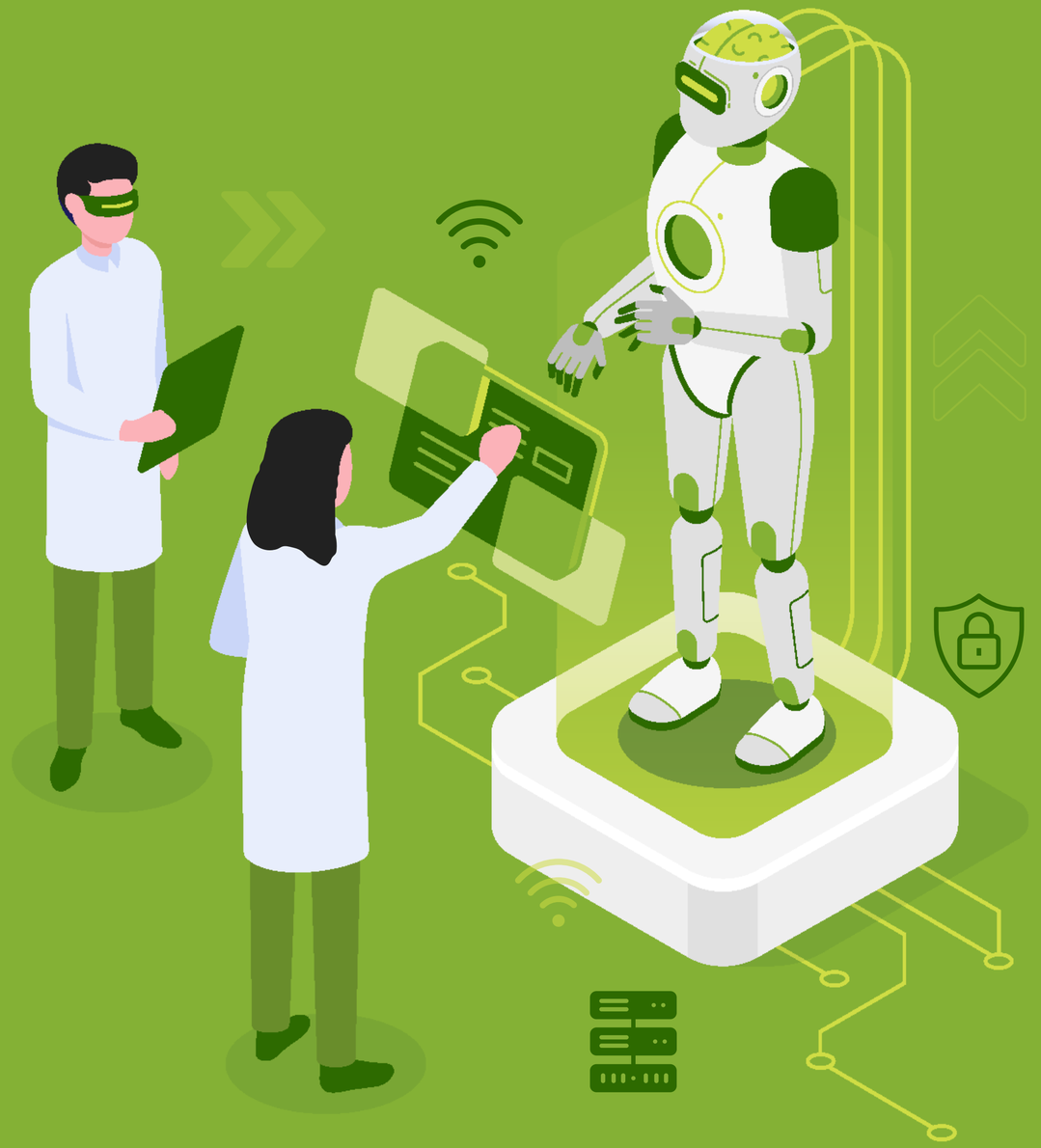
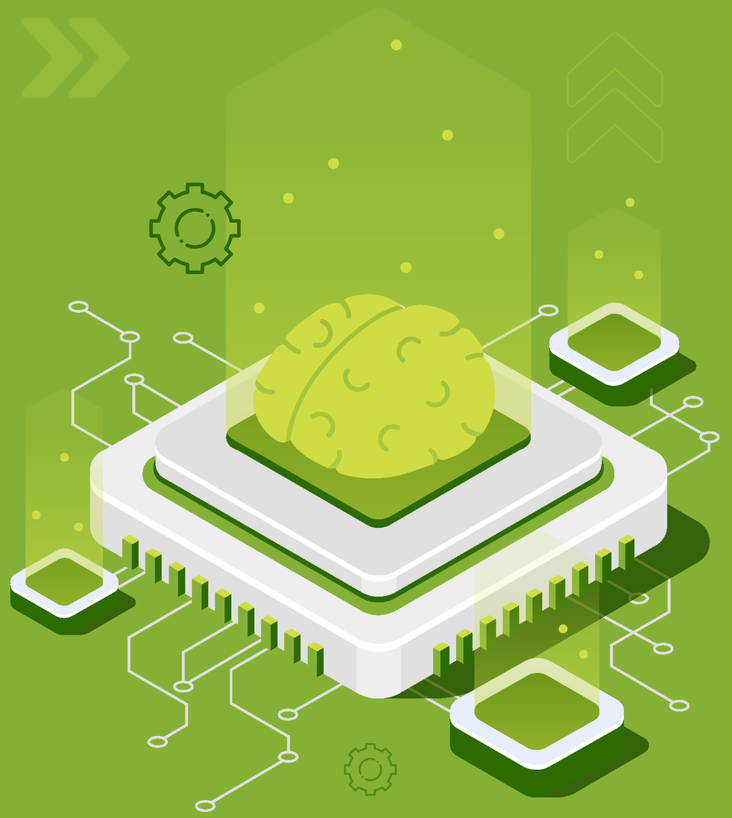
Juniper driven by Mist AI

BRINGING AI TO ENTERPRISE NETWORKING

The journey to better experiences with AIOps.



Start now



Accelerating Outcomes with Real AI

One of the attractions of new technology is that we can be happier and more productive in doing more with less. Yet rarely do new business tools automatically improve themselves, learn and adapt to changing environments, or simplify outcomes. As manual processes are digitized and automated, operational overheads and protocols only increase complexity and technical debt, resulting in applications and networks that incur hidden costs and unexpected externalities.

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AIOps

AIOps, or **artificial intelligence for IT operations**, is the practice of using AI to augment the capabilities of IT teams.

This translates into having more for our teams to monitor and manage. Human talent is left "keeping the lights on" rather than being champions of greater impact initiatives.

There is a solution to the ever-increasing demands on our time. Whether your key performance indicators are network performance, service assurance, or improving user experience, using AI and AIOps to tame network complexity can positively contribute to them all. One of the most important returns on your investment is reclaiming valuable time that would be otherwise lost to routine, repetitive, and monotonous tasks.

Separate Hype from Reality

The combination of cloud computing, availability of big data, and access to open-source software has led to the rise of AI in many fields. Even though AI is still narrowly focused and not yet general purpose, it does excel and even exceed our own capabilities in certain areas, such as processing data at scale and spotting distributed hidden patterns. AI delivers on a wide range of complex tasks that yield tremendous benefits and operational advantages.

AI and AIOps are highly applicable to networks, due to the structure of protocols, labels, and recognized behaviors. But not all AI solutions live up to their hype—it's essential to chase snake oil sellers out of town. Vendors need to be transparent about how their AI solution operates. Their explainability and transparency are critical to building trust and confidence, so a clear understanding of the what, how and why is vital. By asking some key questions, you can lift the lid off the vendor's black box to reveal some of its workings.

Even with confident answers, it's important to carry out your own research—ask around for an analyst opinion, a customer reference, or peer review.

Questions You Should Ask About

- **What algorithms comprise and contribute to the solution?**
- **How is data ingested and cleaned?**
- **Where is the data sourced from (is it customized per account or user)?**
- **How are parameters and features engineered from the network space?**
- **How are models trained to be kept fresh and relevant?**
- **Can the system explain its reasoning, recommendations, or actions?**
- **How is bias eliminated or reduced?**
- **How does the solution or platform itself improve and evolve?**

Confidently Move from Reactive to Proactive

Technologies powered by AI and AIOps can change how we work, communicate, and relate to one another. We can dispense with slow and outdated work processes by adapting smarter ways to diagnose problems, action solutions, and deliver more immediate outcomes that return compounding value.

AIOps not only delivers service assurance and superior user experiences, but also creates the time and space for teams to focus on the future. That enables IT teams to step off the operational “hamster wheel” and start to move from reactive to proactive.

Consider a proactive, virtual network assistant that can troubleshoot your network 24/7 without getting tired, interact with you via natural language, and provide actionable insights across the user device, WLAN, LAN, WAN, and into the cloud. This digital extension of your team enhances everyone’s capabilities and learnings.

By leveraging AI for IT, teams can switch from fatigue and burnout-inducing toil to working on more fulfilling and proactive projects that can be championed organization-wide.

Myth debunked:

AI is not coming for your job. Quite the opposite, in fact. Rather than reactive firefighting, get back the best return on investment possible – your time.

TRAJECTORIES FOR TECHNICAL LEADERS

Simplify for Scale, Speed, and Productivity

Simplicity is not a weakness, but a strength and a competitive advantage that enables rapid reasoning, predictability, and more deterministic outcomes. It enables scalability and efficiency while lowering the barrier for use.

Networks are, by their nature, complex

Networks of networks present an even greater challenge. They have historically been built incrementally, layer by layer, until we're locked into a legacy of platforms that are challenging to escape. Multiple mediums and protocol stacks are traversed from the access edge to the WAN and onto private or public clouds.

Distributed systems that are complex to operate and troubleshoot are almost guaranteed to lead to poor user experiences. AI is key to help sustain the scale, speed, and productivity demanded by networks today.

Failures and outages are inevitable, but using AI to help spot anomalies and predict patterns is one way to increase productivity and efficiency. Better outcomes depend on a better model that leverages AI to deliver real-time, interactive observability that spans a unified view of the entire network, from client to cloud. If user experience is the new uptime, then we must start by redefining expectations and challenging legacy approaches.

Leverage the Real AI Advantage

Once you establish that you're dealing with real AI, you need to be able to identify what benefits or outcomes are genuinely achievable, and how. Is the AI platform easy to use, integrate, and adopt? What domain-specific impact will it have on teams, training, and organizational behaviors? How do you demonstrate benefits to key stakeholders?

As with any change initiative, it helps to start in a low-risk environment and build trust incrementally. This usually involves a demo, proof-of-concept (POC), and perhaps a pilot or small-scale deployment. It's absolutely critical to put vendors through pressure tests as the market gets flooded with buzzwords and basic data reporting masked as AI.

Great AI starts with great data

A meaningful AI solution begins with massive amounts of the right data. This is how it continually builds intelligence over time. And the more diverse the data is, the smarter it gets. Keeping simplicity and user experience in mind, your AI solution should also be able to avoid becoming another legacy burden by continuing to learn and evolve, ultimately protecting your investment.

When the AI engine is constantly retraining itself on the latest data and telemetry, it re-orients its model to help identify site or client-specific trends to streamline network operations. As it adapts to your network environment, it also continuously learns about the problems and issues experienced by similar peer organizations worldwide. This is how the real AI advantage get you further, faster.

The true power of AI lies in constant learning and continuous improvement

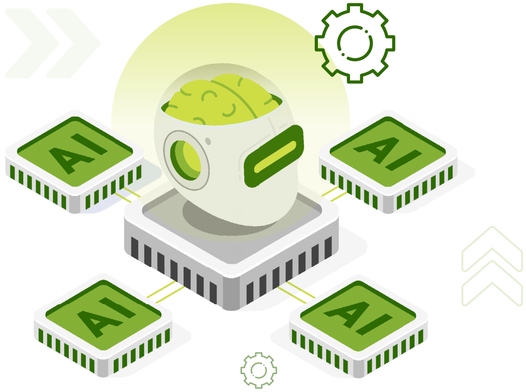
Once the trust is established, automated service assurance continually improves user experience and frees up operational talent.

Networks are made of many parts, but it's only when you begin to orchestrate the user experience end-to-end that the benefits of a unified framework and a holistic approach to AI can assist you from client to cloud.

AI in Action: Proactive RMAs

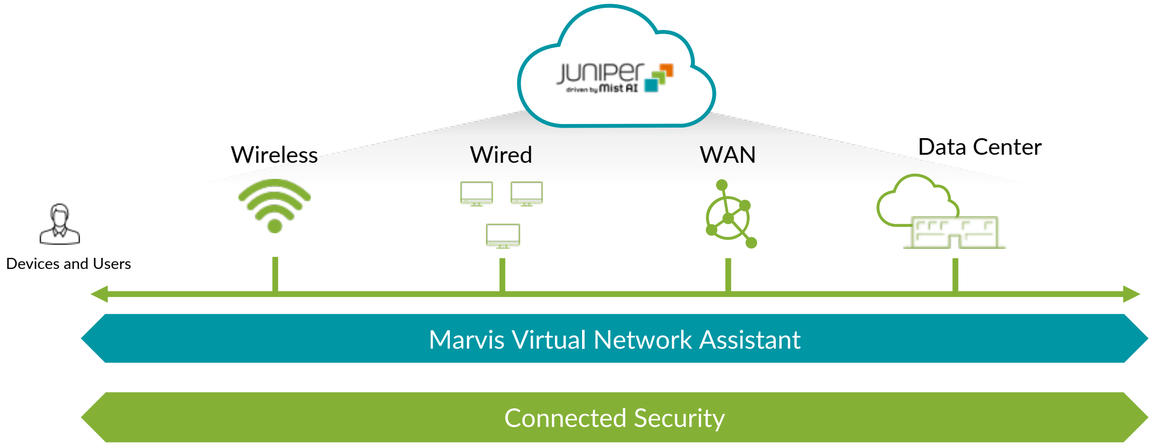
The cumulative global learnings from bugs found in device drivers and firmware become baked into the AI engine.

Metadata related to any bugs and software combinations are immediately known to the AI engine. Instead of the issue lying dormant, waiting to be surfaced on a lengthy support call, an AI solution can initiate RMAs and upgrades before problems arise.



Juniper Networks Driven by Mist AI

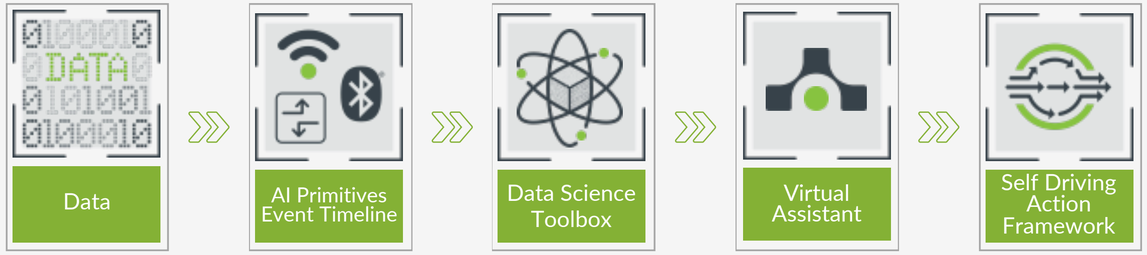
Juniper Networks, driven by Mist AI, delivers the secure, AI-Driven Enterprise that optimizes user experiences from client to cloud, with simplified operations across the WLAN, LAN, WAN, and security. Mist AI transforms network operations with AI-driven insights and automation for unprecedented simplicity, reliability, and predictability. Our team of data scientists and cloud architects with decades of networking experience is building out the network of the next decade.



At the heart of the AI-Driven Enterprise is Marvis, the networking industry's first virtual network assistant (VNA) and Mist AI engine. Marvis is fundamentally transforming the way IT teams interact and troubleshoot the network, by leveraging AI to translate the growing volume and velocity of data into actionable insights and outcomes. Marvis frees up human talent to focus on strategic initiatives.

Marvis exists to make IT simple. This is done by observing, ingesting, optimizing and continually learning from network and user experiences, so the IT administrator doesn't have to. This learning creates a virtuous cycle and a positive network effect that can be leveraged by small and large organizations alike. It's uniquely focused on identifying anything that impacts user experience, with the ability to rapidly surface answers to issues, identify root causes, and proactively troubleshoot with remedial actions.

Mist AI began back in 2015 with a microservices cloud architecture, designed from the ground up to optimize data ingestion. The data converted into AI primitives built out our data science toolbox. Then in 2018, the Mist AI engine was given a personality – Marvis Virtual Network Assistant. And with the self-driving action framework, Marvis can automatically take proactive actions without manual IT intervention, putting it one step closer to delivering the vision of the Self-Driving Network™.

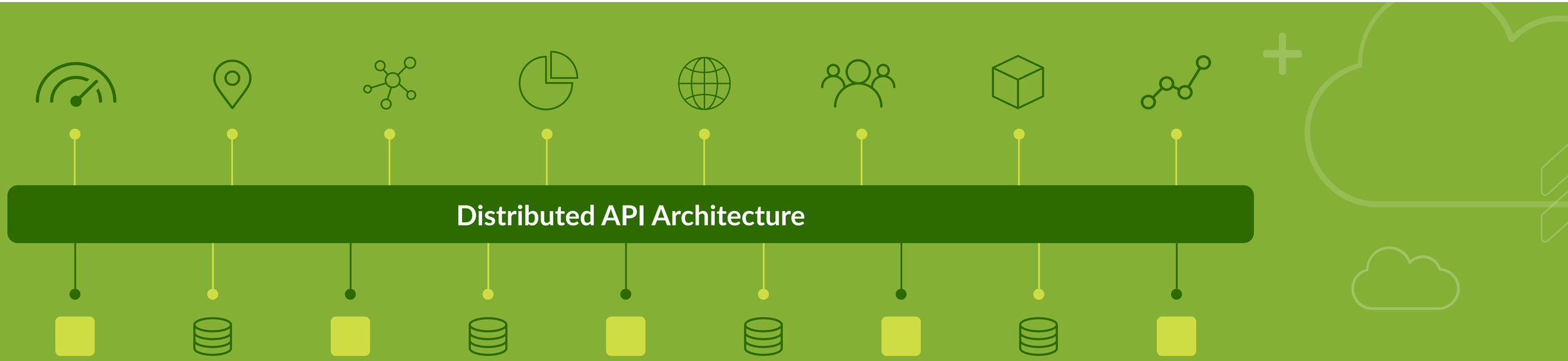


Benefit from Agility and Scale

To ensure Mist AI continues to scale and evolve, a cloud architecture was chosen for agility, elasticity, resiliency, and feature velocity. Plus, everything is open and 100% programmable via APIs to provide maximum flexibility. A distributed microservices cloud allows for new services and features to be rapidly tested and deployed at scale. Modularity means existing services are not impacted by cumbersome maintenance windows and interim updates.

The platform ingests and processes streaming telemetry and data from millions of devices, including Juniper access points, switches, and security gateways, while also performing the lifecycle management for network elements. A unified architecture allows for a consistent approach to device onboarding, observation, and optimization of the various network domains. A common AI engine that spans from client to cloud can understand the whole application journey by building a unified graph of your unique footprint.

The cloud-based platform means a unified and consistent approach to device onboarding, observation, and optimization of your network.

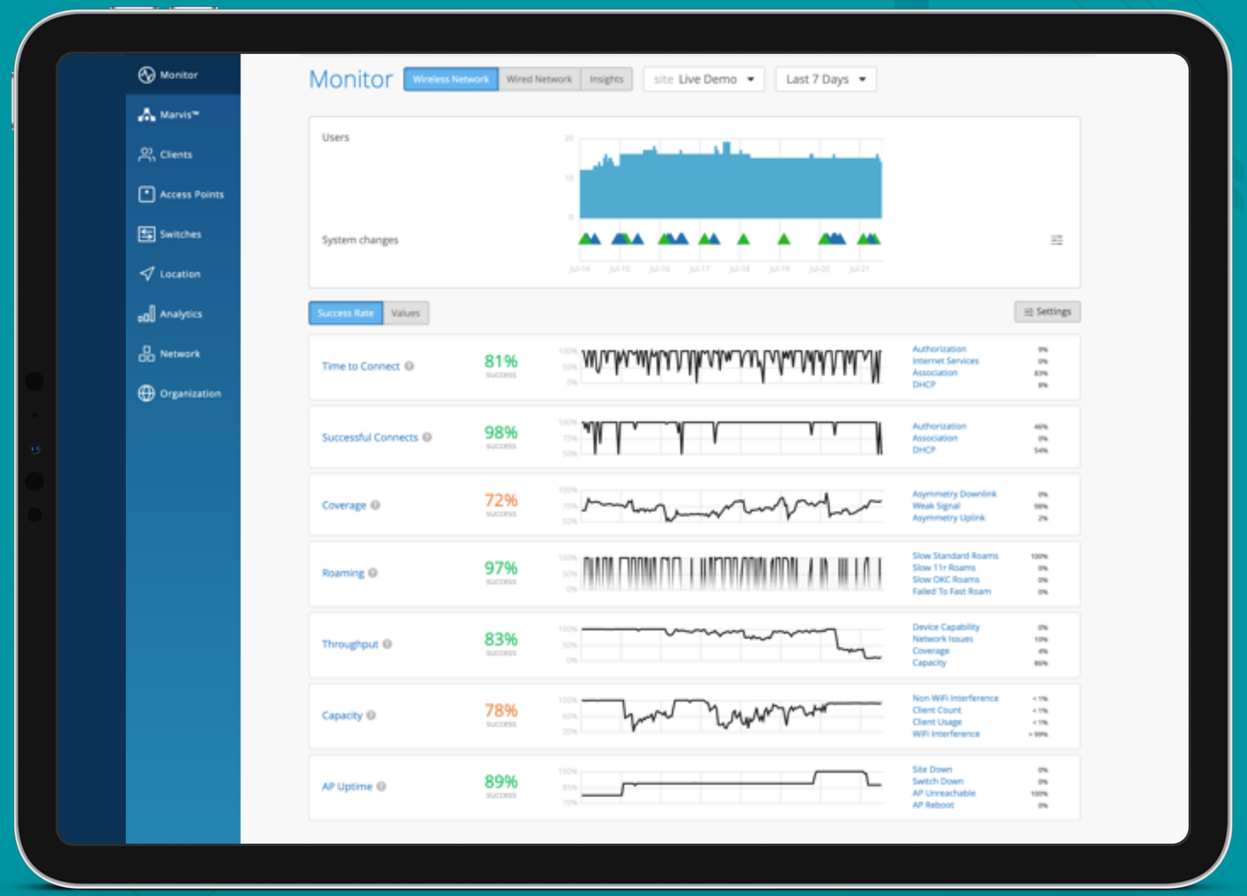


Focus on User Experience

Up is not the same as good

The quality of connectivity is business-critical. In an age of almost total reliance on digital platforms, work is distributed across multiple network domains and flows.
If network domains are monitored in isolation, you will not have a unified view of measurable, resilient, and predictable user experiences. Juniper's solution provides labeled data based on domain-specific knowledge to break problems down into smaller segments that can train the Mist AI engine.

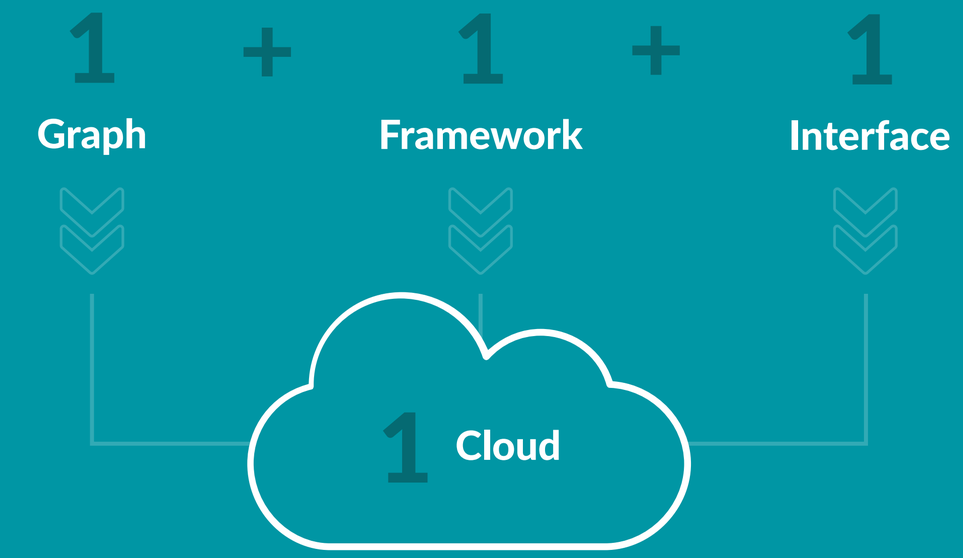
Service level expectations (SLEs) are key metrics that use Mist AI to help you understand and optimize user experiences. The network simply "being up" is not a good enough measure anymore. Now it's how happy your users are that determines the level of network quality. Mist AI enables IT teams to proactively manage and monitor what clients, users, devices, and applications are experiencing across the wireless, wired and WAN network. This equates to a lower mean time to repair, cost savings, and better satisfaction scores.



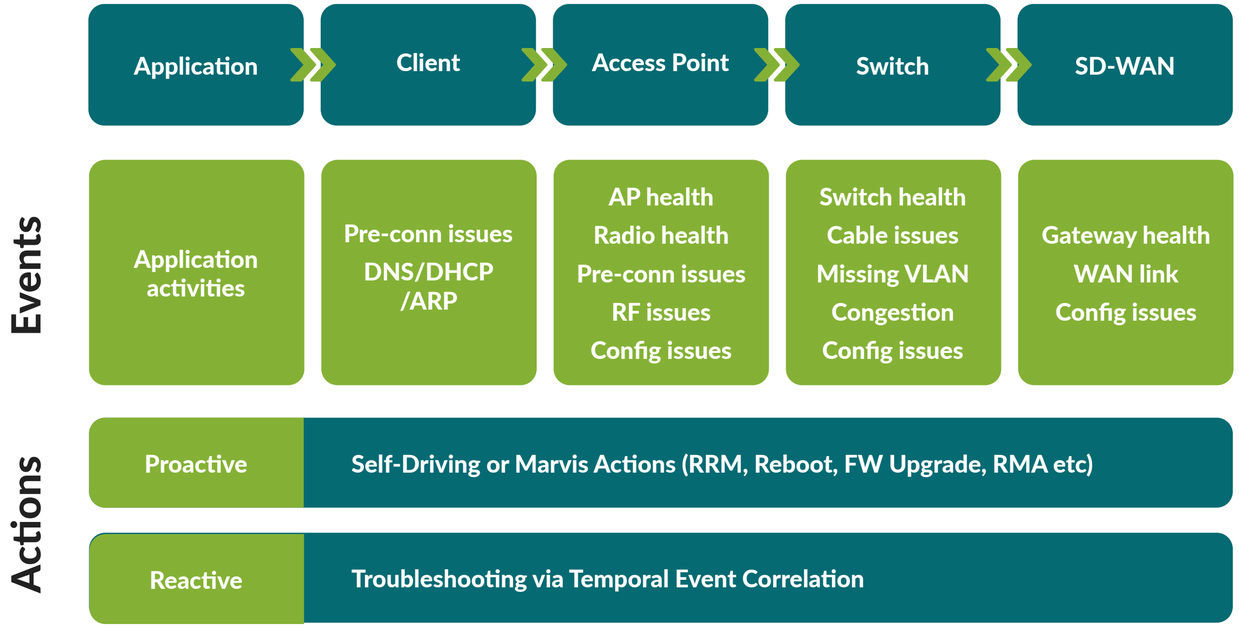
Use AIOps to Deliver the Self-Driving Network™

By embracing AIOps and augmenting your team with Marvis Virtual Network Assistant, a digital extension to your team, the Self-Driving Network™ becomes a reality. What's truly unique about Marvis is its rapid and ongoing evolution, tied to a deep understanding of how networks operate. From a high-level design standpoint, Marvis is engineered with simplicity and user experience in mind.

With one graph per customer, leveraging a unified framework, and all accessed from one interface, a single cloud instance will ensure that Marvis can continue to grow and evolve.



Marvis' Event-Action framework powers continued learning that optimizes the outcomes and experiences for users. With the best data lake in the industry, Marvis collects over 150 user states and metrics every few seconds and then combines them with device configurations and flow data. This is the power of Mist AI at your fingertips.



Juniper driven by Mist AI™

AI-Driven Operations and Support

Networks are designed to support an organization's progress and goals. When networks are not performing well, the end users feel the greatest impact, making their frustrations valid.

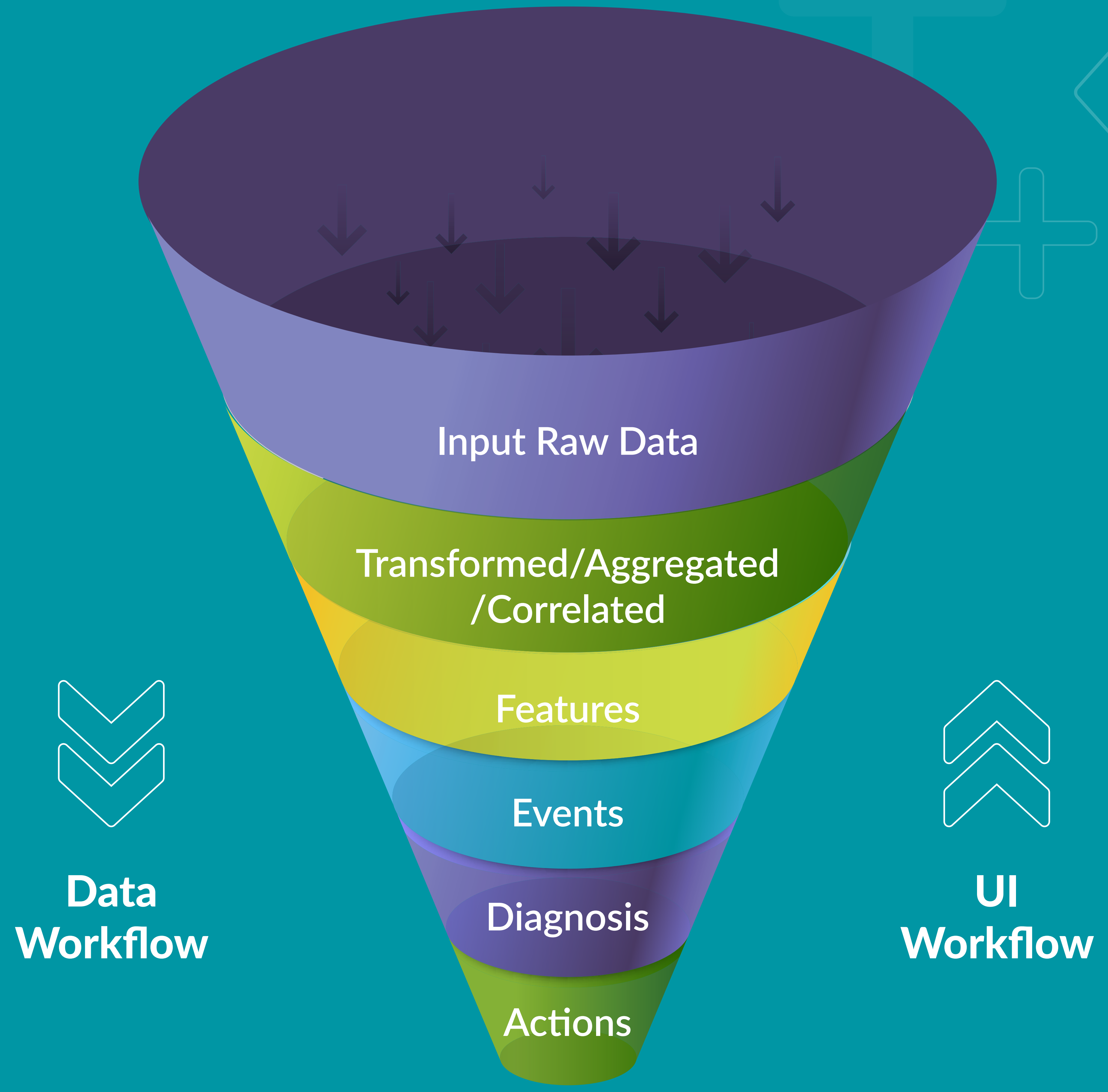
We've moved past network availability and uptime to require a better understanding of what affects not only connectivity, but also a user's experience and their productivity. The quality of user experience is intimately tied to the quality of each flow and session that traverses the network. Mist AI started in the wireless domain, before moving into the wired and WAN domain – with the ultimate goal of making network operations better.

How do you know that you have the right data, accuracy, and correct system representation to inform your decisions about what really happened and when?

We see how AIOps observes, and then adapts to our needs. Mist AI distills network complexity and issues down to simple and meaningful insights and actions in ways that are easy to consume.

Did You Know?

Marvis is the only AI/ML engine to answer every support ticket that comes into the system. Our customer support team is in lock-step with the data science team, and they review every support ticket that Marvis is unable to answer. This feedback loop is used to train Marvis to increase its efficacy rate.

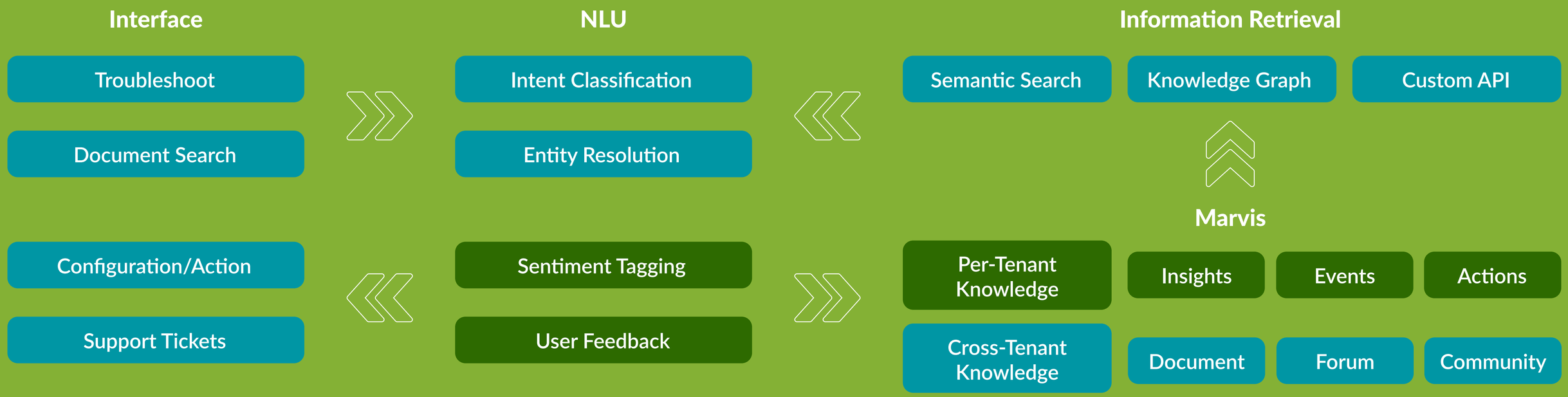


Use natural language with Mist AI

Anyone on the support or operations team can now use natural language to ask questions about how the network is doing. Marvis surfaces not just the “what” but the “why” and next steps to help streamline troubleshooting. Marvis sees real-time states, spots anomalies, and identifies root causes, while offering prescriptive recommendations so you know exactly what to do.

And with the next evolution of the conversational interface, Marvis has been trained with a language representational model built on a 24-layer, 340 million weight, neural network on par with well-known consumer assistants, such as Google Home and Amazon Alexa. By leveraging natural language understanding (NLU), Marvis provides a new way to interact and engage with Mist AI.

Marvis leverages insight from multiple sources, while learning and adjusting according to the user’s questions and intentions. It enables you to have a truly omnipresent and proactive digital member on your team. With constant improvement and 24/7 optimization, support no longer has to equate to hours of painstaking, manual searches. Real AI is not just the “what” and “how”, but also the “why” for each step.



Managing The Secure Client To Cloud Experience

The value of Juniper AIOps

User Experience

- ✔ Reduce noise and false alarms with the AI-driven support model

Operations Experience

- ✔ Determine causality through ML-driven root cause analysis
- ✔ Capture multivariate anomalies through analysis, not static thresholds

DevOps/App Experience

- ✔ Detect anomalies through trending, providing resolution before impact
- ✔ Provide user effectiveness through a conversational interface and NLP/NLU

Location Services

- ✔ Offer insights to prioritize actions
- ✔ Automation of recurring tasks

+ Cloud-based delivery

+ Customer support

Explore the path to becoming an AI-Driven Enterprise with our hands-on webinars.

Wired and Wireless Wednesdays

See how Mist AI and Juniper Mist Cloud deliver the industry's best access layer experiences for clients, users, and devices across wired and wireless.

Transformation Thursdays: The AI-Driven Enterprise

See how the Self-Driving Network™ powered by Mist AI brings insights into user experiences, leveraging AIOps.

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