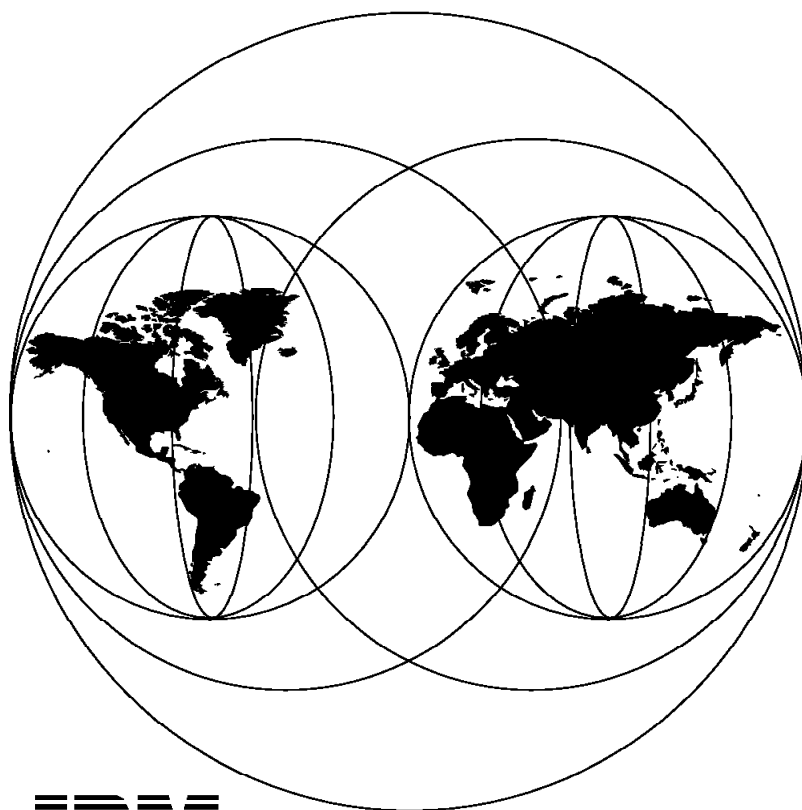


# Migration to VSE/ESA 2.1 Why and How

May 1996



**IBM**

**International Technical Support Organization  
Boeblingen Center**





International Technical Support Organization

SG24-4773-00

**Migration to VSE/ESA 2.1**  
**Why and How**

May 1996

**Take Note!**

Before using this information and the product it supports, be sure to read the general information in Appendix B, "Special Notices" on page 129.

**First Edition (May 1996)**

This edition applies to Virtual Storage Extended/Enterprise System Architecture Version 2 Release 1.1, program number 5690-VSE.

Comments may be addressed to:  
IBM Corporation, International Technical Support Organization  
Dept. 3222 Building 71032-02  
Postfach 1380  
71032 Böblingen, Germany

When you send information to IBM, you grant IBM a non-exclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

© **Copyright International Business Machines Corporation 1996. All rights reserved.**

Note to U.S. Government Users — Documentation related to restricted rights — Use, duplication or disclosure is subject to restrictions set forth in GSA ADP Schedule Contract with IBM Corp.

---

# Contents

<b>Figures</b> .....	vii
<b>Tables</b> .....	ix
<b>Preface</b> .....	xi
How This Redbook Is Organized .....	xi
The Team that Wrote this Redbook .....	xii
Comments Welcome .....	xii
<b>Chapter 1. Why Migration</b> .....	1
1.1 VSE/ESA Version 2 Highlights .....	1
1.2 Migration .....	2
1.3 Overview .....	2
1.4 New Base Programs Software Support .....	4
1.4.1 ESA-mode Only Supervisor .....	4
1.4.2 Data Compression .....	5
1.4.3 Client/Server Support .....	5
1.4.4 CICS/APPC Based Programmable Workstation Support .....	5
1.4.5 Improved Console Support .....	6
1.4.6 REXX/VSE in VSE/ESA Base .....	7
1.4.7 VSE Workdesk Support .....	8
1.4.8 Problem Determination Enhancements .....	9
1.4.9 Librarian Enhancements .....	9
1.4.10 Storage Management Enhancements .....	9
1.4.11 VSE/ESA Distributed Workstation Feature .....	10
1.4.12 LANRES/VSE Support .....	10
1.4.13 Installation Enhancements .....	10
1.4.14 Fast Service Upgrade from VSE/ESA 1.3/1.4 to VSE/ESA 2.1 .....	11
1.4.15 VSE/POWER Enhancements .....	12
1.4.16 VSE/VSAM Enhancements .....	13
1.4.17 CICS/VSE Enhancements .....	14
1.4.18 VTAM Enhancements .....	14
1.4.19 High Level Assembler for VSE .....	15
1.4.20 DITTO/ESA 1.1 Replaces DITTO for VSE and VM .....	15
1.4.21 Device Support Facilities (ICKDSF) Enhancements .....	16
1.4.22 Documentation Enhancements .....	16
1.5 New or Enhanced Optional Programs .....	17
1.5.1 Application Development .....	18
1.5.2 Database Management and Query .....	20
1.5.3 Networking and Distributed Data Processing .....	21
1.5.4 System Support and Control .....	23
1.5.5 Printing and Presentation .....	23
1.6 New Hardware Support .....	24
1.6.1 New Processors Supported (incl. IBM S/390 Parallel Enterprise Server) .....	25
1.6.2 Hardware Compression .....	25
1.6.3 VSE/ESA Turbo Dispatcher Support .....	25
1.6.4 IBM RAMAC Array Family and IBM RAMAC 2 Array Family .....	26
1.6.5 IBM 9336 Model 25 .....	27
1.6.6 IBM 3390 Model 9 Disk Device .....	27
1.6.7 IBM 3990 Model 6 Control Unit .....	28

1.6.8 IBM 3480/3490 Automatic Cartridge Loader	28
1.6.9 IBM 3494 Automated Tape Library	28
1.6.10 New Printers or Printer Models Supported	29
1.6.11 Processor and Device Support Removed with VSE/ESA 2.1	29
1.7 Exploiting New Features and Benefits	29
1.7.1 Real Storage	30
1.7.2 Virtual Storage	30
1.7.3 Application Programming	31
1.7.4 Client/Server Support	31
1.7.5 Data Compression	31
1.8 Highlights of VSE/ESA V2.2	32
<b>Chapter 2. Migrating a VSE/ESA 1.3.X to VSE/ESA 2.1 Using FSU</b>	<b>35</b>
2.1 Requirements for a Fast Service Upgrade	35
2.2 Pre-migration Considerations	35
2.3 Performing a Version Upgrade Through FSU	36
2.4 Fast Service Upgrade (Starting a Version Upgrade)	37
2.4.1 Option 2 - FSU Preparation for a Version Upgrade	37
2.4.2 Option 3 - FSU Installation for a Version Upgrade	41
2.4.3 FSU Installation - Stage 1	43
2.4.4 FSU Installation - Stage 2	47
2.4.5 FSU Installation - Post-Stage 2 Processing	55
<b>Chapter 3. Installing VSE/ESA 2.1 Through Initial Installation</b>	<b>59</b>
3.1 Overview	59
3.2 Planning and Preparation	59
3.3 Considerations for Media Changes	61
3.4 Migrating Existing VSE System Information	61
3.4.1 Restrictions for Migration During Initial Installation	62
3.5 Before Initial Installation	62
3.6 Perform Installation Part I	64
3.7 Perform Installation Part II	65
3.7.1 Performing Migration	68
3.8 Perform Installation Part III	69
3.9 Migration Utilities	70
3.10 Migration and Media Change Considerations	71
3.10.1 User Customized Procedures	71
3.10.2 VSE/POWER Files	71
3.10.3 ICCF Library	72
3.10.4 VSE Control File	72
3.10.5 Optional Products	72
3.10.6 User Programs	73
3.10.7 SAM Files	74
3.10.8 VSAM Files	74
<b>Chapter 4. Migrating CICS and VTAM Definitions</b>	<b>77</b>
4.1 Migrating CICS	77
4.1.1 General Information	77
4.1.2 Planning for the Second CICS Subsystem	79
4.1.3 Migration Tasks	81
4.2 Migrating VTAM Definitions	87
4.2.1 General Information	87
4.2.2 Migration Considerations	88
4.2.3 Preparing for Migration	88

<b>Chapter 5. Operational Changes</b>	95
5.1 Supervisor and IPL Commands	95
5.1.1 Supervisor Parameters	95
5.1.2 Add Command	96
5.1.3 DPD Command	96
5.1.4 IPL Support for IBM 3390-9 - DLA, DLF and DPD Command	96
5.1.5 IPL Load Parameter	97
5.1.6 SYS Command	98
5.2 Attention Routine Commands	98
5.2.1 * CP Command	99
5.2.2 CANCEL Command	99
5.2.3 EXPLAIN Command	99
5.2.4 HCLOG Command	100
5.2.5 MSG Command	100
5.2.6 OFFLINE Command	100
5.2.7 ONLINE Command	100
5.2.8 OPERATE Command	101
5.2.9 QUERY Command	102
5.2.10 REDISPLAY Command	102
5.2.11 SYSECHO Command	102
5.3 Job Control Commands/Statements	103
5.3.1 CACHE	103
5.3.2 EXEC	103
5.3.3 EXTENT	104
5.3.4 LIBSERV	104
5.3.5 OPTION	104
5.3.6 OPTION/STDOPT	105
5.3.7 QUERY	105
5.3.8 SYSDEF	105
5.3.9 SYSECHO	106
5.3.10 VDISK	106
5.4 VSE/POWER Commands and JECL	106
5.4.1 * \$\$ JOB	106
5.5 Linkage Editor Commands	107
5.5.1 ACTION Statement	107
5.6 Librarian Commands	107
5.6.1 TEST TRACE Command	107
5.7 ICCF Commands	107
5.7.1 /LOAD command	107
5.8 VM/VSE Linkage Functions	107
5.9 VSE/OCCF Considerations	108
5.10 Dropped Support	109
5.11 Interactive Trace Program	109
<b>Chapter 6. Hints and Tips</b>	111
6.1 Hints and Tips for FSU	111
6.2 Hints and Tips for Installation	114
6.3 High Level Assembler	115
6.3.1 Environments with No Immediate Need for High Level Assembler	116
6.3.2 Environments Making Full use of High Level Assembler	116
6.4 Installation Tasks for a Second CICS/VSE	117
6.4.1 Task 1 - Modify Predefined Environment	117
6.4.2 Task 2 - Modify Skeletons Provided by VSE/ESA	118
6.4.3 Task 3 - Modify CICS/VSE Control Tables	120
6.4.4 Task 4 - Submit the Modified Skeletons	121

6.4.5 Task 5 - Definitions for MRO	122
6.4.6 Optional Task: UPGRADE CSD	124
6.5 VTAM Required Files	125
<b>Appendix A. Comparison Overview VSE/ESA 1.4 and VSE/ESA 2.1</b>	<b>127</b>
<b>Appendix B. Special Notices</b>	<b>129</b>
<b>Appendix C. Related Publications</b>	<b>131</b>
C.1 International Technical Support Organization Publications	131
C.2 Other Publications	131
<b>How To Get ITSO Redbooks</b>	<b>133</b>
How IBM Employees Can Get ITSO Redbooks	133
How Customers Can Get ITSO Redbooks	134
IBM Redbook Order Form	135
<b>List of Abbreviations</b>	<b>137</b>
<b>Index</b>	<b>139</b>



---

## Figures

1.	Characteristics of IBM 3390 Model 9	27
2.	FSU Selection Panel	37
3.	VSE/ICCF Member FSUPREP (Cartridge Users)	38
4.	VSE/ICCF Member FSUPREP (Tape Users)	39
5.	Starting FSU Installation	42
6.	VSE Control File Backup	64
7.	First Prompt for Installation Part II	65
8.	Job Steps for Migration of Configuration Data	68
9.	VSE/ESA User Sign-on Panel	69
10.	Default ATCSTR00.B in PRD2.CONFIG	90
11.	Changing the ATCSTR00	90
12.	Default VTAM Configuration List	92
13.	ATCCON01 with User Modified Major Nodes	93
14.	PATH Definition Table	93
15.	VTAM Application Major Node	94
16.	SKCICS2 Skeleton	119



---

## Tables

1.	Predefined Environments	11
2.	New Optional Programs (or Features)	17
3.	Hardware Support Removed with VSE/ESA 2.1	29
4.	Interrupt IPL Running under VM	48
5.	Files for a Second CICS	80
6.	Disk Space Needed for a Second CICS	81
7.	Supplied Skeleton Tables	81
8.	Supervisor and IPL Commands	95
9.	Attention Routine Commands	99
10.	Job Control Commands/Statements	103
11.	VSE/POWER Commands and JECL	106
12.	Sequence of UPGRADE CSD Commands	124
13.	VSE/ESA versus VSE/ESA 2.1 Functions	127



---

## Preface

This redbook tells you why you should migrate to VSE/ESA 2.1 and how to do it.

It will help you to understand the benefits of major new functions of VSE/ESA 2.1 and 2.2, such as exploitation of n-way processors through the Turbo Dispatcher and S/390 data compression.

We cover in detail both ways of arriving at a VSE/ESA 2.1 system level: Version upgrade via FSU and initial installation are described in detail including job examples and usage of various system facilities.

This redbook was written mainly for customer and IBM technical personnel responsible for planning and migrating to VSE/ESA 2.1.

Basic knowledge of VSE/ESA is assumed.

---

## How This Redbook Is Organized

The redbook is organized as follows:

- Chapter 1, "Why Migration"

This chapter provides a general overview of the new version. New products, new features and enhancements in VSE/ESA 2.1 are shown. In addition you will find the highlights of VSE/ESA 2.2.

- Chapter 2, "Migrating a VSE/ESA 1.3.X to VSE/ESA 2.1 Using FSU"

This chapter describes the migration from VSE/ESA 1.3 to VSE/ESA 2.1 using the Fast Service Upgrade (FSU).

- Chapter 3, "Installing VSE/ESA 2.1 Through Initial Installation"

This chapter describes the migration from VSE/ESA 1.3 and lower to VSE/ESA 2.1 by new base installation.

- Chapter 4, "Migrating CICS and VTAM Definitions"

This chapter describes the migration of CICS tables and VTAM definitions.

- Chapter 5, "Operational Changes"

This chapter gives you a list of commands/statements that are new or have been changed in format or options.

- Chapter 6, "Hints and Tips"

This chapter gives you hints and tips for problems which may occur during migration.

- Appendix A, "Comparison Overview VSE/ESA 1.4 and VSE/ESA 2.1"

This appendix shows you a function/capability comparison of VSE/ESA 1.4 and VSE/ESA 2.1.

---

## The Team that Wrote this Redbook

This redbook was produced by a team of specialists from around the world working at the International Technical Support Organization Böblingen Center.

**Annegret Ackel** (ACKEL at BOEVM3), from the International Technical Support Organization Böblingen Center, was the project leader.

**Walter Bieg** (WBIEG at GHQVM1), from IBM Germany.

**Rodolfo A. Nunes** (RNUNES at RIOVM1), from IBM Brasil.

**Carmen Wei Yue Hua** (WEIYH at HKGVM8), from IBM China.

---

## Comments Welcome

We want our redbooks to be as helpful as possible. Should you have any comments about this or other redbooks, please send us a note at the following address:

redbook@vnet.ibm.com

**Your comments are important to us!**

---

# Chapter 1. Why Migration

---

## 1.1 VSE/ESA Version 2 Highlights

VSE/ESA Version 2 is based on VSE/ESA Version 1 and extends Version 1 in the following key areas:

### Open, Client/Server Computing

VSE/ESA Version 2 adds important client/server capabilities to the traditional VSE strength in cost-effective batch and online transaction processing.

- The new LANRES/VSE solution offers a variety of host-based services for Novell NetWare attached LANs.
- ADSM for VSE is introduced as a new optional program and is a tool for managing the backup and archiving of workstation data.
- VisualLift is a new optional program providing an easy way to modernize the appearance of the 3270 screens and convert them into a GUI front-end.
- The new VSE Workdesk gives VSE/ESA V2 customers an easy-to-use 'point and click' PC (OS/2 or Microsoft Windows) implementation of the VSE Interactive Interface.

### Reduced Cost of Computing

- VSE/ESA V2 is simplified and streamlined to help make customer work more productive. For example, V2 is available as an FSU (Fast Service Upgrade) for customers with VSE/ESA V1.3 installed.
- Major improvements have been made to the V2 console support. Multiple consoles, PF keys, console integration and many other often requested console improvements are included in V2.
- Data compression is available in V2. For selected files, VSAM will use a compression technique that may result in significant savings in storage space. When the hardware-assisted data compression feature is available (standard on IBM 9672 R, ES/9000 models 211, 511, and 711), VSE/ESA V2 exploits it to reduce dramatically the CPU time needed for compression.

### New Technology Support

- VSE/ESA V2 runs only on ESA-capable processors. V2 introduces with the new Turbo Dispatcher native support for n-way processors as the models of the new S/390 Parallel Enterprise Server (IBM 9672 R11-61), ES/91921, and ES/9221. VSE/ESA V2 supports the RAMAC 2 Array Disk Family, the IBM 3494 Tape Library and can run as the operating system on a PC Server 500 System/390.
- VSE/ESA V2 introduces the latest Language Environment (LE) technology from MVS. New LE languages are COBOL/VSE and PL/I VSE. PL/I VSE brings 31-bit capability for PL/I users.

### Year 2000 Support

The next release VSE/ESA V2.2 will provide support for the Year 2000 transition. Selected Year 2000 improvements will be available for V2.1 as PTFs, so that the

customers can install these as they are available and start modifying their applications to make them ready for the Year 2000. Concurrently with the PTF shipment an INFO APAR will be provided with details about the extended/new functions. To help searching for these APARs, they will contain the keyword **YR2000**. Migration to V2 and the new Language Environment is also very important since the old languages DOS VS/COBOL and VS COBOL II will not provide Year 2000 support. Only COBOL/VSE and PL/I VSE provide this function.

A summary of new functions provided with VSE/ESA 2.2 can be found in 1.8, "Highlights of VSE/ESA V2.2" on page 32.

Details about VSE/ESA Version 2 improvements will be discussed in the following chapters.

---

## 1.2 Migration

Migrating to a new version or release of an operating system is a unique task for each installation. The operating environment, system tailoring required or additional software installed, all contribute to make each system unique. No single method, therefore, can be rigidly applied to every installation migrating to a new release. In its simplest form, migration means for VSE/ESA users transferring hardware configuration and user profile data stored in the VSE/ICCF DTSEFILE and the VSE/ESA control file to the new system.

This effort will enable you to exploit and to take advantage of the benefits of the new functions and facilities available in the new version.

This publication explains different ways of migrating to the new VSE/ESA Version 2.

VSE/ESA is described in a set of manuals called the **VSE/ESA Library**. References to some of these manuals occur here. The IBM manual *VSE/ESA Library Guide* (GC33-6619) has a short description of the manuals provided for VSE/ESA. A brief list of the most important manuals is provided in Appendix C, "Related Publications" on page 131.

---

## 1.3 Overview

This chapter will describe the new and enhanced system and hardware support provided by VSE/ESA V2 and is organized as follows:

### 1 VSE/ESA 2.1 Base Programs Software Support

In this topic we will look at VSE/ESA Central Functions:

- ESA-mode only Supervisor
- Data Compression
- Client/Server Support
- CICS/APPC-Based Programmable Workstation Support
- Improved Console Support
- REXX/VSE in VSE/ESA Base
- VSE Workdesk Support
- Problem Determination Enhancements
- Librarian Enhancements
- Storage Management Enhancements
- VSE/ESA Distributed Workstation Feature



- LANRES/VSE Support
- Installation Enhancements
- Fast Service Upgrade from VSE/ESA 1.3 to VSE/ESA 2.1
- VSE/POWER Enhancements
- VSE/VSAM Enhancements

Other VSE/ESA Base Programs:

- CICS/VSE security migration tool
- VTAM APPN support
- High Level Assembler for VSE in VSE/ESA base
- DITTO/ESA replaces DITTO for VSE and VM
- ICKDSF Enhancements

In addition the *Documentation Enhancements* that we have with the new version will be described.

## 2 New or Enhanced Optional Programs

In this topic we provide details about VSE/ESA 2.1 Optional Program Support and those optional programs that are supported by VSE/ESA 2.1 either for the first time or with a new release.

VSE/ESA new or enhanced Optional Programs: (\*) means newly supported)

- LE/VSE (\*)
- COBOL/VSE (\*)
- PL/I VSE (\*)
- VisualGen (\*)
- VisualLift for MVS, VM & VSE (\*)
- SQL/DS
- QMF/VSE
- DL/I DOS/VS
- DFSORT/VSE (\*)
- ACF/NCP
- ACF/SSP
- EP
- X.25 NPSI
- VSE/OCCF
- ADSM/VSE (\*)
- GDDM/VSE
- PSF/VSE

## 3 New Hardware Support

This topic describes the new hardware support available with VSE/ESA 2.1.

- New IBM ES/9000 Processors
- IBM System/390 Parallel Enterprise Server
- VSE/ESA Turbo Dispatcher Support
- New Printers
- IBM RAMAC Array Family
- IBM 3390 Model 9 Disk Device
- IBM 3990 Model 6 Control Unit
- IBM 3480/3490 Automatic Cartridge Loader
- IBM 3494 Automated Tape Library

## 4 Exploiting the New Features

This topic shows, in brief, how to exploit the new features of VSE/ESA 2.1.

---

## 1.4 New Base Programs Software Support

VSE/ESA consists of a number of base programs. The program number for ordering all these base programs is **5690-VSE**.

Several former base programs have been integrated into one single base program called *VSE Central Functions*. Although they are now in one base program, their functionality is still visible today. For ease of understanding, familiar names such as VSE/POWER, VSE/VSAM, and REXX/VSE are still used. They now represent functional aspects, no longer programs themselves. This new lean program VSE Central Functions is easy to install and use, yet satisfies all core requisites.

**The base programs are offered as a complete, tested package.**

- VSE Central Functions V6.1, 5686-066
  - VSE/Advanced Functions
  - VSE/SP Unique Code
  - VSE Workdesk
  - VSE/ESA Distributed Workstation Feature
  - LANRES/VSE
  - VSE/POWER
  - VSE/ICCF
  - VSE/VSAM
  - VSE/Fast Copy
  - VSE/OLTEP
  - REXX/VSE
- High Level Assembler for VSE V1.2, 5696-234
- VTAM V4.2, 5686-065
- BTAM-ES V1.1, 5746-RC5
- CICS/VSE V2.3, 5686-026
- EREP V3.5, 5656-260
- DITTO/ESA for VSE V1.1, 5648-099
- ICKDSF (Device Support Facilities) V1.16, 5747-DS2

### 1.4.1 ESA-mode Only Supervisor

VSE/ESA is intended for the support of ESA-capable processors (ESA/370 and ESA/390 architecture). To exploit the functions such processors provide, VSE/ESA 2.1 support is restricted to the supervisor mode ESA.

The following supervisor generation options of VSE/ESA Version 1 have been dropped:

- MODE=370
- MODE=VM
- MODE=VMESA

To preserve the functions of former VM and VMESA modes, VSE/ESA 2.1 offers the following enhancements:

- Under VM/ESA, VSE/ESA 2.1 can run without a Page Data Set. To enable this, the IPL option NOPDS has been introduced. NOPDS can be used whenever the processor storage size is such that page frames can be allocated to all virtual storage. If you specify NOPDS, you cannot specify the VSIZE parameter at the same time. If the system operates without a Page Data Set, it calculates the VSIZE from the size of the processor storage and the specified VIO value.
- When running VSE/ESA under VM, support for Inter-User Communication Vehicle (IUCV) is made available for the supervisor mode ESA.

## 1.4.2 Data Compression

This support helps to save disk space and allows for faster data transmission and lower line costs in a network.

A new hardware instruction (CMPSC) that allows for data compression is available on certain IBM ES/9000 processors. To make processors with or without this feature compatible, an equivalent software implementation is available. The interface to the hardware compression feature is the new **macro CSRCMPSC**, also referred to as data compression service. Whether the compression (or decompression) is performed by hardware or software is transparent to the user.

CSRCMPSC is a general use programming interface and requires an ESA/390 processor. VSE/VSAM provides data compression support by exploiting this macro.

## 1.4.3 Client/Server Support

VSE/ESA has evolved - and will continue to evolve - to meet your changing demands and needs. It is an ideal base for client/server solutions that exploit capabilities such as connectivity through a wide range of communication interfaces and protocols, online transaction processing, extensive storage capability, and support for data distribution across different workstation and host platforms. Thus with VSE/ESA, you have the chance to build upon your current investments in hardware and software, while preparing for future growth.

With VSE/ESA 2.1, you automatically receive **LANRES/VSE** to offer transparent access to mainframe resources for NetWare clients. Additional client/server support has been added through optional programs such as:

- ADStar Distributed Storage Manager (ADSM)
- VisualGen for application development

## 1.4.4 CICS/APPC Based Programmable Workstation Support

The CICS/APPC based workstation support uses LU6.2 protocols to communicate between the host and a workstation. It is a peer-to-peer protocol which allows data exchange to be initiated from both sides. CICS/APPC support is available for File Transfer Support within the VSE/ESA Distributed Workstation Feature. For users of the VSE/ESA Distributed Workstation Feature, CICS/APPC based communication provides a more flexible and conversation oriented implementation by supporting:

- Host-initiated communication  
This provides an effective notification mechanism for completed jobs running on the host.
- No terminal emulation required  
No 3270 terminal emulation session is required for host communication.

Users of the VSE/ESA Distributed Workstation Feature who do not have CICS/APPC communication installed, still can use the File Transfer Support based on 3270 terminal emulation session (LU2).

To protect the host resources from unauthorized access, the user of the VSE/ESA Distributed Workstation Feature must provide a user ID and a password when the CICS/APPC communication path is used.

### 1.4.5 Improved Console Support

- **Service Processor Console as VSE/ESA System Console**

On IBM ES/9000 processors, all operator functions provided for the VSE/ESA system console are available to the (Personal System/2-based) processor console. In this role, the processor console is referred to as *integrated console*.

The integrated console eliminates the need to have a (non-SNA) 3270 system console. The integrated console is typically used for IPL and recovery.

- **3270 System Console**

This console has improved functions and presentation characteristics. Several of them had already been available under the Interactive Interface, for example, help, message explanation, and predefined function keys. Dependent on the hardware, extended 3270 attributes (such as color) are supported.

- **Consoles under the VSE/ESA Interactive Interface**

Via the Interactive Interface, a CICS/VSE terminal can now serve independent from VSE/ICCF as:

- **Master console**

At the terminal, an authorized user may become a full-function operator of your VSE/ESA system. Communication with the system appears and occurs in the same way as at a 3270 system console.

- **User console**

At the terminal, users may interact with jobs they have submitted, without impacting system operation. A user console may receive and reply to selected messages that an application program issues, enter restricted set of system commands and receive the related responses.

- **CMS Console Functions**

The VM/VSE Interface fully supports dynamic partitions.

A CMS user receives messages from jobs submitted with the ECHO option. Responses to all commands (including VSE/POWER and VTAM) are routed back to the CMS user. The Attention Routine command SYSECHO allows to designate a VM user ID as a VSE/ESA master console. This function can be exploited to automate VSE/ESA operations via a CMS program.

- **Extended Routing Capabilities**

Messages intended for master consoles are routed to such consoles. For example, to a:

- Master console under the Interactive Interface.
- CMS console (of a VM user ID that operates as a VSE/ESA master console).
- NetView console.

Master console messages that cannot be delivered to a master console are routed to the Integrated Console. Messages can be directed to a specific console. For example, the \* \$\$ JOB statement of VSE/POWER may indicate (ECHO option) a specific user console or a CMS user ID that is to receive messages generated by the job.

Replies are accepted from any authorized console. Command responses are routed to the console from where the command was issued.

- **Logging**

All normal message traffic is logged on the hardcopy file. This includes IPL messages. The name of the console that issued a command or received a reply is part of the logging information. The HCLOG command allows to suppress logging for messages that are routed exclusively to the user console and the replies to such messages.

## 1.4.6 REXX/VSE in VSE/ESA Base

Starting with VSE/ESA 2.1, REXX/VSE is part of VSE/ESA. It belongs to the VSE/ESA base program VSE Central Functions 6.1.

REXX/VSE is a general purpose programming language that has structured-programming instructions, such as IF, SELECT, DO WHILE, LEAVE. This allows programs and algorithms to be written in a clear and structured way. It is easy to use for professionals and general users.

- **New JCL Host Command Environments**

- *ADDRESS JCL*: With ADDRESS JCL, you can imbed VSE/ESA JCL commands into a REXX/VSE program. You can thus issue JCL commands from the REXX program using ADDRESS JCL.
- *ADDRESS LINK*: Through the ADDRESS LINK command, it is possible to call VSE/ESA programs through the VSE/ESA standard parameter list. VSE/ESA programs called this way can send program output to the REXX OUTTRAP stem. This is done through a new programming service routine, ARXOUT.
- *ADDRESS LINKPGM*: Through the ADDRESS LINKPGM command, you can pass multiple parameters to a program. The command evaluates the parameter you specify and performs variable substitutions. The program can update the parameters it receives and return the updated values to the REXX EXEC.

- **REXXIPT External Function**

The REXXIPT External function specifies a REXX stem name (which is used as SYSIPT data stream) for the supported host command environment. All data records specified by REXXIPT are read by the supported command environment through standard OPEN, GET, and CLOSE macros for SYSIPT.

Supported host command environments are ADDRESS JCL, ADDRESS LINK, and ADDRESS LINKPGM.

- **REXX Interactive Communication**

The newly introduced ECHO parameter in the VSE/POWER JECL statement \* **\$\$ JOB** enables a REXX program to communicate interactively with VSE/ESA user consoles. This means, for example, if you trace a REXX program, the trace output is shown on the user console.

- **Communication with IDCAMS and Librarian**

The VSE/VSAM IDCAMS utility can be called from a REXX program. Output that is produced through IDCAMS is then written onto the REXX stem (which was produced through the REXX OUTTRAP function). Also, the Librarian program can be called from a REXX program. Its output is then written onto the REXX stem.

- **REXX/VSE Console Automation**

REXX/VSE Console Automation is based on the console support of VSE/ESA 2.1 and uses:

- Console I/O interfaces such as WTO (Write to Operator) and DOM (Delete Operator Message)
- General-use console interface macros such as MCSOPER (Activate Console) and MGCRE (Create Command or Reply).

REXX/VSE Console Automation helps to automate console operation and makes the operation of the VSE/ESA console more productive. It provides an easy-to-use VSE/ESA console command environment that allows to activate and deactivate one or more VSE/ESA console sessions. Such a program can issue VSE/ESA console commands and retrieve command responses. The following types of commands are supported:

- Attention routine (AR) commands
- Console redisplay commands
- VSE/POWER, VSE/ICCF, CICS/VSE, VTAM and SQL/DS commands.

An extensive set of new REXX/VSE external functions eases the task of writing REXX console applications. These functions allow REXX programs to retrieve and process console commands and react on events.

## 1.4.7 VSE Workdesk Support

The VSE Workdesk is a new front-end for workstation users to VSE/ESA. It runs on IBM OS/2 Version 2.1 or higher and on DOS/Microsoft Windows Version 3.1. Through workstation-based panels and structures, the VSE Workdesk provides icons and objects that help you manage and use VSE/ESA. This is an easy way to access system functions without having to learn a special language for accessing these functions. **You can now point-and-click VSE/ESA.**

An experienced OS/2 user will find a well-known front-end and can easily work with VSE/ESA. If you are familiar with Interactive Interface dialogs and have not used workstation-based windows before, this is an attractive entry into the "PC" environment.

## 1.4.8 Problem Determination Enhancements

In this area, you will find the following enhancements:

- New Interactive Trace Program
- SDAID Enhancements

### New Interactive Trace Program

The interactive trace program is the tracing tool for VSE/ESA application programs. It traces the execution of programs running in static or dynamic user partitions. The interactive trace program is activated through the statement:

```
// EXEC programname,TRACE
```

It is interactively controlled from the VSE/ESA master console or from a user console. The trace program operates at the level of machine instructions and virtual storage addresses. It is similar to the CP debugging facilities available in VM/ESA.

You will find a description of this trace program in Chapter 5, “Operational Changes” on page 95.

### SDAID Enhancements

The external interrupt trace of SDAID allows to trace selected external interruption codes. You may specify a list of up to eight external interruption codes.

## 1.4.9 Librarian Enhancements

The Librarian has been enhanced to support dumps and other library member of up to 2GB. This allows to have partition dumps of that size stored in the dump library.

## 1.4.10 Storage Management Enhancements

- Callable Cell Pool Services

A cell pool is an area of virtual storage divided into cells of fixed size. It can be located in a data space or an address space. To use callable cell pool services, a program must issue the CALL CSR Px xx macro to invoke the appropriate cell pool service program. The service is also available for any user application.

- ESA/370 Linkage Stack

The linkage stack is an area of protected storage given to a program to save status information at branch or program call. It is required for callable cell pool services.

Detailed information on callable cell pool services is provided in the IBM manual *VSE/ESA Extended Addressability*.

### 1.4.11 VSE/ESA Distributed Workstation Feature

VSE/ESA Distributed Workstation Feature is part of the VSE/ESA base program VSE Central Functions 6.1.

The Distributed Workstation Feature (DWF) integrates programmable workstations into VSE/ESA environments, providing a graphical platform for application development tasks. Communication between the VSE/ESA host and the programmable workstations is based on either the file transfer program (which uses LU2 connections to exchange data) or on CICS/APPC.

The new job console function enables users to interact with jobs they have submitted to the host, without impacting system operation. In an OS/2 window, a job console may receive and reply to selected messages that an application program issues, enter a restricted set of system commands and receive the related responses.

In addition, performance improvements have been implemented.

The IBM manual *VSE/ESA Distributed Workstation Feature - User's Guide and Reference* provides more information.

### 1.4.12 LANRES/VSE Support

LANRES/VSE is part of the VSE/ESA base program VSE Central Functions 6.1.

LAN Resource Extension and Services/VSE (LANRES/VSE) establishes a server environment on a VSE/ESA operating system to let NetWare clients have transparent access to System/390 resources. VSE/ESA systems, NetWare local area network (LAN) servers, and heterogeneous clients now can be integrated in a way that provides unique business solutions and helps maximize user productivity.

Through LANRES/VSE, you can:

- Store NetWare data on disk images which physically reside on System/390 DASD
- Print documents or data on printers located anywhere in your site
- Manage NetWare files and directories from VSE/ESA
- Administer multiple NetWare servers from VSE/ESA.

The IBM manual *LANRES/VSE Guide and Reference* provides more information.

### 1.4.13 Installation Enhancements

With VSE/ESA 2.1, initial installation is easier and less time consuming. You have the option to perform the first part of the initial installation automatically. For this purpose a new system prompt appears on the screen, giving you a selection for either an "automatic" or a "manual" installation.

When you select automatic installation, no intervention is required to:

- Initialize system disks
- Place the VTOC
- Restore the system library.

Moreover, the number of IPLs during initial installation is reduced.



## Distribution Tape or Cartridge

Starting with VSE/ESA 2.1, 1600 bpi tapes have been dropped as a distribution media option. The intent is to have the VSE/ESA base system distributed on one tape or cartridge, thus reducing operator interaction during the installation process.

## Predefined Environments

With VSE/ESA 2.1, the number of predefined environments is reduced to simplify installation. At the same time, the characteristics of the predefined environments have changed, as shown in Table 1.

Predefined Environment	Virtual Storage	Address Space	Partitions	Characteristics
A	40MB	12+dyn	12+dyn	Entry system
B	120MB	12+dyn	12+dyn	Large system (31-bit addressing)
C	40MB	12	12	Unattended node system

**Note:** *dyn* indicates that in addition dynamic partitions are available.

### 1.4.14 Fast Service Upgrade from VSE/ESA 1.3/1.4 to VSE/ESA 2.1

Traditionally, the **Fast Service Upgrade (FSU)** process is used to bring a VSE/ESA system to a higher level of maintenance. In this case you use the FSU process for a **service refresh**.

Customers with VSE/ESA 1.3 or VSE/ESA 1.4 can move their system to VSE/ESA 2.1 using the FSU process. In this case you use the FSU process for a **version upgrade**. To do this, your VSE/ESA 1.3/1.4 system must meet specific requirements. For example, it must run with a MODE=ESA supervisor.

For any other version or release of VSE (this includes DOS/VSE, VSE/SP, VSE/ESA 1.1, and VSE/ESA 1.2) you will have to use the initial installation process for installing VSE/ESA 2.1.

The advantage of installing VSE/ESA 2.1 through an FSU and not through an initial installation is that an FSU replaces only VSE/ESA system data:

- VSE/ESA base programs
- VSE/ESA system files
- VSE/ICCF libraries including system data.

User libraries, hardware configuration tables and installation-unique information are not changed by the FSU.

The FSU process does not install VSE/ESA optional programs. If you want to add optional programs to your VSE/ESA 2.1 system, you must install them after the FSU has been completed.

See Chapter 2, "Migrating a VSE/ESA 1.3.X to VSE/ESA 2.1 Using FSU" on page 35 for information about this subject and, if you need more details, see the

IBM manual *VSE/ESA Planning* that lists the requirements, and the IBM manual *VSE/ESA System Upgrade and Service* that describes how to perform an FSU.

### 1.4.15 VSE/POWER Enhancements

VSE/POWER is part of the VSE/ESA base program VSE Central Functions 6.1.

- **Improved Handling of User Exits (Program Checks)**

A user can control data which enters or leaves VSE/POWER's spool files by means of a user exit routine. Starting with VSE/ESA 2.1, VSE/POWER recovers from an exit failure whenever possible and continues with processing.

- **Extended Segmentation Interface**

A new IPWSEGM user macro provides improved support compared to the SEGMENT macro in the following areas:

- The passed JECL statement is no longer limited to 71 bytes. Its operands may extend to 1024 bytes.
- The output attributes of a previous segment are no longer lost. You mark to "keep" them for the next output segment.
- Concurrent segmentation requests from various application programs are no longer processed in multithreaded manner, tying up system resources.
- Macro IPWSEGM supports re-enterable coding.
- A failing IPWSEGM request provides unique return and feedback code for analysis.
- A successful IPWSEGM request returns "jobname", "jobnumber", and so on, of the created queue entry.

- **Direct Queue Entry Access**

With direct queue entry access, VSE/POWER provides improvements when processing spool-access support CTL and GET service requests as follows:

- Performance gains by direct access to the desired queue entry without chain searching.
- Precise and program-processible return and feedback codes in case of access failure.
- Unique access to a single queue entry, when the traditional selection criteria is not unique.

- **Extension of GCM Service**

The Get Completion Message (GCM) service of the spool-access support has been extended:

- An application program which retrieves job event messages can request to be posted when fixed format messages are available for retrieval. It is possible to specify a wait interval.
- The fixed format message has been extended to contain the user ID of the spool-access user and private information specified at job submission time.
- A user can delete one or more job event message queues by means of the GCM-OPEN-PURGE request.

- The statistics status report identifies the spool-access support application which lost the maximum amount of job event messages.
- **Parallel Browsing of Queue Entries**  
Spool-access support users can address an RDR, LST, or PUN queue entry with the GET request in BROWSE mode. Thus you can view one entry without updating it. To improve availability and performance, VSE/POWER accepts up to 255 users in parallel to view such queue entries. Even in shared VSE/POWER systems, each Central Processing Unit (CPU) may have up to 15 users in parallel to view queue entries.
- **Enhanced Viewing of Queue Entries**  
Whenever queue entry data is not read sequentially, but restart continuation at a certain record, page, or line number is desired, a VSE/POWER routine performs an expedited restart, which takes the shortest path to the restart target from either queue entry start, current position, or queue entry end. This significantly speeds up scrolling through VSE/POWER entries.
- **Data Block (DBLK) Size Increase**  
The VSE/POWER data block (DBLK) size corresponds to the physical record size of the VSE/POWER data file on disk, used for spooling and printing of jobs and their output and of all data passed from cross partition and networking sources. The DBLK size influences VSE/POWER spooling performance. An increase of the DBLK size from 12KB to 64KB provides performance and capacity gains, especially in non-typical batch systems (such as high speed print servers or intermediate networking nodes).
- **PNET Transmission Buffer Increase**  
For PNET BSC and CTCA, the maximum network transmission buffer size has been increased from 1,800 to 4,000 bytes. This extension improves networking performance and provides an adaptation to JES and RSCS capabilities.

The IBM manual *VSE/POWER Administration and Operation* provides more information on the subjects introduced.

#### 1.4.16 VSE/VSAM Enhancements

VSE/VSAM is part of the VSE/ESA base program VSE Central Functions 6.1. It shows the following enhancements:

- **Data Compression**  
VSE/VSAM now allows to store data in compressed format. Compression of a VSAM file is requested by specifying the COMPRESSED attribute when defining a cluster. If the processor supports the IBM ES/9000 data compression feature, it is exploited automatically.
- **Record Management Changes**  
Certain VSE/VSAM record management control blocks now are created in the partition GETVIS area above 16MB. This frees storage allocations below the 16MB line.
- **Open and Close Enhancements**  
VSE/VSAM OPEN/CLOSE modules are enhanced by extended error messages for better and faster error recognition.
- **Backup/Restore Enhancements**

VSE/VSAM Backup/Restore allows to backup and restore VSAM clusters that are already in (VSAM-)compressed format.

- **VSE/VSAM IDCAMS Utility**

VSE/VSAM's IDCAMS utility can be called by REXX/VSE programs. Its output can be returned to the REXX/VSE program for processing and analysis.

The IBM manual *VSE/VSAM User's Guide and Application Programming* provides further details about the VSE/VSAM data compression support. The description of VSE/VSAM macros is now in this manual.

## 1.4.17 CICS/VSE Enhancements

CICS/VSE 2.3 is the successor program of CICS/VSE 2.2, which was available with VSE/ESA 1.3. CICS/VSE offers the following new functions and capabilities:

- **CICS Application Migration Aid (CICS/AMA)**

The **CICS/AMA** tool helps you to convert existing macro-level application programs to command-level programs. To enable the conversion from macro-level to command-level, Application Programming Interface (API) and System Programming Interface (SPI) enhancements are introduced. API and SPI enhancements are, for example, the new options RESP2 and CVDA on existing system programming commands.

- **Language Environment VSE/ESA**

CICS/VSE 2.3 supports 31-bit applications written in COBOL/VSE and PL/I VSE within the IBM Language Environment for VSE/ESA (LE/VSE).

- **Security Migration Tool**

CICS/VSE 2.3 offers tools to help you extract all security-related information from the control blocks of your CICS system and from the VSE/ESA control file. Additions and amendments are done automatically and a list of resources is provided for you to delete or leave, depending on your preference.

The IBM manual *CICS/VSE Security Migration Tools Guide* provides detailed information on the security migration tool.

- **Enhanced National Language Support**

CICS/VSE National Language Support (NLS) is extended to support German, Japanese, and Chinese. The series of end-user messages and the Report Controller panels and help panels are translated into German and Japanese.

## 1.4.18 VTAM Enhancements

VTAM 4.2 is the successor program to VTAM 3.4. Among others, it offers the following new functions:

- **Advanced-Peer-to-Peer Networking (APPN)**

VTAM Version 4 also is a new member of the family products supporting SNA Advanced-Peer-to-Peer Networking technology. APPN supports, for example:

- Dynamic location of logical units
- Dynamic route calculation
- Dynamic addition, deletion, and movement of network nodes

- Dynamic integration of Local Area Networks (LANs) and Wide Area Networks (WANs).

VTAM also provides both APPN and subarea networking concurrently. Even application sessions between any combination of APPN and traditional network environments are supported. This not only gives you the benefits of APPN, but also a gradual way of converting your network to it. The addition of the APPN solution has also been enhanced with the support of functions previously announced in VTAM Version 4 releases for MVS/ESA.

- **Data Compression**

VTAM 4.2 for VSE/ESA supports hardware assisted data compression.

### 1.4.19 High Level Assembler for VSE

Starting with VSE/ESA 2.1, the High Level Assembler for VSE is **part of the VSE/ESA base programs** and replaces the DOS/VSE Assembler. High Level Assembler for VSE is the most sophisticated assembler available for MVS, VM, and VSE. It enables the development of programs or subroutines that provide functions not typically provided by other symbolic languages, such as COBOL/VSE and PL/I VSE.

Of special interest to VSE/ESA users is the High Level Assembler for VSE's support for 31-bit addressing and data spaces.

The IBM manual *High Level Assembler for VSE Programmer's Guide* has more information.

### 1.4.20 DITTO/ESA 1.1 Replaces DITTO for VSE and VM

DITTO/ESA for VSE 1.1 replaces DITTO for VSE and VM 3.2 as well as the DITTO 3.2 Productivity Features for VSE and VM. It provides enhancements such as:

- Full-screen DITTO is now started and controlled from a CICS terminal not requiring VSE/ICCF.
- Display of VSE library directories and status, and various functions to work with members.
- Display and manage VSAM catalog entries with an easy-to-use full-screen interface to IDCAMS. The display now provides statistical information not shown by the Productivity Feature.
- An editor for VSE library members and VSAM files.
- Wrapper functions for transmission of tape and file images in a network.
- Copy support for multi-file, multi-volume tapes with special processing for tape labels and other header and trailer records.
- Command mode by keywords and access to REXX variables to help automate routine tasks.
- Exploiting 31-bit addressing to use available storage above 16MB.
- A security exit for better functions access control.

The IBM manual *DITTO/ESA User's Guide and Reference* provides more information.

### 1.4.21 Device Support Facilities (ICKDSF) Enhancements

ICKDSF Release 16 provides support for the IBM RAMAC Array family in the VSE/ESA stand-alone environment. Logical path status reporting and VTOC expansion have been added. For the VM environment, ICKDSF has implemented the VMSES/E format for installation and service.

For the VSE/ESA environment, the online version of ICKDSF has been modified to accept control statements from the system console (SYSLOG). Thus, the online version of ICKDSF can be used (instead of the stand-alone version of ICKDSF) during initial installation of VSE/ESA.

Further enhancements are:

- Support for the IBM RAMAC Array family

ICKDSF has been modified to support the new IBM RAMAC Array family. ICKDSF Release 16 ensures proper operation of the media maintenance and problem determination functions for these new devices.

- Logical path status reporting

This function provides the capability to display information for each logical path from a host operating system to a device attached to an IBM 3990 Model 6 control unit.

- VTOC expansion

The VTOC expansion function allows the size of a VTOC to be increased and relocated without re-initialization of the entire volume. This is useful when the VTOC is inadequate for the amount of data on the volume.

- Support for the Peer-to-Peer Remote Copy (PPRC) function of the IBM 3990 Model 6 control unit.

The IBM manual *ICKDSF User's Guide and Reference* provides more information.

### 1.4.22 Documentation Enhancements

- **Hardcopy Manuals**

For the VSE/ESA library the following new manuals are available:

- *VSE/ESA Using the VSE Workdesk*, describing the new VSE Workdesk.
- *LANRES/VSE Guide and Reference*, describing LANRES/VSE.
- *VSE/ESA System Upgrade and Service*, describing service application and performing a Fast Service Upgrade (FSU). The information included in this manual was formerly contained in the *VSE/ESA Installation and Service* manual.
- *VSE/ESA Turbo Dispatcher Guide and Reference*, describing multiprocessor support.

The VSE/ESA optional programs have their own documentation, which is also shipped to you when you order one or more optional programs.

- **Usability Changes**

To make VSE/ESA syntax diagrams easier to read, syntax diagrams have been converted from the brackets and braces format to the **railroad track format** in all VSE/ESA manuals. The railroad track style is being adopted by all IBM products.

- **Online Documentation**

VSE/ESA and many of its optional programs offer softcopy (online) books, shipped on a CD-ROM. The order number for the English language version is SK2T-0060. If you want to receive a free disc, you have to specify this when ordering VSE/ESA.

Besides the system literature, the CD-ROM also contains manuals for optional programs and coding examples provided by users of VSE.

---

## 1.5 New or Enhanced Optional Programs

Certain VSE programs are designated as VSE/ESA optional programs. These optional programs are tested together with VSE/ESA and supported for simplified installation.

Table 2 shows all VSE/ESA 2.1 supported optional programs, either newly supported or enhanced.

*Table 2. New Optional Programs (or Features)*

<b>Program Name</b>	<b>Version</b>	<b>Progr. Number</b>
ACF/NCP	V7.1.0	5648-063
ACF/SSP	V4.1.0	5686-064
ADSM	V1.2.0	5686-073
COBOL/VSE	V1.1.0	5686-068
DFSORT/VSE	V3.2.0	5746-SM3
DL/I DOS/VS	V1.10.0	5746-XX1
EP	V1.12.0	5735-XXB
GDDM/VSE	V3.1.1	5686-057
LE/VSE	V1.1.0	5686-067
PL/I VSE	V1.1.0	5686-069
PSF/VSE	V2.2.1	5686-040
QMF/VSE	V3.1.1	5648-061
SQL/DS	V3.4.0	5688-103
SQL/DS	V3.5.0	5688-103
VSE/OCCF	V1.5.0	5746-XC5
VisualGen Host Services	V1.1.0	5648-078
VisualLift for MVS, VM & VSE	V1.1.0	5648-109
X.25 NPSI	V3.7.0	5688-035

In the following sections you will find details about the new or enhanced optional programs. These programs are grouped as follows:

- Application Programming
- Database Management and Query
- Networking and Distributed Data Processing
- System Support and Control
- Printing and Presentation

For a description of all optional programs supported, refer to the IBM manual *VSE/ESA General Information - Introducing the System*.

## 1.5.1 Application Development

### 1.5.1.1 IBM Language Environment for VSE/ESA

LE/VSE implements the Language Environment architecture on the VSE platform. This architecture defines programming models that ensure the consistent and predictable behavior of applications, independent of the language in which they are written.

LE/VSE provides common services and language-specific routines in a single run-time environment for high-level language applications. It is the prerequisite run-time environment for applications generated using COBOL/VSE and PL/I VSE.

With LE/VSE, COBOL/VSE and PL/I VSE users can:

- Share and reuse code or mix legacy code with new code. For example, most COBOL applications compiled with previous IBM COBOL compilers under VSE can run with LE/VSE without any source program conversion.
- Use the best language for the job. You can use routines written in Assembler, COBOL or PL/I in the same run-time environment.
- Tune applications with information from the LE/VSE storage report.
- Handle conditions and recover from errors consistently. LE/VSE's condition-handling services enable applications to react to undetected errors, so that only a catastrophic failure need disrupt the application environment.
- Manage storage dynamically. This includes getting, freeing, and reallocating storage and creating user-defined storage pools.
- Perform date and time calculations or complex mathematical functions.

### 1.5.1.2 COBOL/VSE 1.1 and PL/I VSE 1.1

COBOL/VSE and PL/I VSE are the LE/VSE-conforming implementations of the COBOL and PL/I languages. They are IBM's strategic COBOL and PL/I compilers on the VSE platform.

Conformance with LE/VSE brings new benefits to COBOL and PL/I application development:

- Improved communication between COBOL and PL/I.
- Powerful and comprehensive callable services.
- Improved storage tuning.

PL/I VSE brings new benefits already available in COBOL:

- Dynamic loading of subprograms.
- Support for applications that use 31-bit addressing (taking advantage of storage above the 16MB line).



### **1.5.1.3 VisualGen V1**

VisualGen is an OS/2-based application development solution for applications that run in a variety of workstation and host environments. VisualGen provides the capability to define, test and generate, in the same development environment: Graphical User Interface (GUI) client applications, OS/2 and Windows 3.1 server applications, and single system applications.

VisualGen's state-of-the-art development environment delivers robust, industrial strength applications, while insulating the developer from underlying system and subsystem complexities. VisualGen allows the development organization to build on its existing application development skill base. Its 4GL definition paradigm relates naturally to 3GL programmers. Applications previously defined with Cross System Product Version 3.2.2 (or higher) are upwardly compatible to VisualGen, providing investment protection.

#### **Developing Client/Server Applications**

For organizations developing client/server applications, VisualGen provides solutions for both distributed functions and remote database client/server models. The distributed functions solution includes a powerful set of middleware software to shield the developer from the complexity of communications protocols, data formatting, data conversion, and server location. The remote database solution, providing remote access to enterprise data, exploits VisualGen's tight integration with the DB2 family of relational database products. VisualGen fully exploits IBM's Distributed Relational Database Architecture (DRDA) at definition, test, and execution. VisualGen also includes a visual construction capability for developing event-driven GUI components. GUI client applications interface with CICS-based full-function servers on either VSE/ESA, MVS, or OS/2 systems.

VisualGen also supports development of client or stand-alone applications with a character-based user interface. The client applications run on CICS systems connecting CICS server applications. Stand-alone applications are supported for IMS, TSO, and batch as well as CICS systems.

### **1.5.1.4 VisualLift for MVS, VM and VSE 1.1**

IBM VisualLift is a tool to modernize the user interface of existing host applications. It provides workstation users with a new, graphical front-end for host-based applications. Workstation functions such as mouse support, push buttons, and notebooks are available for these applications, without changing them at the host. VisualLift, therefore, provides investment protection for key enterprise applications.

The application end user may use the application (reworked with VisualLift) either on an OS/2 or on a Windows based workstation.

Advantages of using VisualLift: Compared to the traditional user interface of host applications, workstation controls are more intuitive and therefore easier to understand and use. Host applications (running under MVS, VSE, and VM) get one consistent user interface with VisualLift.

VisualLift highlights are, for example:

- Novice and expert modes are provided to use VisualLift effectively.
- You do not have to change your host application and you do not need programming skills to use VisualLift.

## 1.5.2 Database Management and Query

### 1.5.2.1 SQL/DS 3.4 and SQL/DS 3.5

SQL/DS Version 3 Release 4 (also known as DB2/VSE & VM) is the successor product of SQL/DS 3.2 for VSE. In addition to a variety of smaller enhancements, SQL/DS 3.4 and SQL/DS 3.5 offer the following major improvements:

#### Highlights of SQL/DS 3.4

- Up to 36 database servers are now supported under VSE/ESA. Each server runs in its own VSE partition. You can now split independent data belonging to separate applications into separate databases. This increases availability of the data, makes data administration easier and can improve performance.
- SQL/DS exploits 31-bit addressing offered by VSE/ESA. In the SQL/DS partition, buffers and control blocks are moved above the 16MB line. More users can be efficiently supported, and by keeping data in memory, performance can be improved.
- SQL/DS under VSE/ESA acts as a Distributed Relational Database Architecture (DRDA) server to Remote Unit Of Work (RUOW) applications. This allows access to SQL/DS data under VSE from all clients which support DRDA requestor functions.
- The interface between SQL/DS 3.4 and CICS/VSE 2.3 has been enhanced to improve performance. Now a single phase commit protocol is used whenever there is no need for the more costly two phase commit.

#### Highlights of SQL/DS 3.5

SQL/DS 3.5 offers improved operations and database solutions in VSE and VM environments:

- Partial database recovery allows continuous operations and improved system availability.
- Faster online archive significantly improves existing SQL/DS online archive functions.
- CICS database switching facilitates distributed computing and eliminates the need to stop and restart the resource adapter while accessing multiple application servers.
- A variety of compatibility items ensure integration of SQL/DS with other solutions.
- Additional code page support enhances existing national language offerings.

### 1.5.2.2 QMF/VSE 3.1.1

QMF/VSE is a member of IBM's growing family of query and report-writing programs. It provides query tools, report and chart facilities, and a table editor.

QMF/VSE has easy-to-use commands, online help, and command prompts, which increase the productivity and efficiency of users who work with SQL/DS data. They can retrieve and modify data using different query methods.

QMF/VSE helps to develop applications: QMF procedures can contain a series of query and formatting commands. For more complex applications, callable interfaces to COBOL, C/370, and High Level Assembler for VSE are available. QMF/VSE no longer requires ISPF or VSE/ICCF.

### **1.5.2.3 DL/I DOS/VS 1.10**

Data Language/I (DL/I) now fully supports all 31-bit addressing languages of the VSE/ESA environment, such as:

- COBOL/VSE
- PL/I VSE

Both DL/I online and batch/MPS applications written in any of these languages can execute above the 16MB line. This is possible both for programs implemented in the DL/I CALL and DL/I HLPI interface.

Any definitions or options formerly required to place the DL/I parameters below the 16MB line are no longer required.

### **1.5.2.4 DFSORT/VSE 3.2**

VSE/ESA 2.1 supports a new version of the former Sort/Merge 2.5 program. DFSORT/VSE 3.2 enhancements include ESA/390 and ESA/370 technology update and productivity functions:

- 31-bit addressing to provide more virtual storage.
- VSE/VSAM Space Management to allow dynamic allocation of workspace.
- Data spaces to allow fixed-length record sorts without a need for workspace.
- SUM FIELDS=NONE to eliminate records with equal control fields for Sort and Merge applications.
- DFSORT/VSE STXIT and non-DFSORT/VSE STXIT coexistence to provide better abend recovery routine support for Sort/Merge and Copy applications.

## **1.5.3 Networking and Distributed Data Processing**

### **1.5.3.1 ACF/NCP 7.1**

VSE/ESA 2.1 supports Advanced Communications Function/Network Control Program (7.1). ACF/NCP provides support for new IBM 3745 capabilities, network management enhancements, and additional connectivity options. Apart from several usability, reliability, availability, and service enhancements, ACF/NCP has the following highlights:

- It provides ability for peripheral devices to attach through the NCP boundary by frame relay in addition to SDLC or Token-Ring. This increases significantly the interoperability of the IBM 3745 with the IBM 3174 and RoutXpander/2.
- It provides Internet Protocol (IP) communication over an 802.5 Local Area Network (LAN).
- It allows the NCP IP routing tables to be dynamically updated by a TCP/IP Version 2 Release 1 host.
- It provides the ability to dynamically create additional control blocks for many control block pools.
- It allows the composite network node comprised of NCP and VTAM to model its connection to a Token-Ring as an APPN connection network. This minimizes SYSGEN and topology database impacts.
- It allows separate APPN networks to interconnect.

### **1.5.3.2 ACF/SSP 4.1**

VSE/ESA 2.1 supports Advanced Communications Facility/System Support Program (4.1). ACF/SSP provides generation and utility functions for ACF/NCP and Emulation Program (EP). Enhancements are made in:

- Network Definition Facility (NDF) maintainability. ACF/SSP supports all ACF/NCP Version 7 Release 1 functions.
- NDF usability and installability for NCP migration. The NCP migration aid supports migration to ACF/NCP Version 7 Release 1.
- SSP utilities maintainability. ACF/NCP functions are supported by ACF/Trace Analysis Program (ACF/TAP) Configuration Report Program (CRP), SSP Loader, SSP Dumper, Dump Formatter, and SSP CLISTS, as appropriate.

### **1.5.3.3 EP 1.12**

VSE/ESA 2.1 supports the Emulation Program (1.12). EP allows ACF/NCP to operate in Partitioned Emulation Program (PEP) mode. It operates on channel-attached IBM 3745 communication controllers and requires data streaming channel adapters (CADs) and connection to the byte multiplexer channel. Apart from service enhancements, EP 1.12 has the following highlights:

- TWX auto-baud detection operates at speeds of 110, 300, 600, 1200, and 2400.
- Direct call is supported in the V25bis switch line protocol.
- Calling party ID is supported when the host access method includes a "CRI" prefix with the dial digits.

### **1.5.3.4 X.25 NPSI 3.7**

VSE/ESA 2.1 supports IBM X.25 Network Control Program Packet Switching Interface (3.7). This release offers system management and connectivity enhancements over the previous releases of X.25 NPSI. It is concurrent with ACF/NCP 7.1.

X.25 NPSI supports attachment of the IBM 3745 communication controller to data transmission services which comply with CCITT Recommendation X.25 (Melbourne 1988, Malaga-Torremolinos 1984, or Geneva 1980). Apart from several usability and availability enhancements, it has the following highlights:

- With additional dial information capability, expanded dial requirements can be accommodated. This includes additional geographies and telephone company offerings that require additional data, for example.
- Expanded dial information is provided by more than 32 characters that are available in the PATH statement in the Switched Major Node.
- Logical Unit (LU) dynamic reconfiguration provides for dynamic reconfiguration of LUs that are connected by means of Qualified Logical Link Control (QLLC) Private Virtual Circuits (PVCs).

### **1.5.3.5 VSE/OCCF 1.5**

VSE/ESA 2.1 supports a new release (1.5) of VSE/Operator Communications Control Facility. VSE/OCCF no longer needs a shared partition. Moreover, for the functions message translation, message automation, and command and reply translation, VSE/OCCF does not need a partition at all. Only for unattended node support and message routing to NetView, VSE/OCCF has to run in a partition by itself.

This reduces operator intervention at a VSE/ESA installation.

The following changes apply:

- Message suppression, automatic reply, and translation no longer require a VSE/ESA partition. Instead, the necessary phases can be loaded into system GETVIS space. For this case, the QSTART command is used to activate VSE/OCCF message processing.
- Message routing to NetView and the monitoring of subsystems in an unattended node environment require VSE/OCCF to run in a partition of its own. This partition need no longer be a shared partition (as was the case in former releases).

All VSE/OCCF macros are unchanged and existing definitions remain valid.

## 1.5.4 System Support and Control

### 1.5.4.1 ADSM/VSE

VSE/ESA 2.1 supports ADStar Distributed Storage Manager (ADSM) 1.1. It provides host backup/archive services for heterogeneous workstation platforms based on client/server technology. It uses the host's central data storage facilities, disk and tape, for saving critical data dispersed on different workstations throughout the company. Workstation users (ADS clients) can now easily back up or archive their data. The data can then be recovered at any time using ADSM's restore and retrieve functions.

As your storage management software solution, ADSM/VSE provides the following functions:

- Lets workstation users save their critical data at the host via a simple point-and-click interface.
- Allows for automatic host-initiated backup/archive actions via a central scheduler.
- Contains security mechanisms to control the usage of ADSM functions.
- Optimizes the usage of storage media.
- Supports a variety of workstation platforms and LAN file servers.

## 1.5.5 Printing and Presentation

### 1.5.5.1 PSF/VSE 2.2.1

VSE/ESA 2.1 supports PSF/VSE (2.2.1). PSF/VSE provides a link between application programs and advanced function printers. It introduces two new tools for application programmers that can boost productivity and open Advanced Function Presentation to areas not previously accessible:

- The AFP Application Programming Interface (API) enables COBOL programmers to access sophisticated AFP functions using a high-level language interface.
- The AFP Conversion and Indexing Facility (ACIF) processes host application data into AFP data stream (MO:DCA-P) format for platform-independent printing and viewing. It uses the new AFP Workbench for Windows product and input to other application areas such as archival/retrieval. It also provides an indexing capability for efficient retrieval and a resource extraction function for print and view fidelity.

A coordinated set of fonts that permits document interchange between the IBM LaserPrinter 4028 and IBM 240-pel and 300-pel page printers is also part of this PSF/VSE release.

#### **1.5.5.2 GDDM/VSE 3.1.1**

VSE/ESA 2.1 supports Graphical Data Display Manager/VSE (3.1.1). This program provides advanced function device support for screens and printer and creates graphics objects.

The following functions have been enhanced with GDDM/VSE Version 3.1.1:

- Workstation support
- Print and plot functions
- Pan and zoom of image and size and positioning of graphic objects
- More devices (printers, plotters, and graphics displays)
- Selection from multiple Double Byte Character Set (DBCS) symbols
- GDDM/VSE applications can be written in C/370 (and C/370 programs can call GDDM/VSE).

---

## **1.6 New Hardware Support**

IBM may have announced other hardware as supported by VSE/ESA after this manual was printed. Please contact your IBM marketing representative for the most current list of the processors and devices supported.

For a complete list of hardware devices supported by VSE/ESA 2.1, refer to the IBM manual *VSE/ESA General Information - Planning Aspects*.

In this section we are going to talk about the following new supported hardware:

- New IBM ES/9000 processors (incl. IBM S/390 Parallel Enterprise Server)
- Hardware Compression
- VSE/ESA Turbo Dispatcher support
- IBM RAMAC Array Family
- IBM 3390 Model 9 disk device
- IBM 9336 Model 25
- IBM 3990 Model 6 control unit
- IBM 3480/3490 automatic cartridge loader
- IBM 3494 automated tape library
- New Printers or Printer Models Supported

In the last section you will find a list of the devices that are no longer supported by VSE/ESA 2.1.

## 1.6.1 New Processors Supported (incl. IBM S/390 Parallel Enterprise Server)

The following processors became available after VSE/ESA 1.3:

- IBM ES/9221 Models 191, 201, 211

These are uniprocessor models, with processor storage from 64MB to 512MB.

- IBM ES/9221 Models 221, 421

These are dyadic processor models, with processor storage from 128MB to 512MB.

- IBM System/390 Parallel Enterprise Server, IBM S/390 9672 R11

This is a uniprocessor model, with processor storage from 128MB to 2GB.

- IBM System/390 Parallel Enterprise Server, IBM S/390 9672 Models R21, R31, R41, R51, R61

These are n-way processor models, with processor storage from 128MB to 2GB.

In addition, two new models 832 and 9x2 of the IBM ES/9021 processors are available. These are water-cooled multiprocessor models, and VSE/ESA can run on these processors natively (with the VSE/ESA Turbo Dispatcher), in LPAR mode or under VM/ESA.

You can upgrade selected IBM ES/9370 to IBM ES/9221 processors. Also, you can upgrade processor models within the IBM ES/9221 processor family.

## 1.6.2 Hardware Compression

The data compression feature is available on many models of the IBM ES/9000 processor family. It is a standard feature, for example, on the following processors:

- IBM ES/9221 211-based models
- IBM ES/9121 511-based models
- IBM ES/9021 711-based models

To allow for compatibility across the "new" and "older" platforms, an equivalent software implementation is available. This is explained in 1.4.2, "Data Compression" on page 5.

## 1.6.3 VSE/ESA Turbo Dispatcher Support

VSE/ESA 2.1 offers you the value of superior IBM CMOS technology by introducing the VSE/ESA Turbo Dispatcher. The VSE/ESA Turbo Dispatcher brings *n-way* support to VSE for the first time. With the addition of this feature, VSE/ESA 2.1 supports the S/390 Parallel Enterprise Server models natively. That is, when the VSE/ESA Turbo Dispatcher is selected, VSE/ESA 2.1 supports the IBM 9672 1-way through 6-way processor models (R11 - R61).

In addition to the S/390 Parallel Enterprise Server, VSE/ESA 2.1 natively supports all models of the IBM ES/9000 family. For example, besides uniprocessor models also supported by VSE/ESA 1.3, VSE/ESA 2.1 with the VSE/ESA Turbo Dispatcher supports IBM ES/9221 2-way models and 2-4-way models of the IBM ES/9121.

At IPL time you select either the standard VSE dispatcher or the new VSE/ESA Turbo Dispatcher. If you select the standard dispatcher, support is limited to

uniprocessors. If you select the VSE/ESA Turbo Dispatcher, you have an option of uniprocessor or n-way processor support.

For more information refer to the IBM manual *VSE/ESA Turbo Dispatcher Guide and Reference* and to the IBM redbook *VSE/ESA The Turbo Dispatcher*, SG24-4674.

## 1.6.4 IBM RAMAC Array Family and IBM RAMAC 2 Array Family

VSE/ESA supports a new generation of storage devices, the **IBM RAMAC Array Family** and the **IBM RAMAC 2 Array Family**. These devices offer, for example, exceptional data availability, high performance, high function, and ease of installation. The IBM RAMAC Array family exploits the RAID-5 technology.

Host connectivity options include parallel and/or ESCON attachment. ESCON configurations include 128 logical channel path addressing capability.

The IBM RAMAC Array Family is comprised of two rack-and-drawer single unit storage offerings:

- IBM RAMAC Array DASD (IBM 9391/IBM 9392)
- IBM RAMAC Array Subsystem (IBM 9394/IBM 9395)

The IBM RAMAC 2 Array Family is comprised of:

- IBM RAMAC 2 Array DASD
- IBM RAMAC 2 Array Subsystem

and offers reduced cost of data storage, outstanding performance and data availability, and better protection against loss of data.

### 1.6.4.1 IBM RAMAC Array DASD (IBM 9391/IBM 9392)

The IBM RAMAC Array DASD operates transparently to the operating system as an IBM 3390 Model 3 and attaches to the IBM 3990 Storage Control Unit Models 3 and 6. The disk devices take full advantage of the extended and advanced functions of the IBM 3990, such as DASD fast write, concurrent copy, or record cache.

### 1.6.4.2 IBM RAMAC Array Subsystem (IBM 9394/IBM 9395)

The IBM RAMAC Array Subsystem can be used as an IBM 3390 Model 3 or an IBM 3380 Model K disk device. It offers increased levels of performance through multilevel cache with aggregate cache sizes up to four gigabytes. Extended flexibility is provided through:

- 9 to 90.8GB of data storage in one rack
- Controller cache sizes ranging from 64MB to 2GB
- Drawer cache sizes ranging from 32MB to 2GB
- IBM 3380 or IBM 3390 usage
- Software transparency
- Parallel and ESCON channel support
- High degree of modularity and upgradability



### 1.6.4.3 IBM RAMAC 2 Array Family

The IBM RAMAC 2 Array DASD, attached to an IBM 3990-6, can be used in either 3380 or 3390 track format. The IBM RAMAC 2 Array Subsystem supports either 3380-K emulation or 3390-3 emulation. These devices have a capacity of 11 to 180GB of data storage in one rack.

### 1.6.5 IBM 9336 Model 25

The IBM 9336 Model 25 is a new disk device model, which can be attached to all models of the IBM ES/9221 processors. One disk drive has a capacity of 857 megabytes and provides higher performance and requires less power (compared to the other IBM 9336 disk devices.).

### 1.6.6 IBM 3390 Model 9 Disk Device

The IBM 3390 Model 9 is an extension of the IBM 3390 disk device family and is fully supported by the Interactive Interface dialogs. The IBM 3390 Model 9 disk device provides high capacity data storage, at lower performance, with a considerable savings in cost. It offers a capacity three times that of the IBM 3390 Model 3. This is achieved by having the device rotate at 1/3 of the speed of the other IBM 3390 models. This means, however, an increase in access time.

The IBM 3390 Model 9 is the first disk device model that has more than 65536 tracks and more than 9,999 cylinders per volume.

The IBM 3390 Model 9 should be used as storage media for data that is not performance-sensitive. Therefore, the system residence volumes (DOSRES and SYSWK1) should not be placed on an IBM 3390 Model 9 disk device.

The following list contains some types of data that are recommended for storage on an IBM 3390 Model 9 disk device:

- Sequentially-accessed data
- Infrequently-accessed information
- Information currently stored on microfiche
- Image data and indexes
- Backup copies of databases
- Test copies of databases

This model operates in 3390 mode only and has the following characteristics:

VSE/ESA device type:	ECKD
Track capacity:	56664 bytes
Number of cylinders:	10017 cylinders
Number of tracks per cylinders:	15
Number of tracks per volume:	150255

Figure 1. Characteristics of IBM 3390 Model 9

### 1.6.7 IBM 3990 Model 6 Control Unit

The IBM 3990 Model 6 is an upgrade from the IBM 3990 Model 3. Apart from higher internal processing speed and capacity, it offers more cache (up to 2GB) and up to 32MB of non volatile storage (NVS).

Furthermore it provides support for:

- Regular Data Format

This function offers better performance for updates.

- Quiesce/Resume function

This allows automatic quiescing and later resuming of devices and channel paths for maintenance application.

- 128 logical paths

- Peer-to-Peer Remote Copy (PPRC)

This allows you to maintain an identical synchronous copy of a primary volume on a secondary volume - automatically. This function is supported by ICKDSF via a PTF.

The IBM 3990 Model 6 also provides dynamic selection of the caching strategy - track caching versus record caching, which also is suitable for traditionally non-cache-friendly applications.

### 1.6.8 IBM 3480/3490 Automatic Cartridge Loader

The support for the automatic cartridge loader has been improved by adding asynchronous rewind for alternate tape processing with non-3490E cartridge drives. Also, it offers more flexibility for alternate tape processing.

### 1.6.9 IBM 3494 Automated Tape Library

The IBM 3494 is a new intermediate automated tape library. It automates the retrieval, storage, and control of IBM 3490E cartridge tapes.

Together with the IBM 3494, the following two new 3490E models are supported:

- IBM 3490E Models C1A and C2A

The new IBM 3490E models are recognized during installation and will be treated as "3490E tape unit enhanced models" within the Hardware Configuration dialogs. The new models do not require a special IPL ADD statement. Their mode values are transparent to the already existing IBM 3490E family support within the Interactive Interface of VSE/ESA 1.3.

- Capacity of IBM 3494

The cartridge capacity ranges from 210 to 3040 cartridges. The new model C1A and C2A of the IBM 3490E tape subsystems are included in the IBM 3494 Intermediate Automated Tape Library. In one IBM 3494, one to eight drives are supported.

### 1.6.10 New Printers or Printer Models Supported

The following printers are newly supported by PSF/VSE 2.2.1.

- IBM 3829
- IBM 3835 Model 2
- IBM 3912
- IBM 3916
- IBM 3930
- IBM 3935

### 1.6.11 Processor and Device Support Removed with VSE/ESA 2.1

Please note that VSE/ESA 2.1 no longer runs on any System/370 and System/370-XA processors. To make use of advanced hardware and software capabilities, VSE/ESA 2.1 requires an ESA/370 or ESA/390 processor.

Support for the following processors and devices has been removed with VSE/ESA 2.1:

<b>Hardware Type</b>	<b>Device Name/Model</b>
Processors	IBM 4341, Models 2, 12 IBM 4361, Models 4, 5 IBM 9370 (See note 1) IBM ES/4381 (See note 2)
Disk Devices	IBM 3350 IBM 3375 (See note 3)
Tape Devices	IBM 3410 IBM 8809 IBM 1600 bpi density tape (as VSE/ESA distribution tapes)

**Notes:**

1. Selected IBM ES/9370 models continue to be upgradable to most ES/9221 models.
2. Of the IBM ES/4381, only the models 9xE are supported.
3. The IBM 3375 installation support has been dropped. The IBM 3375 is still supported as a data device, however.

The IBM printers IBM 3284, IBM 3286, IBM 3287, IBM 4224, IBM 4234 and IBM 4245 are not supported as console printers (still supported as line or terminal printers).

---

## 1.7 Exploiting New Features and Benefits

As with most things, some new features are easy to implement and take advantage of and some others are not so easy. In this section you will find some hints and tips on how to take advantage of the new features quickly. You will find some examples and some ideas of how to exploit new functions with minor changes.

We will look only briefly at the following:

- Real Storage
- Virtual Storage
- Dynamic Partitions
- Application Programming
- Client/Server Support
- Data Compression

### 1.7.1 Real Storage

VSE/ESA supports up to 2GB of real (processor) storage. This size means a potential reduction in bottlenecks and an increase in the capacity of the system to do work for you.

This seems a bit obvious, but it is very important if you have problems with the amount of real storage needed.

### 1.7.2 Virtual Storage

VSE/ESA supports 31-bit virtual addressing in multiple address spaces. The amount of virtual storage available to you has moved from megabytes to gigabytes (when compared to earlier VSE systems). The practical maximum depends upon your specific VSE/ESA system environment, especially on the amount of real storage.

#### 1.7.2.1 31-bit Addressing

With the 31-bit addressing, the size of the address spaces where your applications run, can be up to 2GB. With 24-bit addressing, the limit is 16MB. Thus when you have 31-bit addressing programs, they can use more virtual storage for tables, arrays, or additional logic data buffers. System programs, such as VSE/VSAM and CICS/VSE, exploit storage above 16MB even if you run 24-bit applications. This increases the virtual storage available below the 16MB for your 24-bit applications. It also positively affects the throughput of your system.

#### 1.7.2.2 Address Spaces

VSE/ESA 2.1 offers 12 permanent address spaces so that each static partition can reside in its own address space. This offers high system availability.

#### 1.7.2.3 Data Spaces

The use of data spaces enables you to write or set up applications with increased performance and throughput, to better utilize processor real storage and to keep **volatile data** in virtual storage.

#### 1.7.2.4 Virtual Disks

A virtual disk is a up to two gigabytes of virtual storage that a program can use as a work space. Although the virtual disk exists in storage, it appears as a real FBA disk device to the user program. By using a virtual disk as storage medium for **work files**, input/output operations to disk devices are significantly reduced, resulting in performance benefits.

All these things, 31-bit addressing, data spaces, and virtual disks allow for more Data In Memory. By using *Data in Memory*, you move data closer to the

programs which use it. Since data exists in memory, it can be accessed at greater speed. Programs spend less time waiting for data, so they are able to offer better response times to users.

This reduction of the number of physical I/Os to disk devices, provides better response times for on-line applications and better elapsed times for batch applications.

#### **1.7.2.5 Dynamic Partitions**

VSE/ESA offers 12 static and up to 200 dynamic partitions. A partition is a division of the virtual address area available for running programs. *Static* partitions are always allocated, whereas *dynamic* partitions are only allocated while they are in use (for the life of a specific job). You are, for example, able to schedule a large number of concurrent jobs, which may reduce or eliminate extra shift operations.

### **1.7.3 Application Programming**

With this new version you will be able to do many new things in the develop application area. You can use the VSE/ESA DWF to do things in a 'point-and-click' environment. You can exploit LE/VSE to migrate you programs to new languages that support 31-bit addressing. You have VisualLift to make "old screen" programs show a "new look screen". VisualGen gives you a very interesting way to work and/or develop programs. It provides a large number of ways to code, maintain and test programs. Flexibility is the word here.

### **1.7.4 Client/Server Support**

This is another important function that you can exploit as soon as you have installed/migrated the VSE/ESA 2.1. You can exploit your VSE/ESA system as a *Central Repository* of data using ADSM/VSE with LANRES/VSE. This also reduces the time needed by the administrator and user of LANs for backup/restore, archive, query, and recovery of files.

Secondary benefits, for example, can be the reduction in the resources that a workstation or a LAN will need.

Another benefit immediately available and exploitable is the VSE/ESA Distributed Workstation Feature. This feature is an effective combination of the VSE/ESA host and programmable workstations.

Another possibility is to use your CICS/VSE as a transaction server. With this, you can split applications and data between workstations and the VSE/ESA host. For example, you can have an application's main database at the host and exchange the data between the host and the workstations (using CICS OS/2, RISC System/6000 or AS/400, and those provided by other vendors).

### **1.7.5 Data Compression**

This support helps to save disk space, reduce the number of I/Os, reduce channel utilization and allows for faster data transmission and lower costs in a network.

VSE/ESA provides support for data compression through:

- The hardware instruction CMPSC which is available on many models of the IBM ES/9000 processor family.

- The CSRCMPSC macro which will use the hardware instruction if available; otherwise it simulates the CMPSC instruction.

User application programs can exploit data compression using or writing CSRCMPSC or CMPSC applications

It is transparent to an application which of the two functions (hardware instruction CMPSC/macro instruction CSRCMPSC) actually performs compression. IPL detects whether a processor supports instruction CMPSC and IPL message 0J76I informs about the compression support available.

With VSE/ESA you can exploit data compression as follows:

- Using the data compression support provided by VSE/VSAM for ESDS, KSDS, and VRDS files with the CSRCMPSC interface.

VSE/VSAM now allows to store data in compressed format. Compression of a VSAM file is requested by specifying the **COMPRESS** attribute when defining a cluster.

- Using the VTAM data compression support.

VTAM 4.2 for VSE/ESA also supports data compression. VTAM data compression enables you to reduce the amount of data being exchanged between LUs in multiple-domain environments (and APPN environments), thus **improving the response time for LU-LU sessions and reducing traffic** over the lines.

- Writing or using CSRCMPSC applications.
- Writing or using CMPSC applications.

---

## 1.8 Highlights of VSE/ESA V2.2

- Year 2000 Support

VSE/ESA 2.2 has been adapted to address the year 2000 problem. Its components use and can handle four-digit years and provide output in most cases in four-digit representation.

- VSE/ESA Turbo Dispatcher Enhancements

The performance of the Turbo Dispatcher has been enhanced by better exploiting parallel processing for VSE/POWER and by providing a more refined tuning mechanism for partition balancing.

- VSE/POWER Enhancements

With VSE/ESA 2.2 on Nways servers, the typical work of VSE/POWER (like networking, local printing, and spooling for batch partitions) can now run in parallel to other system processing. This reduces the non-parallel load of the operating system and may improve total system throughput.

- Partition Balancing Enhancements

The enhanced VSE/ESA Turbo Dispatcher allows "balancing" of the workload between partitions belonging to a balanced group: you can now specify a relative CPU share for each partition in the balanced group. With this enhancement you can balance, for example, your CICS/VSE partition and a batch partition to your needs. This advantage of the Turbo Dispatcher over the standard dispatcher is beneficial even if you are running on a uni-processor.

- New client/server capabilities in VSE/ESA 2.2
  - LANRES/VSE now supports OS/2 LAN servers as well as Novell.
  - LANRES capabilities have been extended to allow easy transfer of KSDS and ESDS files between a S/390 server and an OS/2 or Novell LAN.
  - The Distributed Workstation Feature (DWF) of the VSE Workdesk has been enhanced and is now available for use with Windows PCs.
  - The new VSE C Language Run-Time Support enables 31-bit, Year 2000-ready applications to run on VSE.
  - Visuallift and C language Run-Time environments are part of the VSE/ESA 2.2 base programs.
- LE/VSE 1.4 for VSE
 

LE/VSE 1.4 provides the base for the new powerful debugging function, the Source Level Debugger for COBOL/VSE and PL/I VSE, which is a new option for COBOL/VSE and PL/I VSE compilers. The new debugging capabilities can help users improve the productivity and effectiveness of program testing required to meet especially the Year 2000-challenge.

LE/VSE 1.4 provides Run-time support for C applications compiled with a C compiler that is enabled for LE/VSE 1.4.
- Support of IBM 3590 High Performance Tape Subsystem/Control Unit
 

The IBM 3590 High Performance Tape Subsystem is an extension to IBM's family of 3480, 3490, and 3490E tape devices. It offers increased productivity, better reliability, and reduced cost of data storage. Compaction allows storage of up to 30GB/cartridge.

The IBM 3591 High Performance Tape Control Unit is connected to an ESCON channel and provides attachment of the IBM 3590. It allows the operating system to communicate with the 3590 drives as if they were '3490E' tape drives.





---

## Chapter 2. Migrating a VSE/ESA 1.3.X to VSE/ESA 2.1 Using FSU

---

### 2.1 Requirements for a Fast Service Upgrade

If your current system is VSE/ESA 1.3.x or VSE/ESA 1.4 you can install VSE/ESA 2.1 by performing a version upgrade through an FSU if some prerequisites are fulfilled. You use for that the *Fast Service Upgrade* dialog of the Interactive Interface.

#### Required status of your current system

- Your supervisor mode must be MODE=ESA.  
An FSU is not possible if your supervisor mode is 370, VM, or VMESA.
- The predefined environment 1, 2, or 5 must not have been selected (when VSE/ESA 1.3 was installed).  

Environment 1 and 2	VM, VMESA no longer exists in VSE/ESA 2.1
Environment 5	370, ESA no longer exists in VSE/ESA 2.1
- The system devices on which the system resides (DOSRES/SYSWK1) must be a type supported by VSE/ESA 2.1. For example, they cannot be of type IBM 3350, IBM 3370-2 or IBM 3375. The valid devices are in listed in the *VSE/ESA 2.1 Planning* manual, in section "Master Procedure \$ASIPROC".
- Your current system must have the standard (shipped) system layout of a VSE/ESA 1.3 system including the VSE/ESA library structure and VSE/VSAM catalogs. This is because the following libraries must be present for FSU: **IJSYSRS, PRD1, and PRD2**. Note that if you have combined or renamed these libraries and sublibraries, the FSU job stream will not work without modification.

If your current system is not eligible for an FSU, you must perform an Initial Installation instead. Continue installing the new version in Chapter 3, "Installing VSE/ESA 2.1 Through Initial Installation" on page 59.

**Note:** In the following sections VSE/ESA 1.3 will be used as the base for the FSU description.

---

### 2.2 Pre-migration Considerations

- Review manuals *VSE/ESA 2.1 Planning* and *System Upgrade and Service*.
- Make sure that the VSE/ESA 1.3 Environment is not 1, 2, or 5.
- Confirm that standard system libraries (IJSYSRS, PRD1, PRD2) and sublibraries have not been merged, renamed or changed in size.
- Don't try to use different disk device types from those you are using presently.
- Don't try to change your system's communication access method (switching from BTAM-ES to VTAM or vice versa).
- You cannot change your system from one language to another.
- You cannot switch from a 2-digit subarea naming convention to the 4-digit subarea naming convention.

- For system environments with the generation feature installed, confirm that generation library PRD.GEN1 is available and restored.
- Review SYSTEM HISTORY for installed optional products.
- Check carefully for OEM Vendor products and make sure that they are compatible with VSE/ESA 2.1.

---

## 2.3 Performing a Version Upgrade Through FSU

The great advantage of using FSU for installing VSE/ESA 2.1, is the fact that your migration effort is reduced to a minimum. FSU uses your current system and upgrades it to the VSE/ESA 2.1 level by replacing IBM code only.

The following steps are involved:

1. As a first step, the FSU programs are loaded automatically from the VSE/ESA 2.1 distribution tapes. The IBM code is replaced in two steps:
  - a. In **stage 1**, the new system (library IJSYSRS) is copied from the distribution tape into library IJSYSR1 on SYSWK1. This includes the upgrading of the system history file as well as the loading of PRD2.GEN1 if the generation feature is present.
  - b. An IPL from SYSWK1 starts the **stage 2**. Sublibraries PRD1.BASE and PRD1.MACLIB are restored from the VSE/ESA 2.1 distribution tape. The CICS/VSE CSD file, the VSE/ICCF DTSFILE, the text repository file, and the online messages file are upgraded to the VSE/ESA 2.1 level. In a final step, IJSYSR1.SYSLIB on SYSWK1 is copied to DOSRES under the name IJSYSRS.SYSLIB.

When performing an IPL in VSE/ESA 2.1 the sizes in the SVA command (in your IPL procedure) must be at least as follows (where you may add your own implementation values):

**SVA PSIZE=(256K,2000K),SDL=300,GETVIS=(768K)**

This must be used at first IPL in Stage 2, so it is important that you check these values before IPL.

After stage 2 has been finished, VTAM and CICS/VSE are started first in BASIC startup mode.

2. Because of the new VSE/ESA 2.1 system characteristics and also in case of private VSE/ESA 1.3 system modifications, tailoring is required after FSU completion. This is described in *VSE/ESA 2.1 Planning* under "Tailoring Tasks Required after an FSU".

FSU uses the existing IPL procedure and its own JCL procedures for startup. The predefined environments of VSE/ESA 1.3 are mapped to the new environments of VSE/ESA 2.1:

Environments 3 and 4	Environment A
Environment 6	Environment B

---

## 2.4 Fast Service Upgrade (Starting a Version Upgrade)

A version upgrade is started with the function selection panel by selecting 145 (Fast Path):

- 1 Installation
- 4 IBM Service
- 5 Fast Service Upgrade

The following panel is displayed:

```
IESADMSL.IESEFSU      FAST SERVICE UPGRADE
                                APPLID  DBDCCICS

Enter The number of your selection and press the ENTER key:

      1  Down-Level Check
      2  FSU Preparation
      3  FSU Installation

PF1=HELP      3=END      4=RETURN      6=ESCAPE(U)
              9=ESCAPE(m)

====> _                               Path: 145
```

Figure 2. FSU Selection Panel

Remember that you must **not** perform a down-level check when you do a version upgrade. Therefore you have to start with FSU preparation (option 2).

### 2.4.1 Option 2 - FSU Preparation for a Version Upgrade

When doing a version upgrade, you must select FSU Preparation immediately before the FSU Installation option.

This selection asks to specify the **address (cuu) of the tape unit** used for the FSU. A job stream which restores the latest level of the FSU function from the refresh tape(s) will be built.

The panel *Job Disposition* will be shown, you must use option 2 in the *Job destination* field. This option (2 to file in ICCF library) gives you the opportunity to change the JCL of the generated job stream.

**Be careful:** Since you are performing a version upgrade, you must change the VSE/ICCF member with the default name FSUPREP. Depending on whether you use a tape or a cartridge to perform the update, you may have to do one or more changes, as you can see in the following samples.

### 2.4.1.1 Restore of FSU Function for Cartridge Users

You have to save the VSE/ICCF member FSUPREP in your primary VSE/ICCF library and edit it as follows:

- Change 'VSEESA.RES..VER1' to 'VSEESA.RES..VER2'.
- You may want to change the MOUNT MESSAGE to inform your operator more properly.
- cuu defines the tape drive address to use.

```
.
.
// JOB DTRFSU02
* -----*
*      SELECTIVE RESTORE OF FSU FUNCTION INTO IJSYSRS.SYSLIB      *
*      1) MOUNT VSE/ESAL.X.X.CARTLYY ON TAPE-DRIVE cuu          *
*      AND REPLY †(END/ENTER)† TO CONTINUE                       *
* -----*
.
.
// ASSGN SYS005,cuu                                             <=====
// MTC REW,SYS005
.
.
RESTORE IJSYSRS.SYSLIB.SRV$FSU.PHASE:IJSYSRS.SYSLIB -
        ID =¢VSEESA.RES..VER1¢ -                               <=====
        LIST = NO -
.
.
/*
// MTC FSF,cuu,3                                             <=====
// EXEC DIRIJMGR,PARM=
.
.
// UPSI 00000010
// ASSGN SYS004,cuu                                             <=====
// EXEC PROC=DIRICCF
// EXEC DTSUTIL,PARM=¢RC¢
RESTORE M(67 SRV ..
.
.
```

Figure 3. VSE/ICCF Member FSUPREP (Cartridge Users)

### 2.4.1.2 Restore of FSU Function for Tape Users

You have to save the VSE/ICCF member FSUPREP in your primary VSE/ICCF library and edit it as follows:

- Change 'VSEESA.RES..VER1' to 'VSEESA.RES..VER2'.
- Delete the statement **MTC RUN,cuu**.
- Change the statement **// MTC REW,cuu** to **// MTC FSF,cuu,3**.
- You may want to change the MOUNT MESSAGE to inform your operator more properly.
- cuu defines the tape drive address to use.

```

.
.
// JOB DTRFSU02
* ----- *
*      SELECTIVE RESTORE OF FSU FUNCTION INTO IJSYSRS.SYSLIB      *
*      1) MOUNT VSE/ESA1.X.X.TAPE1YY ON TAPE-DRIVE cuu           *
*      AND REPLY †(END/ENTER)† TO CONTINUE                       *
* ----- *
.
.
// OPTION IGNLOCK
// ASSGN SYS005,cuu <=====
.
.
RESTORE IJSYSRS.SYSLIB.SRV$FSU.PHASE:IJSYSRS.SYSLIB -
          ID =¢VSEESA.RES..VER1¢ - <=====
          LIST = NO -
.
.
/*
// MTC RUN,cuu <=====
// EXEC MIRIJMGR,PARM=¢./STOP NEXT¢
.
.
// MTC REW,cuu <=====
// UPSI 00000010
// ASSGN SYS004,cuu <=====
// EXEC PROC=DTRICCF
// EXEC DTSUTIL,PARM=¢RC¢
RESTORE M(67 SRV ..
.
.

```

Figure 4. VSE/ICCF Member FSUPREP (Tape Users)

### 2.4.1.3 Executing the Job

Having done the appropriate changes (depending on whether you are using cartridge or tapes), you are able to submit the job by entering a **7** for the FSUPREP job in the ICCF Library (or using the appropriate exec, if under VM).

For the following example a cartridge was used for the version upgrade.

After you have submitted the edited FSUPREP job stream, the following jobs run (VSE/POWER job names are shown in parentheses):

#### Step 01 (DTRSTFSU)

Builds the Job Manager environment.

The first message shown by the job is the following:

```

      A MANAGED JOB HAS FAILED.      DO THE FOLLOWING:
1. REPLY †EXIT† TO TEMPORARILY STOP THE JOB SEQUENCE.
2. FIX THE PROBLEM
3. RELEASE THIS JOB AGAIN (R RDR,DTRFSUAB)
4. REPLY †RESUME† TO RESTART PROCESSING OF THE ABORTED JOB.

```

These are instructions to help you to fix problems and restart the job sequence, if something goes wrong.

The second message is to let you know that the system is looking for another active "job sequence".

```
STEP 01: CHECK IF A JOBSEQUENCE IS ALREADY ACTIVE
```

Only if there is another "job sequence" active, the system will show you the following instructions.

```
A JOB SEQUENCE IS ALREADY ACTIVE.      DO THE FOLLOWING:

CANCEL THIS JOB AT THE FOLLOWING PAUSE-STATEMENT
AND RELEASE IT AGAIN (R RDR,DIRSTFSU) WHEN THE CURRENT
CONTROLLED JOBSEQUENCE HAS TERMINATED PROPERLY.

      --- OR ---

TO CONTINUE THIS JOB DESTROYING THE CURRENT JOBSEQUENCE
REPLY †(END/ENTER)† AT THE FOLLOWING PAUSE-STATEMENT.
```

### **Step 02 (DTRFSU02)**

Loads the FSU program into IJSYSRS.SYSLIB.

The message shown by this job is the following:

```
SELECTIVE RESTORE OF FSU FUNCTION INTO IJSYSRS.SYSLIB
1) MOUNT VSE/ESA1.X.X.CARTLYY ON TAPE-DRIVE cuu
   AND REPLY †(END/ENTER)† TO CONTINUE
```

The answer for this job is:

**"ENTER"**

### **Step 03 (DTRFSU03)**

Loads FSU skeletons into the VSE/ICCF library.

The messages shown by this job are the following:

```
SELECTIVE RESTORE OF FSU SKELETONS INTO DTSFILE.
1) EITHER TERMINATE VSE/ICCF
   OR /DISCONN DTSFILE BEFORE PROCESSING
// PAUSE
```

The answer for this is:

**"/DISCONN DTSFILE"** and then **"ENTER"**

**Step 04 (DTRFSU04)** or (DTRCLFSU)

Does a clean up of the preparation. It sends you an information message about the "cleanup" step and, after that, the message:

```

**   FSU PREPARATION SUCCESSFUL COMPLETED   **

DTSFILE NO LONGER OCCUPIED, YOU MAY START VSE/ICCF
OR   /CONN DTSFILE

*****   NOW YOU CAN PERFORM FSU INSTALLATION   *****
*****   PRESS ENTER TO CONTINUE                 *****
```

This is an information message. You must enter now the command:

**"/CONN DTSFILE"**

Do not run the FSU Installation dialog until the jobs have completed. The FSU preparation job must have finished successfully before you generate the FSU Installation job.

## 2.4.2 Option 3 - FSU Installation for a Version Upgrade

**You can run stage 1 of the installation while the system is up and running. There is no need to shut down any partition.**

On the *Fast Service Upgrade* panel, select

**3** (FSU Installation)

When you select option 3, the following panel appears:

```

SRV$FS03                                FAST SERVICE UPGRADE

Enter the required data and press ENTER.

TAPE UNIT ADDRESS..... ____           For a list of valid addresses see
                                         HELP

Enter 2 for NO and 1 for YES to the following questions.

GEN-LIB REFRESH..... 1                Do you want to refresh the Generation
                                         sub-library during this Refresh-Ins-
                                         tallation?
REORGANIZE DTSFILE..... 2             Do you want to reorganize (backup and
                                         restore) the refreshed DTSFILE?
BACKUP LIBRARIES..... 1                Do you want to backup IJSYSRS and
                                         PRD1?
BACKUP DTSFILE..... 1                  Do you want to backup the DTSFILE?
OWN POWER PHASE..... 2                 Do you have your own POWER phase?

PF1=HELP      2=REDISPLAY  3=END

```

Figure 5. Starting FSU Installation

**TAPE UNIT ADDRESS**

Specify the address (cuu) of the tape unit used for the FSU.

**GEN-LIB REFRESH**

This selection appears only for those users who have installed the Generation Feature. Specify whether you want to upgrade the generation library during the FSU. If you enter 2 (NO), the entry for the generation library is removed from the system history file. The sublibrary (PRD2.GEN1) where the Generation Feature resides is not upgraded. Consequently, no service for the Generation Feature (CICS/VSE and Supervisor generation macros) will be applied in the future without a reinstallation of the Generation Feature.

**REORGANIZE DTSFILE**

Specify whether you want to reorganize the *refreshed* VSE/ICCF DTSFILE. Doing this improves system performance.

**BACKUP LIBRARIES**

Specify whether you want to back up the VSE system libraries IJSYSRS and PRD1. If you do not have a backup available, specify 1 (YES) in the BACKUP field for libraries. (Job DTRFSU12 is created.)

1 is recommended.

**BACKUP DTSFILE**

Specify whether you want to back up the *existing* VSE/ICCF DTSFILE. If you do not have a backup available, specify 1 (yes) in the BACKUP field. (Job DTRFSU13 is created.)



1 is recommended.

## OWN POWER PHASE

**Do not specify your own VSE/POWER phase.** The version upgrade ignores it and uses the system's default VSE/POWER phase.

This dialog creates a job with the default name DTRFSU. From the *Job Disposition* panel, you can submit the job to batch, file it in your default primary VSE/ICCF Library, or both. After you have entered all data, the *Job Disposition* panel is displayed, and you can submit the job. You can change the class on the *Job Disposition* panel. Please note that the startup for stage 2 of FSU activates six partitions only (BG, F1 to F5). It is recommended that you select the default partition BG in stage 2 of FSU.

### 2.4.3 FSU Installation - Stage 1

**Stage 1** has the following job sequence. Note that the step numbers consist of a 1 (*from stage 1*) and a job number (*from 1 to A*). The VSE/POWER job names are shown in parentheses:

#### **Step 11 (DTRSTFSU)**

Builds the job manager environment.

#### **Step 12 (DTRFSU12) - This step is optional**

Performs a backup of the following objects, if specified:

- IJSYSRS (stand-alone), including system history file
- PRD1

You will need a scratch tape for this purpose.

The message shown by the job is the following:

```
STEP 12: BACKUP IJSYSRS (STANDALONE) AND PRD1 INCLUDING
          HISTORY FILE
          MOUNT SCRATCH TAPE ON TAPE-DRIVE cuu AND
          REPLY †(END/ENTER)† TO CONTINUE
```

When the right tape is OK, answer:

**"ENTER"**

When the backup is done, the system sends you the message:

```
UNLOAD THE TAPE ON DRIVE cuu AND SAVE IT TO YOUR
TAPE-LIBRARY THEN REPLY †(END/ENTER)† TO CONTINUE
```

**Step 13 (DTRFSU13) - This step is optional**

Backs up VSE/ICCF DTSFILE, if specified. The job asks you to disconnect the VSE/ICCF DTSFILE.

Before you continue, check the list output to make sure the backup is complete.

You will need a scratch tape for this purpose.

The message shown by the job is the following:

```
STEP 13: BACKUP DTSFILE
      1. EITHER  TERMINATE VSE/ICCF
           OR    /DISCONN DTSFILE  BEFORE PROCESSING
      2. MOUNT SCRATCH TAPE ON TAPE-DRIVE cuu
           AND REPLY +(END/ENTER)+ TO CONTINUE
```

When the right tape is OK, answer:

**"/DISCONN DTSFILE"**

Mount the right tape on unit **cuu** and:

**"ENTER"**

When the step is finished, the system will send you the message:

```
1. CHECK LIST OUTPUT TO MAKE SURE THAT YOUR ICCF BACKUP
   IS COMPLETE.
   NOW YOU MAY CONNECT YOUR DTSFILE AGAIN (/CONN DTSFILE)
2. UNLOAD THE TAPE ON DRIVE cuu AND SAVE IT TO YOUR
   TAPE-LIBRARY.
3. REPLY +(END/ENTER)+ TO CONTINUE.
```

Do as suggested (check the output) and enter the commands:

**"/CONN DTSFILE" and "ENTER"**

**Step 14 (DTRFSU14)**

Copies the system history file to a work history file.

The message shown by the job is the following:

```
STEP 14:  1. INITIALIZATION OF FSU CONTROL VARIABLES
           2. COPY SYSTEM-HISTORY-FILE TO WORK-HISTORY-FILE
           3. CHANGE RESIDENCE IN WORK-HISTORY-FILE
```

These are information messages. No action is required.

### **Step 15 (DTRFSU15)**

Installs the system library of the refresh into a system work library (IJSYSR1).

Before installing the new programs, the FSU removes all programs of the old release. The Generation Feature and its components also are removed, if installed. No down-level checking is done.

```
STEP 15: REFRESH SYSRES:
```

1. MOUNT VSE/ESA2.X.X-YY ON TAPE-DRIVE cuu  
AND REPLY †(END/ENTER)† TO CONTINUE.
2. ON MESSAGE M235 REPLY †GO (END/ENTER)†
3. IF MESSAGE M222 OCCURS, REPLY †GO (END/ENTER)†, BUT  
SAVE THE LISTING OF THE DOWNLEVEL DELTA, BECAUSE  
YOU HAVE TO REAPPLY THIS SERVICE.

To go ahead with the job, answer:

**"ENTER"**

After that, when message M235 appears:

**"GO"**

### **Step 16 (DTRFSU16) - This step is performed, if the Generation Feature is installed**

Refreshes the Generation Feature, if specified. This is done only if you installed the Generation Feature and answered **1** (YES) when you were asked about a Gen-lib refresh.

If you use IBM 9346 cartridges or 6250 bpi tapes, you have to mount the tape labeled VSE/ESA2.1.X.GEN-YY.

If you answered **2** (NO), the members in the library PRD2.GEN1 and the MSHP entry are deleted.

The message shown by the job is the following:

```
STEP 16A: RESTART OF: REFRESH GENERATION FEATURE  
VSE/ESA2.X.X-YY STILL MOUNED ON cuu ?  
READY TAPE AND REPLY †(END/ENTER)† TO CONTINUE
```

Mount the tape specified and answer:

**"ENTER"**

```
STEP 16: REFRESH GENERATION FEATURE  
1. IF MESSAGE M222 OCCURS, REPLY †GO (END/ENTER)†, BUT  
SAVE THE LISTING OF THE DOWNLEVEL DELTA, BECAUSE  
YOU HAVE TO REAPPLY THIS SERVICE.
```

If the specified message appears, please answer:

**"GO"**

These are information messages. No action is required.

**Step 17 (DTRFSU17)**

Copies members from PRD2.SAVE and user procedures from IJSYRS.SYSLIB to IJSYSR1.SYSLIB. Furthermore, the following members are copied from IJSYSRS to IJSYSR1.

- STDLABEL.PROC
- STDLABUP.PROC
- STDLABUS.PROC
- DTRPOWR.PROC
- DTR\$DYNn.Z

DTSECTAB.PHASE is **not** copied from IJSYSRS to IJSYSR1 in order to run stage 2 without security.

The following message is issued by this job:

```
STEP 17: COPY ALL MEMBERS FROM PRD2.SAVE TO IJSYSR1.SYSLIB
(WITHOUT DTSECTAB.PHASE)
AND VSE/ESA PROCEDURES FROM IJSYSRS TO IJSYSR1.SYSLIB
```

These are information messages. No action is required.

**Step 18 (DTRFSU18)**

Catalogs jobs that have to run in stage 2.

Do not specify your own VSE/POWER phase. The version upgrade ignores it and uses the system's default VSE/POWER phase.

```
STEP 18:  1. CATALOGS THE JOBS WHICH HAVE TO RUN UNDER CONTROL
           OF IJSYSR1 (NEW SYSRES) .

           2. CATALOGS THE STARTUP JOB FOR THE POWER PARTITION USED
           DURING STAGE II OF FSU.

** DON'T TRY TO IPL IJSYSR1 WITHOUT RUNNING THIS JOB SUCCESSFULLY
```

These are information messages. No action is required.

**Step 19 (DTRFSU19)**

Does a clean up for stage 1 and deletes all FSU jobs from stage 1. In case of problems, refer to 6.1, "Hints and Tips for FSU" on page 111.

### **Step 1A (DTRCLFSU)**

Does the final clean up of stage 1.

Now you must:

- Shut down all partitions except for the VSE/POWER partition.
- Save your VSE/POWER queues on a scratch tape. To do so, issue the following command:

**POFFLOAD BACKUP,ALL,cuu**

where cuu is the address of the tape unit drive you want to use. You need to back up the VSE/POWER queues because they are formatted in stage 2.

- If you want to save your account file, you must save it using the command PACCOUNT.

We recommend to use the PACCOUNT command as in the following example. It writes the account file to tape address cuu as a standard-label file.

**PACCOUNT cuu,,ACCTFILE**

- End the current job.
- You have to know at this point if your SVA command is specifying, at least, the minimum values needed by VSE/ESA 2.1. These values are:

**SVA PSIZE=(256K,2000K),SDL=300,GETVIS=(768K)**

You have two choices to enter these values:

1. Adjust you IPL procedure, if necessary, to reflect the minimum values and catalog it again.
2. Enter these values at IPL time. To do that you have to use the option **STOP=SVA** when entering the IPL parameters. For example:

**IPL=\$IPLESA,JCL=\$\$JCLFSU,STOP=SVA**

- Shut down the VSE/POWER partition.

**Stage 1 of the FSU is successfully finished.**

## **2.4.4 FSU Installation - Stage 2**

Note that the IPL procedure of stage 2 brings up a system that only can be used for service installation. Stage 2 runs without security (even in a secured system).

If you had your own supervisor, do not reassemble it now to be used for the IPL in stage 2. For reassembling you would need the High Level Assembler that is not yet installed. You should use one of the system-provided supervisors: \$\$A\$SUPI for more than 254 devices or \$\$A\$SUPX for up to 254 devices.

IPL from the refreshed SYS.NEW.RES (which is normally on SYSWK1). To begin stage 2, you must use a JCL procedure that has been tailored especially for FSU. To use this JCL procedure, do the following:

- Native Mode Users.

At the very beginning, interrupt the IPL to specify an IPL parameter. **Press the external interrupt key** to do so, or use the **Load parameter** if available on your processor.

- VM Users.

If your system is running under VM, you may do one of the following to interrupt the IPL process:

<i>Table 4. Interrupt IPL Running under VM</i>	
<b>Method A</b>	<b>Method B</b>
1. IPL cuu (SYSWK1) LOADPARM L.P 2. Press ENTER 3. Enter IPL=\$IPLESA,JCL=\$\$JCLFSU 4. Press ENTER	1. IPL cuu (SYSWK1) 2. Press ENTER 3. Press PA1 to enter CP mode 4. Type in EXT and press ENTER 5. Enter IPL=\$IPLESA,JCL=\$\$JCLFSU 6. Press ENTER

### Notes

1. Consult the manual *VSE/ESA Guide to System Functions* for more information about the load parameter (LOADPARM).
2. The system allows you to use your normal IPL procedure, but you **must** use the \$\$JCLFSU procedures. The VSIZE value in your IPL procedure must be at least 20MB.
3. During stage 2 of FSU, the system console will be in the English language. After stage 2, IPL from DOSRES will activate the original language.
4. Make sure that your IPL procedure complies with the new system.
5. You have to reformat the hardcopy file now. Enter the command:

**SET HC=CREATE**

and continue as instructed in the job.

6. If the number of devices exceeds 254, the system cannot continue without operator intervention. Message 0J74D is issued.  
  
You have to delete devices by using the IPL DEL command. No other command will be accepted. (The IPL DEL command is described in detail in the manual *VSE/ESA System Control Statements*.)

The IPL that you have performed will:

1. Format the VSE/POWER queues. Answer all messages beginning with:

F1 001 4733D EQUAL FILE ID IN VTOC .....

by entering:

**1 DELETE**

2. Load all FSU stage 2 jobs.
3. Execute all FSU stage 2 jobs.
4. Start up a mini system, which allows you to perform the necessary steps in stage 2 of FSU.

If you run VSE/POWER in a shared spooling environment, you may receive during the startup the message:

```
1QB2D IS ANY OTHER VSE/POWER SYSTEM ALREADY INITIALIZED?
```

Enter "YES" or "NO"

**Stage 2** has the following job sequence. Note that the step numbers consist of a "2" (from stage 2) and the job number (1 to 8). In case of problems, refer to 6.1, "Hints and Tips for FSU" on page 111.

The VSE/POWER job names are shown in parentheses:

**Step 21 (DTRSTFSU)**

Builds the Job Manager environment.

**Step 22 (DTRFSU22)**

Selectively restores the VSE/ICCF DTSFILE. (Only the members serviced by IBM since the last refresh are replaced in this step.)

If you have installed the Generation Feature and are using IBM 9346 or 6250 bpi tapes, you are asked to remount the tape labeled VSE/ESA2.1.X-YY. If you use IBM 3480 or IBM 3490 cartridges, you are asked whether the cartridge is still mounted and ready.

The message shown by the job is the following:

```
STEP 22:  SELECTIVE RESTORE OF DTSFILE
          VSE/ESA2.X.X-YY STILL MOUNTED ON  cuu ?
          READY TAPE AND REPLY  †(END/ENTER)†  TO CONTINUE
```

When the right tape is OK, answer:

"ENTER"

**Step 23 (DTRFSU23)**

PRD1.BASE is replaced and PRD1.MACLIB is defined and installed.

If the High Level Assembler for VSE was installed on your previous system, you must enter KEEP to message M231D. After the FSU has been completed, you must run the job **DELHLASM**.

The messages shown by the job are the following:

```
STEP 23A:  REFRESH PRD1.BASE
           1. IF MESSAGE M222 OCCURS, REPLY †GO (END/ENTER)†, BUT
              SAVE THE LISTING OF THE DOWNLEVEL DELTA, BECAUSE
              YOU HAVE TO REAPPLY THIS SERVICE.
```

If this happens, answer:

**"GO"**

After this, the following message is issued:

M231D INSTALLATION WILL OVERWRITE PRODUCT 234CG8. ENTER †DELETE† OR †KEEP†

You should answer:

**"KEEP"**

#### **Step 24A (DTRFSU4A)**

Restores the language-dependent parts of VSE/ESA. The language dependent members in library IJSYSR1.SYSLIB and PRD1.BASE are replaced. Depending on your software levels, a down-level message appears.

The messages shown by the job are the following:

```
STEP 24A1: REFRESH THE LANGUAGE DEPENDENT PART IN IJSYSR1.SYSLIB
           1. IF MESSAGE M222 OCCURS, REPLY †GO (END/ENTER)†, BUT
              SAVE THE LISTING OF THE DOWNLEVEL DELTA, BECAUSE
              YOU HAVE TO REAPPLY THIS SERVICE.
```

If this happens, answer:

**"GO"**

```
STEP 24A2: REFRESH THE LANGUAGE DEPENDENT PART IN PRD1.BASE
           1. IF MESSAGE M222 OCCURS, REPLY †GO (END/ENTER)†, BUT
              SAVE THE LISTING OF THE DOWNLEVEL DELTA, BECAUSE
              YOU HAVE TO REAPPLY THIS SERVICE.
```

If this happens, answer:

**"GO"**

#### **Step 24B (DTRFSU4B)**

The online message file is moved to the VSE/VSAM master catalog.

The message shown by the job is the following:

```
STEP 24B: REFRESH MESSAGE FILE
```

This is an information message. No action is required.

#### **Step 24C (DTRFSU4C)**

Refreshes the text repository file and updates the CICS CSD (CICS System Definition File).



For VSE/VSAM data compression, related data sets such as (VSAM.COMPRESS.CONTROL) are defined for the VSE/VSAM master catalog IJSYSCT (VSAM.MASTER.CATALOG) and the VSE/VSAM user catalog VSESPUC (VSESP.USER.CATALOG).

The message shown by the job is the following:

```
STEP 24C:  REFRESH TEXT REPOSITORY FILE AND UPDATE CICS CSD FILE

          NOTE: RETURN CODES UP TO 8 ARE EXPECTED AND HANDLED BY THIS
```

This is an information message. No action is required.

**Step 24D (DTRFSU4D)**

Does a selective restore of the language-dependent members in the VSE/ICCF DTSFILE.

The message shown by the job is the following:

```
STEP 24D:  SELECTIVE RESTORE OF THE LANGUAGE DEPENDENT PART OF
          THE DTSFILE
```

This is an information message. No action is required.

**Step 25 (DTRFSU25) - This step is optional**

Backs up and restores the entire VSE/ICCF DTSFILE. This reorganizes the DTSFILE for better VSE/ICCF performance.

**Step 26 (DTRFSU26)**

Copies the system work library IJSYSR1 to the system library IJSYSRS and renames system procedures.

The INFO.ANALYSIS.EXT.RTNS.FILE (external routines file) is redefined.

The message shown by the job is the following:

```
STEP 26:  COPY NEW SYSRES (IJSYSR1) TO SYSRES (IJSYSRS)
```

This is an information message. No action is required.

```
INFOANA EXTERNAL ROUTINE FILE WILL BE FORMATTED, REPLY DELETE TO
MESSAGE 4433D EQUAL FILE IN VTOC BLNXTRN ...
```

You should answer:

**"DELETE"**

**Step 27 (DTRFSU27)**

Updates work history file locations and copies the work history file to the new system history file.

**Note:** Code replacement is completed. The job sequence now processes startup information.

The messages shown by the job are the following:

```
STEP 27: UPDATE RESIDENCE INFORMATION IN WORK-HISTORY-FILE
        COPY WORK-HISTORY-FILE BACK TO SYSTEM-HISTORY-FILE
```

This is an information message. No action is required.

**Step 28 (DTRFSU28)**

Starts the cleanup job.

The old DTSECTAB.PHASE is deleted in order to run the system without security.

The VSE/ESA 1.3 system environment is now adapted to the new VSE/ESA 2.1 system environment:

Environments 3 and 4	Environment A
Environment 6	Environment B

The messages shown by the job, at this point are the following:

-----  
 STAGE 2 OF FSU HAS FINISHED SUCCESSFULLY.

AFTER THIS JOB STEP THE -TP- PREPARATION WILL FOLLOW BRINGING UP CICS-ICCF AND VTAM (IF REQUIRED). VTAM AND CICS WILL BE STARTED IN BASIC START-UP MODE.

1. REPLY †(END/ENTER)† TO FINISH THIS JOB.
2. PERFORM ANY OPERATIONS TO TEST AND PREPARE YOUR OWN ENVIRONMENT.  
 IF YOU HAVE YOUR OWN SUPERVISOR OR POWER PHASE, YOU SHOULD ASSEMBLE IT NOW.  
 IF YOU ARE USING SECURITY, ASSEMBLE DTSECTAB.  
 (SEE IBM VSE/ESA INSTALLATION MANUAL FOR DETAIL).
3. SHUTDOWN ALL PARTITIONS EXCEPT POWER.
- 3A. (SHUTDOWN CICS WITH †CEMT P SHUT I† TO ENFORCE CICS COLD START AFTER IPL).
4. LOAD YOUR OLD POWER QUEUES:  
 POFFLOAD LOAD,ALL,CUU  
 CUU OF THE TAPE DRIVE  
 THE VTAM AND CICS STARTUP JOBS VTAMSTRT AND CICSICCF HAVE BEEN CHANGED, MAKE SURE THAT THE NEW ONES WHICH ARE IN THE READER QUEUE BEFORE YOU PERFORMED THE LOAD OF THE POWER QUEUES ARE ACTIVATED WHEN YOU STARTUP THE SYSTEM FROM DOSRES. YOU MAY DO THIS BY DELETING THE OLD VTAMSTRT JOB(S) AFTER THE POFFLOAD. THE POWER STARTUP MUST ALSO BE MODIFIED USING SKELETON SKPWSIRT.  
 IF YOU ARE RUNNING ON VM, YOU HAVE TO RELOAD VMCF ROUTINES TO CMS USING SKELETON SKVMVSE.
5. SHUTDOWN POWER.
6. RE-IPL FROM DOSRES (IJSYSRS).

These are information messages. No action is required.

From now on the system uses the default allocation values and LIBDEF procedure of VSE/ESA 2.1.

When the last step completes, the following message appears on the screen:

**Stage 2 of FSU is successfully finished.**

After the completion message, a job step for **teleprocessing preparation** follows. The job to process the startup information does the following:

1. It generates a *basic startup* for CICS/VSE.

The messages shown by basic startup are the following:

```

* *****
*
*          VSE/ESA 2.1.1  PLUS   12/12/95
*
* *****
*  LICENSED MATERIALS - PROPERTY OF IBM
*  5686-066 AND OTHER MATERIALS (C) COPYRIGHT
*  IBM CORP. 1995 AND OTHER DATES
*  ALL RIGHTS RESERVED.
*  US GOVERNMENT USERS RESTRICTED RIGHTS -
*  USE, DUPLICATION OR DISCLOSURE
*  RESTRICTED BY
*  GSA ADP SCHEDULE CONTRACT WITH IBM CORP.
* *****
*  START MODE FOR BG-PARTITION IS BASIC
*

```

**Note:** You can regenerate your own CICS/VSE tables and options later.

During this step, you have to respond to certain messages. You need to define the following:

- BTAM-ES users must define up to three 3270 terminal addresses (cuu).
- VTAM users must specify whether the local control unit is an SNA control unit (**YES or NO**).

If you reply yes, define:

- Control Unit Address
- Terminal type (for example, 24x80)
- Up to three local VTAM terminals (port number)

2. It starts CICS/ICCF and VTAM (for VTAM users) in basic startup mode for test purposes.

From now on the new VTAM startup book ATCSTR00.B is used.

This is the dialog, as it appears at the console. The answers are the ones we used in our test. You have to choose according to your situation.

```

BG 0000 IESIO065D IS THE LOCAL CONTROL UNIT AN SNA CU? YES/NO
BG-0000
0 NO
BG 0000 IESIO064I DEFINE UP TO 3 LOCAL VTAM TERMINALS
BG 0000 IESIO059D ENTER A 3270 ADDRESS (CUU) OR †END†
BG-0000
0 001
BG 0000 IESIO059D ENTER A 3270 ADDRESS (CUU) OR †END†
BG-0000
0 002
BG 0000 IESIO059D ENTER A 3270 ADDRESS (CUU) OR †END†
BG-0000
0 003
BG 0000 IESIO062D CHECK YOUR ANSWERS. DO YOU WANT TO CONTINUE? YES/NO
BG-0000
0 YES

```

If the CICS/ICCF startup fails, this may be solved by renaming all old CICS tables in PRD2.CONFIG, except for the CICS terminal tables **DFHTCTSP** and **DFHRDTSP**.

## 2.4.5 FSU Installation - Post-Stage 2 Processing

Once CICS/ICCF and VTAM are started, you can customize your system (such as VSE/ICCF, VSE/POWER, CICS/VSE tables, options and all other tables).

Do not forget to update your default selection panels and your default application profiles.

### To update your selection panels, proceed as follows:

1. Sign on to the VSE/ESA Interactive Interface using user ID **SYSA**.
2. On the *Function Selection* panel, select  
**2** (Resource Definition)
3. On the *Resource Definition* panel, select  
**1** (User Interface Tailoring)
4. On the *User Interface Tailoring* panel, select  
**2** (Maintain Selection Panels)

Administrator	Synonym
Fast Path: 212	Default: SPM Your: _____

5. Press **PF6=SYSTEM**.

This refreshes the VSE default selection panel hierarchies and ensures that system panels are available.

### To update your application profiles, proceed as follows:

1. If not already done, sign on to the VSE/ESA Interactive Interface using the user ID **SYSA**.
2. On the *Function Selection* panel, select  
**2** (Resource Definition)
3. On the *Resource Definition* panel, select  
**1** (User Interface Tailoring)
4. On the *User Interface Tailoring* panel, select  
**3** (Maintain Application Profiles)

Administrator	Synonym
Fast Path: 213	Default: APM Your: _____

5. Press **PF6=SYSTEM**.

This refreshes the list of application profiles and ensures that any new profiles are available.

### When you have finished the preceding tasks:

1. Shut down all partitions except for the VSE/POWER partition. Shut down CICS/VSE with the following command to force a CICS/VSE cold start after IPL:

## CEMT P SHUT I

2. Restore your VSE/POWER queues from your backup tape. To do so, issue the following command:

**POFFLOAD LOAD,ALL,cuu**

3. Shut down the VSE/POWER partition.

4. **IPL from DOSRES.**

Starting with this IPL, every change that you do (affecting IJSYSRS.SYSLIB) goes to IJSYSRS.SYSLIB and no longer to IJSYSR1.SYSLIB. The following section describes such changes.

### Users with a System with Security Active

It is recommended that you now regenerate your security table DTSECTAB. If you have your own copy of DTRSECTRC, you should merge your input with the latest update shipped by IBM. After that, use the Interactive Interface dialogs. Start with the *Function Selection* panel and select:

**2** (Resource Definition)

**1** (User Interface Tailoring)

**6** (Maintain Primary Sublibraries and Security Table)

Administrator	Synonym
Fast Path: 216	Default: APM Your: _____

This dialog generates the security table DTSECTAB and VSE PRIMARY sublibraries. Existing sublibraries are not affected by this function.

For more details on how to generate your own DTSECTAB, refer to the manual *VSE/ESA Guide to System Functions*.

### For VM Users

You have to reinstall the VM/VSE interface routines using skeletons SKVMVSE, as described in the manual *VSE/ESA Installation*.

### Recataloging Procedures, Books, and Tables

You should recatalog the following, using the new skeletons:

- IPL procedures
- VTAM books
- CICS CSD groups
- User modified tables

For the first three items of this list, start with *Function Selection* panel and select:

- 2 (Resource Definition)
- 4 (Hardware Configuration and IPL)
- 1 (Configure Hardware)

Administrator                      Synonym  
 Fast Path: 241                      Default: APM    Your: \_\_\_\_\_

On the *Configure Hardware* panel, press **PF5**. Select the objects you want to regenerate. The dialog then generates a job for this purpose. The dialog is described in the manual *VSE/ESA Networking Support*.

For user modified tables, submit your own jobs for any tables you use as you already did in your system before the FSU. Note that you should review the output of the job to make sure everything is correct. Error messages in the job output may result in problems during IPL.

**Final Checklist**

- Make sure that you do not use existing user-modified skeletons. Use the new skeletons provided in VSE/ICCF library 59.
- If you want to use your own VSE/POWER phase, you have to regenerate it now, using the upgraded VSE/ESA system. You can use skeleton SKPWRGEN in VSE/ICCF library 59 to regenerate the VSE/POWER phase.
- Reestablish your own LIBDEF procedure by using skeleton SKLIBCHN.
- If you want to use your own allocation values for your static partitions, use the appropriate skeleton for your environment (SKALLOCA,SKALLOCB) to make the necessary changes. For system startup from DOSRES, use the new ALLOC procedure.
- If you want to submit your own startup jobs, you must be careful. Since VTAM defines new data spaces, which are also used by VSE/POWER and CICS/VSE, the DSPACE parameter must be specified in the related startup jobs. The FSU loads the startup jobs for VTAM and CICS/VSE in the VSE/POWER reader queue. Make sure that you use the new startup jobs. During stage 2 of FSU, the DSPACE parameter is used for VSE/POWER. You have to modify your VSE/POWER start up using the provided skeletons.
- Check your startup procedures for invalid variables (for example, XENVNR for environment settings). If they still refer to old environment numbers, update the startup procedures using the respective skeleton.

You may also refer to skeleton SKENVSEL for more information.

Startup Procedure	Skeleton
\$xJCL	SKJCLx, SKJCLxNT, SKINITNN
USERBG	SKUSERBG
POWSIRIn	SKPWSIRT

- As shown before, the VTAM startup was done using the startup book ATCSTR00.B, stored in the system sublibrary PRD2.CONFIG. You may have to adapt the buffer sizes to your needs (for example, IOBUF or SPBUF sizes) and recatalog ATCSTR00.B.

- It is recommended that you increase the size of the work file IJSYS03 for using the High Level Assembler for VSE. The entry for IJSYS03 in STDLABUP.PROC should read as follows:

```
// DLBL IJSYS03,¢%DOS.WORKFILE.SYS003¢,0,VSAM           C
                CAT=VSESPUC,RECSIZE=4096                C
                DISP=(NEW,DELETE),RECORDS=(600,300)
```

After you have made all changes, invoke the dialog *Personalize History File* and enter the required information.

#### **Further Considerations**

- You can now install VSE optional programs. How to do this is described in chapter "Overview of Installing Additional Programs" in the manual *VSE/ESA Installation*.
- REXX/VSE, High Level Assembler for VSE, and VSE/ESA Distributed Workstation Feature belong to the VSE/ESA 2.1 base system. If you have installed the programs before (in VSE/ESA 1.3) you must delete the old level of these programs by using appropriate delete jobs (DELREXX, DELHLASM, DELDWF). For more information, refer to the manual *VSE/ESA Planning*.



---

## Chapter 3. Installing VSE/ESA 2.1 Through Initial Installation

---

### 3.1 Overview

Depending on the current environment and specific prerequisites a version upgrade through FSU might not be possible to install VSE/ESA 2.1. Instead an initial installation will be necessary.

If your current system is not VSE/ESA 1.3 or VSE/ESA 1.4 you must perform an initial installation in any case.

If your current system is VSE/ESA 1.3 or VSE/ESA 1.4, then you must perform an initial installation to migrate your system if:

- Your current supervisor mode is not MODE=ESA.  
Since the supervisor mode used with VSE/ESA 2.1 is always ESA, the MODE option for supervisor generation has been removed. Supervisors of MODE=370, MODE=VM,MODE=VMESA are no longer supported.  
An FSU is not possible if your current system supervisor mode is 370, VM or VMESA.
- The current VSE system is running in a predefined environment 1/2/5 (selected during initial installation).
- The disk devices on which the system resides (DOSRES and SYSWK1) are not of a type supported by VSE/ESA 2.1. For example, they are of the type IBM 3350, or IBM 3375. Refer to Table 3 on page 29.
- Your current system does not have the standard (shipped) system layout of a VSE/ESA 1.3 system including the VSE/ESA library structure and VSE/VSAM catalogs. (This is because libraries IJSYSRS.SYSLIB, PRD1 and PRD2 must be present for FSU.)

VSE/ESA V2.1 will drop its support for processors as described in Table 3 on page 29.

---

### 3.2 Planning and Preparation

To successfully install the new version of VSE/ESA 2.1 the following points have to be taken into consideration as part of planning:

- Hardware
- System environment
- IOCP
- System startup job definition
- Subsystem consideration
- CICS tables

The standard VSE/ESA initial installation process has been further simplified and automated. You can choose:

- automatic installation, or
- manual installation

For the automatic installation VSE/ESA uses a predefined customization table, that relieves the operator from entering commands and responses during the installation process. This minimizes the possibility of entering incorrect information and reduces the overall time required for the initial installation.

To plan the installation of VSE/ESA V2.1, the current system should be analyzed and documented fully.

If all the possible changes take place concurrently, it may become difficult to identify the cause of a problem. Therefore changes should only be done when necessary and then step by step. A thorough inspection to establish the maintenance level of the current system is strongly recommended before migration.

To prepare the migration, the following hardcopies will be useful in case of any problems during the installation process or afterwards.

- Customized IPL, JCL, standard labels, SDL and LIBDEF procedure, FCBs and UCBs. These user modified procedures and members which were installed as part of the base system will be overwritten by the new system and should be backed up.
- Allocation procedure and specific partition requirements.
- STDLABEL, STDLABUP and STDLABUS procedures with LSERV listings.
- Any user modified procedure, for example POWER startup, storage allocation, USER BG.
- A list of ICCF libraries in order to identify which of the important user libraries should be migrated and which libraries contain necessary user source programs to be restored into the new system.
- VSIZE utilization and data space usage (if any).
- LVTOC for DOSRES and SYSWK1 for checking against the VSE/ESA V.2.1 standard layout.
- VSAM space for master catalog IJSYSUC and user catalog VSESPUC in the master catalog is required.  
30 3390 tracks for the Compression Control Data Set (CCDS) must be available in the master and user catalogs.
- VTAM startup job, start options list and configuration list
- CICS startup jobs
- User definitions using CEDA
- H/W configuration and IOCP source statements. During the initial installation, the configuration will be migrated if you answer MIGRATION=YES. A backup could be helpful in case of a mistake.
- Sensitive VSAM file DEFINE/REPRO/EXPORT/BACKUP JCL
- Subsystem startup job streams (PSF,SQL)

- History file listing using MSHP RETRACE
- LISTCAT listings by catalog
- Supervisor source statements, if any
- Any user exit source listings (Job Control, IPL, POWER)
- Any user customized source program listings
- User JCL

---

### 3.3 Considerations for Media Changes

If you migrate your system and data to a different type of disk volume, the following considerations should be taken into account:

- The device type criteria of system residence volumes (DOSRES and SYSWK1) must be met.
- Installing VSE/ESA V2 on these two volumes of DASD will overwrite the previous contents.
- The device type of multiple extent VSE/POWER spool file volumes must be the same.
- The volumes on which multiple VSAM data spaces reside and are controlled by a catalog must all be of the same type and capacity.
- In the VM/VSE environment, DASD volumes must be dedicated to the guest VSE if there are any other online DASD volumes of the same name. If any DASD volumes of the same name require attaching to the system (SYSTEM ATTACH), then the volume you do not need must be taken off-line.
- VSE/ESA Control Area size depends on DASD geometry.

---

### 3.4 Migrating Existing VSE System Information

With an initial installation, you can migrate from the old system your:

- Hardware configuration
- User profiles (for up to 99 VSE/ICCF users or 99 VSE/ICCF libraries).

If you want to do this, answer **YES** to the migration question shown in Figure 7 on page 65.

If you want to migrate after initial installation, you can only migrate VSE control file information. You can use the migration utility IESBLDUP described in 3.9, “Migration Utilities” on page 70

If you want to migrate more than 99 VSE/ICCF users or more than 99 VSE/ICCF libraries, you must have completed initial installation before you can start migration. You have to reformat the new DTSFILE with the desired library and user entries, migrate the user profiles of your previous VSE system using the migration utility IESBLDUP, and restore the private VSE/ICCF libraries of your previous VSE system. Details can be found in the manual *VSE/ESA Administration* under the topic “Reformatting VSE/ICCF DTSFILE” and in 3.9, “Migration Utilities” on page 70.

### 3.4.1 Restrictions for Migration During Initial Installation

Migration of your data is not possible if you:

1. Want to switch over to the 4-digit naming convention that allows you to support more than 255 subareas. Here a complete initial installation is required. The naming convention is required for the unattended node environment.
2. Plan to use a telecommunication access method with VSE/ESA that is different from the one you used in your earlier system. Thus you cannot migrate if you used BTAM with your earlier system and now want to use VTAM.

If you want to change telecommunication access method, you must answer NO when prompted if you want to migrate your configuration data during initial installation.

---

## 3.5 Before Initial Installation

Before initial installation of a new system, you must:

- Have a VOLUME Dump using FASTCOPY (to be used for fallback in case of installation failure).
- Back up user phases and books from system libraries (IJSYSRS, PRD1 and PRD2). This commonly includes POWER phase, PNDDT, CICS tables, VTAM books, FCB, UCB and so on. Use *Interactive Interface Function Selection Panel* and select:

3	(Operations)
7	(Backup / Restore)
2	(Backup/Restore Library Objects)
1	(Backup VSE Library on Tape)

Administrator	Synonym	
Fast Path: 3721	Default:	Your: _____

- Back up all VSE user libraries.
- Back up all user data that resided in the previous volumes.
- Back up CSD file DFHCSD with VSAM REPRO or VSAM Backup/Restore.
- POFFLOAD to backup all the job streams in POWER Queue.
- Back up Text repository file VSE.TEXT.REPSTORY.FILE.
- Back up On-line message file VSE.MESSAGE.ONLINE.
- History file backup using MSHP.
- Journals and logs if needed.
- For migration **during initial installation** you must
  1. Back up the VSE/ICCF DTSTFILE from your previous system on tape. It is recommended to use the *Backup/Restore Library Objects* dialog to do the backup. Start the *Function Selection* panel and select:

- 3 (Operations)
- 7 (Backup / Restore)
- 2 (Backup/Restore Library Objects)
- 4 (Backup ICCF Library on Tape)
- 1 (Backup the DTSFILE (all ICCF Libraries))

Administrator                      Synonym  
 Fast Path: 37241                      Default:                      Your: \_\_\_\_\_

The volume serial number of the tape must be ICCF01.

After installation, you may restore all the user source programs or members containing user application data back to the ICCF User Libraries via the same DTSFILE backup tape. **Only** this tape can be used in the new system to restore the user libraries.

This DTSUTIL backup tape will be used during the installation and help to migrate the user information.

2. Copy the VSE control file.

A VSE/VSAM backup copy on tape of your current VSE control file is created with the REPRO command. You can proceed either by:

- a. Selecting the *Display or Process a File* panel for the VSE/VSAM user catalog VSESPUC and the COPY function to copy the VSE Control File (IESCNTL). The COPY function uses the VSE/VSAM REPRO command. Start the *Function Selection* panel and select:

- 2 (Resource Definition)
- 2 (File and Catalog Management)
- 1 (Display or Process a File)

Administrator                      Synonym  
 Fast Path: 221                      Default:                      Your: \_\_\_\_\_

Specify as catalog VSESPUC and select on the next panel option 4 (COPY) and specify:

- RECORD FORMAT=variable-length blocked records
- BLOCK SIZE=4000

- b. Creating a job stream for batch processing.

Following is a job stream with the *VSE/VSAM REPRO* command which must be used:

```

* $$ JOB JNM=COFYCNIL,CLASS=A,DISP=D,NIFY=YES
// JOB COFYCNIL COPY  VSE.CONTROL.FILE 
// DLBL COPYIN, VSE.CONTROL.FILE ,,VSAM
          CATALOG=VSESPUC
// TLBL COPYOUT, REPRO.CNIRL.FILE ,,CF0001  <=====
// ASSGN SYS005, uu
// EXEC IDCAMS,SIZE=AUTO
REPRO INFILE (COPYIN) -
      OUTFILE (COPYOUT -
      ENVIRONMENT (BLOCKSIZE (4000) -
                  RECORDFORMAT (VARBLK) -
                  STDLABEL -
                  PRIMEDATADEVICE (2400) REW)) -
      NOREUSE
/*
/ 
* $$ EOJ

```

Figure 6. VSE Control File Backup

In the job stream example, the volume serial number is CF0001 which must be used.

The tapes (or cartridge) you use for the backup copies must be of the same type as the tape(s) on which VSE/ESA resides.

---

### 3.6 Perform Installation Part I

To start the installation, perform an IPL from the VSE/ESA 2.1 distributed tape.

During the initial installation process, you must make sure that you have not more than 254 devices turned on. Refer to the manual *VSE/ESA Installation* for more information.

The first system prompt that appears on your system console asks you if you want to do an automatic installation of VSE/ESA.

```
BG 0000 SI01D DO YOU WANT TO DO AN AUTOMATIC INSTALLATION (YES/NO?)
```

VSE/ESA 2.1 uses a predefined customized table containing the information required to perform an automatic installation. **It is recommended that you select the automatic installation since this way excludes typing or setup errors.**

**Note:** The automatic installation path positions the VTOC in the middle of the disk packs. After installation it is possible to move the VTOC if necessary with the ICKDSF utility.

#### Start the automatic installation process

In this step, you are asked to input the addresses of DOSRES and SYSWK1.

```
BG 0000 SI02D ENTER CUU OF DOSRES
BG 0000 SI02D ENTER CUU OF SYSWK1
```

The system will sense the given system device addresses for the device type. If the system cannot sense the device type you will be prompted to enter the necessary information. The next message shows the given input and at this point you may start the installation by entering 'YES' or modify the previous definition by answering 'NO'.

```
BG 0000 SI10D START WITH AUTOMATIC INSTALLATION (YES/NO?)
```

During the automatic installation process watch the screen for given system messages and do not interrupt until the following message appears:

```
BG 0000 SA17W ***** END OF STANDALONE PROCESSING *****
```

The system now performs an automatic IPL from DOSRES.

---

### 3.7 Perform Installation Part II

Part II of the installation will start automatically. With the first prompt you have to decide if you want to migrate your configuration data from a previous VSE version.

```
BG 0001 1Q47I BG INSTALL xxxxxx FROM (SYSA), TIME=yy:yy:yy
BG 0000 // JOB INSTALL VSE/ESA INSTALL PROGRAM
BG 0000
BG 0000 IESI0077D DO YOU WANT TO MIGRATE YOUR CONFIGURATION DATA FROM
          A PREVIOUS VSE VERSION ?   YES/NO
```

*Figure 7. First Prompt for Installation Part II*

If you answer 'Yes', then the user information of your previous system will be migrated in a later step of the installation process. You will then be prompted to mount the previously created backup tapes.

Next you will be asked to select one of the predefined environments that are shipped with VSE/ESA. Your decision may be environment A, B or C.

If your selected environment is A or B, you will be prompted for your TP access method (BTAM or VTAM). Depending on your TP access method you will be prompted to enter some terminal addresses (see manual *VSE/ESA Installation*).

After having defined the terminals, the system prompts you with the question:

```
BG 0000 IESI0062D CHECK YOUR ANSWERS. DO YOU WANT TO CONTINUE ? YES/NO
```

If you answer 'YES', job 'INSTALL' ends and the system proceeds to the next session.

During the install process several jobs are started automatically as follows:

— **STEP 1** —  
Cataloging Hardware Information

The job **DTRIHARD** catalogs hardware information from the IPL procedure.

— **STEP 2** —  
Cataloging ASI IPL Procedure

The job **DTRIASI** catalogs the ASI IPL procedure.

— **STEP 3** —  
Cataloging VTAM Startup Information

The job **DTRIVTAM** runs for VTAM users only. It catalogs VTAM startup information.

For BTAM users STEP 3 will assign BTAM terminals (job DTRIBTAM).

— **STEP 4** —  
Building the List of Jobs

The job **DTRIJBLD** builds the list of jobs that will run.

— **STEP 5** —  
Running Job Manager Controlled Jobs

A number of jobs will now run. Do not cancel any of these jobs.

— **STEP 6** —  
Creating Print Buffers for a System Printer

If you have a system printer controlled by VSE/POWER attached to your system, refer to "Creating Print Buffers for a System Printer" on page 76 of the *VSE/ESA Installation* manual.

— **STEP 7** —  
Restoring System History File

The job **HISTREST** restores the system history file.



**STEP 8**

Defining VSAM Catalogs, Space, and Clusters

The job **VSAMDEFS** defines the VSAM master catalog, a VSAM user catalog, VSAM space, and clusters. The error messages 4228I is expected and can be ignored.

**STEP 9**

Defining Libraries and Sublibraries

The job **LIBRDEFS** defines the necessary libraries and sublibraries for VSE/ESA.

**STEP 10**

Restoring VSE/ICCF DTSFILE

The job **ICCFREST** restores the VSE/ESA-supplied VSE/ICCF DTSFILE.

**STEP 11**

Punching Install Information to VSE/ICCF DTSFILE

The job **ICCFLOAD** adds required system information to the VSE/ESA supplied VSE/ICCF DTSFILE.

**STEP 12**

Installing VSE/ESA Base Programs

The job **BASEREST** installs the VSE/ESA sublibrary PRD1.BASE.

**STEP 13**

Installing Separate Base Macros

The job **MACREST** installs separate macros into PRD1.MACLIB.

**STEP 14**

Restoring Language-Dependent Members

**STEP 15**

Restoring Language-Dependent VSE Workdesk Members

**STEP 16**

Restoring Language-Dependent VSE/ICCF Members

### STEP 17

Initializing and Loading VSE/VSAM Files

The job **VSAMINIT** initializes and loads VSAM files needed by VSE/ESA.

### STEP 18

Initializing Work Files for Info/Analysis

The job **DUMPINIT** initializes the Info/Analysis work files.

If you decided to migrate your configuration data from a previous VSE system, then at this point the migration path will start.

## 3.7.1 Performing Migration

In this part, the backup tape for the DTSFILE of your previous system is used. Before you start the migration, it is recommended to check that the tape serial number is **ICCF01**.

If the tape label is not ICCF01, you can enter 0 IGNORE during label processing to proceed.

When starting the migration part, the system console will prompt you as follows:

```

BG 0001 1Q47I  BG MIGRAT 00016 FROM (SYSA) , TIME=15:40:14
BG 0000 // JOB MIGRAT  MIGRATE VSE USER IDS AND HARDWARE TABLES
          DATE 03/07/96,CLOCK 15/40/14
BG 0000 * PLEASE MOUNT YOUR BACKUP TAPE CONTAINING THE DTSFILE
BG 0000 * ON TAPE DRIVE cuu  <=====
BG 0000 *
BG 0000 * IF YOU HAVE MORE THAN ONE BACKUP TAPE FOR THE DTSFILE:
BG 0000 * THE FIRST STEP WILL PROMPT YOU TO MOUNT THE SECOND BACKUP
BG 0000 * TAPE (MESSAGE 4140A NO ALTERNATE DRIVE ASSIGNED).
BG 0000 * AFTER MOUNTING THE SECOND TAPE, ENTER †NEWIAP†.
BG 0000 * PLEASE ENTER †PAUSE BG† (AR COMMAND) WHILE THE FIRST STEP
BG 0000 * IS RUNNING TO STOP PROCESSING AFTER THE FIRST STEP.
BG 0000 * WHEN BOTH TAPES ARE PROCESSED AND THE PAUSE STATEMENT IS
BG 0000 * ACTIVE, MOUNT THE FIRST BACKUP TAPE AGAIN TO CONTINUE.
BG 0000 // PAUSE WHEN READY, REPLY †0 (END/ENTER)†
```

*Figure 8. Job Steps for Migration of Configuration Data*

Mount the backup tape of VSE/ICCF DTSFILE from your previous VSE system on the specified tape drive now. Then mount the tape with the VSE/VSAM copy of the control file from your previous system on the specified tape drive as well.

After the migration job has ended, the TP access method and CICS/ICCF will be started.

When you get the following message, the system is ready for use:

```
F2 0002 DFH1500 - DBDCCICS: CONTROL IS BEING GIVEN TO CICS
```

---

### 3.8 Perform Installation Part III

To complete initial installation you have to sign on to the Interactive Interface with the special user ID **POST** and password **BASE**.

The one, two, or three terminals which you specified during initial installation will display the VSE/ESA sign-on panel (*VSE/ESA Online* panel) if they were powered on during system startup.

```
IESADMS01                                VSE/ESA ONLINE
5686-066 and Other Materials (C) Copyright IBM Corp. 1995 and other dates

WV  WV  SSSSS  EEEEEEE  ++
WV  WV  SSSSSS  EEEEEEE  ++
WV  WV  SS      EE        ++  EEEEEEE  SSSSS  AA
WV  WV  SSSSSS  EEEEEEE  ++  EEEEEEE  SSSSSS  AAAA
WV  WV  SSSSSS  EEEEEEE  ++  EE        SS      AA  AA
WV  WV          SS  EE        ++  EEEEEEE  SSSSSS  AA  A
WVW  SSSSSS  EEEEEEE  ++  EEEEEEE  SSSSSS  AAAAAA
WV  SSSSS  EEEEEEE  ++  EE        SS  AAAAAA
++
++  EEEEEEE  SSSSSS  AA  A
++  EEEEEEE  SSSSS  AA  A
```

```
Your terminal is A001 and its name in the network is D00101
Today is 03/25/96      To sign on to DBDCCICS -- enter your:
```

```
USER-ID..... POST      The name by which the system knows you.
PASSWORD..... base     Your personal access code.
```

```
PF1=HELP      2=TUTORIAL  3=TO VM      4=REMOTE APPLICATIONS
10=NEW PASSWORD
```

Figure 9. VSE/ESA User Sign-on Panel

The user ID POST is reserved and cannot be used anymore, once the system signs you off from this session.

Refer to the manual *VSE/ESA Installation* for details of the online installation task of the initial installation.

If you did not perform a migration of your data, you will be prompted to specify your naming convention for your VTAM resource names.

If you migrated your data, then processing of the online installation task may take more than 30 minutes. You do not have to enter any information. **Do not interrupt the process.** The naming convention you get in the new system is the same you used with your previous VSE system.

The dialog will then ask you to enter data unique to your installation (for example, customer name, address, ...) on the panel *Complete Initial Installation*.

On the next panel you will be informed that initial installation is complete. After pressing ENTER you will automatically be signed off and the *VSE/ESA Online* panel appears.

To complete the hardware tables you have to sign on to the Interactive Interface with user ID SYSA and password SYSA.

After selecting Fast Path 241 the panel will display all the devices that are powered on and could be sensed during installation. You may now complete the missing information or delete unnecessary devices.

To finish initial installation you should change the passwords of the predefined VSE/ESA user IDs. You also have to activate the VTAM password. Refer to 4.2.2.2, "VTAM Passwords" on page 88.

Now you should perform a system shutdown. Before continuing with any further optional installation task you must perform an IPL from DOSRES. After you have performed the IPL, initial installation is complete.

Optional installation tasks might include:

- Delete VSE/ESA component programs that you do not need.
- Install the VSE/ESA Generation Feature.
- Install VSE/ESA optional programs.

---

## 3.9 Migration Utilities

VSE/ESA provides a number of utilities to help you perform migration:

- A VSE/ESA utility program (*IESBLDUP*) to transfer both VSE control file records and user profiles to the new system. This utility can be used if you did not migrate this information during initial installation.

To do this you must create a copy of the VSE Control File, and a copy of the VSE/ICCF DTSFILE on separate tapes.

IESBLDUP must run in a batch partition controlled by VSE/POWER. VSE/POWER must be generated with the SPOOL=YES (as delivered with VSE/ESA 2.1).

IESBLDUP updates the current control file, creates the job DTRMIGR, and places DTRMIGR into the VSE/POWER reader queue. Job DTRMIGR is automatically processed and invokes the VSE/ICCF utility DTSUTIL to:

- Add new user profiles to the current VSE/ICCF DTSFILE.
  - Alter VSE/ICCF DTSFILE options that are incompatible with VSE/ESA Version 1.
  - Catalog the updated table ADM\$USRT into VSE/ICCF library 50.
- Interactive Interface Dialogs for building jobs to perform backup and restore of libraries and VSE/VSAM files.
  - VSE/POWER's POFFLOAD facility to save and restore jobs and output in the VSE/POWER queues.

---

## 3.10 Migration and Media Change Considerations

### 3.10.1 User Customized Procedures

#### **IJSYSRS.SYSLIB**

This library resides on the DOSRES volume and is created after installation of VSE/ESA V2. If the user has customized members in this library, a backup of individual members via LIBR PUNCH is necessary prior to VSE/ESA V2 installation.

To migrate those user customized procedures, the best method is to have the procedures in the administrator's private ICCF library. It is then a simple matter of backing up the DTSFILE for migration purpose. If they are in another ICCF library, they should be copied to the administrator's library. If they do not exist in ICCF, they should be placed in the administrator's ICCF library via the ICCF LIBRP function.

After installation of the new VSE, the preserved procedures should be individually restored to the administrator's library on the new system. To avoid the names conflicting with those created during the new installation, restore them with a different name.

The reason for using ICCF DTSFILE BACKUP as a migration vehicle, is that the installation procedure will create procedures under the same names on the new system and the contents of the new and old procedures will need to be compared and merged where appropriate.

#### **PRD2.CONFIG**

Since this is the primary repository for user modified components, any procedures (apart from IPL and JCL procedure) may reside here.

To migrate the procedures, the same considerations apply as to any other member in the old PRD2.CONFIG. However, check that the procedures concerned do not have the same name as a member created during the new installation.

### 3.10.2 VSE/POWER Files

Use the POFFLOAD command to back up the POWER queue files.

Usually the POWER objects to be migrated are jobs. Production LST or PUN queue objects, or those waiting for transmission should be processed before the migration and should not be migrated. The account file, if used, should also be processed before migration, using the PACCOUNT command.

In the initial installation process, several jobs essential for starting and operating the VSE system are copied from IJSYSRS.SYSLIB. These jobs are cataloged in the library as member type 'Z'. Even if you customized these members under the old environment, you should re-customize them under the new VSE/ESA 2.1 environment. If the system uses POWER shared spooling, you should offload the entries on the master VSE after every other VSE shuts down.

### 3.10.3 ICCF Library

For the migration of the DTSSFILE, the DTSUTIL BACKUP/RESTORE function must be used.

Before the new installation, you should create the following:

- A DTSSFILE backup
- A listing of the contents of the library immediately before the backup

The DTSSFILE backup is required because migration of the Control File also requires user profiles in the DTSSFILE to be updated.

The volume serial number for the backup tape of DTSSFILE must be **ICCF01** as instructed in the manual *VSE/ESA Installation*. The backup of DTSSFILE as preparation for migration, should not be restored entirely into the new system as part of your migration. The user libraries should be restored selectively as necessary.

Members of ICCF libraries may be selectively restored to their default library or any other library. You should avoid restoring a member to its default library; this is especially important for items backed up from VSE reserved libraries.

You can extend your DTSSFILE up to 15 extents. When you extend it over multiple volumes, the device type for all DASD extents must be the same.

### 3.10.4 VSE Control File

The control file (VSE.CONTROL.FILE on DOSRES) is the central repository file for system access information for the Interactive Interface. It contains:

- User profile records
- Selection panel records
- Application profile records
- Synonym records
- New records (messages displayed to users after they sign on)

The user profile information provides coordination between CICS/VSE, VSE/ICCF, and the Interactive Interface.

Copy the VSE VSAM Control File of your current system using the VSE/VSAM REPRO command. The volume serial number for the backup tape must be **CF0001**.

The file created by the REPRO command is device independent; the initial installation process will create the file with the attributes for the new DASD.

### 3.10.5 Optional Products

Optional products (that is, products which are on the optional products list for VSE and therefore are specially packaged for installation under VSE), are usually restored into sublibraries of PRD2, and sometimes have a 'generation' component as well as a production component. If it has been decided to install these into a sublibrary other than the default one for that product, then the product should be treated as a user application.

You should plan to re-install unless you have verified that the earlier release will still work and is supported. If migration of the existing level is possible, the old product should be backed up via LIBR BACKUP, and after installation of VSE, it should be restored to an equivalent library on the new system. Do not forget any component which has been cataloged into any other sublibrary, such as customized items to PRD2.CONFIG or procedures to IJSYSRS.SYSLIB. They should be identified and migrated as well.

If an optional product is retained at an earlier level, you must ensure that the System History records for that product are also migrated.

Carefully read the installation instructions, release guides, memoranda to users, and any other documentation which is needed prior to starting the migration. Do not assume that the considerations will be the same for each new release of an optional product, and that an earlier migration plan can be used without a careful review.

### 3.10.6 User Programs

User programs will need to be made available in the new system.

This includes source, object and load modules as well as user macros and copy books.

All user code held in VSE libraries should be put in private sublibraries which are sublibraries not used for VSE components.

Source code in ICCF can be migrated as any other ICCF member.

User code contained in VSE libraries is migrated as follows:

1. User code contained in VSE sublibraries which will be created during installation

This situation should be corrected before starting the move. If that is not possible due to a shortage of DASD, you must use LIBR BACKUP to back up all libraries containing user members from the old system; then on the new system, you must use LIBR RESTORE to selectively restore the members you want into the new sublibrary, this time isolating carefully. This approach will also need a review of control statements and may need changes to cataloged procedures.

2. User code held in a private sublibrary of PRD2

Use LIBR BACKUP to backup the complete sublibrary. LIBR RESTORE can restore this subsequently to a library with the same name, or a different name. The sublibrary may be in a library with the same name or a different name as the original.

3. User code held in a private library owned by IJSYSCT or VSESPUC

Use LIBR BACKUP to back up the entire library. After the re-installation use LIBR RESTORE to restore the library. This should be owned by a different user catalog, although this will require JCL or procedure changes.

4. User code held in a private library not owned by IJSYSCT or VSESPUC but on DOSRES or SYSWK1

Use LIBR BACKUP to back up the entire library. After the re-installation use LIBR RESTORE to restore the contents. Restore library on a different volume. No JCL or procedure should be needed.

5. User code held in a private library not owned by IJSYSCT or VSESPUC and not on DOSRES and SYSWK1

Use LIBR BACKUP to back up the entire library. After the re-installation use LIBR RESTORE to restore the contents. This is the ideal case.

LIBR RESTORE allows restoration to disks of the same or different type and also of the same or different architecture. If a new private library is required this must of course be defined to VSAM.

Before re-installing VSE ensure that you have a complete and current LISTDIR listing of all the libraries - do not limit it to private libraries as members may have been incorrectly cataloged.

### 3.10.7 SAM Files

You can use the following utilities for the data migration:

- DITTO
- FASTCOPY

Normally explicit EXTENT information is used for sequential DASD files. This must be changed in every case.

### 3.10.8 VSAM Files

VSAM can be used to hold data directly or, as the underlying access method for SQL/DS, DOS/DL/I or VSAM-managed SAM. In all these cases a special effort might be necessary if there is a change to the media on which the VSAM objects reside. In most cases the method to migrate is to simply detach the data from the old system and attach it to the new one.

Below are several methods to migrate VSAM files.

#### 1. VSAM BACKUP/RESTORE Command

This method is the most flexible. The BACKUP command copies catalog entries even for empty objects. The RESTORE command creates an object equivalent to the original one from the backup copy. This method allows to move the files to a different disk device type, or to increase the files allocation size. The backup copy created by the BACKUP command must be restored by the RESTORE command.

#### 2. VSAM EXPORT/IMPORT Command

For a user catalog which is exported by an EXPORT DISCONNECT command, the master catalog's pointer to it is removed. When it is subsequently imported by an IMPORT CONNECT command, a pointer to it is created in the new system's master catalog.

For a VSAM file, the EXPORT command extracts user catalog information and produces a portable copy of the file that is to be moved. The IMPORT commands loads a portable file and its catalog information in the receiving system.

The EXPORT/IMPORT commands cannot be used to move a master catalog, a non-VSAM file, a data space, or a path, or to provide a backup copy of a catalog.

You cannot export an empty cluster or alternate index.



### 3. VSAM REPRO Command

The REPRO command converts a VSAM file to an intermediate sequential file and vice versa. This means that the target VSAM cluster must be defined before copying the data from an intermediate sequential file to it.

### 4. DITTO

DITTO can also be used to make a backup copy of a VSAM file to an intermediate sequential file. It also requires a predefined VSAM cluster.

If no user VSAM object exists in DOSRES and SYSWK1, nor is owned directly by the master catalog or by VSESPUC, the migration is simple. You EXPORT DISCONNECT the owning user catalog from VSESPUC or IJSYSCT, and after re-installation, IMPORT CONNECT it to the newly defined VSESPUC or IJSYSCT.

If the objects are owned by VSESPUC or by IJSYSCT directly, then they must be backed up using VSAM BACKUP/RESTORE. They can then be restored on the new system.

If a media change is required, then BACKUP/RESTORE must be used.

Always use VSAM BACKUP/RESTORE if possible, as it backs up both, the object concerned and its catalog entry thus allowing an implicit define. User catalogs and the space they own must be explicitly defined. So jobs to back up/restore should be prepared in advance and placed on the POWER queue, so that they can be transferred by POFFLOAD.

If a media change is needed, then make sure that you have sufficient tapes or cartridges to hold your backup data. Empty objects should be migrated as well.



---

## Chapter 4. Migrating CICS and VTAM Definitions

Migrating is always a different task for each installation as each customer environment is unique. No single method, therefore, can be rigidly applied to every migration.

This chapter assumes that you have done the initial migration. This could have been done either via FSU, or by using a new base installation.

Below, we describe how to migrate CICS tables (PPT, PCT, TCT) and VTAM definitions from previous VSE versions to VSE/ESA 2.1. The VSE/CICS distributed with the VSE/ESA 2.1 is the product number 5686-026 Version 2 Release 3 and the VTAM is the product number 5686-065 Version 4 Release 2.

---

### 4.1 Migrating CICS

#### 4.1.1 General Information

CICS/VSE 2.3 is expected to be the last release of CICS/VSE Version 2. It is planned as a migration platform in that it provides a bridge between the application programming interface and system programming interface of CICS/VSE Version 2 and CICS/ESA.

This is the last release of CICS/VSE Version 2 to provide support for some features. You are advised to note these discontinuations if migration to future releases is a possibility.

- The macro-level programming interface

Future versions of CICS/VSE will support the command-level programming interface only. All macro-level application programs must be converted to command level if they are to run on future versions.

- Direct access to CICS control blocks

Direct access to major internal CICS control blocks such as the CSA and the TCA will not be allowed in future versions of CICS/VSE.

- CICS internal security

Future versions of CICS/VSE will no longer use CICS internal security, but a basic external security manager (ESM) will be provided as part of the base operating system to support signon and transaction attach security. A fully functional ESM will be available from a vendor. You will need to consider the implications of this change, and plan to migrate your security data to an ESM.

- BTAM terminal support

The only telecommunications access method available will be VTAM, therefore you will need to migrate your BTAM networks to VTAM.

- Resource definition using PPT, PCT, and TCT for VTAM table macros

The removal of the table generation macro facility for defining PPT, PCT, and TCT VTAM resources will mean that the use of a CSD will become mandatory. The PCT, PPT, and TCT table macros will be retained for the sole purpose of migrating existing PCT, PPT, and TCT definitions to the CSD.

However, TCT macro support will be retained for non-VTAM devices such as sequential terminals, remote terminals, and logical device codes.

- DFHEICAL macro  
The DFHEICAL macro will not be supported in later versions.
- System generation  
System generation macros (DFHSG) will not be supported.
- System initialization overlays  
System initialization overlays will not be supported.
- System initialization parameters  
There will be changes to the system initialization parameters.
- User exits and user replaceable modules  
There will be changes to the user exits and user replaceable modules.

#### 4.1.1.1 CICS/VSE and VSE/ICCF

This list provides an overview of CICS/VSE and VSE/ICCF interaction, operation and partition layout:

- VSE/ICCF runs as a subtask system under CICS/VSE.
- VSE/ICCF resides below 16MB and is loaded and initialized during CICS/VSE startup in the partition GETVIS area.
- VSE/ICCF including the VSE/ICCF interactive partitions, requires about 3MB of virtual storage. As shipped, this value is added to the GETVIS space below 16MB reserved for the CICS/VSE partition (size value).
- During CICS/VSE startup VSE/ICCF is initialized via the initialization program DTSPSTI. To restart VSE/ICCF during production, transaction I\$ST is available. This may be necessary to implement VSE/ICCF configuration changes done via the VSE/ICCF generation table. The name of the default generation table (DTSIGEN) has then to be specified as a parameter for transaction I\$ST.

The table DTSIGEN must be assembled and cataloged in a VSE/ICCF regeneration run as described under "Regenerating VSE/ICCF" in the manual *VSE/ESA Planning*.

VSE/ESA provides table DTSIGENM for generating larger interactive partitions, if needed.

- Together with CICS/VSE, VSE/ICCF can run in a dynamic partition.
- For VSE/ICCF shut down, the command /ICCFEND and transaction I\$SH are available.
- Instead of the VSE/ICCF commands /TC and /CICS, the attention routine command MSG must be used by the operator for communicating with CICS/VSE.

In a VSE/ESA system with several CICS/VSE subsystems **only one** can include VSE/ICCF.

#### 4.1.1.2 Interactive Interface Users

Since VSE/ESA 1.3, the Interactive Interface of VSE/ESA supports four to eight character user IDs. VSE/ICCF is still restricted to four character user IDs.

#### 4.1.1.3 VSE/ICCF DTSFILE

The VSE/ICCF DTSFILE includes the VSE/ICCF libraries (file ICCF.LIBRARY on SYSWK1). This file is allocated with approximately 40MB and defines 99 VSE/ESA libraries. These libraries are also referred to as *program development* libraries. Some libraries are reserved for VSE/ESA, the members that the VSE/ESA ships in these libraries take up approximately 20% of the space reserved for the DTSFILE.

With the skeleton SKICFFMT, you can *reformat* the DTSFILE to create more than 99 user ID records and up to 9999 libraries. This skeleton, which is a member of VSE/ICCF library 59, has the original values that VSE/ESA specifies for the file. The manual *VSE/ESA Administration* describes skeleton SKICFFMT in detail.

If necessary, you can extend the DTSFILE. You can do this by defining a larger extent on SYSWK1 or by defining extents on several volumes. For information on how to use the skeleton SKDTSEXT to extend the DTSFILE, refer to the *VSE/ESA Administration* manual.

### 4.1.2 Planning for the Second CICS Subsystem

#### 4.1.2.1 Virtual Storage Requirements

During initial installation you should select predefined environment A or B. The storage values required for the second CICS/VSE, which is assumed to run in partition F4, are:

**ALLOC F4=8512KB**  
**SIZE F4=6344KB**

Note that these are recommended minimum values. They may or may not be sufficient depending on your applications.

For the original partition values of predefined environments A and B, refer to manual *VSE/ESA Planning*, under topic "Static Partition Allocations for Predefined Environments".

If your system includes more than one CICS subsystem, you should increase the size of the VIO area by 128K for each additional subsystem.

#### 4.1.2.2 Disk Storage Requirements For System Files

While some system files are shared between the two CICS subsystems, others must be defined additionally for the second CICS.

The following files are shared with DBDCCICS, the primary CICS subsystem:

- VSE.CONTROL.FILE
- VSE.TEXT.REPSTORY.FILE
- VSE.MESSAGE.ROUTING.FILE
- CICS.CSD

The system files to be defined for the second CICS are shown in Table 5 on page 80, together with the disk space required. Initially, you should reserve the amount of space shown on Table 6 on page 81.

VSE/ESA provides skeleton SKPREPC2 to define the system files.

Adjust the storage values of the predefined environments by using either skeleton SKALLOCA or SKALLOCB. The SETPFIX value is set by the startup procedure provided (skeleton SKCICS2).

<i>Table 5. Files for a Second CICS</i>			
<b>File Name</b>	<b>IBM-Provided File Identifier</b>	<b>File Type</b>	<b>Remarks</b>
DFHRSD	CICS2.RSD	VSAM KSDS	See note 1
DFHNTRA	CICS2.TD.INTRA	VSAM ESDS	
DFHTEMP	CICS2.DFHTEMP	VSAM ESDS	
DFHSTM	CICS2.AUTO.STATS.A	VSAM SAM-ESDS	
DFHSTN	CICS2.AUTO.STATS.B	VSAM SAM-ESDS	
DFHDMPA	CICS2.DUMPA	VSAM ESDS	See note 2
DFHDMPB	CICS2.DUMPB	VSAM ESDS	See note 2
DFHAUXT	CICS2.AUXTRACE	VSAM ESDS	See note 2
MSGUSR	CICS2.MSGUSR	SAM	
IESPRB	CICS2.VSE.ONLINE.PROB.DET.FILE	VSAM KSDS	

**Notes:**

1. Data must be loaded into the file before you can use it.
2. The file is created dynamically when required. It is released again (on user request) when it is no longer needed.
3. Possibly, your second CICS subsystem needs system journal files (DFHJ0xx). Such a journal file may consist of one or, preferably, two extents. The size of a system journal file and of any CICS user journal file that you might want to use, is workload dependent. For guidance about journal file sizes, refer to the appropriate CICS/VSE documentation.

Add the size of the planned journal files to your estimated disk space requirements.

File Name	Number of FBA Blocks	IBM 3380 Tracks	IBM 3390 Tracks	IBM 9345 Tracks	Approx. Number of MB
VSAM Space	6,500	90	75	90	4.0
Non-VSAM Space	350	15	15	15	0.5
Journal Files	....	....	....	....	4.0

#### 4.1.2.3 Startup Considerations for a Dynamic Partition

The startup program DTRISTRTR processes and sets variables in CPUVARn (shipped as CPUVAR1) such as XSTATxx or XMODxx, only for static partitions. This means, it ignores these parameters if your second CICS runs in a dynamic partition. However, you can use the concept of controlling this via SETPARM variables in CPUVARn by coding your own CICS startup procedure.

#### 4.1.2.4 CICS Control Tables

For the second CICS subsystem, VSE/ESA includes a set of skeleton table definitions as listed in Table 7. In general, these predefined tables need not be modified. Minor changes are to be made to DFHSIT of the primary CICS (DBDCCICS) if the two CICS subsystems are to communicate with each other via MRO.

The skeleton table definitions for the second CICS are structured in a way similar to the table definitions for the primary CICS. They are shipped with VSE/ESA as members of VSE/ICCF library 59.

The autoinstall facility of CICS is to be used together with the TYPETERM and TERMINAL definitions. For more information about the autoinstall facility of CICS/VSE, refer to manual *VSE/ESA Networking Support*.

Control Table Shipped With VSE/ESA	Member Name in Library 59
Destination Control Table (DCT)	DFHDCTC2
File Control Table (FCT)	DFHFCTC2
Program Control Table (PCT)	DFHPCTC2
Processing Program Table (PPT)	DFHPPTC2
System Initialization Table (SIT)	DFHSITC2
Terminal Control Table (TCT)	DFHTCTC2
Program List Table (PLT)	DFHPLTP2,S2

For more details on how to perform the tasks to install a second CICS refer to 6.4, "Installation Tasks for a Second CICS/VSE" on page 117.

### 4.1.3 Migration Tasks

This section describes the tasks involved in migrating to CICS/VSE Version 2 Release 3. Migration is part of the VSE/ESA 2.1 installation. When you migrate to a new release of CICS, it is necessary to carry out the following tasks. Most of these tasks involve checking your existing programs to ensure that they will perform correctly in the changed CICS environment.

1. Check that all software components of your system that interface with CICS are compatible with CICS/VSE 2.3. (This does not apply to program products installed with CICS/VSE 2.3 as part of VSE/ESA 2.1, which are automatically installed at the correct level.)
2. Revise your existing system initialization table (SIT) entries and overrides.
3. Check the pregenerated modules and ensure that you have specified the correct suffixes in the SIT for suffixable modules.
4. Reassemble and link-edit the tables for use with the new version. CICS tables are source-compatible but not object-compatible.
5. Check that all necessary changes are made to your initialization job stream.
6. Create or upgrade your CICS system definition (CSD) file.
7. Think about using resource definition online (RDO) if not already done. It will be mandatory with any future version of CICS/VSE for all PCT and PPT resources, and all VTAM TCT resources.
8. Reassemble any customized CICS programs, for example, the program error program (PEP), node error program (NEP), and terminal error program (TEP).
9. Review your global user exit programs. Any changes needed depend on the function of the global user exit and the amount of CICS and system environment that is exploited.
10. Check your system initialization overlays. The use of parallel tasks at initialization can affect them.
11. Remove all references to the DFHEND macro from pre-2.3 user-replaceable modules before reassembling for CICS/VSE 2.3. (You may need to replace the DFHEND macro with an END DFHxxxNA end card.)

#### **4.1.3.1 Migration Considerations**

Following are some considerations about migration of:

- Application programs
- System initialization
- Resource definitions
- CICS system definition (CSD) file
- and about migration tools support.

#### **Application Programs**

CICS application programs that use the interfaces documented in the CICS/VSE publications should continue to run in the same way as they did in CICS/VSE 2.2. They do not need to be recompiled or reassembled. Any exceptions to this statement are documented in the appropriate CICS manuals.

- Macro-level programs

It is intended that future versions of CICS/VSE will be based on the CICS/ESA product. This means that, as for CICS/ESA, the macro-level programming interface will not be supported. If you are writing new applications, you are strongly recommended to write command-level programs.

- Command-level applications

Command-level code is source-compatible, and normally, object-compatible between CICS/VSE 2.2 and CICS/VSE 2.3, with minor exceptions.



Execution of an application program containing obsolete functions causes unpredictable results, and the possibility of an ASRA or ASRB abend.

There is no guarantee that every program translated or link-edited with the CICS/VSE 2.3 link-edit stub is able to run on an earlier version or release of CICS/VSE.

- Assembler Language

Although VSE/ESA 2.1 will provide only the High-level Assembler (HLASM), applications written for the previous Assembler will continue to run correctly. It is not necessary to reassemble existing applications.

- C/370

Existing C/370 application programs do not need to be retranslated and recompiled.

- RPG

The function available to RPG programmers is the same as that available in CICS/DOS 1.5. Existing RPG application programs do not need to be retranslated and recompiled.

- DOS/VS COBOL and VS COBOL II

CICS/VSE 2.3 introduces support for LE for VSE/ESA and the associated full 31-bit compiler and run-time library for COBOL. This means that your application programmers can write COBOL application programs in:

- DOS/VS COBOL
- VS COBOL II
- COBOL for LE for VSE/ESA

Since DOS/VS COBOL and VS COBOL II will not provide Year 2000 support you should consider migrating your applications to LE/VSE and COBOL/VSE.

- PL/I

CICS/VSE 2.3 introduces support for LE for VSE/ESA and the associated full 31-bit compiler and run-time library for PL/I. Your application programmers can write PL/I application programs in:

- DOS PL/I
- PL/I for LE for VSE/ESA

You should consider moving to the LE for VSE/ESA PL/I compiler to take advantage of the functions that it can offer. DOS PL/I will not provide Year 2000 support.

- CICS Internal Macros and Control Blocks

The major CICS control blocks are not modified by the new function in this release, except to allocate fields that have been previously reserved. There is no guarantee that CICS internal macros or control blocks are source or object compatible between releases.

### **System initialization**

There is no guarantee that the source of the system initialization table and its overrides are compatible between different releases of CICS. System programmers must review jobstreams and the DFHSIT macro, and make any necessary changes before migrating to the new release.

## Resource definitions

In general, changes that are made are as a result of removing redundant keywords, changing defaults to reflect user requirements, increasing the range of values, and introducing new keywords for new functions.

Resource definition tables defined using macros are, at most, source-compatible between releases so you must reassemble all CICS tables against the new release. Object compatibility is not supported.

System programmers are recommended to review the migration information in this book, in the *CICS Release Guide* and in the table definition prototypes in the *CICS/VSE Resource Definition (Macro)* manual, and make any necessary changes before reassembling tables against the new CICS macro libraries.

## CICS system definition (CSD) file

There is no change to the CSD format, and therefore no specific CSD migration step. It is necessary for you to run a CSD upgrade step. Upgrade files are provided with each release of CICS. If you are migrating from a release of CICS/VSE earlier than 2.2, you need to run the upgrade files in sequence. More information about these can be found in the *CICS/VSE System Definition and Operations Guide*.

The key migration task when you move to CICS/VSE 2.3 is updating (or creating) the CSD file with the DFHCSDUP utility program.

CICS supplies resource definition upgrades for each release. The new modules defining CICS resources for CICS/VSE 2.3 are:

- **DFHCU230** - general CICS/VSE definitions
- **DFHCU23F** - report controller definitions

## Migration tools support

The DFHMSCAN utility was first provided in CICS/VSE 2.1, and is still supported in CICS/VSE 2.3.

A VSE/ESA version of the CICS Application Migration Aid (CICS/AMA) is provided for use with CICS/VSE 2.3. It is available only as a service offering through an IBM representative.

- Internal security  
CICS/VSE Version 2 is the last version to support CICS internal security. So you will need to get an external security manager (ESM) for future versions.

- Migration of vendor programs

Because CICS/VSE 2.3 is a small increment over the existing CICS/VSE 2.2 product, there are few major migration issues for vendor products. No interfaces, whether the documented general-use programming interfaces, or those interfaces internal to CICS that are known to be used by vendors (such as the table manager macros), are altered or removed.

- BMS map sets and partition sets

Map DSECTs and objects are compatible between CICS/VSE 2.3 and CICS/VSE 2.2.

- Monitoring output

Programs that process CICS monitoring data, using the dictionary provided are object-compatible.

- Programmable interface to CEMT

The method of passing requests and receiving replies is unchanged in CICS/VSE 2.3. Provided the request does not use any abbreviations of commands, the same request can be invoked on new releases of CICS. The return codes for a new release of CICS are a superset of the return codes on earlier releases.

- System initialization overlays

System initialization overlays need to be reviewed for each new release of CICS, because the order of initialization might be changed. Even though there are no changes to the order of CICS initialization in CICS/VSE 2.3, the system initialization overlays are, at best, source compatible.

#### 4.1.3.2 Migrating Terminal Definitions into the CSD

Up to VSE/SP Version 4, the Interactive Interface dialogs created CICS Terminal Control Table (TCT) entries for your terminal definitions. The Interactive Interface dialogs of VSE/ESA 1.1 or higher, however, store for VTAM users the terminal definitions in the **CICS System Definitions File (CSD)**.

For BTAM-ES users the CICS terminal definitions still result in TCT entries.

A CICS/VSE terminal definition in the CSD consists of two parts:

- The type terminal definition (DEFINE TYPETERM).
- The terminal definition (DEFINE TERMINAL).

VSE/SP Version 4 supplied predefined CICS parameter tables. VSE/ESA 1.1 or higher, on the other hand, supplies CSD TYPETERM definitions.

**One** CICS parameter table has **two** corresponding CSD TYPETERM definitions. One is for SNA, the other is for non-SNA definitions. You can see the complete list of TYPETERM definitions in the IBM Manual *VSE/ESA Planning*, under the topic "VSE/ESA supplied CICS CSD TYPETERM Definitions", in chapter 4.

#### 4.1.3.3 User-defined and Modified Parameters

For user-defined and modified CICS parameter tables the VSE/ESA migration program defines new TYPETERM definitions (during the initial installation). These definitions are stored into a CSD group with the group name VSETYPE1. The group VSETYPE1 will exclusively be used by VSE/ESA.

The naming convention for user defined and modified CICS/VSE TYPETERM definitions, will be as follows:

- TYPETERM name **VSEIDxxx** for displays
- TYPETERM name **VSEPRxxx** for printers  
(with xxx=001 to 999)

This number is incremented by 1 for each new generated name.

If you have used, by any chance, the same TYPETERM names for your own TYPETERMs, you have to *manually* rename your TYPETERMs.

Do not reinitialize your CSD after performing an install or FSU. The install/FSU creates groups in the CSD that are not recreated by the CICS-supplied initialize/upgrade steps. If you wish to recreate your CSD ensure you create a copy beforehand. You can use DFHCSDUP to copy back any VSE-created groups that are required. See the manual *CICS/VSE System Definition and Operations Guide* under topic "Migrating the CICS system definition (CSD) file" for more information.

#### 4.1.3.4 Migrating Device Definitions

There are two ways to migrate device definitions:

##### Migrating with Interactive Interface

When you log on with the user ID POST and selected *migration* during initial installation, your hardware configurations are checked by the migration program. Depending on how many devices you had defined in your previous system, this step may take some time (more than 30 minutes). Do **not** interrupt this process after the message has been displayed:

INPUT ACCEPTED. PLEASE WAIT.

For devices that are no longer supported under VSE/ESA Version 2 you get an *Unidentified Device List* panel. In this panel, the unsupported device addresses are displayed with question marks. If you get this panel, you must delete the devices which show question marks. The following message also appears in the *Unidentified Device List* panel:

JOB HAS BEEN SUBMITTED AND FILED AS CSDMIGR

This job is stored in VSE/ICCF library 10.

For more information refer to manual *VSE/ESA Installation*.

To migrate your previously configured hardware, you must at least once enter the *Hardware Configuration* dialog. Select fast path 241 to get the *Unit Address List* panel. The system may display another unidentified device list for devices which are not uniquely displayed. You can define or delete them using the dialog. Once you press **PF5 (PROCESS)**, your hardware specifications are stored in the CSD.

##### Migrating TCTs into CSD without Interactive Interface

If you have self-defined and modified TCTs (Terminal Control Tables) which you want to migrate without using the Interactive Interface, you may use the MIGRATE command of the CICS/VSE DFHCSDUP utility.

##### However

It is recommended to use the migration process provided by the Interactive Interface.

If you nonetheless want to use the migrate command, you must realize that:

- Many changes have to be made manually, and
- There is no special VSE/ESA support for this type of migration.

If you have self-defined and modified CICS tables which you want to migrate without using the Interactive Interface, you should use the High Level Assembler to do that.

For compiling CICS/VSE tables the following statement must be used to call the High Level Assembler:

```
// EXEC ASMA90,SIZE=(ASMA90,64K),PARM=¢EXIT(LIBEXIT(EDECKXIT)),SIZE(MAXC
                                     -200K,ABOVE)¢
```

Note that the last character in the first line is the continuation character. This statement uses per default the ORDER E/A parameter which is required. Do **not** use ORDER A/E. Further details about the ORDER parameter are provided in the manual *VSE/ESA Guide to System Functions* under topic "High Level Assembler Considerations".

For more information on the DFHCSDUP utility, refer to the IBM manual *CICS/VSE Resource Definition (Online)*.

#### 4.1.3.5 Migration of Autoinstall Terminals

When migrating an autoinstall terminal definition, VSE/ESA assigns VSE51DEF as autoinstall model name. This is an artificial (dummy) name. It will later on cause the CICS/VSE exit program IESZATDX to select the actual model name by the same method as was used up to VSE/SP.

The specification of the **PRINT TO** parameter will no longer be ignored as was the case up to VSE/SP Version 4, rather it will be a normal part of the hardware configuration.

The **TERM ID** specification will be ignored when migrating an autoinstall terminal.

If you have to use predefined TERM IDs you may modify IESZATDX (library 59), to build the TERM ID by using the netname of the VTAM B-BOOK.

For detailed information about setting up a CICS/VSE system with VSE/ESA, see the manual *VSE/ESA Planning* and *CICS/VSE System Definition and Operations Guide*.

---

## 4.2 Migrating VTAM Definitions

### 4.2.1 General Information

VTAM Version 4 Release 2 for VSE is the first version with Advanced Peer to Peer Networking (APPN) support. There was no VTAM V4R1 for VM or VSE, but because this VTAM is on the same functional level as VTAM V4R2 for MVS it has been given the same release number. This numbering ensures consistency of functions for any release of VTAM for MVS, VM and VSE.

This product has "upward compatibility". This is the ability of VTAM V3R4 functions and user interfaces to work in VTAM V4R2. With the exception of the

function provided by the Open Systems Interconnect (OSI) Remote Programming Interface Feature, all VTAM V3R4 functions are included in VTAM V4R2.

VTAM V4R2 is available in three separate packages, offering different levels of function. Ordering VTAM V4R2 for VSE/ESA you can choose one of:

- VTAM Client/Server  
This option has basic APPN and subarea support. It cannot own an NCP.
- VTAM MultiDomain  
This option has all capabilities except for SNI, APPN Border node, APPN Central directory server and APPN search enhancements. This includes Dependent LU server and support for data compression (SW/HW).
- VTAM InterEnterprise.  
This option is the full function set.

It is important to stress that VTAM V4R2 retains all previous subarea functions. Therefore you can upgrade to VTAM V4R2 with minimal changes to your existing network definitions and later migrate parts of your network to APPN step by step at your own pace and convenience.

## 4.2.2 Migration Considerations

### 4.2.2.1 Phase ISTRACON Dropped

VTAM no longer includes phase **ISTRACON**. Its functions are now controlled by startup options. Skeleton SKVTMSAN is no longer required and has been removed. Refer to manual *VTAM Migration Guide for VSE* for further details.

### 4.2.2.2 VTAM Passwords

When you order VTAM, you have to specify one of these three functional packages. With the VSE/ESA distribution cartridge(s) or tapes, you receive a unique VTAM password customized for your site. For initial installation or FSU, VSE/ESA uses a predefined password and no action on your site is necessary. However, when initial installation is complete and you tailor your system, you must activate your own VTAM password by modifying skeleton SKVTAM stored in VSE/ICCF library 59. Proceed as follows:

- Copy the skeleton into your primary VSE/ICCF library.
- Use the copy of the skeleton to modify the VTAM password.
- Submit the skeleton for processing.

For further information refer to manual *VTAM Overview*, for further technical details refer to the manual *VTAM Network Implementation Guide*.

## 4.2.3 Preparing for Migration

In most VSE installations, VTAM is installed jointly with the rest of the operating system central functions and base products. Also VTAM is the networking option of choice and necessary to complete the VSE installations process. After finishing the installation process, by either method, you have a working and installed VTAM environment.

If you came from an FSU migration, you can start with the planning activities to migrate your network to APPN and exploit the new facilities of the new version.

If you came from a new version installation, you now have to tailor your existing environment to match the design of your network. To do this, follow the instructions you are going to find in this chapter (more information is provided in Chapter 6, “Hints and Tips” on page 111).

After you install VSE/ESA, the support for VTAM is already included in the IBM supplied supervisor **\$\$\$SUPX** (the only supplied supervisor in this version).

During the initial installation of VSE/ESA, you completed the basic hardware configuration after signing on the POST user ID. (This is used only once to complete the initial installation of VSE/ESA.) Later on, you can add, change or delete devices on your system at any time. You can use the *Configure Hardware* dialog to add or delete hardware addresses and specify the device characteristics. If it is necessary, you can make changes directly to the definitions created by the Interactive Interface and catalog the jobs so created also using the Interactive Interface.

Some of these devices defined are for VTAM, such as the following:

- Local SNA 3270
- Local non-SNA 3270
- Communications Controllers
  - 3705
  - 3720
  - 3725
  - 3745
- Token-Ring ports
- Channel-to-channel
- Integrated Communication Adapters(ICA)

VSE uses the information provided in the Interactive Interface to create the job to update the IPL procedure. The job is filed in your primary ICCF library, the definitions are filed in library 51 of ICCF.

Following are some definitions tables you should verify and, when necessary, tailor to your needs:

- VTAM startup options
- Configuration list
- Path definitions
- Application program major nodes
- USS tables
- Logon mode tables

#### **4.2.3.1 VTAM Startup Options**

Under the VSE/ESA the VTAM startup options are taken from several sources:

- VTAM defaults
- Values entered through the Interactive Interface dialog
- Values created by the system
- Values entered in a special member
- Values entered by the operator

### 4.2.3.2 Default ATCSTR00

The default startup options stored in member ACTSTR00.B of the PRD2.CONFIG sublibrary contain the following defaults for VTAM:

```
CATALOG ATCSTR00.B                REPLACE=YES
SSCPID=1,                          C
SSCPNAME=SSCP01,                   C
NETID=VIAM1,                        C
HOSTSA=1,                           C
HOSTPU=NODE01,                      C
MAXSUBA=255,                         C
CONFIG=00,                           C
NOPROMPT,                            C
IOINT=0,                              C
SGALIMIT=0,                          C
BSBUF=(28,,,1),                     C
CRPLBUF=(60,,,1),                   C
LFBUF=(70,,,11),                    C
IOBUF=(70,288,,,11),                C
LPBUF=(12,,,6),                     C
SFBUF=(20,,,20),                    C
SPBUF=(210,,,32),                   C
XDBUF=(6,,,1)
```

Figure 10. Default ATCSTR00.B in PRD2.CONFIG

If you want, for any reason, to change something in the ATCSTR00, to prevent problems during VTAM startup with your own definitions you should do the following:

- Prepare a different VTAM list for startup
- Change the VTAM startup so that you will be prompted for the list

This gives you the possibility in case of problems with your own definitions to start VTAM with the default list.

Go into Command mode (function 6) on the ICCF screen and punch the member ATCSSTR00.B from PRD2.CONFIG with the following command:

```
LIBRP PRD2.CONFIG ATCSTR00.B ATCSTR01
```

This will store the member ATCSTR00.B in your private library as ATCSTR01.

```
CATALOG ATCSTR00.B    <== Change to      REPLACE=YES
. . .                ATCSTR01                C
CONFIG=00,           <== Change to CONFIG=01    C
NOPROMPT,            <== Change to PROMPT        C
. . .
XDBUF=(6,,,1)
```

Figure 11. Changing the ATCSTR00



Edit the member and make the changes as outlined in the example.

Catalog the member as ATCSTR01 into PRD2.CONFIG.

After these changes VTAM will prompt you during startup as to which VTAMLIST you want to use. You have to reply with:

**LIST=xx**

where **xx** is the suffix of ATCSTR desired.

#### **4.2.3.3 Values Entered Through the Interactive Interface Dialog**

Through the *Maintain VTAM Startup Option* of ICCF Interactive Interface, you can change the following startup options:

- HOSTSA
- PROMPT
- NETID

Depending on your input the system will build the following three values:

- SSCPID
- SSCPNAME
- HOSTPU

These values are stored in ICCF sublibrary 51 in member ATCSTR00. Additionally, the dialog will create a job that will catalog this member in sublibrary PRD2.CONFIG. This job can be submitted automatically or stored in your primary ICCF library.

When changing the **HOSTSA**, you will be prompted for automatic renaming of VTAM resources. This renaming will change all your resource names, so be careful when you answer this prompt.

#### **4.2.3.4 Configuration List**

When starting up VTAM, you must tell VTAM what resources to start. This resource configuration list identifies to VTAM the list of major nodes to be activated automatically during the initialization.

These major nodes are the names of the .B books in the PRD2.CONFIG sublibrary that contains the system and user provided definitions for the VTAM resource.

The default configuration list is stored in the PRD2.CONFIG sublibrary as ATCCON00.B.

```

CATALOG ATCCON00.B      EOD=YY      REPLACE=YES
      VIMAPPL,          C
      VIMSNA,          C
      VIMSNSNA,        C
      VIMCTCA,         C
      VIMPATH,         C
      VIMCAL,          C
      VIMCA2,          C
      VIMCA3,          C
      VIMCDRM,         C
      VIMCDRS,         C
      VIMSWL
YY
/*

```

Figure 12. Default VTAM Configuration List

When you add your own major nodes, you have to copy the source book to your primary library, make your changes and re-catalog it with a different name, to preserve the original copy in your library.

By default, VTAM searches the ATCCON00.B configuration list. If you changed the CONFIG=00 to CONFIG=01 in your startup options list ATCSTRxx, then you would have to define a source book with the name **ATCCON01** which VTAM would search first.

The activation of the major nodes, is always in the sequence in which they are listed in the ATCCONxx file. So be careful to put those major nodes that give services to other major nodes first in the list.

To get the book ATCCON00.B from PRD2.CONFIG go into Command mode (function 6) on the ICCF screen and enter the following command:

```
LIBRP PRD2.CONFIG ATCCON00.B ATCCON01
```

This will store the member ATCCON00.B in your primary library as ATCCON01.

Edit the member ATCCON01 and add your own definitions from your previous VTAM. Catalog the member as ATCCON01.B.

```

CATALOG ATCCON01.B          EOD=YY          REPLACE=YES
    VIMAPPL,                C
    VIMSNA,                 C
    VIMNSNA,                C
    VIMCTCA,                C
    VIMPATH,                C
    VIMCA1,                 C
    VIMCA2,                 C
    VIMCA3,                 C
    VIMCDRM,                C
    VIMCDRS,                C
    VIMSWL,                 C
    XXXXXXXX                <== New major node
YY
/*

```

Figure 13. ATCCON01 with User Modified Major Nodes

During VTAM startup you will be prompted for the list.

To test your own definitions start with:

**LIST=01**

To use the system provided definition start with:

**LIST=00**

#### 4.2.3.5 PATH Definitions

Communication between two addressable nodes, for example, VTAM and NCP, takes place via a path called a route. You must define one or more routes whenever your system has at least two subareas.

These routes are defined through the PATH macro, which defines the physical route called Explicit Route (ER), and the associated logical route called Virtual Route (VR).

An example of a PATH table definition is in Figure 14.

```

*****
*   PATH33 FOR VSE/ESA 2.1 SA=33 to SA=10
*****
    PATH DESTSA=10,                C
    ER0=(10,1),ER1=(10,1),ER2=(10,1),ER3=(10,1),      C
    ER4=(10,1),ER5=(10,1),ER6=(10,1),ER7=(10,1),      C
    VR0=0,VR1=1,VR2=2,VR3=3,VR4=4,VR5=5,VR6=6,VR7=7

```

Figure 14. PATH Definition Table

#### 4.2.3.6 Application Major Node

All application programs that need the services of VTAM must be defined for VTAM in an application major node through the APPL statement.

VSE/ESA provides a default definition which is stored as member VTMAPPL.B in the PRD2.CONFIG sublibrary. Figure 15 shows a sample job to catalog the VTMAPPL.B member in the PRD2.CONFIG, after saving the old copy as VTMAPPL.SAVE.

```
* $$ JOB JNM=CATAPPL,DISP=D,PRI=3, C
* $$ NOTIFY=YES, C
* $$ LDEST=*, C
* $$ CLASS=0
// JOB CATAPPL CATALOG VTAM APPLICATION MAJOR NODE
// EXEC LIBR,PARM=CM SHP C
ACCESS SUBLIB=PRD2.CONFIG
DELETE VTMAPPL.SAVE
RENAME VTMAPPL.B:VTMAPPL.SAVE
CATALOG VTMAPPL.B REPLACE=YES
VTMAPPL VBUILD TYPE=APPL
DBDCICS APPL AUTH=(PASS,ACQ),MODETAB=IESINCLM,PARSESS=YES
PRODCICS APPL AUTH=(PASS,ACQ),MODETAB=IESINCLM,PARSESS=YES
POWER APPL AUTH=(ACQ)
PNET APPL AUTH=(PASS,ACQ0,VPACING=3,MODETAB=VIMLOFTB,DLOGMOD=PNET
IESWAITT APPL AUTH=(NOACQ)
/+
/*
/&
* $$ EOJ
```

Figure 15. VTAM Application Major Node

The *Maintain VTAM Application Names* dialog of the ICCF Interactive Interface helps you to define the following application types:

- CICS/VSE
- VSE/POWER RJE
- VSE/POWER PNET
- Print Support Facility (PSF)
- VSE/OFFICE
- Self-defined

For more information refer to the list of related publications in Appendix C, "Related Publications" on page 131.

---

## Chapter 5. Operational Changes

To support the new facilities VSE/ESA has operational changes in many areas. These changes imply new commands, statements, parameters and options, or changes to them.

The purpose of this chapter is to describe the operational changes related to:

- Supervisor and IPL Commands
- Attention Routines Commands
- Job Control Commands/Statements
- VSE/POWER Commands and JECL
- Linkage Editor Commands
- Librarian Commands
- ICCF Commands
- VM/VSE Linkage Functions
- VSE/OCCF Considerations
- Dropped Support
- Interactive Trace Program

---

### 5.1 Supervisor and IPL Commands

Operational changes in the Supervisor and IPL commands:

<i>Table 8. Supervisor and IPL Commands</i>	
<b>Command</b>	<b>Remarks</b>
Supervisor Parameters	VSIZE increased, NOPDS new
ADD	CONS changed
DPD	changed
DLA	changed
DLF	changed
IPL Load Parameter	changed
SYS	PASIZE changed, ATL new

**Note:** Since the supervisor mode used with VSE/ESA 2.1 is always ESA, the MODE option for the supervisor generation has been removed.

#### 5.1.1 Supervisor Parameters

The default value of **VSIZE** has been increased to reflect larger FSU storage requirements in an ESA environment. A new parameter is added to this command for requesting a system without a page data set. In that case VSIZE must be omitted.

```
cuu[,sup-name]
...
[,{NOPDS|VSIZE={nM|mG}}]
```

## **NOPDS**

Specifies that the system is to operate without a page data set. If the parameter is omitted, the system will require a page data set.

## **VSIZE=nM|mG**

The VSIZE default value is 32M.

VSIZE may not be specified together with NOPDS. If a system operates without PDS, then it will calculate VSIZE from the size of the processor storage and the specified VIO value. If VSIZE and NOPDS are specified together, the command will be rejected, and has to be reissued.

### **5.1.2 Add Command**

The device identification for the integrated console must be supplied by an ADD command.

#### **Add cuu,CONS**

If the system console is an integrated console, then CONS informs the system, that this 'cuu' is to be used as device identification for the integrated console. Only one device of the type CONS may be added. This device number must not be defined in the IOCDs.

If a different console was specified in the IPL ASI procedure, the ADD command specification will override that of the supervisor parameters command. If a device with this number exists, the command will be rejected, and the system asks for a device specification not defined in the IOCPs. IPL will not continue processing before a dummy console has been ADDED.

**Note:** If the system console is not an integrated console, then the meaning of CONS is unchanged.

### **5.1.3 DPD Command**

The DPD command is invalid in an environment without a page data set (NOPDS option in supervisor parameters command), and will be rejected.

### **5.1.4 IPL Support for IBM 3390-9 - DLA, DLF and DPD Command**

In IPL, the IBM 3390-9 is supported as any other ECKD. However its larger capacity makes changes necessary to some IPL commands and messages. Parameters, that ask for the specification of a cylinder number, have to accept a five digit decimal number. These are:

- Define Label Area  
**DLA ....**  
    [,CYL=n]  
    [,NCYL=m]
- Define Lock File  
**DLF ....**  
    [,CYL=n]  
    [,NCYL=m]

- Define Page Data Set  
**DPD ....**  
**[,CYL=n]**  
**[,NCYL=m]**

#### **CYL=n**

The first cylinder "n" of the extent must be a decimal number with one to five digits. Its minimum value is CYL=1 for DLA and DLF, and CYL=0 for DPD. The maximum value depends on the device.

#### **NCYL=m**

The number of cylinders of the extent must be a decimal number with one to five digits. Its minimum value is NCYL=1. The maximum value depends on the device.

### **5.1.5 IPL Load Parameter**

The format and contents of the IPL load parameter has been changed to support the Integrated Console. The old format (IPLSTOP) is no longer supported. The new format is:

I S P P T x x x

The meaning of the load parameter positions is as follows:

- I Console type
  - If I, route messages to the integrated console
  - If L, route message to the local console
  - Default: L
- S IPL message suppression
  - Suppress all messages during IPL
  - Default: Display all messages
- P IPL prompting code
  - Print message 0I03D that prompts for IPL parameters
  - Default: Do not prompt
- P Startup Mode Prompting
  - Print messages IESI0214I and IESI0215A which prompt for the startup mode
  - Default: Do not prompt
- T Turbo Dispatcher Activation
  - Default: Activate standard dispatcher
- x Reserved fields

If you want the default values to be selected, specify either a blank or a period (.) at the according position.

You enter the parameters as follows:

- For VSE/ESA **native**,  
 in the load parameter field of the program load panel
- For VSE/ESA as **guest system** under VM,  
 in the IPL command after the LOADPARM keyword with dots at the empty positions.

## 5.1.6 SYS Command

The minimum value of **PASIZE** has been changed to support small environments, and a new parameter **ATL** has been introduced.

```
SYS ...  
  [,PASIZE=nM]  
  [,ATL=VM|VSE]
```

### **PASIZE=nM**

The minimum size of the private area - **PASIZE** - depends on either **VSIZE**, or in an environment without **PDS**, on the processor storage size. The private area must be large enough to hold the page manager tables. The minimum value accepted by the system is:

- **PASIZE=1M**, if **VSIZE** is smaller than 256M.
- **PASIZE=6M**, if **VSIZE** is 256M or larger.

In an environment without **PDS**, **VSIZE** has approximately the value of processor storage size minus **VIO** space.

### **ATL=VM|VSE**

The **ATL** (automatic tape library) parameter is required to activate the tape library support for the IBM 3494 during startup.

**VM** indicates that the automatic tape library is supported by **VM**. This is the default when the system is IPLed as a **VM** guest. The operand is invalid for native **VSE**.

**VSE** indicates that the automatic tape library is supported natively by **VSE**. This is the default when the system runs native. This operand is required when the system is IPLed as a **VM** guest, but the automatic tape library is supported by the **LCDD** (**VSE/ESA** IBM 3494 library control device driver).

---

## 5.2 Attention Routine Commands

**AR** commands are classified into three categories:

- Restricted commands that can be entered from system and master consoles only.
- Semi-restricted commands that can be entered from user consoles only for certain argument values. The most common case are partition related commands, that are accepted only when an **ECHO** option for the originating console is effective for the job currently running in the specified partition (**ECHO** scope). Another case are commands that are accepted from user consoles only in a 'query' form.
- Commands for general use that may be entered from any console.

The following table lists the new and changed commands.



<i>Table 9. Attention Routine Commands</i>		
<b>Command</b>	<b>Remarks</b>	<b>Categories</b>
* CP	New command	Restricted
CANCEL	New operand AR	Semi restricted
EXPLAIN	New command	Semi restricted
HCLOG	New command	Semi restricted
MSG	Support new OC exit option	Semi restricted
OFFLINE	New operand	Restricted
ONLINE	New operand	Restricted
OPERATE	New interpretation	Restricted
QUERY	New operands	General use
REDISPLAY	New options	Semi restricted
SYSECHO	New command	Semi restricted

In the following pages more details are given about each new/changed command.

### 5.2.1 \* CP Command

\* CP is a new Attention command, supported in a VM/VSE environment, that allows operators with MASTER authority to submit CP commands and to receive the related responses. It replaces the current support provided by the VM/VSE Interface Routines. The command has the following format (where *string* is any valid CP command):

\* **CP** *string*

Command responses are sent to the origin console, or CMS user.

### 5.2.2 CANCEL Command

A new operand **AR** is available in this command that causes the command that is currently processed by the Attention Routine to be terminated abnormally, regardless of the console that issued the command.

The command **CANCEL AR** requires master authorization.

### 5.2.3 EXPLAIN Command

This is a new command to activate (ON) or deactivate (OFF) the on-line display of message explanations and help text. This information is stored in the file VSE.MESSAGES.ONLINE on DOSRES. The command can be issued from the system or a master console, or it can be included in the startup procedure for the BG partition. After initial installation of VSE/ESA, the status is ON. This status is already set in the standard VSE/ESA 2.1 procedure S0JCL.

The format is:

**EXPLAIN ON|OFF**

## 5.2.4 HCLOG Command

HCLOG is a new Attention command, that allows to control the scope of messages logged on the HC File. The command has the following format:

**HCLOG [ALL|MASTER]**

### **ALL**

With the ALL option (on by default), all console traffic is logged (same as today), except for DOM requests and for redisplay commands and responses.

### **MASTER**

With the MASTER option, logging is limited to:

- messages that are routed to master consoles, or CMS users with MASTER authority
- all input from such consoles or CMS users
- command input from all consoles

with the same exceptions as for ALL.

If the command is entered without operand, the current setting of the logging option is displayed.

## 5.2.5 MSG Command

The MSG command transfers control to an operator communications (OC) routine for which linkage has been established with an STXIT macro. The command can also be used to pass data to the OC exit.

Depending on the new OC exit option MSGPARM=YES, command text, if any, is saved in system GETVIS storage (24- or 31-bit, depending on the OC exit AMODE option). If system GETVIS storage is not available, the message *1/31/ INSUFFICIENT SVA STORAGE* is generated. If the OC exit was defined with the MSGDATA option, and more than 64 bytes of input data are specified, the message *1/XXI INPUT DATA TOO LONG* is generated.

## 5.2.6 OFFLINE Command

The OFFLINE command is used to simulate a **device not ready** status for the specified device, path or channel path. This command is updated to allow the indication of the id of the channel path to be set offline. The command has the following new operand:

**CHPID=xx**

where xx is a hexadecimal number from 00 to FF.

## 5.2.7 ONLINE Command

The ONLINE command is used to simulate a **device ready** status for the specified device or for all devices that have been ADDED to the specified channel. This command is updated to enable the operator to force a device (cuu) or a channel path (CHPID=xx) in the operational state after it was placed in 'quiesced' mode, that is, set offline. The command has the following new operands:

**cuu,FORCE**

**CHPID=xx,FORCE**

where xx is a hexadecimal number from 00 to FF.

## 5.2.8 OPERATE Command

The OPERATE command is used to query or change the system operating mode and the state of the system console (SYSLOG). The format of this command is unchanged, but the resulting modes and states must be re-interpreted in terms of the new console capabilities offered by VSE/ESA 2.1.

Operating modes:

### **LOCAL**

The system console is assumed to be attended.

If SYSLOG is assigned to the Integrated Console, master console traffic is routed to it while no other master console is active. If NetView is the only active master console, message traffic is split between the Integrated Console and the NetView Console, in accordance with OCCF definitions. The Integrated Console cannot be disconnected via OPERATE DISC.

If SYSLOG is assigned to a local non-SNA terminal, message routing further depends on the state of the SYSLOG device, as follows.

### **CONNECTED**

The SYSLOG device receives all message traffic that is not routed to the NetView console, regardless of whether or not other master consoles are active.

### **DISCONNECTED**

The SYSLOG device becomes temporarily unavailable, as a result of an OPERATE DISC command and no messages are routed to it. If the Integrated Console is available, SYSLOG is implicitly assigned to it and messages traffic may be routed to it, as described above. If the Integrated Console is also unavailable, 'held' messages may remain pending until other master consoles are activated. The SYSLOG device returns to the CONNECTED state (the SYSLOG assignment is restored), as soon as the device generates an interrupt while not owned by any partition (that is, not assigned nor used by ACF/VTAM) and the console is activated again.

### **REMOTE**

The system console is assumed to be unattended (input from it is inhibited), and system operation is only possible via master or user consoles. Message routing to the system console follows the same rules as described for the LOCAL mode, except that messages requiring a reply cause the system to be re-IPLed automatically, or to enter a disable wait state, if no master console is active.

### **SELFACT**

The system is assumed to be completely unattended. Input from the system console is inhibited. All messages are routed to the system console, as described for the LOCAL mode in the case of no master console, whereby messages requiring a reply are suppressed by canceling the issuing task.

## 5.2.9 QUERY Command

The QUERY command can now also be used to display information on the standard options and multiprocessing. It is valid on **ESA hardware only**.

### STDOPT

STDOPT is a new operand of the QUERY command. It causes the current setting of all standard options to be displayed on the console.

### TD

TD is a new operand of the QUERY command. It will display the status information about multiprocessing such as CPU addresses, CPU status and accounting information.

## 5.2.10 REDISPLAY Command

The REDISPLAY command has been extended and replaces the former D command. It offers additional options such as filter functions for selectively retrieving messages stored on the hardcopy file. On a user console, only messages that were destined for this console can be redisplayed. On a master console, the message traffic of all consoles can be redisplayed.

A detailed description can be found in the manual *VSE/ESA System Control Statements*.

## 5.2.11 SYSECHO Command

This is a new command for the VM/ESA environment, allowing a VM user ID to operate as a VSE/ESA master console. The command has the following format:

**SYSECHO** [{**ON|OFF**}[,*userid*[,**ONLY**]]]

### ON|OFF

Specifies that master console routing to VM is to be activated (ON) or deactivated (OFF). When omitted, the current SYSECHO settings are displayed. The other command parameters are only applicable when ON is specified. When specified with OFF, an error response *110nl INVALID COMMAND* is generated.

### *userid*

Specifies the VM user ID of the virtual machine to which messages are to be routed. This parameter is required for the first SYSECHO command after the IPL. When omitted for subsequent SYSECHO commands, the current user ID remains in effect.

## ONLY

Specifies that other CMS consoles are not to be supported. When this is specified, it remains in effect until the system is IPLed again.

This command can only be used from a system or master console, or from the BG ASI procedure, and is rejected when the system was IPLed with the SYS option VMCF=NO.

---

## 5.3 Job Control Commands/Statements

Operational changes in the Job Control Statements/Commands:

Command	Remarks
CACHE	Changed operands
EXEC	New operands
EXTENT	Changed operand
LIBSERV	New command/statement
OPTION/STDOPT	New option
QUERY	Same as AR, also supported as JCC
SYSDEF	New operands
SYSECHO	Same as AR, also supported as JCC
VDISK	New operand

### 5.3.1 CACHE

For the support of the IBM 3990-6 the **CACHE SUBSYS/UNIT=cuu,STATUS** command has been extended to provide information about PINNED DATA, assuming that pinned data does exist for the specified subsystem. The number of bytes that are pinned in CACHE or in NVS will be provided. Other changes have been made to the possible answer of the **CACHE STATUS** command.

### 5.3.2 EXEC

The EXEC command has the new options TRACE, REXX, DSPACE and NPA.

**EXEC PGM=progrname,....TRACE**

This option will activate the interactive trace program for the user program named **progrname**. For details see 5.11, "Interactive Trace Program" on page 109.

**EXEC PGM=progrname,....DSPACE=nK|mM**

**DSPACE** specifies, for example for a VTAM application, the maximum size of a data space, where **n** or **m** must be greater than zero and **n** be a multiple of 4 (if not, the system rounds the value up to the higher 4K boundary). A data space cannot be larger than 2GB. Also, the values **n** and **m** are not validated against the DSPACE parameter values of the SYSDEF command.

**EXEC REXX=procname(,SIZE=size\_operand)(,PARM='value')(, parname=value)**

A new operand, named **REXX**, has been introduced for the job control EXEC statement/command to invoke REXX programs. *procname* indicates the name of a procedure in a sublibrary that is to be executed by REXX.

The **SIZE** operand specifies the size of the program area used by REXX to load the programs that do not run in the GETVIS area. In addition, 80K bytes are added for Job Control itself.

The REXX program requested for execution is accessed by job control but not executed. Job control passes the PARM value (if provided) to REXX and REXX retrieves and executes the procedure.

For a detailed syntax and operand description refer to the EXEC statement in the manual *VSE/ESA System Control Statements*.

**EXEC PGM=progname,....,NPA**

**EXEC REXX=procname,....,NPA**

The **NPA** operand specifies in a multiprocessing environment that the job or phase is to be executed in non-parallel mode. This operand is only valid for Format 1 and 3 of the EXEC statement.

### 5.3.3 EXTENT

The IBM 3390-6 is a device that supports more than 100,000 tracks. In the // *EXTENT* statement of JCL VSE/ESA 1.3.0 only a five digit relative-track-number and a five digit number-of-tracks are supported for CKD devices. This number is changed to six in order to support the high track capacity of the IBM 3390-9.

### 5.3.4 LIBSERV

The new command/statement is provided for specifying all information for mounting, maintaining, and detaching tape volumes on an IBM 3494 Tape Library Dataserver. These requests are routed either:

- via the Library Control Device Driver for VSE/ESA (LCDD) or
- via the VSE Guest Server (VGS) machine in VM

to the IBM 3494 Tape Library Dataserver. For details on native VSE support refer to the manual *IBM 3494 Tape Library Dataserver User's Guide: Library Control Device Driver for VSE/ESA*. The type of support is selected during IPL by means of the SYS ATL command.

Refer to manual *VSE/ESA System Control Statements* for a detailed description of the JCC, JCS and AR format of the command.

### 5.3.5 OPTION

The OPTION statement has a new option for locking library members:

**IGNLOCK** or **NOIGNLOCK**

This option IGNLOCK causes all possible locks to be ignored, whereas NOIGNLOCK suppresses the IGNLOCK option (default).

### 5.3.6 OPTION/STDOPT

A new option ACL has been introduced in the OPTION job control statement and in the STDOPT job control command/statement. This allows to activate or deactivate the ACL (Automatic Cartridge Loading) support introduced in VSE/ESA 1.2.0 in case of alternative assignments. The action is system wide if done via STDOPT and can be overwritten on JOB basis via the OPTION statement.

The format is:

```
// OPTION ...[ACL|NOACL]
[//] STDOPT ...[ACL=YES|NOL]
```

#### ACL or ACL=YES

specifies that in case of multi-volume files and ACL active on the actual device the access method will process all tapes on the actual device first, and then follow the alternate chain.

This is the default.

#### NOACL or ACL=NO

specifies that in case of multi-volume files, the access method will follow the alternate chain, independent of ACL active on the device or not.

### 5.3.7 QUERY

See description in 5.2.9, "QUERY Command" on page 102.

### 5.3.8 SYSDEF

The SYSDEF command has a new operand **TD** to start and stop CPUs and reset Turbo Dispatcher related information. The format is:

```
TD,START=ALL|cpuaddr
```

Initializes the multiprocessing environment and starts either all CPUs or the one CPU identified by *cpuaddr*

```
TD,STOP=ALL|cpuaddr
```

Stops either all additionally started CPUs (except the one from which IPL was performed) or the one CPU identified by *cpuaddr*

```
TD,RESETCNT
```

Resets all Turbo Dispatcher related information which is displayed when a QUERY TD command is given.

The SYSDEF command has a new operand **COMMAX** to define the maximum number of data spaces with SCOPE=COMMON which may exist at any one time. The format is:

```
COMMAX=k
```

where k must be in the range of 5 to 253 minus the number of virtual disks added at IPL time.

### 5.3.9 SYSECHO

See description on 5.2.11, "SYSECHO Command" on page 102.

### 5.3.10 VDISK

The VDISK statement or command can be used to define the layout of a virtual disk and to initialize it implicitly. With this command a new parameter is provided in VSE/VSE V2:

#### USAGE=DLA

USAGE=DLA specifies that the virtual disk being defined is to hold the label area. The system allocates space for the new (empty) label area starting after the VOL1 label of the virtual disk. The VTOC is located at the end of the virtual disk.

USAGE=DLA can only be used during ASI and if no other partitions except BG have been started. It is to be used before any DLBL statements are processed.

Up to 2880 blocks can be allocated for the label area.

---

## 5.4 VSE/POWER Commands and JECL

Operational changes in VSE/POWER Statements:

Command	Remarks
* \$\$ JOB	New operands

### 5.4.1 \* \$\$ JOB

The new options **ECHO** or **ECHOU** for the VSE/POWER \*\$\$ JOB statement allow a job to optionally specify whether job-related system console messages are to be routed to a given user console.

```
* $$ JOB
...
ECHO=({ALL|REPLY},user-id)
ECHOU=({ALL|REPLY},user-id)
```

where:

#### ALL

Indicates that all "eligible" messages are to be routed

#### REPLY

Indicates that only messages requiring a reply or action, plus the first and last job message, are to be routed.

*user-id*

Specifies the name of a VSE user ID or a CMS user ID to which messages generated by this job are to be routed.

When the ECHO option is specified for the submitted job, all messages related to the execution of that job are routed to the console of the ECHO user ID. If **no**



**VSE console** is active for that user ID, an attempt is made to route the messages to a CMS user with that user ID.

ECHO (without U) causes the messages **also** to be routed to all active master consoles. ECHOU requests that they are routed **only** to the named user ID.

Messages that were routed to a CMS user and need a reply can then be answered via VSECMD, provided the user is authorized to reply.

---

## 5.5 Linkage Editor Commands

### 5.5.1 ACTION Statement

To prevent indefinite loops in case of errors a new option is introduced that allows to define a user selectable error limit:

**ERRLMT(nnnn)**

where nnnn can be any decimal number from 1 to 9999. The default for nnnn is 256.

---

## 5.6 Librarian Commands

### 5.6.1 TEST TRACE Command

With the TEST TRACE=... command the specified range of LIBR modules give a message when they are called. With the new operands

**PARTition=xx|ALL** or  
**TASK=yy**

the trace can be restricted to a partition or a task.

---

## 5.7 ICCF Commands

### 5.7.1 /LOAD command

The /LOAD Job entry statement has a new operand NPA (Non-Parallel Application) to specify that in a multiprocessing environment the job or phase is to be executed in non-parallel mode.

The format is

**/LOAD .... NPA**

---

## 5.8 VM/VSE Linkage Functions

As in previous releases, a CMS user of VM can submit jobs to VSE/ESA guests through the **SUBVSE** interface routine. The **VSECMD** interface routine for operating VSE/ESA guests from VM has been generalized.

The interface routines VSEREP, VSECP, and VSEMSG are no longer available, since their functions are covered by VSECMD now.

### Changes to SUBVSE

The record length of the input file is restricted to a maximum of 80 characters. The FOR and ECHO arguments have been dropped, since this function is now supported as an option in the VSE/POWER \* \$\$ JOB statement (see 5.4, "VSE/POWER Commands and JECL" on page 106).

VSECMD allows CMS users to operate VSE/ESA guests and is the only way of submitting console input (command or reply) to a VSE/ESA guest, including redisplay commands for the Hardcopy file.

Details can be found in the manual *VSE/ESA Operation*.

---

## 5.9 VSE/OCCF Considerations

Except for the functions *message routing to NetView* and *unattended node support*, VSE/OCCF no longer requires a partition of its own. Instead, the MATAB (Message Action Table) and the MTTs (Message Translation Tables) for message translation and automation can now be loaded into the **system GETVIS area**. The tables are loaded above the 16MB line, if these modules have been linked with RMODE=ANY.

Existing MATABs and MTTs must be re-assembled with the High Level Assembler.

After installation of VSE/OCCF you have to perform the following steps to start VSE/OCCF functions:

1. Load the phases \$IJB0CCF and \$IJB0CFS into the SVA (via SET SDL).
2. Assemble MATAB and all related MTTs using the High Level Assembler and link them with RMODE=ANY.
3. Load MATAB and MTTs. You have two choices:
  - a. Loading an MATAB into system GETVIS space (or using an SVA-resident MATAB):

Use the new command:

#### **QSTART matab**

where matab is the phase name of a message action table.

QSTART loads the specified MATAB and all related MTTs into the system GETVIS area. This requires that these tables reside in IJSYSRS.SYSLIB.

As an alternative these phases can be loaded from any library into the SVA via the SET SDL command. After this has been done, processing of QSTART matab will use the MATAB and/or MTTs that already reside in the SVA.

The QSTART matab command can be included in the JCL startup procedure for the BG partition.

- b. Loading the MATAB into a partition:

If you want to use the functions *message routing to NetView* and *unattended node support* the MATAB must be loaded into a partition.

Use the command:

```
// EXEC matab
```

matab specifies the phase name of the MATAB.

The partition where matab is executed does no longer have to be a shared partition. For unattended node support the partition must be static.

Details can be found in the manuals *VSE/OCCF Reference* and *VSE/ESA Unattended Node Support*.

---

## 5.10 Dropped Support

In the new version of the VSE/ESA system the following support is dropped:

- **TRACE EXTERNAL (SDAID)**

TRACE EXTERNAL of SDAID will be dropped in VSE/ESA V2. That means you may not trace the external interrupt using TRACE EXTERNAL command of SDAID by defining:

- **KEY** (manual external interrupt key)
- **SIGNAL** (external signal 2-7, malfunction alert, emergency signal, external call)
- **TIMER** (interval timer, TOD clock sync check, clock comparator, CPU timer)

- **TRACE OUTPUT=IRB (SDAID)**

You may not use the TRACE OUTPUT=IRB command of SDAID to trace the interruption request block in VSE/ESA V2.

- **ADD S**

ADD S is not valid in VSE/ESA V2.

- **K** command

- **VSEMSG**

- **VSECP**

- **VSEREP**

The functions of VSECP, VSEMSG and VSEREP are now covered by the interface routine VSECMD.

---

## 5.11 Interactive Trace Program

The Interactive Trace Program is the tracing tool for VSE/ESA application programs. It traces the execution of programs running in static or dynamic user partitions. The interactive trace program is activated via the // EXEC statement and controlled interactively from the VSE/ESA master console or from a user console. It operates at the level of machine instructions and virtual storage addresses, similar to the CP debugging facilities in VM/ESA. The interactive trace program provides a branch trace, an instructions trace, a storage alteration trace and an ABEND trace.

The **branch trace** monitors branch instructions. The trace program displays all branch instructions which transfer control to an address which is contained in a

specified storage interval. That means that branches are only recorded if the branch target address points into the specified address range.

The **instruction trace** monitors the instructions executed within a specified storage area. Instructions are traced if the first byte of the instruction is contained in the specified storage area. The trace program displays also EXECUTE instructions if the first byte of the target of EXECUTION is within the designated storage area.

The **storage alteration trace** monitors storage alterations within a specified storage area. A storage alteration event occurs even if the value stored is the same as the original value. However, monitoring does not apply, if data is altered by a channel program or by system control programs.

The **ABEND ('abnormal end') trace** allows interactive debugging if a user program terminates abnormally. In case of an ABEND, the termination routines display the cancelation message on the screen and transfer control to the console operator. The operator can inspect storage data or register contents to determine the cause of the cancelation.

**Trace activation:**

```
// EXEC (PGM=)progname,TRACE
```

The parameter TRACE on the JCL EXEC statement activates the interactive trace program. The invoked trace function is active for the duration of one VSE job step.

The parameter TRACE implicitly defines an instruction trace and an ABEND trace. These trace definitions allow the console operator to get interactive control over the program to be traced. The instruction trace passes control to the console operator at the beginning of a user program, the ABEND trace allows debugging when a program ends abnormally.

The implicitly defined instruction trace traces all instructions executed within the partition. Trace boundaries are the partition begin and end address. The traced program stops after the first instruction has been executed. The trace program displays the first instruction on the screen and waits for an operator response. The operator may now use the implicitly defined instruction traces to step through all instructions of the program, or replace these instruction traces by the specific trace definitions TRACE, QUERY, DISPLAY, ALTER, GO.

With the command

```
TRACE END ALL|n
```

one or all traces specified for a partition may be deleted. The parameter 'n' addresses a trace statements by its trace identification (obtained via the QUERY command). The parameter ALL (default) deletes all traces specified for a partition.

---

## Chapter 6. Hints and Tips

---

### 6.1 Hints and Tips for FSU

#### Backups

The first important tip is:

**Have a *tested* backup of the system disks DOSRES and SYSWK1 available.**

You can create such a backup by using the VSE/Fast Copy program, as described in the manual *VSE/ESA System Utilities*. If you are a VM user, you can also use a DDR backup.

It may be useful to have a backup copy of the:

- VSE/ICCF DTSFILE and the libraries IJSYSRS and PRD1. Use the *Fast Service Upgrade* dialog to create these backups
- VSE/VSAM file CSD (CICS System Definition) file DFHCSD
- VSE/VSAM file VSE.TEXT.REPSTORY.FILE
- PRD2.GEN1 (if the generation feature is installed)

Other files, such as the VSE.MESSAGE.ONLINE VSE/VSAM file can be restored (if necessary) from the old installation tape. This is only possible if there are **no** messages from vendor programs in the online messages file; if you do, make a backup of this file.

If you have vendor programs in your system, you have to be careful about where they are and what backups these products will need.

#### Job Manager

The FSU dialog creates a job sequence which runs under control of the Job Manager (described in the manual *VSE/ESA Installation*). If problems occur when the Job Manager is active, a predefined abend job gets control.

**Be careful when canceling any jobs that the Job Manager manages.**

When the abend job gets control, you have three options:

**RESUME** The job that was running at the time of abnormal termination is restarted. If no job was running, the next job in the sequence runs. This is the recommended way to restart a job.

**RESET** It is recommended that you only use the RESET command in case of severe problems. Please make sure that you do not miss a job when using RESET. If you use RESET, another message asks you for the name of the job that should run next. This can be any job in the list. All jobs which follow the job that has been reset also will run. Job streams may be very complex. Whenever you change the Job Manager sequence you may run into problems.

**EXIT** Job Manager processing is stopped. The job that abended is flagged as incomplete. This gives you the possibility to analyze and fix the problem.

If problems occur and you cannot resume, delete the following jobs in the VSE/POWER reader queue before resubmitting the original job from the VSE/ICCF library:

- DTRSTFSU
- DTRCLFSU
- All jobs beginning with the prefix DTRFSU.

If you do not do this, the job manager may not work correctly at a later time.

To temporarily stop the FSU job sequence and exit from the Job Manager you have to proceed as follows:

- Enter **x EXIT** (where x is the reply ID).
- Fix whatever you have to repair.
- Enter **R RDR,DTRFSUAB** to release the FSU job again.
- Enter **x RESUME** (where x is the reply ID) to restart the processing.

For more information about the Job Manager, refer to 'Appendix A, Overview of the Job Manager', in the manual *VSE/ESA Installation*.

### **Optional Products/Tasks**

You cannot install the Generation Feature through a version upgrade if it was not installed before.

An FSU is not intended for optional programs. If you want to refresh your VSE optional programs, you must reinstall them (using a new release, version, or refresh).

### **IPL**

When performing an IPL in VSE/ESA 2.1 the sizes in the SVA command (in your IPL procedure) must be at least as follows (where you may add your own implementation values):

```
SVA PSIZE=(256K,2000K),SDL=300,GETVIS=(768K)
```

You must change these values in the IPL procedure before the IPL from SYSWK1 is performed (start of stage 2).

The *Tailor IPL Procedure* dialog, described in the manual *VSE/ESA Administration*, helps to change these values.

### **Notes:**

1. Do not IPL VSE/ESA 1.3 with this value.
2. Check that the VSIZE value in your IPL procedure has at least 20MB.

## Space requirements

The VSE/ESA library structure must be present. This means that the FSU is dependent on having IJSYSRS.SYSLIB, PRD1, PRD2.CONFIG and PRD2.SAVE present. If you have combined or renamed these libraries and sublibraries, the FSU job stream will not work without modification.

The FSU runs, per default, in the BG partition. It can run in any partition, as long as the partition leaves enough space for MSHP (at least 1024KB, plus 256KB partition GETVIS area).

In stage 2, the FSU defines a work file for the text repository file. The work file is defined in VSAM space.

You should make sure that your system has sufficient VSAM space on DOSRES (or on the disk device you have specified) for the definition of this work file. To check this:

- 1 Estimate the required space for the work file by looking at the space your current text repository file uses. Access the *File and Catalog Management* dialog, enter VSESPUC (or the catalog name you want to user) for CATALOG NAME, choose selection 1 and use option 1.
- 2 Check how much VSAM space is free on DOSRES (or on the disk device you have specified). Choose selection 5 of the *File and Catalog Management* dialog and user option 1. If there is not sufficient space left, use option 4 to define new space.

It will be necessary to have enough space available for the online message explanation file and for compression control data sets.

In stage 2, PRD1 and PRD2 will need more area also.

PRD1 needs about 60000 additional library blocks

PRD2 needs about 650 additional library blocks for the Generation Feature.

For detailed information on storage requirements refer to the manual *VSE/ESA Planning*.

## Problems during Stage 2

If job **DTRFSU22** fails, the DTSFILE has been changed already. In this case, you must restore the original DTSFILE to reset.

If job **DTRFSU23** fails, the following actions may help fix the problem:

- Define VSE/VSAM space for the master catalog and RESUME later.
- Restore the system sublibraries PRD1.BASE (and PRD1.MACLIB, if applicable) to reestablish the current level of VSE/ESA's base programs. Do not try to start up VTAM or CICS/VSE from DOSRES with the new level installed.

For the first point, it might be helpful to have a job prepared to define VSE/VSAM space similar to the one shown in the example:

```

* $$ JOB JNM=VSAMDEFS,CLASS=0,
* $$ LST CLASS=A,DISP=D
// JOB VSAMDEFS
// EXEC IDCAMS,SIZE=AUTO
  DEFINE SPACE ( TRACKS (1500) -
    ORIGIN (6810) -
    VOLUME (DOSRES)) -
    CATALOG(VSAM.MASTER.CATALOG)
/*
/&
* $$ EOJ

```

If job **DTRFSU4A** fails, proceed as described for job DTRFSU23.

If job **DTRFSU4B** fails, you may not have specified enough space for the online message file. In this case, you must define additional space for the VSE/VSAM master catalog (IJSYSCT) and proceed as described for job DTRFSU23.

If job **DTRFSU4C** fails, the text repository file may not have been loaded completely. You may have to define additional space for the VSE/VSAM user catalog VSESPUC. Check the job output and try to RESUME.

If job **DTRFSU4D** fails, check the output and try to RESUME.

If job **DTRFSU25** fails, you may reset to DTRFSU26 (in case the backup failed) or try to restore the DTSTFILE once more after analyzing and repairing the problem.

If job **DTRFSU26** fails, check the output and try to RESUME.

If job **DTRFSU27** fails, check the job output and try to RESUME. If any product information is missing in the work history file, analyze the problem and restart with stage 1 of FSU.

If job **DTRFSU28** fails, check the job output and try to RESUME. If only the basic startup of VTAM and CICS/VSE fails, perform an IPL from DOSRES. You may repair the basic startup later.

---

## 6.2 Hints and Tips for Installation

- When migrating the system during initial installation, you must prepare at least a backup tape of the VSE/ICCF DTSTFILE from your previous system with serial number **ICCF01** and a backup tape of the VSE control file with serial number **CF0001**.
- After installation is complete, you must check with each subsystem of your previous startup job streams. A **DSPACE** statement must be added in the EXEC.
- For CICS with or without ICCF, you cannot delete the DSPACE=2M if it is already there. If you have restored your previous startup job, then you must have the DSPACE=2M added in the EXEC DFHSIP statement.



```
// EXEC DFHSIP,SIZE=6344K,PARM=¢SIT=C2,START=COLD,$END¢,DSPACE=2M
```

OR

```
// EXEC DFHSIP,SIZE=6344K,PARM=¢SIT=C2,$END¢,DSPACE=2M
```

- The same applies to the VTAM startup job. You must not delete the DSPACE=2M if it is already in the job stream, otherwise, add it in the EXEC statement:

```
// EXEC ISTINCVT,SIZE=ISTINCVT,PARM=¢CUSTNO=C555-555-5555,VTAMPW=xxxx-x*  
xxx-xxx-xxx-xxx¢,DSPACE=2M
```

---

### 6.3 High Level Assembler

With VSE/ESA 2.1, the DOS/VSE Assembler has been replaced by the **High Level Assembler for VSE**. The implications and the characteristics of High Level Assembler are as follows:

- It is automatically installed into the system sublibrary PRD1.BASE during the initial installation.
- During startup, the High Level Assembler is automatically loaded into the SVA (31-bit) area through procedure \$0JCL via load list \$SVAASMA.
- The High Level Assembler has to be called with **// EXEC ASMA90**  
... not with // EXEC ASSEMBLY.
- The High Level Assembler cannot create E-Decks (as the DOS/VSE Assembler could) but can process existing E-Decks via a special library exit shipped as EDECKXIT. This is to support existing IBM or user programs that depend on E-Decks.
- The High Level Assembler requires more virtual storage; a minimum partition size of 1MB is recommended. Depending on the size of your programs much more virtual storage may be needed.
  - All work files are allocated in VSAM-managed space.
  - The work files IJSYS01 to IJSYS07 are for use by compilers. The size of IJSYS03 has been increased because of the High Level Assembler.
  - All work files are part of the System Standard Labels (STDLABUP.PROC)

For customers running assemblies in VSE/ICCF partitions, it is recommended to consider the use of dynamic partitions instead.

### 6.3.1 Environments with No Immediate Need for High Level Assembler

Customers who have no immediate need for advanced High Level Assembler functions (such as 31-bit addressing or data space support) do not need to change their job streams or compile procedures. VSE/ESA automatically converts a // EXEC ASSEMBLY statement into the following call for the High Level Assembler:

```
// EXEC ASMA90,SIZE=(ASMA90,64K),                                     C
      PARM=¢CPAT(SYSL),EX(LBX(EDECKXIT)),FOLD,OP(DOS),SZ(MAX)¢
```

The same statement is created when calling the High Level Assembler via ICCF.

The statement created invokes the High Level Assembler in a way as compatible with the former // EXEC ASSEMBLY call as possible. This is achieved mainly by the following parameters:

SIZE=(ASMA90,64K) and SZ(MAX)

Sets up the partition for the compile step in such a way that a maximum amount of storage will be available as GETVIS storage. This is achieved by reducing the program area of the partition to the possible minimum. The 64K are provided for the ESERV program which is called by EDECKXIT.

EX(LBX(EDECKXIT))

Activates a library exit which temporarily translates macros from E-Deck format back into source format (A-Books) via the ESERV utility program. This enables the High Level Assembler to process such macros.

OP(DOS)

Causes the High Level Assembler to understand only the instructions known to the old DOS/VSE Assembler. This is done in a way that customer macros which might have the same name as one of the new instructions are still expanded correctly.

Refer to the documentation of the High Level Assembler for a detailed and complete parameter description.

**Note:** Programs compiled in this way **cannot** exploit the full range of High Level Assembler capabilities.

### 6.3.2 Environments Making Full use of High Level Assembler

In order to make full use of High Level Assembler functions, job streams must call the High Level Assembler directly. In its simplest form the High Level Assembler can be called with:

```
// EXEC ASMA90,SIZE=ASMA90
```

If E-Decks are to be processed, the following statement is required:

```
// EXEC ASMA90,SIZE=(ASMA90,64K),PARM=CFEXIT(LIBEXIT(EDECKXIT))CF
```

It calls the High Level Assembler and enables the processing of E-Decks.

#### Further Information

For further details about E-Deck processing and the library exit, refer to the manual *VSE/ESA Guide to System Functions*.

For a detailed description of High Level Assembler functions and statements and how to use them, refer to the following manuals of the High Level Assembler:

*Programmer's Guide*  
*Language Reference*

---

## 6.4 Installation Tasks for a Second CICS/VSE

The tasks to be performed are described below. Follow the given sequence.

### 6.4.1 Task 1 - Modify Predefined Environment

The following is assumed:

- You selected predefined environment A or B for initial installation.
- Your second CICS is to run in partition F4.

This means that you can use skeleton SKALLOCA or SKALLOCB to change the allocation values as shown below and as needed by the second CICS:

```
ALLOC F4=8512KB  
SIZE F4=6344KB
```

**Note that these are recommended minimum values.** They may or may not be sufficient depending on your applications.

For the second, predefined CICS the same name of the startup procedure is CICS2, the name of the corresponding skeleton is SKCICS2. **Before** you edit the skeletons, copy them first from VSE/ICCF library 59 to your primary library.

For each additional CICS subsystem you have to increase the VIO size by 128K.

Increasing the partition size may also mean that you have to increase the VSIZE to meet your total system requirements. The default VSIZE is 40MB for predefined environment A and 120MB for predefined environment B. You can change the VIO and VSIZE values with the *Tailor IPL procedure* dialog. Refer to manual *VSE/ESA Administration* under topic "Tailoring the IPL Procedure".

**Note:** You may run a CICS subsystem in a **dynamic partition**. Predefined environments A and B support dynamic partitions. Choosing the Z-class partition with 5MB would mean, for example, that you have to extend it by about 3.5MB to host a second CICS. Note that the partition parameters and values for dynamic partitions are defined in the active dynamic class table. You can modify this table with the *Maintain Dynamic Partitions* dialog. For details refer to manual *VSE/ESA Administration* under topic "Defining Dynamic Class Tables".

Running your second CICS in a static partition other than F4 (or in a dynamic partition) requires changes in skeleton SKCICS2 and SKPREPC2. Affected are mainly statements which include partition-related information.

In VSE/ICCF library 59, VSE/ESA provides two skeletons (SKCICS3 and SKPREPC3) for running a CICS subsystem in a dynamic partition. Although identified for specific system purposes, you may use it as a sample to identify the modifications necessary for a dynamic partition.

**Note:** Before you submit skeletons SKCICS2 and SKPREPC2, first submit skeleton SKCOLD. It updates procedure COLDJOBS which loads jobs into the VSE/POWER reader queue that are important for a COLD startup.

## 6.4.2 Task 2 - Modify Skeletons Provided by VSE/ESA

Copy a skeleton first from VSE/ICCF library 59 to your primary library and modify the skeleton here. This ensures you have a backup version of the original skeleton available.

### Skeleton SKUSERBG

1. Locate the statement

```
* // PWR PRELEASE RDR,CICS2
```

2. Delete the asterisk and the blank in the first two columns.

When the modified procedure is processed during system startup, the statement causes the second CICS subsystem to be started.

### Skeletons SKCICS2 and SKPREPC2

SKCICS2 is the startup procedure for the second CICS subsystem. You can submit this skeleton unchanged if your second CICS subsystem is to run in partition F4. Else, change the highlighted specifications accordingly, as shown in Figure 16 on page 119.

SKPREPC2 defines the resources for a second CICS subsystem and catalogs the required label information.

For more details on how to modify these skeletons, refer to topic "Skeletons for a Second CICS/VSE" in the manual *VSE/ESA Administration*.

**Modify the skeletons *but do not submit them now.***

```

* $$ JOB JNM=CATCICS2,DISP=D,CLASS=0
// JOB CATCICS2                CATALOG CICS2 AND LDCICS2
// EXEC LIBR,PARM=¢MSHP¢
    ACCESS S=IJSYSRS.SYSLIB
    CATALOG CICS2.Z REPLACE=YES
$$$$ JOB JNM=CICS2,DISP=L,CLASS=4,EOJMSG=YES
$$$$ LST CLASS=A,DISP=D,RBS=100
// JOB CICS2                STARTUP OF SECOND CICS WITHOUT ICCF
// OPTION SADUMP=5
// LIBDEF *,SEARCH=(PRD2.CONFIG,PRD1.BASED,PRD1.BASE,PRD2.PROD,          C
    PRD2.CICSR,PRD2.DBASE),PERM
// LIBDEF DUMP,CATALOG=SYSDUMP.F4
// SETPARM TPMODE=¢¢
// SETPARM XMODEF4=¢¢
// SETPARM XNCPU=¢¢
// EXEC PROC=$COMVAR,XNCPU
// EXEC DTRSETP,PARM=¢CPUVAR&XNCPU; ;SET XSTATF4=ACTIVE¢    **F4 ASSUMED
$$/*
// EXEC PROC=CPUVAR&XNCPU,TPMODE,XMOD1F4                    **F4 ASSUMED
// SETPFIX LIMIT=256K
LOG
// ID USER=FORSEC,PWD=YYYYYY
NOLOG
// EXEC PROC=DTRCICS2                LABELS FOR CICS FILES
*   WAITING FOR VTAM TO COME UP
// EXEC IESWAITT
// IF XMODEF4 = COLD THEN                **F4 ASSUMED
// GOTO COLD
// EXEC DFHSIP,SIZE=6344K,PARM=¢SIT=C2,$END¢,DSPACE=2M
$$/*
// GOTO END
/. COLD
// EXEC DFHSIP,SIZE=6344K,PARM=¢SIT=C2,START=COLD,$END¢,DSPACE=2M
$$/*
/. END
// EXEC DTRSETP,PARM=¢CPUVAR&XNCPU; ;SET XSTATF4=INACTIVE¢
$$/*
$$/&
$$$$ EOJ
/+
CATALOG  LDCICS2.PROC        REPLACE=YES DATA=YES
// EXEC DTRIINIT
    LOAD CICS2.Z
/*
/+
/*
* // EXEC PROC=LDCICS2        LOAD CICS2 INTO RDR QUEUE
/*
/&
* $$ EOJ

```

Figure 16. SKCICS2 Skeleton

### 6.4.3 Task 3 - Modify CICS/VSE Control Tables

The control tables that may need to be modified for the second CICS subsystem are the following (their source can be obtained from VSE/ICCF library 59):

System Initialization Table (DFHSITC2)

Destination Control Table (DFHDCTC2)

File Control Table (DFHFCTC2)

Program Control Table (DFHPCTC2)

Processing Program Table (DFHPPTC2)

The Terminal Control Table (DFHTCTCC), which is also shipped for the second CICS subsystem, can be used unchanged.

**System Initialization Table:** This table, shipped as member DFHSITC2, includes significant differences as follows:

- The table suffix is C2 with one exception. Affected operands are:  
DCT=C2      PPT=C2  
FCT=C2      SUFFIX=C2  
PCT=C2      TCT=CC
- The application name of the CICS subsystem:  
APPLID=PRODCICS
- The table activates the spool support of CICS  
SPOOL=(YES,A,B)
- The internal trace function is set to off  
TRACE=(800,OFF)
- The table activates CICS-to-CICS communication via MRO.  
GRPLIST=VSELST2  
IRCSTRT=YES  
ISC=YES  
SYSIDNT=CIC2

If **MRO communication is to be used**, modify table DFHSITSP for the primary CICS system as outlined below:

1. Add the entry:  
SYSIDNT=CIC1
2. Change the below listed entries as follows:  
IRCSTRT=YES  
ISC=YES
3. Change the operand TCT=SP to:  
TCT=CC

If **MRO communication is not to be used**, modify table DHFSITC2 as outlined below:

1. Change the below listed entries as follows:  
IRCSTRT=NO  
ISC=NO
2. Change the GRPLIST parameter's original setting from VSELST2 to:  
GRPLIST=VSELIST

**Destination Control Table:** This table is shipped as member DFHDCTC2. Any TYPE=SDSCI entries that you need in addition are to be added immediately behind the box labeled

LOCAL ENTRIES FOR TYPE=SDSCI SHOULD BE PLACED BELOW THIS BOX

**File Control Table:** This table is shipped as member DFHFCTC2. Any entries that you need in addition are to be added immediately behind the box labeled

LOCAL ENTRIES SHOULD BE PLACED BELOW THIS BOX

**Program Control Table:** This table is shipped as member DFHPCTC2. Any entries that you need in addition are to be added immediately behind the box labeled

LOCAL ENTRIES SHOULD BE PLACED BELOW THIS BOX

**Processing Program Table:** This table is shipped as member DFHPPTC2. Any entries that you need in addition are to be added immediately behind the box labeled

LOCAL ENTRIES SHOULD BE PLACED BELOW THIS BOX

**Terminal Control Table:** The second CICS subsystem support assumes that terminals are to be defined to it by way of the autoinstall function of CICS. The DFHTCTCC therefore includes only console-related entries.

**Note:** For the following tasks (4 and 5), it is assumed that the primary CICS subsystem (DCDCCICS) is up and running.

For more information about how to modify these tables, refer to manual *VSE/ESA Administration* under topic "Modify CICS/VSE Control Tables" or manual *CICS/VSE Resource Definition (Macros)*.

#### 6.4.4 Task 4 - Submit the Modified Skeletons

After having modified the skeletons SKCICS2 and SKPREPC2, submit the skeletons from the FULIST of your primary VSE/ICCF library. Ensure to submit them in the sequence as shown:

1. SKCICS2 - use option 7.

Before you submit the next skeleton, close the Message Routing file. If you define the Workstation File transfer support for your second CICS, close also the Host Transfer File. Use the CICS commands:

```
CEMT SET DATASET(IESROUT) CLOSE  
CEMT SET DATASET(INWFILE) CLOSE
```

2. SKPREPC2 - use option 7.
3. The two CICS control tables that you modified or coded - use option 7.
4. When processing of these skeletons is complete, reopen the files that you closed with:

```
CEMT SET DATASET(IESROUT) OPEN ENA  
CEMT SET DATASET(INWFILE) OPEN ENA
```

There is no need for you to define any terminals to the second CICS. Also, the name of the second CICS (PRODCICS) is already defined to VTAM.

If **MRO communications is to be used**, however, you should assign unique CICS terminal IDs to the terminals of the second CICS.

To use unique CICS terminal IDs, you have to perform the following steps:

- In the *Hardware Configuration* dialog select option 3 for logical unit (further processing) for autoinstall terminals.
- If the entry for CICS TERM ID is displayed, use option 6 and delete the entry for TERM ID (CICS).

The TERM IDs (such as A001, A002 and so on) are used for the first and a second CICS.

To prevent the use of duplicated CICS TERM IDs for the second CICS, do the following:

- Access the autoinstall exec program IESZATDX in VSE/ICCF library 59.
- Locate the field PREFIX DC 'A'.
- Change the letter 'A' to any other (for example, 'B') which is to be used as a prefix for the CICS TERM ID.
- Select option 8 (compile) with the options (1=ONLINE PROGRAM, 4=ASSEMBLER,CATALOG=1).
- Ensure that this phase is being cataloged into a sublibrary unique to the second CICS.

#### 6.4.5 Task 5 - Definitions for MRO

For this task use the RDO (Resource Definition Online) function described in the manual *CICS/VSE Resource Definition (Online)*. This function is a convenient means for setting up a communication path to the primary CICS subsystem and for defining terminals.

##### Define CICS-to-CICS MRO communication

This requires the definition of a connection and an associated sessions definition for each of the two CICS subsystems.

For a **connection** definition, enter the RDO command

##### CEDA DEFINE CONNECTION

and provide specifications as listed below. Accept the defaults for the data-entry fields not listed here:

Panel Line	Specifications		Specifications		Comment
	DBDCCICS	Side	PRODCICS	Side	
Connection :	CIC2		CIC1		SYSID in DFHSITC2
Group :	VSEIRC1		VSEIRC2		
Netname :	PRODCICS		DBDCCICS		
Accessmethod:	IRc		IRc		
Protocol :					Must be blank
Autoconnect :	Yes		Yes		

For the associated **sessions** definition, enter the RDO command

##### CEDA DEFINE SESSIONS

Provide the specifications listed below to have 10 send and receive sessions. Accept the defaults for the data-entry lines not listed here.



Panel Line	Specifications		Specifications		Comment
	DBDCICCS	Side	PRODCICCS	Side	
Sessions	: CICS2		CICS1		arbitrary
Group	: VSEIRC1		VSEIRC2		
Connection	: CIC2		CIC1		SYSID in DFHSITC2
Protocol	: Lu61		Lu61		
RECEIVEPfx	: TR		PR		Must be blank
RECEIVECount:	010		010		
SENDPfx	: TS		PS		
SENDCount	: 010		010		
SENDSize	: 2048		2048		See note 1 below
RECEIVESize	: 2048		2048		See note 1 below
OPERRsl	: 0		0		See note 2 below
OPERSecurity:	1		1		See note 2 below
Autoconnect	: Yes		Yes		
INservice	: Yes		Yes		
RELreq	: Yes		Yes		
Discreq	: Yes		Yes		

**Notes:**

1. A general recommendation: certain CICS applications may require specific values to be specified. Check the applicable manuals.
2. This is the default: gives the terminal operator access to unprotected resources only.

**Define terminals**

Use the autoinstall function of CICS to define the terminals that are to be supported by your second CICS.

Enter RDO commands as follows:

```
CEDA APPEND LIST(VSELIST) TO (VSELST2)
CEDA ADD GROUP(VSEIRC2) LIST(VSELST2)
```

These two statements define a new CSD list, VSELST2, for the second CICS of your VSE/ESA system. Terminal definitions specified in group VSETERM1 are also copied into VSELST2. The statements cause all of list VSELIST to be copied into the new CSD list, and the new group VSEIRC2 (which you defined via CEDA DEFINE SESSIONS), to be added to the list.

```
CEDA ADD GROUP(VSEIRC1) LIST(VSELIST)
CEDA INSTALL GROUP(VSEIRC1)
```

The above statements add and install the new CSD group, VSEIRC1, which you had defined via CEDA DEFINE SESSIONS for your primary CICS.

After successful completion of the above procedure, the required definitions for your second CICS are complete. At the next startup of your VSE/ESA system, your second CICS will be available.

## 6.4.6 Optional Task: UPGRADE CSD

If you want to add any optional features, such as the report controller, you have to perform additional UPGRADE operations, as shown in the third column of following table. Further details are described in the *CICS/VSE System Definition and Operations Guide*.

Your current release	Sequence of UPGRADE commands	Optional features
CICS/DOS/VS 1.7	<ol style="list-style-type: none"> <li>1. UPGRADE USING(DFHCU210)</li> <li>2. UPGRADE USING(DFHCU21T)</li> <li>3. UPGRADE USING(DFHCU220)</li> <li>4. UPGRADE USING(DFHCU230)</li> </ol>	<ol style="list-style-type: none"> <li>1. ICCF UPGRADE USING (DFHCU22I) (DFHCU22I)</li> <li>2. Report Controller UPGRADE USING (DFHCU22F and DFHCU23F)</li> <li>3. Samples programs UPGRADE USING (DFHCU21S)</li> </ol>
CICS/VSE 2.1	<ol style="list-style-type: none"> <li>1. UPGRADE USING(DFHCU220)</li> <li>2. UPGRADE USING(DFHCU230)</li> </ol>	<ol style="list-style-type: none"> <li>1. ICCF UPGRADE USING (DFHCU22I)</li> <li>2. Report Controller UPGRADE USING (DFHCU22F and DFHCU23F)</li> <li>3. Sample programs No upgrades necessary</li> </ol>
CICS/VSE 2.2	<ol style="list-style-type: none"> <li>1. UPGRADE USING(DFHCU230)</li> </ol>	<ol style="list-style-type: none"> <li>1. Report Controller  UPGRADE USING (DFHCU23F)</li> <li>2. Sample programs:  No upgrades necessary</li> </ol>

**Note:** If you are upgrading your CSD from CICS/VSE 2.1, you might need to run an UPGRADE using DFHCU21S to add the VS COBOL II and C/370 sample program definitions. These programs were introduced in CICS/VSE 2.1, but RDO definitions for the programs were not available until CICS/VSE 2.2.

For further information about how to install the second, predefined CICS and the implementation steps required, refer to the manual *VSE/ESA Administration*.

---

## 6.5 VTAM Required Files

When VTAM 4.2 is installed in your system, whether during the VSE installation process or after a migration, VTAM resides together with the Central Function and other base products mostly in the PRD1.BASE system library.

In the VSE environment, there is another set of libraries for the ICCF Interactive environment that contains the basic definitions and setup of VTAM during the VSE/ESA installation process.

Following are the system and ICCF libraries where you can find VTAM modules and files.

### VTAM definition library members

The VSE sublibrary PRD2.CONFIG contains the **.B books** for the start options, list and network definitions and configurations files.

Libraries 51 and 59 of ICCF contain the JCL skeletons and initial startup definitions of VTAM which were created during the VSE installation process.

### VTAM phase library members

These are the executable programs of VTAM and reside in the PRD1.BASE sublibrary. Also in this library are the tables and exit routines. You can identify the VTAM phases in this library because they start with the **IST** prefix and their suffix is **PHASE**.

### VTAM object library members

These are the object code library of VTAM, to be used when you want to re-linkedit VTAM, exit routines, or tables.

These object modules also reside in the PRD1.BASE sublibrary. You can identify the VTAM object modules in this library because they start with the **IST** prefix and their suffix is **OBJ**.

### VTAM macro library members

Also residing in the PRD1.BASE sublibrary. You can identify the VTAM macro instruction definitions. These macros have a **.A** suffix, but you cannot easily identify them because there is not a standard prefix assigned.

### Libraries 51 and 59 of ICCF

Library 59 of ICCF contains some JCL skeletons, such as:

- JCL to load and catalog the VTAM STARTUP JCL.
- JCL to assemble and linkedit the MODETAB, USSTAB.

Library 51 of ICCF contains the initial startup definitions of VTAM, these files were created during the VSE installation process. Some of them are:

- ATCSTR00
- VTMMDL
- VTMSNA
- VTMNSNA

#### **VTAM sample definition tables**

Also residing in the PRD1.BASE sublibrary, are several VTAM and NCP definition and table samples. They have a **.Z** suffix.

Some samples are:

- COAPPN.Z
- GENDECK.Z
- ISTEXCSD.Z
- SAMP327L.Z

#### **VTAM phase library members**

These are the executable programs of VTAM and reside in the PRD1.BASE.

## Appendix A. Comparison Overview VSE/ESA 1.4 and VSE/ESA 2.1

<i>Table 13. VSE/ESA versus VSE/ESA 2.1 Functions</i>		
<b>VSE/ESA Functions</b>	<b>VSE/ESA V1.4</b>	<b>VSE/ESA V2.1</b>
<b>Processors</b> S/370 S/370-XA ESA/370 ESA/390 Native ESA n-way	yes yes yes yes -	- - yes yes yes
<b>Device Support</b> RAMAC 3990-6 Cache 3494 3490E C Ldr FlipFlop 3390-9 dialogues	yes yes yes - -	yes yes yes yes yes
<b>Languages</b> HL Assembler V1.2 Language Environment PL/I for VSE COBOL for VSE VisualGen	opt opt opt opt opt	base opt opt opt opt
<b>Business Applications</b> QMF V3 DFSORT/VSE V3	opt opt	opt opt
<b>Client/Server</b> VisualLift ADSM LANRES/VSE DWF DWF LU6.2 Workdesk VTAM V4 APPN	opt opt - opt - - -	opt opt base base yes yes yes
<b>Systems Management</b> REXX REXX JCL extensions FSU from VSE/ESA V1.3 FSU from VSE/ESA V1.4 CICS/VSE V2.3 DITTO productivity feature ALERT from Legent Simple base structure New console VSAM data compression VTAM V4 restructure VTAM V4 31-bit VTAM V4 data compression	opt - yes - base opt opt - - - - - -	base yes yes yes base base opt yes yes yes yes yes yes



---

## Appendix B. Special Notices

This publication is intended to help customer and IBM technical personnel to:

- Better understand the concepts and migration aspects from backlevel versions of VSE to VSE/ESA 2.1.
- Provide guidelines for the migration

The information in this publication is not intended as a specification of any programming interfaces that are provided by VSE/ESA 2.1. See the PUBLICATIONS section of the IBM Programming Announcement for VSE/ESA 2.1, program number 5690-VSE, for more information about what publications are considered to be product documentation.

References in this publication to IBM products, programs or services do not imply that IBM intends to make these available in all countries in which IBM operates. Any reference to an IBM product, program, or service is not intended to state or imply that only IBM's product, program, or service may be used. Any functionally equivalent program that does not infringe any of IBM's intellectual property rights may be used instead of the IBM product, program or service.

Information in this book was developed in conjunction with use of the equipment specified, and is limited in application to those specific hardware and software products and levels.

IBM may have patents or pending patent applications covering subject matter in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to the IBM Director of Licensing, IBM Corporation, 500 Columbus Avenue, Thornwood, NY 10594 USA.

The information contained in this document has not been submitted to any formal IBM test and is distributed AS IS. The information about non-IBM ("vendor") products in this manual has been supplied by the vendor and IBM assumes no responsibility for its accuracy or completeness. The use of this information or the implementation of any of these techniques is a customer responsibility and depends on the customer's ability to evaluate and integrate them into the customer's operational environment. While each item may have been reviewed by IBM for accuracy in a specific situation, there is no guarantee that the same or similar results will be obtained elsewhere. Customers attempting to adapt these techniques to their own environments do so at their own risk.

Any performance data contained in this document was determined in a controlled environment, and therefore, the results that may be obtained in other operating environments may vary significantly. Users of this document should verify the applicable data for their specific environment.

Reference to PTF numbers that have not been released through the normal distribution process does not imply general availability. The purpose of including these reference numbers is to alert IBM customers to specific information relative to the implementation of the PTF when it becomes available to each customer according to the normal IBM PTF distribution process.

The following terms are trademarks of the International Business Machines Corporation in the United States and/or other countries:

ACF/VTAM	Advanced Function Presentation
AFP	APPN
AS/400	C/370
CICS	CICS OS/2
CICS/ESA	CICS/VSE
DB2	DFSORT
DRDA	ECKD
ES/4381	ES/9000
ES/9370	ESA/370
ESA/390	ESCON
GDDM	IBM
IIN	ILE
IMS	Language Environment
MVS/ESA	NetView
OS/2	Pennant
Personal System/2	PSF
QMF	RAMAC
RISC System/6000	S/370
S/390	SP2
SQL/DS	System/370
System/390	VisualGen
VisualLift	VM/ESA
VSE/ESA	VTAM
XT	

The following terms are trademarks of other companies:

C-bus	Corollary, Inc.
DOS	Microsoft Corporation
HP	Hewlett-Packard Company
Microsoft	Microsoft Corporation
PC Direct	Ziff Communications Company (used by IBM Corporation under license)
UNIX	X/Open Company Limited (registered trademark in the United States and other countries)
Windows	Microsoft Corporation
Windows 95 logo	Microsoft Corporation



---

## Appendix C. Related Publications

The publications listed in this section are considered particularly suitable for a more detailed discussion of the topics covered in this redbook.

---

### C.1 International Technical Support Organization Publications

For information on ordering these ITSO publications see "How To Get ITSO Redbooks" on page 133.

A complete list of International Technical Support Organization publications, known as redbooks, with a brief description of each, may be found in:

*International Technical Support Organization Bibliography of Redbooks*, GG24-3070.

---

### C.2 Other Publications

These publications are also relevant as further information sources.

#### VSE/ESA Publications

- *Online Library, VSE Collection 09/95*, SK2T-0060
- *VSE/ESA Administration*, SC33-6605
- *VSE/ESA Diagnosis Tools*, SC33-6614
- *VSE/ESA DWF-User's Guide and Reference*, SC33-6538
- *VSE/ESA General Information*, GBOF-2300
- *VSE/ESA Guide for Solving Problems*, SC33-6610
- *VSE/ESA Guide to System Functions*, SC33-6611
- *VSE/ESA Installation*, SC33-6604
- *VSE/ESA Library Guide*, GC33-6619
- *VSE/ESA Master Index*, SC33-6620
- *VSE/ESA Messages and Codes*, SC33-6607
- *VSE/ESA Networking Support*, SC33-6608
- *VSE/ESA Operation*, SC33-6606
- *VSE/ESA Planning*, SC33-6603
- *VSE/ESA Programming and Workstation Guide*, SC33-6609
- *VSE/ESA Quick Reference*, GX33-9026
- *VSE/ESA Software Vendor Product Directory*, GC33-6525
- *VSE/ESA System Control Statements*, SC33-6613
- *VSE/ESA System Macros Reference*, SC33-6616
- *VSE/ESA System Macros User's Guide*, SC33-6615
- *VSE/ESA System Upgrade and Service*, SC33-6602
- *VSE/ESA System Utilities*, SC33-6617
- *VSE/ESA The Turbo Dispatcher*, SG24-4674
- *VSE/ESA Turbo Dispatcher Guide and Reference*, SC33-6599
- *VSE/ESA Unattended Node Support*, SC33-6612
- *VSE/ESA Using the VSE Workdesk*, SC33-6622
- *VSE/VSAM Commands and Macros*, SC33-6631

### VTAM Version 4 Publications

- *VTAM V4R2 Messages and Codes*, SC31-6493
- *VTAM V4R2 Migration Guide for VSE/ESA*, GC31-8072
- *VTAM V4R2 Network Implementation Guide*, SC31-6494
- *VTAM V4R2 Operation*, SC31-6495
- *VTAM V4R2 Overview for VM/ESA and VSE/ESA*, GC31-8114
- *VTAM V4R2 Release Guide for VSE/ESA*, GC31-8090
- *VTAM V4R2 Resource Definition Reference*, SC31-6498

### Other VSE/ESA related Publications

- *CICS/VSE 2.3 Resource Definition(Macro)*, SC33-0709
- *COBOL for VSE 1.1 Programming Guide*, SC26-8072
- *LANRES/VSE Guide and Reference*, SC33-6623
- *LE/VSE 1.1 Installation and Customization Guide*, SC26-8064

The following packages contain useful information relating to this document. The packages are available upon request from your IBM representative:

- *VE21PERF PACKAGE* - VSE/ESA 2.1 Performance Considerations  
A separate document about the performance aspects of the Turbo Dispatcher is included.
- *VE13PERF PACKAGE* - VSE/ESA 1.3 Performance Considerations
- *VSENEW11 PACKAGE* - VSE/ESA Newsletter, Third/Fourth Quarter 1995

The packages are stored on the IBM internal tools disk IBMVSE. IBM employees may obtain a copy of the packages by entering the following command from their local VM user IDs:

```
TOOLS SENDTO BOEVM3 VMTTOOLS IBMVSE GET xxxxxxxx PACKAGE
```

where xxxxxxxx is the name of the package.

The packages are also available on the Internet in the:

- FTP Server at [lscftp.kgn.ibm.com/pub/vse/docs](ftp.kgn.ibm.com/pub/vse/docs)
- VSE/ESA Home Page at [www.ibm.de/go/d00000166](http://www.ibm.de/go/d00000166)

The following packages are in zipped format that can be down loaded, unzipped, and printed on a Postscript-capable printer:

- *VE21PERF.ZIP* - VSE/ESA 2.1 Performance Considerations
- *VE21TDP.ZIP* - Performance Considerations for the VSE/ESA 2.1 Turbo Dispatcher
- *VE13PERF.ZIP* - VSE/ESA 1.3 Performance Considerations
- *VSENEW11.ZIP* - VSE/ESA Newsletter, Third/Fourth Quarter 1995

---

## How To Get ITSO Redbooks

This section explains how both customers and IBM employees can find out about ITSO redbooks, CD-ROMs, workshops, and residencies. A form for ordering books and CD-ROMs is also provided.

This information was current at the time of publication, but is continually subject to change. The latest information may be found at URL <http://www.redbooks.ibm.com/redbooks>.

---

## How IBM Employees Can Get ITSO Redbooks

Employees may request ITSO deliverables (redbooks, BookManager BOOKs, and CD-ROMs) and information about redbooks, workshops, and residencies in the following ways:

- **PUBORDER** — to order hardcopies in United States

- **GOPHER link to the Internet**

Type `GOPHER.WTSCPOK.ITSO.IBM.COM`

- **Tools disks**

To get LIST3820s of redbooks, type one of the following commands:

```
TOOLS SENDTO EHONE4 TOOLS2 REDPRINT GET SG24xxxx PACKAGE
TOOLS SENDTO CANVM2 TOOLS REDPRINT GET SG24xxxx PACKAGE (Canadian users only)
```

To get lists of redbooks:

```
TOOLS SENDTO WTSCPOK TOOLS REDBOOKS GET REDBOOKS CATALOG
TOOLS SENDTO USDIST MKTTOOLS MKTTOOLS GET ITSOCAT TXT
TOOLS SENDTO USDIST MKTTOOLS MKTTOOLS GET LISTSERV PACKAGE
```

To register for information on workshops, residencies, and redbooks:

```
TOOLS SENDTO WTSCPOK TOOLS ZDISK GET ITSOREGI 1996
```

For a list of product area specialists in the ITSO:

```
TOOLS SENDTO WTSCPOK TOOLS ZDISK GET ORGCARD PACKAGE
```

- **Redbooks Home Page on the World Wide Web**

<http://w3.itso.ibm.com/redbooks/redbooks.html>

- **IBM Direct Publications Catalog on the World Wide Web**

<http://www.elink.ibm.link.ibm.com/pbl/pbl>

IBM employees may obtain LIST3820s of redbooks from this page.

- **ITSO4USA category on INEWS**

- **Online** — send orders to:

USIB6FPL at IBMMAIL or DKIBMBSH at IBMMAIL

- **Internet Listserver**

With an Internet E-mail address, anyone can subscribe to an IBM Announcement Listserver. To initiate the service, send an E-mail note to [announce@webster.ibm.link.ibm.com](mailto:announce@webster.ibm.link.ibm.com) with the keyword `subscribe` in the body of the note (leave the subject line blank). A category form and detailed instructions will be sent to you.

---

## How Customers Can Get ITSO Redbooks

Customers may request ITSO deliverables (redbooks, BookManager BOOKs, and CD-ROMs) and information about redbooks, workshops, and residencies in the following ways:

- **Online Orders** (Do not send credit card information over the Internet)

**IBMMAIL** — send orders to:

In United States:	usib6fpl at ibmmail
In Canada:	caibmbkz at ibmmail
Outside North America:	bookshop at dkibmbsh at ibmmail

**Internet** — send orders to:

In United States:	usib6fpl@ibmmail.com
In Canada:	lmannix@vnet.ibm.com
Outside North America:	bookshop@dk.ibm.com

- **Telephone orders**

United States (toll free)	1-800-879-2755
Canada (toll free)	1-800-IBM-4YOU
Outside North America	(long distance charges apply)
(+45) 4810-1320 - Danish	(+45) 4810-1020 - German
(+45) 4810-1420 - Dutch	(+45) 4810-1620 - Italian
(+45) 4810-1540 - English	(+45) 4810-1270 - Norwegian
(+45) 4810-1670 - Finnish	(+45) 4810-1120 - Spanish
(+45) 4810-1220 - French	(+45) 4810-1170 - Swedish

- **Mail Orders** — send orders to:

IBM Publications Publications Customer Support P.O. Box 29554 Raleigh, NC 27626-0570 USA	IBM Publications 144-4th Avenue, S.W. Calgary, Alberta T2P 3N5 Canada	IBM Direct Services Sortemosevej 21 DK-3450 Allerød Denmark
--	--	--

- **Fax** — send orders to:

United States (toll free)	1-800-445-9269
Canada (toll free)	1-800-267-4455
Outside North America (long distance charge)	(+45) 48 14 2207

- **1-800-IBM-4FAX (United States) or (+1) 415 855 43 29 (Outside USA)**

Ask for:

- Index # 4421 Abstracts of new redbooks
- Index # 4422 IBM redbooks
- Index # 4420 Redbooks for last six months

- **Direct Services**

Send note to [softwareshop@vnet.ibm.com](mailto:softwareshop@vnet.ibm.com)

- **Redbooks Home Page on the World Wide Web**

<http://www.redbooks.ibm.com/redbooks>

- **IBM Direct Publications Catalog on the World Wide Web**

<http://www.elink.ibm.com/pbl/pbl>

- **Internet Listserver**

With an Internet E-mail address, anyone can subscribe to an IBM Announcement Listserver. To initiate the service, send an E-mail note to [announce@webster.ibm.com](mailto:announce@webster.ibm.com) with the keyword `subscribe` in the body of the note (leave the subject line blank).

---

## IBM Redbook Order Form

Please send me the following:

Title	Order Number	Quantity
-------	--------------	----------

---

---

---

---

---

---

---

---

---

---

---

- Please put me on the mailing list for updated versions of the IBM Redbook Catalog.
- 

First name \_\_\_\_\_ Last name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Postal code \_\_\_\_\_ Country \_\_\_\_\_

Telephone number \_\_\_\_\_ Telefax number \_\_\_\_\_ VAT number \_\_\_\_\_

- Invoice to customer number \_\_\_\_\_

- Credit card number \_\_\_\_\_

Credit card expiration date \_\_\_\_\_ Card issued to \_\_\_\_\_ Signature \_\_\_\_\_

**We accept American Express, Diners, Eurocard, Master Card, and Visa. Payment by credit card not available in all countries. Signature mandatory for credit card payment.**

**DO NOT SEND CREDIT CARD INFORMATION OVER THE INTERNET.**



---

## List of Abbreviations

<b>AOR</b>	Application Owning Region	<b>LPAR</b>	Logical Partition
<b>AR</b>	Attention Routine	<b>LSR</b>	Local Shared Resources
<b>CEC</b>	Central Electronic Complex	<b>LU</b>	Logical Unit
<b>CI</b>	Control Interval	<b>LUW</b>	Logical Unit of Work
<b>CMOS</b>	Complementary Metal Oxide Semiconductor	<b>min</b>	minute
<b>CMT</b>	CICS Maintained Data Table	<b>Min</b>	Minute
<b>CP</b>	Central Processor	<b>MRO</b>	Multiregion Operation
<b>CPU</b>	Central Processing Unit	<b>NPA</b>	Non-Parallel Application
<b>CTC</b>	Channel to Channel	<b>NPS</b>	Non-Parallel Share
<b>DIM</b>	Data In Memory	<b>NSR</b>	Non-Shared Resources
<b>DSA</b>	Dynamic Storage Area	<b>PSW</b>	Program Status Word
<b>ESDS</b>	Entry Sequenced Data Set	<b>RAMP-C</b>	Requirements Approach to Measuring Performance in COBOL
<b>FOR</b>	File Owning Region	<b>SD</b>	Standard Dispatcher
<b>FS</b>	Function Shipping	<b>SDAID</b>	System Debugging Aid
<b>IBM</b>	International Business Machines Corporation	<b>SVA</b>	Shared Virtual Area
<b>II</b>	Interactive Interface	<b>TD</b>	Turbo Dispatcher
<b>IPL</b>	Initial Program Load	<b>TOR</b>	Terminal Owning Region
<b>I/O</b>	Input/Output	<b>TPNS</b>	Teleprocessing Network Simulator
<b>ITSO</b>	International Technical Support Organization	<b>TR</b>	Transaction Routing
<b>JA</b>	Job Accounting	<b>UMT</b>	User Maintained Data Table
<b>KSDS</b>	Key Sequenced Data Set	<b>VRDS</b>	Variable-length Relative Record Data Set





---

# Index

## Special Characters

/LOAD command 107  
\* \$\$ JOB 106  
\* CP command 99

## Numerics

31-bit addressing 30  
3494 Tape Library Dataserver 28, 104  
3590 tape subsystem/control unit 33  
3990 Model 6 28, 103  
3990 Model 9 27, 96  
9336 Model 25 27

## A

Abbreviations 137  
ABEND trace 110  
ACF/NCP 21  
ACF/SSP 22  
ACTION statement 107  
ADDRESS JCL 7  
ADDRESS LINK 7  
ADDRESS LINKPGM 7  
address spaces 30  
ADStar Distributed Storage Manager 23  
application major node 94  
Application Migration Aid 14, 84  
APPN support 14, 87  
AR commands 98  
Assembler 15, 57, 83, 115  
Assembler parameters 116  
ATCSTR00 91  
autoinstall function 123  
autoinstall terminals 87  
automatic cartridge loader 28  
automatic installation 10, 64

## B

BACKUP/RESTORE command 74  
backups 111  
bibliography 131  
branch trace 109  
BTAM support 77

## C

C/370 83  
CACHE 103  
CANCEL AR command 99  
cartridge users FSUPREP 38  
cell pool services 9

CEMT 85  
CICS  
AMA 14, 84  
application programs 82  
BTAM support 77  
CEMT 85  
command-level programs 82  
control blocks 77, 83  
CSD file 50, 84, 85  
enhancements 14  
ICCF interaction 78  
internal security 77, 84  
macro-level interface 77, 82  
migrating 77  
migration tasks 81  
parameter tables 85  
resource definitions 84  
second system 79  
security migration tool 14  
system initialization 83  
workstation support 5  
CMS console 6  
COBOL 83  
COBOL/VSE 18  
configuration data 68  
console support 6  
CSD file 50, 84, 85, 124  
CSRCMPSC macro 5, 31  
customizing after FSU 55

## D

D command 102  
data compression  
CSRCMPSC macro 5, 31  
hardware 25  
VSAM 13, 32, 50  
VTAM 32  
Data in Memory 31  
data spaces 30  
DBLK size 13  
definition library members for VTAM 125  
device definitions 86  
DFHMSCAN utility 84  
DFSORT/VSE 21  
Distributed Workstation Feature 10, 31, 58  
DITTO 15, 75  
DL/I 21  
DPD command 96  
dropped support 109  
DSPACE 57, 103, 114  
DTSECTAB 56  
DTSFILE 42, 49, 51, 62, 68, 72, 79  
dynamic partitions 31

## E

E-Decks 117  
ECHO parameter 8  
Emulation Program 22  
environment 11, 36, 52, 65  
EXEC command 103  
EXPLAIN command 99  
EXPORT/IMPORT command 74  
EXTENT statement 104  
external routines file 51

## F

Fast Service Upgrade 11  
    cartridge users 38  
    customizing 55  
    hints and tips 111  
    installation 41  
    recatalog tables 56  
    security 47  
    space requirements 113  
    starting 37  
    steps 36  
    tape users 38  
    teleprocessing preparation 53  
functional comparison 127

## G

GDDM/VSE 24  
Generation Feature 42, 45, 49, 112

## H

hardcopy file 48  
hardware  
    CMPSC instruction 5, 31  
    data compression 5, 15, 25  
    new support 24  
    printers 29  
    processors 25  
    support removed 29  
    tables 70  
HCLOG command 100

## I

ICCF interaction with CICS 78  
ICCF library 72  
ICKDSF 16  
IESBLDUP 70  
IJSYSRS.SYSLIB 71  
installation with FSU 41  
installing VSE/ESA 2.1 59  
instruction trace 110  
integrated console 6, 96, 101  
interrupting IPL under VM 48

IPL load parameter 97  
IPWSEGM macro 12

## J

Job Manager 111

## L

Language Environment 14, 18, 33  
LANRES 10  
Librarian 9  
LIBSERV 104  
linkage stack 9

## M

macro library members for VTAM 125  
macro-level programming interface 77  
master console 6  
MATAB/MTT 108  
media change 61, 71, 75  
migration  
    application programs for CICS 82  
    autoinstall terminals 87  
    CICS 77  
    configuration data 68  
    data restrictions 62  
    device definitions 86  
    DFHMSCAN utility 84  
    hardcopies required 60  
    hardware tables 70  
    hints 114  
    media change 61, 71  
    optional products 72  
    user programs 73  
    utilities 70  
    via FSU 35  
    VTAM 87  
MRO communication 120  
MSG command 100

## N

naming conventions 69  
National Language Support 14  
NetWare 10  
NOPDS option 5, 96  
NPA operand 104

## O

object library members for VTAM 125  
OCCF 22, 108  
OFFLINE command 100  
ONLINE command 100  
OPERATE command 101  
operating modes 101

operational changes 95  
OPTION statement 104  
optional products 72

## P

PACCOUNT command 47, 71  
page data set 5  
PASIZE 98  
PATH macro 93  
phase library members for VTAM 125, 126  
PL/I 83  
PL/I VSE 18  
PNET transmission buffer 13  
POWER  
    DBLK size 13  
    direct queue entry access 12  
    DSPACE parameter 57  
    GCM service 12  
    own phase 43, 57  
    PACCOUNT command 71  
    PACCOUNT command for FSU 47  
    PNET transmission buffer 13  
    POFFLOAD command 71  
    POFFLOAD for FSU 47  
    queue browsing 13  
    queue files 71  
    segmentation interface 12  
    shared spooling 48, 71  
    user exits 12  
PRD2.CONFIG 71  
printer models 29  
PSF/VSE 23

## Q

QMF/VSE 20  
QSTART command 108  
QUERY command 102  
queue browsing 13

## R

RAMAC Array family 16, 26  
RDO function 122  
real storage 30  
recatalog procedures 56  
REDISPLAY command 102  
REPRO command 75  
REXX  
    calling IDCAMS 8  
    commands 7  
    console automation 8  
    interactive communication 8  
    REXXIPT external function 7  
RPG 83

## S

sample definition tables for VTAM 126  
SDAID 9  
second CICS system 79  
    connection definition 122  
    control tables 81, 120  
    CSD file 124  
    disk storage 79  
    dynamic partition 117  
    installation 117  
    MRO 120, 121, 122  
    session definition 122  
    skeletons 118  
    startup 81  
    terminal definition 123  
    VIO size 117  
    virtual storage 79  
security 56  
security migration tool 14  
SKCICS2 118  
space requirements 113  
SQL/DS 20  
startup jobs 57  
static partitions 31, 57  
STDOPT statement 105  
storage alteration trace 110  
SUBVSE 108  
supervisor 47  
supervisor mode 4, 59  
SVA command 36, 47, 112  
SYSDEF command 105  
SYSECHO command 102  
system console 6, 101  
system initialization 83  
system initialization overlays 85

## T

tape users FSUPREP 38  
teleprocessing preparation 53  
TEST TRACE command 107  
TRACE option 103  
trace program 9, 109  
Turbo Dispatcher 25, 32, 105  
TYPETERM definitions 85

## U

user console 6  
user programs 73

## V

VDISK 106  
vendor programs 84  
VIO size 117  
virtual disk 30

- virtual storage 30
- VisualGen 19
- VisualLift 19
- VSAM
  - BACKUP/RESTORE command 74
  - control file backup 63
  - data compression 13, 32, 50
  - enhancements 13
  - EXPORT/IMPORT command 74
  - IDCAMS and REXX 8
  - REPRO command 75
- VSE control file 63, 70, 72
- VSECMD interface 107
- VSIZE 48, 95, 117
- VTAM
  - application major node 94
  - APPN support 87
  - configuration list 91
  - data compression 15, 32
  - enhancements 14
  - major node 91
  - migration 87
  - passwords 88
  - PATH macro 93
  - required files 125
  - resource names 69
  - startup 57
  - startup options 89
  - table macros 77
- VTOC 64
- VTOC expansion 16

## **W**

- workdesk support 8
- workstation support 5

## **X**

- X.25 NPSI 22

## **Y**

- Year 2000 support 1, 32





Printed in U.S.A.

SG24-4773-00



**Artwork Definitions**

<u>id</u>	<u>File</u>	<u>Page</u>	<u>References</u>
ITLOGO	4773SU	i	i
ITLOGOS	4773SU	i	

**Table Definitions**

<u>id</u>	<u>File</u>	<u>Page</u>	<u>References</u>
COL1	4773VARS	i	
COL32	4773VARS	i	
COL5	4773VARS	i	
COL53X	4773VARS	i	
COL62	4773VARS	i	
COL62X	4773VARS	i	
COL62X1	4773VARS	i	
COL62X2	4773VARS	i	
COL62X3	4773VARS	i	
COL72	4773VARS	i	
COL92	4773VARS	i	
APPAC1H	4773CH1	29	29, 29
OTUC	4773CH6	124	124, 124
APPAT1H	4773AX1	127	127, 127, 127, 127, 127

**Figures**

<u>id</u>	<u>File</u>	<u>Page</u>	<u>References</u>
3390M9	4773CH1	27	1
PANEL	4773CH2	37	2
FSUPREP	4773CH2	38	3
FSUPRE1	4773CH2	39	4
PANEL1	4773CH2	42	5
VCFBKUP	4773CH3	64	6
CH3SP1	4773CH3	65	7
CH3FG10	4773CH3	68	8
CH3FG12	4773CH3	69	9
VTAMLST	4773CH4	93	13
PATH	4773CH4	93	14
MAJNO	4773CH4	94	15
CH6FG1	4773CH6	119	16
			61
			93
			94
			118

Headings			
----------	--	--	--

<u>id</u>	<u>File</u>	<u>Page</u>	<u>References</u>
CH1	4773CH1	1	Chapter 1, Why Migration xi
SWCOMP	4773CH1	5	1.4.2, Data Compression 25
ESA22	4773CH1	32	1.8, Highlights of VSE/ESA V2.2 2
CH2	4773CH2	35	Chapter 2, Migrating a VSE/ESA 1.3.X to VSE/ESA 2.1 Using FSU xi, 11
CH3	4773CH3	59	Chapter 3, Installing VSE/ESA 2.1 Through Initial Installation xi, 35
IESBLD	4773CH3	70	3.9, Migration Utilities 61, 61
CH4	4773CH4	77	Chapter 4, Migrating CICS and VTAM Definitions xi
VTAMPW	4773CH4	88	4.2.2.2, VTAM Passwords 70
CH5	4773CH5	95	Chapter 5, Operational Changes xi, 9
CH529	4773CH5	102	5.2.9, QUERY Command 105
CH5211	4773CH5	102	5.2.11, SYSECHO Command 106
POWER	4773CH5	106	5.4, VSE/POWER Commands and JECL 108
ITP	4773CH5	109	5.11, Interactive Trace Program 103
CH6	4773CH6	111	Chapter 6, Hints and Tips xi, 89
CH61	4773CH6	111	6.1, Hints and Tips for FSU 46, 49
CH64	4773CH6	117	6.4, Installation Tasks for a Second CICS/VSE 81
APPPA	4773AX1	127	Appendix A, Comparison Overview VSE/ESA 1.4 and VSE/ESA 2.1 xi
NOTICES	SG244773 SCRIPT	129	Appendix B, Special Notices ii
BIBL	4773BIBL	131	Appendix C, Related Publications 2, 94
ORDER	REDB\$ORD	133	How To Get ITSO Redbooks 131

Index Entries			
---------------	--	--	--

<u>id</u>	<u>File</u>	<u>Page</u>	<u>References</u>
HARDIND	4773CH1	1	(1) hardware 5, 5, 15, 24, 25, 25, 29, 29, 31, 70
DCOMIND	4773CH1	1	(1) data compression 5, 13, 25, 31, 32, 32, 50
CICSIND	4773CH1	1	(1) CICS 5, 14, 14, 14, 50, 77, 77, 77, 77, 77, 78, 79, 81, 82, 82, 82, 83, 83, 84, 84, 84, 84, 85, 85, 85
REXXIND	4773CH1	1	(1) REXX



			7, 7, 8, 8, 8
VSAMIND	4773CH1	1	(1) VSAM 8, 13, 13, 32, 50, 63, 74, 74, 75
POWIND	4773CH1	1	(1) POWER 12, 12, 12, 12, 13, 13, 13, 43, 47, 47, 48, 57, 57, 71, 71, 71, 71
VTAMIND	4773CH1	1	(1) VTAM 14, 15, 32, 57, 69, 77, 87, 87, 88, 89, 91, 91, 93, 94, 125
MIGRIND	4773CH1	1	(1) migration 35, 60, 61, 62, 68, 70, 70, 71, 72, 73, 77, 82, 84, 86, 87, 87, 114
FSUIND	4773CH1	11	(1) Fast Service Upgrade 36, 37, 38, 38, 41, 47, 53, 55, 56, 111, 113
ASSIND	4773CH1	15	(1) Assembler
SECIND	4773CH4	79	(1) second CICS system 79, 79, 81, 81, 117, 117, 117, 118, 120, 120, 121, 122, 122, 122, 123, 124

<b>Tables</b>
---------------

<u>id</u>	<u>File</u>	<u>Page</u>	<u>References</u>
ENV	4773CH1	11	1 11
CH1TB1	4773CH1	17	2 17
HWSUPP	4773CH1	29	3 59, 59
IPLINT	4773CH2	48	4
CH4TB1	4773CH4	80	5 80
CH4TB2	4773CH4	81	6 80
CH4TB3	4773CH4	81	7 81
CH5TB1	4773CH5	95	8
CH5TB2	4773CH5	99	9
CH5TB3	4773CH5	103	10
CH5TB4	4773CH5	106	11
CH6FIG2	4773CH6	124	12
APPAT1	4773AX1	127	13

<b>Processing Options</b>
---------------------------

Runtime values:

Document fileid .....	SG244773 SCRIPT
Document type .....	USERDOC
Document style .....	REDBOOK
Profile .....	EDFPRF30
Service Level .....	0029
SCRIPT/VS Release .....	4.0.0
Date .....	96.06.11
Time .....	02:41:31
Device .....	3820A
Number of Passes .....	4
Index .....	YES
SYSVAR D .....	YES
SYSVAR G .....	INLINE
SYSVAR S .....	OFFSET
SYSVAR X .....	YES

Formatting values used:

Annotation .....	NO
Cross reference listing .....	YES
Cross reference head prefix only .....	NO
Dialog .....	LABEL
Duplex .....	YES
DVCF conditions file .....	(none)
DVCF value 1 .....	(none)
DVCF value 2 .....	(none)
DVCF value 3 .....	(none)
DVCF value 4 .....	(none)
DVCF value 5 .....	(none)
DVCF value 6 .....	(none)
DVCF value 7 .....	(none)
DVCF value 8 .....	(none)
DVCF value 9 .....	(none)
Explode .....	NO
Figure list on new page .....	YES
Figure/table number separation .....	YES
Folio-by-chapter .....	NO
Head 0 body text .....	Part
Head 1 body text .....	Chapter
Head 1 appendix text .....	Appendix
Hyphenation .....	NO
Justification .....	NO
Language .....	ENGL
Layout .....	OFF
Leader dots .....	YES
Master index .....	(none)
Partial TOC (maximum level) .....	4
Partial TOC (new page after) .....	INLINE
Print example id's .....	NO
Print cross reference page numbers .....	YES
Process value .....	(none)
Punctuation move characters .....	,
Read cross-reference file .....	(none)
Running heading/footing rule .....	NONE
Show index entries .....	NO
Table of Contents (maximum level) .....	3
Table list on new page .....	YES
Title page (draft) alignment .....	RIGHT
Write cross-reference file .....	(none)

Imbed Trace

Page 0	4773SU
Page 0	4773VARS
Page 0	REDB\$BOE
Page i	REDB\$ED1
Page i	4773EDNO
Page i	REDB\$ED2
Page xi	4773ABST
Page xi	4773ORG
Page xi	4773ACKS
Page xii	REDB\$COM
Page xii	4773MAIN
Page xii	4773CH1
Page 33	4773CH2
Page 58	4773CH3
Page 75	4773CH4
Page 94	4773CH5
Page 110	4773CH6
Page 126	4773AX1
Page 129	4773SPEC
Page 129	REDB\$SPE
Page 129	4773TMKS
Page 130	4773BIBL
Page 132	REDB\$ORD
Page 135	4773ABRV