Market Outlook

Market Outlook: Software-Defined Wide-Area Network (SD-WAN), 2018-2023, Worldwide

January 2018

Quadrant
Knowledge Solutions

Executive Overview

This research service includes detailed analysis of the global SD-WAN market in terms of short-term and long-term growth opportunities, emerging technology trends, market trends, and future market outlook. The study also provides a detailed market forecast analysis of the global SD-WAN market in various geographical regions and customer segments. This research provides strategic information for technology vendors to better understand the market supporting their growth strategies and for users to evaluate different vendors capabilities, competitive differentiation, and its market position.

Summary of Key Research Findings

Followings are the key research findings:

- SD-WAN solutions help organizations in simplifying the WAN and branch networks, significantly improves WAN performance, reduces Capex and Opex, and provides higher agility of WAN management.

- Software-defined wide-area network market is expected to grow significantly in the next five to six years from the market size of $501.3 million in 2017 to over $12.11 billion by 2023. The market, which has grown by 67.3% in 2017 compared to 2016, is expected to grow at a compound annual growth rate (CAGR) of 56.1% from 2018-2023.

- The long-term trend for SD-WAN market indicates that the North America market continue to provide the highest business opportunities for SD-WAN vendor and currently holds over 83% of the total market. However, Asia Pacific and EMEA region continue to gain market traction due to growing awareness in the key markets in these regions.

- VMWare (VeloCloud), Versa Networks, Cisco, Silver Peak, Citrix, and Nuage Networks are the technology leaders. These companies provide comprehensive SD-WAN solution and targeting both large enterprise organizations as well as increasingly partnering with communication service providers to improve market penetration. Talari Networks, Fatpipe, CloudGenix, and Mushroom Networks are also gaining market traction and consistently improving their market share. Zenlayer has strong presence in China market.

- Driven by promising market opportunities, large networking and IT vendors are looking at improving their product portfolio with SD-WAN solution. This is expected to drive increased acquisitions and mergers to improve managed services and improved offerings during the forecasted years of 2018-2023.

- Widespread adoption of cloud services (SaaS, PaaS, IaaS) in multiple branch locations are amongst the primary growth driver for the SD-WAN market growth. SD-WAN solutions help in connecting users and devices from multiple locations directly to the cloud data centers and

ensure the connections are optimized and secured. It offers centralized management, orchestration, and automation capabilities for simplified management of networking.

- Explosion of smart IoT devices in various business and industrial applications have significantly increased the network complexities as well as security risks. SD-WAN technology is being seen as an important solution in addressing the complexity and scalability requirements of full-fledged IoT infrastructure. SD-WAN is designed to function on variety of network connectivity, including broadband, cellular, or IoT-specific low-power wide-area network (LP-WAN). SD-WAN solution also helps in improving the network visibility in managing devices or endpoints for reduced security risks and ensures the level of connectivity is available for optimum performance. Emergence of IoT devices is making significant impact in the technology development as well as market growth.

- Communication service providers are increasingly partnering with SD-WAN providers to offer their own managed SD-WAN services. The service providers have also emerged as the most preferred vendor for SD-WAN implementation by enterprise customers and covers 70.3% of the overall SD-WAN market globally.

- Almost all major SD-WAN vendors are improving their security capabilities with advanced built-in security features and are increasing offering integration capabilities with third-party best-of-breed network, cloud, and IoT security products. Improved integration with other security technology enhances network performance and organization's overall network defenses. According to the research findings, security integration capabilities are becoming important differentiator and plays a key role in evaluating SD-WAN technology and vendor selection process.

- Driven by growing competition vendors continue to focus on improving their SD-WAN technology value proposition in terms of improving the overall deployment experience, integration with third-party security technologies, improved orchestration & automation capabilities, application of advanced analytics and application visibility, support for future wireless technologies, 5G & LTE, and application of machine learning, and artificial intelligence technologies to drive next-generation of SD-WAN solution. In addition, with aggressive pricing and product bundling with more features in the base-level offering, vendors continue to improve their price/performance ratio and hence the overall value proposition.

Market Background, Market Drivers, and Trends

A global increase in Internet usage, widespread adoption of cloud application and services, and explosion of smart IoT devices has fuelled enormous demand for reliable and faster WAN connections. To meet the growing networking

demands, enterprise WAN networks require agility, reliability, and uptime for optimum application performance. Enterprise WANs have primarily used MPLS (multiprotocol label switching) and single function CPE (customer premises equipment) for connectivity and security functions. This traditional WAN architecture is often associated with higher capital and operational costs in addition to complex network architecture, slower IT responses, and difficulty in managing branch network and security infrastructure.

While organizations have invested in building robust network infrastructure, they often face challenges in achieving optimum WAN performance in terms of speed, agility, and uptime. SD-WAN uses software-defined networking techniques in managing and controlling multiple WAN circuits. It provides separation of network data and control planes, and includes a centralized application-aware controller to manage network traffic flows, packet priority, routing policy, and network policy. SD-WAN solution helps to create a network overlay in order to decouple network software-defined services from the enterprise underlying hardware systems. SD-WAN's software-centric approach helps in simplifying branch office networking, improves branch agility, optimizes application performance, and provides significant cost reduction both in CAPEX and OPEX.

Software-defined WAN uses virtual WAN connections which are used to connect enterprise networks to achieve faster, reliable and uninterrupted network connections at optimum costs. SD-WAN provide network administrator flexibility to choose appropriate network which connects enterprise networks, including branch office, remote office, and cloud-based centers over large geographical distances. This architectural arrangement enables administrators to break free from being solely dependent on traditional MPLS connections, thus providing relief on the traffic load in any specified path and creating better bandwidth economics for per-bit-transferred. SD-WAN solutions also help administrators in setting up automated policies to ensure data transmission is policed to meet technical and business targets in an optimum and effective manner.

Key Market Drivers

Followings are the key factors that are driving the market growth:

- Enterprises with multiple branch offices often face challenges in managing and securing their WAN and branch networks due to ever-growing bandwidth requirements, network complexity, increasing use of cloud resources, and growing security challenges. These enterprise organizations are increasingly deploying SD-WAN solutions to address changes related to application performance, network complexities, and security.

- In building managed services, service providers face several challenges with traditional WAN products, including slow service definition and deployment times, high cost of networking infrastructure, and high

operational costs. Hence, SD-WAN deployments by managed service providers have emerged as the major driver for the overall market growth.

- Widespread adoption of cloud services (SaaS, PaaS, IaaS) in multiple branch locations are amongst the primary growth driver for the SD-WAN market growth. Organizations are continuously looking at improving the performance of cloud services and internet performance. SD-WAN solutions helps in connecting users and devices from multiple locations directly to the cloud data centers and ensure the connections are optimized and secured. It also offers centralized management and orchestration of these connected endpoints across locations. SD-WAN solution significantly reduces the organization's network complexities of managing dynamic workloads and provides automation capabilities for simplified management of networking.

- Explosion of IoT devices, BYOD and Mobility have significantly increased the workload and attack surface with potential security attacks. Traditional MPLS-based architecture doesn't support the scalability or the flexibility necessary for smooth functioning of IoT devices. SD-WAN solutions is increasingly being seen as the next generation of networking solution in the age of digital transformation. It successfully addresses the challenges of scalability and flexibility requirements and provides network visibility and in-built security to minimize risks.

- Presently, SD-WAN solutions are popular amongst the enterprise and service providers in the North America region. With multiple successful pilot projects and full-fledged deployments by enterprise are creating significant market buzz across global regions. Driven by growing awareness and proven benefits, key markets of Western Europe, China, Japan, Australia, New Zealand, Malaysia, Thailand, and other countries are embracing SD-WAN solutions.

- The important market driver includes SD-WAN solution benefits in providing agility, performance improvements, ease of use, lower Capex and Opex requirements, quick ROI, automation and orchestration capability, network visibility and security functions, and support for organizations digital transformation initiatives.

Key Trends

Followings are the major factors that are driving the market growth:

Mergers and Acquisitions Trend

As the SD-WAN market is gaining significant market traction amongst enterprise as well as service provider customers, the market is expected to continually witness market consolidation, with vendor's strategy of market expansion through mergers and acquisition. Driven by promising market opportunities, large networking and IT vendors are looking at improving their product portfolio

with SD-WAN solution. This is expected to drive increased acquisitions and mergers to improve managed services and improved offerings during the forecasted years of 2018-2023. In 2017, Cisco acquired Viptela, a major SD-WAN specialist, to offer cloud-based SD-WAN solution with advanced routing, complex topologies and granular segmentation capabilities. In 2017, another announcement came from VMware which acquired VeloCloud, a leading SD-WAN vendor, strengthening its SD-WAN capabilities for large enterprise and service providers. This trend is expected to impact the vendor's competitive positioning during the forecasted years of 2018-2023. Growing competition in the global SD-WAN market is expected to drive continued investments in technology innovation and further improvements in routing, security, and management functionalities.

Services Providers are Partnering with SD-WAN Vendors to Offer their Own Services

According to the research findings, SD-WAN market growth is largely driven by increasing adoption amongst service providers. Major services providers, such as AT&T, Orange Business, Verizon, Sprint, MegaPath and others are increasingly partnering with SD-WAN vendors to offer their own SD-WAN managed services to their customers. SD-WAN is increasingly finding acceptance across global regions and hence in order to remain competitive service providers are increasingly offering SD-WAN services and creating additional revenue stream.

SD-WAN Technology Trend

Driven by increasing competition, vendors are increasingly looking at improving their SD-WAN technology capabilities and overall value proposition to remain competitive. Major SD-WAN value proposition now exceed its initial use case of offering hybrid WAN architecture and services. Modern SD-WAN offering includes advanced functionalities, such as centralized management, automation, and orchestration, advanced analytics and application visibility, and security integration capabilities. Several vendors are also looking at providing enhanced support for full-fledged IoT infrastructure and mobility by supporting future wireless technologies, 5G, and Gigabit LTE.

Security Capability is Becoming an Important Differentiator for SD-WAN Technology Selection

Driven by widespread adoption of cloud-based services (IaaS, PaaS, SaaS) and increased presence of smart IoT-devices in the corporate networks, users are increasingly focusing on improving their security defenses. Large enterprise customers and service providers expects SD-WAN solution to support integration with their existing/new security infrastructure to ensure secure network traffic that meets reliability and Quality of Experience (QoE) expectations. Almost all major SD-WAN vendors are improving their security capabilities with advanced built-in security features and are increasingly

offering integration capabilities with third-party best-of-breed network, cloud, and IoT security products. According to the research findings, security integration capabilities are becoming important differentiator and plays a key role in evaluating SD-WAN technology and vendor selection process.

## SD-WAN Solution in the Age of IoT and Digital Transformation

IoT devices are increasingly becoming an integral part of business as well as industrial operations. It is widely being adopted from a simple functionality of tracking product use and re-order alerts to a complex application of inter-connected products with built-in intelligence to communicate and take actions. Widespread adoption of smart IoT devices in various business and industrial applications have significantly increased the network complexities as well as security risks. Traditional MPLS-based architecture doesn't support the scalability or the flexibility necessary for smooth functioning of IoT devices. That is why SD-WAN technology is being seen as an important solution in addressing the complexity and scalability requirements of full-fledged IoT infrastructure. SD-WAN is designed to function on variety of network connectivity, including broadband, cellular, or IoT-specific low-power wide-area network (LP-WAN). It means, IoT devices or endpoints can be easily connected even from a remote location. It enables network administrators to apply integrated network services easily to those connected endpoints and manage the same from a central or regional hub. SD-WAN solution also helps in improving the network visibility in managing devices or endpoints for reduced security risks and at the same time ensures the level of connectivity is available for optimum performance. SD-WAN solution enable IT teams to create granular policies to govern their network traffic and assign priorities of connections based on the types of data packets. In conclusion, SD-WAN solution, by simplifying the WAN architecture, supports organizations digital transformation and IoT initiative to scale quickly and securely.

Market Forecast Analysis by Total Market

Globally the software-defined wide-area network market is poised to grow significantly. With multiple successful deployments by large enterprise organizations, SD-WAN solution market is moving from early adoption to rapid growth stage of the overall product lifecycle. Large organizations from multiple industries, including banking and financial services, insurance, manufacturing, healthcare, retail, IT, telecom, and others are looking at full SD-WAN deployments and are moving from dozens to thousands of SD-WAN branch locations. These organizations are increasingly replacing their traditional hardware models for functions, such as VPN, WAN optimization, application delivery controller (ADC), and others networking hardware with advanced SD-WAN solution.

Software-defined wide-area network market is expected to grow significantly in the next five to six years from the market size of $501.3 million in 2017 to over $12.11 billion by 2023. The market, which has grown by 67.3% in 2017 compared to 2016, is expected to grow at a compound annual growth rate (CAGR) of 56.1% from 2018-2023.

Figure: Market Forecast: Total Market, Base Year – 2017, CAGR – 56.1%
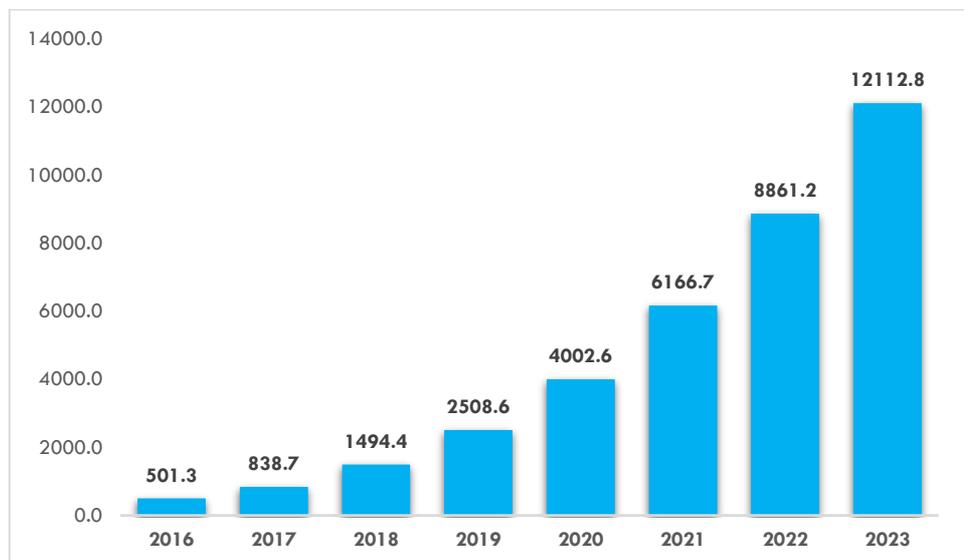
The primary growth driver for rapid increase in SD-WAN market revenue is due to the growing business and operational needs driven by widespread adoption of cloud (applications, storage, and platform), mobility, big data, and analytics, ever growing internet traffic requiring higher bandwidth availability at affordable costs, and explosion of IoT devices in the corporate applications. End users finds SD-WAN value proposition in reducing the network complexities by simplifying and automating WAN operations, reducing CapEx and OpEx requirements, improvement in application performance, improved network visibility and security, and such others. In addition to the improved value proposition, the market growth is also attributed to vendor's efforts in further

improving technology in terms of improved integration with best-of-breed security technologies, orchestration and automation of network processes, emergence of zero-touch deployments, and such others. This trend is expected to play a key role in improving the penetration rate and overall market growth of SD-WAN solution during the forecasted years of 2018-2023.

Market Forecast by Customer Type and Deployments

SD-WAN solution can be deployed as DIY (do it yourself) approach where users themselves install and manage the software and services or as a managed service where vendors take the responsibility of the installation, updates, and support services of the SD-WAN deployments. Large enterprise organizations prefer DIY approach as they have large in-house resources to manage the deployments, on-going support, re-architecting WAN connections to branch offices and remote sites, and its maintenance to ensure optimum performance. However, mid-sized organizations prefer managed deployments as they often lag in terms of in-house expertize or human resources to manage SD-WAN deployments. As per the overall market analysis, hybrid-approach of deployment is increasingly becoming popular where vendor organization manage key aspects of the installation and maintenance, and users are able to manage customization based on their evolving business and operational requirements. Hybrid deployment enable companies to control important aspects of deployments, including provisioning of new connections, creating application policies, setting up compliance rules, and such others. This trend is expected to play a key role in improving the penetration rate amongst mid-sized and large organizations, and overall market growth of SD-WAN solution during the forecasted years of 2018-2023.

According to the research findings, SD-WAN market growth is largely driven by increasing adoption by service providers. As the global SD-WAN market is expected to reach over $12 billion by 2023 with increased acceptance across global regions, in order to remain competitive service providers are increasingly combining their networks with the managed SD-WAN services. Major services providers, such as AT&T, Century Link, Comcast, Earthlink, Masergy, Mitel, Orange Business, Verizon, Sprint, MegaPath, TelePacific, Vonage, Windstream, and others are increasingly partnering with SD-WAN vendors to offer their own SD-WAN managed services to their customers. The service providers have also emerged as the most preferred vendor for SD-WAN implementation by enterprise customers. This is leading to the increased partnership of SD-WAN vendors with communication services provider, managed service providers, application service providers, and other channel partners.

On customer type, service provider customer segment constitutes 70.3% of the total market compared to enterprise segment revenue with a market share of 29.67% in the year 2017. The service provider segment is expected to grow at a CAGR of 56.3% compared to enterprise segment which is expected to grow at a CAGR of 55.5% during 2018-2023.

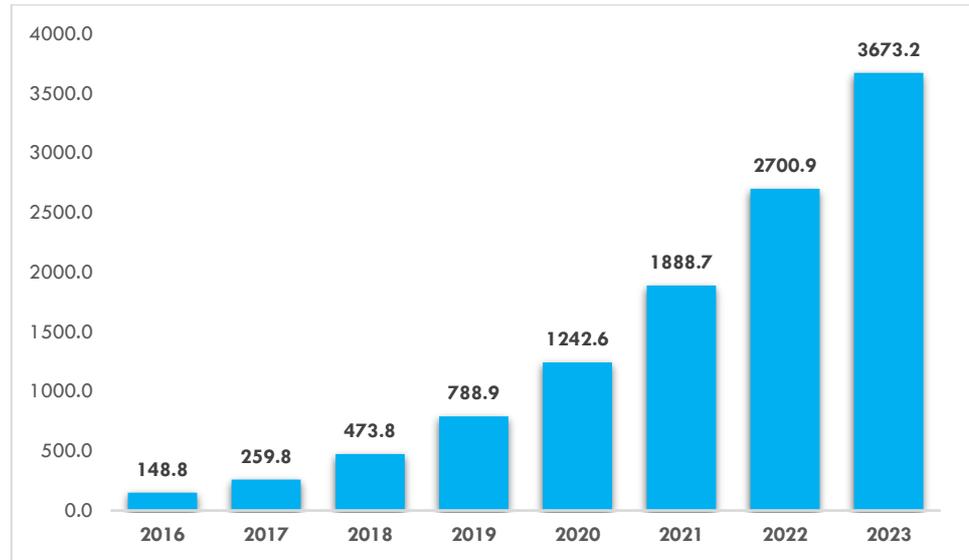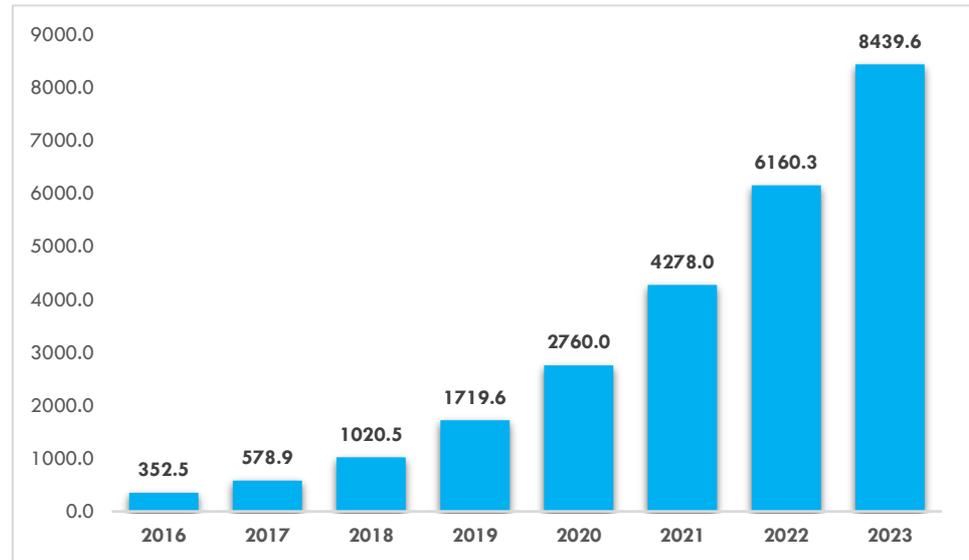*Market Forecast: Enterprise Customers, Base Year – 2017, CAGR – 55.5%*

Figure: Market Forecast: Service Providers, Base Year – 2017, CAGR – 56.3%

Market Forecast by Geographical Regions

The long-term trend for SD-WAN market indicates that the North America market continue to provide the highest business opportunities for SD-WAN vendor and currently holds over 83% of the total market. The SD-WAN market is also finding increasing traction in the key markets of Asia Pacific and EMEA regions which currently hold 8.7% and 8.3% respectively. Asia Pacific market is expected to grow at a CAGR of 64.9% during 2018-2023 driven by rapid adoption in China and improved penetration rate in Australia, Japan, Malaysia, and Thailand. EMEA market is expected to grow at a highest CAGR of 71.3% during 2018-2023 and is expected to overtake APAC market by 2018. EMEA market growth is largely driven by increasing adoption in markets, including Germany, UK, France, Netherlands, and South Africa.

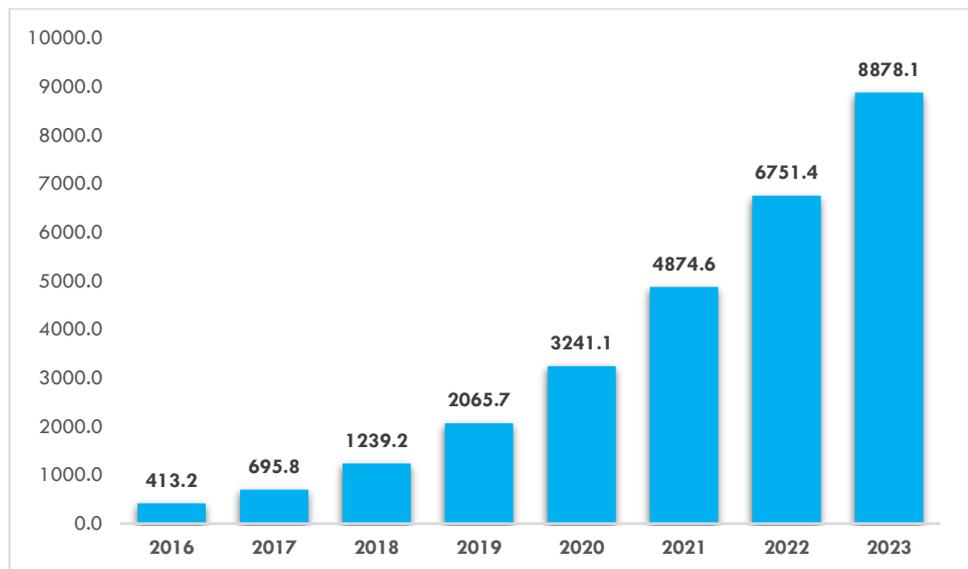*Figure: Market Forecast: Americas Region, Base Year – 2017, CAGR – 52.9%*

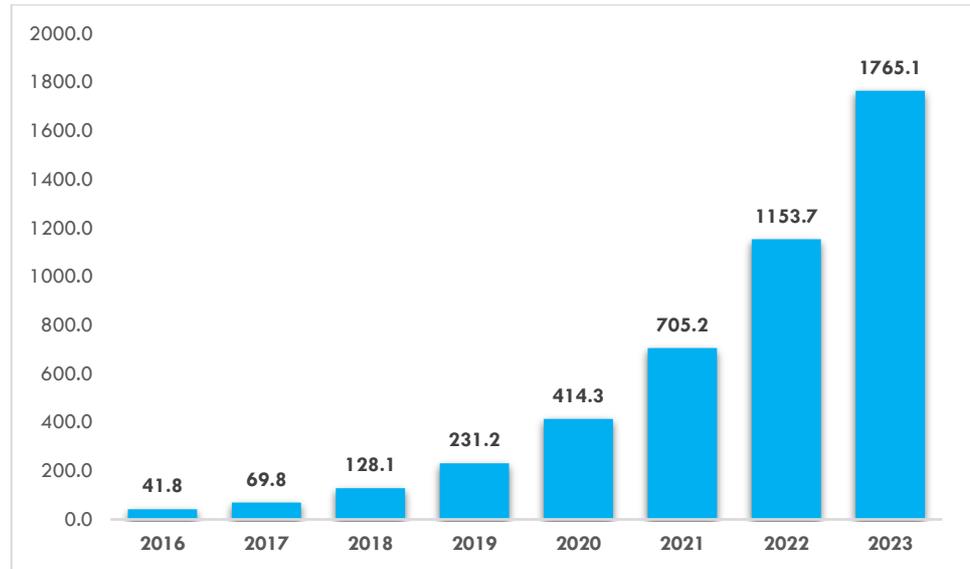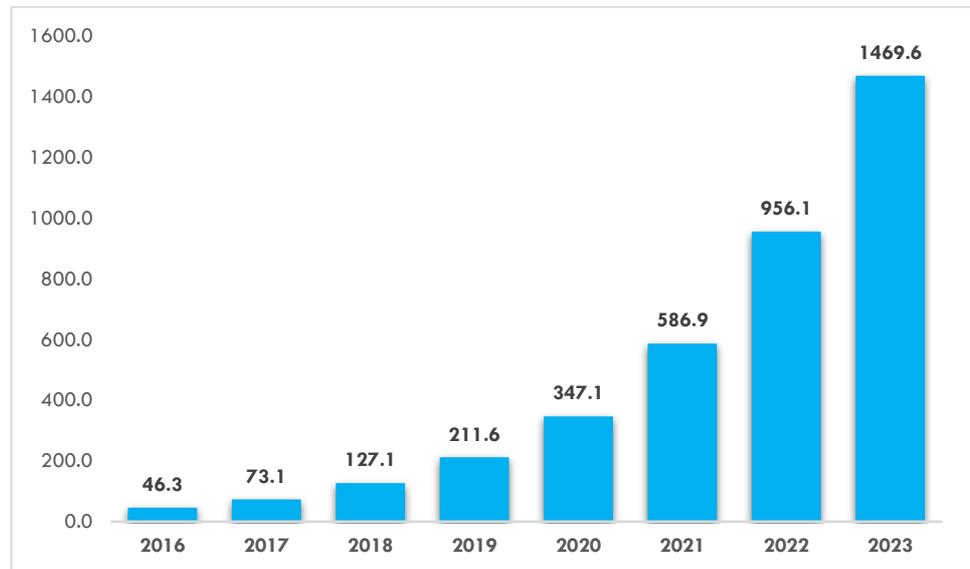**Figure: Market Forecast: EMEA Region, Base Year – 2017, CAGR – 71.3%**

Figure: Market Forecast: Asia Pacific Region, Base Year – 2017, CAGR – 64.9%

Competitive Landscape and Analysis

Quadrant Knowledge Solutions conducted in-depth analysis of major SD-WAN vendors in evaluating their products, market presence, and value proposition. The evaluation is based on the primary research with expert interviews, analysis of use cases, and Quadrant's internal analysis of the overall SD-WAN market. This study includes analysis of key SD-WAN vendors including Cisco (Viptela), Citrix, CloudGenix, Fatpipe, Mushroom Networks, Nuage Networks, Silver Peak, Talari Networks, VMWare (VeloCloud), Versa Networks, Zenlayer, and others.

Global SD-WAN market has a presence of SD-WAN specialists VeloCloud (now, VMWare), Versa Networks, Viptela (now Cisco), and Cloud Genix, networking vendors (Cisco, Mushroom Networks, and Nuage Networks), and WAN optimization vendors (Silver Peak, Citrix, Fatpipe, and Talari Networks). In addition, security vendors are also looking at offering SD-WAN solution to tap the attractive growth opportunities. However, driven by growing technology innovation and advancements in value proposition, SD-WAN offerings and product capabilities from all these different vendors are equally attractive. As new vendors are grabbing market traction, SD-WAN specialists continue to improve their offerings with integrated routing, support for WAN optimization, and added security functions.

VMWare (VeloCloud), Versa Networks, Cisco (Viptela), Silver Peak, Citrix, and Nuage Networks are the top performers and the technology leaders in the global SD-WAN market. These companies provide comprehensive SD-WAN solution and targeting both large enterprise organizations as well as increasingly partnering with communication service providers to improve market penetration. Talari Networks, Fatpipe, CloudGenix, and Mushroom Networks with strong product value-proposition and price/performance ratio, are also gaining market traction and consistently improving their market share. Zenlayer has strong presence in China market.

In the overall technology analysis, VMWare (VeloCloud) has emerged as the clear technology leader with its continue focus on technology innovation to offer next-generation of SD-WAN solution. The company has been successful in partnering with several service-provide customers to integrate its SD-WAN offerings and its SD-WAN offering has been popular amongst enterprise customers. Versa Networks is amongst the early SD-WAN technology innovators and its NFV-based SD-WAN and SD-Security solutions have been well received by several large and mid-sized enterprise customers. Versa has also partnered with several managed services providers and continue to improve its market presence in this segment. Cisco's leadership positioning is primarily driven by integration of Viptela's SD-WAN solution into its enterprise routing platform. Cisco's strategy of acquiring SD-WAN specialist Viptela worked well for the company in gaining significant positioning in the SD-WAN market as well as in retaining its existing router customers. Silver peak has been getting increased

market traction amongst mid-sized and large enterprise customers leveraging its existing customer and channel-partner networks. Talari Networks, Citrix and Fatpipe are increasingly utilizing their existing WAN optimization sales channels to market and sell their SD-WAN solution with product value proposition of integrated routing and WAN optimization capabilities.

Driven by promising market opportunities, large networking and IT vendors are looking at improving their product portfolio with SD-WAN solution. This is expected to drive increased acquisitions and mergers to improve managed services and improved offerings during the forecasted years of 2018-2023. Driven by growing competition vendors continue to focus on improving their SD-WAN technology value proposition in terms of improving the overall deployment experience, integration with third-party security technologies, improved orchestration and automation capabilities, application of advanced analytics and application visibility, support for future wireless technologies, 5G, and LTE, and application of machine learning, and artificial intelligence technologies to drive next-generation of SD-WAN solution. In addition, with aggressive pricing and product bundling with more features in the base-level offering, vendors continue to improve their price/performance ratio and hence the overall value proposition.

As the SD-WAN market reaches the growth stage in the overall product lifecycle, the market is expected to continually witness market consolidation, with vendor's strategy of market expansion through mergers and acquisition. This trend is expected to impact the vendor's competitive positioning during the forecasted years of 2018-2023.

Users should evaluate SD-WAN that offers comprehensive capabilities, including management of SD-WAN and network optimization, such as acceleration, dynamic path selection, hybrid WAN, and centralized administration, management, and orchestration of all connected endpoints, automation, WAN optimization, network security integration, zero-touch deployment, and such others. Users should also look for SD-WAN solution with history of successful large-scale deployments and carefully analyze the existing case studies of those deployments. This should form the basis to prepare best-practice for SD-WAN deployments. While selecting vendors and technology platform, users should evaluate different set of vendors from fairly new SD-WAN specialists to well-established networking and WAN optimization vendors.

Competitive Landscape Analysis

Quadrant Knowledge Solutions' competitive landscape analysis provides a snapshot of the market positioning of the key market participants. Competitive landscape representation provides a visual representation of market participants and provides strategic insights on how each supplier ranks related to their competitors, with respect to various performance parameters based on the category of technology excellence and customer impact. Quadrant's Competitive Landscape Analysis is an effective planning guide for strategic decision making, such as finding M&A prospects, partnership, geographical expansion, portfolio expansion, and similar others.

Each market participants are analyzed against several parameters of Technology Excellence and Customer Impact. In each of the parameters (see charts), index is assigned to each supplier from 1 (lowest) to 10 (highest). These ratings are designated to each market participant based on best practice research findings. Based on the individual participant ratings, X and Y coordinate values are calculated. These coordinates are finally used to make Competitive Landscape Quadrant.

Competitive Factor Analysis – Technology Excellence						
	Sophistication of Technology	Technology Application Diversity	Scalability	Competitive Differentiation & Strategy	Industry Impact	Final Rating
Weightages	20%	20%	20%	20%	20%	100%
Leader						
Competitor 1						
Competitor 2						
Competitor 3						

Source: Quadrant Knowledge Solutions

Competitive Factor Analysis – Customer Impact						
	Addressing Unmet Needs	Product Performance	Proven Record	Ease of Deployment	Customer Service Excellence	Final Rating
Weightages	20%	20%	20%	20%	20%	100%
Leader						
Competitor 1						
Competitor 2						
Competitor 3						

Source: Quadrant Knowledge Solutions

Competitive Landscape Quadrant

Our Competitive Landscape Quadrant representation is based on the evaluation from overall SD-WAN market perspective. Technology is an important consideration when evaluating and selecting a SD-WAN solution and vendor. End user organizations are advised to conduct comprehensive evaluation of different SD-WAN technologies and vendors before making purchasing decision. Users should employ a weighted analysis of the several factors important to their specific organization and industry-specific requirements. SD-WAN technology capabilities differ between different vendor offerings.

Market Outlook: Software-Defined Wide-Area Network (SD-WAN), 2018-2023, Worldwide
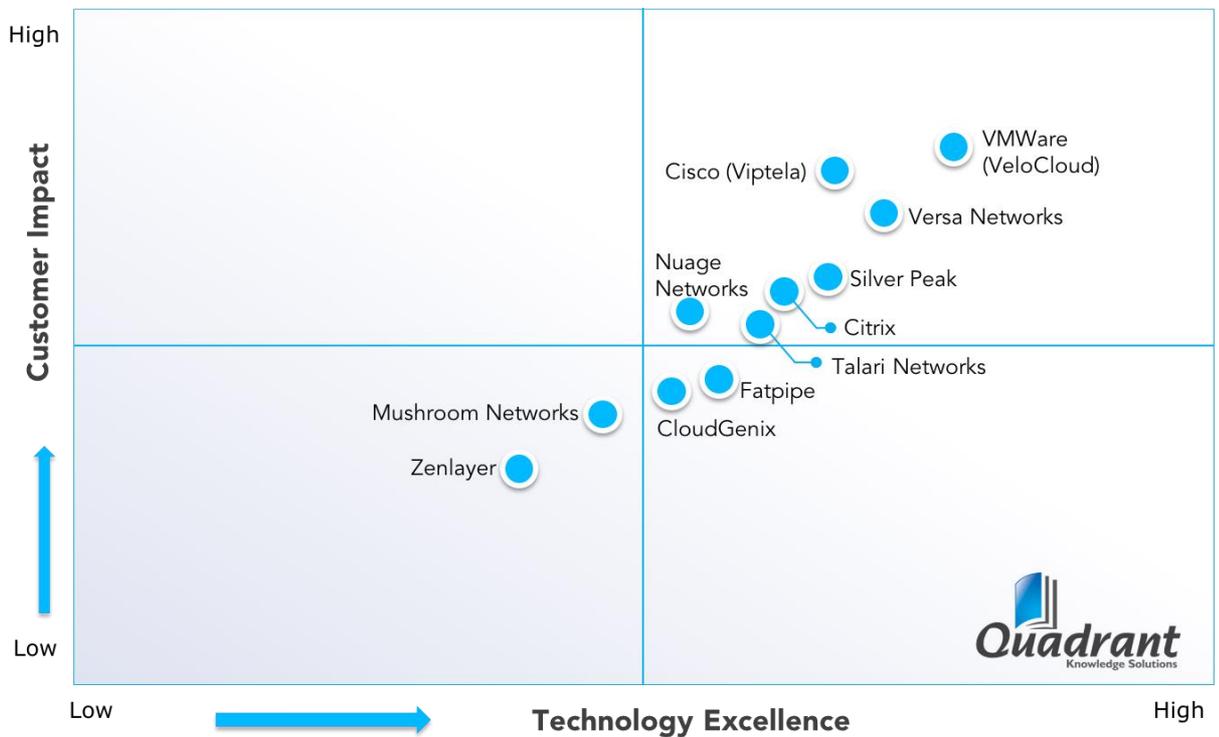
Vendors Profile

Following are the profiles of top SD-WAN providers in the global market. Quadrant research team derived this information from company's website, whitepapers, and in-depth discussions with senior executives.

Vendors Profile

VMWare (VeloCloud)

http://www.Velocloud.com/

Founded in 2012, and headquartered in Mountain View, California, USA, is now a part of VMware after its acquisition in December 2017. The company, with its comprehensive and sophisticated technology offerings, technology innovation, and higher customer impact, has been positioned as the overall technology leader in the global SD-WAN market.

VMWare (VeloCloud) Cloud-Delivered SD-WAN solution consists of VeloCloud Edge, VeloCloud gateways, and VeloCloud Orchestrator. VeloCloud Edge is a compact and zero-touch enterprise-grade appliance that provides optimized and secured connections to applications and data. With Dynamic Multi-Path Optimization (DMPO) and deep application recognition, VeloCloud Edge aggregates multiple links and performs application steering over the optimal WAN link, to ensure end to end quality of services. It is also available as a virtual network function (VNF) for installation on a virtual CPE platform. it can also connect to the system of global VeloCloud Gateways to provide enhanced performance and visibility for cloud services (SaaS, IaaS, B2B internet). VeloCloud Gateways are deployed globally at top-tier cloud data center to include distributed network of service gateways. It provides scalable and on-demand cloud delivered network services and enable optimized path for all applications, branches, and data center. VeloCloud Orchestrator orchestrate the data flow through the cloud network and provides centralized installation, configuration, network-wide business policy definition, real-time monitoring and analysis of application performance. It also enables one-click provisioning of virtual services in the branch, the cloud, or the enterprise data center.

Versa Networks

https://www.versa-networks.com/

Founded in 2012 and headquartered in Santa Clara, California, USA, Versa Network is amongst the early innovators and offers NFV-based SD-WAN and SD-security solution. The company is known for its superior platform-level solution that supports the needs of large enterprise and communication service providers (CSPs) around the world. Driven by the sophistication of technology platform, technology innovation, and overall product performance, the company has been recognized as 2018 company of the year as part of our Best Practice Research.

Versa Networks SD-WAN capabilities includes Versa FlexVNF, Versa Director, and Versa Analytics. Versa FlexVNF is a multi-service, multi-tenant software platform that enables customers to deploy wide range of software-defined solutions, including SD-Routing, SD-Security, and Secure SD-WAN. It provides both networking and security functions in a single software along with service chaining capabilities. All virtualized network and security components are managed centrally through the Versa Director management platform. Versa Director is a virtualization and service creation platform that simplifies the creation, automation and delivery of network and security services using Versa FlexVNF software. It provides management, monitoring, and orchestration capabilities to deliver Versa VNF-based network and security services for various use cases, including SD-WAN with layered security, routing and connectivity to direct internet access and control. Versa Analytics is a real-time Big Data solution purpose-built for Versa FlexVNF-based managed and enterprise SD-WAN and SD-Security deployments. It provides visibility and control, baselining, correlation, and predictive analytics for network, application usage, trends, and security events. It can be integrated into third-party systems.

Versa Networks

Silver Peak

https://www.silver-peak.com/

Headquartered in Santa Clara, California, USA, Silver Peak is leading WAN optimization vendor and has launched its Unity EdgeConnect SD-WAN solution in June 2015. The company, with its comprehensive product value proposition, has been positioned amongst the technology leader in the global SD-WAN market.

Silver Peak SD-WAN solution includes Unity EdgeConnect, Unity Orchestrator, and Unity Boost. Unity EdgeConnect physical or virtual appliance is deployed in branch offices to create a secure, virtual network overlay. This enable organizations to move to a broadband WAN either site-by-site or via a hybrid WAN that leverages MPLS and broadband internet connectivity. Unity Orchestrator, included with EdgeConnect, enables zero-touch provisioning of EdgeConnect appliances in the branch. It provides centralized network visibility for both legacy and cloud applications and automates the assignment of business intent policies to secure and control all WAN traffic. Policy automation accelerates and simplifies the deployment of multiple branch offices. Unity Boost is an optional performance pack that service chains WAN optimization to the EdgeConnect SD-WAN solution. Unity Boost helps companies accelerate performance of latency-sensitive applications and minimize transmission of repetitive data across WAN.

Silver Peak

Cisco (Viptela)

https://www.cisco.com/c/en/us/solutions/enterprise-networks/sd-wan/index.html

http://viptela.com/

In 2017, Cisco acquired Viptela, a major SD-WAN specialist, to offer cloud-based SD-WAN solution. Cisco has been positioned amongst the technology leaders in the global market. Cisco's leadership positioning is primarily driven by integration of Viptela's SD-WAN solution into its enterprise routing platform. Cisco (Viptela) SD-WAN solution is built on SDN principles to create a secure overlay network that separates management-plane, control-plane, and data-plane. Cisco is integrating its existing solution with Viptela's cloud-first SD-WAN solutions to bring next-generation of SD-WAN solutions.

Cisco (Viptela) SD-WAN includes, vManage, vSmart Controller, vEdge Router, and vBond Orchestrator. The vManage is a centralized dashboard that enables automatic configuration, management and monitoring of the Viptela overlay network. Users login to vManage to centrally manage all aspects of the network life cycle from initial deployment, on-going monitoring and troubleshooting to change control and software upgrades. vSmart Controller establish secure SSL connections to all other components in the network and run an Overlay Management Protocol (OMP) to exchange routing, security and policy information. The centralized policy engine in vSmart provides policy constructs to manipulate routing information, access control, segmentation, extranets and service chaining. The vEdge routers are full-featured IP routers that perform standard functions such as BGP, OSPF, ACLs, QoS and various routing policies in addition to the overlay communication. Each vEdge router establishes secure connectivity to all of the control components and also establishes IPSec sessions with other vEdge routers in the WAN network. The vBond orchestrator facilitates the initial bring-up by performing initial authentication and authorization of all elements into the network. vBond provides the information on how each of the components connects to other components.

Citrix

https://www.citrix.co.in/products/netscaler-sd-wan/

Headquartered in Santa Clara, California, Citrix is a well-established IT and WAN optimization vendor. The company is currently expanding its customer base beyond its existing Citrix customers. Citrix NetScaler SD-WAN solution, includes application aware Virtual WAN, dynamic routing, QoS, and WAN optimization functionality.

Its Virtual WAN creates a reliable WAN for diverse range of network links including MPLS, broadband, and wireless. NetScaler SD-WAN includes application QoS that offers granular application awareness combined with network performance and ensures that the critical applications are prioritize and are routed across the highest quality links. The company also provides WAN optimization features such as TCP flow control, data compression, de-duplication and protocol optimization, to improve end user experience and reduction in WAN bandwidth expenses. With dynamic routing and branch simplification. With Dynamic Routing, NetScaler SD-WAN can seamlessly participate in organizations routing topology in overlay mode for easy network insertion or operate in edge mode for a streamlined branch network with assured application delivery. NetScaler SD-WAN also includes integrated firewall to provide multi-faceted data protection to the network. The firewall integrates with the application QoS to allow security policies to be defined centrally enabling allowing IT to limit access by application or application elements, or both. It also provides strong encryption as data crosses public and private networks while integrating with cloud web gateways.

Citrix

Talari Networks

https://www.talari.com/

Founded in 2007 and headquartered in San Jose, California, Talari Networks is amongst the major provider of SD-WAN solution. Talari SD-WAN can be deployed at the physical edge, virtual edge, or in the cloud, through its components including Talari's controller, Talari suite of appliances, and Talari Aware.

Talari Controller is an orchestration point to configure, synchronize time and establish dynamic connections between Talari appliances. It enables centralized management and distribution of services and application policies. Talari offers multiple physical, virtual, and cloud appliances range to support scalability in meeting the needs for small offices to large data centers and from call centers to cloud. Talari Aware is a centralized management system to configure, monitor, and analyze the entire Talari SD-WAN. It provides real-time analytics, visibility for trouble shooting, and capacity planning. The company also offers on-board management interfaces on the appliances and supports third-party management and reporting tools. Talari SD-WAN solution also provides native support for WAN optimization, including data compression, deduplication and congestion controls.

Talari Networks

Research Methodologies

Quadrant Knowledge Solutions uses comprehensive approach to conduct global market outlook research for various technologies. Quadrant's research approach provides our analysts with the most effective framework to identify market trends, technology trends, and helps in formulating meaningful growth strategies for our clients. All the sections of our research report are prepared with considerable amount of time and thought process before moving on to the next step. Following is the brief description of the major sections of our research methodologies.

Secondary Research

Followings are the major sources of information for conducting secondary research:

Quadrant's Internal Database

Quadrant Knowledge Solutions maintains a proprietary database in several technology marketplaces. This database provides our analyst with an effective foundation to kick-start the research project. This database includes information from the following sources:

- Annual reports and other financial reports
- Industry participant lists
- Published secondary data on companies and their products
- Database of market sizes and forecast data for different market segments
- Major market and technology trends

Literature Research

Quadrant Knowledge Solutions leverages on several magazine subscription and other publications that covers wide range of subjects related to technology research. We also use extensive library of directories and Journals on various technology domains. Our analysts' uses blog posts, whitepaper, case studies, and other literatures published by the major technology vendors, online experts, and industry news publications.

Inputs from Industry Participants

Quadrant analysts collect relevant documents such as whitepaper, brochures, case studies, price lists, datasheet, and other documents from all major industry participants.

Primary Research

Quadrant analysts' uses two-step process for conducting primary research, that helps us in capturing meaningful and the most accurate market information. Following is the two-step process of our primary research:

Market Estimation: Based on top-down and bottoms-up approach, our analyst analyses all industry participants to estimate their business in the technology market for various market segments. We also seek information and verification of client business performance as part of our primary research interviews or through detailed market questionnaire. Quadrant research team conducts detailed analysis of the comments and inputs provided by the industry participants.

Client Interview: Quadrant analyst team conducts detailed telephonic interview of all major industry participants to get their perspectives of the current and future market dynamics. Our analyst also gets their first-hand experience with vendor's product demo to understand their technology capabilities, user experience, product features, and other capabilities. Based on the requirements, Quadrant analysts conduct interview with more than one person from each of the market participants to verify the accuracy of the information provided. We typically engage with client personnel in one of the following functions:

- Strategic Marketing Management
- Product Management
- Product Planning
- Planning & Strategy

Data Analysis: Market Forecast & Competition Analysis

Quadrant's analysts' team gathers all the necessary information from secondary research and primary research to a computer database. These databases are then analyzed, verified, and cross-tabulated in numerous ways to get the right picture of the overall market and its segments. After analyzing all the market data, industry trends, market trends, technology trends, and key issues, we prepare preliminary market forecasts. This preliminary market forecast is tested against several market scenarios, economic scenario, industry trends, and economic dynamics. Finally, the analyst team arrive at the most accurate forecast scenario for overall market and its segments.

In addition to market forecasts, our team conducts detailed review of industry participants to prepare competitive landscape and market positioning analysis for overall market as well as for various market segments.

Final Report Preparation

After finalization of market analysis and forecasts, our analyst prepares necessary graphs, charts, and table to get further insights and preparation of final research report. Our final research report includes information including

market forecast; competitive analysis; major market & technology trends; market drivers; vendor profiles, and such others.