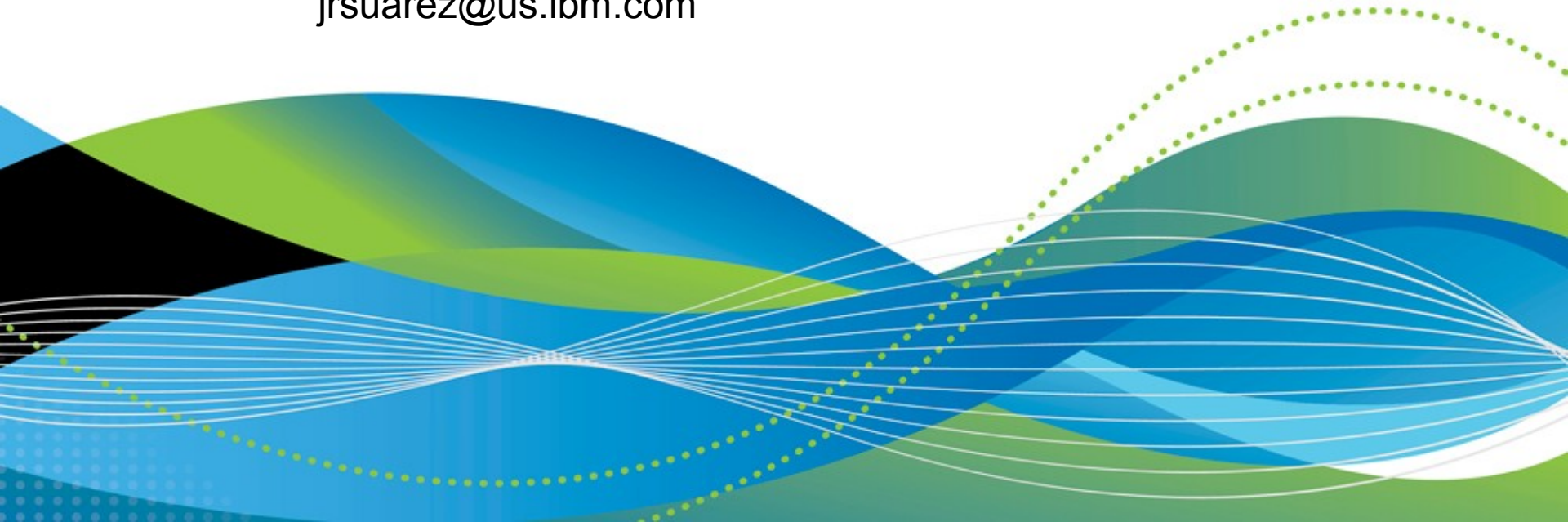


# What's New in DFSSdss and System Data Mover

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# Agenda

## ■ What's New in System Data Mover

- Functions available in z/OS V1R12
- New Functions in z/OS V1R13
- New Function APARs

## ■ What's New in DFSMSdss

- Functions available in z/OS V1R12
- New Functions in z/OS V1R13
- New Function APARs
- **Red Alert**

# What's New in DFSMS SDM z/OS V1R12 ANTTREXX



- Previously unsupported SDM interface to copy services
- In use by small set of customers
  - Several marketing requirements for formal support going back several years
  - Goal was to update the interface so it could be supported, while not impacting customers using the interface unsupported

# What's New in DFSMS SDM z/OS V1R12 ANTTREXX



- Samples
  - ANTFREXX for FlashCopy commands
  - ANTPREXX for PPRC commands
  - ANTRREXX for Global Mirror commands
  - ANTXREXX for XRC commands
  - Can actually use any of the above for all commands, differ only slightly
- Samples shipped in SYS1.DGTCLIB
- Query output available via variable or printed in dump format

# What's New in DFSMS SDM z/OS V1R12 Support for Alternate Subchannel Set



- Alternate Subchannel Set Devices
  - A *special device* is one that is defined in the alternate subchannel set 1 (not subchannel set 0, which where real devices are defined)
  - In HCD, the device type is shown as “3390D” for secondary devices
  - Defining devices in alternate subchannel set frees up device numbers for later usage
  - Intended to be used in a Hyperswap environment
  - New keywords added to FlashCopy, PPRC, and XRC commands to request subchannel
    - For example for ANTRQST FCESTABLISH and FCWITHDRAW SUBCHSET=0|1 and TSUBCHSET=0|1 is valid
  - Please see APAR OA26522 for more details
  - OA37891 adds support for 5 digit device address to F ANTAS000 STATESAVE command



# HyperSwap Exploitation of Alternate Subchannel Set

## ➤ HyperSwap Setup

### ➤ Only one device of PPRC pair ever online

#### ➤ Define 2 UCBs, With Same 4 digit device #.

#### ➤ Primary devices defined as 3390-B in Subchannel Set 0.

#### ➤ Secondary 'paired' device defined as 3390-D in Subchannel Set 1.

### ➤ Application I/O directed to PPRC primary

### ➤ HyperSwap substitutes subchannel 1 PPRC secondary for subchannel 0 primary device

### ➤ Non-disruptive – applications keep running

## ➤ After HyperSwap Event

#### ➤ Application still does I/O to same 4-digit device number

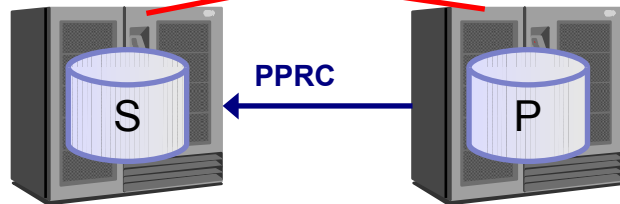
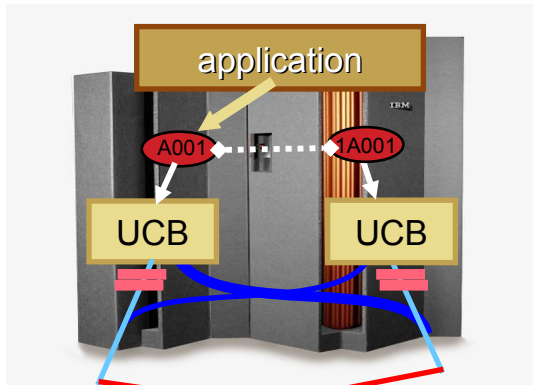
#### ➤ Subchannels associated with 'partner' UCBs

#### ➤ Non-disruptive – applications keep running

#### ➤ Single device number used

## ➤ Management of devices simplified with a Cloned I/O Configuration.

## ➤ Same as today, but without 'wasting' device number



# SDM in z/OS V1R13

- CC Parm Lib Support for member ANTMIN00
  - CCREADAHEAD(3-64)
    - Allows SDM to read updated track data from the controller cache at an installation determined maximum rate
    - Value controls the number of additional buffers obtained at the host for the read I/O for each CC session
    - Example: if the CCREADAHEAD value is set to 32, SDM will obtain 32 additional data buffers from Auxiliary Storage (32\*64k=2MB) and back these in fixed storage during the I/O
  - CCATTNTHROTTLE(YES|NO)
    - Aids in tuning the system to operate more efficiently during periods of high application updates
    - YES: Throttles parallel attention behavior to a maximum of two parallel processes per controller session
    - NO: Does not restrict parallel attention
  - Both can be set via MODIFY ANTMAIN command

# SDM in z/OS V1R13

- XRC TIMESTAMP Suppression
  - Continuation of OA24780
    - Added the ability to suppress channel program timestamping on XRC data mover systems
    - APAR enabled zapping or patching a bit in a SYS1.NUCLEUS
    - Line item adds an ANTXIN00 PARMLIB parameter, SuppressTimestamp(NO|YES), default is NO
    - The recommended use of this parameter is:
      - *SuppressTimestamp(NO) on application systems with a common time reference*
      - *SuppressTimestamp(YES) on remote systems processing XRC, GDPS control systems (K-systems) and z/OS systems that have access to XRC primary volumes and do not share a common time reference with production systems.*
  - Do not use SuppressTimestamp(YES) on application systems,
    - *Would defeat the data consistency mechanism of XRC*

# SDM in z/OS V1R13

- PPRC CQUERY LINKINFO
  - New option to query PPRC linkage
  - Linkage info displays subchannel set, node name, and ID's of primary and secondary linkage adapters

```

ANTP0259I CQUERY FORMATTED LVL 1
LINKINFO REPORT
***** PPRC REMOTE COPY CQUERY - LINKINFO *****
*
*                               DEVN SCH           WNNN           *
*-----*-----*-----*-----*-----*-----*-----*
* PRIMARY      SECONDARY      PRI: 0F50   0 5005076303FFC061  *
* ADAPTER      ADAPTER        SEC: 0F60   0 5005076303FFC05F  *
* IDS          STAT  IDS
*-----*-----*-----*-----*-----*-----*-----*
* 0100         0 0200 0202 0330 0331  *
* 0030         0 0200 0202 0330 0331  *
* 0101         0 0200 0202 0330 0331  *
* 0102         3
* 0103         3
* 0031         0 0200 0202 0330 0331  *
* 0032         3
* 0033         3
*****

```

# New Function APARs for SDM

- OA33715: zIIPEnable Parmlib option to ANTXIN00
  - Addresses problem where not all XRC work was being offloaded to zIIP
  - zIIPEnable = YES|FULL: ANTAS000, ANTAS0nn, and ANTCL0nn address spaces are enabled for running on zIIP
  - zIIPEnable = NO: ANTAS000, ANTAS0nn, and ANTCL0nn address spaces are enabled for running on zIIP

# New Function APARs for SDM

- OA32141: Zero Suspend FlashCopy Enhancement
  - Background: Ability to FlashCopy XRC secondary to make a tertiary copy
    - Prior to this a SUSPEND and resync was needed to Flash secondary's
    - Flash can be established as background copy or nocopy
  - New option to request FlashCopy be established as incremental
    - Reduces background copy time
- OA36570: XSTART Performance Enhancement
  - Background: Reduces the time it takes for the initial XSTART in environments where there are a large number of offline devices (ie PPRC secondaries)

## New Function APARs for SDM

- OA34969: DS8000 Resource Groups (available in R6.1)
  - Ability to administratively specify policy-based limitations which volumes can participate in copy services relationships with other volumes
  - Prevents a user from accidentally targeting a volume in a copy services relationship that was not supposed to be overwritten by a user or application
  - Applies to FlashCopy, Metro Mirror, and Global Mirror
  - DS/CLI must be used to configure Resource Group
    - Volumes and LSS are associated with a single resource group
  - APAR includes message support when failures occur due to violation



# What's New in DFSMSdss z/OS V1R12

- Indexed VSAM defined with IMBED, REPLICATE, or KEYRANGE attributes:
  - Less efficient than more recent enhancements to VSAM
  - Customers have requested assistance in identifying and converting these data sets
  - Solution
    - New messages identifying indexed VSAM data sets with these attributes and will convert some data sets automatically
  - Benefit
    - Reduces customer effort to identify and convert their data sets



# What's New in DFMSDss z/OS V1R12

- Indexed VSAM defined with IMBED, REPLICATE, or KEYRANGE attributes:
  - IMBED/REPLICATE
    - Will be restored without these attributes
    - ADR507I will be issued identifying the data sets being converted
    - *ADR507I DATA SET dsn WAS RESTORED WITHOUT THE IMBED OR REPLICATE ATTRIBUTES*

**ADR442I (001)-FRLBO(01), DATA SET C9SDSS.VRDS.REPIMB01 PREALLOCATED WITH NEW NAME TARGET.VRDS.REPIMB01, IN CATALOG TEST.CAT.TARGET ON VOLUME(S): T9SS02**

**ADR507I (001)-TDVSM(01), DATA SET C9SDSS.VRDS.REPIMB01 IS BEING RESTORED WITHOUT THE IMBED OR REPLICATE ATTRIBUTES**

# What's New in DFSMSdss z/OS V1R12

- Indexed VSAM defined with IMBED, REPLICATE, or KEYRANGE attributes:
  - IMBED/REPLICATE/KEYRANGE
    - During Logical/Physical DS DUMP/RESTORE ADR508I will be issued when encountered (not converted)
      - ADR508I THE FOLLOWING DATA SETS REQUIRE SOME ACTION TO BE TAKEN

**ADR508I (001)-TDDS (01), THE FOLLOWING DATA SETS REQUIRE SOME ACTION TO BE TAKEN**

**TARGET.KSDS.IMBEDX01  
TARGET.KSDS.IMBREP01  
TARGET.KSDS.IMBREP02  
TARGET.KSDS.REPLICAT**

# BSAM I/O for DUMP, COPYDUMP, RESTORE

- Problem Statement / Need Addressed:
  - Reason behind enhancement, for example:
    - Performance
  - Customer requirements addressed
    - MR1012016646, MR0201023028, MR0104024924, MR0614075419, MR0929036619, MR1213042842
- Solution:
  - Allow more options for DFSMSDss produced backups
- Benefit:
  - Increased flexibility for dump data set types
    - Backups greater than 4GB, SMS compression, striped backups
  - Elapsed time improvement up to 36% (~20-30%)

# Overview

- Using the new support:
  - BSAM I/O is the default method for backups on tape and extended format data sets on DASD
  - EXCP I/O continues to be the default method for basic and large format sequential backups on DASD
    - EXCP fall back support valid values are YES or NO
      - Invoked by a new PARM on the EXEC statement called USEEXCP
      - Applications can set UFOUEXCP=ON during EXIT 13
      - System administrators can set UFOUEXCP=ON in installation wide options exit (ADRUEXIT)
      - Overridden when EXCP is inappropriate for the dump data set during RESTORE

# Overview

- The DFSMSdss DUMP command now supports BLKSZLIM on Dump data set DD statement
  - supports values between 65520 and 2GB
  - values 32760 through 65519 are treated as if BLKSZLIM was not specified
  - values over 262,144 are currently rounded down to 262,144

# Installation

- Prerequisites for installation
  - Coexistence PTFs must be installed on all the systems in a SYSPLEX environment before using the new function
  - Allows the ability for backups on tape with larger than 65520 byte blocks to be restored in V1R10 and V1R11
  - Does not allow backups that reside on extended format on DASD to be restored
    - Can COPYDUMP to nonEF data set so it can be used prior to V1R12
- APARs of interest
  - OA35349- No label tapes with no blksize on pre V1R12 dump
  - OA38414- DUMP to DD DUMMY with a nonzero blksize invoked via the API

# What's New in DFSMSdss z/OS V1R12

- BSAM I/O for DUMP output, COPYDUMP, and RESTORE input
  - New Messages
    - ADR054I Indicates USEEXCP was specified
    - ADR502I Indicates USEEXCP=YES was specified but DFSMSdss is going to ignore the request and use BSAM instead
      - Issued during a RESTORE when USEEXCP=YES was specified but EXCP cannot be used to process the input dump data set
  - Exploiters
    - DFSMSHsm BACKVOL DUMP and Automatic DUMP
    - Applications that invoke DFSMSdss and do not specify a block size and dumping to tape

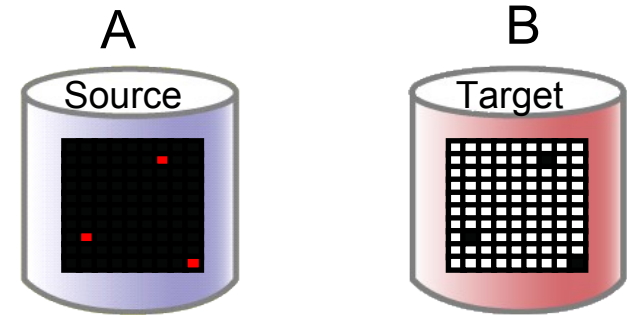
# What's New in DFMSdss z/OS V1R12

- FlashCopy Fast Reverse Restore
  - Allows recovery from an active FlashCopy target volume back to original source volume
    - Does not have to wait for the background copy to finish
    - Only allowed when the volume pair is in a full-volume (tracks 0-n) FlashCopy relationship
    - Allowed during COPY FULL and COPY TRACKS operations
      - COPY TRACKS operations when all tracks (0 –n) are specified

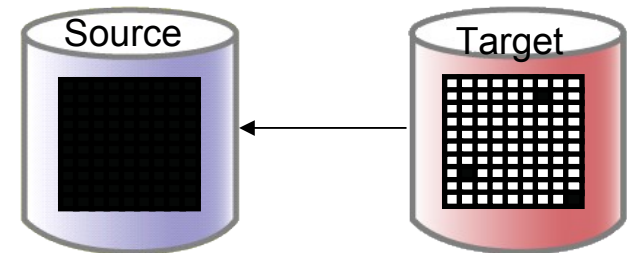


# FlashCopy Fast Reverse Restore

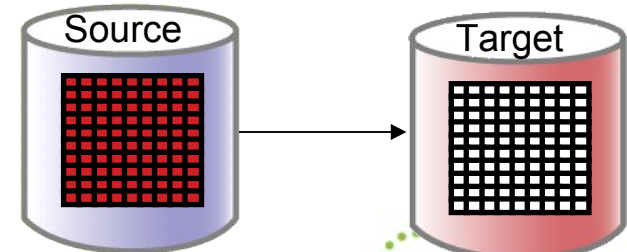
Stop updates to the A volume



Perform a Fast Reverse Restore B>A to create consistent data on the A volume



Once the background copy B>A is complete, Flash A back to B



# What's New in DFSMSdss z/OS V1R12

- FlashCopy Fast Reverse Restore
  - FCFastReverseRestore Keyword
    - Option to restore the FlashCopy source from its FlashCopy target
    - If volume specified are not in a full volume FC relationship with each other operation will fail
    - Relationship reversed may be Space Efficient or Incremental
      - Not required
  - FCFullVolumeRelation Keyword
    - Option to create a single FlashCopy relationship that covers the entire volume
    - When not specified DFSMSdss excludes free space
      - Relationship is not eligible for Fast Reverse Restore
    - Only applies if FlashCopy is used as the data mover

# What's New in DFSMSdss z/OS V1R12

- FlashCopy Fast Reverse Restore
  - ADRUFO Installation-wide options
    - Option UFFCFRRT bit at offset 20 (X'14')
      - RETRY FLASHCOPY WITHOUT FAST REVERSE RESTORE OPTION
      - Creates a new FC relation
    - Option UFBYFRVF bit at offset 20 (X'14')
      - BYPASS VERIFICATION DURING FAST REVERSE RESTORE
      - Debugging FCFRR problems will be cumbersome
  - New RACF Facility Class Profile
    - STGADMIN.ADR.COPY.FCFRR
      - When defined user must have READ access to use FCFRR keyword

# What's New in DFMSdss z/OS V1R12

- FlashCopy Fast Reverse Restore
  - Changed Messages
    - ADR835E, ADR842E, ADR846E, ADR931W
  - New Messages
    - ADR851I
      - Gives specific reason why FCFRR could not be used
      - More for debugging purposes
      - Will not be issued if Installation Exit requests bypass verification
    - ADR852E
      - Will usually follow ADR851I
        - Unless Installation Exit requests retry option
  - Support has been rolled back to V1R10/R11 in OA31765

# What's New in DFSMSdss z/OS V1R12

- Extended Address Volume Support
  - Introducing support of the remaining unsupported data set types
    - In z/OS V1R10 VSAM data sets (except catalogs and VVDSs)
    - In z/OS V1R11 Extended Format sequential data sets
    - In z/OS V1R12 All sequential, partitioned data sets, catalogs, and VVDSs
  - Data sets that remain ineligible for the EAS are:
    - HFS
    - VTOC (continues to be restricted to within first 64K-1 tracks)
    - VTOC index
    - Page data sets
    - VSAM data sets with imbed or keyrange attributes
    - VSAM data sets with incompatible CA sizes
      - Compatible CA sizes are 1, 3, 5, 7, 9 and 15 tracks

# DFSMSdss in z/OS V1R13

- Customized Offering Driver
  - A stand-alone z/OS driving system available at no additional charge to new or currently licensed z/OS customers
  - Using the COD applies if you
    - Don't have an existing system to use as a driving system
    - Or your existing system does not meet driving-system requirements
  - Previously only available on tape media
    - 34xx support withdrawn
    - 359x only choice
  - COD now available in DVD format
    - Consists of DSS full volume dumps
    - Will IPL the DVD using the HMC to bring up DSS SA program
    - Can then execute SA RESTORE
  - NOVERIFY support
  - “Rated z: The hottest DVD release from IBM” article
    - Hot Topics article August 2011

# DFSMSdss in z/OS V1R13

- Sysplex-wide Event Notification 64
  - REFUCB option in DEVSUPxx Parmlib
    - Applies to COPY and RESTORE (FULL/TRACKS) target volumes
    - When VOLSER or VTOC size/location change
    - Unconditional vary online is issued to devices online to sharing systems
      - Allows UCB to be refreshed
      - Must specify REFUCB in DEVSUPxx parmlib
  - OA31785
    - Support to issue ENF64 when VVDS changes
    - Applies to COPY and RESTORE (FULL/TRACKS) target devices
    - Allows VVDS Manager to refresh VVDS
    - Available in all supported releases

## DFSMSSdss in z/OS V1R13

- Timestamp in DSS SYSPRINT messages
  - Capability to have DSS add timestamp to messages
  - Requested through new EXEC PARM or ADRPATCH
  - PARM='MSGTIME=I|W|E|T'
  - Patch byte at offset X'58'
    - X'80' Informational messages
    - X'40' Warning messages
    - X'20' Error messages
    - X'10' Terminating messages
  - Patch values and MSGTIME values may be added together
    - ADRPATCH: Set to X'60'
    - PARM: Set MSGTIME=IWET



# New Function APARs for DSS

- DFSMSdss FlashCopy Batch Protection
  - Directs data set Flashcopies to a specified Storage Group
    - No need to change existing batch jobs \*
    - Must add the following line to SG ACS routine  
IF &ACSENV2 = 'FLASHCPY' THEN SET &STORGRP = 'fcstrgrp';

*fcstrgrp can be either a new or existing Storage Group that contain volsers that DFSMSdss is to use for allocation*

- Must ensure that the target volume specified in the fcstrgrp are capable of FlashCopy
  - *Don't include volumes that are XRC or GM*
- Must have OA32101 (DSS) and OA32103 (SMS) installed

\* So as long as jobs are NOT specifying a GS storclass

# New Function APARs for DSS

- OA38606: Performance Improvement during writes
  - Allows concurrent writes to a dataset extent
  - HW serializes write processing when volumes are PPRC primaries
  - Should see an improvement in I/O during DSS COPY (nonFC) and RESTORE processing
  - Must also install OA38579 (requires IPL)
- OA35034: 1 TB Support
  - Support converts VSAM track allocated VSAM data sets to cylinder allocation
  - When source has >16777214 tracks and was track allocated
- OA39039: Lifting ADR918I RC26 for LDSs (DB2, zFS)
  - Prevented the use of FC when source HURBA=HARBA and targets HARBA > source HARBA

# Red Alert

- OA38942: Possible data loss

## **Abstract:**

Possible data loss for EAV Users on releases z/OS 1.11, 1.12 and 1.13 using DSS Logical Dump or HSM Migrate and Backup processing

**Description:** DSS may skip some of the user's data set during dump processing and result in a failure when attempting to Restore, Recall or Recover these data sets. This failure will prevent any of the data set from being restored (ADR351E). The problem can occur when using EAV volumes with data sets in the EAS region (Extended Addressability Space - cylinder managed region) where the addresses of the data set extents are not in ascending cylinder order, ie. the CCCH address of a later extent is less than a previous extent.

Please see APAR OA38942 for additional information and actions to determine exposure.

## **Recommended Actions:**

Apply ++APAR for OA38942

# Reference Materials

- Publications:
  - SC35-0428: DFSMS Advanced Copy Services
  - SC35-0423: DFSMSdss Storage Administration
  - GA22-7499: z/OS V1R12 Migration
- Redbooks
  - SG245680: IBM TotalStorage Enterprise Storage Server Implementing ESS Copy Services with IBM eServer zSeries
  - SC26-7445: IBM TotalStorage Enterprise Storage Server User's Guide

# Summary

- DFSMS SDM What's New
- DFSMSdss What's New
- Questions?

Feel free to email me with any questions  
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