



DFSMS™ : Latest and Greatest - z/OS® 1.13 Overview

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Disclaimer

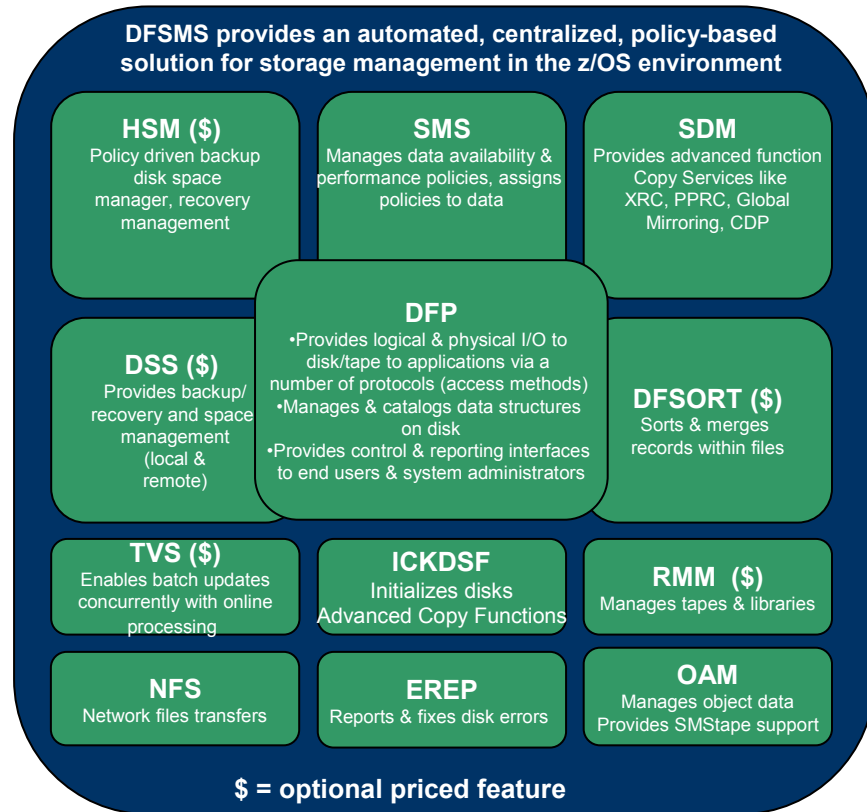
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DFSMS™ - Providing System Managed Storage on z/OS®



DFSMS is the standard methodology worldwide for managing enterprise data and storage on the z/OS platform

DFSMS Supports Information Infrastructure Strategy
Innovative, Integrated, Available Today



Information Compliance

- Ability to cope with increased security and compliance requirements



Information Availability

- Improved storage administrator productivity and simplified management of the z/OS environment
- Increased data storage capacity and scalability to cope with explosive growth of data volumes and database sizes
- Seamless, reliable, performance-sensitive data sharing
- Support for deployment of new processors/systems while exploiting their capabilities efficiently
- Point-in-time copy, fast replication, and continuous data mirroring functions while preserving consistency
- High Availability with simpler, faster, and more reliable recovery operations



Information Retention

- Data availability at all levels of the storage hierarchy
- Long standing provider of critical data management functions



Information Security

- Improved Security with exclusive media encryption capability, integration with z/OS Key Management



z/OS® DFSMS™ V1.13 Highlights (September 2011)



- **NEW z/OSMF DASD Management Application**
- **DFSMSHsm**
 - DFSMSHsm CDS Backup Improvements
 - DFSMSHsm “On Demand” Migration
 - DFSMSHsm RAS and Usability Enhancements
- **DFSMSrmm**
 - DFSMSrmm Simplified Monitoring & Management
 - DFSMSrmm RAS Enhancements
- **SDM**
 - SDM RAS Enhancements
- **OAM**
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 - OAM Usability & Reliability Enhancements
- **NFS**
 - NFS Windows 7 Support
- **DFSMSdfp**
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 - OCE Descriptive Text for Errors
 - OCE Tape Error Recovery for missing and out of sequence volumes
 - OCE FREEVOL=EOV Support
 - OCE RAS
 - EAV Enhancements*
- **Access Methods**
 - VSAM RLS Buffer Enhancements
 - BAM Support for zHPF*
 - BAM RAS Enhancements
 - Media Manager Support for DB2 List Prefetch*
- **Catalog**
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 - Catalog VVDS Expansion
 - Catalog Alias Constraint Relief
 - Catalog Search Interface Redrive
 - Replace Catalog Pseudo-Close with VSAM Close
- **IDCAMS**
 - IDCAMS LISTCAT LEVEL
 - IDCAMS DELETE UCAT Message
- **SMS / ISMF**
 - ISMF Sort Capability & Space in GB
 - SMS Best Practices Enhancements
 - SMS Support for Increased Retention Period
 - SMS RAS Enhancements
- **PDSE**
 - IEBCOPY Command
 - New PDSE Commands
 - PDSE Fairness/Sharing Policy
 - IEBCOPY Enhancements
- **DADSM / CVAF / Device Services**
 - DADSM / CVAF Availability Enhancements
 - Update Volume Information
- ***Statement of Direction (4Q2011 GA)**

NEW z/OSMF Storage Management Application

- **z/OSMF DASD Management Application**
 - The first phase in simplifying SMS Storage Management focuses on the task of adding storage capacity to an SMS pool storage group through a single user interface.
 - The z/OSMF DADS Management application is designed to help the storage administrator by streamlining the process of adding volumes to SMS pool storage groups.
 - It's intended to allow users to perform storage group management tasks from within the application, reducing several manually intensive steps involving multiple applications to a single GUI.
 - It provides the following tasks
 - Define role for storage administrator capabilities
 - Define policies to assist in storage administration tasks
 - Define pools of “extra predefined volumes”
 - View storage group usage to find any exceeding storage capacity thresholds
 - Add storage wizard to manage a number of tasks required to increase pool storage group capacity:
 - *Decides how much storage to add (default will be system-recommend based on policy)*
 - *Selects and inits volumes from pool of pre-defined volumes*
 - *Updates SCDS with selected volumes*
 - *Optionally, vary the volumes online and activate the modified SCDS*
 - Planned for 1Q12 with the PTF for APAR PM40869*

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z/OS DFSMS V1.13 Highlights

(September 2011)

- **DFSMSHsm**
 - DFSMSHsm CDS Backup Improvements
 - DFSMSHsm “On Demand” Migration
 - DFSMSHsm RAS and Usability Enhancements

Session 9944: DFSMSHsm Best Practices to Help You Get the Most from Your Investment, Wednesday 8AM

Session 9351: Managing HSM So That HSM Doesn't Mangle You!, Wednesday 1:30 PM

Session 9943: What's New in DFSMSHsm, Thursday 11AM

DFSMSHsm R13

- **DFSMSHsm CDS Backup Improvements**

- All DFSMSHsm functions are quiesced throughout the CDS backup function, and this impacts the ability to recall or recover data from DFSMSHsm during this period.
 - Journal must be backed up real-time (i.e. no Concurrent Copy option) and thus holds up DFSMSHsm activity.
- **New enhancement:** CDS backup processing will begin the CDS backup function immediately instead of waiting for DFSMSHsm requests to complete.
 - When you specify that a point-in-time copy technique is to be used, CDS backup will back up the journal with minimum impact to DFSMSHsm request processing.
- ? **Why it Matters:** Improve system responsiveness with less-disruptive DFSMSHsm journal and control data set (CDS) backups.

- **DFSMSHsm “On Demand” Migration**

- Interval migration -- at the top of every hour, DFSMSHsm performs a space check on every volume that it manages.
 - Causes a spike in DFSMSHsm CPU usage and can consume a lot of wall clock time.
- **New enhancement:** Specify that space management be done when any volume in a storage group for which automigration is enabled exceeds the utilization threshold, rather than waiting for Interval Migration processing.
- ? **Why it Matters:** Make DFSMSHsm space management more responsive when On Demand Migration replaces Interval Migration processing.

DFSMSHsm R13

- **DFSMSHsm RAS and Usability Enhancements**

- **RELEASE RECALL (DASD)**

- After a HOLD RECALL command is issued, there is no command to release the tasks recalling from DASD volumes without also releasing the hold on recalls from tape volumes.
 - *If an operator experiences a major problem with a tape subsystem, there is no way to release DASD recalls without issuing a general RELEASE RECALL.*
- **New enhancement:** A new subparameter for the RELEASE RECALL command you can use to specify that DFSMSHsm avoid recalling data sets from missing or faulty tapes while releasing the hold on recalls from DASD.
- **Share Requirement MET:** SSMVSS09005
 - *Once a HOLD RECALL command has been issued, there is no way to release DASD recalls without also releasing tape recalls.*
- **? Why it Matters:** If a tape subsystem will be down for an extended period of time, work can continue for those datasets only migrated to DASD.

DFSMSHsm R13



- **DFSMSHsm RAS and Usability Enhancements**

- **QUERY CRQ(RECALL)**

- Common Recall Queue (CRQ) is a single RECALL queue shared by multiple DFSMSHsm hosts. It enables the Recall workload to be distributed across all DFSMSHsm hosts in the sysplex.
 - *A recall request in the CRQ can only be canceled from the originating host. There is no DFSMSHsm command available to help determine which host the recall request initiated from.*
- **New enhancement:** Modified QUERY CRQ command output to include the host id that originated the Recall.
- **? Why it Matters:** User can easily determine the 'originating host ID' should it be necessary to cancel a RECALL request.

z/OS DFSMS V1.13 Highlights (September 2011)

- **DFSMSrmm**
 - DFSMSrmm Simplified Monitoring & Management
 - DFSMSrmm RAS Enhancements

Session 9967 Best Practices for Maximizing Your DFSMSrmm Investment, Tuesday 9:30AM

Session 9942 What's New in DFSMSrmm, Thursday 1:30PM

Session 9232/9233 Storage Reporting Using the Report Generator, Friday 9:30AM

DFSMSrmm R13

- **DFSMSrmm Simplified Monitoring & Management**

- **Retention date in the volume and data set search results**

- Search results list for volumes or data sets might show retained resources with an expiration date already passed, if the resource is retained by VRS.
- **New enhancement:** Display the retention date instead of the expiration date in the search results list, when the volume / data set is VRS retained.
- **? Why it Matters:** Storage administrators can more easily determine from the search results list why a volume is retained, without viewing the volume and data set details.

- **SEARCHDATASET extensions**

- The SEARCHDATASET subcommand has limited ability to search through the attributes of data sets.
- **New enhancement:** Additional operands are added enabling more extensive searches including many on specific date ranges.
- **? Why it Matters:** Search more efficiently in a large number of data sets.

- **TVEXTPURGE parmlib option with extra days**

- If DFSMSHsm tapes are expired by the EDGTVEXT HSM exit, extra days for retention can only be defined with an EXTRADAYS VRS.
- **New enhancement:** With the parmlib option TVEXTPURGE(EXPIRE(days)) a number of extra days can be defined with no additional consideration.
 - *On systems with mixed releases please be aware the TVEXTPURGE(EXPIRE(days)) will only be processed on V1R13, but not on lower releases!*
- **? Why it Matters:** Avoid having to define and apply a VRS.

DFSMSrmm R13



- **DFSMSrmm Simplified Monitoring & Management**

- **Expiry Date Set By information**

- By looking at the expiration date of the volume or data set it is hard to guess who set it – did it come from OCE or from VOLCAT, during conversion or export, ... or did RMM set/changed it according the parmlib OPTIONS.
- **New enhancement:** DFSMSrmm now also records details of what event caused the EXPDT to be set or changed.
- **? Why it Matters:** It is now easy to determine the event that caused the expiration date to be set or changed.

- **VRS Management Updates**

- All data in the RMM inventory is managed by dynamic VRS policies. With every housekeeping run the retention for a volume or a data set can change.
- **New enhancement:** Exclude single data sets from VRSEL.
 - *VRSEL processing is reduced by eliminating certain types of data from VRSEL processing*
- **? Why it Matters:** Help simplify retention policies, avoid batch VRS policy management, and enable you to determine how long a tape data set will be retained.
- **New enhancement:** Optionally assign a retention method at the time a tape data set is created enabling a choice of whether data is managed by expiration date or by VRS policies.
 - *Retention information for expiration date retained data can be known when a tape data set is created.*
- **? Why it Matters:** Enables use of simpler retention policies and helps to avoid batch VRS policy management.

DFSMSrmm R13

- **DFSMSrmm RAS Enhancements**

- **CANCEL Cleanup**

- When DFRMM is cancelled during ESTAE processing, the cleanup of running and queued requests may not be completed successfully. This potentially leaves users of DFSMSrmm services waiting forever.
- **New enhancement:** DFSMSrmm subsystem interface processing now correctly detects that DFRMM is or has been stopped and fails incomplete requests as EDG2002I 'Cancelled by Operator'.
 - *Requests which abnormally end are failed with EDG2003E 'ABEND During Subsystem Processing'.*

? **Why it Matters:** DFSMSrmm TSO commands, housekeeping and tools now provide better user feedback in case a subsystem request fails due to RMM has been cancelled or the subsystem task has been abended.

- **Selective Volume Movement**

- Automated movement avoids moving logical volumes when stacked volume support is enabled. However, many of our customers have non-IBM virtual tape solutions and need another way to prevent volume movement driven by VRSEs.
- **New enhancement:** If a library/appliance is not able to support movement of volumes it can be specified in parmlib LOCDEF command.

? **Why it Matters:** Improved control over automatic inventory management driven movement.

- **Last Change Details**

- Customer requirement to provide an easy way to audit changed media, where ever possible without running EDGAUD audit reports.
- **New enhancement:** Last change information is added to all list command outputs and to the dialog for all resources stored in the RMM CDS.

? **Why it Matters:** Reduced need to run EDGAUD audit reports.

DFSMSrmm R13

- **DFSMSrmm RAS Enhancements**

- **VRS Last Reference Date**

- After some time the number of Vital Record Specifications in a customer installation may grown to a number that is hard to manage.
 - *No longer used VRSEs are especially hard to identify.*
- **New enhancement:** Display the VRS last reference date in the dialog and provide sorting of search results by it.
- **? Why it Matters:** The user can now quickly and easily cleanup unused VRSEs.

- **Display Navigation Enhancements**

- No fast path command exists to display multi-volume and multi-file lists. Only very few Point-and-Shoot fields exist in the RMM dialog.
- **New enhancement:** Specific to multi-volume and multi-file lists, 16 Point-and-Shoot fields on Volume display, and 5 Point-and-Shoot fields on Data set display are implemented.
- **? Why it Matters:** Quicker and easier navigation in the RMM dialog.

z/OS DFSMS V1.13 Highlights (September 2011)

- **SDM**
 - SDM RAS Enhancements

Session 9636 GDPS: Overview and Recent Enhancements (Release 3.7 & 3.8), Wednesday 9:30AM

Session 9945 What's New in DFSMSdss and System Data Mover, Wednesday 11AM

Session 9947/9948 Preserve System Integrity for Your Business With IBM Replication Solutions for BC , Wednesday 1:30AM

Session 9946 Making the Most of DFSMSdss and SMS: Hints, Tips, and Best Practices in your z/OS Environment, Thursday 8AM

SDM R13



- **SDM RAS Enhancements**

- **XQUERY FILTER**

- The STA() parameter on the XQUERY command filters the query output so that only volumes in the specified status are included in the report.
 - *STA(BLK) includes volumes which are in a “blocked” state, which includes device blocking and long busy. The purpose of filtering on blocked devices is to identify sources of application impact, since blocking works by slowing down application writes on a volume.*
 - *The existing filter is insufficient to meet customer needs because not all volumes which are contributing to high residual counts and application impact are identified.*
- **New enhancement:** Provide filtering for high-activity volumes that are not being blocked or paced.
 - *Used by the XRC Performance Monitor (XPM). XPM changes are in APAR OA35078. After applying the XPM APAR, APAR OA33140 allows XPM to work on pre-R13 systems.*

? Why it Matters: New parameter can be used to balance volumes across controllers.

- **EAV 1TB Volume* Bitmaps**

- Bitmaps for 1TB volumes take up 31,457,280 bytes.
- **New enhancement:** Place bitmap above the 2GB bar.
- **? Why it Matters:** Cut down on space used in an XRC primary address space and provide XRC exploitation of EAV volumes.

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SDM R13



- **SDM RAS Enhancements**

- **Concurrent Copy PARMLIB**

- Customer requirement to simplify tuning changes for Concurrent Copy.
 - *Concurrent Copy jobs have utilized hardcoded tuning parameters since initial shipment. Often times these values have required modification for a particular system. This could be done using AMASZAP, SDM PATCH command but are not easy.*
- **New enhancement:** Provide SYS1.PARMLIB(ANTMIN00) keywords and Operator Modify Command keywords to adjust tuning values for CC.
 - *CC Read Ahead*
 - *CC Attention Throttling*
 - *CC I/O Adjustments*
- **? Why it Matters:** Allow supported tuning value adjustments for individual system optimization, and reduce / eliminate CC Attention SRB contention at the controller level.

z/OS DFSMS V1.13 Highlights (September 2011)

- **OAM**
 - OAM Filesystem Support
 - OAM Usability & Reliability Enhancements

**Refer to Anaheim
Conference
proceedings:**

**Session 9009 What's
New With OAM Object
Support**

**Session 9008 DFSMS
Object Support: Data
Archiving with OAM**

OAM R13



- **OAM Filesystem Support**

- OAM's storage hierarchy supports disk, tape, and optical storage levels.
- **New enhancement:** OAM adds support for file systems to the disk level for zSeries File System (zFS) and Network File System (NFS) file systems, in addition to the existing support for DB2-backed object storage.
 - Support of file systems for primary OAM object storage allows z/OS UNIX file systems to store, retrieve, and delete objects, and to move objects between file systems and other locations in the OAM hierarchy.

? Why it Matters: Provides new, more flexible ways to configure OAM storage hierarchy.

OAM R13



- **OAM Usability and Reliability Enhancements**

- **Wildcard in F OAM,S,STORGRP Command**

- Operators had to enter command for each object and/or object backup storage group he wanted OAM to process.
- **New enhancement:** The MODIFY OAM,S,STORGRP,groupname command has been enhanced to support a single asterisk wildcard in the groupname.
- **? Why it Matters:** OAM command simplification.

- **Extend Object Expiration Beyond 27 Years**

- Prior to this support, the maximum expiration criteria specified via SMS management class definition (other than NOLIMIT) is 9999 days (roughly 27 years).
- **New enhancement:** Objects can still be retained FOREVER (or NOLIMIT) however the 9999 day maximum associated with management class Retention Limit, Expire after Date/Days, and Expire after Days Non-usage has been expanded to 93000 days.
 - *The maximum number of days specified via the RETPD and EVENTEXP keywords on the OSREQ API has also been expanded to 93000.*
- **? Why it Matters:** Extended expiration support which may help assist with compliance regulations.

OAM R13



- **OAM Usability and Reliability Enhancements**

- **Dynamic Update of SETOAM Keywords**

- In order to change the distribution of tape drives allocated for OAM object and object backup storage groups, installations had to modify values in the CBROAMxx Parmlib member and restart OAM.
- **New enhancement:** Values specified for the SETOAM keywords are dynamically changeable via the F OAM,UPDATE,SETOAM operator command. No restart of the OAM address space is required.
 - *SGMAXTAPESTORETASKS and SGMAXTAPERETRIEVETASKS (storage group level)*

? Why it Matters: Distribution of tape resource can be biased towards object or object backup storage groups as required.

- **Improved Media Migration**

- When processing volumes with a large number of collections, a significant amount of time could elapse between the time the MOVEVOL command is issued and the time of the first write to a new volume.
 - *Running MOVEVOL on one member of an OAMplex resulted in measurable CPU usage on 'idle' members in the OAMplex in reaction to XCF messages broadcast by the 'active' member.*
- **New enhancement:** OAM's media migration utility, MOVEVOL, is changed to no longer process objects on a collection boundary.
 - *With this support, the frequency of the broadcast messages relating to all tape reads and writes (not just MOVEVOL) from the 'active' member will be significantly reduced potentially resulting in much lower CPU usage on the 'idle' systems.*

? Why it Matters: This new algorithm should result in a better performance when moving objects from a source volume that contains a large number of OAM collections.

OAM R13



- **OAM Usability and Reliability Enhancements**

- **SMF Counter Scalability**

- Some 4 byte counter fields in SMF Type 85, subtypes 32-35 and 87 containing kilobyte values potentially could overflow as workloads and tape capacity increase.
- **New enhancement:** New 8 byte counter fields have been added to SMF Type 85, subtypes 32-35 and 87 to protect against potential overflow.
 - *The new 8 byte counters contain values in bytes and provide more granularity.*
- **? Why it Matters:** Avoids inaccuracies due to counter overflow (the 4 byte counters will contain 'FFFFFFFF' if overflow condition is detected).

- **RECYCLE Candidates Display**

- When an F OAM,START,RECYCLE command is issued, the Recycle Candidates display message, CBR9875I, followed by a list of up to 40 volumes that have met the criteria specified by the RECYCLE command is generated and sent to hard copy SYSLOG.
 - *The total number of volumes that meet the criteria for the RECYCLE command is **not** displayed.*
- **New enhancement:** The message line that is displayed at the end of the Recycle Candidates display is updated to show a count of the total number of volumes that met the criteria specified in the RECYCLE command.
- **? Why it Matters:** Improved OAM monitoring and reporting.

z/OS DFSMS V1.13 Highlights (September 2011)

- **NFS**
 - NFS Windows 7 Support

NFS R13



- **NFS Windows 7 Support**

- ***New enhancement:*** NFS supports 32- and 64-bit versions of Microsoft Windows 7 Professional Edition with Open Text NFS Client or Open Text NFS Server installed.

? Why it Matters: Continued currency support.

z/OS DFSMS V1.13 Highlights (September 2011)

- **DFSMSdfp**
 - OCE Support for XTIOT and Uncaptured UCBs
 - OCE Descriptive Text for Errors
 - OCE Tape Error Recovery for missing and out of sequence volumes
 - OCE FREEVOL=EOV Support
 - OCE RAS
 - EAV Enhancements

Session 9941 Need Space? How to Start Planning Now for Migration to EAV, Tuesday 4:30PM

OCE R13

- **OCE Support for XTIOT and Uncaptured UCBs**
 - OCE XTIOT support for BAM DCBs was added in z/OS V1R12 but did not include subsystem DCBs and ACBs.
 - **New enhancement:** XTIOT support for subsystem ACBs and DCBs
 - Subsystems to use BAM DCBs and ACBs with XTIOT.
 - Unauthorized programs to use XTIOTs when a captured UCB is not requested.
 - **? Why it Matters:** Help provide virtual storage constraint relief for address spaces that allocate a large number of data sets.
- **OCE Descriptive Text for Errors**
 - OCE and the OPEN or CLOSE access method executors detect hundreds of error conditions that result an abend message containing a numeric abend code and return code value.
 - **New enhancement:** An installation option, via DEVSUPxx, to additionally include the descriptive text appended to the associated abend message.
 - Eliminates the need to reference the message manuals to interpret the abend and return codes.
 - New DEVSUPxx parameter to activate: OCE_ABEND_DESCRIP = YES | NO
 - **? Why it Matters:** Improved RAS and first time data capture.

OCE R13

- **OCE Tape Error Recovery for missing and out of sequence volumes**

- For multi-volume data sets error conditions can be detected during OCE input processing. There are ignore (default) or abend options available for these anomalies, but NO recovery option.
- **New enhancement:** OCE detects the anomaly and passes control to the LABAN exit. RMM exercises the recovery option and will attempt to return the corrected list. OCE processes the RMM volume list and returns a new message:
 - IEC716I ddnamexx: TAPE MULTIVOLUME LIST CORRECTED
 - Note: Not available when you specify OPTCD=B, which bypasses label anomaly processing.

? Why it Matters: *Automatic* recovery for missing or out-of-sequence tape volumes.

- **OCE FREEVOL=EOV Support**

- Today, SYSZVOLS in GRS is needed in order to read multi-volume files on tape concurrently from different systems in the sysplex.
- **New enhancement:** Allow different systems in the sysplex to concurrently read multivolume tape files in a way similar to the Deq at Demount Facility.
 - A new JCL keyword (FREEVOL=EOV) will allow a tape for part of a multivolume data set to be available at end of volume rather than end of step.
 - Limitations:
 - *Does not require APF authorization, and since it is implemented in the JCL, no changes to the application are required.*
 - *Honored only for input processing.*
 - *EOV and CLOSE volume disposition processing will unload the volume when the disposition would otherwise be REWIND.*

? Why it Matters: Allow other jobs to use the tape immediately and overlap processing of multivolume tape data sets.

OCE R13



- **OCE RAS Enhancements**

- **Allow DCBE to be either in key8 or key9**

- Today, key 8 callers of OPEN are allowed to provide DCBs located in key-9 storage; however, OPEN does not allow DCBEs also to be in key-9 storage.
 - **New enhancement:** Allow both DCB and DCBE to be in only key 9 storage.
 - **? Why it Matters:** No longer need to copy Key 9 DCBEs to Key 8 storage before OPEN.

- **MULTSDN**

- QSAM uses the MULTSDN value to calculate a better BUFNO value for tape and specific types of DASD data sets. The BUFNO is calculated based on the first data set in the concatenation.
 - *When going to the next data set in the concatenation an out of storage condition can occur when EOVS getmains a large amount of storage based on the BUFNO and BLOCKSIZE when the blocksize of the next data set is much larger than the current data set.*
 - **New enhancement:** Dynamically recalculate the BUFNO value when switching to the next concatenated data set when QSAM with MULTSDN is specified.
 - **? Why it Matters:** Avoid potential out-of-space conditions due to incorrect BUFNO values for concatenated data sets.

- **RACF Return and Reason Codes**

- **New enhancement:** On return from a call made to RACF from OCE, when the return or reason code is nonzero, save the information and make it available in a dump associated with the RACF failure during OCE processing.
 - **? Why it Matters:** Improved first time data capture.

What is an EAV?

- What is an Extended Address Volume (EAV)?
 - A volume with more than 65,520 cylinders
 - Size limited to 223 GB (262,668 Max cylinders)
 - Supported in z/OS V1R10 and higher
- What is EAS Eligible?
 - A data set on an EAV that is eligible to have extents in the extended addressing space and described by extended attribute DSCBs (format 8/9)
 - Can reside in track or cylinder-managed space
 - SMS-managed or non-SMS managed
 - Any data set type can reside in track-managed space



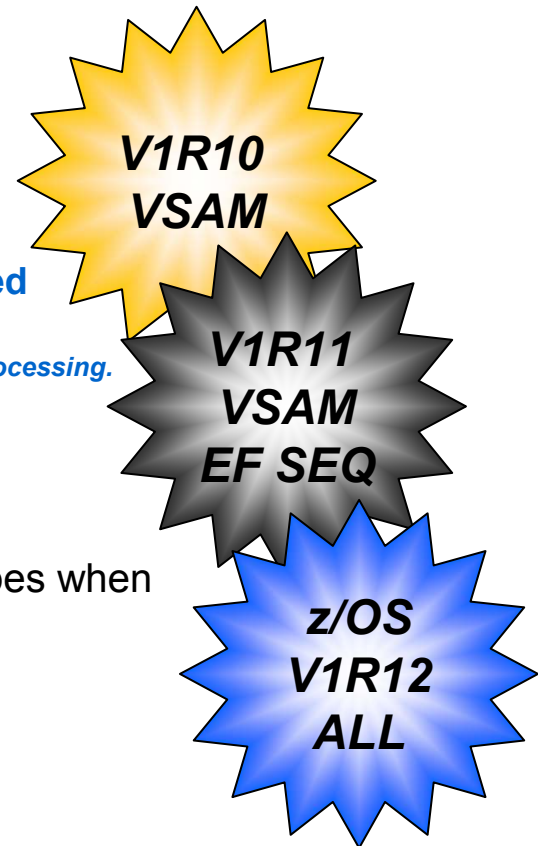
Breaking the 65,520 cylinder limit



EAV R13



- **Data set types supported**
 - **VSAM data types (KSDS, RRDS, ESDS and linear)**
 - **Sequential (Extended Format)**
 - **Sequential (Basic and Large Format)**
 - **Direct (BDAM)**
 - **Partitioned (PDS, PDSE)**
 - **Catalog (VVDS and BCS)**
 - **All data sets used by DFSMSrmm (journal and dynamically allocated temporary files)**
 - *Except the RMM CLIST data set when created automatically by SEARCH subcommand processing.*
- **z/OS R13 Exploitation**
 - Communications Server FTP, which already supports SMS-managed extended format sequential data sets, supports additional data set types when they reside in the extended addressing space (EAS) of an EAV:
 - SMS-managed and non-SMS-managed physical sequential
 - Basic and large format data sets
 - PDS and PDSE data sets
 - GDG data sets
 - SDSF support for output data sets.



? Why it Matters: Scalability for customers constrained by 4 character UCB's

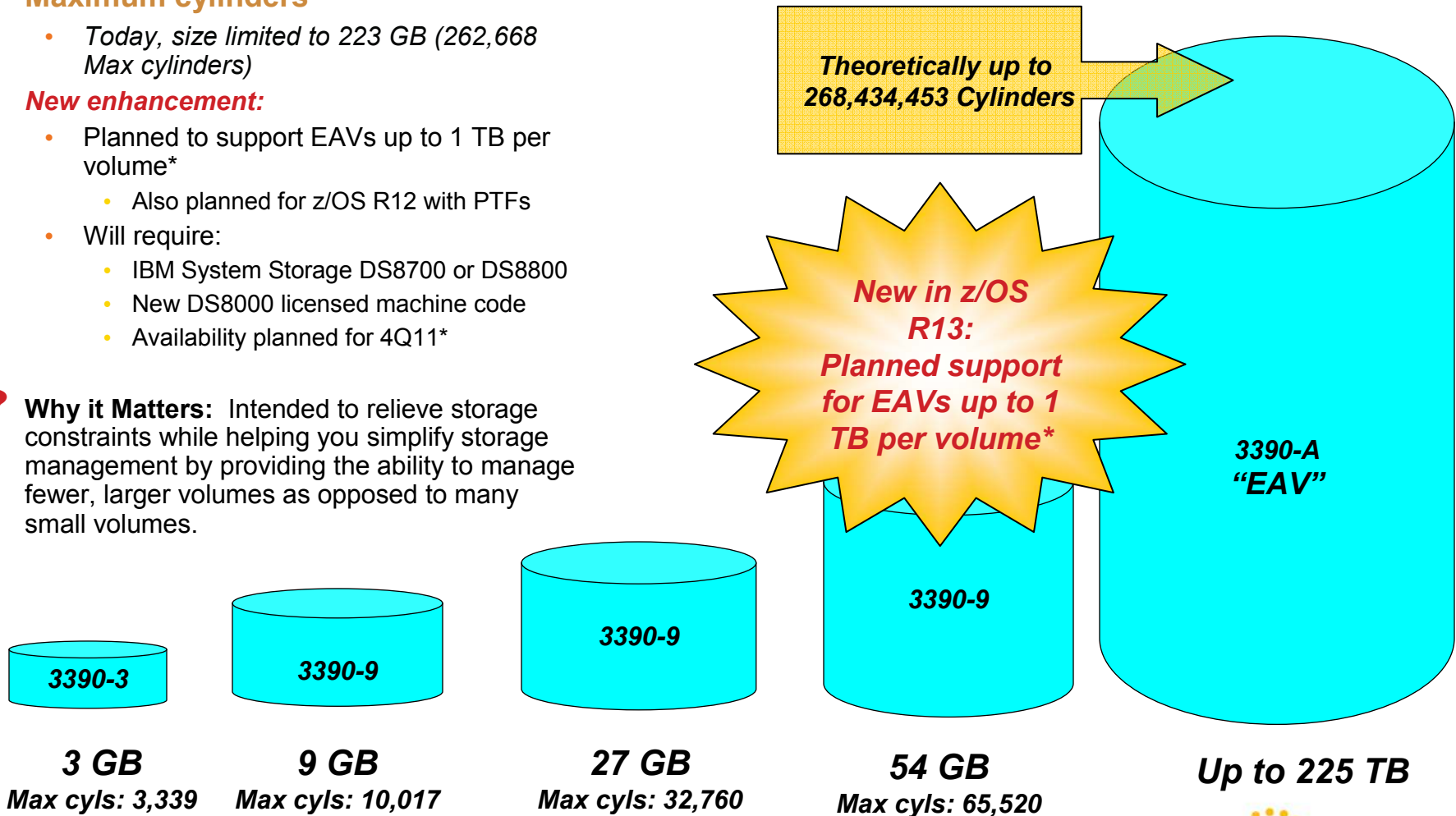


EAV R13



- **Maximum cylinders**
 - Today, size limited to 223 GB (262,668 Max cylinders)
- **New enhancement:**
 - Planned to support EAVs up to 1 TB per volume*
 - Also planned for z/OS R12 with PTFs
 - Will require:
 - IBM System Storage DS8700 or DS8800
 - New DS8000 licensed machine code
 - Availability planned for 4Q11*

? Why it Matters: Intended to relieve storage constraints while helping you simplify storage management by providing the ability to manage fewer, larger volumes as opposed to many small volumes.



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z/OS DFSMS V1.13 Highlights (September 2011)

- **Access Methods**
 - VSAM RLS Buffer Enhancements
 - BAM Support for zHPF*
 - BAM RAS Enhancements
 - Media Manager Support for DB2 List Prefetch*

**Session 9955 DFSMS
Basics: VSAM Transaction
VSAM (TVS) Basics /
Implementation,
Wednesday 11AM**

**Session 9934: Evolution of
the System z Channel
Monday 4:30**

**Session 9797: zEnterprise
196 I/O Infrastructure
Update Tuesday 4:30**

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VSAM RLS R13

- **VSAM RLS Buffer Enhancements**

- RLS spheres remain connected for a short period of time after the data set is last closed in the system.
 - **New enhancement:** Setting of a new Storage Class attribute allows the buffers and its resources for a data set be released sooner when the data set is last closed in the system.
 - Beneficial to environment with applications that do not quickly re-open the same data sets and environment that is often short of buffer pool space.
 - *Not intended for data sets that are being re-open quickly as BMF will have to re-prime all the buffers it needs when reopening the same data sets. In this case, turning on this feature might even degrade the performance*
 - IDCAMS DCOLLECT will be designed to include information about this new attribute in storage class (type SC) records.
 - **New enhancement:** Provide enhancements to VSAM RLS buffer management algorithms to improve processing of "aged" buffers.
 - Expected to help improve performance when processing large RLS data sets with large buffer pools.
- ? Why it Matters: Help improve performance when processing large VSAM RLS data sets.**

BAM R13

- **High-Performance FICON (zHPF) improvements planned for 4Q2011***
 - **New enhancement:** zHPF to support certain I/O transfers for QSAM, BPAM, and BSAM
 - Extends current zHPF support for VSAM, Extended Format sequential, zFS, and PDSE data sets to support:
 - Basic nonextended format Physical Sequential data sets
 - Basic and large format sequential data sets
 - Will require:
 - z/OS V1.13, z/OS V1.12, or z/OS V1.11 with PTFs
 - zEnterprise System server with channels that support zHPF and a minimum Machine Change Level (MCL)
 - HMC V2.11.1
 - Support Element V2.11.1
 - IBM System Storage DS8700 or DS8800 series with new DS8000 licensed machine code
 - Enable in IGDSMSxx member of parmlib: SAM_USE_HPF(YES|NO)
 - Default NO on z/OS R11-R12, YES on z/OS R13
- **? Why it Matters:** Better I/O performance expected with no application changes

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BAM R13



- **BAM RAS Enhancements**

- **Improved tracing**

- Today, for some extended format SAM errors, the user has to recreate the problem in order to gather diagnostic information.
- **New enhancement:** Diagnostic enhancements designed to reduce problem recreates and problem determination efforts.
 - *Provide a SAM internal trace facility designed to trace at the DCB level without GTF. Trace table entries created until the DCB is closed.*
 - *Also DESERV enhanced to use existing interface to the SSF CTRACE component to create trace records which can be formatted by IPCS.*

? Why it Matters: Improved diagnostics and first time data capture.

Media Manager R13



- **DB2 List Prefetch***

- **Media Manager Support**

- **New enhancement:** Provide improvements for DB2 list prefetch.
 - *Expected to provide significant performance improvements for certain DB2 queries and some DB2 utility operations.*
 - *Will take advantage of new support planned in 4Q11* for IBM System Storage DS8700 or DS8800 series.*
 - *New DS8000 licensed machine code.*
 - *Also planned to be available on z/OS V1.11 and z/OS V1.12 with PTFs.*

? Why it Matters: Synergy and improved performance with a combination of z/OS, DB2, and System Storage.

z/OS DFSMS V1.13 Highlights

(September 2011)

- **Catalog**
 - Catalog PARMLIB Support
 - Catalog VVDS Expansion
 - Catalog Alias Constraint Relief
 - Catalog Search Interface Redrive
 - Replace Catalog Pseudo-Close with VSAM Close

Session 9965: Catalog Management Overview, Tuesday 1:30PM

Refer to Anaheim Conference proceedings:

Session 8977 What's New with DFSMS ICF Catalog and IDCAMS

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Catalog R13

- **Catalog PARMLIB Support**

- Users can customize the Catalog environment via SYS1.NUCLEUS (SYSCATxx) or SYS1.PARMLIB (LOADxx).
 - However, only one line (80 characters) is available for parameters and that line has long been filled preventing any new parameters from being added. Also, It prevents customers from changing these parameters once the system has been IPL'ed.
- **New enhancement:** A new parmlib member, IGGCATxx, allows users to specify a number of Catalog system parameters. Default is IGGCAT00
 - VVDS space defaults
 - Catalog utilization warning message threshold
 - Limit on CAS service tasks (overrides any specification in SYSCATxx)
 - Whether to enable extension records for user catalog aliases
 - A number of other things you also specify using MODIFY CATALOG
 - Some keywords inadvertently omitted from R13 Init & Tuning draft:
 - *EXTENDEDALIAS(YES/NO), DELFORCEWNG(YES/NO), DSNCHECK(YES/NO), SYMREC(YES/NO), UPDTFAIL(YES/NO), VVRCHECK(YES/NO), DELRECOVWNG(YES/NO)*

? Why it Matters: Customers can now create their own Catalog parmlib member(s) to customize their Catalog environment; the parameters can be changed by doing an IPL or a simple restart of the Catalog address space.

Catalog R13

- **Catalog VSAM Volume Data set (VVDS) Expansion**

- The max of x'FFFF' CI's in a VVDS is the limiting factor for the number of VSAM data sets or number of data sets on an SMS managed volume.
- **New enhancement:** Increase the max usable size of the VVDS
 - Maximum VVDS space increased from 5,460 tracks to 5,825 cylinders.
 - For most data set types, this is expected to be an increase from hundreds of thousands of data sets to millions of data sets per volume.
- **? Why it Matters:** Allows the number of data sets per volume to scale with extended address volume (EAV) sizes.

- **Catalog Alias Constraint Relief**

- Approximately 3500 catalog aliases are allowed per user catalog.
 - In order to have more aliases, additional catalogs must be defined.
- **New enhancement:** Increase the number of aliases defined for a user catalog.
 - New limit expected to be over 500,000 (depending on alias lengths). Creates a new catalog connector extension record (Type V).
 - Catalog parmlib member (IGGCATxx) keyword
 - *EXTENDEDALIAS(YES|NO)*
 - **Do not specify YES until all systems that will process the catalog are at R13!**
- **? Why it Matters:** Scalability; reduces the number of user catalogs to be defined and managed.

Catalog R13

- **Catalog Search Interface Redrive**

- Due to the increased usage of Generic Filter Locate (GFL) via the Catalog Search Interface (CSI), more and more requests are not redriven successfully making a CAS restart less viable.
 - When a restart problem is in evidence, a return code of 246, reason code 0 is returned to the caller.
- ***New enhancement:*** Redrive the CSI request in the event of a return code 246 reason code.
 - Maximum VVDS space increased from 5,460 tracks to 5,825 cylinders.
 - For most data set types, this is expected to be an increase from hundreds of thousands of data sets to millions of data sets per volume.
- **? Why it Matters:** More requests complete normally (ie redrives are successful).

Catalog R13

- **Replace Catalog Pseudo-Close with VSAM Close**
 - Today, Catalog Management invokes VSAM Open, which writes out SMF62 records. Catalog Management did a pseudo-close which does not issue a real VSAM Close, and no SMF64 records are written out
 - ***New enhancement:*** Replace Catalog pseudo-close with VSAM Close.
 - 2 SMF64 records written out: one for DATA and one for INDEX.
 - **? Why it Matters:** Improved problem diagnostics in case of error and improved reporting.

z/OS DFSMS V1.13 Highlights

(September 2011)

- **IDCAMS**
 - IDCAMS LISTCAT LEVEL
 - IDCAMS DELETE UCAT Message

**Refer to Anaheim
Conference proceedings:**

**Session 8977 What's New
with DFSMS ICF Catalog
and IDCAMS**

AMS R13



• IDCAMS LISTCAT LEVEL

- Ordinary LISTCAT with LVL sometimes does not list all dependent objects for a CLUSTER or an AIX. This is because the LVL pattern for the DATA and the INDEX objects does not match the generic pattern expressed.
- **New enhancement:** With a CDILVL option to a LISTCAT LVL, you are able to see the other dependent objects, so long as the pattern matches the main CLUSTER or AIX object.
 - Specify whether related component names be listed when a data set entry is listed based on the pattern specified by LEVEL.
 - *Default is NOCDILVL, so you must specify CDILVL to get the extra set of dependent objects.*
 - CDILVL specification is only for LVL and is used with GFL listings only. Any use of LVL without GFL will be valid, but the parameter will be ignored.
- **? Why it Matters:** See more in a LISTCAT LVL listing than merely what matches the LVL pattern, necessarily.

• IDCAMS DELETE UCAT

- When DELETE User-catalog with FORCE option is issued, IDCAMS issues a WTOR warning message to confirm the deletion.
- **New enhancement:** Issue an operator message that requires a response before allowing a user catalog to be deleted when RECOVERY is specified.
 - Enabled using new operands of the MODIFY CATALOG command
- **? Why it Matters:** Help prevent inadvertent deletion of user catalogs in batch jobs using IDCAMS.

z/OS DFSMS V1.13 Highlights (September 2011)

- **SMS / ISMF**
 - ISMF Sort Capability & Space in GB
 - SMS Best Practices Enhancements
 - SMS Support for Increased Retention Period
 - SMS RAS Enhancements

ISMF R13



• ISMF Sort Capability

- Customer requirement to sort saved volume lists (using NaviQuest) by column.
- **New enhancement:** Added sort capability for volume list.
- **? Why it Matters: Make ISMF easier to use.**

• ISMF Space in GB

- **New enhancement:** Add function to ISMF to display space information in GB units and support a new display for pool storage groups.
 - Added the Display function for POOL type SG.
 - User can request space information be displayed in GB.
- **? Why it Matters: Make ISMF easier to use.**

SMS R13

- **SMS Best Practices**

- R12 added new SMS health checks for the communications and active configuration data sets (COMMDS and ACDS)
 - Best practice to specify the REUSE option to avoid running into space problems (SMS reason code 6068) as result of subsequent ACDS updates, or IMPORT/EXPORT functions.
 - *SMS will run into space problems when a lot of updates happen on the CDS without REUSE option specified.*
 - SMS Health Check only acts as a detective without enforcing the requirement of the REUSE option.
- **New enhancement:** SMS determines whether the configuration data set (CDS) has the REUSE attribute, and if not changes it to REUSE automatically during activation.

? Why it Matters: Avoid out of space conditions for SMS CDS.

SMS R13

- **SMS Support for Increased Retention Period**

- Currently the maximum data set retention period is limited to 9999 days after creation, which is about 27 years.
 - In many instances, this is insufficient due to various reasons such as legal requirements that documents be kept for longer than 27 years.
- ***New enhancement:*** New design limit is 93,000 days (a bit over 254 years).
 - 1-byte fields and 1900 TOD epoch date limit most expiration dates to YE2155.
 - 99000 and 99366 remain as “never expire” dates no matter how derived.
 - OAM and DFSMSrmm to support expiration dates up to the year 2264.
 - The coexistence PTFs for lower level systems will continue to enforce the maximum retention period of 9999 days.

? Why it Matters: Legal requirements and compliance regarding document retention can be met more easily.

SMS R13

- **SMS RAS Enhancements**

- **CDS Linear Data Set Check**

- SMS requires the CDS to be a linear data set and will issue a dump with unclear message that prevents the user from diagnosing the problem.
- **New enhancement:** SMS determines if the CDS is a VSAM linear data set and will issue a clear message to indicate the error.
 - *IGD090I if the CDS is not a VSAM linear data set*

? Why it Matters: Improved SMS diagnostics.

- **SMS PARMLIB parameter and Command**

- Typically, error messages generated during SMS processing are passed back to the caller who is responsible for externalizing these messages.
 - *For DELETE/RENAME processing, SMS will externalize its own error messages to the hardcopy log and the joblog.*
- **New enhancement:** SMS provides the user with an option to control the issuance of these DELETE/RENAME messages via a new PARMLIB parameter and operator command.
 - *New parameter for member IGDSMSxx: SUPPRESS_DRMSGS (YES|NO)*
 - *New operator command: SETSMS SUPPRESS_DRMSGS(YES|NO)*

? Why it Matters: SMS users can specify whether or not to have messages displayed in the hardcopy log and joblog.

SMS R13



- **SMS RAS Enhancements**

- **Space Requests Greater than '7FFFFFFF'X kilobytes**

- Current space definitions in internal control blocks and internal logic in SMS limit the size of data sets that can be handled to '7FFFFFFF'X KiloBytes. This computes to roughly 39 million tracks or 2.5 million cylinders for a 3390 device.
 - *Other components have similar restrictions but in most cases their limits are higher, e.g. MVS Allocation has a limit in the neighborhood of 16 million cylinders.*
- **New enhancement:** SMS will support a much higher data set size. The new limit will be '7FFFFFFF'X Megabytes or higher (greater than 2500 million cylinders).

? Why it Matters: Improved scalability for SMS.

- **Include CDS level in the output of D SMS command**

- Currently, the D SMS command generates the IGD002I message. This message will list information that is extracted from the IGDSMSxx member and stored in the IGDSSIVT.
 - *One piece of information that is not displayed is the level of the currently active configuration. .*
- **New enhancement:** SMS enhances the D SMS command to put out the level of the configuration in addition to all currently displayed fields.
 - *The level represents the level of DFSMS at which the configuration was created.*
 - *ACDS LEVEL = z/OS Vn.nn|UNAVAIL*

? Why it Matters: Improved SMS reporting.

SMS R13



- **SMS RAS Enhancements**

- **Provide More Current Volume Space Statistics**

- The volume statistics in the SMS control data set (SCDS) are not updated until the specific volume status is changed, i.e. varied online or offline or being allocated to.
 - *There is increasing demand by applications needing to calculate the actual available space in the entire storage group.*
- **New enhancement:** When SMS is requested to retrieve the volume list for a storage group, if any of the volume statistics in the list are not updated, then SMS will issue an LSPACE macro to obtain the latest statistics for that volume.
 - *For performance reasons, only a maximum of 500 volumes in the list will be updated each time.*
 - *If there are more than 500 volumes in the list, then the remaining will be updated when the same SG is requested again.*

? Why it Matters: The storage administrator will see more recent volume statistics.

z/OS DFSMS V1.13 Highlights (September 2011)

- **PDSE**
 - IEBPDSE Command
 - New PDSE Commands
 - PDSE Fairness/Sharing Policy
 - IEBCOPY Enhancements

**Session 9939 What We've
Done for You Lately With
PDSE, Tuesday 9:30AM**

**Session 9940 IEBCOPY –
Teaching an Old Dog New
Tricks, Thursday 9:30AM**

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PDSE R13

- **IEBPDSE Command**

- Over the years there have been a number of customer requirements requesting the ability to verify the structural integrity of a PDSE.
 - In some instances, customers back-up broken data sets as part of their routine operations, only to become aware of the problem months after the operation occurred, or multiple backups after the first one.
- **New enhancement:** A new utility, IEBPDSE, will verify the structure of a PDSE is valid.
 - The PDSE validation utility may be invoked using job control statements. Like most utilities, IEBPDSE can be invoked from TSO if SYSLIB is allocated to a PDSE.
 - *EXEC statement invokes the PDSE validation utility using PGM=IEBPDSE. The PARM keyword may be specified.*
 - PDSE validation utility does not validate the data in the members.
 - IEBPDSE does not require APF authorization.

? Why it Matters: Help detect errors in PDSE structures that might otherwise go undetected.

PDSE R13

- **Refresh PDSE**

- When a PDSE error has occurred, the installation needs to access what is affected by the error and may need to refresh the in-storage copy of the data set.
- **New enhancement:** PDSE support is enhanced with two new commands to simplify the identification of and recovery from some PDSE problems.
 - Display all users of a specified PDSE, and discard stale pages from PDSE directory cache.
 - The CONNECTIONS command is useful in determining which jobs are affected when an error occurs associated with a PDSE. The installation can then determine if a reIPL or restart of the PDSE address space must be done immediately.
 - *D SMS,PDSE<1>,CONNECTIONS,DSN(pdsename)<,VOL(volser)>*
 - The REFRESH command is useful in discarding what may be bad data for a PDSE after an error.
 - *V SMS,PDSE<1>,REFRESH,DSN(pdsename)<,VOL(volser)>*

? Why it matters: Simplified error detection and recovery for PDSE.

PDSE R13

IEBCOPY Enhancements

- Today, IEBCOPY employs inefficient channel programming and 24-bit addressing, which inhibits use of virtual storage. In addition, IEBCOPY uses the EXCP access method and special I/O appendages which require it to be run from an authorized library.
 - **New enhancement:** Enhancements for the IEBCOPY utility to improve performance when copying a partitioned data set (PDS) to another PDS.
 - IEBCOPY will exploit 31-bit storage for track buffers
 - **New enhancement:** Removes the current requirement for APF authorization.
 - If your program calls IEBCOPY, you probably can remove APF authorization from your program, making it safer.
- ? Why it Matters:** Improved performance and usability for IEBCOPY.

z/OS DFSMS V1.13 Highlights (September 2011)

- **DADSM / CVAF / Device Services**
 - DADSM / CVAF Availability Enhancements
 - Update Volume Information

DADSM / CVAF R13

- **DADSM Availability Enhancements**

- **Dynamic Exit**

- **New enhancement:** Provide Dynamic Exit support for both the preprocessing exit (IGGPRE00) and the postprocessing exit (IGGPOST0).
 - *Provides ability to change exits without interrupting the operation of the system AND to run multiple exit routines in the order specified without having to integrate exits from multiple sources and vendors.*

- **Concurrent Service**

- **New enhancement:** DADSM and CVAF components will support concurrent service.
 - *Allow users to dynamically update their programs without IPL.*

- **Reusable Address Space**

- **New enhancement:** DEVMAN address space is planned to be marked reusable
 - *Restarting it does not subtract from the system's maximum number of address spaces or from the system's reserve of non-restartable address spaces when REUSASID(YES) is specified in DIAGxx.*

? Why it Matters: Help improve system and application availability.

DADSM / CVAF / Device Services R13 Preview



- **Update Volume Information**

- ***New enhancement:*** Update volume information across a Parallel Sysplex when DFSMSdss or DFSMSHsm Fast Replication Backup and Recovery processing complete successfully, and the volume serial or VTOC location, or both, have been changed.
 - Designed to issue VARY automatically on sharing systems when these operations change volume serial, VTOC pointer.
 - Controlled via a new REFUCB keyword is specified in a DEVSUPxx member of parmlib.

? Why it Matters: Eliminate the requirement to issue VARY commands on sharing systems in the sysplex when volume information has been updated by these functions.

Thank you!



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