AI for IT: Mist Reinvents the Wi-Fi Experience

It's no secret that people want wireless everywhere. Great Wi-Fi is a linchpin of innovative customer experiences, employee productivity and operational efficiency. People want their mobile devices to work flawlessly, whether they are continuing a conversation in an elevator or streaming replays in a crowded stadium. But it's not just people anymore. Security cameras, environmental controls, building access systems and many other IoT devices are flooding into organizations.

When a self-driving robot in a warehouse can't process inbound shipments or an executive gets disconnected from Skype, poor Wi-Fi complaints get elevated. Unfortunately, these daily complaints go to IT support. Meanwhile, hotel guests and university students will take their dissatisfaction straight to social media. Frustrations run high and wireless takes the blame for most connection problems.

At Mist, we have been at the frontline watching the rapid impact of digital transformation on enterprises as they balance the productivity requests of mobilizing their workforce with the never-ending costs of its deployment and management. Today's WLAN has become the network workhorse and business critical. To simplify and automate IT support for WLANs, Mist leapfrogged existing WLAN leaders with the power of artificial intelligence (AI).

GROWING NETWORK SUPPORT CHALLENGES

To deliver a great Wi-Fi experience, wireless network engineers need specialized skills and a laundry list of certifications. Fixing root causes is similar to finding the needle in the haystack, especially through invisible radio waves. Traditionally, network engineers rely on specialized tools and handy scripts that they've developed to identify the problem. Yet, certain circumstances may require additional configuration tweaking or even onsite network redesigns. Large enterprises may have a deep bench of wireless specialists, but most organizations have IT staff who are network generalists.

The emergence of AI offers enterprises a better way to deliver a great WLAN experience to users and IT teams alike.

ENTERPRISE WI-FI, POWERED BY AI

Mist, together with Juniper, are building the AI-Driven Enterprise. Through our innovative, wireless platform—the first to be created in more than a decade of WLAN products, Mist depends on a modern microservices cloud architecture and cutting-edge data science to deliver an unprecedented scale and agile solution. Aside from the minimal upfront setup costs and pay-as-you-consume benefits of a cloud-based service, Mist's cloud WLAN provides a great experience for both users and IT.

Marvis, the virtual network assistant with a proactive action dashboard, is at the heart of what makes a Mist WLAN different. IT support staff can interact intuitively, via natural language queries, with Marvis to troubleshoot issues and gain insights to deliver a better experience for users and devices. And with the recently introduced Marvis Actions, now IT administrators are proactively alerted to when actions are required and the recommended steps to keep the network running optimally. See diagram below.

AI-DRIVEN SUPPORT – AN INDUSTRY FIRST FOR NETWORKING
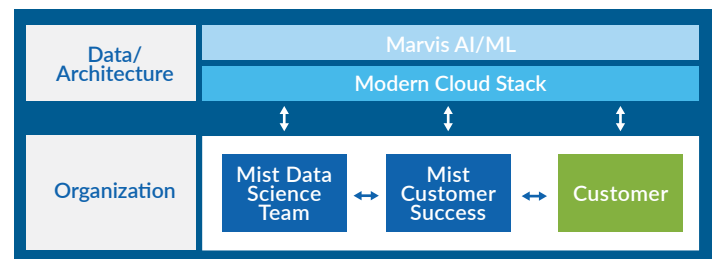
The Mist WLAN platform is fully instrumented with network telemetry. Unlike legacy WLAN products, there is no need to bolt on overlay sensors or rig up data collection hardware and software to gain insight into the user experience or to facilitate IT support.

Network health data is collected in near real-time and streamed to the Mist Cloud. More than 150 pre- and post-connection states are collected from every device. Connection data is constantly streaming in from more than 100,000 customer access points, creating a robust data set that characterizes network, client and application behavior.
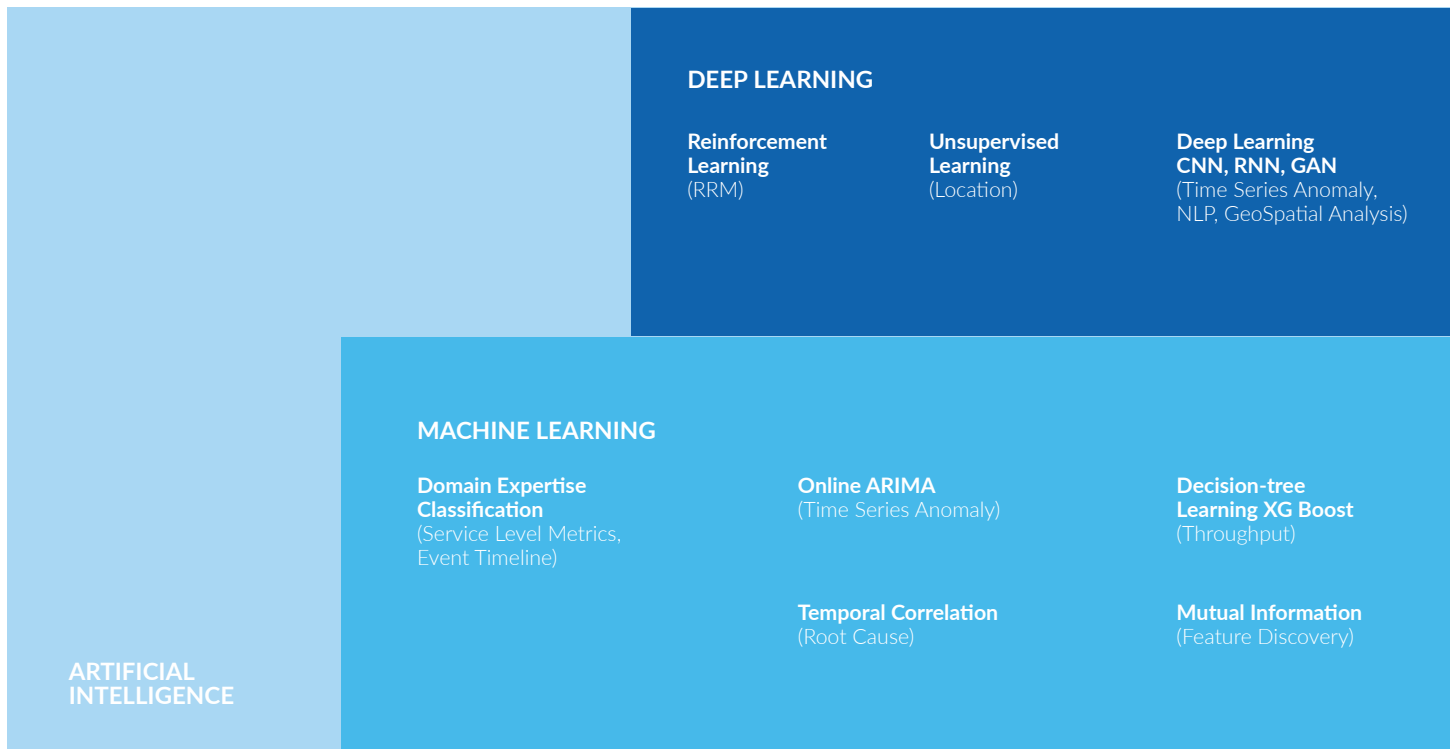
Mist applies deep wired and wireless domain expertise to this massive dataset. The data collected is beyond the scale of human comprehension. Many AI solutions leverage labeled data based on domain-specific knowledge to break the problem down into small segments that can be used to train the AI models. In the Mist model, this is achieved using design intent metrics, which are structured data categories created by Mist's domain experts to classify and monitor the wireless user experience along with the capabilities to set new services such as Wi-Fi service levels.

Advanced data science techniques enable the Mist platform to analyze data and provide actionable insight, such as root cause identification, trending analysis and location. Each customer's network is analyzed to establish a baseline. Using unsupervised learning algorithms, Mist identifies abnormalities in customers' networks. With unsupervised learning, the algorithms discover the unique digital fingerprints in customer environments.

Mist also uses supervised learning algorithms to troubleshoot specific issues, such as when a video call won't stay connected. As wireless engineering experts, we know how enterprise Wi-Fi should behave in a broad variety of use cases, and we train the AI models to identify and analyze different problems. Reference the Well Stocked Data Science Toolbox diagram to view the alignment of AI and solutions use case.

WELL-STOCKED DATA SCIENCE TOOLBOX

DEEP LEARNING

Reinforcement Learning
(RRM)

Unsupervised Learning
(Location)

Deep Learning CNN, RNN, GAN
(Time Series Anomaly, NLP, GeoSpatial Analysis)

MACHINE LEARNING

Domain Expertise Classification
(Service Level Metrics, Event Timeline)

Online ARIMA
(Time Series Anomaly)

Decision-tree Learning XG Boost
(Throughput)

Temporal Correlation
(Root Cause)

Mutual Information
(Feature Discovery)

ARTIFICIAL INTELLIGENCE

We continue to advance the quality of our data, as well as our AI models. When Mist's customer success engineers resolve an issue, the detailed support tickets are reviewed by our data science and engineering teams. A problem experienced by one customer can help us hone the network health data we collect or evolve our AI models so other enterprises don't experience the issue.

A MODERN, COLLABORATIVE PRODUCT TEAM

The tight-knit relationship among our data science, engineering and customer support teams delivers an outstanding advantage. At legacy WLAN vendors, these teams are siloed, making collaboration difficult. The Mist solution is continuously improving in its ability to simplify and automate IT using AI.

Our data science team's domain expertise is unparalleled. We have experts in WLAN engineering, of course, as well as cybersecurity experts and even a particle physicist. Diversity of thinking allows the creation of innovative solutions to solve the most difficult problems in networking.

TRANSFORMING THE IT SUPPORT EXPERIENCE

Now with Marvis, the IT support experience is being transformed by Mist, moving away from the incumbent legacy world of reacting to opened support tickets. With Mist, IT teams are proactively alerted through the power of data, data science and AI so that they can resolve most problems well before end users even know there is an issue to report.

TOP COMPANIES AROUND THE WORLD TRUST MIST

Customers like Gap, University of Texas (Dallas), Verizon, the Department of Veterans Affairs and many other organizations of all sizes are using Mist to simplify wireless operations and add location services that are demanded by today's digital user. With Mist, they gain Wi-Fi that is predictable, reliable and measurable, and location services that are easy to deploy and manage. With the power of AI, these organizations can set a new standard of delivering a great experience for both their users and the IT team.

This is the AI-Driven Enterprise. This is Mist.