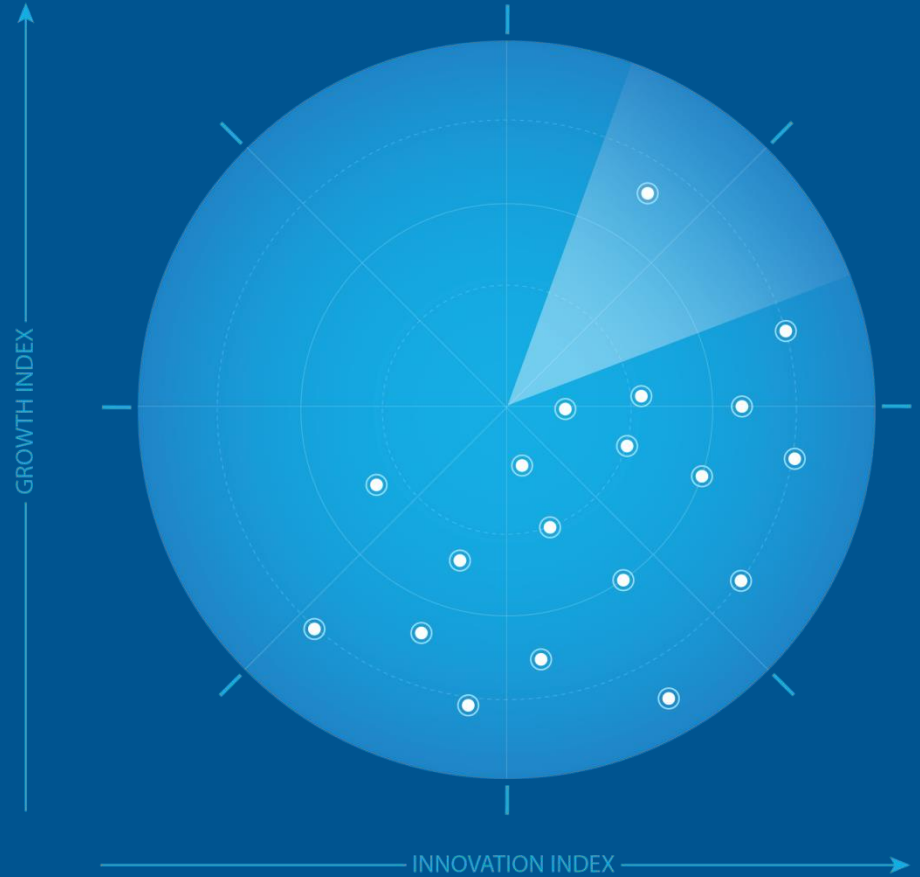# Ethernet Services in North America, 2023

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

December 2023

Strategic Imperative
and Growth
Environment

Strategic Imperative

Factors Creating Pressure on Growth

Innovative Business Models Challenges

- Ethernet services have not changed for decades. Network service providers (NSPs) provide symmetrical bandwidth, service level agreements (SLAs), proactive monitoring of networks, and 24/7/365 customer support. However, today's organizations require software-defined, dynamically scalable, and high-bandwidth adaptive networks for agility and flexibility. To meet their needs, NSPs are introducing new offerings, such as network-as-a-service (NaaS), which supports an end-to-end service model and includes customer-premises hardware, single-pane-of-glass management, and an orchestration platform. Ethernet is the most prevalent underlay because it offers secure and dedicated connectivity. NSPs should expect Ethernet revenues to migrate to the wholesale segment or become part of NaaS soon.

Transformative Megatrends

- Businesses are adopting digital technologies, such as the Internet of Things (IoT), video analytics, robotics, artificial intelligence (AI), and big data analytics, to collect data, analyze and derive insights, and improve business efficiency. These applications require a secure connection with a high bandwidth because the data collected from distributed devices is vulnerable to security threats.

Strategic Imperative

Factors Creating Pressure on Growth

- Enterprises' need for security and performance control drives demand for private networks, especially dedicated Ethernet services in the 10G-and-above range. Financial, healthcare, and government verticals operate in highly distributed environments and rely on private and secured branch networks. Ethernet is best for these verticals because it provides high security and control in WANs.

Disruptive Technologies

- The shift from traditional fixed networks to flexible, software-based networking continues. SD-WAN enables organizations to safely and flexibly manage a variety of transport technologies, resulting in many organizations opting for less expensive technologies such as broadband or DIA. Indeed, this hurts the Ethernet market, particularly in the small and medium business/retail sector. In the case of wholesale and large businesses, Frost & Sullivan has observed that security, flexibility, scalability, and dependability still hold value, which is why they will continue to utilize private connections, such as Ethernet.

Growth Environment

- Carrier Ethernet services include all layer 1/2/3 services sold under different names—including transparent or native LAN, gigabit Ethernet, metro Ethernet, EPL, EVPL, E-access, and virtual private LAN services. This study includes Ethernet services delivering any of the following underlying infrastructure, offering symmetrical speeds, and adhering to MEF definitions:

  - Ethernet over copper

  - Ethernet over hybrid fiber coax

  - Ethernet over synchronous optical networking (SONET)

  - Ethernet over dense wavelength division multiplexing

  - Ethernet over MPLS

  - Ethernet over layer two switched infrastructure.

- Frost & Sullivan defines wholesale services as services that providers sell to other carriers, systems integrators, and resellers. In contrast, business carrier Ethernet services are services providers sell to enterprises or businesses.

Growth Environment (continued)

- This study uses the MEF (formerly Metro Ethernet Forum) definition for a carrier Ethernet service. MEF, an industry consortium of network, cloud, and technology providers, has documented numerous technical requirements to build and manage feature-rich business-class Ethernet services over any infrastructure and drive the widespread availability of Ethernet services.

- The carrier Ethernet services market's product life cycle has matured, with year-over-year growth rates dropping. Both wholesale and business/retail market sectors are experiencing a drop in Ethernet revenue growth rates owing to price compression, market maturity, and increased usage of less expensive transport technologies with the advent of SD- WAN.

- While the market experienced negative growth rates because of these trends, enterprises will continue to use Ethernet services for their flexibility, scalability, and reliability. Frost & Sullivan does not anticipate a substantial revenue decline soon, as enterprises' need for security and performance control will still drive demand for private networks, particularly dedicated Ethernet services in the 1G and higher bandwidth ranges. Moreover, as technology evolves, new applications become latency-sensitive and require high bandwidth with uninterrupted connectivity to perform efficiently. In addition, the need to connect to third-party cloud service providers and interconnect corporate data centers continues to drive demand for higher Ethernet speeds.

Growth Environment (continued)

- Frost & Sullivan observes a sustained request for upgrades in bandwidth. Moreover, NSPs saw higher demand from enterprises for Ethernet to access cloud-based applications and connect on-premises and hosted data centers. In addition, carriers reported seeing the need for higher-capacity ports from hyper-scalers. However, the price compression causes a revenue decline in the Ethernet service market.

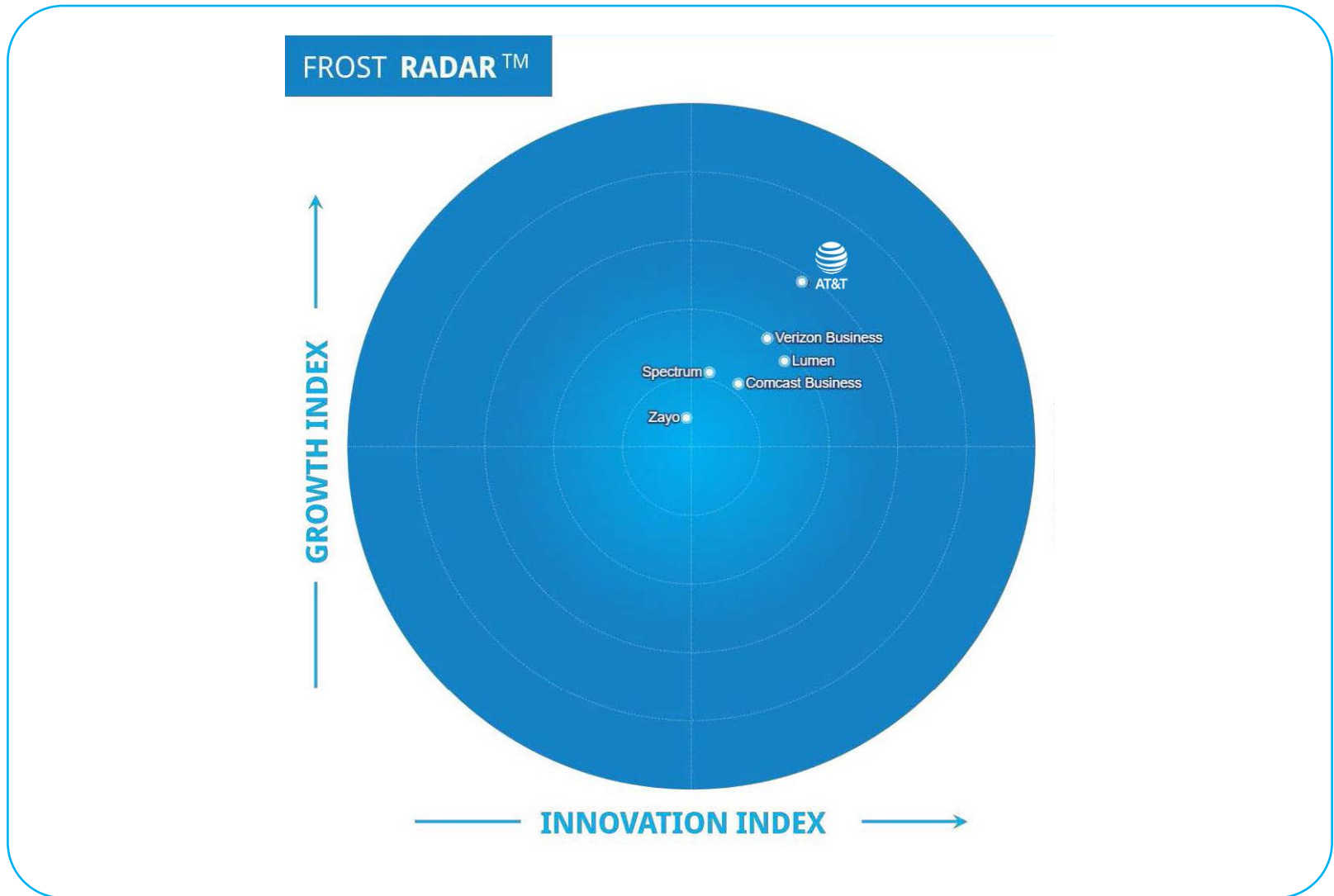Source: Frost & Sullivan
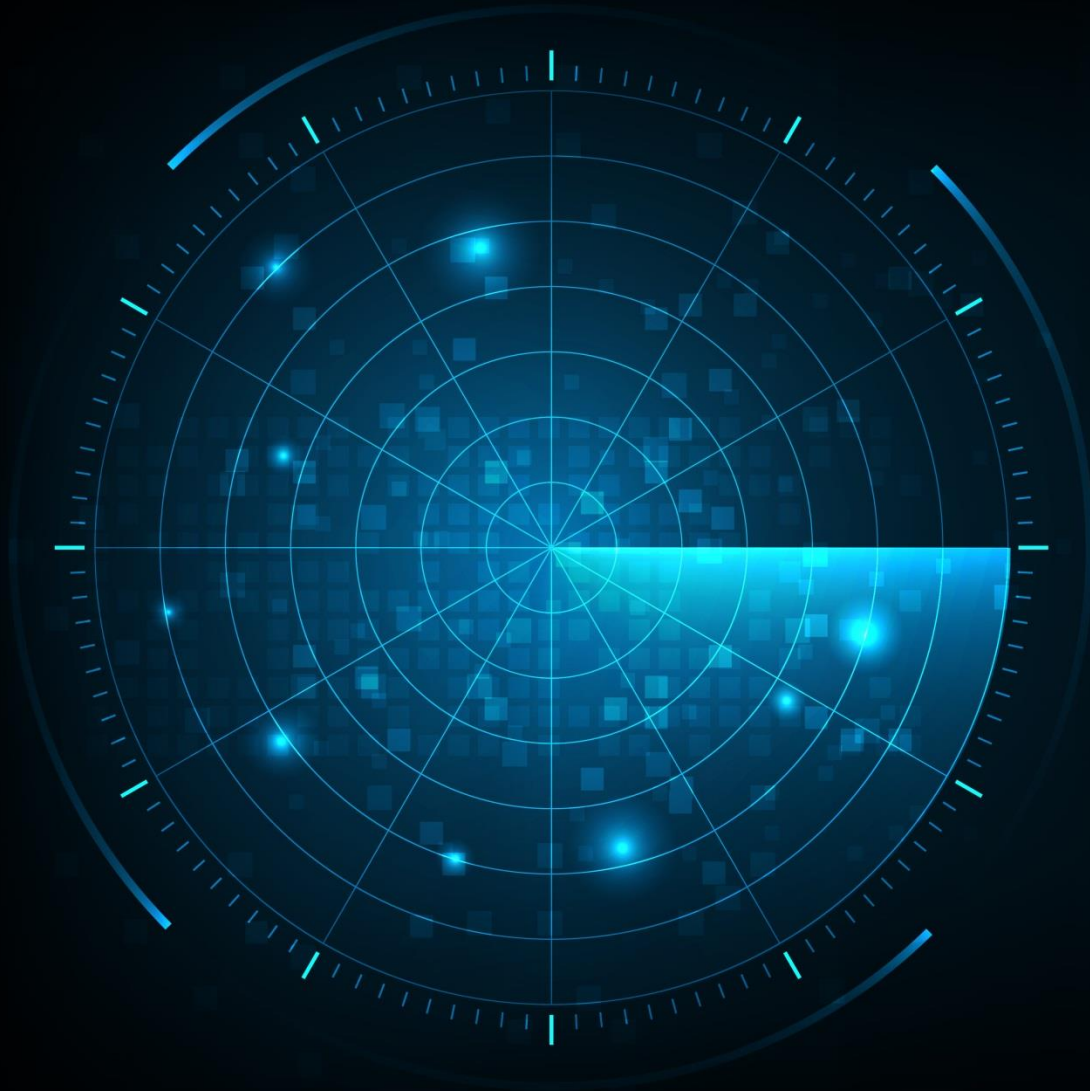
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Frost Radar™

Ethernet Services in North America, 2023

Frost Radar™: External Risk Mitigation and Management, 2023

Source: Frost & Sullivan

Frost Radar™
Competitive Environment

- The North American carrier Ethernet service market is competitive, with more than ten major network service providers (NSP) participating. However, not all service providers have significant market shares or highly innovative offerings. The companies mapped on the Frost Radar™ offer well-rounded solutions with relevant geographical coverage. NPSs are analyzed primarily based on their Ethernet service's features and functionality, market share, and company's growth performance.

- In this report, Frost & Sullivan focuses on leading service providers of comprehensive carrier Ethernet services in the US market. This market continues to experience negative revenue growth rates for Ethernet, primarily due to price compression and market maturity. However, Ethernet remains one of the most crucial transport technologies in wholesale and business/retail markets.

- AT&T is the Growth Index and Innovation Index leader because of the completeness of its offering, its large customer base, and its reliable nationwide network in the United States. Moreover, the main innovation that it has concerning this technology is its AT&T Switched Ethernet on Demand (ASEoD) service, based on a customer self-service portal that stands out among competitors as it allows customers to manage Ethernet billing, inventory management, real-time ordering, trouble ticketing, bandwidth utilization, and customized alerts.

Frost Radar™
Competitive Environment (continued)

- Moreover, ASEoD allows a single device to provide routing, firewall, intrusion prevention system (IPS), switching, web filtration, and 24/7 proactive management to detect, prevent, and resolve issues.

- Following closely behind AT&T, Verizon and Lumen are formidable competitors with the largest Ethernet footprint and a broad portfolio of value-added services. One common metric to compare networks is fiber route miles; that is, the physical undersea cables and national networks that make up the core networks of these companies. AT&T and Verizon report over 1,000,000 route miles, and Lumen reports 6,000,000 route miles globally. This capital-intensive market and the number of miles of fiber show potential market growth, as lit business buildings represent potential Ethernet consumers.

Source: Frost & Sullivan

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Companies to Action:

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

Company to Action: AT&T

Innovation

- AT&T offers switched Ethernet, dedicated Ethernet, and custom combinations. AT&T's Ethernet services are mature products with all the standard Ethernet services features, including SLAs, nationwide coverage, and speeds of 100 Mbps, 1 Gbps, 10 Gbps, and 100 Gbps. Delivering 100G Ethernet services is a capability that all market competitors do not possess. This competitive advantage was developed to support expanding bandwidth-intensive applications that run in public clouds.

- The main innovation that AT&T has about this product is its service T&T Switched Ethernet on Demand (ASEoD). Thanks to this product, AT&T can offer a product with disruptive features such as adaptable and on-demand Ethernet networks. The self-service portal allows customers to scale, provision, and modify network configurations quickly, adding an integrated Internet connection on ports up to 10Gbps. In this manner, clients only pay for the bandwidth they use. Another advantage of this service is using a single device to provide routing, firewall, intrusion prevention system (IPS), switching, web filtration, and 24/7 proactive management to detect, prevent, and resolve issues.

- AT&T is one of the few companies with more than 145 years of innovation. This claim is backed by nearly ten thousand patents and eight Nobel prizes. Its innovation is fueled by $135 billion in network and wireless investment in the last five years (2017–2021), and specifically, $1.5 billion in 2021 will be allocated to research and development.

Source: Frost & Sullivan

Company to Action: AT&T

Growth

- AT&T leverages its success in Ethernet services in the United States through its impressive Fiber footprint. The company's fiber network has connected more than 750,000 business buildings in the United States. The company is in more than 500 data centers across the United States and 250 cloud data centers outside the country, offering speeds up to 1 terabyte per second. Consequently, AT&T's market leadership stems from its solid base of clients, strong brand recognition, and ease of upsell/cross-sell.

- AT&T is the Ethernet Services Market leader due to its reliable nationwide network and commercial relations with businesses. AT&T serves all business tiers by providing a range of speeds and dedicated and shared networks to meet the requirements and budgets of its customers.

Source: Frost & Sullivan

Company to Action: AT&T

Frost Perspective

- Even though the market is mature and experiencing stagnant growth, Frost & Sullivan believes AT&T has a successful revenue maintenance strategy. First, its network allows it to increase long-haul service revenue while its primary competitors focus on Metro Ethernet. AT&T should keep focusing on expanding fiber routes in the United States to continue strengthening its market position.

- Furthermore, to offset the market downturn, AT&T has added value-added services to its traditional transport services, such as Managed ASEoD. Frost & Sullivan believes AT&T should extend this strategy by adding more value-added service bundles with its Ethernet services.

Key Takeaways

Key Takeaways

1 Network service providers that offer dynamic capabilities through self-service portals are appealing to customers as they can monitor and manage their networks (e.g., latency, jitter, packet loss, availability, and frame loss), make real-time changes (e.g., bandwidth upgrades), and have access to reporting tools. In addition, self-service tools and application programming interfaces support certain services, such as product quoting and order automation.

2 As technology evolves, new applications become latency-sensitive and require high bandwidth with uninterrupted connectivity to perform efficiently. This trend is pushing the need for high-speed bandwidth across various industry verticals. Ethernet offers high bandwidth ports, excellent scalability, and price competitiveness. Ethernet offers high bandwidth ports, excellent scalability, and price competitiveness.

3 Finally, connectivity is at the core of businesses' digital transformation initiatives. Enterprises are increasingly deploying next-generation business applications that capture colossal amounts of data daily to process and derive inferences for efficient business operations. These business applications are latency-sensitive and require high bandwidth connectivity to perform efficiently. The growing demand for high bandwidth by enterprise customers will continue to drive demand for wholesale Ethernet, mainly for 400 gigabyte Ethernet ports, driving the need for wholesale Ethernet.

Source: Frost & Sullivan

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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