

FourNet®

The Buyer's Guide to SD-WAN

Discover the benefits, pitfalls and considerations you must consider when moving to SD-WAN.

Copyright 2024

Contents

01 Introduction

02 Understanding SD-WAN

03 Comparisons : SD-WAN vs Traditional WAN

04 Considerations for SD-WAN

05 Potential Pitfalls with SD-WAN

06 Key Considerations When Choosing an SD-WAN Solution

07 Features to Consider When Selecting SD-WAN

08 Evaluating SD-WAN Vendors

09 How FourNet can Help

Introduction

Software-Defined Wide Area Networking (SD-WAN) as a transformative solution for organisations



Organisations in today's digital landscape require robust and efficient networking solutions to support their day-to-day operations. Traditional Wide Area Network (WAN) architectures often need help to meet the increasing demands of bandwidth-intensive applications, cloud-based services, and the growing number of remote locations. This is where Software-Defined Wide Area Networking (SD-WAN) emerges as a transformative solution.

SD-WAN technology leverages software-defined networking (SDN) principles to abstract network control and management from the underlying hardware infrastructure. It provides organisations with a centralised, software-based platform that enables the simplified configuration, management, and optimisation of their wide area networks.

By decoupling network control from physical devices, SD-WAN offers unprecedented flexibility, agility, and scalability compared to traditional WAN architectures. It allows organisations to streamline network provisioning, monitor and control traffic in real-time, and dynamically allocate bandwidth based on application priorities and network conditions.

Furthermore, SD-WAN introduces intelligence and automation into network management, enabling organisations to optimise the performance and reliability of their wide area networks. It can seamlessly route traffic over multiple connection types, including MPLS, broadband internet, and LTE, based on parameters like performance, cost, and security requirements. This enhances network availability, maximises bandwidth utilisation, and reduces costs by leveraging cost-effective internet connections.

Another key feature of SD-WAN is its ability to provide improved network security. SD-WAN solutions often come equipped with robust security features, including encryption, authentication, and traffic segmentation. This ensures the secure transmission of sensitive data across the network, protecting organisations from potential cyber threats and maintaining compliance with privacy regulations.

SD-WAN is particularly beneficial for organisations with distributed operations, remote branch offices, or a mobile workforce. It enables seamless connectivity and application performance across geographically dispersed locations, eliminating the bottlenecks and performance limitations often associated with traditional WAN architectures.

In summary, SD-WAN is a transformative technology that offers organisations unprecedented control, agility, and efficiency in managing their wide area networks. With its ability to optimise bandwidth utilisation, enhance security, and streamline network management, SD-WAN empowers organisations to embrace digital transformation, improve productivity, and deliver better user experiences across their networks.

Copyright 2023®

Understanding SD-WAN

Definition and Explanation of SD-WAN Technology

Software-Defined Wide Area Networking (SD-WAN) is a networking technology revolutionising how organisations build, manage, and optimise their wide area networks. It introduces a software-centric approach to wide-area network connectivity by abstracting the network control and management from the underlying hardware infrastructure.

In traditional WAN architectures, proprietary hardware devices typically implement network management and control functions. This makes the network rigid, complex, and costly to manage, especially when organisations have multiple branch offices or distributed locations. SD-WAN addresses these challenges by centralising network management and control in a software-based platform.

In an SD-WAN deployment, edge devices placed at each branch office or remote location form the foundation of the network. These devices connect to the organisation's wide area network, establish connections, manage traffic, and optimise network performance. They are often referred to as SD-WAN edge devices or customer premises equipment (CPE).
A centralised controller or orchestrator handles the control and management of the SD-WAN network infrastructure. This software platform provides a single point of control for configuring and managing the network, allowing administrators to define policies and traffic and make real-time adjustments based on network conditions.

SD-WAN technology leverages multiple connection types, including MPLS, broadband internet, and LTE, to establish secure and reliable connections between branch offices and the corporate network. These connections can be intelligently managed and dynamically adjusted based on various factors such as application requirements, network performance, and cost.

SD-WAN enables organisations to simplify network deployment, reduce costs, and improve application performance by utilising SDN principles. It introduces automation and intelligence into network management, allowing organisations to optimise bandwidth utilisation, streamline network provisioning, and enhance security.

Overall, SD-WAN technology provides organisations with a flexible, scalable, and cost-effective solution for managing their wide area networks. By bringing software-defined networking capabilities to the WAN, SD-WAN revolutionises network connectivity and enables organisations to embrace the digital transformation era with increased agility, efficiency, and control

Comparison of Traditional WAN and SD-WAN Architectures

Traditional WAN architectures rely on proprietary hardware devices and pre-defined routing protocols to connect geographically dispersed locations. While effective at the time, these architectures have limitations regarding flexibility, scalability and control compared to SD-WAN architectures.

Here are some key differences between traditional WAN and SD-WAN architectures:

Connectivity

Traditional WANs are designed for connectivity through costly MPLS circuits. On the other hand, SD-WAN supports a range of connections, including broadband, LTE, and MPLS, giving organisations the flexibility to build network connections based on the type of application being used.

Network Controls

In traditional WANs, network control is managed through individual routers. In SD-WAN, network control is centralised through a software controller, reducing the need for manual configuration of each device.

Traffic Management

In traditional WANs, traffic is often prioritised based on predetermined routing protocols. SD-WAN, however, allows organisations to prioritise traffic based on specific applications and performance requirements, optimising network performance.

Security

Traditional WAN architectures primarily rely on firewalls to secure network traffic. On the other hand, SD-WAN integrates sophisticated security features such as encryption, intrusion detection, and traffic segmentation that are more advanced and provide better protection against cyber threats.

Deployment Time

Traditional WANs are complex to deploy, requiring a lot of manual configuration and hardware deployment at each location. SD-WAN architectures are more streamlined, easier to deploy, and often take less time to install and configure.

Access To The Latest Skills

Traditional WAN architectures have limitations in terms of scalability for fast-growing organisations. SD-WAN allows organisations to add or remove locations and scale capacity more easily without manually configuring the routers at each location.

In summary, traditional WAN architectures are often rigid, complex, and limited in terms of flexibility and scalability. SD-WAN has revolutionised networking by offering a more flexible, agile, and cost-effective solution that better suits the needs of today's digitally driven organisations. By centralising network management, allowing for easy deployment and scalability, and offering more comprehensive security features, SD-WAN is a game-changer in the world of networking.

Copyright 2023®

Benefits of SD-WAN

A move to SD-WAN delivers a range of benefits

Improved Network Performance

SD-WAN provides flexible pathways for each of your organisation's applications. optimises network traffic, preventing congestion and bottlenecks across the network, improving efficiency and reducing latency issues.

Another key benefit is the ability to enhance cloud application performance, with SD-WAN routing traffic over the shortest route, improving performance.

Enhanced Security

With SD-WAN providing routing over multiple links, aside from bandwidth utilisation, it ensures that data is securely transported, authorised, and encrypted between different locations. The simplified management of the network also improves network visibility, which can be lacking with traditional WAN architectures.

SD-WAN also delivers organisations the foundations for building SASE, and the WAN edge created a key and effective point for policy enforcement.

Cost Savings

It has been reported that by removing MPLS WAN connections, SD-WAN can reduce annual cost of ownership by up to 62%.

Aside from reducing expenditure on connectivity, a move to SD-WAN can also deliver additional costs savings due to removing the need to backhaul traffic to the data centre and simplifying management and configuration of WAN hardware such as routers, switching and firewalls.

Scalability and Flexibility

With its capabilities to utilise multiple transport options and routing, SD-WAN delivers a significant amount of flexibility to organisations, especially for remote sites. This makes connecting and managing branch locations easier and simpler, regardless of the geographical location or carrier restrictions.

In addition, the management of SD-WAN delivers flexibility in terms of scaling and adding and removing of sites and, with automatic workload balancing and congestion management, can deliver excellent performance across the entire network.

Centralised Management

SD-WAN delivers a centralised management platform that simplifies network management and control. Policies and rules can be set for applications across the network, such as CRM systems, Office 365 and even real-time traffic, such as VoIP.

Segmentation policies can be managed with a single interface and automatically adapt to any changes on the network.

Copyright 2023®

The Pitfalls of SD-WAN

What you need to be mindful of when making the move to SD-WAN

Internet Dependency

Whilst SD-WAN offers a host of benefits around flexibility and utilisation across multiple connections, this also brings to the front a level of dependency on internet connectivity.

Unless effective redundancy across connectivity and outage or disruption with an internet service provider (ISP) could result in potential downtime until service is restored.
.

Implementation Challenges

The complexities of a move to SD-WAN and ensuring that the solution is optimised to deliver the right performance and security are crucial. Internal talent and skills may lack the knowledge to deliver the solution effectively, and it is critical that teams have both the support of the vendor and MSP.

This becomes particularly important when looking to overcome challenges around cloud connectivity, troubleshooting issues and security issues.

Vendor Lock-in

While many organisations have their preferred vendors, an important consideration when making any changes to infrastructure is the interoperability between solutions.

This is particularly important when looking to implement an SD-WAN solution.

Security Considerations

With dynamic traffic routing, there is a potential loss of visibility if the solution is not adequately monitored of configured.

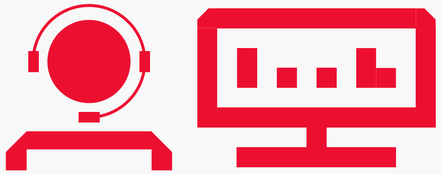
IT teams should ensure that any SD-WAN solution offers adequate Endpoint security and visibility and Moreso look to deploy network segmentation to separate both sensitive data and critical assets from the rest of the network.

Due to the dynamic nature of the solution many organisations address challenges around security by deploying secure access service edge (SASE) in parallel with SD-WAN deployment.

Copyright 2023®

Key Consideration When Choosing Your Solution

It is imperative that any significant changes to network architecture are carefully thought out and planned out, and with a move to SD-WAN, a number of things need focus and consideration.



Assess Organisational Requirements

Take the time to undertake a full review of your requirements, assess the current network capability and capacity and create a plan for what the solution would need to deliver in terms of performance, security, scalability, and any budgetary constraints.

Hybrid of Pure SD-WAN

Do you want to deliver a hybrid WAN solution, dropping internet connections alongside the existing MPLS network? Whilst this can deliver performance, reliability, and security advantages, it can be more expensive and does not eliminate costs associated with MPLS.

In addition, a hybrid WAN solution isn't designed with mobile communications or cloud at its heart and, therefore requires further investment and strategies to integrate and secure these services into the enterprise network.

Network Architecture Compatibility

Will the potential solution align with the current organisation architecture and future growth. What are the potential challenges or changes required around connectivity to ensure you can benefit from the solution.

Copyright 2023®

Features to consider when choosing your solution

When investigating and comparing SD-WAN feature sets here are some key features to look for.

Remote Site Functionality

Assess what functionality you require at remote sites, your current routing solutions may offer a diverse range of functionality including QoS, Dynamic routing, VPN, access control and event management. Any SD-WAN solution will need to be able to deliver all of these things and deliver high-speed bandwidth across multiple transports, including MPLS, Internet, 3G/4G/LTE and 5G.

Ability to Optomise Applications

A key feature of SD-WAN is the ability to enhance and optimise the performance of your applications. You need to ensure that any solution can recognise the applications used across the organisations and be able to monitor performance across the WAN. This also applies to your communications traffic such as video, voice, and SaaS applications

Control of Bandwidth & Pathways

With SD-WAN automatically routing traffic and reliance on ISP's having capacity, resilience and effective failover is critical. Your solution needs to be able to direct traffic based on your policies in the event of any changes to the network.

Enhancing Security with Segmentation

It is important that steps are taken to fully understand any potential security vulnerabilities and with traffic moving between remote sites and the data centre it is imperative that measures like microsegmentation is available. This will restrict the movement of any malicious actor by limiting movement across the network.

Encrypting Traffic

With less reliance on VPN it is imperative that any SD-WAN solution you choose can encrypt the WAN traffic based on policy. There are also considerations around automated key rotation that can add additional layers of security across the network.

Automation and Orchestration

Ensure any solution offers automated management of the SD-WAN to provide seamless monitoring, troubleshooting, repair, and other key functions to ease any management burdens.

Copyright 2023®

Features to consider when choosing your solution

Simple Branch Deployment.

Ensure the solution delivers a simple deployment to remote offices, enabling non-technical staff to simply power, connect and the device can configure itself.

Security at the Edge

With the changes to network topology that SD-WAN delivers, remote offices now connect directly to the internet. This means that considerations around security at each remote site need to be reviewed. This could mean deployment of next-generation firewalls that deliver security functionality essential in todays digital world.

Copyright 2023®



Evaluating SD-WAN Vendors

How do you make the right choice with your technology partner?

When investing in a solution like SD-WAN, it is important to undertake a significant amount of due diligence on any proposed solution and partner.

Asking the right questions and fully understanding current needs and the future will be essential in switching to SD-WAN alongside the right partner.

There are several key considerations and questions to ask when selecting a vendor/partner these include.

- **Will the product/solution integrate well with my existing infrastructure?**
- **How can I leverage and use the partner/supplier relationship to make the transition seamless and painless?**
- **What experience and expertise does the partner/supplier in delivering SD-WAN?**
- **What are my drivers for SD-WAN, and will the partner/supplier be able to support these?**
- **Does the vendor solution allow for interoperability or scalability to meet future demands?**
- **Does the partner/supplier offer services required to support my project/ongoing service requirements?**
- **What training and support will be offered/provided by the partner/supplier?**

Copyright 2023®

About FourNet

FourNet works with some of the most secure, critical and commercially driven organisations in the UK.

Our expertise is in transitioning and integrating complex, legacy systems to deliver the latest communication, collaboration, and contact centre capabilities.

We provide the knowledge and technical expertise to help our customers achieve their digital transformation and customer experience goals. FourNet's Intelligent Managed Service frees up time for our customers to focus on running their business, without having to worry about their communications infrastructure.

Our Infrastructure Partners

Cisco Partner
Master Security Specialized
Master Collaboration Specialized
Gold Provider

Extreme networks
DIAMOND PARTNER

ENGAGE
FORTINET EXPERT PARTNER

Easy To Procure

Crown Commercial Service Supplier

Nominated Supplier

CYSYLLTU CYMRU CONNECTING WALES
Cwsmer – Cysylltu – Cydweithio
Customer – Contact – Collaborate

HM Government G-Cloud Supplier

Jisc

Scottish Government
Riaghaltas na h-Alba
gov.scot

Crescent Purchasing Consortium

Achilles UVDB QUALIFIED

Copyright 2023®

FourNet®

Copyright 2023®