

Competitive Landscape: WAN Edge

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The enterprise WAN edge has become the focus of new architectural approaches, in addition to functional consolidation, which has attracted more than 40 competitors. Technology product management leaders will be challenged as solution evolution will take multiple paths.

Key Findings

- The WAN edge market is undergoing disruption from multiple market forces — some driven by technology, others by business needs, business models and buyer culture.
- To compete in this market, long-term providers will have to embrace multiple product/service models and multiple, simultaneous go-to-market models.
- SD-WAN is a key technological driver for change in the short term, but network function virtualization (NFV) and alternative delivery models will bring further disruptions during the next three years.
- The vendor landscape in this space is fast-evolving and diverse, with some attacking the broad market and others building strong positions in narrowly focused segments.

Recommendations

Technology product management leaders striving to grow agile WAN infrastructure solutions should:

- Avoid viewing the WAN edge as one homogeneous market, but as several submarkets evolving toward a similar end goal of a functionally converged edge solution.
- Establish key value propositions that address the broad enterprise need for a simpler method to manage changing WAN requirements.
- Never underestimate the strong market demand for better and simpler WAN edge solutions as this is driving enterprises to adopt new vendors and new technologies.
- Develop your product plans with the understanding that, over time, individual products such as SD-WAN will become features on aggregation platforms. Include a move to the next higher-value offering.

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Strategic Planning Assumptions

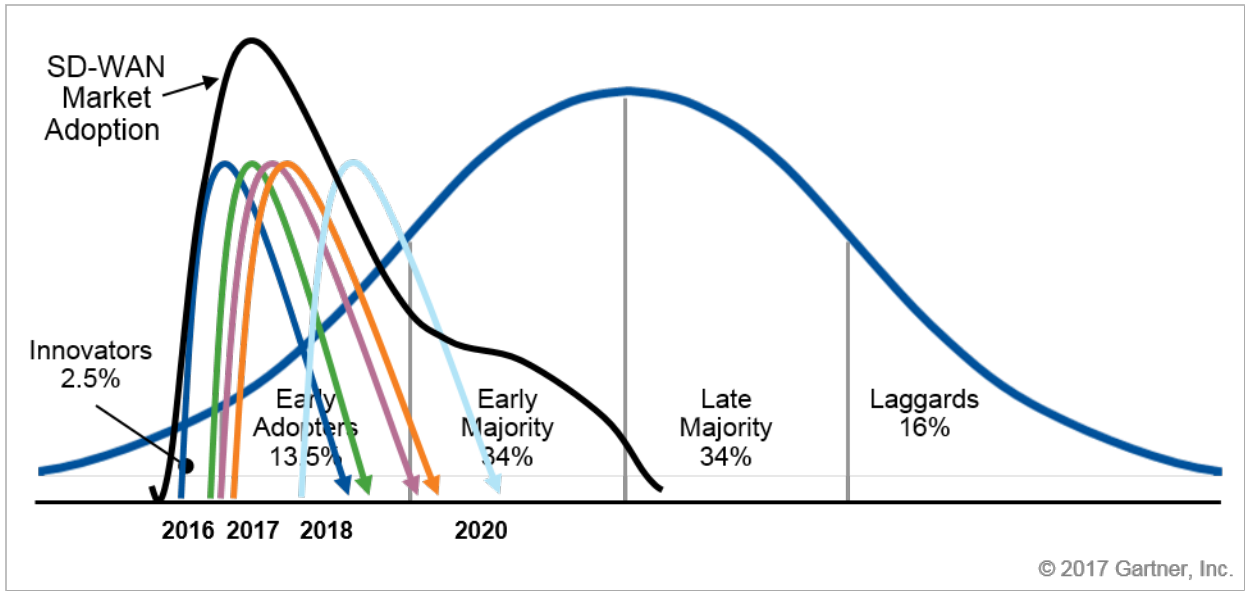
By 2018, more than 40% of WAN edge infrastructure refresh initiatives will be based on software-defined WAN (SD-WAN) appliances and/or x86-based virtualized customer premises equipment (vCPE) platforms versus traditional routers (up from less than 2% today).

By YE20, more than 60% of enterprises will have deployed direct internet access in their branch offices, up from less than 30% in 2016.

Analysis

We chose to focus on the WAN edge market because it is undergoing radical transformation. In less than three years, this space will see at least five waves of overlapping disruption. For details, see Figure 1 and The Future of Competition section.

Figure 1. SD-WAN Market Adoption



Source: Gartner (May 2017)

The WAN edge infrastructure market is recrafting and, in many cases, consolidating several branch-office WAN edge functions, including routing, SD-WAN, WAN path control, security and WAN optimization, which together, constitute the full functionality needed to design a branch-office WAN edge solution. This also means that vendors from multiple functional areas are placing increased focus on these solutions.

This market has evolved from traditional branch routers and is undergoing dramatic change, driven by the needs of digital business transformation, increasing use of cloud services and increasing adoption of real-time applications across the WAN.

Traditional solutions have become dramatically more expensive and complex to deploy and manage. As a consequence, enterprise demand for significant simplification of branch-office WAN solutions is now driving a need for all integrated WAN edge infrastructure appliances/services.

WAN edge functionality can exist on- or off-enterprise-premises. It is typically sourced from network equipment providers (and their channels), network service providers, system integrators (SIs) or managed service providers (MSPs). This is described as a solution composed of vCPE and NFV, where virtualized network functions can be deployed either on-site on an x86 white box or in a provider's data center (see "Network Function Virtualization Will Enable Greater Managed WAN Agility and Flexibility" and "Virtualization and SD-WAN Enable Branch Office WAN Simplification").

WAN edge infrastructure does not include the underlying network transport service (for example, Multiprotocol Label Switching [MPLS], broadband internet and Long Term Evolution [LTE]). However, some vendors or partners deliver the WAN edge infrastructure as a service bundled with the underlying transport.

Competitive Situation and Trends

To succeed in this highly disruptive environment, vendors must demonstrate unprecedented flexibility and agility across all aspects of their business.

The basic technology and engineering talent to enter the market are widely accessible, making differentiation difficult to sustain.

The vendor landscape includes large incumbents (for example, Cisco and Nokia), incumbents from adjacent markets (for example, Citrix and Riverbed), startups (for example, CloudGenix and VeloCloud) and established niche players (for example, Cybera and ZeroOutages, a division of XRoads Networks) — in total, more than 40 companies.

Buyers are more concerned about addressing business problems (for example, agility, availability and lower costs) than about loyalty to current vendors or the technology.

Market Players

This Competitive Landscape evaluates 23 vendors that have very different levels of market reach, business models and market traction. We believe it is important to provide broad coverage since competition in a rapidly evolving market may come from a less visible provider. That said, there are more than 40 vendors competing in this rapidly evolving market, and it seems like new entrants

appear almost weekly. Even with flawless execution, it is highly unlikely that all vendors will survive as independent entities.

Because of the presence of several strong incumbents, the market will remain highly fragmented with six to 10 strong players emerging. Of the rest, some will be acquired, some will retreat to niches and the rest will fail. As a result, we have focused this research on what we believe is a representative sample of the vendor base with solutions in general availability that incorporate the broader WAN edge functionality as described in the previous section.

Vendors in this market develop products that they offer as products and/or services, and service providers develop infrastructure that they market as part of their managed WAN services. For this reason, this Competitive Landscape evaluates both products that are delivered as traditional infrastructure devices, as well as products sold as virtual functionality or overlay managed services.

Gartner has developed a model to explain vendor behaviors during periods of disruption (see "Four Highly Disruptive Factors Will Challenge the Survival of Incumbent Data Center Market Vendors"). The three behaviors are Protector (entrenched incumbents that try to preserve their position), Evolutionary Disruptors (incumbents that expand into an adjacent market in an attempt to increase their opportunity) and Revolutionary Disruptors (new entrants, typically startups that want to radically restructure the market). These behaviors are abbreviated in Table 1 as P, E and R.

Coverage comprises Protectors (Cisco, Huawei and Juniper); Revolutionary Disruptors, including high-profile SD-WAN startups (CloudGenix, VeloCloud, Viptela and Versa Networks); Evolutionary Disruptors, including a significant number of strong players (such as Barracuda Networks; Citrix; Nuage Networks, a Nokia venture; ZeroOutages; and Riverbed) that are pivoting from adjacent markets; and smaller companies (such as Aryaka; Cradlepoint; FatPipe Networks; InfoVista, with its Ipanema product line; Silver Peak; and Talari Networks) that are adjusting to leverage the opportunity. We also cover niche companies (such as Bigleaf Networks, Cato Networks, Cybera, Ecessa and TELoIP) that focus on specific use cases, geographies or vertical markets.

Table 1 offers a summary of all providers described in this research.

Table 1. Summary of Vendors' Market Focus

	Target Market	Suitable Network Size	Channel Strategy	Geographic Sales Strategy	Number of Customers	PER Behavior
Aryaka	Medium to Large	Small to Medium	Direct, Providers	Global	>575	E
Barracuda Networks	Small to Medium	Small to Medium	Direct, Channel	Global	4,500	E
Bigleaf Networks	Small to Medium	Small	Direct, Channel	North America	>300	E
Cato Networks	Medium	Medium	Providers	Global	~50	R
Cisco	Small to Large	Small to Large	Direct, Channel, Providers	Global	>150,000	P
Citrix	Medium to Large	Small to Medium	Direct, Channel	Global	>6,000	E
CloudGenix	Medium	Small to Large	Direct, Channel	North America	<100	R
Cradlepoint	Medium	Small to Medium	Direct, Channel, OEM	North America	15,000	E
Cybera	Medium to Large	Medium to Large	Direct, Channel, OEM	North America	>1,000	E
Ecessa	Medium	Small to Medium	Direct	North America	>200	E
FatPipe Networks	Medium	Small to Large	Direct, Channel	Global	>1,000	E
Huawei	Medium to Large	Small to Large	Direct, Channel, Providers	Global	>10,000	P
InfoVista	Medium to Large	Medium to Large	Direct, Providers	Global	>1,000	E
Juniper	Medium to Large	Small to Large	Direct, Channel, Providers	Global	>20,000	P
Nuage Networks	Large Service Providers	Medium to Large	Direct, Providers	Global	~50	E

	Target Market	Suitable Network Size	Channel Strategy	Geographic Sales Strategy	Number of Customers	PER Behavior
Riverbed	Medium to Large	Small to Medium	Direct, Channel, Providers	Global	>20,000	E
Silver Peak	Medium to Large	Small to Large	Direct, Channel, Providers	Global	>2,000	E
Talari Networks	Small to Medium	Small to Medium	Direct, Channel	Global	>400	E
TELoIP	Medium	Small	Providers (MSPs)	North America	150	E
VeloCloud	Medium to Large and Service Providers	Medium to Large	Direct, Providers	Global	>550	R
Versa Networks	Large and Service Providers	Medium to Large	Providers	Global	100	R
Viptela	Medium to Large and Service Providers	Medium to Large	Direct, Providers	Global	<150	R
ZeroOutages	Medium to Large	Small to Medium	Channel	North America	>3,000	E
P = Protector E = Evolutionary Disruptor R = Revolutionary Disruptor						

Source: Gartner (May 2017)

The Future of Competition

Competition in this market is being driven by successive overlapping waves of disruption. The initial disruption is caused by SD-WAN startups — (Revolutionary Disruptors) such as VeloCloud, Viptela and CloudGenix, disrupting Cisco, the dominant incumbent (Protector). From all but the very earliest days, the disruption has been about solving business problems, not about the technology. As a result, the disruption is being fueled by this shift in buyer behavior, and it is enabled by new business models and well-understood, but newly delivered, technologies. Incumbents are competing by leveraging established relationships, and breadth of product and channel options.

Successful go-to-market has combined direct customer contact, while building enterprise sales channels, combined with visionary service providers (xSPs), which are typically late-mainstream/laggards. Aggressive marketing has led to increased buyer awareness of new offerings in this market. Dramatically new product/service price points are being established.

During 2017, the second wave of disruption will be fueled by pivoting vendors (Evolutionary Disruptors) from adjacent markets such as WAN optimization and security that will compete by leveraging their financial power to build/buy the technology, and also leverage their channels and significant installed bases to enter the market. Vendors pivoting from communications service provider (CSP) routing/security (Evolutionary Disruptors) will disrupt the market and compete by delivering offerings so CSPs and large end users can embed value in their infrastructure — NFV. Competition increases, the market fragments and less successful providers will struggle to find a space to prosper.

In 2017, the third and fourth waves of disruption are likely to be caused by internal tensions between product groups within Cisco (Integrated Services Routers [ISR] versus Meraki), which could confuse the market further, or could lead to a new, more competitive offering from Cisco. At the same time, CSPs will compete by leveraging established relationships and a new deployment model — NFV — to offer buyers richer bundled services at very competitive prices. This disrupts the product sale model as more buyers shift to services.

A fifth wave of disruption is also apparent in 2017, as the SI/MSP channel disrupts CSPs with bundles of multiprovider network services, integrating services and products from multiple sources. There will be additional disruption should the big cloud players such as Amazon Web Services (AWS), Facebook, Google or Microsoft enter the market with an open-source offering, a new set of partner-delivered services or something even more disruptive.

Competitive Profiles

Aryaka

Market Overview

Aryaka's SmartCONNECT WAN edge solution comprises the Aryaka Network Access Point edge appliance, and the MyAryaka portal for reporting on-premises and in-the-cloud deployments. Aryaka has more than 575 WAN customers (by Gartner estimate), with the majority using its network as a service, WAN optimization as a service and SD-WAN. It combines a WAN connectivity service with edge routing, security and WAN optimization services.

How Aryaka Competes

Aryaka addresses the market from a position as an alternative and lower-cost WAN provider to traditional MPLS services. It focuses on globally distributed organizations with sites that experience poor performance and look at upselling to additional sites, and with additional managed services. Its WAN edge appliance supports a good range of routing, security and WAN optimization capabilities, delivered as a fully managed WAN service. Its last-mile procurement, monitoring and

management service is a new addition, and its global capabilities are still evolving, especially in larger deployments. It complements this within the cloud-deployed network services, such as on-demand WAN optimization or internet access, for highly flexible WAN services. The network functions can be deployed within 28 global hub locations, which also constitute Aryaka's core WAN backbone hubs. While globally distributed enterprises represent its key target, it also sells into geographically confined midmarket national enterprises.

Based upon Gartner's PER framework, Aryaka is an Evolutionary Disruptor, pivoting from its initial WAN optimization as a service/managed network service offering.

Barracuda Networks

Market Overview

Barracuda Networks' NextGen Firewall F-Series comprises the NextGen Firewall WAN edge appliances and the Barracuda Networks' NextGen Control Center for on-premises deployment. Barracuda Networks initially targeted the midmarket, with 4,500 primarily midmarket firewall/VPN customers that are beginning to enable SD-WAN capabilities, and has now expanded its focus to larger enterprises. Its SD-WAN offering is combined with its security/VPN capabilities into a security-focused value proposition.

How Barracuda Networks Competes

Barracuda Networks pursues the buyer from its position as a trusted security vendor. It then offers the additional value of adequate routing/path selection and basic WAN optimization via basic compression and deduplication, which is already included in the installed systems. Barracuda Networks' go-to-market leverages its broad portfolio of security, storage and networking products to establish strong customer relationships. It offers feature-rich products that are marketed as easy to use, combined with a high-touch subscription-based support program. While the midsize-enterprise market has been its primary focus, Barracuda Networks is attempting to use its F-Series offering to compete for larger enterprise opportunities. Barracuda Networks' route to market is through a combination of value-added resellers (VARs) in North America and distributors in other regions. It is expanding service provider relationships via direct relationships as well as through its Intronis subsidiary. Its cloud presence includes AWS, Microsoft Azure and Google.

Based upon Gartner's PER framework, Barracuda Networks is an Evolutionary Disruptor, pivoting from its initial focus on the security market.

Bigleaf Networks

Market Overview

Bigleaf Networks approaches the North American midmarket from a position as a provider of managed internet cloud connectivity. Bigleaf Cloud-First SD-WAN comprises of Bigleaf Edge

Routers and Bigleaf Gateway Clusters. It combines a proprietary network-based SD-WAN with a managed service. Bigleaf Networks has more than 300 customers for its SD-WAN offering.

How Bigleaf Networks Competes

It focuses on enabling optimized branch-office connectivity to public cloud services. Bigleaf Edge Routers in the branch office use static routing to establish tunnels across the internet to a dedicated network of Bigleaf Gateway Cluster hubs deployed in five locations around the U.S. These hubs support dynamic routing and adaptive quality of service (QoS), but no WAN optimization. From these core hubs, Bigleaf Networks has direct core internet peering for connectivity to cloud providers. The key value proposition is that traffic is balanced across multiple internet paths from the enterprise branch office to the hub for optimum performance, and only sent over the open internet close to the cloud provider. However, currently, there is only support of five hub locations, which limits proximity to cloud services. The solution is delivered as a managed service overlay to the internet transport, and while the intent is to route traffic via the best-performing internet path to a specific cloud service, there are no performance guarantees. Bigleaf Networks focuses on simplicity of deployment and uses a proprietary routing protocol called Same-IP Failover, rather than Border Gateway Protocol. While the service is suitable for any performance-sensitive application traffic flow between branch offices and public cloud services, the main focus is the retail segment.

Based upon Gartner's PER framework, Bigleaf Networks is an Evolutionary Disruptor, working to expand its managed network service offering.

Cato Networks

Market Overview

Cato Networks competes as a provider of a secure network as a service, primarily focused on the midmarket. Cato Networks' solution offers a combination of SD-WAN and security consisting of two types of edge options: Cato Socket/vSocket and Cato Client, and the Cato Cloud. The service was launched in February 2016, and it is still gaining market presence, with about 50 customers.

How Cato Networks Competes

Cato Networks has deployed 30 points of presence (PoPs), and interconnected these for a global cloud-based backbone, the Cato Cloud. It claims to offer "MPLS-like performance and reliability at internet prices." Edge devices connect to these PoPs for branch-office WAN connectivity, including cloud connectivity. The edge device offers good SD-WAN capabilities, good routing and security, with next-generation firewall (NGFW)/URL filtering and anti-malware offered as a cloud service from the PoPs. It does not support WAN optimization. The key value proposition is that each endpoint connects to the closest PoP via a secure tunnel, and all security for all endpoints is located in the PoP. In addition, transport between PoPs is via high-performing internet sourced from multiple carriers. The service is sold on a subscription basis toward the midmarket based on a monthly fee per location, with all edge devices and core WAN connectivity included, as well as ongoing monitoring and maintenance. Customers need to acquire access services separately. Cato

Networks' go-to-market is reseller and MSP-/internet-service-provider-focused, although Cato Networks also leverages some direct sales.

Based upon Gartner's PER framework, Cato Networks is a Revolutionary Disruptor, offering a blend of SD-WAN plus security as a service to the midmarket.

Cisco

Market Overview

Cisco approaches the broad WAN edge market with a combination of in-house products (ISR/ Intelligent WAN [IWAN], Meraki MX/SD-WAN, virtual ISR, virtual ASA, Virtual Wide Area Application Services, virtual NGFW and Cloud Services Router 1000V). It generates more than \$3 billion in annual revenue. Cisco has more than 150,000 customers for its WAN products, which are predominantly router-based platforms (by Gartner estimate).

How Cisco Competes

Cisco's go-to-market depends upon a broad, although complex and sometimes confusing, mix of overlapping products, along with strong end-user, channel and service provider relationships to maximize revenue and account control. In addition, Cisco is pursuing WAN edge opportunities via its Virtual Managed Services initiative for service providers, which combines its Unified Computing System servers with virtual network functions (VNFs) of its WAN edge appliances. It leverages a strong reputation for customer support and an extremely loyal base of tens of thousands of Cisco trained network engineers to maintain account control and high ISR price premiums in the face of overall declining networking pricing. Emergence of multiple strong SD-WAN startups led by ex-Cisco and Juniper executives has forced Cisco to address the ISR's functional and price performance limitations via a multipronged approach.

Cisco typically leads with the ISR and IWAN for enterprise accounts, whenever its strength as a multiservice platform will prevail. When price becomes an issue, and discounts and relationships are inadequate, Cisco often then proposes the midmarket-targeted Meraki branch-office offering. In many cases, the Meraki offering is suitable, but at the expense of top-line revenue and total-margin dollar shrinkage. However, because Meraki lacks custom application templating and comprehensive routing protocol support, it is unsuitable for many large enterprises. Additionally, CSPs are reluctant to offer Meraki because they lose control of the account to the Cisco-hosted-and-managed application. While this approach seeks to maximize Cisco's opportunities, it often generates confusion and ill will among customers that feel Cisco should have offered the Meraki option alongside of the ISR. For clear SD-WAN opportunities, where price and simplicity are clear requirements and cloud-based management is desirable, and for midmarket opportunities, Cisco leads with Meraki. For very large enterprises, Cisco positions the ISR or its new Enterprise Network Compute System for NFV, although market impact has been minimal, at best, due to its delayed general-availability status. If Cisco addresses the Meraki limitations, it will face internal conflict as it tries to rationalize its many offerings.

Note: As we were about to publish this research (May 2017), Cisco announced its intention to acquire Viptela. Product integration/direction has not been announced.

Based upon Gartner's PER framework, Cisco acts as a Protector regarding its ISR business and as an Evolutionary Disruptor, pivoting Meraki from its initial cloud-managed midmarket branch Wi-Fi to a midmarket/enterprise cloud-managed SD-WAN offering.

Citrix

Market Overview

Citrix approaches the market from a position as a trusted application networking vendor with an existing client base for its Application Delivery Controller, WAN optimization and XenApp/XenDesktop. The newly introduced NetScaler SD-WAN (formerly CloudBridge) comprises the NetScaler edge devices, the NetScaler SD-WAN Center central management, and the NetScaler Insight Center for visibility and reporting. It combines WAN optimization and reporting with good SD-WAN, firewall and routing. Citrix has 6,000 WAN optimization customers (by Gartner estimate) and about 200 SD-WAN deployments.

How Citrix Competes

Citrix focus is to create an integrated branch networking solution for a broad range of WAN needs, from hybrid WAN to hybrid cloud. Its WAN edge appliance supports a good set of SD-WAN, routing, firewall and WAN optimization capabilities via a broad range of appliances. While Citrix has a large base of midmarket Xen and WAN optimization customers, the NetScaler SD-WAN is being positioned as suitable for a broad range of enterprises. Citrix route to market is heavily dependent upon leveraging existing XenApp/XenDesktop VARs, while it attempts to build a CSP/MSP channel.

Based upon Gartner's PER framework, Citrix is an Evolutionary Disruptor, pivoting from its WAN optimization controller (WOC) focus to an SD-WAN plus WOC offering.

CloudGenix

Market Overview

CloudGenix targets North American midsize-to-large enterprises that want to adopt a very application-/business-driven, analytics-rich model of WAN management. The CloudGenix Instant On (ION) consists of ION edge devices and the ION Central Controller, with an installed base of less than 100 customers.

How CloudGenix Competes

CloudGenix differentiates based upon its easy-to-use, intent-derived, application-centric management model and traffic-forwarding capabilities, along with deep analytics. The SD-WAN capability is unique in the approach taken to application path forwarding based on both network performance and end-to-end application performance such as application transaction time and

media codec performance. This approach appeals to buyers that want to use business-focused metrics to configure and manage their networks and want to step away from legacy-technology-dense command line interface (CLI)-based approaches. Additionally, CloudGenix offers support for VMware, KVM and AWS virtual appliances, and offers rich application and network analytics in its base platform. CloudGenix has good routing, strong analytics and path selection, and an application-based firewall, but no WAN optimization. CloudGenix focuses on retail, finance and hi-tech as it builds out its sales organization from a U.S.-centric team to a more global organization.

Based upon Gartner's PER framework, CloudGenix is a Revolutionary Disruptor, combining traditional WAN edge features with a business-focused management model that leverages deep analytics.

Cradlepoint

Market Overview

Cradlepoint targets highly distributed organizations that utilize 4G LTE connectivity, and prefers cloud-delivered management and network services. Cradlepoint has just received \$89 million in venture funding, which will allow the company to expand its cellular capabilities, including 5G and narrowband Internet of Things (IoT). The Cradlepoint NetCloud platform includes NetCloud Manager for cloud management; branch routers (AER Series) and mobile routers (IBR900); machine-to-machine/IoT (IBR300/600 Series) gateways; and NetCloud Engine, which provides an over-the-top (OTT) managed network as a service. Gartner estimates that Cradlepoint has more than 15,000 customers, which are predominantly via cellular/Wi-Fi routers.

How Cradlepoint Competes

Cradlepoint has enhanced its solution to compete as a provider of cloud-managed LTE-optimized edge routers. Its portfolio consists of integrated LAN switching and Wi-Fi, SD-WAN, firewall with intrusion prevention system/intrusion detection system, secure web gateway and a cloud gateway to the NetCloud Engine (NCE) service. NCE provides a cloud-based, OTT-managed network as a service that allows customers to spin up encrypted virtual overlay networks. Other NCE functions include firewall, application filtering and secure internet access. NCE is access-network-agnostic and utilizes more than 30 PoPs in public cloud data centers from multiple CSPs. Pricing is based on an annual subscription per endpoint client or router gateway, exclusive of access network costs. All Cradlepoint solutions can be managed by the customer through the NetCloud Manager portal, which also supports an MSP-managed service model. While Cradlepoint offers good routing capabilities, along with SD-WAN functionality and a software-defined overlay, it does not support application-level traffic steering or WAN optimization. However, Cradlepoint is one of a few WAN edge infrastructure vendors that support integrated LAN switching with both Wi-Fi and 4G LTE access.

Based upon Gartner's PER framework, Cradlepoint is an Evolutionary Disruptor, working to expand its SD-WAN and software-defined, OTT-managed network offerings.

Cybera

Market Overview

Cybera focuses on environments with large numbers of cost-sensitive locations (gas station/minimart, kiosks and the IoT, for example) that require high availability, rich functionality and ease of use. Cybera has more than 1,000 customers. Cybera's One provides rich security services with proven network scalability.

How Cybera Competes

Cybera's One SD-WAN as a service is delivered via easy-to-install-and-manage, integrated edge platform and its SD-WAN cloud with integral management. Cybera offers high availability, secure transport, high degree of traffic isolation (including Payment Card Industry certification) and support for any Internet Protocol (IP) transport, but no WAN optimization. Cybera's highly integrated, one-box-per-location approach simplifies installation, reduces space/power requirements and lowers cost. The as-a-service, network-overlay approach simplifies design and operation for the customers as it provides 24/365 monitoring and troubleshooting, which is valuable when on-site technical resources are nonexistent. The service does not include the underlying transport, which enterprises need to procure and manage independent of the Cybera overlay service. Cybera's go-to-market includes direct, channel and OEM relationships that embed Cybera One in larger managed service offerings.

Based upon Gartner's PER framework, Cybera is an Evolutionary Disruptor, working to expand its managed network service offering via SD-WAN.

Ecessa

Market Overview

Ecessa addresses the North American midsize-enterprise market from a position of an early vendor of WAN link failover and load-balancing appliances to improve reliability of the WAN. Ecessa WANworX SD-WAN comprises three components: WANworX edge devices or virtual instance; headend devices, which are deployed at the data center; and the central management tool, Ecessa Insight, for all configuration, management and monitoring/reporting. Ecessa has more than 200 customers. It combines a basic SD-WAN with a managed service.

How Ecessa Competes

The majority of Ecessa's revenue comes from North America, although it has global sales and support capabilities via partners. The system is sold as a premises-based offering, with three tiers of capabilities. The entry-level Ecessa Edge provides basic routing and security, failover and QoS; the PowerLink adds VPN functionality and the WANworX line adds multisite WAN virtualization. The products can be field-upgraded through a software key unlock. Ecessa does not support WAN optimization. Its SD-WAN solution is mainly focused on WAN virtualization for the purpose of link load balancing, improved network performance and availability.

Ecessa goes to market through a broad array of partners, including CSPs, managed network service providers and master agents. Ecessa's limited geographic footprint and visibility in the market will make it harder to grow its business, although its MSP/multicarrier focus should play well with midmarket customers.

Based upon Gartner's PER framework, Ecessa is an Evolutionary Disruptor, pivoting from its initial focus on path selection to a more capable WAN edge offering.

FatPipe Networks

Market Overview

FatPipe Networks approaches the midsize-to-large enterprise market from its position of strength as a supplier of link bonding/VPN products. The FatPipe Symphony SD-WAN consists of FatPipe edge devices and the FatPipe Orchestrator, which is the global controller and management console. FatPipe Networks has several thousand WAN customers (by Gartner estimate), predominantly for WAN path control usage applications.

How FatPipe Networks Competes

FatPipe Networks was an early innovator in router clustering, access bonding and link load balancing, but has expanded their product focus to a one-stop shop for WAN edge solution. Their solution now incorporates SD-WAN with very good traffic management capabilities, good WAN optimization and routing, but basic security features. While product capabilities have grown, sales and marketing efforts have limited FatPipe Networks' presence in the market. FatPipe Networks has channel partners across the globe, but majority of revenue is made in North America. FatPipe Networks has limited partnering with carriers and cloud providers.

Based upon Gartner's PER Framework, FatPipe Networks is an Evolutionary Disruptor, pivoting from an early focus on access bonding and link load balancing to a fully featured SD-WAN offering.

Huawei

Market Overview

Huawei's China-out approach, combined with full vertical integration and aggressive pricing, has enabled it to build a growing presence in emerging markets with recent expansion to Europe and South America. Huawei's AR family offers a wide range of integrated multifunction routers, combined with an optional network controller. Huawei has more than 10,000 branch-office router customers, and less than 50 SD-WAN customers.

How Huawei Competes

Huawei uses its vertical integration (silicon, to software, to systems) to offer a broad, aggressively priced, richly featured product line, that includes security/VPN and Wi-Fi capabilities, but no WAN

optimization. It leverages its preferred status within China and its access to Chinese economic development foreign aid funds to drive its business abroad. Huawei is a fast follower, which lowers risk in slow-to-develop and stable markets, but it is a liability during times of significant disruption. It has successfully overcome some objections to its perceived connections to the Chinese intelligence community (notably in the U.K.) by engaging credible local verification/validation organizations to examine its offerings, although access to the U.S. market is very limited. Because of strong relationships with CSPs' access/transport organizations, Huawei is opening broader go-to-market options for its routers.

Based upon Gartner's PER framework, Huawei is a Protector, working to preserve and expand its existing router business.

InfoVista

Market Overview

InfoVista's Ipanema product line addresses the market from a position of an experienced vendor of scalable application visibility, application performance control and WAN optimization solutions. The Ipanema solution comprises two components: the edge appliance ("ip|engines," "tele|engines" and virtual engines); and the multitenant orchestrator SALSA, which is the centralized management system. SALSA provides real-time visualization and analytics, reporting, and configuration and application policy management via business application performance objectives. The Ipanema SD-WAN solution combines WAN optimization and reporting, with good WAN path selection and application control, basic security (with connection to third-party secure web gateways), and only static routing. InfoVista has several thousand customers, primarily delivered through CSP managed service offerings.

How InfoVista Competes

While InfoVista sells direct to a small number of large enterprises, it mainly sells through carriers and channel partners. It has long-standing relationships with several large carriers as a preferred partner for managed services. InfoVista is expanding its channel programs to include more VARs, MSPs and SIs. In support of this expansion, it has launched a cloud-based management platform. Its primary focus is ensuring the performance of business-critical applications across a hybrid internet/MPLS WAN. The solution enables a flexible, logical WAN topology design and supports a unique ability to define high-level application performance objectives that are used by the system to automatically manage traffic over the network. InfoVista is integrating its 5View products, adding troubleshooting and end-to-end visibility from a single user interface. InfoVista focuses on large distributed enterprises.

Based upon Gartner's PER framework, InfoVista is an Evolutionary Disruptor, working to pivot from its initial application performance management (APM)/WOC to a broader WAN edge and end-to-end application performance management and troubleshooting offering.

Juniper

Market Overview

Juniper's WAN edge offering focuses on the NFX250 Network Services Platform that enables VNFs such as its vSRX secure router to deliver services such as routing, VPN, NGFW, unified threat management and WAN optimization to be deployed in the branch office. It also offers the SRX Series Services Gateway for routing and security services. Juniper's Contrail Service Orchestration centralizes the management.

Juniper's NFX250 Network Services Platform is largely in CSP trials, and the legacy SRX Series has been deployed by CSPs in several thousand customers, as well as with enterprises directly. By Gartner estimate, Juniper has more than 20,000 WAN customers, predominantly leveraging its routers and security gateway solutions.

How Juniper Competes

Juniper differentiates by heavily focusing its product development and go-to-market efforts around Tier 1 and 2 CSPs. Juniper lost significant market traction in the routing and branch security market due to delayed delivery of an integrated routing and security platform — the SRX Series. Its heavy focus on CSPs means that Juniper was late to the WAN edge disruption opportunity. It offers zero-touch provisioning when used in conjunction with the vendor's Contrail Service Orchestration platform, but lacks full SD-WAN capability. Juniper is betting that its long-standing relationships with CSPs will eventually displace SD-WAN startups as the preferred providers of new-generation WAN edge offerings. Juniper's current offering to provide WAN optimization to its customers is fulfilled through its partnerships with Riverbed and Silver Peak.

Based upon Gartner's PER framework, Juniper is a Protector, working to preserve and expand its security-driven WAN edge opportunity.

Nuage Networks

Market Overview

Nuage Networks (from Nokia) addresses CSPs and extremely large enterprises that function like global or regional service providers. Nuage Networks' Virtualized Network Services (VNS) WAN edge offering is composed of its policy-driven Virtualized Services Controller (VSC), Virtualized Services Directory (VSD) and Network Services Gateways (NSG) endpoints (physical or virtual, both multitenant capable), which deliver routing/SD-WAN and security services. The VSC, which is multitenant, also controls the Virtualized Cloud Services for data center SDN, enabling seamless network across data center and branches. Nuage Networks has about 50 customers for VNS, including a number of large service provider wins at BT, Vodafone, NTT, China Telecom Global, Telus, Telia (Finland), MyRepublic (Singapore) and Exponential-e (the U.K.).

How Nuage Networks Competes

Nuage Networks differentiates through its highly scalable infrastructure and integrated LAN/Metro/WAN SDN offering, which provides consistent policies and services across the entire environment. Its software is well-respected in the service provider community and has been shown to be reliable at global scale. Its multitenancy enables service providers to cost-effectively serve multiple customers from a shared infrastructure. Its go-to-market is primarily through CSPs, including those listed above, although it also has relationship with resellers and SIs, including Accenture, Dell Technologies, Hewlett Packard Enterprise and IBM, to reach the enterprise market. Nuage Networks does sell directly to very large enterprises with a focus on financial services companies or other verticals with a large number of branch sites (including retail and supply chain manufacturing) that are of the scale and complexity of a Tier 2 CSP. This approach has enabled Nuage Networks to win a number of large accounts, but its success in selling directly in the overall WAN edge market has been minimal.

Based upon Gartner's PER framework, Nuage Networks is an Evolutionary Disruptor, pivoting from its data-center-focused SDN offering to offer a single end-to-end, data-center-to-branch-office SDN solution.

Riverbed

Market Overview

Riverbed targets the broad WAN edge market from its position as the leader and trusted provider of WAN optimization. Riverbed WAN edge offering combines SteelConnect for SD-WAN and security services, and Riverbed SteelHead SD, which combines SD-WAN, security, visibility and WAN optimization services in a single device. This can also be combined with SteelFusion. Riverbed has about 20,000 WAN optimization customers and is now upselling those accounts to SD-WAN capabilities. SteelConnect is the result of the acquisition of Ocedo (Karlsruhe, Germany) and became generally available at the end of 2016. As a result, customer deployments number in the low hundreds, with much of the installed based in Europe, although expansion into the Riverbed installed base has grown significantly in 1Q17.

How Riverbed Competes

Riverbed missed the early SD-WAN opportunity, but it is now leveraging its installed base of some 20,000 accounts and its established channels, including relationships with carriers such as Orange Business Services. Riverbed offers a comprehensive branch-office infrastructure solution, including SD-WAN, wireless and wired LAN connectivity, security, and WAN optimization, as well as compute and storage virtualization via SteelFusion. Riverbed recently acquired Xirrus to expand its portfolio of branch Wi-Fi capabilities. Riverbed provides automated deployment of virtual editions of SteelHead and SteelConnect for AWS and Azure, and a cloud acceleration service with Akamai. SteelConnect platforms range from highly integrated small-branch devices to individual components that can be used to support larger sites. SteelConnect can be easily added to an existing SteelHead environment and shares application IDs discovered by SteelHead. It can be deployed in a "greenfield" environment or can be deployed in a mixed environment of SteelHead

and SteelHead SD, all managed via a common console. Sales focus is shifting from small-to-medium-network deployments (less than 250 locations) to large-enterprise deployments. As part of this expansion, Riverbed continues to shift its channel strategy from a volume to a value-added focus.

Based upon Gartner's PER framework, Riverbed is an Evolutionary Disruptor, pivoting from its WOC/APM/network-performance-management focus to a broad branch-office-in-a-box strategy.

Silver Peak

Market Overview

Silver Peak has evolved its focus from a leading WAN optimization vendor to an SD-WAN vendor for a secure hybrid WAN. Silver Peak Unity EdgeConnect has three primary components: Unity EdgeConnect appliances; Unity Orchestrator, which is the central console to configure and manage the system; and Unity Boost, which is an optional performance pack for WAN optimization. Silver Peak has more than 2,000 WAN customers (by Gartner estimate), primarily using WAN optimization. It has more than 400 customer deployments of its Unity EdgeConnect SD-WAN solution.

How Silver Peak Competes

Silver Peak's key vision is a fully automated WAN solution delivering end-to-end application performance according to business-intent definitions. Silver Peak offers one of the most comprehensive WAN edge solutions integrated in one appliance, combining good WAN optimization, very good SD-WAN, good routing and application identification capabilities. Appliances are available as physical or virtual instances. The Silver Peak Unity EdgeConnect solution includes the Cloud Intelligence and Advanced Exterior WAN routing, which optimizes external SaaS applications, and monitors and maintains performance metrics for more than 50 SaaS applications. Silver Peak SD-WAN solutions are sold exclusively through an indirect model via a global channel partner network and a limited MSP network that spans North America, South America; Asia/Pacific, including Japan; and EMEA. While traditionally, Silver Peak has not leveraged carriers effectively, it is now actively pursuing those relationships.

Based upon Gartner's PER framework, Silver Peak is an Evolutionary Disruptor, pivoting from its WOC focus to an SD-WAN plus WOC offering.

Talari Networks

Market Overview

Talari Networks was one of the innovators in WAN virtualization with a good access aggregation, QoS and link load-balancing solution. It leverages that heritage to address small-to-medium-market enterprises that require a simplified WAN edge solution for the hybrid WAN. Talari Adaptive Path Networking (APN) consists of edge appliances and the centralized management system, APN

Aware. Talari Networks has 400 WAN customers (by Gartner estimate), primarily for WAN path selection/link bonding.

How Talari Networks Competes

Talari Networks' strategic focus and its product offering have expanded to embrace SD-WAN. However, while its marketing has been streamlined according to its new product focus, its sales focus is still evolving from its traditional focus to hybrid WAN solutions. It offers a good SD-WAN solution, with good routing support and an embedded firewall; however, it does not yet support any WAN optimization. It has a limited, but growing, number of channel partners worldwide, and no carrier partners and limited cloud partners, which will make it harder to grow its business.

Based upon Gartner's PER framework, Talari Networks is an Evolutionary Disruptor, pivoting from its initial link bonding focus to a broader SD-WAN offering.

TELoIP

Market Overview

TELoIP's offering targets North American midmarket customers that value cost and simplicity, with a focus on unified communications. The TElolP Virtual Intelligent Network Overlay comprises edge appliances, and the cloud-based controller/gateway and orchestrator/management portal. TElolP offers its capabilities as a service through MSPs in North America, with expansion to EMEA and Asia/Pacific planned for 2017. It has about 150 end-user customers.

How TElolP Competes

TELoIP's go-to-market is focused exclusively on MSPs, with a value proposition of guaranteed performance and quality of experience, combined with low cost and simplicity. Its shared infrastructure, including nine PoPs in North America, is multitenant, which enables multiple MSPs to quickly turn up services without deploying infrastructure. TElolP touts its multicarrier link aggregation and fast failover for critical traffic, including IP telephony as key differentiators. TElolP's limited geographic footprint and visibility in the market will make it harder to grow its business, although its MSP/multicarrier focus should play well with midmarket customers.

Based upon Gartner's PER framework, TElolP is an Evolutionary Disruptor, focused on leveraging its SD-WAN as a service to deliver MPLS-like performance and SLAs over low-cost transport.

VeloCloud

Market Overview

VeloCloud is a highly visible pure-play SD-WAN startup focused on midmarket to very large organizations and MSPs. VeloCloud Cloud-Delivered SD-WAN comprises on-site VeloCloud Edge devices, a cloud-based VeloCloud Orchestrator and a distributed network of VeloCloud Gateways. Gartner estimates VeloCloud has more than 550 customers.

How VeloCloud Competes

VeloCloud's primary focus is to enable connectivity across a highly distributed hybrid WAN, with a specific focus on cloud connectivity, particularly for SaaS applications such as Microsoft Office 365. It combines an SD-WAN, with excellent GUI-based management, good security, segmentation and good routing, as well as cloud gateway services and dynamic multipath optimization for brownout protection. The solution can be delivered as a fully on-site deployed system, or it can be delivered as a multitenant, cloud-based solution. In the cloud-delivered solution, the control function is provided as a service, and the VeloCloud Gateways offer direct connectivity to third-party cloud services. This approach enables service providers to rapidly introduce a VeloCloud-based service without having to first perform a global build-out. VeloCloud is 100% channel-sold via a range of partners offering managed services, including ATT, Telstra and Sprint. While VeloCloud is one of the early leaders in the retail market, with a number of very large deployments, its solution has broad appeal to most enterprise WAN needs.

Based upon Gartner's PER framework, VeloCloud is a Revolutionary Disruptor, combining rich SD-WAN capabilities, cloud-based delivery and aggressive pricing.

Versa Networks

Market Overview

Versa Networks is a startup that addresses the WAN edge market by delivering a rich set of software-based network capabilities to service providers and large enterprises. Versa Networks' solution consists of four software components — Versa FlexVNF, with routing, SD-WAN and rich security, but no WAN optimization; Versa SD-WAN controller; central management platform Versa Director; and Versa Analytics, a dedicated component for visualization, reporting and analytics — with deployment options for third-party, x86-based physical devices, public/private clouds, VMs or containers. Versa Networks has less than 100 end-user customers (by Gartner estimate), although 20 service providers have adopted Versa Networks, including CenturyLink and Tata Communications, and a number of others are evaluating Versa Networks.

How Versa Networks Competes

Versa Networks' offering is designed as fully virtualized software solution, where network and security functions can reside on the branch, data center or in the cloud. Additionally, Versa FlexVNF, Analytics and management system are multitenant, enabling delivery of SD-WAN as a service. These capabilities allow it to target service providers that prefer on-premises, cloud-based or hybrid solutions. The offering includes application-specific path selection, based upon real-time measurement and on-premises multitenancy. Versa Networks' founders have strong ties to the CSP community due to their roles in Juniper's MX router team, enabling Versa Networks' initial go-to-market focus on Tier 1, 2 and 3 service providers. Versa Networks has won multiple carrier deals, including Tata Communications, Colt and CenturyLink. If successful, this approach will enable Versa Networks to compensate for a late market entry. Versa Networks is now adding a direct sales effort to target large-enterprise customers that traditionally favor a do-it-yourself approach to WANs.

Based upon Gartner's PER framework, Versa Networks is a Revolutionary Disruptor, combining a fully virtualized suite of WAN edge capabilities that can be deployed on-premises, as a hybrid or in a service provider's PoP.

Viptela

Market Overview

Viptela is a highly visible pure-play SD-WAN startup that targets enterprises and service providers requiring rich features and proven scalability. Viptela's Secure Extensible Network consists of the vEdge routers (physical and virtual, included in AWS/Azure), cloud-hosted vSmart controller, vManage management system and vBond orchestrator. Viptela is one of two startups founded by veterans of Cisco's routing business, and the market knowledge, customer contacts and credibility has enabled them to generate several very large direct-sales wins (more than 1,000 locations), while building out its CSP (Verizon, Singtel and others) and VAR/SI channels. Gartner estimates Viptela has less than 150 customers.

How Viptela Competes

Viptela competes based upon its early market entry, with a very stable, feature-rich product offered by a very credible team, with excellent venture capital backing. Viptela has several referenceable accounts, with deployments in the hundreds/thousands of sites. While its management interface is becoming more GUI-based, the initial version strongly appealed to network engineers who wanted an improvement in capabilities and price compared with the Cisco ISR, but that offered a familiar management model. Viptela's offering provides strong SD-WAN, routing and Layer 3 security, with rich segmentation capabilities per location. This simplifies remote locations (for example, healthcare, finance and retail), while lowering the cost of central site deployments. The most notable limitation is lack of WAN optimization and advanced L4-L7 security. Viptela's route to market is a combination of direct sales to large enterprises that prefer do-it-yourself and service providers that can deliver a complete managed service, including transport.

Based upon Gartner's PER framework, Viptela is a Revolutionary Disruptor, combining an easy-to-deploy feature-rich SD-WAN offering with proven scalability, while offering a management mode that is very familiar to operators that favor Cisco's CLI.

ZeroOutages

Market Overview

ZeroOutages approaches the WAN edge market through its long standing as a provider of overlay managed WAN services atop third-party transport. The service is designed for midsize to large enterprises that lack the resources or desire to manage their own WANs. WAN edge solution from ZeroOutages, a division of XRoads Networks, consists of two main components: intelligent edge devices and the Zoom management system. It has more than 3,000 deployments, with most in North America.

How ZeroOutages Competes

ZeroOutages' offering is sold as a comprehensive flat-fee managed service overlay to multiple WAN services, typically multiple internet services. It offers good SD-WAN capabilities, good routing and security, with some optimization services (stream compression, packet loss recovery and universal deduplication, for example) offered as an add-on option. The services include network design and deployment, and management of the on-site appliance, as well as performance measuring and monitoring of all underlying transport services, including automated trouble ticketing to nonperforming transport providers. Via the Zoom portal, customers have access to various performance and usage reports, but all configuration is done as part of the service. ZeroOutages has channel partners globally, but most of its revenue is from North America. Lack of visibility and brand recognition outside of North America will make it harder to grow its international business.

Based upon Gartner's PER framework, ZeroOutages is an Evolutionary Disruptor that works to expand its end-to-end managed network service overlay offering via SD-WAN.

References and Methodology

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

Gartner surveyed more than 30 vendors in the market.

Gartner Recommended Reading

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

"Digital Business and Cloud Demand New WAN Architectures"

"Forecast: SD-WAN and Its Impact on Traditional Router and MPLS Services Revenue, Worldwide, 2016-2020"

"High-Tech Tuesday Webinar: SD-WAN Forecast and Opportunity — How SD-WAN Will Disrupt the Router Market"

"Market Guide for WAN Edge Infrastructure"

"Four Highly Disruptive Factors Will Challenge the Survival of Incumbent Data Center Market Vendors"

"Hype Cycle for Networking and Communications, 2016"

"Technology Insight for Software-Defined WAN (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"

"Revolutionary Disruptors Are Changing the Rules of the Data Center Infrastructure Market"

"Protectors Must Transform to Stay Relevant in the Data Center Infrastructure Market"

"Evolutionary Disruptors Must Identify and Effectively Exploit Market Adjacencies"

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