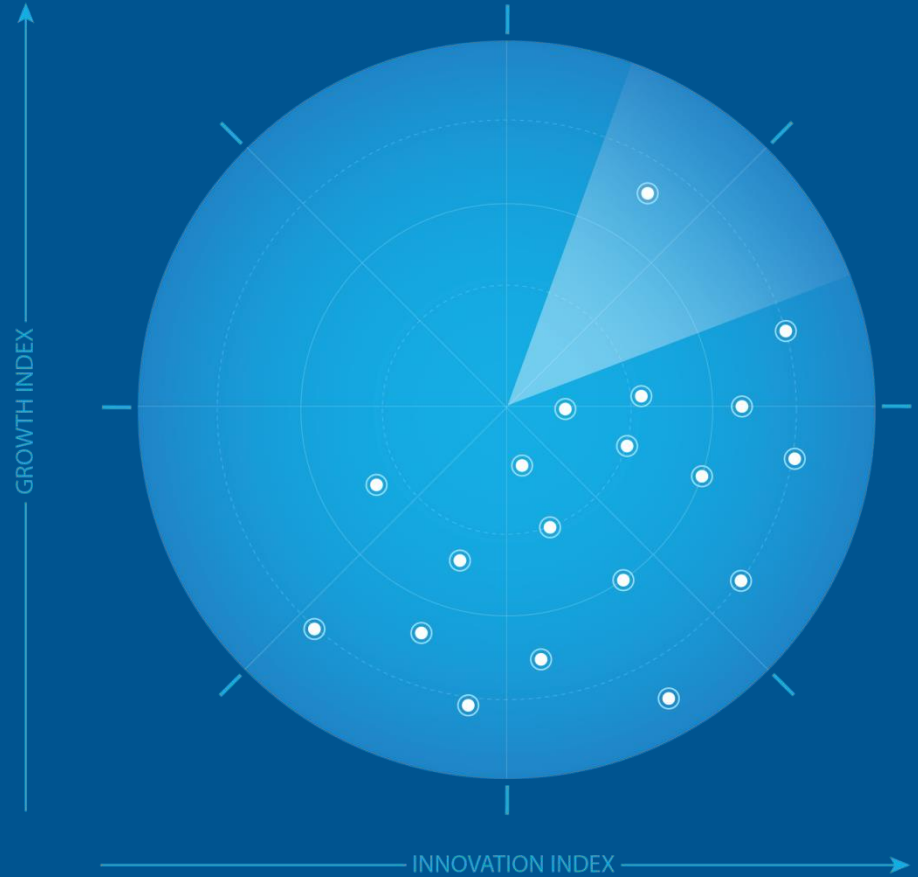# FROST & SULLIVAN

Frost Radar™: Enterprise Network Services, 2023

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

June 2023

Strategic Imperative

- The enterprise network services market is in flux. To offset revenue declines for traditional enterprise network services, telcos are moving up the stack to value-added managed services. To offset the high capital costs of operating a network, they are increasingly adding software-defined functions, security, automation, and finally leveraging artificial intelligence.

- Furthermore, the competitive environment has changed. Telecom companies primarily focus on their home geographies; some are state-subsidized or regulated. However, when it comes to offering seamless services to enterprise customers who do business globally, these local or regional telcos must cooperate or compete with one another.

- In this Frost Radar, we look at the top providers worldwide in the Global Enterprise Network Services space. These companies have spent decades building fiber capacity and fine-tuning their network switches and protocols to have efficient large-scale and responsive networks. All the providers compete against each other to attract global enterprise clients. At the same time, they must partner with one another or other local providers to offer end-to-end connectivity between clients' headquarters in one region and branches in other countries or regions.

- The global providers typically have hundreds of access partners, and some have up to a thousand local network access partners and Internet Service Providers (ISPs) partners.

- These local access providers have been carefully vetted by the global partners, as they enable the end-to-end SLAs enterprises to want and expect from these top-tier providers

Strategic Imperative (continued)

- The companies in this Radar have embraced their role as digital telecom providers; they are well on their way to becoming integrators of networks and services to the global digital enterprise. However, the roots of this journey are still connectivity and traditional data and voice offerings, which make up 80% or higher of the total revenues.

- The providers are providing platforms that can be co-managed by their enterprise clients, via robust Application Programming Interfaces to cloud, IT service management, and network automation platforms. Artificial Intelligence in Operations (AIOps) is also an area where all the providers are trying to outdo each other, using telematics, machine learning, and advanced correlation engines. The aim is to simplify operations and engage in predictive behaviors, allowing them to be proactive with self-healing mechanisms

- For global providers, the geographical footprint is key, as even the smaller communication service providers offer services in 100+ countries, with the top tier offering services in nearly 200 and just a few with 200+ countries.

- The geopolitical risk factors are even more relevant today than ever before. High inflation in the US and much of the eurozone is driving slight negative to flat growth among many of the players.

Source: Frost & Sullivan

Strategic Imperative (continued)

- After years of tracking Net Promoter Scores (NPS), the network operators are additionally trying to outdo each other with customer experience. Networks are seen as a commodity, therefore providers focus on client-facing processes, such as the onboarding and offboarding of services, billing, network inventory, and incident management to differentiate themselves.

Growth Environment

Commonly Used Terms

- MNC Multinational Corporation – Companies that own and operate businesses in many countries with 25% of more revenue outside the home country.

- An End is the main country typically where the MNC is headquartered. B end is where the remote site or remote branch is located in another country.

- Offnet: Network circuits (wired, wireless, IP, satellite, etc.) from another network company.

- Route Miles: The number of route miles in a network multiplied by the number of fiber strands within each cable on the network.

Global Network Services Provider responsibilities include:

- Extensive focus on import/export and telecom regulations must be adhered especially in countries such as India, Brazil, and China, and honoring trade embargos with countries such as Iran and North Korea.

- Global Monitoring and restoring service 24x7 and offering an end-to-end service level agreement (SLA) for the entire solution and ensuring that performance guarantees are offered across the globe.

- Having value-added services such as unified communications, collaboration, contact center, security, and various SDWAN and SASE services with the ability to provide consultancy and advisory services

- Supporting IT managers with a self-service portal interface that provides detailed visibility for provisioning, onboarding/offboarding, and general programmability of today's software-defined network.

- Flexible billing with fixed and subscription-based models, where the customer pays a monthly recurring charge (MRC), set up fees, and statement of work models for professional services. The operators are now refereeing to this as NaaS Network as a Service.
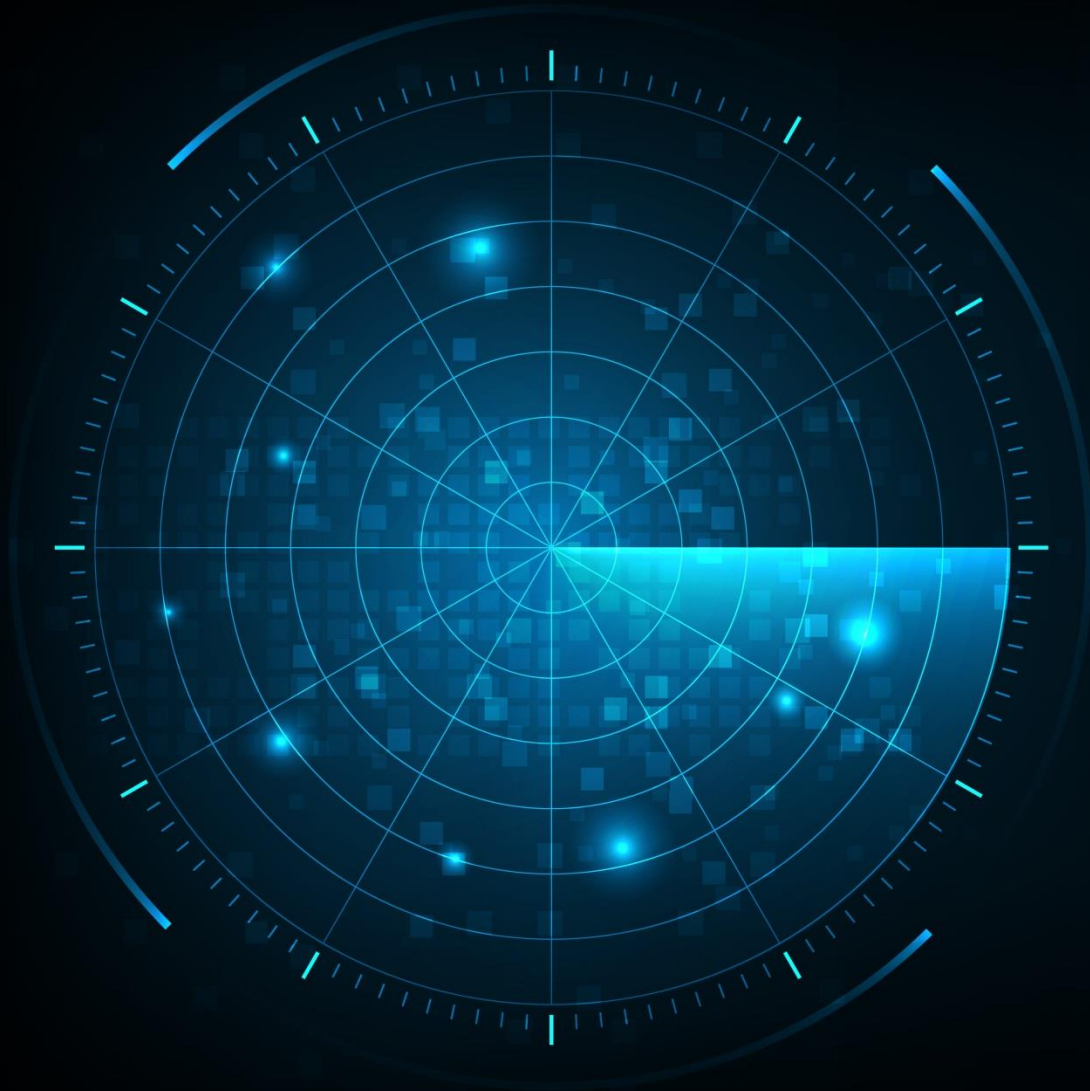
Growth Environment

- The global enterprise network services market is around $80 billion dollars, with growth rates flat or in a slight decline since the pandemic. The enterprise space has around 4.5 million connections and we expect that to remain steady for the next few years. The pandemic had many companies freezing growth plans, and the recent inflationary pressures are not providing enough headwinds to predict strong growth in the next few years.

- Global GDP, as forecasted by OECD Organization for Economic Co-operation and Development, is expected to be 2.6% in 2023 for the G20 (Top 20 Countries) and 2.9% in 2024 [1]. Frost & Sullivan is anticipating a slightly lower than GDP performance in the global network services market as the last few years revenues have been in a decline and we see 2024 picking up better than 2023. The US multinational corporation (MNC) market (still 30% of all MNCs) traditionally has stayed on pace with the overall market per a comprehensive Brookings research conducted in 2021 [2] and therefore, Frost sees the overall IT spend of MNCs staying in the range of 1%-3% as well.

- Among global network providers, the movement to software-defined functions has been progressing for years with the greatest investments related to security. Implementation of software-defined networks often results in lower revenue for providers, as enterprise clients make use of lower-cost direct internet, broadband, and wireless instead of higher-priced private VPNs. However, security and robust mobile assets are also seeing solid growth in the Internet of Things IoT space, and the operators can offset losses in connectivity revenues with security, professional services, and mobility/IoT integrations.

1: https://www.oecd.org/economic-outlook/march-2023/
2: https://www.brookings.edu/wp-content/uploads/2021/04/GG_Ch1_Summary.pdf

Source: Frost & Sullivan

Growth Environment (continued)

- Providers who have a consultive approach to application performance will also see growth opportunities as the complex networking needed for applications that are routed from the cloud, edge, branch and headquarters locations become more and more scattered and nuanced.
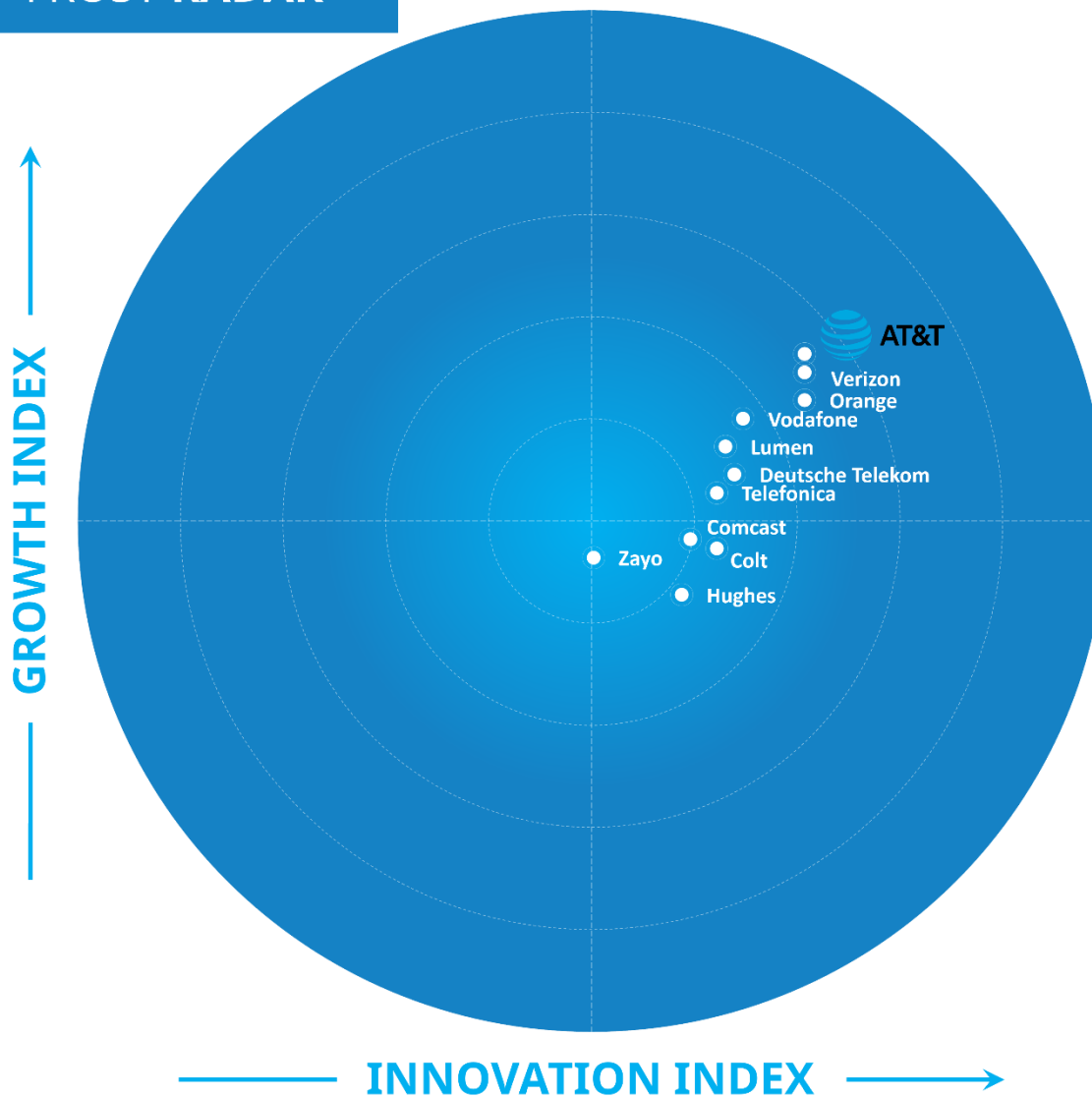
Source: Frost & Sullivan

Frost Radar™: Enterprise Network Services

Source: Frost & Sullivan

Frost Radar™
Competitive Environment

- The global enterprise network services market is a mature competitive market with the revenue generated mainly from global MNCs and international agencies headquartered in the provider's home country. For instance, if we use the 2022 Forbes Global 20001 list as a proxy, the US is the headquarters for 595 companies or 30% of the overall list. The large US opportunity explains why US-based AT&T and Verizon have the highest revenues.

- Larger European network operators like Orange, DT, Telefonica, and Vodafone stand out as strong rivals and leaders in their sections of the European markets. The growing Asia market has standouts as NTT & Tata with Asia have a growing MNC base these providers will also see part of that growth. Overall, the market does have global competitiveness as the MNCs adopt both global and regional best-in-breed buying behaviors and during our interviews, many of the participants mentioned each other as partners and competitors depending on the opportunities.

Frost Radar™
Competitive Environment (continued)

- One common metric to compare global networks is fiber route miles (see definition page - as the number of strands can make a difference); that is, the physical undersea cables and national networks that make up the core networks of these companies. AT&T and Verizon both report over 1,000,000 route miles globally and Comcast Business has 1,000,000 in the US. Vodafone has an impressive 621,000 miles. Orange Business is still the leader in global reach with over 220 countries and still has an extensive nearly 300,000 miles of optical fiber in France and around the world. DT, Telefonica, Tat, and Zayo all have very extensive subsea cable systems and report in the hundreds of thousands of route miles as well. As route miles are calculated by the number of strands in each cable it is hard to compare route miles as apples to apples and each operator often display their networks so understanding where they have international capacity is still the most important.

- In this capital-intensive market, many global providers invest hundreds of millions or billions of dollars in fiber routes. They often contribute to the consortiums for newer more direct and faster subsea cables to support international capabilities. Where any participants highlighted extensive network upgrades or investments, we have included that in the profiles.

Frost Radar™
Competitive Environment (continued)

- COLT and Tata do not have the long history of some of their rivals, such as AT&T, Verizon, or Orange Business; however, they are seen to be very innovative and have excellent customer service.

- Hughes Network Systems is the smallest of all the companies on the Radar however they have a place with the global providers for clients seeking global coverage with a nimble but still capable provider.

- Tata has had extremely high NPS scores over the last 4 years that range from 70 to most recently, 84. NPS1 is an overall indicator of how likely a company is to be recommended; and therefore, is a proxy for customer retention.

- Orange Business is a standout among the providers for their forward-looking mix of services and the overall portfolio that is heavily focused on services. For instance, in the Q1 2023 annual report, Fixed Connectivity was 42% of the revenue while IT and Security services accounted for 44%. Frost & Sullivan sees this as a benchmark to the other providers.

Source: Frost & Sullivan

Frost Radar™
Competitive Environment (continued)

- NTT is a global provider with services in 56 countries and headquartered in Japan (4th in the world for MNCs, with 10% of that market). NTT has an extensive portfolio and leader; however, the company declined participation in this Radar. British Telecom, located in 184 countries and headquartered in the UK (5th for MNCs and host to around 3% of MNCs), is a global provider with an extensive portfolio, however, the company also declined participation in the study.

- China is the 2nd largest country for MNCs and has massive network operators such as China Telecom, China Mobile, and China Unicom but not on our radar for enterprise network offerings as information is not as readily available by these carriers.

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

Companies to Action: AT&T

INNOVATION	GROWTH	FROST PERSPECTIVE
• AT&T is one of the few companies that can claim 145+ years of innovation. This claim is backed by nearly ten thousand patents and eight Nobel prizes. • Innovation is fueled by $135 billion in network and wireless investment in the last 5 years (2017-2021) and specifically $1.5B in 2021 allocated to Research and Development. • To avoid friction in the ordering of new services, AT&T offers to reuse fiber from existing MPLS ports for new DIA installs. This is an innovative way to reduce installation times and easily migrate clients between services.	• AT&T offers dedicated internet in 170+ countries with Internet aggregation in over 200. They have 760 on-net locations that include 500+ carrier hotels in 59 countries and interconnect with 15 different cloud providers. • AT&T additionally has dedicated Ethernet in 50 countries and has over 3900 MPLS service nodes in over 200 countries to maintain global market leadership in terms of connections and revenue. • AT&T is considered a market leader in dedicated internet access, MPLS, and managed SD-WAN.	• AT&T has extensive network capabilities and investments globally. The revenue and connection are skewed heavily towards the US but with time even the US MNCs are losing ground to Asia-born MNCs. • To ensure it maintains its leadership position AT&T should focus on non-US-based MNCs, particularly in the growing Asia market and the growth areas of European. AT&T has assets in these regions and should leverage them better.

Source: Frost & Sullivan

Companies to Action: AT&T (continued)

INNOVATION

- AT&T's flagship SD-WAN/SASE portfolio is offered in multiple deployment models, with all major SD-WAN/SASE equipment providers, such as Cisco, Aruba, VMWare, Fortinet, Palo Alto; including their own which is often the first model offered to the massive SMB market.
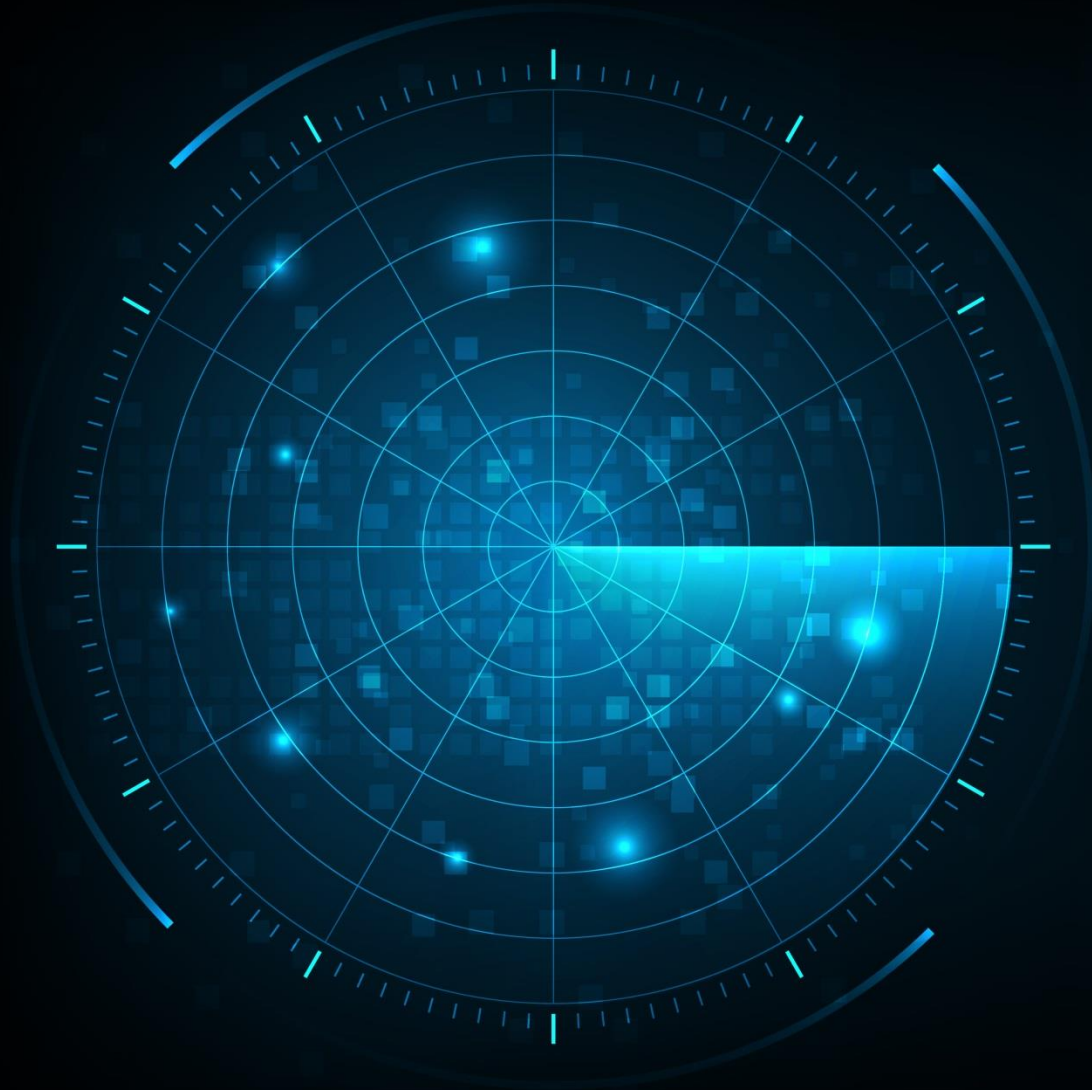
GROWTH

- AT&T continues to focus on integrating services within its digital experience platforms. For instance, the Digital Exchange Marketplace, allows customers to dynamically connect to cloud providers in just 15 minutes, via existing Switched Ethernet or MPLS networks through the digital portal.
- Furthermore, the portal has the capability to add internet and voice to existing contracts, which will allow for a more frictionless order experience for clients and aid in growth.

FROST PERSPECTIVE

- With its portfolio of cellular, fixed, and cyber security offerings, AT&T is well-positioned to enable digital transformations. The company should continue to focus on these higher-margin services.
- Cybersecurity is top of mind and AT&T competes quite well with standalone Managed Security Solution Providers (MSSP). Frost & Sullivan believes having network plus security is needed for the long-term viability and success of all the network operators.

Source: Frost & Sullivan

Frost Radar™

Key Takeaways

Key Takeaways

1 The competitive forces are driving innovation in the customer portals to enable network service providers to deliver not only transparency but automation and an enhanced customer experience.

2 Customer satisfaction has never been higher for global brands. These operators are all scoring from the high 40s in NPS to some setting industry records with NPS in the 70s and 80s.
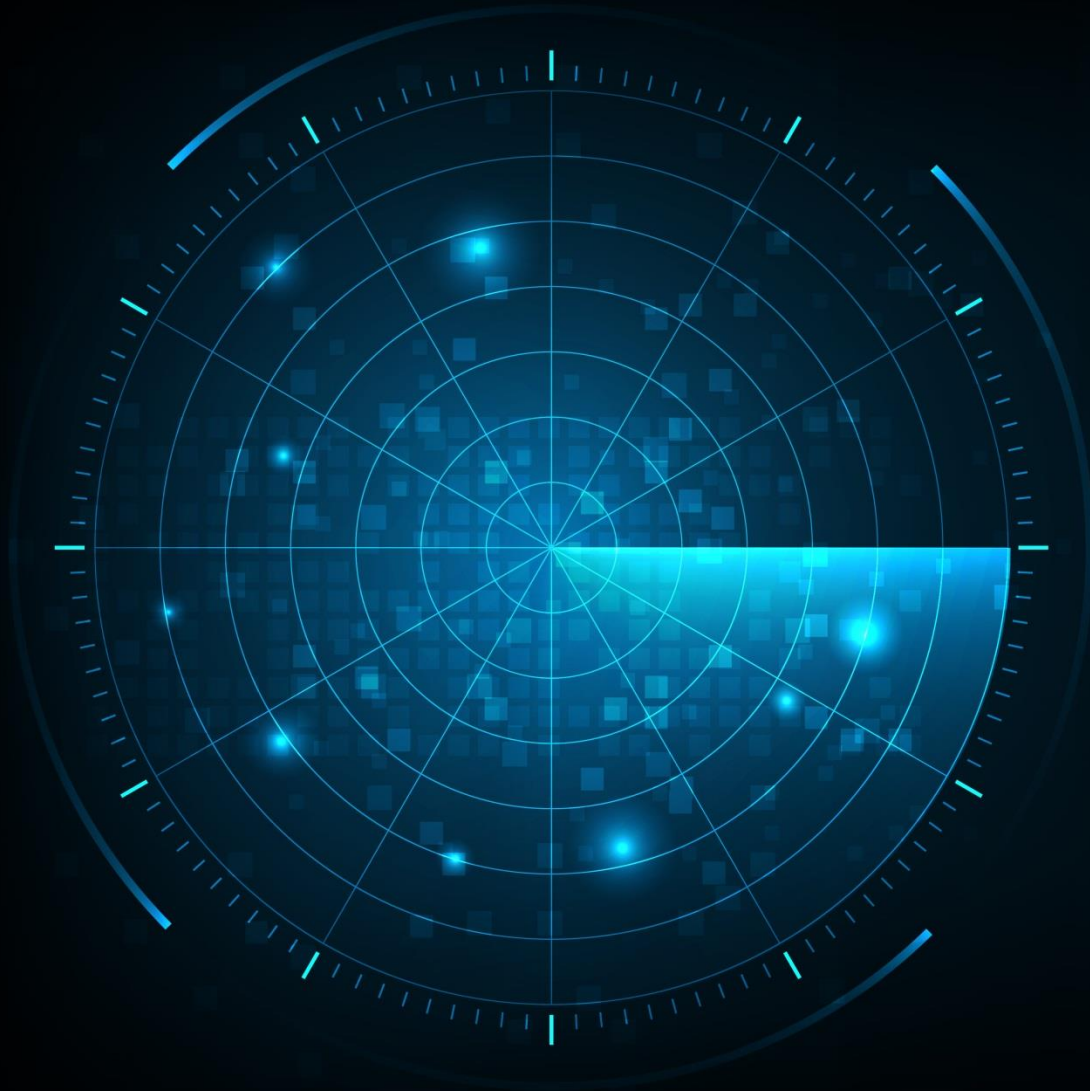.

3 Scale is still a winner in this market and some tier 2 and tier 3 providers not currently on the Radar will look to merge or be acquired to compete globally. The pandemic has taught us that scaled companies are far more able to weather geopolitical chaos'

Source: Frost & Sullivan

Key Takeaways

4

The network operators are charging fully ahead with security offerings to simplify the enterprise IT landscape. We will see security, cloud, and network operators all find footing in this space with network operators in a solid position to be the end-to-end platform service of choice.

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.

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