

The Guide to **SD-WAN**



Consolidated[®]
communications

CONNECTING **YOU** BETTER

Traditional WANs and Today's Network Challenges

Traditional wide area networks are built on rigid architectures comprising expensive routers and switches, which are optimized for private data center applications. These hub and spoke WAN topologies are unable to accommodate today's network requirements, as SaaS applications, cloud services, virtualization, and IoT increase bandwidth demands and change traffic patterns.

In typical branch office deployments, private-circuit connections are used to backhaul traffic through the enterprise data center, adding latency, degrading application performance and driving up private network bandwidth costs (**Figure 1**). MPLS brings a high quality of service, but with the tradeoff of limited capacity, higher cost and long deployment lead times. Broadband provides fast deployments and greater capacity, but sacrifices some reliability.

As enterprise network traffic continues to double every year, fueled by the growing number and proportion of cloud-based applications, these rigid network architectures will be unable to keep pace (**see Figures 2 & 3 on the next page**). They are difficult to manage, don't scale easily, and provide little flexibility when trying to adapt dynamically to changing network traffic patterns and performance requirements.

Figure 1: Backhauling Enterprise Traffic to the Enterprise Data Center

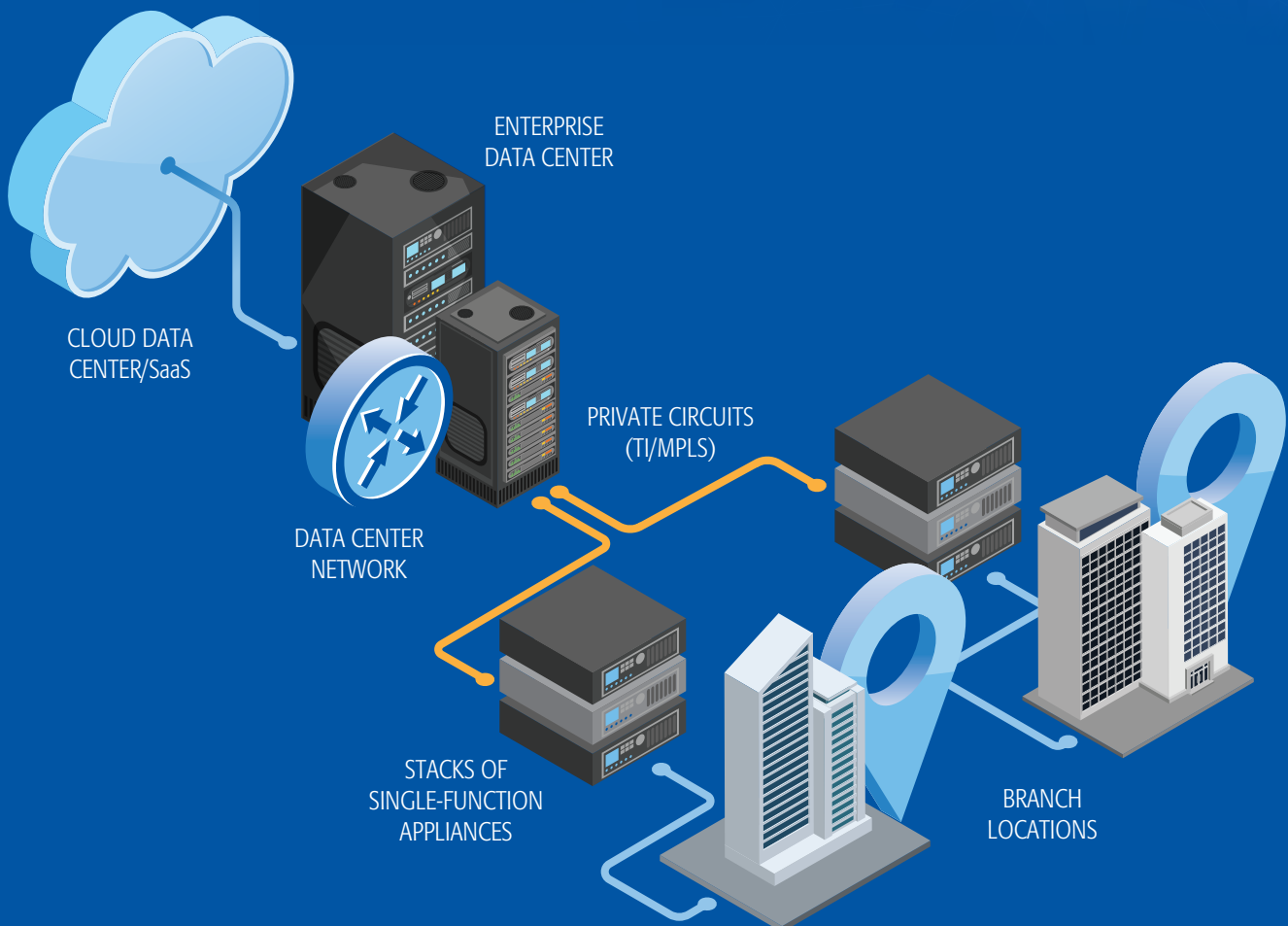
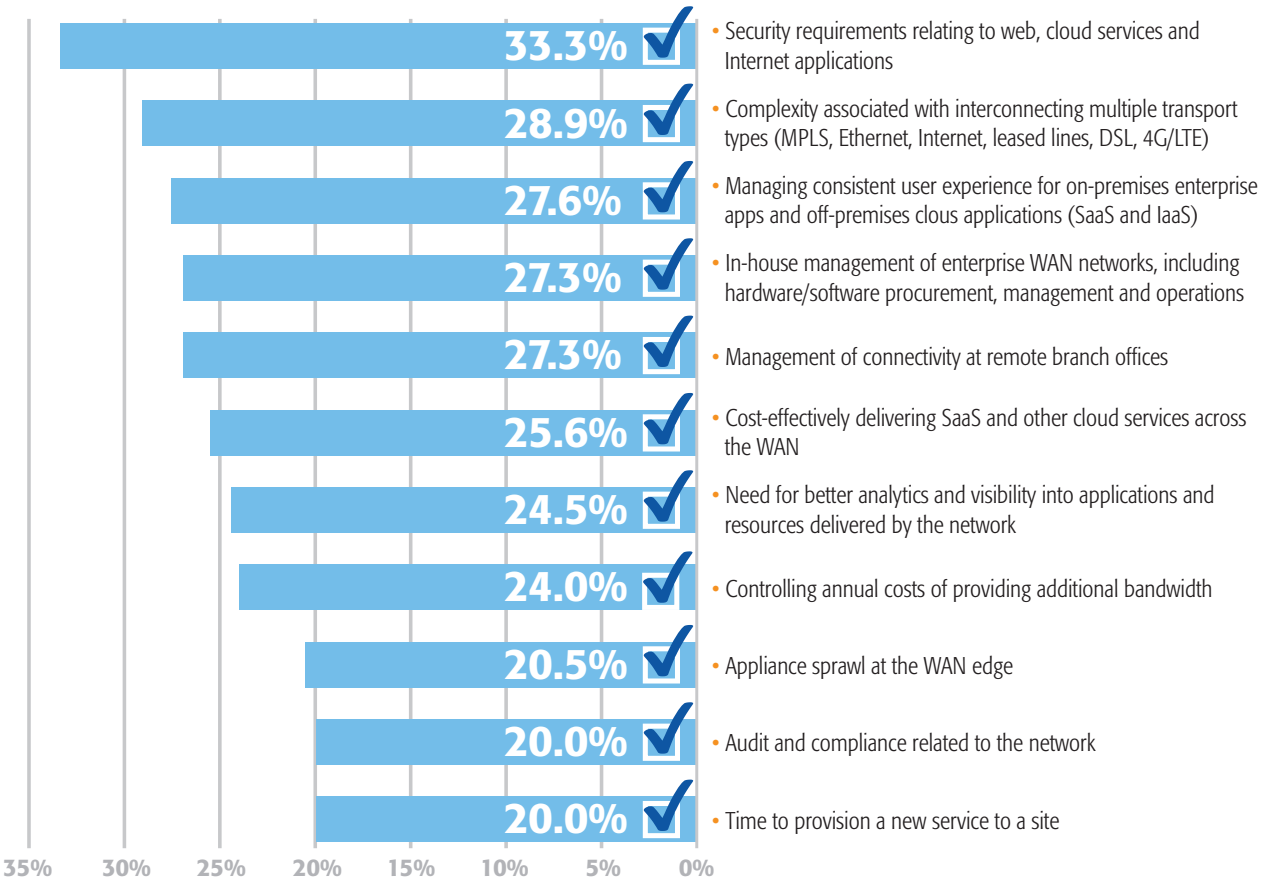


Figure 2: Cloud Security & WAN Complexity

Cloud Security & Rising WAN Complexity are Today's Top WAN Challenges

Based on the following list, select the three most important WAN challenges that best relate to your company.

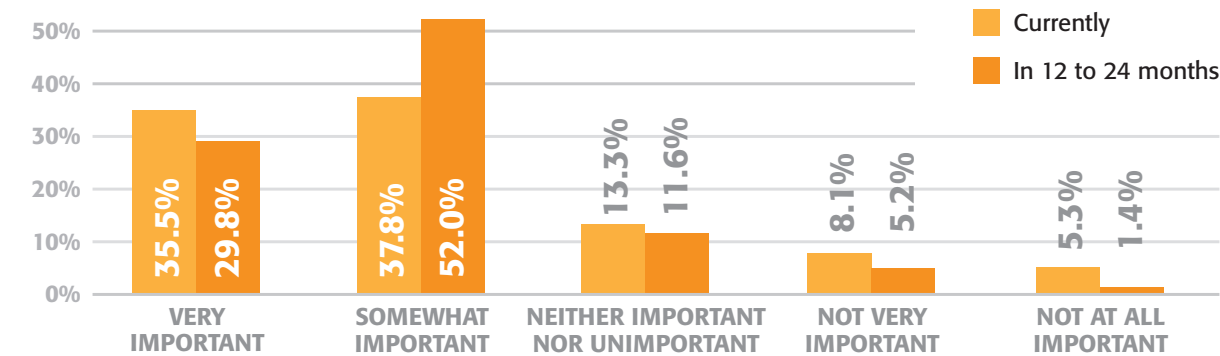


n = 1,202 Source: IDC's Software-Defined WAN Survey, August 2018

Figure 3: Cloud Usage Influences WAN Technology Choice

Cloud Usage Continues to Grow as a Driver of WAN Technology Choice

Please rate the importance of SaaS/Cloud services in your organization's WAN technology choices now and in 12 to 24 months.



n = 1,202 Source: IDC's Software-Defined WAN Survey, August 2018

Addressing Network, Application, and Cloud Complexity

Software-Defined Wide Area Networking (SD-WAN) offers a revolutionary approach – based on virtualization – to solving the challenges associated with today's networks. By separating the control and data planes, SD-WAN reduces reliance on expensive hardware while providing greater network visibility and control. According to a 2018 Frost and Sullivan report, 69% of surveyed organizations indicated they had plans to replace branch routers with SD-WAN appliances.

More simply stated, SD-WAN leverages the benefits of cloud, the inexpensive bandwidth of broadband, and the existing network infrastructure to cost-efficiently transmit data, video, and voice traffic across the organization.

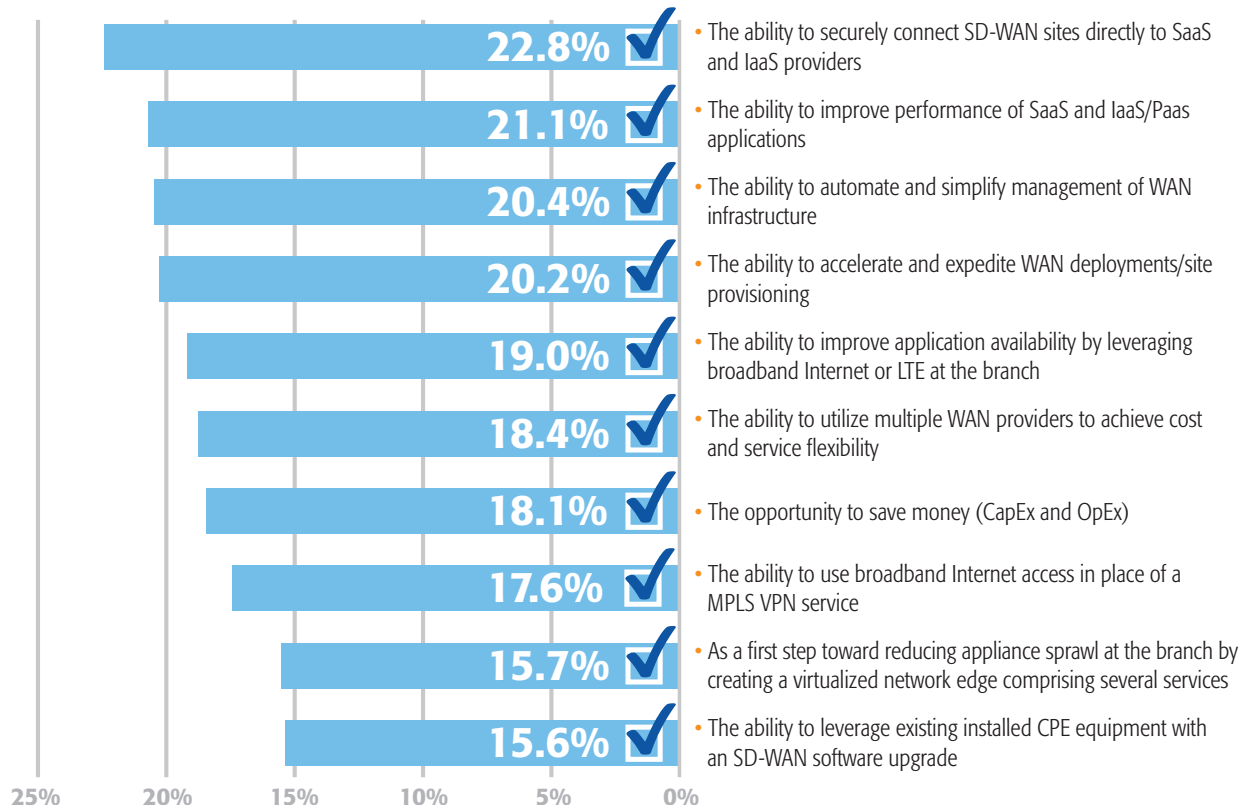
More simply stated, SD-WAN leverages the benefits of cloud, the inexpensive bandwidth of broadband, and the existing network infrastructure to cost-efficiently transmit data, video, and voice traffic across the organization. SD-WAN can, for instance, dynamically move traffic across optimal paths – MPLS, broadband, LTE – on the network while ensuring that applications, such as video, get the bandwidth they need to reduce jitter and latency. Sophisticated solutions will steer traffic to the best available link. If transmission issues are detected, on-demand remediation can be applied to ensure that critical applications get the priority they require.

With SD-WAN, IT managers can deploy reliable and secure Internet-based connectivity – with its benefits of ubiquity, high bandwidth and low cost – quickly and easily (Figure 4).

Figure 4: Top SD-WAN Adoption Drivers

Secure Cloud Connectivity, Performance of Cloud Apps, and Simplified WAN Management are Top Drivers of SD-WAN Adoption

Which of the following are the top two use case criteria for adopting an SD-WAN technology solution?



n = 1,202 Source: IDC's Software-Defined WAN Survey, August 2018

The Benefits of SD-WAN

Whether your organization is a large, multi-site operation or a small to mid-sized company with a single location, chances are good that a reliable, high-performance network is critically important. SD-WAN can help improve your network performance and lower the risk of costly network downtime with a scalable solution that provides several key benefits that address today's IT needs.

Performance – SD-WAN provides continuous monitoring and on-demand remediation, limiting or eliminating system downtime. Improved network performance is just one of many positive outcomes your organization may realize from using SD-WAN.

Visibility – Even if your business needs only a single-site solution, you can still benefit from improved visibility into your network when using SD-WAN. Both single-circuit SD-WAN and multi-circuit SD-WAN implementations offer continuous monitoring. This means the performance is automatically profiled and configuration changes can be deployed quickly and easily when necessary. Because link quality and capacity are monitored on a continuous basis, there is real-time feedback when remediation is necessary.

Moves, Adds and Changes – The enhanced visibility that comes with SD-WAN can also help you recognize where to make changes to your network and your future strategies. When you use SD-WAN, those changes are also fast and seamless. This means you can grow to use more bandwidth and avoid downtime.

Flexibility and Scalability – SD-WAN can accommodate changing networking demands, giving you flexibility and peace of mind - you don't need to make costly IT infrastructure changes as your business needs evolve.

Application Quality of Experience (QoE) – Application aware overlay QoE follows pre-defined traffic classes, business policies and priorities.

Security – SD-WAN can improve your network security with zero-touch provisioning, secure connections, IPSec tunnels, and more.

Dynamic Multi-Path Optimization (DMPO) – DMPO means network traffic is directed to different channels automatically when something isn't working as planned. Even if you don't take advantage of that functionality, your company can still realize the performance benefits associated with SD-WAN. That's because SD-WAN provides on-demand fixes or remediation for priority applications that are network sensitive when problems occur. When it is impossible to "steer around" problems, these remediation measures are applied automatically so you can be confident your company's mission critical applications will get the bandwidth they need.

Cost Efficiency – In many cases, SD-WAN offers network performance and information security cost efficiencies. Those efficiencies will depend on the extent to which you use the technology.

Uptime and Reliability – No matter what type of business your IT function supports, network outages are never acceptable. When employees, contractors, and others users rely on cloud-based applications and solutions to meet business needs, network outages can be more than just painful; they can actually cripple the business. Implementing SD-WAN and adding a circuit with a service level agreement on a separate network can help your organization reduce risk, ensure business continuity, and limit or even avoid the detrimental effects of unplanned downtime altogether.

How are companies using SD-WAN?

Regardless of business size, it's important to use bandwidth efficiently. That can be particularly true for small businesses. Consider these several scenarios:

Scenario 1: An organization is moving many of its critical applications to the cloud.

SD-WAN allows IT managers to create policies and rules to ensure that cloud applications get the bandwidth they require. Application traffic can be prioritized and directed toward the optimal network connection.

Scenario 2: A large organization wants to reduce costs associated with MPLS connections.

Considerable savings can be realized by moving some (or all) WAN traffic onto broadband Internet. SD-WAN makes it easy to set up secure, hybrid WANs that blend MPLS with broadband Internet in any number of topologies. Also, an administrator can use policy-based management to set priorities and automatically balance traffic across WAN links as circumstances change.

Scenario 3: A company is expanding its footprint through acquisition.

SD-WAN can be used as an overlay while retaining the existing network services of the acquired company. With this overlay, IT managers can apply appropriate policies to optimize network performance.

Scenario 4: Employees are streaming video and music and uploading content to their social media accounts during their lunch breaks – or maybe throughout the day – and impacting the network performance of more critical applications.

With SD-WAN, IT organizations can quickly create and enforce policies around application priority and usage. More bandwidth can be allocated to critical businesses applications while iTunes, YouTube and Facebook traffic can be given lower priority – or shut off completely.

Scenario 5: A small or medium business needs to optimize WAN capacity.

With SD-WAN, companies can leverage both public and private network services – lower priority traffic can be shunted to the public Internet while critical applications get the bandwidth and performance they require on the private network.

Scenario 6: An IT audit determines that the corporate WAN requires greater resiliency.

SD-WAN is ideal for creating WAN resiliency in hybrid network environments with multiple connections to a single site. Network traffic can be engineered for balance, but provide automatic fail-over in the event a connection goes down.

Considering SD-WAN for Your Organization? Six Critical Considerations

SD-WAN has moved from the early adoption phase to a more general acceptance among organizations of all sizes (Figure 5). And, while the benefits of SD-WAN are widely recognized, it remains imperative that organizations keep six critical considerations in mind when evaluating and selecting SD-WAN and transport solutions:

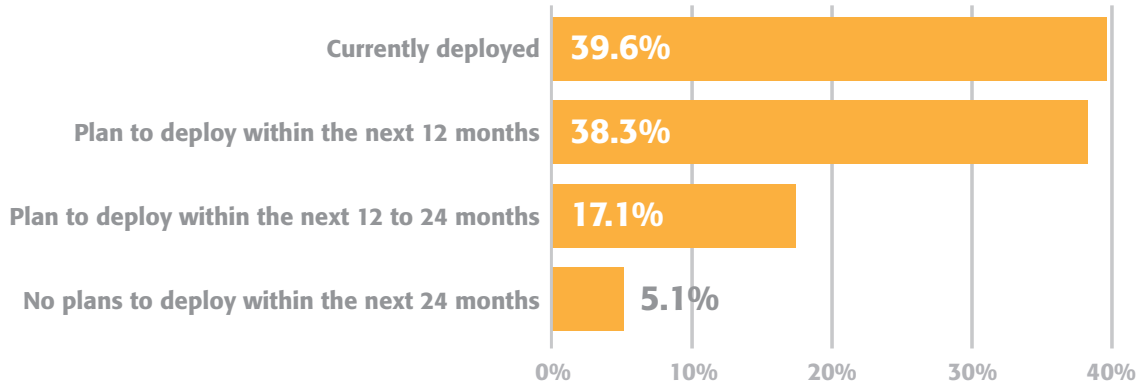
1. How tight are the latency, jitter or packet loss requirements of the planned applications? Many modern applications are highly resilient in the face of modest network variations. Failing to understand the true requirements may lead to buying more expensive bandwidth than is actually necessary.
2. How will a transport solution meet the business's compliance mandates, especially in highly regulated verticals such as healthcare (HIPAA), financial services (Sarbanes-Oxley) and retail (PCI)?
3. Are there specific accommodations, such as segmenting or layering confidential or sensitive information that must be designed into the transport and SD-WAN plan?
4. How will the chosen service provider meet its quality of service agreements? Will a hybrid transport solution help ensure quality performance in the face of network outages?
5. What mix of upstream and downstream bandwidth is needed to optimize application performance and bandwidth expenditure? Many cloud applications—particularly consumer applications, training, Wi-Fi and media streaming applications—drive far higher downstream capacity needs.
6. How can traffic be classified—and how will the service provider deliver classifications—to ensure that business critical or regulatory compliant transactions always have the available bandwidth they need?

SD-WAN has moved from the early adoption phase to a more general acceptance among organizations of all sizes.

Figure 5: High Interest in SD-WAN

Intent to Deploy SD-WAN Continues to be Very High

Does your organization currently use or plan to use SD-WAN technology solutions?



n = 1,202 Source: IDC's *Software-Defined WAN Survey*, August 2018

Conclusion

The WAN is transforming!

As enterprises seek to improve agility, reduce costs and adapt to the demands of cloud-based application delivery, SD-WAN offers great promise as an alternative to older networking technologies. With zero-touch deployment, enterprise-grade network performance, security, visibility, and management control over both public Internet and private networks, SD-WAN addresses the growing complexity of today's WANs.

