White Paper

AIOps with Data, Analytics, and Intelligent Automation: A Foundational Capability for Modern IT Operations

Sponsored by: BMC Software

Stephen Elliot
March 2022

IDC OPINION

AIOps is a need-to-have, not nice-to-have, technology capability for IT operations, DevOps, and site reliability engineering (SRE) executives and their teams as they face pressure to move faster to identify, resolve, predict, and prevent problems as the rate and pace of change accelerates and as complex cloud and application environments continue to expand. A great customer experience depends on a great digital experience; this requires an efficient and effective operational/service delivery model that enables high-performing services. AIOps brings together data, analytic models, and intelligent automation to create a modern operational model that engenders speed, agility, and predictability. Intelligent automation identifies opportunities for automated corrective action using a policy and event-driven automation broker. These values directly impact an organization's ability to generate innovation, revenue growth, and profitability. Intelligent automation uses policies and an event-driven automation broker to identify opportunities for automated corrective actions, which can increase process and team efficiencies to deliver optimized costs and faster time to market.

IN THIS WHITE PAPER

This IDC study provides operations, DevOps, and site reliability engineering executives and senior IT leaders with why and how artificial intelligence (AI) technology in IT operations is selected and used to deliver maximum business value, ensuring AI investment decisions are measured against an expected return. Many organizations call this AIOps; the ability to collect a variety of data at scale and apply various analytic models to accelerate problem identification, resolution, and predictive capabilities with various levels of automation and monitoring.

SITUATION OVERVIEW

IT operations, DevOps, and SRE executives and teams are in unprecedented territory; they all must meet new challenges for scaling and accelerating digital transformation, faster DevOps-driven application deployment cycles, the rising complexity of multiple cloud adoption, and the expansive sophistication of a traditional and modern (i.e., mainframe, container, microservices, Kubernetes based) application architecture. In addition, the need to align these people, process, and technology challenges to business outcomes has never been more important. Executive teams realize that their technology architecture is in fact their business architecture; the ability to deliver high-performing digital services and products relies on an effective and efficient service delivery foundation.

Meeting rising customer demands requires a service delivery foundation that aligns monitoring, intelligent automation, data, and analytic capabilities together to deliver great customer experiences through optimized problem, change, and incident management processes and higher-performing services. This foundation often starts with the idea of AIOps.

Artificial intelligence has been used at varying levels in IT operations for over two decades. For tools that embed AI to deliver a specific outcome, the intelligence can be inobtrusive and invisible. However, there are tools where the AI is the primary interface, requiring the IT organization to adopt something that is different than any tool it is using today. What AIOps delivers is a better way to understand and predict a condition or an outcome, aligning automation and monitoring data collection and analytics. The objective is to manage increasing complexity, keep up with the pace and rate of change, and deliver greater business value and customer experiences. To obtain these results from AIOps, organizations must use automation with analytics to drive advantage. The challenge is that AIOps must have a purpose and a measurable outcome. You must start with the outcome you want to deliver, such as faster mean time to repair (MTTR).

The idealistic view is AIOps tools can be let loose and forgotten as the AI will allow the IT organization to sit back and benefit from the results. The real answer is that "it depends." The challenge is AIOps must have a purpose and a measurable outcome. If you don't know what you are looking for from AI, it will not tell you. It also requires clean data from various sources. Without the proper data sources, the impact from analysis can be less valuable. There are several different types of models to choose from:

- The goal of AI is to make a smart computer system like humans to solve complex problems — it works across an expansive scope.
- The goal of machine learning (ML) is to allow machines to learn from data so that they can give accurate output — it has a limited scope.
- The goal of analytics is to establish a set of patterns that can give greater insights from disparate data sources — it works best with a limited scope.

AI, ML, and analytics are the most used methods/terms in IT operations tools to describe how they deliver intelligence. In IT management, application of analytic models to operational data pools is finding its way into more areas with a growing number of companies experiencing the benefits of using AIOps tools. AIOps is being used to enable digital transformation use cases as it works across multiple, different environments (multicloud containers, virtualized, dynamic) without requiring custom setup. It is also used to monitor cloud and can adapt, especially when companies transition from private to public environments. Recent advancements in the discipline of artificial intelligence within the IT operations discipline have broadened capabilities that various types of analytic models offer IT operations professionals. It's all about the data.

Looking to an AIOps tool to make sense from data that is constantly changing and chaotic without focusing it on an outcome is going to result in disappointment. Simply letting it loose and expecting an answer is never going to be successful. It's not about data sources; it's about the right kind of data. The better the data quality, the better the AIOps output, results, recommendations, and predictions. Without this discipline, the AIOps tool will simply take one set of data and convert it into a different set of data. The less intuitive the AIOps output, the greater the need for expertise to be used to translate the data into usable information.

Why AIOps? Why Now?

In customer conversations, some organizations have improved their event management capabilities and suppressed event "noise" 60–90%. In another example, a customer reduced the time to identify the root cause of performance problems by 30%. In another case, a customer proactively fixed 40% of certain problems by using predictive capabilities with monitoring. These customers have balanced the need for integration with their use of data collection and various types of analytic models. It's important to understand that open integrations enable the ingestion of events, metrics, and topologies from third-party solutions, sometimes using out-of-the-box adapters (an example is BMC StreamWeaver) to maximize visibility and coverage of data.

IT executives should be considering how the use of analytic models can support and solve actual business problems. AIOps is a growing method to solve service performance problems and grow the business. AI, alone, is not an answer. Many IT organizations have a corporate AI strategy or road map; I&O professionals should consider how AIOps addresses operational challenges as enterprise monitoring is modernized and improved across the company. This includes the use of automation as a guiding framework that takes advantage of AIOps capabilities. They should also consider how AIOps plays a role or is a leading technology to deliver business outcomes as part of the corporate strategy, notably in areas such as customer satisfaction, experience, cost containment and reduction, product quality, and time to market. I&O teams in the "new normal" are very focused on customer behavior and new customer engagement models as brick-and-mortar locations reopen, and the "cost of service" theme for cost containment and reduction opportunities is related to service delivery processes.

AIOps is a need-to-have, not nice-to-have, technology. There are many different operational and service delivery challenges faced by IT operations, DevOps, and SRE teams that must be solved to deliver a great customer experience. AIOps can help solve the following challenges:

- Managing a large, disparate toolchain of disintegrated tools and processes that create separate data pools and tool sprawl, sometimes with limited monitoring, reporting, and service visibility capabilities
- Tool acquisition and integration costs that continue to increase
- The growing consideration of overlapping IT operations, DevOps, and SRE management, monitoring, and process capabilities
- The importance of supporting a plethora of technologies, cloud architectures, data types, and organizational models such as Agile, DevOps, and SRE
- The limited use of various analytic models to reduce event noise, improve collaboration, and drive predictive, data-driven postures across IT teams
- Aligning SLAs, SLOs, and SLIs to the ability to deliver end-to-end full-stack observability of a service while determining the impact on customers and business metrics

AIOps tools provide monitoring and management for performance and availability of services with integration into IT service management to reduce the time and overhead for identifying and resolving problems across complex multicloud environments. The importance of collecting the right type of data cannot be understated; the ability to take that data (metrics, logs, events, etc.) to create a service topology and apply various AI/ML/analytic models that determine root cause and prevent service degradation is paramount to AIOps delivering business outcomes. Many organizations and leadership teams are maturing their AIOps deployments by automating their remediation processes and proactively executing issue resolution from across operations, SRE, and DevOps teams.

BMC Helix Operations Management

BMC Helix Operations Management provides predictive IT with AIOps, machine learning, advanced analytics, and automation using predictive capabilities to proactively improve the performance and availability of IT services across multicloud, hybrid cloud, and on-premises environments. The solution is business service centric, understanding the relationship between the different nodes within the service to produce high-quality analysis on top of those services and allow customers to create their own service model. Specifically, some of the critical capabilities are:

- **Dynamic service modeling that generates a topology view of services that is leveraged for service-centric monitoring and root cause isolation**
- **AI- and ML-driven event correlation, situation management, and root cause isolation for reduced MTTR**
- **AIOps, analytics, and machine learning:** Intelligently ingest, analyze, and manage enormous volumes of operational data
- **AI/ML-based situations and root cause isolation:** Proactive, automated event correlation and determination of root cause across business services
- **Service-centric monitoring:** Monitoring business services and visualizing status using heat maps and tile views
- **Open integrations:** Using out-of-the-box adapters to ingest metrics, events, and topologies from third-party solutions
- **Univariate and multivariate anomaly detection:** Triggering events and notifications based on abnormal behavior
- **Intelligent automation:** Identifying opportunities for automation to take corrective action
- **BMC Helix Platform:** Includes BMC Helix Discovery for visibility to infrastructure, topologies, relationships, and services including Dynamic Service Models

IT Essential Guidance

Customers should focus on proactive issue identification and resolution, with the opportunity to automate remediation using integrated processes and advanced analytic models. The importance of the ability to collect any data from across a variety of sources (infrastructure, applications, third-party solutions, IoT sensors, business processes, etc.) from any cloud is a critical success factor. The ability to visualize services to customers provides a foundation for connecting time-sensitive tasks with the right people and teams while minimizing (or preventing) any negative impact on customers (or revenue).

Business rules and policies can help establish the proper level of automation as well as dictate various levels of automated actions. The use of intelligent automation can identify problems through monitoring and root cause analysis to quickly enable problem resolution work streams. Intelligent automation provides a recommended course of action for the best "type" of automation to apply, identify, and resolve different problems; there is no one automation workflow that solves everything. The identification of the problem can trigger a workflow to fix the unique problem — invoking an automated process and triggering a set of actions across different toolchains. This intelligent automation goes beyond just problem notification to include problem remediation. By aligning the monitoring of services with the ability to identify and resolve problems, IT operations, DevOps, and SRE teams can develop a modern operational approach for service delivery while reducing time, increasing mean time to identification (MTTI) and MTTR, and considering the opportunity for monitoring tool consolidation to reduce costs.

Additional recommendations include:

- If your reason for adopting an AIOps tool is to prevent outages, then reward the IT operations team on "outage avoidance" and not MTTR (e.g., security officers receive greater rewards for stopping breaches than they do for dealing with them once the breach occurs).
- Don't treat the AIOps tools just as a "tool." Gaining the greatest value requires that AI receives constant attention to tune, adjust, and focus it. Look for a platform with open integrations.
- Evaluate the "time to value" as most AI takes time to learn and tune. IT environments can vary widely (change, data variety, data complexity, metrics, criticality). Take care to focus the AI and not treat everything the same.
- Consider AIOps tools that do not rely on dashboards to show value. If a tool relies on a dashboard to show the health of IT, then it will require you to have someone looking at it and constantly interpreting the data. The best AIOps tool is the one that gives you the answer, guidance, and an actionable outcome.
- Do not take the vendor's word on value attainment. Ask for references that resemble your use case, and ask the hard questions regarding cost, skills, and ROI.
- Plan to invest in staff and team training; communicate adoption across peer teams to drive conversations on outcomes and business advantages that are derived from AI.
- Foster executive support for AI projects, define the critical KPIs and metrics that AIOps can deliver, and gauge progress and success using these metrics.
- Some vendors talk about AIOps but don't have any real analytics or analytic investments in the product. Dig deep with vendors to determine who is making R&D investments into analytics and the vision for the technology in products moving forward.
- Seek out the corporate strategy for AI or analytics in the company; become a key player in delivering customer satisfaction and improved customer experience using AIOps by measuring what matters to quantify customer experience.

FUTURE OUTLOOK

What does successful AIOps look like? Many organizations take a measured people, process, and technology approach to deploying AIOps and measuring business value:

- A team with all the right skills (IT operations, SRE, and DevOps teams can utilize AIOps capabilities to deliver more automation, team collaboration and productivity, and measurable business outcomes linked to performance and availability of services.)
- A set of objectives with clear, measurable results
- A change in the thinking of how success is rewarded
- Starting small, proving the concept and the value, and then expanding
- Sharing, through integration, the intelligence with other solutions to maximize the value
- Investing in training and upskilling to produce a higher return on AI investment

CHALLENGES/OPPORTUNITIES

The use of AIOps solutions requires IT leaders to trust analytic models and their respective outcomes. Some other common challenges and opportunities are:

- Moving toward a data-driven culture — the IT organization, leadership, and culture of using data-driven decision making that relies on high-quality data and the right analytic models
- Lack of quality data to support the outcome and the inability to integrate data from various sources
- Lack of skilled people and the inability to train or hire the right staff
- Inflated AIOps expectations and poorly developed use cases and metrics
- Intelligence that can or needs to be trained (The smartest AIOps tools still need to establish boundaries to understand what something "good" or "bad" looks like. If early training is not adequately focused, it will be left to the AI to work out what's normal and what's not.)
- "Normal states," which can be hard to find (Things don't remain constant, and change is ongoing. DevOps and agile practices are designed to break "normal," making boundaries hard to establish.)
- Pattern dashboards (Using data to produce pattern dashboards is interesting, but if it requires higher-skilled staff with broader domain knowledge to interpret the charts, then it might be time to look for a better AIOps solution that just tells what is going on and what to do about it.)
- Trust (There is lack of trust. The data displayed on the dashboards must be actionable. It should not fluctuate [e.g., with probability percentages that change] as this will create confusion and doubt into addressing a situation that requires a specific action.)
- A need for real-time breadth and depth of data collection/inspection (In the multicloud environment, customer experience-dominant era, AI models must inspect and analyze information in near real time, from a variety of sources, in high volumes.)
- Bidirectional integration (There should exist deep bidirectional integration between the AI solution and the ITSM solution.)

CONCLUSION

AIOps solutions can provide several critical benefits such as faster time to value for complex IT infrastructures and reduced MTTR/MTTI using machine learning proactively to detect, correlate, and analyze events and determine root cause and increase team productivity by using automation to quickly take corrective actions. Technology executives can enable their IT operations, SRE, and DevOps teams to scale faster and more efficiently using different types of analytic models applied to a vast variety of data. Beyond the technology, people and automated processes play a critical role in driving value for the customer experience; AIOps can serve as a foundational technology investment for modern operational excellence, enabling business scale and speed that drives competitive advantage and profitable growth.

About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.

Global Headquarters

140 Kendrick Street
Building B
Needham, MA 02494
USA
508.872.8200
Twitter: @IDC
blogs.idc.com
www.idc.com