z/OS V1R13

DFSMShsm: Serviceability and usability

Session objectives

- Many small enhancements are being provided to improve the serviceability and usability of DFSMShsm. Each of these enhancements will be briefly described.
  - PDA Trace during DFSMShsm startup
  - Fast Replication ARC1809I messages
  - RELEASE RECALL(DASD)
  - QUERY CRQ
  - ONLYIF Enhancements
  - ARC0570I patch
  - AUDIT COPYPOOL
  - Change messages from 'I' to 'E'
  - Change FR(DSR) default to NONE

Overview - PDA trace during DFSMShsm startup

- Problem Statement / Need Addressed
  - If PDA=YES is not specified in the startup procedure, PDA tracing will not occur during DFSMShsm startup, leading to difficulty diagnosing errors that may occur during startup.
  - "PDA" stands for "problem determination aid"
- Solution
  - Default setting for enabling PDA trace during startup is changed from NO to YES
- Benefit / Value
  - More efficient diagnosis of problems which occur during startup and eliminating the need to recreate the error for diagnosis of these problems.

Usage and invocation - PDA trace during DFSMShsm startup

- Parameter 'PDA=' can be specified in the DFSMShsm startup procedure to indicate whether DFSMShsm should begin PDA tracing at startup. Once the ARCCMDxx PARMLIB member is processed during DFSMShsm initialization, DFSMShsm will begin tracing all other DFSMShsm activity unless the SETSYS PDA(NO) parameter is specified in the ARCCMDxx PARMLIB member.

Overview - Fast replication ARC1809I messages

- Problem Statement / Need Addressed
  - Fast Replication Backup processing issues excessive ARC1809I messages when reporting the reason why a target volume cannot be paired to a source volume.
  - It is ARC1809I VOLUME volser1 IS NOT A {FAST REPLICATION | PRESERVE MIRROR} CANDIDATE FOR L0 VOLUME volser2, VER=ver, RC=retcode[, RSN=reascode reastext]
- Solution
  - Duplicate ARC1809I messages will be suppressed.
  - A new SETSYS command replaces the existing PATCH to enable/disable the redundant ARC1809I messages.
- Benefit / Value
  - Simpler analysis of source to target volume pairing problems.
- The ARC1809I RC2 message indicates that a source and target cannot be paired because the target volume has already been matched with a different source. For a single FRBACKUP command, the ARC1809I RC2 can be issued many times for each target volume. This item will decrease the number of ARC1809I RC2 messages such that the message will be issued no more than once per target volume for each storage group in the copy pool.
- Currently, a patch command can be used to turn off all ARC1809I messages. The existing patch will continue to be supported, but all external references to it will be removed from the publications.

Usage and invocation - Fast replication ARC1809I messages

- SETSYS FASTREPLICATION(VOLUMEPAIRMESSAGES(YES/NO))
  - YES indicates that the ARC1809I message should be issued when a target volume cannot be paired with a source volume.
  - NO indicates that the ARC1809I messages should not be issued.
- QUERY SETSYS will report the setting of this new SETSYS in the ARC1823I message.

Overview - RELEASE RECALL(DASD)

- Problem Statement / Need Addressed
  - When HOLD RECALL is issued in response to a tape related problem, there is no method available to change the hold level to just HOLD RECALL(TAPE) without first releasing all recalls.
- Solution
  - Add support for a RELEASE RECALL(DASD) command.
- Benefit / Value
  - Enables Recall requests from ML1 to continue when there is a tape related issue.

Usage and invocation - RELEASE RECALL(DASD)

- The command RELEASE RECALL(DASD) will convert a HOLD RECALL state to a HOLD RECALL(TAPE) state.
- QUERY ACTIVE will indicate a hold on tape recall tasks.

Overview - QUERY CRQ
- Problem Statement / Need Addressed
  - A recall request in the common recall queue (CRQ) can only be canceled from the host that originated the request. To determine which host originated the request, a QUERY must be issued on each DFSMShsm host.
- Solution
  - The output from the QUERY COMMONQUEUE(RECALL) command will show the originating host id.
- Benefit / Value
  - Simplified data gathering.
- The common recall queue (CRQ) is a single recall queue that is shared by multiple DFSMShsm hosts. This queue is implemented through the use of a coupling facility (CF) list structure. The CRQ balances the recall workload across multiple address spaces and enables optimization for priority and single-tape mounts. In some parallel sysplex configurations, a single host is not necessarily connected to every device. The CRQ enables hosts that are not connected to a device, like a tape drive, to place recall requests on the CRQ. Once on the CRQ, the request can be selected by hosts that are connected to the device.

Usage and invocation - QUERY CRQ
- This is the old message:
  - ARC1543I type MWE FOR DATA SET name, FOR USER userid, REQUEST request_number, WAITING TO BE PROCESSED ON A COMMON QUEUE, nmwe MWES AHEAD OF THIS ONE
- When ARC1543I is issued as a result of the QUERY COMMONQUEUE(RECALL) command, it will include this text that shows the host id of the host that initiated the request:
  - {, REQUEST ORIGINATED ON HOST hostid}
- The ARC1543I message update is not displayed when it is the result of a QUERY DATASETNAME, QUERY REQUEST, or QUERY USERID.

Overview - ONLYIF Enhancements
- Problem Statement / Need Addressed
- ONLYIF related problems;
  - The ONLYIF command allows a single command to be executed conditionally. With a multi-host system, the ONLYIF command allows the definition of parameters for each host within a single PARMLIB member (ARCCMDxx). Storage administrators of multi-host systems want a single ONLYIF command to be able to conditionally execute a block of commands, so that the ARCCMDxx PARMLIB member is easier to understand and maintain.
  - The ONLYIF parameter HSMHOST accepts a single hostid. Storage administrators of multi-host systems want to specify multiple host IDs in a single ONLYIF command.
- Solution
  - New BEGIN and END statements for the ONLYIF command.
  - Allow multiple host ids in the HSMHOST parameter of the ONLYIF command.
- Benefit / Value
  - These improvements make the ARCCMDxx PARMLIB member easier to understand and maintain.

Usage and invocation - ONLYIF Enhancements
- Example of old way (which still works):
```
ONLYIF HSMHOST(A,B)
   SETSYS ABSTART(0600 0700)
ONLYIF HSMHOST(A,B)
   SETSYS ABARSTAPES(NOSTACK)
```
- Example of new way:
```
ONLYIF HSMHOST(A,B)
BEGIN
        − SETSYS ABSTART(0600 0700)
        − SETSYS ABARSTAPES(NOSTACK)
END
```
- In the example the SETSYS commands will be issued to Hosts A and B.

Overview - ARC0570I patch
- Problem Statement / Need Addressed
  - ARC0570I messages are unconditionally issued when certain SMS constructs have not been defined. There is no way to suppress these messages when this is a known and acceptable condition.
  - It is: ARC0570I {PRIMARY SPACE MANAGEMENT | INTERVAL MIGRATION | ON DEMAND MIGRATION | COMMAND MIGRATION | AUTOMATIC BACKUP | COMMAND BACKUP | AUTOMATIC DUMP | COMMAND DUMP | RESTORE | RECOVERY | FRBACKUP | FRRECOV} FOR {ALL SMS MANAGED | volser | volser,SGROUP=sg | ALL COPY POOL | COPY POOL=cpname} VOLUME(S) TERMINATED, RC=return-code, REASON=reason-code
- Solution
  - Two new patches will be introduced to filter ARC0570I messages, during autobackup, automigrate and autodump functions.
- Benefit / Value
  - Eliminate periodic analysis of messages which are known to be acceptable by some, but not by others.

Usage and invocation - ARC0570I patch
- ARC0570I RC17 (No storage groups defined) messages will be turned off using the following patch:

- PATCH .MCVT.+297 BITS(....1...)
▪ ARC0570I RC36 (No copy pools defined) messages will be turned off using the following patch:
    – PATCH .MCVT.+297 BITS(.....1..)

Overview - AUDIT COPYPOOL
▪ Problem Statement / Need Addressed
    – AUDIT COPYPOOLCONTROLS does not report fast replication target volume records that are invalidly paired with a source volume record.
▪ Solution
    – The AUDIT COPYPOOLCONTROLS function will now detect invalid target volume records. (This detection will not occur when a specific copy pool name has been specified).
▪ Benefit / Value
    – Automated cleanup of invalid fast replication records.

Usage and invocation - AUDIT COPYPOOL
▪ When AUDIT detects an orphan FRTV record, a new AUDIT error message will be issued to the AUDIT output, to identify the orphaned FRTV.
    – *ERR 202 ORPHANED I (FRTV) RECORD FOUND FOR TARGET VOLUME <tgtvolser>, SOURCE VOLUME <srcvolser>
    – Following the error message AUDIT will issue the FIXCDS DELETE command required to resolve the error, if FIX is specified on the AUDIT command.

Overview - Change messages from 'I' to 'E'
▪ Problem Statement / Need Addressed
    – Incorrect message suffix on these messages:
    – ARC0036I I/O {INHIBITED | DISABLED} FOR DFSMSHSM PROBLEM DETERMINATION OUTPUT DATA SET, REAS=reason-code
    – ARC0503I ALLOCATION ERROR, {VOLUME=volser | DATA SET=dsname | DD DUMMY}, RC=return-code, REASON=reason-code, INFO CODE=infocode, EXTENDED REASON CODE=extreas
    – ARC0704I {BACKUP | DUMP | RECOVER} OF VOLUME volser1 TERMINATED, ERROR {ALLOCATING | OPENING | CLOSING | READING | WRITING} VTOC COPY DATA SET [ON VOLUME volser2]
▪ Solution
    – Change ARC0036I, ARC0503I and ARC0704I to ARC0036E, ARC0503E and ARC0704E.
▪ Benefit / Value
    – Correct message suffixes.

Usage and invocation - Change messages from 'I' to 'E'
▪ None unless you have message automation that detects these message numbers.

Overview - Change FR(DSR) default to NONE
▪ Problem Statement / Need Addressed
    – When fast replication PREFERRED is in effect, DFSMShsm will use fast replication as the copy method whenever possible for data set level recoveries. This may cause a subsequent copy pool backup to fail due to the background copy still being in progress. It is difficult to analyze the copy pool backup failure and make adjustments given the messages only indicate the backup volume was already a FlashCopy source. When FASTREPLICATION(DSR(NONE)) is specified, the failure messages indicate serialization failure on the copy pool, which is more helpful in resolving the situation.
▪ Solution
    – The default for data set level recovery will be changed from PREFERRED to NONE. DFSMShsm Fast Replication data set level recoveries need to use traditional copy methods as the default.
▪ Benefit / Value
    – Subsequent copy pool backups will not fail due to a background copy initiated by previous data set recoveries still being in progress.

Usage and invocation - Change FR(DSR) default to NONE
▪ SETSYS FASTREPLICATION(DATASETRECOVERY(PREFERRED | REQUIRED | NONE))
▪ FASTREPLICATION(PREFERRED | REQUIRED | NONE) is an optional keyword on the FRRECOV command, that overrides the FASTREPLICATION(DSR(PREFERRED | REQUIRED | NONE)) value specified on the SETSYS command. When the FASTREPLICATION parameter is not specified on the FRRECOV command, the SETSYS FASTREPLICATION(DSR) specification is used.

Interactions and dependencies
▪ None.

Migration and coexistence considerations
▪ PDA trace during DFSMShsm startup (1)
    – The default for PDA trace during DFSMShsm startup will be changed to PDA=YES. Customers should set PDA=NO in the DFSMShsm startup procedure if they do not want PDA trace enabled during DFSMShsm startup.
▪ Fast Replication ARC1809I messages (2)
    – Customers who currently have PATCH .FRGCB.+9 BITS(.1......) in their ARCCMDxx PARMLIB member should replace the patch with the desired SETSYS FASTREPLICATION(VOLUMEPAIRMESSAGES(YES|NO)) command.
▪ ONLYIF Enhancements (5)

- Coexistence PTFs will be shipped for releases V1R10, V1R11 and V1R12 to tolerate the ONLYIF changes made on a V1R13 system to a shared PARMLIB member. This coexistence support will properly parse and process BEGIN / END logic and multiple hostids within the HSMHOST keyword.
- Change FR(DSR) default to NONE (9)
  - Customers who currently rely on the previous default value of SETSYS FASTREPLICATION(DSR(PREFERRED)) should determine whether they want to keep the PREFERRED option by specifying the SETSYS FASTREPLICATION(DSR(PREFERRED)) command to override the new default on V1R13. If they want to specify FASTREPLICATION(DSR(NONE)), they can allow DFSMShsm to default to NONE.

Installation
- None.

Session summary
- We have reviewed each of the Serviceability and Usability line item enhancements.

Appendix - References
- *z/OS V1R13 DFSMShsm Storage Administration,* SC35-0421-12
- *z/OS V1R13 DFSMShsm Implementation and Customization Guide,* SC35-0418-12
- *z/OS MVS System Messages, Vol. 2 (ARC-ASA),* SA22-7632-21
- *z/OS V1R13 Migration,* GA22-7499-19