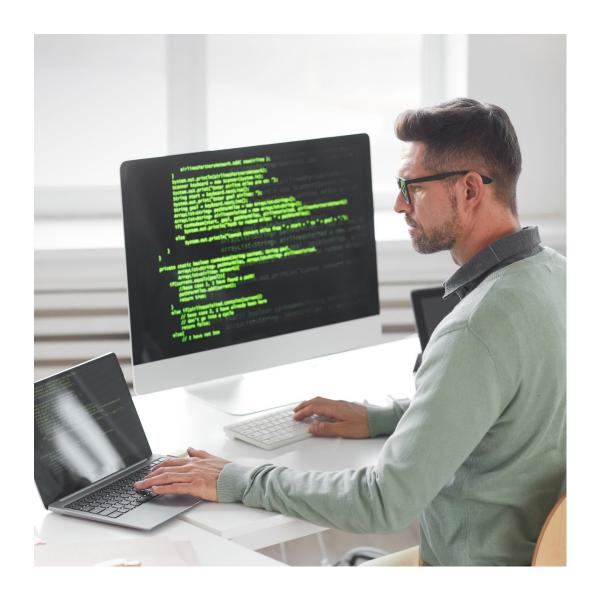# Assure application performance with AIOps

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Why you need AIOps and IT automation

Increase IT productivity by 35% and assure your application performance with AIOps

Today's digital businesses depend on the performance and availability of critical business applications and the infrastructure on which they run.

According to a McKinsey study, CIOs cited the need to react more quickly as the top reason for making changes to their organizations.[1]

A lack of visibility across hybrid and multicloud environments, rising costs, inefficient resourcing decisions and lack of centralized control has slowed the ability to digitally transform their business. The use of technologies such as virtual machines, container-based microservices and shared multi-tenant infrastructure can accelerate application development, but introduces operational complexity.

Modern applications are often separated by multiple layers of abstraction, making it difficult to understand which underlying physical server, storage and networking resources are supporting which applications. Traditional methods of forecasting resource requirements based on "set it and forget it" estimates can lead to overallocation of resources, or worse yet, starve applications during usage spikes. Even with an additional resource margin, performance isn't guaranteed due to the unpredictable nature of modern application demands.

Assure application performance with AIOps →

IBM was recently named an AIOps solutions leader in the Omdia Universe: Selecting an AIOps Solution, 2021–22 report →

Resource optimization that requires an operator to manually update the production environment will fall short in dynamic demand situations. To stay relevant, modern organizations are turning to a new, AIOps-driven approach that improves speed, utilization and service delivery.

– **Faster decision making:**
  Full-stack, enterprise observability.
– **Smarter resource allocation:**
  Dynamic resource management and cost optimization.
– **Predictive AIOps:**
  Autonomous problem determination, remediation and avoidance.

216% ROI

"The customer interviews and financial analysis found that a composite organization experiences benefits of $3.56 million over three years versus costs of $1.13 million, adding up to a net present value (NPV) of $2.43 million and an ROI of 216%."[2]

02

Faster decision making

Full-stack
and enterprise
observability

The challenge
Traditional monitoring tools lack the visibility that's required to manage the performance of modern IT environments and address potential bottlenecks before they impact users. You need to automatically ingest observability metrics, tracing every request and profiling all processes across microservices

Key use case: Application monitoring
Asking developers to add extensive logging code for monitoring takes time away for high-value code production. With a combination of automated instrumentation and judicious manual code logging, your applications can support enterprise-level observability based on health and performance metrics, distributed traces, and logs.

An observable system enables you to collect diagnosis and resolution data from your production environment in near real-time. This helps your ITOps team resolve incidents more rapidly, even when services are widely distributed. With reliable, complete metrics and distributed tracing from your production systems, your team will escape the problem resolution "blame game" since your captured data will point to the responsible components rather than relying on hunches.

The solution
IBM Observability by IBM Instana® is an APM (Application Performance Management) technology that handles automated instrumentation for many popular runtime environments such as Java and PHP without any agents required. For other runtimes like Node, Instana provides a runtime-specific library to handle automated instrumentation. The application-level metrics, tracing and logs are captured in production and analyzed for a synthesized view of your application and infrastructure estate.

Your ITOps and development teams can use the Instana dashboards to monitor your application performance with intelligent grouping, giving them end-to-end visibility—all the way from the user's browser to the services and infrastructure layer.

"Reduce time to debug applications by 75%."[2]

Observe what's happening across your application performance. Get immediate and actionable insights to make sure that your applications perform. →

Enhance your application performance →

03
Smarter resource management

Dynamic resource
management and
cost optimization

The challenge
Traditional IT management tools and processes cannot assure the performance of increasingly complex and dynamic applications that are distributed across private, public and multicloud environments running virtual servers and containers.

These traditional systems and processes attempt to assure performance through over-simplification of resources. This approach won't work for increasingly dynamic and complex applications, nor will manually applied updates scale to systems that have complex compliance requirements.

ITOps Managers and site reliability engineers (SREs) need a top-down, application-driven approach that continuously analyzes the resource needs of applications. With this analysis, fully automated actions assure that applications get what they need to perform while conforming to your company's IT policies.

Key use case: Resource utilization

You don't need to apply an over-provisional "security blanket" to avoid resource problems. You don't need to sacrifice performance to save money, either. The performance objective is decision automation for resource management, not just process automation.

To automate decisions with confidence, your application resource management (ARM) platform needs a full view of your application requirements. APM insights, available through auto-instrumentation with Instana and other supported APM platforms, helps the ARM platform automate resource decisions informed by large-grain measures available at the Kubernetes resources level.

The solution

Based on actual application metrics captured by APM application programming interfaces (APIs), IBM® Turbonomic® Application Resource Management offers recommended resource optimizations for performance.

At first, you may choose to manually review these recommendations to confirm they're correct but, over time, you'll come to trust them and automate these decisions.

With IBM® Turbonomic® Application Resource Management for IBM Cloud Paks, applications get the resources they need through visibility, insights and actions at every layer of the application and infrastructure stack without the need for human intervention.

Intelligent app resource management with AI–powered automation →

Get better application performance →

04

Predictive AIOps

Autonomous problem determination, remediation and avoidance

The challenge

Every business is a now a digital business, facing daily demands to evolve. Businesses are moving into new markets, addressing new segments and utilizing new channels while still maintaining quality and compliancy. Unfortunately, the hybrid and multicloud environments meant to empower teams can also unintentionally hinder them.

Complexity is driving dependency and forcing organizations to sacrifice innovation for stability. But what if you could have both? The initial promise of AI—detecting patterns and gaining insights from the past to improve the future—is becoming reality.

Key use case: Incident management

Experienced ITOps managers, developers and SREs are skilled at spotting small differences that (usually) lead to problem resolution. However, with cloud adoption comes decoupled services, which adds an extra burden when debugging if logs and configuration data are not centralized and synchronized.

To further complicate incident resolution, dependency relationships between service A and B may not be known until runtime. This is where AI and machine learning can really help. Let computers sort through mountains of data and sift out potential causes.

View a technical demonstration of how IBM Cloud Pak for Watson AIOps addresses incident management and remediation. →

Infuse AIOps with intelligent IT →

The solution

IBM Cloud Pak for IBM Watson® AIOps groups related events of an incident, reducing "alert storms" that waste operators' time.
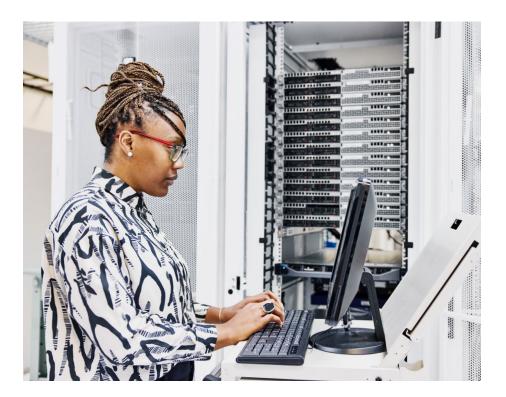
"Reduce mean time to repair (MTTR) by 50%."[1]

Similarly, IBM Cloud Pak for Watson AIOps analyzes system data to understand what's normal behavior, then automatically sets adaptive thresholds. This avoids the trap of fixed thresholds leading to false alarms or brewing problems going undetected.

Thanks to adaptive thresholds and log anomaly detection, issues that necessitate your ITOps team are more likely to be discovered earlier. The alert notifications are surfaced in your ChatOps tool of choice with a hypothesized cause and summary of potentially impacted services, helping you improve your incident management capabilities.

IBM Cloud Pak for Watson AIOps integrates with popular incident tracking tools, enabling your team to collaborate in a less formal ChatOps environment while not losing the tracking ability of traditional incident resolution tools.

IBM helps you leverage the power of AI, with an AIOps platform that can help you automate labor-intensive processes, achieve proactive incident resolution, and embrace an integrated DevSecOps model, freeing your teams to innovate in an open, hybrid cloud environment.

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How IBM can help

IBM can meet you wherever you are in your AIOps journey. Spend more time on innovation and less time on troubleshooting.

The success of your digital business depends on the performance and availability of critical business applications and the efficiency of the infrastructure on which they run.

IBM is a recognized leader in AIOps solutions and IT automation, with a proven approach to automate business operations and achieve better performance, no matter where you are in your AIOps journey.

By taking our key technologies and applying them to this framework, you can tune automation depending on your specific needs and challenges. We and our ecosystem are ready to help you optimize on essentially any platform and basically any cloud, helping to enable:

Why AIOps	Assess where you are today	Know how to get there
Faster decision making	Do you have full visibility across your entire IT environment? Do you have comprehensive and actionable, data-driven insights for your business applications?	To make good decisions and diagnose problems faster, you need reliable, cross-platform information. IBM Observability by Instana APM delivers real-time and actionable observability on essentially any platform or cloud environment with world-class visualization and user interface (UI).
Smarter resource allocation	Do you have a top-down, application-driven approach that continuously analyzes the resource needs of applications? Can you assure that your applications are getting what they need to perform while conforming to your business policies?	Escape the performance management "blame game" with a top-to-bottom view of your infrastructure and application resources. IBM® Turbonomic® Application Resource Management assures application performance while delivering cloud cost optimization by matching application demand to elastic supply.
Predictive AIOps	Can you proactively avoid application outages and problems, and accelerate root cause analysis to reduce mean time to resolution (MTTR)? Are you using AI to automate labor-intensive processes and achieve proactive incident resolution?	Don't rely on intuition or siloed knowledge to resolve incidents. Let machine learning and AI do the heavy lifting of detecting potential root cause factors. IBM Cloud Pak for Watson AIOps provides effective anomaly detection, risk prediction, and workflow automation.

Next steps

IBM Observability by Instana APM

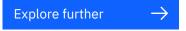Discover the leading observability APM monitoring technology.

Dive deeper →

Turbonomic ARM for IBM Cloud Paks

Dynamically resource applications to absorb shifting user demands and deliver target response times.

Explore further →

IBM Cloud Pak for Watson AIOps

Automate labor-intensive processes and achieve proactive incident resolution.

Read more →

We can help you enhance and simplify your IT operations with AIOps.

Schedule a demo →

01   The need for speed in the post COVID-19 era—and how to achieve it, McKinsey & Company, 9 September 2020 www.mckinsey.com/business-functions/organization/our-insights/the-need-for-speed-in-the-post-covid-19-era-and-how-to-achieve-it

02   Forrester: The Total Economic Impact™ of IBM Cloud Pak For Watson AIOps With Instana, Forrestor study commissioned by IBM, July 2021 www.ibm.com/downloads/cas/09EDOML3