Market Guide for WAN Edge Infrastructure

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WAN edge infrastructure is changing rapidly as I&O leaders responsible for networking face dynamic business requirements, including changing application architectures. This guide covers a fragmented vendor and technology landscape, with a focus on the increasingly relevant topics of SD-WAN and vCPE.

Key Findings

- The WAN edge infrastructure market includes vendors that provide network functions designed for branch locations, such as routing, WAN optimization and SD-WAN.

- Many enterprise are struggling with the price, performance and flexibility of their traditional WANs, which is exacerbated by proliferation of public cloud applications.

- A wide range of innovative WAN technologies has been delivered to the market in the last 24 months.

- The market for branch office network functionality is shifting from dedicated routing and WAN optimization appliances to SD-WAN and vCPE platforms.

- Ample differences exist between vendor products, including architecture, functionality, business models, deployment methods, management, usability, visibility and cost.

Recommendations

I&O leaders responsible for planning, sourcing and managing network infrastructure should:

- Avoid making strategic WAN decisions in a siloed, incremental fashion, solely within the networking group.

- Prefer SD-WAN solutions or vCPE-based platforms when refreshing or replacing WAN edge equipment, instead of just refreshing existing router-based platforms.

- Pilot SD-WAN solutions for branch offices to redress device complexity and/or high WAN transport or equipment costs.

- Explore vCPE offerings as an alternative to traditional, mission-specific appliances when refreshing network edge devices or renewing managed network service deals, or to reduce branch appliance sprawl.

Strategic Planning Assumption

By year-end 2017, more than 40% of WAN edge infrastructure refresh initiatives will be based on virtualized customer premises equipment (vCPE) platforms or software-defined WAN (SD-WAN) software/appliances versus traditional routers (up from less than 5% today).

Market Definition

This document was revised on 12 April 2017. For more information, see the Corrections page.

WAN edge infrastructure enables network connectivity between enterprise locations, and is typically procured by senior networking leaders within an infrastructure and operations (I&O) organization. This market has evolved from traditional branch routers (often called "customer edge [CE] routers" in a Multiprotocol Label Switching [MPLS] implementation), and is undergoing dramatic change.

WAN edge infrastructure now incorporates a widening set of network functions, including secure routers, SD-WAN, WAN path control and WAN optimization, along with traditional routing functionality. WAN edge functionality can exist on or off the enterprise premises, and is typically sourced from network equipment providers (and their channels), network service providers (NSPs) or managed service providers (MSPs). However, WAN edge infrastructure does not include the underlying network transport service (for example, MPLS, broadband internet, Long Term Evolution [LTE]). WAN edge infrastructure should be agnostic to the underlying network transport provider (i.e., carrier). However, it can be bundled with NSP/MSP offerings.

The following characteristics underlie the WAN edge infrastructure market:

- **Typical business outcomes —** The fundamental business outcome is connectivity between enterprise users, applications and services that reside in distributed locations. Locations include (but aren't limited to) headquarters, branches, corporate data centers, colocation/hosting facilities and cloud providers.

- **Market —** WAN edge infrastructure provides network functions that support connectivity for distributed locations (typically branches). This market includes functionality that Gartner defines as routers, secure routers, WAN optimization controllers (WOCs), WAN path controllers and SD-WAN.

- **Typical buyers —** Within the enterprise, CIOs, CTOs, the vice president of I&O, the director of networking, and network and telecom managers are typically the buyers of WAN edge infrastructure.

- **How buyers shape their buying decisions —** When selecting WAN edge infrastructure, buyers typically focus on several factors, including price, performance, form factor, deployment

options, supplier availability, ease of management, visibility/analytics, customer support/ experience, brand visibility and overall product architecture.

- **Deliverables —** The primary deliverables include network functions that enable connectivity for users at branches. Typical network functions include edge routing, secure routing and VPN, WAN optimization, WAN path control, and SD-WAN. These functions can be delivered to the enterprise as dedicated hardware appliances (such as router, WOC, gateway, SD-WAN edge-device) or as a software instance of these functions (a virtualized network function [VNF]), and may reside at the customer premises, in provider points of presence (POPs) or as a network-based/cloud service.

- **How providers package, market and deliver —** Buyers typically source their WAN edge products either directly from network equipment suppliers, or via a network or managed service provider (that is, as a managed service). WAN edge infrastructure can be procured via leasing, subscription or consumption-based pricing models. Further, there is a diverse set of deployment options for these networking functions, including via hardware appliances, software (VNF) or cloud-based services.

Market Direction

The days of the traditional hub-and-spoke WAN architectures being good enough for most enterprises are long gone. Enterprises must alter their WAN architectures in support of new digital business initiatives and adoption of public cloud services, which are forecast to grow 86% between 2014 and 2018 (see "Digital Business and Cloud Demand New WAN Architectures"). The rationale behind this is that migration of applications to the public cloud can lead to distinct challenges, including:

- Network performance problems as traffic is backhauled, which typically increases latency. In a recent survey, 46% of organizations still backhaul internet traffic to a central location,[1] although client interactions would indicate the number is higher than 50%.[2]

- WAN expenses increase due to backhauled internet traffic. Clients report that backhauled internet traffic represents 50% to 80% of overall traffic on their MPLS networks.[2]

Thus, we estimate that more than 50% of Gartner clients will deploy hybrid WANs within two years.
[1,2] However, this complicates the overall operation and management of branch office WAN equipment, as traditional WAN edge functions are difficult to manage at scale in a hybrid architecture.

Help! I Hate My WAN

Many enterprises are experiencing substantial WAN challenges in terms of cost, flexibility, performance and/or availability. This was reiterated in polling at Gartner's 2016 data center conference, where a 6:1 ratio of respondents described their WAN as either "brittle and slow,"

"prone to outage" or "too expensive," versus "cost-effective and agile" (n = 95; see Figure 1). Not surprisingly, WAN-related client inquiries have increased 27% between 2014 and 2016.

Figure 1. How Would Your CEO Describe Your Corporate WAN?
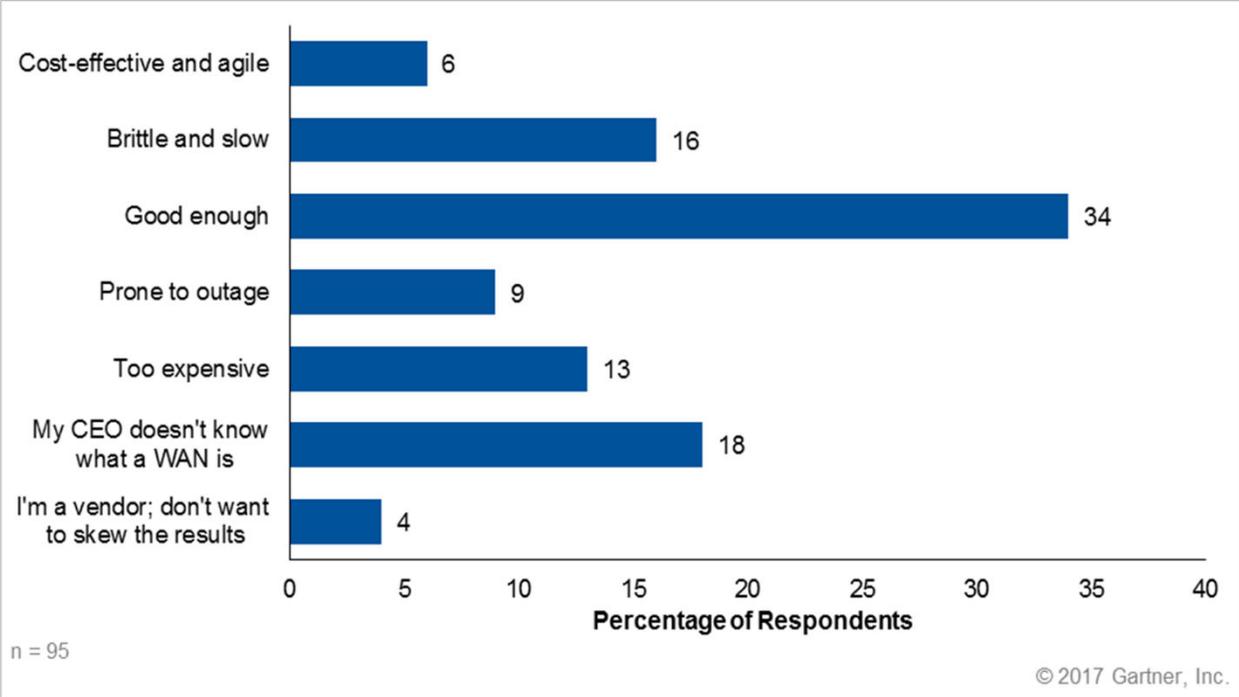
Polling conducted at the Gartner Data Center Conference, December 2016

Source: Gartner (March 2017)

Transforming the WAN From Fragile to Agile

The result of the above factors is a changing mix of WAN edge functionality required at the typical enterprise branch. In other words, the days of simply needing a router at all locations and WAN optimization at some branches are behind us. In 2010, it was common to see WAN functions wrapped in hardware and delivered to the enterprise. Currently, functions can be delivered via hardware, software and/or over the top (OTT) as a cloud-based service, and we anticipate this dynamism to continue for several more years, until at least 2020 (see Figure 2).

Figure 2. Transformation of the WAN Edge
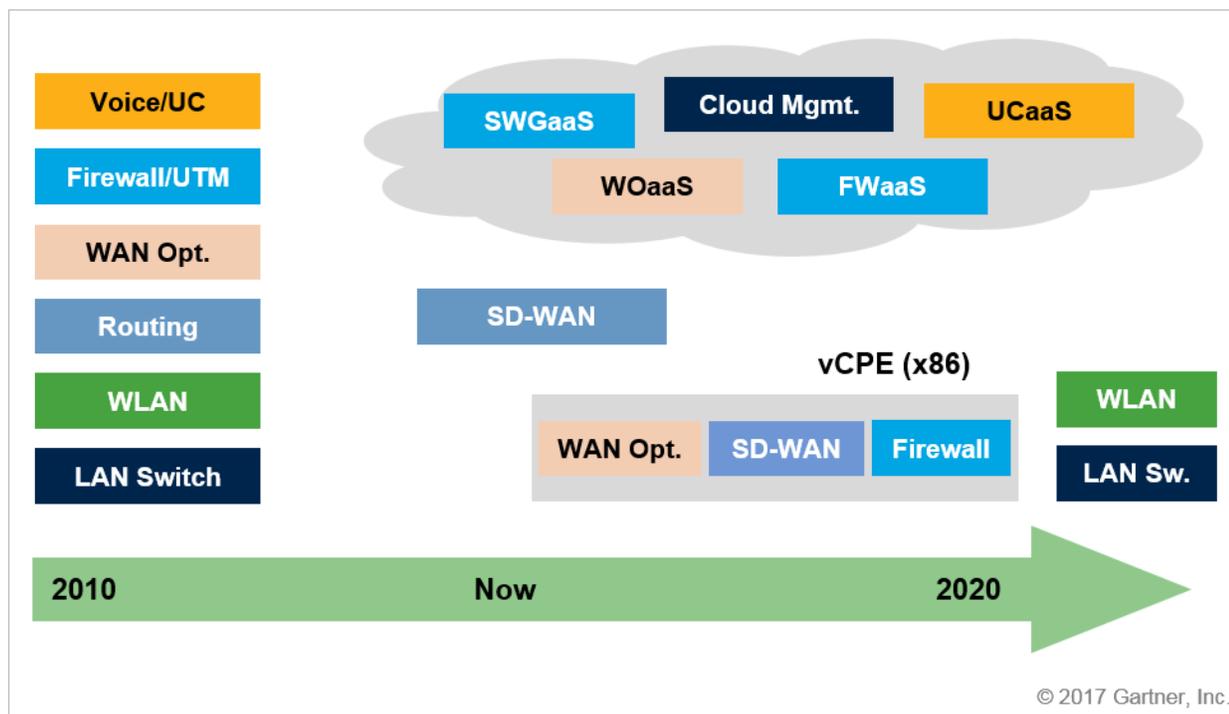
FWaaS: firewall as a service; LAN Sw.: LAN switch; SWGaaS: secure web gateway as a service; UC: unified communications; UCaaS: unified communications as a service; UTM: unified threat management; WAN Opt.: WAN optimization; WOaaS: WAN optimization as a service

Source: Gartner (March 2017)

Market Analysis

Moving forward, Gartner views SD-WAN and vCPE as key technologies to help enterprises transform their networks from fragile to agile. We believe that emerging SD-WAN solutions and vCPE platforms will best address enterprise requirements for the next five years, as they provide the best mix of performance, price and flexibility compared to alternative hardware-centric approaches. Specifically, we predict that by 2018, more than 40% of WAN edge infrastructure refresh initiatives will be based on vCPE or SD-WAN appliances versus traditional routers (up from less than 2% today).

SD-WAN

SD-WAN products offer a lightweight replacement to traditional routers. They provide dynamic path selection, along with improved management and zero-touch configuration, along with VPN capability (see "Technology Overview for SD-WAN"). The benefits of an SD-WAN approach are substantial, compared to traditional WAN products, including reduced capital and operational costs at the WAN edge, improved provisioning times and enhanced branch uptime.

Global SD-WAN adoption has grown from a handful of paying customers in June 2014 to an estimated 3,000 as of February 2017,[1,2,3] with a heavy concentration in the retail and financial services verticals. While we estimate that less than 5% of the Gartner client base has deployed SD-WAN to date, we are seeing mainstream interest in the technology — inquiries have tripled in the last year — and anticipate 25% of enterprises will adopt SD-WAN in the next two years.[1,2] We forecast SD-WAN to grow at 59% compound annual growth rate (CAGR) through 2020 to become a $1.3 billion market (See "Forecast: SD-WAN and Its Impact on Traditional Router and MPLS Services Revenue, Worldwide, 2016-2020"). However, SD-WAN does not currently always address the full complement of functions needed by all enterprise branches, as many commercial products in the market lack robust security, voice and WAN optimization functionality; moreover, the majority of SD-WAN products don't support legacy physical interfaces, such as T1/E1.

NFV/vCPE Platforms

Virtualized customer premises equipment, or vCPE, refers to the use of industry-standard, typically x86-based devices, rather than function-specific appliances, for enterprise network edge functions, including WAN edge routers, WOCs and firewalls. vCPE is one delivery method for an NFV deployment (see "Network Function Virtualization Will Enable Greater Managed WAN Agility and Flexibility"). vCPE will increase the agility of enterprise networks, enabling them to respond to changing needs more rapidly. It should reduce the costs of adding additional functions at the WAN edge, reduce the effort and risk of deploying new functions, and allow the enterprise to consider smaller, specialist vendors.

Today, vCPE is primarily a carrier-driven technology, but as carrier offerings become mainstream, enterprises will be involved in the decision-making process regarding which network functions are run on the NFV/vCPE platform. Further, organizations that rely on carrier services will likely be consuming services that are underpinned by vCPE.

Routing and WAN Optimization

While SD-WAN and vCPE represent areas of high growth at the WAN edge, dedicated routers and WAN optimization controllers are still widely deployed in the enterprise. In fact, many SD-WAN deployments today haven't actually replaced traditional routers; they've supplemented them for a variety of reasons, including risk aversion and lack of support for legacy T1/E1 interfaces. However, moving forward, these dedicated hardware devices are evolving from stand-alone markets to features in emerging SD-WAN products and within vCPE platforms.

Deployment Options

After many years of limited options, there are now several deployment methods available for the enterprise to consume network functions .

- **Dedicated hardware appliance —** This is the traditional style of deployment, in which a single network function is delivered as a turnkey integrated hardware appliance. This is still very common today, as many enterprises have dedicated physical routers and WAN optimization

hardware appliances. Cisco 800 series routers and Riverbed SteelHead physical appliances are common examples.

- **Multifunctional integrated platform —** This is a platform that combines proprietary hardware and software to deliver multiple functions, such as WAN optimization and routing, and may extend beyond just WAN functions to include voice, security or x86 compute capacity. Cisco 4000 series ISR and Riverbed SteelHead SD are examples.

- **Virtualized network function (VNF) —** This is a software-based instance of a network function that can be delivered on an x86-based computing platform. Nearly all routing, WAN optimization and SD-WAN vendors deliver a VNF version of their software.

- **Virtualized CPE platform (vCPE) —** vCPE is a multifunctional platform to support an NFV architecture, designed around industry standards to run multiple virtual functions, with possibly different vendors' functions in the same device. The platform allows multiple VNFs to be installed, and typically makes use of industry-standard x86 devices, rather than function-specific appliances. Juniper Networks' NFX is an example of a hardware vCPE platform.

- **Cloud-based OTT —** This is where a network function is delivered via a cloud platform, and the enterprise subscribes to the functionality. An example is Aryaka, which provides WAN optimization as a service.

Consumption Models for WAN Edge Infrastructure

Enterprise consume WAN edge infrastructure functionality in multiple ways, including:

- **DIY —** Enterprise owns and manages WAN edge functionality itself.

- **NSP** — Network service provider manages edge, usually as an extension to WAN transport.

- **Managed network service (MNS) —** Managed network service providers include system integrators (SIs) and MSPs, which in some cases allow organizations to bring your own access (BYOA).

- **Hybrid —** Combination of at least two of the above.

On a global basis, most WAN edge infrastructure is provided as a managed service, either via a service provider or SI. Conversely, in North America, the predominant way of managing WAN edge infrastructure for a large enterprise is DIY.[1,2,4]

In this research, we focus primarily on WAN edge functionality that can address multiple consumption models. Further, WAN edge infrastructure must be agnostic to the underlying transport model. For example, Verizon offers a managed SD-WAN offering underpinned by either Viptela or Cisco solutions. In this Market Guide, we will focus on the network infrastructure vendor, such as Viptela or Cisco, not on the managed service delivered by Verizon.

Representative Vendors

The vendors listed in this Market Guide do not imply an exhaustive list. This section is intended to provide more understanding of the market and its offerings.

More than 40 vendors offer WAN edge infrastructure to the enterprise, thus we are describing only a representative subset of vendors and approaches.

Aryaka

www.aryaka.com

California, U.S.

Aryaka has over 500 paying customers for its WAN products (by Gartner's estimate). This vendor provides the following capabilities within its WAN edge infrastructure portfolio: routing, SD-WAN, advanced firewall and cloud gateways. Aryaka also operates a global network backbone. Aryaka is representative of a vendor that specializes in an OTT delivery model for its services.

In 2009, Aryaka began by offering WAN optimization as a service, via its global backbone of POPs. It subsequently enhanced its offer to include on-premises capabilities, including routing and SD-WAN. The vendor also provides security services, such as firewalling and gateways to many leading cloud services, from its backbone network with 28 global points of presence. Aryaka's offer is delivered as a fully managed service, and it will also manage last-mile connectivity. However, Aryaka's solution provides very limited customization, since it is delivered as a service. Based on our analysis, Aryaka is a fit for globally distributed midmarket organizations that desire SD-WAN and/or WAN optimization delivered as a managed service.

Cisco

www.cisco.com

California, U.S.

Cisco has over 150,000 paying customers for its WAN products, which are predominantly router-based platforms (Gartner estimate). Cisco has an established global installed base, including several large-scale customer deployments of more than 10,000 branches. This vendor provides the following capabilities within its WAN edge infrastructure portfolio: routing, SD-WAN, lightweight WOC, WOC, basic firewall, advanced firewall and secure web gateway (SWG) functionality. Cisco is representative of an incumbent router-centric vendor that is evolving its offering to address emerging requirements, including SD-WAN.

Cisco is the most visible WAN networking vendor in our client conversations. Cisco has the broadest portfolio of any vendor in this research, and can deliver routing, SD-WAN, WAN optimization and multiple security functions in both a hardware appliance or as a software-based form factor, and is one of only a few vendors to support a variety of legacy interfaces. The vendor has several product lines including its flagship product, the ISR 4000 router, managed via APIC

Enterprise Module (APIC-EM) software. The ISR can include multiple functions, including voice, WAN optimization, routing, firewall, x86 server and DNS-based security.

We observe Cisco lead with several other non-ISR products, including Meraki MX, in certain situations. Clients further report that Cisco's Intelligent WAN (IWAN) can be cumbersome to configure and manage, and consequently very difficult to scale, and we observe it to be expensive. Based on our analysis, Cisco Meraki products are a fit for organizations looking at SD-WAN and/or cloud-managed branch devices, and the vendor's ISR line of routers is a fit for organizations looking to consolidate multiple functions into a single platform.

Note: In February 2017, Cisco announced a new branch platform, the Cisco 5400 Network Enterprise Compute System for Enterprise NFV. Due to the newness of this announcement, Gartner did not analyze this product for this report.

Citrix

www.citrix.com

Florida and California, U.S.

Citrix has over 6,000 paying WAN customers (Gartner estimate), predominantly using WAN optimization. This vendor provides the following capabilities within its WAN edge infrastructure portfolio: routing, SD-WAN, and WOC functionality. Citrix is representative of a WAN optimization vendor that is evolving its offering to address emerging requirements, including SD-WAN.

An established WAN optimization vendor, Citrix has pivoted to SD-WAN as its primary WAN edge offering, with over 100 paying customers for its flagship product, NetScaler SD-WAN. Citrix now offers integrated SD-WAN and WAN optimization functions within the same appliance. However, we don't observe Citrix deployed as a replacement to WAN routers, although the vendor has recently added the necessary routing functionality to do so. Based on our analysis, Citrix is a fit for enterprises with 250 or fewer branches on their WAN that require SD-WAN or WAN optimization, especially for organizations that are heavily invested in XenApp/XenDesktop applications.

CloudGenix

www.cloudgenix.com

California, U.S.

CloudGenix has a several dozen paying SD-WAN customers (by Gartner's estimate). This vendor provides the following capabilities within its WAN edge infrastructure portfolio: routing, SD-WAN and basic firewall functionality. CloudGenix is representative of a startup SD-WAN vendor.

CloudGenix is a pure-play SD-WAN startup, and its Instant-On Network (ION) SD-WAN offering includes physical and virtual form factor products for branches. ION provides application fingerprinting and session- or flow-based path selection. The solution also provides detailed application analytics, which enables application-centric troubleshooting for network teams.

CloudGenix has worked with VMware both to integrate the deployment of its software in VMware environments and to coordinate the deployment of applications spanning the data center and the WAN. CloudGenix currently lacks WAN optimization and cloud gateways, and does not have a significant presence outside the U.S. Based on our analysis, CloudGenix is a fit for North American organizations when application-centric troubleshooting and analytics are a priority.

Cradlepoint

www.cradlepoint.com

Idaho, U.S.

Cradlepoint has over 15,000 paying WAN customers (by Gartner's estimate), predominantly via cellular/Wi-Fi routers. This vendor provides the following capabilities within their WAN edge infrastructure portfolio: routing, SD-WAN, basic firewall, SWG and cloud gateways. Cradlepoint is representative of an established cellular router vendor that is evolving its offering to address emerging requirements, including SD-WAN and OTT delivery of services.

Cradlepoint is an established provider of LTE/cellular routers with a sizable installed base in small-footprint locations, including retail. Its low-cost, compact integrated form factor cellular/Wi-Fi CPE is popular in small environments, such as kiosks or microbranches. In December 2015, the vendor acquired Pertino, which is the basis for its OTT service called NetCloud Engine (NCE). Thus, the vendor's flagship AER series routers can now be combined with the NCE services to provide additional network functions, including firewall and SWG. The vendor provides a broad set of routing and security capabilities, but lacks WAN optimization. NCE is available as a managed service only, so there is no option for on-premises-based management for NCE. Based on our analysis, Cradlepoint is a fit for organizations with smaller branch locations, particularly if LTE/cellular is a key access technology at that location.

FatPipe Networks

www.fatpipeinc.com

Utah, U.S.

FatPipe Networks has several thousand paying WAN customers (by Gartner's estimate), predominantly for WAN path control usage scenarios. This vendor provides the following capabilities within its WAN edge infrastructure portfolio: routing, SD-WAN, WOC and basic firewall functionality. FatPipe Networks is representative of a WAN path control vendor that is evolving its offering to address emerging requirements, including SD-WAN.

FatPipe Networks is an established provider of WAN path control and WAN optimization functionality, and has evolved its product to address SD-WAN functionality. Its principal WAN edge products are the Symphony SD-WAN and MPVPN families. Initially focusing on midsize enterprises, FatPipe Networks is evolving its product to meet the needs of larger enterprises. The vendor provides both physical and virtual appliances, as well as multitenant platforms, to allow service providers to create hosted services based on FatPipe Networks technology. However, it does not run cloud gateways itself. Based on our analysis, FatPipe Networks is a fit for organizations located

in North, South America and Asia/Pacific (APAC) regions that are seeking integrated SD-WAN and WAN optimization.

Huawei

www.huawei.com

Shenzhen, China

Huawei has over 10,000 paying WAN customers (by Gartner's estimate), primarily based on its router platform. This vendor provides routing and basic firewall functionality within its WAN edge infrastructure portfolio. Huawei is representative of an incumbent router-centric vendor.

Huawei's flagship WAN edge product is the AR series of routers and gateways that provide connectivity and routing functionality for branch locations. The vendor has demonstrated the capability to support very large deployments, with several 5,000-plus site customer implementations. Huawei provides a cost-effective platform that provides routing, VPN and security functionality, and has broad physical interface support, including legacy interfaces. However, Huawei currently lacks SD-WAN and WOC, although we anticipate the vendor will add SD-WAN in 2017. Based on our analysis, Huawei is a fit for organizations in Europe, Latin America and APAC looking to consolidate multiple functions into a single platform.

Juniper

www.juniper.net

California, U.S.

Juniper has over 20,000 paying WAN customers (by Gartner's estimate), predominantly for routers and security gateways. This vendor provides the following capabilities within its WAN edge infrastructure portfolio: routing, advanced firewall, a vCPE platform and SWG functionality. Juniper is representative of an incumbent security- and router-centric vendor that is evolving its offering to address emerging requirements, including vCPE platforms.

Juniper is an established vendor of branch routing and network security products; many enterprise and service providers use its products. Its SRX network gateways are available in a range of physical and virtual form factors and provide WAN edge routing and AppSecure software, which supports a wide range of security functions, including advanced firewalling and SWG. Juniper's newest WAN offering is a vCPE platform, the NFX250. Juniper offers zero-touch provisioning when used in conjunction with the vendor's Contrail Service Orchestration platform, but lacks full SD-WAN capability today. However, we anticipate the vendor adding SD-WAN functionality in early 2017. The vendor lacks WAN optimization functionality, but offers partnerships (including Riverbed and Silver Peak) to address this functionality. Based on our analysis, Juniper is a fit for large enterprises looking for a security gateway or a vCPE-based platform for their WAN edge.

Nokia (Nuage Networks)

www.nuagenetworks.com

California, U.S.

Nuage Networks has 25 to 50 paying SD-WAN customers for its Nuage WAN products (by Gartner's estimate). This vendor provides the following capabilities within its WAN edge infrastructure portfolio: routing, SD-WAN and basic firewall functionality. Nuage Networks is representative of an SD-WAN vendor targeting primarily service providers, but with capabilities that extend to large enterprise.

Nuage Networks was an internally funded startup created by Alcatel-Lucent (later acquired by Nokia), initially focused in the data center. The vendor has subsequently expanded to deliver branch functionality, via a single platform called the Virtualized Services Platform (VSP). Nuage now provides software-defined networking (SDN), SD-WAN and microsegmentation, which span both branches and data center networks. Nuage provides both physical and virtual form factors of its Network Services Gateway (NSG) WAN edge products, and also has multitenant versions of these products for service providers. Nuage uses partners such as Check Point Software Technologies, Fortinet and Palo Alto Networks for advanced security functions. Nuage lacks WAN optimization or cloud gateway services. Based on our analysis, Nuage Networks is a fit for large or technologically advanced organizations seeking SD-WAN functionality, and particularly for organizations that want to extend consistent network policies between their data center and branch environments.

Riverbed

www.riverbed.com

California, U.S.

Riverbed has over 20,000 paying WAN customers, primarily using WAN optimization appliances (by Gartner's estimate). This vendor provides the following capabilities within its WAN edge infrastructure portfolio: routing, SD-WAN, WOC, and basic firewall. Riverbed is representative of an established WAN optimization vendor that is evolving its offering to address emerging requirements, including SD-WAN.

Riverbed is a leading WAN optimization vendor that has recently moved into the SD-WAN market. Riverbed acquired SD-WAN startup Ocedo in January 2016, which forms the basis of its SteelConnect SD-WAN product. Riverbed has combined the capabilities of SteelConnect with its existing SteelHead WAN optimization products, and recently announced an integrated appliance that provides both functions. The vendor also integrates APM capability from its SteelCentral product into SteelConnect. Riverbed supports virtualized editions of both SteelHead and SteelConnect for deployment in cloud services and as a virtualized network function. Its virtual SteelHead product is available on several network service providers NFV platforms, including AT&T and Verizon, and it also has a relationship with Akamai to accelerate leading SaaS applications such as Microsoft Office 365. Riverbed lacks legacy interface support for T1/E1, and clients report their WOC products are expensive. Based on our analysis, Riverbed is a fit for all organizations seeking SD-WAN, WAN optimization or both within an integrated device.

Silver Peak

www.silver-peak.com

California, U.S.

Silver Peak has over 2,000 paying WAN customers (by Gartner's estimate), primarily using WAN optimization. This vendor provides the following capabilities within its WAN edge infrastructure portfolio: routing, WOC, SD-WAN and basic firewall functionality. Silver Peak is representative of an established WAN optimization vendor that is evolving its offering to address emerging requirements, including SD-WAN.

Silver Peak pivoted to SD-WAN as its flagship offering in mid-2015. Silver Peak now has more than 300 paying customers for its SD-WAN solution, called Unity EdgeConnect. EdgeConnect provides SD-WAN with embedded path conditioning and the option for WAN optimization capability. The vendor offers both physical and virtualized versions of its WAN optimization and SD-WAN appliances. We don't typically observe Silver Peak deployed as a replacement to WAN routers, although the vendor has this capability. Based on our analysis, Silver Peak is a fit for enterprises headquartered in APAC, North America or Europe that require SD-WAN and/or WAN optimization.

Talari Networks

www.talari.com

California, U.S.

Talari Networks has over 300 paying WAN customers (by Gartner's estimate), primarily for WAN path selection usage scenarios. This vendor provides the following capabilities within its WAN edge infrastructure portfolio: routing, SD-WAN and basic firewall functionality. Talari Networks is representative of WAN path control vendor that is evolving its offering to address emerging requirements, including SD-WAN.

Talari Networks began in 2007 as a WAN path controller vendor, and developed a rich set of dynamic path selection and multipath management capabilities. It subsequently enhanced its Adaptive Private Networking software to deliver full SD-WAN functionality. Talari Networks products are available in either physical or virtual form factors. Talari Networks does not currently offer WAN optimization or turnkey integration with leading SWG vendors, and it does not provide its own cloud gateways. However, we anticipate the vendor adding WAN optimization and SWG functionality within the next year. Based on our analysis, Talari Networks is a fit for midmarket enterprises seeking an SD-WAN, especially when a diverse range of link types is required.

VeloCloud

www.velocloud.com

California, U.S.

VeloCloud has over 500 paying SD-WAN customers (by Gartner's estimate). This vendor provides the following capabilities within its WAN edge infrastructure portfolio: routing, SD-WAN, lightweight WOC, basic firewall and cloud gateways. VeloCloud is representative of a startup SD-WAN vendor.

VeloCloud is a pure-play SD-WAN startup gaining adoption and share in the market. The vendor's solution is composed of edge software or hardware appliances, cloud gateways and requisite management. The vendor's cloud gateways provide increased visibility, security and performance for applications in the public cloud, such as Office 365. VeloCloud has gained rapid adoption in the market via inserting its software with service providers and MSPs, with several marquee wins, including AT&T and Sprint. Based on client feedback and Gartner analysis, VeloCloud's SD-WAN UI is excellent. However, some midmarket clients have reported challenges with VeloCloud sales and support. Cisco is an investor of VeloCloud[5] and the two companies have also partnered in this market. Based on our analysis, VeloCloud is a fit for organizations headquartered in APAC, North America or Europe for SD-WAN functionality, especially those who are deploying applications in the public cloud.

Versa Networks

www.versa-networks.com

California, U.S.

We estimate Versa Networks has a few dozen paying customers. This vendor provides the following capabilities within its WAN edge infrastructure portfolio: routing, SD-WAN, and advanced firewall functionality. Versa Networks is representative of a startup vendor targeting primarily service providers, but with capabilities that extend to very large enterprises.

Versa Networks is a startup focused on delivering WAN edge functionality primarily in virtualized form. Versa Networks does not currently offer hardware appliance versions of its products, but can be run as a VNF on vCPE platforms, or packaged with validated third-party hardware, including white-box vendors. Its products are especially suitable for deployment in vCPE platforms and/or white-box environments, and the vendor has been selected by several NSPs, including CenturyLink and Tata Communications. Versa Networks offers routing, SD-WAN and security VNFs, with plans to add additional functions in the next 12 months. Versa Networks does not currently offer WAN optimization, although it is planned. Based on Gartner analysis, Versa Networks is a fit for enterprises that operate very large infrastructures looking to deploy white-box branch hardware, and/or want to combine SD-WAN and security on the same platform.

Viptela

www.viptela.com

California, U.S.

Viptela has 100 to 150 paying SD-WAN customers (by Gartner's estimate). This vendor provides the following capabilities within its WAN edge infrastructure portfolio: routing, SD-WAN, and basic firewall functionality. Viptela is representative of a startup SD-WAN vendor.

Viptela is a pure-play SD-WAN startup that is gaining traction and visibility in the market. Viptela is achieving growing adoption in North American enterprises, often displacing incumbents, and now has several production deployments at 1,000 or more branches. The vendor is also being used in service provider offerings, including from Verizon and Singtel. The vendor provides SD-WAN capability via vEdge routers, vSmart controllers and accompanying management platform; this capability is available via an operating expenditure (opex) pricing model only. Clients in large-scale WAN environments report that Viptela is a cost-effective and easy-to-manage alternative to traditional routers. However, Viptela lacks several capabilities, including integrated WAN optimization, SWG and support for integrated T1/E1 interfaces. Based on our analysis, Viptela is a fit for large enterprises headquartered in APAC, North America or Europe looking to deploy SD-WAN.

ZeroOutages

www.zerooutages.com

California, U.S.

ZeroOutages has several hundred paying customers (by Gartner's estimate). This vendor provides the following capabilities within its WAN edge infrastructure portfolio: routing, SD-WAN, firewall and WOC. ZeroOutages is representative of a regional SD-WAN vendor that specializes in a managed-services consumption model.

ZeroOutages delivers WAN infrastructure, which can be combined with connectivity, via a managed network services offering. Its service offers include managed transport, routing, SD-WAN, firewall and WAN optimization. The vendor manages network equipment and carrier connections on behalf of customers to create a turnkey experience but customers cannot directly adjust their configurations unless they attend training and sign a liability release. The vendor's installed base of customers primarily comprises North American midmarket organizations, but it supports hundreds of international customer locations. Based on our analysis, ZeroOutages is a fit for organizations headquartered in North America that are looking to deploy a hybrid WAN via a managed service model.

Market Recommendations

The WAN edge infrastructure market includes multiple functions, platform options and consumption models, and has seen substantial innovation in the past two years. Enterprises can incorporate these innovations to improve the performance, availability and cost-effectiveness of their WANs. To make the best decision for WAN edge infrastructure, we recommend:

1. Start with the applications. Align your WAN strategy with new business and application requirements, including application placement, before diving deep into network infrastructure technology decisions.

2. Ensure infrastructure decisions are made in accordance with long-term WAN and application architecture. Avoid making strategic WAN decisions in a siloed, incremental fashion, and solely by the network team.

3. Include new technology vendors and service options when refreshing branch router equipment or renegotiating service provider contracts. Use a router refresh or replacement initiative to consider other options, such as SD-WAN alternatives or vCPE-based carrier offerings.

4. When negotiating a new carrier contract, look beyond the current MPLS services and bandwidth requirements to options like carrier internet gateways or cloud connection services.

5. Do not assume one size fits all. Different organizations and different business units/branches within an organization will have dramatically different needs for WAN functionality. Create tiered branch offerings (i.e., small/medium/large), taking application requirements into account, and tailor WAN edge functions to these specific requirements.

6. Don't believe the hype from many vendors that "MPLS is dead." For many enterprises, hybrid internet/MPLS WANs offer the best mix of performance, reliability and security for at least the next three years.

Gartner Recommended Reading

Some documents may not be available as part of your current Gartner subscription.

"Digital Business and Cloud Demand New WAN Architectures"

"Network Design Best Practices for Office 365"

"Hype Cycle for Networking and Communications, 2016"

"Technology Overview for SD-WAN"

"Cool Vendors in Enterprise Networking, 2015"

"Cool Vendors in Enterprise Networking, 2016"

"Hybrid Will Be the New Normal for Next Generation Enterprise WAN"

"Network Function Virtualization Will Enable Greater Managed WAN Agility and Flexibility"

Evidence

[1] Research Circle Survey: This research was conducted via an online survey from 3 October 2016 to 25 October 2016 among Gartner Research Circle Members — a Gartner-managed panel composed of IT and business leaders. In total, 65 members participated that were a) involved in WAN-related discussions and/or strategic decisions for their organizations, and b) have more than 10 locations. Survey participants included organizations based in North America, Latin America, EMEA and APAC.

[2] Gartner analysts have conducted more than 2,300 interactions from 1 January 2016 through 3 January 2017 with current and prospective Gartner clients on the topic of wide-area networking.

[3] Gartner surveyed more than 30 vendors in the market. Vendors were asked to respond to a questionnaire.

[4] Polling from Data Center Conference presentations indicated that 68% of attendees manage the WAN edge with their own staff; 18% use a network service provider and 9% use a managed service provider (n = 103).

[5] "Cisco Puts Its Money Where the WAN Is," Network World and "Cisco, Telstra Back SD-WAN Startup VeloCloud in $35m Round," ZDNet

Note 1 Network Service Providers

We exclude NSPs offering managed network services because they typically build their offerings with commercial vendor products as the underpinning technology. Further, most carrier services are not agnostic to transport.

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