IBM z/VSE

IBM

Release Guide

Version 5 Release 1

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> **Note:** Before using this information and the product it supports, be sure to read the general information under "Notices" on page v.

Contents

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Accessibility

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully. The major accessibility features in z/VSE enable users to:

- Use assistive technologies such as screen readers and screen magnifier software
- Operate specific or equivalent features using only the keyboard
- Customize display attributes such as color, contrast, and font size

Using Assistive Technologies

Assistive technology products, such as screen readers, function with the user interfaces found in z/VSE. Consult the assistive technology documentation for specific information when using such products to access z/VSE interfaces.

Documentation Format

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About This Book

This manual first provides an introduction to Version 5 Release 1 and a list of the servers that are supported. It then provides an overview of the enhancements and changes implemented with:

- The *June 2013* Service Upgrade of IBM® z/VSE Version 5 Release 1.
- The *June 2012* Service Upgrade of IBM z/VSE Version 5 Release 1.
- IBM z/VSE Version 5 Release 1.

Who Should Use This Book

This manual is intended for those z/VSE users who need to be aware of important information provided with z/VSE 5.1.

How to Use This Book

The book contains four chapters:

- Chapter 1, "Introduction and Server Support," on page 1
- Chapter 2, "Changes Introduced via June 2013 Service Upgrade of z/VSE 5.1," on page 3
- Chapter 3, "Changes Introduced via the June 2012 Service Upgrade of z/VSE 5.1," on page 7
- Chapter 4, "Changes Introduced With z/VSE 5.1," on page 11

Where to Find More Information

Whenever appropriate, the book refers to other z/VSE manuals that provide further details on a specific topic.

The z/VSE home page provides additional z/VSE information:

z/VSE Home Page

z/VSE has a home page on the World Wide Web, which offers up-to-date information about VSE-related products and services, new z/VSE functions, and other items of interest to VSE users.

You can find the z/VSE home page at

http://www.ibm.com/systems/z/os/zvse/

You can also find VSE User Examples (in zipped format) at

http://www.ibm.com/systems/z/os/zvse/downloads/samples.html

Chapter 1. Introduction and Server Support

z/VSE 5.1 aims to continue the strategy that was defined for previous releases. This means:

- **Protect** customers' investments in the z/VSE platform,
- **Integrate** z/VSE into the overall IT environment, and
- **Extend** existing z/VSE application solutions by exploiting and leveraging *Linux on System z* (or any other application platform).

Linux on System z is central to z/VSE's strategy of enabling open standard e-business technologies to support new, more rapidly growing workloads.

Using the *z/VSE connectors*, you can integrate z/VSE resources with any Java-capable platform of your choice (that is, not only System z).

z/VSE 5.1 introduces an architectural level set (ALS) that requires IBM System z9® or later. It offers the value of innovative IBM zEnterprise® technology.

z/VSE 5.1 supports these IBM System z servers:
- IBM zEnterprise EC12 (zEC12).
- IBM zEnterprise 196 (z196).
- IBM zEnterprise 114 (z114).
- IBM System z10™ Enterprise Class (z10 EC).
- IBM System z10 Business Class (z10 BC).
- IBM System z9 Enterprise Class (z9 EC).
- IBM System z9 Business Class (z9 BC).

For further details, see "Hardware Support" in the *z/VSE Planning*, SC34-2635.

Chapter 2. Changes Introduced via June 2013 Service Upgrade of z/VSE 5.1

This chapter describes the changes introduced via the *June 2013* Service Upgrade of z/VSE 5.1. It contains these topics:

- "Support for Innovative IBM zEnterprise EC12 Technology"
- "Support for IBM System Storage TS1140 Tape Drive"
- "Configurable Input Buffers for HiperSockets and OSA-Express Devices" on page 4
- "Support for I/O Operations on Memory Objects" on page 4
- "Memory Object Dump When an Abnormal Program End Occurs" on page 4
- "Include Shared Memory Objects in Stand-alone Dump" on page 5
- "Connection Pooling When Using the Database Call Level Interface" on page 5

Support for Innovative IBM zEnterprise EC12 Technology

z/VSE supports:
- Configurable Crypto Express4S.
- OSA Express4S 1000BASE-T

z/VSE 5.1 supports the Crypto Express4S adapter in both IBM Common Cryptographic Architecture (CCA) coprocessor and accelerator modes. The Crypto Express4S adapter can be used in an LPAR and z/VM-guest environment.

To use the Crypto Express4S adapter in a z/VSE 5.1 system running on a zEnterprise EC12 server, you must *either* install the June 2013 Service Upgrade of z/VSE 5.1 *or* install PTF UD53863.

From z/VSE 4.3 onwards, z/VSE transparently supports the OSA Express4S 1000BASE-T adapter.

For further details, refer to the *z/VSE Planning*, SC34-2635.

Support for IBM System Storage TS1140 Tape Drive

z/VSE supports the IBM System Storage® TS1140 tape drive (also referred to as the 3592 Model E07).

- Media types MEDIA11 (CSTB), MEDIA12 (CSTC), and MEDIA13 (CSTD) are supported.
- The *Configure Hardware* dialog offers the 2176 track capacity for the TS1140.

For further details, refer to the topics:

- "Overview of Tape Drives/Libraries Supported by z/VSE" in the *z/VSE Planning*, SC34-2635.
- "Implementing Tape Library Support" in the *z/VSE Administration*, SC34-2627.

Configurable Input Buffers for HiperSockets and OSA-Express Devices

Customers who extend z/VSE solutions by exploiting Linux on System z often use a HiperSockets network for high-speed TCP/IP connectivity between z/VSE and Linux on System z.

Best performance can be achieved when data is always delivered successfully without the need to re-send. Since HiperSockets transfers data synchronously, successful delivery of data depends on whether there are any free QDIO (Queued Direct I/O) *input buffers* on the target system. To improve the rate of successful data delivery, z/VSE 5.1 now allows you to configure the number of QDIO input buffers for:

- HiperSockets devices (CHPID type **IQD**).
- OSA-Express devices (CHPID types **OSD** and **OSX**).

To implement this function in a z/VSE 5.1 system, you must install one of the following:

1. The June 2013 Service Upgrade of z/VSE 5.1.
2. PTFs UD53905 and UD53906 (APAR DY47394).

For further details of how to configure the number of QDIO input buffers, refer to the topic "Configurable QDIO Buffers" in the manual *z/VSE TCP/IP Support*.

Support for I/O Operations on Memory Objects

Your programs can now use the EXCP macro to perform I/O operations to/from virtual storage above the 2 GB bar.

To allow I/O buffers to reside above the 2 GB bar, your programs must use Format-2 IDAWs . Therefore, the CCB macro provides the additional keyword `IDAW`.

For further details, see "Using 64-Bit Virtual I/O Operations on Memory Objects" in the *z/VSE Extended Addressability*, SC34-2630.

Memory Object Dump When an Abnormal Program End Occurs

When an "abnormal program end" (ABEND) occurs, if `OPTION MODUMP` or `STDOPT MODUMP=YES` is active then z/VSE will create a *memory object dump* of 4 KB either side of the failing address.

A memory object dump will be created when *all* of the following conditions apply:

- The failing program is running in 64-bit mode when the abnormal program end occurs.
- The current primary address space owns private memory objects (defined via an `IARV64 GETSTOR` request) or shared memory objects (defined via an `IARV64 GETSHARED` request).
- At lease one general register contains a 64-bit address in the range of a memory object.

For further details, refer to the topic "Memory Object Dump" in the *z/VSE Diagnosis Tools*, SC34-2628.

Include Shared Memory Objects in Stand-alone Dump

Using the job control command STDOPT SADMPSMO, you can specify whether or not the shared memory object dump file `SHARED-MEMORY_OBJ` is to be included in a stand-alone dump. The default is "No".

For details of how to use the STDOPT SADMPSMO command, refer to "STDOPT (Standard JC Options)" in the manual *z/VSE System Control Statements*.

Connection Pooling When Using the Database Call Level Interface

The *Database Call Level Interface* (DBCLI) allows z/VSE applications to access a relational database on any suitable database server that offers a Java™ Data Base Connectivity (JDBC) driver that supports JDBC V3.0 or later.

Connection pooling now allows *existing* database connections for DBCLI applications running under the CICS Transaction Server for VSE/ESA V1.1 to be kept and reused. This can be especially beneficial for short-lived, CICS DBCLI applications that run frequently.

Without connection pooling, the creation of database connections can be comparatively time-consuming because of the overhead required to establish a network connection and initialize access to a database server.

To implement connection pooling in a z/VSE 5.1 system, you must:

1. *Either* install the June 2013 Service Upgrade of z/VSE 5.1 *or* install APARs PM80539 and PM80540.
2. Follow the instructions provided in "Setting Up and Configuring the DBCLI Connection Pool Manager" in the *z/VSE e-business Connectors User's Guide*, SC34-2629.

Chapter 3. Changes Introduced via the June 2012 Service Upgrade of z/VSE 5.1

This chapter describes the changes introduced via the *June 2012* Service Upgrade of z/VSE 5.1. It contains these topics:
- "IBM CICS Explorer"
- "Linux Fast Path in an LPAR Environment"
- "Database Call Level Interface" on page 8
- "IBM System Storage Tape Controller 3592 Model C07" on page 8
- "VSE/POWER Enhancements" on page 8
- "z/VSE - z/VM IP Assist" on page 9
- "System Parameter IJBVMID" on page 9

IBM CICS Explorer

The *IBM CICS Explorer*®, referred to simply as the *CICS Explorer*, is a workstation-based CICS® tool that allows you to *monitor* your CICS systems. You cannot perform CICS updates using the CICS Explorer.

The CICS Explorer is based on CICS system management interfaces. It consists of *two* parts, the *workstation component* and the *host component*.
- The workstation component can be downloaded from the z/VSE Web Page given below.
- The host component is shipped as a PTF that has been integrated into this Service Upgrade.

z/VSE also provides you with skeletons in ICCF library 59 which you can use for specifying the required CICS System Definition (CSD) and transaction security definitions.

For details of the CICS Explorer, refer to the z/VSE Web Page at:

```
http://www.ibm.com/systems/z/os/zvse/products/cics.html
```

Linux Fast Path in an LPAR Environment

The *Linux Fast Path* allows selected TCP/IP applications running under z/VSE to communicate with a TCP/IP stack on Linux without using a TCP/IP stack on z/VSE. Prior to this Service Upgrade of z/VSE 5.1, the Linux Fast Path could only be used in a *z/VM environment*. With this Service Upgrade of z/VSE 5.1, the Linux Fast Path can also be used in an *LPAR environment*:
- In an LPAR environment, both z/VSE and Linux on System z run in LPAR-mode on a zEnterprise server. A HiperSockets™ connection is used between z/VSE and Linux on System z LPARs.
- Running a Linux Fast Path in an LPAR requires the *HiperSockets Completion Queue* function that is available with zEnterprise.
- Running a Linux Fast Path in an LPAR environment means Linux on System z will primarily run on the faster/cheaper IFL (Integrated Linux Facility) processors in one LPAR, whereas z/VSE will run on standard processors in a different LPAR.

For details, refer to the chapter "Running z/VSE With a Linux Fast Path" in the *z/VSE TCP/IP Support*, SC34-2640.

Database Call Level Interface

The *Database Call Level Interface* (DBCLI) allows z/VSE applications to access a relational database on any suitable database server that offers a Java Data Base Connectivity (JDBC) driver that supports JDBC V3.0 or later.

Therefore, you have the flexibility of being able to choose a database server (IBM DB2®, Oracle, Microsoft SQL Server, MySQL, and so on) that runs on a platform other than z/VSE.

Because neither the DBCLI client nor the DBCLI server inspect the SQL statements being used by your application program, you can use any type of SQL statements and SQL dialect that are supported by the Vendor's JDBC Driver (IBM DB2, Oracle, Microsoft SQL Server, MySQL, and so on) *providing* the database-provider also supplies a suitable JDBC driver.

For details, refer to the chapters "Installing the Database Call Level Interface" and "Using the Database Call Level Interface to Access Data" in the *z/VSE e-business Connectors User's Guide*, SC34-2629.

IBM System Storage Tape Controller 3592 Model C07

The *IBM System Storage Tape Controller 3592 Model C07* is a new high-performance tape controller that can be used to attach a:
* 3592 Model E05 (TS1120) tape drive
* 3592 Model E06 (TS1130) tape drive
* TS3500/3584 UltraScalable tape library.

For details, refer to the chapter "Hardware Support" in the *z/VSE Planning*, SC34-2635.

VSE/POWER Enhancements

Being part of this Service Upgrade of z/VSE 5.1, the enhancements provided with VSE/POWER 9.1 are:
* *IPWSEGM Support of Duplicates for LST and PUN Output*

    Since z/VSE 4.1, VSE/POWER supports the creation of duplicate output using the * $$ LSTDUP and * $$ PUNDUP JECL statements or the PCOPY command.

    Output *duplication* allows multiple VSE/POWER tasks to access a single image of spooled data. Output duplication has now been made available for program-driven segmentation via IPWSEGM. Duplication for the next output segment can be requested using new operand DUP=YES for statements * $$ LST or * $$ PUN supplied via macro IPWSEGM. For each duplicate, the supplied JECL must contain DUP=YES followed by at least one JECL operand permitted for statements * $$ LSTDUP or * $$ PUNDUP.
* *Enhanced Dynamic Access to VSE/POWER Job Attributes*

    A VSE/POWER job can create multiple LST and PUN outputs, each with a different job name and other properties. From z/VSE 5.1 onwards, a common attribute TKN has been defined for each job and all of its spooled output. The TKN attribute of the VSE/POWER job can now be extracted from the MAPPOWJB DSECT using the GETFLD FIELD=POWJOB service.

For further details, refer to the *VSE/POWER Application Programming*, SC34-2642.

z/VSE - z/VM IP Assist

The *z/VSE - z/VM IP Assist* function now allows selected TCP/IP applications running under z/VSE to communicate via a Linux Fast Path with a z/VM guest that provides all the services the Linux Fast Path requires. Therefore, you are not required to install and maintain a Linux system in a z/VM guest, or use a TCP/IP stack on z/VSE.

For details, refer to the chapter "z/VSE - z/VM IP Assist" in the *z/VSE TCP/IP Support*, SC34-2640.

System Parameter IJBVMID

A new "implicitly-defined" symbolic system parameter **IJBVMID** has now been introduced:

- When running z/VSE under z/VM, IJBVMID contains the 8-byte z/VM user-ID (padded to the right with blanks).
- When running z/VSE natively, IJBVMID contains eight blank characters.

Note: "Implicitly-defined" means that z/VSE provides IJBVMID without requiring any action by the user.

In a conditional JCL job, you can check the value of **IJBVMID** and then act accordingly. For example:

```
// IF IJBVMID = 'PROD' THEN
// EXEC PROC=INITPROD
// IF IJBVMID = 'TEST' THEN
// EXEC PROC=INITTEST
```

z/VSE V5.1 June 2012 Service Upgrade

Chapter 4. Changes Introduced With z/VSE 5.1

This chapter describes the changes delivered at General Availability of z/VSE 5.1.

It contains these topics:

Support for (64-bit) Memory Objects in 64-bit Address Spaces

With z/VSE 5.1, programs can define *memory objects* in *64-bit address spaces*:

- The 64-bit address space provides you with a vastly increased amount of virtual storage than was previously available with only the first 2 GB of virtual storage.
- A program can now obtain up to *90 GB* of additional virtual storage, which should help to meet the demands of growing applications and workloads.
- A memory object is a multiple of 1 MB "chunks" of virtual storage, where each memory objects starts on a megabyte boundary.
- Memory objects can be allocated for *data* only. Programs cannot run in the virtual storage area above the bar (the 2 GB line).
- Only *allocated* memory objects are used in the calculation of the current VSIZE usage.
- The IARV64 macro has been ported from IBM z/OS. Programs that use the IARV64 macro with the functionality supported by z/VSE are expected to be compatible with z/OS.

For further details, see "Using Memory Objects in the 64-Bit Address Space" in the *z/VSE Planning*, SC34-2635.

Exploitation of IBM System Storage Tape Technology

These are the System Storage tape enhancements provided with z/VSE 5.1:

- *Copy Export Feature* z/VSE now supports the *Copy Export* feature, which is provided by the Model TS7740 of the TS7700 Virtualization Engine.
  - The Copy Export feature allows you to 'copy export' selected logical volumes to an offsite TS7740 for disaster recovery.
  - For details, see "Implementing Tape Library Support" in the *z/VSE Administration*, SC34-2627.

- *Multi-Cluster Grids* z/VSE now supports *multi-cluster grid* configurations for the TS7700 Virtualization Engine.
  - Logical volume attributes and data can be replicated across the clusters in a Grid.
  - Any data replicated between the clusters is accessible through any other cluster in a Grid configuration.
  - For details of how to implement multi-cluster grid support, refer to the IBM Redbook which you can find at this URL:

    `http://www.redbooks.ibm.com/redbooks/pdfs/sg247712.pdf`

Exploitation of IBM System Storage Disk Technology

FCP-attached SCSI disks can additionally be used with:

- *IBM Storwize® V7000*
  - Storwize V7000 is a midrange disk offering built on IBM System SAN Volume Controller (SVC) technology.
  - It can be attached through Fibre Channel (FC) switches to z/VSE® using Fibre Channel Protocol (FCP) sub-channels.
  - z/VSE supports Storwize V7000 (SCSI) devices for *system use* (z/VSE system devices that can be IPL'd) and as *data devices* in both an LPAR and a z/VM® guest environment.
- *IBM XIV® Storage System*
  - The XIV Storage System is a high-end open disk system which can be attached through FC switches to z/VSE using FCP sub-channels.
  - z/VSE supports XIV (SCSI) devices for *system use* (z/VSE system devices that can be IPL'd) and as *data devices* in both an LPAR and a z/VM guest environment.

Note: Both the above SCSI disk systems are available from z/VSE 4.2 onwards.

Security/Encryption Enhancements

These are the security/encryption enhancements provided with z/VSE 5.1:

- *Improved Cryto Commands* The `status=cr` and `status=cpacf` commands for displaying hardware crypto information have changed. For details, see "Displaying Hardware Crypto Status Information Under z/VSE" in the *z/VSE Administration*, SC34-2627.
- *New AP Crypto Command* A new APSTAT command has been included for displaying details about an Adjunct Processor. For details, see "Using Hardware Crypto Commands" in the *z/VSE Administration*, SC34-2627.
- *4096-Bit Key Lengths* In addition to 2048-bit RSA keys, z/VSE 5.1 now supports *4096-bit RSA keys*, that are exploited by:
  - *TCP/IP for VSE/ESA* and the *e-business Connectors* for improved SSL security.
  - The *Encryption Facility for z/VSE OpenPGP* for public-key encryption (described in "Implementing the Encryption Facility for z/VSE OpenPGP" in the *z/VSE Administration*, SC34-2627).

TCP/IP and Networking Enhancements

These are the TCP/IP and networking enhancements provided with z/VSE 5.1:

- *Layer 2 of OSI Model* In addition to supporting the Layer 3 (IP Layer) mode, z/VSE now supports the *Layer 2* (the Data Link Layer) of the OSI (*Open Systems Interconnection*) TCP/IP model. Layer 2 support is provided by IPv6/VSE V1.1.

- *Virtual LANs* z/VSE 5.1 provides VLAN support for OSA Express® (CHPID types OSD and OSX) and HiperSockets (CHPID type IQD) devices. In a Layer 3 configuration, VLANs can be transparently used by IPv6/VSE V1.1 and TCP/IP for VSE/ESA V1.5F.
  - IPv6/VSE V1.1 is required if you want to configure VLANs for OSA-Express (CHPID type OSD and OSX) devices in a Layer 2 configuration that carries IPv6 traffic.

- *IEDNs* z/VSE can now participate in an *Intra-Ensemble Data Network* (IEDN) using OSA Express for zBX. Within a z/VM V6.1 guest environment, z/VSE can transparently access an IEDN through a z/VM VSWITCH. This support is also available with z/VSE V4.2 and later.

- *z/VSE z/VM IP Assist (z/VSE VIA)* z/VSE now exploits the *z/VSE VIA function*. In a z/VM guest environment, this function allows z/VSE to access an external network or an IEDN without requiring a TCP/IP stack on z/VSE.

- *IPv6/VSE* IPv6/VSE provides large TCP window support, 64-bit virtual exploitation, Layer 2, and Virtual LAN support.

- *Linux Fath Path and IPv6* The Linux Fast Path now supports *IPv6* that allows 128-bit (16-byte) IP addresses.

For details of the above enhancements, refer to "TCP/IP and Networking Support" in the *z/VSE Planning*, SC34-2635

e-business Connectors Enhancements

These are the e-business Connectors enhancements provided with z/VSE 5.1:

- *Additional Tools and Functions for VSE Script Connector* The VSE Script connector now supports additional codepage tools, VSE/POWER functions, and Librarian functions. For details, see "Writing VSE Scripts Using the VSE Script Language" in the *z/VSE e-business Connectors User's Guide*, SC34-2629.

- *Support for Latest Product Versions* The current versions of these products are supported:
  - Windows (for example, Windows Vista) together with the related security concepts.
  - Java, together with the related SSL functionality.
  - TCP/IP.
  - WebSphere®.

VSE/POWER Enhancements

Being part of z/VSE 5.1, the enhancement provided with VSE/POWER 9.1 is the *support for the TKN Attribute*:

- VSE/POWER now provides a new TKN attribute. Using this attribute, VSE/POWER operator commands can now address all spooled outputs of one job as *one entity*.
- The *CTKN operand* has been added to PALTER, PDELETE, PDISPLAY, PHOLD, POFFLOAD SELECT and PRELEASE commands to select the output produced by a specific job. For example, the command PRELEASE LST,CTKN=001234AF will release all LST output spooled by the VSE/POWER job with TKN value 001234AF.

For further details, refer to the *VSE/POWER Application Programming*, SC34-2642.

System Management Enhancements

These are the system management enhancements provided with z/VSE 5.1:

- *SNMP Symbolic Parameters* You can now use *symbolic parameters* when running the SNMP Trap Client in batch. For details, see "Using the SNMP Trap Client in Batch Jobs" in the *z/VSE e-business Connectors User's Guide*, SC34-2629.
- *Dynamic Linking of SNMP Trap Client API* The VSE Monitoring Agent has been enhanced to allow your COBOL, PL/I, and C/VSE programs, and CICS transactions to *dynamically* link the SNMP Trap Client API to enable them to send SNMP "traps". For details, see "Collecting Data Using the VSE Monitoring Agent" in the *z/VSE e-business Connectors User's Guide*, SC34-2629.
- *GDPS*® The support for GDPS (*Geographically Dispersed Parallel Sysplex*®) allows a GDPS Client to collect availability data from your z/VSE systems and send it to a central GDPS K-System running under z/OS. For details, see "Using GDPS Support for High Availability" in the *z/VSE e-business Connectors User's Guide*, SC34-2629.

VSE/VSAM Enhancements

This topic describes the enhancement provided with *VSE/VSAM 9.1*, which is part of z/VSE 5.1.

Beginning with *z/VSE 3.1*, the ability to define catalogs as *recoverable* was removed.
- Although *existing* recoverable catalogs were supported, *new* catalogs could no longer be defined as recoverable.
- The catalog-recovery functionality was no longer state-of-the-art and made support of newer devices increasingly difficult.

Beginning with *z/VSE 4.3*, the ability to *extend files* in a recoverable catalog or *add additional space* to a recoverable catalog was removed. The removal of the necessity to check for access to a recoverable catalog from all VSAM operations allows for more streamlined and better-performing code.

If you still use recoverable catalogs, you should plan to migrate these recoverable catalogs to *standard catalogs*. This should be done before you migrate to z/VSE 4.3.

Note: If you have already migrated to z/VSE 4.3 or z/VSE 5.1 with *existing* recoverable catalogs, please contact IBM Support for assistance.

The migration steps are fairly straightforward and consist of:

1. IDCAMS BACKUP (*) a backup of all clusters from the catalog.

2. Depending on the volume layouts, you might have to identify which extents on a volume belong to this catalog by using extent information from an IDCAMS LISTCAT SPACE.

   - If the volume only contains VSAM space belonging to this catalog, you can use IKQVDU to scratch the volume that contains the catalog and all volumes containing its space.

   - Otherwise, refer to the topic "Re-Build a Catalog" in the *z/VSE Hints and Tips* manual for further guidance.

3. IDCAMS EXPORT DISCONNECT to remove the user catalog entry from the master catalog.

4. IDCAMS DEFINE USERCATALOG.

5. IDCAMS DEFINE SPACE on all available volumes.

6. IDCAMS RESTORE OBJECTS(*) to restore all clusters to the catalog.

The final removal of the support for recoverable catalogs will *improve VSAM performance and ease the support of newer devices*.

Language Environment Enhancements

These are the enhancements provided with *LE/VSE Version 1 Release 4 Modification Level 8*, which is part of z/VSE 5.1:

- You can now use the `fopen()` function to create VSE librarian members with the `DATA=YES` parameter. For details, see "Library Functions" in the *LE/VSE C Run-Time Library Reference*, SC33-6689.

- A new overview table now shows which TCP/IP callable functions can be used in various environments (LE/VSE, TCP/IP for VSE/ESA, IPv6/VSE, and/or Linux Fast Path). For details, see "TCP/IP Callable Functions" in the *LE/VSE C Run-Time Library Reference*, SC33-6689.

- Details have been provided on how to configure the TCP/IP multiplexer for the *IPv6/VSE socket interface*. For details, see "TCP/IP Callable Functions" in the *LE/VSE C Run-Time Library Reference*, SC33-6689.

- The functional descriptions of the TCP/IP callable functions that were previously described in the *LE/VSE C Run-Time Library Reference* have been integrated into the *z/VSE TCP/IP Support*. For details, see "TCP/IP Support for the LE/VSE C Socket Interface" in the *z/VSE TCP/IP Support*, SC34-2640.

- Important information concerning the use of VSAM ESDS and KSDS `shareoptions` 3 and 4 files has been included in the chapter "Performing VSAM I/O Operations" of the *LE/VSE C Run-Time Programming Guide*, SC33-6688.

- A major update has been made of the information describing the SPC (System Programming C) environment, including new and replacement samples. For details, see "Using the System Programming C Facilities" in the *LE/VSE C Run-Time Programming Guide*, SC33-6688.

- Additional information has been provided concerning the use of *fetchable PL/I programs* that are executed in a *multitasking* environment. For details, see "PL/I Multitasking Under LE/VSE" in the *LE/VSE Programming Guide*, SC33-6684.

- When running a PL/I multitasking application, the new callable service *CEEPUSR* allows you to retrieve the address of a pre-allocated storage area that can be used for inter-task communication. For details, see "LE/VSE Callable Services" in the *LE/VSE Programming Reference*, SC33-6685.

- With the latest CEETRACE V1.2, you can now use the:

    – *Mini dump feature* to obtain within a *statement execution history report*, a formatted dump of the condition information block and (if applicable) the machine state information at the time of an application's failure.

    – *Auto reporting feature* to produce an *execution statement history report* based upon simple entrypointname, statement number, or statement-execution count criteria.

    – *HLL statement exit* to provide a user exit point at each HLL statement executed within a CEETRACE enabled application.

For details, refer to the *CEETRACE Feature, Installation and User's Guide* which you can obtain from: `http://www.ibm.com/systems/z/os/zvse/`

Dump Handling Enhancements

These are the dump handling enhancements provided with z/VSE 5.1:

* *Support for Memory Objects* Information has been provided that describes the use of dump files for *memory objects*. For details, see "Partition, Data Space, and Memory Object Dump Files" in the *z/VSE Diagnosis Tools*, SC34-2628.

* *Support for 64-Bit Address Space* A trace example has been provided that uses the *64-bit address space*. For details, see "Trace Output Example of General-Purpose Registers When Caller in AMODE 64" in the *z/VSE Diagnosis Tools*, SC34-2628.

Items No Longer Supported With z/VSE 5.1

From z/VSE 5.1 onwards:

* There is no support for these servers:
  – zSeries® 990 (z990)
  – zSeries 890 (z890)
  – zSeries 900 (z900)
  – zSeries 800 (z800)

* IBM Servers supported by z/VSE 5.1 do not offer basic mode of operation. The relevant information has therefore been removed from the z/VSE manuals.

* There is no support for *preferred paths* for SCSI disks.

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