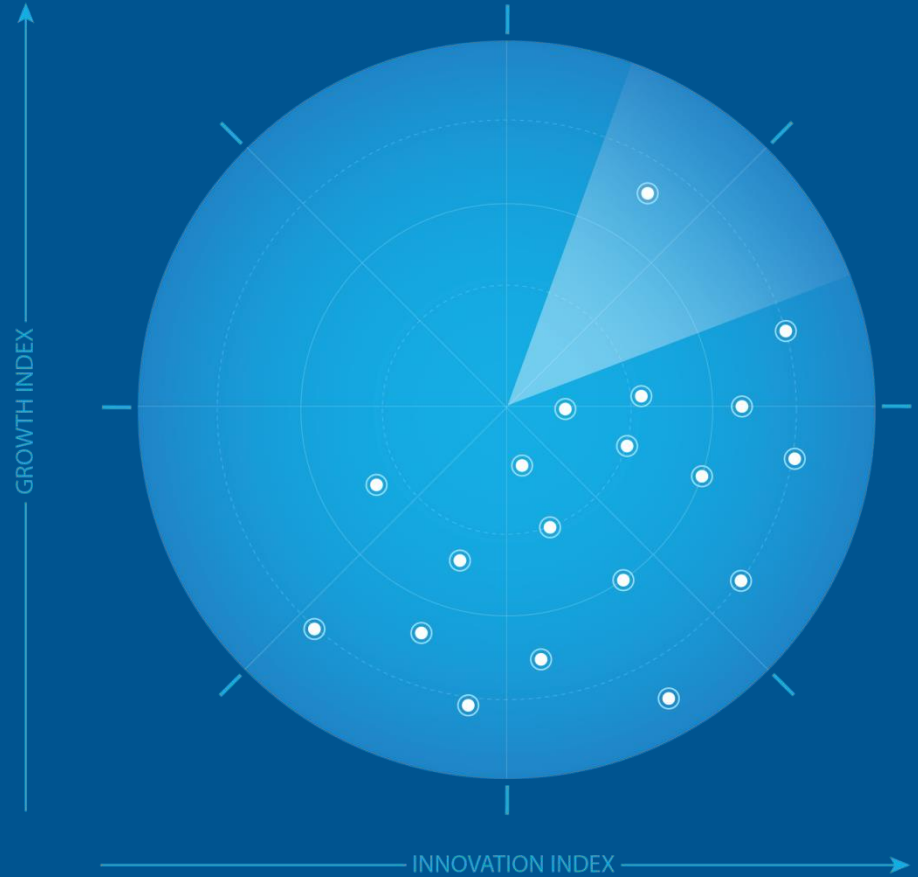


Frost Radar™: Managed SD-WAN Services in North America, 2024

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A Benchmarking System
to Spark Companies to
Action - Innovation That
Fuels New Deal Flow and
Growth Pipelines



FROST & SULLIVAN

Strategic Imperative and Growth Environment



Strategic Imperative

Factors Creating Pressure on Growth

- The rate of change in the software-defined wide area network/secure access service edge (SD-WAN/SASE) space adds sophistication and drives the need for managed SD-WAN/SASE. Enterprises still face challenges deploying SD-WAN; as an overlay technology, it exposes all the intricacies and complexities of the underlying networking that many enterprises did not have to consider in previous network technologies.
- In Frost & Sullivan's 2023 Global Voice of the Customer Network Survey of 1,390 decision makers, the top-cited challenge to deploying SD-WAN was ensuring interoperability with the existing WAN. Interoperability triggered service providers to offer gateways to their multiprotocol label switching (MPLS) services or solve the problem using different vendor gateways on their networks. The second most cited challenge is resistance from internal teams; service providers can overcome this by deploying services for the internal teams to manage. Another mentioned challenge was deploying internationally, with concerns ranging from regulations to on-site support. Again, a top-tier provider will navigate the import/export compliances and have established regional field support partners for local installs and support.

Source: Frost & Sullivan

Strategic Imperative

Factors Creating Pressure on Growth

- In the same survey, network, and security ranked the top concern for digitization goals; with that understanding, it makes sense that the software-defined networking (SDN) journey starts with SD-WAN and then continues to SASE to converge and simplify the network and security offering, Furthermore, providers are adding more voice services as session border controllers (SBCs) via their unified-communication-as-a-service (UCaaS) gateways. These SASE and voice integrations are in their core locations (super points of presence [PoPs] or service PoPs) for as-a-service consumption. Service providers are positioning their universal customer premises equipment (uCPE) as a vendor-agnostic device, pre-engineered with the provider's virtual network functions (VNFs). As VNFs gain traction for routing, optimizing, and security services on the uCPE, in the cloud, and at the edge, it enables value-added services to be enabled quickly, easily, and inexpensively.
- The reasons for deploying SASE are cost savings and ease of security management across branches and remote workers. The savings stem from the integrated network and security package, supported by a single platform subscription or by simply reducing the number of vendors.

Source: Frost & Sullivan

Strategic Imperative

Factors Creating Pressure on Growth

- The single platform can seamlessly deploy and manage network functions on the client side or in the service PoP and connect and secure multi-edge compute platforms.
- Worth noting is that managed SD-WAN providers offer traditional security functions including firewall, intrusion prevention system (IPS), and intrusion detection system (IDS) services in virtual and physical form factors. Most providers are offering or considering value-added security services such as endpoint detection and response (EDR), managed detection and response (MDR), and overall extended detection and response (XDR). Artificial intelligence (AI) and machine learning tools give providers visibility into the data and end-to-end network security. They apply learnings from the network they observe and the collective knowledge of all customer networks. The main takeaway is that network and security are forever attached at the hip.
- In the network, business models are executed using customer portals, APIs, and the as-a-service model, essential elements of a managed SD-WAN/SASE strategy. These elements provide visibility and integration with enterprise IT service management suites and configure, price, and quote (CPQ) services alongside tools to manage performance and service-level agreements (SLAs).

Source: Frost & Sullivan

Strategic Imperative

Factors Creating Pressure on Growth

- The service provider and customer both benefit from the integration. The portals and APIs are important for customer experience and collaboration because they enable CPQ functions and day two support. Service providers are evolving the platforms and portfolios to support a network-as-a-service (NaaS) framework.

Growth Environment

- In managed SD-WAN, the service provider acts as a single point of contact for the complete SD-WAN solution, including the SD-WAN appliance, software license, WAN services, and day two support services. SD-WAN architecture abstracts the control and management function from the data or traffic flows, allowing the flexibility to place the controllers and management mechanisms on an uCPE, telco edge, public cloud, or traditional data center. Provider responsibilities in a managed SD-WAN service include:
 - procuring, installing, configuring, and managing the overlay SD-WAN edge device (physical or virtual) and software;
 - installing and managing the underlay WAN links such as direct internet access (DIA), Ethernet, broadband, or wireless on their network or from another telecom partner;
 - managing all the moves, adds, and changes across the SD-WAN solution;
 - monitoring the service 24x7, troubleshooting, and restoring it in case of a problem (day 2 support);
 - offering an SLA for the entire solution and ensuring that performance guarantees offered in the SLA are met;
 - creating optional value-added services such as WAN aggregation and continuity configurations, third-party access management, additional security features, or WAN optimization;



Source: Frost & Sullivan

Growth Environment

- creating optional value-added services such as WAN aggregation and continuity configurations, third-party access management, additional security features, or WAN optimization;
 - supporting IT managers with a self-service portal interface or the needed APIs to pull the data to provide a granular level of visibility and control and
 - billing for the service in a subscription-based model in which the customer pays a monthly recurring charge (MRC) for the managed SD-WAN. While some providers bill managed SD-WAN services as a single MRC for the edge device, bandwidth charges, and management fees, others charge bandwidth fees separately.
- In the Frost & Sullivan network survey, 50% of respondents said their enterprises had started at least one SD-WAN deployment, and 34% had started a SASE deployment. Some 45% of adopters chose to implement SD-WAN in a fully managed option, 41% in a co-managed option, and only 14% do it yourself (DIY).
 - The managed SD-WAN industry consists of three types of service providers.
 - **Network Service Providers (NSPs)**, including AT&T, Comcast Business, Lumen, and Verizon, can combine network services with equipment vendors' solutions. The customer benefits from the provider's network services because doing so offers tighter integration of SD-WAN solutions with the network, enabling the provider to offer better SLAs and visibility through the customer portals.



Source: Frost & Sullivan

Growth Environment

- These providers are being seen as system integrators for deploying digital infrastructure. This Frost Radar focuses on companies still operating a network, but numerous local providers cater to small and medium-sized businesses (SMBs).
- **Managed Service Providers (MSPs)**, including MetTel, Sangoma, Nitel, and Fusion Connect, offer managed network, security, unified communications, and cloud services for many enterprise solutions. They have partnerships with several solution vendors and can combine SD-WAN with managed network services and offer optional value-added services as the end customers' needs grow. These companies might have a backbone for interconnecting their services but buy all local services from Tier 1 players. Numerous local management providers serve SMBs.
- **Value-added Resellers (VARs)**, also called technology service distributors (TSDs), include Avant, Telarus, and CDW and have emerged as a key channel through which some enterprises prefer to buy managed SD-WAN. VARs can function as a single channel for procuring solutions from different vendors, but that appears to be a cohesive solution. They often buy the components, install them, and work with the NSPs/MSPs to manage the production environment. The revenue is still realized through the NSP or MSP as a channel.
- Positive news about network budgets should enable growth in the space. Frost & Sullivan's 2023 survey indicated that after two years of skinny budgets, 61% of respondents indicated a network budget increase, 35% reported having the same budget, and 3% indicated a decline.



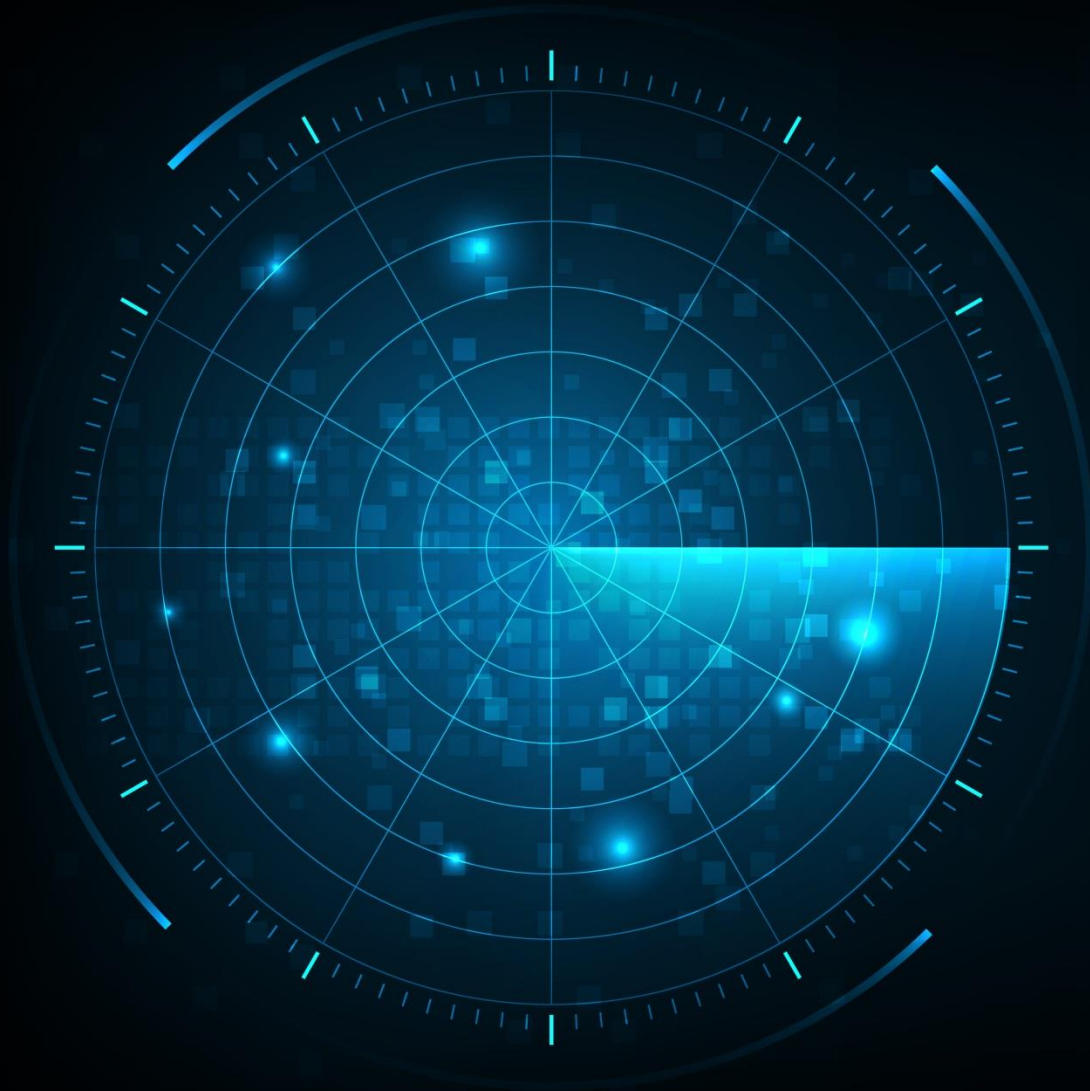
Source: Frost & Sullivan

Growth Environment

- Of the 61% who indicated a budget increase, two-thirds had increased their budget by 11% or more and the remaining third increased between 1% and 10%.

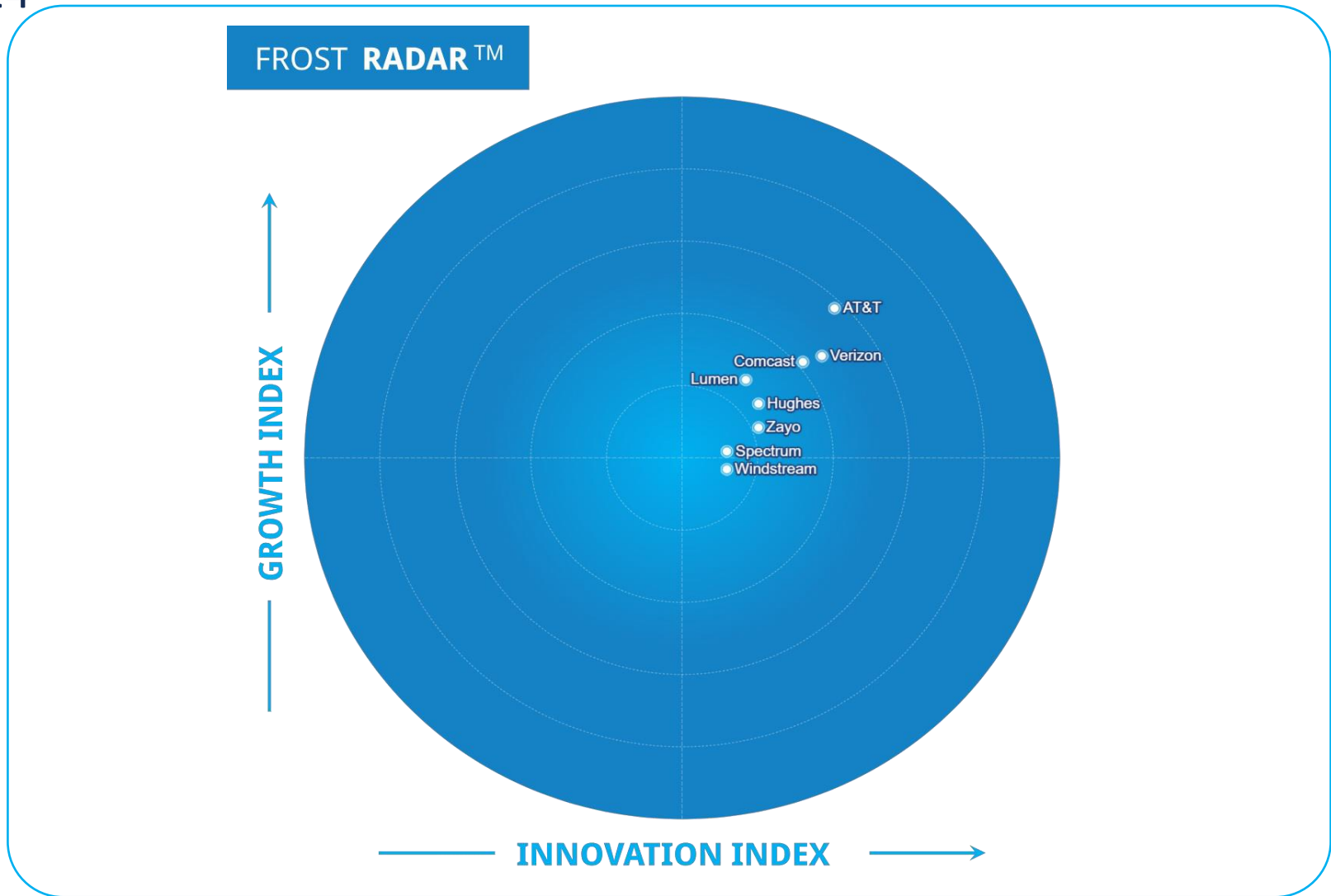


Source: Frost & Sullivan



**Frost Radar™
Managed SD-WAN
SASE Services in
North America,
2024**

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Source: Frost & Sullivan

Competitive Environment

- For this Frost Radar, Frost & Sullivan focuses on NSPs and MSPs with full-fledged managed SD-WAN offerings in the North American market. Service providers are primarily analyzed based on their managed SD-WAN/SASE portfolios, which include (but are not limited to) the choice of software-defined solutions; the underlay network choices; managed service support before, during, and after deployment; self-service portals and network management capabilities; and the ability to layer in services as zero trust network access (ZTNA), secure web gateway, SBC, and UCaaS. Table stakes for each vendor are simple pricing models for small, medium, and large sites; competitive access (underlay) pricing; competitive SLAs; and robust client portals and APIs for customers to view and integrate the service offerings into their systems and processes.
- Of the hundreds of service providers in North America, Frost & Sullivan independently plotted the top eight companies in this Frost Radar analysis. Formidable competitors AT&T, Verizon, and Comcast Business have the largest number of managed SD-WAN sites. Hughes Network Systems has a strong installation base, but competition is increasing as up-and-coming companies like Windstream and Zayo demonstrate solid growth rates.



Competitive Environment

- Many providers' portfolios have been built out; while they might expand for latency or new market opportunities, their vendor stack has not dramatically changed from previous years. One reason for this is industry consolidation: in 2023, HPE acquired Juniper, Broadcom acquired VMWare, and Cisco is pulling together much of its portfolio of Viptela, Catalyst, and Meraki solutions.
- The Frost Radar measures growth rates in addition to absolute revenue and combines them with other factors to measure companies' performance along the Growth Index. AT&T and Verizon have the most revenue, solid growth rates, and highest site counts of all companies covered, with Comcast Business a close third. While some participants have high individual-year growth rates, the Growth Index evaluation also considered multiyear growth patterns.
- For MSPs with competitive local exchange carrier (CLEC) roots, SD-WAN is forcing them to focus on the software layer and service management rather than providing the telecom infrastructure itself. As MSPs migrate out of the CLEC business, they partner with NSPs and enter into stronger wholesale agreements with larger national or global players.



Competitive Environment

- The Innovation Index has five areas of focus. AT&T, Verizon, Comcast Business, and Lumen demonstrate strong and innovative packages. Hughes Network Systems, Windstream, and Zayo are noteworthy for their focus on delivering global SD-WAN services at scale like the bigger players. Comcast Business, Windstream, and Hughes Network Systems stand out in terms of customer satisfaction and focus on value for clients. The added focus on customer portals positions these providers well in this competitive space. Frost & Sullivan recognizes the time and investment spent integrating performance and SLA management, ordering, scheduling, and billing functionality into easy-to-use portals.



**Companies to Action:
Companies to Be Considered First for
Investment, Partnerships, or Benchmarking**

Company to Action: AT&T

Innovation

- AT&T SD-WAN offers uCPE, specialized appliances, and cloud-based services with a robust set of licensed products from Cisco, Meraki, Aruba, VMware, Fortinet, Palo Alto Networks, and Zscaler.
- Another innovation and foresight is for partial MPLS/SD-WAN clients: a gateway from the SD-WAN/SASE services to MPLS services. The gateway allows clients to transition and keep MPLS on certain sites while modernizing to SDN on other sites. Normally, clients would have to create such a gateway themselves.
- AT&T's foresight in offering a uCPE allows it to remove or add different vendor solutions, enabling customers to avoid vendor lock-in—a common pitfall of SD-WAN/SASE offerings.
- For its DIA offering (the most common underlay for SD-WAN), AT&T offers its first add-on security for as little as \$20 a month. The service is called Dynamic Defense and is deployed in major US hubs. It filters network traffic and uses the AT&T threat intelligence knowledge base. This is just one example of AT&T's security expertise, based on more than 1,000 security patents.
- AT&T's self-service portal enables zero-touch provisioning and lifecycle management, with the ability to execute logical network changes. All are powered by a virtual AI assistant.

Source: Frost & Sullivan

Company to Action: AT&T

Innovation

- At the cloud edge, AT&T is innovating with application VNFs such as routing via Juniper and Cisco; security features with Palo Alto, Fortinet, and Juniper; SD-WAN with Cisco, VMware, and Silver Peak; and visibility with Accedian (now owned by Cisco).
- AT&T's real difference is the ability to offer uCPE, on-prem, or cloud versions, with gateways for enterprises to take advantage of pre-integrated, or best-of-breed, SD-WAN, with several underlay and overlay choices deployed at scale globally.

Company to Action: AT&T

Growth

- In 2024, AT&T continues to have the most SD-WAN sites deployed in North America and more than 140,000 sites globally. The SDN-based network-on-demand offering allows customers to procure dynamic bandwidth across its AT&T Switched Ethernet, internet, and MPLS offerings.
- AT&T has SD-WAN deployments in at least 82 countries and offers wireless internet in more than 70. This is an important advantage because a common setup for SD-WAN is DIA with LTE/4G/5G backup. Overall, the service is offered in more than 150 countries.
- As a multiservice operator, AT&T has strong marketing plans for fixed wireless access and collaboration services via a new Teams Phone for Mobile offering with Microsoft.
- AT&T goes to market with Equinix with a service called TAO total access orchestration, which combines a virtual router, firewalls, SD-WAN, SBCs, and other VNFs from vendors such as Infoblox.

Source: Frost & Sullivan

Company to Action: AT&T

Frost Perspective

- AT&T's robust range of network service choices (DIA, broadband, wireless, Ethernet, MPLS, and IP VPN) with SD-WAN creates customer stickiness. Also, having single-vendor SASE and best-of-breed options allows for capturing the full range of customers—from SMB to enterprise.
- AT&T has an advantage in capturing the hybrid cloud market. Scalable multi-cloud connectivity is already pre-provisioned in over 750 global on-net cloud locations.
- AT&T should focus more on the as-a-service marketplace, specifically the onboarding aspect. To complement a large portfolio that is dynamic, on-demand, and self-service, the next step is the ability to onboard digitally. While AT&T has established a digital buy flow for a small office bundle consisting of internet, SD-WAN, and Wi-Fi, many AT&T product websites have a “Contact Us” page vs. digital onboarding. The digital transition from browsing to onboarding will allow for a frictionless sales cycle and is necessary to maintain leadership.

Source: Frost & Sullivan



Key Takeaways

Key Takeaways

1

NSPs deliver a platform fabric approach to their as-a-service model in which SASE and SD-WAN, along with key components such as DIA services, are bundled in an easy-to-consume price, order, and delivery package.

2

The adjacent areas of AI and data science are where providers focus more time and energy. Artificial intelligence operations, or AIOps, capture location, traffic flows, device types, and performance metrics to be synthesized for predictive maintenance, self-correcting, and self-healing features. Combined with application management and contact center value-added services, this provides more professional service opportunities.

3

As network and security offers converge, enterprises will reduce complexity by streamlining the number of security point solutions. In the mid-market, single vendors are becoming popular. The reason is simplicity, ease of architecture, policy administration, and consistencies, as well as fewer panes of glass to monitor and troubleshoot when security incidents happen. NSPs and MSPs will seek boutique security firms to bolster their security practices through partnerships or acquisitions.

Source: Frost & Sullivan

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Frost Radar™ Analytics



Frost Radar™: Benchmarking Future Growth Potential

2 Major Indices, 10 Analytical Ingredients, 1 Platform

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.

GROWTH INDEX ELEMENTS

- **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

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.

INNOVATION INDEX ELEMENTS

- **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.

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