

SD-WAN: THE FUTURE OF NETWORKING



WHITEPAPER

JULY 2019



SD-WAN: THE FUTURE OF NETWORKING

The telecoms industry continues to be the epicentre of technological growth and innovation and is taking our connected world to another level.

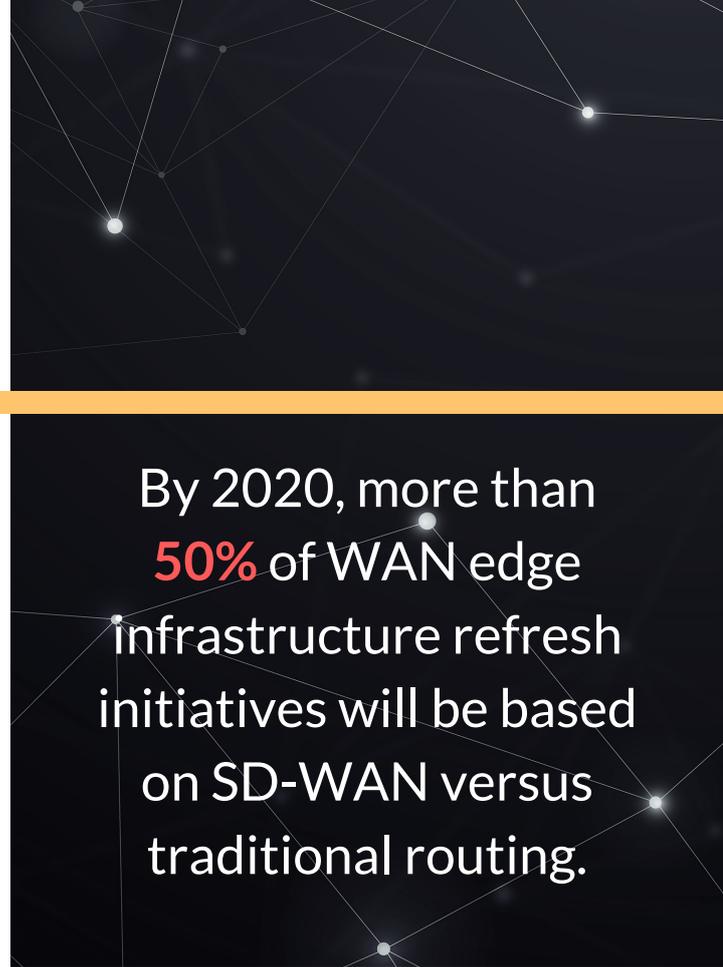
Analysts are forecasting rapid growth in both enterprise spending on SD-WAN and corresponding vendor and service provider revenues over the next few years. According to a report by Gartner, by 2020, more than 50% of WAN edge infrastructure refresh initiatives will be based on SD-WAN versus traditional routing.

Whilst these are projections, we can see first-hand that SD-WAN is gaining momentum and is redefining networking as we know it. To understand further the likely disruption that this technology will cause, we delve into the world of SD-WAN, its claimed business benefits, and how this may benefit business VoIP and contact centres worldwide...

WHAT IS SD-WAN?

SD-WAN is a software-defined approach to managing a Wide Area Network (WAN), providing a virtual WAN architecture solution that enables businesses to leverage multiple transport services including MPLS, LTE and Broadband Internet Services.

Via software and a centralized dashboard, SD-WAN acts as a virtual overlay to a network, intelligently directing traffic across a WAN, handling traffic based on priority, ensuring quality of service and security requirements in accordance with business needs.



By 2020, more than **50%** of WAN edge infrastructure refresh initiatives will be based on SD-WAN versus traditional routing.

SD-WAN differs from software-defined networking in that SDN deployments are geared toward provision of flexible deployment and usage-based solutions between high capacity sites (for example, a business' head office and a data centre). SD-WAN allows for the same, but at branch site level.

It has emerged as a compelling alternative to the traditional WAN, especially among heavily decentralised organisations with many branch offices or those utilising cloud services.

WHY IS SD-WAN THE FUTURE?

A Wide Area Network allows businesses to connect offices to data centers and to each other. These networks, often complex and implemented over large geographical distances, may utilise multiple carriers' networks. The result: operational challenges which could include network congestion, packet delay variation, packet loss, or service outages.

In addition, bandwidth requirements continue to increase and many modern applications, for example VoIP calls, videoconferencing, media streaming and virtualized applications and desktops require low latency connectivity. Expanding WAN capability to accommodate these factors can be **complex** and **expensive**, with corresponding difficulties related to both network management and troubleshooting.

SD-WAN offers a new approach to network connectivity that is more aligned to the **cloud-centric** world we live in.

With the rapid adoption of SaaS / IaaS applications, often in multiple cloud environments, it has become apparent that traditional WAN networks are not efficient in dealing with the complexity or bandwidth requirements that cloud adoption brings.

SD-WAN addresses these issues, offering a new approach to network connectivity that is more aligned to the cloud-centric world we live in.

WHAT ARE THE BENEFITS?

A ROBUST, SECURITY-INTENSIFIED SD-WAN CAN BE THE ENABLER OF GEOGRAPHICAL AND INTERNAL GROWTH

1 GREATER FLEXIBILITY

SD-WAN, especially cloud-enabled solutions, gives more flexibility. It allows businesses to optimise their routing paths depending on business priorities and bandwidth needs, and maintain the most mission critical, latency-sensitive business applications such as real-time voice and video.

WHAT ARE THE BENEFITS? CONTINUED...

2 INCREASED PERFORMANCE

Since SD-WAN has the capability to automatically funnel traffic through the fastest and most reliable connection, common network issues such as jitter and latency are considerably reduced, increasing overall network performance and agility. A capable SD-WAN solution will overcome the most extreme disruptions including brownouts and even blackouts.

3 REDUCED COST

Maintaining an all MPLS-based WAN is expensive. The introduction of SD-WAN may result in significant cost savings as businesses are able to better utilise WAN connections, balancing between high-cost and low-cost lines based on the priority and characteristics of specific traffic. In addition, SD-WANs help drive a strong positive ROI because the software-based approach moves the category of WAN networking from a capital expense to an operating expense. According to Gartner, **SD-WAN can be up to two and half times less expensive than a traditional WAN architecture.**

6 COMPETITIVE EDGE

The deployment of SD-WAN gives the ability to carry out real-time management and monitoring of all network services that can put a business at an advantage over competitors who are still using one-off traditional WAN.

4 INCREASED SECURITY

SD-WAN architecture features distribute security at branch level, which means that all endpoints are covered with edge-to-edge encryption. This removes the need for data to travel back to the HQ or data centre for advanced security protection, i.e. a firewall, DNS or intrusion prevention. With SD-WAN user accounts can be easily created and removed from a single management plane, increasing the control of access permissions used by guests and employees.

5 SIMPLIFIED MANAGEMENT

SD-WAN simplifies and streamlines network management by decoupling the traffic management, monitoring and management plane from the hardware. SD-WAN can make it easy to scale across numerous endpoints, whether it be on-site or cloud, and gives the ability to automate zero-touch deployment globally, using a single management interface.

According to Gartner, **SD-WAN improves the time it takes for businesses to provision network changes at branches by between 50 to 90%, due to simplifying operation, orchestration and zero-touch configuration.**

DIFFERENT TYPES OF SD-WAN ARCHITECTURES

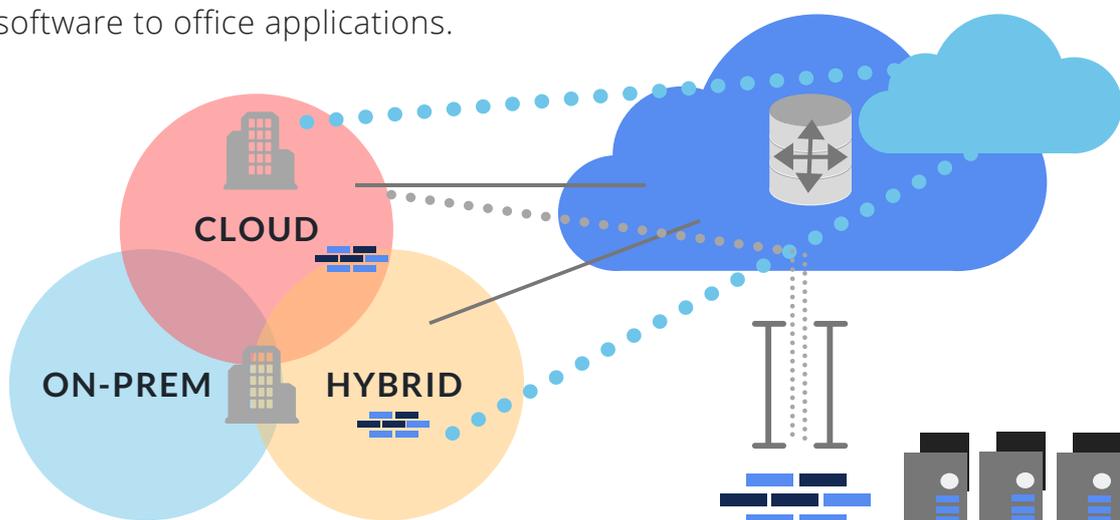
There are several different SD-WAN packages available from various service providers, which normally fall under 3 architecture types:

1 ON-PREM SD-WAN

This architecture is used by companies that host most – if not all – of their business applications locally, establishing connections between remote sites and non-cloud services.

2 CLOUD-ENABLED SD-WAN

This architecture takes advantage of cloud gateways to communicate with cloud applications, covering anything from cloud-based CRM software to office applications.



When choosing an SD-WAN, consider the size of your business, its locations and how you manage the network first.

3 CLOUD-ENABLED PLUS BACKBONE

'Cloud-enabled plus backbone' SD-WAN architecture offers connection to the SD-WAN provider's nearest network point of presence (POP) where traffic hops on the SD-WAN provider's private, fibre-optic, network backbone. This improves the performance of all network traffic.

CAN SD-WAN IMPROVE BUSINESS VOIP?



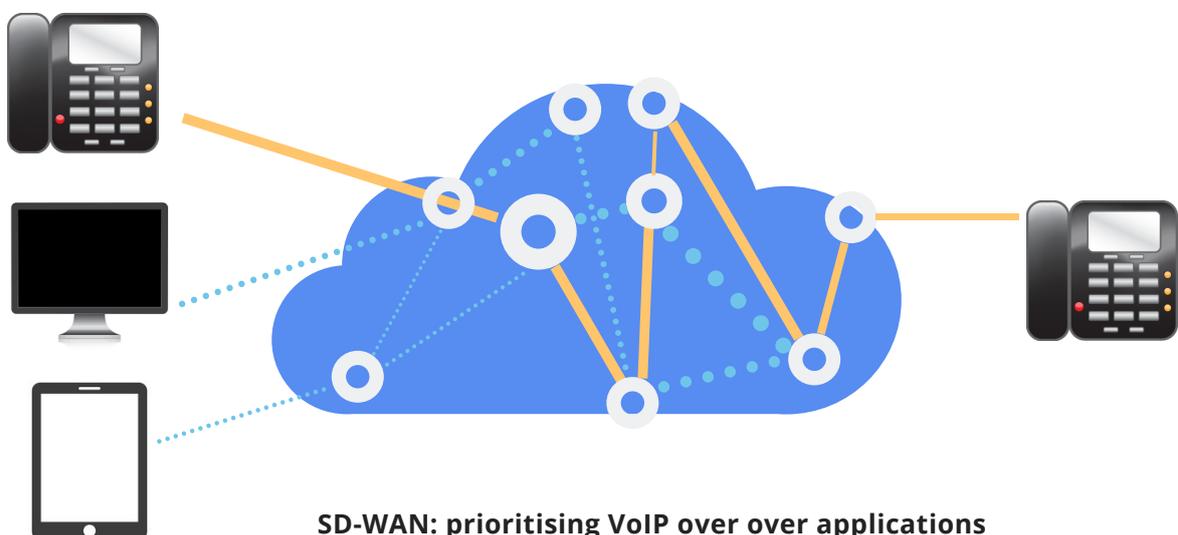
Yes. A good SD-WAN solution, when layered on a single (and even poor) internet connection, can improve the chances of a crisp and clear VoIP and reduce or eliminate dropped calls.

SD-WANs come with an online control panel with a GUI, where the user can configure and monitor the service. Here, the user can identify the different applications on the network and group them into different levels of priority, for example VoIP vs email vs web browsing, and then choose to send the higher priority applications first.

In real-time, SD-WAN detects and monitors application flow and regulates the non-priority traffic accordingly. By prioritising VoIP over other applications, call quality is improved as calls are no longer competing for that all essential bandwidth.

Other common features of SD-WAN solutions include 'Forward Error Correction' and 'jitter buffering', both of which help to strengthen the quality of the voice call and ensure calls do not drop out. Some cloud-enabled SD-WAN providers offer these features on-site as well as the cloud gateway level.

PACKET SWITCHING



SD-WAN: prioritising VoIP over over applications

WILL SD-WAN BE OF BENEFIT TO CONTACT CENTRES?

We believe so...

Contact centres have evolved in recent years, moving from a single location to multi-location with agents increasingly positioned in different geographic locations to take advantage of the time zone coverage.

One of the first adopters of VoIP, contact centres have historically used MPLS for their internal private WAN, often utilising dual MPLS networks. Whilst this approach is proven to maintain reliability and call quality, it is expensive and can be over-provisioned.

Furthermore, with the continued rise of the adoption of SaaS / IaaS applications in multiple clouds, contact centres have greater data demands on their internal network than just providing high-quality voice calls. More applications used by agents are being centralised rather than distributed to each individual centre, and with the rise of social media and video chat support there is greater strain on the network capabilities and WAN bandwidth than ever before.

With many contact centres operating from multi-locations and using multiple WAN links at each location, it makes for the perfect environment for SD-WAN deployments.



HOW CAN DEPLOYING SD-WAN HELP?

The capabilities within SD-WAN determine the most effective way to route traffic to remote locations – this is ideal for mission critical contact centre WAN applications.

With the right SD-WAN solution, contact centres can get higher reliability and greater WAN utilisation from existing MPLS links, even in the face of network problems.

The ability to use all WAN links, in addition to the ability to safely use each link at higher sustained network utilisation can postpone the need to buy expensive bandwidth upgrades, where the costs per bit of MPLS bandwidth can be anything **from 10x to 100x the cost of internet bandwidth.**

Contact centres can anticipate significant savings by replacing traditional WANs with SD-WAN technology. This saving will come from reduced infrastructure, software and support costs at brand locations, as well as reduced personnel cost for the provision, management and troubleshooting of equipment.