

Overcoming Business Challenges in WAN infrastructure

A CIO's perspective on network infrastructure

The Cisco SD-WAN solution is a cloud-delivered overlay WAN architecture that enables digital and cloud transformation at enterprises. It significantly reduces WAN costs and time to deploy new services, and, builds a robust security architecture crucial for hybrid networks.

Executive summary

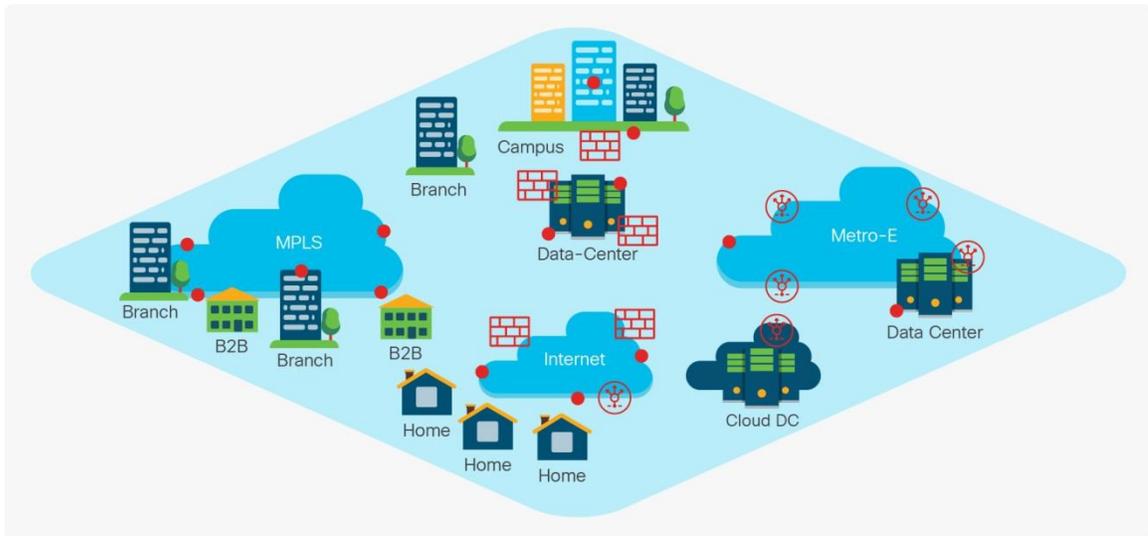
Traditional networking infrastructure was deployed when the security perimeter was well defined, most applications were low bandwidth, and most content and applications resided in corporate data centers. Today, enterprises have very different requirements. High-bandwidth, real-time, and big-data applications are pushing capacity limits of the network. In some cases, most traffic is destined for the Internet or public cloud, and the security perimeter is fast disappearing due to mobile devices and cloud technology, along with a dynamic B2B partner ecosystem. The downside risks of status quo are significant, and technological innovation has failed to comprehensively address the problem.

Cisco SD-WAN helps enterprises build a secure extensible WAN that is designed to overcome critical networking and security challenges and elegantly address the emerging requirements.

Network and business challenges

The figure below shows a high-level representation of a traditional enterprise infrastructure. There are multiple networks for different applications and a chaotic distribution of networking functions, such as routing intelligence and Layer 4 to 7 services.

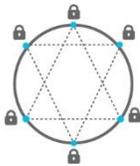
Figure 1. Complexity in today's enterprise network



This poses a problem for

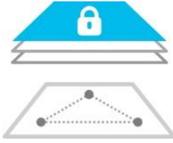
- Business executives wanting to deliver high bandwidth applications and video
- Network architects seeking to deliver end-to-end network segmentation, offer BYOD access, and provide a good end-user experience for cloud and Internet-based applications
- Security officers wanting to meet compliance, security, and audit objectives
- Network operation teams wanting to help ensure availability and enable rapid change control

These seemingly diverse problems can be traced to three fundamental shortcomings:



Secure ubiquitous connectivity is painful.

- Complexity associated with interconnecting multiple transport networks like MPLS, Metro-E, Internet, and LTE
- Security vulnerabilities due to weak encryption policies and complex key management schemes for the wide area
- Audit and compliance penalties due to inadequate network segmentation across the lines of business



Benefits of network virtualization do not extend outside the data center.

- Poor user experience with cloud applications and Internet access due to a centralized Demilitarized Zone (DMZ) architecture
- Growing annual costs to provide bandwidth needed for virtual desktop infrastructure (VDI, video), and other high-bandwidth applications
- Delays and cost associated in translating business logic into network policies



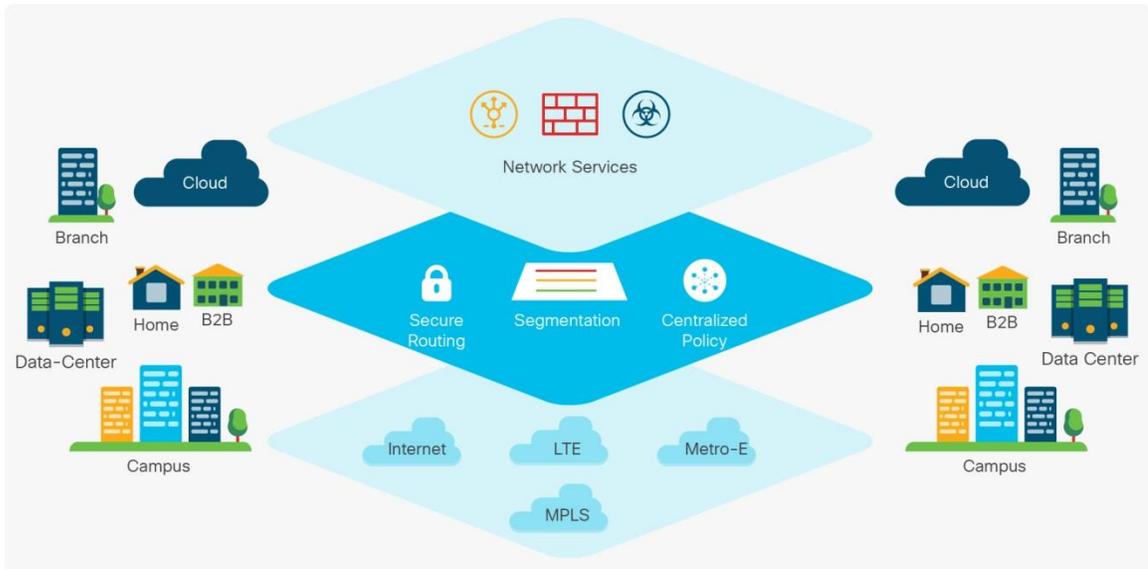
Delays are associated with rolling out new applications and services.

- Delays in onboarding a new site or business partner due to rigidity of the carrier's footprint
- Revenue lost while waiting for network infrastructure to come up to speed on business needs
- High cost of change control since policy is embedded at every point in the network

The Cisco SD-WAN approach and value proposition

Cisco SD-WAN has taken an integrated approach to addressing the multitude of challenges. The SD-WAN solution builds an overlay network over any transport network, such as Internet, MPLS, LTE, or Metro-E, and elegantly integrates routing, segmentation, security, policy, and orchestration. The solution is centrally managed and translates business logic into something networks can understand, eliminating a major disconnect between business and IT.

Figure 2. Secure Extensible Network

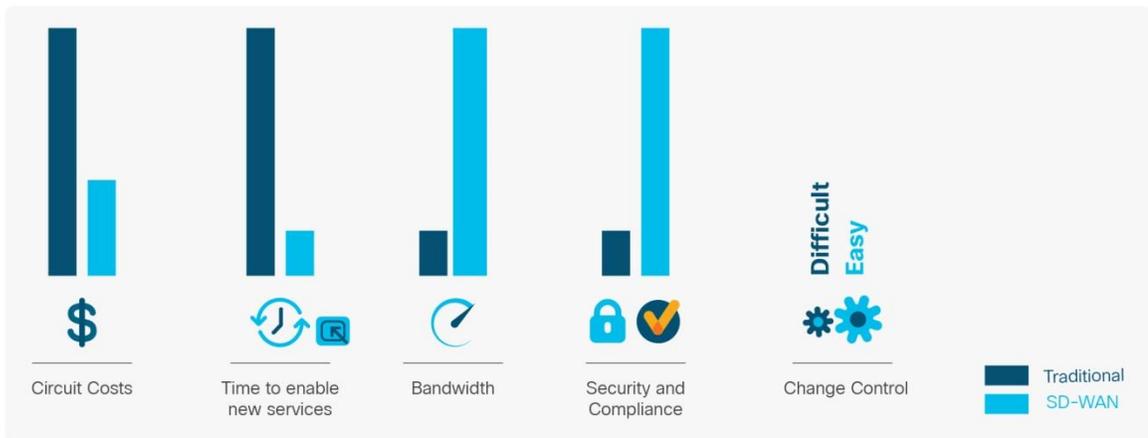


The Cisco SD-WAN solution helps enterprises:

- Provide secure connectivity anywhere
- Extend the benefits of virtualization outside the data center
- Rapidly deploy new services and applications

For the CIO, these features translate to a savings of up to 80 percent in carrier Operating Expenses (OpEx), a significant improvement in time to deploy new services, and a consistent high level of security across the hybrid network.

Figure 3. The Cisco SD-WAN advantage



Use Cases

Transport-agnostic VPNs



The Cisco SD-WAN solution provides a cost-effective, secure IP fabric over any underlying transport.

B2B partner network



Enterprises with a dynamic partner ecosystem can rapidly onboard business partners over any transport network.

End-to-end network segmentation



Secure sensitive traffic among different lines of business and different business partners with end-to-end segmentation.

Encryption at scale



The SEN solution provides powerful encryption capabilities, with automated key management and device authentication to secure any network infrastructure.

Optimized Internet exit



Enterprises can deliver an optimal user experience for cloud, VDI, and Internet applications by enabling regional Internet exit points.

Network service insertion



Network services like firewalls, IPS, and load balancers can be consolidated at centralized locations, and traffic can be routed through these services with simple policy changes.



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