IBM z/VSE
Version 4.Release 3

Operation

SC33-8309-03

Note: Before using this information and the product it supports, be sure to read the general information under “Notices” on page 221.

This edition applies to Version 4 Release 3 of IBM z/Virtual Storage Extended (z/VSE), Program Number 5609-ZV6, and to all subsequent releases and modifications until otherwise indicated in new editions.

This edition replaces SC33–8309–02.

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About This Book

This manual describes the main operation tasks in z/VSE. It contains information on system startup and shutdown as well as on how to run and control system processing of z/VSE.

The manual is divided into five parts:

- **Part 1** gives an overview of common operator tasks and contains information you may need for getting started. It contains, for instance, supplemental information on basic terms and system use of z/VSE.
- **Part 2** shows various methods you can use to communicate with z/VSE.
- **Part 3** has information about system startup and shutdown.
- **Part 4** deals with operator commands that can be entered from the z/VSE console. Information on the VM/VSE interface is also provided here.
- **Part 5** describes operator tasks that can be performed by using Interactive Interface dialogs.

Please note that the panels in this manual are examples only. They operate with numbers that do not necessarily reflect realistic values.

Who Should Use This Book

This manual is intended for operators who perform tasks such as:

- Starting up the system
- Operating and controlling the system
- Shutting down the system.

Knowledge of the system hardware (for example, how to operate the console, the tape devices, and the printers) is needed. The hardware publications delivered with your equipment contain the necessary information.

Where to Find More Information

The following IBM z/VSE manuals contain further information on aspects covered in this manual:

- z/VSE Administration, SC34-2692
- z/VSE Diagnosis Tools, SC34-2628
- z/VSE Guide for Solving Problems, SC34-2605
- z/VSE Installation, SC34-2678
- z/VSE System Upgrade and Service, SC34-2680
- z/VSE Planning, SC34-2681
- z/VSE System Control Statements, SC34-2679
- z/VSE System Utilities, SC34-2675
- z/VSE Guide to System Functions, SC34-2705
- z/VSE SNA Networking Support, SC34-2626

The following IBM manuals may also be helpful:

- VSE/POWER Administration and Operation, SC34-2743.
- VTAM Operation, SC31-6495
- CICS Report Controller Planning Guide, SC33-1009
- CICS Supplied Transactions, SC33-0710
- VSE/ICCF Administration and Operation, SC33-8329.

z/VSE IBM Documentation

IBM Documentation is the new home for IBM's technical information. The z/VSE IBM Documentation can be found here:

https://www.ibm.com/docs/en/zvse/6.2

You can also find VSE user examples (in zipped format) at

https://public.dhe.ibm.com/eserver/zseries/zos/vse/pdf3/zVSE_Samples.pdf

Summary of Changes

Note: For an overview of *all* the items introduced with z/VSE 5.2 (including the two service upgrades described above), refer to the z/VSE Release Guide.

Part 1. Getting Ready to Operate z/VSE

Chapter 1. Basic Operation Tasks

Your equipment will be delivered with operating instructions. You should study those instructions and become familiar with your hardware before using this information.

Once you have done this, you are ready to start performing z/VSE operation tasks. These tasks include:

- Starting up the system.
- Operating and controlling the system.
- Shutting down the system.

If you experience a problem that you cannot solve using this information, consult the z/VSE Guide for Solving Problems or notify your system administrator.

If you are required to manage the *hardware Crypto configuration* of your installation, refer to "Using Hardware Crypto Commands" in the z/VSE Administration.

Starting the System

Before starting up the system, you should do the following to prepare it for operation:

1. Switch On the Hardware

   Turn on the power for the processor and any other attached I/O devices. Then perform *power-on reset* (on earlier processors *Initial Microprogram Load*, or IML). Once power-on reset is finished, you can start up z/VSE.

2. Start Up z/VSE

   To get the system running, you perform a *system startup*. You initiate the startup by performing IPL. During startup the following message may appear:

   ```
   IESI0211I  ALL PARTITIONS WILL BE INITIALIZED IN WARM START MODE.
              IF YOU WANT TO INTERRUPT THEN ENTER MSG BG.
   ```

   A WARM startup is the normal way to bring up the system and in most cases you will not want to interrupt this procedure.

   In addition to a WARM startup there are other startup modes. All startup modes are described in detail under “Using z/VSE Startup Modes” on page 63.

   Once system startup has finished, the system is "up" (ready for work).

Operating and Controlling the System

When the system is running, your intervention may be required on some occasions.

Controlling System Hardware

You may have to change printer forms or mount magnetic tapes or cartridges. You may want to keep an installation log sheet with status information, reports of errors, and so on, depending on procedures established at your installation.

Controlling System Processing

A running z/VSE system usually needs little attention. If the system does need additional information before it can continue (for instance, more input or a response) a *message* will appear on the console screen. Such system messages are the main way by which z/VSE communicates with you. You will find these messages and the actions to take in response to them in the z/VSE Messages and Codes Volume 1 manual.

You have to answer some of these messages by entering a *response* or one or more *commands*. Through commands you control operations such as scheduling jobs for execution or for printing, and stopping or restarting operations.

You may also see messages issued from application programs. Please consult your system administrator for information on responding to these types of messages.

Shutting Down the System

Maybe at the end of the day, or possibly for system maintenance, z/VSE will be shut down. Chapter 6, “Shutting Down the System,” on page 67 describes how to do this. After the shutdown procedure has finished, you can turn off the equipment.

Chapter 2. What You Should Know Before Starting

Explanation of Physical Address and VSE Address

From z/VSE 4.3 onwards, z/VSE supports device addresses (that is, *physical addresses*) of up to X'FFFF'. This support is implemented as follows:

- z/VSE applications, messages, commands, and so on, do not address a device by the physical address (**pcuu**), but instead by the *VSE address* (**cuu**).
- VSE addresses are in the range from X'000' to X'FFF'.
- To each physical address (pcuu) there is a corresponding VSE address (cuu).
- If the physical address is less than or equal to X'FFF', the VSE address (cuu) is equal to the physical address (pcuu).
- If the physical address is higher than X'FFF' (and therefore outside the range of VSE addresses), the physical address (pcuu) and VSE address (cuu) will be different.

CP commands (under z/VM) always use *physical addresses*.

z/VSE jobs, commands, dialogs, and messages use *VSE addresses*. However, in specified cases (for example, when using the `QUERY IO` command) *physical addresses* might be used.

Note: Throughout the z/VSE documentation, the term *address* of a device (used on its own) always refers to the *VSE address*.

Obtaining a Physical Address From a VSE Address

You might be required to obtain a device's *physical address* from its *VSE address* when:

- Mounting a tape in a tape drive.
- Mounting forms in a printer.

This is because the *physical address* is used to identify the actual "physical" device (tape drive or printer) you must use.

To obtain a device's physical address from its VSE address, you must:

1. Type this command in the command line of the console:

   ```
   QUERY IO,CUU=nnn
   ```

   where *nnn* is the VSE address. For example, `QUERY IO,CUU=185`.
2. When you press Enter, the command is executed and the resulting display will look like this:

   ```
   QUERY IO,CUU=185
   AR 0015  VSE ADDR   PHYSICAL ADDR   DEVICE CLASS
   AR 0015       185           1185   TAPE
   AR 0015 1I40I  READY
   ```

   The physical address of the device (in this example, a tape drive) is shown above as 1185.

If a VSE address is *currently displayed on the console*, you can use the PF11 key (11=PCUU) to generate the required `QUERY IO` command. For example:

1. Position the cursor underneath the first character of the VSE address (cuu) 185. In this example, you would position the cursor beneath the '1'.
2. Press PF11.
3. In the command line of the console, this QUERY IO command will automatically be generated:

```
QUERY IO,CUU=185
```

4. When you press Enter, the command is executed (the resulting display is the same as in the previous example).

Obtaining a VSE Address From a Physical Address

You might be required to obtain a device's *VSE address* from its *physical address* when initializing a magnetic tape. For example, you might:

- Make a note of the physical address of the tape drive.
- Mount your tape.
- Using the `QUERY IO` command at the console, obtain the corresponding VSE address.
- Enter commands such as `MTC WTM,1A0` and `MTC REW,1A0`.

To obtain a device's VSE address from its physical address, you must:

1. Type this command in the command line of the console:

   ```
   QUERY IO,CUU=nnnn
   ```

   where *nnnn* is the physical address. In this example, the physical address (pcuu) is 3A61.
2. When you press Enter, the command is executed and the resulting display will look like this:

   ```
   QUERY IO,CUU=3A61
   AR 0015  VSE ADDR   PHYSICAL ADDR   DEVICE CLASS
   AR 0015       A61            3A61   TAPE
   AR 0015 1I40I  READY
   ```

   The VSE address of the device (in this example, a tape drive) is shown above as A61.

Using the Hardware Configuration List

Your z/VSE system administrator provides you with a hardware *configuration list*. This is a list of all *input/output (I/O)* devices attached to your processor. It should include the physical address (pcuu) and corresponding VSE address (cuu) of each device, its location, and other applicable information.

Be sure to have the hardware configuration list available when you operate your z/VSE system.

Online and Batch Processing

z/VSE supports two methods of processing data: batch processing and online processing.

In *batch* processing, all data for a job is gathered before the processing (or execution) of that data is requested. Normally, several batch jobs can be processed concurrently. In most cases, you are not required to attend the system during processing of the job.

In *online* processing (also called *interactive* processing), the system processes data as it is being entered. A program running under this method may stop to request an answer from you and then proceed based on your reply. You will normally be working at a display station.

Static and Dynamic Partition IDs

z/VSE supports two types of partitions: *static* and *dynamic* partitions.

While the system is up and running, static partitions are continuously present. Dynamic partitions are created and activated only as needed. Also, the space which dynamic partitions occupy during job processing is released when processing is finished.

Some batch jobs may be restricted to either static or dynamic partitions. Your system administrator will tell you which batch jobs require specific partitions to run.

You can distinguish between static and dynamic partitions by their differing partition identifiers (IDs).

Static Partition IDs

z/VSE supports up to 12 static partitions. These are indicated by the following identifiers:

- **BG**
- **F1 to F9**
- **FA, FB**

Dynamic Partition IDs

Dynamic partitions have their own partition identifiers. These are indicated by the following identifiers:

- The first character may be any alphabetic character **except A, B, F**. The first character shows the class to which a dynamic partition belongs.
- The second character (1-9 or A-W) identifies a dynamic partition within a class.

For example, **P1, W3, KL** could be dynamic partitions IDs.

Dynamic partitions are grouped into classes which correspond to VSE/POWER execution job classes. Your system administrator defines dynamic classes and the number of dynamic partitions running in each dynamic class in tables called *Dynamic Class Table*s. Ask your system administrator for a list of your specific partition configuration.

Because some operator commands are restricted or not valid for dynamic partitions, you should distinguish between static and dynamic partitions carefully. For a list of valid and restricted operator commands, see Table 10 on page 213.

For further details on how to control batch jobs in dynamic partitions, see Chapter 9, “Controlling Job Execution,” on page 79.

Predefined VSE/POWER Queues

z/VSE uses the *batch queues* provided by VSE/POWER to process batch program input and output:

- *List (LST) queue*

  This is the primary output queue. The output of jobs is stored here.
- *Reader (RDR) queue*

  All input for batch processing (jobs) is stored in this queue and waits there to be processed.
- *Punch (PUN) queue*

  This is another output queue, which stores punch output such as:

  – Output produced by compilers (object decks, for example).
  – Output produced by application programs.
  – Data sent from other systems to be placed in a VSE/ICCF library.
  – Output for card punches of RJE (Remote Job Entry) workstations.
- *Transmit (XMT) queue*

  The transmit queue is primarily used if you are part of a network. This queue stores data (both input and output) to be sent to another system in the network.
- *Wait for Run Subqueue*

  This is a subqueue of the RDR queue. The Wait for Run Subqueue only contains jobs scheduled for run time events to come.
- *In-Creation (CRE) queue*

The In-Creation queue is referred to as *logical queue*. It is not a physically linked set of allocated queue entries like the physical RDR/LST/PUN/XMT queues but rather simply a subset of allocated queue entries in the 'in-creation' state. The entries in this logical queue are located for display purposes by stepping sequentially through all allocated queue entries and examining the state indicator.

VSE/POWER also provides the Deletion queue. It is an internal queue not shown in the Interactive Interface and it may be used to watch POWER delete processing.

- *Deletion (DEL) queue*

  The Deletion queue is referred to as *logical queue*. It is not a physically linked set of allocated queue entries like the physical RDR/LST/PUN/XMT queues but rather simply a subset of allocated queue entries in the 'delayed deletion' state. The entries in this logical queue are located for display purposes by stepping sequentially through all allocated queue entries and examining the state indicator.

  For more information please refer to VSE/POWER Administration and Operation.

VSE/POWER Queue Entries

A collection of related data identified by name and number in one of the queues is called a *queue entry*. Each queue entry also has characteristics like:

- Priority
- Disposition
- Class

VSE/POWER processes the queue entries automatically. Normally, you do not have to intervene. However, some queue entries are held in a queue and not processed (entries with disposition H, for example). In order to release such a queue entry for processing, you will have to change the disposition.

You may have to change the priority of a queue entry in the list queue to expedite printing. You may also have to change the disposition or class to hold a queue entry from processing or printing until a printer or printer forms are available. In order to perform such tasks, you must know which queue entries need rescheduling.

Priority

When two queue entries have the same class and are both available for processing, the one with the higher priority will be processed. The priority of a queue entry can vary from 0 to 9. Normally you should only use priority 0 to 8, because z/VSE uses priority 9 for some system queue entries that must be processed as soon as possible. The default priority, as specified in the POWER generation macro, is 3.

Disposition

Each queue entry in a VSE/POWER queue has a disposition assigned. Following are the dispositions that occur most frequently:

D (dispatch)
The queue entry is available for immediate processing. It is deleted from the queue after being processed.

H (hold)
The queue entry remains in the queue until you change its disposition or delete it.

K (keep)
The queue entry is available for immediate processing. It stays in the queue with disposition L after being processed.

L (leave)
The queue entry remains in the queue until you change its disposition or delete it.

Other dispositions that occur less frequently are:

Y (fail)
The queue entry is held by a subsystem or application program request because output processing failed. The entry cannot be processed until changed.

X (incomplete)
The queue entry is incomplete because of a system or program failure. It is unavailable for normal processing and cannot be processed until the disposition is changed.

A (append)
Spool data may be added to the queue entry via spool-access support.

Note: An asterisk (*) means that the entry is being processed.

Class

Classes are used to group queue entries with similar requirements. For example, all queue entries in the reader queue with class 0 are normally processed in partition BG. By convention, all queue entries with class Q are designed to be viewed at a display station instead of being printed. A special output class may also be used to group all queue entries in the list queue that require a specific form.

Classes used for dynamic partitions may also be used for static partitions. If both a *dynamic class* and a static partition with the same class are ready to receive a job, a dynamic partition will be started *first* to process the job. You can use the **SET DYNAL=LOW** command to specify that a static partition will be started first to process the job.

For more information about disposition, priority, and class, refer to VSE/POWER Administration and Operation.

Error Situations

Errors may occur during operation. There may be errors in control statements or programs, or a device may have a read or write error. You may have mounted a wrong tape for a program, or data required for processing may not be found on the specified disks.

If further processing is not possible because of an error condition, you should collect as much information as possible on the status of the program and the system at the time the error occurred. This helps the system administrator or the programmer to analyze and solve the problem.

The z/VSE Guide for Solving Problems manual describes what you can do to collect information when an error occurs.

Some useful utilities you can use to gather information are listed under Appendix E, “Available z/VSE Utilities,” on page 219.

The z/VSE Messages and Codes Volume 1 manual gives you the actions to take in response to messages that the system may issue. The introduction to the z/VSE Messages and Codes Volume 1 manual contains a description of the meaning of message numbers and action indicators associated with messages. Also, from a z/VSE console, you can go into *explanation mode* to obtain **online** the same information that is provided in the z/VSE Messages and Codes Volume 1 manual. See also section “Displaying Message Explanations” on page 34.

If a console message tells you to enter a certain command, you can find details in the z/VSE System Control Statements manual or the respective component manual.

Chapter 3. Operating in the Turbo Dispatcher Environment

Overview of the Turbo Dispatcher

The Turbo Dispatcher is the only dispatcher supported by z/VSE, and is *always active*.

Since the Turbo Dispatcher is always active, this also implies that job accounting is active (JA=YES in the IPL SYS command).

After IPL, only the CPU from which IPL was performed is active. Other CPUs are in stop status (unless they are automatically activated by // SYSDEF TD,START statements in the $0JCL startup procedure of the BG partition). To activate the other CPUs, you must use the SYSDEF TD,START command.

Furthermore, VSE/POWER is set up for parallel processing.

Using the SYSDEF TD Command

With the SYSDEF TD command or statement, you can start and stop CPUs and reset Turbo Dispatcher information. Refer to the manual z/VSE System Control Statements for the format and syntax of the various SYSDEF TD commands and statements.

Starting CPUs

There are two ways to start CPUs:

1. In the startup procedure $0JCL of the BG partition you can include statements such as the following:

```
// SYSDEF TD,START=ALL
// SYSDEF TD,START=cpuaddr
// SYSDEF TD,STARTSBY=cpuaddr
```

2. At the z/VSE console you can enter attention routine (AR) commands such as the following:

```
SYSDEF TD,START=ALL
SYSDEF TD,START=cpuaddr
SYSDEF TD,STARTSBY=cpuaddr
```

ALL means that all CPUs of a multiprocessor that are not yet active are to be activated. *cpuaddr* means that a single CPU identified by *cpuaddr* is to be activated.

Note:

1. To find out the CPU addresses, you can use the QUERY TD command for z/VSE. The corresponding VM command is QUERY CPUS.
2. Refer also to “The SYSDEF TD,STARTSBY Command” on page 13.

Stopping CPUs

You can stop all CPUs, except for the CPU from which IPL was performed, or a single CPU identified by *cpuaddr*. The following attention routine (AR) commands are available:

```
SYSDEF TD,STOP=ALL
SYSDEF TD,STOP=cpuaddr
```

Refer also to:

- “The SYSDEF TD,STOPQ Command” on page 12.

- "The SYSDEF TD,STOPSBY Command" on page 13.

Resetting Turbo Dispatcher Information

To obtain statistical information (for example, on CPU utilization) you can reset Turbo Dispatcher information with the following attention routine (AR) command:

```
SYSDEF TD,RESETCNT
```

This command is executed automatically when a CPU is stopped or started. It should be used, for example, by the operator before issuing a QUERY TD command to get a defined starting point.

Using the SYSDEF Command in a z/VMz/VM Environment

If the z/VSE console is also the CP console (not dialed), you are recommended to first issue the CP command SET EMSG OFF before issuing the SYSDEF command. This is to reduce heavy message traffic that may occur.

The SYSDEF TD,STOPQ Command

Instead of simply stopping a CPU, it can also be quiesced as explained below. The format of the corresponding attention routine (AR) command is as follows:

```
SYSDEF TD,STOPQ=ALL
SYSDEF TD,STOPQ=cpuaddr
```

The STOPQ operand does not really stop a CPU (as the STOP operand does), but suspends a CPU from task selection. A quiesced CPU which is not needed during a certain period of time (for example during off-shift) helps to minimize the overhead caused by idle additional CPUs. The STOPQ operand applies especially for z/VSE systems running as guests under VM because the STOP operand excludes the guest from I/O Assist, which may cause performance degradation.

If a CPU has been quiesced, the character string "QUIESCED" is displayed in the corresponding row of the QUERY TD output. Note that the time values of quiesced CPU will still grow as elapsed time goes by. This is because quiesced CPU does not process any work unit but does still receive and handle interrupts.

In a system with absolutely no work load, the time values of a quiesced CPU may increase as if the CPU were active. This is because, in this case, both active and quiesced CPUs do not process a single work unit. However, in a system with high work load the time values for active CPUs increase much faster than for quiesced CPUs.

The three different states of a CPU and the possible transitions from one state to another are shown in the Figure below.

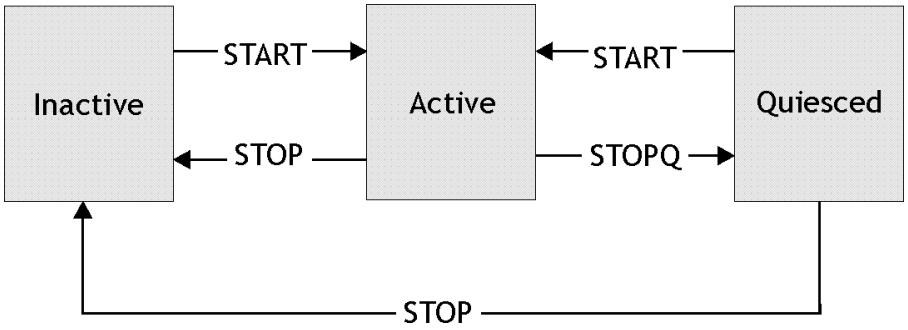


Figure 1. CPU States and their Transitions

Other transitions are not allowed and result in error messages if attempted.

The SYSDEF TD,STARTSBY Command

The STARTSBY operand sets a standby CPU in online mode and starts it. It is only available when running z/VSE in an LPAR.

The format of the corresponding attention routine (AR) command is as follows:

```
SYSDEF TD,STARTSBY=cpuaddr
```

The SYSDEF TD,STOPSBY Command

The STOPSBY operand stops a CPU and sets it in standby mode. It is only available when running z/VSE in an LPAR.

The format of the corresponding attention routine (AR) command is as follows:

```
SYSDEF TD,STOPSBY=cpuaddr
```

If a CPU is in standby mode, the character string "STANDBY" is displayed in the corresponding row of the QUERY TD output.

Using the PRTY and PRTY SHARE Command for Partition Balancing

This section demonstrates the use of the PRTY and PRTY SHARE command. The example is valid for a multiprocessor or a uniprocessor environment. See the manual z/VSE Guide to System Functions for the command syntax.

Displaying the Current Partition Priority Sequence

When entering the **PRTY** command without operands, z/VSE displays the partition priority sequence as shown in Figure 2 on page 13 where partition F1 has the highest and partition X the lowest priority.

```
PRTY
AR 0015 PRTY X,S,R,I,Z,Y,P,C,BG,FA,F9,F8,F6,F5,F4,F2,F7,FB,F3,F1
AR 0015
AR 0015 1I40I  READY
```

Figure 2. PRTY Command: Displaying Partition Priorities

The following system programs and workloads are assumed for the sample environment:

- VSE/POWER runs in F1
- CICS runs in F2
- VTAM runs in F3
- The BSM security server runs in FB

For partition F2 a heavy workload is assumed likely to monopolize the system by consuming most of the CPU time.

Because of the F2 workload, the batch partitions to the left of F2 in the priority sequence (X, S, R, I, Z, Y, P, C, BG, FA, F9, F8, F6, F5, F4) will receive very few time slices if at all. Let us assume that you want to improve the poor performance of F4, F8, and dynamic class C. You can achieve this by creating a balanced group (consisting of F4, F8, F2, and class C) in a way that limits F2 in throughput and response time.

Creating a Balanced Group

You establish the balanced group with the **PRTY** command as shown in Figure 3 on page 14.

```
PRTY F4=F8=C=F2,BELOW,FB
AR 0015 PRTY X,S,R,I,Z,Y,P,BG,FA,F9,F6,F5,F4=F8=C=F2,FB,F3,F1        (1)
AR 0015
AR 0015 SHARE F4= 100, F8= 100,  C= 100, F2= 100          (2)
AR 0015
AR 0015 1I40I  READY
```

Figure 3. PRTY Command: Creating a Balanced Group

The meaning of the display is as follows:

1. The system displays the priority sequence with the newly established balanced group including partitions F4, F8, dynamic class C, and F2. Highest priority has the VSE/POWER partition F1, the VTAM partition F3, and the BSM security server partition FB, followed by the balanced group.

   The available CPU time is distributed as follows:

   a. Partitions F1 and F3 get the CPU time (cycles) they request.

   b. The partitions of the balanced group get all the remaining CPU time (which they do not necessarily use up completely).

   c. The partitions to the left of the balanced group get the CPU time (cycles), if any, not consumed by F1, F3, and the balanced group.

2. The system displays the share values for each partition and class belonging to the balanced group. The initial value for each member of the balanced group is 100. This is the default value as set by the system for partition balancing. You may increase this initial value up to a maximum of 9999 or decrease it down to a minimum of 1. You can remove a partition or class from balancing by specifying a share value of 0.

When entering the PRTY command without parameters you get a display with the newly set values and priorities:

```
PRTY
AR 0015 PRTY X,S,R,I,Z,Y,P,BG,FA,F9,F6,F5,F4=F8=C=F2,FB,F3,F1
AR 0015
AR 0015 SHARE F4= 100, F8= 100,  C= 100, F2= 100
AR 0015
AR 0015 1I40I  READY
```

Figure 4. PRTY Command: Displaying Partition Priorities

Each static partition and dynamic class included in the PRTY sequence has an initial share value of 100. The share value, however, affects dispatching only if the corresponding partition or class is *part of the balanced group.* For this reason, only the share values of the members of the balanced group are displayed.

Note: Priority setting can be changed by POWER time-controlled procedures for online processing and batch processing.

Changing the Relative Share of CPU Time

In our example, F4, F8, F2 and class C have equal rights in terms of their dispatching order, that is, they get time slices of the same size allocated. This, however, may lead to a poor CICS performance in F2. To reduce the performance degradation, you can give F2 a higher relative share of CPU time compared to the other members of the balanced group. You can do this with the **PRTY SHARE** command as shown in Figure 5 on page 14.

```
PRTY SHARE,F2=600
AR 0015 PRTY X,S,R,I,Z,Y,P,BG,FA,F9,F6,F5,F4=F8=C=F2,FB,F3,F1
AR 0015
AR 0015 SHARE F4= 100, F8= 100,  C= 100, F2= 600
AR 0015
AR 0015 1I40I  READY
```

Figure 5. PRTY SHARE Command: Changing the Share of CPU Time (Example 1)

Partition F2 gets now a six times higher share of CPU time than the other members of the balanced group.

Let us assume there are two dynamic partitions active in class C: C1 and C2. Dynamic partitions of the same class will receive the share value of the corresponding dynamic class. So the current distribution of workload within the balanced group is as follows:

The share values for F4, F8, C1, and C2 are 100 each; for F2 the share value is 600 resulting in a total of 1000. F2 will receive 60% of the CPU time for the balanced group whereas F4, F8, C1 and C2 will receive 10% each. This means that F2 still receives a high amount of CPU time but without the danger of monopolizing the system. The batch partitions F4 and F8 and the dynamic class C also receive a proper portion of CPU time ensuring a certain amount of throughput for these partitions.

The shares of CPU time for the balanced group as shown in Figure 6 on page 15 are equivalent to those shown in Figure 5 on page 14, since what we define are *relative* shares.

```
PRTY SHARE,F4=10,F8=10,C=10,F2=60
AR 0015 PRTY X,S,R,I,Z,Y,P,BG,FA,F9,F6,F5,F4=F8=C=F2,FB,F3,F1
AR 0015
AR 0015 SHARE F4=  10, F8=  10,  C=  10, F2=  60
AR 0015
AR 0015 1I40I  READY
```

Figure 6. PRTY SHARE Command: Changing the Share of CPU Time (Example 2)

Adding a Partition to a Balanced Group

Finally, we want to add partition F5 to the balanced group using the **PRTY** command as shown in Figure 7 on page 15.

```
PRTY F5,EQUAL,F2
AR 0015 PRTY X,S,R,I,Z,Y,P,BG,FA,F9,F6,F5=F4=F8=C=F2,FB,F3,F1
AR 0015
AR 0015 SHARE F5= 100, F4=  10, F8=  10,  C=  10, F2=  60
AR 0015
AR 0015 1I40I  READY
```

Figure 7. PRTY Command: Adding a Partition to a Balanced Group

Note, that F5 still has its initial share value of 100, since there was no other share value assigned for F5. Now, the sum of all share values is 200 (F5 having 100, F4, F8, C1, C2 having 10 each, and F2 having 60). This means F5 will receive 50% and F2 30% of the CPU time for the balanced group.

Displaying Partition Activity and Balancing Data

You can use the *Display System Activity* dialog to display partition activity and balancing data. An example is shown under “ Partition Balancing Display” on page 17.

Controlling CPU Activity

Querying CPUs

To query the status of a z/VSE multiprocessor environment, you can use the following attention routine (AR) command:

```
  QUERY TD
```

Refer to "Interpreting the QUERY TD Display" in the manual *VSE/ESA Turbo Dispatcher Guide and Reference* for details about the information displayed and how to interpret it.

Using the Display System Activity Dialog

The *Display System Activity* dialog (operator Fast Path **71**) displays information about CPU usage in a z/VSE multiprocessor environment as shown in Figure 8 on page 16 and Figure 9 on page 16.

The display is updated by default in 15 seconds intervals. The activity display is also available for workstation users via folder *VSE Workdesk*. Refer to “Monitoring CPU Activity” on page 17 for details.

Note: The display does not provide workload details such as the ratio of parallel and non-parallel processing. For such details you must use the QUERY TD command.

In Figure 8 on page 16, the second line shows the number of CPUs activated, while the third line displays the CPU usage (127%) which is the sum of the individual partition utilizations. The value of 127% reflects the total CPU activity of all active CPUs (all active static and dynamic partitions). The individual partition values that result in 127% are shown in column %CPU.

The maximum value that can be reached by a single CPU is naturally 100%.

```
IESADMDA             DISPLAY SYSTEM ACTIVITY              15 Seconds  09:
*---- SYSTEM (CPUs:  2 /  0 ) ----* *------------ CICS : DBDCCICS ------------*
|CPU      : 127%   I/O/Sec:    1  | |No. Tasks:     118   Per Second :   0.1  |
|Pages In :    0   Per Sec:    *  | |Dispatchable:    0   Suspended  :     2  |
|Pages Out:    0   Per Sec:    *  | |Peak Active :    6   MXT reached:     0  |
*--------------------------------* *----------------------------------------*
Priority: Z,Y,P,BG,F8,C,FA,F9,F7,F6,F5,F4,F2,FB,F3,F1

 ID S JOB NAME  PHASE NAME  ELAPSED     CPU TIME   OVERHEAD   %CPU       I/O
 F1 1 POWSTART    IPWPOWER   18:38:30       8.11       6.13             3,686
 F3 3 VTAMSTRT    ISTINCVT   18:38:09      23.89      37.36             5,466
 FB B SECSERV     BSTPSTS   168:01:17        .05        .02               659
 F2 2 CICSICCF    DFHSIP     18:38:06      65.50      88.66    50%     34,682
 F4 4 REXXSAA               02:45:44      12.38       5.04             5,014
 F5 5 <=WAITING FOR WORK=>                  .51        .15               100
 F6 6 <=WAITING FOR WORK=>                  .51        .15               100
 F7 7 <=WAITING FOR WORK=>                  .51        .15               100
 F9 9 <=WAITING FOR WORK=>                  .51        .15               100
 FA A <=WAITING FOR WORK=>                  .52        .16               101
 F8 8 SUBCPUPU    TOOL       00:06:09     128.16      16.47    47%         79
 BG 0 <=WAITING FOR WORK=>                  .00        .00                2
PF1=HELP      2=PART.BAL.   3=END        4=RETURN     5=DYN.PART         6=CPU
```

Figure 8. Example of a System Activity Display

When pressing PF5, the percentage of CPU time used up by dynamic partitions is displayed (the time shown is summarized on the class level).

When pressing PF6, a summary chart is displayed showing the CPU and partition activity. In case of dynamic partitions, the CPU activity is not shown for single dynamic partitions but is summarized on the class level (C) as shown in Figure 9 on page 16.

When pressing PF9, details on balanced partitions (if defined) are shown. Refer to “ Partition Balancing Display” on page 17 for an example.

```
IESADMCPU               CPU SYSTEM ACTIVITY DISPLAY      15 Seconds  09:10:11

                                                                      %CPU
                 *-----------------------------------------------------* Time
Total System     | ****************************************************> | 127%
                 |     |         |         |         |         |      |
                 *---- 10 ------ 30 ------ 50 ------ 70 ------ 90 ----*
ID    JOB NAME

F2    CICSICCF   | *************************                             40%
F8    SUBCPUPU   | ***********************-                             37%
FB    SECSERV    | ***************                                     30%
C                | ***************                                     20%









PF1=HELP                    3=END       4=RETURN
```

Figure 9. Example of a System Activity Display (Summary Chart)

Partition Balancing Display

The *Display System Activity* dialog offers via PF9 a summary display of all active static partitions and dynamic classes, together with their CPU utilization, their share values, and whether they belong to a balanced group or not. Partitions or classes belonging to a balanced group are identified by an asterisk (*). Figure 10 on page 17 shows a sample display.

For more information about share values and balanced groups refer to the section “Using the PRTY and PRTY SHARE Command for Partition Balancing” on page 13.

```
IESADMPB    Display Partition Activity and Balancing     15  Seconds 14:20:20
*---------------- SYSTEM ( CPUs active:  1 / CPUs quiesced:   ) ------------*
|CPU     :   122%   Non-par. :   3%    | Pages In :    0   Per Sec :     *  |
|I/O/Sec :     5    Spin     :   2%    | Pages Out:    0   Per Sec :     *  |
*-------------------------------------------------------------------------*
Priority: Z, Y, P, BG,FA,F5,F9,F7,F6,F4=F8=C=F2,FB,F3,F1

  ID B JOB NAME            %CPU SHARE  |  ID B JOB NAME            %CPU SHARE
  F1   POWSTART               5   100  |  FA   <=WAITING FOR WORK=>       100
  F3   VTAMSTRT               5   100  |  BG   <=WAITING FOR WORK=>       100
  FB * SECSERV               30   300  |  P    <=====ENABLED======>       100
  F2 * CICSICCF              25   400  |  Y    <=====ENABLED======>       100
  C  * <=====ENABLED======>  20   100  |  Z    <=====ENABLED======>       100
  F8 * BATCHLM3              10   100  |
  F4 * CICS2                 25   200  |
  F6   <=WAITING FOR WORK=>       100  |
  F7   <=WAITING FOR WORK=>       100  |
  F9   <=WAITING FOR WORK=>       100  |
  F5   <=WAITING FOR WORK=>       100  |

PF1=HELP                   3=END        4=RETURN
```

Figure 10. Example of an Activity Display with Balanced Partitions

Note that the total CPU usage of 122% includes the 2% Spin time during which the CPU was waiting for resources.

Monitoring CPU Activity

Another possibility to monitor the CPU activity of your VSE system over the time is provided by the VSE Navigator. For details refer to

- *z/VSE e-business Connectors User's Guide* with form number SC33-8231, available as PDF on the CD-ROM (SK2T-0060) and DVD-ROM (SK3T-8348) and from the Internet at z/VSE IBM Documentation.
- z/VSE downloads for VSE Navigator download.

The Console Dialog

The panel you get when using the *Console* dialog shows in the first line the number of active CPUs: (02).

```
SYSTEM:  z/VSE              z/VSE 4.3         TURBO (02)       USER:  PUBS
VM USER ID:  VSE430                                            TIME:  18:14:02
BG 0000 EOJ PAUSEBG
        DATE 04/15/2011, CLOCK 18/13/40, DURATION   00/00/27
BG 0001 1Q34I   BG WAITING FOR WORK
d dync
AR 0015 1C39I COMMAND PASSED TO VSE/POWER
F1 0001 1Q6AI  ******   ACTIVE DYNAMIC CLASS TABLE DTR$DYNC.Z    ******
F1 0001 1Q6AI  CLS STATE   ACT/MAX ALLOC    SIZE  SP-GETV  PROFILE LUBS
F1 0001 1Q6AI   C  ENAB      0  9     1M    500K    128K   STDPROF   50
F1 0001 1Q6AI   P  ENAB      0 32     1M    512K    128K   PWSPROF   50
F1 0001 1Q6AI   Y  ENAB      0  8    12M   1024K   1024K   STDPROF   50
F1 0001 1Q6AI   Z  ENAB      0  3     5M   1024K    128K   STDPROF   50
F1 0001 1Q6AI   I  ENAB      0  1     1M     80K    128K   STDPROF   50
F1 0001 1Q6AI   R  ENAB      0  4     8M    512K    128K   STDPROF   50
F1 0001 1Q6AI   M  ENAB      0 15    15M    152K    128K   STDPROF   50
F1 0001 1Q6AI   N  ENAB      0  7     7M     80K    128K   STDPROF   50
F1 0001 1Q6AI   S  ENAB      0  7     7M     80K    128K   STDPROF   50
F1 0001 1Q6AI   T  ENAB      0 17    17M    172K    128K   STDPROF   50









==>

1=HLP 2=CPY 3=END 4=RTN 5=DEL 6=DELS 7=RED 8=CONT 9=EXPL 10=HLD 11=PCUU 12=RTRV

ACT_MSG: HOLDRUN           PAUSE: 01  SCROLL: 1           MODE:  CONSOLE
```

Figure 11. Example of a Console Panel Display

Restricted Use of the DSPLY and the ALTER Command

In a multiprocessor environment, each processor has a prefix register which the processor uses to relocate addresses between X'0' and X'1FFF' to another page frame in storage. The prefix register enables each processor to use a different page frame to avoid conflicts with other processors for activities such as interrupt code recording. Thus, the address range X'0' through X'1FFF' (which in this context is called prefix page) refers to different areas of storage, depending on which processor generates the address.

DSPLY Command

The DSPLY command allows the operator to display 16 bytes of virtual storage, starting at the specified hexadecimal address. The data is displayed on the device assigned to SYSLOG which is usually the system console.

If at least one additional CPU is started, the address range from X'0' to X'1FFF' is no longer unique. Thus, if the hexadecimal address specified with the DSPLY command is below X'2000', the output of the DSPLY command is random; it shows storage belonging to any of the active CPUs.

This ambiguity can be avoided only if the system runs in uniprocessor mode.

ALTER Command

The ALTER command allows the operator to alter 1 to 16 bytes of virtual storage, starting at the specified hexadecimal address.

If at least one additional CPU is started, the address range from X'0' to X'1FFF' is no longer unique. Therefore, if the hexadecimal address specified with the ALTER command is below X'2000', the storage area that is to be altered is randomly selected depending on which CPU is momentarily active. It also involves the risk that system-relevant data is destroyed. Therefore, ALTER is not allowed if the following two conditions are true:

- At least one additional CPU has been started.
- The specified hexadecimal address for ALTER is below X'2000'.

This status is also indicated by the following message:

```
1I37I   UPDATE ON PREFIX PAGE NOT POSSIBLE IN MP ENVIRONMENT
```

In this message, MP stands for multiprocessor.

However, the ALTER command can be used in "uniprocessor mode" by stopping all additional CPUs first. When later returning to "multiprocessor mode", the changed information is automatically transferred to the other CPUs.

For a detailed syntax and operand description of the commands refer to the manual z/VSE System Control Statements.

Part 2. Communicating with z/VSE

Chapter 4. How To Operate Your System

Most z/VSE operation tasks are done by using the **z/VSE console**. This topic, therefore, concentrates on the z/VSE console: its functions and how you operate from it.

You can also perform some operation tasks by using the System Management dialogs of the z/VSE Interactive Interface. There are dialogs, for example, for managing the VSE/POWER queues and backing up data. These dialogs are described in Chapter 15, “Performing Tasks via Dialogs,” on page 115.

This topic has information on how to communicate with the system using z/VSE console functions. For a device description of a given console itself and for information on how to handle its hardware functions, refer to the appropriate hardware documentation.

This topic has three major parts:

1. Some conceptual information about the z/VSE console
2. Operation in **full-screen** mode.

   This is considered as the normal (or the primary) mode of operation.
3. Special considerations for **line-mode** operation.

This topic contains:

Note:

1. Before using the information in this topic, you should ensure you understand the terms *physical address* and *VSE address*. See “Explanation of Physical Address and VSE Address” on page 5.
2. If you are required to manage the *hardware Crypto configuration* of your installation, refer to "Using Hardware Crypto Commands" in the z/VSE Administration, SC34-2692.

The z/VSE Console

Regarding the z/VSE console, different console authorization modes are distinguished:

- **administration console**
- **limited administration console**
- **enhanced user console**
- **user console**.

Table 1. Overview of different console authorization modes		
	Can receive all messages	**Can enter all commands**
Administration console like for SYSA	yes	yes
Limited administration console	yes	no
Enhanced user console	no	yes
User console like for PROG	no	no

Administration Console versus User Console

The system communicates with the operator by way of

- Messages
- Command responses
- Output of system functions that was requested from the console.

The distinction between administration and user console has to do with the **amount** of data that the system sends to the console:

Administration Console

An administration console can enter all commands and receives **all system messages** that are not directed to a specific console. These include so-called *unsolicited messages*: messages that make some event of system-wide relevance known, as shown in the following three examples:

```
IST020I VTAM INITIALIZATION COMPLETE FOR ...
   ⋮
DFHSI8430I DBDCCICS About to link to PLT programs during the third
stage of initialization.
   ⋮
K029I   ICCF INITIALIZATION COMPLETE
```

In addition, the administration console receives data that have to do with its own activities, for example responses to commands it had issued, or specific output it had requested (output of commands MAP, LISTIO etc.).

Please note that **one or more administration consoles** can be active at the same time. The *Console* dialog of the z/VSE Interactive Interface lets you perform all operation tasks (except for IPLing the system) from a normal display station. Therefore, any number of Interactive Interface users can have an administration console.

Note: Operator and administrator type users have administration console authority by default.

User Console

This console has limited command authority and receives only messages that are specifically directed to it. These are, as is the case of the administration console, messages that relate to its own activities. For example,

- The system response to the REPLID command (to list the messages that indicate an outstanding action or reply) is sent only to the console that issued the REPLID command.
- Job-related messages are sent to the console that is designated as the recipient of those messages, most likely the console which submitted the job.

For a more detailed description of the console commands, please refer to “Console Commands” on page 37.

User Profile Definitions

Whether you get an administration console or a user console is determined by the type of your user ID under which you are logged on to the Interactive Interface.

After selecting the *Console* dialog, your terminal is a

administration console

if your's is a SYSA user ID (administrator - type 1 user) or an OPER user ID (operator - type 2 user), or is a

User console

if your's is a PROG user ID (programmer - again type 2 user) or *general user* user ID (type 3 user).

These are default definitions. The administrator can override these definitions when defining a user profile.

The console of a CMS user who communicates with z/VSE through the VM/VSE Interface is a z/VSE **user console**. The CMS user's console can be made a z/VSE **administration console** via the attention routine (AR) command SYSECHO. (The VM/VSE Interface is described in detail in Chapter 14, “Operating z/VSE under VM,” on page 105.) Also, the NetView operator's console becomes a z/VSE **administration console** after a QLOGON command has been issued.

Note that the system console (see below) is always an administration console.

Command Authorization

An administration console has unrestricted authorization to reply to all outstanding messages and to enter any kind of system command.

An administrator user always has administration console authorization. Generally, for all users the console authorization can be configured with the user profile dialog. However, it is not recommended to define programmer users with an administration console (especially to allow entering commands).

On the other hand, a user console with **restricted command authority** can respond only to the messages that are directed to it. Also, it can enter only a restricted set of system commands: just enough to perform operation tasks within its own scope and without impacting system wide operation.

CMS User under the VM/VSE Interface

In a z/VSE system with security not active (SEC=NO), a CMS user under the VM/VSE Interface has unrestricted command authority.

This subject is discussed in more detail in section “VSE System Control Commands” on page 37.

Interactive Interface Console versus System Console

The system console has all the characteristics of an administration console. In addition, it is the **only console from where you can IPL** the system.

The system console is either

- a locally-attached non-SNA 3270 terminal,
- an OSA-ICC attached terminal, or
- the integrated console.

  This is the console of the service processor (available on z Systems processors). When you have designated the integrated console as your z/VSE system console, you use it typically for

  – **IPL** After IPL, for your normal day-to-day work, you would most likely use another terminal as system console, for example a terminal where you logged on to the z/VSE Interactive Interface.

  – **Recovery** The integrated console resumes the system console function when no other console is available.

Section “How to Access an Integrated Console” on page 51 describes for z Systems processors how you access the integrated console.

After IPL has completed, the 3270 system console works like any other administration console, thus receives all system messages. The integrated console, on the other hand, is shut off from the normal message traffic. It serves only as the "last-resort" console to receive all critical messages that cannot be routed to any other console.

The Interactive Interface Console is attached through CICS TS and the Interactive Interface using selection 3 1 (for an administrator type user). It can also be configured as initial selection using the user profile maintenance.

The z/VSE Console in Various Environments

The figure below shows where, in a given z/VSE system, the above-presented console types fit in.

The left part of the figure addresses a z/VSE guest system under VM, the right part a z/VSE system running in LPAR mode. Letters **F** or **L** indicate whether a console works in full-screen mode or in line-mode, respectively.

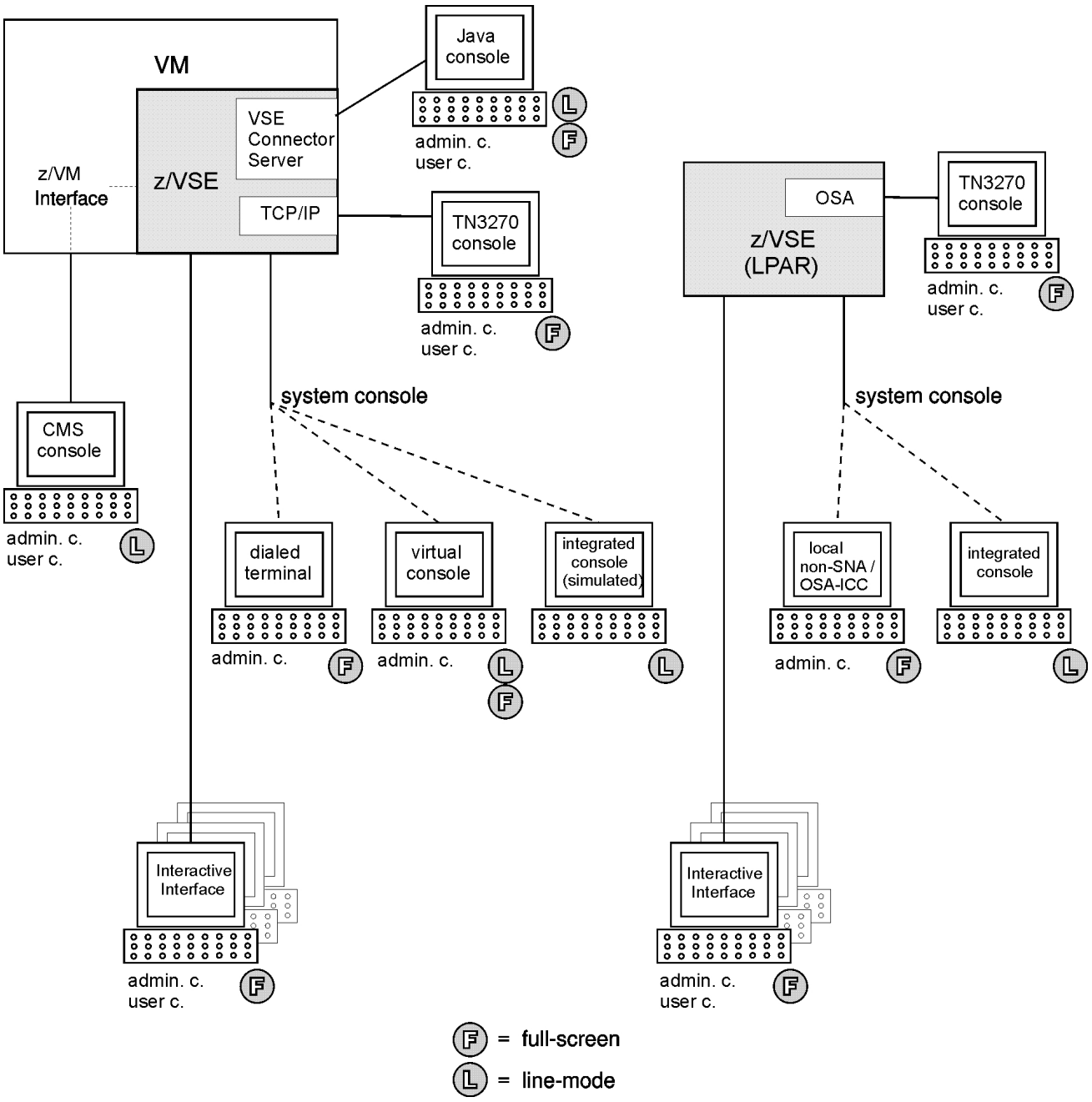


Figure 12. z/VSE Consoles

Note:

1. The z/VSE system console under VM operates either in line mode or in full-screen mode. You set the mode with the CP command TERMINAL CONMODE. Be aware of some risks when operating in full-screen mode. This is discussed later in this topic in section "Considerations for TERMINAL CONMODE 3270" on page 48.

   A dialed terminal always operates in full-screen mode.
2. A NetView operator station can also serve as a z/VSE administration console.

   Its presentation characteristics are controlled by NetView.

The z/VSE Console in Full-Screen Mode

The system communicates with the operator by way of **messages**. It is the operator's task to **interpret** these messages and react to them through message replies and operator commands. **Explanations** which help to interpret a message are available to be displayed at the console. The operator can **redisplay messages** that have disappeared from (scrolled off) the display screen.

Interactions of the above kind will be discussed in detail in the following sections. Here the emphasis is on operating in full-screen mode. A later section ("Special Considerations for Line-Mode Operation" on page 49) points to some specialties for line-mode operation.

A full-screen console is typically available at the system console and at a z/VSE console under the z/VSE Interactive Interface. The system console obtains its full-screen console automatically through IPL. Under the Interactive Interface, you have to specifically select the dialog. This is described in the following section.

Accessing the Console Dialog

For user ID **OPER**, z/VSE predefines the *z/VSE Function Selection* panel shown in Figure 13 on page 28. The system displays the panel after a user with a profile like that of OPER signs on.

```
IESADMSL.IESEOPER         z/VSE FUNCTION SELECTION
                                                    APPLID: DBDCCICS
  Enter the number of your selection and press the ENTER key:

        1  Program Development Library
        2  Console
        3  Manage Batch Queues
        4  Message and News Handling
        5  Backup/Restore
        6  CICS-Supplied Transactions
        7  System Status
        8  Maintain Synonyms









PF1=HELP                  3=SIGN OFF                        6=ESCAPE(U)
                          9=Escape(m)

==>
```

Figure 13. Example of z/VSE Function Selection Panel

In this information, the panel is used as the starting point for many of the operation tasks shown.

Note: Your administrator may change the default panel to fit your particular system more closely.

A selection in the above panel leads to a particular dialog. Each dialog is described in a separate topic, except for the first dialog *Program Development Library*. This selection allows you to handle jobs stored in a VSE/ICCF library. For a detailed description about the use of program development libraries, see the *VSE/ESA Programming and Workstation Guide* manual.

To access the *z/VSE Console* dialog, in the *z/VSE Function Selection* panel shown in Figure 13 on page 28, select:

2 (Console)

Operator Fast Path: 2	Synonym Default: console Yours:

Invoking the dialog displays the *z/VSE Console* panel. See Figure 11 on page 18 for an example.

Handling System Messages

On a full-screen *z/VSE Console* display, you will see basically two types of messages:

- System messages
- Local messages.

Local messages have to do with the dialog that is currently taking place. They appear by themselves in the lower portion of the screen (note that this is not true for a line-mode display where local messages are intermixed with system messages). Local messages frequently relate to **local commands** which are discussed in "Local Commands" on page 39.

System messages are, in general, displayed on the system console screen and on any screen that is occupied by the *z/VSE Console* function of the Interactive Interface.

These messages are issued by the supervisor, by one of the other components of z/VSE, or by a program running in a batch partition. Most of the messages just inform you about some activity in the system. For example, an information message like:

```
F1 0001 1Q47I  BG SAVELIB  00478 FROM (VSE1), TIME=10:02:57
```

tells you that the job SAVELIB has been selected for batch processing in partition BG.

Other messages ask you to take an action, or make a decision. In the message:

```
F1 0001 1Q40A  ON 01E FORMS F001 NEEDED FOR PRTJOB 00298
```

you are asked to check that the correct forms are mounted in the printer with address 01E, which is the *VSE address*. To obtain the corresponding *physical address*, you would enter a `QUERY IO,CUU=01E` command at the console. For details, see "Obtaining a Physical Address From a VSE Address" on page 5.

In some cases, part of the required action is to enter a reply to the message. An example is message:

```
F1-0001 1C10D PLEASE ASSIGN SYSRDR
```

For detailed information about these messages refer to z/VSE Messages and Codes Volume 1.

Before you answer a message, further messages requiring your reply may be issued. And, you normally do not have to answer system messages in the order that they are displayed. For this reason the system adds a prefix to each message. The prefix consists of:

1. The partition identifier.
2. One of the following three characters:
   - Blank (space) which indicates that no direct reply is required for the message. However, the message may tell you to perform some action.
   - Minus sign (–) which indicates that a reply is required.
   - Plus sign (+) which indicates that not only a reply is required but also a system resource (I/O device or partition) cannot continue until the message is answered. In addition, other system actions may be stopped until the message is answered.
3. The reply identifier (reply ID), a four-digit number that you use to answer the message. Leading zeroes in the reply ID may be omitted.

In the last example above, the message was issued by a program running in partition F1, and the reply ID is 0001. To answer a message, you first type the reply ID followed by one space, and then the actual answer.

To display the partition identifiers and prefixes of messages that still need replies, enter the command:

```
REPLID
```

The REPLID command displays outstanding replies for both static and dynamic partitions. The lines below show an example of the **REPLID** command and how you might respond to the command's output.

```
replid
AR 0015 1I87I REPLY TO : F2-0002 BG-0000
2 cemt i te
 .
 .
 .
```

Figure 14 on page 30 illustrates the communication between you and your z/VSE system. Notice how the system marks reply IDs by minus (–) or plus (+) signs, as was outlined above.

```
sdaid
AR 0015 4C05I PROCESSING OF SDAID  COMMAND SUCCESSFUL
AR 0015 1I40I  READY
trace
AR 0015 4C08D SPECIFY TRACE TYPE.+
AR+0015
15 io
AR 0015 4C08D SPECIFY ONE OF THE KEYWORDS AREA OR JOBNAME.+
AR+0015
15 area
AR 0015 4C08D SPECIFY TRACE AREA.+
AR+0015
15
AR 0015 4C08D SPECIFY ONE OF THE KEYWORDS UNIT,CU,OR CHANNEL.+
AR+0015
15 unit
AR 0015 4C08D SPECIFY UNIT ADDRESS(ES).+
AR+0015
15 480
AR 0015 4C08D SPECIFY OUTPUT.+
AR+0015
15
AR 0015 4C08D SPECIFY OPTIONS.+
AR+0015
15
AR 0015 4C05I PROCESSING OF TRACE  COMMAND SUCCESSFUL
AR 0015 1I40I  READY
endsd
AR 0015 4C05I PROCESSING OF ENDSD  COMMAND SUCCESSFUL
AR 0015 1I40I  READY
r rdr,pausebg
AR 0015 1C39I COMMAND PASSED TO VSE/POWER
F1 0001 1R88I  OK
BG 0001 1Q47I   BG PAUSEBG 00855 FROM (SYSA) , TIME=16:01:36
BG 0000 // JOB PAUSEBG
        DATE 12/17/2010,CLOCK 16/01/36
BG 0000 // PAUSE
BG-0000
0
BG 0000 EOJ PAUSEBG
        DATE 12/17/2010,CLOCK 16/01/45,DURATION   00/00/09
BG 0001 1Q34I   BG WAITING FOR WORK
```

Figure 14. Answering System Messages

Note:

1. Messages during the very early part of IPL do not have reply IDs.
2. Replies to VSE/POWER messages (1Q-, 1R- and 1V-prefix messages) are often VSE/POWER commands (for example, PGO). These replies do not require a reply ID.

Redisplaying Messages

Because the console screen can display only a limited number of messages, old messages will disappear from the screen as new ones appear. If you want to see a particular message again, you can redisplay it by using the **REDISPLAY** command as described below.

This section shows examples about how you use the **REDISPLAY** command. For the full description of this command refer to Appendix B, “REDISPLAY Command,” on page 205.

Additional Information...

- When you are actually doing work with your z/VSE system, you are encouraged to make use of the online HELP facility.
- Just press the PF1 (=HLP) key and you will get plenty of information, including examples, on how to work with the redisplayed data.

You enter the REDISPLAY command in one of two ways:

- As **local command**

  In this case, you have to prefix the percent character: %REDISPLAY. It is advisable to assign a PF key to the %REDISPLAY command. The set of predefined key settings that is used in this information has PF7 assigned to the %REDISPLAY command. When using the PF key, you may or may not supply some operand(s) in the input line.

  When the %REDISPLAY command is given in console mode, the console goes into **redisplay mode**. While in redisplay mode, you may issue additional %REDISPLAY commands, preferably by using some predefined key.

- As **system command**

  This form is used for *line-mode* display (as opposed to full-screen display). Special Considerations for line-mode display are discussed in section "Special Considerations for Line-Mode Operation" on page 49.

The data being redisplayed, in general, is taken from the hardcopy file. Due to the fact that it is only **one** hardcopy file that records the console traffic of **all** consoles, on an administration console you might see more records redisplayed than originally appeared on that console. The redisplay at a **user console** (assuming the user has restricted command authority) shows only console traffic to or from this console.

The **REDISPLAY** command has parameters for reducing the amount of logging items to be redisplayed. This is shown in the following examples (where the short form %REDI of the %REDISPLAY command is used).

Filtering (by Partition, Commands etc.)

To select data for a particular **partition**, F3 for example, you type

F3 in the input line and press PF7. This is equivalent to entering the local command

%REDI F3

Here are a few more examples. In console mode, you type (and then press PF7)

BG to redisplay logging items from partition BG only,

P1 to redisplay logging items from dynamic partition P1 only,

P* to redisplay messages from all dynamic partitions that belong to dynamic class P.

Other filtering criteria are the following:

CMD
All entered commands and responses

AR
Attention routine commands and responses

IPL
IPL messages

'string'
messages and replies which contain a given character string.

For example, enter **'CODE='** and press PF7 to redisplay messages that present a return code.

Specifying **ALL** or ***** causes resetting to 'no-filter.'

Subfilter

This is a second filter which can be specified with or without the above-described filter. The subfilter is specified by one character to select

S
Messages that had been suppressed or automatically been replied to (by an operator-automation product)

N
All logging items directed to or entered at an automation console such as a NetView operator station

A
Action messages.

You can reset a subfilter by entering one of the above-described filters.

Working in Redisplay Mode

As mentioned above, when the **local command** %REDISPLAY is entered in console mode, your console goes into **redisplay mode**.

Once you are in redisplay mode, you can page back and forth (that is, look for earlier or later messages), change filters, and finally leave redisplay mode.

Using Predefined Key Settings

For the following discussion, you should be aware of the use of PF (and other) keys in redisplay mode. The predefined PF keys together with their labels are the following (please refer also to Figure 16 on page 40):

```
1=HLP 2=CPY 3=END              6=CNCL 7=BWD 8=FWD 9=EXPL 10=INP 11=PCUU 12=INFO
```

Each PF key having a label is associated with a local command. For example pressing (PF key) 12=INFO initiates the local command %CHANGE INFO. This command changes a variety of "extras" in your message area. It changes, for example, the request to display the date/time for **redisplayed** messages from 'Show' to 'Do not show', or from 'Do not show' to 'Show'. All predefined key settings (PF, ENTER, CLEAR) are shown in Table 3 on page 45 through Table 6 on page 46.

Note in particular that, in redisplay mode, the ENTER key works like a %REDISPLAY command. You can, for example, move the cursor to any line in the message area. Pressing ENTER would make this line the *current line*.

Do not mistake the PF10 (=INP) key to be the ENTER key. The INP key causes the content of the input line to be processed as a command, for example a z/VSE system command. The ENTER key, on the other hand, is actually the %REDISPLAY command and uses the content of the input line as parameter(s) for this command.

Setting a Starting Position

The REDSIPLAY command offers several means of setting a new starting position. For example:

Type **-500** in the input line and repeatedly press PF8 to page forward through the last 500 logging items.

Type **-5D** and press PF7 to skip all logging items of the last five days and to continue paging backward. You can make a similar selection based on minutes (M) or hours (H).

Type **12/17/2010** and press PF7 to skip logging items between now and 17 December 2010.

A new starting position is determined relative to the

Current **filter**, and the
Current **line**.

The current line is visible by strong highlighting: color and solid bar reverse_video When your re-display is set to BWD (backward) scanning, as indicated at the very bottom of your screen

```
FILTER:  ALL                  BWD                          MODE:  REDISPLAY
```

the current line is at the bottom of the message area. Conversely, when FWD (forward) scanning is set, the current line is at the top of the message area.

An 'R' as input lets the display return to the original starting position.

Entering System and Command Input

While you are in re-display mode you can enter system input (commands and replies) and local commands. Note that a **user console** cannot issue a **system command** while in re-display mode.

Type your input into the input area and press PF10=INP (be careful not to press the ENTER key because this key normally serves as another %REDISPLAY command).

Use this function with care. Because any system messages resulting from this input are not received by the console as long as it is in redisplay mode, system performance may be affected. When the MESSAGE indicator at the bottom starts flashing, you should return to console mode as soon as possible.

Be Aware of Special Situations...

1. The REDISPLAY command uses the hardcopy file as input source. If a filter was specified, searching through the hardcopy file may take a while. During the time of searching, the

   ```
   REDISPLAY
   ```

   indicator flashes in the status line.
2. When in the bottom line of your screen, the

   ```
   MESSAGE
   ```

   indicator appears, one or more messages are waiting to be displayed. This indicator is a warning that your console may be in danger of getting SUSPENDed (see the following item). The indicator starts flashing once a critical number of waiting messages is exceeded. Leaving redisplay mode will allow the message that is waiting to be displayed.
3. When in the bottom line of your screen, the

   ```
   SUSPEND
   ```

   indicator flashes, your console has temporarily been cut off from receiving new messages. You do not loose these messages because all messages are recorded in the hardcopy file from where you can redisplay them anytime later.

   The system console can never be SUSPENDed.
4. **Terminate redisplay mode before you walk away from the console** (this is particularly true for the system console). If you fail to do this, your entire system processing may be affected.

Leaving Redisplay Mode

To terminate redisplay mode, use the command **%REDI E**. It is customary to have PF3 assigned to this function.

The **%REDI C** (PF6) immediately cancels any REDISPLAY command that is currently in process. You may want to use this command when searching for a given argument seems unusually long (the REDISPLAY indicator keeps flashing in the status line; see the first of the Notes above).

Redisplaying Messages about Outstanding Replies/Actions

You can redisplay messages from all static and dynamic partitions that tell you about outstanding replies or actions. To do this, enter the **REDISPLAY** command with 'H' as input.

Combining Input Parameters

The REDISPLAY command allows you to enter several parameters in one command. For example, entering

H,P1

plus pressing PF7, requests to have outstanding messages of dynamic partition P1 displayed.

Displaying Message Explanations

You can request an online explanation of a message from the *z/VSE Console* display. This function is available both at a locally-attached system console and at any *z/VSE Console* panel under the Interactive Interface. It is **not** available at the *integrated console* of the z Systems service processor or at a z/VSE console under VM that you operates in CONMODE 3215 (*line-mode*).

The online-explanation function accesses the online message file of z/VSE.

Note: The online message file, as delivered to you, only has the messages that are included in the https://publibfp.dhe.ibm.com/epubs/pdf/iesmc191.pdf manual. The file does not have messages, for example, of optional programs that you may install.

Support for online explanation must be activated by issuing the command

```
EXPLAIN ON
```

This command causes the online message file to be opened.

The OFF parameter causes online explanation support to be deactivated.

You can inquire about the current status by entering the command without a parameter. The initial status after IPL is OFF. EXPLAIN ON may be included in the BG ASI procedure, to activate the support as part of the IPL process.

There are two ways of requesting a message explanation (the following discussion assumes that PF9 is defined as EXPLAIN key):

1. Move the cursor to the message ID of the message for which you need the explanation. Press PF9.
2. Type the message number in the input line (==>). Press PF9.

If a message explanation references another message number, you can display information about this message, too. Move the cursor to the referenced message number or type the message number into the input line. Then press PF9 or the ENTER key.

Please note that you cannot get an online explanation while the **attention routine** (AR) has a **reply outstanding**. The reply must first be given, and then online explanations will be available again.

Note: If you enter a message number which is incorrect or which cannot be found, the dialog will do one of two things:

1. Display information about a message number that closely matches the one you entered.
2. Display a message telling you that the number cannot be found.

VSE/VSAM and AMS Return Codes

You can also display message information about VSE/VSAM return and error codes and Access Method Services (AMS) return and reason codes. The following keywords must be used for VSE/VSAM return and error codes:

```
VSAMOPEN    - for OPEN macro
VSAMCLOS    - for CLOSE and TCLOSE macro
```

```
 VSAMREQU    - for request macros like GET and PUT
 VSAMXXCB    - for GENCB, MODCB, SHOWCB, and TESTCB macro
```

The following keyword must be used for AMS return and reason codes:

```
 VSAMRESN    - for catalog management requests
```

The following example shows a portion of a message display with a VSE/VSAM error code. You get this display after pressing PF9. In the online message explanation, the message variables are shown just in lowercase, not lowercase and italicized as they are in the PDF and IBM Documentation.

```
 SYSTEM   z/VSE                z/VSE 4.3                     USER:  LUKN
 VM USER ID:  ZVSE430                                        TIME:  15:01:04
  4228I   FILE filename macro ERROR X'nn' (nnn) CAT=ddddddd (rr,mm,ss)
          (moduleid) (text)
          EXPLANATION:  The ACB error flag was set to X'nn' (given in decimal
          notation in parentheses) during the indicated VSAM operation (exe-
          cution of OPEN, CLOSE, or TCLOSE).  See error codes; they are listed
          in "VSAMOPEN/VSAMCLOS/VSAMREQU/ VSAMXXCB via EXPLAIN-key."
          ddddddd is the filename of the catalog being searched for the object.
          A filename of '..N/A..' means that no catalog was yet active;
          '..INT..' indicates a filename internally created by VSAM.
          If an error was detected within the catalog management routines,

              rr = catalog management return code,
              mm = suffix of catalog management module detecting the error,
              ss = catalog management reason code.

          See "VSAMRESN via EXPLAIN-key."
          (moduleid) is the name of the VSAM OPEN/CLOSE module that detected
          the error.
          text is additionally created text that may assist service personnel
          in problem determination.  If the text is "Internal IKQOCMSG error"
          the messages routine has received inconsistent information.  Report
          the problem to IBM.
          .
          .
          .
==>
 1=HLP 2=CPY 3=END                   7=BWD 8=FWD 9=EXPL 10=INP

                                                      MODE:  EXPLANATION
```

The explanation tells you how to proceed to display the description of the error code. Type VSAMOPEN and press ENTER or PF9 to get a display similar to the one shown below:

```
 SYSTEM:  z/VSE                z/VSE 4.3                     USER:  LUKN
 VM USER ID:  ZVSE430                                        TIME:  15:04:00
 VSAMOPEN  - Error Codes from OPEN

          Register 15 contains X'00': All ACBs were opened successfully.  OPEN
          processing continues.

          ----------------------------------------------------------------
          ERROR CODE
          Dec  Hex Explanation
          ----------------------------------------------------------------
          113  71  OPEN tried to execute the Catalog Check Service Aid in order
                   to check the validity of this file's catalog records.
                   Either the CDLOAD failed, or the service aid encountered I/O
                   errors.  The file has been opened successfully.
                   Programmer Response: Run the Catalog Check Service Aid; it
                   will identify catalog errors for you.  Follow the directions
                   for the error messages that it issues.
          114  72  The catalog Check Service Aid was invoked during OPEN proc-
                   essing and detected a catalog irregularity, or there was
                   insufficient storage for Catalog Check processing.
                   Programmer Response: This access to the data is allowed,
                   but there are errors in the catalog structure that you
                   should find.  Because this information was collected during
                   OPEN processing, it cannot be printed.  Run the Catalog
                   Check Service Aid against the entire catalog; it will iden-
                   tify catalog errors for you.  Follow the directions for the
 ==>

 1=HLP 2=CPY 3=END                   7=BWD 8=FWD 9=EXPL 10=INP

                                                      MODE:  EXPLANATION
```

The next example shows a portion of a message display with a Librarian Feedback code. You get this display after pressing PF9. In the online message explanation, the message variables are shown just in lowercase, not lowercase and italicized as they are in the PDF and IBM Documentation.

```
SYSTEM:  z/VSE              z/VSE 4.3        TURBO (01)       USER:  AMAD
VM USER ID:  ZVSE430                                          TIME:  14:11:0
L150I      INTERNAL ERROR DETECTED BY MODULE module-name IN PHASE phase-name -
           FEEDBACK CODE = code

           Explanation:  This is probably a system failure. The feedback
           code is primarily intended for use by service personnel. For the
           meaning of the hexadecimal feedback codes, please refer to
           VSELIBFC (via EXPLAIN-key).

           System Action:  This message is followed by a dump. Processing
           terminates with return code 16.

           Programmer Response:  If the libraries to be accessed exist and
           have been built correctly, then contact your IBM Support Center.

           Operator Response:  None.
```

The explanation tells you how to proceed to display the description of the feedback code. Type VSELIBFC and press ENTER or PF9 to get a display similar to the one shown below:

```
SYSTEM:  z/VSE              z/VSE 4.3        TURBO (01)       USER:  AMAD
VM USER ID:  ZVSE430                                          TIME:  08:10:22
VSELIBFC - LIBRARIAN FEEDBACK CODES

          Librarian Feedback Codes

          This section lists and explains Librarian Feedback codes. Feedback
          codes are 1-byte values between 1 and 255. They are listed as part
          of messages L150, L152, L157, and L158 as well as 1QC4I to describe
          unexpected conditions detected by Librarian modules in general as a
          result of system internal errors.

          +----------------+--------+---------+------------------------------+
          !      Value     !   Dec  !   Hex   !          Description         !
          +----------------+--------+---------+------------------------------+
          !                       PARAMETER CHECKING                         !
          +----------------+--------+---------+------------------------------+
          !    FDBCCONN    !    1   !    1    ! ANY CONNECTION ACTIVE. A     !
          !                !        !         ! service was called without   !
          !                !        !         ! any connection to the req.   !
          !                !        !         ! library object.              !
          +----------------+--------+---------+------------------------------+
          !    FDBCMBRC    !    2   !    2    ! CONNECTION TO MBR ACTIVE. A  !
          !                !        !         ! service which is not appli-  !
          !                !        !         ! cable while connection-to-   !
          !                !        !         ! member holds was issued.     !
          +----------------+--------+---------+------------------------------+
==>

1=HLP 2=CPY 3=END                    7=BWD 8=FWD 9=EXPL 10=INP

                                                    MODE:  EXPLANATION
```

Entering System and Command Input

While you are in explanation mode you can enter system input (commands and replies) and local commands. Note that a **user console** cannot issue a **system command** while in explanation mode.

Type your input into the input area and press PF10=INP (be careful not to press the ENTER key because this key normally serves as another %EXPLAIN command).

Use this function with care. Because any system messages resulting from this input are not received by the console as long as it is in explanation mode, system performance may be affected. When the MESSAGE indicator at the bottom starts flashing, you should return to console mode as soon as possible.

Getting HELP Information

You request HELP information by pressing PF1 (%HELP command). This function is available in any operation mode and transfers your console into **help mode**.

HELP information is of two kinds:

1. Panel help

   This provides assistance in using the panel.
2. Message help

   This provides detailed explanations about a local message currently being displayed.

In a HELP panel, you can enter commands (including system commands, such as MAP) and have the result displayed at the console.

Console Commands

From your console, you can issue two types of commands:

- VSE system control commands: These commands are directed toward the operating system as a whole.
- Local commands: These commands have to do with what is happening on your screen. They are mostly screen control commands.

VSE System Control Commands

These commands fall into several groups according to their function, such as commands for

- **IPL** (Initial Program Load) - commands ADD, DPD, SET, SVA etc.
- **JCL** (Job Control Language) - commands ASSGN, JOB, DLBL, EXEC etc.
- **AR** (Attention Routine) and system commands - commands MAP, REDISPLAY, DUMP, GETVIS etc.
- **Security Server**– commands (see “Security Server Commands” on page 38.

Command Authorization

Commands under consideration here are:

- JCL (Job Control Language)
- AR (Attention Routine) and other system commands not processed by Attention Routines (for example REPLID).

These commands fall into three categories according to the level of authorization the issuing user must have:

- **Restricted commands**

  can be entered only from the system console and from other administration consoles. The majority of **AR commands and system commands** belong to this category, for example DUMP and BATCH.

  Authorization is required for the following **Job Control commands**:

  ALLOC
  DVCDN
  DVCUP
  HOLD
  JCLEXIT
  MSECS
  NPGR
  PRTY
  ROD
  SET
  SIZE
  START
  STOP
  SYSDEF
  UCS
  UNBATCH

- **Semi-restricted commands**

  can be entered from a user console only for two special purposes:

  1. To communicate with the partition where a job is running that was submitted from the user console. The VSE/POWER * $$ JOB statement must be specified with the ECHO option. The commands are the following:

CANCEL
MSG
PAUSE
REPLID
REDISPLAY

2. Querying

   Only the query-format may be used; for example the PRTY command to enquire about the partition priority (that is, the PRTY command to **set a new partition priority** would not be allowed from a user console). The commands are the following:

   AUTOIPL
   CACHE
   EXPLAIN
   HCLOG
   MSECS
   PRTY
   PRTYIO
   SYSECHO

- **General-use commands**

  can be entered from any console. The commands are the following:

  GETVIS
  MAP
  STATUS
  VOLUME

Commands of VSE/POWER and VSE/ICCF are restricted in a similar fashion.

Security Server Commands

The Security Server provides a set of commands to control its operation and display server status information.

These commands can be entered from the system console through:

```
MSG xx,DATA=command
```

where **xx** indicates the selected server partition (default FB) and **command** can be one of the following:

HELP, ?, or blank
obtains a list of possible commands.

STATUS
displays some information about the server's internal status.

DBSTARTCACHE
starts caching records read from the VSE.CONTROL.FILE.

DBSTOPCACHE
stops caching.

LOGTIME=*n*
sets the logtime interval time.

OPENCNTL
opens the VSE.CONTROL.FILE.

CLOSECNTL
closes the VSE.CONTROL.FILE.

OPENBST
opens the VSE.BSTCNTL.FILE.

CLOSEBST
closes the VSE.BSTCNTL.FILE.

RESET
resets the server to its initial state.

STOP
stops the server.

Getting Help

The Help command displays a list of available server commands. For example:

```
msg fb,data=?
AR 0015 1I40I  READY
FB 0011 BST221I POSSIBLE SECURITY SERVER COMMANDS ARE:
FB 0011   DBSTARTCACHE ........: STARTS DATABASE CACHING
FB 0011   DBSTOPCACHE .........: STOPS DATABASE CACHING
FB 0011   STATUS ..............: SHOWS TOTAL SERVER STATUS
FB 0011   STATUS=ALL ..........: SHOWS TOTAL SERVER STATUS
FB 0011   STATUS=MAIN|PS|DB|CR : SHOWS SELECTED STATUS
FB 0011   LOGTIME=N ...........: SETS LOGTIME TO N MINUTES (1..9)
FB 0011   RESET ...............: CLEANUP EVERYTHING
FB 0011   STOP | SHUTDOWN .....: STOPS THE SERVER (USE WITH CAUTION)
FB 0011   SHUTDOWN NOPROMPT ...: STOPS THE SERVER WITHOUT CONFIRM.
FB 0011   OPENCNTL ............: OPENS THE II CONTROL FILE
FB 0011   CLOSECNTL ...........: CLOSES THE II CONTROL FILE
FB 0011   OPENBST .............: OPENS THE BSM CONTROL FILE
FB 0011   CLOSEBST ............: CLOSES THE BSM CONTROL FILE
FB 0011 HARDWARE CRYPTO COMMANDS:
FB 0011   APBUSY=NN ...........: SET AP CRYPTO WAIT ON BUSY (0..99)
FB 0011   APRETRY=NN ..........: SET AP CRYPTO RETRY COUNT (0..99)
FB 0011   APREM AP=NN .........: REMOVE (DISABLE) A CRYPTO DEVICE
FB 0011   APADD AP=NN .........: ADD (ENABLE) A DISABLED DEVICE
FB 0011   APQUE ...............: SHOW STATUS OF ASSIGNED AP QUEUE
FB 0011   APHIST ..............: SHOW HISTORY OF PROCESSED REQUESTS
FB 0011   APWAIT=NN ...........: SET AP CRYPTO POLLING TIME (0..99)
FB 0011   APSENSE .............: START SENSING OF CRYPTO HARDWARE
FB 0011   APTRACE=N ...........: SET AP CRYPTO TRACE LEVEL (0..3)
```

See the https://publibfp.dhe.ibm.com/epubs/pdf/iesple82.pdf manual for an overview and planning information, the https://publibfp.dhe.ibm.com/epubs/pdf/iesame81.pdf manual for using information of the security server.

Local Commands

These commands, in general, control the dialog and how you operate your screen. This is in contrast to commands that control the primary computing tasks at your central processor.

Before you get to know these commands, you may want to learn a little about the layout of the *z/VSE Console*.

The z/VSE Console Panel

The *z/VSE Console* panel has slightly different appearances, depending on the mode that your console is in.

The primary mode is **console mode**. Figure 15 on page 40 shows an example.

The other three modes are

- Redisplay mode
- Explanation mode
- Help mode.

An example of a redisplay is shown in Figure 16 on page 40.

```
SYSTEM:  z/VSE              z/VSE 4.3         TURBO (01)       USER:  AMAD
VM USER ID:  ZVSE430                                           TIME:  08:15:22
F4-0004
d dync
AR 0015 1C39I COMMAND PASSED TO VSE/POWER
F1 0001 1Q6AI  ******   ACTIVE DYNAMIC CLASS TABLE DTR$DYNC.Z    ******
F1 0001 1Q6AI  CLS STATE   ACT/MAX ALLOC    SIZE  SP-GETV  PROFILE LUBS
F1 0001 1Q6AI   C  ENAB      0  9     1M    500K    128K   STDPROF   50
F1 0001 1Q6AI   P  ENAB      0 32     1M    512K    128K   PWSPROF   50
F1 0001 1Q6AI   R  ENAB      0  3     8M   1024K    128K   STDPROF  100
F1 0001 1Q6AI   S  ENAB      0  2    15M   1024K    128K   STDPROF  100
F1 0001 1Q6AI   Y  ENAB      0  8     5M   1024K    128K   STDPROF   50
F1 0001 1Q6AI   Z  ENAB      0  3     5M   1024K    128K   STDPROF   50
r rdr,pausebg
AR 0015 1C39I COMMAND PASSED TO VSE/POWER
F1 0001 1R88I  OK : 1 ENTRY PROCESSED BY R RDR,PAUSEBG
BG 0001 1Q47I   BG PAUSEBG 00026 FROM (SYSA) , TIME= 8:15:22
BG 0000 // JOB PAUSEBG
        DATE 12/17/2010, CLOCK 08/15/22
BG-0000 // PAUSE









==>

1=HLP 2=CPY 3=END 4=RTN 5=DEL 6=DELS 7=RED 8=CONT 9=EXPL 10=HLD 11=PCUU 12=RTRV

ACT_MSG: HOLDRUN           PAUSE: 01  SCROLL: 1           MODE:  CONSOLE
```

Figure 15. z/VSE Console: Console Mode

```
SYSTEM:  z/VSE               z/VSE 4.3                         USER:  HAUS
VM USER ID:  ZVSE430                                           TIME:  14:25:32
Z1 0045 0S30I DUMP STARTED. MEMBER=DZ100001.DUMP IN SUBLIB=SYSDUMP.DYN
Z1 0045 1I49I DUMP LIBRARY FULL
Z1 0045 1I51I DUMP COMPLETE
Z1 0045 4A87I AUTOMATIC CLOSE HAS BEEN STARTED
Z1 0045 4A88I AUTOMATIC CLOSE FOR 1 FILE(S) COMPLETED
Z1 0045 1S78I  JOB TERMINATED DUE TO  PROGRAM ABEND
Z1 0045 EOJ MIGRAT
        DATE 12/17/2010,CLOCK 16/39/36,DURATION   00/00/16
Z1 0001 1Q3EI  DYNAMIC CLASS 'Z' WAITING FOR WORK
F4 0004 DFH0801 - C.I.C.S. TIME ALTERED FROM 24.00.000 TO 00.00.004
BG 0001 1Q47I   BG UPDSECT 00354 FROM (VOLK) , TIME=12:54:28
BG 0000 // JOB UPDSECT UPDATE SECURITY TABLE
        DATE 12/17/2010,CLOCK 12/54/32
BG 0000 // EXEC PROC=IESGENST
BG 0000 // EXEC LIBR,PARM='MSHP'
BG 0000 // EXEC IESSECU,SIZE=AUTO
BG 0000 EOP IESGENST
BG 0000 // IF $RC > 8 THEN
BG 0000 1S46I  ONE STATEMENT SKIPPED DUE TO IF CONDITION
BG 0000 // EXEC PROC=IESBLDST
BG 0000 // EXEC IESINSRT

==>

1=HLP 2=CPY 3=END             6=CNCL 7=BWD 8=FWD 9=EXPL 10=INP 11=PCUU 12=INFO

FILTER:  ALL                 BWD                          MODE:  REDISPLAY
```

Figure 16. z/VSE Console: Redisplay Mode

The z/VSE Console panel basically has 6 sections:

1. Two header lines
2. A large portion for system-message lines (depending on the terminal type, there is space for 17, 20, 25, or 36 message lines).
3. An input line (indicated by an arrow ==>), plus one continuation line
4. One line for PFkey labels

5. One message line, for notification and error information related to this console's operation only
6. One line for various status indicators.

Entering a Local Command

This section shows by way of examples how you work with local commands. The entire set of local commands, together with syntax rules, is described in reference-format in the following section, “Local Commands - Reference Summary” on page 42.

Local commands may be assigned to PF keys (this is true for local commands as well as for VSE system control commands). For example, PF12 is occupied by the command

```
%RETRIEVE
```

Pressing PF12 then would cause the last-entered command to be displayed in the input line (you must press ENTER to have the command processed).

Your z/VSE system as delivered to you has predefined key settings (PFs, ENTER, CLEAR). In fact, there are four sets of key settings, one for each mode: **console** mode, **redisplay** mode, **explanation** mode, **help** mode. Predefined key settings (which are similar to the ones delivered with your z/VSE system) are listed in Table 3 on page 45 through Table 6 on page 46.

Note: The examples in this documentation are based on these key settings.

Your administrator has the tools to establish other key settings. These tools are described in the IBM manual z/VSE Administration. The key settings are valid for the entire system, they cannot be set for an individual user.

Five local commands will now be explained:

%COPY
%DELAY
%DELETE
%CHANGE HOLD
%EXCUU

The %COPY Command

This command copies a message line from within the current display to the input line.

Assume you want to copy line number 12. You either type

```
%COPY 12
```

and press ENTER. Or, you move the cursor to that line and press PF2.

The %COPY command is useful, for example, when you want to correct a JCL command which you had misspelled. Simply move the cursor to the line where the system had displayed (*echoed*) the incorrect statement and then press PF2.

Note that the copied data remains in the input line after you return to console mode. This allows you to copy (while you are in redisplay mode) an entire command from the redisplayed data and have it executed by simply pressing ENTER once you are back in console mode.

The %DELAY Command

This command places a character string in the input line with the cursor positioned right behind the string. It allows you, for example, to have a partial command displayed. You may then type in the missing data.

Assume

- PF7 (set with 7=RED) has been *reset* to %DELAY D NET,ACT,ID=
- You are in console mode.

When you press PF7, the partial command

```
D NET,ACT,ID=
```

is displayed in the input line whereupon you may type the net ID and send off the command to the z/VSE system.

The %DELETE Command

This command **removes the highlighting** from an action message that is currently displayed on your console screen. In other words, the command **cannot truly delete** an arbitrary line from the screen, no matter if it is highlighted or not.

It is most practical to use the setting of PF5 as shown in Table 3 on page 45:

%DELETE ?CL,?IN

You simply move the cursor to the highlighted message and press PF5.

The variable ?CL (*cursor location*) is set equal to the line number of the message. The variable ?IN (*input line*) picks up the content of the input line. Note that the message is deleted only from the one console where you are working. Pressing PF6 would replace the variable ?IN by the keyword SYSTEM:

%DELETE ?CL,SYSTEM

This ensures that the highlighting disappears on **all z/VSE consoles** that are currently active.

An alternate way of entering the command would be to specify the line number explicitly, for example if the action message is displayed on line 11:

```
%DELETE 11
```

The %CHANGE HOLD Command

As the console screen fills up again and again, the vast majority of messages disappears. Only those messages that require your attention are collected in highlighted form at the top of the screen.

You have the option of annulling this HOLDing of messages: enter the command

```
%CHANGE HOLD
```

This command works like a toggle switch: you may revert back to HOLDing of action messages by entering the command again.

For console mode, the set of predefined keys used in this documentation has the %CHANGE HOLD command assigned to PF10.

The %EXCUU Command

The %EXCUU command is used to obtain the *physical address* of a device from its *VSE address* at the console. This is required, for example, when mounting tapes or loading forms in a printer, because the *physical address* is used to identify the actual "physical" device to be used.

To obtain a device's physical address from its VSE address, you simply move the cursor to the first character of the device address (contained in the highlighted message) and press PF11. The %EXCUU command is then executed and a `QUERY  IO` command displayed in the console's command line. After pressing Enter, the `QUERY  IO` command will be executed.

The terms *physical address* and *VSE address* are described in “Explanation of Physical Address and VSE Address” on page 5.

Local Commands - Reference Summary

The table below shows the syntax of all local commands and the corresponding functional descriptions. It also lists the modes where the command is valid.

Please observe the following syntax rules:

- The local command must be the first string. It can be abbreviated to five characters (including the leading %).
- One or more blanks separate the local command from the first parameter.
- All other parameters are separated by a comma.

If a local command is assigned to a PF key, you may use variables as parameters. When the command is processed, the variable takes on a value as listed below:

?CL
- number of the message line the cursor is pointing to

?TK
- message ID of the message the cursor is pointing to

?IN
- the data in the input line.

Assume, for example, that

- PF7 is set to

```
%REDISPLAY ?IN
```

- With your console in console mode, in the input line you type

```
B,06/10/2004
```

When you press PF7, logging items will be redisplayed beginning with 10 June 2004 in a backward direction.

The four tables beginning with Table 3 on page 45, which list the predefined key settings, have more examples of the use of variables.

Table 2. Local Commands - Reference Summary

Command	Function	Modes
%BACKward	Pages backward.	Explanation Help
%CHANge ALARM	Enables/disables the alarm sound that is generated when a local message is displayed.	All
%CHANge HOLD	Changes the HOLDing of action messages on the console from 'HOLD' to 'Do not HOLD,' or from 'Do not HOLD' to 'HOLD.'	All
%CHANge INFO	Changes the request to display additional items (the time stamp, for example) for **redisplayed** messages from 'Show' to 'Do not show,' or from 'Do not show' to 'Show.'	All
%CLEAr	Clears the portion of the message area that is eligible for being scrolled off. MORE and HOLD states are also removed.	Console
%CLEAr	Causes the screen to be refreshed.	Redisplay Explanation Help
%CONTinue	Continues with console display. MORE and HOLD states are also removed.	Console
%COPY nn	Copies one message line to the input line.	All
%DELAy string	Displays a command string in the input line and positions the cursor at the end of the string.	All

Table 2. Local Commands - Reference Summary (continued)		
Command	**Function**	**Modes**
%DELEte nn,string	De-highlights message line 'nn' on all consoles currently active in the system if string is set to SYSTEM; otherwise only at the local console.	Console
%END	Returns to previous mode. Note that the row following this one, with no entry in the **Command** column, also applies to the %END command.	Explanation Help
%END	Returns to the panel from where the current panel had been accessed, or: if entered at the system console, deactivates the console (see also the Note below).	Console
%EXCUU	Displays the *physical address* of a device that corresponds to its *VSE address*. See “Obtaining a Physical Address From a VSE Address” on page 5.	Console Redisplay
%EXPLain msgID	Displays explanations for the message identified by 'msgID' by using the *online message explanation* file as input.	Console Explanation Redisplay
%FORWard	Pages forward.	Explanation Help
%HELP	Provides help information for current display, either about using the panel or explaining a local message.	All
%REDIsplay string	Re displays logging items in accordance with the given 'string' of redisplay parameters.	Console Redisplay
%RETRieve	Displays a previously entered command in the input line.	Console
%RETUrn	Returns to *z/VSE Function Selection* panel, or: if entered at the system console, deactivates the console (see also the Note below).	Console
%SET PAUSE nn	Sets the time for the console display's time of pausing before displaying another page. nn indicates the number of seconds ranging between 00 and 99 .	All
%SET SCROLL n	Changes (for console mode) the number of non-highlighted messages that is carried over on a turnover to the next screen. n has a value between 0 and 9.	All

Note: When %END or %RETURN is entered at the system console, you receive the message

```
CONSOLE DEACTIVATED, HIT ENTER TO RESUME
```

After you press ENTER, your console screen is refreshed. You may have a need for this if the picture is scrambled or otherwise corrupted.

The diagram below shows the predefined default values of the ALARM, HOLD, INFO, PAUSE and SCROLL settings.

```
 Parameter   Default Value
 _________   _____________
 ALARM          YES
 HOLD           YES
 INFO           NONE
 PAUSE          1
 SCROLL         1
```

These settings are defined in the IBM-supplied source members IJBxDEF (system wide) and IESxDEF (for users of the z/VSE Interactive Interface). They can be changed by updating and assembling those members (as described in section "Using Macro IJBDEF" of the IBM manual z/VSE Administration).

Table 3. Predefined Key Settings - Console Mode

Type	PFkey	PFkey label	Command
PFKEY	01	'1=HLP'	'%HELP'
PFKEY	02	'2=CPY'	'%COPY '?CL'
PFKEY	03	'3=END'	'%END'
PFKEY	04	'4=RTN'	'%RETURN'
PFKEY	05	'5=DEL'	'%DELETE '?CL',"?IN'
PFKEY	06	'6=DELS'	'%DELETE '?CL',"'SYSTEM'
PFKEY	07	'7=RED'	'%REDISPLAY '?IN'
PFKEY	08	'8=CONT'	'%CONTINUE'
PFKEY	09	'9=EXPL'	'%EXPLAIN '?TK'
PFKEY	10	'10=HLD'	'%CHANGE 'HOLD'
PFKEY	11	'11=PCUU'	'%EXCUU'
PFKEY	12	'12=RTRV'	'%RETRIEVE'
ENTER		'INPUT'	'?IN'
CLEAR		'CLEAR'	'%CLEAR'

Table 4. Predefined Key Settings - Redisplay Mode

Type	PFkey	PFkey label	Command
PFKEY	01	'1=HLP'	'%HELP'
PFKEY	02	'2=CPY'	'%COPY '?CL'
PFKEY	03	'3=END'	'%REDISPLAY E'
PFKEY	06	'6=CNCL'	'%REDI C'

Table 4. Predefined Key Settings - Redisplay Mode (continued)

Type	PFkey	PFkey label	Command
PFKEY	07	'7=BWD'	'%REDI '?CL';'B,'?IN'
PFKEY	08	'8=FWD'	'%REDI '?CL';'F,'?IN'
PFKEY	09	'9=EXPL'	'%EXPLAIN '?TK'
PFKEY	10	'10=INP'	'?IN'
PFKEY	11	'11=PCUU'	'%EXCUU'
PFKEY	12	'12=INFO'	'%CHANGE INFO'
ENTER		'REDISPLY'	'%REDI '?CL';'?IN'
CLEAR		'CLEAR'	'%CLEAR'

Table 5. Predefined Key Settings - Explanation Mode

Type	PFkey	PFkey label	Command
PFKEY	01	'1=HELP'	'%HELP'
PFKEY	02	'2=CPY'	'%COPY '?CL'
PFKEY	03	'3=END'	'%END'
PFKEY	07	'7=BWD'	'%BACKWARD'
PFKEY	08	'8=FWD'	'%FORWARD'
PFKEY	09	'9=EXPL'	'%EXPLAIN '?TK'
PFKEY	10	'10=INP'	'?IN'
ENTER		'EXPLAIN'	'%EXPLAIN '?TK'
CLEAR		'CLEAR'	'%CLEAR'

Table 6. Predefined Key Settings - Help Mode

Type	PFkey	PFkey label	Command
PFKEY	01	'1=HLP'	'%HELP'

Table 6. Predefined Key Settings - Help Mode (continued)			
Type	**PFkey**	**PFkey label**	**Command**
PFKEY	03	'3=END'	'%END'
PFKEY	07	'7=BWD'	'%BACKWARD'
PFKEY	08	'8=FWD'	'%FORWARD'
PFKEY	10	'10=INP'	'?IN'
ENTER		'HELP'	'%HELP'
CLEAR		'CLEAR'	'%CLEAR'

Controlling the Screen

This section gives a few hints and tips about using the console screen. Most of this information should be intuitively clear when you are actually working at your console.

In the following discussion, a PF key is shown whenever a predefined PFkey setting exists for a local command.

Console Mode Only

The following items are applicable to console mode only. The next section addresses also other modes.

- Action messages are highlighted. Messages indicating a system failure appear in color (the default color is red). They will not leave the screen, rather will be collected at the top of the screen.
- You may change this mechanism by issuing the command %CHANGE HOLD (PF7). All highlighted messages now are allowed to roll off the screen, and new highlighted messages will not stay on the screen until %CHANGE HOLD (PF7) is used again. The %CHANGE HOLD command thus works like a toggle switch.
- A highlighted message will be de-highlighted after the condition that led to the highlighting is no longer true. For example, the highlighting disappears after an action is taken that was asked for in the message.

  Please note that a message requesting a reply disappears entirely when the job that issued the message gets cancelled.
- A message can manually be de-highlighted by issuing the %DELETE (PF5 or PF6) command. This message will then automatically roll off the screen. This function can be used for messages which cannot be automatically deleted by the system.
- Whenever the screen is completely filled, the message display stops; '..MORE' is displayed in the status line (which is the bottom line), for example like this:

```
ACT_MSG: HOLD                PAUSE:    3          MODE:  CONSOLE ..MORE
```

  The screen can be turned over with the %CONTINUE command (PF8).

  If you do not turn over the screen, it remains in the MORE state for a given **pause time** (the default is 1 second). After the pause time has elapsed, the display automatically turns over to the next page.

  You can set the pause time with the %SET PAUSE command, in the range of 0 to 99 seconds. A pause time of 0 means that the screen automatically turns over whenever it has been filled completely. Do not use a value of 0 for a PC in 3270 compatibility mode.

The pause time is permanently displayed in the status line (see the example above).

- You can change the number of (non-highlighted) messages that are kept after a turnover to the next screen. Use the %SET SCROLL command, with a message range from 1 to 9.
- When you press ENTER without any input, no new messages will be issued. 'HOLD' is displayed in the status line (the bottom line). The %CONTINUE command (PF8) resumes the displaying of new messages.

Console or Other Modes

- You can obtain message explanations by positioning the cursor to the message ID and issuing the %EXPLAIN command (PF9).

  The status indication MESSAGE appears if new messages were to be delivered in the meantime, for example like so:

```
 1=HLP 2=CPY 3=END                    7=BWD 8=FWD 9=EXPL 10=INP
                                                 MESSAGE  MODE: EXPLANATION
```

- There may be instances where you remain on one display for a long time (for example you had set your screen into HOLD, or you are analyzing an explanation panel). For a console that is set to HOLD, the bottom of the panel would look like this:

```
==>
 1=HLP 2=CPY 3=END 4=RTN 5=DEL 6=DELS 7=RED 8=CONT 9=EXPL 10=HLD 11=PCUU 12=RTRV
ACT_MSG: HOLD                      PAUSE:     1            MODE:  CONSOLE
```

  During this time, you won't receive any messages that the system wants to deliver to you. When the system is getting overloaded by messages to be delivered and you are one of those users who have not picked up their message(s) in a long while, your console receives an alert: the status indication MESSAGE flashes in the status line.

  You should then go into console mode to handle the new messages. Failing to do so could lead you into the SUSPENDed state, which is described in the following paragraph.
- The status indication SUSPEND flashes if the console is being suspended from receiving new messages. You do not loose these messages because all messages are recorded in the hardcopy file from where you can redisplay them anytime.

Considerations for TERMINAL CONMODE 3270

When you operate your z/VSE system under VM from a **CP console in TERMINAL CONMODE 3270**, you should take a few precautions.

Full-Screen Refreshes Missing

If for your console the TERMINAL option BREAKIN is set to IMMED and the ENTER or ATTN key is pressed while a CP message is pending, CP overlays the screen with the message. A refresh of the screen does not necessarily follow; only the updated portions of the screen appear (however, other keys like CLEAR or PA1 do restore the screen).

To avoid problems of this kind, do either of the following:

1. Use the TERMINAL option BREAKIN GUESTCTL. In this case, CP will only signal the presence of messages by a beep, without interrupting the full-screen session on interrupts (other than the one specified as BRKKEY).
2. Use a dialed 3270 terminal rather than the CP console in 3270 mode.

Disconnect/Reconnect between Different Terminal Types

When you disconnect from a terminal and reconnect at another that has different presentation characteristics, your operation may not be successful. The screen might be scrambled, or the lines skewed.

You may try pressing PF3 and then ENTER to refresh the console. Better yet: strictly avoid this kind of disconnecting/reconnecting.

Special Considerations for Line-Mode Operation

The preceding sections focussed on operating your console in **full-screen** mode. In this mode, the contents of an entire terminal screen is displayed at once.

In **line mode**, on the other hand, the information is presented one line at a time in the message area of the terminal screen. You are in line-mode operation at a

- z/VSE system console under VM, when the terminal is set to CONMODE 3215
- CMS console that communicates with z/VSE via the VM/VSE Interface
- Integrated console as system console.

According to the above list, three line-mode displays are shown in the figures below. Notice that this type of display does not have the frame of surrounding information that you get in full-screen mode (for comparison see Figure 16 on page 40). For example, filter, mode, or predefined PFkey settings are not available. The system cannot display highlighted messages.

The following sections describe some peculiarities of line-mode operation.

```
d q
AR 0015 1C39I COMMAND PASSED TO VSE/POWER
F1 0001 1R49I  QUEUE FILE 007% FULL - 1763 FREE QUEUE RECORDS
F1 0001 1R49I  USED QUEUE RECORDS: 123, CRE-Q: 6, DEL-Q: 0
F1 0001 1R49I  RDR-Q: 49, LST-Q: 68, PUN-Q: 0, XMT-Q: 0
F1 0001 1R49I  QUEUE FILE EXTENT ON CKD-230, SYS001, 945, 15
F1 0001 1R49I  DATA FILE 015% FULL - 1422 FREE DBLK GROUPS
F1 0001 1R49I  CURRENT DBLK SIZE=07548, DBLK GROUP SIZE=00008
F1 0001 1R49I  DATA FILE EXTENT 1 ON CKD-231, SYS002, 6330, 1920
F1 0001 1R49I  ACCOUNT FILE 12 % FULL
F1 0001 1R49I  ACCOUNT FILE EXTENT ON CKD-231, SYS000, 8250, 90
```

Figure 17. Example of a Line-Mode Display (CONMODE 3215)

```
vsecmd zvse430 d q
Ready;
 09:22:26  * MSG FROM ZVSE430 : AR 0015 1C39I COMMAND PASSED TO VSE/
 09:22:26  * MSG FROM ZVSE430 : F1 0001 1R49I  QUEUE FILE 007% FULL - 1763 FREE
  QUEUE RECORDS
 09:22:26  * MSG FROM ZVSE430 : F1 0001 1R49I  USED QUEUE RECORDS: 123, CRE-Q:
 6, DEL-Q: 0
 09:22:26  * MSG FROM ZVSE430 : F1 0001 1R49I  RDR-Q: 49, LST-Q: 68, PUN-Q: 0,
 XMT-Q: 0
 09:22:26  * MSG FROM ZVSE430 : F1 0001 1R49I  QUEUE FILE EXTENT ON CKD-230, SY
 S001, 945, 15
 09:22:26  * MSG FROM ZVSE430 : F1 0001 1R49I  DATA FILE 015% FULL - 1422 FREE
 DBLK GROUPS
 09:22:26  * MSG FROM ZVSE430 : F1 0001 1R49I  CURRENT DBLK SIZE=07548, DBLK GR
 OUP SIZE=00008
 09:22:26  * MSG FROM ZVSE430 : F1 0001 1R49I  DATA FILE EXTENT 1 ON CKD-231, S
 YS002, 6330, 1920
 09:22:26  * MSG FROM ZVSE430 : F1 0001 1R49I  ACCOUNT FILE 12 % FULL
 09:22:26  * MSG FROM ZVSE430 : F1 0001 1R49I  ACCOUNT FILE EXTENT ON CKD-231,
 SYS000, 8250, 90
```

Figure 18. Example of a Line-Mode Display (VM/VSE Interface)

Note that the preceding figure shows a display from a **simulated integrated console** under VM. Here, a z/VSE command must be imbedded within the CP command VINPUT VMSG.

REDISPLAY Command

From a line-mode console, you do not have available the conveniences of the **local command** %REDISPLAY, such as the predefined PF keys to browse through the redisplayed data.

Instead you must use the system command REDISPLAY (without the prefix %). Assume, for example, that you want to redisplay messages of partition F3. In full-screen mode, you would type F3 and press PF7 which would place your console in **redisplay mode**. While in this mode, you could scan further through the redisplayed data via PF keys, specify new filters etc.

In line-mode operation, on the other hand, you might enter

```
RED F3,20L
```

The requested 20 lines will be displayed. The system maintains a so-called *internal redisplay mode*. Due to this mode, certain settings are being kept, such as current line, filter. Therefore, by entering the above command again, you would receive the next 20 lines for partition F3.

Internal redisplay mode ends after you enter a REDISPLAY command that includes the 'E' parameter.

Note: Under the VM/VSE interface, inclusion of the 'E' parameter is implied.

For the full description of the REDISPLAY command refer to Appendix B, “REDISPLAY Command,” on page 205.

Setup for Desired Chronological Order

For a redisplay in line mode, be aware of the following. The data being redisplayed are taken, line by line, from the hardcopy file. By default, the redisplay starts at the current line in the presence and moves backward into the past. Newer messages are redisplayed ahead of the older messages. In other words, when redisplaying messages in backward direction, the output on a line-mode console appears in **reverse chronological** order.

To receive the output in **chronological** order, you should proceed as follows:

1. Set the starting position to a point farther back in the past by specifying the proper positioning operand.
2. Set the redisplay direction to 'forward' by using the direction operand F.
3. Choose the number of lines to be displayed via the 'lines' operand.

Here are a few examples.

```
RED -100,F,20L
```

```
RED -10M,F,10L
```

```
RED 14:55,F,20L
```

```
RED 03/09/1995,F,30L
```

Before you enter a new REDISPLAY command to go farther back in time, be aware that the hardcopy file is positioned at the last message displayed.

Disconnecting the System Console

z/VSE provides the capability to use the system console as a VTAM* or a CICS* terminal. This requires the definition of a **dummy device**. The following command, contained in the shipped IPL procedures, will do this and thus allow disconnection of the system console:

```
ADD FFF,CONS
```

(ADDing a dummy device with the CONS parameter is also necessary (if your system uses an integrated console as system console.)

The **OPERATE** command allows you to switch your system console to disconnected mode. This means that the device will be released from the system console status and thus might be used as a VTAM or a CICS terminal. **No system messages will appear** on the screen after the system console has been disconnected. Enter:

```
OPERATE DISC
```

The **DISC** option will only be accepted if the hardcopy file is open at the time the command is issued.

Note that although an *integrated console* cannot be used as VTAM or CICS terminal, it can be disconnected (you may have a reason to suspend the message traffic to this console).

To return to the system console, either

- Enter the

  ```
  OPERATE CONN
  ```

  command, or
- Terminate your VTAM or CICS application and press ENTER. If that is not possible, switch off the terminal and switch it on again. This will return you to the system console.

When you use z/VSE under VM, you can use the following command to disconnect the system console:

```
* CP DISC
```

Resetting a Dialed System Console

The local command %RETURN (normally assigned to the PF4 key), when issued at the system console, deactivates the console; see also Table 2 on page 43.

When your z/VSE is running under VM, %RETURN causes the following command to be processed:

* CP DISCONNECT - for a console in CONMODE 3270
* CP RESET - for a dialed console

It is recommended that you use the %RETURN command rather than one of the two commands above.

How to Access an Integrated Console

Depending on the IBM z Systems processor, you have to perform a number of steps to access the integrated console of your service processor. The following are examples on how to proceed to access an integrated console from IBM z Systems processors. For a detailed description, refer to the operating procedure manual shipped with your IBM z Systems processor.

Example 1: IBM z Systems processor with Integrated Console To access the integrated processor console, proceed as follows:

1. Invoke the *System Console Index* screen.
2. Select *Operator Controls* (either by entering F OPRCTL or 11).
3. On the panel that appears, you are prompted for the physical address of a device and a LOAD parameter (PARM). Enter the required physical address and specify **I**. **I** indicates that you perform an IPL with an integrated console.
4. To be able to communicate with z/VSE, select *Operator Messages* by entering F OPRMSG (or by going back to the *System Console Index* and entering 12).
5. The VSE system console appears on your screen. You now can enter VSE commands in the field SCP COMMAND.

Example 2: IBM System z Processor with Integrated Console To access the integrated processor console, proceed as follows:

1. Select the *System Monitor and Control* panel.
2. From the selection bar, select OPERATE and RECOVER.
3. On the panel that appears, you are prompted for the physical address of a device and a LOAD parameter. Enter the required physical address and specify **I**. **I** indicates that you perform an IPL with an integrated console.
4. A *MESSAGES* icon flashes on your screen. To be able to communicate with z/VSE, select the icon (double click).
5. From the selection bar, select REQUESTS. On the resulting pop-up menu select DETAILS.
6. The VSE system console appears on your screen. You now can enter VSE commands:
   - From the selection bar, select OPTIONS
   - From the resulting pop-up menu, select SEND COMMAND.
   - Enter the VSE commands and select SEND.

Accessing the System Console From Other Environments

In this topic we describe how the system console can be accessed from various z/VSE system components and programming environments.

Using a VSE-Connector-Based System Console

The *z/VSE e-business connectors* provide Java-based access to the system console.

The *VSE Navigator* is an example of a Java application that provides a console function.

For details of how to write your own Java program to access the console, refer to the *z/VSE e-business Connectors User's Guide*, SC34-2693.

Using a Telnet 3270-Based System Console

The VSE system console can be accessed via Telnet-3270 on the basis of TCP/IP. To access the system console via Telnet-3270, you can use:

- A Telnet-3270 client (for example *IBM Personal Communications*) connected directly to a Telnet daemon (TELNETD) that is provided by TCP/IP for VSE/ESA.
- A Telnet-3270 client connected to a z/VMz/VM system in which z/VSE runs as a VM guest. In this case, you connect to the z/VSE sign-on panel by selecting the appropriate VTAM application.
- A Telnet-3270 client connected to a 2074 control unit. In this case, you connect to the z/VSE sign-on panel by selecting the appropriate VTAM application.
- A Telnet-3270 client connected to an OSA adapter. In this case, you connect to the z/VSE sign-on panel by selecting the related VTAM application.
- An IBM processor's *Support Element* (SE) to access to the system console directly (via the SE's "Operating System Messages" function).

Using a REXX-Based System Console

The REXX programming language together with its REXX runtime environment provides access to the VSE system console.

For details, refer to the REXX/VSE Reference, SC33-6642.

Part 3. Performing System Startup and Shutdown

Chapter 5. Performing System Startup and Shutdown

Note: Before using the information in this topic, you should ensure you understand the terms *physical address* and *VSE address*. See “Explanation of Physical Address and VSE Address” on page 5.

Starting Up the System

z/VSE provides you with fast and efficient facilities to start up your system.

First, you have to power on your processor. You must also ready the input/output (I/O) devices: disk drives, tape and diskette units, printers, and terminals.

z/VSE can be installed as either a *native* system or as a *guest system* running under VM. z/VSE installed as a native system means that z/VSE is the only operating system installed on a processor or in a logical partition (LPAR). When z/VSE is installed as a guest system, it runs under the control of VM, which serves as the host system.

You start your z/VSE by performing **Initial Program Load** (IPL). To allow an almost completely automated system startup, z/VSE provides the **Automated System Initialization** (ASI) support. For ASI to work, all information required for system startup is stored as cataloged procedures in the system sublibrary IJSYSRS.SYSLIB and is called from there during startup.

After the programs required for IPL have been loaded, the appropriate IPL procedure is processed. An IPL procedure sets or changes various characteristics of your system, for example the layout of the page data set.

After that, ASI JCL procedures and jobs are processed. These procedures contain parameters for partition allocations, library search definitions, label definitions, and others. The ASI JCL procedures start the partitions.

Startup procedures for the predefined environments are shipped with your system.

Starting z/VSE Native

During power-on, your processor goes through *power-on reset*. After that, you initiate an IPL. You have to specify the *physical address* of your SYSRES volume (which customarily has volume serial number DOSRES). For an explanation of "physical address", see “Explanation of Physical Address and VSE Address” on page 5.

You find startup examples for IBM z Systems processors in the z/VSE Installation manual, sections "Step 1 - Performing an IPL from Tape" and "Step 1 - Performing an IPL from Tape (Manual/Native)". If you use a different processor, please refer to the operating procedure manual for that particular processor.

Setting the Time-Of-Day Clock

The TOD (time-of-day) clock must be set to start up your system. If z/VSE is running as a VM guest, the VM date is retrieved and used by the system. In case the TOD clock is not set, the system displays the following message during IPL:

```
0I18D ENTER SET CMD
THE DATE VALUE FORMAT IS MM/DD/YYYY
```

Enter the **SET DATE** command:

```
SET DATE=mm/dd/yyyy,CLOCK=hh/mm/ss,ZONE=EAST|WEST/hh/mm
```

For DATE=*mm* is month, *dd* is day, *yyyy* is year.

For CLOCK= *hh* is hour, *mm* is minutes, *ss* is seconds.

For ZONE=*hh* is hours, *mm* is minutes in multiples of 30.

Please enter the date and time and time zone of your geographical location. For more information, please refer to the z/VSE System Control Statements manual.

After you have entered the required information, the following message appears:

```
0I19A  ENABLE SETTING OF TOD CLOCK
```

Enable the setting of the TOD clock via the enable TOD switch, the hardware selection menu, or mode select option. For detailed information, refer to the operating procedures manual for your processor.

z/VSE now starts ASI processing.

Starting z/VSE under VM

To run your z/VSE as a guest system under VM, you have to log on to VM using the ID and password defined for the z/VSE guest system. Your terminal can then serve as the z/VSE system console.

If your system has been installed on a SCSI disk you have to define the connection path to the SCSI disk to VM before you IPL the system.

A common way of starting z/VSE under VM is to log on the VSE guest system to VM and then go into CP mode (you go into CP mode by pressing **PA1**). Now enter:

IPL *pcuu*
where *pcuu* (the physical address) can be one of the following:

- address of your SYSRES device, which normally has volume serial number DOSRES if your SYSRES is an ECKD or FBA disk.
- address of the FCP device which attaches the SYSRES device if your SYSRES is a SCSI disk.

For an explanation of **pcuu** (physical address), see "Explanation of Physical Address and VSE Address" on page 5.

z/VSE now starts ASI processing.

For information about installing z/VSE under VM, refer to z/VSE Planning and z/VSE Installation.

Performing an IPL of z/VSE From a SCSI Disk

When you perform an IPL from a *non-SCSI* disk, the IPL process uses a z Systems channel-attachment. Until z/VSE 3.1, this was the only method you could use. From z/VSE 3.1 onwards, you can perform an IPL from an FCP-attached SCSI disk. However, you cannot IPL the SCSI disk *directly*. Instead, you must perform an IPL from the FCP device. You can start the IPL from either:

- A VM guest (described in "Initiating an IPL of z/VSE From a VM Guest" on page 56).
- An LPAR (described in "Initiating an IPL of z/VSE From an LPAR" on page 57).

Prerequisites

- To perform an IPL of z/VSE from a SCSI disk, the SCSI IPL hardware feature must already be installed and enabled on your z Systems processor.
- If your z/VSE system is running under z/VMz/VM, the z/VMz/VM system must also support IPL from SCSI.

Initiating an IPL of z/VSE From a VM Guest

This section provides an overview of the steps you must follow if z/VSE is to be IPLed from a SCSI disk, where the IPL is initiated from a VM guest. The VM guest's virtual memory is loaded with the:

- Machine loader (a platform-independent hardware tool).

- Parameters required to access the SCSI disk, which you define using the SET LOADDEV command (described below).

1. **Use the SET LOADDEV Command to Supply the Required Parameters**. You use the SET LOADDEV command to provide the machine loader with the parameters this program needs in order to access a SCSI disk. These are the parameters you must provide to the machine loader:

   - WWPN used to access the SCSI disk.
   - LUN of the SCSI disk.

   For example, to IPL your z/VSE system from a SCSI disk that is accessed via the WWPN 5005076300C29A76 and has the LUN 5601000000000000, you would use the command:

   ```
   SET LOADDEV PORTNAME 50050763 00C29A76 LUN 56010000 00000000
   ```

   (You must pad the LUN with zeros until it reaches 16 characters).

   You can also use the QUERY LOADDEV command to display the parameters that have been set for the machine loader. In this example, if you enter Q LOADDEV, the displayed information would look like this:

   ```
   PORTNAME  50050763 00C29A76    LUN 56010000 00000000    BOOTPROG 0
   BR_LBA    00000000 00000000
   ```

   For details of the SET LOADDEV and QUERY LOADDEV commands, refer to the manual *z/VM CP Command and Utility Reference*, SC24-6008.

2. **IPL the FCP Device**. You use the IPL command to perform an IPL of the FCP device used in the connection path to the SCSI disk. The syntax of the command is:

   ```
   IPL fcp_device_number
   ```

   For example, to IPL the FCP device with the physical address (pcuu) 2FA0, you would enter:

   ```
   IPL 2FA0
   ```

Initiating an IPL of z/VSE From an LPAR

This section provides an overview of the steps you must follow if z/VSE is to be IPL'd from a SCSI disk, where the IPL is initiated from an LPAR. You use the *Hardware Management Console* (HMC) to load the z/VSE operating system into an LPAR. For details of how to navigate to the HMC *Load* panel, you should refer to the operating procedure manual for the IBM processor you are using.

In the *Load* panel, first click **SCSI** from the selection shown. Then you must enter these values:

Load Address
: This is the device address of the FCP device. For example, you would enter 1D00 to load the FCP device with the physical address (**pcuu**) 1D00.

World Wide Port Name (WWPN)
: This is the WWPN of the port on the ESS controller which is used to connect to the SCSI disk. For example, 5005076300CA9A76.

Logical Unit Number
: The LUN number of the SCSI disk from which the z/VSE operating system is to be IPL'd. For example, 5606000000000000.

Note: You must not change any of these fields in the *Load* panel:

- Boot program selector
- Boot record logical block address
- OS specific load parameters

(The defaults are correct).

Understanding IPL Messages Relating to SCSI Disks

During an IPL, the informational message **0I04I** displays:

- The FBA-SCSI device address (IPLDEV=...).
- SCSI parameters you have specified either using LOADDEV (under z/VM) or using the *Load* panel: FCP=..., WWPN=..., and LUN=...

Here is an example message:

```
0I04I IPLDEV=X'600',VOLSER=DOSRES,CPUID=FF0198142064
      FCP=X'1D00',WWPN=5005076300CA9A76,LUN=5606000000000000
```

The FBA-SCSI device address is always the one that was used during the *previous* IPL. If the previous device address cannot be determined, z/VSE generates its own device address to be used temporarily (X'FF0' in the example below).

```
0I04I IPLDEV=X'FF0',VOLSER=DOSRES,CPUID=FF0198142064
      FCP=X'1D00',WWPN=5005076300CA9A76,LUN=5606000000000000
```

z/VSE also expects a DEF SCSI command for the SYSRES SCSI disk in your IPL procedure. If the DEF SCSI commands for the SYSRES device do not specify the same parameters that were used for the IPL, they are considered to be additional connection paths. z/VSE will always first use the IPL'd path (that was defined using LOADDEV or the *Load* panel). In the following example, the FCP devices's *physical address* 1D00 has been mapped to the *VSE address* D00.

```
BG 0000 DEF SCSI,FBA=600,FCP=D00,WWPN=5005076300CA9A76,LUN=5606000000000000
BG 0000 DEF SCSI,FBA=601,FCP=D00,WWPN=5005076300CA9A76,LUN=5607000000000000
```

(For an explanation of the terms "physical address" and "VSE address", see “Explanation of Physical Address and VSE Address” on page 5).

If you perform a QUERY SCSI command, the information displayed would look like this:

```
query scsi
AR 0015 FBA-CUU   FCP-CUU   WORLDWIDE PORTNAME   LOGICAL UNIT NUMBER
AR 0015     600       D00     5005076300CA9A76      5606000000000000
AR 0015     601       D00     5005076300CA9A76      5607000000000000
```

Note: For details of how SCSI disks are configured, refer to the topic "Configuring Your System to Use SCSI Disks" in the z/VSE Administration documentation.

Setting the Mode of Communicating with the System

When starting IPL, you can indicate how you want to communicate with the system; during IPL and afterward. This involves the specification of

1. Type of system console: locally attached terminal or integrated console
2. Suppression of IPL messages and IPL command echoing
3. Prompting for IPL parameters
4. Prompting for Mode of System Startup.

You specify this information in the first four positions of the **IPL load parameter:**

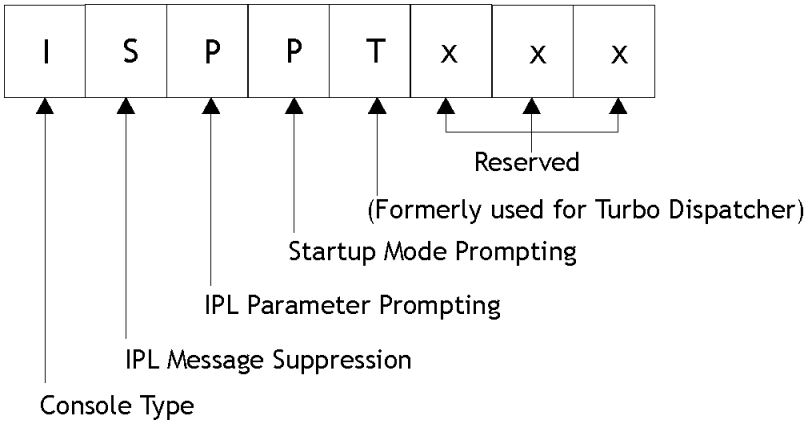


Figure 19. IPL Load Parameter Format

You enter your choices when running

- z/VSE **native**

  in the load parameter field of the program load panel; when running
- z/VSE as **guest system** under VM

  in the IPL command after the LOADPARM keyword, for example

  ```
  IPL pcuu LOADPARM ..P
  ```

  (where **pcuu** is a physical address).

  Be sure to indicate an empty position by a period (.). Trailing periods can be omitted. For each empty position, a default will be chosen.

The effect of these IPL load parameters is described in the following sections.

Console Type

This is specified in the first position of the IPL load parameter:

I
: The system console is the *integrated console*.

  This is the service processor console that is available on z Systems processors. When you have chosen the integrated console as your z/VSE system console, you would typically use it for

  - **IPL** After IPL, for your normal day-to-day work, you would most likely use another terminal as system console, for example a terminal where you logged on to the z/VSE Interactive Interface.
  - **Recovery** The integrated console resumes the system console function when no other console is available.

  For the integrated console, an ADD statement containing a dummy device address and the CONS parameter must be supplied at IPL time, for example

  ```
  ADD FFF,CONS
  ```

period (.)
: Instead of a period you may code an L.

  The system console is a locally-attached 3270 non-SNA terminal, it can also be attached through OSA-ICC.

  Its device address is included in the ASI IPL procedure as first operand of the Supervisor Parameters command, like so:

  ```
  009,$$A$SUPI,VSIZE=...
  ```

The system checks whether this device is operational. If the system finds the device not to be operational, it waits for an interrupt from a local console.

Suppression of IPL Messages and Command Logging

This is specified in the second position of the IPL load parameter.

S
All informational messages during IPL are suppressed. Only those error messages appear that require a response or an action.

Also, IPL commands will not be listed on the console.

period(.)
All IPL messages are displayed. IPL commands are listed on the console unless the NOLOG option is specified in the Supervisor Parameters command.

IPL Prompting Code

This is specified in the third position of the IPL load parameter. Here you indicate whether you want IPL to stop for you to enter new IPL parameters. In section “Modifying the Automated Startup Procedures” on page 60, you find more information about these IPL parameters.

P
IPL will stop with message

```
0I03D   ENTER SUPERVISOR PARAMETERS OR ASI PARAMETERS
```

This allows you to enter new IPL parameters.

period(.)
IPL will **not prompt** you for IPL parameters.

Startup Mode Prompting Code

This is specified in the 4th position of the IPL load parameter. Here you indicate whether you want IPL to stop for you to enter the startup mode. In section “Using z/VSE Startup Modes” on page 63, you find more information about making the startup mode known to the system.

P
Startup will stop with messages

```
IESI0214I  SELECT STARTUP MODE...
```

This allows you to specify the startup mode.

period(.)
Startup will **not prompt** you for the system startup mode.

Modifying the Automated Startup Procedures

You can interrupt the automatic startup process, for example to

- Use non-default ASI IPL or ASI JCL procedures. The default procedures are those listed in message 0J01I.
- Make temporary changes or corrections to the IPL commands contained in the ASI IPL procedure.

There are several methods for interrupting and restarting IPL, however only one method is described in this section. Your processor type will determine which of the methods you should use.

Refer to *z/VSE Guide to System Functions* for detailed information on how to:

- Interrupt and restart IPL processing,
- Enter IPL parameters,

- Stop ASI processing at specific IPL commands in the ASI IPL procedure,
- Modify IPL commands, or
- Create an ASI master procedure ($ASIPROC).

To select an ASI IPL and/or an ASI JCL procedure other than the default procedure, you may (before you start IPL) request that IPL will stop and allow you to restart IPL by typing the name of another ASI IPL and/or ASI JCL procedure.

The following is a description of the preferred method. Proceed as follows:

- If you are running z/VSE as a native system, type P into the third position of the load parameter field in the *Program Load* panel.
- If your z/VSE runs under VM, enter:

  ```
  IPL pcuu LOADPARM ..P
  ```

  (where **pcuu** is a physical address).
- After the message

  ```
  0I03D  ENTER SUPERVISOR PARAMETERS OR ASI PARAMETERS
  ```

  enter the parameters with which you want to IPL the system.

You can now do the following:

1. use alternate ASI procedures,
2. alter IPL commands in the existing IPL procedure,
3. change the mode for adding I/O devices, or
4. perform an interactive IPL.

Using Alternate ASI Procedures

To use alternate ASI procedures, enter the names of the desired ASI IPL and JCL procedures as follows:

```
IPL=IPL-procedurename,JCL=JCL-procedurename
```

Message 0J01I is reissued with the new ASI procedure names and the procedures are executed automatically. If you press ENTER without supplying any input, then the default procedures are used.

Changing or Correcting IPL Commands

If you want to update the IPL commands contained in the ASI IPL procedure or enter new commands, reply as follows:

```
STOP=(stoplist)
```

stoplist specifies a single IPL command or a list of up to four different IPL commands, separated by commas and enclosed in parentheses, for example:

```
STOP=ADD
STOP=(ADD,DEF,DPD,SVA)
```

When an IPL command contained in the stop list is encountered during ASI IPL processing, ASI stops before processing this command. The command is saved and listed on SYSLOG and the following message is issued:

```
0J05D  ASI STOP.  ENTER COMMANDS, HIT END/ENTER TO CONTINUE
```

You can now enter one or more updated or new IPL commands from the console. To proceed with ASI, press ENTER. The saved command is now resubmitted to ASI for processing. It is recommended that you submit the **SET** command in this way.

ASI then processes the remaining IPL commands in the procedure, stopping each time a command is encountered which is contained in the stop list. If the IPL procedure contains several commands of the same type, ASI will stop only before processing the *first* of these commands. For example, if you enter **STOP=ADD**, and the procedure contains several **ADD** commands, ASI stops before the first **ADD** command. When you press ENTER, the rest of the procedure is executed without stopping. The new or updated commands will change the procedure only temporarily, that is, they are valid only until the next IPL.

Take as an example the following ASI IPL procedure:

```
009,$$A$SUPI,NOLOG
ADD 1009 AS 009,3277
     .
     .
ADD 1480 AS 148,3390
DEF SYSREC=150
DEF SYSCAT=150
DPD ...
SVA ...
```

In the above example, 1480 is a *physical address* whereas 148 is a *VSE address*. For an explanation of these terms, see "Explanation of Physical Address and VSE Address" on page 5.

Assume you have to change the device type for 1480, add device 1481, change the assignment for SYSCAT, and redefine the page data set. After message

```
0I03D   ENTER SUPERVISOR PARAMETERS OR ASI PARAMETERS
```

appears, proceed as follows:

1. Reply: `STOP=(DEF,DPD)`.
2. ASI stops before processing DEF SYSREC and lists the **DEF** command followed by message 0J05D.
3. Now enter the following commands from SYSLOG:

   ```
   0 DEL 1480
   0 ADD 1480 AS 148,ECKD
   0 ADD 1481 AS 149,ECKD
   ```

   Pressing ENTER without input results in processing DEF SYSREC.
4. ASI stops again before processing the **DPD** command and lists the **DPD** command followed by message 0J05D. In response enter:

   `0 DEF SYSCAT=151`
   (which overrides the DEF SYSCAT=150 specified in the IPL procedure)

   `0 DPD ...`
   (which allocates the page data set as requested. Make sure to re-specify the complete page data set if it is spread across multiple extents.)

   When you press ENTER after allocation of the page data set, the original **DPD** command (or commands of a multi-extent page data set) is rejected with error message 0I36D. Ignore this message and press ENTER again. ASI processing continues by reading the **SVA** command (or the next command) from the procedure and executing it.

Changing the Mode for Adding I/O Devices

If you want to change the mode for adding I/O devices, reply:

```
TYPE=type
```

type specifies how I/O devices are to be added during IPL.

- **TYPE=SENSE** causes IPL to add the devices which support device sensing automatically.
- **TYPE=NORMAL** means that IPL only checks your ADD statements for correctness.

Performing an Interactive IPL

To perform an interactive IPL, type the supervisor parameters command:

```
$$A$SUPI,VSIZE=...
```

and press ENTER. **Press ENTER again**. This will lead you into an interactive IPL.

Note: Do not forget to reset the 'IPL prompting' character of the IPL load parameter (3rd position) when you re-IPL the system. Otherwise, the IPL is performed again with IPL prompting which causes IPL to stop and the system waits with message

```
0I03D  ENTER SUPERVISOR PARAMETERS OR ASI PARAMETERS
```

Using z/VSE Startup Modes

You initiate system startup by performing an IPL (as was described in the preceding part of this topic). In the IPL load parameter you request 'IPL prompting' by coding a 'P' in the 4th position:

```
...P
```

or enter msg BG after IESI0211I.

After IPL is completed, you get the following messages at the system console if all partitions will be initialized in the same startup mode:

```
IESI0211I  ALL PARTITIONS WILL BE INITIALIZED IN xxxxxx START MODE. IF YOU
           WANT TO INTERRUPT THEN ENTER MSG xx
```

xxxxxx represents the startup mode to be performed. If the partitions will be initialized in different startup modes, you get message IESI0221I followed by message IESI0222I:

```
IESI0221I  PARTITIONS xx xx WILL BE INITIALIZED IN yyyyyy START MODE

IESI0222I  REMAINING PARTITIONS WILL BE INITIALIZED IN xxxxxxx START MODE
```

If you want to interrupt the startup, enter MSG BG.

Because in the IPL load parameter or via MSG BG you had requested prompting for startup mode, you will now receive the following messages:

```
IESI0214I  SELECT STARTUP MODE FOR SYSTEM: MINI BASIC COLD

IESI0215A  OR, IF NO CHANGE, ENTER: END.
```

You can now request one of the following startup modes:

- **MINI**
- **BASIC**
- **COLD**

MINI, BASIC, and COLD are discussed in detail in the following sections.

If no MINI,BASIC, or COLD startup is requested, the system automatically performs one of the following two startup modes:

1. **WARM** (normal startup):

   A WARM startup is performed by each *partition* of the system if the latest shutdown of all partitions was completed successfully. The system is in normal, re-usable condition. It is the normal and fastest system startup.

   A WARM startup can only be selected by the system.
2. **RECOV** (recovery startup):

A RECOV startup is performed for some partitions by the *system* if the latest shutdown could not be completed successfully or no shutdown was performed at all.

A RECOV startup can only be selected by the system.

If the partition which CICS and VSE/ICCF are sharing is performing a RECOV startup, it may take additional time until CICS and VSE/ICCF are available.

MINI Startup

You should perform a MINI startup only if instructed to do so.

A MINI startup does not start CICS, VSE/ICCF, and VTAM. Only the BG and F1 (VSE/POWER) partitions are activated.

A MINI startup may be used, for example, if no one needs to do online processing and you want to do batch processing only. This startup procedure is quicker than a complete startup, and is sufficient for batch processing.

Jobs that you might want to process could be maintenance jobs that can only be executed when CICS and VSE/ICCF are not running. Candidates for MINI startup could be jobs such as:

- Backing up data.
- Restoring data.
- VSE/ICCF maintenance.
- Restoring the system library.
- Performing library maintenance.

To request a MINI startup, perform the procedure described in “Using z/VSE Startup Modes” on page 63. Answer messages IESI0214I/IESI0215A by entering:

```
0 MINI
```

Now you are ready to do MINI processing.

The documentation z/VSE Guide for Solving Problems has more detailed information about a MINI start.

BASIC Startup

You should perform a BASIC startup only if instructed to do so.

A BASIC startup may be used, for example, if CICS does not come up after modifying the system. The BASIC startup is designed to give you the opportunity to recover from such problems. Pregenerated system tables will be used, and none of the modifications the administrator made to the system will be effective. The following partitions are active after a BASIC startup has been completed:

- BG (available)
- F1 (VSE/POWER)
- F2 (CICS and VSE/ICCF)
- F3 (VTAM, if used)
- F4 (available)
- F5 (available)

With this basic system, erroneous system modifications can be corrected. After corrections are done, you must shut down the system and perform a new startup.

To request a BASIC startup, perform the procedure described under “Using z/VSE Startup Modes” on page 63. Answer messages IESI0214I/IESI0215A by entering:

```
0 BASIC
```

During a BASIC startup, you are requested to specify up to three terminal addresses. For these terminals, standard CICS and VTAM definitions are used.

For more detailed information on when to use a BASIC start, refer to the z/VSE Guide for Solving Problems documentation.

Note: When you use the IBM-supplied BASIC startup, the *z/VSE Online* panel does not show (and you therefore cannot use) the PF3 key to return to VM.

COLD Startup

You should perform a COLD startup only if instructed to do so.

A COLD startup initializes and reformats the VSE/POWER queues and the VSE/POWER account file. COLD startup is automatically performed during system installation.

During a COLD startup, all VSE/POWER queues are initialized. This means that all entries that are in the queues will be erased. You can save some or all entries contained in the queues by using the **POFFLOAD** command (as described in "Offloading and Loading VSE/POWER Queues" on page 77) *before* you shut down the system. Also all information in the VSE/POWER account file will be erased. To save this information, use the **PACCOUNT** command (as described in "Saving Accounting Information" on page 78) *before* you shut down the system.

After a COLD startup, z/VSE automatically initiates procedure COLDJOBS which reloads certain z/VSE-supplied jobs into the VSE/POWER reader queue.

During a COLD startup CICS is also COLD started.

To request a COLD startup, perform the procedure described under "Using z/VSE Startup Modes" on page 63. Answer messages IESI0214I/IESI0215A by entering:

```
0 COLD
```

Answer all messages beginning with:

```
F1 0001 4733D EQUAL FILE ID IN VTOC .....
```

by entering

```
1 DELETE
```

Sometimes a message will appear beginning with:

```
F1 0001 4244A OVERLAP ON UNEXPRD FILE .....
```

Note: If this message comes up, contact your system administrator and make sure whether this file can be safely deleted.

If you have verified this, answer by entering:

```
1 DELETE
```

The documentation z/VSE Guide for Solving Problems has more detailed information on when to use a COLD start.

Chapter 6. Shutting Down the System

Note: From z/VSE 6.2 onwards, CICS/VSE (Program Number 5686-026) is no longer shipped on the Extended Base Tape. Therefore, all references to CICS/VSE have been removed from this topic.

You can shut down the system as a whole but also single components. For example, you can shut down CICS, VSE/ICCF or VTAM independently of one another.

In the command examples shown in this topic, the following partition assignments are assumed:

- DBDCCICS => F2
- PRODCICS => F8
- DB2 => `class S`
- TCP/IP => F7
- VSE Connector Server => `class R`
- VTAPE server => `class R`
- BSM Security Server, SECSERV => FB
- VTAM => F3

Also, be aware that xx, the reply ID shown in the examples of CICS commands, is indicated at the command prompt.

To shut down the entire system, shut down the components in the following order:

Note: The VTAPE Server will terminate *automatically* after processing of virtual tapes has completed.

1. Shut down DB2.
2. Shut down the CICS Transaction Server for z/VSE(es).
3. Shut down the VSE Connector Server.
4. Shut down TCP/IP.
5. Shut down VTAM.
6. Shut down all programs running in VSE/POWER controlled partitions using the appropriate commands.
7. Shut down VSE/POWER. **Note:** this also automatically shuts down the *BSM Security Server* (SECSERV) which runs per default in partition FB.

Shutting Down DB2

Shut down DB2 by first entering:

```
MSG S1
```

to start communication with DB2 (assuming that you are running DB2 in the S1 partition). The **MSG** *partition-id* command starts a session between you and DB2.

To shut down, enter:

```
xxx SQLEND
```

Wait until the partition finished processing.

Shutting Down the CICS Transaction Server(es)

The following description applies to a CICS Transaction Server that has VSE/ICCF running under it, but also to a CICS Transaction Server without VSE/ICCF.

Shut down the CICS Transaction Server (simply referred to as CICS) by first entering:

```
MSG F2 (or F8 for CICS production)
```

to start communication with CICS (assuming that you are running CICS in the F2 partition or CICSPROD in the F8 partition). The **MSG** *partition-id* command starts a session between you and CICS. For more information on the MSG command, refer to the documentation z/VSE System Control Statements.

Now, to inquire if a task is still running, enter:

```
xxx CEMT I TAS
```

and which users are still logged on:

```
xxx USER (only possible on system console, not on the Interactive Interface console)
```

If someone is still logged on, ask the user to sign off. Use the CICS **CMSG** 'message' command, for example, to send a message to the user's terminal ID:

```
xxx CMSG 'Please sign off.
             Shutdown in 2 minutes',R=terminal-id,S
```

Be aware that the **CMSG** command may disturb the current session of the user.

Note: An alternate way of performing these tasks is to use the *Display Active Users/Send Message* dialog. Details on this dialog can be found in “Displaying Active Users and Sending Messages” on page 123.

To shut down, enter:

```
xxx CEMT P SHUT
```

As long as any task is in suspended mode, CICS will not terminate. In order to enable a normal shutdown, tell the users still logged on to log off and purge the suspended tasks (see “Stopping a Task” on page 102).

If there is no other choice, use the following command to shut down CICS:

```
xxx CEMT P SHUT I
```

Note: CEMT P SHUT I should *only* be issued under exceptional circumstances or on request of your **system administrator**.

It may not be possible to shut down CICS using a CEMT command. In this case use the **PFLUSH** (short form: **F**) command:

```
F F2
```

Be aware that you have to confirm your command to PFLUSH CICS when you see the following message:

```
F1+001 1QZ1D  SUBSYSTEM RUNNING IN PARTITION F2 - REPLY 'YES' TO FLUSH
PARTITION
```

Note: As with the **CEMT P SHUT I** command, the **PFLUSH** command should only be issued under exceptional circumstances or on request of your **system administrator**.

The display of message DFHKE1799 indicates that CICS has been successfully shut down. For example:

```
DFHKE1799 DBDCCICS TERMINATION OF CICS IS COMPLETE.
```

If you are running CICS under VSE/POWER, then you may get an additional message, for example:

```
1Q34I  F2 WAITING FOR WORK
```

Shutting Down the VSE Connector Server

To shut down the VSE Connector Server, enter:

```
MSG R1
xxx SHUTDOWN
```

(In the above example, the VSE Connector Server runs in partition **R1**).

On the prompt for verification, enter

```
xxx YES
```

(where 'xxx' is the partition reply-ID).

Shutting Down the VTAPE Server

VTAPE server normally terminates automatically with the last active virtual tape.

You should first finish all active tape definitions with virtual tapes.

Shutting Down TCP/IP

If TCP/IP services are used in CICS TS first check which services are still active by entering, for example

```
xxx CEMT I TCPIP
```

If services are found active, deactivate all services using

```
xxx CEMT SET TCPIP CLOSE
```

To shut down TCP/IP, enter

```
MSG F7
xxx SHUTDOWN
```

This will shut down TCP/IP in a delayed mode. To immediately shut down, enter

```
xxx SHUTDOWN IMM
```

You will get a verification prompt which you have to answer with

```
xxx YES
```

Be aware that this prompt will *not* be displayed if you have entered the TCP/IP Command SET DOWNCHECK=OFF.

Shutting Down VTAM

Before shutting down VTAM, be sure you have terminated TCP/IP and all CICS(es) (or at least closed VTAM in all CICSes).

Shut down VTAM using

```
Z NET
```

Z is the short form of the VTAM command HALT.

To halt VTAM more quickly than with a normal **HALT** command, enter:

```
Z NET,QUICK
```

Be careful when using **Z NET,QUICK**. This command disrupts LU-LU sessions.

For a full description of **HALT** commands, refer to the documentation *VTAM Operation*, SC31-6495.

The appearance of message

```
IST102I  VTAM IS NOW INACTIVE
```

indicates that you have successfully shut down VTAM.

If you are running VTAM under VSE/POWER, then you may get an additional message, for example:

```
1Q34I  F3 WAITING FOR WORK
```

Shutting Down VSE/POWER

Shut down VSE/POWER as follows:

To see which VSE/POWER tasks are still active, enter the **PDISPLAY A** command (short form: **D A**):

```
D A
```

Use the **PSTOP** command to stop the tasks which are still active. See the IBM documentation VSE/POWER Administration and Operation for details on using the PSTOP command.

Now you are ready to shut down VSE/POWER by entering:

```
PEND   (= VSE/POWER end)
```

You can also use the command

```
PEND cuu   (cuu = address of system printer)
```

You get a listing with the VSE/POWER status report. Your administrator may use the report for tuning of VSE/POWER.

When a VSE/POWER shutdown has been performed, a new IPL is necessary. For restarting of single partitions, refer to “Restarting VTAM” on page 73 and “Restarting CICS(es) with VSE/ICCF” on page 71.

Issue the **MAP** command to show all other programs, not controlled by VSE/POWER, that are still active. If necessary, terminate the active programs using appropriate commands. See the IBM documentation z/VSE System Control Statements for a full description of MAP command.

Chapter 7. Restarting Single Components

After a single component, controlled by VSE/POWER, has been shut down within a partition, you do not have to restart the whole z/VSE system in order to restart that one component.

Depending upon your needs, you can restart:

- DB2 (release the appropriate startup job)
- CICS and VSE/ICCF together
- CICS TS alone
- The Connector server and VTAPE server
- The BSM Security Server
- TCP/IP
- VSE/ICCF when CICS is already up and running
- VTAM alone.

Restarting CICS(es) with VSE/ICCF

After you have shut down CICS with VSE/ICCF, you can restart it in the F2 partition by using the VSE/POWER command **PRELEASE** (short form: **R**) to release jobs from the reader queue. By default, CICS with VSE/ICCF runs in the F2 partition. Enter:

```
R RDR,CICSICCF
```

Note: *CICSICCF* is the default startup job that is delivered with your system and is predefined for you by z/VSE. If you have your own startup job for CICS with VSE/ICCF, then use that instead.

Restarting CICS without VSE/ICCF

If you have installed a second predefined CICS (without VSE/ICCF), you can restart it by entering:

```
R RDR,CICS2
```

Note: *CICS2* is the default startup job that is delivered with your system and is predefined for you by z/VSE. If you have your own startup job for CICS without VSE/ICCF, then use that instead.

Restarting the Connector Server and VTAPE Server

To restart the Connector server, enter

```
R RDR,STARTVCS          (where STARTVCS is the default name)
```

Note: The job for VTAPE server is automatically released when a tape is required. No manual intervention is required.

Restarting the BSM Security Server

The system default name for the BSM Security Server is SECSERV.

Because the partition **FB** is *not* controlled by VSE/POWER, you *cannot* restart the BSM Security Server by simply releasing the SECSERV job. Instead, you must restart *$BJCL.PROC*.

There are generally three situations in which you must restart the BSM Security Server, and the commands you use to do so differ accordingly. In these examples, it is assumed that the BSM Security Servers runs in partition FB and therefore each reply begins with an '**11**'.

- If you have shut down the BSM Security Server *for the first time after an IPL*, you restart the BSM Security Server by entering:

```
11 // EXEC PROC=RESTASEC
```

- If you have shut down the BSM Security Server *for a second or further time after an IPL*, you restart the BSM Security Server by entering:

```
11 /+
11 // EXEC PROC=RESTASEC
```

- If the BSM Security Server has *terminated unexpectedly*, in most cases you must *re-IPL your z/VSE system* in order to restart the Basic Security Manager together with the Security Server.

Restarting TCP/IP

The system default name for the job is TCPIP00. So, to restart TCP/IP, enter

```
R RDR,TCPIP00
```

If CICS TCP/IP services are used, you have to activate them using the following command (e. g. for partition F2):

```
MSG F2
xxx CEMT SET TCPIP OPEN
```

Restarting VSE/ICCF Only

Restarting or shutting down of VSE/ICCF is generally not necessary. However, if e. g. you want to start with a different VSE/ICCF partition layout, you can stop and restart it in the following way:

First, to shut down inquire which VSE/ICCF users are still logged on by entering:

```
/USERS
```

Use one of the following methods to inform the users who are still logged on that you will be shutting down VSE/ICCF:

- The *Display Active Users/Send Message* dialog, or
- Enter the CICS **CMSG** command, or
- Enter the VSE/ICCF **/WARN** command (this command tells terminal users to log off soon because of VSE/ICCF's impending termination).

After a while, you may enter the **/USERS** command again to check for any users still logged on.

To shut down VSE/ICCF, enter:

```
/ICCFEND
```

Note: Those users still logged on will be disconnected.

If the **/ICCFEND** command does not completely shut down VSE/ICCF, you can enter:

```
MSG F2
```

to start communication with CICS (assuming that you are running CICS in the F2 partition) and then enter:

```
xxx I$SH
```

to shut down VSE/ICCF.

Note: xxx I$SH should *only* be issued under exceptional circumstances or on request of your **system administrator.**

The display of message

```
K125I ICCF HAS BEEN TERMINATED
```

indicates that you have successfully shut down VSE/ICCF.

For more information on the above VSE/ICCF commands, see the IBM documentation *VSE/ICCF Administration and Operation*.

To restart VSE/ICCF only, e. g. with larger system-provided partition layout, first enter:

```
MSG F2
```

Note: If you have VSE/ICCF's CICS running in a partition other than F2, then specify that partition ID instead.

The **MSG** *partition-id* command starts a session between you and CICS.

Now enter

```
xxx I$ST DTSIGENM
```

If you omit the DTSIGENM parameter, the default layout will be used for startup.

I$ST is a CICS transaction ID. For more information on the use of this transaction, see the IBM documentation VSE/ICCF Administration and Operation.

Restarting VTAM

If you have shut down VTAM, you can restart it using the command:

```
R RDR,VTAMSTRT
```

Note: *VTAMSTRT* is the default startup job that is delivered with your system and is predefined for you by z/VSE. If you have your own startup job for VTAM, then use that instead.

Assuming that CICS has not been shut down, wait for VTAM initialization to complete. Then enter:

```
MSG F2
AR 0015 1I40I READY
F2-0002 0D16D READY
xxx CEMT SET VTAM OPEN
```

Note: VTAM has to be opened in all CICSes. In the above example and throughout this documentation, it is assumed that you have CICS with VSE/ICCF running in the F2 partition.

The **MSG** *partition-id* command starts a session between you and CICS. The CICS command CEMT reestablishes the connection between VTAM and CICS.

CEMT commands are discussed in Chapter 13, “Controlling Online Operation,” on page 101. For more detailed information about these CICS commands, see the IBM documentation *CICS Supplied Transactions*.

Part 4. Performing Tasks via the z/VSE Console

Chapter 8. Performing Tasks via the z/VSE Console

Note:

1. Before using the information in this topic, you should ensure you understand the terms *physical address* and *VSE address*. See “Explanation of Physical Address and VSE Address” on page 5.
2. If you are required to manage the *hardware Crypto configuration* of your installation, refer to "Using Hardware Crypto Commands" in the z/VSE Administration, SC34-2692.

Managing VSE/POWER Files

Offloading and Loading VSE/POWER Queues

You perform this task by entering commands from a z/VSE console.

Use the **POFFLOAD** (short form: **O**) command to save some or all jobs of the VSE/POWER queues on tape and later reload them for processing, printing, or transmitting. This is useful, for example, if you have large job outputs in the LST queue, but no printer available at the moment. Or you may want to save the jobs of the VSE/POWER queues before installing a refresh tape. You can reload the saved jobs to your system, or you can take the tape to another z/VSE system and reload the jobs to the VSE/POWER queues of that system.

You can save the jobs of all queues or of a particular queue. If you save the jobs of a particular queue, then you can specify the class or classes of the jobs that have to be saved.

Offloading Queues

To back up *all* entries in *all* VSE/POWER queues, first mount a tape on a tape drive (for example, the tape drive at address 300). Then enter:

```
O BACKUP,ALL,300
```

Address 300 is the *VSE address* of the tape drive. To obtain the corresponding *physical address*, position the cursor under the first character of the VSE address, and press PF11. Then press Enter to execute the `QUERY IO` command that is displayed in the command line.

You also can back up just one queue or some entries in a queue. For example:

- To save only those entries in LST that have class B, you could enter

  ```
  O BACKUP,LST,300,,B
  ```

- To save only those entries in LST that have class B, and have creation-dates (CRDAYS) that are older than 03/03/2010, you could enter

  ```
  O BACKUP,LST,300,,B,CRDAYS<03/03/10
  ```

Loading Queues

To reload *all* entries for *all* queues, you would enter:

```
O LOAD,ALL,300
```

To reload *all* entries for *RDR*, you would enter:

```
O LOAD,RDR,300
```

Note: For more information about the POFFLOAD command and its operands, see the VSE/POWER Administration and Operation documentation.

Saving Accounting Information

You perform this task by entering commands from the z/VSE console.

VSE/POWER collects accounting information for each job running under its control. This information is stored in the *account file*. For example, when more than 80% of this file's space is full, VSE/POWER warns you by issuing the following message:

```
1Q31I  ACCOUNT FILE (IJAFILE) MORE THAN 80% FULL
```

This message is issued every 60 seconds as a reminder to the operator that immediate action is required. You should then enter one of the forms of the **PACCOUNT** command (short form: **J**) to empty the account file and optionally save its contents.

Some examples of the **PACCOUNT** command are:

J 300
Saves the contents of the account file on a tape mounted on tape drive with address 300 and then empties the account file. This is the *VSE address*. To obtain the corresponding *physical address*, position the cursor under the first character of the VSE address, and press PF11. Then press Enter to execute the `QUERY  IO` command that is displayed in the command line.

J PUN
Saves the contents of the account file to the punch queue in job PACCOUNT and then empties the account file.

J DEL
Empties the account file. Its contents are lost.

The administrator of your z/VSE system will tell you which form of the **PACCOUNT** command to use.

After saving the account file, VSE/POWER displays the following message:

```
1Q79I ACCOUNT FILE SAVED
```

You do not have to wait for message 1Q31I to be displayed to enter the **PACCOUNT** command. For example, you may want to save the account file each day before shutting down your z/VSE system. Use the **PDISPLAY** command (short form: **D**) to find out how much of the account file has already been used.

Enter the command:

```
D Q
```

The system displays four messages. The fourth one looks like:

```
1R49I  ACCOUNT FILE 27 % FULL
```

and gives you the needed information.

Note: If the account file becomes full, VSE/POWER displays a message like:

```
1Q32A NO MORE ACCOUNT FILE (IJAFILE) SPACE FOR LST,02E
```

and stops processing jobs until you use the **PACCOUNT** command to empty the account file.

Chapter 9. Controlling Job Execution

The tasks described in this section can be performed at the z/VSE console. To process jobs that are in the RDR queue, refer to Chapter 17, “Managing VSE/POWER Queues,” on page 127. It shows how to use the *Manage Batch Queues* dialog of the Interactive Interface. You do not have to use the *Manage Batch Queues* dialog; you can also use regular VSE/POWER commands entered at the z/VSE console.

Most batch jobs in your z/VSE system are created by users working at display stations. These jobs are directly submitted to the reader queue. Other jobs may come from users at RJE workstations. Or they are sent from other nodes if your system is part of a network.

Starting a Job in a Static and Dynamic Partition

You start a VSE/POWER job by releasing the job from the VSE/POWER reader queue. You proceed in the same way for static or dynamic partitions. Assuming a job *PAUSEW* with a dynamic (or static) class *W* is in the RDR queue, you would enter:

```
R RDR,PAUSEW
```

To process a VSE/POWER job in a dynamic partition, the processing class of that job must be defined as *enabled* in the active Dynamic Class Table. For details on how to enable/disable dynamic classes, refer to the following section “Additional Considerations for Dynamic Partitions” on page 79.

The **MAP** command tells you which classes, static and dynamic partitions are active and which jobs are running. For details on the MAP command, refer to the IBM documentation z/VSE System Control Statements.

Additional Considerations for Dynamic Partitions

After you have started *PAUSEW*, that job normally starts executing in a dynamic partition that belongs to *PAUSEW*'s dynamic class *W*, for instance partition *W1*. But it may happen that *PAUSEW* does not start. In this case, you should check the status of dynamic class *W* by using the **PDISPLAY DYNC** (short form: **D DYNC**) command. To do this, enter:

```
D DYNC,W
```

To display all dynamic classes, enter:

```
D DYNC,ALL
```

Note: Before using the **PDISPLAY DYNC** command, ensure that the selected Dynamic Class Table has been loaded. If no Dynamic Class Table has been loaded, the system issues the message:

```
1Q6CI D NO ACTIVE DYNAMIC CLASS TABLE LOADED
```

Use the **PLOAD** command to load a Dynamic Class Table.

The result of PDISPLAY DYNC,ALL - it might look as shown below - displays the current active **Dynamic Class Table** with the following information for all dynamic classes (CLS):

- Current state of each class (STATE: ENAB, DISAB, SUSPEND)
- Number of currently active partitions within one class (ACT)
- User specified attributes (MAX, ALLOC, SIZE, SP-GETV, PROFILE, LUBS).

```
1Q6AI  ******   ACTIVE DYNAMIC CLASS TABLE DTR$DYNC.Z   *******
1Q6AI  CLS STATE   ACT/MAX ALLOC    SIZE  SP-GETV  PROFILE LUBS
1Q6AI   G  ENAB      6 32     1M    200K    128K   ASIPRCG   15
1Q6AI   W  DISAB     0 15     2M    300K    200K   ASIX      15
1Q6AI   P  ENAB      4  8     1M    150K    128K   ASIPROCP  15
1Q6AI   Q  ENAB      0  5     1M    100K    128K   ASICQ     12
1Q6AI   M  SUSPEND   8  8     1M    100K    128K   ASIPROCM  15
```

As you see, the state of a dynamic class is either *ENAB*led, *DISAB*led or *SUSPEND*ed. But the state of a dynamic class **must be** *enabled* (for allocation of dynamic partitions) so that jobs can be processed in this class. If the state is *DISAB*led or *SUSPEND*ed, a job having this VSE/POWER job class cannot be executed.

You can change the state *ENAB*led or *DISAB*led (see example below); you cannot change the state *SUSPEND*ed.

You can change the state by using the **PVARY DYNC** (short form: **V DYNC**) command. Assuming you have found out that the state of dynamic class *W* is *DISAB*led, you can change the state of the class to *ENAB*led (this would then start your job PAUSEW):

```
V DYNC,ENAB,W
or
V DYNC,,W
```

You cannot influence the state suspended because this indicates shortage of resources, for example that the highest possible number of jobs running in this class has already been reached. VSE/POWER resumes suspended classes *automatically* when lacking resources become available again.

In the example above, class M - although enabled - is currently suspended for further partition allocation because the number of currently active partitions (ACT = 8) has reached the maximum size (MAX = 8). The state of class M automatically changes again to *ENAB*led when a job with this job class finishes and returns its partition used for processing.

For further details on how to use the PDISPLAY, PLOAD, and PVARY commands, refer to the documentation VSE/POWER Administration and Operation.

Displaying Active Jobs

To find out from the console which jobs are currently executing, use the **PDISPLAY A** command (short form: **D A**). In addition to showing the active VSE/POWER tasks, this command also displays the jobs being executed, printed, punched, or transmitted.

Note:

1. **PDISPLAY A** differs from **PDISPLAY ALL**.
2. You can also use the *Manage Batch Queues* dialog to show active jobs. These jobs have an asterisk (*) in the DIS column.

The result of **PDISPLAY A** might look as follows:

```
PDISPLAY A


AR 0015 1C39I COMMAND PASSED TO VSE/POWER
F1 0001 1R48I   BG,FEC,A0I,      INACTIVE,
F1 0001 1R48I   F2,FEC,L2,  CICSICCF,03922,2
F1 0001 1R48I   F3,FEC,K3,  VTAMSTRT,03921,3
F1 0001 1R48I   F4,FEC,J4,      INACTIVE,
F1 0001 1R48I   F5,FEC,H5,      INACTIVE,
F1 0001 1R48I   F6,FEC,M6,      INACTIVE,
F1 0001 1R48I   F7,FEC,N7,      INACTIVE,
F1 0001 1R48I   F8,FEC,P8,  CICS2   ,03923,8
F1 0001 1R48I   F9,FEC,Q9,      INACTIVE,
F1 0001 1R48I   FA,FEC,TV,      INACTIVE,
F1 0001 1R48I   F3,FEE,,  VTAMSTRT,03921,A        21 LINES SPOOLED,QNUM=00522
F1 0001 1R48I   F2,FEE,,  CICSICCF,03922,A      2247 LINES SPOOLED,QNUM=00489
F1 0001 1R48I   F8,FEE,,  CICS2   ,03923,A      1993 LINES SPOOLED,QNUM=00476
F1 0001 1R48I  RDR,00C,A,
F1 0001 1R48I  PUN,00D,V,VM,,      INACTIVE,
F1 0001 1R48I  LST,00E,V,1,VM,,      INACTIVE,
```

For example, the fields of the second line show:

- The VSE/POWER list task (*LST*).
- The device address associated with the task (*00E*).
- The classes that can be handled by the task in the order of processing (*A*).
- The number of buffers that a list task uses (*1*).
- The list task is not active (*INACTIVE*).

For more examples and details of PDISPLAY commands refer to the VSE/POWER Administration and Operation documentation.

Stopping Job Execution

You may have to terminate a job that has been executing too long. For example, a program that is looping never normally comes to an end. In addition, a programmer or the system administrator may ask you to stop a job's execution.

Use the **PFLUSH** command (short form: **F**) or the **PCANCEL** command (short form: **C**) to stop a job that is executing.

For example, to stop job LOOP that is executing in partition F4, you would enter:

```
F F4      or      C LOOP
```

When the job is terminated, the system will issue message 0V16I:

```
F4 0004 0V16I JOB LOOP CANCELED. REQUEST FROM VSE/POWER
```

Reading In Batch Jobs from Tape

You may want to execute jobs that you received on tape or on diskette. The **PSTART** command (short form: **S**) tells VSE/POWER to place incoming jobs into the reader queue.

To tell VSE/POWER to:

1. Read jobs from a tape that is mounted on tape drive 301,
2. Assign class A to those jobs if they do not have a class already assigned.

you would enter:

```
S RDR,301,A
```

Address 301 is the *VSE address*. To obtain the corresponding *physical address*, position the cursor under the first character of the VSE address, and press PF11. Then press Enter to execute the `QUERY IO` command that is displayed in the command line.

To tell VSE/POWER to read jobs in file TESTJOBS from the diskette mounted on diskette drive with address 024, you would enter:

```
S RDR,024,,'TESTJOBS'
```

By default, class A is assigned to the jobs if they do not have a class already assigned.

Chapter 10. Controlling Printer Output

The tasks described in this topic are performed at the z/VSE console.

Check with your administrator about use of your system's printers. For example, some may be automatically started during ASI processing. Or you may have output printed on various types of forms. If so, then your installation may submit jobs using certain print classes, one class of jobs to be printed on form A, the next class on form B, and so on. Or you may have different printers for each class of job.

These arrangements vary from one installation to another. The administrator of your z/VSE system should give you instructions about using printers.

Note:

1. If the printer output is not readable, or the skipping or spacing is incorrect, a wrong train image buffer or a wrong forms control buffer may be loaded. You may also refer to the IBM documentation z/VSE Guide for Solving Problems for additional information.
2. Detailed information on how to obtain a device's physical address from its VSE address is provided in “Obtaining a Physical Address From a VSE Address” on page 5.

Starting a Printer

To start printing job output on the printer, you enter a **PSTART** command (short form: **S**), like:

```
S LST,02E
```

LST indicates spooled list output, 02E is the address of the printer. This is the *VSE address*. To obtain the corresponding *physical address*, position the cursor under the first character of the VSE address, and press PF11. Then press Enter to execute the `QUERY  IO` command that is displayed in the command line.

The output of jobs that have output class A (the default) will begin to print.

Jobs with other output classes may need special forms. To print jobs with output class B on the printer at address 02E, first enter the **PSTOP** command (short form: **P**):

```
P 02E,EOJ
```

This will stop the printer after it finishes printing the current job. Then mount the forms needed for class B jobs. Start the printer again by entering:

```
S LST,02E,B
```

To print all output with classes C and F, you can have class C output printed first using:

```
S LST,02E,CF
```

You can specify up to four classes in a **PSTART** command.

If message

```
1Q40A  ON cuu FORMS ffff NEEDED FOR jobname jobnumber
```

appears, and after you have mounted special forms on the printer (after you have obtained its physical address, as described above), you can check the alignment the printed output will have. The **PSETUP** command (short form: **U**) prints pages of listing output with the letter **X** in place of all printable characters.

This command can only be used after message 1Q40A has been received. For example, to print 10 setup pages on printer with address 02E, wait for message 1Q40A, and then enter:

```
U 02E,10
```

To print two setup pages, enter:

```
U 02E,2
```

The output might look like this:

```
Page 1

xxxx          xxxxxx      xxxxxx
xx xxxxxx     xxxxx       xxxxxxxx
xx xxxxxxxx   xxxxx         xxxxxx

Page 2

xxxx          xxxxxx      xxxxxx
xx xxxxx      xxxxx         xxxxxx
xx xxxx       xxxxx         xxxxxx
```

If the alignment of the output does not match the lines on the paper, stop the printer by pressing its STOP key. Then adjust the forms, and restart the printer. Repeat this procedure until the forms are properly aligned. When the setup process is finished, enter the **PGO** command (short form: **G**) for the printer:

```
G 02E
```

The pages are then printed from the beginning with their original contents.

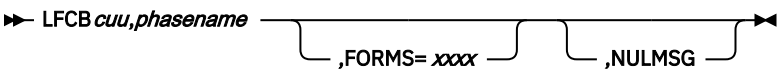
```
Page 1

NAME          NUMBER      AMOUNT
L. KEEFFE     69060       1,080.05
N. REYNOLDS   41240         798.83

Page 2

NAME          NUMBER      AMOUNT
D. HALEY      33110         497.11
A. WATT       76779         699.42
```

By convention, Class Q is used for job output that is to be viewed at a display station before further processing. If you start a printer to print jobs with output class Q, the output may be printed and deleted from the queue without being reviewed at a display station.

Changing Forms

Most of the printers use a forms control buffer (FCB) to control the skipping of forms. The documentation z/VSE Administration describes the dialog for maintaining printer FCBs. For loading, please also refer to VSE/POWER Administration and Operation.

If you have changed forms, it may be necessary to change skipping or spacing. You can do that by reloading the forms control buffer (FCB) using the **LFCB** command. This command causes the system to load a buffer image, stored as a phase, into the FCB of the specified printer. You can use the **LFCB** command for any printer on which forms skip operations are controlled by an FCB.



cuu
Specifies the address of your printer. This is the *VSE address*. To obtain the corresponding *physical address*, position the cursor under the first character of the VSE address, and press PF11. Then press Enter to execute the `QUERY  IO` command that is displayed in the command line.

phasename
Indicates the name of the phase which contains the required buffer image. The phasenames for different printer types are shown in Table 7 on page 86.

FORMS=*xxxx*
Specifies the installation-defined forms number *xxxx* of the paper that is to be used with the new FCB image. You have to specify this operand if the new FCB image requires a change of forms.

NULMSG
Suppresses the printing of a buffer load verification message. If you specify NULMSG, the system continues processing immediately after completion of the FCB load operation. You will not be able to verify if the contents of the FCB match the forms to be used.

If output printing starts under control of the wrong FCB image, do the following:

1. Stop the printer using the **PFLUSH** command (short form: **F**):

```
F 02E,HOLD
```

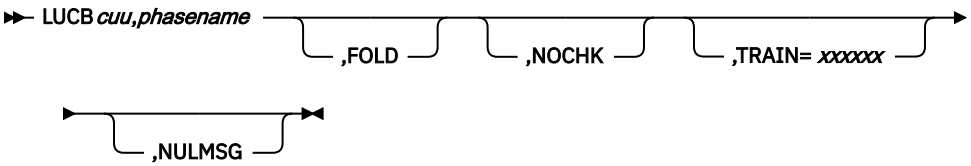
2. Load the correct FCB.
3. Change forms if necessary.
4. Use the **PALTER** command or **PRELEASE** command or the dialog to change the disposition of the print job. For a full description of the PALTER and PRELEASE commands, see the VSE/POWER Administration and Operation documentation.
5. Restart the printer.
6. Enter the **LFCB** command.

You can now check the alignment the printed output will have with the **PSETUP** command. See "Starting a Printer" on page 83 how to do this.

Changing Print Trains

The universal character set buffer (UCB) allows you to choose such options as different print trains or upper and lower case printing.

You can take advantage of these options by using the **LUCB** command. This command causes the system to load the buffer image, contained in the phase (see Table 7 on page 86 for phasenames) into the UCB of the printer you specified. The printer must be ready or in operation.



cuu
specifies the address of the printer whose UCB is to be loaded. This is the *VSE address*. To obtain the corresponding *physical address*, position the cursor under the first character of the VSE address, and press PF11. Then press Enter to execute the `QUERY  IO` command that is displayed in the command line.

phasename
Indicates the name of the phase which contains the required buffer load image. The phasenames for different printer types are shown in Table 7 on page 86.

FOLD
Causes lowercase characters to be printed as uppercase characters.

NOCHK
Suppresses data checks resulting from mismatches between printline characters and the UCB.

TRAIN=*xxxxxx*
Indicates the train or chain identification. The system inserts this operand in an action message.

NULMSG
Suppresses the printing of a buffer load verification message. If you specify NULMSG, the system continues processing immediately after completion of the UCB load operation. You will not be able to verify if the contents of the UCB match the print train mounted on the printer.

If output printing starts under control of the wrong UCB, do the following:

1. Stop the printer using the **PFLUSH** (short form: **F**) command:

```
F 02E,HOLD
```

2. Load the correct UCB.
3. Change forms if necessary.
4. Use the **PALTER** command or **PRELEASE** command to change the disposition of the print job to *D*. The disposition must be changed to *D* to allow printing.
5. Restart the printer.
6. Enter the **LUCB** command.

Table 7. Printers and Phasenames

IBM Printers	Phasenames	
3211	$$BUCB	$$BFCB
3203-5	$$BUCB00	$$BFCB00
3262 (48 CHARACTER)	$$BUCB22	$$BFCB22
3262 (63 CHARACTER)	$$BUCB22	$$BFCB22
3262 (96 CHARACTER)	$$BUCB22	$$BFCB22
3289-4	$$BUCB10	$$BFCB10
1403U	$$BUCB4	$$BFCB4
4248	NOT APPLICABLE	$$BFCBWM
6262-014	NOT APPLICABLE	$$BFCBWM

Terminating a Printout

To terminate a running printout, use the **PFLUSH** (short form: **F**) command. For example, to stop the job currently printing and place it in disposition **H** (hold) or disposition **L** (leave), enter the **PFLUSH** command with the HOLD operand:

```
F 02E,HOLD
```

You may now continue with the next list queue entry.

Jobs with a disposition of D (dispatch) will be deleted from the queue unless you specify HOLD. Jobs with a disposition of K (keep) will be placed in L (leave) disposition. Job dispositions are explained under “Disposition” on page 8. To print a flushed job later, use either **PALTER** or **PRELEASE**.

Stopping the Printer

If you tell VSE/POWER to stop printing from the list queue, output execution is stopped before its normal end. However, the output is not deleted from the list queue.

When you restart list queue execution, printing starts from the beginning of the entry that was stopped.

For example, to stop a running printout immediately on the printer at address 014, you would enter the **PSTOP** command (short form: **P**):

```
P 014
```

This is the *VSE address*. To obtain the corresponding *physical address*, position the cursor under the first character of the VSE address, and press PF11. Then press Enter to execute the QUERY IO command that is displayed in the command line.

When you start the printer again (PSTART LST,014), printing will begin at the *first* record of the same job output.

If you use the option RESTART of the **PSTOP** command, printing restarts where it was interrupted:

```
P 014,RESTART
```

You can specify that printing from the list queue is to stop when printing of the current output is complete by entering:

```
P 014,EOJ
```

Restart Printing from a Different Output Page

You can restart a *running* printout from either the beginning or from a specified page by using the **PRESTART** command (short form: **T**). For example, if you have a forms jam and want to reprint the previously printed ten pages and then continue on printer 02E, enter:

```
T 02E,-10
```

This is the *VSE address*. To obtain the corresponding *physical address*, position the cursor under the first character of the VSE address, and press PF11. Then press Enter to execute the QUERY IO command that is displayed in the command line.

You can specify a signed or unsigned value up to 999,999. The default value is 1. If you specify a value that is too large forward, that value will be ignored. If you specify a value that is too large backward, printing will start again from the first record. If you just specify a number, the printer will start printing at the page you specify.

The following command will cause printing to begin at page 20:

```
PRESTART 02E,20
```

To skip 13 pages from the page currently being printed and continue, enter:

```
T 02E,+13
```

If you try to use this command after the printout has already finished, you will get message 1R57I, and the command will be ignored.

Print Band Handling on IBM 4248 Printers

If you have an IBM 4248 printer in native mode, you may have to change the print band, or check that the correct band is mounted. (A 4248 is in native mode if it was ADDed at IPL with the device type 4248 and is switched to 4248 operation mode. It is also possible to ADD an IBM 4248 with the device type PRT1 and set the switch to 3211 operation mode.)

The attention routine (AR) command **BANDID** gives you the information you need.

To check which band is mounted, enter the command:

```
BANDID cuu
```

where *cuu* is the address of the 4248 printer device (for example, 00E). You then get a console message giving you the band identifier of the print band presently on the printer. If a different band is required for the next job, change the band and check that you have mounted the right one by entering the **BANDID** command again.

cuu is the *VSE address* of the 4248 printer device. To obtain the corresponding *physical address*, position the cursor under the first character of the VSE address, and press PF11. Then press Enter to execute the `QUERY  IO` command that is displayed in the command line.

Setting Defaults for an IBM 3800 Printing Subsystem

If your computing system includes an IBM 3800 Printing Subsystem, you can set and/or reset the 3800 system default parameters by using the **SETDF** operator command. Issuing the **SETDF** command does not change the settings of the 3800. Instead, the parameters are saved such that when the user specifies DFLT=Y or keyword=* in a SETPRT statement, the SETPRT routine sets the 3800 with the predefined defaults.

The following examples illustrate uses of the **SETDF** command:

Example 1: To set selected default parameters for a 3800 and reset the others, enter the command:

```
SETDF 018,BURST=Y,FLASH=AC01,FORMS=8X11,RESET
```

Address 018 is the *VSE address*. To obtain the corresponding *physical address*, position the cursor under the first character of the VSE address, and press PF11. Then press Enter to execute the `QUERY  IO` command that is displayed in the command line.

This command sets the 3800 printer whose address is 018 with the default of bursting=yes, forms overlay name=AC01, and forms name=8X11. It resets the values for CHARS, FCB, and MODIFY. If all 3800 printers at your location are to be set with these defaults, specify 3800 instead of a single printer address.

Example 2: To set or reset selected defaults, and list the defaults, enter the command:

```
SETDF 3800,BURST=,FCB=AC02,FORMS=,MODIFY=AC03,LIST
```

This command resets the system default values for the BURST and FORMS parameters. The FCB default is specified as AC02 and the default copy modification is AC03. The LIST parameter then causes a display of the defaults on the operator console.

For detailed information, see the description of the SETDF command in z/VSE System Control Statements.

Chapter 11. Communications and Networking Operation

This topic provides information on single processor and networking (two or more processors) environments. In addition, for each environment there is information on communicating with display stations, terminal printers, and workstations. Working with Binary Synchronous Communication (BSC) and TCP/IP connections is also discussed.

For detailed information on a networking environment, refer to the:

- z/VSE SNA Networking Support, SC34-2626.
- z/VSE TCP/IP Support, SC34-2706.

Single Processor Environment

Single processor environment means that your system is not in a network with other systems. In addition to its *local* communication devices, however, it can have a number of *remote* communication devices attached to it. Such devices can include:

- Display stations and terminal printers (attached via an integrated adapter of a processor or one or more control units on leased or switched lines).
- Remote Job Entry (RJE) workstations (attached on leased or switched lines).
- IBM 3600 and IBM 4700 Finance Communications Systems (attached on leased or switched lines).

Communicating with Display Stations and Terminal Printers

Each local or remote display station or terminal printer in your system's configuration has a unique *terminal identifier (ID)*.

Your z/VSE system administrator should prepare a list of all display stations and printers attached to your system. This list should include their locations, VTAM netnames, CICS terminal identifiers, and other applicable information. *Be sure to have this list available when controlling communications and networking operation*.

Displaying Device Status

To request a status display for a display station or terminal printer, use the **DISPLAY NET** command (short form: **D NET**). For example, to request a status display for the display station with the VTAM netname D1020001, enter:

```
D NET,ID=D1020001
```

To request a status display for the line L0300001, enter:

```
D NET,ID=L0300001
```

To request a status display for all display stations and terminal printers, enter:

```
D NET,TERMS
```

Besides the local and remote display stations and terminal printers, this last status display will also include information about RJE workstations.

Note: To make sure that no VTAM messages will be suppressed, enter:

```
MODIFY NET,SUPP=NOSUP
```

Activating or Deactivating a Device

To activate or deactivate a display station or terminal printer, use the **VARY NET** command (short form: **V NET**). For example, to deactivate the display station with VTAM netname D1020001, enter:

```
V NET,INACT,ID=D1020001
```

To reactivate this display station, enter the following commands:

```
V NET,ACT,ID=D1020001
MSG F2
02 CEMT SET TERM(D102) INSERVICE ACQUIRED
```

Notice that the CICS identifier of the display station (**CEMT** command above) is different from the VTAM identifier (**VARY NET** command). The reply ID 02 used in the example above could be different on your system.

VSE/POWER RJE Workstations

RJE workstations are defined by a unique ID of up to three digits called a *remote identifier (remid)*. The remid has to be in the range of 1 to 250. Your z/VSE system administrator should prepare a list of all RJE workstations attached to your system. This list should include their locations, remote identifiers, and other applicable information. *Be sure to have this list available when controlling communications and networking operation*.

Requesting Device Status

To request a status display for all RJE workstations, use the **PINQUIRE** command (short form: **I**):

```
I ALL
```

Sending a Message to an RJE Workstation

Use the **PBRDCST** command (short form: **B**) to send a message to the operator of an RJE workstation. For example, to tell the operator at the RJE workstation with remote identifier (remid) 31 that you will stop all connections to RJE workstations in about half an hour, enter:

```
B 31,'RJE will shut down in 30 minutes'
```

Starting and Stopping SNA Connections

Use the **PSTART** command (short form: **S**) to start the connections to all RJE SNA workstations:

```
S RJE,SNA
```

Use the **PSTOP** command (short form: **P**) to stop all RJE SNA connections. The option EOJ allows the current jobs to finish before the connection is stopped:

```
P RJE,SNA,EOJ
```

Starting and Stopping BSC Connections

To start the RJE connection to a BSC workstation on the line with address 032, enter:

```
S RJE,032
```

To end the RJE connection to a BSC workstation on the line with address 032, enter:

```
P 032
```

Add the option EOJ to allow the current jobs to finish before the connection is stopped:

```
P 032,EOJ
```

The BSC workstation address 032 is the *VSE address*. To obtain the corresponding *physical address*, position the cursor under the first character of the VSE address, and press PF11. Then press Enter to execute the QUERY IO command that is displayed in the command line.

Networking Environment

In a *networking environment* two or more processors are connected via telecommunication lines or channel-to-channel adapters (CTCA). In addition, the same I/O devices as in a single processor environment can be remotely attached to your z/VSE system.

Each data processing system in a networking environment is called a *node*. A node is defined by a unique *node identifier (node ID)* and a *subarea number*. The path travelled by information from one node to another is called a *route*.

Programs, display stations, and terminal printers are called *resources*. A resource at one node can communicate with a resource at another node. This is called *cross-domain communication*. Cross-domain communication is controlled by programs called *cross-domain resource managers (CDRMs)*.

Display Stations and Terminal Printers

In a networking environment, each display station or terminal printer is defined to VTAM by an 6-8 character *netname*.

The administrator of your z/VSE system should prepare a list of all display stations and printers attached to your system. This list should include their locations, VTAM netnames, CICS terminal identifiers, and other applicable information. *Be sure to have this list available when controlling communications and networking operation*.

Displaying Device Status

To request a status display for a remote display station or terminal printer, use the **DISPLAY NET** command (short form: **D NET**). For example, to request a status display for the display station R1230001 in a networking environment, enter:

```
D NET,ID=R1230001
```

To request a status display for all remote display stations and terminal printers attached to the line that has the identifier L0300001, enter:

```
D NET,ID=L0300001
```

To request a status display for all display stations and terminal printers, enter:

```
D NET,TERMS
```

Activating or Deactivating a Device

To activate or deactivate a display station or terminal printer, use the **VARY NET** command (short form: **V NET**). For example, to deactivate the display station R1230001 in a networking environment, enter:

```
V NET,INACT,ID=R1230001
```

To reactivate this display station enter:

```
V NET,ACT,ID=R1230001
MSG F2
02 CEMT SET TERM(R001) INSERVICE ACQUIRED
```

Notice that the CICS identifier of the display station (**CEMT** command above) is different from the VTAM identifier (**VARY NET** command). The reply ID 02 used in the example above could be different on your system.

VSE/POWER RJE Workstations

The commands that you use to control the RJE workstations are the same as in a single processor environment (see "VSE/POWER RJE Workstations" on page 90).

Note: The status display in answer to the command **PINQUIRE ALL** also will include information about the nodes of the network.

SNA Network Connections

A network session for job and file transfer between your z/VSE system and another node is started by means of the **PSTART** command. Both nodes must issue a **PSTART** command (or an equivalent command if the system with which you are communicating is not a system using VSE/POWER) to activate the connection.

Normally, PSTART commands for all connections between your node and other nodes in the network are automatically issued at startup. Your z/VSE system administrator should prepare a list of all nodes in the network. This list should include their locations, node identifiers, and other applicable information (whether, for example, the connection to that node is automatically started). *Be sure to have this list available when controlling network operation*.

Note that network problems may occur that you cannot solve using the commands and procedures described in this section. If this happens, first contact your local z/VSE system administrator. If your z/VSE system is connected to a central host, you may also contact the network administrator there.

Requesting Device Status

Use the **PINQUIRE** command (short form: **I**) to request a status display for a node in the network. For example, to request a status display for the node with node identifier (nodeid) VSESA2, enter:

```
I NODE=VSESA2
```

If the system answers with message:

```
1R56I SNA PROCESSING NODE VSESA2
```

the connection between your node and node VSESA2 is established.

Connection Problems

If the connection to node VSESA2 is not yet established and your node is waiting for activity from node VSESA2, you will get message

```
1R56I SNA NODE=VSESA2 SESSION PENDING
```

Maybe the other processor is not yet active, or the operator there has not yet started the connection. Or perhaps the corresponding cross-domain resource manager (CDRM) is not active.

Collect additional information using the commands **D NET** and **D PNET**. Enter one or more of the following commands:

D NET,CDRMS
Displays the status of all cross-domain resource managers known at your node.

D NET,CDRSCS
Displays information about all cross-domain resources known at your node.

D NET,CLSTRS
Displays the status of all physical units known at your node.

D NET,PATHTAB
Displays the routes currently known to your node together with their status.

D NET,ROUTE,DESTSUB=
Displays the status of routes to a destination subarea.

D NET,LINES
Displays the status of the lines and channel links in the domain.

D NET,STATIONS
Displays the status of all cross-subarea link stations within each node.

D PNET,ALL
Displays the node identifier of all nodes known to PNET at your system.

D PNET,LINKS
Displays the node identifier of all nodes known to PNET with which your node has a direct session defined.

Note: Refer to the *z/VSE Messages and Codes* for a detailed explanation of the items in the messages. You may also want to check with the operator of the other node.

If a network resource that is needed for the pending connection is inactive, you can activate it with the **VARY NET,ACT** command (short form: **V NET,ACT**). For example, to activate the cross-domain resource manager VSE3CDRM, enter:

```
V NET,ACT,ID=VSE3CDRM
```

Use the **VARY NET,INACT** command (short form: **V NET,INACT**) if you want to deactivate a network resource. For example, to deactivate the cross-domain resource manager VSE3CDRM, enter:

```
V NET,INACT,ID=VSE3CDRM
```

Note: Before you enter a **VARY NET** command, you should check with the operator of the other node.

Sending Messages to Another Node

Use the **PBRDCST** command (short form: **B**) to send a message to the operator at another node. For example, to ask the operator at node VSESA2 when the system will be shut down, enter:

```
B VSESA2,'At what time will you shut down?'
```

Routing Operator Commands to Another Node

To enter commands as if you were the operator at *another* node within the network, use the **PXMIT** command (short form: **X**). For example, to display all entries from the transmission queue of node VSESA2 which are destined for node VSESA1, enter:

```
X VSESA2,D XMT,TNODE=VSESA1
```

The answer to the **D XMT** command will be displayed at your console.

Note: You can only specify those commands for which your node has been given authority by the other node.

Stopping Transmission of a Job or Output

Sometimes you may be asked to stop the transmission of a job or of output that is currently being sent to or received from another node. The following example assumes that you were asked to stop the transmission of job NETJOB from your node to node VSESA2.

The transmission of jobs and outputs is handled by *transmitters* (send jobs or output from one node to another one) and *receivers* (receive jobs or output from another node). Each transmitter has an identifier of the form **TR***n*, where *n* is a digit. Each receiver has an identifier of the form **RV***n*, where *n* is a digit.

To stop the transmission of a job or output, you first have to find out which transmitter or receiver handles the transmission. To do so, use the command:

```
D A,PNET
```

In the system answer to this command, find the line that looks like the following:

```
1R48I  J-TR1,SNA,*,  NETJOB  ,00238,A  LEFT=00047 OF 00083
       NODE=VSESA2
```

In this example, your job is being handled by job transmitter number 1 (J-TR1). Now you can stop the transmission of NETJOB by entering the **PFLUSH** command (short form: **F**):

```
F PNET,VSESA2,TR1,JOB
```

The transmission of job NETJOB is stopped. The job will be erased from the transmission queue if its disposition was D. If the job's disposition was K, the job will stay in the queue with disposition L.

You can also use the option HOLD of the **PFLUSH** command:

```
F PNET,VSESA2,TR1,JOB,HOLD
```

In this case, the job will stay in the queue. The disposition will be H if the job's disposition was D. It will be L if it was K before transmission started.

If you want to stop transmission of an output, you have to enter *OUT* instead of JOB in the **PFLUSH** command. Message 1R48I in answer to your **D A,PNET** command will show you which transmitter or receiver handles the transmission of your output.

Stopping Job and Output File Transfer

The network may be shut down during the system shutdown process. If you have to stop job and output file transfer while continuing batch operation, you must issue **PSTOP** commands for all active nodes. Be sure to use the EOJ option to allow the current activity to complete.

To stop job and output file transfer to another node in the network, use the **PSTOP** command (short form: **P**). For example, if you want to stop job and file transfer to node VSESA2, enter:

```
P PNET,VSESA2,EOJ
```

This will stop all job and output file transfer activity to node VSESA2 when transmission of the current job or file is complete.

Use the **PSTART** command (short form: **S**) to restart the connection for job and output file transfer to a node in the network. For example, to restart the connection for job and output file transfer to node VSESA2, enter:

```
S PNET,VSESA2
```

Note: If the operator at the other node deactivated the connection for job and file transfer to your node, you will get message:

```
1RC6I CONNECTION PENDING FOR NODE VSESA2,
       TIME=hh:mm:ss RC=cccc
```

If you need to know the meaning of the return code (RC=*cccc*), refer to the explanation of message 1RC6I in the z/VSE Messages and Codes Volume 1 documentation.

The operator at node VSESA2 has to enter a **PSTART** command for *your* node to complete the connection. For example, if your node is VSESA1, the operator at node VSESA2 has to enter the following command:

```
S PNET,VSESA1
```

BSC Network Connections

When BSC line control is used to communicate between your system and another processor, VSE/POWER alone handles the transmission of jobs and output. Therefore, you *cannot* use VTAM commands (**D NET**, **V NET**) to request a status display of the connection or to activate or deactivate the connection.

To start the connection between your system and node VSEBSC (if it was not started automatically at system startup) using BSC line control and the line with address 032, enter:

```
S PNET,VSEBSC,,032
```

The other VSE/POWER commands that you use to control job and file transfer between your system and another node in the network with BSC line control are similar to those described under "SNA Network Connections" on page 92.

For example, you may request a status display for node VSEBSC by entering:

```
I NODE=VSEBSC
```

or stop all job and file transfer activity to node VSEBSC at the end of the current transmission with:

```
P PNET,VSEBSC,EOJ
```

TCP/IP Network Connections

When TCP/IP PNET is used to communicate between your system and another processor, VSE/POWER alone handles the transmission of jobs and output.

To start the connection between your system and node VSETCP (if it was not started automatically at system startup), you would enter:

```
S PNET,VSETCP
```

The other VSE/POWER commands that you use to control job and file transfer between your system and another node in the network with TCP/IP PNET are similar to those described under "SNA Network Connections" on page 92.

For example, you may request a status display for node VSETCP by entering:

```
I NODE=VSETCP
```

or stop all job and file transfer activity to node VSETCP at the end of the current transmission with:

```
P PNET,VSETCP,EOJ
```

Chapter 12. Handling of Magnetic Tapes

Note: Before using the information in this topic, you should ensure you understand the terms *physical address* and *VSE address*. See “Explanation of Physical Address and VSE Address” on page 5.

Initializing Magnetic Tapes

When you get a magnetic tape new from the factory, you must *initialize* it before it can be used. Initializing the tape writes a label and a tape mark or just a tape mark onto it. z/VSE recognizes the tape as either labeled or unlabeled.

Also, if you have a cartridge that was used on an IBM 3490 tape device, you cannot use that cartridge on an IBM 3480 tape drive unless you re-initialize it.

In this case, a message such as:

```
0P32 NON COMPAT SYS012=480
```

will be issued.

Labeled Tapes

To initialize a magnetic tape with a label from the console:

1. Mount your tape.
2. Note the *physical address* of the tape drive (for example, A181). To obtain the *VSE address* of the tape drive, at the command line of the console you must enter this command:

   ```
   QUERY  IO,CUU=nnnn
   ```

   In this example, you would enter `QUERY  IO,CUU=A181`. In the example, the VSE address 181 would then be displayed.
3. Enter the commands as shown in Figure 20 on page 98.

Figure 20 on page 98 shows your entries along with the system messages that will appear.

When this job has finished, you have an initialized tape with a label. The volume identifier (volume serial number) for the first tape is VSE001. Write this volume identifier (VSE001) on an external label, and attach the label to the tape reel.

Note: Your administrator may also make the DITTO program available to you via the Interactive Interface. You can also use the online dialog of DITTO to initialize a tape. For more information on the DITTO program refer to the IBM documentation *DITTO/ESA for VSE, User's Guide and Reference* , SH19-8221.

```
r rdr,pausebg
AR 0015 1C39I COMMAND PASSED TO VSE/POWER
F1 0001 1R88I  OK : 1 ENTRY PROCESSED BY R RDR,PAUSEBG
BG 0001 1Q47I   BG PAUSEBG 03940 FROM (SYSA) , TIME=21:10:01
BG 0000 // JOB PAUSEBG
        DATE 12/15/2010, CLOCK 21/10/01
BG-0000 // PAUSE
0 exec ditto
BG 0000 1S54I  PHASE DITTO    IS TO BE FETCHED FROM PRD1.BASE
BG 0000 *** DITTO/ESA active ***
BG 0000 When prompted, enter GO to skip optional prompts, or U to exit from
function
BG 0000 DITTO function ?
BG-0000
0 int
BG 0000 Output tape ? Enter unit, unit-mm, ATLc or ATLc-mm
BG-0000
0 181
BG 0000 VOLSER ?
BG-0000
0 vse001
BG 0000 Enter new data set name
BG-0000
0
BG 0000 Enter Y for ANSI/ASCII label or N for IBM standard/EBCDIC label
BG-0000
0 n
BG 0000 Writing...
BG 0000 New VOLSER is VSE001
BG 0000 DITTO function ?
BG-0000
0 rew,181
BG 0000 Rewinding...
BG 0000 REW completed
```

Note: DITTO has prompted you in initializing this tape. But there is a faster way to do that.

```
BG 0000 DITTO function ?
BG-0000
0 int,181,vse001,,n
BG 0000 Writing...
BG 0000 New VOLSER is VSE001
BG 0000 DITTO function ?
BG-0000
0 eoj
BG 0000 DITTO processing completed
BG 0000 1S55I  LAST RETURN CODE WAS 0000
BG-0000 1I00D  READY FOR COMMUNICATIONS.
0
BG 0000 EOJ PAUSEBG   MAX.RETURN CODE=0000
        DATE 12/15/2010, CLOCK 21/11/43, DURATION   00/01/42
BG 0001 1Q34I   BG WAITING FOR WORK
```

Figure 20. Initializing a Tape with a Label

Non-Labeled Tapes

To initialize a magnetic tape without a label, use the *Write Tape Mark (WTM)* option of the **MTC** command.

1. Enter the **PRELEASE** command (short form: **R**):

   ```
   R RDR,PAUSEBG
   ```

   Wait for the system messages:

   ```
   BG 0000 // PAUSE
   ```

2. Note the *physical address* of the tape drive (for example, A1A0). To obtain the *VSE address* of the tape drive, at the command line of the console you must enter this command:

   ```
   QUERY  IO,CUU=nnnn
   ```

   In this example, you would enter `QUERY IO,CUU=A1A0`. In the example, the VSE address `1A0` would then be displayed.

3. Mount your tape.
4. Enter the following commands:

```
0 MTC WTM,1A0
0 MTC REW,1A0
```

   The system will answer each of these commands with message:

```
BG-0000
```

   Repeat steps 2 to 4 for each tape to be initialized.
5. To exit, enter:

```
0
```

Handling of Specific IBM Tape Devices

IDRC and Encryption for 3480, 3490, 3490E, 3590, and 3592 Tape Devices

IDRC means **I**mproved **D**ata **R**ecording **C**apability for 3480, 3490, 3490E, 3590, and 3592 tape devices. To use IDRC, the modes described below can be specified in the **ADD** command and in the ASSGN statement.

Encryption involves the encryption of tapes using the hardware-based encryption facilities provided by an *encryption-capable* tape drive. An example of an encryption-capable tape drive is the IBM TotalStorage 3592 Model E05. To use this hardware-based encryption, the modes described below can be specified in the **ADD** command and in the ASSGN statement.

These are the mode settings that can be specified:

X'00'
Buffered Write Mode

X'20'
Unbuffered Write Mode

X'28'
IDRC (compression) with unbuffered Write Mode

X'08'
IDRC (compression) with buffered Write Mode

X'03'
Encryption Write Mode

X'23'
Encryption with unbuffered Write Mode

X'0B'
Encryption and IDRC (compression) Write Mode

X'2B'
Encryption and IDRC (compression) and unbuffered Write Mode

See the documentation z/VSE System Control Statements for detailed information about the ADD command, the ASSGN statement and device type code for the IBM 3480, 3490, 3490E, 3590, and 3592 tape devices.

Chapter 13. Controlling Online Operation

In a z/VSE system, CICS and VTAM control online processing. This includes control over the status of display stations, data, and programs.

You can enter *CICS Master Terminal (CEMT)* commands from the system console or from any other z/VSE administration console. With CEMT commands, you can modify the operational status of programs or display stations that are under the control of CICS.

For detailed information about CEMT commands, refer to the IBM documentation CICS Supplied Transactions.

Entering CEMT Commands from the z/VSE Console

To start a *session* with CICS from the z/VSE console, you first enter a **MSG** *partition-id* command. Then you can enter one or a sequence of CEMT commands. Precede each CEMT command by the *reply ID* that z/VSE issues in reply to your CEMT command:

```
0D16D READY
```

If one or more replies are still outstanding when **MSG** *partition-id* is entered, the message(s) which require a response will be displayed in highlighted form. Multiple reply IDs are made unique through a count in the first position:

```
F2-0002
 .
 .
F2-1002
```

To illustrate the use of the reply ID, the commands in the examples below use the reply ID **2**. Please note that this reply ID could be different on your system.

You may abbreviate the operands of the CEMT command to the shortest unique set of characters. This means that you can enter TASK, TAS, or TA, but not T, because T can be confused with TERMINAL, TRANSACTION, and so on.

CICS completes its response to a CEMT command in the following manner:

```
F2 0002  RESPONSE:  NORMAL TIME:          DATE:
F2-0002  APPLID=DBDCCICS
```

To end the CICS session, type the reply ID and press the ENTER key. *Do not forget to end a CICS session, otherwise online processing could lock up.*

Controlling CICS Tasks

A CICS *task* is the actual execution of a user request.

The CICS task shown in the following example was performed at the system console. Handling of this example CICS task would be different if you used the display station.

Inquiring Status

In CICS, you have some control over task execution via commands such as the CEMT **INQUIRE** command. Enter:

```
xxx CEMT INQUIRE TASK         or
xxx CEMT I TA
```

```
msg f2
AR 0015 1I40I  READY
F2-0100
100 cemt i ta
F2-0100
F2 0104
         Tas(0000023) Tra(CXPB)           Sus Tas Pri( 001 )
         Sta(S ) Use(DBDCCICS) Rec(X'BC845B5F406B7A84') Hty(OPEN_ANY)
         Tas(0000025) Tra(IESO)           Sus Tas Pri( 020 )
         Sta(S ) Use(CICSUSER) Rec(X'BC845B5F40425984') Hty(EKCWAIT )
         Tas(0000027) Tra(ICVS)           Sus Tas Pri( 001 )
         Sta(S ) Use(CICSUSER) Rec(X'BC845B5F40827984') Hty(USERWAIT)
         Tas(0001968) Tra(IECA)           Sus Tas Pri( 020 )
         Sta(SD) Use(ELKE    ) Rec(X'BC93C42DA3AF4465') Hty(EKCWAIT )
         Tas(0001986) Tra(IECM)           Sus Tas Pri( 020 )
F2 0104  Sta(SD) Use(ELKE    ) Rec(X'BC93C4408E30CA01') Hty(EKCWAIT )
         Tas(0001987) Tra(CEMT) Fac(CO01) Run Ter Pri( 255 )
         Sta(TO) Use(CICSUSER) Rec(X'BC93C440A66B4605')
         RESPONSE: NORMAL TIME:  19.43.41  DATE: 02.15.05
         SYSID=CIC1 APPLID=DBDCCICS
```

The individual items of the above display are explained in the IBM documentation *CICS Supplied Transactions*. You may need this form of the CEMT command, for example, to find out if a CICS task is in a *SUS*pended condition and blocks the terminal. If required, you can stop such a task with the procedure described in the following section.

Stopping a Task

To stop a task, first find out its task number by entering an **INQUIRE** command like the one shown above.

As shown, the result will give you the task number of all tasks. Note the number assigned by CICS to the task that you want to stop (06173 in the example). Now enter a **SET** command to stop the task:

```
2 CEMT SET TAS(06173) PURGE
```

If this command is not successful, enter:

```
2 CEMT SET TAS(06173) FORCE
```

In both cases CICS will answer with the following message which tells you that the task is being purged.

```
114 cemt set tas(0000821) force
F2-0114
F2 0117
         Task(0000821)
         Tranid(IECM)
         Facility()
         Runstatus(Dispatchable)
         Ftype(Task)
         Priority( 020 )
         Purgetype( Forcepurge )
         Startcode(SD)
         Userid(ELKE)
F2 0117  Recunitid(X'BB8D9168083E3342')
         Htype()
         Hvalue()
         Htime()
         Bridge()
         Identifier()
         NORMAL
         RESPONSE: NORMAL TIME:  06.42.52  DATE: 07.22.04
         SYSID=CIC1 APPLID=DBDCCICS
```

Controlling Display Stations

With the CEMT commands **INQUIRE TERMINAL** and **SET TERMINAL** you can:

- Find out the status of a display station.
- Change the priority of one display station relative to another.

- Change a display station's status to "in service" (the display station is available for use by transactions) or "out of service" (the display station can no longer be used by transactions).
- Acquire a display station from VTAM and put it in session with CICS.

Inquiring Status

If you want to find out the status of *all* display stations and terminal printers, although you would normally specify a *single* terminal ID, you can do so by entering:

```
xxx CEMT INQUIRE TERMINAL          or
xxx CEMT I TE
```

This gives you information about the status of *all* the display stations and terminal printers. The system answer looks like the following:

```
msg f2
AR 0015 1I40I  READY
F2-0116
116 cemt i te
F2-0116
F2 0119
         Ter(A000)           Pri( 000 ) Pag Ins Ati Tti
         Net(D1000001) Acq Cre
         Ter(CBRF)           Pri( 000 ) Pag Ins Ati Tti
         Net(CBRF    ) Rel Cre
```

To find out about the status of a *specific* display station or terminal printer, enter:

```
xxx CEMT INQUIRE TERMINAL (term ID)          or
xxx CEMT I TE (term ID)
```

term ID is the 4-character name of the display station or terminal printer.

The system answer looks like the following:

```
F2 0119  Ter(L306)           Pri( 000 ) Pag Ins Ati Tti
         Net(D72L306 ) Rel Cre
RESPONSE: NORMAL TIME:  09.51.34  DATE: 02.24.05
SYSID=CIC1 APPLID=DBDCCICS
```

The meaning of the items is explained in the *CICS Supplied Transactions* documentation.

Changing Status

You can change the status of a display station by using the **SET TERMINAL** command. For example, to change the status of display station D009 so that it is out of service, enter:

```
xxx CEMT SET TERMINAL(D009) OUTSERVICE
```

You may need this command if a display station or the related task are locking up the CICS system. After the display station is disabled, you still have to terminate the task:

```
xxx CEMT SET TASK(06173) PURGE
```

You may accomplish both of these by entering:

```
xxx CEMT S TE(D009) OUT PUR
```

This sets the display station out of service *and* terminates the task at the same time.

Now you can put the display station back in service and acquire it for VTAM:

```
xxx CEMT SET TERMINAL(D009) INSERVICE ACQUIRED
```

You may abbreviate this:

```
xxx CEMT S TE(D009) INS ACQ
```

After you enter the command to put the display station in service, check its access by VTAM by entering:

```
xxx CEMT INQ TE(D009)
```

The report should indicate that the display station has been acquired (ACQ). If it does not, enter:

```
xxx CEMT SET TE(D009) ACQ
```

Chapter 14. Operating z/VSE under VM

This topic discusses the communication of a VM user with a z/VSE system under VM. In particular, it discusses the following topics:

- Accessing a z/VSE guest system
- Commands of the VM/VSE Interface
- Other facilities of communication, not dependent on the VM/VSE interface.

Accessing a z/VSE Guest System

There are several methods to access a z/VSE guest system that is installed under VM when you are a terminal user. You can either use:

- The CP **DIAL** command
- **VTAM cross domain**
- **VM/Pass-Through Facility** (which is an optional VM licensed program)
- Terminals attached to the z/VSE guest system.

Dialing into the System

Assuming you are the user of a terminal that is connected to a VM system. You can access a z/VSE guest system using the CP command

DIAL user pcuu

where:

- *user* stands for the name of a virtual machine defined in the VM directory for the z/VSE system.
- *pcuu* stands for the terminal's physical address to be used, which can be up to *four* hexadecimal characters. If you do not enter the address, you will get the first free virtual terminal address. For an explanation of "physical address", see “Explanation of Physical Address and VSE Address” on page 5.

Before you can DIAL to a VSE system, the operator must have performed a logon of the z/VSE guest system and an IPL of the VSE system. The DIAL command is issued from the VM screen. When the *z/VSE Online* panel appears, sign on to the z/VSE system using an ID and password known to it.

After completing your work, return to the *z/VSE Online* panel and press **PF3** (TO VM). This terminates the session and returns you to CP mode. You can then log on to the VM system, if you wish.

VTAM Cross Domain Logon

The cross domain relation under consideration here consists of a

- VTAM under VM, and a
- VTAM under the z/VSE guest system.

By using the VTAM cross domain logon, you have a direct access to z/VSE.

VM/VSE Interface - Command Descriptions

The following is assumed:

1. Your administrator has made the necessary changes to both the host (VM) and guest (z/VSE) system. This is discussed in detail in the documentation *VM Running Guest Operating Systems*
2. Your VM and z/VSE systems are up and running. The z/VSE system was IPLed with SYS option VMCF=YES.

3. Your administrator has installed the service modules of the VM/VSE Interface. These modules are a set of VSE phases and CMS* modules provided by z/VSE. The VM/VSE Interface routines let CMS users operate z/VSE systems. The documentation z/VSE Installation provides detailed information how to install the VM/VSE Interface.

   It is also assumed that your administrator has given you the right to access any of those CMS modules that you need.

Command Facilities of the VM/VSE Interface

When you use a z/VSE system with the VM/VSE Interface, you can do the following from your VM user ID:

- **Execute z/VSE commands** on a z/VSE virtual machine and have the resulting responses echoed to your VM user ID. You use the **VSECMD** command.

  VSECMD also serves to

  – Reply to messages that result from the execution of a job. The job must have a unique job owner ID (your VM user ID, for example).

  – Issue CP commands for execution in the z/VSE virtual machine and have the resulting messages routed to your VM user ID.

    Two facilities are available that let you issue CP commands:

    - *Enter CP commands* (*** CP command**) from your z/VSE console
    - *Execute CP commands* (**// EXEC CPCMD**) within JCL statements.

    These two facilities are described at the end of this topic. Note that they are not part of the VM/VSE Interface.

- **Submit jobs** from a CMS terminal to a z/VSE virtual machine and have messages from the job echoed to a specific user ID (provided the ECHO/ECHOU parameter in the * $$ JOB statement had specified that user ID). You use the **SUBVSE** command.

Command Authority

Your *command authority* that is given to you via your user profile determines the scope of commands that you may enter:

- If you have **unrestricted command authority**, you may enter any command, and reply to any outstanding message whether or not it is routed to your VM user ID.
- If your command authority is restricted, you can only enter a subset of commands as described in “Command Authorization” on page 37. And you may only reply to messages that were exclusively routed to your VM user ID.

Within the VM/VSE Interface, you can restrict command authority only in a system with security active (that is, the system was IPLed with SEC=YES). Unrestricted command authority is established through the MCONS or AUTH parameters, within a user profile, of the z/VSE Access Control table DTSECTAB. This table is described in Appendix B of the IBM documentation z/VSE Administration.

All Administration Console Messages to One User - SYSECHO

Via the Attention Routine command SYSECHO, your VM user ID can be authorized to receive all administration console messages and to issue commands without restriction (provided your z/VSE system was IPLed with SYS option VMCF=YES). This function allows to automate z/VSE operations from a CMS program.

The SYSECHO command is described in the documentation z/VSE System Control Statements.

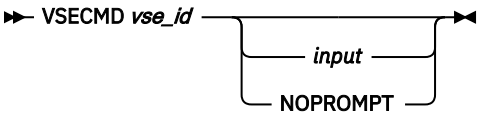
Note: In the following sections the example user ID of the z/VSE virtual machine will be *VSEGUEST*.

VSECMD: Send Commands and Replies to the z/VSE Virtual Machine

VSECMD allows you to send commands to the z/VSE virtual machine for execution. These can be attention routine commands such as **MAP**, **PRTY**, VSE/POWER commands, VTAM commands etc.

If you send, for example, the **MAP** command to the z/VSE virtual machine VSEGUEST, all messages issued from the attention routine and resulting from the **MAP** command will be routed to your VM user ID.

The command format of **VSECMD** is:



where:

vse_id
is the VM user ID of the z/VSE guest virtual machine.

input
is the z/VSE command or the reply to be sent to the z/VSE virtual machine. If this operand is omitted, you will be prompted for it.

NOPROMPT
requests that prompting should not occur, that is, the input is requested without a preceding prompt message.

Optionally, you can enter **VSECMD** or **VSECMD HELP** or **VSECMD ?** to have the command format explained.

You can issue the following command, for example:

```
VSECMD VSEGUEST D A
```

The result is shown below. It is assumed that the z/VSE guest system is authorized for the MSGNOH command (otherwise every line would be prefixed by a MSG FROM VSEGUEST header).

```
vsecmd vseguest d a
Ready; T=0.01/0.01 11:12:16
AR 0015 1C39I COMMAND PASSED TO VSE/POWER
F1 0001 1R48I   BG,FEC,A0I,      INACTIVE,
F1 0001 1R48I   F2,FEC,L2,  CICSICCF,00021,2
F1 0001 1R48I   F3,FEC,K3,  VTAMSTRT,00003,3
F1 0001 1R48I   F4,FEC,J4,      INACTIVE,
F1 0001 1R48I   F5,FEC,H5,      INACTIVE,
F1 0001 1R48I   F6,FEC,M6,      INACTIVE,
F1 0001 1R48I   F7,FEC,N7,      INACTIVE,
F1 0001 1R48I   F8,FEC,P8,      INACTIVE,
F1 0001 1R48I   F9,FEC,R9,      INACTIVE,
F1 0001 1R48I   FA,FEC,S,      INACTIVE,
F1 0001 1R48I   FB,FEC,T,      INACTIVE,
F1 0001 1R48I   F3,FEE,,  VTAMSTRT,00003,A        20 LINES SPOOLED
F1 0001 1R48I   F2,FEE,,  CICSICCF,00021,A       173 LINES SPOOLED
F1 0001 1R48I  RDR,00C,A,      INACTIVE,
```

The system response is displayed only on the CMS console.

As another example, a dialog is shown below where a CMS user requests the execution of a librarian job.

```
vsecmd vseguest r rdr,pausebg

AR 0015 1C39I COMMAND PASSED TO VSE/POWER
Ready; T=0.01/0.01 10:20:58
F1 0001 1R88I  OK
BG 0001 1Q47I   BG PAUSEBG 01148 FROM (SYSA) , TIME= 9:20:58
BG 0000 // JOB PAUSEBG
        DATE 10/25/94,CLOCK 09/20/58
BG 0000 // PAUSE
BG-0000

vsecmd vseguest 0 exec librbg
```

```
Ready; T=0.01/0.01 10:21:05
BG-0000 1U52A  PROGRAM NOT FOUND.

vsecmd vseguest 0 exec libr

Ready; T=0.01/0.01 10:21:12
BG 0000 L001A ENTER COMMAND OR END
BG-0000

vsecmd vseguest 0 acc s=prd1.base

Ready; T=0.01/0.01 10:21:22
BG 0000 L113I RETURN CODE OF ACCESS IS  0
BG 0000 L001A ENTER COMMAND OR END
BG-0000
```

Return Codes and Error Messages

VSECMD may fail immediately with one of the following error messages and return codes:

```
0D14I    COMMAND IGNORED (4)
0D11I    INVALID REPLY-ID (8)
0D10I    COMMAND OR REPLY NOT AUTHORIZED (12)
0D86I    NO REDISPLAY COMMAND/MODE IS ACTIVE, COMMAND IGNORED (16)
0D92I    REDISPLAY MODE ALREADY ACTIVE FOR ANOTHER USER (20)
0D21I    INPUT REJECTED BY EXTERNAL EXIT (24)
0D18I    INVALID INPUT (28)
0D19I    ATTENTION ROUTINE NOT ACTIVE (32)
0D24I    REDISPLAY PROCESSOR NOT ACTIVE (32)
VMCF13I  VM/VSE SERVICE ROUTINE FAILURE (32)
VMCF14D  ENTER VSE INPUT
VMCF36I  VMCF ENABLED FOR SYSECHO ONLY (36)
VMCF40I  PROGRAM LOGIC ERROR nn (40)
VMCF44I  TARGET USERID NOT AVAILABLE FOR VMCF (44)
VMCF48I  VMCF MESSAGE LIMIT EXCEEDED, RETRY (48)
VMCF52I  VMCF ERROR nnnn WHILE SENDING (52)
VMCF56I  INCOMPATIBLE VERSIONS OF VMCF (56)
VMCF60I  PROCESSING SUSPENDED BY USER (60)
VMCF64I  NO HELP AVAILABLE (64)
VMCF68I  NO DATA ENTERED (68)
VMCF72I  VMCF ERROR nnnn WHILE AUTHORIZING THIS USERID (72)
VMCF76I  INPUT DATA TOO LONG (76)
```

Additional Considerations

End of Redisplay Enforced

Be aware that, under the VM/VSE Interface, a CMS user's console does not remain in *redisplay mode* after the REDISPLAY command is processed. For any REDISPLAY command, the 'E' (END) parameter is forced:

```
RED xxxx...,E
```

Line-Mode Considerations

A CMS console under the VM/VSE Interface operates in line mode. Please be aware of some peculiarities that apply for line-mode operation. They are described in “Special Considerations for Line-Mode Operation” on page 49.

SUBVSE: Submit a Job to the z/VSE Guest System

The *SUBVSE* command allows a CMS user to submit jobs to a z/VSE virtual machine.

Before a VM user can successfully do this, the z/VSE operator at the z/VSE console has to do the following:

1. Specify the class of the virtual reader:

   ```
   * CP SPOOL RDR CL cl CONT NOHOLD EOF
   ```

The value of *cl* can be A through Z, or 0 through 9. You can also issue this command from the PROFILE EXEC of the z/VSE virtual machine.

Make the class that the virtual reader is started with known to all VM users who are expected to use SUBVSE. The class parameter that is used in the SUBVSE command must match the class of the virtual reader.

2. Use the **PSTART** command (short form: **S**) to start the VSE/POWER reader task for the virtual reader from the z/VSE console:

```
S RDR,cuu,cl
```

VSE/POWER assigns the class specified in the **PSTART** command to jobs which have been submitted without specification of the *CLASS* operand in their `* $$ JOB card`.

The address of the virtual reader is specified in the directory entry for the z/VSE machine and is the same address as the VSE reader address.

After the above steps have been done, SUBVSE may be used by any CMS user.

Note:

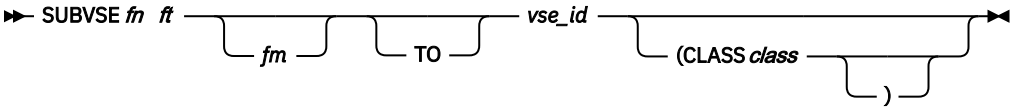
1. *SUBVSE* does not automatically route job-related messages to the submittor. To achieve this, the ECHO parameter of the VSE/POWER * $$ JOB statement must name the submittor's user ID (see also the following section "The ECHO Option of the VSE/POWER * $$ JOB Statement" on page 110).
2. *SUBVSE* does not automatically route job output back to you. You should add the LDEST/PDEST operand to the VSE/POWER JOB card or add the DEST operand to the VSE/POWER LST/PUN cards in order to get job output routed back to your VM user ID.

   The LST and/or PUN task must be started for the respective VM devices:

```
S LST,cuu,cl,,VM
S PUN,cuu,cl,,VM
```

   It is recommended to start LST/PUN for a class other than *A* to avoid routing of such output back to VM that uses the default class *A* and does not specify a VM user ID as destination.

The format of **SUBVSE** is:



where:

fn ft
are the CMS filename and filetype of the job to be submitted.

fm
is the CMS filemode. If *fm* is omitted or specified as '*', all accessed disks are searched and the first file found is submitted.

vse_id
is the VM user ID of the z/VSE guest virtual machine.

class
is the class to be assigned to the submitted job in the virtual reader. If this parameter is omitted, default class A is used.

Optionally, you can enter **SUBVSE** or **SUBVSE HELP** or **SUBVSE ?** to have the command format explained.

Return Codes and Error Messages

SUBVSE may succeed or fail with one of the following return codes and error messages.

Error Message	Return Code
Job *fn ft* submitted to *vse_id*	(0)
Incomplete fileid	(8)
Invalid filemode *fm*	(12)
Disk *mode* not accessed	(16)
File *fn ft* not found	(20)
No user ID specified	(24)
Invalid class *class*	(28)
No virtual punch available	(32)
Virtual punch not ready	(36)
Some records exceed 80 characters	(40)
User ID *vse_id* not in CP directory	(44)
Invalid user ID *vse_id*	(48)
Invalid option	(52)
Too many parameters	(56)
Undetermined error	(100)

The ECHO Option of the VSE/POWER * $$ JOB Statement

ECHO (or ECHOU) is an optional parameter of the VSE/POWER * $$ JOB statement. It is coded in the submitted job stream as an output routing option, just like LDEST or PDEST. (Prior to VSE/ESA 2.1, this option was available as an operand of SUBVSE.)

The ECHO (or ECHOU) parameter names a user ID: either a VSE user ID (defined in the z/VSE Interactive Interface) or a CMS user ID. 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 such messages to a CMS user with that user ID (typically the job submitter).

ECHO (without U) causes the messages **also** to be routed to all active administration consoles. ECHOU, on the other hand, requests that they are routed **only** to the named user ID.

Messages that were delivered to a CMS user and need a reply can then be answered via VSECMD, provided the user is authorized for the reply. Unrestricted command authority is required for replies to messages that are routed to administration consoles.

You code the ECHO/ECHOU parameter either as

ECHO=(ALL,user ID)
ECHOU=(ALL,user ID)

to request that all eligible messages are to be routed, or as

ECHO=(REPLY,user ID)
ECHOU=(REPLY,user ID)

to request that only messages requiring a reply or an action, plus the first and last job message, are to be routed. Information messages will not be sent.

The * $$ JOB statement is described in the IBM documentation VSE/POWER Administration and Operation.

Example

Assume that you have a file PRINTLOG JOB with the following content:

```
* $$ JOB JNM=PRINTLOG,CLASS=0,DISP=D,ECHO=(ALL,CMSUSER)
// JOB PRINTLOG
// EXEC PRINTLOG
/*
/&
* $$ EOJ
```

After you enter

```
subvse printlog job a to vseguest
```

the following output is displayed:

```
Job printlog job submitted to vseguest
Ready; T=0.02/0.03 09:34:41
 BG 0001 1Q47I   BG PRINTLOG 00590 FROM LOCAL , TIME= 9:34:42
 BG 0000 // JOB PRINTLOG
         DATE 01/19/2005,CLOCK 09/34/42
 BG-0000 0D57A ENTER OPTIONS FOR PRINTLOG OR A LIST OF OPTIONS:

 .
 .
 .
```

Use the **VSECMD** command to respond to the outstanding requests you will receive. For example:

```
VSECMD VSEGUEST 0 ALL
```

Additional Considerations

The attention routine command SYSECHO, which is introduced in the topic “All Administration Console Messages to One User - SYSECHO” on page 106, allows a VM user ID to operate as a z/VSE administration console (provided your z/VSE system was IPLed with SYS option VMCF=YES). If the ONLY parameter was included in the SYSECHO command, the console will be **the only CMS console** that is able to communicate with z/VSE.

In this case, a dialog between the z/VSE guest and a non-administration console is not possible. Therefore, the system cannot request input from a (non-master) user who had submitted a job. Instead, this job would be canceled.

Issuing CP Commands (not Depending on VM/VSE Interface)

Two facilities are available to issue CP commands, independent of the VM/VSE Interface:

- *** CP** command, to issue CP commands from the z/VSE console
- **// EXEC CPCMD** statement, to include CP Commands in a z/VSE job stream.

* CP Command: Issue CP Commands from a z/VSE Console

The *** CP** command allows you to issue CP commands from a z/VSE console. This way you may perform tasks like:

- Spooling virtual devices
- Attaching tapes
- Detaching tapes
- Resetting terminals.

Note: When using CP commands, the *physical address* of a device is *always* used. For details, see “Explanation of Physical Address and VSE Address” on page 5.

For example, to free a not required device, you would enter:

```
* CP DETACH A281
```

You may use any CP command your z/VSE machine is authorized to execute. The related console must be an administration console (for details see "The z/VSE Console" on page 23). You may, for example, use the *** CP DISC** command to disconnect the z/VSE system console. This command, however, does not apply to a z/VSE dedicated console.

The response to the CP command is displayed at the console of the user who entered the command.

CPCMD: Include CP Commands in the z/VSE Job Stream

// EXEC CPCMD enables you to include CP commands in the z/VSE job stream, and execute them when the job is running in a z/VSE partition. Using // EXEC CPCMD allows you to predefine many actions.

For example, if you detach a device with the real address A281, the z/VSE job stream could look like the following:

```
* $$ JOB JNM=DETDEV,CLASS=0,DISP=D
// JOB DETDEV
// EXEC CPCMD
DETACH A281
/*
/&
* $$ EOJ
```

Only the following CP commands are allowed:

- ATTACH
- CHANGE
- CLOSE
- DEFINE
- DETACH
- LINK
- MESSAGE
- MSGNOH
- ORDER
- PURGE
- RESET
- REWIND
- SET
- SPOOL
- TAG
- TRANSFER

Part 5. Performing Tasks via Dialogs

Chapter 15. Performing Tasks via Dialogs

Dialogs for Displaying System Status

z/VSE provides dialogs for displaying the status of the system:

- *Display System Activity*
- *Display Channel and Device Activity*
- *Display Storage Layout*
- *Display CICS TS Storage*

This topic describes the first two dialogs, *Display System Activity* and *Display Channel and Device Activity*. These dialogs dynamically provide system status information for daily operation.

The third dialog, *Display Storage Layout*, allows users such as you or the administrator to view the partition and SVA layout of the active system. Since this information is of particular interest to the system administrator, the dialog is described in the z/VSE Administration documentation. Refer to this information for details about this dialog.

The dialogs *Display System Activity* and *Display Channel and Device Activity* allow users such as you or the administrator to see and understand what is happening in the system. Each dialog interactively displays general information about current system activity. This includes such things as:

- CPU use
- Paging
- I/O activity
- Status of CICS tasks

The following section describes general considerations about how the dialogs work and how you might use them. It outlines various things you should consider when using the data.

For specific information about using each dialog, refer to:

- “Displaying System Activity” on page 116.
- “Displaying Channel and Device Activity” on page 119.

When to Use the Dialogs

The information available through these dialogs can be used to:

- Observe system behavior.

  The data shows:

  – How much CPU and I/O resources are used by CICS compared to batch activity.
  – How well disk I/O activity is balanced.
  – How rapidly each partition is progressing.
- Diagnose initial problems or performance.

  The information may indicate high paging rates or that the CPU is being used too heavily.

  When the system has poor response times although paging and CPU use are relatively low, the *Display Channel and Device Activity* dialog may show where I/O problems are located.
- Understand the effect of tuning actions.

  For example, you may use the **PRTY** command to:

  – Modify partition priorities.

  - Activate/deactivate the *partition balancing*.

  You can then monitor the new resource distribution.

  Review I/O activity and CPU use on a job basis to approximate the resources you need.
- Consider CICS load to prevent Short-on-Storage (SOS) conditions at another time.
- Follow the progress of test runs for application programs.
- Follow the progress of important batch applications.
- Observe what the system is doing.

  The *Display System Activity* dialog provides summary information for questions like:

  - What jobs are active?
  - Are any replies outstanding?
  - What is the current priority order of the partitions?

Displaying System Activity

From the *z/VSE Function Selection* panel as shown in Figure 13 on page 28 you can access the *Display System Activity* dialog as follows:

- **7** (System Status)
- **1** (Display System Activity)

```
Operator
Fast Path:  71
```

```
Synonym
Default:    da          Yours:
```

The *Display System Activity* panel shows current system activity. An example of the panel is shown in Figure 21 on page 116.

```
IESADMDA             DISPLAY SYSTEM ACTIVITY              15 Seconds  08:05:30
*---- SYSTEM (CPUs:  1 /  0 ) ----* *------------ CICS : DBDCCICS ------------*
|CPU      :   0%   I/O/Sec:    1  | |No. Tasks:      26   Per Second :     *  |
|Pages In :    0   Per Sec:    *  | |Dispatchable:    0   Suspended  :     3  |
|Pages Out:    0   Per Sec:    *  | |Curr. Active :   5   MXT reached:     0  |
*--------------------------------* *----------------------------------------*
Priority: Z,Y,S,R,P,J,C,BG,FA,F9,F8,F6,F5,F4,F2,F7,FB,F3,F1

 ID S JOB NAME  PHASE NAME  ELAPSED     CPU TIME   OVERHEAD   %CPU       I/O
 F1 1 POWSTART    IPWPOWER  431:26:33      15.45       4.00             3,998
 F3 3 VTAMSTRT    ISTINCVT  431:26:26      21.00       5.42             6,175
 FB B SECSERV     BSTPSTS   431:26:34        .11        .03             1,105
*F7 7 TCPIP00     IPNET     431:25:24      29.47       7.58             6,793
 F2 2 CICSICCF    DFHSIP    431:26:23     175.71      45.41            63,899
 F4 4 <=WAITING FOR WORK=>                  .00        .00                 2
 F5 5 <=WAITING FOR WORK=>                  .00        .00                 2
 F6 6 <=WAITING FOR WORK=>                  .00        .00                 2
 F8 8 CICS2       DFHSIP    431:25:15     155.61      39.96             8,282
 F9 9 <=WAITING FOR WORK=>                  .00        .00                 2
 FA A <=WAITING FOR WORK=>                  .00        .00                 2
 BG 0 <=WAITING FOR WORK=>                  .00        .00                 2
PF1=HELP      2=PART.BAL.   3=END        4=RETURN     5=DYN.PART   6=CPU
```

Figure 21. Example of System Activity Display

From this panel, you can obtain further information about dynamic classes, dynamic partitions, and CPU activity.

- Press PF5 (DYN.PART) to display system activity of dynamic classes and partitions. For details on the *Display Dynamic Classes* panel refer to “Displaying Dynamic Class Information” on page 118.

  Note: PF5 does not appear if no dynamic classes are defined or if no dynamic partitions are active.

  - Press PF6 (CPU) to display the system's CPU activity. For details on the *CPU System Activity Display* panel refer to “Displaying CPU Information” on page 119.

The dialog interactively updates the information on your terminal screen at fifteen second intervals. The administrator can change the interval time. The dialog can also be changed to update the display only when you press ENTER. See "Automatic Redisplay" on page 119 for information.

The panel shows the activity which has taken place since the last display of the screen.

Note:

1. The calculations are done only for the current time interval and are rounded to whole numbers. The values are only indicators of system use. They should not be used to measure the actual performance of the system.
2. An asterisk (*) or zero appears in fields that either cannot be calculated or that have no significance, for example, the Pages In/Out value for a system without a page data set (NOPDS).
3. If a numeric calculation overflows, the field is filled with nines (9).

The information below describes the entries on the panel. You can refer to Figure 21 on page 116 when you review this information. The top line of the panel shows two important values at the right of the screen:

1. The interval (in seconds) which the calculations are based upon. This is the elapsed time since the panel was last displayed.
2. The current display time in hours:minutes:seconds.

In Figure 21 on page 116, the interval is 15 seconds and the time is 08:13:42.

SYSTEM Section

The SYSTEM section is at the upper left of the panel. It shows summary information about system use.

- The percentage of CPU use is only an indicator of the overall system load. The maximum value is 100% multiplied by the number of active CPUs. If a new job is loaded while a time interval is taken, an asterisk in the display indicates no percentage.
- The start I/O rate is given for the total system.

  For VM users, the I/O per sec rate may seem unusually high. The dialog calculates the total I/O rate on the system. Therefore, this rate includes unit record virtual I/O. You can specifically monitor disk or tape device activity using the *Display Channel and Device Activity* dialog.

CICS Section

The CICS section is at the upper right of the panel. It shows summary information concerning the CICS under which the **dialog** is running:

- The number of CICS tasks that have been attached since system startup (No. Tasks). The number is reset to zero after 100,000.
- The number of CICS tasks attached during the current interval (Per Sec). This is the task rate.
- The number of CICS tasks active (Active Tasks) and suspended (Suspended).
- The number of currently-active tasks.
- The number of times the MXT (maximum allowed tasks) was reached.

PARTITION Section

Information about the individual static partitions is shown below the SYSTEM and CICS sections.

The information below describes the fields:

ID

The **ID** field shows the VSE static partition identifications. They are displayed in descending, dispatching order; high to low.

An ***** in front of a partition ID indicates at least one outstanding system message reply for this partition (see Figure 21 on page 116).

S
This column shows address spaces. Characters 0-9, A, B indicate the address spaces in which the partitions are allocated. Character S indicates partitions in the shared area.

JOB/PHASE NAME
This is the VSE job name and phase name. If no job is running in the partition, the dialog displays one of the following under these two columns. The panel does not display partitions which are not in use.

- WAITING Not under control of VSE/POWER and inactive.
- WAITING FOR WORK Under control of VSE/POWER and inactive.
- DEACTIVATED Temporarily deactivated.

  A partition is temporarily deactivated because the system is experiencing high paging.

ELAPSED TIME
The elapsed time is shown in hours:minutes:seconds (HH:MM:SS).

CPU TIME and OVERHEAD PER STEP
These values are shown in hundredths of a second.

% CPU TIME
This is only an indicator of each partition's use of system resources. Because of the rounding of values, the time intervals, and *the distribution of system overhead among the active partitions*, the percentage number can be more than 100.

I/O PER STEP
The total number of start I/O's for the currently active job step, including the related system task activity. Consequently, the number of start I/O's for a job step can be greater than the total number of device I/O requests found on the *Display Channel and Device Activity* panel. The number of records spooled by VSE/POWER is not included in Figure 21 on page 116.

Displaying Dynamic Class Information

From the *Display System Activity* panel as shown in Figure 21 on page 116, you can display dynamic class information by pressing PF5.

An example of the *Display Dynamic Classes* panel is shown in Figure 22 on page 118.

```
IESADMDDC                  DISPLAY DYNAMIC CLASSES        15 Seconds  11:36:25
                                                             Page 1 of 1
Enter selected class and press ENTER:

 DYNAMIC   NUMBER OF     ACTIVE      CPU TIME   OVERHEAD    %CPU        I/O
  CLASS    PARTITIONS  PARTITIONS
    C           9                        .00        .00
    P          32                        .00        .00
    R           3                        .00        .00
    S           2                        .00        .00
    Y           8                        .00        .00
    Z           3                        .00        .00




Select Dynamic Class:

PF1=HELP                    3=END        4=RETURN
```

Figure 22. Example of Dynamic Class Display

This panel shows current activity of all dynamic classes. At this point, you can also display system activity of *all dynamic partitions* that belong to one dynamic class. To do this, enter the dynamic class ID on the "Select Dynamic Class" line shown in the panel above and press ENTER.

Note: You *cannot* specify dynamic classes that are classified INVALID (see example above).

Displaying CPU Information

From the *Display System Activity* panel as shown in Figure 21 on page 116, you can separately display CPU information by pressing PF6.

The *CPU System Activity Display* panel has the following information:

- CPU activity is displayed for the *whole system*.
- CPU activity is displayed for *single static partitions*.
- CPU activity is displayed for *single dynamic classes only* (not for each dynamic partition within a class).

Only the ten most active static partitions and dynamic classes are displayed. The dialog automatically updates the display at 15 second intervals.

The panel may display no percentages if the dialog records no activity for the system or the partitions. If a new job is loaded while a time interval is taken, an asterisk in the display indicates no percentage. This is because inactive or total CPU percentage cannot be calculated.

Automatic Redisplay

The *Display System Activity* dialog automatically redisplays current system activity every 15 seconds.

The administrator may create new application profiles using those provided by z/VSE as models and:

- Change the default time interval.
- Have the display updated only when ENTER is used.

The documentation z/VSE Administration provides details about implementing such changes.

Displaying Channel and Device Activity

The *Display Channel and Device Activity* dialog lets you monitor the use of I/O devices. You can select information about a single device address or about a range of device addresses. These device addresses are *VSE addresses* (see “Explanation of Physical Address and VSE Address” on page 5).

Like the *Display System Activity* dialog, the *Display Channel and Device Activity* can highlight areas where performance tools like CICS/PARS or VSE/PT may be used.

At the beginning of this topic (on page “Dialogs for Displaying System Status” on page 115) you will find information on how to use the *Display Channel and Device Activity* dialog and the *Display System Activity* dialog to understand system activity.

To access the dialog, start with the *z/VSE Function Selection* panel as shown in Figure 13 on page 28 and select:

- **7** (System Status)
- **2** (Display Channel and Device Activity)

Operator Fast Path: 72	Synonym Default: sio Yours:

The *Display Channel and Device Activity* panel shows current device activity. An example of the panel is shown in Figure 23 on page 120 .

```
IESADMSIOS         DISPLAY CHANNEL AND DEVICE ACTIVITY         Page  02 of  03

DEVICE ADDRESS RANGE FROM: 00E TO: 231                     Seconds    11:34:04

        DEVICE        PART              JOB                 DEVICE I/O
                       ID               NAME                REQUESTS

         122           F3             VTAMSTRT                     3
         230           F1             POWSTART                  2056
                       F3             VTAMSTRT                   372
                       FB             SECSERV                    231
                       F7             TCPIP00                    132
                       F2             CICSICCF                  6583
                       F4                                          2
                       F5                                          2
                       F6                                          2
                       F8             CICS2                     1255
                       F9                                          2
                       FA                                          2

PF1=HELP                        3=END        4=RETURN
PF7=BACKWARD    8=FORWARD
```

Figure 23. Example of Display Channel and Device Activity Panel

The panel displays information as of the time you selected the dialog. You can refresh the panel by pressing ENTER. This updates the display to show the most current information. To browse through the entries, use PF7 and PF8.

Note: An '*' preceding a 'PART ID' entry indicates that the number of I/O REQUESTS may not refer to physical I/Os.

How to Evaluate Information Provided

Relative Values

Because the calculations are rounded and based on a short time interval, the values should be considered *indicators* of system use. They should not be used as a precise source of measurement. However, they do give you a good idea of what the system is doing.

Misinterpreting Data

You should not misinterpret, for example, very high or low values. They may be displayed because the time interval is very small. Before you make any decisions, monitor the system for longer periods of time. You should also consider other aspects, such as:

- System response time
- Types of activities in various partitions

For example, if the panel displays CPU use of 100% or more, this does not always mean that the CPU is used too heavily. A batch job may be using large amounts of CPU resources whenever CICS does not need it.

Similar situations may also cause very low figures to be displayed.

The I/O per sec rate and the I/O per active job step rate calculated by the *Display System Activity* dialog do not contain the number of records spooled by VSE/POWER. The number of records spooled by VSE/POWER is calculated by the *Display Channel and Device Activity* dialog. You can use this dialog to specifically monitor disk or tape device activity.

Comparing Similar Work Loads

If you compare similar work loads, the values for each may be different. Even if you monitor the same environment twice, the time intervals may be slightly different and display different data.

Effect on the System

When you display system or device information, the dialog itself uses system resources. If there is no other activity on the system, the resources which the dialog uses are shown for the CICS partition.

If you use a short time interval, the system interaction significantly increases. By using a longer interval (for example, 60 seconds), the interaction is almost negligible, and the dialog uses less system resources.

Performance Monitoring

The two dialogs should not be considered as replacements for performance monitoring tools. The type of data which the dialogs display is different. For example, they do not provide:

- Reporting
- Percentage of channel or device use
- SEEK information
- Average time to complete I/O operation
- Average queuing time

The dialogs only help you determine where some problems are. They *cannot* perform system tuning.

Display Storage Layout

The *Display Storage Layout* dialog lets you monitor the storage layout usage. It shows critical storage areas like system GETVIS below.

To access the dialog, start with the *z/VSE Function Selection* panel as shown in Figure 13 on page 28 and select:

- **7** (System Status)
- **3** (Display Storage Layout)

Operator	Synonym
Fast Path: 73	Default: sio Yours:

The *Display Storage Layout* panel shows the storage layout. An example of the panel is shown in Figure 24 on page 121 .

```
IESADMDSS1                    DISPLAY STORAGE LAYOUT

-------------------------------------------------------------------------------
| Total SVA (31 bit):     14M   PFIX (31 bit) Used: 2336K Limit:   47M |
-------------------------------------------------------------------------| Data
|       X  X  X        X  X           |                                 | Space:
| 16M - - - - - - - - - - - - - - - - | - - - - - - - - - - - - - - - - | 9472K
|       X  X  X        X  X           |                                 |
| X     X  X  X        X  X           |                                 |
| X     X  X  X        X  X           |                                 |
| X  X  X  X  X  X  X  X  X  X  X  X  |                                 |
| BG F1 F2 F3 F4 F5 F6 F7 F8 F9 FA FB | C  J  P  R  S  Y  Z             |
| 0  1  2  3  4  5  6  7  8  9  A  B  |                                 |
-------------------------------------------------------------------------|
|       |  SHARED PARTITIONS:   none                                     | Avail-
| 5120K |  Total SVA (24 bit):  3628K Unused:                  768K | able:
|       |  SUPERVISOR:           724K PFIX (24) Used:  336K Lim:   12M |   70M
-------------------------------------------------------------------------------
Private space size:      70M                      Total virtual storage:  264M
PARTITION ID / DYNAMIC CLASS: __   Specify for more information

PF1=HELP      2=REFRESH   3=END       4=RETURN               6=SVA
```

Figure 24. Example of Display Storage Layout Panel

The panel displays information as of the time you selected the dialog. You can refresh the panel by pressing ENTER. This updates the display to show the most current information. To browse through the entries, use PF7 and PF8.

Display CICS TS Storage Layout

The *Display CICS TS Storage* dialog lets you monitor the storage usage of CICS TS.

To access the dialog, start with the *z/VSE Function Selection* panel as shown in Figure 13 on page 28 and select:

- **7** (System Status)
- **4** (Display CICS TS Storage Layout)

Operator	Synonym
Fast Path: 74	Default: sio Yours:

The *Display CICS TS Storage Layout* panel shows the storage usage of CICS TS. An example of the panel is shown in Figure 25 on page 122.

```
IESADMDCST                    DISPLAY CICS TS STORAGE         Time:  11:39:58
  Applid: DBDCCICS    Sysid: CIC1    Jobname: CICSICCF    CICS TS Level:   111
Storage Protection ...... ACTIVE         Reentrant Programs ..... PROTECT
                                         CICS Trace Table size..     256
Extended DSA:                        (All sizes in kbyte)    LIMIT   25600
                                     ECDSA   EUDSA   ESDSA   ERDSA  Totals
  Current DSA Size .............      4096    1024    1024    5120   11264
  Current DSA used .............      3528     128     196    4168    8020
 *Peak DSA used ................      3528     128     196    4168
  Peak DSA Size ................      4096    1024    1024    5120   11264
  Largest free area/Free Storage     0.98    1.00    1.00    0.98
  Times short-on-storage (SOS)..        0       0       0       0       0

DSA:                                                          LIMIT    5120
                                      CDSA    UDSA    SDSA    RDSA  Totals
  Current DSA Size ..............      512     256     256     256    1280
  Current DSA used ..............      304      24     188     244     760
 *Peak DSA used .................      320      48     208     244
  Peak DSA Size .................      512     256     256     256    1280
  Largest free area/Free Storage.    0.88    1.00    0.94    1.00
  Times short-on-storage (SOS)...       0       0       0       0       0
PF1=HELP      2=REFRESH   3=END       4=RETURN
```

Figure 25. Example of Display CICS TS Storage Layout Panel

The panel displays information as of the time you selected the dialog. You can refresh the panel by pressing ENTER. This updates the display to show the most current information. To browse through the entries, use PF7 and PF8.

For an explanation of the shown values you may use the help key to get more information.

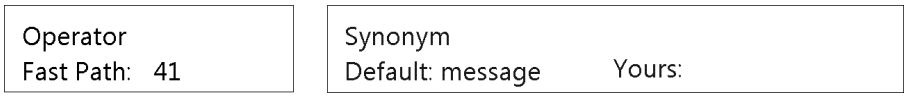
Chapter 16. Dialogs for Communicating with Other Users

Displaying Active Users and Sending Messages

The *Display Active Users/Send Message* dialog displays the users who are logged on. From the dialog, you can send a message to selected users or to all users who are logged on.

To access the dialog, start with the initial *z/VSE Function Selection* panel shown in Figure 13 on page 28 and select:

- **4** (Message and News Handling)
- **1** (Display Active Users/Send Message)



A panel displays the users who are signed on at the time you accessed the dialog. You can press PF2 to refresh the panel and display the most current information.

The following information is displayed for each user:

USER
This is either the user ID of the user signed on to the Interactive Interface or the operator ID of a user who is working with CICS in "native" mode.

TERM
Terminal ID.

TRANS
The name of the transaction the user is currently running or is about to run.

TIME
The time the user signed on.

DATE
The current date.

INPUTS
The number of input messages received from the user's terminal.

OUTPUTS
The number of output messages sent to the user's terminal.

Note: You can also display users who are signed on to CICS by entering the **USER** command from the z/VSE console. For more information about this command, see Appendix C, “USER Command,” on page 211.

Sending a Message

You can send a message by pressing PF6. On the next panel, type in your message. When you are done, press PF5. This tells the system you have finished typing the message.

The dialog redisplays the first panel. Use the column to the left of the user IDs to select the users who will receive the message.

If you want to send the message to all users signed on, press PF9. However, you should use PF9 carefully since the message dialog will then wait for responses to be received. If the message is sent to *many users*, this might result in "MXT-reached" conditions occurring.

If you want to select the users who will receive the message, enter:

```
3
```

in the OPT column to the left of each user ID to be selected. When you are done, press PF10 to send the message to the selected users.

When your message is sent, the dialog displays the following message:

```
MESSAGE NUMBER x WAS SCHEDULED FOR y DESTINATION(S)
```

Signing Off a User

If your user profile is based on SYSA, the FULIST displays option 2 (SIGN OFF A USER). You can select this option to sign off particular users from the system.

If a user is still logged on to VSE/ICCF, you should use the **/DISC** command from the z/VSE console to also terminate the VSE/ICCF session for this user. To perform the disconnect, enter:

```
/DISC USER user-id
```

See the *VSE/ICCF Administration and Operation* documentation for detailed information on VSE/ICCF commands.

Hardware Restrictions

You can only send a message to IBM 3270 compatible displays. The dialog will not send a message to a user who does not have one of these displays.

Receiving a Message from Another User

Sometimes another user who is signed on to CICS will send you a message. If the message is sent by the *Display Active Users/Send Message* dialog, the system displays the *Message Delivery* panel on your terminal. The panel shows the message and the user ID of the person who sent the message.

You can send a reply to the user. Type in your reply on the panel and press PF10. The system sends the reply to the user.

You do not have to send a reply. Press PF3 (NO REPLY). The system redisplays your last panel.

Entering News

You use the *Enter News* dialog to enter a *news item*. This is a message that is displayed to users when they sign on to the Interactive Interface. The news is also displayed to users already signed on to the system. You can add, change, or delete news items.

To access the dialog, start with the *z/VSE Selection Panel* shown in Figure 13 on page 28 and select:

- **4** (Message and News Handling)
- **2** (Enter News)

Operator Fast Path: 42	Synonym Default: news Yours:

The *Enter News* panel displays the current news entry. You can have up to four lines of information. On the panel, you can:

1. Add a line

   Type in the information on a blank line.
2. Change a current line

   Type over the current information.

3. Delete a line

   Use the space bar and blank out the line or use the ERASE EOF key to erase the line.

When you are done, press PF5. The dialog files the news information in the z/VSE control file and makes it available to all users who are authorized to receive news.

Retrieving Messages

The *Retrieve Message* dialog displays messages that the system has sent to you; for example, messages that give you information about return codes or job status, or messages sent to you by other users of the online system (VSE/ICCF).

The messages are held in a queue. When you access the dialog, it displays the messages in the queue on your terminal screen. The queue is deleted whenever the Interactive Interface system is shut down.

If you access the dialog and no messages have been sent to you, the system displays the following message on the selection panel:

```
THERE ARE NO MESSAGES AVAILABLE
```

To access the *Retrieve Message* dialog, start with the *z/VSE Function Selection* panel shown in Figure 13 on page 28 and select:

4 (Message and News Handling)
3 (Retrieve Message)

Operator Fast Path: 43	Synonym Default: retrieve Yours:

The *Retrieve Message* panel displays the messages. Use the appropriate *PF keys* to scroll forward, backward, left, or right. The PF keys are described at the bottom of the panel.

You can delete individual message lines. Use the ERASE EOF key or blank out the line using the space bar and then press ENTER.

If you want to delete all messages in the queue, press PF5.

While you review the panel, it is possible that the system will send new messages to you. You can update the panel display to see any new messages by pressing PF9. If the system has not sent any new messages to you, it displays the following:

```
NO NEW MESSAGES WERE RETURNED
```

You can end the dialog by pressing PF3.

Chapter 17. Managing VSE/POWER Queues

The tasks described in this topic are performed by using the *Manage Batch Queues* dialog of the Interactive Interface. If you wish, you may also perform these tasks by entering commands from the z/VSE console. For information about the commands, see the VSE/POWER Administration and Operation documentation.

Accessing the Dialog for Managing Queues

With the *Manage Batch Queues* dialog, you can display and process entries in the LST, RDR, PUN, and XMT queues. The dialog interactively displays the entries using a FULIST like the one shown in Figure 26 on page 128.

If you are a *type 1* user (like the predefined system administrator SYSA), you can use all FULIST functions and access entries in all the queues. As a *type 2* user (like the predefined OPER and PROG), you can handle all batch queue entries if your system administrator has authorized you to do so (via the *User Profile Maintenance* dialog). Otherwise, you can only handle entries which you have submitted or which are destined for you.

To access the dialog, start with the *z/VSE Function Selection* panel and select:

3 (Manage Batch Queues)

Operator Fast Path: 3	Synonym Default: power Yours:

On the *Manage Batch Queues* panel, enter the number for the queue you want to display:

```
1   (List Queue)
2   (Reader Queue)
3   (Punch Queue)
4   (Transmit Queue)
5   (Wait for Run Subqueue)
6   (In-creation Queue)
```

You do not have to display the entire queue. You can display entries that:

- Begin with certain characters.

  Enter the prefix in the PREFIX field (Only valid for selections 1-4 above).
- Are in a certain class.

  Enter the class in the CLASS field.
- Belong to certain user IDs.

  Enter the user ID in the USER field. This displays all jobs originated by or destined for this user. For users with programmer (type 2) authorization, the USER field shows their own user ID by default. This may be blanked out to get a display of all users' jobs.

In addition, for *Options 1 to 4 only*, you can display:

- Queue entries that are sorted by the:
  - Oldest entry at the top.
  - Newest entry at the top.
  - Earliest entry to expire at the top.
- A limited number of sorted queue entries (in the field LIMIT).

  Note: You can only use the LIMIT field if you have sorted the queue entries by oldest entry, newest entry, or earliest entry.

A FULIST displays the entries in the queue as of the time you made your selection. Press PF2 to refresh the panel. This updates the FULIST and displays the most current information.

If you want to locate a particular queue entry, enter the job name in the LOCATE JOBNAME field. The dialog searches the queue. If the entry is found, it is displayed with an * in the OPT column. If it is not in the queue, the dialog displays the message:

```
JOBNAME NOT FOUND
```

Note: To locate a particular entry, enter the entire name of the job. You cannot just enter a prefix.

The options you can select are shown at the top of the FULIST. For example,

1 = DISPLAY
2 = CHANGE
4 = COPY TO PRIMARY LIBRARY
5 = DELETE
6 = HOLD
7 = RELEASE
8 = SEGMENT
9 = SEGMENT IMMEDIATELY

Note: The DELETE option does not issue a confirmation message when you select it. However, your user profile can be changed so that the DELETE option will issue a confirmation message. Information on changing user profiles can be found in the z/VSE Administration documentation. If you would like to receive a confirmation message from the DELETE option ask your system administrator to change your user profile for you.

List Queue

Selecting **1** (List Queue) from the *Manage Batch Queues* panel displays a FULIST of the entries currently in LST. For example:

```
IESBQUL                          LIST QUEUE                          Page 14 of 28

OPTIONS:   1 = DISPLAY      2 = CHANGE        3 = PRINT       5 = DELETE

OPT JOBNAME NUMBER SFX S PRI DIS CL  PAGES  CC FORM TO       FROM

 _  VTAM33   00988        3   D  A     121   1      ANDR     .ANDR
 _  VTAMSTRT 00991        3   D  A       6   1      SYSA     .SYSA
 _  VTAM33   00993        3   D  A    1227   1      ANDR     .ANDR
 _  VTAMSTRT 00995        3   D  A       6   1      SYSA     .SYSA
 _  VTAM33   00997        3   D  A      69   1      ANDR     .ANDR
 _  VTAM33   00999        3   D  A    1227   1      ANDR     .ANDR
 _  VTAM33   01001        3   D  A     334   1      ANDR     .ANDR
 _  VTAM33   01003        3   D  A       4   1      ANDR     .ANDR
 _  CICSICCF 00996        3   D  A       4   1      SYSA     .SYSA
 _  VTAMSTRT 01007        3   D  A       4   1      SYSA     .SYSA
 _  CICSICCF 01008        3   D  A       4   1      SYSA     .SYSA
 _  VTAM33   01009        3   D  A       4   1      ANDR     .ANDR
 _  VTAM33   01011        3   D  A       4   1      ANDR     .ANDR

PF1=HELP       2=REFRESH    3=END        4=RETURN
PF7=BACKWARD   8=FORWARD

LOCATE JOBNAME ==> ________
```

Figure 26. List Queue Panel

The information below describes the entries on this panel. You can also use the SORTED field to specify the sequence in which the entries are displayed. This is useful, for example, if you later wish to:

- Display the latest jobs in your system.
- Delete the oldest entries in your system.

However, some entries on the panel are not available if the queue output has been sorted. For details, see “Accessing the Dialog for Managing Queues” on page 127.

See the next three sections for a description of the options you can select.

Jobname, Number

VSE/POWER uses the jobname and the number to identify the job output.

Job Suffix Number (SFX)

Shows the segment number if job output is segmented.

System ID (S)

This parameter is relevant if your system is running with *POWER shared spooling*. It informs you which CPU is assigned to this entry.

See “VSE/POWER Queue Entries” on page 8 for an explanation of **Priority (PRI)**, **Disposition (DIS)** and **Class (CL)**.

Pages

Indicates the number of pages of the job output.

CC

This parameter allows you to specify the number of copies to be printed.

Form

Depending on the output classes, you may need special forms to print your jobs. These forms can be named here.

To

Destination user ID.

From

Origin node and user, separated by a period ('.').

Enter the option number in the OPT column to the left of the entry you want to process.

Display Option

The DISPLAY option displays the list output of the job on the terminal screen. The PF keys have specific settings, which are shown in Table 8 on page 129.

You can locate a particular character string. Type in the character string letters and press either PF5 (search columns 1 - 9) or PF6 (search all columns). Depending if the data you want to locate is in lower- or uppercase, you have to key it in lower- or uppercase.

If the character string has embedded blanks, you must enter a slash (**/**) before and after the string. For example, to locate the character string *ABC DEF*, type in:

```
/ABC  DEF/
```

Press PF5 or PF6.

Table 8. PF Key Settings for DISPLAY Option in List Queue

PF Key	PF Key Setting
PF1	Show PF Key setting
PF2	Redisplay current page
PF3	End
PF4	End

Table 8. PF Key Settings for DISPLAY Option in List Queue (continued)	
PF Key	**PF Key Setting**
PF5	Locate the character string entered. Search columns 1 - 9 only.
PF6	Locate the character string entered. Search all columns.
PF7	Scroll backward
PF8	Scroll forward
PF9	Top
PF10	Shift left
PF11	Shift right
PF12	Bottom

Note: The settings for the PF13-PF24 keys correspond to the settings for PF1-PF12.

Change Option

The CHANGE option allows you to change the system ID, priority, disposition, class, number of copies, or destination user ID. Enter the option number, key over the value of the characteristic you want to change (S, PRI, DIS, CL, CC, or TO), and press ENTER. If, however, other queue entries have the same jobname, jobnumber, jobsuffix, and class as the entry you want to change, these queue entries will be changed, too.

The CHANGE option can also be used to make list output available for printing. You can choose between three different types of printers:

1. A local or system printer.
2. A terminal printer.
3. A remote printer.

The following attributes are to be changed for printing:

DISPOSITION
Change to disposition D or K. If you change disposition to K, the job remains in the List queue with disposition L after being printed.

CLASS
Change to a class for which a printer has been started.

TO USER ID
System printer :

- Change either to LOCAL or SYSTEM or leave it blank.

Terminal printer and remote printer:

- Change to the appropriate printer/destination ID.

Print Option

The PRINT option allows you to print the list output of the job entry selected.

Note: The system changes both the class and disposition entries automatically: the class (CLASS) entry changes to A, the disposition (DIS) entry changes to D. To get the job printed, you have to ensure that the printer is started for class A.

Delete Option

The DELETE option deletes the entry from the queue.

Note: Other queue entries having the same jobname, jobnumber, jobsuffix, and class as the entry you want to delete, will be deleted, too.

Reader Queue

If you select **2** (Reader Queue) from the *Manage Batch Queues* panel, the system displays a FULIST panel that shows all entries in RDR.

```
IESBQUR                       READER QUEUE                        Page  1 of  5

1 = DISPLAY  2 = CHANGE  4 = COPY TO PRIMARY LIBRARY    5 = DELETE  7 = RELEASE

OPT JOBNAME  NUMBER  S PR DIS CLASS  CARDS  FROM                 RUN TIME

 _  BACKUP    00063     8  K    0       91  .SYSA              10:00    01/01
 _  BACKUP    00064     8  K    0       91  .SYSA              00:00    01/02
 _  ADDINFO   00065     9  L    0       65  .SYSA
 _  DTRFSU23  00269     9  L    0       90  .SYSA
 _  DTRFSU4A  00270     9  L    0       50  .SYSA
 _  DTRFSU4B  00271     9  L    0       37  .SYSA
 _  DTRFSU4C  00272     9  L    0       88  .SYSA
 _  DTRFSU4D  00273     9  L    0       46  .SYSA
 _  DTRFSU26  00274     9  L    0       44  .SYSA
 _  DTRFSU27  00275     9  L    0       41  .SYSA
 _  DTRSTFSU  00277     9  L    0       22  .SYSA
 _  DTRFSU22  00268     9  L    0       28  .SYSA
 _  DTRFSUAB  00276     9  L    0       12  .SYSA

PF1=HELP       2=REFRESH    3=END        4=RETURN
               8=FORWARD

LOCATE JOBNAME ==> ________
```

Figure 27. Reader Queue Panel

Change Option

The CHANGE option allows you to change the system ID, priority, disposition, or class. Enter the option number, key over the value of the characteristic you want to change (S,PRI, DIS, or CLASS), and press ENTER.

The sysid parameter (S) can be used if your system is running with *POWER Shared Spooling*. Enter a blank and the system will distribute the jobs for you. To assign a required CPU to a job enter a number from 1 to 9. If there is no *Shared Spooling* ignore the sysid parameter.

Copy Option

The COPY TO PRIMARY LIBRARY option copies the job to your default primary library (as specified in your user profile). The dialog does **not** delete the job from the reader queue. The library member name is the same name as the job name in the queue. If member name already exists, the following message is displayed:

```
MEMBER ALREADY EXISTS IN YOUR PRIMARY LIBRARY
```

This means that no copy is performed.

Delete Option

The DELETE option deletes the job from the queue. If the job is currently active, you cannot delete it.

Release Option

This option makes the job available for processing. When the RELEASE option has been issued, VSE/POWER will assign a new job number to the selected job.

Note: For jobs with **dynamic classes**, you have to ensure that the selected Dynamic Class Table has been loaded and that the dynamic classes are *enabled*. For further details refer to "Additional Considerations for Dynamic Partitions" on page 79.

Punch Queue

If you select **3** (Punch Queue) from the *Manage Batch Queues* panel, the system displays a FULIST panel that shows all entries in PUN. The FULIST is similar to the one for RDR (Figure 27 on page 131).

Change Option

The CHANGE option allows you to change the system ID, priority, disposition, class, number of copies, or destination user ID. Enter the option number, key over the value of the characteristic you want to change (S, PRI, DIS, CL, CC or TO), and press ENTER. If, however, other queue entries have the same jobname, jobnumber, jobsuffix, and class as the entry you want to change, these queue entries will be changed, too.

The CHANGE option may also be used to make the punch output available for punching at the local system. The following attributes can be changed:

CLASS
Change to a class for which the system punch has been started.

DISPOSITION
Change to disposition D or K. If you change DISPOSITION to K, the job remains in the Punch Queue with disposition L after being punched out.

TO USER ID
Change to the name of a RJE puncher (R*nnn*), LOCAL, SYSTEM or leave it blank.

Copy Option

The COPY TO PRIMARY LIBRARY option copies the punch output to your default primary library (as specified in your user profile). The dialog does **not** delete the entry from the punch queue. The library member name is the same name as the job name in the queue. If the member name already exists, the following message is displayed:

```
MEMBER ALREADY EXISTS IN YOUR PRIMARY LIBRARY
```

No copy is performed.

Delete Option

The DELETE option deletes the entry from the queue.

Note: Other queue entries having the same jobname, jobnumber, jobsuffix, and class as the entry you want to delete, will be deleted, too.

Transmit Queue

If you select **4** (Transmit Queue) from the *Manage Batch Queues* panel, the system displays a FULIST panel that shows all entries in XMT. The FULIST is similar to the one for LST (Figure 26 on page 128).

Hold Option

The HOLD option holds the job, list output, or punch output in your local queue. It is not forwarded to its final destination.

Release Option

The RELEASE option makes the job, list output, or punch output eligible to be forwarded to its destination.

Wait for Run Subqueue

```
IESBQUR                        READER QUEUE                         Page  1 of  1
Wait for Run Subqueue
OPTIONS:   2 = CHANGE    4 = COPY TO PRIMARY LIBRARY    5 = DELETE  7 = RELEASE

OPT JOBNAME  NUMBER  S PRI DIS CLASS CARDS  FROM                 RUN TIME

    CATTEST   00242     3   K    8      23  .SYSA              14:00    03/02









PF1=HELP       2=REFRESH    3=END        4=RETURN

LOCATE JOBNAME ==> ________
```

Figure 28. Wait for Run Subqueue Panel

The *Wait for Run Subqueue* panel displays all jobs which will be processed at the time shown. These jobs have been assigned time event scheduling operands. These operands can be specified in the *Job Disposition* panel and allow you to determine the day and time a job is scheduled for processing. If a job has to be scheduled once, you specify the time and the date. If a job has to be scheduled repetitively, you can specify that the job is scheduled:

1. Daily
2. Every weekday (for example, every Monday)
3. Every specific day of every month (for example, every first day)
4. Every specific day of certain months (for example, every first of January, June and December).

The documentation VSE/POWER Administration and Operation provides detailed information about time event scheduling.

The information below describes the RUN TIME fields on the *Wait for Run Subqueue* panel.

RUN TIME
: The time and date when a timer-controlled job will be dispatched. An '*' indicates that the run time has already been reached but the job is still waiting for processing because, for example, there is no free partition. '--' is displayed for jobs with a disposition of H, L, or X.

In-creation Queue

```
IESBQUC                  IN-CREATION QUEUE                       Page  1 of  1

OPTIONS:   1 = DISPLAY      8 = SEGMENT     9 = SEGMENT IMMEDIATE

OPT JOBNAME NUMBER SFX CLASS  LINES ID PART DEV ORIGINATOR FROM

 _  CICS2    03923       A     1993  L  F8  FEE  CICS2     .SYSA
 _  CICSICCF 03922       A     2249  L  F2  FEE  CICSICCF  .SYSA
 _  VTAMSTRT 03921       A       21  L  F3  FEE  VTAMSTRT  .SYSA









PF1=HELP       2=REFRESH    3=END        4=RETURN

LOCATE JOBNAME ==> ________
```

Figure 29. In-creation Queue Panel

The *In-creation Queue* panel displays all jobs just being created.

LINES
Shows the number of lines spooled for the related job.

PART
Shows the partition that generates the output.

DEV
Indicates which type of output, FEE means print output, FED means punch output.

With option 1 you can display the generated output. Option 8 will segment the output on a page boundary. Option 9: You can use the SEGMENT IMMEDIATE function to process output immediately (e. g. to save queue storage).

Chapter 18. Controlling Printer Output via CICS

Using the CICS Report Controller

Note: The *CICS Report Controller User's Guide* documentation has detailed information about the Report Controller. Use that information if you often work with this CICS feature.

"Report" is the CICS term for an entry in the LST queue. You can use the Report Controller of CICS to manage entries stored in the LST queue. The Report Controller helps you to organize printing of reports and to manage CICS-attached terminal printers.

The *Invoke CEOS* dialog lets you use the CICS Report Controller. To access this dialog, start with the *z/VSE Function Selection* panel shown in Figure 13 on page 28 and select:

- **6** (CICS-Supplied Transactions)
- **2** (Invoke CEOS)

```
Operator
Fast Path:   62
```

```
Synonym
Default: ceos          Yours:
```

Every time you use the Report Controller, you get the *CICS Report Controller* panel (Figure 30 on page 135).

```
CEOS:  1                CICS REPORT CONTROLLER

Select one of the following options:

              1  Report selection.
              2  Printer selection.




Selection ==>




PF1=Help PF3=End ENTER=Continue.
```

Figure 30. CICS Report Controller Panel

Report Selection

Typing 1 in the *CICS Report Controller* panel displays the *Report Selection* panel (Figure 31 on page 136). This panel allows you to create a list of all or selected reports.

```
CEOS: 11                    REPORT SELECTION

      You may list all reports or only those reports that match
      your selection criteria.

      Type your selection criteria:
        Report number  ==>
        Report name    ==>
        Destination    ==>
        Forms          ==>
        Class          ==>              A-Z / 0-9
        From date      ==>              mm/dd/yyyy
        To date        ==>              mm/dd/yyyy
        Power Sysid    ==>              1-9

      To select Status type a Y against one or more of the following:
        In use         ==>              Held (L)       ==>
        Resume         ==>              Held (H)       ==>
        Error creating ==>              Ready (K)      ==>
        Error printing ==>              Ready (D)      ==>

PF1=Help PF3=End ENTER=Continue.
```

Figure 31. Report Selection Panel

You request a list of *all reports* by simply pressing ENTER without entering any selection criteria.

You may view a *subset* of the complete report list by specifying the following selection criteria:

Report number
The number assigned to a report.

Report name
The short name by which a report is known.

Destination
A name for a printer or a group of printers. Destination can be:

1. Destination name of up to eight characters associated with the terminal identifier of the printer.
2. A user ID.
3. A system printer.

Forms
The name or code of the type of form or paper on which the report will be printed.

From date
If entered, the list will not contain reports generated before the specified date.

To date
If entered, the list will not contain reports generated later than the specified date.

Power Sysid
The SYSID to which the report is to be directed.

You can also list reports according to their *Status* by typing a **Y** (for yes) against each status you want. *Status* describes what is currently happening to them.

Status:

Held
Created but not printed or printed and not deleted.

Ready
Report is ready to print at the destination.

In use
Report is currently being printed.

Resume
Report is temporarily complete, but may be added to later.

Error creating
An error occurred during creation of a report.

Error printing
Indicates that a printer failure occurred.

To list reports beginning with the same characters, use an asterisk (*) like this:

```
Report name  ==>  CVK*
```

This will provide you with a list of all reports beginning with **CVK**.

Using the Report List Panel

Pressing ENTER in the *Report Selection* panel displays the *Report List* panel.

```
 CEOS: 111                   REPORT LIST                    1 TO    18 OF    21
RCFLS
 Enter Options (1=See/Change Characteristics 3=Print 5=Delete 6=Hold 8=Browse)
OPT  NAME     USERDATA         NUMBER STATUS   FORMS CLS PAGES CPY PRI DEST
     PAUSEBG                    02332 READY(D)        A      1   1  3  SYSA
     PAUSEBG                    02344 READY(D)        A      4   1  3  SYSA
     PAUSEBG                    02351 READY(D)        A      3   1  3  SYSA
     PAUSEBG                    02502 READY(D)        A      1   1  3  SYSA
     PAUSEBG                    02508 READY(D)        A      1   1  3  SYSA
     PAUSEBG                    02513 READY(D)        A      1   1  3  SYSA
     PAUSEBG                    02515 READY(D)        A      1   1  3  SYSA
     PAUSEBG                    02519 READY(D)        A      1   1  3  SYSA
     PAUSEBG                    02532 READY(D)        A      1   1  3  SYSA
     PAUSEBG                    02538 READY(D)        A      1   1  3  SYSA
     PAUSEBG                    02572 READY(D)        A      1   1  3  SYSA
     PAUSEBG                    02581 READY(D)        A      1   1  3  SYSA
     PAUSEBG                    02628 READY(D)        A      1   1  3  SYSA
     PAUSEBG                    02634 READY(D)        A      1   1  3  SYSA
     PAUSEBG                    02644 READY(D)        A      1   1  3  SYSA
     PAUSEBG                    02649 READY(D)        A      1   1  3  SYSA
     PAUSEBG                    02657 READY(D)        A      1   1  3  SYSA
     PAUSEBG                    02665 READY(D)        A      1   1  3  SYSA
PF1=Help PF3=End PF6=Bulk Change PF8=Forward ENTER=Continue.
```

Figure 32. Report List Panel

You can see the total number of reports in the top right hand corner of the panel.

The *Report List* panel informs you about:

NAME
The name of the report.

USERDATA
A short description of the report that is sometimes given to the report when it is created.

NUMBER
VSE/POWER automatically gives a number to each report.

STATUS
See report selection criteria in the topic “Report Selection” on page 135.

FORMS
The type of paper on which you want to print your reports. Leave this field blank if you want to use your standard paper.

CLS
The class of a report.

PAGES
The number of pages in the report.

CPY
The number of copies to be printed.

PRI
The priority with which this report will be printed. It ranges from 9 (very high) to 1 (very low).

DEST
For the definition of *destination*, see “Report Selection” on page 135.

You may use the *Report List* panel in order to see or change report characteristics, to make a report ready for printing, to delete a report or to keep a report in the LST queue.

Option 1 (See/Change Characteristics)

You will mainly use this option to *prepare* a report for printing. By selecting this option, you get a panel which shows you the characteristics of your report. You can change the class and destination of the report, the number of copies you want to have printed, the page number your report starts printing and the page number it finishes printing. You can also specify that a separator page is to be printed.

Make sure that the class of the report you want to print matches the class given to your printer and enter the destination of your printer. If your printer does not start printing, check the *Printer List* panel for the printer status. See “Printer Selection” on page 138 for a definition of *status*.

Option 3 (Print)

Use this option to make your report *ready* for printing.

Option 5 (Delete)

Use this option to delete a report.

Option 6 (Hold)

Use this option to change the status of a report to HELD. It will stay in the LST queue and will not be printed until it is made ready for printing. Use Option 3 to perform this.

Option 8 (Browse)

Use this option to browse your report.

Press PF6 to get the *Bulk Change* panel. It allows you to change the characteristics of many reports together.

Printer Selection

Entering 2 in the *CICS Report Controller* panel displays the *Printer Selection* panel (Figure 33 on page 138). This panel allows you to see a list of *terminal printers* attached to CICS.

```
CEOS: 12                    PRINTER SELECTION

      You may list all printers or only those printers that match
      your selection criteria.

       Type your selection criteria:

         Printer name   ==>
         Destination    ==>
         Class          ==>           A-Z / 0-9
         Forms          ==>

       To select Status type a Y against one or more of the following:
         Printing       ==>              Released       ==>
         Waiting        ==>              Starting       ==>
         Stopped        ==>
         Aligning       ==>
         Unavailable    ==>
         Out of service ==>
         Paused         ==>


PF1=Help PF3=End ENTER=Continue.
```

Figure 33. Printer Selection Panel

You can request a list of *all terminal printers* by simply pressing ENTER without entering any selection criteria.

If you know that several printers have names beginning with the same characters, you can list them together. To do this, you use an asterisk (*) like this:

```
Printer name  ==>   CP*
```

This will provide you with a list of printer names beginning with **CP**.

Enter specific selection criteria to choose the printers you want to see on a list.

Selection criteria:

Printer name
The four-character name of a printer.

Destination
The location name given to one or a group of printers. It is used to direct the reports to where they are to be printed.

Class
The class of reports which may be printed on a printer.

Forms
The type of forms or paper currently loaded on a printer.

Status:

Printing
A report is currently being printed.

Waiting
A printer is waiting for reports to print.

Stopped
A printer is stopped, but available.

Aligning
Forms are being aligned on a printer.

Unavailable
A printer is being used by another application.

Out of service
A printer is out of service and can only be brought back into service by an authorized person.

Paused
A printer has been paused and needs to be resumed before printing will continue.

Pressing ENTER in the *Printer Selection* panel displays the *Printer List* panel.

```
CEOS: 121                   PRINTER LIST                    1 TO     2 OF       1
Enter Options(1=See/Change Characteristics   2=Start   3=Restart   4=Align
   5=Stop now   6=Stop after copy   7=Stop after report   8=Pause   9=Resume)
OPT  PRINTER  DESTINATION  STATUS              CLASS  FORMS  REPORT  NAME  NUMBER
     RA05     LAWI         STOPPED                C   STORE  STORES        D8666
     L870     FIBU         WAITING                D   ACC1   ACCOUNT       D4292









 PF1=Help PF3=End ENTER=Continue.
```

Figure 34. Printer List Panel

You may use this panel in order to start, stop, and align terminal printers as well as set them up with the right class, forms, and destination identifier so that certain reports will be printed.

For any given printer, you can use Option 1 (See/Change Characteristics) to get the *Printer Characteristics* panel (not shown here). The information displayed on that panel allows you to see whether the printer is printing, and if it is, which report, and how much of that report it has printed. You can see whether the **Destination**, **Class** or **Forms** that you specified for the report you want to print are the same as those on the printer. If they are different, you can change them. Press ENTER and you get the *Printer List* panel with your changes displayed.

Starting a Terminal Printer

Option 2
Start when printer is stopped.

Option 3
Restart when printer is paused - reprint several pages. Set the page from which printing will restart when the printer is resumed.

Option 9
Resume printing when paused - start where it stopped or as specified by Option 3 (Restart).

Stopping a Terminal Printer

Option 5
Stop printer immediately.

If you use **Stop now** before all copies of a report have been printed, the printer will enter STOPPED status. Use Option 2 (Start) to start the printer again.

Option 6
Stop printer after current copy is completed.

Option 7
Stop after all copies have been printed.

Option 8
Pause - interrupt printing without affecting the report currently being printed.

Use Option 3 (Restart), to set the page from which printing will restart, followed by Option 9 (Resume). Or, select Option 9 (Resume) only to resume printing where it stopped.

Aligning Paper

You use Option 4 (Align) to set up the paper for correct margins after a new batch of paper has been loaded into the printer.

The printer must be paused. On the *Printer Characteristics* panel you can specify the number of pages you want for alignment. Select Option 9 (Resume) to resume printing after alignment has been completed.

For more information, see the CICS Report Controller User's Guide documentation.

Chapter 19. Backing Up and Restoring Data

Note:

1. All tasks described in this topic are done using dialogs of the Interactive Interface.
2. Each device address (cuu) used in this topic refers to a *VSE address*. Details of how to obtain the *physical address* that corresponds to a VSE address are provided in "Obtaining a Physical Address From a VSE Address" on page 5.

This topic contains these main topics:

Overview of Data Backup/Restore

At various times, you should back up all or part of your system.

When you *back up* data, you save a copy of the data on disk or real/virtual tape. If the data is later damaged on your system, you can *restore* the data to the system by reading the copy from the disk or real/virtual tape. You can also let various programs *reorganize* your data when you do a backup or restore of them.

z/VSE uses various data and library formats. Because of this, z/VSE also offers different backup and restore programs (or dialogs) which are designed to fit those different formats. Table 9 on page 144 lists the main data and library formats and gives recommendations on how to save the respective data.

If you want to do a backup of specific data, such as VSE/POWER queues, VSE/VSAM data, or VSE/ICCF libraries, it is recommended to use the backup utilities (or dialogs) provided for these programs. For a description, refer to the IBM documentation indicated in the following table.

For the major backup/restore tasks, z/VSE has dialogs under the Interactive Interface. These dialogs create jobs that invoke a particular backup or restore program. The description of these dialogs is the main subject of this topic.

Quite a few of the save/restore tasks listed below can also be performed with **DITTO/ESA for VSE** program. For details, refer to the IBM documentation *DITTO/ESA for VSE, User's Guide and Reference*.

Table 9. Overview on Programs for Saving/Restoring Data

Kind of data	Backup	Restore	Reorganize	Recommended	Where described
Total volumes (for example, DOSRES, SYSWK1)	VSE/Fast Copy	VSE/Fast Copy	(see Note)	VSE/Fast Copy or dialog	z/VSE System Utilities
VSE libraries	Librarian BACKUP	Librarian RESTORE	Librarian BACKUP/ RESTORE	Librarian or Interactive Interface dialogs	z/VSE Guide to System Functions z/VSE System Control Statements
Non-VSE/VSAM data	VSE/Fast Copy	VSE/Fast Copy	–	VSE/Fast Copy	z/VSE System Utilities
VSE/VSAM data	VSE/VSAM, Backup	VSE/VSAM, Restore	VSE/VSAM, Export and Import	VSE/VSAM, Backup/Restore or Interactive Interface dialogs	VSE/VSAM Commands z/VSE Administration
VSE/ICCF libraries	DTSUTIL, Backup	DTSUTIL, Restore	DTSUTIL, Backup Format and restore	DTSUTIL or dialog	VSE/ICCF Administration and Operation
VSE/POWER queue	POFFLOAD, SAVE	POFFLOAD, LOAD	–	POFFLOAD	VSE/POWER Administration and Operation
SQL/DS	ARCHIVE	ARCHIVE	–	ARCHIVE	z/VSE Administration
DL/I	IMAGE COPY	IMAGE COPY	Reorganization UNLOAD and RELOAD	DL/I	DL/I Resource Definition and Utilities
System History File	MSHP or VSE/Fast Copy	MSHP or VSE/Fast Copy	–	MSHP or dialog	z/VSE System Control Statements

Note: Reorganizing data means a change of the physical arrangement of data to obtain a better correspondence of physical and logical structures in order to speed up access and to utilize storage more efficiently. The VSE/Fast Copy parameter REORGANIZE only relocates a file and does not rearrange data in general.

File Names and Other Considerations When Using Remote Virtual Tapes

If the required Linux, UNIX, or Windows file for a remote virtual tape does not exist, it is automatically created after the corresponding VTAPE START command has been submitted. If you assign file names. you must observe certain rules and characteristics.

Linux and UNIX Considerations

Linux and UNIX are case-sensitive, but job streams that are created on the z/VSE host (using dialogs of the Interactive Interface) are in capital letters. It might therefore be necessary to edit such job streams and adapt the file name to the Linux or UNIX conventions.

Windows Considerations

Windows file names can contain blanks, therefore the file name must be enclosed in quotation marks. A quotation mark within a file name must be coded as two single quotation marks. For example:

```
FILE='D:\John''s\Virtual Tapes\vt001401.001'
```

Windows file names can have more than 100 characters in length. Since the limit for remote files is 100 characters, you can specify `FILE='filename'` twice or even three times. The file name is concatenated in storage, thus allowing for a file name length of 200 or even 300. The following example is equivalent to the previous example:

```
FILE='D:',FILE='\John''s\Virtual Tapes\',FILE='vt001401.001'
```

The following example job has been generated by the *Prepare for Installation* dialog. If you use job `IJBVTDLG` as shown, you can specify file names that are mixed case, or longer than 100 characters, or both. However, be aware that Linux clients are case-sensitive regarding file names.

```
* $$ JOB JNM=INSPRE,DISP=D,PRI=3,                                      C
* $$ NTFY=YES,                                                         C
* $$ LDEST=*,                                                          C
* $$ CLASS=0
// JOB INSPRE  SCAN OPTIONAL PRODUCT TAPE
// LIBDEF PHASE,SEARCH=(PRD1.BASE,IJSYSRS.SYSLIB)
* *
* *     PREPARE ADDITIONAL PROGRAM INSTALLATION
* *     -  SCAN PROGRAM TAPE
* *
* *  VIRTUAL TAPE SPECIFIED, NO REAL TAPE DRIVE REQUIRED ON
* *                 280
// EXEC IJBVTDLG
UNIT=280,
HOSTNAME=123.123.123.123
HOSTNAME=
HOSTNAME=
HOSTNAME=
HOSTNAME=
HOSTNAME=
HOSTNAME=
FILE='DATASET*********************************'
FILE='*********************************'
FILE='*********************************'
FILE='*********************************'
FILE='*********************************'
FILE='*********************************'
FILE='************************'
READ
/*

/*
// ASSGN SYS006,280
// MTC REW,SYS006
// EXEC DTRIPRE,PARM='VDDR=280'
/*
// ASSGN SYS006,UA
// VTAPE STOP,UNIT=280
/&
* $$ EOJ
```

Before it is submitted, the job can be stored in a library and edited as required. For example, you might need to use the `SET CASE MIXED` command to produce the statements shown below:

```
⋮
FILE='my_TEST.file*****************************'
FILE='*****************************************'
FILE='*****************************************'
FILE='*****************************************'
FILE='*****************************************'
FILE='*****************************************'
```

```
FILE='************************'
⋮
```

When the job is finally submitted, a mixed-case file name is therefore used.

Backup Considerations

Backing Up the Entire System

You should first back up the entire system immediately after you install z/VSE. You should also perform a backup before you extend space that is reserved for VSE/VSAM.

The preferred method is to copy your **volumes** using the Fastcopy utility. When you later restore the volumes, the disks must be of the same device type as the original ones. To copy them to disks of different device type, you must do an initial installation and then restore the individual parts, such as VSE libraries, VSE/ICCF libraries, VSE/VSAM files.

Backing Up Parts of the System

Periodically, you should back up individual parts of the system. How often you should perform any backups depends on how the system is used and how frequently it is updated. By frequently backing up your data, you can minimize the impact of lost or damaged data.

You should consider backing up the system libraries at various intervals. You should also frequently back up:

- VSE/VSAM files
- VSE/ICCF libraries
- User libraries

If data is lost or damaged, you should restore the libraries and/or files using your backed-up real/virtual tapes. After the restore is complete, you can re-enter any changes which were made since the backup was done.

When you back up data, you should carefully label your backup *real tapes*. If you require a label for your *virtual tapes*, you can enter a '1' in the field "Label Process". This helps ensure that you do not restore an incorrect version of your data.

Backing Up Selected z/VSE Files

You should back up the following z/VSE files:

1. z/VSE Control File and BSM Control File

   You should back up the z/VSE control file (IESCNTL) and BSM control file (BSTCNTL)

   - immediately after initial installation,
   - after migration of user security definitions, and
   - at frequent intervals.

   The frequency of your backups depends on how much user profiles, synonyms, selection panels, and application profiles and security definitions are updated.

   You can back up the z/VSE Control File and BSM Control File using one of two dialogs:

   - *Backup VSAM File* (see “Backing Up VSE/VSAM Files” on page 152).
   - *Backup a Volume or File* (see “Backing Up a Volume or File” on page 186).

   Note: If you wish to restore any of the above two files, you must first *close* the file in the BSM (Basic Security Manager) and CICS partitions. Details are provided in “Security Server Commands” on page 38.

2. Message File

   You should back up the message file IESMSGS after initial installation. You can back up the file in the same way as the z/VSE control file.

3. System Text File

   You should back up the system text file IESTRFL after initial installation. The file contains Interactive Interface messages and HELP information. It also contains any HELP text that is created by system users and integrated by your system administrator. How often you back up the file after installation depends on the amount of HELP text that they create.

   You can back up the file in the same way as the z/VSE control file and message file.

4. VSE/ICCF DTSFILE

   You should back up the DTSFILE after initial installation and at regular intervals. The frequency of backups depends on your system's VSE/ICCF activity.

   You can back up the DTSFILE using one of two dialogs:

   - *Backup ICCF Library* (see "Backing Up VSE/ICCF Libraries" on page 174).
   - *Backup a Volume or File* (see "Backing Up a Volume or File" on page 186).

Exporting VSE/VSAM Files

The *Export VSAM File* dialog exports VSE/VSAM files. To access the dialog, start with the *z/VSE Function Selection* panel and select:

- **5** (Backup/Restore)
- **1** (Backup/Restore VSAM Objects)
- **1** (Export VSAM File)

Operator Fast Path: 511	Synonym Default: Yours:

The information you need depends on whether:

- you export a file to disk or real/virtual tape.
- a file exported to a *real* tape is to be encrypted or not.

The information in "Input for Exporting to Disk or Real/Virtual Tape" on page 147 is for all types of export. Following this section is the additional input for exporting to disk or real/virtual tape, and for exporting an encrypted file to a real tape.

Input for Exporting to Disk or Real/Virtual Tape

Note: If you wish to use virtual tapes, ensure you have read "File Names and Other Considerations When Using Remote Virtual Tapes" on page 144!

For exporting a VSE/VSAM file to disk or real/virtual tape, you need the following information:

IDENTIFICATION
The identification of the VSE/VSAM file you are exporting.

OUTPUT MEDIUM
Specify the type of device to which the file is exported:

1 - DISK
2 - TAPE
3 - VIRTUAL TAPE

CATALOG TYPE
Specify where the file is defined:

1 - MASTER
2 - USER

If you specify USER, enter the identification of the user catalog which owns the cluster.

If you export a file to disk, continue with "Additional Input for Exporting to Disk" on page 148.

If you export a file to a real/virtual tape, continue with "Additional Input for Exporting to a Real/Virtual Tape" on page 148.

Additional Input for Exporting to Disk

If you export a file to disk, you also need the following information:

OUTPUT VOLUME SERIAL NUMBER
The six-character volume serial number.

STARTING POINT and LENGTH
The starting track (block) and the number of tracks (blocks) for the output file.

Note: The *help function* of the dialog has complete information about valid starting points and lengths for each device type you might use for export to disk.

RETENTION PERIOD
The number of days (**0 - 9999**) that you want to keep the output file, or the output file expiration date in the form **YYYY/DDD** or **YY/DDDD** where **YYYY** or **YY** is the year and **DDD** is the day of the year).

FILE IDENTIFICATION
The identification of the output file where you export the VSE/VSAM file.

Press ENTER. The dialog creates a job with the default name EXPORT. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Additional Input for Exporting to a Real/Virtual Tape

If you export a file to real/virtual tape, you also need the following information:

TAPE ADDRESS
The VSE address (*cuu*) of a real/virtual tape drive. For a real tape drive, to obtain the corresponding *physical address* you must enter `QUERY IO,CUU=`*nnn* at the console (where *nnn* is the VSE address).

If you wish to *encrypt* the file to be exported to a *real* tape, select the address of an *encryption-capable tape drive* (for example, the *cuu* of the IBM 3592-E05 tape drive).

VOLUME SERIAL NUMBER
The six-character volume serial number of the real/virtual tape. The meaning of VOLUME SERIAL NUMBER depends on how the fields LABEL PROCESS and LABEL CHECK are set:

- If LABEL PROCESS and LABEL CHECK are both set to '1', then VOLUME SERIAL NUMBER will be the same as the label record written on the tape by the tape initialization function.
- If LABEL PROCESS is set to '2', then VOLUME SERIAL NUMBER will be used for the name of the tape.

DENSITY/MODE

- For IBM 3480, 3490, 3490E, 3590 and 3592 tape drives, enter the *mode*.
  - If you wish to *encrypt* the file to be exported to a real tape, specify a mode that uses encryption. However, you must have specified an encryption-capable tape drive in field TAPE ADDRESS. For a list of modes that use encryption, enter a **?** and press ENTER.
- For tape drives other than IBM 3480, 3490, 3490E, 3590 and 3592, specify the density.
- **Not used with virtual tapes.**

RETENTION PERIOD
The number of days (**0 - 9999**) that you want to keep the output file, or the output file expiration date in the form **YYYY/DDD** or **YY/DDDD** where **YYYY** or **YY** is the year and **DDD** is the day of the year).

REWIND OPTION
Specify:

1 - REW (Rewind at EOJ)
2 - NREW (No rewind)
3 - UNLD (Rewind and unload) **Not used with virtual tapes.**

LABEL PROCESS
Specify the type of label processing:

1 - LABELED
2 - UNLABELED TAPES

LABEL CHECK
If you enter **1** for the tape label processing, specify whether you want label checking:

1 - YES (Label is checked)
2 - NO (Label is not checked)

If you specified label checking 1 = YES:

TAPE FILE ID
The name of the real/virtual tape file for the TLBL statement.

Press ENTER. Now do one of the following:

- If you entered the *cuu* of an encryption-capable tape drive in field TAPE ADDRESS, the *Tape Encryption* panel is displayed. Proceed to "Additional Input for Exporting to an Encrypted Real Tape" on page 149.
- If you did **not** enter the *cuu* of an encryption-capable tape drive in field TAPE ADDRESS, the dialog creates a job with the default name EXPORT. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both. Before you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.
- If you wish to export the file to a *virtual* tape, the dialog creates a job with the default name EXPORT. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Additional Input for Exporting to an Encrypted Real Tape

Enter the following additional information in the *Tape Encryption* panel:

TAPE ENCRYPTION
Specify whether tape encryption is required:

1 - TAPE ENCRYPTION
2 - NO TAPE ENCRYPTION. In this case, *the remaining fields in this section are not used*. After pressing ENTER, the dialog creates a job which (on the *Job Disposition* panel) you can submit to batch, file in your default primary library, or both. When you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.

TAPE MODE
The two-character tape mode, which must be supported by the tape drive you are using. If you enter an invalid tape mode, z/VSE displays a list of valid encryption tape modes that can be used with your encryption-capable tape drive. To obtain explanations of these encryption tape modes, press PF1 (Help) and then page forwards (by pressing PF8).

KEKL1
Is the label of the first key-encryption-key to be used for encrypting the data to be stored on the tape. If you do *not* specify a KEKL1, z/VSE uses the default KEKL1 *and* KEKL2 that are stored by the EKM (Encryption Key Manager).

KEM1
Specifies the "encoding mechanism" (KEM). The KEM specifies how the label for the first key-encryption-key (KEKL1) is encoded by the EKM and stored on the tape cartridge. The values can be either:

1
Encoded as the specified label.

2
Encoded as a hash of the public key.

KEKL2
Is the label of the second key-encryption-key to be used for encrypting the data to be stored on the tape:

- You cannot specify a KEKL2 without having specified a KEKL1.
- If you specify a KEKL1 but do *not* specify a KEKL2 , z/VSE uses the value of KEKL1 for KEKL2.
- If you do *not* specify a KEKL1 *and* a KEKL2, z/VSE uses the default KEKL1 and KEKL2 that are stored by the EKM (Encryption Key Manager).

KEM2
Required if you entered a value for KEKL2. Specifies the "encoding mechanism" (KEM). The KEM specifies how the label for the second key-encryption-key (KEKL2) is encoded by the EKM and stored on the tape cartridge. The possible values (**1** or **2**) are the same as for KEM1.

On pressing ENTER, the dialog creates a job with the default name EXPORT. If you have specified a KEKL1 and possibly a KEKL2, this job will contain the resulting KEKL statement required to produce encrypted data on the tape. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Before you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.

Importing VSE/VSAM Files

The *Import VSAM File* dialog imports VSE/VSAM files. To access the dialog, start with the *z/VSE Function Selection* panel and select:

- **5** (Backup/Restore)
- **1** (Backup/Restore VSAM Objects)
- **2** (Import VSAM File)

Operator Fast Path: 512	Synonym Default: Yours:

The information you need depends on whether you import a file from disk or tape. The information in “Input for Importing from Disk or Real/Virtual Tape” on page 150 is for both types of import. Following this section is the additional input for importing from disk or tape.

Input for Importing from Disk or Real/Virtual Tape

Note: If you wish to use virtual tapes, ensure you have read “File Names and Other Considerations When Using Remote Virtual Tapes” on page 144!

For importing a VSE/VSAM file from disk or real/virtual tape, you need the following information:

IDENTIFICATION
The identification of the file that you are importing.

FILE TYPE
Specify the type of file:

1 - KSDS
2 - FOR ANY OTHER TYPE

OUTPUT VOLUME SERIAL
The volume serial number of the disk where you store the file.

INPUT MEDIUM
Specify:

1 - DISK
2 - TAPE
3 - VIRTUAL TAPE

NEW CATALOG TYPE
Specify either:

1 - MASTER
2 - USER

If you specify USER, enter the identification of the user catalog which owns the cluster.

TYPE OF IMPORT
Specify:

1 - Import with new name
2 - Import with same name (conditional purge)
3 - Import with same name (unconditional purge)

If you enter 1 (import with new name), you need a new file identification.

If you import a file from disk, continue with "Additional Input for Importing from Disk" on page 151. If you import a file from real/virtual tape, continue with "Additional Input for Importing from Real/Virtual Tape" on page 151.

Additional Input for Importing from Disk

If you import a file from disk, you also need the following information:

IDENTIFICATION
Identification of the disk file from where the VSE/VSAM file was originally exported.

VOLUME SERIAL
Six-character volume serial number of the disk.

Press ENTER. The dialog creates a job with the default name IMPORT. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Additional Input for Importing from Real/Virtual Tape

If you import a file from real/virtual tape, you also need the following information:

TAPE ADDRESS
The VSE address (*cuu*) of a real/virtual tape drive. For a real tape drive, to obtain the corresponding *physical address* you must enter `QUERY IO,CUU=`*nnn* at the console (where *nnn* is the VSE address).

VOLUME SERIAL NUMBER
The volume serial number of the input real/virtual tape.

REWIND OPTION
Specify:

1 - REW (Rewind at EOJ)
2 - NREW (No rewind)
3 - UNLD (Rewind and unload)

LABEL PROCESS
Specify the type of label processing:

1 - LABELED
2 - UNLABELED TAPES

LABEL CHECK
If you entered 1 for the type of label processing, specify whether you want label checking:

1 - YES (Label is checked)
2 - NO (Label is not checked)

TAPE FILE ID
The name of the real/virtual tape file for the TLBL statement.

Press ENTER. The dialog creates a job with the default name IMPORT. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

For real tapes, before you submit the job, you should mount the tape. Use the *same* tape address you specified in the dialog.

Backing Up VSE/VSAM Files

The *Backup VSAM File* dialog backs up VSE/VSAM files. You can back up all files in a catalog or select the files you want to back up. To access the dialog, start with the *z/VSE Function Selection* panel and select:

- **5** (Backup/Restore)
- **1** (Backup/Restore VSAM Objects)
- **3** (Backup VSAM File)

Operator Fast Path: 513	Synonym Default: Yours:

Note: You cannot use the VSE/VSAM backup utility to back up a file in VSAM-managed space with the record format NOCIFORMAT. Use the *Backup VSE Library on Tape* dialog to back up a library. Refer to "Backing Up VSE Libraries" on page 168.

You need the following information:

CATALOG TYPE
Specify where the files are defined:

1 - MASTER
2 - USER

If you specify **2**, enter the identification of the user catalog.

BACKUP WHOLE CATALOG
Specify whether you want to back up all files or selected files in the catalog.

1 - Back up all files
2 - Back up selected files

If you enter 2, the dialog displays an additional panel. Specify the identification of the individual files you want to back up. You can also enter a generic identification to back up groups of files.

After you specified all your files, enter **2** in the MORE FILES field. The dialog continues.

OUTPUT MEDIUM
Specify:

1 - DISK
2 - TAPE
3 - VIRTUAL TAPE

Additional Input for Backup to a Real/Virtual Tape

Note: If you wish to use virtual tapes, ensure you have read "File Names and Other Considerations When Using Remote Virtual Tapes" on page 144!

If you back up to real/virtual tape, you also need the following information:

TAPE ADDRESS
The VSE address (*cuu*) of a real/virtual tape drive. For a real tape drive, to obtain the corresponding *physical address* you must enter `QUERY IO,CUU=nnn` at the console (where *nnn* is the VSE address).

If you wish to *encrypt* the file to be backed up to a *real* tape, select the address of an *encryption-capable tape drive* (for example, the *cuu* of the IBM 3592-E05 tape drive).

VOLUME SERIAL NUMBER
The six-character volume serial number of the real/virtual tape. The meaning of VOLUME SERIAL NUMBER depends on how the fields LABEL PROCESS and LABEL CHECK are set:

- If LABEL PROCESS and LABEL CHECK are both set to '1', then VOLUME SERIAL NUMBER will be the same as the label record written on the tape by the tape initialization function.
- If LABEL PROCESS is set to '2', then VOLUME SERIAL NUMBER will be used for the name of the tape.

DENSITY/MODE

- For IBM 3480, 3490, 3490E, 3590 and 3592 tape drives, enter the *mode*.
  - If you wish to *encrypt* the file to be backed up to a *real* tape, specify a mode that uses encryption. However, you must have specified an encryption-capable tape drive in field TAPE ADDRESS. For a list of modes that use encryption, enter a **?** and press ENTER.
- For tape drives other than IBM 3480, 3490, 3490E, 3590 and 3592, specify the density.
- **Not used with virtual tapes.**

RETENTION PERIOD
The number of days (**0 - 9999**) that you want to keep the output file, or the output file expiration date in the form **YYYY/DDD** or **YY/DDDD** where **YYYY** or **YY** is the year and **DDD** is the day of the year).

REWIND OPTION
Specify:

1 - REW (Rewind at EOJ)
3 - UNLD (Rewind and unload) **Not used with virtual tapes.**

COMPACT
Enter:

1 - compaction
2 - no compaction (this is the default)

If you specify **1**, the VSE/VSAM files will be backed up in packed form, thus using less space.

If you specify **2**, the VSE/VSAM files will not be backed up in packed form.

LABEL PROCESS
Specify the type of label processing:

1 - LABELED
2 - UNLABELED TAPES

LABEL CHECK
If you enter **1** for the tape label processing, specify whether you want label checking:

1 - YES (Label is checked)
2 - NO (Label is not checked)

If you specified label checking 1 = YES:

TAPE FILE ID
The name of the real/virtual tape file for the TLBL statement.

Press ENTER. Now do one of the following:

- If you entered the *cuu* of an encryption-capable tape drive in field TAPE ADDRESS, the *Tape Encryption* panel is displayed. Proceed to "Additional Input for Backup to an Encrypted Real Tape" on page 154.
- If you did **not** enter the *cuu* of an encryption-capable tape drive in field TAPE ADDRESS, the dialog creates a job with the default name VSAMBKUP. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both. Before you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.
- If you wish to back up the file to a *virtual* tape, the dialog creates a job with the default name VSAMBKUP. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Note: The file you are backing up must be available for an INPUT OPEN. The OPEN *might* fail if the file is currently opened for input or output by another partition or system. Because the OPEN might not *always* fail, it is strongly recommended that the file which is being backed up should not be opened for output by any other partition or system. Otherwise, the resulting backup copy might not represent the actual state of the original file.

Additional Input for Backup to an Encrypted Real Tape

Enter the following additional information in the *Tape Encryption* panel:

TAPE ENCRYPTION
Specify whether tape encryption is required:

1 - TAPE ENCRYPTION

2 - NO TAPE ENCRYPTION. In this case, *the remaining fields in this section are not used*. After pressing ENTER, the dialog creates a job which (on the *Job Disposition* panel) you can submit to batch, file in your default primary library, or both. When you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.

TAPE MODE
The two-character tape mode, which must be supported by the tape drive you are using. If you enter an invalid tape mode, z/VSE displays a list of valid encryption tape modes that can be used with your encryption-capable tape drive. To obtain explanations of these encryption tape modes, press PF1 (Help) and then page forwards (by pressing PF8).

KEKL1
Is the label of the first key-encryption-key to be used for encrypting the data to be stored on the tape. If you do *not* specify a KEKL1, z/VSE uses the default KEKL1 *and* KEKL2 that are stored by the EKM (Encryption Key Manager).

KEM1
Specifies the "encoding mechanism" (KEM). The KEM specifies how the label for the first key-encryption-key (KEKL1) is encoded by the EKM and stored on the tape cartridge. The values can be either:

1
Encoded as the specified label.

2
Encoded as a hash of the public key.

KEKL2
Is the label of the second key-encryption-key to be used for encrypting the data to be stored on the tape:

- You cannot specify a KEKL2 without having specified a KEKL1.
- If you specify a KEKL1 but do *not* specify a KEKL2 , z/VSE uses the value of KEKL1 for KEKL2.
- If you do *not* specify a KEKL1 *and* a KEKL2, z/VSE uses the default KEKL1 and KEKL2 that are stored by the EKM (Encryption Key Manager).

KEM2
Required if you entered a value for KEKL2. Specifies the "encoding mechanism" (KEM). The KEM specifies how the label for the second key-encryption-key (KEKL2) is encoded by the EKM and stored on the tape cartridge. The possible values (**1** or **2**) are the same as for KEM1.

Press ENTER. The dialog creates a job with the default name VSAMBKUP. If you have specified a KEKL1 and possibly a KEKL2, this job will contain the resulting KEKL statement required to produce encrypted data on the tape. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Before you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.

Additional Input for Backup to Disk

If you back up to disk, you also need the following information:

VOLUME SERIAL NUMBER
The volume serial number of the backup disk.

STARTING POINT
Enter the starting track (or block if using an FBA device).

LENGTH
Enter the total number of tracks (or blocks if using an FBA device).

RETENTION PERIOD
The number of days (**0 - 9999**) that you want to keep the output file, or the output file expiration date in the form **YYYY/DDD** or **YY/DDDD** where **YYYY** or **YY** is the year and **DDD** is the day of the year).

COMPACT
Enter:

1 - compaction
2 - no compaction (this is the default)

If you specify **1**, the VSE/VSAM files will be backed up in packed form, thus using less space.

If you specify **2**, the VSE/VSAM files will not be backed up in packed form.

FILE IDENTIFICATION
The identification of the output file being used for the backup.

Press ENTER. The dialog creates a job with the default name VSAMBKUP. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Note: The file you are backing up must be available for an INPUT OPEN. The OPEN *might* fail if the file is currently opened for input or output by another partition or system. Because the OPEN might not *always* fail, it is strongly recommended that the file which is being backed up should not be opened for output by any other partition or system. Otherwise, the resulting backup copy might not represent the actual state of the original file.

Restoring VSE/VSAM Files

The *Restore VSAM File* dialog restores VSE/VSAM files from real/virtual tape or disk. You can restore all files or select the files you want to restore. You can also restore some or all files to a different volume than the volume from which they were backed up.

To access the dialog, start with the *z/VSE Function Selection* panel and select:

- **5** (Backup/Restore)
- **1** (Backup/Restore VSAM Objects)
- **4** (Restore VSAM File)

Operator Fast Path: 514	Synonym Default: Yours:

The dialog displays different panels depending on the values you specify. For all types of restore, you need the information in “Input for All Types of Restores” on page 156. Following this section is the additional input for restoring all files or selected files.

Input for All Types of Restores

Regardless of whether you restore all or some files or whether you restore files to different volumes, you need the following information:

CATALOG TYPE
Specify where the files will be defined:

1 - MASTER
2 - USER

If you specify **2**, enter the identification of the user catalog.

RESTORE ALL
Specify whether you want to restore all files on the disk or real/virtual tape, or whether you want to select the files:

- **1** - Restore all files

  Refer to “Additional Input for Restoring All Files” on page 157.
- **2** - Restore selected files

  Refer to “Additional Input for Restoring Selected Files” on page 157.

INPUT MEDIUM
Specify:

1 - DISK
2 - TAPE
3 - VIRTUAL TAPE

XREFERENCE LISTINGS
Specify:

1 - Restore data only
2 - Create cross-reference listings only
3 - Restore data and create cross-reference listings

Additional Input for Restore from Real/Virtual Tape

Note: If you wish to use virtual tapes, ensure you have read “File Names and Other Considerations When Using Remote Virtual Tapes” on page 144!

If you restore from real/virtual tape, you also need the following information:

TAPE ADDRESS
The VSE address (*cuu*) of a real/virtual tape drive. For a real tape drive, to obtain the corresponding *physical address* you must enter `QUERY IO,CUU=`*nnn* at the console (where *nnn* is the VSE address).

VOLUME SERIAL NUMBER
The six-character volume serial number of the input real/virtual tape.

REWIND OPTION
Specify:

1 - REW (Rewind at EOJ)
3 - UNLD (Rewind and unload) **Not used with virtual tapes.**

LABEL PROCESS
Specify the type of label processing:

1 - LABELED
2 - UNLABELED TAPES

LABEL CHECK
If you enter **1** for the tape label processing, specify whether you want label checking:

1 - YES (Label is checked)
2 - NO (Label is not checked)

If you specified label checking 1 = YES:

TAPE FILE ID
Specify the name corresponding to the file ID on the TLBL statement.

Additional Input for Restore from Disk

If you restore from disk, you also need the following information:

IDENTIFICATION
Identification of the disk file that holds the file(s) to be restored.

VOLUME SERIAL NUMBER
The six-character volume serial number of the input disk.

Additional Input for Restoring All Files

VOLUME SERIAL NUMBER
This field is optional; you must enter the six-character volume serial number only if you want to restore VSAM files to a disk other than the one from which you created the backup.

If you do not specify this, the dialog restores each file to the disk it resided on when it was backed up.

Press ENTER. The dialog creates a job with the default name VSAMREST. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

For real tapes, mount the tape when you submit the job. Use the *same* tape address you specify in the dialog.

Additional Input for Restoring Selected Files

If you select the files, you can restore some or all files to different volumes. A panel displays the CHANGE VOLUME field.

You have three choices.

1. Press ENTER.

   The dialog restores each file you select to the same volume it resided on when it was backed up.

   Specify the identification of each individual file or the generic identification for a group of files.
2. Enter **1**.

   You can specify the volume where *all* files you select are restored. You need:

   VOLUME SERIAL NUMBER
   The six-character volume serial number of the output disk.

   FILE IDENTIFICATION
   Identification of each file or generic identification for a group of files you want restored.
3. Enter **2**.

   If you choose this option, you can:

   a. Restore *some* files to a different volume.

b. Move a file's data component to a different volume than the index component.

FILE IDENTIFICATION
Specify the files you want restored. Enter individual file IDs or a generic identification for a group of files.

INDEX VOLSER
Indicate whether you want separate volumes for the data and index components. If you specify separate volumes, you will be requested to supply separate volume serial numbers for the index and data components. This is valid for key-sequenced data sets (KSDS) or alternate indexes (AIX*).

DATA VOLUME NUMBER
Enter new volume serial numbers for the files if you want to restore the data component to a disk other than the one from which you created the backup.

These panels are redisplayed until you indicate you have no more files to restore.

Press ENTER. The dialog creates a job with the default name VSAMREST. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

For real tapes, mount the tape when you submit the job. Use the *same* tape address you specify in the dialog.

Export-Disconnect a User Catalog

The *Export-Disconnect a User Catalog* dialog disconnects (*exports*) a catalog from a system (use the *Import-Connect a User Catalog* dialog to reconnect the catalog).

To access the dialog, start with the *z/VSE Function Selection* panel and select:

- **5** (Backup/Restore)
- **1** (Backup/Restore VSAM Objects)
- **5** (Export-Disconnect a User Catalog)

Operator	Synonym
Fast Path: 515	Default: Yours:

The following panel is displayed:

```
CAT$TPT2              EXPORT-DISCONNECT A USER CATALOG

Enter the required data and press ENTER.



Enter the identification of the user catalog to be exported.

      --------        --------        --------        --------        --------




PF1=HELP       2=REDISPLAY  3=END
```

Figure 35. Example Display of Export-Disconnect User Catalogs Panel

Enter the identification of the user catalog you want to export.

Press ENTER. The dialog creates a job with the default name TPTUCAT. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Import-Connect a User Catalog

The *Import-Connect a User Catalog* dialog connects (*imports*) a catalog, for example a catalog that had previously been disconnected elsewhere.

To access the dialog, start with the *z/VSE Function Selection* panel and select:

- **5** (Backup/Restore)
- **1** (Backup/Restore VSAM Objects)
- **6** (Import-Connect a User Catalog)

Operator	Synonym
Fast Path: 516	Default: Yours:

The following panel is displayed:

```
 CAT$TPT3              IMPORT-CONNECT A USER CATALOG

 Enter the required data and press ENTER.

VOLUME NUMBER.............. ______      Enter the VOLUME NUMBER of the disk
                                       on which this catalog resides.

Enter the IDENTIFICATION of the USER CATALOG to be imported.

      ________        ________        ________        ________        ________




 PF1=HELP       2=REDISPLAY  3=END
```

Figure 36. Example Display of Import-Connect User Catalogs Panel

You need the following information:

VOLUME SERIAL NUMBER
The six-character volume serial number of the disk where the catalog resides (DOSRES, for example).

CATALOG IDENTIFICATION
The identification of the user catalog to be imported.

Press ENTER. The dialog creates a job with the default name TPTUCAT. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Copying In Catalogs

The *Copy In Catalog* dialog restores either the master catalog or a user catalog from disk or real/virtual tape. To access the dialog, start with the *z/VSE Function Selection* panel and select:

- **5** (Backup/Restore)
- **1** (Backup/Restore VSAM Objects)
- **7** (Copy In Catalog)

Operator	Synonym
Fast Path: 517	Default: Yours:

A panel displays four selections:

1. Restore the Master Catalog from Real/Virtual Tape
2. Restore the Master Catalog from Disk
3. Restore a User Catalog from Real/Virtual Tape
4. Restore a User Catalog from Disk

The input you need differs depending on whether you are restoring the catalog from disk or real/virtual tape. The two methods are described below.

Restore Master or User Catalog from Real/Virtual Tape

Note: If you wish to use virtual tapes, ensure you have read "File Names and Other Considerations When Using Remote Virtual Tapes" on page 144!

If you restore the master catalog or a user catalog from real/virtual tape (selections 1 or 3), you need the following information:

CATALOG IDENTIFICATION
You need this if you restore a user catalog. Specify the identification of the user catalog.

TAPE ADDRESS
The VSE address (*cuu*) of a real/virtual tape drive. For a real tape drive, to obtain the corresponding *physical address* you must enter `QUERY IO,CUU=`*nnn* at the console (where *nnn* is the VSE address).

VIRTUAL TAPE
Specify whether a virtual tape is to be used.

1 - YES
2 - NO (the default)

VOLUME SERIAL NUMBER
The six-character volume serial number of the real/virtual tape.

REWIND OPTION
Specify:

1 - REW (Rewind at beginning and end of job)
2 - NREW (No rewinding at either beginning or end of job)
3 - UNLD (Rewind at beginning, rewind and unload at end of job) **Not used with virtual tapes.**

If VSE Access Control is active, you must specify **1** for unlabeled real/virtual tapes.

LABEL PROCESS
Specify the type of label processing.

1 - LABELED
2 - UNLABELED TAPES

LABEL CHECK
If you entered **1** for the real/virtual tape label processing, specify whether you want label checking:

1 - YES (Label is checked)
2 - NO (Label is not checked)

If you specified label checking 1 = YES:

TAPE FILE ID
Specify the name of the real/virtual tape output file.

Press ENTER. The dialog creates a job with the default name RESTCAT. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Restore Master or User Catalog from Disk

If you restore the master catalog or a user catalog from disk (selections 2 or 4), you need the following information:

CATALOG IDENTIFICATION
You need this if you restore a user catalog. Specify the identification of the user catalog.

VOLUME SERIAL NUMBER
The six-character volume serial number of the disk where the backup copy of the catalog resides.

FILE ID
Identification of the disk file which contains the backup copy.

Press ENTER. The dialog creates a job with the default name RESTCAT. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Copying Out Catalogs

The *Copy Out Catalog* dialog backs up either the master catalog or a user catalog to real/virtual tape or disk. To access the dialog, start with the *z/VSE Function Selection* panel and select:

- **5** (Backup/Restore)
- **1** (Backup/Restore VSAM Objects)
- **8** (Copy Out Catalog)

Operator Fast Path: 518	Synonym Default: Yours:

A panel displays four selections:

1. Backup the Master Catalog to Tape
2. Backup the Master Catalog to Disk
3. Backup a User Catalog to Tape
4. Backup a User Catalog to Disk

The information you need depends on whether you back up the catalog to disk or real/virtual tape, but also whether a catalog backed up to a *real* tape is to be encrypted or not. The methods are described below.

Back Up Master or User Catalog to a Real/Virtual Tape

Note: If you wish to use virtual tapes, ensure you have read "File Names and Other Considerations When Using Remote Virtual Tapes" on page 144!

If you back up the master catalog or a user catalog to real/virtual tape (selections 1 or 3), you need the following information:

CATALOG IDENTIFICATION
You need this if you back up a user catalog. Specify the identification of the user catalog.

TAPE ADDRESS
The VSE address (*cuu*) of a real/virtual tape drive. For a real tape drive, to obtain the corresponding *physical address* you must enter `QUERY IO,CUU=`*nnn* at the console (where *nnn* is the VSE address).

If you wish to *encrypt* the catalog to be backed up to a *real* tape, select the address of an *encryption-capable tape drive* (for example, the *cuu* of the IBM 3592-E05 tape drive).

VIRTUAL TAPE
Specify whether a virtual tape is to be used.

1 - YES
2 - NO (the default)

VOLUME SERIAL NUMBER
The six-character volume serial number of the real/virtual tape. The meaning of VOLUME SERIAL NUMBER depends on how the fields LABEL PROCESS and LABEL CHECK are set:

- If LABEL PROCESS and LABEL CHECK are both set to '1', then VOLUME SERIAL NUMBER will be the same as the label record written on the tape by the tape initialization function.
- If LABEL PROCESS is set to '2', then VOLUME SERIAL NUMBER will be used for the name of the tape.

DENSITY/MODE

- For IBM 3480, 3490, 3490E, 3590 and 3592 tape drives, enter the *mode*.
  - If you wish to *encrypt* the catalog to be backed up to a *real* tape, specify a mode that uses encryption. However, you must have specified an encryption-capable tape drive in field TAPE ADDRESS. For a list of modes that use encryption, enter a **?** and press ENTER.
- For tape drives other than IBM 3480, 3490, 3490E, 3590 and 3592, specify the density.
- **Not used with virtual tapes.**

RETENTION PERIOD
The number of days (**0 - 9999**) that you want to keep the output file, or the output file expiration date in the form **YYYY/DDD** or **YY/DDDD** where **YYYY** or **YY** is the year and **DDD** is the day of the year).

REWIND OPTION
Specify:

1 - REW (Rewind at EOJ)
2 - NREW (No rewind)
3 - UNLD (Rewind and unload) **Not used with virtual tapes.**

If VSE Access Control is active, you must specify **1** for unlabeled real/virtual tapes.

LABEL PROCESS
Specify the type of label processing:

1 - LABELED
2 - UNLABELED TAPES

LABEL CHECK
If you entered **1** for the real/virtual tape label processing, specify whether you want label checking:

1 - YES (Label is checked)
2 - NO (Label is not checked)

If you specified label checking 1 = YES:

TAPE FILE ID
Specify the name of the real/virtual tape output file.

Press ENTER. Now do one of the following:

- If you entered the *cuu* of an encryption-capable tape drive in field TAPE ADDRESS, the *Tape Encryption* panel is displayed. Proceed to “Additional Input for Backup to an Encrypted Real Tape” on page 162.
- If you did **not** enter the *cuu* of an encryption-capable tape drive in field TAPE ADDRESS, the dialog creates a job with the default name BKUPCAT. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both. Before you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.
- If you wish to back up the catalog to a *virtual* tape, the dialog creates a job with the default name BKUPCAT. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Additional Input for Backup to an Encrypted Real Tape

Enter the following additional information in the *Tape Encryption* panel:

TAPE ENCRYPTION
Specify whether tape encryption is required:

1 - TAPE ENCRYPTION

2 - NO TAPE ENCRYPTION. In this case, *the remaining fields in this section are not used*. After pressing ENTER, the dialog creates a job which (on the *Job Disposition* panel) you can submit to batch, file in your default primary library, or both. When you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.

TAPE MODE
The two-character tape mode, which must be supported by the tape drive you are using. If you enter an invalid tape mode, z/VSE displays a list of valid encryption tape modes that can be used with your encryption-capable tape drive. To obtain explanations of these encryption tape modes, press PF1 (Help) and then page forwards (by pressing PF8).

KEKL1
Is the label of the first key-encryption-key to be used for encrypting the data to be stored on the tape. If you do *not* specify a KEKL1, z/VSE uses the default KEKL1 *and* KEKL2 that are stored by the EKM (Encryption Key Manager).

KEM1
Specifies the "encoding mechanism" (KEM). The KEM specifies how the label for the first key-encryption-key (KEKL1) is encoded by the EKM and stored on the tape cartridge. The values can be either:

1
Encoded as the specified label.

2
Encoded as a hash of the public key.

KEKL2
Is the label of the second key-encryption-key to be used for encrypting the data to be stored on the tape:

- You cannot specify a KEKL2 without having specified a KEKL1.
- If you specify a KEKL1 but do *not* specify a KEKL2 , z/VSE uses the value of KEKL1 for KEKL2.
- If you do *not* specify a KEKL1 *and* a KEKL2, z/VSE uses the default KEKL1 and KEKL2 that are stored by the EKM (Encryption Key Manager).

KEM2
Required if you entered a value for KEKL2. Specifies the "encoding mechanism" (KEM). The KEM specifies how the label for the second key-encryption-key (KEKL2) is encoded by the EKM and stored on the tape cartridge. The possible values (**1** or **2**) are the same as for KEM1.

Press ENTER. The dialog creates a job with the default name BKUPCAT. If you have specified a KEKL1 and possibly a KEKL2, this job will contain the resulting KEKL statement required to produce encrypted data on the tape. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Before you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.

Back Up Master or User Catalog to Disk

If you back up the master catalog or a user catalog to disk (selections 2 or 4), you need the following information:

CATALOG IDENTIFICATION
You need this if you back up a user catalog. Specify the identification of the user catalog.

OUTPUT VOLUME SERIAL NUMBER
The six-character volume serial number of the disk where the backup copy will reside.

STARTING POINT and LENGTH
The starting track (block) and the number of tracks (blocks) to be allocated for the catalog. The sum of the first starting point and the last starting point amount to the capacity of the device. The sum of the starting point and length chosen must not be greater than the capacity of the device.

Note: The *help function* of the dialog has complete information about valid starting points and lengths for each device type you might use to copy out to disk.

RETENTION PERIOD
The number of days (**0 - 9999**) that you want to keep the output file, or the output file expiration date in the form **YYYY/DDD** or **YY/DDDD** where **YYYY** or **YY** is the year and **DDD** is the day of the year).

FILE ID
Identification of the disk output file.

Press ENTER. The dialog creates a job with the default name BKUPCAT. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Flashcopy VSAM Catalog/Files (ESS only)

The *Flashcopy VSAM Catalog/Files* dialog provides a fast backup function from disk to **tape** for VSE/VSAM data. It does so by creating a job stream that includes these IDCAMS commands: IDCAMS SNAP (including the DDSR function), IDCAMS IMPORT CONNECT, IDCAMS BACKUP and IDCAMS EXPORT DISCONNECT.

Note: The IDCAMS BACKUP requires the availability of the catalog and of **all** the related disk volumes holding data of the VSAM files owned by the catalog.

To access the dialog, start with the *z/VSE Function Selection* panel and select:

- **5** (Backup/Restore)
- **1** (Backup/Restore VSAM Objects)
- **9** (FlashCopy VSAM Catalog/Files (ESS only)

The dialog shown in Figure 37 on page 164 is displayed. You can either:

- Copy a whole catalog and *all* its related files.
- Select *individual* files from the catalog for backup (IDCAMS BACKUP).

```
 DSF$SNP1                 FLASHCOPY VSAM CATALOG/FILES

 Enter the required data and press ENTER.


CATALOG TYPE................. 2          Enter  1 for MASTER catalog, or
                                         2 for USER catalog.

Enter  the  identification of the user catalog if you specify  2 for USER in
the CATALOG TYPE field.
      --------        --------        --------        --------        --------

Enter a synonym name for the snapped catalog.
      --------        --------        --------        --------        --------

BACKUP WHOLE CATALOG......... 1          Enter  1 to backup EVERYTHING in
                                         your catalog, or  2 to backup
                                         SELECTED files.
Only backup to tape is supported.

 PF1=HELP       2=REDISPLAY  3=END
```

Figure 37. FlashCopy VSAM Catalog/Files Dialog - Catalog Definitions

You need the following information:

TYPE OF CATALOG
User catalog or master catalog.

CATALOG IDENTIFICATION
You need this if you back up a user catalog. Specify the identification of the user catalog.

SYNONYM NAME OF CATALOG ON THE TARGET VOLUME
The synonym name is the new name of the copy of the catalog.

SCOPE OF THE COPY

1. Whole catalog
2. Selected files (generic specification is possible).

If **2** is selected, the following panel is shown:

```
 DSF$SNP5               FLASHCOPY VSAM CATALOG / FILES

 Enter the required data and press ENTER.


Enter  the identification or generic identification of the VSE/VSAM file(s) you
want to back up.



      ________        ________        ________        ________        ________


MORE FILES................... 2           Enter  1 to backup more files.  Oth-
                                         erwise, enter  2.



 PF1=HELP       2=REDISPLAY  3=END
```

Figure 38. Example Display of Import-Connect User Catalogs Panel

Now enter the identification of the VSE/VSAM files you want to backup. To repeat this panel, enter **1** for more files.

After pressing ENTER, Figure 39 on page 165 is displayed.

```
 DSF$SNP2               FLASHCOPY VSAM CATALOG / FILES

 Enter the required data and press ENTER.


Enter  all entire  Source  Disk  Volumes where the CATALOG and all its Datasets
reside and the  Target  Volumes to which the  FlashCopy has to be done.

SOURCE VOLUME 1.............. ______      Enter the Volume-id where the CATALOG
                                         resides
TARGET VOLUME 1.............. ______      Enter the Volume-id to which  Flash
                                         Copy has to be done
MORE VOLUMES................. 2           Enter  1 to add more volumes.
                                         Otherwise, enter  2
COPY/NOCOPY.................. 1           Enter  1 to initiate a FlashCopy
                                         relation and copy source to target
                                         volumes, otherwise, enter  2
                                         to initiate a FlashCopy relation
                                         with option NOCOPY.

 PF1=HELP       2=REDISPLAY  3=END
```

Figure 39. FlashCopy VSAM Catalog/Files Dialog - Volume Definitions

You need the following information:

SOURCE VOLUME 1
The ID of the volume from which the FlashCopy is to be done.

TARGET VOLUME 1
The ID of the volume to which the FlashCopy is to be done.

MORE VOLUMES
Specify:

1 - YES to specify that further volumes are to be backed up.
2 - NO (the default).

COPY/NOCOPY
Specify:

1 - YES (the default), to initiate the FlashCopy relation between source and target volumes with option COPY.
2 - NO, to initiate the FlashCopy relation between source and target volumes with option NOCOPY.

Figure 40 on page 166 shows how you specify the characteristics of the backup tape.

```
 DSF$SNP3               FLASHCOPY VSAM CATALOG/FILES

 Enter the required data and press ENTER.


TAPE ADDRESS................. ___          Address of the tape unit (cuu).  For
                                          valid addresses enter a "?".
VOLUME SERIAL NUMBER......... ______       Volume serial number of the backup
                                          tape.
DENSITY/MODE................. __           Enter the density/mode. For valid
                                          densities/modes enter a "?".
RETENTION PERIOD............. ________     Enter the number of days (0-9999) or
                                          the Julian date in the form YY/DDD or
                                          YYYY/DDD.
REWIND OPTION................ 1            Enter 1 for REWIND,  2 for NOREWIND
                                          or  3 for UNLOAD.
LABEL PROCESS................ _            Enter 1 if you want a labeled
                                          tape, otherwise enter 2.


 PF1=HELP       2=REDISPLAY  3=END
```

Figure 40. FlashCopy VSAM Catalog/Files Dialog - Backup Tape Characteristics

You need the following information:

TAPE ADDRESS
The VSE address (*cuu*) of a real/virtual tape drive. For a real tape drive, to obtain the corresponding *physical address* you must enter `QUERY IO,CUU=`*nnn* at the console (where *nnn* is the VSE address).

If you wish to *encrypt* the catalog to be backed up to a *real* tape, select the address of an *encryption-capable tape drive* (for example, the *cuu* of the IBM 3592-E05 tape drive).

VOLUME SERIAL NUMBER
The six-character volume serial number of the real/virtual tape. The meaning of VOLUME SERIAL NUMBER depends on how the fields LABEL PROCESS and LABEL CHECK are set:

- If LABEL PROCESS and LABEL CHECK are both set to '1', then VOLUME SERIAL NUMBER will be the same as the label record written on the tape by the tape initialization function.
- If LABEL PROCESS is set to '2', then VOLUME SERIAL NUMBER will be used for the name of the tape.

DENSITY/MODE

- For IBM 3480, 3490, 3490E, 3590 and 3592 tape drives, enter the *mode*.
  - If you wish to *encrypt* the catalog to be backed up to a *real* tape, specify a mode that uses encryption. However, you must have specified an encryption-capable tape drive in field TAPE ADDRESS. For a list of modes that use encryption, enter a **?** and press ENTER.
- For tape drives other than IBM 3480, 3490, 3490E, 3590 and 3592, specify the density.

RETENTION PERIOD
The number of days (**0 - 9999**) that you want to keep the output file, or the output file expiration date in the form **YYYY/DDD** or **YY/DDDD** where **YYYY** or **YY** is the year and **DDD** is the day of the year).

REWIND OPTION
Specify:

1 - REWIND (Rewind at EOJ)
2 - NOREWIND (No rewind)
3 - UNLOAD (Rewind and unload)

If VSE Access Control is active, you must specify **1** for unlabeled real/virtual tapes.

LABEL PROCESS
Specify the type of label processing:

1 - LABELED
2 - UNLABELED TAPES

If you enter the *cuu* of an *encryption-capable tape drive* in field TAPE ADDRESS, after pressing ENTER the *Tape Encryption* panel is displayed.

Enter the following additional information in the *Tape Encryption* panel:

TAPE ENCRYPTION
Specify whether tape encryption is required:

1 - TAPE ENCRYPTION
2 - NO TAPE ENCRYPTION. In this case, *the remaining fields in this section are not used*. After pressing ENTER, the dialog creates a job which (on the *Job Disposition* panel) you can submit to batch, file in your default primary library, or both. When you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.

TAPE MODE
The two-character tape mode, which must be supported by the tape drive you are using. If you enter an invalid tape mode, z/VSE displays a list of valid encryption tape modes that can be used with your encryption-capable tape drive. To obtain explanations of these encryption tape modes, press PF1 (Help) and then page forwards (by pressing PF8).

KEKL1
Is the label of the first key-encryption-key to be used for encrypting the data to be stored on the tape. If you do *not* specify a KEKL1, z/VSE uses the default KEKL1 *and* KEKL2 that are stored by the EKM (Encryption Key Manager).

KEM1
Specifies the "encoding mechanism" (KEM). The KEM specifies how the label for the first key-encryption-key (KEKL1) is encoded by the EKM and stored on the tape cartridge. The values can be either:

1
Encoded as the specified label.

2
Encoded as a hash of the public key.

KEKL2
Is the label of the second key-encryption-key to be used for encrypting the data to be stored on the tape:

- You cannot specify a KEKL2 without having specified a KEKL1.
- If you specify a KEKL1 but do *not* specify a KEKL2 , z/VSE uses the value of KEKL1 for KEKL2.
- If you do *not* specify a KEKL1 *and* a KEKL2, z/VSE uses the default KEKL1 and KEKL2 that are stored by the EKM (Encryption Key Manager).

KEM2
Required if you entered a value for KEKL2. Specifies the "encoding mechanism" (KEM). The KEM specifies how the label for the second key-encryption-key (KEKL2) is encoded by the EKM and stored on the tape cartridge. The possible values (**1** or **2**) are the same as for KEM1.

If you have specified a KEKL1 and possibly a KEKL2, this job will contain the resulting KEKL statement required to produce encrypted data on the tape. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

The dialog creates a job with the default name VSAMSNAP.

- If you selected the IDCAMS SNAP NOCOPY option in Figure 39 on page 165, VSAMSNAP includes these IDCAMS commands: IDCAMS SNAP, IDCAMS EXPORT/IMPORT, IDCAMS BACKUP, and IDCAMS DDSR.
- If you selected the IDCAMS SNAP COPY option in Figure 39 on page 165, VSAMSNAP includes these IDCAMS commands: IDCAMS SNAP, IDCAMS EXPORT/IMPORT, and IDCAMS BACKUP.

The IDCAMS commands you selected are described in the VSE/VSAM Commands, SC34-2707 and VSE/VSAM User's Guide and Application Programming, SC34-2704.

Before you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.

Backing Up VSE Libraries

Note: If you wish to use virtual tapes, ensure you have read "File Names and Other Considerations When Using Remote Virtual Tapes" on page 144!

The *Backup VSE Library on Tape* dialog backs up VSE libraries from disk to real/virtual tape. If a backup is made to a *real* tape, the data can be encrypted. You can back up either libraries, sublibraries, or members.

To access the dialog, start with the *z/VSE Function Selection* panel and select:

- **5** (Backup/Restore)
- **2** (Backup/Restore Library Objects)
- **1** (Backup VSE Library on Tape)

Operator Fast Path: 521	Synonym Default: Yours:

Specify the library (sublibrary) you want to back up. You can back up several libraries or sublibraries in the same step. Type in the name(s) and press ENTER. The dialog stores the information and redisplays the panel. Specify the next entry.

When you finish, press PF5 to process the information. The dialog continues and displays the next panel.

If there is a need to perform a *stand-alone* backup, use the BACKUP command as described in the z/VSE System Control Statements documentation.

For a single backup task, you can specify several libraries, sublibraries or members. However, you *cannot* mix them. You have to back up either entire libraries, sublibraries, *or* members.

You need the following information:

LIBRARY NAME
The name of the library you want to back up. If you back up a sublibrary, this is the first qualification level.

SUBLIBRARY NAME
The name of the sublibrary you want to back up. If you leave this field blank, the dialog backs up the entire library.

MEMBER NAME/MEMBER TYPE
This identifies the member within the specified sublibrary. The member name and member type may be generic. If you leave this field blank, the entire sublibrary will be backed up.

IDENTIFICATION
This is the ID that identifies the backup when it is restored. The restore process checks for the ID, if you specify it.

TAPE ADDRESS
The VSE address (*cuu*) of a real/virtual tape drive. For a real tape drive, to obtain the corresponding *physical address* you must enter `QUERY IO,CUU=nnn` at the console (where *nnn* is the VSE address).

If you wish to *encrypt* the library (sublibrary or member) to be backed up to a *real* tape, select the address of an *encryption-capable tape drive* (for example, the *cuu* of the IBM 3592-E05 tape drive).

VIRTUAL TAPE
Specify whether a virtual tape is to be used.

1 - YES
2 - NO (the default)

VOLUME SERIAL NUMBER
The six-character volume serial number of the real/virtual tape. The meaning of VOLUME SERIAL NUMBER depends on how the fields LABEL PROCESS and LABEL CHECK are set:

- If LABEL PROCESS and LABEL CHECK are both set to '1', then VOLUME SERIAL NUMBER will be the same as the label record written on the tape by the tape initialization function.
- If LABEL PROCESS is set to '2', then VOLUME SERIAL NUMBER will be used for the name of the tape.

DENSITY/MODE

- For IBM 3480, 3490, 3490E, 3590 and 3592 tape drives, enter the *mode*.
  - If you wish to *encrypt* the library (sublibrary or member) to be backed up to a *real* tape, specify a mode that uses encryption. However, you must have specified an encryption-capable tape drive in field TAPE ADDRESS. For a list of modes that use encryption, enter a **?** and press ENTER.
- For tape drives other than IBM 3480, 3490, 3490E, 3590 and 3592, specify the density.
- **Not used with virtual tapes.**

RETENTION PERIOD
The number of days (**0 - 9999**) that you want to keep the output file, or the output file expiration date in the form **YYYY/DDD** or **YY/DDDD** where **YYYY** or **YY** is the year and **DDD** is the day of the year).

LABEL PROCESS
Specify the type of label processing:

1 - LABELED
2 - UNLABELED TAPES

LABEL CHECK
If you entered **1** for the real/virtual tape label processing, specify whether you want label checking:

1 - YES (Label is checked)
2 - NO (Label is not checked)

If you specified label checking 1 = YES:

TAPE FILE ID
This is an optional name associated with the real/virtual tape file. It protects the file from being overwritten and helps ensure that the correct file is processed.

You should write down the ID that you enter. You need to know it, when the file is processed.

Press ENTER. Now do one of the following:

- If you entered the *cuu* of an encryption-capable tape drive in field TAPE ADDRESS, the *Tape Encryption* panel is displayed. Proceed to "Additional Input for Backup to an Encrypted Real Tape" on page 170.
- If you did **not** enter the *cuu* of an encryption-capable tape drive in field TAPE ADDRESS, the dialog creates a job with the default name VSESAV. On the *Job Disposition* panel, you can submit the job to

batch, file it in your default primary library, or both. Before you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.

- If you wish to back up the library (sublibrary or member) to a *virtual* tape, the dialog creates a job with the default name VSESAV. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Additional Input for Backup to an Encrypted Real Tape

Enter the following additional information in the *Tape Encryption* panel:

TAPE ENCRYPTION
Specify whether tape encryption is required:

1 - TAPE ENCRYPTION

2 - NO TAPE ENCRYPTION. In this case, *the remaining fields in this section are not used*. After pressing ENTER, the dialog creates a job which (on the *Job Disposition* panel) you can submit to batch, file in your default primary library, or both. When you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.

TAPE MODE
The two-character tape mode, which must be supported by the tape drive you are using. If you enter an invalid tape mode, z/VSE displays a list of valid encryption tape modes that can be used with your encryption-capable tape drive. To obtain explanations of these encryption tape modes, press PF1 (Help) and then page forwards (by pressing PF8).

KEKL1
Is the label of the first key-encryption-key to be used for encrypting the data to be stored on the tape. If you do *not* specify a KEKL1, z/VSE uses the default KEKL1 *and* KEKL2 that are stored by the EKM (Encryption Key Manager).

KEM1
Specifies the "encoding mechanism" (KEM). The KEM specifies how the label for the first key-encryption-key (KEKL1) is encoded by the EKM and stored on the tape cartridge. The values can be either:

1
Encoded as the specified label.

2
Encoded as a hash of the public key.

KEKL2
Is the label of the second key-encryption-key to be used for encrypting the data to be stored on the tape:

- You cannot specify a KEKL2 without having specified a KEKL1.
- If you specify a KEKL1 but do *not* specify a KEKL2 , z/VSE uses the value of KEKL1 for KEKL2.
- If you do *not* specify a KEKL1 *and* a KEKL2, z/VSE uses the default KEKL1 and KEKL2 that are stored by the EKM (Encryption Key Manager).

KEM2
Required if you entered a value for KEKL2. Specifies the "encoding mechanism" (KEM). The KEM specifies how the label for the second key-encryption-key (KEKL2) is encoded by the EKM and stored on the tape cartridge. The possible values (**1** or **2**) are the same as for KEM1.

Press ENTER. The dialog creates a job with the default name VSESAV. If you have specified a KEKL1 and possibly a KEKL2, this job will contain the resulting KEKL statement required to produce encrypted data on the tape. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Before you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.

Restoring VSE Libraries

Note: If you wish to use virtual tapes, ensure you have read "File Names and Other Considerations When Using Remote Virtual Tapes" on page 144!

The *Restore VSE Library from Tape* dialog restores VSE libraries from real/virtual tape to disk. You can restore libraries, sublibraries, or members. To access the dialog, start with the *z/VSE Function Selection* panel and select:

- **5** (Backup/Restore)
- **2** (Backup/Restore Library Objects)
- **2** (Restore VSE Library from Tape)

Operator Fast Path: 522	Synonym Default: Yours:

Specify the library (sublibrary or member) you want to restore. You can restore several libraries, sublibraries, or members in the same step. Type in the name(s) and press ENTER. The dialog stores the information and redisplays the panel. Specify the next entry.

When you finish, press PF5 to process the information. The dialog continues and displays the next panel.

For a single restore task, you can specify several libraries, sublibraries, or members. However, you *cannot* mix them. You have to restore either entire libraries, sublibraries, *or* members only.

For information on restoring online SYSRES files, libraries, and sublibraries, refer to the IBM documentation z/VSE Guide to System Functions.

You need the following information:

LIBRARY NAME
The name of the library you want to restore. When restoring a sublibrary or members, this is the first qualification level.

If you enter an asterisk (*), the dialog restores all libraries and sublibraries from the current backup file. In this case, you cannot specify sublibrary or member names. For restoring all libraries and sublibraries from multiple backup files on the backup real/virtual tape, enter an asterisk (*) in the IDENTIFICATION field also.

If you enter 1 (YES) in the OLD FORMAT field, you can *only* enter a library name on the panel. The OLD FORMAT field is described below.

If the library does not exist, it will be created if a label exists for the library.

SUBLIBRARY NAME
The name of the sublibrary you want to restore. If you leave this field blank, the dialog restores the entire library.

When you restore a sublibrary with the same name as an existing sublibrary, the existing sublibrary is overwritten.

If the sublibrary does not exist, it will be created if the library exists.

MEMBER NAME/MEMBER TYPE
This identifies the member you want to restore. It is qualified by the library and sublibrary names. If you leave these fields blank, the dialog restores the entire sublibrary (library).

IDENTIFICATION
This is the *mnemonic ID* that identified the backup file when it was backed up. The restore process checks for the ID, if it was specified.

An asterisk (*) in this field causes the entire backup real/virtual tape to be searched from the current position to the end of the real/virtual tape.

If you enter 1 (YES) in the OLD FORMAT field, you *cannot* enter a value in this field. The OLD FORMAT field is described below.

NEWNAME
Specify whether you want to restore the library and/or sublibrary under a new name.

1 - YES
2 - NO

If you specify 1 (YES), the dialog displays a second panel. Enter the new name for the library (sublibrary). If you only specify a library name on the first panel, you *cannot* enter a new sublibrary name on the second panel.

If you enter 1 (YES) in the OLD FORMAT field, you *cannot* enter 1 (YES) in this field. The OLD FORMAT field is described below.

TIME STAMP
Specify whether you want to keep the original date.

1 - the original date is kept.
2 - the present date is used.

LIST
Specify whether you want a listing of the restored library, sublibrary, or member(s).

1 - YES
2 - NO

OLD FORMAT
For restoring a tape that was created using the BACKUP function (pre-Version 2 VSE/Advanced Functions), you *must* enter **1** (YES). Otherwise, enter **2** (NO).

If you enter 1 (YES), consider the following:

1. You can only enter a library name on the panel. Do *not* enter a sublibrary or member name.
2. You *cannot* specify a value for the IDENTIFICATION field on the panel.
3. You *cannot* enter 1 (YES) for the NEWNAME field. You must enter **2** (NO).
4. You must specify a new library structure. The dialog displays a second panel. You *must* enter a sublibrary name. You cannot change the name of the library.

TAPE ADDRESS
The VSE address (*cuu*) of a real/virtual tape drive. For a real tape drive, to obtain the corresponding *physical address* you must enter `QUERY IO,CUU=`*nnn* at the console (where *nnn* is the VSE address).

VIRTUAL TAPE
Specify whether a virtual tape is to be used.

1 - YES
2 - NO (the default)

VOLUME SERIAL NUMBER
This identifies the real/virtual tape. Specify the same value that was used when the library was backed up. For real tapes, the job has comments and a PAUSE statement requesting that you mount the tape with this ID.

LABEL PROCESS
Specify the type of label processing:

1 - LABELED
2 - UNLABELED TAPES

LABEL CHECK
If you entered **1** for the real/virtual tape label processing, specify whether you want label checking:

1 - YES (Label is checked)
2 - NO (Label is not checked)

If you specified label checking 1 = YES:

TAPE FILE ID
This is an optional name associated with the real/virtual tape file. It protects the file from being overwritten and helps ensure that the correct file is processed.

Press ENTER. The dialog creates a job with the default name VSERES. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

For real tapes, before you submit the job, you should mount the backup tape. Use the *same* tape address you specify in the dialog.

Scanning a VSE Library Backup Tape

Note: If you wish to use virtual tapes, ensure you have read "File Names and Other Considerations When Using Remote Virtual Tapes" on page 144!

The *Scan VSE Library Backup Tape* dialog scans a real/virtual tape containing the backup of a VSE library. It prints information about the contents of the real/virtual tape on the system printer. To access the dialog, start with the *z/VSE Function Selection* panel and select:

- **5** (Backup/Restore)
- **2** (Backup/Restore Library Objects)
- **3** (Scan VSE Library Backup Tape)

Operator Fast Path: 523	Synonym Default: Yours:

Specify the library (sublibrary or member) you want to scan. You can scan several libraries, sublibraries, or members in the same job step. Type in the name(s) and press ENTER. The dialog stores the information and redisplays the panel. Specify the next entry.

When you finish, press PF5 to process the information. The dialog continues and displays the next panel.

For a single scan task, you can specify several libraries, sublibraries, or members. However, you *cannot* mix them. You can scan either entire libraries, sublibraries, *or* members only.

You need the following information:

LIBRARY NAME
The name of the library you want to scan. If you scan a sublibrary or members, this is the first qualification level.

If you enter an asterisk (*), the dialog scans all libraries and sublibraries in the current backup file. In this case, you cannot specify sublibrary or member names. If you want to scan all libraries and sublibraries in multiple backup files on the backup real/virtual tape, then enter an asterisk (*) in the IDENTIFICATION field also.

If you enter 1 (YES) in the OLD FORMAT field, you can *only* enter a library name on the panel. The OLD FORMAT field is described below.

SUBLIBRARY NAME
The name of the sublibrary you want to scan. If you leave this field blank, the dialog scans the entire library.

MEMBER NAME/MEMBER TYPE
This identifies the member you want to scan. It is qualified by the library and sublibrary names. If you leave this field blank, the dialog scans the entire sublibrary (library).

IDENTIFICATION
This is the *mnemonic ID* that identified the backup file when it was backed up. The scan process checks for the ID, if it was specified.

If you enter an asterisk (*) in this field, the entire backup real/virtual tape is searched from the current position to the end of the real/virtual tape.

If you enter 1 (YES) in the OLD FORMAT field, you *cannot* enter a value in this field. The OLD FORMAT field is described below.

OLD FORMAT (not for virtual tapes)
If the **real** tape you scan was created using the BACKUP function (pre-Version 2 VSE/Advanced Functions), you *must* enter **1** (YES). Otherwise, enter **2** (NO).

If you enter 1 (YES), consider the following:

1. You can only enter a library name on the panel. Do *not* enter a sublibrary or member name.
2. You *cannot* specify a value for the IDENTIFICATION field on the panel.

TAPE ADDRESS
The VSE address (*cuu*) of a real/virtual tape drive. For a real tape drive, to obtain the corresponding *physical address* you must enter `QUERY IO,CUU=`*nnn* at the console (where *nnn* is the VSE address).

VIRTUAL TAPE
Specify whether a virtual tape is to be used.

1 - YES
2 - NO (the default)

VOLUME SERIAL NUMBER
This identifies the real/virtual tape. Specify the same value that was used when the library was backed up. For real tapes, the job has comments and a PAUSE statement requesting that you mount the tape with this ID.

LABEL PROCESS
Specify the type of label processing:

1 - LABELED
2 - UNLABELED TAPES

LABEL CHECK
If you entered **1** for the real/virtual tape label processing, specify whether you want label checking:

1 - YES (Label is checked)
2 - NO (Label is not checked)

If you specified label checking 1 = YES:

TAPE FILE ID
This is an optional name associated with the real/virtual tape file. It protects the file from being overwritten and helps ensure that the correct file is processed.

Press ENTER. The dialog creates a job with the default name LIBSCN. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

For real tapes, before you submit the job, you should mount the backup tape you want to scan. Use the *same* tape address you specify in the dialog.

Backing Up VSE/ICCF Libraries

Note: If you wish to use virtual tapes, ensure you have read "File Names and Other Considerations When Using Remote Virtual Tapes" on page 144!

The *Backup ICCF Library on Tape* dialog backs up VSE/ICCF libraries from disk to real/virtual tape. In addition, VSE/ICCF libraries can be backed up to a *real* tape in encrypted format. To access the dialog, start with the *z/VSE Function Selection* panel and select:

- **5** (Backup/Restore)
- **2** (Backup/Restore Library Objects)
- **4** (Backup ICCF Library on Tape)

Operator	Synonym
Fast Path: 524	Default: Yours:

A panel displays three selections:

1. Backup the DTSFILE (all VSE/ICCF libraries)
2. Archive all VSE/ICCF libraries on real/virtual tape
3. Export VSE/ICCF library members to real/virtual tape.

Backing Up the DTSFILE

This task backs up all VSE/ICCF libraries to tape. The job that the dialog creates can only run when VSE/ICCF is *not* active. The job contains a PAUSE statement to let you disconnect the DTSFILE. To perform the disconnect, enter:

```
/DISC DTSFILE
```

Run the job, then connect the DTSFILE again. Enter:

```
/CON DTSFILE
```

You need the following information:

TAPE ADDRESS
The VSE address (*cuu*) of a real/virtual tape drive. For a real tape drive, to obtain the corresponding *physical address* you must enter `QUERY IO,CUU=`*nnn* at the console (where *nnn* is the VSE address).

If you wish to *encrypt* the VSE/ICCF libraries to be backed up to a *real* tape, select the address of an *encryption-capable tape drive* (for example, the *cuu* of the IBM 3592-E05 tape drive).

VIRTUAL TAPE
Specify whether a virtual tape is to be used.

1 - YES
2 - NO (the default)

VOLUME SERIAL NUMBER
The label that is written on the real/virtual tape. It uniquely identifies the real/virtual tape and provides protection. For real tapes, when the job runs it checks the label to make sure you mounted the correct tape.

For real tapes, you should also write the ID on the tape itself so you can easily locate it. The job has comments and a PAUSE statement requesting that you mount the tape with this ID. You should also write down the ID you use. You need to know it, when you restore the real tape.

DENSITY/MODE

- For IBM 3480, 3490, 3490E, 3590 and 3592 tape drives, enter the *mode*.
  - If you wish to *encrypt* the VSE/ICCF libraries to be backed up to a *real* tape, specify a mode that uses encryption. However, you must have specified an encryption-capable tape drive in field TAPE ADDRESS. For a list of modes that use encryption, enter a **?** and press ENTER.
- For tape drives other than IBM 3480, 3490, 3490E, 3590 and 3592, specify the density.
- **Not used with virtual tapes.**

RETENTION PERIOD
The number of days (**0 - 9999**) that you want to keep the output file, or the output file expiration date in the form **YYYY/DDD** or **YY/DDDD** where **YYYY** or **YY** is the year and **DDD** is the day of the year).

LABEL PROCESS
Specify the type of label processing:

1 - LABELED

2 - UNLABELED TAPES

LABEL CHECK
If you entered **1** for the real/virtual tape label processing, specify whether you want label checking:

1 - YES (Label is checked)
2 - NO (Label is not checked)

If you specified label checking 1 = YES:

TAPE FILE ID
This is an optional name associated with the real/virtual tape file. It protects the file from being overwritten and helps ensure that the correct file is processed.

You should write down the ID that you enter. You need to know it, when the file is processed.

Press ENTER. Now do one of the following:

- If you entered the *cuu* of an encryption-capable tape drive in field TAPE ADDRESS, the *Tape Encryption* panel is displayed. Proceed to "Additional Input for Backup/Archive/Export to an Encrypted Real Tape" on page 179.
- If you did **not** enter the *cuu* of an encryption-capable tape drive in field TAPE ADDRESS, the dialog creates a job with the default name ICFSAV. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both. Before you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.
- If you wish to back up the VSE/ICCF libraries to a *virtual* tape, the dialog creates a job with the default name ICFSAV. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Archiving All VSE/ICCF Libraries

Note: The input tape and the output tape described in this topic can be a *physical tape* or a *virtual tape*. If you wish to use a *virtual tape*, ensure you have read "File Names and Other Considerations When Using Remote Virtual Tapes" on page 144!

This task is a different form of a backup task. It backs up on a new tape:

1. the entire current VSE/ICCF library, *plus*
2. members from a previous backup tape.

Members from the previous backup tape are included in the new backup tape *providing* they are not in the current VSE/ICCF library.

By using this dialog, you can keep copies of inactive VSE/ICCF members on a backup tape, when you do not need them online. This can help save library space. You can restore members from the tape using the *Restore ICCF Library from Tape* dialog.

You need *two* tape drives for this task:

- One tape drive for the input tape.
- One tape drive for the output tape.

where:

- The input tape is the tape that contains the *previous* backup.
- The output tape is the *new backup tape* which the dialog creates.

The dialog displays two panels for you to enter information about the tapes. On the *Define Input Tape* panel, enter the values for the input tape. On the *Define Output Tape* panel, specify the values for the output tape.

The job can only run when VSE/ICCF is *not* active. The job contains a PAUSE statement to let you disconnect the DTSFILE. To perform the disconnect, enter:

```
/DISC DTSFILE
```

Run the job, then connect the DTSFILE again. Enter:

```
/CON DTSFILE
```

You need the following information:

TAPE ADDRESS
The VSE address (*cuu*) of a real/virtual tape drive for the input or output. For a real tape drive, to obtain the corresponding *physical address* you must enter `QUERY IO,CUU=`*nnn* at the console (where *nnn* is the VSE address).

If you wish to *encrypt* the VSE/ICCF libraries to be archived to a *real* tape, select the address of an *encryption-capable tape drive* (for example, the *cuu* of the IBM 3592-E05 tape drive).

VIRTUAL TAPE
Specify whether a virtual tape is to be used.

1 - YES
2 - NO (the default)

VOLUME SERIAL NUMBER
Enter the tape label for both the input and output real/virtual tapes.

For the input real/virtual tape, this is the label that was written when the real/virtual tape was backed up.

For the output real/virtual tape, this specifies the label that is written on the new backup real/virtual tape. It uniquely identifies the real/virtual tape and provides protection. For real tapes, it is recommended that you write the ID on the tape itself so you can easily locate it. You should also write down the ID you use. You need to know it, when you restore the real tape.

For real tapes, the job has comments and a PAUSE statement requesting that you mount the real tapes with these IDs. It checks both labels to make sure you mounted the correct tapes.

DENSITY/MODE

- For IBM 3480, 3490, 3490E, 3590 and 3592 tape drives, enter the *mode*.
  - If you wish to *encrypt* the VSE/ICCF libraries to be archived to a real tape, specify a mode that uses encryption. However, you must have specified an encryption-capable tape drive in field TAPE ADDRESS. For a list of modes that use encryption, enter a **?** and press ENTER.
- For tape drives other than IBM 3480, 3490, 3490E, 3590 and 3592, specify the density.
- **Not used with virtual tapes.**

TAPE FILE ID
This is an optional name associated with the real/virtual tape file.

For the input real/virtual tape, enter the name that was used when the real/virtual tape was backed up, if one was specified.

For the output real/virtual tape, you can specify an ID. It protects the file from being overwritten and helps ensure that the correct file is processed. It is recommended that you write down the ID that you enter. You need to know it, when the file is processed.

Press ENTER. Now do one of the following:

- If you entered the *cuu* of an encryption-capable tape drive in field TAPE ADDRESS, the *Tape Encryption* panel is displayed. Proceed to "Additional Input for Backup/Archive/Export to an Encrypted Real Tape" on page 179.

- If you did **not** enter the *cuu* of an encryption-capable tape drive in field TAPE ADDRESS, the dialog creates a job with the default name ICFSAV. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both. Before you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.
- If you wish to archive the VSE/ICCF libraries to a *virtual* tape, the dialog creates a job with the default name ICFSAV. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Exporting VSE/ICCF Library Members

Note: If you wish to use virtual tapes, ensure you have read "File Names and Other Considerations When Using Remote Virtual Tapes" on page 144!

This task backs up VSE/ICCF library members on real/virtual tape so you can *import* them into another system.

It writes control statements on the real/virtual tape which identify the members and the VSE/ICCF library in which they reside. You can only use one real/virtual tape for this task.

The output data includes the library number, member names, member data, and user IDs of the member owners. Because this information is available on the real/virtual tape, you do not have to specify it when you import the members. However, the user IDs of the owners of the exported VSE/ICCF members must *also* be defined to the importing z/VSE system. Additionally, when you import member(s) on another system, you could have problems when imported and existing library members have the same name. One way to avoid members being overwritten is to use a specific library in each system to temporarily store all members that are being moved from one system to another.

On the first panel, enter the following information:

TAPE ADDRESS
The VSE address (*cuu*) of a real/virtual tape drive. For a real tape drive, to obtain the corresponding *physical address* you must enter `QUERY IO,CUU=`*nnn* at the console (where *nnn* is the VSE address).

If you wish to *encrypt* the VSE/ICCF library members to be exported to a *real* tape, select the address of an *encryption-capable tape drive* (for example, the *cuu* of the IBM 3592-E05 tape drive).

VIRTUAL TAPE
Specify whether a virtual tape is to be used.

1 - YES
2 - NO (the default)

VOLUME SERIAL NUMBER
Specify an identifier for the real/virtual tape that is processed. This value is *not* related to the tape label. A tape label is *not* used for this task.

For real tapes, it is recommended that you write the ID on the outside of the tape. This helps the operator locate the correct tape. The job has comments and a PAUSE statement requesting that you mount the real tape with this ID.

For real tapes, you should also write down the name you use. You need to know it when you import the members into another system.

DENSITY/MODE

- For IBM 3480, 3490, 3490E, 3590 and 3592 tape drives, enter the *mode*.
  - If you wish to *encrypt* the VSE/ICCF library members to be exported to a real tape, specify a mode that uses encryption. However, you must have specified an encryption-capable tape drive in field TAPE ADDRESS. For a list of modes that use encryption, enter a **?** and press ENTER.
- For tape drives other than IBM 3480, 3490, 3490E, 3590 and 3592, specify the density.
- **Not used with virtual tapes.**

On the second panel, specify the VSE/ICCF library and the names of up to ten members you want to export. Enter your data and press ENTER. The dialog redisplays the panel. You can specify additional member names in the same library or in a different library.

When you finish, leave the fields for the member names *blank* and press ENTER. The dialog then continues.

You need the following information:

LIBRARY NUMBER
The number of the library where the members are stored.

MEMBER NAME
There are ten fields at the bottom of the panel. Enter up to ten names of the members you want to export.

Press ENTER. Now do one of the following:

- If you entered the *cuu* of an encryption-capable tape drive in field TAPE ADDRESS, the *Tape Encryption* panel is displayed. Proceed to "Additional Input for Backup/Archive/Export to an Encrypted Real Tape" on page 179.
- If you did **not** enter the *cuu* of an encryption-capable tape drive in field TAPE ADDRESS, the dialog creates a job with the default name ICFSAV. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both. Before you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.
- If you wish to export the VSE/ICCF library members to a *virtual* tape, the dialog creates a job with the default name ICFSAV. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Additional Input for Backup/Archive/Export to an Encrypted Real Tape

Enter the following additional information in the *Tape Encryption* panel:

TAPE ENCRYPTION
Specify whether tape encryption is required:

1 - TAPE ENCRYPTION

2 - NO TAPE ENCRYPTION. In this case, *the remaining fields in this section are not used*. After pressing ENTER, the dialog creates a job which (on the *Job Disposition* panel) you can submit to batch, file in your default primary library, or both. When you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.

TAPE MODE
The two-character tape mode, which must be supported by the tape drive you are using. If you enter an invalid tape mode, z/VSE displays a list of valid encryption tape modes that can be used with your encryption-capable tape drive. To obtain explanations of these encryption tape modes, press PF1 (Help) and then page forwards (by pressing PF8).

KEKL1
Is the label of the first key-encryption-key to be used for encrypting the data to be stored on the tape. If you do *not* specify a KEKL1, z/VSE uses the default KEKL1 *and* KEKL2 that are stored by the EKM (Encryption Key Manager).

KEM1
Specifies the "encoding mechanism" (KEM). The KEM specifies how the label for the first key-encryption-key (KEKL1) is encoded by the EKM and stored on the tape cartridge. The values can be either:

1
Encoded as the specified label.

2
Encoded as a hash of the public key.

KEKL2
Is the label of the second key-encryption-key to be used for encrypting the data to be stored on the tape:

- You cannot specify a KEKL2 without having specified a KEKL1.
- If you specify a KEKL1 but do *not* specify a KEKL2 , z/VSE uses the value of KEKL1 for KEKL2.
- If you do *not* specify a KEKL1 *and* a KEKL2, z/VSE uses the default KEKL1 and KEKL2 that are stored by the EKM (Encryption Key Manager).

KEM2
Required if you entered a value for KEKL2. Specifies the "encoding mechanism" (KEM). The KEM specifies how the label for the second key-encryption-key (KEKL2) is encoded by the EKM and stored on the tape cartridge. The possible values (**1** or **2**) are the same as for KEM1.

Press ENTER. The dialog creates a job with the default name ICFSAV. If you have specified a KEKL1 and possibly a KEKL2, this job will contain the resulting KEKL statement required to produce encrypted data on the tape. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Before you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.

Restoring VSE/ICCF Libraries

Note: If you wish to use virtual tapes, ensure you have read "File Names and Other Considerations When Using Remote Virtual Tapes" on page 144!

The *Restore ICCF Library from Tape* dialog restores VSE/ICCF libraries from real/virtual tape to disk. To access the dialog, start with the *z/VSE Function Selection* panel and select:

- **5** (Backup/Restore)
- **2** (Backup/Restore Library Objects)
- **5** (Restore ICCF Library from Tape)

Operator Fast Path: 525	Synonym Default: Yours:

A panel displays four selections:

1. Restore the DTSFILE (all VSE/ICCF Libraries)
2. Restore one VSE/ICCF Library
3. Restore a Member of a VSE/ICCF Library
4. Import VSE/ICCF Library Member.

Restoring the DTSFILE (All VSE/ICCF Libraries)

This task restores all VSE/ICCF libraries from a backup tape (the DTSFILE). The job that the dialog creates can only run when VSE/ICCF is *not* active. The job contains a PAUSE statement to let you disconnect the DTSFILE. To perform the disconnect, enter:

```
/DISC DTSFILE
```

Run the job, then connect the DTSFILE again. Enter:

```
/CON DTSFILE
```

You need the following information:

TAPE ADDRESS
The VSE address (*cuu*) of a real/virtual tape drive. For a real tape drive, to obtain the corresponding *physical address* you must enter `QUERY IO,CUU=nnn` at the console (where *nnn* is the VSE address).

VIRTUAL TAPE
Specify whether a virtual tape is to be used.

1 - YES
2 - NO (the default)

VOLUME SERIAL NUMBER
The label that was written when the real/virtual tape was backed up. For real tapes, the job has comments and a PAUSE statement requesting that you mount the tape with this ID. It checks the label to make sure you mounted the correct tape.

LABEL PROCESS
Specify the type of label processing:

1 - LABELED
2 - UNLABELED TAPES

LABEL CHECK
If you entered **1** for the tape label processing, specify whether you want label checking:

1 - YES (Label is checked)
2 - NO (Label is not checked)

If you specified label checking 1 = YES:

TAPE FILE ID
This is an optional name associated with the real/virtual tape file. Enter the name that was used when the tape was backed up, if one was specified.

Press ENTER. The dialog creates a job with the default name ICFRES. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

When you submit the job, mount the backup tape. Use the *same* tape address you specify in the dialog.

Restoring One VSE/ICCF Library

This task restores an entire VSE/ICCF library from a backup real/virtual tape. The dialog creates a job that can only run when VSE/ICCF is *not* active. The job contains a PAUSE statement to let you disconnect the DTSFILE. To perform the disconnect, enter:

```
/DISC DTSFILE
```

Run the job, then connect the DTSFILE again. Enter:

```
/CON DTSFILE
```

If the tape you restore was created using the *Archive* function, it contains both active and inactive copies of library members.

Inactive copies are members that were *not* resident in the VSE/ICCF library when the archiving was done. They were copied from the previous backup tape. Active copies are members that *were* resident in the VSE/ICCF library when the archiving was done. They were copied directly from the VSE/ICCF library.

This task restores the active VSE/ICCF members *only*.

You need the following information:

TAPE ADDRESS
The VSE address (*cuu*) of a real/virtual tape drive. For a real tape drive, to obtain the corresponding *physical address* you must enter `QUERY IO,CUU=nnn` at the console (where *nnn* is the VSE address).

VIRTUAL TAPE
Specify whether a virtual tape is to be used.

1 - YES
2 - NO (the default)

VOLUME SERIAL NUMBER
The label that was written when the real/virtual tape was backed up. For real tapes, the job has comments and a PAUSE statement requesting that you mount the tape with this ID. It checks the label to make sure you mounted the correct tape.

LABEL PROCESS
Specify the type of label processing:

1 - LABELED
2 - UNLABELED TAPES

LABEL CHECK
If you entered **1** for the tape label processing, specify whether you want label checking:

1 - YES (Label is checked)
2 - NO (Label is not checked)

If you specified label checking 1 = YES:

TAPE FILE ID
This is an optional name associated with the real/virtual tape file. Enter the name that was used when the tape was backed up, if one was specified.

LIBRARY ON TAPE
Enter the number of the library you want restored from the tape.

RECEIVING LIBRARY
Enter the number of the library into which the data is to be restored. If you leave this field blank, the dialog restores the data into the library specified in the LIBRARY ON TAPE field.

Press ENTER. The dialog creates a job with the default name ICFRES. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

When you submit the job, mount the backup tape. Use the *same* tape address you specify in the dialog.

Restoring a VSE/ICCF Library Member

This task restores a VSE/ICCF member from a backup real/virtual tape. The dialog creates a job that can only run when VSE/ICCF is *not* active. It contains a PAUSE statement to let you disconnect the DTSFILE. To perform the disconnect, enter:

```
/DISC DTSFILE
```

Run the job, then connect the DTSFILE again. Enter:

```
/CON DTSFILE
```

You need the following information:

TAPE ADDRESS
The VSE address (*cuu*) of a real/virtual tape drive. For a real tape drive, to obtain the corresponding *physical address* you must enter `QUERY IO,CUU=`*nnn* at the console (where *nnn* is the VSE address).

VOLUME SERIAL NUMBER
The label that was written when the real/virtual tape was backed up. For real tapes, the job has comments and a PAUSE statement requesting that you mount the tape with this ID. It checks the label to make sure you mounted the correct tape.

LABEL PROCESS
Specify the type of label processing:

1 - LABELED
2 - UNLABELED TAPES

LABEL CHECK
If you entered **1** for the tape label processing, specify whether you want label checking:

1 - YES (Label is checked)
2 - NO (Label is not checked)

If you specified label checking 1 = YES:

TAPE FILE ID
This is an optional name associated with the real/virtual tape file. Enter the name that was used when the tape was backed up, if one was specified.

MEMBER NAME
Enter the name of the member you want restored from the tape.

RECEIVING LIBRARY
Enter the number of the library into which the member is to be restored.

If you leave this field blank, the dialog restores the member into the library it was in when it was backed up. If the library does *not* exist anymore, you *must* specify the receiving library.

Press ENTER. The dialog creates a job with the default name ICFRES. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

When you submit the job, mount the backup tape. Use the *same* tape address you specify in the dialog.

Importing VSE/ICCF Library Members

This task imports (loads) VSE/ICCF library members that were written on real/virtual tape using the *Export* function. You can load the members into one or more VSE/ICCF libraries.

The export real/virtual tape includes library numbers, member names, member data, and the user IDs of the member owners.

Note: If the user IDs of the exported member owners are not defined to the importing z/VSE system, then these members cannot be imported.

The dialog loads the exported library members with the same names they had in the original system. You should make sure that any existing VSE/ICCF members are not overwritten. One way to avoid problems is to use a specific library in the system to temporarily store all members that are being moved from one system to another. You need the following information:

TAPE ADDRESS
The VSE address (*cuu*) of a real/virtual tape drive. For a real tape drive, to obtain the corresponding *physical address* you must enter `QUERY IO,CUU=`*nnn* at the console (where *nnn* is the VSE address).

VIRTUAL TAPE
Specify whether a virtual tape is to be used.

1 - YES
2 - NO (the default)

TAPE VOLUME ID
Specify the identifier that was used when the real/virtual tape was exported. This identifier serves to recognize the real/virtual tape that is processed. This value is *not* related to the tape label. A tape label is *not* used for this task.

The volume serial number helps the operator locate the correct real/virtual tape. For real tapes, the job has comments and a PAUSE statement requesting that you mount the tape with this ID.

Press ENTER. The dialog creates a job with the default name ICFRES. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

When you submit the job, mount the tape. Use the *same* tape address you specify in the dialog.

Backing Up or Restoring the System History File

The Interactive Interface has two dialogs to back up or restore the system history file:

- *Backup History File*
- *Restore History File*

Backing Up the History File

Note: If you wish to use virtual tapes, ensure you have read "File Names and Other Considerations When Using Remote Virtual Tapes" on page 144!

To access the *Backup History File* dialog, start with the *z/VSE Function Selection* panel and select:

- **5** (Backup/Restore)
- **3** (Backup History File)

Operator Fast Path: 53	Synonym Default: Yours:

To back up the system history file you need the following information:

TAPE ADDRESS
The VSE address (*cuu*) of a real/virtual tape drive. For a real tape drive, to obtain the corresponding *physical address* you must enter `QUERY IO,CUU=`*nnn* at the console (where *nnn* is the VSE address).

If you wish to *encrypt* the system history file to be backed up to a *real* tape, select the address of an *encryption-capable tape drive* (for example, the *cuu* of the IBM 3592-E05 tape drive).

VIRTUAL TAPE
Specify whether a virtual tape is to be used.

1 - YES
2 - NO (the default)

VOLUME SERIAL NUMBER
The six-character volume serial number of the real/virtual tape. The meaning of VOLUME SERIAL NUMBER depends on how the fields LABEL PROCESS and LABEL CHECK are set:

- If LABEL PROCESS and LABEL CHECK are both set to '1', then VOLUME SERIAL NUMBER will be the same as the label record written on the tape by the tape initialization function.
- If LABEL PROCESS is set to '2', then VOLUME SERIAL NUMBER will be used for the name of the tape.

DENSITY/MODE

- For IBM 3480, 3490, 3490E, 3590 and 3592 tape drives, enter the *mode*.
  - If you wish to *encrypt* the system history file to be backed up to a *real* tape, specify a mode that uses encryption. However, you must have specified an encryption-capable tape drive in field TAPE ADDRESS. For a list of modes that use encryption, enter a **?** and press ENTER.
- For tape drives other than IBM 3480, 3490, 3490E, 3590 and 3592, specify the density.
- **Not used with virtual tapes.**

RETENTION PERIOD
The number of days (**0 - 9999**) that you want to keep the output file, or the output file expiration date in the form **YYYY/DDD** or **YY/DDDD** where **YYYY** or **YY** is the year and **DDD** is the day of the year).

LABEL PROCESS
Specify the type of label processing:

1 - LABELED
2 - UNLABELED TAPES

LABEL CHECK
If you entered **1** for the tape label processing, specify whether you want label checking:

1 - YES (Label is checked)
2 - NO (Label is not checked)

If you specified label checking 1 = YES:

TAPE FILE ID
This is an optional name associated with the real/virtual tape file. Enter the name that was used when the tape was backed up, if one was specified.

Press ENTER. Now do one of the following:

- If you entered the *cuu* of an encryption-capable tape drive in field TAPE ADDRESS, the *Tape Encryption* panel is displayed. Proceed to "Additional Input for Backing Up to an Encrypted Real Tape" on page 185.
- If you did **not** enter the *cuu* of an encryption-capable tape drive in field TAPE ADDRESS, the dialog creates a job with the default name BACKUP. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both. Before you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.
- If you wish to back up the system history file to a *virtual* tape, the dialog creates a job with the default name BACKUP. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Additional Input for Backing Up to an Encrypted Real Tape

Enter the following additional information in the *Tape Encryption* panel:

TAPE ENCRYPTION
Specify whether tape encryption is required:

1 - TAPE ENCRYPTION
2 - NO TAPE ENCRYPTION. In this case, *the remaining fields in this section are not used*. After pressing ENTER, the dialog creates a job which (on the *Job Disposition* panel) you can submit to batch, file in your default primary library, or both. When you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.

TAPE MODE
The two-character tape mode, which must be supported by the tape drive you are using. If you enter an invalid tape mode, z/VSE displays a list of valid encryption tape modes that can be used with your encryption-capable tape drive. To obtain explanations of these encryption tape modes, press PF1 (Help) and then page forwards (by pressing PF8).

KEKL1
Is the label of the first key-encryption-key to be used for encrypting the data to be stored on the tape. If you do *not* specify a KEKL1, z/VSE uses the default KEKL1 *and* KEKL2 that are stored by the EKM (Encryption Key Manager).

KEM1
Specifies the "encoding mechanism" (KEM). The KEM specifies how the label for the first key-encryption-key (KEKL1) is encoded by the EKM and stored on the tape cartridge. The values can be either:

1
Encoded as the specified label.

2
Encoded as a hash of the public key.

KEKL2
Is the label of the second key-encryption-key to be used for encrypting the data to be stored on the tape:

- You cannot specify a KEKL2 without having specified a KEKL1.

- If you specify a KEKL1 but do *not* specify a KEKL2 , z/VSE uses the value of KEKL1 for KEKL2.
- If you do *not* specify a KEKL1 *and* a KEKL2, z/VSE uses the default KEKL1 and KEKL2 that are stored by the EKM (Encryption Key Manager).

KEM2
Required if you entered a value for KEKL2. Specifies the "encoding mechanism" (KEM). The KEM specifies how the label for the second key-encryption-key (KEKL2) is encoded by the EKM and stored on the tape cartridge. The possible values (**1** or **2**) are the same as for KEM1.

Press ENTER. The dialog creates a job with the default name BACKUP. If you have specified a KEKL1 and possibly a KEKL2, this job will contain the resulting KEKL statement required to produce encrypted data on the tape. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Before you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.

Restoring the History File

Note: If you wish to use virtual tapes, ensure you have read "File Names and Other Considerations When Using Remote Virtual Tapes" on page 144!

To access the *Restore History File* dialog, start with the *z/VSE Function Selection* panel and select:

5 (Backup/Restore)
4 (Restore History File)

Operator Fast Path: 54	Synonym Default: Yours:

To restore the system history file you need the following information:

TAPE ADDRESS
The VSE address (*cuu*) of a real/virtual tape drive. For a real tape drive, to obtain the corresponding *physical address* you must enter `QUERY IO,CUU=`*nnn* at the console (where *nnn* is the VSE address).

VIRTUAL TAPE
Specify whether a virtual tape is to be used.

- **1** - YES
- **2** - NO (the default)

TAPE FILE ID
This is an optional name associated with the real/virtual tape file. Enter the name that was used when the tape was backed up, if one was specified.

The backup dialog creates a job with the default name BACKUP. The restore dialog creates a job with the default name RESTORE.

On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

When you submit the job, mount the appropriate tape (backup or restore tape). Use the *same* tape address you specify in the dialog.

Backing Up a Volume or File

The *Backup a Volume or File* dialog backs up:

- An entire volume
- Part of a volume
- An individual file

To access the dialog, start with the *z/VSE Function Selection* panel and select:

- **5** (Backup/Restore)
- **5** (Backup a Volume or File)

Operator	Synonym
Fast Path: 55	Default: Yours:

A panel displays two selections:

1. Backup a volume

   This creates a Fast Copy job which backs up an entire volume or part of a volume. For VSE/VSAM integrity purposes, you can only process all VSE/VSAM files or no VSE/VSAM files.

2. Backup a file

   This creates a Fast Copy job which backs up a single file.

Input for Backing Up a Volume or File

Note: If you wish to use virtual tapes, ensure you have read "File Names and Other Considerations When Using Remote Virtual Tapes" on page 144!

For both cases: backing up volume or file, you supply the following information:

INPUT VOLUME SERIAL (of disk)
If a volume serial number is entered which is unknown to the system or not available, you are asked for the DEVICE TYPE of the disk.

VIRTUAL TAPE
Specify whether a virtual tape is to be used.

1 - YES
2 - NO (the default)

LIST
Specify whether you want the dialog to print extent information on the system printer.

1 - YES
2 - NO

CHECK

1 - disk checking
2 - no disk checking

NOPROMPT

1 - to suppress notification for data secured files on system console
2 - to get notification for data secured files on system console

TAPE ADDRESS (*cuu*)
The VSE address (*cuu*) of a real/virtual tape drive. For a real tape drive, to obtain the corresponding *physical address* you must enter `QUERY IO,CUU=`*nnn* at the console (where *nnn* is the VSE address).

If you wish to *encrypt* the volume or file to be backed up to a *real* tape, select the address of an *encryption-capable tape drive* (for example, the *cuu* of the IBM 3592-E05 tape drive).

ALTERNATE TAPE (*cuu*)
You can use an alternate *real* tape drive if the backup needs more than one real tape. **Note:** If you attempt to use a *virtual* tape drive, the alternate tape address will be ignored!

VOLUME SERIAL NUMBER
The six-character volume serial number of the backup real/virtual tape. The meaning of VOLUME SERIAL NUMBER depends on how the fields LABEL PROCESS and LABEL CHECK are set:

- If LABEL PROCESS and LABEL CHECK are both set to '1', then VOLUME SERIAL NUMBER will be the same as the label record written on the tape by the tape initialization function.
- If LABEL PROCESS is set to '2', then VOLUME SERIAL NUMBER will be used for the name of the tape.

DENSITY/MODE

- For IBM 3480, 3490, 3490E, 3590 and 3592 tape drives, enter the *mode*.
  - If you wish to *encrypt* the volume or file to be backed up to a *real* tape, specify a mode that uses encryption. However, you must have specified an encryption-capable tape drive in field TAPE ADDRESS. For a list of modes that use encryption, enter a **?** and press ENTER.
- For tape drives other than IBM 3480, 3490, 3490E, 3590 and 3592, specify the density.
- **Not used with virtual tapes.**

RETENTION PERIOD
The number of days (**0 - 9999**) that you want to keep the output file, or the output file expiration date in the form **YYYY/DDD** or **YY/DDDD** where **YYYY** or **YY** is the year and **DDD** is the day of the year).

OPTIMIZE
OPTIMIZE is only valid for dump functions and it influences the amount of data taken to the target tape. It has a value of 1,2,3, or 4, where the default value is 1. See the z/VSE System Utilities documentation for more details on the uses of OPTIMIZE.

LABEL PROCESS
Specify the type of label processing:

1 - LABELED
2 - UNLABELED TAPES

LABEL CHECK
If you entered **1** for the tape label processing, specify whether you want label checking:

1 - YES (Label is checked)
2 - NO (Label is not checked)

TAPE FILE ID
This is an optional name associated with the real/virtual tape file. It protects the file from being overwritten and helps ensure that the correct file is processed.

You should write down the ID that you enter. You need to know it when the file is processed.

Additional Input for Backing Up a Volume

If you back up a volume, you also need the following information. For the three fields described below, enter one of the following:

1 - YES
2 - NO

NOVSAM
Specify whether you want to exclude all VSE/VSAM files from the backup.

EXCLUDE
Specify whether you want to exclude some non-VSAM files from the backup.

If you specify 1 (YES), enter the file IDs of the disk files you want to exclude.

NOEXPIRED
Specify whether you want to exclude all expired files from the backup.

Press ENTER. Now do one of the following:

- If you entered the *cuu* of an encryption-capable tape drive in field TAPE ADDRESS, the *Tape Encryption* panel is displayed. Proceed to “Additional Input for Backing Up to an Encrypted Real Tape” on page 189.

- If you did **not** enter the *cuu* of an encryption-capable tape drive in field TAPE ADDRESS, the dialog creates a job with the default name DUMP. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both. Before you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.
- If you wish to back up the volume to a *virtual* tape, the dialog creates a job with the default name DUMP. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Additional Input for Backing Up a File

If you back up a file, the dialog also needs the disk file ID.

Press ENTER. Now do one of the following:

- If you entered the *cuu* of an encryption-capable tape drive in field TAPE ADDRESS, the *Tape Encryption* panel is displayed. Proceed to "Additional Input for Backing Up to an Encrypted Real Tape" on page 189.
- If you did **not** enter the *cuu* of an encryption-capable tape drive in field TAPE ADDRESS, the dialog creates a job with the default name DUMP. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both. Before you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.
- If you wish to back up the file to a *virtual* tape, the dialog creates a job with the default name DUMP. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Additional Input for Backing Up to an Encrypted Real Tape

Enter the following additional information in the *Tape Encryption* panel:

TAPE ENCRYPTION
Specify whether tape encryption is required:

1 - TAPE ENCRYPTION

2 - NO TAPE ENCRYPTION. In this case, *the remaining fields in this section are not used*. After pressing ENTER, the dialog creates a job which (on the *Job Disposition* panel) you can submit to batch, file in your default primary library, or both. When you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.

TAPE MODE
The two-character tape mode, which must be supported by the tape drive you are using. If you enter an invalid tape mode, z/VSE displays a list of valid encryption tape modes that can be used with your encryption-capable tape drive. To obtain explanations of these encryption tape modes, press PF1 (Help) and then page forwards (by pressing PF8).

KEKL1
Is the label of the first key-encryption-key to be used for encrypting the data to be stored on the tape. If you do *not* specify a KEKL1, z/VSE uses the default KEKL1 *and* KEKL2 that are stored by the EKM (Encryption Key Manager).

KEM1
Specifies the "encoding mechanism" (KEM). The KEM specifies how the label for the first key-encryption-key (KEKL1) is encoded by the EKM and stored on the tape cartridge. The values can be either:

1
Encoded as the specified label.

2
Encoded as a hash of the public key.

KEKL2
Is the label of the second key-encryption-key to be used for encrypting the data to be stored on the tape:

- You cannot specify a KEKL2 without having specified a KEKL1.

- If you specify a KEKL1 but do *not* specify a KEKL2 , z/VSE uses the value of KEKL1 for KEKL2.
- If you do *not* specify a KEKL1 *and* a KEKL2, z/VSE uses the default KEKL1 and KEKL2 that are stored by the EKM (Encryption Key Manager).

KEM2
Required if you entered a value for KEKL2. Specifies the "encoding mechanism" (KEM). The KEM specifies how the label for the second key-encryption-key (KEKL2) is encoded by the EKM and stored on the tape cartridge. The possible values (**1** or **2**) are the same as for KEM1.

Press ENTER. The dialog creates a job with the default name DUMP. If you have specified a KEKL1 and possibly a KEKL2, this job will contain the resulting KEKL statement required to produce encrypted data on the tape. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Before you submit the job, you should mount the tape. Use the *same* tape address you specify in the dialog.

Restoring a Volume or File

The *Restore a Volume or File* dialog restores:

- An entire volume
- Part of a volume
- An individual file.

To access the dialog, start with the *z/VSE Function Selection* panel and select:

- **5** (Backup/Restore)
- **6** (Restore a Volume or File)

Operator Fast Path: 56	Synonym Default: Yours:

A panel displays two selections:

1. Restore a Volume

   This creates a Fast Copy job that restores an entire volume or part of a volume. For VSE/VSAM integrity purposes, you can only process all VSE/VSAM files or no VSE/VSAM files.

2. Restore a File

   This creates a Fast Copy job that restores a single file. You can:

   - Restore the file to the same extents it had when it was backed up
   - Relocate the file on the disk.

Input for Restoring a Volume or File

Note: If you wish to use virtual tapes, ensure you have read “File Names and Other Considerations When Using Remote Virtual Tapes” on page 144!

For both cases: restoring volume or file, you need the following information:

OUTPUT VOLUME SERIAL
This is the volume serial number of the output disk that will receive the restored data.

If a volume serial number is entered which is unknown to the system or not available, you are asked for the DEVICE TYPE of the disk.

LIST
Specify whether you want the dialog to print extent information on the system printer.

1 - YES

2 - NO

CHECK

1 - disk checking
2 - no disk checking

NOVERIFY

1 - to suppress verification of disk output
2 - to get verification of disk output

TAPE ADDRESS (*cuu*)
The VSE address (*cuu*) of a real/virtual tape drive. For a real tape drive, to obtain the corresponding *physical address* you must enter `QUERY IO,CUU=`*nnn* at the console (where *nnn* is the VSE address).

VIRTUAL TAPE
Specify whether a virtual tape is to be used.

1 - YES
2 - NO (the default)

ALTERNATE TAPE (*cuu*)
You can use an alternate *real* tape drive if the restore needs more than one real tape. **Note:** If you attempt to use a *virtual* tape drive, the alternate tape address will be ignored!

VOLUME SERIAL NUMBER
The six-character volume serial number of the backup real/virtual tape.

LABEL PROCESS
Specify the type of label processing:

1 - LABELED
2 - UNLABELED TAPES

LABEL CHECK
If you entered **1** for the tape label processing, specify whether you want label checking:

1 - YES (Label is checked)
2 - NO (Label is not checked)

TAPE FILE ID
This is an optional name associated with the real/virtual tape file. It protects the file from being overwritten and helps ensure that the correct file is processed.

Additional Input for Restoring a Volume

When restoring a volume, you may enter the following information:

NEW VOLUME SERIAL NUMBER
This specifies the new volume serial number of the output disk. If you leave this field blank, the volume serial number of the original source disk will be written onto the output disk.

In case you entered a volume serial number which is unknown to the system or not available, you are asked for the DEVICE TYPE of the disk.

Press ENTER. The dialog creates a job with the default name DUMPREST. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

When you submit the job, mount the restore tape. Use the *same* tape address you specify in the dialog.

Additional Input for Restoring a File

If you restore a file, you also need the following information:

DISK FILE ID
The file ID of the disk file you are restoring.

RELOCATE
Specify whether you want to relocate the file on the disk.

1 - YES
2 - NO

If you specify 1 (YES), you need the following information about the *relocated* disk file.

RELOCATED DISK FILE ID
The file ID for the relocated disk file.

SEQUENTIAL ACCESS
Specify either sequential or direct access.

DATE
Enter the retention period of **1 - 4** digits or the Julian date in the form **YY/DDD**, where **YY** is the year and **DDD** is the day of the year.

START
Specify the starting block or track for the file.

FILE LENGTH
Enter the size of the file in blocks or tracks.

The values of START and FILE LENGTH must be numeric and *cannot* be 0. The sum of the first starting point and the last starting point amount to the capacity of the device. The sum of the starting point and length chosen must not be greater than the capacity of the device.

Note: The *help function* of the dialog has complete information about valid starting points and lengths for each device type you might use for restoring to disk.

Press ENTER. The dialog creates a job with the default name DUMPREST. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

When you submit the job, mount the restore tape. Use the *same* tape address you specify in the dialog.

Copying a Volume or File

The *Copy a Volume or File* dialog:

- Copies the following from one disk to another disk:
  - An entire volume
  - Part of a volume
  - An individual file
- Removes a FlashCopy relation to a target disk.

To access the dialog, start with the *z/VSE Function Selection* panel and select:

- **5** (Backup/Restore)
- **7** (Copy a Volume or File)

Operator Fast Path: 57	Synonym Default: Yours:

A panel displays three selections:

1. Copy a Volume

   This creates a Fast Copy job. The job copies an entire volume or part of a volume from one disk to another disk. *The disks must be of the same device type*. For VSE/VSAM integrity purposes, you can only process all VSE/VSAM files or no VSE/VSAM files.

2. Copy a File

This creates a Fast Copy job. The job copies a single file from one disk to another disk. *The disks must be the same device type*. You can:

- Copy the file to the same extents.
- Relocate the file on the second disk.

3. Remove FlashCopy relation

   This removes the relation to a target disk that has been used as *intermediate* storage for a subsequent Backup job. This relation was established when the **NOCOPY** parameter was selected for the *Copy a Volume* dialog.

Input for Copying a Volume or File

For both cases: copying a volume or file, you supply the following information:

INPUT VOLUME SERIAL NUMBER
If a volume serial number is entered which is unknown to the system or not available, you are asked for the DEVICE TYPE of the disk.

OUTPUT VOLUME SERIAL NUMBER
If a volume serial number is entered which is unknown to the system or not available, you are asked for the DEVICE TYPE of the disk.

LIST
Specify whether you want the dialog to print extent information on the system printer.

1 - YES
2 - NO

INPUT DISK CHECK

1 - disk checking
2 - no disk checking

OUTPUT DISK CHECK

1 - disk checking
2 - no disk checking

NOPROMPT

1 - to suppress notification for data secured files on system console
2 - to get notification for data secured files on system console

NOVERIFY

1 - to suppress verification of disk output
2 - to get verification of disk output

Additional Input for Copying a Volume

When copying a **volume**, you also need the following information:

NEW VOLUME SERIAL NUMBER
This is the volume serial number that is written on the output disk. If you do not enter this number, the volume serial number of the source disk is taken as the new number.

You must specify this value if any of the parameters below (NOVSAM, EXCLUDE, NOEXPIRED) has a value of YES.

NOVSAM
Specify whether you want to exclude all VSE/VSAM files from the copy.

1 - YES
2 - NO

EXCLUDE
Specify whether you want to exclude certain non-VSAM files from the copy.

1 - YES
2 - NO

If you specify 1 (YES), enter the file IDs of the disk files you want to exclude.

NOEXPIRED
Specify whether you want to exclude expired files from the copy.

1 - YES
2 - NO

NOCOPY
Specify whether you want to use the target disk as *intermediate* storage for a subsequent Backup job.

1 - YES
2 - NO

If you select 2 (NO), a physical copy of the source disk will be created on the target disk.

Press ENTER. The dialog creates a job with the default name FCOPY. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Additional Input for Copying a File

If you copy a file, you also need the following information:

RELOCATE
Specify whether you want to relocate the file on the target disk.

1 - YES
2 - NO

If you enter 1 (YES), you need to specify the file ID of the *relocated* disk file.

DISK FILE ID
Specify the ID of the file (input source file).

Note: The information below is for both the file you want to copy and for the new file on the second disk.

SEQUENTIAL ACCESS
Specify either sequential or direct access.

DATE
Enter the retention period of **1 - 4** digits or the Julian date in the form **YY/DDD**, where **YY** is the year and **DDD** is the day of the year.

START
Specify the starting block or track for the file.

FILE LENGTH
Enter the size of the file in blocks or tracks.

RELOCATED DISK FILE ID
The file ID for the relocated disk file.

The values of START and FILE LENGTH must be numeric and *cannot* be 0. The *help function* of the dialog has complete information about valid starting points and lengths for each device type you might use.

Press ENTER. The dialog creates a job with the default name FCOPY. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Input for Removing a FlashCopy Relation

To remove a FlashCopy relation to a target disk, you supply the following information:

OUTPUT VOLUME SERIAL NUMBER
The six-character volume serial number of the target disk that has a previously-established NOCOPY relation. If a volume serial number is entered which is unknown to the system or not available, you are asked for the DEVICE TYPE of the disk.

Press ENTER. The dialog creates a job with the default name FCOPY. On the *Job Disposition* panel, you can submit the job to batch, file it in your default primary library, or both.

Chapter 20. Controlling Online Operation via CICS

Entering CEMT Commands from a Display Station

The *Invoke CEMT* dialog lets you use CICS master terminal commands from a display terminal. This terminal must be a z/VSE administration console.

Start with the *z/VSE Function Selection* panel shown in Figure 13 on page 28 and select:

- **6** (CICS-Supplied Transactions)
- **1** (Invoke CEMT)

Operator Fast Path: 61	Synonym Default: mt Yours:

The system displays the following information:

STATUS: ENTER ONE OF THE FOLLOWING

- **Discard**
- **Inquire**
- **Perform**
- **Set**

You can issue any of the above commands by typing the command in the first line (above the STATUS line). After that, another command selection list appears on your screen and you can choose the appropriate one.

It is easier to enter CEMT commands from the display station than from the z/VSE console, because you do not have to know and enter the complete command.

For all the details of the CEMT transaction, refer to the documentation *CICS Supplied Transactions*.

Note: The CEMT commands that you issue from the Interactive Interface are valid only for the CICS which has VSE/ICCF running under its control. For controlling any other CICS partition, you have to enter the required commands from the z/VSE console.

Chapter 21. Maintaining Synonyms

Maintaining Synonyms for the Dialogs

The synonym function lets you equate a selection path to a private synonym. The synonym must consist of 1-8 alphameric characters (including the characters $, #, and &). For example, instead of specifying the fast path **61** to access the *Invoke CEMT* dialog, you could use a word that you remember better.

Figure 41 on page 199 in alphabetical order lists the synonyms and fast paths supplied by z/VSE for user OPER. You can also define other synonyms using the *Maintain Synonyms* dialog.

```
SYNONYM              PATH

BACKUP               5
CEOS                 6 2
CONSOLE              2
DA                   7 1
ICCF                 1 1
ICCFS                1
LST                  3 1
MESSAGE              4 1
MT                   6 1
NEWS                 4 2
POWER                3
PUN                  3 3
RDR                  3 2
RESTORE              5
RETRIEVE             4 3
SIO                  7 2
SYNONYMS             8
USERS                4 1
XMT                  3 4
```

Figure 41. Synonyms Supplied by z/VSE for OPER

To access the *Maintain Synonyms* dialog, start with the *z/VSE Function Selection* panel shown in Figure 13 on page 28 and select:

8 (Maintain Synonyms)

```
Operator
Fast Path:   8
```

```
Synonym
Default: synonyms        Yours:
```

Adding Synonyms

If you want to add one or more synonyms, press PF6. The *Add Synonyms* panel will be displayed (Figure 42 on page 200).

```
IESADMSYNA                        ADD SYNONYMS

  Enter up to thirteen new synonyms and associated paths, then press ENTER.

         NEW SYNONYM        NEW PATH

          --------      - - - - - - - - -
          --------      - - - - - - - - -
          --------      - - - - - - - - -
          --------      - - - - - - - - -
          --------      - - - - - - - - -
          --------      - - - - - - - - -
          --------      - - - - - - - - -
          --------      - - - - - - - - -
          --------      - - - - - - - - -
          --------      - - - - - - - - -
          --------      - - - - - - - - -
          --------      - - - - - - - - -
          --------      - - - - - - - - -

PF1=HELP                    3=END        4=RETURN                 6=SHOW LIST
```

Figure 42. Add Synonyms Panel

Type in the new synonym definitions in the fields offered on the panel, and press ENTER. Pressing PF6 will take you back to the previous panel, which will show the updated list.

Note: If you do not press ENTER before you press PF6, all input will be discarded.

Changing and Deleting Synonyms

To change any of the listed synonyms, enter **2** in the option column next to the synonyms you want to change. Then type in the desired synonyms in the *New Name* column, and/or overtype the path information, and press ENTER. If you want to locate a particular synonym, type in the name into the command line at the bottom of the panel, and press ENTER. If you decide to delete a synonym from the list, type in **5** in the option column next to the synonym you want to delete, and press ENTER.

Appendix A. Understanding Syntax Diagrams

This section describes how to read the syntax diagrams in this documentation.

To read a syntax diagram follow the path of the line. Read from left to right and top to bottom.

- The ▶▶— symbol indicates the beginning of a syntax diagram.
- The —▶ symbol, at the end of a line, indicates that the syntax diagram continues on the next line.
- The ▶— symbol, at the beginning of a line, indicates that a syntax diagram continues from the previous line.
- The —▶◀ symbol indicates the end of a syntax diagram.

Syntax items (for example, a keyword or variable) may be:

- Directly on the line (required)
- Above the line (default)
- Below the line (optional)

Uppercase Letters

Uppercase letters denote the shortest possible abbreviation. If an item appears entirely in uppercase letters, it can not be abbreviated.

You can type the item in uppercase letters, lowercase letters, or any combination. For example:

In this example, you can enter KEYWO, KEYWOR, or KEYWORD in any combination of uppercase and lowercase letters.

Symbols

You **must** code these symbols exactly as they appear in the syntax diagram

*****
: Asterisk

:
: Colon

,
: Comma

=
: Equal Sign

-
: Hyphen

//
: Double slash

()
: Parenthesis

.
: Period

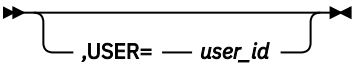
+
: Add

For example:

```
* $$ LST
```

Variables

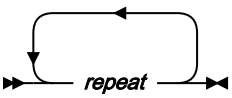
Highlighted lowercase letters denote variable information that you must substitute with specific information. For example:



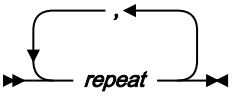
Here you must code USER= as shown and supply an ID for user_id. You may, of course, enter USER in lowercase, but you must not change it otherwise.

Repetition

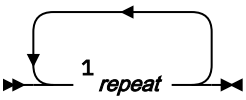
An arrow returning to the left means that the item can be repeated.



A character within the arrow means you must separate repeated items with that character.



A footnote (1) by the arrow references a limit that tells how many times the item can be repeated.

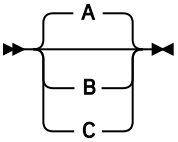


Notes:

[1] Specify *repeat* up to 5 times.

Defaults

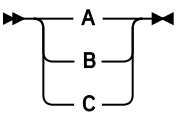
Defaults are above the line. The system uses the default unless you override it. You can override the default by coding an option from the stack below the line. For example:



In this example, A is the default. You can override A by choosing B or C.

Required Choices

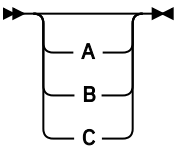
When two or more items are in a stack and one of them is on the line, you **must** specify one item. For example:



Here you must enter either A or B or C.

Optional Choice

When an item is below the line, the item is optional. Only one item **may** be chosen. For example:



Here you may enter either A or B or C, or you may omit the field.

Required Blank Space

A required blank space is indicated as such in the notation. For example:

```
* $$ EOJ
```

This indicates that at least one blank is required before and after the characters $$.

Appendix B. REDISPLAY Command

The REDISPLAY command lets you retrieve logging information that had earlier been displayed on one or more consoles. This information consists of *logging items* such as messages issued by the system, or commands that you entered and the system's response to these commands.

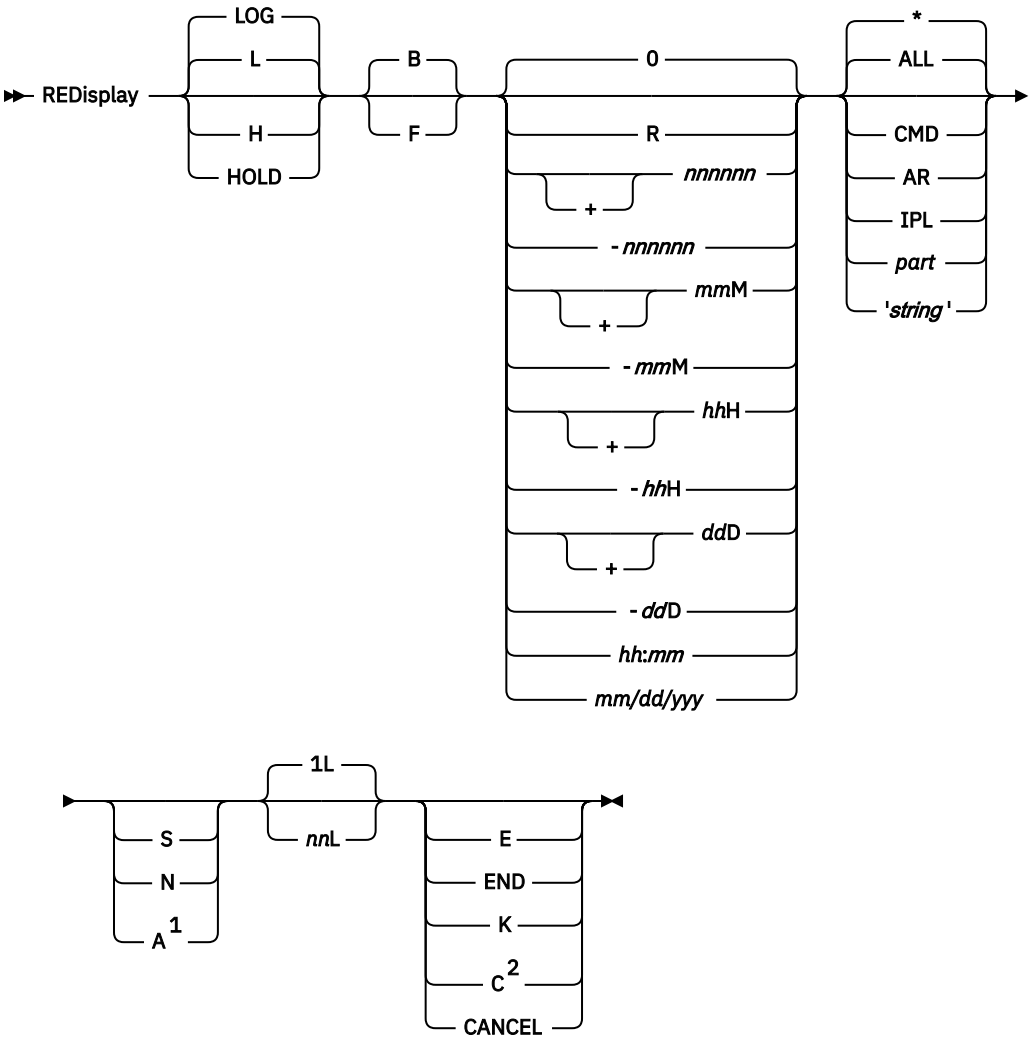
You enter the REDISPLAY command in one of two ways:

- As **system command**
- As **local command**

  In this case, you have to prefix the percent character: %REDISPLAY. It is advisable to assign a PF key to the %REDISPLAY command. Normally PF7 is assigned to the %REDISPLAY command. When using the PF key, you may or may not supply some operand(s) in the input line.

  When the %REDISPLAY command is given in console mode, the console goes into **redisplay mode**. While in redisplay mode, you may issue additional %REDISPLAY commands, preferably by using some PF key function.

The following section describes the syntax of the REDISPLAY command. For explanations on how to read a railroad diagram, please refer to Appendix A, “Understanding Syntax Diagrams,” on page 201.



Notes:

[1] Together with H/HOLD, a subfilter cannot be specified.
[2] Together with C/CANCEL, no other operand can be specified.

All operands are optional. **The operands can be specified in any sequence and must be separated by a comma**.

If a **default** is listed for an operand, it applies to the time when the console is not yet in redisplay mode. When the console is already in redisplay mode, the values of the preceding Redisplay command are taken as default. However, **startpos** (the third column in the diagram) always has a default of 0.

A change of **function** (the first column in the diagram) causes the defaults for the other operands to be chosen as if the console were not yet in redisplay mode.

The parameter values are described below. They are grouped into the following items:

- functions
- direction
- startpos
- filter
- subfilter
- lines
- action

function

specifies the scope of data to be redisplayed:

L
LOG
requests redisplay of any kind of logging items. This is the default.

H
HOLD
requests only redisplay of messages that are waiting for a reply or for an action.

direction

determines whether the redisplay moves forward or backward:

B
the direction of redisplay is backward. This is the default.

F
the direction of redisplay to forward.

startpos

specifies where the redisplay is to start:

R
causes redisplay to be **restarted** from the point where redisplay mode was entered.

[+]nnnnnn
-nnnnnn
specifies the number of lines to be spaced forward (+) or backward (-) starting at the current position. startpos has as default a value of 0 for nnnnnn.

[+]mmM
-mmM
specifies the number of minutes that is to be added (+) to or subtracted (-) from the time of the current position.

[+]hhH
-hhH
specifies the number of hours that is to be added (+) to or subtracted (-) from the time of the current position.

[+]ddD
-ddD
specifies the number of days that is to be added (+) to or subtracted (-) from the date of the current position.

hh:mm
requests that the redisplay is to start at the message with the specified time (of the current day).

Leading zeros have to be specified.

mm/dd/yyyy
requests that the redisplay is to start at the message with the specified date (you may indicate the year by only two digits 'yy', leaving out the century).

Leading zeros have to be specified.

filter

specifies selection criteria:

ALL
*****
requests that the set of logging items is not to be restricted in any way. This is the default.

CMD
requests redisplay of all entered commands (Attention, VSE/POWER, VM, CP, invalid commands) together with the system's responses to these commands. For example, if 'D RDR' had been entered, not only the 'D RDR' command but also the related responses are redisplayed.

AR
requests redisplay of Attention Routine commands together with the system's responses to these commands.

IPL
requests redisplay of all commands entered during IPL and their command responses. Only items up to the message

```
0I20I   IPL COMPLETE FOR...
```

are displayed.

part
requests redisplay of all logging items that belong to a specific partition. **part** designates a static partition (BG, Fn), a dynamic partition (U2, for example), or a class of dynamic partitions, which is indicated by an an asterisk in the second position (U*, for example).

'string'
requests redisplay of all messages and replies that contain the specified character-string within one line. char-string may be up to 15 characters long.

subfilter

allows to specify a second selection filter in addition to the one specified in **filter**:

S
requests redisplay of all messages which were suppressed or replied to by an operator-automation product.

N
requests redisplay of all logging items directed to or entered at an operator-automation console, for example a NetView operator station.

A
requests redisplay of action messages.

The subfilter can be turned off by entering a new **filter**.

Note: For the H (HOLD) function, a subfilter cannot be specified.

lines

specifies the number of lines to be redisplayed.

nnL
for **nn** any value value between 1 and 34 is allowed. 1 is the default.

The last message is displayed in its entirety. Therefore up to 11 lines above the specified lines value may appear.

action

specifies something about ending redisplay processing:

E
END
requests that the redisplay mode is to be ended.

K
This is the **K**eep option. The position on the hardcopy file where redisplaying starts will be preserved for the next redisplay request.

C
CANCEL
specifies that the Redisplay command **currently in process** is to be cancelled immediately. If no Redisplay command is in progress, this command has no effect. No other operands are allowed when the **CANCEL** action is requested.

Appendix C. USER Command

Use this transaction command to display a list of all users signed on to either z/VSE or CICS. This command has no operands.

```
USER
```

Example Displaying a List of All Active CICS Users

To display a list of all active CICS users, use the following set of commands. The USER transaction is only possible on a system console. Using the Interactive Interface, use the DISPLAY ACTIVE USERS dialog to show active users.

```
MSG F2
AR 0015 1I40I  READY
F2-0002 OD16D READY
xxx USER
F2 0002 LIST OF SIGNED ON USERS:
F2 0002                          SIGN ON:
F2 0002 USER      TERM  TRANS   TIME  DATE        INPUTS      OUTPUTS   STATUS
F2 0002 RENT      D009   IESI  09:34 08/26           63           72    1
F2 0002 SCHN      D015   IESO  08:08 08/27          213          224
F2-0002
```

One line is displayed for each active user. For each user the following information is shown:

1. The 4-character user ID or 3-character operator ID.
2. The 4-character terminal ID.
3. The name of the transaction being used.
4. The number of inputs from the display station.
5. The number of outputs to the display station.
6. The Status of the terminal:

   1 = terminal out of service.
   2 = /DISCONN or SIGN OFF was issued.

Do not forget to end the CICS session by entering the reply ID (02 in the example above).

Note: This transaction can only be used from the z/VSE console and has its equivalent in the *Display Active Users/Send Message* dialog.

Appendix D. Operator Commands and Statements

In your job you will be concerned with entering statements and commands. The statements and commands described in this topic are also contained in the z/VSE System Control Statements documentation. If you are not yet an experienced operator, you will have to refer to this information quite frequently.

There are the following types of operator commands:

- IPL
- Job control (JCL)
- Attention routine (AR) and other system commands.

The main difference between these types of commands is:

- The time at which they can be entered, and
- The way in which they are entered.

IPL commands are accepted only during the IPL procedure.

Job control commands and **statements** may be entered in response to JCL messages only. They have to be preceded by the reply partition IDs.

Attention routine commands can be entered after IPL during system operation. If the attention routine is not available, enter the command **RC** (Request Communication). You can then enter any attention routine command.

Some commands belong to more than one type. The **SET** command, for example, can be used either as a job control command or as an attention routine command. Occasionally the effect of a command differs depending on the type used.

Likewise, certain operands are permitted or not permitted, depending on the command type used. Differences in effect and type are stated in the z/VSE System Control Statements documentation.

All operator commands are fully supported in or for static partitions. They are not, however, fully supported in or for dynamic partitions; some commands are not valid, others are restricted.

Table 10 on page 213 shows to which types the commands belong, summarizes their functions, and marks restricted or not valid usage in or for dynamic partitions. Under the columns **Job Control (JCL)** and **System/Attention Rtn(AR)**, letter combinations **XR** and **XS** indicate whether a command requires unrestricted command authorization (XR) or is semi-restricted (XS). For explanations see section "Command Authorization" on page 37.

A few commands show different degrees of restriction between JCL and AR type. This has either to do with different levels of control that JCL and AR routines maintain in a given situation (CANCEL command, for example). Or, JCL and AR commands may have different scopes of function. For example, the **JCL** command PRTY can only set a priority whereas the **AR** command has also the enquiry function which is not restricted.

Table 10. Alphabetical List of Operator Commands and Statements

Command	Meaning	Type of Command			Support in/for dynamic partitions
		IPL	Job Control (JCL)	System/ Attention Rtn (AR)	
ADD	Add a device to the PUB table	X			
ALLOC	Allocate virtual or real storage to partitions		XR	XR	Not Valid
ALTER	Alter 1 to 16 bytes in virtual storage			XR	

Table 10. Alphabetical List of Operator Commands and Statements (continued)

Command	Meaning	Type of Command			Support in/for dynamic partitions
		IPL	Job Control (JCL)	System/ Attention Rtn (AR)	
ASSGN	Assign a logical unit		X		Restricted
BANDID	Display or specify print band identifier on 4248 printer			XR	
BATCH	Initiate or resume processing in a partition			XR	Not valid
CACHE	Control cache operations for an IBM 3990 -3 DASD storage controller			XS	
CANCEL	Cancel execution of current job or I/O request		X	XS	
CLOSE	Close a logical unit		X		
DATE	Set a temporary date		X		
DEF	Assign SYSCAT and SYSREC	X			
DEL	Delete a device from the PUB table	X			
DEV	Display device	X			
DLBL	Define label information for disk/diskette files		X		
DLF	Define lock file	X			
DPD	Define the page data set	X			
DSPLY	Display 16 bytes of virtual storage			XR	
DUMP	Print part or all of virtual storage			XR	
DVCDN	Make a device unavailable		XR		Not valid
DVCUP	Make a device available		XR		Not valid
END or ENTER	End of input		X	X	
EXEC	Execute a program or procedure		X		Restricted
EXPLAIN	Activate support for online explanations			XS	
EXTENT	Define an extent for disk/diskette file		X		
FREE	Free device from RESERVED status			XR	
GETVIS	Display GETVIS information			X	
GOTO	Skip following statements		X		
HCLOG	Control scope of messages in hardcopy file			XS	
HOLD	Hold unit assignments after subsequent UNBATCH until end of next job		XR		Not valid
ID	Provide user identification		X		
IF	Check condition		X		
IGNORE	Ignore indicated abnormal condition		XR	XR	

Table 10. Alphabetical List of Operator Commands and Statements (continued)

Command	Meaning	Type of Command			Support in/for dynamic partitions
		IPL	Job Control (JCL)	System/ Attention Rtn (AR)	
IXFP SNAP	Snapshot copy		XR	XR	
JCLEXIT	Activate or deactive JCL exit routine		XR		
JOB	Define beginning of a job		X		
KEKL	Associate a tape drive with key-encryption-key labels		XR	XR	
LFCB	Load forms control buffer			XR	
LIBDEF	Define library chains		X		
LIBDROP	Drop library chain definitions		X		
LIBLIST	List library chain definition		X		
LIBSERV	Control IBM 3494 Tape System		X	XR	
LISTIO	List current I/O assignments		X		
LOG	Log (print) job control statements and comments		XR	XR	
LUCB	Load Universal Character Buffer			XR	
MAP	List storage allocations		X	X	
MSECS	Change or display time slice for partition balancing		XR	XS	
MSG	Communication with a program			XS	
MTC	Control magnetic tape operations		X	XR	
NEWVOL	Resume processing, required volume is mounted			XR	
NOLOG	Suppress logging of job control		XR	XR	
NPGR	Define number of programmer logical units		XR		Not valid
OFFLINE	Simulate 'device not ready'			XR	
ON	Set global condition		X		
ONLINE	Simulate 'device and ready' status			XR	
OPERATE	Query or alter current operation mode and system console state			XR	
OPTION	Specify job control options		X		Restricted
PAUSE	Interrupt processing at end of job or job step		X	XS	
PROC	First statement of cataloged procedure		X		
PRTY	Modify or display partition priority		XR	XS	

Table 10. Alphabetical List of Operator Commands and Statements (continued)

Command	Meaning	Type of Command			Support in/for dynamic partitions
		IPL	Job Control (JCL)	System/ Attention Rtn (AR)	
PRTY SHARE	Partition balancing		XR	XS	
PRTYIO	Set priorities for I/O requests			XS	
PWR	Passes commands to POWER. (Do not enter at the system console.)		X		
PWROFF	Power off the CPU (if the CPU has the Programmed Power Off Feature)			XR	
QUERY	Display information on data spaces		X	X	
QUERY IO	Displays general information about the number of devices that can be defined, and the number of currently-defined devices.		X	X	
QUERY IO,cuu=*nnn*	Display the physical address that corresponds to the VSE address *nnn*.				
QUERY IO,cuu=*nnnn*	Display the VSE address that corresponds to the physical address *nnnn*.				
QUERY SCSI	Display information on SCSI devices		X	X	
QUERY SYSTEM	Display information on tasks/subtasks, and whether PAV is active.		X	X	
QUERY TD	Display TD statistics		X	X	
RC	Force acceptance of attention routine commands			XR	
REDISPLAY	Display former messages			XS	
REPLID	Display prefixes of messages with outstanding responses			XS	
RESERV	Reserve device for VSAM space management usage			XR	
RESET	Reset temporary I/O device assignments		X		
ROD	Record on demand		XR		
RSTRT	Restart checkpoint programs		X		Not valid
SET	Set date, clock, and time zone	X	XR		Restricted
SET XPCC	Enable sharing of SQL/DS* databases between z/VSE and VM/CMS	X			
SETDF	Set and/or reset default values for the 3800 printer			XR	
SETPARM	Define or set symbolic parameter		X		
SETPFIX	Define limits for PFIXing pages		X		
SETPRT	Set the 3800 printer		X		

Table 10. Alphabetical List of Operator Commands and Statements (continued)

Command	Meaning	Type of Command			Support in/for dynamic partitions
		IPL	Job Control (JCL)	System/ Attention Rtn (AR)	
SET ZONEDEF	Set time zone	X			
SET ZONEBDY	Set date for daylight saving time	X			
SIZE	Change storage allocation		XR	XR	Not valid
START	Initiate or resume processing in a partition		XR	XR	Not valid
STATUS	Display task status			X	
STDOPT	Set standard options		X		
STOP	Stop processing in a partition		XR		Not valid
SVA	Reserve space in the shared virtual area	X			
SYS	Set system values	X			
SYSDEF	Define data space limits and defaults		XR	XR	
SYSDEF SCSI	Define SCSI device		XR	XR	
SYSDEF SYSTEM	Activate "more tasks" support, and activate/deactivate PAV		XR	XR	
SYSDEF TD	Start/stop CPUs and reset statistics counts		XR	XR	
SYSECHO	Assign VM user-ID as administration console			XS	
TLBL	Define label information for tape files		X		
UCS	Load Universal Character Set buffer		XR		
UNBATCH	Deactivate a partition		XR		Not Valid
UNLOCK	Release locks set by another system			XR	
UPSI	Set program switch indicators		X		
VDISK	Define virtual disks		X		
VOLUME	Display currently mounted disk volumes			X	
VTAPE	Define/Release Virtual Tape		X		
ZONE	Define time zone		X		
/.	Define a label for GOTO		X		
/+	End of procedure		X		
/*	End of data		X		
/&	End of job		X		
*	Comment		X		
* CP	Submit CP command			XR	

Appendix E. Available z/VSE Utilities

This section briefly tells you about some of z/VSE utilities. If you would like to know how to apply these utilities, refer to the z/VSE System Control Statements documentation.

LVTOC

The **Operator Action** for a number of system messages includes the listing of the volume table of contents (VTOC) of a certain disk pack.

Display the VTOC by using either the IBM utility program LVTOC or the *Display VTOC* dialog of the Interactive Interface (which is only available in the panel hierarchy of the system administrator).

LSERV

The **Operator Action** for a number of system messages includes the listing of the label information area. To do this, use the IBM utility program LSERV.

PRINTLOG

In some cases it might be useful to have a hardcopy record of all system messages which have been issued by the system. Each line that appears on the console is written to the hardcopy file, which resides on SYSREC. To print the hardcopy file from disk onto SYSLST, use the IBM utility program PRINTLOG.

LISTLOG

In some cases it is necessary to gather information about how a certain job has been running on the system. Job run information includes the following:

- All job control statements in the job stream
- All console messages for the job
- All operator responses for the job
- Any attention routine messages and commands issued while the job was running.

To print this job run information, use the IBM utility program LISTLOG.

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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.

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The following cross-references are used:

- Contrast with. This refers to a term that has an opposed or substantively different meaning.
- Synonym for. This indicates that the term has the same meaning as a preferred term, which is defined in its proper place in the dictionary.
- Synonymous with. This is a backward reference from a defined term to all other terms that have the same meaning.
- See. This refers the reader to multiple-word terms that have the same last word.
- See also. This refers the reader to related terms that have a related, but not synonymous, meaning.

*** abend**
1. Abnormal end of task. 2. Synonym for *abnormal termination*.

access control
A function of VSE that ensures that the system and the data and programs stored in it can be accessed only by authorized users in authorized ways.

Access Control Logging and Reporting
An IBM licensed program to log all attempts of access to protected data and to print selected formatted reports on such attempts.

access control table (DTSECTAB)
A table used by the system to verify a user's right to access a certain resource.

access method
A program, that is, a set of commands (macros), to define files or addresses and to move data to and from them; for example VSE/VSAM or VTAM.

account file
A disk file maintained by VSE/POWER containing accounting information generated by VSE/POWER and the programs running under VSE/POWER.

address space
A subdivision of the total of virtual storage.

administration console
In z/VSE, one or more consoles that receive all system messages, except for those that are directed to one particular console. Contrast this with the *user console* which receives only those messages that are specifically directed to it, for example messages issued from a job that was submitted with the

request to echo its messages to that console. The operator of an administration console can reply to all outstanding messages and enter all system commands.

Advanced Function Printing* (AFP)
A group of IBM licensed programs that support APA printers.

AFP*
Advanced Function Printing.

*** all points addressable (APA)**
In computer graphics, pertaining to the ability to address and display or not display every point on a display surface (paper).

alternate block
On an FBA disk, a block designated to contain data in place of a defective block.

alternate index
In systems with VSE/VSAM, the index entries of a given base cluster organized by an alternate key, that is, a key other than the prime key of the base cluster. For example, a personnel file primarily ordered by names can be indexed also by department number.

alternate library
A library which becomes accessible from a terminal when the user of that terminal issues a connect or switch (library) request.

alternate screen size
An option that permits the size of a display screen to be defined differently from the standard size.

*** alternate tape**
A tape drive to which the operating system switches automatically for tape read or write operations if the end of the volume has been reached on the originally used tape drive.

alternate track
On a CKD disk, a track designated to contain data in place of a defective track.

*** American National Standard Code for Information Interchange (ASCII)**
The standard code, using a coded character set consisting of 7-bit coded characters (8 bits including parity check), used for information interchange among data processing systems, data communication systems, and associated equipment. The ASCII set consists of control characters and graphic characters. (A)

APA
All points addressable.

APAR
Authorized Program Analysis Report.

appendage routine
A piece of code physically located in a program or subsystem, but logically an extension of a supervisor routine.

*** application profile**
A control block in which the system stores the characteristics of one or more application programs.

application program
A program written for or by a user that applies directly to the user's work. See also *batch program* and *online application program*.

application program major node
A group of application program minor nodes. In VTAM, a member or book of the definition library that contains one or more APPL statements, which represent application programs.

*** ASCII**
American National Standard Code for Information Interchange.

ASI (automated system initialization) procedure
A set of control statements which specifies values for an automatic system initialization.

assemble
To translate a program from assembler language into object code.

assembler
A computer program used to assemble. Synonymous with *assembly program*.

assembler language
A programming language whose instructions are usually in one-to-one correspondence with machine instructions and allows to write macros.

attention routine
A routine of the system that receives control when the operator presses the Attention key. The routine sets up the console for the input of a command, reads the command, and initiates the system service requested by the command.

authorized program analysis report (APAR)
A report of a problem caused by a suspected defect in a current release of a program.

*** automated system initialization (ASI)**
A function that allows control information for system startup to be cataloged for automatic retrieval during system startup.

*** autostart**
A facility that starts up VSE/POWER with little or no operator involvement.

auxiliary storage
Addressable storage that is not part of the processor, for example storage on a disk unit. Synonymous with *external storage*.

*** background partition**
An area of virtual storage in which programs are executed under control of the system. By default, the partition has a processing priority lower than any of the existing foreground partitions.

*** backup copy**
A copy, usually of a file or a library member, that is kept in case the original file or library member is unintentionally changed or destroyed.

*** base cluster**
In systems with VSAM, a key-sequenced or entry-sequenced file over which one or more alternate indexes are built.

basic telecommunications access method (BTAM)
An access method that permits read and write communication with remote devices. Its current version is called BTAM-ES.

batch processing
1. Serial processing of computer programs. 2. Pertaining to the technique of processing a set of computer programs in such a way that each is completed before the next program of the set is started. (A)

batch program
A program that is processed in series with other programs and therefore normally processes data without user interaction.

binary synchronous communication (BSC)
Method of telecommunication using binary synchronous line discipline. Contrast with *SDLC*.

bits per second (bps)
In serial transmission, the instantaneous bit speed with which a device or channel transmits a character.

block
Usually, a block consists of several records of a file that are transmitted as a unit. But if records are very large, a block can also be part of a record only. See also *control block*.

block group
In VSE/POWER, the basic organizational unit for fixed-block architecture (FBA) devices. Each block group consists of a number of 'units of transfer' or blocks.

blocking
The process of combining (or cutting) records into blocks.

*** bps**
Bits per second.

*** bringup**
The process of starting a computer system or a subsystem that is to operate under control of the system.

BSC
Binary synchronous communication.

*** BTAM-ES (Basic Telecommunication Access Method Extended Storage)**
An IBM supplied telecommunication access method. It permits read and write communication with remote devices.

CA
Control area.

*** cache**
A high-speed buffer storage that contains frequently accessed instructions and data; it is used to reduce access time.

cache storage
A random access electronic storage in selected storage controls used to retain frequently used data for faster access by the channel. For example, the IBM 3990 Model 3 contains cache.

CA splitting
In VSE/VSAM, to double a control area dynamically and distribute its CIs evenly when the specified minimum of free space gets used up by more data.

catalog
1. A directory of files and libraries, with reference to their locations. A catalog may contain other information such as the types of devices in which the files are stored, passwords, blocking factors. (I) (A) 2. To store a library member such as a phase, module, or book in a sublibrary.

*** cataloged procedure**
A set of control statements placed in a library and retrievable by name.

*** CDRM**
Cross-domain resource manager.

CDRSC
Cross-domain resource.

*** central location**
The place at which a computer system's control device, normally the system console in the computer room, is installed.

Central Processing Complex
A segment of the physical resources of a system configuration.

central processing unit (CPU)
The hardware component that interprets and executes instructions. Synonym for *processor*.

*** channel adapter**
A communication controller hardware unit used to attach the controller to a data channel.

channel-attached
Pertaining to the attachment of devices directly by data channels (I/O channels) to a computer. Contrast with link-attached. Synonymous with *locally attached*.

channel program
One or more channel command words that control a sequence of data channel operations. Execution of this sequence is initiated by a single start I/O (SIO) instruction.

*** channel scheduler**
The part of the supervisor that controls all input/output operations.

channel-to-channel attachment (CTCA)
A function that allows data to be exchanged (1) under the control of VSE/POWER between two virtual VSE machines running under VM or (2) under the control of VTAM between two processors.

channel subsystem
A feature of 370-XA and Enterprise Systems Architecture that provides extensive additional channel (I/O) capabilities over the System/370*.

character-coded request
A request encoded and transmitted as a character string. Contrast with *field-formatted request*.

checkpoint
1. A point at which information about the status of a job and the system can be recorded so that the job step can be restarted later. 2. To record such information.

CI
Control interval.

CICS
Customer Information Control System.

CKD device
Count-key-data device.

class
In VSE/POWER, a group of jobs that either come from the same input device or go to the same output device.

cluster controller
A hardware unit to control the input/output operations of more than one device connected to it. A cluster controller may be run by a program stored and executed in the unit; for example, the IBM 3601 Finance Communication Controller. Or it may be controlled entirely by hardware; for example, the IBM 3272 Control Unit.

CMS
Conversational monitor system.

COBOL
Common business-oriented language.

common business-oriented language (COBOL)
A high-level programming language based on English used primarily for business application programs.

common library
A library that can be interactively accessed by any user of the (sub)system that owns the library.

*** communication adapter**
A circuit card with associated software that enables a processor, controller, or other device to be connected to a network.

*** communication controller**
1. A device that directs transmission of data over the links of a network; its operation is controlled by a program executed in a processor to which the controller is connected or it may be controlled by a program executed within the device. (T)2. A type of communication control unit whose operations are controlled by one or more programs stored and executed in the unit. It manages the details of line control and the routing of data through a network.

communication line
See *telecommunication line*.

*** compaction**
In SNA, the transformation of data by packing two characters in a byte so that only a subset of the allowable 256 characters is used. The most frequently sent characters are compacted.

*** compile**
To translate a source program into an executable program (object program). See also *assembler*.

compiler
A program used to compile.

component
1. Hardware or software that is part of a computer system. 2. A functional part of a product, identified by a component identifier. 3. In VSE/VSAM, a named, cataloged group of stored records, such as the data component or index component of a key-sequenced file or alternate index.

component identifier
A 12-byte alphanumeric string, uniquely defining a component to MSHP.

conditional job control
The capability of the job control program to process or to skip one or more statements based on a condition that is tested by the program.

configuration
The devices and programs that make up a system, subsystem, or network.

connect
To authorize library access on the lowest level. A modifier such as "read" or "write" is required for the specified use of a sublibrary.

control block
An area within a program or a routine defined for the purpose of storing and maintaining control information.

control interval (CI)
A fixed length area of disk storage where VSE/VSAM stores records and distributes free space. It is the unit of information that VSE/VSAM transfers to or from disk storage. For FBA, it must be an integral multiple, to be defined at cluster definition, of the block size.

control program
A program to schedule and supervise the running of programs in a system.

control unit
See *communications controller* and *cluster controller*. Synonymous with *controller*.

*** conversational monitor system (CMS)**
A virtual machine operating system that provides general interactive time sharing, problem solving, and program development capabilities.

*** corrective service**
The installation of a PTF or an APAR fix that corrects a specific problem.

count-key-data (CKD) device
A disk device that stores data in the record format: count field, key field, data field. The count field contains, among others, the address of the record in the format: cylinder, head (track), record number and the length of the data field. The key field, if present, contains the record's key or search argument. CKD disk space is allocated by tracks and cylinders. Contrast with *FBA disk device*. See also *extended count-key-data device*.

CPU
Central processing unit.

Customer Information Control System (CICS)
An IBM program that controls online communication between terminal users and a database. Transactions entered at remote terminals are processed concurrently by user-written application programs. The product includes facilities for building, using, and servicing databases.

Its current version is called the CICS Transaction Server for z/VSE.

DASD
Direct access storage device.

DASD sharing
An option that lets independent computer systems use common data on shared disk devices.

database
A set of data available online that is organized by a common system and used for a common purpose.

*** data block (DBLK)**
In VSE/POWER, the unit of transfer for spooling job input and job output.

data block group
The smallest unit of space that can be allocated to a VSE/POWER job on the data file. This allocation is independent of any device characteristics.

data conversion descriptor file (DCDF)
With a DCDF you can convert individual fields within a record during data transfer between a PC and its host. The DCDF defines the record fields of a particular file for both, the PC and the host environment.

*** data entry panel**
A panel in which the user communicates with the system by filling in one or more fields. See also *panel* and *selection panel*.

data file
See *file*.

data import
The process of reformatting data that was used under one operating system such that it can subsequently be used under a different operating system.

*** Data Interfile Transfer, Testing and Operations (DITTO) utility**
An IBM program that provides file-to-file services for card I/O, tape, and disk devices.

Data Language/I (DL/I)
A database access language used with CICS.

data link
In SNA, the combination of the link connection and the link stations joining network nodes, for example, a System/370 channel and its associated protocols. A link is both logical and physical.

In SNA, synonym for *link*.

*** data management**
A major function of the operating system. It involves organizing, storing, locating, and retrieving data.

data processing system
Synonym for *computer system*.

data security
See *access control*.

data set
See *file*.

data set header record
In VSE/POWER abbreviated as DSHR, alias NDH or DSH. An NJE control record either preceding output data or, in the middle of input data, indicating a change in the data format.

*** data terminal equipment (DTE)**
In SNA, the part of a data station that serves as a data source, data sink, or both. (I) (A)

*** DBLK**
Data block.

DCDF
Data conversion descriptor file.

*** DCE**
Data circuit-terminating equipment.

deblocking
The process of making each record of a block available for processing. Contrast with *blocking*.

*** dedicated (disk) device**
A device that cannot be shared among users.

default value
A value assumed by the program when no value has been specified by the user.

definition statement
In VTAM, the means of describing an element of the network.

*** device address**
1. The identification of an input/output device by its channel and unit number. 2. In data communication, the identification of any device to which data can be sent or from which data can be received.

*** device class**
The generic name for a group of device types, for example, all display stations belong to the same device class. Contrast with *device type*.

*** Device Support Facilities**
An IBM supplied SCP for performing operations on disk volumes so that they can be accessed by IBM and user programs. Examples of these operations are initializing a disk volume and assigning an alternate track.

*** device type code**
The four- or five-digit code to be used for defining an I/O device to a computer system.

DFT mode
Distributed function terminal (DFT) mode.

*** dialog**
1. In an interactive system, a series of related inquiries and responses similar to a conversation between two people. 2. For z/VSE, a set of panels that can be used to complete a specific task, for example, defining a file.

dialog manager
The program component of z/VSE that provides for ease of communication between user and system.

direct access
Accessing data on a storage device using their address and not their sequence. This is the typical access on disk devices as opposed to magnetic tapes. Contrast with *sequential access*.

Direct access storage device
A device in which access time is effectively independent of the location of the data.

directory
1. A table of identifiers and references to the corresponding items of data. (I) (A) 2. In VSE, specifically, the index for the program libraries. See also *library directory* and *sublibrary directory*.

disk operating system residence volume (DOSRES)
The disk volume on which the system sublibrary IJSYSRS.SYSLIB is located including the programs and procedures required for system startup.

disk sharing
An option that lets independent computer systems use common data on shared disk devices.

display station
A display screen with attached keyboard for communication with the system or a network. See also *terminal*.

disposition
A means of indicating to VSE/POWER how job input and output is to be handled. A job may, for example, be deleted or kept after processing.

distributed function
The use of programmable terminals, controllers, and other devices to perform minor data processing operations.

distributed function terminal (DFT) mode
IBM PCs operating in DFT mode make use of the extended data stream facility allowing simultaneous host sessions by using screen windows.

*** distribution tape**
A magnetic tape that contains, for example, a preconfigured operating system like z/VSE. This tape is shipped to the customer for program installation.

DITTO/ESA for VSE
Data Interfile Transfer, Testing, and Operations utility. An IBM program that provides file-to-file services for disk, tape, and card devices.

DL/I
Data Language/I.

domain
The network resources under the control of a particular SSCP.

DOSRES
Disk operating system residence volume.

double-byte character set (DBCS)
A character set which allows Korean, Japanese, and Chinese languages to be internally represented by two bytes per character.

DSF
Device Support Facilities.

DSH(R)
Data set header record.

*** DTE**
Data terminal equipment.

dummy device
A device address with no real I/O device behind it. Input and output for that device address are spooled on disk.

dump
1. Data that has been dumped. (I) (A) 2. To write at a particular moment some contents of storage to another data medium for the purpose of safeguarding or debugging the data. (T)

*** duplex**
Pertaining to communication in which data can be sent and received at the same time.

dynamic partition
A partition created and activated on an 'as needed' basis that does not use fixed static allocations. After processing, the occupied space is released. Contrast with *static partition*.

*** dynamic partition balancing**
A VSE facility that allows the user to specify that two or more or all partitions of the system should receive about the same amount of time on the processor.

dynamic space reclamation
A librarian function that makes space freed by the deletion of a library member reusable.

EBCDIC
Extended binary-coded decimal interchange code.

ECKD* device
Extended count-key-data device.

emulation
The use of programming techniques and special machine features that permit a computer system to execute programs written for another system or for the use of I/O devices different from those that are available.

emulation program (EP)
An IBM control program that allows a channel-attached 3705 or 3725 communication controller to emulate the functions of an IBM 2701 Data Adapter Unit, or an IBM 2703 Transmission Control.

end user
1. A person who makes use of an application program. 2. In SNA, the ultimate source or destination of user data flowing through an SNA network. May be an application program or a terminal operator.

Enterprise Systems Architecture (ESA)
See *ESA/370** and *ESA/390**.

*** entry-sequenced file**
A VSE/VSAM file whose records are loaded without respect to their contents and whose relative byte addresses cannot change. Records are retrieved and stored by addressed access, and new records are added to the end of the file.

environmental record editing and printing (EREP) program
The program that makes the data contained in the system recorder file available for further analysis.

EREP program
Environmental record editing and printing program.

error recovery procedures (ERP)
Procedures to help isolate and, where possible, to recover from errors in equipment.

ESA mode
An operation mode of the supervisor (generated with MODE=ESA) of a VSE system. Such a supervisor will run on Enterprise Systems Architecture processors (ESA/370 and ESA/390) and provides support for multiple virtual address spaces, the channel subsystem, and more than 16MB of real storage.

ESA/370
IBM Enterprise Systems Architecture/370. The extension to the IBM System/370 architecture which includes the advanced addressability feature that provides access registers.

ESA/390
IBM Enterprise Systems Architecture/390. The latest extension to the IBM System/370 architecture which includes the advanced addressability feature and advanced channel architecture.

*** escape**
To return to the original level of a user interface.

ESDS
Entry-sequenced data set. See *entry-sequenced file*. See also *SAM ESDS*.

exit
A routine, normally user-supplied, that receives control from the system when a certain event occurs (abnormal-end exit, for example).

extended count-key-data (ECKD) device
A disk storage device that has a data transfer rate faster than some processors can utilize. A specialized channel program is needed to convert ordinary CKD channel programs for use with an ECKD device.

extent
Continuous space on a disk or diskette occupied by or reserved for a particular file or VSAM data space.

extended binary-coded decimal interchange code (EBCDIC)
A coded character set consisting of 8-bit coded characters.

extended recovery facility (XRF)
In z/VSE, a feature of CICS that provides for enhanced availability of CICS by offering one CICS system as a backup of another.

external storage
Storage that is not part of the processor.

fast copy data set program (VSE/Fast Copy)
See *VSE/Fast Copy*.

fast service upgrade (FSU)
A service function of z/VSE for the installation of a refresh release without regenerating control information such as library control tables.

FBA disk device
Fixed-block architecture disk device.

*** FCB**
Forms control buffer.

FCOPY
See *VSE/Fast Copy*.

*** feature code**
A code used by IBM to process hardware and software orders.

*** fence**
A separation of one or more components or elements from the remainder of a processor complex. The separation is by logical boundaries. It allows simultaneous user operations and maintenance procedures.

fetch
1. To locate and load a quantity of data from storage. (A) 2. To bring a program phase into virtual storage from a sublibrary and pass control to this phase. 3. The name of the macro instruction (FETCH) used to accomplish 2. See also *loader*.

file
A named set of records stored or processed as a unit. (T) Synonymous with *data set*.

fixed-block architecture (FBA) disk device
A disk device that stores data in blocks of fixed size. These blocks are addressed by block number relative to the beginning of the file. Contrast with *CKD device*.

*** foreground partition**
A space of virtual storage in which programs are executed under control of the system. By default, a foreground partition has a higher processing priority than the background partition.

*** forms control buffer (FCB)**
In the 3800 Printing Subsystem, a buffer for controlling the vertical format of printed output.

FORTRAN (formula translation)
A programming language primarily used for applications involving numeric computations.

FSU
Fast service upgrade.

FULIST (FUnction LIST)
A type of selection panel that displays a set of files and/or functions for the choice of the user.

GB
Gigabyte.

generate
To produce a computer program by selecting subsets of standardized code under the control of parameters. (A)

generation
See *macro generation*.

generation feature
An IBM licensed program order option used to tailor the object code of a program to user requirements.

*** GETVIS space**
Storage space within a partition or the shared virtual area, available for dynamic allocation to programs.

gigabyte (GB)
1,024MB or 1,073,741,824 bytes of storage.

global command
A command typed into the global command area, which is usually located at the top of the screen. It allows a user to change or delete the same word or character string throughout a library member.

guest system
A data processing system that runs under control of another (host) system.

*** half-duplex**
In data communication, pertaining to transmission of data in only one direction at a time. Contrast with *duplex*.

hardcopy file
A system file on disk, used to log all lines of communication between the system and the operator at the system console, to be printed on request.

hard wait
The condition of a processor when all operations are suspended. System recovery from a hard wait is impossible without performing a new system startup.

hardware
Physical equipment used in data processing, as opposed to programs, procedures, rules, and associated documentation. (I) (A) Contrast with *software*.

help panel
A display of information provided by the system in response to a user's help request.

host mode
In this operating mode, a PC can access a VSE host. For programmable workstation (PWS) functions, the Move Utilities of VSE can be used.

host processor
1. In a network, the processor in which the access method for the network resides. 2. In an SNA network, the processor that contains a system services control point (SSCP).

*** host system**
The controlling or highest level system in a data communication configuration.

ICCF
See *VSE/ICCF*.

index
In data management, a table used to locate the records of a file.

*** initial program load (IPL)**
The process of loading system programs and preparing the system to run jobs.

input/output control system (IOCS)
A group of IBM supplied routines that handle the transfer of data between main storage and auxiliary storage devices.

interactive
A characteristic of a program or system that alternately accepts input and then responds. An interactive system is conversational, that is, a continuous dialog exists between user and system. Contrast with *batch*.

Interactive Computing and Control Facility (ICCF)
An IBM program that serves as interface, on a time-slice basis, to authorized users of terminals linked to the system's processor.

interactive interface
A system facility which controls how different users see and work with the system by means of user profiles. When signing on, the interactive interface makes available those parts of the system authorized by the profile. The interactive interface has sets of selection- and data-entry panels through which users communicate with the system.

interactive partition
An area of virtual storage for the purpose of processing a job that was submitted interactively via VSE/ICCF.

interface
A shared boundary between two hardware or software units defined by common functional or physical characteristics. It might be a hardware component or a portion of storage or registers accessed by several computer programs.

*** intermediate storage**
Any storage device used to hold data temporarily before it is processed. See also *buffer storage*.

IOCS
Input/output control system.

IPL
Initial program load.

*** irrecoverable error**
An error for which recovery is impossible without the use of recovery techniques external to the computer program or run. (T)

IUCV
Interactive User Communication Vehicle.

JCL
Job control language.

JECL
Job entry control language.

job accounting
A system function that lists how much every job step uses of the different system resources.

job accounting interface
A function that accumulates accounting information for each job step, to be used for charging the users of the system, for planning new applications, and for supervising system operation more efficiently.

*** job accounting table**
An area in the supervisor where accounting information is accumulated for the user.

job catalog
A catalog made available for a job by means of the file name IJSYSUC in the respective DLBL statement.

job control language (JCL)
A language that serves to prepare a job or each job step of a job to be run. Some of its functions are: to identify the job, to determine the I/O devices to be used, set switches for program use, log (or print) its own statements, and fetch the first phase of each job step.

job control statement
A particular statement of JCL.

job entry control language (JECL)
A control language that allows the programmer to specify how VSE/POWER should handle a job.

job step
One of a group of related programs complete with the JCL statements necessary for a particular run. Every job step is identified in the job stream by an EXEC statement under one JOB statement for the whole job.

job stream
The sequence of jobs as submitted to an operating system.

Kanji
A set of symbols used in Japanese ideographic printing. Every symbol is represented by two bytes.

KB
Kilobyte.

key
In VSE/VSAM, one or several characters taken from a certain field (key field) in data records for identification and sequence of index entries or of the records themselves.

key sequence
The collating sequence either of records themselves or of their keys in the index or both. The key sequence is alphanumeric.

key-sequenced file
A VSE/VSAM file whose records are loaded in key sequence and controlled by an index. Records are retrieved and stored by keyed access or by addressed access, and new records are inserted in the file in key sequence.

*** kilobyte (KB)**
1024 bytes of storage.

KSDS
Key-sequenced data set. See *key-sequenced file*.

label
1. An identification record for a tape, disk, or diskette volume or for a file on such a volume. 2. In assembler programming, a named instruction generally used for branching.

label information area
An area on a disk to store label information read from job control statements or commands. Synonymous with *label area*.

*** LAN**
Local area network.

language translator
A general term for any assembler, compiler, or other routine that accepts statements in one language and produces equivalent statements in another language.

LEN
Low-entry networking.

*** librarian**
The set of programs that maintains, services, and organizes the system and private libraries.

library
See *VSE library* and *VSE/ICCF library*.

*** library block**
A block of data stored in a sublibrary.

*** library directory**
The index that enables the system to locate a certain sublibrary of the accessed library.

*** library member**
The smallest unit of data to be stored in and retrieved from a sublibrary.

*** licensed program**
A separately priced program and its associated materials that bear an IBM copyright and are offered to customers under the terms and conditions of the IBM Customer Agreement (ICA).

line
Short for telecommunication line. Any physical medium such as a wire or microwave beam, that is used to transmit data. Synonymous with *transmission line*.

line commands
In VSE/ICCF, special commands to change the declaration of individual lines on your screen. You can copy, move, or delete a line declaration, for example.

line printer
A device that prints a line of characters as a unit. (I) (A) Contrast with *character printer* or *page printer*.

link
1. To connect items of data or portions of programs, for example linking of object programs by the linkage editor or linking of data items by pointers. 2. In SNA, the combination of the link connection and the link stations joining network nodes, for example, a System/370 channel and its associated protocols. A link is both logical and physical. Synonymous with *data link*.

linkage editor
A program to build a phase (executable code) from one or several independently translated object modules or existing phases or both. In creating the phase, the program resolves cross references among the modules and phases available as input. The program can catalog the newly built phases.

*** link-attached**
Pertaining to devices connected to a control unit by a data link. Synonymous with *remote*. Contrast with *channel- attached*.

link connection
Physical medium of transmission, for example a telephone wire or a microwave beam. In SNA, the physical communication equipment between link stations, for example a line and a DCE. Synonymous with *data circuit*.

link-edit
To create a loadable computer program by having the linkage editor process compiled (assembled) source programs.

*** link station**
In SNA, the combination of hardware and software that allows a node to attach to and provide control for a link.

loader
A routine, commonly a computer program, that reads data or a program into processor storage. See also *relocating loader*.

*** local address**
In SNA, an address used in a peripheral node in place of an SNA network address and transformed to or from an SNA network address by the boundary function in a subarea node.

*** local area network (LAN)**
A data network located on the user's premises in which serial transmission is used for direct data communication among data stations. (T)

*** lock file**
In a shared disk environment under VSE, a system file on disk used by the sharing systems to control their access to shared data.

*** logging**
The recording of data about specific events.

logical unit (LU)
1. A name used in programming to represent an I/O device address. 2. In SNA, a port through which a user accesses the SNA network, a) to communicate with another user and b) to access the functions of the SSCP. An LU can support at least two sessions -- one with an SSCP and one with another LU -- and may be capable of supporting many sessions with other LUs.

logical unit name
In programming, a name used to represent the address of an input/ output unit.

logo
A trademark or other art work that is associated with a firm or product. A logo often appears as the first screen of an interactive program.

*** logon-interpret routine**
In VTAM, an installation exit routine, associated with an interpret table entry, that translates logon information. It may also verify the logon.

*** logon mode**
In VTAM, a subset of session parameters specified in a logon mode table for communication with a logical unit. See also *session parameters*.

*** logon-mode table**
In VTAM, a set of entries for one or more logon modes. Each logon mode is identified by a logon mode name.

low-entry networking (LEN)
In SNA, a capability in type 2.1 nodes allowing them to be directly attached to one another using peer-to-peer protocols and allowing them to support multiple and parallel sessions between logical units (LUs).

LU
Logical unit.

*** LU-LU session**
In SNA, a session between two LUs in an SNA network. It provides communication between two users, or between a user and an LU services component.

magnetic ink character recognition (MICR)
The recognition of characters printed with ink that contains particles of a magnetic material.

*** maintain system history program (MSHP)**
A program used for automating and controlling various installation, tailoring, and service activities for a VSE system.

major node
In VTAM, a set of minor nodes that can be activated as a group. See *node* and *minor node*.

*** MB**
Megabyte.

*** megabyte (MB)**
1,024KB or 1,048,576 bytes of storage.

*** member**
The smallest unit of data that can be stored in and retrieved from a sublibrary.

message
1. In VSE, a communication sent from a program to the operator or user. It can appear on a console, a display terminal or on a printout. 2. In telecommunication, a logical set of data being transmitted from one node to another.

*** microcode**
1. A code written using the instructions of a specific instruction set and implemented in a part of storage that is not program-addressable. 2. To design write, and test one or more micro instructions.

*** migrate**
To move to a changed operating environment, usually to a new release or version of a system.

minor node
In VTAM, a uniquely-defined resource within a major node. See *node* and *major node*.

*** module**
A program unit that is discrete and identifiable with respect to compiling, combining with other units, and loading; for example, the input to, or output from, an assembler, a compiler, linkage editor, or executive routine. (A)

*** MSHP**
Maintain system history program.

Multiple Virtual Storage/Extended Architecture (MVS/XA*)
A licensed IBM program providing operating system support. It is a follow-on development of MVS/SP*.

*** multiprogramming**
1. A mode of operation that provides for interleaved execution of several programs by a single processor. (I) (A) 2. Pertaining to concurrent execution of several programs by a computer. (A)

multitasking
Concurrent running of one main task and one or several subtasks in the same partition.

*** nest**
To incorporate a structure or structures of some kind into a structure of the same kind. For example, to nest one loop (the nested loop) within another loop or to nest one subroutine (the nested subroutine) within another subroutine. (T)

NetView
An IBM licensed program to monitor a network, manage it, and diagnose its problems.

network
1. An arrangement of nodes (data stations) and connecting branches. 2. The assembly of equipment through which connections are made between data stations.

network address
In SNA, an address, consisting of subarea and element fields, that identifies a link, link station, or NAU. Subarea nodes use network addresses; peripheral nodes use local addresses. The boundary function in the subarea node to which a peripheral node is attached transforms local addresses to network addresses and vice versa. See *local address*.

Network Communications Control Facility (NCCF)
An IBM licensed program; the base for command processors that can monitor, control, and improve the operations of a network. Its function is included and enhanced in NetView's command facility. A traditional, alternative name for the command facility of NetView.

Network Control Program (NCP)
An IBM licensed program that provides communication controller support for single-domain, multiple-domain, and interconnected network capability.

network definition table (NDT)
In VSE/POWER networking, the table where every node in the network is listed.

networking
Making use of the services of a network program.

network operator
The person or program responsible for controlling the operation of all or part of a network.

*** node**
1. In SNA, an end point of a link or junction common to several links in a network. Nodes can be distributed to host processors, communication controllers, cluster controllers, or terminals. Nodes can vary in routing and other functional capabilities. 2. In VTAM, a point in a network defined by a symbolic name. Synonymous with *network node*. See *major node* and *minor node*.

*** node name**
In VTAM, the symbolic name assigned to a specific major or minor node during network definition.

*** object code**
Output from a compiler or assembler which is itself executable machine code or is suitable for processing to produce executable machine code. (A)

object module (program)
A program unit that is the output of an assembler or compiler and is input to a linkage editor.

OLTEP
Online test executive program.

online application program
An interactive program used at display stations. When active, it waits for data. Once input arrives, it processes it and sends a response to the display station or to another device.

online processing
Processing by which the input data enters the computer directly from a display station and the output data is transmitted directly to the display station.

online test executive program (OLTEP)
A program that controls the activities on the online-test system and provides communication with the operator. This test system (called VSE/OLTEP) can be used to test I/O devices, control units, and channels while programs are running.

*** operating system**
Software that controls the running of programs; an operating system may provide services such as resource allocation, scheduling, input/output control, and data management. (I) (A)

*** operator command**
A statement to a control program, issued via a console or terminal. It causes the control program to provide requested information, alter normal operations, initiate new operations, or end existing operations.

optical reader/sorter
A device that reads hand written or machine printed symbols on a voucher and, after having read the voucher, can sort it into one of the available stacker-select pockets.

optional program
An IBM program that a user can install on VSE by way of available installation-assist support.

*** outboard recorder (OBR)**
A VSE feature that records error data on the system recorder file when an irrecoverable I/O error occurs.

*** packet**
In data communication, a sequence of binary digits, including data and call control signals, that is transmitted and switched as a composite whole. (I) The data, call control signals, and, possibly, error control information are arranged in a specific format.

*** packet switching**
The processing of routing and transferring data by means of addressed packets so that a channel is occupied only during transmission of a packet. On completion of the transmission, the channel is made available for transfer of other packets. (I)

page
1. In a virtual storage system, the unit of code or data or both which is transferred between processor storage and the PDS as needed for processing. 2. To transfer pages between processor storage and the page data set.

page data set (PDS)
One or more extents of disk storage in which pages are stored when they are not needed in processor storage.

page fault
A program interruption that occurs when a program page marked "not in processor storage" is referred to by an active page.

*** page fixing**
Marking a page so that it is held in processor storage until explicitly released. Until then, it cannot be paged out.

page frame
An area of processor storage that can contain a page.

page-in
The process of transferring a page from the PDS to processor storage.

page I/O
Page-in and page-out operations.

page-out
The process of transferring a page from processor storage to the PDS.

*** page pool**
The set of page frames available for paging virtual-mode programs.

panel
The complete set of information shown in a single display on a terminal screen. Scrolling back and forth through panels is like turning manual pages. See also *selection panel* and *data entry panel*.

partition
A division of the virtual address area available for running programs. See also *dynamic partition, static partition*.

*** partition balancing, dynamic**
A VSE facility that allows the user to specify that two or more or all partitions of the system should receive about the same amount of time on the processor.

*** path**
1. In VTAM, the intervening nodes and data links connecting a terminal and an application program in the host processor. 2. In VSAM, a named logical entity providing access to the records of a base cluster either directly or through an alternate index.

PDS
Page data set.

personal computer (PC)
A microcomputer for individuals or small businesses.

*** phase**
The smallest unit of executable code that can be loaded into virtual storage.

PL/I
A programming language designed for use in a wide range of commercial and scientific computer applications.

PLU
Primary logical unit.

PNET
Programming support available with VSE/POWER; it provides for the transmission of selected jobs, operator commands, messages, and program output between the nodes of a network.

polling
In telecommunication, the process of inviting linked stations to transmit, one after the other.

port
1. An access point for data entry or exit. 2. A connector on a device to which cables for other devices (display stations, printers) are attached. Synonymous with *socket*.

POWER
See *VSE/POWER*.

*** pregenerated operating system**
An operating system such as z/VSE that is shipped by IBM mainly in object code. IBM defines such key characteristics as the size of the main control program, the organization and size of libraries, and required system areas on disk. The customer does not have to generate an operating system.

*** preventive service**
The installation of one or more PTFs on a VSE system to avoid the occurrence of anticipated problems.

*** primary library**
A VSE library owned and directly accessible by a certain terminal user.

primary logical unit
In SNA, the LU that contains the primary half-session for a particular LU-LU session. A particular LU may contain both primary and secondary half-sessions for different active LU-LU sessions. Contrast with *SLU*.

printer/keyboard mode
Refers to 1050 or 3215 console mode (device dependent).

priority
A rank assigned to a partition or a task that determines its precedence in receiving system resources.

*** private library**
A user-owned library that is separate and distinct from the system library.

*** private partition**
Any of the system's partitions that are not defined as shared. See also *shared partition*.

procedure
See *cataloged procedure*.

*** processing**
The performance of logical operations and calculations on data, including the temporary retention of data in processor storage while this data is being operated upon.

processor
The hardware component that interprets and executes instructions. (I) (A)

processor storage
The storage contained in one or more processors and available for running machine instructions. Synonymous with *real storage*.

*** production library**
1. In a pre-generated operating system (or product), the program library that contains the object code for this system (or product). 2. A library that contains data needed for normal processing. Contrast with *test library*.

profile
A description of the characteristics of a user or a computer resource.

*** programmer logical unit**
A logical unit available primarily for user-written programs. See also *logical unit name*.

program product
See *licensed program*.

program service
The customer- or program-related IBM service of correcting design or implementation errors via APARs and PTFs.

program temporary fix (PTF)
A solution or by-pass of one or more problems documented in APARs. PTFs are distributed to IBM customers for preventive service to a current release of a program.

prompt
To issue messages to a terminal or console user, requesting information necessary to continue processing.

protocol
In SNA, the set of rules for requests and responses between communicating nodes that want to exchange data.

PTF
Program temporary fix.

punch
1. To make holes in some data medium according to a signal code and thus save data on that medium. 2. A machine (output device) to punch 80-column punch cards.

*** punch card**
A card into which hole patterns can be punched; normally, it is characterized by 80 columns and 12 rows of punch positions.

*** queue**
1. A line or list formed by items in a system waiting for service; for example, tasks to be performed or messages to be transmitted in a network. 2. To arrange in, or form, a queue.

queue file
A disk file maintained by VSE/POWER that holds control information for the spooling of job input and job output.

queue record
A record in the queue file containing descriptive information about a job or job output.

*** random processing**
The treatment of data without respect to its location on disk storage, and in an arbitrary sequence governed by the input against which it is to be processed.

real address
The address of a location in processor storage.

*** real address area**
In VSE, the area of virtual storage where virtual addresses are equal to real addresses.

real mode
In VSE, a processing mode in which a program may not be paged. Contrast with *virtual mode*.

real storage
See *processor storage*.

recovery management support (RMS)
System routines that gather information about hardware failures and that initiate a retry of an operation that failed because of processor, I/O device, or channel errors.

*** reentrant**
The attribute of a program or routine that allows the same copy of the program or routine to be used concurrently by several tasks.

refresh release
An upgraded VSE system with the latest level of maintenance for a release.

relative-record file
A VSE/VSAM file whose records are loaded into fixed-length slots and accessed by the relative-record numbers of these slots.

relocatable module
In VSE, a library member of type object. It consists of one or or more control sections cataloged as one member.

relocating loader
A function that modifies addresses of a phase, if necessary, and loads the phase for running into the partition selected by the user.

*** remote job entry (RJE)**
Submission of jobs through an input unit that has access to a computer through a data link.

remote spooling communications subsystem (RSCS)
The licensed program that transmits spool files between VM users, remote stations, and remote and local batch systems via its telecommunication facilities.

*** restore**
To write back on disk data that was previously written from disk to an intermediate storage medium such as tape.

RJE
Remote job entry.

RJE workstation
Any workstation that is used for remote job submission and for the remote retrieval of output.

RMS
Recovery management support.

*** routine**
Part of a program, or a sequence of instructions called by a program, that may have some general or frequent use. (I) (A)

*** routing**
The assignment of the path by which a message will reach its destination.

RPG II
A commercially oriented programming language suitable for writing application programs that meet common business data processing requirements.

RRDS
Relative-record data set. See *relative-record file*.

RSCS
remote spooling communications subsystem.

*** run**
1. A performance of one or more jobs. (I) (A) 2. A performance of one or more programs. (I) (A) 3. To cause a program or job to be performed.

SAM
Sequential access method.

SAM ESDS file
A SAM file managed in VSE/VSAM space, so it can be accessed by both SAM and VSE/VSAM macros.

schedule
To select a program or task for getting control over the processor.

SCP
System control programming.

SDL
System directory list.

SDLC
Synchronous data link control.

SDR
Statistical data recorder.

*** search chain**
The order in which chained sublibraries are searched for the retrieval of a certain library member of a specified type.

secondary logical unit
In SNA, the LU that contains the secondary half-session for a particular LU-LU session. An LU may contain secondary and primary half-sessions for different active LU-LU sessions. Contrast with *PLU*.

security
See *access control*.

segmentation
In VSE/POWER, a facility that breaks list or punch output of a program into segments so that printing or punching can start before this program has finished generating such output.

*** selection panel**
A displayed list of items from which a user can make a selection. Synonymous with *menu*.

sense
Determine, on request or automatically, the status or the characteristics of a certain I/O or communication device.

sequential access
The serial retrieval of records in their entry sequence or serial storage of records with or without a premeditated order. Contrast with *direct access*.

sequential access method (SAM)
A data access method that writes to and reads from an I/O device record after record (or block after block). On request, the support performs device control operations such as line spacing or page ejects on a printer or skip a certain number of tape marks on a tape drive.

sequential file
A file in which records are processed in the order in which they are entered and stored.

service node
Within the VSE unattended node support, a processor used to install and test a master VSE system which is copied for distribution to the unattended nodes. Also, program fixes are first applied at the service node and then sent to the unattended nodes.

*** service program**
A program in general support of computer processes, for example, a diagnostic program, a trace program, or a sort program. (T) Synonymous with *utility program*.

session parameters
In SNA, the parameters that specify or constrain the protocols (such as bracket protocol and pacing) for a session between two NAUs. See also *logon mode*.

shared disk option
An option that lets independent computer systems use common data on shared disk devices.

*** shared partition**
In VSE, a partition allocated for a program that provides services for and communicates with programs in other partitions of the system's virtual address spaces.

*** shared spooling**
A function that permits the VSE/POWER account file, data file, and queue file to be shared among several computer systems with VSE/POWER.

*** shared virtual area (SVA)**
In VSE, a high address area that contains a list system directory list (SDL) of frequently used phases, resident programs shared between partitions, and an area for system support.

skeleton
A set of control statements and/or instructions that requires user-specific information to be inserted before it can be submitted for processing.

SLU
Secondary logical unit.

SNA
Systems Network Architecture.

SNA network
The part of a user-application network that conforms to the formats and protocols of SNA.

*** software**
Programs, procedures, rules, and any associated documentation pertaining to the operation of a computer system.

source member
A library member containing source statements in any of the programming languages supported by VSE.

*** source program**
A computer program expressed in a source language. (I) (A) Contrast with *object module*.

source statement
A statement written in symbols of a programming language.

*** spool access support**
A function of VSE/POWER that allows user programs or subsystems running on VSE to access the spool files of VSE/POWER.

*** spool file**
1. A file that contains output data saved for later processing. 2. One of three VSE/POWER files on disk: queue file, data file, and account file.

*** spooling**
The use of disk storage as buffer storage to reduce processing delays when transferring data between peripheral equipment and the processor of a computer. In VSE, this is done under the control of VSE/POWER.

SQL/DS
Structured Query Language/Data System.

*** stacked tape**
An IBM supplied product-shipment tape containing the code of several licensed programs.

stand-alone program
A program that runs independently of (not controlled by) the VSE system.

*** standard label**
A fixed-format record that identifies a volume of data such as a tape reel or a file that is part of a volume of data.

*** start option**
In VTAM, a user-specified or IBM specified option that determines conditions for the time an VTAM system is operating. Start options can be predefined or specified when VTAM is started.

start-stop (SS) system
A data transmission system in which each character id preceded by a start signal and is followed by a stop signal. (T)

startup
The process of performing IPL of the operating system and of getting all subsystems and application programs ready for operation.

static partition
A partition, defined at IPL time and occupying a defined amount of virtual storage that remains constant. Contrast with *dynamic partition*.

station
1. One of the input or output points of a network that uses communication facilities; for example, the telephone set in the telephone system or the point where the business machine interfaces with the channel on a leased private line. 2. One or more computers, terminals, or devices at a particular location.

statistical data recorder (SDR)
A feature that records the cumulative error status of an I/O device on the system recorder file.

storage control unit
A piece of hardware equipment that controls the reading and writing of data at one or more disk devices.

storage director
An independent component of a storage control unit; it performs all of the functions of a storage control unit and thus provides one access path to the disk devices that are attached to it. A storage control unit has two storage directors.

storage dump
See *dump*.

storage fragmentation
Inability to allocate unused sections (fragments) of storage in the real or virtual address range of virtual storage.

Structured Query Language/Data System
An IBM licensed program for using a database in an online, interactive, or batch environment.

*** subarea**
A portion of the SNA network consisting of a subarea node, attached peripheral nodes, and associated resources. Within a subarea node, all NAUs, links, and adjacent link stations in attached peripheral or subarea nodes that are addressable within the subarea share a common subarea address and have distinct element addresses.

*** subarea address**
In SNA, a value in the subarea field of the network address that identifies a subarea.

sublibrary
In VSE, a subdivision of a library. Members can only be accessed in a sublibrary.

sublibrary directory
An index for the system to locate a member in the accessed sublibrary.

submit
A VSE/POWER function that passes a job to the system for processing.

*** subsystem**
A secondary or subordinate system or program, usually capable of operating independently of, or asynchronously with, the operating system.

subtask
A task that is initiated by the main task or by another subtask.

*** supervisor**
The part of a control program that coordinates the use of resources and maintains the flow of processor operations.

supervisor mode
See *ESA mode*.

SVA
Shared virtual area.

switched line
A telecommunication line in which the connection is established by dialing.

*** switched SNA major node**
In VTAM, a major node whose minor nodes are PUs and LUs attached by switched SDLC links.

switched virtual circuit
An X.25 NPSI circuit that is dynamically established when needed. The X.25 equivalent of a switched line.

Synchronous Data Link Control (SDLC)
A discipline for managing synchronous, code-transparent, serial-by-bit information transfer over a link connection. Transmission exchanges may be duplex or half-duplex over switched or non-switched links. The configuration of the link connection may be point-to-point, multipoint, or loop.

SYSRES
System residence volume.

*** system console**
A console, usually equipped with a keyboard and display screen for control and communication with the system.

system directory list (SDL)
A list containing directory entries of frequently-used phases and of all phases resident in the SVA. The list resides in the SVA.

*** system file**
In VSE, a file used by the operating system, for example, the hard-copy file, the recorder file, the page data set.

system logical unit
A logical unit available primarily for operating system use. See also *logical unit name*.

system recorder file
The file that is used to record hardware reliability data. Synonymous with *recorder file*.

system refresh release
See *refresh release*.

system residence volume (SYSRES)
The disk volume on which the system sublibrary is stored and from which the hardware retrieves the initial program load routine for system startup.

system sublibrary
The sublibrary that contains the operating system. It is stored on the system residence volume (SYSRES).

System Support Program (SSP)
An IBM licensed program, made up of a collection of utilities and small programs, that supports the operation of the NCP.

Systems Network Architecture (SNA)
The description of the logical structure, formats, protocols, and operational sequences for transmitting information units through and controlling the configuration and operation of networks.

*** tailor**
A process that defines or modifies the characteristics of the system.

*** task**
The basic unit of synchronous program execution. A task competes with other tasks for system resources such as processing time and I/O channels.

task management
The functions of a control program that control the use, by tasks, of the processor and other resources (except for input/output devices).

TCT
Terminal control table.

*** telecommunication**
Transmission of data between computer systems and between such a system and remote devices.

telecommunication line
Any physical medium such as a wire or microwave beam, that is used to transmit data. Contrast with *data link*.

terminal
A point in a system or network at which data can either enter or leave. (A) Usually a display screen with a keyboard.

terminal control table (TCT)
A control block in which the system stores information about the characteristics and modes of operation of the terminals defined to the system.

*** throughput**
1. A measure of the amount of work performed by a computer system over a given period of time, for example, jobs per day. (I) (A) 2. In data communication, the total traffic between stations per unit of time.

time event scheduling support
In VSE/POWER, the time event scheduling support offers the possibility to schedule jobs for processing in a partition at a predefined time once or repetitively. The time event scheduling operands of the * $$ JOB statement are used to specify the desired scheduling time.

*** time slicing**
A mode of operation in which several processes are assigned quanta of time on the same processor. (I) (A)

*** token**
In a local area network, the symbol of authority passed among data stations to show the station temporarily in control of the transmission medium. (T)

token-ring
A network configuration where series of attaching devices are connected by unidirectional transmission links to form a closed path. Tokens are passed from adapter to adapter.

trace
1. To record a series of events as they occur. 2. A record of specified events during the run of a program. 3. A program to produce such a record.

*** track**
A circular path on the surface of a disk or diskette. Smallest unit of physical disk space.

track group
In VSE/POWER, the basic organizational unit of a file for CKD devices.

track hold
A function that protects a track while it is being updated by one program from being accessed by another program.

transaction
1. In a batch or remote batch entry, a job or job step. 2. In CICS, an application program (or programs) that can be used by a display station operator. A given transaction can be used concurrently from one or more display stations. The execution of a transaction for a certain operator is also referred to as a task. A given task can relate only to one operator.

*** transient area**
An area within the control program used to provide high-priority system services on demand.

*** transmit**
To send data from one place for reception elsewhere. (A)

UCB
Universal character set buffer.

*** UCS**
Universal character set.

*** unique file**
A VSE/VSAM file that occupies a data space of its own. The data space is defined at the same time as the file and cannot contain any other file. Contrast with *suballocated file*.

universal character set (UCS)
A printer feature that permits the use of a variety of character arrays.

universal character set buffer (UCB)
A buffer to hold UCS information.

user console
In z/VSE, a console that receives only those system messages that are specifically directed to it. These are, for example, messages that are issued from a job that was submitted with the request to echo its messages to that console. Contrast with *administration console*.

user exit
A programming service provided by an IBM software product that may be requested during the execution of an application program for the purpose of transferring control back to the application program upon the later occurrence of a user-specified event.

*** utility program**
1. A program in general support of computer processes, for example, a diagnostic program, a trace program, or a sort program. (T) Synonymous with *service program*. 2. A program that performs an everyday task such as copying data from one storage device to another. (A)

VAE
Virtual addressability extension.

variable-length relative-record file
A VSE/VSAM relative-record file with variable-length records. See also *relative-record file*.

virtual address
An address that refers to a location in virtual storage. It is translated by the system to a processor storage address when the information stored at the virtual address is to be used.

virtual addressability extension (VAE)
A storage management support that gives the user of z/VSE multiple address spaces of virtual storage.

virtual address area
The virtual range of available program addresses.

virtual address space
In VSE, a subdivision of the virtual address area available to the user for the allocation of private (non-shared) partitions.

*** virtual I/O area (VIO)**
An extension of the page data set; used by the system as intermediate storage, primarily for control data.

*** virtual machine**
A functional simulation of a computer system and its associated devices.

*** virtual mode**
The operating mode of a program which may be paged.

*** virtual partition**
In VSE, a division of the dynamic area of virtual storage.

virtual storage
Addressable space image for the user from which instructions and data are mapped into processor storage locations.

virtual storage
Addressable space image for the user from which instructions and data are mapped into processor storage locations.

virtual tape
In z/VSE, a virtual tape is a file (or data set) containing a tape image. You can read from or write to a virtual tape in the same way as if it were a physical tape. A virtual tape can be:

- A VSE/VSAM ESDS file on the z/VSE host side.
- A remote file on the server side; for example, a Linux, UNIX, or Windows file. To access such a remote virtual tape, a TCP/IP connection is required between z/VSE and the remote system.

volume ID
The volume serial number, which is a number in a volume label assigned when a volume is prepared for use by the system.

volume table of contents (VTOC)
A table on a disk volume that describes every file on it.

VRDS
Variable-length relative-record data set. See *variable-length relative record file*.

VSAM
See *VSE/VSAM*.

VSE (Virtual Storage Extended)
A system that consists of a basic operating system and any IBM supplied and user-written programs required to meet the data processing needs of a user. VSE and the hardware it controls form a complete computing system. Its current version is called z/VSE.

VSE/Advanced Functions
As part of VSE Central Functions, a base program of z/VSE.

VSE/ESA
A predecessor system of z/VSE.

VSE/Fast Copy
A utility program for fast copy data operations from disk to disk and dump/restore operations via an intermediate dump file on magnetic tape or disk.

*** VSE/ICCF (VSE/Interactive Computing and Control Facility)**
An IBM program that serves as interface, on a time-slice basis authorized users of terminals linked to the system's processor.

VSE/ICCF library
A file composed of smaller files (libraries) including system and user data which can be accessed under the control of VSE/ICCF.

VSE library
A collection of programs in various forms and storage dumps stored on disk. The form of a program is indicated by its member type such as source code, object module, phase, or procedure. A VSE library consists of at least one sublibrary which can contain any type of member.

*** VSE/OLTEP (VSE/Online Test Executive Program)**
An IBM program for managing the online tests that are available for preventive service for I/O devices. Normally, only IBM service representatives use this program.

*** VSE/POWER**
An IBM program primarily used to spool input and output. The program's networking functions enable a VSE system to exchange files with or run jobs on another remote processor.

VSE/SP Unique Code
A component of z/VSE.

VSE/VSAM (VSE/Virtual Storage Access Method)
An IBM access method for direct or sequential processing of fixed and variable length records on disk devices.

VSE/VSAM catalog
A file containing extensive file and volume information that VSE/VSAM requires to locate files, to allocate and deallocate storage space, to verify the authorization of a program or an operator to gain access to a file, and to accumulate use statistics for files.

*** VSE/VSAM managed space**
A user-defined space on disk placed under the control of VSE/VSAM.

VTAM (Virtual Telecommunications Access Method)
An IBM program which controls communication and the flow of data in an SNA network. It provides single-domain, multiple-domain, and interconnected network capability; it supports application programs and subsystems (VSE/POWER, for example).

VTAM application program
A program that has opened an ACB to identify itself to VTAM and can now issue VTAM macro instructions.

*** VTAM definition library**
The VSE files that contain the VTAM definition statements and start options filed during VTAM definition.

VTOC
Volume table of contents.

wait for run subqueue
In VSE/POWER, a subqueue of the reader queue with dispatchable jobs ordered in execution start time sequence.

wait state
The condition of a processor when all operations are suspended. System recovery from a hard wait is impossible without performing a new system startup. Synonym for *hard wait*.

XA channel subsystem
See *channel subsystem*.

XRF
Extended recovery facility.

*** X.21**
In data communication, a recommendation of the CCITT that defines the interface between data terminal equipment and public data networks for digital leased and circuit switched synchronous services.

*** X.21 feature**
A feature that allows a system to be connected to an X.21 network.

X.25
In data communication, a recommendation of the CCITT that defines the interface between data terminal equipment and packet switching networks.

*** X.25 feature**
A feature that allows a system to be connected to an X.25 network.

X.25 NCP Packet Switching Interface (NPSI)
An IBM licensed program that allows SNA programs to communicate with SNA equipment or non-SNA equipment over packet-switched data networks. In addition, the product may be used to attach native X.25 equipment to SNA host systems without a packet network.

z/Virtual Machine (z/VM)
An IBM program providing operating system support. Among other services, it manages the resources of a single computer so that multiple computing systems seem to exist. Each of those virtual machines is the functional equivalent of an IBM computer system. An earlier name was VM/ESA.

z/VSE (z/Virtual Storage Extended)
The most advanced VSE system currently available.

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