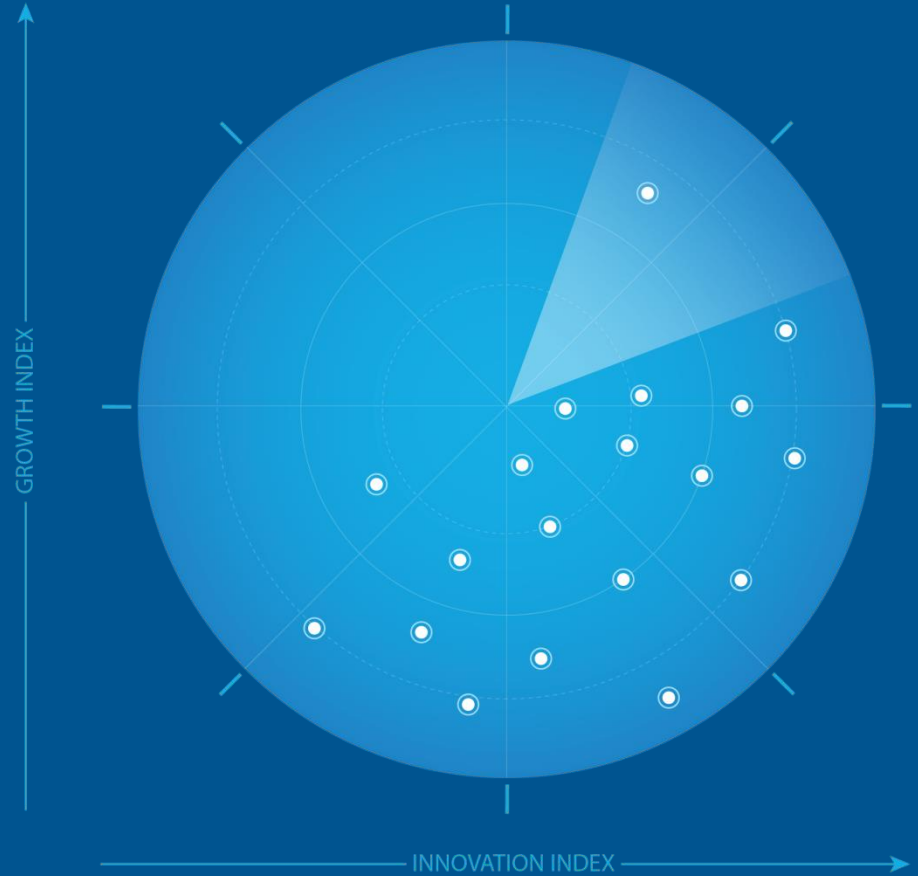# FROST & SULLIVAN

Frost Radar™: Global SD-WAN Vendor Market, 2020

Benchmarking Future Growth Potential

Global Information and Communications Technologies Research Team at Frost & Sullivan

Excerpt Prepared for VMware, July 2020
(original report publication date June 2020)

Contents

Strategic Imperative and Growth Environment

Strategic Imperative

Vendors Gear Up to Extend SD-WAN for Remote Workers in the Face of COVID-19 Pandemic

The COVID-19 pandemic has forced governments across the globe to order citizens to stay at home and follow social distancing practices, resulting in an unprecedented number of people working from home. The cloud and advances in networking technology have made this possible.

With businesses across industries embracing the public cloud to host key applications, and with advances in residential broadband and wireless speeds, remote workers can access most enterprise applications from home. However, as remote workers compete for bandwidth with children attending virtual classrooms and others at home trying to stream entertainment, optimizing and prioritizing business applications on home networks has become critical.

Software-defined wide area network (SD-WAN) technology can optimize the available bandwidth for remote workers by:

- giving higher priority to business traffic compared to social media, YouTube, and streaming service traffic;

- continuously monitoring the traffic path for packet loss and delay, and applying forward error correction to reduce packet loss and increase throughput; and

- using traffic-handling techniques to throttle less-critical application traffic.

Note: For a detailed analysis of SD-WAN for remote workers, see this Frost & Sullivan report.
Source: Frost & Sullivan

Strategic Imperative (continued)

Leading SD-WAN vendors have adapted their solutions to support the exponential increase in remote workers. For example:

- VMware announced an SD-WAN for Home offer, wherein existing or new customers can procure and ship SD-WAN edge devices to their remote workers' homes. The global footprint of cloud gateways hosted in the points of presence (PoPs) of diverse partners ensures that business users, no matter where they are and what applications they are trying to access, are just a gateway away from optimized connectivity.

- Versa Networks' Secure Access targets remote workers and road warriors, building on the Versa Secure SD-WAN to securely connect remote employees to corporate resources.

- Silver Peak has seen requests from its existing customers across industries for its Unity EdgeConnect™ SD-WAN appliances. Cloud and SD-WAN technologies represent a compelling value proposition to global enterprises as they embrace remote working beyond the COVID-19 pandemic. SD-WAN vendors are prepping accordingly in terms of solutions (simplified CPE, client-based and client-less access) to support the growing trend in "micro" branch.

Strategic Imperative (continued)

Hybrid Cloud and Multi-cloud Connectivity Needs will Continue to Drive Demand for SD-WAN

Cloud has been gaining traction among global businesses, with 75% of global IT decision makers agreeing with the statement "the cloud is the most integral part of our digital transformation strategy" in Frost & Sullivan's 2019 Cloud survey. In the same survey, 37% of respondents indicated they currently use a hybrid cloud, with another 35% indicating they plan to use a hybrid cloud in the next 2 years.

It is common for enterprises to use a multi-cloud deployment for various workloads. As enterprise applications get distributed across multiple clouds, the traditional WAN architecture of backhauling traffic to a hub site, and then routing to cloud, is inefficient and expensive. SD-WAN enables enterprise IT to predefine business policies through the SD-WAN controller, to specify which cloud applications are suitably accessed directly through the internet versus backhauled to a hub site.

The COVID-19 pandemic highlighted the value of cloud and connectivity to ensure business continuity. Frost & Sullivan expects cloud adoption to further increase in the next 5 years, thus driving demand for SD-WAN solutions. While most SD-WAN vendors have had cloud on-ramp connectivity to public cloud for a while, 2019 witnessed vendors' integration of their solutions with Azure virtual WAN, Amazon Transit Network Gateway, and Google Cloud Hub to optimize enterprise cloud connectivity.

Source: Frost & Sullivan

Strategic Imperative (continued)

Vendors Increase Focus on Security Integration versus Interoperability

The initial SD-WAN offerings came with basic cloud-based security features, in partnership with security vendors such as Zscaler or Palo Alto Networks. To further support enterprise IT decision makers' need for a broader set of security features, leading vendors have established partnerships with security vendors to ensure interoperability of their solutions. For example, Silver Peak, Nuage Networks, VMware-VeloCloud, and Versa Networks joined the Fortinet Fabric-Ready Partner Program that allows partners to leverage Fortinet's APIs for deep integration with the Fortinet Security Fabric.

These partnerships allow enterprises to choose best-of-breed, interoperable security solutions with their SD-WAN. However, the next wave of SD-WAN product evolution is focused on integrated security. Some vendors, such as Versa Networks and Fortinet, have security inherently built into their platform; others, such as Cisco and VMware, have integrated some security functions into their SD-WAN solutions.

The ability to apply consistent security policies from the LAN to WAN to cloud is extremely important for businesses while doing direct internet breakout to cloud. A secure SD-WAN solution with integrated security and networking with the option to manage through a single pane of glass holds immense promise for enterprises' cloud networking.

Strategic Imperative (continued)

Generation 2 SD-WAN Solutions Continue to Evolve in the Market

While there is no clear definition or consensus on what a Gen2 SD-WAN encompasses, most vendors interviewed for this report tend to agree on the following features that Gen2 SD-WAN offers:

- **Application-aware Networking:** Gen2 SD-WAN solutions offer true centralized, cloud-based networking management capabilities that allow network managers to define business intent policies for various applications. The application-aware networking automatically recognizes leading applications and enables direct internet breakout to cloud-based applications. The network also constantly learns to update and automate traffic breakout without manual intervention, as in the case of Gen1 SD-WAN. Some vendors are currently using artificial intelligence, machine learning, and data science to create a truly autonomous or self-driving network, wherein the network learns from past performance data to adapt to changing requirements.

- **Platform-centric, Cloud-first Solution:** Unlike the Gen1 SD-WAN solutions that were single-application-centric, Gen2 solutions are platform-centric as they encompass a variety of network functions such as WAN optimization, routing, and stateful firewall. The platform-centric approach is intertwined with the hybrid cloud/multi-cloud trends in the enterprise market. While Gen1 SD-WAN simplified branch site connectivity, it did not address the hybrid cloud/multi-cloud deployments of businesses. Gen2 SD-WAN addresses the multi-cloud connectivity needs of enterprises by enabling users to define and apply policies to seamlessly route application traffic across multiple clouds.

Source: Frost & Sullivan

Strategic Imperative (continued)

- **Integrated Security:** Gen1 SD-WAN solutions offered some level of cloud-based security functionality by partnering with select vendors. Gen2 SD-WAN solutions come with integrated stateful firewall, and deep integration and interoperability with a plethora of leading security vendors. SD-WAN vendor solutions available in the market today have varying levels of Gen2 SD-WAN features, with vendors differentiating themselves by their focus on certain features and functionalities. VMware-VeloCloud and Nuage Networks are examples of virtualized platforms that offer superior routing and management control across data centers, branch sites, and clouds. Silver Peak and CloudGenix (acquired by Palo Alto Networks in Q1 of 2020) are examples of companies whose solutions offer intent-based networking that focuses on L3-L7 application level networking, as opposed to L2 or L3 routing protocol-based networking. Versa Networks offers native security with full unified threat management (UTM) and next-generation firewall (NGFW) capabilities that are unmatched by any other SD-WAN vendor (other than security vendors such as Fortinet).

Strategic Imperative (continued)

SDN, NFV, and SD-WAN are Converging to Help Enterprises Transition to a Software-Defined Branch

With the convergence of software-defined networking (SDN), network function virtualization (NFV) and SD-WAN, businesses can use SD-WAN technology to route traffic based on pre-defined policies, change the underlying bandwidth in real time, and deploy network functions (e.g., virtual firewall, virtual WAN optimization) on a uCPE. The uCPE is an x86-based hardware appliance that can host multiple virtual network functions (VNFs), thus eliminating the need for dedicated hardware for each network function. With the uCPE approach, businesses can choose to virtualize network functions in a phased manner. For example, they can deploy SD-WAN functionality in virtual format instead of using a dedicated SD-WAN appliance. Alternatively, they may choose to deploy a virtual firewall from an alternative security vendor, in addition to the existing CPE-based firewall, for added security features. The NFV-based approach offers network functions on demand through a catalog of best-of-breed solutions from multiple vendors. This means businesses have vendor independence to an extent (since the catalog is still limited to the VNFs supported by the service provider), allowing customers to conduct technology bake-offs before deciding on the vendor to use.

The choice to lead with the SD-WAN appliance approach or the uCPE approach will depend on application-specific WAN performance requirements at the branch, including high-performance routing, level of security policies, and the need for bandwidth optimization. It will also depend on the life left on the existing hardware, associated maintenance contracts, and the level of cost efficiencies the virtualization exercise can deliver. A majority of the SD-WAN deployments in place today use a physical appliance at the edge, which involves a start-up fee for the CPE and a monthly recurring fee for software licensing.

Source: Frost & Sullivan

Strategic Imperative (continued)

Edge Compute, 5G, and SD-WAN

The growth in IoT applications and the need for faster processing of data for latency-sensitive applications is driving the need for edge computing. For use cases in which massive amounts of data are collected for processing from myriad geographically dense endpoints (for example, real-time temperature-sensing across climate-controlled storage facilities, or traffic monitoring), storing and analyzing all the data in a centralized, remote data center may be less than optimal. Edge compute addresses the need for local compute power in close proximity to endpoints. With edge compute, network and compute resources are configured at local sites to process the data, thus limiting network-induced delays, reducing network costs, and minimizing risks of data loss or corruption.

5G plays a critical role in the success of edge compute due to its high-speed and low-latency bandwidth features. While 5G rollout began in 2018, the service is available in limited cities today. 5G speeds are comparable to that delivered over fiber with data peak rate for download speeds reaching 20 Gbps. 5G also offers superior connection density compared with LTE as it can support close to 1 million connected devices.

SD-WAN facilitates automated, optimized, and secure connectivity over 5G between endpoints (users or things) and edge compute nodes. The network slicing feature of 5G enables an SD-WAN platform to request virtualized slices on the network for different applications, based on centrally defined policies. SD-WAN vendors are looking to ship SD-WAN appliances with integrated 5G support to tap into edge computing and 5G trends. For example, VMware has a 5G integrated in its device.

Growth Environment

In this report, the SD-WAN vendor market is the infrastructure market consisting of SD-WAN hardware and software. The SD-WAN overlay functionality is delivered using a physical or virtual appliance. While most vendors offer a physical hardware appliance that hosts the SD-WAN software, there are vendors that predominantly sell only the software (for example, Versa Networks); in this case, only software licensing revenues earned by a vendor are included.

SD-WAN Vendor Market Revenue Forecast: This is revenue earned by vendors for their SD-WAN hardware and software products sold either directly to enterprises or through indirect channels that could include network or managed service providers (NSP/MSP), system integrators, application service providers, or value-added resellers (VARs).

- As per the new ASC606 rule by the Financial Accounting Standards Board (FASB) and its European counterpart, the International Accounting Standards Board (IASB), vendors are required to recognize any revenue paid by the customer in full, at the time of payment. For example, if a customer pays for the SD-WAN solution CPE and licensing fees for a 3-year period in full, the entire value of the contract must be recognized at the time of payment. While some vendors are adhering to the ASC606 rule, others continue to use the ASC605 rule wherein if the customer pays in full for a 3- or 5-year contract, they distribute the revenue through the contact period (either monthly or annually). Frost & Sullivan has no way of normalizing this inconsistency.

Growth Environment (continued)

- Forecasts include revenue recognized from CAPEX purchase of edge appliance and licenses, perpetual licensing fees, related maintenance fees, and subscription licensing fees.

- Incremental revenue from value-added services or features/functionalities, such as WAN optimization or security services provided on vendor CPE, are not included in the report.

SD-WAN Market Customer Sites Forecast: This is the number of active or operational SD-WAN sites. These customer sites are broken down by DIY and managed.

- **DIY SD-WAN** sites refer to the sites where the enterprise IT procures the SD-WAN appliance, and deploys and manages it in-house.

- **Managed SD-WAN** sites refer to the sites where an MSP procures, deploys, and manages **both the overlay and underlay (transport networks)** SD-WAN components for the enterprise.

Source: Frost & Sullivan

Forecast Assumptions

Frost & Sullivan conducted primary interviews with leading SD-WAN vendors, researched the quarterly and annual reports of publicly listed companies, and utilized internal and external databases to perform a detailed analysis of customer wins, existing site deployments, pricing and contracting models, and sales and marketing channels to arrive at revenue estimates for the global SD-WAN market. The revenue and sites estimates were sent to individual companies for feedback; responses were analyzed further, and compared to Frost & Sullivan's forecast model.

- Global SD-WAN market revenue crossed the $1 billion mark in 2019, with revenue and customer sites growing more than 100% from 2018 to 2019. The economic downturn due to COVID-19 will impact SD-WAN spending in the near term. Highly distributed verticals such as retail and manufacturing are impacted negatively from the pandemic, which will slow market growth in the next couple of years. Frost & Sullivan expects that as businesses reassess their technology spend, SD-WAN will emerge as a top choice for their networking needs, which will contribute to higher growth rates beyond 2022.

- Leading SD-WAN vendor solutions come with integrated security, WAN optimization, and routing capabilities. Cost savings from using hybrid networks, superior WAN performance from application-aware routing, and simplicity and ease of use from integrated functions such as stateful firewall, routing, and WAN opt are expected to drive market migration from a single-function, hardware-centric approach to a software-centric approach, where a single composite image of software can deliver multiple functions.

Forecast Assumptions (continued)

- Hybrid cloud/multi-cloud connectivity continues to be huge focus for SD-WAN vendors, with most announcing integration with leading cloud platforms. As enterprise applications get distributed across multiple clouds, the traditional WAN architecture of backhauling traffic to a hub site and then routing to cloud is inefficient and expensive. The hub-and-spoke model is especially inefficient considering the growth in remote working, which is here to stay in the long run. SD-WAN enables enterprise IT to predefine business policies through the SD-WAN controller, to specify which cloud applications are suitably accessed directly through the internet versus backhauled to a hub site.

- Network and application security remains a priority for enterprises. While most leading SD-WAN vendor solutions come with a stateful firewall, vendor platforms are evolving to support integrated security features such as antivirus, URL filtering, malware protection, and intrusion detection/prevention systems (IDS/IPS), which will in turn drive demand for secure SD-WAN solutions.

- North America continues to lead in terms of global SD-WAN revenue share, albeit lower than that in 2018, with Europe gaining traction, followed by Asia-Pacific and Japan, and Latin America.

- Globally, businesses are showing a preference for managed SD-WAN solutions. This is pushing SD-WAN vendors to build partnerships to help tap into the market potential. The SD-WAN vendor partner channel typically includes NSPs, MSPs, system integrators, application service providers, and VARs.

Revenue Forecast

SD-WAN Vendor Market: Revenue Forecast, Global, 2019 & 2024

CAGR(19-24):38%

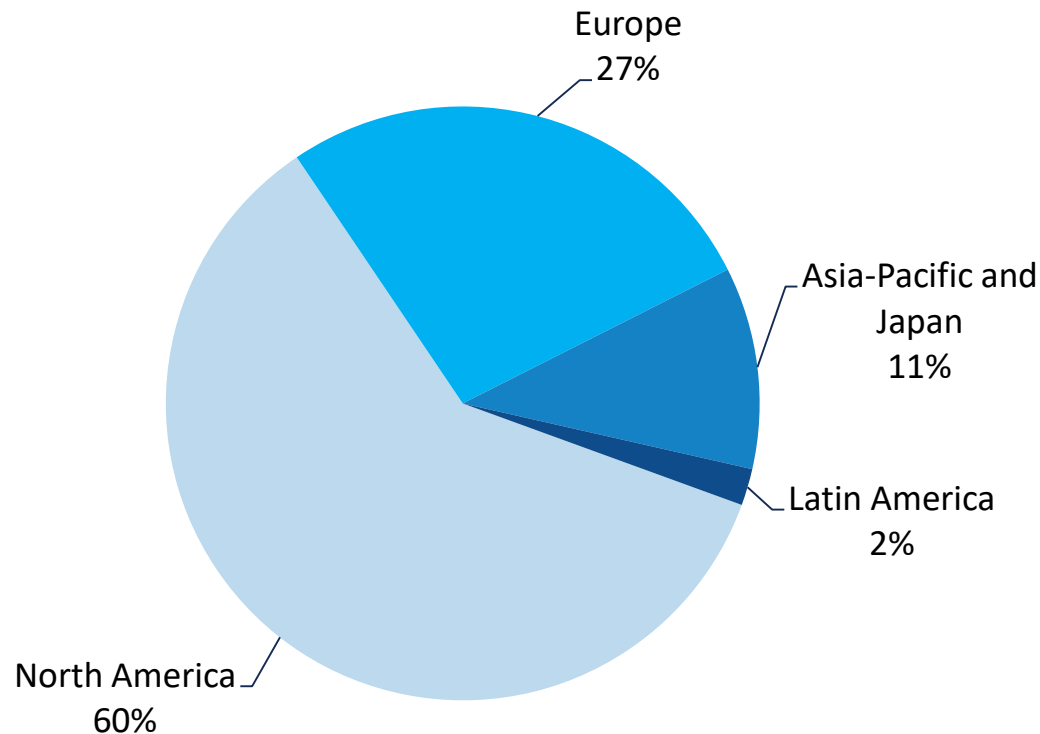|	2019	2024
■ Revenue	1,230.3	6,267.7
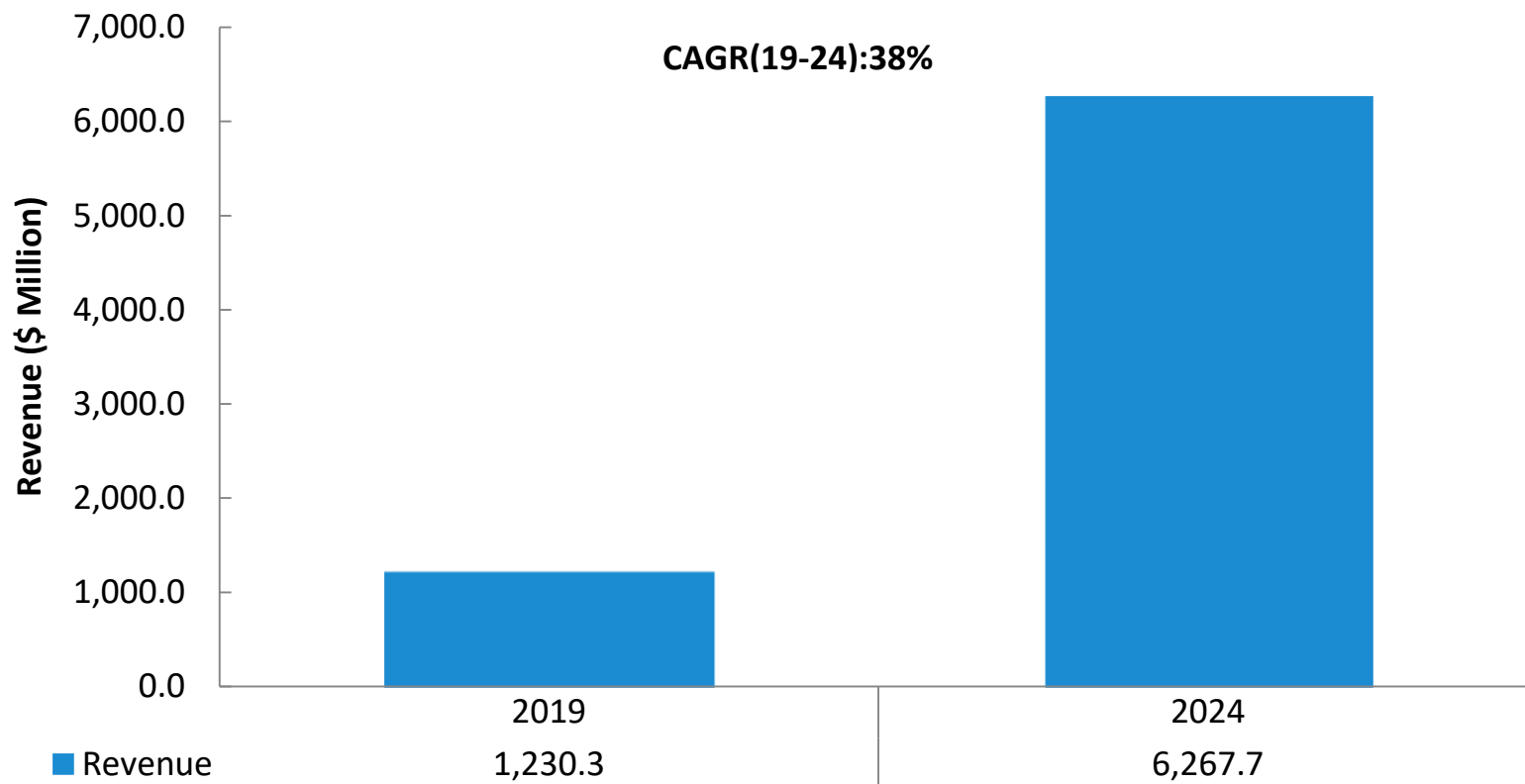
Note: All figures are rounded. The base year is 2019. Source: Frost & Sullivan

Revenue Breakdown by Region

SD-WAN Vendor Market: Revenue Breakdown by Region, 2019
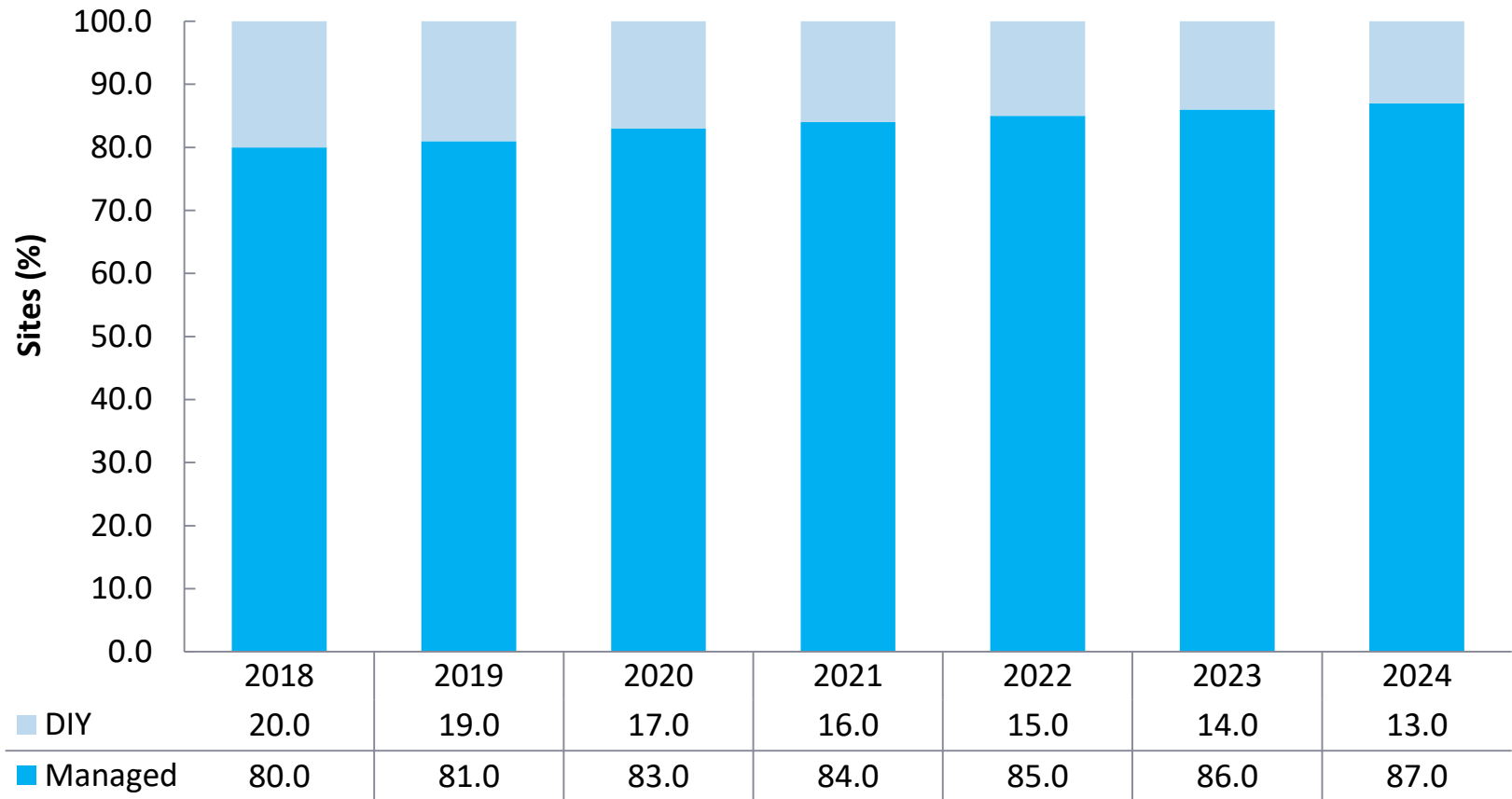

North America's share of the global revenue decreased in 2019, with Europe and APJ growing faster than predicted. The Latin American market is still nascent.
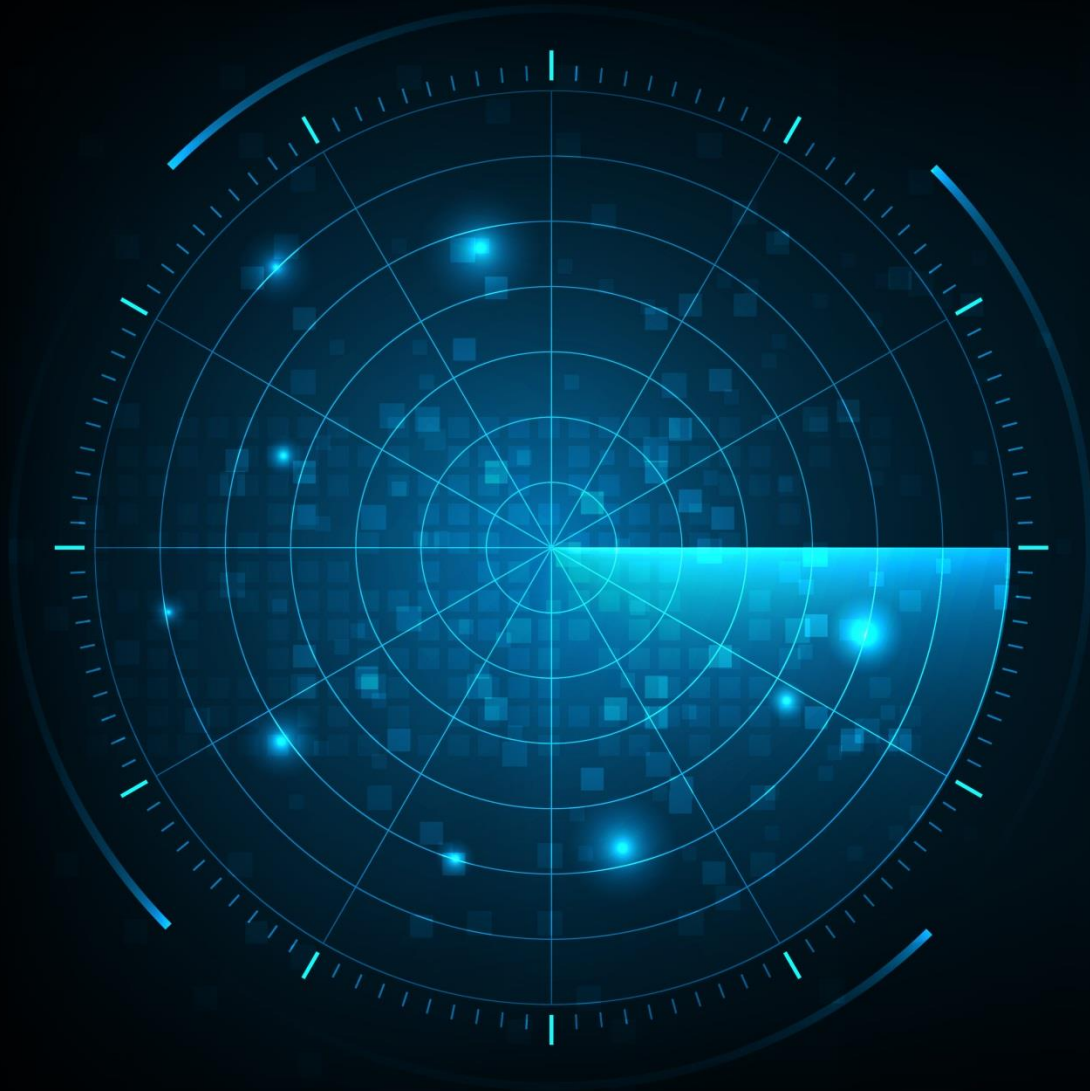
Customer Site Forecast (continued)

SD-WAN Vendor Market: Customer Sites Deployed by Managed vs. DIY Model, Global, 2018-2024

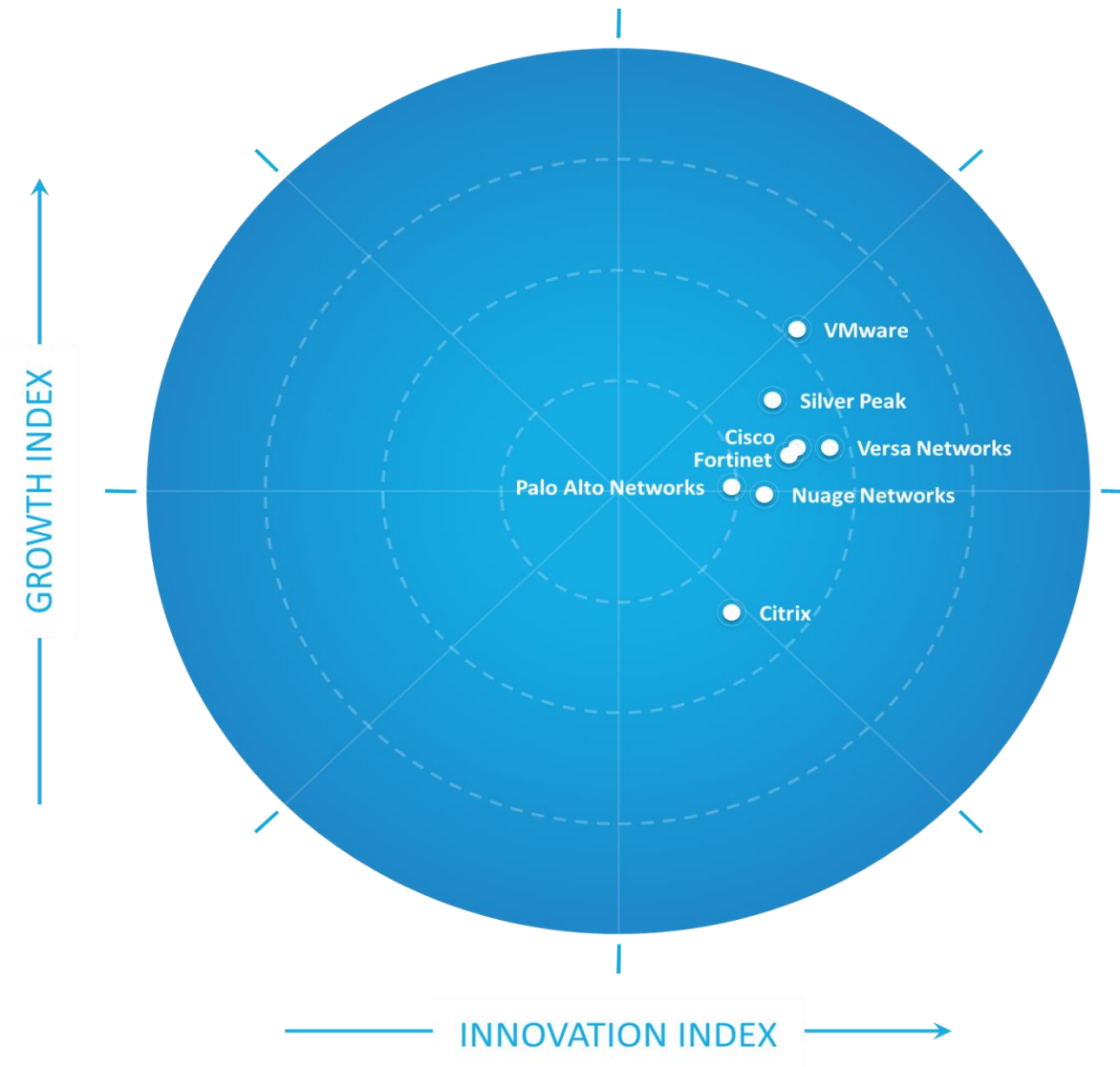|	2018	2019	2020	2021	2022	2023	2024
DIY	20.0	19.0	17.0	16.0	15.0	14.0	13.0
Managed	80.0	81.0	83.0	84.0	85.0	86.0	87.0

Note: All figures are rounded. The base year is 2019. Source: Frost & Sullivan

Frost Radar™

Global SD-WAN Vendor Market

Frost Radar™: Global SD-WAN Vendor Market

Frost Radar™: Competitive Environment

The global SD-WAN vendor market remains fragmented, with close to 25 vendors in competition. However, not all vendors provide complete SD-WAN solutions. The companies mapped on the Frost Radar™ have well-rounded solutions. Vendors are primarily analyzed based on their SD-WAN features and functionality; while related functions such as security, WAN optimization, and routing are critical, the vendors need to have a strong SD-WAN solution to be included on the Radar.

- VMware leads the global SD-WAN market and is a Growth and Innovation leader on Frost Radar™ because of the completeness of its offering. VMware's revenue and sites deployed are unmatched. The company's SD-WAN gateways offer a superior alternative to traditional WAN deployments for customers looking to connect to clouds in an optimized and secure manner. The gateway approach also is unique to VMware, resulting in the company scoring high on the Innovation index.

- Silver Peak is a Growth leader on the Frost Radar™ based on its ability to stay independent and grow in an organic manner. The company has more than 2,500 customers so far, and is expanding its reach rapidly across the globe through partners.

- Versa Networks is the Innovation leader on the Frost Radar™ mapping based on the company's holistic approach to software-defined branch solutions. Its platform integrates routing, networking, security, and SD-WAN services in a flexible, versatile software stack that displaces multiple legacy branch-office hardware devices.

- Cisco scores high on the Growth index because of its dominance in the enterprise routing market, which the company is able to tap into to market its Viptela-based SD-WAN solution.

Frost Radar™: Competitive Environment (continued)

- Fortinet has demonstrated remarkable growth in the SD-WAN market in the last year, earning the company a spot on the Frost Radar™. The company 's SD-WAN functionality built into its FortiGate firewall offers integrated SD-WAN, security, and routing functions in a single appliance.

- Palo Alto Networks' Radar positioning is based on its CloudGenix acquisition, whose revenue contributed to the company scoring high on the Growth index.

- Nuage Networks' Radar positioning is based on the immense success the company has seen in the Europe, Middle East, and Africa region through its service provider channels. Nuage Networks' VNS is the core of an SD-WAN 2.0 solution, which combines support for multi-cloud, end-to-end security, and a flexible approach to value-added services.

- Citrix's Radar positioning is based on the company's SD-WAN solution that offers full-fledged routing functionality, firewall, and app-based routing features at the WAN edge. Citrix networking solutions combined with its virtual workspace solution offers a compelling value proposition to businesses.

Oracle (formerly Talari Networks), InfoVista, and Fatpipe Networks have the potential to be included in future Frost Radar™ reports. While these vendors have notable SD-WAN deployments in the market, they did not fulfill all the criteria for the Growth and Innovation indices. Riverbed also is excluded: the company has chosen to go the OEM route by partnering with Versa Networks, which already is included in this report.

Companies to Action

Companies to Be Considered First for Investment, Partnerships, or Benchmarking

VMware

INNOVATION	GROWTH	NEXT STEPS

INNOVATION

- VMware SD-WAN by VeloCloud is unique in the market, with its Network of Cloud Services approach that has SD-WAN gateways strategically distributed across global PoPs. The diversity of partners hosting the gateways (IaaS providers, SaaS clouds, telco clouds, security clouds, and network exchanges) ensures that business users, no matter where they are and what applications they are trying to access, are just a gateway away.
- The Nyansa acquisition provides VMware with the ability to integrate artificial intelligence and machine learning into its SD-WAN platform to deliver comprehensive analytics and a self-healing WAN using machine learning. Nyansa Crawler is an analytics engine that can gather and process data from enterprise LAN and WAN to provide truly end-to-end optimized connectivity.

GROWTH

- VMware continues to lead the global SD-WAN market in terms of deployed sites and revenue. The company has consistently ranked as the market leader (based on revenues) in Frost & Sullivan's global SD-WAN vendor research since 2017, and is the Growth and Innovation leader on the Frost Radar™.
- The company's cloud-based architecture has been popular with network services providers that integrate VMware SD-WAN solutions with their own core networks to offer better application performance, speed up deployment times, and reduce bandwidth costs for their customers.
- VMware sells to enterprises through a global channel partner network that includes NSPs, MSPs, VARs, and system integrators. The company has more than 5,000 customers .

NEXT STEPS

- VMware has announced plans to enhance security functionality on its SD-WAN solution. In addition to the existing stateful firewall, the company plans to add NGFW, cloud security, and IDS/IPS to its portfolio. Frost & Sullivan believes this will be critical for VMware to compete effectively in the market.
- As VMware adds compute capacity to its edges and gateways to address the edge compute requirements of low-latency applications., the company is looking to add endpoint security solutions from Carbon Black as an option for clients.
- VMware edge devices will start supporting 5G natively to add 5G access to the mix. The company has partnered with AT&T to embed SIM technology in its edge devices.

Source: Frost & Sullivan

**Strategic
Insights**

Strategic Insights

1   The COVID-19 pandemic highlighted the value of cloud and connectivity to ensure business continuity. Frost & Sullivan expects cloud adoption to further increase in the next 5 years, thus driving demand for SD-WAN solutions.

2   Network and application security remains a key priority for enterprises. While most leading SD-WAN vendor solutions come with a stateful firewall, vendor platforms are evolving to support integrated security features such as antivirus, URL filtering, malware protection, and IDS/IPS, which will in turn drive demand for secure SD-WAN solutions.

3   Globally, businesses are showing a preference for managed SD-WAN solutions. This is pushing SD-WAN vendors to build partnerships to help tap into the market potential. The SD-WAN vendor partner channel typically includes NSPs, MSPs, system integrators, application service providers, and VARs.

Source: Frost & Sullivan

Next Steps: Leveraging the Frost Radar™ to Empower Key Stakeholders

Significance of Being on the Frost Radar™

Companies plotted on the Frost Radar™ are the leaders in the industry for growth, innovation, or both. They are instrumental in advancing the industry into the future.

GROWTH POTENTIAL

Your organization has significant future growth potential, which makes it a Company to Action.

BEST PRACTICES

Your organization is well positioned to shape Growth Pipeline™ best practices in your industry.

COMPETITIVE INTENSITY

Your organization is one of the key drivers of competitive intensity in the growth environment.

CUSTOMER VALUE

Your organization has demonstrated the ability to significantly enhance its customer value proposition.

PARTNER POTENTIAL

Your organization is top of mind for customers, investors, value chain partners, and future talent as a significant value provider.

Source: Frost & Sullivan

Frost Radar™ Empowers the CEO's Growth Team

STRATEGIC IMPERATIVE

- Growth is increasingly difficult to achieve.

- Competitive intensity is high.

- More collaboration, teamwork, and focus are needed.

- The growth environment is complex.

LEVERAGING THE FROST RADAR™

- The Growth Team has the tools needed to foster a collaborative environment among the entire management team to drive best practices.

- The Growth Team has a measurement platform to assess future growth potential.

- The Growth Team has the ability to support the CEO with a powerful Growth Pipeline™.

NEXT STEPS

- **Growth Pipeline Audit™**

- **Growth Pipeline as a Service™**

- **Growth Pipeline™ Dialogue with Team Frost**

Source: Frost & Sullivan

Frost Radar™ Empowers Investors

STRATEGIC IMPERATIVE

- Deal flow is low and competition is high.

- Due diligence is hampered by industry complexity.

- Portfolio management is not effective.

LEVERAGING THE FROST RADAR™

- Investors can focus on future growth potential by creating a powerful pipeline of Companies to Action for high-potential investments.

- Investors can perform due diligence that improves accuracy and accelerates the deal process.

- Investors can realize the maximum internal rate of return and ensure long-term success for shareholders

- Investors can continually benchmark performance with best practices for optimal portfolio management.

NEXT STEPS

- **Growth Pipeline™ Dialogue**

- **Opportunity Universe Workshop**

- **Growth Pipeline Audit™ as Mandated Due Diligence**

Source: Frost & Sullivan

Frost Radar™ Empowers Customers

STRATEGIC IMPERATIVE	LEVERAGING THE FROST RADAR™	NEXT STEPS

- Solutions are increasingly complex and have long-term implications.

- Vendor solutions can be confusing.

- Vendor volatility adds to the uncertainty.

- Customers have an analytical framework to benchmark potential vendors and identify partners that will provide powerful, long-term solutions.

- Customers can evaluate the most innovative solutions and understand how different solutions would meet their needs.

- Customers gain a long-term perspective on vendor partnerships.

- **Growth Pipeline™ Dialogue**

- **Growth Pipeline™ Diagnostic**

- **Frost Radar™ Benchmarking System**

Source: Frost & Sullivan

Frost Radar™ Empowers the Board Of Directors

STRATEGIC IMPERATIVE

- Growth is increasingly difficult; CEOs require guidance.

- The Growth Environment requires complex navigational skills.

- The customer value chain is changing.

LEVERAGING THE FROST RADAR™

- The Board of Directors has a unique measurement system to ensure oversight of the company's long-term success.

- The Board of Directors has a discussion platform that centers on the driving issues, benchmarks, and best practices that will protect shareholder investment.

- The Board of Directors can ensure skillful mentoring, support, and governance of the CEO to maximize future growth potential.

NEXT STEPS

- **Growth Pipeline Audit™**

- **Growth Pipeline as a Service™**

Source: Frost & Sullivan

Frost Radar™ Analytics

Frost Radar™: Benchmarking Future Growth Potential
2 Major Indices, 10 Analytical Ingredients, 1 Platform

GROWTH INDEX ELEMENTS

VERTICAL AXIS

Growth Index (GI) is a measure of a company's growth performance and track record, along with its ability to develop and execute a fully aligned growth strategy and vision; a robust growth pipeline system; and effective market, competitor, and end-user focused sales and marketing strategies.

- **GI1: MARKET SHARE (PREVIOUS 3 YEARS)**
  This is a comparison of a company's market share relative to its competitors in a given market space for the previous 3 years.

- **GI2: REVENUE GROWTH (PREVIOUS 3 YEARS)**
  This is a look at a company's revenue growth rate for the previous 3 years in the market/industry/category that forms the context for the given Frost Radar™.

- **GI3: GROWTH PIPELINE**
  This is an evaluation of the strength and leverage of a company's growth pipeline system to continuously capture, analyze, and prioritize its universe of growth opportunities.

- **GI4: VISION AND STRATEGY**
  This is an assessment of how well a company's growth strategy is aligned with its vision. Are the investments that a company is making in new products and markets consistent with the stated vision?

- **GI5: SALES AND MARKETING**

- This is a measure of the effectiveness of a company's sales and marketing efforts in helping it drive demand and achieve its growth objectives.

Frost Radar™: Benchmarking Future Growth Potential
2 Major Indices, 10 Analytical Ingredients, 1 Platform

INNOVATION INDEX ELEMENTS

HORIZONTAL AXIS

Innovation Index (II) is a measure of a company's ability to develop products/services/solutions (with a clear understanding of disruptive Mega Trends) that are globally applicable, are able to evolve and expand to serve multiple markets, and are aligned to customers' changing needs.

- **II1: INNOVATION SCALABILITY**
  This determines whether an organization's innovations are globally scalable and applicable in both developing and mature markets, and also in adjacent and non-adjacent industry verticals.

- **II2: RESEARCH AND DEVELOPMENT**
  This is a measure of the efficacy of a company's R&D strategy, as determined by the size of its R&D investment and how it feeds the innovation pipeline.

- **II3: PRODUCT PORTFOLIO**
  This is a measure of a company's product portfolio, focusing on the relative contribution of new products to its annual revenue.

- **II4: MEGA TRENDS LEVERAGE**
  This is an assessment of a company's proactive leverage of evolving, long-term opportunities and new business models, as the foundation of its innovation pipeline. An explanation of Mega Trends can be found here.

- **II5: CUSTOMER ALIGNMENT**
  This evaluates the applicability of a company's products/services/solutions to current and potential customers, as well as how its innovation strategy is influenced by evolving customer needs.

Frost Radar™: Benchmarking Future Growth Potential
Companies to Action

COMPANIES TO ACTION

All companies on the Frost Radar™ are Companies to Action. **Best Practice** recipients are the companies that Frost & Sullivan considers the companies to act on now.

GROWTH EXCELLENCE AWARD

The Growth Excellence best practice award is bestowed upon companies achieving high growth in an intensely competitive industry. This includes emerging companies making great strides in market penetration and seasoned incumbents holding on to their perch at the pinnacle of the industry.

INNOVATION EXCELLENCE AWARD

The Innovation Excellence best practice award is bestowed upon companies that are industry leaders outperforming their competitors in this area or new market entrants contending for leadership through heavy investment in R&D and innovation.

GROWTH INNOVATION & LEADERSHIP AWARD

The Growth Innovation Leadership (GIL) best practice award is bestowed upon companies that are market leaders at the forefront of innovation. These companies consolidate or grow their leadership position by continuously innovating and creating new products and solutions that serve the evolving needs of the customer base. These companies are also best positioned to expand the market by strategically broadening their product portfolio.

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