



# StorageTek™ VTCS

Update Guide

docs.sun Update Only, April 5, 2010





VTCS™

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docs.sun Update Only, April 5, 2010

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# Preface

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## Audience

This guide is for StorageTek or customer personnel who are responsible for managing VTCS.

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## About This Book

*VTCS Update Guide* provides update information about the following enhancements to VTCS:

- [“INVENTORY Utility” on page 1](#)
- [“DISPLAY RTD Enhancements” on page 13](#)
- [“DISPLAY MVCPool Name\(poolname\) Enhancements” on page 19](#)
- [“SLSUX14 Enhancements” on page 31](#)
- [“RTD Swap Enhancements” on page 33](#)
- [“VTCS 6.2 Migration Control Enhancements” on page 43](#)
- [“CONFIG GLOBAL MAXVTVSZ Parameter” on page 51](#)
- [“External Volume Pools \(POOLPARAM EXTERNAL\)” on page 57](#)
- [“Using Manual Transports as RTDs” on page 65](#)
- [“Recovering VTVs That Resided On Lost or Damaged MVCs” on page 69](#)



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## INVENTORY Utility

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The INVENTORY utility lists all VTVs on specified MVCs. Additionally, you can use INVENTORY to:

- Request that the contents of the specified MVCs are cross-checked with the information recorded in the CDS.
- Terminate the processing based on the end-of-tape position recorded in the CDS for the MVC, rather than at the MVC's physical end-of-tape.
- Have the processing terminated for an MVC the first time a VTV is discovered that is incompatible with the information in the CDS.

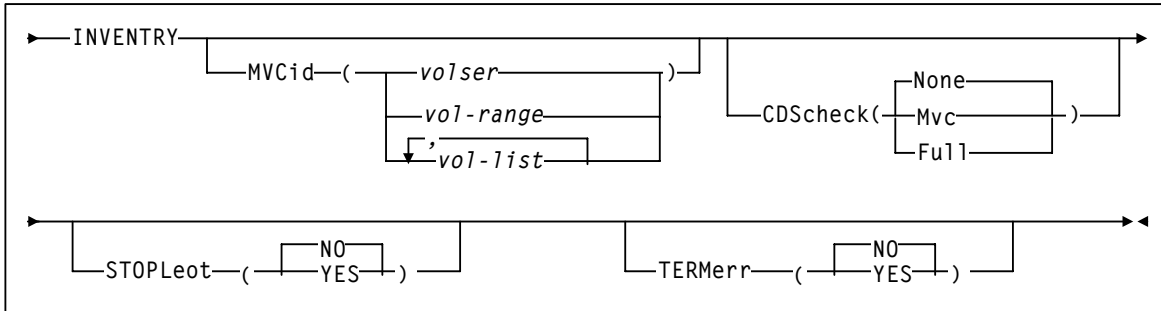
The INVENTORY utility requires the following PTFs:

- 6.1 - L1H14NU for SWS6100, L1H14NT for SOS6100, L1H14NS for SMS6100
- 6.2 - L1H14OC for SWS6200, L1H14OA for SOS6200, L1A00PL for SMC6200, L1H14OB for SMS6200
- 7.0 - L1H14U4 for SSEA700

---

# INVENTORY Utility

## Syntax



## Parameters

### MVCid

specifies the MVC(s) to be inventoried.

### CDScheck

specifies whether the contents of each inventoried MVC is checked against the information recorded in the CDS.

#### None

Each VTV found on an inventoried MVC is listed via message SLS6933I. The CDS is not checked. None is the default.

#### Mvc

Each VTV found on an inventoried MVC is listed via message SLS6933I. The details of the VTV are obtained from the CDS. The MVC and CDS copies of the VTV are compared and listed as a comment on SLS6933I. If the CDS shows a resident or MVC copy of the VTV exists that differs from the copy listed in SLS6933I, its details are listed via message SLS6934I.

#### Full

Each VTV found on an inventoried MVC is listed via message SLS6933I.

The details of the VTV are obtained from the CDS. The MVC and CDS copies of the VTV are compared and listed as a comment on SLS6933I. If the CDS shows a resident or MVC copy of the VTV exists that differs from the copy listed in SLS6933I, its details are listed via message SLS6934I. For each inventoried MVC, the CDS is checked to see which VTVs are shown to have a copy on the MVC. Any VTVs that were not found on the MVC are listed via message SLS6935E.

#### STOPlcot

specifies whether processing is to terminate when the logical end-of-tape position is reached. The logical end-of-tape position is the end-of-tape position recorded in the CDS for this MVC.

##### NO

All VTVs are to be processed on each inventoried MVC. NO is the default.

##### YES

VTVs are processed on each inventoried MVC until:

- The MVC's physical end-of-tape is reached, or
- The first VTV is found on the MVC that is beyond the logical end-of-tape position, if this is earlier than the physical end-of-tape position. Invalid with CDScheck(None).

#### TERMerr

specifies whether the inventory of an MVC is to terminate when it encounters the first inconsistency between the contents of the MVC and the VTVs that the CDS indicates are on the MVC. Such inconsistencies are listed via message SLS6935E, SLS6936E or SLS6938E.

##### NO

The inventory of an MVC is not to terminate when it encounters the first inconsistency between the contents of the MVC and the VTVs that the CDS indicates are on the MVC. NO is the default.

##### YES

The inventory of an MVC is to terminate when it encounters the first inconsistency between the contents of the MVC and the VTVs that the CDS indicates are on the MVC. Invalid with CDScheck(None).

---

# Messages

SLS6932E

INVENTORY SYNTAX ERROR: RRR

**Explanation.** The syntax of the INVENTORY utility printed prior to this message contains error rrr

- The value of CDScheck must be Full, Mvc or None.
- The value of STOpleot must be NO or YES.
- The value of TERMerr must be NO or YES.
- STOpleot(YES) can only be specified with CDScheck(Full/Mvc).
- TERMerr(YES) can only be specified with CDScheck(Full/Mvc).

**System Action.** Processing terminates. The return code is set to 8.

**User Response.** Correct the syntax before re-executing the utility.

SLS6933I

MVC MMMMMM BLOCK BBB: VTV VVVVVV CREATED CCC MIGRATED RRR  
OOO

**Explanation.** This message shows the details of VTV vvvvvv found on MVC mmmmmm while performing an inventory of the MVC.

The details are those recorded on MVC mmmmmm, not in the CDS:

- bbb shows the block on MVC mmmmmm where VTV vvvvvv begins.
- ccc is the date/time VTV vvvvvv was created (if known).
- rrr is the date VTV vvvvvv was migrated to MVC mmmmmm (if known).
- ooo is an optional comment, which is output only if the INVENTORY utility specified CDScheck(Full/Mvc).
- If the CDS indicates that a resident or MVC copy of VTV vvvvvv exists and it differs from the copy described in this message, message SLS6934I will be output to describe the CDS copy of VTV vvvvvv.



- comments on the details of VTV vvvvvv recorded in the CDS relative to the copy of VTV vvvvvv found on MVC mmmmmm:

- 'CDS VTV is not defined' - VTV vvvvvv is not defined in the CDS.

This is an error. This situation should not occur if VTV vvvvvv was migrated to MVC mmmmmm while using this CDS.

'CDS shows no VTV copy' - the CDS indicates no copy of VTV vvvvvv has ever been created.

This is an error. This situation should not occur if VTV vvvvvv was migrated to MVC mmmmmm while using this CDS.

- 'CDS shows an older VTV' - the copy of VTV vvvvvv recorded in the CDS has an older (less recent) creation date/time than the copy of VTV vvvvvv found on MVC mmmmmm.

This is an error. This situation should not occur if VTV vvvvvv was migrated to MVC mmmmmm while using this CDS.

- 'CDS shows a newer VTV' - the copy of VTV vvvvvv recorded in the CDS has a newer (more recent) creation date/time than the copy of VTV vvvvvv found on MVC mmmmmm.

This is normal and can occur as follows:

- VTV vvvvvv is created at date/time ccc and migrated to MVC mmmmmm at block bbb.
- at later date/time ddd, another copy of VTV vvvvvv is created.
- VTCS will update the CDS to show it has unlinked VTV vvvvvv from MVC mmmmmm, though VTV vvvvvv will still exist physically on MVC mmmmmm.

- 'CDS shows same age VTV' - the copy of VTV vvvvvv recorded in the CDS has the same creation date/time as the copy of VTV vvvvvv found on MVC mmmmmm. However, the CDS does not show a copy of VTV vvvvvv at block bbb on MVC mmmmmm.

This is normal and can occur as follows:

- VTV vvvvvv is created at date/time ccc and migrated to MVC mmmmmm at block bbb.
- MVC mmmmmm is drained.
- VTV vvvvvv is recalled from MVC mmmmmm and migrated to MVC nnnnnn.
- VTCS will update the CDS to show it has unlinked VTV vvvvvv from MVC mmmmmm, though VTV vvvvvv will still exist physically on MVC mmmmmm.

- 'CDS shows matching VTV' - the copy of VTV vvvvvv recorded in the CDS has the same creation date/time as the copy of the VTV found on MVC mmmmmm. Additionally, the CDS shows a migrated copy of this VTV at block bbb on MVC mmmmmm.

This is normal and indicates this is a current copy of VTV vvvvvv.

**System Action.** Processing continues.

**User Response.** If comment 'CDS VTV is not defined', 'CDS shows no VTV copy' or 'CDS shows an older VTV' was output:

- investigate why this is the case.
- if comment 'CDS VTV is not defined' was output and VTV vvvvvv should be defined in the CDS, define it using the appropriate procedure.
- if the CDS should be in step with the contents of MVC mmmmmm, perform an audit of MVC mmmmmm.

Otherwise, none.

SLS6934I

VTV VVVVVV: TTT CREATED CCC MIGRATED RRR

**Explanation.** This message shows the details recorded in the CDS of VTV vvvvvv found on MVC mmmmmm while performing an inventory of the MVC:

- ttt is:
  - 'Not on MVC mmmmmm' if the CDS shows there is no copy of VTV vvvvvv on MVC mmmmmm, or
  - 'MVC mmmmmm block bbb' if the CDS shows there is a copy of VTV vvvvvv on MVC mmmmmm, beginning at block bbb.

Regardless of the value of ttt, copies of VTV vvvvvv may exist on other MVCs.

- ccc is the date/time VTV vvvvvv was created (if known).
- 'Migrated rrr' shows the date VTV vvvvvv was migrated to MVC mmmmmm. It is output only if the CDS indicates there is a copy of VTV vvvvvv on MVC mmmmmm and the date is known.

**System Action.** Processing continues.

**User Response.** None.

SLS6935E

VTV VVVVVV: MVC MMMMMM BLOCK BBB CREATED CCC MIGRATED RRR

**Explanation.** This message shows the details recorded in the CDS of VTV vvvvvv:

- bbb shows the block on MVC mmmmmm where VTV vvvvvv begins.
- ccc is the date/time VTV vvvvvv was created (if known).
- rrr is the date VTV vvvvvv was migrated to MVC mmmmmm (if known).

Though the CDS indicates a copy of VTV vvvvvv is present on MVC mmmmmm, VTV vvvvvv was not found on MVC mmmmmm while performing an inventory of the MVC.

**System Action.** The return code is set to 8. If the INVENTORY utility specified TERMerr(YES), processing of MVC mmmmmm terminates. Otherwise, processing continues.

**User Response.** If the CDS should be in step with the contents of MVC mmmmmm, perform an audit of MVC mmmmmm. Otherwise, none.

SLS6936E

THE CDS DOES NOT CONTAIN VTV VVVVVV, FOUND DURING INVENTORY PROCESSING OF MVC MMMMMM

**Explanation.** VTV vvvvvv was found on MVC mmmmmm while performing an inventory of the MVC, but the VTV is not defined in the CDS.

**System Action.** The return code is set to 8. If the INVENTORY utility specified TERMerr(YES), processing of MVC mmmmmm terminates. Otherwise, processing continues.

**User Response.** If VTV vvvvvv should be defined in the CDS, define it using the appropriate procedure. Then, if the CDS should be in step with the contents of MVC mmmmmm, perform an audit of MVC mmmmmm.

SLS6937I

INVENTORY OF MVC MMMMMM TERMINATED AT BLOCK BBB1, VTV VVVVVV. LOGICAL END-OF-TAPE IS AT BLOCK BBB2.

**Explanation.** VTV vvvvvv was found at block bbb1 on MVC mmmmmm while performing an inventory of the MVC.

Block bbb1 is on/past block bbb2, which the CDS shows to be the logical end-of-tape (LEOT) position for this MVC, i.e. the position to which the next migration will occur.

This does not indicate an error if MVC mmmmmm has been drained or reclaimed, as the recalled VTVs will still exist physically on the MVC.

The INVENTORY utility specified STOPleot(YES), i.e. that processing should terminate when the logical end-of-tape (LEOT) position was reached.

**System Action.** Processing of MVC mmmmmm terminates. The return code is set to 0.

**User Response.** None.

SLS6938E

VTV VVVVVV, FOUND DURING INVENTORY PROCESSING OF MVC MMMMMM, IS INCONSISTENT WITH THE CDS

**Explanation.** VTV vvvvvv was found on MVC mmmmmm while performing an inventory of the MVC.

The details of VTV vvvvvv in the CDS differ from the details of VTV vvvvvv found on MVC mmmmmm in a manner that should not be possible if VTV vvvvvv was migrated to MVC mmmmmm while using this CDS.

Message SLS6933I, issued prior to this message, gives the details of the copy of VTV vvvvvv found on MVC mmmmmm and summarizes the differences.

Message SLS6934I, issued prior to this message if the CDS shows a resident or MVC copy of VTV vvvvvv exists, gives the details of VTV vvvvvv in the CDS.

**System Action.** The return code is set to 8.

If the INVENTORY utility specified TERMerr(YES), processing of MVC mmmmmm terminates.

Otherwise, processing continues.

**User Response.** Investigate the reason for the differences between the copy of VTV vvvvvv found on MVC mmmmmm and the CDS copy of VTV vvvvvv.

If the CDS should be in step with the contents of MVC mmmmmm, perform an audit of MVC mmmmmm.

SLS6939E

UNABLE TO DETERMINE THE POSITION OF THE END OF VTV VVVVVV.  
INVENTORY OF MVC MMMMMM TERMINATED.

**Explanation.** VTV vvvvvv was found on MVC mmmmmm while performing an inventory of the MVC.

VTCS could not determine if more VTVs exist on MVC mmmmmm, as it was unable to determine the position of the end of VTV vvvvvv on MVC mmmmmm.

**System Action.** Processing of MVC mmmmmm terminates. The return code is set to 8.

**User Response.** Contact StorageTek Software Support.

SLS6940E

ECAM ERROR CCC/SSS (POSSIBLE DATA LOSS) OCCURRED READING VTV  
VVVVVV, DURING INVENTORY PROCESSING OF MVC MMMMMM

**Explanation.** VTV vvvvvv was found on MVC mmmmmm while performing an inventory of the MVC.

ECAM error ccc/sss occurred reading this VTV, indicating this copy of the VTV may have been lost or corrupted.

**System Action.** Processing continues. The return code is set to 8.

**User Response.** If other usable copies of the VTV exist, consider using the VTVMANT utility to unlink the VTV from MVC mmmmmm to ensure this copy of the VTV can not be used. Contact StorageTek Software Support if assistance is required.

SLS6941E

ECAM ERROR CCC/SSS OCCURRED READING VTV VVVVVV, DURING  
INVENTORY PROCESSING OF MVC MMMMMM

**Explanation.** VTV vvvvvv was found on MVC mmmmmm while performing an inventory of the MVC. ECAM error ccc/sss occurred reading this VTV.

**System Action.** Processing of MVC mmmmmm terminates. The return code is set to 8.

**User Response.** Perform any action indicated for this error in the appropriate ELS manual. Contact StorageTek Software Support if assistance is required.

SLS6942I

NO VTVS WERE FOUND ON MVC MMMMMM

**Explanation.** No VTVs were found on MVC mmmmmm, which was being inventoried.

**System Action.** Processing of MVC mmmmmm terminates. The return code is set to 0.

**User Response.** None.

---

## XML Output

```
<inventory_request>
<header>
<vtcs_version>6.1.0</vtcs_version>
<date>2008SEP01</date>
<time>10:25:36</time>
<host_name>ECCL</host_name>
</header>
<inventory_cdscheck>MVC</inventory_cdscheck>
<inventory_stop_at_logical_eot>NO</inventory_stop_at_logical_eot>
<inventory_terminate_on_error>NO</inventory_terminate_on_error>
<inventory_summary>
</inventory_summary>
<mvc_data>
<volser>021549</volser>
<vtv_count>0</vtv_count>
<media>STK1R</media>
<percent_used>0.00</percent_used>
<percent_fragmented>0.00</percent_fragmented>
<percent_available>100.00</percent_available>
<media_size>20000</media_size>
<times_mounted>220</times_mounted>
<audit>NO</audit>
<eject>NO</eject>
<drain>NO</drain>
<maxvtv>NO</maxvtv>
<export>NO</export>
<consolidated>NO</consolidated>
<full>NO</full>
<usable>YES</usable>
<initialised>YES</initialised>
<broken>NO</broken>
<lost>NO</lost>
<data_check>NO</data_check>
<read_only>NO</read_only>
<retired>NO</retired>
<warranty_expired>NO</warranty_expired>
<invalid_mir>NO</invalid_mir>
<date_last_mounted>2008SEP01</date_last_mounted>
<time_last_mounted>10:06:59</time_last_mounted>
<date_last_migrate>2007JUL17</date_last_migrate>
<time_last_migrate>06:39:07</time_last_migrate>
<date_last_reclaim>2008SEP01</date_last_reclaim>
<time_last_reclaim>10:19:38</time_last_reclaim>
<vtss_last_mounted></vtss_last_mounted>
```

FIGURE 1-1 INVENTORY XML Output (Part 1)

```

<acs>00</acs>
<eot_block_id>00000000</eot_block_id>
<block_id_first_space>1540CD4B</block_id_first_space>
<inventory_vtv>
<volser>Y00486</volser>
<block_id>00000000</block_id>
<date_created>2007JUL17</date_created>
<time_created>06:33:22</time_created>
<date_migrated>2007JUL17</date_migrated>
<comment>CDS SHOWS SAME AGE VTV</comment>
<vtv_data>
<volser>Y00486</volser>
<initialised>YES</initialised>
<mounted>NO</mounted>
<resident>NO</resident>
<scratch>NO</scratch>
<fenced>NO</fenced>
<new_create>NO</new_create>
<copies_to_migrate>2</copies_to_migrate>
<times_read>1</times_read>
<consolidated>NO</consolidated>
<migrated>YES</migrated>
<replication>NOT REPLICATED</replication>
<size_compressed>385.24</size_compressed>
<size_uncompressed>389.78</size_uncompressed>
<compress_percent>2</compress_percent>
<maximum_size>400</maximum_size>
<date_last_used>2008SEP01</date_last_used>
<time_last_used>10:16:45</time_last_used>
<date_last_mount>2007JUL17</date_last_mount>
<time_last_mount>06:33:23</time_last_mount>
<date_last_recall>2008SEP01</date_last_recall>
<time_last_recall>10:14:13</time_last_recall>
<date_created>2007JUL17</date_created>
<time_created>06:33:22</time_created>
<management_class>M15</management_class>
<vtss_name>HBVTSS18</vtss_name>
<multiple_start>Y00486</multiple_start>
<multiple_next>Y00487</multiple_next>
<mvc_instance>
<volser>022561</volser>
<block_id>23415C48</block_id>
<date_migrated>2007JUL17</date_migrated>
</mvc_instance>
<mvc_instance>
<volser>022531</volser>
<block_id>1540D3C1</block_id>
<date_migrated>2008SEP01</date_migrated>
</mvc_instance>
</vtv_data>
</inventory_vtv>
... more <inventory_vtv> blocks
</mvc_data>
<exceptions>
</exceptions>
</inventory_request>

```

FIGURE 1-2 INVENTORY XML Output (Part 2)

---

**Note –**

---

1. `mvc_data` tags (`<volser>.<block_id_first_space>`) are as produced for MVC RPT of an MVC.
  2. `<inventory_vtv>` details are produced for each VTV found on the inventoried MVC. They correspond to information output in message SLS6933I.
  3. `<vtv_data>` details are produced for CDS details of a VTV and correspond to information output in messages SLS6934I or SLS6935E. `<vtv_data>` details are present only when `CDScheck(Full/Mvc)` is specified and the details of the VTV recorded in the CDS differ from the details of the VTV found on the inventoried MVC.
-





## DISPLAY RTD Enhancements

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The VTCS Display RTD command produces a single line description showing details for each RTD that is defined in the VTCS configuration. Generally, this information is sufficient to adequately describe the current state of the RTD. However, if an RTD is shared between multiple VTSSs, the displayed status of the RTD may not apply to all of the connected VTSSs. For example, some of the VTSSs that are connected to the RTD may be varied offline or ECAM communication errors may prevent access to the RTD from some of the connected VTSSs as shown in [“Current Display RTD Command Output \(6.1\)” on page 14](#).

These enhancements improve the output from the Display RTD command for shared RTDs by:

- Reformatting the output from the Display RTD command as follows:
  - The current single line display (reformatted) is displayed if the global status of the shared RTD applies to all of the connected VTSSs.
  - If the global status of the shared RTD does not apply to all of the connected VTSSs, an individual line is displayed showing the status of each VTSS.

See [“New Display RTD Command Output” on page 15](#) for an example.

- XML tags are produced showing the status of the shared RTDs for each of the connected VTSSs.

See [“XML output” on page 17](#) for an example.

The Display RTD enhancements require the following PTFs:

- 6.1 - L1H14K5 for SWS6100
- 6.2 - L1H14K7 for SWS6200

---

## Current Display RTD Command Output (6.1)

FIGURE 2-1 shows an example of the current Display RTD command output (for VTCS 6.1).

RTD	Status	Mount	Alloc	Host	VTSS
2A00	Online/free	-	-	-	DVTSS16
2A01	Online/free	-	-	-	DVTSS16
2A02	Online/free	-	-	-	DVTSS16
2A03	Online/free	-	-	-	DVTSS16
2A04	Online/free	-	-	-	-
2A05	Offline	-	-	-	-
2A06	Path offline	-	-	-	DVTSS18
2A07	Path offline	-	-	-	DVTSS18
2A08	Online/free	-	-	-	DVTSS19
2A09	Online/free	-	-	-	DVTSS19
2A0A	Online/free	-	-	-	-
2A0B	Online/free	-	-	-	-

FIGURE 2-1 Current Display RTD Command Output (6.1)

As shown in FIGURE 2-1, the VTSS name is not displayed if the RTD is shared between VTSSs. In this example:

- RTDs 2A04 and 2A05 are shared between VTSSs DVTSS16 and DVTSS17.
- RTDs 2A0A and 2A0B are shared between VTSSs DVTSS17, DVTSS18 and DVTSS19.
- VTSS DVTSS18 has been varied offline but this is not shown in the output.

## New Display RTD Command Output

FIGURE 2-2 shows an example of the new Display RTD command output (for VTCS 6.1).

RTD	Mount	Alloc	Host	VTSS	Status
2A00	-	-	-	DVTSS16	Online/free
2A01	-	-	-	DVTSS16	Online/free
2A02	-	-	-	DVTSS16	Online/free
2A03	-	-	-	DVTSS16	Online/free
2A04	-	-	-	-	Online/free
2A05	-	-	-	-	Offline
2A06	-	-	-	DVTSS18	Fail/offline
2A07	-	-	-	DVTSS18	Path offline
2A08	-	-	-	DVTSS19	Online/free
2A09	-	-	-	DVTSS19	Online/free
2A0A	-	-	-	-	Online/free
				DVTSS17	Online/free
				DVTSS18	Path offline
				DVTSS19	Online/free
2A0B	-	-	-	-	Online/free
				DVTSS17	Online/free
				DVTSS18	Path offline
				DVTSS19	Online/free

FIGURE 2-2 New Display RTD Command Output (6.1)

FIGURE 2-3 shows an example of the new Display RTD command output (for VTCS 6.2).

RTD	Mount	Alloc	Host	VTSS	Status	Top ID	Top host
2A00	-	-	-	DVTSS16	Online/free	-	-
2A01	-	-	-	DVTSS16	Online/free	-	-
2A02	-	-	-	DVTSS16	Online/free	-	-
2A03	-	-	-	DVTSS16	Online/free	-	-
2A04	-	-	-	-	Online/free	-	-
2A05	-	-	-	-	Online/free	-	-
2A06	-	-	-	DVTSS18	Fail/offline	-	-
2A07	-	-	-	DVTSS18	Path offline	-	-
2A08	-	-	-	DVTSS19	Online/free	-	-
2A09	-	-	-	DVTSS19	Online/free	-	-
2A0A	-	-	-	-	Online/free	-	-
				DVTSS18	Path offline		
				DVTSS19	Online/free		
				DVTSS17	Online/free		
2A0B	-	-	-	-	Online/free	-	-
				DVTSS18	Path offline		
				DVTSS19	Online/free		
				DVTSS17	Online/free		

FIGURE 2-3 New Display RTD Command Output (6.2)

As shown in [FIGURE 2-2 on page 15](#) and [FIGURE 2-3 on page 15](#):

- For the shared RTDs only, the current single line is displayed if the global status of the shared RTD applies to all of the connected VTSSs (for example, RTDs 2A04 and 2A05 above).
- If the status of a shared RTD from any VTSS is different from the global status, an individual line is displayed for each VTSS (for example, RTDs 2A0A and 2A0B above).

---

## XML output

DISPLAY RTD produces XML tags that show the status of the shared RTDs for each of the connected VTSSs. An example of the XML output for shared RTD 2A0B is shown in [FIGURE 2-4](#).

```
<rtd_data>
<device_address>2A0B</device_address>
<device_type>STK1RA34</device_type>
<status>Online/free</status>
<acs>00</acs>
<lsm>00</lsm>
<vtss_data>
<name>DVTSS18</name>
<status>Path offline</status>
</vtss_data>
<vtss_data>
<name>DVTSS19</name>
<status>Online/free</status>
</vtss_data>
<vtss_data>
<name>DVTSS17</name>
<status>Online/free</status>
</vtss_data>
</rtd_data>
```

**FIGURE 2-4** Display RTD Command XML Output



## DISPLAY MVCPool Name(*poolname*) Enhancements

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The DISPLAY MVCP command output is enhanced for Named MVC Pools to:

- Display the values of the optional parameters that are currently in effect for the Named MVC Pools.
- Produce XML tags showing the values of the optional parameters that are currently in effect for the Named MVC Pools.

For more information, see:

- [“Display MVCPool Output” on page 20](#)
- [“QUERY/DISPLAY MVCPOOL XML” on page 22](#)

These enhancements require the following 6.2 PTFs:

- L1H14VW (SWS6200)
- L1H14VV (SMS6200)
- L1A00Q7 (SMC6200)

# Display MVCPool Output

FIGURE 3-1 shows an example of Display MVCPool NAME (POOL1) output.

MVCPool (POOL1) INFORMATION							
INITMVC	MVCFREE	THRESHOLD	MAXMVC	START			
NO	2	30	4	10			
ACS	MEDIA	FREE-MVCS		RECLAIM-MVCS	USED-MVCS		
		VOLS	GB	VOLS	GB	VOLS	GB
00	ECART	120	96	2	0.5	90	45
00	STK1R	30	600	1	3.5	25	350
00	TOTAL	150	696	3	4.0	115	395

FIGURE 3-1 Example output from Display MVCPool NAME(POOL1)

FIGURE 3-2 shows an example of Display MVCPool output (no pool name specified).

MVCPool INFORMATION							
INITMVC	MVCFREE	THRESHOLD	MAXMVC	START			
NO	2	30	4	10			
ACS	MEDIA	FREE-MVCS		RECLAIM-MVCS	USED-MVCS		
		VOLS	GB	VOLS	GB	VOLS	GB
00	ECART	310	248	4	1.2	100	65
00	ZCART	120	192	1	0.5	250	400
00	TOTAL	430	440	5	1.7	350	465
01	ECART	90	144	15	6.2	322	485
01	ZCART	35	700	3	11.3	43	675
01	TOTAL	125	844	18	17.5	365	1160
NON-LIB	STK2P	22	1100	0	0	12	1565
NON-LIB	TOTAL	22	1100	0	0	12	1565

FIGURE 3-2 Example output from Display MVCPool (no pool name specified)



**INITMVC**

specifies whether un-initialized MVCs are to be initialized when they are first mounted.

**MVCFREE**

the minimum number of free MVCs.

**THRESHOLD**

the fragmented space threshold (as a percentage) that determines when an MVC is eligible for demand or automatic reclamation.

**MAXMVC**

MVC limit for a single reclaim.

**START**

Specifies a percentage value that represents the ratio of reclaim candidates to total MVCs, which triggers automatic space reclamation.

**ACS**

the ACS containing the MVC pool. **NONLIB** counts are for initialized MVCs that are now outside the library.

**MEDIA**

the MVC media type.

**FREE-MVCS**

MVCs that have 100% usable space and do not contain any migrated VTVs. The storage shown is the total free space based on media type capacity.

**RECLAIM-MVCS**

MVCs eligible for space reclamation by this host. The storage shown is the total wasted space including those MVCs not yet eligible for space reclaim.

**USED-MVCS**

Initialized MVCs that are partially or completely full.

# QUERY/DISPLAY MVCPOOL XML

TABLE 3-1 QUERY/DISPLAY MVCPOOL XML Tags

Command/ Utility	Head Tag	Structure/Data Tags				
<b>QUERY/ DISPLAY MVCPOOL</b>	<query_mvcpool >	<header>	<vtcs_version>			
				<process_id>		
				<date>		
				<time>		
				<host_name>		
			<mvcpool_count s>	<name>		
				<init_mvc>		
				<mvcfree>		
				<reclaim_thresho ld>		
				<reclaim_maxmv c>		
				<reclaim_start>		
				<acs_mvc_counts >	<acs>	
					<media_mvc_ counts>	<media>
						<free_volumes>
						<free_size>
						<reclaim_volum es>
						<reclaim_size>
				<used_volumes>		
				<used_size>		

**TABLE 3-2** VTCS XML Data Tag Descriptions

<b>Data Tag</b>	<b>Occurs In</b>	<b>Definition</b>
<accessible>	<vtss_data>	Yes/no. Indicates whether a VTSS is accessible from this host.
<acs>	<acs_mvc_counts>	ACS ID where the MVCs reside.
	<rtd_data> <connected_device_types>	ACS ID where the RTD is attached.
	<storclas_data>	ACS ID specified in the Storage Class.
	<mvc_data>	ACS ID where the MVC resides.
	<vtss_data>	Default ACS ID.
<active_migrate_tasks>	<vtss_data>	Number of active migration tasks.
<archive_status>	<mvc_instance>	Archived - the VTV was archived to this MVC. Consolid - the VTV was consolidated/exported to this MVC. Deletion - the VTV was migrated to this MVC, but this MVC copy is in addition to that dictated by the VTV's MGMTCLAS. Migrated - the VTV was migrated to this MVC. Reconcil - the VTV should not have been migrated to this MVC. RECONCIL should be run.
<audit>	<mvc_data>	Yes/no. Audit in progress or previous audit failed.
<auto_migrate_threshold>	<vtss_data>	Current threshold for automatic migration.
<auto_migration_list>	<vtss_data>	List of VTVs scheduled for automatic migration.
<available_3105>	<vtcs_data>	CDS compatibility: <cds_compatible_v4>, <cds_compatible_v5>, <cds_compatible_v6>
<block_id>	<mvc_instance>	Block ID of the VTV on the MVC.
<broken>	<mvc_data>	Yes/no. Indicates MVC error status.
<capacity_mb>	<vtss_data>	Capacity of VTSS in Mb.
<CDS_compatible_V4>	<vtcs_data>	Yes/no.
<CDS_compatible_V5>	<vtcs_data>	Yes/no.
<CDS_compatible_V6>	<vtcs_data>	Yes/no.
<cds_block>	<mvc_data_diag>	The block number (bbb) of the MVC within the relevant CDS subfile.
<cds_record>	<mvc_data_diag>	The block record number (rrr) of the MVC within the relevant CDS subfile.
<CF_lock_number>	<CF_lock_data>	Coupling Facility lock number.
<CF_lock_type>	<CF_lock_data>	Coupling Facility lock type.
<CF_lock_owning_host>	<CF_lock_data>	Coupling Facility lock owner.
<channel_id>	<rtd_data>	The channel id of a single RTD/CLINK.
	<clink_data>	
<clink_id>	<clink_data>	Internal ID of a CLINK.
<compress_percent>	<vtv_data>	Percentage compression for the VTV.

**TABLE 3-2** VTCS XML Data Tag Descriptions

<b>Data Tag</b>	<b>Occurs In</b>	<b>Definition</b>
<connected_device_types>	<vtss_data>	RTD device types connected to the VTSS.
<consolidate_date>	<mvc_data>	Date YYYYMMDD that the MVC was used for consolidation.
<consolidate_time>	<mvc_data>	Time HH:MM:SS that the MVC was used for consolidation.
<consolidated>	<vtv_data>	Yes/no. Indicates whether a VTV is currently consolidated.
	<mvc_data>	Indicates that this MVC is a consolidated MVC.
<contains_free_MVCs>	<mvcpool_data>	Yes/no. Indicates whether the MVC Pool contains free MVCs.
<cuaddr>	<vtd_range>	A DECOM or CONFIG control unit identifier for a VTD that matches its value in the IOCP.
<data_check>	<mvc_data>	Yes/no. Indicates whether an MVC has had a data check.
<date_created>	<vtv_data>	Date YYYYMMDD that the VTV was created.
<date_last_mounted>	<mvc_data>	Date YYYYMMDD that the MVC was last mounted.
<date_last_used>	<vtv_data>	Date YYYYMMDD that the VTV was last used.
<date>	<header>	Date YYYYMMDD that the XML was generated.
<dbu>	<vtss_data>	DBU % for a single VTSS.
<default_acs>	<vtss_data>	The configured default ACS ID for this VTSS.
<device_address>	<rtd_data> <rtd_data_diag>	The configured device address for an RTD.
	<vtd_data>	
<device_type>	<rtd_data> </required_device_types> <connected_device_types>	The device type of the RTD.
<dismount_time>	<vtss_data>	The time an MVC is retained on a RTD.
<drain>	<mvc_data>	Yes/no. Indicates whether the MVC is being drained.
<copies_to_migrate>	<vtv_data>	1, 2, 3, or 4. Indicates number of migration copies of a VTV.
<eject>	<mvc_data>	Yes/no. Indicates whether the MVC is ejected.
<export>	<mvc_data>	Yes/no. Indicates whether the MVC is exported.
<fenced>	<vtv_data>	Yes/no. Indicates whether a VTV is currently fenced.
<free_size>	<media_mvc_counts>	Free space in GB.
<free_volumes>	<media_mvc_counts>	Number of free MVCs.
<full>	<mvc_data>	Yes/no. Indicates whether the MVC is considered full.
<function>	<vtcs_request>	VTCS function being performed.
<global_maxvtv>	<vtcs_data>	Maximum VTVs per MVC (4-32000).
<global_mvcfree> <mvcfree>	<vtcs_data>	Free MVC threshold for reclaim (0-255).

**TABLE 3-2** VTCS XML Data Tag Descriptions

Data Tag	Occurs In	Definition
<global_replicat>	<vtcs_data>	REPLICAT setting (ALWAYS   CHANGED).
<global_sync_replicate>	<vtcs_data>	SYNCHREP setting (YES   NO).
<global_vtvattr>	<vtcs_data>	When a Management Class is assigned to a VTV -
		SCRATCH - after a scratch mount.
		ALLMOUNT - after any mount.
<global_recall_with_error>	<vtcs_data>	Whether VTCS recalls VTVs with read data checks.
		YES - recall VTVs with read data checks.
		NO - do not recall VTVs with read data checks.
<global_lock_structure>	<vtcs_data>	The name of an MVS Coupling Facility Structure where VTCS CDS Record Locks are stored.
<global_vtvpagesize>	<vtcs_data>	STANDARD or LARGE
<high>	<vtd_range>	The end of a volser range.
	<vtvvol>	
	<mvcvol>	
<host_id>	<vtcs_data>	The host where the command was issued (QUERY CONFIG command only).
<host_name>	<header>	Host where XML was generated.
	<host_replicate_queues>	Host attached to the Primary VTSS.
	<lock_data>	Host owning the lock.
	<clink_data>	Host using a CLINK.
<immediate_migration_list>	<vtss_data>	List of VTVs scheduled for immediate migration.
<init_mvc>	<mvcpool_counts>	Yes/no. Indicates whether an MVC is initialized when it is first mounted.
<initialised>	<vtv_data>	Yes/no. Indicates whether a VTV has been used.
	<mvc_data>	Yes/no. Indicates whether an MVC has been used.
<internal_device_type>	<mvc_instance> <rtd_data_diag>	The internal coding of the device type (dd).
<invalid_mir>	<mvc_data>	Yes/no. Indicates whether the MVC has an invalid MIR.
<lost>	<mvc_data>	Yes/no. Indicates whether the MVC is lost (mount could not complete).
<low>	<vtd_range>	The start of a range.
	<vtvvol>	
	<mvcvol>	
<lsm>	<rtd_data>	LSM ID that contains the RTD.
<lsm_plus_one>	<rtd_data_diag>	LSM ID plus one that contains the RTD.
<management_class>	<vtv_data>	The Management Class assigned to this VTV.
<maximum_migrate_tasks>	<vtss_data>	Maximum number of auto-migrate tasks for this VTSS.

**TABLE 3-2** VTCS XML Data Tag Descriptions

Data Tag	Occurs In	Definition
<maxvtv>	<mvc_data>	Yes/no. Indicates whether the MVC has reached the limit of VTVs.
<media_size>	<mvc_data>	The size in Mb of the MVC.
<media>	<media_mvc_counts>	MVC media type.
	<mvc_data>	
	<mvcpool_data>	
<migrate_hamt>	<vtss_data>	High auto-migrate threshold.
<migrate_lamt>	<vtss_data>	Low auto-migrate threshold.
<migrate_status>	<mvc_instance>	Consolid - the VTV was consolidated/exported to this MVC. Deletion - the VTV was migrated to this MVC, but this MVC copy is in addition to that dictated by the VTV's MGMTCLAS. Migrated - the VTV was migrated to this MVC. Reconcil - the VTV should not have been migrated to this MVC. RECONCIL should be run.
<migrated>	<vtv_data>	Yes/no. Indicates whether a VTV is currently resident on one or more MVCs.
<migrates>	<vtss_data>	Yes/no. Indicates whether this host supports migrate.
	<host_data>	
<migration_vtv_count>	<automatic_migration_list>	Number of VTVs schedule for automatic or immediate migration.
	<immediate_migration_list>	
<migration_failure_time>	<automatic_migration_list>	Time of automatic migration failure.
<mode>	<cluster_data>	Operational state of a cluster.
<mounted>	<vtv_data>	Yes/no. Indicates whether a volser (VTV or MVC) is currently mounted.
<mount_suitability>	<mvc_instance>	The mount suitability of the MVC (ss).
<mvc_cache_entry>	<mvc_data_diag>	The MVC cache entry (cccccc).
<mvc_cache_indexing_entry>	<mvc_data_diag>	The cache/indexing entry (iiii).
<mvc_free>	<mvcpool_counts>	
<mvc_indexing_flags>	<mvc_data_diag>	The indexing flags (ff).
<mvcpool>	<storclas_data>	The MVC Pool name specified in a STORCLAS statement.
<mvcpool_is_defined>	<mvcpool_data>	Yes/no. Indicates whether the MVC pool is defined.
<name>	<rtd_data>	Identifier of RTD.
	<vtss_data>	Identifier of VTSS.
	<mvcpool_counts>	Identifier of MVCPOOL.
	<cluster_data>	Identifier of CLUSTER.
	<host_data>	Identifier of HOST.

**TABLE 3-2** VTCS XML Data Tag Descriptions

Data Tag	Occurs In	Definition
	<mvcpool_data>	Identifier of MVCPOOL.
<new_create>	<vtv_data>	Yes/no. Indicates whether the VTV was newly created when it was last resident.
<noverify>	<vtd_range>	Yes/no. Indicates whether VTCS verifies the VTD addresses versus the MVS device addresses in the IOCP.
<number_rtds>	<vtss_data>	Number of RTDs configured for a VTSS.
<number_vtds>	<vtss_data>	Number of VTDs configured for a VTSS.
<number_vtvs>	<vtss_data>	Number of VTVs currently resident on a VTSS.
<owner_vtss>	<rtd_data>	The VTSS currently using an RTD.
<parent_id>	<vtcs_request>	Task ID of the parent task to the task listed.
<percent_available>	<mvc_data>	The amount of space available for migrations on this MVC.
<percent_fragmented>	<mvc_data>	The amount of unusable space on this MVC due to fragmentation.
<percent_used>	<mvc_data>	The amount of space on this MVC occupied by VTVs.
<primary_name>	<cluster_data>	VTSS name of Primary VTSS.
<primary_state>	<cluster_data>	Status of Primary VTSS.
<process_id>	<header>	The internal VTCS ID for a request.
	<vtcs_request>	
<read_only>	<mvc_data>	Yes/no. Indicates whether the MVC is readonly.
<reason>	<vtv_data>	Text message showing the reason for an exception condition.
	<mvc_data>	
	<vtcs_request>	
	<exceptions>	
<reclaim_maxmvc>	<vtcs_data> <mvcpool_counts>	MVC limit for a single reclaim.
<reclaim_space_to_move>	<mvc_data_diag>	The amount of space that reclaim will move (mmmmmmmm).
<reclaim_suitability>	<mvc_data_diag>	The reclaim suitability (sssssss).
<reclaim_size>	<media_mvc_counts>	Reclaim space in GB.
<reclaim_start>	<vtcs_data> <mvcpool_counts>	Reclaim start threshold.
<reclaim_threshold>	<vtcs_data> <mvcpool_counts>	Fragmented space threshold.
<reclaim_volumes>	<media_mvc_counts>	Number of volumes available for reclaim.
<reclaims>	<vtss_data>	Yes/no. Indicates whether this host supports reclaim.
	<host_data>	
<replicate_difference>	<host_replicate_queues>	

**TABLE 3-2** VTCS XML Data Tag Descriptions

<b>Data Tag</b>	<b>Occurs In</b>	<b>Definition</b>
<replicate_frequency>	<host_replicate_queues>	
<replicate_oldest>	<host_replicate_queues>	
<replicate_qdepth>	<host_replicate_queues>	Number of VTVs waiting to be replicated.
<replicate_skip>	<host_replicate_queues>	
<replication>	<vtv_data>	“not replicated” indicates that a VTV has no replication requirements.
		“replicated” indicates that a VTV is fully replicated.
		“replication started” indicates that replication has started for this VTV.
		“replication required” indicates that replication is needed for this VTV.
<replication_capability>	<clink_data>, <cluster_data>	SYNCHRONOUS   ASYNCHRONOUS
<requests_queued>	<rtd_data_diag>	Requests queued for this RTD.
<resident>	<vtv_data>	Yes/no. Indicates whether a VTV is currently resident on a VTSS buffer.
<retired>	<mvc_data>	Yes/no. Indicates whether the MVC is retired.
<scratch_count>	<scratch_data>	
<scratch>	<vtv_data>	Yes/no. Indicates whether a VTV is currently a scratch volume in the CDS.
<secondary_name>	<cluster_data>	Name of secondary VTSS
<secondary_state>	<cluster_data>	State of secondary VTSS.
<size_compressed>	<vtv_data>	The compressed size of a VTV in Mb.
<size_uncompressed>	<vtv_data>	The uncompressed size of a VTV in Mb.
<maximum_size>	<vtv_data>	The maximum size of a VTV in Mb (400 or 800).
<status>	<rtd_data>	Operational state of an RTD.
	<vtss_data>	Operational state of a VTSS.
	<vtd_data>	Operational state of a VTD.
	<clink_data>	Operational state of a CLINK.
<storclas_name>	<storclas_data>	The Storage Class name specified in a STORCLAS statement.
<storage_class>	<mvc_data>	The Storage Class assigned to an MVC.
<subpool_name>	<scratch_data>	Scratch subpool name.
<suitable_RTD_online>	<vtss_data>	Yes/no. Indicates whether an RTD compatible with the requested MVC media type is online.
<task_number>	<lock_data>	The task number associated with the lock.
	<task_data>	The task number for each task on the current host.
<task_type>	<lock_data>	The task type associated with the lock.



**TABLE 3-2** VTCS XML Data Tag Descriptions

<b>Data Tag</b>	<b>Occurs In</b>	<b>Definition</b>
	<task_data>	The task type of each task on the current host.
<time_created>	<vtv_data>	Time HH:MM:SS that a VTV was created.
<time_last_mounted>	<mvc_data>	Time HH:MM:SS that an MVC was last mounted.
<time_last_used>	<vtv_data>	Time HH:MM:SS that a VTV was last used.
<time>	<header>	Time HH:MM:SS that the XML was generated.
<times_mounted>	<mvc_data>	The mount count of an MVC.
<trace>	<trace_request>	On/off. Indicates whether VTCS tracing is active.
<usable>	<mvc_data>	Yes/no. Indicates whether the MVC can be used for migration.
<usage>	<clink_data>	Current activity on a CLINK.
<usage>	<vtd_data>	Current activity on a VTD (ECAM only for replication, otherwise blank)
<used_size>	<media_mvc_counts>	Total used space.
<used_volumes>	<media_mvc_counts>	Initialized MVCs that are not eligible for space reclamation.
<volser>	<mvc_instance>	Volser of MVC.
	<vtv_data>	Volser of VTV.
	<vtv_data_diag>	Volser of VTV.
	<mvc_data>	Volser of MVC.
	<mvc_data_diag>	Volser of MVC.
	<vtd_data>	Volser of VTV on VTD.
<vtcs_version>	<header>	Defines the VTCS version that generated the XML in v.r.m format currently 6.0.0.
<vtss_last_mounted>	<mvc_data>	The VTSS name that the MVC was last mounted on.
<vtss_name>	<vtv_data>	VTSS name that the VTV was last resident on.
	<clink_data>	VTSS name of the primary attached to CLINK.
	<vtd_data>	VTSS name used during QUERY VTD.
	<replication_data>	Primary VTSS name.
<vtss_subsystems>	<vtcs_data>	Number of VTSS subsystems.
<vtv_count>	<mvc_data>	Count of VTVs on an MVC.
<waiting_host>	<lock_data>	The host waiting for the lock.
<waiting_task>	<lock_data>	The task waiting for the lock.
<warranty_expired>	<mvc_data>	Yes/no. Indicates whether the MVC's warranty has expired.



## SLSUX14 Enhancements

---

The HSC Volume Access User Exit (SLSUX14), which enables you to invoke security checking for volume access at mount and eject time, is enhanced to be invoked for VT) scratch volume mounts. If SLSUX14 rejects the volume, the mount will fail with the following messages:

- SLS2980I Access to volume vvvvvv denied for MOUNT processing for Job jjjjjjjj
- SLS5079E Mount of vvvvvv on dddd - Failed (12) – VTV:vvvvvv Volume access control gave RC=rrrrrrrr

If the mount fails, VTCS returns the VTV to scratch status, which is consistent with how HSC scratch mount selection interacts with SLSUX14. That is, HSC does not try other scratch volumes for the one mount request and leaves the rejected volume in scratch status.

This enhancement requires the following PTFs:

- For 7.0, L1H151K - SES700
- For 6.2, L1H14W1 (SWS620) and L1H14W2 (SOS6200)



## RTD Swap Enhancements

---

When an error occurs while reading an MVC on an RTD, VTCS may swap the MVC to another RTD to retry the operation. If the swap is for an MVC audit then the selection of the “swap to” device type **excludes** the device type that the error occurred on. Otherwise, the “swap to” device type is restricted to the native device type (device type MVC was created on). However, **note that**:

- T9840D devices are the **preferred** device type for reading an MVC created on **any** T9840 device type (T9840A/T9840B/T9840C/T9840D).
- T10KB devices are the **preferred** device type for reading an MVC created on **any** T10K device type (T10KA/T10KB).

This enhancement provides the MVCATTR control statement, which lets you specify the “swap to” RTD device type for each MVC media name. For more information, see [“MVCATTR Control Statement” on page 34](#).

---

**Note** – It is possible to get the SLS6949I message on a write swap. This will only occur if the MVCATTR requests a swap to the native device type. For example, if you have an MVCATTR for MEDIA(STK1RC) and request SWAPTO(STK1RC34,) then it will look like the swap was influenced because it matched the MVCATTR but in reality it did this by default.

---

This enhancement requires the following PTFs:

- 6.2:
  - SOS6200 - L1H150A
  - SWS6200 - L1H1509
  - SMS6200 - L1H1508
- 7.0 - SSEA700 - L1H150Q

# MVCATTR Control Statement

The MVCATTR control statement assigns attributes to an MVC media name. The MVCATTR control statement is loaded by the MGMTDEF command.

## Syntax

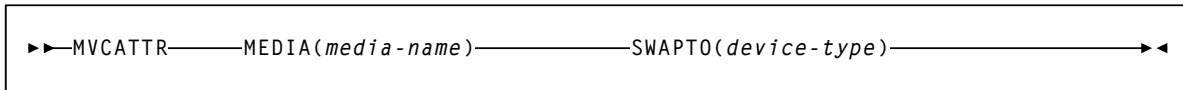


FIGURE 5-1 MVCATTR control statement syntax

## Parameters

### MEDIA

Specifies the MVC media name to which the attribute is assigned.

---

**Note** – Only one MVCATTR should be coded for each MEDIA name.

---

#### *media-name*

the MVC media name; see [TABLE 5-1](#).

### SWAPTO

Defines the RTD device type the MVC is swapped to (if possible).

#### *device-type*

the RTD device type; see [TABLE 5-1](#).

TABLE 5-1 Valid MVC Media Names and Compatible SWAPTO RTD Device Types

Valid MEDIA Names	Compatible SWAPTO Device Types
STK1R	STK1RA34, STK1RB34, STK1RD34, STK1RDE4  <b>Note: STK1RA34 and STK1RB34 devices are equivalent to VTCS, so you cannot ensure a swap to these specific device types.</b>
STK1RC	STK1RC34, STK1RD34, STK1RDE4
STK1RD	STK1RD34, STK1RDE4
STK1RDE	STK1RDE4
STK2P	STK2PA34, STK2PB34
STK2PB	STK2PB34
T1000T1	T1A34, T1AE34, T1B34, T1BE34
T1000TS	T1A34, T1AE34, T1B34, T1BE34
T1000E1	T1AE34, T1BE34

**TABLE 5-1** Valid MVC Media Names and Compatible SWAPTO RTD Device Types

<b>Valid MEDIA Names</b>	<b>Compatible SWAPTO Device Types</b>
T10000ES	T1AE34, T1BE34
T1B000T1	T1B34, T1BE34
T1B000TS	T1B34, T1BE34
T1B000E1	T1BE34
T1B000ES	T1BE34

---

# Messages

SLS6949I

INITIATING SWAP OF MVC VVVVVV FROM RTD RRRRRRRR TO DEVICE TYPE  
TTTTTTT

**Explanation.** An error has occurred while processing MVC vvvvvv. The MVC is being swapped from RTD rrrrrrr to device type tttttt.

**System Action.** The current action will be attempted upon another RTD. The device type being swapped to has been influenced by an MVCATTR SWAPTO policy definition.

**User Response.** The reason for the error should be investigated. Check the SYSLOG for other indications as to the nature of the error. If the MVC is damaged or suspect, then use the VT MVCDRAIN command to remove all VTVs from the MVC. If the problem keeps reoccurring upon the same RTD, use the VT VARY command to vary the RTD offline and contact StorageTek hardware support.



## MVCMMAINT Utility Update

---

When a MVC has incurred a data check or has come to the end of its useful life, typically you physically replace the cartridge. However, you may be using information stored in the MVC record (for example, number of times mounted) to track usage for operations such as media scrubbing or to plan for media replacement. Therefore, when you replace an MVC, you may want to reset the fields in the MVC record in the CDS. You can now reset these fields via the MVCMMAINT REPLACED parameter as described in [“MVCMMAINT Utility” on page 38](#).

This update requires the following PTFs:

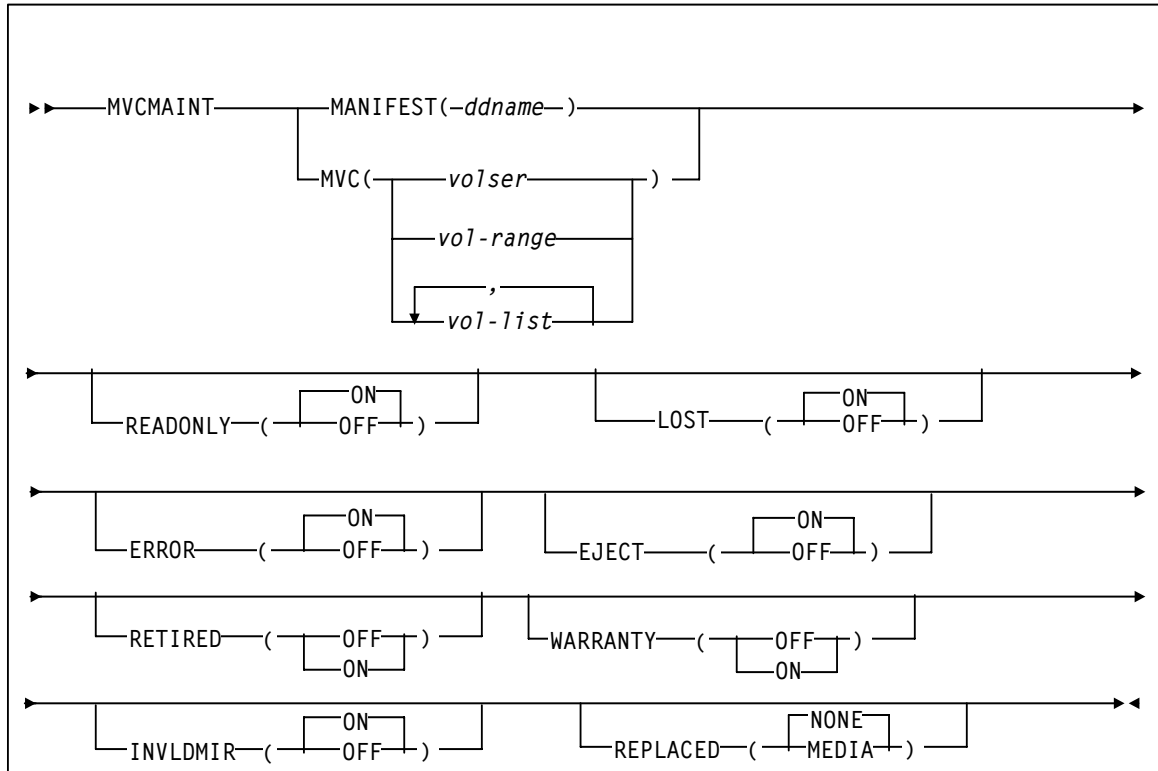
- 6.1 - L1H14JJ
- 6.2 - L1H14JK

---

# MVCMANT Utility

MVCMANT sets MVC attributes.

## Syntax



## Parameters

### MANIFEST

specifies the input ddname of the manifest file. **Note that** you can specify a merged manifest file or multiple manifest files.

*ddname*

ddname of the manifest file. The default is MANIFEST.

### MVC

specifies the MVCs whose read/write attribute is changed.

*volser, vol-range or vol-list*

the volsers of one or more MVCs.

## READONLY

sets the read/write status of the MVC.

ON

MVC is readonly (the default).

OFF

MVCs is writable.

## LOST

sets the “lost” status of the MVC.

ON

MVC is lost (the default).

OFF

MVC is not lost.

## ERROR

sets the error status of the MVC.

ON

MVC is in error (the default).

OFF

MVC is not in error.

## EJECT

sets the “logical eject” status of the MVC.

ON

MVC is “logically ejected” (the default).

OFF

MVC is not “logically ejected”.

MVCMAINT will only allow EJECT(ON) to be set for an MVC if ALL of the following are true

- The MVC is not marked Full, and
- The MVC is not Draining, and
- The MVC contains zero VTVs.

## RETIRED

sets the “retired” status of the MVC. There is no default; you must specify a value.

ON

MVC is retired.

OFF

MVC is not retired but is still in “expired warranty” state (still selectable for output).

## WARRANTY

sets the “expired warranty” status of the MVC. There is no default; you must specify a value.

ON

MVC’s warranty has expired.

OFF

MVC's warranty has not expired.

---

**Note** – RETIRED and WARRANTY are mutually exclusive. That is, you cannot specify RETIRED and WARRANTY on the same MVCMAINT command.

---

#### INVLDMIR

sets the invalid MIR status of the MVC.

ON

MIR is invalid (the default).

OFF

MIR is not invalid.

#### REPLACED

Resets or clears various fields in the MVC record after physically replacing an MVC.

NONE

Makes no updates to the MVC record.

#### MEDIA

Update the MVC record. The MVC must be empty (contain zero VTVs) and unmounted or this parameter will fail. REPLACED (MEDIA) updates the following MVC fields as follows:

- Media type of the MVC is cleared
- Count of times mounted is set to zero
- Warranty Expired Flag is turned off
- Invalid MIR Flag is turned off
- Retired Flag is turned off
- Broke/Error Flag is turned off
- Lost Flag is turned off
- Data Check Flag is turned off
- VTSS Last Written By is cleared
- Date/Time MVC was last written to is cleared
- Storage Class is cleared
- Date/Time of Last Drain/Reclaim is cleared
- Date/Time of Migrate from Empty State is cleared

---

**Note** – The REPLACED parameter is mutually exclusive with the LOST, ERROR, EJECT, RETIRED, WARRANTY, and INVLDMIR parameters.

---

---

# Messages

SLS6943E

MVC mmm IS NOT EMPTY, REQUEST FAILED.

**Explanation.** The action requested requires the MVC to be empty. The action can not be completed since the MVC is not empty.

'Display MVC' or MVC report output may show the MVC has zero VTVs but the MVC is not empty. To be empty, the MVC must show zero VTVs and have been drained.

**System Action.** The action requested against the MVC fails.

**User Response.** Drain the MVC and then re-attempt the action against the MVC.

SLS6945E

MVC mmm IS MOUNTED, REQUEST FAILED.

**Explanation.** The action requested requires that the MVC not be mounted. The action can not be completed since the MVC is mounted.

**System Action.** The action requested against the MVC fails.

**User Response.** Dismount the MVC and then re-attempt the action against the MVC.



## VTCS 6.2 Migration Control Enhancements

---

VTCS 6.2 is enhanced to provide greater control over VTV migration as described in the following sections:

- [“MIGRSEL Control Statement” on page 44](#)
- [“DISPLAY MIGRATE” on page 46](#)
- [“Controlling Migration Workloads” on page 50](#)

This enhancement requires the following 6.2 PTFs:

- L1H14M8 (SWS620) and L1H14MA (SOS620)

---

# MIGRSEL Control Statement

The MIGRSEL control statement defines migration settings for a Storage Class, and/or VTSS, and/or host. It is loaded by the MGMTDEF command.

## Syntax

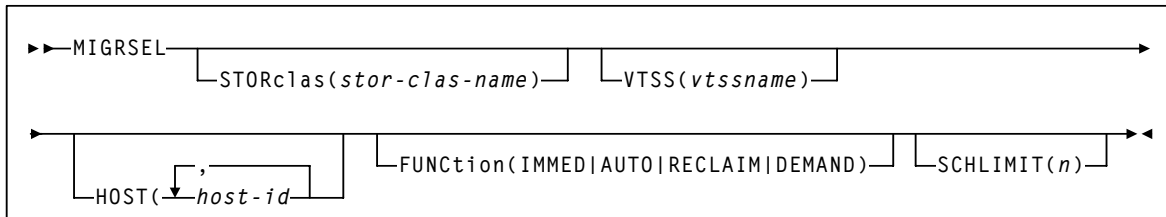


FIGURE 7-2 MIGRSEL control statement syntax

## Parameters

### STORclas

optionally, specifies a Storage Class to which the migration settings apply. If you do not specify a Storage Class, the statement applies to all Storage Classes.

*stor-clas-name*

the name of the Storage Class you defined on the STORclas control statement.

### VTSS

optionally, specifies a VTSS to which the migration settings apply. If you do not specify a VTSS, the statement applies to all VTSSs.

*vtssname*

the VTSS name

### HOST

optionally, specifies one or more hosts to which the migration settings apply. Any hosts not specified on this parameter ignore the settings. If you do not specify one or more hosts, the settings apply to all hosts.

*host-id*

a host identifier (maximum 8 characters)



## FUNCTION

optionally, specifies the type of migration to which the settings apply:

### IMMED

migrations resulting from either of the following:

- MGMTclas IMMEdmig(KEEP)
- MGMTclas IMMEdmig(DELETE)

### AUTO

automatic migrate to threshold migration processing

### RECLAIM

migrations resulting from MVC DRAIN or RECLAIM requests

### DEMAND

migrations resulting from a MIGRATE command or utility (demand migrations)

## SCHLIMIT

optionally, de-priorities migration per Storage Class.

*n*

the preferencing value. Valid values are 0 to 99. The default is 99, which indicates no limit, up to the VTSS MAXMIG value.

Lower values de-priorities migration, and you can specify automatic, immediate, demand, and reclaim migrates. Lower values can do the following:

- Optimize MVC usage.
- Prefer migration to other Storage Classes.
- Limit migration to keep RTDs available for auto recalls.
- Reduce MVC swapping when workloads change.

For auto and immediate migration processing, MIGRSEL SCHLIMIT de-priorities migration for the VTSS to storage class relationship. This comparison is not global and only effects requests driven by the individual VTCS host

For demand migration requests, MIGRSEL SCHLIMIT will cause the request to be held if the scheduling of it would cause the number of globally active migration requests on the VTSS that satisfy the same FUNCTION and STORCLAS selection criteria to be exceeded. The migration requests will be released and an MVC picked once the constraint subsides.

---

# DISPLAY MIGRATE

Display MIGrate displays migration status.

<b>Interfaces:</b>	UUI - All
<b>Subsystem Requirements:</b>	Active HSC/VTCS

## Syntax

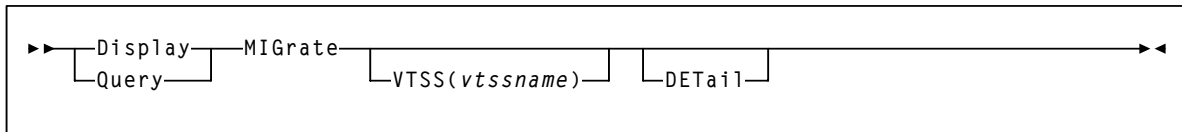


FIGURE 7-3 Display MIGrate syntax

## Parameters

### VTSS

the VTSS whose migration status you want to display.

*vtssname*

the VTSS name.

### DETail

display migration status by Storage Class.

## Display MIGrate Output

FIGURE 7-4 shows an example of Display MIGrate output.

```
VTSSNAME: HBVTSS16
ACTIVE MIGRATION TASKS: 4
IMMEDIATE MIGRATE:                MAX WAIT: 5 MINUTES
IMMEDIATE DELAY QUEUE: ACTIVE
AUTO MIGRATE:                      HOST: EC20 MIGRATION TARGET: 70%
```

FIGURE 7-4 Example Display MIGrate output

### *Fields*

#### **VTSSNAME**

the VTSS migrating the VTVs.

#### **ACTIVE MIGRATION TASKS**

the total number of migration tasks (automatic, immediate, and migrate-to-threshold).

#### **IMMEDIATE MIGRATE**

either **Not active** if there are no current or pending immediate migrations or the maximum time that any VTV has been waiting for immediate migration.

---

**Note** – This field only shows status for the LPAR on which the query was issued.

---

#### **IMMEDIATE DELAY QUEUE**

Whether there are VTVs on the Immediate Migrate Queue.

#### **AUTO MIGRATE**

either **Not active** or the name of the host and migration target (LAMT or specified threshold for a migration-to-threshold) if auto migration is active on any host.

## Display MIGrate DEtail Output

FIGURE 7-5 shows an example of the additional fields from Display MIGrate DEtail output.

```
VTSSNAME: DVTSS16
Active migration tasks: 2
Immediate migrate: Max wait: 1 minutes
Immediate delay queue: Not active
Auto migrate: Not active
```

Storage Class	ACS	Max/Onl RTDs	---SCH-- Lim Pref	Req Act	--Auto-- GB	---Immed--- Delay GB	Weight /Skip
S1	00	16 16	1 0	1	-	1 9	50/ 0
S2	00	16 16	1 0	1	-	1 9	50/ 0

FIGURE 7-5 Example Display MIGrate DEtail additional output

### *Fields*

#### **STORAGE CLASS**

the Storage Class associated with the migration.

---

**Note** – If you do not explicitly assign a Storage Class, an MVC’s default Storage Class is the name of the last VTSS that wrote to the MVC for reclamation or migration and this class has the VTCS default media selections. To change these defaults, create a Storage Class with the VTSS name and specify the desired media selection order.

---

#### **ACS**

the ACS defined for the Storage Class.

#### **MAX/ONL RTDs**

- the maximum number of RTD tasks based on the Storage Class and RTD configuration definitions.
- the maximum number of tasks for those RTDs that are actually online (**MAX TASKS** minus the number of offline RTDs).

#### **SCH**

SCHLIMIT and SCHPREF values from MIGRSEL statements that apply to the active migration for the storage class.

#### **Req Act**

the number of active migration tasks.

#### **ACTIVE TASKS**

the number of migration tasks currently active for the Storage Class.

#### **AUTO**

indicates whether the Storage Class contains automatic migration VTVs.

#### **IMMED**

indicates whether the Storage Class contains immediate migration VTVs.

**WEIGHT** (percent)

the priority of the Storage Class compared to other Storage Classes for the VTSS. Storage Classes with higher priorities are assigned a greater proportion of migration tasks.

# Controlling Migration Workloads

TABLE 7-1 Controlling Migration Workloads

This policy does the following...	Valid values are...	The default is...	To set the policy, use...
Controls migration workloads.	0-99	99 (no limit up to the VTSS MAXMIG value)	MIGRSEL SCHLIMIT

## Usage Notes

MIGRSEL SCHLIMIT provides finer control over how Storage Classes are treated for migration, but in the opposite direction. That is, MIGRSEL SCHLIMIT, applies limits on migration resources (RTDs/MVCs) per Storage Class, and you can do so on a VTSS and/or host basis. Use MIGRSEL SCHLIMIT, as follows:

- Use MIGRSEL SCHLIMIT to deprefer migration per Storage Class. Lower values deprefer migration, and you can specify automatic, immediate, demand, and reclaim migrates. Lower values can do the following:
  - Optimize MVC usage. You can use this strategy where you want to limit the number MVCs used. Example: a workload migrated to a Storage Class that is subsequently used for offsite vaulting.
  - Preference migration to other Storage Classes.
  - Restricts migration concurrency to better use MVCs.
  - Limits migration to keep RTDs available for auto recalls.
  - Reduce MVC swapping when workloads change.
- MIGRSEL SCHLIMIT allows you to specify the VTSS and host to which the preferencing applies.
- For auto and immediate migration processing, MIGRSEL SCHLIMIT depreferences migration for the VTSS to Storage Class relationship. This comparison is not global and only effects requests driven by the individual VTCS host
- For demand migration requests, MIGRSEL SCHLIMIT it will cause the request to be held if the scheduling of it would cause the number of globally active migration requests on the VTSS that satisfy the same FUNCTION and STORCLAS selection criteria to be exceeded. The migration requests will be released and a MVC picked once the constraint subsides.

## CONFIG GLOBAL MAXVTVSZ Parameter

---

VTCS 6.2 and 7.0 are enhanced to provide a CONFIG GLOBAL MAXVTVSZ parameter, which enables you to specify the global default maximum VTV size. Previously, you could only specify MAXVTVSZ on the MGMTCLAS statement. The valid CONFIG GLOBAL MAXVTVSZ values (400, 800, 2000 and 4000) are identical to the valid values for the MGMTCLAS MAXVTVSZ.

This enhancement requires the following PTFs:

- For VTCS/NCS 6.2, L1H153L, L1H153M and L1A00QO.
- For ELS 7.0, L1H153N.

The changes from these enhancements are as follows:

- CONFIG GLOBAL syntax is changed; see [“CONFIG GLOBAL” on page 52](#).
- VTV maximum size policy is changed; see [“Maximum VTV Size” on page 55](#).
- DISPLAY CONFIG output now shows the value of new CONFIG GLOBAL MAXVTVSZ.
- A new XML tag is created for the CONFIG GLOBAL MAXVTVSZ parameter and is output by CONFIG and DECOM processing as follows:

```
<global_maxvtvsz>nnnn</global_maxvtvsz>
```

- Messages are changed and added; see [“Messages” on page 56](#).

# CONFIG GLOBAL

The CONFIG GLOBAL statement specifies VTCS global values. This statement is required.

## Syntax (6.2)

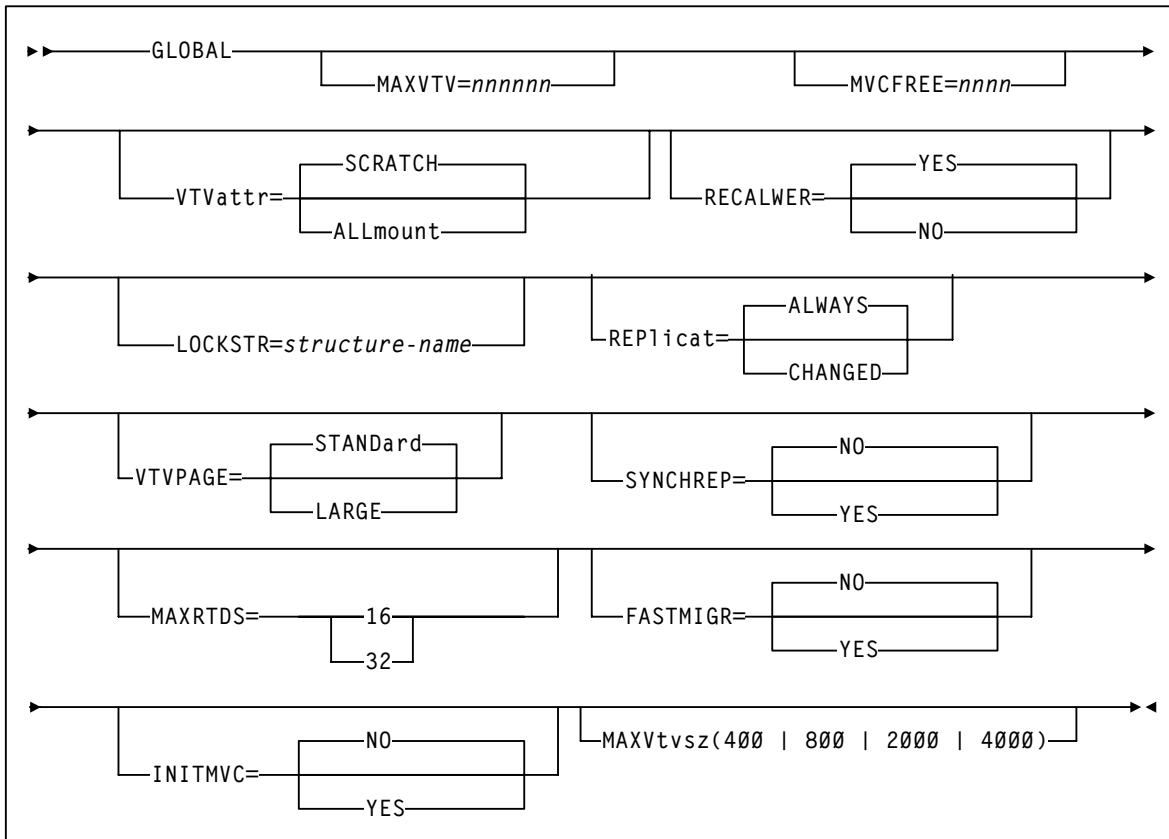


FIGURE 8-6 CONFIG GLOBAL syntax (6.2)



## Syntax (7.0)

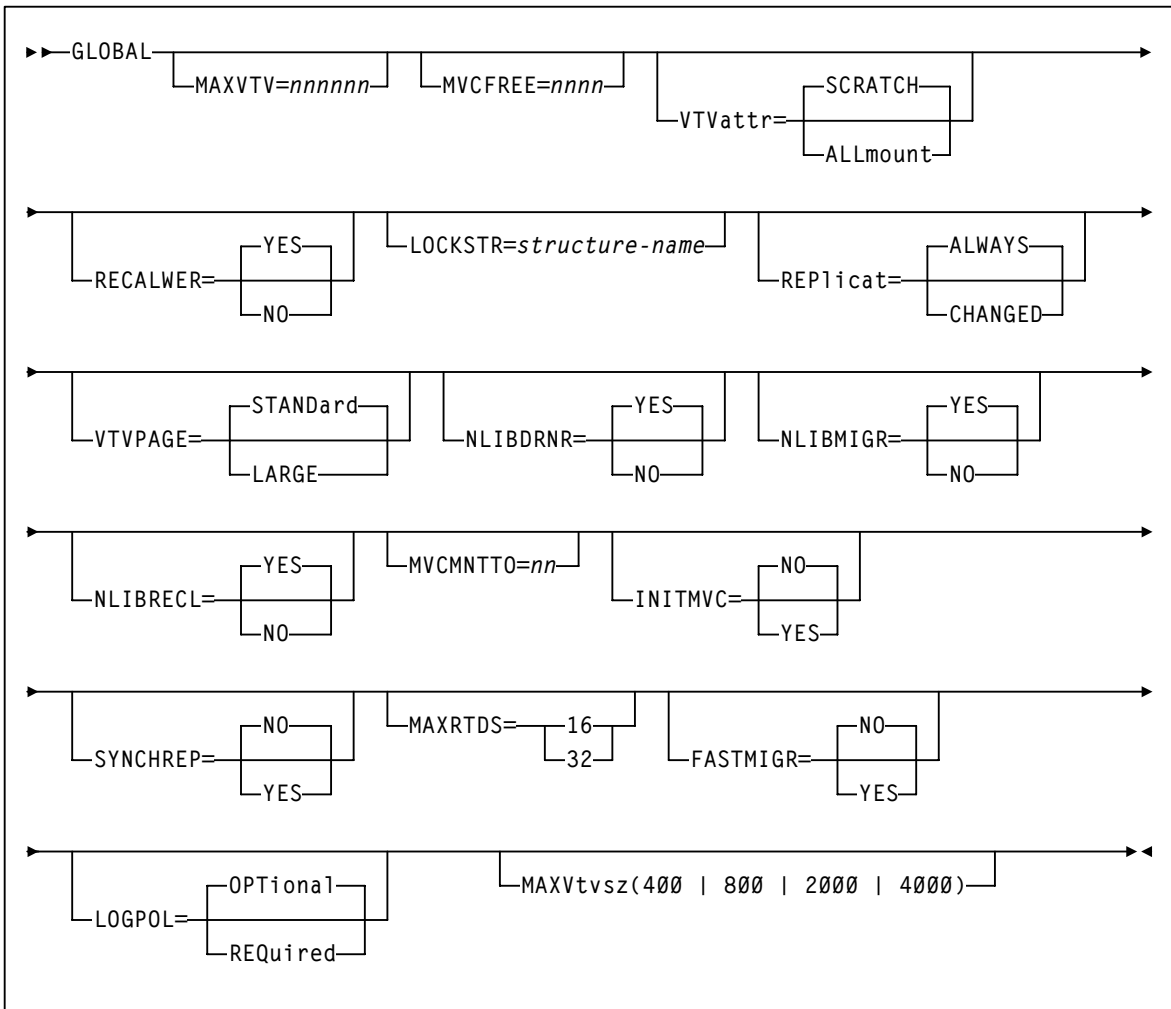


FIGURE 8-7 CONFIG GLOBAL syntax (7.0)

## New Parameters

### MAXVtvsz

specifies the maximum VTV size. Valid values for this parameter depend on both the CDS level and the microcode levels of the applicable VTSSs.

400

400MB (the default, if not specified).

800

800MB. The CDS must be at a E level or above.

2000

2GB. The CDS must be at a G level or above.

4000

4GB. The CDS must be at a G level or above.

---

### Note –

- The size of a VTV changes *only* after it goes through a scratch cycle. Therefore, if you change the Management Class and DISP=MOD, then it will still retain the original size.
  - If you specify a VTV size that is not supported by the configuration, VTCS issues warning messages and MAXVtvsz defaults to the largest VTV size supported by the configuration.
  - MAXVtvsz **does not** apply to VSM2s.
  - MAXVTVSZ (2000 | 4000) requires VSM4/VSM5 microcode D02.02.00.00 or VSM3 microcode N01.00.77.00. No installed option is required.
-

---

# Maximum VTV Size

TABLE 8-1 Maximum VTV Size

This policy does the following...	Valid values are...	The default is...	To set the policy, use...
Specifies the maximum size for VTVs.	In MBs: <ul style="list-style-type: none"><li>■ 400</li><li>■ 800</li><li>■ 2000</li><li>■ 4000</li></ul>	400	CONFIG GLOBAL MAXVTVSZ, MGMTCLAS MAXVTVSZ

## Usage Notes

- The CONFIG GLOBAL and MGMTCLAS MAXVTVSZ parameters interact as follows:
  - If MAXVTVSZ is specified on MGMTCLAS, this value overrides the CONFIG GLOBAL MAXVTVSZ value.
  - If MAXVTVSZ is **not** specified on MGMTCLAS, the CONFIG GLOBAL MAXVTVSZ value, if specified, is used. Otherwise, MAXVTVSZ defaults to 400MB.
  - If MAXVTVSZ is **not** specified on MGMTCLAS **or** on CONFIG GLOBAL, MAXVTVSZ defaults to 400MB.
- MAXVTVSZ has the CDS level and VTSS microcode level prerequisites describes in [“MAXVtvsz” on page 54](#).

---

# Messages

Message SLS6656I is enhanced with the following additional reason texts:

- MAXVTVSZ value is not 400, 800, 2000 or 4000
- MAXVTVSZ value is incompatible with the CDS level

The following new message is added:

SLS6951I

VTSS VVVVVVVV DOES NOT SUPPORT GLOBAL MAXVTVSZ OF NNNN -  
DEFAULTING TO DDDD

**Explanation.** VTVs of the size specified by the global MAXVTVSZ parameter (NNNN) cannot be created because VTSS VVVVVVVV is at a microcode level that does not support this VTV size.

**System Action.** Processing continues, but VTVs of the requested size will not be created. The MAXVTVSZ specification will now default to the largest VTV size supported by all of the VTSSs in the configuration (DDDD).

**User Response.** If VTVs of the requested size are required then upgrade the VTSS to a supporting microcode level and recycle HSC/VTCS or vary the VTSS offline/online to activate the feature.

## External Volume Pools (POOLPARAM EXTERNAL)

ELS 7.0, via the HSC VOLPARAM and POOLPARAM statements and the SET VOLPARAM utility, provides a single interface for defining and manages scratch pools and volumes of all types (real tape volumes, MVCs, VTVs, and cleaning cartridges). This SPE extends that functionality to allow you to use these facilities to define *external pools* via the new POOLPARAM EXTERNAL parameter. Examples of external pools are HSM pools and pools reserved for VTVs imported via CTR. In both examples, POOLPARAM (EXTERNAL) ensures that the volumes cannot be scratched by the system where they reside.

This enhancement requires PTF L1H152F for ELS 7.0.

The changes from this enhancement are as follows:

- POOLPARAM syntax is changed; see “POOLPARAM Control Statement” on page 58.
- DISPLAY SCRATCH output now shows that if there are scratch volumes in subpool 0, they are displayed under the subpool name DEFAULTPOOL. Also, volumes not eligible for use by the system (for example, external pool volumes, non-VOLPARAM volumes, DRTEST pool volumes) are not counted in the DISPLAY SCRATCH totals.
- New XML tag definitions:

TABLE 9-1 New POOLPARAM(EXTERNAL) XML Tags

Tag Name	Definition
<owner_tapeplex_name>	For VTVs exported via CTR, the name of the TapePlex that owns the external pool that contains the VTVs.
<pool_type>	For volumes defined with VOLPARAM, the associated POOLPARAM pool type.

- Updates to XML schema for the DISPLAY VOLSER output are that within <display\_volume\_request> at the end of the <volume\_data> header, the following fields are added:
  - <pool\_type>
  - <subpool\_name>
  - <owner\_tapeplex\_name>
- Updates to XML schema for the VOLRPT output are that within <volrpt> at the end of <volume\_data> the following fields are added:
  - <pool\_type>
  - <subpool\_name>
  - <owner\_tapeplex\_name>

---

## POOLPARAM Control Statement

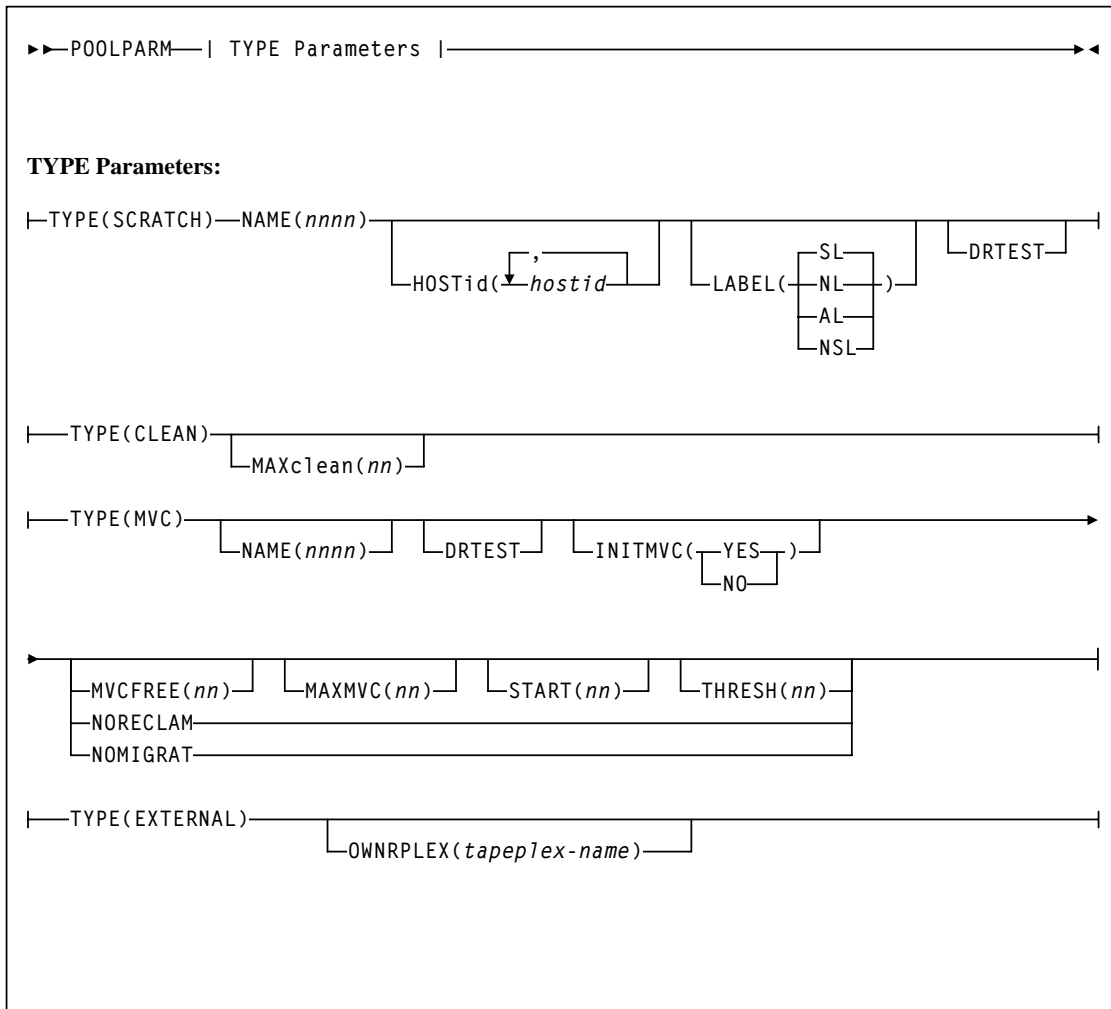
POOLPARAM control statements define pool information for a server complex in the form of named pools of specific types.

VOLPARAM statements define a volser, volser list, or volser range to be associated with the specified POOLPARAM statement.

POOLPARAM and VOLPARAM statements are defined in the SLSPARM data set, and are loaded using the SET VOLPARAM utility.

- When a POOLPARAM statement is read, all subsequent VOLPARAM statements encountered before the next POOLPARAM statement are applied.
- When VOLPARAM statements are read without a prior POOLPARAM, those VOLSER volumes are considered non-subpool (subpool 0) volumes.

# Syntax



# New Parameters

## **TYPE(EXTERNAL)**

defines a pool that is used for purposes other than clean, scratch, or MVC. Examples of external pools are HSM pools and pools reserved for VTVs imported via CTR. Volumes defined in a pool with `TYPE (EXTERNAL)` can never be used as scratch volumes on the receiving system.

## **OWNRPLEX**

optionally, specifies the name of the TapePlex that owns the volumes in the external pool.

For VTVs, this controls volumes imported via Cross-TapePlex Replication (CTR). A VTV can only be imported if the sending system's TapePlex name matches the `OWNRPLEX` value.

Volumes in an `EXTERNAL` pool can be scratched only if the scratch request originates from the TapePlex matching the `OWNRPLEX` name. The TapePlex name is defined via the `SMC TAPEPLEX NAME` parameter command is also specified on the `CONFIG TAPEPLEX THISPLEX` parameter.

Alternatively, volumes in an external pool with an `OWNRPLEX` name of "LOCALHSC" can be scratched on the local system (but not used as scratch volumes on the local system).



# Using External Pools with Cross-TapePlex Replication

FIGURE 9-1 shows an example of a CTR Configuration. In this system, VTSSs VMSPA1 and VSMPA2 reside in TapePlex TMVSA and have “partner” CLINKS to VTSS VMSPA3 in TapePlex TMVSB. VTVs replicated to VSMPA3 are now resident in TMVSB’s CDS, as are the MVCs to which the VTVs are subsequently migrated. That is, VTVs are replicated across TapePlexes, then migrated locally. VTSSs in the sending TapePlex **cannot have connections** to RTDs in the receiving TapePlex.

**Note** – The following example shows a uni-directional cross-tapeplex replication. To do a bi-directional cross-tapeplex replication, you simply define the configuration and SMC client/server control statements the same way on both tapeplexes. Note that a single tapeplex can also receive VTVs from multiple other tapeplexes. To define a configuration where one tapeplex is receiving data from multiple other tapeplexes, you simply add additional tapeplex names to the CONFIG of TMVSB.

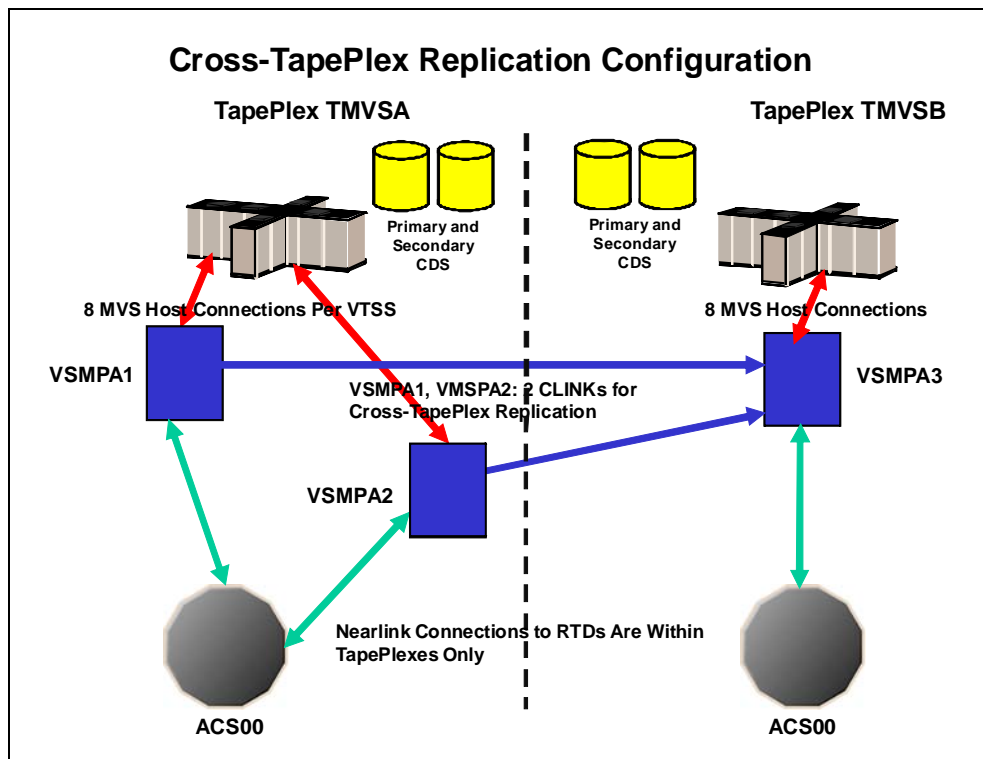


FIGURE 9-1 CTR Configuration

## ▼ Defining Policies for CTR

### ▼ Policies for the Sending TapePlex

To define policies for the sending TapePlex (TMVSA) of the example CTR system shown in [FIGURE 9-1 on page 61](#), do the following:

1. Enable the Advanced Management Feature.
2. For TMVSA, create the Storage Classes for the MVCs that contain the locally migrated VTVs and the CTR Storage Classes.

```
STOR NAME (LOCAL1) ACS (00) MEDIA (STK1R)  
STOR NAME (EEPA1) TAPEPLEX (TMVSB)
```

**FIGURE 9-2** TMVSA Storage Classes

In [FIGURE 9-2](#), the STORclas statements define:

- Storage Class LOCAL1, which is Storage Class for the locally migrated VTVs from each VTSS.
- Storage Class EEPA1, which is a Storage Class for CTR, and specifies the receiving TapePlex (TMVSB).

3. Create the Management Class that points to the Storage Classes in [Step 2](#).

```
MGMT NAME (LOCEEX1) MIGPOL (LOCAL1) EEXPOL (EEPA1)
```

**FIGURE 9-3** Management Class for Replication/CTR

4. Create an SMC Policy that specifies virtual media and assigns the Management Class created in [Step 3](#).

```
POLICY NAME (PPAY) MEDIA (VIRTUAL) MGMT (LOCEEX1)
```

**5. Create a TAPEREQ statement to route critical data to VSM and assign the corresponding Policy to the data.**

```
TAPEREQ DSN(*.PAYROLL.**) POLICY(PPAY)
```

**FIGURE 9-4** TAPEREQ Statement to Route Data, Assign Policy

In [FIGURE 9-4](#), the TAPEREQ statement specifies to route data sets with HLQ mask \*.PAYROLL.\*\* to VSM and assign Policy PPAY.

---

**Note – Also note** the following:

---

- Although you can use SMC policies to direct your CTRs to a specific esoteric, StorageTek recommends using **only** MGMTCLAS so that the SMC/VTCS allocation influencing can use any VTSS that supports the MGMTCLAS requirements.
- You can use the EEXPORT command to do manual CTR. For more information, see *VTCS Command and Utility Reference*.

**6. Check your HSC PARMLIB options to ensure that subtype 28 records are enabled.**

If enabled, VTSS writes a subtype 28 record that includes the target VTSS name for each CTR event.

## ▼ Policies for the Receiving TapePlex

To define policies for the receiving TapePlex (TMVSB) of the example CTR system shown in [FIGURE 9-1](#) on page 61, do the following:

1. Enable the Advanced Management Feature.
2. Ensure that your POOLPARAM/VOLPARAM statements include the VTV volsers that are received from TMVSA.

Modify your POOLPARAM/VOLPARAM parameters to include the range of VTVs that will be replicated from tapeplex TMVSA. In order to ensure that these volumes are never selected as scratch volumes by TMVSB, StorageTek recommends that you:

- Define the “receiving” pool as TYPE (EXTERNAL)
- Specify the owner of the “receiving” pool as the sending TapePlex

For example:

```
POOLPARAM NAME (FROMTMVSA) TYPE (EXTERNAL) OWNRPLEX (TMVSA)
VOLPARAM VOLSER (A10000-A19999) MEDIA (VIRTUAL)
```

3. For TMVSB, create the Storage Classes for local migration.

```
STOR NAME (TMVSA1) ACS (00) MEDIA (STK1R)
STOR NAME (TMVSA2) ACS (00) MEDIA (STK1R)
```

**FIGURE 9-5** Storage Classes for Local and Remote Migrated VTVs

In [FIGURE 9-2](#), the STORclas statements define Storage Classes TMVSA1 and TMVSA2 for local migration. The Storage Class names allow us to segregate this work from the TMVSB local work.

4. Create the Management Classes that point to the Storage Classes in [Step 2](#).

```
MGMT NAME (LOCEEX1) MIGPOL (TMVSA1)
MGMT NAME (LOCEEX2) MIGPOL (TMVSA2)
```

**FIGURE 9-6** Management Classes for Replication

Note that we are using the same Management Class names that we used on TMVSA (these Management Classes are specified in the VTV metadata that is sent from the VTSS on TMVSA), but we reference the Storage Classes for local migration. The definitions of the Management and Storage Classes on TMVSB can use any parameters including EEXPOL to replicate to a third TapePlex.

## Using Manual Transports as RTDs

---

In a Disaster Recovery (DR) situation, a real ACS may not be available to VSM. This enhancement enables using a “manual” RTD (not attached to an ACS) in this situation.

This enhancement requires the following PTFs:

- HSC 6.1 - L1H156C
- HSC 6.2 - L1H156E
- ELS 7.0 - L1H156G

The changes from this enhancement are as follows:

- `SET SLIDRIVS` syntax is changed; see [“SET SLIDRIVS” on page 66](#).
- See [“Defining Manual RTDs” on page 68](#) for this procedure.
- The following message is added:

SLS4378E

Invalid value for MODEL

**Explanation.** The MODEL parameter contains a value that is invalid for a tape drive model.

**System Action.** The SET SLIDRIVS utility terminates with RC(8).

**User Response.** Correct the MODEL value.

---

# SET SLIDRIVS

SET SLIDRIVS adds or changes device numbers for drives in a particular panel.

- For 9310 and 9740 libraries, these changes take effect when you recycle the affected HSC system(s). Refer to “Running SET SLIDRIVS With the HSC Active” on page 67 for more information.
- For SL3000 and SL8500 libraries, these changes take effect when you issue a MODIFY CONFIG UPD ACS(XX) for the ACS that the drives were added to. NCO adds the drives to the configuration. There is no need to recycle the HSC.

---

**Caution** – For 9310 and 9740 libraries, StorageTek recommends you bring the HSC down on all hosts before specifying this parameter, and recycle the HSC after every SET SLIDRIVS operation. Table 10-1 describes some instances where the HSC can remain active, however, unpredictable results can occur.

---

<b>Interfaces:</b>	SLUADMIN utility only
<b>Subsystem Requirements:</b>	Active HSC not required

## Syntax

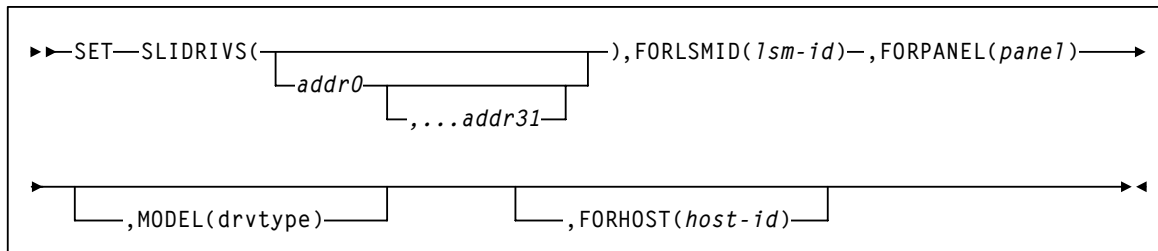


FIGURE 10-8 SET SLIDRIVS syntax

## New Parameter

### MODEL

optionally, specifies the transport model number as described in the following:

- HSC 6.1 - *SMC Configuration and Administration Guide*.
- HSC 6.2 - *SMC Configuration and Administration Guide*.
- ELS 7.0 - *Command, Control Statement, and Utility Reference*.

---

**Note** – The MODEL parameter is only used to specify the drive type for manual RTDs., which are defined in a nonexistent ACS. When an LSM is brought online, the (non-manual) drive type is automatically set.

---

## Running SET SLIDRIVS With the HSC Active

---

**Note – The following applies to 9310 and 9740 LSMs only. It does not apply to the SL8500 or SL3000.**

---

Ideally, the HSC should be shut down on all hosts when you specify the SET SLIDRIVS parameter. In some cases, however, the HSC can be left active without causing adverse results. Table 10-1 defines options for running SET SLIDRIVS.

**TABLE 10-1** HSC State/SET SLIDRIVS Operation

HSC State	Effect on SET SLIDRIVS
Down	If the HSC is down on all hosts, the HSC recognizes all new drive locations when it is initialized.
Active	The HSC can be up on all hosts only if <i>new drives are being added at new drive locations</i> . The HSC recognizes the new drive locations when it is recycled on a host.
Active	If unit addresses are changed or deleted for an <i>existing drive location</i> , either <ul style="list-style-type: none"><li>■ the affected LSM must be offline until the HSC has been recycled on all hosts, or</li><li>■ the affected ACS must be offline to all affected hosts that access an HSC that has not been recycled.</li></ul>

---

## Defining Manual RTDs

To support nonlibrary VSM configurations, you must define manual RTDs in a nonexistent ACS.

**To define manual RTDs:**

**1. Generate LIBGEN macros to define a nonexistent ACS.**

The SLIDRIVS macro defines the device address for the manual RTDs.

---

**Note** – The LSM in the nonexistent ACS can be defined as an SL8500 or SL3000 to take advantage of the `MODIFY CONFIG` command.

---

**2. Run the SLICREAT utility to format a new CDS.**

**3. Run SET SLIDRIVS utility to set the MODEL for the manual RTDs, for example:**

```
SET SLIDRIVS(400,401,402,403) MODEL(T9840C)
```

---

**Note** – Manual RTDs on the same panel must be the same drive type.

---

**4. Run the VTCS CONFIG utility to define the VSM system.**

**5. Use the VTCS IMPORT utility to import MVCs into the new CDS to use with the manual RTDs.**

These MVCs are treated as nonlibrary volumes.



## Recovering VTVs That Resided On Lost or Damaged MVCs

---

You can use the LOGUTIL FOR\_LOSTMVC statement to recover VTVs that resided on lost or damaged MVCs.

This enhancement requires PTF L1H1584 for ELS 7.0.

The changes from this enhancement are as follows:

- The LOGUTIL FOR\_LOSTMVC statement is added; see [“LOGUTIL FOR\\_LOSTMVC Statement” on page 73](#).
- See [“Using FOR\\_LOSTMVC to Recover VTVs” on page 76](#) for this procedure.
- Messages are added; see [“New Messages” on page 81](#).

# LOGUTIL

The LOGUTIL command initiates the CDS recovery process for VTCS. It is used in the following scenarios:

- The CDS has become unusable or corrupt and MVCs used since the date of the CDS backup need to be identified for MVCAUDIT purposes.
- A VTSS has suffered a catastrophic data loss.

LOGUTIL calls the module that analyzes the input log files, and calls a recovery module to perform the appropriate recovery actions.

Additionally, the LOGUTIL FOR\_LOSTMVC statement recovers VTVs that resided on a lost or damaged MVC.

<b>Interfaces:</b>	SLUADMIN utility only
<b>Subsystem Requirements:</b>	Active HSC not required

## Syntax

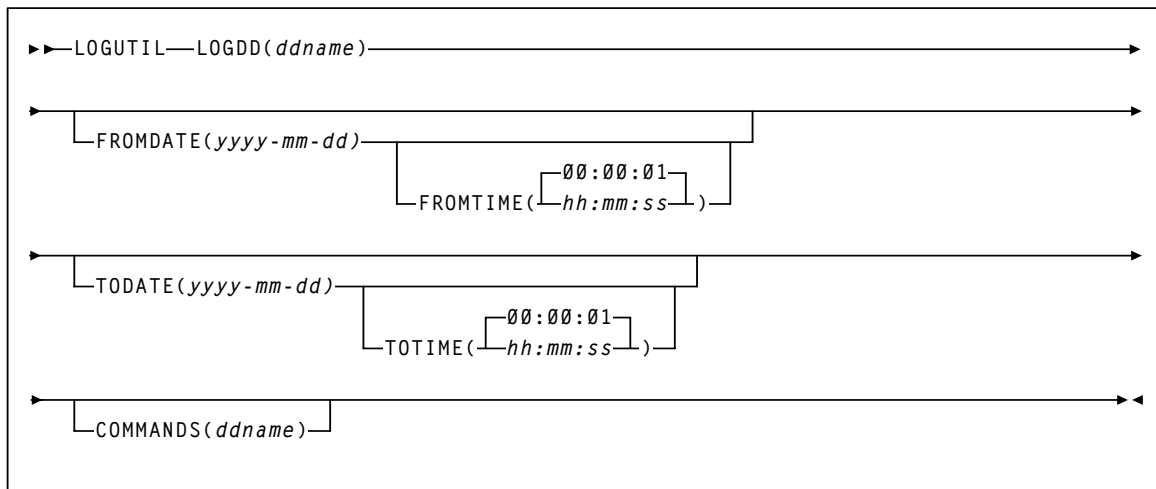


FIGURE 11-9 LOGUTIL syntax

# Parameters

## **LOGDD**

specifies the DD name of the input log data sets

*ddname*

the DD name

## **FROMDATE**

optionally, specifies a starting date for logged events

*yyyy-mm-dd*

the starting date

## **FROMTIME**

optionally, specifies a starting time for logged events

*hh:mm:ss*

the starting time. The default is 00:00:01.

## **TODATE**

optionally, specifies an ending date and time for logged events

*yyyy-mm-dd*

the ending date

## **TOTIME**

optionally, specifies an ending time for logged events

*hh:mm:ss*

the ending time. The default is 00:00:01.

## **COMMANDS**

optionally, specifies the DD name of a data set that contains recovery commands.

*ddname*

the DD name

## LOGUTIL GENAUDIT Statement

The LOGUTIL GENAUDIT statement initiates a re-synchronization of the CDS to VSM via MVCAUDIT statements that are generated when the COMMANDS parameter is specified with the LOGUTIL command. The LOGUTIL GENAUDIT statement identifies MVCs for input to MVCAUDIT.

### Syntax

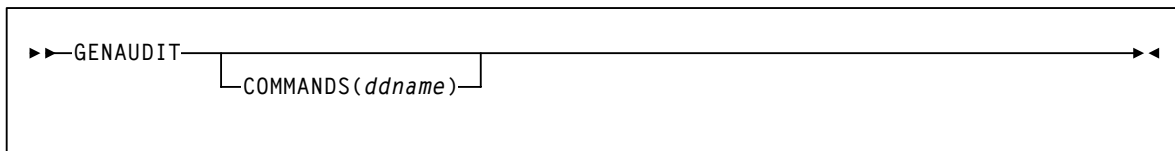


FIGURE 11-10 LOGUTIL GENAUDIT statement syntax

### Parameters

#### COMMANDS

optionally, specifies the DD name of a data set that includes the recovery commands created when the COMMANDS parameter is specified on the LOGUTIL command.

#### *ddname*

the DD name

# LOGUTIL FOR\_LOSTMVC Statement

The LOGUTIL FOR\_LOSTMVC statement recovers VTVs that resided on lost or damaged MVCs.

## Syntax

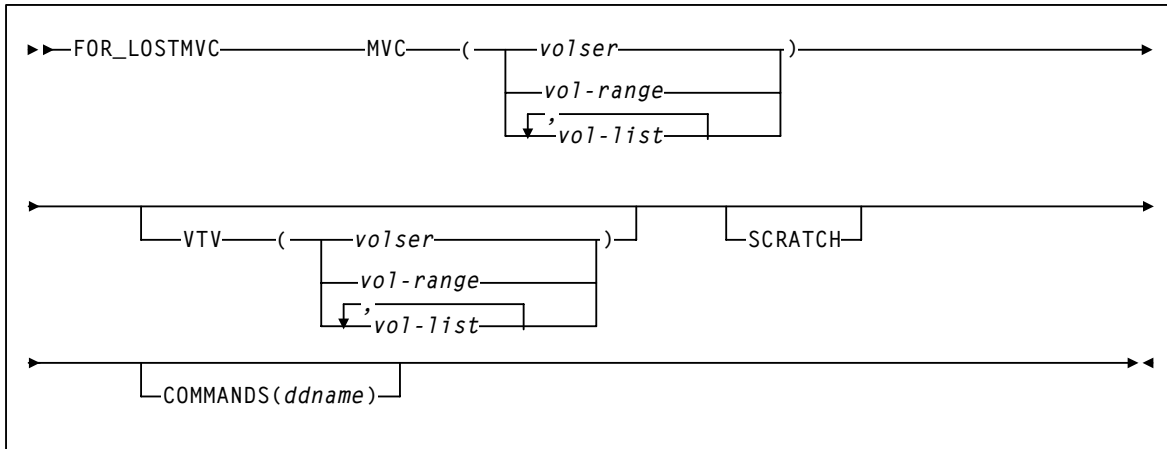


FIGURE 11-11 LOGUTIL FOR\_LOSTMVC statement syntax

## Parameters

### MVC

specifies the MVC(s) to be recovered. You can specify a maximum of 1000 MVCs.

### VTV

optionally, can be used as a filter to request the utility to only recover certain VTVs on a MVC. The specified VTVs must reside on one or more of the recovery MVCs to be processed. When this parameter is coded, only VTVs specified will be recovered (if they exist on the recovery MVCs).

This parameter is intended to be a filter. If VTVs are specified that are **not** on the specified MVCs then they will **not** be recovered and there will not be a message listing them in the report output.

You can specify a maximum of 300,000 MVCs.

### SCRATCH

optionally, specifies to process scratch VTVs. By default scratch VTVs are not processed as part of the recovery.

### COMMANDS

optionally, specifies the DD name of a data set that contains the recovery commands.

#### *ddname*

the DD name

**Note** – The FOR\_LOSTMVC COMMANDS parameter works with the LOGUTIL COMMANDS parameter as follows:

- If you specify LOGUTIL COMMANDS, the FOR\_LOSTMVC statement outputs recovery commands to the specified data set even if you did not specify FOR\_LOSTMVC COMMANDS.
- If you specify COMMANDS on both LOGUTIL and FOR\_LOSTMVC, recovery commands are only output to the FOR\_LOSTMVC COMMANDS data set.

## LOGUTIL FOR\_LOSTMVC Report

FIGURE 11-12 shows an example LOGUTIL FOR\_LOSTMVC report.

SLUADMIN (7.0.0)	SUN STORAGETEK VTCS SYTEM UTILITY	PAGE 0001	
TIME 06:32:03	RECOVERY OF MVC DMV509	DATE 2009-11-20	
MVC INFORMATION	MEDIA=ECART      STORCLAS=S1      VTVS : ACTIVE 1 DELETED 0		
VTV	R   S	<---CREATION----->      <-----ALTERNATE MVC COPIES----->      <---EEXPORT COPIES----->      RECOVER	
		----->	
		DATE      TIME      VOLSER      BLOCKID      VOLSER      BLOCKID      TAPEPLEX      TAPEPLEX      FROM	
DX009	-   -	2009JAN15   04:11:18   DMV500*   00000000   DMV501*   00000000   -      -      AUDIT	
			DMV504
			DMV502*   00000000   DMV503*   00000000
			DMV504   00000000   DMV505   00000000
			DMV506   00000000   DMV507   00000000
			DMV508   00000000   DMV510   00000000
			DMV511   00000000   DMV512   00000000
VTV SUMMARY COUNTS FOR MVC DMV509			
TOTAL	RESIDENT	EEXPORT	MIGRATED      SCRATCH      UNRECOVERABLE
1	0	0	1      0      0

FIGURE 11-12 Example Report from LOGUTIL FOR\_LOSTMVC

As shown in FIGURE 11-12, the LOGUTIL FOR\_LOSTMVC report has four sections:

- A title line that shows the volser of the lost or damaged MVC that is being recovered.

**Note** – Each lost or damaged MVC is listed on a new page.

- Lost or damaged MVC media type, Storage Class, and VTV counts according to the MVC record in the CDS.
- VTV Information that shows all of the VTVs that previously existed on the lost or damaged MVC with the following information:
  - VTV volser

- Residency status
- Scratch status
- Creation Date and Time
- Alternate MVC copies found. MVCs flagged with an “\*” were either not found in the CDS or had some combination of lost, broken, and DATA CHECK bits on. Three MVC copies are listed per line and there could be an unlimited number of alternate MVC copies listed.
- Electronically Exported (Cross Tape Replicated) Copies. Those copies that were rejected by the receiving TapePlex are not listed as a recovery copy.
- The VTV recovery method, which is any of the following:
  - RECALL – The VTV will be recalled from an alternate MVC copy.
  - AUDIT vvvvvv – A previously linked MVC copy was found in the LOGUTIL structure. To recover the VTV, the MVC listed must be AUDITED.
  - VTSSname – The VTV is resident in the VTSS listed.
  - TAPEPLEX name – The VTV can be recovered from another TAPEPLEX.
  - UNRECOVERABLE – No alternate copies of the VTV were found.
  - SCRATCH – The VTV is in scratch status and will not be recovered.

---

**Note** – A maximum of approximately 50 VTVs are listed per page.

---

- MVC Summary Information that shows totals for the following:
  - Total VTVs found on the MVC.
  - VTVs found resident in a VTSS.
  - VTVs that will be recovered from an Electronically Exported copy.
  - VTVs that will be recovered from an alternate MVC copy.
  - Scratch VTVs that will not be recovered.
  - Unrecoverable VTVs.

---

## Using FOR\_LOSTMVC to Recover VTVs

You can use the LOGUTIL FOR\_LOSTMVC statement to recover VTVs that resided on lost or damaged MVCs. How does the LOGUTIL FOR\_LOSTMVC statement work and how do you use it most effectively? Well, as follows...

The FOR\_LOSTMVC utility scans the CDS and the log file structure (if necessary) to identify all VTVs on the lost or damaged MVCs whose volsers you specify and to determine the recovery method from an alternate VTV copy as described in [TABLE 11-1 on page 77](#). LOGUTIL FOR\_LOSTMVC generates a report showing all VTVs that existed on the lost or damaged MVCs and how they will be recovered, plus summary information for each lost or damaged MVC.



**TABLE 11-1** Alternate VTV Copy and Recovery Process

<b>Alternate VTV Copy Category</b>	<b>Recovery Process</b>
<b>Category 1:</b> Currently VTSS resident.	Recovery is from the resident copy. If you requested recovery commands, <code>VTVMaint</code> <code>ULINKMVC</code> commands are generated to unlink the VTV from the lost or damaged MVCs.
<b>Category 2:</b> Currently linked to one or more alternate MVC copies.	Recovery is from the best alternate MVC based on four factors: <ul style="list-style-type: none"> <li>■ Does an MVC record exist in the CDS for the MVC?</li> <li>■ Is the MVC in lost status?</li> <li>■ Is the MVC in broken status?</li> <li>■ Has a data check occurred on the MVC?</li> </ul> If you requested recovery commands, <code>VTVMaint</code> <code>ULINKMVC</code> and <code>RECALL</code> commands are generated to unlink the VTV from the lost or damaged MVCs and then recall the MVC.
<b>Category 3:</b> Has been Cross TapePlex Replicated.	The first remote TapePlex encountered that contains a copy of the VTV is used to recover the VTV. If you requested recovery commands, <code>EEXPORT</code> <code>ULINKMVC</code> commands are generated. These commands <b>must</b> be run from the remote TapePlex where the VTV currently resides. Comments in the <code>COMMANDS</code> data set show the TapePlex where these commands must be run. The command unlinks the VTV from the lost or damaged MVCs and then Cross TapePlex Replicates the VTV back to the local TapePlex.
<b>Category 4:</b> Was previously linked to one or more MVC copies that may still contain the VTV data.	One of the previously linked MVCs is selected as the recovery MVC. These MVC copies were found in the log files and may still contain a copy of the VTV. You must audit the selected recovery MVC. The best previously linked MVC copy to do the recovery from is selected based on the same factors as alternate MVCs. If you requested recovery commands, <code>AUDIT</code> commands are generated to audit the MVC and to attempt to link it to the VTV. <code>MVCMAINT READONLY (ON)</code> commands are generated for <code>AUDIT</code> MVCs.
<b>Category 5:</b> Is unrecoverable.	Unrecoverable, copies only existed on the lost or damaged MVCs.
<b>Note:</b> If you requested recovery commands, <code>MVCMAINT</code> commands are also generated for Categories 1, 2, and 3, and 4. These statements mark the lost or damaged MVCs as <code>readonly</code> and <code>broken</code> so that they are no longer selected for recalls or migrates.	

## FOR\_LOSTMVC Recovery Procedure

---

**Note** – In this procedure, the JCL examples do not show DD statements for the CDS copies, which is valid if HSC is active and you want to use the active CDS on the system where you are running LOGUTIL. Otherwise, you must specify the DD statements for the CDS copies.

---

To recover VTVs using FOR\_LOSTMVC:

1. First, run the LOGUTIL FOR\_LOSTMVC command with only the volsers of the lost or damaged MVCs.

For example, the following example shows:

- The logging data set is LOGIN.

---

**Note** – You can run LOGUTIL FOR\_LOSTMVC with a dummy LOGDD specified to allow recovery on systems where CDS Logging has not been activated. The recovery is limited to the data in the CDS but may still be useful if all VTVs are either resident, on an alternate MVC copy or exported via Cross Tape Replication.

---

- The volser of the damaged MVC is DMV509.
- The recovery commands are logged in data set RECVCMD.

```
//JOBLOGR job (account),programmer,REGION=1024k
//S1 EXEC PGM=SLUADMIN,PARM=MIXED
//STEPLIB DD DSN=hlq.SEALINK,DISP=SHR
//LOGIN DD DSN=FEDB.VSMLMULT.LOGFILE.OFFLOAD(-2),DISP=OLD
// DD DSN=FEDB.VSMLMULT.LOGFILE.OFFLOAD(-1),DISP=OLD
// DD DSN=FEDB.VSMLMULT.LOGFILE.OFFLOAD(0),DISP=OLD
//RECVCMD DD DSN=FEDB.VSMLMULT.RECVCMD,DISP=(CATLG,DELETE),
// UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE),
// DCB=(RECFM=FB,LRECL=80,BLKSIZE=27920)
//SLSPRINT DD SYSOUT=*
//SLSIN DD *
LOGUTIL LOGDD (LOGIN)
FOR_LOSTMVC MVC (DMV509) COMMANDS (RECVCMD)
```

## 2. Review the LOGUTIL FOR\_LOSTMVC report from [Step 1](#).

Select the VTVs you want to recover and rerun LOGUTIL FOR\_LOSTMVC, specifying the VTVs you want to recover from the lost or damaged MVC. For example:

```
//JOBLOGR job (account),programmer,REGION=1024k
//S1 EXEC PGM=SLUADMIN,PARM=MIXED
//STEPLIB DD DSN=hlq.SEALINK,DISP=SHR
//LOGIN DD DSN=FEEDB.VSMLMULT.LOGFILE.OFFLOAD(-2),DISP=OLD
// DD DSN=FEEDB.VSMLMULT.LOGFILE.OFFLOAD(-1),DISP=OLD
// DD DSN=FEEDB.VSMLMULT.LOGFILE.OFFLOAD(0),DISP=OLD
//REVCMD DD DSN=FEEDB.VSMLMULT.REVCMD,DISP=(CATLG,DELETE),
// UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE),
// DCB=(RECFM=FB,LRECL=80,BLKSIZE=27920)
//SLSPRINT DD SYSOUT=*
//SLSIN DD *
LOGUTIL LOGDD(LOGIN)
FOR_LOSTMVC MVC(DMV509) VTV(DX009) COMMANDS(REVCMD)
```

---

**Note** – If you specify a VTV that was not on the lost or damaged MVC, this VTV is ignored.

---

If you want to recover all specified VTVs on the damaged MVC, continue with [Step 3](#).

## 3. To recover the specified VTV(s), run the commands in the recovery data set specified in [Step 2](#).

---

**Note** –

- The commands in the recovery data set should be run (using standard SLUADMIN JCL) as soon as possible after running FOR\_LOSTMVC to ensure their accuracy.
  - StorageTek recommends that you run the recovery commands in the COMMANDS file in the following order:
    1. All EEXPORT ULINKMVC commands.
    2. All MVCMAINT READONLY (ON) commands.
    3. All AUDIT commands.
    4. If there were EEXPORT ULINKMVC or AUDIT commands, then re-run FOR\_LOSTMVC. With the new run, there should be no EEXPORT or AUDIT commands in the newly generated COMMANDS file. If there are, then return to [Step 1](#).
    5. All MVCMAINT READONLY (ON) ERROR (ON) commands.
    6. All ULINKMVC commands.
    7. All RECALL commands.
    8. The RECONcil utility
  - MVCMAINT commands are generated for all specified lost or damaged MVCs that exist in the CDS and that have at least one qualifying VTV on them. The MVCMAINT commands will set the readonly and error/broken bits on for the lost or damaged MVCs to prevent them from being allocated for recalls or migrates. A maximum of approximately 3000 MVCs is included on each MVCMAINT command.
-

**4. Run the RECONcil utility to ensure the correct number of MVC copies are created for each VTV.**

For example:

```
//JOBLOGR job (account),programmer,REGION=1024k
//S1 EXEC PGM=SLUADMIN,PARM=MIXED
//STEPLIB DD DSN=hlq.SEALINK,DISP=SHR
//LOGIN DD DSN=FEED.VSMLMULT.LOGFILE.OFFLOAD(-2),DISP=OLD
// DD DSN=FEED.VSMLMULT.LOGFILE.OFFLOAD(-1),DISP=OLD
// DD DSN=FEED.VSMLMULT.LOGFILE.OFFLOAD(0),DISP=OLD
//REVCMD DD DSN=FEED.VSMLMULT.REVCMD,DISP=(CATLG,DELETE),
// UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE),
// DCB=(RECFM=FB,LRECL=80,BLKSIZE=27920)
//SLSPRINT DD SYSOUT=*
//SLSIN DD *
RECONCIL VTV(DX009)
```

---

## New Messages

SLS6953W

AAA VVVVVV IS AN INVALID VOLSER, IT IS NOT DEFINED IN THE CDS

**Explanation.** The error occurred while running a LOGUTIL utility. Volser VVVVVV was specified on the AAA (VTV or MVC) keyword. VVVVVV is not a valid AAA (VTV or MVC) volser defined in the CDS.

**System Action.** The utility continues on to the next volser. If volser VVVVVV is the last volser to process then the utility ends.

**User Response.** Correct the volser parameter and re-run the utility.

SLS6954W

MVC VVVVVV CONTAINS ZERO QUALIFYING VTVS

**Explanation.** The FOR\_LOSTMVC utility was requested to recover the VTVs on MVC VVVVVV. After applying the specific VTV filters, there were zero qualifying VTVs. Hence no recovery is necessary..

**System Action.** The utility continues on to the next MVC. If volser VVVVVV was the last MVC to process then the utility ends.

**User Response.** None, unless the VTV keyword was specified. If the VTV keyword was specified, try removing it and then re-run the utility.

SLS6955W

VTV v1: MVC m1 WAS PICKED AS THE RECOVERY MVC BUT CONTAINS ERRORS.

**Explanation.** A LOGUTIL utility selected MVC m1 as the best candidate to recover VTV v1. The MVC is either not in the CDS or has some combination of the LOST, BROKE, and DATA CHECK bits on. The MVC may have problems when RECALL or AUDIT is attempted against it.

**System Action.** The utility continues processing.

**User Response.** Try to correct the problem with the MVC before running RECALL or AUDIT against it. If the RECALL or AUDIT fails and if there are alternate MVC copies, attempt the operation against a different alternate MVC copy of the VTV.

SLS6956E

CCCCCCC parameter exceeds NNNNNNNN volumes

**Explanation.** The CCCCCC parameter was specified for a LOGUTIL utility. The number of volumes specified on the parameter exceeds NNNNNNNN (maximum permitted).

**System Action.** The utility terminates with RC 8.

**User Response.** Correct the parameter and re-run the utility.

SLS6957I

One or more volsers were duplicated on the CCC parameter

**Explanation.** The CCC parameter was specified for a LOGUTIL utility. At least one volser was found duplicated on the CCC parameter.

**System Action.** The duplicate volser is ignored.

**User Response.** Correct the parameter and re-run the utility if necessary.

## Recovering Deleted VTVs

---

You can use the LOGUTIL UNDELETE statement to recover deleted VTVs.

This enhancement requires PTF for ELS 7.0.

The changes from this enhancement are as follows:

- The LOGUTIL UNDELETE statement is added; see [“LOGUTIL UNDELETE Statement” on page 86](#).
- See [“Using UNDELETE to Recover VTVs” on page 89](#) for this procedure.
- Messages are added; see [“New Messages” on page 93](#).

# LOGUTIL

The LOGUTIL command initiates the CDS recovery process for VTCS. It is used in the following scenarios:

- The CDS has become unusable or corrupt and MVCs used since the date of the CDS backup need to be identified for MVCAUDIT purposes.
- A VTSS has suffered a catastrophic data loss.

LOGUTIL calls the module that analyzes the input log files, and calls a recovery module to perform the appropriate recovery actions.

Additionally, the LOGUTIL UNDELETE statement recovers deleted VTVs and the LOGUTIL FOR\_LOSTMVC statement recovers VTVs that resided on a lost or damaged MVC.

<b>Interfaces:</b>	SLUADMIN utility only
<b>Subsystem Requirements:</b>	Active HSC not required

## Syntax

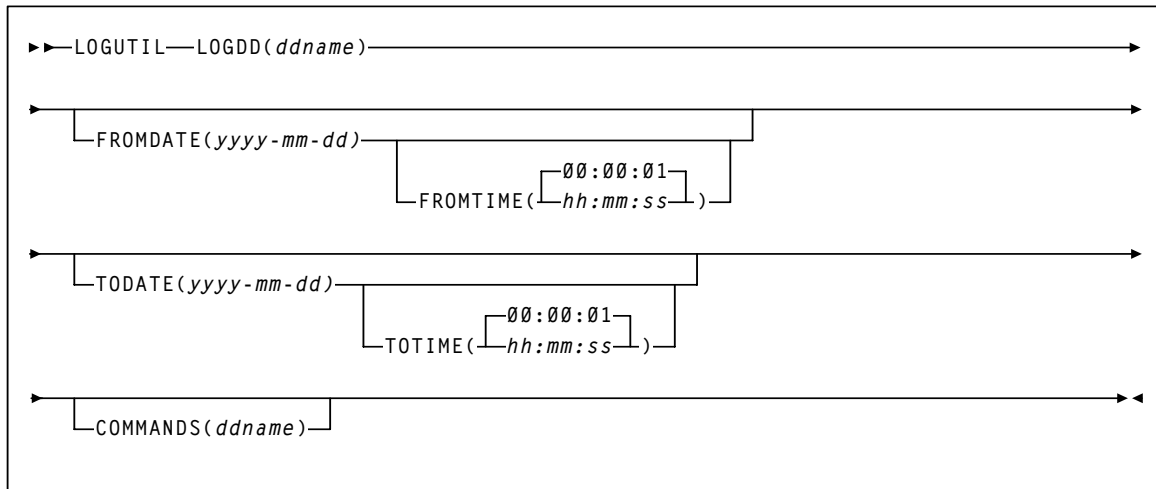


FIGURE 12-13 LOGUTIL syntax



## Parameters

### **LOGDD**

specifies the DD name of the input log data sets

*ddname*

the DD name

### **FROMDATE**

optionally, specifies a starting date for logged events

*yyyy-mm-dd*

the starting date

### **FROMTIME**

optionally, specifies a starting time for logged events

*hh:mm:ss*

the starting time. The default is 00:00:01.

### **TODATE**

optionally, specifies an ending date and time for logged events

*yyyy-mm-dd*

the ending date

### **TOTIME**

optionally, specifies an ending time for logged events

*hh:mm:ss*

the ending time. The default is 00:00:01.

### **COMMANDS**

optionally, specifies the DD name of the data set where recovery commands will be written to.

*ddname*

the DD name

# LOGUTIL UNDELETE Statement

The LOGUTIL UNDELETE statement recovers deleted VTVs.

## Syntax

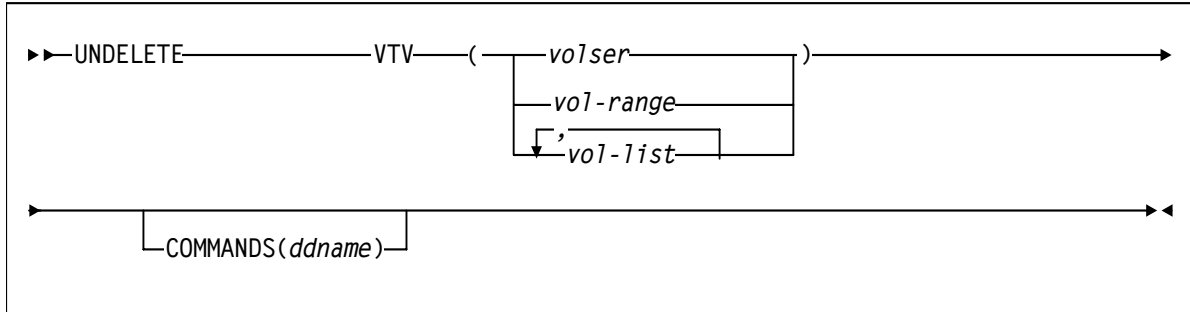


FIGURE 12-14 LOGUTIL UNDELETE statement syntax

## Parameters

### VTV

specifies the VTV(s) to be recovered. You can specify a maximum of 1000 VTVs.

### COMMANDS

optionally, specifies the DD name of a data set that contains the recovery commands.

#### *ddname*

the DD name

---

**Note** – The UNDELETE COMMANDS parameter works with the LOGUTIL COMMANDS parameter as follows:

- If you specify LOGUTIL COMMANDS, the UNDELETE statement outputs recovery commands to the specified data set even if you did not specify UNDELETE COMMANDS.
  - If you specify COMMANDS on both LOGUTIL and UNDELETE, recovery commands are only output to the UNDELETE COMMANDS data set.
-

# LOGUTIL UNDELETE Report

FIGURE 12-15 shows an example LOGUTIL UNDELETE report.

SLUAD MIN (7.0.0)	SUN STORAGETEK VTCS SYTEM UTILITY						PAGE 0001			
TIME 06:32:03							DATE 2009-11-20			
SLS6953W VTV DMP000 is an invalid volser, it is not defined in the CDS										
SLS6959I VTV DX0004 is not in deleted status, recovery is not necessary										
<---CREATION--->			<-----PREVIOUSLY LINKEDMVC COPIES----->				<---EEXPORT COPIES--->		RECOVER	
VTV	DATE	TIME	VOLSER	BLOCKID	VOLSER	BLOCKID	TAPEPLEX	TAPEPLEX	FROM	
DX0000	2009OCT20	04:11:18	DMV100	00000000	DMV125*	00000000	-	-	AUDIT DMV100	
			DMV200	00000000	-	-	-	-		
DX0008	2009OCT20	04:11:18	-	-	-	-	-	-	unrecoverable	
DX0009	2009OCT20	04:11:18	DMV200	00000000	-	-	-	-	AUDIT DMV200	
* - MVC is either not found in the CDS or has some combination of LOST, BROKEN, or DATA CHECK bits on										
VTV SUMMARY COUNTS										
TOTAL	NOT DELETED		AUDIT		TAPEPLEX		UNRECOVERABLE		OTHER	
5	1		2		0		1		1	

FIGURE 12-15 Example Report from LOGUTIL UNDELETE

As shown in FIGURE 12-15, the LOGUTIL UNDELETE report has three sections:

- The following Error messages can be issued in the first section of the report:
  - SLS6953W VTV vvvvvv is an invalid volser, it is not defined in the CDS. These VTVs do not appear in the UNDELETE VTV Information and are counted in the "Other" category.
  - SLS6959I VTV vvvvvv is not in deleted status, recovery is not necessary. These VTVs do not appear in the UNDELETE VTV Information section and are counted in the "Not Deleted" category.
- The following VTV information:
  - VTV volser
  - Creation Date and Time
  - Previously linked MVC copies found. MVCs flagged with an "\*" were either not found in the CDS or had some combination of lost, broken, and DATA CHECK bits on. Three MVC copies are listed per line and there could be an unlimited number of alternate MVC copies listed.
  - Electronically Exported (Cross Tape Replicated) Copies. Up to 2 TAPEPLEX names can be listed.
  - The VTV recovery method, which is any of the following:

- **AUDIT vvvvvv** – A previously linked MVC copy was found in the LOGUTIL structure. To recover the VTV, the MVC listed must be AUDITED.
- **TAPEPLEX name** – The VTV can be recovered from another TAPEPLEX.
- **UNRECOVERABLE** – No alternate copies of the VTV were found.
- **VTV Summary Information** that shows totals for the following:
  - **Total** - Total count of VTVs for which UNDELETE was requested.
  - **Not Deleted** - VTVs that are not in deleted status. An SLS6959I message is issued for each of these VTVs.
  - **Tapeplex** - VTVs that can be recovered from a remote TAPEPLEX.
  - **Audit** - VTVs that can be recovered from a previously linked MVC copy.
  - **Unrecoverable** - VTVs that are unrecoverable.
  - **Other** - Other VTVs. An SLS6953W message is issued for each of these VTVs.

---

## Using UNDELETE to Recover VTVs

You can use the `LOGUTIL UNDELETE` statement to recover deleted VTVs. How does the `LOGUTIL UNDELETE` statement work and how do you use it most effectively? Well, as follows...

The `UNDELETE` utility scans the CDS and the log file structure to identify all deleted VTVs whose volsers you specify and to determine the recovery method as described in [TABLE 12-1 on page 90](#). `LOGUTIL UNDELETE` generates a report showing where copies of deleted VTVs can be found and how they will be recovered. Also see [“UNDELETE Recovery Procedure” on page 91](#).

**TABLE 12-1 Deleted VTVs Recovery Process**

<b>Deleted VTV Category</b>	<b>Recovery Process</b>
<p><b>Category 1: Other</b> - VTV is either not in the CDS or is logically deleted</p>	<p>SLS6953W is issued stating that recovery cannot be done because the VTV does not exist in the CDS.</p>
<p><b>Category 2: Not deleted</b> - The VTV is not in deleted status. To be in deleted status the VTV cannot be resident or migrated.</p>	<p>Message SLS6959I is issued stating that recovery is not necessary because the VTV is not deleted.</p>
<p><b>Category 3: Audit</b> - The VTV is in deleted status and was previously linked to one or more MVC copies that may still contain the VTV data.</p>	<p>For VTVs that fall into category 3, one of the previously linked MVCs will be selected as the recovery MVC. These MVC copies were found in the LOGUTIL structure and may still contain a copy of the VTV, which requires an MVC audit. The best recovery MVC will be selected based on four factors:</p> <ul style="list-style-type: none"> <li>■ Does an MVC record exist in the CDS for the MVC?</li> <li>■ Is the MVC in lost status?</li> <li>■ Is the MVC in broken status?</li> <li>■ Has a data check occurred on the MVC?</li> </ul> <p>If you requested recovery commands, MVCMAINT READONLY (ON) and AUDIT commands will be generated. The MVCMAINT command will protect the contents of the MVC and the AUDIT commands will link the MVC to the the VTV if the data is still accessible on the MVC .</p>
<p><b>Category 4: Tapeplex</b> - The VTV is in deleted status and was previously electronically exported to one or more TapePlexes that may still contain a copy of the VTV.</p>	<p>The first remote TapePlex encountered that contains a copy of the VTV is used to recover the VTV.</p> <p>If you requested recovery commands, LOGUTIL UNDELETE commands will be generated. These commands <b>must</b> be run from the remote TapePlex where the VTV currently resides. Comments in the COMMANDS data set show the TapePlex where these commands must be run. StorageTek recommends running the EEXPORT command (after the VTV is recovered on the remote TapePlex) to send the VTV back to the original TapePlex.</p>
<p><b>Category 5: Unrecoverable</b> - The VTV is in deleted status but is unrecoverable..</p>	<p>Unrecoverable, no copies exist.</p>

# UNDELETE Recovery Procedure

---

**Note** – In this procedure, the JCL examples do not show DD statements for the CDS copies, which is valid if HSC is active and you want to use the active CDS on the system where you are running LOGUTIL. Otherwise, you must specify the DD statements for the CDS copies.

---

## To recover VTVs using UNDELETE:

1. **Before running LOGUTIL UNDELETE, ensure all VTVs to be undeleted are not in scratch status by running HSC UNSCRATCH against them.**

Unscratching VTVs ensures that they are **not** used as a scratch, which could produce unpredictable results when undeleting a VTV.

2. **Run the LOGUTIL UNDELETE command with volser of the deleted VTVs.**

For example, the following example shows:

- The logging data set is LOGIN.
- The volsers of the deleted VTVs are DX000, DX008, and DX009.
- The recovery commands are logged in data set REVCMD.

```
//JOBLOGR job (account),programmer,REGION=1024k
//S1 EXEC PGM=SLUADMIN,PARM=MIXED
//STEPLIB DD DSN=hlq.SEALINK,DISP=SHR
//LOGIN DD DSN=FEDE.VSMLMULT.LOGFILE.OFFLOAD(-2),DISP=OLD
// DD DSN=FEDE.VSMLMULT.LOGFILE.OFFLOAD(-1),DISP=OLD
// DD DSN=FEDE.VSMLMULT.LOGFILE.OFFLOAD(0),DISP=OLD
//REVCMD DD DSN=FEDE.VSMLMULT.REVCMD,DISP=(CATLG,DELETE),
// UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE),
// DCB=(RECFM=FB,LRECL=80,BLKSIZE=27920)
//SLSPRINT DD SYSOUT=*
//SLSIN DD *
LOGUTIL LOGDD(LOGIN)
UNDELETE VTV(DX0000,DX0008,DX0009) COMMANDS(REVCMD)
```

3. **To recover the specified VTV(s), run the commands in the recovery data set specified in [Step 2](#).**

---

## Note –

- The commands in the recovery data set should be run (using standard SLUADMIN JCL) as soon as possible after running UNDELETE to ensure their accuracy.
- StorageTek recommends that you run the recovery commands in the COMMANDS file in the following order:
  1. All MVCMAINT READONLY (ON) commands.
  2. All AUDIT commands.
  3. LOGUTIL UNDELETE commands from remote TapePlexes. LOGUTIL UNDELETE commands are generated for VTVs with no previously linked MVC copies, but with Cross TapePlex replication data found in the CDS. The commands must be run from the remote TapePlex where the VTV was Cross TapePlex Replicated. Comments will

be written to the COMMANDS file stating where (TAPEPLEX) the command should be run from. A maximum of approximately 3000 VTVs will be listed for each UNDELETE command.

- MVCMAINT commands are generated for all AUDIT MVCs. The MVCMAINT commands will set the readonly bit on for the MVCs. This is to prevent them from being changed before they can be audited. A maximum of approximately 3000 MVCs will be included on each MVCMAINT command.
- 

#### 4. Run the RECONcil utility to ensure the correct number of MVC copies are created for each VTV.

For example:

```
//JOBLOGR job (account),programmer,REGION=1024k
//S1 EXEC PGM=SLUADMIN,PARM=MIXED
//STEPLIB DD DSN=hlq.SEALINK,DISP=SHR
//LOGIN DD DSN=FEDB.VSMLMULT.LOGFILE.OFFLOAD(-2),DISP=OLD
// DD DSN=FEDB.VSMLMULT.LOGFILE.OFFLOAD(-1),DISP=OLD
// DD DSN=FEDB.VSMLMULT.LOGFILE.OFFLOAD(0),DISP=OLD
//REVCMD DD DSN=FEDB.VSMLMULT.REVCMD,DISP=(CATLG,DELETE),
// UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE),
// DCB=(RECFM=FB,LRECL=80,BLKSIZE=27920)
//SLSPRINT DD SYSOUT=*
//SLSIN DD *
RECONCIL VTV(DX0000,DX0009)
```



---

## New Messages

SLS6959I

VTV VVVVVV is not in deleted status, recovery is not necessary

**Explanation.** Recovery of VTV VVVVVV was requested by the UNDELETE utility. The UNDELETE utility will only recover VTVs that are in deleted status. To be in deleted status, the VTV can not have any resident or migrated copies. VTV VVVVVV has a copy in one of these places so recovery is not necessary.

**System Action.** The utility continues on to the next VTV. If volser VVVVVV was the last VTV to process then the utility ends.

**User Response.** None.



## Recovering a Non-Current Version of a VTV

---

You can use the LOGUTIL LOCATE\_VTV statement to recover a non-current version of a VTV.

This enhancement requires PTF L1H15FM for ELS 7.0.

The changes from this enhancement are as follows:

- The LOGUTIL LOCATE\_VTV statement is added; see [“LOGUTIL LOCATE\\_VTV Statement” on page 98](#).
- See [“Using LOCATE\\_VTV to Recover a Non-Current Version of a VTV” on page 102](#) for this procedure.
- Messages are added; see [“New Messages” on page 105](#).

# LOGUTIL

The LOGUTIL command initiates the CDS recovery process for VTCS. It is used in the following scenarios:

- The CDS has become unusable or corrupt and MVCs used since the date of the CDS backup need to be identified for MVCAUDIT purposes.
- A VTSS has suffered a catastrophic data loss.

LOGUTIL calls the module that analyzes the input log files, and calls a recovery module to perform the appropriate recovery actions.

Additionally, the LOGUTIL LOCATE\_VTV statement recovers older versions of VTVs, the LOGUTIL UNDELETE statement recovers deleted VTVs and the LOGUTIL FOR\_LOSTMVC statement recovers VTVs that resided on a lost or damaged MVC.

<b>Interfaces:</b>	SLUADMIN utility only
<b>Subsystem Requirements:</b>	Active HSC not required

## Syntax

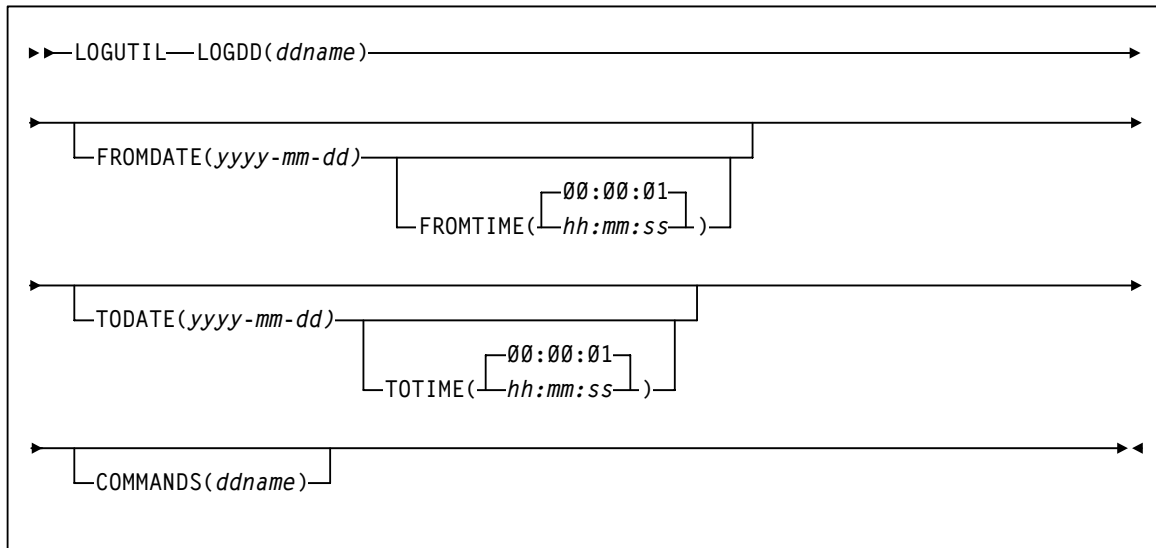


FIGURE 13-16 LOGUTIL syntax

# Parameters

## **LOGDD**

specifies the DD name of the input log data sets

*ddname*

the DD name

## **FROMDATE**

optionally, specifies a starting date for logged events

*yyyy-mm-dd*

the starting date

## **FROMTIME**

optionally, specifies a starting time for logged events

*hh:mm:ss*

the starting time. The default is 00:00:01.

## **TODATE**

optionally, specifies an ending date and time for logged events

*yyyy-mm-dd*

the ending date

## **TOTIME**

optionally, specifies an ending time for logged events

*hh:mm:ss*

the ending time. The default is 00:00:01.

## **COMMANDS**

optionally, specifies the DD name of the data set where recovery commands will be written to.

*ddname*

the DD name

# LOGUTIL LOCATE\_VTV Statement

The LOGUTIL LOCATE\_VTV statement recovers a non-current version of a VTV.

## Syntax

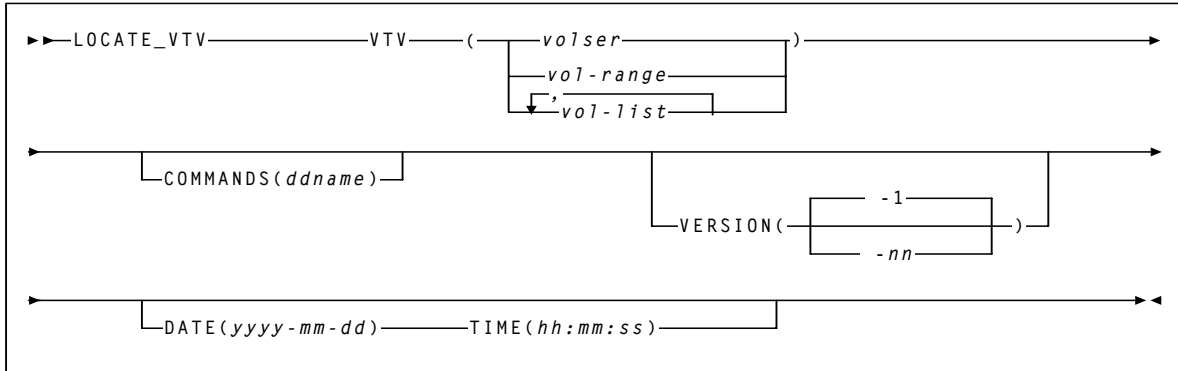


FIGURE 13-17 LOGUTIL LOCATE\_VTV statement syntax

## Parameters

### VTV

specifies the VTV(s) to be recovered. You can specify a maximum of 1000 VTVs.

### COMMANDS

optionally, specifies the DD name of a data set that contains the recovery commands.

*ddname*

the DD name

---

**Note** – The LOCATE\_VTV COMMANDS parameter works with the LOGUTIL COMMANDS parameter as follows:

- If you specify LOGUTIL COMMANDS, the LOCATE\_VTV statement outputs recovery commands to the specified data set even if you did not specify LOCATE\_VTV COMMANDS.
- If you specify COMMANDS on both LOGUTIL and LOCATE\_VTV, recovery commands are only output to the LOCATE\_VTV COMMANDS data set.

---

### VERSION

optionally, specifies the version of the VTV to recover. The default is VERSION (-1), which is one version older than the current version. Valid values are -1 to -99.

---

**Note** – VERSION is mutually exclusive with the DATE and TIME parameters.

---

### DATE(*yyyy-mm-dd*)

optionally, specifies the date of the VTV version to recover. If you specify DATE, you must also specify TIME.

### TIME(*hh:mm:ss*)

optionally, specifies the time of the VTV version to recover. If you specify TIME, you must also specify DATE.

## LOGUTIL LOCATE\_VTV Report

FIGURE 13-18 shows an example LOGUTIL LOCATE\_VTV report.

```

SLUADMIN (7.0.0)                                PAGE 0001
SUN STORAGETEK VTCS SYTEM UTILITY

TIME 16:32:03                                DATE 2010-01-11

RECOVERY OF VTV DX0004

VERSION <----CREATION----> <-----PREVIOUSLY LINKEDMVC COPIES-----> <--EEXPORT COPIES--- RECOVER
>

      DATE      TIME      VOLSER   BLOCKID  VOLSER   BLOCKID      TAPEPLEX  TAPEPLEX  FROM
00      2009Jun05  13:14:43  DMV125*  00001911  -      -      -      -      n/a
-01      2009Jun05  13:12:11  DMV100   0000323C  -      -      -      -      n/a
-02      2009Jun05  13:09:25  DMV100   00003233  -      -      -      -      RTV DMV1000
-03      2009Jun05  15:59:45  DMV400   00000000  -      -      -      -      n/a

* - MVC is either not found in the CDS or has some combination of LOST, BROKEN, or DATA CHECK bits on

VTV SUMMARY COUNTS

TOTAL      TAPEPLEX      RTV      UNRECOVERABLE      OTHER
1          0          1          0          0
    
```

FIGURE 13-18 Example Report from LOGUTIL LOCATE\_VTV

As shown in FIGURE 13-18, the LOGUTIL LOCATE\_VTV report has the following sections:

- A title line that shows the VTV volser that is being recovered.

---

**Note** – Each VTV is listed on a new page.

---

- The following VTV information:
  - VTV version
  - Creation Date and Time
  - Previously linked MVC copies found. MVCs flagged with an “\*” were either not found in the CDS or had some combination of lost, broken, and DATA CHECK bits on. Three MVC copies are listed per line and there could be an unlimited number of alternate MVC copies listed.
  - Electronically Exported (Cross Tape Replicated) Copies. Up to 2 TAPEPLEX names can be listed per line, and unlimited number of TAPEPLEXs can be listed.
  - The VTV recovery method, which is any of the following:
    - RTV vvvvvv - A previously linked MVC copy was found in the LOGUTIL structure. To recover the VTV, the RTV utility must be run against the MVC listed
    - TAPEPLEX name – The VTV can be recovered from another TAPEPLEX.
    - UNRECOVERABLE – No previously linked MVC copies of the VTV were found.



- VTV Summary Information that shows totals for the following:
  - **Total** - Total count of VTVs for which `LOCATE_VTV` was requested.
  - **Tapeplex** - VTVs that can be recovered from a remote TAPEPLEX.
  - **RTV** - VTVs that can be recovered from a previously linked MVC copy.
  - **Unrecoverable** - VTVs that are unrecoverable.
  - **Other** - Other VTVs. An SLS6953W, SLS6962I or SLS6963I message is issued for each of these VTVs

---

## Using LOCATE\_VTV to Recover a Non-Current Version of a VTV

You can use the LOGUTIL LOCATE\_VTV statement to recover a non-current version of a VTV. How does the LOGUTIL LOCATE\_VTV statement work and how do you use it most effectively? Well, as follows...

The LOCATE\_VTV utility scans the CDS and the log file structure to identify all versions of VTVs whose volsers you specify and to determine the recovery method as described in [TABLE 13-1 on page 103](#). LOGUTIL LOCATE\_VTV generates a report showing where non-current versions of VTVs can be found and how they will be recovered. Also see [“LOCATE\\_VTV Recovery Procedure” on page 104](#).

**TABLE 13-1** Non-current VTV Version Recovery Process

VTV Category	Recovery Process
<p><b>Category 1: Other</b> - Can result from any of the following:</p> <ul style="list-style-type: none"> <li>■ Specified VTV is not in the CDS. Either it does not exist or is logically deleted. Message SLS6953W is issued.</li> <li>■ Requested version of the specified does not exist in the LOGUTIL structure. Message SLS6962I is issued.</li> <li>■ Recovery has been requested of version 0 of the specified VTV. This is not permitted. Message SLS6963I is issued.</li> </ul>	<p>Message SLS6953W, SLS6963I, or SLS6962I is issued.</p>
<p><b>Category 2: RTV</b> - Specified VTV version was previously linked to one or more MVC copies that may still contain the VTV data.</p>	<p>For VTVs that fall into Category 2, one of the previously linked MVCs will be selected as the recovery MVC. These MVC copies were found in the LOGUTIL structure and may still contain a copy of the VTV. The only way to tell for sure is to run the RTV utility against the MVC. The best recovery MVC will be selected based on four factors:</p> <ul style="list-style-type: none"> <li>■ Does an MVC record exist in the CDS for the MVC?</li> <li>■ Is the MVC in lost status?</li> <li>■ Is the MVC in broken status?</li> <li>■ Has a data check occurred on the MVC?</li> </ul> <p>If you requested recovery commands, MVCMAINT READONLY (ON) and RTV commands will be generated. The MVCMAINT command will protect the contents of the MVC and the RTV commands will create a copy of the VTV data if it is still accessible on the MVC .</p>
<p><b>Category 3: Tapeplex</b> - The VTV was previously electronically exported to one or more TapePlexes that may still contain a copy of the VTV.</p>	<p>For VTVs that fall into category 3, the first remote TAPEPLEX encountered that a copy of the VTV was electronically exported to, will be used to recover the VTV. This information is obtained from the LOGUTIL structure. If recovery commands were requested, LOGUTIL LOCATE_VTV commands will be generated to be run on the remote TAPEPLEX. Comments in the COMMANDS dataset will show the TAPEPLEX where these commands must be run from.</p>
<p><b>Category 4: Unrecoverable</b> - Specified VTV version is unrecoverable.</p>	<p>Unrecoverable, no copies exist.</p>

# LOCATE\_VTV Recovery Procedure

---

**Note** – In this procedure, the JCL examples do not show DD statements for the CDS copies, which is valid if HSC is active and you want to use the active CDS on the system where you are running LOGUTIL. Otherwise, you must specify the DD statements for the CDS copies.

---

**To recover VTVs using LOCATE\_VTV:**

**1. Run the LOGUTIL LOCATE\_VTV command with volsers of the VTVs.**

For example, the following example shows:

- The logging data set is LOGIN.
- The volsers of the VTVs are DX000 through DX0005, the version is -1.
- The recovery commands are logged in data set RECVCMD.

```
//JOBLOGR job (account),programmer,REGION=0M
//S1 EXEC PGM=SLUADMIN,PARM=MIXED
//STEPLIB DD DSN=hlq.SEALINK,DISP=SHR
//LOGIN DD DSN=FEDB.VSMLMULT.LOGFILE.OFFLOAD(-2),DISP=OLD
// DD DSN=FEDB.VSMLMULT.LOGFILE.OFFLOAD(-1),DISP=OLD
// DD DSN=FEDB.VSMLMULT.LOGFILE.OFFLOAD(0),DISP=OLD
//RECVCMD DD DSN=FEDB.VSMLMULT.RECVCMD,DISP=(CATLG,DELETE),
// UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE),
// DCB=(RECFM=FB,LRECL=80,BLKSIZE=27920)
//SLSPRINT DD SYSOUT=*
//SLSIN DD *
LOGUTIL LOGDD(LOGIN)
LOCATE_VTV VTV(DX0000-DX0005) VERSION (-1) COMMANDS(RECVCMD)
```

**2. To recover the specified VTV(s), run the commands in the recovery data set specified in [Step 1](#).**

---

**Note** –

- The commands in the recovery data set should be run as soon as possible after running LOCATE\_VTV to ensure their accuracy.
  - Sun StorageTek recommends that you run the recovery commands in the COMMANDS file in the following order:
    1. All MVCMAINT READONLY (ON) commands.
    2. LOGUTIL LOCATE\_VTV commands from remote TapePlexes. These commands can be run using standard SLUADMIN JCL but require LOGUTIL to be run just prior.
    3. All RTV commands using standard SWSRTV JCL.
  - MVCMAINT commands are generated for all RTV MVCs. The MVCMAINT commands will set the readonly bit on for the MVCs. This is to prevent them from being changed before they can be processed.
-

---

# New Messages

SLS6962I

REQUESTED VERSION OF VTV VVVVVV DOES NOT EXIST, RECOVERY IS NOT POSSIBLE

**Explanation.** Recovery of the requested version of VTV vvvvvv is not possible. The VTV version to recover is specified on the VERSION or DATE/TIME parameters of the LOCATE\_VTV command. There were no migrated or electronically exported copies found of this VTV version in the LOGUTIL structure so recovery is not possible.

**System Action.** The utility continues on to the next VTV. If volser VVVVVV was the last VTV to process then the utility ends.

**User Response.** Check to make sure the correct CDS log files were included on the LOGUTIL LOGDD. If not then include the correct log files and re-run the utility. Also check to make sure the correct version number was specified on the VERSION or DATE/TIME parameters. All versions found are listed in the report output. If the wrong version was specified then re-run the utility with the correct version number specified.

SLS6963I

RECOVERY OF VERSION 0 IS NOT PERMITTED, YYYY-MM-DD HH:MM:SS MATCHES VERSION 0 FOR VTV VVVVVV

**Explanation.** Recovery of version 0 of a VTV is not permitted by the LOCATE\_VTV utility. The LOCATE\_VTV utility was run requesting recovery of VTV VVVVVV with DATE=YYYY-MM-DD and TIME=HH:MM:SS. Recovery of this VTV is not permitted since these values match version 0 for this VTV.

**System Action.** The utility continues on to the next VTV. If volser VVVVVV was the last VTV to process then the utility ends.

**User Response.** If recovery is needed for version 0 of this VTV then consider using another utility to recover the data (AUDIT, UNDELETE, etc.) If an incorrect value was specified for the DATE/TIME parameters then re-run the utility with the correct values specified.

SLS6964W

VTV VERSION VVVVVV CDATE CTIME IS NEWER THAN VERSION 0. ENSURE CORRECT CDS AND LOG FILES WERE USED.

**Explanation.** The LOCATE\_VTV utility was run requesting recovery of VTV VVVVVV. A version of VTV VVVVVV was found in the log files with a create date of CDATE and create time of CTIME. This version of the VTV is newer than version 0. This condition can only occur in one of two situations:

1. The datasets specified on the LOGUTIL LOGDD DD statement are not related to the CDS used by the utility.
2. A CDS copy is being used by the utility that is older than the log datasets.

**System Action.** The utility continues on to the next version of VTV VVVVVV. If CDATE CTIME is the last version of this VTV then the utility proceeds to the next VTV. If there are no more VTVs to process then the utility ends.

**User Response.** If incorrect dataset names were specified for the CDS or log files then correct the dataset names and re-run the utility. If recovery of this VTV version is still desired then re-run the utility specifying CDATE/CTIME on the DATE/TIME parameters.

## Additional Information

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Oracle Corporation (Oracle) offers several methods for you to obtain additional information.

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### Oracle's External Web Site

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The URL for Oracle/StorageTek/Sun storage information for is:  
<http://www.oracle.com/us/products/servers-storage/storage/index.html>

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### Sun/StorageTek Documentation

The URL for Sun/StorageTek documentation is:

<http://docs.sun.com/app/docs>

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### Oracle Global Partners

The Oracle Global Partners site provides information about solutions available with Oracle's partners:

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## Third-Party Web Sites

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## Customer Support

For more information about Oracle support (including for Sun/StorageTek branded products) see:  
<http://www.oracle.com/us/support/index.htm?origref=>  
<http://www.oracle.com/us/products/index.html>



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# Conventions for Reader Usability

Conventions are used to shorten and clarify explanations and examples within this book.

## Typographic

The following typographical conventions are used in this book:

- **Bold** is used to introduce new or unfamiliar terminology.
- Letter Gothic is used to indicate command names, filenames, and literal output by the computer.
- Letter Gothic Bold is used to indicate literal input to the computer.
- *Letter Gothic Italic* is used to indicate that you must substitute the actual value for a command parameter. In the following example, you would substitute your name for the “username” parameter.
- Logon *username*
- A bar ( | ) is used to separate alternative parameter values. In the example shown below either username or systemname must be entered.
- Logon *username|systemname*
- Brackets [ ] are used to indicate that a command parameter is optional.
- Ellipses ( ... ) are used to indicate that a command may be repeated multiple times.
- The use of mixed upper and lower case characters (for non–case sensitive commands) indicates that lower case letters may be omitted to form abbreviations. For example, you may simply enter **Q** when executing the **Quit** command.

## Keys

Single keystrokes are represented by double brackets [[ ]] surrounding the key name. For example, press [[ESC]] indicates that you should press only the escape key.

Combined keystrokes use double brackets and the plus sign (+). The double brackets surround the key names and the plus sign is used to add the second keystroke. For example, press [[AL]] + [[C]] indicates that you should press the alternate key and the C key simultaneously.

## Enter Command

The instruction to “press the [[ENTER]] key” is omitted from most examples, definitions, and explanations in this book.

For example, if the instructions asked you to “enter” **Logon pat**, you would type in **Logon pat** and press [[ENTER]].

However, if the instructions asked you to “type” **Logon pat**, you would type in **Logon pat** and you would *not* press [[ENTER]].

## Warnings, Cautions, and Notes - Software

The following are used in software documentation.

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**Caution** – Information necessary to keep you from corrupting your data.

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**Tip** – Information that can be used to shorten or simplify your task or they may simply be used as a reminder.

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**Note** – Information that may be of special interest to you. Notes are also used to point out exceptions to rules or procedures.

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## Warnings, Cautions, and Notes - Hardware

The following are used in hardware documentation.

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**Note** – A note provides additional information that is of special interest. A note might point out exceptions to rules or procedures. A note usually, but not always, follows the information to which it pertains.

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**Caution** – A caution informs you of conditions that might result in damage to hardware, corruption of data, or corruption of application software. A caution always precedes the information to which it pertains.

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**Warning – Possible Physical Injury.** A warning alerts you to conditions that might result in long-term health problems, injury, or death. A warning always precedes the information to which it pertains.

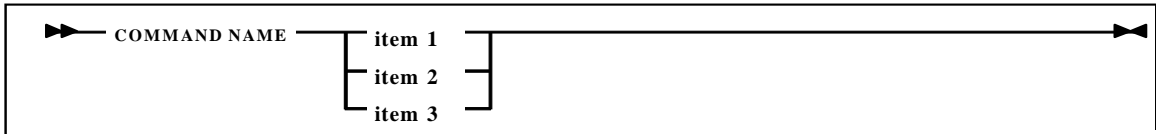
---



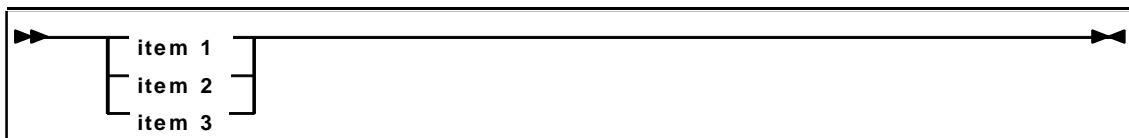
# Syntax

Syntax flow diagram conventions include the following:

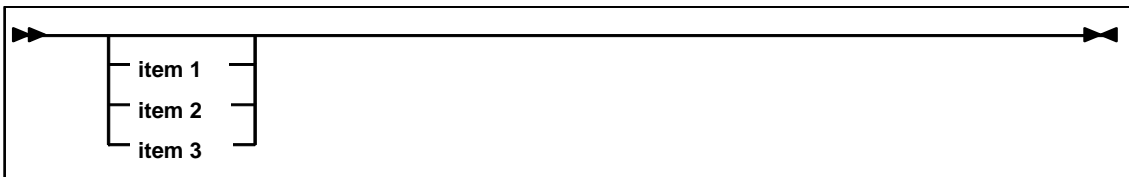
**Flow Lines**—Syntax diagrams consist of a horizontal baseline, horizontal and vertical branch lines and the command text. Diagrams are read left to right and top to bottom. Arrows show flow and direction.



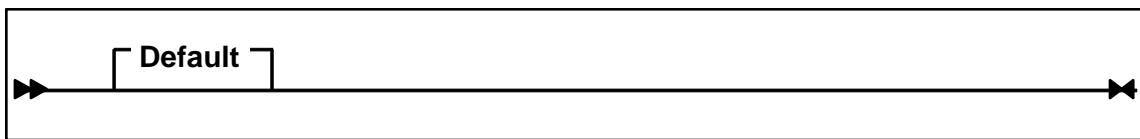
**Single Required Choice**—Branch lines (without repeat arrows) indicate that a single choice must be made. If one of the items to choose from is on the baseline of the diagram, one item must be selected.



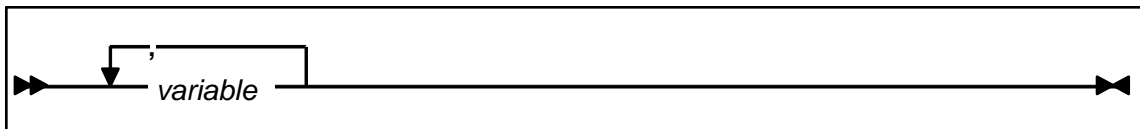
**Single Optional Choice**—If the first item is on the line below the baseline, one item may optionally be selected.



**Defaults**—Default values and parameters appear above the baseline.



**Repeat Symbol**—A repeat symbol indicates that more than one choice can be made or that a single choice can be made more than once. The repeat symbol shown in the following example indicates that a comma is required as the repeat separator.



**Keywords**—All command keywords are shown in all upper case or in mixed case. When commands are not case sensitive, mixed case implies that the lowercase letters may be omitted to form an abbreviation.

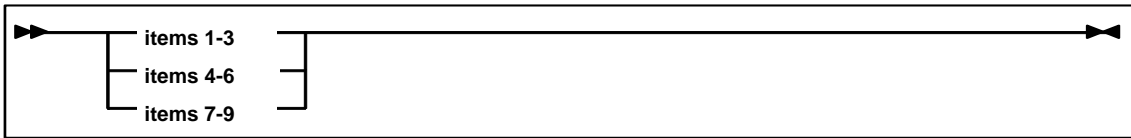
**Variables**—Italic type is used to indicate a variable.

**Alternatives**—A bar ( | ) is used to separate alternative parameter values.

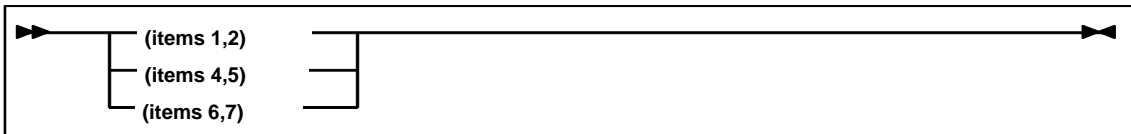
**Optional**—Brackets [ ] are used to indicate that a command parameter is optional.

**Delimiters**—If a comma (,), a semicolon (;), or other delimiter is shown with an element of the syntax diagram, it must be entered as part of the statement or command.

**Ranges**—An inclusive range is indicated by a pair of elements of the same length and data type, joined by a dash. The first element must be strictly less than the second element.



**Lists**—A list consists of one or more elements. If more than one element is specified, the elements must be separated by a comma or a blank and the entire line must be enclosed by parentheses.







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