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Navigating the Future of Enterprise Networks:

EMBRACE A MODERN CLOUD AND AI-DRIVEN OPERATIONS

WHITE PAPER

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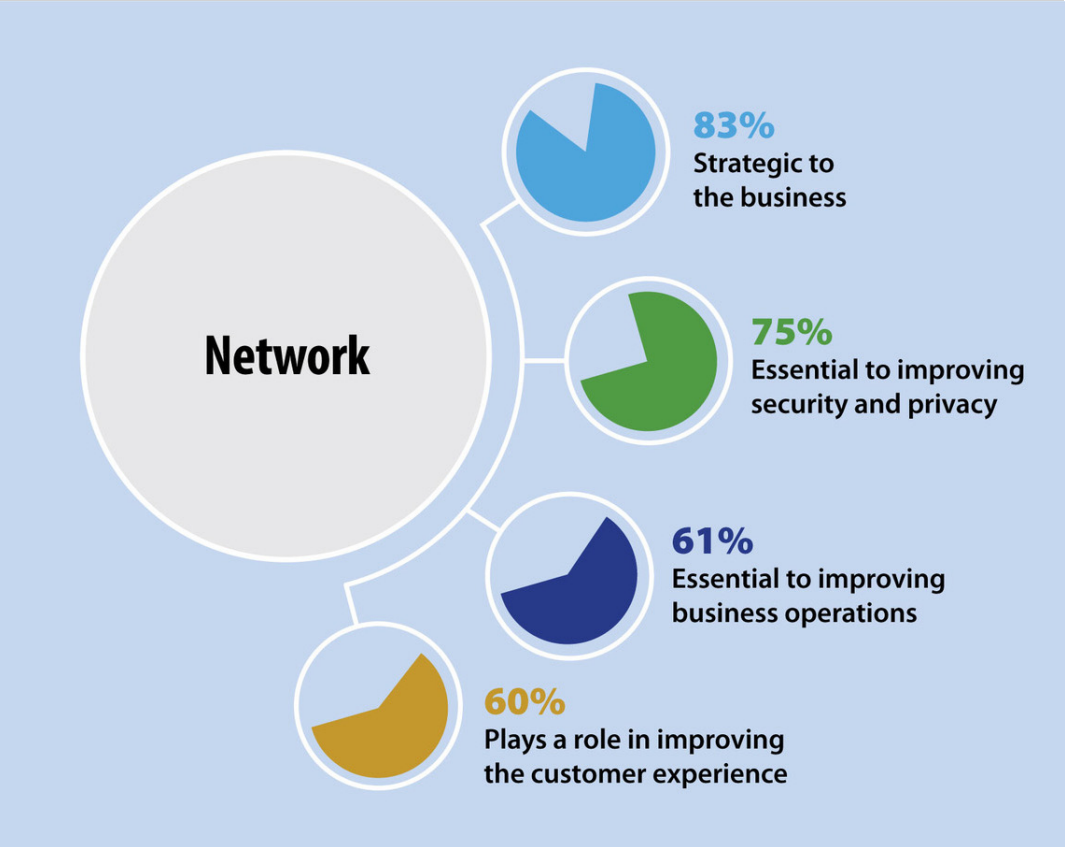
INTRODUCTION: THE NETWORK'S IMPORTANCE IN THE MODERN ENTERPRISE

The business value of the network has changed. Something once seen as a simple connection is now considered the enterprise's core. ZK Research's studies underscore the increased importance of the network.

For example, according to the ZK Research 2023 Network Survey, 83% of IT and business leaders believe the network is now strategic to the business, 75% believe the network is essential to improving security and privacy, 61% think it is vital to improving business operations, and 60% believe the network plays a role in improving the customer experience (Exhibit 1).

Look at the developments of the past few years. In the wake of the pandemic, remote work rose dramatically—and despite calls back to the office, it will remain prominent in the coming years. In addition, the Internet of Things (IoT) has grown breathtakingly fast, and new business models crop up almost daily. At the same time, networks based on traditional architectures with on-prem management have struggled to accommodate users and devices across multiple locations and connection types.

Exhibit 1: The Network Is at the Core of the Enterprise



ZK Research 2023 Network Survey

ABOUT THE AUTHOR

Zeus Kerravala is the founder and principal analyst with ZK Research. Kerravala provides tactical advice and strategic guidance to help his clients in both the current business climate and the long term. He delivers research and insight to the following constituents: end-user IT and network managers; vendors of IT hardware, software and services; and members of the financial community looking to invest in the companies that he covers.

On average, it takes four months for an enterprise-class company to make a network-wide change.

The answer? A cloud-based management solution built with a microservices cloud architecture that can scale to hundreds of thousands of devices and ensure the best user experiences across distributed environments.

In this report, we'll examine the best way to implement this approach.

SECTION II: TODAY'S DYNAMIC DIGITAL ENTERPRISES NEED CLOUD-BASED NETWORK MANAGEMENT

The traditional way of running networks is past its sell-by date. Those old management models are simply too granular, requiring networks to operate on a box-by-box basis. Consequently, lead times to change the network are too long, and the very structure of the network creates isolated silos of data.

ZK Research data shows that, on average, it takes four months for an enterprise-class company to make a network-wide change—and that is simply far too slow for dynamic, digital businesses. In today's market, a business that refuses to speed up this process likely won't be around long. Enterprises don't have the time to wait—so they must look elsewhere for the change they need. Therefore, businesses need to look to the cloud for the next step in network operating models.

Proactively Fixing Network Issues Before They Become Problems

A modern network can provide a cloud-native single point of control that gives administrators visibility and ease of management across wireless LANs (WLANs), LANs, and SD-WANs deployed in campus, branch, remote worker, data center, and cloud locations. Such a network can proactively find and fix issues before they become problems. Studies conducted by ZK Research show that this eliminates 90% of help desk tickets.

The campus LAN and campus Wi-Fi have evolved along with the business objectives of the technology and now need operational simplicity and agility, security, AI and automation, analytics and GenAI, location services, and asset tracking. Those business objectives are driving IT agendas. Therefore, leaders need to modernize the network to turn it into a business driver for innovation while also balancing risk.

Accelerating Digital Transformations with AI and Generative AI Assistants

As enterprises plan digital transformations, the increasingly complex mix of technology solutions required to meet the needs of business users is complicating IT operations. Consequently, CIOs and IT managers should adopt AI and automation to improve IT resiliency and optimize the network.

Recent advancements in the use of AI-enhanced network automation and generative AI—particularly for proactive insights, assisted operations, and support functions—have proven to be critical enablers of digital transformation initiatives, and they should be adopted if the company expects to stay on track with transformation.

SECTION III: WHAT'S BEHIND THE DEMAND FOR CLOUD NETWORK MANAGEMENT?

Private data centers, cloud applications, and on-premises networks are increasingly managed in the cloud. The cloud approach can provide numerous benefits, including anomaly detection, service levels, and event correlation—along with virtual network assistants that can take the drudgery out of managing a network.

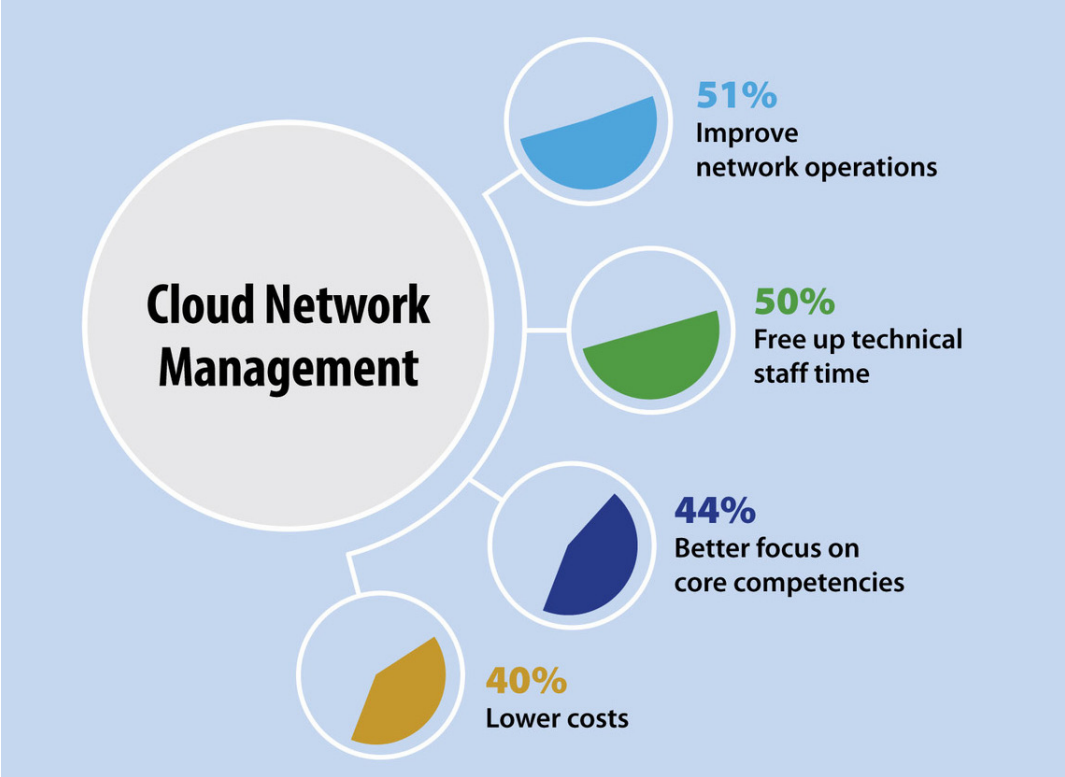
This isn't some kind of pie-in-the-sky wish for the future—it is happening. In fact, studies conducted by ZK Research show that 79% of organizations will look to use the cloud to manage all or part of their network.

In addition, enterprises say they're looking for multiple benefits with a move to the cloud, including improving network operations, freeing up technical staff time, enabling a better focus on core competencies, and lowering costs (Exhibit 2).

The Advantages Enterprises Gain from Cloud Network Management

Enterprises are inundated with alerts, dashboards, and time-consuming tasks that produce little in return. So, as they look to manage multiple network domains—including edge, core, campus, and data center—more cohesively, they need a centralized platform that can extend to the entire

Exhibit 2: Benefits of Moving Network Management to the Cloud



ZK Research 2023 Network Survey

A cloud-based platform scales easily when enterprises and service providers need to manage additional sites, while continuing to perform at the same high levels.

network. Modern cloud-based platforms provide this extensibility while enabling a variety of other advantages, including the following:

Scalability and Performance

In contrast to on-premises platforms, a cloud-based platform scales easily when enterprises and service providers need to manage additional sites, while continuing to perform at the same high levels. In addition, on-prem systems often require the provision of additional capacity to support new sites.

The cloud eliminates the traditional limitations to scale, such as on-prem or cloud-hosted controller pairs that would have to be replicated for resiliency; the need for additional controllers to provide management and troubleshooting as packet captures, event logs, and debug logs eat up processing power; and the need for additional controllers to the cover surges in traffic that come during the holidays and other critical times of the year.

A modern microservices-based cloud architecture enables unprecedented horizontal and vertical elastic scale. How does it do that? It can shrink and expand resources with minimal lead time. Consequently, IT teams no longer need to worry whether resources can scale and perform to meet the demands of a critical event, such as Black Friday for retailers.

This new cloud network management architecture can automate the optimization of resources, including the utilization of services. As a result, it can scale each module up or down when needed without requiring end-user intervention.

Unlike the old-style on-prem systems, there is no physical cap on the number of access points, sites, or client devices. Perhaps most importantly, the NOC is on 24/7, without interruption or worries about pager duty.

Location and Identification Services

Asset management is a critical aspect of any infrastructure, and providing up-to-date information on the location and status of equipment is still an issue in most companies. Enabling intelligence within the device to proactively provide information about its status is tremendously valuable to IT. The microservices-based cloud network management can fulfill these needs easily.

Rapid Access to New Features and Functions

Cloud-based management platforms have the added benefit of being constantly updated by the networking vendor. Therefore, customers get access to the latest features and functions of the cloud-based platform as soon as they are available—rather than having to navigate the often-arduous process of downloading or updating an on-premises management system.

Using AI and ML to Identify Problems, Remediate, Optimize, and Automate

These advanced management features enable a cloud-based platform to operate the network more efficiently by fixing problems before they impact users and ensuring high service levels.

When you centralize management, you centralize data.

As the enterprise network scales, relying on advanced AI and ML—and the automation they enable—is a critical way to manage the network efficiently. Key advantages of enhanced automation include the following:

Baseline monitoring: An AI system dynamically understands the baselines for normal and abnormal behavior, and it sends automatic alerts when a performance or security issue arises.

Reduction in mean time to resolution (MTTR): An AI-driven system can automatically determine what steps need to be taken to resolve an issue and then either recommend those steps or automatically implement them, enabling a reduction in incident MTTR.

When you centralize management, you centralize data. Putting the data in one place opens up a world of opportunities for AI/ML, and a consolidated data set is the key to AI and automation. Data scientists like to say that "good data leads to good insights." On the other hand, fragmented data leads to partial insights.

Cloud Architecture Matters

The cloud is critical for companies to align their network and business goals, but not all clouds are created equal. Just taking a monolithic network management design and dropping it into the cloud won't get you anywhere. A microservices-based solution designed in the cloud, for the cloud, and by cloud networking experts is the right approach.

SECTION III: CHOOSING THE RIGHT CLOUD-BASED NETWORK MANAGEMENT PROVIDER

Don't accept the solution many providers give you. The best option for cloud networking is not a simple lift-and-shift of your vertically integrated legacy networking to the cloud. Sure, you'll centralize control, but you'll bring along all of the same problems you were dealing with on-premises.

Cloud-based network management requires a total rethink. So, when evaluating solutions, ask providers these questions—and pay attention to their answers:

- Is the solution built on modern cloud-native principles? For example, does it utilize containers, microservices, and APIs?
- Is the solution designed with the user experience of network admins and engineers in mind? Ask your network experts what they think of the provider's answer.
- Is the solution an AI-driven enterprise suite that can handle wireless, wired, SD-WAN, and security? Find out whether it enables or empowers the all-important AIOps.

- Does the provider release constant updates, or is there a several-month wait? Sitting around waiting for promised bug fixes, support for new client devices, and delivery of long-promised new features is unproductive, so understand the update cadence.

- Can the solution manage software and firmware releases along with updates for managed hardware from the cloud?

- Does the solution utilize microservices to minimize or eliminate downtime for maintenance releases and bug fixes?

- Can you apply updates without involving IT administrators?

- Can the solution scale quickly?

- Does the solution enable AIOps and deliver optimal IT team experiences with simplified operations?

- Does the solution have the dynamic, elastic scalability and agility needed for organizations ranging from small businesses to large enterprises?

Evaluating Juniper's Microservices Approach to Cloud Networking

In preparing this report, ZK Research looked closely at Juniper's seventh-generation Mist AI solution and found it to be well ahead of the competition. The solution provides anomaly detection, service levels, and event correlation. It also features the only virtual network assistant in the industry.

Advanced management platforms are essential to secure high-performing networks that span multiple domains. Such networks usually have a growing number of users and devices that access bandwidth-hogging and increasingly distributed applications, underscoring the need for an advanced management platform such as Juniper's Mist AI.

Security Built In, Not Bolted On

The network and security must come together. Once considered an add-on that could be handled down the road, security is now a must-have. Consequently, it must be built into network design at the outset, not bolted on. The Mist AI model places security at the forefront.

AIOps at the Center

AIOps can improve operational efficiency so that IT staff and partners can focus on business-enabling tasks rather than the workaday operations of the network. Mist AI enables the use of more

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AIOps models, including proactive, preventive, and predictive support that can identify potential problems before they affect critical systems.

Greater Resiliency

Juniper Mist's cloud-native platform scales elastically with the needs of an enterprise. The microservices-based architecture enables regular feature updates with no downtime. Best of all, network upgrades happen in minutes, not months.

Complete Visibility

With Juniper's Mist AI, IT staff can see more than what's happening with the network; they can now optimize user experiences using its embedded AI-driven tools. Mist AI can proactively find and fix Wi-Fi issues before they become problems—along the way, eliminating 90% of help desk tickets.

Increased Efficiency

Get a stress-less, do-more network. Mist AI can shrink the IT to-do list by utilizing self-driving operations, AI-guided actions, and a 100% open API that works with every solution. With Mist AI in place, companies can put time, money, and resources into more strategic projects—and save up to 85% in total opex.

Anyone looking to take their network from the legacy days of on-premises to a land of unlimited possibilities should consider Juniper's Mist AI.

SECTION IV: CONCLUSION AND RECOMMENDATIONS

The needs of enterprises have evolved at breakneck speed. The once-staid world of networking is being pulled into the future. New cloud-native microservices-based networking tools will forever change the IT backwater that networking once was.

With hybrid workforces now the norm, IoT growing, and new business models constantly sprouting up, ZK Research sees cloud-based network management as the future. As outlined in this report, businesses should look for several things when evaluating their options.

ZK Research makes the following recommendations for businesses to follow in their quest for better cloud-based network management:

Look to microservices for agility and scale. A microservices architecture enables a level of agility and scale to network management and operations that was unimaginable in the legacy world. Such an architecture means that on-demand network upgrades and patches take minutes rather than months.

Turn to AI, machine learning, and data science. Look for an approach that adapts to user, device, and application behavior changes in real time. This will result in few surprises for network operations. It's also critical to have real-time monitoring of network trends and alerts when service levels degrade, along with recommendations for troubleshooting.

Insist on a modern cloud approach. Web scale enables the collection, analysis, and storage of real-time metadata from all connected network devices. A container-based approach means portability and fault tolerance, while other elements provide speed, scale, and resiliency.

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