The Leader's Guide to AI and Network Transformation

Executive Summary

Your users are demanding better connectivity and networks that can support more devices and applications than they've ever had to before. Add in the growing pressure to reduce IT service costs without sacrificing service quality and it's clear that legacy networks simply aren't up to the challenge.

Legacy networks are deployed in silos, dependent on manual operations, and don't offer the scalability and flexibility needed to meet today's technology needs. All of those factors increase the likelihood of network downtime, which can not only give your competitors a leg up, but:

Cost your organization millions
e.g., Amazon would lose $35 million in revenue during a one-hour outage

Interrupt critical operations
e.g., an outage on a college campus can keep thousands of students from taking important tests

Negatively impact the user experience
e.g., if BT lost connectivity for only 10 seconds during the Olympics, a million viewers would miss the 100MM dash

Put people's lives at risk
e.g., just 30 seconds of network downtime at an assisted care facility could result in a patient wandering out the door

In this ebook, we'll discuss why IT leaders are turning to AI and the cloud to meet the demands of today's technology needs (such as hybrid employees and increased device usage, including Internet of Things), achieve substantial cost savings and ROI, and take advantage of the latest generation of Wi-Fi: Wi-Fi 6E.

Cloud Microservices Enable Agility

What is a cloud microservice? It's a method of developing software applications or functions as a distributed set of independently deployable and manageable modules that run various application services. Each service has a unique function that communicates with others via well-defined application programming interfaces (APIs).

They differ from standard monolithic software applications in multiple ways:

1.

Microservices applications are composed of loosely coupled services that can be developed, deployed, and scaled independently for greater scalability, agility, and fault isolation while a monolithic application is limited to the single integrated unit it was built as

2.

Microservices enable individual services to scale based on demand, optimizing resource utilization and facilitating faster time-to-market than their monolithic counterparts

3.

Microservices offer technology choices, allowing teams to use the most suitable tools for each service

Overall, microservices in the cloud provide more flexibility, resilience, and adaptability than monolithic applications.

User Interface

Microservice 1

Microservice 6

Microservice 2   Microservice 3   Microservice 4   Microservice 5
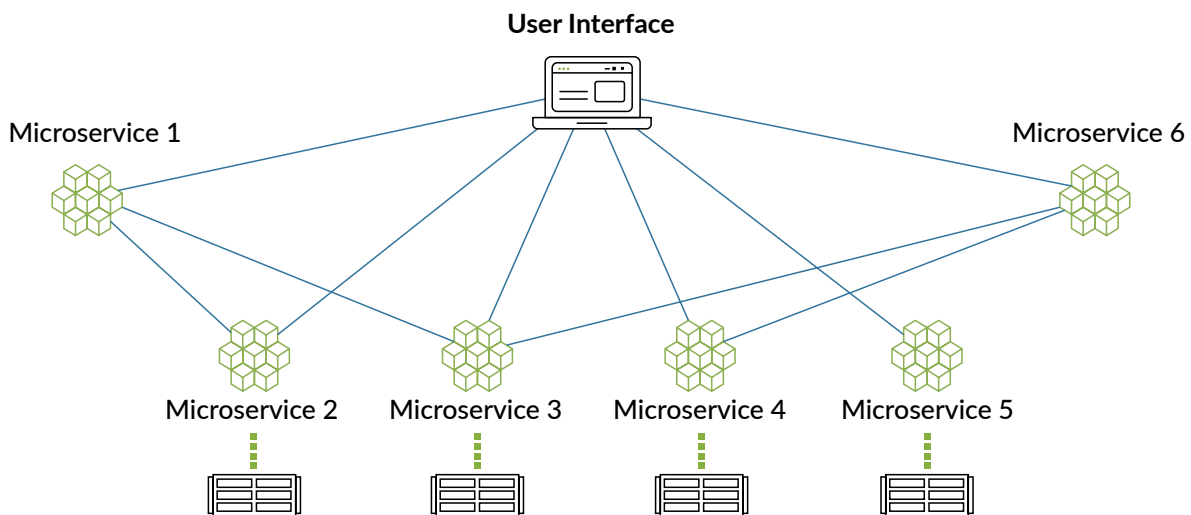
Microservices cloud architecture diagram

Microservices are built as distributed application components, allowing services to work independently yet be deployed, updated, and scaled to support overall application performance needs. This allows your organization to:

- Deploy new services quickly without disrupting existing services or impacting end users

- Elastically scale each module up or down dynamically without end user intervention

- Upgrade features easily in near real time without network disruption

Additionally, just like when deploying and upgrading services, the failure of one does not impact the others. 100% API programmability allows services to communicate and handle failures far more gracefully.

Cloud microservices adoption is driven by scalability, agility, fault isolation, cost efficiency, flexibility, and streamlined DevOps. It leverages cloud platforms for resource optimization, faster time-to-market, resilience, and technology diversity. Microservices enable independent scaling and development, while cloud services offer infrastructure, automation, and service management capabilities. Together, they empower organizations to meet changing demands, reduce costs, and deliver applications efficiently in the cloud.

The Role of AI in Network Automation

Today's enterprise networks are incredibly complex. With disparate parts made up of increasingly distributed users and devices accessing applications hosted in multiple clouds, management is time consuming and difficult to maintain.

Automation is a primary solution for organizations with goals of improving network operations and maintaining business continuity across disparate IT environments. However, standard automation still requires regular human interaction. That's where AI comes in.

AI for IT Operation (AIOps) can improve operational efficiency, freeing IT staff to focus on business-enabling tasks rather than the nondifferentiated day-to-day operations of the network. Not only that, AI also enables IT staff to proactively troubleshoot the network by identifying and remediating problems as they arise before these issues can negatively impact users.

The key role of AI in automation include:

Baseline Monitoring:
AI dynamically understands what the baselines for normal and abnormal behavior are and sends automatic alerts when there's a performance or security issue for precise troubleshooting

Reduction in Mean Time to Resolution (MTTR):
AI automatically determines what steps are needed to resolve issues and either recommends those steps or automatically implements them, enabling a reduction in incident MTTR

Automated Support:
AI can be used to notify end users proactively when issues arise and generate a ticket in both end users' and vendors' systems, which significantly expedites problem resolution. If the issue persists and live support is required, AI automatically routes the ticket to the appropriate technical support staff along with the data needed to investigate and resolve the problem

Overall, AI can manage your network more efficiently, consistently, and securely than humans can on their own, especially since they have limited work hours and other priorities.

Technology Integration for Seamless Operations

Having disparate systems and tools inevitably leads to subpar user experiences, connectivity, and security. Siloed systems and tools don't share information and require separate management. So, when something inevitably goes wrong, it's not apparent what went wrong or where. Your team needs to go through the time-consuming task of researching each component to find the trouble spot, then figure out how to fix it without having a domino effect that negatively impacts broader network. More tools equals more complexity and more money and time spent trying to keep your systems up and running.

That's why it's important to have a microservices architecture that works seamlessly across wired, wireless, and SD-WAN. A cloud microservice architecture streamlines the management process, cutting back on unnecessary capital and operating costs, as well as optimizing deployment, software updates, troubleshooting, and security – all without requiring network downtime.

Add AI to the mix and you've got a singular entity monitoring everything, helping you achieve synergy across your technology systems. AI allows you to proactively manage troubleshooting and problem resolution to provide the best user experience possible.

Conclusion

With user expectations and the number of devices connecting to your network being higher than ever, it's never been more critical to reinvent your network. AI can help you optimize your network connectivity, management, and security all while cutting associated costs. It's time to revolutionize your network with AI and the cloud.

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About Juniper Networks

At Juniper Networks, we are dedicated to dramatically simplifying network operations and driving superior experiences for end users. Our solutions deliver industry-leading insight, automation, security, and AI to drive real business results. We believe that powering connections will bring us closer together while empowering us all to solve the world's greatest challenges of well-being, sustainability, and equality.

Find out how AI can prepare your network for future growth.

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