



AIOps

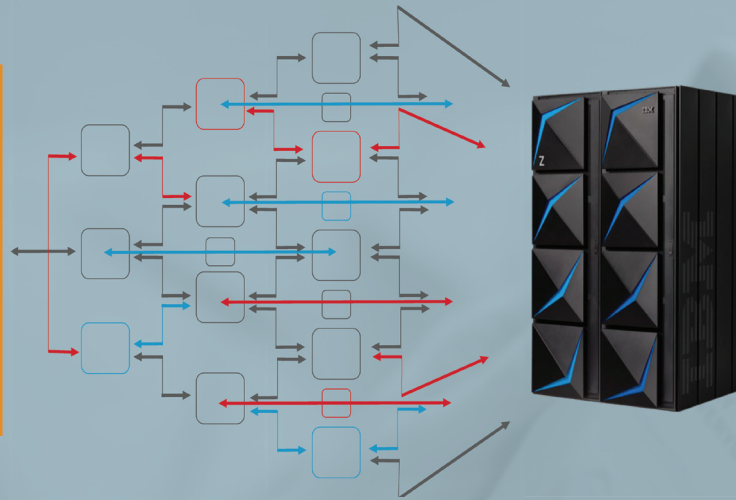
Mainframe AIOps

Combine Machine and Human Intelligence
to Drive Operational Excellence



Delivering Optimized Digital Experiences is Complex.

In today's hyper-connected world, the demand to deliver excellent digital experiences is greater—and more difficult—than ever before. Customers expect apps to work flawlessly, ALWAYS be available, respond in seconds, and remain ultra-secure.



What many don't realize, though, is that behind the scenes of all these digital apps, there has been an exponential growth of data, transactions and complexity.

It's overwhelming! There's simply too much data, which takes too long to analyze, resulting in issues going undiscovered until it's too late.

Compounding the matter: IT teams tend to monitor and automate in a siloed fashion, which impedes their ability to detect, diagnose and act on complex issues.

TOO MUCH

data, complexity, and change,
to manage manually

88%

Increase in Operational Data

TOO LONG

to access information and
diagnose problems

3.7

Average MTTR
(Hours)

TOO LATE

to avoid business impact

\$150M

Average Outage Costs

APPLICATIONS



STORAGE



DATABASES



SYSTEMS



NETWORKS



LOGS



Sources:

1. Too Much: Modernizing IT Operations for Digital Economy, Digital Enterprise Journal 2017
2. Too Long: <https://www.dej.cognanta.com/wp-content/uploads/2019/08/Slide7.jpg>
3. Too Late: Delta's Computer Outage to Cost \$150M, Forbes 2016

Managing Diverse, Hybrid IT Environments with AIOps

Traditional approaches to managing hybrid IT environments simply won't cut it anymore. That's why more and more companies are turning to AIOps to help address operational challenges. AIOps applies artificial intelligence to IT operations, bringing together big data, machine learning and automation.

AIOps



Big Data and Analytics



Machine Learning



Intelligent Automation



Domain Expertise

Combining Machine AND Human Intelligence...

At Broadcom, we believe AIOps is about applying *augmented* intelligence to IT Ops, combining machine intelligence **with** human intelligence to continuously improve operations.

It's not about replacing IT operators—the machine learning algorithms need to be trained by the data collected and by the domain experts. It's about augmenting your team with actionable insights and fast, automated remediation to prevent issues and minimize the impact when they do arise.



AIOps is a Journey, Not a Destination

AIOps requires a pragmatic approach, customized to each organization using it. The key to moving forward is to make small changes incrementally that will add up over time, shifting focus from reactive IT to proactive IT.

ANALYZE Issues and Diagnose Root Causes Faster

AIOps solutions from Broadcom integrate data across hybrid IT—including mobile, multi-cloud and mainframe—enabling holistic visibility and automated correlation for faster root cause analysis.

When issues arise, the key is to be able to view meaningful data in context so that your team can intelligently identify the true cause of issues and automatically resolve them, rather than simply chase symptoms.

USE CASE

Analyze 5X Faster

CHALLENGES:

- Being notified after a customer is impacted is too late.
- Static thresholds yield too many false positives and cause a lot of unnecessary churn to investigate.



With broad visibility and in-depth diagnostics, you'll experience:

- Increased IT efficiency through faster problem triage and remediation
- Improved productivity and resource efficiency
- Reduced mean time to resolution (MTTR)

RESULTS:

“Performance insights in near **real time** are spectacular.”

“We **reduced time** to analyze cause of issue from hours to minutes.”

“Test is one thing, being able to **see in production** provides the real insights.”



SOUTHWEST GAS

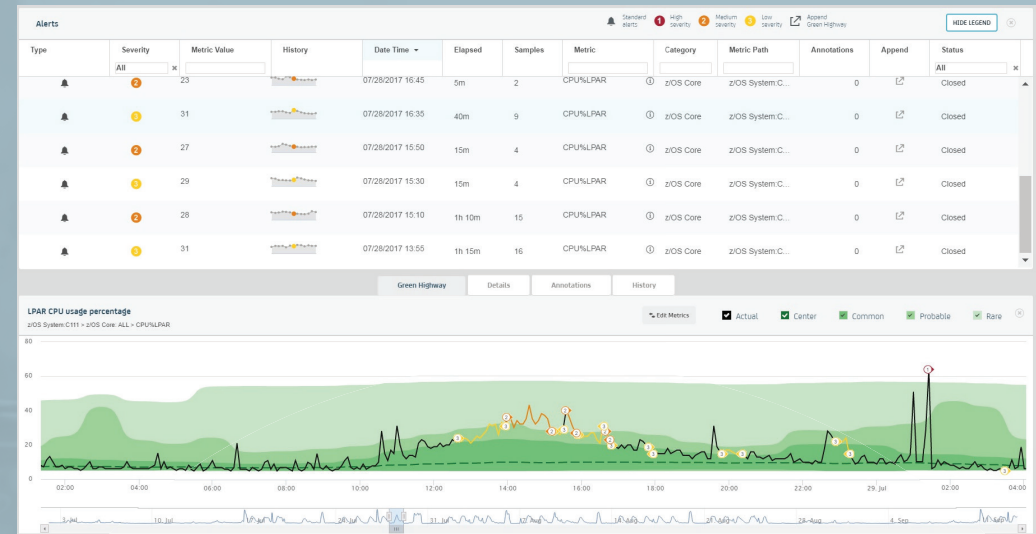
Proactively ANTICIPATE Issues Before They Impact Business

The best kind of problem is one that never occurs. AIOps solutions from Broadcom provide early warnings through machine learning-based algorithms, which proactively identify issues that may affect service levels.

With AIOps, your team can discover potential issues sooner and fix them—or even better, prevent them from happening in the first place. Processing millions of change events, logs, metrics and trends gathered across subsystems and applications, the machine-learning algorithms detect recurring patterns that have led to problems in the past.

The key is detecting when patterns start to emerge, as opposed to after the fact. This enables your team to tackle small sparks before they become five-alarm fires.

USE CASE



By shifting from reactive to proactive operations you can:

- Detect potential issues before business impact
- Quickly isolate and diagnose problems
- Automate corrective action

Anticipate Problems Hours Earlier



Large Financial
Services Company

CHALLENGES:

- Major system incident resulted in 8 hour outage.
- Average **cost of** a critical application **failure** per hour is **\$500,000** to **\$1 million**

RESULTS:

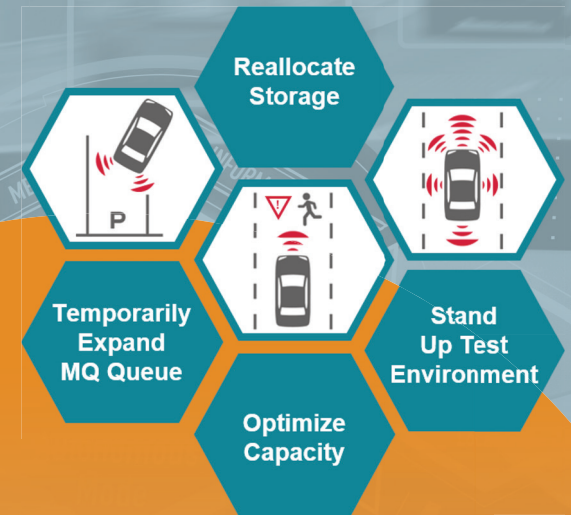
“Issue easily found **within minutes.**”

“Anomaly detection would have alerted of the issue **2 hours before** we even knew we had a problem and **5 hours before** we took action.”

AUTOMATE to Increase Efficiency and Protect Your Experts

AIOps solutions from Broadcom deliver outcome-driven automation across hybrid IT environments, enabling systems to heal and optimize themselves. You specify your preferences and goals—such as service level metrics, cost constraints or security policies—and the software takes care of the rest. These decisions are made in milliseconds, around the clock, adjusting in real-time based on your unique IT environment conditions.

These capabilities not only eliminate manual efforts and streamline workflows, they provide incremental **automation you can trust**, with built in feedback loops and guardrails.



Automating along the way wherever possible allows you to:

- Prevent system slowdowns and outages
- Increase efficiency of your day-to-day operations
- Protect your experts for more strategic initiatives

USE CASE

Automate to Reduce Manual Effort



Global Insurance Company

CHALLENGES:

- Exploding mainframe demands and complexity
- Shrinking staff resources
- Needed to offload and automate low level staff work

RESULTS:

“Over **40% reduction in manual effort.**”

“CA/Broadcom approach is **way ahead** of other intelligence engines which aren’t real time.”

“...able to avoid having experienced staff waste their time...instead they are available to **apply their expertise** to next gen solutions.”

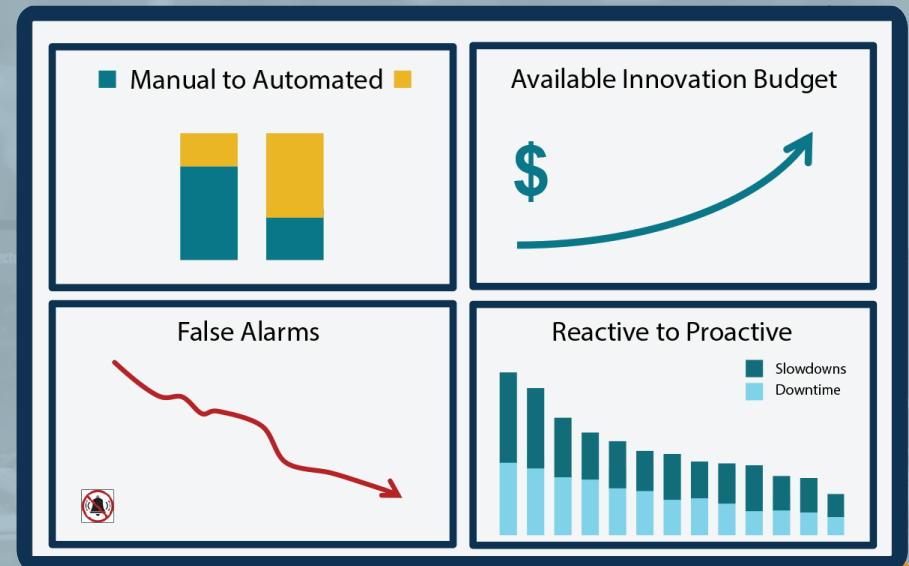
Before You Can Optimize, You Have to PRIORITIZE

AIOps is a journey, a continuous process of incremental improvement, but determining where to start can be one of the hardest steps. There's no one-size-fits-all approach, and on top of that, you probably lack the time, insight and resources to determine the greatest opportunities for improvement.

Prioritize Based on Data-Driven Insights

Broadcom will partner with you, using a data-driven approach to help you determine what projects to focus on first to make the biggest impact. Where to start depends on your goals, your resources, and what YOUR data reveals. For example:

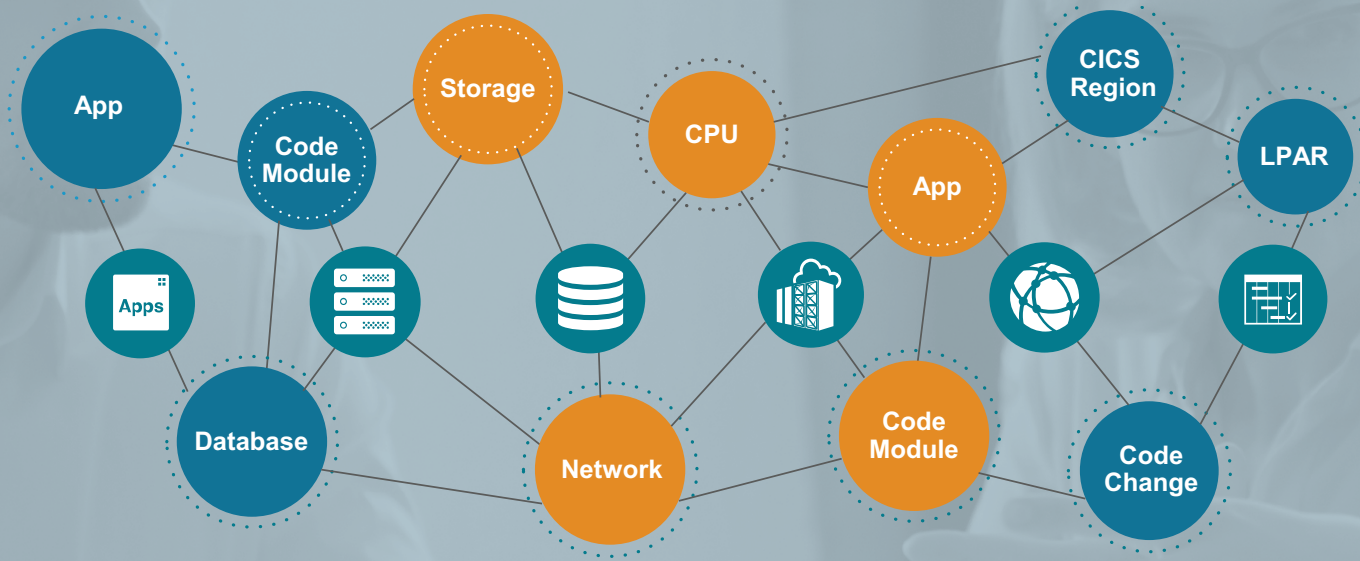
- If your staff is finding out about problems long after they've occurred and end users have been impacted, you want to focus on anticipating problems.
- If your teams are exhausted by the time it takes just to collect the data—much less analyze it—we'll help you leverage APIs to expedite data gathering and use newest tools to speed analysis.
- If your teams are doing the same manual actions over and over, let's focus on automation to free them up to work on higher priority efforts.



The key is to get started,
and Broadcom will help you:

- **Expedite** decisions using data-driven insights
- **Compare** opportunities to assess ROI
- **Allocate** resources for optimal outcomes
- **Uncover** the best path forward

It's All About Contextual Insights



The key to AIOps is data. All the data already exists in your systems, but by itself it's not enough. Relevant data must be put into context, transforming it into contextual insights that are meaningful and actionable.

Broadcom AIOps solutions help you surface the hidden relationships across IT silos by integrating the data, using an open architecture approach. Now, your IT Ops team can gather data from numerous sources, including Broadcom tools, third party tools and the mainframe itself—there's no need to rip and replace what you already have. This allows you to act faster by rapidly discovering what is happening across your systems to deliver the right insights to the right people at the right time.

Transform your data into contextual insights that drive operational excellence.

- Reduce manual efforts by over 40%
- Predict problems hours sooner
- Identify root cause 5 times faster

Get Started On Your AIOps Journey With Broadcom Today

Broadcom provides a pragmatic approach to implementing AIOps that lets you keep and leverage the tools you already have while taking the incremental steps towards adoption. In summary, here are a few best practices to consider on your AIOps journey:

- **Design around an open-first, secure data strategy.**

Simply stated, without data, AI does not work. You need to ease access to operational data using open and secure APIs—but you also need to understand where it's being used, and by whom.



- **Embed domain-trained AI to drive outcomes.**

Significant effort goes into training the AI algorithms, and most Ops shops don't have the time or skill to train them up. You can't just take a generic algorithm off open source and hope it works.

Look for analytics and algorithms that have already been trained for your domain and embed them within your existing systems.

- **Integrate breadth of visibility with depth of analysis and expertise.**

You're not going to find a single solution that does everything. Leverage AIOps components that allow you to easily integrate new capabilities as they emerge—facilitated by an open and extensible architecture.

This allows you to incrementally build up breadth and depth as opposed to being stuck at a dead end with a single solution. You want flexibility.



Get Started on Your AIOps Journey with Broadcom Today

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Broadcom Mainframe Software Division continues to drive the next evolution of open, cross-platform, enterprise innovation. We specialize in DevOps, Security, AIOps, and Infrastructure software solutions that allow customers to embrace open tools and technologies, make Mainframe an integral part of their cloud, and enable innovation that drives business forward. We are committed to forging deep relationships with our clients at all levels. This goes beyond products and technology to partner in creative ways that support customer success.