

CA 1[®] Tape Management Best Practices

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Wednesday, August 4th , 9:30
Session Number 8069



SHARE in Boston

Agenda

- Health Checks
- TMSXTEND
 - use it instead of TMSFORMT unless you have non-standard volser naming conventions
- CTS Address Space
 - Enqueue the TMC
 - Tapemap
 - TMSAPEC
- Miscellaneous
- Real-time Robotic Interface
 - CBRUX nnn Exits
 - Identify Virtual-Tape ranges
 - READONLY subpool
- External Security
 - Protect tapes
 - Erase residual data
 - Data erase
- Stay Current on Maintenance
 - Call support when upgrading z/OS OR adding new devices

Health Checks

- Added with CA 1 maintenance RO04520
 - Included with CA 1 SP5
- Originally 15 Health Checks were added
 - Simple analysis of DSNB free chain
 - Short run of 1000 – run every 60 minutes
 - Long run of complete chain – run daily
 - Recommended Option Settings
 - DSNB and Audit Utilization Thresholds
 - Medium if within 10% of Threshold
 - Low if within 20% of Threshold
 - TMC and Audit on the same volume

Health Checks (cont.)



- Two ways to activate
- With CA Health Check Common Services r12.1 – new CA Health Check address space PLUS CA 1 r12.0
 - See instructions in RI18684 for CCS r11
 - See instructions in RI18890 for CCS r12
 - Simply running TMSINIT will define the CA 1 Health Checks
- Without the CA Common Services Health Check Address Space OR CA 1 r11.5
 - Requires the CTS address space

Health Checks (cont.)



- Here is a display from the SDSF CK panel that lists all the CA 1 Health Checks

```
SYSVIEW 11.6 XE76 ----- HCHECKER, Health Checker ----- 10/07/27 09:55:38
Command ====> _
Scroll *====> PAGE
----- Lvl 2 Row 6-21/129 Col 1-79/567
Options CONFIRM XSYS
-----
Cmd Name                               UState  SState  Status  Global
-----
CATALOG_IMBED_REPLICATE                ACTIVE  ENABLED  EXCEPTION-LOW
CA1_AUDIT_VRFY_WITHIN_LOW_THRSH        ACTIVE  ENABLED  SUCCESSFUL
CA1_AUDIT_VRFY_WITHIN_MED_THRSH        ACTIVE  ENABLED  SUCCESSFUL
CA1_FREE_DSNB_LOW_THRSH                 ACTIVE  ENABLED  SUCCESSFUL
CA1_FREE_DSNB_MEDIUM_THRSH              ACTIVE  ENABLED  SUCCESSFUL
CA1_FREE_DSNB_QUICK_SCAN                 ACTIVE  ENABLED  SUCCESSFUL  GLOBAL
CA1_TMC_AUDIT_PLACEMENT                 ACTIVE  ENABLED  EXCEPTION-MEDIUM
CA1_USED_DSNB_FREE_CHAIN                 ACTIVE  ENABLED  SUCCESSFUL  GLOBAL
CA1_VRFY_MIXED_EXPDT_OPTION             ACTIVE  ENABLED  SUCCESSFUL
CA1_VRFY_OPTION_DCHG                    ACTIVE  ENABLED  SUCCESSFUL
CA1_VRFY_OPTION_LCHG                    ACTIVE  ENABLED  SUCCESSFUL
CA1_VRFY_OPTION_TCHG                    ACTIVE  ENABLED  SUCCESSFUL
CA1_VRFY_SECURITY_EXIT_FUNC             ACTIVE  ENABLED  SUCCESSFUL
CA1_VRFY_SECURITY_EXIT_PSWD             ACTIVE  ENABLED  EXCEPTION-MEDIUM
CA1_VRFY_SECURITY_EXIT_YSVC             ACTIVE  ENABLED  SUCCESSFUL
OFF_USING_IE_DISPLAY                    ACTIVE  ENABLED  EXCEPTION-LOW
```

TMSXTEND



- If you aren't using it yet, why not?
- Eliminates the need for most clients to use TMSUX2U & TMSUX2E to convert Alpha-numeric volsers to numeric
 - Exception – Numbers to the left of Alpha characters
 - 0001NT – 9999NT
 - Exception – non decimal counting techniques
 - 000000-00000F, 000010-00001F, 000020-00002F
 - Eliminates the need to use TMSFORMT to add volume ranges or additional DSNB records
 - Eliminates the need to use TMSREMOV to remove volume ranges

TMSXTEND (cont.)



- Can be run without stopping OPEN/CLOSE/EOV tape processing
 - CA 1 Batch Utilities and Report Utilities should not be run
 - Attempting to start such a utility after TMSXTEND has started will most likely fail (JCL error or dynamic-allocation failure)
- A new TMC must be pre-allocated (IEFBR14) – strongly recommend a blocked TMC of 340 x 8880
- TMSRINIT should be added as a Started Task on all systems sharing the TMC – not as a batch job

TMSXTEND (cont.)

- Can be run in test-mode first (PARM=TEST)
- TMSXTEND executes TMSBLDVR as a subtask
 - You can execute TMSBLDVR as a standalone utility to build a new TMC if you are doing a new install of CA 1
 - Can be executed standalone with PARM=TEST to validate the control statements
- EXCLUDE LPAR's/machines that are NOT active when TMSXTEND is running
- INCLUDE LPAR's/machines that do not perform any normal tape processing each day

CTS Address Space

- Enqueue the TMC
 - The DBS subtask allocates the TMC and Audit files
 - Insures they are not deleted or archived by accident
 - F CTS,START DBS
 - F CTS,STOP DBS or F CTS,MSG DBS,STOP
- Tapemap
 - Added with RO09194 (part of SP6 and r12.0)
 - F CTS,SET TASK(TMAP) PGM(CTSTMAP)
 - F CTS,START TMAP
 - F CTS,MSG TMAP,'MAP volser1,volser2,...,UNIT=uuuu'

CTS Address Space (cont.)



- TMSAPEC
- Similar to TMSPTRS, will automatically correct more errors
- No copy of the TMC is made, the actual TMC is analyzed in place
- Can be scheduled to run on a periodic basis and only between certain hours
- Can automatically correct errors or create control statements for TMSUPDTE, TMSUDSNB or TMSAGGR to post-process

Real-time Robotic Interface



- CBRUX nnn Exits
- CBRUXENT – Called for ENTRY into an SMS managed robot
 - Includes the definition of Virtual Volumes or the definition of tapes to a Manual Tape Library
 - Modification to the ATLTABLE in the distributed source allows CA 1 to identify which IBM robot the tape is in
- CBRUXEJC – Called for EJECT MOVE (not called for EJECT COPY) and for a DELETE of a Virtual Volume
 - Modification to the pseudo Data Set Name associated with the physical volume used during an EJECT MOVE

Real-time Robotic Interface (cont.)



- CBRUX nnn Exits (cont.)
- CBRUXVNL – Called for every attempt to allocate an offline DASD device or any tape volume not currently inside an IBM robot or defined to a MTL
 - Modification to the CA 1 supplied sample to ignore based on defined or not, by device type if defined, or by location (off-site or in-house)
- All three CA 1 supplied exits should be installed to prevent the execution of the rmm supplied versions (which are normally distributed in SYS1.LINKLIB)

Real-time Robotic Interface (cont.)



- **The CA-1 supplied sample ++USERMOD to be applied to the z/OS SMP zone needs to be restored and re-applied whenever there is maintenance to the IBM versions of these exits**
- New option (r11.5 SP5 or r12.0) to notify the robotic system when a tape is scratched
 - ROBSCR in TMOOPT nn
 - Based on the setting of the Robot-Type field within the TMC (TMROBTY)
 - If set to IBM or VIBM, then LCS services are invoked to notify OAM the volume has been scratched

Real-time Robotic Interface (cont.)



- WORKFILES should not be allowed when the real-time scratch interface is used – WRKFLS=NO
- CTSSYNC is an interface module to pass commands to the IBM robot
 - Can be used to synchronize the robot to the CA 1 status
 - If the two OAM data bases (TCDB and LM) become out-of-sync with each other;
 - Notify IBM, since this may indicate a more serious problem
 - Use CTSSYNC to force the tape into SCRATCH status, then into PRIVAT status, and finally perform a SYNC to synchronize with CA 1

Real-time Robotic Interface (cont.)



- TMSUPDTE should be used to set the Robot-Type (TMROBTY) for virtual volume ranges
 - VIBM – Virtual IBM
 - VSTORTEK – Virtual Oracle/STK
 - VCAVTAPE – CA Vtape
- TMSKEYAB may be modified to add new names to the Robot-Type translation table

Real-time Robotic Interface (cont.)



- READONLY subpool support
 - New enhancement
 - R11.5 – RO20262 & RO19148
 - R12.0 – RO20261 & RO19149
 - Allows for a CA 1 subpool to be defined as READONLY
 - When defined as READONLY, no MOD processing or creation of additional secondary files are allowed
 - If open'ed for INOUT but will only be read for input, specify LABEL=(,,IN) in the JCL
 - Simply define a subpool with READONLY as the first 8 characters of the 13-character pool name

External Security



- Protect Tapes – During Standard OPEN processing
 - External Security System (TAPE DATA SET PROTECTION)
 - With z/OS 1.8 and above, new DEVSUPxx member of SYS1.PARMLIB

TAPEAUTHDSN

TAPEAUTHF1

TAPEAUTHRC4

TAPEAUTHRC8

- With CA 1 TMOOPTxx options

OCEOV

DSNB

FORNDSN

External Security (cont.)



- Protect Tapes – During Special OPEN processing
 - EXPDT=98000 either specified or implied
 - If the Tape Management System is bypassed, then 44-character DSN checking is bypassed – **ANY HLQ** can be added to trick the previous security check
 - TMOOPTxx option FUNC
 - CLASS – CATAPE (CA@APE, CAT) entity FORNORES or FORRES with access of READ or UPDATE
 - Strictly limit FORRES – both READ and UPDATE
 - Using 98000 for in-house tapes is a security exposure
 - Limited to TAPEMAP utilities only

External Security (cont.)



- Protect Tapes – During Special OPEN processing (cont.)
 - BLP can be controlled via JES jobclass definition
 - BLP can be controlled via external security options
 - CA 1 TMOOPTxx option FUNC
 - CLASS = CATAPE (CA@APE or CAT), ENTITY BLPRES or BLPNORES, ACCESS either READ or UPDATE
 - Allows for tight control of BLP for in-house tapes, must more relaxed rules for BLP for foreign tapes
 - NL usage is also controlled when FUNC is active
 - FUNC=EXT (extended) allows for control via volser or unit address – ENTITY = xxxRES.Vvvvvvv.UCBnnnn or xxxNORES.Vvvvvvv.UCBnnnn

External Security (cont.)

- Protect Updates to the TMC itself
 - TMOOPTxx option YSVC should be YES
 - Check for CLASS = CATAPE (CA@APE, CAT), ENTITY = YSVCUNCD or YSVCCOND
 - If Un-Conditional access is allowed, no further checking
 - If Conditional access is allowed, then a second check of the DSN of the record itself is performed
- CREATE processing
 - TMOOPTxx option CREATE should be ALTER/CREATE
- Control who runs TMSINIT as a started task
 - TMOOPTxx option SECWTO should be YES

External Security (cont.)



- Erase Residual Data
 - Older 3480/3490 cartridges can be physically degaussed with a large electro-magnet
 - Newer 3590/3592 type cartridges can be physically degaussed only if you want to permanently destroy them
 - Destroys the servo-tracks which are required
 - SCRATCH tapes can be programmatically degaussed with either TMSTPPRO or CTSDEU
 - Tapes with active data can have residual data erased prior to off-site shipment with CTSDEU

Miscellaneous



- Keep 3 months of Audit backup
 - Audit data is not just for recovery
 - Allows for easier trouble shooting, especially when a client asks “why was this tape scratched last month?”
- Set AUDB4 to BATCH
 - Writes a “before” image to the AUDIT file for every batch update (not O/C/EOV processing) performed
 - Uses more AUDIT records, so make sure your AUDIT file is sufficiently large before making this change

Miscellaneous (cont.)



- Use alternate method for backup of the TMC and restore at your DR location to eliminate pointer errors at DR
 - Use IEBGENER to copy the AUDIT file as LABEL=(2,SL) behind the TMSCOPY backup of the TMC for off-site storage
 - Not used for in-house restore (when the TMC is deleted or over-written).
 - At DR however, restore the AUDIT from file-2 first, then do a normal restore of the TMC (PARM=RESTORE)
 - Creates a “snap-shot” restore of the TMC at exactly the time the first record of the AUDIT file was copied
 - No pointer errors at DR

Miscellaneous (cont.)



- Install the FAILSAFE ++USERMOD on the z/OS SMP zone
 - Prevents tapes from being created when the CA 1 intercepts are inactive (prior to the activation of CA 1 or if CA 1 had been shutdown or in-activated for some reason)
- Use the real-time catalog interface instead of TMSCTLG
 - OCTLG changed to NO
 - First run TMSOSCAT with PARM=SYNC on all systems without shared catalogs
 - Eliminates the need to run TMSCTLG on a daily basis

Stay Current on Maintenance



- Always call CA 1 support prior to upgrading to a new release of z/OS
 - 214-473-1431
- Always call CA 1 support prior to adding new types of tape hardware or new Virtual Tape solutions
- PLEASE call CA 1 support when planning on data center migrations that involve moving tape libraries
 - Both L1 and L2 are willing to help review project plans to ensure that no steps are forgotten
- Are you using CA Mainframe Software Manager (CA MSM) yet to automate CA 1 installation, maintenance and deployment?

simplify management

CA Mainframe Software Manager (CA MSM)



CA Mainframe Software Manager - New Deployment - Windows Internet Explorer

http://uslca31.ca.com:39465/MSM/MSMMain.html#Open/deployments/NewDeploymentWizard

CA Mainframe Software Manager - New Deployment

CA Mainframe Software Manager

Logged in as: LUFDA02 (Log Out)

Software Status | Software Catalog | **New Deployment** | Settings

1 Introduction 2 CSI Selection 3 Product Selection 4 Custom Data Sets 5 Methodology Selection 6 System Selection 7 Preview

Introduction

Welcome to the CA MSM deployment wizard. This wizard will guide you through the steps required to deploy one or more products to one or more systems. Note: You can save your deployment at any step in this wizard.

Deployment Identification

Name*: New releases for May

Description: Update CA product releases for May

Save Back Next Deploy Cancel Help

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- InstallShield® and Windows Update for the Mainframe
- Dramatically simplifies software management activities
- Significantly reduces installation, deployment, and maintenance times
- Enormous productivity increases for both experts and novices
- More than 120 deployable products across all major product families
- Included at no additional charge for any active CA Technologies mainframe customers

CA MSM time savings - installation



Time to Install 10 Mainframe Applications*

Product	Mainframe Expert Install			Mainframe Novice Install		
	Traditional	With CA MSM	Improvement	Traditional	With CA MSM	Improvement
CA 1	36 min	9 min	4X	3 hrs 12 min	14 min	14X
CA Auditor for z/OS	26 min	7 min	4X	2 hrs 22 min	8 min	18X
CA Datacom®	1hr 14 min	6 min	12X	3 hrs 8 min	10 min	19X
CA JARS Resource Accounting	37 min	5 min	7X	1 hr 11 min	6 min	12X
CA Librarian®	28 min	2 min	14X	1 hr 13 min	6 min	12X
CA MIM™ Resource Sharing	30 min	5 min	6X	1 hr 31 min	5 min	18X
CA OPS/MVS®	36 min	6 min	6X	1 hr 50 min	7 min	16X
CA Panvalet®	54 min	3 min	18X	1 hr 11 min	5 min	14X
CA SMF Director	40 min	5 min	8X	1 hr 10 min	6 min	12X
CA SymDump® for CICS	38 min	3 min	12X	4 hrs 3 min	6 min	40X
Totals	6 hrs 39 min	51 min	8X	20 hrs 51 min	1 hr 13 min	17X

87% productivity gains for mainframe experts and 94% for novices!

CA MSM time savings – maintenance



CA MSM time savings - maintenance

Time to Install Maintenance for 7 Mainframe Applications*							
Product	Number of Fixes	Mainframe Expert Install			Mainframe Novice Install		
		Traditional	With CA MSM	Improve-ment	Traditional	With CA MSM	Improve-ment
CA Auditor for z/OS	14	23 min	1 min 22 sec	17X	41 min	1 min 30 sec	27X
CA Cleanup for CA ACF2™	1	6 min	38 sec	10X	33 min	1 min 13 sec	27X
CA Easytrieve®	9	24 min	1 min 24 sec	17X	60 min	1 min 59 sec	31X
CA Endeavor® Software Change Manager	19	32 min	5 min 5 sec	7X	46 min	10 min 2 sec	5X
CA Librarian®	15	45 min	1 min 58 sec	23X	38 min	2 min 55 sec	13X
CA Parvalet®	12	27 min	1 min 39 sec	17X	62 min	2 min 25 sec	26X
CA View®	4	32 min	1 min 48 sec	18X	37 min	1 min 39 sec	22X
Totals		3 hrs 09 min	13 min 54 sec	14X	5 hrs 17 min	21 min 43 sec	15X

Source: CA Technologies Lab Results

93% productivity gains for mainframe experts and 94% for novices!

CA MSM time savings - deployment



Time to Deploy 10 Mainframe Applications*

Product	To A Single Remote System			To Six Remote Systems	
	Traditional	With MSM	Improvement	With CA MSM	Improvement
CA 1				0:05:45	26X
CA Workload Automation Restart Option (CA 11)				0:03:32	30X
CA Cleanup for CA ACF2™				0:03:22	24X
CA Copycat				0:03:15	25X
CA Deliver™				0:05:36	14X
CA Endeavor® Software Change Manager				0:11:24	11X
CA NetMaster® Suite				0:21:58	9X
CA SYSVIEW® Performance Management				0:13:42	22X
CA TPX Session Management	0:45:00	0:07:00	6X	0:11:01	6X
CA View®	0:58:00	0:06:19	9X	0:13:55	12X
Totals	9:03:00	0:33:55	16X	1:33:30	15X

93% productivity increase using CA MSM for Deployment

Deploy all products to one system 0:24:02

Deploy all to six remote systems 1:28:25

- There were 4 tasks performed in non-MSM deployments
1. JCL Preparation and documentation review
 2. TSO XMIT process
 3. Send using FTP Protocol
 4. Receive using FTP Protocol

Source: CA Technologies Lab Results

QUESTIONS



Slide 30

n6

You should add a summary slide

newna01, 7/26/2010