

# z/OS 3.1 IBM Education Assistant

Solution Name: Navigator Inspector

Solution Element(s): BCP – Supervisor

July 2023



# Agenda

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- Trademarks
- Objectives
- Overview
- Usage & Invocation
- Interactions & Dependencies
- Upgrade & Coexistence Considerations
- Installation & Configuration
- Summary
- Appendix

# Trademarks

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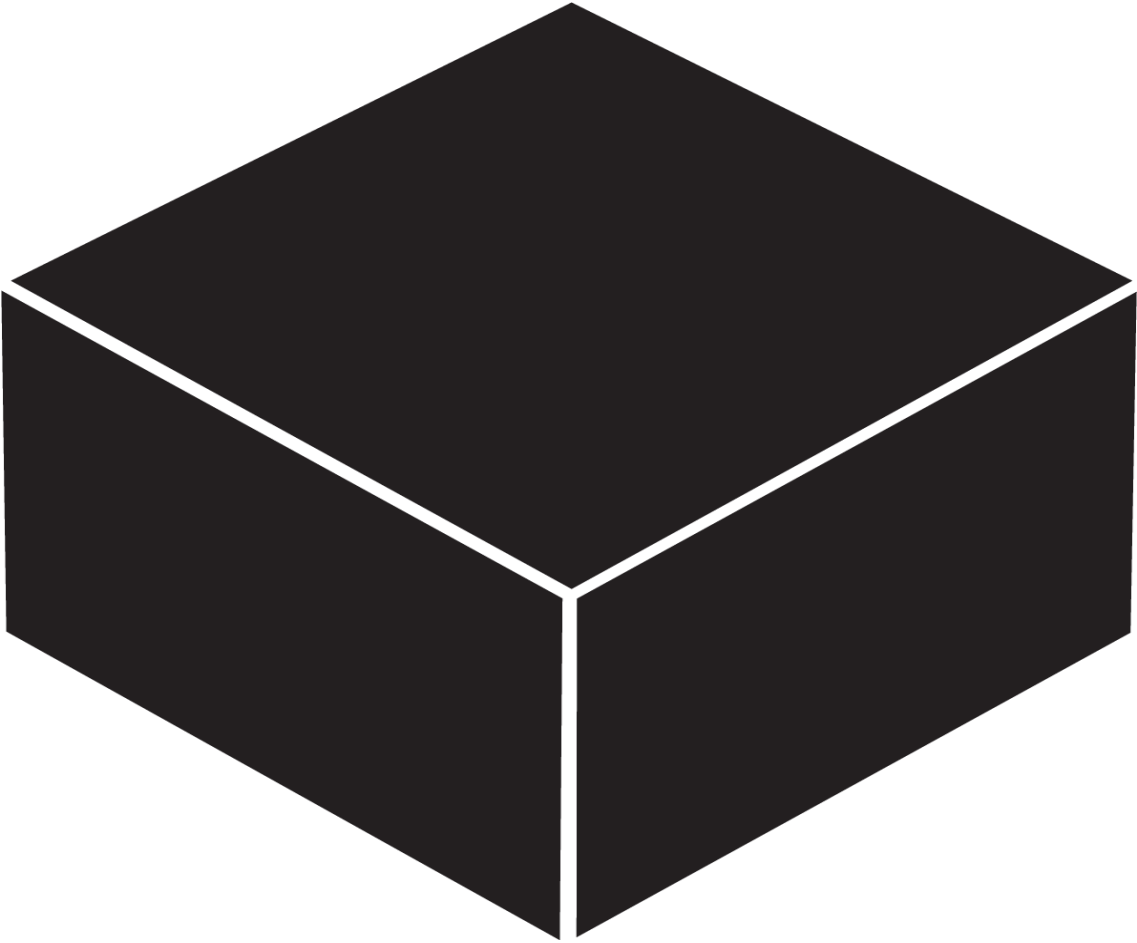
- See url <http://www.ibm.com/legal/copytrade.shtml> for a list of trademarks.
- Additional Trademarks: None

# Objectives

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- Describe challenges and personas for detecting, diagnosing, and preventing transient performance issues
- Review how Correlator data generation helps identify and begin diagnosing transient performance issues
- Review Navigator Reactive Performance Diagnosis
- Describe new Navigator Inspector function

# Challenging Detecting, Diagnosing, and Preventing Transient Performance Issues



The workload is a black box because its data is:

## Noisy

- Many workload components generate significant data -- inconsequential to the reported problem
- Too Summarized – Overview data (e.g. 15/30 minute interval), averages lose transient issues
- Too Detailed – Frequent per event data – cannot see forest for the trees

## Siloed

- Single-component data generation and analysis - one puzzle piece at a time
- Manual cross-silo correlation

## Costly

- Recreates to collect new data
- Detail data requires a lot of CPU and storage to collect and analyze
- Requires subject matter experts interpret results

# Personas



**Jim**

**Senior Subject Matter Expert**

Addressing transient performance issues improves workload resilience by avoiding workload impacts, crit-sits, and outages when the workload is under more stress.

- **Tasks, Responsibilities and Key Jobs**

- Troubleshooting to ensure smooth operations of their system and that performance meets their business SLAs. Constantly battles against increased workload and performance bottlenecks to minimize operational costs.
- Handles any complex problems that operations team can not directly solve.
- Helps in the automation and creation of runbooks for the resolution to common problems by operations team without his assistance.
- Jim is responsible for the management of one or more key z systems subsystems, such as CICS or IMS. Ensuring applications are deployed correctly and operating to best possible level.
- Jim also performs problem determination when an issue related to system performance is reported to him.
- It's important to Jim to resolve problem as quickly as possible.

# Correlator Data Generation

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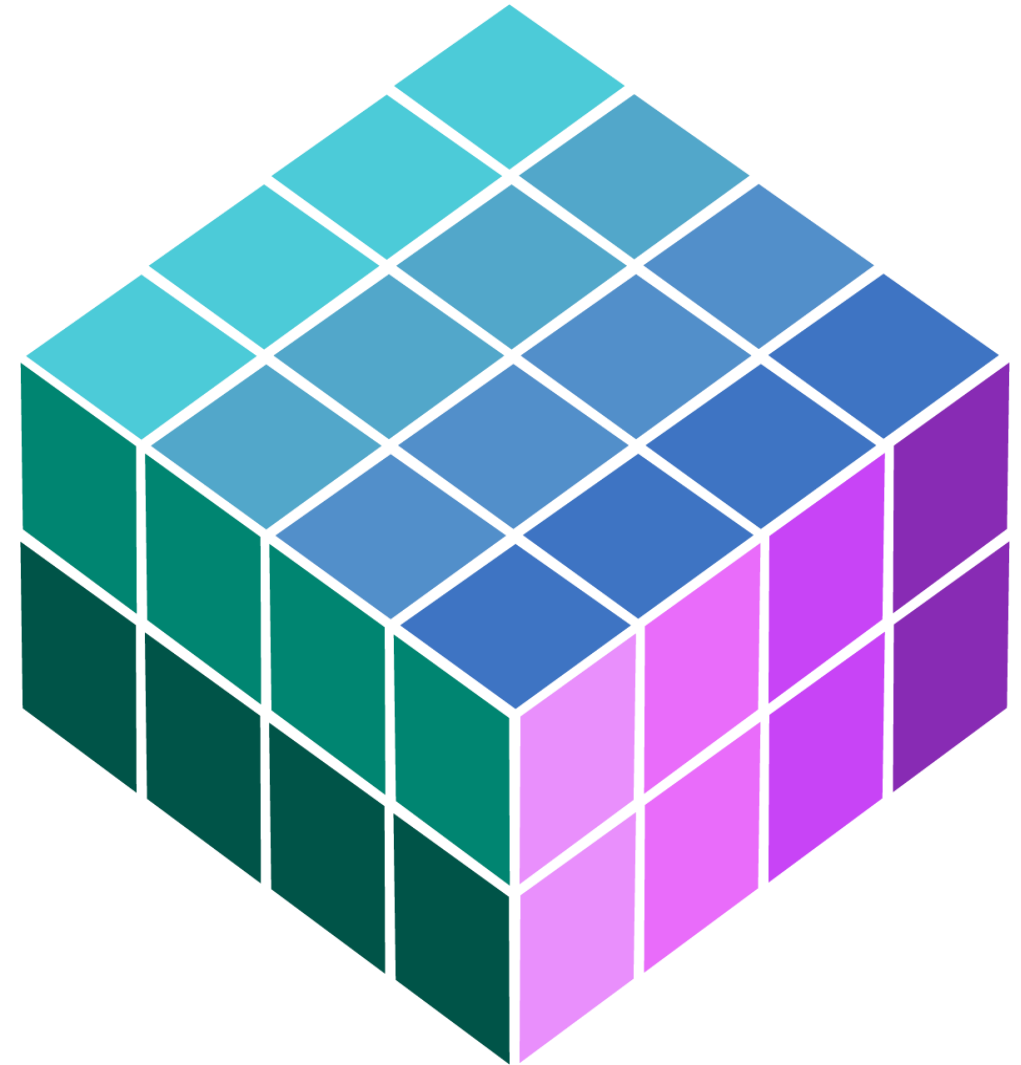
IBM z/OS Workload Interaction Correlator is a priced feature that enables z/OS components and middleware silos to generate **5-second** synchronized, **micro-summary**, **exceptionalism enriched data**

Generates data needed to identify and begin diagnosing transient performance issues.

In a variety of IBM z/OS workload benchmark environments, generating **IBM Correlator records did not measurably increase z/OS CPU overhead.**

[Correlator Entitlement](#) allows clients with an RMF license running z/OS 2.4 and above to **generate Correlator records at no additional charge.**

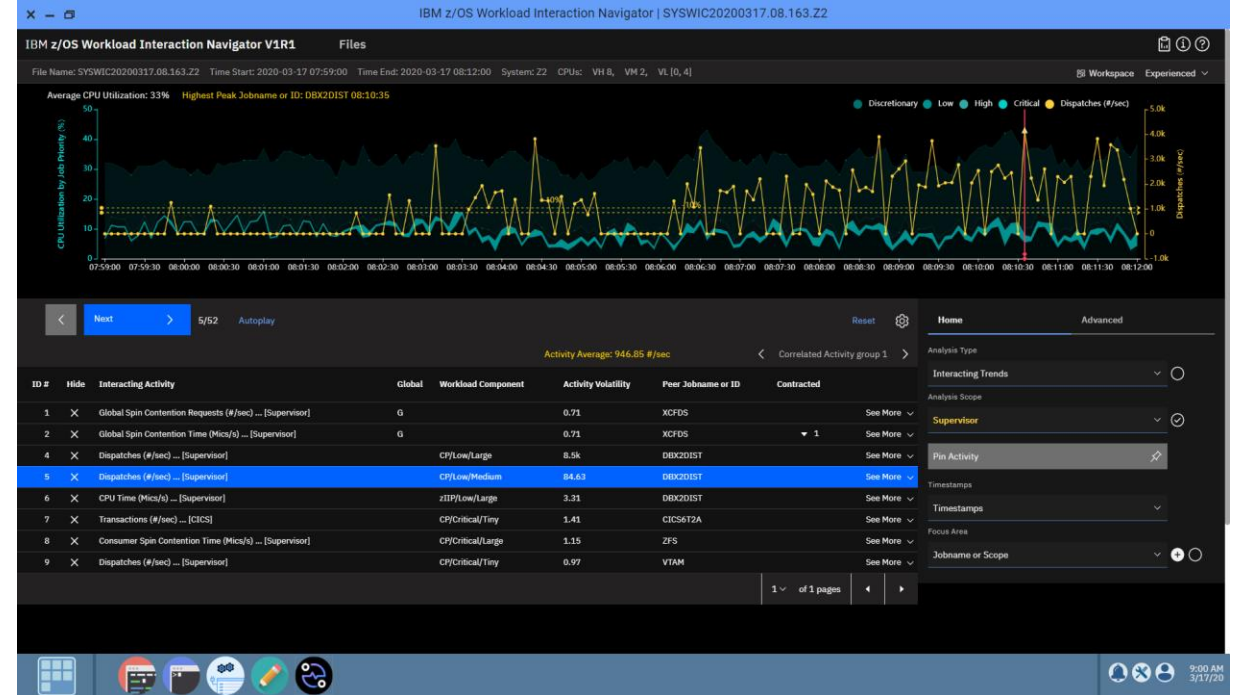
[IBM Flash](#) recommends all clients collect all available Correlator SMF records



# Navigator Reactive Performance Diagnosis

IBM z/OS Workload Interaction Navigator is a One Time Charge (OTC) priced product that identifies substantive **client specific anomalies with context**, and temporally correlates them across z/OS and Middleware silos, for a single system and across sysplex members, with **only 15 minutes** of Correlator data

Navigator enables Subject Matter Experts to quickly identify correlated anomalies, which **reduces the time required to diagnose workload impacts, crit-sits, or outages.**



Runs as an application in the IBM Z Distribution for Zowe™



Take a test drive with [Navigator zTrial](#)



# Overview

- Who (Audience)
  - Subject Matter Experts
- What (Solution)
  - Navigator Inspector transforms 8 weeks of anomalies with context into anomaly signatures and correlates and prioritizes new, reoccurring, and worsening anomaly signatures.
  - Proactive Change Verification can train the Inspector what is normal before **any change** and after that change, identify only **new or worsening anomalies**. Any change may be a hardware or software upgrade, or an arrival pattern change.
- Wow (Benefit / Value, Need Addressed)
  - Enables Subject Matter Experts to proactively identify workload anomalies and provide an opportunity to diagnose and address them **before workload impacts, crit-sits, and outages occur**.

The screenshot displays the IBM z/OS Workload Interaction Navigator 1.1.0 interface. The top navigation bar includes the title, a 'Home' link, and a search icon. Below the navigation bar, a file name 'SYSWSC20220529.WEEKLY\_Z1200N...' is shown along with time range filters. The main content area features a table with columns for ID #, Score, Activity Name / Anomaly Signature, Intervals, System, Size, Day, CPU, Highest Peak Time, Highest Peak, Jobname or ID, Activity Average, Date Time, and Workload Component. The table is currently displaying a list of anomalies, with the first row highlighted in blue. The interface also includes a 'Workload: All' dropdown, a 'Recent: 20220728.08' filter, and a 'Multi-System: 0' indicator. A 'Bulk' button is visible in the bottom right corner.

ID #	Score	Activity Name / Anomaly Signature	Intervals	System	Size	Day	CPU	Highest Peak Time	Highest Peak	Jobname or ID	Activity Average	Date Time	Workload Component
AR1	991	Cpu Time Per Transaction ... [CICS]	8	Z3	4 KB	Thu	7501507	08:08:40	11 Secs	CICS0100	901 Mics	20220804.080900	CPOOnline/Tiny
AR2	36	Response Time Per Transaction ... [CICS]	2	Z2	82	Fri	7501506	13:45:10	368 Mics	CICS0100	213 Mics	20220729.114400	CPOOnline/Tiny
AR3	4	Supervisor-Resource-2 ... [Supervisor]	16	Z4	85	Mon	7501501A	13:23:05	323 Mics	CATALOG	122 Mics	20220725.131400	CPOOnline/Tiny
AR4	4	Supervisor-Resource-3 ... [Supervisor]	20	Z4				22:44:00	820 Secs	CICS0100			
AR5	4	Cpu Time Per Transaction ... [CICS]	2	Z1				17:47:25	2.05 Secs	CICS0100			
AR6	3	Response Time Per Transaction ... [CICS]	10	Z2				21:28:35	**	CATALOG			
AR7	2	Cpu Time Per Transaction ... [IMS]	2	Z3				08:20:10	**				
AR8	2	Response Time Per Transaction ... [CICS]	5	Z1				12:20:10	**				
AR9	2	Response Time Per Transaction ... [CICS]	4	Z1				02:58:25	**				
AR10	1	Cpu Time Per Transaction ... [IMS]	6	Z3				04:28:00	**				
AR11	1	Cpu Time Per Transaction ... [CICS]	19	Z3				11:34:35	**				
AR12	1	Cpu Time Per Transaction ... [IMS]	6	Z4				05:18:55	1058 Mics	CICS0100			
								06:27:40	138 Mics	CICS0100			
								22:47:30	42 Secs	CICS0100			
								04:21:05	332 Mics	CICS0100			
								04:23:55	641 Mics	CICS0100			
								10:12:40	678 Mics	MPW3101			
								06:13:00	128 Mics	CICS0100			
								04:00:15	26 Secs	CICS0100			
								05:17:45	1.02 Secs	CICS0100			
								04:44:15	5.41 Secs	CICS0100			
								14:58:25	18 Secs	CICS0100			
								16:28:25	2.85 Secs	CICS0100			
								15:17:25	2.83 Secs	MPW3101			
								06:12:55	448 Mics	MPW3101			
								12:12:35	411 Mics	CICS0100			
								07:11:25	208 Mics	CICS0100			
								01:11:35	108 Mics	CICS0100			
								04:11:10	5.08 Mics	CICS0100			
								19:41:25	4.48 Mics	MPW3101			
								10:12:40	528 Mics	MPW3101			
								20:14:25	318 Mics	CICS0100			
								04:12:55	238 Mics	CICS0100			

# What Can Navigator Tell You About Your Workload

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Contact your IBM Representative to start a Navigator “Rapid POC” to:

1. Collect Correlator data from your environment
2. Have IBM experts analyze your Correlator data and playback the results
3. Uncover the power of the Navigator and see what it can do for you

# Usage & Invocation

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- [Setting up the Inspector cron job](#) - Processes IBM® z/OS® Workload Interaction Correlator records hourly, performs Navigator Reactive Analysis on every 15-minute interval, and saves the condensed analysis result.
  1. Create directory for Inspector cron job log file (e.g. `mkdir /u/ZWIN_ADMIN/inspect`)
  2. Create directory for Inspector cron job temporary output (e.g. `mkdir /u/ZWIN_ADMIN/inspect/workspace`)
  3. Issue `crontab -e` to add a new entry as like the following:

```
2 * * * * _BPX_JOBNAME='INSPECT' ZWIN_APP_DIR/inspect/inspect.sh -w
/u/ZWIN_ADMIN/inspect/workspace 2>&1 >>
/u/ZWIN_ADMIN/inspect/inspect_`date +%Y-%m-%d`.log
```

# Interactions & Dependencies

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- Software Dependencies
  - IBM SDK for z/OS, Java™ Technology Edition, Version 8
  - IBM Z® Distribution for Zowe
    - V1.0.0 requires IBM SDK for Node.js 12.0 or later
    - V2.0.0 requires IBM Open Enterprise SDK for Node.js 16.0
  - IBM z/OS Workload Interaction Correlator
- Hardware Dependencies - None
- Exploiters - None

# Upgrade & Coexistence Considerations

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- To exploit this solution, all systems in the Plex must be at the new z/OS level: **No**
- List any toleration/coexistence APARs/PTFs: **None**
- List anything that doesn't work the same anymore. **N/A**

# Installation & Configuration

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- List anything that a client needs to be aware of during installation and include **examples** where appropriate - clients appreciate these:
  - Are any APARs or PTFs needed for enablement? Yes, Navigator [Apar OA63586](#)
  - What jobs need to be run? None
  - What hardware configuration is required? None
  - What PARMLIB statements or members are needed? None
  - Are any other system programmer procedures required? Configuring z/OS Workload Interaction Navigator describes how to setup Navigator Reactive Analysis.
  - Are there any planning considerations? No
  - Are any special web deliverables needed? No
  - Does installation change any system defaults? No

# Summary

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- Navigator Reactive Performance Diagnosis enables Subject Matter Experts to quickly identify correlated anomalies, which reduces the time required to diagnose workload impacts, crit-sits, or outages.
- Navigator Inspector enables Subject Matter Experts to proactively identify workload anomalies and provide an opportunity to diagnose and address them before workload impacts, crit-sits, and outages occur.
- Navigator Inspector Proactive Change Verification can train the Inspector what is normal before any change and after that change, identify only new or worsening anomalies.
- Contact your IBM Representative to start a Navigator “Rapid POC”

# Appendix

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[Book: IBM z/OS Workload Interaction Navigator](#)  
[Chapter: Configuring](#)  
[Section: Setting up the Inspector Cron Job](#)

[Book: IBM z/OS Workload Interaction Navigator](#)  
[Chapter: Operating](#)  
[Section: Performing Inspection](#)