

SD-WAN Managed Services RadarView™ 2019

Enabling optimized and flexible
network transformation

July 2019

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1

The adoption of SD-WAN Managed Services technology to enhance network performance and improve bandwidth utilization is growing across industries. There is significant interest among the top Global 2000 companies to explore and understand SD-WAN to transform their networks.

2

Avasant's ongoing interactions with enterprise digital leaders reveal that organizations are working to find the right business case to scale SD-WAN across the enterprise. They are looking to identify service providers that provide a progressive, business-centric approach to support their SD-WAN transformation journey.

3

The SD-WAN Managed Services RadarView 2019 Report is aimed at providing information about the key trends and best practices to enterprises and build a granular understanding of the SD-WAN ecosystem.

4

Avasant evaluated 38 providers of SD-WAN Managed Services through a rigorous methodology across key dimensions of practice maturity, partnership ecosystem, and investments and innovation to finally recognize 22 that brought the most value to the market over the last 12 months.

5

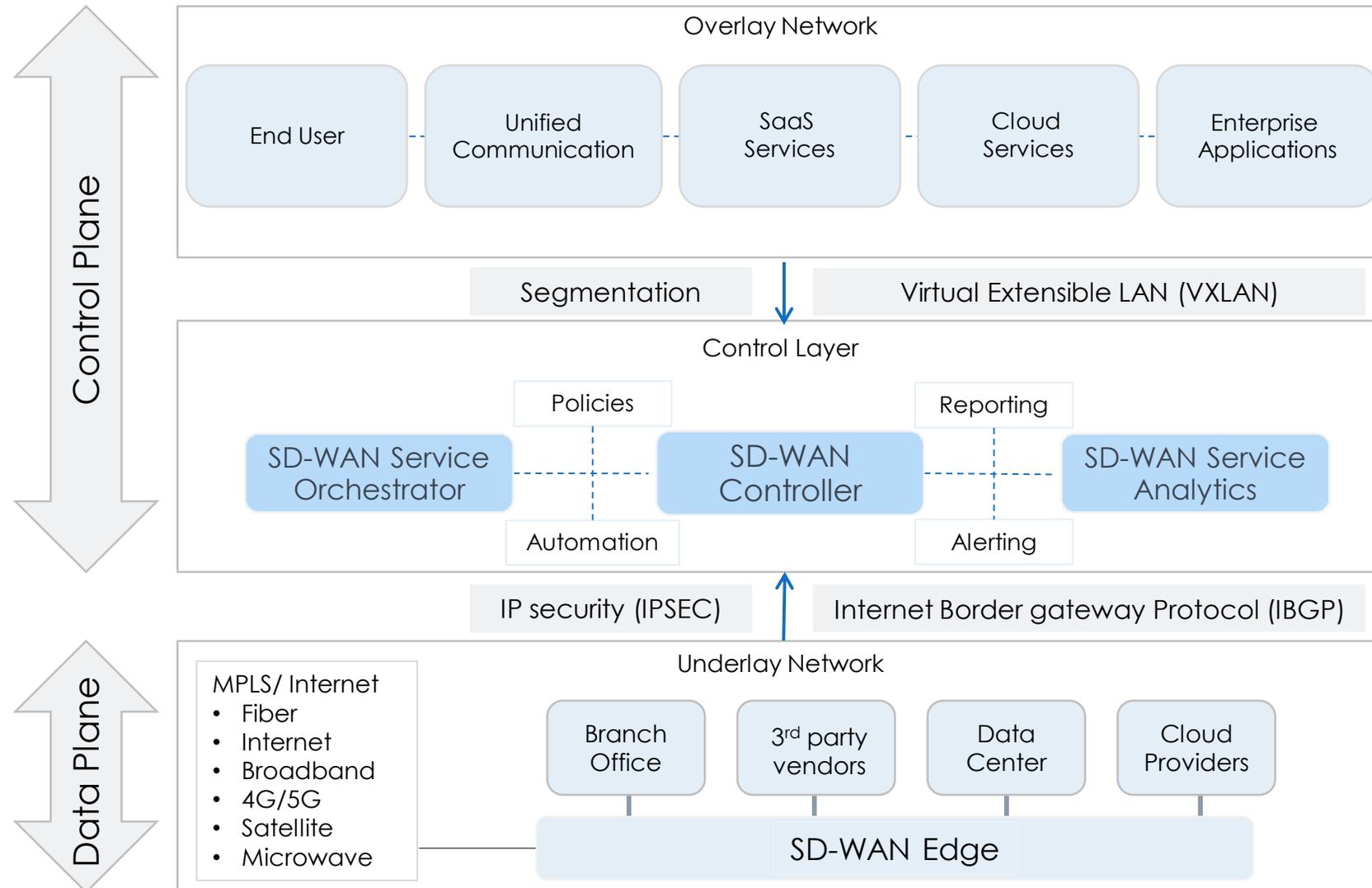
The report also highlights the key market trends and Avasant's view on the road ahead for enterprises leveraging SD-WAN Managed Services over the next 12 to 18 months

AVASANT

Background

Defining SD-WAN Managed Services

Applying SDN technology to connect overlay network of enabled devices to an underlay infrastructure



Avasant SD-WAN Managed Services RadarView covers service providers with end-to-end offerings spanning network management, network security, performance management and support of physical and virtual customer premise equipment (CPE).

A compelling case for SD-WAN exists for globally dispersed enterprises with growing network complexities



Access to SaaS based applications

- SD-WAN supports cloud-based and real-time applications along with supporting new cloud-driven traffic patterns
- SD-WAN also align with multi-cloud models to support diverse application mix



Connecting to dispersed remote locations

- SD-WAN enables global connectivity in shortest time
- Multiple branch sites especially with no-network zone, enables enterprises with a case to implement SD-WAN



Increasing bandwidth requirements

- SD-WAN enables network managers to identify the right bandwidth requirements for their networks
- It also helps enterprise to reduce bandwidth costs and perform effective and software-controlled bandwidth utilization



Need for scale and hardware refreshes

- Replaces legacy networks with software-defined WAN, making them suitable for modern connectivity
- SD-WAN removes cumbersome process of making changes in multiple devices in WAN networks

SD-WAN enables enterprises to fundamentally transform their network management



Traditional WAN

SD-WAN

| | Traditional WAN | SD-WAN |
|--|---|---|
|  Deployment | <ul style="list-style-type: none">• Manual configuration of routers and gateways• On-site technicians required• Months to provision | <ul style="list-style-type: none">• Software-defined deployment of traffic rules• Zero touch configuration• Hours to provision |
|  QoS/Security | <ul style="list-style-type: none">• Limited visibility on application performance• Inconsistent level of QoS and security across branch offices | <ul style="list-style-type: none">• Full visibility into real-time network management• High level of QoS and security policy; managed centrally |
|  Cost Impact | <ul style="list-style-type: none">• High costs due to resiliency on MPLS links• Increased costs due to dedicated links for critical business traffic | <ul style="list-style-type: none">• Cost savings though using low cost internet links• No dedicated links to provision critical traffic, hence lower costs |
|  Cloud integration | <ul style="list-style-type: none">• Non optimized for connectivity to cloud environment• Backhaul to enterprise datacenter and then to cloud | <ul style="list-style-type: none">• Rapid connectivity with multiple clouds and IaaS• Enables direct access to cloud option |

Enterprises investing in SD-WAN need to evaluate technical, design and security considerations

SD-WAN transforms how enterprises manage networks and helps them to overcome barriers towards true digital transformation

Typical SD-WAN implementation challenges

Business Case

- Preparing clear business case
- Visibility into network underlays
 - Transition challenges



Security

- Outdated legacy security solutions
 - Transport data over private link
 - Centralized firewalls cause bottlenecks



Cloud Migration

- Cloud unfriendly architecture
- Providing fast access to SaaS based applications



Complex Environment

- Manage multiple WAN links
- Managing existing MPLS
- Orchestrating SD-WAN network



Diversity

- Connecting enterprise network
- Supporting multiple site issues
- Limited local resources



Skill gaps

- Lack of cloud & automation expertise
- Shortage of hybrid IT skills
- Upskilling of network engineers





Executive Summary

Four key SD-WAN Managed Services trends shaping the market

SD-WAN is accelerating and will be mainstream in coming 36 months

- Nearly 20% of the Global 2000 companies have already adopted some form of SD-WAN technology. Within next 36 months, enterprise SD-WAN adoption is likely to double.
- Industries requiring high bandwidth such as Telecom, Media & Communication and geographically dispersed, such as Manufacturing (including high tech), and Retail & CPG have been early adopters of SD-WAN. While, highly regulated industries like healthcare and BFSI are slowly gaining momentum

Cloud-first and digital initiatives are driving SD-WAN adoption

- As more than 80% of Global 2000 enterprises move to hybrid cloud environments, they require advanced network capabilities and topologies. SD-WAN provides the mechanism to support increasing application workloads and a way to securely access these cloud applications.
- SD-WAN adoption has accelerated with usage of technologies like AI, IoT and big data/analytics which require efficient bandwidth utilization and network agility to support growing traffic.

Industry acquisitions have been increasing and will continue in 2019

- The SD-WAN technology startup ecosystem has become vibrant with significant funding and marquee acquisitions. Traditional technology providers are leveraging these acquisitions to acquire IP, rapidly expand capabilities and develop adjacent services.
- Managed service providers (MSPs) are taking the inorganic route to develop integrated SD-WAN managed services, expand global network and offer enhanced functionalities.

New ecosystem partnerships are driving SD-WAN tech enhancements

- Service providers in conjunction with leading SD-WAN technology providers are offering new features including network analytics, predictive maintenance, auto-healing etc. These help enterprises improve network resilience, resolution time, and business agility.
- Leading cloud providers have built partnerships and offerings with SD-WAN technology providers, to enable seamless and secure cloud support and faster access to cloud-based applications.

Road ahead for the enterprise SD-WAN adoption

Identify clear value-driven business case for SD-WAN

- Organizations need to develop comprehensive business case for SD-WAN adoption that consider value-centric advantages such as customer experience and business agility, in addition to the more traditional metrics around operational savings.
- Enterprises should build their core SD-WAN business case based on assessment of their enterprise need of moving to cloud, connecting dispersed locations, and increasing bandwidth requirements.

Leverage phased transition approach for SD-WAN adoption

- Enterprise should carry out pilot models to evaluate SD-WAN requirements, understand critical factors needed for a best-fit implementation approach and to achieve sustainable cost optimization.
- Utilize phased SD-WAN implementation approach with strong governance to manage complex rollouts, reduce network interdependencies and transition risks.

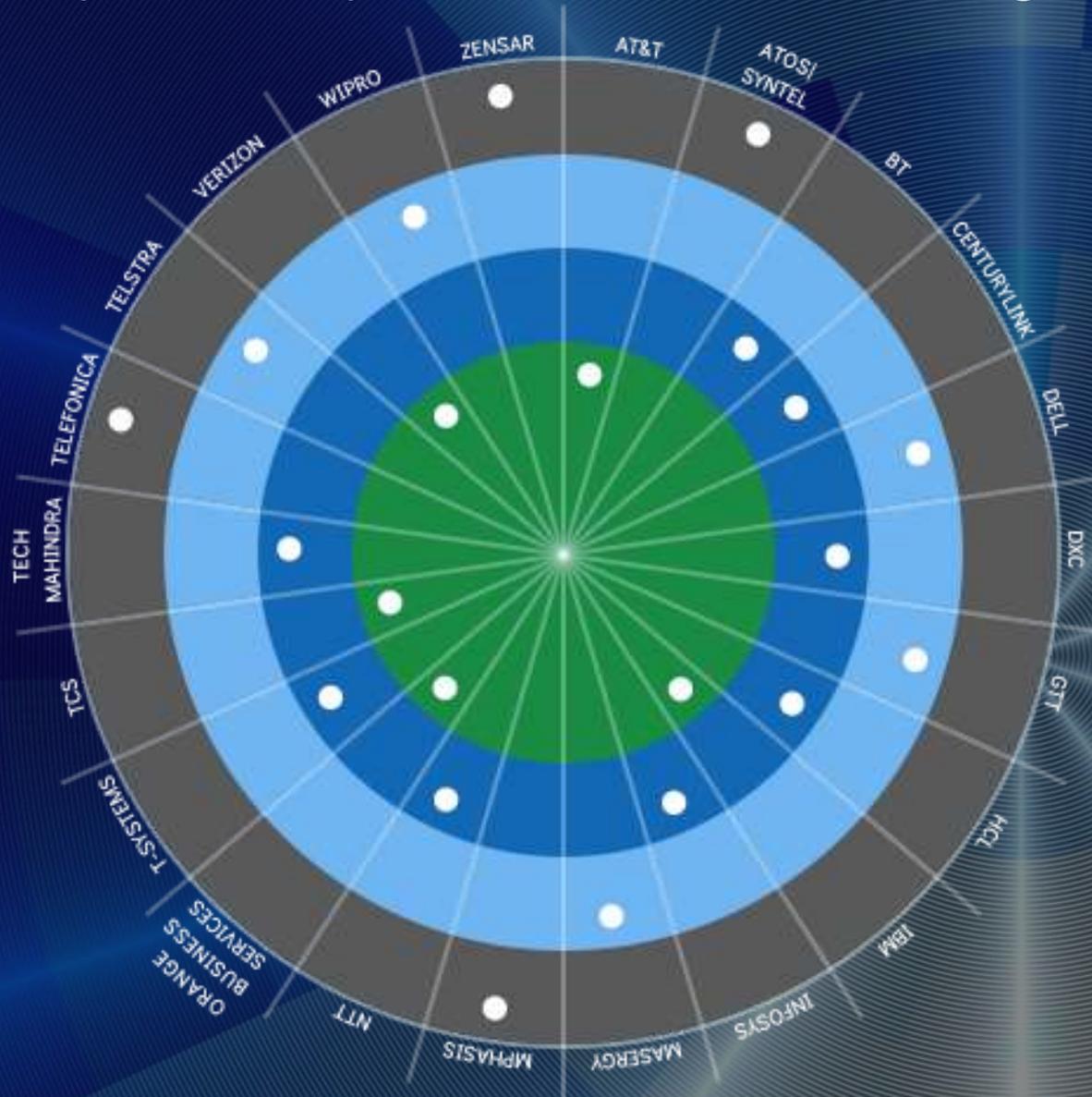
Work with providers with large, complex implementation experience

- Enterprises should seek service providers that have strong SD-WAN platform partnerships, structured training programs, flexible pricing models and extensive global coverage.
- To address multi-vendor integration and security challenges, enterprises need to invest in revamping their hiring process and upskilling teams with security and project management skills.

Invest in next-gen security solutions compliant with new security standards

- As SD-WAN becomes central to cloud and IoT applications, both service providers and enterprises need to increase focus on SD-WAN security features, staff certifications and compliance.
- With a rise in Cybersecurity breaches in the past 24 months, enterprise and service providers teams need to replace perimeter-based security and upgrade tools capabilities with next gen security standards based on real-time traffic and business goals

Avasant has recognized 22 top-tier providers supporting the enterprise adoption of SD-WAN Managed Services



LEADERS

| | |
|--------------------------|-----|
| AT&T | IBM |
| Orange Business Services | TCS |
| Verizon | |

INNOVATORS

| | |
|----------------------|-------------|
| British Telecom (BT) | CenturyLink |
| DXC | HCL |
| Infosys | NTT |
| Tech Mahindra | T-Systems |

DISRUPTORS

| | |
|---------|-------|
| Dell | GTT |
| Masergy | Wipro |
| Telstra | |

CHALLENGERS

| | |
|---------------|---------|
| Atos Syntel | Mphasis |
| Telefonica | Zensar |



SD-WAN Managed Services: Market Overview

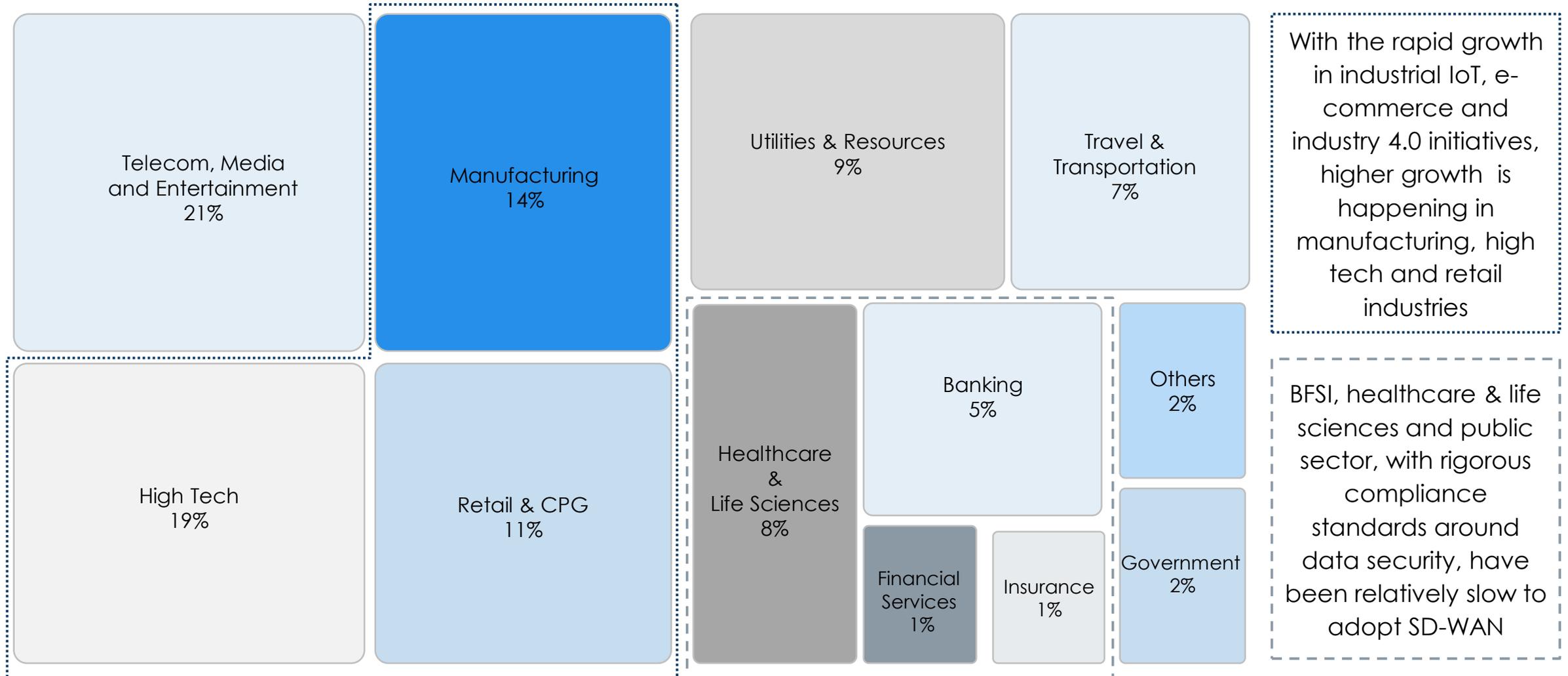
Leading enterprises with wide global presence have done full-scale SD-WAN implementations

More than 45% of Global 2000 companies are planning to deploy SD-WAN in next 24 months

~15-20%
Of Global 2000 enterprises have implemented SD-WAN across their environment

| Organization | Industry | Description | Business benefits delivered |
|---|----------------------------|---|---|
|  | Manufacturing | Hitachi deployed flexible SD-WAN solution on its GWAN infrastructure to connect more than 1,000 offices in 40 countries, along with securing WAN infrastructure | Network bandwidth optimization, improved network visibility and automated internet usage |
|  | High Tech | McLaren implemented SD-WAN solution to connect their technology center with racing circuits in 21 countries during the 2018 season. | Improved network availability and traffic visualization |
|  | Banking | Rabobank replaced its legacy copper footprint with SD-WAN solution at 90+ branches and two data centers across Australia and New Zealand. | Improved bandwidth utilization and customer experience |
|  | Retail & CPG | Modernized its stores by implementing SD-WAN services across 16 locations to deliver high quality unified communications over broadband links | Improved performance by 50%, and PCI compliance at multiple retail locations |
|  | Healthcare & Life Sciences | Deployed SD-WAN solution across 120 facilities, migrating from MPLS network. It offered centralized orchestration and access to cloud from remote sites | Reduced in-person doctor visits for 10,000 patients and improved QoS |
|  | Manufacturing | Siemens signed a six-year contract worth \$294M to migrate entire global infrastructure to a dynamic and flexible SD-WAN network which will connect cloud applications as well as IoT devices | Transformation across 1,500 sites in 94 countries, implementing universal CPE, web protection suite and SDN-UCPE infrastructure |
|  | High Tech | Leveraged SD-WAN managed services across 650+ sites in over 50 countries, integrating film and electronic business units improving network security and network transparency | Improved network performance and enabled applications to be virtually accessed via cloud |

TMT and High Tech are early adopters and constitute more than a quarter of SD-WAN implementations



Enterprises across industries are typically leveraging SD-WAN to address 4 main use cases



| Use Cases | Customer challenge | SD-WAN solution |
|---|--|--|
| WAN segmentation | <ul style="list-style-type: none">• Traditional WAN backhauls SaaS traffic to Central DC over costly MPLS for internet exit.• Long MPLS backhaul leads to suboptimal path and performance issues. | <ul style="list-style-type: none">• Multiple WAN Segments based on application, security and compliance requirements.• Application based policies. |
| Access to enterprise SaaS based application | <ul style="list-style-type: none">• Traditional appliance based internet security at central DC will be inadequate.• Long MPLS backhaul leads to suboptimal path and performance issues. | <ul style="list-style-type: none">• Dynamic path selection in Hybrid WAN environment.• Implements connectivity and boosts security in multi-cloud strategy |
| Network provisioning | <ul style="list-style-type: none">• High network provisioning time from days to weeks• Increased go-to-market time | <ul style="list-style-type: none">• SD-WAN solution built with policy modules, provision network based on line of business (LOB)• Zero-touch provisioning to remote locations |
| Connected devices | <ul style="list-style-type: none">• Connecting and managing devices, sensors and cloud through legacy WAN architecture• Allocating on-site network engineer would be cost prohibitive | <ul style="list-style-type: none">• Provides restricted access to IoT, self-monitoring and provisioning based on business and resources• Improved support for user connected experience |

As enterprise applications are becoming cloud ready, it requires new WAN topology to support it

SD-WAN is better suited to deliver some of the typical network requirements for successful cloud adoption. SD-WAN solutions meet these challenges and address growing need for cloud-based applications

>80%
Of the Global 2000 firms have hybrid IT environments



| SD-WAN features | Traditional WAN | SD-WAN |
|------------------------|---|---|
| Low latency |  |  |
| High bandwidth for QoS |  |  |
| Network redundancy |  |  |
| Flexibility |  |  |
| Automated provisioning |  |  |

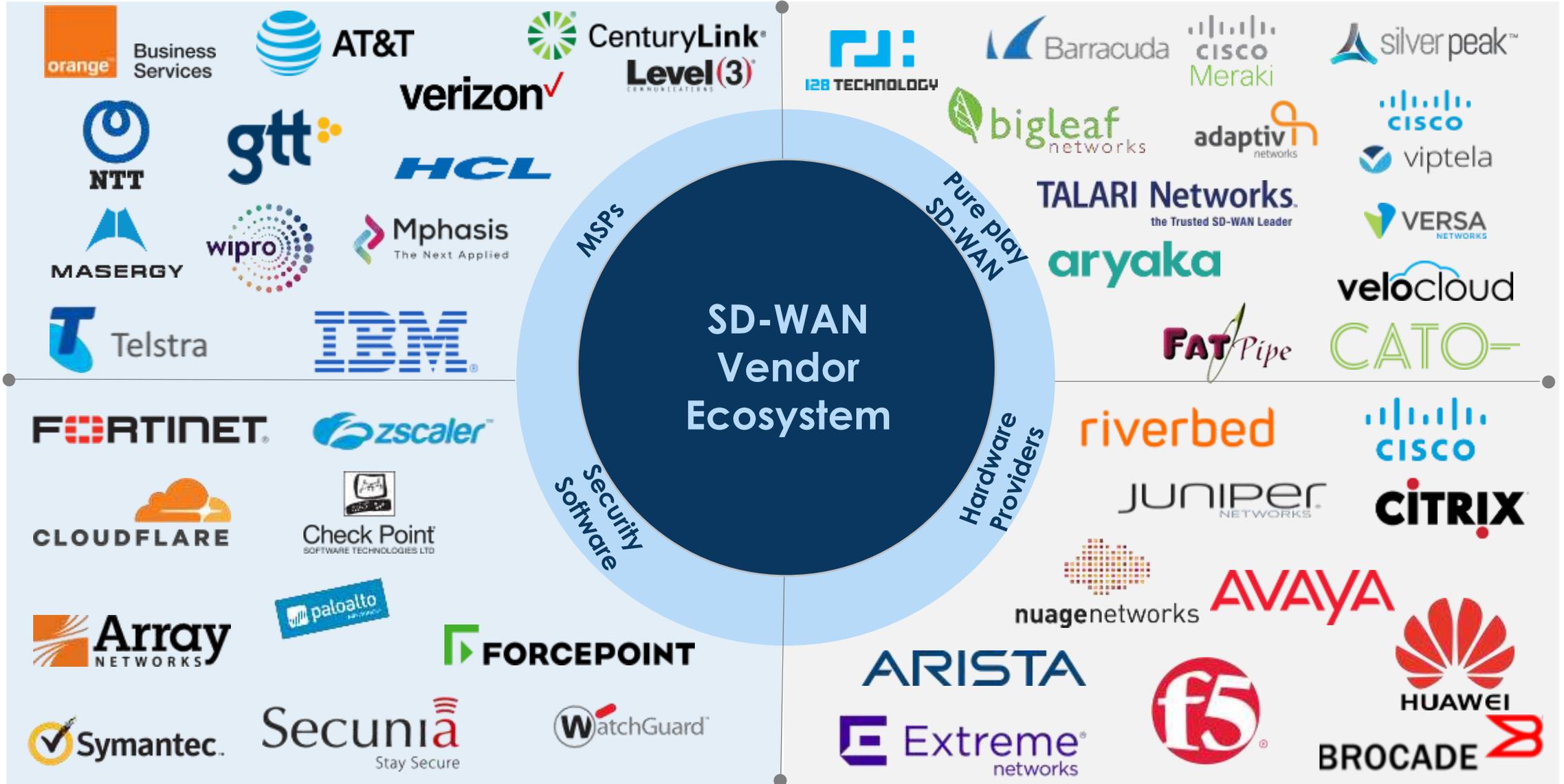
Darker color indicates higher favorability:   

Emerging digital technologies help SD-WAN acceleration

SD-WAN is pivotal to enterprise digital strategy and steps up as a critical enabler to add more connected devices

| Technology | Applications | Organization | Industry | Illustrative examples |
|-----------------------------------|------------------------|---|----------------------------|---|
| Internet of Things (IoT) + SD-WAN | Smart Cities |  | Government | <ul style="list-style-type: none"> City of San Antonio installed cloud-managed routing platforms across 700 traffic cabinets and utilized 4G LTE, enabling constant connectivity and streamlined network troubleshooting The SDN enabled network provided real-time management, easy physical access, and the potential to scale up the network and applications. |
| | Smart Cars |  | Manufacturing | <ul style="list-style-type: none"> Hyundai is planning to launch hyperconnected cars next year, incorporating SDN architecture designed and built by Cisco As a result, the premium Hyundai vehicles will offer integrated, multi-layer security, vehicle-to-vehicle communication and network traffic analysis |
| | Smart Wearables |  | Healthcare & Life Sciences | <ul style="list-style-type: none"> Augmedix, a healthcare technology company, has incorporated SD-WAN as a service to enable doctors communicate in real-time using Google Wearables and document patients electronic health records. It transfers data from data center located in US to India using a remote desktop-based IoT application |
| | Mobile Payments |  | Financial Services | <ul style="list-style-type: none"> ChargelSpot leveraged WAN modernization services across its Kiosks through purpose built IoT routers, providing auto restart and troubleshooting capabilities The solution provided reliable LTE connectivity to kiosks located in retail stores, malls etc. and provided carrier flexibility, kiosks security etc. |
| AI/ML + SD-WAN | Predictive Maintenance |  | Manufacturing | <ul style="list-style-type: none"> Makino, a global leader in metal cutting technology, deployed SD-WAN solution to synchronize data between Tokyo HQ's and Ohio It helped them increased (20x) performance, predict maintenance, track machine downtime, and reduced downtime from 7 hours to 20 minutes |

The SD-WAN ecosystem has a large number of players addressing different aspects of the value chain



To address increasing SD-WAN demands, technology players have invested and acquired niche SD-WAN players

6.5X
Average acquisition value to funding ratio

| Technology Provider | SD-WAN platform provider | Acquisition date | Deal Size (in USD million) | Description |
|---|---|------------------|----------------------------|---|
|  |  | Nov, 2012 | 1,200 | <ul style="list-style-type: none"> Meraki's acquisition has expanded Cisco's cloud networking portfolio and network management solutions Cisco adds over 300+ Meraki's employees, increase wireless revenue and strengthen go-to-market capabilities |
|  |  | Aug, 2017 | 610 | <ul style="list-style-type: none"> Viptela's acquisition strengthened Cisco's SD-WAN portfolio with policy-driven routing and next-gen security capabilities Post Viptela's acquisition Cisco claims to add more than 800 SD-WAN customers and achieved faster time-to-market |
|  |  | Nov, 2018 | N/A | <ul style="list-style-type: none"> Talari's Network has helped Oracle to enhance its Acme Packet acquired SBC assets and expand cloud business The acquisition has added 500 enterprise customers across 40 countries and opened new business opportunities |
|  |  | Jan, 2016 | N/A | <ul style="list-style-type: none"> Riverbed's acquisition of Ocedo expands its application-centric SD-WAN solutions and channel partners Ocedo also integrates Astaro, a networking security company, capabilities with Riverbed's SD-WAN solution |
|  |  | Nov, 2017 | 450 | <ul style="list-style-type: none"> By Acquiring VeloCloud, VMware integrates end-to-end automation, application continuity and security capabilities The acquisition will further strengthen VMware's position in leading the market transition to a software-defined future |

Even service providers are utilizing marquee acquisitions to offer comprehensive offerings and acquire new market

| Date | Company | Acquired | Deal Size | Description |
|----------|---|---|-------------|---|
| May 2018 |  |  from the ground to the cloud | USD 2.3B | <ul style="list-style-type: none"> GTT completed its Interoute acquisition in 2018, gaining access to 400 PoPs and fiber network across 129 cities The acquisition adds marquee client base, strengthens GTT's managed services portfolio and expand vertical expertise |
| Aug 2017 |  |  | USD 160M | <ul style="list-style-type: none"> GTT acquisition of Global Capacity provides last-mile connectivity assets to 9.6 million commercial customers and 41 data centers Additionally, GTT also added new clients in healthcare, retail, application services and carrier markets |
| Nov 2016 |  |  | USD 34B | <ul style="list-style-type: none"> CenturyLink leverages its Level3 acquisition to offer enhanced SD-WAN managed services and expand fiber foothold Both companies will also offer enhanced products and service across SD-WAN, hybrid cloud and security |
| May 2015 |  |  | Undisclosed | <ul style="list-style-type: none"> DXC through its HPE acquisition of ContexTream, complements its NFV services through ContexNet, an OpenDaylight-based SDN controller |
| Jan 2014 |  |  | USD 525M | <ul style="list-style-type: none"> NTT utilizes Virtela acquisition to offers SD-WAN managed services, incorporating Virtela's monitoring services, SDN and firewall capabilities The acquisition helped NTT to expand global network to more than 190 countries and launch new networking services |

SD-WAN service providers are also developing proprietary platforms and incorporating them in their managed services

Illustrative SD-WAN platforms by MSPs

| SD-WAN MSPs | Developed in-house tools/platforms |
|---|------------------------------------|
|  AT&T | FlexWare |
|  BT | Agile Connect |
|  gtt | GTT SD-WAN |
|  HCL | NetBot |
|  IBM | IBM SD-WAN platform |
|  MASERGY | SD-WAN Go |
|  NTT | NTT SD-WAN platform |
|  orange Business Services | Flexible SD-WAN |
|  T-Systems | Smart SD-WAN |

Key functionalities offered

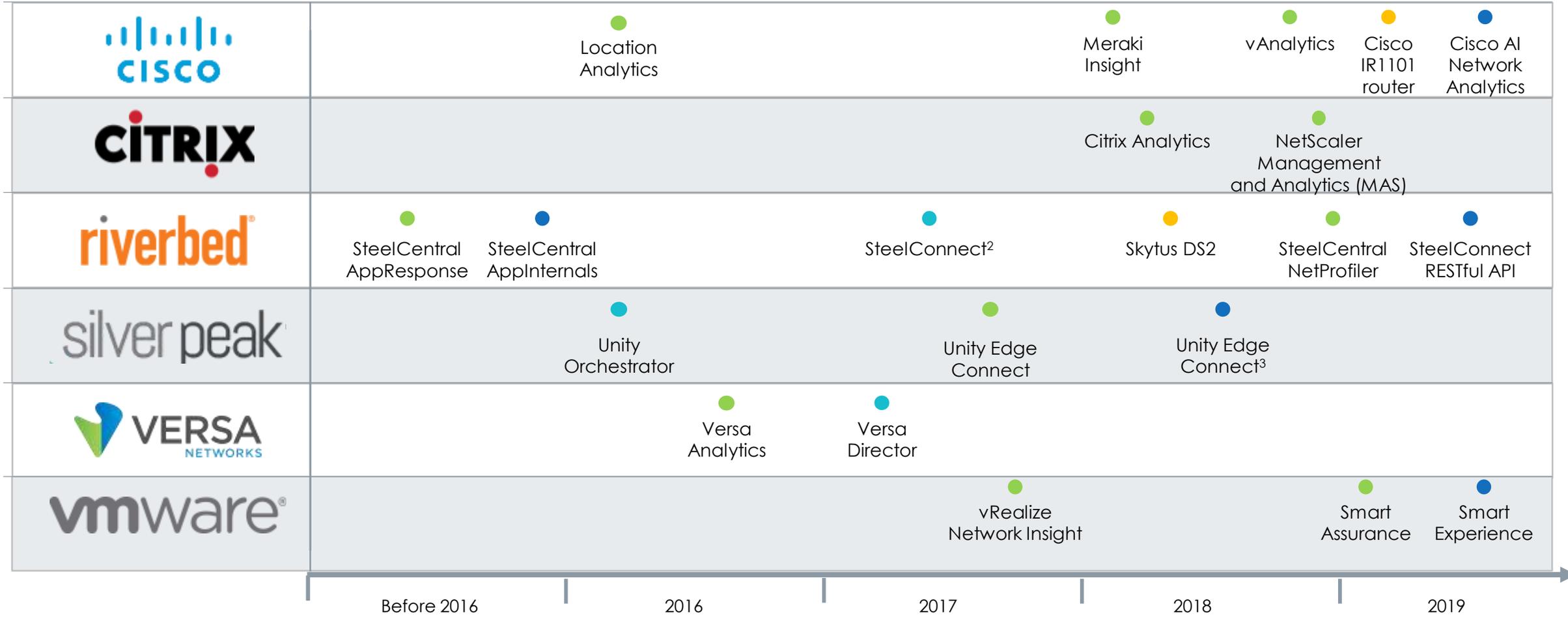
| | |
|--|-------------------------------|
| Automated provisioning | Integrated firewall services |
| Unified threat management | Unified policy management |
| Transport visibility | WAN orchestration |
| Dynamic path selection and tunnel management | Monitoring and SLA management |

33%
of the overall investment budget is going towards IP and asset creation

SD-WAN platforms have also accelerated features and offerings around emerging technologies in the last 24 months



Providers began with integrating reporting, analytics, IoT, and automation into the platform and are now bringing in AI/ML features¹



● Intelligent Automation ● Analytics ● AI / Machine Learning ● Internet of things (IoT)

1. Company Announcements, Avasant Research
 2. Riverbed SteelConnect offers automated provisioning for Azure; 3 - Silver Peak has bagged \$90 million in funding to leverage machine learning algorithms and other forms of artificial intelligence (AI) to drive intent-based networking.



Cloud providers have begun to realize the opportunity, and have consequently developed their own SD-WAN offerings

| Cloud service provider | SD-WAN technology provider | Description |
|---|---|--|
|  |  | <ul style="list-style-type: none"> In April 2019, Citrix entered into a strategic partnership with Google to enable enterprises to extend their networks to the cloud and deliver applications in an agile manner. It will offer Citrix SD-WAN and Citrix ADC on GCP marketplace through its SD-WAN appliances and help clients to deploy multiple SaaS, cloud, virtual, web and microservices-based apps. |
|  |  | <ul style="list-style-type: none"> In April 2019, GCP forged a partnership with VMware to allow customers run distributed, cloud-native applications across Google Cloud platform via an integration with VMware NSX Service. It has also rolled out integrations such as plug-in for VMware vRealize Automation. |
|  |  | <ul style="list-style-type: none"> Versa Networks joined hands with AWS in November 2018 to offer tailored SD-WAN solutions, allowing customers to quickly execute their AWS migration and establish secure connectivity between on-premise data centers and AWS. The Versa solution incorporates security functionalities and application-aware routing features to provide high scalability as needed. |
|  |  | <ul style="list-style-type: none"> VMware in collaboration with Microsoft has launched a bundled SD-WAN offering in September 2018, enabling customers to redesign their networks for optimized cloud access using SD-WAN. The solution combines Microsoft Virtual WAN, spanning around 130 PoPs, with the optimization and security provided by cloud-delivered VMware SD-WAN by VeloCloud. |
|  |  | <ul style="list-style-type: none"> Cisco-Viptela entered into an alliance with Microsoft Azure in July 2017, to enable customers to extend their WAN into Azure public environment and treat their Azure Virtual Network (VNET) resource as a branch. Also, it has expanded its Cloud onramp branch networking product to Azure platform |

Enterprises should prioritize business-centric factors while considering migration to SD-WAN

A structured business case is the first step in a digital-first enterprise SD-WAN migration journey



Move beyond the buzzword and get to the heart of the business challenge

- Evaluate the tentative payback (ROI) period
- Showcase strategy to replace obsolescence approaching hardware and associated support systems
- Identify opportunities for revenue upsell after network transformation
- Present cost reduction analysis including network maintenance, technical sites and operations
- Calculate transition risks during the optimization process



Evaluate existing topology, cost impact and network

- Calculate the network impact while decommissioning on other technologies
- Evaluate cost for network transformation or modifying the CPE
- Calculate impact of revenue loss while decommissioning of legacy networks
- Estimate expected revenue increase and churn rate while migrating



Describe the current state and plan to success

- Develop road map for cost optimization
- Prioritize and choose migration of specific branch sites
- Designate a focused management team
- Orchestrate a well-planned customer migration
- Design a structured vendor evaluation framework and understand solution approach
- Choose partner which can absorb whole transition costs

A phased approach enables significant governance, remove interdependencies and lower transition risks

Pilot models are a great way to explore SD-WAN and how it can help clients understand critical factors needed for a best-fit implementation...

...Once the pilot sites have been migrated, customers can move forward with transition

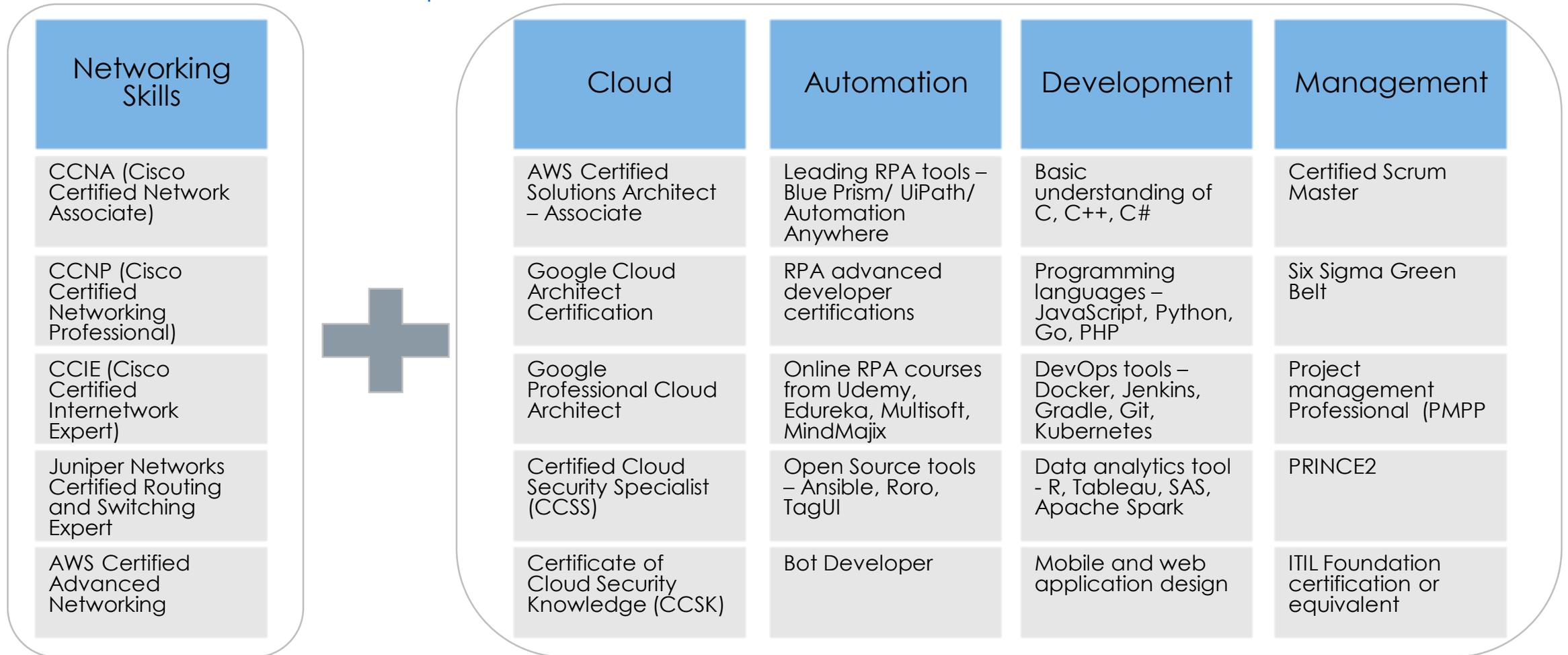
| Top 3 parameters for phased SD-WAN migration approach | |
|---|--|
| Organizational structure | <ul style="list-style-type: none">Type of workload<ol style="list-style-type: none">Mission criticalNon-criticalType of existing architecture<ol style="list-style-type: none">On-premiseCloud-enabledOn-premise + Cloud |
| Proximity of Site | <ul style="list-style-type: none">Site location from main branch<ol style="list-style-type: none">Remote siteClosed loopType of location<ol style="list-style-type: none">Data centerBranch location |
| Homogeneity of Sites | <ul style="list-style-type: none">Site Priority<ol style="list-style-type: none">HighMediumLowType of Site<ol style="list-style-type: none">DistributedHub and Spoke |



| Key consideration for effective transition | |
|--|--|
| Re-use existing infrastructure Utilize legacy customer infrastructure and leverage correct migration technique to avoid roadblocks | Zero business disruption Implement SD-WAN with no impact on current business activities |
| Effective change management Ensuring no-loss during knowledge transfer and leverage rich pool of skilled resources | Adoption of best practices Implementing zero-trust WAN security based on industry best practices |

Enterprises need to upskill Network Engineers with cloud and automation skills in addition to core networking capabilities

Network engineers of the future need to embrace software fluency, automation scripting, and management skills to meet business needs for complex network infrastructure



Sample Networking skills

Sample Emerging skillsets and certifications among Network Engineer jobs in 2019

Security is a key challenge for enterprise SD-WAN adoption; necessary governance framework and investment are key



Sample Network Security breaches in past 24 months

| | |
|--|--|
| | <ul style="list-style-type: none"> In March 2018, Cathay Pacific Airlines discovered a network breach with unauthorized access to 9.4 million customers personal information. There were 2 attacks: the first hacked the company's VPN, while the second exploited an application vulnerability on the internet-facing server. |
| | <ul style="list-style-type: none"> Equifax reported a massive data breach in July 2017, which reportedly compromised PII for 145+ million users. The breach occurred due to network vulnerabilities, malfunctioning of network monitoring tool, and improper segmentation over a multi month period. |
| | <ul style="list-style-type: none"> Timehop, a social media app, detected a network intrusion in July 2018, impacting 21 million users, including names, email addresses, and phone numbers. It detected anomalous activity within the network identified by the collection and collation of disparate datasets. |

To address enterprise security concerns, ecosystem partners have evolved to develop robust and reliable security solution

| Security Software Provider | Platform |
|----------------------------|---|
| | GlobalProtect Cloud Service |
| | FortiGate Secure SD-WAN |
| | ZScaler SD-WAN security |
| | Next Generation Firewall (NGFW) |
| | Cloud Network Security as a Service (NSaaS) |
| | Total Security Suite |



Ultimately, both enterprises and providers need to work together towards a proactive approach to network security



Enterprises

- Make designing and implementing an SD-WAN Security strategy an integral part of the business case.
- Notify and gain permission from network administrators to access certain user information.
- Evaluate managed service providers and identify qualified partners with right accreditations and investments in SD-WAN security, privacy, and trust solutions.
- Ensure that everyone in the enterprise understands the need for strong governance, controls, and accountability as it relates to SD-WAN Security.

Providers

- Take the lead and bring interdependent yet disparate players (platform, network, software and hardware providers) within the SD-WAN ecosystem to address the security issues for broader adoption.
- Play an active role in aligning with regulatory and governing bodies to bring standardization.
- Educate and partner with enterprises on SD-WAN security strategy, design, development, and deployment.
- Take proactive approach using network analytics and cyber threat intelligence to analyze and anticipate where the likely threats are coming from and increase readiness by investing in SD-WAN Security solutions and technologies



SD-WAN Managed Services RadarView 2019

Avasant's SD-WAN Managed Services RadarView assesses service providers across 3 critical dimensions:



Practice Maturity

- This dimension considers the current state of the provider's SD-WAN practice in terms of its strategic importance for the provider, the maturity of their offerings and capabilities, and client engagement.
- The nature and sophistication of solutions, use cases being addressed, market acceptance, quality of talent and execution capability are all important factors that contribute to this dimension.

Partnership Ecosystem

- This dimension typically assesses the nature of the ecosystem partnerships that the provider has entered into, the objective of the partnership (co-development, co-innovation, etc.), its engagement with solutions providers, start-up communities and industry associations.
- The kind of joint development programs around offerings, go-to-market approaches, and the overall depth in partnerships are all important aspects.

Investments and Innovation

- This dimension assesses the investment approach and innovation focus of the provider, and how it aligns with the future direction of the industry.
- The overall strategic investments, including both organic and inorganic ones, towards capability and offering growth, technology development and human capital development, along with the innovations that the provider develops with their partners, are critical aspects of this dimension.

Research methodology and coverage

Avasant based its analysis on a number of sources:

Public disclosures Publicly available information such as SEC filings, annual reports, quarterly earnings calls, executive interviews and statements.

Market interactions Discussions with enterprise executives leading digital initiatives and influencing service providers selection and engagement.

Provider inputs Inputs collected through an online survey and structured briefings in March-July 2019.

Of the 38 service providers assessed, the final 22 featured in SD-WAN Managed Services RadarView for 2019 are:



Note: Assessments for AT&T, Atos | Syntel, British Telecom, Dell, DXC, Masergy, NTT, Tech Mahindra, Telefonica, Telstra, T-Systems and Wipro have been conducted based on public disclosures and market interactions only



SD-WAN Managed Services RadarView 2019

Reading the RadarView

Avasant has recognized service providers in 4 classifications:



Leaders show consistent excellence across all the key dimensions of the RadarView assessment – practice maturity, partner ecosystem and investments & innovation – and have had a superior impact on the market as a whole. These providers have shown true creativity and innovation and have established trends and best practices for the industry. These providers have proven their commitment to the industry and are recognized as thought leaders in the space that set the standard for the rest of the industry to follow. Leaders display a superior quality of execution and a reliable depth and breadth across verticals.



Innovators show a penchant for reinventing concepts and avenues, changing the very nature of how things are done from the ground up. Unlike the Leaders, Innovators have chosen to dominate in a few select areas or industries and distinguish themselves on the basis of superior innovation. These radicals are always hungry to create pioneering advancements in the industry and are actively sought after as trailblazers redefining the rules of the game.

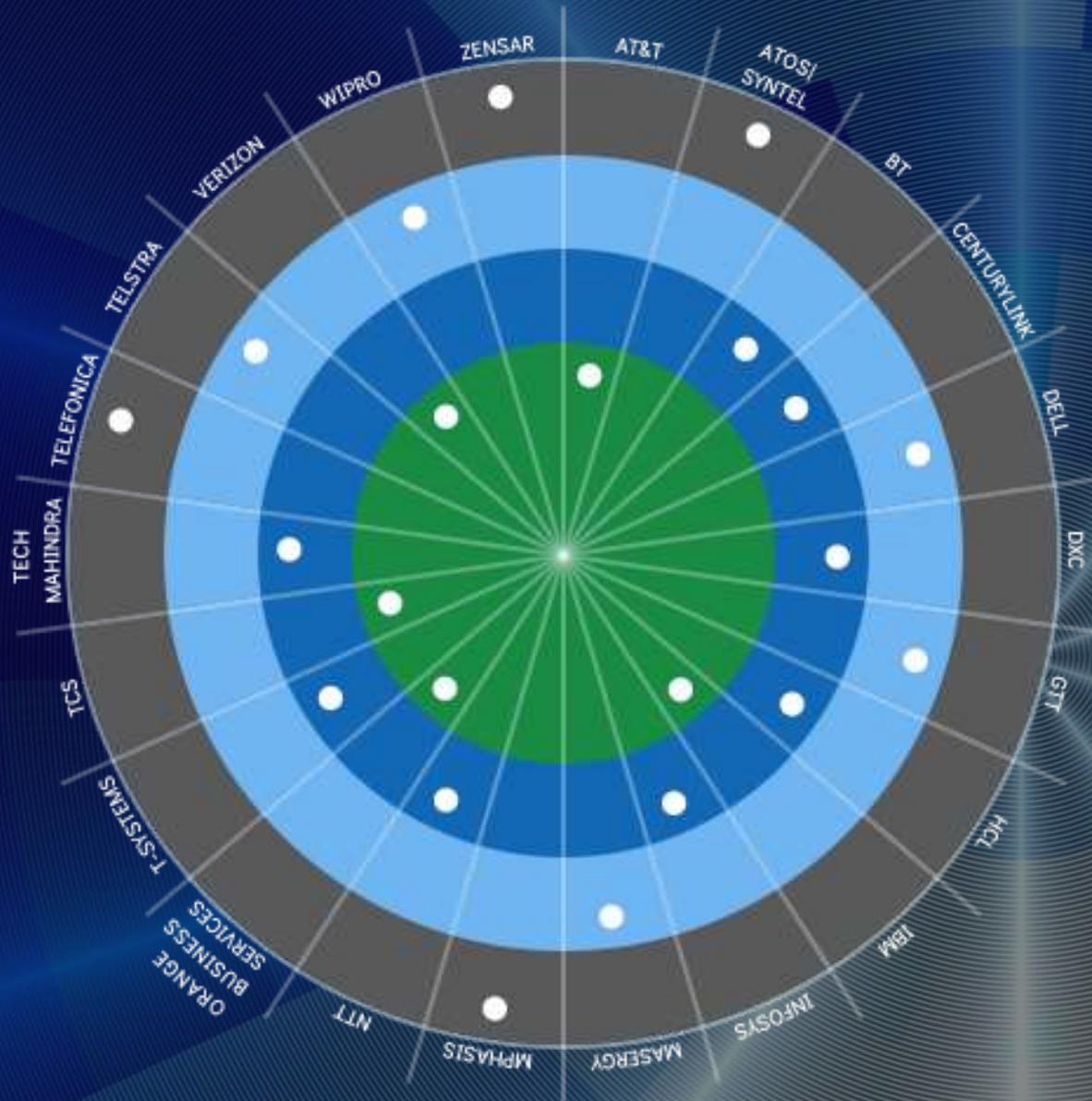


Disruptors enjoy inverting established norms and developing novel approaches that invigorate the industry. These providers choose to have a razor-sharp focus on a few specific areas, and address those at a high level of granularity and commitment that results in tectonic shifts. While Disruptors might not have the consistent depth and breadth across many verticals like the Leaders or the innovation capabilities of the Innovators, they exhibit superior capabilities in their areas of focus.



Challengers strive to break the mold and develop groundbreaking techniques, technologies and methodologies on their way to establishing their unique position. While they may not have the scale as providers in other categories, Challengers are eager and nimble, and use their high speed of execution to great effect as they scale heights in the industry. Challengers have a track record of delivering quality projects against for their most demanding Global 2000 clients. In select areas and industries, Challengers might very well have capabilities that match or exceed those of the providers in other categories.

SD-WAN Managed Services RadarView™ 2019



LEADERS

| | |
|--------------------------|-----|
| AT&T | IBM |
| Orange Business Services | TCS |
| Verizon | |

INNOVATORS

| | |
|----------------------|-------------|
| British Telecom (BT) | CenturyLink |
| DXC | HCL |
| Infosys | NTT |
| Tech Mahindra | T-Systems |

DISRUPTORS

| | |
|---------|-------|
| Dell | GTT |
| Masergy | Wipro |
| Telstra | |

CHALLENGERS

| | |
|---------------|---------|
| Atos Syntel | Mphasis |
| Telefonica | Zensar |



Service Provider Profiles

Orange Business Services : RadarView Profile



Practice Overview

- Practice Size: 3,000+
- Active Clients: 65+
- SD-WAN Active Since: 2017
- Delivery Highlights: 80+ SD-WAN pilots and POCs running currently

20-50%
SD-WAN
revenue
growth

400+
Points-of-
presence
(PoPs)

Client Case Studies

- Helped Siemens' SD-WAN transformation across 1,500 sites in 94 countries, providing network design, internet-based SDN and uCPE, connecting cloud applications and IoT devices. This led to improved performance and early SDN rollout by 2020.
- Implemented Flexible SD-WAN solution for Weener Plastics to support its cloud applications across its 24 sites in Europe, Asia and Latin America. The reliable and agile network improved business agility and internal communication.
- Signed a 5-year (USD 25M) managed services deal with Auercon to deploy Flexible SD-WAN and cybersecurity services across 60 sites. This will increase network capacity and improve security for cloud-based applications.
- Incorporated Flexible SD-WAN solution across Majid Al Futtaim Retail sites in 38 markets. This supports its smart retail applications and provides seamless shopping experience for its customers.

Key IP and Assets

- Flexible SD-WAN - End-to-end intelligent SD-WAN orchestration tool
- SD-WAN profiler - Enables SD-WAN assessment and adoption level
- Easy Go Network - Virtual network functions (VNF) provisioning tool

Partnerships

Platform Providers

Security Providers

Sample Clients

- Weener Plastics
- Majid Al Futtaim Retail
- Auercon
- A Netherlands-based leading beverage company
- A Germany-based multinational conglomerate company
- SONY
- A leading pharmaceutical company in Asia

Industry Coverage

| |
|----------------------------------|
| Banking |
| Financial Services |
| Government |
| Healthcare and Life Sciences |
| High Tech |
| Insurance |
| Manufacturing |
| Non-Profits |
| Retail and CPG |
| Telecom, Media and Entertainment |
| Travel and Transportation |
| Utilities and Resources |

- Practice Maturity ★★★★★
- Partnership Ecosystem ★★★★★
- Investments & Innovation ★★★★★

Industry pioneer with comprehensive set of services coupled with deep partner connect. Laser-focused investment strategy

Darker color indicates higher industry concentration: ●●●●●

Analyst Insights

Practice Maturity



- Starting in 2017, Orange Business Services has significantly strengthened their SD-WAN practice and has bagged EUR 600 M worth of total contracts value (TCV) signed in H1 2018. Their SD-WAN managed offering has seen strong traction among manufacturing, utilities, resources, government and financial services clients
- Its end-to-end SD-WAN orchestration tool dubbed Flexible SD-WAN has been a key differentiator of its managed service offering, with strong security validation and predictive maintenance functionalities.
- Open Labs, its application development and testing center, enables a wide array of SD-WAN capabilities, tests use cases, and jointly assesses SD-WAN business requirements with customers. Orange is building 11 such labs, with 8 labs in Europe, 2 in the US, and 1 in Singapore.
- It leverages its unique co-innovation model for majority of its SD-WAN engagements. For instance, it has been successfully managing Siemens' SD-WAN transformation in the last 4 years across 94 countries.

Partnership Ecosystem



- Orange Business Services has created a robust partnership ecosystem that includes Cisco-Viptela (SD-WAN), Riverbed (WAN optimization) and Juniper Networks (security and routing). It also leverages Riverbed's SteelConnect technology to strengthen its network portfolio, along with providing virtualization and zero-touch provisioning capabilities.
- With the Cisco alliance, it leverages Cisco's SD-WAN virtual network function (VNF) to deliver a fully functional virtualized solution for enterprise customers, which has become part of the Orange's universal customer premise equipment (uCPE) offer.

Investments & Innovation



- Orange Business Services has identified NFV/SDN transformation as a key area of focus. Therefore, it is integrating vCPE/uCPE vendors to extend the scope and market penetration, along with enhancing the Orange portal with advanced analytics, advanced RBAC, and improved user experience.
- It is also setting up next-generation hubs to continue the development of SD-WAN orchestration and service integration capabilities, and to build "Internet of Enterprises" to support SDN transformation.

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