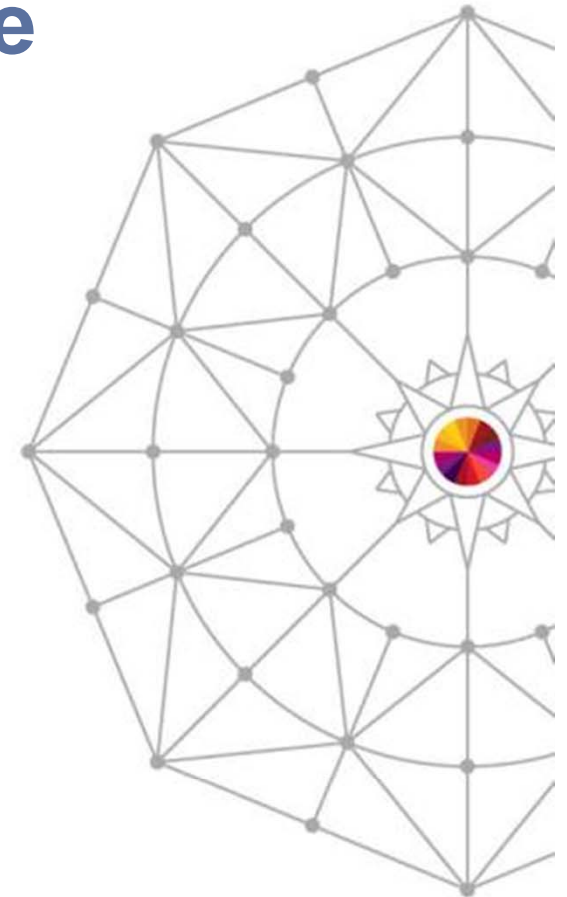




OMEGAMON XE for Storage V520 Exploiting z/OS V2R1

Vickie Dault
IBM

Tuesday March 11, 2014
Session Number 14614
3:00 pm



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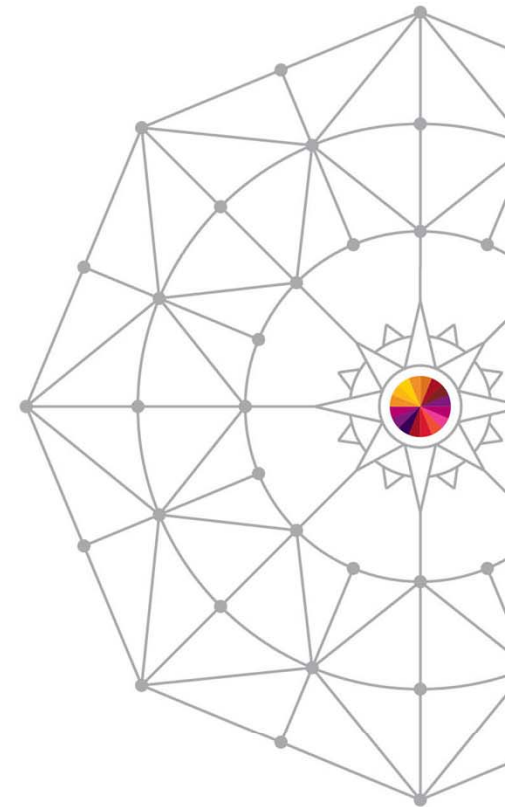
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OMEGAMON XE for Storage V520

Agenda

- New Features
 - VSAM RLS
 - HSM, CICS, System Catalogs w/V2R1
 - Tape Management Improvements
 - z/OS Copy Services
 - XRC, PPRC, Flash Copy
 - zIIP processors
 - Updated EMC Workspaces
 - I/O Secondary Delays
- References

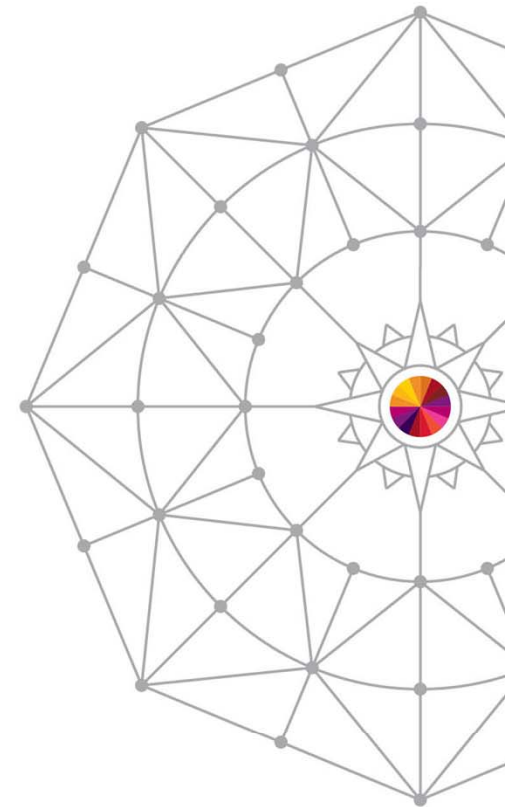


OMEGAMON XE for Storage V520

- New Feature: **VSAM RLS**

Developed in cooperation with the DFSMS VSAM team

- Information obtained via coupling facility
- CA/CI split information by the cluster component type



OMEGAMON XE for Storage V520



What is Record Level Sharing?

- VSAM Clusters are locked at the record level
 - Increased throughput when multiple users or applications are accessing a cluster in a sysplex
 - I/O optimization/reduction
 - Local buffers are maintained and used if valid
 - Coupling Facility (CF) copy of data is used if valid
 - Media manager gets data from DASD
 - CA/CI splits still cause performance degradation
 - Correct sizing of buffer pools and CF structure is critical
-
- Definition: An RLS dataset is a VSAM cluster that has been opened for RLS processing



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Record Level Sharing Overview

Monitored at both the SYSPLEX and z/OS Image level

- 15 new TEP Workspaces
- 12 new e3270ui workspaces
- 6 modified TEP workspaces
- 1 new navigation option from e3270ui startup workspace

Situations

- 9 new TEP Situations
- 5 new e3270ui situations

Monitored RLS Objects

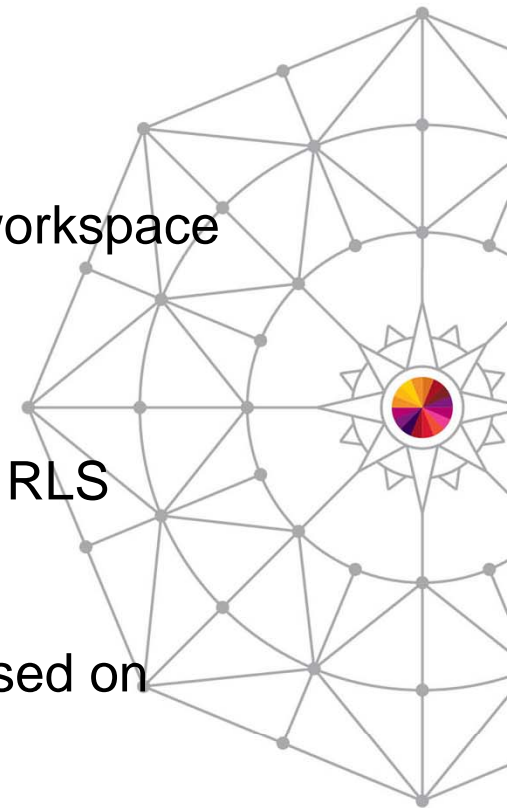
- Locking Activity
- Coupling Facility Structure
- Buffer management
- Storage Class
- Datasets



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RLS Data Collection

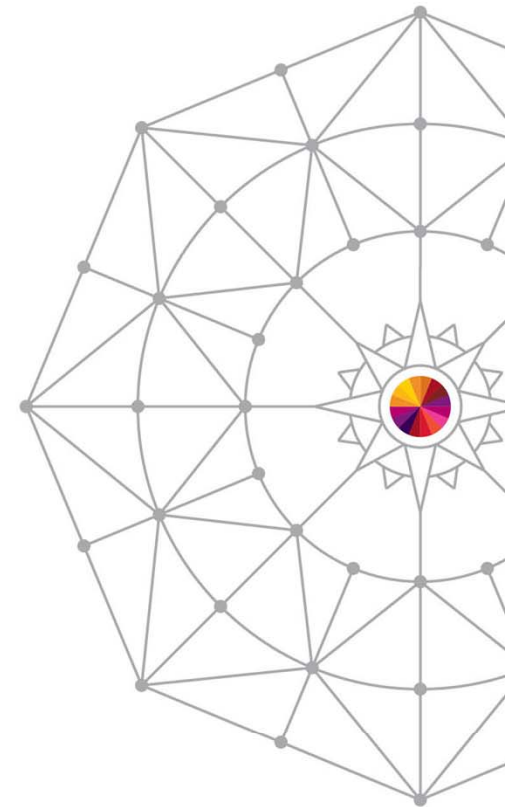
- Real time **API** to SMF 42 subtype 15-19 records
 - Data is mapped by SMF record
 - Not obtained via SMF exit
- **Timer based collection** set by control in RLS default workspace
 - Storage Class
 - Lock Activity
 - Buffer Management
- **Timer based collection** for Dataset Groups containing RLS datasets
 - Based on existing Dataset Group options
 - Datasets designated for RLS collection – data based on collection interval
- **Ad-hoc Data collection**
 - Coupling facility activity and lock contention report
 - All dataset collection that is not done as part of dataset group
 - Report interval is time since dataset was opened



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RLS WORKSPACES



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RLS Workspaces SMS Configuration



The screenshot displays the SMS Configuration application window. The left sidebar shows a tree view with 'SMS Configuration' selected. The main area is divided into several panels:

- SMS Base Configuration:** Shows status (Active), level (1.13.0), and last update (12/17/13 17:25:00).
- Storage Groups:** A table listing various storage groups like DB2LARGE, DLGROUP, DMGROUP, etc., with their descriptions and last update times.
- Data Classes:** A table listing data classes like DB2EDC, DCISM, DCMO09, etc., with their descriptions and last update times.
- Management Classes:** A table listing management classes like DLMGMT, DMGMT, HSMGMT, etc., with their descriptions and last update times.
- Storage Classes:** A table listing storage classes like BASE, DB2DASD, DB2ZLSC, etc., with their descriptions and last update times.

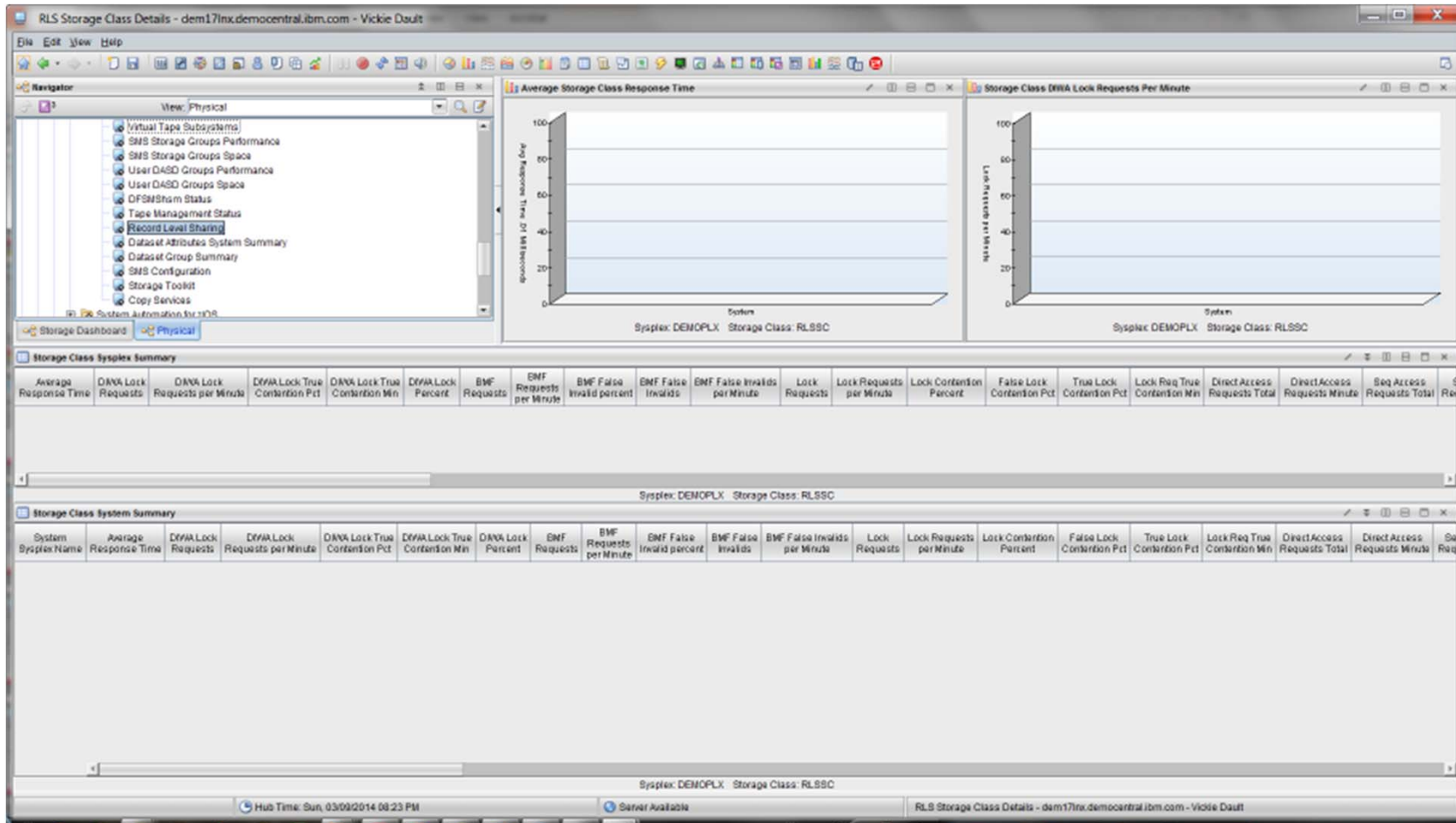
A context menu is open over the 'RLSSC' storage class, showing options: 'SMS Storage Class Details', 'BCDS Details', 'MCDS Details', 'RLS Storage Class Details', 'Link Wizard...', and 'Link Anchor...'. The 'RLS Storage Class Details' option is highlighted.

New navigation option to RLS Storage Class Details if the Storage Class is associated with a cache set

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RLS Workspaces SMS Configuration

RLS Storage Class Details



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RLS Workspaces Data Class



Data Class Details

Description	Last Update User ID	Last Updated	Expiration Date	Retention Days
DATA CLASS FOR DB2 DATASETS REQUIRING EXTENDE...	PDDAVE	09/18/01 18:13:00	n/a	n/a

Data Class: LDSEA

Data Class Allocation

Primary Space Allocation	Secondary Space	Average Record Length	Record Scaling Factor	Maximum Volumes	Compaction	Directory Blocks	Dataset Type	Extended Addressability	Logical Record Length	Record Format	Record Organization	Reduce Space Percent
n/a	n/a	n/a	n/a	1	n/a	n/a	Ext Preferred	Yes	n/a	Unknown	SAM	n/a

Data Class: LDSEA

Data Class VSAM Attributes

Control Area Free Space Percent	Control Interval Free Space Percent	Control Interval Size	Index Options	Key Length	Cross Region Share Option	Cross System Share Option	Record Bias	RLS Cache	RLS Above Bar	Edent Relief	Control Area Reclaim
n/a	n/a	n/a	n/a	n/a	n/a	n/a	User	n/a	No	No	Yes

Control Area Reclaim

Yes

The CA Reclaim indicates whether the DASD space for empty CAs may be reused on z/OS 1.12 or later systems.

RLS Cache

n/a

RLS Above Bar

No

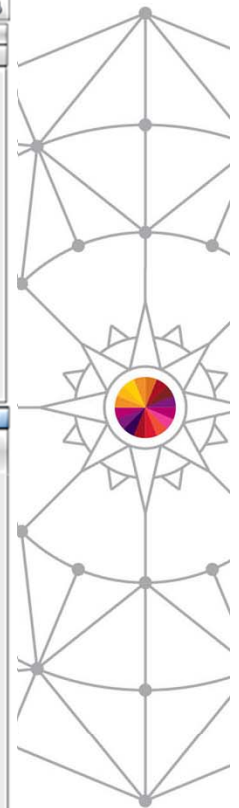
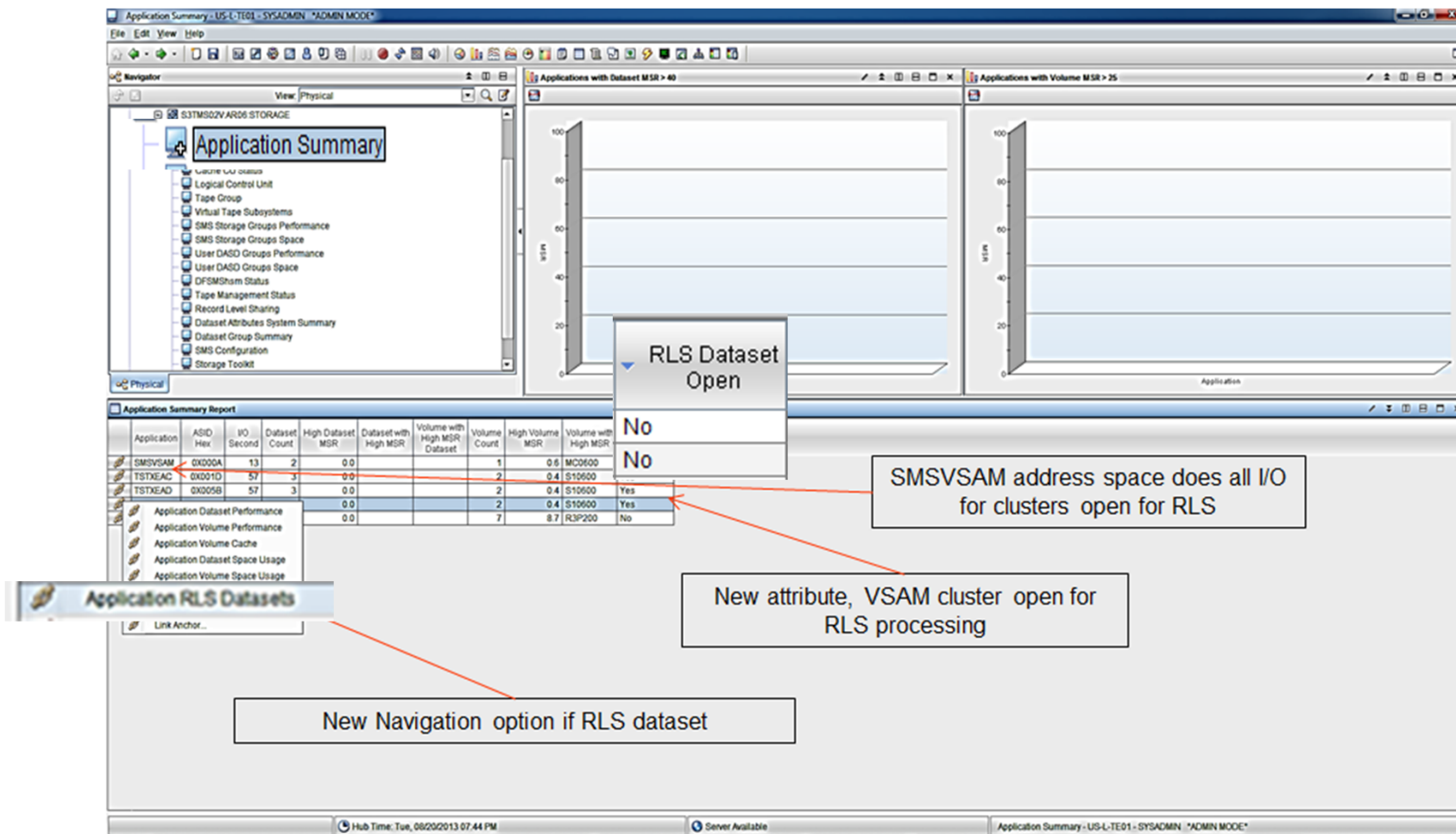
The RLS CF CACHE VALUE field shows that VSAM RLS data with greater than 4K CI's defined to DFSMS CF cache structures can be cached.

The RLS above the 2-GB BAR indicates whether or not virtual storage for RLS can be above the 2-Gigabyte bar

HELP for new VSAM attributes

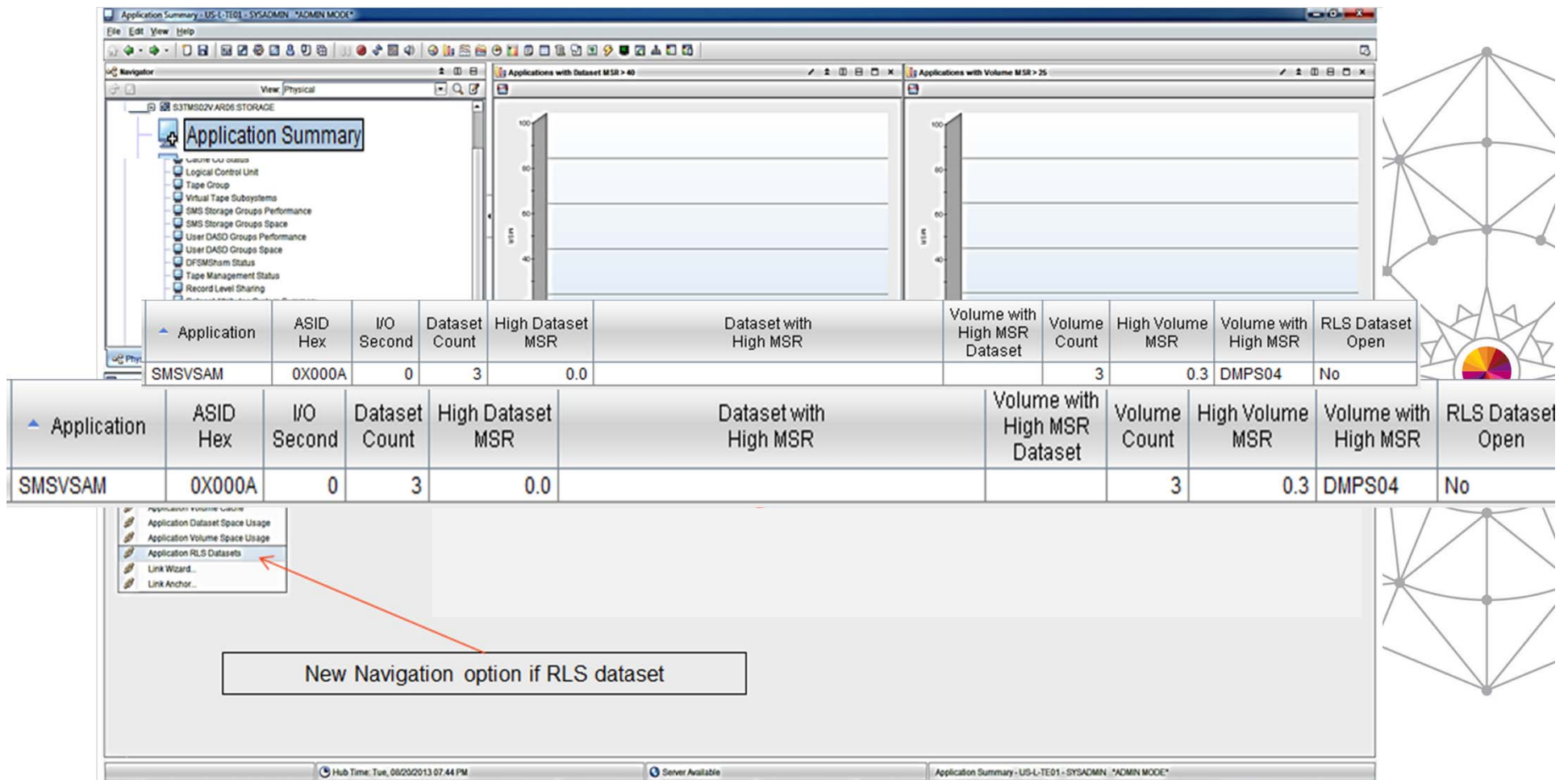
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RLS Workspaces Application Summary



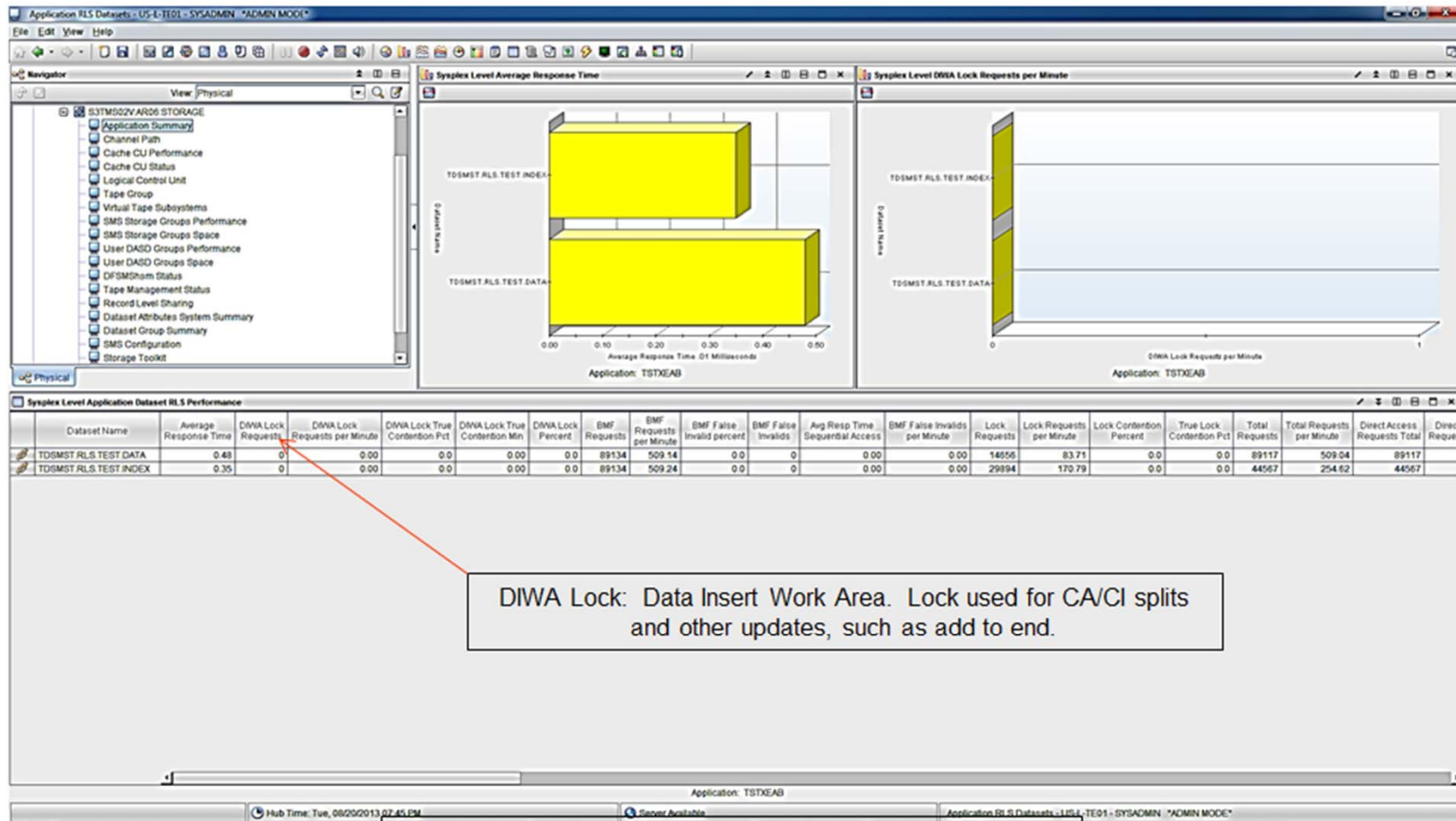
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RLS Workspaces Application Summary



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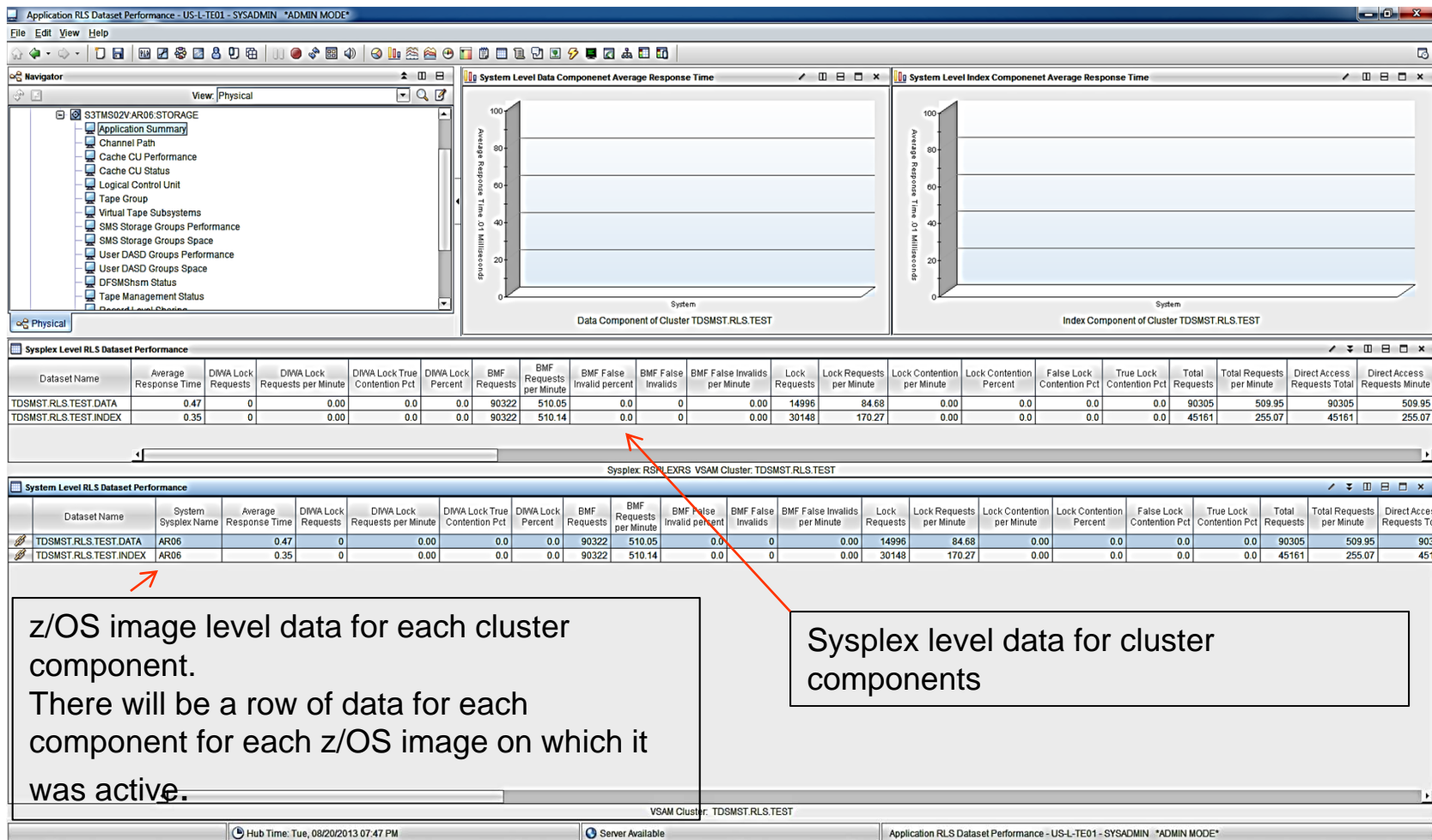
RLS Workspaces Application Datasets



- All statistics on this workspace are at the sysplex level
- All statistics for this node are based on the interval since the dataset was opened

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RLS Workspaces Application Dataset Performance

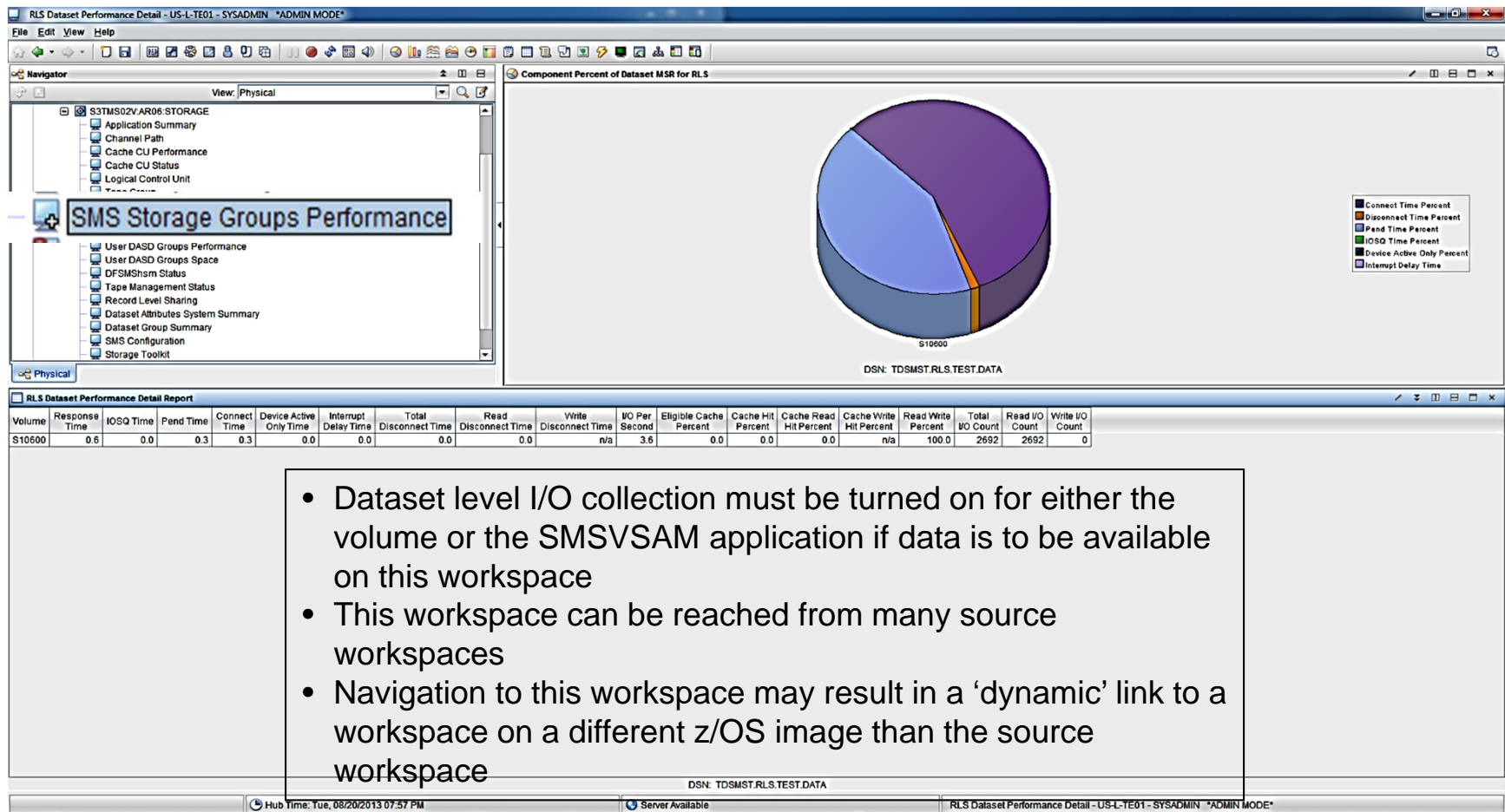


z/OS image level data for each cluster component.
There will be a row of data for each component for each z/OS image on which it was active.

Sysplex level data for cluster components

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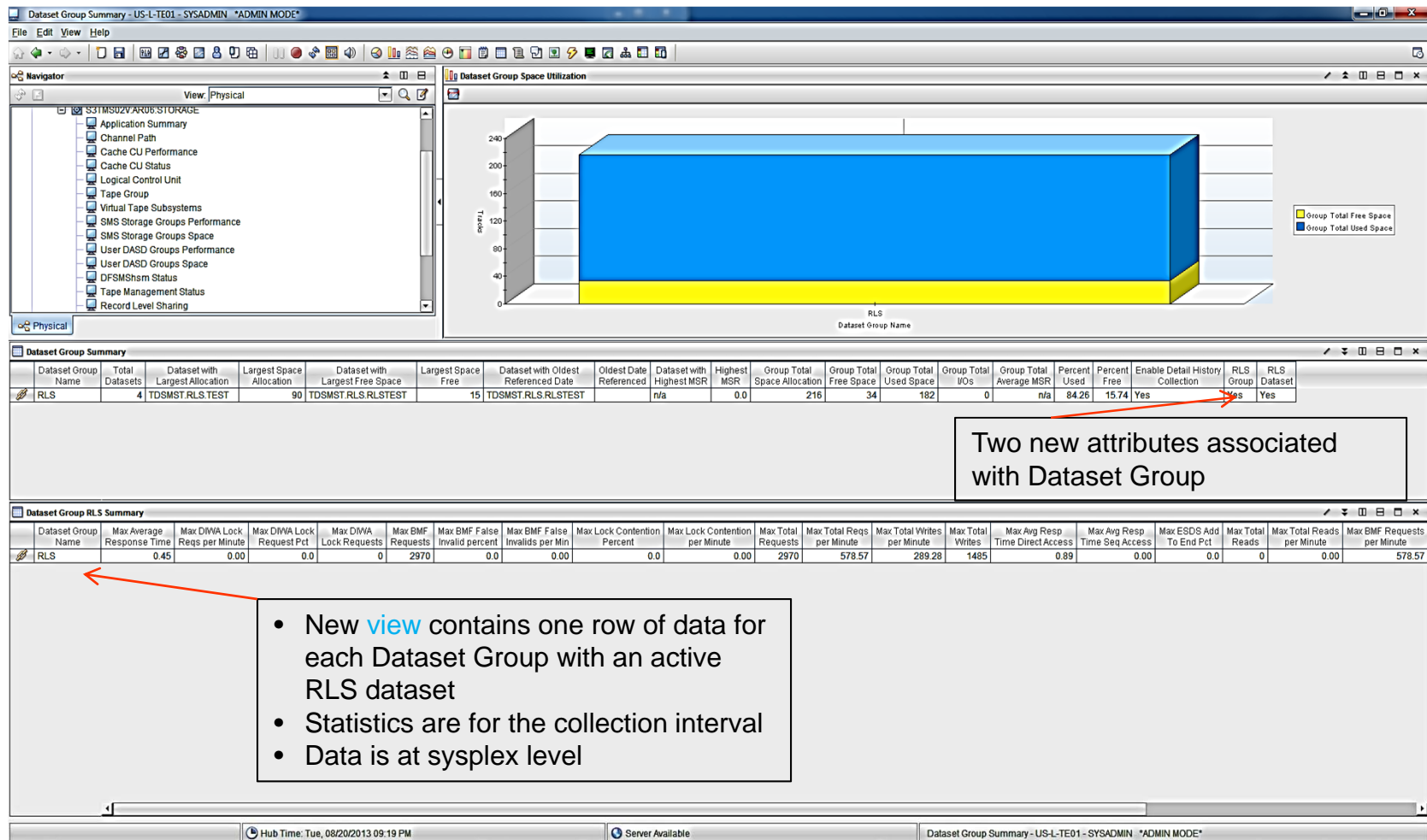
RLS Workspaces Dataset Performance Detail



- Dataset level I/O collection must be turned on for either the volume or the SMSVSAM application if data is to be available on this workspace
- This workspace can be reached from many source workspaces
- Navigation to this workspace may result in a 'dynamic' link to a workspace on a different z/OS image than the source workspace

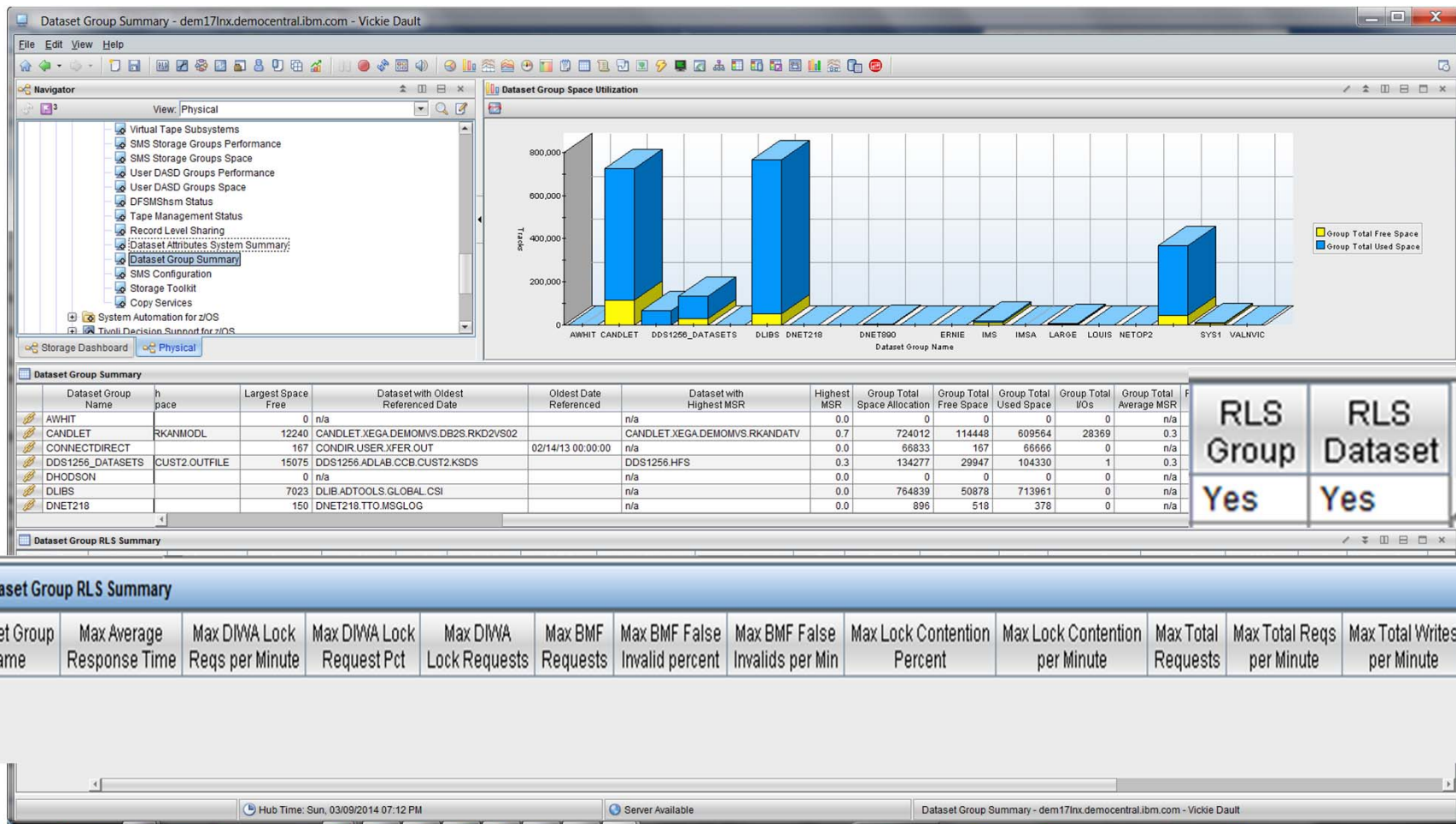
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RLS Workspaces Dataset Group Summary



OMEGAMON XE for Storage

RLS Workspaces Dataset Group Summary



RLS Group	RLS Dataset
Yes	Yes

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RLS Workspaces Dataset Group Summary



Dataset Group Properties

Group Name: CANDLET ☒ Enable Detail History Collection ☐ RLS Group

Mask	Active	Space Data	RLS Mask
CANDLET.XEGA.**	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

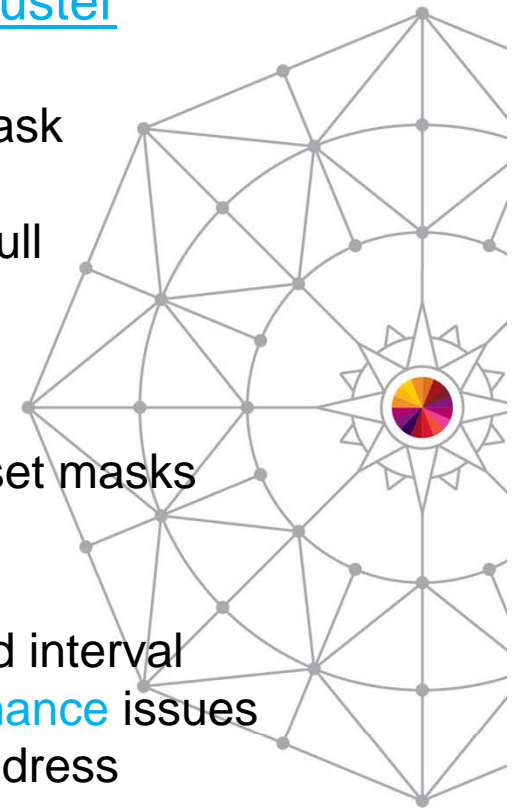
OK Cancel Help

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RLS Workspaces Dataset Group Summary

Rules for coding dataset mask

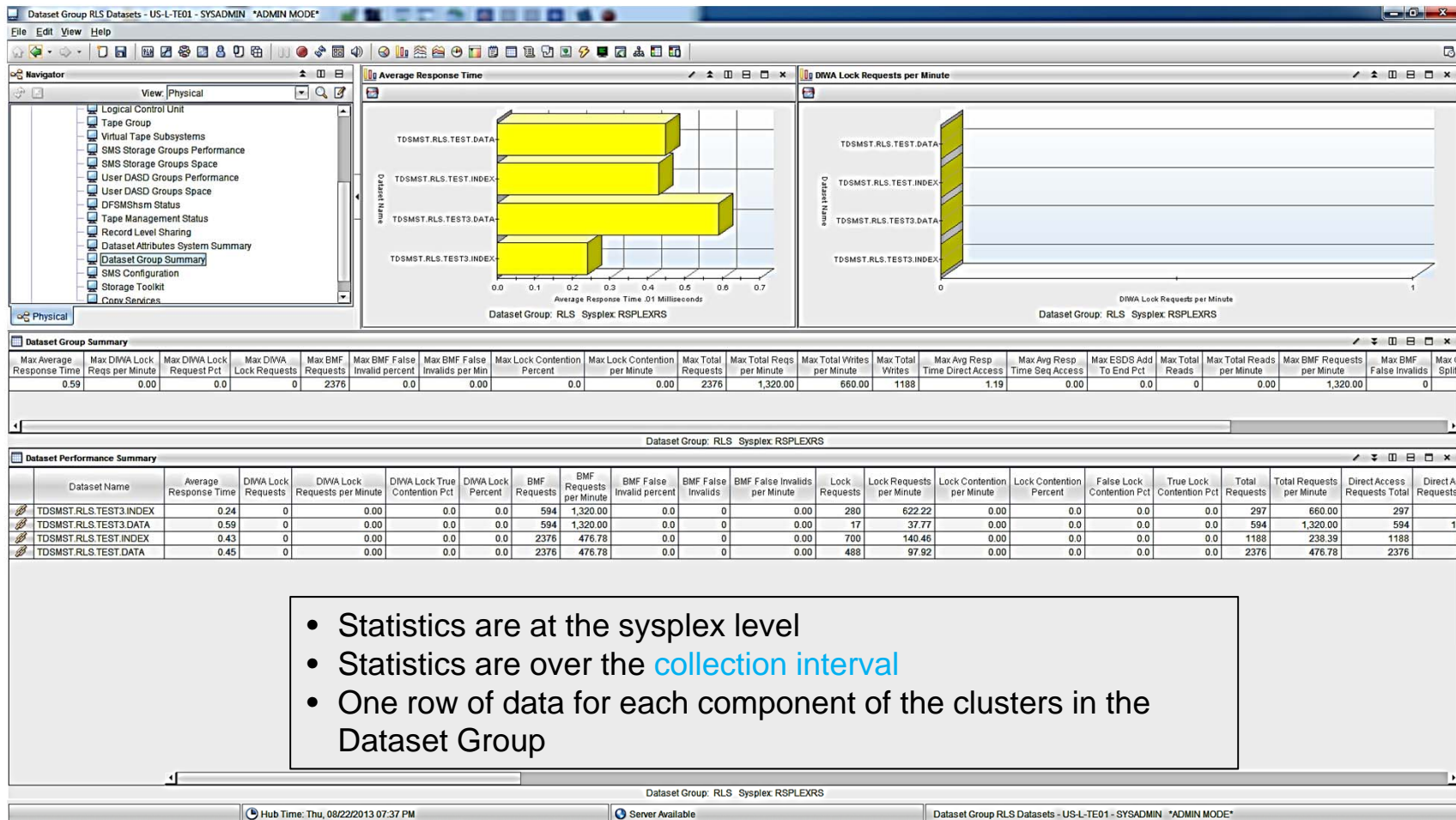
- RLS Dataset mask must be of proper format for the cluster name
 - First qualifier cannot be masked; SYS* is not a valid mask
 - Complex masking is not allowed; SYS1.L*.*.LINKLIB
 - Mask must terminate with either * or ** unless it is the full dataset name;
SYS1.VSAM.CLUSTER
SYS1.** , SYS1.VSAM.*
- A Dataset Group may contain both RLS and non-RLS dataset masks
- Precautions
 - Dataset level data is collected on demand or on a timed interval
 - Monitoring thousands of datasets may result in performance issues in both the OMEGAMON TEMS and the SMSVSAM address spaces



14987: OMEGAMON XE for Storage - Hints and Tips to Improve Performance and Usage by Deborah Reynolds Wednesday 11:00 am

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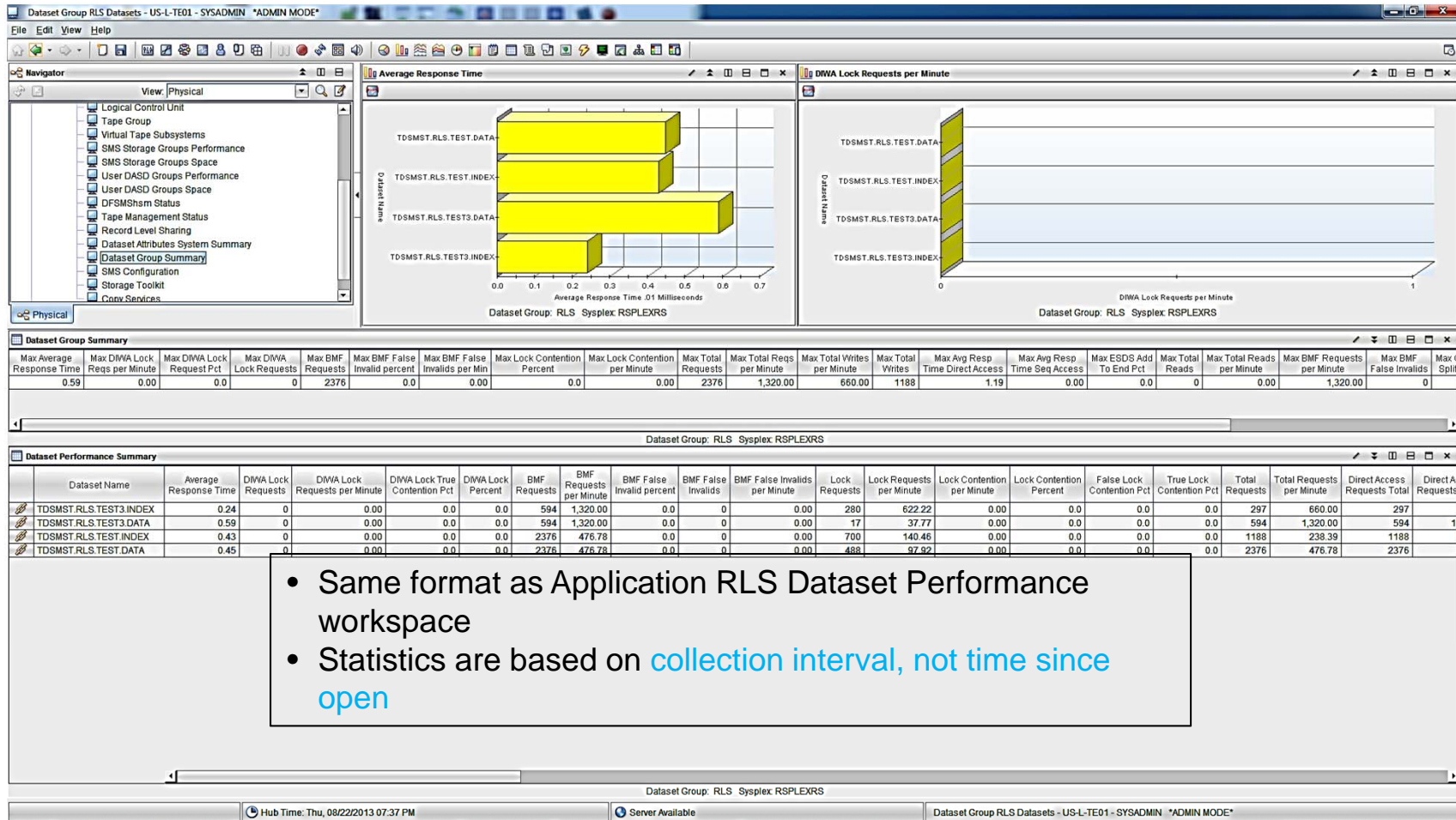
RLS Workspaces Dataset Group Summary



- Statistics are at the sysplex level
- Statistics are over the **collection interval**
- One row of data for each component of the clusters in the Dataset Group

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RLS Workspaces Dataset Group Summary Performance



- Same format as Application RLS Dataset Performance workspace
- Statistics are based on collection interval, not time since open

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RLS Workspaces Dataset Group Summary

Collection interval



Dataset Group Summary

Dataset Group Name	h	pace
AWHIT		
CANDLET	RKANMODL	
CONNECTDIRECT		
DDS1256_DATASETS	CUST2.OUTFILE	
DHODSON		
DLIBS		
DNET218		

Dataset Group RLS Summary

Dataset Group Name	Max BMF Invalids per Min	Max Lock Content Percent
AWHIT		
CANDLET		
CONNECTDIRECT		
DDS1256_DATASETS		
DHODSON		
DLIBS		
DNET218		

Dataset Group Space Utilization

Bar chart showing Group Total Free Space (yellow) and Group Total Used Space (blue) for various dataset groups. The Y-axis represents PL (Physical Length) from 0 to 800,000.

Dataset Group Name: AWHIT, CANDLET, DDS1256_DATASETS, DLIBS, DNET218, DNET990, ERNIE, IMS, IMSA, LARGO, LOUIS, NETOP2, SYS1, VALNVC

RLS Collection

RLS Collection Interval

☐ RMF Interval
☒ On Demand
☐ 0 Mins (5 - 360)

OK Cancel Help

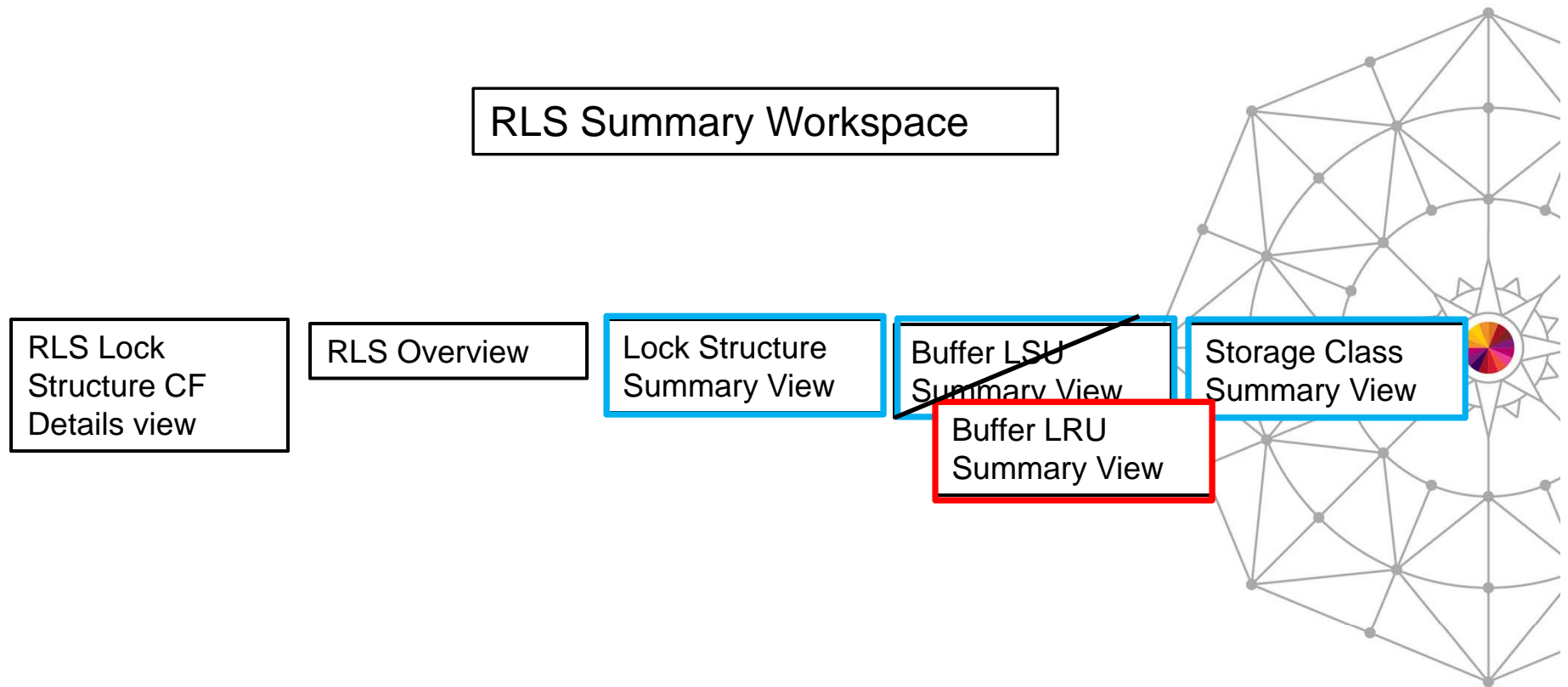
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RLS Workspaces

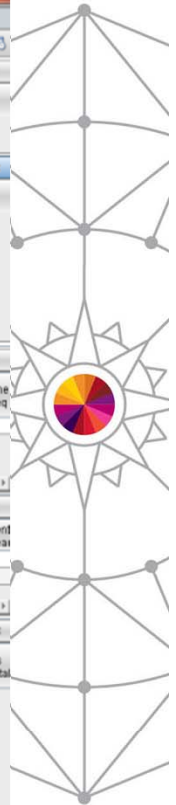
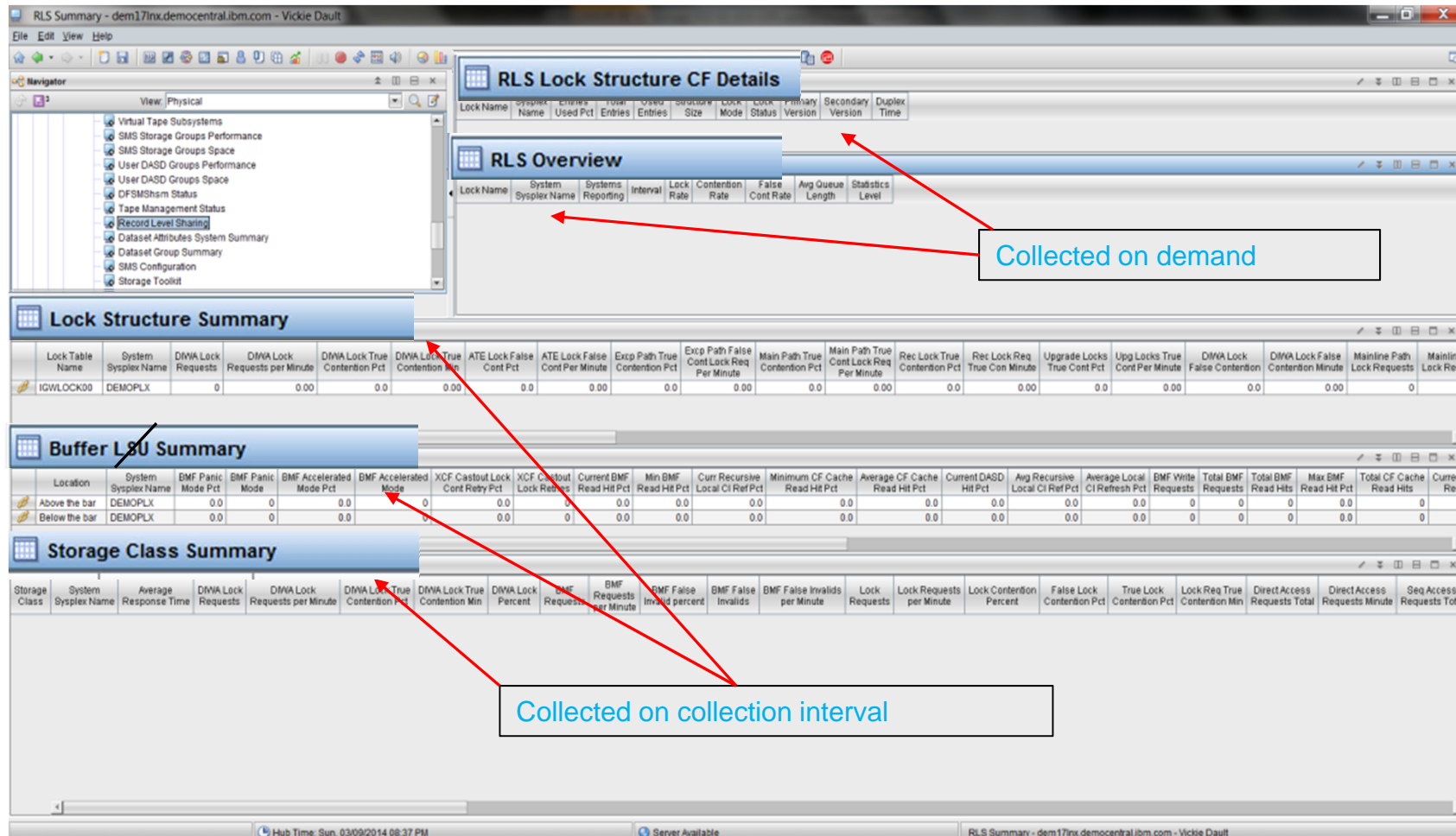
Record Level Sharing Summary



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RLS Workspaces

Record Level Sharing Summary



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RLS Workspaces

Lock Performance Detail



RLS Lock Performance Detail - US-L-TE01 - SYSADMIN *ADMIN MODE*

File Edit View Help

Navigator View: Physical

- SMS Storage Groups Performance
- SMS Storage Groups Space
- User DASD Groups Performance
- User DASD Groups Space
- DFSMSHsm Status
- Tape Management Status
- Record Level Sharing
- Dataset Attributes System Summary
- Dataset Group Summary
- SMS Configuration
- Storage Toolkit
- Core Services

Physical

RLS Lock Structure CF Details

Entries Used Pct	Total Entries	Used Entries	Structure Size	Lock Mode	Lock Status	Primary Version	Secondary Version	Duplex Time
0.0	27895	2	14336	Simplex	Enabled	CBD4D29841D11608		0

Statistics are at sysplex level

Sysplex name: RSPLEXRS Lock Name: IGWLOCK00

RLS Sysplex Level Lock Overview

Interval	Lock Rate	Contention Rate	False Cont Rate	Avg Queue Length
1 day	0.556	0.000	0.000	0.001
8 hours	1.670	0.000	0.000	0.003
1 hour	1.485	0.000	0.000	0.000
1 minute	4.950	0.000	0.000	0.000

Sysplex name: RSPLEXRS Lock Name: IGWLOCK00

1 Minute System Level Lock Performance

System Sysplex Name	Lock Rate	Contention Rate	False Cont Rate	Avg Queue Length
AR06	4.950	0.000	0.000	0.000

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1 Hour System Level Lock Performance

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8 Hours System Level Lock Performance

System Sysplex Name	Lock Rate	Contention Rate	False Cont Rate	Avg Queue Length
AR06	1.670	0.000	0.000	0.003

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- z/OS image level statistics
- One row per system with activity

Hub Time: Thu, 08/22/2013 05:15 PM Server Available RLS Lock Performance Detail - US-L-TE01 - SYSADMIN *ADMIN MODE*



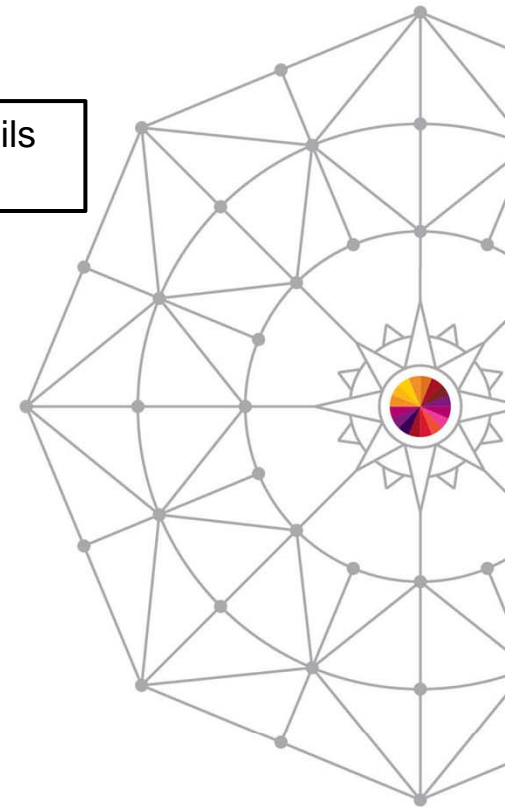
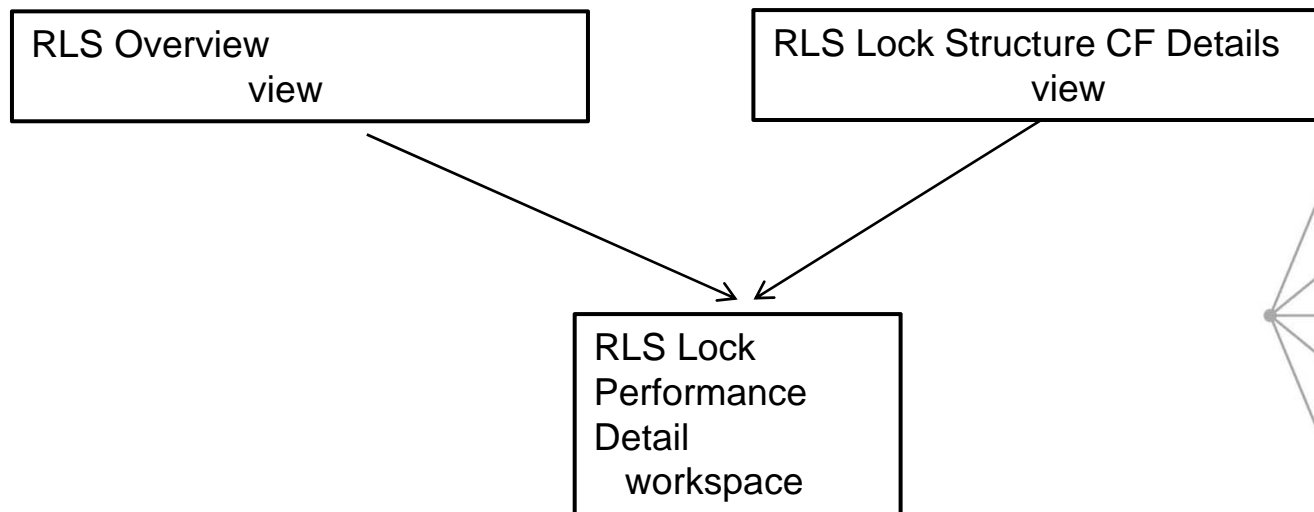
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RLS Workspaces

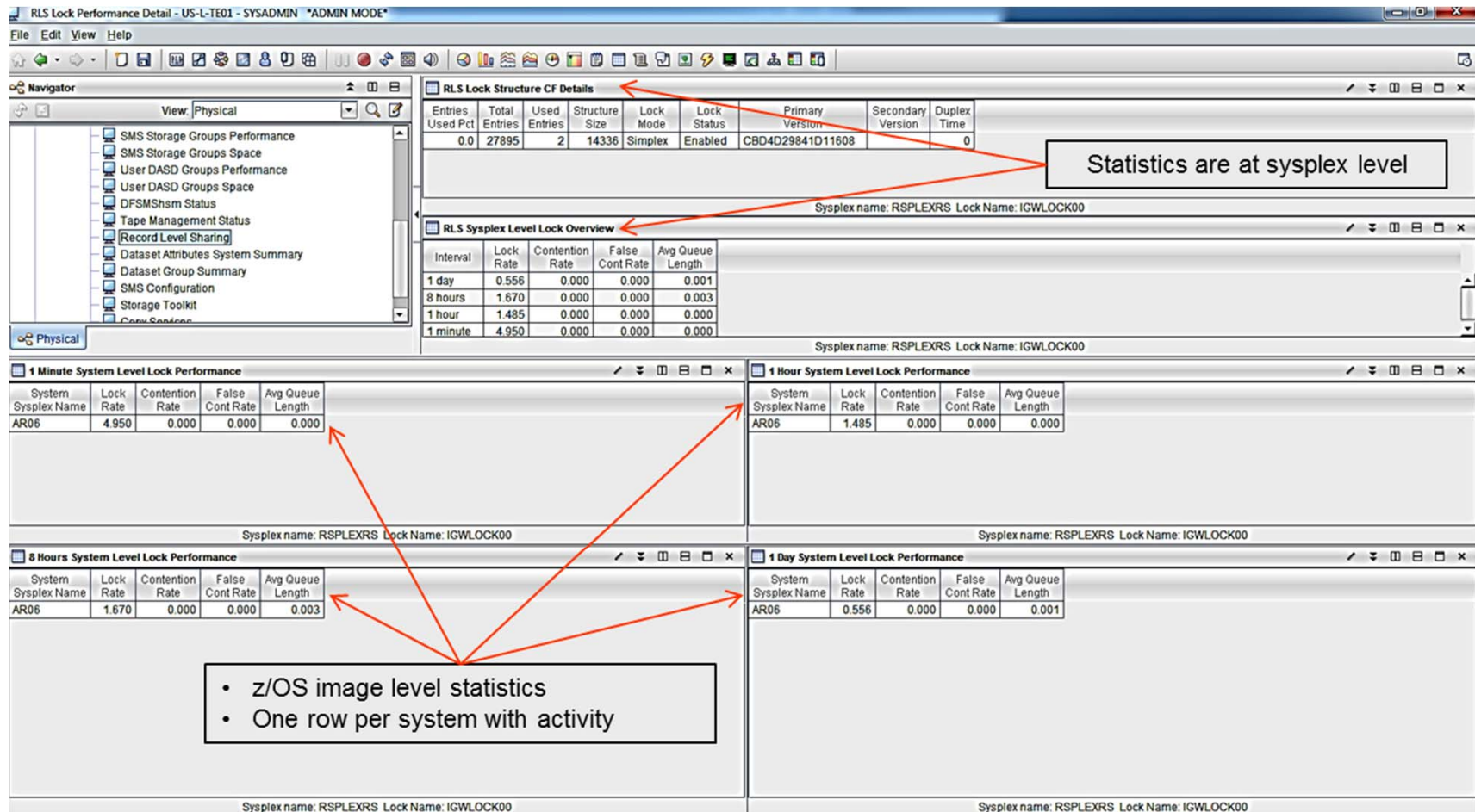
RLS Lock Structure Overview



OMEGAMON XE for Storage

RLS Workspaces

Lock Performance Detail Workspace



RLS Lock Performance Detail - US-L-TE01 - SYSADMIN *ADMIN MODE*

File Edit View Help

Navigator

View: Physical

- SMS Storage Groups Performance
- SMS Storage Groups Space
- User DASD Groups Performance
- User DASD Groups Space
- DFSMShm Status
- Tape Management Status
- Record Level Sharing
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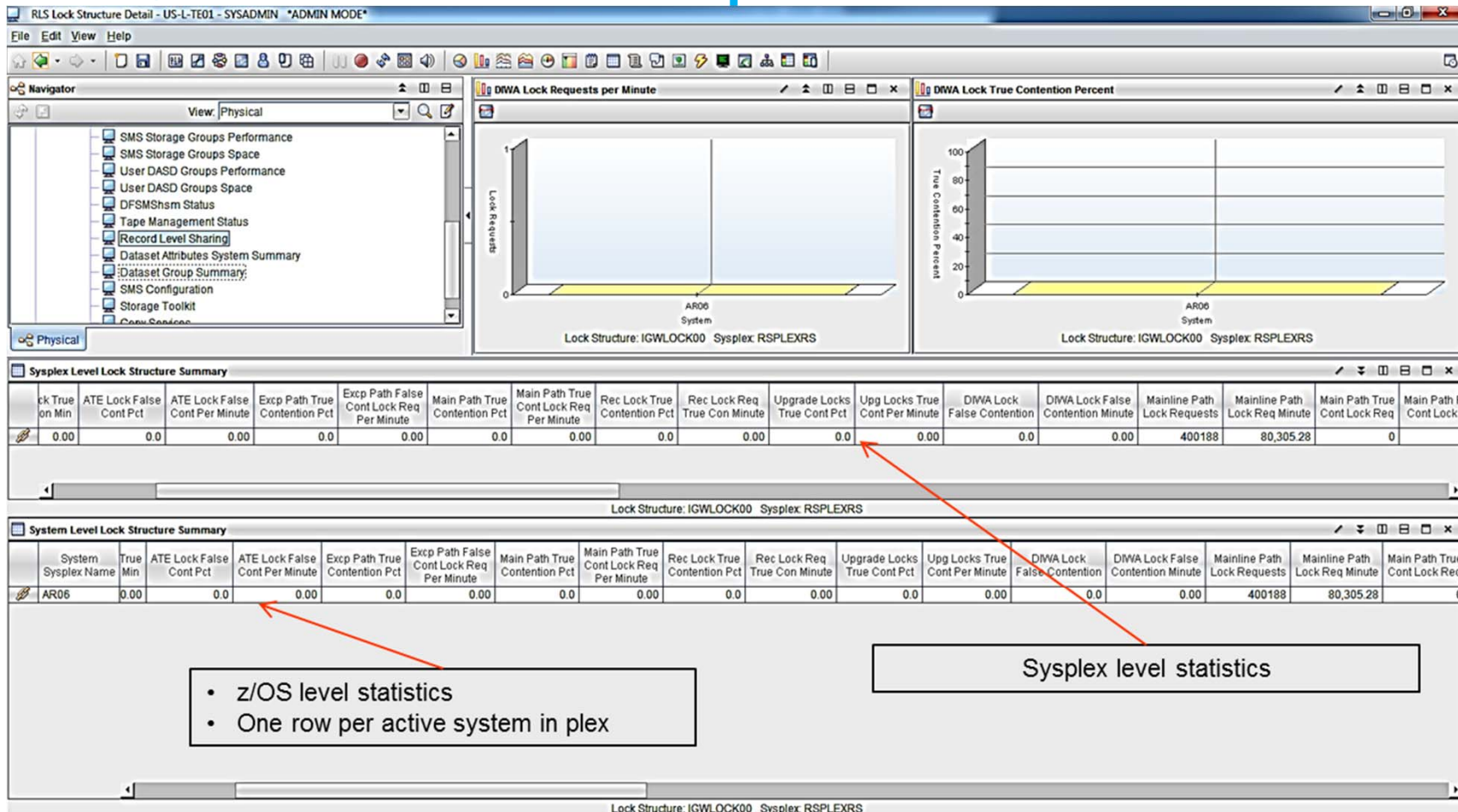
Sysplex name: RSPLEXRS Lock Name: IGWLOCK00

- z/OS image level statistics
- One row per system with activity

OMEGAMON XE for Storage

RLS Workspaces

Lock Structure Detail Workspace



- z/OS level statistics
- One row per active system in plex

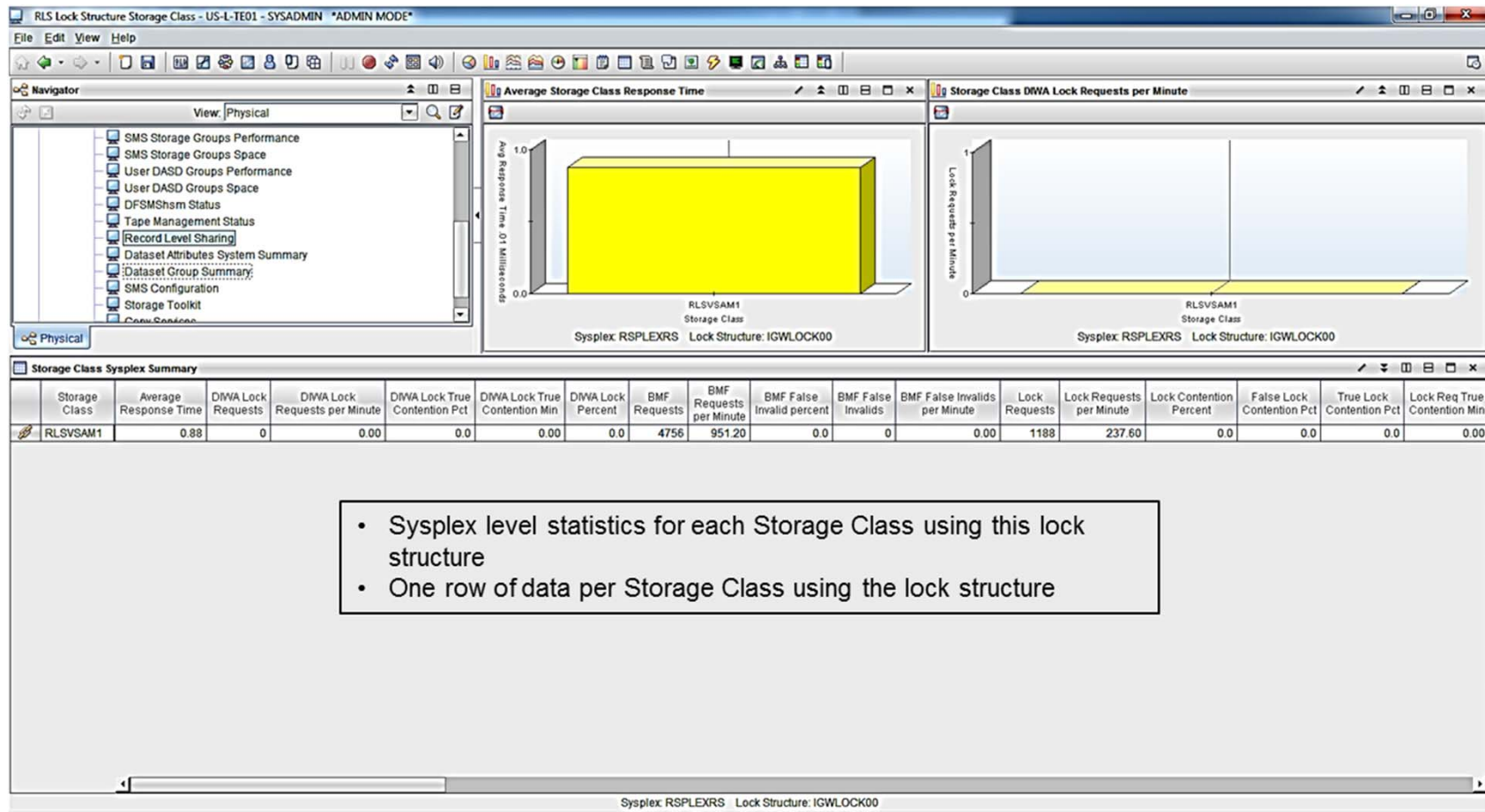
Sysplex level statistics

Information about a single lock structure

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RLS Workspaces

Lock Structure Storage Class

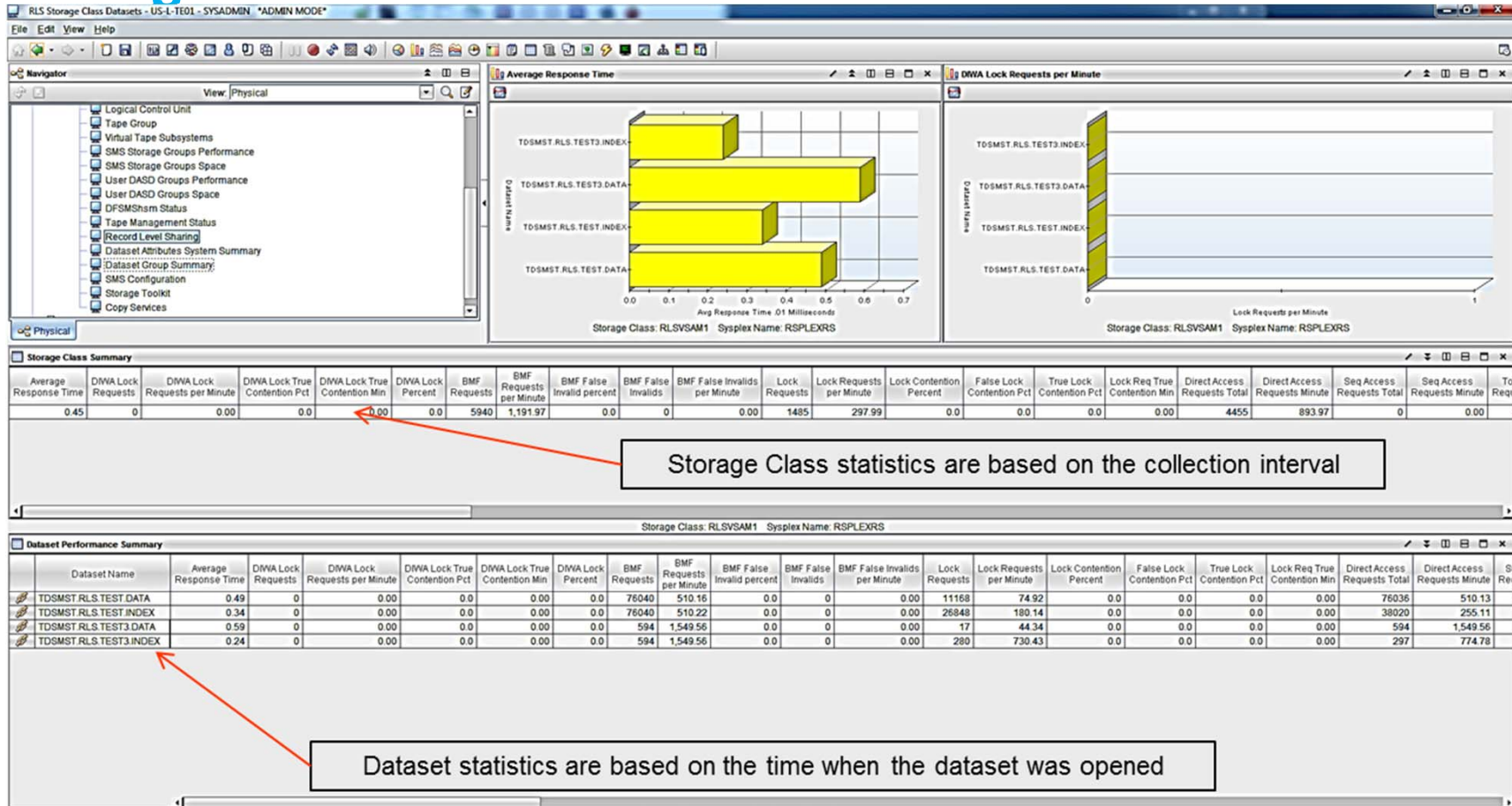


- Sysplex level statistics for each Storage Class using this lock structure
- One row of data per Storage Class using the lock structure

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RLS Workspaces

Storage Class Datasets



Storage Class statistics are based on the collection interval

Dataset statistics are based on the time when the dataset was opened

All statistics are at the sysplex level

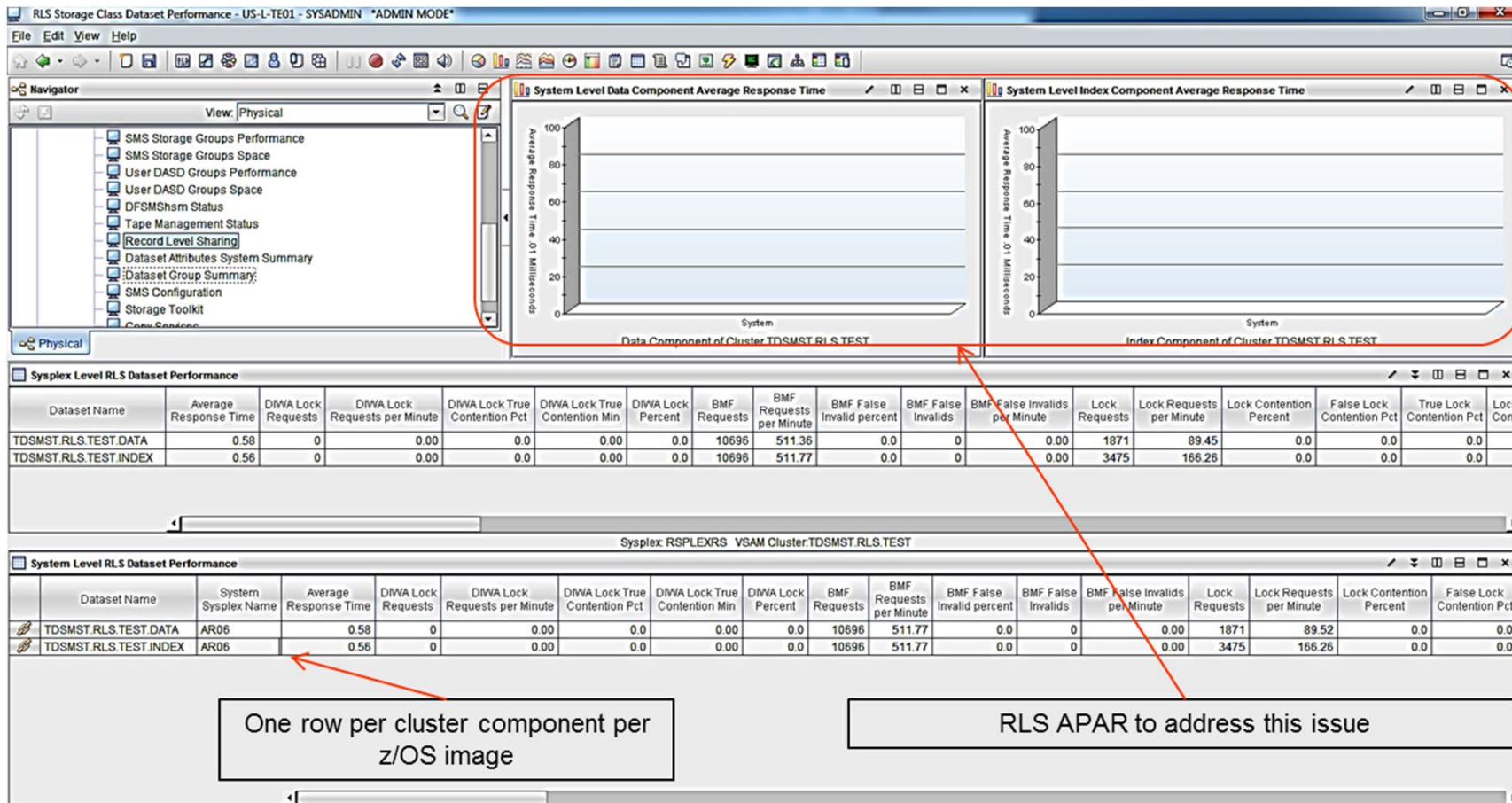
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RLS Workspaces

Storage Class Dataset Performance



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RLS Workspaces

Buffer ~~LSU~~ Summary Buffer LRU Summary



RLS Buffer LSU Detail - US-L-TE01 - SYSADMIN *ADMIN MODE*

File Edit View Help

Navigator View Physical

- Tape Group
- Virtual Tape Subsystems
- SMS Storage Groups Performance
- SMS Storage Groups Space
- User DASD Groups Performance
- User DASD Groups Space
- DFSMSHsm Status
- Tape Management Status
- Record Level Sharing
- Dataset Attributes System Summary
- Dataset Group Summary
- SMS Configuration

Sysplex Level Above the Bar Buffers

Buffer Pool Size KB	Avg Minimum Buffers	Avg Maximum Buffers	Avg Current Buffers	Avg Minimum Extents	Avg Maximum Extents
2	0	0	0	0	0
4	0	0	0	0	0
8	0	0	0	0	0
16	63	83	83	1	1
32	0	0	0	0	0
64	0	0	0	0	0
128	0	0	0	0	0
256	0	0	0	0	0
512	0	0	0	0	0
1024	0	0	0	0	0
2048	0	0	0	0	0

Sysplex Level Below the Bar Buffers

Buffer Pool Size KB	Avg Minimum Buffers	Avg Maximum Buffers	Avg Current Buffers	Avg Minimum Extents	Avg Maximum Extents	Avg Current Extents	Minimum Buffers
2	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0
16	63	83	83	1	1	1	63
32	0	0	0	0	0	0	0
64	0	0	0	0	0	0	0
128	0	0	0	0	0	0	0
256	0	0	0	0	0	0	0
512	0	0	0	0	0	0	0
1024	0	0	0	0	0	0	0
2048	0	0	0	0	0	0	0

Sysplex RSPLEXRS

Sysplex Level Buffer Pool Summary

Location	MF Accelerated Mode	XCF Castout Lock Cont Retry Pct	XCF Castout Lock Retries	Current BMF Read Hit Pct	Min BMF Read Hit Pct	Curr Recursive Local CI Ref Pct	Max Recursive Local CI Ref Pct	Current CF Cache Read Hit Pct	Minimum CF Cache Read Hit Pct	Average CF Cache Read Hit Pct	Current DASD Hit Pct	Avg Recursive Local CI Ref Pct	Average Local CI Refresh Pct	BMF Write Requests	Total BMF Requests	Total BMF Read Hits	Max BMF Read Hit Pct
Above the bar	0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0
Below the bar	0	226.3	43	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1189	3567	3528	9

Sysplex RSPLEXRS

Local Level Above the Bar Buffer Pool Summary

System Sysplex Name	BMF Panic Mode Pct	BMF Panic Mode	BMF Accelerated Mode Pct	BMF Accelerated Mode	XCF Castout Lock Cont Retry Pct	XCF Castout Lock Retries	Current BMF Read Hit Pct	Min BMF Read Hit Pct	Curr Recursive Local CI Ref Pct	Minimum CF Cache Read Hit Pct	Average CF Cache Read Hit Pct	Current DASD Hit Pct	Avg Recursive Local CI Ref Pct	Average Local CI Refresh Pct	BMF Write Requests	Total BMF Requests	Total BMF Read Hits
AR06	0.0	0	0.0	0	205.2	39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	3567	3528

Local Level Below the Bar Buffer Pool Summary

System Sysplex Name	BMF Panic Mode Pct	BMF Panic Mode	BMF Accelerated Mode Pct	BMF Accelerated Mode	XCF Castout Lock Cont Retry Pct	XCF Castout Lock Retries	Current BMF Read Hit Pct	Min BMF Read Hit Pct	Curr Recursive Local CI Ref Pct	Minimum CF Cache Read Hit Pct	Average CF Cache Read Hit Pct	Current DASD Hit Pct	Avg Recursive Local CI Ref Pct	Average Local CI Refresh Pct	BMF Write Requests	Total BMF Requests	Total BMF Read Hits
AR06	0.0	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0

Buffer pool summary by z/OS system

Sysplex level buffer pool usage by buffer size

All data based on the collection interval

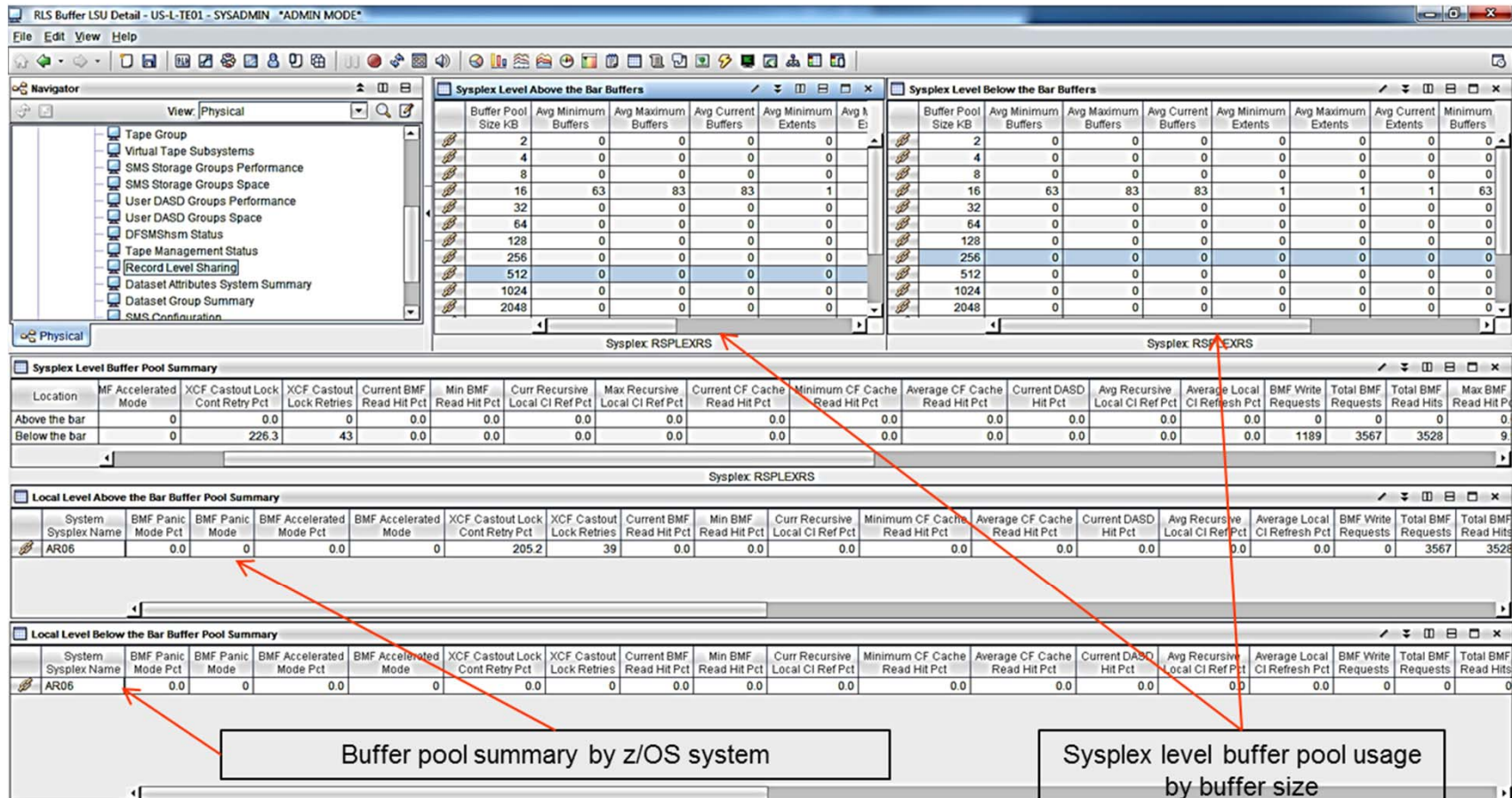
Complete your session evaluations online at www.SHARE.org/Anaheim-Eval



OMEGAMON XE for Storage

RLS Workspaces

Buffer LRU Detail Workspace Buffer LRU Detail



Buffer pool summary by z/OS system

Sysplex level buffer pool usage
by buffer size

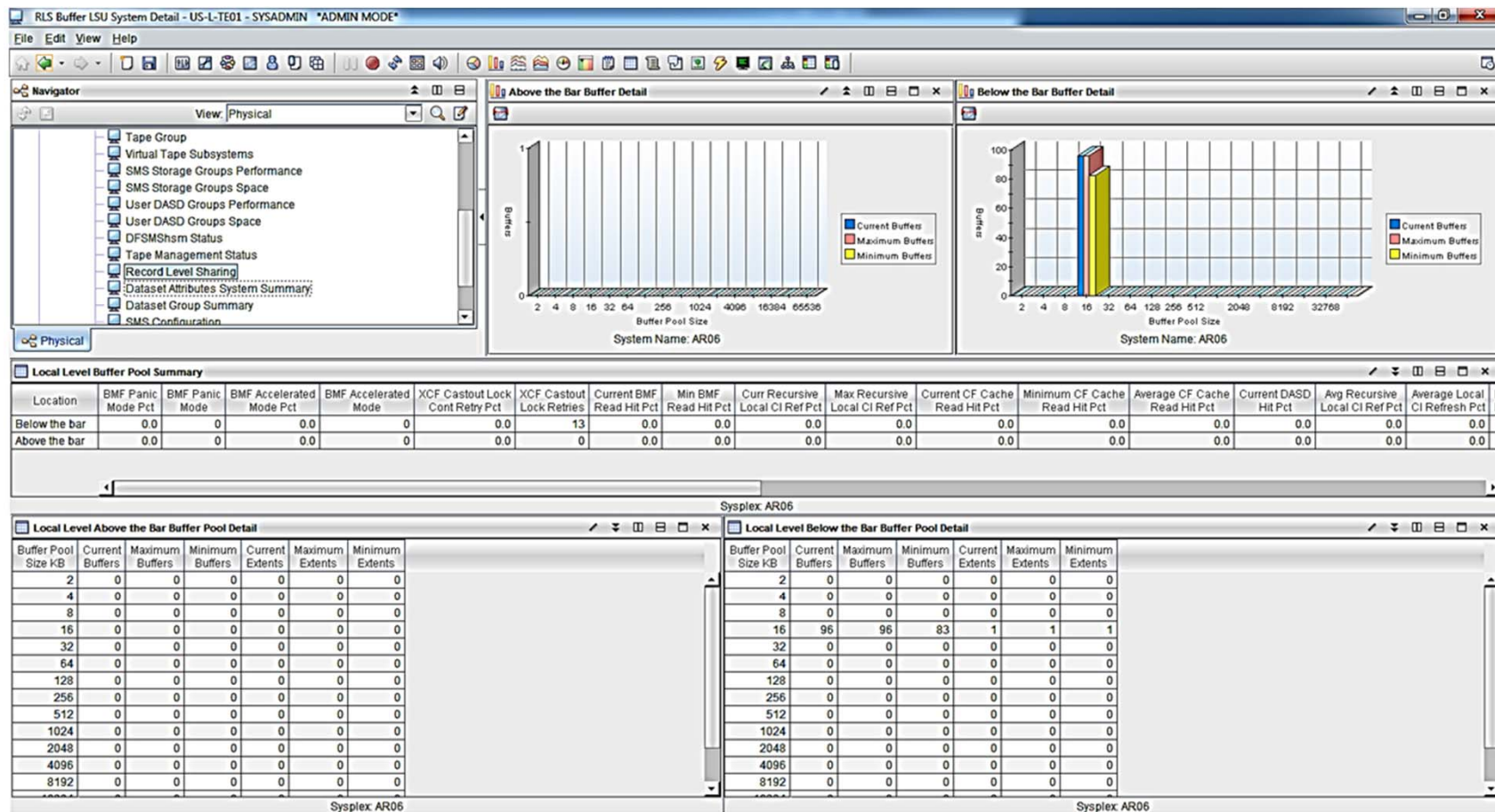
All data based on the collection interval

OMEGAMON XE for Storage

RLS Workspaces

Buffer LRU System Detail

Buffer ~~LSU~~ System Detail Workspace



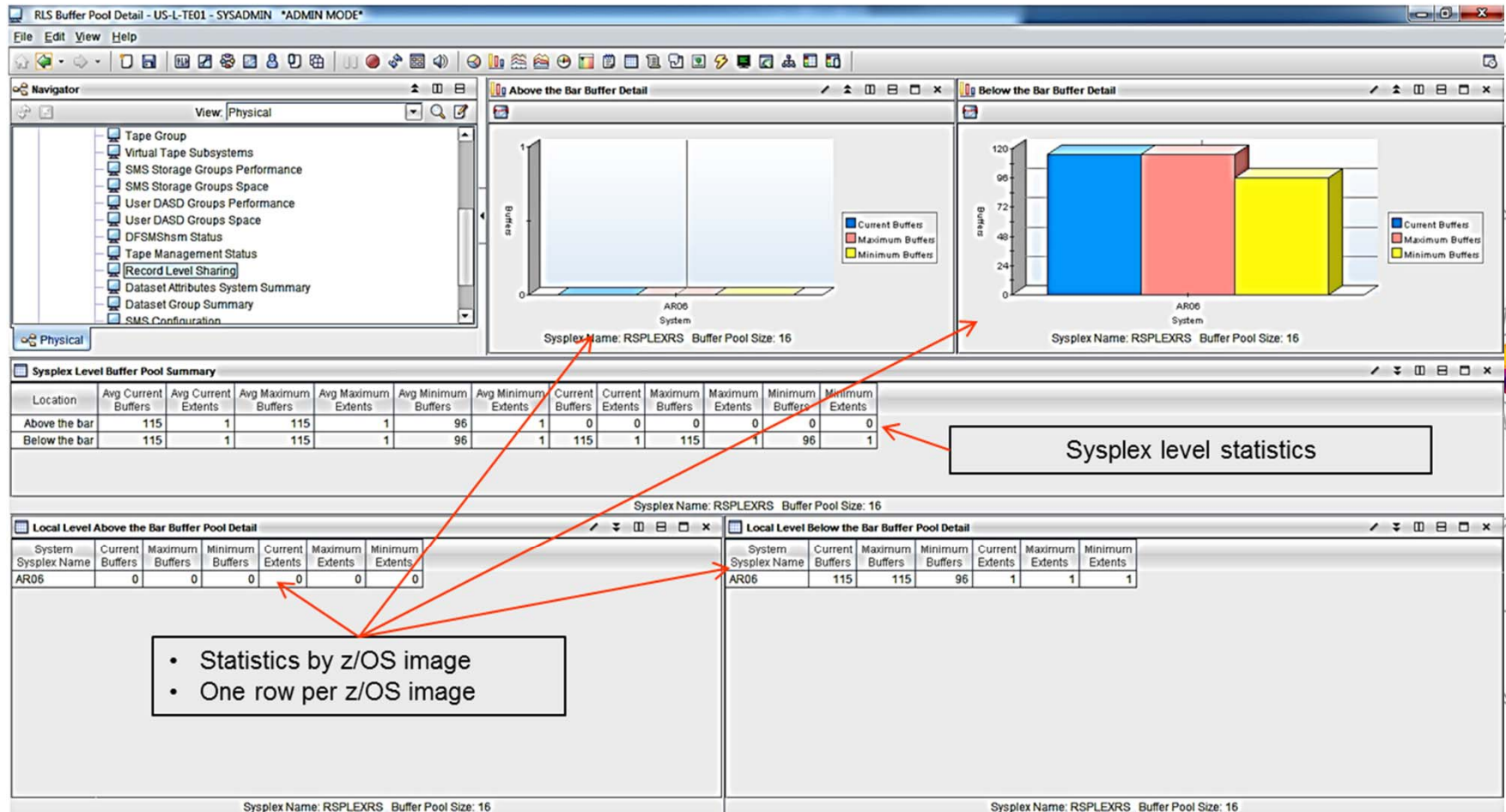
Buffer Pool Statistics for a single z/OS image

Complete your session evaluations online at www.SHARE.org/Anaheim-Eval

OMEGAMON XE for Storage

RLS Workspaces

Buffer Pool Detail



Complete your session evaluations online at www.SHARE.org/Anaheim-Eval



OMEGAMON XE for Storage

RLS Monitoring

e3270ui



S3 - RS22 Beacon - RS22 OM - BlueZone Mainframe Display

File Edit Session Options Transfer View Script Help

Connections: RS22 OM

Attention PA1 PA2 PA3 Reset PF01 PF02 PF03 PF04 PF05 PF06 PF07 PF08 PF12 System Req

Command ==> Enterprise Summary Auto Update : off
KOBSTART Plex ID :
Sys ID :

Storage SMSplex Overview

Columns 14 to 20 of 20 Rows 1 to 2 of 2

SYSplex Name	HSM CDS Minimum Free Space	RMM % Used	HSM Status	Disabled VTOC Index	RLS MAX Resp Time	BMF Panic Mode Pct	SMS CDS SYSplex Name
RSPLEXRS	99.0	3503477K	Active	No	12.34	n/a	AR06, DFSMS, SCDS
RSPLEX01	37.0	98	Active	Yes	n/a	77.7	RSPLEX01, SMSPLEX, SCDS

Thursday August 22 2013

S3 Ready (1) 192.168.55.22 S22T0146 20:05:55 8/22/2013 NUM 00:00:24 28,079

- New Attributes
- Response Time is high
- Zoom on column to RLS overview

Complete your session evaluations online at www.SHARE.org/Anaheim-Eval



OMEGAMON XE for Storage

RLS Monitoring *e3270ui*

S3 - RS22 Beacon - RS22 OM - BlueZone Mainframe Display

File Edit Session Options Transfer View Script Help

Connections: RS22 OM Attention PA1 PA2 PA3 Reset PF01 PF02 PF03 PF04 PF05 PF06 PF07 PF08 PF12 System Req

Command KSJRS 08/22/2013 23:07:58 Auto Update : Off
Plex ID : RSPLEXRS
Sys ID : AR06

RLS Summary

RLS Lock Structure CF Details

Lock Name	Sysplex Name	Entries Used %	Total Entries	Used Entries	Structure Size	Lock Mode	Lock Status	Primary Version	Secondary Version	+Dup Tim
IGWLOCK00	RSPLEXRS	0.0	27895	2	14336	Simplex	Enabled	CBD4D29841D11608		

RLS Overview

Lock Name	System Sysplex Name	Systems Reporting	Interval	Lock Rate	Contention Rate	False Cont Rate	Avg Queue Length	Statistics Level
IGWLOCK00	RSPLEXRS	1	1 day	2.093	0.000	0.000	0.002	Sysplex
IGWLOCK00	RSPLEXRS	1	8 hours	5.403	0.000	0.000	0.006	Sysplex
IGWLOCK00	RSPLEXRS	1	1 hour	6.328	0.000	0.000	0.000	Sysplex
IGWLOCK00	RSPLEXRS	1	1 minute	3.383	0.000	0.000	0.000	Sysplex

Lock Structure Summary

Lock Table Name	System Sysplex Name	DIWA Lock Requests	DIWA Lock Requests per Minute	DIWA Lock True Contention %	DIWA Lock True Contention Min	ATE Lock False Cont %	+ATE L Cont
IGWLOCK00	RSPLEXRS	0	0.00	0.0	0.00	0.0	

Buffer LSU Summary

Location	System Sysplex Name	BMF Panic Mode %	BMF Panic Mode	BMF Accelerated Mode %	BMF Accelerated Mode	XCF Castout Lock Cont Retry %	XCF Castout Lock Retries	Current BMF Read Hit %
Above the bar	RSPLEXRS	0.0	0	0.0	0	0.0	0	0.0
Below the bar	RSPLEXRS	0.0	0	0.0	0	0.0	0	0.0

Storage Class Summary

Storage Class	System Sysplex Name	Average Response Time	DIWA Lock Requests	DIWA Lock Requests per Minute	DIWA Lock True Contention %	DIWA Lock True Contention Min	+DIWA Lock
RLSVSAM1	RSPLEXRS	0.40	0	0.00	0.0	0.00	0.0

Look for abnormal values and take appropriate action.

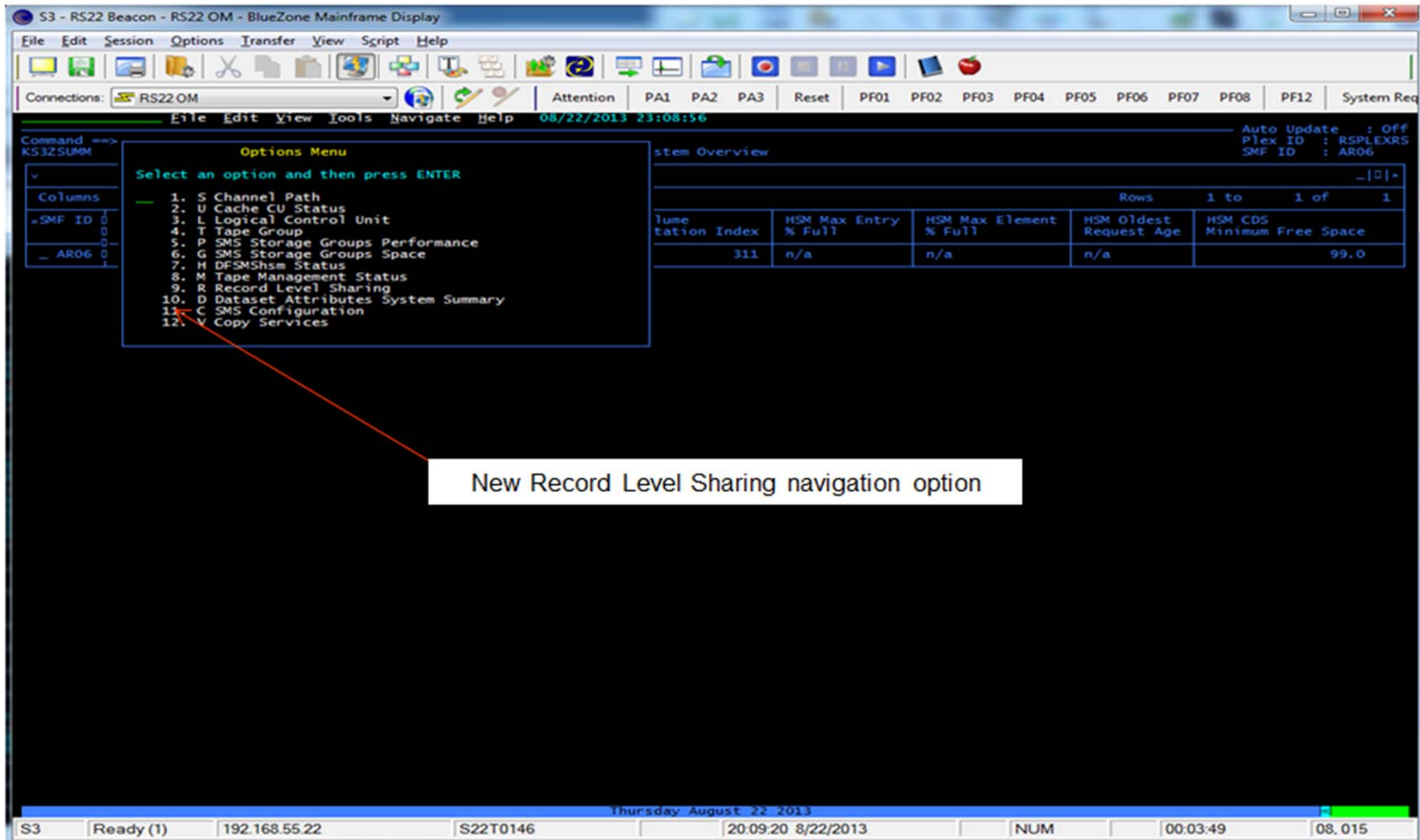
Thursday August 22 2013

S3 | Ready (1) | 192.168.55.22 | S22T0146 | 20.08.20 8/22/2013 | NUM | 00:02:49 | 13,004



OMEGAMON XE for Storage

RLS Monitoring *e3270ui*



Options Menu

Select an option and then press ENTER

1. S Channel Path
2. U Cache CU Status
3. L Logical Control Unit
4. T Tape Group
5. P SMS Storage Groups Performance
6. G SMS Storage Groups Space
7. H DFSMSHsm Status
8. M Tape Management Status
9. R Record Level Sharing
10. D Dataset Attributes System Summary
11. C SMS Configuration
12. V Copy Services

System Overview

Volume	Index	HSM Max Entry % Full	HSM Max Element % Full	HSM Oldest Request Age	HSM CDS Minimum Free Space
311	n/a	n/a	n/a	99.0	

New Record Level Sharing navigation option

Thursday August 22 2013

S3 Ready (1) 192.168.55.22 S22T0146 20:09:20 8/22/2013 NUM 00:03:49 08,015



OMEGAMON XE for Storage

RLS Monitoring

more information

Session 15089 Using RLS with your Catalogs – a How to

Neal Bohling VSAM RLS Level 2

Tuesday 11:00 am

Session 15090 DFSMS Advanced Leveraging VSAM RLS
Best practices

Neal Bohling VSAM RLS Level 2

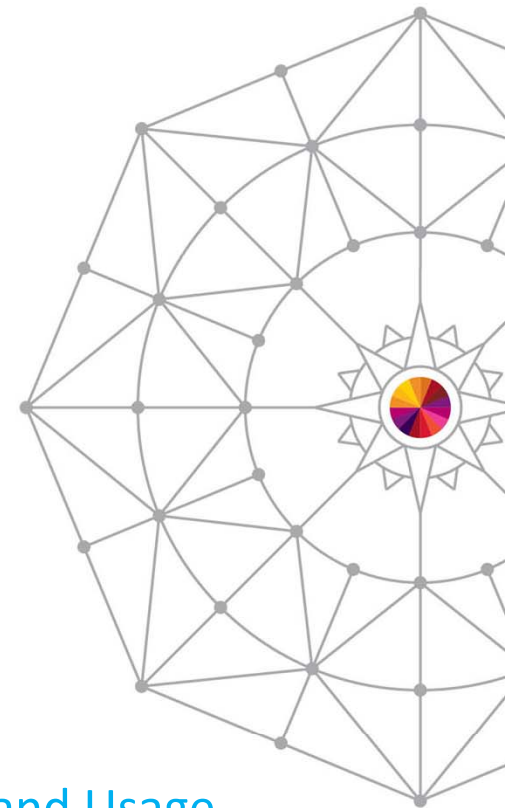
Wednesday 1:30 pm

Session 14987 OMEGAMON XE for Storage

Hints and Tips to improve Performance and Usage

Deborah Reynolds SMPO migration specialist

Wednesday 11:00 am



Complete your session evaluations online at www.SHARE.org/Anaheim-Eval

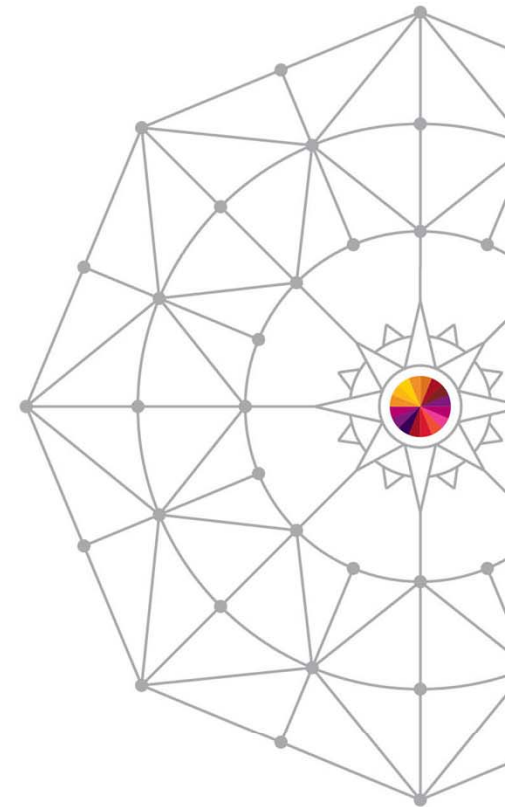


OMEGAMON XE for Storage V520



Examples of RLS in V2R1

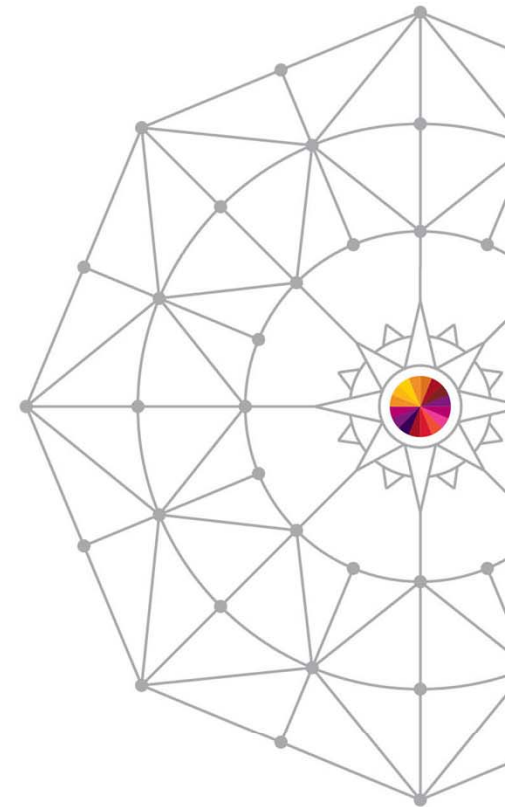
- HSM Common Recall Queue
- CICS VSAM
- z/OS Catalogs



OMEGAMON XE for Storage V520

Agenda


- New Features
 - VSAM RLS
 - HSM, CICS, System Catalogs w/V2R1
 - Tape Management Improvements
 - z/OS Copy Services
 - XRC, PPRC, Flash Copy
 - zIIP processors
 - I/O Secondary Delays
 - Updated EMC Workspaces
- References




OMEGAMON XE for Storage V520

- New Features Tape Management Improvements

Old

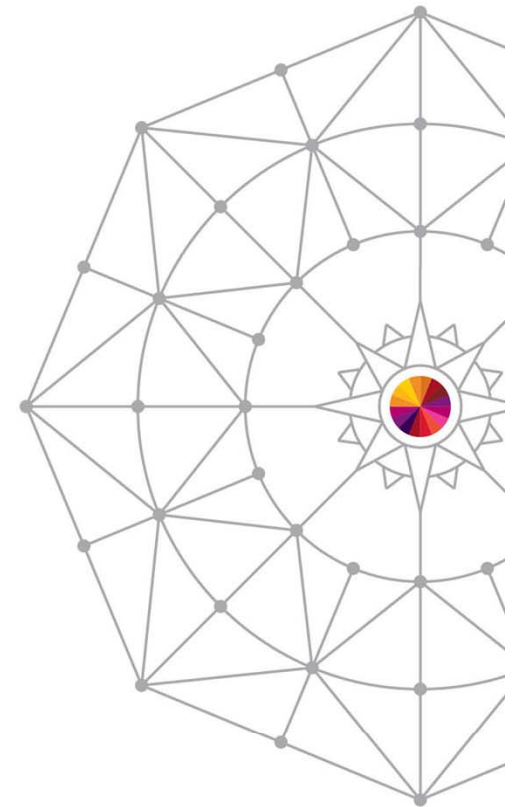
 DFSMSrmm Status

New

 Tape Management Status

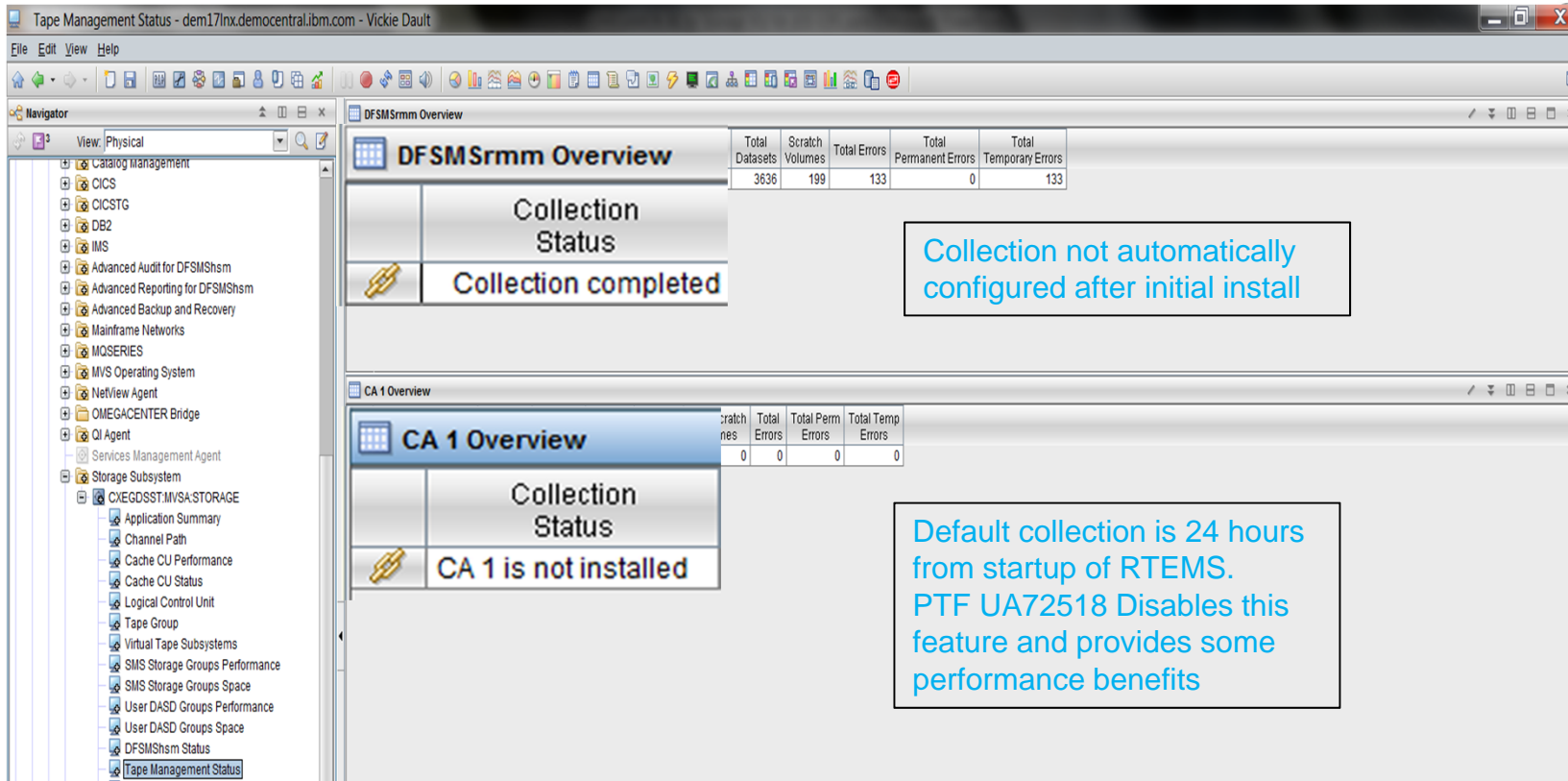
Both RMM and CA1 collections available
Concurrently.

Very useful during Migrations



OMEGAMON XE for Storage V520

- New Features Tape Management Improvements



Tape Management Status - dem17inx.democentral.ibm.com - Vickie Dault

File Edit View Help

Navigator View: Physical

- Catalog Management
 - CICS
 - CICSTG
 - DB2
 - IMS
 - Advanced Audit for DFSMSHsm
 - Advanced Reporting for DFSMSHsm
 - Advanced Backup and Recovery
 - Mainframe Networks
 - MOSES
 - MVS Operating System
 - NetView Agent
 - OMEGACENTER Bridge
 - QI Agent
 - Services Management Agent
 - Storage Subsystem
 - CXEGDSST-MVSA-STORAGE
 - Application Summary
 - Channel Path
 - Cache CU Performance
 - Cache CU Status
 - Logical Control Unit
 - Tape Group
 - Virtual Tape Subsystems
 - SMS Storage Groups Performance
 - SMS Storage Groups Space
 - User DASD Groups Performance
 - User DASD Groups Space
 - DFSMSHsm Status
 - Tape Management Status

DFSMSrmm Overview

Total Datasets	Scratch Volumes	Total Errors	Total Permanent Errors	Total Temporary Errors
3636	199	133	0	133

Collection Status

Collection completed

Collection not automatically configured after initial install

CA 1 Overview

Scratches	Total Errors	Total Perm Errors	Total Temp Errors
0	0	0	0

Collection Status

CA 1 is not installed

Default collection is 24 hours from startup of RTEMS. PTF UA72518 Disables this feature and provides some performance benefits

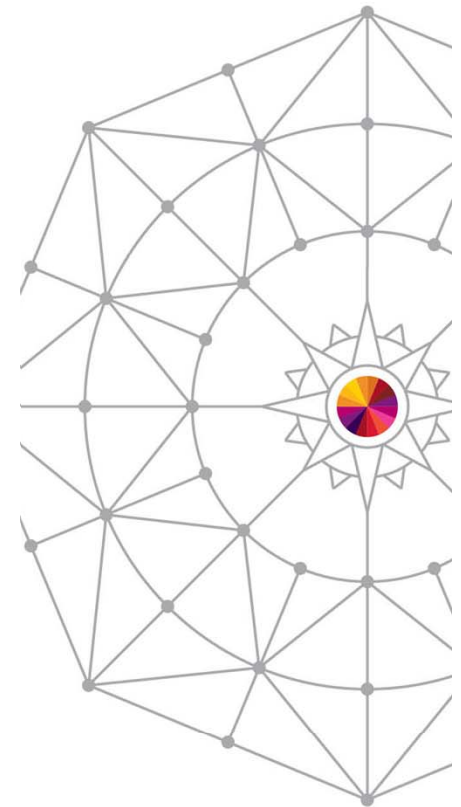
OMEGAMON XE for Storage V520

- New Features Tape Management Improvements **CA1**

CA 1 Status

Visualize the most important metrics for your tape management system.

- Active vs. Scratch volumes
- Remaining DSNB records (for multi-file volumes)
- Volume and Dataset utilization statistics
 - Average dataset size (in MB)
 - Total volume usage across the tape library (in GB)
- TMC backup information
- Audit information

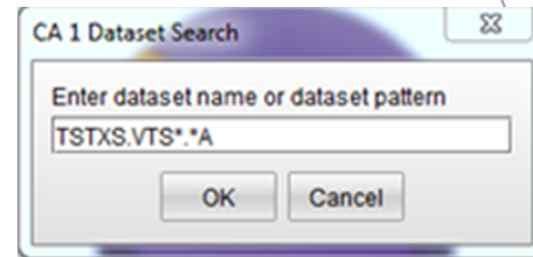
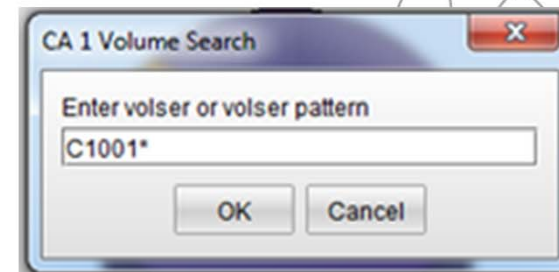


OMEGAMON XE for Storage V520

- New Features Tape Management Improvements **CA1**

Search Capabilities

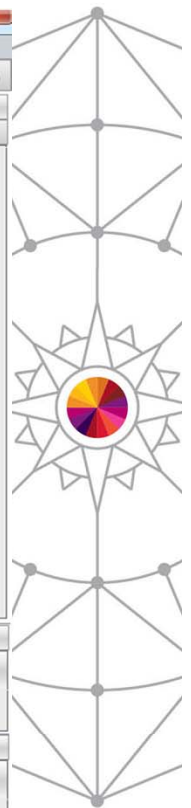
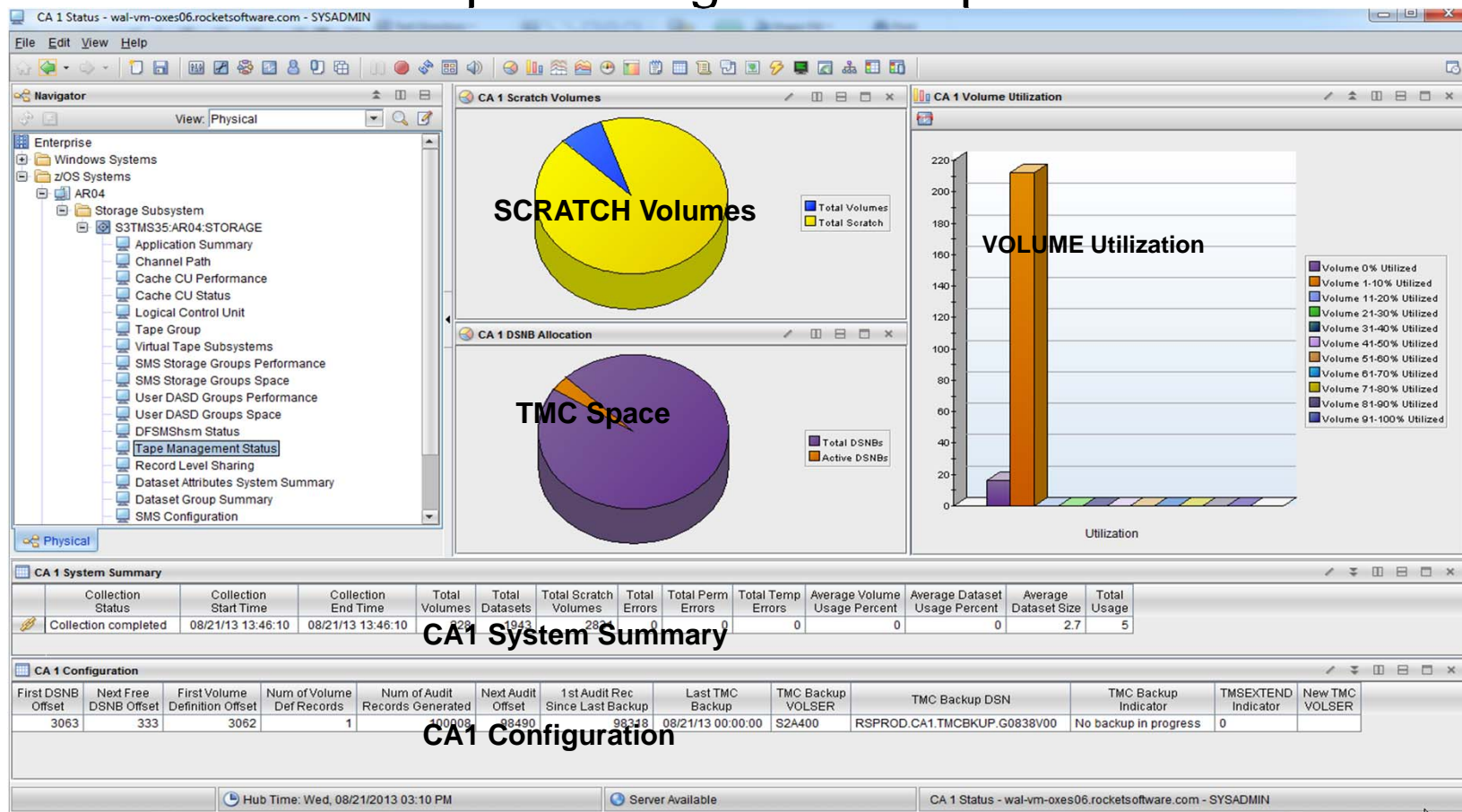
- Quickly find volumes and datasets
- Search by VOLSER or DSN name
- Standard search patterns supported
- Statistics at search result level
- Drill down for more details
- Available in TEP and E3270



OMEGAMON XE for Storage V520

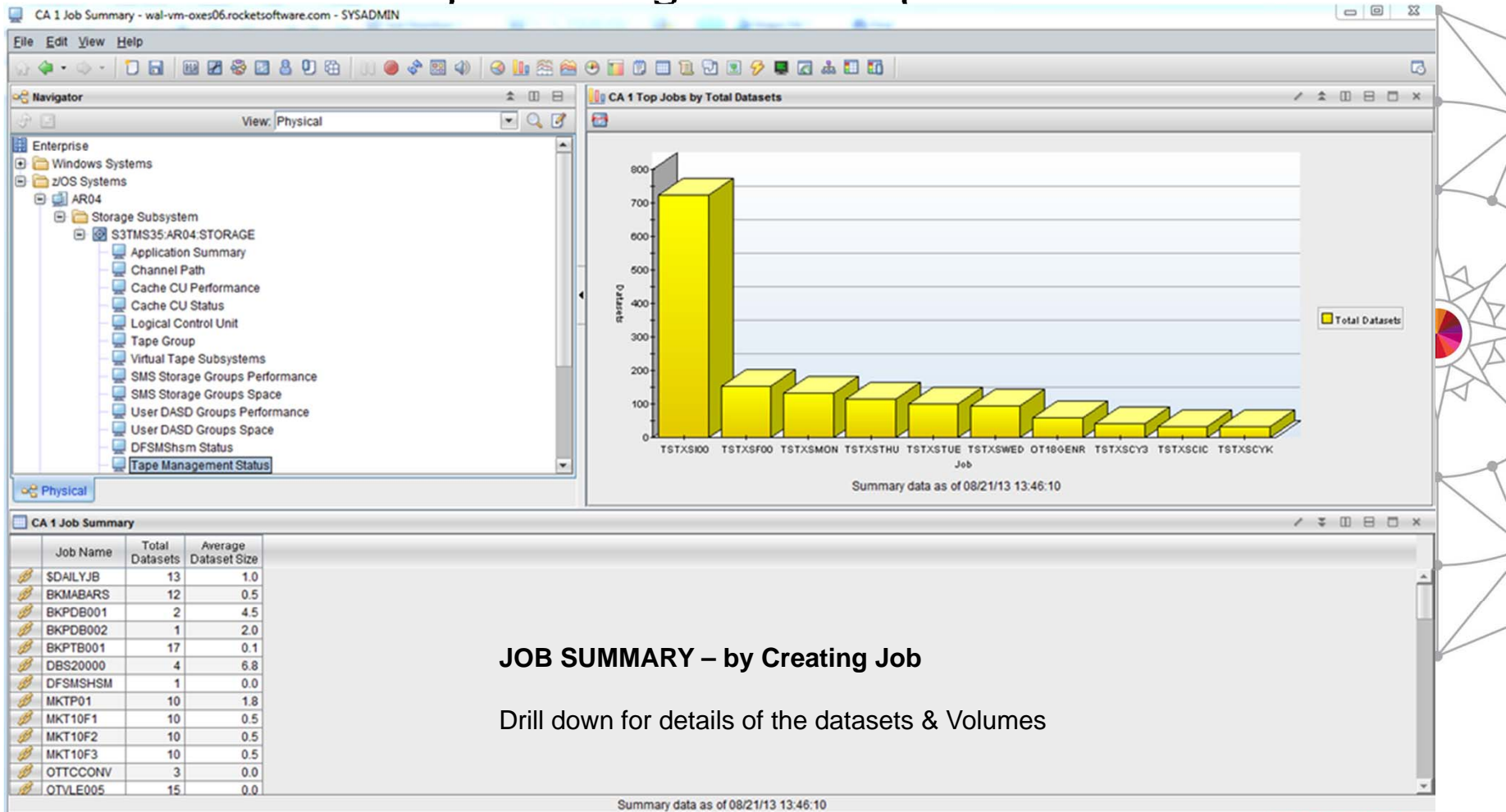


- New Features Tape Management Improvements **CA1**



OMEGAMON XE for Storage V520

- New Features Tape Management Improvements **CA1**

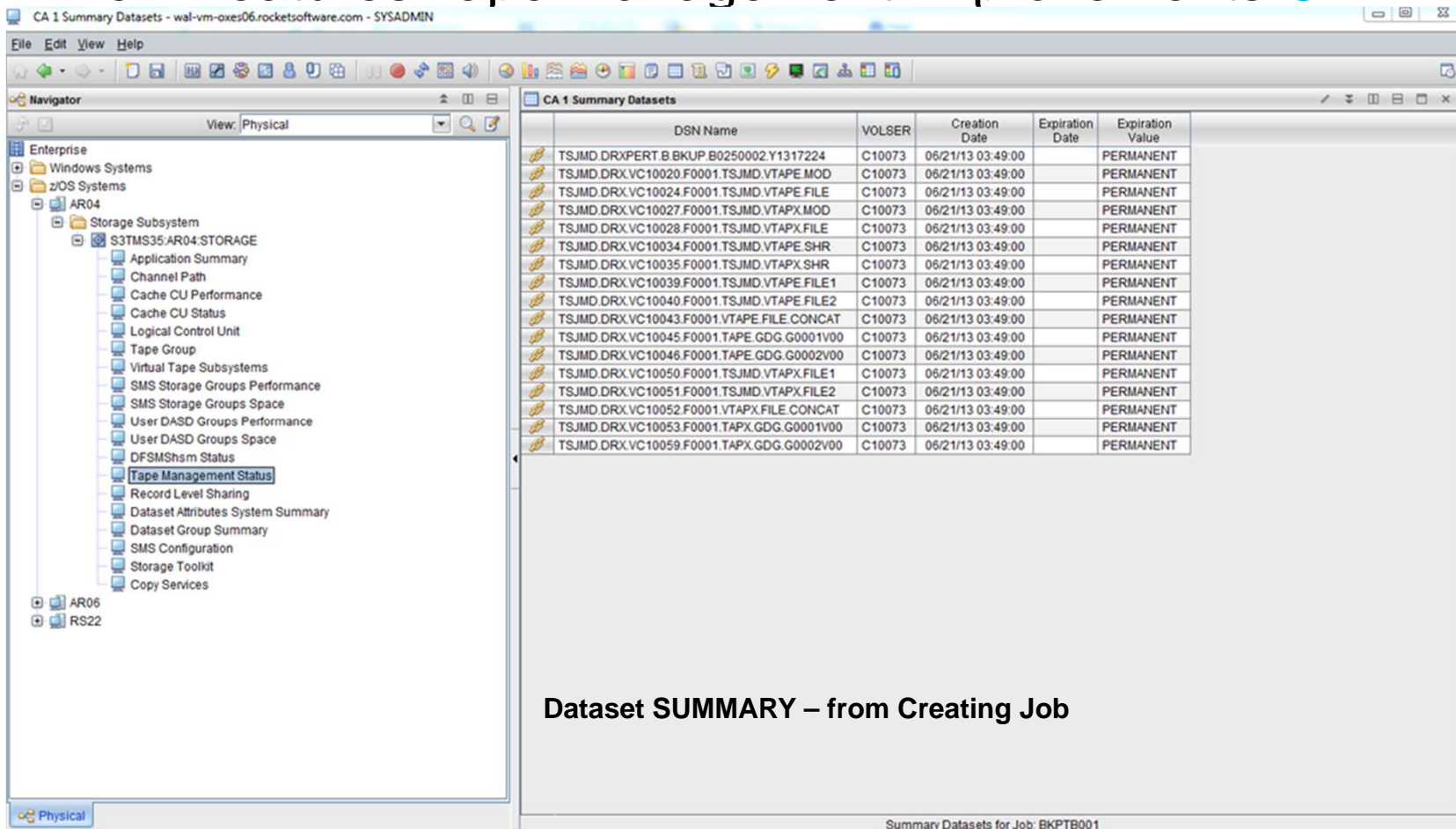


JOB SUMMARY – by Creating Job

Drill down for details of the datasets & Volumes

OMEGAMON XE for Storage V520

- New Features Tape Management Improvements **CA1**



CA 1 Summary Datasets - wal-vm-oxes06.rocketsoftware.com - SYSADMIN

File Edit View Help

Navigator View: Physical

Enterprise

- Windows Systems
- z/OS Systems
 - AR04
 - Storage Subsystem
 - S3TMS35:AR04:STORAGE
 - Application Summary
 - Channel Path
 - Cache CU Performance
 - Cache CU Status
 - Logical Control Unit
 - Tape Group
 - Virtual Tape Subsystems
 - SMS Storage Groups Performance
 - SMS Storage Groups Space
 - User DASD Groups Performance
 - User DASD Groups Space
 - DFSMSHsm Status
 - Tape Management Status**
 - Record Level Sharing
 - Dataset Attributes System Summary
 - Dataset Group Summary
 - SMS Configuration
 - Storage Toolkit
 - Copy Services
- AR06
- RS22

CA 1 Summary Datasets

DSN Name	VOLSER	Creation Date	Expiration Date	Expiration Value
TSJMD.DRXPERT.B.BKUP.B0250002.Y1317224	C10073	06/21/13 03:49:00		PERMANENT
TSJMD.DRX.VC10020.F0001.TSJMD.VTAPE.MOD	C10073	06/21/13 03:49:00		PERMANENT
TSJMD.DRX.VC10024.F0001.TSJMD.VTAPE.FILE	C10073	06/21/13 03:49:00		PERMANENT
TSJMD.DRX.VC10027.F0001.TSJMD.VTAPX.MOD	C10073	06/21/13 03:49:00		PERMANENT
TSJMD.DRX.VC10028.F0001.TSJMD.VTAPX.FILE	C10073	06/21/13 03:49:00		PERMANENT
TSJMD.DRX.VC10034.F0001.TSJMD.VTAPE.SHR	C10073	06/21/13 03:49:00		PERMANENT
TSJMD.DRX.VC10035.F0001.TSJMD.VTAPX.SHR	C10073	06/21/13 03:49:00		PERMANENT
TSJMD.DRX.VC10039.F0001.TSJMD.VTAPE.FILE1	C10073	06/21/13 03:49:00		PERMANENT
TSJMD.DRX.VC10040.F0001.TSJMD.VTAPE.FILE2	C10073	06/21/13 03:49:00		PERMANENT
TSJMD.DRX.VC10043.F0001.VTAPE.FILE.CONCAT	C10073	06/21/13 03:49:00		PERMANENT
TSJMD.DRX.VC10045.F0001.TAPE.GDG.G0001V00	C10073	06/21/13 03:49:00		PERMANENT
TSJMD.DRX.VC10046.F0001.TAPE.GDG.G0002V00	C10073	06/21/13 03:49:00		PERMANENT
TSJMD.DRX.VC10050.F0001.TSJMD.VTAPX.FILE1	C10073	06/21/13 03:49:00		PERMANENT
TSJMD.DRX.VC10051.F0001.TSJMD.VTAPX.FILE2	C10073	06/21/13 03:49:00		PERMANENT
TSJMD.DRX.VC10052.F0001.VTAPX.FILE.CONCAT	C10073	06/21/13 03:49:00		PERMANENT
TSJMD.DRX.VC10053.F0001.TAPX.GDG.G0001V00	C10073	06/21/13 03:49:00		PERMANENT
TSJMD.DRX.VC10059.F0001.TAPX.GDG.G0002V00	C10073	06/21/13 03:49:00		PERMANENT

Physical

Summary Datasets for Job: BKPTB001

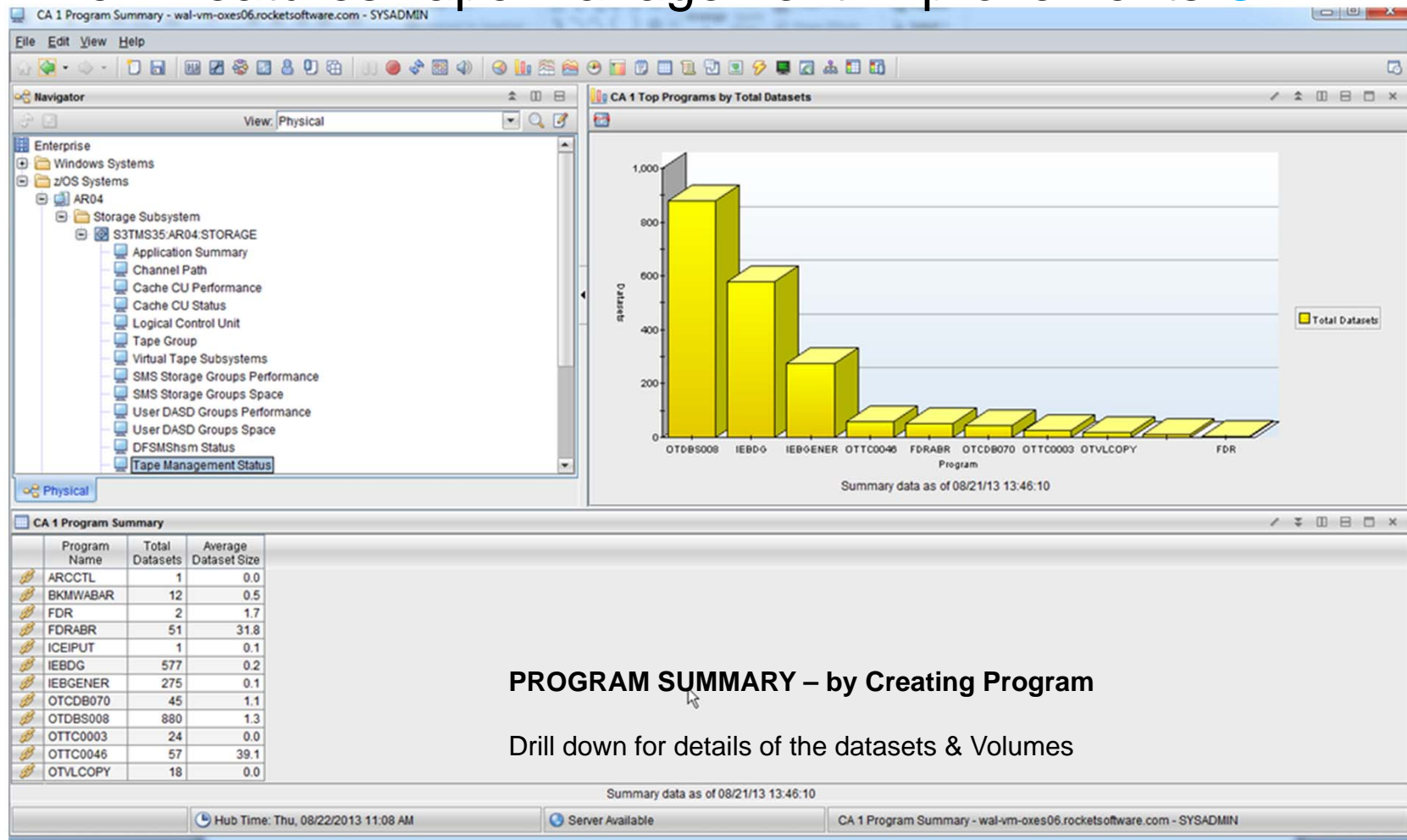


Dataset SUMMARY – from Creating Job

OMEGAMON XE for Storage V520



- New Features Tape Management Improvements **CA1**

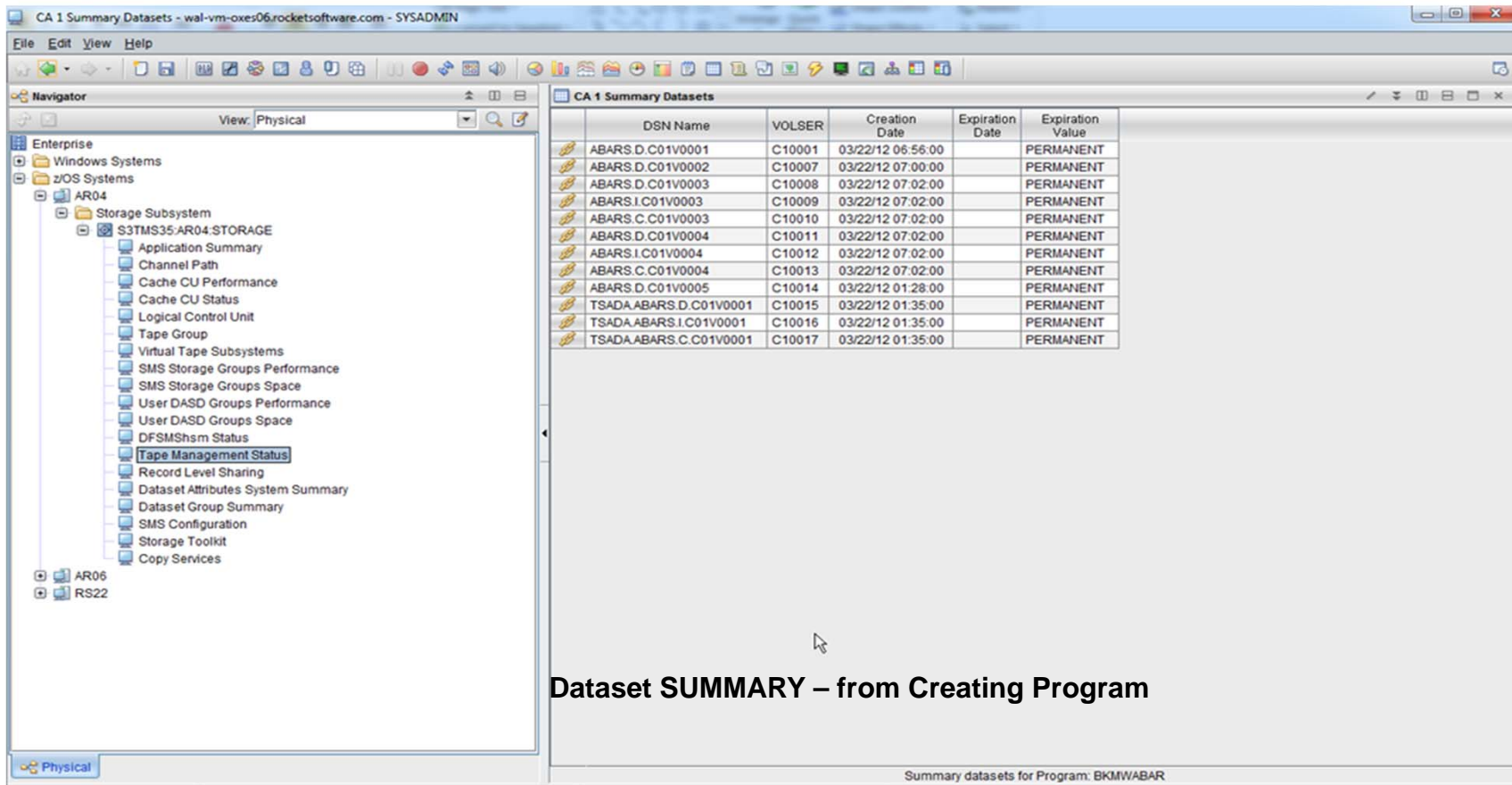


PROGRAM SUMMARY – by Creating Program

Drill down for details of the datasets & Volumes

OMEGAMON XE for Storage V520

- New Features Tape Management Improvements **CA1**



CA 1 Summary Datasets - wal-vm-oxes06.rocketsoftware.com - SYSADMIN

File Edit View Help

Navigator View: Physical

Enterprise

- Windows Systems
- z/OS Systems
 - AR04
 - Storage Subsystem
 - S3TMS35:AR04:STORAGE
 - Application Summary
 - Channel Path
 - Cache CU Performance
 - Cache CU Status
 - Logical Control Unit
 - Tape Group
 - Virtual Tape Subsystems
 - SMS Storage Groups Performance
 - SMS Storage Groups Space
 - User DASD Groups Performance
 - User DASD Groups Space
 - DFSMSHsm Status
 - Tape Management Status**
 - Record Level Sharing
 - Dataset Attributes System Summary
 - Dataset Group Summary
 - SMS Configuration
 - Storage Toolkit
 - Copy Services
- AR06
- RS22

CA 1 Summary Datasets

DSN Name	VOLSER	Creation Date	Expiration Date	Expiration Value
ABARS.D.C01V0001	C10001	03/22/12 06:56:00		PERMANENT
ABARS.D.C01V0002	C10007	03/22/12 07:00:00		PERMANENT
ABARS.D.C01V0003	C10008	03/22/12 07:02:00		PERMANENT
ABARS.I.C01V0003	C10009	03/22/12 07:02:00		PERMANENT
ABARS.C.C01V0003	C10010	03/22/12 07:02:00		PERMANENT
ABARS.D.C01V0004	C10011	03/22/12 07:02:00		PERMANENT
ABARS.I.C01V0004	C10012	03/22/12 07:02:00		PERMANENT
ABARS.C.C01V0004	C10013	03/22/12 07:02:00		PERMANENT
ABARS.D.C01V0005	C10014	03/22/12 01:28:00		PERMANENT
TSADA.ABARS.D.C01V0001	C10015	03/22/12 01:35:00		PERMANENT
TSADA.ABARS.I.C01V0001	C10016	03/22/12 01:35:00		PERMANENT
TSADA.ABARS.C.C01V0001	C10017	03/22/12 01:35:00		PERMANENT

Physical

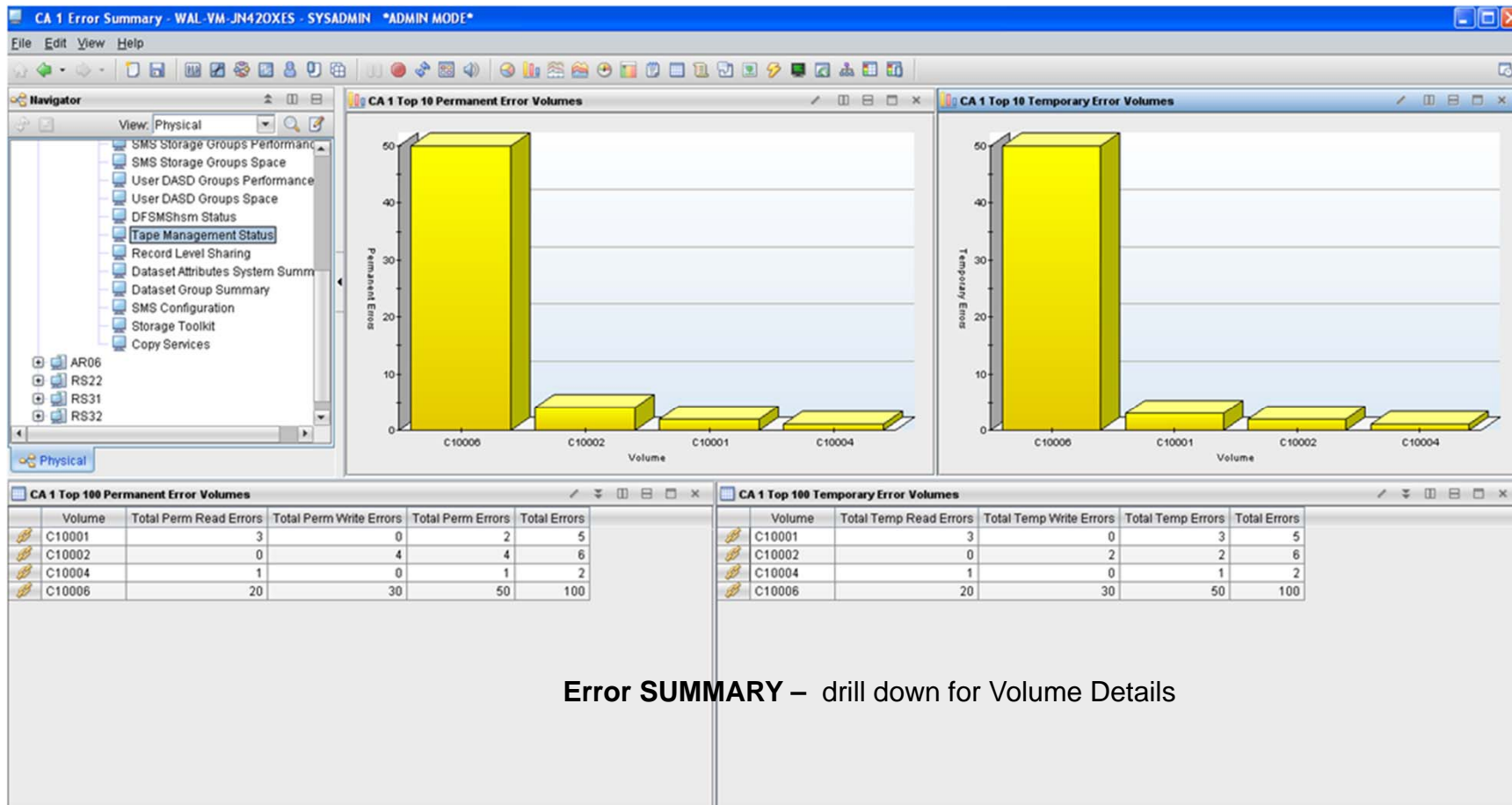
Summary datasets for Program: BKMWABAR

Dataset SUMMARY – from Creating Program

OMEGAMON XE for Storage V520



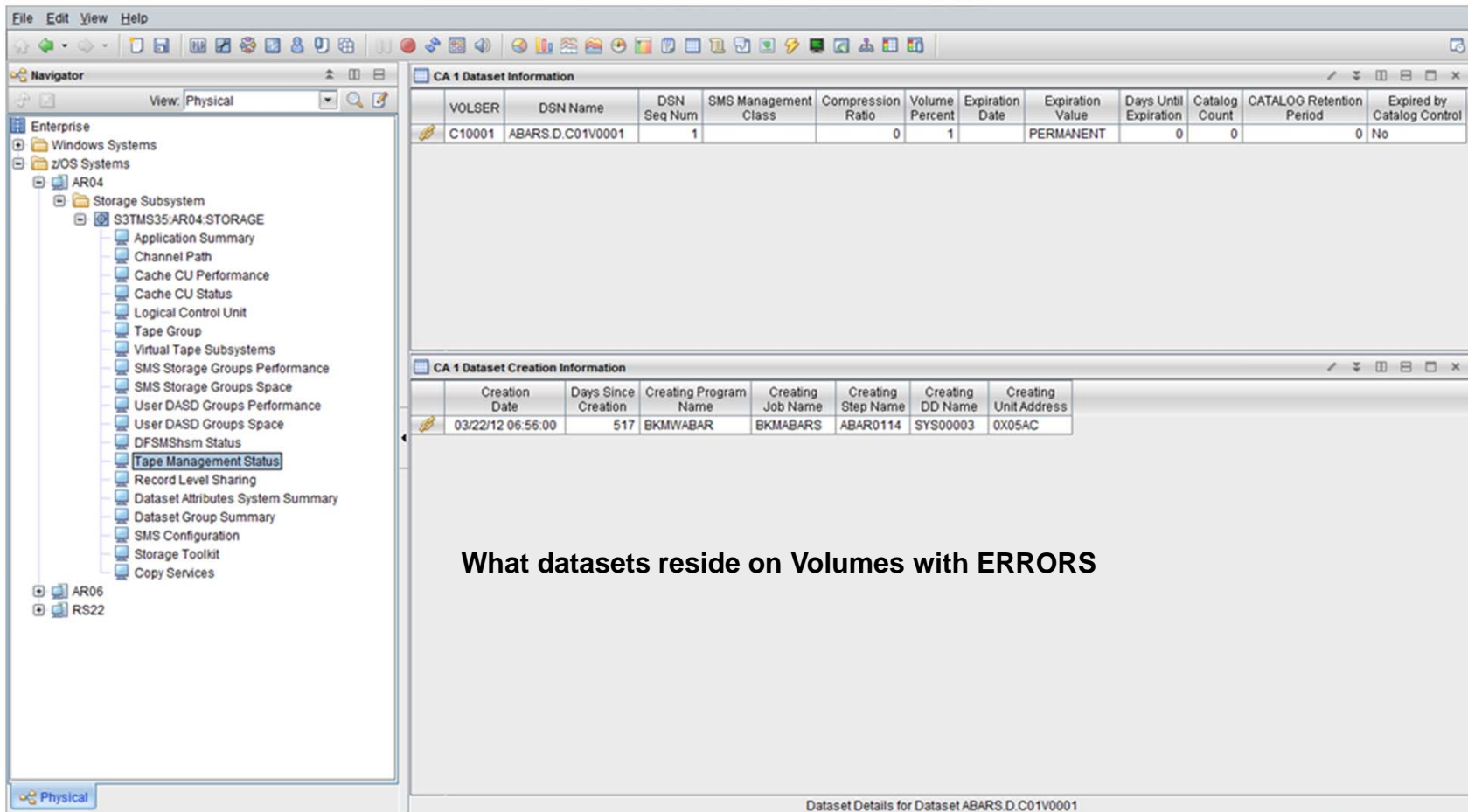
- New Features Tape Management Improvements **CA1**



Error SUMMARY – drill down for Volume Details

OMEGAMON XE for Storage V520

- New Features Tape Management Improvements **CA1**



The screenshot displays the OMEGAMON XE for Storage V520 interface. On the left is a Navigator pane showing a tree structure of storage components. The main area is divided into two panels: 'CA 1 Dataset Information' and 'CA 1 Dataset Creation Information'.

CA 1 Dataset Information

VOLSER	DSN Name	DSN Seq Num	SMS Management Class	Compression Ratio	Volume Percent	Expiration Date	Expiration Value	Days Until Expiration	Catalog Count	CATALOG Retention Period	Expired by Catalog Control
C10001	ABARS.D.C01V0001	1		0	1		PERMANENT	0	0	0	No

CA 1 Dataset Creation Information

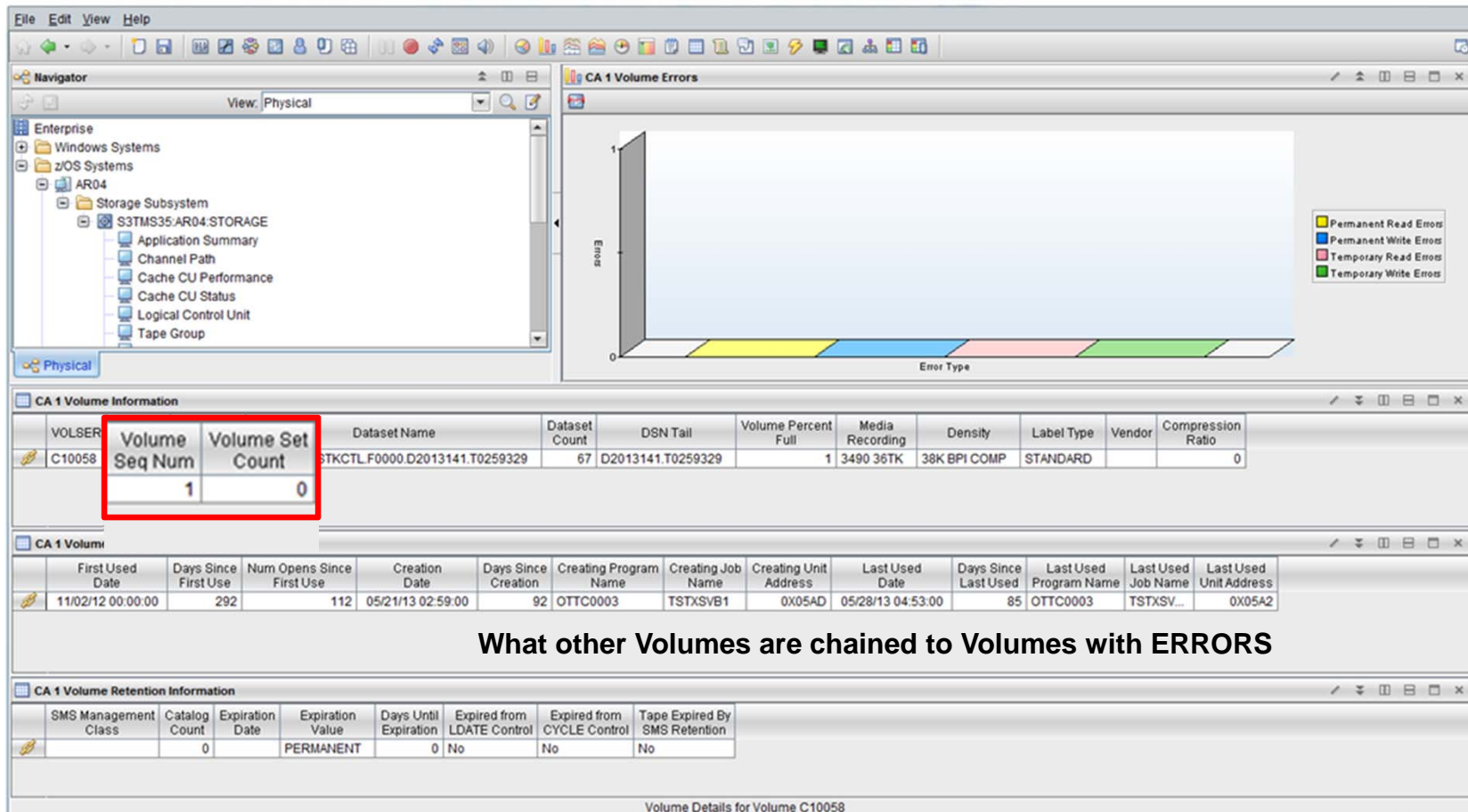
Creation Date	Days Since Creation	Creating Program Name	Creating Job Name	Creating Step Name	Creating DD Name	Creating Unit Address
03/22/12 06:56:00	517	BKMWABAR	BKMABARS	ABAR0114	SYS00003	0X05AC

What datasets reside on Volumes with ERRORS

Dataset Details for Dataset ABARS.D.C01V0001

OMEGAMON XE for Storage V520

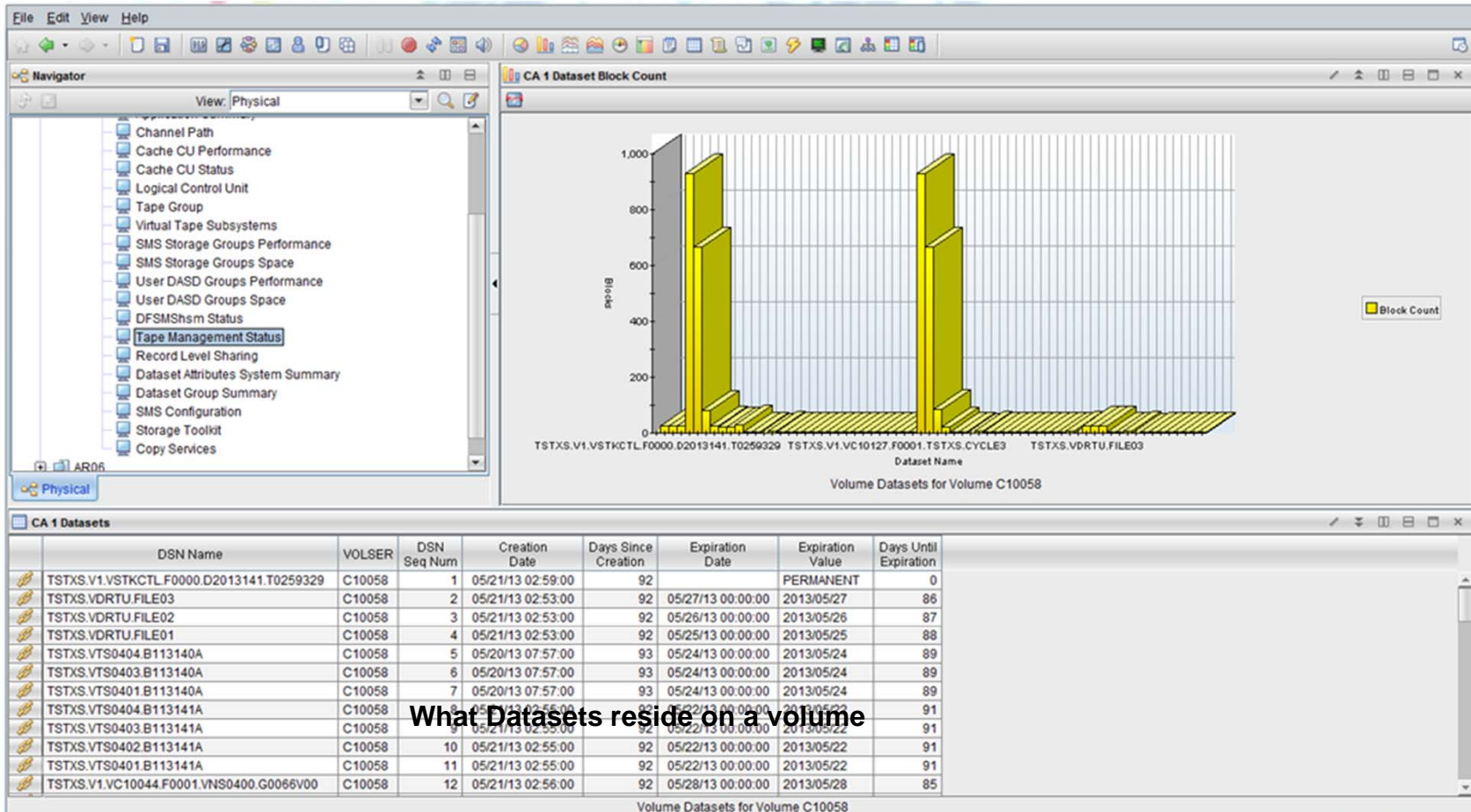
- New Features Tape Management Improvements **CA1**



What other Volumes are chained to Volumes with ERRORS

OMEGAMON XE for Storage V520

- New Features Tape Management Improvements **CA1**



What Datasets reside on a volume

OMEGAMON XE for Storage V520

- New Features Tape Management Improvements **CA1**

What else do you want to see in **CA1**
in OMEGAMON XE for Storage?

Development wants to hear from you!

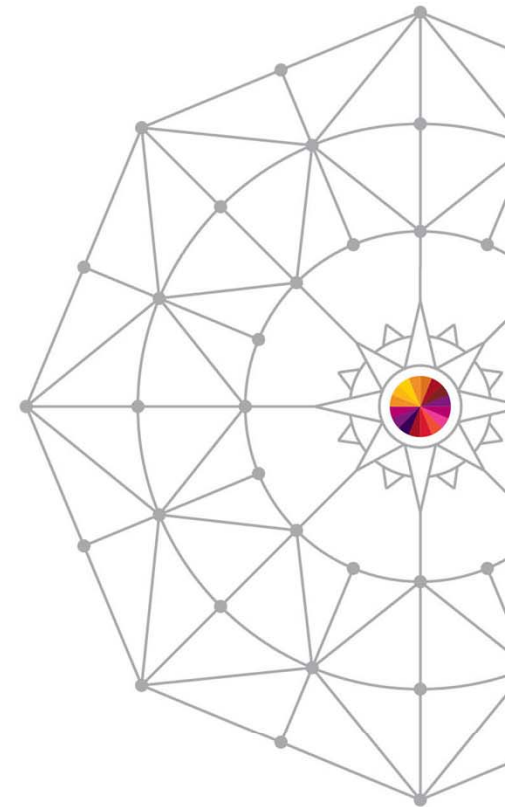
OPEN a SHARE Requirement
or
Request for enhancement RFE!



OMEGAMON XE for Storage V520

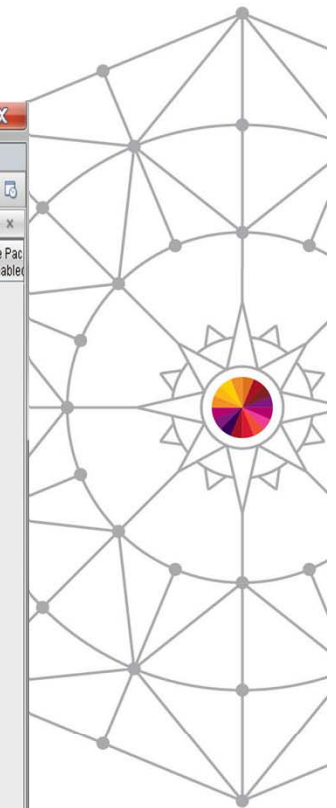
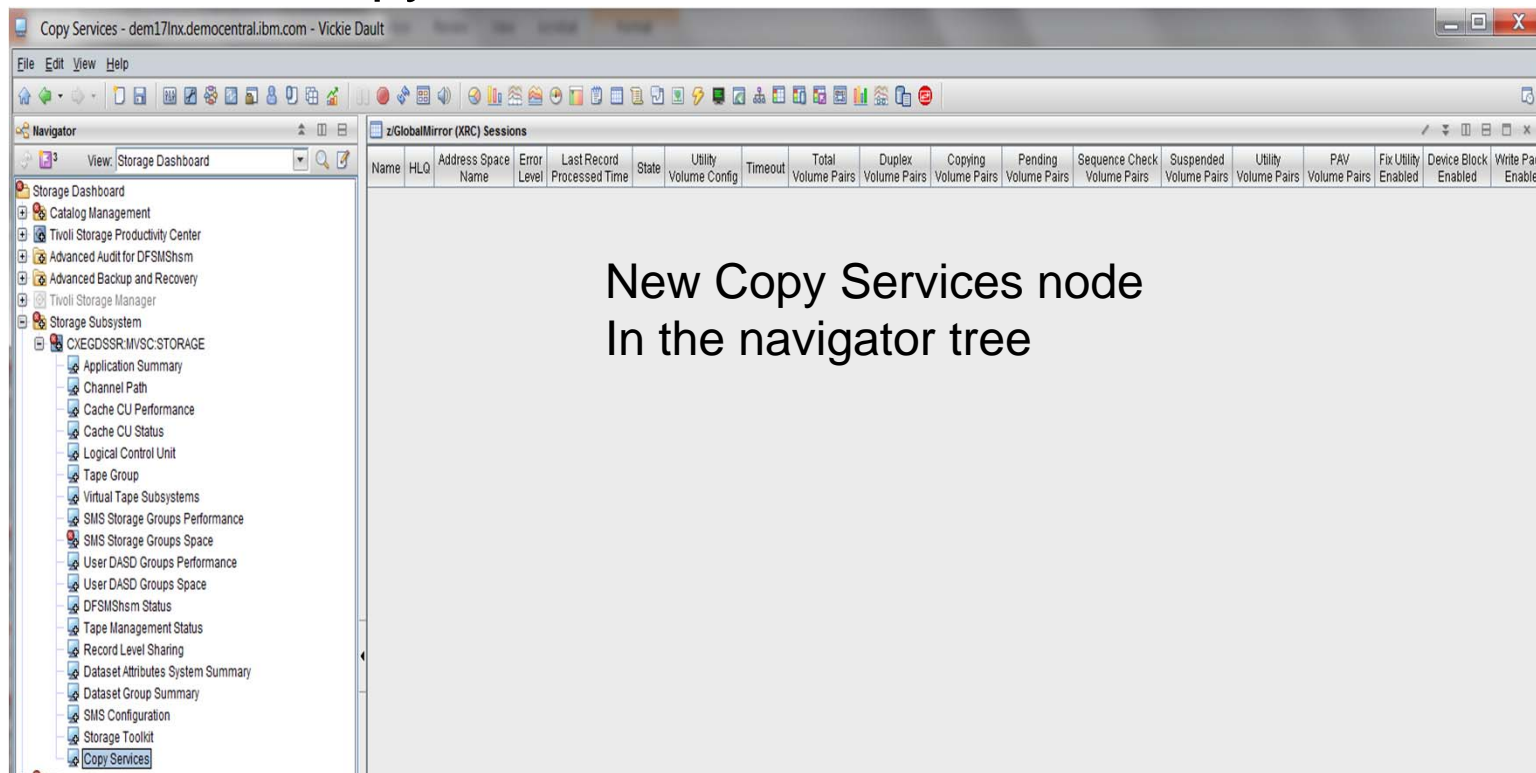
Agenda

- New Features
 - VSAM RLS
 - HSM, CICS, System Catalogs w/V2R1
 - Tape Management Improvements
 - z/OS Copy Services
 - XRC, PPRC, Flash Copy
 - zIIP processors
 - I/O Secondary Delays
 - Updated EMC Workspaces
- References



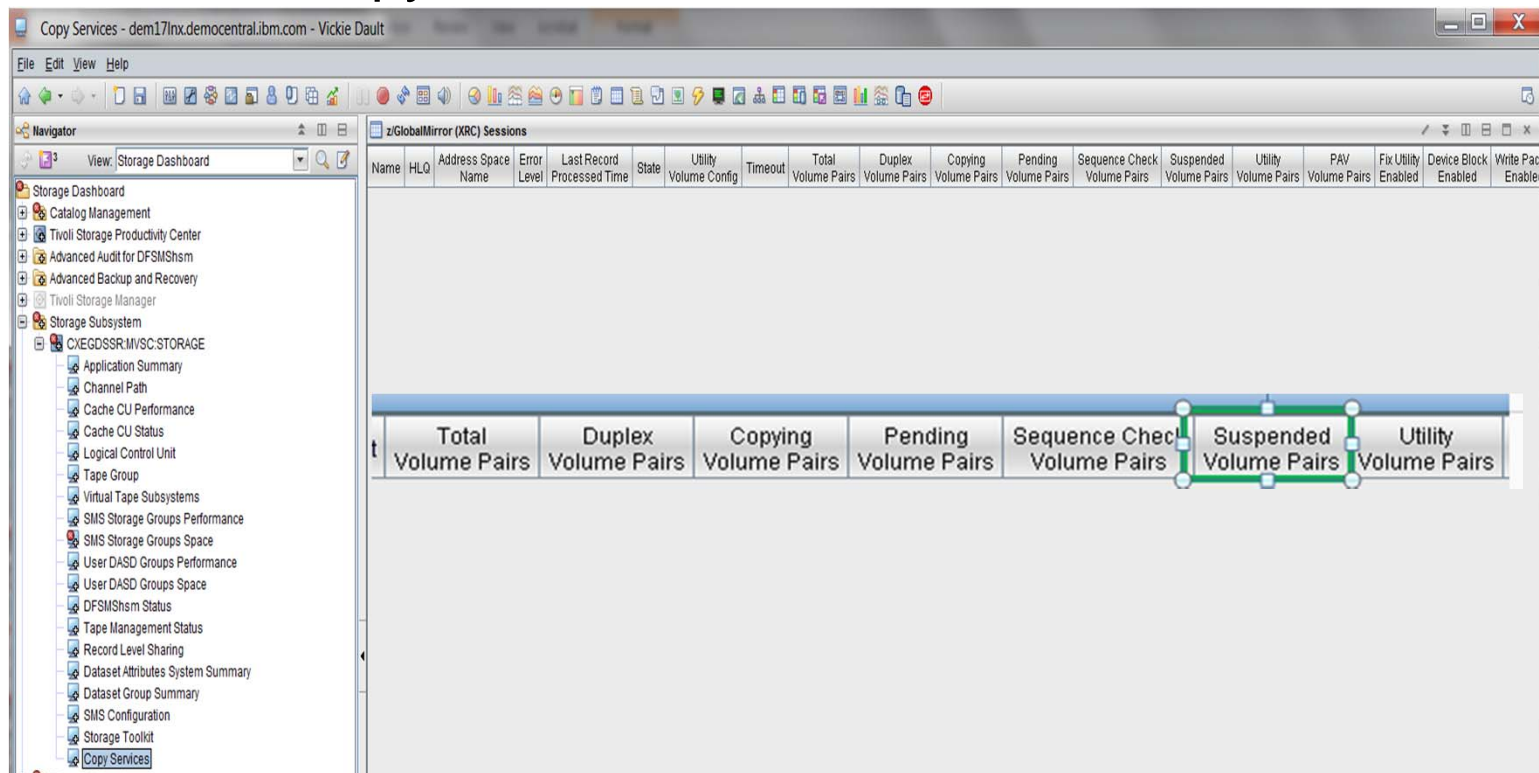
OMEGAMON XE for Storage V520

- New Features
 - z/OS Copy Services



OMEGAMON XE for Storage V520

- New Features
 - z/OS Copy Services



z/Global Mirror (XRC) Sessions, XRC Connections > Volume Pairs

OMEGAMON XE for Storage V520

- New Features
 - z/OS Copy Services

Flash Copy Volumes^{*1} and Relationships

Flash Copy Volumes														
VOLSER	Storage Group	Device Number	Storage Subsystem ID	Logical Storage Subsystem	CCA Number	Control Unit Model	Serial Number	Remote Serial Number	Active Relation Count	Max Relation Count	Continuation Track	Flash Copy Capable	Incapability Reason	P-to-P Remote Copy Session

PPRC Volumes^{*2} and Connections

PPRC Volumes																		
VOLSER	Storage Group	Device Number	Subchannel Set	Primary Storage Subsystem ID	Primary Logical Storage Subsys	Primary CCA	Primary Serial Number	First Secondary SSID	First Secondary LSS	First Secondary CCA	First Secondary SSN	Copy State	Suspended XRC	Primary Volume	Secondary Volume	Consistency Group Member	Critical	VP

Link Statistics^{*3}

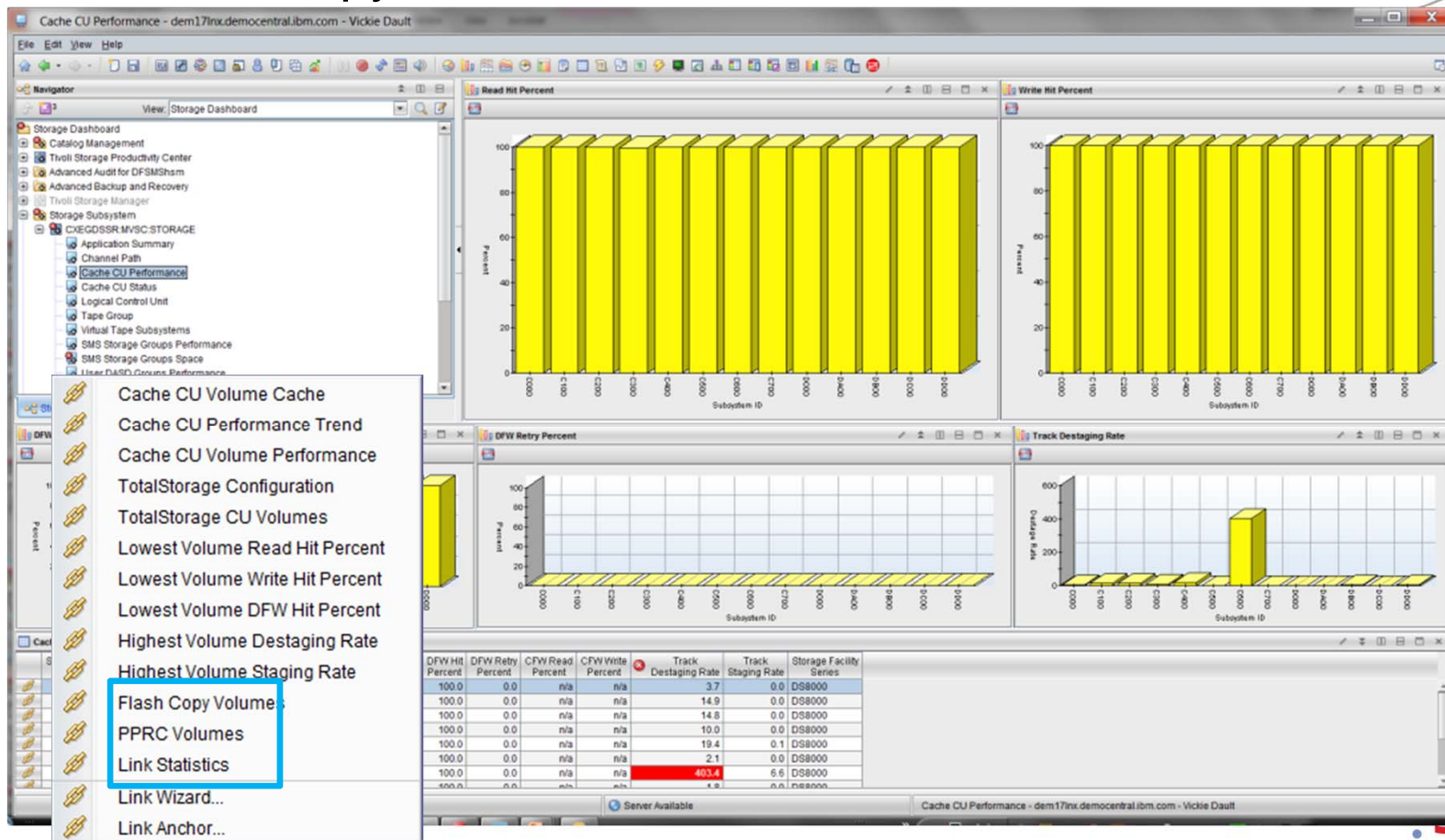
Link Statistics												
Device Number	Serial Number	Interface ID	Interface Type	Bits Per Second	MB Per Second	GB Per Second	ECKD Read Bytes	ECKD Read Rate Bytes	ECKD Read MB	ECKD Read Rate MB	ECKD Read GB	ECKD Read Rate GB

^{*1} ^{*3} **ONLY** Available from SMS Storage Group Performance and Cache CU Performance

^{*2} **ONLY** Available Cache CU Performance

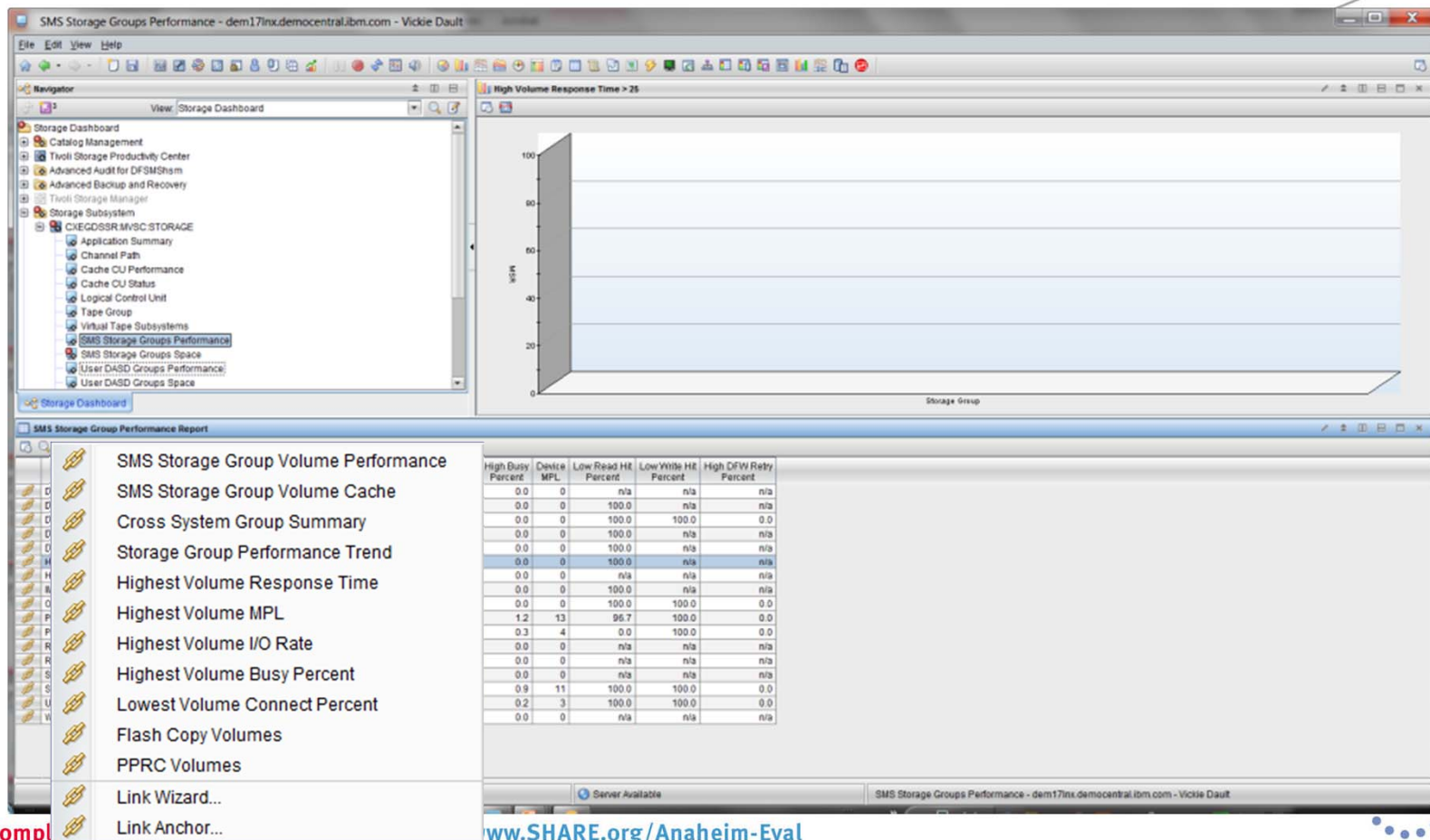
OMEGAMON XE for Storage V520

- New Features
 - z/OS Copy Services from **Cache CU Performance**



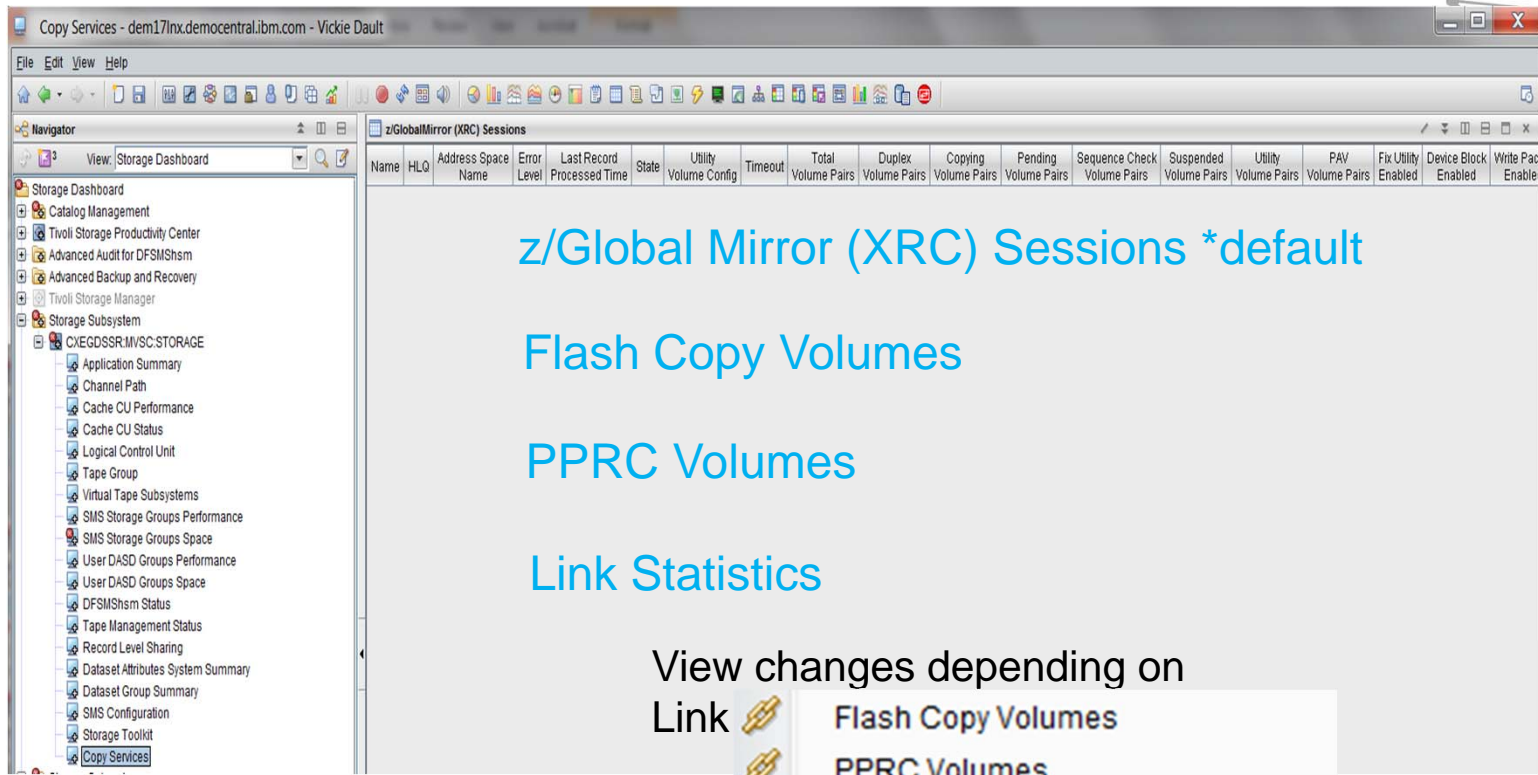
OMEGAMON XE for Storage V520

- New Features
 - z/OS Copy Services from **SMS Storage Group Performance**



OMEGAMON XE for Storage V520

- New Features
 - z/OS Copy Services **Workspace**



The screenshot shows the OMEGAMON XE for Storage V520 interface. The title bar reads "Copy Services - dem17lnx.democentral.ibm.com - Vickie Dault". The menu bar includes File, Edit, View, and Help. The Navigator pane on the left shows a tree structure with "Storage Dashboard" selected. The main pane displays "z/GlobalMirror (XRC) Sessions" with a table of columns: Name, HLQ, Address Space, Error Level, Last Record Processed Time, State, Utility Volume Config, Timeout, Total Volume Pairs, Duplex Volume Pairs, Copying Volume Pairs, Pending Volume Pairs, Sequence Check Volume Pairs, Suspended Volume Pairs, Utility Volume Pairs, PAV Volume Pairs, Fix Utility Enabled, Device Block Enabled, and Write Pac Enabled. Overlaid on the main pane are the following text elements:

- z/Global Mirror (XRC) Sessions *default
- Flash Copy Volumes
- PPRC Volumes
- Link Statistics

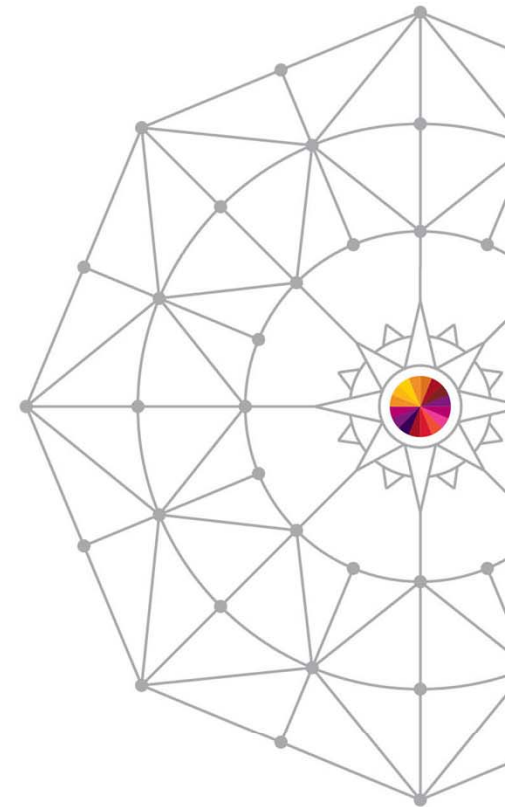
Below these, a text box states "View changes depending on Link" followed by three radio button options:

- Flash Copy Volumes
- PPRC Volumes
- Link Statistics

OMEGAMON XE for Storage V520

Agenda

- New Features
 - VSAM RLS
 - HSM, CICS, System Catalogs w/V2R1
 - Tape Management Improvements
 - z/OS Copy Services
 - XRC, PPRC, Flash Copy
 - **zIIP processors**
 - I/O Secondary Delays
 - New EMC Workspaces
- References

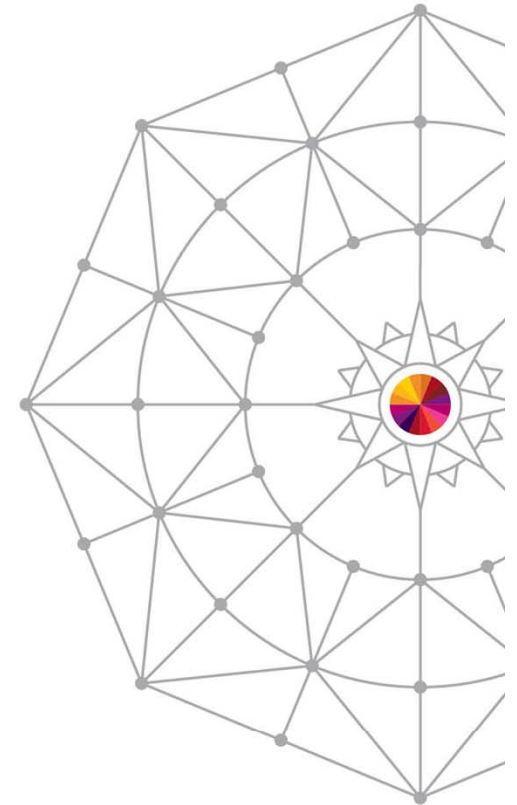


OMEGAMON XE for Storage V520



- New Features
 - zIIP Processor Utilization

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There are no workspaces indicating zIIP exploitation

OMEGAMON XE for Storage V520

- New Features
 - zIIP Processor Utilization

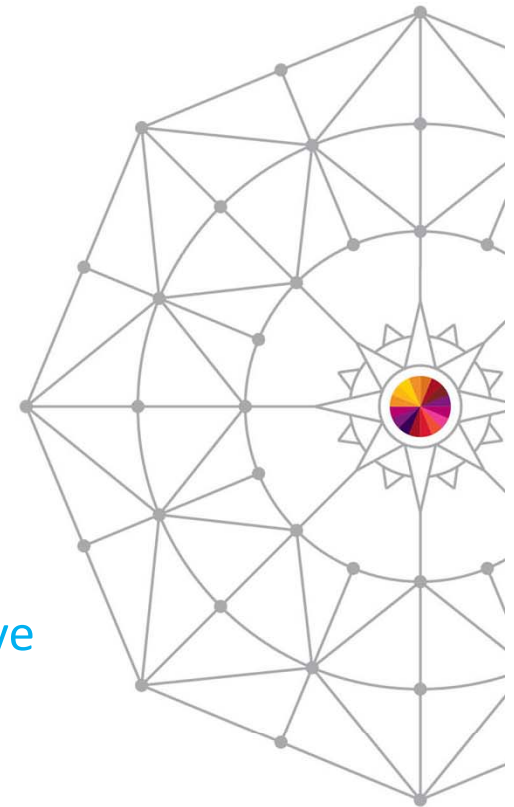
For more information on the use of zIIP

Session 14987

OMEGAMON XE for Storage Hints and Tips to improve
Performance and Usage

Deborah Reynolds SMPO migration specialist

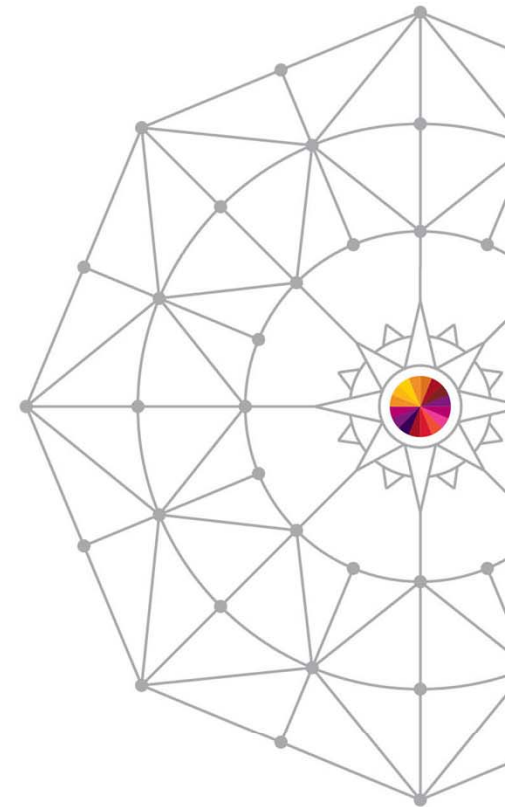
Wednesday 11:00 am



OMEGAMON XE for Storage V520

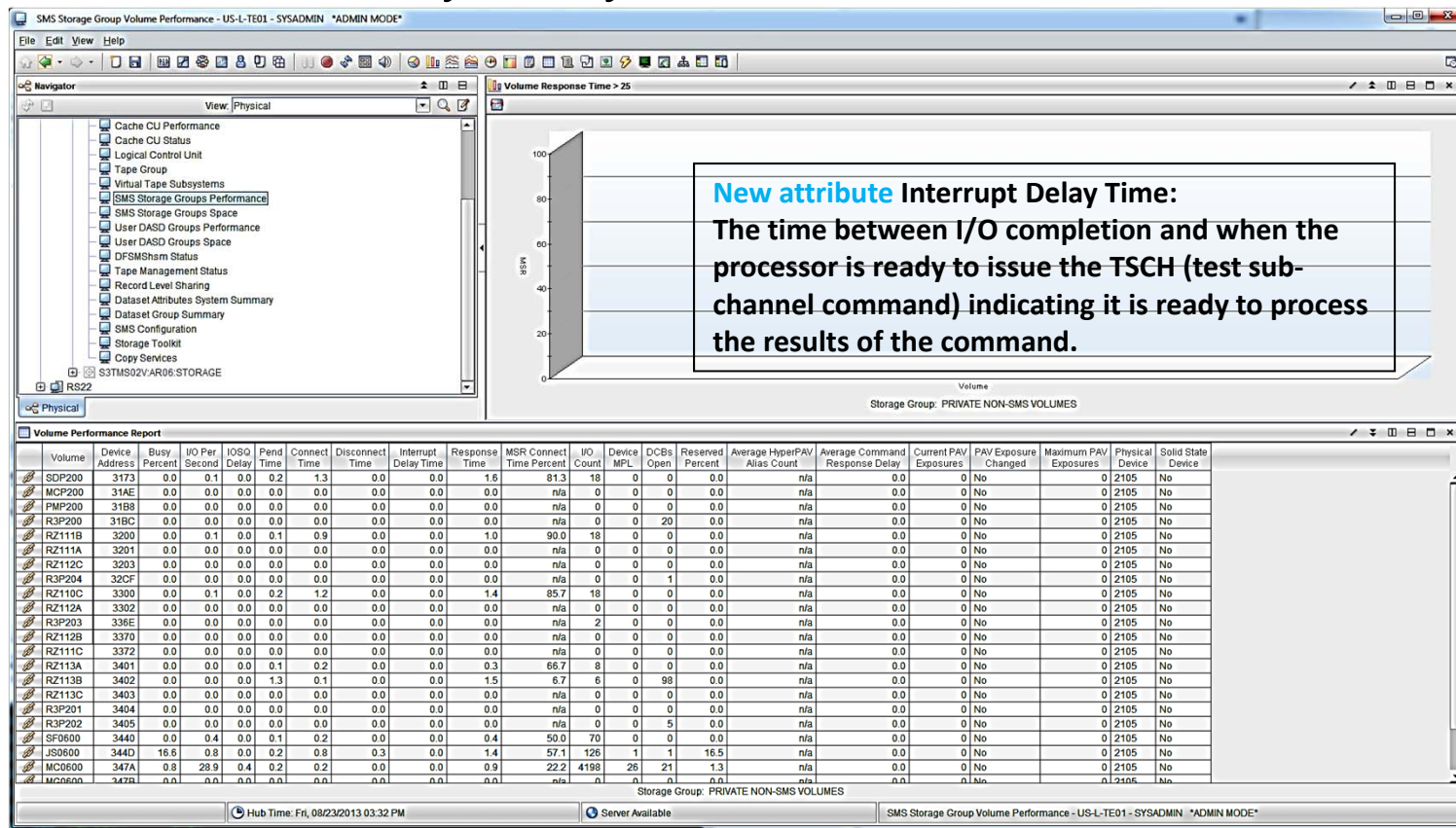
Agenda

- New Features
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OMEGAMON XE for Storage V520

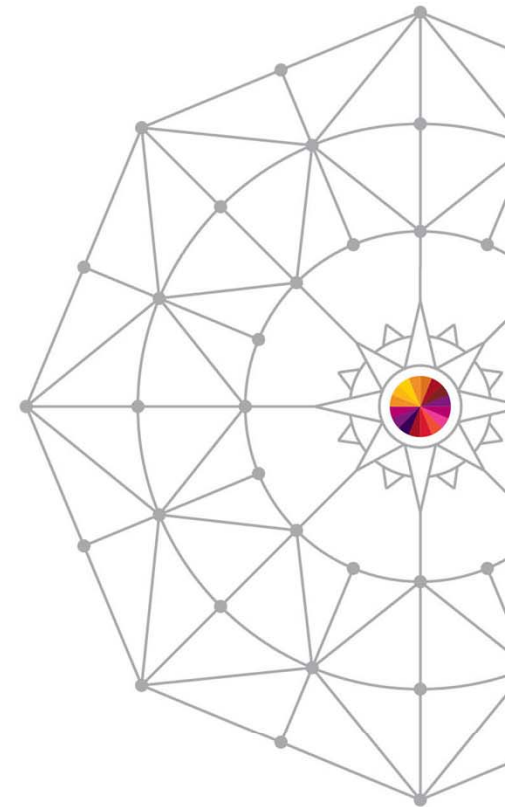
- New Features
 - I/O Secondary Delays



OMEGAMON XE for Storage V520

Agenda

- New Features
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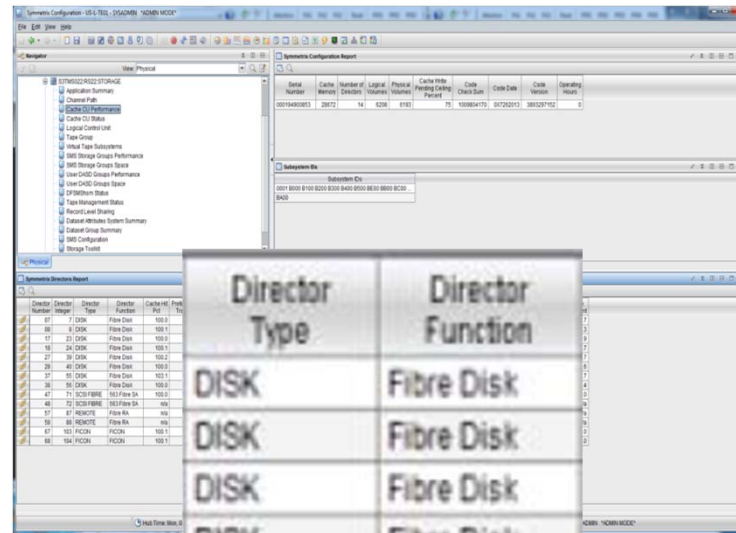
OMEGAMON XE for Storage V520

- New Features
 - EMC Workspaces

CACHE CU STATUS

Symmetrix Directors View Remodeled

- New metrics
- Collection interval/refresh aligned with cache interval
- Descriptive names
- Hexadecimal and decimal names for directors
- Support for more directors
- Previous version circa 1995 – a lot had changed in the Symmetrix architecture

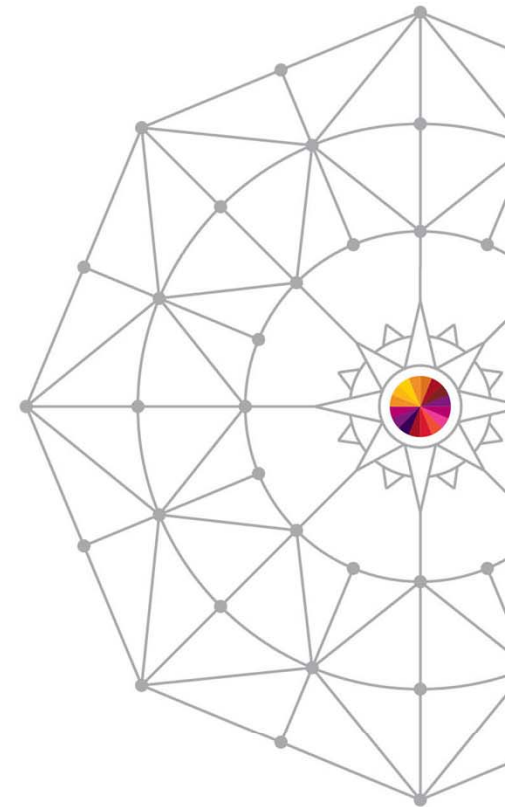


Director Type	Director Function
DISK	Fibre Disk
DISK	Fibre Disk
DISK	Fibre Disk
DISK	Fibre Disk
DISK	Fibre Disk
DISK	Fibre Disk
DISK	Fibre Disk
SCSI FIBRE	563 Fibre SA
SCSI FIBRE	563 Fibre SA
REMOTE	Fibre RA
REMOTE	Fibre RA
FICON	FICON
FICON	FICON

OMEGAMON XE for Storage V520

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OMEGAMON XE for Storage

RLS Monitoring

more information

Session 15089 Using RLS with your Catalogs – a How to

Neal Bohling VSAM RLS Level 2

Tuesday 11:00 am

Session 15090 DFSMS Advanced Leveraging VSAM RLS
Best practices

Neal Bohling VSAM RLS Level 2

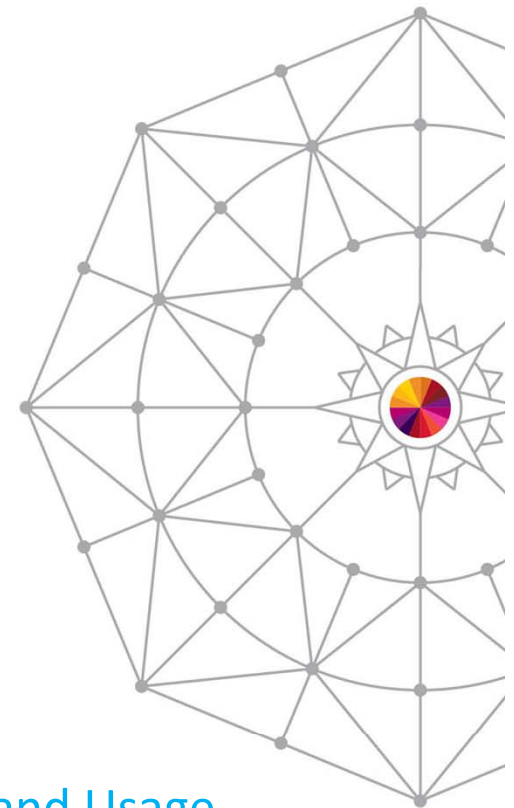
Wednesday 1:30 pm

Session 14987 OMEGAMON XE for Storage

Hints and Tips to improve Performance and Usage

Deborah Reynolds SMPO migration specialist

Wednesday 11:00 am



OMEGAMON XE for Storage

RLS Monitoring

more information

Session 15352 DB2 and Advanced Copy Services: All you need to know

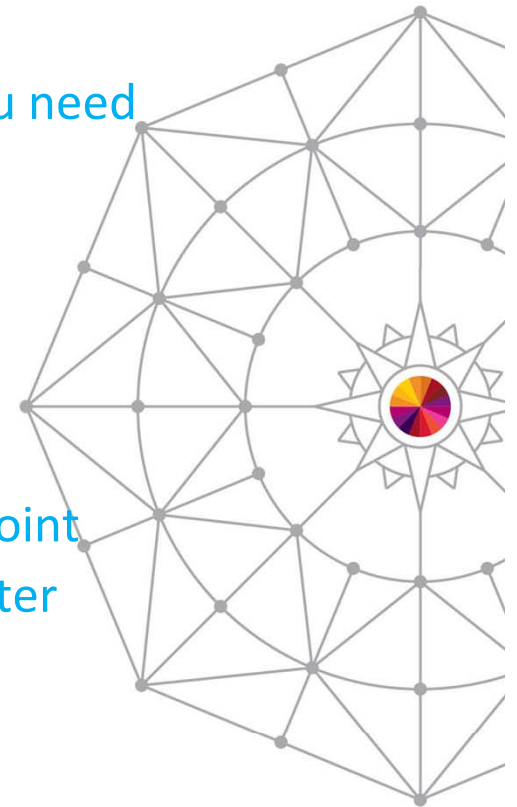
Paul Pendle EMC Corporation

Tuesday 3:00 pm

Session 15077 Continuing the understanding of IBM Copy Services, Peer to Peer-Remote Copy (PPRC) and Point in time Copy (FlashCopy) for High Availability and Disaster Recovery

Lisa Gundy z/OS DFSMS Copy Services Architect

Wednesday 11:00 am



OMEGAMON XE for Storage V520

- New Features Questions?

Sincere “Thank you” to product development for sample screen shots, technical explanations and guidance.

