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CISCO
The bridge to possible

The Journey to Cloud Network Management

Contents

The evolution of network management

A network management revolution is underway. Innovations such as hybrid work, Augmented Reality (AR), Virtual Reality (VR), and robotics are diversifying the makeup of devices on the network, demanding lower latency and changing the approach to security. Organizations are also decentralizing, rapidly scaling out the number and diversity of sites they support. Together, these two transitions put massive stress on the network and the teams that support it, threatening the foundation for future technology and business innovations.

IT teams are tasked with ensuring the network is ready for these challenges today with an eye toward supporting the challenges of tomorrow. Network operations teams are facing this head on as they drive new trends to support a more mobile, diverse, and data-hungry base of users and devices.

These shifts can be categorized as automation and analytics, as-a-service consumption of technology, IoT, and security. Each of them plays into the others and creates a need for simplicity, resiliency, and agility in the network.

This white paper outlines these trends and presents a scaling IT operating model as a path toward helping IT engage with these trends.

The trends guiding networking

Cisco sees several factors facing IT organizations building out the network for the future. These highlight how IT organizations are working differently to deliver applications faster and support new devices, without compromising security.

Automation and analytics

The network is increasingly complicated, with a diversified set of devices, ways of connecting, and locations to connect from. It's no longer just laptops and cell phones; everything is connected, from lights and smart cameras to thermostats. As such, network operations teams are starting to rely on automation, Artificial Intelligence (AI), and Machine Learning (ML) to simplify network operations.

One example is the increasing number of people working on the go. Cisco reported a 300% increase in mobile meetings in 2021[1]. This causes a policy and identity challenge. Without some level of automation, network operations teams can do nothing but manage the basics of identity and policy. These teams are now harnessing network telemetry and automating identity and policy management using AI and ML models to accelerate their understanding of whether the user is who they say they are and whether they are visiting from a safe network. To do this effectively, the network needs to be agile, flexible, and ubiquitous.

As-a-service consumption

IT has traditionally centered on installing and managing infrastructure as a reaction to business demands, with a focus on managing infrastructure costs. With the rise of as-a-service consumption, IT organizations see an opportunity to change that dynamic.

The cost structure of as-a-service technology, and the ability to scale services based on outcomes and more easily add new capabilities, helps shift IT efforts away from cost reduction toward activities that effectively contribute to profit.

Internet of Things (IoT)

The proliferation of remotely accessed devices, assets, and sensors in both indoor and outdoor environments is speeding up. Cisco research highlights that by 2023 IoT devices will make up half of all networked devices (up from a third in 2018).[2] Organizations are looking at IoT as the answer to a wide range of problems covering everything from improving employee safety by monitoring air quality in office environments to tracking warehouse efficiency by monitoring the movement of assets and equipment.

Such an influx of devices on the network will drive a further convergence between IT and Operations Technology (OT) teams. With OT relying heavily on the network, both IT and OT teams will need to collaborate and share intelligence on network and device health, frequency band usage, security, policy, and maintenance efforts. IT will need a more data-driven and mobile network to do this effectively.

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[1] Cisco Hybrid Work Index, 2021.

[2] IoT and the Network: What Is the Future? Cisco, 2020.

Security

The complexity of mobility, a heterogeneous device base, and IoT means IT is thinking differently about security. IT teams have recognized that security cannot be a guarded perimeter around the network and instead needs to be pervasive through the network. From the office to the coffee shop, and from the laptop to the connected security camera, security must permeate everything in the network.

Network access is available 24 hours a day 7 days a week, globally. Network operations teams need to be able to react to security threats at any point in the day or night, wherever they are. Immediate access to the network, whether an admin is on-premises or at home, is imperative.

Each of the above trends plays into the others and is creating a renewed need for simplicity, resiliency, and agility in how network operations teams manage the network.

This is ultimately pushing IT toward cloud management for the network. Moreover, the transition is already underway, with three in five enterprises reporting the use of some level of cloud-based platform to manage network infrastructure.[3]

Hybrid work case study

One use case that brings to life the interplay of these trends and the resulting need for cloud network management is the growth of hybrid work.

The pandemic started a significant cloud push at the application level, with 70% of organizations reporting that it accelerated the migration of apps to the cloud.[4] This was a matter of business survival as workers moved to remote work and needed access to collaboration and productivity tools. However, the use of cloud in the application layer has not abated, with a recent Gartner report highlighting that 95% of digital workloads will be deployed on cloud-native platforms by 2025.[5]

To enable these cloud applications to function effectively regardless of location or device, the network needs to be more mobile, agile, and optimized for remote access.

Research from Enterprise Management Associates shows that 85% of organizations are experiencing a permanent increase in the number of employees working from home at least part time.[6] What's more, people aren't just working from their laptops anymore, Cisco data shows a 200% increase in meetings accessed from mobile devices.[7]

As people return to the office in a hybrid fashion, employers are grappling with how they can help employees feel safe and how they can manage the costs of an emptier building. And IT is implementing changes to deliver applications quickly, automate policy management, and secure workers wherever they may be. With network operations employees being largely hybrid themselves, IT organizations have a complicated set of considerations that drive the trends outlined earlier.

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[3] Cisco Global Networking Trends Report, 2022.

[4] Enterprise Management Associates, Hybrid Work Requires Network Transformation, 2022.

[5] Gartner Says Cloud Will Be the Centerpiece of New Digital Experiences, Gartner, 2021.

[6] Enterprise Management Associates, Hybrid Work Requires Network Transformation, 2022.

[7] Cisco Hybrid Work Index, data from February 2020 to January 2022.

Figure 1.
Trends driving migration to the cloud

This is where cloud comes in. IT organizations need the right blend of networking technology, simplicity of management, and operational agility to deliver hybrid work at scale. Networking teams are implementing cloud network management to:

- Enable remote monitoring and/or management

- Support cross-network automation to provide real-time diagnostics, automated onboarding, and policy management

- Collect data across the network from user devices and IoT sensors to speed up decision making

All in all, networks require high levels of adaptability and simplicity, and the ability to securely connect and support users regardless of their location. This circles back to the earlier trends and highlights the need for cloud networking now.

What is cloud network management?

To address these challenges and adapt to the requirements of a more distributed workforce, organizations are rapidly adopting network management platforms in the cloud. Cloud network management not only removes the need for a physical network management device on-premises, it also helps IT organizations evolve their operations to meet these new requirements head on.

With cloud management, IT organizations can monitor and manage complex networks from anywhere. To dive deeper into how this capability affects the trends guiding networking, it's worth taking a closer look at cloud monitoring and management.

What is cloud monitoring?

Cloud monitoring provides more than just a view of the networking environment in a centralized dashboard. Network operations can use cloud monitoring to inspect networking statistics (such as traffic information) and configurations (such as connected ports) and perform basic troubleshooting from 10 meters or 100 miles away.

One of the first benefits users of cloud monitoring realize is access to network data at scale. Cloud monitoring of networks connects the switching and access infrastructure to a centralized dashboard to which data is funneled, allowing IT organizations to make decisions faster and serve as the backbone for any automation efforts.

This access to data also speeds up issue resolution. A network administrator can identify switch connection troubles and start mitigating the impact from anywhere on the planet. This is increasingly important as more switches are being deployed to support trends such as IoT with Power over Ethernet (PoE)-powered lighting and to pull data from IoT hubs to a centralized dashboard.

Cloud monitoring is often a first step toward full cloud management, as it allows networking operations teams to experience the benefits of cloud without having to replace their existing on-premises management system.

What is cloud management?

Cloud management takes cloud monitoring and adds a high level of flexibility and agility for network operations teams. The centralized dashboard can be used to remotely manage onboarding, identity, port configuration for switches, analytics, and security without the cost and complexity of on-premises wireless controllers and overlay management systems. The data collected from the network can also be used to fully automate these processes with automated security alerts and zero-touch provisioning of devices.

The ability to manage large networks with tens of thousands of endpoints from a central hub enables IT teams to take full advantage of the networking trends outlined earlier. In fact, almost 700,000 Cisco customers manage their network at least in part from the cloud.

Flexibility in how cloud is consumed is another benefit. Cloud network management (including monitoring) is an as-a-service offering. IT organizations can take advantage of cloud network management without the upfront costs of an on-premises solution. In addition, it can be easily scaled based on the needs of the organization and is always up to date with the latest features and security.

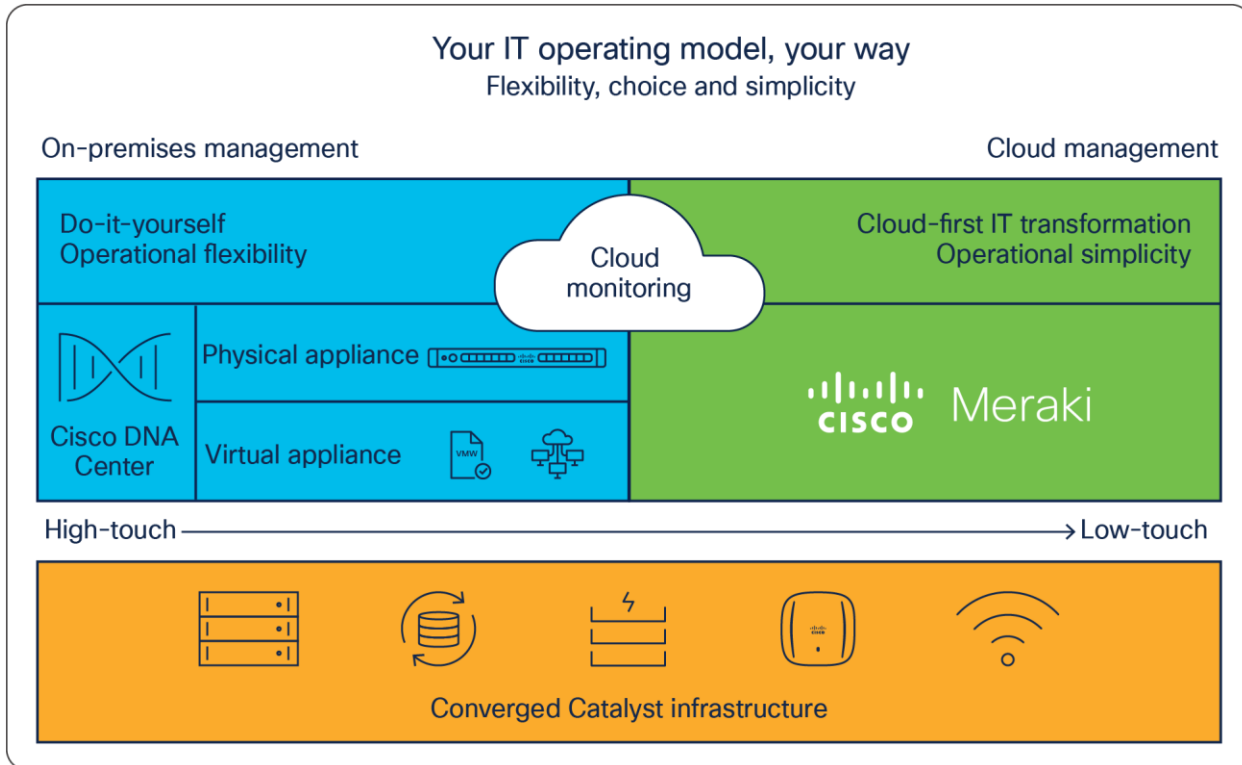# The Cisco full spectrum IT operating model

Figure 2.
The Cisco full-spectrum operating model

Cisco offers a unified approach to cloud networking management to support everything from air-gapped on-premises network management to fully cloud managed networks. The goal is to meet network operations where they are in their cloud journey.

This approach unlocks a vast expanse of opportunities for IT organizations, all of which are built on trusted, known Cisco platforms that provide a consistent experience regardless of the use case.

Cisco is investing in on-premises and cloud management for today's challenges, with an eye toward what customers need for tomorrow.

A (virtual) on-premises operating model

While cloud enables new use cases and improves simplicity, not all networks can be hosted in the cloud today.

Cisco understands these needs and as such is continuing to invest in its on-premises network management platform, Cisco DNA Center. The newest innovation from Cisco in on-premises network management is the Cisco DNA Center virtual appliance.

Cisco DNA Center traditionally resides on a physical appliance. The Cisco DNA Center virtual appliance eliminates the need for this hardware and deploys Cisco DNA Center in a public cloud service such as AWS or in a VMware ESXi virtual environment. It can be located on-premises or in a co-location facility and provides feature parity with the physical appliance.

The journey to cloud-first IT transformation

As outlined earlier, the cloud-managed network transformation is already underway. IT organizations want to engage in the trends guiding networking, and this can't always be achieved with the existing network infrastructure. Cisco understands this and is building the future of the network today by bringing together the Cisco Meraki cloud platform with Cisco Catalyst hardware. This will be a scalable platform to support IT as they embark on the journey from on-premises to the cloud.

More IT organizations will begin this transformation as the key reasons for on-premises networks become less impactful. This is already starting to happen, with comfort around cloud growing in some industries, the introduction of high-density Cisco Catalyst access points that are available in the Meraki cloud management platform, and innovations in cloud-managed networks that are bringing more customization options to cloud networks.

This transformation allows IT to engage in the trends described at the outset of this white paper in a scalable way. Today, with minimal disruption, IT organizations can deploy cloud monitoring from Cisco Meraki for the Cisco Catalyst 9000 switch family, bringing access to real-time network data and enabling remote troubleshooting of network issues.

IT can take this journey one step further by enabling cloud management for the Cisco Catalyst 9162, 9164, and 9166 Series Access Points with the Cisco Meraki cloud management platform.

This solution migrates the Catalyst hardware from Cisco DNA Center to the Meraki cloud management platform. With this migration, an on-premises network management system is no longer needed to support the network.

The IT operating model from Cisco is scalable, from on-premises to cloud network management, and brings converged hardware that works regardless of the management platform. IT teams can transition to the cloud when they are ready and protect their technology investments by not having to rip and replace hardware.

Summary

Networking is changing fast, and the Cisco IT operating model is built to help IT teams keep up by delivering a scalable, consistent experience as they implement cloud network management. With cloud network monitoring and management from Cisco, IT organizations can be more flexible and more responsive, worry less about how the network is managed, and have more time to focus on projects to drive business success.

Resources

Try our Meraki instant demo

Watch a demo of Catalyst and Meraki, together

See more on Meraki dashboard

Learn more about access networking

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