

SD-WAN migration in a connected world

Overcome implementation issues with our top tips for SD-WAN deployment

Software-defined networking (SDN) is at the forefront of today's networking evolution, allowing organizations to virtualize their network infrastructure to provide greater agility, business flexibility and cost savings. SDN in the wide area network (SD-WAN) has emerged as the optimum approach for organizations looking to take full advantage of the benefits offered by cloud and internet services.

Not plug-and-play

SD-WAN, however, is not a plug-and-play proposition. It needs a detailed understanding of your organization's existing infrastructure and applications for success. But there is much to be gained, because a properly implemented SD-WAN gives organizations insight and control over applications, robust edge-to-edge security and improved end-user performance.

Modern IT infrastructure is wide-ranging and complex, which means that your SD-WAN project requires careful planning and integration. The solution needs to manage multiple network access types, such as wireless, MPLS, dedicated and broadband internet, and route many different types of traffic securely according to enterprise policies.

SD-WAN may sound like a simple concept, but you are in fact designing and building a complex network that needs to be carefully executed to fulfil expectations and provide optimum performance.

Critical steps to a smooth SD-WAN transition

Every organization wants to deploy SD-WAN with minimal disruption to their day-to-day business operations. To help you succeed, we've put together the critical steps for a frictionless SD-WAN implementation. They draw on our experience of deploying the technology for many different companies across multiple sectors.

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SD-WAN solutions offer multiple benefits over traditional WAN architecture. Moving to SD-WAN has never been easier with NTT.

Analyze your IT estate to get 'SD-WAN ready'

You need to fully comprehend your IT estate and how it all works together. This includes business applications and associated priorities, traffic patterns and flows, cloud services in use, software-as-a-service models, and how and where to connect to all of these.

Combining multiple poor access types does not make a good network

Simply bonding together multiple connections does not make for a quality SD-WAN implementation. If they are poorly thought out and executed, you will be very disappointed. You need to take the quality and capability of the access lines into consideration to ensure that application performance expectations are met. For example, you might want to guarantee low-latency access for a voice over internet protocol (VoIP) application. In addition, a higher bandwidth access type will be required for video broadcasting. A service provider with the relevant experience will be able to help you right-size your network design.

Look at how SD-WAN will integrate into your current infrastructure

SD-WANs do not cover all of the network functionality. You will need to consider how you can integrate SD-WAN into your wider infrastructure during the design process. This analysis should highlight application and protocol usage to better understand routing and bandwidth. Application performance improvements are achieved by prioritizing the packets on your network and this can only be achieved with detailed application recognition and classification.

Think about how you will right size your underlay connections, whether you have enough valid IP addresses for the deployment and how you will use internet access to support applications with the required levels of performance.

Ensure SD-WAN fits into your cloud strategy

Cloud connectivity is a critical issue. Ensure your SD-WAN will operate in your chosen clouds such as Microsoft Azure and Amazon Web Services. Some SD-WAN solutions will only provide a path to public cloud providers using a central hub-style internet breakout, others only through a local internet breakout. Also, these solutions may not be optimized for either latency or performance, or support only a limited selection of cloud providers. You should carefully consider this otherwise you may not realize the benefits that SD-WAN can deliver.

Map the connectivity flows of your applications

Mapping the connectivity flow is essential to setting up routing policies for deploying SD-WAN. Establish a detailed design and set policies to ensure that bandwidth is allocated to comply with security and business priorities. Study your application usage and be clear on routing, bandwidth and performance requirements. Apply intelligent path control to create a platform that provides the users with the best possible application experience.

Use SD-WAN migration as an opportunity to update your security policies and business best practices

During the design and test phase, it is essential to test your application path steering changes against current and future corporate security and compliance policies. SD-WAN provides

a platform for you to make more use of the public internet, but it also brings risks. Using the internet could expose you to hacking or other attacks if the correct protection and practices are not put in place. For example, effectively deploying appropriate encryption and containment policies is an imperative step to ensure corporate data is secure.

Selecting the right SD-WAN vendor

With a plethora of SD-WAN technology vendors now in the market it is easy to be confused about which one would be the best fit for your organization. Many vendors claim to offer SD-WAN capabilities but miss key features that might be critical to your WAN, or may lack the level of global support your organization may need. Be careful to analyze the different feature-sets and support capabilities on offer from vendors, including appliances and uCPE options, and consider how well they align with the requirements you have for your WAN and its management. Engage with vendors, where appropriate select your shortlist, and run tests to validate which technology is the best fit for your purpose.

Focus on the business outcomes that you need from your WAN and consider working with a managed services provider (MSP) who can identify the right-fit SD-WAN solution that would be consumed as a service. The right MSP will tailor the solution to enable your business outcomes.

In addition, an MSP with a multi-vendor SD-WAN offering can bridge different SD-WAN technologies to prevent vendor lock-in and provide integration with other network features and services chaining, including security and other features.

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Near **real-time streaming network analytics** that refresh reports **every 60 seconds** and includes **DVR replay functionality**.



Cloud-based secure web gateway and SASE security services activated and deactivated **on-demand in minutes via a self-service portal**.



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AI-ops, self-healing and predictive network analytics operations that detect and **alert 95% of issues** before they impact business health with **99% of trouble tickets proactively opened**.

Consider the skills gap

The skills gap may be one of the most significant operational challenges for companies embarking on their SD-WAN journey. A network overlay requires expert knowledge of SD-WAN policy and configuration parameters including enterprise applications grouping, routing and prioritization in a highly granular and flexible way. Continuous policy fine tuning is also important to ensure the network continues to support the enterprise applications as they evolve. This SD-WAN policy life cycle management requires skill and knowledge across multiple disciplines.

Those not properly trained and experienced in these capabilities face a potentially steep learning curve as they grapple with a new software defined networking environment that also requires tight collaboration between network, application and security teams. Consider the maturity of your teams, whether you have the right skills and operational know-how internally, or need to engage a managed services provider that will allow you to focus your resources on strategic initiatives rather than operationally run your new SD-WAN network.

Carefully plan your deployment and consider running a pilot

An SD-WAN isn't simply about connecting points. An SD-WAN implementation is an intrinsic part of the business and requires greater design and planning than a traditional network. Run pilots to work out any pain points, determine that the network design supports your required application priorities, and that you are utilizing the correct network access types. This will help you accelerate an effective SD-WAN roll out across the organization.

Prioritize sites and applications for migration

Prioritize the sites and applications that will benefit most from early SD-WAN migration. Think about where applications are hosted and the key locations in your network. This will help you design your migration plan. For instance, regional branches can be aggregated to cloud gateways or regional breakout points to provide public cloud interconnection or secure internet breakout in a cost-effective manner. Determine which of your key applications will most benefit from an SD-WAN design and which breakout points create the best access to these applications.

In addition, if your business needs to connect with highly regulated regions such as China, then consider how you will comply with government restrictions.

Continually monitor your network during the deployment phase

A verification and validation of the solution is essential to see how the network will perform under pressure. Also, you should monitor the ability for remote branch traffic to leverage both public and private connectivity in an active-active connection mode; verify that business-critical traffic is being steered across the best performing paths across your WAN, while least important traffic makes use of the most cost-effective routes. Having a clear and concise monitoring system for your applications is essential to ensure your objectives are met.

Ensure that you have efficient network monitoring

Use data collected from your SD-WAN monitoring systems to provide full visibility of your WAN and application performance. The rich data it provides allows you to tune application and network policies to ensure that your network aligns with the priorities of your business and its needs, both now and in the future.

In addition to these critical steps, you may want to consider taking advantage of other new emerging network solutions, such as Network Functions Virtualization (NFV). Most SD-WAN solutions today don't support compute-intensive functions such as gateways for remote access, application acceleration and security features (beyond VPN tunnelling).

Why NTT?



NTT is the only global service provider innovating and investing heavily in every layer of network infrastructure, from mobile, internet, cloud, data center, security and SD-WAN services. This enables us to offer comprehensive and differentiated end-to-end networking solutions with enhanced quality of service for end-user and customer experience.



Global Tier-1 IP network and over 1,000 local ISP relationships interconnecting the world's biggest businesses, enabling digital collaboration and direct connectivity to cloud and SaaS providers.



Single pane of glass and integrated network management platform for managed SD-WAN, SD-LAN Infrastructure, VPNs, multicloud connectivity, remote access services, private 5G networks secure web gateway and SASE services.

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