

# IBM Z-Monitoring the modern mainframe and API economy

Ashok Mahay

IBM UK Ltd

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Session **OD**



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# Session Objectives

- Changes in how enterprises manage their IT operations are driving changes in how service management is provisioned and utilized. From new workloads based on Java, to the ability to track performance end-to-end across a hybrid cloud including the mainframe, the requirements for a monitoring solution are evolving.
- Recent updates to the OMEGAMON family includes features to monitor the latest levels of z/OS, storage infrastructure and major subsystems delivering innovative user experience updates with improved deployment processes.
- Updated monitoring for z/OS Connect EE give you more insight than ever before into API performance on z/OS
- Learn about these updates for proactively monitoring key z/OS-based workloads.

# Topics

- Digital Transformation
- IBM Z Monitoring
  - IBM OMEGAMON monitoring
  - Recent Updates
- OMEGAMON for JVM API Monitor
- Future Plans
  - What Zowe Means for Monitoring
- Final Questions



72% of disruption comes from innovative industry incumbents

IBM Institute for Business Value survey

IBM Z powers 72% of customer facing apps, but organizational challenges limit ability to support

Forrester

\$1.2– \$2.5B annual spend on unplanned app downtime

Gartner

56% of customers have no succession plan for IBM Z skills

Forrester



Digital transformation is impacting all areas of the enterprise

# The cost of an outage

14% of outages cost > \$5M per hour

33% of outages cost > \$1M per hour

Single incidents can cost > \$100M

Regulatory fines can cost > \$70M

# Customer Challenges



## Need to Manage Multicloud Environments Fueled by IBM Z



- **Connected Monitoring Solution**
- **Single Source of Information**
- **Single Point of Control**
- **Day 1 subsystem support for rapid deployment**

## Need Integrated Views of Subsystems



- **Avert problems before impact**
- **Quickly establish root cause**
- **360-degree view across subsystems**
- **Avoid Costly outages**
- **Eliminate War rooms**

## Need to Simplify and Integrate Through Open Access



- **Foster Generational shift with familiar, open access**
- **Simple for New talent**
- **Capture Z system and tribal knowledge**
- **Right view for the right workstream**



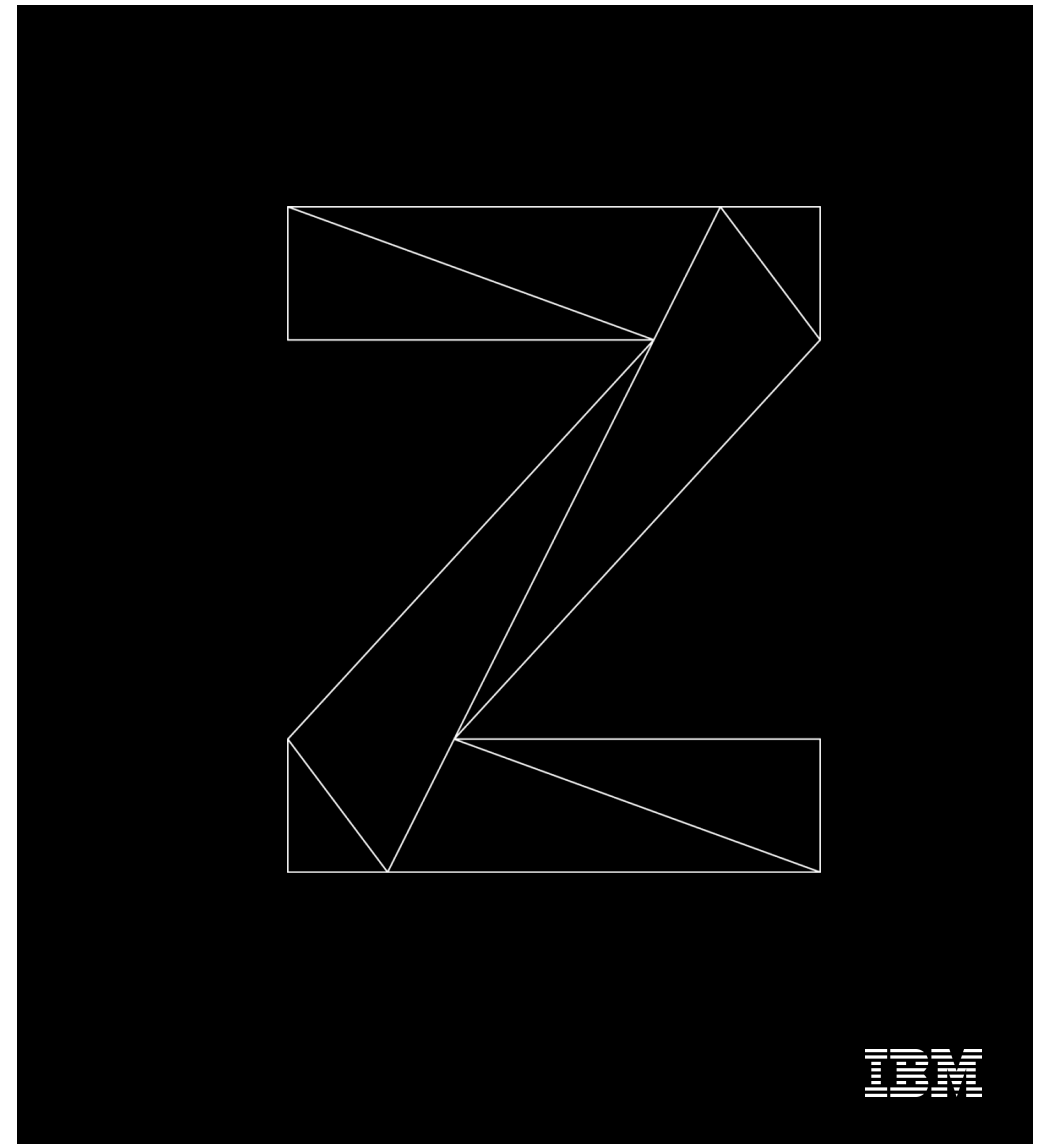


Finding the needle ...

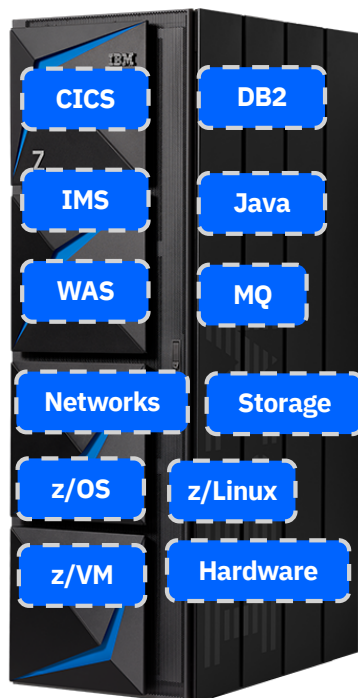
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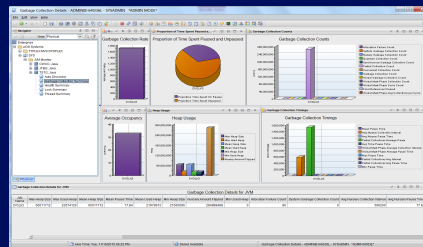
# IBM Z Monitoring



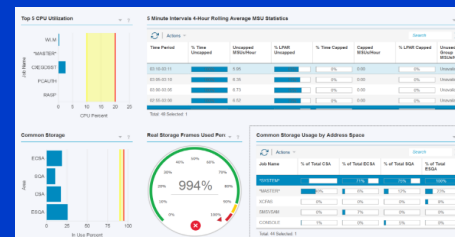
# IBM Z Monitoring



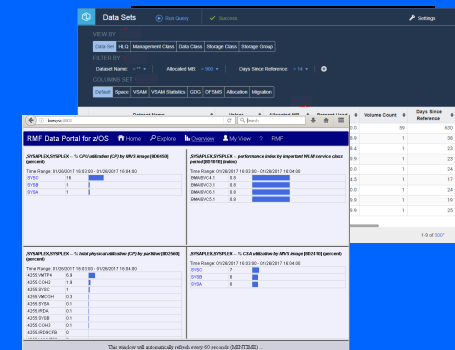
Management View of Z Performance & Availability for Hybrid Cloud



Operator Diagnostic Dashboards



Expert Deep Dive Domain Views & Tools

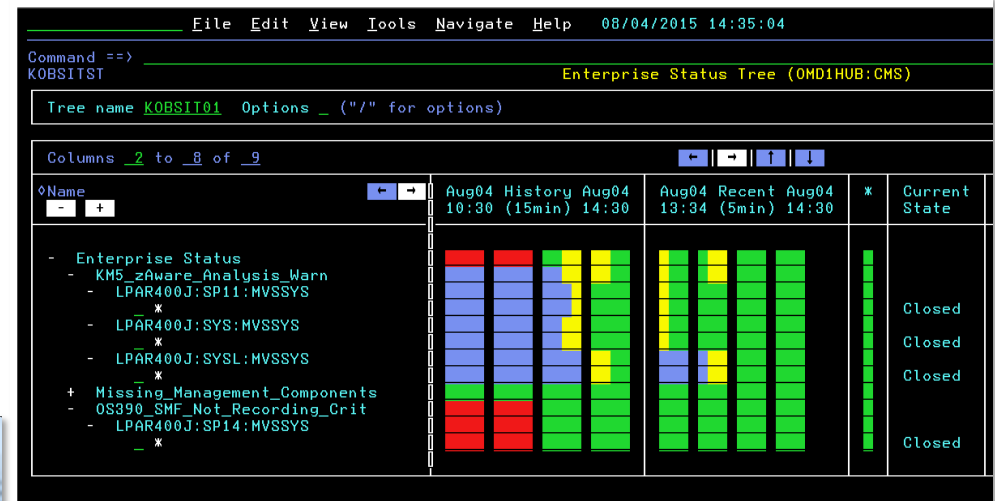


Intelligent Alerts    Automated Actions    Custom Views    Historical Data  
Expert Advice    Automation and Scheduling Links

# IBM OMEGAMON for mainframe management

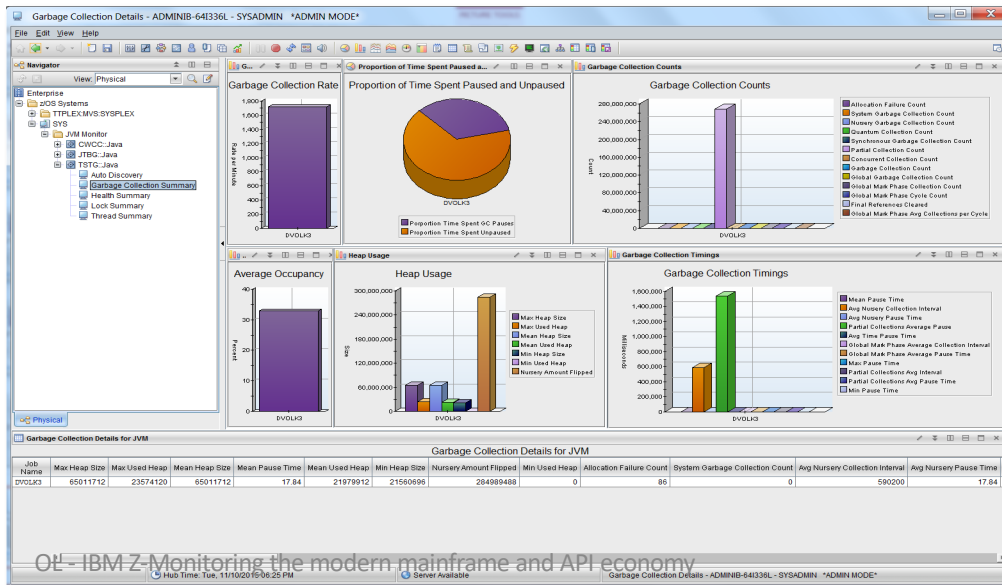
The IBM OMEGAMON family provides a **comprehensive performance and availability** solution for **monitoring, analyzing, and managing** mainframe operating systems, databases and other environments

IBM OMEGAMONS will assist in **detecting bottlenecks** and other **potential problems**, identifying the **root cause**, and **proactively resolving** performance issues



## Key capability

- **Comprehensive management** for z/OS, Storage, Network, Java, CICS, IMS, DB2, MQ
- Powerful **GUI & 3270 user interfaces** provide a “single pane of glass” comprehensive enterprise view
- Proactive monitoring of key resources and **alerting of anomalies** using Situations
- **Built-in best practices** based on problem-solving scenarios streamline problem resolution
- **High performance and low overhead** designed to have minimal impact on the subsystems being monitored



# Who uses OMEGAMON?

## **Primary Users: Systems Programmers / Administrators and Operators**

- Responsible for keeping business-critical systems online
- Respond to alerts where problems are detected and system performance may be affected
- Need access to system information fast
- Require access to systems to take corrective action where needed
- Looking to increase the degree of automation for systems management

## **Secondary Users: Junior Operators / Developers / LoB / ...**

- Need to be alerted to system performance problems
- Triage alerts and isolate problems
- Able to fix simple issues
- Understand impact of application changes to systems
- View performance reports on application performance and trending



# Core OMEGAMON Features

All OMEGAMON agents provide the following capabilities:

## Situations

*Situations* describe a condition or set of conditions you want to examine to determine if a potential problem exists in the systems and resources you are monitoring and will notify operations

Enables proactive monitoring, and ability to take reflexive actions (including integration with SA on z/OS)

Each OMEGAMON provides their own “out-of-the-box” Situations to start monitoring with, and are fully customizable

## Historical Data

*Historical data* refers to snapshots of the current system details that are collected regularly and stored for potential problem investigation.

Historical data can also be used to generate reports about performance and tracking of SLA goals

Data is normally collected and stored locally on z/OS before being warehoused after 24 hours

## Integrated UI

There are multiple User Interfaces that focus on the skill level and requirements of the end user.

Data collected from all OMEGAMON agents are available on these UIs and cross-product linkage

Workspaces are fully customizable

Access to data can be limited to certain systems or subsystem types through SAF settings.

# Faster problem resolution with *Situations*

- **What are they?**
- *Situations* describe a condition or set of conditions you want to examine to determine if a potential problem exists in the systems and resources you are monitoring and will notify operations

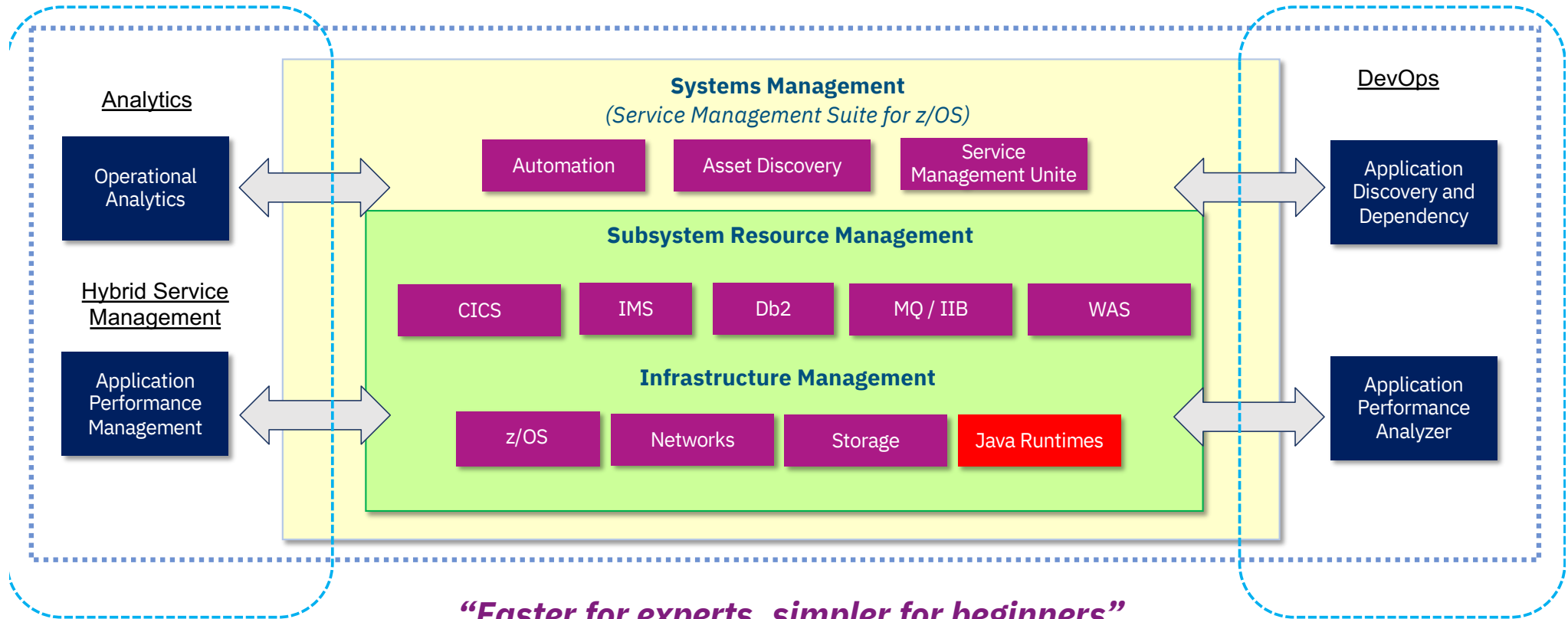
## Why use them?

- Proactively monitor the performance of your system
- You pick which metrics to monitor out of many hundreds to use and on which systems to run
- Resolve problems automatically using Take Action (reflex automation)
- Provide customized expert advice

**Situations provide continuous observation of your systems!**

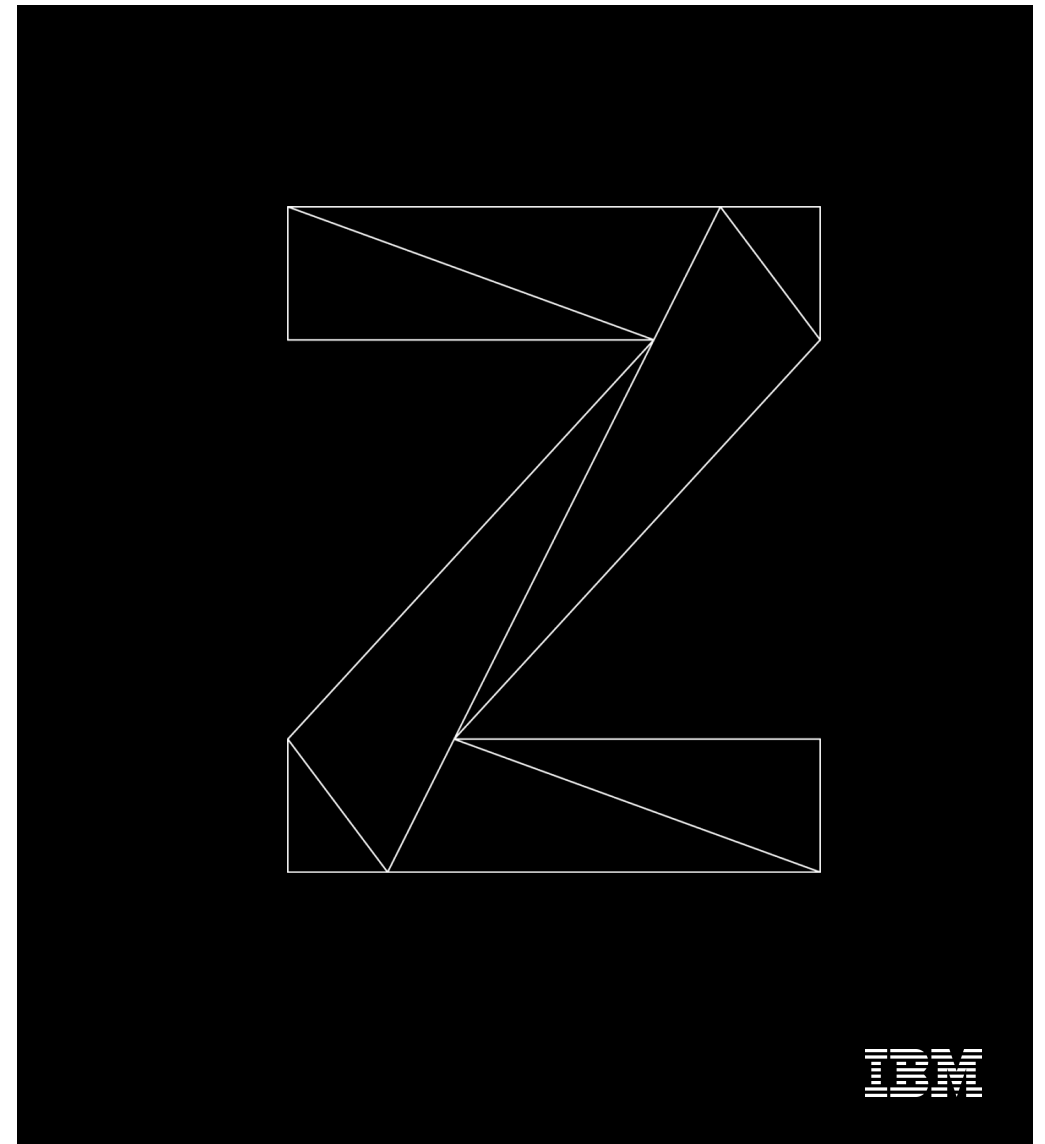
# IBM Z IT Service Management Family

*The OMEGAMON family integrates into a broad portfolio of IBM Products*



# OMEGAMON Overview

## Recent Updates



# OMEGAMON Family – Currency updates

- **Monitoring support for z15**
- **Support for z/OS V2.4**
- **Support for new Storage Hardware (DS8990F)**
- **Reduce risk of undetected blind spots within monitoring environment as you roll out updates**
- **OMEGAMONs are usually engaged in Early Support programs to support the various domains**



# IBM OMEGAMON for JVM on z/OS

## Extended z/OS Connect Request Details

### • APAR OA56263#

- Records **every** request
- Response Time breakdown
- Extended service provider metrics

API Name	HTTP Method	Request Count	Error Count	Timeout Count	Response Time Avg	OS Connect Avg	Response Time Min	Response Time Max	Response Time Avg Dev	SoR Time Avg	SoR Time Min	SoR Time Max
*ADMIN	PUT	09	0	0	0.002748s	0.002748s	0.00149s	1.00061s	0.002554s	0.00000s	0.00000s	0.00000s
- phonebook	GET	16	12	0	0.002415s	0.00636s	0.00156s	0.00299s	0.00431s	0.01779s	0.01174s	0.02156s
- customers	GET	27	12	0	0.002076s	0.00557s	0.00100s	0.00394s	0.00097s	0.01518s	0.00404s	0.0258s
- employee	PUT	12	12	0	0.002142s	0.00613s	0.00140s	0.00394s	0.00043s	0.01522s	0.01078s	0.02452s
- phonebook	PUT	14	14	0	0.00162s	0.00273s	0.00112s	0.00252s	0.00070s	0.00255s	0.00000s	0.0192s
- customer	PUT	11	0	0	0.002722s	0.00648s	0.00150s	0.00381s	0.00736s	0.02134s	0.01104s	0.02919s
- employee	GET	02	0	0	0.00221s	0.00529s	0.00144s	0.00270s	0.00125s	0.01602s	0.00300s	0.0226s
*SERVICE	POST	26	26	0	1.00241s	1.00085s	1.00044s	1.00433s	0.01030s	0.01523s	0.00000s	0.02002s
- phonebook	DELETE	14	14	0	0.00226s	0.00604s	0.00155s	0.00301s	0.00500s	0.01602s	0.01148s	0.0220s
- employee	DELETE	12	12	0	0.00179s	0.00490s	0.00143s	0.00298s	0.00425s	0.01399s	0.01076s	0.02490s
- phonebook	DELETE	14	14	0	0.002703s	0.00746s	0.00172s	0.00479s	0.00958s	0.02911s	0.0125s	0.0247s
- customer	DELETE	10	0	0	0.002703s	0.00551s	0.00150s	0.00479s	0.00958s	0.02152s	0.01109s	0.04024s
- employee	POST	11	11	0	0.00189s	0.00397s	0.00131s	0.00288s	0.00194s	0.01500s	0.00444s	0.0247s
- catalog	POST	11	11	0	0.00189s	0.00397s	0.00131s	0.00288s	0.00194s	0.00934s	0.00522s	0.01811s
- customer	POST	10	10	0	0.00348s	0.00513s	0.00186s	0.00288s	0.00874s	0.00934s	0.01132s	0.01810s
- addresses	POST	04	4	0	0.00348s	0.00513s	0.00186s	0.00288s	0.00874s	0.00934s	0.01132s	0.01810s
					3.53072s	0.00609s	0.00731s	0.00836s	9.66535s	0.53011s	0.00000s	0.0002s

# Requires z/OS Connect 3.0.20 or later

- 11 new workspaces
- 5 Summary Workspaces in a tabbed pane
- Total response time
- z/OS Connect time
- SoR Time

- System of Record (SoR) information
- Service name and type
- Target Application (SoR ID)
- Target transaction/program (SoR Resource)
- Service connector ID (SoR Reference)

Try today for free with zero install via IBM Z Trial → [ibm.biz/omegJVMZTrial](http://ibm.biz/omegJVMZTrial)

# Sessions this week

- **Monitoring Java and z/OS Connect EE API workloads-Discover-Alert-Optimize**

**Code:** (OL)

**Presenter:** Ashok Mahay

**Stream:** System Automation, Monitoring and Analytics

**Room:** Magny Cours

**Day:** Wednesday

**Time:** 16:30 - 17:30

- **z/OS Connect EE performance and workload management considerations**

**Code:** (GP)

**Presenter:** Nigel Williams

**Stream:** CICS

**Room:** Hungaroring

**Day:** Thursday

**Time:** 13:00 - 14:00

# Other OMEGAMON Updates

## OMEGAMON framework

- APAR OA57133 provides Support for Passphrase and Multi-Factor Authentication (MFA) - both the OMEGAMON Classic and Enhanced 3270UI.
- OA55918: ENGINE MEMORY REWRITE (EMR) - 31-bit memory management was changed to use memory more efficiently (CPU improvements).
- OA56925: Enhanced 3270UI Multi-tenancy support (e3270UI)

The screenshots show the OMEGAMON framework interface. The top window displays a 'CICS Task History Summary' table with columns for Transaction ID, CPU Time, Response Time, End Time, Task Number, and File. The middle window shows a 3D bar chart titled 'Velocity' with three bars representing different categories. The bottom window shows a detailed table of system metrics including Name, Class, Status, and various performance indicators.

## OMEGAMON for z/OS – FP4

- New Enterprise Central Processing Complex Overview workspaces
- Updated Sysplex Level Overview workspace
- New WLM Service and Report Class Extended Metrics workspaces
- New workspace to display RMF historical data

## OMEGAMON for Db2

- Support CICS TS 6.1
- Add Buffer Pool Data to Enhanced 3270 UI Thread Detail

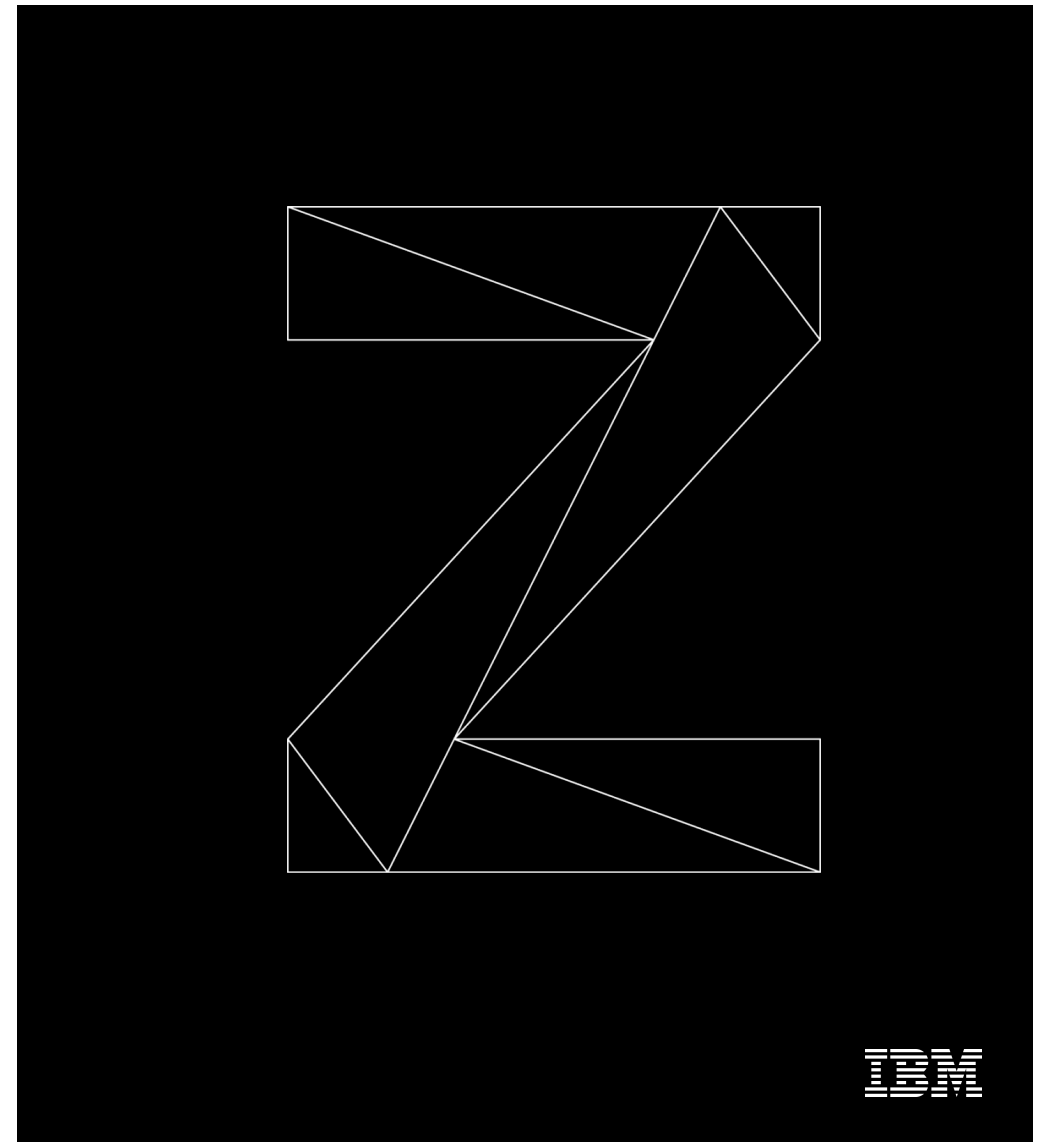
## OMEGAMON for Storage

- OA57903: Realtime Dataset Metrics Export Enhancement.
  - Updated Zowe level that was/is incorporated into OM Storage, to then-current level.
  - Export from RDM Viewer to spreadsheet



Monitoring the API Economy

OMEGAMON for JVM –  
API monitor






## We are living through an API Revolution!

Your mainframe System of Record doesn't need to be a cost center

Developers are the new customers of mainframe assets

Embrace new technologies



Leverage key assets stored on the Open Mainframe

Avoid blind spots as you embrace the API economy

Identify changes in workload performance

Monitor response time and throughput

Proactive alerting

Identify API Response Time

Understand if the infrastructure is able to handle current workloads

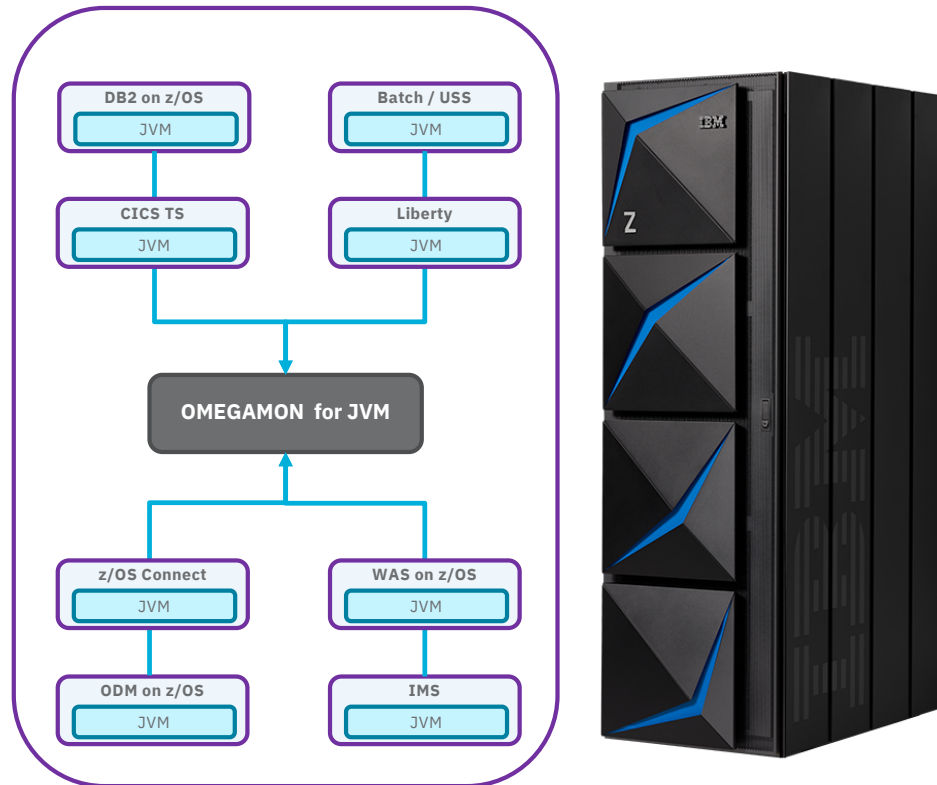
z/OS Connect EE performance

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The screenshot displays the IBM System Health monitoring interface. On the left, the 'Health Status' section shows monitoring components: CICS (Critical(1)), MQ (Critical(7), Warning(2)), DB2, z/OS, IMS, Networks, WAS, and Automation Domains (TESTPLX INGS40 Critical(2), Warning(2)). The main 'Events' table lists various system events with columns for Severity, Ack, Source, Summary, Time, and Category.

Severity	Ack	Source	Summary	Time	Category
Critical	Open	TVS/APG/TESTMVS	Automation resource with Compound State of "Error", Operational State: "The resource could not be started"	2015-08-27 19:43:54	SA Event
Critical	Open	TIR_MOVE/APG	Automation resource with Compound State of "Error", Operational State: "Error"	2015-08-25 21:06:40	SA Event
Critical	Open	WMQA.MVSTMQESA	EAP problem with started sender channel	2015-08-14 21:15:19	Situation OM MQ
Critical	Open	WMQA.MVSTMQESA	EAP problem with started sender channel	2015-08-14 21:15:19	Situation OM MQ
Critical	Open	WMQA.MVSTMQESA	EAP problem with started sender channel	2015-08-14 21:15:19	Situation OM MQ
Critical	Open	WMQA.MVSTMQESA	EAP queue has oldest message age too high	2015-08-14 21:07:57	Situation OM MQ
Critical	Open	WMQA.MVSTMQESA	EAP transmission queue has messages	2015-08-14 20:59:17	Situation OM MQ
Critical	Open	WMQT.MVSTMQESA	EAP queue has high depth	2015-08-14 20:41:18	Situation OM MQ
Critical	Open	WMQT.MVSTMQESA	EAP queue has oldest message age too high	2015-08-14 20:25:57	Situation OM MQ
Critical	Open	MVST.CICSADR1	Short Term Percentage Exceeded for CDB2RDYQ	2015-08-01 01:27:09	Situation OM CICS
Warning	Open	EAP_2IAPG/TESTMVS	Automation resource with Compound State of "Warning", Operational State: "The resource is performing poc"	2015-08-26 12:35:04	SA Event
Warning	Open	EAP_3IAPG/TESTMVS	Automation resource with Compound State of "Warning", Operational State: "The resource is performing poc"	2015-08-25 21:14:25	SA Event
Warning	Open	WMQT.MVSTMQESA	Dead Letter Queue is not empty	2015-08-14 20:26:20	Situation OM MQ
Warning	Open	WMQT.MVSTMQESA	EAP dead letter queue has messages	2015-08-14 20:17:20	Situation OM MQ

## IBM OMEGAMON for JVM on z/OS

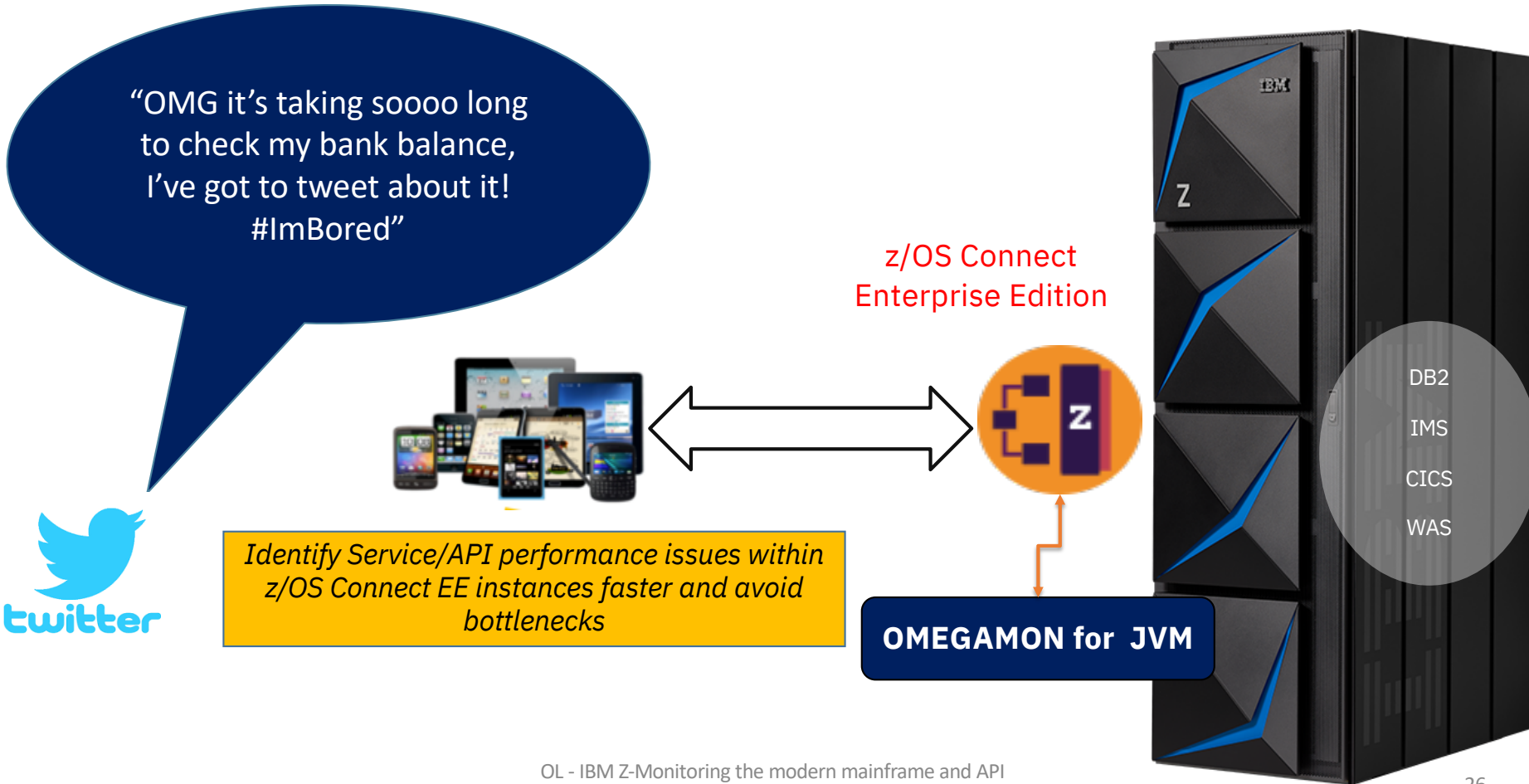


Reduce Blind Spots by Monitoring Java Runtimes on z/OS

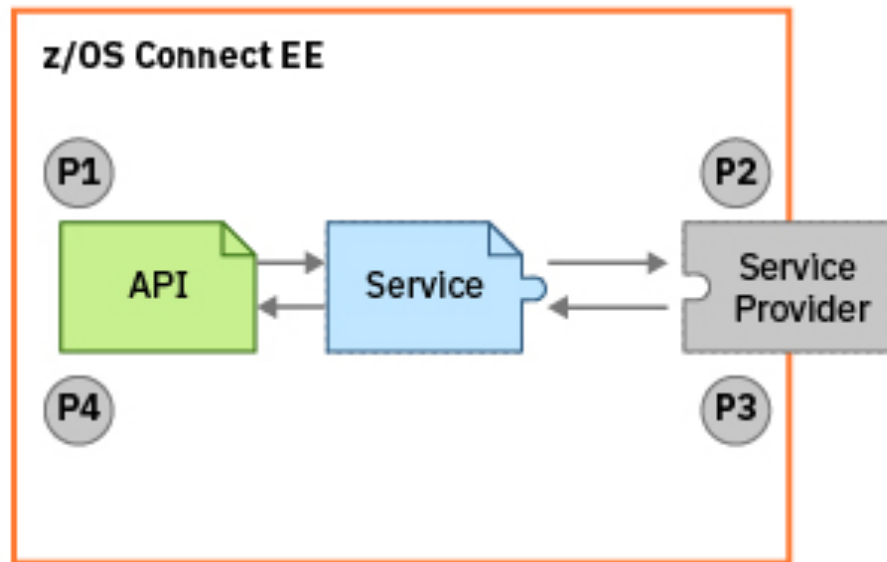
Resource level monitoring of *all* Java Virtual Machines (JVMs) on z/OS

- **Auto-discover** all JVMs
- **Lightweight overhead data collection (no instrumentation)**
- **Valuable overview of KPIs that affect z/OS users specifically (zIIPs, Native)**
- Identify **problematic thread and locking issues**, sub-optimal JVM **garbage collection performance**, looping thread and **CPU performance issues**
- **View all JVMs side-by-side**
- **API monitoring of z/OS Connect Enterprise Edition**

# Scenario: Slow API reports are coming in



## zCEE v3.0.18 introduced additional data points for interceptors



P1 - captures information about the request as it comes into z/OS Connect to be processed

P2 - captures information about the request just before it is sent to the System of Record

P3 - captures information about the response from the System of Record

P4 - captures information about the response before it is sent to the client

# Scenario: Slow API Response Time

JVMs Monitored by this Collector

Columns 2 to 13 of 16

ΔJob ▽Name	Subsystem Type	Application	ΔGCs per ▽Minute	Δ% Time in ▽GC Pauses	ΔHeap ▽Occupancy	ΔSystem ▽GC Count	ΔLocks ▽Missed %
JJD0BGBQ	Liberty	z/OS Connect	0.00	0.00%	0.00%	0	1.00%

Identify the z/OS Connect Job by looking at the Application field. Select the Job using option 'Z'

File Edit View Tools Navigate Help 12/14/2018 21:26:03

Command ==> JJCZSA z/OS Connect Request

APIName Service SOR ID Reference Resource

1. Last 5 Minute(s) (HH:MM:SS.mmm) (MM/DD/YYYY)  
 2. Last 1 Hour(s) Start Time 21:21:03.705 Date 12/14/2018  
 3. Date/Time Range End Time 21:26:03.705 Date 12/14/2018

Columns 3 to 13 of 17

ΔAPI ▽Name	ΔHTTP ▽Method	ΔRequest ▽Count	ΔError ▽Count	ΔTimeout ▽Count	ΔResp Time ▽Avg	ΔOS ▽Avg
*ADMIN*	GET	12	0	0	.000218s	.00
catalog_v.10	GET	1	0	0	10.2122s	10.21
catalog_v.10	POST	1	0	0	.007055s	.00

Sort the rows by 'Avg Response Time' - Identify and select the API name with highest Avg Response Time. Selecting option 'S' will display log of all requests completed in the last time interval

# View all completed requests for a given API over time

File Edit View Tools Navigate Help 12/15/2018 00:15:49

Command ==> KJJZCDA Requests using API catalog\_v.10, Method GET

Auto Update : off  
SMF ID : 85B2  
Co11 ID : 23D1

1. Last 5 Minute(s) Start Time (HH:MM:SS.mmm) Date (MM/DD/YYYY)  
2. Last 1 Hour(s) End Time 23:46:16.869 Date 12/14/2018  
3. Date/Time Range End Time 23:51:16.869 Date 12/14/2018

Columns 2 to 9 of 19 Rows 1 to 43 of 2001

Event Time	Total Req Time	zOS Conn Time	SoR Resp Time	Service Name	SoR ID	SoR Resource	SoR Ref	Request URI
12/15/18 00:15:27.286	.001367s	.000469s	.000898s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.309	.000629s	.000211s	.000418s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.312	.000482s	.000189s	.000293s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.318	.000484s	.000193s	.000291s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.321	.000486s	.000199s	.000287s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.324	.000493s	.000190s	.000303s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.326	.000487s	.000195s	.000292s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.329	.000517s	.000187s	.000330s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.332	.000519s	.000187s	.000332s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.335	.000514s	.000191s	.000323s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.338	.000493s	.000185s	.000308s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.340	.000490s	.000183s	.000307s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.343	.000641s	.000189s	.000452s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.346	.000521s	.000186s	.000335s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.349								/ite
12/15/18 00:15:27.353								/ite
12/15/18 00:15:27.356								/ite
12/15/18 00:15:27.358								/ite
12/15/18 00:15:27.361								/ite
12/15/18 00:15:27.364								/ite
12/15/18 00:15:27.367								/ite
12/15/18 00:15:27.369								/ite
12/15/18 00:15:27.372								/ite
12/15/18 00:15:27.375								/ite
12/15/18 00:15:27.377								/ite
12/15/18 00:15:27.380								/ite
12/15/18 00:15:27.383								/ite
12/15/18 00:15:27.386								/ite
12/15/18 00:15:27.388								/ite
12/15/18 00:15:27.391								/ite
12/15/18 00:15:27.394								/ite
12/15/18 00:15:27.396	.000510s	.000177s	.000333s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.399	.000535s	.000178s	.000357s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.402	.000400s	.000178s	.000222s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.404	.000547s	.000181s	.000368s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.407	.000538s	.000190s	.000348s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.409	.000539s	.000182s	.000357s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.412	.000561s	.000173s	.000388s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.415	.000525s	.000179s	.000346s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.417	.000393s	.000173s	.000220s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.420	.000553s	.000180s	.000373s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.423	.000546s	.000178s	.000368s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite
12/15/18 00:15:27.425	.000394s	.000177s	.000217s	inquireSingle_v1	ROCKNET1.CACL54HX	CSMI, DFHOXCMN	I5G1	/catalog/v1.0/ite

KJJZC0001W Too many result rows. Showing first 2,000 only

Hub JJD1:CMS on platform R5B2(z/OS)

BACK HOME MORE

View the completed API and method requests  
Sort log entries by highest Total Request Time so the slowest comes to the top, then  
Select the API and method with the longest response time to view the API, SoR and z/OS Connect breakdown in one window.



# Selective time series range

Use the filter fields to zoom in to specific time frame – view trends.

K05203H\* 2705 CONNECT Reques

APIName	Service	SoR ID	Reference	Resource
<input checked="" type="checkbox"/>				Specify F
3	1. Last <u>5</u> Minute(s)		(HH:MM:SS.mmm)	(MM/DD/YYYY)
	2. Last <u>1</u> Hour(s)	Start Time	00:00:00.000	Date 09/05/2018
	3. Date/Time Range	End Time	23:59:59.999	Date 09/05/2018

# NEW - Detailed z/OS Connect Request Details page

```
File Edit View Tools Navigate Help 03/19/2019 11:17:59
Auto Update : Off
Command ==> KJJZCDD z/OS Connect Request Detail SMF ID : ZT01
Coll ID : KJJ1

Event time..... 03/19/19 11:07:06.080
Request Type.... API
API name..... catalog_v1.0
Request URI..... /catalogManager/v1.0/orders
Query String....
Method..... POST
Port..... 52943
HTTP code..... 503 (Service Unavailable)
Timeout..... Yes
Service Name.... placeOrder_v1.0
Total Req Time.. 30.001297s
z/OS Conn Time.. 0.000758s
SoR Resp Time... 30.000539s
SoR ID..... MOPZT00 .CICSMOB1
SoR Ref..... CICSMOB1
SoR Resource.... MZPO,DFH0XCMN
Remote Address.. 9.212.143.65
Request Length.. 50
Response Length.. 0
Correlator..... e9e3f0f0d7d3c5e700254000190d5d7f
Operation..... postPlaceOrder_v1.0
Provider..... CICS-1.0
User ID..... EMPLOY1
```

This screen shows the details of the request that timed out. It gives a complete view of the timeout:

**CICS transaction MPZO timed out and the program that was being executed was DFH0XCMN.**

An HTTP return code 503 was returned to the client.

We have enough data to pass on to the CICS SME for final analysis.

## Check tabs in e3270UI for other views of data

File Edit View Tools Navigate Help 12/14/2018 23:13:38

Command ==> KJJZCSS

Auto Update : off  
SMF ID : R5B2  
Coll ID : JJD1

Requests by Service Name

APIName Service SoR ID Reference Resource

1. Last 5 Minute(s) (HH:MM:SS.mmm) (MM/DD/YYYY)  
2. Last 1 Hour(s) Start Time 22:52:18.757 Date 12/14/2018  
3. Date/Time Range End Time 22:57:18.757 Date 12/14/2018

Columns 2 to 13 of 16 Rows 1 to 2 of 2

Service Name	Request Count	Error Count	Timeout Count	Resp Time Avg	zOSConnect Avg	Resp Time Min	Resp Time Max	Resp Time StdDev	SoR Time Avg	SoR Time Min	SoR Time Max	SoR Time StdDev
placeorder_v1.0	6	0	0	.002101s								
inquireSingle_v1	2	1	0	.001300s								

Use the Service tab to view the list of defined services...

Look at the data passing through z/OS Connect in other views

File Edit View Tools Navigate Help 12/14/2018 23:51:16

Command ==> KJJZCSI

Auto Update : off  
SMF ID : R5B2  
Coll ID : JJD1

Requests by SoR ID

APIName Service SoR ID Reference Resource

1. Last 5 Minute(s) (HH:MM:SS.mmm) (MM/DD/YYYY)  
2. Last 1 Hour(s) Start Time 23:46:16.869 Date 12/14/2018  
3. Date/Time Range End Time 23:51:16.869 Date 12/14/2018

Columns 2 to 13 of 16 Rows 1 to 1 of 1

SoR ID	Request Count	Error Count	Timeout Count	Resp Time Avg	zOSConnect Avg	Resp Time Min	Resp Time Max	Resp Time StdDev	SoR Time Avg	SoR Time Min	SoR Time Max	SoR Time StdDev
ROCKNET1.CACL54HX	1	0	0	.001443s	.000630s	.001443s	.001443s	0.00000s	.000813s	.000813s	.000813s	0.000

Select System of Record ID tab to view which Subsystems (CICS, IMS etc) are processing API requests and if there were any errors. This example shows the qualified APPLID for a CICS region

# Ordering by Reference or Resource

File Edit View Tools Navigate Help 12/14/2018 23:55:21

Command ==> KJZCSR Requests by SoR Reference

Auto Update : off  
SMF ID : R5B2  
Coll ID : JJD1

APIName Service SoR ID Reference Resource

1. Last 5 Minute(s) (HH:MM:SS.mmm)  
2. Last 1 Hour(s) Start Time 23:46:16.869 Date  
3. Date/Time Range End Time 23:51:16.869 Date

Columns 2 to 13 of 16

Rows 1 to 1 of 1

ΔSoR Ref	Request Count	ΔError Count	ΔTimeout Count	ΔResp Time Avg	ΔzOSConnect Avg	ΔResp Time Min	ΔResp Time Max	ΔResp Time StdDev	ΔSoR Time Avg	ΔSoR Time Min	ΔSoR Time Max	ΔSoR Time StdDev
_ I5G1	1	0	0	.001443s	.000630s	.001443s	.001443s	0.00000s	.000813s	.000813s	.000813s	0.0000

View by Reference ID - requests specifically by the target connection references e.g. alias for backend server (as defined in server.xml)

File Edit View Tools Navigate Help 12/15/2018 00:06:55

Command ==> KJZCSR Requests by SoR Resource

Auto Update : off  
SMF ID : R5B2  
Coll ID : JJD1

APIName Service SoR ID Reference Resource

1. Last 5 Minute(s) (HH:MM:SS.mmm)  
2. Last 1 Hour(s) Start Time 23:46:16.869 Date  
3. Date/Time Range End Time 23:51:16.869 Date

Columns 2 to 13 of 16

Rows 1 to 1 of 1

ΔSoR Resource	Request Count	ΔError Count	ΔTimeout Count	ΔResp Time Avg	ΔzOSConnect Avg	ΔResp Time Min	ΔResp Time Max	ΔResp Time StdDev	ΔSoR Time Avg	ΔSoR Time Min	ΔSoR Time Max	ΔSoR Time StdDev
_ CSMI,DFHOXCMN	1	0	0	.001443s	.000630s	.001443s	.001443s	0.00000s	.000813s	.000813s	.000813s	0.0000

View by Resources - which programs, transactions IDs, and REST end points are being called by z/OS Connect to satisfy each API request. (Program name and transaction)

File Edit View Tools Navigate Help 01/11/2019 12:44:10

Command ==> KOBHLRTX Help (KJJZCDD)

z/OS Connect Individual Request Details

This workspace lists the individual requests that comprise the selected summary row.

The following data are shown:

Event Time Name	The date and time that request entered the system. The date is in U.S MM/DD/YY format.
Total Req Time	The total amount of time the request took between the request being received by z/OS Connect and a response being returned to the request client.
Z/OS Conn Time	The amount of time the request spent in z/OS Connect in seconds.
SoR Resp Time	The amount of time the request spent being processed by the System of Record.
Service Name	The name of the service invoked by the request. For administration API queries, this value may be "N/A". For requests that do not invoke a service (either because there was an error or the service is not active, the value "NONE" is used.
SoR ID	The SoR ID is a string representing the System of Record application. For the CICS service provider this is the fully qualified CICS applid. For the IMS service provider it is the datasource name. For the REST client service provider, it is the IP address/hostname and port of the target API endpoint.
SoR Resource	A string containing service provider specific information identifying the resource invoked on the

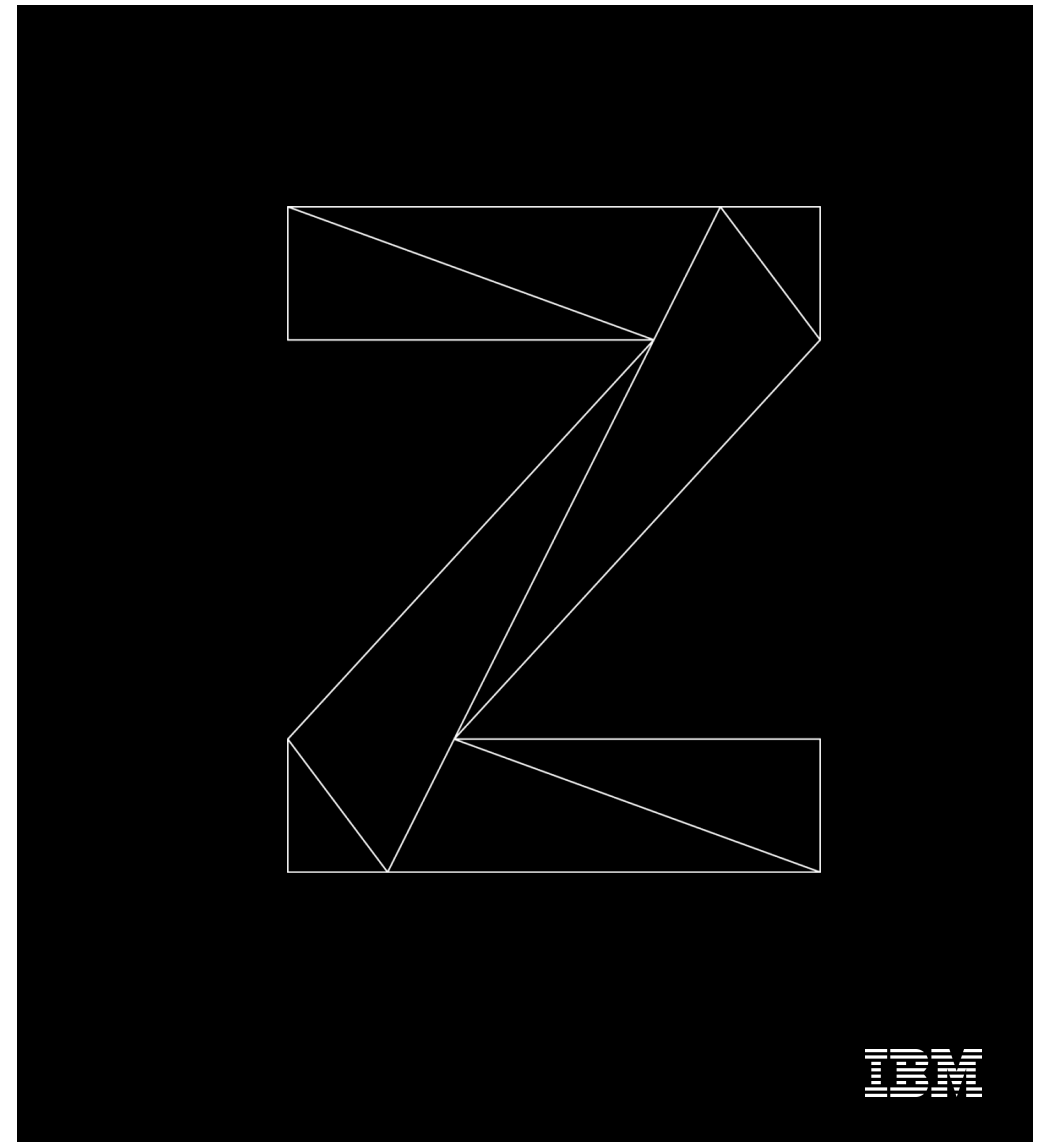
**We can launch the Help panels to view each attribute's reference information.**

# Zowe – IT Operations

What Zowe Means for  
Monitoring



# Zowe



## “DISCLAIMER”....

- Zowe is an open source project - IBM was a founding member
- Zowe is not an IBM product
- All the information presented in this session is public information but subject to change
- Future plans depends on the open community decisions. Time frames for delivery are not guaranteed since it depends on the staffing and time commitment of the open community
- You are encouraged to get involved in the community for the latest information and to influence the project direction and priorities



# Zowe Vision Statement

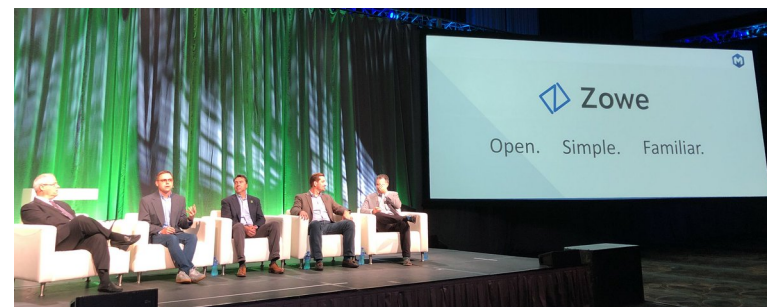


- Attract new people
  - ✓ Demystify the Z platform
  - ✓ Enhance integration and consumability
  - ✓ Promote Open community of practice
- Reduce learning curve
  - ✓ Improve productivity
  - ✓ Modern, platform-neutral interfaces
  - ✓ Cloud-like experience
- Simplify architecture
  - ✓ Reduce operational overhead
  - ✓ Improve co-existence
  - ✓ Enable rich ecosystem of free and commercial solutions



## Quick Facts about Zowe

- Zowe 1.0 Announced at THINK conference
  - Pronounced as “Zoe” – [zoh-ee] in English
    - Not an acronym – just a simple, fun and easy name
    - Using the spelling “Zowe” allowed trademarking
- Open Source by [Open Mainframe Project \(OMP\)](#)
  - Collaborative project within the Linux Foundation
- Currently available at V1.5
  - Alpha release is available with SMP/E



# What's in Zowe?

Browser-based Web Desktop

Integrated 3270 Emulator

API Mediation Layer  
(Gateway, Discovery Service, Catalog)

The screenshot displays the Zowe web interface. On the left, there's a Swagger API documentation for JES jobs, listing endpoints like `/api/v1/jobs` and `/api/v1/jobs/{jobName}/files`. The main area shows the JES Explorer with a tree view of job components and a content viewer displaying job logs. A TN3270 terminal window is also visible, showing a list of jobs and their execution status.

The screenshot shows the API Mediation Layer API documentation. It features a header for 'API Mediation Layer API' and a section for 'API Catalog'. The API Catalog is described as a service to display service details and API documentation for discovered API services. The version is listed as 1.0.0.

The screenshot shows a terminal window with the command `bright zos-files` executed. The output displays a description: 'Manage z/OS data sets and USS files', followed by usage instructions: `bright zos-files [action] [object] [options]`.

Swagger-defined z/OS REST APIs

Node.js- based CLI

# What does Zowe mean for Operations?

**Leverage core Zowe capabilities such as single sign-on and API access to data**

**Evolve current UI for modern user requirement while leveraging existing investments**

**Increase integration between tool sets from TEP to Service Management Unite and Enhanced 3270UI**

**Simplify installation and workflows to lower skills barrier to monitor and manage**

**...we've already got started**

# OMEGAMON for Storage V5.5 – September 2018

-- First IBM Offering to leverage Zowe



FILTER BY  
 Dataset Name: = \*\* ▾ | Days Since Reference: > 31 ▾ | +

COLUMNS SET  
 Default Space VSAM VSAM Statistics GDG DFSMS Allocation

Dataset Name  
 39IC.IMAGCOPY.DBABPT05.D20173  
 39IC.IMAGCOPY.DBABPT05.D20180  
 39IC.IMAGCOPY.DBABPT05.T012912

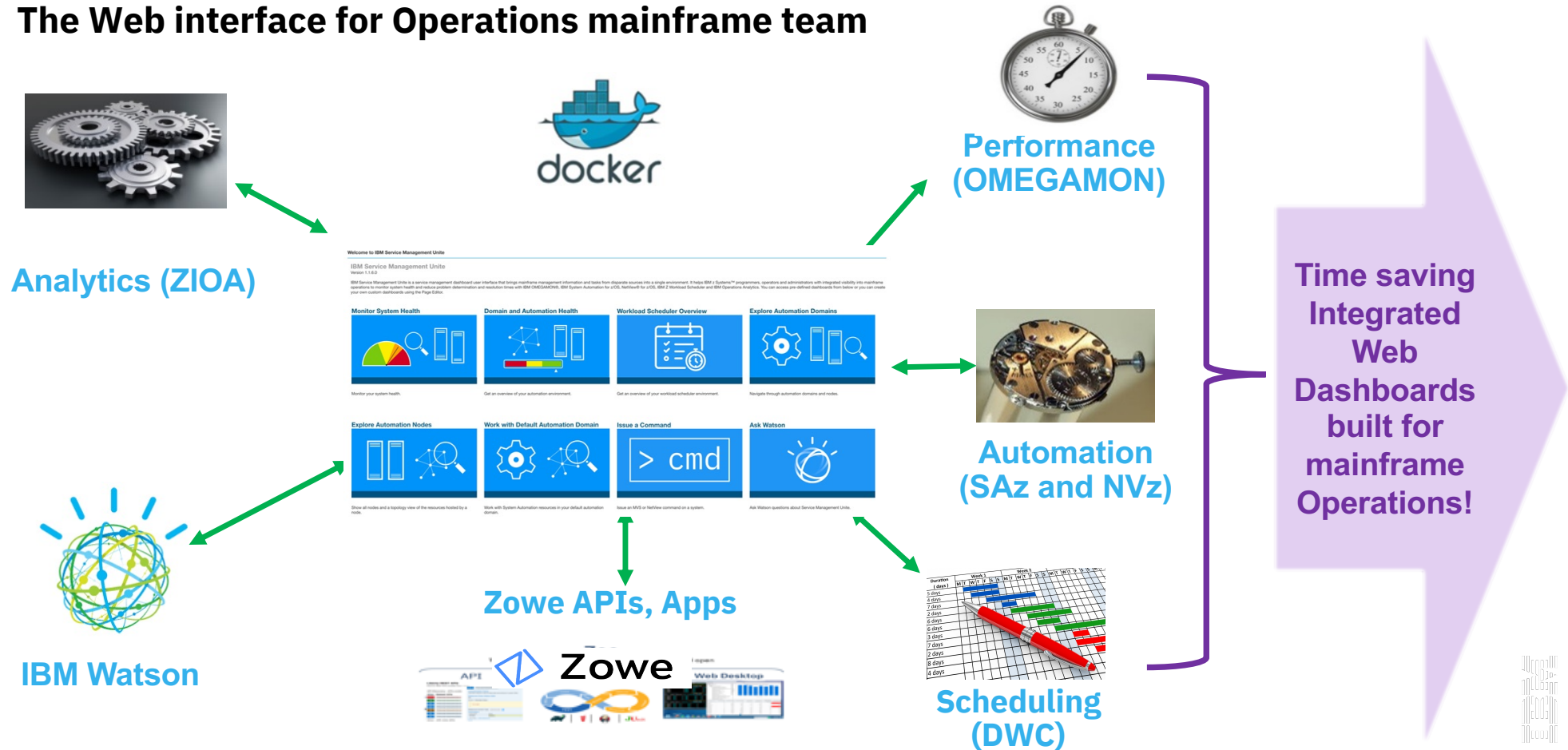
Device Type: = ▾  
 = ▾  
 Unknown  
 3390  
 3380  
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OL - IBM Z Monitoring the modern mainframe and API economy

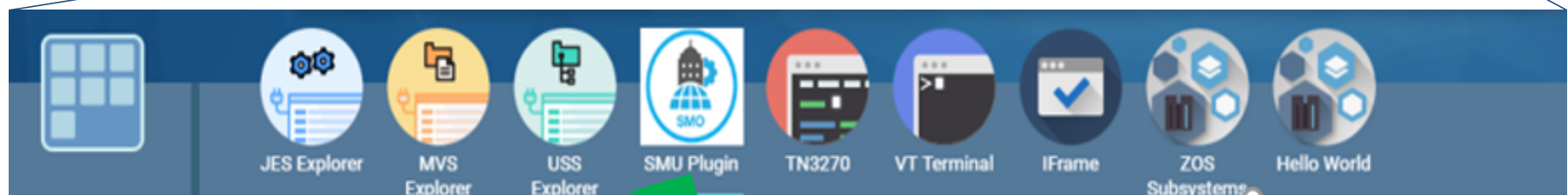
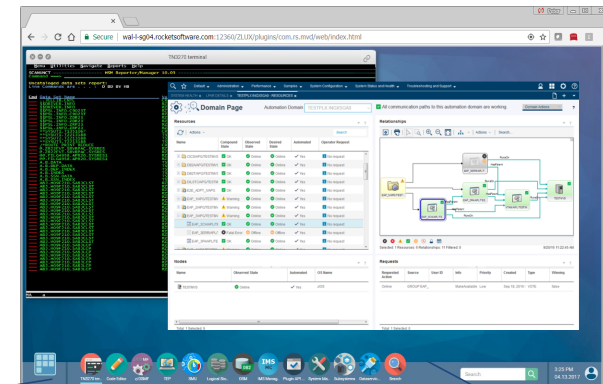
# IBM Service Management Unite at a glance

## The Web interface for Operations mainframe team



# SMU is now a Zowe Desktop Application

- SMU Zowe plugin is alongside Zowe core JES/MVS dataset Explorer plugins
- Instant access to 3270 tooling and other popular applications “All of the old”



# Service Management Unite v1.1.5 – December 2018



**View JES Job Information in SMU  
using Zowe JES Explorer**



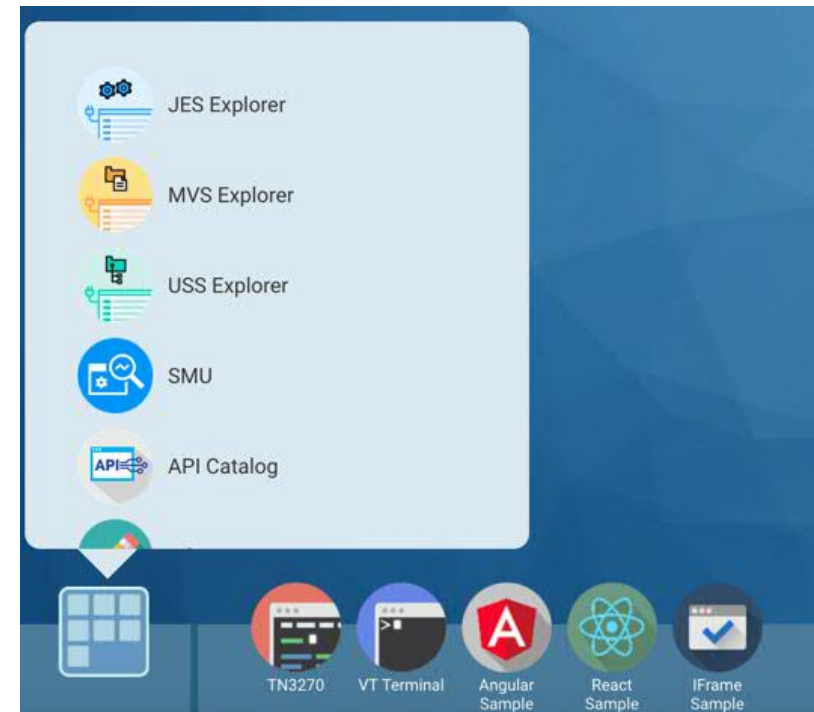
**View and edit data sets in SMU  
using Zowe MVS Explorer**



**SMU Simplified Installation**



**SMU Z Trial for JVM Monitoring**





# Improved Problem Analysis using Zowe JES Explorer

- Enable mainframe operators to isolate environmental issues by offering seamless navigation into Zowe's JES Explorer to view any job content without the need to switch the application or even use another terminal

**LPAR Details for SYS9**

System: OHCS1PM System: zvc

**Top 5 CPU Utilization**

Job Name	% LPAR Unccapped	% LPI
ZDW...		
OHP...		
L2S1...		
WLM	6%	
OHP...	5%	

**Address Space Bottleneck Analysis Summary**

Job Name	ASID	CPU Loop Index
MSGBCNDL	0xd0027	
S4KSCNDL	0xd0026	0%
I2USVR1	0xd0025	0%
I2UANG1	0xd0024	0%

Total: 362 Selected: 0

**Common Storage Summary**

Major Name	Owning Address Space	ASID	Owning Task Count	Waiting Task Count	Maximum Wait Time
SYS0SN	INGNAM1	0xd00DF	1	1	1,006.72



**JES Explorer**

Name: OHPMTOM

Job ID: STC22889

**Content Viewer**

```

1 //OHPMTOM JOB MSGCLASS=X, STC22889
2 // MSGLEVEL=1
3 //STARTING EXEC OHPMTOM
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993
994
995
996
997
998
999
1000

```



# Improved Problem Analysis using Zowe MVS Explorer

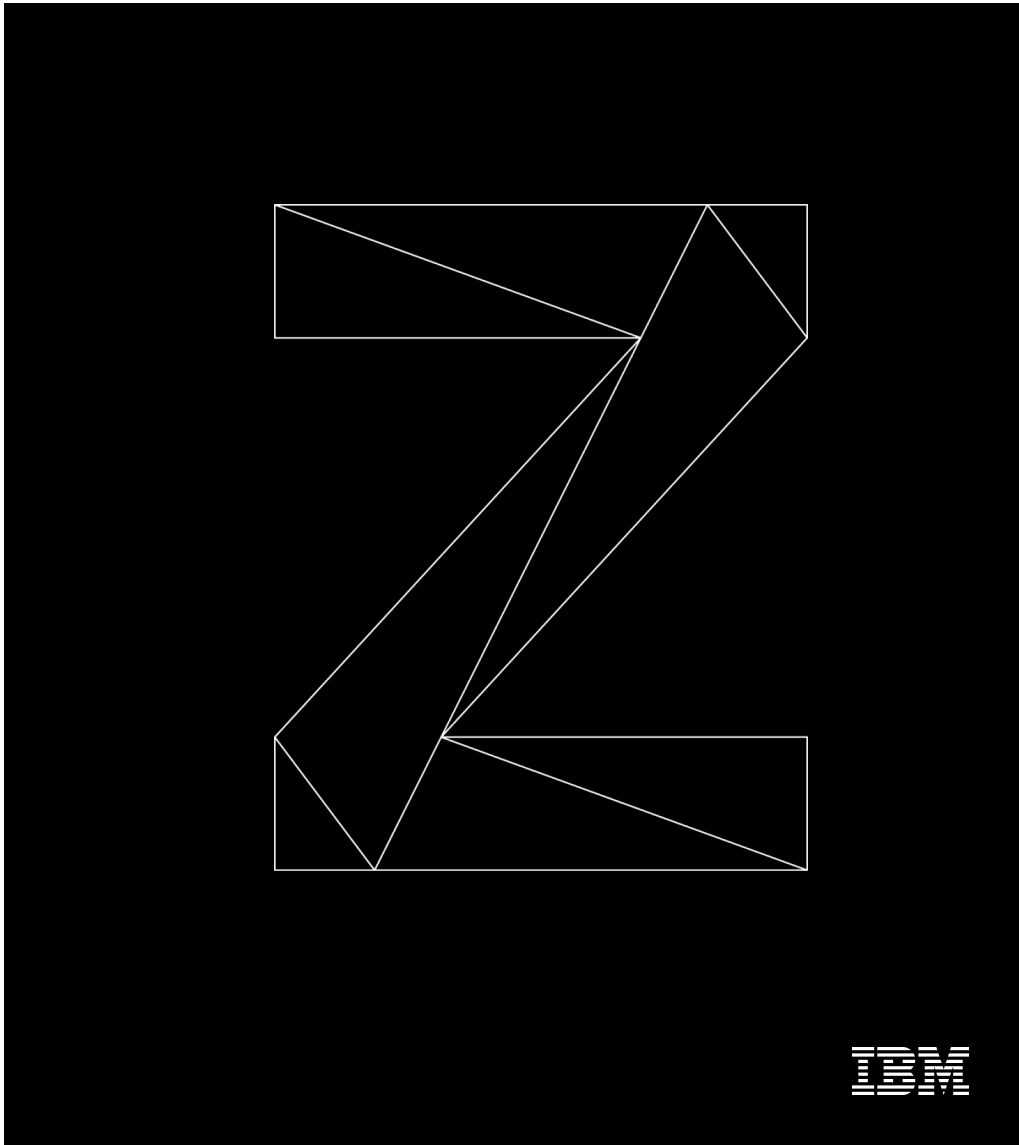
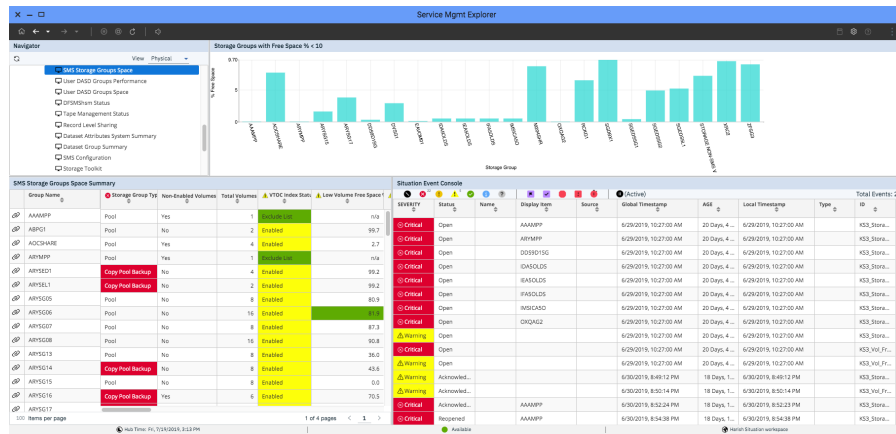
- View/Edit Data Set Member or sequential Data Set content
- View Data Set attributes, like blksize, LRECL and so on.
- Enable/Disable Explorer page according to Data Set type

The screenshot displays the Zowe MVS Explorer interface with four main panels:

- Volume Details for AUCS01:** Shows volume attributes such as Device (AUCS01), Address (6347), Total Capacity (2707 MB), Free Space (966 MB), and SMS Status (Enabled).
- Volume Space Trend:** A line graph showing Percent Free Space (35.6%) over time from 10/22/18 10:00 PM to 10/23/18 12:00 AM.
- Data Sets on the Volume:** A table listing datasets on the volume. A context menu is open over the dataset `ITUAM.SCLM.V7R1.M0.WARREN.PANL`, showing options like "Issue Command...", "Migrate Dataset to Level 1 Volume...", "Migrate Dataset to Level 2 Volume...", "Release Dataset...", "MVS DataSet Information", and "Properties...".
- Data Set Explorer:** A tree view showing the dataset structure, including members like HELPO02, HELPO04, SETUP001, AS400001, SETUP006, DATAM003, SETUP007, BILL0001, L0001, SP002, CLJENT02, SETUP003, CICS0002, SETUP004, SETUP005, DATAM002, HELPO010, EXTR001, and DATAM005.
- MVS Viewer:** Displays the content of the selected dataset member, showing a JCL program with various comments and options.

# A bit about IBM Z Service Management Explorer (IZSME)...

## What / Why / Direction



# Statement of Direction

## Statement of Direction – 14-Feb-2019

**IBM intends to modernize the user experience for z/OS users of the Tivoli Enterprise Portal (TEP) by enabling the use of Zowe to provide a full web browser-based implementation of the current capability, while automatically capturing and preserving the investment that clients have made in customization. The new web-based capability, when fully delivered, will remove all dependency on client-side Java, making it easier to have a consistent experience and eliminating impacts from Java version and service levels.**

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# IBM Z Service Management Explorer (IZSME) Goals:



- Provide completely web-based solution, eliminating need for Java client
- Easy install / config – self-discovery, input credentials and port number, then users are “instantly-on”
  - No PARMGEN changes!
  - No changes to where and how you run TEMS server(s)
- Lift & Shift now – opens architecture for future expansion
- Automatically incorporate ALL customizations without migration or re-creation
- Ultimately allow TEPS server to run on z/OS as well as zLinux, etc.
- Provide UX modernization platform through Zowe implementation
- Display distributed platform agent data in addition to IBM Z

# IBM Z Service Management Explorer:

## Delivery Phases

- While bringing IZSME online, users can also continue using TEP
  - Phase 1 - Read-only IZSME, need TEP client for editing/creation tasks
    - Some users can remove client workstation Java
  - Phase 2 – General Administrative, Create/Edit capability added
    - Completely eliminate client workstation Java dependency
  - Phase 3 – TEPS function can be hosted on Zowe server
    - All necessary functions on Zowe platform (on z/OS)

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# IBM Service Management Explorer Phase 1 Beta:

## Beta 1 Contains:

- Easy and automated installation, discovery, and configuration
- Navigator panels w/custom navigators
- Table views w/thresholds
- Situation event viewer
- Histogram views

## Beta 2 - available soon:

- LDAP support
- Pie charts
- Line charts
- Workspace links

## Beta 3 (plan) available later...:

- More custom graphics
- Topology view
- Notepad & web page views
- “Java Extensions”
- ...more



## How to get Involved:

- Join our Early Access Program (EAP)
- Benefits:
  - Webinars – how-to, upcoming functions, and more...
  - Opportunity to provide feedback to IBM
  - Early access to beta code for :
    - OMEGAMONs
    - E3270UI
    - IBM Z Service Management Explorer
    - IBM Service Management Unite
- To Join: Email EAP Program Administrator
  - [Laura Rosensteel \(lrosens@us.ibm.com\)](mailto:lrosens@us.ibm.com)

# Phase 1 Deliverable:

## How will IZSME Compare to TEP?

- Easy installation
- Self-discovery of servers
- View and navigation familiar
- Modernized graphics & appearance
- Some navigator shortcuts to make life easier
- Full scope of query results returned
- Sorting & filtering on full data returned
- MFA support (via Zowe)

### High Availability:

- IZSME Zowe plug-in inherits HA/FT from Zowe
- Node will detect TEPS DB or TEMS failures
- IZSME components will switch to failover locations
- Failover locations specified by user



# What Would Migration to a TEP based on Zowe look like?

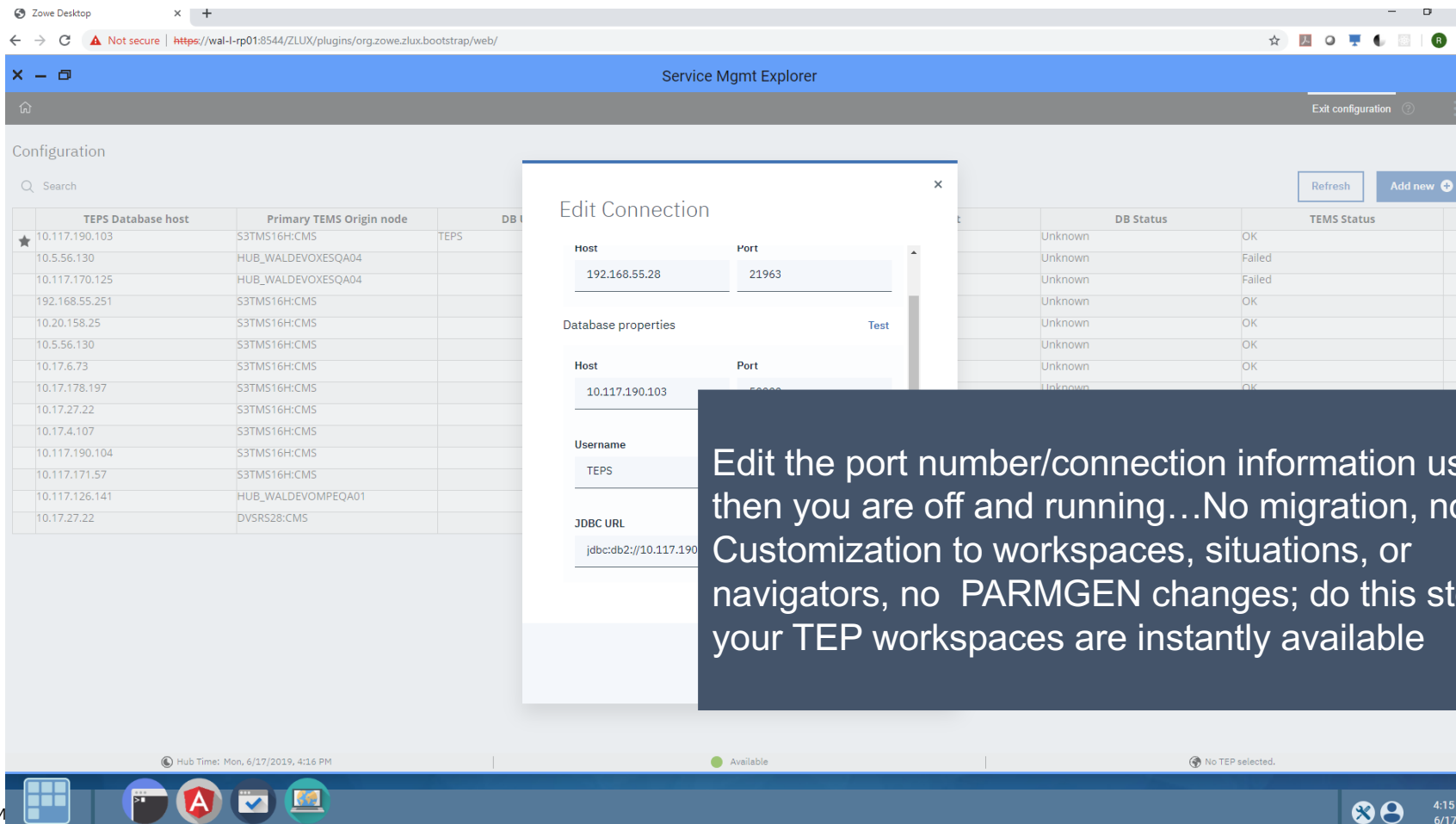
The screenshot shows the 'Service Mgmt Explorer' interface. It features a search bar, 'Refresh' and 'Add new' buttons, and a table with the following columns: TEPS Database host, Primary TEMS Origin node, DB Username, DB Password, DB Port, DB Status, and TEMS Status. A context menu is open over the first row, showing options: Set As Default, Edit, Test, and Delete.

TEPS Database host	Primary TEMS Origin node	DB Username	DB Password	DB Port	DB Status	TEMS Status
10.117.190.103	S3TMS16H:CMS	TEPS	*****	50000	Unknown	OK
10.5.56.130	HUB_WALDEVOXESQA04			50000	Unknown	Failed
10.117.170.125	HUB_WALDEVOXESQA04			50000	Unknown	Failed
192.168.55.251	S3TMS16H:CMS			50000	Unknown	OK
10.20.158.25	S3TMS16H:CMS			50000	Unknown	OK
10.5.56.130	S3TMS16H:CMS			50000	Unknown	OK
10.17.6.73	S3TMS16H:CMS			50000	Unknown	OK
10.17.178.197	S3TMS16H:CMS			50000	Unknown	OK
10.17.27.22	S3TMS16H:CMS			50000	Unknown	OK
10.17.4.107	S3TMS16H:CMS			50000	Unknown	OK
10.117.190.104	S3TMS16H:CMS			50000	Unknown	OK
10.117.171.57	S3TMS16H:CMS			50000	Unknown	OK
10.117.126.141	HUB_WALDEVOMPEQA01			50000	Unknown	OK
10.17.27.22	DVSR528:CMS			50000	Unknown	OK

Agents, TEPS & TEMS servers are discovered automatically; you don't have to input them; no changes to TEMS are required... Authenticate to your servers then....

Hub Time: Mon, 6/17/2019, 4:15 PM | Available | No TEP selected.

# What Would Migration to a TEP based on Zowe look like?



The screenshot shows the 'Service Mgmt Explorer' interface. A table lists database connections with columns for 'TEPS Database host', 'Primary TEMS Origin node', and 'DB'. An 'Edit Connection' dialog box is open, showing fields for 'Host' (192.168.55.28), 'Port' (21963), 'Database properties', 'Host' (10.117.190.103), 'Port' (50000), 'Username' (TEPS), and 'JDBC URL' (jdbc:db2://10.117.190.103). A text overlay on the dialog box reads: 'Edit the port number/connection information used – then you are off and running...No migration, no Customization to workspaces, situations, or navigators, no PARMGEN changes; do this step and your TEP workspaces are instantly available'.

TEPS Database host	Primary TEMS Origin node	DB	DB Status	TEMS Status
10.117.190.103	S3TMS16H:CMS	TEPS	Unknown	OK
10.5.56.130	HUB_WALDEVQESQA04		Unknown	Failed
10.117.170.125	HUB_WALDEVQESQA04		Unknown	Failed
192.168.55.251	S3TMS16H:CMS		Unknown	OK
10.20.158.25	S3TMS16H:CMS		Unknown	OK
10.5.56.130	S3TMS16H:CMS		Unknown	OK
10.17.6.73	S3TMS16H:CMS		Unknown	OK
10.17.178.197	S3TMS16H:CMS		Unknown	OK
10.17.27.22	S3TMS16H:CMS		Unknown	OK
10.17.4.107	S3TMS16H:CMS		Unknown	OK
10.117.190.104	S3TMS16H:CMS		Unknown	OK
10.117.171.57	S3TMS16H:CMS		Unknown	OK
10.117.126.141	HUB_WALDEVOMPEQA01		Unknown	OK
10.17.27.22	DVRSR528:CMS		Unknown	OK

# What could a TEP based on Zowe look like?

Take the aspects of TEP you have already invested in (customized workspace, situations) and make it visible in a modern browser based environment. Users can continue using the “old” TEP or the new Service Management Explorer interchangeably; no cutover is required. In Phase 1, administrative functions such as editing workspaces, situations, and navigators will require the “old” TEP.

Group Name	Storage Group Type	Non-Enabled Volumes	Total Volumes	Enabled	Critical	Open	Group Name	Date
AAAMPP	Pool	Yes	1	Enabled	Critical	Open	AAAMPP	6/12/2019, 3
ABPG1	Pool	No	2	Enabled	Critical	Open	AOCSHARE	6/12/2019, 3
AOCSHARE	Pool	Yes	4	Enabled	Critical	Open	ARYMPP	6/12/2019, 3
ARYMPP	Pool	Yes	1	Exclude List	Critical	Open	DDS9D1SG	6/12/2019, 3
ARYSED1	Copy Pool Backup	No	2	Enabled	Critical	Open	DVSG1	6/12/2019, 3
ARYSEL1	Copy Pool Backup	No	1	Enabled	Critical	Open	IDA5OLDS	6/12/2019, 3
ARYSG05	Pool	No	8	Enabled	Critical	Open	IEA5OLDS	6/12/2019, 3
ARYSG06	Pool	No	16	Enabled	Critical	Open	IFA5OLDS	6/12/2019, 3
ARYSG07	Pool	No	8	Enabled	Critical	Open	IMSICA50	6/12/2019, 3
ARYSG08	Pool	No	16	Enabled	Critical	Open		

# IZSME – Nav tree, Tables with links, Histograms, tooltips

Service Mgmt Explorer

**Navigator**

- QA
- RS25
- RSPLEXTS:MVS:SYSplex
  - Coupling Facility Policy Data for Sysplex
  - Coupling Facility Structures Data for Sysplex
  - Coupling Facility Systems Data for Sysplex
  - GRS Ring Systems Data for Sysplex
  - Global Enqueue Data for Sysplex
  - Report Classes Data for Sysplex
  - Resource Groups Data for Sysplex
  - Service Classes Data for Sysplex**
  - Service Definition Data for Sysplex

**Performance Indices**

**Actual Host**

**Transactions / Second**

**Service Classes**

Service Class	Goal Importance	Actual Host	Performance Index	Worst Performance Index	Transaction Rate	Actual Network	Actual Total	Workload	Period	Goal Type
SMS Storage Group Volume Space	Highest	42	1.42	1.42	0.0	0	42	AVZ_WK...	1	Velocio
SMS Storage Group Space Trend	Medium	82	0.36	0.36	0.0	0	82	BATCH	2	Velocio
Lowest Volume Free Space	High	6	13.33	13.33	0.0	0	6	DB2	1	Velocio
Lowest Volume Free Space Percent	Low	0	20.00	20.00	0.0	0	0	DDF	1	Velocio
Highest Volume Fragmentation Index	High	3	16.66	16.66	0.0	0	3	STC	1	Velocio
Flash Copy Volumes	High	7	12.85	12.85	0.0	0	7	STC	1	Velocio
PPRC Volumes	High	3	30.00	30.00	0.0	0	3	SDH_W...	1	Velocio
test	Highest	7	12.85	12.85	0.0	0	7	STC	1	Velocio
test inter-view	Highest	3	30.00	30.00	0.0	0	3	SDH_W...	1	Velocio
test-relative	Highest	3	30.00	30.00	0.0	0	3	SDH_W...	1	Velocio
test-absolute	Highest	3	30.00	30.00	0.0	0	3	SDH_W...	1	Velocio

19, 9:52 AM Available Service Classes Data for Sysplex

# IZSME – Situation event console and pagination

Service Mgmt Explorer

Storage Groups with Free Space % < 10

SMS Storage Groups Space Summary

Group Name	Storage Group Type	Non-Enabled Volumes	Total Volumes	VTOC Index Status	Low Volume Free Space %
AAAMPP	Pool	Yes	1	Exclude List	n/a
ABPG1	Pool	No	2	Enabled	99.7
AOCSHARE	Pool	Yes	4	Enabled	2.7
ARYMPP	Pool	Yes	1	Exclude List	n/a
ARYSED1	Copy Pool Backup	No	4	Enabled	99.2
ARYSEL1	Copy Pool Backup	No	2	Enabled	99.2
ARYSG05	Pool	No	8	Enabled	80.9
ARYSG06	Pool	No	16	Enabled	81.9
ARYSG07	Pool	No	8	Enabled	87.3
ARYSG08	Pool	No	16	Enabled	90.8
ARYSG13	Pool	No	8	Enabled	36.0
ARYSG14	Copy Pool Backup	No	8	Enabled	43.6
ARYSG15	Pool	No	8	Enabled	0.0
ARYSG16	Copy Pool Backup	Yes	6	Enabled	70.5
ARYSG17					

Situation Event Console

SEVERITY	Status	Name	Display Item	Source	Global Timestamp	AGE	Local Timestamp	Type	ID
Critical	Open	AAAMPP	AAAMPP		6/29/2019, 10:27:00 AM	20 Days, 4 ...	6/29/2019, 10:27:00 AM		KS3_Stora...
Critical	Open	ARYMPP	ARYMPP		6/29/2019, 10:27:00 AM	20 Days, 4 ...	6/29/2019, 10:27:00 AM		KS3_Stora...
Critical	Open	DDS9D15G	DDS9D15G		6/29/2019, 10:27:00 AM	20 Days, 4 ...	6/29/2019, 10:27:00 AM		KS3_Stora...
Critical	Open	IDA5OLDS	IDA5OLDS		6/29/2019, 10:27:00 AM	20 Days, 4 ...	6/29/2019, 10:27:00 AM		KS3_Stora...
Critical	Open	IEA5OLDS	IEA5OLDS		6/29/2019, 10:27:00 AM	20 Days, 4 ...	6/29/2019, 10:27:00 AM		KS3_Stora...
Critical	Open	IFA5OLDS	IFA5OLDS		6/29/2019, 10:27:00 AM	20 Days, 4 ...	6/29/2019, 10:27:00 AM		KS3_Stora...
Critical	Open	IMSICA50	IMSICA50		6/29/2019, 10:27:00 AM	20 Days, 4 ...	6/29/2019, 10:27:00 AM		KS3_Stora...
Critical	Open	OXQAG2	OXQAG2		6/29/2019, 10:27:00 AM	20 Days, 4 ...	6/29/2019, 10:27:00 AM		KS3_Stora...
Warning	Open				6/29/2019, 10:27:00 AM	20 Days, 4 ...	6/29/2019, 10:27:00 AM		KS3_Stora...
Critical	Open				6/29/2019, 10:27:00 AM	20 Days, 4 ...	6/29/2019, 10:27:00 AM		KS3_Vol_Fr...
Warning	Open				6/29/2019, 10:27:00 AM	20 Days, 4 ...	6/29/2019, 10:27:00 AM		KS3_Vol_Fr...
Warning	Acknowled...				6/30/2019, 8:49:12 PM	18 Days, 1...	6/30/2019, 8:49:12 PM		KS3_Stora...
Warning	Acknowled...				6/30/2019, 8:50:14 PM	18 Days, 1...	6/30/2019, 8:50:14 PM		KS3_Vol_Fr...
Critical	Acknowled...	AAAMPP	AAAMPP		6/30/2019, 8:52:24 PM	18 Days, 1...	6/30/2019, 8:52:23 PM		KS3_Stora...
Critical	Reopened	AAAMPP	AAAMPP		6/30/2019, 8:54:38 PM	18 Days, 1...	6/30/2019, 8:54:38 PM		KS3_Stora...

Hub Time: Fri, 7/19/2019, 3:13 PM

1 of 4 pages

Harish Situation workspace

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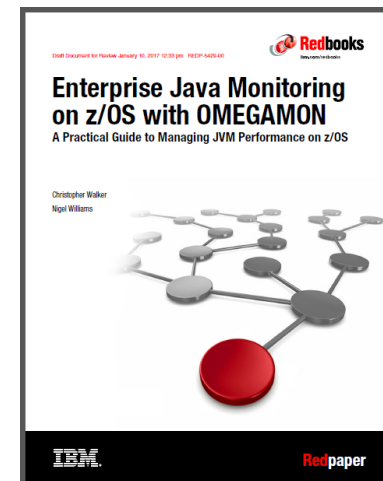
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This customized user interface provides dashboards to monitor the overall health status of automation domains/nodes in IBM Z environments and to monitor and manage z/OS, network, storage and other subsystems.

zTrial includes hands-on tutorials showing how to:

- Identify a JVM performance problem.
- Isolate high JVM garbage collection / restore service.
- Isolate slow performance to a JVM's blocked threads and restore service.

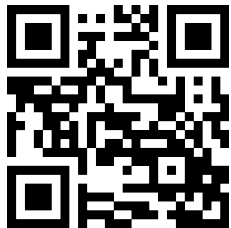






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1  2  3  4  5  6  7  8  9