

**MAINVIEW<sup>®</sup> SRM  
EasyHSM  
User Guide and Reference**

**Version 7.1**

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- messages received (and the time and date that you received them)
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  - messages from related software

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# About This Book

This book contains detailed information about MAINVIEW<sup>®</sup> Storage Resource Manager EasyHSM by BMC Software and is intended for storage administrators.

To use this book, you should be familiar with the following items:

- OS/390 operating system.
- job control language (JCL)
- Interactive System Productivity Facility (ISPF)

## How This Book Is Organized

This book is organized as follows. In addition, an index and glossary appear at the end of the book.

Chapter/Appendix	Description
Chapter 1, "What Is EasyHSM?"	provides an overview of EasyHSM
Chapter 2, "EasyHSM Functions"	describes the EasyHSM functions
Chapter 3, "Defining the DFHSM Environment"	describes how to define the DFHSM environment to MAINVIEW SRM
Chapter 4, "EasyHSM Views"	provides a summary of EasyHSM views and a description of each
Chapter 5, "DFHSM CDS Query Views"	describes control data set (CDS) query views and provides a description of each
Chapter 6, "DFHSM Output Management"	describes automated processing of DFHSM and DFDSS output
Appendix A, "DFHSM User Exit Routines"	provides user exit reference information

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Category	Document	Description
MAINVIEW common documents	<i>OS/390 and z/OS Installer Guide</i> <i>MAINVIEW Installation Requirements Guide</i> <i>MAINVIEW Common Customization Guide</i> <i>Using MAINVIEW</i> <i>MAINVIEW Administration Guide</i> <i>Implementing Security for MAINVIEW</i>	provide instructions for installing, configuring, using, and administering MAINVIEW
MAINVIEW SRM customization documents	<i>MAINVIEW SRM Customization Guide</i>	provides instructions for configuring and customizing MAINVIEW SRM for OS/390 including EasyHSM
core documents	<i>MAINVIEW SRM User Guide and Reference</i>	provides information common to all MAINVIEW SRM products and high-level navigation
	<i>MAINVIEW SRM Reference Summary</i>	provides a reference of global parameters, filter list and rule list parameters, and functions
messages	<i>MAINVIEW SRM Messages</i>	provides hardcopy of messages that are also available online
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## Conventions

This section provides examples of the conventions used in this book and explains how to read ISPF panel-flow diagrams and syntax statements.

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## General Conventions

This book uses the following general conventions:

Item	Example
information that you are instructed to type	Type <b>SEARCH DB</b> in the designated field.
specific (standard) keyboard key names	Press <b>Enter</b> .
field names, text on a panel	Type <b>the appropriate entry</b> in the <b>Command</b> field.
directories, file names, Web addresses	The BMC Software home page is at <b>www.bmc.com</b> .
nonspecific key names, option names	Use the HELP function key.  KEEPDICTIONARY option
MVS calls, commands, control statements, keywords, parameters, reserved words	Use the SEARCH command to find a particular object.  The product generates the SQL TABLE statement next.
code examples, syntax statements, system messages, screen text	//STEPLIB DD  The table <i>table_name</i> is not available.
emphasized words, new terms, variables	The instructions that you give to the software are called <i>commands</i> .  In this message, the variable <i>file_name</i> represents the file that caused the error.
single-step procedures	» To enable incremental backups, type <b>y</b> and press <b>Enter</b> at the next prompt.

This book uses the following types of special text:

**Note:** Notes contain important information that you should consider.

**Warning!** Warnings alert you to situations that could cause problems, such as loss of data, if you do not follow instructions carefully.

**Tip:** Tips contain useful information that may improve product performance or that may make procedures easier to follow.

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## Syntax Statements

Syntax statements appear in Courier. The following example shows a sample syntax statement:

```
COMMAND KEYWORD1 [KEYWORD2|KEYWORD3] KEYWORD4={YES|NO}
    file_name...
```

The following table explains conventions for syntax statements and provides examples:

Item	Example
Items in italic type represent variables that you must replace with a name or value. Use an underscore for variables with more than one word.	<code>dtsbackup <i>control_directory</i></code>
Brackets indicate a group of options. You can choose at least one of the items in the group, but none of them is required. Do not type the brackets when you enter the option. A comma means that you can choose one or more of the listed options. You must use a comma to separate the options if you choose more than one option.	<code>[<i>table_name, column_name, field</i>]</code>
Braces enclose a list of required items. You must enter at least one of the items. Do not type the braces when you enter the item.	<code>{<i>DBD_name   table_name</i>}</code>
A vertical bar means that you can choose only one of the listed items. In the example, you would choose either <i>commit</i> or <i>cancel</i> .	<code>{<i>commit   cancel</i>}</code>
An ellipsis indicates that you can repeat the previous item or items as many times as necessary.	<code><i>column_name . . .</i></code>

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# Chapter 1 What Is EasyHSM?

This chapter presents the following topics:

Overview . . . . .	1-1
What EasyHSM Does . . . . .	1-2
How EasyHSM Works . . . . .	1-3

## Overview

A component of the powerful MAINVIEW SRM suite of storage management products, EasyHSM

- provides online monitoring and reporting to help storage managers use DFHSM efficiently
- increases the functionality of DFHSM
- enhances flexibility
- provides a series of views to identify what DFHSM is doing and any problems that DFHSM is experiencing
- provides a batch facility that you can access from the MVS RMHSM menu for printing views

These capabilities are provided regardless of the degree of DFSMS implementation.

## What EasyHSM Does

In addition to providing the reporting functionality that DFHSM lacks, EasyHSM provides command-line capabilities and management of write to operator (WTO) messages. These capabilities allow you to distill and organize critical information on errors and failures, thereby providing tremendous time savings.

EasyHSM allows you to manage storage in a granular fashion by providing easy-to-use functions and information that is organized and summarized.

Another key feature is the ability to take non-working days into account. This impacts all aspects of HSM efficiency from thrashing to user wait time to MLO DASD savings.

Other features of the EasyHSM product include

- enhanced control of DFHSM migration processing (at the data set level)
- enhanced control of DFHSM backup processing (at the data set level)
- processing based on user-defined calendars
- cleanup utility for the DFHSM migration and backup control data sets (MCDS, BCDS)
- automated monitoring and response for DFHSM and DFDSS error messages
- controlled pooling during recall (picks best volume from pool)
- migration control for generation data groups (GDGs)
- automatic conversion of HSM migration periods to management classes
- reports on DFHSM activity and DFHSM errors

You can enhance DFHSM control data set cleanup by using the EasyHSM SMHSMUTL batch utility program to delete obsolete entries from the migration control data set (MCDS) and the backup control data set (BCDS) based on user-defined criteria. The SMHSMUTL utility generates the required DFHSM delete commands. These are supplied to DFHSM for processing using TSO batch (IKJEFT01).

- output management facilities for DFHSM and DFDSS messages

DFHSM and DFDSS generate a huge number of messages that detail their activity in great detail. Finding relevant messages and acting on them is often a challenge. Most often, error messages are never seen.

EasyHSM provides filters that allow you to specify a subset of important messages from several sources, including the DFHSM backup, migration, dump, and command logs, as well as DFDSS message logs. In addition to logging these critical messages, EasyHSM can respond to the message with some pre-defined action such as creating jobs, issuing commands, and so on. This process saves time, increases productivity, and significantly reduces operator error.

- best-fit volume selection on recall (non-SMS-managed data sets)

When HSM recalls a data set from tape to disk, it simply finds the volume with the most space (within an eligible storage group if SMS) and allocates the data set on that volume. EasyHSM searches all eligible volumes within a defined pool to find the free space segment that most closely fits the size of the data set being recalled. DFHSM is then forced to allocate the data set on that volume. This dramatically reduces volume fragmentation, which means better hardware utilization and reduced cost.

- migration control for GDG data sets

EasyHSM can migrate old versions of GDG data sets based on version number and age criteria.

- EasyHSM and Control Data Set Query views

EasyHSM provides a number of views that facilitate the use and management of DFHSM. Data is collected from DFHSM log files and DFHSM control data sets. The information for these views can be selected and organized on the basis of time (hours or days), data set name, system ID, volume, or other parameters. Most views allow the entry of DFHSM commands such as HMIGRATE and HRECALL.

## How EasyHSM Works

EasyHSM functionality is based on the MAINVIEW SRM architecture, which uses filter and rule lists. You can activate any EasyHSM function for individual data sets or groupings of data sets based on numerous criteria.

By running in SIMulate mode prior to implementation, you can evaluate the results of proposed changes using live data. The MAINVIEW SRM calendar reduces both CPU and MLO requirements by basing migrations on actual workdays. The calendar feature lets you adjust the elapsed-day specifications by the number of non-working days to achieve an accurate elapsed time for migration. The MAINVIEW SRM calendar is quick and easy to set up and saves MLO resources without increasing CPU thrashing.

You can override migration values set by DFHSM to handle exceptions and temporary conditions. You can select data sets for migration without backup or direct them from MLO to ML2. You can bypass small data sets completely. You can base selections on a wide range of criteria.

Within eligible pools, volumes are selected based on the best fit of the data set to available extents, thereby controlling fragmentation. With EasyHSM you can extend the benefits of HSM to non-SMS-managed data.

The control data set utility purges the DFHSM migration and backup control data sets. Obsolete entries are deleted based on user-specified criteria. Control cards executed by backup control provides an easy method for selecting or excluding data sets from backup processing. MAINVIEW SRM filtering minimizes coding and insures that automatic backups do not occur for data sets that do not need these copies, such as test and transitory data sets. ALTERDS commands are not required.

TSO delete migration and backup entries and associated data sets are identified based on a variety of aging calculations, DSN or name masks, control data set type, or pool name. You can specify the number of backup copies to keep, as well.

SMHSMUTL reads the DFHSM control data sets, selects data set entries on the basis of your specifications, and generates TSO DFHSM commands to delete migration and backup entries and associated data sets.

Output Management automates DFHSM and DFDSS message management. Cryptic WTO messages are filtered, reworded, and responded to based on user-defined criteria. Control statements are automatically generated. This feature addresses one of the monumental tasks of DFHSM and makes it manageable by even less experienced staff.

The MAINVIEW SRM EasyHSM views provide fast, flexible access to DFHSM operations, using MCDS, BCDS, offline control data sets (OCDS), and DFHSM log files.

EasyHSM functions are summarized below.

- The HSMBACKP function allows selection and exclusion of data sets and volumes for DFHSM backup.

- The HSMDELETE function provides enhanced processing when selecting DFHSM data sets for deletion.
- The HSMCCNV function allows conversion of DFHSM migration periods for management classes based on the non-working-days specifications in the MAINVIEW SRM calendar.
- The HSMIGRT function provides enhanced processing when selecting DFHSM data sets for migration.
- The HSMRECAL function provides DASD pooling support for non-DFSMS data sets recalled by DFHSM.
- The SMHSMUTL batch program purges the DFHSM migration and backup control data sets of obsolete entries based on user-specified criteria.

The EasyHSM output management function allows processing of DFHSM and DFDSS output. Output management provides

- the capability of filtering out unwanted or informational messages and displaying only messages indicating situations that need attention
- automated creation of control cards, JCL, or commands to handle conditions described by messages, using information extracted from the message text
- immediate job submission of generated JCL



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## Chapter 2 EasyHSM Functions

This chapter provides detailed explanations about each function in EasyHSM.

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HSMBACKP—Control DFHSM Backups . . . . .	2-2
HSMDELET—Enhance DFHSM Deletion . . . . .	2-4
HSMCCNV—Apply Calendar Conversion to DFHSM Migration. . . . .	2-6
HSMIGRT—Enhance DFHSM Migration . . . . .	2-10
HSMRECAL—Pool Data Sets During DFHSM Recall. . . . .	2-14
SMHSMUTL—DFHSM Control Data Set Batch Utility. . . . .	2-18

### Overview

MAINVIEW SRM storage management services are divided into functions. Functions provide all the runtime services of MAINVIEW SRM. The SMFUNCxx member activates MAINVIEW SRM functions and controls message and tracing activity. SMFUNCxx points to members SMFLSTxx and SMRLSTxx, which select resources and control the operation of the functions.

Functions are defined in SET statements. You can change parameters using any of the following methods:

- by editing the member directly
- by using the MAINVIEW SRM function SET commands
- through the Functions option on the Parmlib Members pop-up menu of the EZSRM Menu (see Chapter 6, “How to Define and Activate Functions” in the *MAINVIEW SRM User Guide and Reference*)

EasyHSM functions do not operate for DFDSS jobs.

## HSMBACKP—Control DFHSM Backups

The HSMBACKP function allows you to select and exclude data sets and volumes for DFHSM backup.

DFHSM provides automated data set backup processing for OS/390. However, DFHSM does not provide an easy method of selecting groups of data sets for backup or for excluding groups of data sets from backup. Data sets must be included or excluded for backup processing either through aggregate group definitions or one data set at a time using the ALTERDS command.

HSMBACKP provides a simple and flexible means of selecting groups of data sets to be backed up by DFHSM or excluding groups of data sets from backup processing.

### Parameter Quick Reference

SET statement (in member SMRLSTxx)

Parameter	Description
BACKCMD= <u>YES/NO</u>	specifies if command-initiated backups are processed
BACKUP= <u>YES/NO</u>	specifies that a backup will not be performed
EVENTID=xxxxx	identifies a user event defined in an SMEVNTxx member

### Parameter Explanations

#### BACKCMD=

Purpose: Specifies whether command-initiated backups are processed by HSMBACKP. BACKCMD=YES allows HSMBACKP to process command-initiated backups as well as automatic backups. BACKCMD=NO prohibits HSMBACKP from processing command-initiated backups. This is an optional parameter.

Syntax: BACKCMD=*YES/NO*

Default: BACKCMD=YES

#### BACKUP=

Purpose: Specifies whether the backup is allowed. If BACKUP=NO, DFHSM does not back up the selected resource. If BACKUP=YES, DFHSM backs up the resource. This is an optional parameter.

Syntax: BACKUP=*YES/NO*

Default:BACKUP=NO

**EVENTID=**

**Purpose:**Specifies the identifier assigned to a user event in an SMEVNTxx member. This parameter will cause an event to be generated from this function.

**Note:** If EVENTID= is used on an FLST SET statement with MODE=INACT, the event will still be issued.

**Syntax:** EVENTID=xxxxx

The variable xxxxx is the 5-character string specified on the EVNTID parameter in and SMEVNTxx member.

Default:None

## Usage Notes

HSMBACKP applies to all data sets selected by DFHSM for backup during volume backup or space management. It does not work for data sets backed up explicitly, such as with the TSO/ISPF HBACKDS command.

The BACKCMD parameter allows you to bypass function processing for DFHSM backups that are initiated by command. HSMBACKP always processes automatically initiated backups, but it may be set to ignore backups that are performed on command. This allows emergency backups to be executed without modifying the normal backup parameters in HSMBACKP.

Note that the default mode of operation of HSMBACKP is to prohibit backups. The default is BACKUP=NO, which prevents a backup on the selected resource. Therefore, if most resources should be backed up unless otherwise specified, the rule list should conclude with BACKUP=YES for all resources (INC DSN=/).

When a backup is prohibited, HSMBACKP issues the following message:

```
SVM0380I dsn DISABLED FOR BACKUP
```

No message is issued when a resource is selected for backup.

Note that the HSMBACKP function must be specified in the SMFUNCxx member to be available and must be set to active to provide service.

**Example**

The following example show syntax for the HSMBACKP function:

SMFUNC3A member

<pre>SET  NAME=HSMBACKP       ACTIVE=YES       MSG=I SMF=I       FLST=A5 RLST=A5       DESC='CONTROL BACKUPS'</pre>	<p>The function is defined and activated.</p>
---	---

SMFLSTA5 member

<pre>SET  MODE=ACT       INC DSN=/'</pre>	<p>Select all data sets for processing.</p>
---	---

SMRLSTA5 member

<pre>SET  BACKCMD=NO BACKUP=NO       INC DSN=**.TEST*</pre>	<p>Disallow automatic backups of test data sets. (Command-initiated backups are not affected.)</p>
<pre>SET  BACKCMD=NO BACKUP=NO       INC DSN=**.TRANS*</pre>	<p>Do not back up transitory data sets. (Command-initiated backups are not affected.)</p>
<pre>SET  BACKCMD=YES BACKUP=NO       INC VOL=DB*</pre>	<p>Disallow all DFHSM backups against DB2<sup>®</sup> volumes.</p>
<pre>SET  BACKCMD=YES BACKUP=YES       INC DSN=/'</pre>	<p>For all other data sets, allow automatic and command-initiated backups.</p>

## HSMDELETE—Enhance DFHSM Deletion

The HSMDELETE function provides enhanced processing when selecting DFHSM data sets for deletion.

HSMDELETE provides the following advantages over DFHSM processing:

- Aging can be based on working days, rather than calendar days.
- Data sets can be selected or excluded based on more criteria.

### Parameter Explanations

**EVENTID=**

**Purpose:** Specifies the identifier assigned to a user event in an SMEVNTxx member. This parameter will cause an event to be generated from this function.

**Note:** If EVENTID= is used on an FLST SET statement with MODE=INACT, the event will still be issued.

**Syntax:** EVENTID=xxxxx

The variable xxxxx is the 5-character string specified on the EVNTID parameter in and SMEVNTxx member.

**Default:** None

### Filter List Parameters Supported

Due to the invocation of HSMDELETE during OS/390 exit ARCSAEXT, only the following MAINVIEW SRM filter list parameters are available:

CALAGE	CAT	DSN	DSNn
DSORG	DSTYPE	GDGVER	HLQ
LLQ	POOL	RACF	REFAGE
SIZE	USER	VOL	XMODE

## Usage Notes

HSMDELETE applies to all data sets considered by DFHSM for volume migration and space management migration.

If a data set is not selected for HSMDELETE processing by filter list specifications and the age of the data set is less than the age specified in the management class for data set deletion, HSMDELETE does not affect the processing of the data set.

The REFAGE and CALAGE selection parameters can be used to filter data sets considered by DFHSM for deletion. CALAGE contains the number of working days since the data set was created, while REFAGE contains the unadjusted number of days since the data set was created.

HSMDELETE issues the following message if it modifies the deletion status of a data set:

```
SVM0365I dsn DISABLED FOR AUTO DELETION
```

No message is issued when a data set is not selected by HSMDELETE.

Note that the HSMDELETE function must be specified in the SMFUNCxx member to be available and must be set to active to provide service.

### Example

The following example shows syntax for the HSMDELETE function.

SMFUNC12 member

SET	NAME=HSMDELETE ACTIVE=YES FLST=09 MSG=I SMF=I DESC='CONTROL DELETION'	The function is defined and activated.
-----	--	--

SMFLST09 member

SET	MODE=ACT INC DSN=TEST./ CALAGE>45 INC DSN=PROD./ CALAGE>90	Select TEST. data sets if CALAGE is greater than 45. Select PROD. data sets if CALAGE is greater than 90.
-----	--	--

## HSMGCCNV—Apply Calendar Conversion to DFHSM Migration

The HSMGCCNV function allows conversion of DFHSM migration periods for management classes based on the non-working day specifications in the MAINVIEW SRM calendar.

DFHSM's automatic space management processing selects data sets for automatic migration based in part on the number of days since the data set was last referenced (PRIMARY DAYS NON USAGE). This automatic migration is a valuable part of storage management. It requires little or no human intervention in moving low-usage data sets from high-speed devices to less expensive devices. However, DFHSM counts only elapsed calendar days in determining the time to migration; it does not take into account days that are not working days, such as public holidays, weekends, and installation-defined days off. This capability is provided by MAINVIEW SRM calendar definitions in member SMCALSxx.

During migration processing by DFHSM, HSMGCCNV adjusts the PRIMARY DAYS NON USAGE specification by the number of non-working days in the period, thus giving an accurate elapsed time for migration based on actual workdays, rather than calendar days.

## Parameter Quick Reference

SET statement (in member SMRLSTxx)

Parameter	Description
CAL= <i>YES/NO</i>	specifies date conversion by calendar
EVENTID=xxxxx	identifies a user event defined in an SMEVNTxx member

## Parameter Explanations

### CAL=

**Purpose:** Specifies whether the DFHSM management class migration days value should be adjusted to account for the non-working days in the MAINVIEW SRM calendar.

**Syntax:** CAL=*YES/NO*

**Default:** CAL=YES

### EVENTID=

**Purpose:** Specifies the identifier assigned to a user event in an SMEVNTxx member. This parameter will cause an event to be generated from this function.

**Note:** If EVENTID= is used on an FLST SET statement with MODE=INACT, the event will still be issued.

**Syntax:** EVENTID=*xxxxx*

The variable *xxxxx* is the 5-character string specified on the EVNTID parameter in and SMEVNTxx member.

**Default:** None

### Filter List Parameters Supported

Filter and rule list entries for HSMGCCNV should include and exclude resources based on the MGMTCLAS parameter only.

**Warning!** The only valid selection parameter during HSMGCCNV processing is MGMTCLAS. All other selection parameters do not have a value when HSMGCCNV is active. Therefore, filter and rule lists used with HSMGCCNV should only INCLUDE or EXCLUDE based on MGMTCLAS. For example, the following filter list entry for HSMGCCNV will never be satisfied because the JOB parameter does not contain a value:

---

```
SET MODE=SIM
INC JOB=DFHSM/
```

---

This rule list entry will also never be satisfied because the VOL parameter does not contain a value.

---

```
SET CAL=NO
INC VOL=EMP/
```

---

## Usage Notes

HSMGCCNV provides services only if CAL=YES is specified. HSMGCCNV ignores any management classes for which PRIMARY DAYS NON USAGE is zero.

The use-days figure is adjusted to workdays by starting at the current date and backing up for the number of workdays corresponding to use-days, adjusting the day count as non-working days are found in the calendar. This work-day count is returned to DFHSM as the PRIMARY DAYS NON USAGE value, which must be satisfied before a data set is migrated.

Note that the effect is to *increase* the primary days non-usage, so that the data set is migrated only after the number of actual working days has elapsed. Each non-working day in the period covered by the primary days non-usage adds a day to the number returned to DFHSM as the new primary days non-usage.

Note that the HSMGCCNV function must be specified in the SMFUNCxx member to be available and must be set to active to provide services.

HSMCCNV issues the following message when it processes a management class:

```
SVM0361I  MGMTCLAS=xxxxxxx, MD=nnnn, WD=nnnn
```

In this message, the variables are as follows:

- MGMTCLAS=xxxxxxx indicates the management class name
- MD=nnnn identifies the original migration days value
- WD=nnnn identifies the adjusted migration days (working days) value

### Example

The following example shows syntax for the HSMCCNV function:

SMFUNC21 member

```
SET    NAME=HSMCCNV ACTIVE=YES    The function is defined and
      MSG=E SMF=N                  activated. SMF records are not
      FLST=02 RLST=02              written. Only error messages are
      DESC='ADJUST MIGRATION DAYS' written.
```

SMCAL10 member

```
SET    YEAR=2000                  The year 2000 is defined with
      SAT=W                        Saturdays as work days,
      SUN=F                        Sundays as non-working days,
      FREE=01.12 /* Dec 1 */       and various other days during the
      FREE=01.01 /* Jan 1 */       year non-working. (Note that it is
      FREE=22.02 /* Feb 22 */     not necessary to specify
      FREE=17.04-20.04 /* Apr 17-20 */ Saturday as a working day; any
      FREE=31.05 /* May 31 */     day or date not defined as FREE
      FREE=04.07 /* July 4 */     is a working day.)
      FREE=08.06 /* June 8 */
      FREE=25.11-26.11 /* Nov 25-26 */
      FREE=24.12 /* Dec 24 */
      FREE=25.12 /* Dec 25 */
```

SMFLST02 member

```
SET    MODE=ACT                  This filter list specification is
      INC MGMTCLAS=/              active. It selects all resources
                                  with a management class.
```

SMRLST02 member

```
SET    CAL=YES                   This rule list specifies calendar
      EXC MGMTCLAS=BATCH          adjustment for all management
                                  classes except BATCH.
```

# HSMmigrt—Enhance DFHSM Migration

The HSMmigrt function provides enhanced processing when selecting DFHSM data sets for migration.

HSMmigrt provides the following advantages over DFHSM processing:

- Aging can be based on working days, rather than calendar days.
- Migration from ML0 to ML2 without a backup copy can be allowed.
- Data sets can be selected or excluded based on more criteria.

## Parameter Quick Reference

SET statement (in member SMRLSTxx)

Parameter	Description
BACKUP= <u>YES/NO</u>	specifies that ML0-2 migration without backup is allowed
CAL= <u>YES/NO</u>	specifies date conversion by calendar
EVENTID= <u>xxxxx</u>	identifies a user event defined in an SMEVNTxx member
MIGCMD= <u>YES/NO</u>	specifies if command-initiated migration is processed
MIGRATE= <u>YES/NO</u>	specifies if migration is disallowed
ML2= <u>YES/NO</u>	specifies direct migration from ML0 to ML2

## Parameter Explanations

### BACKUP=

Purpose: Specifies whether migration from ML0 to ML2 without a backup copy is allowed. BACKUP=NO specifies that a backup copy is *not* necessary before ML0-ML2 migration. BACKUP=YES specifies that a backup copy must exist before migration from ML0 to ML2 is allowed. (See the ML2 parameter below.) This is an optional parameter.

Syntax: BACKUP=YES/NO

Default: BACKUP=YES

### CAL=

Purpose: Specifies whether the DFHSM management class migration days value should be adjusted to account for the non-working days in the MAINVIEW SRM calendar.

Syntax: CAL=YES/NO

Default:CAL=YES

**EVENTID=**

Purpose:Specifies the identifier assigned to a user event in an SMEVNTxx member. This parameter will cause an event to be generated from this function.

**Note:** If EVENTID= is used on an FLST SET statement with MODE=INACT, the event will still be issued.

Syntax: EVENTID=xxxxx

The variable xxxxx is the 5-character string specified on the EVNTID parameter in and SMEVNTxx member.

Default:None

**MIGCMD=**

Purpose:Specifies whether command-initiated migration is processed by HSM MIGRT. MIGCMD=YES allows HSM MIGRT to process command-initiated migration as well as automatic migration. MIGCMD=NO prohibits HSM MIGRT from processing command-initiated migration (that is, command-initiated migration overrides HSM MIGRT). This is an optional parameter.

Syntax: MIGCMD=YES/NO

Default:MIGCMD=YES

**MIGRATE=**

Purpose:Specifies whether migration is allowed. MIGRATE=YES allows migration processing to proceed for a data set; MIGRATE=NO disallows any migration of the data set. This is an optional parameter.

Syntax: MIGRATE=YES/NO

Default:MIGRATE=YES

**ML2=**

Purpose:Specifies whether direct migration from ML0 to ML2 is allowed. ML2=YES allows direct migration from ML0 to ML2; ML2=NO does not. This is an optional parameter.

Syntax: ML2=YES/NO

Default:ML2=NO

### Filter List Parameters Supported

Due to the invocation of HSMmigRT during OS/390 exits ARCSAEXT and ARCMDEXT, only the following MAINVIEW SRM filter list parameters are available:

CALAGE	CAT	DSN	DSNn
DSORG	DSTYPE	GDGVER	HLQ
LLQ	POOL	RACF	REFAGE
SIZE	USER	VOL	XMODE

## Usage Notes

HSMmigRT applies to all data sets considered by DFHSM for volume migration and space management migration. It does not work for data sets migrated explicitly, such as with the DFHSM MIGRATE DSNAME command or the TSO or ISPF HMIGRATE command.

If a data set is not selected for HSMmigRT processing by filter list or rule list specifications, DFHSM is directed to migrate the data set.

The REFAGE and CALAGE selection parameters can be used to filter data sets considered by DFHSM for migration. CALAGE contains the number of unreferenced working days, while REFAGE contains the unadjusted number of unreferenced days.

HSMmigRT allows migration directly from ML0 to ML2 with or without a backup. Use the ML2 and BACKUP parameters to specify this service.

The MIGCMD parameter allows command-initiated migration to bypass any selection or restriction by HSMmigRT, ensuring that emergency migration requests proceed unhindered.

**Note:** If SETMIG NOMIGRATION or MIGRATION is set in DFHSM for a group of data sets or volumes, the MAINVIEW SRM exit will not be involved when these data sets are migrated.

### Messages

HSMmigRT issues one of the following messages if it modifies the migration status of a data set.

```
SVM0360I   dsn WILL MIGRATE TO ML1 MD=nnnn AGE=nnnn
           ML2 IF BACKUP EXISTS
           ML2 BYPASSING BACKUP
```

HSM MIGRT has modified the migration status of a data set as stated. MD is the DFHSM adjusted migration age. AGE=nnnn is the real age of the data set (elapsed days since last referenced).

```
SVM0362I
SVM0363I   dsn MADE INELIGIBLE FOR MIGRATION -MIGCMD
```

HSM MIGRT has modified the migration status of a data set to prevent its migration. MIGCMD indicates the rule directed no migration.

Note that a large volume of messages could be issued by HSM MIGRT. You may wish to suppress informational messages in the function definition in the SMFUNCxx parmlib member or in the filter list for the function.

No message is issued when a data set is not selected by HSM MIGRT.

Note that the HSM MIGRT function must be specified in the SMFUNCxx member to be available and must be set to active to provide service.

### Example

The following example shows syntax for the HSM MIGRT function.

SMFUNC12 member

```
SET  NAME=HSM MIGRT ACTIVE=YES
      MSG=I SMF=I
      FLST=09 RLST=09
      DESC='CONTROL MIGRATION'
```

The function is defined and activated.

SMFLST09 member

```
SET  MODE=ACT
      INC DSN=/'
```

Select all data sets for processing.

SMRLST09 member

```
SET  MIGRATE=NO MIGCMD=NO
      INC SIZE<1MB
      INC HLQ=SYS*
```

Do not migrate data sets smaller than 1 megabyte or system data sets (but allow a command-initiated migration to override).

```
SET  MIGRATE=YES ML2=YES
      INC LLQ=LIST* DSORG=PS REFAGE=7
      INC POOL=TEST REFAGE=7
```

Migrate listing data sets and data sets in the TEST pool directly to tape after seven calendar days of nonuse.

SET	MIGRATE=YES MIGCMD=NO INC DSORG=PO REFAGE=90	Migrate unused PDSs after 90 calendar days.
SET	MIGRATE=YES INC DSORG=VS CALAGE=120	Migrate unused VSAM data sets after 120 working days.
SET	MIGRATE=YES INC DSORG=PS SIZE>1MB SIZE<10MB X CALAGE=45	Migrate unused sequential data sets between 1 and 10 MB in size after 45 working days.
SET	MIGRATE=YES INC DSORG=PS SIZE>10MB CALAGE=30	Migrate unused sequential data sets larger than 10 MB after 30 working days.

## HSMRECAL—Pool Data Sets During DFHSM Recall

The HSMRECAL function provides DASD pooling support for non-DFSMS data sets recalled by DFHSM.

If a migrated data set is needed for processing, DFHSM recalls it from the migration volume to a DASD volume. DFHSM selects destination volumes for non-DFSMS-managed data sets based on maximum available space within a group of volumes selected on the basis of data set pool, original volume pool, use attribute, defined recall attributes, and so on.

HSMRECAL allows recalled data sets to be assigned to MAINVIEW SRM-defined pools on the basis of data set attributes including name, organization, size, and so on. Within eligible pools, volumes are selected based on the best fit of the data set size to available extents.

### Parameter Quick Reference

SET statement (in member SMRLSTxx)

Parameter	Description
EVENTID=xxxxx	identifies a user event defined in an SMEVNTxx member
POOL=(xxxxxx, . . .)	1-15 pool names from (SMPOOLxx)
USEVOL=STOR/PRIV/ALL	selects volume by use attribute (storage and/or private)

## Parameter Explanations

### EVENTID=

**Purpose:** Specifies the identifier assigned to a user event in an SMEVNTxx member. This parameter will cause an event to be generated from this function.

**Note:** If EVENTID= is used on an FLST SET statement with MODE=INACT, the event will still be issued.

**Syntax:** EVENTID=xxxxx

The variable xxxxx is the 5-character string specified on the EVNTID parameter in and SMEVNTxx member.

**Default:** None

### POOL=

**Purpose:** Specifies the name of the pool to receive the recalled data set. If multiple pools are specified, the first pool with sufficient space for the data set is assigned. This is a required parameter.

**Syntax:** POOL=(xxxxxx, xxxxxx, . . . )

The variable xxxxxx is a 1-8 character pool name defined in SMPOOLxx. If the poolname is not defined, refresh or start-up will fail. Up to 15 pools can be specified. If a single pool is specified, parentheses are not needed.

**Default:** None

### USEVOL=

**Purpose:** Specifies the type of volume (storage, private, or any) that satisfies the allocation. USEVOL=STOR directs the data set to a storage-mounted volume; USEVOL=PRIV directs the data set to a private volume. (There is currently no specification for PUBLIC-only volumes.) USEVOL=ALL directs the allocation to the first available volumes, regardless of use attribute. This is an optional parameter.

**Syntax:** USEVOL=xxxx

The variable xxxx represents one of the following types of volumes:

STOR Storage  
PRIV Private

ALL All volumes, regardless of use attribute

Default:USEVOL=ALL

### Filter List Parameters Supported

Due to the invocation of HSMRECAL during OS/390 exit ARCRDEXT, only the following MAINVIEW SRM filter list parameters are available:

CAT	DEVTYPE	DSN	DSNn
DSORG	HLQ	JOB	JOBACCTn
JOBCLASS	LLQ	PGM	PGMRNAME
PROCSTEP	RACF	SIZE	STEP
STEPACCTn	SYSID	USER	VOL
XMODE			

## Usage Notes

HSMRECAL applies to migrated data sets being recalled by DFHSM from ML1 or ML2 volumes. HSMRECAL does not process DFSMS-managed data sets.

DFHSM passes a list of candidate destination volumes to HSMRECAL. HSMRECAL returns up to four volumes that are in the candidate list and that are also in one or more of the specified MAINVIEW SRM pools. If HSMRECAL cannot find any of the DFHSM candidate volumes in any of the specified pools, the function makes no volume recommendations, thus allowing DFHSM to select the volume.

HSMRECAL requires that all pool volumes that are eligible for recall be defined to DFHSM with the AUTORECALL option on the ADDVOL command. Also, the SETSYS RECALL command must specify PRIVATEVOLUME(UNLIKE).

Note that parameters related to job execution (such as JOB, JOBCLASS, PGM, and so on) will have values for DFHSM. DASDPOOL rules based on such parameters may not give the desired results during HSMRECAL.

Note that the HSMRECAL function must be specified in the SMFUNCxx member to be available and must be set to active to provide service.

## Messages

HSMRECAL issues the following message when a destination pool is selected for the recalled data set:

```
SVM0370I  dsn POOL (poolname) ASSIGNED
```

**Note:** If the SVM0370I message contains the poolname \$DHSSM\$, HSMRECAL is unable to pool the data set being recalled. HSM will chose the volume on which the data set will be recalled. This can occur because either of the following is true:

- You have coded a pooling rule that attempts to pool the data set to a volume that is not HSM-managed.
- The volume the data set was migrated from is defined as part of a VOLUMEPOOL in the HSM command file (SYS.PARMLIB(ARCCMDxx)).

### Example

The following example shows syntax for the HSMRECAL function.

SMFUNC05 member

```
SET  NAME=HSMRECAL ACTIVE=YES      The function is defined and
     MSG=I SMF=I                   activated.
     FLST=5B RLST=5F
     DESC='CONTROL RECALL ALLOC'
```

SMPOOL11 member

```
SET  POOLNAME=STD USELIMIT=90      Pool PRODSTD includes all
     VOL=PROD0/                   volumes whose names begin
                                   with PROD0. A 90% capacity
                                   limit is put on all volumes in this
                                   pool.
```

```
SET  POOLNAME=PRODMAX             Pool PRODMAX includes two
     USELIMIT=80                 high-capacity 3390 volumes
     VOL=PROD2/                 designated for very large data
                                   sets.
```

```
SET  POOLNAME=TEST00             Pool TEST00 includes all
     EXC VOL=TESTC/             volumes whose names begin
     INC VOL=TEST/              with TEST, except those
                                   beginning with TESTC.
```

```
SET  POOLNAME=WORK               Pool WORK includes the two
     VOL=(WORK01,WORK02)        named volumes.
```

SMFLST5B member

```
SET  MODE=ACT                   Allow DFHSM to process VSAM
     EXC LLQ=MSTR* DSORG=VS      master files; all other data set
     INC DSN=/                   recalls go through HSMRECAL.
```

SMRLST5F member		
SET	POOL=WORK INC SIZE<1MB	Data sets smaller than 1 megabyte are assigned to pool WORK.
SET	POOL=(TEST00,WORK) INC LLQ=*TST* INC RACF=DEV	Test data sets and data sets belonging to DEV are assigned to either pool TEST00 or pool WORK.
SET	POOL=TEST00 INC SIZE>1MB SIZE<10MB	Data sets larger than 1 megabyte and smaller than 10 megabytes are assigned to pool TEST00.
SET	POOL=PRODMAX INC SIZE>50MB INC SIZE>10MB DSORG=VS	Data sets larger than 50 megabytes and VSAM data sets larger than 10 megabytes are assigned to pool PRODMAX.
SET	POOL=STD INC DSN=/	All other data sets are assigned to pool STD.

## SMHSMUTL—DFHSM Control Data Set Batch Utility

The SMHSMUTL batch program purges obsolete entries based on user-specified criteria from the DFHSM migration and backup control data sets.

SMHSMUTL reads the DFHSM control data sets, selects data set entries on the basis of your specifications and generates TSO DFHSM commands to delete migration and backup entries and associated data sets.

You can select data sets for deletion based on data set name (full name or name mask), MAINVIEW SRM pool membership, or any of four aging criteria, with or without non-working day adjustment by the MAINVIEW SRM calendar.

### Parameter Quick Reference

Parameter	Description
DELETE	keyword parameter that must precede all other parameters
BAKDAY=nnnn	age at which backup entries can be deleted
CAL=YES/ <u>NO</u>	specifies use of MAINVIEW SRM calendar adjustment services

CDS=MCDS/BCDS/BOTH	type of control data set (migration, backup, or both)
CREDDAYS=nnnn	age (from creation date) at which migration entries can be deleted
DSN=xxxxxxx. . .	name or name mask of data set(s) to be selected
EVENTID=xxxxx	identifies a user event defined in an SMEVNTxx member
KEEPBACKV=nnnn	number of copies of backup data sets that should be kept
MIGDDAYS=nnnn	age (from migration date) at which migration entries can be deleted
POOL=xxxxxxx	a single MAINVIEW SRM pool name
REFDDAYS=nnnn	age (from last reference) at which migration entries can be deleted

### Parameter Explanations

#### DELETE=

Purpose:Identifies a new specification. This must be the first operand on a control card set for SMHSMUTL. Each DELETE keyword starts a new specification.

Syntax: DELETE

Default:None

#### BAKDDAYS=

Purpose:Specifies the age (number of days since last backup) at which the backup data set (and BCDS entry) is deleted. This is a required parameter if CDS=BCDS. If CDS=MCDS or CDS=BOTH, this parameter is not allowed.

See also the KEEPBACKV parameter.

Syntax: BAKDDAYS=nnnn

The variable *nnnn* is a number in the range 0-9999.

Default:None

#### CAL=

**Purpose:**Specifies whether aging is adjusted with the non-working days specification in the MAINVIEW SRM calendar definition. CAL=NO specifies that adjustments are not applied; CAL=YES specifies that date calculations take into account all non-working days in the MAINVIEW SRM calendar. This is an optional parameter.

**Syntax:** CAL=YES/NO

**Default:**CAL=NO

**CDS=**

**Purpose:**Specifies the type of DFHSM control data set to be affected. This is a required parameter.

**Syntax:** CDS=xxxx

The variable *xxxx* is a value as follows:

BCDS	backup control data set
MCDS	migration control data set
BOTH	backup and migration control data sets

**Default:**None

**CREDDAYS=**

**Purpose:**Specifies the age (number of days since creation of the original pre-migration data set) at which the migrated data set (and MCDS entry) is deleted. If CDS=MCDS or CDS=BOTH, then one and only one of these three parameters must be specified: CREDDAYS, MIGDAYS, REFDAYS. If CDS=BCDS, this parameter is not allowed.

**Syntax:** CREDDAYS=*nnnn*

The variable *nnnn* is a number in the range 0-9999.

**Default:**None

**DSN=**

**Purpose:**Specifies a data set name or name mask. All MAINVIEW SRM name masking parameters can be used. This is a required parameter.

**Syntax:** DSN=xxxxxxxxxxxxxxxxxxxx . . .

The variable *xxxxxxx* specifies a data set name up to 44 characters long.

Default:None

**EVENTID=**

Purpose:Specifies the identifier assigned to a user event in an SMEVNT*xx* member. This parameter will cause an event to be generated from this function.

**Note:** If EVENTID= is used on an FLST SET statement with MODE=INACT, the event will still be issued.

Syntax: EVENTID=*xxxxx*

The variable *xxxxx* is the 5-character string specified on the EVNTID parameter in and SMEVNT*xx* member.

Default:None

**KEEPBACKV=**

Purpose:Specifies the number of backup versions of a data set that should be kept. If not specified, all backup copies are deleted. Use this parameter only if CDS=BCDS.

Syntax: KEEPBACKV=*nnn*

The variable *nnnn* is a number in the range 0-255.

Default:None

**MIGDAYS=**

Purpose:Specifies the age (number of days since migration of the data set) at which the migrated data set (and MCDS entry) is deleted. If CDS=MCDS or CDS=BOTH, then one and only one of these three parameters must be specified: CREDDAYS, MIGDAYS, REFDAYS. If CDS=BCDS, this parameter is not allowed.

Syntax: MIGDAYS=*nnnn*

The variable *nnnn* is a number in the range 0-9999.

Default:None

**POOL=**

**Purpose:** Specifies the name of a single MAINVIEW SRM pool. Name masking cannot be used. If you specify the POOL parameter, only data sets from the specified pool are selected. This is an optional parameter. If you do not specify the POOL parameter, data sets are selected for processing without regard to pool membership.

**Syntax:** POOL=*xxxxxxx*

The variable *xxxxxxx* is a poolname from the SMPOOL*xx* member.

**Default:** None

**REFDAYS=**

**Purpose:** Specifies the age (number of days since the original pre-migration data set was last referred to) at which the migrated data set (and MCDS entry) is deleted. If CDS=MCDS or CDS=BOTH, then one and only one of these three parameters must be specified: CREDDAYS, MIGDDAYS, REFDAYS. If CDS=BCDS, this parameter is not allowed.

**Syntax:** REFDAYS=*nnnn*

The variable *nnnn* is a number in the range 0-9999.

**Default:** None

## Usage Notes

SMHSMUTL generates DFHSM control cards to delete entries (and associated data sets) from the DFHSM migration and backup control data sets. These control cards are formatted for execution by TSO.

For the migration control data set, the general format of the control card is

```
HSEND DELETE dsn
```

For the backup control data set, the general format of the control card is

```
HSEND BDELETE dsn
```

SMHSMUTL processing is controlled by DELETE requests. Each delete request specifies

- data set name or name mask
- type of DFHSM control data set to be affected (migration or backup)

- aging specification (number of days after which the data set is to be deleted)

These criteria are compared to DFHSM control data set entries; eligible data sets cause the generation of a DFHSM delete control card. For example, the following SMHSMUTL control card

```
DELETE CDS=MCDS DSN=TD*.SPFTEMP*./ MIGDAYS=10
```

might generate the following control cards:

---

```
HSEND DELETE TDMOORE.SPFTEMP2.CNTL
HSEND DELETE TDCAREY.SPFTEMP1.LIST
HSEND DELETE TDJOHNSN.SPFTEMP0.CNTL
HSEND DELETE TDJOHNSN.SPFTEMP1.CNTL
HSEND DELETE TDJOHNSN.SPFTEMP2.CNTL
```

---

Up to 3140 DELETE requests can be submitted in a single run.

MAINVIEW SRM must be active for SMHSMUTL to run. The generated control cards must be submitted to TSO to actually change the DFHSM control data sets.

Note that the DFHSM DELETE command deletes a migrated data set without recalling it. Both the MCDS entry and the migrated data set are deleted. The DFHAM DELETE command does not delete backup versions of the data set. The DFHSM BDELETE command deletes all or specific backup versions of a data set.

### Control Card Syntax

The following is a list guidelines for specific control card parameters:

- The DELETE keyword begins a specification. All parameters until the next DELETE keyword or the end of the input file are part of the specification.
- Parameters can be on the same line or separate lines. There is no line continuation character.
- Parameters can start in any column.
- Comments must be on separate lines. A comment must have an asterisk in column 1.
- Blank lines are allowed.

## Name Masking

All MAINVIEW SRM name masks can be used with the DSN parameter. These mask characters are fully described in the *MAINVIEW SRM User Guide and Reference*. Briefly, the mask characters are as follows:

- % Any numeric character
- ? Any character except period (.)
- / Any number of characters, to the end of a name
- \* Any number of characters in a single name qualifier
- \*\* Any non-zero number of name qualifiers

SMHSMUTL does not support the use of MAINVIEW SRM variables.

## Messages

SMHSMUTL issues the following messages to sysout (SMHSMPRM is the parameter processing program in SMHSMUTL.):

```
SMHSMPRM REQUIRED PARAMETER MISSING: parameter
SMHSMPRM INVALID PARAMETER: parameter
SMHSMPRM DUPLICATE PARAMETER: parameter
SMHSMPRM INVALID VALUE FOR PARAMETER: parameter
SMHSMPRM CDS=MCDS/BOTH NOT ALLOWED WITH BAKDAYS
SMHSMPRM CDS=BCDS ONLY VALID WITH BAKDAYS
SMHSMPRM MAXIMUM OF 3140 DELETE STATEMENTS REACHED
```

## Job Required for the SMHSMUTL Utility

In the JCL below, STEP10 executes SMHSMUTL to generate DFHSM control cards; STEP20 executes TSO in batch to have DFHSM process the cards.

---

```
//STEP10      EXEC  PGM=SMHSMUTL,REGION=2M
//STEPLIB     DD   DSN=EMP.?prefix.BBLINK,DISP=SHR
//SYSPRINT    DD   SYSOUT=*
//BCDS        DD   DSN=dfhsm.backup.control,DISP=SHR
//MCDS        DD   DSN=dfhsm.migration.control,DISP=SHR
//HSMCMD      DD   DSN=&&HSMOUT,DISP=(NEW,PASS),
//             SPACE=(TRK,(10,10)),UNIT=SYSDA,
//             DCB=(LRECL=80,BLKSIZE=13680,RECFM=FB)
//SYSIN       DD   *
DELETE DSN=**.TRAN* CDS=MCDS MIGDAYS=20
/*
//STEP20      EXEC  PGM=IKJEFT01
//SYSTSPRT    DD   SYSOUT=*
//SYSTSIN     DD   DSN=&&HSMOUT,DISP=(OLD,DELETE)
```

---

ddnames descriptions are as follows:

ddname	Description
STEPLIB	specifies the library containing MAINVIEW SRM load modules
BCDS	specifies the DFHSM backup control data set
MCDS	specifies the DFHSM migration control data set
HSMCMD	specifies an output data set for the generated control cards
SYSIN	specifies the input data set containing control cards for SMHSMUTL

### Example

The following example shows syntax for the SMHSMUTL batch program.

DELETE CDS=MCDS DSN=**.SRCHF0R./ REFDAYS=10	Delete migration entries for search results data sets after 10 days of non-use.
DELETE CDS=MCDS DSN=AP* **.TRANS* CREDDAYS=90	Delete migration entries for accounts payable transaction data sets 90 days after creation.
DELETE CDS=BOTH DSN=/ MIGDDAYS=180	Delete all backup and migration entries 180 days after migration.
DELETE CDS=BCDS DSN=GLYTD* **.UPD* BAKDDAYS=20 KEEPBACKV=5	Delete all but 5 backup versions of general ledger update data sets 20 days after backup.



---

---

# Chapter 3 Defining the DFHSM Environment

This chapter presents the following topics:

Overview . . . . .	3-1
DFHSM Control Data Sets . . . . .	3-2
DFHSM Log Extract Process . . . . .	3-3
Automated Processing . . . . .	3-3
Batch Processing . . . . .	3-4
Log Extract Data Set . . . . .	3-6
User Job Execution . . . . .	3-7
Sysplex Environments with Shared DASD Considerations . . . . .	3-7
System Parameters . . . . .	3-7

## Overview

Information on the DFHSM environment is supplied to MAINVIEW SRM in several ways:

- The DFHSM control data sets are identified in EZHSM statements in the MAINVIEW SRM ISPF startup CLIST.
- Records from the DFHSM logs are extracted by MAINVIEW SRM, under the control of a timer-activated task, which first switches the log file and then copies required records to a dynamically allocated MAINVIEW SRM data set.

- Specific information needed by MAINVIEW SRM, such as the DFHSM log file name and migration control data set (MCDS), backup control data set (BCDS), offline control data set (OCDS) definition and allocation, is supplied in parameters in the MAINVIEW SRM SMMSYSxx parmlib member.

## DFHSM Control Data Sets

EasyHSM derives information from the DFHSM MCDS and BCDS. These data sets are dynamically allocated during the start of the EasyHSM component. Their ddnames are SRMMCDS, SRMBCDS, and SRMOCDS. The data set names used in the dynamic allocation are retrieved from the SMMSYSxx parmlib member as described in “System Parameters” on page 3-7.

EasyHSM currently does not support DFHSM control data sets that are defined as multi-cluster, key-range VSAM files. This type of control data set definition allows the control data sets to occupy multiple volumes for a total of 16 GB of space. Use of this type of control data set requires IBM® APAR OY59526. Typically, only large installations use this type of control data set.

If you use multi-cluster key-range control data sets, do not use the Info line command for migrated data sets or the following views:

- HSMDLYA (Daily Activity Summary)
- HSMDLYV (Daily Volume Summary)

EasyHSM supports control data sets that are single volume, single cluster (the most common organization) or multivolume, single cluster.

---

## DFHSM Log Extract Process

A number of the EasyHSM views are based on data in the DFHSM log files. This data must be extracted from the log files and written into a MAINVIEW SRM data set. DFHSM must be set to write data to its log file Y in order for EasyHSM to gather the extract data. EasyHSM does not use DFHSM PDA files for gathering data.

In order to capture all DFHSM log data reliably, EasyHSM supplies a program that switches the DFHSM log file, reads the newly inactive log file, dynamically allocates an output file, and writes the data required by the EasyHSM views to the new file. Once started, this program is executed periodically, creating multiple date/timestamped extract files during a day. EasyHSM reads as many of these extract files as necessary to cover the time period requested for a view.

You can run the log-extract program as part of MAINVIEW SRM or in batch mode.

### Automated Processing

The log-extract program is started at MAINVIEW SRM startup (or during MAINVIEW SRM execution) when the SMMSYS<sub>xx</sub> parameter HLOGCOLL is set to YES. You can set HLOGCOLL to NO to deactivate this program. If HLOGCOLL is set to NO, the only option for collecting log data is through batch execution. As distributed on the MAINVIEW SRM installation tape, HLOGCOLL is set to NO. You can change it to YES in the MAINVIEW SRM System Parameters panel while MAINVIEW SRM is active to start log file processing; stopping and starting MAINVIEW SRM is not required. (Note that the HLOGCOLL parameter must still be changed in member SMMSYS<sub>xx</sub> to ensure that log file processing is activated on the next startup of MAINVIEW SRM.) HLOGYDSN must also be set in the SMMSYS<sub>xx</sub> member so that EasyHSM knows what DFHSM is using as its log file Y.

Use the HLOGAUTH (hours) and HLOGAUTM (minutes) parameters in SMMSYS<sub>xx</sub> to run the log-extract program at periodic intervals. Set intervals sufficiently short to ensure that the DFHSM log file does not fill up and get switched by DFHSM; if this happens, that log file's data is lost to the EasyHSM views. Do not set any interval shorter than necessary, however, because of the following reasons:

- the number of input data sets to EasyHSM is limited to 255

- the time required to allocate multiple data sets dynamically can significantly slow view generation

**Warning!** EasyHSM does not detect a log switch that occurs between the intervals specified. As a result, if DFHSM does a log swap between intervals, EasyHSM does not capture this log data for reporting. BMC Software recommends batch processing to prevent any missing data from views.

## Batch Processing

**Note:** See the *MAINVIEW SRM User Guide and Reference* for batch processing procedures for information found in online views.

You can run the log-extract program in batch mode. This may be preferable at your installation if you already have some type of automated operations software that can detect when DFHSM switches the log file; for example, a program could detect message ARC0020.

HLOGCOLL must be set to NO to run the batch version of the log-extract program. MAINVIEW SRM must be executing. You can run the log-extract program in two modes:

- When the log-extract program runs in automatic mode, it swaps the log file and extracts data at regular intervals.
- When the log-extract program runs in single-execution mode, it is executed once and ends. It can also be run without swapping the DFHSM log file.

The following parameters are available for batch mode processing:

Parameter	Description
NOAUTO	The log-extract program does not run automatically. The batch execution ends after processing the log file. If NOAUTO is not specified, the log-extract program continues to run until cancelled (or until MAINVIEW SRM is shut down), processing the log file on the interval specified by HLOGAUTH/M.
NOSWAP	The log-extract program does not swap the DFHSM log file. It reads the current DFHSM Y log file. If NOSWAP is not specified, the log-extract program swaps the DFHSM log file prior to reading and extracting log records.

If the log-extract program is running in automatic mode, the log-extract program is terminated if HLOGCOLL is set to YES in MAINVIEW SRM; the MAINVIEW SRM-controlled version continues the processing.

If both the NOAUTO and NOSWAP parameters are specified, the log-extract program can be used to extract log file data from any desired log file of any name. This feature is useful, for example, to extract data from DFHSM log files on different LPARs than the one where MAINVIEW SRM is executing.

When 'NOAUTO,NOSWAP' is specified, the log-extension program scans the job JCL for any DD that begins with HLOG. If one is found, that data set is opened as the Y log file; the log file name in the SMMSYSxx member is ignored.

**Tip:** Even if NOAUTO and NOSWAP are specified, a non-zero HGLOGAUTH value *must* be specified

The following are other batch processing considerations:

- The last four characters of the ddname are taken as the system ID. This system ID should match the system that generated the log file; if it is different, views selected for that system ID are not complete.
- If only HLOG is specified, the current system ID of the system where the log-extract program is running is used.
- If the job JCL does not have a DD that begins with HLOG, the DFHSM Y log file named in SMMSYSxx is used.
- Only one log file is read per execution of the log-extract program.

**Tip:** The value specified for the system ID portion of the HLOG ddname described above

- is used to form the low-level qualifier or the log extract data set name
- is inserted in the type-3 log records in the file
- If you specify an incorrect system ID, you may see this incorrect value in views and be unable to select statistical and/or error views based on system ID.

The JCL used to execute the log-extract program in batch mode is in *?prefix.BBSAMP* member JCLHSMXLX. Modify JCLHSMXLX according to the instructions in the member header.

#### Example

The example shown in Figure 3-1 extracts data from two log files.

**Figure 3-1 Example JCL that Extracts Data from Two Log Files**


---

```
//JOB
//STEP10 EXEC PGM=PRSANP01 , PARM= 'NOSWAP , NOAUTO '
//STEPLIB DD DSN=EMP . MVSRM . BBLINK , DISP=SHR
//HLOGMVSA DD DSN=DFHSM . Y . LOGFILE . MVSA , DISP=SHR
//STEP20 EXEC PGM=PRSANP01 , PARM= 'NOSWAP , NOAUTO '
//STEPLIB DD DSN=EMP . MVSRM . BBLINK , DISP=SHR
//HLOGMVSB DD DSN=DFHSM . Y . LOGFILE . MVSB , DISP=SHR
```

---

Starting DFHSM with LOGSW=YES causes a log swap by DFHSM at start up. To ensure that the data in the startup swapped log file is extracted for use, you should add a step to the DFHSM procedure preceding the DFHSM start to run the log extraction program with PARM='NOAUTO,NOSWAP'.

## Log Extract Data Set

The data set name generated by the log-file-switching program is in the following format:

*user-specified-prefix.Dyymmdd.Thhmmss.SYSsyst-id*

The variables in the data set name are as follows:

- *user-specified-prefix* is specified in the HLOGINDX parameter and must can be up to 20 characters long. The prefix must be valid for data set naming restrictions, as in the following example:

BMC.DFHSMLOG.D941210.T225212.SYSMVS1

- *Dyymmdd* is the date specified as year, month, and day.
- *Thhmmss* is the time specified as the hour, minute, and second.
- *syst-id* is the system ID for the system on which the log-extract program is run.

Use the HLOGINDX parameter of the SMMSYS<sub>xx</sub> parmlib member to control the data set name prefix.

The MAINVIEW SRM log extract file is allocated by default with primary space of 15 tracks and secondary space of 10 tracks. If this is insufficient for the amount of data collected in the interval specified in the HLOGxxxx parameters, use the HLOGPRIM parameter to specify the size of the primary extent in tracks. The size of the secondary extent is set to one-half the size of the primary extent. Alternatively, you can use the MAINVIEW SRM function SPACSQTY to increase the primary and secondary allocation sizes.

## User Job Execution

The log-extract program can initiate a user job after the log file is swapped and the records are extracted. HLOGTASK specifies the name of the procedure to be run.

## Sysplex Environments with Shared DASD Considerations

The HLOGINDX parameter must be unique to each system on which EasyHSM is performing HSM log collections. The Service Point for each EasyHSM must be accessible to a CAS within the sysplex. Each CAS must in turn be accessible from other CASs within the sysplex. When running EasyHSM reports, use the CONTEXT command in MAINVIEW to view log data on other systems. MAINVIEW will handle the appropriate retrieval of data between the systems.

## System Parameters

The following parameters in the SMMSYSxx parmlib member (system-level specifications for MAINVIEW SRM) are used to define and control EasyHSM log file support:

Parameter	Required	Description
BCDS <i>n=xxxxxxxxxxx</i>	No	specifies backup data sets to be defined and allocated during EasyHSM startup
MCDS <i>n=xxxxxxxxxxx</i>	No	specifies migrated data sets to be defined and allocated during EasyHSM startup
OCDS= <i>xxxxxxxxxxx</i>	No	specifies OCDS data set to be defined and allocated during EasyHSM startup
HLOGAUTH= <i>nn</i>	Yes	automatic DFHSM log switch interval in hours
HLOGAUTM= <i>nn</i>	No	automatic DFHSM log switch interval in minutes

Parameter	Required	Description
HLOGCOLL= <u>YES/NO</u>	No	activation of DFHSM log file data collection
HLOGINDX=xxxxxxx	No	DSN prefix of DFHSM log extract file
HLOGPRIM= <i>nnn</i>	No	number of tracks of primary allocation of log extract file
HLOGTASK=xxxxxxx	No	name of the procedure to be run after the DFHSM log file switch
HLOGUNIT=xxxxxxx	No	unit name for allocation of log extract file
HLOGYDSN=xxxxxxx	No	data set name of DFHSM's log file Y

**BCDS<sub>n</sub>=**

Purpose: Specifies backup data sets to be defined and allocated during EasyHSM startup.

Syntax: BCDS<sub>n</sub>=xxxxxxx

The variable *n* is the multi-cluster number. Specify the numbers 2, 3, and 4 only if you are defining a multi-cluster data set.

*The variable xxxxxxx is a backup data set name.*

Required: No (However, if you do not specify this parameter, some of the EasyHSM views will not be available.)

Default: None

**MCDS<sub>n</sub>=**

Purpose: Specifies migrated data sets to be allocated during EasyHSM startup.

Syntax: MCDS<sub>n</sub>=xxxxxxx

The variable *n* is the multi-cluster number. Specify the numbers 2, 3, and 4 only if you are defining a multi-cluster data set.

*The variable xxxxxxx is a migrated data set name.*

Required: No (However, if you do not specify this parameter, some of the EasyHSM views will not be available.)

Default: None

**OCDS=**

Purpose: Specifies offline CDS data sets to be defined and allocated during EasyHSM startup.

Syntax: OCDS=*xxxxxxx*

*The variable xxxxxx is an OCDS data set name.*

Required: No (However, if you do not specify this parameter, some of the EasyHSM views will not be available.)

Default: None

#### **HLOGAUTH=**

Purpose: Specifies the *hours* component of the duration between automatic log file switching.

EasyHSM extracts records from the DFHSM log files. If HLOGCOLL=YES is specified, MAINVIEW SRM automatically switches the DFHSM log file and extracts the required records for EasyHSM. The switching interval is specified in hours and minutes by the parameters HLOGAUTH and HLOGAUTM.

Syntax: HLOGAUTH=*nn*

The variable *nn* specifies a number of hours in the range of 0 through 24.

Required: Yes

Default: HLOGAUTH=00

#### **HLOGAUTM=**

Purpose: Specifies the *minutes* component of the duration between automatic log file switching.

EasyHSM extracts records from the DFHSM log files. If HLOGCOLL=YES is specified, MAINVIEW SRM automatically switches the DFHSM log file and extracts the required records for EasyHSM. The switching interval is specified in hours and minutes by the parameters HLOGAUTH and HLOGAUTM.

Syntax: HLOGAUTM=*nn*

The variable *nn* specifies a number of minutes in the range of 0 through 60.

Required: No

Default: HLOGAUTM=00

**HLOGCOLL=**

Purpose: Specifies whether MAINVIEW SRM automatically performs DFHSM log file switching and record extraction for EasyHSM.

EasyHSM requires certain records from the DFHSM log files. If HLOGCOLL=YES is specified, MAINVIEW SRM automatically switches the DFHSM log files and runs the log-extract program at the interval specified by the HLOGAUTH/M parameters.

Syntax: HLOGCOLL=YES/NO

Required: No

Default: HLOGCOLL=NO

**HLOGINDX=**

Purpose: Specifies the prefix of the EasyHSM data set that contains the records extracted from the DFHSM log file. The prefix may contain up to 20 characters, in any number of name qualifiers. The full data set name generated for the log extract file is

*prefix.Dyymmdd.Thhmmss.SYSsystem-id*

Syntax: HLOGINDX=xxxxxxxx.xxxxxxxxx.xx

Required: Yes (A name is required for EasyHSM to be functional.)

Default: None

**HLOGPRIM=**

Purpose: Specifies the number of tracks to be allocated for the log extract file. One-half of the primary extent is allocated for the secondary extent (with a minimum of 1). If not specified, 15 tracks are used for the primary extent, and 10 tracks are used for the secondary extent.

Syntax: HLOGPRIM=*nnn*

The variable *nnn* is a number in the range of 1 through 999.

Required: No

Default: HLOGPRIM=15

**HLOGTASK=**

**Purpose:**Specifies the name of the procedure to be run following the EasyHSM DFHSM log file switch program execution.

EasyHSM extracts records from the DFHSM log files. If HLOGCOLL=YES is specified, MAINVIEW SRM automatically switches the DFHSM log file and extracts the required records for EasyHSM.

**Syntax:** HLOGTASK=xxxxxxxx

**Required:**No

**Default:**None

**HLOGUNIT=**

**Purpose:**Specifies the esoteric or generic unit name for the allocation of the log extract file. If not specified, SYSALLDA is used.

**Syntax:** HLOGUNIT=xxxxxxxx

**Required:**No

**Default:**HLOGUNIT=SYSALLDA

**HLOGYDSN=**

**Purpose:**Specifies the fully qualified data set name of the DFHSM log file Y.

**Syntax:** HLOGYDSN=xxxxxxxx.xxxxxxx....

**Required:**Yes. (A name is required for EasyHSM to be functional.)

**Default:**None



---

---

# Chapter 4 EasyHSM Views

This chapter presents the following topics:

Overview . . . . .	4-1
Backup and Recovery Activity Views . . . . .	4-4
Daily Activity Summary Views . . . . .	4-5
Daily Volume Summary Views . . . . .	4-6
Data Set Deletions Views . . . . .	4-6
Error Details Views . . . . .	4-7
Error Summary Views . . . . .	4-9
Log Entries Views . . . . .	4-10
Migration Activity Views . . . . .	4-12
Migration Level 1 to Level 2 Views . . . . .	4-14
Migration Thrashing Views . . . . .	4-15
Recall Activity Views . . . . .	4-16
VSAM Cluster Views . . . . .	4-17
Migrated Data Set View . . . . .	4-17
VSAM Index Component View . . . . .	4-18
VSAM Data Component View . . . . .	4-18
Non-VSAM Data Set View . . . . .	4-18

## Overview

EasyHSM provides a number of views that facilitate the use and management of DFHSM. Data is collected from DFHSM log files and DFHSM control data sets. You can select and organize the information for these views on the basis of time (hours or days), data set name, system ID, volume, or other parameters. Most views allow you to enter DFHSM commands such as HMIGRATE and HRECALL.

To invoke EasyHSM views you can use the following methods:

- Type the view name and required parameters at the **COMMAND** line on any **MAINVIEW** panel when EasyHSM is active.
- Select the view from the EZSRMHSM menu.
- Filter the data from the data input panel.

To invoke EasyHSM views from the EZSRMHSM menu, perform the following steps:

**Step 1** From the EZSRM Menu, select **EasyHSM**.

The EZSRMHSM Menu is displayed, as shown in Figure 4-1.

**Figure 4-1 EZSRMHSM Menu**

```

28NOV2001 11:31:23 ----- MAINVIEW WINDOW INTERFACE -----
COMMAND ==>                                     SCROLL ==> PAGE
CURR WIN ==> 1          ALT WIN ==>
>W1 =EZSRMHSM=====SJSG=====28NOV2001==11:31:23====MVS RMHSM=D====1
          EZSRMHSM  Menu

EasyHSM Views      +-----+      DFHSM CDS Query Views
                   |         |      . Backup data set view
                   | Place cursor on |      . Backup DSN version
                   | menu item and   |      . Migrated data set view
                   | press ENTER    |      . OCDS data set view
                   +-----+      . OCDS volume view

. Bkup/Recovery Activity |
. Error details          |
. Error summary         +-----+      SRM Administration
. Log entries           |
. Migration activity    |
. Migration thrashing   |
. Recall activity       |
. Data set deletions    |
. Daily activity summary > Parmlib Members
. Daily volume summary  . Functions
. Migration level 1->2  . SRM Component Status
                       . MVS RMHSM View List
                       . MVS RMHSM Batch Reports
. DFHSM Output Mgmt    . Return....

```

**Step 2** Set date and time for data views using the **MAINVIEW TIME** command. See “Using the **TIME** Command” in the *MAINVIEW SRM User Guide and Reference*.

**Step 3** Select the menu option of your choice. A data entry panel is displayed in which you can filter the data you want to see.

**Step 4** To filter data, complete the fields provided on the data entry panel.

**Step 5** Type **S** to the left of the **<=** symbol to process the request.

Table 4-1 describes the EasyHSM views. Information on invoking views and available action line commands are presented on the following pages.

**Tip:** You can use the EZcmd menu to link to another view rather than the action line command. See the *MAINVIEW SRM User Guide and Reference* for details.

Power users can gain functionality by using *primary action commands*, which are described in the online Help. They appear in reverse video to indicate that you can link to a detailed description of the command that includes specific arguments the command uses.

**Table 4-1 EasyHSM Views (Part 1 of 2)**

View	Description	View Name
Backup/Recovery Activity	shows all successful backup and recovery actions processed by DFHSM during the specified time period The views show age, volumes (from and to and current), date of last change, and SMS class information.	HSMBKRC HSMBKRCD
Error Details	shows all unsuccessful actions processed by DFHSM during the specified time period, with error codes and a description of the error	HSMERDT HSMERDTD
Error Summary	shows total errors for migration, recall, and backup during the specified time period, with error codes and a description of the error	HSMERRS HSMERRSD
Log Entries	lists all actions (successful and unsuccessful) processed by DFHSM during the specified time period	HSMLOGE HSMLOGED
Migration Activity	shows all successful migrations processed by DFHSM during the specified time period, with aging information, volume information, and DFSMS class information	HSMMGAT HSMMGATD
Migration Thrashing	shows migration/recall actions for data sets in a manner that makes excessive activity highly visible	HSMMGTH HSMMGTHD
Recall Activity	shows successful recalls processed by DFHSM during the specified time period, with aging information, volume information, and DFSMS class information	HSMRCAL HSMRCALD
Data Set Deletions	shows all successful data set deletions processed by DFHSM during the specified time period, with aging information, volume information, and job/user information Data set deletions occur from the DFHSM automatic space management functionality that deletes expired data sets or from explicit requests to delete migrated data sets. The deletion type column shows BY AGE for expiration-date-based deletions, and MIGRATED DS for DFHSM delete-migrated commands.	HSMDSDL HSMDSLDL
Daily Activity Summary	shows statistics for the DFHSM operations over the requested time period This information is read from the MAINVIEW SRM log extract files. The view displays a row of information for each MCDS daily statistic record written to the MAINVIEW SRM log extract files.	HSMDLYA HSMDLYAD

**Table 4-1 EasyHSM Views (Part 2 of 2)**

View	Description	View Name
Daily Volume Summary	shows volume information for DFHSM-managed volumes for the requested time period This information is read from the MAINVIEW SRM log extract files. The view displays a row of information for each MCDS volume statistic record written to the MAINVIEW SRM log extract files. These records may be created as frequently as once an hour.	HSMDLYV HSMDLYVD
Migration Level 1 to Level 2	shows all successful migrations from level 1 to level 2 processed by DFHSM during the specified time period, with aging information, volume information, and DFSMS class information	HSML1L2 HSML1L2D

## Backup and Recovery Activity Views

The Backup and Recovery Activity tabular view shows all successful backup and recovery actions processed by DFHSM during the specified time period. The view shows age, volumes (from and to and current), date of last change, and SMS class information. The detail view displays the selected data set record in vertical format.

View Type	View Name	View Invocation
tabular	HSMBKRC	HSMBKRC DSN/ CatInfo SYSID
detail	HSMBKRCD	HSMBKRCD DSN CatInfo SYSID

### View Invocation

Optional Input		Valid Values	Default
data set name	specifies a data set name or data set name mask	fully qualified DSN, partial DSN suffixed with "/", or "/"	"/" (All)
system ID	specifies the 4-digit system ID where the activity originated	valid SYSIDs	all SYSIDs
Include catalog information?	specifies whether to include catalog information in the display	Y (Yes), N (No)	N (No)

Date and time are retrieved from the parameters in the MAINVIEW TIME command.

The following line actions are available from this view:

BV	shows the backup versions for the data set
CL	displays a catalog list (IDCAMS LISTCAT) for the data set
D	displays a detailed view of this data set
HBA	backs up the data set
HBD	deletes the backed-up copy of the data set
HMD	deletes the migrated data set
HMI	migrates the data set
HRE	recalls the migrated data set
HRC	recovers the backed-up data set
I	shows detailed data set information (WBDSIM)

## Daily Activity Summary Views

The Daily Activity Summary tabular view shows statistics for DFHSM operations over the requested time period. This information is read from the MAINVIEW SRM log extract files.

- The tabular view displays a row of information for each MCDS daily statistic record written to the MAINVIEW SRM log extract files.
- The detail view displays the selected system record in vertical format.

View Type	View Name	View Invocation
tabular	HSMDLYA	HSMDLYA SYSID
detail	HSMDLYAD	HSMDLYAD SYSID

### View Invocation

Optional Input		Valid Values	Default
System ID	specifies the 4-digit system ID where the activity originated	valid SYSIDs	All SYSIDs

Date and time are retrieved from the parameters in the MAINVIEW TIME command.

No line actions are available for this view.

## Daily Volume Summary Views

The Daily Volume Summary tabular view shows volume information for DFHSM-managed volumes for the requested time period. This information is read from the MAINVIEW SRM log extract files.

- The tabular view displays a row of information for each MCDS volume statistic record written to the MAINVIEW SRM log extract files. These records may be created as frequently as once an hour.
- The detail view displays the selected volume record in vertical format.

View Type	View Name	View Invocation
tabular	HSMDLYV	HSMDLYV Volume SYSID
detail	HSMDLYVD	HSMDLYVD Volume SYSID

### View Invocation

Optional Input		Valid Values	Default
system ID	specifies the 4-digit system ID where the activity originated	valid SYSIDs	all SYSIDs
volume	specifies the volume for which activity is displayed	valid volume serial number	all volumes

Date and time are retrieved from the parameters in the MAINVIEW TIME command.

No line actions are available for this view.

## Data Set Deletions Views

The Data Set Deletions views show all successful data set deletions processed by DFHSM during the specified time period.

For each deleted data set, the tabular view shows information on aging, volume, job, and user. The detail view displays the selected data set record in vertical format.

The way that the data set deletion was initiated is reflected in the view as follows:

- When DFHSM automatically deletes data sets because they have expired, the deletion type column shows BY AGE.
- When DFHSM deletes migrated data sets because of an explicit request, the deletion type column shows MIGRATED DS.

View Type	View Name	View Invocation
tabular	HSMDSDL	HSMDSDL DSN/ CatInfo SYSID
detail	HSMDSDL	HSMDSDL DSN CatInfo SYSID

### View Invocation

Optional Input		Valid Values	Default
data set name	specifies a data set name or data set name mask	fully qualified DSN, partial DSN suffixed with “/”, or “/”	“/” (All)
system ID	specifies the 4-digit system ID where the activity originated	valid SYSIDs	all SYSIDs
Include catalog information?	specifies whether to include catalog information in the display	Y (Yes), N (No)	N (No)

Date and time are retrieved from the parameters in the MAINVIEW TIME command.

The following line actions are available from this view:

BV shows the backup versions for the data set  
 D displays a detailed view of this data set  
 HBD deletes the backed-up copy of the data set  
 HRC recovers the backed-up data set

## Error Details Views

The Error Details tabular view shows all unsuccessful actions processed by DFHSM during the specified time period, with error codes and a description of the error. The detail view displays the selected data set record in vertical format.

View Type	View Name	View Invocation
tabular	HSMERDT	HSMERDT DSN/ CatInfo SYSID
detail	HSMERDTD	HSMERDTD DSN Catinfo SYSID

**View Invocation**

Optional Input		Valid Values	Default
data set name	specifies a data set name or data set name mask	fully qualified DSN, partial DSN suffixed with “/”, or “/”	“/” (All)
system ID	specifies the 4-digit system ID where the activity originated	valid SYSIDs	all SYSIDs
Include catalog information?	specifies whether to include catalog information in the display	Y (Yes), N (No)	N (No)

Date and time are retrieved from the parameters in the MAINVIEW TIME command.

The following line actions are available from this view:

- D displays a detailed view of this data set
- I shows detailed data set information
- BV shows the backup versions for the data set
- CL displays a catalog list (IDCAMS LISTCAT) for the data set
- HBA backs up the data set
- HBD deletes the backed-up copy of the data set
- HMD deletes the migrated data set
- HMI migrates the data set
- HRC recovers the backed-up data set
- HRE recalls the migrated data set
- M displays HSM messages
- QW displays QuickRef messages

**Table 4-2 Action and Category Descriptions**

DFHSM Action	Action Code	Category Code
migration ML0 to ML1 ML1 to ML2 ML0 to ML2 failed migrate	MIGRATE 0->1 MIGRATE 1->2 MIGRATE 0->2 MIGRATE SPCMGMT	MIGRATION
recall ML1 to ML0 ML2 to ML0	RECALL 0<-1 RECALL 0<-2	RECALL

**Table 4-2 Action and Category Descriptions**

backup daily spill failed backup	DAILY BACKUP SPILL BACKUP BACKUP	BACKUP
recovery	RECOVERY	RECOVERY
volume dump	FULL VOL DUMP	DUMP
restore data set volume	VOL/DS RESTORE	RESTORE
delete migrated data set delete data set by age data set deleted by age failed delete scratched by SPCMGMT recycle backup recycle migration volume	DELETE MIG DS DS DEL BY AGE EXPIRED DELETE SCRATCH RECYCLE BACKUP RECYCL MIG VOL	OTHER

Note that some of the fields displayed in the error view, may be empty, depending on what data had been collected by DFHSM when the error occurred.

## Error Summary Views

The Error Summary tabular view shows total errors for migration, recall, and backup during the specified time period, with error codes and a description of the error. The view includes only migration, recall, and backup actions.

The detail view displays the selected data set record in vertical format.

View Type	View Name	View Invocation
tabular	HSMERRS	HSMERRS DSN/ CatInfo SYSID
detail	HSMERRSD	HSMERRSD DSN CatInfo SYSID

### View Invocation

Optional Input		Valid Values	Default
data set name	specifies a data set name or data set name mask	fully qualified DSN, partial DSN suffixed with “/”, or “/”	“/” (All)

Optional Input		Valid Values	Default
system ID	specifies the 4-digit system ID where the activity originated	valid SYSIDs	all SYSIDs
Include catalog information?	specifies whether to include catalog information in the display	Y (Yes), N (No)	N (No)

Date and time are retrieved from the parameters in the MAINVIEW TIME command.

The following line actions are available from this view:

DET displays error details  
DIS displays a detailed view of this data set  
M displays HSM messages  
QW displays QuickRef messages

The DET line action switches the view to a detail panel in which the individual errored actions that make up a summary row are displayed.

**Table 4-3 Action and Category Descriptions**

DFHSM Action	Action Code	Activity Code
migration ML0 to ML1 ML1 to ML2 ML0 to ML2 failed migrate	MIGRATE 0->1 MIGRATE 1->2 MIGRATE 0->2 MIGRATE	MIGRATION
recall ML1 to ML0 ML2 to ML0	RECALL 0<-1 RECALL 0<-2	RECALL
backup daily spill failed backup	DAILY BACKUP SPILL BACKUP BACKUP	BACKUP

Note that some of the fields displayed in the error view, may be empty, depending on what data had been collected by DFHSM when the error occurred.

## Log Entries Views

The Log Entries tabular view lists all actions (successful and unsuccessful) processed by DFHSM during the specified time period. The detail view displays the selected data set record in vertical format.

View Type	View Name	View Invocation
tabular	HSMLOGE	HSMLOGE DSN/ CatInfo SYSID
detail	HSMLOGED	HSMLOGED DSN CatInfo SYSID

### View Invocation

Optional Input		Valid Values	Default
data set name	specifies a data set name or data set name mask	fully qualified DSN, partial DSN suffixed with “/”, or “/”	“/” (All)
system ID	specifies the 4-digit system ID where the activity originated	valid SYSIDs	all SYSIDs
Include catalog information?	specifies whether to include catalog information in the display	Y (Yes), N (No)	N (No)

Date and time are retrieved from the parameters in the MAINVIEW TIME command.

The following line actions are available from this view:

BV shows the backup versions for the data set  
 CL displays a catalog list (IDCAMS LISTCAT) for the data set  
 DIS displays a detailed view of this data set  
 HBA backs up the data set  
 HBD deletes the backed-up copy of the data set  
 HMI migrates the data set  
 HRC recovers the backed-up data set  
 HMD deletes the migrated data set  
 HRE recalls the migrated data set  
 I shows detailed data set information  
 M displays HSM messages  
 QW displays QuickRef messages

DFHSM actions are listed in Table 4-4.

**Table 4-4 DFHSM Action Descriptions**

<b>DFHSM Action</b>	<b>Action Code</b>
migration ML0 to ML1 ML1 to ML2 ML0 to ML2 failed migrate	MIGRATE 0->1 MIGRATE 1->2 MIGRATE 0->2 MIGRATE SPCMGMT
recall ML1 to ML0 ML2 to ML0	RECALL 0<-1 RECALL 0<-2
backup daily spill failed backup	DAILY BACKUP SPILL BACKUP BACKUP
recovery	RECOVERY
volume dump	FULL VOL DUMP
restore data set volume	VOL/DS RESTORE
delete migrated data set delete data set by age data set deleted by age failed delete scratched by SPCMGMT recycle backup recycle migration volume	DELETE MIG DS DS DEL BY AGE EXPIRED DELETE SCRATCH RECYCLE BACKUP RECYCL MIG VOL

## Migration Activity Views

The Migration Activity tabular view shows all successful migrations processed by DFHSM during the specified time period, including information about aging, volume, and DFSMS class. The detail view displays the selected data set record in vertical format.

View Type	View Name	View Invocation
tabular	HSMMGAT	HSMMGAT DSN/ CatInfo SYSID
detail	HSMMGATD	HSMMGATD DSN CatInfo SYSID

### View Invocation

Optional Input		Valid Values	Default
data set name	specifies a data set name or data set name mask	fully qualified DSN, partial DSN suffixed with “/”, or “/”	“/” (All)
system ID	specifies the 4-digit system ID where the activity originated	valid SYSIDs	all SYSIDs
Include catalog information?	specifies whether to include catalog information in the display	Y (Yes), N (No)	N (No)

Date and time are retrieved from the parameters in the MAINVIEW TIME command.

The following line actions are available from this view:

I shows detailed data set information  
 BV shows the backup versions for the data set  
 CL displays a catalog list (IDCAMS LISTCAT) for the data set  
 D displays a detailed view of this data set  
 HBA backs up the data set  
 HBD deletes the backed-up copy of the data set  
 HMD deletes the migrated data set  
 HMI migrates the data set  
 HRC recovers the backed-up data set  
 HRE recalls the migrated data set

The tabular view displays three types of migrations, as shown in Table 4-5.

**Table 4-5 DFHSM Action Descriptions**

DFHSM Action	Action Code
ML0 to ML1 migration	M 0->1
ML1 to ML2 migration	M 1->2
ML0 to ML2 migration	M 0->2

## Migration Level 1 to Level 2 Views

The Migration Level 1 to Level 2 tabular view shows all successful migrations from level 1 to level 2 processed by DFHSM during the specified time period, including information on aging, volume, and DFSMS class. The detail view displays the selected data set record in vertical format.

View Type	View Name	View Invocation
tabular	HSML2L2	HSMMG12 DSN/ CatInfo SYSID
detail	HSML1L2D	HSMMG12D DSN CatInfo SYSID

### View Invocation

Optional Input		Valid Values	Default
data set name	specifies a data set name or data set name mask	fully qualified DSN, partial DSN suffixed with "/", or "/"	"/" (All)
system ID	specifies the 4-digit system ID where the activity originated	valid SYSIDs	all SYSIDs
Include catalog information?	specifies whether to include catalog information in the display	Y (Yes), N (No)	N (No)

Date and time are retrieved from the parameters in the MAINVIEW TIME command.

The following line actions are available from this view:

- BV shows the backup versions for the data set
- CL displays a catalog list (IDCAMS LISTCAT) for the data set
- D displays a detailed view of this data set
- HBA backs up the data set
- HBD deletes the backed-up copy of the data set
- HMD deletes the migrated data set
- HMI migrates the data set
- HRC recovers the backed-up data set
- HRE recalls the migrated data set
- I shows detailed data set information

## Migration Thrashing Views

The Migration Thrashing tabular view shows migration and recall actions for data sets in a manner that makes excessive activity highly visible. The detail view displays the selected data set record in vertical format.

View Type	View Name	View Invocation
tabular	HSMMGTH	HSMMGTH DSN/ CatInfo SYSID
detail	HSMMGTHD	HSMMGTHD DSN CatInfo SYSID

### View Invocation

Optional Input		Valid Values	Default
data set name	specifies a data set name or data set name mask	fully qualified DSN, partial DSN suffixed with “/”, or “/”	“/” (All)
system ID	specifies the 4-digit system ID where the activity originated	valid SYSIDs	all SYSIDs
Include catalog information?	specifies whether to include catalog information in the display	Y (Yes), N (No)	N (No)

Date and time are retrieved from the parameters in the MAINVIEW TIME command.

The following line actions are available from this view:

BV shows the backup versions for the data set  
 CL displays a catalog list (IDCAMS LISTCAT) for the data set  
 D displays a detailed view of this data set  
 DET displays migration thrashing details  
 HBA backs up the data set  
 HBD deletes the backed-up copy of the data set  
 HMD deletes the migrated data set  
 HMI migrates the data set  
 HRE recalls the migrated data set  
 HRC recovers the backed-up data set  
 I shows detailed data set information  
 M displays HSM messages  
 QW displays QuickRef messages

## Recall Activity Views

The HSM Recall Activity tabular view shows successful recalls processed by DFHSM during the specified time period, including information on aging, volume, and DFSMS class. The detail view displays the selected data set record in vertical format.

View Type	View Name	View Invocation
tabular	HSMRCAL	HSMRCAL DSN/ CatInfo SYSID
detail	HSMRCALD	HSMRCALD DSN CatInfo SYSID

### View Invocation

Optional Input		Valid Values	Default
data set name	specifies a data set name or data set name mask	fully qualified DSN, partial DSN suffixed with "/", or "/"	"/" (All)
system ID	specifies the 4-digit system ID where the activity originated	valid SYSIDs	all SYSIDs
Include catalog information?	specifies whether to include catalog information in the display	Y (Yes), N (No)	N (No)

Date and time are retrieved from the parameters in the MAINVIEW TIME command.

The following line actions are available from this view:

BV shows the backup versions for the data set  
 CL displays a catalog list (IDCAMS LISTCAT) for the data set  
 HBA backs up the data set  
 HBD deletes the backed-up copy of the data set  
 HMD deletes the migrated data set  
 HMI migrates the data set  
 HRE recalls the migrated data set  
 HRC recovers the backed-up data set  
 I shows detailed data set information  
 MTD displays migrated thrashing details

The view displays the two types of recalls shown in Table 4-6.

**Table 4-6 DFHSM Action Descriptions**

DFHSM Action	Action Code
ML0 from ML1recall	R 0<-1
ML0 from ML2 recall	R 0<-2

## VSAM Cluster Views

The VSAM Cluster tabular view provides general VSAM cluster information. The detail view displays the selected data set record in vertical format.

You can use action line commands to provide more detailed information on the individual VSAM components.

View Type	View Name	View Invocation
tabular	WBDSIC	WBDSIC <i>fully qualified DSN</i>

The following line actions are available from this view:

CL displays a catalog list for the data set  
I shows component information

## Migrated Data Set View

The Migrated Data Set tabular view shows data set information related to a migrated data set.

View Type	View Name	View Invocation
tabular	WBDSIM	WBDSIM <i>fully qualified DSN</i>

No line actions are available for this view.

## VSAM Index Component View

The VSAM Index Component tabular view displays information obtained from the catalog for the INDEX component of the indicated VSAM cluster and the data set name of the INDEX component.

View Type	View Name	View Invocation
tabular	WBDSII	WBDSII <i>fully qualified DSN</i>

No line actions are available for this view.

## VSAM Data Component View

The VSAM Data Component tabular view provides detailed VSAM data component information. The major sections of the display (HISTORY, ATTRIBUTES, ALLOCATION, and STATISTICS) have the same meaning and contain much the same information as the standard IDCAMS LISTCAT. The only exception is the ALLOCATION section, which provides fields that consolidate information from the ALLOCATION portion of LISTCAT.

View Type	View Name	View Invocation
tabular	WBDSID	WBDSID <i>fully qualified DSN</i>

No line actions are available for this view.

## Non-VSAM Data Set View

The Non-VSAM Data Set tabular view shows information about the selected data set.

View Type	View Name	View Invocation
tabular	WBDSIA	WBDSIA <i>fully qualified DSN</i>

No line actions are available for this view.

---

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# Chapter 5 DFHSM CDS Query Views

This chapter explains how to use DFHSM control data set (CDS) query views.

Overview . . . . .	5-1
Backup Data Set Views . . . . .	5-3
Backup Data Set Versions Views . . . . .	5-4
Backup Data Set Versions for Data Set Views . . . . .	5-5
Migrated Data Set Views . . . . .	5-6
OCDS Data Set Views . . . . .	5-7
OCDS Volume Views . . . . .	5-8

## Overview

EasyHSM provides fast, flexible access to DFHSM operations, using MCDS, BCDS, OCDS, and DFHSM log files.

To invoke DFHSM CDS query views you can use the following methods:

- Type the view name and required parameters at the **COMMAND** line on any MAINVIEW panel when EasyHSM is active.
- Select the view from the EZSRMHSM menu.
- Filter the data from the data input panel.

To invoke EasyHSM views from the EZSRMHSM menu, perform the following steps:

- Step 1** From the EZSRM Menu, select **EasyHSM**.

The EZSRMHSM menu is displayed, as shown in Figure 5-1.

Figure 5-1 EZSRMHSM Menu

```

28NOV2001 11:31:23 ----- MAINVIEW WINDOW INTERFACE -----
COMMAND ==>>                                SCROLL ==>> PAGE
CURR WIN ==>> 1          ALT WIN ==>>
>W1 =EZSRMHSM=====SJSG=====*=====28NOV2001==11:31:23===MVS RMHSM=D====1
          EZSRMHSM Menu

EasyHSM Views          +-----+          DFHSM CDS Query Views
|                       |           |          . Backup data set view
| Place cursor on      |           |          . Backup DSN version
| menu item and        |           |          . Migrated data set view
| press ENTER          |           |          . OCDS data set view
+-----+             +-----+          . OCDS volume view

. Bkup/Recovery Activity |           |          SRM Administration
. Error details          |           |          > Parmlib Members
. Error summary          |           |          . Functions
. Log entries            |           |          . SRM Component Status
. Migration activity     |           |          . MVS RMHSM View List
. Migration thrashing    |           |          . MVS RMHSM Batch Reports
. Recall activity        |           |          . Return....
. Data set deletions     |           |
. Daily activity summary |           |
. Daily volume summary   |           |
. Migration level 1->2   |           |

. DFHSM Output Mgmt     |           |

```

- Step 2** Set date and time for data views using the MAINVIEW TIME command. See “Using the TIME Command” in the *MAINVIEW SRM User Guide and Reference*.
- Step 3** Select the menu option of your choice. A data entry panel is displayed in which you can filter the data you want to see.
- Step 4** To filter data, complete the fields provided on the data entry panel.
- Step 5** Type S to the left of the <=> symbol to process the request.

Table 5-1 describes the DFHSM CDS query views. Information on invoking views and available action line commands are presented on the following pages.

**Tip:** You can use the EZcmd menu to link to another view rather than the action line command. See the *MAINVIEW SRM User Guide and Reference* for details.

Power users can gain functionality by using *primary action commands*, which are described in the online Help. They appear in reverse video to indicate that you can link to a detailed description of the command that includes specific arguments the command uses.

**Table 5-1 DFHSM CDS Query Views**

View	Description	View Name
Backup Data Set view	shows backup status information on data sets The view shows the age of the backup, the date it was taken, and the device and device type (disk or tape).	HSMBKDS HSMBKDSD
Backup DSN Version view	lists backup data set entries on a specific data set version	HSMBKVR HSMBKVRD
Backup Data Set Version view	shows backup status information on a specific data set version	HSMDVER HSMDVERD
Migrated Data Set view	shows status information on migrated data sets The view shows current migration level, volume information, aging information, compression percentage, SDSP residency, and DFSMS class information. The view can be restricted to VSAM or non-VSAM data sets and to data sets on Level 1 or Level 2.	HSMMGDS HSMMGDSD
OCDS Data Set view	shows physical block information for each data set, as well as the volume serial of the tape It also shows the last referenced date, the expiration date, and the HSM name of the data set.	HSMOCDSD HSMOCDSD
OCDS Volume view	shows the information that is contained in the OCDS for each volume It shows the volume serial of the tape, the type of tape, the number of valid blocks, the number of data sets on the tape, whether the tape contains RACF-protected data sets, and whether HSM considers the volume to be full.	HSMOCDV HSMOCDVD

## Backup Data Set Views

The Backup Data Set tabular view shows backup status information on data sets, such as the age of the backup, the date it was taken, the device, and the device type (disk or tape). The detail view displays selected data set record in vertical format.

View Type	View Name	View Invocation
tabular	HSMBKDS	HSMBKDS DSN/ DSTP
detail	HSMBKDSD	HSMBKDSD DSN DSTP

Optional Input		Valid Values	Default
data set name	specifies a data set name or data set name mask	fully qualified DSN, partial DSN suffixed with “/”, or “/”	“/” (All)
data set name type	specifies the data set type	A (all types) V (VSAM data sets) N (Non-VSAM data sets)	A (All)

Date and time are retrieved from the parameters in the MAINVIEW TIME command.

The following line actions are available for this view:

BV shows the backup versions for the data set  
D displays detail view  
HBD deletes the backed-up copy of the data set  
HRC recovers the backed-up data set

## Backup Data Set Versions Views

The Backup Data Set Versions tabular view shows backup status information on data set versions. The detail view displays the selected data set record in vertical format.

View Type	View Name	View Invocation
tabular	HSMBKVR	HSMBKVR DSN/ DSTP
detail	HSMBKVRD	HSMBKVRD DSN DSTP

### View Invocation

Optional Input		Valid Values	Default
data set name	specifies a data set name or data set name mask	fully qualified DSN, partial DSN suffixed with “/”, or “/”	“/” (All)
data set name type	specifies the data set type	A (all types) V (VSAM data sets) N (Non-VSAM data sets)	A (All)

Date and time are retrieved from the parameters in the MAINVIEW TIME command.

The following line actions are available for this view:

BV shows the backup versions for the data set  
 D displays detail view  
 HBD deletes the backed-up copy of the data set  
 HRC recovers the backed-up data set

## Backup Data Set Versions for Data Set Views

The Backup Data Set Version for Data Set tabular view shows backup status information on a specific data set version. The detail view displays the selected data set record in vertical format.

View Type	View Name	View Invocation
tabular	HSMDVER	HSMDVER DSN DSTP
detail	HSMDVERD	HSMDVERD DSN DSTP

### View Invocation

Optional Input	Valid Values	Default
data set name	specifies a data set name	fully qualified DSN
		none

Date and time are retrieved from the parameters in the MAINVIEW TIME command.

The following line actions are available for this view:

HBD deletes the backed-up copy of the data set  
 HRC recovers the backed-up data set

## Migrated Data Set Views

The Migrated Data Set tabular view shows status information on migrated data sets. The view shows current migration level, volume information, aging information, compression percentage, SDSF residency, and DFSMS class information. The view can be restricted to VSAM or non-VSAM data sets and to data sets on Level 1 or Level 2. The detail view displays the selected data set record in vertical format.

View Type	View Name	View Invocation
tabular	HSMMGDS	HSMMGDS DSN/ DSTP
detail	HSMMGDSD	HSMMGDSD DSN DSTP

Optional Input		Valid Values	Default
data set name level	specifies a data set name or data set name mask to show activity for	fully qualified DSN, partial DSN suffixed with "/", or "/"	"/" (All)
data set type	specifies the data set type	A (all types) V (VSAM data sets) N (Non-VSAM data sets)	A (All)
migration level	specifies migration levels to include	A (all levels) 1 (level 1) 2 (level 2)	A (All)
Include catalog information?	specifies whether to include catalog information in the display	Y (Yes), N (No)	N (No)

Date and time are retrieved from the parameters in the MAINVIEW TIME command.

The following line actions are available for this view:

DIS displays a detailed view of this data set  
HMD deletes the migrated data set copy  
HMI migrates the data set  
HRE recalls the migrated data set  
I shows detailed data set information

## OCDS Data Set Views

The OCDS Data Set tabular view shows physical-block information for each offline data set, as well as the volume serial of the tape. It also shows the last referenced date, the expiration date, and the HSM name of the data set. The detail view displays the selected data set record in vertical format.

View Type	View Name	View Invocation
tabular	HSMOCDS	HSMOCDS DSN/ DSTP VLTP FVLN TVLN
detail	HSMOCSD	HSMOCSD DSN DSTP VLTP FVLN TVLN

Optional Input		Valid Values	Default
data set name	specifies a data set name or data set name mask	fully qualified DSN, partial DSN suffixed with "/", or "/"	"/" (All)
data set type	specifies the data set type	A (all types) V (VSAM data sets) N (Non-VSAM data sets)	A (All)
volume type	specifies the volume type	A (all types) M (migrated) D (daily backup) B (spill backup) U (unassigned)	A (All)
from volume	specifies a From volume name mask	full volume name, partial volume name suffixed with "/", or "/"	"/" (All)
to volume	specifies a To volume name mask	full volume name, partial volume name suffixed with "/", or "/"	"/" (All)

Date and time are retrieved from the parameters in the MAINVIEW TIME command.

The following line actions are available for this view:

BV shows backup versions for the data set  
 D displays detail view  
 HBD deletes the backed-up copy of the data set  
 HMD deletes the migrated data set  
 HRC recovers the backed-up data set  
 HRE recalls the migrated data set  
 I shows detailed data set information

## OCDS Volume Views

The OCDS Volume tabular view shows the information that is contained in the OCDS for each volume. It shows the volume serial of the tape, the type of tape, the number of valid blocks, the number of data sets on the tape, whether the tape contains RACF-protected data sets, and whether HSM considers the volume to be full. The detail view displays the selected volume record in vertical format.

View Type	View Name	View Invocation
tabular	HSMOCDV	HSMOCDV VLTP, FVLN, TVLN
detail	HSMOCDVD	HSMOCDVD VLTP, FVLN, TVLN

Optional Input		Valid Values	Default
volume type	specifies the volume type	A (all types) M (migrated) D (daily backup) B (spill backup) U (unassigned)	A (All)
from volume	specifies a From volume name mask	full volume name, partial volume name suffixed with “/”, or “/”	“/” (All)
to volume	specifies a To volume name mask	full volume name, partial volume name suffixed with “/”, or “/”	“/” (All)

Date and time are retrieved from the parameters in the MAINVIEW TIME command.

The following line actions are available for this view:

DEL deletes the selected volume  
 DIS displays a detailed view of this data set  
 I shows detailed volume information  
 REC recycles the selected volume  
 UNA unassigns the selected volume

---

---

# Chapter 6 DFHSM Output Management

This chapter presents the following topics:

Overview . . . . .	6-1
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Input Data Sets . . . . .	6-3
Output Data Sets . . . . .	6-4
Report Output . . . . .	6-4
JCL and Control Card Output . . . . .	6-5
Skeleton Processing . . . . .	6-13
Using Variables in Skeletons . . . . .	6-14
Message ARC0734I . . . . .	6-15
DFHSM Output Management Views . . . . .	6-19

## Overview

DFHSM output management allows automated processing of DFHSM and DFDS output. Output management provides

- filtering of unwanted or informational messages, displaying only messages indicating situations that need attention
- automated creation of control cards, JCL, or commands to handle conditions described by messages, using information extracted from the message text
- immediate submission of generated JCL
- online views produced by the message-filtering process

Output management begins with the execution of a batch job. It reads user-specified sets of DFHSM logs and DFDSS message output. You can select messages for inclusion in reports and for construction of JCL or control cards. You can view the results online in the HSMOMDS and HSMOMML views.

**Tip:** Your DFHSM initialization parameters must include **ACTLOGTYPE(DASD)**.

DFHSM initialization parameters are usually stored in the ARCCMD $_{xx}$  member of your SYS1.PARMLIB data set. This logging method allows your log data to be available for the EasyHSM reporting facility.

## Message Filtering

DFHSM and DFDSS produce one or more messages for every action they take. In some cases, they also produce messages for actions they do not take. This results in a large number of messages that might contain important information for managing the installation's storage resources. The storage administrator should regularly scan the messages to determine if any preventive or corrective action is needed.

For example, the following message indicates that a backup was not taken; the storage administrator should investigate and correct the situation. However, this message is often buried in many occurrences of messages ARC0722I, ARC0723I, and ARC0734I.

```
ARC0706I BACKUP OF VOLUME WORK02 TERMINATED, NO DASD
        DAILY BACKUP VOLUME AVAILABLE
```

```
ARC0700I BACKUP OF VOLUME SMS005 SUSPENDED, TASK WAITING
        FOR AN AVAILABLE DASD DAILY BACKUP VOLUME
```

DFHSM log data sets typically contain hundreds of ARC0734I messages, most of them indicating successful actions. However, the following message could indicate DFHSM processing bottlenecks that should be corrected.

```
ARC0734I ACTION=BACK-UP FRVOL=EMP004 TOVOL=HSM004 TRACKS=
        52 RC= 19, REASON= 12, AGE= 1, DSN=
```

The following message, and other instances of ARC0734I with non-zero return codes, indicates that the operation failed for a data set. That data set was not backed up or migrated; it may be uncataloged, cataloged but nonexistent, or ineligible for backup or migration.

```
ARC0734I ACTION=MIGRATE FRVOL=WORK02 TOVOL= *** TRACKS=
0 RC= 20, REASON= 12, AGE=107, DSN=
```

## Input Data Sets

Output management reads the DFHSM and DFDSS message logs. These logs must be written to DASD data sets by DFHSM and DFDSS.

Your DFHSM initialization parameters must include the ACTLOGTYPE(DASD) parameter so DFHSM will write the log records to DASD data sets used by the OPRTR000 program.

**Note:** DFHSM initialization parameters are usually stored in the ARCCMDxx member of your SYS1.PARMLIB data set.

If you are using the alternative logging method, ACTLOGTYPE(SYSOUT), your log data will not be available for the OPRTR000 program, and you should refer to “EasyHSM Views” on page 4-1.

DFHSM uses the following naming convention for the log data sets:

*HSMACT.Hhostid.actLOG.Dyyddd.Thhmmss*

The variables in the naming convention are as follows:

- *hostid* is the one-character ID of the host machine
- *act* identifies the DFHSM activity
  - BAK backup
  - MIG migration
  - CMD command
  - DMP dump)
- *yyddd* is the Julian date when the data set was produced
- *hhmmss* is the time of day when the data set was produced

**Note:** You can set the high-level qualifier of the DFHSM activity log data sets in the HSMACTID parameter in the SMMSYSxx member of the SYS1.PARMLIB data set.

The DFHSM data sets are dynamically allocated by output management and do not require any entries in the execution JCL. You can use the DAYS/DATE and HOST parameters on output management control cards to specify which DFHSM logs should be used as input. DFHSM logs that have been migrated are recalled to ML0 for input processing. *A maximum of 255 DFHSM logs can be input to any single execution of output management.*

With DFDSS, the output data set for messages must be specified on the SYSPRINT DD statement of the DFDSS job. DFDSS does not require any naming standards. DFDSS data sets must be identified explicitly on the OPMIN DD statement.

Output management allows data to be extracted from selected DFHSM or DFDSS messages and substituted into *skeleton* statements. (This is conceptually similar to the ISPF JCL skeleton facility.) These skeleton statements, which are normally JCL or control card prototype statements, are read from partitioned data set (PDS) members. The input skeleton PDS is identified on the OPMSKL DD statement. The member name is specified on the SAVE or START output management control card. (See “Skeleton Processing” on page 6-13 for a complete description.)

## Output Data Sets

Output management produces two types of output:

- reports
- generated JCL and control cards.

## Report Output

Output management generates two different report types, identified by the REPORT and ERROR parameters in the output management specification requests. DFHSM and DFDSS messages can be filtered into either category; the distinction between normal reporting and error reporting depends on how you define it.

Reports are written to PDSs created dynamically by output management. Each report PDS is given a name unique to the current date. Multiple executions of output management on the same day adds members to any existing reports PDS for that day. These output data sets use the following naming convention:

*opmhlq.OUTPUT.DFHSM.Dyymmdd*  
*opmhlq.OUTPUT.DFDSS.Dyymmdd*

The variables in the naming convention are as follows:

- *opmhlq* is the output management high-level qualifier specified in the OPMHLQ parameter of the SMMSYSxx member
- *yymmdd* is the current date

Report members in the output PDS use the following naming convention:

*s h r hhmm*

The variables in the naming convention are as follows:

- *s* identifies the source:
  - B DFHSM backup log
  - M DFHSM migration log
  - C DFHSM command log
  - D DFHSM dump log or DFDSS output
- *h* identifies the ID of the host machine
- *r* identifies the type of output
  - Report
  - Error
- *hhmm* identifies the time of day when output management produced the member

#### Example

M2R1503 migration report for host 2, run at 3:03 P.M.

BAE0811 backup error report for host A, run at 8:11 A.M.

## JCL and Control Card Output

Output management allows data to be extracted from selected DFHSM and DFDSS messages and substituted into *skeleton* statements (normally JCL and control card images). The output containing the skeleton text and substituted data is written to the sequential data set identified on the OPMSUB DD statement. The member name is specified on the SAVE control card. (See “Skeleton Processing” on page 6-13 for a complete description.)

You can also submit translated skeleton output directly to OS/390 for execution. An INTRDR DD statement is required in the JCL.

## Execution JCL

Figure 6-1 shows the JCL required to execute output management. MAINVIEW SRM must be active to run output management.

**Figure 6-1 Sample JCL for Output Management**

```
//STEP10      EXEC PGM=OPRTR000,REGION=2M
//STEPLIB     DD DSN=xxxxxxx.BBLINK,DISP=SHR
//SYSPRIN     DD SYSOUT=*
//SYSUT1DD    UNIT=unit,SPACE=(CYL,(10,10))
//SYSUT2     DD UNIT=unit,SPACE=(CYL,(10,10))
//OPMIN      DD DSN=DFDSS.messages,DISP=SHR      optional
//OPMSKL     DD DSN=xxxxxxx.opm.skeleton,DISP=SHR optional
//OPMSUB     DD DSN=xxxxxxx.opm.genjcl,DISP=SHR  optional
//INTRDR     DD SYSOUT=*,DCB=BLKSIZE=80         optional
//SYSIN      DD *
```

output management control cards

/\*

DDname descriptions are as follows:

DD Statement	Description
OPMIN	specifies the DFDSS message data set This DD statement is required if DFDSS is specified in any output management control statement. (DFHSM input data sets are allocated dynamically and do not require JCL specification.)
OPMSKL	specifies an input PDS containing skeleton specifications This DD statement is required when either SAVE or START is specified with an ACTION statement.
OPMSUB	specifies an output sequential data set for card images generated from skeleton statements This DD statement is required when SAVE is specified with an ACTION statement.
INTRDR	specifies an internal reader This DD statement is required when START is specified with an ACTION statement.
SYSIN	contains the control statements for output management processing

## Control Statements

You define output management processing by specifying a series of control statements containing a variable number of parameters. Like other MAINVIEW SRM functions, parameters are either action parameters or selection parameters. (See Figure 6-2 on page 6-8.)

You use *action* parameters to

- specify the activity to be performed and the source of data

For example, BACKUP indicates that backup messages from DFHSM data set HSMACT.Hx.BACLOG.Dyyddd.Thhmmss are processed.

- specify the type of output to be produced

For example, REPORT indicates that a report of selected messages is produced.

- specify skeleton usage

For example, SAVE specifies the skeleton for building the output with data extracted from message input.

- specify the data to be extracted from messages and substituted into skeleton lines

For example, %VOL=AFTER(“VOLUME=”,6) indicates that a skeleton variable %VOL has the six-character string following “VOLUME=” in the selected messages.

You use *selection* parameters to

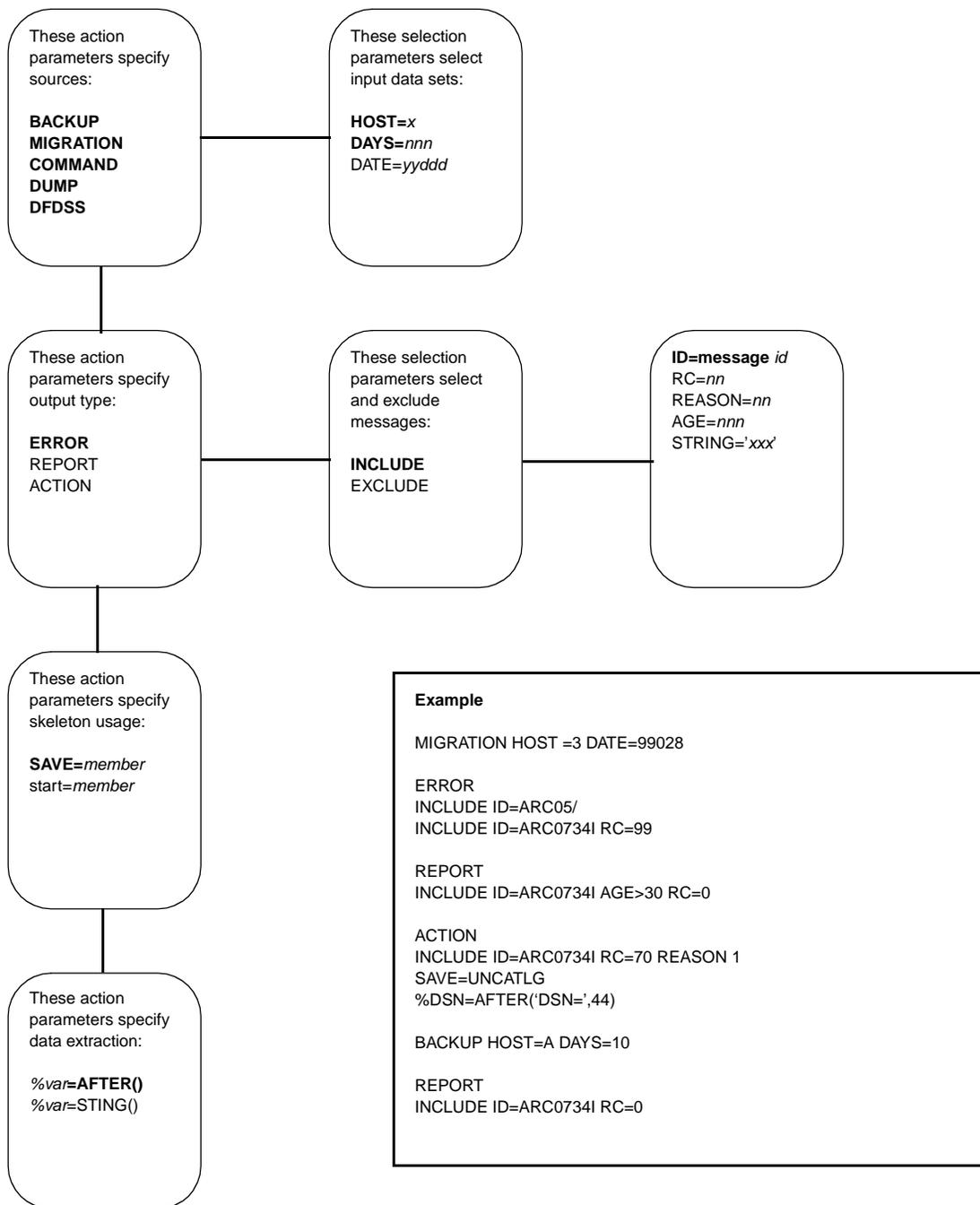
- specify the individual DFHSM logs to be read

For example, HOST=A DATE=98030 specifies that logs from host machine A created on 1/30/98 are to be processed.

- Specify messages to be included or excluded

For example, INCLUDE ID=ARC0706I indicates that all ARC0706I messages are included for processing.

Figure 6-2 DFHSM Output Management Action and Selection Parameters Overview



## Syntax

A single execution of the output management program can produce multiple sets of output, and each output set can produce 1 to 3 reports. A single execution of output management can produce only one output set for a single host, but multiple hosts can be processed in each run.

The syntax for an output set consists of

- One action parameter (BACKUP, MIGRATION, DFDSS, and so on) specifying input from DFHSM or DFDSS
- One or more action parameters (ERROR, REPORT, ACTION) specifying output to reports or card image generation
- For each output action parameter, one or more selection parameters (INCLUDE, EXCLUDE, and so on) and one or more keywords (ID, RC, REASON, and so on)
- For each card image generation action parameter (SAVE, START), one action parameter specifying a skeleton member

Some parameters require a keyword followed by a value, while other parameters require a value or stand alone, as in the following examples:

REPORT	no value follows the REPORT parameter
INCLUDE ID=ARC0523I	no value follows the INCLUDE parameter, but the ID keyword must be followed by a value

Parameters can begin in any column. A single parameter must be contained on one line. Multiple parameters can be on the same line, or separate lines, except for INCLUDE/EXCLUDE specifications, which must be contained on one line. There is no line continuation character. The maximum line length is 80.

Blank lines are ignored. Comment lines must start with an asterisk in column 1. There is no facility for embedded comments (all comments must be a separate line).

Like MAINVIEW SRM function filter statements, selection parameters on the same line are ANDed together; selection parameters on separate lines are ORed together.

Selection keywords cannot be duplicated after a single INCLUDE/EXCLUDE parameter. For example, INCLUDE AGE>30 AGE<60 is invalid; only the last AGE keyword is used.

You can use the following features with message selection keywords. (Message selection keywords are always specified after an INCLUDE or EXCLUDE parameter).

- You can use name masking in the ID message selection parameter. The following name masking characters are available:
  - % any single numeric character
  - ? any single alphanumeric character, except the period character (.)
  - / any character string, any length
- you can use the following comparison operators in the RC, REASON, and AGE message selection parameters:

= (equals)	parameter must equal the specified value
/ (not equals)	parameter must not equal the specified value
< (less than)	parameter must be less than the specified value
> (greater than)	parameter must be greater than the specified value

## Parameter Specifications

The following action parameters identify the general input source. Each of these action parameters begins a specification for one output set. Other action and selection parameters (noted below) define the input and output information.

Action Parameter	Description
BACKUP	DFHSM backup logs are processed
MIGRATION	DFHSM migration logs are processed
DUMP	DFHSM dump logs are processed
COMMAND	DFHSM command logs are processed
DFDSS	DFDSS message data sets are processed

DFHSM source parameters also require the following selection parameters to identify the range of data sets to be read. (These parameters are not available for DFDSS processing.)

Selection Parameter	Description
DATE= <i>yyddd</i>	specifies an exact date in Julian format ( <i>yyddd</i> ) All non-empty DFHSM logs for that day are processed. A specific date must be given; no masking characters are allowed. No comparison operators other than = (equals) are allowed. DATE or DAYS must be specified.
DAYS= <i>nnn</i>	specifies a range of days Up to 731 days can be specified. (However, no more than 255 input data sets are processed.) This value specifies the number of days (starting with the current day) for which log data sets are read; for example, DAYS=2 reads logs from today and yesterday. DAYS=0 is invalid. No masking characters are allowed. No comparison operators other than = (equals) are allowed. DATE or DAYS must be specified.
HOST= <i>x</i>	specifies the host machine ID Allowable characters are 0-9 and A-Z. No masking characters are allowed. No comparison operators other than = (equals) are allowed. This is a required parameter for DFHSM requests (MIGRATION, BACKUP, COMMAND, DUMP); it is not necessary for DFDSS requests.

### Example

The following examples show valid parameter specifications:

BACKUP DATE=98028 HOST=2	Process DFHSM backup logs generated on 1/28/98 for host machine 2.
MIGRATION DAYS=10 HOST=A	Process DFHSM migration logs generated during the past 10 days for host machine A.
DFDSS	Process all DFDSS message output contained in the data set(s) on DD statement OPMIN.
COMMAND HOST=C DAYS=5	Process DFHSM command logs generated over the past 5 days for host machine C.

The following parameters identify the type of output. At least one of these parameters must be specified for each output set request (BACKUP, MIGRATION, COMMAND, DUMP, DFDSS). No more than one of each output type (REPORT, ERROR, ACTION) can be specified for a single output set.

Output Parameter	Description
REPORT	specifies that selected messages are to be written to a report output member <i>shRhmm</i> in <i>opmhlq.OUTPUT.DFxxx.Dyyddd</i> )
ERROR	specifies that selected messages are to be written to an error output member ( <i>shEhmm</i> in <i>opmhlq.OUTPUT.DFxxx.Dyyddd</i> ) Note that the difference between REPORT and ERROR depends on your specification.
ACTION	specifies that selected messages are used as a source of data to be extracted and substituted into skeleton statements

### Message Inclusion Parameters

The following parameters specify criteria used to select or exclude messages from the DFHSM and DFDSS logs. The selection parameters must be preceded by the INCLUDE or EXCLUDE parameter. (As with the MAINVIEW SRM filter selection parameters, the three-character abbreviations INC and EXC can be used.) A selection parameter can be used only once in any single INCLUDE or EXCLUDE parameter. All parameters on the same line are ANDed together parameters on separate lines are ORed together.

Parameter	Description
ID=xxxxxxx	specifies a message ID (1-8 characters) Name masking can be used. This is a character comparison. The leading three characters must be specified in the mask; for example, ID=ARC0734/ instead of ID=734/
RC=nn	specifies a numeric return code Name masking cannot be used. Alternative comparison operators (/, <, >) can be used. This parameter is matched to the RC= value in messages. Note that not all DFHSM/DFDSS messages show return codes. If a message does not contain the string RC=, it is not selected by this parameter.
REASON=nn	specifies a numeric reason code Name masking cannot be used. Alternative comparison operators (/, <, >) can be used. This parameter is matched to the REASON= value in messages. Note that not all DFHSM/DFDSS messages show reason codes. If a message does not contain the string REASON=, it is not selected by this parameter.

Parameter	Description
AGE= <i>nnnn</i>	<p>specifies a numeric age</p> <p>Name masking cannot be used. Alternative comparison operators (<i>/</i>, <i>&lt;</i>, <i>&gt;</i>) can be used. This parameter is matched to the AGE= value in messages.</p> <p>Note that not all DFHSM/DFDSS messages show age. If a message does not contain the string AGE=, it is not selected by this parameter.</p>
STRING='xxxxxxx'	<p>specifies a string to find in the message text</p> <p>The value must be in single quotes (apostrophes). Name masking cannot be used.</p>

### Example

The following examples show valid parameter specifications:

<pre>BACKUP DATE=98028 HOST=2 REPORT INC ID=ARC072/</pre>	<p>Process DFHSM backup logs generated on 1/28/98 for host machine 2. Report all ARCO 720-series messages.</p>
<pre>MIGRATION DAYS=10 HOST=A ERROR INC RC/0 INC REASON&gt;4</pre>	<p>Process DFHSM migration logs generated during the past 10 days for host machine A. Report all messages with a non-zero return code or a reason code greater than 4.</p>
<pre>MIGRATION DAYS=2 HOST=1 REPORT INC ID=ARC0522I INC ID=ARC0523I ERROR INC ID=ARC0734I RC&gt;0</pre>	<p>Process DFHSM migration logs generated today and yesterday on host machine 1 (the default). Report all volume start/stop messages (ARCO522-ARCO523). Report all data set migration messages (ARCO734) with a return code greater than zero.</p>

## Skeleton Processing

The ACTION parameter allows data to be extracted from selected messages and substituted into skeletons. This permits automatic creation of job streams to correct problems revealed by DFHSM or DFDSS processing. JCL and control cards can be created and saved in a PDS member for later use or submitted for immediate execution.

## Using Variables in Skeletons

Skeleton members are read from the PDS that the OPMSKL DD statement identifies. Each skeleton member can have multiple lines; each line can have multiple *variables*. Each *variable* corresponds to an action parameter that specifies the data in the DFHSM or DFDSS message that will be extracted. The extracted data is substituted for the variable in the skeleton. For each message selected for processing the translated skeleton lines are added to the end of the output data set.

Variable names are four characters long; the first character must be a percent sign (%). Any variable in the skeleton that is not matched in the action parameters is written out unchanged (that is, the variable name is written). An unassigned variable (one that is specified in the action parameters but is not assigned a value) causes the skeleton line to be written with no variable substitution, even if other variables exist that have values.

Substitution of a variable's value in the skeleton statement causes all characters to the right of the variable to shift right. If any non-blank characters are shifted farther than column 72, the warning **\*\* ERROR** is added to the translated line.

Translated skeleton members are written to a sequential data set (DD OPMSUB) or immediately submitted for execution (DD INTRDR).

Use the following action parameters to specify skeleton processing:

Parameter	Description
SAVE	specifies that translated skeleton statements are saved in the sequential output data set (DD OPMSKL and OPMSUB must be specified in the JCL.) Only one SAVE or START can be specified in a single ACTION request.
START	specifies that translated skeleton statements are submitted for immediate execution (DD OPMSKL and INTRDR must be specified in the JCL.) Only one SAVE or START can be specified in a single ACTION request.
MEMBER=xxxxxxx	specifies the name of an input PDS member containing skeleton specifications (DD OPMSKL must be specified in the JCL.)
%var=AFTER('string',length)	Specifies that the variable named <i>var</i> receives the text following <i>string</i> , until a blank or comma is found, for a maximum of <i>length</i> .
%var=STRING(offset,length)	specifies that the variable named <i>var</i> receives the text beginning at <i>offset</i> in the message for <i>length</i> bytes The offset must be specified one greater than the actual offset (with the first character counted as 1).

### Example

The following examples show valid parameter specifications:

```
BACKUP DAYS=5 HOST=A
ACTION
INC ID=ARC0734I RC=70 REASON=1
SAVE MEMBER=UNCATLG
%NAM=AFTER('DSN=',44)
```

Process DFHSM backup logs generated over the last 5 days for host machine A. For all ARCO734 messages with return code 70 and reason code 1 (cataloged non-existent data set), generate JCL to uncatalog the data set. The data set name is extracted from the message by taking the characters following the DSN= text.

The skeleton member UNCATLG contains:

```
//STEP10 EXEC PGM=IEFBR14
//DD1 DD DSN=%NAM,
// DISP=(OLD,DELETE,DELETE)
```

In this JCL, the value of the JCL's DSN parameter is, after substitution, the data set name from the ARCO734 message.

## Message ARCO734I

For easier reading, the frequently occurring DFHSM message ARCO734I is reformatted before being written to the output report.

The DFHSM format is

```
ARC0734I ACTION=MIGRATE FRVOL=WORK01 TOVOL=HSM002
TRACKS=2 RC=0, REASON=0, AGE=6,
DSN=HSMACT.H1.BAKLOG.D94049.T072111
```

The reformatted message in output management's reports is

```
ARC0734 IMIGRATE RC=0 RS=0 AGE=6
SN=HSMACT.H1.BAKLOG.D94049.T072111 WORK01/HSM002
TRK=2
```

Data extraction from message ARCO734I is based on the DFHSM format.

**Example**

The following example shows the parameter specifications for creating a weekly report showing DFHSM normal and unsuccessful expired backup processing.

<pre> BACKUP  HOST=1         DAYS=7  REPORT   INC ID=ARC0680I   INC ID=ARC0681I   INC ID=ARC0734I  STRING='EXBACKV' RC=0         </pre>	<p>Read DFHSM backup logs for the last seven days.</p> <p>For a success report, extract start and stop messages and all data-set-level messages for expired backup processing that report successful completion.</p>
<pre> ERROR   INC ID=ARC0734I  STRING='EXBACKV' RC&gt;0         </pre>	<p>For an error report, select all data set level messages that report some type of error.</p>

**Example**

The following example shows the parameter specifications for creating a daily report showing DFHSM unsuccessful backup processing at the data set level and volume level.

<pre> BACKUP  DAYS=1  HOST=B  **** SHOW PROBLEMS IN BACKUP **** REPORT   EXC ID=ARC0734I   INC ID=ARC/  STRING='TERMINATE'   INC ID=ARC/  STRING='FAIL'   INC ID=ARC/  STRING='ERROR'   INC ID=ARC/  STRING='INOP'   INC ID=ARC/  STRING='CANNOT'   INC ID=ARC/  STRING='DISABLE'   INC ID=ARC/  STRING='ABEND'  ** SHOW DATA SET BACKUP PROBLEMS **** ERROR   INC ID=ARC0734I  RC&gt;0  STRING='BACK-UP'         </pre>	<p>Read DFHSM backup logs for the current day for host machine B. (DAYS=1 assumes this job runs after all daily DFHSM processing is complete.)</p> <p>Select all detail messages (messages that have a message ID) that show problems, except data-set-level messages.</p> <p>Select all data-set-level backup messages that have a non-zero return code.</p>
--	---

**Example**

The following example shows the parameter specifications for listing all data sets over the last 60 days that DFHSM identified as unsupported for migration.

<pre>MIGRATION DAYS=60 HOST=D REPORT INC ID=ARC0734I RC=99</pre>	<pre>Read DFHSM migration logs for the last 60 days for host machine D. Select all ARCO734 messages with a return code of 99.</pre>
--	---

**Example**

The following example shows the parameter specifications for generating JCL to uncatalog data sets that do not exist on the cataloged volume. The second part shows the parameters for generating and submitting JCL to catalog data sets that exist but are not cataloged.

**First Execution of Output Management Parameters**

<pre>MIGRATION DAYS=5 HOST=1 ACTION INC ID=ARC0734I RC=70 REASON=1 INC ID=ARC0734I RC=07 REASON=8 SAVE MEMBER=UNCATLG %NAM=AFTER('DSN=',44)  SAVE MEMBER=UNCATLG %NAM=AFTER('DSN=',44)</pre>	<pre>Select migration ARCO734 messages with a return code/reason code that indicates that the data set VTOC entry was not found.</pre>
<pre>skeleton UNCATLG //STEP10 EXEC PGM=IEFBR14 //DD1 DD DSN=%NAM, // DISP=(OLD,UNCATLG,KEEP)</pre>	<pre>Extract the data set name from the message for substitution into the skeleton JCL in member UNCATLG.  PDS member UNCATLG (in the data set identified by DD OPMSKL) provides skeleton JCL. The %NAM variable will be replaced by the data set name.</pre>

**Second Execution of Output Management Parameters**

<pre>MIGRATION DAYS=5 HOST=1 ACTION INC ID=ARC0734I RC=30 REASON=0</pre>	<pre>Select migration ARCO734 messages with a return code of 30 and reason code of 0 (data set not cataloged).</pre>
--	--

```
START MEMBER=CATLG
%NAM=AFTER('DSN=',44)
%VOL=AFTER('FRVOL=',6)
```

Extract the data set name and volume ID from the message for substitution into the skeleton JCL in member CATLG. The START keyword executes the tailored JCL.

```
skeleton CATLG
//CLEANUP JOB .....
//STEP10 EXEC PGM=IEFBR14
//DD1DD DSN=%NAM,VOL=SER=%VOL,
//DISP=(OLD,CATLG,KEEP),UNIT=SYSDA
```

PDS member CATLG (in the data set identified by DD OPMSKL) provides skeleton JCL. The %NAM variable is replaced by the data set name; &VOL is replaced by the volume serial number.

---

### Example

---

The following example shows the parameter specifications for generating JCL to correct problems with the DFHSM control data set records.

```
parameters
MIGRATION DAYS=2 HOST=4
ACTION
INC ID=ARC0734I RC=2 REASON=8
INC ID=ARC0734I RC=6 REASON=0
INC ID=ARC0734I RC=13 REASON=8
INC ID=ARC0734I RC=20 REASON=2
INC ID=ARC0734I RC=20 REASON=12
INC ID=ARC0734I RC=20 REASON=16

SAVE MEMBER=OPMFI
%DSN=AFTER('DSN=',44)
```

Select migration ARCO734 messages with a return code/reason code that indicates a problem in the DFHSM control data set.

```
skeleton OPMFI
HSEND FIXCDS D %DSN DELETE
```

Extract the data set name from the message for substitution into the skeleton JCL in member OPMFI.

PDS member OPMFI (in the data set identified by DD OPMSKL) provides a skeleton control card. The %DSN variable is replaced by the data set name.



**Table 6-1 DFHSM Output Management Views**

<b>View</b>	<b>Description</b>	<b>Invocation</b>	<b>Actions</b>
Data Set List view	lists the data sets containing DFHSM and DFDSS messages Each data set listed in the DFHSM Output Management Data Set List view has one or more members associated with it. These members contain the messages from DFHSM or DFDSS that deal with certain specific areas, such as backup or migration.	HSMOMDS	/ Display members DEL Delete data set
Member List view	shows the source and type of messages contained in each member of the data set	HSMOMML DSN (of Output Management data set)	B Browse member E Edit member

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# Appendix A DFHSM User Exit Routines

MAINVIEW SRM DFHSM exit routines are *not* required for the EasyHSM reporting facility. However, if you are using DFHSM (2.4 or higher) and you want to use the MAINVIEW SRM EasyHSM HSMBACKP, HSMCCNV, HSMIGRT, and HSMRECAL functions, you must either

- Copy the MAINVIEW SRM DFHSM exit routines (ARCMDEXT, ARCRDEXT, and ARCSAEXT) to a library where they can be accessed by DFHSM (such as a LNKST library) where DFHSM can access them.
- Concatenate the SVOS library must be concatenated into the STEPLIB for the DFHSM job(s).

After you make the MAINVIEW SRM exit routines available to DFHSM, you must activate them using the following command:

```
SETSYS EXITON (ARCMDEXT, ARCRDEXT, ARCSAEXT)
```

You can issue this command from OS/390 or TSO, or you can include it in the DFHSM ARCCMD $_{xx}$  member in SYS1.PARMLIB.

To use MAINVIEW SRM DFHSM exit routines, follow these guidelines:

- If you already have DFHSM exit routines implemented at your installation, you must change the CSECT names in the MAINVIEW SRM exit routines and modify your exit routine to call the MAINVIEW SRM exit routines.

- 
- When calling the MAINVIEW SRM DFHSM exit routines, the registers should be *exactly* as they were when DFHSM called your exit routine, with the exception of R15. R15 should contain the entry point of the MAINVIEW SRM exit routine. This means that R13 and R14 returns from the MAINVIEW SRM exit routines will be to DFHSM, not to your exit routines. The MAINVIEW SRM exit routines must receive control in 31-bit addressing mode. Any 24-bit addressing mode user exit routine must switch to 31-bit mode before calling the MAINVIEW SRM exit routine.
  - Your exit routine should call the MAINVIEW SRM exit routines by the CSECT name that you assign in place of the standard ARCxxEXT names.

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# Glossary

This glossary defines BMC Software terminology. Other dictionaries and glossaries can be used in conjunction with this glossary.

Since this glossary pertains to BMC Software-related products, some of the terms defined might not appear in this book.

To help you find the information you need, this glossary uses the following cross-references:

*Contrast with* indicates a term that has a contrary or contradictory meaning.

*See* indicates an entry that is a synonym or contains expanded information.

*See also* indicates an entry that contains related information.

<b>action</b>	Defined operation, such as modifying a MAINVIEW window, that is performed in response to a command. <i>See</i> object.
<b>active window</b>	Any MAINVIEW window in which data can be refreshed. <i>See</i> alternate window, current window, window.
<b>administrative view</b>	Display from which a product's management tasks are performed, such as the DSLIST view for managing historical data sets. <i>See</i> view.
<b>ALT WIN field</b>	Input field that allows you to specify the window identifier for an alternate window where the results of a hyperlink are displayed. <i>See</i> alternate window.
<b>Alternate Access</b>	<i>See</i> MAINVIEW Alternate Access.
<b>alternate form</b>	View requested through the FORM command that changes the format of a previously displayed view to show related information. <i>See also</i> form, query.

---

<b>alternate window</b>	(1) Window that is specifically selected to display the results of a hyperlink. (2) Window whose identifier is defined to the ALT WIN field. <i>Contrast with</i> current window. <i>See</i> active window, window, ALT WIN field.
<b>analyzer</b>	(1) Online display that presents a snapshot of status and activity data and indicates problem areas. (2) Component of CMF MONITOR. <i>See</i> CMF MONITOR Analyzer.
<b>application</b>	(1) Program that performs a specific set of tasks within a MAINVIEW product. (2) In MAINVIEW VistaPoint, combination of workloads to enable display of their transaction performance data in a single view.
<b>application trace</b>	<i>See</i> trace.
<b>ASCH workload</b>	Workload comprising Advanced Program-to-Program Communication (APPC) address spaces.
<b>AutoCustomization</b>	Online facility for customizing the installation of products. AutoCustomization provides an ISPF panel interface that both presents customization steps in sequence and provides current status information about the progress of the installation.
<b>automatic screen update</b>	Usage mode wherein the currently displayed screen is refreshed automatically with new data at an interval you specify. Invoked by the ASU command.
<b>batch workload</b>	Workload consisting of address spaces running batch jobs.
<b>BBI</b>	Basic architecture that distributes work between workstations and multiple OS/390 targets for BMC Software MAINVIEW products.
<b>BBI-SS PAS</b>	<i>See</i> BBI subsystem product address space.
<b>BBI subsystem product address space (BBI-SS PAS)</b>	OS/390 subsystem address space that manages communication between local and remote systems and that contains one or more of the following products: <ul style="list-style-type: none"> <li>• MAINVIEW AutoOPERATOR</li> <li>• MAINVIEW for CICS</li> <li>• MAINVIEW for DB2</li> <li>• MAINVIEW for DBCTL</li> <li>• MAINVIEW for IMS Online</li> <li>• MAINVIEW for MQSeries (formerly Command MQ for S/390)</li> <li>• MAINVIEW SRM</li> <li>• MAINVIEW VistaPoint (for CICS, DB2, DBCTL, and IMS workloads)</li> </ul>
<b>BBPARM</b>	<i>See</i> parameter library.

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<b>BBPROC</b>	<i>See</i> procedure library.
<b>BBPROF</b>	<i>See</i> profile library.
<b>BBSAMP</b>	<i>See</i> sample library.
<b>BBV</b>	<i>See</i> MAINVIEW Alternate Access.
<b>BBXS</b>	BMC Software Subsystem Services. Common set of service routines loaded into common storage and used by several BMC Software MAINVIEW products.
<b>border</b>	Visual indication of the boundaries of a window.
<b>bottleneck analysis</b>	Process of determining which resources have insufficient capacity to provide acceptable service levels and that therefore can cause performance problems.
<b>CA-Disk</b>	Data management system by Computer Associates that replaced the DMS product.
<b>CAS</b>	Coordinating address space. One of the address spaces used by the MAINVIEW windows environment architecture. The CAS supplies common services and enables communication between linked systems. Each OS/390 or z/OS image requires a separate CAS. Cross-system communication is established through the CAS using VTAM and XCF communication links.
<b>CFMON</b>	<i>See</i> coupling facility monitoring.
<b>chart</b>	Display format for graphical data. <i>See also</i> graph.
<b>CICSplex</b>	User-defined set of one or more CICS systems that are controlled and managed as a single functional entity.
<b>CMF MONITOR</b>	Comprehensive Management Facility MONITOR. Product that measures and reports on all critical system resources, such as CPU, channel, and device usage; memory, paging, and swapping activity; and workload performance.
<b>CMF MONITOR Analyzer</b>	Batch component of CMF MONITOR that reads the SMF user and 70 series records created by the CMF MONITOR Extractor and/or the RMF Extractor and formats them into printed system performance reports.
<b>CMF MONITOR Extractor</b>	Component of CMF that collects performance statistics for CMF MONITOR Analyzer, CMF MONITOR Online, MAINVIEW for OS/390, and RMF postprocessor. <i>See</i> CMF MONITOR Analyzer, CMF MONITOR Online, MAINVIEW for OS/390.

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**CMF MONITOR Online**

Component of CMF that uses the MAINVIEW window interface to present data on all address spaces, their use of various system resources, and the delays that each address space incurs while waiting for access to these resources. *See* CMF MONITOR, MAINVIEW for OS/390.

**CMF Type 79 API**

Application programming interface, provided by CMF, that provides access to MAINVIEW SMF-type 79 records.

**CMFMON**

Component of CMF MONITOR that simplifies online retrieval of information about system hardware and application performance and creates MAINVIEW SMF-type 79 records.

The CMFMON *online facility* can be used to view data in one or more formatted screens.

The CMFMON *write facility* can be used to write collected data as MAINVIEW SMF-type 79 records to an SMF or sequential data set.

**CMRDETL**

MAINVIEW for CICS data set that stores detail transaction records (type 6E) and abend records (type 6D). Detail records are logged for each successful transaction. Abend records are written when an abend occurs. Both records have the same format when stored on CMRDETL.

**CMRSTATS**

MAINVIEW for CICS data set that stores both CICS operational statistic records, at five-minute intervals, and other records, at intervals defined by parameters specified during customization (using CMRSOPT).

**column**

Vertical component of a view or display, typically containing fields of the same type of information, that varies by the objects associated in each row.

**collection interval**

Length of time data is collected. *See also* delta mode, total mode.

**command delimiter**

Special character, usually a ; (semicolon), used to stack commands typed concurrently on the COMMAND line for sequential execution.

**COMMAND line**

Line in the control area of the display screen where primary commands can be typed. *Contrast with* line command column.

**Command MQ Automation D/S**

Command MQ agents, which provide local proactive monitoring for both MQSeries and MSMQ (Microsoft message queue manager). The Command MQ agents operate at the local node level where they continue to perform functions regardless of the availability of the MQM (message queue manager) network. Functionality includes automatic monitoring and restarts of channels, queue managers, queues and command servers. In cases where automated recovery is not possible, the agents transport critical alert information to a central console.

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### **Command MQ Automation S/390**

Command MQ component, which monitors the MQM (message queue manager) networks and intercedes to perform corrective actions when problems arise. Solutions include:

- Dead-Letter Queue management
- System Queue Archival
- Service Interval Performance solutions
- Channel Availability

These solutions help ensure immediate relief to some of the most pressing MQM operations and performance problems.

### **Command MQ for D/S**

Command MQ for D/S utilizes a true client/server architecture and employs resident agents to provide configuration, administration, performance monitoring and operations management for the MQM (message queue manager) network.

### **Command MQ for S/390**

*See* MAINVIEW for MQSeries.

### **COMMON STORAGE MONITOR**

Component of MAINVIEW for OS/390 that monitors usage and reconfigures OS/390 or z/OS common storage blocks.

### **composite workload**

Workload made up of a WLM workload or other workloads, which are called *constituent workloads*.

### **constituent workload**

Member of a composite workload. Constituent workloads in a composite usually belong to a single workload class, but sometimes are mixed.

### **contention**

Occurs when there are more requests for service than there are servers available.

### **context**

In a Plex Manager view, field that contains the name of a target or group of targets specified with the CONTEXT command. *See* scope, service point, SSI context, target context.

### **CONTEXT command**

Specifies either a MAINVIEW product and a specific target for that product (*see* target context) or a MAINVIEW product and a name representing one or more targets (*see* SSI context) for that product.

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**control statement** (1) Statement that interrupts a sequence of instructions and transfers control to another part of the program. (2) Statement that names samplers and other parameters that configure the MAINVIEW components to perform specified functions. (3) In CMF MONITOR, statement in a parameter library member used to identify a sampler in the extractor or a report in the analyzer, or to describe either component's processing requirements to the operating system.

**coupling facility monitoring (CFMON)**

Coupling facility views that monitor the activity of your system's coupling facilities.

**current data** Data that reflects the system in its current state. The two types of current data are real-time data and interval data. *Contrast with* historical data. *See also* interval data, real-time data.

**current window** In the MAINVIEW window environment, window where the main dialog with the application takes place. The current window is used as the default window destination for commands issued on the COMMAND line when no window number is specified. *Contrast with* alternate window. *See* active window, window.

**DASD** (Direct Access Storage Device) (1) A device with rotating recording surfaces that provides immediate access to stored data. (2) Any device that responds to a DASD program.

**DASD ADVISOR** An interactive software tool that diagnoses DASD performance problems and makes recommendations to reduce overall service time. This tool measures and reports on the operational performance of IBM and IBM-compatible devices.

**data collector** Program that belongs to a MAINVIEW product and that collects data from various sources and stores the data in records used by views. For example, MAINVIEW for OS/390 data collectors obtain data from OS/390 or z/OS services, OS/390 or z/OS control blocks, CMF MONITOR Extractor control blocks, and other sources. *Contrast with* extractor.

**delta mode** (1) In MAINVIEW for DB2 analyzer displays, difference between the value sampled at the start of the current statistics interval and the value sampled by the current analyzer request. *See also* statistics interval. (2) In CMFMON, usage mode wherein certain columns of data reflect the difference in values between one sample cycle and the next. Invoked by the DELta ON command. *See also* collection interval, sample cycle, total mode.

**DFSMS** (Data Facility Storage Management System) Data management, backup, and HSM software from IBM for OS/390 or z/OS mainframes.

**DMR** *See* MAINVIEW for DB2.

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<b>DMS</b>	(Data Management System) <i>See</i> CA-Disk.
<b>DMS2HSM</b>	<i>See</i> MAINVIEW SRM DMS2HSM.
<b>DSO</b>	(Data Set Optimizer) CMF MONITOR Extractor component that uses CMF MONITOR Extractor data to produce reports specifying the optimal ordering of data sets on moveable head devices.
<b>EasyHSM</b>	<i>See</i> MAINVIEW SRM EasyHSM.
<b>EasyPOOL</b>	<i>See</i> MAINVIEW SRM EasyPOOL.
<b>EasySMS</b>	<i>See</i> MAINVIEW SRM EasySMS.
<b>element</b>	(1) Data component of a data collector record, shown in a view as a field. (2) Internal value of a field in a view, used in product functions.
<b>element help</b>	Online help for a field in a view. The preferred term is <i>field help</i> .
<b>Enterprise Storage Automation</b>	<i>See</i> MAINVIEW SRM Enterprise Storage Automation.
<b>event</b>	A message issued by Enterprise Storage Automation. User-defined storage occurrences generate events in the form of messages. These events provide an early warning system for storage problems and are routed to user-specified destinations for central viewing and management.
<b>Event Collector</b>	Component for MAINVIEW for IMS Online, MAINVIEW for IMS Offline, and MAINVIEW for DBCTL that collects data about events in the IMS environment. This data is required for Workload Monitor and optional for Workload Analyzer (except for the workload trace service). This data also is recorded as transaction records (X'FA') and program records (X'F9') on the IMS system log for later use by the MAINVIEW for IMS Offline components: Performance Reporter and Transaction Accountant.
<b>expand</b>	Predefined link from one display to a related display. <i>See also</i> hyperlink.
<b>extractor</b>	Program that collects data from various sources and keeps the data control blocks to be written as records. Extractors obtain data from services, control blocks, and other sources. <i>Contrast with</i> data collector.
<b>extractor interval</b>	<i>See</i> collection interval.
<b>fast path</b>	Predefined link between one screen and another. To use the fast path, place the cursor on a single value in a field and press <b>Enter</b> . The resulting screen displays more detailed information about the selected value. <i>See also</i> hyperlink.

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<b>field</b>	Group of character positions within a screen or report used to type or display specific information.
<b>field help</b>	Online help describing the purpose or contents of a field on a screen. To display field help, place the cursor anywhere in a field and press <b>PF1</b> (HELP). In some products, field help is accessible from the screen help that is displayed when you press <b>PF1</b> .
<b>filter</b>	Selection criteria used to limit the number of rows displayed in a view. Data that does not meet the selection criteria is not displayed. A filter is composed of an element, an operator, and an operand (a number or character string). Filters can be implemented in view customization, through the PARM/QPARM commands, or through the Where/QWhere commands. Filters are established against elements of data.
<b>fire</b>	The term used to indicate that an event has triggered an action. In MAINVIEW AutoOPERATOR, when a rule selection criteria matches an incoming event and <i>fires</i> , the user-specified automation actions are performed. This process is also called <i>handling</i> the event.
<b>fixed field</b>	Field that remains stationary at the left margin of a screen that is scrolled either right or left.
<b>FOCAL POINT</b>	MAINVIEW product that displays a summary of key performance indicators across systems, sites, and applications from a single terminal.
<b>form</b>	One of two constituent parts of a view; the other is query. A form defines how the data is presented; a query identifies the data required for the view. <i>See also</i> query, view.
<b>full-screen mode</b>	Display of a MAINVIEW product application or service on the entire screen. There is no window information line. <i>Contrast with</i> windows mode.
<b>global command</b>	Any MAINVIEW window interface command that can affect all windows in the window area of a MAINVIEW display.
<b>graph</b>	Graphical display of data that you select from a MAINVIEW window environment view. <i>See also</i> chart.
<b>hilevel</b>	For MAINVIEW products, high-level data set qualifier required by a site's naming conventions.
<b>historical data</b>	(1) Data that reflects the system as it existed at the end of a past recording interval or the duration of several intervals. (2) Any data stored in the historical database and retrieved using the TIME command. <i>Contrast with</i> current data, interval data and real-time data.

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<b>historical database</b>	Collection of performance data written at the end of each installation-defined recording interval and containing up to 100 VSAM clusters. Data is extracted from the historical database with the TIME command. <i>See</i> historical data.
<b>historical data set</b>	In MAINVIEW products that display historical data, VSAM cluster file in which data is recorded at regular intervals.
<b>HSM</b>	(Hierarchical Storage Management) Automatic movement of files from hard disk to slower, less-expensive storage media. The typical hierarchy is from magnetic disk to optical disk to tape.
<b>hyperlink</b>	<p>(1) Preset field in a view or an EXPAND line on a display that permits you to</p> <ul style="list-style-type: none"> <li>• access cursor-sensitive help</li> <li>• issue commands</li> <li>• link to another view or display</li> </ul> <p>The transfer can be either within a single product or to a related display/view in a different BMC Software product. Generally, hyperlinked fields are highlighted. (2) Cursor-activated short path from a topic or term in online help to related information. <i>See also</i> fast path.</p>
<b>Image log</b>	<p>Collection of screen-display records. Image logs can be created for both the BBI-SS PAS and the BBI terminal session (TS).</p> <p>The BBI-SS PAS Image log consists of two data sets that are used alternately: as one fills up, the other is used. Logging to the BBI-SS PAS Image log stops when both data sets are filled and the first data set is not processed by the archive program.</p> <p>The TS Image log is a single data set that wraps around when full.</p>
<b>IMSplex System Manager (IPSM)</b>	MVIMS Online and MVDBC service that provides Single System Image views of resources and bottlenecks for applications across one or more IMS regions and systems.
<b>interval data</b>	<p>Cumulative data collected during a collection interval. Intervals usually last from 15 to 30 minutes depending on how the recording interval is specified during product customization. <i>Contrast with</i> historical data.</p> <p><b>Note:</b> If change is made to the workloads, a new interval will be started.</p> <p><i>See also</i> current data and real-time data.</p>
<b>InTune</b>	Product for improving application program performance. It monitors the program and provides information used to reduce bottlenecks and delays.

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<b>IRUF</b>	IMS Resource Utilization File (IRUF). IRUFs can be either detail (one event, one record) or summarized (more than one event, one record). A detail IRUF is created by processing the IMS system log through a program called IMFLEEDIT. A summarized IRUF is created by processing one or more detail IRUFs, one or more summarized IRUFs, or a combination of both, through a sort program and the TASCOSTR program.
<b>job activity view</b>	Report about address space consumption of resources. <i>See</i> view.
<b>journal</b>	Special-purpose data set that stores the chronological records of operator and system actions.
<b>Journal log</b>	Collection of messages. Journal logs are created for both the BBI-SS PAS and the BBI terminal session (TS).  The BBI-SS PAS Journal log consists of two data sets that are used alternately: as one fills up, the other is used. Logging to the BBI-SS PAS Journal log stops when both data sets are filled and the first data set is not being processed by the archive program.  The TS Journal log is a single data set that wraps around when full.
<b>line command</b>	Command that you type in the line command column in a view or display. Line commands initiate actions that apply to the data displayed in that particular row.
<b>line command column</b>	Command input column on the left side of a view or display. <i>Contrast with</i> COMMAND line.
<b>Log Edit</b>	In the MAINVIEW for IMS Offline program named IMFLEEDIT, function that extracts transaction (X'FA') and program (X'F9') records from the IMS system log. IMFLEEDIT also extracts certain records that were recorded on the system log by IMS. IMFLEEDIT then formats the records into a file called the IMS Resource Utilization File (IRUF).
<b>MAINVIEW</b>	BMC Software integrated systems management architecture.
<b>MAINVIEW Alarm Manager (MV ALARM)</b>	In conjunction with other MAINVIEW products, notifies you when an exception occurs. MAINVIEW Alarm Manager is capable of monitoring multiple systems simultaneously, which means that MAINVIEW Alarm Manager installed on one system keeps track of your entire sysplex. You can then display a single view that shows exceptions for all MAINVIEW performance monitors within your OS/390 or z/OS enterprise.

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**MAINVIEW Alternate Access**

Enables MAINVIEW products to be used without TSO by providing access through EXCP and VTAM interfaces.

**MAINVIEW Application Program Interface (MVAPI)**

A CLIST- or REXX-based, callable interface that allows MAINVIEW AutoOPERATOR EXECs to access MAINVIEW monitor product view data.

**MAINVIEW AutoOPERATOR**

Product that uses tools, techniques, and facilities to automate routine operator tasks and provide online performance monitoring, and that achieves high availability through error minimization, improved productivity, and problem prediction and prevention.

**MAINVIEW control area**

In the MAINVIEW window environment, first three lines at the top of the view containing the window information line and the COMMAND, SCROLL, CURR WIN, and ALT WIN lines. The control area cannot be customized and is part of the information display. *Contrast with* MAINVIEW display area, MAINVIEW window area.

**MAINVIEW Desktop** Version of the MAINVIEW window interface designed to run on OS/2 and Windows workstations.

**MAINVIEW display area**

*See* MAINVIEW window area.

**MAINVIEW Explorer** Product that provides access to MAINVIEW products from a Web browser running under Windows. MAINVIEW Explorer replaces MAINVIEW Desktop.

**MAINVIEW for CICS** Product (formerly MV MANAGER for CICS) that provides real-time application performance analysis and monitoring for CICS system management.

**MAINVIEW for DB2** Product (formerly MV MANAGER for DB2) that provides real-time and historical application performance analysis and monitoring for DB2 subsystem management.

**MAINVIEW for DBCTL (MVDBC)**

Product that provides real-time application performance analysis and monitoring for DBCTL management.

**MAINVIEW for IMS (MVIMS) Offline**

Product with a Performance Reporter component that organizes data and prints reports used to analyze IMS performance and a Transaction Accountant component that produces cost accounting and user charge-back records and reports.

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**MAINVIEW for IMS (MVIMS) Online**

Product that provides real-time application performance analysis and monitoring for IMS management.

**MAINVIEW for IP**

Product that monitors OS/390 and z/OS mission-critical application performance as it relates to TCP/IP stack usage. Collected data includes availability, connections, response times, routers, service levels, storage, traffic, Web cache, and so on.

**MAINVIEW for Linux–Servers**

Product that allows you to monitor the performance of your Linux systems from the MAINVIEW windows interface.

**MAINVIEW for MQSeries (formerly known as Command MQ for S/390)**

Delivers comprehensive capabilities for configuration, administration, performance monitoring and operations management for an entire MQM (message queue manager) network.

**MAINVIEW for OS/390**

System management application (formerly known as MAINVIEW for MVS prior to version 2.5). Built upon the MAINVIEW window environment architecture, it uses the window interface to provide access to system performance data and other functions necessary in the overall management of an enterprise.

**MAINVIEW for UNIX System Services**

System management application that allows you to monitor the performance of the Unix System Services from a MAINVIEW window interface.

**MAINVIEW for VTAM**

Product that displays application performance data by application, transaction ID, and LU name. This collected data includes connections, response time statistics, application availability, and application throughput.

**MAINVIEW for WebSphere Application Server (formerly known as MAINVIEW for WebSphere)**

Product that provides extensive monitoring for the IBM WebSphere Application Server for z/OS and OS/390 environment.

**MAINVIEW Selection Menu**

ISPF selection panel that provides access to all MAINVIEW windows-mode and full-screen mode products.

**MAINVIEW SRM**

*See* MAINVIEW Storage Resource Manager (SRM).

**MAINVIEW SRM DMS2HSM**

Product that facilitates the conversion of CA-Disk, formerly known as DMS, to HSM.

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**MAINVIEW SRM EasyHSM**

Product that provides online monitoring and reporting to help storage managers use DFHSM efficiently.

**MAINVIEW SRM EasyPOOL**

Product that provides control over data set allocation and enforcement of allocation and naming standards. EasyPOOL functions operate at the operating system level to intercept normal job processing, thus providing services without any JCL changes.

**MAINVIEW SRM EasySMS**

Product that provides tools that aid in the conversion to DFSMS and provides enhancement to the DFSMS environment after implementation. EasySMS consists of the EasyACS functions, the SMSACSTE function, and the Monitoring and Positioning Facility.

**MAINVIEW SRM Enterprise Storage Automation**

Product that delivers powerful event generation and storage automation technology across the storage enterprise. Used in conjunction with MAINVIEW AutoOPERATOR, automated solutions to perform pool, volume, application, or data set-level manipulation can be created and used in response to any condition or invoked to perform ad hoc requests.

**MAINVIEW SRM SG-Auto**

Product that provides early warning notification of storage anomalies and automated responses to those anomalies based on conditions in the storage subsystem.

**MAINVIEW SRM SG-Control**

Product that provides real-time monitoring, budgeting, and control of DASD space utilization.

**MAINVIEW SRM StopX37/II**

Product that provides enhancements to OS/390 or z/OS space management, reducing the incidence of space-related processing problems. The StopX37/II functions operate at the system level to intercept abend conditions or standards violations, thus providing services without any JCL changes.

**MAINVIEW SRM StorageGUARD**

Product that monitors and reports on DASD consumption and provides historical views to help control current and future DASD usage.

**MAINVIEW Storage Resource Manager (SRM)**

Suite of products that assist in all phases of OS/390 or z/OS storage management. MAINVIEW SRM consists of products that perform automation, reporting, trend analysis, and error correction for storage management.

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## MAINVIEW SYSPROG Services

*See* SYSPROG services.

## MAINVIEW VistaPoint

Product that provides enterprise-wide views of performance. Application and workload views are available for CICS, DB2, DBCTL, IMS, OS/390, or z/OS. Data is summarized at the level of detail needed; for example, views can be for a single target, an OS/390 or z/OS image, or an entire enterprise.

## MAINVIEW window area

Portion of the information display that is not the control area and in which views are displayed and windows opened. It includes all but the first three lines of the information display. *Contrast with* MAINVIEW control area.

## monitor

Online service that measures resources or workloads at user-defined intervals and issues warnings when user-defined thresholds are exceeded.

## Multi-Level Automation (MLA)

The user-defined, multiple step process in Enterprise Storage Automation that implements solutions in a tiered approach, where solutions are invoked one after another until the condition is resolved.

## MVALARM

*See* MAINVIEW Alarm Manager.

## MVAPI

*See* MAINVIEW Application Program Interface.

## MVCICS

*See* MAINVIEW for CICS.

## MVDB2

*See* MAINVIEW for DB2.

## MVDBC

*See* MAINVIEW for DBCTL.

## MVIMS

*See* MAINVIEW for IMS.

## MVIP

*See* MAINVIEW for IP.

## MVLNX

*See* MAINVIEW for Linux–Servers.

## MVMQ

*See* MAINVIEW for MQSeries.

## MVMVS

*See* MAINVIEW for OS/390.

## MVScope

MAINVIEW for OS/390 application that traces both CPU usage down to the CSECT level and I/O usage down to the channel program level.

## MVSRM

*See* MAINVIEW Storage Resource Manager (SRM).

## MVSRMHSM

*See* MAINVIEW SRM EasyHSM.

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<b>MVSRMSGC</b>	<i>See</i> MAINVIEW SRM SG-Control.
<b>MVSRMSGD</b>	<i>See</i> MAINVIEW SRM StorageGUARD.
<b>MVSRMSGP</b>	<i>See</i> MAINVIEW SRM StorageGUARD.
<b>MVUSS</b>	<i>See</i> MAINVIEW for UNIX System Services.
<b>MVVP</b>	<i>See</i> MAINVIEW VistaPoint.
<b>MVVTAM</b>	<i>See</i> MAINVIEW for VTAM.
<b>MVWEB</b>	<i>See</i> MAINVIEW for WebSphere Application Server.
<b>nested help</b>	Multiple layers of help pop-up windows. Each successive layer is accessed by clicking a hyperlink from the previous layer.
<b>object</b>	<p>Anything you can manipulate as a single unit. MAINVIEW objects can be any of the following: product, secondary window, view, row, column, or field.</p> <p>You can issue an action against an object by issuing a line command in the line command column to the left of the object. <i>See</i> action.</p>
<b>OMVS workload</b>	Workload consisting of OS/390 OpenEdition address spaces.
<b>online help</b>	Help information that is accessible online.
<b>OS/390 and z/OS Installer</b>	BMC Software common installation system for mainframe products.
<b>OS/390 product address space (PAS)</b>	Address space containing OS/390 or z/OS data collectors, including the CMF MONITOR Extractor. Used by MAINVIEW for OS/390, MAINVIEW for UNIX System Services, and CMF MONITOR products. <i>See</i> PAS.
<b>parameter library</b>	<p>Data set consisting of members that contain parameters for specific MAINVIEW products or a support component There can be several versions:</p> <ul style="list-style-type: none"> <li>• the distributed parameter library, called BBPARM</li> <li>• a site-specific parameter library or libraries</li> </ul> <p>These can be</p> <ul style="list-style-type: none"> <li>• a library created by AutoCustomization, called UBBPARM</li> <li>• a library created manually, with a unique name</li> </ul>

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<b>PAS</b>	Product address space. Used by the MAINVIEW products. Contains data collectors and other product functions. <i>See also</i> OS/390 product address space (PAS) <i>and</i> BBI subsystem product address space (BBI-SS PAS).
<b>performance group workload</b>	Collection of address spaces defined to OS/390 or z/OS. If you are running OS/390 or z/OS with WLM in compatibility mode, MAINVIEW for OS/390 creates a performance group workload instead of a service class.
<b>PERFORMANCE MANAGER</b>	MAINVIEW for CICS online service for monitoring and managing current performance of CICS regions.
<b>Performance Reporter (MVIMS)</b>	MVIMS Offline component that organizes data and prints reports that can be used to analyze IMS performance.
<b>Performance Reporter</b>	Product component that generates offline batch reports. The following products can generate these reports: <ul style="list-style-type: none"> <li>• MAINVIEW for DB2</li> <li>• MAINVIEW for CICS</li> </ul>
<b>Plex Manager</b>	Product through which cross-system communication, MAINVIEW security, and an SSI context are established and controlled. Plex Manager is shipped with MAINVIEW window environment products as part of the coordinating address space (CAS) and is accessible as a menu option from the MAINVIEW Selection Menu.
<b>pop-up display</b>	Full-screen panel that displays additional information about a selected event in a detail trace.
<b>pop-up window</b>	Window containing help information that, when active, overlays part of the window area. A pop-up window is displayed when you issue the HELP command while working in windows-mode.
<b>PRGP workload</b>	In MVS/SP 5.0 or earlier, or in compatibility mode in MVS/SP 5.1 or later, composite of service classes. MAINVIEW for OS/390 creates a performance group workload for each performance group defined in the current IEAIPS.xx member.
<b>procedure library</b>	Data set consisting of members that contain executable procedures used by MAINVIEW AutoOPERATOR. These procedures are execute command lists (EXECs) that automate site functions. There can be several versions: <ul style="list-style-type: none"> <li>• the distributed parameter library, called BBPROC</li> <li>• a site-specific parameter library or libraries</li> </ul>

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These can be

- a library created by AutoCustomization, called UBBPROC
- a library created manually, with a unique name

The site-created EXECs can be either user-written or customized MAINVIEW AutoOPERATOR-supplied EXECs from BBPROC.

**product address space**

*See* PAS.

**profile library**

Data set consisting of members that contain profile information and cycle refresh definitions for a terminal session connected to a BBI-SS PAS. Other members are dynamically created by MAINVIEW applications. There can be several versions:

- the distributed profile library, called BBPROF
- a site-specific profile library or libraries

These can be

- a library created by AutoCustomization, called SBBPROF
- a library created manually, with a unique name

The site library is a common profile shared by all site users. The terminal session CLIST creates a user profile automatically if one does not exist; it is called `userid.BBPROF`, where `userid` is your logon ID. User profile libraries allow each user to specify unique PF keys, CYCLE commands, target system defaults, a Primary Option Menu, and a unique set of application profiles.

**query**

One of two constituent parts of a view; the other is form. A query defines the data for a view; a form defines the display format. *See also* form, view.

**real-time data**

Performance data as it exists at the moment of inquiry. Real-time data is recorded during the smallest unit of time for data collection. *Contrast with* historical data. *See also* current data and interval data.

**Resource Analyzer**

Online real-time displays used to analyze IMS resources and determine which are affected by specific workload problems.

**Resource Monitor**

Online data collection services used to monitor IMS resources and issue warnings when defined utilization thresholds are exceeded.

**row**

(1) Horizontal component of a view or display comprising all the fields pertaining to a single device, address space, user, and so on. (2) Horizontal component of a DB2 table consisting of a sequence of values, one for each column of the table.

---

<b>RxD2</b>	Product that provides access to DB2 from REXX. It provides tools to query the DB2 catalog, issue dynamic SQL, test DB2 applications, analyze EXPLAIN data, generate DDL or DB2 utility JCL, edit DB2 table spaces, perform security administration, and much more.
<b>sample cycle</b>	<p>Time between data samples.</p> <p>For the CMF MONITOR Extractor, this is the time specified in the extractor control statements (usually 1 to 5 seconds).</p> <p>For real-time data, the cycle is not fixed. Data is sampled each time you press <b>Enter</b>.</p>
<b>sample library</b>	<p>Data set consisting of members each of which contains one of the following items:</p> <ul style="list-style-type: none"> <li>• sample JCL that can be edited to perform specific functions</li> <li>• macro that is referenced in the assembly of user-written services</li> <li>• sample user exit routine</li> </ul> <p>There can be several versions:</p> <ul style="list-style-type: none"> <li>• the distributed sample library, called BBSAMP</li> <li>• a site-specific sample library or libraries</li> </ul> <p>These can be</p> <ul style="list-style-type: none"> <li>• a library created by AutoCustomization, called UBBSAMP</li> <li>• a library created manually, with a unique name</li> </ul>
<b>sampler</b>	Program that monitors a specific aspect of system performance. Includes utilization thresholds used by the Exception Monitor. The CMF MONITOR Extractor contains samplers.
<b>SBBPROF</b>	<i>See</i> profile library.
<b>scope</b>	Subset of an SSI context. The scope could be all the data for the context or a subset of data within the context. It is user- or site-defined. <i>See</i> SSI context, target.
<b>screen definition</b>	Configuration of one or more views that have been stored with the SAVEScr command and assigned a unique name. A screen includes the layout of the windows and the view, context, system, and product active in each window.
<b>selection view</b>	In MAINVIEW products, view displaying a list of available views.

---

**service class workload**

Collection of address spaces defined to OS/390 or z/OS. If you are running Workload Manager (WLM) in goal mode, MAINVIEW for OS/390 creates a service class workload for each service class that you define through WLM definition dialogs.

If you are running MVS 4.3 or earlier, or MVS/SP 5.1 or later with WLM in compatibility mode, OS/390 creates a performance group workload instead of a service class. *See* performance group workload.

**service objective**

Workload performance goal, specified in terms of response time for TSO workloads or turnaround time for batch workloads. Performance group workloads can be measured by either objective. Composite workload service objectives consist of user-defined weighting factors assigned to each constituent workload. For compatibility mode, neither OS/390 nor z/OS provides any way to measure service.

**service point**

Specification, to MAINVIEW, of the services required to enable a specific product. Services can be actions, selectors, or views. Each target (for example, CICS, DB2, or IMS) has its own service point.

The PLEX view lists all the defined service points known to the CAS to which the terminal session is connected.

**service request block (SRB)**

Control block that represents a routine to be dispatched. SRB mode routines generally perform work for the operating system at a high priority. An SRB is similar to a task control block (TCB) in that it identifies a unit of work to the system. *See also* task control block.

**service select code** Code entered to invoke analyzers, monitors, and general services. This code is also the name of the individual service.

**session**

Total period of time an address space has been active. A session begins when monitoring can be performed. If the product address space (PAS) starts after the job, the session starts with the PAS.

**SG-Auto**

*See* MAINVIEW SRM SG-Auto.

**SG-Control**

*See* MAINVIEW SRM SG-Control.

**single system image (SSI)**

Feature of the MAINVIEW window environment architecture where you can view and perform actions on multiple OS/390 or z/OS systems as though they were a single system. The rows of a single tabular view can contain rows from different OS/390 or z/OS images.

---

## **Skeleton Tailoring Facility**

A facility in MAINVIEW AutoOPERATOR that allows skeleton JCL to be used during job submission. Skeleton JCL can contain variables within the JCL statements to be substituted with data values at job submission time. Directive statements can be used in the skeleton JCL to cause the repetition of a set of skeleton statements. This facility functions similar to the TSO skeleton tailoring facility.

**SRB** *See* service request block.

**SSI** *See* single system image.

**SSI context** Name created to represent one or more targets for a given product. *See* context, target.

## **started task workload**

Address spaces running jobs that were initiated programmatically.

**statistics interval** For MAINVIEW for DB2, cumulative count within a predefined interval (30-minute default set by the DB2STATS parameter in the distributed BBPARM member BBIISP00) for an analyzer service DELTA or RATE display. Specifying the DELTA parameter displays the current value as the difference between the value sampled by the current analyzer request and the value sampled at the start of the current interval. Specifying the RATE parameter displays the current value by minute (DELTA divided by the number of elapsed minutes).

**stem variables** A REXX facility, supported in MAINVIEW AutoOPERATOR REXX EXECs and the Skeleton Tailoring Facility, where variable names end with a period followed by a number, such as &POOL.1. This configuration allows each variable to actually represent a table or array of data, with the zero variable containing the number of entries in the array. For example, &POOL.0 = 5 would indicate variables &POOL.1 through &POOL.5 exist.

**StopX37/II** *See* MAINVIEW SRM StopX37/II.

**StorageGUARD** *See* MAINVIEW SRM StorageGUARD.

**summary view** View created from a tabular view using the Summarize option in view customization. A summary view compresses several rows of data into a single row based on the summarize criteria.

**SYSPROG services** Component of MAINVIEW for OS/390. Over 100 services that detect, diagnose, and correct OS/390 or z/OS system problems as they occur. Accessible from the OS/390 Performance and Control Main Menu. Note that this component is also available as a stand-alone product MAINVIEW SYSPROG Services.

---

<b>system resource</b>	<i>See</i> object.
<b>target</b>	Entity monitored by one or more MAINVIEW products, such as an OS/390 or z/OS image, an IMS or DB2 subsystem, a CICS region, or related workloads across systems. <i>See</i> context, scope, SSI context.
<b>target context</b>	Single target/product combination. <i>See</i> context.
<b>TASCOSTR</b>	MAINVIEW for IMS Offline program that summarizes detail and summary IMS Resource Utilization Files (IRUFs) to be used as input to the offline components.
<b>task control block (TCB)</b>	Address space-specific control block that represents a unit of work that is dispatched in the address space in which it was created. <i>See also</i> service request block.
<b>TCB</b>	<i>See</i> task control block.
<b>terminal session (TS)</b>	Single point of control for MAINVIEW products, allowing data manipulation and data display and providing other terminal user services for MAINVIEW products. The terminal session runs in a user address space (either a TSO address space or a stand-alone address space for EXCP/VTAM access).
<b>TDIR</b>	<i>See</i> trace log directory.
<b>threshold</b>	Specified value used to determine whether the data in a field meets specific criteria.
<b>TLDS</b>	<i>See</i> trace log data set.
<b>total mode</b>	Usage mode in CMFMON wherein certain columns of data reflect the cumulative value between collection intervals. Invoked by the DELta OFF command. <i>See also</i> collection interval, delta mode.
<b>trace</b>	(1) Record of a series of events chronologically listed as they occur. (2) Online data collection and display services that track transaction activity through DB2, IMS, or CICS.
<b>trace log data set (TLDS)</b>	Single or multiple external VSAM data sets containing summary or detail trace data for later viewing or printing. The trace log(s) can be defined as needed or dynamically allocated by the BBI-SS PAS. Each trace request is assigned its own trace log data set(s).

---

**trace log directory (TDIR)**

VSAM linear data set containing one entry for each trace log data set. Each entry indicates the date and time of data set creation, the current status of the data set, the trace target, and other related information.

**transaction** Specific set of input data that initiates a predefined process or job.

**Transaction Accountant**

MVIMS Offline component that produces cost accounting and user charge-back records and reports.

**TS** *See* terminal session.

**TSO workload** Workload that consists of address spaces running TSO sessions.

**UAS** *See* user address space.

**UBBPARM** *See* parameter library.

**UBBPROC** *See* procedure library.

**UBBSAMP** *See* sample library.

**user address space**

Runs a MAINVIEW terminal session (TS) in TSO, VTAM, or EXCP mode.

**User BBPROF** *See* profile library.

**view** Formatted data within a MAINVIEW window, acquired from a product as a result of a view command or action. A view consists of two parts: query and form. *See also* form, job activity view, query.

**view definition** Meaning of data that appears online, including source of data, selection criteria for data field inclusion and placement, data format, summarization, context, product, view name, hyperlink fields, and threshold conditions.

**view command** Name of a view that you type on the COMMAND line to display that view.

**view command stack**

Internal stack of up to 10 queries. For each command, the stack contains the filter parameters, sort order, context, product, and time frame that accompany the view.

**view help** Online help describing the purpose of a view. To display view help, place the cursor on the view name on the window information line and press **PF1** (HELP).

---

<b>window</b>	Area of the MAINVIEW screen in which views and resources are presented. A window has visible boundaries and can be smaller than or equal in size to the MAINVIEW window area. <i>See</i> active window, alternate window, current window, MAINVIEW window area.
<b>window information line</b>	Top border of a window. Shows the window identifier, the name of the view displayed in the window, the system, the scope, the product reflected by the window, and the tomfooleries for which the data in the window is relevant. <i>See also</i> window status field.
<b>window number</b>	Sequential number assigned by MAINVIEW to each window when it is opened. The window number is the second character in the window status field. <i>See also</i> window status field.
<b>window status</b>	One-character letter in the window status field that indicates when a window is ready to receive commands, is busy processing commands, is not to be updated, or contains no data. It also indicates when an error has occurred in a window. The window status is the first character in the window status field. <i>See also</i> window information line, window status field.
<b>window status field</b>	Field on the window information line that shows the current status and assigned number of the window. <i>See also</i> window number, window status.
<b>windows mode</b>	Display of one or more MAINVIEW product views on a screen that can be divided into a maximum of 20 windows. A window information line defines the top border of each window. <i>Contrast with</i> full-screen mode.
<b>WLM workload</b>	In goal mode in MVS/SP 5.1 and later, a composite of service classes. MAINVIEW for OS/390 creates a workload for each WLM workload defined in the active service policy.
<b>workflow</b>	Measure of system activity that indicates how efficiently system resources are serving the jobs in a workload.
<b>workload</b>	(1) Systematic grouping of units of work (for example, address spaces, CICS transactions, IMS transactions) according to classification criteria established by a system administrator. (2) In OS/390 or z/OS, a group of service classes within a service definition.
<b>workload activity view</b>	Tracks workload activity as the workload accesses system resources. A workload activity view measures workload activity in terms of resource consumption and how well the workload activity meets its service objectives.
<b>Workload Analyzer</b>	Online data collection and display services used to analyze IMS workloads and determine problem causes.

---

**workload definition** Workload created through the WKLIST view. Contains a unique name, a description, an initial status, a current status, and selection criteria by which address spaces are selected for inclusion in the workload. *See* Workload Definition Facility.

**Workload Definition Facility**

In MAINVIEW for OS/390, WKLIST view and its associated dialogs through which workloads are defined and service objectives set.

**workload delay view**

Tracks workload performance as the workload accesses system resources. A workload delay view measures any delay a workload experiences as it contends for those resources.

**Workload Monitor**

Online data collection services used to monitor IMS workloads and issue warnings when defined thresholds are exceeded.

**workload objectives**

Performance goals for a workload, defined in WKLIST. Objectives can include measures of performance such as response times and batch turnaround times.

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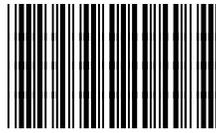
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# Notes



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