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The way it should be.

# SDWAN EVALUATION CRITERIA

## SOFTWARE DEFINED WIDE AREA NETWORKING

## 1. WHAT IS **SDWAN**?

Some who've built a Wide Area Network remember the pain of having to source the appropriate hardware. Maybe fewer remember the high price tag on the equipment. However, anyone whose ever deployed WAN equipment remembers the time spent configuring and reconfiguring each and every device.

These same pains used to exist in the realm of desktop computing. Virtualizing desktops allowed uniform deployment and remediation practices, drastically reducing the time necessary to spin up or restore users. Likewise, being able to contain a user experience within just a slice of a single, larger capacity machine means you no longer need a 1:1 ratio of Users to Units of Expensive Hardware.

**Software Defined Wide Area Networking** (SDWAN or SD-WAN), takes these realizations from desktop virtualization and applies them to network switches and routers. **SDWAN is a new paradigm for networking based on the virtualization of routers, switches, and other networking components.**
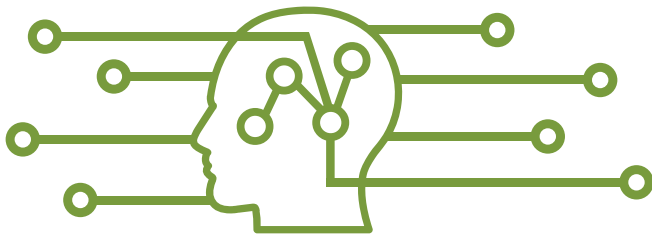
"This is one small step **for routers**, one giant leap **for networking.**"

## 2. WHAT ARE **THE IMPLICATIONS** THAT MAKE THIS **SO BIG**?

Many people start to question at this point because they've heard a lot of hype about **SDWAN**, they're excited, and they're expecting a humongous game changer. They hear the basic premise of what **SDWAN** does and it sounds so simple that they're not sure they've heard correctly.

The reason there is so much energy around such a small change is because this one step is a clear step across the threshold to a universally scalable solution. To steal from Neil Armstrong: **This is one small step for routers, one giant leap for networking.**

By virtualizing the network intelligence, you gain all the same benefits of separating the programming from the hardware that we saw with virtualizing desktops. At this level, the hardware only has to be capable of doing what it is told, meaning you'll have a less complex and subsequently less costly hardware selection process (mostly X86 architectures). New site deployments and MTTR become exponentially simplified when your worst-case scenario is just drop shipping a basic device to the location, having anyone plug it in for you over a FaceTime session, and uploading a pre-defined image that will then self-administer the device. And you don't have to worry about your preferred brand of hardware going EOL or even being out of stock, because you no longer actually care about the hardware — no matter which comparable device you select, it will load the same software and function exactly the same.

Beyond just that, however, the ripples this change is causing through the Telecommunications and Networking industry truly are massive. It's now possible to deploy a mesh of reliable, but low-intelligence (and therefore low cost) devices, and simultaneously get all the functionality of a carrier-grade MPLS network. With the inclusion of VPN and link-aggregation capabilities, **SDWAN** allows us to manage a single, coherent network across various connections from various providers. For many organizations, these types of networks rival, or even exceed, the capabilities of more expensive MPLS networks, and the less-flexible and non-coherent stateful failover functions that many firewalls provide.

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## 4. THE FRAMEWORK

Leaders like to skip to the end, and just want to know who the top two or three provides are in the **SDWAN** space (or any given technology). The problem with that is three fold. **SDWAN** is still finding its place in the public market. **SDWAN** is still being defined and is a broad spectrum and so are the ways different providers are approaching their delivery and capabilities. Finally, **SDWAN** can accomplish multiple business **OBJECTIVES** and yet different client use cases will result in various providers excelling in different scenarios. Hence the framework provided is what will help leaders determine which provider will best serve the **OBJECTIVES**.

- **SDWAN** plays a **ROLE** in your business by performing a number of **FUNCTIONS** that serve your **OBJECTIVES**.

- By knowing what business **OBJECTIVES** you seek, you can define which **ROLES** **SDWAN** needs to play for you.

- By knowing which **ROLES SDWAN** should fill, you can define the appropriate **FUNCTIONS** that need to be performed.

- This list of needed **FUNCTIONS** is your **SDWAN** Evaluation Criteria.

## 5. START WITH YOUR BUSINESS

**BUSINESS OBJECTIVES**

Before we even begin discussing the actual technology, we need to get clear on what **SDWAN** can do for you.

- Improved Network Fault Tolerance
- Improved Network Performance
- Reduced Network Cost
- Provider–confirmed expiration dates on all of your current telecom contracts (most carriers automatically renew you!)

**CURRENT ENVIRONMENT**

Let's take stock of your current network to see where **SDWAN** can bring you the most value.

- Number of locations and users per location
- How you're currently networking your sites.
- **Firewall strategy:** Premise, Centralized, or Network.
- How many, and what, types of data flow across your network.
- What types of routing protocols are currently being used on your network.
- What network resiliency/recovery options are currently in place.
- Provider confirmed expiration dates on all of your current telecom contracts (most carriers automatically renew you!)

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## 6. THE 4 ROLES OF SDWAN

SDWAN achieves your Objectives by fulfilling one or more of these following roles:

### STANDARDIZATION

This **ROLE** should be the starting point for all **SDWAN** solutions. The ability to deploy the same technology across all locations, regardless of the actual underlying infrastructure, is, after all, precisely what **SDWAN** is about.

### RESILIENCY

This **ROLE** focuses on both single-site and enterprise survivability. It often makes use of a provider gateway to keep operations alive, and is exponentially empowered by having at least two connections, per location, that are physically diverse (network, medium, pathway). The primary purpose of this **ROLE** is to aggregate the multiple links into a single, hyper-resilient network connection. The combination of multiple pathways and the aforementioned provider-side gateway allows **SDWAN** to manage a persistent inbound/outbound connection through conditions that cause traditional services to fail.

### OPTIMIZATION

Solutions that fill this **ROLE** are successful when they reduce the amount of transmitted data and/or provide the least possible delay between request and response. Policy-based traffic shaping (QoS/CoS) and various data reduction techniques are the most effective (and therefore common) features for this category.

### APPLICATION

This **ROLE** focuses solely on protecting the performance of a small selection of mission-critical applications (usually just one). This type of **SDWAN** will use many of the **FUNCTIONS** from the other three **ROLES**, but this **ROLE** is easily distinguished by its behavior to optimize a single application or service, at the expense of other data on the network and therefore a streamlined experience, lending itself to networks built around a single app or service (e.g. DaaS).

**KNOWING WHICH ROLES YOU WANT SDWAN TO FILL FOR YOUR ORGANIZATION IS ESSENTIAL TO MAKING THE RIGHT SELECTION.**

## 7. SDWAN FUNCTIONS

Core Parameters define the most fundamental aspects of all **SDWAN** solutions, and are always the first points to consider, no matter what **OBJECTIVES** or features are sought. Fault Tolerance decisions speak to the ability to withstand interference and interruptions, and are designed to keep connectivity open for normal behaviors. Performance decisions speak to the ability to optimize normal behaviors, and are designed to improve data flow, either through real-time responsiveness to changes in network conditions, reduction of data transmissions, or mitigation strategies for performance-affecting problems (latency, packet loss).

Some features may fall into multiple categories, while others may be so closely integrated that one may not make sense without the other.

- **CORE PARAMETERS** include 4 specific decisions, the first of which being whether it ought to be Premise or Cloud Based.

- **FAULT TOLERANCE** gives 5 specific **FUNCTIONS** to select from, including the level of Forward Error Correction that will be applied.

- **PERFORMANCE** consists of no less than 7 Functions to evaluate, such as Multi-Link Aggregation.

- **COST,** always a concern for a business, asks 4 important questions about your expectations, to ensure the right balance is found. Ultimately the question is: **Do you want to take on this burden yourself?**