Using AI for capacity planning and performance management

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Mainframe operations teams are under pressure to keep critical services running – but growing complexity and fragmented tools make it harder than ever

the average hourly cost enterprises incur due to downtime

$300K+

AI-enabled insights can augment established practices to help teams manage challenges more proactively.

Customer expectations are higher than ever

Customers expect always-on digital services and Z is the backbone.

Operational risk is rising

Increasing workload volume, more complex hybrid architectures, growing SME shortages

Reactive operations no longer scale

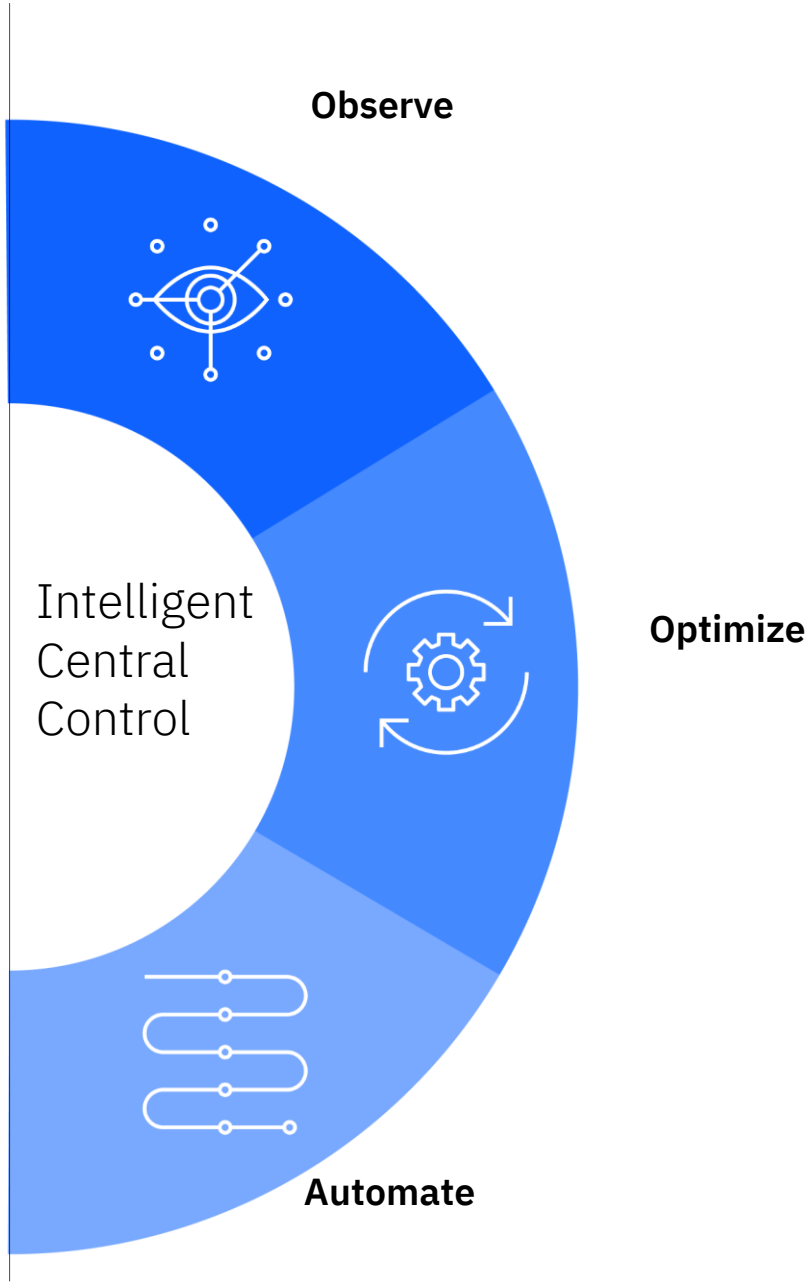
Teams can’t manually correlate data from dozens of tools fast enough to keep pace.

AI-assisted operations are now essential

Organizations must shift from manual incident chasing to proactive, AI-driven resiliency.

IBM can help you simplify operations and enhance resiliency

- Simplified, AI-powered operations that provide observability, optimized performance and increased automation.
- AI-driven operations that anticipate issues through OpenTelemetry-enabled insights.
- Delivers operational resilience, reduced MTTR, and maintains continuous availability.



Building blocks for modern Z operations

Integrated capabilities help you improve performance, resilience and cost efficiency.

Observe

Deliver enterprise-wide visibility across IBM Z and hybrid applications to support AI-assisted issue detection, diagnosis, and trend-based prevention.

- Efficiency-Driven Z Observability
- Rapid Root Cause Analysis
- Cost & Utilization Insights
- End-to-End DevOps Lifecycle Tracking
- Proactive Trend Analysis & Visualization

Optimize

Maximize mainframe availability and performance through correlated insights, continuous tuning, and AI driven optimization across Z + hybrid environments.

- App & Subsystem Performance Optimization
- Continuous Performance Assurance
- Cross-Environment Resource Optimization
- Multi-Source Data Correlation

Automate

Apply agentic AI and guided automation to reduce MTTR, boost staff productivity, and sustain resiliency across mainframe operations.

- Automated Remediation
- Automated Resilience & Recovery
- AI-Powered Low-Code Workflows
- Repeatable Runbooks

The future of performance and capacity planning on IBM Z

Today's global, 24/7 economy demands continuous availability (zero service disruptions) from business applications. A lack of visibility into critical applications and understanding of the IT infrastructure makes this difficult to achieve.

IBM provides AI, agents, forecasting, and what-if technology to empower mainframe sites to prevent service disruptions before they occur and utilize measurement data insights to lower costs and optimize business applications.

Reduce downtime; identify risks and inefficiencies

Automated site health and risk detection flags hidden risks, both current and upcoming.

Automated site health uses AI based forecasting to alert on future usage that exceed requirements.

What-If analysis assists in picking optimal configurations given future workloads.

Safely Optimize Costs without impacting service

Easily optimize your workloads and site configuration to optimize CPU consumption.

Eliminate redundant tooling and silos while enhancing cross-departmental collaboration with end-to-end visibility across your infrastructure.

Use forecasting and what if to choose a configuration that minimizes service disruptions.

Augment Staff and Accelerate Training

Augment the effectiveness of staff with interactive, customizable, and shareable reports and dashboards, built-in and explanations, and extensive drill downs..

Expedite learning, promote collaboration,
and enhance analytical effectiveness with force-multiplying technology

This strategic value is only unlocked with smart data integration between the silos and by enabling cross-infrastructure views of specific application / business workloads

IBM Z IntelliMagic Vision for z/OS

End-to-end
z/OS infrastructure
AI-driven analytics for
performance management

- CICS
- Db2
- IMS
- MQ
- Systems
- TCP/IP
- WebSphere
- z/OS Connect
- Disk & Replication
- Virtual Tape

An IntelliMagic Customer - z/OS Infrastructure

- SMF/RMF/CMF/BVIR/IMS Logs Daily Pro
- Daily: 929 million+ records
- 24 hrs at 15 Minute Intervals = **672 interv**
  week
- Each record type contains 5-50 metrics (e
  15 metrics per record)
- 929m x 15 = **13.9+ billion** interrelated me
  day

Tsunami:

..an arrival or occurrence of something in overwhelming quantities.

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AI can help analyze in better ways

Using AI and Machine Learning to Detect Unexpected Changes in Performance and Usage

Based on mix of models on top of state space model

Learns from historic performance and usage

Report using exceptions that are flagged with yellow and red indicators

WLM Importance Rating Change Detection

For System ID 'A004' by Importance

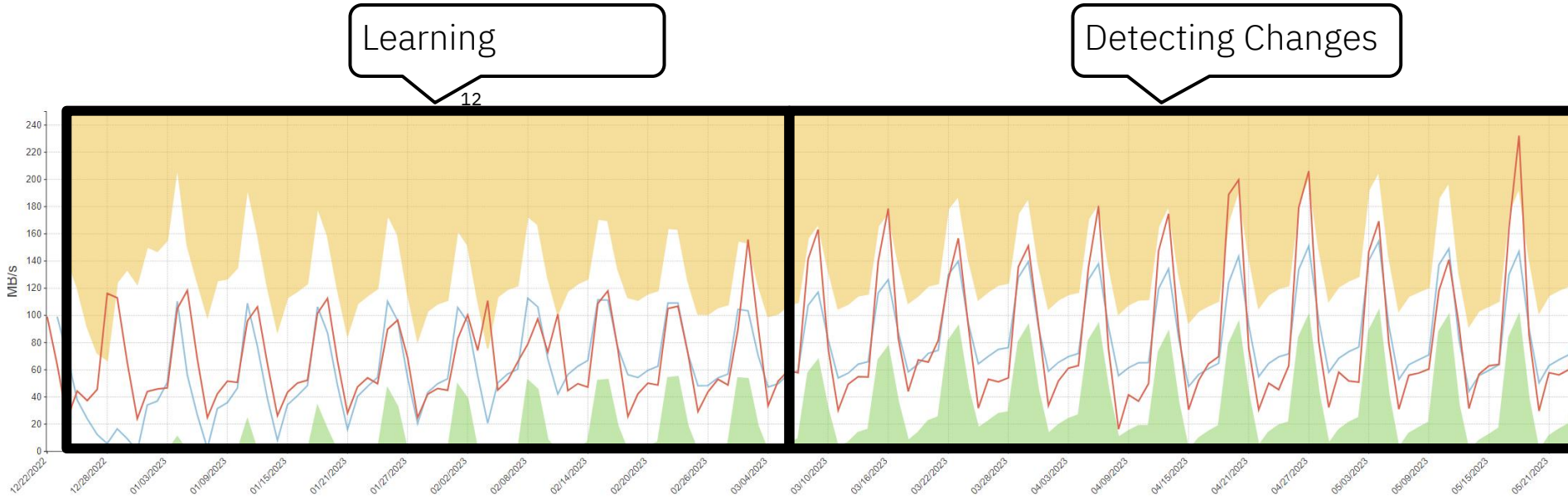
Drilldown

Importance	Performance Index	Performance Index Change (std devs)	All CP processor time used (Classic) (s)	All CP processor time used (Classic) Change (std devs)	zIIP Processor Usage (s)	zIIP Processor Usage Change (std devs)
3	1.82	2.23	14.01	-0.11	10.056	-0.04
5	1.76	1.40	8.45	2.26	10.996	1.57
1	1.39	1.37	440.22	1.65	744.445	2.30
4	0.95	2.23	147.73	0.56	39.371	0.26
Disc	0.81	0.26	98.96	0.28	7.882	-0.60
2	0.73	0.62	249.69	0.81	43.135	0.81
0-Sys	0.00	0.00	487.05	2.93	3.343	0.87

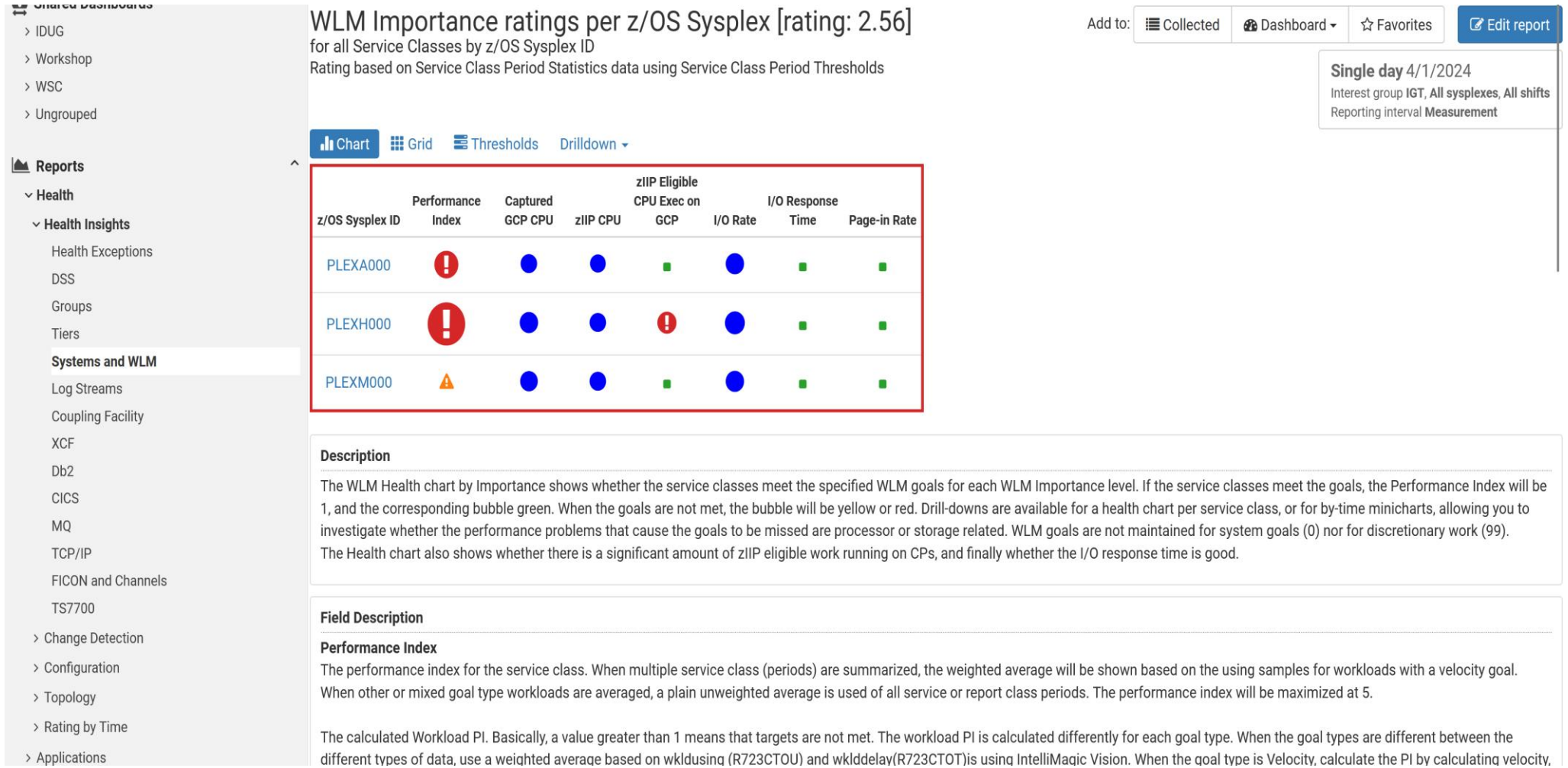
Using AI and Machine Learning to Detect Unexpected Changes in Performance and Usage

Based on mix of models on top of state space model

Learns from historic performance and usage

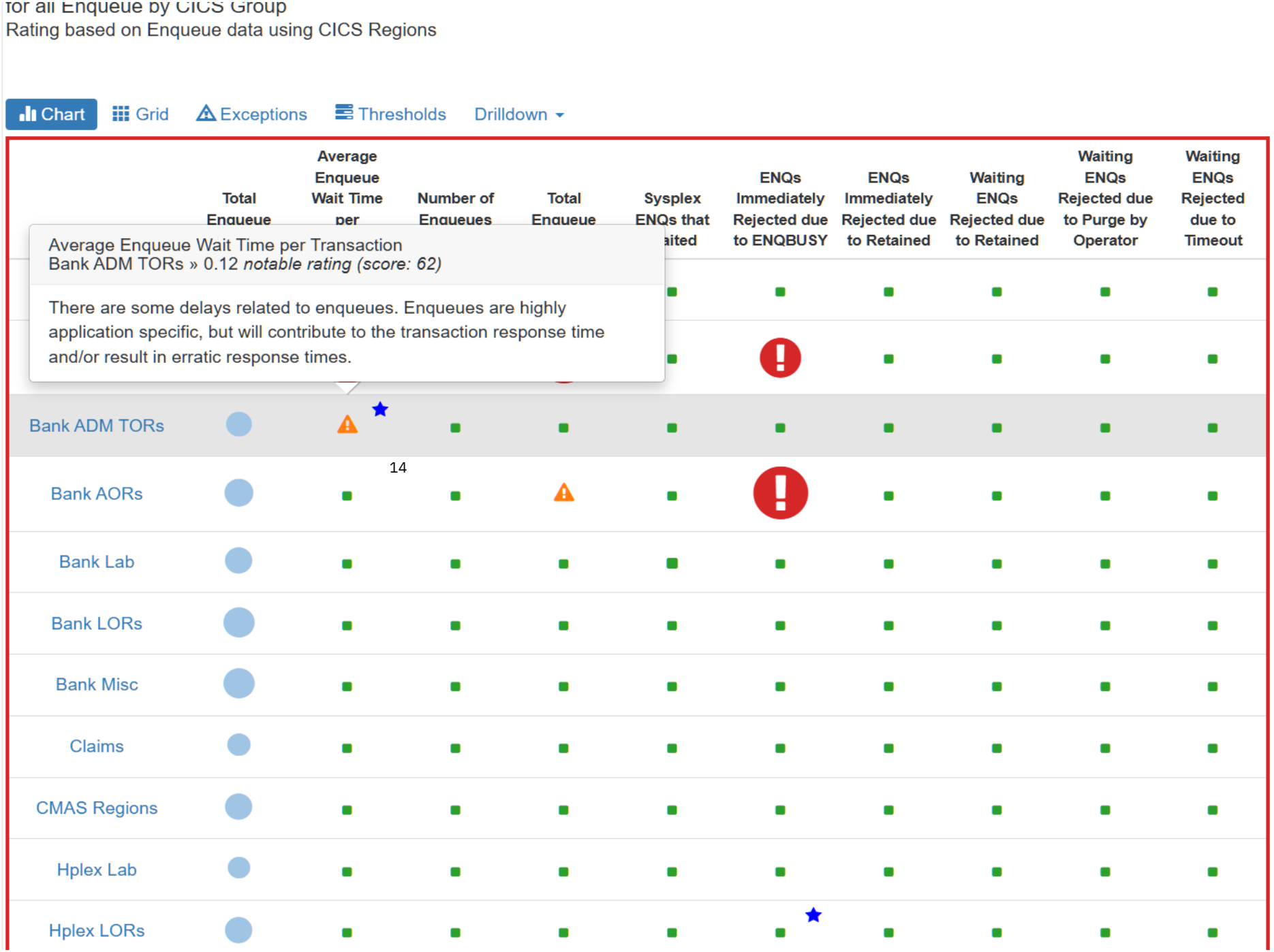


Using AI to flag risks to infrastructure and application availability



Using AI to highlight the exceptions that need my attention today

The most urgent thing to look at may not be the one with the highest severity

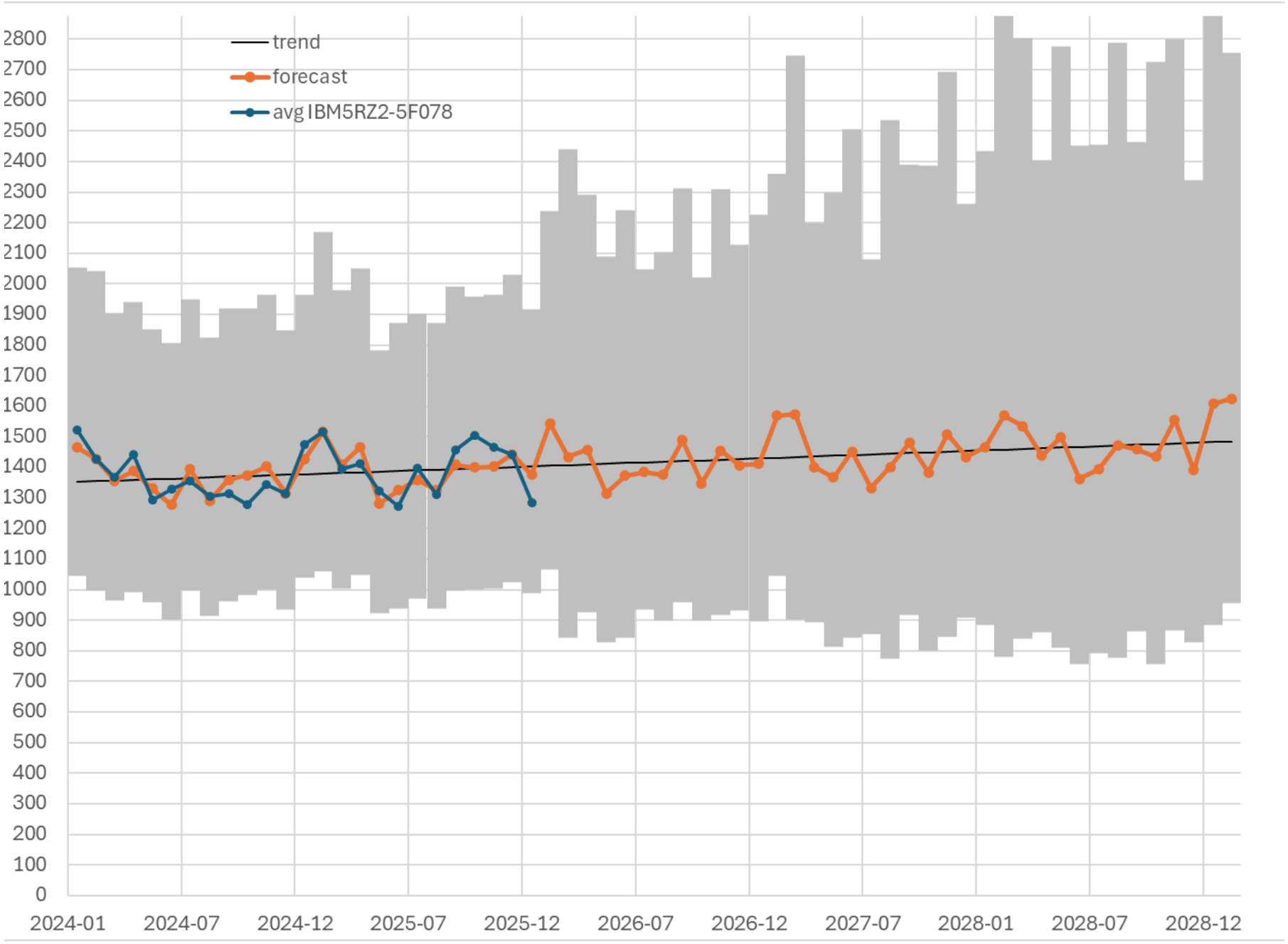


Forecasting

Predicting years ahead
Learning from history
Seasonality

Answer questions like:

- Will I run out of capacity in my CPCs before I will replace them?
- Will I stay within my TFP contract?



IBM IntelliMagic agent for Z

The **IBM IntelliMagic agent for Z** empowers performance analysts to find relevant information in the vast Z performance space. The **IBM Z IntelliMagic agent for Z** is an experienced co-worker that assists users in quickly finding relevant reports for conducting performance analysis and resolving issues faster. The agent understands **natural language queries**, providing a conversational interaction experience.

"With IBM IntelliMagic agent for Z, users can find the nuggets that help them solve day to day problems”

Vision for IBM IntelliMagic agent for Z

Strategic Vision:

AI that guides and supports you through the tasks related to using IBM Z IntelliMagic Vision for z/OS.

Giving helpful suggestions, can point out things of interest and can summarize and analyze your z/OS environment.

As if an experienced colleague is sitting right next to you.

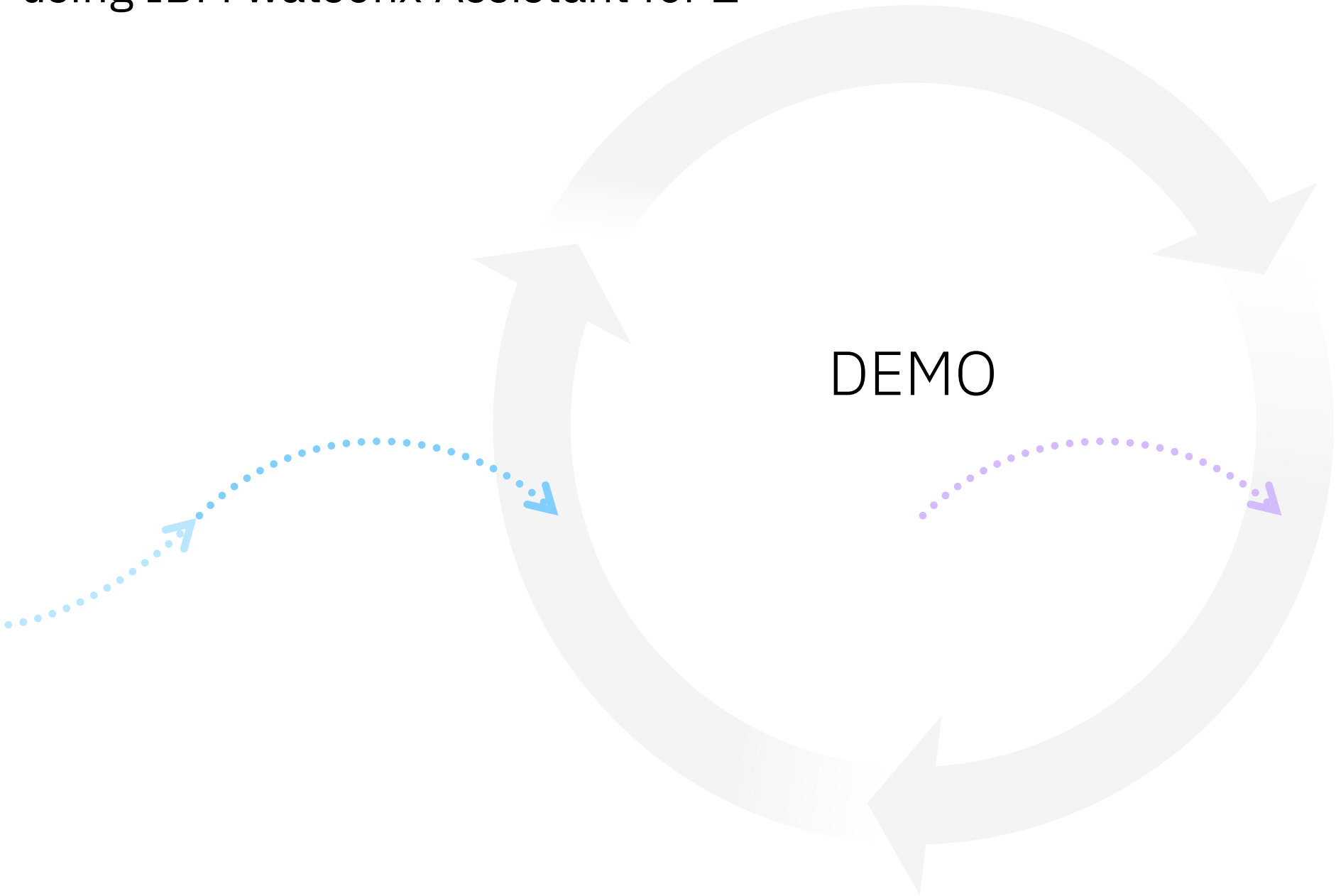
Enabled by:

Using Agents that have intimate knowledge of the structure and capabilities of IntelliMagic, and that can access reports and data from IntelliMagic.

This combined with supporting documents about how to use IntelliMagic as well as general z/OS knowledge.

Allow the AI to support the user with best practices and informed guidance.

Changing the way you engage and interact with IBM Z IntelliMagic Vision using IBM watsonx Assistant for Z



IBM Z IntelliMagic Agent

Roadmap

Today - GA

Help users finding information in IBM Z IntelliMagic Vision for z/OS based on current report and user query

Support Spyre

Near Term

Explain - Summarize anomaly based on data and drill downs

Future

Use history as additional context answering questions

Adding knowledge of environment (as know by IntelliMagic)

Can clarify terminology used

Can suggest other areas to look at, based on WXA4Z

Explain

Summarize anomaly based on data and drill downs

Why

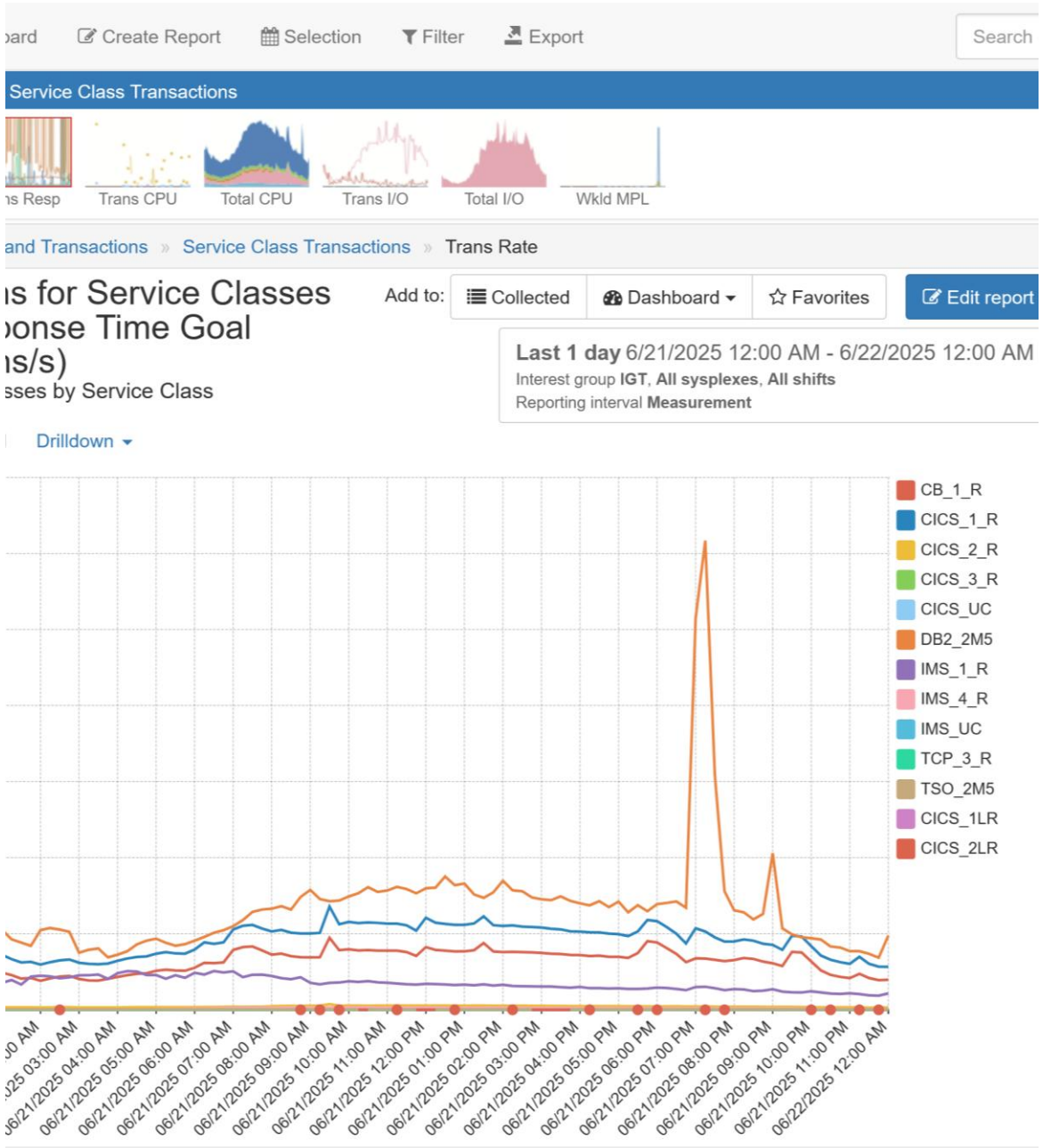
Spikes found at an aggregated level are typically only caused by a few underlying factors.

Currently finding these factors requires multiple drill-downs, through multiple levels.

This is time consuming.

What

Let AI do the drill-down and analysis work and report back on what the contributing factors are.



All statements in these slides are subject to change

Show

What

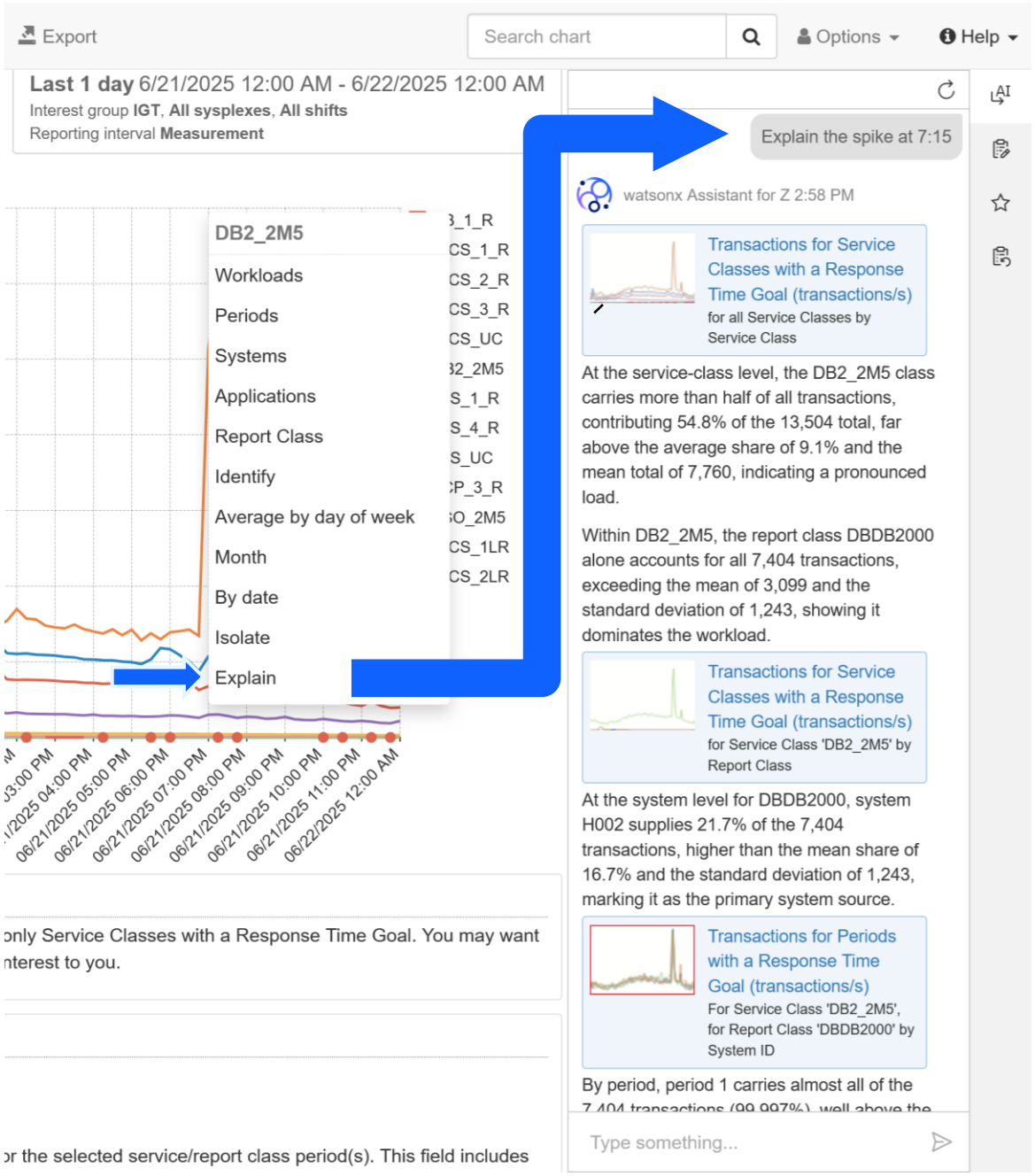
User can select an anomalous point and ask for an explanation.

Agent gives a summary of what the underlying issue might be.
This summary appears in the chat and contains clickable previews of relevant reports.

How

Agent navigates through IntelliMagic Vision. It inspects the content of the reports and uses its knowledge to select the most relevant drill-down paths to inspect further.

It collects relevant findings and summarizes them back to the user.



Details

Background

Will be part of the IBM IntelliMagic agent for Z.

Core algorithms developed by IBM Research.

Uses domain knowledge embedded in IBM Z IntelliMagic Vision.

Elements

Steps that support the conclusion.

Clickable evidence, linking back to the real data.

Summary, based upon the steps shown above.

All statements in these slides are subject to change

Observability and AIOps for IBM Z sessions at SHARE Orlando

Day	Time	Title	Featured Products
Monday	9:45 am	Data Center Automation - Z System Automation and Agentic AI	Z System Automation
	10:30 am	Using OpenTelemetry to Integrate the Mainframe Into Your Enterprise-Wide Observability Platform	Z Observability Connect, Instana
	1:15 pm	BYOD Lab: WXA4Z Agentic Hands-on Workshop	watsonx Assistant for Z
	1:15 pm	Intelligent Automation of a Hybrid Data Center With Next Generation of Z System Automation	Z System Automation
	2:30 pm	IBM Z NetView Technical Updates	Z NetView
	3:45 pm	Simplify Mainframe Operations with the Latest IBM Z OMEGAMON Enhancements	OMEGAMON
Tuesday	10:30 am	Stronger, Smarter Operations: How BPER Reinvented Data Resiliency Management with IZBR	Z Backup Resiliency
	2:30 pm	What's New in IBM Z Workload Scheduler V.10.2.x and Roadmap	Z Workload Scheduler
Wednesday	9:15 am	IBM Concert for Z, an AI-Powered Mainframe Resilience Platform: Solutions vs. Alerts	Concert for Z
	1:45 pm	BYOD Lab: AI Enabled Proactive Monitoring to Get the Most From Your System With IBM Concert for Z	Concert for Z
	2:30 pm	IBM Z Cyber Vault Explained - Soup to Nuts and Nose to Tail	Z Backup Resileincy
	3:45 pm	Using AI for Capacity Planning and Performance Management in Z	IntelliMagic
Thursday	10:30 am	IBM Z NetView Hints and Tips	Z NetView

Connect with IBM technical leaders and product management team:

Concert for Z
Domenico D'Alterio
Fabricio Miatto

OMEGAMON
Ash Mahay

Z Observability Connect Instana
Chris Walker

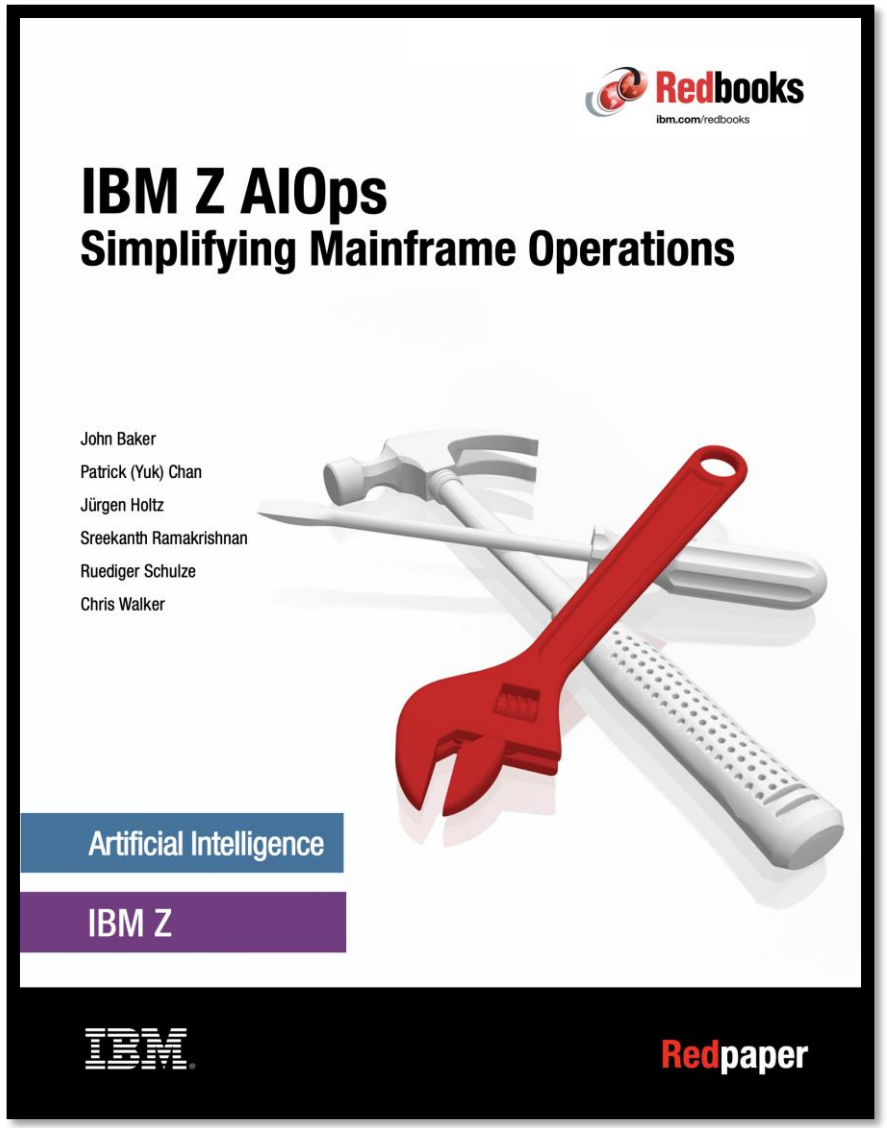
NetView
Derrick Washington

Z System Automation
Johannes Hausch

Z Workload Scheduler
Domenico D'Alterio
Wolfgang Schaeberle

IMS Tools
Tracy Dean

New Redpaper



How can you simplify mainframe operations? To answer this question, this IBM Redbooks publication draws on Lean Thinking, which focuses on identifying waste and strain in any process.

By applying AI and machine learning technologies to mainframe operations, you can deliver improved efficiency and effectiveness.

Download your copy:
https://ibm.biz/Redpaper-SMO-2025

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