

Simplify Your Life with New Mainframe Management Tools

Ros Schulman – Hitachi Data Systems John Varendorff – Hitachi Data Systems Session 16925

March 3, 2015 4:30-5:30pm

Sheraton – Boren





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Agenda

- What brought us here?
- **Replication Management**
- **Replication Management Scenario**
- Role of SYSREXX
- **Dynamic Tiering Management**
- **Dynamic Tiering Management Scenario**
- Summary





The Need For Automation Is Clear





of time spent on *lowervalue* admin and provisioning

390 of storage outages caused by *human error*



•••



Why do we need to simplify our life

- Explosive data growth
 - Even in MF
- Doing more with less
 - Storage Admins sometime manage in excess of 500TB a person
- Keeping Data forever
 Large ML2 Pools
- Downtime is basically zero



Because HERE we are Today



- After 50 years, many mainframe'ers have retired, gone into seclusion, become homeless, or passed on
- New skills are being developed, but experience is not "Waldo" retired years ago
- ACS routines, JCL, REXX Execs, have become outdated
 - Afraid to touch "Waldo's" ACS routines or JCL
 - Complicated job dependencies exacerbate to fear
 - Minimum number or changes minimize risk
 - Often times, changes are contracted out
 - Copy/Paste becomes a Storage Admins best friend
 - Many M&A's bring different disciplines together. Who owns the technology?

Result: with all the promises of SMS, the mainframe is NOT nearly as efficient as most believe, and datastores are 1,000,000's of times larger than when SMS was initially shipped.. Yes, <u>MILLIONS</u>!! Rule of thumb: If doubling capacity, assume complexity goes up by 2.2x-2.8x. It's not linear.

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Software has become more complex



- In 1995 only replication solution was Synchronous
- Today we have
 - Sync
 - Async
 - -3DC
 - -4DC
 - Flashcopytm
 - Other In-system replication technologies



Disks have become more complex



- We used to have basically 1 size disk/array
- People owned volumes
- Today we can intermix multiple drive sizes, raid types and media types and store over a PB in a single array
- Performance is more critical than ever
- SMS routines are increasingly complex to help manage this



How do we solve these problems



- Newer technologies can significantly help simplify the environment
 - Dynamic Provisioning
 - Dynamic Tiering
 - Large Volume Sizes
 - Managing 54TB with 255 large volumes vs. 20,000 3390-3 requires less effort
 - Flash





Management is integral to simplification

- Accelerates deployment
- Centralized and automated management of Mainframe storage solutions
- Single, consistent interface
 - Based on TSO/ISPF
- Decreases staffing and training costs
- Real time display of critical thresholds
- Improves problem avoidance
- Auto discovery eliminates errors
- Automatic notification of key event completion
- Provides greater control





Replication Management





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Today's Mainframe Replication Challenges

- Manage mainframe systembased replication solutions while maintaining reliable disaster recovery capabilities
- Operational testing of DR plan
- Protect data recoverability against rolling disasters
- Application data integrity spanning multiple storage systems
- Need for operations simplification





Solution Hitachi Business Continuity Manager

- Automates management of distributed copy groups, solves synchronization problems
 - Integrates with z/OS based Basic HyperSwap and GDPS Hyperswap to enable quick restart in a 3DC configuration
- Supports Advanced TrueCopy, ShadowImage and Universal Replicator features
 - Extended consistency groups
- Real time view of Universal Replicator Metrics
- Improved detection and notification
 - Receives auto notification of key copy "state transitions"
- Monitoring Feature

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Lets show you how simple it is to manage replication





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Role of z/OS System REXX[™] (also known as SYSREXX[™]) in Simplified System Management





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Role of SYSREXX - According to IBM:



"The role of SYSREXX in 'New Face of z/OS' is to provide an infrastructure through which REXX execs may be run outside the normal TSO/E or Batch environments, using a simple programming interface. This enables the leveraging of base operating system components by new style applications that will, over time, lead to simplified interaction and more intuitive system management capabilities on z/OS.

The ability to initiate REXX execs directly from an operator console has been long overdue on z/OS and is a drag along benefit of this initiative. The possibilities for exploiting existing REXX code through the use of SYSREXX are vast, whether to provide operator assists or to provide routines that can be leveraged by new strategic initiatives.⁷¹

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1. Extract from "z/OS System REXX" by Ron Northrup IBM at REXX Language Symposium 2010



3/6/15



- Easiest and Most Obvious Exploitation
 - Execute Interpretive Rexx or CEXECs (Compiled Execs) directly from z/OS Console
- Facilitate Hitachi Replication Management via z/OS Commands
- Simple Implementation.....☺!

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- Add Rexx Libraries to REXXLIB Concatenation in AXRXX Member of PARMLIB
 - Libraries must be **RECFM=VB** as libraries are concatenated to

`SYS1.SAXREXEC' which is also **RECFM=VB**.

BROWSE SYS1.PARMLI Command ===>	B(AXR00) - 01.01	Line 00000039 Col 001 080 Scroll ===> <u>CSR</u>	
CPF('REXX',SYSTEM)	/* Defines REXX single	system */ 00290000	
AXRUSER(STCSYS)	/* ?AXREXX security=axr	user results in the 00320000	
	exec running in a se defined by the useri	d AXRUSER */ 00340000	
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/*REXALID ADD DEN(RE)	concatenation	@P1A*/ 00351000 dd Davylib Dap2 ap	
MOYLlopkopTacks(32)	VOLCO2 to the con	catenation 0P1A*/ 00380000	
		@P2A*/ 00400000	SH/
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- Terminate **AXR** Address Space
 - Note: No Stop Command for AXR
 - Issue FORCE AXR, ARM
- Restart **AXR** Address Space
 - Issue START AXRPSTRT







- Validate **REXXLIB** Libraries as available
 - Issue F AXR, SYSREXX REXXLIB









- Confirm CPF (Command Prefix) for SYSREXX
 - Issue F AXR, SYSREXX STATUS

-F AXR,SYSREXX STATUS				
AXR02001 SYSREXX STATUS	6 DISPLAY	180		
SYSTEM REXX STARTED AT	05.13.12	ON	02/16/2015	
PARMLIE HEMBERS:	AXR00			
CPF: (REXX YSYSTEM)	AXRUSE	R :	STCSYS	
TIMEINT 30	TMP: NOT	ENAE	BLED	
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REQUESTS QUEUED:	0 ACCEPT	ING	NEW WORK	
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	IDLE:	4	MAX:	32
	ASYNC :	Ø	SYNC:	0
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- Ensure **AXRWTO** Rexx Function used to issue Unsolicited WTOs
 - Rexx SAY Commands will be output only after Rexx Exec has completed execution.
- Ready to Go!





• Execute Rexx Exec from z/OS Console

- rexx cpf rexx exec name rexx arguments

System Command Extension	
Type or complete typing a system command, then press Enter.	
<pre>===> <u>REXX BCMREXXC SUSPEND PREFIX(DEMO.SHARE) DAD(PRI) ROUTE(PRI2SEC</u> ===>) GROUP(ASYNC) PAIRLIST(YES) WAITSECS(15) WAITLOOPS(10)</pre>	
<pre>Place the cursor on a command and press Enter to retrieve it.</pre>	
Wait 1 second to display responses (specify with SET DELAY) Do not save commands for the next SDSF session F1=Help F2=Split F3=Cancel F5=FullScr F7=Backward F8=Forward F9=Swap F11=ClearLst F12=Cancel	• • SHAR

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Execute Rexx Exec from z/OS Console

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0010	YKQ09	39I YKQUE	ERY com	nmand re	eturn d	code=	0008	, rea	ason	code=00	00
0010	YKU09	99I YKSUS	SPND co	ommand r	return	code	-000	0, r	easor	n code=0	000
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Dynamic Tiering Management





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So how do I simplify management of Dynamic Tiering using Management Tools



- Native management from z/OS
 - Control for data location from host's point of view, not storage system's point of view
 improves control and simplifies operations
 - Reduce dependency on open server-based operations
- Control of storage service levels using HDT policies
- Linkage with z/OS SMS (storage group) speeds integration and reduces opex
- Simplify management in large-scale environments with group operations
- Both ISPF panel and flexible command-line interface (TSO/E REXX) offer users an easy way to get the most out of Dynamic Tiering
 - Intuitive Point and Shoot capability helps both old-timers and newbies alike



Linkage with z/OS SMS Feature



HTSM works with DFSMS constructs (storage group). Each tiering policy group can have 1 or more storage groups. This feature gives users the capability to manage the HDT for MF environment from a z/OS point of view. SMS integration makes it easy to add dynamic tiering to existing SMS operations





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Hitachi Dynamic Tiering and Management by Storage groups with DFSMShsm 2.1





Migration Storage Hierarchy



And this is how it works





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Use UP and DOWN PF Keys or commands to scroll MENU.

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Summary



- Doing more with less is not easy
- Take advantage of newer technologies
 - Dynamic Tiering for performance
 - Large Volumes sizes to reduce #volumes managed
- Take advantage of automation
- Use Z/OS aware tools for
 - Discovery
 - Simplified Management
 - Time to implement
 - Easier learning curve



Thank You!

For additional Hitachi information, please contact

Ros.Schulman@hds.com 973 207 4138 (cell)

John.Varendorff@hds.com

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DC



Session 16926 – Improve your IT Analytics capabilities through Mainframe consolidation and simplification

Speakers: Roselinda Schulman (Hitachi Data Systems) and John Harker (Hitachi Data Systems) Session 16923 – The Reality of Storage Virtualization Thursday, March 5, 2015, 1:45-2:45\ Speaker: William Smith (Hitachi Data Systems) Session 16757- Agile, Available, and Recoverable – Demystifying Time to Data Thursday, March 5, 2015, 4:30-5:30,

Speaker: Ros Schulman (Hitachi Data Systems) and Rebecca Levesque (21st Century Software)



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