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ARUBA AIOps

Artificial Intelligence-powered Action for IT Operations

In an environment of rapidly changing business and user expectations driven by an explosion of connectivity requirements from the edge to the cloud, a new approach to network management is needed. Aruba AIOps is the next generation of AI-powered solutions that integrates proven Artificial Intelligence solutions with recommended and automated action to provide both fast response to identified problems, along with proactive prediction and prevention.

Legacy network management systems have deployed some form of AI to surface issues and suggest paths to resolution. But this falls far short of what network teams need in terms of predictive identification and remediation of issues. Aruba AIOps provides operations teams with AI insights that can identify pending problems and presents opportunities for optimization by combining highly reliable and accurate feedback with a broad range of guided or automated actions.

What is AIOps?

AIOps (Artificial Intelligence for IT operations) combines big data and machine learning to automate IT operations processes, including event correlation, anomaly detection and causality determination

Gartner Inc., 2019

AIOPS THAT'S BUILT-IN

Aruba has been delivering AI-powered solutions since 2014. We began with optimizing RF settings and client connectivity, then built on this with campus-wide AI solutions that extend the reach of analytics into a broad range of network solving capabilities such as troubleshooting, baselining and user-based performance insights. Our data science leadership has resulted in over 100+ patents. We have designed our networking solutions to be "AI-ready" to provide the data that the AI models need to deliver reliable actions and recommendations.

Aruba AIOps also streamlines troubleshooting with Natural Language search to easily deliver needed data, which then assists in automating the generation of trouble tickets. This means the operations team does not have to hunt for relevant debug data and the TAC team can immediately begin the remediation process.

Once changes are made to network settings or configurations, Aruba AIOps Impact Validation will determine if the change achieved the desired result and can automatically roll back to previous state if necessary.

THE POWER OF DATA

A fundamental requirement for reliable Artificial Intelligence is access to the volume and variety of data needed to train the mathematical models that form the basis on the solution. For years, Aruba has been collecting and aggregating network-relevant data from over 40,000 sites that generate over 1.5 billion events per day. Each device and endpoint send just the right data needed for the analytics—over 100 different features for each element.

Legacy network management systems that cannot harness and leverage this scale of data simply will not be able to deliver reliable results from their AI models. Consequently, they cannot deliver trusted actions required for next generation AIOps. Their analytics simply alert on known issues and guess at possible responses. Peer comparisons and optimization recommendations that are applicable to an individual network are not possible.

A MODEL FOR SMARTER IT OPERATIONS

Aruba AIOps is delivered via Aruba Central, our centralized command center, which includes unified management and security for wired, wireless and SD-WAN operations. Designed using a modern microservices architecture, Aruba Central makes it easy to view AI-powered user and networking analytics and take action, from a single pane of glass.

With the need to decrease ITs dependency on legacy rule-based and siloed operations, Aruba Central delivers greater predictive and prescriptive insights and guidance. The following are examples of how AIOps is delivered from Aruba Central:

AI Insights

Machine learning makes it possible to capture data from every Aruba access point, switch or gateway to provide a real-time infrastructure and connectivity perspective. The data lets IT easily see successful and non-successful connections, channel and port utilization and possible issues that can be immediately remediated.

For example, to anticipate problems, this data can be used by the IT team and the Aruba's Service organization to track behavioral changes related to density and types of devices, software and hardware updates, as well as which specific access points that may be experiencing issues.

As the data is stored in the cloud, it's easy to view how a network is performing across locations – all from a single pane of glass. Utilizing the cloud also provides the ability to anonymously compare a network against like or peer networks[1] for a broader perspective and optimization. All of this comes from Aruba's advantage in accessing an enormous volume and variety of data that is factored into insights.

Examples of included insights and outcomes:

- **RF management:** Automatically identifies channel utilization issues across 2.4 & 5 GHz radios to help IT tune the Wi-Fi network for the best possible performance, even as the density of devices changes
- **Client roaming optimization:** A unique feature that continuously monitors all clients connected to each AP and automatically groups them to the best available AP for seamless roaming – no more sticky clients
- **Airtime utilization:** A view into environmental conditions and their impact on APs by location and density to help identify dead spots and placement issues
- **Connectivity performance:** Insights that display good versus bad DHCP and AAA responsiveness and where users and IoT may be experiencing intermittent connectivity issues
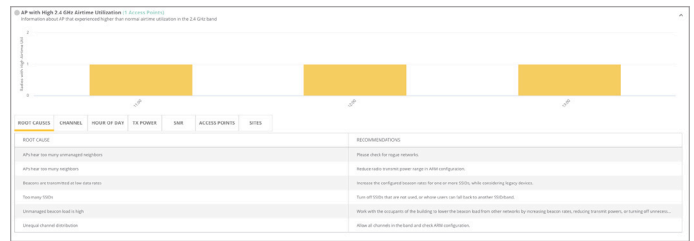

Figure 1: Aruba AI Insights: Automated root cause analysis

360 Degree Network and User Insights

Due to the increased use of mobility, a simple way to measure and see end-to-end transactions remotely for user and IoT devices is needed. Aruba's User Experience Insight (UXI) consists of Aruba Central-hosted management and data repository, machine learning and the ability to understand network performance from both the network and user perspective.

Aruba UXI leverages AI-based machine learning to tackle this problem using a feature called AI Alerts. By generating traffic that mimics user and IoT behavior throughout the day to exercise applications, we are able to capture a single, objective source of truth on whether or not users are having a good experience when using mission critical business applications.

AI Alerts then pinpoint when and where sub-optimal performance problems are occurring to focus the operations team on critical issues. Comprehensive end-user and IoT data are displayed, helping IT to quickly and proactively fix problems and optimize experiences without frustrating and time-consuming troubleshooting.

Examples of available insights and outcomes:

- **Device association per area:** All stages of connections including authentication, DHCP and DNS help identify where in the process users may experience problems
- **End-to-end app responsiveness:** Continuous visibility into the responsiveness of internal and cloud-hosted applications by location enables operations to get in front of issues before users report a problem
- **AI Alerts:** Insight into critical services that require IT attention, such as guest portal load times, HTTPS timeouts, low MOS scores, packet loss and outages that IT can use to quickly troubleshoot issues

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[1] Activity data is anonymously analyzed. No payload or end-user data is accessed or used.

Automated Device Profiling and Insight

With the dramatic increase in IoT devices being connected to wireless and wired networks today, visibility has become a critical component to maintaining security and compliance standards. Manual approaches to identifying new devices and assigning appropriate access permissions has become unmanageable.

ClearPass Device Insight builds on Aruba's leadership in network visibility and access control through a new approach – using machine learning and a unique set of both active and passive discovery methods to identify and profile the full range of devices connected to networks today.

Examples of available insights and outcomes:

- **Full-spectrum visibility:** Each connected device is displayed to help security and network IT teams eliminate blind spots
- **Cloud-sourcing:** Allows Aruba's large installed-base to share profiles of newly introduced IoT devices with the community to provide a comprehensive device database
- **Role-based access control:** Once devices are identified and profiled, ClearPass Policy Manager can apply the appropriate role-based access policies to ensure that users and devices have only the IT permission they need for their mission

THE AI-POWERED EDGE

A breadth and depth of data in a single data lake – combined with advanced machine learning and AI-powered actions via Aruba Central – provides organizations with a next generation all-in-one AIOps platform to drive the automation needed for today's modern, Intelligent Edge networks.

With Aruba AIOps, IT can deliver the best possible user experience and business outcomes with greater end-to-end visibility – with the automation needed to improve efficiencies. All by quickly anticipating and responding to issues – even while rolling out new services that both IT and people can trust.

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