WI-FI-FIRST ARCHITECTURES FOR GOVERNMENT

AI-driven solutions offer a secure, cloud-first approach with unique insights, assurance, and flexibility

Challenge

Government agencies are tasked with providing connected services to growing numbers of users and IoT devices despite shrinking helpdesk budgets and fewer skilled IT staff. The adoption of cloud-based applications contributes to the challenge, creating an expectation of "always-on" networks.

Solution

EX Series Ethernet Switches and Mist wireless access points from Juniper Networks offer a complete and assured Wi-Fi solution for government agencies, delivering a consistent controllerless architecture that scales up to thousands of access points.

Benefits

- *Assure wireless network performance by measuring connections against service-level expectations*
- *Provide predictive recommendations to detect and resolve Wi-Fi service issues before they get reported by users*
- *Enable guest Wi-Fi services for personal employee devices, visitors, and the public without compromising security*
- *Enable integrated Bluetooth Low Energy (BLE) location services for asset and visitor tracking*

Delivering a wireless network has become a mission-critical requirement for government agencies embarking on a digital transformation that will allow them to deliver more efficient and accessible public services.

Wireless connectivity is crucial because it not only connects users, giving staff access to information wherever they are in the building, but also a growing number of Internet of Things (IoT) devices and productivity tools such as digital signage, meeting room booking interfaces, and building safety and security systems.

Also, as government agencies find themselves increasingly sharing workspaces with other agencies, private sector organizations, and the public, they need a better, more flexible approach to networking.

The Challenge

Connecting to a Wi-Fi network requires dozens of steps to work properly, and once a device is connected, traditional architectures offer no insight into the user experience. "Up" is not the same as "good." Given current limitations, it is nearly impossible for a human operator to spot "outlier" events or trends amidst the noise of many successful connections.

Wi-Fi architectures that rely on on-premises controllers are monolithic and do not meet the agility requirements of modern networks. Meanwhile, many cloud implementations do not take advantage of the power of modern microservices architectures. Software updates are also problematic, requiring all access points connected to the same controller to reboot at once. There is no way to test updates on a small number of devices without taking the entire campus network down. This invariably compromises the network's security posture, where the time required to patch known vulnerabilities is measured in weeks or months, not hours.

At the same time, troubleshooting performance issues has become increasingly difficult for resource-constrained service desks. IT staff are unable to determine whether a reported problem is caused by the end-user device, authentication, Dynamic Host Configuration Protocol (DHCP) or Domain Name System (DNS) servers, the WAN, or the remote application. Troubleshooting and resolution can take hours or even days.

The Juniper Networks Government Wi-Fi Solution

By embracing a cloud-first design and leveraging the power of AI-driven enterprise IT, Juniper Networks offers a government Wi-Fi solution built to deliver an outstanding user experience for both users and IoT devices.

The Mist Cloud, hosted on Amazon Web Services (AWS), is designed from the ground up to meet the security requirements of our most demanding customers. Wi-Fi administrators are in complete control over their own IT environment, including who on their support staff has access, whether packet capture data is uploaded to the cloud, and which devices are allowed onto their network.

Best-in-class location services enable innovative new use cases without having to deploy a secondary infrastructure, such as the detection of unauthorized mobile devices or tracking visitors for safety and security purposes.

At a glance, the Mist dashboard gives administrators actionable insights and monitors trends over time, rapidly pinpointing common problems such as wireless coverage issues and missing VLAN configurations on switches supporting the wireless network. Through a simple point-and-click user interface designed around the most common operational challenges, the dashboard dramatically increases the effectiveness of Level 1 helpdesk staff who previously had to escalate issues to a network specialist for investigation. At the same time, IoT devices on the network can be monitored proactively, ensuring reliable operation.

The Mist solution integrates easily with common network access control (NAC) and identity management solutions, as well as security information and event management (SIEM) and other log management and audit requirements.
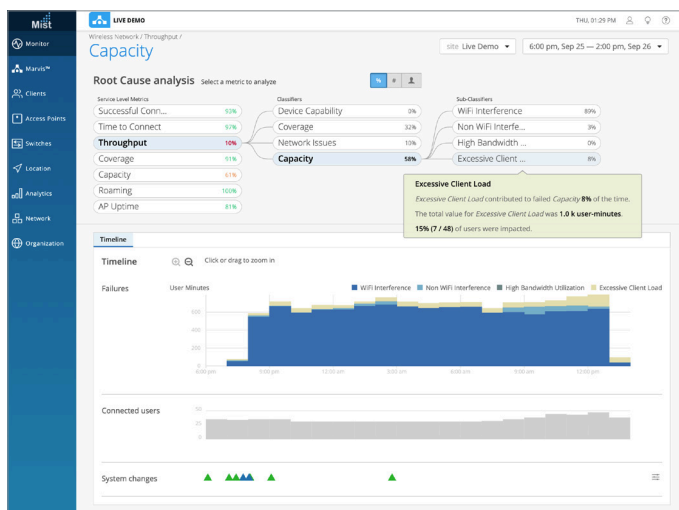

Figure 1: An example of the in-depth and automated troubleshooting provided by the Mist AI engine

Features and Benefits

- The microservices-based architecture of Mist Cloud eliminates the inflexible nature of controller-based solutions, giving government agencies a management platform that is continually updated to ensure they always have the latest features and security patches with no downtime.

- The Marvis AI virtual assistant, a component of the Mist Cloud, enables IT staff who are not wireless experts to ask natural language questions and rapidly drill down into the status of a site, user, or device.

- The Mist Edge solution allows seamless mobility and anchoring of guest traffic, offering the benefits of a centralized forwarding plane without the limitations of traditional on-premises network management approaches.

- Virtual Chassis technology on Juniper Networks® EX Series Ethernet Switches allows multiple interconnected platforms to operate as a single, logical device, reducing the number of LAN switches to manage. The EX Series switches also deliver the latest Power over Ethernet (PoE) and multigigabit Ethernet technology, providing a reliable wired network capable of supporting the demands of Wi-Fi 6 backhaul.

- Support for automation and zero-touch provisioning enables rapid roll-out of new hardware.
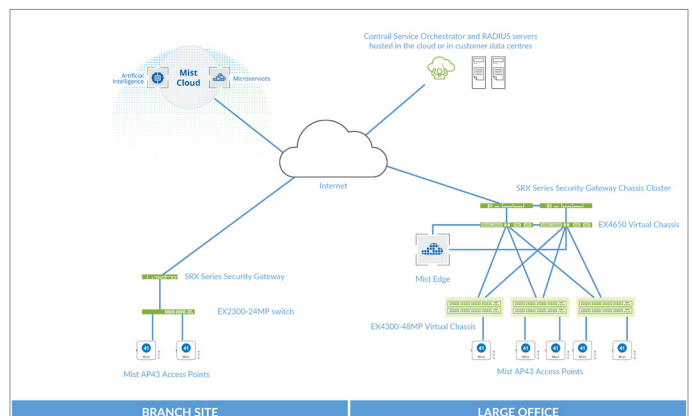

Figure 2: Mist and EX Series switch architectures for both small and large sites

Solution Components

While all EX Series switches and Mist access points offer the benefits of Juniper's AI-driven enterprise, the following models are highlighted for their full Wi-Fi 6 support:

- Mist AP43 access points offer both Wi-Fi 6 and BLE support, enabling new location-based services.

- EX2300-24MP and EX2300-48MP switches provide a cost-effective 802.3bz-compliant multigigabit wired network with PoE+ support for smaller sites (recommended for sites with fewer than four switches).

- EX4300-48MP switches provide a higher scale multigigabit Ethernet solution that supports PoE++ requirements, with up to 10 switches in a Virtual Chassis for more demanding environments.

- Optionally, Mist Edge provides a scalable termination point for access point tunnels, both enabling large-scale Layer 2 mobility across campus environments for thousands of devices as well as providing an anchor point for guest network traffic.

Other Juniper Networks products may complement those listed above, including EX4600 and EX4650 switches in the campus core. Juniper Networks SRX Series Services Gateways and Contrail® Service Orchestration complete the campus and branch environment with a full software-defined enterprise and SD-WAN solution.

Summary—A Wi-Fi Solution that Provides Assured Service Levels for Government

Government agencies face a common set of challenges: more demanding users, a wireless-first working design, and an increasing cyber threat landscape. Juniper Networks enables these agencies to rapidly deliver value for their users, creating a wireless network managed in the cloud and fit for the next decade, while eliminating the lock-in caused by legacy and proprietary architectures.

By leveraging the power of AI with a solution built to make networks easier to operate, Mist Wi-Fi enables rapid troubleshooting while providing a level of visibility into the wireless network previously unavailable. This allows users to move beyond the network being simply "up" to delivering innovative new services while measuring performance against service-level expectations.

Next Steps

To find out more, why not sign up for a live demo every Wednesday at https://ai.mist.com/live-demo/? Alternatively, contact your Juniper Networks sales representative for further information.

About Juniper Networks

Juniper Networks brings simplicity to networking with products, solutions and services that connect the world. Through engineering innovation, we remove the constraints and complexities of networking in the cloud era to solve the toughest challenges our customers and partners face daily. At Juniper Networks, we believe that the network is a resource for sharing knowledge and human advancement that changes the world. We are committed to imagining groundbreaking ways to deliver automated, scalable and secure networks to move at the speed of business.

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