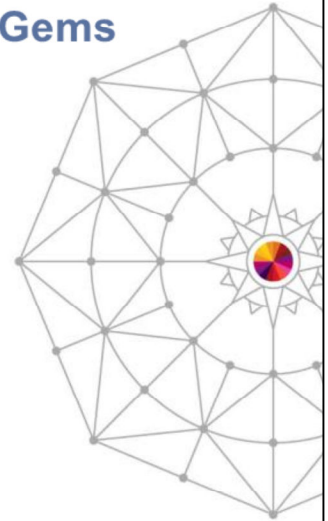




DFSMS Freebies and Hidden Gems

Barbara McDonald
IBM – bawhite@us.ibm.com

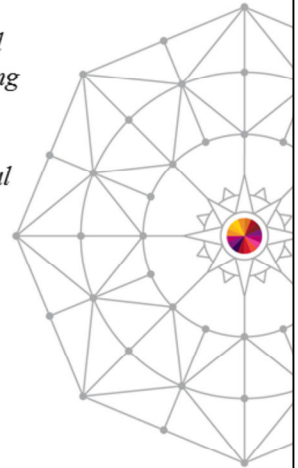
March 10, 2014
Session 15078



Copyright (c) 2014 by SHARE Inc. Except where otherwise noted, this work is licensed under <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Disclaimer

The information on the new product is intended to outline our general product direction and it should not be relied on in making a purchasing decision. The information on the new product is for informational purposes only and may not be incorporated into any contract. The information on the new product is not a commitment, promise, or legal obligation to deliver any material, code or functionality. The development, release, and timing of any features or functionality described for our products remains at our sole discretion.



Complete your session evaluations online at www.SHARE.org/Anaheim-Eval



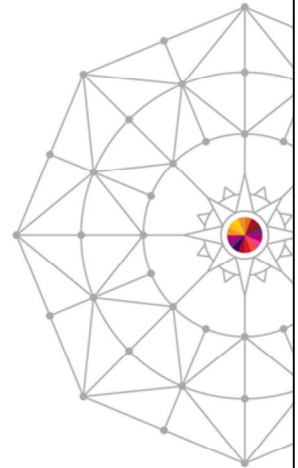
Agenda



- **TS7700 R3.1 Enhancements**
 - DFSMS RAS Enhancements
- **DFSMSHsm**
 - DFSMSHsm Tape Enhancements
 - DFSMSHsm Fast Replication Enhancements
 - DFSMSHsm RAS & Usability Enhancements
- **DSS**
 - DSS COPY Enhancements for EAV Migration
- **Catalog**
 - Catalog Contention Detection Enhancements
 - Catalog DFSMS GDG Enhancements
 - Catalog Externals Enhancements
 - Catalog Security Enhancement
 - Catalog D-APARs
- **IDCAMS**
 - IDCAMS Support for RLS
 - DELETE PDS/PDSE with Mask
 - ALTER NULLIFY Management Class
 - DIAGNOSE of GDGs
- **Access Methods**
 - VSAM RLS Dynamic Volume Count
 - VSAM RLS OMXE for Storage Support
 - VSAM RLS and VSAM D-APARs
 - zEDC QSAM/BSAM Compression
- **PDSE**
 - PDSE Larger Member Size
 - GDG support for PDSEs
 - IEBCOPY Enhancements

Agenda

- **SMS**
 - Provide Option to Suppress Messages
 - Alter ACDS/COMMDS to SHAREOPTIONS(3 3)
 - SMS ACS Read-only Variable for EAVs
- **DFSMSdfp**
 - OCE Partial Release Enhancements
 - OCE RAS Enhancements
- **SDM**
 - D-APARs
- **DFSORT**
 - Functional Enhancements
 - Improve DFSORT/DB2 Synergy
- **DFSMSrmm**
 - DFSMSrmm RAS Enhancement
- **NFS**
 - NFS Server RPCBIND Enhancements



z/OS DFSMS Highlights



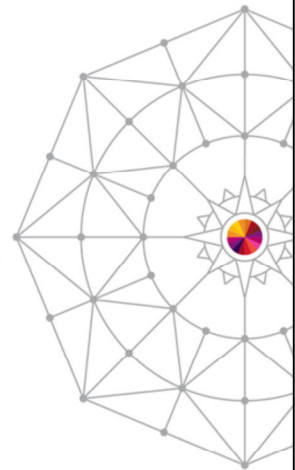
- **TS7700**

- **V3.1 (GA December 2013)**

- Highlights of the TS7700 R3.1 support include:
 - 8 Gb Dual-Port FICON adapter support
 - FlashCopy for Disaster Recovery (DR) test capability

- **DFSMS RAS Enhancements**

- Refer to OAM APAR OA40572 for additional details; it will pre-req all other support.
 - UA90673 – R12
 - UA90674 – R13
 - UA90675 – V2R1



8GB FICON:

- Provides support for up to eight FICON channels (doubling the previous number of channels).
- Also included is support for up to 512 logical paths per FICON channel (doubling the number of logical paths per channel for a maximum of 8 x 512 or 4096 logical paths).

FlashCopy for DR test capability

- Provides a snapshot of the file system (logical volumes) can be captured for DR testing. The snapshot (point in time copy at time zero) is initiated using the MVS operator LIBRARY REQUEST command. This new function is supported with the TS7720 Virtualization Engine and provides support for a read-only copy of the flashed logical volumes.
- While the DR test is accessing the FlashCopy of a logical volume, the production environment can continue to mount, modify and replicate the original copy of the volume and can also return the volume to scratch.
- The DR test environment will continue to see the data as it existed (when the snapshot was taken) prior to any updates.

TS7700 R3.1

- **DFSMS RAS Enhancements**

- **Diagnostic Enhancements**

- **New enhancement:** Additional system and job-related information is passed to the TS7700 on the mount command:
 - 8-CHAR sysplex name
 - 8-CHAR program name
 - First 17-CHARs of the data set name
 - *Note: The job-related information is only passed when the first file sequence (scratch or private; DISP=NEW) is written to the volume.*
 - **New enhancement:** Enhanced messages:
 - CBR3710I LIBSERV failure occurred for library <library-name>. RC=return-code, RSN=reason-code, **REQTYPE=request-type**.
 - IEA439I TAPE LIBRARY(XXXXX), DEVICE(DDDD) FOUR MINUTE I/O TIMEOUT, **REQTYPE=request-type, CMDCODE=command-code, CMDORDER=command-suborder, CMDTYPE=command-type**.

? Why it Matters: Improved diagnostics.

MOUNT command:

- **JOBINFO keyword:**

```
LIBSERV REQTYPE(MOUNT)
      FUNC(CALL)
      CATEGORY(SCRATCH_CATEGORY)|
      VOLSER(private volume)
      UCBP(UCBPTR)
      SERVLP(SERVLPTR)
      SCNAME(STORAGE_CLASS_NAME)
      ...
JOBINFO;
```

Messages :

- **CBR3710I:**

- When OAM invokes the LIBSERV macro to send an I/O request to the library, if the command fails, the failing return and reason code are included in the message. Now this message also includes the requested function type.

- **IEA439I:**

- When I/O to the library times out, device services issues a message with the 5-CHAR library-ID and the 4-digit device number. Now this message also includes the failing request type and command information.

TS7700 R3.1

- **DFSMS RAS Enhancements**

- **Bulk Volume Information Retrieval (BVIR) Interface Enhancements**

- Today RMM uses the returned BVIR data to generate customizable reports.
- **New enhancement:** Additional "Volume Map" options, "Volume Map Primary" and "Volume Map Secondary", are introduced:
 - *With Release 3.0 of the TS7700, the number of volumes supported in a TS7700 Grid was increased to 4 million logical volumes (and with backup copies this could be 8 million logical volumes).*
 - *Sample RMM JCL (EDGJCXP) is updated to reference the new "Volume Map Backup" option.*

? Why it Matters: Improved RMM reporting capabilities.



TS7700 R3.1

- DFSMS RAS Enhancements

- Cartridge Entry Recovery Processing

- Today during cartridge entry processing, an out of synch condition can occur between the library and the tape configuration database (TCDB) if the I/O request to move the volume out of the insert category time outs and is successfully retried.
 - When this happens, all of the hosts that are processing the list of volumes, think that another host processed the volume.
 - This results in the TCDB volume record not being added or updated (and the volume missing from the CBR3610I message).
 - Job processing can later fail, if the library selects a scratch volume that is not in the TCDB.
 - **New enhancement:** AOM was enhanced to better handle I/O error conditions during cartridge entry processing.
 - *Additional logic is put in place to detect the time out and retry condition and if this condition is detected, an attempt is made to add (or update) the volume record in the TCDB.*



? Why it Matters: Improved tape recovery processing.

TS7700 R3.1

- DFSMS RAS Enhancements

- Permanent Error Detection Enhancements

- When device services sends a request (MOUNT, DEMOUNT, AUDIT, EJECT) to the library, it will check on the request every few minutes.
 - If a permanent error occurs and the state of the request cannot be determined, the request can hang (for example, in CBRLLACS MOUNT processing).
 - **New enhancement:** Enhancements to device services and OAM on detection of a permanent error.
 - Logic has been added for device services to detect this condition with a unique failure back to its caller. This results in OAM issuing the following new messages (as appropriate):

CBR4121I Request for status volume volser in library <library-name> failed.

CBR3718I {MOUNT| DEMOUNT| AUDIT| EJECT} completion status for volume <volser>, library <library-name>, message ID <msgid>, unable to obtain.

? Why it Matters: Improved tape error detection and diagnostics.



TS7700 R3.1

- DFSMS RAS Enhancements

- Scratch Threshold Monitoring Enhancements

- With APAR OA39381, a new scratch threshold monitoring task was added (in OAM) so that every 10 minutes, the task would wake-up and perform scratch threshold processing.
 - It was discovered that scratch threshold processing was also being performed for the distributed tape libraries associated with a virtual tape library.
 - Since all volumes and drives are associated with the composite library, there is no need to do the extra I/O to the distributed libraries of a composite library.
 - **New enhancement:** Enhancements to the scratch threshold monitoring task.
 - *Enhancements are made to bypass threshold processing for distributed libraries. This support will also reset the scratch counts, associated with a distributed library back to zero.*

? Why it Matters: Improved tape error detection and diagnostics.



No function errors resulted from this but scratch counts in ISMF which were previously 0 now had values

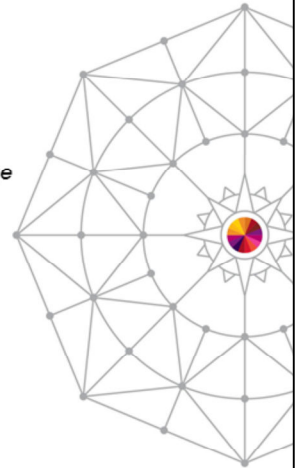
TS7700 R3.1

- **DFSMS RAS Enhancements**

- **MOUNT Processing Enhancements**

- Today when a TS7700 Virtualization Engine is put in write protect mode, a CBRLLACS ABEND0B6 can occur on a specific mount, but not for a scratch mount.
 - **New enhancement:** Enhancements to OAM mount processing.
 - *If a scratch or a private mount fails with this error, LACS message CBR4126I, will be issued instead of the abend.*

? Why it Matters: ABEND reduction and improved tape error diagnostics.



z/OS DFSMS Highlights



- **DFSMSHsm**

- **V2.1**

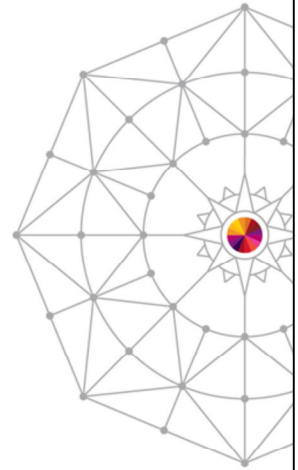
- DFSMSHsm Tape Enhancements
 - DFSMSHsm Fast Replication Enhancements
 - DFSMSHsm RAS & Usability Enhancements

Session 15076: What's New in DFSMSHsm,
Tuesday 9:30AM

Session 15109: Implementing DFSMSHsm Best
Practices with Tivoli Advanced Products,
Tuesday 1:30PM

Session 15110: What You Need to Know About
the Way HSM Uses SMS, **Wednesday 9:30AM**

Session 14135: DFSMSHsm Best Practices,
Wednesday 4:30PM



DFSMSHsm



- **DFSMSHsm Tape Enhancements**

- DFSMSHsm migration and backup data sets can span up to a maximum of 40 tape volumes.
 - Prevents DFSMSHsm from managing larger data sets in a virtual tape environment.
- **New enhancement:** Extend the maximum number of volumes that a migration or backup tape data set can span from 40 to 254 volumes.
 - Existing DFSMSHsm architecture prevents the limit from being extended to the Allocation limit of 255 volumes.
 - Allow Recycle to process connected sets of up to 254 volumes.

? Why it Matters: Allows migration and backup of larger data sets, which is particularly useful when using the typically small tape volume sizes configured for virtual tape subsystems.



■ Not a problem for 'real' tape, but does prevent DFSMSHsm from managing larger data sets in a virtual tape environment. Note: 6GB limit used in the example is for IBM TS7700, other vendor products may have larger capacity.

■ Example: $40_{\text{tapes}} * 6\text{GB}_{\text{logical tape}} * 2.5_{\text{Compaction}} = 600\text{GB}$

■ Example: $254 * 6\text{GB} * 2.5 = 3.8\text{TB}$

DFSMSHsm

- **DFSMSHsm Fast Replication Enhancements**

- **Physical Data Set Recovery RENAME**
- **New enhancement:** Physical VSAM Data Set Restore RENAME support
 - Currently, DFSMSHsm does not support renaming of a VSAM data set using the RECOVER data set FROMDUMP command.
 - With the DFSMSdss support for physical data set RENAME described above, DFSMSHsm will extend the RECOVER data set NEWNAME FROMDUMP support to VSAM data sets.

? Why it Matters: Renaming a data set during recovery enables users to be able to recover a broken data set to another name for analysis to determine what caused the breakage and to determine to which point in time the data set should be recovered, before replacing the production version of the data set.



- Fast replication is an HSM function that manages Point-in-Time copies
 - Combined with DB2 BACKUP SYSTEM, provides non-disruptive backup and recovery to any point in time for DB2 databases and subsystems (SAP) (ie continuous data protection).
 - Recovery at all levels from either disk or tape - entire copy pool, individual volumes and data sets.

New enhancement: Enhance the FRRECOV DSNAMES command to enable data sets to be renamed.

DFSMSHsm



- **DFSMSHsm Fast Replication Enhancements**

- **Dataset Recovery Performance**

- Today, DSS Scans the entire VVDS to locate the VVR for the data set being processed. When many data sets are being processed, potentially a large performance impact, especially if the VVDS is large.
 - **New enhancement:** HSM will capture the VVR RBA along with other catalog data at time of backup.
 - HSM passes this to DSS during FRRECOV processing so that DSS can directly access the VVR.

? Why it Matters: Performance improvements when recovering a large number of data sets.



DFSMSHsm



- **DFSMSHsm RAS and Usability Enhancements**

- **UCB Capture**

- HSM's large customers face periodic 878-Abends in the DFSMSHsm address space.
 - These abends have repetitively been shown to be caused by DFSMSHsm capturing a high number UCBs below-the-line.
 - Historically, DFSMSHsm was required to capture UCBs below-the-line due to certain called services requiring UCBs to reside below-the-line.

- **New enhancement:** HSM will no longer capture UCBs into below the line storage.

? Why it Matters: Provides storage constraint relief by increasing the available storage below-the-line.



UCB Capture:

- These abends have repetitively been shown to be caused by DFSMSHsm capturing a high number UCBs below-the-line.
- Historically, DFSMSHsm was required to capture UCBs below-the-line due to certain called services requiring UCBs to reside below-the-line.

DFSMSHsm



- **DFSMSHsm RAS and Usability Enhancements**

- **QUERY ACTIVE**

- Today, if there's a problem with a tape drive and a need to cancel the associated HSM task, there's no easy way to tell which one to cancel.
- **New enhancement:** New QUERY ACTIVE command includes the needed information to cancel the HSM tasks:
 - **Tape volser**
 - **Device address**
 - **Task name**

? Why it Matters: Provides improved serviceability and diagnostics.



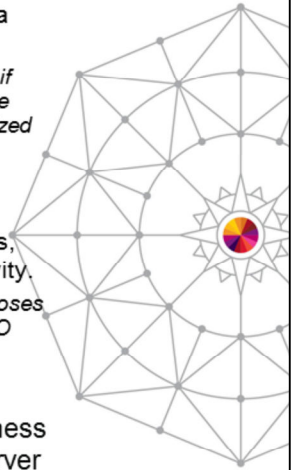
DFSMSHsm



- **DFSMSHsm RAS and Usability Enhancements**

- **SMSVSAM Server Termination Handling**

- Today, when DFSMSHsm accesses the CDSes in RLS mode and an SMSVSAM server error occurs, DFSMSHsm simply takes a fatal abend and shuts down.
 - *If RESTART is not specified in the DFSMSHsm startup procedure or if DFSMSHsm is unable to restart within the allotted amount of time, the user is required to determine when the SMSVSAM server has initialized and manually restart all DFSMSHsm hosts.*
 - *All DFSMSHsm requests that were in progress at the time of the SMSVSAM server error are lost and must be reissued to complete.*
 - **New enhancement:** When an SMSVSAM server error occurs, DFSMSHsm detects the error, and quiesces all CDS I/O activity.
 - *Once the SMSVSAM server initializes, DFSMSHsm automatically closes and reopens the CDSes and resumes all requests waiting on CDS I/O operations.*



? Why it Matters: Greatly improve the usability and robustness of DFSMSHsm in regards to it's response to SMSVSAM server errors.

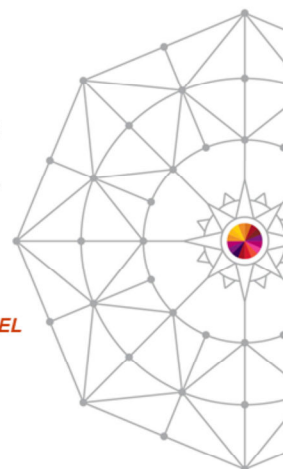
DFSMSHsm / Allocation

- **DFSMSHsm RAS and Usability Enhancements**

- **Batch Parallel Recall**

- Today, during Batch processing, when Allocation determines data sets need to be recalled by HSM, it's done sequentially for each data set in the job step.
 - **New enhancement:** Allocation updated to enable you to specify that migrated data sets be allocated by a batch job be recalled in parallel, before each job step starts
 - Allocation will issue recall requests during step initiation, wait for all recalls to complete, and continue with Allocation processing needed to start the step.
 - New **ALLOCxx** keyword to enable, and **SETALLOC** support:
 - **ALLOCxx Parmlib:** **BATCH_RCLMIGDS(PARALLEL)**
 - **SETALLOC:** **SETALLOC SYSTEM, BATCH_RCLMIGDS=PARALLEL**

? Why it Matters: Provides improved elapsed recall time.

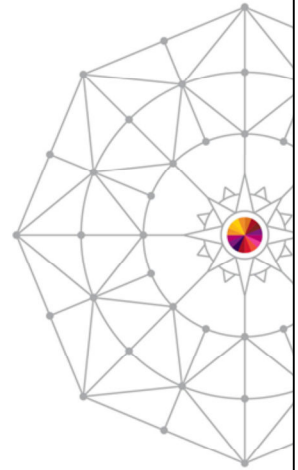


z/OS DFSMS Highlights

- **DSS**
 - **V2.1**
 - COPY Enhancements for EAV Migrations

Session 15322: zGM, XRC, PPRC, GM, GC, MM, FC, CC, VCC: Introduction to the Alphabet Soup of IBM Copy Services, **Tuesday 3PM**

Session 15077: Continuing the understanding of IBM Copy Services: Peer-to-Peer-Remote-Copy (PPRC) and Point in Time Copy (FlashCopy) for High Availability and Disaster Recovery, **Wednesday 11AM**

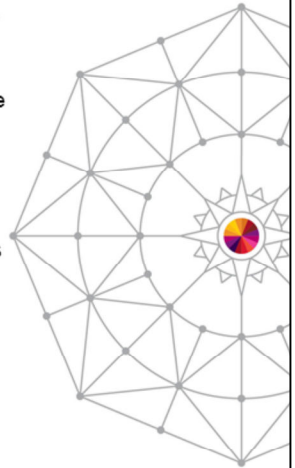


DFSMSdss



- **DSS COPY Enhancements for EAV Migrations**

- Today customers migrating non-VSAM data sets to EAV cannot use DSS logical COPY to get the data sets allocated into the EAS without first pre-allocating the target data set.
 - When a non-VSAM data set has a an EATTR of 'not specified' the EATTR value by default is NO, meaning the data set is not eligible to be allocated in the EAS on a EAV.
 - *DSS does not drive the dataclass ACS routines during a COPY.*
- **New enhancement:** DFSMSdss provides a patch byte that allows users to change the EATTR type for non-VSAM allocations to EATTR=OPT when the source has an EATTR value of EATTR=NS or EATTR=NO during logical data set COPY.



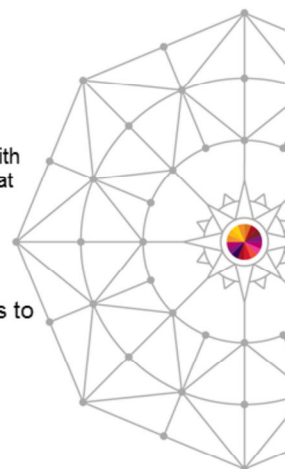
DFSMSdss



- **DSS COPY Enhancements for EAV Migrations**

- The new patch byte at offset X'5B' can only be enabled using the SET PATCH command:
 - SET PATCH 5B = FF.
 - When the patch at offset X'5B' is set to a non-zero value, all non-VSAM data sets that are selected and copied will have the EATTR value set to EATTR=OPT.
 - It is recommended to run the COPY using the SET PATCH command with TYPRUN=NORUN to ensure the data sets selected are the data sets that you are wanting the EATTR value set to OPT.
- See OA42848. PTFs available 10/18/13 on R12 and above.

? Why it Matters: Enables easier migration of non-VSAM data sets to EAV volumes without having to pre-allocate the target data sets.



z/OS DFSMS Highlights



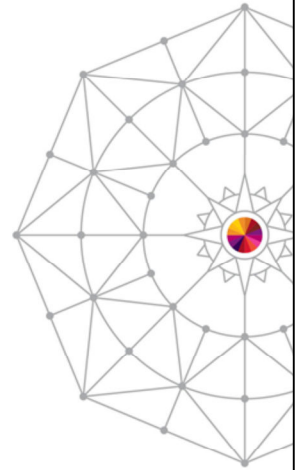
- **Catalog**

- **V2.1**

- Catalog Contention Detection Enhancements
 - Catalog DFSMS GDG Enhancements
 - Catalog Externals Enhancements
 - Catalog Security Enhancement
 - Catalog D-APARs

Session 14633: The Catalog Search Interface, **Monday 11AM**

Session 15089: Using RLS with Your Catalogs – a How-To, **Tuesday 11AM**

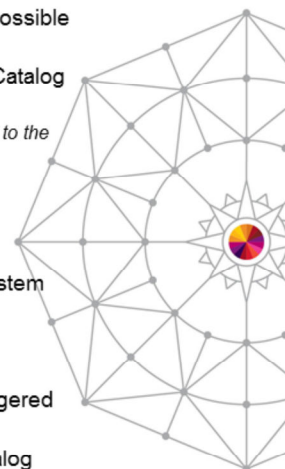


Catalog

- **Catalog Contention Detection Enhancements**

- CAS (Catalog Address Space) Contention Management was introduced in R12.
 - CAS Contention Management monitors Catalog address space for possible contention for resources among Catalog tasks.
 - It was designed initially to ONLY detect SYSZTIOT contention with Catalog and introduced a new catalog modify command.
 - *The only action taken when the wait threshold was crossed was notification to the console and a one time symrec to the logrec.*
- **New enhancement:** Expand the resources being monitored to include:
 - **SYSZVDS** -- Serialization on the VVDS dataset of a volume.
 - **SYSIGGV2** -- provides an essential mechanism to facilitate cross system sharing of catalogs.
 - **ALLOCLCK** -- an internal CAS lock which protects allocations, de-allocations, opens and closes.
 - A new action, **REDRIVE**, can be associated with a resource and triggered when the wait threshold is breached.
 - Contention wait-time and actions per resource can be set in the Catalog parmlib.

? Why it Matters: More efficient use of storage resources; better diagnostics to determine the cause of serialization contention problems that impact CAS.



Catalog



- **Catalog DFSMS GDG Enhancements**

- **New enhancement:** Allows users to specify that all the members of a generation data group (GDG) be returned in order from oldest to newest when the generation data set (GDS) name is specified without a generation number.
 - This function can be exploited via new IDCAMS keywords LIFO and FIFO for DEFINE and ALTER.
 - **LIFO** - the order is the newest GDS allocated to the oldest GDS. (Default and current order)
 - **FIFO** - the order is the oldest GDS allocated to the newest GDS.
 - Catalog Parmlib option **GDGFIFOENABLE** must be set
- New **GDGORDER JCL DD statement keyword** to specify that you get the generation datasets oldest generation first to newest or the reverse.
 - JCL keyword overrides whatever is specified for GDG on DEFINE or ALTER

? Why it Matters: Allows all the members of a GDG to be processed in chronological order without being sorted or concatenated.



Catalog



- **Catalog External Enhancements**

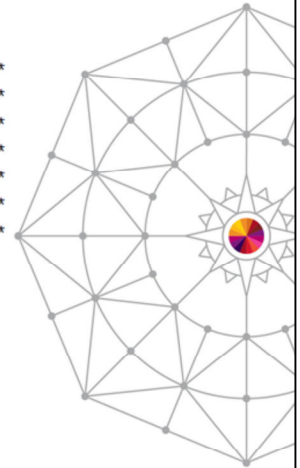
- **New enhancement:** Latch number added to F CATALOG,LIST.
 - Added to message IEC347I when there is latch contention.
 - Where 00001 is the latch number in hexadecimal

```
IEC347I LIST CATALOG TASK(S)
*CAS*****
*  FLAGS - TASK ADDR - JOBNAME / STEPNAME - ELAPSED TIME - ID      *
*  ----- 00891D78 DUMPSRV / DUMPSRV 00.01.55 02                *
*  WAITING FOR Get LatchShr # 00001 FROM 09F06730 FOR 00.01.23    *
*****
* O-OLDEST, W-WAIT, A-ABEND, E-ENQ, R-RECALL, L-RLS                *
*CAS*****
```

- **New enhancement:** Provide date and time for export data set used by ICFRU.

- Added new line to CRURRAP as follows:

RECORD SELECTION AND VALIDATION REPORT	
CATALOG NAME	EXECUTION PARAMETERS
CATALOG NAME	CATEI001.UCAT1
RECORD SELECTION START	01/31/13 (13.031) 11:16:11
RECORD SELECTION STOP	01/31/13 (13.031) 11:16:29
SIGNIFICANT GAP TIME	0030 MINUTES
MAXIMUM CLOCK DIFFERENCE	NONE SECONDS
CATALOG WAS EXPORTED ON	01/31/13 AT 11:16:11

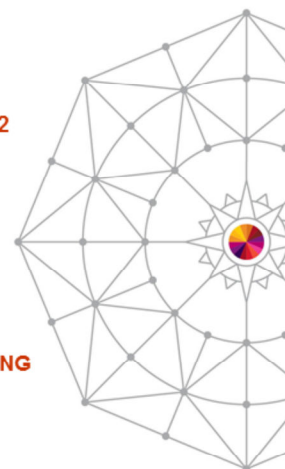


Catalog



- **Catalog External Enhancements**

- **New enhancement:** Fix return & reason code returned to HSM as described in APAR OA23698.
 - Enhances the HSM message ARC0936I so that it is more meaningful when the system detects an error other than in the VVDS.
 - **ARC0936I ERROR RETRIEVING SMS VTOC/VVDS DATA, FUNC = (ACCESS| FREE), RC=retcode, REASON=reas1, SUBREAS=reas2**
 - It might end with "RC=12, REASON=98-CATALOGENTRYMGR SUBREAS=reas2" where reas2 is four characters:
 - 1 - Catalog RC (See IDC3009I)
 - 2 - Catalog reason. (See IDC3009I)
 - 3, 4 - Catalog module identifier
- **New enhancement:** IEC363D to accept 'Yes' and 'No'.
 - For message **IEC363D IS THIS RESTART RELATED TO AN EXISTING CATALOG PROBLEM (Y OR N)?**
 - Added capability to respond with "YES" or "NO" in addition to "Y" or "N"
 - Message text was not changed and remains as seen above
 - Follow on message IEC364D will also accept "YES" or "NO"



Catalog



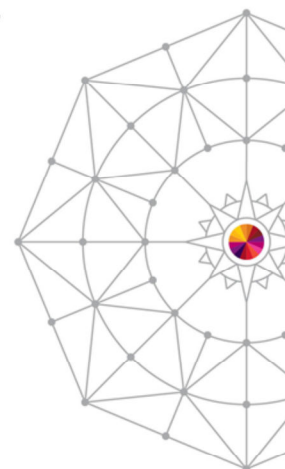
- **Catalog External Enhancements**

- **New enhancement:** Support ABEND Async Events Task Support.
 - Support added so three additional CAS specialty tasks (Async Events, Sysplex Command, and Sysplex Quiesce) can be ABENDED by the Modify command.
 - Added TCB addresses for each task to the F CATALOG,REPORT output in message IEC359I

```
16.48.03 SYSTEM1 IEC359I CATALOG REPORT OUTPUT
*CAS*****
* CATALOG COMPONENT LEVEL = HDZ2210 *
* CATALOG ADDRESS SPACE ASN = 002A *
* CAS ANALYSIS TASK = 00995A28 *
* CAS ALLOCATION TASK = 00995C58 *
* CAS ASYNC TASK = 009957F8 *
* CAS SYSPLEX COMMAND TASK = 00996AC8 *
* CAS SYSPLEX QUIESCE TASK = 00996BC0 *
* VOLCAT HI-LEVEL QUALIFIER = SYS1 *
```

- Added to F CATALOG,ABEND command as follows:
 - F CATALOG,ABEND(ASYNCR)
 - F CATALOG,ABEND(SYSPCMD)
 - F CATALOG,ABEND(SYSPQUI)

? Why it Matters: Improved diagnostics.



Catalog



- **Catalog Security Enhancement**

- **New enhancement:** Change STGADMIN.IGG.DEFINE.RECAT and STGADMIN.IGG.DEFDEL.UALIAS from LOG=NONE to LOG=NOFAIL.
 - These facility classes are used by Catalog Administrators to perform REPRO MERGECATs without having ALTER access to the catalogs involved.

? Why it Matters: Unauthorized use can be detected (logged) and audited.



Catalog



- **Catalog D-APAR OA41707**

- When issuing the IDCAMS commands VERIFY, REPRO and PRINT for a catalog that is extended addressable and SMB is invoked, the open of these catalogs will fail with an IEC161I 032-015 message and cause the IDCAMS commands to fail.
- **New enhancement:** Catalogs will be excluded from SMB processing.
 - SMB was not designed for use with a catalog and could interfere with Catalog Address Space's processing.
 - PTFs available 11/20/13 on R13 and above.

? Why it Matters: Avoid open failures for Catalogs defined as Extended Addressable (EA).



Catalog

- **Catalog D-APAR OA44318**

- Extended Alias support was introduced in 1.13 that increased the number of aliases that could be associated to a single user catalog from 3000 to more than 500,000.
- The CSI is the interface to Catalog where the issuer can provide a work area of up to 1mb.
 - However it has been found that this 1mb limit is too small to accommodate a single catalog record exploiting extended alias support to a high degree.
- **New enhancement:** Alter the CSI maximum work area size to a value that can accommodate the new larger records.
 - APAR opened 1/28/14. PTFs available TDB on R13 and above.

? Why it Matters: Allow users of the Catalog Search Interface (CSI) to exploit the extended alias support.



Note: This issue has been observed in testing where 30,000+ aliases were specified to a ucat & required 1.5mb work area .

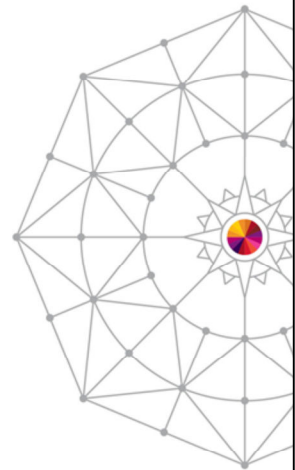
z/OS DFSMS Highlights



- **IDCAMS**

- **V2.1**

- IDCAMS Support for RLS
 - DELETE PDS/PDSE with Mask
 - ALTER NULLIFY Management Class
 - IDCAMS D-APAR

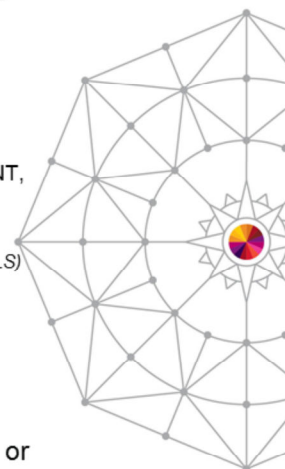


IDCAMS



- **IDCAMS Support for RLS**

- Customer requirement to copy, print and backup VSAM data sets while sharing the VSAM data set with other applications.
- **New enhancement:** Enhance IDCAMS commands PRINT, REPRO, IMPORT and EXPORT to be able to open VSAM data sets using RLS.
 - A new optional keyword **RLSSOURCE ({NO|YES| QUIESCE})** and/or **RLSTARGET ({NO|YES|QUIESCE})** will be implemented for the PRINT, REPRO, IMPORT and EXPORT commands.
 - **NO** – Default uses Non-Shared Resources (NSR). Abbreviation: N
 - **YES** - Indicates that the data set will be opened using record level sharing (RLS) and the data set will have consistent read integrity. Abbreviation: Y
 - **QUIESCE** – Indicates that the data set will be quiesced before opening and processing any entries. Abbreviation: Q
- **SHARE Requirement Met: SSMVSS01007**



? Why it Matters: Provides applications the ability to read or print records from a data set being used in RLS mode.

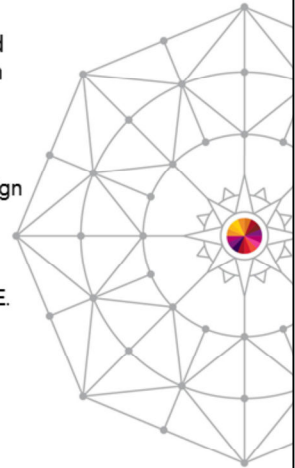
IDCAMS



- **DELETE PDS/PDSE with Mask**

- In R12, IDCAMS provided a DELETE option to delete all members of a partitioned data set in a single operation.
- **New enhancement:** Enhance the IDCAMS DELETE command to be more flexible in performing the deletion of the members in a partitioned data set (PDS/PDSE).
 - Allows a mask for member names to be specified in a DELETE command for PDS/PDSEs.
 - A mask for a member name can contain an asterisk (*) or percent sign (%).
 - Asterisk means 0 or more characters
 - % means 1 and only 1 character
 - Double asterisk (**) still means delete all members in the PDS/PDSE.

? Why it Matters: Improved usability and flexibility of the DELETE command for PDS/PDSE processing.



- DELETE SOME.DATA.SET(EELLS*)
 - ...to delete all members starting with "EELLS"
- DELETE SOME.DATA.SET(EELLS%A)
 - ...to delete all members with EELLSxA, where x is any character

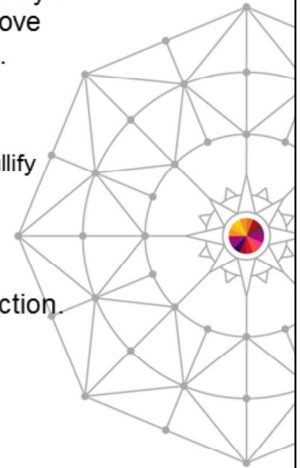
IDCAMS



- **ALTER NULLIFY Management Class**

- Currently, IDCAMS ALTER does not allow a user to nullify a management class, but ISMF provides support to remove the management class from a dataset by specifying '-'.
 - **New enhancement:** Allow a user to specify 'ALTER NULLIFY' to nullify a Management Class.
 - Users can specify NULLIFY(MANAGEMENTCLASS) to nullify the Management Class of a dataset.
 - The abbreviation is NULLIFY(MGMTCLAS).

? Why it Matters: Improved usability of the ALTER function.



- Usability enhancement from a FITS requirement

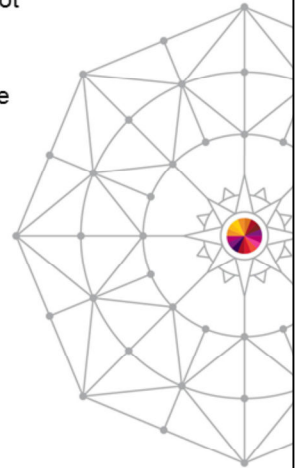
IDCAMS



- IDCAMS D-APAR OA44292

- Intermittent broken data set problem that has been impossible to collect traces for the right time period because EXAMINE does not recognize that there is a problem with the index structure.
- **New enhancement:** Add support to EXAMINE to detect a mismatch between the index key of a higher index record with the index key of the lower level index record.
 - APAR opened 1/20/14. PTFs available TDB on R13 and above.

? Why it Matters: Improved VSAM broken index error detection.



z/OS DFSMS Highlights



- **Access Methods**

- **V2.1**

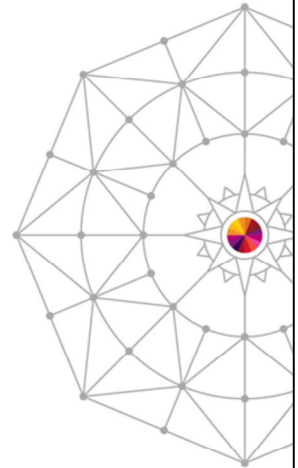
- VSAM RLS Dynamic Volume Count
 - VSAM RLS OMXE for Storage Support
 - VSAM RLS and VSAM D-APARs
 - zEDC QSAM/BSAM Compression

Session 14614: OMEGAMON XE for Storage V5.2 Enhancements for z/OS 2.1, **Tuesday 3PM**

Session 15090: DFSMS Advanced: Leveraging VSAM RLS Best Practices, **Wednesday 1:30PM**

Session 15110: zEnterprise Data Compression: What is it and How Do I Use it?, **Wednesday 4:30PM**

Session 15080: z/OS zEnterprise Data Compression Usage and Configuration, **Thursday 1:30PM**



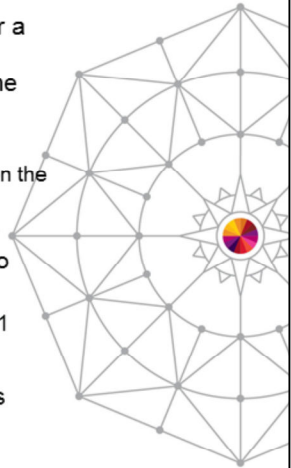
Access Methods



- **VSAM RLS Dynamic Volume Count**

- Currently setting Dynamic Volume Count (DVC) along with the Space Constraint Relief attribute in the SMS data class used for a data set can be used to determine the maximum number of volumes it will be allowed to span, to increase the original volume count specified for data sets in JCL or when using Dynamic Allocation.
 - Enables the data set to be extended later should it run out of space on the volumes on which it was originally allocated, and is intended to help prevent space-related abends, and is only supported by base VSAM.
- **New enhancement:** Remove the restriction and extend DVC to support VSAM RLS data sets.
 - Note: To be activated, all sharing systems must be running z/OS V2.1

? Why it Matters: Prevent space-related abends when data sets grow during VSAM RLS processing.



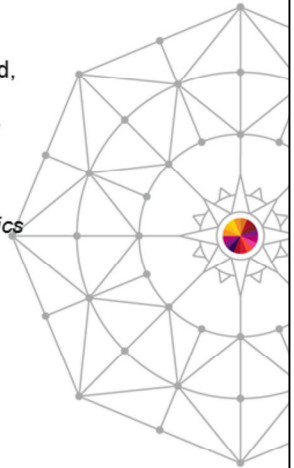
- Many use DVC today with VSAM to help avoid out-of-space conditions, but had the restriction that it was not supported for VSAM RLS.

Access Methods

- **VSAM RLS Omegamon XE for Storage Support**

- **New enhancement:** Add RLS Support to OMXE for Storage V5.2.
 - GA'd September 6, 2013 with the following VSAM RLS Support to monitor RLS behavior more easily and on demand, as well as to obtain historic data:
 - *Dataset and Storage Class RLS statistics including CA splits and lock contention are presented*
 - *Report on coupling facility lock structure statistics*
 - *Report on local buffer manager Last Recently Used (LRU) statistics*

? Why it Matters: Improved monitoring and reporting of VSAM RLS behavior via what's currently available from OMXE for Storage.

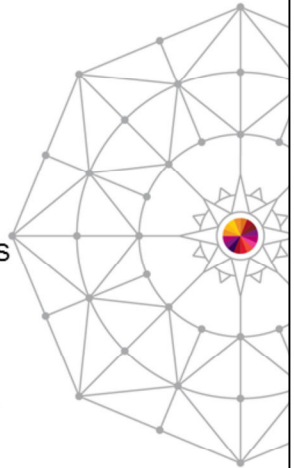


Access Methods



- **VSAM RLS D-APAR OA43921**

- **New enhancement:** Enhance CTRACE data for get buffer and free buffer requests.
 - Each get buffer and free buffer request will be captured in CTRACE data entries for diagnostic purposes.
 - To enable the CTRACE, use the "cb" and subcomp=(blc) options:
 - *trace ct,32m,comp=syssms*
 - *rxx,options=(cb,subcomp=(blc)),end*
 - Refer to the "VSAM RLS component trace" chapter in the z/OS DFSMSdfp Diagnosis Reference for more information.
 - PTFs available on R13 and above.



? Why it Matters: Improved VSAM RLS buffering diagnostics.

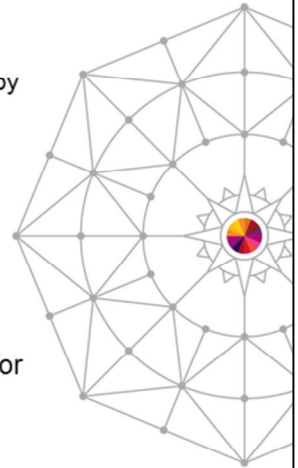
Access Methods



- **VSAM D-APAR OA42582**

- Various VSAM striped EOV error messages may indicate that a striped data set may overlay an extent of another non-striped data set.
 - VSAM striped data set EOV error messages may be caused by incorrect values in the catalog. This might be only a one time occurrence.
- **New enhancement:** Generate a diagnostic dump on an extend of a VSAM striped data when there is a possible catalog error.
 - PTFs available 1/9/14 on R13 and above.

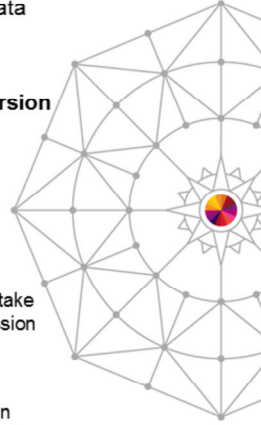
? Why it Matters: Improved first failure data capture (FFDC) for VSAM striped data sets.



zEDC QSAM/BSAM Data Set Compression



- The new zEDC compression for new data sets is Optional
 - Only turn on after ALL systems that might access compressed data have zEDC acceleration
 - All previous compression options are still supported
 - **Note: zEDC Compressed Format data sets are created as Version 2 data sets**
- Setup is similar to setup for existing types of compression (generic and tailored)
- Who benefits?
 - Customers who don't use BSAM/QSAM compression today
 - Customers who don't currently compress their BSAM/QSAM data can take advantage of the disk space savings available through zEDC compression with minimal CPU overhead.
 - Customers who currently compress their BSAM/QSAM data
 - The CPU cost of compressing BSAM/QSAM data can be reduced when using zEDC compression compared to existing BSAM/QSAM compression options. Note that the disk space savings may vary depending on the type of compression used.



Complete your session evaluations online at www.SHARE.org/Anaheim-Eval



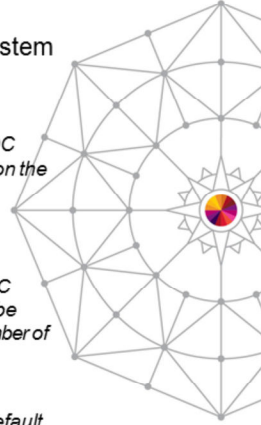
DFSMS Exploitation of zEDC:

- zEnterprise Data Compression (zEDC) for z/OS V2.1, running on zEC12 and zBC12 servers with the zEDC Express adapter, is designed to support a new data compression function designed for low-latency compression.

zEDC QSAM/BSAM Data Set Compression



- Setup is similar to setup for existing types of compression (generic and tailored)
 - It can be selected at either or both the data set level or system level.
 - **Data set level**
 - In addition to existing tailored (T) and generic (G) values, new zEDC **Required (FR)** and zEDC **Preferred (FP)** values will be available on the **COMPACTION** option in data class.
 - When not found in data class, the system level is used
 - **System level**
 - In addition to existing **TAILORED** and **GENERIC** values, new zEDC **Required (ZEDC_R)** and zEDC **Preferred (ZEDC_P)** values will be available on the **COMPRESS** parameter found in IGDSMSxx member of SYS1.PARMLIB.
 - **Activated using SET SMS=xx or at IPL**
 - Data class continues to take precedence over system level. The default continues to be **GENERIC**.



Complete your session evaluations online at www.SHARE.org/Anaheim-Eval



SMS Data Class:

- ZP: Prefer zEDC compression. The system will not fail the allocation request but rather create either a tailored compressed data set if the zEDC function is not supported by the system or create a non-compressed extended format data set if the minimum allocation amount requirement is not met.
- ZR: Require zEDC compression. The system will fail the allocation request if the zEDC function is not supported by the system or the minimum allocation amount requirement is not met.

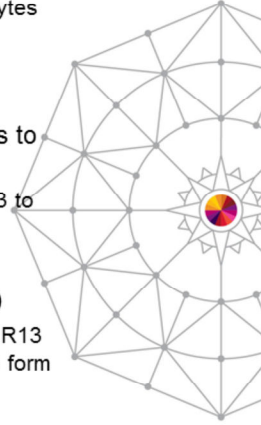
PARMLIB:

- zEDC_R tells the system to fail the allocation request if the zEDC function is not supported by the system or the minimum allocation amount requirement is not met.
- zEDC_P tells the system to not fail the allocation request but rather create either a tailored compressed data set if the zEDC function is not supported by the system or create a non-compressed extended format data set if the minimum allocation amount requirement is not met.

zEDC QSAM/BSAM Data Set Compression



- Use SMF records to determine compression ratio
 - SMF Type 14/15 contains existing compressed/uncompressed bytes to calculate compression ratio and new bits to identify zEDC compressed format data set.
- Coexistence PTFs for DFSMS components to support access to existing zEDC compressed format data sets.
 - DFSMS coexistence PTFs will allow a user on V1R12 and V1R13 to read/write existing zEDC compressed format data sets
- Coexistence PTFs for DFSMSdss (COPY/DUMP/RESTORE)
 - DFSMSdss coexistence PTFs will allow a user on V1R12 and V1R13 to RESTORE a compressed format sequential data set when the form of compression used was zEDC compression.



Complete your session evaluations online at www.SHARE.org/Anaheim-Eval



z/OS DFSMS Highlights



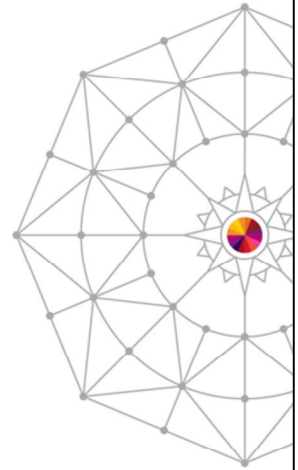
- **PDSE**

- **V2.1**

- PDSE Larger Member Size
 - GDG support for PDSEs
 - IEBCOPY Enhancements

Session 15084: DFSMS
Advanced: PDSE Diagnostics
and Recovery, **Wednesday 3PM**

Session 15083: The Future of
PDSE: The Version 2 Format,
Thursday 11AM



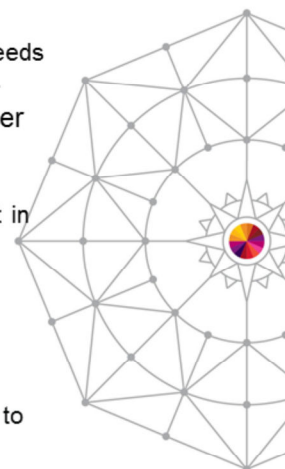
PDSE



- **PDSE Larger Member Size**

- Currently PDSE members are limited to 15,728,639 records.
 - Message IEC036I 002-A8 is issued if a PDSE member exceeds 15,728,639 lines. This limit does not exist for PDS datasets.
- **New enhancement:** Increase the limit on PDSE member size.
 - PDSE member size is planned to be over 125 times larger (approximately 2,146,435,071 records) than the current limit in many circumstances, and substantially larger than the maximum supported size of a PDS member.
- **SHARE Requirement met: SSMVSS11010**

? Why it Matters: Provide additional scalability and usability benefits of using PDSEs in place of PDSs and make it feasible to use PDSEs instead of multiple large sequential data sets.



PDSE



- **GDG support for PDSEs**

- Currently PDSs are supported as GDSs (generation data sets). However, PDSEs are not supported as GDSs.
- **New enhancement:** Provide support for using generation data groups (GDGs) comprising PDSE generation data sets.
 - This support, planned to be similar to existing GDG support for PDS data sets.
 - PDSE can be defined as a GDS by specifying DSNTYPE=LIBRARY or a DATACLAS that specifies DSNTYPE=LIBRARY on the GDS define command.

? Why it Matters: Extend usage of PDSEs.



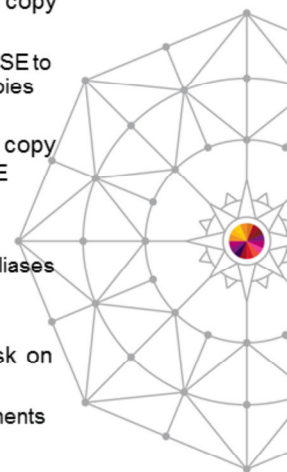
PDSE



IEBCOPY Enhancements

- Currently, IEBCOPY can be used to copy to or from a PDSE data set a member and its aliases, together as a group. In addition, copy functions require that member names be fully qualified.
 - COPYGRP supports all combinations of group copy requests for PDSE to PDSE, PDSE to PDS and PDS to PDSE, but PDS to PDS group copies are currently treated as a COPY operation.
- **New enhancement:** New COPYGROUP function designed to copy members and all aliases for any combination of PDS and PDSE data sets.
 - A superset of the existing COPYGRP function.
 - All aliases in a group will be copied with the member or neither the aliases nor the member in a group will be copied.
 - The EXCLUDE statement is not supported.
- **New enhancement:** Allow the user to pass a filter pattern mask on COPYGROUP functions
 - The MEMBER sub parameter of the SELECT and EXCLUDE statements will be enhanced to accept the "*" and '%' filter control characters.

? Why it Matters: Improved usability for IEBCOPY.

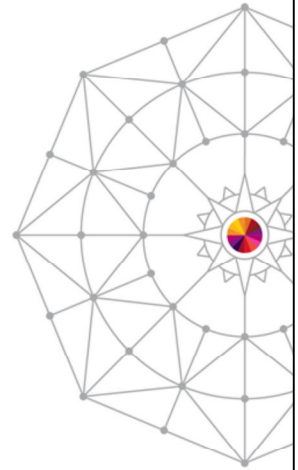


z/OS DFSMS Highlights

- **SMS**
 - **V2.1**
 - Provide Option to Suppress Messages
 - Alter ACDS/COMMDS to SHROPT(3 3)
 - SMS ACS Read-only Variable for EAVs

Session 15093: DFSMS
Intermediate: Navquest –
Streamlining SMS work, **Monday**
11AM

Session 15097: DFSMS Basics:
How to Write ACS Routines -
Hands-on Lab, **Wednesday 11AM**



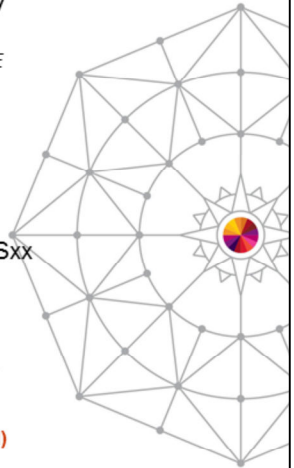
SMS



- **Provide Option to Suppress Messages**

- Some users complained that SMS may issue too many IGD17054I, IGD17227I and IGD17395I messages to the joblog and hardcopy log:
 - IGD17054I DATA SET NOT FOUND FOR DELETE/RENAME ON VOLUME
 - IGD17227I DATA SET WAS ALLOCATED TO A SUBSEQUENT MULTI-TIERED STORAGE GROUP
 - IGD17395I DATA SET WAS NOT ALLOCATED IN THE SAME STORAGE FACILITY IMAGE
 - These messages can not be suppressed by the Message Processing Facility (MPF) or installation exits
- **New enhancement:** SMS provides a new parameter in IGDSMSxx to allow the user to selectively suppress these messages:
 - **SUPRESS_SMSMSG(YES|NO, IGD17054I, IGD17227I, IGD17395I)**
 - **NO is the default and the message(s) will not be suppressed**
- SMS provides a new command to selectively alter the setting of these messages
 - **SETSMS SUPRESS_SMSMSG(YES|NO, IGD17054I, IGD17227I, IGD17395I)**

? Why it Matters: Enables users to suppress unwanted/unneeded messages.



SMS



- **Alter ACDS/COMMDs to SHROPT(3 3)**

- **New enhancement:** SMS will be enhanced to check whether or not the SHAREOPTIONS(3,3) or higher is specified for ACDS or COMMDs.
 - If a lower share option is detected by SMS during CDS activation, SMS will attempt to alter the share option to (3,3) or higher and issue a message to inform the user of the result of the change.
 - If the change is successful, SMS will issue new message IGD098I. Otherwise new message IGD099I will be issued. In both cases the activation process continues as before.

? Why it Matters: "Soft" enforcement of SMS best practice to help users avoid potential problems with SMS due to incorrect sharing options.



- In z/OS V1.13, health check for incorrect SHAREOPTIONS

SMS



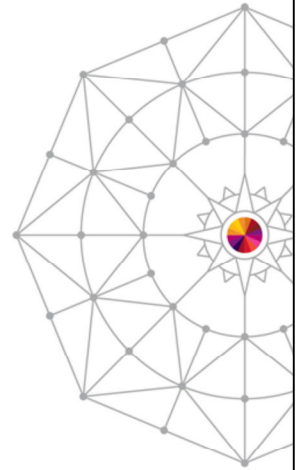
- **SMS ACS Read-only Variable for EAVs**
 - Currently, the EATTR keyword can be specified on
 - JCL
 - Dynamic allocation
 - AMS DEFINE
 - DATACLAS
 - **However, it's NOT available to the installation's ACS routines**
 - **New enhancement:** Provide a new ACS Read-only Variable for EAV:
 - **&EATTR - contains the extended attributes for EAV**
 - Expected Values:
 - *OPT: extended attributes are optional*
 - *NO: no extended attributes*
 - *Blank : not specified (This is a default value)*

? Why it Matters: ACS routines can be more intelligent to select proper SMS constructs for EAV, so a data set can be allocated to an EAV storage group.



z/OS DFSMS Highlights

- **DFSMSdfp**
 - **V2.1**
 - OCE Partial Release Enhancements
 - OCE RAS Enhancements

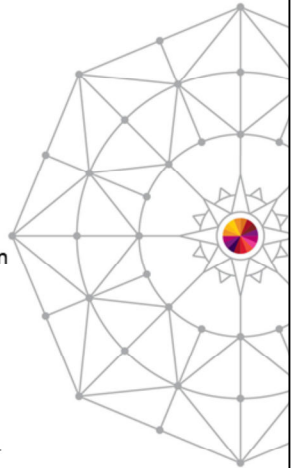


OCE



- **OCE Partial Release Enhancements**

- Currently unused space at the end of a data set is released under these conditions:
 - Sequential or partitioned data set
 - RLSE was coded on the DD statement or the management class specifies it
 - It happens during HSM space management or when a program closes the data set that is open for writing.
- If the data set has multiple volumes, the space is released only on one volume, not on subsequent volumes that the data set might have been extended to previously.
 - An exception is striped data sets, where space is released on all stripes if possible.
- **New enhancement:** If SMS-managed, then all the space in the data set on subsequent volumes will be released.
 - The format 1 or 8 DSCB will remain with no extents.
 - The catalog entry will still show the volume serials.
 - Space is released even if the storage class says "guaranteed space".
- **SHARE Requirement Fully Addressed:** SSMVSS08002
 - Partially addressed in R12 which addressed SMS, Extended Format (EF) datasets.
 - Now fully addressed with support for sequential data sets



? **Why it Matters:** More efficient use of storage resources.

Complete your session evaluations online at www.SHARE.org/Anaheim-Eval



OCE

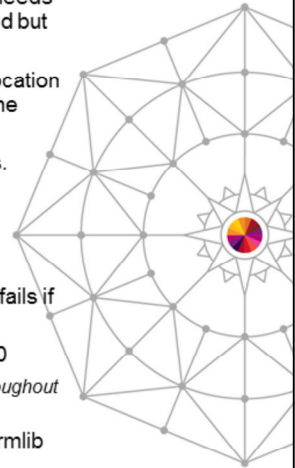
- **OCE RAS Enhancements**

- Eliminate ABEND 837 RC08
 - Currently during EOJ tape output processing when another volume needs to be added to the JFCB volume list and a JFCB extension is required but does not exist, an abend 837 RC08 is issued.
 - **New enhancement:** Eliminate the abend by dynamically calling Allocation to create the JFCB extension required to add the current volume to the volume list.

? Why it Matters: Automatic error recovery and avoidance of abends.

- Parmlib member IEAAPP00 should allow comments
 - Parmlib member IEAAPP00 can be used to define authorized I/O appendage routines. Currently IEAAPP00 processing in IEAVNP16 fails if comments are included.
 - **New enhancement:** Allow comments in parmli member IEAAPP00
 - *Comments will be allowed both at the start of a member or interspersed throughout the member.*

? Why it Matters: Improved communication regarding changes to parmli members.



z/OS DFSMS Highlights

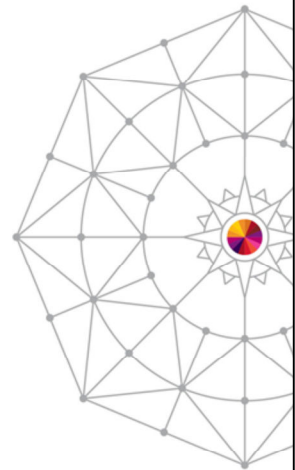


- **SDM**
 - **V2.1**
 - D-APARs

Session 15322: zGM, XRC, PPRC, GM, GC, MM, FC, CC, VCC: Introduction to the Alphabet Soup of IBM Copy Services, **Tuesday 3PM**

Session 15077: Continuing the understanding of IBM Copy Services: Peer-to-Peer-Remote-Copy (PPRC) and Point in Time Copy (FlashCopy) for High Availability and Disaster Recovery, **Wednesday 11AM**

Session 14615: Extending z/OS Mainframe Workload Availability with GDPS/Active-Active, **Thursday 1:30PM**



DS8K Recent Enhancements:

SDM Non-Disruptive State Save

- Implement new diagnostic control in DS8K that takes an Non-disruptive State Save (a statesave w/o warmstart). Enable NDSS in XRC where statesaves are done now and add API support via ANTRQST. Also provides enhanced existing operator command that allows the operator to initiate a statesave.

Soft Fence

- Hyperswap Synergy support that will prevent read and write access to the former primary PPRC volumes, after a disk switch, by systems outside the sysplex or systems being IPLed manually (outside of GDPS).

GM Pause on CG Boundary

- Allows PiT copies w/o stopping GM session & converting pairs. Capability to switch primary production back and forth between any of the sites w/o performing full copies of data.

Query host volume access

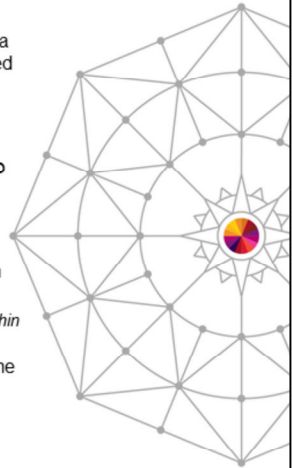
- Basic requirement is for a way that a process running on one system (LPAR) can identify all the other systems a disk device may be attached to and know if the volume is online on the other systems (ie determine where a device has active pathgroups, especially outside of the sysplex). EMC has a unique CCW command that provides us a CPU/LPAR list of only those on which the paths to the device are grouped.
- Another related issue is that customers have occasionally lost important data by inadvertently initializing the wrong volume using ICKDSF. In the worst cases, customers have experienced system outages caused by the unintentional initialization of a system volume.

SDM



- **D-APAR OA44191**

- [XRC Dynamic Volume Compare](#) provides the capability to validate XRC integrity while mirroring is active.
 - This is accomplished by reading tracks from primary and secondary devices, comparing them, and repeating the compare for any mismatches at a later time. If a match on all tracks is achieved at least once, mirroring for that volume is considered validated.
 - The XRC Dynamic Volume Compare (DVC) utility currently only allows a volume Exclude list to be specified.
- **New enhancement:** Enhance the utility to also allow for an Include list, so that a subset of devices within an LSS can more easily be compared.
 - ANTUXDVC has been enhanced to allow specification of an Include list which will define the specific volumes to be compared.
 - Volumes are first matched against the Include list. Any matching volumes are then compared to the Exclude list.
 - *This allows specifying a large volume range for Inclusion and then specific ranges within be excluded.*
 - In addition, new PARM field options can be specified to cause WTORs issued by the utility to be suppressed.
 - APAR closed; PTFs available on R12 and above.



? Why it Matters: Improved usability for SDM DVC utility which allows users to validate XRC integrity.

See <http://www-01.ibm.com/support/docview.wss?uid=isg3T7000248> for more information on the XRC Dynamic Volume Compare utility.

SDM



- **D-APAR OA44413**
 - **SDM CTRACE Enhancements**
 - The SDM CTRACE data is a crucial piece of information used to diagnose SDM problems and obtain first failure data capture (FFDC). New requirements have been submitted to improve the usability of the function.
 - **New enhancement:** The following enhancements are being made for SDM CTRACE to address ease of use:
 - Trace records are maintained in one of nine sub-areas in the component trace data space called partitions which often hinders record formatting and analysis.
 - Use the *IPCS MERGE* command to display trace records from different partitions in timestamp order. To help with this new *OPTIONS* parameter *PARTITION* will be added.
 - Trace records at the end of a table's current buffer are not displayed.
 - Pass back the address and length of the buffer area after the point in the current buffer where new trace entries are to be added.
 - Multiple ?ALESERV calls to obtain the data space's STOKEN impact performance.
 - The *STOKEN* will be saved and passed as needed, rather than obtaining it each time.
 - APAR opened 2/6/14; PTFs TBD on R12 and above.

? **Why it Matters:** Improved XRC FFDC and Serviceability.



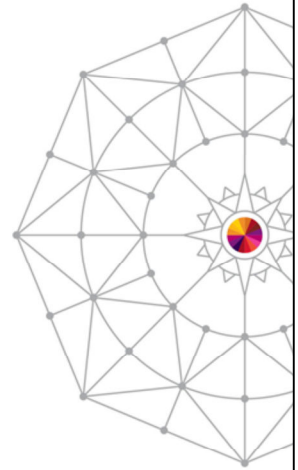
z/OS DFSMS Highlights



- **DFSORT**

- **V2.1**

- Functional Enhancements
 - Improve DFSORT/DB2 Synergy



DFSORT

- **Functional Enhancements**

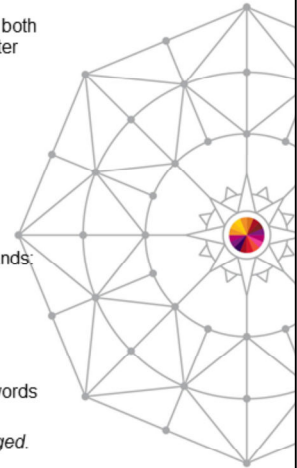
- **Alphanumeric Tests**

- Users often want to do comparison tests to see if a field only contains characters in a specific set (e.g. A-Z, a-z and/or 0-9).
 - **New enhancement:** Support new alphanumeric tests, using binary format, for both compare fields and parse fields, including combinations of alphanumeric character sets (uppercase and lowercase, and numeric).
 - **UC:** Uppercase characters (A-Z)
 - **LC:** Lowercase characters (a-z)
 - **MC:** Mixed case characters (A-Z, a-z)
 - **UN:** Uppercase and numeric characters (A-Z, 0-9)
 - **LN:** Lowercase and numeric characters (a-z, 0-9)
 - **MN:** Mixed case and numeric characters (A-Z, a-z, 0-9)
 - The alphanumeric test keywords can be used in the following comparison operands: COND, INCLUDE, OMIT, BEGIN, END, WHEN and TRLID.
 - PARSE function can now be used with alphanumeric test to start or end with a character from any of various alphanumeric character sets.

- **Migration / Coexistence Consideration**

- The alphanumeric test fields, LC, LN, MC, MN, UC and UN, are new reserved words which are no longer allowed as symbols.
 - *If any of these words were used as a symbol previously they must be changed. For example, if MC was used, it can be changed to "mc".*

? Why it Matters: Allows users to specify various sets of characters using a single compare condition or PARSE keyword rather than coding multiple compare conditions.



Comparison Example:

- INCLUDE COND=(11,10,BI,EQ,MC)
- OMIT COND=(50,5,BI,EQ,LC)

PARSE Example:

- INREC PARSE=(%01=(ENDBEFR=UC, FIXLEN=5)), BUILD=(%01)

DFSORT

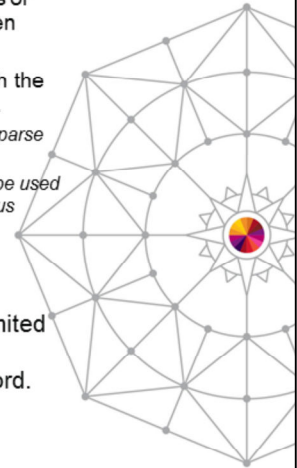


- **Functional Enhancements**

- **PARSE Enhancements**

- Users often have records with a very large number of delimited fields or with consecutive fields that they want to parse in the same way. Often they want to parse fields based on a specific set of characters.
 - **New enhancement:** Allow up to 1000 parsed fields (%0-%999) with the PARSE function; the previous limit was 100 parsed fields (%0-%99).
 - **REPEAT=v** is a new PARSE option that can be used to repeat a particular parse field definition multiple times.
 - **STARTAFT=an, STARTAT=an, ENDBEFR=an and ENDAT=an** can now be used with the PARSE function to start or end when a character from any of various alphanumeric character sets is found.

? Why it Matters: Allows users to parse up to 1000 fields. With REPEAT=v they can easily ignore or process consecutive delimited fields of the same form. The alphanumeric tests allow them to specify various sets of characters using a single PARSE keyword.



PARSE Examples:

- More parsed fields
 - OUTREC PARSE=(%121=(ENDBEFR=C',' ,FIXLEN=12),
 - %322=(ENDBEFR=C',' ,FIXLEN=8),
 - %999=(FIXLEN=5)),
 - BUILD=(%121,X,%322,X,%999)
- Repeating parsed fields
 - INREC PARSE=(%=(ENDBEFR=C',' ,REPEAT=3),
 - %11=(ENDBEFR=C',' ,FIXLEN=10,REPEAT=4)),
 - BUILD=(%11,X,%12,X,%13,X,%14)

DFSORT

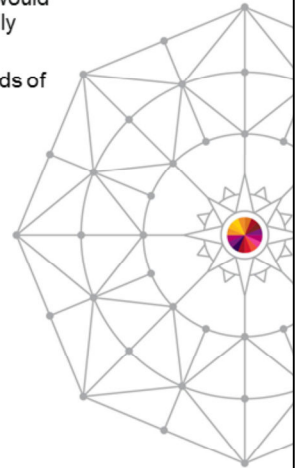


- **Functional Enhancements**

- **Symbol Enhancements**

- Feedback indicates users really like DFSORT symbols support and would like to see symbols supported for more DFSORT operands, especially those of the form KEYWORD=n.
 - **New enhancement:** KEYWORD=sym will be supported for operands of the form KEYWORD=n where n is a number.
 - Symbols can now be used with more DFSORT features such as ID=sym, SEQ=sym, ABSPOS=sym and FIXLEN=sym.
 - If New_Length,25 is defined in SYMNames, you can use LENGTH=New_Length wherever you can use LENGTH=25

? Why it Matters: Improved DFSORT usability.



- The operands ABSPOS, ACCEPT, ADDPOS, AVGLEN, DO, ENDPOS, ENDREC, FIXLEN, ID, IFOUTLEN, INCR, LENGTH, LINES, MAXLEN, RECORDS, REPEAT, SAMPLE, SEQ, SKIPREC, SPLIT1R, SPLITBY, START, STARTPOS, STARTREC, STOPAFT and SUBPOS can now have symbols.

Symbol Example:

- OUTFIL REPEAT=Mult,
- IFOUTLEN=out_length,
- IFTHEN=(WHEN=GROUP,RECORDS=Num_records,
- PUSH=(id_col:ID=id_length))

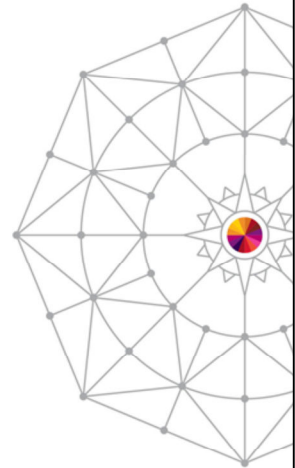
DFSORT

- **Functional Enhancements**

- **Add String at End of Variable-Length Records**

- Users often have variable-length files that need a particular string added to the end of each record.
 - **New enhancement:** Allow users to specify that a string up to 50 characters in length be appended to variable-length output records.
 - Previously, users would have had to write their own E35 exit logic to add a string to each VB record.
 - **VLTRAIL=string** is a new OUTFIL option that allows users to insert a character string (C'string') or hexadecimal string (X'yy...yy') at the end of each variable-length OUTFIL output record.

? Why it Matters: Improved DFSORT usability.



Example:

- `OUTFIL VLTRIM=C' ',VLTRAIL=X'0D0A'`

DFSORT

- **Improve DFSORT/DB2 Synergy**

- Wanted to improve reliability and performance of DFSORT:
 - Provide virtual storage constraint relief below 16MB
 - Reduce disk work space related failures
 - Improve scalability for very large sorts
- **New enhancements:**
 - **Exploit Extended TIOT, uncaptured UCB and above the line DSAB options for dynamically allocated work data sets.**
 - *Uncaptured UCBs (S99UCACB option) is always exploited.*
 - *Extended TIOT (S99TIOEX option) and DSAB above 16 megabyte virtual (S99DSABA option) are used if DFSORT is running authorized.*
 - **Expand “additional” work data sets capability provided in previous release.**
 - *R12 provided capability for dynamic allocation of additional work data sets that are only used if needed (ie primary space of zero and secondary space only allocated if needed)*
 - *V2R1 now provides capability to provide similar function for JCL or pre-allocated work data sets. Work data sets with primary allocation of zero are only used when work data sets with non-zero primary have been exhausted.*
 - **Increase maximum size of disk and memory object work files.**
 - *To further exploit Extended Address Volumes, the maximum number of tracks that can be used for a single work data set has been increased from 1,048,576 to 16,777,216 when full track blocking is used.*
 - *To further exploit large central storage configurations, the maximum amount of memory object storage that can be used as intermediate work space has been increased from 64 gigabytes to 1 terabyte.*

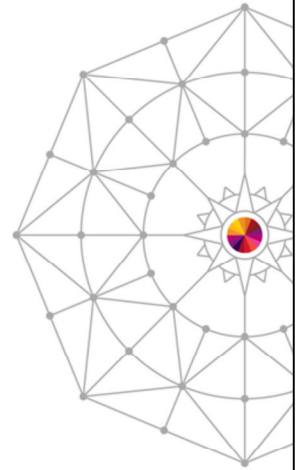
? Why it Matters: Improved reliability and scalability for all users of DFSORT.



z/OS DFSMS Highlights



- **DFSMSrmm**
 - **V2.1**
 - DFSMSrmm RAS Enhancements



DFSMSrmm

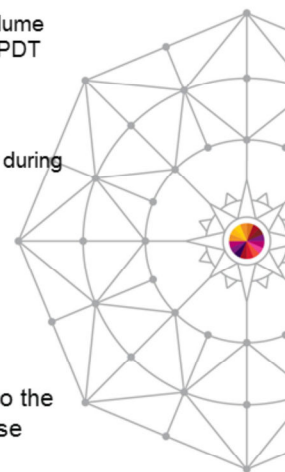


- **RAS Enhancements**

- **Conversion Support Changes**

- RMM implemented a new data set attribute LASTREF and a new volume attribute RETAINBY, for data sets and volumes managed by the EXPDT retention method.
 - If a customer wants to use these new attributes he has to use TSO RMM CHANGEDATASET and CHANGEVOLUME commands.
 - **New enhancement:** set the LASTREF and RETAINBY attributes during conversion.
 - A default value can be set via new EDGCNVT SYSIN statements :
OPTION EXPDT_RETAINBY
OPTION EXPDT_LASTREF.
 - APAR OA35808 provides toleration support.

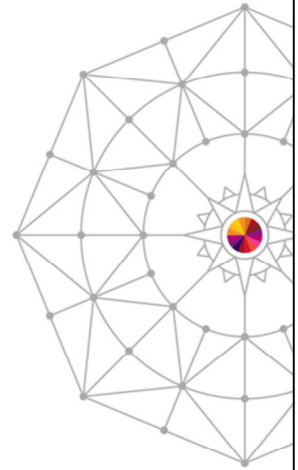
? Why it Matters: At conversion time, for the EXPDT retention method, similar attributes of the input data can be translated to the RMM data set and volume attributes. No extra updates of these attributes are needed after the conversion.



z/OS DFSMS Highlights



- **NFS**
 - **V2.1**
 - NFS Server RPCBIND Enhancements



NFS

- **NFS Server RPCBIND Enhancements**

- Currently on the z/OS system, when the RPCBIND fails, the z/OS NFS Server has no capability to re-register with RPCBIND when it is restarted.
 - All existing connections to the NFS Server remain operative. However, no new NFS V2 or NFS V3 mounts can be established to the NFS Server.
 - In order for the NFS Server to reconnect to RPCBIND, it must be restarted, which impacts the existing mounts to the NFS Server.
- **New enhancement:** The RPCBIND and NFS Servers are designed to allow the NFS Server to re-register with RPCBIND when RPCBIND is restarted, without an NFS Server restart.
 - This is designed to help preserve existing connections to the NFS Server and to allow new mounts when RPCBIND is restarted.

? Why it Matters: Potentially helps to improve the NFS Server resiliency and availability by eliminating a reason for NFS Server restarts.



z/OS® DFSMS™ Highlights



- Where to find additional information:
 - **V2.1**
 - **DFSMS Using the New Functions (SC23-6857-00)** - <http://www-05.ibm.com/e-business/linkweb/publications/servlet/pbi.wss?CTY=US&FNC=SRX&PBL=sc23-6857>
 - **R13**
 - **DFSMS Using the New Functions (SC26-7473-08)** – <http://publibz.boulder.ibm.com/cgi-bin/bookmgr/Shelves/ez2zo111?filter=DFSMS+Using+the+New+Functions+&SUBMIT=Search+titles>
 - **z/OS V1.13 DFSMS Technical Update -** <http://www.redbooks.ibm.com/abstracts/sg247961.html?Open>
 - **R12**
 - **DFSMS Using the New Functions (SC26-7473-07)** - <http://publibz.boulder.ibm.com/epubs/pdf/dgt2g570.pdf>
 - **z/OS V1.12 DFSMS Technical Update -** <http://www.redbooks.ibm.com/abstracts/sg247895.html?Open>



Connect with IBM System z on social media!

Subscribe to the new [IBM Mainframe Weekly](#) digital newsletter to get the latest updates on the IBM Mainframe!

LinkedIn

[System z Advocates](#) **
[IBM Mainframe-Unofficial Group](#)
[IBM System z Events](#)
[Mainframe Experts Network](#)
[SHARE](#)



facebook

[IBM System z](#) **
[IBM Master the Mainframe Contest](#)
[IBM Destination z](#)
[SHARE Inc.](#)

twitter

[IBM System z](#) **
[IBM System z Events](#)
[Destination z](#)
[SHARE](#)

System z SMEs and Executives:
Deon Newman - [@deonnewm](#)
Steven Dickens - [@StevenDickens3](#)
Michael Desens - [@MikeDesens](#)
Patrick Toole - [@Pat_Toole_II](#)
Kelly Ryan - [@KellykmRyan](#)
Richard Gamblin - [@RichGx](#)

Blogs

[IBM Mainframe Insights](#) **
[Millennial Mainframer](#)
[#MainframeDebate](#) blog
[SHARE](#) blog
[IBM Destination z](#)



YouTube

[IBM System z](#) **
[Destination z](#)

tumblr

[IBM Mainframe50](#)

Include the hashtag [#mainframe](#) in your social media activity and [#mainframe50](#) in 50th anniversary activity

** Indicates official IBM System brand owned accounts, managed by Carly Exum (STG) and Pratin Ashtekar (SWG)