



SOLUTION BRIEF

SD-WAN BENEFITS: IS IT RIGHT FOR YOUR BUSINESS?

Historically, networking has been a challenge for businesses of all sizes. Until recently, managing a network meant configuring individual components across each office branch and ensuring they have uniform policies and security components. This takes a great deal of time and labor to set up, manage and monitor.

It also meant constantly watching your network for changes and abnormalities. Because your application services were in a central data center, whenever employees needed to access a service, they all had to connect to the same data center. This meant occasional — if not frequent — data traffic bottlenecks, with too many requests at one time for the network to process.

What if there were a way to take all those individual network configurations, with all their policies and security features, and combine them into one central interface? What if, instead of being accessed from a data center, your employees could access your application services through the cloud, reducing network traffic?

These challenges are addressed with a software-defined wide area network (SD-WAN), which aims to solve all of these issues and more — and at a lower cost than traditional networking setups.

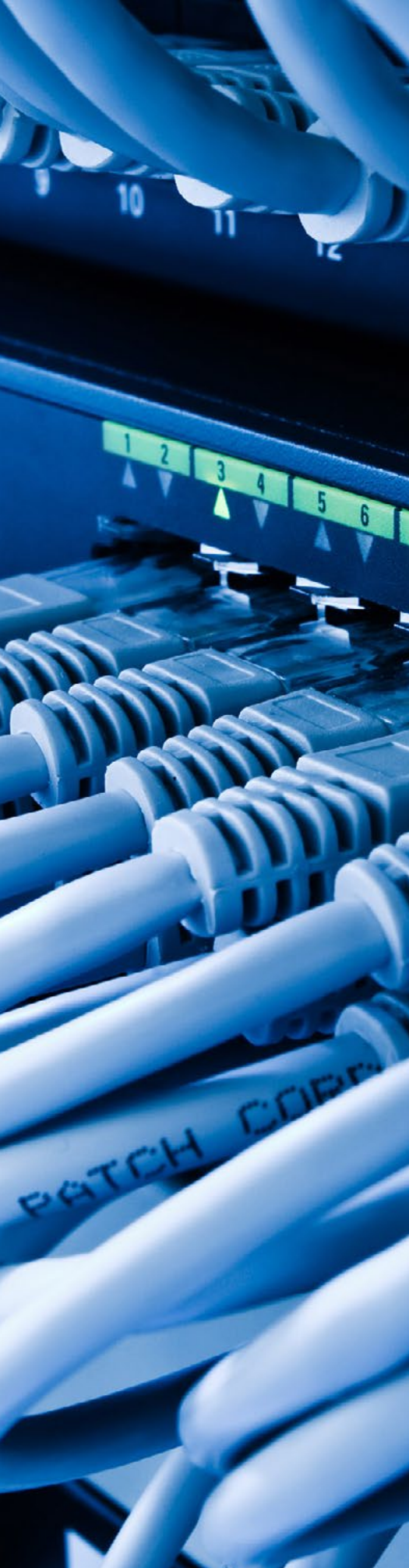
What is a software-defined wide area network?

To understand SD-WAN technology, it's vital to first understand what a wide area network (WAN) is.

A WAN is a connectivity solution for private networks — the long-distance counterpart to the local area network (LAN). Whereas a LAN is typically a network that is entirely contained in one relatively small area, traditional WAN architecture can span virtually any distance. A LAN is something you might find in a small office, whereas a WAN connection can span many offices in several different locations.

SD-WAN technology is a virtualized approach to broadband internet WAN that is far easier to integrate with a cloud solution than a traditional WAN, as its parameters are





configured via software. The network hardware is thus separated from the management process, allowing all hardware to be managed from a single interface instead of at the individual device level. This offers several advantages over a traditional WAN:

- Faster network speeds with traffic prioritization.
- Easier to set up and scale.
- Enhanced security.
- Simplified architecture.
- Better user experience.
- Increased cloud application performance.

An alternative to SD-WAN technology is multiprotocol label switching (MPLS), which is a standard routing protocol provided by telecommunications companies. An MPLS differs from traditional internet in that it has the security needed for businesses to function without them being exposed to cyberthreats.

One inherent limitation of MPLS is the challenges businesses face when scaling their networks. Both the cost and complexity of the network would increase with the size of the operation. With SD-WAN, office branch locations can be added without the traditional prices associated with MPLS. A second problem is bottlenecks that occur when network traffic is too high. Because MPLS networks utilize a centralized data hub to offer their business' software as a service (SaaS) application, too much traffic at one time would lead to severely reduced network speeds.

SD-WAN is designed to overcome the common issues involved with an MPLS network. It does this primarily through virtualized network functions (VNFs), which are far less complex than a traditional MPLS setup and friendlier to cloud security and applications. Because SD-WAN removes the need for a data center to access software, there is no risk of a traffic bottleneck. SD-WAN controllers can still utilize a data center, but they can also use the cloud.

Note that SD-WAN and MPLS can be used at the same time. A key component of SD-WANs is that they can be easily implemented into existing setups. So long as you have the hardware and a platform to support the software, you can use SD-WAN.

How SD-WAN came to be

Initially, WAN traffic relied on point-to-point (PPP) lease lines to connect multiple LANs together. Later, frame relay technology made it so companies didn't require dedicated links between LAN locations, and these took over PPP lease lines.

When MPLS came into being in the 2000s, it combined multiple functions — such as data networking, video and voice technologies — in the same network with an Internet Protocol (IP) address. MPLS also provides extra quality of service (QoS) features and better network speed than frame relays. MPLS is still very popular today.



The beginnings of SD-WAN came about a decade later in 2013, and companies started to understand its benefits: Cheaper cost, easier to deploy and simpler to manage, among many others.

What are the common features of a software-defined wide area network?

All SD-WANs have these features in common:

- Supports VPNs.
- Capable of dynamic path selections.
- Supports multiple connections at once (i.e., network redundancy).
- Has an easy-to-use interface.

These four commonalities differentiate SD-WANs from other types of network connections. In addition to lessened cost and greater scalability, SD-WAN features many other important benefits. These include:

Easier to configure: With traditional MPLS setups, a range of devices were equally needed at each branch location, each requiring its own setup to accommodate the needs of the network. The VNF function of an SD-WAN means it's only limited by the processing power of its connected devices, such as routers and PCs.

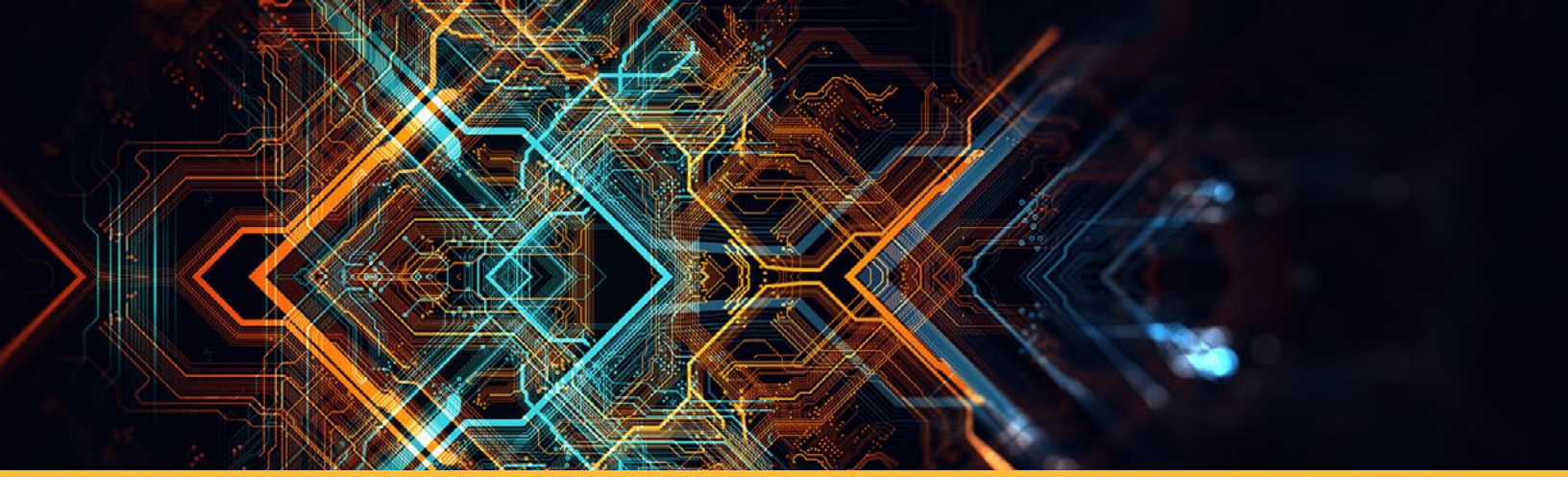
A single hub for network administrators: SD-WANs have a central network management interface that controls all aspects of the network. This differentiates it from previous network setups that needed to be configured separately at their individual locations. If the corporate IT department or central data hub needs to update services or policies across the network, an SD-WAN can use software to accomplish this easily.

Intelligent path control: The key word in SD-WAN is “software,” which is what manages changing network conditions automatically. Because the software adapts automatically to these changes, this task does not need to be done manually.

Users can directly access SaaS services: With SD-WAN, all SaaS services exist as a cloud service instead of being hosted in a data center. This eliminates the risk of a network bottleneck.

Network redundancy: SD-WANs use several connections at once to increase bandwidth, including 5G, 4G LTE and Wi-Fi. Regardless of what your primary connection is based on, the public cloud is always available. SD-WANs do not require MPLS circuits and can use VPNs when necessary — so even if the MPLS circuits are down, the network remains online.

More choices: Access to solution providers, OEMs and hardware/software vendors is enhanced with SD-WAN. Previously, with MPLS networks, businesses were restricted in these options because of telecommunications companies with little competition.



All of this ultimately leads to a more capable network and greater productivity. With these tasks controlled by the unified software interface instead of an individual with multiple sets of software, your employees can be freed up for other tasks instead of constantly monitoring and configuring your network.

- **Controller:** This is how a business' IT department monitors and configures the network.
- **Aggregator:** This function of the SD-WAN software combines all the different WAN connection types into a single layer to make it manageable.
- **Customer premise equipment (CPE):** This is the hardware side of the SD-WAN, including routers, servers and firewalls installed at each location. Note that there does not need to be a central server for SD-WAN to function, unlike with MPLS.

A note about security with SD-WAN

One challenge all adopters of SD-WAN face is ensuring its attached devices have updated security. Because SD-WAN is a diverse network without a central server, there are more points of entry in the network. This means you should make a point of managing those points of entry — routers, PCs and other hardware attached to the network — to prevent a breach.

Should you use a software-defined wide area network?

Here are some examples of how businesses can use SD-WAN:

- **Migrate to the cloud:** An inherent limitation of an MPLS network is that it's difficult to implement a cloud architecture. SD-WAN is ideal for companies that want to have a cloud business. However, that's not to say that you must use the cloud to have an SD-WAN. An on-premises deployment is possible.
- **Expansion:** Unlike with MPLS, scalability and geographic expansion aren't issues. SD-WAN utilizes unified communications, policies and security, so when it's time to grow your business, you can easily join all your branch locations under one umbrella.
- **Achieve redundancy:** A business losing its network can be devastating for productivity. SD-WAN has native redundancy, so if one connection fails, you'll have several backups.



- **Enhance performance:** SD-WAN utilizes both private and public networks, enhancing network performance and reducing internal traffic. For example, it's possible to offload traffic from your private network and onto the public network, preventing excess traffic that leads to slow data transfer rates.

If any of these applications sound like something your business can use, SD-WAN might be the perfect solution.



Achieve greater security for a lower cost

SD-WAN aims to solve the problems inherent to MPLS. This type of WAN has greater security, is less costly, easier to scale and simpler to implement and manage.

At WiLine, we offer a range of network services, including a comprehensive SD-WAN solution for small businesses and enterprises alike. Contact us today to learn more.

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