



DQE Communications

Driving Business Agility Through SD-WAN

Modern businesses need agile, modern solutions for managing their network traffic as they add new locations to their existing footprints. Traditional Wide Area Networks (WANs) cannot provide the performance and scalability that enterprises using modern, data-intensive applications require. For business executives and their IT teams, the challenge lies in finding the right Software-defined Wide Area Network (SD-WAN) solution. The idea is to have an easy-to-use, centralized platform through which to control traffic flows and provision required connectivity services. In this eBook, we examine the benefits of SD-WAN, how SD-WAN can future-proof your network for emerging technologies and the advantages of our own SD-WAN Managed Services.

Chapter 1. What is SD-WAN?

A Software-defined Wide Area Network (SD-WAN) is a virtual WAN architecture that allows businesses with multiple sites to manage their network traffic. Centrally managed and cloud-friendly in its functionality, an SD-WAN offers businesses unique advantages in directly connecting users to any application whether it is hosted in on-premise data centers or private/public clouds.

In a traditional WAN scenario, a company's traffic is backhauled from branch locations to a centralized data center before being forwarded to its destination. Routers direct traffic based on TCP/IP addresses and other protocols. However, if traffic prioritization changes, network administrators must physically adjust switches, routers and other devices at impacted branch locations. Of course, this significantly slows down overall performance, resulting in reduced productivity and efficiency for a company's employees. Fortunately, an SD-WAN can change the game significantly.

At its core, SD-WAN virtualizes legacy WAN services. IT teams relying on an SD-WAN architecture can use a centralized network management software interface to direct

traffic across the WAN and scale across multiple locations. By separating a network's hardware from decisions about traffic management, an SD-WAN can provide businesses with a centralized, cost-effective and secure way to improve application performance.

In a traditional WAN, configuration and monitoring are kept separate with configuration being largely manually driven and router centric. SD-WAN, on the other hand, uses an overlaying orchestrator that controls all device configuration and monitoring centrally. Following initial device setup, network administrators no longer need to manually adjust devices at branch locations for changes in traffic policies. Now, they can use the centralized management platform of SD-WAN to connect different users with different device types and automatically push traffic segmentation/routing policies to all branch locations. This greatly simplifies service provisioning while enhancing overall network security.

As a result, SD-WAN can improve business agility and set companies up to meet the growing demand for cloud-based services and new applications.

Chapter 2. SD-WAN is the Future of Business WAN

A growing number of businesses around the globe are interested in adopting SD-WAN solutions to improve efficiency. Intrinsicly linked to demand for SD-WAN products is a growing dependence on cloud computing. Here are a few key statistics from the International Data Corporation and Silver Peak:

- 72% of midsize or large corporations will adopt a multi-cloud and/or hybrid IT strategy by 2021
- 53% of companies expect that more than half of their applications will be in the cloud within 2 years
- 20% anticipated increase in enterprise bandwidth
- required per year at branch locations. Network traffic expected to double every 3 years
- 90% of companies expect to implement SD-WAN within the next year
- 80% of new applications will be deployed by the cloud by 2030

Although WAN connectivity serves as a foundation for ongoing digital transformation, legacy WAN architectures pose the following challenges:

- Long time to install and configure
- Expensive
- Complex to manage
- May not be able to provide the flexibility/performance for cloud connectivity

Fortunately, SD-WAN is an enabler of improved employee and customer experiences, especially at branch locations. More than just a network architecture, SD-WAN is a gateway that empowers businesses to invest in new tools and technologies that can make day to day operations more efficient. Here are the top three trends that will impact the world of SD-WAN over the next few years:

1. Greater Use of Machine Learning to Improve Network Performance

As today's businesses leverage new technologies and data-intensive cloud-based applications, having reliable, agile networks is more important than ever. In fact, AI and Machine Learning (ML) hold the potential to create

truly intelligent SD-WANs that can continuously and seamlessly adapt to a business' emerging network needs. This capability especially comes in handy from a reliability perspective as, through ML, network analytics applications for software defined networks can improve anomaly detection and resolution before unplanned problems occur. In other words, expect SD-WANs to become even more efficient as they leverage new and emerging technologies.

2. Leveraging SD-WAN To Improve Communication

SD-WAN solutions are inherent enablers of cloud computing. They can help businesses with remote branch locations implement a host of cloud-reliant tools across the entire company, such as those categorized as Unified Communications (UC) services. From voice-over-internet protocol (VoIP) to integrated audio/web conferencing and unified messaging, these tools put a significant strain on legacy WAN traffic management. SD-WAN frees enterprises from this constraint, allowing them to leverage UC and other applications to ensure that all employees across every branch have access to the same communication and collaboration tools.

3. Outsourcing SD-WAN Management to Vendors

Because SD-WAN is all about security, scalability and simplicity, a growing number of enterprises are looking for vendors that have experience in managing SD-WAN deployments. From an efficiency perspective, this is also beneficial as it makes it even faster to add new services, add new cloud instances to create hybrid or multi-cloud strategies and even take advantage of converged security/SD-WAN products where available.

Here's the bottom line. At DQE, we see many organizations across a variety of verticals that have diverse traffic needs and networks with multiple endpoints to manage. From adopting cloud-native voice services to accessing cloud-based collaboration platforms and interconnecting office branches, SD-WAN deployments give organizations the ease and flexibility of using an internet-based application to shape and prioritize traffic. The result is improved network functionality.

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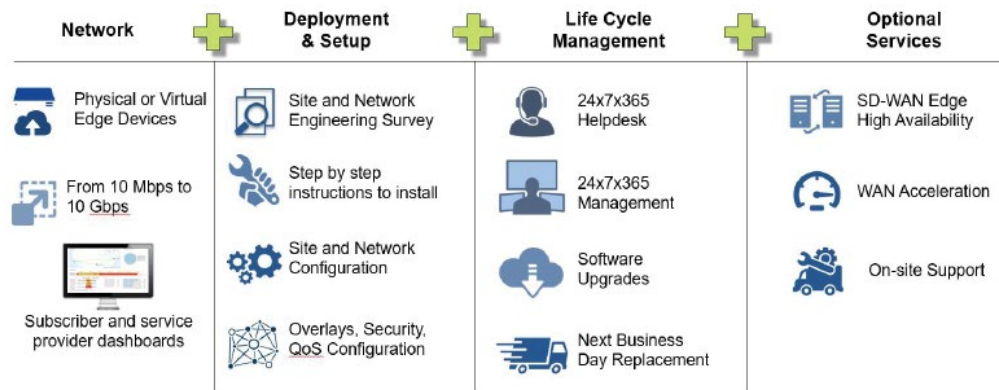


Figure 1.

Chapter 3. DQE's SD-WAN Managed Service

As a leading provider of fiber optic network solutions, DQE is always innovating and finding new ways to support the needs of our customers. Recognizing the growing demand for SD-WAN solutions, we offer a unique SD-WAN Managed Service that gives businesses the ability to obtain the flexibility and cost-savings of SD-WAN without the challenges of self-configuring the infrastructure and network connections.

Implemented as an overlay on top of a company's existing transport network or alongside new connectivity options, DQE monitors and manages all software updates while providing customers with enhanced visibility and control through an online web portal. As well, we offer tailored bandwidth options and even next-business-day equipment replacement with onsite sparing available. With our SD-WAN Managed Service, we can now provide support for companies with remote branch locations outside of our extensive fiber optic network footprint. By supporting our customers in this way, we are making it easy for them to scale and add new locations on their terms.

Best of all, as a trusted partner, we can guide you through the entire process of setting up your SD-WAN. This covers

everything from network considerations to deployment and setup, life cycle management and value-added services such as a high-availability SD-WAN Edge platform and WAN Acceleration. The full scope of our services is depicted in Figure 1.

Other key features of DQE's SD-WAN Managed Service include:

- Speeds of 10Mb to 10Gb over various transport technologies
- Path conditioning (FEC/POC/QoS) to ensure private line-like performance
- Load balancing and link bonding to provide extreme reliability
- Dynamic multi-path control (packet-based routing)
- Real time traffic steering over broadband or MPLS
- Zero touch provisioning (ZTP)
- Support for virtual appliances

If you have a network that includes geographically-disperse branch locations and are looking for an efficient way to improve traffic management and performance, contact us with your questions or call **1-866-GO-FIBER**.

About DQE Communications

Headquartered in Pittsburgh, Pennsylvania, DQE Communications is one of the leading providers of high-speed, data networking for businesses and carriers. The company's continually expanding fiber-optic network currently spans thousands of miles and over 1,900 buildings and 116 business parks. DQE Communications' growing list of services include Metro Ethernet, Wavelength, Internet, DDoS Mitigation, Cloud Solution, Dark Fiber, and Colocation. A subsidiary of Duquesne Light Holdings, DQE Communications was established in 1997 to provide businesses with secure, reliable and flexible network services. For more information, visit www.DQECOM.com or call 1-866-GO-FIBER.