SD-WAN certainly is a transformational technology in terms of its capability to make the enterprise network ready for the digital transformation (DX) era. It is a one-stop solution that consolidates all the basic network functions, such as routing, WANOP, and security, and does so with built-in intelligence. The simplicity that SD-WAN brings in certainly makes it the most sought-after technology for enterprises looking to transform their network ecosystem.

SD-WAN: The Key Enabler for Network Transformation with Unmatched Benefits

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Written by: Dileep Nadimpalli, Research Manager – Enterprise Infrastructure; Sudharsan Raghunathan, Sr. Analyst – Networking

Changing Business Priorities, Driving Adoption of Emerging Technologies

The COVID-19 pandemic has triggered the importance of Digital Transformation (DX), forcing enterprises across multiple industries to change their business models, operating models, and customer engagement models. Organizations that were having a clear digital road map were able to quickly revisit their strategy and realign their business with the changing needs, while the rest could not endure these challenging business dynamics.

Long gone are days in which enterprises argue on how modern technologies, such as artificial intelligence (AI)/machine learning (ML), Internet of Things (IOT), edge, cloud, and so forth, are going to bring them immediate value-add or return on investment (ROI). These technologies are fast becoming the bedrock of any transformational initiative. Additionally, because of the pandemic, enterprises have witnessed a greater need to create digital workspaces for employees to access applications/data anywhere at any time through any device securely. Hence, technology becomes the first and the foremost important investment that enterprises should consider to enable agility and elasticity for their growing multicloud needs.
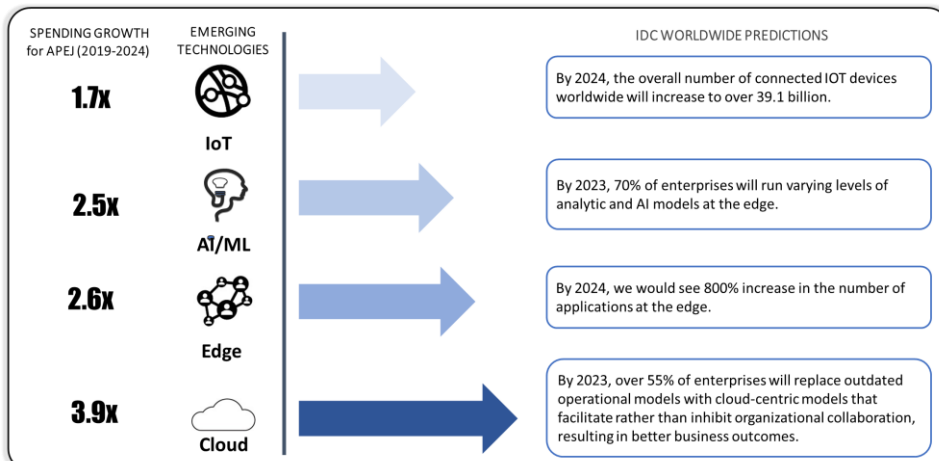
KEY THEME:
SD-WAN – A gamechanger in the network transformation

WHAT'S IMPORTANT: The goal of any enterprise should be to improve application experience for stakeholders irrespective of the application location and device accessed without compromising security.

KEY TAKEAWAYS:

SD-WAN is a crowded market with innumerable vendors providing point solutions. *Enterprise*s need to carefully evaluate and choose the right technology partner with strong expertise; and comprehensive SD-WAN/SASE solution that can act as a trusted advisor throughout the deployment journey.

Figure 1: Asia/Pacific (Excluding Japan) Emerging Technology Spending

SPENDING GROWTH for APEJ (2019-2024) — EMERGING TECHNOLOGIES — IDC WORLDWIDE PREDICTIONS

- **1.7x** IoT — By 2024, the overall number of connected IOT devices worldwide will increase to over 39.1 billion.
- **2.5x** AI/ML — By 2023, 70% of enterprises will run varying levels of analytic and AI models at the edge.
- **2.6x** Edge — By 2024, we would see 800% increase in the number of applications at the edge.
- **3.9x** Cloud — By 2023, over 55% of enterprises will replace outdated operational models with cloud-centric models that facilitate rather than inhibit organizational collaboration, resulting in better business outcomes.
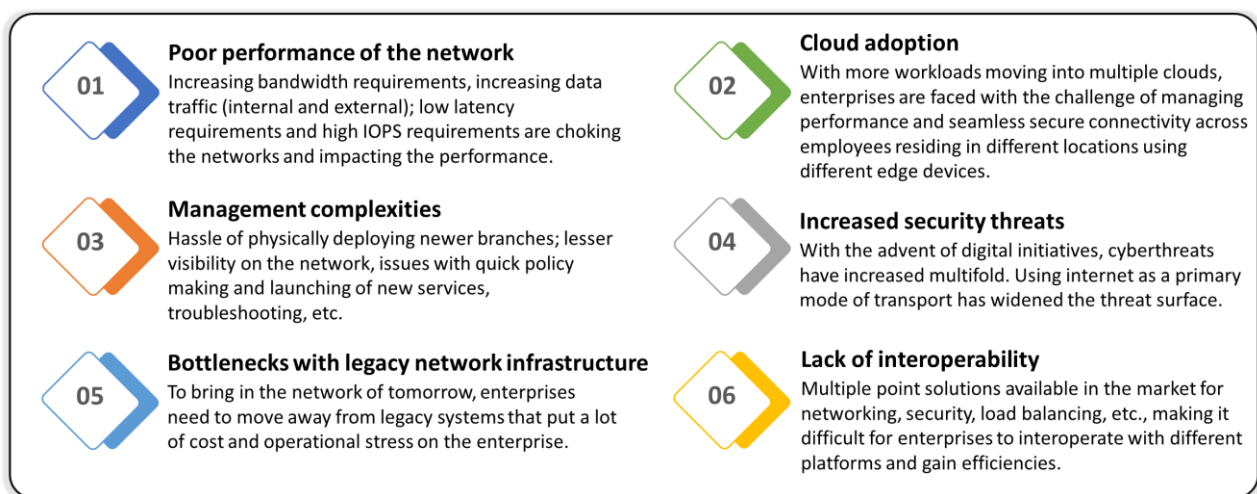
Source: IDC, 2020

Network Transformation Is the Backbone of Digital Transformation Initiatives

Network transformation has been one area that has been ignored by enterprises for many years because of multiple challenges and complexities. For an enterprise to be future ready, adoption of emerging technologies, like IOT, AI/ML, and edge computing, plays a vital role. However, a successful implementation requires organizations to revisit their network ecosystem by modernizing their network infrastructure to bring in efficiencies in terms of performance, agility, security, manageability, and scalability in this ever-changing business dynamics. Networking has evolved to a point in which organizations are slowly moving away from speeds and feeds and rather concentrating on the quality of experience.

Figure 2: Network Challenges Faced by Today's Organizations

01 Poor performance of the network
Increasing bandwidth requirements, increasing data traffic (internal and external); low latency requirements and high IOPS requirements are choking the networks and impacting the performance.

02 Cloud adoption
With more workloads moving into multiple clouds, enterprises are faced with the challenge of managing performance and seamless secure connectivity across employees residing in different locations using different edge devices.

03 Management complexities
Hassle of physically deploying newer branches; lesser visibility on the network, issues with quick policy making and launching of new services, troubleshooting, etc.

04 Increased security threats
With the advent of digital initiatives, cyberthreats have increased multifold. Using internet as a primary mode of transport has widened the threat surface.

05 Bottlenecks with legacy network infrastructure
To bring in the network of tomorrow, enterprises need to move away from legacy systems that put a lot of cost and operational stress on the enterprise.

06 Lack of interoperability
Multiple point solutions available in the market for networking, security, load balancing, etc., making it difficult for enterprises to interoperate with different platforms and gain efficiencies.

Source: IDC, 2021

SD-WAN Is the Future-Ready Networking Technology

SD-WAN offers a very compelling solution to address most of the network challenges enterprises are facing today. SD-WAN provides unmatched benefits, such as reducing bandwidth costs, better visibility and control, optimizing network traffic, high performance with low latency, zero touch provisioning (ZTP), and ease of management with built-in analytics/automation tools. Furthermore, SD-WAN has also evolved into Secure SD-WAN and SASE, which tightly integrates networking with security functions.

Evolution of Secure SD-WAN and SASE

As enterprises started to use internet as a primary link, it has opened a plethora of security vulnerabilities. These security attacks have only become amplified with the COVID-19 scenario and working from home on untrusted devices and networks. With the growing security threats, enterprises should not treat networks and security as siloes anymore. Rapid adoption of cloud and distributed computing has become the primary drivers for security to also have a distributed approach instead of backhauling to a central location to apply security policies. SD-WAN has hence evolved into Secure SD-WAN and SASE, which combines the networking functionality tightly integrated with security functions, such as secure gateways, cloud access security broker (CASB), zero trust security, firewall as a service (FWaaS), data loss prevention (DLP), domain name system (DNS), intrusion detection system (IDS)/IPS, and delivered as a cloud service.

SASE helps organizations move away from point solutions and enable seamless delivery, which is much faster and efficient through a single integrated cloud stack. Especially in a remote working scenario, an employee can have security agents deployed in the device when connecting from an untrusted network and security is taken care without having to deploy any customer premises equipment (CPE) in the user location. The promise of SASE is to provide a seamless user experience irrespective of the location or device with a security feature that is hardware independent and cloud native. Being a completely cloud delivered model also helps enterprises to easily scale up/down as per the enterprise requirements.

Drivers, Benefits, and Adoption Trends of SD-WAN

All these benefits are compelling organizations to adopt SD-WAN as one of the fastest-growing network technologies. According to IDC, the Asia/Pacific (excluding Japan) (APEJ) market for SD-WAN is expected to grow at 31.7% compound annual growth rate (CAGR) from 2020 to 2024. As per the recent survey, close to two-thirds of the organizations are willing to deploy SD-WAN in the next two years.

This clearly implies that SD-WAN will play a major role in the network transformation initiatives of enterprises and help solve decade-old network and security complexities. SD-WAN is truly a comprehensive future-ready solution to enable enterprises for their scalability and agility needs.

Figure 3: SD-WAN Adoption in Asia/Pacific (Excluding Japan)
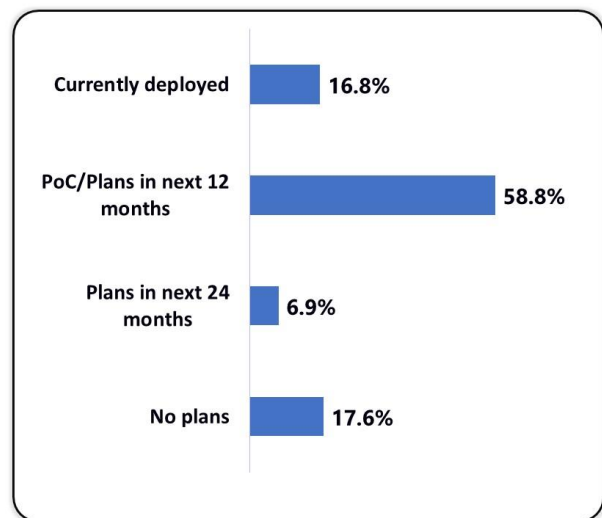
Source: IDC's *COVID-19 Wave 10 Survey, 2020*

SD-WAN is a one-stop solution for most of the networking issues that organizations have been facing over the years as it covers routing, WAN optimization, and security altogether in a single fabric with cost savings associated, thereby making it a compelling proposition for enterprises.

Figure 4: Reasons to Deploy SD-WAN
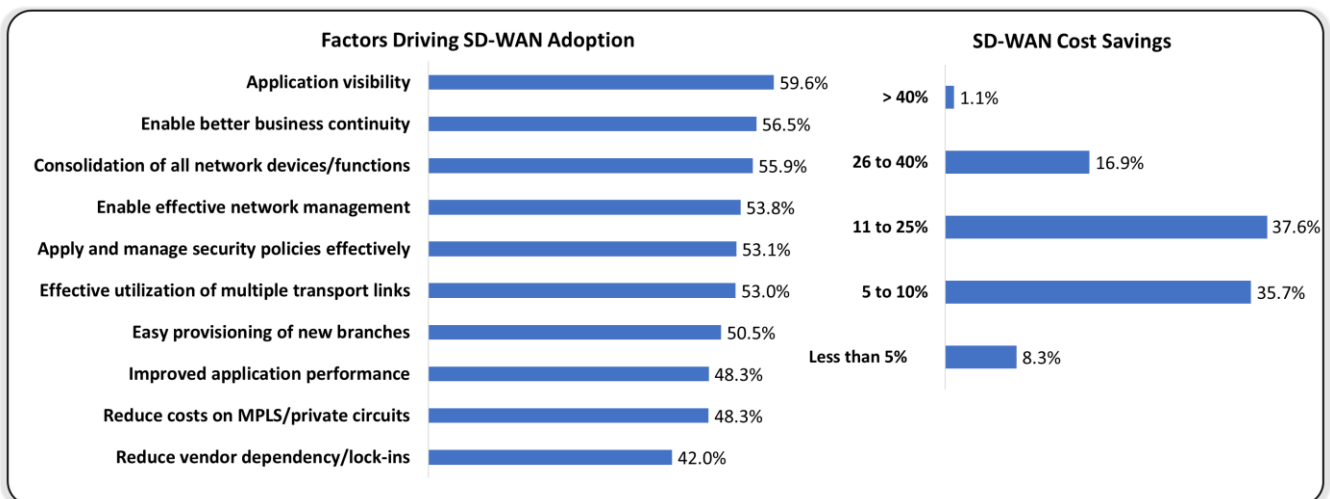
Source: IDC's COVID-19 Wave Survey, 2020

What began as a technology to primarily cut costs on multiprotocol label switching (MPLS) has become an important technology in driving efficiencies of WAN. However, SD-WAN has the potential to replace MPLS with alternate transport mechanisms like broadband and 4G. The trend of still using MPLS prevails in most of the Asia/Pacific countries because of broadband speed and reliability issues, forcing enterprises to stick with at least 1 MPLS link.

Industry-Specific Use Cases for SD-WAN

We have witnessed majority of the SD-WAN deployments in verticals, such as banking, financial services, and insurance (BFSI); IT/ITeS; manufacturing; retail; healthcare; and government. The use cases for SD-WAN might differ from vertical to vertical; however, the need for SD-WAN is quite prominent across organizations.

Figure 5: Industry-Specific Use Cases for SD-WAN

BFSI	Professional Services	Healthcare	Retail/eCommerce	Manufacturing
• Ability to connect multiple branches without compromising security and reliability at a lower cost • Ability to use multiple transport methods to connect remote branches, ATMs (LTE, broadband) • Capability to customize connectivity based on multiple architectures (branches, ATMs)	• Use cases around COVID-19 pandemic remote working scenario that enables users to connect from home • Ability to connect to multiple cloud (SaaS and IaaS) applications • Ability to seamlessly stream audio/video/VDI without lag in performance • Connecting IT/ITeS branch offices are spread across geographies that require seamless connectivity	• Easy access to electronic health records across healthcare centers • Boost telemedicine capabilities • Enable effective security policies to manage and secure patient data • Manage data getting generated through smart monitors, medical devices (IOT), etc. • Effective micro-segmentation and application of analytics to detect breaches	• Enabling seamless network experience irrespective of unexpected seasonal demand • Use real-time purchase data and take timely business decisions • Effective micro-segmentation to set polices and compliance requirements across headquarters, retail shops • Enable POS connectivity without downtime, provide guest Wi-Fi, etc.	• Help in taking business decisions by providing seamless connectivity to IOT devices at the edge • Enable better shop floor efficiency through real-time data sharing, predictive maintenance, etc. • Help with micro-segmentation of networks based on units, departments, etc.

Source: IDC, 2021

Cisco Is by Far the Market Leader in the SD-WAN Space

"Cisco is by far the market leader in SD-WAN market with market share more than the next five SD-WAN vendors combined in 1H20." - IDC Worldwide SD-WAN Infrastructure Market Shares, 1H20 release

Cisco has one of the most comprehensive SD-WAN solutions and offers best-in-class quality of service (QoS) in the market. Majority of the organizations opt for Cisco because of its long-standing experience and expertise in networking and security domains; extensive pre/post-sales support and strong culture to drive innovations. Cisco's SD-WAN can be managed in-house or outsourced to a managed SP. Cisco has strong partnerships with a variety of managed service vendors and telecom SPs to facilitate smooth transition to SD-WAN. Cisco also has a strong market presence with proven implementation capabilities for thousands of branches. Recently, Cisco implemented a very large SD-WAN project (8,000+ branches) for a public sector banking organization in the APEJ region.

Cisco's SD-WAN solution offers secure, cloud-ready, scalable, agile, application-aware, and simplified management. It provides an excellent network experience irrespective of the transport links (MPLS, internet, LTE), application location (corporate DC, branch, colocation, cloud), and the deployment type (cloud and on-premises). Cisco's vManage provides best-in-class automation, orchestration, management, visualization, and analytics capabilities.

Figure 6: Cisco SD-WAN/SASE Portfolio
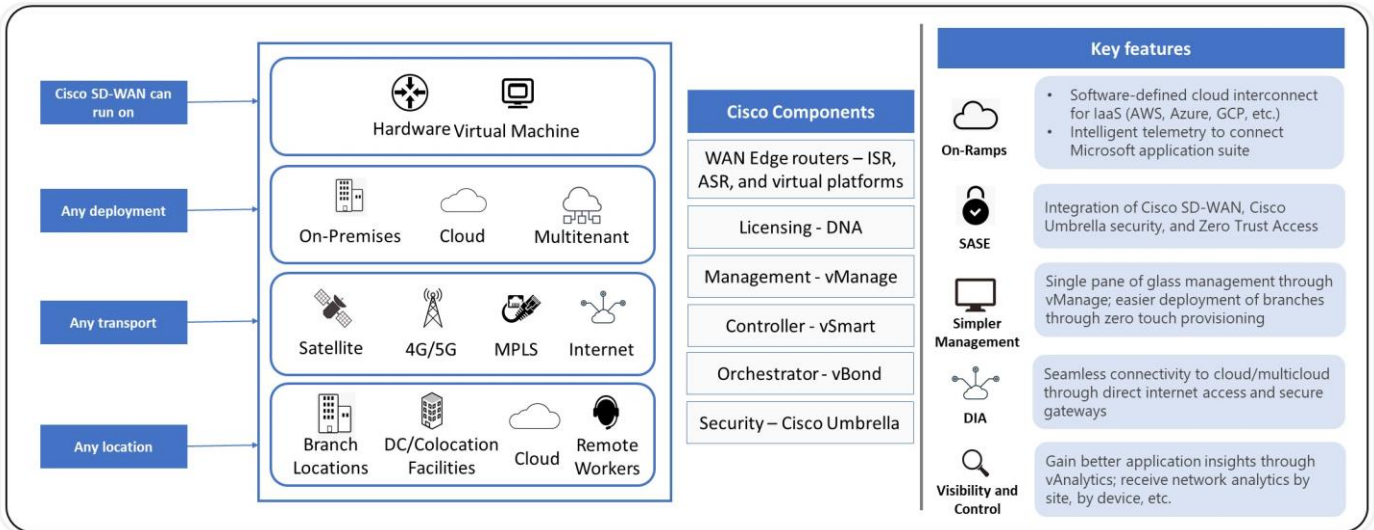
Cisco's SASE Offerings

Cisco is one of the very few vendors offering end-to-end solution with multiple capabilities to emerge as a single point of contact for all SD-WAN/SASE needs. Cisco has been strong in terms of building native capabilities and collaborating with multiple third-party vendors, thereby acting as a technology partner guiding enterprises toward their SD-WAN/SASE journey.

Figure 7: Cisco Fabric - SASE
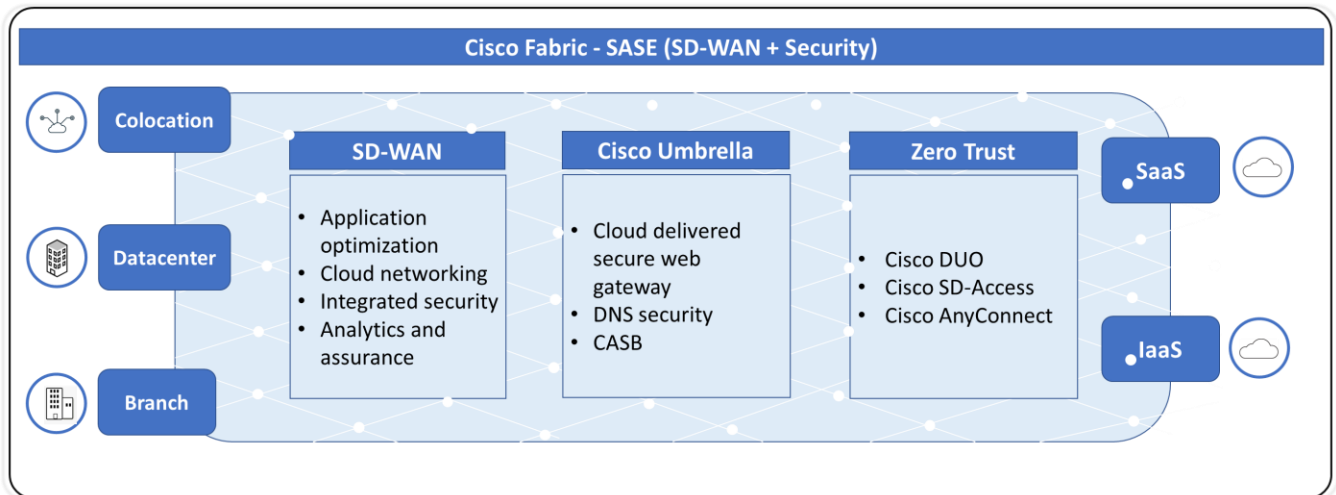
Enterprises looking for DIA from branches to clouds can do so by using a Cisco SD-WAN appliance with a built-in security stack that offers next-generation firewall, IPS, URL filtering, and so forth. Enterprises bound by strict regulatory landscape that prohibits DIA can leverage colocation facilities as secure internet gateways that can run Cisco's security stack to ensure security for branch/remote workers.

Cloud On-Ramp

Software-defined cloud interconnects (SDCI) – This collaboration with Megaport enables an effective middle mile that makes accessing of IaaS (AWS, Azure, GCP, and so forth) and SaaS applications (O365, Salesforce, and others) secure and easy. The on-ramp functionality could be managed with vManage, Cisco's management and orchestration layer to extend the SD-WAN fabric to any cloud.

Figure 8: Cisco's Cloud On-Ramp
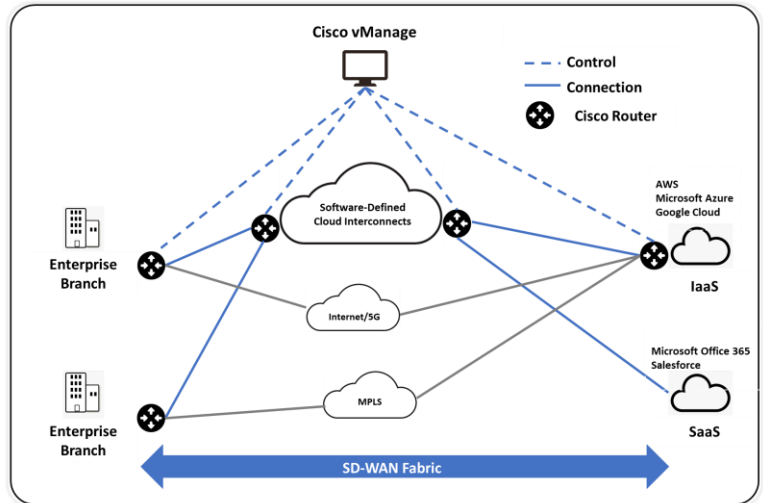
Source: Cisco, 2021

Intelligent telemetry – Microsoft suite of applications is one of the most extensively accessed enterprise applications. Organizations have always faced lag in application performance, owing to the variety of applications in the Microsoft suite requiring specific network demands. The integration with Microsoft performance telemetry enables enterprises to get the best application experience through application-aware routing and automated path selection and provide varied QoS levels for different Microsoft applications like Teams, Exchange, and so forth.

Benefits Cisco's SD-WAN Solution

The major advantage of Cisco is the ability to use the existing ISR and ASR routers in the branches and leverage SD-WAN licenses on top of the existing CPEs. This reduces the time and cost of SD-WAN deployment as enterprises need not rip and replace the existing branch infrastructure or wait until the next refresh cycle to upgrade their branch-level CPEs. Enterprises that have used SD-WAN have reported significant improvement in the bandwidth utilization, thereby reducing the cost of expensive MPLS links. Organizations also find seamlessness in terms of overall network management that encompasses on-boarding of new services and faster policy making. Cisco's SD-WAN has significantly reduced the unplanned downtime that enterprises were facing, thereby making the enterprise future proof and ready to take up new transformational initiatives.

**Figure 9: Benefits of Cisco SD-WAN Solution**
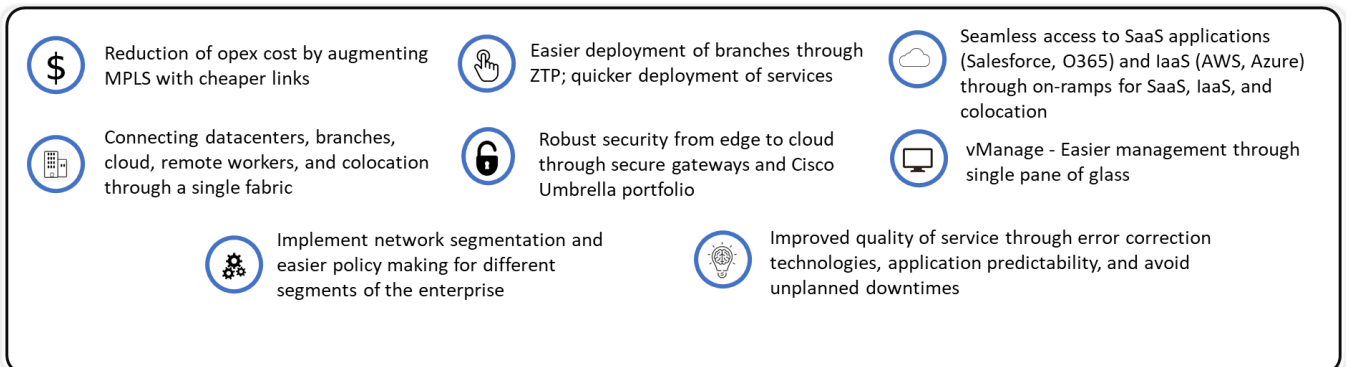
Source: IDC and Cisco, 2021

Cisco's SD-WAN Case Study

Lotte group, the South Korean conglomerate, had a diverse setup with more than 50 affiliates and research and development (R&D) locations. The enterprise had multiple disparate solutions for network management and security that made it challenging to scale efficiently in the multicloud era. The enterprise also underwent constant negative network performance, which led them to migrate to Cisco SD-WAN.

Figure 10: Case Study: Lotte Group
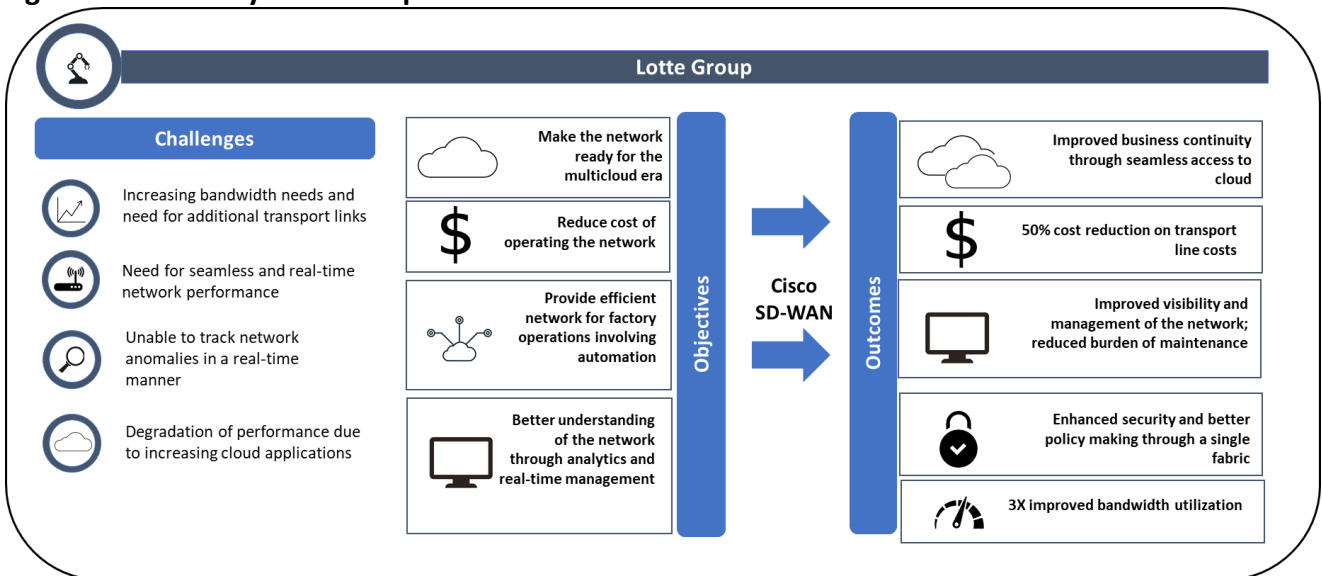
Source: IDC and Cisco, 2021

"In order to streamline IT line costs and manage the entire network safely, Lotte Group is working with Lotte Information & Communication and Cisco SD-WAN. As a result, Lotte Home Shopping improved its bandwidth by more than three times at a cost reduction of more than 50%." - **Lotte Information & Communication, IDC Division Head Han Wang-seok**

Conclusion

Enterprises should look for a trusted advisor and not a point solution while they are looking to deploy an SD-WAN deployment. The SD-WAN vendor needs to support enterprises in driving business outcomes, such as cost savings, operational efficiencies, and productivity. Organizations should consider vendors that have end-to-end networking and security capabilities, strong technical expertise, and industry know-how for their SD-WAN deployment journey. Enterprises need to carefully evaluate the solution through POCs and deploy the right SD-WAN solution to get the true benefits of the technology that will help drive a successful network transformation.

Some of the key attributes that enterprises need to consider before deploying an SD-WAN are number of branches to be connected, geographical distribution of branch locations, current and future bandwidth requirements, current and future application locations, expectation with respect to remote working and branchless operations for the future, end-to-end security, and so forth. In terms of deployment, the enterprise needs to evaluate whether it has the capability to manage the SD-WAN in-house or outsource to a managed service vendor or a telecom SP. Multiple small and medium-sized enterprises (SMEs) are taking the managed service route for easier deployment and management.

Figure 11: Key Considerations for SD-WAN
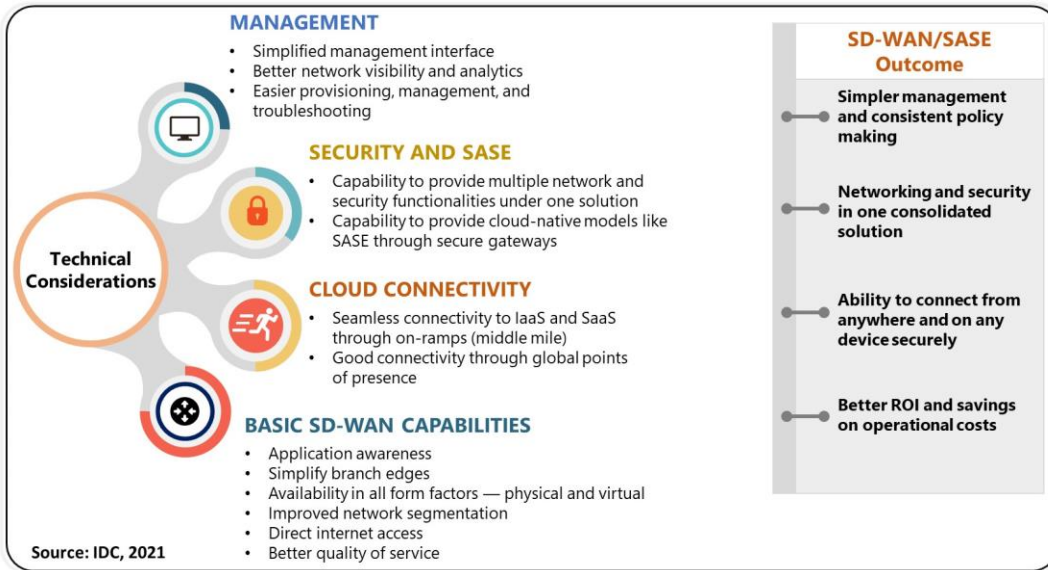
SD-WAN has the capability to solve majority of the network and security challenges that the industry is facing today at a reduced total cost of ownership (TCO) without compromising the network experience. With a single SD-WAN fabric, enterprises can do away with multiple point solutions covering networking, security, and WAN optimization requirements. Although SD-WAN covers the entire gamut of networking and security, enterprises cannot perceive the implementation as a one-time activity. It is rather a journey of network transformation that evolves over time with additional functionalities and services getting added as per the industry demands. Hence, it is extremely vital for organizations to choose the right partner that is abreast with the industry changes and requirements and has a long-standing experience in delivering deep technology expertise, thereby smoothly transitioning enterprises into the networks of tomorrow.

About the analyst:

Dileep Nadimpalli, Research Manager – Enterprise Infrastructure

Dileep Nadimpalli is a Research Manager at IDC India, based in Bangalore. He leads Enterprise Infrastructure research practice for the India region and is actively involved in the execution of custom & consulting assignments for technology vendors and buyers.

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