

SD-WAN Market Overview

Simplify and Secure Your Complex Network

01/02/2017

Executive Summary

According to a March, 2016 article in Network World, IDC expects SD-WAN sales to approach \$600 million this year. By next year they will more than double to \$1.4 billion, and almost double the year after to \$2.6 billion by 2018 [1]. As with any evolving technology gaining momentum, marketplace questions exist around selection, design, and deployment. Increased feature functionality and a decrease in time and labor to deploy, have created widespread interest.

Scope

This landscape overview looks at how SD WAN is simplifying traditional WANs. Based on end user deployment there appear to be four categories of customer focus which are driving deployment.

- The Remote/Branch Office
- WAN Management
- WAN Security
- WAN Topology

Based upon client feedback our landscape explores six of the leading SD-WAN solutions on the market today. This overview also makes predictions of future trending and recommendations based on these predictions..

Cisco's WAN solutions is the market leader in the space. Their IWAN suite is a transport-independent design, intelligent path control, application optimization, and secure encrypted communications between branch locations [2].

While noting that fact, our focus will be on 6 providers which many of the carrier providers have chosen to white label.

Were you Aware?

- The market for SD-WAN vendors is easily broken into three buckets: Incumbent networking vendors who are rolling out SD-WAN products (i.e Cisco, with Dell, HPE and Juniper expected to join soon); WAN specialists who extend their products to include SD-WAN (Silver Peak, Talari Networks); and then pure-play SD-WAN startups (VeloCloud, CloudGenix, Ocedo, and Viptela) [3]
- By the end of 2019, 30% of enterprises will use SD-WAN products in all their branches, up from <1% today. [4]
- A 250-branch WAN over three years is estimated to cost \$1,285,000 in a traditional WAN architecture, but \$452,500 with an SD-WAN deployment [5]
- Security, reliability, and high bandwidth are network technology necessities, but 40% to 55% of firms struggle to deliver secure, reliable performance cost efficiently. [6]
- Enterprise WAN bandwidth demand is growing 30% per year driven by video, cloud and real time collaboration [7].

Marketplace

Overview - The SD-WAN Landscape

Current WAN architectures are not meeting top technology priorities. Network managers place high importance on security, high bandwidth capacity, and reliability. Current WAN architectures fall short of the ideal. Compounded with legacy challenges, network managers reported that hybrid WAN architectures exacerbate the problem of ensuring consistent security and performance in a cost-efficient manner. Increased utilization of cloud services and additional applications while delivering highly available connectivity are also key challenges [8]








What are some of the advantages of an SD WAN Solution?

- Improved Transport Options
- Better Security
- Intelligent Pathway Control
- Automatic Provisioning

Most of these solutions are appliance based. An appliance is installed at each remote location. These edge devices are managed and configured by a secure centralized cloud-based management console that sets access, routing and configuration policies for the entire enterprise WAN across all media types. For our landscape review, six leading SD-WAN products were selected based on feature set and market presence; CloudGenix, Riverbed SteelConnect, Talari, Velocloud, Versa and Viptela.

In addition to Cisco IWAN, there are many other companies including 128 Technology, Aryaka, Bigleaf, Cato Networks, Citrix, Cradelpoint, Ecessa, Elfig, Fatpipe, Glue Networks, Mushroom Networks, Nuage Networks, Silver Peak and Sonus Networks who offer solutions in the SD-WAN market. The six that were selected are meant to provide an overview of market capabilities.

Simplifying Remote Office Connections

Simplifying Remote Office Connections						
SD WAN Landscape						
Zero-Touch Install	✓	✗	✓	✓	✓	✓
Remote Device Elimination	✓	✗	✓	✓	✓	✗
Service Chaining/Insertion	✓	✓	✓	✓	✓	✓
Automated IP Address Discovery	✓	✓	✓	✓	✓	✓
Brown out Resiliency	✓	✗	✓	✓	✓	✓
MOS Scoring	✓	✗	✓	✓	✓	✗
Edge Devices	Appliance/ Virtual	Appliance/ Virtual	Appliance/ Virtual	Appliance/ Virtual	Appliance/ Virtual	Appliance/ Virtual
						

More and more is being demanded of the Branch office WAN leg.

Many SD-WAN solutions seek to solve this problem with plug and play appliances, These appliances can be easily connected at the remote site by local non technical staff. The device autoconfigures after install. This is known as a Zero touch install and one of the advantages of SD WAN. Also know as Universal Edge Devices, these appliances include firewalling, routing, and switching stack functionality.












































Network Managers also want features like Intrusion Prevention Systems or Anti-Malware. These features can be added through a technique called service chaining or service insertion. In this scenario the SD-WAN appliance provides a virtual space that can host other advanced feature applications in their own VMs. Many of the SD-WAN vendors in this study have already established partnerships with various vendors to provide these advanced features out of the box. Customer consistently want these 6 features:

- **Zero Touch Installation**
- **Remote Device Elimination**
- **Service Chaining/Insertion**
- **Automated IP Address Discovery**
- **Brown Out Resiliency**
- **MOS Scoring**








Monitoring and management of WAN traffic is being reshaped by SD WAN as well., SD WAN provides a control plane platform. previous standalone manual functions such as command line configuration, access rules and manual monitoring are easier to manage from this control device.

These platforms have 6 key characteristics:

- **Cloud-based Management Platform** - The platform manages WAN operations from a cloud management console
- **Application Awareness** - The platform is aware of what applications reside where, what connectivity they require and what access should be granted to its users or dependent systems and allows network operators to easily adjust priority across the network to any application.
- **Centralized Policy Engine** -The platform uses its application awareness and roles-based policy engine to configure complex access topologies.
- **Analytics & Reporting** - The platform can collect key metrics, performance analytics and give visibility to both network operations teams and security analysts as needed. Real-time and historical reporting eliminating the need for packet capture tools or other complex and time consuming traffic monitors
- **API Exposure** - The platform exposes a RESTful API allowing it to integrate with other existing operations, network or security monitoring and management platforms giving operations staff a "single pane of glass"
- **Export to SIEM** - Describes the capability to natively export logs to a Security Information Event Management (SIEM) tool.

SD WAN Landscape	Simplifying WAN Management					
						
Cloud Based Management						
Application Awareness						
Centralized Policy Engine						
Analytics & Reporting						
API Exposure						
Export to SIEM						
Edge Devices	Appliance/ Virtual	Appliance/ Virtual	Appliance/ Virtual	Appliance/ Virtual	Appliance/ Virtual	Appliance/ Virtual
						

Simplifying WAN Security

Simplifying WAN Security						
SD WAN Landscape						
Built In FW Capabilities	✓	✓	✓	✓	✓	✓
Built In IPS Capabilities	✓	✓	✗	✓	✓	✓
AES-128 Encryption	✓	✓	✓	✓	✓	✓
AES-256 Encryption	✓	✗	✓	✓	✓	✓
Edge Devices	Appliance/ Virtual	Appliance/ Virtual	Appliance/ Virtual	Appliance/ Virtual	Appliance/ Virtual	Appliance/ Virtual
						

Traditional security devices operate on a signature basis and assume that the number of ingress/egress points are limited to the points in the network where one of these tools is placed. But that's not the case at all any more. Today, partner connections, consumer devices and direct Internet access from a branch have significantly changed the number of attack points in a network and made it hard to defend.

Customers consistently request SD-WAN solutions deliver four key security features:

Built-in FW Capabilities - The solution provides basic firewall rule functionality.

Built-in IPS Capabilities - The solution provides a basic Intrusion Prevention System functionality.

AES-128 Encryption - The solution provides the Advanced Encryption Standard supporting 128 key length.








AES-256 Encryption - The solution provides the Advanced Encryption Standard supporting 256 key length.

FIPS 140-2 Certified - U.S. Government computer security standard used to accredit cryptographic modules.

Reshaping the WAN

Today's architectures demand performance including at the branch level. Applications are distributed, collaboration tools abound, and cloud access is mandatory. Utilizing software to define and manage the WAN provides on demand switching decisions. Network managers can instantly control real time changes in traffic demands, priority, connection quality and available bandwidth.




















Customers are requiring SD WAN to deliver 6 key features:

Simplifying the WAN						
SD WAN Landscape						
MPLS Replacement	✓	✗	✓	✓	✓	✓
Centralized Configuration	✗	✓	✓	✓	✓	✓
Hosts Own POPs	✓	✗	✗	✓	✗	✗
Multiple Connection Types	✓	✓	✓	✓	✓	✓
Traffic Steering	✓	✗	✓	✓	✓	✓
Support Legacy WAN Interface	✓	✗	✗	✓	✓	✗
Opex/Capex	Both	Capex	Capex	Both	Opex	Capex
						






















SD WAN and Telcos

According to Telecom Ramblings, all major telecom carriers are deploying or will soon deploy SD-WAN for their next-generation hybrid WAN network made from public Internet and MPLS.

Here are the telcos and the platforms they are deploying thus far:

SD WAN Telco Landscape					
					
ATT					
BT					
Colt					
CTL					
Deutsche Telekom					
Earthlink					
Masergy					
MetTel					
Sprint					
Telstra					
Vonage					
Verizon					

Clarify360's Quick Look Comparison

	MPLS	SD-WAN	Internet VPN
Price	\$\$\$\$\$	\$\$	\$
SLA			
Zero Touch			
Visibility			
Rapid Deployment			
Central Management			
Direct to Cloud			
Virtual Service Delivery			

Clarify360's View

SD WAN Outlook Today

Driving SD WAN adoption are three items:

- **Capex Savings**
- **Cost Reduction**
- **Increased need for business agility.**

We see these trends continuing. While SD WAN revenues are going to cannibalize existing MPLS revenues, the telco providers have the ability to lower internal infrastructure costs as well as operational expenses due to the ability to virtualize some of these costs. Additionally telcos will continue to invest in the SD WAN space because they will be able to launch new services such as IoT and Smart City on these newer platforms.

Managed services placed on top of SD WAN platforms will continue to evolve. An SD WAN topology enables enterprises to move forward more proactively with cloud services.

As this is an evolving space, we're bound to see consolidation, changes in partnership and acquisition. Virtual CPE will continue to reshape the existing routing and switching marketplace.

SD WAN Outlook Next 12-18 months

- **Shift in focus from control plane only optimization to control plane plus data plane optimization**
- **Virtual Network Functions will transform SD WAN from simple cost reduction to full WAN performance management**
- **Aggregators or managed providers with multiple bandwidth options will have the edge over single threaded providers**
- **SD WAN architectures optimized for cloud will dominate the market in 2017**
- **Business Applications will drive SD WAN adoption**
- **IoT and M2M will begin a transitional integration with SD WAN**

Vendor Selection

How do you help clients migrate from an MPLS solution to an SD WAN solution?

Can you support a pilot in my existing environment?

Can 4-nines (99.99 percent) reliability and performance predictability be delivered if only Internet connections are used?

Can a single flow be striped across multiple disparate links?

Can all links be used whenever they are working, or just for designated traffic types?

Can business priorities and policies be enforced to ensure critical application traffic always has an adequate share of network resources?

How is performance and reliability for SaaS and public cloud services traffic assured?

Does the solution work with our existing MPLS WAN?

Does the SD-WAN solution offer extensive network-level and application-level visibility and reporting?

Technology Assessment—4 Key Areas to Review

Architecture

- What are the minimum and maximum number of branches supported?
- What is the interoperability between SD WAN and non SD WAN environments?
- Is the platform physical or virtual?

Management

- How easy is it to add a new location to an existing SD WAN environment?
- Can changes be made during business hours without disrupting the environment?

Deployment








- What are the vendor's largest deployments to date?
- Can we talk to other customer's with a deployment of the same size?
- Does the solution support legacy WAN interfaces—DS1, E1, DS3, E3? What interfaces are not supported?

Security








- How is direct Internet access (DIA) supported, and which security services does the solution offer or integrate with?

Appendix








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Sources

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