

Discovering OMEGAMON

Volume 6

OMEGAMON XE for Storage v530

**Enhanced 3270 User Interface Lab
Exercises**



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Overview



Lab Prerequisites

This lab should not be taken unless the participant has, at a minimum, previously taken the e3270 UI Introduction lab and preferably the e3270 UI z/OS lab as well. Alternately, if the participant has previous hands-on experience with the e3270 UI, then this lab will be of value to them.

OMEGAMON XE for Storage provides the ability to monitor the various z/OS storage systems. The new, enhanced 3270(e3270) user interface, included with OMEGAMON XE for Storage v5.3, complements the existing Tivoli Enterprise Portal Server (TEPS) interface by providing the ability to monitor these various z/OS storage systems from a 3270 session. This series of exercises will illustrate several of the features and functions available in this new e3270 user interface.

Individual labs exercises will cover the following topics –

- Monitoring storage systems from a system/LPAR perspective
- Monitoring devices, DFSMSshsm, DFSMSrmm and DFSMS constructs
- Identifying issues utilizing dataset attribute details

Introduction

This lab will demonstrate how to utilize the OMEGAMON XE for Storage V5.3 enhanced 3270 user interface (e3270 UI). In this lab's exercises, the user will perform a series of exercises focused on the following:




- Monitor performance and utilization of storage systems from a high-level, subsystem view
- Monitor critical storage subsystems of DFSMSshsm and DFSMSrmm as well as the various hardware devices that make up the z/OS storage systems
- Utilize the dataset attribute collection to identify files with the most significant space related issues

The lab will also demonstrate an important new feature of OMEGAMON Storage V5.3, historical data collection and viewing within the e3270 user interface.

OMEGAMON XE for Storage provides support for many of the common storage devices in use today. While other devices are supported, they are not included in this set of exercises. These exercises are performed on IBM systems that utilize IBM hardware.

Icons

The following symbols appear in this document at places where additional guidance is available.

Icon	Purpose	Explanation
	Important!	This symbol calls attention to a particular step or command. For example, it might alert you to type a command carefully because it is case sensitive.
	Information	This symbol indicates information that might not be necessary to complete a step, but is helpful or good to know.
	Trouble-shooting	This symbol indicates that you can fix a specific problem by completing the associated troubleshooting information.

Lab 1 Monitoring Storage Performance and Space – High Level Overview

Lab 1 introduces the e3270 interface for OMEGAMON XE for Storage. This lab is performed from the default 'start' panel, KOBSTART. KOBSTART is an overview panel for all installed OMEGAMON products. The SMSplex Overview screen, which is included on KOBSTART, provides 'zoom enabled' fields into OMEGAMON XE for Storage detail displays. The lab will illustrate zooming from this start screen directly into OMEGAMON XE for Storage detailed displays. The first part of this lab will demonstrate how to identify possible response time issues and the second part of the lab will cover how to identify possible free space issues, directly from the KOBSTART screen.

Lab 1 illustrates several of the detailed displays available in OMEGAMON XE for Storage. Many of these screens can also be accessed by utilizing a different path through the product. The main purpose of this exercise is to demonstrate how to do high-level storage monitoring from the main/overview OMEGAMON screen, KOBSTART.



Security Information!

Prior to starting these exercises, please see the instructor for user ID/password and logon instructions.



Screen Size and Presentation Display

The sample product displays in this lab were created with a screen size of 43x80. The IBM Personal Communications Session Manager sessions utilized in this workshop have been pre-configured with a screen size of 43x80, but may be modified allowing for more or less data to be displayed on each screen. Depending on the screen size in use, the product displays shown on your monitor may appear different than the examples in this lab.

1.1 View Storage Performance from Enterprise Summary

__1. Sign on to the e3270 UI.

Enter the User ID and Password provided by the instructor and press **ENTER**.

This is the default initial screen, the **Enterprise Summary**, KOBSTART, which displays a high-level overview from each of the installed OMEGAMON products.

The screenshot shows the 'Enterprise Summary' screen with the following sections:

All Active Sysplexes

ΔSysplex Name	ΔAverage VCPU Percent	Highest LPAR Name	ΔHighest VLPAR CPU%	ΔPercent VMSU Capacity	+LPAR Group Name
_ ESYSPLEX	2	ESYSMVS	3	1.8	N/A

All Active CICSplexes

ΔCICSplex Name	ΔNumber of Regions	ΔTransaction Rate	ΔCPU Utilization	Any SOS Regions	SOS Region
_ CICS DAX1	6	0/m	0.0%	No	n/a
_ CICS PLEX1	9	1/m	0.0%	No	n/a
_ OMEG PLEX	7	6/m	0.0%	No	n/a

All Active DB2 Subsystems

ΔDB2 ID	ΔMVS System ID	Lock Conflict	Lock Escalation	Lock Escalation	Lock Escalation	+DDF Rate
- DSNT	MVSE	0	0	0	0.00	
- DSNC	MVSE	0	0	0	0.00	
- DSNB	MVSE	0	0	0	0.00	
- DSNB	MVSE	0	0	0	0.00	
- DB1S	MVSE	0	0	0	0.00	
- DB1I	MVSE	0	0	0	0.00	
- DB1D	MVSE	0	0	0	0.00	

Monitored IMS Subsystems No Data

__2. Locate OMEGAMON XE for **Storage SMSplex Overview** on Main Menu (KOBSTART)

With the cursor in the home position (upper left corner), press **PF8**, to scroll down.

The screenshot shows the OMEGAMON XE main menu. At the top, there is a menu bar with 'File', 'Edit', 'View', 'Tools', 'Options', and 'Help'. The date and time are '11/27/2012 09:44:57'. The command is 'KOBSTART' and the title is 'Enterprise Summary'. The 'Auto Update' is 'Off'. The 'Plex ID' and 'Sys ID' are blank.

The menu items are:

- Monitored IMS Subsystems (No Data)
- WebSphere MQ Queue Manager Status (No Data)
- Storage SMSplex Overview** (highlighted)
- Network Health for Applications

The 'Storage SMSplex Overview' table has the following data:

Columns	2	to	5	of	18	Rows	1	to	1	of	1
System Name	High Volume Response Time	High Volume Fragmentation Index	HSM Max Entry % Full	+HSM Ma % Full							
_ DEMOPLX	3.0	819	n/a	n/a							

The 'Network Health for Applications' table has the following data:

Columns	3	to	7	of	21	Rows	1	to	9	of	9
ΔSystem ID	ΔJob Name	Δ% Segs OutOfOrder	ΔTot Segs OutOfOrder	ΔConn in Backlog	Backlog Rejected	ΔTot Bac Rejected					
_ MVSE	BBOS003	0	0	0	0	0					
_ MVSE	TN3270A	0	0	0	0	0					
_ MVSE	TN3270	0	0	0	0	0					
_ MVSE	CICSA0R5	0	0	0	0	88					
_ MVSE	CICSA0R6	0	0	0	0	30					
_ MVSE	CICSA0R8	0	0	0	0	44					
_ MVSE	WEBSRV	0	0	0	0	0					
_ MVSE	BLZBFA3	0	0	0	0	0					
_ MVSE	BLZBFA1	0	0	0	0	0					

Locate the **Storage SMSplex Overview**. An SMSplex is a group of one or more systems that share a common storage management subsystem (SMS) configuration. This section provides you with one row of data for each SMSplex. Each row will contain the worst values from all monitored systems within that SMSplex.

__3. Review Storage Key Performance Indicators (response time and storage metrics).

This overview screen displays key performance and space related metrics that represent the 'worst' values from all monitored systems. Abnormal values in any of these metrics could be an indicator of an impact to overall transaction throughput and/or end-user response times and would be flagged as an exception.

Additional overview data is available as indicated by the number of columns being displayed.

File Edit View Tools Options Help 11/27/2012 09:52:14
 Auto Update : Off
 Command ==> Enterprise Summary Plex ID :
 KOBSTART Sys ID :

Monitored IMS Subsystems No Data

WebSphere MQ Queue Manager Status No Data

Storage SMSplex Overview

Columns 2 to 5 of 18 Rows 1 to 1 of 1

◊SYSplex Name	High Volume Response Time	High Volume Fragmentation Index	HSM Max Entry % Full	+HSM Max % Full
_ DEMOPLX _	3.0	819	n/a	n/a

Place the cursor anywhere inside this section and press **PF11** to scroll right.

File Edit View Tools Options Help 11/27/2012 10:10:45
 Auto Update : Off
 Command ==> Enterprise Summary Plex ID :
 KOBSTART Sys ID :

Monitored IMS Subsystems No Data

WebSphere MQ Queue Manager Status No Data

Storage SMSplex Overview

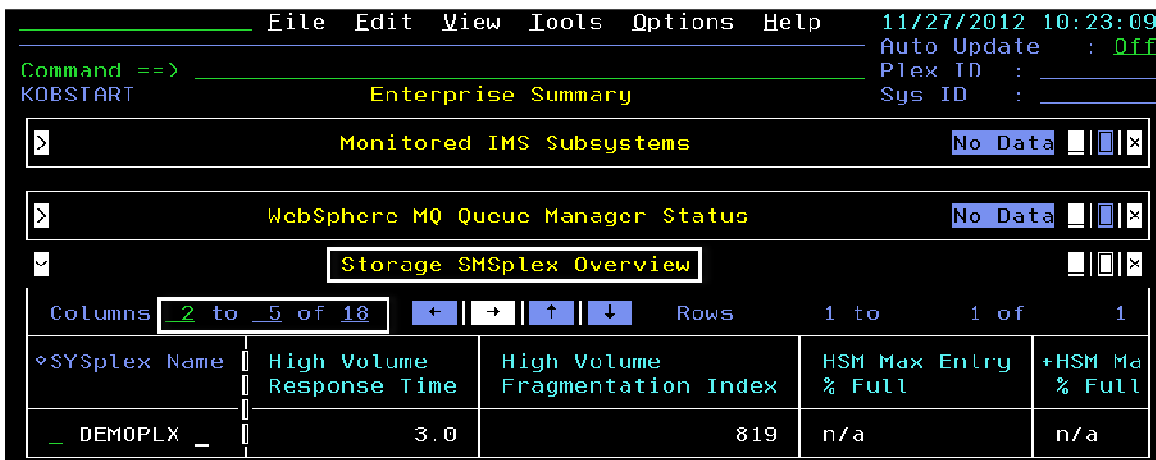
Columns 5 to 7 of 18 Rows 1 to 1 of 1

◊SYSplex Name	HSM Max Element % Full	HSM Oldest Request Age	Storage Grp Low Free Space %
_ DEMOPLX _	n/a	n/a	8.6

The next set of storage related attributes is displayed. You can continue to review additional data by scrolling right by pressing **PF11**.

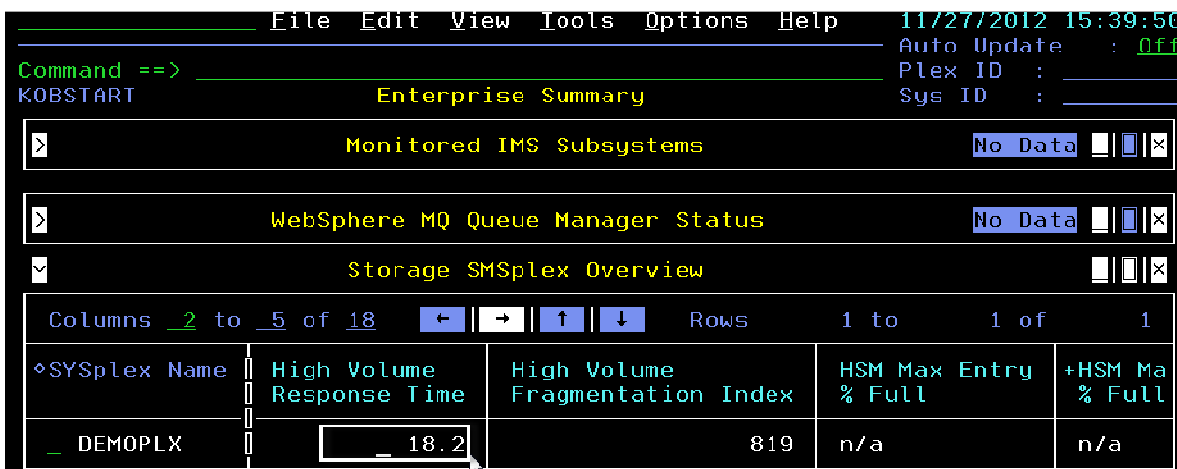
After reviewing the available performance and storage metrics provided on this main screen, please scroll back to the left by pressing **PF10** until column 2 is shown.

You should now be back to this screen position:



__4. View device and dataset performance related data

Place the cursor in the 'High Volume Response Time' column as shown below and press ENTER.



The Storage Group and the associated volumes with the highest response times are shown. You may see a different Storage Group and volumes than those shown below due to the dynamic nature of the workload.

```

File Edit View Tools Navigate Help 09/11/2014 11:44:39
Auto Update : Off
Command ==>
KS3SGPD SMS Storage Groups Performance Details Plex ID : DEMOPLX
Sys ID : MVSE

```

Storage Group Performance Details				
Columns 2 to 5 of 10		Rows 1 to 1 of 1		
Group Name	Storage Group Type	Storage Group Status	Total Volumes	High Response Time
S_DMGROUP	Pool	Enabled	30	1.5

Highest Volume Response Time Report						
Columns 2 to 7 of 22		Rows 1 to 15 of 15				
Volume	Device Address	Busy %	ΔI/O Per ∇Second	ΔIOSQ ∇Delay	ΔPend ∇Time	ΔConnect ∇Time
- DMEC15	034E	16.3	219.5	0.7	0.1	0.7
- DMEC17	0350	0.1	1.2	0.0	0.2	0.8
- DMEC21	0354	0.1	2.4	0.0	0.2	0.7
- DMED08	0207	0.3	4.6	0.0	0.2	0.7
- DMED05	0204	0.0	0.0	0.0	0.2	0.4
- DMEC16	034F	1.1	17.1	0.0	0.1	0.6
- DMEC14	034D	0.4	6.8	0.0	0.1	0.6
- DMEC20	0353	0.0	0.0	0.0	0.2	0.2

Place an – S - next to the **Storage Group** name and press **ENTER**.

__5. Review Storage Group volume performance

All volumes associated with the selected Storage Group are now available.

```

File Edit View Tools Navigate Help 09/11/2014 11:45:38
Auto Update : Off
Command ==>
KS3SSGVP SMS Storage Group Volume Performance Plex ID : DEMOPLX
Sys ID : MVSE
Storage Group: DMGROUP
Volume Performance Report
Columns 2 to 7 of 22 Rows 1 to 10 of 30
Volume Device Address Busy % ΔI/O Per ΔIOSQ ΔPend ΔConnect
          |         |         |         |         |         |         |
          |         |         |         |         |         |         |
- DMED01 | 0200 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1
- DMED02 | 0201 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1
- DMED03 | 0202 | 0.0 | 0.0 | 0.0 | 0.2 | 0.2
- DMED04 | 0203 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1
- DMED05 | 0204 | 0.0 | 0.0 | 0.0 | 0.2 | 0.4
- DMED06 | 0205 | 0.0 | 0.0 | 0.0 | 0.2 | 0.2
- DMED07 | 0206 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1
- DMED08 | 0207 | 0.4 | 5.4 | 0.0 | 0.2 | 0.7
- DMED09 | 0208 | 0.0 | 0.0 | 0.0 | 0.2 | 0.2
- DMED10 | 0209 | 0.0 | 0.0 | 0.0 | 0.2 | 0.2
Volume Cache Report
Columns 2 to 7 of 27 Rows 1 to 9 of 29
Volume Device Address Subsystem Cache Status Read Write +Rea
          |         |         |         |         |         |         |
          |         |         |         |         |         |         |
- DMED01 | 0200 | C700 | Active | 100.0 | 100.0 |
- DMED02 | 0201 | C700 | Active | 100.0 | 100.0 |
- DMED03 | 0202 | C700 | Active | 100.0 | 100.0 |
- DMED04 | 0203 | C700 | Active | 100.0 | n/a |
- DMED05 | 0204 | C700 | Active | 100.0 | n/a |
- DMED06 | 0205 | C700 | Active | 100.0 | 100.0 |
- DMED07 | 0206 | C700 | Active | 100.0 | n/a |
- DMED08 | 0207 | C700 | Active | 100.0 | 100.0 |
- DMED09 | 0208 | C700 | Active | 100.0 | n/a |
Thursday September 11 2014
    
```

In order to view and sort the performance related metrics, assuming the default screen size is being used, position your cursor in the Columns field, place a - 4 - in this field and press ENTER.

__6. Locate a 'busy' volume

Notice that there are several volume performance related metrics now displayed. It is possible to sort any of these fields to identify volumes that may be experiencing performance issues. Additional metrics are also available and many be viewed by continuing to scroll right with **PF11**.

For this lab, we are going to identify the busiest volumes within this storage group. Notice the 'arrows' in the column headings of the **Volume Performance Report**.

```

File Edit View Tools Navigate Help 09/11/2014 11:46:38
Command ==>
KS3SSGVP SMS Storage Group Volume Performance Auto Update : Off
Plex ID : DEMOPLX
Sys ID : MVSE
Storage Group: DMGROUP
Volume Performance Report
Columns 4 to 9 of 22 Rows 1 to 10 of 30

```

Volume	ΔI/O Per ∇Second	ΔIOSQ ∇Delay	ΔPend ∇Time	ΔConnect ∇Time	ΔDisconnect ∇Time	+Interru Delay T
DMED01	0.0	0.0	0.1	0.1	0.0	n/a
DMED02	0.0	0.0	0.1	0.1	0.0	n/a
DMED03	0.0	0.0	0.2	0.2	0.0	n/a
DMED04	0.0	0.0	0.1	0.1	0.0	n/a
DMED05	0.0	0.0	0.2	0.4	0.0	n/a
DMED06	0.0	0.0	0.2	0.2	0.0	n/a
DMED07	0.0	0.0	0.1	0.1	0.0	n/a
DMED08	5.4	0.0	0.2	0.7	0.0	n/a
DMED09	0.0	0.0	0.2	0.2	0.0	n/a
DMED10	0.0	0.0	0.2	0.2	0.0	n/a

Place the cursor on the arrow of the 'I/O Per Second' column header and press **ENTER** to sort the volume list by this field. Leaving the cursor in this position and pressing **ENTER** again will sort the field in the opposite manner.

For this lab, please locate the volume with the highest I/O rate, as shown below

```

File Edit View Tools Navigate Help 09/17/2014 11:48:21
Auto Update : Off
Command ==>
KS3SSGVP SMS Storage Group Volume Performance Plex ID : DEMOPLX
Sys ID : MVSE
Storage Group: DMGROUP
Volume Performance Report
Columns 4 to 9 of 22 Rows 1 to 10 of 30

```

Volume	ΔI/O Per Second	ΔIOSQ ΔDelay	ΔPend ΔTime	ΔConnect ΔTime	ΔDisconnect ΔTime	+Interru Delay T
DMEC15	219.0	0.7	0.1	0.7	0.0	n/a
DMEC16	17.9	0.0	0.1	0.6	0.0	n/a
DMEC14	8.1	0.0	0.1	0.6	0.0	n/a
DMED08	5.4	0.0	0.2	0.7	0.0	n/a
DMEC21	2.0	0.0	0.2	0.7	0.0	n/a
DMEC17	1.0	0.0	0.2	0.8	0.0	n/a
DMEC23	0.4	0.0	0.2	0.2	0.0	n/a
DMEC22	0.4	0.0	0.2	0.2	0.0	n/a
DMED32	0.1	0.0	0.2	0.2	0.0	n/a
DMEC30	0.0	0.0	0.1	0.1	0.0	n/a

__7. Display active datasets on a volume

```

File Edit View Tools Options Help 02/01/2013 15:43:06
Auto Update : Off
Command ==>
KS3SSGVP SMS Storage Group Volume Performance Plex ID : DEMOPLX
Sys ID : MVSE
Storage Group: PRIMARY
Volume Performance Report
Columns 4 to 9 of 21 Rows 1 to 10 of 40

```

Volume	ΔI/O Per Second	ΔIOSQ ΔDelay	ΔPend ΔTime	ΔConnect ΔTime	ΔDisconnect ΔTime	ΔResponses ΔTime
S DMEP21	598.5	0.0	0.2	0.2	0.0	0.4
DMEP01	147.0	0.0	0.1	0.3	0.0	0.4
DMEP34	113.3	0.0	0.1	0.3	0.0	0.5
DMEP36	74.7	0.0	0.1	0.4	0.0	0.5
DMEP12	74.2	0.0	0.1	0.2	0.0	0.4
DMEP13	74.1	0.0	0.1	0.3	0.0	0.5
DMEP22	74.1	0.0	0.2	0.5	0.0	0.7
DMEP19	73.6	0.0	0.1	0.2	0.0	0.4
DMEP10	73.3	0.0	0.1	0.3	0.0	0.5
DMEP11	73.0	0.0	0.1	0.2	0.0	0.4

Place an – S - next to the busiest volume and press ENTER.

__8. View volume dataset performance

Active Datasets

This step will be more meaningful if a volume with several active datasets is selected, as shown below. If the selected volume does not show dataset activity, try selecting different volumes by pressing PF3 to return to the prior screen. Depending on the level of system activity, this data may not always be available.

The active dataset and their performance on the selected volume are shown. You will likely see different dataset(s), depending on the volume selected on the prior screen.

Notice that sorting for the dataset performance related information is available. You are able to scroll and sort this display in a similar manner as the **Volume Performance Report**, allowing you to identify files on this volume that are heavily used. For this exercise, we will drill down on one of the displayed datasets.

File Edit View Tools Options Help 02/01/2013 15:43:32
 Auto Update : Off
 Command ==> KS3DPS Dataset Performance Summary Plex ID : DEMOPLX
 Sys ID : MVSE

Volume: **DMEP21**

Dataset Performance Summary Report

Columns 2 to 4 of 20 Rows 1 to 10 of 13

Dataset Name	ΔResponse Time	ΔIOSQ Time	ΔPen Time
S CANDLET.XEGA.ESYSMVS.RKANEXEC	0.8	0.2	
DB2.V10.SDSNLOAD	0.9	0.4	
DNET581.DEMO.DATA	0.5	0.0	
SYS1.VTOC.VDMEP21	11.9	0.3	
SYS1.VTOCIX.VDMEP21	0.7	0.2	
SYS1.VVDS.VDMEP21	0.4	0.0	
SYS13032.T153501.RA000.DEMOJOB2.OUT1.H01	1.0	0.2	
SYS13032.T153510.RA000.DEMOJOB2.TRSTMP.H01	1.1	0.0	
SYS13032.T153513.RA000.DEMOJOB2.TRSTMP.H01	0.6	0.1	
SYS13032.T153516.RA000.DEMOJOB2.TRSTMP.H01	1.3	0.1	

Datasets with MSR > Storage Class Objective No Data

Place an – **S** - in the field next to one of the datasets and press **ENTER**.

__9. View Volume Dataset Usage

This display shows which jobs/tasks are currently using the selected file. You may see different task(s), depending on the dataset selected on the prior screen. There will be one entry for each job/task that is accessing this file.

```

File Edit View Tools Options Help 02/01/2013 15:43:50
Auto Update : Off
Command ==>
KS3DPD Dataset Performance Detail Plex ID : DEMOPLX
Sys ID : MVSE
DSN: CANDLET.XEGA.ESYSMVS.RKANEXEC Volume: DMEP21
Dataset Performance Detail Report
Columns 1 to 7 of 19 Rows 1 to 1 of 1

```

Jobname	ASID	ΔResponse ∇Time	ΔIOSQ ∇Time	ΔPend ∇Time	ΔConnect ∇Time	+Dev Onl
S CXEGTOM	336	0.8	0.2	0.2	0.4	

Place an – S - next to the job/task as shown and press **ENTER**.

For a given volume and dataset, all jobs/tasks that have this file allocated are displayed. The display below shows tasks from other systems have this dataset allocated and could be impacting I/O performance for this volume. Further investigation could be necessary.

```

File Edit View Tools Options Help 02/01/2013 15:44:01
Auto Update : Off
Command ==>
KS3DD Dataset Details Plex ID : DEMOPLX
Sys ID : MVSE
DSN: CANDLET.XEGA.ESYSMVS.RKANEXEC
Dataset Space Attributes
Columns 2 to 6 of 23 Rows 1 to 1 of 1
Volume Tracks Tracks Tracks Number of +Dataset
Allocated Used Used % Extents Type
DMEP21 57 23 40.3 3 Partitioned
Dataset Users
Columns 1 to 5 of 5 Rows 1 to 3 of 3
Application Application Control Application System
Type Waiting
CXEGDSST Started Task Shared No ESYSMVS
CXEGTOM Started Task Shared No ESYSMVS
CXEGDSSR Unknown Shared No ESYSMVS2
Dataset SMS Constructs
Columns 1 to 4 of 4 Rows 1 to 1 of 1
Storage Data Management Stripe
Class Class Class Count
BASE STANDARD n/a
Dataset Performance Summary
Columns 2 to 6 of 20 Rows 1 to 1 of 1
Volume ΔResponse IOSQ Time ΔPend Time ΔConnect Device Active
Time Time Time Time Only Time
Friday February 01 2013 MOREV

```

Press F3 until you return to panel KS3SSGVP

1.2 Displaying Volume Level History (New in V5.3)

This exercise will demonstrate how you may view historical performance information within the e3270 user interface.

__1. From KS3SSGVP request history

Position the cursor next to one of the high usage volumes. **Enter H** and **Press Enter**.

File Edit View Tools Navigate Help 09/11/2014 11:56:21
 Command ==> Display : HISTORY
 KS3SSGVP Historical Summary Plex ID : DEMOPLX
 Sys ID : MVSE

Storage Group: DMGROUP

Selected item DMEC15

Columns 3 to 7 of 23 Rows 1 to 4 of 4

Recording Time	Volume	Device Address	Busy %	I/O Per Second	IOSQ Delay	Pend Time
11:30:13	DMEC15	034E	15.9	213.5	0.7	0.1
11:00:13	DMEC15	034E	16.2	218.8	0.6	0.1
10:30:13	DMEC15	034E	15.9	214.8	0.7	0.1
10:00:13	DMEC15	034E	15.2	204.2	0.7	0.1

You are now looking at the I/O and % busy history for the chosen volume. You may Press F11 to scroll to see additional information columns.

Press PF3 three times to return to the Enterprise Summary screen, KOBSTART.

File Edit View Tools Options Help 11/27/2012 15:55:48
 Command ==> Auto Update : Off
 KOBSTART Enterprise Summary Plex ID :
 Sys ID :

Monitored IMS Subsystems No Data

WebSphere MQ Queue Manager Status No Data

Storage SMSplex Overview

Columns 2 to 5 of 18 Rows 1 to 1 of 1

SYSplex Name	High Volume Response Time	High Volume Fragmentation Index	HSM Max Entry % Full	+HSM Ma % Full
DEMOPLX	18.2	819	n/a	n/a

1.3 View Storage Data from Enterprise Summary

- 1. View disk space related data

The screenshot shows the KOBSTART Enterprise Summary screen. The 'Storage SMSplex Overview' section is expanded, displaying a table with the following data:

Columns	2 to 5 of 18	Rows	1 to 1 of 1
◊SYSplex Name	High Volume Response Time	High Volume Fragmentation Index	HSM Max Entry % Full
DEMOPLX	18.2	819	n/a

From the KOBSTART screen, place the cursor on somewhere in the **Storage SMSplex Overview** section.

Press **PF11** (twice, if using the default screen size) to scroll right until you see the 'Low Track Managed Free Space %' column.

The screenshot shows the KOBSTART Enterprise Summary screen with the 'Storage SMSplex Overview' section expanded. The columns have been scrolled to the right, showing the following data:

Columns	8 to 10 of 18	Rows	1 to 1 of 1
◊SYSplex Name	Storage Grp Low Free Space GB	Low Track Managed Free Space %	Low Track Managed Free Space GB
DEMOPLX	1.4	6.9	1.4

Place your cursor anywhere in this column and press **ENTER**.

__2. View Storage group and volume space

Space related details for the specific Storage Group and the volumes in this group are shown. You will likely see a different Storage Group and volumes than those shown below due to the dynamic nature of the workload.

Note there are additional volumes and data available. Placing the cursor anywhere in the 'Volume Space Report' window and scrolling down (PF8) and/or right (PF11) will display this data. Additionally, you can view a list of datasets on each volume by placing an -S- next to a specific volume. Finally, the message at bottom right corner indicates more data is available.

```

File Edit View Tools Navigate Help 09/11/2014 12:07:39
Command ==> Auto Update : Off
KS3SGSD SMS Storage Group Space Details Plex ID : DEMOPLX
Sys ID : MVSE
    
```

Storage Groups Space Details

Group Name.....	DLGROUP	Storage Group Status.....	Enabled
Storage Group Type.....	Pool	Non-Enabled Volumes.....	No
Total Volumes.....	8	VTOC Index Status.....	Enabled
Low Volume Free Space %...	0.4	High Volume Fragmentation	739
Largest Free Extent MB....	155	Free Space MB.....	1218
Free Space %.....	1.8	Total Space MB.....	64957
Track Managed Low Volume F	0.4	Track Managed High Volume	739
Track Managed Largest Free	155	Track Managed Free Space M	1218
Track Managed Free Space %	1.8	Track Managed Total Space	64957
Used Space %.....	98.2	Track.....	98.2

Volume Space Report

Columns 2 to 7 of 19 Rows 1 to 8 of 8

Volume	Device Address	Device Type	Total Capacity Megabytes	Free Space Megabytes	% Free Space	+Fragm Index
- DMEA01	0302	3390	8120	188	2.3	
- DMEA02	0303	3390	8120	200	2.4	
- DMEA03	0304	3390	8120	150	1.8	
- DMEA04	0305	3390	8120	122	1.5	
- DMEA05	0306	3390	8120	147	1.8	
- DMEA06	0307	3390	8120	36	0.4	
- DMEA07	0308	3390	8120	189	2.3	
- DMEA08	0309	3390	8120	185	2.2	

Lowest Volume Free Space

Columns 2 to 7 of 11 Rows 1 to 8 of 8

Volume	Device Address	Free Space Megabytes	Device Type	Total Capacity Megabytes	% Free Space	+Fragm Index
- DMEA06	0307	36	3390	8120	0.4	

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To view this additional data, with the cursor in the home position (top left), press **PF8** to scroll down.

__3. View devices with low free space

Devices in the storage group sorted by lowest free space and lowest free space percent are shown making it easy to identify volumes running low on space. Depending on the Storage Group selected and which screen size is being used, a different number of volumes may be displayed.

Volume	Device Address	Device Type	Total Capacity Megabytes
D DMEA01	0302	3390	81
- DMEA02	0303	3390	81
- DMEA03	0304	3390	81

For this exercise, place an **- D-** next to a device and press **ENTER**, to get additional details for this device. Note that you are also able to view datasets on each volume, but is not shown as part of this lab.

__4. View device details

Review the device details that are shown for the selected device. Note the bottom left corner, more data is available.

File Edit View Tools Navigate Help 09/11/2014 12:09:14
 Command ==> KS3DSD
 Auto Update : Off
 Plex ID : DEMOPLX
 Sys ID : MVSE

Volume: DMEA01

Volume Free Space Details

Free Space Megabytes	% Free Space	Total Free Cylinders	Total Free Tracks	Free Extents	Largest Free Extent MB
188	2.3	215	249	34	98

Track-Managed Free Space Details

Track Managed Free Space	Track Managed % Free	Track Managed Free Cylinders	Track Managed Free Tracks	+Track Mana Free Exten
188	2.3	215	249	34

With the cursor in the home position (top left), press **PF8** to scroll down to see additional device details including which systems have the device allocated and the device model.

Additional device details are shown below.

```

File Edit View Tools Navigate Help 09/11/2014 12:10:27
Command ==>
KS3DSD Device Space Details Plex ID : DEMOPLX
Sys ID : MVSE
    
```

Volume Status		
System ID	MVS Status	SMS Status
ESYSMVS	Online	Enable
ESYSMVS2	Online	Enable
ESYSMVS3	Unknown	Enable

Volume Details					
Device Address	Device Type	Device Model	RAID Model	LCU Number	Solid State Device
0302	3390	3390-9	2107	000	No

Press **PF3** twice to return to the **Enterprise Summary** screen, KOBSTART.

```

File Edit View Tools Options Help 11/27/2012 15:55:48
Command ==>
KOBSTART Enterprise Summary Plex ID :
Sys ID :
    
```

Storage SMSplex Overview				
SYSPlex Name	High Volume Response Time	High Volume Fragmentation Index	HSM Max Entry % Full	+HSM Ma % Full
DEMOPLX	18.2	819	n/a	n/a

This concludes Lab 1, Monitoring Storage – High Level Overview.

Lab 2 View Device and Storage Subsystem Data

Lab 2 continues to explore the e3270 interface details. This lab will explore how OMEGAMON for Storage monitors devices and the storage subsystems of DFSMSHsm, DFSMSrmm and DFSMS.

Lab 2 illustrates several of the displays available in OMEGAMON XE for Storage that can be used for managing the hardware and storage subsystem. The main purpose of this exercise is to demonstrate the breadth and depth of the various hardware and storage subsystem monitoring displays.

2.1 View Hardware/Device Data

Pre-staged exercise tasks



These exercises are being performed on IBM systems which utilize IBM hardware. While not covered during this lab, OMEGAMON XE for Storage provides hardware metrics for other OEM storage devices.

In this Lab, the participants will view information for control units, along with various disk and tape information provided by OMEGAMON XE for Storage.

- __1. Locate OMEGAMON XE for Storage on the Enterprise Summary (KOBSTART). Please see step 2 from Lab 1 for instructions for locating this section of the display.
- __2. Zoom into the OMEGAMON for Storage product home screen and display available options

◊SYSplex Name	High Volume Response Time	High Volume Fragmentation Index	HSM Max Entry % Full	+HSM Ma % Full
<input type="checkbox"/> DEMOPLX	7.1	831	n/a	n/a

Place an – **S** - next to the Sysplex name and press **ENTER**.

The SMSplex System Overview(KS3ZSUMM) is displayed.

SMF ID	Storage Grp Low Free Space %	Storage Grp Low Free Space GB	High Volume Response Time	+High Volume Fragmentatio
/ MVSE	8.9	1.4	6.9	831

Place a slash (/) next to the **SMF ID** name and press **ENTER**.

The menu options available are displayed.

```

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
    
```

3. Review Cache Control Unit Status

This menu provides options to review the state and status of the various hardware and software that make up the storage subsystem. Several of these options will be explored in this lab, beginning with the status of the **Cache Control units**.

```

Options Menu
Select an option and then press ENTER

2. U Cache CU Status
1. S Channel Path
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
    
```

Select option – **2** - and press **ENTER**.

The various control units are displayed. This display provides several different status and performance views, of the control units. Note that there is additional data available, as indicated in the lower right corner of the display.

Cache Control Unit Status Report						
Columns 2 to 6 of 11		Rows 1 to 7 of 7				
Subsystem ID	Control Unit Type	Active Volumes	Deactivated Volumes	Cache Status	+Cache MB Configur	
- C600	2107	121	0	Active	12176.0	
- C500	2107	18	0	Active	12176.0	
- C000	2107	1	0	Active	13920.0	
- C300	2107	8	0	Active	13920.0	
- C200	2107	16	0	Active	13920.0	
- C700	2107	10	0	Active	12176.0	
- DC00	2107	16	0	Active	28560.0	

Cache Control Unit Performance Report						
Columns 2 to 7 of 14		Rows 1 to 7 of 7				
Subsystem ID	Control Unit Type	Read Hit %	Write Hit %	Read I/O %	Bypass Cache %	Inhibit Cache %
- C600	2107	99.8	99.9	74.2	0.0	0.0
- C500	2107	99.9	100.0	60.4	0.0	0.0
- C000	2107	100.0	n/a	100.0	0.0	0.0
- C300	2107	100.0	n/a	100.0	0.0	0.0
- C200	2107	100.0	100.0	27.4	0.0	0.0
- C700	2107	99.8	100.0	61.0	0.0	0.0
- DC00	2107	100.0	100.0	49.4	0.0	0.0

Volumes With Lowest Read Hit Percent						
Columns 2 to 7 of 27		Rows 1 to 10 of 15				
Volume	Device Address	Subsystem ID	Read Hit %	Write Hit %	Read I/O %	DFW Status

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With the cursor in the 'home' position (upper left corner), press **PF8** to view additional control unit performance data.

More **control unit** statistics (read and write), are displayed. The lower right corner of the screen indicates there is additional control unit data available.

```

File Edit View Tools Options Help 11/29/2012 10:18:20
Auto Update : Off
Command ==> Cache CU Status Plex ID : DEMOPLX
KS3CCS Sys ID : MVSE
  
```

Volumes With Lowest Read Hit Percent						
Volume	Device Address	Subsystem ID	Read Hit %	Write Hit %	Read I/O %	DFW Status
DMESP2	010D	C600	78.2	100.0	24.1	Active
DMEU10	0223	C600	95.8	100.0	99.7	Active
DMEU03	021C	C600	97.3	100.0	98.9	Active
DMED39	0333	C700	97.4	100.0	22.2	Active
DMEU09	0222	C600	98.9	100.0	98.9	Active
DMEU27	033B	C500	99.0	100.0	99.0	Active
DMEU14	0227	C600	99.0	100.0	99.8	Active
DMEU17	022A	C600	99.3	100.0	97.1	Active
DMEU04	021D	C600	99.4	100.0	99.4	Active
DMEU07	0220	C600	99.5	100.0	99.5	Active

Volumes With Lowest Write Hit Percent						
Volume	Device Address	Subsystem ID	Read Hit %	Write Hit %	Read I/O %	DFW Status
DMECAT	0101	C600	99.9	100.0	90.8	Active
DMEOS1	0102	C600	100.0	100.0	12.4	Active
DMEOS2	0103	C600	100.0	100.0	30.1	Active
DMEPG1	0106	C600	100.0	100.0	30.6	Active
DMEPG2	0107	C600	100.0	100.0	24.3	Active
DMEPG3	0108	C500	100.0	100.0	24.3	Active
DMEPG4	0109	C600	100.0	100.0	24.3	Active
DMEPG5	010A	C600	100.0	100.0	24.3	Active
DMESP0	010B	C600	100.0	100.0	42.3	Active
DMESP1	010C	C600	100.0	100.0	18.6	Active

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Feel free to scroll down using **PF8** to view the remaining control unit data. After reviewing the data press **PF7** the appropriate number of times to return to this screen. From the screen shown above, press **PF7** (two times, if using the default screen size) to return to the **Cache CU Status** screen (KS3CCS).

4. Review Storage Hardware Information

OMEGAMON XE for Storage provides information for IBM hardware along with commonly used hardware from 3rd party vendors.

File Edit View Tools Options Help 11/29/2012 10:22:51
 Auto Update : Off
 Command ==> KS3CCS Cache CU Status Plex ID : DEMOPLX
 Sys ID : MVSE

Cache Control Unit Status Report

Columns 2 to 6 of 11 Rows 1 to 7 of 7

Subsystem ID	Control Unit Type	Active Volumes	Deactivated Volumes	Cache Status	+Cache MB Configur
/ C600	2107	121	0	Active	12176.0
- C500	2107	18	0	Active	12176.0
- C000	2107	1	0	Active	13920.0
- C300	2107	8	0	Active	13920.0
- C200	2107	16	0	Active	13920.0
- C700	2107	10	0	Active	12176.0
- DC00	2107	16	0	Active	28560.0

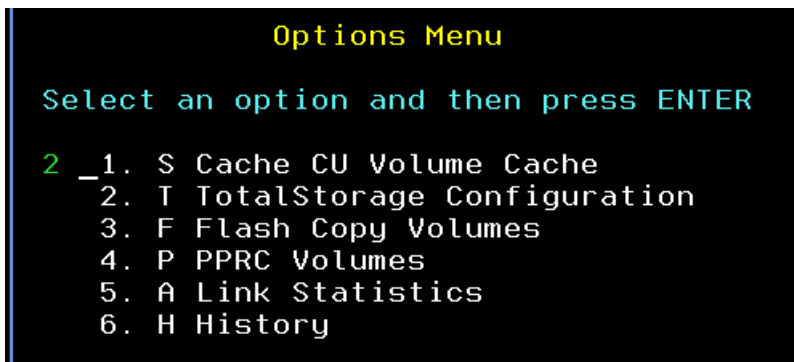
Cache Control Unit Performance Report

Columns 2 to 7 of 14 Rows 1 to 7 of 7

Subsystem ID	Control Unit Type	Read Hit %	Write Hit %	Read I/O %	Bypass Cache %	Inhibit Cache %
- C600	2107	99.8	99.9	74.2	0.0	0.0
- C500	2107	99.9	100.0	60.4	0.0	0.0
- C000	2107	100.0	n/a	100.0	0.0	0.0
- C300	2107	100.0	n/a	100.0	0.0	0.0
- C200	2107	100.0	100.0	27.4	0.0	0.0
- C700	2107	99.8	100.0	61.0	0.0	0.0
- DC00	2107	100.0	100.0	49.4	0.0	0.0

Place a slash (/) next to the **Subsystem ID** of a control unit and press **ENTER**.

As the selected subsystem is an IBM storage device, Option 2 will provide TotalStorage Configuration detail for this device. Other vendor specific hardware is also supported. The menu text presented for Option 2 is dependant on the type of device selected on the prior screen.



Select option – 2 - and press **ENTER**.

TotalStorage Configuration information is displayed.

File Edit View Tools Options Help 11/29/2012 10:26:20
 Auto Update : Off
 Command ==> TotalStorage Configuration
 KS3TC Plex ID : DEMOPLX
 Sys ID : MVSE

Storage Facility ID: IBM00210794175000000WM371

TotalStorage Extent Pools

Extent Pool ID	Pool Type	Real Pool Capacity	Virtual Pool Capacity	Real Extents	+Virtual Extents
0	CKD	7506	0	8419	0
1	CKD	7506	0	8419	0

TotalStorage SSIDs

+Subsystem IDs Position 1 to 74 of 80

C600 C500 C700

TotalStorage Configuration

Total Cache	Available Cache	Configured NVS	Pinned NVS	Logical Volumes	Logical Subsystems	+Total Extent
12176.0	8754.9	1024.0	0.0	149	3	2

Press **PF3** two times to return to the **SMSplex System Overview (KS3ZSUM)**.

__5. Display Tape information

```

File Edit View Tools Options Help 11/29/2012 10:11:33
Auto Update : Off
Command ==>
KS3ZSUMM SMSplex System Overview
SMF ID : DEMOPLX
SMF ID :

```

SMF ID	Storage Grp Low Free Space %	Storage Grp Low Free Space GB	High Volume Response Time	+High Volume Fragmentatio
/ MVSE	8.9	1.4	6.9	831

Place a slash (/) next to the **SMF ID** and press **ENTER**.

```

File Edit View Tools Navigate Help 12/18/2013 15:51:45
Auto Update : Off
Command ==>
KS3ZSUMM
MOPLX SE

```

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

```

Columns 1
SMF ID
MVSE

```

Select option – 4 - and press **ENTER**.

```

File Edit View Tools Navigate Help 12/18/2013 15:52:48
Auto Update : Off
Command ==>
KS3TG
Plex ID : DEMOPLX
Sys ID : MVSE

```

Tape Group Report

Columns 2 to 6 of 25 Rows 1 to 4 of 4

Library Name	ID Number	Library Type	Library Device	Console Name	Library Description
ATL1	12316	ATLDS	3494-L10		IBM 3494 TAP
S ATL2	02014	ATLDS	3584-L22		IBM 3592 TAP
ATL3	00001	ATLDS			3484-L22 TAP
3490		Non Library			

Tape groups are displayed. Place an – S - next to the ATL2 tape group and press **ENTER**.

The tape devices and their status for the selected tape library are displayed. There is additional status data available to the right.

Device Address	Device Type	Device Status	Mount Pending Time	Volume	Jobname	+Stora Group
B000	3590-1	Offline	n/a			
B001	3590-1	Offline	n/a			
B002	3590-1	Offline	n/a			
B003	3590-1	Offline	n/a			
B004	3590-1	Online	n/a			
B005	3590-1	Offline	n/a			

Press **PF3** two times to return to the SMSplex System Overview (KS3ZSUM).

2.2 View Hardware/Device History (New in V5.3)

OMEGAMON Storage provides history data at several levels. Earlier you looked at device information in a real time manner. Now you will see how to get interval history of hardware device performance.

SMF ID	Storage Grp Low Free Space %	Storage Grp Low Free Space GB	High Volume Response Time	+High Volume Fragmentatio
/ MVSE	8.9	1.4	6.9	831

__1. Review Cache Control Unit Status

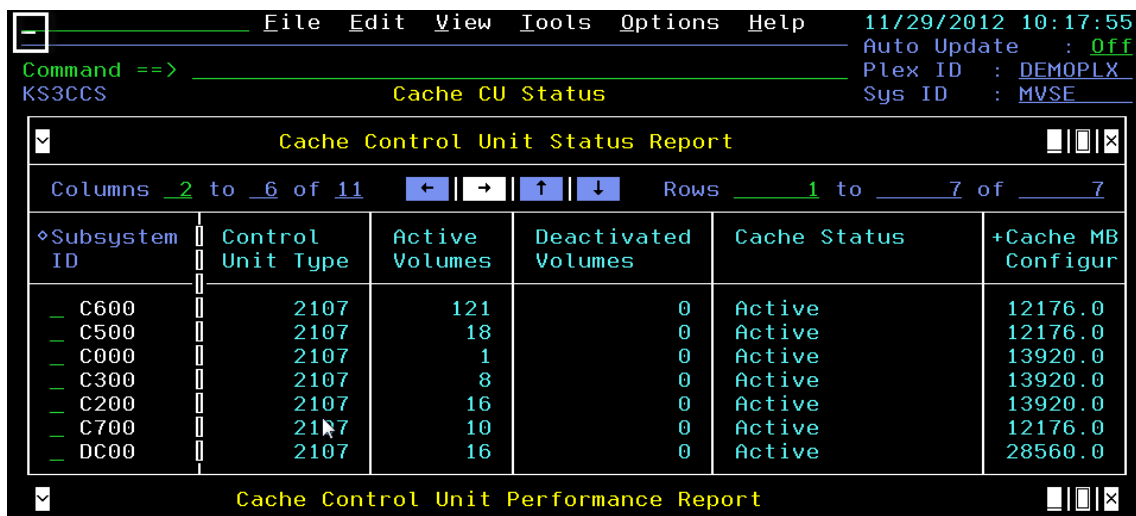
Place a slash (/) next to the **SMF ID** name and press **ENTER**.

The menu options available again are displayed.

This menu provides options to review the state and status of the various hardware and software that make up the storage subsystem. Several of these options will be explored in this lab, beginning with the status of the **Cache Control units**.

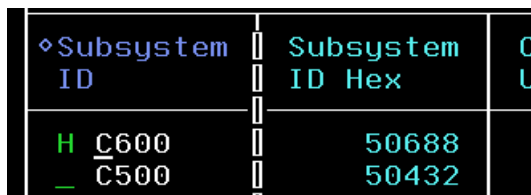


Select option – 2 - and press **ENTER**.



You are again viewing the cache control unit status panel (KS3CCS).

2. Request history



Position the cursor by a device, enter H and Press Enter

Recording Time	Subsystem ID	Subsystem ID Hex	Control Unit Type	Active Volumes	Deactivated Volumes
12:30:02	C600	50688	2107	61	35
12:00:02	C600	50688	2107	61	35
11:30:02	C600	50688	2107	61	35
11:00:02	C600	50688	2107	61	35

You are now looking at history of the cache control unit.

__3. Return to the KS3ZSUM panel

Press F3 multiple times to return to KS3ZSUM.

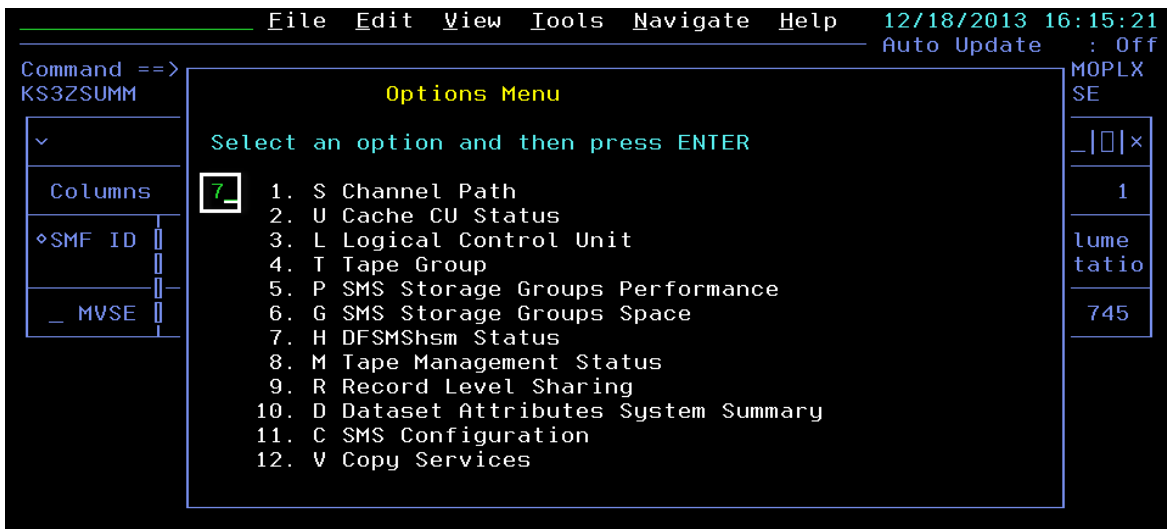
2.3 View Storage Subsystem data

__1. Display DFSMSHsm information

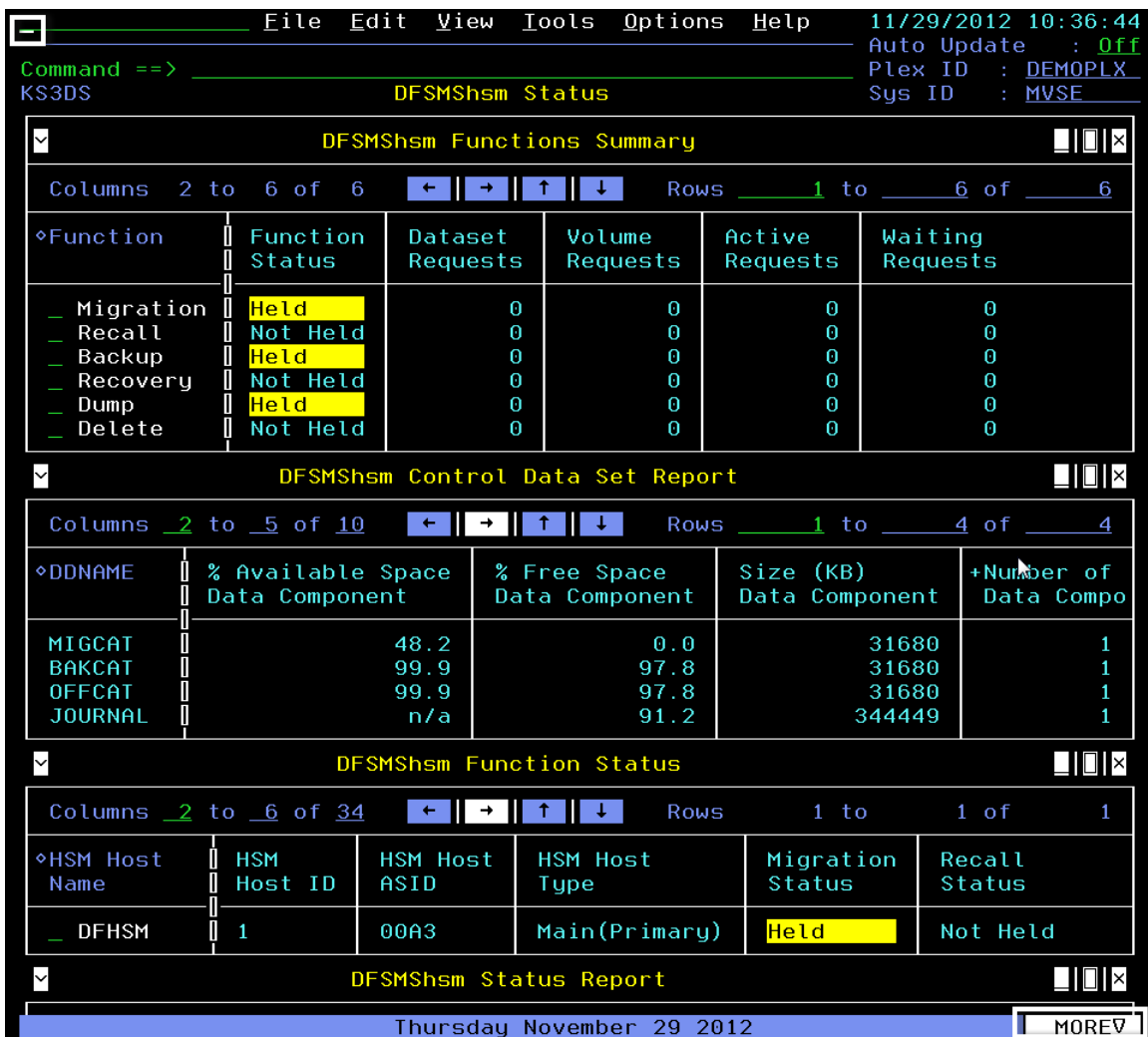
OMEGAMON XE for Storage also displays information related to the various storage subsystems. This information is accessed from the SMSplex System Overview(KS3ZSUM).

SMF ID	Storage Grp Low Free Space %	Storage Grp Low Free Space GB	High Volume Response Time	+High Volume Fragmentatio
/MVSE	8.8	1.4	5.5	831

Place a slash (/) next to the **SMF ID** and press **ENTER**.



Select option – 7 - and press **ENTER**.



DFSMShsm data is displayed. More data is available. With the cursor in the home position (top left), press **PF8** to scroll down.

The remaining DFSMShsm data is displayed.

```

File Edit View Tools Options Help 11/29/2012 10:36:56
Auto Update : Off
Plex ID : DEMOPLX
Sys ID : MVSE
Command ==>
KS3DS DFSMShsm Status

```

DFSMShsm Status Report					
Columns 2 to 6 of 33		Rows 1 to 1 of 1			
◊HSM Status	HSM ASID	Version	HSM Start Time	Interval Start Time	+Inte Requ
_ Active	00A3	1.13.0	12/11/24 12:26:03	12:26:05	

DFSMShsm Host Details Report					
Columns 2 to 6 of 38		Rows 1 to 1 of 1			
◊HSM Host Name	HSM Host ID	HSM Host Type	HSM Host Status	HSM Host ASID	+HSM Host Start Time
_ DFHSM	1	Main(Primary)	Active	00A3	12/11/24 12:2

DFSMShsm Host Storage Utilization					
Columns 2 to 6 of 7		Rows 1 to 1 of 1			
◊HSM Host Name	HSM Host ID	HSM Host Type	HSM Host ASID	Central Storage Real Frames	+Central S Fixed Fra
DFHSM	1	Main(Primary)	00A3	4549	113

DFSMShsm Common Storage			
Active Limit %.....	90	Inactive Limit %.....	30
Maximum MWE Address Space.	4	Maximum Common Storage....	102400
Used Common Storage.....	0		

Press **PF3** to return to the **SMSplex System Overview (KS3ZSUM)**.

__2. Display Tape Management information – DFSMSrmm (or CA-1, if installed)

OMEGAMON XE for Storage also displays information related to the tape management systems of DFSMSrmm or CA-1. This information is accessed from the **SMSplex System Overview**(KS3ZSUM).

SMF ID	Storage Grp Low Free Space %	Storage Grp Low Free Space GB	High Volume Response Time	High Volume Fragmentatio
/ MVSE	8.8	1.4	5.5	831

Place a slash (/) next to the **SMF ID** and press **ENTER**.

Option	Description
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

Select option – **8** - and press **ENTER**.

Tape Management Status (KS3TMS) is displayed.

```

File Edit View Tools Navigate Help 12/18/2013 16:30:43
Auto Update : Off
Plex ID : DEMOPLX
Sys ID : MVSE
Command ==>
KS3TMS Tape Management Status

```

DFSMSrmm Overview		
Columns <u>1</u> to <u>3</u> of <u>9</u>	← → ↑ ↓	Rows 1 to 1 of 1
Collection Status	Summary Collection Start Time	+Summary Collecti End Time
S Collection completed	13/12/15 02:53:09	13/12/15 02:53:

CA 1 Overview		
Columns <u>1</u> to <u>3</u> of <u>9</u>	← → ↑ ↓	Rows 1 to 1 of 1
Collection Status	Collection Start Time	+Collection End Time
_ CA 1 is not installed	n/a	n/a

Note that support for both DFSMSrmm and CA-1 is provided. Place an **-S-** next to the Collection Status for DFSMSrmm and press **ENTER**.

File Edit View Tools Navigate Help						12/18/2013 16:30:59	
Command ==>						Auto Update : Off	
KS3DFSS DFSMSrmm Status						Plex ID : DEMOPLX	
						Sys ID : MVSE	
DFSMSrmm System Summary Totals							
Columns <u>1</u> to <u>3</u> of <u>15</u>				← → ↑ ↓		Rows 1 to 1 of 1	
Collection Status				Summary Collection Start Time		+Summary Collecti End Time	
_ Collection completed				13/12/15 02:53:09		13/12/15 02:53:	
DFSMSrmm System Usage & Activity Summary							
Columns <u>1</u> to <u>5</u> of <u>12</u>				← → ↑ ↓		Rows 1 to 1 of 1	
Total Capacity	Data Created Previous Day	Volumes R/W Previous Day	Datasets R/W Previous Day	Datasets Created Previous Day			
/ 161771	0.0	2	0	0			
DFSMSrmm Control Dataset							
Columns <u>2</u> to <u>3</u> of <u>15</u>				← → ↑ ↓		Rows <u>1</u> to <u>4</u> of <u>4</u>	
Dataset Type		Catalog Entry Type		+Dataset Name			
_ Master CDS		Cluster		COMMON.RMM.CONTROL			
_ Master CDS		Data Component		COMMON.RMM.CONTROL.DATA			
_ Master CDS		Index Component		COMMON.RMM.CONTROL.INDEX			
_ Journal		NonVSAM		COMMON.RMM.JOURNAL.FILE			
DFSMSrmm Configuration Options							
Columns <u>1</u> to <u>7</u> of <u>40</u>				← → ↑ ↓		Rows 1 to 1 of 1	
Accounting Source	SMSACS	BLP	Catalog SysID	DSN Cmd Auth	Owner Cmd Auth	Journal Full Value	
Wednesday December 18 2013							
MORE							

The DFSMSrmm Status is displayed. Place a slash (/) next to the row in the **System Usage & Activity Summary** and press **ENTER**.

File Edit View Tools Navigate Help 12/18/2013 16:32:29
 Auto Update : Off

Command ==> MOPLX
 KS3DFSS SE

Options Menu

Select an option and then press ENTER

2	_1. S DFSMSrmm Job Summary	1
	_2. P DFSMSrmm Pending Actions	

_ Collection completed	13/12/15 02:53:09	13/12/15 02:53:
------------------------	-------------------	-----------------

DFSMSrmm System Usage & Activity Summary | | | X

Columns 1 to 5 of 12		← → ↑ ↓	Rows 1 to 1 of 1	
Total Capacity	Data Created Previous Day	Volumes R/W Previous Day	Datasets R/W Previous Day	Datasets Created Previous Day
_ 161771	0.0	2	0	0

DFSMSrmm Control Dataset | | | X

Columns 2 to 3 of 15		← → ↑ ↓	Rows 1 to 4 of 4	
Dataset Type	Catalog Entry Type	+Dataset Name		
_ Master CDS	Cluster	COMMON.RMM.CONTROL		
_ Master CDS	Data Component	COMMON.RMM.CONTROL.DATA		
_ Master CDS	Index Component	COMMON.RMM.CONTROL.INDEX		
_ Journal	NonVSAM	COMMON.RMM.JOURNAL.FILE		

DFSMSrmm Configuration Options | | | X

Columns 1 to 7 of 40		← → ↑ ↓	Rows 1 to 1 of 1			
Accounting Source	SMSACS	BLP	Catalog SysID	DSN Cmd Auth	Owner Cmd Auth	Journal Full Value

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Select Option – 2 - and press ENTER.

The screenshot shows two windows from the DFSMSrmm interface. The top window, titled "DFSMSrmm Action Status", displays a table of actions and their statuses. The bottom window, titled "DFSMSrmm Move Status", displays a table of moves with their current and destination locations, status, and move type.

Action	Status
REPLACE	Pending
SCRATCH	Pending
INIT	Unknown
ERASE	Unknown
RETURN	Unknown
NOTIFY	Unknown

Action	Current Location	Destination Location	Status	Move Type
MOVE	SHELF	ATL2	Complete	NotRTS
MOVE	SHELF	ATL2	Pending	RTS

The DFSMSrmm Actions and Status is displayed.

Press **PF3** two times to return to the SMSplex System Overview (KS3ZSUM).

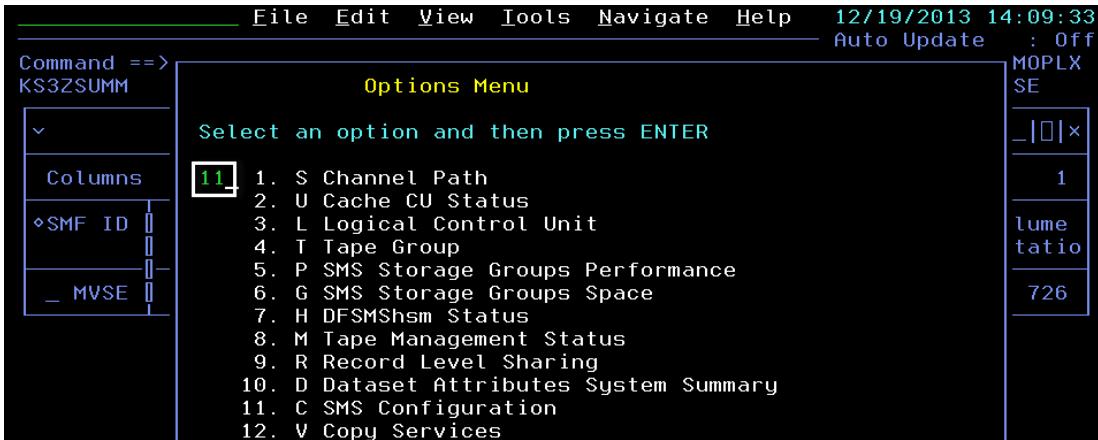
3. Display DFSMS configuration information

OMEGAMON XE for Storage also displays information related to SMS system configuration and constructs. This information is accessed from the SMSplex System Overview(KS3ZSUM).

The screenshot shows the "SMSplex System Overview" window. It displays a table with columns for SMF ID, Storage Grp Low Free Space %, Storage Grp Low Free Space GB, High Volume Response Time, and +High Volume Fragmentatio. The row for SMF ID MVSE is highlighted.

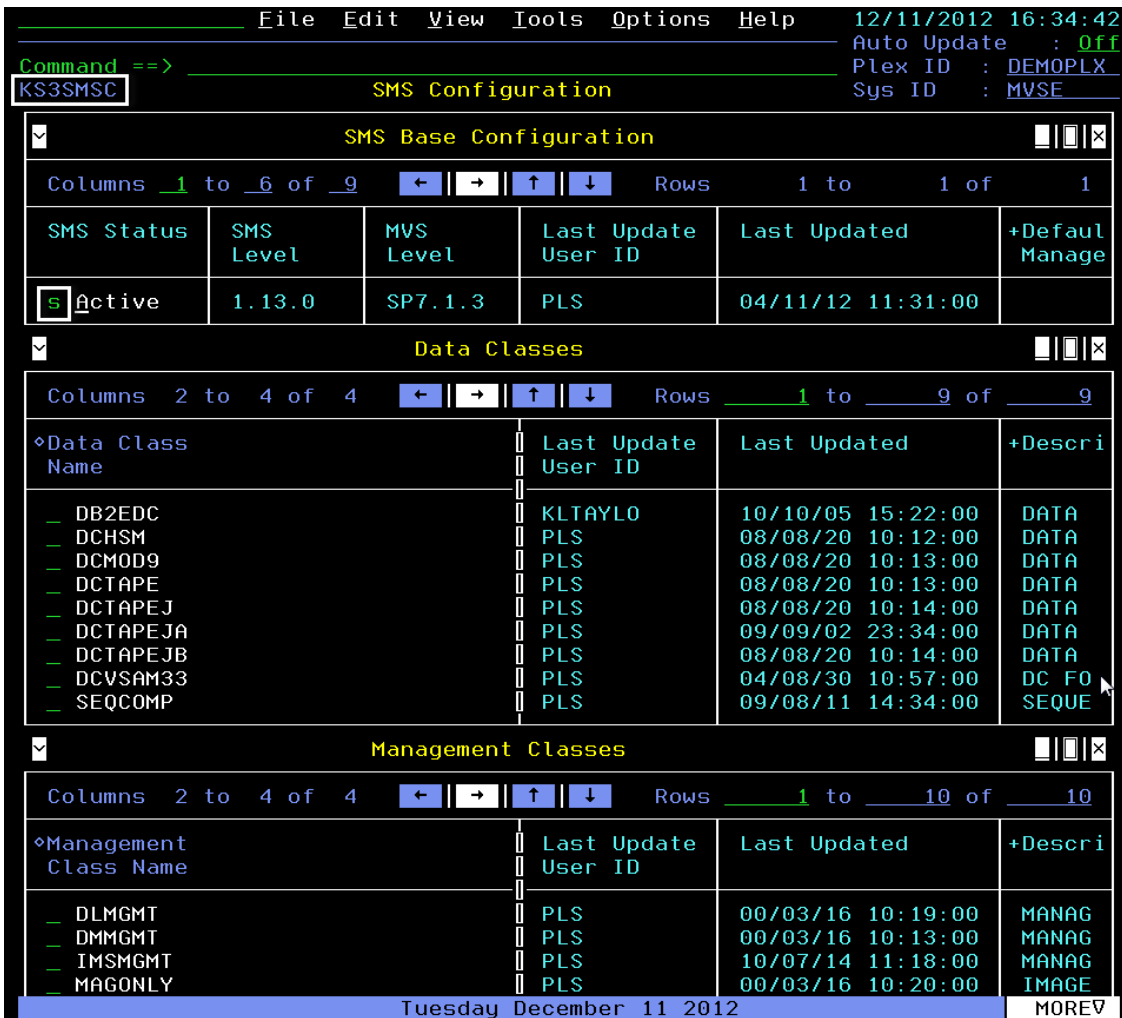
SMF ID	Storage Grp Low Free Space %	Storage Grp Low Free Space GB	High Volume Response Time	+High Volume Fragmentatio
/ MVSE	8.8	1.4	5.5	831

Place a slash (/) next to the SMF ID and press **ENTER**.



Select option – **11** - and press **ENTER**.

The **SMS Configuration (KS3SMSC)** screen provides information about SMS configuration and SMS constructs.



Place an – **S** - on the SMS Base Configuration and press **ENTER**.

Information related to the LPARs configured within the current SMSplex is displayed.

```

File Edit View Tools Options Help 12/11/2012 16:35:16
Auto Update : Off
Command ==>
KS3SCD SMS Configuration Details Plex ID : DEMOPLX
Sys ID : MVSE
    
```

SMS Configuration Members	
Name	Type
ESYSMVS	System
ESYSMVS2	System
ESYSMVS3	System

```

Cache Sets No Data
    
```

Base Configuration					
SMS Status	SMS Level	MVS Level	Last Update User ID	Last Updated	+Default Manage
Active	1.13.0	SP7.1.3	PLS	04/11/12 11:31:00	

Press **PF3** to return to SMS Configuration (KS3SMSC).

In addition to SMS Configuration, OMEGAMON XE for Storage also provides SMS construct information. More SMS construct data is available on subsequent screens by scrolling down.

```

File Edit View Tools Options Help 12/11/2012 16:37:00
Auto Update : Off
Plex ID : DEMOPLX
Sys ID : MVSE
Command ==>
KS3SMSC SMS Configuration

```

SMS Base Configuration					
SMS Status	SMS Level	MVS Level	Last Update User ID	Last Updated	+Defaul Manage
_ Active	1.13.0	SP7.1.3	PLS	04/11/12 11:31:00	

```

Data Classes

```

◊Data Class Name	Last Update User ID	Last Updated	+Descri
_ DB2EDC	KLTAYLO	10/10/05 15:22:00	DATA
_ DCHSM	PLS	08/08/20 10:12:00	DATA
_ DCMOD9	PLS	08/08/20 10:13:00	DATA
_ DCTAPE	PLS	08/08/20 10:13:00	DATA
_ DCTAPEJ	PLS	08/08/20 10:14:00	DATA
_ DCTAPEJA	PLS	09/09/02 23:34:00	DATA
_ DCTAPEJB	PLS	08/08/20 10:14:00	DATA
_ DCVSAM33	PLS	04/08/30 10:57:00	DC FO
_ SEQCOMP	PLS	09/08/11 14:34:00	SEQUE

```

Management Classes

```

◊Management Class Name	Last Update User ID	Last Updated	+Descri
_ DLMGMT	PLS	00/03/16 10:19:00	MANAG
_ DMMGMT	PLS	00/03/16 10:13:00	MANAG
_ IMSMGMT	PLS	10/07/14 11:18:00	MANAG
_ MAGONLY	PLS	00/03/16 10:20:00	IMAGE

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With the cursor in the home position (top left), press **PF8** to scroll down.

Additional SMS Constructs are shown. More construct Information is available.

File Edit View Tools Options Help 12/11/2012 16:37:27
 Auto Update : Off
 Command ==> Plex ID : DEMOPLX
 KS3SMSC SMS Configuration Sys ID : MVSE

Management Classes

Columns 2 to 4 of 4 Rows 1 to 10 of 10

Management Class Name	Last Update User ID	Last Updated	+Descri
- DLMGMT	PLS	00/03/16 10:19:00	MANAG
- DMMGMT	PLS	00/03/16 10:13:00	MANAG
- IMSMGMT	PLS	10/07/14 11:18:00	MANAG
- MAGONLY	PLS	00/03/16 10:20:00	IMAGE
- MCTAPE	PLS	00/03/16 10:19:00	MANAG
- NOMIG	PLS	00/03/16 10:11:00	NON-M
- OSMGMT	PLS	00/03/16 10:15:00	MANAG
- STANDARD	PLS	00/03/16 10:15:00	MANAG
- USRMGMT	PLS	00/03/16 10:15:00	MANAG
- WRKMGMT	PLS	99/06/09 14:41:00	MANAG

Storage Classes

Columns 2 to 4 of 4 Rows 1 to 10 of 12

Storage Class Name	Last Update User ID	Last Updated	+Descri
- BASE	PLS	99/06/09 14:37:00	PRODU
- DB2DASD	SYSSMS	93/05/05 13:43:00	IMAGE
- DB2XLSC	KLTAYLO	12/05/16 08:28:00	LARGE
- DLBASE	KLTAYLO	11/01/07 15:03:00	DLIB
- DMBASE	KLTAYLO	11/01/12 07:01:00	DATAM
- HSMBASE	PLS	08/08/20 10:20:00	DLIB
- IMSBASE	PLS	10/07/14 11:18:00	IMS I
- NOVIO	SYSSMS	93/04/28 11:09:00	STORA
- OSBASE	PLS	99/06/09 14:37:00	OPERA
- SCTAPE	PLS	99/10/11 09:16:00	STORA

Storage Groups

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With the cursor on the home position (top left), press **PF8** to scroll down.

The remaining SMS construct information is shown.

The screenshot shows the 'SMS Configuration' window with the 'Storage Groups' tab selected. The window title is 'SMS Configuration' and the command is 'KS3SMSC'. The date and time are 12/11/2012 16:38:39. The status bar shows 'Auto Update : Off', 'Plex ID : DEMOPLX', and 'Sys ID : MVSE'. The main display is a table with the following columns: Storage Group Name, Storage Group Type, Last Update User ID, and +Last Up. The 'PRIMARY' group is highlighted with a cursor.

Storage Group Name	Storage Group Type	Last Update User ID	+Last Up
DB2LARGE	Pool	KLTAYLO	12/07/
DLGROUP	Pool	PLS	99/10/
DMGROUP	Pool	KLTAYLO	11/09/
DMGROUPD	Pool	KLTAYLO	11/01/
DMGROUPL	Pool	KLTAYLO	08/09/
DSNICPD	Copy Pool Backup	KLTAYLO	11/01/
DSNICPL	Copy Pool Backup	KLTAYLO	11/01/
DSNIGPD	Pool	KLTAYLO	11/01/
DSNIGPL	Pool	KLTAYLO	11/01/
HSMGROUP	Pool	KLTAYL2	08/09/
IMAGE	Object	ARMS01	97/09/
IMAGEBK	Object Backup	ARMS01	97/09/
IMSGROUP	Pool	KLTAYLO	11/01/
OSGROUP	Pool	PLS	00/08/
PRIMARY	Pool	PLS	99/06/
REDPOOL	Copy Pool Backup	KLTAYLO	10/12/
RELPOOL	Copy Pool Backup	KLTAYLO	08/09/
SGTAPE	Tape	PLS	08/08/

Place an – **S** - next to one of the listed **Storage Groups** and press **ENTER**. Details for this or for any of the previously SMS constructs are displayed.

The screenshot shows the 'SMS Storage Group Details' window for the 'PRIMARY' group. The window title is 'SMS Storage Group Details' and the command is 'KS3SSGD'. The date and time are 12/11/2012 16:38:55. The status bar shows 'Auto Update : Off', 'Plex ID : DEMOPLX', and 'Sys ID : MVSE'. The main display is divided into three sections: 'Storage Group Details Report' and 'Storage Group Status'.

Storage Group Type	Automatic Backup	Automatic Backup System/Group	Guaranteed Backup Frequency	+Automa Dump
Pool	Yes		No Limit	Yes

System ID	Storage Group Status
ESYSMVS	Enable
ESYSMVS2	Enable
ESYSMVS3	DisAll

Press **PF3** three times to return to Enterprise Summary screen, KOBSTART.

This concludes Lab 2, View Device and Storage Subsystem Data

Lab 3 View Dataset Attribute Details and Exceptions

The final lab, Lab 3, explores the various dataset exception reports that are available in the e3270 interface. These dataset details are typically collected once daily, during a period of low system activity.

Lab 3 will review several of the exception reports available in OMEGAMON XE for Storage that can be used for identifying inefficient space utilization. The main purpose of this exercise is to demonstrate the breadth and depth of the dataset exception reporting.



Security Information!

Prior to starting these exercises, if you have not already done so, please see the instructor for user ID/password and logon instructions.

3.1 View and Navigate Dataset Attribute System Summary

In this Lab, the participants will view dataset exception reporting provided by the OMEGAMON XE for Storage e3270 interface.

- ___1. Locate OMEGAMON XE for Storage on the Enterprise Summary (KOBSTART). Please see step 2 from Lab 1 for instructions for locating this section of the display.

ΔQMGr Name	Host Name	ΔQMGr Status	Channel Initiator	Command Server
— BWF1	MVSE	Stopped	Stopped	Stopped
— BWF0	MVSE	Stopped	Stopped	Stopped
— WMQT	MVSE	Running	Running	Waiting
— WMQB	MVSE	Running	Running	Waiting
— WMQA	MVSE	Running	Running	Waiting

ΔSYSplex Name	High Volume Response Time	High Volume Fragmentation Index	HSM Max Entry % Full	+HSM Max % Full
— DEMOPLX	6.1	888	n/a	n/a

__2. Zoom into the OMEGAMON for Storage product home screen and display available options

The screenshot shows the OMEGAMON Enterprise Summary screen. At the top, there is a menu bar with 'File', 'Edit', 'View', 'Tools', 'Options', and 'Help'. The date and time are '11/29/2012 10:10:14'. The command is 'KOBSTART'. Below the menu, there are three main sections:

- Monitored IMS Subsystems:** Shows 'No Data'.
- WebSphere MQ Queue Manager Status:** A table with 5 columns: ΔQMgr Name, Host Name, ΔQMgr Status, Channel Initiator, and Command Server. The rows are:

ΔQMgr Name	Host Name	ΔQMgr Status	Channel Initiator	Command Server
BWF1	MVSE	Stopped	Stopped	Stopped
BWF0	MVSE	Stopped	Stopped	Stopped
WMQT	MVSE	Running	Stopped	Waiting
WMQB	MVSE	Running	Running	Waiting
WMQA	MVSE	Running	Running	Waiting
- Storage SMSplex Overview:** A table with 5 columns: ΔSYSplex Name, High Volume Response Time, High Volume Fragmentation Index, HSM Max Entry % Full, and +HSM Max % Full. The row is:

ΔSYSplex Name	High Volume Response Time	High Volume Fragmentation Index	HSM Max Entry % Full	+HSM Max % Full
S DEMOPLX	7.1	831	n/a	n/a

Place an **S** next to the Sysplex name and press **ENTER**.

The SMSplex System Overview(KS3ZSUMM) is displayed.

The screenshot shows the OMEGAMON SMSplex System Overview screen. At the top, there is a menu bar with 'File', 'Edit', 'View', 'Tools', 'Options', and 'Help'. The date and time are '12/12/2012 14:20:33'. The command is 'KS3ZSUMM'. Below the menu, there is one main section:

- SMSplex System Overview:** A table with 5 columns: ΔSMF ID, Storage Grp Low Free Space %, Storage Grp Low Free Space GB, High Volume Response Time, and +High Volume Fragmentation. The row is:

ΔSMF ID	Storage Grp Low Free Space %	Storage Grp Low Free Space GB	High Volume Response Time	+High Volume Fragmentation
/ MVSE	13.8	1.4	8.7	888

Place a slash (/) next to the **SMF ID** name and press **ENTER**.

The menu of available options is displayed.

```

File Edit View Tools Navigate Help 12/18/2013 15:25:16
Auto Update : Off
Command ==> MOPLX
KS3ZSUMM SE
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
Columns
SMF ID
MVSE
MOPLX SE
1
lume tatio
745

```

3. Review Dataset Attributes Summary

This is the primary menu for OMEGAMON XE for Storage. Several of these options have been reviewed in the prior labs. This lab will explore the Dataset Attribute reports.

```

File Edit View Tools Navigate Help 12/19/2013 14:15:28
Auto Update : Off
Command ==> MOPLX
KS3ZSUMM SE
Options Menu
Select an option and then press ENTER
10 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
Columns
SMF ID
MVSE
MOPLX SE
1
lume tatio
726

```

option – 10 - and press **ENTER**.

Select

The Dataset Attributes System Summary is shown. This initial screen displays extreme dataset characteristics, like largest and oldest datasets. More data is available to the right.

```

File Edit View Tools Options Help 12/12/2012 14:39:13
Auto Update : Off
Command ==>
KS3DASS Dataset Attributes System Summary Plex ID : DEMOPLX
Sys ID : MVSE
    
```

Dataset Attribute Summary		
Columns <u>1</u> to <u>3</u> of <u>13</u>	← → ↑ ↓	Rows 1 to 1 of 1
Status Message	Collection Start Time	+Collection End Time
_ Collection completed	12/12/12 03:53:42	12/12/12 04:

Dataset Attribute Dataset Extremes		
Columns <u>1</u> to <u>3</u> of <u>13</u>	← → ↑ ↓	Rows 1 to 1 of 1
Largest Dataset Name	Largest Dataset Volume	+Largest D Allocated
_ TPCDS.TEMP.LOAD.UNLOAD.TSDSSTS.PTALL.NEW	DMEC13	1885275

With the cursor somewhere in this Dataset Extremes window, press **PF11** to scroll this window to the right.

More data is available to the right. While this lab will not show these subsequent screens, feel free to explore this additional information by scrolling right.

```

File Edit View Tools Options Help 12/12/2012 14:44:24
Auto Update : Off
Command ==>
KS3DASS Dataset Attributes System Summary Plex ID : DEMOPLX
Sys ID : MVSE
    
```

Dataset Attribute Summary		
Columns <u>1</u> to <u>3</u> of <u>13</u>	← → ↑ ↓	Rows 1 to 1 of 1
Status Message	Collection Start Time	+Collection End Time
_ Collection completed	12/12/12 03:53:42	12/12/12 04:

Dataset Attribute Dataset Extremes		
Columns <u>3</u> to <u>5</u> of <u>13</u>	← → ↑ ↓	Rows 1 to 1 of 1
Largest Dataset Allocated Tracks	Largest Unused Space Dataset Name	+Largest U Dataset V
_ 1885275	CICSTSS.CSG.CUST.VSAM.DATA	DMEU10

After reviewing these Dataset extremes, with the cursor still in this window, press **PF10** the appropriate number of times to scroll back to the left in order to return to Column 1 for this window.

__4. Review Dataset Space exception reports.

Dataset Attribute Summary		
Status Message	Collection Start Time	+Collection End Time
_ Collection completed	12/12/12 03:53:42	12/12/12 04:

Dataset Attribute Dataset Extremes		
Largest Dataset Name	Largest Dataset Volume	+Largest D Allocated
/ IPCDS . TEMP . LOAD . UNLOAD . TSDSSTS . PTALL . NEW	DMEC13	1885275

After scrolling left until column 1 is displayed, place a slash (/) next to the largest dataset name and press **ENTER**.

Options Menu		
Largest Dataset Name	Largest Dataset Volume	+Largest D Allocated
_ TPCDS . TEMP . LOAD . UNLOAD . TSDSSTS . PTALL . NEW	DMEC13	1885275

This lab will explore each of these dataset exception reports in sequence. After each report is reviewed, you will be directed to return to this screen

Select option – **1** - and press **ENTER**.

The Dataset Space Summary provides several 'top 10' reports at the dataset level. This initial display shows the largest allocated files and the dataset with the most extents.

More data is available by scrolling down.

The screenshot shows the 'Dataset Space Summary' interface with three reports. The first report, 'Top Datasets by Allocated Space', lists datasets with their allocated tracks. The second report, 'Top Datasets by Extents', lists datasets with their number of extents and allocated tracks. The third report, 'Top Datasets by Unused Space', is partially visible at the bottom.

Top Datasets by Allocated Space			
Dataset Name	Volser	Allocated Tracks	+Used Track
TPCDS.TEMP.LOAD.UNLOAD.TSDSSTS.PTALL.NEW	DMEC13	1885275	
DLIB.SERVICE.HFS	TSTD14	450000	
TPCDS.SYSREC.UNLOAD.TSDSSTS	DMEC05	282825	
JAZZV3.HFS	DMED36	136110	
PAGE.ESYSMVS.LOCAL4.DATA	DMEPG4	135000	
PAGE.ESYSMVS.LOCAL3.DATA	DMEPG3	135000	
PAGE.ESYSMVS.LOCAL2.DATA	DMEPG2	135000	
PAGE.ESYSMVS.LOCAL5.DATA	DMEPG5	135000	
BACKUP.ZOS13.DLIBS	TSTD18	90600	
DSNTCAT.DSNDBD.QAIRS.LXTIBMQR.I0001.A001	DMEC02	87360	

Top Datasets by Extents			
Dataset Name	Volser	Extents	+Allocat Tracks
DSNSCAT.DSNDBD.DSNDB07.DSN4K03.I0001.A002	DMED44	253	22545
DSNSCAT.DSNDBD.DSNDB07.DSN32K01.I0001.A005	DMED21	252	37725
DSNSCAT.DSNDBD.DSNDB07.DSN4K02.I0001.A002	DMED15	251	20535
DSNSCAT.DSNDBD.DSNDB07.DSN32K02.I0001.A006	DMED17	250	19620
DSNSCAT.DSNDBD.DSNDB07.DSN4K01.I0001.A002	DMED17	245	16215
DSNSCAT.DSNDBD.DSNDB07.DSN32K03.I0001.A006	DMED15	227	25365
DSNSCAT.DSNDBD.DSNDB07.DSN32K00.I0001.A006	DMED44	225	30750
DSNCCAT.DSNDBD.DBA105B.GLWSPJA.I0001.A001	DMED03	136	849
DDS3220.HFS	DMEU29	123	126
WSPOT07.HFS	DMEU14	123	1845

Top Datasets by Unused Space

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With the cursor in the home (top left) position, Press **PF8** to scroll down.

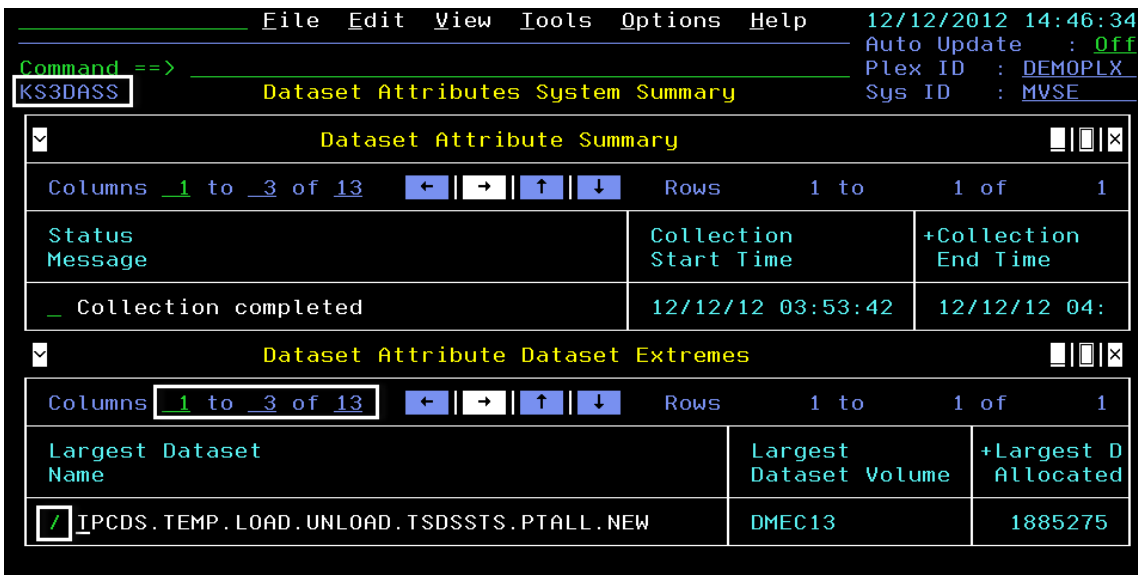
This 2nd page (if using the default screen size) of the Dataset Space Summary shows the dataset with the most unused space. Reports are also provided for VSAM files with the most **CA** and **CI** splits.

While this lab does not explore the 3rd page of this report, feel free to do so by scrolling down. Also feel free to select an individual dataset to view additional datasets details.

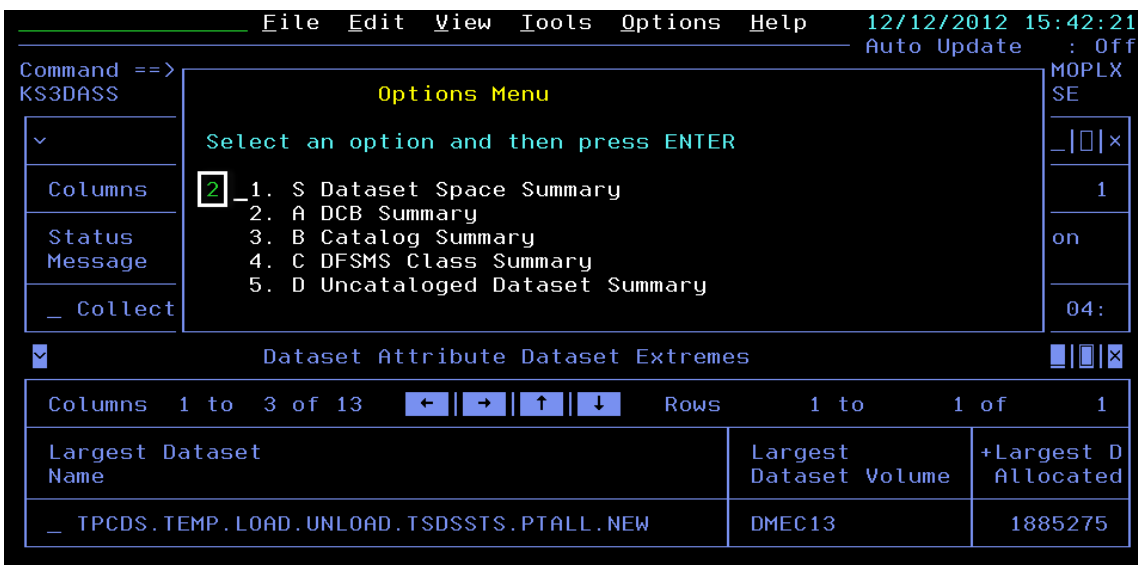
File Edit View Tools Options Help				12/12/2012 15:24:48
Command ==>		Auto Update : Off		Plex ID : DEMOPLX
KS3DATSS		Dataset Space Summary		Sys ID : MVSE
<div style="border: 1px solid black; padding: 2px;"> Top Datasets by Unused Space </div>				
Columns 2 to 4 of 8		Rows 1 to 10 of 20		
Dataset Name	Volser	Unused Tracks	+Allocate Tracks	
— CICSTSS.CSG.CUST.VSAM.DATA	DMEU10	72690	75015	
— SYS1.ESYSMVS.HASPACE	DMESP2	49500	49500	
— SYS1.ESYSMVS.HASPACE	DMESP1	49500	49500	
— TPCDS.TEMP.LOAD.UNLOAD.TSDSSTS.PTALL.NEW	DMEC13	46973	1885275	
— DSNTCAT.DSNDBD.IDAADEMO.IDAATSSS.I0001.A012	DMEC09	41669	41670	
— DSNTCAT.DSNDBD.IDAADEMO.IDAATSSS.I0001.A013	DMEC09	41669	41670	
— DSNTCAT.DSNDBD.IDAADEMO.IDAATSSS.I0001.A011	DMEC01	41669	41670	
— DSNTCAT.DSNDBD.IDAADEMO.IDAATSSS.I0001.A015	DMEC01	41669	41670	
— DSNTCAT.DSNDBD.IDAADEMO.IDAATSSS.I0001.A003	DMEC01	41669	41670	
— DSNTCAT.DSNDBD.IDAADEMO.IDAATSSS.I0001.A004	DMEC01	41669	41670	
<div style="border: 1px solid black; padding: 2px;"> Top Datasets by CA Splits </div>				
Columns 2 to 4 of 10		Rows 1 to 10 of 20		
Dataset Name	Volser	CA Splits	CI Splits	
— DDS0001.PATMASTR.DAT	DMEU15	83	0	
— CICSTSS.CSG.CUST.VSAM.DATA	DMEU10	83	80389	
— DDS0017.PATMASTR.TEST.DAT	DMEU19	83	0	
— CANDLET.XEGA.ESYSMVS.IMSA.RKEIEDS.DATA	DMEP14	76	3151	
— DDS1604.MNA.ADTL.IMSDX.DATA	DMEU17	68	486	
— CANDLET.XEGA.ESYSMVS2.RKDSCATC.DATA	DMEP20	56	5713	
— CANDLET.XEGA.ESYSMVS.IMSC.RKEIEDS.DATA	DMEP40	56	2836	
— CANDLET.XEGA.ESYSMVS.RKDSCATC.DATA	DMEP27	52	12740	
— DSNBCAT.BSDS01.DATA	DMEP02	51	0	
— DSNTCAT1.USER.CATALOG	DMED35	50	1480	
<div style="border: 1px solid black; padding: 2px;"> Top Datasets by CI Splits </div>				
Wednesday December 12 2012				ΔMOREV

Press **PF3** to return to Dataset Attributes System Summary (KS3DASS).

__5. Display dataset DCB distribution



On the KS3DASS screen, place a slash (/) next to the largest dataset name and press **ENTER**.



Select Option – 2 - and press **ENTER**.

The 1st page of the DCB Summary provides views by dataset organization and block size. These reports could help identify space not being utilized effectively. In the example below 9% of the allocated space is being used by datasets with a 0 block size and could warrant further investigation.

More data is available by scrolling down.

File Edit View Tools Options Help 12/12/2012 16:20:37						
Command ==> KS3DCBS DCB Summary Auto Update : Off Plex ID : DEMOPLX Sys ID : MVSE						
DSORG Summary Report						
Columns 2 to 4 of 7 Rows 1 to 10 of 17						
DSORG	Number of Datasets	% of Total Datasets	% of Allocated Space			
Unknown	12	0.0	0.0			
Hierarchical File	2674	1.4	7.8			
PDS Extended	4758	2.5	3.1			
Extended Sequential	47265	24.5	23.4			
Extended Seq Unmovable	0	0.0	0.0			
VSAM	76670	39.8	27.6			
VSAM Unmovable	0	0.0	0.0			
ISAM	0	0.0	0.0			
ISAM Unmovable	0	0.0	0.0			
Physical Sequential	33967	17.6	30.5			
Blocksize Distribution Report						
Columns 2 to 6 of 8 Rows 1 to 9 of 9						
Low Blocksize	High Blocksize	Number of Datasets	% of Total Datasets	% of Allocated Space		+Allo Trac
0	0	3972	2.1	9.0		
1	127	543	0.3	0.1		
128	255	947	0.5	0.2		
256	511	258	0.1	0.0		
512	1023	1589	0.8	0.1		
1024	4095	4027	2.1	1.0		
4096	8191	136455	70.8	54.4		
8192	16383	3132	1.6	1.3		
16384	65535	41883	21.7	33.9		
Creation Date Distribution Report						
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Press **PF8** to scroll down.

The 2nd page (if using the default screen size) of the DCB Summary provides views by dataset age and reference date. Note in the example below that there are several thousand datasets that have not been referenced in a year or more. These datasets represent nearly 60% of the total datasets and over 25% of the total allocated space. These may be candidates for migration.

File Edit View Tools Options Help 12/12/2012 16:27:12
 Auto Update : Off
 Command ==> KS3DCBS DCB Summary Plex ID : DEMOPLX
 Sys ID : MVSE

Creation Date Distribution Report

Columns 2 to 5 of 8 Rows 1 to 8 of 8

Low Days Since Creation	High Days Since Creation	Number of Datasets	% of Total Datasets	+% of Allocat Space
0	1	246	0.1	0.1
2	7	5859	3.0	2.0
8	31	5645	2.9	2.4
32	90	5204	2.7	18.9
91	180	10718	5.6	12.0
181	365	37593	19.5	20.6
366	730	39187	20.3	17.4
731	+	88354	45.8	26.5

Reference Date Distribution Report

Columns 2 to 5 of 8 Rows 1 to 8 of 8

Low Days Since Reference	High Days Since Reference	Number of Datasets	% of Total Datasets	+% of Total Allocated
0	1	1098	0.6	2.3
2	7	9286	4.8	18.3
8	30	7117	3.7	4.4
31	90	7412	3.8	21.3
91	180	12732	6.6	10.8
181	365	40873	21.2	15.6
366	730	43251	22.4	14.4
731	+	71037	36.8	12.8

Press **PF3** to return to Dataset Attributes System Summary (KS3DASS).

__6. Display Catalog summary information

File Edit View Tools Options Help 12/12/2012 14:46:34
 Auto Update : Off
 Plex ID : DEMOPLX
 Sys ID : MVSE

Command ==>
 KS3DASS Dataset Attributes System Summary

Dataset Attribute Summary

Columns 1 to 3 of 13 Rows 1 to 1 of 1

Status Message	Collection Start Time	+Collection End Time
_ Collection completed	12/12/12 03:53:42	12/12/12 04:

Dataset Attribute Dataset Extremes

Columns 1 to 3 of 13 Rows 1 to 1 of 1

Largest Dataset Name	Largest Dataset Volume	+Largest D Allocated
/ IPCDS . TEMP . LOAD . UNLOAD . TSDSSTS . PTALL . NEW	DMEC13	1885275

On the KS3DASS screen, place a slash (/) next to the largest dataset name and press **ENTER**.

File Edit View Tools Options Help 12/12/2012 16:34:43
 Auto Update : Off

Command ==>
 KS3DASS

Options Menu

Select an option and then press ENTER

- 3 1. S Dataset Space Summary
2. A DCB Summary
3. B Catalog Summary
4. C DFSMS Class Summary
5. D Uncataloged Dataset Summary

Dataset Attribute Dataset Extremes

Columns 1 to 3 of 13 Rows 1 to 1 of 1

Largest Dataset Name	Largest Dataset Volume	+Largest D Allocated
_ TPCDS . TEMP . LOAD . UNLOAD . TSDSSTS . PTALL . NEW	DMEC13	1885275

Select Option -3- and press **ENTER**.

The **Catalog Summary** shows the number of datasets defined to each catalog. In general, it is a best practice to spread catalog entries (high level qualifiers) across several catalogs, in order to minimize the impact of a catalog failure.

While this Catalog Summary Report below shows a reasonable distribution of catalog entries across several catalogs, there appears to be a large number of uncataloged datasets, utilizing a fairly significant amount of space. This could warrant further investigation. While not shown in this lab, a list of datasets within each catalog can be obtained by selecting the respective catalog.

Catalog Name	Total Datasets	Allocated Tracks	+Use Tra
— CATALOG.DATABASE.UCAT	43174	4582172	
— CATALOG.DLIBS.UCAT	1212	513730	
— CATALOG.IMSHOL.UCAT	519	23062	
— CATALOG.IMSTGT.UCAT	758	47160	
— CATALOG.MASTER.MCAT	2587	4760582	
— CATALOG.PRODUCTS.UCAT	52072	5912648	
— CATALOG.USERS.UCAT	48308	2387221	
— CATALOG.USERS2.UCAT	7878	1559268	
— DB1RDCA1.USER.CATALOG	1174	46816	
— DB1RLCA1.USER.CATALOG	11	4499	
— DSNDCAT1.USER.CATALOG	563	34011	
— DSNIDCA1.USER.CATALOG	780	124090	
— DSNILCA1.USER.CATALOG	19	7739	
— DSNTCAT1.USER.CATALOG	24856	3578211	
— SYS1.VOLCAT.VGENERAL	1	45	
— SYS1.VOLCAT.V1	1	45	
UNCATALOGED	8893	2261465	

Press **PF3** to return to Dataset Attributes System Summary (KS3DASS).

__7. Display DFSMS summary information

File Edit View Tools Options Help 12/12/2012 14:46:34
 Auto Update : Off
 Plex ID : DEMOPLX
 Sys ID : MVSE

Command ==>
 KS3DASS Dataset Attributes System Summary

Dataset Attribute Summary

Columns 1 to 3 of 13 Rows 1 to 1 of 1

Status Message	Collection Start Time	+Collection End Time
_ Collection completed	12/12/12 03:53:42	12/12/12 04:

Dataset Attribute Dataset Extremes

Columns 1 to 3 of 13 Rows 1 to 1 of 1

Largest Dataset Name	Largest Dataset Volume	+Largest D Allocated
/ IPCDS.TEMP.LOAD.UNLOAD.TSDSSTS.PTALL.NEW	DMEC13	1885275

On the KS3DASS screen, place a slash (/) next to the largest dataset name and press **ENTER**.

File Edit View Tools Options Help 12/12/2012 16:59:49
 Auto Update : Off

Command ==>
 KS3DASS

Options Menu

Select an option and then press ENTER

- 4 1. S Dataset Space Summary
2. A DCB Summary
3. B Catalog Summary
4. C DFSMS Class Summary
5. D Uncataloged Dataset Summary

Dataset Attribute Dataset Extremes

Columns 1 to 3 of 13 Rows 1 to 1 of 1

Largest Dataset Name	Largest Dataset Volume	+Largest D Allocated
_ TPCDS.TEMP.LOAD.UNLOAD.TSDSSTS.PTALL.NEW	DMEC13	1885275

Select Option -4- and press **ENTER**.

The DFSMS Class Summary shows the number of datasets defined to each SMS construct.

Notice that 54% of the datasets, representing 34% of the allocated space, are defined to the Storage Group DMGROUP. Also notice that 75% of the datasets are not assigned to a data class. These may not be problems, but it is still valuable information.

While not shown in this lab, a list of datasets within each construct can be obtained by selecting the respective item.

Additional SMS class information can be found on the next page.

The screenshot shows the DFSMS Class Summary interface. At the top, it displays the command 'KS3DCS' and the title 'DFSMS Class Summary'. The date and time are '12/12/2012 17:00:50'. The system ID is 'MVSE'. The interface is divided into three sections: Storage Groups, Data Classes, and Management Classes. The Storage Groups section shows a table with columns for SMS Class, Number of Datasets, % of Total Datasets, and % of Total Allocated. The Data Classes section shows a similar table. The Management Classes section is currently empty.

Storage Groups	Number of Datasets	% of Total Datasets	% of Total Allocated
DB2LARGE	4210	2.2	20.5
DLGROUP	1221	0.6	1.7
DMGROUP	104364	54.1	34.1
DMGROUPD	1177	0.6	0.2
DMGROUPL	14	0.0	0.0
DSNICPD	343	0.2	0.1
DSNICPL	351	0.2	0.1
DSNIGPD	783	0.4	0.5
DSNIGPL	22	0.0	0.0
HSMGROUP	1	0.0	0.0

Data Classes	Number of Datasets	% of Total Datasets	% of Total Allocated
DB2EDC	47259	24.5	22.2
DCHSM	0	0.0	0.0
DCMOD9	0	0.0	0.0
DCTAPE	0	0.0	0.0
DCTAPEJ	0	0.0	0.0
DCTAPEJA	0	0.0	0.0
DCTAPEJB	0	0.0	0.0
DCVSAM33	473	0.2	0.1
SEQCOMP	7	0.0	1.3
n/a	144991	75.2	76.3

Management Classes

Wednesday December 12 2012

With the cursor in the home position (top left) press **PF8** to scroll down.

The 2nd page (if using the default screen size) of the SMS Class Summary provides dataset statistics for additional DFSMS constructs.

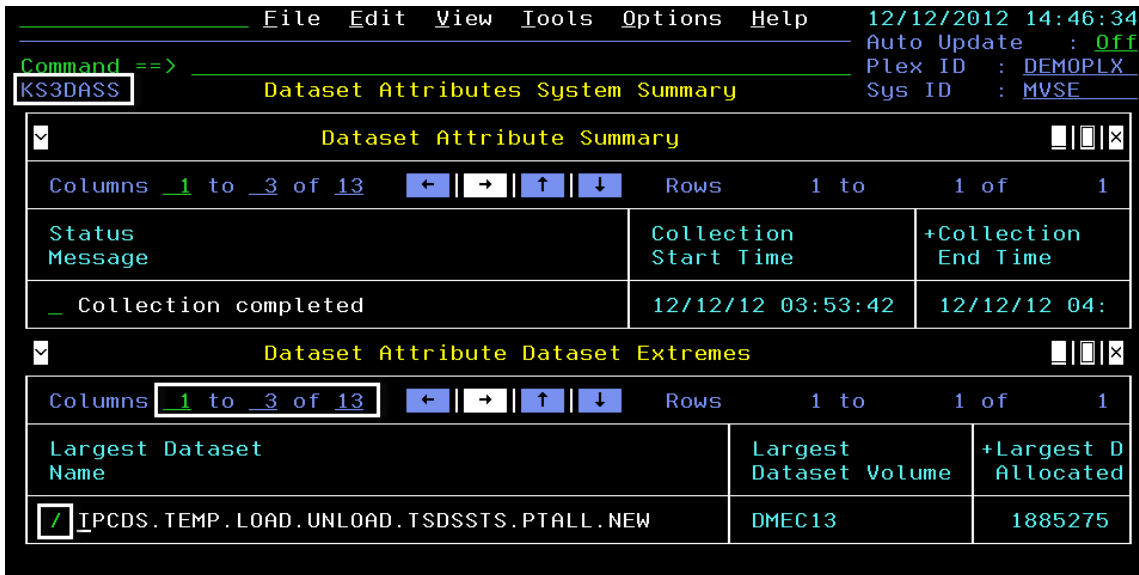
Management Classes			
Columns <u>2</u> to <u>4</u> of <u>7</u> Rows <u>1</u> to <u>10</u> of <u>12</u>			
◊SMS Class	Number of Datasets	% of Total Datasets	+% of Total Allocated
- DLMGMT	1223	0.6	2.0
- DMMGMT	110342	57.2	45.8
- IMSMGMT	1031	0.5	0.2
- MAGONLY	0	0.0	0.0
- MCTAPE	0	0.0	0.0
- NOMIG	10	0.0	0.0
- OSMGMT	320	0.2	0.4
- STANDARD	17547	9.1	26.6
- USRMGMT	52303	27.1	12.4
- WRKMGMT	0	0.0	0.0

Storage Classes			
Columns <u>2</u> to <u>4</u> of <u>7</u> Rows <u>1</u> to <u>14</u> of <u>14</u>			
◊SMS Class	Number of Datasets	% of Total Datasets	+% of Total Allocated
- BASE	17515	9.1	17.5
- DB2DASD	0	0.0	0.0
- DB2XLSC	4184	2.2	20.5
- DLBASE	1203	0.6	1.7
- DMBASE	106234	55.1	34.8
- HSMBASE	0	0.0	0.0
- IMSBASE	1031	0.5	0.2
- NOVIO	0	0.0	0.0
- OSBASE	319	0.2	0.4
- SCTAPE	0	0.0	0.0
- USRBASE	52290	27.1	12.4
- WRKBASE	0	0.0	0.0

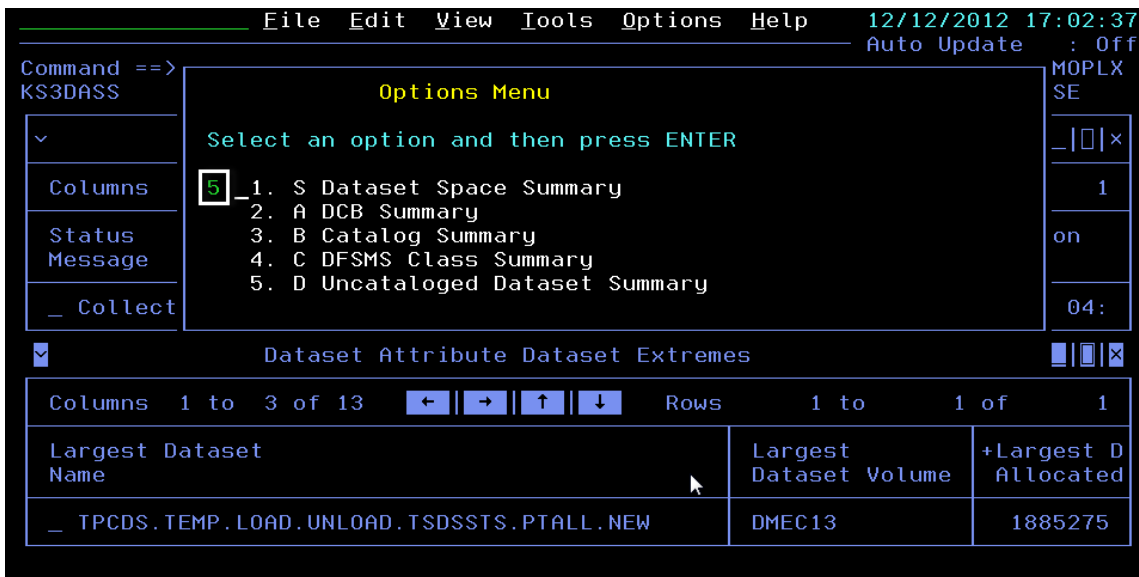
Wednesday December 12 2012 ΔMOREV

Press **PF3** to return to Dataset Attributes System Summary (KS3DASS).

__8. Display Uncataloged Dataset Information



On the KS3DASS screen, place a slash (/) next to the largest dataset name and press **ENTER**.



Select Option – **5** - and press **ENTER**.

The Uncataloged Dataset Summary Report shows the number of uncataloged datasets on each volume. Large uncataloged datasets may be wasting space and should be investigated. While not shown in this lab, a list of datasets on each volume can be obtained by selecting the respective volume.

Volser	Total Datasets	Allocated Tracks	Used Tracks	Unused Tracks
— DMEI03	313	18634	4855	13779
— DMEI04	346	19021	4999	14022
— DMEI06	354	19578	5099	14479
— DMEI07	346	19021	4999	14022
— DMEI08	371	19774	5080	14694
— DMEH02	310	32327	32327	0
— DMEI02	367	19234	5097	14137
— DMEI13	349	19531	4991	14540
— DMEI14	261	11451	4661	6790
— DMEI15	357	19345	5026	14319
— DMEI01	2	2	2	0
— DMEI10	1	15	15	0
— DMEI11	1	15	15	0
— DMEI12	4	272	272	0
— DMEI09	10	334	334	0
— DMEI10	1	15	15	0
— DMEI11	1	15	15	0
— DMEI12	4	272	272	0
— DMEI13	349	19531	4991	14540
— DMEI14	261	11451	4661	6790
— DMEI15	357	19345	5026	14319
— DMED08	2	915	915	0
— DMED10	2	2	2	0
— DMED12	1	15	15	0
— DMED31	1	5	5	0
— DMED35	1	15	15	0
— DMEI01	2	2	2	0
— DMEI02	367	19234	5097	14137
— DMEI03	313	18634	4855	13779
— DMEI04	346	19021	4999	14022
— DMEI06	354	19578	5099	14479
— DMEI07	346	19021	4999	14022
— DMEI08	371	19774	5080	14694
— DMEI09	10	334	334	0
— DMEI10	1	15	15	0
— DMEI11	1	15	15	0
— DMEI12	4	272	272	0
— DMEI13	349	19531	4991	14540
— DMEI14	261	11451	4661	6790
— DMEI15	357	19345	5026	14319
— DMEP01	28	940	73	867
— DMEP02	9	960	2	958
— DMEP03	10	976	13	963
— DMEP04	25	2404	18	2386
— DMEP05	9	998	8	990
— DMEP06	17	2045	8	2037
— DMEP07	3	405	4	401
— DMECAT	4	6581	6552	29
— DMEA01	1	1	1	0

Press **PF3** three times to return to the Enterprise Summary (KOBSTART).

Congratulations!!! This concludes Lab 3, View Dataset Attribute Details and Exceptions.

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Appendix C. Documentation Revision History

Date of Revision	Number	Completed by	Revision Log
01/16/2013	V1	David Mazza	Created and authored OMEGAMON MFN Lab Workbook
02/06/2013	V2	David Mazza	Updated with V5.1 PTFs
03/11/2013	V3	David Mazza	Updated
03/13/2013	V3.1	Lih Wang	Minor edits, packaged OMEGAMON POT 2 nd Edition for publishing on iQWorks, total 12 workbooks for 8 products.
01/03/2014	v4	David Mazza	Updated with V5.2 corresponding screen shots
01/06/2014	V4.1	Lih Wang	Minor edits, packaged OMEGAMON POT 3 rd Edition for publishing on iQWorks
9/11/2014	V6.0	Ed Woods	Updated for V5.3 to include examples of history data.
9/19/2014	V530	Lih Wang	Edits for Enterprise2014 conference lab session. and renamed the file with matching product release number.



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