

FROST & SULLIVAN

VERIZON

2022
COMPANY
OF THE
YEAR

*GLOBAL MULTI-ACCESS EDGE
COMPUTING INDUSTRY*

Best Practices Criteria for World-Class Performance

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

AWARD CRITERIA	
<i>Visionary Innovation & Performance</i>	<i>Customer Impact</i>
Addressing Unmet Needs	Price/Performance Value
Visionary Scenarios Through Mega Trends	Customer Purchase Experience
Implementation of Best Practices	Customer Ownership Experience
Leadership Focus	Customer Service Experience
Financial Performance	Brand Equity

Industry Challenges

The term "edge computing" refers to computing that pushes intelligence, data processing, analytics, and communication capabilities down to where the data originates, that is, at network gateways or directly at endpoints. The aim is to reduce latency, ensure highly efficient network operation as well as service delivery, and offer an improved 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.

Multi-access edge computing (MEC) is deployed by telecom operators around the world in public and private networks. Operators increasingly partner with cloud providers and deploy smaller data centers at the network edge, closer to customers (or on-premises), to enable compelling use cases and optimize application performance.

Telecom operators must address several critical industry challenges to capture the full potential of MEC, and most of them are still working on their transformation process for cloud computing and full virtualization of network functions. Moreover, ecosystems are underdeveloped in many of the most attractive vertical markets. Thus, MEC implementations often require heavy initial capital investment. Finally, there is a lack of MEC standardization and interoperability across telecom operators worldwide which can complicate deployments.

Addressing Unmet Needs

Verizon was one of the pioneers in 5G globally, with building blocks of fiber, spectrum, software-defined network (SDN), and MEC. Its public MEC solution, AWS Wavelength, was announced in December 2019 in partnership with AWS and was initially launched in Chicago. It extends the compute and storage services and tools of AWS to the edge of Verizon's public mobile network.

From August 2021 to August 2022, Verizon's public MEC coverage increased from 13 to 19 of the top 20 US metropolitan areas. The latest locations where the service has been activated are Nashville, TN, and Tampa, FL. Verizon claims that 75% of the US population is now within 150 miles of its AWS Wavelength Zones.

Verizon's main competitor still hasn't launched a public MEC offering, although it announced a partnership with a cloud provider for this purpose. Verizon's second largest competitor has not announced either a partnership with a cloud provider yet or plans to launch public MEC.

Furthermore, Verizon integrates private networks with the three leading cloud providers' edge offerings: AWS Outposts, which is AWS hardware implemented on-premises at the customer location for local compute and storage; Microsoft Azure Stack Edge, a cloud platform that can be deployed on-premises, and Google Distributed Cloud Edge. Public MEC has 7 to 80 milliseconds (ms) of latency level, while private

"Verizon's MEC solution addresses unmet needs from clients, enabling them to run mission-critical applications with ultra-low latency, virtually real-time, in mobile networks, thus enabling data-driven companies to succeed."

**- Renato Pasquini,
Research Vice President**

MEC can offer latency levels lower than 7 ms, and in some cases lower than 2 ms.

In addition to MEC, Verizon created a platform for 5G edge services and an application programming interface (API) layer, supporting the development of applications by third parties and the developer ecosystem.

Verizon's MEC solution addresses unmet needs from clients, enabling them to run mission-critical applications

with ultra-low latency, virtually real-time, in mobile networks, thus enabling data-driven companies to succeed. Examples of applications are computer vision, augmented, mixed and virtual reality, digital twins, machine analytics, crowd analytics, cashier-less checkout, and quality assurance, all requiring ultra-low latency to process video or data analytics in real time and provide automated responses.

Research conducted in Q3 2022 by Frost & Sullivan indicates that approximately 15% of enterprises consider edge computing to be the number one priority for technology investments over the next 12 months. In that sense, with 5G MEC, Verizon has prepared the foundation to serve the unmet needs of enterprise customers and help them deliver superior customer experience to their end-users.

Visionary Scenarios Through Mega Trends

Verizon's 5G MEC will help accelerate many Mega Trends analyzed by Frost & Sullivan for 2030, such as the "Future of Mobility" with autonomous and connected cars, or "Smart is the New Green" with smart cities and smart products. 5G MEC is a vector for ultra-reliable connectivity and technology convergence, which should lead to a future with zero accidents, zero emissions, and drive innovation and productivity to superior levels in all industries.

Artificial intelligence (AI) is used in a variety of MEC use cases, such as vehicle-to-anything (V2X) communication, threat detection, supply chain automation, and computer vision and machine learning at the edge. Verizon foresees great demand in the entertainment industry, for instance, in the case of cloud gaming, 4K video upload/streaming, and volumetric rendering. It also anticipates great demand in the retail and manufacturing verticals, as companies will look to automate their business processes and provide next-generation customer experiences. Overall, according to Verizon, there will be consistent demand across industries.

Verizon is working with its partners in labs to stimulate the development of MEC solutions and help foster the demand for the MEC infrastructure it has developed. In addition, Verizon is also working on different initiatives to drive interoperability, such as device-aware and network-aware-based orchestration, and hybrid cloud resource deployments at scale, which help mitigate this market challenge.

Implementation of Best Practices

Verizon has developed strategic partnerships with cloud providers like AWS, Microsoft Azure and Google Cloud—market-leading technology companies in the enterprise segment capable of serving the demand of clients as they move compute and storage to the networks' edge. In addition, Verizon also partnered with global systems integrators (SIs) such as IBM, KPMG, Deloitte, Capgemini, TechMahindra, and Bosch that help deploy and manage solutions implemented in different environments as well as integrate them with legacy architectures. As enterprises increasingly turn to SIs to offload the complexity of deploying hybrid edge-to-cloud environments, partnership ensures seamless integration of connectivity, infrastructure, and applications.

Verizon used hybrid MEC orchestration, implementing best practices in terms of networking, hybrid cloud and managed services. Verizon has solution partners in different areas and is driving new solutions through its innovation labs, pilot projects, and commercial agreements with clients from several verticals. In addition to its Platform-as-a-Service catalog, Verizon created a catalog of pre-integrated edge solutions to reduce complexity for customers and partners. The objective is to help clients find the solutions they need, allow solution partners to scale use cases, and add value while reducing capital expenditures and operational expenses associated with implementations. Verizon already has an IoT marketplace for connectivity, hardware, and solutions that clients can leverage when designing their own solutions.

Verizon operates on the concept of “Real-time Enterprise,” with end-to-end visibility, control and security, and applied analytics and machine learning. Security is a top investment priority for Chief Information Officers (CIOs) in 2021 and 2022; according to a recent Frost & Sullivan end-user survey conducted with 1,464 respondents globally, 51% classified cyber security as a top priority. To address this need, Verizon implemented integrated 5G and Software Defined Network (SDN) security services, policies for customers, independent software vendor (ISV) and system integrator (SI), and hardened delivery infrastructure.

With its MEC solution, Verizon is addressing the challenges faced by IT decision-makers related to security, while also helping them move workloads to the edge and implement data-driven strategies.

Leadership Focus

Verizon acquired C-Band spectrum US-wide and invests heavily in 5G coverage: in March 2021 it announced an increment of \$10 billion in capital expenditures from 2021 to 2023, on top of the average \$18 billion per year already budgeted. With this, Verizon intends to cover 250 million Americans with 5G

“The public use cases Verizon offers in Manufacturing, Healthcare, Entertainment, and other verticals demonstrate Verizon’s ability to customize solutions and also bring the best solutions from its partners to address customers’ unique needs.”

**- Renato Pasquini,
Research Vice President**

by 2024, and to keep expanding its Millimeter Wave (mmWave) with small cells covering the main metropolitan areas and dense indoor locations (i.e., airports, stadiums) to provide even better customer experience. As Verizon anticipates 50% of urban traffic to use mmWave, this can be an important competitive differentiator. Frost & Sullivan expects this to result in a leadership position in terms of subscribers.

In addition, Verizon is also rolling out MEC in the main metropolitan areas of the US. 5G MEC is already available in 19 metropolitan areas, providing latencies lower than 80 ms, and the company is likely to continue expanding service availability to all major metropolitan areas of the US, where enterprises and heavy users are located. Verizon is also working with large enterprises to launch private 5G MEC networks. The company reports high demand across use cases, it has acquired very relevant corporations as clients, and expects significant MEC revenue growth in the next 5 years.

Customer Purchase Experience

With the ability to customize implementations for enterprises, Verizon’s customers feel they are buying solutions that address their unique needs. The key verticals are transportation/logistics, retail, manufacturing, healthcare, entertainment, and construction, and key applications already developed include connected vehicles, automated manufacturing, AR/VR, crowd analytics, cashier-less checkout, quality assurance, and cloud gaming.

Verizon has a detailed website for MEC, with a very clear value proposition outlining specific applications and partnerships, including a use case library. The website allows buyers to request a sales consultation with Verizon specialists, based on the unique need presented by the client. As some of the solutions are customized and co-created, Verizon established a qualified consulting and pre-sales team to support customers and SI partners. This allows Verizon to address customer challenges and meet their objectives.

The public use cases Verizon offers in Manufacturing, Healthcare, Entertainment, and other verticals demonstrate Verizon’s ability to address customers’ unique needs. Verizon also provides a portal (and an API-based app) for the customer to manage connectivity, activate, manage and deactivate users and devices, customize features, and receive alerts to take action on emergent issues.

Brand Equity

According to Brand Finance’s *Telecoms 150 2022* ranking, Verizon is the most valuable telecommunications brand globally with a brand value that increased from \$68.9 billion in 2021 to \$69.6 billion in 2022. In addition to the company’s strong financial performance and volume of customers,

continuous investment in innovation has allowed it to deliver unique, differentiated value to clients.

Verizon works with enterprises and start-ups at innovation centers and labs developing MEC applications. In the US, there are five 5G labs in the east and west coast. In London, there is a 5G lab for international customers. Verizon Ventures seeks and invests in promising start-ups. In the last 10 years, Verizon has partnered with more than 40 companies from different verticals.

Frost & Sullivan believes Verizon's entrepreneurship in emerging technologies such as 5G and MEC, along with its ability to engage in strategic partnerships and develop new business models, has made it a leading company to support the growth opportunities associated with Mega Trends and clients' current and future demands for mission-critical applications.

Conclusion

Verizon has a strong track record of successful investments and a strategic vision that puts 5G as a key lever for revenue growth in the coming years. Its leadership in the MEC market in the US, and the strategic partnerships it has made with cloud providers, systems integrators, and solution developers, should lead to innovative solutions and improved customer experience. The appetite of the company for nationwide spectrum, 5G coverage improvement, and deployment of MEC in all major metropolitan areas of the US clearly demonstrate Verizon's strong commitment to delivering enhanced value to its customers. The company can enable customers as they accelerate their transition of compute and storage to the network edge, which will allow them to support customer demand for high throughput and low latency for mission-critical applications and innovative business models and solutions.

With its strong overall performance, Verizon earns Frost & Sullivan's 2022 Global Company of the Year Award in the global multi-access edge computing industry.

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

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

Best Practices Award Analysis

For the Company of the Year Award, 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 by a robust solution development process

Visionary Scenarios Through Mega Trends:

Long-range, macro-level scenarios are incorporated into the innovation strategy through the use of Mega Trends, thereby enabling first-to-market solutions and new growth opportunities

Leadership Focus: Company focuses on building a leadership position in core markets and on creating stiff barriers to entry for new competitors

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

Financial Performance: Strong overall business performance is achieved in terms of revenue, revenue growth, operating margin, and other key financial metrics

Customer Impact

Price/Performance Value: Products or services provide the best value for the price compared to similar market offerings

Customer Purchase Experience: Quality of the purchase experience assures customers that they are buying the optimal solution for addressing their unique needs and constraints

Customer Ownership Experience: Customers proudly own the company's product or service and have a positive experience throughout the life of the product or service

Customer Service Experience: Customer service is accessible, fast, stress-free, and high quality

Brand Equity: Customers perceive the brand positively and exhibit high brand loyalty

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 Engine™

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:

- **Mega Trend (MT)**
- **Business Model (BM)**
- **Technology (TE)**
- **Industries (IN)**
- **Customer (CU)**
- **Geographies (GE)**

