



Hands-On Labs

Resource Management with z/OSMF

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Introduction

The IBM z/OS Management Facility (z/OSMF) provides system management solutions for z/OS in an app-oriented, Web browser-based user interface with integrated user assistance.

The Resource Monitoring app introduced with z/OSMF V1R12 allows you to monitor the performance and resource consumption of the z/OS, AIX, and Linux images in your installation by means of a state-of-the-art graphical front-end.

In this lab you will learn how to use the z/OSMF Resource Monitoring app efficiently:

- Monitor the system performance enterprise-wide from one single point of control
- Get started immediately and exploit the pre-defined Dashboards
- Add your own Dashboards with your favourite metrics for continuous monitoring
- Get the best out of the advanced filtering capabilities
- Exchange your user defined dashboards with other power users

Finally, the lab will also cover two features: Navigate back and forth through historical data and export the data from your Dashboards to a spreadsheet compliant format.

Lesson 1 – Logon to z/OSMF

In this step, we will now go into z/OSMF to use the Resource Monitoring function. For this lab, we are using a z/OSMF V2.5 system.

- Go to <https://share.centers.ihost.com/zosmf/> on the Firefox or IE web browser. (If you want to follow this lab on your own system, that is fine. Just note some of the samples we use you will need to supply yourself, using the Appendix to find those samples.).
- Using the userid you were given (SHARAnn, SHARBnn, or SHARCnn) and the password, logon to z/OSMF. The userid you were given is a regular z/OS userid on this system and has been given access to z/OSMF. There is *no* z/OSMF code on this workstation, all executables (except the web browser) are on the z/OS system.
- Click on “LOG IN”.

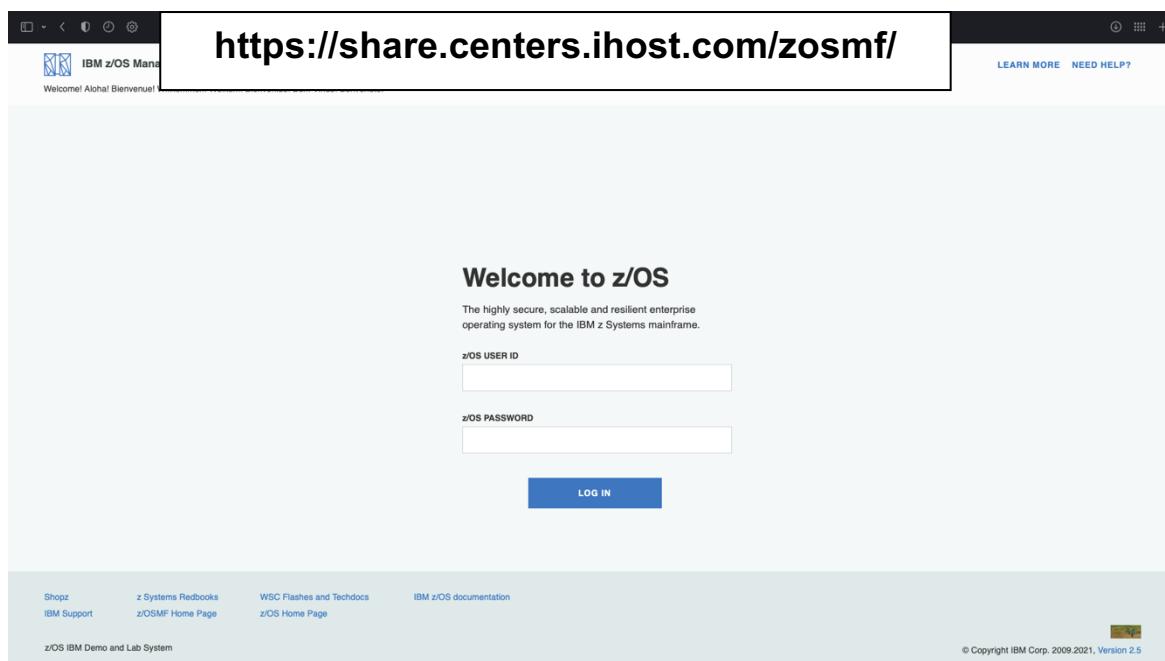


Figure 1: z/OSMF Welcome Screen

Lesson 2 – The System Status App

You can double click the *System Status* icon. This app provides a quick health check of all your system complexes. For all Sysplexes where z/OSMF was able to connect, a green–yellow–red indication is displayed – based on the WLM Performance Index.

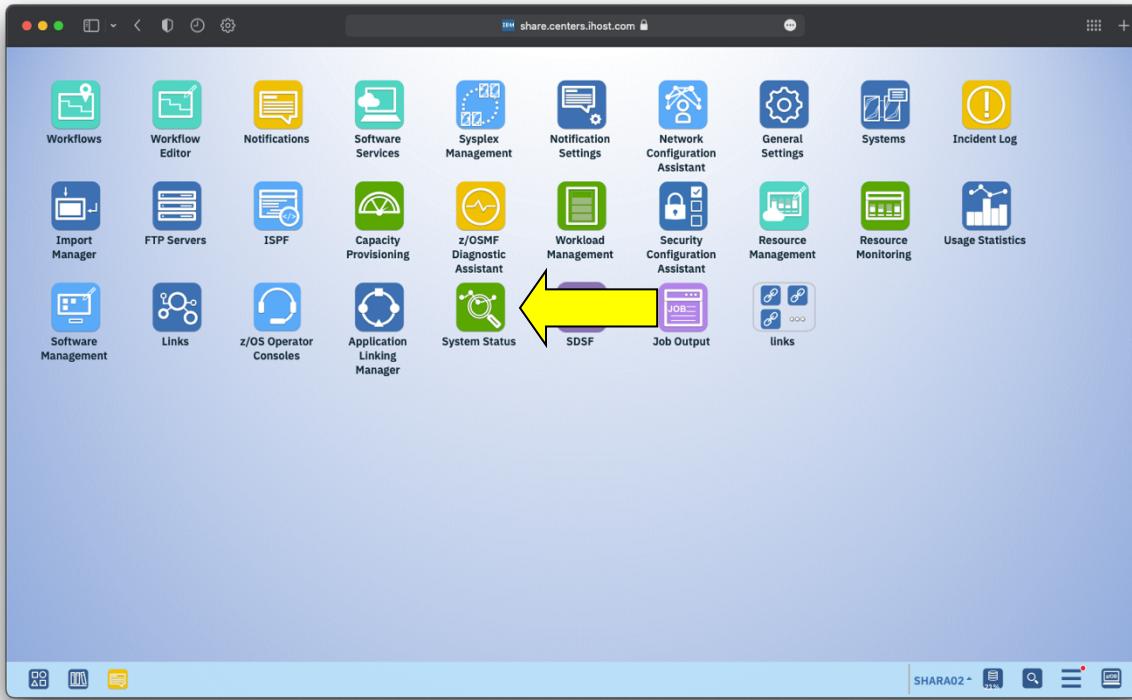


Figure 2: z/OSMF Apps

By default, a connection to the so called *LOCALPLEX* (i.e., the Sysplex where z/OSMF itself is running) is already predefined. The application can detect the location of the RMF Distributed Data Server (aka DDS) automatically and retrieve all required metrics by means of corresponding DDS performance data requests.

Within the *System Status* app, you can now define additional z/OS, AIX, and Linux images to be monitored with the *Resource Monitoring* app.

The screenshot shows a web-based application window titled "System Status" from the URL "share.centers.ihost.com". The main content area displays a table of system resources:

Resource Filter	System Type	Connectivity Filter	Performance Index Status	Related Service Definition Filter	Active WLM Policy	Activity Filter
LOCALPLEX	z/OS	Connected	PI <= 1 for all periods	S2WLM	S2WLM	
SHARPLEX	z/OS	Connected	PI <= 1 for all periods	S2WLM	S2WLM	
SPLEXA09	z/OS	Connected	PI <= 1 for all periods	S2WLM	S2WLM	
SPLEXA10	z/OS	Connected	PI <= 1 for all periods	S2WLM	S2WLM	
SPLEXC14	z/OS	Connected	PI <= 1 for all periods	S2WLM	S2WLM	

Total: 5 Selected: 0

Refresh Last refresh: Feb 25, 2022, 4:20:00 PM local time (Feb 25, 2022, 10:20:00 PM GMT)

Automatic refresh

On the right side of the interface, there are four links with icons:

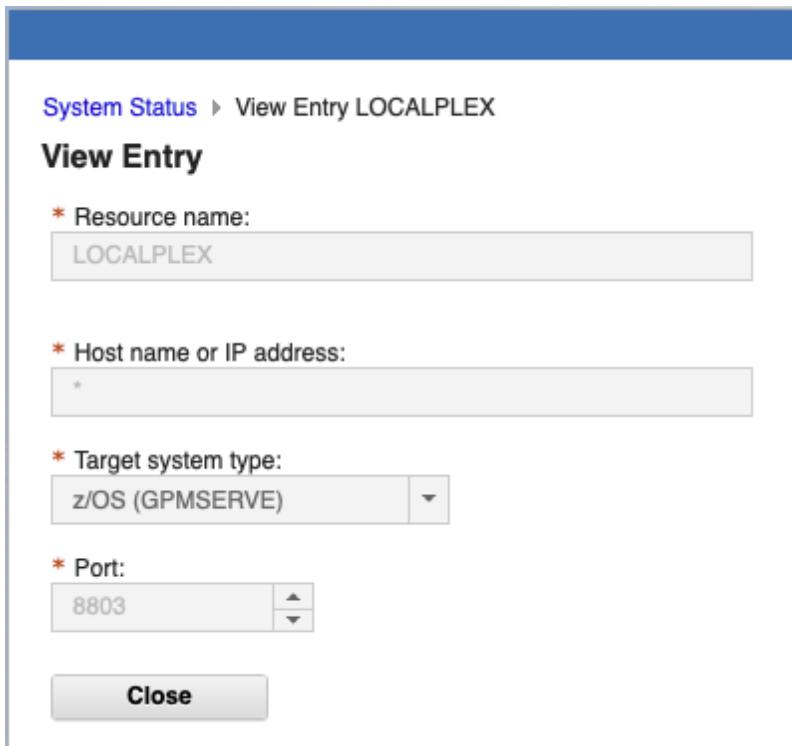
- Systems (document icon)
- Incident Log (yellow exclamation mark icon)
- Resource Monitoring (green bar chart icon)
- Usage Statistics (blue bar chart icon)

The bottom of the window shows a toolbar with icons for back, forward, search, and other navigation functions, along with the text "SHARA02".

Figure 3: The System Status App

Exercise:

- Click on the LOCALPLEX hyperlink and examine the attributes
 (Alternatively you can choose *Actions – Modify Entry*)
 Since the application connects automatically to the LOCALPLEX no IP address (*) or port number needs to be specified



System Status ▶ View Entry LOCALPLEX

View Entry

* Resource name:
LOCALPLEX

* Host name or IP address:
*

* Target system type:
z/OS (GPMSEERVE)

* Port:
8803

Close

Figure 4: Attributes of the LOCALPLEX

- Define a new z/OS Sysplex. Click on *Actions – Add Entry* and specify the following:

Resource name:	SHARPLEX
Host name:	share.centers.ihost.com
Target system type:	z/OS (GPMSEERVE)
Port:	8803

Then confirm with OK

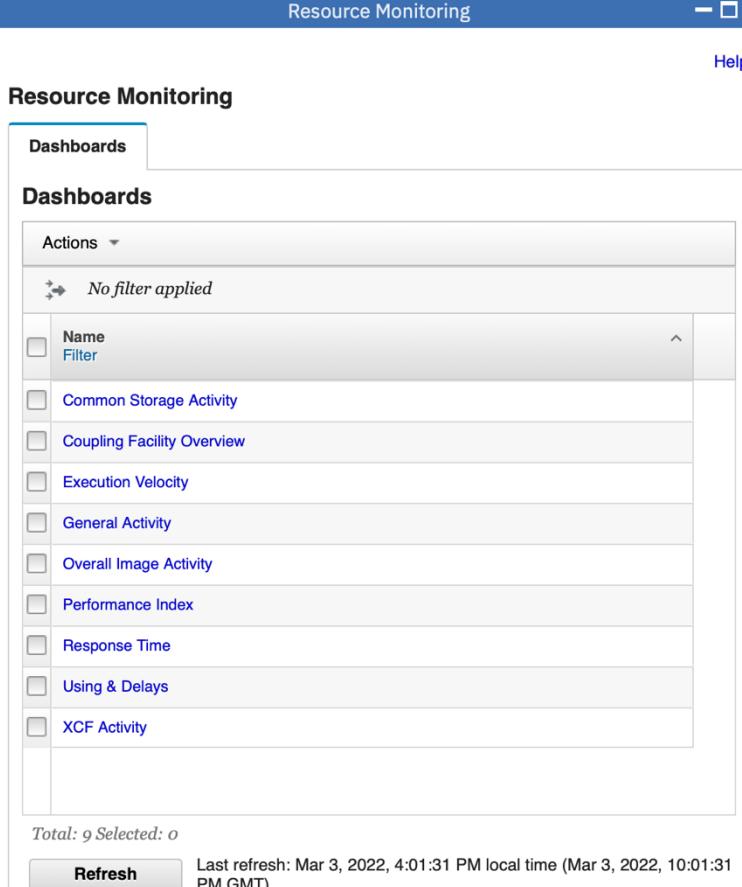
Congratulations. You have defined your first remote z/OS Sysplex successfully!
 Your *System Status* app should now look like that shown in Figure 3 on page 6.

At this point you can define the connections to all Sysplexes within your enterprise.
 Subsequently you can monitor your enterprise-wide system performance from one single point of control.

Lesson 3 – The Dashboard Concept

The z/OSMF *Resource Monitoring* app provides a set of preconfigured Dashboards for all performance relevant areas.

Once you double click the *Resource Monitoring* icon, the *Dashboards* tab is opened and shows you the list of available Dashboards.



The screenshot shows the 'Resource Monitoring' application interface with the 'Dashboards' tab selected. The main area displays a list of nine preconfigured dashboards:

- No filter applied
- Name Filter
- Common Storage Activity
- Coupling Facility Overview
- Execution Velocity
- General Activity
- Overall Image Activity
- Performance Index
- Response Time
- Using & Delays
- XCF Activity

Total: 9 Selected: 0

Last refresh: Mar 3, 2022, 4:01:31 PM local time (Mar 3, 2022, 10:01:31 PM GMT)

Figure 5: Resource Monitoring – Preconfigured Dashboards

Basically, a Dashboard is a view containing a set of various performance metrics.

When a Dashboard is started, it begins to retrieve the online performance data from the DDS periodically. By default, the most current snapshot is displayed.

By means of a slider you can navigate through the data collected since the start of the current session.

A Dashboard can contain one or more Metric Groups. And in turn, a Metric Group is a container for one or more Metrics. In other words, we are dealing with a three-level hierarchy:

- Dashboard
- Metric Group
- Metric

Now let's take a closer look at closer look at the predefined Dashboards.

Exercise:

- Open the *Resource Monitoring* task by double clicking its icon
- From the Dashboard list select the *Common Storage Activity* hyperlink (alternatively, you can check the Dashboard and then click *Actions – Open*)
- When the *Select Sysplex* dialog appears, choose SHARPLEX from the drop-down box and confirm with OK. Then a new tab with the *Common Storage Activity* Dashboard will be opened.

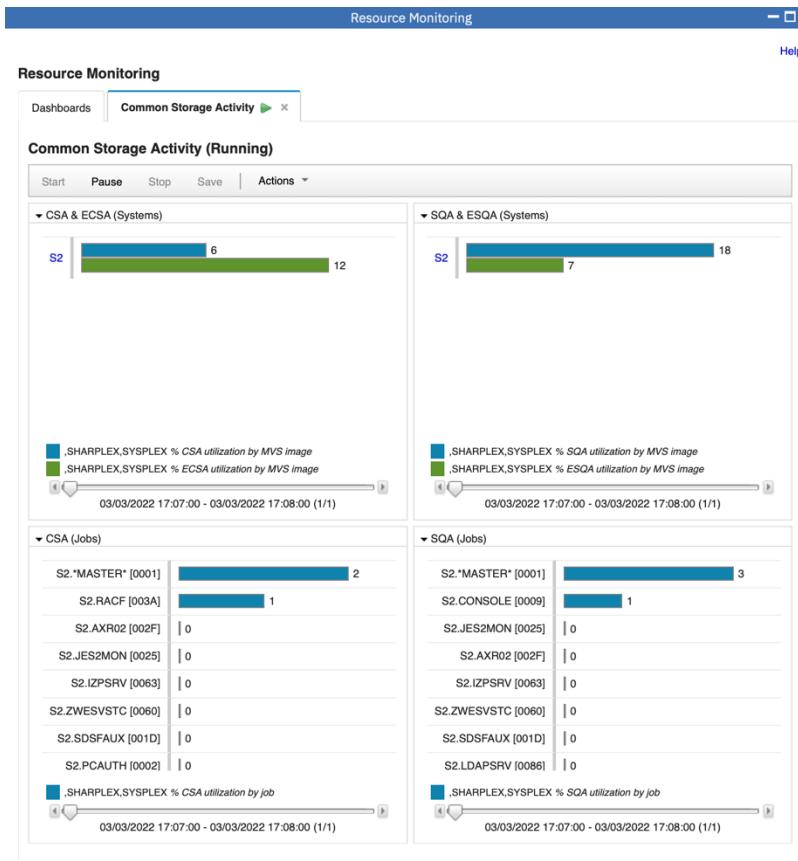


Figure 6: Common Storage Activity Dashboard

- Explore the *Common Storage Activity* Dashboard
 - the Dashboard consists of four Metric Groups
 - each Metric Group displays either one or two metrics
 - the Dashboard is populated with new data every 60 seconds
 - an individual Metric Group can be expanded/collapsed in order to make room for other Metric Groups
 - click on the hyperlink for the system name S2 and display the system attributes
 - stop and restart the Dashboard by clicking *Pause* and *Start* on the menu bar

As a matter of course you can run as many Dashboards as you like in parallel.

Exercise:

- from the Dashboards tab, select General Activity
- When the *Select Sysplex* dialog appears, choose SHARPLEX from the drop-down box and confirm with OK. Then a new tab with the *General Activity* Dashboard will be opened
- Both Dashboards (*Common Storage & General Activity*) are now populated with new data every 60 seconds
- Wait for a couple of minutes and then scroll through the previous intervals on the individual Metric Groups by means of the slider. Even though we don't have a lot of activity on our system, we can observe slightly changing values between the different intervals

Please recall that both Dashboards that we have opened so far are preconfigured Dashboards. As we have seen by means of the *Select Sysplex* dialog, those Dashboards are applicable for all your defined Sysplexes. In other words, the internal format of these definitions does not contain any references to specific resource names (e.g., system or job names). Hence, the preconfigured Dashboards are generic Dashboards (in contrast to non-generic resource specific Dashboards). Generic Dashboards can only contain metrics which are associated with the Sysplex resource as the top-level resource.

Lesson 4 – Dashboard Attributes

Once you have opened a certain Dashboard you can select the Actions – *Modify Settings...* menu which displays the following dialog:

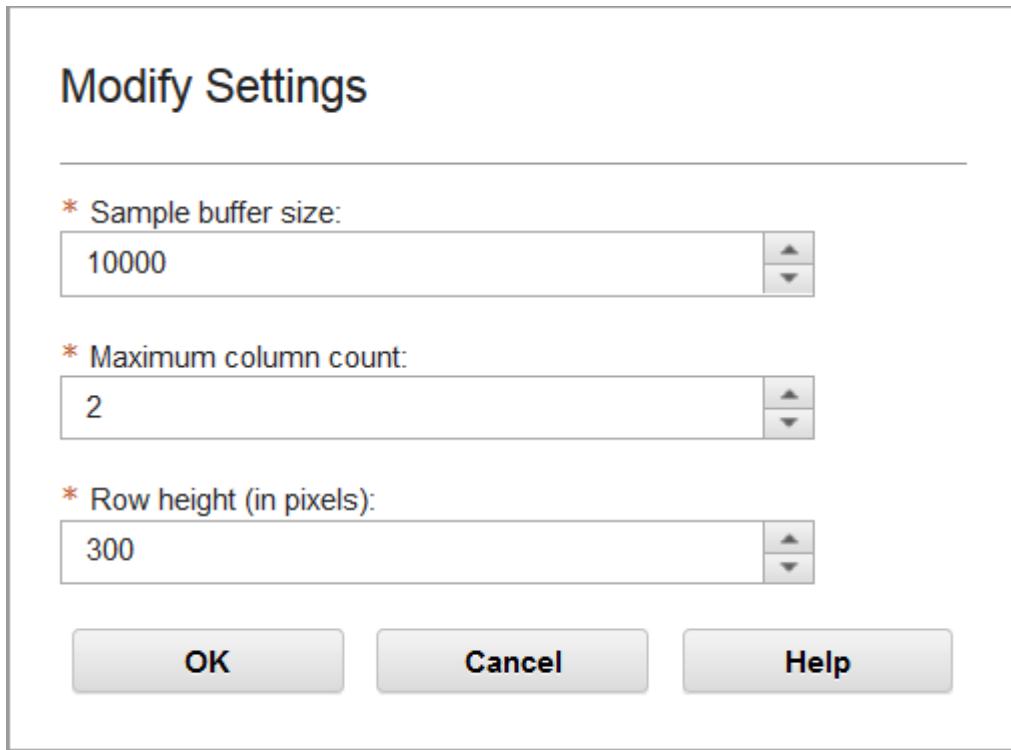


Figure 7: Modify Dashboard Settings

Exercise:

- Open the *Modify Settings* dialog for the *Common Storage Activity* Dashboard and click the *Help* button
- Review the explanations for the individual settings displayed on the Help popup window
- Change the following settings:
 - Maximum column count 4
 - Row height 600

Click OK and notice the changes. Your Dashboard should now look like shown in

- Figure 8 on page 12
- Close the *Common Storage Activity* tab. You will be informed that your changes will be discarded...confirm with OK

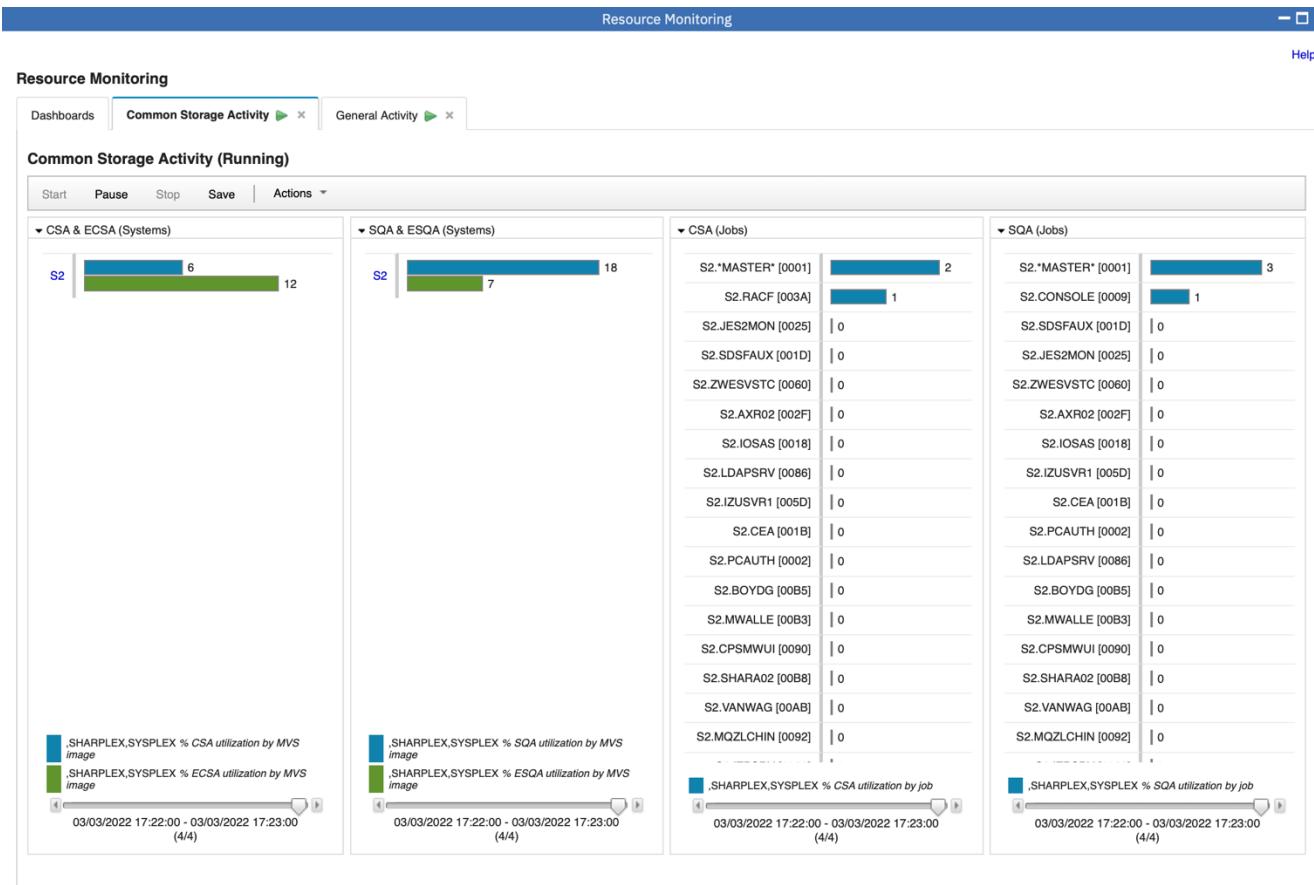


Figure 8: Dashboard with four Metric Groups side by side

Lesson 5 – User Defined Dashboards

In the previous lessons we have examined a few of the predefined Dashboards. One of the strengths of the Resource Monitoring app is the possibility to define and customize additional Dashboards. The user can choose from a huge variety of metrics, combine them to Metric Groups and assemble the Metric Groups into Dashboards. As a matter of course, the new Dashboards can be stored persistently for later use.

Exercise:

- From the *Dashboards* tab, click on *Actions – New*. As result, a *New Dashboard* tab is opened. Obviously, this Dashboard is empty at this point, since it contains no metrics at all
- Now choose *Actions – Add Metric* and the *Add Metric* dialog will be displayed as shown in Figure 9.
The four tabs at the bottom of this dialog (*Resource – Metric – Filter – Work Scope*) are representing a workflow concept: first you need to pick a resource and then select a certain metric for this resource. Those two steps are mandatory.
Then, optionally, you can choose between various filtering options or specify a WLM workscope for your metric

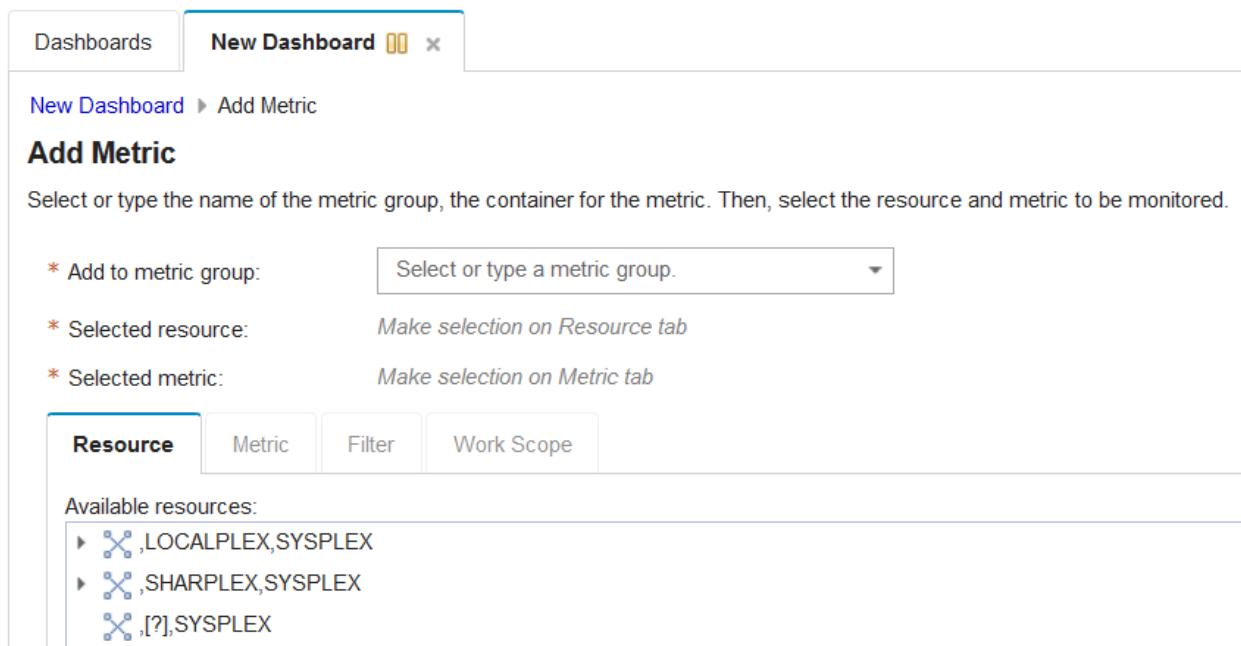


Figure 9: Add Metric Dialog

- On the *Resource* tab, expand the SHARPLEX resource. In a z/OS environment, the Sysplex is always the top-level resource. Now you can navigate through the entire resource tree and finally pick the resource that you want to monitor. During the navigation, the application communicates in realtime with the DDS to retrieve the current configuration information. The SHARPLEX resource is a pure monoplex with an MVS Image called S2.
- Go ahead and expand the MVS_IMAGE resource to see the resources on the next hierarchy level

- Now select (but do not expand) the Storage resource from the available resources. Once you have selected a resource, the *Metric* tab changes from disabled to enabled
- Proceed with the workflow and click on the *Metric* tab. As result, all metrics which are applicable for the currently selected resource are displayed. For most resource types, the user can select from a huge number of metrics. Therefore, the metrics are grouped by categories. When you collapse all metric categories for the Storage resource, your *Metric* tab should look as shown in Figure 10:

* Selected resource:  S2,* ,STORAGE

* Selected metric: Make selection on Metric tab

Resource	Metric	Filter	Work Scope
Quick filter: <input style="width: 100%; height: 30px; border: 1px solid #ccc; margin-bottom: 5px;" type="text"/>			
Available metrics: <ul style="list-style-type: none"> ▶  single valued ▶  by enclave ▶  by job ▶  by WLM report class period ▶  by WLM service class period ▶  by WLM report class ▶  by WLM service class ▶  by WLM workload 			

Figure 10: Metric Categories for the Resource Type Storage

- Expand the metric category by *job* and select the metric *# frames active by job*
- Click the OK button: message IZUR202E will appear, and you will need to specify a name for your new Metric Group, no default name is provided by the application
- Enter *Active Frames* in the *Add to metric group* text field and click again the OK button. Now your Dashboard should look like shown in Figure 11

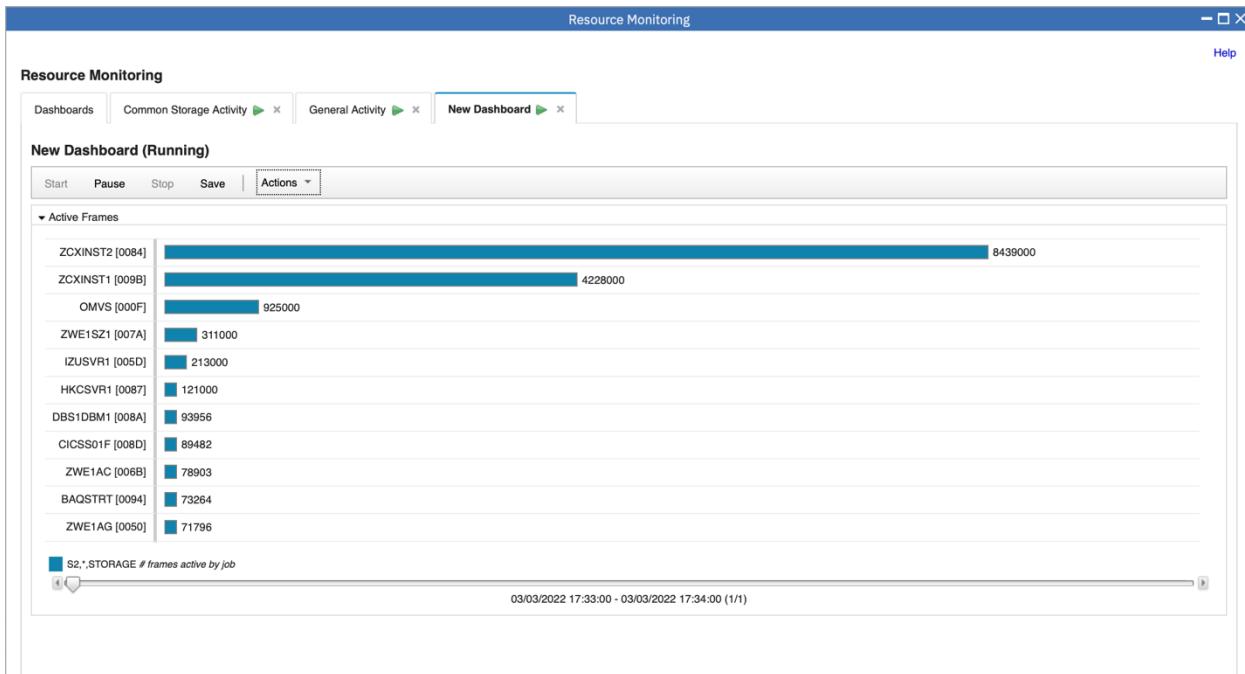


Figure 11: New Dashboard

- Click again on *Actions – Add Metric*. Then, repeat the steps as before, but now choose the metric *# frames fixed by job* and add it to the new Metric Group *Fixed Frames*

- So far, we have defined two Metric Groups with just one single metric per group. Now let's add another Metric Group which contains more than one metric.
Proceed as before, but from the metric category *by WLM service class period* choose the metric *# frames active by WLM service class period* and add it to the new Metric Group *Active & Fixed Frames (WLM View)*. Now, as a second metric, add the metric *# frames fixed by WLM service class period* to the same Metric Group.
To achieve this, choose the already existing Metric Group by using the drop-down box of the *Add to metric group* text field
- To see all Metric Groups in a row, change the *Maximum column count* in the *Modify Settings* dialog to the value 3
- Now it's time to save our valuable new Dashboard. On the menu bar, click *Save* and enter *Storage Soaker* as Dashboard name. Then confirm with *OK*
- Verify your new Dashboard: it should look like shown in Figure 12

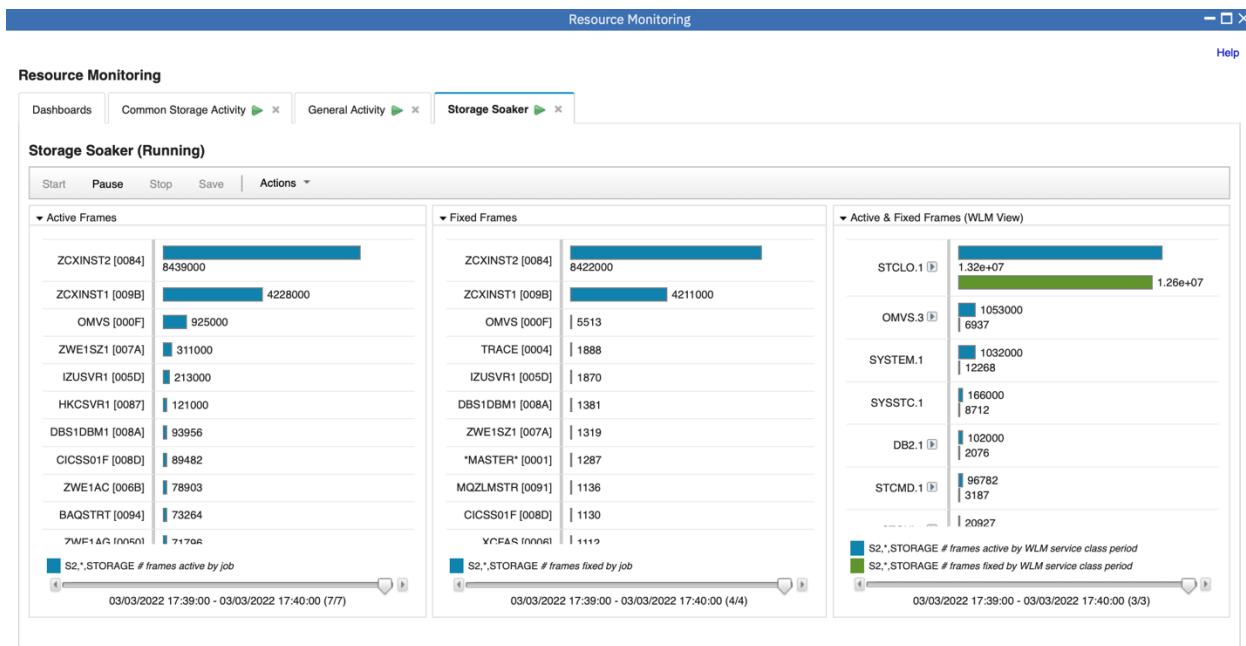


Figure 12: Dashboard *Storage Soaker*

- Finally, return to the Dashboards tab and check whether your new Dashboard has been added to the list of available Dashboards

Lesson 6 – Advanced Filtering Capabilities

All metrics that you can select for continuous monitoring can be grouped into the following two basic types:

- Single valued metrics (just one string containing a value)
- List valued metrics (multiple strings with name/value pairs)

List valued metrics can be easily identified since the term “by” is always part of their metric name (see also Figure 10 on page 14).

The Resource Monitoring application provides powerful filtering capabilities which allows you to determine very precisely the content of a list valued metric and to reduce the number of name/value pairs to the instances of your choice.

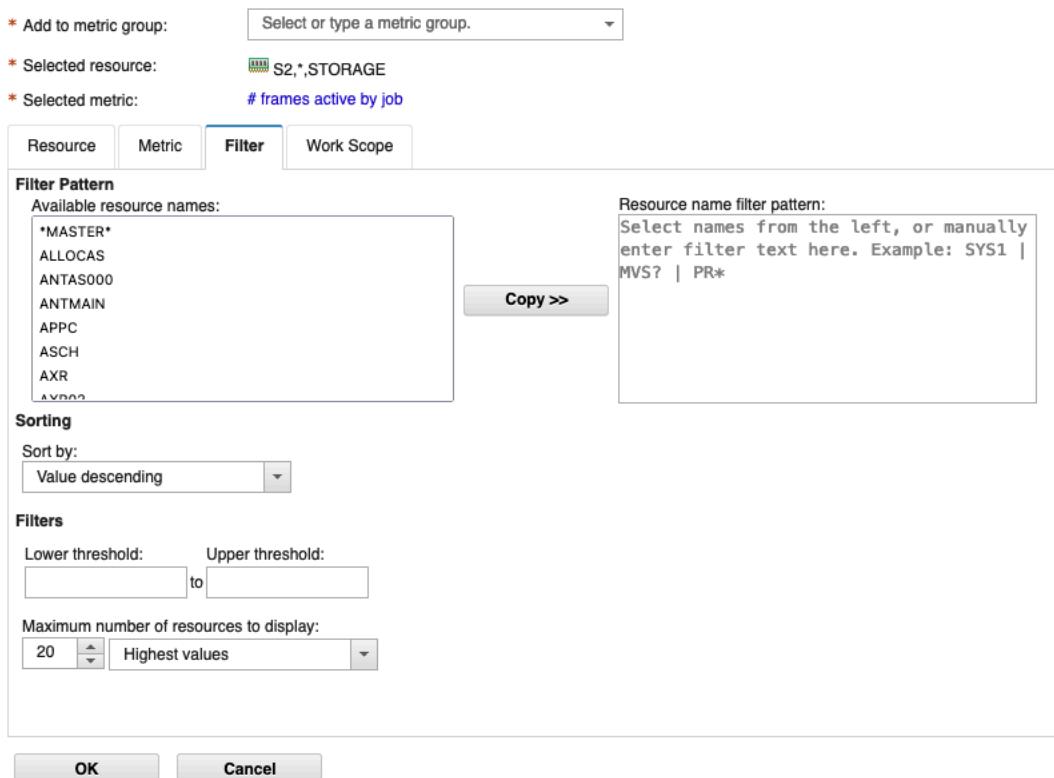
Figure 13 shows the available filtering and sorting options.

For list valued metrics you can choose and combine the following options:

- Specify a name pattern
- Determine the sort order
- Specify a lower and/or upper threshold
- Define the number of list elements
- Focus on the instances with the highest or lowest values

Add Metric

Select or type the name of the metric group, the container for the metric. Then, select the resource and metric to be monitored.



*** Add to metric group:** Select or type a metric group.

*** Selected resource:** S2,*;STORAGE

*** Selected metric:** # frames active by job

Filter

Resource	Metric	Filter	Work Scope
Filter Pattern <div style="display: flex; justify-content: space-between;"> <div style="flex: 1;"> Available resource names: <ul style="list-style-type: none"> *MASTER* ALLOCAS ANTAS00 ANTMAIN APPC ASCH AXR AV000 </div> <div style="flex: 1;"> Resource name filter pattern: <p>Select names from the left, or manually enter filter text here. Example: SYS1 MVS? PR*</p> <input type="text"/> </div> </div> <p>Copy >></p>			
Sorting <p>Sort by:</p> <p>Value descending</p>			
Filters <p>Lower threshold: _____ to _____ Upper threshold: _____</p> <p>Maximum number of resources to display:</p> <p>20 <input type="button" value="▲"/> Highest values <input type="button" value="▼"/></p>			
<input type="button" value="OK"/> <input type="button" value="Cancel"/>			

Figure 13: Add Metric Dialog – Filter Tab

Exercise:

- Restart your *Storage Soaker Dashboard*
- From the menu bar, click *Actions – Modify Metric*
- On the *Modify Metric* popup select the metric *# frames active by job* and click *Modify*. Then the *Filter* tab on the *Modify Metric* dialog is already preselected. Furthermore, all currently active jobs are displayed in the *Available resource names* text field.
To specify a filter pattern, you have the following two choices:
 1. Select an individual job and then click *Copy* to move the job name to the *Resource name filter pattern* text field (this action can be repeated multiple times)
 2. Move the mouse cursor over the *Resource name filter pattern* text field and specify any name patterns directly in edit mode. In doing so, you can also utilize the supported wildcards shown in the pattern example
- Specify the following string in the *Resource name filter pattern* text field:
CATALOG | CONSOLE | DB | GRS* | JES* | LLA | RMF**
- Then click *OK* and verify whether the job names in the *Active Frames Metric Group* are matching the pattern
- Now let's go for a value-oriented filter specification:
Again, from the menu bar, click *Actions – Modify Metric*
- On the *Modify Metric* popup select the metric *# frames fixed by job* and click *Modify*. Then the *Filter* tab on the *Modify Metric* dialog is already preselected
- On the *Sort by* drop down box, change *Value descending* to *Value ascending*
- Specify a value of 100 as *Lower threshold* and 500 as *Upper threshold*
- Change the *Maximum number of resources to display* to a value of 10 and change *Highest values* to *Lowest values*
- Then click *OK* and verify whether the instances in the *Fixed Frames Metric Group* are matching the filter and sort specifications
- Save your current filter specifications by clicking *Save* on the menu bar and close the *Storage Soaker Dashboard*

Lesson 7 – Applying Workscopes

A Workscope can be applied to an individual metric in a similar way as a filter specification. But in contrast to a filter, a Workscope represents a kind of tag, either for a WLM workunit or for a certain job name.

On the *Add Metric* dialog, the *Work Scope* tab is either enabled or disabled, depending on the fact, whether a Workscope is applicable for the currently selected metric.

Exercise: Workscope = WLM Work Unit

- Restart your *Storage Soaker Dashboard*
- From the menu bar, click *Actions – Modify Metric*.
On the *Modify Metric* popup select the metric *# frames active by job* and click *Modify*. Then the *Filter* tab on the *Modify Metric* dialog is already preselected
- Remove the name pattern that you have specified in the previous lesson in the *Resource name filter pattern* text field
- Click the *Work Scope* tab
- From the *Filter scope* drop down box, select *WLM service class*
- From the *Filter for* drop down box, select the service class OMVS
- Then click *OK* and verify whether the job names in the *Active Frames* Metric Group are OMVS address spaces (e.g., the FTP or INET daemon)

Exercise: Workscope = Job Name

- From the *Dashboards* tab, click on *Actions – New*. As result, a *New Dashboard* tab is opened
- Now choose *Actions – Add Metric* and the *Add Metric* dialog will be displayed
- On the *Resource* tab, expand the SHARPLEX resource and then S2,MVS_IMAGE
- Now select (but don't expand) the Storage resource from the available resources. Once you have selected a resource, the *Metric* tab changes from disabled to enabled
- Click on the *Metric* tab. As result, all metrics which are applicable for the currently selected resource are displayed
- From the *single valued metrics* category, select the metric *# frames active*
- Navigate to the *Work Scope* tab and select *job* from the *filter scope* drop down box
- Now select the job CATALOG from the *Filter for* drop down box
- Type the Metric Group name *Frame Activity for CATALOG* in the *Add to metric group* text entry field
- Click the *OK* button
- In the same way, add the metric *# frames fixed* as second metric to the same Metric Group
- Create another Metric Group *Frame Activity for CONSOLE* and add the same metrics that you have selected for the CATALOG job to this Metric Group. But in this case, choose CONSOLE instead of CATALOG as Workscope
- Save your new Dashboard with the name *Frame Activity Details*. It should now look as shown in Figure 14 on page 20

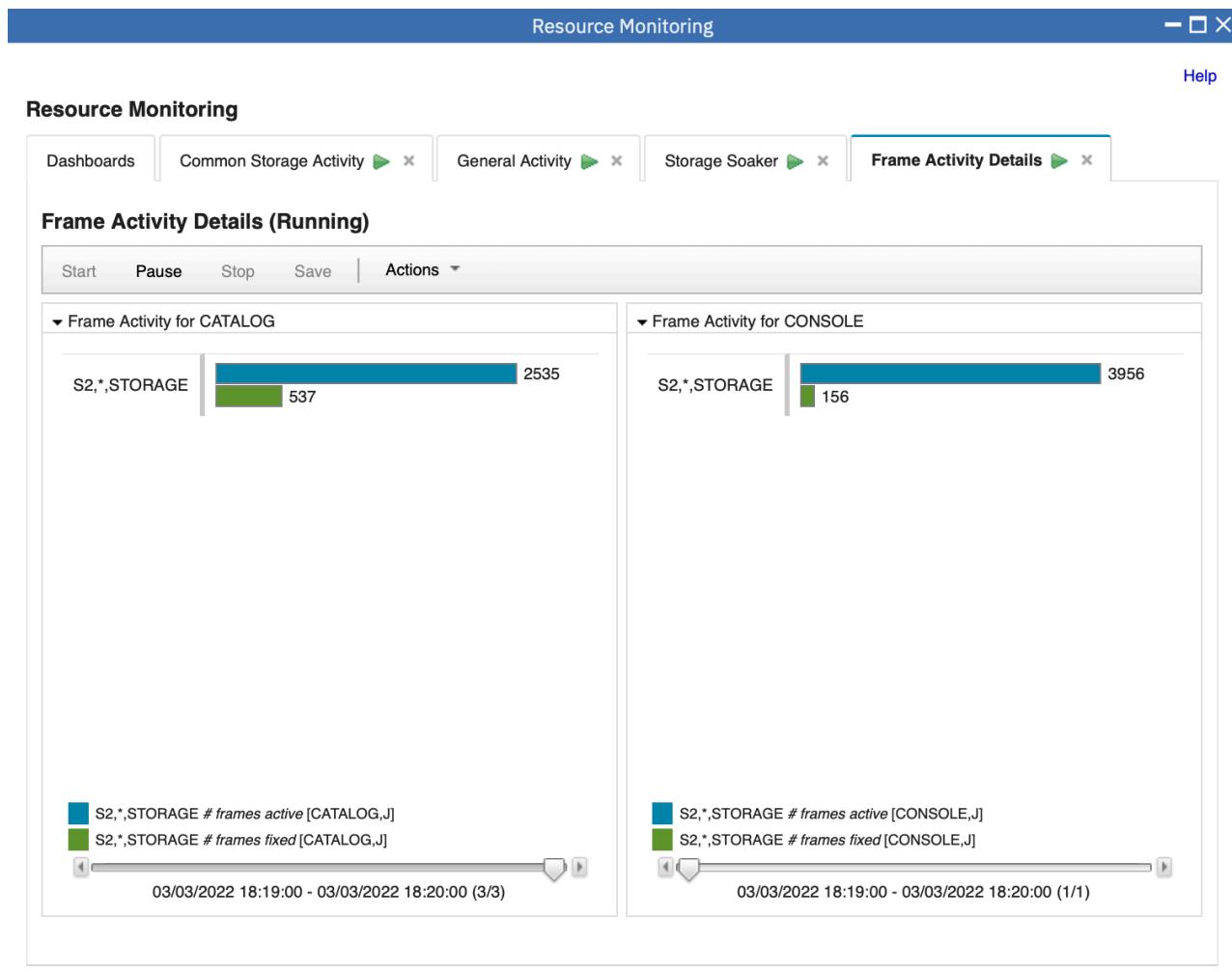


Figure 14: Dashboard *Frame Activity Details*

Lesson 8 – Arrange Metrics or Groups

Once you have finished your definitions and saved your smart new Dashboards it's time to learn something about additional fine-tuning opportunities.

At a later point in time, you probably want to

- Rearrange the position of your Metric Groups
- Change the sort order of some metrics within a Metric Group

Exercise:

- Restart your *Storage Soaker* Dashboard
- From the menu bar, click *Actions – Arrange Metric or Groups*
- On the *Arrange Metric or Groups* popup, select the Metric Group *Active & Fixed Frames (WLM View)* and click the *Move up* button twice: the Metric Group is moved to the top position
- Confirm with OK. The Metric Group *Active & Fixed Frames (WLM View)* should now be displayed as leftmost Metric Group of your Dashboard
- Again, from the menu bar, click *Actions – Arrange Metric or Groups*
- On the *Arrange Metric or Groups* popup, now select the metric *# frames fixed by WLM service class period* and click the *Move up* button once: the Metric is moved to the first position within the Metric Group
- Confirm with OK. The metric *# frames fixed by WLM service class period* has now become the “lead metric”. That means, the instances within this Metric Group are now sorted by this metric in descending order.
- Save your changes. Verify that your final Dashboard looks like shown in Figure 15

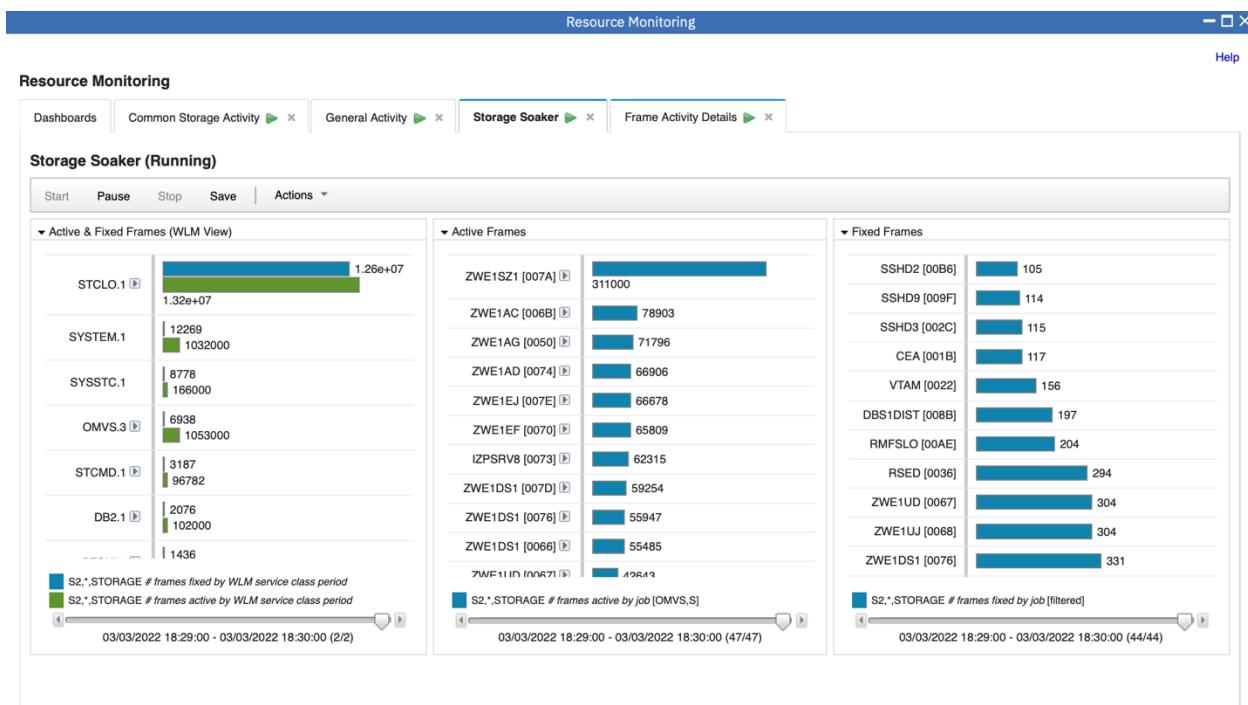


Figure 15: Final Dashboard *Storage Soaker*

Lesson 9 – Start and Exchange Dashboards

Generally, your daily routine will be the following: Once you are logged in to the z/OSMF Resource Monitoring app, you want to get started with your favorite Dashboards – almost automatically and with a minimum of further interaction.

This can easily be achieved by bringing together the advanced characteristics of Dashboards with the standard capabilities of your web browser.

Exercise:

- On the *Dashboards* tab, mark the checkbox for the *Common Storage Activity Dashboard*
- From the menu bar click *Actions – Open in New Tab or Window*
- When the *Select Sysplex* dialog appears, choose SHARPLEX from the drop-down box and confirm with OK. Then a new browser tab with the *Common Storage Activity Dashboard* will be opened
- Additionally, the complete definition of the Dashboard appears as part of the URL string in the address bar of your browser:

```
https://share.centers.ihost.com/zosmf/izur/pd.jsp#{"id":"pd0","mgs": [{"n":"CSA.20.26.20ESCA.20.28Systems.29","ms":[{"p":"M","id":"8D2410","res":{"label":"+,SYSPLEX"}},{"p":"M","id":"8D2430","res":{"label":"+,SYSPLEX"}]}], "n":"SQA.20.26.20ESQA.20.28Systems.29","ms":[{"p":"M","id":"8D2470","res":{"label":"+,SYSPLEX"}}, {"p":"M","id":"8D2450","res":{"label":"+,SYSPLEX"}]}, {"n":"CSA.20.28Jobs.29","ms":[{"p":"M","id":"8D2420","res":{"label":"+,SYSPLEX"}}, {"p":"M","id":"8D2480","res":{"label":"+,SYSPLEX"}}]}, "n":"Common.20Storage.20Activity","h":300}
```

Figure 16: *Common Storage Activity Dashboard* – JSON Representation

The fact that we have opened the Dashboard in a browser tab instead of an internal tab provides two major benefits:

1. The browser tab provides more space for the visualization of the Dashboard
2. The visibility of the URL allows us to treat the Dashboard like a standard browser bookmark

Exercise:

- On the Firefox menu bar click *Bookmarks* for the list of existing bookmarks
- From the context menu of the list, select *New Folder...* and specify *z/OSMF Startup* as folder name
- Ensure that the active browser tab is *Common Storage Activity (Running)*. Then, on the Firefox menu bar, click again on *Bookmarks* and choose *Bookmark This Page*. Now select the *z/OSMF Startup* folder from the *Folder* drop down box and click the *Done* button
- Navigate back to the *Dashboard* tab of the z/OSMF Resource Monitoring application and start your *Storage Soaker Dashboard* also in an external browser tab
- Add the URL of this Dashboard to the *z/OSMF Startup* folder in the same way than the *Common Storage Activity* Dashboard
- On the title bar of the z/OSMF session click *Logout*. Then close all browser tabs
- Now close and restart your Firefox browser session
- Reconnect to z/OSMF: <https://share.centers.ihost.com/zosmf/>
- Login to z/OSMF again with your SHARANN userid
- Select *Bookmarks – z/OSMF Startup* from the browser's menu bar
- Click *Open All in Tabs* like shown in Figure 17

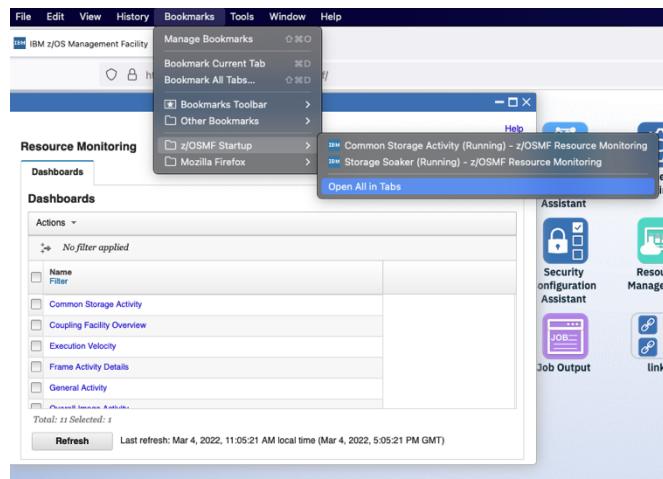


Figure 17: Start Multiple Dashboards

As result, all external browser tabs contained in the folder will be opened.
 Note, that for a generic Dashboard like the *Common Storage Activity* Dashboard you will have to answer the question all the time to which Sysplex the Dashboard should be applied. Hence, to avoid multiple prompts, it is not recommended to add lots of generic Dashboards to Startup folders.

However, together with this concept based on bookmarks you can exploit additional benefits like:

1. Create a hierarchical folder structure for your Dashboards
2. Exchange Dashboards or even complete Folders with other users

Congratulations. You have finished this lesson and you are now an advanced user of the z/OSMF Resource Monitoring app – at least when your browser window finally looks like shown in Figure 18 😊

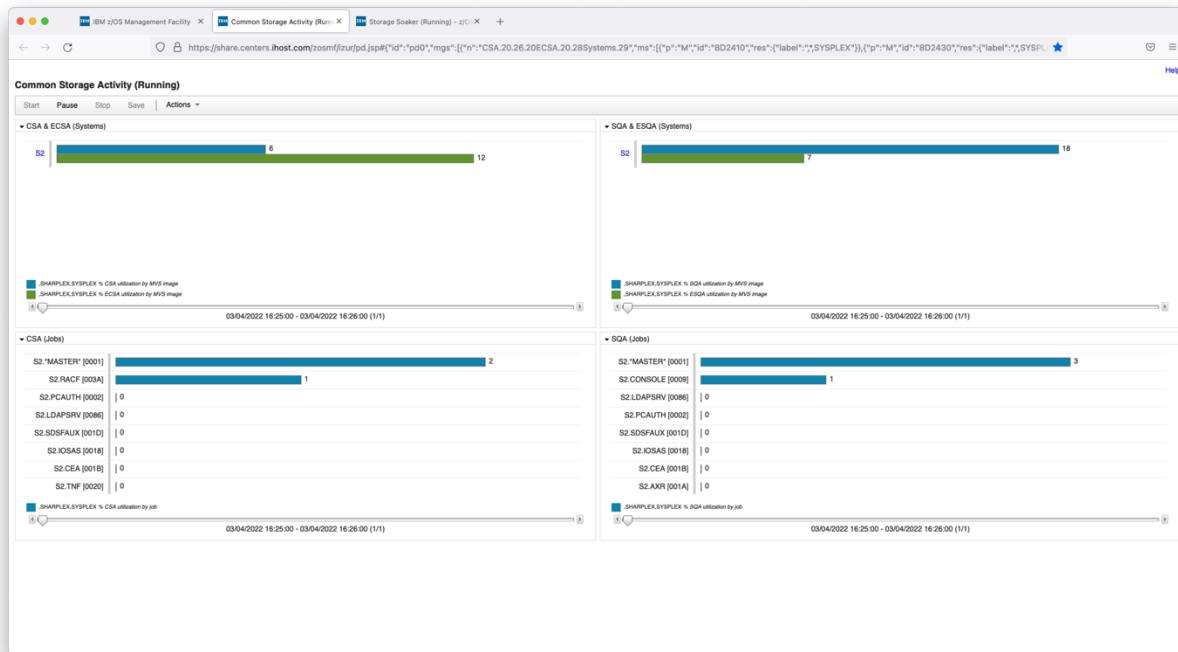


Figure 18: Multiple Dashboards in external Browser Tabs

Lesson 10 – Retrieve Historical Data

The timeframe where you can navigate through the data within a Dashboard is usually between the point in time where you have started the Dashboard up to the current time. But – take note, you can extend this timeframe significantly: for your convenience you are able to populate your dashboards with historical data if the data is available from the RMF Monitor III Data Gatherer.

Exercise:

- Restart your *Storage Soaker* Dashboard
- From the menu bar, click *Actions – Retrieve Historical Data*
- On the *Retrieve Historical Data* popup, set the timeframe to 2 hours, click the *Specify the range in seconds* radio button and enter 600 seconds as range length. By default the historical data collection is applied to all Metric Groups – optionally you can select individual Metric Groups as well

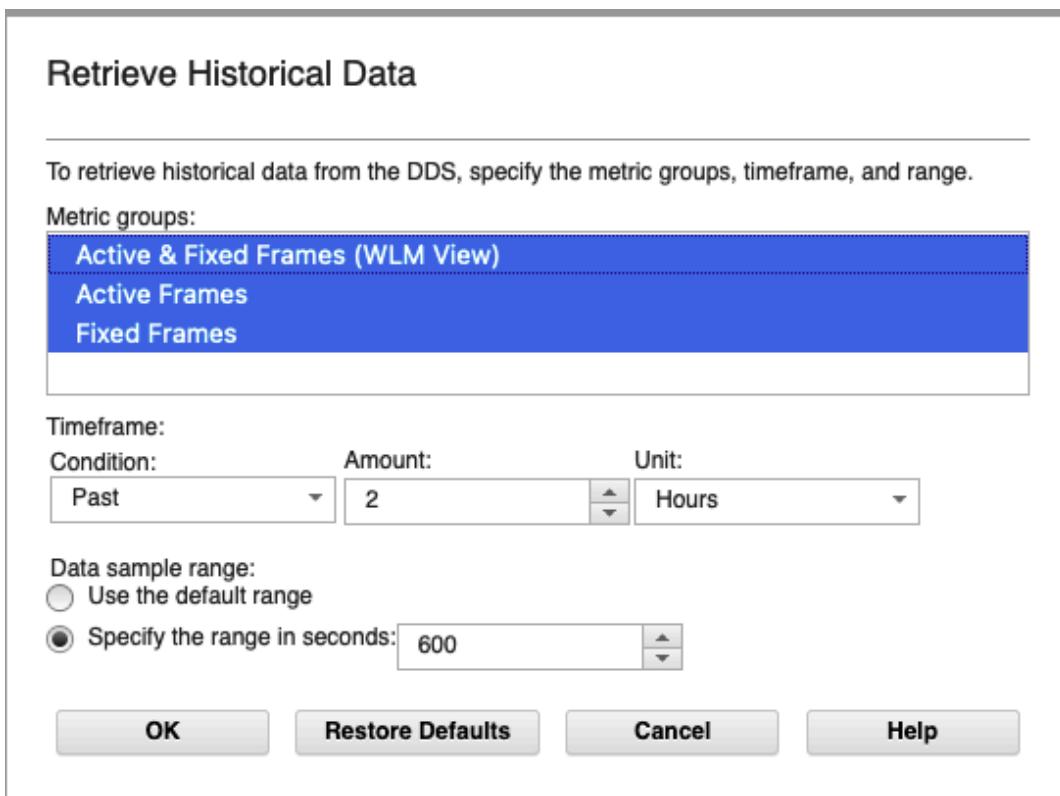


Figure 19: *Retrieve Historical Data* dialog

- Confirm your selections with OK. Your Dashboard is now populated with the data from the latest 2 hours. Since we have specified a range length of 10 minutes, we should have 12 intervals available within our 2-hour timeframe.
Now we can use the slider and navigate through the history for each Metric Group

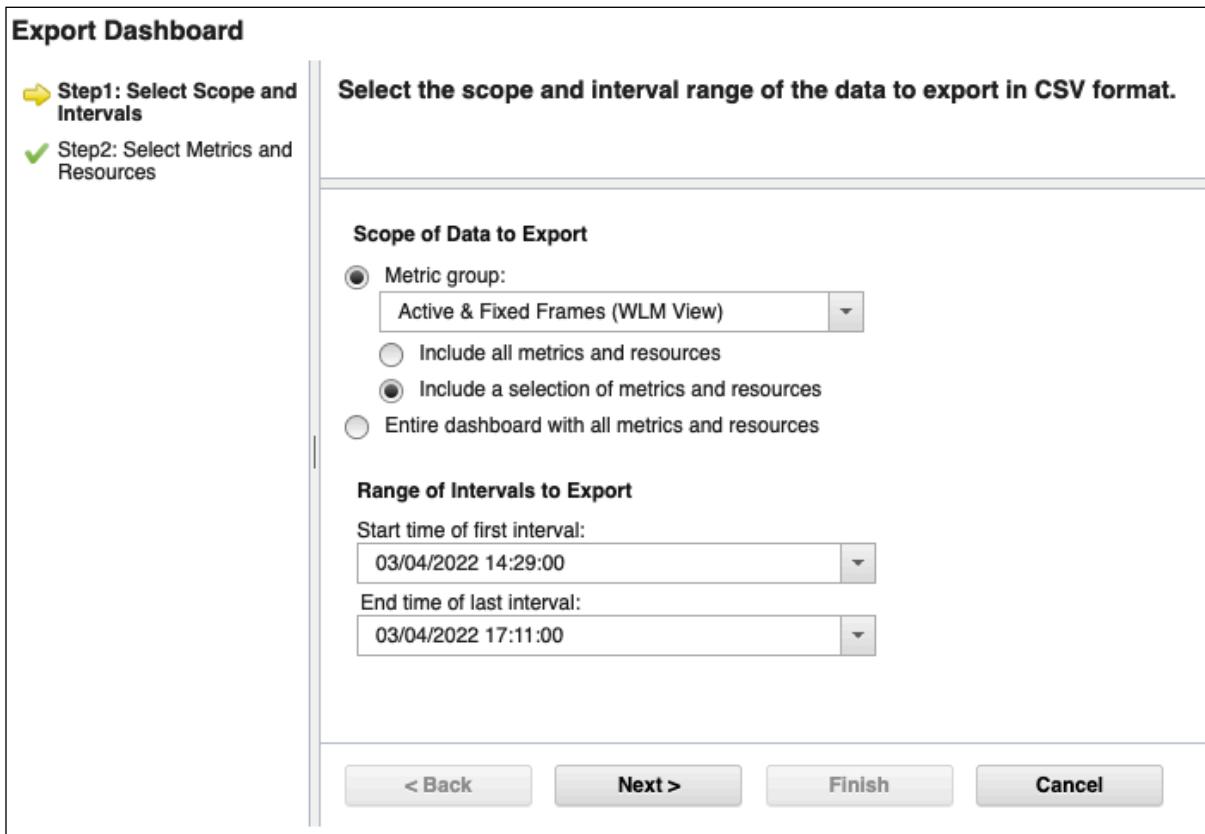
As alternative for historical requests, we can also change the *Condition* to *Dates from / Dates between* and specify a certain time window explicitly.

Lesson 11 – Export Data to Spreadsheets

One more smart feature of the Resource Monitoring application is the Data Export Facility. It allows you to export all metric values to CSV format for later use in spreadsheet applications. It's up to you whether you want to export individual Metrics, Metric Groups, or entire Dashboards.

Exercise:

- Restart your *Storage Soaker Dashboard*
- From the menu bar, click *Actions – Export...*
Now the *Export Dashboard* dialog is opened, and you can specify the scope and the intervals for your export request.
As default scope the first Metric Group with all contained metrics and resources is preselected.
The available intervals are displayed at the bottom of the dialog. Here you can easily focus on certain intervals by using the *Start time / End time* drop down boxes.



The screenshot shows the 'Export Dashboard' dialog box. On the left, there is a vertical navigation bar with two items: 'Step1: Select Scope and Intervals' (highlighted with a yellow arrow icon) and 'Step2: Select Metrics and Resources'. The main content area has a title 'Select the scope and interval range of the data to export in CSV format.' Below this, there are two sections: 'Scope of Data to Export' and 'Range of Intervals to Export'. In the 'Scope of Data to Export' section, the radio button 'Metric group:' is selected, and the dropdown menu shows 'Active & Fixed Frames (WLM View)'. There are also three other options: 'Include all metrics and resources', 'Include a selection of metrics and resources' (which is selected), and 'Entire dashboard with all metrics and resources'. In the 'Range of Intervals to Export' section, there are two dropdown menus for 'Start time of first interval' (set to '03/04/2022 14:29:00') and 'End time of last interval' (set to '03/04/2022 17:11:00'). At the bottom of the dialog are four buttons: '< Back', 'Next >', 'Finish', and 'Cancel'.

Figure 20: Export Dashboard Facility – Step1

- Now select the *Include a selection of metrics and resources* radio button.
As result, the *Next* push button changes to the enabled state
- Click the *Next* button: the *Select Metrics and Resources* dialog is opened. In case you want to focus on specific metrics or resources you can make your selections on this page very efficiently

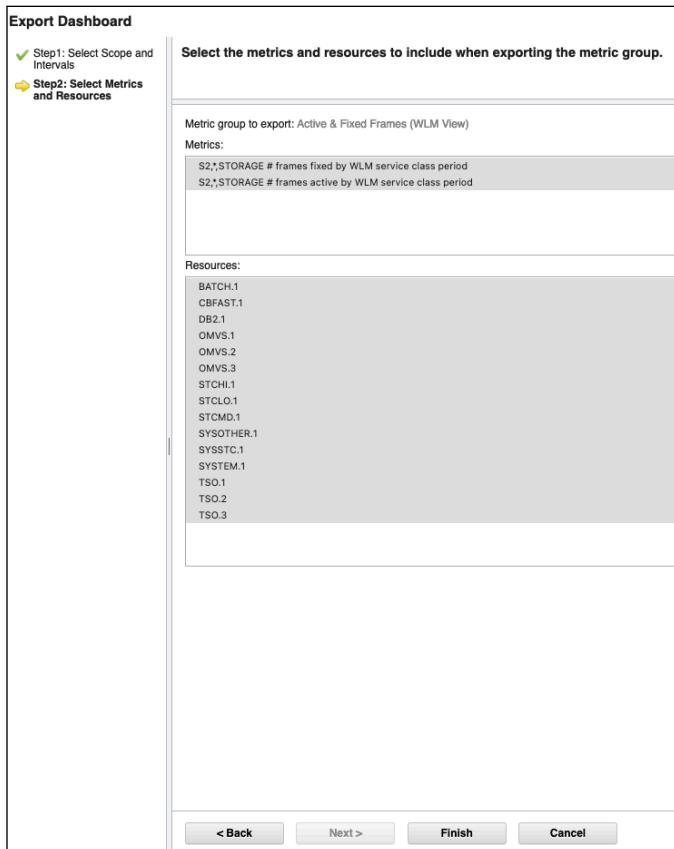


Figure 21; Export Dashboard Facility – Step 2

- Leave the selections unchanged and click *Finish* to start the export processing
- Choose *Open with Microsoft Excel* when the *Open CSV* dialog is displayed.
As result, all the data contained in the selected Metric Group for the specified intervals will appear in the cells of your spreadsheet application

When you select on the *Export Dashboard* dialog the option *Entire dashboard with all metrics and resources* a ZIP archive will be created as result.

The archive contains one CSV file per Metric Group. For our *Storage Soaker* Dashboard, we should see the following files in the *Storage Soaker.zip* archive:

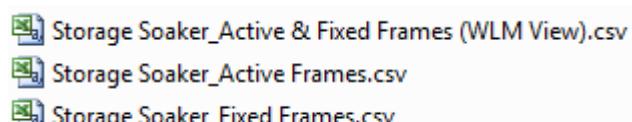


Figure 22: Dashboard Archive *Storage Soaker*

Lesson 12 – Cleanup

To wipe out all your traces there is just one easy exercise remaining:

- Close all running Dashboards
- Remove the *z/OSMF Startup* folder from your browser bookmarks
- Remove the two user defined Dashboards *Storage Soaker* and *Frame Activity* from the *z/OSMF Resource Monitoring* application