

IBM CICS VSAM Recovery
Version 5 Release 1



User's Guide

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Version 5 Release 1



User's Guide

Note

Before using this information and the product it supports, read the information in "Notices" on page 189.

This edition applies to Version 5 Release 1 of the CICS VSAM Recovery for z/OS, program number 5655-Y24, and to all subsequent releases and modifications until otherwise indicated in new editions.

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How to use this document

Use this document for guidance on how you use an automated VSAM recovery and backout strategy for CICS® VR.

This document contains the following topics:

- Chapter 1, “Introducing CICS VR,” on page 1, introduces CICS VR and explains the ISPF panel driven components, pull-down menus, secondary windows, function keys and shortcuts, and online help, available. Including “Customizing the JCL skeleton” on page 10, which describes how to start the ISPF/PDF editor to obtain a JCL skeleton to be used to conform to your organization's standards.
- Chapter 2, “Running CICS VR forward recovery,” on page 13, provides details on the forward recovery function using the ISPF panels.
- Chapter 3, “Running CICS VR backup,” on page 39, describes how to take a backup using CICS VR.
- Chapter 4, “Running CICS VR reorganization,” on page 43, describes how to reorganize a VSAM sphere using CICS VR.
- Chapter 5, “Working with other VSAM sphere list pull-down menus,” on page 47, contains information on various pull-down menus on the VSAM sphere list panel.
- Chapter 6, “Working with CICS Backout Failed spheres,” on page 65, describes how to use the CICS Backout Failed sphere list which shows the CICS spheres registered for manual recovery or reorganization after CICS notification of a backout failure.
- Chapter 7, “Selecting from the log stream list,” on page 71, provides information on the use and the manipulation of MVS™ log streams and CICS VR SAM copies of MVS log streams.
- Chapter 8, “Selecting from the log of logs list,” on page 81, provides specifics concerning the use and manipulation of the log of logs.
- Chapter 9, “Setting automatic deregistration criteria,” on page 91, describes the provision of automatic deregistration to stop the RCDS from filling up.
- Chapter 10, “Browsing messages,” on page 95, describes how to browse messages that CICS VR has written to the data set allocated to the DWWMSG ddname when the specific error conditions are detected
- Chapter 11, “CICS VR settings,” on page 97, describes how to use the “CICS VR main menu” to customize all CICS VR settings, such as Undo logs.
- Chapter 12, “Using ISMF data set lists with CICS VR,” on page 109, describes how to use Interactive Storage Management Facility (ISMF) data set lists with CICS VR.
- Chapter 13, “Running CICS VR manually,” on page 129, offers step-by-step instructions for manually recovering VSAM spheres without using the ISPF dialog interface.
- Chapter 14, “Running CICS VR batch backout,” on page 135, describes how to run the CICS VR batch backout utility.
- Chapter 15, “Understanding CICS VR reports,” on page 145, contains details concerning statistical reports.

Operating environment

CICS VR uses logs to recover VSAM data. CICS VR supports MVS log streams.

You do not need CICS installed or running when you perform recovery. If you are recovering VSAM record level sharing (RLS) data, RLS must be active on the system on which the recovery is run.

For the specific software requirements for CICS VR, see *CICS VR Implementation Guide and Reference*.

Terminology

All the important terms used when working with CICS VR are described in detail in the Glossary. Several key terms are highlighted here.

IBM® CICS VSAM Recovery Version 5 Release 1, Program Number 5655–Y24, is referred to as CICS VR.

CICS is used when referring to all versions of CICS Transaction Server.

The term *log* is used to describe any of these types of logs:

- MVS log streams
- CICS VR SAM copies of MVS log streams
- CICS system log

Summary of changes

The summary of changes informs you of the changes to this document.

Revision bars (|) in the left margin of the document indicate changes from the previous edition.

Changes for Version 5 Release 1

CICS VR Version 5 Release 1 contains these changes.

Support for GDPS® Active-Active continuous availability solution

CICS VR 5.1 provides replication logging capability in support of the IBM GDPS/Active-Active (GDPS/AA) availability solution which IBM intends, in the future, to enhance to support replication of VSAM data for active-standby and active-query configurations. Currently GDPS/AA provides software replication of DB2® and IMS™ data between geographically dispersed sysplexes. The replication logging in CICS VR is intended to be used by GDPS/AA to provide replication of VSAM data updated by batch jobs under the control of CICS VR and complements replication logging capability in CICS TS 5.1 which provides the same support for VSAM files under control of CICS TS.

In CICS VR 5.1 support for replication logging provides UNDO, REDO, Tie-up records and File Close records on the same MVS logstream. Replication logging is activated using a new LOGREPLICATE attribute on the VSAM cluster definition. Replication logging can be activated in addition to any CICS VR UNDO or REDO logging already in place for backout or forward recovery support. If both replication logging and REDO logging for forward recovery are activated, they share the same logstream.

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Batch logging enhancements

The CICS VR batch logging diagnostics are improved, including an enhanced DWW269I message in the joblog that provides the details of the type of logging and the number of records, in decimal, written. On the system log new DWW400I and DWW401I messages provide details of the jobnames and job IDs using batch logging and which logstreams are being used. Clashes can be more easily identified, for example the attempted use of the same logstream by two concurrent jobs. For more information see, Setting up CICS(r) VR VSAM batch logging.

Batch backout improvements

The support provided by CICS VR when running batch backout to back out a batch job or jobstep are enhanced. The enhancements include:

- Diagnostics improved when no backout is required
- A new CHECK option to produce enhanced reports listing the key of records backed out
- Support for step names within procedures

For more information see, BATCHBACK: Remove updates to VSAM spheres.

Migration utility enhancements

- Support for upgrading CICS VR 5.1 RCDSs to CICS VR 5.1
- Improved error diagnostics
- Support for migration of CICS VR server defaults from previous releases

For more information see, General migration considerations.

NOTIFY enhancements

CICS VR provides a sample REXX clist to demonstrate the notification of multiple VSAM sphere backups. For more information see, NOTIFY: Notify CICS(r) VR when a VSAM sphere backup is created.

Message and report enhancements

- CICS VR produces diagnostic messages when the system data sets DWWDMSG and DWWDUMP wrap.
- The wording is improved for easier comprehension of log stream copy and log of logs scan reports.

For more information see, Understanding CICS(r) VR reports.

Logstream Printing enhancements

DWWJUP has been enhanced to identify replication records written by CICS VR 5.1 and CICS TS 5.1.

Changes for Version 4 Release 3

CICS VR Version 4 Release 3 contains these changes.

Enhanced server address space configuration

- **Customize names for started tasks:** CICS VR operations involve the use of a number of MVS started tasks. When CICS VR constructs a job name, it can now optionally include a system identifier instead of system slot number, to guarantee that the name of the job is unique across the sysplex, enabling unique security profiles to be associated with the jobs.
- **VSAM REDO batch logging continue control:** You can specify the maximum job step return code that CICS VR treats as the successful completion of the job step to continue VSAM REDO batch logging.
- **Server set up control:** You can specify a setup job that must be run during the initialization of the CICS VR server address space.

- **Scavenger run control:** You can set both the time interval parameter and the start time parameter to control the scavenger runs.
- **Selective backup registration control:** You can automatically register in the RCDS only backups for which VSAM spheres were already registered.
- **None string handling:** As a usability aid, you can specify a value of NONE in place of a blank or null string for CICS VR parameters in the IGDSMSxx parmlib member.
- **Setting CICS VR Server address space defaults from the ISPF dialog**
Authorized users can specify CICS VR server address space defaults from the CICS VR ISPF dialog interface, as well as from the CICSVR_GENERAL_CONTROL parameter.

Server address space security improvements

CICS VR can protect the RCDS from being updated by any user when the panel interface is used. You can specify that the user's security profile must be checked before allowing certain information in the RCDS to be added, changed, or deleted. CICS VR can protect the RCDS from being updated by any external service request to the CICS VR server address space from batch jobs. The RCDS protection from non-authorized usage has improved.

Automation enhancements

Automation is enhanced and integration improved.

- You can enable and disable the CICS GLUE DWWXFCBF dynamically by means of CICS transactions or EXEC CICS LINK commands to appropriate programs, in addition to the current enabling method by PLTPI.
- You can find out the state of the CICS VR Server, and, if it is not active, try to activate it in the GLUE enabling process.

Duplicate recovery runs prevention

You can prevent the running of duplicate recovery jobs by using the new Recovery Submission Manager tool.

Time range for batch backout

You can specify a stop point for Batch Backout. Support has been added for **stoptime** and **stoptod** keywords. You can specify a stop point for Batch Backout. The time range for Batch Backout is started by adding STOPTIME or STOPTOD keywords to the command input in the DWWIN DD statement.

Improved backup deregistration

You can specify multiple criteria for automatic backup deregistration on the CICS VR automatic backup deregister window by specifying values for the following input fields:

- **Backup retention period:** An integer between 0 and 999 specifies the number of days CICS VR keeps information about backups in the RCDS.
- **Use log retention period:** A value of 1, Yes, specifies that CICS VR deregisters backups when coinciding log data that is also deregistered by the CICS VR automatic log stream deregistration function.
- **Use catalog information:** A value of 1, Yes, specifies that CICS VR deregisters all registered non-DFSMSHsm backups that are not in the ICF catalog.

ISPF Global Time Presentation Setting

You can choose a format for timestamp representation on panels by using the new option, **ISPF Global Time Representation Setting**.

Last Data Set Filter

You can enter the sphere list with the last used data set name filter without having to specify values for input fields every time that the CICS VR VSAM sphere include window is displayed.

RCDS extract utility

A new keyword, SPHERES, has been added to the RCDS EXPORT command, when you specify SPHERES CICS VR copies information about the specified data sets to an EXPORT file which can be used with IMPORT to load a new RCDS. The values in the keyword specify the names of the data sets for which the information is copied. You can select information only about the specified data sets that you require to be copied from one RCDS to another.

Journal print filtering

You can now print only a part of the contents of the mvslgms and information about certain records logged on them. Include and Exclude filtering, using the same criteria as for logical recovery, has been added. CICS VR now provides print filtering for records logged on an mvslgm.

Logcopy filtering

You can copy only a part of the contents of the mvslgms. In addition to normal copying you can use Include and Exclude filtering using the same criteria as for logical recovery. The Logcopy function filtering is started by adding EXCLUDE or INCLUDE commands, or both, to the command input in the DWWIN DD statement.

Miscellaneous release changes

The IVP procedure now includes CICS VR server address space setup, server start, and batch logging.

Recovery now supports use of HSM Version 0 backups available with z/OS® 1.10.

Changes for Version 4 Release 2

CICS VR Version 4 Release 2 contains these changes.

Support for ABARS backups

ABARS backups are now included in the set of types supported by CICS VR automatic restore. ABARS notifies CICS VR of backups, then CICS VR adds the backups to the inventory. CICS VR provides ISPF panels to enable recovery for ABARS data sets.

Individual criteria can be specified for log streams

Using the CICS VR interface, you can set a retention period for MVS log streams and log of logs streams. The retention period for blocks value applies to all registered log streams. CICS VR allow you to specify individual retention criteria for log streams registered to CICS VR.

NOTIFY utility

CICS VR has a NOTIFY utility. This utility intended to be used for any backup of a VSAM sphere created by an IBM or non-IBM product. When notified, CICS VR registers information about the backup in the CICS VR RCDS. Information about the backup is visible through the CICS VR panel interface.

Hardware backup support

Additional support for hardware backups has been provided. A new keyword to indicate the use of a hardware backup has been added to the RECOVER command.

Enhancement to DWWEFCBF program

The DWWEFCBF program enables program DWWXFCBF at exit XFCBFAIL with parameters optimized for the CICS TS version. No user configuration changes are required to enable this change.

Extended ESDS support

CICS VR supports Extended Addressability for ESDS, for CICS updates and for CICS VR Batch Logging. No user configuration changes are required to enable this change.

SMS tape data sets deregistration

CICS VR deregistration of SMS tape data sets now uncatalogs and deletes the data sets. No user configuration changes are required to enable this change.

New CICS VR journal print utility

There is sometimes a need to print the contents of MVS logs and to find information about records logged on them. CICS VR can print records logged by CICS VR or CICS on MVS logs.

Automatic and manual invocation of log of logs scan utility

CICS VR can run the log of logs scan automatically, at regularly scheduled times. CICS VR can also run the log of logs scan manually, at more convenient times.

Multiple undo logs support

The new CICS VR logger feature allows a user to have several undo logs on a system, and customize their usage by defining UserID, JobID and HLQ associations.

Changes for Version 4 Release 1

CICS VR Version 4 Release 1 contains the following changes.

CICS VR Security

Security has been enhanced to protect the RCDS from being updated by any user. It is possible to specify that the users security profile must be checked before allowing certain information in the RCDS to be added, changed, or deleted.

RCDS REPORTS

Recovery reports can be created to identify the information required to enable recovery of a remote site. In particular, detailed information can be obtained to determine what is needed to recover a main or remote site from a disaster or to keep the site up-to-date. Other reports provide information that show when VSAM spheres were used and where the records were logged, information about each registered backup in RCDS, and information about registered mvslog copies in RCDS.

Automated Recovery

The CICS VR Automated Recovery function has been added. This provides an automatic or semi-automatic repair or reorganization of a VSAM data set after a backout failure has occurred in CICS TS, when attempting to back out changes to the data set.

Backup initiation

Backup can now be initiated using an ISPF dialog.

Automatic deregistration for change accumulation data sets

Automatic deregistration for change accumulation data sets has been added.

CICS/ESA V4R1 is no longer an IBM-supported release of CICS

None of the new functions added to CICS VR V4R1 have been designed for use or tested with CICS/ESA V4R1. Documentation specific to CICS/ESA V4R1 support has been removed from this manual to reflect the changes made in CICS VR V4R1.

Perform tasks on CICS Backout Failed spheres

CICS spheres are registered for manual recovery or reorganization after CICS notification of a backout failure. A dialog has been provided to perform these tasks using a CICS Backout Failed sphere list panel.

Running backup from CICS VR Panels

Backups can be initiated using the CICS VR ISPF dialog interface.

RCDS Reports

Recovery reports can be created to identify the information required to enable recovery of a remote site. In particular, detailed information can be obtained to determine what is needed to recover a main or remote site from a disaster or to keep the site up-to-date.

Local/GMT switch support for the CICS VR registered backup names list

The CICS VR VSAM sphere list secondary window contains a List pull-down menu which provides a List backup names option. The dialog has been enhanced by adding support for GMT or Local time format switches. This choice of times allows viewing the actual names of the CICS VR registered backups for non- DFSMSHsm backups, with backup times in the format that you require. This facility is provided on the CICS VR backup list secondary window only.

Batch Backout

Performance of the Batch Backout utility has been increased.

Logstream names

An option has been added, REALDDN, to use either real DD names or generated names for the logstream of VSAM sphere changes.

RCDS and DWW1558S message

The message DWW1558S is no longer displayed incorrectly.

Log stream copy utility enhancement

Cursor control, TOD timestamp and delete functions have been added to the log stream copy utility. You can use new keywords on the LOGSTREAMCOPY command to:

- Set and reposition a “start of copy” cursor to control where log stream records are read from.
- Repeat reads to produce additional exact copies of log stream records.
- Delete log stream records. Deletion is only permitted if the CICS VR global default LCDEL is set to YES.
- Specify a TOD timestamp for the start and end of copying, which provides more granularity than the existing keywords.

Functional enhancements to the precopy exit

- The DEFEXIT command has been extended to provide greater compatibility with older exit routines.
- Additional documentation is provided about the log stream records created by the LOGSTREAMCOPY command.

Chapter 1. Introducing CICS VR

With CICS VR, you can recover your VSAM data without specialist knowledge or expertise.

You use the CICS VR Interactive System Productivity Facility (ISPF) dialog interface which constructs the jobs that are run to recover VSAM data.

The CICS VR ISPF dialog interface conforms to Systems Application Architecture® (SAA), Common User Access (CUA) guidelines, and is object-action oriented. With the dialog interface you select an object on the panel, and then select an action to apply to that object. The panels contain components such as menu bars, pull-down menus, and secondary windows. See the “Glossary” on page 163 for an explanation of these CUA terms. For a more detailed description of CUA terminology, see *Common User Access: Basic Interface Design Guide* in the *Systems Application Architecture* library.

When to run CICS VR

Use CICS VR to recover from any of the following problems in a CICS TS or batch environment:

Physical VSAM damage or loss

Use the CICS VR panel interface to construct a recovery job when your VSAM data has been physically damaged or lost. In a CICS TS or batch environment, CICS VR forward recovery performs the same set of tasks:

- Restores the VSAM sphere from a logical backup, if available
- Forward recovers all updates made by CICS and batch applications since the backup was taken

In a CICS TS environment

After forward recovery completes successfully, CICS can reopen the data set. CICS removes any incomplete units of work that exist in the forward recovered VSAM data set.

In a batch environment

CICS VR treats each batch job step as a logical unit of work. CICS VR forward recovery forward recovers updates made by completed batch job steps only. CICS VR does not leave your VSAM data in an inconsistent state; for example, when only some updates made by a batch job step are forward recovered successfully.

Logical VSAM damage caused by CICS transactions

Use the CICS VR panel interface to recover VSAM data from damage caused by logical corruption. Use the panel to build a forward recovery job. Specify forward recovery criteria to exclude any updates have been made, but are not required, to your VSAM data by CICS transactions.

Failed batch job step

A batch job that updates VSAM data but encounters a failure might leave VSAM data in an inconsistent state. Use CICS VR batch backout to remove updates made to VSAM data by a batch job step that failed.

How you interact with CICS VR

Interaction with CICS VR is usually performed using panel interfaces. Each panel in the interface consists of several components.

To help explain the components the figure below shows an example of the CICS VR VSAM sphere list panel.

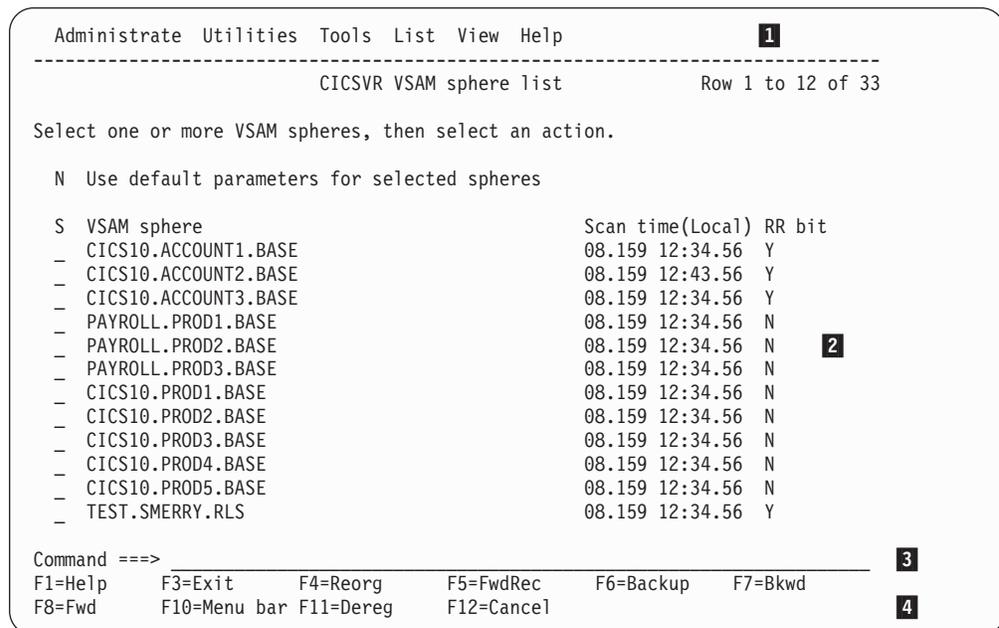


Figure 1. Components of a CICS VR panel

- 1** The **menu bar** at the top of the panel consists of a list of choices, or pull-down menus, that represent groups of related actions that you can select. See the description of pull-down menus in "Pull-down menus."
- 2** The **scrollable area** is where you interact with the dialog. This area begins below the menu bar, and occupies most of the panel or secondary window. It can contain selection fields, display fields, and entry fields.
- 3** The **command area** is where you enter commands such as system commands or CICS VR shortcut commands, without leaving the CICS VR ISPF dialog interface. For further information, see "Shortcut commands" on page 8.
- 4** The **function key area** at the bottom of the panel, is where you perform actions by pressing a function key. See "Function keys and shortcuts" on page 5 for an explanation of the function keys in the CICS VR ISPF dialog interface.

Pull-down menus

When you select a choice from the menu bar and a pull-down menu is displayed. The pull-down menu overlays a part of the panel under the choice.

The figure below shows the Utilities pull-down menu from the "CICS VR VSAM sphere list" panel:

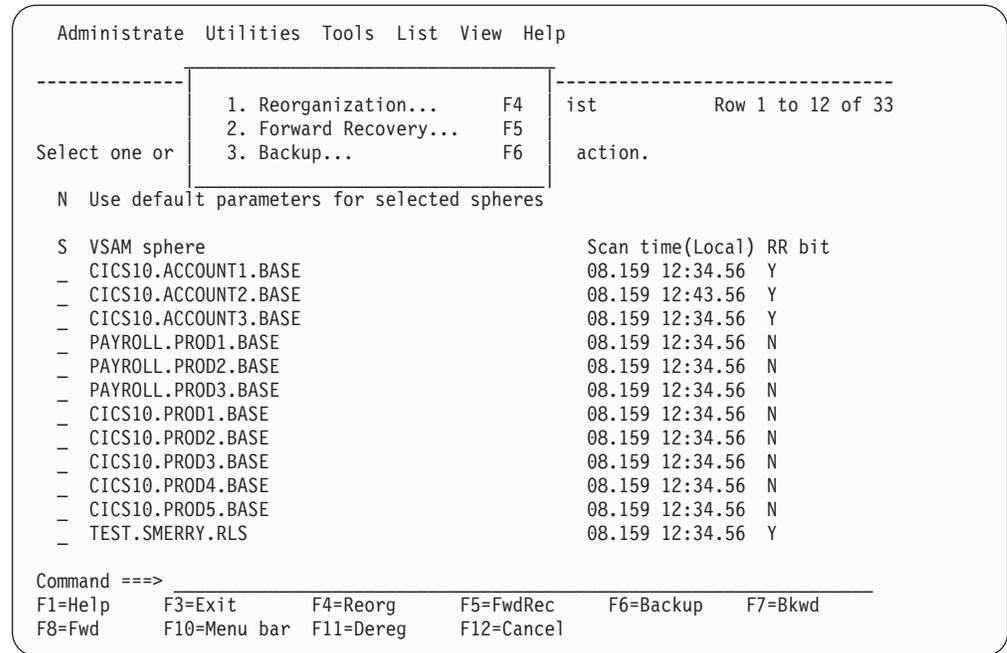


Figure 2. An Example of a pull-down menu

You can select these menus from the CICS VR panels:

Administrat

Manage VSAM spheres and logs. This pull-down menu is available on these panels:

- “CICS VR VSAM sphere list”
- “CICS VR log of logs list”
- “CICS VR list of log streams”
- “CICS VR Settings”

Utilities

Specify the CICS VR utility or backup utility that you want to run, CICS VR VSAM sphere list, or scan the log of logs, CICS VR log of logs list. This pull-down menu is available on these panels:

- “CICS VR VSAM sphere list”
- “CICS VR log of logs list”

Tools

Run VSAM record level sharing (RLS) and set the scan option. This pull-down menu is available on the CICS VR VSAM sphere list panel.

List

List different objects that are relevant to the panel from which you select it.

View

Restrict or sort the list of objects that are displayed.

Help

Relevant help information from the following sources:

- “CICS VR main menu”
- “CICS VR VSAM sphere list”
- “CICS VR log of logs list”
- “CICS VR log streams list”
- “CICS VR settings”

Secondary windows

After selecting an option from a pull-down menu, a secondary window is displayed. Secondary windows do not have a menu bar.

The figure below shows an example of the “CICS VR sequence checking” secondary window.

```

                                CICSVR sequence checking

Specify sequence checking parameters. Press Enter to use the displayed
values in the recovery.

LOG DATA SETS                !   LOG RECORDS
Gap in sequence _  1. STOP      !   Gap in sequence _  1.STOP
                   2. WARNING   !                   2.WARNING
                   3. IGNORE    !                   3.IGNORE
                                !
Out of sequence _  1. STOP      !   Out of sequence _  1.STOP
                   2. WARNING   !                   2.WARNING
                   3. IGNORE    !                   3.IGNORE
                                !
Reset sequence _    1. STOP      !   Reset sequence _  1.STOP
                   2. WARNING   !                   2.WARNING
                   3. IGNORE    !                   3.IGNORE

Command ==> _____
F1=Help   F5=GetDef  F6=SaveDef F12=Cancel
```

Figure 3. An Example of a secondary window

Pop-up messages

When using a CICS VR panel interface, various pop-up messages might be displayed providing additional information.

For example, CICS VR displays the pop-up message as shown below, when the **Browse messages** option is selected from the “CICS VR main menu”, but no messages have been written by CICS VR.

```

Help
-----
                                CICSVR main menu

Select one and press Enter.

                                — 1. List of VSAM spheres
                                       2. List of log streams
                                       3. List of registered log of logs
                                       4. Automatic deregister criteria
                                       5. JCL skeleton
                                       6. Browse messages
                                       7. List of CICS Backout Failed spheres
                                       8. CICSVR Settings

                                -----
                                | The data set allocated to the DWMSG ddname is empty. |
                                -----
(C) Copyr
Command ==>
F1=Help      F3=Exit      F10=Menu bar F12=Cancel

```

Figure 4. Sample CICS VR pop-up message

Removing pop-up messages

A pop-up message might obscure text or input fields on a CICS VR panel.

You can remove a pop-up message using one of the following methods:

- Place the cursor over the pop-up message and press Enter.
- Enter the command, **REMSG** on the command line and press Enter.

Function keys and shortcuts

Three groups of function keys are used in the CICS VR ISPF dialog interface.

- “Standard function keys”
- “Other function keys” on page 6
- “Shortcut function keys” on page 7

Standard function keys

Two standard function keys are available in all panels and secondary windows.

F1=Help

Provides specific information about an item or field, or about the help itself. For further information, see “Online help” on page 9.

F12=Cancel

Exits the current panel or secondary window.

If you run CICS VR under ISPF/Program Development Facility (ISPF/PDF), you have two more standard ISPF function keys:

F2=Split screen

Splits the screen display.

F9=Switch screen

Switches the display to another screen.

Other function keys

These function keys are available in some CICS VR panels and secondary windows in the ISPF dialog interface. They are available only in the panels and secondary windows that contain objects to which they refer, so the function performed by a key might change depending on the panel that is displayed.

For example, the F10 key can act as the menu bar key only in panels with a menu bar.

F3=Exit

Ends a function and removes the panel associated with that function from the screen. The exit key is available in panels with a menu bar.

F4=Prompt

Displays a secondary window containing a list of input values. You can select one item from the list for input, by moving the cursor to the relevant field and pressing F4. The input field is followed by the plus symbol '+' showing that prompt data is available for this field. This function key is available in secondary windows that contain prompt fields.

F4=SwType

Switches the types of reorganization in the "CICS VR VSAM Sphere reorganization" panel and the types of Undo logs associations in the "CICS VR Undo logs management" secondary window.

F5=GetDef

Sets the value of the input fields to the CICS VR default values. This function key is available in secondary windows where defaults are used.

F5=Add

Opens a secondary window to register new associations in the "CICS VR Undo logs assignment" window.

F6=SaveDef

Saves the displayed values in a secondary window. This function key is available in panels where defaults are used.

F6=Alter

Opens a secondary window to modify the parameters of the selected associations in the "CICS VR Undo logs assignment" window.

F7=PrevVSAM

Returns to the previous "CICS VR VSAM sphere parameters" secondary window.

F7=PrevItem

Returns to the previous Undo log association in the "CICS VR Undo logs management" secondary window.

F7=Bkwd

Scrolls the information in the panel or secondary window backward by one screen. This function key is available in panels and secondary windows with scrollable data.

F8=Fwd

Scrolls the information in the panel or secondary window forward by one screen. This function key is available in panels and secondary windows with scrollable data.

F10=Menu bar

Moves the cursor to and from the menu bar. This function key is available in panels with a menu bar.

F10=AutoNO

Disables Automatic LSR buffers on the “CICS VR VSAM buffer pools” panel.

F11=AutoYES

Enables Automatic LSR buffers on the “CICS VR VSAM buffer pools” panel.

Shortcut function keys

Some actions available on a menu have shortcut function keys. Pressing the shortcut key causes the action, without selecting the action from the menu.

The keys are available on specific panels:

F4=ListDet

Equivalent to the **List details** choice on the **List** pull-down menu of the panel. It is available on these panels:

- “CICS VR log of logs list”
- “CICS VR SAM copy list”
- “CICS VR log stream list”
- “CICS Backout Failed sphere list”

F4=Reorg

Equivalent to the **Reorganization** choice on the **Utilities** pull-down menu. It is available only on the “CICS VR VSAM sphere list” panel.

F5=FwdRec

Equivalent to the **Forward recovery** only choice on the **Utilities** pull-down menu. It is available only on the “CICS VR VSAM sphere list” panel.

F5=ListSAM

Equivalent to the **List SAM copies** choice on the **List** pull-down menu. It is available only on the “CICS VR log stream list” panel.

F5=Recov

Equivalent to the **Recovery** option on the **Utilities** pull-down menu. It is available only on the “CICS Backout Failed sphere list” panel.

F5=ScanAll

Performs a scan of all the registered log of logs. It is available only on the “CICS VR log of logs list” panel.

F6=Backup

Equivalent to the **Backup** choice on the **Utilities** pull-down menu. It is available only on the “CICS VR VSAM sphere list” panel.

F6=Register

Equivalent to the **Register** choice on the **Administrate** pull-down menu. It is available only on the “CICS VR log of logs list” panel.

F6=Reorg

Equivalent to the **Reorganization** choice on the **Utilities** pull-down menu. It is available only on the “CICS Backout Failed sphere list” panel.

F10=Info

Provides a view of the optional information for the selected backups. It is available only on the CICS VR registered backup names list.

F11=Dereg

Deregisters an item from the recovery control data set (RCDS). It is available in these panels:

- “CICS VR VSAM sphere list”
- “CICS VR log of logs list”
- “CICS VR log streams list”
- “CICS Backout Failed sphere list”

F11=Delete

Removes the selected associations in the “CICS VR Undo logs assignment” window.

Shortcut commands

Some actions available on a menu have equivalent commands. Entering the command on the command line causes the action, without selecting the action from the menu. The commands are available on specific panels.

Add Equivalent to selecting the **Add** choice on the **Administrate** pull-down menu. It can be used only on the “CICS VR Undo logs assignment” panel.

Alter Equivalent to selecting the **Alter** choice on the **Administrate** pull-down menu. It can be used only on the “CICS VR Undo logs assignment” panel.

Backup

Equivalent to selecting the **Backup** choice on the **Utilities** pull-down menu. It can be used only on the “CICS VR VSAM sphere list” panel.

Delete Equivalent to selecting the **Delete** choice on the **Administrate** pull-down menu. It can be used only on the CICS VR Undo logs assignment panel.

Dereg Equivalent to selecting the **Deregister** choice on the **Administrate** pull-down menu. It can be used only on panels containing items that can be deregistered.

FwdRec

Equivalent to selecting the **Forward** recover only choice on the **Utilities** pull-down menu. It can be used only on the “CICS VR VSAM sphere list” panel.

Info Provides a view of optional information for the selected backups. It can be used only on the CICS VR registered backup names list.

ListDet

Equivalent to selecting the **List** details choice on the **List** pull-down menu.

ListSAM

Equivalent to selecting the **List SAM copies** choice on the **List** pull-down menu. It can be used only on the “CICS VR log stream list” panel.

Recov Equivalent to selecting the **Recovery** choice on the **Utilities** pull-down menu. It can be used only on the “CICS Backout Failed sphere list” panel.

Register

Equivalent to selecting the **Register** choice on the **Administrate** pull-down menu. It can be used only on the “CICS VR log of logs list” panel.

REMMMSG

Removes any pop-up messages from the displayed CICS VR panel or secondary window.

Reorg

Equivalent to selecting the **Reorganization** choice on the **Utilities** pull-down menu. It can be used only on the “CICS VR VSAM sphere list” panel and the “CICS Backout Failed sphere list” panel.

ScanAll

Equivalent to selecting the **Scan all** choice on the **Utilities** pull-down menu. It can be used only on the “CICS VR log of logs list” panel.

Online help

Press F1 for Online help. The help information provided is context-sensitive and depends on the task being performed at the time, and the current position of the cursor.

If the cursor is on a part of a panel or secondary window, the help gives general information about the tasks that can be performed at this point in the ISPF dialog interface. If a message is displayed, press F1 to obtain help for that message. For additional help on the panel or secondary window, press F2 from the message help.

Help is also displayed on the menu bar of these panels:

- “CICS VR main menu”
- “CICS VR VSAM sphere list”
- “CICS VR log of logs list”
- “CICS VR log streams list”
- “CICS Backout Failed sphere list”
- “CICS VR Settings”

In the help pull-down menu, the choices are as follows:

Using help

Tells you how to use CICS VR online help.

General help

Provides general information about the panel and the tasks that you can perform on the panel.

Index Contains a list of available help information, in alphabetical order.

Keys help

Displays a list of function key assignments for a panel.

Command help

Displays a list of available CICS VR line commands.

Product information

Provides product copyright information.

For a detailed example, see “Using the VSAM sphere list Help pull-down menu” on page 62.

Using the main menu

When you start CICS VR, the “CICS VR main menu” panel is displayed, as shown below.

If you are running CICS VR for the first time, select option 5 from the main menu to customize the JCL skeleton. For further information, see “Customizing the JCL skeleton” on page 10.

From the “CICS VR main menu” panel, you can select these options:

1. A list of VSAM spheres.

2. A list of MVS log streams and CICS VR copied log streams Chapter 7, "Selecting from the log stream list," on page 71.
3. A list of registered log of logs, Chapter 8, "Selecting from the log of logs list," on page 81.
4. The Automatic deregister criteria, "Setting automatic log stream deregistration" on page 91.
5. The JCL skeleton, "Customizing the JCL skeleton."
6. An ISPF BROWSE of the data set allocated to the DWWMSG ddname, Chapter 10, "Browsing messages," on page 95.
7. A list of CICS Backout Failed spheres, Chapter 6, "Working with CICS Backout Failed spheres," on page 65.
8. CICS VR settings, Chapter 11, "CICS VR settings," on page 97.

```

                                CICSVR main menu
Command ==>> _____
Select one and press Enter.

                                1. List of VSAM spheres
                                2. List of log streams
                                3. List of registered log of logs
                                4. Automatic deregister criteria
                                5. JCL skeleton
                                6. Browse messages
                                7. List of CICS Backout Failed spheres
                                8. CICSVR Settings

(C) Copyright IBM Corp. 1991, 2008. All rights reserved.
F1=Help      F3=Exit      F10=Menu bar F12=Cancel

```

Figure 5. Main menu panel

Customizing the JCL skeleton

The JOB statement from this JCL skeleton is used when creating a backup or reorganization job.

Select option 5 from the "CICS VR main menu" to start an ISPF/PDF edit of the JCL skeleton, as shown below. An editor is displayed so that you can edit the CICS VR JCL skeleton information to conform to the standards in your organization. For more information about customizing the JCL skeleton, see *CICS VR Implementation Guide and Reference*.

```

)CM    @BANNER_START
)CM    Licensed Materials - Property of IBM
)CM
)CM    5655-Y24
)CM
)CM    (C) Copyright IBM Corp. 2005, 2012
)CM    @BANNER_END
)CM    $L0= CVR410  410 050909 ..... Changed
)CM    $L1= CVR430  430 080109 ..... Changed
)CM    *****
)CM
)CM    Add the JOB statement to meet your system requirements.
)CM
)CM    Do not remove the &CJOBCHAR variable in the JOB name.
)CM
)CM    You must use double ampersands (&&) to produce a character
)CM    string starting with an ampersand (&) in a generated job.
)CM    For example: NOTIFY=&&SYSUID
)CM
)CM    Change the DSN value in STEPLIB DD to the name of your
)CM    CICSVR library.
)CM
)CM    Change RCDS DSN name in DWWCON1, DWWCON2, and DWWCON3 DDs
)CM    to what you have defined.
)CM
)CM    *****
)CM
//TSTGFS&CJOBCHAR JOB (ACCOUNT),MSGLEVEL=(1,1),NOTIFY=USERID,
//                MSGCLASS=X,CLASS=A,REGION=4M
)SEL &CUTIL NE REORG  && &CUTIL NE BACKUP
//DWW          PROC
//RECOVER     EXEC PGM=DWWCO,COND=(8,LE)
//STEPLIB    DD DSN=DWW.SDWWLOAD,DISP=SHR
//           DD DSN=DWW.SDWWLENU,DISP=SHR
//DWWMSG     DD SYSOUT=*
//DWWPRINT   DD SYSOUT=*
//DWWCON1    DD DISP=SHR,DSN=DWW.DWWCON1.GRPPROD
//DWWCON2    DD DISP=SHR,DSN=DWW.DWWCON2.GRPPROD
//DWWCON3    DD DISP=SHR,DSN=DWW.DWWCON3.GRPPROD
//           PEND
// * END OF PROC
)ENDSEL

```

Figure 6. JCL skeleton

When you leave the editor, you go back to the “CICS VR main menu”.

Chapter 2. Running CICS VR forward recovery

CICS VR forward recovery consists of a restore and then forward recovery.

The panels and secondary windows shown here are in the sequence for a recovery run. You need not use all the panels and secondary windows every time you run recovery. You can bypass some of them by using the default values.

Creating and running a forward recovery task

When you create and run a forward recovery task you can select the specific VSAM spheres or data sets that you want to forward recover. You can edit the CICS VR recovery parameters and product a test report.

1. If you are running CICS VR for the first time, select option 5 from the “CICS VR main menu” and customize the JCL skeleton, as described in “Customizing the JCL skeleton” on page 10.
2. Update the RCDS with the latest information. The log of logs scan utility runs automatically when using the CICS VR dialog to create the recovery job.
3. Obtain a list of VSAM spheres:
 - a. Select option 1 from the “CICS VR main menu”. A secondary window is displayed.
 - b. Specify search criteria for the list of VSAM spheres, or specify the name of the data set that contains a list of VSAM spheres, as described in “Specifying criteria for the VSAM sphere list” on page 14. Press Enter.
 - c. A list of spheres that are registered with CICS VR is displayed. These spheres either match the search criteria you entered, or are listed in the data set that you specified. Select the VSAM spheres that you want to recover, as described in “Selecting from the VSAM sphere list” on page 17.

To use one set of recovery parameters for all of the selected VSAM spheres, enter Y in the **Use default parameters for selected spheres** field, as described in “Specifying default recovery parameters” on page 23.

4. Select the **Utilities** pull-down menu and choose option 2 for **Forward recovery**, or press the FwdRec key, F5. A secondary window opens.
5. Enter the recovery parameters in the secondary window for the VSAM sphere that is displayed, as described in “Providing VSAM sphere recovery parameters” on page 18. Repeat this step until you have supplied the recovery parameters for all of the VSAM spheres that you selected.

When you have entered all of the necessary information on the panels, a message is displayed in the “CICS VR wait secondary window” shown in “Applying entered parameters” on page 30, asking you to wait while the recovery job is being constructed.

6. A secondary window opens that allows you to change the parameters that CICS VR specifies in the recovery job, as described in “Entering recovery parameters” on page 30. Select and change any of the listed parameters.
7. Submit the job that CICS VR creates for you, as described in “Submitting the job” on page 36.

8. Optional: A **TEST** command is available. The command runs a forward recovery or backout job, but does not update any VSAM spheres or RCDS. A report is produced at the end of the command. See the *CICS VR Implementation Guide and Reference* for more information.

The following topics describe each task in more detail.

Specifying criteria for the VSAM sphere list

How to filter the VSAM spheres that are displayed on the CICS VR VSAM sphere list by specifying a VSAM sphere and Data set.

Select option 1 from the main menu to display the “VSAM sphere list include” secondary window, as shown below.

Use this secondary window to filter the VSAM spheres that are displayed on the CICS VR VSAM sphere list:

- Specify a VSAM sphere name.
- Specify a Data Set Name, containing a list of VSAM spheres.

Restriction: If you enter text in both the **VSAM sphere** field and the **Data Set Name** field, CICS VR ignores the **VSAM sphere** field and opens the data set that you specified in the **Data Set Name** field.

CICSVR VSAM sphere list include

Command ==> _____

Specify VSAM sphere list search criteria, then press Enter.

VSAM sphere * _____

OR

Specify the name of a data set that contains a list of VSAM spheres,
then press Enter.

Data Set Name . . . _____

F1=Help F12=Cancel

Figure 7. VSAM sphere list include secondary window

Note: Changed values for both the **VSAM sphere** field and the **Data Set Name** field are saved in the application profile pool and are extracted from the application profile pool the next time you open the “CICS VR VSAM sphere list include” window. Upon completion of the CICS VR dialog session, ISPF saves the contents of the application profile pool in the user’s profile library which guarantees saving the last entered data set filter across both CICS VR and ISPF sessions for the same TSO user ID.

VSAM sphere

Use the **VSAM sphere** field to enter data set name search criteria to filter the VSAM spheres that are included in the CICS VR VSAM sphere list. The default value for this field is an asterisk '*'. Use the default value to display all registered VSAM spheres on the CICS VR VSAM sphere list.

For detailed help information, move the cursor to this field and press F1.

Data Set Name

Use the **Data Set Name** field to enter the name of a data set that contains records with the names of VSAM spheres.

The data set can be either sequential or a member of a Partitioned Data Set (PDS), so you can create a group of VSAM spheres using any method you choose, such as ISPF panels or JCL. You can save these data sets for later use.

For example, you might want to create a data set list that contains the names of the VSAM spheres that are updated by a certain application. If that application encounters an error, you can quickly create a recovery job for every VSAM sphere that has been updated by the abending application.

Each VSAM sphere listed in the data set, and that is registered to CICS VR, is on the VSAM sphere list and is selected. If a VSAM sphere is listed in the data set, but is not registered to CICS VR, see “Viewing unregistered VSAM spheres” on page 16 for details on how to register the VSAM sphere.

CICS VR displays an appropriate error message if any of the following conditions are true for the specified data set:

- The data set does not exist.
- The data set is not cataloged.
- The data set is empty.
- The data set does not have a fixed or variable record format.
- The data set has spanned records.
- The data set does not reside on DASD.

The data set might be created as described in “Creating the data set list.”

Creating the data set list

Before you can use the CICS VR data set list feature, you must create a data set list.

To create a data set list:

1. Create a sequential data set or a member of a PDS. The sequential data set or PDS must be cataloged and have a fixed or variable record format. This data set must reside on DASD. Data sets with spanned records are not supported.
2. Add a record for each VSAM sphere that you want to include on the CICS VR VSAM sphere list. Use the following rules when you create the list:
 - Begin the name of the VSAM sphere in the first column of the record.
 - Create a separate record for each VSAM sphere that you want to include in the recovery job.
 - You can use the global search characters asterisk '*' and percent sign '%' in the record. The asterisk represents any number of characters and the percent sign represents a single character.

For example:

- If a record in the data set contains only the asterisk, all CICS VR registered VSAM spheres are on the VSAM sphere list and are selected.

- If a record in the data set contains "ACCOUNT.*.*", all CICS VR-registered VSAM spheres that have a minimum of three qualifiers and have a high-level qualifier of "ACCOUNT" are on the VSAM sphere list and are selected.
- If a record in the data set contains "ACCOUNT%.%%%", all CICS VR-registered VSAM spheres that have two qualifiers, a high-level qualifier of "ACCOUNTx" where x is any character, and a second qualifier of any three characters, are on the VSAM sphere list and are selected
- No upper limit applies to the number of VSAM sphere name records that can be included in the data set list file. However, the allocated size of the data set list file must be large enough to contain all of the required VSAM sphere name records.
- To create a recovery job for all VSAM spheres listed in the data set by specifying default recovery parameters, all spheres listed in the data set must share the following characteristics:
 - All of the spheres must have similar backup types such as the following:
 - Logical backup that is known to CICS VR
 - Backup on the same DFSMSHsm full volume dump
 - Either no backup or a recovery job that does not include a step to restore from a backup
 - All of the spheres listed in the data set must use the same time format on the log; that is, all spheres must use local time format or all spheres must use Greenwich Mean Time (GMT) format.

Viewing unregistered VSAM spheres

If you enter the name of a data set on the **Data Set Name** field of the "CICS VR VSAM sphere list include" secondary window, CICS VR opens the specified data set and reads each VSAM sphere name record.

For each record read, CICS VR tries to match it with an entry in the RCDS. A match indicates that the VSAM sphere is registered to CICS VR, and CICS VR creates a recovery job for the VSAM sphere.

If a VSAM sphere name record does not match an entry in the CICS VR RCDS, that VSAM sphere is not registered to CICS VR. CICS VR cannot create a recovery job for this VSAM sphere, and an error message is written to the data set allocated to the DWWMSG ddname.

A VSAM sphere is registered to CICS VR during the following activities:

- LOGOFLOGS SCAN
- CICS VR batch logging
- Notification of a logical backup created for the VSAM sphere
- Notification of a CICS backout failure for a VSAM sphere

See "Registering a VSAM sphere in the RCDS" on page 48 for more information regarding the registration of VSAM spheres.

After all VSAM spheres listed in the data set are read by CICS VR and, if one or more of the VSAM spheres does not match an entry in the RCDS, the data set allocated to the DWWMSG ddname is opened for VIEW:

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-----
VIEW      USER1.EXAMPLE.DWWMSG                      Columns 00001 00072
Command ==> _____ Scroll ==> PAGE
.TITLE 1CICSVR - CICS VSAM RECOVERY
000002 0
000003 DWW8000W VSAM sphere not found in the RCDS: EXAMPLE.UNRGSTRD.SPHERE
***** ***** Bottom of Data *****

F1=Help   F2=Split   F3=Exit   F5=Rfind   F6=Rchange  F7=Up
F8=Down   F9=Swap    F10=Left  F11=Right  F12=Cancel

```

Figure 8. VIEW of DWWMSG data set - if one or more unregistered VSAM spheres found

Press F3 to exit the VIEW of the DWWMSG data set and continue to create a recovery job for the VSAM spheres that match an entry in the RCDS.

If you do not enter the name of a data set on the “CICS VR VSAM sphere list include” secondary window, the DWWMSG data set is not opened for VIEW.

Selecting from the VSAM sphere list

After you enter search criteria or the name of a data set on the “CICS VR VSAM sphere list” secondary window, the “CICS VR VSAM sphere list” panel is displayed. The spheres listed either match the search criteria that you entered or are listed in the data set that you specified, see the figure below.

Enter S next to each of the VSAM spheres for which you want to create a recovery job.

Requirement: When you use CICS VR to create a recovery job for one or more VSAM spheres, ensure that none of those VSAM spheres is available for updates by CICS or batch applications, if you are using the CICS VR batch logger. These data sets must remain unavailable until the CICS VR recovery job has been run successfully to ensure that the data sets do not become inconsistent.

Forward recovery is performed for each of the VSAM Spheres selected from the list. Each recovery task can have different settings, as described in “Providing VSAM sphere recovery parameters” on page 18.

You can use a set of default parameters for all the recovery tasks. Enter Y in the **Use default parameters for selected spheres** field to use default parameters for all the selected VSAM spheres. For further information, see “Specifying default recovery parameters” on page 23.

```

Administrate Utilities Tools List View Help
-----
CICS VSAM sphere list                               Row 1 to 4 of 33

Select one or more VSAM spheres, then select an action.

N Use default parameters for selected spheres
S VSAM sphere                                     Scan time(local) RR bit

- CICS10.ACCOUNT1.BASE                            08.159 12:34.56 Y
- CICS10.ACCOUNT2.BASE                            08.159 12:43.56 Y
- CICS10.ACCOUNT3.BASE                            08.159 12:34.56 Y
- PAYROLL.PROD1.BASE                             08.159 12:34.56 N
- PAYROLL.PROD2.BASE                             08.159 12:34.56 N
- PAYROLL.PROD3.BASE                             08.159 12:34.56 N
- CICS10.PROD1.BASE                               08.159 12:34.56 N
- CICS10.PROD2.BASE                               08.159 12:34.56 N
- CICS10.PROD3.BASE                               08.159 12:34.56 N
- CICS10.PROD4.BASE                               08.159 12:34.56 N
- CICS10.PROD5.BASE                               08.159 12:34.56 N
- TEST.SMERRY.RLS                                08.159 12:34.56 Y

Command ==> _____
F1=Help   F3=Exit   F4=Reorg   F5=FwdRec   F6=Backup   F7=Bkwd
F8=Fwd    F10=Menu Bar F11=Dereg  F12=Cancel

```

Figure 9. VSAM sphere list panel. Use S in the first column to select a VSAM sphere.

From the “CICS VR VSAM sphere list” panel, select an action by using one of the shortcut function keys, or select one of the pull-down menus:

- Administrate
- Utilities
- Tools
- List
- View
- Help

Providing VSAM sphere recovery parameters

If you select a recovery for the VSAM spheres and do not enter Y in the **Use default parameters for selected spheres** field, the “VSAM sphere parameters” secondary window is displayed, as shown below.

This window is displayed for each of the VSAM spheres you select.

```

CICSVR VSAM sphere parameters

Press F4 when the cursor is in the Backup time field to obtain a list of data
set backup times. Press Enter to continue.

VSAM sphere . . . . . : CICS10.ACCOUNT1.BASE

New VSAM sphere name . . _____

Forward-recovery start time . . _____ (YY.DDD HH:MM:SS)
Forward-recovery stop time . . _____ (YY.DDD HH:MM:SS)
Backup time . . . . . _____ + (YY.DDD HH:MM:SS)
Time format . . . . . Local + Backup type . Logical _____ +
Volume for restore . . _____ Unit for restore . . . . . _____

Command ==> _____
F1=Help      F4=Prompt    F5=GetDef    F6=SaveDef   F7=PrevVSAM
F12=Cancel

```

Figure 10. VSAM sphere parameters for recovery secondary window

Here you can specify the following VSAM sphere parameters for inclusion in the recovery run:

- A new name for the recovered VSAM sphere
- The start time for forward recovery
- The stop time for forward recovery
- The backup time
- The backup type
- The time format used on the log, if you are using MVS log streams or QSAM copies of MVS log streams
- The volume for the restored copy of the data set, if the backup is logical or a DFSMSHsm full volume dump
- The unit for the restored copy of the data set, if the backup is logical or a DFSMSHsm full volume dump

Restriction: If the data set you are recovering is SMS-managed, the volume and unit values are ignored.

The first time you use this window the CICS VR default values are displayed. Also, if a logical backup exists for the VSAM sphere, the backup time of the most recent logical backup is in the backup time field and forward recovery start time field.

You can perform the following tasks:

To obtain a list of logical backups known to CICS VR

Move the cursor to the **backup time** field, and press F4. For further information, see “Listing logical backups” on page 20.

To obtain a list of available Time format options

Move the cursor to the **time format** field, and press F4. For further information, see “Specifying time format” on page 22.

To obtain a list of available Backup type options

Move the cursor to the **Backup type input** field, and press F4. For further information, see “Specifying backup type” on page 22.

To obtain the default values from the recovery control data set (RCDS)

Press F5.

To save the currently displayed values

Press F6. The default update verification secondary window, shown in “Applying entered parameters” on page 30, is displayed.

To go back to the previous VSAM sphere

Press F7.

For detailed help information about any of these fields, move the cursor to the field and press F1.

Listing logical backups

How to display all known logical backups.

Place the cursor on the **Backup time input** field and press the Prompt key, F4, to retrieve a list of all logical backups known to CICS VR for the VSAM sphere. All known backups are then displayed in the “CICS VR backup prompt list” secondary window.

The backups made of VSAM spheres in 'Recovery-Required' state are not listed.

```

                                CICSVR backup prompt list                Row 1 to 4 of 4

Select one backup time, then press Enter.

VSAM sphere . . . : PAYROLL.BASE

----- Data set backup information -----
S  Date   Time   Gen Ver  Online Rp Date Rp Time  Type  Product
-   08.178 12:01:01   01  001  NO                               LOCAL HSMLB
-   08176  11:04:44                               NO                               LOCAL DSSLC
-   08175  18:01:17                               NO                               LOCAL DSSLD
-   08174  09:32:12                               FUZZY 08174 09:29:10 LOCAL OTHER
***** Bottom of data *****

Command ==> _____
F1=Help   F7=Bkwd   F8=Fwd   F12=Cancel
```

Figure 11. Backup prompt list secondary window

All logical backups retrieved from the DFSMSHsm inventory, with all the other logical backups registered in the CICS VR RCDS for the VSAM sphere, are displayed on the CICS VR backup prompt list. CICS VR tries to display the backup and recovery point dates and times in the format, local or GMT, that was specified on the previous VSAM sphere parameters secondary window. Place an S in the input field next to the backup that you would like to restore and then press Enter.

GMT format of the backup and recovery point dates and times might not be available in these cases:

- CICS VR was not notified by DFSMSHsm when the DFSMSHsm logical backup was created.
- The backup was made using backup-while-open (BWO) for a non-RLS VSAM data set.

Press F1 for further details about each of the listed parameters on the CICS VR backup prompt list.

CICS VR can restore a VSAM data set from one of the following backups:

Recovering DFSMSHsm logical backups

DFSMSHsm logical backups are identified by the product identifier HSMLB on the CICS VR backup prompt list. You can register DFSMSHsm logical backups in the CICS VR RCDS, or CICS VR can dynamically retrieve information about DFSMSHsm logical backups from DFSMSHsm's inventory. When you select a DFSMSHsm logical backup for restore, the appropriate keywords are added to the produced RECOVER command. CICS VR calls DFSMSHsm to perform a restore of the selected DFSMSHsm logical backup while running the recovery job.

Recovering DFSMSdss logical copies

DFSMSdss logical copies are identified by the product identifier DSSLC. You can register DFSMSdss logical copies in the CICS VR RCDS by specifying the CICSVRBACKUP and RENAMEU(**,CICSVR.**) keywords in the copy job. When you select a DFSMSdss logical copy, the DWWDSLC restore skeleton, which is supplied with CICS VR, is added to the produced recovery job. CICS VR calls DFSMSdss to perform a copy of the selected DFSMSdss logical copy while the recovery job is running.

Recovering DFSMSdss logical dumps

DFSMSdss logical dumps are identified by the product identifier DSSLD in the CICS VR backup prompt list. You can register DFSMSdss logical dumps in the CICS VR RCDS by specifying the CICSVRBACKUP keyword in the dump job or by activating the DFSMSdss logical dump registration control default. When you select a DFSMSdss logical dump, the DWWDSLD restore skeleton, which is supplied with CICS VR, is added to the produced recovery job. CICS VR calls DFSMSdss to perform a restore of the selected DFSMSdss logical dump while the recovery job is running.

Recovering other registered logical backups

You can register other logical backups in the CICS VR RCDS through the CICS VR file copy notification service. The product identifier associated with the backup that is in the CICS VR backup prompt list, is originally specified during notification. You must define a restore skeleton for each product identifier to CICS VR. The restore skeleton must contain a call to the appropriate program, the commands required to restore the backup, and variables to retrieve various pieces of information about the backup from the RCDS. When the backup is selected for restore, the restore skeleton associated with the backup is added to the produced recovery job and the values for all specified variables are substituted. The specified program is then called to restore the backup while the recovery job is running.

Recovering DFSMSHsm full volume dumps

DFSMSHsm full volume dumps are not in the CICS VR backup prompt list. To make CICS VR recover a VSAM sphere from a DFSMSHsm full volume dump:

1. Select **Full Volume Dump** as the backup type.
2. In the **Backup time input** field, enter the date when the full volume dump was created.

The appropriate keywords are then added to the RECOVER command. CICS VR calls DFSMSHsm to restore the data set from the entered DFSMSHsm full volume dump while the recovery job is running.

See the *CICS VR Implementation Guide and Reference* for further information about backup notification, backup registration, and restore skeletons.

Specifying time format

To change the format of the times listed on the CICS VR “VSAM sphere parameters” secondary window, Local or GMT, place the cursor on the **Time format** input field and press the F4. The “CICS VR time format selection” secondary window opens and you select a time format.

The CICS VR default Time format is Local.

Specify 1 for Local time format or 2 for Greenwich Mean Time (GMT) format and then press Enter.

Changing the time format does not automatically adjust any previously entered dates and times to the newly selected format. After changing the time format, be sure to adjust any entered dates and times on the “CICS VR VSAM sphere parameters” secondary window accordingly.

```
          CICSVR Time Format Selection

Select a time format to be used during this
session and press Enter.

Time format  1_  1.  Local
              2.  GMT

Command ====> _____
F1=Help     F12=Cancel
```

Figure 12. CICS VR Time Format selection secondary window

Specifying backup type

To change the type of backup that is restored before forward recovery processing, place the cursor on the **Backup type** input field and press F4. The “CICS VR Backup Type Selection” secondary window opens and you can select a backup type.

If any logical backups for the VSAM sphere are known to CICS VR, the default value is Logical. Otherwise, the default backup type is None.

```
DWPPBUS          CICSVR Backup Type Selection

Select a backup type to be used during this session and
press Enter.

Backup type      1.  None
                  2.  Logical
                  3.  Full Volume Dump
                  4.  No tie-ups

Command ====> _____
F1=Help     F12=Cancel
```

Figure 13. CICS VR Backup type selection secondary window

Use the “CICS VR Backup Type Selection” secondary window to select from the following types of backups to restore:

None Specifies that a backup does not exist for the selected VSAM sphere or you do not want CICS VR to create a recovery job to restore the VSAM sphere from a backup.

Logical

Specifies that you want CICS VR to restore the VSAM sphere from a logical backup that is known to CICS VR. CICS VR restores the logical backup that is selected from the CICS VR backup prompt list.

Full volume dump

Specifies that you want CICS VR to restore the VSAM sphere from a DFSMSHsm full volume dump. Enter the date the full volume dump was created in the **Backup time** input field of the “CICS VR VSAM sphere parameters” secondary window.

No tie-ups

Specifies that you want CICS VR to restore the VSAM sphere from a backup taken by hardware, where there is no tie-up record on the log with a time stamp for the start of the backup. Selecting this backup type adds the NOTIEUPS keyword to the generated recovery job.

Specify the desired backup type, and press Enter.

Specifying default recovery parameters

If you want to use one set of recovery parameters, enter Y in the **Use default parameters for selected spheres** field.

The specified recovery parameters are applied to every selected VSAM sphere during construction of the forward recovery job. If you do not specify Y in this field, CICS VR prompts you to enter recovery parameters for each individual sphere that you select.

If you specify default recovery parameters for every selected VSAM sphere, all of the spheres must have similar backup types such as the following:

- Logical backup that is known to CICS VR
- Backup on the same DFSMSHsm full volume dump
- Either no backup or a recovery job that does not include a step to restore from a backup
- Each VSAM sphere must have the same time format on the logs, either local time format or GMT format.

Providing default recovery parameters

Use the “CICS VR VSAM sphere default parameters” secondary window to apply one set of recovery parameters to all of the selected VSAM spheres during construction of the recovery job.

If you select forward recovery for the selected VSAM spheres, and if Y was entered in the **Use default parameters for selected spheres** field, the “CICS VR VSAM sphere default parameters” secondary window is displayed:

```

CICSVR VSAM sphere default parameters

Enter the default values to be used for all selected VSAM spheres.

1 - 8 character DSN extension . _____

Forward-recovery start time . . _____ (YY.DDD HH:MM:SS)

Forward-recovery stop time . . _____ (YY.DDD HH:MM:SS)

Backup date . . . . . _____ (YY.DDD)

Time format . . . . . Local + Backup type . None _____ +

Volume for restore . . _____ Unit for restore . . . . _____

Command ==> _____
F1=Help F4=Prompt F12=Cancel

```

Figure 14. VSAM sphere default parameters secondary window

The following list describes the input fields on the VSAM sphere default parameters secondary window. Enter the information in these fields in the same order listed here:

Backup type

To change the backup type selection, place the cursor on the **Backup type** input field and press F4. The “CICS VR Backup Type Selection” secondary window is displayed allowing you to select a Backup type.

```

CICSVR Backup Type Selection

Select a backup type to be used during this session and
press Enter.

Backup type 1_ 1. None
                2. Logical
                3. Full Volume Dump
                4. No tie-ups

Command ==> _____
F1=Help F12=Cancel

```

Figure 15. CICS VR Backup Type Selection secondary window

Backup type is a required field; all of the selected VSAM spheres must have the same backup type.

None Specifies that a backup does not exist for the selected VSAM spheres or you do not want CICS VR to create a recovery job to restore the VSAM spheres from a backup.

Logical

Specifies that a logical backup exists and is known to CICS VR for all selected VSAM spheres. A logical backup is known to CICS VR if it exists in DFSMSHsm's inventory or has been registered in the CICS VR RCDS. For all non-DFSMSHsm logical backups, you must define a restore skeleton to CICS VR that matches the product identifier of the most recent logical backup that is known to CICS VR for each of the selected spheres. If you specify **Logical**, CICS VR sets the values for the forward recovery start time and backup

date fields to the creation date and time of the most recent logical backup that is known to CICS VR for each sphere. If the most recent logical backup was taken while the data set remained online and open for update, CICS VR sets the forward recovery start time to the recovery point associated with the backup.

See the *CICS VR Implementation Guide and Reference* for further information about backup notification, backup registration, and restore skeletons.

Full volume dump

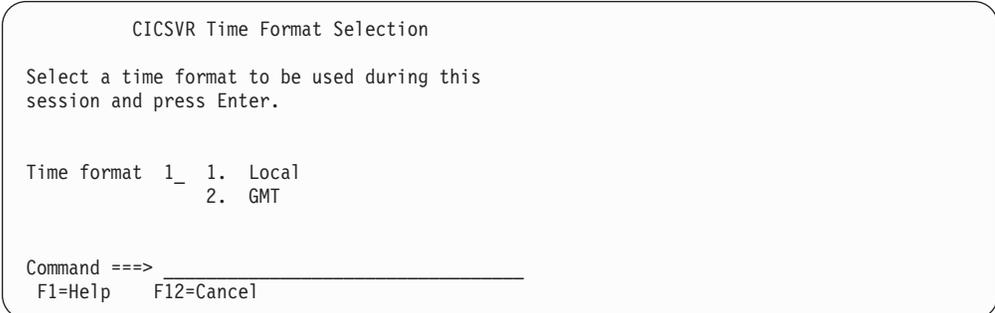
Specifies that each of the selected VSAM spheres are backed up on the same DFSMSHsm full volume dump. Enter the date of the full volume dump in the **Backup date** field. CICS VR creates a recovery job that restores each VSAM sphere from the specified DFSMSHsm full volume dump.

No tie-ups

Specifies that you want CICS VR to restore the VSAM sphere from a backup taken by the hardware, where there is no tie-up record on the log with a time stamp for the start of the backup. Selecting this backup type adds the NOTIEUPS keyword to the generated recovery job.

Time format

To change the time format selection, place the cursor on the **Time format** input field and press F4. The “CICS VR Time Format Selection” secondary window is displayed and you can select a time format. The CICS VR default value is Local.



```
CICSVR Time Format Selection

Select a time format to be used during this
session and press Enter.

Time format 1_ 1. Local
              2. GMT

Command ==> _____
F1=Help    F12=Cancel
```

Figure 16. CICS VR Time Format selection secondary window

Time format is a required field and specifies the time format used on the logs of the selected VSAM spheres. All selected VSAM spheres must have the same time format. Changing the time format does not automatically adjust any previously entered dates and times to the newly selected format. After changing the time format, be sure to adjust any entered dates and times on the “CICS VR VSAM sphere default parameters” secondary window accordingly.

The “CICS VR Time Format Selection” secondary window allows you to select from the following time formats:

Local Specify this option if local time format is used on the logs.

GMT Specify this option if Greenwich Mean Time (GMT) format is used on the logs.

1 - 8 character DSN extension

The 1-to-8-character **DSN extension** field is optional. If you enter an

extension, it is appended to the name of each selected VSAM sphere. If you do not specify a VSAM sphere name extension, a warning message is displayed. If you do not want to define an extension, press Enter.

Depending on the type of backup you specified, CICS VR creates a recovery job and performs one of the following actions:

- If you choose **Logical** or **Full Volume Dump** as the backup type, CICS VR creates a recovery job that restores and recovers each VSAM sphere to a new VSAM sphere with the modified name. The modified name includes the original sphere name and the appended extension.

For example, if you enter RECOVERD as the VSAM sphere name extension, select **Logical** as the backup type, and select VSAM sphere PAYROLL.BASE for a recovery, CICS VR creates a recovery job that restores VSAM sphere PAYROLL.BASE from its most recent logical backup to PAYROLL.BASE.RECOVERD. All after-images are applied to PAYROLL.BASE.RECOVERD. If you do not enter a VSAM sphere name extension, the original VSAM sphere is replaced during the restore and recover.

For all non-DFSMSHsm backups, the restore skeleton associated with the product identifier of the logical backup must contain logic to check for the existence of the CNEWDSN variable and use it if available. The CNEWDSN variable contains the fully qualified sphere name with the appended extension. See the *CICS VR Implementation Guide and Reference* for more information about restore skeletons.

- If you choose **None** as the backup type, CICS VR creates a recovery job that forward recovers each VSAM sphere to a VSAM sphere with the modified name. The modified name includes the original sphere name and the appended extension. This data set must already exist; CICS VR does not create it.

For example, if you enter RECOVERD as the VSAM sphere name extension, select **None** as the backup type, and select VSAM sphere PAYROLL.BASE for a recovery, CICS VR creates a recovery job that applies the after-images of VSAM sphere PAYROLL.BASE to VSAM sphere PAYROLL.BASE.RECOVERD. If you do not enter a VSAM sphere name extension, the after-images are applied to the original VSAM sphere.

Forward recovery start time

Forward recovery start time identifies the date and time of the earliest after-images CICS VR uses to recover the selected VSAM spheres. CICS VR creates a recovery job that recovers all updates made on or after this date and time for each selected VSAM sphere. The forward recovery start time requirement is based on your selection of backup type as follows:

- If you choose **Logical** as the backup type, leave this field blank. CICS VR uses the creation date and time of the most recent logical backup that is known to CICS VR for each sphere as the forward recovery start time. If the most recent logical backup was taken while the data set remained online and open for update, CICS VR sets the forward recovery start time to the recovery point associated with the backup.
- If you choose **None** or **Full Volume Dump** as the backup type, you must enter a date and time in this field.

Forward recovery stop time

Forward recovery stop time is an optional field. It identifies the date and time of the latest time stamp of the after-images CICS VR uses to recover

the selected VSAM spheres. If you leave the field blank, the default value is set to the date and time of when the recovery job is created.

Backup date

Backup date identifies the date of the DFSMSHsm full volume dump from which CICS VR restores each selected VSAM sphere. The backup date is based on your selection of backup type as follows:

- If you choose **None** as the backup type, leave this field blank.
- If you choose **Logical** as the backup type, leave this field blank. CICS VR uses the date and time of the most recent logical backup found for each sphere during the creation of the recovery job.
- If you choose **Full Volume Dump** as the backup type, enter the date of the DFSMSHsm full volume dump that CICS VR uses to restore the selected VSAM spheres. CICS VR creates a recovery job that restores each selected VSAM sphere from the specified DFSMSHsm full volume dump.

Volume for restore

Volume for restore identifies the name of a volume to which you want to restore the VSAM spheres. You can specify a volume only if you choose **Logical** or **Full Volume Dump** as the backup type. If you specify a volume, you must enter a value in the **Unit for restore** field. If the selected VSAM spheres are managed by the storage management subsystem, the volume and unit values are ignored during the run of the recovery job that is created.

For all non-DFSMSHsm backups, the restore skeleton that matches the product identifier of the backup checks for the existence of the CNEWVOL variable and uses it if available. The CNEWVOL variable contains the name of the new volume entered through the panel interface.

Unit for restore

Unit for restore identifies the type of unit to which you want to restore the VSAM spheres. You can specify a unit only if you choose **Logical** or **Full Volume Dump** as the backup type. If you specify a unit, you must enter a value in the **Volume for restore** field. If the selected VSAM spheres are managed by the storage management subsystem, the volume and unit values are ignored during the run of the recovery job that is created.

For all non-DFSMSHsm backups, the restore skeleton that matches the product identifier of the backup checks for the existence of the CNEWUNIT variable and uses it if available. The CNEWUNIT variable contains the name of the new unit entered through the panel interface.

Using the VSAM sphere list Utilities pull-down menu for recovery

How to use the “CICS VR VSAM sphere list” **Utilities** pull-down menu for reorganization, forward recovery and back up.

After you have selected all of the VSAM spheres for recovery open the **Utilities** pull-down menu:

1. Press F10 to open the menu bar.
2. Move the cursor to the **Utilities** pull-down menu and press Enter

The pull-down menu is displayed:

```

Administrate Utilities Tools List View Help
-----
Select one or 1. Reorganization... F4
               2. Forward recovery... F5
               3. Backup... F6
               action.
N Use default parameters
S VSAM sphere Scan time(local) RR bit
- CICS10.ACCOUNT1.BASE 08.159 12:34.56 Y
- CICS10.ACCOUNT2.BASE 08.159 12:43.56 Y
- CICS10.ACCOUNT3.BASE 08.159 12:34.56 Y
- PAYROLL.PROD1.BASE 08.159 12:34.56 N
- PAYROLL.PROD2.BASE 08.159 12:34.56 N
- PAYROLL.PROD3.BASE 08.159 12:34.56 N
- CICS10.PROD1.BASE 08.159 12:34.56 N
- CICS10.PROD2.BASE 08.159 12:34.56 N
- CICS10.PROD3.BASE 08.159 12:34.56 N
- CICS10.PROD4.BASE 08.159 12:34.56 N
- CICS10.PROD5.BASE 08.159 12:34.56 N
- TEST.SMERRY.RLS 08.159 12:34.56 Y

Command ==>
F1=Help F3=Exit F4=Reorg F5=FwdRec F6=Backup F7=Bkwd
F8=Fwd F10=Menu Bar F11=Dereg F12=Cancel

```

Figure 17. VSAM sphere list—utilities pull-down menu. Use S in the first column to select a VSAM sphere.

From this pull-down menu, you can select **Reorganization**, **Forward recovery** or **Backup** for the VSAM spheres that you selected by using one of these methods:

Reorganization

- Select option 1 for reorganization.
- Move the cursor to the **Reorganization** item in the pull-down menu, and press Enter.
- Type the CICS VR shortcut command Reorg on the command line.
- Press F4.

Forward recovery

- Select option 2 for forward recovery.
- Move the cursor to the **Forward recovery** item in the pull-down menu, and press Enter.
- Type the CICS VR shortcut command FwdRec on the command line.
- Press F5.

Backup

- Select option 3 for backup.
- Move the cursor to the **Backup** item in the pull-down menu, and press Enter.
- Type the CICS VR shortcut command Backup on the command line.
- Press F6.

To obtain information about each menu pull-down menu item, move the cursor to an item and press F1.

If you have a log of logs registered in the RCDS, CICS VR scans the logs. If the logs are successfully scanned, CICS VR presents the results as an ISPF browse of the DWWPRINT data set. If any messages were written to the DWWMSG data set during the scan, the DWWMSG data set is opened for view.

```

CICSVR - LOG OF LOGS SCAN UTILITY                DATE : 08/06/07    TIME : 11:01:09    PAGE : 1
STATISTICS FOR A LOG OF LOGS SCAN
=====
LOG OF LOGS NAME      : CICSVR1.MVSLOG.LOL1
FIRST TIME GMT        : 08.157 12:00:59
LAST TIME GMT         : 08.159 12:00:59
FIRST TIME LOCAL     : 08.157 12:00:59
LAST TIME LOCAL      : 08.159 12:00:59
FIRST BLOCK ID       :                43282
LAST BLOCK ID        :                67382

VSAM DATA SET STATISTICS
=====
VSAM DATA SET NAME   CICSID   FCT NAME  OPEN DATE/TIME  CLOSE DATE/TIME  MVS LOG STREAM NAME
-----
CICSPROD.ACC.VSAMA   CICSPROD  BASEA    08.157 12:00:00  08.159 12:11:10  CICSVR1.MVSLOG
CICSPROD.ACC.VSAMB   CICSPROD  BASE2    08.157 12:00:00                CICSVR1.MVSLOG
CICSPROD.ACC.VSAMC   CICSPROD  BASE3    08.157 12:00:00                CICSVR1.MVSLOG

- LOG OF LOGS SCAN UTILITY                DATE : 08/06/07    TIME : 11:01:09    PAGE : 2
INFORMATION FOR A FORWARD RECOVERY OF CICSPROD.ACC.VSAMA
=====
JOB STEP 1
START TIME GMT      STOP TIME GMT
-----
08.157 12:00:00    08.158 12:11:10
MVS LOG STREAMS NEEDED
-----
CICSVR1.MVSLOG
CICSVR - LOG OF LOGS SCAN UTILITY                DATE : 08/06/07    TIME : 11:01:09    PAGE : 3
INFORMATION FOR A FORWARD RECOVERY OF CICSPROD.ACC.VSAMB
=====
JOB STEP 1
START TIME GMT      STOP TIME GMT
-----
08.157 12:00:00    08.158 11:01:11
MVS LOG STREAMS NEEDED
-----
CICSVR1.MVSLOG
CICSVR - LOG OF LOGS SCAN UTILITY                DATE : 08/06/07    TIME : 11:01:09    PAGE : 4
INFORMATION FOR A FORWARD RECOVERY OF CICSPROD.ACC.VSAMC
=====
JOB STEP 1
START TIME GMT      STOP TIME GMT
-----
08.157 12:00:00    08.158 11:01:11
MVS LOG STREAMS NEEDED
-----
CICSVR1.MVSLOG

```

Figure 18. Log of logs scan utility—DWWPRINT

Press F8 to scroll through the log of logs list report. Press F3 to continue with forward recovery.

Entering recovery parameters

Before the recovery job is created, you have the option to change the CICS VR parameters that are used in the recovery job creation. You can define the following CICS VR parameters for your forward recovery job.

- VSAM buffer pools
- CICS VR exits
- Selective forward recovery

Use the “CICS VR forward recovery” secondary window to select the CICS VR parameters that you want to change. Using a secondary window for each parameter selected, you can change the values. The parameter secondary windows open in the order displayed in the “CICS VR forward recovery” secondary window:

```
DWPPFR3          CICSVR forward recovery only

Press Enter to create a job with default values. Or, select one or more
choices below, and press Enter to override current values.

S Forward-recovery parameters related to:
- Sequence checking
- VSAM buffer pools
- CICSVR exits
- Selective forward recovery
- Prevent duplicate runs

Command ==>
F1=Help   F12=Cancel
```

Figure 19. Forward recovery parameters secondary window. Use S in the first column to select a choice.

After you change the parameters that CICS VR uses in the recovery job, the “CICS VR recovery” secondary window is displayed again.

To create the recovery job, press Enter without any of the parameters selected. CICS VR uses any previously changed parameters in the job construction.

You do not have to change any of the CICS VR parameters listed in the “CICS VR forward recovery” secondary window. CICS VR uses the default values when creating the recovery job if you do not change any parameters.

For detailed help information about any of these choices, move the cursor to the field and press F1.

Applying entered parameters

CICS VR attempts to apply the entered default recovery parameters to each of the VSAM spheres that you selected in preparation for the construction of the recovery job. If CICS VR finds any errors during this process, a separate message is written to the data set allocated to the DWWMSG ddname for each error.

If any errors are found during this process, the data set allocated to the DWWMSG ddname is automatically displayed when the process is complete.

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-----
VIEW      USER1.EXAMPLE.DWWMSG                      Columns 00001 00072
Command ==> _____ Scroll ==> PAGE
.TITLE 1CICSVR - CICS VSAM RECOVERY
000002 0
000003 DWW8004W A logical backup could not be found for VSAM sphere TEST.SPH1
000004
000005 DWW8004W A logical backup could not be found for VSAM sphere TEST.SPH2
***** ***** Bottom of Data *****

F1=Help    F2=Split   F3=Exit    F5=Rfind   F6=Rchange F7=Up
F8=Down    F9=Swap    F10=Left   F11=Right  F12=Cancel

```

Figure 20. VIEW of DWWMSG data set

Press F3 to exit the VIEW and continue creating a recovery job for those VSAM spheres that do not contain errors.

Confirming an update to the CICS VR default values

Use this secondary window to confirm an update to the CICS VR default values.

```

CICSVR default update verification

Press Enter to update stored defaults, or press F12 to cancel the request.

Command ==> _____
F1=Help    F12=Cancel

```

Figure 21. Default update verification secondary window

CICS VR wait secondary window

After you have entered the recovery parameters for every selected VSAM sphere, the “CICS VR wait” secondary window is displayed:

```

CICSVR wait

CICSVR is constructing your recovery job. This job might take a few minutes.

```

Figure 22. Wait Secondary Window

Defining the VSAM buffer pools

Use the “CICS VR VSAM buffer pools” secondary window to tune your CICS VR run by changing the number of buffers in the VSAM buffer pools.

If you selected **VSAM buffer pools** from the “CICS VR forward recovery” secondary window, shown in “Entering recovery parameters” on page 30, the “CICS VR VSAM buffer pools” secondary window is displayed.

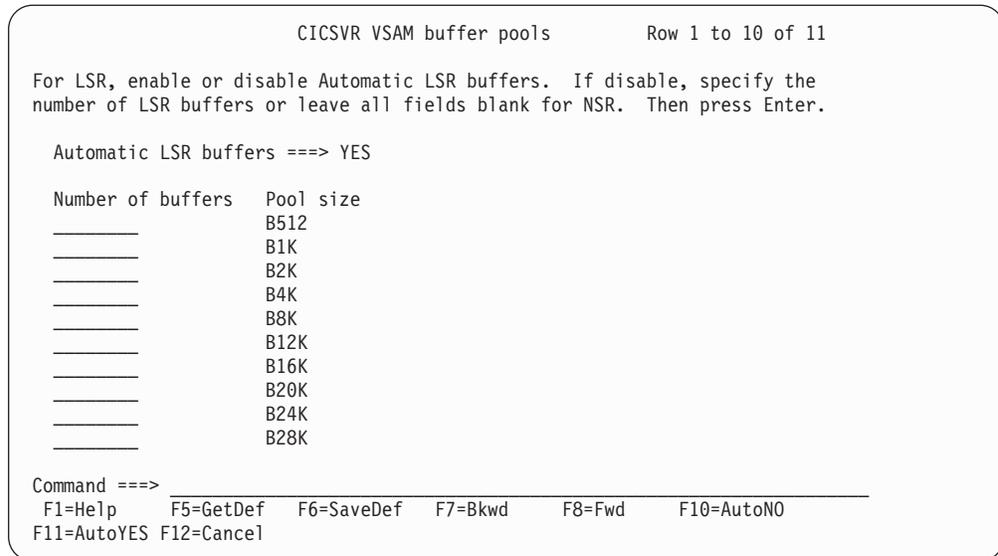


Figure 23. VSAM buffer pools secondary window

When you first enter this secondary window, the CICS VR default values are displayed. Press F5 to obtain the default values from the RCDS. Press F6 to save the currently displayed values; the “CICS VR Default update verification” secondary window opens. Press F10 if you do not want to use the automatic calculation of LSR buffers option; press F11 to use this option.

Recommendation: For more efficient recovery jobs, use automatic LSR buffers. For more detailed information about automatic LSR buffers, see *CICS VR Implementation Guide and Reference*.

For detailed help information about any of these fields, move the cursor to the field and press F1.

Defining exits

Use the “CICS VR exits” secondary window to define which CICS VR exits you want to use in this recovery run.

If you selected **CICS VR exits** from the “CICS VR forward recovery” secondary window, shown in “Entering recovery parameters” on page 30, the “CICS VR exits” secondary window opens.

For more information about CICS VR exits, see *CICS VR Implementation Guide and Reference*.

If one or more of the VSAM spheres that you previously selected for recovery uses MVS log streams or QSAM copies of MVS log streams, the “CICS VR exits” secondary window is displayed so that you can define exits for the recovery job.

```

CICSVR exits

Specify member names for the CICSVR exits. Press Enter to use the
displayed member names in the recovery.

Preapply . . . _____
Error . . . . . _____
ESDS delete . . _____
Termination . . _____

Command ==> _____
F1=Help    F5=Getdef  F6=SaveDef F12=Cancel

```

Figure 24. Exits secondary window, with MVS log streams

When you first enter this secondary window, the CICS VR default values are displayed. Press F5 to obtain the default values from the RCDS. Press F6 to save the currently displayed values; the “Default update verification” secondary window, shown in “Applying entered parameters” on page 30 is displayed.

For detailed help information about any of these fields press F1.

Choosing selective recovery

If you select the **Selective forward recovery** option from the “CICS VR forward recovery” secondary window the “CICS VR selective recovery” secondary window is displayed.

```

CICSVR selective forward recovery

Select a command, INCLUDE or EXCLUDE, and specify one or more ID values.
Press Enter to save the command. The panel clears allowing you to
enter values for another Include or Exclude command. Press F12 to return
to the previously displayed panel.

Command (INCLUDE = 1, EXCLUDE = 2) _
---- ID ---- ----- VALUE -----
FILE . . . _____
      _____
      _____
      _____
      _____
      _____

TERMINAL . _____
      _____
      _____
      _____
      _____
      _____

TRANSACTION _____
      _____
      _____
      _____
      _____
      _____

Command ==> _____ Scroll ==> PAGE
F1=Help    F12=Cancel

```

Figure 25. CICS VR selective forward recovery secondary window

Select the INCLUDE or EXCLUDE command. Enter one or more FILE IDs, TERMINAL IDs, or TRANSACTION IDs to include or exclude specific log records during recovery processing to eliminate unwanted changes. Press Enter to save the command. Enter another INCLUDE or EXCLUDE command or press F12 to return to the previous panel. If you enter multiple EXCLUDE commands and INCLUDE commands, all the EXCLUDE commands are processed before the INCLUDE commands.

To change the values you entered, press F12 to return to the previous panel. Continue through the CICS VR dialog to the CICS VR job submission panel.

To change the INCLUDE or EXCLUDE command manually, select option 3, Edit the job.

To save the generated JCL and edit it at a later date, select option 4, **Save generated JCL**.

Preventing duplicate recovery runs

You can prevent a Forward Recovery job from running, if it is a duplicate of a previously run job.

To prevent the same recovery job from running twice use the Recovery Submission Manager (RSM). The RSM checks whether a recovery job run is or is not required. You can add a step with a call to the RSM to:

- recovery jobs which have already been stored, and
- recovery jobs which have not been run, using the CICS VR ISPF Dialog Interface.

To add an automatic RSM step to the job, check the **Prevent duplicate runs** field in the "CICS VR forward recovery only" window and carry on with the job construction, no further settings are required. The default is **Prevent duplicate runs** option turned off.

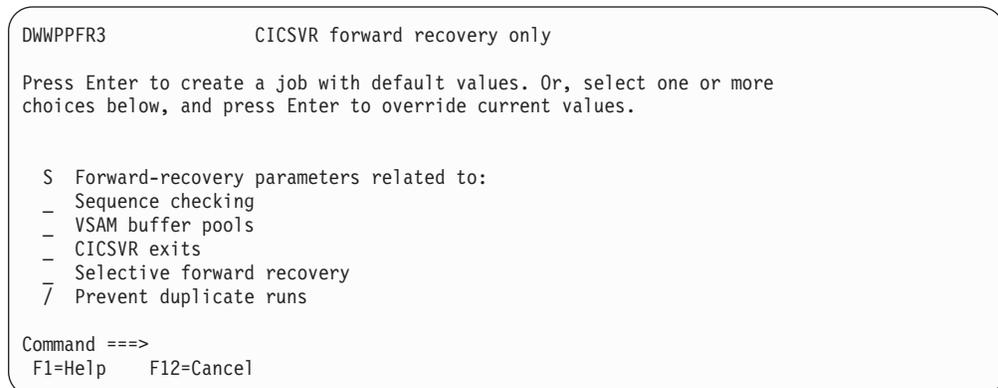


Figure 26. CICS VR forward recovery parameters window

You can also provide a duplicate recovery run prevention in the constructed batch jobs. However, you have to update the job manually by adding an RSM utility step before any restore and Recovery steps:

```

//VSAMRRY1 JOB CLASS=A,MSGCLASS=H,REGION=4096K,NOTIFY=&SYSUID,
//          MSGLEVEL=(1,1)
//RSMSTEP  EXEC   PGM=DWRZ
//DWWCON1  DD  DISP=SHR,DSN=DWW.DWWCON1.GRPPROD
//DWWCON2  DD  DISP=SHR,DSN=DWW.DWWCON2.GRPPROD
//DWWCON3  DD  DISP=SHR,DSN=DWW.DWWCON3.GRPPROD
//DWDUMP   DD    SYSOUT=*
//DWWMSG   DD    SYSOUT=*
//DWWPRINT DD    SYSOUT=*
//DWWIN    DD    *

CHECK          -
JOBNAME(VSAMRRY1) -
SPHERE(USER.KSDS1) -
NEWSPHERE(USER.KSDS1.REC) -
STARTTIME(07.081/11:00:00) -
STOPTIME(07.081/20:00:00) -
MVSLOGNAME(USER.FILELOG1) -
RETURNCODE(0)

/*
//RSMIF  IF RSMSTEP.RC=0 THEN
//*** RESTORE STEP ***
//RESTORE EXEC   PGM=IDCAMS
...
//*** RECOVERY STEP ***
//RECOVERY EXEC   PGM=DWWCO
...
//*** ADDITIONAL STEPS ***
//PRNTVSAM EXEC   PGM=IDCAMS
...
//RSMIF ENDIF
//

```

Figure 27. Sample RSM step structure

See *CICS VR Implementation Guide and Reference* for the description on the syntax of the CHECK command.

Specifying the log stream type

Use the “CICS VR log stream type” secondary window to select the type of log stream, MVS log stream or QSAM copy of the MVS log stream, that you want CICS VR to use during construction of the recovery job.

After you have entered the recovery parameters for all of the previously selected VSAM spheres, and if one or more of the selected spheres has an associated MVS log stream, the “CICS VR log stream type” secondary window opens. This selection applies only to the VSAM spheres that have an associated MVS log stream. See *CICS VR Implementation Guide and Reference* for more information about using the LOGSTREAMCOPY command to create a QSAM copy of an MVS log stream.

CICSVR log stream type

Specify log stream type. Press Enter to continue the job creation.

Log stream type . . _ 1. MVS logger log stream
2. QSAM copy

Command ==> _____

F1=Help F5=GetDef F6=SaveDef F12=Cancel

Figure 28. Log stream type secondary window

Use this secondary window to specify the type of MVS log stream that CICS VR uses for this recovery job.

When you first enter this secondary window, the CICS VR default values are displayed. Press F5 to obtain the default values from the recovery control data set (RCDS). Press F6 to save the currently displayed values; the default update verification secondary window, shown in “Applying entered parameters” on page 30, is displayed.

For detailed help information, move the cursor to a field and press F1.

Listing recovery job errors

If CICS VR detects errors while constructing the recovery job, the “CICS VR recovery job error list” secondary window is displayed. Use the “CICS VR recovery job error list” secondary window to obtain information about errors found during the construction of the recovery job.

```

CICSVR recovery job error list          Row 1 to 3 of 3

Select one or more errors, then press Enter to obtain more information about
the error.  A corresponding DWW message has also been written to the
DWWMSG data set for each error that is in this list.

S   Error                Data set
-   Overlapping recover  TEST.SMERRY.RLS
-   Unknown ddname      PROD.MILLER.RLS
-   Log sequence error   LOG05.CICS10.D96159.T224559
*****BOTTOM OF DATA*****

Command ==> _____
F1=Help   F7=Bkwd   F8=Fwd    F12=Cancel

```

Figure 29. Recovery job error list secondary window. Use S in the first column to select an error.

Select an error to obtain a secondary window that contains a detailed description of the error.

A corresponding DWW message is also written to the DWWMSG data set for each error that is in the “CICS VR recovery job error list” secondary window.

For general help information press F1.

Submitting the job

After the recovery job has been constructed, the “CICS VR job submission” secondary window is displayed. Use this secondary window to submit, browse, or edit the job.

Select option 4 to save the recovery job that CICS VR generated for you, as described in “Saving the generated JCL” on page 37.

Select option 5 to return to the VSAM sphere list.

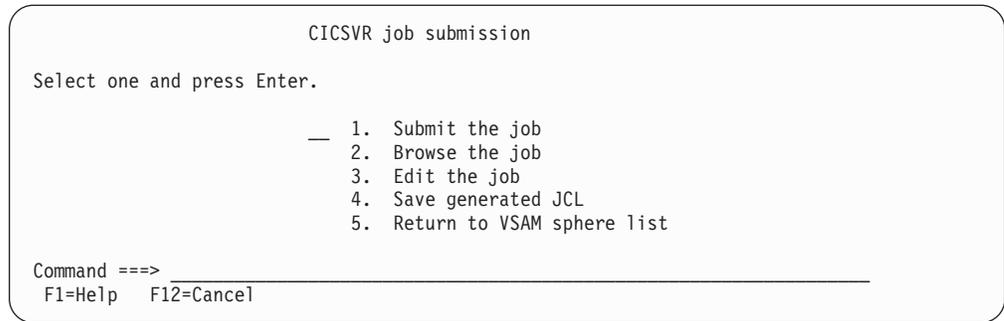


Figure 30. Job submission secondary window

For detailed help information about any of these options, move the cursor to the field and press F1.

Saving the generated JCL

You can specify the member name to which CICS VR saves the generated recovery job. The member is saved in the data set you allocated to the ddname ISPFILF.

The “CICS VR save JCL” secondary window is displayed if you selected Option 4 from the “CICS VR job submission” secondary window.

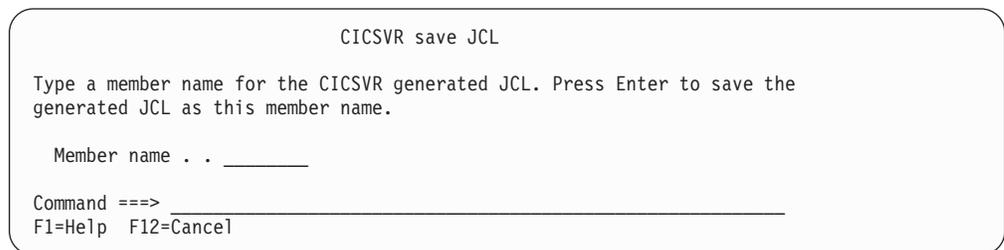


Figure 31. Save JCL secondary window

Chapter 3. Running CICS VR backup

The information in the following topics describe how to take a backup using CICS VR. The panels and secondary windows are in the sequence that they are displayed during a backup job generation.

Creating and running a backup job using the CICS VR ISPF dialog interface

Perform the following sequence of tasks to create and run a backup job from CICS VR ISPF dialog interface.

Procedure

1. Open the DWWSLIB library used in CICS VR ISPF dialog.
2. Modify the JCL skeletons in the library for supported backup products such as DFSMSHsm and DFSMSdss. Place custom JCL skeletons into the CICS VR DWWSLIB, with names that conform to the following convention:
`DWWprdnm`
where `prdnm` is the abbreviation of the backup product called in that skeleton.
For example, the name of the CICS VR DWWSLIB member containing a JCL skeleton for a custom backup product might be `DWCSTPR`.
This product name abbreviation is needed later in the CICS VR VSAM sphere backup parameters secondary window.
3. Open the CICS VR dialog interface.
4. Select option 1 from the “CICS VR main menu”. A secondary window is displayed.
5. Specify the search criteria for the list of VSAM spheres, or specify the name of the data set that contains a list of VSAM spheres, press Enter. A list of CICS VR-registered spheres is displayed. These spheres either match the search criteria or are listed in the specified data set.
6. Select the VSAM spheres to back up.
7. Select the **Utilities** pull-down menu. Choose option 3 and press Enter. A secondary window is displayed.
8. Enter the parameters for taking a backup, as described in “Providing VSAM sphere backup parameters” on page 40. Repeat this step, entering the backup parameters for all of the VSAM spheres selected for backup.
Use the `PrevVSAM`, `F7`, key to return to the parameters for a previous sphere if needed.
When you have entered all the necessary information on the panels, a message is displayed asking you to wait while the backup job is being constructed.
9. Submit the job that has been created by CICS VR.

What to do next

See Chapter 2, “Running CICS VR forward recovery,” on page 13 for additional information on using the main menu, working with VSAM sphere list, and CICS VR job submission.

Providing VSAM sphere backup parameters

If you select a backup function for the VSAM spheres, the “VSAM sphere backup parameters” secondary window is displayed. This secondary window is displayed for each of the VSAM spheres selected for backup.

Use this window to specify the VSAM sphere parameters for the backup job.

```
DWPPBKS          CICSVR VSAM sphere backup parameters

Type the backup name for selected VSAM sphere, then specify backup product
name. Choose backup type. Press Enter to continue.

VSAM sphere . . . . . : CICSMVS.R41MN01.VSAM1
VSAM sphere backup name . _____
Aggregate group name . . _____
Backup product name . . . HSMLB (HSMLB, ABARS, DSSLC, DSSLD or other)
Backup type . . . . . _ (1-CICS Online, 2-CICS Offline, 3-non-CICS)
CICS APPLID . . . . . _____

Command ==> _____
F1=Help  F7=PrevVSAM  F12=Cancel
```

Figure 32. VSAM sphere backup parameters secondary window

The parameters include this information:

- A name for the backup data set
- The product name, to be used for locating the appropriate JCL skeleton
- The backup type, which can be offline or online

If the backup type chosen is CICS Offline, the CICS APPLID must be specified as well.

The default value for the backup product name is HSMLB.

At any time, press PrevVSAM, F7, to go back to the backup parameter screen for the previous VSAM sphere.

For detailed help information about any of these fields, move the cursor to the field and press F1.

Restrictions

The VSAM sphere backup name is ignored when you specify the default backup product name HSMLB. If the backup name is empty and the backup product name is not HSMLB, a warning message is displayed. If the backup name is empty and the backup product name is HSMLB, no warning message is displayed.

If the backup type chosen is 2 (CICS Offline), specify the CICS APPLID. The APPLID is used for taking the sphere offline in a particular CICS instance.

If the sphere is being accessed in RLS mode, the sphere is taken offline from all CICS regions using it.

Starting the backup

As processing continues, CICS VR searches DWWSLIB to locate the JCL skeleton containing the job for the specified backup product. JCL skeletons for HSM and DSS products are supplied with CICS VR.

You must construct JCL skeletons for other backup products and place them into the CICS VR DWWSLIB before you issue the backup request from panels. The name of the JCL skeleton member must match the name specified in the backup product name field.

Chapter 4. Running CICS VR reorganization

You can reorganize a VSAM sphere using CICS VR. VSAM sphere reorganization can increase the space of a sphere and its alternate indexes. It can also change the control interval sizes for a sphere's components.

The panels and secondary windows shown here are in the sequence that they are during generation of a reorganization job.

Creating and running a reorganization job

Perform this sequence of tasks to create and run a CICS VR reorganization job.

Procedure

1. Update the RCDS with the most recent information about the VSAM sphere or spheres that you want to reorganize. *CICS VR Implementation Guide and Reference* has more information about registering VSAM spheres.
2. Obtain a list of VSAM spheres:
 - a. Select option 1 from the "CICS VR main menu". The "CICS VR VSAM sphere list include" secondary window opens.
 - b. Either enter search criteria for the list of VSAM spheres, or enter the name of the data set that contains the list of VSAM spheres. "Specifying criteria for the VSAM sphere list" on page 14 explains how to do this.

The "CICS VR VSAM sphere list" panel is displayed, showing a list of VSAM spheres registered to CICS VR. The spheres in the list either match the search criteria that you entered or are listed in the data set which you specified.

3. Enter S next to the VSAM sphere that you want to reorganize. Multiple selection of spheres is not allowed for reorganization.
4. Either select the **Utilities** pull-down menu and choose the **Reorganization** option, option 1, or use the shortcut function key F4 (Reorg). The "CICS VR VSAM sphere reorganization parameters" secondary window opens.
5. Enter the reorganization parameters for the VSAM sphere that is displayed in the "CICS VR VSAM sphere reorganization parameters" secondary window. "Providing VSAM sphere reorganization parameters" on page 44 explains how to do this. When you have entered all the necessary parameters, CICS VR constructs a reorganization job, and the "CICS VR job submission" secondary window opens.
6. Choose the **Save generated JCL** option, option 4, to save the reorganization job. The "CICS VR Save JCL" secondary window opens. Specify the member name for the reorganization job. The member is saved in the data set that you allocated to the ddname ISPFIL.
7. In the "CICS VR job submission" secondary window, choose the **Browse the job** option, option 2, if you want to check the reorganization job that CICS VR has generated. You can edit the job if necessary.
8. In the "CICS VR job submission" secondary window, choose the **Submit the job** option, option 1, to run the reorganization job.

Providing VSAM sphere reorganization parameters

When you select the **Reorganization** option for VSAM spheres, the “CICS VR VSAM sphere reorganization parameters” secondary window opens. Use this window to specify the parameters for the reorganization job.

```
DWPPRGS          CICSVR VSAM sphere reorganization parameters Row 1 to 2 of 2

Type the increase amount, percent, and specify new CI sizes for desired
entries. Switch reorganization type by pressing PF4, SwType, if needed.
Press Enter to continue.

VSAM sphere . . . . . : CICSMSV.AA.KSDS01

Reorganization type . . : AIXFULL
Increase . . . . . : 10 % (0-99)

Backup name for ESDS . . _____
REORG mode . . . . . : 2 (1-CICS Offline, 2-non-CICS)
CICS APPLID . . . . . : _____

VSAM sphere entry          Type      Cur. CI  New CI
CICSMSV.AA.KSDS01.DATA    DATA    4K      4608
CICSMSV.AA.KSDS01.INDEX   INDEX    2K      _____

Command ==> _____
F1=Help  F4=SwType  F7=Bkwd  F8=Fwd  F12=Cancel
```

Figure 33. VSAM sphere reorganization parameters secondary window

The parameters you need to specify are as follows:

Reorganization type

There are two reorganization types, AIXFULL and NOSPACE. Press F4, SwType, to switch between the two types.

AIXFULL

All the components of the VSAM sphere are reorganized according to the parameters that you specify for the reorganization job. The reorganization type AIXFULL can be used only for a VSAM sphere that has alternate indexes (AIXes) defined.

NOSPACE

Only the base cluster of the VSAM sphere is affected by the reorganization.

Increase

The percentage amount by which the space of the sphere and its alternate indexes increases. The default is 10%. 99% almost doubles the space. If you specify zero, the space of the VSAM sphere remains unchanged, and the only changes made in the reorganization are to the control interval (CI) sizes for the components of the sphere, if you have requested changes using the **New CI** fields.

Backup name for ESDS

The backup name is used for a backup step after the reorganization, if you change any of the control interval (CI) sizes for the components of the sphere. After changing the CI size, backup of an ESDS sphere is required for any further forward recovery processing to run correctly, because the change to the CI size affects the Relative Base Addresses (RBAs) of the records.

The backup name for an ESDS sphere is ignored if the sphere being processed is not of an ESDS type or if you leave all of the **New CI** fields blank.

REORG mode

There are two reorganization modes, CICS Offline and non-CICS. Specify 1 for CICS Offline, and 2 for non-CICS.

CICS Offline

Additional processing is carried out to disable the VSAM sphere and take it offline to a particular CICS region before the reorganization, and to enable the VSAM sphere to CICS after the reorganization. If you choose the CICS Offline reorganization mode, you must specify a CICS APPLID, which is used to take the sphere offline to that CICS region.

Non-CICS

The VSAM sphere is not taken offline to any CICS region.

CICS APPLID

The APPLID of the CICS region to which the VSAM sphere is to be taken offline before the reorganization.

New CI

The new control interval (CI) size for this component of the VSAM sphere, in either bytes or kilobytes. For kilobytes, specify K after the numeric value, for example, 16K. If you specify the new value in bytes, the maximum value is 32768. If you specify the new value in kilobytes, the maximum value is 32 KB.

For detailed help information about any of these parameters, move the cursor to the appropriate field and press F1.

Chapter 5. Working with other VSAM sphere list pull-down menus

The CICS VR recovery and backup functions are typically accessed using the **Utilities** pull-down menu after selecting VSAM spheres.

CICS VR provides other pull-down menus on the VSAM sphere list panel, allowing you to perform other tasks using the selected spheres. This section provides details on the additional pull-down menu functions.

- The **Administrate** pull-down menu is described in “The VSAM sphere list Administrate pull-down menu.” Use this pull-down menu to register the VSAM spheres in the RCDS, as detailed in “Registering a VSAM sphere in the RCDS” on page 48, and deregister the selected VSAM spheres from the recovery control data set (RCDS), as detailed in “Deregistering a VSAM sphere from the RCDS” on page 49.
- The **Tools** pull-down menu is described in “Using the VSAM sphere list tools pull-down menu” on page 50. Use this menu to perform these tasks:
 - Use RLS protocols during recovery processing of RLS-accessed VSAM data sets as described in “CICS VR RLS processing (RR bit)” on page 50.
 - Use the scan option to specify whether CICS VR automatically scans the registered log of logs before a recovery job is constructed, as described in “Using the CICS VR scan option” on page 51.
- The **List** pull-down menu is described in “Using the VSAM sphere list panel list pull-down menu” on page 52.
 - List backups, as described in “Listing logical backups” on page 53.
 - List RLS details, as described in “Listing RLS details” on page 54.
 - List backup names, as described in “Listing backup names” on page 54.The list details can be presented using either local time or GMT, as described in “Switching time format” on page 56.
- The **View** pull-down menu is described in “Using the VSAM sphere list **View** pull-down menu” on page 57. Use this menu to redisplay, sort, or filter the list of VSAM spheres.
- The **Help** pull-down menu is described in “Using the VSAM sphere list Help pull-down menu” on page 62.

The VSAM sphere list Administrate pull-down menu

Use the **Administrate** pull-down menu to register VSAM spheres in the CICS VR RCDS, deregister selected VSAM spheres from the CICS VR RCDS, and exit from the CICS VR VSAM sphere list.

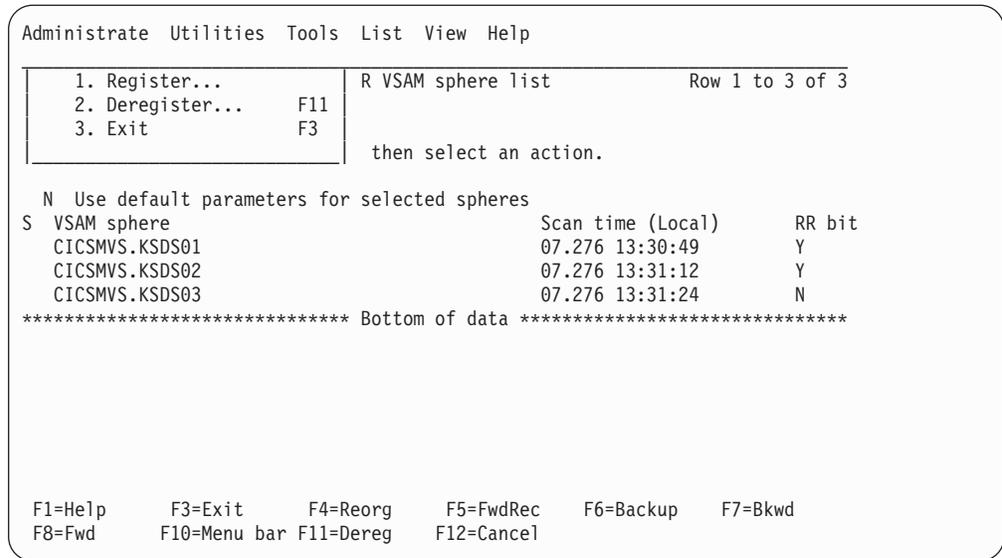


Figure 34. VSAM sphere list **Administrat** pull-down menu

To select an option from the **Administrat** pull-down menu, either:

1. Enter the number of the option you want to select on the input line that is in the **Administrat** pull-down menu.
2. Place the cursor over the option you want to select in the **Administrat** pull-down menu and press Enter.

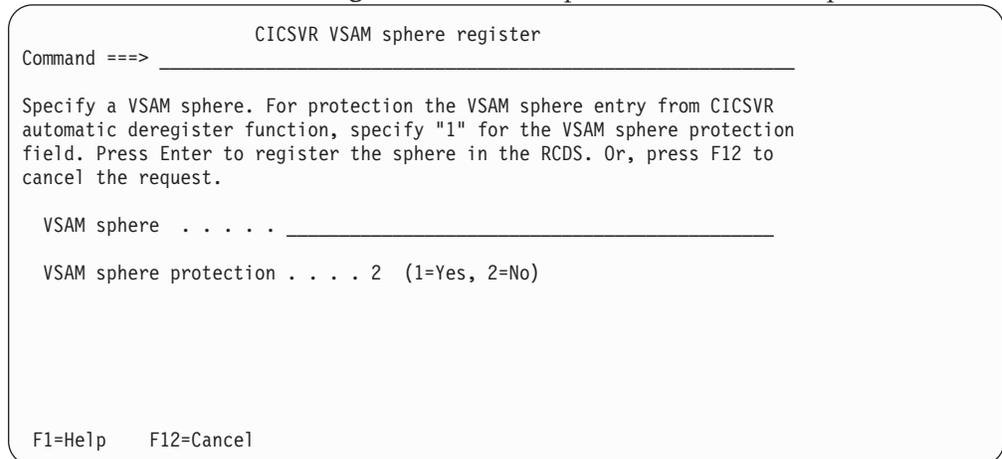
Registering a VSAM sphere in the RCDS

Use the **Register** option to preliminary register VSAM spheres to use the CICS VR selective backup registration function that registers only those backups that relate to VSAM spheres already registered in the RCDS.

For more information see description of SELBKREG server address space default in *CICS VR V4R3 Implementation Guide and Reference*.

Register a VSAM sphere in the RCDS using one of these methods:

- Select option 1.
- Move the cursor to the **Register** item in the pull-down menu and press Enter



A value of 1, Yes, for VSAM sphere protection means that the VSAM sphere entry in the RCDS is protected from the CICS VR automatic deregistration function. The **Register** option also turns the protection flag on and off for VSAM spheres that are already registered:

1. Type S beside the selected spheres in the VSAM sphere list.
2. Select the option 1 from the **Administrate** pull-down menu.

The “CICS VR VSAM sphere register” secondary window is displayed for every VSAM sphere that you selected.

Deregistering a VSAM sphere from the RCDS

Deregistering a VSAM sphere removes the VSAM sphere entry from the CICS VR VSAM sphere list.

To deregister a VSAM sphere from the CICS VR RCDS, select the VSAM sphere(s) you want to deregister and then select the **Deregister** option. Use one of the following methods:

- Select **Deregister** from the **Administrate** pull-down menu.
- Enter DEREg on the command line and press Enter.
- Press the Dereg key, F11.

For each VSAM sphere you selected to deregister, the “CICS VR VSAM sphere deregister verification” secondary window is displayed.

```

CICSVR VSAM sphere deregister verification
Command ==>

Specify "1" to deregister the VSAM sphere, or "2" if you want only to set
off the protection flag in the sphere entry. Then press Enter to perform
the function, or F12 to cancel the request.

VSAM sphere . : CICSMVS.KSDS01
VSAM sphere protection . . . : ON
Deregister/Reset . . . . . 1 (1=Deregister, 2=Reset)

F1=Help   F12=Cancel
```

Figure 35. VSAM sphere deregister verification secondary window

The “CICS VR VSAM sphere deregister verification” secondary window allows you to perform one of the following actions:

- Type 1 in the input field and press Enter if you want to deregister information only about the listed VSAM sphere from the RCDS.
- Type 2 in the input field and press Enter if you want to turn off only the protection flag in the VSAM sphere entry in the RCDS.

Press Enter to deregister or reset the listed VSAM sphere from the RCDS or press F12, to stop the deregistration. Press the F1, to obtain further help information.

Using the VSAM sphere list tools pull-down menu

Use the VSAM sphere list **tools** pull-down menu to set RLS options for the VSAM spheres.

To use the Tools pull-down menu:

1. On the “CICS VR VSAM sphere list” panel, type S beside the VSAM sphere with which you want to work.
2. Press F10 to open the menu bar, place the cursor under **Tools** and press Enter.

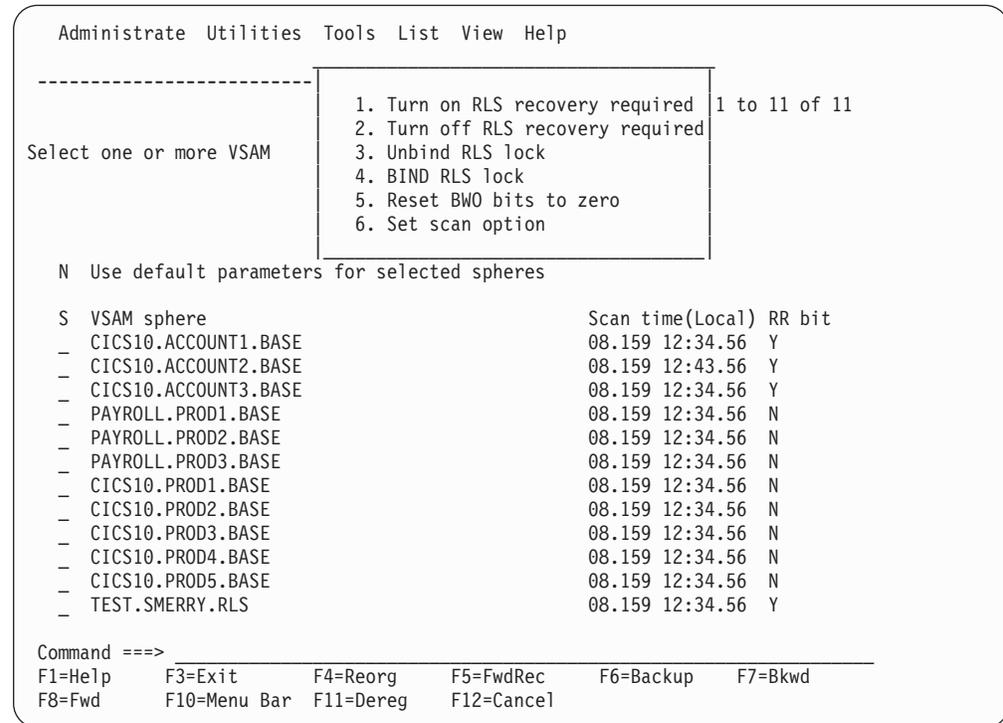


Figure 36. VSAM sphere list—Tools pull-down menu

From this pull-down menu, you can set RLS options for the VSAM spheres that you selected by using one of these methods:

- Select the option you need.
- Move the cursor to the item in the pull-down menu, and press Enter.

To obtain information about each menu choice, move the cursor to an item and press F1.

CICS VR RLS processing (RR bit)

To ensure the integrity of VSAM spheres, CICS VR runs a key set of RLS protocols during recovery processing of RLS-accessed VSAM data sets.

The protocols operate in these ways:

- Using the Unbind and Bind services to transfer the RLS locks to the recovered sphere. At the start of recovery, CICS VR unbinds the locks, and, after a successful recovery, CICS VR rebinds all locks.
- Setting the RLS Recovery Required bit (RR bit) on and off in the ICF catalog. At the start of recovery, CICS VR sets this bit on to prevent all other applications

from accessing the data set while CICS VR performs recovery. After a successful recovery, CICS VR turns this bit off to allow other applications access to the data set.

Recovery failure

If a CICS VR recovery fails for a VSAM sphere, CICS VR does not bind the locks and the RR bit remains on, preventing all other applications from updating the sphere until a recovery is successful.

If you want to force access to a VSAM sphere that failed recovery, you can manually bind the locks and then turn the RR bit off by selecting the VSAM sphere from the CICS VR VSAM sphere list and selecting the appropriate action from the **Tools** menu.

Recovery to a new name

If you have successfully recovered a VSAM sphere, but the recovery was performed against a VSAM sphere with a new name, the optional NEWNAME parameter is specified, CICS VR assumes that the original VSAM sphere is still corrupted. CICS VR therefore does not bind the locks or turn off the RR bit for the original VSAM sphere after a successful recovery to a new name.

If you want to force access to a VSAM sphere that was recovered to a new name, you can manually bind the locks and then turn the RR bit off by selecting the original VSAM sphere from the CICS VR VSAM sphere list and selecting the appropriate action from the **Tools** menu.

Using the CICS VR scan option

You can specify whether CICS VR automatically scans the registered log of logs before a recovery job is constructed.

Select option 6, **Set scan** option to display the “CICS VR scan option” panel. The default value for this option is 1; indicating that CICS VR performs a log of logs scan unless you change the value.

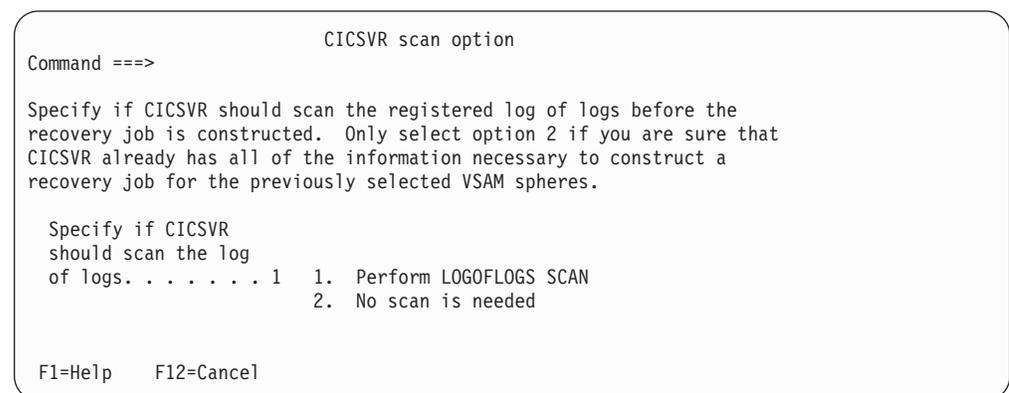


Figure 37. CICS VR scan option

Use the **Specify if CICS VR should scan the log of logs** field to specify whether CICS VR scans the registered log of logs before CICS VR constructs the recovery job. The LOGOFLOGS SCAN obtains the information necessary to create a recovery job. Select one of the following options:

- Select 1, the default value, so that CICS VR scans the registered log of logs before CICS VR constructs the recovery job.
Recommendation: Except for unusual situations, use the default, option 1, when creating a recovery job.
- Select 2 so that CICS VR does not scan the registered log of logs before CICS VR constructs the recovery job. For example, you might select option 2 in the following situations:
 - You have recently run a log of logs scan to specifically scan only the log of logs related to the VSAM spheres for which you are creating a recovery job. In this situation, you do not want CICS VR to scan all of the log of logs registered to CICS VR because the related log of logs were scanned. This assumes that no updates have been made to the VSAM spheres for which you are creating a recovery job since the selective log of logs scan ran.
 - The forward recovery stop time that you are going to specify for the selected VSAM spheres is earlier than the last time the log of logs was scanned.
 - CICS VR VSAM batch logging is the only type of logging done for the VSAM spheres that you are recovering.

Restriction: Each time you return the VSAM sphere list, the value in the **Specify if CICS VR should scan the log of logs** field is reset to the default value of 1.

Using the VSAM sphere list panel list pull-down menu

You can list logical backups, RLS details and data set names for selected VSAM spheres.

From the **List** pull-down menu, you can:

1. List logical backups for selected VSAM spheres, as described in “Listing logical backups” on page 53.
2. List RLS details for selected VSAM spheres, as described in “Listing RLS details” on page 54.
3. List the data set names of registered backups for selected VSAM spheres, as described in “Listing backup names” on page 54.

The list details can be presented using either local time, or GMT, as described in “Switching time format” on page 56.

```

Administrate Utilities Tools List View Help
-----
CICS | - 1. List backups... | ow 1 to 12 of 33
      | 2. List RLS details...
Select one or more VSAM spheres | 3. List backup names |
-----
N Use default parameters for selected spheres

S VSAM sphere                               Scan time(Local) RR bit
CICS10.ACCOUNT1.BASE                       08.159 12:34:56 Y
CICS10.ACCOUNT2.BASE                       08.159 12:34:56 Y
CICS10.ACCOUNT3.BASE                       08.159 12:34:56 Y
PAYROLL.PROD1.BASE                         08.159 12:34:56 N
PAYROLL.PROD2.BASE                         08.159 12:34:56 N
PAYROLL.PROD3.BASE                         08.159 12:34:56 N
CICS10.PROD1.BASE                          08.159 12:34:56 N
CICS10.PROD2.BASE                          08.159 12:34:56 N
CICS10.PROD3.BASE                          08.159 12:34:56 N
CICS10.PROD4.BASE                          08.159 12:34:56 N
CICS10.PROD5.BASE                          08.159 12:34:56 N
TEST.SMERRY.RLS                           08.159 12:34:56 Y

Command ===>
F1=Help    F3=Exit    F4=Reorg   F5=FwdRec  F6=Backup  F7=Bkwd
F8=Fwd     F10=Menu bar F11=Dereg F12=Cancel

```

Figure 38. VSAM sphere list—List pull-down menu

To select an option from the **List** pull-down menu, either:

- Enter the number of the option you want to select on the input line that is in the **List** pull-down menu.
- Place the cursor over the option you want to select in the **List** pull-down menu, then press Enter.

For further help information, press F1.

Listing logical backups

All logical backups that are known to CICS VR for the VSAM sphere are displayed. DFSMShsm volume dumps are not shown in this list.

If you select the **List backups** option from the **List** pull-down menu a secondary window opens. The “CICS VR Backup list” secondary window is displayed once for every VSAM sphere that you selected.

Note: The backups made of VSAM spheres in 'Recovery-Required' state are not listed.

```

CICSVR backup list                               Row 1 to 3 of 3

Press Enter to show the backup list for the next selected VSAM sphere. Or,
press F12 to cancel the list sequence.

VSAM sphere . . . : PAYROLL.BASE

----- Data set backup information -----
Date   Time      Gen  Ver  Online  Rp Date Rp Time  Type  Product
08.178 05:13:32  01   001  NO           .           .   LOCAL HSMLB
08.176 11:04:44           NO           .           .   LOCAL DSSLD
08.175 18:01:17           NO           .           .   LOCAL DSSLC
***** Bottom of data *****

Command ==>
F1=Help   F5=Local  F6=GMT    F7=Bkwd   F8=Fwd    F12=Cancel

```

Figure 39. CICS VR Backup list

For help information press F1.

Listing RLS details

How to list RLS details.

If you select the **List RLS** details option from the **List** pull-down menu a secondary window opens. This secondary window opens once for every VSAM sphere that you selected.

```

CICSVR VSAM sphere RLS details list

Press Enter to show the RLS details list for the next VSAM sphere. Or,
press F12 to cancel the list sequence.

VSAM sphere . . . . . : CICS10.PROD1.BASE
MVS log stream . . . . : CICS10.PROD1.LOGSTREAM
RLS recovery required . : NO

Command ==> _____
F1=Help  F12=Cancel

```

Figure 40. VSAM sphere RLS details list

For help information, press F1.

Listing backup names

Select one or more VSAM spheres and then select option 3, **List backup names**, from the **List** pull-down menu to display the data set names of the non-DFSMSshm backups that are registered in the RCDS for the selected VSAM spheres.

DFSMSshm backups are *not* shown in the registered backup names list.

The “CICS VR Backup list” secondary window - local time, shows the registered backup names list. The registered backup names list is displayed once for every VSAM sphere that was selected.

```

CICSVR registered backup names list      Row 1 to 2 of 2

Press Enter to show the registered backup names list for the next selected
VSAM sphere. Or, press F12 to cancel the list sequence. Select a backup
and press F10, 'Info', to obtain optional backup information, or F11, Dereg, to
deregister the backup from the RCDS and optionally uncatalog and delete
the backup.

VSAM sphere . . . : CICSMVS.TST33.KSDS02

----- Data set backup information -----
S Date      Time          Type   Backup data set name
 08.033    15:22:01         LOCAL  CICSMVS.KSDS02.BACKUPK2
 08.033    10:20:55         LOCAL  CICSMVS.KSDS02.BACKUPK3
***** Bottom of data *****

Command ==>
F1=Help      F5=Local    F6=GMT      F7=Bkwd     F8=Fwd      F10=Info
F11=Dereg    F12=Cancel

```

Figure 41. Backup list secondary window - local time

From this window, you can also select one or more backups and perform one of the following actions against the selected backups:

- Display optional information
- Dynamically deregister the backups

Displaying optional backup information

Select one or more backups and then press F10, **Info**, to display optional information that might have been specified when the backups were registered to CICS VR.

CICS VR then displays the “CICS VR backup optional information” secondary window for every selected backup.

```

CICSVR backup optional information      Row 1 to 4 of 4

Press Enter to show the optional backup information for the next selected
backup data set. Or, press F12 to cancel the list sequence.

VSAM sphere . . . . : PAYROLL.BASE

Backup data set name : PAYROLL.OTHER.BACKUP

Product identifier . : OTHER

----- Optional information -----

This is sample information that was stored in the RCDS entry
for backup PAYROLL.OTHER.BACKUP made for sphere PAYROLL.BASE.
This information was specified in the optional_information
parameter of the file copy notification service.
***** Bottom of data *****

Command ==> _____
F1=Help      F7=Bkwd     F8=Fwd      F12=Cancel

```

Figure 42. CICS VR backup optional information secondary window

The “CICS VR backup optional information” secondary window displays the optional 256 characters that might have been specified in the **optional_information**

parameter during registration of the selected backup. See the *CICS VR Implementation Guide and Reference* for more information about backup registration.

Dynamically deregistering backups

Select one or more backups and then press F11, Dereg, to deregister, and optionally uncatalog and delete, the selected backups.

CICS VR then displays the “CICS VR backup deregister verification” secondary window for every selected backup.

```
CICSVR backup deregister verification

Select an action and press Enter to deregister the backup. Or, press F12
to cancel the request.

Backup name . . . . . : PAYROLL.OTHER.BACKUP

Backup date and time
(Local format) . . . : 08.174 09:32:12

— 1. Deregister the backup from the CICSVR RCDS
   2. Deregister the backup from the CICSVR RCDS and
      uncatalog and delete the backup

Command ==> _____
F1=Help   F12=Cancel
```

Figure 43. CICS VR backup deregister verification secondary window

Use the “CICS VR backup deregister verification” secondary window to perform one of the following actions:

- Type 1 in the input field and press Enter if you want to only deregister information about the listed backup from the CICS VR RCDS.
- Type 2 in the input field and press Enter if you want to deregister information about the listed backup from the CICS VR RCDS and uncatalog and delete the backup.

Even when the backup is on tape, CICS VR attempts to deregister, uncatalog, and delete the backup. ABARS backups can be only deregistered from the RCDS, but not uncataloged and deleted.

Switching time format

You can choose which format CICS VR displays the backup and recovery point times, either in local time or GMT format.

Press F6, GMT, to display the times in Greenwich Mean Time (GMT) format, if possible.

Press F5, Local, to re-display the times in local format.

```

CICSVR registered backup names list      Row 1 to 2 of 2

Press Enter to show the registered backup names list for the next selected
VSAM sphere. Or, press F12 to cancel the list sequence. Select a backup
and press F10, 'Info', to obtain optional backup information, or F11, 'Dereg', to
deregister the backup from the RCDS and optionally uncatalog and delete
the backup.

VSAM sphere . . . : CICSMVS.TST33.KSDS02

----- Data set backup information -----
S Date      Time      Type      Backup data set name
 08.033    17:20:48    GMT      CICSMVS.KSDS02.BACKUPK3
 08.033    13:22:01    GMT      CICSMVS.KSDS02.BACKUPK2
***** Bottom of data *****

Command ==>
F1=Help      F5=Local    F6=GMT      F7=Bkwd     F8=Fwd      F10=Info
F11=Dereg    F12=Cancel

```

Figure 44. Backup list secondary window - GMT time

The times might not be available in GMT format for a backup in these circumstances:

- CICS VR was not notified by DFSMSHsm when the DFSMSHsm logical backup was created.
- The backup was made using the Backup-While-Open (BWO) facility for a non-RLS VSAM data set.

See the *CICS VR Implementation Guide and Reference* for further information about CICS VR backup notification.

Using the VSAM sphere list View pull-down menu

Use the **View** pull-down menu to redisplay, sort, or filter the list of VSAM spheres.

```

Administrate Utilities Tools List View Help
-----
Command ==>          CICSVR VSA | 1. All | Row 1 to 3 of 3
Select one or more VSAM spheres, then | 2. Include... |
N Use default parameters for selecte | 3. Sort... |
S VSAM sphere | 4. Instance ID... |
CICSMVS.KSDS01 | 5. Protected |
CICSMVS.KSDS02 | |
CICSMVS.KSDS03 | |
***** Bottom of data *****

Scan time (Local)      RR bit
07.276 13:30:49      Y
07.276 13:31:12      Y
07.276 13:31:24      N

F1=Help      F3=Exit      F4=Reorg      F5=FwdRec      F6=Backup      F7=Bkwd

```

Figure 45. VSAM sphere list—View pull-down menu

Use the **View** pull-down menu to redisplay, sort, or filter the list of VSAM spheres using one of the following methods:

All This option redisplay all registered VSAM spheres.

Include

This option includes all registered VSAM spheres that match certain criteria.

- Redisplay the list of VSAM spheres based on name criteria, as described in “Specifying criteria for the VSAM sphere list” on page 14.
- Redisplay the list of VSAM spheres by entering the name of a data set as input to CICS VR that contains a list of VSAM sphere names, as described in “Specifying criteria for the VSAM sphere list” on page 14.

Sort Sort the currently displayed list based on entered criteria, as described in “Sorting the VSAM sphere list” on page 59.

Instance ID

Filter the currently displayed list based on instances where the VSAM spheres are defined, such as CICS APPLID, TVSNAM, and CICS VR ID, see “Filtering the VSAM sphere list by instance identifiers” on page 59 for more information.

Protected

This option displays all registered VSAM spheres that have the protection flag set in the RCDS.

To select an option from the **View** pull-down menu, either:

- Enter the number of the option that you want to select on the input line that is in the **View** pull-down menu.
- Place the cursor over the option you want to select in the **View** pull-down menu and press Enter.

For further help information press F1.

Specifying criteria for the VSAM sphere list

You can search on criteria based on the VSAM spheres listed on the sphere list or the name of the data set.

Select option 2 from the “Using the VSAM sphere list **View** pull-down menu” on page 57 to display the “CICS VR VSAM sphere list include” secondary window “Specifying criteria for the VSAM sphere list.”

Use this secondary window to filter the VSAM spheres listed on the CICS VR VSAM sphere list. You can enter search criteria based on either the VSAM sphere name, or, the name of a data set that contains a list of VSAM spheres as described in “Specifying criteria for the VSAM sphere list” on page 14.

Restriction: If you enter text in both the **VSAM sphere** field and the **Data Set Name** field, CICS VR ignores the **VSAM sphere** field and opens the data set that you specified in the **Data Set Name** field.

```

CICSVR VSAM sphere list include
Command ==> _____
Specify VSAM sphere list search criteria, then press Enter.
VSAM sphere . . . . . * _____

OR

Specify the name of a data set that contains a list of VSAM spheres,
then press Enter.
Data Set Name . . . _____

F1=Help   F12=Cancel

```

Figure 46. VSAM sphere list include secondary window

For help information press F1.

Sorting the VSAM sphere list

How to sort the VSAM sphere list.

Select option 3 from the VSAM sphere list **View** pull-down menu to display the “CICS VR VSAM sphere list sort” secondary window.

Use this secondary window to sort the contents that are in the VSAM sphere list panel “Using the VSAM sphere list **View** pull-down menu” on page 57.

```

CICSVR VSAM sphere list sort
Select the column to sort by, then press Enter.
- 1. VSAM sphere
  2. Ascending last archive time
  3. Descending last archive time

Command ==> _____
F1=Help   F12=Cancel

```

Figure 47. VSAM sphere list sort secondary window

For detailed help information about these options, move the cursor to the input field and press F1.

Filtering the VSAM sphere list by instance identifiers

You can filter the VSAM spheres listed in the VSAM sphere list. A VSAM sphere is defined as belonging to an instance (CICS, DFSMStvs, and CICS VR) when logging has been performed for the VSAM sphere by the specific instance.

Select option 4 from the pull down menu as described in “Using the VSAM sphere list **View** pull-down menu” on page 57 to display the “CICS VR VSAM sphere list instance identifier filter” secondary window.

CICSVR VSAM sphere list instance identifier filter

Enter up to ten CICS APPLIDs, TVSNAMES, and CICSVR IDs, then press Enter.
Any VSAM sphere that is on the CICSVR VSAM sphere list, and is defined to one of the specified instance identifiers, is on the filtered CICSVR VSAM sphere list.

	-----	VALUE	-----	-----	-----
CICS APPLID (cccccccc) _____	_____	_____	_____	_____	_____
TVSNAME (nnn) _____	_____	_____	_____	_____	_____
CICSVR ID (Rgggggnn) . _____	_____	_____	_____	_____	_____

Command ==> _____
F1=Help F12=Cancel

Figure 48. CICS VR VSAM sphere list instance identifier filter secondary window

Use this secondary window to filter the VSAM spheres previously listed on the VSAM sphere list, “Using the VSAM sphere list **View** pull-down menu” on page 57, based on the ID of the instances to which the VSAM spheres are defined (CICS APPLID, TVSNAME, and CICS VR ID).

For example, if a CICS region with an APPLID of CICSPROD runs an application and performs forward recovery logging for VSAM sphere TEST.VSAM.SPHERE, CICS VR registers VSAM sphere TEST.VSAM.SPHERE as belonging to CICS APPLID instance CICSPROD.

The following message is displayed on the “VSAM sphere list” panel after successful filtering: Sphere list filtered by specified Instance ID. On return to the “CICS VR VSAM sphere list instance identifier filter” secondary window, the specified instance IDs values are kept.

Note: A single VSAM sphere can be defined to multiple instances. To obtain help information press F1.

CICS APPLID

In the CICS APPLID fields, enter the name of a CICS instance. Any VSAM sphere that was previously listed on the CICS VR VSAM sphere list, and is defined to the entered instance, is displayed on the filtered CICS VR VSAM sphere list.

You can specify up to ten CICS APPLIDs, where cccccccc is the CICS APPLID of a CICS instance that is specified in the CICS APPLID system initialization parameter.

TVSNAME

In the TVSNAME fields, enter the name of a DFSMS Transactional VSAM Service (DFSMSStvs) instance. Any VSAM sphere that was previously listed on the CICS VR VSAM sphere list, and is defined to the entered instance, is displayed on the filtered CICS VR VSAM sphere list.

You can specify up to ten TVSNAMES, where nnn is the TVSNAME of a specific DFSMSStvs instance defined in the TVSNAME definition in the IGDSMSxx PARMLIB member.

CICSVR ID

In the CICSVR ID fields, enter the name of a CICS VR instance. Any VSAM sphere that was previously listed on the CICS VR VSAM sphere list, and is defined to the entered instance, is displayed on the filtered CICS VR VSAM sphere list. You can specify up to ten CICS VR IDs.

The CICSVR ID for a specific CICS VR instance is displayed in the text of message DWW245I, on the system console, when the CICS VR address space is initialized. Also, you can obtain the CICSVR ID value by issuing the DISPLAY SMS,CICSVR operator command.

For example, the DISPLAY SMS,CICSVR operator command produces a result similar to the following:

```
DISPLAY SMS,CICSVR - JOB STATUS
  APPLID AND NUMBER OF JOBS USING BATCH LOGGING:
  SYSNAME:  MVV3      .RPROD04      0      0      0
```

In this example of the results produced by the DISPLAY SMS,CICSVR operator command, the CICS VR instance ID for the system is referred to as the APPLID, where:

Symbol	Meaning
.	CICS VR constant value
R	CICS VR constant value
PROD	CICS VR group name suffix defined on the system
04	System number

If you want to filter the VSAM sphere list, only displaying VSAM spheres defined to the .RPROD04 CICS VR instance, you specify the CICS VR ID without the first "." character as input to the CICS VR ID field. For this example, you enter RPROD04 on the CICS VR ID input field, where:

Symbol	Meaning
R	CICS VR constant value
gggg	CICS VR group name suffix defined on the system
nn	System number

Here is an example of entering RPROD04 as input to the CICS VR VSAM sphere list instance identifier filter:

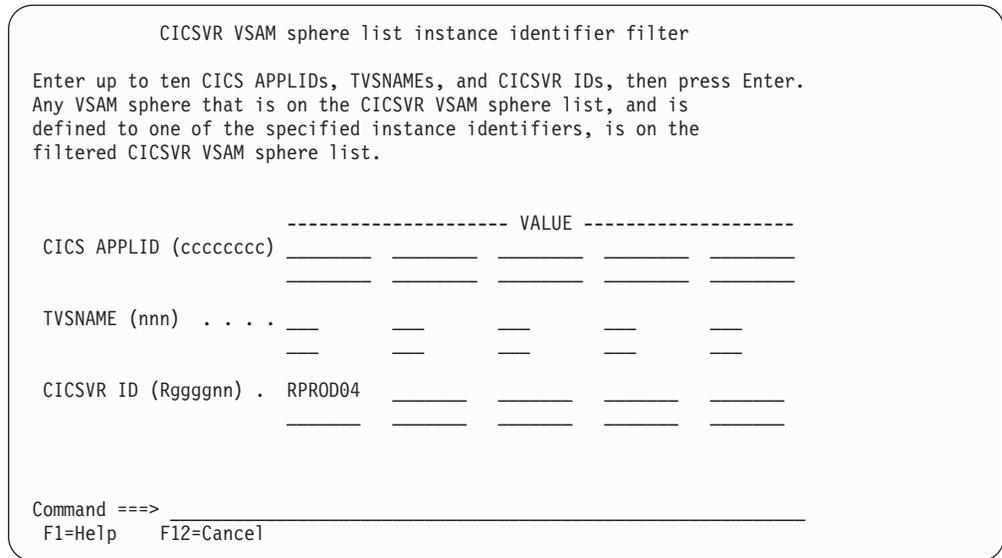


Figure 49. CICS VR VSAM sphere list instance identifier filter secondary window example

- You can use the global search characters asterisk '*' and percent sign '%' to specify a pattern for an instance identifier. The asterisk '*' represents any number of characters and the percent sign '%' represents a single character. For example, to filter the list of VSAM spheres so that only spheres defined to a CICS APPLID beginning with characters "PROD" are listed, you can specify "PROD*" in a CICS APPLID input field.
- A VSAM sphere that was listed on the previous CICS VR VSAM sphere list has to be defined to only one of the specified instances to be included on the filtered CICS VR VSAM sphere list. For example, if you enter PROD1 and PROD2 on the **CICS APPLID** input fields, any VSAM sphere that was previously listed on the CICS VR VSAM sphere list and is defined to CICS instance PROD1, PROD2, or both is displayed on the filtered CICS VR VSAM sphere list.

In another example, if you enter PROD1 and PROD2 on the **CICS APPLID** input fields and also enter 001 on the TVSNAME input field, any VSAM sphere that was previously listed on the CICS VR VSAM sphere list and is defined to either CICS APPLID PROD1 or PROD2, or TVSNAME instance 001 is displayed on the filtered CICS VR VSAM sphere list.

- CICS VR records the instances to which a VSAM sphere is defined during a log of logs scan (for CICS and DFSMStvs). Therefore, you might want to run a log of logs scan before using the CICS VR VSAM sphere list instance identifier filter if a log of logs scan has not been run recently.

Using the VSAM sphere list Help pull-down menu

A description of the pull-down menu choices.

Use the **Help** pull-down menu to obtain help information.

```

Administrate Utilities Tools List View Help
-----
                                CICSVR VSAM spher  of 33
Select one or more VSAM spheres, then select an
                                1. Using help...
                                2. General help... F1
                                3. Index...
                                4. Keys help...
                                5. Command help...
                                6. Product information

N Use default parameters for selected spheres

S VSAM sphere                               Scan time(Local) RR bit
- CICS10.ACCOUNT1.BASE                       08.159 12:34.56 Y
- CICS10.ACCOUNT2.BASE                       08.159 12:43.56 Y
- CICS10.ACCOUNT3.BASE                       08.159 12:34.56 Y
- PAYROLL.PROD1.BASE                         08.159 12:34.56 N
- PAYROLL.PROD2.BASE                         08.159 12:34.56 N
- PAYROLL.PROD3.BASE                         08.159 12:34.56 N
- CICS10.PROD1.BASE                          08.159 12:34.56 N
- CICS10.PROD2.BASE                          08.159 12:34.56 N
- CICS10.PROD3.BASE                          08.159 12:34.56 N
- CICS10.PROD4.BASE                          08.159 12:34.56 N
- CICS10.PROD5.BASE                          08.159 12:34.56 N
- TEST.SMERRY.RLS                           08.159 12:34.56 Y

Command ==>>
F1=Help      F3=Exit      F4=Reorg    F5=FwdRec   F6=Backup   F7=Bkwd
F8=Fwd       F10=Menu Bar F11=Dereg  F12=Cancel

```

Figure 50. VSAM sphere list—Help pull-down menu

On the pull-down menu, either type in a number or move the cursor to the item and press Enter.

The associated Help pull-down menu choices are:

Using help

Tells you how to use CICS VR online help.

General help

Provides general information about the panel and the tasks you can perform on the panel.

Index Contains a list of available help information, in alphabetical order.

Keys help

Displays a list of function key assignments for a panel.

Command help

Displays the list of available CICS VR Panel Interface line commands.

Product information

Provides product copyright information.

To obtain information about each menu choice, move the cursor to an item and press F1.

Chapter 6. Working with CICS Backout Failed spheres

The CICS Backout Failed sphere list shows the CICS spheres registered for manual recovery or reorganization after CICS notification of a backout failure.

Select option 7 from the “CICS VR main menu” to display the list of CICS backout failed spheres.

```
Administrate Utilities List Help
-----
CICS Backout Failed sphere list          Row 1 to 3 of 3
Command ==>
Select one sphere, then select an action.

S VSAM sphere                          Time (Local)      Error
CICSMVS.TST33.KSDS01                   08.033 10:00:00  IOERROR
CICSMVS.TST33.KSDS02                   08.033 10:00:00  NOSPACE
CICSMVS.TST33.KSDS03                   08.033 10:00:00  AIXFULL
***** Bottom of data *****

F1=Help      F3=Exit      F4=ListDet   F5=Recov     F6=Reorg     F7=Bkwd
F8=Fwd       F10=Menu bar F11=Dereg    F12=Cancel
```

Figure 51. Selecting from the CICS Backout Failed sphere list

From the “CICS Backout Failed sphere list” window, you can select an action by using one of the shortcut function keys, or select any of these pull-down menus from the menu bar.

- Administrate
- Utilities
- List
- Help

Using the Administrate pull-down menu

Use the **Administrate** pull-down menu to deregister the selected CICS backout failed sphere, and to view or change the CICS VR automation level.

If you intend to deregister a CICS backout failed sphere, select the VSAM sphere to administer and press F10 to display the menu bar.

If you want to view or change the CICS VR automation level, press F10 to open the menu bar without selecting a VSAM sphere.

Place the cursor under **Administrate** and press Enter to display the “CICS Backout Failed sphere list” panel.

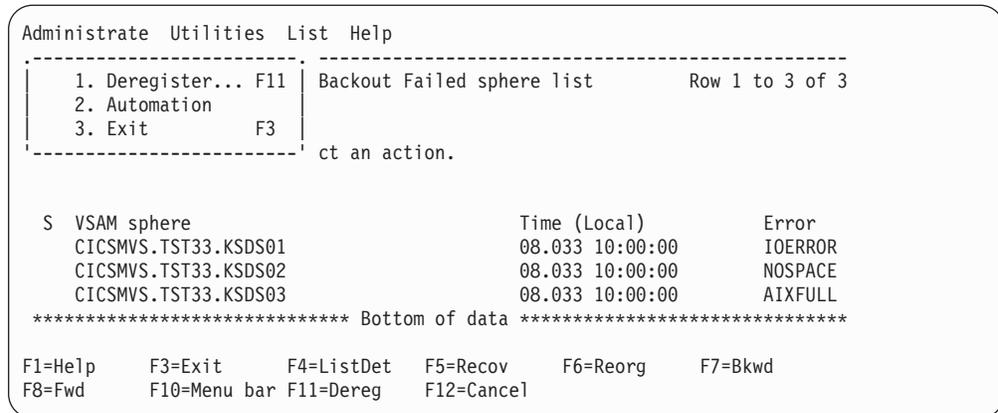


Figure 52. The CICS Backout Failed sphere list panel Administrate pull-down menu

From this pull-down menu, you can deregister the selected sphere or modify the CICS VR automation level.

Deregister

Deregistration removes the information about the selected sphere from RCDS. For further information on deregistration, see “Deregistering a VSAM sphere from the RCDS” on page 49. To deregister a VSAM sphere, select the VSAM sphere and then press F10 to open the menu bar. Next, place the cursor under **Administrate** and press Enter. Deregister the VSAM sphere in one of the following ways:

- Select option 1 to deregister the specified sphere.
- Move the cursor to the **Deregister** item in the pull-down menu, and press Enter.
- Press the Deregister shortcut function key F11.

Automation

View or modify the CICS VR automation level in one of the following ways:

- Select option 2 to specify the Automation level.
- Move the cursor to the **Automation** item in the pull-down menu and press Enter.

A panel opens allowing you to enable full automation. If full automation is enabled, CICS VR builds and submits recovery or reorganization jobs without user intervention. These jobs are for VSAM data sets where backout failures were alerted and registered. A separate job is submitted for each affected data set.

If full automation is not enabled, you must use the CICS VR panel dialog manually to build and submit recovery or reorganization jobs.

For further information on automation, see the discussion of Automated Recovery in the *CICS VR Implementation Guide and Reference*.

To obtain information about each menu item, move the cursor to an item and press F1.

Using the Utilities pull-down menu

You can use the **Utilities** pull-down menu for Recovery, Recovery with Backup, or Reorganization tasks on the selected CICS Backout Failed sphere.

After selecting the VSAM sphere for recovery, recovery with backup, or reorganization, press F10 to open the menu bar, place the cursor under **Utilities** and press Enter.

The “CICS Backout Failed sphere list” panel displays the **Utilities** pull-down menu.

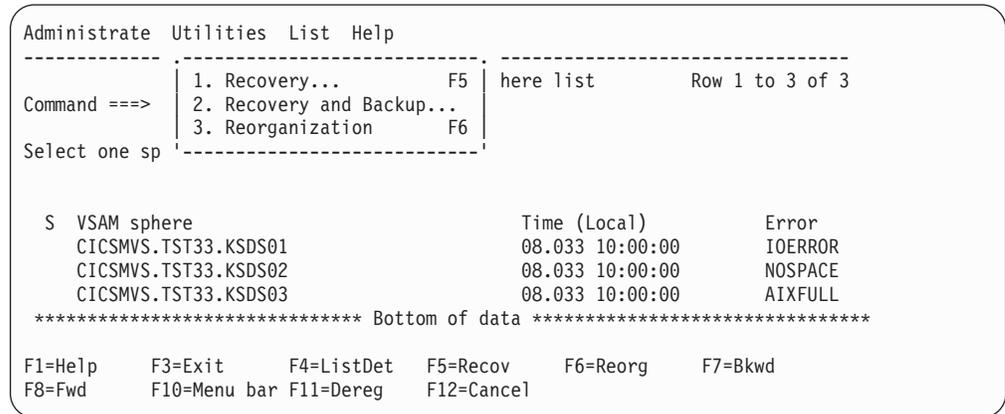


Figure 53. The CICS Backout Failed sphere list panel Utilities pull-down menu

From this pull-down menu, you can select the utility that corresponds to the error value for the selected sphere.

Recovery

Recovery builds a job to perform these tasks:

- Take the sphere offline from CICS.
- Forward recover the sphere.
- Put the sphere back online to CICS, and instruct CICS to retry its backout.

Select this utility in one of the following ways:

- Select option 1 for forward recovery.
- Move the cursor to the **Recovery** item in the pull-down menu, and press Enter.
- Press the CICS VR forward recovery shortcut function key F5.

Recovery and Backup

Recovery and Backup builds a job to perform these tasks:

- Take the sphere offline from CICS.
- Forward recover the sphere.
- Take a backup of the sphere.
- Put the sphere back online to CICS, and instruct CICS to retry its backout.

Select this utility in one of the following ways:

- Select option 2 for forward recovery and backup.
- Move the cursor to the **Recovery** item in the pull-down menu, and press Enter.

Reorganization

Reorganization builds a job to perform these tasks:

- Take the sphere offline from CICS.
- Delete and redefine the sphere with more space or a bigger alternate index record size.
- Put the sphere back online to CICS, and instruct CICS to retry its backout.

Select this utility in one of the following ways:

- Select option 3 for reorganization.
- Move the cursor to the **Reorganization** item in the pull-down menu, and press Enter.
- Press the CICS VR forward recovery shortcut function key F6.

To obtain information about each menu item, move the cursor to an item and press F1.

Using the List pull-down menu

You can see more information about the selected sphere included in the CICS Backout Failed sphere list.

After selecting the VSAM sphere to list details, press F10 to display the menu bar. Place the cursor under **List** and press Enter. The “CICS Backout Failed sphere list” panel **List** pull-down menu is displayed.

```

Administrate Utilities List Help
-----
Command ==> C | 1. List details... F4 | Row 1 to 3 of 3
-----
Select one sphere, then select an action.

S VSAM sphere                               Time (Local)      Error
CICSMVS.TST33.KSDS01                       08.033 10:00:00  IOERROR
CICSMVS.TST33.KSDS02                       08.033 10:00:00  NOSPACE
CICSMVS.TST33.KSDS03                       08.033 10:00:00  AIXFULL
***** Bottom of data *****

F1=Help   F3=Exit   F4=ListDet F5=Recov   F6=Reorg   F7=Bkwd
F8=Fwd    F10=Menu bar F11=Dereg F12=Cancel

```

Figure 54. The CICS Backout Failed sphere list panel List pull-down menu

From this pull-down menu, you can obtain more information about the selected sphere. Select option 1 or press shortcut function key F4.

The “CICS Backout Failed sphere details list” panel shows an example of the list details for a selected sphere.

```
Administrate Utilities List Help
-----
                CICS Backout Failed sphere details list

VSAM sphere . . . . . : TST33.KSDS01
File name . . . . . : XXXXAAAA
Registration time . . . : 08.036 14:00:10 (local)
                        08.036 13:00:10 (GMT)
Modification time . . . : 08.036 14:00:10 (local)
                        08.036 13:00:10 (GMT)
Application ID . . . . : CICSVR41
Error type . . . . . : IOERROR
Recovery status . . . . : ACCEPTED
RLS . . . . . : YES
Logstream . . . . . : CICS MVS.STREAM.LOG

Command ==> _____
F1=Help   F12=Cancel

-----

Command ==>
F1=Help   F3=Exit   F4=ListDet  F5=Recov   F6=Reorg   F7=Bkwd
F8=Fwd    F10=Menu bar F11=Dereg   F12=Cancel
```

Figure 55. The CICS Backout Failed sphere details list panel

To obtain information about each menu item, move the cursor to an item and press F1.

Chapter 7. Selecting from the log stream list

On the “CICS VR log stream list” panel, a list of all MVS log streams and SAM copies of log streams that are registered in the recovery control data set (RCDS) are displayed.

If you select option 3 from the “CICS VR main menu”, a list of MVS log streams and CICS VR copies of MVS log streams is displayed.

```
Administrate List View Help
-----
CICSVR log stream list                               Row 1 to 10 of 10
Command ==> _____

Select one or more log streams, then select an action. This list contains log
streams and CICSVR log stream copies. Log streams do not have a copied date
and time.

S Log stream                                         Copied until (GMT)
- CICS10.PROD1.LOGSTRM
- CICS10.PROD1.LOGSTRM.QSAMCOPY.TEST01             08.159 08:31:21
- CICS10.PROD1.LOGSTRM.QSAMCOPY.TEST02             08.159 08:33:45
- CICS10.PROD1.LOGSTRM.QSAMCOPY.TEST03             08.159 08:34:09
- CICS10.PROD1.LOGSTRM.QSAMCOPY.TEST04             08.159 08:37:12
- CICS10.PROD2.LOGSTRM
- CICS10.PROD2.LOGSTRM.COPY1                         08.159 08:45:12
- CICS11.PROD1.LOGSTRM.QSAM                          08.159 08:45:12
- CICS11.PROD2.LOGSTRM.SAMCOPY                       08.159 08:45:12
- CICS11.PROD3.LOGSTRM.SAMCOPY                       08.159 08:45:12
***** Bottom of data *****

F1=Help      F3=Exit      F4=ListDet   F5=ListSAM   F7=Bkwd      F8=Fwd
F10=Menu bar F11=Dereg    F12=Cancel
```

Figure 56. Log stream list panel. Use S in the first column to select a log stream.

MVS log streams do not have a date and time in the **Copied until** field.

You can manipulate which and in what order the log streams and log stream copies are displayed by using the **View** pull-down menu shown in “Using the CICS VR log stream list View pull-down menu” on page 77. If no log streams or log stream copies match your entered search criteria the list of log streams is empty, to check select option 2 from the **View** pull-down menu and the list of log streams is displayed.

From the “CICS VR log stream list” panel, you can select an action by using one of the shortcut function keys, or you can select these pull-down menus from the menu bar:

- Administrate
- List
- View
- Help

For general help information, press F1.

Using the CICS VR log stream list panel Administrate pull-down menu

The methods with which you can deregister a log stream entry from the RCDS from the **Administrate** pull-down menu.

1. Select option 1
2. Press F11.
3. Move the cursor to the **Deregister** item in the pull-down menu and press Enter

Select option 2 to leave the panel

```
Administrate List View Help
-----
- 1. Deregister ...      F11  log stream list      Row 1 to 10 of 10
- 2. Exit                F3
-----
Select one or more log streams, then select an action. This list contains log
streams and CICSVR log stream copies. Log streams do not have a copied date
and time.

S Log stream                               Copied until (GMT)
- CICS10.PROD1.LOGSTRM
- CICS10.PROD1.LOGSTRM.QSAMCOPY.TEST01     08.159 08:31:21
- CICS10.PROD1.LOGSTRM.QSAMCOPY.TEST02     08.159 08:33:45
- CICS10.PROD1.LOGSTRM.QSAMCOPY.TEST03     08.159 08:34:09
- CICS10.PROD1.LOGSTRM.QSAMCOPY.TEST04     08.159 08:37:12
- CICS10.PROD2.LOGSTRM
- CICS10.PROD2.LOGSTRM.COPY1                08.159 08:45:12
- CICS11.PROD1.LOGSTRM.QSAM                08.159 08:45:12
- CICS11.PROD2.LOGSTRM.SAMCOPY             08.159 08:45:12
- CICS11.PROD3.LOGSTRM.SAMCOPY             08.159 08:45:12
***** Bottom of data *****

F1=Help      F3=Exit      F4=ListDet  F5=ListSAM  F7=Bkwd     F8=Fwd
F10=Menu bar F11=Dereg   F12=Cancel
```

Figure 57. Log stream list Administrate pull-down menu

To obtain help information about each menu choice, move the cursor to an item and press F1.

Deregistering a log stream entry from the RCDS

A secondary window is displayed for every log stream copy that you select from the “CICS VR log stream list” panel. All the information that was written to the RCDS during the log stream copy can be deleted.

Select option 1 from the **Administrate** pull-down menu to open the secondary windows below:

```
CICSVR log stream deregister
Command ==>>> _____
Press Enter to deregister the log stream. Or, press F12 to cancel the
request.

Log stream . . . . : CICS10.PROD2.LOGSTRM

F1=Help      F12=Cancel
```

Figure 58. Log stream deregister secondary window

This secondary window is displayed for every MVS log stream that you select from the “CICS VR log stream list” panel.

To deregister the log stream, press Enter.

To obtain help information, press F1.

```

                                CICSVR SAM copy deregister verification
Command ==> _____

Select an action and press Enter to deregister the SAM copy. Or, press F12
to cancel the request.

SAM copy . . . . . : CICS11.PROD1.LOGSTRM.QSAM

  1. Deregister the SAM copy
  2. Deregister and delete the SAM copy; uncatalog if tape

F1=Help   F12=Cancel
```

Figure 59. SAM copy deregister verification secondary window

This secondary window is displayed for every log stream copy that you select from the “CICS VR log stream list” panel. To deregister the SAM copy, select option 1. All the information that was written to the RCDS during the log stream copy is deleted.

To remove information about the SAM copy from the RCDS and to uncatalog and delete the copy, select option 2.

To obtain help information, press F1.

Using the CICS VR log stream list panel list pull-down menu

If you open the “CICS VR log stream list” panel List pull-down menu you can display list details, SAM copies and SAM copy details.

```

Administrate List View Help
-----
Command ==> | 1. List details... F4 | ist          Row 1 to 10 of 10
              | 2. List SAM copies ... F5 |
              -----
Select one or more log streams, then select an action. This list contains log
streams and CICSVR log stream copies. Log streams do not have a copied date
and time.

S Log stream                               Copied until (GMT)
- CICS10.PROD1.LOGSTRM
- CICS10.PROD1.LOGSTRM.QSAMCOPY.TEST01     08.159 08:31:21
- CICS10.PROD1.LOGSTRM.QSAMCOPY.TEST02     08.159 08:33:45
- CICS10.PROD1.LOGSTRM.QSAMCOPY.TEST03     08.159 08:34:09
- CICS10.PROD1.LOGSTRM.QSAMCOPY.TEST04     08.159 08:37:12
- CICS10.PROD2.LOGSTRM
- CICS10.PROD2.LOGSTRM.COPY1                08.159 08:45:12
- CICS11.PROD1.LOGSTRM.QSAM                 08.159 08:45:12
- CICS11.PROD2.LOGSTRM.SAMCOPY             08.159 08:45:12
- CICS11.PROD3.LOGSTRM.SAMCOPY             08.159 08:45:12
***** Bottom of data *****

F1=Help   F3=Exit   F4=ListDet  F5=ListSAM  F7=Bkwd    F8=Fwd
F10=Menu bar F11=Dereg  F12=Cancel
```

Figure 60. Log stream list: List pull-down menu

Listing log streams and log stream copies details

The methods with which you can list details about the selected log streams and log stream copies from the **List** pull-down menu.

From the **List** pull-down menu, you can list details about the selected log streams and log stream copies. Use one of the following methods:

- Select option 1, or
- Move the cursor to the **List details** item in the **List** pull-down menu and press Enter

To obtain information about a menu choice, move the cursor to an item, and press F1.

You can also list details about the selected log streams and log stream copies using one of the following options:

- Type the CICS VR shortcut command `listdet` on the command line, or
- Press the CICS VR **List details** shortcut function key F4

For each MVS log stream that you have selected, the “CICS VR log stream details list” secondary window is displayed:

```

                                     CICSVR log stream details list           Row 1 to 3 of 3
Command ==> _____
Select one or more errors, then press Enter to obtain more information. Or,
press Enter to show the log stream details list for the next selected log
stream. Or, press F12 to cancel the list sequence.

Log stream . . . . : CICS10.PROD1.LOGSTRM
First block ID    : 1013
Last block ID     : 7331
First time copied : 08.159 07:10:14 (local)
                  08.159 06:10:14 (GMT)
Last time copied . : 08.159 18:13:14 (local)
                  08.159 17:13:14 (GMT)
Last copy time . . : 08.159 16:59:23 (local)
                  08.159 15:59:23 (GMT)

S Information & error
- Error while trying to connect to log stream.
- I/O error on log stream.
- Sequence error on log stream.
***** Bottom of data *****

F1=Help   F7=Bkwd   F8=Fwd    F12=Cancel
```

Figure 61. Log stream details list secondary window

This secondary window opens for each selected MVS log stream. If errors were found for the log stream, a message for each error is shown.

Place an S in the column next to each error message for which you require more information. A secondary window opens for each selected error and contains a detailed description of the error with a reference to the relevant message in *CICS VR Messages and Problem Determination*.

This secondary window reflects information from the CICS VR RCDS about processing an MVS log stream with the CICS VR log stream copy utility ran

without the cursor control tool. If you selected an MVS log stream that was not copied by the CICS VR log stream copy utility, the details in this secondary window do not contain any data. If you have selected an MVS log stream that was copied by the CICS VR log stream copy utility with the use of the cursor control tool, only the **Last copy time** field contains data.

To obtain detailed help information, move the cursor to a field and press F1.

For each log stream copy that you have selected, the “CICS VR SAM copy details list” secondary window opens.

```

CICSVR SAM copy details list
Command ==> _____
Press Enter to show the SAM copy details list for the next SAM copy. Or,
press F12 to cancel the list sequence.

Log stream . . . . : CICS10.PROD4.LOGSTRM
SAM copy . . . . . : CICS10.PROD4.QSAMCOPY
First block ID   : 21063
Last block ID    : 93048
First time . . . : 08.159 12:13:14 (local)
                  08.159 13:13:14 (GMT)
Last time . . . . : 08.159 18:13:14 (local)
                  08.159 19:13:14 (GMT)
Copy time . . . . : 08.159 23:59:14 (local)
                  08.160 00:59:14 (GMT)
No. of CICS record : 234
Copy number . . . : 1
Copied records . . : 1 (1 = All / 2 = CICS AND CICSVR)
F1=Help  F12=Cancel
```

Figure 62. SAM copy details list secondary window

This secondary window opens for each selected log stream copy, including copies received by means of the **SETBRCUR** cursor control option. For this reason the selected log stream, the “CICS VR log stream details list” secondary window might contain no data, but the “CICS VR SAM copy details list” secondary window might contain details about the copy of the log stream.

To obtain detailed help information, move the cursor to a field and press F1.

Listing SAM copies

The methods with which you can list SAM copies of MVS log streams from the **List** pull-down menu.

To list SAM copies of MVS log streams from the **List** pull-down menu:

- Select option 2
- Move the cursor to the **List SAM copies** item in the **List** pull-down menu and press Enter

To obtain information about a menu choice, move the cursor to an item, and press F1.

You can also list SAM copies of the selected MVS log streams using one of the following options:

- Type the CICS VR shortcut command ListSAM on the command line, or

- Press F5

For each MVS log stream that you have selected, the “CICS VR SAM copy list” secondary window is displayed.

```

                                CICSVR SAM copy list                Row 1 to 4 of 4
Command ==> _____
Select one or more SAM copies, then select an action.

Log stream . . . . : CICS10.PROD1.LOGSTRM

S SAM log stream copy                Copy time (GMT)
- CICS10.PROD1.LOGSTRM.QSAMCOPY.TEST01    08.159 08:31:21
- CICS10.PROD1.LOGSTRM.QSAMCOPY.TEST02    08.159 08:33:45
- CICS10.PROD1.LOGSTRM.QSAMCOPY.TEST03    08.159 08:34:09
- CICS10.PROD1.LOGSTRM.QSAMCOPY.TEST04    08.159 08:37:12
***** Bottom of data *****

F1=Help    F4=ListDet  F7=Bkwd    F8=Fwd     F11=Dereg  F12=Cancel

```

Figure 63. CICS VR SAM copy list secondary window

This secondary window opens for each MVS log stream that you have selected. It contains the list of all its copies registered in the CICS VR RCDS, including those that have been received by means of the **SETBRCUR** cursor control option.

If you select a log stream copy for the list SAM copies action, the CICS VR SAM copy list secondary window is displayed for the MVS log stream from which it was copied. All registered copies are displayed.

From this secondary window, you can select one or more log stream copies by placing an S in the first column. You can now perform the following actions on the selected log stream copies:

- List details
- Deregister

To list details of the selected log stream copies, either press F4 or type listdet on the command line. The “CICS VR SAM copy details list” secondary window, previously shown in “Listing log streams and log stream copies details” on page 74, opens for each selected log stream copy.

To deregister the selected log stream copies, either press F11 or type dereg on the command line. The “CICS VR SAM copy deregister verification” secondary window, previously shown in “Deregistering a log stream entry from the RCDS” on page 72, opens for each selected log stream copy.

For general help information, press F1.

Listing SAM copy details

If you press F4 in the “CICS VR SAM copy list” secondary window the “CICS VR SAM copy details list” secondary window is displayed and you can select a SAM copy.

This secondary window opens once for every SAM copy that you select.

```

CICSVR SAM copy details list
Command ==> _____

Press Enter to show the SAM copy details list for the next SAM copy. Or
press F12 to cancel the list sequence.

Log stream . . . . : CICS10.PROD4.LOGSTRM
SAM copy . . . . . : CICS10.PROD4.QSAMCOPY
First block ID   : 21063
Last block ID    : 93048
First time . . . : 08.159 12:13:14 (local)
                  08.159 13:13:14 (GMT)
Last time . . . . : 08.159 18:13:14 (local)
                  08.159 19:13:14 (GMT)
Copy time . . . . : 08.159 23:59:14 (local)
                  08.160 00:59:14 (GMT)
No. of CICS record : 234
Copy number . . . : 1
Copied records . . : 1 (1 = All / 2 = CICS AND CICSVR)
F1=Help   F12=Cancel
```

Figure 64. SAM copy details list secondary window

For help information, press F1.

Using the CICS VR log stream list View pull-down menu

Use this pull-down menu to re-display the log stream list by specifying search or sort criteria.

Use one of these methods to select a choice:

- Select the option you need.
- Move the cursor to the item in the pull-down menu and press Enter.

Select option 1 to re-display the log stream list with all CICS VR registered MVS log streams and log stream copies.

```

Administrate List View Help
-----
Command ==>      | 1. All      | ream list      Row 1 to 10 of 10
                  | 2. Include...|
                  | 3. Sort...   |
Select one or more ----- ct an action. This list contains log
streams and CICSVR log stream copies. Log streams do not have a copied date
and time.

S Log stream                               Copied until (GMT)
- CICS10.PROD1.LOGSTRM
- CICS10.PROD1.LOGSTRM.QSAMCOPY.TEST01      08.159 08:31:21
- CICS10.PROD1.LOGSTRM.QSAMCOPY.TEST02      08.159 08:33:45
- CICS10.PROD1.LOGSTRM.QSAMCOPY.TEST03      08.159 08:34:09
- CICS10.PROD1.LOGSTRM.QSAMCOPY.TEST04      08.159 08:37:12
- CICS10.PROD2.LOGSTRM
- CICS10.PROD2.LOGSTRM.COPY1                 08.159 08:45:12
- CICS11.PROD1.LOGSTRM.QSAM                  08.159 08:45:12
- CICS11.PROD2.LOGSTRM.SAMCOPY              08.159 08:45:12
- CICS11.PROD3.LOGSTRM.SAMCOPY              08.159 08:45:12
***** Bottom of data *****

F1=Help      F3=Exit      F4=ListDet   F5=ListSAM   F7=Bkwd      F8=Fwd
F10=Menu bar F11=Dereg   F12=Cancel

```

Figure 65. Log stream List—View pull-down menu

To obtain information about each menu choice, move the cursor to an item and press F1.

Specifying search criteria for the log stream list

Steps and an example to specify log stream list search criteria.

Select option 2 from the “CICS VR log stream list” **View** pull-down menu, and the “CICS VR log stream list include” secondary window opens.

Use this secondary window to specify search criteria input to the “CICS VR log stream list” panel. If you do not include information here, a list containing all possible data is constructed.

```

CICSVR log stream list include

Specify search criteria to include in the log stream list, then press
Enter.

Log stream . . . . CICS10.PROD1.LOGSTRM

Command ==> _____
F1=Help  F12=Cancel

```

Figure 66. Log stream list include secondary window

To obtain detailed help information, move the cursor to a field and press F1.

Sorting the log stream list

How to sort the log stream list display.

Select option 3 from the “CICS VR log stream list” **View** pull-down menu and a secondary window is displayed.

Use this secondary window to sort the contents of what is displayed in the “CICS VR Log stream list” panel, shown in Chapter 7, “Selecting from the log stream

list,” on page 71.

```
CICSVR log stream list sort

Select the column to sort by, then press Enter.

      1. Log stream
      2. Ascending copied-until time
      3. Descending copied-until time

Command ==> _____
F1=Help F12=Cancel
```

Figure 67. Log stream list sort secondary window

To obtain help information, move the cursor to the input field and press F1.

Working with the log stream list Help pull-down menu

How to use the “CICS VR Log stream list” panel **Help** pull-down menu to retrieve help information, and a description of the menu options.

```
Administrate List View Help
-----
Command ==> _____ Row 1 to 10 of 10
Select one or more log st his list contains log
streams and CICSVR log st have a copied date
and time.
-----
  1. Using help...
  2. General help... F1
  3. Index...
  4. Keys help...
  5. Command help...
  6. Product information
-----

S Log stream Copied until (GMT)
- CICS10.PROD1.LOGSTRM
- CICS10.PROD1.LOGSTRM.QSAMCOPY.TEST01 08.159 08:31:21
- CICS10.PROD1.LOGSTRM.QSAMCOPY.TEST02 08.159 08:33:45
- CICS10.PROD1.LOGSTRM.QSAMCOPY.TEST03 08.159 08:34:09
- CICS10.PROD1.LOGSTRM.QSAMCOPY.TEST04 08.159 08:37:12
- CICS10.PROD2.LOGSTRM
- CICS10.PROD2.LOGSTRM.COPY1 08.159 08:45:12
- CICS11.PROD1.LOGSTRM.QSAM 08.159 08:45:12
- CICS11.PROD2.LOGSTRM.SAMCOPY 08.159 08:45:12
- CICS11.PROD3.LOGSTRM.SAMCOPY 08.159 08:45:12
***** Bottom of data *****

F1=Help F3=Exit F4=ListDet F5=ListSAM F7=Bkwd F8=Fwd
F10=Menu bar F11=Dereg F12=Cancel
```

Figure 68. Log stream List—Help pull-down menu

Use one of these methods to select a help choice:

- Select the option you need.
- Move the cursor to the item in the pull-down menu and press Enter.

The associated help choices are:

Using help

Tells you how to use CICS VR online help.

General help

Provides general information about the panel and the tasks that you can perform on the panel.

Index Contains a list of available help information in alphabetical order.

Keys help

Displays a list of function key assignments for a panel.

Command help

Displays the list of available CICS VR Panel Interface line commands.

Product information

Provides product copyright information.

To obtain information about each menu choice, move the cursor to an item and press F1.

Chapter 8. Selecting from the log of logs list

Use the “CICS VR log of logs list” panel pull-down menu to re-display the log stream list by specifying search or sort criteria. This panel lists all the log of logs that are registered in the recovery control data set (RCDS).

If you select option 4 from the main menu, the list of log of logs is displayed.

Type S in the first column to select a log of logs.

```
Administrate Utilities List View Help
-----
CICSVR log of logs list Row 1 to 5 of 5
Select one or more log of logs, then select an action.
-----
S Log of logs Last scan time (GMT) DD name
CICS10.LOGOFLOG 08.159 11:51 DWWSYS1
CICS11.LOGOFLOG 08.159 11:52 DWWSYS2
CICS12.LOGOFLOG 08.159 11:53 DWWSYS3
CICS13.LOGOFLOG 08.159 11:55 DWWSYS4
CICS14.LOGOFLOG 08.159 11:57 DWWSYS5
***** Bottom of data *****

Command ==>
F1=Help F3=Exit F4=ListDet F5=ScanAll F6=Register F7=Bkwd
F8=Fwd F10=Menu bar F11=Dereg F12=Cancel
```

Figure 69. CICS VR log of logs list panel

You can manipulate which log of logs are displayed, and the order in which they are displayed, by using the **View** pull-down menu, “Working with the CICS VR log of logs list View pull-down menu” on page 86. If no log of logs qualify you have an empty list.

From the “CICS VR log of logs list” panel, you can select an action by using one of the shortcut function keys or you can select these pull-down menus from the menu bar:

- Administrate
- Utilities
- List
- View
- Help

Press F1 for further information.

Working with the log of logs list Administrate pull-down menu

The methods with which you can register a log of logs to the RCDS from the **Administrate** pull-down menu.

Use one of the following methods to register a log of logs to the RCDS:

- Select option 1.
- Press the Register key, F6.
- Type register on the command line.
- Move the cursor to the **Register** item in the pull-down menu and press Enter.

You can deregister a log of logs from the RCDS by using one of these methods:

- Select option 2.
- Press the Dereg key, F11.
- Type dereg on the command line.
- Move the cursor to the **Deregister** item in the pull-down menu and press Enter.

```
Administrate Utilities List View Help
-----
1 1. Register... F6      CICSVR log of logs list          Row 1 to 5 of 5
  2. Deregister...F11
  3. Exit           F3      logs, then select an action.

S Log of logs                Last scan time (GMT)  DD name
- CICS10.LOGOFLOG           08.159 12:10         DWWSYS1
- CICS11.LOGOFLOG           08.159 12:23         DWWSYS2
- CICS12.LOGOFLOG           08.159 12:43         DWWSYS3
- CICS13.LOGOFLOG           08.159 14:02         DWWSYS4
- CICS14.LOGOFLOG           08.159 16:53         DWWSYS5
*****BOTTOM OF DATA*****

Command ==>
F1=Help   F3=Exit   F4=ListDet F5=ScanAll F6=Register F7=Bkwd
F8=Fwd    F10=Menu bar F11=Dereg F12=Cancel
```

Figure 70. Log of logs list—Administrate pull-down menu

To obtain information about each menu choice move the cursor to an item and press F1.

Registering a log of logs in the RCDS

How to register the log of logs in the RCDS using the **Administrate** pull-down menu.

To register the log of logs in the RCDS:

1. Select option 1 from the **Administrate** pull-down menu to display the secondary window shown below.
2. Select option 1 to register the log of logs in the RCDS.

```

CICSVR log of logs register

Specify a log of logs. If required, enter a start scan point, then press
Enter to register the log of logs. Or, press F12 to cancel the request.

Log of logs . . . . _____
Start scan point . . _____ (YY.DDD HH:MM:SS)

Command ==> _____
F1=Help   F12=Cancel

```

Figure 71. Log of logs register secondary window

To obtain help information, press F1.

Deregistering a log of logs from the RCDS

How to deregister a log of logs from the RCDS using the “CICS VR log of logs deregister” secondary window.

Select option 2 from the **Administrate** pull-down to menu to open the secondary window shown below.

This secondary window opens for every log of logs that you select from the “CICS VR log of logs list” panel, Chapter 8, “Selecting from the log of logs list,” on page 81.

To deregister the log of logs, select option 2. All the information about the selected log of logs is deleted from the RCDS.

```

CICSVR log of logs deregister

Press Enter to deregister the log of logs. Or, press F12 to cancel the
request.

Log of logs . . . : CICS10.LOGOFLOG

Command ==> _____
F1=Help   F12=Cancel

```

Figure 72. Log of logs deregister secondary window

To obtain help information, press F1.

Working with the log of logs list Utilities pull-down menu

From the **Utilities** pull-down menu, you can call a dynamic online scan of the log of logs registered to CICS VR.

To select an option from the **Utilities** pull-down menu, either:

- Enter the number of the option you want to select on the input line that is in the **Utilities** pull-down menu.
- Place the cursor over the option you want to select in the **Utilities** pull-down menu and press Enter.

```

Administrate Utilities List View Help
-----
Select one or | 1. Scan all      F5 | gs list          Row 1 to 1 of 1
               | 2. Scan selected   | an action.
               | 3. Scan listed     |
               -----

S Log of logs          Last scan time (GMT)  DD name
CICS10.LOGOFLOG      08.159 11:51        DWWSYS1
CICS11.LOGOFLOG      08.159 11:52        DWWSYS2
CICS12.LOGOFLOG      08.159 11:53        DWWSYS3
CICS13.LOGOFLOG      08.159 11:55        DWWSYS4
CICS14.LOGOFLOG      08.159 11:57        DWWSYS5
***** Bottom of data *****

Command ==>
F1=Help      F3=Exit      F4=ListDet   F5=ScanAll   F6=Register  F7=Bkwd
F8=Fwd       F10=Menu bar F11=Dereg   F12=Cancel

```

Figure 73. Log of logs list—Utilities pull-down

The log of logs hold information about update activity occurring for VSAM spheres in a CICS region. The CICS VR log of logs scan reads the registered log of logs and stores recovery information in the RCDS. CICS VR then uses this stored recovery information to build accurate recovery jobs for VSAM spheres.

Use the **Utilities** pull-down menu to start the following variations of the log of logs scan utility:

Scan all

Scans all log of logs registered to CICS VR, regardless of any log of logs that are currently listed or selected on the log of logs list. You can start **Scan all** by pressing the ScanAll key, F5, or by typing SCANALL on the command line and pressing Enter.

Scan selected

Scans only the log of logs that are selected on the CICS VR log of logs list.

Scan listed

Scans only the log of logs that are currently listed on the CICS VR log of logs list. For example, you might have filtered the log of logs list by entering criteria on the “CICS VR log of logs list include” secondary window, “Specifying search criteria for the log of logs list” on page 87, and want to scan only the filtered log of logs.

To obtain information about the menu choice, move the cursor to the item and press F1.

Working with the CICS VR log of logs list panel List pull-down menu

The methods with which you can list details about log of logs.

You can list details about log of logs from the CICS VR Log of logs **List** pull-down menu using one of these methods:

- Select option 1.
- Press the ListDet key, F4.

- Type listdet on the command line.
 - Move the cursor to the item in the pull-down menu and press Enter.
- Use this pull-down menu to show details about log of logs stored in the RCDS.

```

Administrate Utilities List View Help
-----
_ 1. List details...F4                               Row 1 to 5 of 5
Select one or more logs of logs, then select an action.

S Log of logs                Last scan time (GMT)  DD name
- CICS10.LOGOFLOG           08.159 12:10         DWWSYS1
- CICS11.LOGOFLOG           08.159 12:23         DWWSYS2
- CICS12.LOGOFLOG           08.159 12:43         DWWSYS3
- CICS13.LOGOFLOG           08.159 14:02         DWWSYS4
- CICS14.LOGOFLOG           08.159 16:53         DWWSYS5
*****BOTTOM OF DATA*****

Command ==>
F1=Help      F3=Exit      F4=ListDet   F5=ScanAll   F6=Register  F7=Bkwd
F8=Fwd       F10=Menu bar F11=Dereg   F12=Cancel

```

Figure 74. Log of logs list—List pull-down menu

To obtain information about the menu choices, move the cursor to the item and press F1.

Listing log of logs details

How to view the log of logs details list using the “CICS VR log of logs details list” secondary window.

To open the “CICS VR log of logs details list” secondary window select option 1.

```

CICSVR log of logs details list      Row 1 to 4 of 4

Select one or more errors, then press Enter to obtain more information. Or,
press Enter to show the log of logs list for the next selected log of
logs. Or, press F12 to cancel the list sequence.

Log of logs . . . : CICS10.LOGOFLOG
First block ID   : 1010
Last block ID    : 2512
First timestamp  . : 08.159 12:13:14 (local)
                  : 08.159 13:13:14 (GMT)
Last timestamp . . : 08.159 18:13:14 (local)
                  : 08.159 19:13:14 (GMT)
Last scan time . . : 08.159 22:59:14 (local)
                  : 08.159 23:59:14 (GMT)

S Information & error
_ Log of logs inactive
_ Error while trying to connect to log of logs
_ I/O error on log of logs
_ Sequence error on log of logs
***** BOTTOM OF DATA *****
Command  ===>
F1=Help  F7=Bkwd  F8=Fwd  F12=Cancel

```

Figure 75. Log of logs details list secondary window

This secondary window opens for each selected log of logs. If errors have been found for the log of logs, a message for each error is displayed.

Type S in the column next to each error message for which you require more information. A secondary window opens for each selected error and contains a detailed description of the error with a reference to the relevant message in *CICS VR Messages and Problem Determination*.

To obtain detailed help information, move the cursor to a field and press F1.

Working with the CICS VR log of logs list View pull-down menu

How to display the log of logs list by specifying search or sort criteria using the **View** pull-down menu.

To re-display the log of logs list with all CICS VR registered log of logs, select option 1.

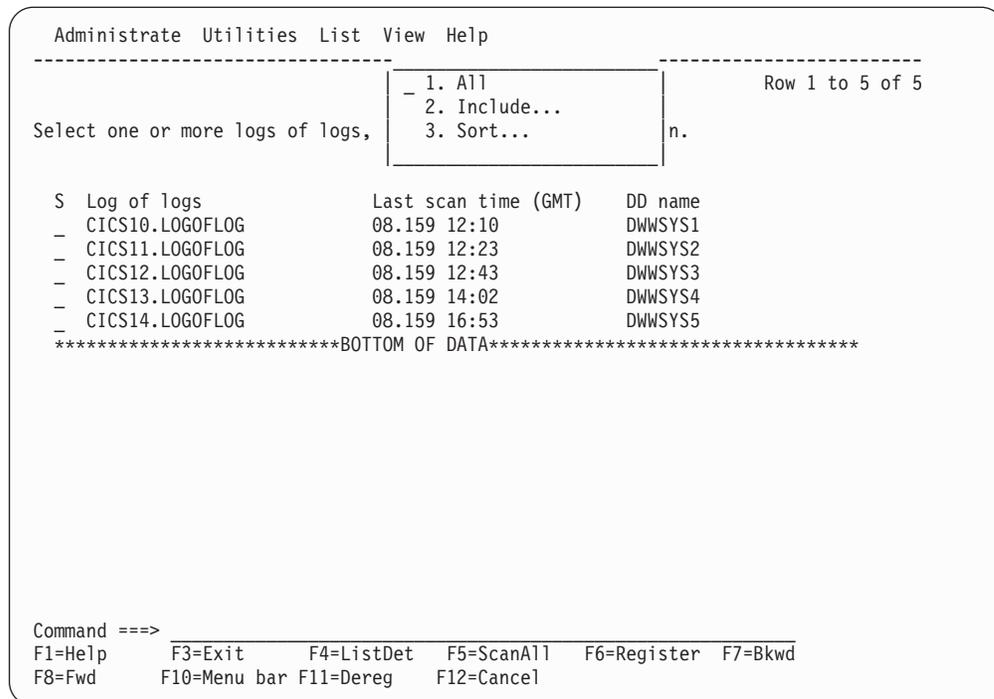


Figure 76. Log of logs list—View pull-down menu

Use one of these methods to select a choice:

- Select the option you need.
- Move the cursor to the item in the pull-down menu and press Enter.

To obtain information about each menu choice, move the cursor to an item and press F1.

Specifying search criteria for the log of logs list

Use the “CICS VR log of logs list include” secondary window to specify include-criteria input to the “CICS VR log of logs list” panel. If you do not specify any search criteria here, a list of all CICS VR registered log of logs is constructed.

Select option 2 from the log of logs list **View** pull-down menu to display the “CICS VR log of logs list include” secondary window.

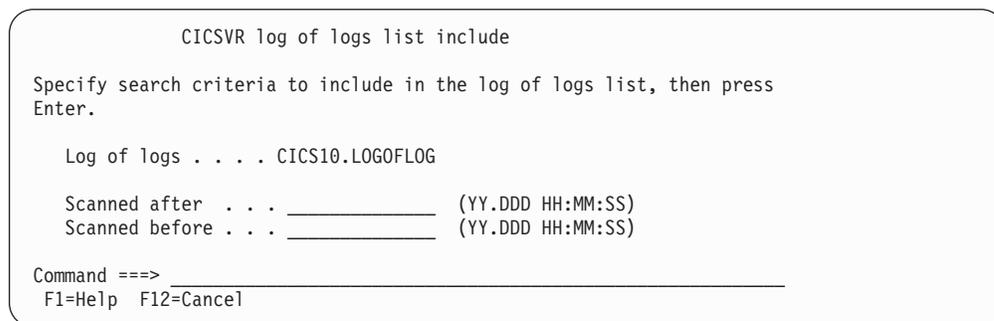


Figure 77. Log of logs list Include secondary window

To obtain detailed help information, move the cursor to a field and press F1.

Sorting the log of logs list

Use the “CICS VR log of logs list sort” secondary window to sort the contents of the log of logs list panel information.

To open the “CICS VR log of logs list sort” secondary window, select option 3 from the “CICS VR log of logs list sort” **View** pull-down menu.

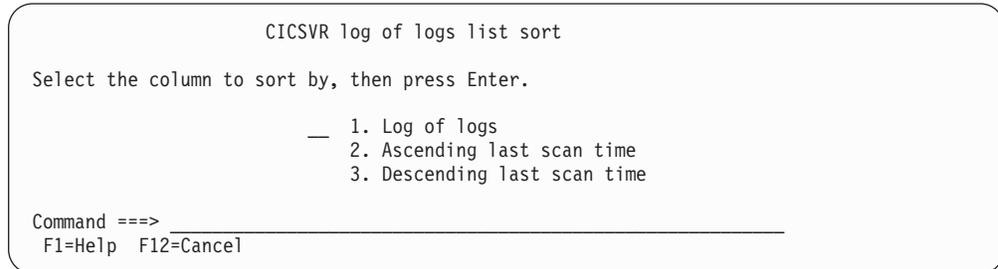


Figure 78. Log of logs list sort secondary window

To obtain help information, move the cursor to the input field and press F1.

Using the log of logs list Help pull-down menus

How to obtain help information using the of the “CICS VR log of logs list” panel **Help** pull-down menu and information about the **Help** pull-down menu options.

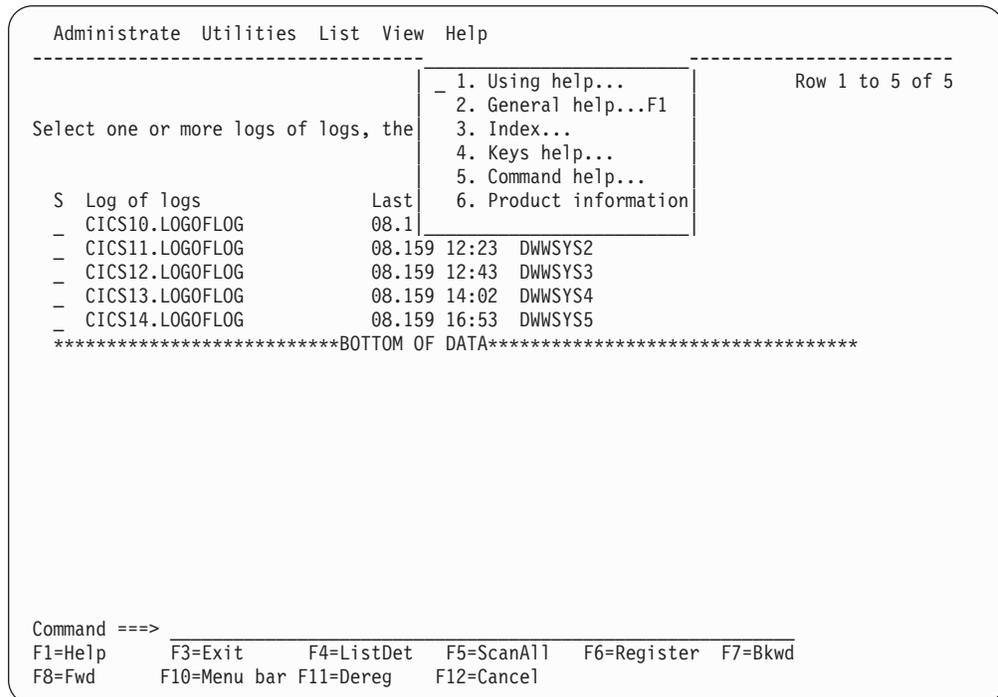


Figure 79. CICS VR log of logs list—Help pull-down menu

Use one of these methods to select a help choice:

- Select the option you need.
- Move the cursor to the item in the pull-down menu and press Enter.

The associated help choices are:

Using help

Tells you how to use CICS VR online help.

General help

Provides general information about the panel and the tasks that you can perform on the panel.

Index Contains a list of available help information, in alphabetical order.

Keys help

Displays a list of function key assignments for a panel.

Command help

Displays the list of available CICS VR panel interface line commands.

Product information

Provides product copyright information.

To obtain information about each menu choice, move the cursor to an item and press F1.

Chapter 9. Setting automatic deregistration criteria

CICS VR provides automatic deregistration to stop the RCDS from filling up. Periodically automatic deregistration removes outdated information from the RCDS, based on retention criteria you set. CICS VR can delete and uncatalog certain entities when they are deregistered from the RCDS.

You can specify a separate retention period for each of the entities known, including log streams, log streams copies, backups, and change accumulation data sets (CA). You can control the automatic deregister criteria from one menu.

Select option 4 from the main menu to open the “CICS VR automatic deregister criteria menu”.

```
Help
-----
DWPPADC          CICSVR automatic deregister criteria menu

Select one and press Enter.

                                1. Automatic log stream deregister
                                2. Automatic backup deregister
                                3. Automatic change accumulation deregister

Command ==>>
F1=Help      F3=Exit      F10=Menu bar F12=Cancel
```

Figure 80. The CICS VR automatic deregister criteria menu

Setting automatic log stream deregistration

Use the “CICS VR automatic log stream deregister” secondary window to specify the parameters to be used by the CICS VR automatic deregistration.

Select option 1, **Automatic log stream deregister**, from the “CICS VR automatic deregister criteria menu” to open the secondary window below:

```

CICSVR automatic log stream deregister
Command ==>

Specify the automatic deregister criteria for log stream blocks and log
stream copies, then press ENTER. Or, leave all fields blank, then press
ENTER to turn off the automatic deregister function. Press F11 to view or
specify individual deregistration criteria for logstreams.

Automatic deregister . . . . : ON

Retention period for blocks    099 (Number of days)

Retention period for copies    (Number of days)

Uncatalog and delete . . . . . (1=Yes, 2=No)

Automatic individual deregister . . : ON

F1=Help      F11=IndDereg  F12=Cancel

```

Figure 81. Automatic log stream deregister secondary window

This figure displays sample user-entered values, but the default values for this secondary window are as follows:

- **OFF** for Automatic deregister
- Blank for the Retention period for blocks
- Blank for the Retention period for copies
- Blank for the Uncatalog and delete
- **OFF** for Automatic individual deregister

For information about setting and using CICS VR automatic deregistration, see "Understanding CICS VR automatic deregistration" in the *CICS VR Implementation Guide and Reference* .

For help information, press F1

Setting automatic backup deregistration

Use the "CICS VR automatic backup deregister" secondary window to view and update the deregistration settings.

Select option 2, **Automatic backup deregister**, from the "Automatic deregister criteria menu" to view and change the CICS VR automatic backup deregistration settings.

```

CICSVR automatic backup deregister
Command ==>

Turn automatic deregistration for backups ON by specifying values for
Backup retention period, Use log retention period and Use catalog
information, then press Enter. Turn automatic deregistration for backups
OFF by leaving all fields blank, then press Enter.

Automatic backup deregister . . . . . : OFF
Backup retention period . . . . . ___ (Number of days)
Use log retention period . . : (005) . . _ (1=Yes, 2=No)
Use catalog information . . . . . _ (1=Yes, 2=No)
Uncatalog and delete . . . . . _ (1=Yes, 2=No)

F1=Help   F12=Cancel

```

Figure 82. CICS VR automatic backup deregister secondary window

Use the “CICS VR automatic backup deregister” secondary window to view and change the automatic backup deregistration settings. From this window, you can:

- Turn automatic backup deregistration ON by specifying at least one of the following deregistration criteria:
 - an integer between 0 and 999 specified for **Backup retention period**
 - the value of 1 specified for **Use log retention period**
 - the value of 1 specified for **Use catalog information**
- Change existing automatic backup deregistration settings by typing new values over the existing values and pressing Enter.
- Turn automatic backup deregistration OFF by leaving all input fields blank and pressing Enter.

If you do not want to change the automatic backup deregistration settings, press Cancel, F12. This action immediately returns you to the CICS VR VSAM sphere list.

For information about setting and using CICS VR automatic deregistration, see “Understanding CICS VR automatic deregistration” in the *CICS VR Implementation Guide and Reference* .

Setting automatic change accumulation deregistration

CICS VR provides a separate retention period support for change accumulation (CA) data sets.

Select option 3 from the “CICS VR automatic deregister criteria menu” to open the “CICS VR automatic change accumulation deregister” panel:

```
CICSVR automatic change accumulation deregister

Command ==>

Specify the automatic deregister criteria for CA, then press Enter. Or
leave both fields blank, then press Enter to turn off the automatic
deregister function.

Automatic deregister . . . : OFF
Retention period . . . . . (Number of days)
Uncatalog and delete . . . (1=Yes, 2=No)

F1=Help   F12=Cancel
```

Figure 83. The CICS VR automatic change accumulation deregister panel

For information about setting and using CICS VR automatic change accumulation deregistration, see "Setting automatic change accumulation deregistration criteria" in the *CICS VR Implementation Guide and Reference*.

Chapter 10. Browsing messages

At various locations throughout the CICS VR panel interface, CICS VR writes messages to the data set allocated to the DWWMSG ddname when the specific error conditions are detected.

When the error messages are initially written to the data set allocated to the DWWMSG ddname, CICS VR performs an ISPF VIEW of the recently written messages. You can view all messages that have been written to the data set allocated to the DWWMSG ddname during the entire session of the CICS VR panel interface by selecting option six, **Browse messages**, from the “CICS VR main menu”.

```
Help
-----
                                CICSVR main menu

Select one and press Enter.

                                6_ 1. List of VSAM spheres
                                   2. List of log streams
                                   3. List of registered log of logs
                                   4. Automatic deregister criteria
                                   5. JCL skeleton
                                   6. Browse messages
                                   7. List of CICS Backout Failed spheres
                                   8. CICSVR Settings

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Command ==>
F1=Help      F3=Exit      F10=Menu bar F12=Cancel
```

Figure 84. Main menu panel

After selecting option six, **Browse messages**, from the “CICS VR main menu”, an ISPF BROWSE of the data set allocated to the DWWMSG ddname occurs:

```
Menu Utilities Compilers Help
-----
BROWSE   CICSVR.PANELS.DWWMSG           Line 00000000 Col 001 080
***** Top of Data *****
CICSVR - CICS VSAM RECOVERY                      DATE : 03/

DWW1101I The archive utility is started at 03/06/03 15:05:28.

DWW1241I No blocks were read for the log of logs CICSVR.CICSVR.DFHGLGLOG.

DWW1102I The archive utility is terminated. The maximum condition code is 0.
***** Bottom of Data *****

Command ==>                               Scroll ==> PAGE
F1=Help   F2=Split F3=Exit  F5=Rfind  F7=Up     F8=Down   F9=Swap
F10=Left  F11=Right F12=Cancel
```

Figure 85. BROWSE of DWWMSG data set

Press F7, Up, and F8, Down, to scroll through the messages.

Press F3, Exit, or F12, Cancel, to exit the BROWSE and return to the CICS VR main menu.

Chapter 11. CICS VR settings

Use the “CICS VR main menu” to customize all CICS VR settings, such as Undo logs.

You can customize CICS VR settings by selecting option 8, **CICS VR settings**, from the “CICS VR main menu”.

```
Help
-----
                                CICSVR main menu
Command ===> _____
Select one and press Enter.

      8  1. List of VSAM spheres
         2. List of log streams
         3. List of registered log of logs
         4. Automatic deregister criteria
         5. JCL skeleton
         6. Browse messages
         7. List of CICS Backout Failed spheres
         8. CICSVR Settings

(C) Copyright IBM Corp. 1991, 2008. All rights reserved.
F1=Help   F3=Exit   F10=Menu bar F12=Cancel
```

Figure 86. CICS VR main menu

When you select the **CICS VR Settings** option, the “CICS VR settings” secondary window is displayed:

```
Help
-----
                                CICSVR settings menu
Select and press Enter.

      1. Undo logs assignment
      2. Time presentation (Currently set to: Local)
      3. Server default settings
      4. Server scavenger settings

Command ===>
F1=Help   F3=Exit   F10=Menu bar F12=Cancel
```

Figure 87. CICS VR settings menu

Undo logs assignment

Select option 1 to assign undo log associations. For further information on the available settings, see “Undo log associations.”

Time presentation

Select option 2 to set the time format to be used in the CICS VR ISPF dialog session. For further information on the available settings, see “Setting the global time format” on page 104.

Server default settings

Select option 3 to set the CICS VR server address space defaults. For further information on the settings see, “Setting CICS VR server address space defaults” on page 104.

Server scavenger settings

Select option 4 to set the CICS VR server address space scavenger parameters. For further information on the available settings see, “Setting CICS VR server address space scavenger parameters” on page 106.

Undo log associations

You can use the Undo logs assignment feature to set up multiple undo logs, which are associated with particular user IDs, job name prefixes, or high-level qualifiers of VSAM sphere names. When you submit a VSAM sphere update job that involves undo logging, CICS VR searches for any matching associations.

When CICS VR finds an association that applies to a submitted job, it writes undo records to the undo log named for the association. If no association is found for the job, records are written to the default undo log that is defined for the system. Only one undo log can be used for each job.

When you select option 1, **Undo logs assignment**, on the “CICS VR settings” panel, option 8 from the “CICS VR main menu”, the “CICS VR Undo logs assignment” panel is displayed. This panel lists all the associations that are currently in effect.

S	Value	Type	Undo log name	Time (GMT)
-	CICSMVS7	HLQ	CM7.UNDOLOG	08.181 15:13:12
-	CICSVR2	HLQ	TEST.TST2.UNDOLOG	08.181 15:13:17
-	AT*	JOBNAME	DWW.USER.UNDOLOG	08.185 16:11:08
-	ATEST2*	JOBNAME	TEST.TST2.UNDOLOG	08.181 15:14:05
-	ATEST1	JOBNAME	TEST.TST1.UNDOLOG	08.179 16:01:43
-	AAAA	USERID	DWW.USER.UNDOLOG	08.185 15:35:24
-	APROD*	JOBNAME	PROD.UNDOLOG	06.184 13:17:31
-	TESTUSER	USERID	TEST.TST1.UNDOLOG	06.184 13:17:31

Command ==>>
F1=Help F3=Exit F4=SwSort F5=Add F6=Alter F7=Bkwd
F8=Fwd F10=Menu bar F11=Delete F12=Cancel

Figure 88. CICS VR Undo logs assignment panel

The list shows the following information about each association:

Value

The string that CICS VR tries to match when searching for any association that applies to a submitted job.

Type

The type of association; so whether the value string is a user ID, a job name prefix, or the high-level qualifier for a VSAM sphere name:

USERID

The value for this association is the user ID under which the job runs. With this association in effect, for every VSAM sphere update job submitted by this user, undo records are written to the named undo log. The value is the exact user ID.

JOBNAME

The value for this association is the job name prefix of the VSAM sphere update job. With this association in effect, for every VSAM sphere update job with a prefix that matches the stated value, undo records are written to the named undo log. The value can be an exact job name prefix or it can be a mask ending with an asterisk (*) as a wildcard. For example, the association shown in the sample listing with a value of ATEST1 matches only with the job name prefix ATEST1, but the association with a value of ATEST2* matches with any of the job name prefixes ATEST2, ATEST2MON, or ATEST23.

HLQ The value for this association is the high-level qualifier (HLQ) of a VSAM sphere name. With this association in effect, for every VSAM sphere update job that updates a VSAM sphere with the specified high-level qualifier, undo records are written to the named undo log. The value is the exact high-level qualifier.

Undo log name

The undo log that is used if this association applies to a job. The name of the undo log consists of a prefix, which can be up to 18 characters, followed by .UNDOLOG.

Time

The time when the association was last updated.

You can sort the list of associations by association value, association type, or undo log name. To sort the list, press F4, SwSort, to loop through the different sorting types. Each time you press F4, the list is repopulated based on the new sorting type.

Matching rules for associations

CICS VR must find only one matching association to select the correct undo log for a particular VSAM sphere update job. You do not have to define all the types of association for each job. For example, if CICS VR finds a user ID association for a particular job, it can select the correct undo log on this basis, and does not need to find a job name prefix association and high-level qualifier association as well.

However, because you can define different types of association, some VSAM sphere update jobs that you submit might match the value for more than one association. For example, a job might be submitted with the job name prefix ATEST2, to update a VSAM sphere with a name that has the high-level qualifier CICSVR2. This job matches more than one association in the sample listing.

Because only one undo log can be used for each job, CICS VR applies some matching rules to make sure that it has selected the undo log that you intended for the job:

1. The user ID associations are searched first, followed by the job name prefix associations, followed by the high-level qualifier associations.
2. If a match is found with an association of one type, CICS VR continues searching all the remaining association types, to check that no conflicting associations of other types occur. If another matching association is found that names a different undo log, CICS VR undo logging produces an error and does not start. For example, if a job is submitted with the job name prefix ATEST2 to update a VSAM sphere with a name that has the high-level qualifier CICSVR2, CICS VR finds a matching association for both the job name prefix and the high-level qualifier. Because these associations both name the undo log TEST.TST2.UNDOLOG, they do not conflict, and the undo logging can proceed. However, if the same job is submitted with the job name prefix ATEST1, a matching job name prefix association exists that names the undo log TEST.TST1.UNDOLOG, followed by a matching high-level qualifier association that names the undo log TEST.TST2.UNDOLOG. In this case, you have a conflict, and the undo logging cannot proceed.
3. For job name prefix associations, if you have set up associations using masks, and a job name prefix therefore matches the value of more than one association, CICS VR selects the association with the fullest match. For example, the sample listing includes job name prefix associations with values of AT*, ATEST2*, and ATEST1. For a job submitted with the job name prefix ATEST23, CICS VR selects the association with a value of ATEST2*, rather than AT*, because that is the fullest match.
4.
 - If you are updating multiple VSAM spheres in the same job, and you have no matching user ID association or job name prefix association, all the VSAM sphere names must have a high-level qualifier association, and these must all point to the same undo log.
 - If you have no high-level qualifier associations in effect at all for the VSAM spheres in the job, that is also acceptable. If CICS VR finds that one of the VSAM sphere names has a high-level qualifier association pointing to a different undo log, or that some have matching associations but others do not match any association, CICS VR undo logging produces an error and stops. This error cannot be discovered until processing starts against the first VSAM data set that is different from those encountered previously.
 - If a matching user ID association or job name prefix association for the job exists, it is not important if some of the VSAM sphere names do not match any association, but it is important if they have associations pointing to different undo logs, because of a conflict.

If an error occurs, the job proceeds without undo logging.

If no matching associations of any type are found for a job, the undo records are written to the default undo log that is defined for the system. The prefix for the default undo log name is specified in the **CICSVR_UNDOLOG_PREFIX(prefix)** parameter in the active IGDSMSxx member of SYS1.PARMLIB. The default prefix is DWW, so the default name for the default undo log is **DWW.UNDOLOG**. You must define the default undo log before you submit any job involving undo logging. The *CICS VR Implementation Guide and Reference* explains how to define an undo log.

Creating or modifying undo log associations

Use the “CICS VR Undo logs assignment” panel to access the “CICS VR Undo logs management” panel, which you can use to add a new undo log association or modify an existing undo log association.

Before you begin

To create a new undo log association using the “CICS VR Undo logs assignment” panel, press F5, Add.

To modify an existing undo log association using the “CICS VR Undo logs assignment” panel, type S, select, against the association or associations that you want to modify, and press F6, Alter. For example:

```
Administrat View Help
-----
DWPPULA          CICSVR Undo logs assignment          Row 1 to 8 of 8

Select one association, then select an action. Or, use Add action to register
new association.

S Value      Type      Undo log name      Time (GMT)
S CICSMS7    HLQ       CM7.UNDOLOG        08.181 15:13:12
S CICSVR2    HLQ       TEST.TST2.UNDOLOG  08.181 15:13:17
- AT*        JOBNAME   DWW.USER.UNDOLOG   08.185 16:11:08
S ATEST2*    JOBNAME   TEST.TST2.UNDOLOG  08.181 15:14:05
- ATEST1     JOBNAME   TEST.TST1.UNDOLOG  08.179 16:01:43
S AAAA       USERID   DWW.USER.UNDOLOG   08.185 15:35:24
- APROD*     JOBNAME   PROD.UNDOLOG        08.184 13:17:31
- TESTUSER   USERID   TEST.TST1.UNDOLOG   08.184 13:17:31

Command ==>
F1=Help      F3=Exit      F4=SwSort      F5=Add      F6=Alter      F7=Bkwd
F8=Fwd       F10=Menu bar F11=Delete     F12=Cancel
```

Figure 89. CICS VR Undo logs assignment panel: selecting associations

When you press F5, Add, or F6, Alter, the “CICS VR Undo logs management” panel is displayed:

```
DWPPULM          CICSVR Undo logs management

Choose association type by pressing PF4, SwType, type the value, specify
undo log name prefix and press Enter. Or, press F12 to cancel request.

Association type . . : USERID

Association value . . . _____

Undo log name prefix _____ .UNDOLOG

Command ==>
F1=Help      F4=SwType     F7=PrevItem    F12=Cancel
```

Figure 90. CICS VR Undo logs management panel

If you are creating a new undo log association, the association value and undo log name prefix are blank. If you are modifying existing undo log associations, the existing parameters for the first association are filled in, and the correct association type is shown.

About this task

“Undo log associations” on page 98 explains the meaning of each parameter and the rules that CICS VR uses to match job information to associations. For detailed help for any of the fields, move the cursor to the field and press F1.

To create or modify undo log associations, follow these steps:

Procedure

1. Use the information in “Undo log associations” on page 98 to plan your new undo log associations or your changes.
 - a. Do not set up conflicting associations. If more than one association can be matched to the same job, the associations must specify the same undo log name; otherwise, CICS VR undo logging cannot proceed.
 - b. If you want to use high-level qualifier associations to determine the undo log, and you update multiple VSAM spheres in the same job, make sure that all the VSAM spheres listed in the job have a high-level qualifier association, and that they specify the same undo log.

When you are creating a new undo log association, CICS VR notifies you if the association that you try to create is identical to an existing association. However, CICS VR cannot determine whether two associations conflict until the job responsible for the conflict has been submitted. Also, CICS VR cannot determine whether the associations for multiple VSAM spheres are correct until processing starts against the first VSAM data set that is different from those encountered previously in the job. To avoid processing errors, plan your associations carefully beforehand.

2. Before creating or modifying any undo log association, make sure that no CICS VR batch jobs are currently running. Your changes take effect immediately, and can affect running CICS VR batch jobs that involve undo logging.
3. To specify or change the association type, press F4, SwType, to loop through the three possible types, USERID, JOBNAME, or HLQ.
4. Specify, or overtyp to change, the association value.
 - a. For the USERID association type, the value is an exact user ID under which matching jobs run.
 - b. For the HLQ association type, the value is an exact high-level qualifier for a VSAM sphere name to which matching jobs relate.
 - c. For the JOBNAME association type, the value is the job name prefix of matching jobs. The value can be an exact job name prefix or it can be a mask ending with an asterisk (*) as a wildcard. “Undo log associations” on page 98 explains how matching takes place when masks are used.
5. Specify or overtyp to change the undo log name prefix. This undo log is used when the association applies for a submitted job. The prefix can be up to 18 characters, and CICS VR appends .UNDOLOG to form the complete undo log name. You can use the name of an existing undo log or specify a new undo log name. If you specify a new undo log name, you do not take any additional actions to create or activate the new undo log.
6. Press Enter to create or modify the association. The association is stored in the RCDS, and it is available to CICS VR immediately for matching.

- If you are modifying more than one association, repeat this process for the rest of the associations. If you want to return to a previous association, press F7, PrevItem. When you have finished modifying all the associations that you selected, CICS VR returns to the “CICS VR Undo logs assignment” panel, where your changed associations are displayed.

Deleting undo log associations

Use the “CICS VR Undo logs assignment” panel to access the “CICS VR Undo logs delete” panel to remove an unwanted undo log association.

Before you begin

To delete one or more undo log associations:

Procedure

- With the “CICS VR Undo logs assignment” panel displayed, place an S, select, against the association or associations that you want to delete, and press F11, Delete. For example:

The “CICS VR Undo logs delete” panel is displayed:

```

Administrate View Help
-----
DWPPULA                CICSVR Undo logs assignment                Row 1 to 8 of 8

Select one association, then select an action. Or, use Add action to register
new association.

S Value      Type      Undo log name      Time (GMT)
- CICSMS7    HLQ      CM7.UNDOLOG        08.181 15:13:12
- CICSVR2    HLQ      TEST.TST2.UNDOLOG  08.181 15:13:17
S AT*        JOBNAME   DWW.USER.UNDOLOG   08.185 16:11:08
- ATEST2*    JOBNAME   TEST.TST2.UNDOLOG  08.181 15:14:05
- ATEST1     JOBNAME   TEST.TST1.UNDOLOG  08.179 16:01:43
- AAAA       USERID   DWW.USER.UNDOLOG   08.185 15:35:24
S APROD*     JOBNAME   PROD.UNDOLOG        08.184 13:17:31
- TESTUSER   USERID   TEST.TST1.UNDOLOG   08.184 13:17:31

Command ==>
F1=Help      F3=Exit      F4=SwSort      F5=Add      F6=Alter      F7=Bkwd
F8=Fwd       F10=Menu bar F11=Delete     F12=Cancel

```

Figure 91. CICS VR Undo logs assignment panel: selecting associations

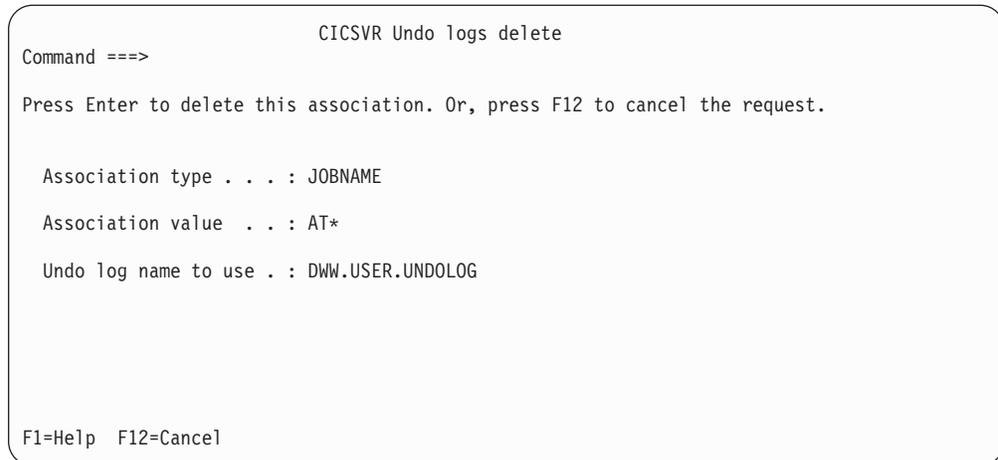


Figure 92. CICS VR Undo logs delete panel

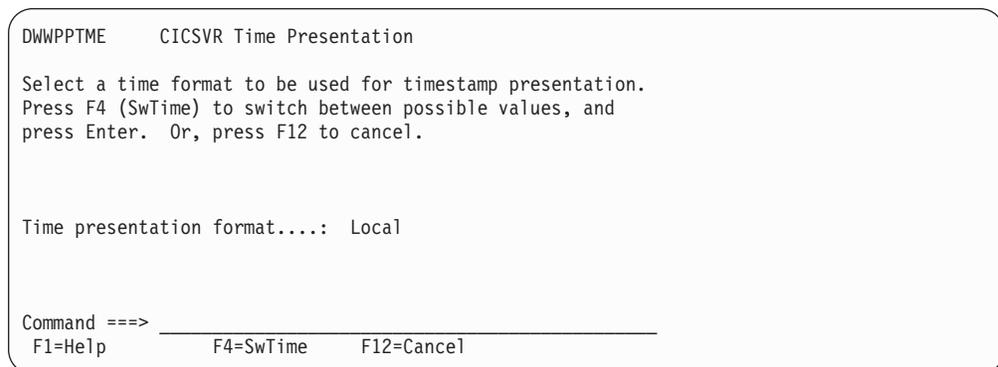
2. Press Enter to confirm deletion or F12 to cancel deletion.
3. Repeat this process for all of the associations that you selected. When you have finished deleting all of the associations that you selected, CICS VR returns to the “CICS VR Undo logs assignment” panel.

Setting the global time format

Use the **Time presentation format** option to set a global time format for the window and panel displays and also for time stamping logs. You can choose either Greenwich Mean Time (GMT) or Local time.

To set the global time format from the “CICS VR main menu”, follow these steps:

1. From the “CICS VR main menu”, select **CICS VR Settings** to open the “CICS VR settings menu”.
2. Select 2, the **Time presentation format** option.
3. Press F4 to switch between GMT or local time.
4. Press Enter to save the changes and exit the window or F12 to exit without saving.



Setting CICS VR server address space defaults

You can specify CICS VR server address space defaults using the CICS VR ISPF dialog interface, without using the CICSVR_GENERAL_CONTROL parameter to display and change the current settings.

To change server defaults from the CICS VR panel dialog, you must have the ALTER access level in the DWWCICSVR FACILITY profile.

To view and set values for CICS VR as defaults:

1. Call the CICS VR panel interface.
2. Select option 8, **CICS VR settings**, from the “CICS VR main menu” and press Enter. The “CICS VR settings menu” opens:

```

Help
-----
                                CICSVR settings menu
Command ===>
Select and press Enter.

                                1. Undo logs assignment
                                2. Time presentation
                                3. Server default settings
                                4. Server scavenger settings

F1=Help      F3=Exit      F10=Menu bar F12=Cancel
  
```

3. Select option 3, **Server default settings**, and press Enter. The “CICS VR server default settings” window opens and displays values for CICS VR address space defaults in the same format as they are displayed in the output from the CICSVR_GENERAL_CONTROL(DISPLAY DEFAULTS) parameter. For detailed information, see *CICS VR Implementation Guide and Reference*:

```

                                CICSVR server default settings      Row 1 to 11 of 11
Command ===>

Specify values for CICSVR server defaults. Then Press Enter to save them
in the RCDS or F12 to cancel.

Default name Value      Scope  Owner
CBAUTO      YES       GLOBAL DWWMPROD
DSSLDREG    ABARS    GLOBAL DWWMPROD
LCDEL       YES       GLOBAL DWWMPROD
LOLSCAN     DEREG    LOCAL  MVV3
REALDDN     NO        GLOBAL DWWMPROD
REDORC      4         GLOBAL DWWMPROD
SECURITY    YES       GLOBAL DWWMPROD
SELBKREG    NO        GLOBAL DWWMPROD
SERVSEC     YES       GLOBAL DWWMPROD
SETUP       DWRMDFS  LOCAL  MVV3
SYSTEMID    QA        LOCAL  MVV3
***** Bottom of data *****

F1=Help      F7=Bkwd      F8=Fwd       F12=Cancel
  
```

4. To change any values for CICS VR server defaults, type new values over the existing values and press Enter. If values are changed, CICS VR address space is notified to refresh control defaults. Thus, default changes are put into effect without CICS VR server reactivation.

Setting CICS VR server address space scavenger parameters

You can control the Inventory Scavenger and the History Scavenger by specifying the parameter values for the **Run control time interval** and the **Run control start time** using the “CICS VR server scavenger settings” window. The specified parameter values are used to control the scavenger runs for the next time the CICS VR server address space is started.

To set the CICS VR server address space scavenger parameters:

1. Select option 8, **CICS VR Settings**, from the “CICS VR main menu” window to open the “CICS VR settings menu” window.
2. Select option 4 from the “CICS VR settings menu” window to open the “CICS VR server scavenger settings” window.
3. Set the time interval and the start time for the **Inventory Scavenger** and the **History Scavenger** using the window below:

```
CICSVR server scavenger settings
Command ==>

Specify values for CICSVR scavenger run control parameters. Then Press
Enter to save them in the RCDS or F12 to cancel.

                Inventory Scavenger

Run control time interval . . . . . 24 (0-24, in hours)
Run control start time . . . . .          (HH:MM:SS) Local

                History Scavenger

Run control time interval . . . . . 01 (1-24, in hours)
Run control start time . . . . .          (HH:MM:SS) Local

F1=Help   F5=Local   F6=GMT   F12=Cancel
```

Figure 93. “CICS VR server scavenger settings”

The CICS VR server address space schedules the scavenger runs starting with start time, if the start time is not a blank character string and it is greater than the current time when the CICS VR server address space is started. The scavenger then runs periodically once in each time interval. Otherwise it starts with the next time interval after the CICS VR server address space is started and then again periodically once in each time interval.

Inventory scavenger

The installation default settings for the time interval parameter and the start time parameter respectively is a value of 24 and a blank character string. The default setting means that the inventory scavenger runs once a day starting on the next day after the CICS VR server address space is started. A value of 0 for time interval means that the CICS VR server will not schedule any runs of the inventory scavenger.

History scavenger

The installation default settings for the time interval parameter and the start time parameter respectively is a value of 1 and a blank character

string. The default setting means that the history scavenger runs once an hour starting on the next hour after the CICS VR server address space is started.

Chapter 12. Using ISMF data set lists with CICS VR

CICS VR is integrated with ISMF so that you can create a CICS VR recovery job for the data sets in an ISMF data set list by entering the VSAMREC line operator or list command. When you enter the VSAMREC line operator or list command, the necessary CICS VR panels are called and you can create a recovery job for the VSAM sphere.

Restriction: When you use CICS VR to create a recovery job for one or more VSAM spheres, ensure that none of the VSAM spheres for which you are creating a recovery job is available for updates by either CICS or batch applications if using the CICS VR batch logger. These data sets must be unavailable until the CICS VR recovery job is run successfully to avoid inconsistent data sets.

Creating ISMF data set lists

With ISMF, you can create and use data set lists that are groups of data sets that match user-defined selection criteria. Depending on the selection criteria that you enter, these lists can contain hundreds of data set names or only a few.

For more detailed information about ISMF, see *z/OS DFSMS: Using the Interactive Storage Management Facility*.

To create an ISMF data set list, select option 1, **Data Set**, from the “ISMF PRIMARY OPTION MENU”:

```
Panel  Help
-----
                    ISMF PRIMARY OPTION MENU - z/OS DFSMS V1 R3
Enter Selection or Command ==> _____

Select one of the following options and press Enter:

0  ISMF Profile           - Specify ISMF User Profile
1  Data Set               - Perform Functions Against Data Sets
2  Volume                 - Perform Functions Against Volumes
3  Management Class      - Specify Data Set Backup and Migration Criteria
4  Data Class             - Specify Data Set Allocation Parameters
5  Storage Class         - Specify Data Set Performance and Availability
6  Storage Group         - Specify Volume Names and Free Space Thresholds
7  Automatic Class Selection - Specify ACS Routines and Test Criteria
8  Control Data Set      - Specify System Names and Default Criteria
9  Aggregate Group       - Specify Data Set Recovery Parameters
10 Library Management    - Specify Library and Drive Configurations
11 Enhanced ACS Management - Perform Enhanced Test/Configuration Management
C  Data Collection       - Process Data Collection Function
L  List                   - Perform Functions Against Saved ISMF Lists
R  Removable Media Manager - Perform Functions Against Removable Media
F1=Help  F2=Split  F3=End  F4=Return  F7=Up    F8=Down  F9=Swap
F10=Left F11=Right F12=Cursor
```

Figure 94. ISMF PRIMARY OPTION MENU in storage administrator user mode

The ISMF “DATA SET SELECTION ENTRY PANEL” is displayed as shown below. You enter the selection criteria used by ISMF to generate a data set list. You can specify a value in any selection criterion field that meets your needs.

```

Panel Defaults Utilities Scroll Help
-----
                                DATA SET SELECTION ENTRY PANEL                                Page 1 of 5
Command ==>
For a Data Set List, Select Source of Generated List . . 2 (1 or 2) (1)

  1 Generate from a Saved List          Query Name To
    List Name . .                      Save or Retrieve

  2 Generate a new list from criteria below
    Data Set Name . . . 'EXMPHLQ.**' (2)
    Enter "/" to select option _ Generate Exclusive list

Specify Source of the new list . . 2 (1 - VTOC, 2 - Catalog) (3)
  1 Generate list from VTOC
    Volume Serial Number . . . (fully or partially specified)
  2 Generate list from Catalog
    Catalog Name . . .
    Catalog Password . . . . . (if password protected)
    Volume Serial Number . . . TSTVOL (fully or partially specified) (4)
    Acquire Data from Volume . . . . . N (Y or N)
    Acquire Data if DFSMSHsm Migrated . . N (Y or N)
Use ENTER to Perform Selection; Use DOWN Command to View next Selection Panel;
Use HELP Command for Help; Use END Command to Exit.

.
.
.

To further limit the Generated List, Specify a single value or list of values
in any of the following:
                                Rel Op   Value   Value   Value   Value
                                -----
Entry Type . . . . . EQ   CLUSTER (5)
.
.

```

Figure 95. ISMF DATA SET SELECTION ENTRY PANEL

Requirement: Always enter 2, **Catalog** in the **Specify Source of the new list** field. CICS VR creates a recovery job for a VSAM sphere based on its base cluster name. Base cluster names can be retrieved only from the catalog.

The ISMF “DATA SET SELECTION ENTRY PANEL” with sample criteria entered in this example, produced the ISMF data set list shown in the ISMF “DATA SET LIST” panel. The following list explains the entered criteria:

1. Enter option 2, **Catalog** in the **Select Source of Generated List** field on line (1) to create a new ISMF data set list.
2. Enter 'EXMPHLQ.**' in the **Data Set Name** field on line (2) to produce a list of data sets with a first lever qualifier of 'EXMPHLQ'.
3. Enter option 2, **Catalog** in the **Specify Source of the New List** field on line (3) so that CICS VR can retrieve the base cluster name for the VSAM spheres selected for the list of data sets. IOption 2, **Catalog** is required.
4. Enter TSTVOL in the **Volume Serial Number** field on line (4) so that data sets that reside only on TSTVOL are in the data set list.
5. Enter EQ CLUSTER in the **Entry Type** field on line (5) so that only VSAM base clusters that meet the other selection criteria are included in the data set list.
6. After you enter this data, press Enter and ISMF creates a data set list as shown in the ISMF “DATA SET LIST” panel.

Result: If you enter the same criteria specified in the preceding steps and press Enter, an ISMF data set list similar to the one shown in ISMF “DATA SET LIST”

panel is displayed.

```
Panel List Dataset Utilities Scroll Help
-----
                                DATA SET LIST
Command ==>                                Scroll ==> HALF
                                Entries 1-6 of 6
Enter Line Operators below:                Data Columns 3-4 of 39

LINE          DATA SET NAME          ALLOC  ALLOC
OPERATOR      (2)-----          SPACE  USED
---(1)-----
EXMPHLQ.CLUSTER1
EXMPHLQ.CLUSTER2
EXMPHLQ.CLUSTER3
EXMPHLQ.CLUSTER4
EXMPHLQ.CLUSTER5
EXMPHLQ.CLUSTER6
-----
                                BOTTOM OF DATA -----

F1=Help  F2=Split  F3=End  F4=Return  F7=Up    F8=Down  F9=Swap
F10=Left F11=Right  F12=Cursor
```

Figure 96. ISMF DATA SET LIST panel

Saving ISMF data set lists

After an ISMF data set list is created and the results are presented on the ISMF “DATA SET LIST” panel you can issue any line operators and list commands for these data sets.

You can also save the contents of the data set list and view the contents of this data set list at any time. You can issue any line operators or list commands for the data sets in the saved ISMF data set list.

To save the contents of an ISMF data set list, type the `save listname list` command on the command line field. When you issue this command, the current data set list is saved as the specified listname in the allocated output table library.

```

Panel List Dataset Utilities Scroll Help
-----
                                DATA SET LIST
Command ==> SAVE LIST3                                Scroll ==> HALF
                                                    Entries 1-6 of 6
Enter Line Operators below:                            Data Columns 3-4 of 39

  LINE          DATA SET NAME          ALLOC  ALLOC
  OPERATOR          DATA SET NAME          SPACE  USED
  ---(1)---      -----(2)-----      --(3)-- --(4)--
                EXMPHLQ.CLUSTER1          -----
                EXMPHLQ.CLUSTER2          -----
                EXMPHLQ.CLUSTER3          -----
                EXMPHLQ.CLUSTER4          -----
                EXMPHLQ.CLUSTER5          -----
                EXMPHLQ.CLUSTER6          -----
  -----      -----      BOTTOM OF DATA      -----

F1=Help  F2=Split  F3=End  F4=Return  F7=Up    F8=Down  F9=Swap
F10=Left F11=Right F12=Cursor

```

Figure 97. ISMF DATA SET LIST panel with SAVE list command

You can view the contents of the saved list at any time. Select option L, List, from the “ISMF PRIMARY OPTION MENU”.

```

Panel Help
-----
                                ISMF PRIMARY OPTION MENU - z/OS DFSMS V1 R3
Enter Selection or Command ==> L_____

Select one of the following options and press Enter:

0 ISMF Profile          - Specify ISMF User Profile
1 Data Set              - Perform Functions Against Data Sets
2 Volume                - Perform Functions Against Volumes
3 Management Class     - Specify Data Set Backup and Migration Criteria
4 Data Class           - Specify Data Set Allocation Parameters
5 Storage Class        - Specify Data Set Performance and Availability
6 Storage Group        - Specify Volume Names and Free Space Thresholds
7 Automatic Class Selection - Specify ACS Routines and Test Criteria
8 Control Data Set     - Specify System Names and Default Criteria
9 Aggregate Group      - Specify Data Set Recovery Parameters
10 Library Management  - Specify Library and Drive Configurations
11 Enhanced ACS Management - Perform Enhanced Test/Configuration Management
C Data Collection      - Process Data Collection Function
L List                 - Perform Functions Against Saved ISMF Lists
R Removable Media Manager - Perform Functions Against Removable Media
F1=Help  F2=Split  F3=End  F4=Return  F7=Up    F8=Down  F9=Swap
F10=Left F11=Right F12=Cursor

```

Figure 98. ISMF PRIMARY OPTION MENU with List option selected

After you select the List option from the “ISMF PRIMARY OPTION MENU”, the saved ISMF lists are displayed on the “SAVED ISMF LISTS” panel.

```

Panel List Utilities Scroll Help
-----
                                SAVED ISMF LISTS
Command ==>                                Scroll ==> HALF
                                           Entries 1-4 of 4
Enter Line Operators below:                Data Columns 3-7 of 8

  LINE      LIST      LIST      LAST DATE  LAST TIME  LAST MOD  LIST ROW
  OPERATOR  NAME      TYPE      MODIFIED   MODIFIED   USERID    COUNT
  ---(1)---  --(2)---  --(3)---  ---(4)---  ---(5)---  --(6)---  --(7)---
                LIST1  DATASET  2008/06/03 12:30     USER1      35
                LIST2  DATASET  2008/05/21 08:56     USER1      35
                LIST3  DATASET  2008/06/18 13:07     USER1       6
                LIST4  DATASET  2008/06/18 13:22     USER1     182
  -----  -----  -----  BOTTOM OF DATA -----

```

F1=Help F2=Split F3=End F4=Return F7=Up F8=Down F9=Swap
F10=Left F11=Right F12=Cursor

Figure 99. SAVED ISMF LISTS panel

To view the contents of a saved ISMF data set list and issue line operators and list commands for the data sets in the list, enter the List line operator against the desired data set list.

```

Panel List Utilities Scroll Help
-----
                                SAVED ISMF LISTS
Command ==>                                Scroll ==> HALF
                                           Entries 1-4 of 4
Enter Line Operators below:                Data Columns 3-7 of 8

  LINE      LIST      LIST      LAST DATE  LAST TIME  LAST MOD  LIST ROW
  OPERATOR  NAME      TYPE      MODIFIED   MODIFIED   USERID    COUNT
  ---(1)---  --(2)---  --(3)---  ---(4)---  ---(5)---  --(6)---  --(7)---
                LIST1  DATASET  2008/06/03 12:30     USER1      35
                LIST2  DATASET  2008/05/21 08:56     USER1      35
  LIST      LIST3  DATASET  2008/06/18 13:07     USER1       6
                LIST4  DATASET  2008/06/18 13:22     USER1     182
  -----  -----  -----  BOTTOM OF DATA -----

```

F1=Help F2=Split F3=End F4=Return F7=Up F8=Down F9=Swap
F10=Left F11=Right F12=Cursor

Figure 100. SAVED ISMF LISTS panel with List line operator

After you issue the List line operator for a saved ISMF data set list, the contents of that list are displayed on the ISMF “DATA SET LIST” panel.

```

Panel List Dataset Utilities Scroll Help
-----
                                DATA SET LIST
Command ==>                                Scroll ==> HALF
                                Entries 1-6 of 6
Enter Line Operators below:                Data Columns 3-4 of 39

LINE          OPERATOR          DATA SET NAME          ALLOC   ALLOC
                                SPACE    USED
---(1)-----  -----(2)-----  ---(3)-- --(4)--
                                EXMPHLQ.CLUSTER1
                                EXMPHLQ.CLUSTER2
                                EXMPHLQ.CLUSTER3
                                EXMPHLQ.CLUSTER4
                                EXMPHLQ.CLUSTER5
                                EXMPHLQ.CLUSTER6
-----  -----  -----  BOTTOM OF DATA  -----

F1=Help   F2=Split  F3=End    F4=Return F7=Up     F8=Down   F9=Swap
F10=Left  F11=Right F12=Cursor

```

Figure 101. ISMF DATA SET LIST panel

You can issue line operators and list commands, including the VSAMREC line operator and list command, for the data sets in the selected ISMF data set list. You can issue VSAMREC for both dynamically created ISMF data set lists and saved ISMF data set lists.

Use saved ISMF data set lists in conjunction with CICS VR as part of your plans for the recovery process. Then, if data is lost, the recovery process is much faster and easier. The following steps show an example of how you can use ISMF data set lists to prepare for a simple recovery:

1. Create an ISMF data set list that contains all VSAM spheres that reside on a particular volume using the information from the catalog.
2. Save this data set list with the SAVE listname list command.
3. If the entire volume is lost, display the contents of the previously saved ISMF data set list using the ISMF 'List' line operator. Then, enter the VSAMREC list command to restore and recover every VSAM sphere that initially was located on the lost volume.

VSAMREC is described in more detail in “Understanding VSAMREC” on page 118.

Using saved queries to regenerate ISMF data set lists

After you create and save an ISMF data set list, additional new data sets might meet the same selection criteria used to produce a saved data set list. Once you save an ISMF data set list, you can only re-display the original contents of that list.

Use ISMF queries to create a new data set list from the original selection criteria.

Saving the query

How to save an ISMF data set query using the ISMF “DATA SET SELECTION ENTRY PANEL”.

You can save the selection criteria you enter on the ISMF “DATA SET SELECTION ENTRY PANEL” as an ISMF data set query. Type the QSAVE command on the

command line and enter a one to eight character name in the **Query Name to Save or Retrieve** field. This command saves the contents of every selection criteria input field on the ISMF “DATA SET SELECTION ENTRY PANEL” as the specified query name.

The query is saved in member ISMFQDSN of the partitioned data set allocated to the ISPTABL ddname. If this is the first query saved and member ISMFQDSN does not exist, execution of the QSAVE command creates this member.

```

Panel Defaults Utilities Scroll Help
-----
                        DATA SET SELECTION ENTRY PANEL                        Page 1 of 5
Command ==> QSAVE_____
For a Data Set List, Select Source of Generated List . . 2 (1 or 2)

  1 Generate from a Saved List          Query Name To
    List Name . .                      Save or Retrieve LIST3____

  2 Generate a new list from criteria below
    Data Set Name . . . 'EXMPHLQ.**'
    Enter "/" to select option _ Generate Exclusive list

Specify Source of the new list . . 2 (1 - VTOC, 2 - Catalog)
  1 Generate list from VTOC
    Volume Serial Number . . .          (fully or partially specified)
  2 Generate list from Catalog
    Catalog Name . . .
    Catalog Password . . . . .          (if password protected)
    Volume Serial Number . . . TSTVOL    (fully or partially specified)
    Acquire Data from Volume . . . . . N (Y or N)
    Acquire Data if DFSMSshm Migrated . . N (Y or N)
Use ENTER to Perform Selection; Use DOWN Command to View next Selection Panel;
Use HELP Command for Help; Use END Command to Exit.

.
.
.

To further limit the Generated List, Specify a single value or list of values
in any of the following:

                                Rel Op   Value   Value   Value   Value
                                -----  -----  -----  -----
Entry Type . . . . . EQ         CLUSTER

```

Figure 102. ISMF DATA SET SELECTION ENTRY PANEL with QSAVE command

Recommendation: Save the ISMF query and the ISMF data set list with the same name. Using this naming convention allows you to easily match a saved query to a saved ISMF data set list.

Retrieving a saved query

After you save the selection criteria used to produce an ISMF data set list as a data set query, you can retrieve that saved query at any time to regenerate the data set list.

Regenerating the data set list from the data set query produces a new data set list. All data sets that match the query's selection criteria are included in the new data set list.

Type the QRETRIEV command on the command line of the ISMF “DATA SET SELECTION ENTRY PANEL” and enter the name of the query you wish to retrieve on the **Query Name to Save or Retrieve** field. This command fills in all selection criteria fields with the values that were saved in the specified query.

ISMF searches the data sets allocated to the ISPTLIB ddname for the specified query. Ensure that the data set allocated to the ISPTABL ddname that contains the ISMFQDSN member is also allocated to the ISPTLIB ddname.

```

Panel Defaults Utilities Scroll Help
-----
                        DATA SET SELECTION ENTRY PANEL                        Page 1 of 5
Command ==> QRETRIEV
For a Data Set List, Select Source of Generated List . . 2 (1 or 2)

  1 Generate from a Saved List          Query Name To
    List Name . .                      Save or Retrieve LIST3__

  2 Generate a new list from criteria below
    Data Set Name . . .
    Enter "/" to select option _ Generate Exclusive list

Specify Source of the new list . . 2 (1 - VTOC, 2 - Catalog)
  1 Generate list from VTOC
    Volume Serial Number . . . (fully or partially specified)
  2 Generate list from Catalog
    Catalog Name . . .
    Catalog Password . . . . . (if password protected)
    Volume Serial Number . . . (fully or partially specified)
    Acquire Data from Volume . . . . . N (Y or N)
    Acquire Data if DFSMSHsm Migrated . . N (Y or N)
Use ENTER to Perform Selection; Use DOWN Command to View next Selection Panel;
Use HELP Command for Help; Use END Command to Exit.

.
.
.

To further limit the Generated List, Specify a single value or list of values
in any of the following:
                                Rel Op   Value   Value   Value   Value
                                -----  -----  -----  -----  -----
Entry Type . . . . .
.
.
.

```

Figure 103. ISMF DATA SET SELECTION ENTRY PANEL with QRETRIEV command

After all of the search criteria fields are filled in with the values retrieved from the specified query, press Enter to produce a new list of data sets that match the selection criteria.

ISMF displays a list of all of the data sets that match the selection criteria on the ISMF "DATA SET LIST" panel. To replace the contents of the original data set list with the currently displayed list, type the **SAVE listname REPLACE** list command. This command replaces the contents of the saved ISMF data set list with the data sets currently listed on the ISMF "DATA SET LIST" panel.

```

Panel List Dataset Utilities Scroll Help
-----
                                DATA SET LIST
Command ==> SAVE LIST3 REPLACE                                Scroll ==> HALF
                                                                Entries 1-7 of 7
Enter Line Operators below:                                Data Columns 3-4 of 39

  LINE          DATA SET NAME          ALLOC  ALLOC
  OPERATOR          DATA SET NAME          SPACE  USED
  ---(1)-----  -----(2)-----  ---(3)-- --(4)--
                EXMPHLQ.CLUSTER1          -----
                EXMPHLQ.CLUSTER2          -----
                EXMPHLQ.CLUSTER3          -----
                EXMPHLQ.CLUSTER4          -----
                EXMPHLQ.CLUSTER5          -----
                EXMPHLQ.CLUSTER6          -----
                EXMPHLQ.CLUSTER7          -----
  -----  -----  -----  BOTTOM OF DATA  -----

F1=Help   F2=Split   F3=End   F4=Return   F7=Up   F8=Down   F9=Swap
F10=Left  F11=Right  F12=Cursor

```

Figure 104. ISMF DATA SET LIST panel with SAVE list command

Use ISMF queries in conjunction with CICS VR as part of your plans for the recovery process. Then, if data is lost, the recovery process is much faster and easier. The following steps show an example of how you can use ISMF queries to prepare for a simple recovery:

1. Enter the selection criteria necessary to produce a list of data sets that meet your requirements such as all data sets updated by a particular application.
2. Save the selection criteria as a query using the **QSAVE queryname** command.
3. Generate the ISMF data set list and save it using the **SAVE listnam** list command.

Result: An ISMF data set list and an ISMF data set query are available if you have to perform a recovery.

If data is lost or corrupted and VSAM data sets in an ISMF data set list need to be recovered, complete the following steps:

1. Determine which saved ISMF data set lists contain the VSAM data sets that need to be recovered. Verify whether any new data sets match the original selection criteria of the saved ISMF data set lists.

For example, there might be data sets that were created since the original ISMF data set list was created. If these new data sets match the original selection criteria, continue to step 2. If there are no new data sets, display the contents of the saved ISMF data set list using the LIST line operator and continue to step 5.

2. Regenerate the data set list using the saved query. Enter the **QRETRIEV queryname** command from the ISMF "DATA SET SELECTION ENTRY PANEL".
3. Press Enter on the ISMF "DATA SET SELECTION ENTRY PANEL" to produce a new list of data sets that match the original selection criteria.
4. Replace the original data set list with the currently displayed data set list by entering the **SAVE listname REPLACE** command
5. Enter the **VSAMREC list** command to create a recovery job for all of the VSAM spheres within the data set list.

Result: A recovery job is created for all of the VSAM spheres within the data set list.

Understanding VSAMREC

VSAMREC is the name of the list command and line operator that you can enter on the ISMF "DATA SET LIST" panel to recover the VSAM spheres in the list.

VSAMREC is an alias for DWWRECVR. Both VSAMREC and DWWRECVR are members of the SDWWCNTL data set. Before you can use VSAMREC, you need to tailor it to match your specific installation. You must also allocate VSAMREC to the SYSPROC ddname. For more information about editing the VSAMREC CLIST, see *the CICS VR Implementation Guide and Reference*.

Using VSAMREC as a line operator

You can enter VSAMREC as a line operator for individual data sets within an ISMF data set list.

When you use VSAMREC as a line operator, the CICS VR dialog creates a complete recovery job for the VSAM sphere for which the line operator is.

```
Panel List Dataset Utilities Scroll Help
-----
                                DATA SET LIST
Command ==>>                                Scroll ==>> HALF
                                           Entries 1-6 of 6
Enter Line Operators below:                Data Columns 3-4 of 39

  LINE                                     ALLOC  ALLOC
  OPERATOR                                SPACE  USED
  ---(1)---                                ---(3)-- ---(4)--
VSAMREC  EXMPHLQ.CLUSTER1                -----
          EXMPHLQ.CLUSTER2                -----
          EXMPHLQ.CLUSTER3                -----
          EXMPHLQ.CLUSTER4                -----
          EXMPHLQ.CLUSTER5                -----
          EXMPHLQ.CLUSTER6                -----
-----  -----  -----  BOTTOM OF DATA  -----

F1=Help  F2=Split  F3=End  F4=Return  F7=Up  F8=Down  F9=Swap
F10=Left F11=Right F12=Cursor
```

Figure 105. ISMF DATA SET LIST panel with VSAMREC line operator

The VSAMREC line operator is specified for data set 'EXMPHLQ.CLUSTER2' in the ISMF data set list. The CICS VR dialog interface creates a complete recovery job for 'EXMPHLQ.CLUSTER2'.

Viewing registration errors

After you specify the VSAMREC line operator for a data set, CICS VR verifies that the data set is registered in the CICS VR RCDS. If the data set is registered, CICS VR creates a recovery job for the sphere.

If the data set is not registered in the CICS VR RCDS, CICS VR cannot create a recovery job for the sphere and an error message is written to the data set allocated to the DWWMSG ddname. The DWWMSG data set is then opened for VIEW.

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-----
VIEW      USER1.EXAMPLE.DWWMSG                      Columns 00001 00072
Command ==> _____ Scroll ==> PAGE
.TITLE 1CICSVR - CICS VSAM RECOVERY
000002 0
000003 DWN8000W VSAM sphere not found in the RCDS: EXMPHLQ.CLUSTER2
***** ***** Bottom of Data *****

F1=Help   F2=Split   F3=Exit   F5=Rfind   F6=Rchange  F7=Up
F8=Down   F9=Swap    F10=Left  F11=Right  F12=Cancel

```

Figure 106. VIEW of DWWMSG data set

A VSAM sphere is registered to CICS VR during the following activities:

- LOGOFLOGS SCAN
- CICS VR batch logging
- Registration of a logical backup for the VSAM sphere in the CICS VR RCDS
- Notification of a CICS backout failure for the VSAM sphere

For more information regarding registering VSAM spheres, see *CICS VR Implementation Guide and Reference*.

Press F3 to exit the VIEW of the DWWMSG data set and return to the ISMF "DATA SET LIST" panel.

Browsing the DWWPRINT data set

If the VSAM sphere for which the VSAMREC line operator is issued is registered to CICS VR, all log of logs registered to CICS VR are scanned.

If the log of logs are successfully scanned, CICS VR presents the results as an ISPF browse of the DWWPRINT data set. If one or more log of logs is registered to CICS VR and one or more messages is written to the DWWMSG data set during the scan, the DWWMSG data set is opened for view.

```

CICSVR - LOG OF LOGS SCAN UTILITY                DATE : 08/06/23    TIME : 11:01:09    PAGE : 1
STATISTICS FOR A LOG OF LOGS SCAN
=====
LOG OF LOGS NAME      : CICSVR1.MVSLOG
FIRST TIME GMT       : 08.159 01:00:00
LAST TIME GMT        : 08.159 01:10:00
FIRST TIME LOCAL     : 08.159 01:00:00
LAST TIME LOCAL      : 08.159 01:10:00
FIRST BLOCK ID       :                43282
LAST BLOCK ID        :                67382

VSAM DATA SET STATISTICS
=====
VSAM DATA SET NAME   CICSID  FCT NAME  OPEN DATE/TIME  CLOSE DATE/TIME  MVS LOG STREAM NAME
-----
EXMPHLQ.CLUSTER2     CICSPROD  BASEA    08.159 01:00:00  02.199 01:10:00  CICSVR1.MVSLOG

- LOG OF LOGS SCAN UTILITY                DATE : 08/06/23    TIME : 11:01:09    PAGE : 2
INFORMATION FOR A FORWARD RECOVERY OF EXMPHLQ.CLUSTER2
=====
JOB STEP 1
START TIME GMT      STOP TIME GMT
-----
08.159 01:00:00    08.159 01:10:00
MVS LOG STREAMS NEEDED
-----
CICSVR1.MVSLOG

```

Figure 107. BROWSE of DWWPRINT data set

Press F8 to scroll through the log of logs scan report. Press F3 to continue creating the recovery job.

Providing VSAM sphere forward recovery parameters

After you finish browsing the DWWPRINT data set, the “CICS VR VSAM sphere parameters” secondary window is displayed.

```

CICSVR VSAM sphere parameters

Press F4 when the cursor is in the Backup time field to obtain a list of data
set backup times. Press Enter to continue.

VSAM sphere . . . . . : CICS10.ACCOUNT1.BASE
New VSAM sphere name . . _____
Forward-recovery start time . . _____ (YY.DDD HH:MM:SS)
Forward-recovery stop time . . _____ (YY.DDD HH:MM:SS)
Backup time . . . . . _____ + (YY.DDD HH:MM:SS)
Time format . . . . . Local + Backup type . Logical _____ +
Volume for restore . . _____ Unit for restore . . . . . _____

Command ==> _____
F1=Help      F4=Prompt    F5=GetDef    F6=SaveDef   F7=PrevVSAM
F12=Cancel

```

Figure 108. CICS VR VSAM sphere parameters secondary window

Tip: If the F-keys hide the volume and unit fields on your “CICS VR VSAM sphere parameters” secondary window, enter PFSHOW OFF on the command line to hide the F-keys and show the volume and unit fields. Enter the PFSHOW ON command to display the F-keys again.

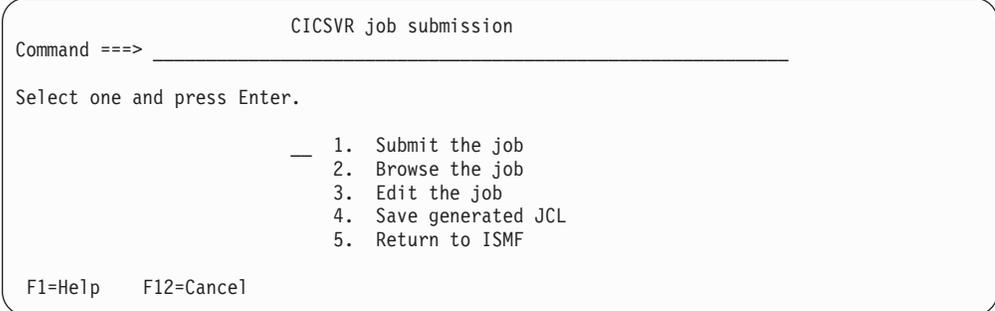
The default values of the “CICS VR VSAM sphere parameters” secondary window restores the VSAM sphere from its latest logical backup, if one exists, and forward recovers the sphere to the current time. You can change the value of any field on this secondary window.

CICS VR continues to create the complete recovery job. For more information about recovery jobs and a detailed description of the panels displayed, see Chapter 2, “Running CICS VR forward recovery,” on page 13. You can also press F1 at any time during CICS VR execution for a further explanation of every field on every CICS VR panel.

Submitting the job

After the recovery job is created, the “CICS VR job submission” secondary window is displayed.

Use this secondary window to submit, browse, or edit the job. You can also select option 4 to save the recovery job.



```

CICSVR job submission
Command ===> _____
Select one and press Enter.

      1. Submit the job
      2. Browse the job
      3. Edit the job
      4. Save generated JCL
      5. Return to ISMF

F1=Help  F12=Cancel
```

Figure 109. CICS VR job submission secondary window

If you enter the VSAMREC line operator against multiple data sets in the ISMF data set list, select option 5 to return to the ISMF “DATA SET LIST” panel. CICS VR continues processing all of the data sets in the ISMF data set list for which the VSAMREC line operator is specified.

For detailed help information, move the cursor to the field and press the Help key, F1.

Using VSAMREC as a list command

You can enter VSAMREC as a list command for all of the data sets within an ISMF data set list.

This command starts the CICS VR dialog which creates a recovery job for every data set within the data set list.

```

Panel List Dataset Utilities Scroll Help
-----
                                DATA SET LIST
Command ==> VSAMREC                                Scroll ==> HALF
                                                    Entries 1-6 of 6
Enter Line Operators below:                        Data Columns 3-4 of 39

LINE OPERATOR          DATA SET NAME          ALLOC SPACE  ALLOC USED
---(1)---             -----(2)-----             --(3)-- --(4)--
EXMPHLQ.CLUSTER1
EXMPHLQ.CLUSTER2
EXMPHLQ.CLUSTER3
EXMPHLQ.CLUSTER4
EXMPHLQ.CLUSTER5
EXMPHLQ.CLUSTER6
-----             -----(2)-----             --(3)-- --(4)--
                                BOTTOM OF DATA

F1=Help   F2=Split   F3=End   F4=Return   F7=Up   F8=Down   F9=Swap
F10=Left  F11=Right  F12=Cursor

```

Figure 110. ISMF DATA SET LIST panel with VSAMREC list command

If you enter VSAMREC as a list command for all of the six data sets, CICS VR creates a recovery job for all six data sets in the data set list.

Viewing registration errors

After you enter the VSAMREC list command, CICS VR verifies that every data set in the list is registered in the CICS VR RCDS. If a data set is registered, CICS VR creates a recovery job for the sphere.

If the data set is not registered in the CICS VR RCDS, CICS VR cannot create a recovery job for the sphere and an error message is written to the data set allocated to the DWWMSG ddname. The DWWMSG data set is then opened for VIEW.

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-----
VIEW          USER1.EXAMPLE.DWWMSG          Columns 00001 00072
Command ==> _____ Scroll ==> PAGE
.TITLE 1CICSVR - CICS VSAM RECOVERY
000002 0
000003 DWW8000W VSAM sphere not found in the RCDS: EXMPHLQ.CLUSTER2
000004
000005 DWW8000W VSAM sphere not found in the RCDS: EXMPHLQ.CLUSTER3
***** ***** Bottom of Data *****

F1=Help   F2=Split   F3=Exit   F5=Rfind   F6=Rchange   F7=Up
F8=Down   F9=Swap    F10=Left  F11=Right  F12=Cancel

```

Figure 111. VIEW of DWWMSG data set

A VSAM sphere is registered to CICS VR during the following activities:

- LOGOFLOGS SCAN
- CICS VR batch logging
- Registration of a logical backup for the VSAM sphere in the CICS VR RCDS

For more information regarding the registration of VSAM spheres, see *CICS VR Implementation Guide and Reference*.

Press F3 to exit the VIEW of the DWWMSG data set.

Selecting a recovery action

The “CICS VR VSAM sphere list” panel is displayed after you exit the VIEW of the DWWMSG data set.

This same panel is also displayed if every data set shown on the ISMF data set list is registered to CICS VR.

```
Administrate Utilities Tools List View Help
-----
CICSVR VSAM sphere list                      Row 1 to 4 of 4
Command ===> _____

Select one or more VSAM spheres, then select an action.

Y Use default parameters for selected spheres

S VSAM sphere                               Scan time(Local)  RR bit
S EXMPHLQ.CLUSTER1                          08.158 13:02:54
S EXMPHLQ.CLUSTER4                          08.158 13:02:54
S EXMPHLQ.CLUSTER5                          08.158 13:02:54
S EXMPHLQ.CLUSTER6                          08.158 13:02:54
***** Bottom of data *****

F1=Help    F3=Exit    F5=FwdRec  F6=Backup  F7=Bkwd
F8=Fwd     F10=Menu bar F11=Dereg  F12=Cancel
```

Figure 112. CICS VR VSAM sphere list panel

Every VSAM sphere in the ISMF data set list that is registered to CICS VR is shown on the “CICS VR VSAM sphere list” panel as selected, which is indicated by the letter S next to the name of the sphere. You can either exit the “CICS VR VSAM sphere list” panel, F3, and return to ISMF to fix any errors, or you can create a recovery job for every VSAM sphere that is registered to CICS VR.

To create a recovery job, first ensure that S is displayed next to only those VSAM spheres for which you want to create a recovery job. Then, select the desired recovery action from the **Utilities** pull-down menu or select the desired recovery action using the associated F-key.

CICS VR creates the recovery job you select. For more information on the selected recovery action, see Chapter 2, “Running CICS VR forward recovery,” on page 13.

If you are creating a recovery job for a large number of VSAM spheres, use the **Use default parameters for selected spheres** field on the CICS VR VSAM sphere list panel. Set this field to Y and specify the recovery parameters just once. The selected recovery parameters are applied to each of the specified VSAM spheres. For more information about using the **Use default parameters for selected spheres** field, refer to the appropriate section for the recovery action you select.

Submitting the job

After the recovery job is created, the “CICS VR job submission” secondary window is displayed.

Use this secondary window to submit, browse, or edit the job. Select option 4 to save the job that CICS VR created for you. Select option 5 to return to the “CICS VR VSAM sphere list” panel. Select option 6 to return to the ISMF “DATA SET LIST” panel.

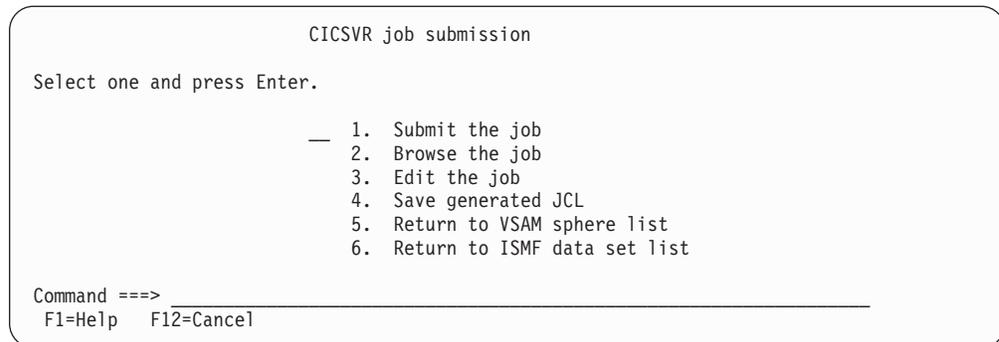


Figure 113. Job submission secondary window

For detailed help information, move the cursor to the field and press the Help key, F1.

Creating backups using the ISMF Data Set List panel

You can use ISMF data set lists to group VSAM spheres for recovery. You can also use the same ISMF data set lists to group VSAM spheres to create backups used by CICS VR.

See, “Creating ISMF data set lists” on page 109 for more information.

CICS VR can create a recovery job that restores a VSAM sphere from a logical backup. ISMF supports the following commands that can be used to create a DFSMSHsm logical backup, DFSMSdss logical copy, or DFSMSdss logical dump for VSAM data sets:

- HBACKDS line operator for DFSMSHsm logical backups
- COPY line operator and list command for DFSMSdss logical copies
- DUMP line operator and list command for DFSMSdss logical dumps

Each of these commands is described in the sections that follow. For more information on how to create backups for use by CICS VR, see *CICS VR Implementation Guide and Reference*.

Using the HBACKDS line operator

Use the HBACKDS line operator on the ISMF “DATA SET LIST” panel to create DFSMSHsm logical backups.

You can enter HBACKDS for any data set in the ISMF data set list. The “HBACKDS ENTRY PANEL” is displayed. Use this panel to specify parameters for the DFSMSHsm logical backup.

```

Panel  Utilities  Help
-----
                                HBACKDS ENTRY PANEL
Command ==>

Optionally Specify one or more for
Data Set: CICS MVS.BASE1.SPH1

Target . . . . .                (D=DASD, T=TAPE or blank)

Concurrent copy . . . . .        (R=Required, P=Preferred,
For R or P, enter CC option      S=Standard or blank)
                                (P=PHYSICAL, L=LOGICAL or blank)

Wait for Completion . . . . . N  (Y or N)

Data Set Password . . . . .      (if password protected)

Use ENTER to Perform Hbackds;
Use HELP Command for Help; Use END Command to Exit.

```

Figure 114. HBACKDS ENTRY PANEL

After you enter the backup parameters and press Enter, DFSMSHsm creates the logical backup. The CICS VR dialog interface retrieves information about this backup from DFSMSHsm when constructing the recovery job.

Exception: The CICS VR address space does not have to be active for CICS VR to access information from DFSMSHsm.

Using the COPY line operator and list command

Use the COPY line operator and list command on the ISMF “DATA SET LIST” panel to create DFSMSdss logical copies. If you enter the COPY line operator for a data set, ISMF displays the “COPY ENTRY PANEL”.

Use this panel to enter various parameters used to build the COPY for the data set you specify with the COPY line operator. If you enter the COPY list command for a data set list, ISMF displays the “COPY COMMAND ENTRY PANEL”. Use this panel to enter various parameters used to build the COPY job for every data set in the ISMF data set list.

Requirements: For CICS VR to be notified when a DFSMSdss logical copy is made for a VSAM sphere, the CICS VR address space must be active and the CICSVRBACKUP and RENAMEU(**,CICSVR.***) keywords must be included in the COPY job. Enter Y in the **CICSVR backup** field to include these keywords and produce a job that creates a copy of the VSAM sphere for use with CICS VR.

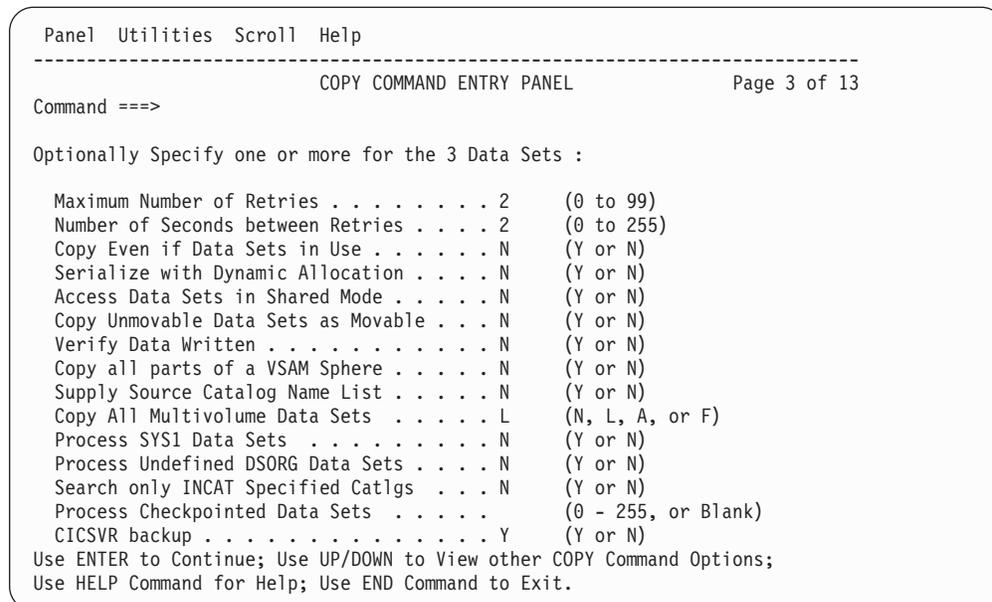


Figure 115. COPY COMMAND ENTRY PANEL

If you enter Y in the **CICSVR backup** field, the following occurs:

- The **CICSVRBACKUP** and **RENAMEU(**,CICSVR.**)** keywords are automatically added to the job.
- When the job is run, CICS VR is notified about the copy of the VSAM sphere.

Restriction: If you enter Y in the **CICSVR backup** field, the following must be true:

- An N must be entered in the **Copy all parts of a VSAM sphere** field. The **SPHERE** and **CICSVRBACKUP** keywords are mutually exclusive for the DFSMSdss COPY function.
- The **Target Data Sets New First Level Qualifier** field and the **New Target DSN or first level qualifier** field must be left blank. The **RENAMEU(**,CICSVR.**)** keyword is automatically added to the COPY job and CICS VR supplies DFSMSdss with the new name of the copy produced when the copy job is run.
- The **Select Disposition of Source Data Sets** field must not be set to 3, 4, or 5. The **DELETE** and **CICSVRBACKUP** keywords are mutually exclusive for the DFSMSdss COPY function.

Using the DUMP line operator and list command

Use the DUMP line operator and list command on the ISMF “DATA SET LIST” panel to create DFSMSdss logical dumps. If you enter the DUMP line operator for a data set, ISMF displays the “DUMP ENTRY PANEL”.

Use this panel to enter various parameters used to build the DUMP job for the data set you specify with the DUMP line operator. If you enter the DUMP list command for a data set list, ISMF displays the “DUMP COMMAND ENTRY PANEL”. Use this panel to enter various parameters to build the DUMP job for every data set in the ISMF data set list.

Requirements: For CICS VR to be notified when a DFSMSdss logical dump is made for a VSAM sphere, the CICS VR address space must be active and the **CICSVRBACKUP** keyword must be included in the DUMP job. Enter Y in the

CICSVR backup field to include this keyword and produce a job that creates a logical dump of the VSAM sphere for use with CICS VR.

```
Panel  Utilities  Scroll  Help
-----
                                DUMP COMMAND ENTRY PANEL                                Page 3 of 9
Command ==>

Specify one or more Dump Control options for the 1 Data Sets:

Maximum Number of retries . . . . . 2      (0 to 99)
Number of Seconds between retries . . . . . 2      (0 to 255)
Dump even if Data Set in Use . . . . . N      (Y or N)
Serialize with Dynamic Allocation . . . . . N      (Y or N)
Access Source Data Sets in Shared Mode . . . . . N      (Y or N)
Dump in Compressed Form . . . . . N      (Y or N)
Amount of I/O Buffering . . . . . 1TRK      (1TRK 2TRK 5TRK 1CYL)
Reset Source Data Set Changed Indicators . . . . . N      (Y or N)
CICSVR backup . . . . . Y      (Y or N)

Select Disposition of Source Data Sets after Successful Dump:
1  1. Keep                                4. Uncatalog and Scratch if Expired
   2. Uncatalog                            5. Uncatalog all, Scratch if Expired
   3. Uncatalog and Scratch

Use ENTER to Continue; Use DOWN Command to View more DUMP Control Options;
Use HELP Command for Help; Use END Command to Exit.
```

Figure 116. DUMP COMMAND ENTRY PANEL

If a Y is entered in the **CICSVR backup** field, the job that is produced creates a DUMP of the VSAM spheres that is used by CICS VR. The **CICSVRBACKUP** keyword is automatically added to the job and CICS VR is notified about the dump when the job is run.

Chapter 13. Running CICS VR manually

IBM recommends that you use the CICS VR panel interface to create recovery jobs for your VSAM spheres. Using the CICS VR panel interface eliminates the need for you to manually keep track of daily update activity, logs, backups, etc. Also, the CICS VR panel interface automatically creates the recovery JCL for you.

However, in some environments, using the CICS VR panel interface might not be possible or ideal. This section provides hints and tips that you might want to consider when preparing to run CICS VR manually.

Keeping manual records

If you have to use CICS VR without the automation provided with the recovery control data set and the ISPF dialog interface, you need access to accurate records relating to logs and VSAM spheres.

In a large installation, keeping records of VSAM spheres, backup copies, and logs is often the responsibility of different groups. For example:

- Computer operations support
- Database support
- Production support
- Computer operations
- Media library

If this is the case in your organization, ensure that the activities of these different groups are coordinated to obtain the records required.

Note: The report produced from the CICS VR archive utility and CICS VR log of logs scan utility can provide you with many of the details required to run CICS VR manually. Specify RECOVERYREPORT(YES) as a keyword in the CICS VR archive or log of logs scan utility to produce this report.:

```
RECOVERYREPORT(YES)
```

For more information about the CICS VR archive utility see, and information about scanning the log of logs see, see *CICS VR Implementation Guide and Reference*.

What information is required?

To manually recover VSAM data sets, you must prepare several jobs. All the information you require must be quickly and easily available.

Record or obtain access to the following information:

- VSAM sphere information.

Record this information about the VSAM spheres:

- Components of each VSAM sphere.

This can be a table that lists, for each base cluster, the alternate-index (AIX[®]) data set names and the path names. You need this information for the job that re-creates your VSAM sphere.

Finding the information when you need it at recovery time might be an alternative to maintaining this table. If the disk is not lost, you can use the

access method services (AMS) LISTCAT command. Alternatively, you can use the printed output from the latest backup job for the sphere.

- File names of VSAM sphere components.

You can obtain this information when required by entering this CICS command for the base cluster and for each path:

```
CEMT INQUIRE FILE (*) DSNAME(dsname)
```

You need this information during recovery, to close relevant files and to inquire about the status of files.

- The log or log stream that is used for forward recovery of each VSAM sphere. This can be a table that lists all VSAM base clusters, and shows which log or log stream the after-images are on. You need this information to help you find the relevant MVS log stream or archived log.

You can list the VSAM clusters when required, by using this CICS command:

```
CEMT INQUIRE DSNAME(base dsname)
```

- Backup information.

Each time you make a backup of a sphere, record this information:

- Base-cluster data set name
- Whether the backup was created while the data set was offline and unavailable for update, or online and available for update
- Whether the VSAM sphere supports VSAM RLS
- AIX data set names, if backed up
- Date and time of backup
- Recovery point date and time (if online backup)
- Backup data set name
- Serial numbers for backup data set volumes
- Location of physical volumes
- Name of backup utility

This information lets you find the correct backup volume and specify the required keywords in the recovery job.

- Forward recovery log information.

In order to create a CICS VR forward recovery job manually for a VSAM sphere you must have the following information about the forward recovery log for the VSAM sphere that you want to recover.

- CICS application identifier (APPLID)
- CICS log ID
- Log close time
- Date and time the log was opened
- Log stream or log stream copy data set name
- Serial numbers for log stream or log stream copy data set volumes
- MVS log stream name
- Location of physical volumes

The CICS VR archive utility report or the log of logs scan utility report provides most of this information. This information lets you find the correct archived logs or MVS log streams and specify their data set names in the recovery job.

For more information about the CICS VR archive utility see, and information about scanning the log of logs see, see *CICS VR Implementation Guide and Reference*.

Note: CICS VR typically retrieves necessary recovery information by reading the tieup log record on the forward recovery log stream. It is possible to use CICS VR to forward recover updates when the tie-up log record is not available. To do this, the ddname with which the data set was opened in the CICS region, and the APPLID of the CICS region; which can be obtained from the tie-up log record, need to be recorded and supplied to the CICS VR recovery job.

Gathering the required information

Starting with this information, your record keeping system must give all the information needed to create the recovery job. It can be useful to have a form detailing the information required for the recovery.

When a problem has occurred, you can perform recovery if you know this information:

- Name of the base cluster
- Date and time the problem occurred

You require at least the information shown below, the data recorded in the table is sample data only.

Table 1. Information Required for Recovery

<i>General information</i>	
Is the CICS VR recovery function required?	NO
Data set name of damaged base cluster.	PAYROLL.BASE
Data set name of paths.	PAYROLL.PATH1
Base cluster file names.	PAYROLL
Path file names.	PAYP1
<i>Forward recovery</i>	
Data set name of backup to be restored.	PAYROLL.BASE.BACKUP
Date and time the backup was made.	01159.2000
Is the backup an online backup?	NO
Data set names of logs.	MVSLOG1.PROD.SYS1
Date and time the earliest log was opened.	01159/0800
Record format.	N/A

Once you have decided which function you have to run and have the required information available, you can start the recovery process.

Producing a CICS VR work sheet

At the time a problem occurs, information about the problem must be communicated to the personnel who will perform the recovery or backout run. One way to ensure the information is available is to use a work sheet.

This form describes the requirements in enough detail that the recovery and backout jobs can be prepared and run successfully.

Data set naming conventions

Give unique names to the logs and backup data sets so that you can easily distinguish them from the operational data sets.

If you have no suitable naming convention, create one for all future backups and logs. MVS data set names can be 1–44 characters, divided into qualifiers of up to 8 characters. Here are some examples:

clustername.BU.Ddate.Ttime

For backup data sets of VSAM base cluster *clustername*.

logstreamname.COPY1.Ddate.Ttime

For the first copy of an MVS log stream *logstreamname*. The date and time might be the time that the copy was made.

Here are examples of data set names that follow these naming conventions:

PAYROLL.BASE.BU.D01159.T235205 A backup data set

PAYROLL.LOGSTREAM.COPY1.D01200.T232145 A copy of an MVS log stream

Starting CICS VR forward recovery

To start the forward recovery functions, run the required JCL and provide the CICS VR commands you require as parameters on the DWWIN DD statement.

The following sample JCL shows the JCL that is required to run CICS VR commands manually.

The commands specified to the CICS VR recovery program vary, depending on factors such as the type of recovery requested and what types of logs you are using, for example, log copies or log streams. For more information about the commands and keywords for the type of recovery you need, see “CICS VR commands” in the *CICS VR Implementation Guide and Reference*.

```
//CICSVR JOB job statement 1
//COMMAND EXEC PGM=DWWCO 2
//STEPLIB DD DSN=DWW.SDWWLOAD,DISP=SHR 3
// DD DSN=DWW.SDWWLENU,DISP=SHR
//DWWLOAD DD DISP=SHR,DSN=DWW.SDWWLOAD 4
// DD DISP=SHR,DSN=DWW.SDWWLENU
// DD DISP=SHR,DSN=exits load library name
//DWWMSG DD SYSOUT=* 5
//DWWPRINT DD SYSOUT=* 6
//DWWCON1 DD DSN=hlq.slg.DWWCON1.GRPsuffix,DISP=SHR 7
//DWWCON2 DD DSN=hlq.slg.DWWCON2.GRPsuffix,DISP=SHR
//DWWCON3 DD DSN=hlq.slg.DWWCON3.GRPsuffix,DISP=SHR
//DWWLOG DD DSN=LOG03.COPY1.D01159.T221500, 8
// UNIT=TAPE,VOL=SER=123456,DISP=OLD
//DWWIN DD * 9
.
.
CICSVR commands
.
.
/*
//
```

Figure 117. Sample JCL to run CICS VR forward recovery

1. The JOB statement specifies a minimum region size of 2048KB.
2. The program to be run is DWWCO. The prefix DWW always refers to CICS VR.

3. Supply the name of the CICS VR load library.
4. DWWLOAD is optional, and defines the alternative load libraries to STEPLIB and the link list, after the top module from the EXEC statement has been loaded. After the top module initialization, all following module loads, supplementary CICS VR modules, and CICS VR exits are from these alternative load libraries.
5. DWWMSG defines the output data set that contains the messages produced by CICS VR. This is usually defined as a SYSOUT data set.

The DCB parameters for this data set are RECFM=FBA and LRECL=133. The block size can be provided on the DWWMSG DD statement and must be a multiple of 133. The default is 133.
6. DWWPRINT defines the output data set that contains the reports produced by CICS VR. This is usually defined as a SYSOUT data set.

The DCB parameters for this data set are RECFM=FBA and LRECL=133. The block size can be provided on the DWWPRINT DD statement and must be a multiple of 133. The default is 133.
7. DWWCON x references the CICS VR RCDS and must be specified if available. CICS VR recovery can run when the RCDSs are not specified, however CICS VR might not be able to use change accumulation data sets or recover updates made by batch jobs if the RCDSs are not specified.
8. DWWLOG can be used to specify the names of log stream copies, or change accumulation data sets to be used during forward recovery processing. However, the MVSLOG command with the appropriate keyword must be specified, in addition to the RECOVER command, for CICS VR to use the specified log stream copies or change accumulation data sets. For more information, see “MVSLOG: Specify an MVS Log Stream” in the *CICS VR Implementation Guide and Reference*.
9. DWWIN defines the input data set containing the CICS VR commands. You can either specify a sequential data set with 80-byte, fixed-length records, or include the CICS VR commands in-stream.

Chapter 14. Running CICS VR batch backout

The CICS VR batch backout utility allows you to remove updates that were made to KSDS, ESDS, RRDS, and VRRDS VSAM spheres by steps in a batch job. This section describes how to run the CICS VR batch backout utility.

- Understanding the common batch window problem
- Invoking CICS VR batch backout
- Understanding CICS VR batch backout completion

See *CICS VR Implementation Guide and Reference* for information about setting up CICS VR for batch backout processing, undo logging and additional required parameters, along with full details of the BATCHBACK command used to run the batch backout utility.

Understanding the common batch window problem

In many environments, the batch window is a predefined time of day that VSAM spheres can be offline, unavailable for online CICS processing.

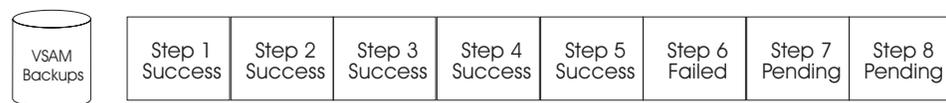
For example, a batch window can be defined every night between 10:00 PM and midnight. During the batch window, a number of tasks might be performed against the offline VSAM data sets, including:

- Backup creation
- Report generation
- Execution of batch jobs against the VSAM data sets

In most scenarios, the batch window is restricted to a predefined time interval. If an error occurs during one of the tasks run during the batch window, the time it takes to recover from the error might prevent the completion of all required tasks before the end of the batch window. In most environments, this could prove very costly to business.

For example, consider the following scenario:

- An environment has a batch window between 10:00 PM and midnight. During this time interval, backups of all VSAM spheres must be taken and a batch job that updates the VSAM spheres must be run. However, in this example scenario, all backups completed successfully but the batch job encountered an abend during step six.



Sample Batch Job

Figure 118. Batch window error

To recover from this scenario, the user would have to perform the following steps:



Figure 119. Batch window error recovery without CICS VR batch backout

1. Restore the VSAM spheres from their latest backups
2. Forward recover the VSAM spheres up to the time that the batch job step, step six, that was being run when the abend occurred started
3. Fix the problem that caused the abend
4. Continue execution of the batch job, starting at the batch job step, step six, that was being run when the abend occurred

While this solution successfully recovers the VSAM spheres from the abend that occurred, for some users the amount of time required to restore and forward recover the VSAM spheres would cause processing to exceed the allocated batch window time frame. Therefore some users have elected to use the batch backout process in preference to forward recovery.

To help avoid missing the batch window time frame, and to ease the process of recovering from abends that occur during batch processing, you can use the CICS VR batch backout function. CICS VR batch backout removes all updates that were made to VSAM spheres from a batch job step, or multiple steps, if required. For example, the user could recover from the same batch error that was previously described by performing the following steps:

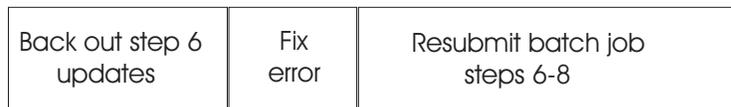


Figure 120. Batch window error recovery with CICS VR batch backout

1. Use CICS VR batch backout to remove all updates made by the job step, step six, that was being run when the abend occurred
2. Fix the problem that caused the abend
3. Continue execution of the batch job, starting at the batch job step, step six, that was being run when the abend occurred

Using CICS VR batch backout allows you to recover from this batch job error without:

- Restoring the VSAM spheres from backups
- Forward recovering the successful updates made by steps 1-5

Removing the steps listed allows for a quicker recovery from the batch job error. Therefore increasing the chances of successfully completing all required batch window processing in the allocated batch window time frame.

Starting CICS VR batch backout

CICS VR batch backout processing is started by running the DWWBACK program.

The DWWBACK batch backout program can be started in one of the following ways:

- Automatically by CICS VR when a batch job encounters an abend.
- Manually by creating and submitting a batch job that starts the DWWBACK program.

Note: To use the CICS VR batch backout utility, undo logging must be enabled for the VSAM spheres, along with some other additional configuration. See *CICS VR Implementation Guide and Reference*, for further information on setting up CICS VR VSAM batch logging.

CICS VR batch backout supports KSDS, ESDS, RRDS, and VRRDS VSAM spheres.

The following sections describe the manual and automatic execution of CICS VR batch backout.

Automatically running CICS VR batch backout

CICS VR can be configured to automatically start the batch backout utility when a batch job step encounters an abend.

Set the CICSVR_BACKOUT_CONTROL parameter to SUBMIT ABEND if you want to enable automatic batch backout execution, see *CICS VR Implementation Guide and Reference* for more information.

If automatic batch backout execution is enabled on a CICS VR system, CICS VR monitors the execution of all batch jobs that start CICS VR undo logging. If a batch job that started CICS VR undo logging encounters a system or user abend, CICS VR automatically submits a batch backout job to remove all updates made to the VSAM spheres by the batch job step that was in progress when the abend occurred. To perform automatic batch backout processing, CICS VR uses a customized version of the batch backout JCL skeleton.

The CICS VR automatic batch backout JCL skeleton is located in member DWWBAFJS of the CICS VR library SDWWCNTL, as shown below:

```

//DWWBAFJS JOB (ACCOUNT),MSGLEVEL=(1,1),MSGCLASS=H,REGION=4M
//*****/
//*                                     */
//* @BANNER_START                       */
//* Licensed Materials - Property of IBM */
//*                                     */
//* 5655-Y24                             */
//*                                     */
//* (C) Copyright IBM Corp. 2004, 2012  */
//*                                     */
//*                                     */
//*                                     */
//* @BANNER_END                           */
//*                                     */
//*****/
//*                                     */
//* CHANGE ACTIVITY:                      */
//*                                     */
//* $AB= CVR330 330 040404 KVV           */
//* BATCH BACKOUT CONTROL                 */
//* $A8= CVR330 330 050715 KVV           */
//* ADDRESS SPACE LEVEL PK08815          */
//* BATCH BACKOUT BY JOB IDENTIFIER       */
//*                                     */
//*****/
//*                                     */
//* SET SYMBOLIC PARAMETERS               */
//*                                     */
//* SETPREF SET PREF=DWW                  ! CICSVR RCDS NAME PREFIX
//* SETSUFF SET SUFF=PROD                  ! CICSVR XCF GROUP NAME SUFFIX
//*                                     */
//* SETJN SET JN=JOBNAME                   ! NAME OF BATCH JOB TO BACKOUT
//* SETJID SET JID=JOBID                   ! ID OF BATCH JOB TO BACKOUT
//*                                     */
//* INVOKE CICSVR BATCH BACKOUT UTILITY TO REMOVE ALL UPDATES
//* THAT WERE MADE TO THE VSAM SPHERES BY THE JOB STEP THAT
//* ENCOUNTERED AN ABEND DURING THE LAST EXECUTION
//* OF THE BATCH JOB
//*                                     */
//* BACKOUT EXEC PGM=DWWBACK,PARM='JOB(&JN) JOBID(&JID) FAILED'
//* DWWMSG DD SYSOUT=*                      ! MESSAGE DATA SET
//* DWWPRINT DD SYSOUT=*                    ! REPORT DATA SET
//* DWWCON1 DD DISP=SHR,DSN=&PREF..DWWCON1.GRP&SUFF ! RCDS DATA SET
//* DWWCON2 DD DISP=SHR,DSN=&PREF..DWWCON2.GRP&SUFF ! RCDS DATA SET
//* DWWCON3 DD DISP=SHR,DSN=&PREF..DWWCON3.GRP&SUFF ! RCDS DATA SET
//* DWWIN DD *                              ! COMMAND DATA SET
//* BATCHBACK JOB(JOBNAME) JOBID(JOBID) FAILED RCDS(YES)

```

Figure 121. Automatic batch backout JCL skeleton (DWWBAFJS)

Prior to using CICS VR automatic batch backout, edit the JOB statement in the JCL to conform to your environment's standards. Copy the updated DWWBAFJS member into PROCLIB, as described in the *CICS VR Program Directory*.

Adding a CICS VR batch backout ESDS delete exit

If any of your batch jobs that start undo logging add records to a VSAM ESDS, you must define a CICS VR batch backout ESDS delete exit program to the batch backout JCL skeleton.

See, "Additional ESDS considerations" on page 143, for more information.

Viewing automatic batch backout job status

When a batch job that starts undo logging encounters an abend, CICS VR automatically performs the tasks described.

- The variables in the batch backout JCL skeleton are substituted with appropriate values. The substituted values remove all updates made to the VSAM spheres by the batch job step that was in progress when the abend occurred.
- CICS VR generates a unique job name for the batch backout job. CICS VR then submits the batch backout job and issues message DWW246I to the operator console:

```
DWW246I  APPLICATION BACKOUT (jobname) SUCCESSFULLY RAN.
```

Where *jobname* is the unique *jobname* automatically generated by CICS VR prior to submission.

Verify the successful completion of the batch backout job reported in message DWW246I prior to processing the VSAM spheres further.

Running CICS VR batch backout manually

You can create and submit a batch job manually that starts the CICS VR batch backout program DWWBACK.

You can use this batch backout program to perform one of the following tasks:

- Remove all updates made by a step in a batch job that encountered an abend.
- Remove all updates made by a specified step, and all subsequent steps, of a batch job, regardless of whether the steps encountered an abend or not.
- Remove all updates made by an entire batch job, regardless of whether the steps encountered an abend or not.

```
//BTCHBACK JOB ACCOUNTING INFORMATION,REGION=4M
//BA      EXEC PGM=DWWBACK
//STEPLIB DD DSN=DWW.SDWWLOAD,DISP=SHR
// DD DSN=DWW.SDWWLENU,DISP=SHR
//DWWLOAD DD DISP=SHR,DSN=DWW.SDWWLOAD
// DD DISP=SHR,DSN=DWW.SDWWLENU
// DD DISP=SHR,DSN=exits load library name
//DWWMSG  DD SYSOUT=*
//DWWPRINT DD SYSOUT=*
//DWWCON1 DD DSN=DWW.DWWCON1.GRPPROD,DISP=SHR
//DWWCON2 DD DSN=DWW.DWWCON2.GRPPROD,DISP=SHR
//DWWCON3 DD DSN=DWW.DWWCON3.GRPPROD,DISP=SHR
//DWWIN  DD *
.
.
CICSVR batch backout commands
.
/*
//
```

1
2
3
4
5
6
7
8

Figure 122. Sample JCL that can be used to start the CICS VR batch backout program.

Descriptions of the numbered JCL statements are as follows:

1. The JOB statement conforms to the standards of your environment.
2. The CICS VR batch backout program to be run is DWWBACK.
3. STEPLIB defines the name of the CICS VR load library if it is not allocated in the link list.
4. DWWLOAD is optional, and defines the alternative load libraries to STEPLIB and the link list, after the top module from the EXEC statement has been

loaded. After the top module initialization, all following module loads, supplementary CICS VR modules, and CICS VR exits are from these alternative load libraries.

5. DWWMSG defines the output data set that contains the messages produced by CICS VR. This is usually defined as a SYSOUT data set. The DCB parameters for this data set are RECFM=FBA and LRECL=133. The block size can be provided on the DD statement, and must be a multiple of 133. The default block size is 133.
6. DWWPRINT defines the output data set that contains the reports produced by CICS VR. This is usually defined as a SYSOUT data set. The DCB parameters for this data set are RECFM=FBA and LRECL=133. The block size can be provided on the DD statement, and must be a multiple of 133. The default block size is 133.
7. DWWCON x defines the RCDSs that were allocated to the CICS VR server address space when the batch job that made the updates you want to back out was originally run.
8. DWWIN defines the input data set containing the CICS VR commands. You either can specify a sequential data set with 80-byte fixed-length records, or include the commands in-stream. For an explanation of the available commands and keywords, see "Understanding the CICS VR batch backout command and keywords."

Understanding the CICS VR batch backout command and keywords

The keywords that are used to run the BATCHBACK command are described.

BATCHBACK JOB(*jobname*) FAILED

FAILED

Specifies that CICS VR backs out all updates that were made by the step that encountered an abend during the latest execution of the specified *jobname* regardless of whether it is a step or a procedure step. The step that encountered the abend must have been the last step run by the specified job. When FAILED is specified, CICS VR verifies that the last step run by the specified job did encounter an abend.

If the step did not encounter an abend, a message is produced and batch backout does not continue. However, if you want to backout the updates made by a step regardless of if it encountered an abend or not, you can specify the STEP/PROCSTEP keyword.

BATCHBACK JOB(*jobname*) STEP(*stepname*)

STEP Specifies that CICS VR backs out all updates that were made by the specified step, and all subsequent steps, regardless of whether they call a procedure or not, during the latest execution of the specified *jobname*. It proceeds regardless of whether the steps encounter an abend or not.

For example, consider a scenario where a batch job named TESTJOB ran the following four steps in the order shown:

1. STEP1
2. STEP2
3. STEP3
4. STEP4

None of these steps call a procedure. Executing the following batch backout command causes CICS VR to remove all updates made by steps STEP2, STEP3, and STEP4:

BATCHBACK JOB(TESTJOB) STEP(STEP2)

Assume that STEP2 calls a procedure PROCBA, that runs two following steps in the order shown:

1. PROCST1
2. PROCST2

When you execute the following batch backout command, CICS VR removes all updates made by the procedure steps PROCST1 and PROCST2 in step STEP2, step STEP3, and step STEP4:

BATCHBACK JOB(TESTJOB) STEP(STEP2)

BATCHBACK JOB(jobname) STEP(stepname) PROCSTEP(procstepname)

STEP, PROCSTEP

Specifies that CICS VR backs out all updates that were made by the specified procedure step in the specified step, and all subsequent steps, during the latest execution of the specified jobname, regardless of whether the steps encountered an abend.

For example, consider a scenario where a batch job named TESTJOB ran the following four steps in the order shown:

1. STEP1
2. STEP2
3. STEP3
4. STEP4

Step STEP1 and step STEP2 call procedure PROCBA. Procedure PROCBA runs two following steps in the order shown:

1. PROCST1
2. PROCST2

Executing the following batch backout command causes CICS VR to remove all updates made by the procedure step PROCST2 called in step STEP2, and made by steps STEP3 and STEP4. Procsteps in STEP1 and procstep PROCST1 in STEP2 are ignored:

BATCHBACK JOB(TESTJOB) STEP(STEP2) PROCSTEP(PROCST2)

BATCHBACK JOB(jobname)

JOB Specifies that CICS VR backs out all updates that were made by every step during the latest execution of the specified *jobname*, regardless of whether the steps encountered an abend.

BATCHBACK JOB(jobname) JOBID(JES job ID)

JOBID

When a JOBID is specified, only the steps of the specified JOB name with a matching *JES job ID* is backed out. JOBID is an optional keyword. JOBID is processed when the RCDS is specified in the batch backout job, and also when the RCDS is not available to the batch backout job.

BATCHBACK JOB(jobname) SPHERENAME(spherename)

SPHERENAME

If SPHERENAME is specified, only the VSAM spheres listed are backed out. SPHERENAME is an optional keyword. Any number of spheres can be specified.

For more information, see “BATCHBACK: Remove updates to VSAM spheres” in the *CICS VR Implementation Guide and Reference*.

The following example removes all updates that were made by the last step run in job TESTJOB, if it encountered an abend.

```
//BTCHBACK JOB ACCOUNTING INFORMATION,REGION=4M
//BA      EXEC PGM=DWWBACK
//STEPLIB DD DSN=DWW.SDWWLOAD,DISP=SHR
// DD DSN=DWW.SDWWLENU,DISP=SHR
//DWWLOAD DD DISP=SHR,DSN=DWW.SDWWLOAD
//      DD DISP=SHR,DSN=DWW.SDWWLENU
//      DD DISP=SHR,DSN=exits load library name
//DWWMSG  DD SYSOUT=*
//DWWPRINT DD SYSOUT=*
//DWWCON1 DD DSN=DWW.DWWCON1.GRPPROD,DISP=SHR
//DWWCON2 DD DSN=DWW.DWWCON2.GRPPROD,DISP=SHR
//DWWCON3 DD DSN=DWW.DWWCON3.GRPPROD,DISP=SHR
//DWIN    DD *
          BATCHBACK JOB(TESTJOB) FAILED
/*
//
```

Figure 123. Example of executing the CICS VR batch backout utility

Note: Only one BATCHBACK command can be entered per job step that starts the DWWBACK program.

Running batch backout when the RCDSs are unavailable

In most scenarios, the RCDSs that were allocated to the CICS VR server address space when the batch job that made the updates you want to back out was originally run, are allocated to the CICS VR batch backout job on the DWWCONx DD statements. However, you might encounter a situation where the RCDSs are no longer available.

For example, the RCDSs might have been physically corrupted. You can still perform batch backout processing when the RCDSs are not available if you know the name of the undo log stream that was allocated to CICS VR when the batch job that made the updates you want to back out was originally run.

Note: The RCDSs contain information that is used by CICS VR batch backout to perform various error checking and improve performance. Therefore, executing CICS VR batch backout without the RCDSs allocated causes increased processing time and less error checking.

To run CICS VR batch backout when the RCDSs are unavailable, complete the following additional tasks:

- Remove the DWWCONx DD statements from the batch backout JCL.
- Add the RCDS(NO) keyword to the BATCHBACK command.
RCDS(NO) indicates that the RCDSs are unavailable to CICS VR during this batch backout run.
- Add the MVSLOG(*undo log stream*) command to the batch backout job.
undo log stream is the name of the undo log stream that was defined to CICS VR when the batch job that made the updates you want to back out was originally run.

The following commands show an example of executing CICS VR batch backout when the RCDSs are unavailable. The commands remove all updates that were made by the last step run in job TESTJOB, if it encountered an abend. CICS VR batch backout processing reads the before-image log records from the DWW.UNDOLOG log stream.

```

//BTCHBACK JOB ACCOUNTING INFORMATION,REGION=4M
//BA      EXEC PGM=DWWBACK
//STEPLIB DD DSN=DWW.SDWWLOAD,DISP=SHR
// DD DSN=DWW.SDWWLENU,DISP=SHR
//DWWLOAD DD DISP=SHR,DSN=DWW.SDWWLOAD
//      DD DISP=SHR,DSN=DWW.SDWWLENU
//      DD DISP=SHR,DSN=exits load library name
//DWWMSG  DD SYSOUT=*
//DWWPRINT DD SYSOUT=*
//DWWIN   DD *
          BATCHBACK JOB(TESTJOB) FAILED RCDS(NO)
          MVSLOG(DWW.UNDOLOG)
/*
//

```

Figure 124. Example of running CICS VR batch backout when the RCDSs are unavailable

Additional ESDS considerations

When a record is added to a VSAM ESDS by a batch job, CICS VR undo logging writes a before-image log record with the RBA of the record that was added to the undo log stream. Therefore, during batch backout processing, CICS VR locates any records that were added to the ESDS by the batch job step.

However, because ESDS records are written sequentially, CICS VR cannot physically delete them. Instead, these records that were added to ESDSs must be logically marked-for-deletion. The method used to logically mark ESDS records for deletion varies between environments. Therefore, CICS VR allows you to specify a CICS VR batch backout ESDS delete exit in a batch backout job.

The CICS VR batch backout ESDS delete exit is passed the ESDS record that was added by the batch job step. The exit can then mark the record for deletion according to your environment's standards. The exit then passes the marked-for-deletion ESDS record back to CICS VR, along with an action code indicating the next step for CICS VR to take; terminate, ignore, or replace the ESDS record with the marked-for-deletion record and continue. For further information about creating the exit, see the *CICS VR Implementation Guide and Reference*.

You must add the following command to the input command area, after the DWWIN DD * statement, to all CICS VR batch backout jobs that attempt to remove one or more records that were added to a VSAM ESDS.

```
DEFEXIT ESDSDELETE(batch backout ESDS delete exit program)
```

batch backout ESDS delete exit program is the name of the CICS VR batch backout ESDS delete exit program.

If the exit program is not in the link list, the exit program must reside in a data set that is defined to the JOBLIB, STEPLIB, or DWWLOAD ddname. You also can keep the exit program in your CICS VR load library.

If you have configured CICS VR to start batch backout automatically when a batch job encounters an abend, make the ESDS delete exit changes mentioned earlier to the batch backout JCL skeleton DWWBAFJS.

Understanding CICS VR batch backout completion

Upon completion of the CICS VR batch backout program, messages are written to the data set allocated to the DWWMSG ddname indicating the result of the processing.

In addition, successful processing causes the following three reports to be written to the data set allocated to the DWWPRINT DD statement:

- Batch backout job step statistics
- Batch backout data set statistics
- Batch backout exit action statistics

See Chapter 15, “Understanding CICS VR reports,” on page 145, for a detailed description of the batch backout reports.

Rerunning CICS VR batch backout

Various conditions can cause CICS VR batch backout to terminate processing, for example, a VSAM sphere being unavailable. CICS VR writes an appropriate error message to the data set allocated to the DWWMSG ddname to help you resolve the issue that caused termination.

In some cases, you might be able to resolve the issue and rerun the CICS VR batch backout job. Rerunning a CICS VR batch backout job, after it previously terminated abnormally, does not cause any duplicate processing. Any before-images that were applied during the previous execution of the failed batch backout job are ignored the next time the same batch backout job is run. Therefore allowing you to remove successfully the updates made by the specified batch job steps.

Chapter 15. Understanding CICS VR reports

The CICS VR forward recovery and batch backout utilities produce a set of reports upon successful completion. The reports are written to the data set allocated to the DWWPRINT ddname. However, the set of reports written for the forward recovery backout utilities differ from the set of reports written for the batch backout utilities.

CICS VR forward recovery produces the following three reports:

- Log data set statistics (“Report of log data set statistics”)
- Statistics on data sets that have been recovered (“Report of recovered data sets statistics” on page 147)
- Exit action statistics (“Report of exit action statistics” on page 147)

Forward recovery can also produce a recovery progress report. The following section, “Reports produced by forward recovery,” contains an example and description of each report produced by the CICS VR forward recovery utilities.

CICS VR batch backout produces the following three reports:

- Batch backout job step statistics (“Batch backout job step statistics example” on page 153)
- Batch backout data set statistics (“Batch backout data set statistics example” on page 155)
- Batch backout exit action statistics (“Batch backout exit action statistics example” on page 156)

The section “Reports produced by batch backout” on page 152 contains an example and description of each report produced by the CICS VR batch backout utility.

The archive utility can produce up to three different reports in the DWWPRINT file. For examples of the archive reports see *CICS VR Implementation Guide and Reference*.

Reports produced by forward recovery

Examples and description of every report produced by CICS VR forward recovery.

RECOVER—DWWPRINT output

Report of log data set statistics

MVS LOG STREAM STATISTICS:

 KEY TO FIELD IDENTIFIERS

 UPD-AFTER UPDATE AFTER IMAGE
 ADD-AFTER ADD AFTER IMAGE
 DEL-AFTER DELETE AFTER IMAGE
 DSNAME DDNAME TO SPHERE AND PATH NAME

NAME OF MVS LOG STREAM	NO OF RECORDS PROCESSED	NO OF DSNAME	NO OF UPD-AFTER	NO OF ADD-AFTER	NO OF DEL-AFTER
RETAIL.ACCOUNTS.MVSLG1.CUST	11	3	2	5	1
RETAIL.ACCOUNTS.MVSLG2.CUST	44	12	5	21	6
TOTAL	55	15	7	26	7
LOG RECORDS EXCLUDED DUE TO ANY ENTERED EXCLUDE CRITERIA:				14	
LOG RECORDS INCLUDED DUE TO ANY ENTERED INCLUDE CRITERIA:				0	

Figure 125. RECOVER: Log statistics

For a detailed description of the log statistics, see "MVS log stream statistics, log statistics, and journal data set statistics" on page 149.

Report of recovered data sets statistics

STATISTICS OF RECOVERED DATA SETS

BASE NAME OF RECOVERED DATA SET: RETAIL.ACCOUNTS.MAIN

BASE NAME OF ORIGINAL DATA SET: RETAIL.ACCOUNTS.MAIN

THE FOLLOWING ASSOCIATED PATHS ARE DEFINED IN THE VSAM CATALOG:
RETAIL.ACCOUNTS.CUSTNO

FIRST AND LAST RECORDS APPLIED:

RECORDS	DATE YY/DDD	TIME HH:MM:SS	TIME TYPE
FIRST LOG RECORD APPLIED	08/157	13:19:59	LOCAL
LAST LOG RECORD APPLIED	08/158	15:44:59	LOCAL

NAME OF RECOVERED DATA SET: RETAIL.ACCOUNTS.MAIN

		:---- RECORDS FOUND ON THE LOG(S) ----:				:- CHANGE RECORDS APPLIED -:			:- CHANGES IGNORED BY EXIT
DATASET TYPE	FCT ENTRY NAME	DSNAME	UPD-AFTER	ADD-AFTER	DEL-AFTER	ADDS	UPDATES	DELETES	
BASE	MAIN	4	2	14	3	2	2	1	0
TOTAL		4	2	14	3	2	2	1	0
OVERALL TOTAL		4	2	14	3	2	2	1	0
GRAND TOTAL		4	2	14	3	2	2	1	0

Figure 126. RECOVER: statistics of recovered data sets

For a detailed description of the recovered data set statistics, see "Statistics of recovered data sets" on page 150.

Report of exit action statistics

EXIT ACTION STATISTICS

```

:-----NUMBER OF ACTIONS TAKEN-----:
EXIT NAME      RECORD CHANGE      CONTINUE      IGNORE
-----
PREAPPLY              0              2              0
ESDS DELETE      EXIT NOT TAKEN
-----

:--NUMBER OF ACTIONS TAKEN--:
EXIT NAME      CONTINUE      IGNORE
-----
ERROR          EXIT NOT TAKEN
-----

:--NUMBER OF ACTIONS TAKEN--:
EXIT NAME      CODE CHANGED      CONTINUE
-----
TERMINATION    EXIT NOT TAKEN
-----

```

Figure 127. RECOVER: exit action statistics

For a detailed description of the exit action statistics, see “Exit action statistics” on page 152.

Report of recovery progress

VSAM SPHERE NAME: VBFR.SMERRY.TEST

THE PREVIOUS FORWARD RECOVERY REGISTERED FOR THIS VSAM SPHERE WHICH WAS
RUN AT 08.109 20:57:16 COMPLETED SUCCESSFULLY.

THIS FORWARD RECOVERY WAS RUN AT: 08.112 21:01:39
TYPE OF RECOVERY : FORWARD RECOVERY IN ONE STEP ONLY.

THE VSAM RECOVERY REQUESTED BIT WAS SUCCESSFULLY SET.

THE VSAM RLS LOCKS WERE SUCCESSFULLY UNBOUND.

DFSMSHSM RECOVER WAS SUCCESSFUL.

THESE AIXS WERE REMOVED:

VBFR.SMERRY.TEST.AIX1

FORWARD RECOVERY RAN SUCCESSFULLY.

AIXS AFTER AIX REBUILD:

VBFR.SMERRY.TEST.AIX1 : SUCCESSFULLY REBUILT.

THE VSAM RLS LOCKS WERE SUCCESSFULLY BOUND.

A SUCCESSFUL FORWARD RECOVERY WAS RELATED TO VSAM.

Figure 128. RECOVER: progress report

Report descriptions

Descriptions of the information that is provided in the three types of statistical reports produced by the CICS VR RECOVER function.

MVS log stream statistics, log statistics, and journal data set statistics

Description of the information provided using this report header which depends on which type of log you are using in the recovery.

The following information is provided in this statistical report:

Key to field identifiers

Provides a key to the record types listed in the remainder of the report.

No of records processed

Shows the total number of records; of the types shown in the columns to the right of this column, that were processed for each log, MVS log stream, or journal. Records for other VSAM spheres besides those being recovered or backed out are included.

If the CICS VR run ends with an error message, these statistics do not match the number of records shown in the **Statistics of recovered or backed-out data sets** report.

No of xxxxxx

The number of records of type xxxxxx that were processed, where xxxxxx can be one of the following types. See the KEY TO FIELD IDENTIFIERS section of this report for a description of the type.

- UPD-BEFORE
- ADD-BEFORE
- BOFLGREC
- UPD-AFTER
- ADD-AFTER
- DEL-AFTER
- DSNNAME

LOG RECORDS EXCLUDED DUE TO ANY ENTERED EXCLUDE CRITERIA

The number of log records that were read but not applied by CICS VR selective forward recovery due to meeting the criteria of one or more entered EXCLUDE commands. This field only applies to forward recovery processing and is 0 if no EXCLUDE commands were entered in the recovery job.

LOG RECORDS INCLUDED DUE TO ANY ENTERED EXCLUDE CRITERIA

The number of log records that were read and applied by CICS VR selective forward recovery due to meeting the criteria of one or more entered INCLUDE commands. This field only applies to forward recovery processing and is 0 if no INCLUDE commands were entered in the recovery job.

Statistics of recovered data sets

A description of the information provided in the recovered data statistical report.

Base name of recovered, or backed out, data set

The VSAM base cluster that CICS VR allocates and updates.

Base name of original data set

The data set name that CICS used when it accessed the VSAM base cluster.

Paths defined in the VSAM catalog

Path names found in the VSAM catalog entry for the recovered data set. You can check these path names to confirm that the entire sphere existed during the CICS VR run.

First and last records applied

The time-stamp of the first and last after-image, or before-image, that was applied to the VSAM data set. The date is taken from a label record, and the time is taken from the after-image or before-image. Time type identifies the time format, GMT or LOCAL, of the applied records.

Name of recovered data set

The VSAM component name of the recovered data set. This can be a base cluster or path. If you used the NEWSPHERE keyword in the CICS VR run, the name of this field is **Original name of recovered data set**. This shows the original VSAM component name that was found on the log.

Dataset type

Base or path.

FCT entry name

The CICS file control table (FCT) entry names for this VSAM sphere that were used during the period covered by the logs.

Number of records (or Records found on the log)

For each file, the total number of records found on the logs that relate to the file.

If the CICS VR run ends with an error message, these statistics will not match the number of records shown in the MVS log stream, log data set, or journal data set statistics report.

Number of changed records (or Change records applied)

The number of times CICS VR added, updated, or deleted a record in the VSAM data set within the specified, or default, START/STOP times.

Changes ignored by exit

The number of after-images or before-images that were ignored in the preapply exit.

** Failures **

The number of failures because of duplicate or not found conditions. This field might be in the report of a forward recovery run using CICS logs. It can also be in the report of a forward recovery run using data sets that were backed up using BWO.

Corresponding messages in the ranges DWW0601—DWW0605 and DWW0621—DWW0627 might also be produced in the DWWMSG file. If the data set being recovered was backed up with the backup-while-open facility, message DWW0635 is displayed. For information on acceptable VSAM errors, see the error exit description in *CICS VR Implementation Guide and Reference*. The following figure is an excerpt from a recovered data set statistics report and shows the format of the Failures section.

A failure can occur for the following reasons:

DATASET TYPE	FCT NAME	ENTRY DSNAME	UPD-AFTER	ADD-AFTER	DEL-AFTER	ADDS	UPDATES	DELETES	IGNORED BY EXIT
BASE	MAIN		1	1	3	1	0	0	0
TOTAL			1	1	3	1	0	0	0

** FAILURES ** DUE TO DUPLICATE OR NOT FOUND CONDITIONS: ADDS = 3 UPDATES = 1 DELETES = 1

Figure 129. Recovered data set statistics report – Failures section

Adds

- When the access key from a CICS log record does not match the key in the log record (see message DWW0627)
- When acceptable errors are met, as detailed in the description of the error exit in *CICS VR Implementation Guide and Reference*.

Updates

- When the access key from a CICS log record does not match the key in the log record (see message DWW0627)
- If a path update from a CICS log attempts to change the base key (see message DWW0626)
- If a non-unique key is encountered for a CICS log during a path update or delete (see message DWW0625)
- When acceptable errors are met, as detailed in the description of the error exit in *CICS VR Implementation Guide and Reference*.

Deletes

- If a non-unique key is encountered for a CICS log during a path update or delete (see message DWW0625)

- When acceptable errors are met, as detailed in the description of the error exit in *CICS VR Implementation Guide and Reference*.

Note: The **** Failures **** field is not illustrated in the example (“Report of recovered data sets statistics” on page 147), because failures are shown only in the circumstances mentioned earlier.

Exit action statistics

Description of the information that is provided in this statistical report:

Exit name

All four exits are listed by name.

Number of actions taken

The number of times the exit has set a given action code. Each time an exit is called, the exit routine must set an action code.

Record change

The number of VSAM records updated by the CICS VR pre-apply or ESDS delete exits.

Code changed

The final termination code can be changed only once by the CICS VR termination exit.

Continue

Functionally equivalent to CICS VR not taking the exit.

Ignore The number of records ignored by the CICS VR recovery or backout process. Processing continues to the next record.

Recovery progress report

Description of the information in the recovery progress report.

- The number of steps in the recovery job
- VSAM RLS processing
- DFSMSHsm processing
- AIX removal and rebuilding

During CICS VR recovery, error or informational messages might be written to the DWWMSG file.

For details of CICS VR messages and abend codes, see *CICS VR Messages and Problem Determination*.

Reports produced by batch backout

Examples and descriptions of every report produced by CICS VR batch backout.

Batch backout job step statistics example

```

BATCH BACKOUT JOB STEP STATISTICS:
-----
KEY TO FIELD IDENTIFIERS
-----
NO OF UNDOs FOR STEP - NUMBER OF UNDO RECORDS ENCOUNTERED FOR STEP
NO OF DATA SETS    - DIFFERENT DATA SETS UPDATED
UPD-BEFORE         - DELETE OR UPDATE BEFORE IMAGE
ADD-BEFORE         - ADD BEFORE IMAGE
ADDS               - NUMBER OF ADD RECORDS
UPDATES           - NUMBER OF UPDATED RECORDS
DELETES           - NUMBER OF DELETE RECORD
-----

JOB NAME: R33PTB21
JOB ID:  JOB06529

NAME OF LOGSTREAM:
DWW.UNDOLOG

JOB STEP  -NO OF - -NO OF - -- NUMBER OF BEFORE--  ----- NUMBER OF CHANGED -----  CHANGES
  NAME    UNDOs  DATA  IMAGE LOG RECORDS    VSAM RECORDS  DELETED  BY EXIT
-----
UPDATE2   27     1     27     0     0     27     0     0
-----
UPDATE1   15     1     15     0     0     15     0     0
-----
TOTAL     42     2     42     0     0     42     0     0
-----

```

Figure 130. Batch backout job step statistics example

Batch backout job step statistics description

This batch backout job step statistics report contains information about each job step that was backed out by CICS VR.

The following information is provided:

Key to field identifiers

Provides a key to the record types listed in the remainder of the report.

Job name

Name of job that performed the updates that CICS VR backed out.

Job ID

JES job ID of the job that performed the updates that CICS VR backed out.

Name of logstream

Name of the undo log stream that CICS VR read during batch backout processing.

Step name

Names of the batch job steps that performed the updates that CICS VR backed out.

Note: If it is a procedure step then both the step and procstep names are specified.

Number of records processed for job

Shows the total number records that were applied during backout processing.

Number of UNDOs for step

Shows the total number records that were found during backout processing.

The following types of log records listed in the NUMBER OF RECORDS field causes one of the matching actions to occur during batch backout processing:

Type of log record	Action performed against the VSAM data set
UPD-BEFORE	UPDATES, ADDS
ADD-BEFORE	DELETES

For example, if CICS VR finds an UPD-BEFORE log record during batch backout processing it indicates that a VSAM sphere record was either updated or deleted by a batch application, and causes CICS VR batch backout to perform either an ADD or UPDATE to the actual VSAM sphere. If CICS VR finds an ADD-BEFORE log record during batch backout processing it indicates that a VSAM sphere record was added by a batch application, and causes CICS VR to perform a DELETE of the actual VSAM record.

Changes ignored by exit

The number of before-images that were ignored because of the action code returned from the CICS VR batch backout ESDS delete exit.

If CICS VR batch backout terminated with an error, these statistics might not match the number of records shown in the Batch Backout data set Statistics report.

If CICS VR batch backout terminated with an error, these statistics might not match the number of records shown in the Batch Backout data set Statistics report.

No of xxxxxx

The number of log records of type xxxxxx that were processed, where xxxxxx can be one of the following types. See the KEY TO FIELD IDENTIFIERS section of this report for a description of the type.

- UPD-BEFORE
- ADD-BEFORE
- DATA SETS

Batch backout data set statistics example

```

BATCH BACKOUT DATA SET STATISTICS
-----
JOB NAME: R33PTB21
JOB ID:   JOB06529

BASE NAME OF BACKED OUT DATA SET: DWW.TEST.KSDS01

BASE NAME OF ORIGINAL DATA SET: DWW.TEST.KSDS01

FIRST AND LAST LOG RECORDS APPLIED:
-----
RECORDS
-----
LOG BLOCK TIME STAMP AT BACKOUT START  2008.06.04  16:04:33  LOCAL
LOG BLOCK TIME STAMP AT BACKOUT END    2008.06.04  16:04:23  LOCAL
-----

JOB STEP  NUMBER OF BEFORE  NUMBER OF CHANGED  CHANGES
NAME      IMAGE LOG RECORDS      VSAM RECORDS      IGNORED
-----
          UPD-BEFORE      ADD-BEFORE        ADDS      UPDATES  DELETES  BY EXIT
-----
UPDATE2   27          0          0         27         0         0
-----
UPDATE1   15          0          0         15         0         0
-----
TOTAL     42          0          0         42         0         0
-----

OVERALL
TOTAL     42          0          0         42         0         0
-----

```

Figure 131. Batch backout data set statistics example

Batch backout data set statistics description

This batch backout data set statistics report contains information about the type of updates for that were backed out from each VSAM data set. This report is repeated for every VSAM sphere that CICS VR batch backout processing updated.

The following information is provided:

Job name

Name of job that performed the updates that CICS VR backed out.

Job ID

JES job ID of the job that performed the updates that CICS VR backed out.

Base name of backed out data set

The name of the VSAM base cluster that CICS VR applied the log records to.

Base name of original data set

The name of the VSAM base cluster that the batch job initially updated.

First and last log records applied

The time-stamps of the latest and the earliest before-image log records that were applied to the VSAM data set. The dates and times are taken from the before-image. Time type identifies the time format of the dates and times listed.

Note: CICS VR batch backout processing reads the undo log stream from youngest to oldest.

Job step name

Names of the steps in the batch job that performed the updates that CICS VR backed out.

Number of before image log records

For each VSAM data set, the total number of log records found on the undo log stream that relate to the VSAM data set for the specified job step.

If CICS VR batch backout terminated with an error, these statistics might not match the number of records shown in the **Batch Backout Job Step Statistics** report.

The following types of log records listed in the NUMBER OF RECORDS field causes one of the matching actions to occur during batch backout processing:

Type of log record	Action performed against the VSAM data set
UPD-BEFORE	UPDATES ADDS
ADD-BEFORE	DELETES

For example, if CICS VR finds an ADD-BEFORE log record during batch backout processing, this indicates that a VSAM sphere record was added by a batch application. Therefore, this causes CICS VR to perform a DELETE of the actual VSAM record.

If CICS VR finds an UPD-BEFORE log record during batch backout processing, this indicates that either a VSAM sphere record was updated or deleted by a batch application. Therefore, this causes CICS VR batch backout to perform either an ADD or UPDATE to the actual VSAM sphere.

Number of changed VSAM records

Indicates the number of each type of action CICS VR performed against the VSAM sphere during batch backout processing.

Note: The TOTAL row summarizes the number of before-image log records and changed VSAM records for the corresponding VSAM data set. The OVERALL TOTAL row summarizes the number of before-image log records and changed VSAM records for all of the VSAM data sets that were backed out.

Changes ignored by exit

The number of before-images that were ignored due to the action code returned from the CICS VR batch backout ESDS delete exit.

Batch backout exit action statistics example

```
BATCH BACKOUT EXIT ACTION STATISTICS
-----

JOB NAME: R33PTB21
JOB ID:  JOB06529

EXIT NAME          :-----NUMBER OF -----:
                   RECORDS PASSED TO THE EXIT
-----
ESDS DELETE          0
-----
```

Figure 132. Batch backout exit action statistics example

Batch backout exit action statistics description

This batch backout exit action statistics report contains information about the numbers of records passed to the CICS VR batch backout ESDS delete exit.

The following information is provided:

Job name

Name of job that performed the updates that CICS VR backed out.

Job ID

JES job ID of the job that performed the updates that CICS VR backed out.

Exit name

Name of the possible CICS VR batch backout exits.

Number of records passed to the exit

Total number of records that were passed to each of the listed exits during batch backout processing.

Note: Currently, only the CICS VR batch backout ESDS delete exit can be defined to a CICS VR batch backout job.

Reports produced by RCDS REPORT

Examples of every report produced by CICS VR RCDS REPORT.

RCDS REPORT RECOVERY report

This report produces information based on data obtained from the RCDS. If the latest information is needed perform a log-of-logs scan to update the RCDS with the current data. When the update has been performed, the REPORT RECOVERY utility job can be submitted.

The report job starts its lookup through RCDS, either from the specified timestamp, or from the very beginning.

The result is a report stating when VSAM spheres were used, and on which mvslg the records were logged.

```
CICSVR RCDS UTILITY - RECOVERY REPORT                                DATE : 08/05/28 TIME : 12:23:10
-----
VSAM SPHERE NAME      OPEN DATE/TIME        CLOSE DATE/TIME       MVS LOG STREAM NAME
-----
PROD.ACCOUNT1         2008.131 14:32:59     2008.131 15:00:02     CICSTS.FILELOG1
PROD.ACCOUNT1         2008.131 18:32:59     2008.131 20:00:02     CICSTS.FILELOG1
PROD.ACCOUNT1         2008.131 22:32:59     2008.131 23:00:02     CICSTS.FILELOG1
PROD.ACCOUNT2         2008.131 14:32:59     2008.131 15:00:02     CICSTS.FILELOG1
PROD.ACCOUNT2         2008.131 16:32:59     2008.131 18:00:02     CICSTS.FILELOG1
```

Figure 133. RCDS REPORT RECOVERY Report

RCDS REPORT BACKUP report

The report job starts to lookup through RCDS, either from the specified timestamp, or from the very beginning. This report produces information based on data obtained from the RCDS. The result is a report listing all the backups that are registered in the RCDS, and the time when the backup was taken.

VSAM SPHERE NAME	BACKUP NAME	BACKUP TIME	PRODUCT
CICSVR.RXXNT011.KSDS01	CICSVR.RXXNT011.KSDS01.REPRO	2008.157 15:39:07	REPRO
CICSVR.RXXDR011.ESDS02	DWV.DS001001.D2008155.T1623289	2008.155 16:23:29	DSSLC
CICSVR.RXXDR011.ESDS03	CICSVR.RXXDR011.DSSDUMP	2008.155 16:24:43	DSSLD
CICSVR.RXXDR011.ESDS04	CICSVR.RXXDR011.DSSDUMP	2008.155 16:24:43	DSSLD
CICSVR.RXXSN011.ESDS01	DWV.DS04Q001.D2008157.T1106029	2008.157 11:06:03	DSSLC
CICSVR.RXXSR011.AESDS01	CICSVR.ABARS.CVRTESTX.D.C01V0074	2008.157 10:40:54	ABARS
CICSVR.RXXSR011.AESDS02	CICSVR.ABARS.CVRTESTX.D.C01V0074	2008.157 10:40:54	ABARS
CICSVR.RXXSR011.AKSDS01	CICSVR.ABARS.CVRTESTX.D.C01V0074	2008.157 10:40:55	ABARS

Figure 134. RCDS REPORT BACKUP Report

RCDS REPORT COPY Report

This report produces information based on data obtained from the RCDS. The report job starts to lookup through RCDS, either from the specified timestamp, or from the very beginning. The result is a report listing all the mvsllog copies that are registered in the RCDS, and the times which the copy covers.

CICSVR RCDS UTILITY - COPY REPORT DATE : 08/05/28 TIME : 12:23:10

MVS LOG STREAM NAME	MVS LOG COPY NAME	INTERVAL START TIME	INTERVAL STOP TIME
CICSTS.FILELOG1	CICSTS.FILELOG1.COPY001	2008.129 00:00:00	2008.130 18:00:00
CICSTS.FILELOG1	CICSTS.FILELOG1.COPY002	2008.130 18:00:00	2008.129 18:00:00
CICSTS.FILELOG1	CICSTS.FILELOG1.COPY003	2008.129 18:00:00	2008.133 18:00:00
CICSTS.FILELOG2	CICSTS.FILELOG2.COPY001	2008.129 00:00:00	2008.130 18:00:00

Figure 135. RCDS REPORT COPY Report

RCDS REPORT CHECK report

This report produces information based on data read for other reports written earlier in the same job, such as recovery, backout, or copy reports. The CHECK parameter means that a check is performed to ensure that all the resources required for forward recovery are cataloged.

The report job starts to lookup through RCDS, either from the specified timestamp, or from the very beginning.

The result is a report listing all the mvsllog copies that are registered in the RCDS, and whether they are cataloged or not..

```

-----
VSAM SPHERE NAME                                CATALOGED
-----
CICSTS.VSAM1                                    YES
CICSTS.VSAM2                                    NO
CICSTS.VSAM3                                    YES

BACKUP NAME                                      CATALOGED
-----
CICSTS.BKP1                                    YES
CICSTS.BKP2                                    NO
CICSTS.BKP3                                    YES

MVS LOG COPY NAME                              CATALOGED
-----
CICSTS.COPY1                                    YES
CICSTS.COPY2                                    NO
CICSTS.COPY3                                    YES

CICSTS.DFHLGLOG.COPY.LGCOPY                    YES

```

Figure 136. RCDS REPORT CHECK Report

Reports produced by PRINT

This topic contains information about the reports produced by CICS VR PRINT.

CICS VR provides support for printing records from logstreams used for undo logs, forward recovery logs, and replication logs. The same logstream can be used as a forward recovery log and a replication log, but the undo log is separate. A replication log contains undo replication records and redo replication records. If the same logstream is shared as a forward recovery log as well, then each redo record is marked as both a forward recovery record and a replication record.

For each block to be printed, the report consists of:

1. The block header record
2. Detail for each record in the block, with information about specific fields in the record. This detail includes log type (replication or none), record type, file information, and key type, where it can be determined.
3. The entire record in hex format.
4. A summary record.

Note: If the record type is not recognized, only the hex dump is printed.

Record types

Where the record type is recognized, two parts are provided for the description. If the first part is one of:

- CICS autojournalled redo record
- CICS forward recovery redo record
- CICS VR forward recovery redo record

- CICS replication redo record

Then the second part of the description can be one of:

- file close record
- read only
- read update record
- tie up record
- write add record
- write add complete
- write delete record
- write update record

If the first part of the record type description is:

- CICS VR batch backout undo record
- CICS replication batch backout undo record

Then the second part of the description can be one of:

- End of job step
- Get-for-Update/Eraser
- Put Add
- Start of job step

Examples of a record type description are: CICS forward recovery redo record, write add complete and CICS replication redo record, write add complete.

File information

File information such as the file ID, filename, and filetype is provided in the report if the information is present in the record or if the information can be extracted from an earlier tieup record.

Key line

The key line value can be KEY, XRBA, RBA, or RRN. Subsequent information is displayed in the same format as the record with a hex dump and then character data.

Block header record

An example of the block header record and hex dump output produced by the CICS VR print utility.

Block header record

```
CICSVR - JOURNAL PRINT UTILITY PROGRAM MVSLOG CICS.DFHLOG2
DATE : 06/06/07 TIME : 11:01:09 PAGE : 1
```

Block header record

```
Block identifier - 000000000144A20B
Length of block - 0000009E
```

```
GMT timestamp - BE1A6FA27C09D362 2007/357 13:07:01.547165
Local timestamp - BE1A6FA27C09D362 2007/357 13:07:01.547165
```

```
000000 000000 6EC4C6C8 01400001 C9E8E9C7 E9C3F0F1 BE1A6FA2 7C06A282 BE1A6FA2 7C06A282 *->DFH. ..IYZGZC01..?S@.SB..?S@.SB*
000020 00000000 000012F9 00000000 0144A10F 0000009E *.....9..... *
```

Individual record

Examples of the individual record and hex dump output produced by the CICS VR print utility.

Example 1

In this example, the type of record has been identified as a CICS write-add-complete forward recovery redo record. For information on record types, see "Reports produced by PRINT" on page 159.

```
Replication Log - NO
Type of record - CICS forward recovery redo record, write add complete
GMT timestamp - BE1A6FA27C04BB42 2007/357 13:07:01.547165
Local timestamp - BE1A6FA27C09D362 2007/357 13:07:01.547165
Filename - DDNAME1
VSAM dsname - PROD.FILE1.KSDS
Filetype - KSDS
Key - F1F2F3F4 *1234*

000000 000034 0000006A 00000010 BE1A6FA2 7C04BB42 00000000 0144A10F 01010000 00000034 *.....?S@.....*
000020 00000001 00000000 0144A10F 01010000 00000034 001CE0D9 D4E4E600 40404040 *.....RMUW. *
000040 40404040 40404040 C2E4D7C4 0023379C 001A7AE2 E3C1E3BE 1A6FA276 A5310F01 * BUPD.....:STAT..?S.V...*
000060 00BE1A6F A27C0464 4200 *...?S@... *
```

Example 2

In this example, the type of record has been identified as a CICS write-add-complete replication redo record. This record can be also forward recovery redo record. For information on record types, see "Reports produced by PRINT" on page 159.

```
Replication log - YES
Type of record - CICS replication and forward recovery redo record, write add complete
GMT timestamp - BE1A6FA27C04BB42 2007/357 13:07:01.547165
Local timestamp - BE1A6FA27C09D362 2007/357 13:07:01.547165
Filename - DDNAME1
VSAM dsname - PROD.FILE1.KSDS
Filetype - KSDS
Key - F1F2F3F4 *1234*

000000 000034 0000006A 00000010 BE1A6FA2 7C04BB42 00000000 0144A10F 01010000 00000034 *.....?S@.....*
000020 00000001 00000000 0144A10F 01010000 00000034 001CE0D9 D4E4E600 40404040 *.....RMUW. *
000040 40404040 40404040 C2E4D7C4 0023379C 001A7AE2 E3C1E3BE 1A6FA276 A5310F01
* BUPD.....:STAT..?S.V...*
000060 00BE1A6F A27C0464 4200
S@... *
```

Summary report

An example of the summary report output produced by the CICS VR print utility.
CICSVR - JOURNAL PRINT UTILITY PROGRAM DATE :06/06/07 TIME :11:01:09 PAGE :1

Summary report

STATISTICS FOR BLOCKS READ

```
=====
FIRST TIME GMT : 2008.157 12:00:59
LAST TIME GMT : 2008.159 12:00:59
FIRST TIME LOCAL : 2008.157 12:00:59
LAST TIME LOCAL : 2008.159 12:00:59
NUMBER OF BLOCKS READ: 234
NUMBER OF REPL BLOCKS: 234
FIRST BLOCK ID : 43282
LAST BLOCK ID : 67382
```

REDO RECORDS STATISTICS

STATISTICS FOR FCTNAME ddname1

=====

Vsam data set name: PROD.BASE1
GMT date/time of first reference: 2008.158 11:11:11
GMT date/time of last reference: 2008.158 11:11:11
Number of read only records: 314
Number of read for update records: 314
Number of write for update records: 314
Number of write add records: 314
Number of write add complete records: 314
Number of delete records: 314
Number of file close records: 1
Number of tie up records: 1

or

REDO RECORDS STATISTICS (replication)

STATISTICS FOR FCTNAME ddname1

=====

Vsam data set name: PROD.BASE1
GMT date/time of first reference: 2008.158 11:11:11
GMT date/time of last reference: 2008.158 11:11:11
Number of replication records: 314
Number of read only records: 314
Number of read for update records: 314
Number of write for update records: 314
Number of write add records: 314
Number of write add complete records: 314
Number of delete records: 314
Number of file close records: 1
Number of tie up records: 1

STATISTICS FOR DATA SET NAME dsn1

=====

GMT date/time of first reference: 2008.158 11:11:11
GMT date/time of last reference: 2008.158 11:11:11
Number of Get-for-Update/Erase: 314
Number of Put Add records: 314

or

UNDO RECORDS STATISTICS (replication)

STATISTICS FOR DATA SET NAME dsn1

=====

GMT date/time of first reference: 2008.158 11:11:11
GMT date/time of last reference: 2008.158 11:11:11
Number of Get-for-Update/Erase: 314
Number of Put Add records: 314

Glossary

The terms in this glossary are defined as they pertain to the CICS VSAM Recovery documentation.

If you do not find the term you are looking for, view the *Glossary of Computing Terms* located at:

<http://www.ibm.com/ibm/terminology/>

This glossary includes terms and definitions from:

- The *American National Standard Dictionary for Information Systems*, ANSI X3.172-1990, copyright 1990 by the American National Standards Institute (ANSI). Copies can be purchased from the American National Standards Institute, 11 West 42nd Street, New York, New York 10036. Definitions are identified by the symbol (A) after the definition.
- The *Information Technology Vocabulary* developed by Subcommittee 1, Joint Technical Committee 1, of the International Organization for Standardization and the International Electrotechnical Commission (ISO/IEC JTC1/SC1). Definitions of published part of this vocabulary are identified by the symbol (I) after the definition; definitions taken from draft international standards, committee drafts, and working papers being developed by ISO/IEC JTC1/SC1 are identified by the symbol (T) after the definition, indicating that final agreement has not yet been reached among the participating National Bodies of SC1.
- The *IBM Dictionary of Computing*, New York: McGraw-Hill, 1994.

The following cross-reference is used in this glossary:

See: This refers the reader to (a) a related term, (b) a term that is the expanded form of an abbreviation or acronym, or (c) a synonym or more preferred term.

A

access method services (AMS)

A utility program for the definition and management of VSAM data sets.

after-image

Records that CICS writes to a forward recovery log to show what the VSAM record will look like after it has been updated by the application. (Throughout the CICS VR library, the forward recovery log is referred to as the log.)

AIX Alternate index.

alternate index (AIX)

A collection of index entries related to a given base cluster and organized by an alternate key; that is, a key other than the prime key of the associated base cluster data records. The AIX gives an alternative directory for finding records in the data component of a base cluster.

AMS Access method services.

APAR Authorized program analysis report.

application identifier (APPLID)

The name that identifies a CICS region to VTAM[®]. It can be a maximum of 8 characters.

APPLID

Application identifier.

archive utility

The CICS VR utility that registers details of a log on the RCDS and optionally copies it to a backup.

authorized program analysis report (APAR)

A report of a problem that is suspected to be caused by a defect in a current, unaltered release of a program.

automatic journal archiving

A function provided by CICS. When a disk log, defined to use this function is ready for archiving, CICS automatically creates and submits an archive job. The log data set is not reused until archiving is complete, and CICS ensures that the archive jobs are submitted promptly.

B**back up**

The process of copying a data set to a backup volume.

backout

The CICS VR function that you can use if CICS fails in the attempt to back out uncommitted changes on a VSAM sphere. Using information from the RCDS, CICS VR constructs a job to back out uncommitted changes on a VSAM KSDS, ESDS, or RRDS, as indicated on the log. Refer to batch backout to remove updates made by batch job steps.

backout failing log record (BOFLGREC)

The record that CICS stores on the system log (throughout the CICS VR library, the system log is referred to as the log). This allows CICS VR to start and stop its scan of the log in the correct places and to locate the relevant before-images. CICS issues a BOFLGREC the first time a backout failure is detected. CICS issues following BOFLGRECs if the same task suffers a backout failure through a different file, or if a different task suffers a backout failure. So, there is a BOFLGREC for each combination of file and task that fails backout.

backup

The copy of the VSAM sphere, either on disk or tape, that you make at regular intervals as a minimum precaution to protect a VSAM sphere.

backup-while-open facility (BWO)

The facility supported by DFSMS/MVS, CICS and CICS VR, that lets CICS VSAM data sets be backed up while CICS is concurrently updating them. The data sets can then be recovered if data is lost. For the software levels required to use this facility, refer to *CICS VR Implementation Guide and Reference*.

base cluster

A key-sequenced or entry-sequenced data set that one or more alternate indexes can be built over, or a relative-record data set.

basic catalog structure (BCS)

The name of the catalog structure in the integrated catalog facility environment. See also *ICF catalog*.

batch backout

A CICS VR function that will remove updates made to VSAM spheres by one or more batch job steps. CICS VR undo logging must be performed for the affected VSAM spheres to allow for batch backout processing. CICS VR batch backout supports KSDS, ESDS, RRDS, and VRRDS VSAM spheres.

BCS Basic catalog structure.

before-image

The copy of a VSAM record that CICS saves in the system log before CICS updates the record (throughout the CICS VR library, the system log is referred to as the log). Before-images are used to back out incomplete or incorrect changes if a failure occurs.

BOFLGREC

Backout failing log record

buffer An area of processing storage that is used to hold a block of data while it is waiting to be processed or written to an I/O device.

BWO Backup-while-open facility.

C

CA See *change accumulation*.

CA Control area.

CBIPO

Custom-Built Installation Process Offering.

CBPDO

Custom-Built Product Delivery Offering.

CEDA The main CICS-supplied transaction used to define resources online. When you use CEDA, you can update the CICS system definition (CSD) data set, and the running CICS region.

CEMT A CICS-supplied transaction used to invoke all the master terminal functions. These functions include inquiring and changing the value of parameters used by CICS, altering the status of system resources, terminating tasks, and shutting down CICS. Refer to *CICS Supplied Transactions* or *CICS/MVS CICS-Supplied Transactions*

CF Coupling Facility.

change accumulation

A CICS VR utility that reduces the time it takes to perform a forward recovery. CICS VR change accumulation consolidates forward recovery log records into a CA data set. CICS VR uses the CA data set in conjunction with the forward recovery log to reduce the number of log records that CICS VR needs to apply to get the sphere back to the exact state before the data was lost.

CI Control interval.

CICS Customer Information Control System.

CICS session

The time period during which a user has access to a CICS region.

CICS system definition (CSD) data set

A VSAM KSDS cluster with alternate paths. The CSD data set contains a resource definition record for every record defined to CICS using resource definition online (RDO).

CICSplex

(1) A CICS complex. A CICSplex consists of two or more regions that are linked using CICS intercommunications facilities. The links can be either intersystem communication (ISC) or interregion communication (IRC) links, but within a CICSplex are more usually IRC. Typically, a CICSplex has at least one terminal-owning region (TOR), more than one application-owning region (AOR), and might have one or more regions that own the resources that are accessed by the AORs. (2) In CICSplex[®] SM, a management domain. The largest set of CICS regions or systems to be manipulated as a single CICSplex SM entity. CICS regions in a CICSplex SM CICSplex do not need to be connected to each other.

CICSplex SM

IBM CICSplex System Manager for z/OS. An IBM CICS system management product that provides a single system image and a single point of control for one or more CICSplexes, including CICSplexes on heterogeneous operating systems.

CICS VR

CICS VSAM Recovery.

cluster

In VSAM, a named structure consisting of a group of related components. For example, when the data is key sequenced, the cluster contains the data and index components; for data that is entry sequenced, the cluster contains only a data component. See also *base cluster* and *alternate index*.

cold start

The standard CICS initialization sequence performed without regard for prior system activity.

Common User Access (CUA)

Guidelines for the interface between a user and a workstation or terminal.

complete recovery

The CICS VR function that consists of forward recovery followed by backout, if needed. In CICS VR complete recovery, CICS VR restores a DFSMSHsm backup for you.

concurrent copy

The facility supported by DFSMS/MVS, CICS, and CICS VR that increases the availability of data by letting you make a consistent backup or copy of data, concurrent with normal application program processing.

control area (CA)

A group of VSAM control intervals used as a unit for formatting a data set before adding records to it.

control area split

The movement of the contents of some VSAM control intervals in a control area to a newly created control area, to aid the insertion, or lengthening of a record when no free control intervals remain in the original control area.

control interval (CI)

A fixed-length area of auxiliary-storage space where VSAM stores records and distributes free space. It is the unit of information that is transmitted to or from auxiliary storage, by VSAM.

control interval split

The movement of some stored records in a VSAM control interval to a free control interval, to aid the insertion, or lengthening of a record that will not fit in the original control interval.

Coupling Facility (CF)

The hardware that provides high-speed caching, list processing, and locking functions in a sysplex.

CSD CICS system definition data set.

CUA Common User Access.

D**Data Facility Product**

See *DFP*.

Data Facility Storage Management Subsystem data facility product (DFSMSdfp)

A DFSMS/MVS functional component that provides functions for storage management, data management, program management, device management, and distributed data access.

Data Facility Storage Management Subsystem data set services (DFSMSdss)

A DFSMS/MVS functional component used to copy, move, dump, and restore data sets and volumes.

Data Facility Storage Management Subsystem hierarchical storage manager (DFSMSHsm)

A DFSMS/MVS functional component used for backing up and recovering data, and managing space on volumes in the storage hierarchy.

Data Facility Storage Management Subsystem removable media manager (DFSMSrmm)

A DFSMS/MVS functional component that manages removable media.

Data Facility Storage Management Subsystem/MVS (DFSMS/MVS)

An IBM licensed program that together with z/OS SP compose the base z/OS operating environment. DFSMS/MVS consists of DFSMSdfp, DFSMSdss, DFSMSHsm, and DFSMSrmm.

data integrity

The quality of data that exists as long as accidental destruction, change, or loss

ddname

Data definition name.

deregister

The CICS VR function that removes a VSAM sphere name from the RCDS, or removes all references to a log from the RCDS.

DFDSS

Referred to in this book by its new product name. See *DFSMSdss*.

DFHCSDUP

CICS system definition (CSD) data set utility program. It provides offline services for the CSD. You can invoke DFHCSDUP as a batch program, or from a user-written program running in batch mode, or under TSO.

DFHJCRDS

The CICS journal-control record-mapping macro.

DFHSM

Referred to in this book by its new product name. See *DFSMSHsm*.

DFP Referred to in this book by its new product name. See *DFSMSdfp*.

DFSMSdfp

Data Facility Storage Management Subsystem data facility product.

DFSMSdss

Data Facility Storage Management Subsystem data set services.

DFSMSHsm

Data Facility Storage Management Subsystem hierarchical storage manager.

DFSMSrmm

Data Facility Storage Management Subsystem removable media manager.

DFSMS/MVS

Data Facility Storage Management Subsystem/MVS.

dsname record

A record on a log that equates an FCT file name to a data set.

DTB Dynamic transaction backout.

dynamic transaction backout (DTB)

The process of canceling changes that a transaction makes to a VSAM data set after the transaction fails, for whatever reason.

E**emergency restart**

Initialization of the CICS region following an abnormal end, where the information recorded on the system log is used to recover the data files of all interrupted transactions, to the condition they were in when the transactions started. (Throughout the CICS VR library, the system log is referred to as the log.)

entry-sequenced data set (ESDS)

A VSAM data set whose records are physically in the same order in which they were added to the data set. An ESDS is processed by addressed direct access, or addressed sequential access and has no index. Records are added at the end of the data set.

ESA Enterprise Systems Architecture.

ESDS Entry-sequenced data set.

Extended Recovery Facility (XRF)

A related set of programs that lets an installation reach a higher level of CICS availability to end users. Availability is improved by having a pair of CICS regions: an active system and a partially initialized alternate system. The alternate system stands by to continue processing if failures occur on the active system.

F

FCT File control table.

file A CICS entity that relates to a data set. File names are 1–8 characters.

file control table (FCT)

CICS table containing the characteristics of the files accessed by CICS file control.

FMID Function modification identifier.

forward recovery

The CICS VR function that reapplies all changes to the VSAM sphere since the last backup. The sphere can be a KSDS, ESDS, RRDS, or VRRDS. CICS VR gets the information it needs to construct the recovery job from the RCDS. The contents of the logs are applied to the VSAM sphere to return it to its exact state before the data was lost.

forward recovery log

A log that is being used for implementing forward recovery. (Throughout the CICS VR library, the forward recovery log is referred to as the log.)

function modification identifier

A seven-character ID used to identify the release of a product.

G

GDG Generation data group.

generation data group (GDG)

A collection of data sets kept in chronological order; each data set is a generation data set.

global user exit

A point in a CICS module at which CICS can pass control to a program that you have written (an *exit* program) and then resume control when your program has finished. When an exit program is enabled for a particular exit point, the program is called every time the exit point is reached.

I**ICF catalog**

Integrated catalog facility catalog.

in-flight transaction

A transaction that has uncommitted updates at the time of an abnormal CICS end.

instance

An instance of CICS VR starts when transaction VSAM is initialized as part of SMSVSAM address space initialization or enabled by operator command. It ends when transactional VSAM enters a quiesced or disabled state, or when the SMSVSAM address space is terminated.

integrated catalog facility (ICF) catalog

A catalog that consists of a basic catalog structure (BCS) and its related volume table of contents (VTOCs), and VSAM volume data sets (VVDSs). The ICF catalog is the only catalog that is supported by DFSMS/MVS. See also *basic catalog structure (BCS)*, *volume table of contents (VTOC)*, and *VSAM volume data set (VVDS)*.

Interactive System Productivity Facility (ISPF)

The MVS interactive facility that serves as a full-screen editor and dialog manager. ISPF can be used for writing application programs. It is used by CICS VR to provide an interactive dialog between the CICS VR user and the CICS VR functions.

I/O Input/output.

ISPF Interactive System Product Facility.

J

JACD Journal archive control data set.

JCT Journal control table.

journal

See *log*.

journal control table (JCT)

The way by which the characteristics of the logs are described to CICS for access through journal control. The JCT contains journal information and operating system control blocks describing each log.

journaling

The recording of information onto a journal (including the system log) for processing by CICS VR. Also known as *logging*.

journal-label-record

A special record type that is the first record written out by CICS in a block of log records.

JPDS Journal partitioned data set.

K

keypoint

The periodic recording of system information and control blocks on the system log (throughout the CICS VR library, the system log is referred to as the log).

key-sequenced data set (KSDS)

A VSAM data set whose records are loaded in key sequence and controlled by an index.

KSDS Key-sequenced data set.

L

linear data set

A VSAM data set that contains data but no control information. A linear data set can be accessed as a byte-addressable string in virtual storage. See *recovery control data set*.

link pack area (LPA)

In MVS, an area of virtual storage that contains re-entable routines that are loaded at IPL time and that can be used concurrently by all tasks in the system.

local shared resources (LSR)

Files that share a common pool of buffers and a common pool of strings; that is, control blocks supporting I/O operations.

log A set of one or more sequential data sets to which records are written during a CICS session in these circumstances:

- By CICS, to implement user-defined resource protection (logging to the system log)
- By CICS, to implement user-defined automatic logging (to an MVS log stream, including the system log)
- Explicitly, by the JOURNAL command (or macro), from an application program (to an MVS log stream, including the system log)

(Throughout the CICS VR library, all journals are referred to as logs.)

log manager

A CICS domain introduced in CICS Transaction Server, which replaces the CICS journal control management function of earlier CICS versions. The

CICS log manager uses MVS system logger services to write CICS systems logs, forward recovery logs, and user journals to log streams managed by the MVS system logger. (Throughout the CICS VR library, system logs, forward recovery logs, and MVS log streams are referred to as logs.)

log of logs

A log created by CICS Transaction Server that contains records that are written each time a file is opened or closed. CICS VR scans the log of logs and saves information needed for recovery in the RCDS.

log tail

In CICS VR, the oldest log record of interest. Log tail deletion is the process of deleting unneeded records that are older than the oldest record of interest to CICS VR.

local shared resources (LSR)

Files that share a common pool of buffers and a common pool of strings; that is, control blocks supporting I/O operations.

logical unit of work (LUW)

A sequence of processing actions (for example, changes to a base cluster) that must be completed before the individual actions can be regarded as committed. Every CICS task that affects a recoverable resource consists of one or more LUWs. When changes are committed (by successful completion of the LUW and recording of the sync point on the system log), they need not be backed out after a later failure of the transaction or system. The end of an LUW is marked in a transaction by a sync point, issued either by the user program or by CICS when the transaction ends. In the absence of user sync points, the entire task is an LUW.

LPA Link pack area.

LSR Local shared resource.

LUW Logical unit of work.

M

master terminal operator (MTO)

A CICS operator who is authorized to use the master-terminal-functions transaction.

menu bar

The area at the top of a window that contains choices that let the CICS VR user access the actions available in that window.

migration utility

The utility provided by CICS VR that helps you upgrade your RCDS.

MTO Master terminal operator.

O

object action

A process sequence in which the user selects an object and then selects an action to apply to that object.

online Pertaining to a user's access to a computer through a terminal. The term *online* is also used in this book to describe a resource (for example, a data set) being used by a user through a terminal.

P

path A data set name for the relationship between an alternate index and its base cluster, or an alias for a VSAM data set.

PDF Program Development Facility.

PMR Problem management record.

problem management record (PMR)

A record on the RETAIN[®] database where all activity about your CICS VR problem is recorded.

program temporary fix (PTF)

A temporary solution, or by-pass of a problem, diagnosed by IBM as resulting from a defect in a current, unaltered release of a program.

program update tape (PUT)

A tape or cartridge on which IBM places PTFs so that you can install them on your system.

PTF Program temporary fix.

pull-down menu

A list of choices associated with a choice on the menu bar. The CICS VR user selects a choice from the menu bar, and a pull-down appears in the secondary window, under the choice.

PUT Program update tape.

R

RBA Relative byte address.

RCDS Recovery control data set.

RDO Resource definition online.

record level sharing

See *VSAM record level sharing*.

recovery

- (1) The process of reapplying updates to a lost or damaged VSAM data set.
- (2) In DFSMSHsm, the process of copying a backup version of a data set from a backup volume to a specified volume, possibly to the volume from which the backup version was made.

Recovery and Backup function

The Recovery and Backup function builds a job to: take the sphere offline from CICS, forward recover the sphere, take a backup of the sphere, put the sphere back online to CICS, and instruct CICS to retry its backout.

recovery control

In CICS VR, the collective name for the functions that keep track of all the information needed to forward recover and back out protected VSAM spheres.

recovery control data set (RCDS)

One of three identical linear VSAM data sets that contain information about the contents of archived logs and the ISPF dialog interface default values. CICS VR uses this stored information to construct recovery jobs. CICS VR uses three identical RCDSs to reduce the possibility of data loss.

Recovery function

The Recovery function builds a job to: take the sphere offline from CICS, forward recover the sphere, put the sphere back online to CICS, and instruct CICS to retry its backout.

recovery point time

The point in time that forward recovery starts from for VSAM data sets that were restored from a backup made using the backup-while-open facility. With the backup-while-open facility, recovery point time is a maximum of 30 minutes before the *actual* backup time.

register

See *archive function*.

relative byte address (RBA)

The displacement of a stored record or control interval from the beginning of the storage space allocated to the VSAM data set to which it belongs.

relative-record data set (RRDS)

A VSAM data set whose records are loaded into fixed-length slots. The records are accessed by a relative record number (RRN).

Remote Technical Assistance Information Network

See *RETAIN*.

Reorganization function

The Reorganization function builds a job to: take the sphere offline from CICS, delete and redefine the sphere with more space or a bigger alternate index record size, and instruct CICS to retry its backout.

request parameter list (RPL)

In ACF/VTAM, a control block that contains the parameters needed for processing a request for data transfer.

resource definition macro

A method of defining resources to CICS using macros. You code and assemble special macro instructions, and then provide CICS with these assembled tables at initialization time.

resource definition online (RDO)

The recommended method of defining resources to CICS by creating resource definitions interactively, or using the utility DFHCSDUP, and then storing them in the CICS system definition (CSD) data set. These definitions are then installed as CICS resources, by specifying a list of definitions at CICS initialization time. Using the CEDA transaction, resource definitions can be installed while CICS is active, so they can be used immediately.

restore

The process of copying a backup version of a VSAM data set from backup media, to the same media from which the backup version was created, or to another media. This restored copy can then be used in CICS VR forward recovery.

RETAIN

A software system used by IBM Support Centers and other IBM offices to solve problems with IBM products. RETAIN is used to document each problem and the correction developed for it.

RPL Request parameter list.

RLS VSAM record level sharing.

RRDS Relative-record data set.

S

SAA Systems Application Architecture.

secondary window

The window you get when you select an option from a pull-down. A secondary window does not have a menu bar.

SIT System initialization table.

SNA System Network Architecture.

SMF System Management Facility.

SMS Storage Management Subsystem.

sphere

See *VSAM sphere*.

storage management subsystem (SMS)

A DFSMS/MVS facility used to automate and centralize the management of storage. Using SMS, a storage administrator describes data allocation characteristics, performance and availability goals, backup and retention requirements, and storage requirements to the system through data class, storage class, management class, and ACS routine definitions.

sync point

See *synchronization point*.

synchronization point (sync point)

A point in the processing of a task at which changes to recoverable resources are regarded as committed.

sysplex

A set of MVS systems communicating and cooperating with each other through certain multi-system hardware components and software services to process customer workloads.

system initialization table (SIT)

A CICS control table required for the system to be operational. The SIT controls the capability of the system through a set of system initialization parameters.

system log

A CICS log (ID=01) that is used by CICS to log changes to resources for backout. (Throughout the CICS VR library, the system log is referred to as the log.)

system logger

A central logging facility provided by z/OS. The z/OS system logger provides an integrated MVS logging facility that can be used by system and subsystem components. For example, it is used by the CICS Transaction Server log manager.

System Management Facility (SMF)

An MVS component that collects and records system and job-related information.

Systems Application Architecture (SAA)

A formal set of rules that enables applications to be run without modification, in different computer environments.

T

task In CICS, a single instance of the execution of a transaction. Contrast with *transaction*.

tie-up record (TUR)

The association between the file and data set, as recorded on the log.

transaction

Can be regarded as a unit of processing (consisting of one or more application programs) initiated by a single request, often from a terminal. A transaction might require the initiation of one or more tasks for its execution. Contrast with *task*.

transaction backout

The cancelation, because of a transaction failure, of all updates performed by a task.

TUR Tie-up record.

U**uncommitted updates**

The updates from an incomplete LUW that are left on the &Sphere when a task or CICS abends.

upgrade set

All the alternate indexes that VSAM has been instructed to update whenever there is a change to the data part of the base cluster.

V**variable relative-record data set (VRRDS)**

A VSAM data set whose records are loaded into variable-length slots. The records are accessed by a relative record number (RRN).

volume table of contents (VTOC)

A table on a direct access volume that describes each data set on the volume.

VRRDS

Variable relative-record data set

VSAM

Virtual Storage Access Method.

VSAM record level sharing (VSAM RLS)

An extension to VSAM which provides direct record level sharing of VSAM data sets from multiple address spaces across multiple systems. Record level sharing utilizes the z/OS Coupling Facility to provide cross system locking, local buffer invalidation, and cross system data caching. With VSAM RLS, CICS regions that share VSAM data sets can reside in one or more MVS images within a parallel sysplex.

VSAM sphere

A base cluster, together with any alternate indexes defined with it.

VSAM volume data set (VVDS)

A data set that describes the characteristics of VSAM data sets and system-managed data sets residing on a given disk; part of an ICF catalog.

VSAMREC

A line operator and list command that can be issued from the ISMF DATA SET LIST panel to create a recovery job for VSAM spheres.

VTOC Volume table of contents.

VVDS VSAM volume data set.

X

- XA** Extended Architecture.
- XRF** Extended Recovery Facility.

Where to find more information

IBM provides access to unlicensed CICS VR softcopy books on the Internet.

To find CICS VR books on the Internet, go to theSupport home page at:

<http://www-947.ibm.com/support/entry/portal/documentation>

From either of these Web sites, you can search for CICS VR softcopy books.

Publication Title	Order Number
<i>IBM CICS VR V5R1 Implementation Guide and Reference</i>	SC34-2813
<i>IBM CICS VR V5R1 User's Guide</i>	SC34-2814
<i>IBM CICS VR V5R1 Messages and Problem Determination</i>	SC34-2812
<i>IBM CICS VR V5R1 Program Directory</i>	GI13-0588

These online CICS VR books are distributed on CD-ROM:

Publication Title	Order Number
<i>z/OS Software Products Collection</i>	SK3T-4270
<i>OS/390® Collection</i>	SK2T-6700
<i>OS/390 PDF Library Collection</i>	SK2T-6718
<i>IBM Transaction Processing and Data Collection</i>	SK2T-0730

Referenced documents

A list of the publications are referenced in this information.

Publication Title	Order Number
<i>z/OS MVS Setting Up a Sysplex</i>	SA22-7625
<i>z/OS DFSMSHsm Storage Administration Guide</i>	SC35-0421
<i>z/OS DFSMSHsm Storage Administration Reference</i>	SC35-0422
<i>z/OS DFSMSHsm User Commands Reference Summary</i>	SX35-5063
<i>z/OS DFSMSdss Storage Administration Guide</i>	SC35-0423
<i>z/OS DFSMSdss Storage Administration Reference</i>	SC35-0424
<i>z/OS DFSMSHsm Managing Your Own Data</i>	SC35-0420
<i>z/OS MVS Programming: Assembler Services Guide</i>	SA22-7605
<i>OS/390 MVS Programming: Assembler Services Guide</i>	GC28-1762
<i>z/OS MVS Programming: Assembler Services Reference ABE-HSP</i>	SA22-7606
<i>CICS Recovery and Restart Guide</i>	SC33-1698
<i>CICS for MVS/ESA: Recovery and Restart Guide</i>	SC33-1182
<i>CICS RACF® Security Guide</i>	SC34-5720

Publication Title	Order Number
<i>CICS for MVS/ESA: RACF Security Guide</i>	SC33-1701
<i>CICS System Definition Guide</i>	SC34-5725
<i>CICS for MVS/ESA: System Definition Guide</i>	SC33-1164
<i>CICS Resource Definition Guide</i>	SC34-5722
<i>CICS for MVS/ESA: Resource Definition Guide</i>	SC33-1166
<i>DFSORT Application Programming Guide R14</i>	SC33-4035
<i>z/OS DFSMS Access Method Services</i>	SC26-7394
<i>z/OS MVS Initialization and Tuning Reference</i>	SA22-7592

Accessing z/OS documents on the Internet

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Using LookAt to look up message explanations

LookAt is an online facility that allows you to look up explanations for most messages you encounter, as well as for some system abends and codes. Using LookAt to find information is faster than a conventional search because in most cases LookAt goes directly to the message explanation.

You can access LookAt from the Internet at: <http://www.ibm.com/eserver/zseries/zos/bkserv/lookat/>

Alternatively, you can access LookAt from anywhere in z/OS where you can access a TSO/E command line (for example, TSO/E prompt, ISPF, z/OS UNIX System Services running OMVS). You can also download code from the *z/OS Collection* (SK3T-4269) and the LookAt Web site that will allow you to access LookAt from a handheld computer (Palm Pilot VIIx suggested).

To use LookAt as a TSO/E command, you must have LookAt installed on your host system. You can obtain the LookAt code for TSO/E from a disk on your *z/OS Collection* (SK3T-4269) or from the **News** section on the LookAt Web site.

Some messages have information in more than one document. For those messages, LookAt displays a list of documents in which the message appears.

Accessibility

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully.

The major accessibility features in CICS VR 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 CICS VR.

Consult the assistive technology documentation for specific information when using it to access CICS VR interfaces.

Keyboard navigation of the user interface

Users can access CICS VR user interfaces using TSO/E or ISPF.

Refer to *z/OS TSO/E Primer*, *z/OS TSO/E User's Guide*, and *z/OS ISPF User's Guide Volume I* for information about accessing TSO/E and ISPF interfaces. These guides describe how to use TSO/E and ISPF, including the use of keyboard shortcuts or function keys (F keys). Each guide includes the default settings for the F keys and explains how to modify their functions.

CICS VR secondary window resize

Throughout the CICS VR panel interface, CICS VR displays numerous secondary windows that allow you to get help information, enter parameters, etc.

The secondary windows overlay the main CICS VR panels that they relate to. However, when using screen reading software with the CICS VR panel interface, it might be possible that the screen reading software does not differentiate between the background CICS VR panel and the foreground CICS VR secondary window. Therefore, when a CICS VR secondary window appears, the text read by the screen reading software might cause confusion (for example, two sets of F-key definitions might be read).

To resolve this issue, IBM recommends entering the RESIZE command on the command line of every CICS VR secondary window that appears. Entering the RESIZE command will transform the CICS VR secondary window into a full size panel, therefore allowing the screen reading software to correctly interpret all text.

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Messages and Problem Determination

User's Guide

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