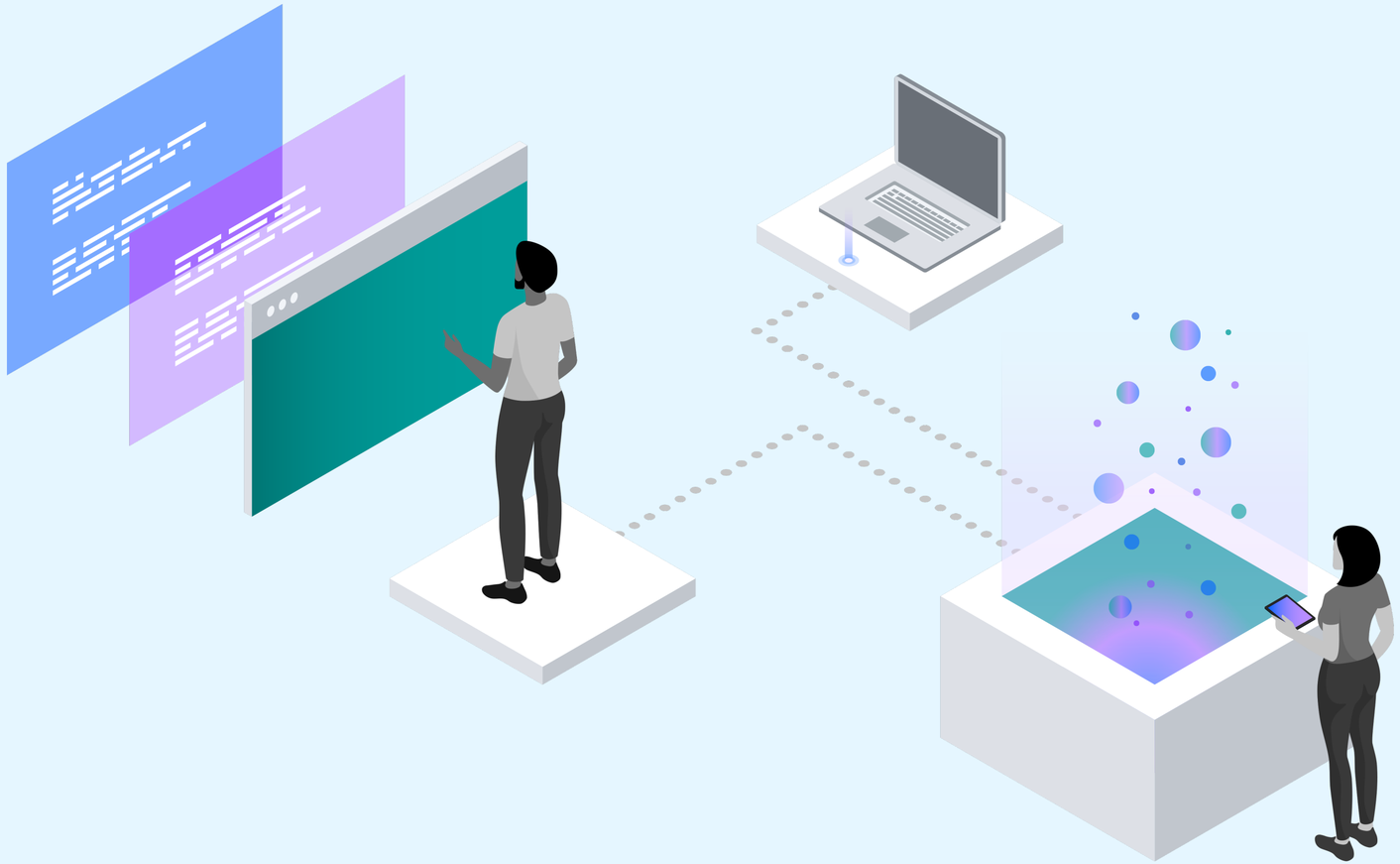
Best practices for taking a hybrid approach to AIOps for IBM Z



Challenges for CIOs and Ops teams

CIOs' challenges

Innovation vs. stability

- 2,000+ IT incidents per month; 9 will be critical, costing $139k per hour on average
- 70% of the team is tied up just keeping what they already have running

Complex environments & siloed teams

- Days to detect and diagnose a complex issue
- Major outages can cost up to $420k per hour
- Inefficient war-room process

Ops teams' challenges

Overwhelmed by disparate tools

- Struggling with inconsistent alerts across sources
- Workflow interrupted to swap between disparate tools
- Challenges with sharing data

Burnout & skills

- Only 10% of FTEs have 90% critical expertise
- Teams & CIOs struggle with talent risk

Detect

Monitoring

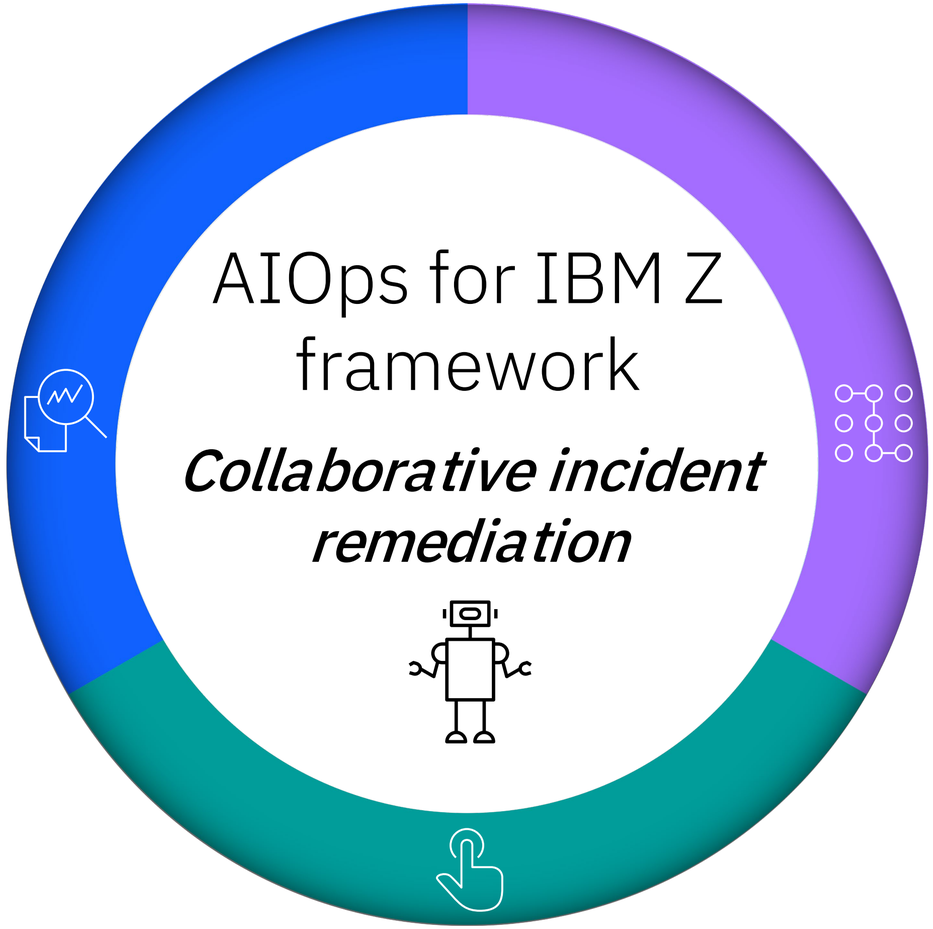
IBM OMEGAMON®
IBM Z® Monitoring Suite

Hybrid cloud observability

IBM Z APM Connect
IBM Observability by Instana APM on z/OS®
IBM zSystems Integration for Observability

Anomaly detection

IBM Z Anomaly Analytics



Decide

Deep-domain metrics & application trace analysis

IBM OMEGAMON
IBM Z Monitoring Suite

Log analytics

IBM Z Operational Log and Data Analytics

Anomaly correlation

IBM z/OS Workload Interaction Navigator

Performance & capacity management

IBM Z Performance and Capacity Analytics

Act

Intelligent automation

IBM Z System Automation
IBM Z NetView®

Predictive workload automation

IBM Z Workload Scheduler

Storage automation

IBM Z Advanced Storage Management Suite

Resiliency

IBM Z Batch Resiliency

Better together – Hybrid cloud integrations

Hybrid cloud integration

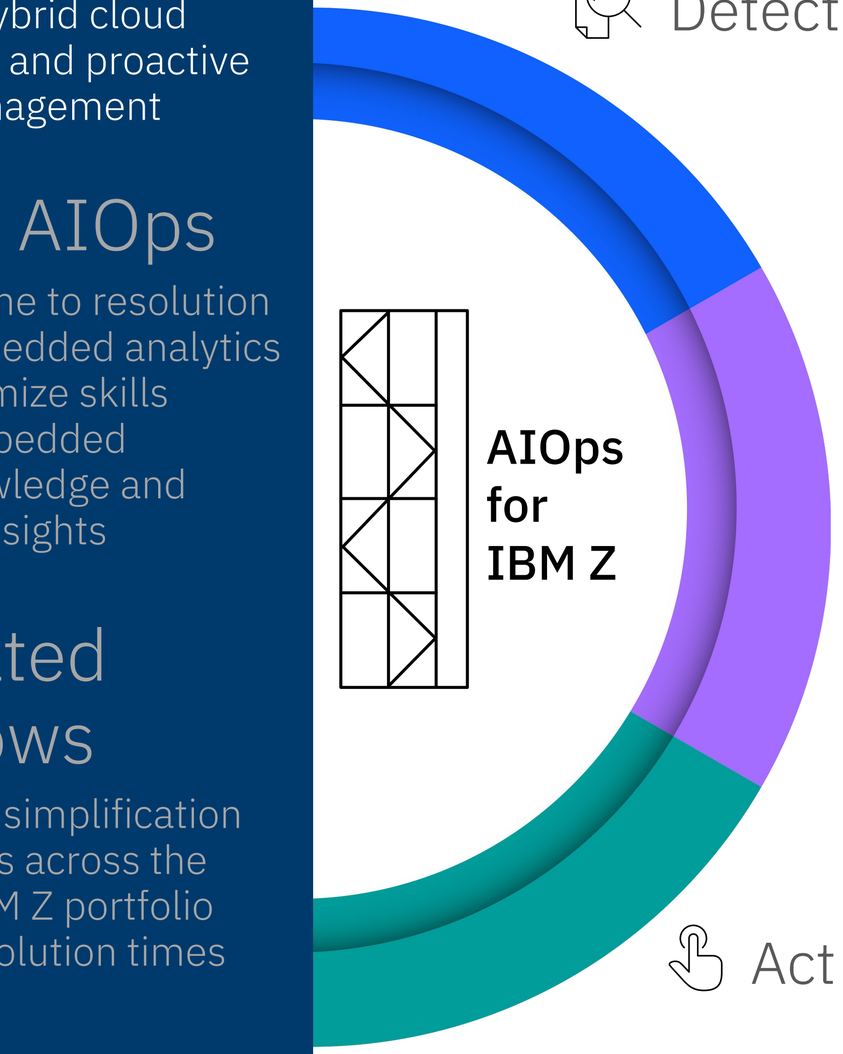
Enhancing hybrid cloud observability and proactive incident management

Embed AIOps

Improved time to resolution through embedded analytics and AI. Minimize skills gap with embedded domain knowledge and contextual insights

Integrated workflows

Streamlining simplification of capabilities across the AIOps for IBM Z portfolio for faster resolution times



Detect

Monitoring
IBM Z Monitoring Suite

Hybrid cloud observability
IBM Z APM Connect
IBM Observability by Instana APM on z/OS
IBM zSystems Integration for Observability

Anomaly detection
IBM Z Anomaly Analytics

Hybrid Application Observability
IBM Instana®

3rd party solutions
App Dynamics

Hybrid Application Incident Management
IBM Cloud Pak for AIOps

Decide

Deep-domain metrics & application trace analysis
IBM OMEGAMON

Log analytics
IBM Z Operational Log and Data Analytics

Performance & capacity management
IBM Z Performance and Capacity Analytics

3rd party solutions
Splunk
Elk
DataDog
ServiceNow
Other 3rd party products

Act

Intelligent automation
IBM Z System Automation
IBM Z NetView

Predictive workload automation
IBM Z Workload Scheduler

Enterprise Automation
RedHat Ansible

Automation hub
with 100+ plugins for hybrid cloud and other integrations

Hybrid cloud integration

Enhancing hybrid cloud observability and proactive incident management

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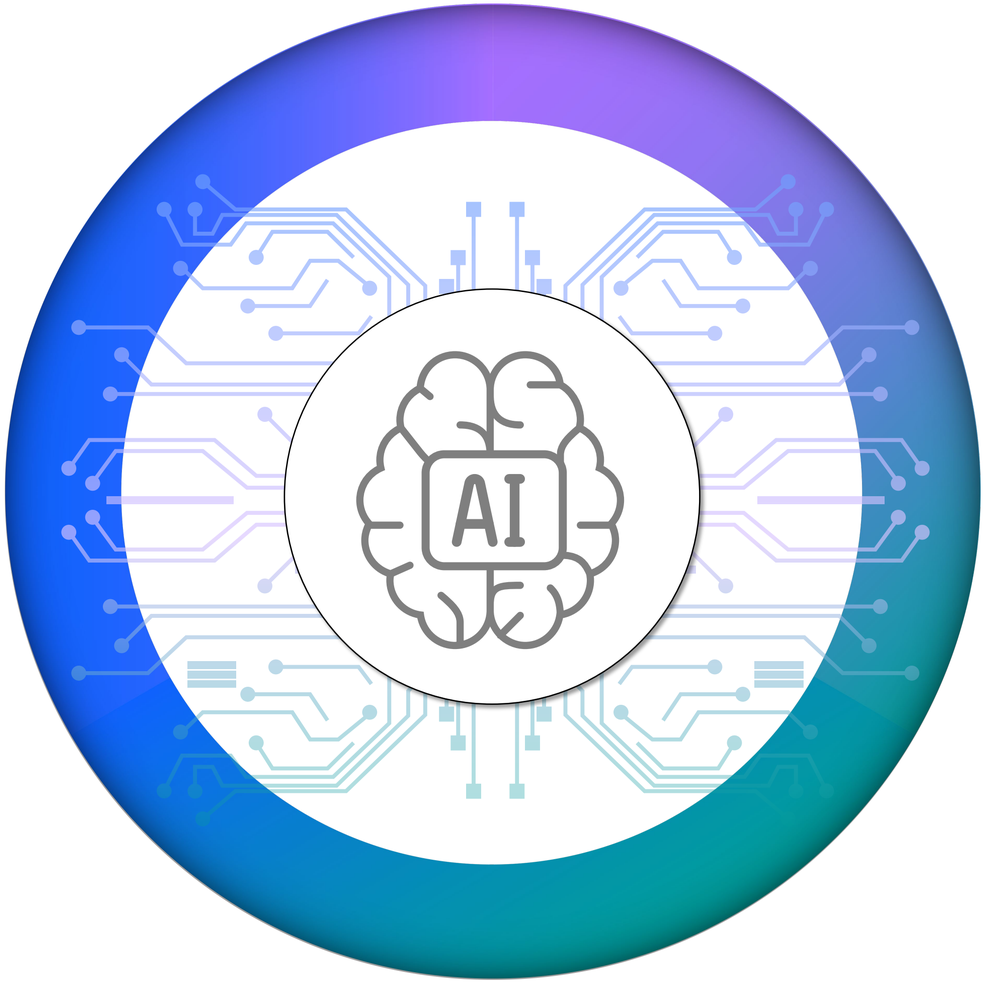

Detect

Accelerate detection and reduce tribal knowledge with environment modeling

Decide

Embed more domain knowledge and contextualize AI insights through correlations

Act

Restore service as soon as possible and avoid problems with intelligent automation and collaborative incident management

Hybrid cloud integration

Enhancing hybrid cloud observability and proactive incident management

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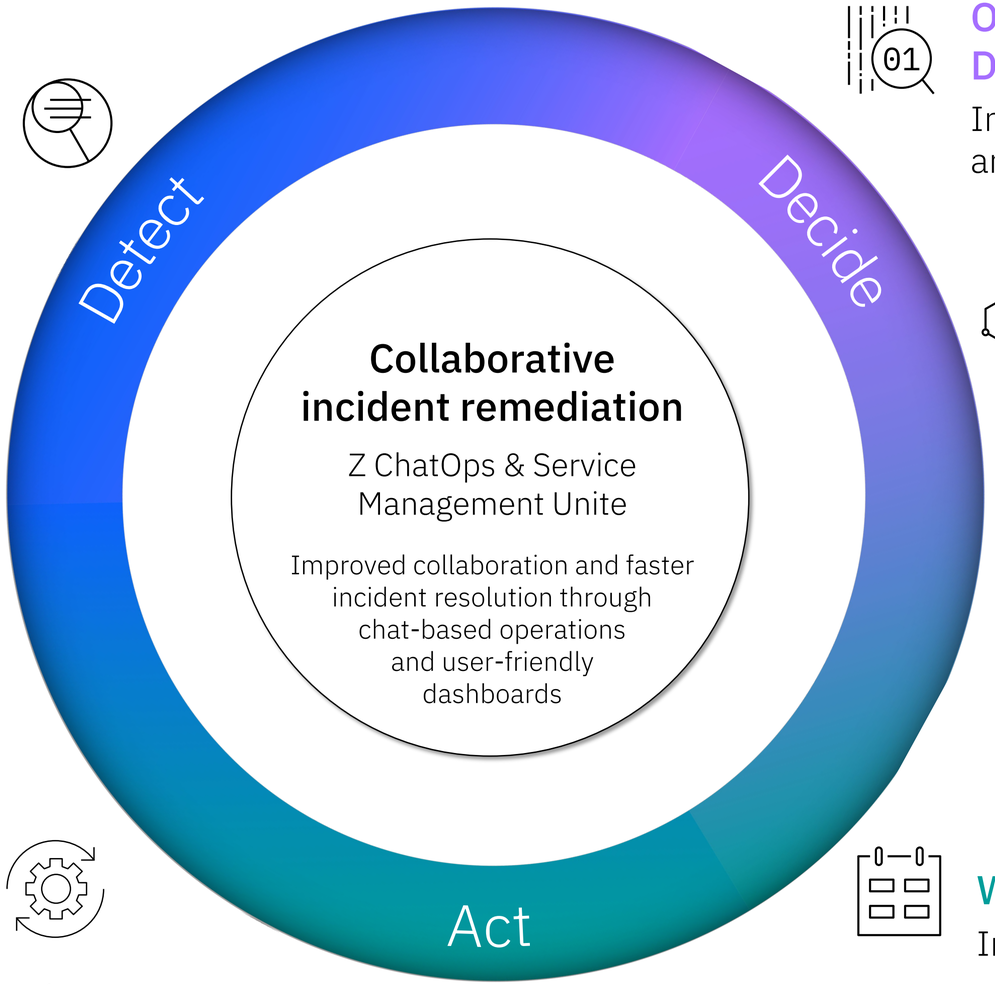


Instana for z/OS

Integrate application performance traces

Anomaly Analytics

Integrate proactive incidents

OMEGAMON Monitors

Integrate deep infrastructure insights and events

System Automation

Integrate automation insights and drive action

Operational Log & Data Analytics

Integrate cross domain metrics and trace analysis

Workload Interaction Navigator

Integrate cross-subsystem correlated anomalies

Workload Scheduler

Integrate batch scheduling

Collaborative incident remediation

Improved collaboration and faster incident resolution through chat-based operations and user-friendly dashboards

- IBM Z ChatOps
- IBM Service Management Unite

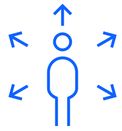
Included in:

- IBM Z Service Management Suite
- IBM Z Service Automation Suite
- IBM Z Monitoring Suite
- IBM zSystems Integration for Observability
- IBM Z System Automation

Challenges

Increasingly hybrid and complex application landscapes

- Information, team, and data silos increase the time to problem resolution
- Collaboration across teams and remote workforce
- Lack of skills
- Many different tools needed



IBM Capability

- ChatOps solutions that foster collaboration and surface relevant data and actions in enterprise chat platforms
- Consolidated web-based dashboards that bring mainframe management information and tasks from disparate sources into a single environment
- Alert the team through chat platforms and use an intelligent chatbot to analyze and operate an IBM Z environment

Client Value

Improved collaboration within and across teams

- Faster incident identification and resolution
- Faster onboarding of next generation of Z operators
- Easy sharing of Z data
- Integration with other tooling

Detect

Monitor hybrid infrastructure and applications and detect issues and anomalies

Monitoring

- IBM OMEGAMON
- IBM Z Monitoring Suite
- IBM Z Service Management Suite

Hybrid cloud observability

- IBM Z APM Connect
- IBM Observability by Instana APM on z/OS
- IBM zSystems Integration for Observability

Anomaly detection

- IBM Z Anomaly Analytics

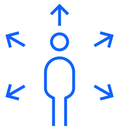
Monitoring

Identify poorly performing tasks quickly for faster resolution with full-stack monitoring for early detection of Z incidents

- IBM OMEGAMON
- IBM Z Monitoring Suite
- IBM Z Service Management Suite

Challenges

- Environments are growing in complexity as applications and workloads are rapidly changing
- Hybrid observability solutions lack visibility into IBM Z for visualizing modern hybrid applications
- Teams are challenged with being overloaded and are often unable to attract and retain new skills and expertise



IBM Capability

- Deep monitoring and alerting of the latest IBM Z hardware, z/OS, and middleware to provide visibility into native applications, cryptographic enhancements, AI, system recovery boost, container extensions, and more
- Stream core metrics and integrate events to industry-leading observability solutions
- Enhanced configuration management to rapidly deploy critical monitoring infrastructure

Client Value

- Improve collaboration between teams – Alert details sent to your collaboration tool for faster problem triage which can be seen by the entire channel
- Visibility of IBM Z in modern, open, hybrid cloud tools for visualization and analytics
- When an incident occurs, the enterprise operations teams are provided with additional context and remediation through automation

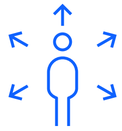
Hybrid cloud observability

Avoid blind spots in application observability with end-to-end transaction tracing including z/OS resources

- IBM Z APM Connect
- IBM Observability by Instana APM on z/OS
- IBM zSystems Integration for Observability

Challenges

- Application teams typically lack visibility into critical z/OS-based workloads and resources
- Disjointed data collection and operations user experience between mainframe and other technologies within the enterprise
- Leads to delayed problem detection and isolation resulting with increased incident resolution time



IBM Capability

- Comprehensive transaction tracing capabilities to track application flow into z/OS and through key subsystems including MQ®, CICS®, IMS™ and Db2® on z/OS
- Direct integration of key infrastructure metrics from OMEGAMON into Instana for additional context when investigating hybrid application incidents
- Simplified approach for integrating z/OS telemetry data into enterprise-wide solutions

Client Value

- Ensure the mainframe is full participant in enterprise-wide observability with no blind spots
- Empower application teams to detect and isolate mainframe issues even with limited IBM Z knowledge
- Drive down time to resolve application problems that are impacted on z/OS

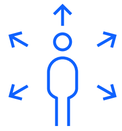
Anomaly detection

Proactive incident detection with real-time AI/ML operational anomaly analytics

- IBM Z Anomaly Analytics

Challenges

- Reactive response to operational events negatively impacts the customer experience
- Vast amounts of operational data are impossible to manually analyze in real time
- As the digital transformation continues, hybrid applications are rapidly changing along with the adoption of DevOps



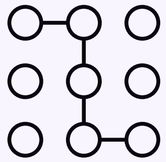
IBM Capability

- Greater key performance indicator coverage with pre-built metric models for z/OS, Db2, CICS, IMS, MQ
- Improved log-based machine learning granularity with variable analysis
- Common Kafka architecture to expand AIOps for IBM Z ecosystem
- Streamlined install/config experience for faster time to value

Client Value

- Proactively identify potential IT Operational issues before they become SLA impacting events
- Reduce the mean time to detect operational issues from hours to real time
- Integrate topology and anomaly events directly into event management systems, service desk solutions, or with IBM Cloud Pak® for AIOps for complete hybrid cloud application visibility

Decide



Analyze issues and anomalies to isolate problems and identify root causes

Deep-domain metrics & application trace analysis

- IBM OMEGAMON
- IBM Z Monitoring Suite
- IBM Z Service Management Suite
- IBM zSystems Integration for Observability

Log analytics

- IBM Z Operational Log and Data Analytics

Anomaly correlation

- IBM z/OS Workload Interaction Navigator
- IBM z/OS Workload Interaction Correlator

Performance & capacity planning

- IBM Z Performance and Capacity Analytics

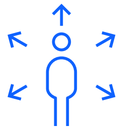
Deep-domain metrics & application trace analysis

Diagnose application bottlenecks within code, server resources or external dependencies

- IBM Z Monitoring Suite
- IBM Z Service Management Suite
- IBM zSystems Integration for Observability

Challenges

- Growth of complex application architectures and open mainframe services
- Locating the root cause from among many domain areas
- Collecting and analyzing bottlenecks within application code or subsystem programs



IBM Capability

- Expedite root cause analysis and assist domain experts
- Analyze z/OS Connect APIs through to the system of record
- Identify bottlenecks within application code and identify z/OS Container Extensions
- Dynamically capture application or java traces and share trace reports with program development or IT support teams

Client Value

- Enable advanced tracing with provided intelligent alerts
- Activate CICS or IMS tracing and capture in-flight Java™ traces/dumps
- Utilize proprietary INSPECT feature to breakdown address space CPU execution
- Avoid blind spots with IBM z/OS Container Extensions task visualization
- Stream curated performance metrics to IBM Instana and other open platform tools, and forward events to IBM Cloud Pak for AIOps

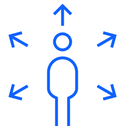
Log analytics

Accelerate hybrid incident identification with real-time operational analytics

- IBM Z Operational Log and Data Analytics

Challenges

- Increasingly complex environments with hybrid application architectures
- Acceleration in data volume leads to overwhelming analysis
- IBM Z skills are becoming harder to acquire
- Difficulty gaining visibility into mainframe means unnecessary operational challenges



IBM Capability

- Out-of-the-box log analytics platform that runs on Z
- Common Kafka architecture to enable strategic AIOps for IBM Z ecosystem
- Widened dashboard support to visualize IBM Z operational data in the same context as your distributed environment

Client Value

- *Reduced cost*
  Save on streaming & maximize your log analytics investment
- *Reduced effort*
  Leverage the analytics platform of your choice to quickly make sense of your Z data
- *Greater visibility*
  Contextualize your Z data to uncover & investigate incidents with increased speed and confidence

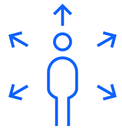
Anomaly correlation

Correlate anomalous activities across z/OS subsystems

- IBM z/OS Workload Interaction Navigator
- IBM z/OS Workload Interaction Correlator

Challenges

- IBM Z workloads are often a black box where the interdependencies of workload activities are unknown
- Previously available data was not sufficient to quickly diagnose workload performance issues that are often transient in nature
- When issues arise in an environment, time is lost identifying the true root cause by investigating symptoms of the problem



IBM Capability

- z/OS components and middleware silos generate purpose built, 5-second synchronized, micro-summary, exceptionalism enriched data
- Reactive performance problem diagnosis dynamically identifies, temporally correlates, and prioritizes micro-summary anomalies
- Historical inspector continuously learns if client-specific anomalies reoccur, and if they ‘get worse’

Client Value

- Correlated anomalies can be analyzed across disparate silos – reducing root cause identification time for complex outages and critical situations
- Proactively identify repeating workload anomalies with an opportunity to diagnose and address them before workload impacts, crit-sits, and outages occur
- Change verification to understand what is normal and visualize any new and worsening anomalies

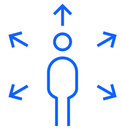
Performance and capacity management

Reduce the time to access, curate and analyze operational data to make accurate performance and capacity decisions that align with business goals

- IBM Z Performance and Capacity Analytics

Challenges

- Use of multiple disconnected tooling leads to a lack of system-wide insight, making it difficult to effectively track usage and cost against plan
- Root cause analysis to determine source of problems is difficult, making it costly to identify and validate capacity and performance optimization opportunities
- Widening skills and expertise gap to build deep data insights and reports



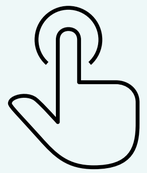
IBM Capability

- Health Metrics Scorecard delivers easy to understand report detailing the overall health of environment across nearly 40 components
- Expanded SMF performance analysis across MQ, Db2 on z/OS and z/OS Connect
- Enhanced capacity planning reports for analyzing workloads in either MSUs or MIPS
- Pre-defined reports to cover Tailored Fit Pricing for Hardware and Software

Client Value

- Detailed, timely insights with lower overhead curated from near real time SMF data
- Proactive anticipation of future problems and needs by understanding impact of configuration changes and potential upgrades before making decisions
- Transparency in consumption and chargeback processes that can be tied back to business needs

Act



Rapidly respond to reduce impact on the clients with improved resiliency

Intelligent automation

- IBM Z Service Automation Suite
- IBM Z Service Management Suite
- IBM Z System Automation
- IBM Z NetView

Predictive workload automation

- IBM Z Service Automation Suite
- IBM Z Workload Scheduler

Storage automation

- IBM Z Advanced Storage Management Suite

Resiliency

- IBM Z Batch Resiliency

Intelligent automation

End-to-end, goal-driven and policy-based system automation for a consistent and reliable automation across the enterprise

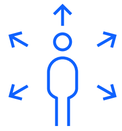
- IBM Z System Automation
- IBM Z NetView

Included in:

- IBM Z Service Management Suite
- IBM Z Service Automation Suite

Challenges

- Hybrid and complex application landscapes (multi-sysplex, multi-platforms environment)
- Sustain availability and resiliency goals under budget pressures, increased availability demands while facing generation shift
- Increasing efforts and cost to document and maintain automation code
- New automation personnel lack mainframe skills to operate the complex environments



IBM Capability

- Policy-based automation to dynamically manage automated resources cross-sysplex and cross-platform
- Tight integration with key operational capabilities
- Accessible through OpenAPI REST interfaces via Ansible, Zowe™ command line interface, chat tools, and other clients
- Modern, customizable and intuitive dashboard user interface for managing automated resources

Client Value

- Improved reliability and resiliency for faster incident resolution
- Policy-based automatic restart and failover capabilities including pro-active automation
- Intuitive interfaces and integration with chat platform improves collaboration within and across teams
- Faster response to business requirements while following structured change management principles using dynamic resources

Predictive workload automation

End-to-end workload automation with embedded predictive scheduling for SLA management cross enterprise

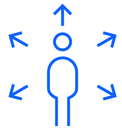
- IBM Z Workload Scheduler

Included in:

- IBM Z Service Automation Suite

Challenges

- Orchestration of calendar-based and event-driven tasks
- Growing complexity of workload to be managed, with dependencies between jobs running on different platforms
- Islands of different automations that are not integrated
- Shortening batch windows requiring continuous optimization of the batch execution, avoiding violation of SLA constraints



IBM Capability

- Embedded predictive analytics to identify risk of SLA violations with automatic remediation
- AI powered anomaly detection
- Wide variety of advanced job types available to integrate cloud – and container environments
- Workload automation data is exposed as metrics based on standards such as OpenMetrics for easy integration in observability and analytics platforms

Client Value

- End-to-end workload automation from a single point of control for z/OS and hybrid cloud applications
- Batch scheduling integrated in DevOps toolchains and observability platforms
- Z ChatOps integration to send alerts to your enterprise chat platform and use of a chatbot to monitor and control the job execution
- Run on-demand business processes as services from a self-service catalog from any device without workload scheduling knowledge

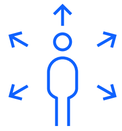
Intelligent storage

Machine aided storage resource management and automated storage tasks across the enterprise for improved SLAs

- IBM Z Storage Management Suite for z/OS
  - OMEGAMON for Storage on z/OS
  - Advanced Catalog Management for z/OS
  - Advanced Allocation Manager for z/OS
  - Advanced Reporting and Management for DFSMShsm™
  - Advanced Audit for DFSMShsm
  - IBM Cloud® Tape Connector for z/OS

Challenges

- Modern z/OS Storage Environments are large & complex spanning multiple venders and tools
- Storage on z/OS continues to be a vulnerable area with a decline in skilled storage admins and a struggle to train new talent
- Storage capacity continues to grow rapidly with the acceleration of digital transformation



IBM Capability

- Storage Hardware and Software subsystem monitoring / management compatible with Zowe™ version 2.2
- HSM, RMM, ICF catalog & VSAM backup, integrity, and optimization
- Policy-based z/OS storage allocation and availability (outage prevention)
- Leverage Cloud or on-prem Object Storage for z/OS archive and/or backup data

Client Value

- Policy-based control of storage allocation keeps users from overconsuming storage and prevents storage failures
- Ensure HSM subsystems are healthy, efficient, and have low risk of outages
- Ensure crucial files are backed up and kept healthy for optimal performance
- Single vendor solution, reduce software stack TCO

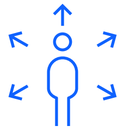
Resiliency

Improve business resiliency and reduce risk by offering immediate insight into data inter-dependencies and vulnerabilities

- IBM Z Batch Resiliency

Challenges

- Ransomware, corruption, and cyber-attacks have introduced alarming new scenarios that demand even more diligent approachs to resiliency
- Increased emphasis on the importance of infrastructure resiliency driven by new regulatory mandates, such as DORA*
- Volume of data and complexity of applications is increasing, and operational and disaster recovery needs to keep up



IBM Capability

- Cyber Vault Health Check report identifies any non-database-managed data set open at the time of a Safeguarded Copy backup
- Cascade reports provide a complete look into the past of at-risk data sets at a point in time and enable a forward recovery plan for any non-database-managed data recovered
- Generate restore JCL to accelerate the recovery process lowing dependency on skilled users

Client Value

- Decrease recovery time following data corruption event with minimized manual processes
- Prove compliance and reliability on an ongoing basis to support audit and regulatory needs
- Reduce reliance on diminishing set of skilled users to manage recovery processes

* Digital Operational Resilience Act

Additional resources

The AIOps for IBM Z framework and solutions will help determine the next best step

Website

- AIOps for IBM Z

Community

- Stay informed by joining the AIOps on IBM Z community

IBM Z Trials

- Experience the products using IBM Z Trials

Demos/Videos

- AIOps for IBM Z video channel
- AIOps for IBM Z Overview
- Automated Resolution
- Enterprise Observability

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