LUMEN®

2025 COMPANY OF THE YEAR

Driving impact across the customer value chain

RECOGNIZED FOR BEST PRACTICES IN THE NORTH AMERICAN EDGE SOLUTIONS INDUSTRY

FROST & SULLIVAN

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Best Practices Criteria for World-class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each recognition category before determining the final recognition recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. Lumen excels in many of the criteria in the edge solutions space.

RECOGNITION CRITERIA	
Visionary Innovation & Performance	*Customer Impact*
Addressing Unmet Needs	Price/Performance Value
Visionary Scenarios Through Megatrends	Customer Purchase Experience
Leadership Focus	Customer Ownership Experience
Best Practices Implementation	Customer Service Experience
Financial Performance	Brand Equity

The Strategic Imperative 8: Factors Creating Pressure on Growth



- **Innovative Business Models**: A new revenue model that defines how a company creates and capitalizes economic value, typically impacting its value proposition, product offering, operational strategies, and brand positioning
- **Customer Value Chain Compression**: Customer value chain compression as a result of advanced technologies, internet platforms, and other direct-to-consumer models that enables the reduction of friction and the number of steps in customer journeys
- **Transformative Megatrends**: Global forces that define the future world with their far-reaching impact on business, societies, economies, cultures, and personal lives
- **Disruptive Technologies:** New, disruptive technologies that are displacing the old, and significantly altering the way consumers, industries, or businesses operate
- **Internal Challenges**: The internal organizational behaviors that prevent a company from making required changes

- **Competitive Intensity**: A new wave of competition from start-ups and digital business models that challenge the standing conventions of the past, compelling established industries to re-think their competitive stance
- **Geopolitical Chaos**: Chaos and disorder arising from political discord, natural calamities, pandemics, and social unrest that impact global trade, collaboration, and business security
- **Industry Convergence**: Collaboration between previously disparate industries to deliver on whitespace cross-industry growth opportunities

The Transformation of the Edge Solutions Industry

> *"As a value proposition, Lumen combines its Edge Fabric solutions with its global fiber network to support next-generation applications closer to where the data is generated. The company has about 340,000 route miles of optical fiber worldwide, delivering the industry's highest commercially available connectivity speeds of up to 400 Gbps. Lumen's unique selling point is its ability to guarantee latency of less than 5 milliseconds in about 56 edge locations in North America, covering 98% of enterprise demand in the United States. The company's expertise in managed and professional services also helps it provide flexible business models for its enterprise customers."*
>
> ***- Carina Gonçalves***
> ***Industry Principal***

Lumen's Edge Fabric Solutions

Edge computing pushes intelligence, data processing, analytics, and communication capabilities to where the data originates: at network gateways or endpoints. The aim is to reduce latency, ensure highly efficient network operation and service delivery, and improve user experience. By extending processing closer to the data source, edge computing enables latency-sensitive computing, offers greater business agility through better control and faster insights, lowers operating expenses, and results in more efficient network bandwidth support. Telecommunications operators and system integrators worldwide are deploying edge solutions in partnership with cloud providers and establishing smaller data centers at the network edge, closer to customers, or on-premises, to enable compelling use cases and optimize application performance. The ecosystems are underdeveloped in most of the attractive vertical markets, such as manufacturing and mining. Thus, implementations of edge solutions often require a heavy initial capital investment.

Founded in 1930 and headquartered in the United States, Lumen is a global telecommunications company that offers a range of network solutions, from metro connectivity and long-haul data transport to Edge Computing Solutions security, managed services, and digital platforms. These solutions are personalized to meet the requirements of all vertical types and business sizes. As a value proposition, Lumen combines its Edge Computing Solutions with its global fiber network to support next-generation applications closer to where the data is generated. The company has about 340,000 route miles of optical fiber worldwide, delivering the industry's highest commercially available connectivity speeds of up to 400 Gbps. Lumen's unique selling point is its ability to guarantee latency of less than 5 milliseconds in about 60 edge locations in North America, covering 95% of enterprise demand in the United States. The company's expertise in managed and professional services also helps it provide flexible business models for its enterprise customers. It evaluates prioritized use case needs,

considering a range of business, technology, and budget requirements. This broad portfolio meets the needs of corporate customers to create growth opportunities in the edge solutions industry.

Lumen's Edge Computing Solutions Portfolio

To deliver flexible business models to its enterprise customers, Lumen designed a portfolio of 6 edge computing solutions: Edge Bare Metal, Edge Private Cloud, Network Storage, Data Protect, Network as a Service (NaaS), and Edge Service Manager. Lumen Edge Bare Metal is an dedicated on-demand, , pay-as-you-go bare metal server hardware as-a-service hosted in 60+ distributed locations backed by Lumen's fiber network to deliver ≤5ms that offers single-tenancy servers and a unified platform to run applications and workloads.

Edge Private Cloud is a managed infrastructure-as-a-service (IaaS) offering with optional Kubernetes. The solution is highly customizable with options per host, such as 16-56 cores, 256 GB-1.5 TB RAM, and 5 TB-35 TB usable storage (SSD). Competing offerings do not have as many options and levels of customization across factors (cores, RAM, and SSD) as Lumen. Based on software-defined data center (SDDC) technology, Edge Private Cloud can be deployed in more than 2,200 on-net public and private data centers. Moreover, Lumen has had a long-term partnership with VMware since 2002, establishing a dedicated private cloud, which has been.built with VMware Cloud Foundation since 2016. In 2024, Lumen joined the Pinnacle Partner Program, which has 22 years of experience delivering dedicated VMware Cloud Foundation private clouds integrated with fiber networks.

Network Storage is a fully managed multi-protocol storage service with self-service provisioning. Powered by NetApp ONTAP and StorageGRID, the solution has a consistent feature set in all locations: Lumen Edge, third-party colocation, managed hosting, customer premises, and public cloud. The solution also includes private storage nodes dedicated to each customer for maximum security and performance, as well as file and block storage built on All-Flash.

Data Protect, a fully managed data protection service is an immutable backup solution for recovering critical business data from ransomware and complying with regulatory requirements. The solution includes on-site backups combined with cloud storage and off-site backups with multiple copies of data. Self-service access to managed backup services is also available.

NaaS provides secure, real-time connectivity to edge and cloud environments. Finally, Edge Service Manager offers automated deployment, management, and instance monitoring across multi-edge environments. As edge computing is an emerging industry, finding such a diverse and complete portfolio in the market is difficult. In addition, Lumen demonstrates transparency by showing how each solution uniquely meets a customer's requirements. Competitors lack the clarity that Lumen possesses in segmenting its portfolio into 6 distinct edge computing solutions, each tailored to meet specific demands. Most competitors offer only a limited number of solutions with a lower level of detail.

Lumen Digital

To keep up with the demands of a digital organization, businesses of all sizes require a network that is consistently accessible, secure, and scalable, accompanied by pay-as-you-grow pricing models. The

> *"Cloudify Telecom, a strategy to digitize processes and network functions to create consumption-based solutions, is a top priority for Lumen in 2025 to meet customer demands. The platform delivers next-generation network and security solutions on demand and pay-per-use. Lumen's control center, network visibility dashboard, and an inherently secure network with artificial intelligence (AI)-enabled threat intelligence backed by Black Lotus Labs are key assets."*
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convergence of network and security drives the way enterprises consume network services. Cloudify Telecom, a strategy to digitize processes and network functions to create consumption-based solutions, is a top priority for Lumen in 2025 to meet customer demands. The platform delivers next-generation network and security solutions on demand and pay-per-use. Lumen's control center, network visibility dashboard, and an inherently secure network with artificial intelligence (AI)-enabled threat intelligence backed by Black Lotus Labs are key assets.

With leadership in core telecommunications services, Lumen has established its reputation and performance in the cloud environment. The company has deployed more than 100,000 active route miles for leading cloud providers such as AWS and Microsoft. In addition, Lumen has more than 163,000 on-net buildings with 91 local cloud on-ramps. The company provides network services to the top cloud providers across 2,190 interconnects, and more than 200 billion NetFlow sessions are ingested and analyzed daily across more than 7,000 unique telecommunications interconnects.

In 2025, Lumen announced 2 partnerships to boost its Lumen Digital portfolio. From Google Cloud regions, the company launched 400 Gbps direct fiber connections to customer locations, which is unique in the market today. Competitors still cannot reach that level of speed. Lumen also integrated IBM's Watson X AI products into its edge cloud infrastructure to develop enterprise-grade AI solutions at the edge.

With optimized network performance management, advanced security, and simple integration capabilities, Lumen is preparing itself for the next generation of cloud and edge applications that will scale in the coming years.

AI Network Backbone

Traditional telcos are transforming into technology companies (techcos), with a strong emphasis on adopting AI for network operations automation, productivity gains, customer experience improvement, and new revenue streams. According to Lumen, AI will go through 3 phases: training models based on an AI network backbone, inferencing with models based on AI applications, and implementing AI rings that communicate over fiber rings. Lumen is building the backbone to become the leading AI-ready network, balancing capacity and utilization to meet the growing hyperscale and enterprise demand.

Lumen's North American internet network architecture is a key competitive differentiator due to its dense and distributed metro network reach, enabling diverse and tailored high-bandwidth access solutions. The company's large on-net building footprint and substantial peering capacity ensure traffic delivery from origin to destination with extremely low latency. The company has more than 240 points of presence in 70 North American markets, with extensive coverage of Tier I and II markets. To bolster

its expansion efforts, Lumen has partnered with Corning, securing 10% of Corning's global fiber capacity over the next 2 years to interconnect AI-enabled data centers, doubling Lumen's intercity fiber miles in the United States. Beyond North America, Lumen serves all sizes of businesses in more than 60 countries. Its strong global presence strengthens and grows its customer base, mainly businesses with globally distributed locations. Regarding performance, the company has 25% less optical loss than competitors and 60% more capacity than legacy fiber.

Lumen has successfully transitioned from a telecommunications operator to a customer-focused technology services company. It has served as a network leader for many years, and this additional focus to become a preferred partner to the GenAI community is a positive trajectory, especially in services where milliseconds matter.

AI Applications

As AI evolves from a learning model running in data centers to an inference model running in edge computing facilities, telcos' central offices can host AI capabilities. In 2023, Lumen launched innovative commercial offerings, preparing the way for AI applications, including NaaS, a new consumption model, and ExaSwitch, a new optical interconnection ecosystem. Lumen's ExaSwitch is a revolutionary approach for the network interconnections industry. It provides automation, on-demand scalability, and management of high-volume interconnects. Furthermore, existing network services support the ExaSwitch offering as businesses prefer to engage with providers that meet their current and future network service needs. In 2024, the company launched Private Connectivity Fabric^{SM}, a new network architecture designed for AI innovation. The company actively integrates these next-generation offerings into its fiber optic network to enhance the customer experience, decreasing latency and increasing quality of service. Furthermore, in 2024, Lumen partnered with Microsoft to create and deliver new telecommunications industry-specific solutions.

With expertise in retail, finance, services, manufacturing, and hyperscalers, Lumen enables scalability and seamless integration of AI tools with existing infrastructure. For each industry type, Lumen has AI-ready infrastructure solutions that include networking, edge private cloud, security, and managed and professional services.

Lumen's recent partnerships with Meta, Google Cloud, AWS, and Microsoft underscore its network's capability to drive AI-powered innovation. Its network supports data-heavy, AI-driven demands, solidifying its position as a preferred partner for AI-ready infrastructure in finance and healthcare.

AI Rings

Even with an extensive fiber footprint, Lumen continues to invest in building higher-capacity fiber routes and new technologies to increase the quality of service and reduce network costs. The company is transitioning from a single network port to a Fabric port with GenAI. This significant change enables up to 10% fewer cross-connects and 50% fewer ports, which means lower costs and lower network latency. Lumen has also built an AIOps engine for enterprise customers to manage reachable wide-area network (WAN), IT, and OT endpoints. AI fiber rings communicating across networks to serve applications is a new concept in the industry, where Lumen incorporated a long-range scenario into its

innovation strategy. Leveraging cutting-edge technologies such as AI, the company accelerates its transformational growth journey.

Conclusion

Edge solutions involve dedicated computing and networking resources on a client's premises. Such solutions support ultra-low latency, data security, and customization, making them ideal for gaming, media, finance, and healthcare, as well as applications demanding real-time control and stringent data privacy. Lumen's Edge Computing Solutions simplify network, storage, and security governance with consistent real-time data processing from the cloud core to the edge of digital interaction. . Combining a comprehensive edge computing portfolio with its AI network backbone, the company guarantees latency of less than 5 milliseconds in about 60 edge locations in North America, covering 95% of enterprise demand in the United States. As enterprises explore GenAI, the company is well-positioned to deliver these advanced use cases' high-capacity, high-availability, low-latency networks. With its strong overall performance, Lumen earns Frost & Sullivan's 2025 Company of the Year Recognition in the North American edge solutions industry.

What You Need to Know about the Company of the Year Recognition

Frost & Sullivan's Company of the Year Recognition is its top honor and recognizes the market participant that exemplifies visionary innovation, market-leading performance, and unmatched customer care.

Best Practices Recognition Analysis

For the Company of the Year Recognition, Frost & Sullivan analysts independently evaluated the criteria listed below.

Visionary Innovation & Performance

Addressing Unmet Needs: Customers' unmet or under-served needs are unearthed and addressed to create growth opportunities across the entire value chain

Visionary Scenarios Through Megatrends: Long-range scenarios are incorporated into the innovation strategy by leveraging mega trends and cutting-edge technologies, thereby accelerating the transformational growth journey

Leadership Focus: The company focuses on building a leadership position in core markets to create stiff barriers to entry for new competitors and enhance its future growth potential

Best Practices Implementation: Best-in-class implementation is characterized by processes, tools, or activities that generate consistent, repeatable, and scalable success

Financial Performance: Strong overall business performance is achieved by striking the optimal balance between investing in revenue growth and maximizing operating margin

Customer Impact

Price/Performance Value: Products or services offer the best ROI and superior value compared to similar market offerings

Customer Purchase Experience: Purchase experience with minimal friction and high transparency assures customers that they are buying the optimal solution to address both their needs and constraints

Customer Ownership Excellence: Products and solutions evolve continuously in sync with the customers' own growth journeys, engendering pride of ownership and enhanced customer experience

Customer Service Experience: Customer service is readily accessible and stress-free, and delivered with high quality, high availability, and fast response time

Brand Equity: Customers perceive the brand positively and exhibit high brand loyalty, which is regularly measured and confirmed through a high Net Promoter Score®

Best Practices Recognition Analytics Methodology

Inspire the World to Support True Leaders

This long-term process spans 12 months, beginning with the prioritization of the sector. It involves a rigorous approach that includes comprehensive scanning and analytics to identify key best practice trends. A dedicated team of analysts, advisors, coaches, and experts collaborates closely, ensuring thorough review and input. The goal is to maximize the company's long-term value by leveraging unique perspectives to support each Best Practice Recognition and identify meaningful transformation and impact.

		VALUE IMPACT	
STEP		WHAT	WHY
1	**Opportunity Universe**	Identify Sectors with the Greatest Impact on the Global Economy	Value to Economic Development
2	**Transformational Model**	Analyze Strategic Imperatives That Drive Transformation	Understand and Create a Winning Strategy
3	**Ecosystem**	Map Critical Value Chains	Comprehensive Community that Shapes the Sector
4	**Growth Generator**	Data Foundation That Provides Decision Support System	Spark Opportunities and Accelerate Decision-making
5	**Growth Opportunities**	Identify Opportunities Generated by Companies	Drive the Transformation of the Industry
6	**Frost Radar**	Benchmark Companies on Future Growth Potential	Identify Most Powerful Companies to Action
7	**Best Practices**	Identify Companies Achieving Best Practices in All Critical Perspectives	Inspire the World
8	**Companies to Action**	Tell Your Story to the World (BICEP*)	Ecosystem Community Supporting Future Success

*Board of Directors, Investors, Customers, Employees, Partners

About Frost & Sullivan

Frost & Sullivan is the Growth Pipeline Company™. We power our clients to a future shaped by growth. Our Growth Pipeline as a Service™ provides the CEO and the CEO's growth team with a continuous and rigorous platform of growth opportunities, ensuring long-term success. To achieve positive outcomes, our team leverages over 60 years of experience, coaching organizations of all types and sizes across 6 continents with our proven best practices. To power your Growth Pipeline future, visit Frost & Sullivan at http://www.frost.com.

The Growth Pipeline Generator™

Frost & Sullivan's proprietary model to systematically create ongoing growth opportunities and strategies for our clients is fuelled by the Innovation Generator™.

Learn more.

Key Impacts:

- **Growth Pipeline:** *Continuous Flow of Growth Opportunities*
- **Growth Strategies:** *Proven Best Practices*
- **Innovation Culture:** *Optimized Customer Experience*
- **ROI & Margin:** *Implementation Excellence*
- **Transformational Growth:** *Industry Leadership*



The Innovation Generator™

Our 6 analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.

Analytical Perspectives:

- Megatrend (MT)
- Business Model (BM)
- Technology (TE)
- Industries (IN)
- Customer (CU)
- Geographies (GE)

