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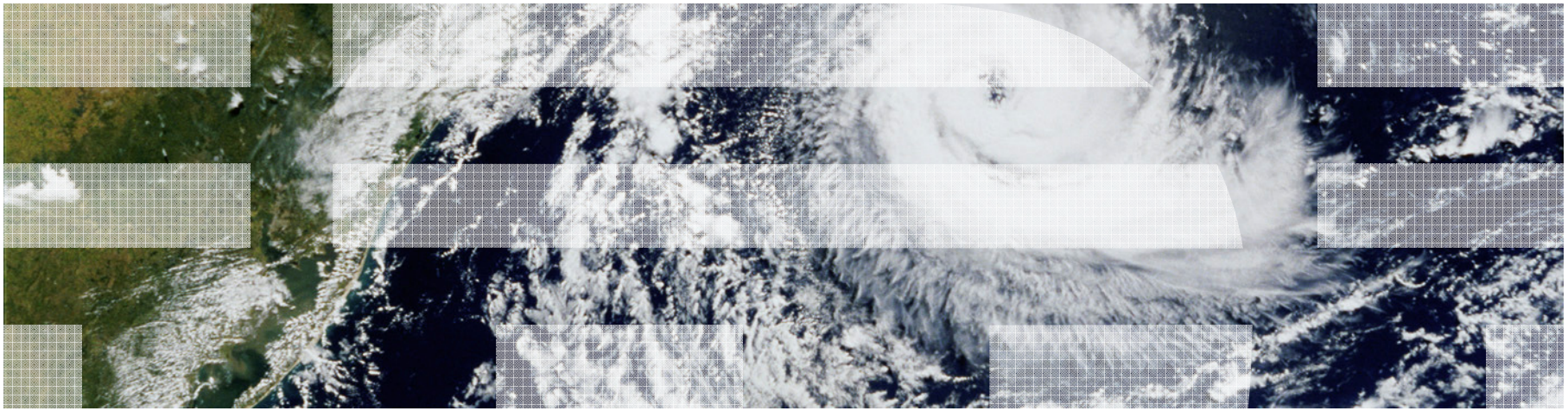
Session 09942:
DFSMSrmm:
What's new in z/OS V1.13 and z/OS V1.12



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Agenda

- z/OS Release 13 Enhancements
- Selected z/OS Release 12 Enhancements
- Appendix

DS8700

TS1140 Tape Drive

TS7680 Deduplication Gateway

TS3500 Library

TS7700 Virtualization Engine

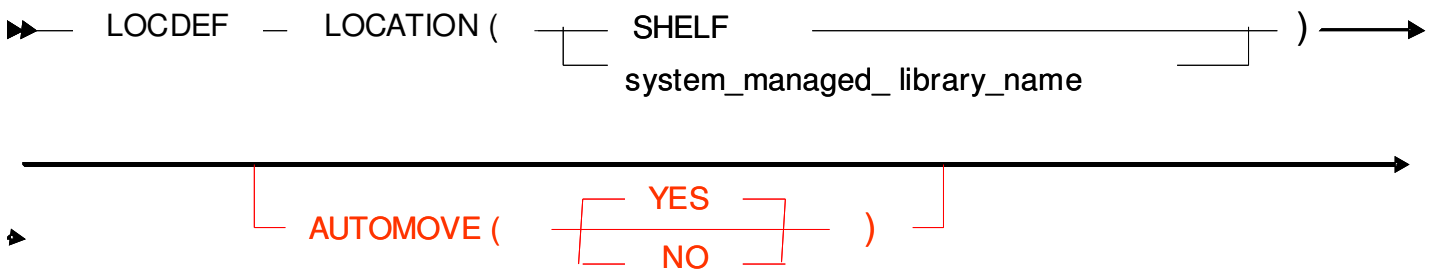
Agenda

- z/OS Release 13 Enhancements
  - Selective volume movement
  - More „Last change“ details
  - Last Reference Date for VRS
  - ISPF Navigation Enhancements
  - Show Effective Retention/Expiration Date
  - Search Dataset Extensions
  - TVEXTPURGE Extra Days
  - More information on Expiry Date source
  - Exclude data sets from VRSEL
  - **New RETENTIONMETHOD(EXPDT)**
  - Enhanced Tape Copy Support

RMM Selective Volume Movement

- This new capability is designed for libraries that contain virtual volumes or other volumes which either cannot be moved or for which you do not want DFSMSrmm to initiate the movement.
- With new LOCDEF operand AUTOMOVE(YES/NO), you can define locations that are not applicable for automated movement.
- **When current location of a volume is defined with LOCDEF…AUTOMOVE(NO), DSTORE processing will not set the destination from the required location.**
- During inventory management DSTORE, DFSMSrmm validates the current location name for a volume and determines if automated movement is required.
  - If validation fails no movement is initiated.
  - If a location is not defined via LOCDEF on the inventory management system automated movement is started.
- All volumes can be manually moved by RMM subcommands.

Volume Movement: Parmlib LOCDEF option AUTOMOVE



YES Volume movement will be attempted by DSTORE processing, if the current location does not match the required location.

NO No automatic volume movement will attempted.

```
EDGPC800                DFSMSrmm Location Definitions          Row 1 to 6 of 6
Command ===> _____________________________________________ Scroll ===> PAGE

Location Locdef Management Location Prio- AM Media Names
                Type       Type     rity
-------- ------ ---------- -------- ----- -- --------------------------------
         NO                AUTO     4800  Y
         NO                MANUAL   4900  Y
DISTANT  NO                STORE    200   Y
LOCAL    NO                STORE    300   Y
REMOTE   NO                STORE    100   Y
SHELF    NO                SHELF    5000  Y
******************************** Bottom of data ********************************
```

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More „Last change“ details

- Last change information is added to the
  - TSO list command output
  - ISPF List- , Change- and Delete- panels

  for all resources stored in the RMM CDS
- Reduced need for running EDGAUD audit reports.
- If the most recent change was made by DFSMSrmm processing the ID starts with an asterisk (*).
  - *OAM DFSMSrmm system managed tape support
  - *HKP Inventory management
  - *OCE DFSMSrmm OPEN/CLOSE EOV support

```
                    DFSMSrmm Owner Details - BSIN
Command ===>

  Surname  . : Sinram
  Forenames  : Horst
  Department : 3272

  Address:
    Line 1 . : IBM R&D
    Line 2 . : D-71032 Boeblingen
    Line 3 . : Germany

  Telephone:
    Internal :                External . . :

  Electronic mail:
    Email  . : sinram@de.ibm.com
    Userid . : SINRAM         Node . . . . : IBMDE

Last Change information:
 Date . . . . . : 2011/07/05     Time  . : 15:29:17     System  : IRD6
 User change date : 2011/07/05     Time  . : 15:29:17     User ID : BSIN
```

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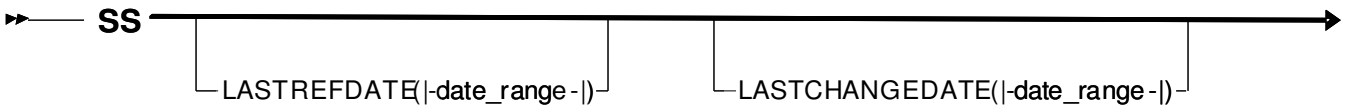
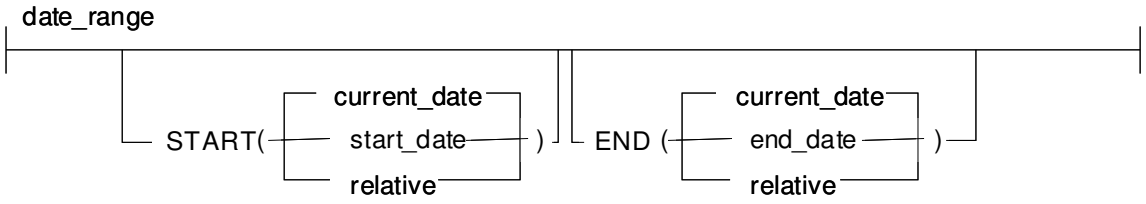
Last Reference Date for VRS

- After some time the number of Vital Record Specifications in a customer installation may be grown to a number that is hard to comprehend.
  - Especially no longer used VRS' are hard to identify.
- RMM can now
  - display the VRS last reference date in the dialog, and
  - Allow to sorting / search results by last reference date
- You can now cleanup unused VRS‘ more easily

Last Reference Date for VRS SEARCHVRS





RMM ISPF Panel Updates (1)

```
                        DFSMSrmm Display Data Set VRS
Command ===>

Data set mask . : 'BACKUP.DB2ISA.**'                              GDG . : NO
     Job name mask . :

Count . . . : 35                     Retention type . . . . . : DAYS
                                     While cataloged . . . . . : NO
Delay . . . : 0   Days               Until expired . . . . . . : NO

Location . . . . . : HOME
Number in location : 35
Priority . . . . . : 0
                                     Release options:
Next VRS in chain . :                Expiry date ignore . . . : NO
    Chain using . . :                Scratch immediate . . . . : NO

Owner . . . . . : DBUSER
Description . . :
Last reference  : 2011/07/03  16:33:42  ( YYYY/MM/DD  HH:MM:SS )
Delete date . . : 1999/12/31  ( YYYY/MM/DD )

Last Change information:
 Date . . . . . : 2011/07/03     Time . : 17:04:00     System  : IRD6
 User change date : 2011/04/04   Time . : 07:43:27     User ID : DBUSER
```

RMM ISPF Panel Updates (2)

```
                          DFSMSrmm Search VRSs
Command ===> ____________________________________________________________

Optionally specify one of:
Data set mask   ____________________________________________  GDG  . . ___
     Job name mask   _________                                 ( Yes or No )
Volume serial   _______          Retention type   ________
VRS name  . . . _________        While cataloged  ___   ( Yes or blank for all)
                                 Until expired    ___   ( Yes or blank for all)
Location  . . . . _________      Release options:
Next VRS in chain _________      Expiry date ignore   ___   ( Yes or No )
  Chain using . . ____           Scratch immediate    ___   ( Yes or No )
Owner . . . . . . *_______
Limit . . . . . . 150_           Limit search to first n VRSs. Default is *
Dates             Start          End       Date, date range or relative value
  Reference . . 2011/01/01   . . ___________
  Changed . . . -6M          . . ___________
Clist . . . . . . NO_            YES to create a data set, or NO, or blank
```

```
                          DFSMSrmm VRSs (Page 4 of 4)          Row 1 to 30 of 150
Command ===> ____________________________________________________ Scroll ===> PAGE

Enter HELP or PF1 for the list of available line commands.
Use the LEFT and RIGHT commands to view other data columns.
                                                        Store  Last
S  Volume/Data set/Name specification                Count number reference
-- ------------------------------------------------ ----- ------ ----------
__ BACKUP.DB2ISA.**                                   35    35     2011/07/03
```

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ISPF Navigation Enhancements

- New primary commands CHAINV and CHAIND display multi-volume and multi-file information.
- 16 Point-and-Shoot fields on Volume display, and 5 Point-and-Shoot fields on Data set display allow for more immediate navigation options
  - To control how P&S fields are displayed:
    - Select the Point-and-Shoot... choice from the Colors pull-down, or
    - Issue the ISPF system command PSCOLOR from any ISPF command line
    - Subsequent examples use

```
Panel Element                    Color          Intensity  Highlight
                                                                More:
Point-and-Shoot . . . . . . . . YELLOW_____    HIGH____   REVERSE____
```

    to highlite P&S fields

ISPF Navigation – New Primary Commands CHAIND/CHAINV

```
                        DFSMSrmm Data Set Details                  Multi-File
Command ===> chaind

Data set name . . : 'D109123.B10501.SEQ003'
Volume serial . . : B10501      Physical file sequence number . . : 3
Owner . . . . . . : BSIN        Data set sequence number  . . . . : 0
                                                                More:      +
Job name  . . . . :
Step name . . . . :                          Record format . . . . :
Program name  . . :                          Block size  . . . . . : 0
DD name . . . . . :                          Logical record length : 0
Create date . . . : 2011/07/05  YYYY/MM/DD   Block count . . . . . : 0
Create time . . . : 16:45:59                 Total block count . . : 0
System id . . . . : IRD6                     Data set size (KB)  . : 0
                                             Percent of volume . . : 0
Expiration date . : 2011/07/15  YYYY/MM/DD   Device number . . . . :
 Set by . . . . . : CMD_DEF
```

The CHAIND command shows all data sets of the multi-volume set

```
                DFSMSrmm Data Sets (Page 1 of 2)              Row 1 to 11 of 11
Command ===> ____________________________________________________ Scroll ===> PAGE

Enter HELP or PF1 for the list of available line commands
Use the RIGHT command to view other data columns
                                                  Volume           File
S  Data set name                                  serial Owner     seq
-- ---------------------------------------------- ------ --------- -----
__ D109123.B10501.SEQ001                          B10501 BSIN      1
__ D109123.B10501.SEQ002                          B10501 BSIN      2
__ D109123.B10501.SEQ003                          B10501 BSIN      3
__ D109123.B10501.SEQ004                          B10501 BSIN      4
__ D109123.B10501.SEQ005                          B10501 BSIN      5
__ D109123.B10501.SEQ006                          B10501 BSIN      6
__ D109123.B10501.SEQ007                          B10501 BSIN      7
__ D109123.B10501.SEQ008                          B10501 BSIN      8
__ D109123.B10501.SEQ009                          B10501 BSIN      9
__ D109123.B10501.SEQ010                          B10501 BSIN      10
__ D109123.B10501.SEQ011                          B10501 BSIN      11
```

The CHAINV command shows all volumes of the multi-volume set

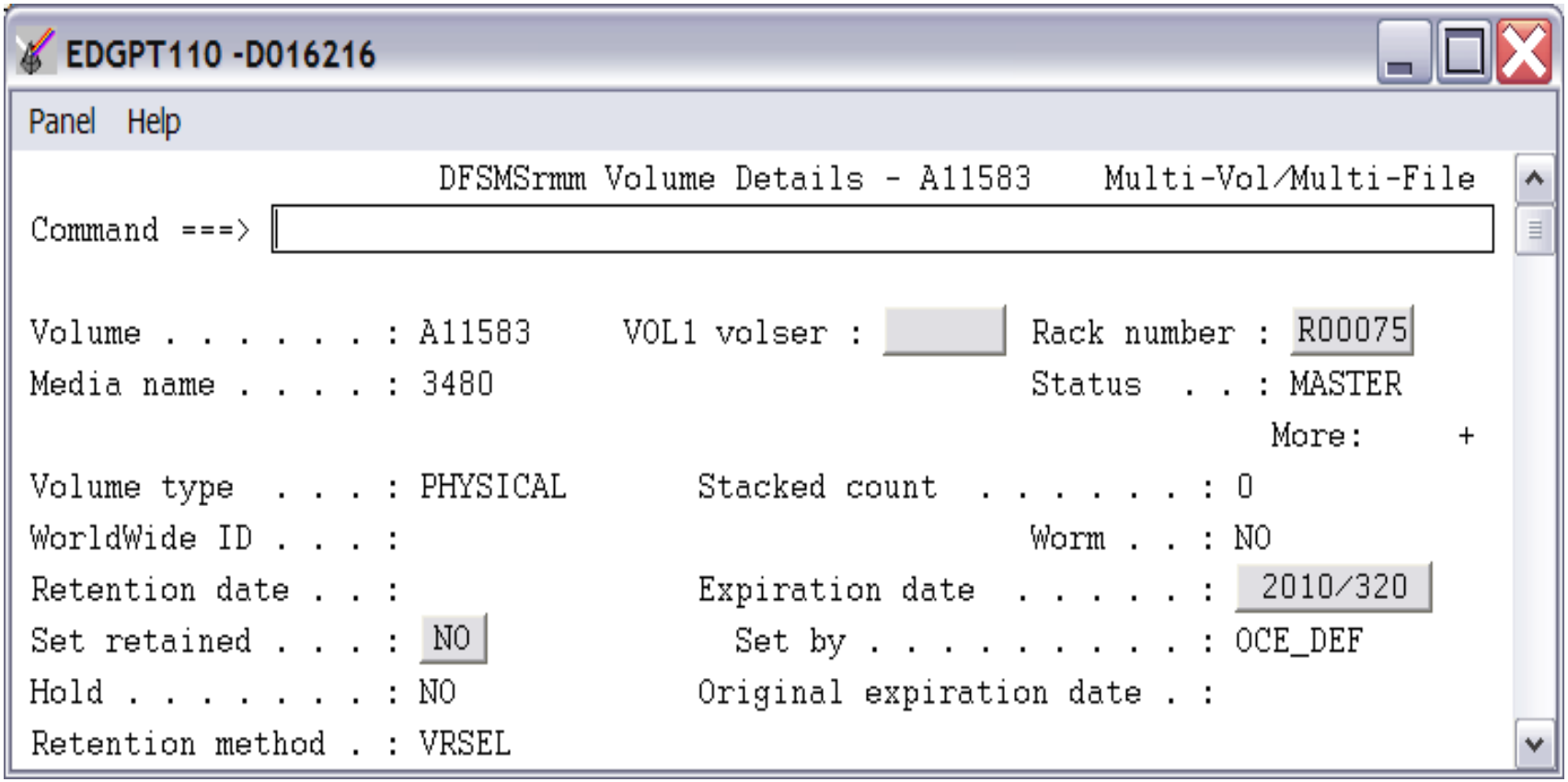
ISPF Navigation Point-and-Shoot Fields

- New point-and-shoot fields are available on the
  - volume and
  - data set display panels

```
                        DFSMSrmm Data Set Details                  Multi-Fi
Command ===>

Data set name . . : 'SAMPLE3.B10001.SEQ002'
Volume serial . . : B10001      Physical file sequence number . . : 2
Owner . . . . . . : BSIN        Data set sequence number  . . . . : 0
                                                                  More:
Job name  . . . . :
Step name . . . . :                          Record format . . . . :
Program name  . . :                          Block size  . . . . . : 0
DD name . . . . . :                          Logical record length : 0
Create date . . . : 2011/07/05  YYYY/MM/DD   Block count . . . . . : 0
Create time . . . : 16:39:56                 Total block count . . : 0
System id . . . . : IRD6                     Data set size (KB)  . : 0
                                             Percent of volume . . : 0
Expiration date . : 2011/07/15  YYYY/MM/DD   Device number . . . . :
 Set by . . . . . : CMD_DEF
Original          :             YYYY/MM/DD
```

Point-and-Shoot in ISPF GUI Client mode



Example of Point-and-Shoot fields on the Display Volume Details panel (GUI mode)

List of Point-and-Shoot Volume Fields

Field	RMM Dialog displays
VOL1 volser	Volume Details for VOL1 volser
Rack number	Rack Details
Set retained	Volume search result list for the volume set
Expiration date	Dialog User Options (date options)
Availability	Volume search result list for the volume set
Owner	Owner Details
Security	Security Classification Rules for the security level
Last changed by	Owner Details
Previous volume	Volume Details for previous volser
Next volume	Volume Details for next volser
Volume sequence	Volume search result list for the volume set
Number of data sets	Data set search result list for all data sets on this volume
Actions pending	Volume Action Status list
Location	Location Definitions list
Bin number	Bin Details
Product info	Product Details

Usage & Invocation – List of Point-and-Shoot Data Set Fields

Field	RMM Dialog displays
Volume serial	Volume Details for volser
Owner	Owner Details
Physical file sequence nbr	Data set search result list for all data sets on this volume
Data set sequence number	Data set search result list for all data sets in the volume set
Create date	Dialog User Options (Date options)

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Show Effective Retention/Expiration Date

- If a resource is retained by VRS, the results list for volumes or data sets might show retained resources with an expiration date that is already passed.

- RMM will now display the retention date instead of the expiration date in the
  - volume search results list
  - data set result list

  if the volume or data set is VRS retained.

- You can now more easily determine from the search results list why a volume is retained, without viewing the volume and data set details.

Show Effective Retention/Expiration Date

- The Search Volume and Search Dataset dialog results list will show the retention date, when a resource is VRS retained.

- The Search Dataset TSO subcommand will return the REXX variables EDG@RTDT and EDG@RTDJ in any case

- The 'Search Dataset' command issued via API will return the RTDJ SFI (X'88C000'), like it was returned by the 'Search Dataset Extended' command before already

Show Effective Retention/Expiration Date Data Set Search Results Panel

```
 Panel  Help  Scroll
EDGPD030        DFSMSrmm Data Sets (Page 2 of 2)                Row 1 to 4 of 4
Command ===> _                                                  Scroll ===> PAGE

Enter HELP or PF1 for the list of available line commands
Use the LEFT command to view other data columns
                                          Create     Expiration V
S  Data set name                          date       date       R
-- ---------------------------------------- ---------- ---------- -
__ RMMUSER.D10000                         10/04/2010 15/04/2010 Y
__ RMMUSER.D20000                         10/04/2010 15/04/2010
__ RMMUSER.D30000                         10/04/2010 15/04/2010 Y
__ RMMUSER.D40000                         10/04/2010 15/04/2010
****************************** Bottom of data ******************************
```

V1 R12

```
 Panel  Help  Scroll
                DFSMSrmm Data Sets (Page 2 of 2)                Row 1 to 4 of 4
Command ===> _                                                  Scroll ===> PAGE

Enter HELP or PF1 for the list of available line commands
Use the LEFT command to view other data columns
                                          Create     Expir./    V
S  Data set name                          date       Retn. date R
-- ---------------------------------------- ---------- ---------- -
__ RMMUSER.D10000                         10/04/2010 11/04/2010 Y
__ RMMUSER.D20000                         10/04/2010 15/04/2010
__ RMMUSER.D30000                         10/04/2010 PERMANENT  Y
__ RMMUSER.D40000                         10/04/2010 15/04/2010
****************************** Bottom of data ******************************
```

V1 R13

Show Effective Retention/Expiration Date
Volume Search Results Panel

```
 Panel  Help  Scroll
                    DFSMSrmm Volumes (Page 1 of 2)              Row 1 to 2 of 2
Command ===> _                                                  Scroll ===> PAGE

Enter HELP or PF1 for the list of available line commands
Use the RIGHT command to view other data columns
   Volume          Assigned   Expiration S                    Dest-    Tr- Data
S  serial Owner    date       date       R Status  Location  ination  ans sets
-- ------ -------- ---------- ---------- - ------- --------  -------- --- -----
__ V10000 RMMUSER  2010/100   2010/105     MASTER  SHELF               N   0
__ V10001 RMMUSER  2010/100   2010/105     VRS     SHELF               N   4
******************************* Bottom of data ********************************
```

V1 R12

```
 Panel  Help  Scroll
                    DFSMSrmm Volumes (Page 1 of 2)              Row 1 to 2 of 2
Command ===> _                                                  Scroll ===> PAGE

Enter HELP or PF1 for the list of available line commands
Use the RIGHT command to view other data columns
   Volume          Assigned   Expir./    S                   Dest-    Tr- Data
S  serial Owner    date       Retn. date R Status  Location  ination  ans sets
-- ------ -------- ---------- ---------- - ------- --------  -------- --- -----
__ V10000 RMMUSER  2010/100   2010/105     MASTER  SHELF               N   0
__ V10001 RMMUSER  2010/100   PERMANENT    VRS     SHELF               N   4
******************************* Bottom of data ********************************
```

V1 R13

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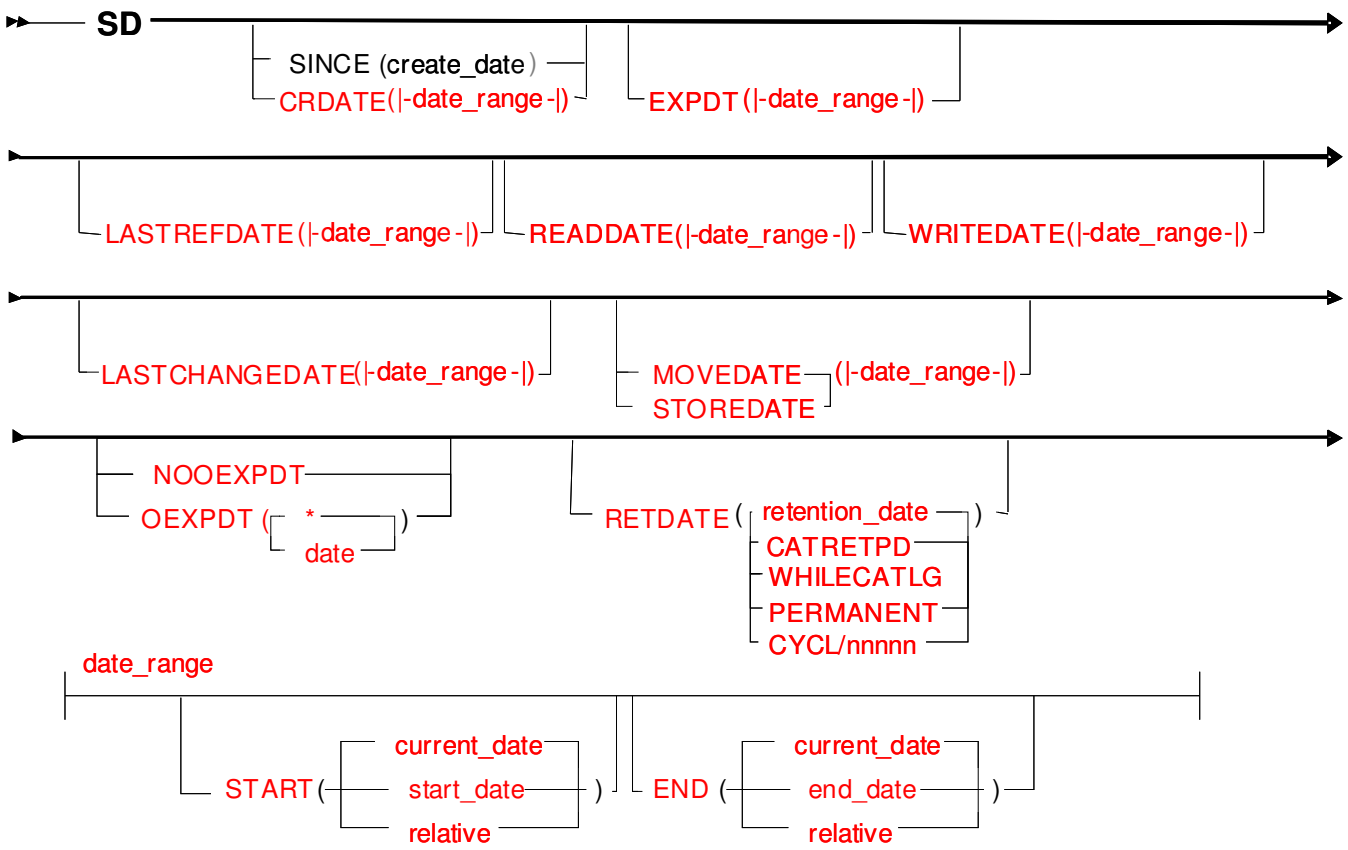
Search Dataset Extensions

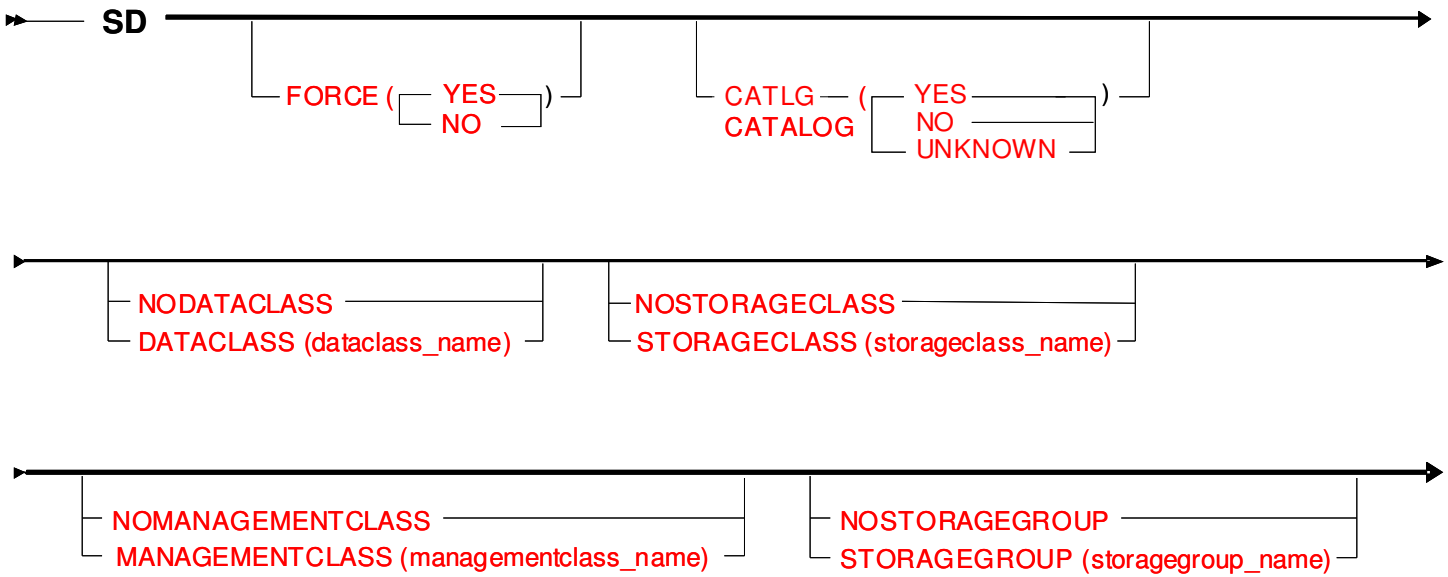
- Previously, the SEARCHDATASET subcommand had limited ability for searching on attributes of data sets.
- RMM does now allow to search on more search criteria
  - including many on specific date ranges.
- You can now search more efficiently in a large number of data sets.

Search Dataset Extensions
SEARCHDATASET Syntax (1/2)

- Options listed in red were added:



SEARCHDATASET Syntax (2/2)



Search Dataset Extensions Examples

- List all data sets that were last read or written a month ago or newer:
  - `SD LASTREFDATE(START(-1M)) OWNER(*) LIMIT(*)`
- List all data sets, of which the last CDS change is 1 year ago or longer and that have no original expiration date set:
  - `SD LASTCHANGEDATE(START(1900/001) END(-1Y)) +`
    `NOOEXPDT OWNER(*) LIMIT(*)`
- List all data sets that are retained forever and cataloged:
  - `SD RETDATE(PERMANENT) CATLG(YES) OWNER(*) LIMIT(*)`
- List all data sets, defined with data class "DC000001", but no storage class:
  - `SD DATACLASS(DC000001) NOSTORAGECLASS OWNER(*) LIMIT(*)`

Usage & Invocation – Dialog

```
                        DFSMSrmm Data Set Search
Command ===> ____________________________________________________________

Enter fully qualified or partial data set name and job name:

Data set name  . . . . ____________________________________________
Job name . . . . . . . ________    Specific or generic name

Enter optional parameters to qualify search
                                                                More:     +
Owner  . . . . . . . . ________    Owner of volumes (Default is your userid)
Volume serial  . . . . ______    OR Volume serial
List entire set  . . . ___         YES, For all data sets in the
                                   multi-volume set, otherwise NO
Status . . . . . . . . _______     PRIVATE, SCRATCH, or blank for all
Retained by VRS  . . . ___         YES, NO, or blank for all
Excluded from VRSEL    ___         YES, NO, or blank for all
Dates           Start          End       Date, date range or relative value
  Create  . . . __________  . . __________
  Expiration    __________  . . __________
  Reference . . __________  . . __________
  Read  . . . . __________  . . __________
  Write . . . . __________  . . __________
  Changed . . . __________  . . __________

Physical file seq  . . _____       Relative position on the volume
Limit  . . . . . . . . 10__        Limit search to first nnnn data sets
Clist  . . . . . . . . ___         YES to create a data set, or NO, or blank
Program name . . . . . ________    Specific or generic name
Closed by Abend  . . . ___         YES, NO, or blank for all
Deleted  . . . . . . . ___         YES, NO, or blank for all
BES key index  . . . . __________   CA BTE tape encryption key index
Original EXPDT . . . . __________  YES, NO, or a specific date YYYY/MM/DD
Retention  . . . . . . __________  Data set retained up to YYYY/MM/DD
Cataloged  . . . . . . _______     YES, NO or UNKNOWN
Force  . . . . . . . . ___         Data sets used with FORCE ( YES or NO )
Data class . . . . . . ________    Data class name or NO
Storage class  . . . . ________    Storage class name or NO
Management class . . . ________    Management class name or NO
Storage group  . . . . ________    Storage group name or NO
```

- Also the ISPF panel for SEARCHDATA SET has been enhanced for the new search criteria

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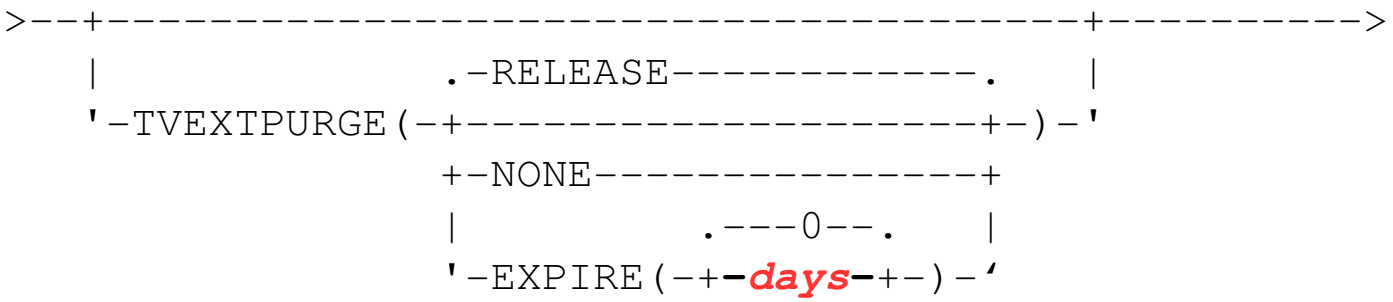
TVEXTPURGE Extra Days

- If DFSMShsm tapes are expired by the EDGTVEXT HSM exit, extra days for retention can only be defined with an EXTRADAYS VRS.

- With the new parmlib option
  TVEXTPURGE(EXPIRE(days))
  a number of extra days can be defined globally with no additional VRS definition.



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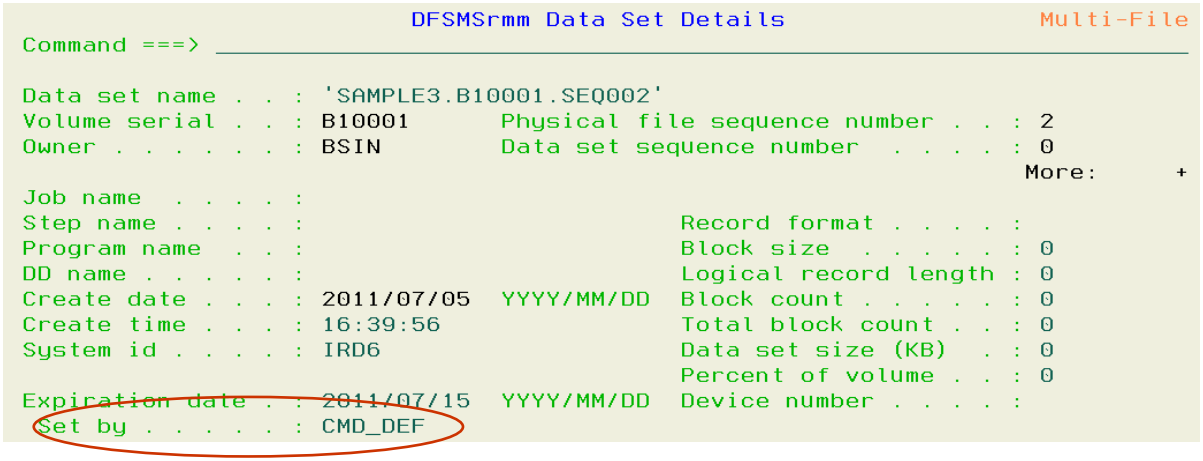
More information on Expiry Date source

- Just by looking at the expiration date of the volume or data set it may be hard to understand how it was set:
  - Does it stem from OCE or from VOLCAT, during conversion or export, or did RMM set or change it due to parmlib OPTIONS?
- DFSMSrmm now records details of what event caused the EXPDT to be set or changed.
- You can now easily determine what caused the expiration date to be set or changed.



More information on Expiry Date source

The Set by field displays the event that caused the expiration date to be set or changed:

blank	Not set
CMD	Set by TSO subcommand
CMD_DEF	Default RETPD applied during subcommand processing
CMD_VOLCAT	EXPDT obtained from VOLCAT during subcommand processing
OCE_JFCB	EXPDT obtained from EXPDT/RETPD keywords or from dataclass applied during tape recording
OCE_EXIT	EDG_EXIT100 updated the JFCB EXPDT during tape recording
OCE_DEF	Default RETPD applied during tape recording
OCE_MAX	MAXRETPD was used to reduce the requested EXPDT during tape recording
OCE_VOLCAT	EXPDT obtained from VOLCAT during tape recording
LCS	EXPDT obtained from VOLCAT for system managed tapes when called from OAM installation exits
LCS_DEF	Default RETPD applied for system managed tapes when called from OAM installation exits
TVEXTPURGE	Set as a result of TVEXTPURGE parmlib option
CNVT	Set during conversion by EDGCNVT
EXPORT	Set during export processing

Reporting on Expiry Date source

EDGRDEXT – Data set name record

```
...
RDTOTAL_BLKCNT   DS    0CL20       Total block count across all vol
...
RDESB    DS    CL10                Expdt set by
RDUCDATE DS    CL10                Last "user" change date of
*                                  data set record
```

EDGRVEXT – Volume record

```
...
RVHOLD          DS  C               VOLUME HOLD - Y/N
RVESB           DS  CL10            Expdt set by
RVUCDATE        DS  CL10            LAST "USER" CHANGE DATE
RVUCTIME        DS  CL6             LAST "USER" CHANGE TIME (HHMMSS)
```

EDGRXEXT – Extended extract record

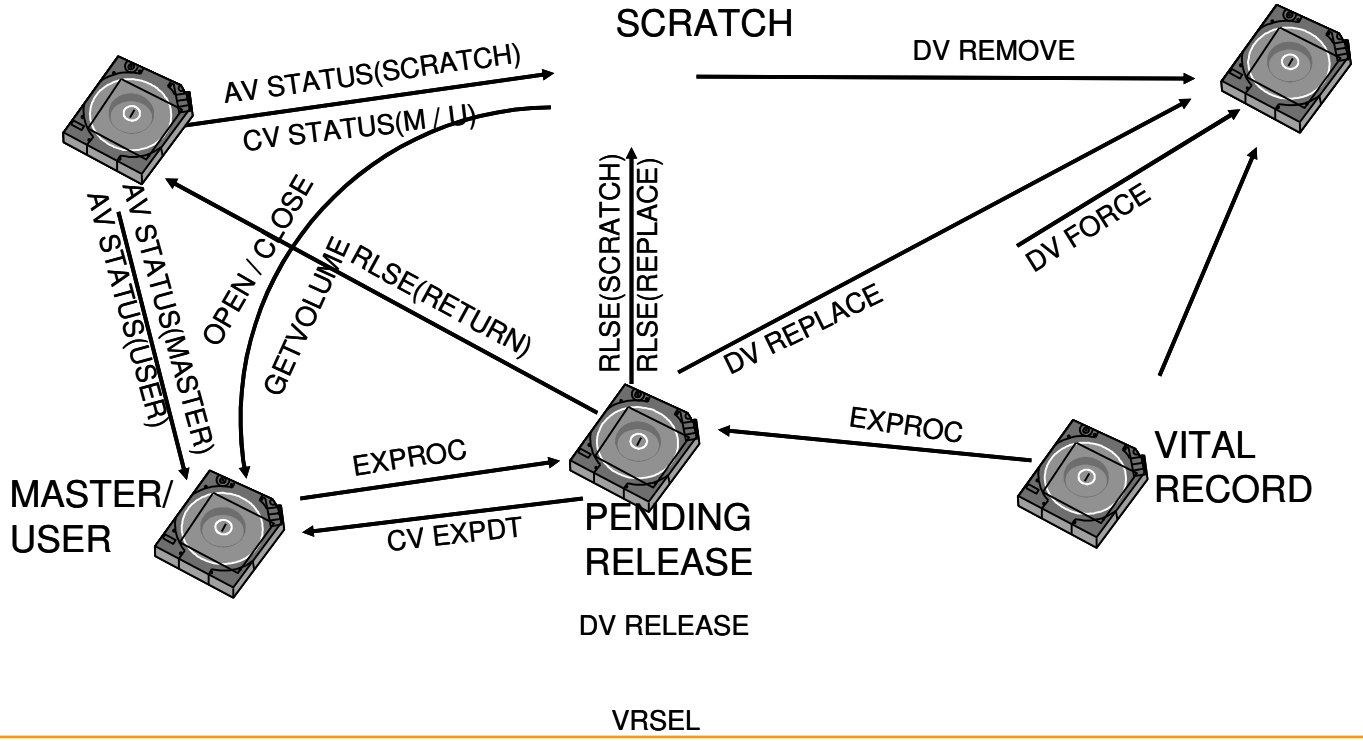
```
...
XVHOLD           DS  C              VOLUME HOLD - Y/N
XVESB            DS  CL10           Expdt set by - of the volume
XDESB            DS  CL10           Expdt set by - of the data set
XVUCDATE         DS  CL10           VOLUME LAST "USER" CHANGE DATE
XVUCTIME         DS  CL6            VOLUME LAST "USER" CHANGE TIME
```

Agenda

- z/OS Release 13 Enhancements
  - Selective volume movement
  - More „Last change“ details
  - Last Reference Date for VRS
  - ISPF Navigation Enhancements
  - Show Effective Retention/Expiration Date
  - Search Dataset Extensions
  - TVEXTPURGE Extra Days
  - More information on Expiry Date source
  - **Exclude data sets from VRSEL**
  - **New RETENTIONMETHOD(EXPDT)**
  - Enhanced Tape Copy Support

Exclude data sets from VRSEL and RETENTIONMETHOD(EXPDT)

- Previously data in the RMM inventory were managed by dynamic VRS policies. With every housekeeping run the retention for a volume or a data set can change.



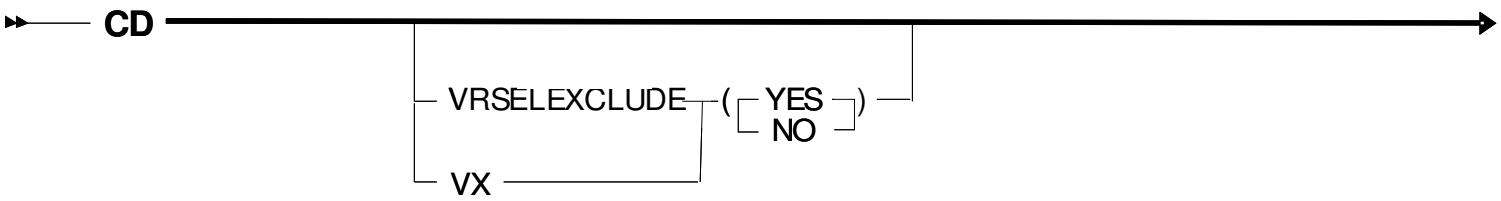
- **While VRS' are extremely powerful constructs not all data may require that dynamic management**

Exclude data sets from VRSEL and RETENTIONMETHOD(EXPDT)

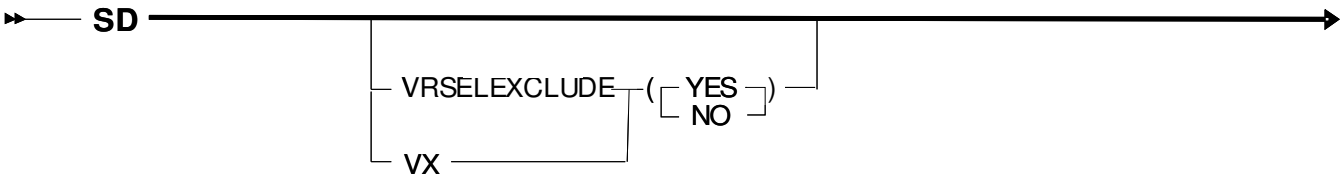
- **It is now possible to**
  - exclude certain data from VRSEL, or to
  - assign a retention method at the time a tape data set is created .
    - This provides you with a choice of whether data is managed by expiration date or by VRS policies.
- With these capabilities you can
  - reduce VRSEL runtime by eliminating certain types of data from VRSEL processing
  - Effectively achieve Controlling Data set Support When a volume or volume set is VRS retained, and you exclude one or more of the data sets from VRSEL, you can have the volume managed just by those data sets not excluded from VRSEL.
  - **Work with simpler retention policies and avoid or reduce batch VRS policy management.**
  - **The retention information for expiration date retained data can be known when a tape data set is created.**

- Note: z/OS releases lower than V1R13 require the PTF for coexistence APAR **OA32984** to be installed before exploiting these new functions on V1R13.

Exclude data sets from VRSEL: RMM CHANGEDATASET and SEARCHDATASET Commands



- If VRSELEXCLUDE is changed from NO to YES then:
  - the "VRS retained" flag is reset and
  - the retention date is set to the **current** date
- For multivolume data sets set VX or evry data set record



Exclude data sets from VRSEL: ISPF Panel Updates

```
                        DFSMSrmm Data Set Details                Multi-File
Command ===> ____________________________________________________________

Data set name . . : 'SAMPLE3.B10001.SEQ002'
Volume serial . . : B10001      Physical file sequence number . . : 2
Owner . . . . . . : BSIN        Data set sequence number  . . . . : 0
                                                             More:     +
Job name  . . . . :
Step name . . . . :                          Record format . . . . :
Program name  . . :                          Block size  . . . . . : 0
DD name . . . . . :                          Logical record length : 0
Create date . . . : 2011/07/05  YYYY/MM/DD   Block count . . . . . : 0
Create time . . . : 16:39:56                 Total block count . . : 0
System id . . . . : IRD6                     Data set size (KB)  . : 0
                                             Percent of volume . . : 0
Expiration date . : 2011/07/15  YYYY/MM/DD   Device number . . . . :
 Set by . . . . . : CMD_DEF
Original  . . . . :             YY'

Last job name . . :
Last step name  . :
Last program name :
Date last read  . :
Date last written :

VRSEL exclude . . : YES
Retention date  . :
VRS retained  . . : NO
```

```
EDGPD010                  DFSMSrmm Data Set Search
Command ===> ____________________________________________________________

Enter fully qualified or partial data set name and job name:

Data set name  . . . . **_____________________________________________________
Job name . . . . . . . _________    Specific or generic name

Enter optional parameters to qualify search
                                                                More:     +
Owner  . . . . . . . . BSIN____    Owner of volumes (Default is your userid)
Volume serial  . . . . ______    OR Volume serial
List entire set  . . . ___         YES, For all data sets in the
                                   multi-volume set, otherwise NO
Status . . . . . . . . _______     PRIVATE, SCRATCH, or blank for all
Retained by VRS  . . . ___         YES, NO, or blank for all
Excluded from VRSEL    yes         YES, NO, or blank for all
Dates            Start          End       Date, date range or relative value
  Create  . . . __________  . . __________
  Expiration    __________  . . __________
  Reference . . __________  . . __________
  Read  . . . . __________  . . __________
  Write . . . . __________  . . __________
  Changed . . . __________  . . __________
```

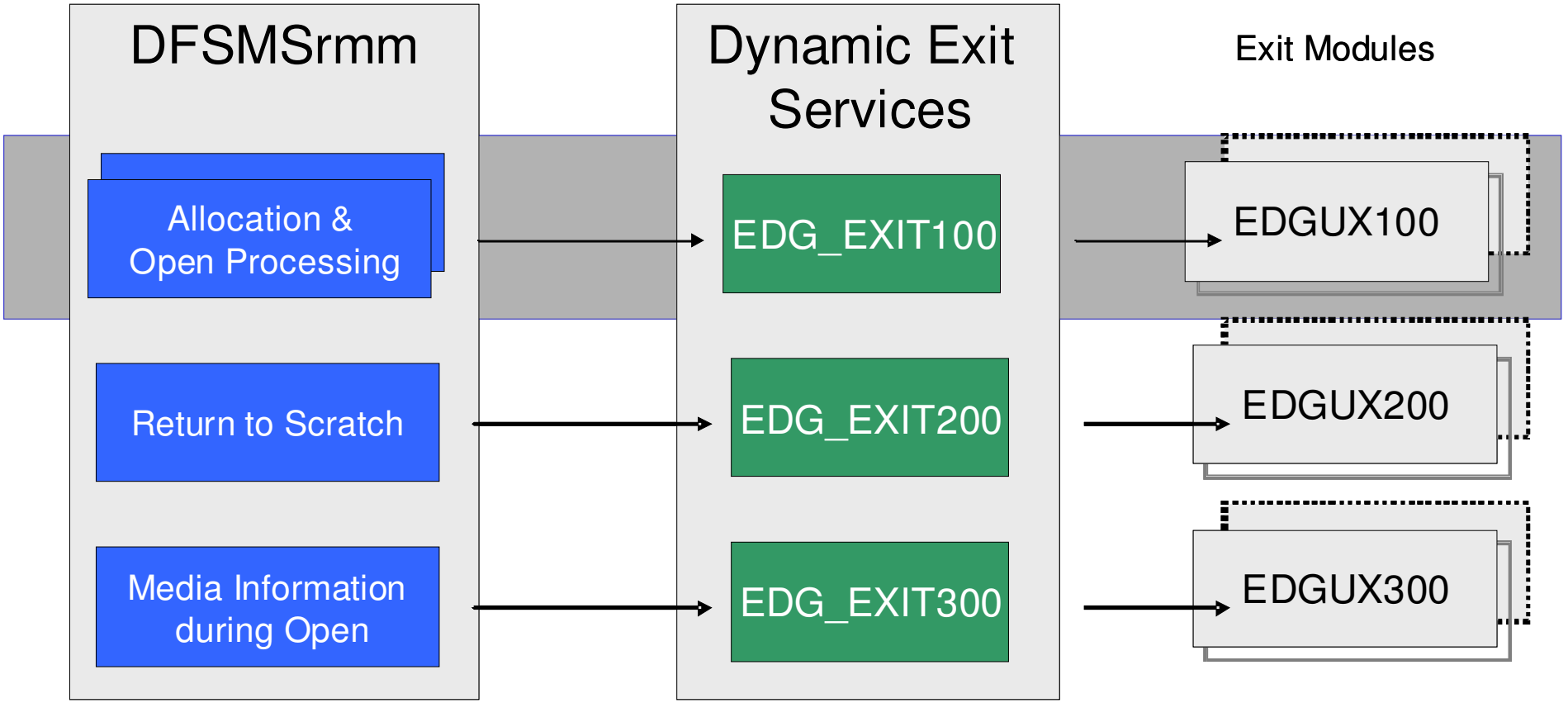
Exclude data sets from VRSEL: ISPF Panel Updates Change Data Set

```
EDGPD310                DFSMSrmm Change Data Set Details
Command ===>

Data set name . . : 'SAMPLE3.B10001.SEQ001'
Volume serial . . : B10001      Physical file sequence number . . : 1
Owner . . . . . . : BSIN        Data set sequence number  . . . . . 0
                                                            More:     +
Job name  . . . . . _________
Step name . . . . :                          Record format . . . . . ____
Program name  . . . _________                Block size  . . . . . . 0
DD name . . . . . :                          Logical record length   0
Create date . . . . 2011/07/05  YYYY/MM/DD   Block count . . . . . . 0
Create time . . . . 16:39:56                 Total block count . . : 0
System id . . . . . IRD6                     Percent of volume . . : 0
                                             Device number . . . . . ____

Last job name . . :                          Last DD name  . . . . :
Last step name  . :                          Last device number  . :
Last program name :
Date last read  . . ___________              VRS management value    _________
Date last written   ___________              Management class  . . . _________
                                             Data class  . . . . . . _________
VRSEL exclude . . . YES                      Storage class . . . . . _________
Retention date  . :                          Storage group . . . . . :
VRS retained  . . : NO
```

Exclude data sets from VRSEL: Installation Exits Overview



Exclude data sets from VRSEL: Exit Support VRSELEXCLUDE

- A new EDG_EXIT100 option is provided to request overriding DFSMSrmm VRSEL processing for specific data sets as they are created or re-written.
- The data set VRSELEXCLUDE attribute is set for all data sets on volumes managed by the EXPDT retention method, and is not affected by this support. If a data set is already retained as a vital record, the vital record attribute is reset and the retention date set to the current date.

- Copy the sample EDGUX100 exit module and use the copy as a base for your exit module.
  - Only perform your processing if the PL100_CAN_VRSELEXCLUDE bit is on.
  - Set PL100_SET_VRSELEXCLUDE bit to B'1' for data sets. If you do **not** request VRSELEXCLUDE the default for the retention method will be used.
    If the installation exit sets PL100_SET_VRSELEXCLUDE then any VRS management value set in PL100_VRS is ignored.
  - You do not need to set the PL100_SET_VRSELEXCLUDE bit when you also request to set the retention method to EXPDT: DFSMSrmm always sets the VRSELEXCLUDE attribute for data sets managed by the EXPDT retention method.
- Make any other changes required such as setting the retention method when creating the first file on the tape, or clearing the EXPDT.

Exclude data sets from VRSEL: EDG_EXIT100 Sample VX Table

- The sample EDGUX100 exit module includes an example of setting the VRSELEXCLUDE attribute.
  - The order in which the table entries are listed is important because the exit scans the table until it finds the first entry where the job name, data set name and program name masks match the current request. You can change the priority of matching by changing the order of the table entries.

```
VXTAB    DS    0F                    START OF VRSELEXCLUDE TABLE
         SPACE 1
         DC    CL8'*'                JOBNAME
         DC    CL44'RMMUSER.VX.*'    DATA SET NAME
         DC    CL8'*'                PROGRAM NAME
         SPACE 1
         DC    CL8'VX END'           END OF VX TABLE MARKER
```

Migration & Coexistance

- There are no migration concerns introduced by this support.
- Standard coexistence recognizes and supports:
  - Data set level VRSELEXCLUDEVRSEL processing on releases below z/OS V1.13 skips these data sets

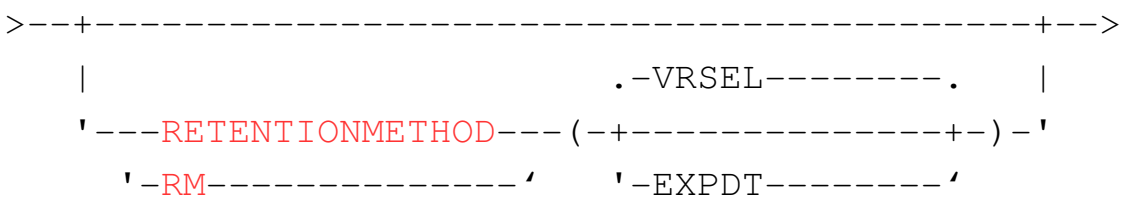
Agenda

- z/OS Release 13 Enhancements
  - Selective volume movement
  - More „Last change“ details
  - Last Reference Date for VRS
  - ISPF Navigation Enhancements
  - Show Effective Retention/Expiration Date
  - Search Dataset Extensions
  - TVEXTPURGE Extra Days
  - More information on Expiry Date source
  - Exclude data sets from VRSEL
  - **New RETENTIONMETHOD(EXPDT)**
  - Enhanced Tape Copy Support

RETENTIONMETHOD(EXPDT): RMM Parmlib Option (1)

- A new parmlib options RETENTIONMETHOD(EXPDT) allows to set the system-wide default retention method for new tape volume sets created during OCE processing, and for tape volumes added to the DFSMSrmm CDS.

OPTION Command: RETENTIONMETHOD



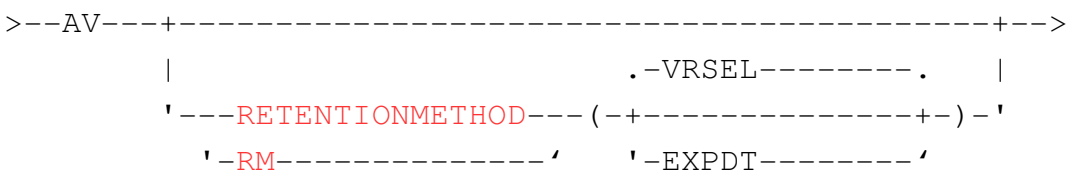
RETENTIONMETHOD(EXPDT): RMM Parmlib Option (2)

- **VRSEL**
  - Specify VRSEL to set the default retention method for new tape volume sets to be VRSEL. This option enables DFSMSrmm inventory management to attempt to match data sets and volumes to VRSes, and if a match is found, to determine if the data set or volumes is to be retained by VRS.
  - The VRSEL retention method is controlled by all the other VRS related options in parmlib including OPTION RETAINBY MOVEBY.

- **EXPDT**
  - Specify EXPDT to set the default retention method for new tape volume sets to be based on EXPDT. Data sets and volumes managed by this retention method are never processed by VRSEL inventory management.
  - The EXPDT retention method manages at the volume level: each volume is considered separately for expiration, and each file on a volume can increment the volume expiration date.
  - All files of a multi volume data set on a volume set managed by the EXPDT retention method have the same expiration date and time.
  - When you specify the EXPDT retention method the DFSMSrmm inventory management EXPROC processing always attempts to return volumes to scratch on the same run as the volume is released (Note: this is as if the SCRATCHIMMEDIATE attribute is set for the volume).

- Default: RETENTIONMETHOD(VRSEL)
- Use parmlib RETENTIONMETHOD(EXPDT) only once you want to switch the default retention method to EXPDT.

RM(EXPDT): ADDVOLUME subcommand

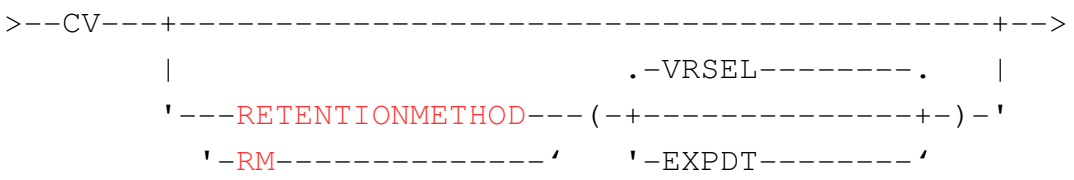


RETENTIONMETHOD|RM(VRSEL|EXPDT)

- Use this operand to set the retention method for a tape volume set. Specify this operand for the first volume in a multi-volume sequence. All other volumes added to the set assume the same retention method.
- Specify **VRSEL** to set the retention method for a tape volume set to be VRSEL. This option enables DFSMSrmm inventory management to attempt to match data sets and volumes to VRSes, and if a match is found, to determine if the data set or volumes are to retained by VRS.
- Specify **EXPDT** to set the retention method for a tape volume set to be based on EXPDT. Data sets and volumes managed by this retention method are never processed by VRSEL inventory management.

Default: RETENTIONMETHOD as specified or defaulted to in parmlib.

RM(EXPDT): CHANGEVOLUME subcommand



RETENTIONMETHOD|RM(VRSEL|EXPDT)

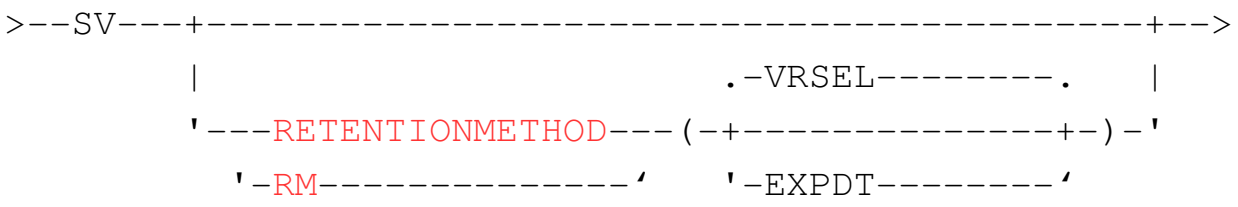
- Use this operand for any volume to set the retention method for a tape volume set. Specify this operand only for the first volume in a volume set. All other volumes in the set assume the same retention method.

- Specify **VRSEL** to set the retention method for a tape volume set to be VRSEL. This option enables DFSMSrmm inventory management to attempt to match data sets and volumes to VRSes, and if a match is found, to determine if the data set or volumes are to retained by VRS.

- Specify **EXPDT** to set the retention method for a tape volume set to be based on EXPDT. Data sets and volumes managed by this retention method are never processed by VRSEL inventory management.

- RETENTIONMETHOD is mutually exclusive with PREVVOL and NOPREVVOL operands.

RM(EXPDT): SEARCHVOLUME subcommand



RETENTIONMETHOD|RM (VRSEL|EXPDT)

Use this operand to restrict the returned volumes based on the retention method.

- Specify VRSEL to select volumes with the VRSEL retention method.
- Specify EXPDT to select volumes with the EXPDT retention method.

RM(EXPDT): LISTCONTROL OPTION Output

```
EDGPC200                DFSMSrmm System Options Display
Command ===>

                                                                More:      +

Parmlib suffix . : 02

Operating mode . : PROTECT

Data sets:
  Control  . . . : BRMM.MASTER.CDS
  Journal  . . . : BRMM.MASTER.JOURNAL
  CDS id . . . . : I                          Journal threshold . : 50 %
  Catalog SYSID  : N                          Journal transaction : NO

                                              SMF:
Retention method : VRSEL                        System id . . . . : IRD6
                                                Audit . . . . . . : 248
Retention period:                               Security  . . . . : 249
  Default  . . . : 10
  Maximum  . . . : NOLIMIT                    Report options:
  Catalog  . . . : 12     hours                 Lines per page  . : 54
                                                Date format . . . : JULIAN
```

RM(VRSEL) remains the default

RM(EXPDT): EDG_EXIT100 Retention Method Support

- You can use the EDG_EXIT100 installation exit to set the retention method to be used for new tape data. When you create a new tape volume set, or rewrite an existing set from the first file you can override the system default retention method.

```
ENT1ST   DS    0F
* start of RDS entries
         EDGCVRSG DSN=RMMUSER.RMEXPDT.*,                          X
               RM=EXPDT,                                          X
               RO=NO,                                             X
               RETPD=5
        EDGCVRSG DSN=*,                                           X
               RM=NONE,                                           X
               RO=NO,                                             X
               RETPD=5
* start of keyword dates from EDGC5LDR
         EDGCVRSG KEYDATE=98010,                                  X
               VRSVAL=D98010
         EDGCVRSG KEYDATE=99000,                                  X
               VRSVAL=D99000
         EDGCVRSG KEYDATE=99010,                                  X
               VRSVAL=D99010
         EDGCVRSG KEYDATE=99110,                                  X
               VRSVAL=D99110
         EDGCVRSG KEYDATE=99201,                                  X
               VRSVAL=D99201
ENTLAST  EDGCVRSG DSN='*',RO='NO'
```

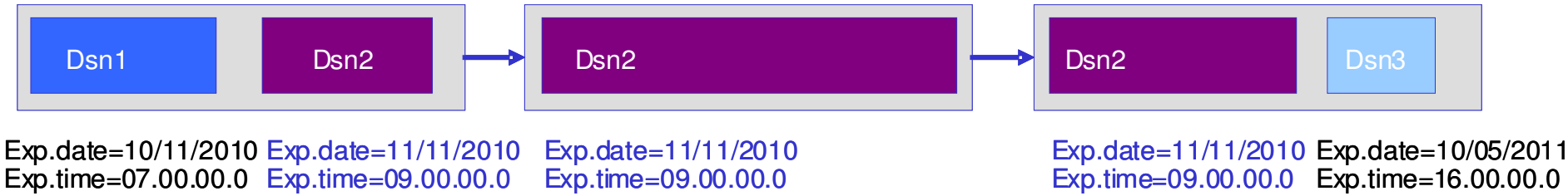
RM(EXPDT): Expiry Date Equalization

- RMM maintains a consistent data set expiration date and time for data sets on EXPDT-managed volumes at these times:
  - During O/C/EOV processing.
    The expiration time is rounded up to the next whole hour.
    - Minimize I/O to the RMM CDS.
    - This is done for the first data set record of a data set, and only incremented again when data set creation continues onto a new volume and current time exceeds the rounded value.
    - The ASSIGN time remains unchanged
  - When you specify EXPDT/RETPD on ADDDATASET or CHANGEDATASET subcommands.
  - During CHANGEVOLUME PREVVOL
  - When the retention method of the volume set is changed from VRSEL to EXPDT

RM(EXPDT): Expiry Date Equalization (cont.)

- **VRSEL retention method**
  - Data sets on volumes managed by the VRSEL retention method are unchanged.

- **EXPDT retention method**
  - All files of a multi volume data set on a volume set managed by RM(EXPDT) have the same expiration date and time.



RM(EXPDT): Retention Method Considerations

- You **do not need** to run VRSEL processing unless any volumes are defined with the VRSEL retention method.
  - Only **EXPROC processing is required** to handle expiration of all volumes managed by the EXPDT retention method.
- EXPROC processing provides a summary of volumes by retention method. See the MESSAGE file example below.
- The expiration date of volumes is set during OPEN processing, so for volumes managed by the EXPDT retention method no special considerations exist for open data sets – they are managed based on the volume EXPDT.
- EXPROC processing currently remains to be date-sensitive only (i.e., not time sensitive)
- Volumes containing data sets closed by ABEND processing or which are DELETEd are handled as if no special ABEND/DELETED VRS had been defined. i.e. All retention is based only on the volume EXPDT.
- Volumes managed by the EXPDT retention method are included only in the EXPDTDROP limit. VRSRETAIN and VRSDROP limits apply only to volumes managed by VRSEL retention method.

RM(EXPDT): New TSO Subcommand Return/Reason Code

Return Code	Reason Code	Message Number	Issuing Command	Description
12	266	3363	CV, AV	Retention method can only be specified for the first volume in a set

RM(EXPDT): Authorization

Define the resource	To Control the
STGADMIN.EDG.CV.RM[minlength]	Updating of retention method. Supporting CV RETENTIONMETHOD|RM

When you Define	With Access	Then
STGADMIN.EDG.CV.RM minlength	Entity not defined	Based on STGADMIN.EDG.MASTER access.
	UPDATE	Allows any volume to be updated

RM(EXPDT): New EDGJRPT/EDGRRPTE Report 18

```
DFSMSrmm                    Inventory of Data Set Names by Volume Retention Method EXPDT     PAGE -          1  EDGRPT18
 DATE -    2010/129
                                                                                                            TIME -    08:11:53

                                          Volume Vol- DSN-  Creating Create     Create Volume     DSN        V EXPDT
 Data Set Name                             Serial Seq. Seq.  Jobname  Date       Time   Exp. Date  Exp. Date  X Set by
 ----------------------------------------- ------ ---- ----- -------- ---------- ------ ---------- ---------- - ----------
 RMMUSER.D16002                            A16002    1     1          2010/123   081146 2010/133   2010/128   Y CMD_DEF
 RMMUSER.D16003                            A16003    2     1          2010/129   081147 2010/135   2010/135   Y CMD
 RMMUSER.D16004.DS1                        A16004    3     1 BERNDS   2010/129   081147 2010/134   2010/099   Y CMD
 RMMUSER.D16004.DS2                        A16004    3     2 BERNDS   2010/129   081147 2010/134   2010/111   Y CMD
                                             End of Report.   4 Entries listed


DFSMSrmm INTERNAL USE ONLY          Inventory of Data Set Names by Volume Retention Method VRSEL      PAGE -          2
 EDGRPT18                                                                                             DATE -
 2010/129
                                                                                                            TIME -    08:11:53
-                                         Volume Vol- DSN-  Creating Create     Create Volume     DSN        V V
 Data Set Name                             Serial Seq. Seq.  Jobname  Date       Time   Ret. Date  Ret. Date  X R
 ----------------------------------------- ------ ---- ----- -------- ---------- ------ ---------- ---------- - -
 BERNDS.DATASET                            A16007    1     1          2010/123   081146 2010/240   2010/240   N Y
 BERNDS.DATASET                            A16006    1     1          2010/129   081147 2010/250              Y Y
 BERNDS.DATASET                            A16006    1     2          2010/129   081150 2010/250   2010/240   N Y
 RMMUSER.D16001.A                          A16001    1     1 TEST     2010/123   081146 PERMANENT  PERMANENT  N Y
 RMMUSER.D16001.B                          A16001    1     2 TEST     2010/123   081146 PERMANENT             Y Y
 RMMUSER.D16001.C                          A16001    1     3 TEST     2010/123   081146 PERMANENT  PERMANENT  N Y
 RMMUSER.D16005                            A16005    1     1          2010/129   081147                       N N

                                             End of Report.   7 Entries listed
```

RM(EXPDT): New EDGJRPT/EDGRRPTE Report 18

```
DFSMSrmm                    Inventory of Data Set Names by Volume Retention Method EXPDT     PAGE -          1  EDGRPT18
 DATE -    2010/129
                                                                                                            TIME -    08:11:53

                                          Volume Vol- DSN-  Creating Create     Create Volume     DSN        V EXPDT
 Data Set Name                             Serial Seq. Seq.  Jobname  Date       Time   Exp. Date  Exp. Date  X Set by
 ----------------------------------------- ------ ---- ----- -------- ---------- ------ ---------- ---------- - ----------
 RMMUSER.D16002                            A16002    1     1          2010/123   081146 2010/133   2010/128   Y CMD_DEF
 RMMUSER.D16003                            A16003    2     1          2010/129   081147 2010/135   2010/135   Y CMD
 RMMUSER.D16004.DS1                        A16004    3     1 BERNDS   2010/129   081147 2010/134   2010/099   Y CMD
 RMMUSER.D16004.DS2                        A16004    3     2 BERNDS   2010/129   081147 2010/134   2010/111   Y CMD
                                             End of Report.   4 Entries listed


DFSMSrmm INTERNAL USE ONLY          Inventory of Data Set Names by Volume Retention Method VRSEL      PAGE -          2
 EDGRPT18                                                                                             DATE -
 2010/129
                                                                                                            TIME -    08:11:53
-                                         Volume Vol- DSN-  Creating Create     Create Volume     DSN        V V
 Data Set Name                             Serial Seq. Seq.  Jobname  Date       Time   Ret. Date  Ret. Date  X R
 ----------------------------------------- ------ ---- ----- -------- ---------- ------ ---------- ---------- - -
 BERNDS.DATASET                            A16007    1     1          2010/123   081146 2010/240   2010/240   N Y
 BERNDS.DATASET                            A16006    1     1          2010/129   081147 2010/250              Y Y
 BERNDS.DATASET                            A16006    1     2          2010/129   081150 2010/250   2010/240   N Y
 RMMUSER.D16001.A                          A16001    1     1 TEST     2010/123   081146 PERMANENT  PERMANENT  N Y
 RMMUSER.D16001.B                          A16001    1     2 TEST     2010/123   081146 PERMANENT             Y Y
 RMMUSER.D16001.C                          A16001    1     3 TEST     2010/123   081146 PERMANENT  PERMANENT  N Y
 RMMUSER.D16005                            A16005    1     1          2010/129   081147                       N N
                                             End of Report.   7 Entries listed
```

RM(EXPDT): EDGJACTP Report

- **VRSRETN Report**
  - A new data column is added to include the data set VRSEXCLUDE attribute.
  - Note that the VRSRETN and VRSRETNS reports are produced only for volumes that are managed by the VRSEL retention method.

- **EXPDROP Report**
  - A new data column is added to include the retention method

RM(EXPDT): EDGJACTP VRSRTN Report

Newly assigned volumes subject to VRSRETAIN 01/20/09 05:55:21 - 1 -

Status: RETAINED

DATA SET					DATA SET VRS						VOLUME		
VOLSER	FSEQ	DSNAME	JOBNAME	V X	RETAINED	DROP PRIM	REASON 2nd.	PRIMARY VRS	JOB MASK	VRS TYPE	VRS	RETAIN REASON	F C
A22251	1	RMMUSER.DSN1		N	Y			RMMUSER.*		D		DATASET	
A22252	1	RMMUSER.DSN20		N	Y			RMMUSER.*		D		DATASET	
A22252	2	RMMUSER.DSN21		N	Y			RMMUSER.*		D		DATASET	
A22253	1	D046059.DSN01		Y	N	W		D046059.*		D		IMPLICIT	
A22253	2	DSN02		Y								IMPLICIT	
A22253	3	D046059.DSN03		N	Y			D046059.*		D		DATASET	
VOL001	1	First.data.set	F1J	N	N	D		ABEND	*	D	VOL001	VOLUME	
VOL001	2	Second.data.set	F1J	Y							VOL001	VOLUME	
VOL002	1	Second.data.set	F1J	Y								SET	
VOL002	2	third.data.set	F1J	Y								SET	

data sets in this status: 10

Newly assigned volumes subject to VRSRETAIN 01/20/09 05:55:21 - 2 -

Status: NOTRETAINED

DATA SET					DATA SET VRS						VOLUME		
VOLSER	FSEQ	DSNAME	JOBNAME	V X	RETAINED	DROP PRIM	REASON 2nd.	PRIMARY VRS	JOB MASK	VRS TYPE	VRS	RETAIN REASON	F C
A22250	1	D046059.WCATALOG	SSTEINHA	N	N	W		D046059.*		D			
A22256	1	DSN6		N									
NO0001	1	ANOTHER.DSET	WOODY1	Y									
NO0001	2	YET.ANOTHER	WOODY2	Y									

data sets in this status: 4

RM(EXPDT): Conversion EDGCNVT SYSIN

- OPTION RM
  - Use the OPTION statement to specify the defaults for DFSMSrmm options which affect volume and data set attributes during conversion.
  - Supported options:
    - RM - Specify the **default** retention method. You can override the default retention method at the volume set level by setting the appropriate flags in the 'L record'. See the EDGCLREC mapping: LVRMVRS, LVRMEXP.
  - When you specify the RM option you must select one of the following retention_methods:
    - VRSEL: Specify VRSELas the default retention method for all volume sets.
    - EXPDT: Specify EXPDT to set the default retention method for volume sets to be based on EXPDT. Data sets and volumes managed by this retention method are never processed by VRSEL inventory management.
    - The EXPDT retention method manages at the volume level: each volume is considered separately for expiration, and each file on a volume can increment the volume expiration date.
  - Default: OPTION RM VRSEL

RM(EXPDT): Conversion EDGCNVT Sample JCL

```
//EDGCNVT  EXEC PGM=EDGCNVT
//SYSUDUMP DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
//SYSOUT   DD DISP=(,CATLG),LRECL=80,RECFM=FB,
//         SPACE=(80,(1,1),RLSE),UNIT=SYSDA,
//         DSN=D046059.RMM.EDGCNVT.SYSOUT.DATA
//VRSCMDS  DD DISP=(,CATLG),LRECL=80,RECFM=FB,
//         SPACE=(80,(10,5),RLSE),UNIT=SYSDA,
//         DSN=D046059.RMM.EDGCNVT.VRSCMDS.DATA
//DEXTRCT  DD DISP=SHR,DSN=D046059.RMM.EDGC5LDR.DEXTOUT.DATA
//         DD DISP=SHR,DSN=D046059.RMM.EDGC5LDR.DEXTOUTK.DATA
//LIBLIST  DD DISP=(,CATLG),LRECL=1000,RECFM=VB,
//         SPACE=(TRK,(1,1),RLSE),UNIT=SYSDA,
//         DSN=D046059.RMM.EDGCNVT.LIBLIST.DATA
//OWNLIST  DD DISP=(,CATLG),LRECL=400,RECFM=VB,
//         SPACE=(TRK,(1,1),RLSE),UNIT=SYSDA,
//         DSN=D046059.RMM.EDGCNVT.OWNLIST.DATA
//BINLIST  DD DISP=(,CATLG),LRECL=256,RECFM=VB,
//         SPACE=(TRK,(1,1),RLSE),UNIT=SYSDA,
//         DSN=D046059.RMM.EDGCNVT.BINLIST.DATA
//VRSLIST  DD DISP=(,CATLG),LRECL=256,RECFM=VB,
//         SPACE=(TRK,(1,1),RLSE),UNIT=SYSDA,
//         DSN=D046059.RMM.EDGCNVT.VRSLIST.DATA
//SYSIN DD *
OPTION RMEXPDT
LOCDEF VAULT1 BINS
LOCDEF VAULT2 BINS
IF VMEDIA EQUALS TAPE1600 THEN MEDIANAME EQUALS REELS
```

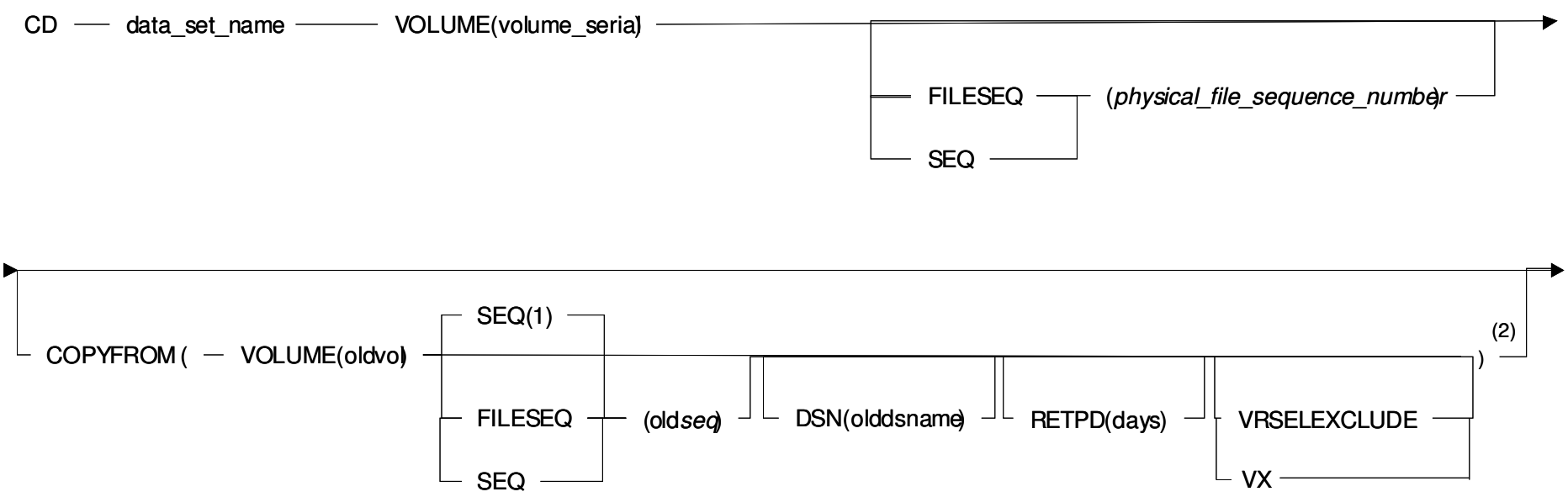
Agenda

- z/OS Release 13 Enhancements
  - Selective volume movement
  - More „Last change“ details
  - Last Reference Date for VRS
  - ISPF Navigation Enhancements
  - Show Effective Retention/Expiration Date
  - Search Dataset Extensions
  - TVEXTPURGE Extra Days
  - More information on Expiry Date source
  - Exclude data sets from VRSEL
  - **New RETENTIONMETHOD(EXPDT)**
  - Enhanced Tape Copy Support

Enhanced Tape Copy Support

- Tape copy applications could previously use RMM subcommands to update data set and volume meta data after a copy is completed.
  - BUT not all data set and volume attributes could be copied via RMM subcommands.
  - Retention of the source and target data sets is subject to VRS processing and results were not always predictable.
- A new data set subcommand option COPYFROM, does now support copying all applicable attributes and controlling the retention of the source data set.
  - Using installation exit EDG_EXIT100 option tape copy applications can avoid issuing the subcommands needed for copying data set attributes.
- Whether by using subcommands or the user exit copied data sets can now inherit all required attributes
  - Even without the copy application knowing what all the attributes are

Enhanced Tape Copy Support: RMM CHANGEDATASET



- If you specify any other CHANGEDATASET operands
  - the COPYFROM operand is processed first,
  - then the additional operands.

  Therefore additional operands can specify data that overrides the copied attributes.
- Example:
  COPYFROM(RETPD(0) VX)
  copies data set and sets the source data set to pending release

Enhanced Tape Copy Support: Authorization

Define the resource	To Control the
STGADMIN.EDG.CD.COPYFROM.*dsname* minlength	Copying of data set attributes from data set *dsname* to another data set, and to affect the retention of the source data set.

minlength

If you use a generic profile, the minimum non-generic profile name checked for by DFSMSrmm is 'STGADMIN.EDG.CD.'

When you Define	With Access	Then
STGADMIN.EDG.CD.COPYFROM.dsname	Entity not defined	Based on STGADMIN.EDG.MASTER access.
	READ	You are permitted to copy attributes and update retention for identically named data sets.
	UPDATE	You are permitted to copy attributes and update retention for any two data set records.

Enhanced Tape Copy Support: Copying Data Set Attributes

- After copying the data set attributes, all data set records of the target data set make the data set appear to be the original.
- DFSMSrmm copies **all** attributes that are not related to the physical aspects of the data set, volume and tape drive.
- Attributes related to retention are subject to update by the next run of inventory management. The intention is that the copied data set will be retained in the same way as the source data set.
- After the attributes are copied there will be no trace of the copy application or the batch job used to perform the copy because all target data set attributes reflect the creation and use of the source data set.
  - The "last change" information of the target data set is updated during command processing to reflect that the command was processed.

Enhanced Tape Copy Support: Data Set Attributes Not Copied

Command operand No cmd operand	Extract file field	REXX Variable/SFI
dsname	RDDSNAME	EDG@DSN
VOLUME	RDVOLSER	EDG@VOL
SEQ|FILESEQ	RDDSNSEQ	EDG@FILE
LABELNUMBER	RDLABNO	EDG@DSEQ
TOTALBLKCOUNT	RDTOTAL_BLKCNT	EDG@BLKT
PERCENT	RDPERCENT	EDG@DPCT
DEVNUM	RDUNITAD	EDG@DEV
LRECL	RDLRECL	EDG@LRCL
RECFM	RDRECFM	EDG@RCFM
BLKSIZE	RDBLKSZ	EDG@BLKS
BLKCOUNT	RDBLKCNT	EDG@BLKC
owner	RDOWNDSN	EDG@OWN
data set size	RDDSSIZE,RDSIZE	EDG@DSS6
catalog status	RDCAT	EDG@CTLG
STORAGECLASS	RDSCNAME	EDG@SC
storage group	RDSGNAME	EDG@SG
DATACLASS	RDDCNAME	EDG@DC
start block ID	n/a	n/a
end block ID	n/a	n/a
last device number	RDLDEVN	EDG@LDEV
BESKEY	RDBESKEY	EDG@BESK
VRSELEXCLUDE	RDVEX	EDG@VEX Note: This attribute is not copied unless both the source and target volumes are managed by RM(VRSEL)
ABEND	RDABEND	EDG@ABND Note: This attribute is not copied unless it is set. The source setting is merged with the target setting.

Enhanced Tape Copy Support: Installation Exit Support

- A new EDG_EXIT100 option is provided to notify RMM that the data set being created **is being copied from another**.

- During OPEN processing the exit can identify the source data set from which RMM will obtain all existing data set attributes which will be used for the new data set.
  - RMM EOV processing ensures that the attributes are copied to all new data set records when the output data set becomes a multi-volume data set.

```
PL100_CAN_COPYFROM     EQU X'08'
PL100_SET_COPYFROM     EQU X'04'
PL100_COPYFROM_DSN     DS CL44
PL100_COPYFROM_VOLSER  DS CL6
PL100_COPYFROM_DSEQ    XL4
PL100_COPYFROM_OWNER   DS CL8   …
```

Enhanced Tape Copy Support: Installation Exit Exploitation

- **Dynamic Exit Available since z/OS V1R11**
  - Add exit module dynamically prior to the first copy
    - Pass source data set key via exit - Dsname, file sequence, volser
    - Select required retention method and VRSELEXCLUDE for target via exit
    - During OPEN &CLOSE the attributes are copied from source to target Data Set record
    - Physical attributes are set based on volume and drive used
  - Delete exit module at end of processing / all copies completed
  - Your copy application must communicate with your exit module
  - When processing successful use the RMM API to:
    - Issue RMM commands for source data sets and volumes, for example:

      RMM DV volser RELEASE

      or

      RMM CV volser RETENTIONMETHOD(EXPDT) RETPD(4)

      or

      RMM CD sourcedsn VOLUME(sv) SEQ(ss) VRSELEXCLUDE(YES)

Agenda

- z/OS Release 13 Enhancements
- Selected z/OS Release 12 Enhancements
- Appendix

Support for TS1140

- DFSMSrmm Support provided via
  - APAR OA35804 (zOS V1.10)
  - APAR OA33958 (z/OS V1.11 – V1.12)
  - z/OS V1.13

- DFSMSrmm support in z/OS V1.10 and V1.11 is a subset of the SUPPORT available with V1.12 and above

z/OS V1.10 and above provides	In addition, z/OS V.12 and above provides
▪New Media Types ▪New Recording Formats ▪Changed RMM commands: –ADDVOLUME –CHANGEVOLUME –SEARCHVOLUME	▪New maximum values for –BLKCOUNT –TOTALBLKCOUNT ▪New volume and data set attributes ▪LISTVOLUME output; LISTDATASET output ▪RMM ISPF Dialog ▪REXX and API SFIs ▪Reporting

New Media Types and Recording Modes

Media Type	Alias	Full Media Name
MEDIA11	EATC	IBM Enterprise Advanced Tape Cartridge 3592.
MEDIA12	EAWTC	IBM Enterprise Advanced WORM Tape Cartridge 3592.
MEDIA13	EAETC	IBM Enterprise Advanced Economy Tape Cartridge 3592.

Recording Format	Description	Valid with media types
EFMT4	Data is written to the volume in EFMT4 format.	Existing: EXTC, EXWTC, New: EATC, EAWTC, EAETC
EEFMT4	Data is written to the volume in encrypted EFMT4 format.	Existing: EXTC, EXWTC, New: EATC, EAWTC, EAETC

- New types and recording formats can be used with ADDVOLUME, CHANGEVOLUME, SEARCHVOLUME commands.

Larger counts and new attributes

- Larger block counts
  - BLKCOUNT can be now up to 4294967295 (10 characters).
    - •ADDDATASET and CHANGEDATASET
  - TOTALBLKCOUNT can be now up to 18446744073709551615 (20 characters)
    - •CHANGEDATASET

- New attributes
  - VOLUME
    - •Physical space Used
    - •Compression
  - DATASET
    - •Physical Size
    - •Compression

```
EDGPT110              DFSMSrmm Volume Details - JC0176
Command ===>

Volume . . . . . : JC0176     VOL1 volser :         Rack number :
Media name . . . . : 3480                           Status  . . : USER
                                                                  More:   - +

Volume use count . : 1              Volume usage (KB)  . . . . : 500000
Compression  . . . : 1.05           Physical space used (KB) . : 476844
Capacity (MB)  . . : 3814697        Percent full . . . . . . . : 0
Create date  . . . : 2011/187       Create time  . . . . . . . : 06:36:54
                                    System ID  . . . . . . . . : W98MVS2
Date last read . . : 2011/187       Date last written  . . . . : 2011/187
Drive last used  . : 0BB3           Write Mount count  . . . . : 1
```

$$Compression = \frac{ApplicationBytesWritten}{DeviceBytesWritten}$$

-Due to granularity of data the compression value for smaller data sets may not be meaningful

-0.00 displayed when no ration can be computed

Summary of z/OS DFSMSrmm V1R12

Ease of Use

- Retention Limit Reporting (Roll-back to R10 via APAR OA30881)
- Ignore for duplicate volumes
- Automation for WTORs in Production and Parallel Running
- Expiration Override for Volumes
- ISPF Dialog CLIST option to avoid search results list

Optimization

- Copy Export Sample Reports from Export Status and BVIR

Performance and Scalability

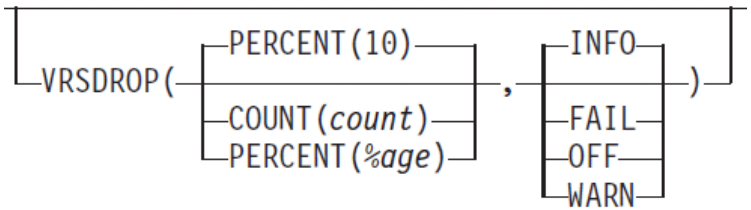
- All RMM Data Sets EAS Eligible, 'XTIOT' Support
- IPV6 Support
- Contribution to z/OS Target of 5% improvement / Release

Availability and RAS

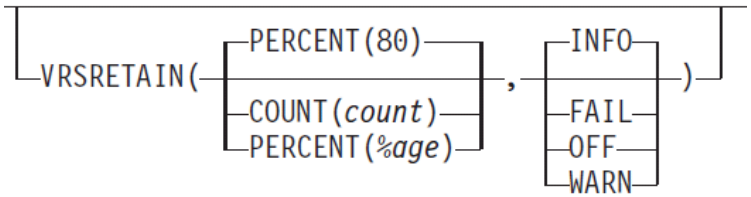
- Status Available via Subcommand and API
- STOP/CANCEL Recovery Improvements
- PDA Trace Enhanced to trace outside subsystem address space

Safety net: EXPDTDROP / VRSDROP / VRSRETAIN

- **VRSDROP** to specifies how many existing VRS-retained volumes may be dropped from vital records retention and the action to be taken by DFSMSrmm.



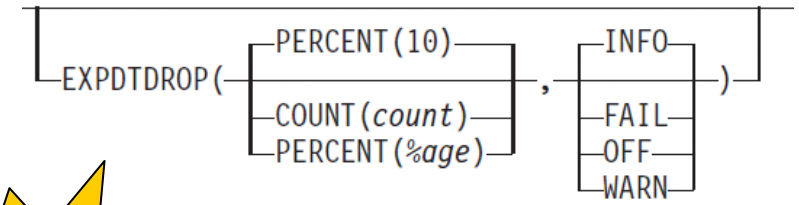
- **VRSRETAIN** specifies how many newly
- assigned volumes are to be retained by vital records retention.
  - A newly assigned volume is one that has a volume assignment time that is higher than the run time of the previous VRSEL processing and that is not VRS-retained.



- **EXPDTDROP** specifies how many existing expiration date retained volumes may be dropped from retention.

An EXPDT-retained volume is one that is not VRS-retained and is not newly assigned

  - EXPROC: additional processing may be required



Sample VRSRETAIN Report

```
Newly assigned volumes subject to VRSRETAIN                                    01/20/09        05:55:21        - 1 -

Status: RETAINED

D A T A  S E T                          D A T A  S E T  V R S                                                  V O L U M E
                                                 DROP   REASON                                    VRS                RETAIN     FILE   IN
VOLSER   FSEQ   DSNAME                  JOBNAME  RETAINED PRIM   2nd.   PRIMARY VRS             JOB MASK  TYPE  VRS     REASON     COUNT  SET
-------- -----  ---------------------  -------- -------- ------ ------ ----------------------- --------- ----- ------- ---------- -----  ---
VOL1         1  RMMUSER.DSN11                   Y                      RMMUSER.*                         D                DATASET        3  N
VOL1         2  RMMUSER.DSN12                   N        W             RMMUSER.*                         D                IMPLICIT       3  N
VOL1         3  RMMUSER.DSN13                   Y                      RMMUSER.*                         D                DATASET        3  N
VOL2         1  D046059.DSN21                   N        W             D046059.*                         D     VOL2       VOLUME         2  N
VOL2         2  D010155.DSN22                                                                                VOL2       VOLUME         2  N
VOL6         1  D046059.DSN61                   N        D             D046059.*                         D                SET            1  Y
VOL7         1  D077077.DSN71                                                                                             IMPLICIT       2  Y
VOL7         2  D077077.DSN72                   Y                      D077077.DSN72                     D                DATASET        2  Y

data sets in this status:              8

Newly assigned volumes subject to VRSRETAIN                                    01/20/09        05:55:21        - 2 -

Status: NOTRETAINED

D A T A  S E T                          D A T A  S E T  V R S                                                  V O L U M E
                                                 DROP   REASON                                    VRS                RETAIN     FILE   IN
VOLSER   FSEQ   DSNAME                  JOBNAME  RETAINED PRIM   2nd.   PRIMARY VRS             JOB MASK  TYPE  VRS     REASON     COUNT  SET
-------- -----  ---------------------  -------- -------- ------ ------ ----------------------- --------- ----- ------- ---------- -----  ---
VOL3         1  RMMUSER.DSN31          STEINHA  N        W             RMMUSER.*                         D                                1  Y
VOL4         1  D010155.DSN41                                                                                                          2  Y
VOL4         2  RMMUSER.DSN42                   N        W             RMMUSER.*                         D                              2  Y
VOL5         1  D010155.DSN51                                                                                                          3  N
VOL5         1  D010155.DSN52                                                                                                          3  N
VOL5         1  D010155.DSN53                                                                                                          3  N

data sets in this status:              6
```

```
Summary of newly assigned volumes for VRSRETAIN          01/20/09        05:55:21        - 1 -


Status          VOLUME COUNT
--------------  ------------
RETAINED                   4
NOTRETAINED                3
```

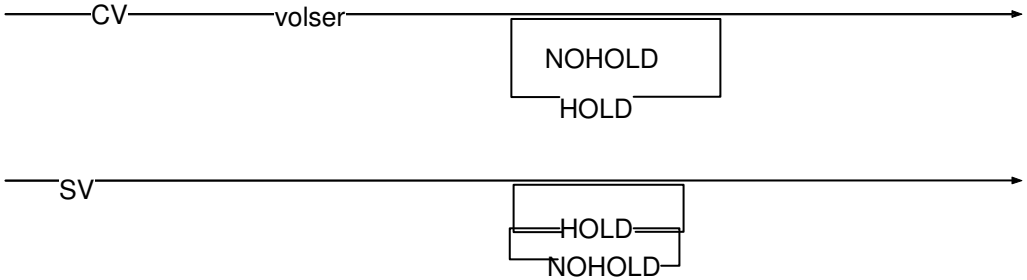
OPENRULE IGNORE (V1.12)

- Ignore processing for specific volser request (read and write)
  - The external/vision volser is used to identify the mounted volume

Library	OPENRULE for		Result in	
	requested volser	VOL1 volser	V1R11	V1R12
Non-system managed (SHELF)	IGNORE	ACCEPT	requested volser ignored (at file validation)	requested volser ignored (at mount verification)
	ACCEPT	IGNORE	VOL1 volser ignored, `LBL ERR VOL1`	accepted
System managed (ATL)	IGNORE	ACCEPT	requested volser ignored (at file validation)	requested volser ignored (at mount verification)
	ACCEPT	IGNORE	VOL1 volser ignored, `613-1C requested volser`	accepted

Expiration Override

- Problem
  - Difficult to determine how data sets and volumes are retained
  - Setting EXPDT(99365) might not force retention
  - Changing policies or EXPDT causes loss of actual retention policy
- Solution
  - New Subcommand to prevent expiration
  - Existing policy and retention is unchanged
- Subcommand Changes:



- Setting using the dialog
  - New 'HY' and 'HN' line commands
- When HOLD attribute is set:
  - Unable to RELEASE the volume
  - EXPROC prevents expiration

Dialog CLIST Option

```
EDGP@CLS                  DFSMSrmm CLIST Processing
Command ===>

Enter optional prefix and suffix values
Prefix  . . . . . . . 'RMM LV '
Returned text depending on resource being searched
Suffix  . . . . . . . ' ALL'

Enter optional fully qualified or partial data set information for CLIST
Data set name  . . . .
Expected data set size             records
Extend existing CLIST              YES, NO or blank

View search results    NO          YES, NO or blank

Press ENTER to CONTINUE, or END to RETURN.
```

If you choose **View search results: NO** (which is the default), the search result list is not displayed

Copy Export processing (V1.12)

- Use EDGJCEXP sample job to generate reports about copy exported data combining information from
  - TS7700 library
    - BVIR or Export status file
  - DFSMSrmm extended extract records

- Reports are provided sorted
  1. by data set name
  2. by logical volume serial number
  3. by stacked volume serial number

TS7700 Virtualization Engine

Copy Export Reporting

- EDGJCEXP Report – sorted by dataset

```
Copy Exported Data Sets                              - 1 -       12/08/2009       03:30:21

based on Bulk Volume Information Retrieval data

DATA SET INFORMATION
                                                    CREATE    CREATE REC  BLK   RETENTION  EXPIRATION PHYSICAL V
DATA SET NAME                                       DATE      TIME   FM   SIZE  DATE       DATE       FILE SEQ R
--------------------------------------------------- --------- ------ ---- ----- ---------- ---------- --------- -
BERNDS.EXPIRED.HYD868                               2009/338  082750 F       80 2009/353   2009/341       1    Y
BERNDS.EXPIRED.HYD880                               2009/337  150732 F       80 2009/352   2009/340       1    Y
BERNDS.MULTI.VOLUME.DS1                             2009/338  082524 FB      80 2009/353   2009/341       1    Y
BERNDS.MULTI.VOLUME.DS1                             2009/338  082524 FB      80 2009/353   2009/341       1    Y


LOGICAL VOLUME INFO                    STACKED VOLUME INFO                                  COPY EXPORT INFO
                REQUIRED EXPIRATION              CURRENT  DESTI    IN   RETENTION  V EXPORT      EXPORT
VOLSER  VOLSEQ  LOCATION DATE          VOLSER    LOCATION NATION   TRAN DATE       R DATE        TIME
------- ------ -------- ----------    ------- -------- -------- ---- ---------- - ----------- ------
HYD868       1  MAZ2     2009/341     A02039  ATL3484F MAZ1     Y    2020/001   Y 2009/338    083938
HYD880       1  MAZ2     2009/341     A02039  ATL3484F MAZ1     Y    2020/001   Y 2009/338    083938
HYD862       1  MAZ2     2009/341     A02039  ATL3484F MAZ1     Y    2020/001   Y 2009/338    083938
HYD861       1  MAZ2     2009/341     A02039  ATL3484F MAZ1     Y    2020/001   Y 2009/338    083938
```

- EDGJCEXP Report – sorted logical volume

```
Copy Exported Data Sets By Logical Volume              - 1 -        12/08/2009        03:30:22

based on Bulk Volume Information Retrieval data

Logical Volume Info:  HYD861    1 MAZ2     2009/341

DATA SET INFORMATION
                                                CREATE     CREATE REC  BLK   RETENTION  EXPIRATION PHYSICAL V
DATA SET NAME                                   DATE       TIME   FM   SIZE  DATE       DATE       FILE SEQ R
--------------------------------------------- ---------- ------ ---- ----- ---------- ---------- -------- -
BERNDS.MULTI.VOLUME.DS1                         2009/338   082524 FB      80 2009/353   2009/341       1    Y
BERNDS.SEC14.HYD861                             2009/338   082527 F       80 2009/353   2009/341       2    Y
BERNDS.SEC14.HYD861                             2009/338   082638 F       80 2009/353   2009/341       3    Y
BERNDS.SEC14.HYD861                             2009/338   082749 F       80 2009/353   2009/341       4    Y

STACKED VOLUME   INFO                                    COPY EXPORT INFO
        CURRENT  DESTI    IN   RETENTION  V EXPORT       EXPORT
VOLSER  LOCATION NATION   TRAN DATE       R DATE         TIME
A02039  ATL3484F MAZ1     Y    2020/001   Y 2009/338     083938
A02039  ATL3484F MAZ1     Y    2020/001   Y 2009/338     083938
A02039  ATL3484F MAZ1     Y    2020/001   Y 2009/338     083938
A02039  ATL3484F MAZ1     Y    2020/001   Y 2009/338     083938
```

Overview

- EDGJCEXP Report – sorted stacked volume

```
Copy Exported Data Sets By Stacked Volume              - 1 -        12/08/2009        03:30:22

based on Bulk Volume Information Retrieval data

Stacked Volume Info:  A02039 ATL3484F MAZ1     Y 2020/001    Y 2009/338    083938

          LOGICAL VOLUME INFO
                         REQUIRED EXPIRATION
          VOLSER  VOLSEQ LOCATION DATE

          HYD861      1   MAZ2     2009/341
          HYD861      1   MAZ2     2009/341
          HYD861      1   MAZ2     2009/341
          HYD861      1   MAZ2     2009/341

          DATA SET INFORMATION
                                                          CREATE     CREATE REC  BLK   RETENTION  EXPIRATION PHYSICAL V
          DATA SET NAME                                   DATE       TIME   FM   SIZE  DATE       DATE       FILE SEQ R
          ----------------------------------------------- ---------- ------ ---- ----- ---------- ---------- -------- -
          BERNDS.MULTI.VOLUME.DS1                         2009/338   082524 FB       80 2009/353   2009/341        1    Y
          BERNDS.SEC14.HYD861                             2009/338   082527 F        80 2009/353   2009/341        2    Y
          BERNDS.SEC14.HYD861                             2009/338   082638 F        80 2009/353   2009/341        3    Y
          BERNDS.SEC14.HYD861                             2009/338   082749 F        80 2009/353   2009/341        4    Y
```

Agenda

- z/OS Release 13 Enhancements
- Selected z/OS Release 12 Enhancements
- Appendix

Summary of z/OS DFSMSrmm V1R13

+: Support integrated into release base

Function \ z/OS (RMM) release	z/OS V1.13	z/OS V1.12	z/OS V1.11	z/OS V1.10
VRSELEXCLUDE & RM(EXPDT)	+	**OA32984** (Toleration)	**OA32984** (Toleration)	**OA32984** (Toleration)
TS1140 Support	+	**OA33958**	**OA33958**	**OA35804**
▪*Selective volume movement* ▪*More „Last change" details* ▪*Last Reference Date for VRS* ▪*ISPF Navigation Enhancements* ▪*Show Effective Retention/Expiration Date* ▪*Search Dataset Extensions* ▪*TVEXTPURGE Extra Days* ▪*More information on Expiry Date source* ▪*Enhanced Tape Copy Support*	+			
Retention limit reporting	+	+	**OA30881**	**OA30881**
Volume Hold	+	+	**OA30436** (Honor Volume Hold)	**OA30436** (Honor Volume Hold)
•*EAS Eligibility* •*OPENRULE IGNORE* •*IPv6* •*AUTOR* •*Addt. Status commands & RAS enhancements*	+	+		
Option to turn uppercasing on/off	+	+	**OA32661**	**OA32661**
TS7700 1.6 Support , Logical WORM	+	+	**OA28637**	**OA28637**

Important APAR and Enhancements Provided In the Service Stream

- OA34036
  - The "volume hold" flag –newly introduced with z/OS V1.12- will be honored on R10, R11
- OA31661
  - Additional option to control uppercasing of dataset names. The default is to convert to upper case (R9-R11)
- OA32754, OA33498
  - In a client/server configuration the client may hang after a network error (R9-R12)
  - Or a loop issuing `EDG0356E SERVER COMMUNICATION ERROR` messages may occur
- OA33876 (currently open, R11)
  - TS7700 COPY EXPORT related fixes and documentation updates
  - Fixes to address problems until microcode fix level is available
  - Refer to updated documentation: http://publibz.boulder.ibm.com/zoslib/pdf/OA33876.pdf

Summary of z/OS DFSMSrmm V1R12

+: Support integrated into release base

z/OS (RMM) release / *Function*	*z/OS V1.12*	*z/OS V1.11*	*z/OS V1.10*	*z/OS V1.9*
Retention limit reporting	+	**OA30881**	**OA30881**	
Volume Hold	+	**OA30436** (Honor Volume Hold)	**OA30436** (Honor Volume Hold)	
•*EAS Eligibility* •*OPENRULE IGNORE* •*IPv6* •*AUTOR* •*Addt. Status commands & RAS enhancements*	+			
Option to turn uppercasing on/off	+	**OA32661**	**OA32661**	**OA32661**
TS7700 1.6 Support , Logical WORM	+	**OA28637**	**OA28637**	**OA28637**
•*Report generator extensions* •*Journaling for D/R, EDGUPDT* •*EDGINERS SCAN*	+	+		
Migration checks for z/OS V1.11+ coexistence	+	**OA32028**	**OA26947** **OA32028**	**OA26947** **OA32028**
z/OS V1.11+ coexistence	+	**N/A**	**OA25714** **OA28232**	**OA25714** **OA28232**

Where to go for more information on DFSMSrmm

- DFSMSrmm Homepage: http://www.ibm.com/systems/storage/software/sms/rmm
  - DFSMSrmm Enhancements: https://www.ibm.com/support/docview.wss?q1=T1010391&rs=0&uid=isg3T1010391
- z/OS V1.12 DFSMS library: http://www.ibm.com/systems/z/os/zos/bkserv/r12pdf/#dfsms, especially
  - DFSMSrmm Managing and Using Removable Media http://publibz.boulder.ibm.com/epubs/pdf/dgt2r390.pdf
  - DFSMSrmm Implementation and Customization Guide http://publibz.boulder.ibm.com/epubs/pdf/dgt2c890.pdf
- Redbooks DFSMSrmm Primer: http://www.redbooks.ibm.com/abstracts/SG245983.html
- Contact the DFSMSrmm team: DFSMSrmm@de.ibm.com

Thank you!