The Wonderful World of DFSMShsm SETSYS Commands

Glenn Wilcock
wilcock@us.ibm.com
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Agenda

- Overview
- DFSMShsm Environment
- Control Data Set Backup
- Compaction
- Tape
- Space Management
- Backup / Recovery
- Fast Replication

Help!

For a free, quick review of your ARCCMDnn parms

or

Questions about a PATCH in your ARCCMDnn that you don't have documented

Chase me down or send email to wilcock@us.ibm.com

DFSMShsm Architecture

SYS1.PROCLIB(DFHSM)
SYS1.LINKLIB(ARCCTL)
★SYS1.PARMLIB
★(ARCCMD*nn*,ARCSTR*nn*)

START DFHSM, CMD=*nn*

HSMplex

HSM 1   HSM 2   HSM n

LOGX
LOGY

PDOX
PDOY

Activity Logs:
Migration, Backup,
Dump,
Command, ABARS

MCDS *Migration*   **BCDS** *Backup*   **OCDS** *Tape*   **Journal**

Control Data Sets *(Inventory)*

SHARE in Pittsburgh 2014
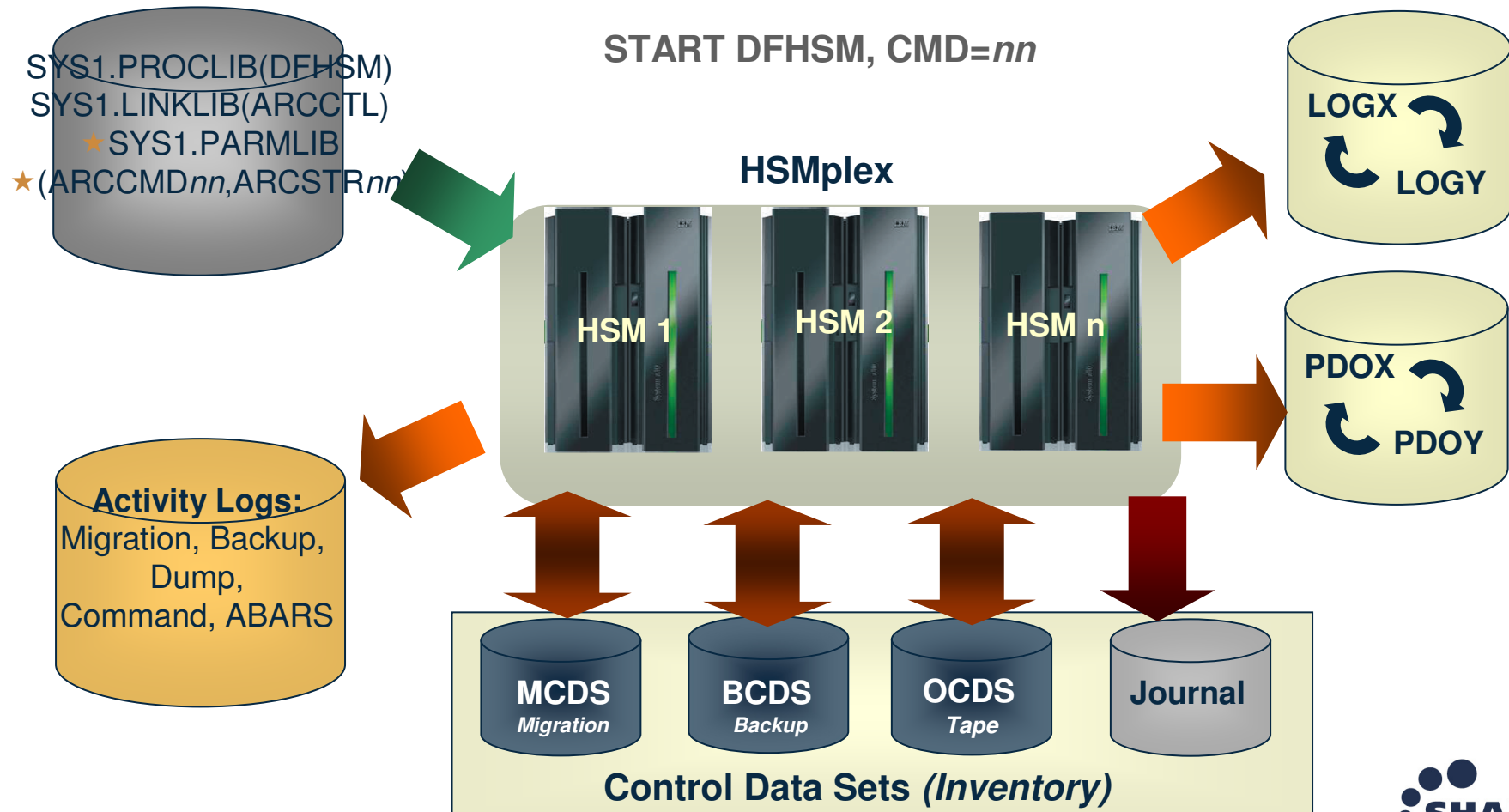
ARCCMD*nn* PARMLIB Member

SETSYS JES2 NOCONVERSION NOREQUEST NODEBUG NOEMERGENCY NOSWAP
SETSYS MOUNTWAITTIME(2) NOPROFILEBACKUP COMPACT(NONE) JOURNAL(RECOVERY)
SETSYS MONITOR(STARTUP VOLUME NOSPACE) NOSMALLDATASETPACKING
SETSYS TAPESECURITY(PASSWORD) INTERVALMIGRATION SMF(254)
SETSYS ABSTART(0000 0000) AMSTART(0000 0000)
SETSYS EXITOFF(AD BD CB CD MD MV RD TD TV)
SETSYS EXITOFF(MM IN SA)
SETSYS BACKUP VERSIONS(2) FREQUENCY(0) RECALL(PRIVATEVOLUME)
SETSYS SYS1DUMP
DEFINE BACKUP(Y)
SETSYS CDSVERSIONBACKUP(BACKUPD(DASD) BACKUPC(1))
QUERY SETSYS STARTUP CONTROLDATASETS BACKUP(ALL)
PATCH .ARCCVT.+3D3 X'C0'
PATCH .ARCCVT.+194 BITS(1.......)
AUTH HSMATH0 DBA(CONTROL)
AUTH HSMATH1 DBA(CONTROL)
AUTH HSMATH2 DBA(CONTROL)
AUTH HSMATH3 DBA(CONTROL)
AUTH HSMATH4 DBA(CONTROL
AUTH IBMUSER DBA(CONTROL)
SYS PDA(ON)

ARCCMD*nn* PARMLIB Member

```
/* …                                                                      */
/* Have a prologue to document changes…                                   */
/* GRW Added ONDEMANDMIGRATION parameter 4/10/12                          */
/* …                                                                      */
/* Group parameters and use block comments…                              */


/* General DFSMShsm parameters                                            */
SETSYS JES2
SETSYS NOCONVERSION
/* Specify Defaults! … */
SETSYS NOEMERGENCY
SETSYS NOSWAP


/* CDS Backup                                                             */
SETSYS CDSVERSIONBACKUP(DATAMOVER(DSS))


/* Tape                                                                   */
SETSYS …


/* Space Management … */


/* Patches … */
PATCH .MGCB.+xx (.1……)              /* Comment on what patch does
```

ARCCMD*nn*

- IBM recommends a single, shared ARCCMD*nn* member for all DFSMShsm hosts
  - Eliminates chance of discrepancies between ARCCMDnn members across systems

HSMplex

HSM 1   HSM 2   HSM n

<Parm z>

ARCCMD*01*
<Parm x>

ARCCMD*02*
<Parm y>

ARCCMD*03*
<Parm z>

HSMplex

HSM 1   HSM 2   HSM n

<Parm x>
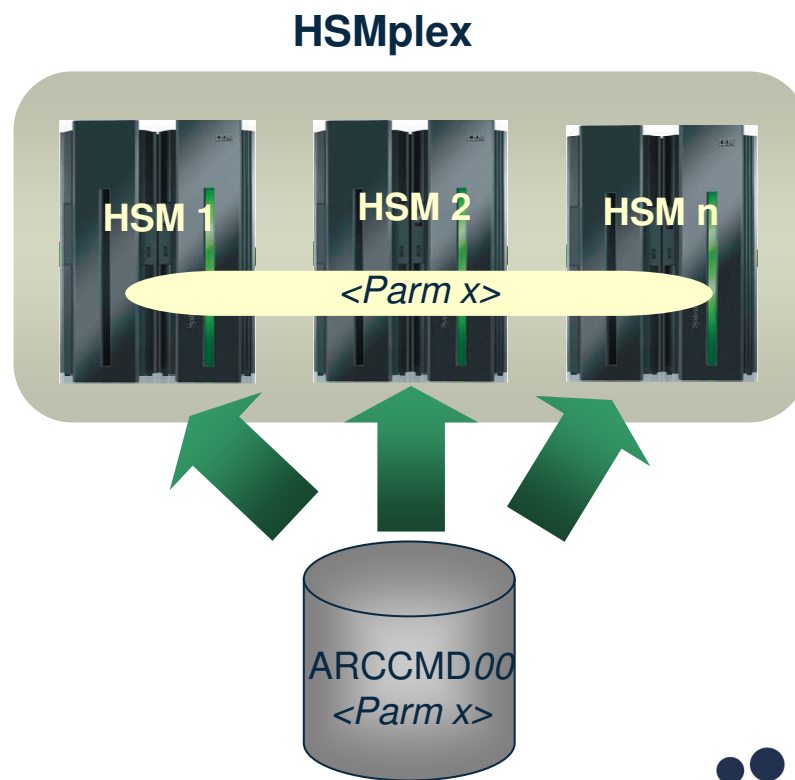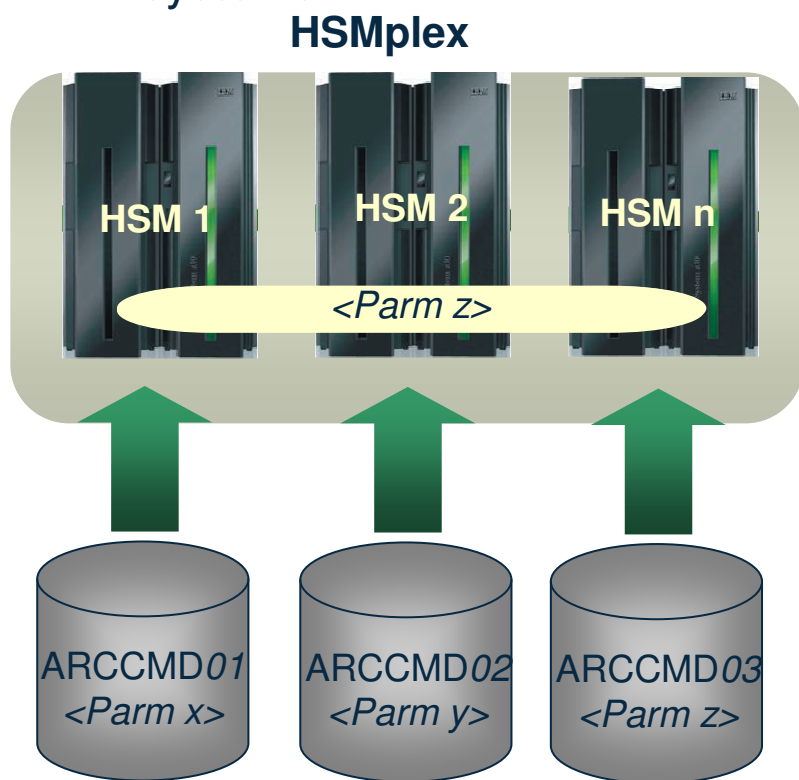
ARCCMD*00*
<Parm x>

ARCCMD*nn*

- Pre-V1R13 ONLYIF support is *very* basic
  - Used when commands are unique to one or more DFSMShsm hosts
  - Example: Only hosts A,B & C run Automatic Dump:

```
ONLYIF HSMHOST(A)
    SETSYS ADSTART(1800 2400)
ONLYIF HSMHOST(B)
    SETSYS ADSTART(1800 2400)
ONLYIF HSMHOST(C)
    SETSYS ADSTART(1800 2400)
ONLYIF HSMHOST(A)
    SETSYS MAXDUMPTASKS(7)
ONLYIF HSMHOST(B)
    SETSYS MAXDUMPTASKS(7)
ONLYIF HSMHOST(C)
    SETSYS MAXDUMPTASKS(7)
```

ARCCMD*nn*

- V1R13
  - Support for BEGIN and END operators
  - Enables multiple host IDs on the HSMHOST keyword

  ```
  ONLYIF HSMHOST(A,B,C)
        BEGIN
           SETSYS ADSTART(1800 2400)
           SETSYS MAXDUMPTASKS(7)
        END
  ```

- Coexistence (OA33557)
  - Pre-V1R13 systems will correctly parse new syntax introduced on a V1R13 system

Rationale for Default Values

- Why is *that* the default!!!???
  - For new Parameters, default values are chosen to avoid any type of Migration Action when going to a new z/OS release
  - This means that many desirable new futures must be explicitly enabled, even though it seems like the default should be to have them enabled

  - For example, Fast Subsequent Migration must be enabled, even though it can significantly reduce the amount of data that is processed
  - Rationale: the function requires CDS records to be kept longer, which will increase the size of the MCDS.

Information Preserved Across Startups

- ## Never
  - HOLD – *Hold HSM activity*
  - PATCH – *Override standard HSM processing*
  - SETSYS – *Set HSM system environment*
  - TRAP – *Request a dump for a specific error*

- ## Sometimes
  - ADDVOL – *Add a volume to HSM management*
  - DEFINE – *Define control structures (cycles, pools, etc)*
  - SETMIG – *Set migration settings for nonSMS data*

- ## Always
  - ALTERDS – *Alter backup settings for nonSMS data*
  - AUTH – *Authorize users to commands * Use RACF instead*

Processing order

Issue this command…	Before this command…
SETSYS JES2 or JES3	*Any other command*
ADDVOL	DEFINE POOL
DEFINE DUMPCLASS	ADDVOL w/ AUTODUMP
SETSYS MAXRECALLTASKS	SETSYS TAPEMAXRECALLTASKS
SETSYS SDSP	ADDVOL w/ SDSP
SETSYS SYSOUT	SETSYS ACTLOGTYPE

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Processing order *(cont)*

Issue this command…	Before this command…
SETSYS MAXDSRECOVERTASKS	SETSYS MAXDSTAPERECOVERTASKS
SETSYS USERUNITTABLE	ADDVOL, DEFINE ARPOOL, DEFINE DUMPCLASS, SETSYS… ARECOVERUNIT, BACKUP(TAPE), CDSVERSIONBACKUP, MIGUNITNAME, RECYCLEOUTPUT, SPILL, TAPEMIGRATION, UNITNAME, TAPEUTILIZATION
SETSYS USERDATASETSERIALIZATION	SETSYS DAYS SETSYS MIGRATIONSUBTASKS(Y)

'Retired' Keywords

- AUTOMIGRATIONSTART (Supported)

- EXITS (Supported)

- DEFERMOUNT (Ignored)

- CDSVERSIONBACKUP(DENSITY(density)) only applicable for reel-type tapes

System Specifications

- JES2 | JES3
  - This should be the first line!

- SWAP | NOSWAP
  - Only specify SWAP if you must. HSM will force NOSWAP when it needs to

- CSALIMITS | NOCSALIMITS
  - HSM now maintains these in ECSA, so NOCSALIMITS is recommended
    - CSALIMITS subparameters ACTIVE, INACTIVE, MAXIMUM, MWE
    - Requests are failed after the maximum is reached

- DFHSMDATASETSERIALIZATION | USER…
  - DFHSM… uses volume reserve with ARCMIGV or ARCBACV qname
  - USER… uses SYSDSN enqueue. Requires GRS or equivalent

System Specifications

- EMERGENCY | NOEMERGENCY
  - EMERGENCY holds all HSM processing

- REQUEST | NOREQUEST
  - REQUEST specifies that an operator should be prompted to permit automatic functions to start

- CONVERSION | NOCONVERSION
  - Reblocking allowed during recall and recovery
    - More applicable in the 'olden days' with mixed device geometries

- OPTIMUMDASDBLOCKING | NOOPTIMUM…
  - NOPTIMUMDASDBLOCKING results in 2K block size

- DEBUG | NODEBUG
  - HSM runs but doesn't actually expire or move data

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System Specifications MONITOR

- ## STARTUP | NOSTARTUP
  - Get messages for commands in ARCCMDxx to system console

- ## VOLUME | NOVOLUME
  - Only specify VOLUME if you love seeing ARC0734I messages to system console

- ## SPACE | NOSPACE
  - For NOSPACE, ARC0400I, ARC0401I and ARC0402I are still written to log and activity log

- ## BCDS(threshold) MCDS(thr) OCDS(thr) JOURNAL(thr)
  - Give yourself plenty of time to take action before Journal or CDS fills
  - Default is 80%

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System Specifications

- JOURNAL(RECOVERY | SPEED) | NOJOURNAL
  - Don't specify SPEED unless you can afford to lose a data set or two
  - Never specify NOJOURNAL unless you can afford to lose A LOT of data
- PDA(ON | OFF | NONE)
  - Enables First Failure Capture
  - Requires PDOX / Y data sets to be allocated
- SYS1DUMP | NOSYS1DUMP
  - HSM dumps written to a system dump data set
- SMF(id) | NOSMF
  - id used for HSM SMF records (use '240')
  - SMF 240 – VSR and DSR
  - SMF 241 – FSR and WWFSR
  - Used for DFSMS Report Generator

System Specifications

- **EXITON(exit name, exit name, …)**
  - Replacement for SETSYS EXITS

- **ACTLOGMSGLVL(FULL | EXCEPTIONONLY | REDUCED)**
  - Affects Activity Logs and HSMLOGX
  - Use SMF to get record of data sets successfully processed if EXCEPTIONONLY is specified

- **PLEXNAME(plexname_suffix)**
  - Should be specified if more than one HSMplex within a sysplex
  - ARCPLEX0 is the default HSMplex name

System Specifications

- DSSXMMODE(Y|<u>N</u> BACKUP(Y|<u>N</u>) CDSBACKUP(Y|<u>N</u>) DUMP(Y|<u>N</u>) MIGRATION(Y|<u>N</u>) RECOVERY(Y|<u>N</u>))
  - Runs DSS in its own address space for each function
  - Only use if needed (to increase HSM below-the-line storage)
    - Will increase MIPS usage
  - Fast Replication operations to disk always use DSS XM mode.
    - MIPS is not increased because DSS is the full data mover and the control unit is performing the data movement

- PROMOTE(PRIMARYHOST(Y|<u>N</u>) SSM(Y|<u>N</u>))
  - Enables a designated host to take over the unique functions of the Primary host or a SSM host

- USECYLINDERMANAGEDSPACE (Y|<u>N</u>)
  - Y=Ok to use Extended Addressing Space of EAV for ML1 volumes

CDSVERSIONBACKUP Options

! Note: These settings are HSMplex wide. If they vary from HSM to HSM, the last one to start 'wins'

- BACKUPCOPIES(copies)
  - Default is 4. The more the merrier
  - It's possible to roll off the last valid backup copy if enough consecutive backups fail
  - Use Health Checker for CDS Backup

- DATAMOVER(DSS | HSM)
  - DSS
    - Enables point-in-time copies (VirtualCC, CacheCC)
    - Verifies structural integrity of CDS
    - Additional steps for CDS Recovery
  - HSM
    - Simple EXPORT of the data

CDSVERSIONBACKUP Options

- BACKUPDEVICECATEGORY(DASD | TAPE(NOPARALLEL | PARALLEL EXPIRATIONDATE(date) | RETENTIONPERIOD(retpd))
  - If DASD, CB exit can be used to copy to tape
  - If Tape selected, specify EXPIRATIONDATE(99365) as ARCTVEXT now called when CDS backup rolls off
  - PARALLEL always used when backing up to tape using DSS

- B|M|O|JOURNALBACKUPDSN(dsname)
  - Final qualifier indicates datamover **.Vnnnnnnn if HSM, **.Dnnnnnnn if DSS
  - Watch out for **.Xnnnnnnn, an Error occurred!
  - If multicluster CDSes, "DSn" inserted in the name

Compaction Options

- COMPACT (ALL | NONE)
  - Can also restrict compaction to DASDMIGRATE, TAPEMIGRATE, DASDBACKUP, TAPEBACKUP
  - Let the tape hardware do the compaction to tape!
  - Compaction not done for compacted Level0 data sets

- SETSYS COMPACTPERCENT(pct)
  - Default is 40%
  - Need to weigh DASD/tape savings against MIPS cost

Compaction Options

- ZCOMPRESS (ALL | NONE)
  - 3rd Quarter 2014, OA42243
  - Uses zEDC to significantly reduce compression MIPS
  - Can also restrict compaction to DASDMIGRATE, TAPEMIGRATE, DASDBACKUP, TAPEBACKUP
  - Use ZCOMPRESS over tape compaction based on results
  - Compaction not done for compacted Level0 data sets
  - If zEDC not available, defaults to COMPACT option

  - Full volume Dump zEDC support via DEFINE DUMPCLASS
  - ABARS will come later
  - PDS data sets not yet supported by DFSMShsm

Compaction Options

- SETSYS OBJECTNAMES(objname...)
  SOURCENAMES(srcname...)

  – Controls which compaction table is used based on last qualifier of data set name (next-to-last for GDSs)

  – OBJECT - OBJLIB, LOAD, LOADLIB, LINKLIB

  – SOURCE - CNTL, JCL, PARMLIB, SRCE, TEXT, CLIST, ASM, COBOL, FORT, PLI

  – General compaction table if no match or not specified

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Tape

- TAPEHARDWARECOMPACT | <u>NOTAPEHARDWARECOMPACT</u>
  - Selection allowed for 3480X only, TAPEHARDWARECOMPACT always used for 3490, 3590

- INPUTTAPEALLOCATION(WAIT | <u>NOWAIT</u>) OUTPUTTAPEALLOCATION(WAIT | <u>NOWAIT</u>) RECYCLETAPEALLOCATION(WAIT | <u>NOWAIT</u>)
  - WAIT can cause noticeable performance degradation due to contention for SYSZTIOT resource

Tape

- PARTIALTAPE(MARKFULL | <u>REUSE</u>)
  - Weigh cost of partial tapes vs. slot in automated library
  - Partials not selected for generic RECYCLE or TAPECOPY
  - Can be applied separately to migration and backup
- TAPEUTILIZATION(UNITTYPE(unit) PERCENTFULL(pct) | NOLIMIT)
  - Should limit to 97% if using TAPECOPY
  - NOLIMIT prevents tape span reduction -- Use PERCENTFULL(100), instead
- TAPESPANSIZE(size)
  - Default size is 500 MB
  - Can help reduce tape mounts for RECYCLE

Tape

- TAPEINPUTPROMPT(MIGRATIONTAPES(<u>YES</u> | NO) BACKUPTAPES(<u>YES</u> | NO) DUMPTAPES(<u>YES</u> | NO)
  - No tape input prompting done when all tapes requested are in an SMS-managed tape library

- RECYCLEOUTPUT(BACKUP(unit) MIGRATION(unit))
  - Defaults to SETSYS UNITNAME value for backup tapes and SETSYS MIGUNITNAME for ML2 tapes

Tape

- RECYCLEINPUTDEALLOCFREQUENCY (BACKUP(m) MIGRATION(n))
  - Abbreviated RIDF
  - Controls how often DFSMShsm deallocates the input unit during RECYCLE processing
  - Defaults is to keep the input unit allocated until the processing of that type of volume (backup or ML2) is complete

Tape DUPLEX

- BACKUP(Y|<u>N</u> ERRORALTERNATE(<u>CONTINUE(TAPECOPY</u>|RECYCLE))

- MIGRATION(Y|<u>N</u> ERRORALTERNATE(<u>CONTINUE(TAPECOPY</u>|RECYCLE) | MARKFULL))
  - When duplexing, the default is to continue writing to the original tape when there is an error on the alternate tape
  - MARKFULL indicates that a new original and alternate tape should be mounted when there is an error on either tape
  - RECYCLE indicates that Recycle should be used when there is an error on the alternate copy

Tape

- EXTENDEDTTOC(Y|N)
  - Enables slightly more than one million data sets to be written to a migration or backup tape
  - Requires OCDS to be defined with a maximum record size of 6144 bytes

- TAPEDATASETORDER(PRIORITY|FBID)
  - When recalling all of the data sets off of a tape FBID significantly improves performance

- SETSYS MIGRATIONLEVEL1DAYS(n)
  - Default is 60, affects non-SMS-managed data sets only
  - Specified number of days includes time spent on Level 0

Tape

- RECYCLETAKEAWAYRETRY(YES MAXRETRYATTEMPTS(*nn*) DELAY(*mmmm*) | <u>NO</u>)
  - If Recycle ends due to a tape take away, enables the Recycle to be automatically restarted

- To identify tapes that are in a Retry status or that have exceeded the maximum retries:

  LIST TTOC SELECT (RECYCLETAKEAWAY)

Space Management

- ## PSMSTART(hhmm1 hhmm2)
  - hhmm1 – start time
  - hhmm2 – a new volume is not started after this time

- ## SSMSTART(hhmm1 hhmm2)
  - Secondary space management should be run prior to primary space management to free space on ML1

- ## MAXMIGRATIONTASKS(n)
  - If using SDSPs, ensure you have at least 1 more SDSP than migration tasks
  - Applies only to automatic migration tasks

Space Management (V2R1)

- MIGRATIONSUBTASKS(YES | <u>NO</u>)
  - Enables HSM to start multiple subtasks to write to the same tape
  - Requires SETSYS USERDATASETSERIALIZATION
  - For small data sets, this can significantly improve the throughput since pre and post processing are overlapped
  - Also applies to ML1
  - ✓ When enabling MIGRATIONSUBTASKS, concurrent cell pool activity may increase in cell pool 5. It is advisable to review the value specified for CELLS parameter in the HSM startup procedure for CELL POOL 5. See the DFSMShsm Implementation and Customization Guide for information on Adjusting the size of cell pools.

- MIGRATIONSUBTASKS(ADDITIONALSUBTASKS(0-10))
  - The default number of subtasks is 5. Use this parm to experiment with adding more.

Space Management

- MIGRATEPREFIX(prefix)
  - RACF-protect with UACC(NONE)
  - Avoid changes to MIGRATEPREFIX when using a tape management system
  - Use same MIGRATEPREFIX in all DFSMShsm images in shared environment

- SMALLDATASETPACKING | NOSMALLDATASETPACKING
  - SDSPs result in more efficient use of ML1, reduce need for defrags
  - Consider SDSP(KB(95))

Space Management

- SETSYS MAXSSMTASKS(CLEANUP(nn) TAPEMOVEMENT(mm))

  – CLEANUP: 0-15 specifies the number tasks (default=2)
  – TAPEMOVEMENT: 0-15 specifies number of ML1 to ML2 tape tasks (default=1)
  – Task level of 0 means that function will not be performed
  – If duplexing, 2 tape drives needed for each TAPEMOVEMENT task
  – ML1 to ML2 DASD data movement is performed under one task and cannot be controlled by the MAXSSMTASKS keyword.

Space Mangement

- TAPEMIGRATION(RECONNECT(ALL | ML2DIRECTEDONLY | NONE))
  - Used to control when Fast Subsequent Migration is attempted
  - ALL - reconnect if eligible when migrating to ML1 or ML2
  - ML2DIRECTED - reconnect if eligible when migration is to ML2 tape
  - NONE - never reconnect

Space Management

- MIGRATIONCLEANUPDAYS(n1 n2 n3)
  - Default is to retain old MCD records for 10 days (n1), statistics records for 30 days (n2), reconnect days is 3 (n3)
  - MCD records for data sets not meeting target compaction percent are always kept for 90 days after RECALL
  - May want to lower first value, increase second if using DCOLLECT for capacity planning
  - To calculate retention date for reconnect candidates. Recall date + # days between last reference date and migration date + reconnect days (n3)

Space Management ML1OVERFLOW

- ## DATASETSIZE(dssize)
  - The minimim size in kb for which a data set should target an ML1 Overflow volume for migration or backup
  - Default is 2,000,000K

- ## THRESHOLD(threshold)
  - Maximum used space on an overflow volume before moving data off of it

- ## PATCH .MCVT.+595 BITS(.......1)
  - Prevents datasets >64K tracks from migrating and backing up to ML1

Space Management

- INTERVALMIGRATION | NOINTERVALMIGRATION
  - Ignored for SMS-managed volumes with AM = I attribute

- MAXINTERVALTASKS(n)
  - Set to zero to prevent interval migration of SMS-managed volumes with the AUTOMIGRATE = I attribute

- ONDEMANDMIGRATION(Y | N)
  - Overrides INTERVALMIGRATION
  - MAXMIGRATIONTASKS controls the number of ODM tasks

- ODMNOTIFICATIONLIMINT(limit)
  - Default of 100

Space Management

- COMMONQUEUE(RECALL(CONNECT(basename)))
  - Connect to CRQ during startup
  - *basename* must be exactly five characters
  - Structure name: SYSARC_basename_RCL

Space Management

- ## SETSYS EXPIREDDATASETS(SCRATCH | NOSCRATCH)
  - Affects data sets having expiration date in Format1 DSCB, both SMS and non-SMS
  - Affects both migrated and non-migrated data sets
  - Ensure that users are properly specifying expiration dates before considering SCRATCH

- ## SETSYS SCRATCHFREQUENCY(n)
  - Controls deletion of non-SMS-managed List data sets
  - Default is 9999 - no scratching of list data sets
  - Data sets with final qualifiers of LIST, OUTLIST and LINKLIST are assumed to be List data sets

Backup

- AUTOBACKUPSTART(hhmm1 hhmm2 hhmm3)
  - hhmm2 represents the latest time you want automatic backup to start, when omitted automatic backup can start any time between hhmm1 and hhmm3

- BACKUPPREFIX(prefix)
  - RACF-protect with UACC(NONE)
  - Avoid changes to BACKUPPREFIX when using a tape management system
  - Use same BACKUPPREFIX in all DFSMShsm images in shared environment

Backup

- ## INCREMENTALBACKUP(CHANGEDONLY | ORIGINAL)
  - Specify ORIGINAL if using other products that reset the Format1 DSCB changed indicator
  - Use CHANGEDONLY in combination with SMS Storage Group GUARANTEED BACKUP FREQUENCY parm

- ## VERSIONS(n)
  - Default is 2
  - Controls number of backup versions kept for non-SMS data sets, can be overriden with ALTERDS command
  - Maximum number of versions is to 100

Backup

- ## FREQUENCY(days)
  - Default is 0 days
  - Applies to non-SMS data sets only
  - Can be overriden with ALTERDS command

- ## BACKUP | NOBACKUP
  - NOBACKUP prevents automatic backup, automatic dump and EXPIREBV processing

Backup

- BACKUP(INUSE (RETRY(Y | <u>N</u>) DELAY(min) SERIALIZATION(PREFERRED | <u>REQUIRED</u>)))
  - RETRY indicates if DFSMShsm should make a second attempt to backup an in-use data set
  - DELAY specifies how long to wait before attempting the retry, defaults to 15 minutes
  - SERIALIZATION(PREFERRED | REQUIRED) indicates if the data set must no longer be in use during the retry
  - Can be overriden with ARCBDEXT installation-wide exit

Backup DSBACKUP

- **DASDSELECTIONSIZE**(maximum standard)
  - Determines preference for tape or dasd for WAIT-type requests
  - NOWAITS directed to tape, if tape tasks allowed.
  - Specify DASDSELECTIONSIZE(0) to force all nontargeted command data set backups to tape.
  - Large (favor tape), Medium(first available), small (favor DASD)
  - Defaults
    - Maximum = 3000 KB
    - Standard = 250 KB
  - Can be overridden by TARGET keyword on BACKDS command

- **DASD(TASKS(nn)) TAPE(TASKS(nn))**
  - Defaults for both DASD and TAPE = 2   (Max=64)
  - Specify 0 to disallow backup to that device type

Backup DSBACKUP

- DEMOUNTDELAY(MAXIDLETASKS(nn)
  MINUTES(minutes))
  - MAXIDLETASKS is the max number of idle tape data set backup tasks.
    - Limit is number of TAPE dsbackup tasks
    - Default is 0
  - MINUTES is the maximum time a task can be idle before the tape is deallocated.
  - 0 to 1440,
    - 1440 indicates to leave tape mounted
    - 0 indicates to deallocate tape when no requests on queue that could be targeted to tape
    - Default is 60

Fast Replication

- ## MAXCOPYPOOLTASKS(FRBACKUP(nn) DSS(nnn)
  - FRBACKUP(nn) = # of concurrent DFSMSdss invocations - Default is 15
  - DSS(nnn) = # of volume pairs that DFSMShsm will pass on each invocation of DFSMSdss - Default is 24

- ## MAXCOPYPOOLTASKS(FRRECOV(nn) DSS(nnn))
  - FRRECOV(nn) = # of concurrent DFSMSdss invocations - Default is 15
  - DSS(nnn) = # of volume pairs that DFSMShsm will pass on each invocation of DFSMSdss - Default is 24

- Defaults represent recommended values for optimum performance based on test results!

FASTREPLICATION

- VOLUMEPAIRMESSAGES(YES | NO)
  - Replaced patch to enable ARC1809I volume pairing messages

- FCRELATION(EXTENT | FULL)
  - Specify FULL if you want to enable QUERY COPYPOOL to indicate the percent complete of background copies for nonIncremental copies
  - Consider FULL in Preserve Mirror Environment

- DATASETRECOVERY(NONE|PREFERRED |REQUIRED)
  - Default is NONE so that a data set recovery does not prevent a subsequent copy pool backup

System z Social Media

- System z official Twitter handle:
  - **@ibm_system_z**

- Top Facebook pages related to System z:
  - **Systemz Mainframe**
  - **IBM System z on Campus**
  - **IBM Mainframe Professionals**
  - **Millennial Mainframer**

- Top LinkedIn Groups related to System z:
  - **Mainframe Experts Network**
  - **Mainframe**
  - **IBM Mainframe**
  - **System z Advocates**
  - **Cloud Mainframe Computing**

- YouTube
  - **IBM System z**

- Leading Blogs related to System z:
  - **Evangelizing Mainframe (Destination z blog)**
  - **Mainframe Performance Topics**
  - **Common Sense**
  - **Enterprise Class Innovation: System z perspectives**
  - **Mainframe**
  - **MainframeZone**
  - **Smarter Computing Blog**
  - **Millennial Mainframer**

The Wonderful World of DFSMShsm SETSYS Commands

Glenn Wilcock
wilcock@us.ibm.com
IBM

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