Guide to Software-Defined Wide Area Networking

How SD-WAN is transforming business

Insight

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Today's networking challenges

WAN is falling behind.

Today, businesses from every sector are seeking gains in productivity and cost reduction through mobile solutions, cloud applications and the Internet of Things (IoT). But with digital transformation comes greater demands on traditional Wide Area Networks (WANs), including the need for increased bandwidth, improved security capabilities, faster deployment and increased availability of applications.[1]

Existing networks based on Multiprotocol Label Switching (MPLS) simply cannot provide the advanced capabilities required to support these modern initiatives.[2] Efforts to modify legacy infrastructure to meet growing demands often result in new complexities. Layers of programming tools and scripts initially intended to simplify or automate processes add new variables that only compound existing issues.[3]

The next-generation solution

According to IDC, the top challenges associated with existing WAN architecture include the **complexity** associated with interconnecting multiple transport types, the need for better **visibility** across remote sites and growing concerns over network **security.**[4]

In this ebook, we'll explore how Software-Defined Wide Area Networking (SD-WAN) is addressing each of these challenges while examining the importance of migration for business growth and reviewing several options for procurement and implementation.

Reducing network complexity

Traditionally, WAN is made up of a diverse patchwork of networking devices and services — which can create quite the challenge when it comes to IT management.

According to IDC, 45% of organizations plan to deploy SD-WAN within the next 12 months as a way to lower costs, reduce deployment times and provide a more robust foundation for applications.[4]

By applying Software-Defined Networking (SDN) technology to WAN connections, SD-WAN harnesses the power of virtualization and automation to deliver significant improvements to network performance and manageability.[5]

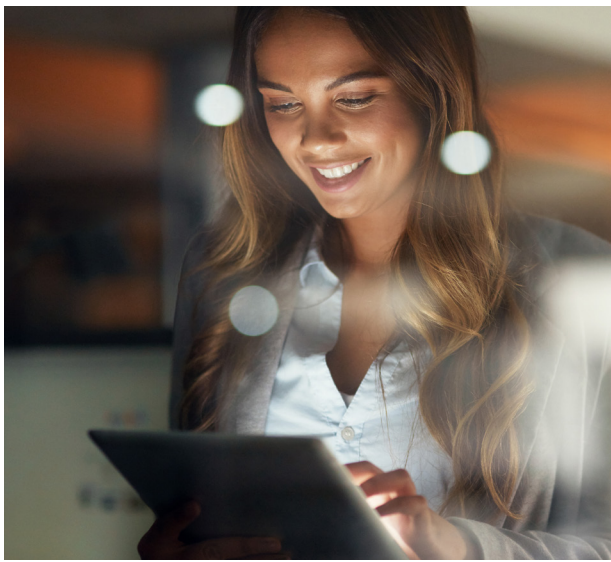
Hardware simplified

Rather than relying solely on costly MPLS hardware, SD-WAN takes advantage of existing broadband internet connections to provide increased agility and control while using less bandwidth. This not only results in significant cost reduction but also improves the efficiency of network connections. By intelligently segmenting traffic and leveraging dynamic, policy-based routing to determine optimal network paths, SD-WAN is able to streamline the delivery of data, speed deployment and improve application performance.[5]

Software enhanced

Unlike traditional WAN routers, SD-WAN decouples the data and control planes, eliminating the need for manual execution through the Command Line Interface (CLI). Instead, a centralized cloud-based management platform allows network changes to be grouped and extended across your entire network using zero-touch provisioning.[3] This means business- or intent-based policies can be set and distributed across hybrid WANs, cloud networks, wireless and wired Local Area Networks (LANs) in minutes — not months.

SD-WAN with intent-based networking offers additional benefits, including automated provisioning, machine learning and advanced orchestration within the centralized management platform to reduce the complexity of network policies.[2] More advanced SD-WAN solutions are able to apply path control to automatically prioritize inbound and outbound traffic by business criticality.



Improving network visibility

The fragmented nature of standard WAN solutions means that IT teams often have limited visibility into the network, which can present a major challenge when it comes to identifying and correcting problems in a timely manner.[6]

SD-WAN employs continuous automatic monitoring of network events, collecting report-based usage and availability data about network sites, servers, applications and users. This information is then delivered through the central management platform, providing a unified at-a-glance view of all registered devices and applications.[3]

A bird's-eye view

While the exact features of the control dashboard will vary depending on the specific product or service provider, a quality SD-WAN solution provides the ability to easily collect network data, oversee bandwidth planning, gauge performance and quickly resolve availability or security issues. This increased visibility allows IT teams to isolate WAN traffic into specific segments, providing certain branches or partners with access to critical assets and applications while blocking others from view.[6]

SD-WAN with intent-based networking allows teams to leverage predictive analytics, Artificial Intelligence (AI) and machine learning to drive more efficient network optimization by pre-calculating the impact of configuration changes. This makes it easy to improve network and application performance, providing a more consistent user experience while ensuring Service Level Agreements (SLAs) are met.[2]

Strengthening network security

The average WAN is prone to attacks and faults, even under normal circumstances. SD-WAN delivers a more resilient network infrastructure designed to enforce multilayered security for hybrid cloud and on-premise infrastructure through encryption, authentication, segmentation and service chaining.

Complete transparency

In addition to simplifying policy management and visibility, the SD-WAN console acts as an all-in-one security platform through which user identity-based controls can be easily defined and threats quickly identified. By leveraging data-plane traffic encryption and control-plane support for firewalls, access points and switches, SD-WAN also provides the ability to integrate built-in security features with a Cloud Access Security Broker (CASB) or other on-premise defenses.

Built-in defenses

A zero-trust model for mutual authentication allows SD-WAN to ensure every device has been authorized and every packet encrypted using a Secure Sockets Layer (SSL) and IP security technologies before granting access to the network. Mission-critical traffic and assets can also be partitioned to protect against vulnerabilities in other parts of the enterprise.[2]

With intent-based networking for SD-WAN, IT teams can securely connect users to applications over any type of connection, including MPLS, internet and 4G LTE connections. Network intelligence detects and responds to threats in real time using fail-over and safe-path optimization, while always-on assurance provides the ability to validate business intent, verify network behavior and assure regulatory compliance.[2]

What Cisco brings to SD-WAN

Cisco's enterprise-grade SD-WAN solution, one of the most widely deployed in the world, leverages intent-based networking to provide greater agility, a stronger user experience and advanced threat protection.[7]

With Cisco SD-WAN, you will gain:

- Transport independence, including flexibility to deploy your SD-WAN over any type of connection, such as MPLS, internet or 4G LTE
- Rich networking and security services, such as WAN optimization, firewall and Intrusion Prevention System (IPS) services that can be deployed on demand
- Endpoint flexibility for small to large branches, physical and virtual platforms, with deployability across your branch, campus, data center or cloud

Meraki

Since 2016, Cisco Meraki® SD-WAN, available from Insight, has been one of the most well-established platforms in the networking space. Included with any enterprise license for Meraki security appliances, this SD-WAN solution requires no additional servers or hardware, delivering complete flexibility and control without the need for additional investment. With integrated security and full-stack management through a single interface, this solution is ideal for current Meraki users and smaller IT teams who value easy deployment and simple network administration.[8]

Viptela

The acquisition of Viptela has further enhanced Cisco's SD-WAN portfolio. By applying the latest advances in software-defined networking, Viptela® WAN solutions deliver support for complex WAN topologies with a high degree of customization. This solution is best suited for larger enterprises that require end-to-end segmentation capabilities across on-premise, public and private cloud infrastructure.[8]

Both Cisco® SD-WAN product lines take advantage of advanced analytics capabilities to eliminate network blind spots by providing real-time correlation, cross-customer benchmarking and complete visibility into app performance.

Why Insight for Cisco SD-WAN?

For nearly two decades, Insight and Cisco have worked together to deliver the tools and experience businesses need to optimize network operations. As Cisco's fourth largest national partner with more than 4,000 sales and service engineers, 1,000 Cisco technical certifications, and four master certifications in security, collaboration, managed services, data center and hybrid cloud, Insight is uniquely positioned to assist with your SD-WAN migration.

Rather than taking a one-size-fits-all approach, our extensive networking expertise allows us to build a customized solution that aligns to specific business needs. We start by evaluating existing architecture and working closely with in-house IT teams to create a road map to deployment. Together, Insight and Cisco ensure every step of the migration and integration process is executed with speed, accuracy and cost efficiency. We can even provide ongoing training, lifecycle and technical support, equipping IT staff with the knowledge to handle ongoing networking administration.

Connect with an Insight specialist today to learn more about how Insight and Cisco can help your organization achieve operational excellence through SD-WAN.

About Insight

Insight empowers companies of all sizes, government organizations, and healthcare and educational institutions with Insight Intelligent Technology Solutions™ to realize their goals. As a Fortune 500-ranked global provider of hardware, software, cloud and service solutions, we give clients the guidance and expertise needed to define, architect, implement and manage technology today while transforming for tomorrow.

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