



What's New in DFSSMSdss and System Data Mover

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August 4, 2010
Session 8048



SHARE in Boston

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Agenda

■ What's New in System Data Mover

- ANTTREXX Interface Support
- Support for Alternate Subchannel Set defined devices

■ DFSMSdss What's New in z/OS V1R12

- VSAM IMBED, REPLICATE or KEYRANGE attributes
- BSAM I/O for DUMP output, COPYDUMP, and RESTORE input
- Fast Reverse Restore FlashCopy
- Extended Address Volume Support



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

- ANTTREXX Callable from any REXX environment with 2 positional input parameters
 - First parameter = request type
 - Matches ANTRQST request types (e.g., FCQUERY or PFREEZE)
 - Second parameter = REXX compound variable containing keywords for the request
- The commands and keywords supported by ANTTREXX are not case sensitive.
- REXX commands use same facility classes as their associated ANTRQST requests

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

- CALL ANTTREXX 'FCQUERY' , 'INOUT'
 - or
- result=ANTTREXX(?FCQUERY?,?INOUT?)
- Command parameters passed in the input compound variable, cannot contain imbedded blanks.
 - For instance, code 'DEVN(0A00)', but not 'DEVN (0A00)'
or 'DEVN(0A00)'.

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

- Message changes
 - All messages updated to have unique message numbers for unique message text
 - Completion messages expanded to include request type and return codes
 - ANTR8810I OK
Modified to:
 - ANTR8810I OK request SUCCESSFUL|ACCEPTED
 - ANTR8811E ERROR ANTRQST RETCODE: xxxx
Now
 - ANTR8811E ERROR request RETURN_CODE xxxx <RSNCODE yyyy>

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

- Keyword changes
 - FlashCopy keywords changed:
 - SRCEXTN – Source track range(s)
 - SRCEXTNA – All source tracks
 - TGTEXTN – Target track range(s)
 - TGTEXTNA – All target tracks
 - Both 'old' and 'new' keywords will work, but only 'new' are documented
 - Not all API keywords included
 - ECB
 - ASYNC

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

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

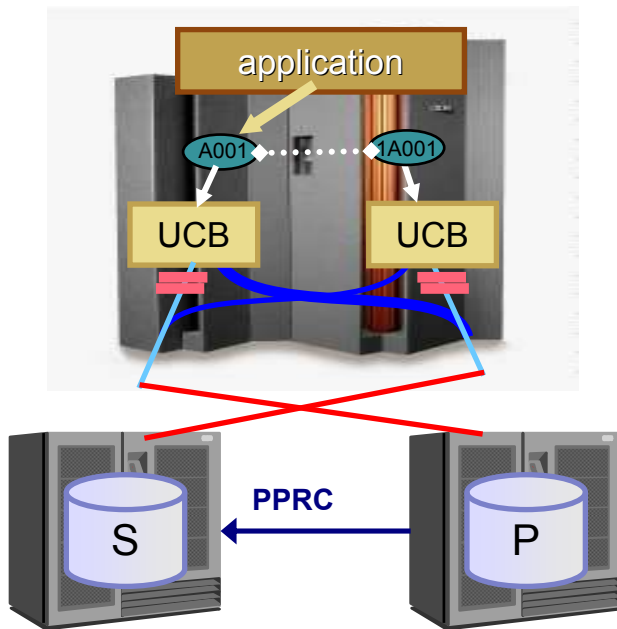
➤ Subchannels associated with 'partner' UCBs

➤ 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



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 DFSMSdss 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
 - Elapsed time improvement up to 36% (~20-30%)

Overview

- With BSAM I/O
 - Use the DFSMSdss DUMP, COPYDUMP and RESTORE commands to
 - Create copy and restore backups on tape with larger than 65520 byte blocks
 - Create copy and restore backups in the extended format on DASD
 - Fallback to the old method of EXCP instead of BSAM at the JOB, application or installation level
- Value:
 - Faster throughput, shorten batch window for backups
 - Backups greater than 4GB, SMS compression, striped backups

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 (ADRUIXIT)
 - 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

What's New in DFSMSdss z/OS V1R12

- BSAM I/O for DUMP output, COPYDUMP, and RESTORE input
 - EXCP fall back support valid values are YES or NO
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What's New in DFSMSdss z/OS V1R12

- BSAM I/O for DUMP output, COPYDUMP, and RESTORE input
 - Changed Messages
 - ADR009T – Invalid value in PARM statement
 - ADR030I - Indicates DCB values have been modified
 - ADR331E – Output block size greater than input block size on COPYDUMP
 - ADR347E – Permanent I/O error

What's New in DFSMSdss z/OS V1R12

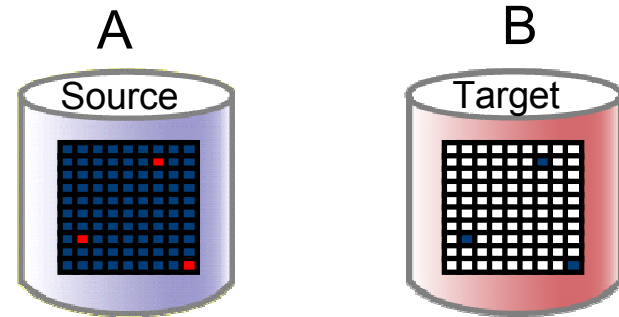
- BSAM I/O for DUMP output, COPYDUMP, and RESTORE input
 - New Messages
 - ADR054I Indicates USEEXCP was specified
 - ADR502I Indicates USEEXCP=YES was specified but DFSMSdss is going to ignore the request and use BSAM instead
 - Issued during a RESTORE when USEEXCP=YES was specified but EXCP cannot 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 DFSMSdss z/OS V1R12

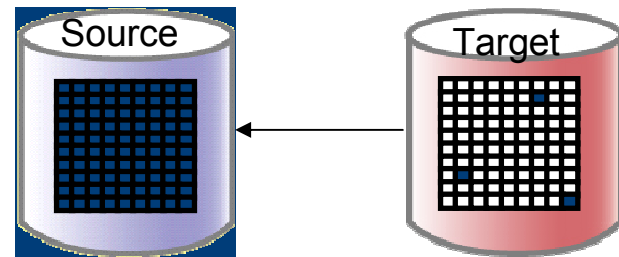
- FlashCopy Fast Reverse Restore
 - Allows recovery from an active FlashCopy target volume back to original source volume
 - Does not have to wait for the background copy to finish
 - Only allowed when the volume pair is in a full-volume (tracks 0-n) FlashCopy relationship
 - Allowed during COPY FULL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

FlashCopy Fast Reverse Restore

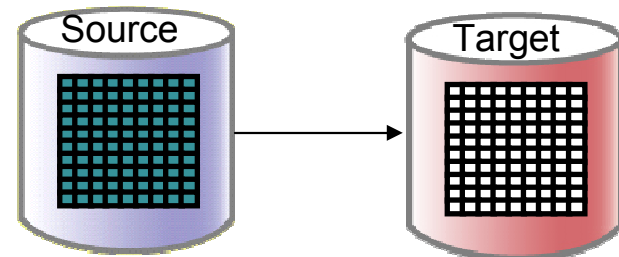
Stop updates to the A volume



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 DFSMSdss 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

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 in z/OS V1R12
- Questions?