FROST & SULLIVAN

2024 ENABLING TECHNOLOGY LEADER

IN THE NORTH AMERICAN ENTERPRISE MOBILE NETWORKING INDUSTRY

HIGHWAY 9 NETWORKS

FROST & SULLIVAN

2024 BEST PRACTICES AWARD

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. Highway 9 Networks excels in many of the criteria in the enterprise mobile networking space.

AWARD CRITERIA

Technology Leverage	*Customer Impact*
Commitment to Innovation	Price/Performance Value
Commitment to Creativity	Customer Purchase Experience
Stage Gate Efficiency	Customer Ownership Experience
Commercialization Success	Customer Service Experience
Application Diversity	Brand Equity

Industry Overview

Digital technologies play a fundamental role in assisting contemporary businesses achieve their productivity, efficiency, and sustainability goals, while enabling them to remain forward-looking. In the era of artificial intelligence (AI), Internet of Things (IoT), hybrid cloud, and edge computing, software-driven networks serve as the backbone of data-driven enterprises, empowering them to leverage cutting-edge technologies for enhanced collaboration, innovation, and competitive advantage. With intelligent automation and self-optimization capabilities, such networks can enhance efficiency and reliability, ensuring consistent and high-quality communication experiences for employees, customers, and partners. In today's dynamic work environments, employees are no longer bound to traditional wired connections. Work occurs in diverse locations, spanning offices, homes, coffee shops, and on the move. This evolution underscores the critical importance of wireless connectivity, enabling seamless communication, collaboration, and productivity regardless of physical location.

Since the rise of smartphones, cellular voice and data services have become indispensable for consumers and business users alike. However, cellular networks often struggle to deliver high fidelity connectivity indoors, especially in larger corporate buildings, commercial facilities, or event venues. It is in the best interests of businesses and communications service providers (CSPs) to ensure that their mobile devices can be used indoors, especially in large areas where Wi-Fi is not easily accessible. According to the Ericsson ConsumerLab study titled “5G Value: Turning Performance into Loyalty,” 5G performance at key locations directly influences customer loyalty. Between 12% and 20% of 5G users consistently face issues with 5G coverage indoors, and those experiencing connectivity problems at indoor locations, such as event venues

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> ***Vice President, Research***

and airports, are 3 times more likely to churn in the next 6 months. Ensuring strong performance and robust indoor coverage is crucial for CSPs. With the proliferation of enterprise mobile applications, the increasing trend of bring-your-own-device (BYOD), and visitors, guests, suppliers, partners, and customers coming onto the corporate premises, it is in the best interest of businesses to ensure seamless coverage indoors and outdoors.

According to Frost & Sullivan analytics, global IoT connections are projected to soar to approximately 75 billion by 2027. Leading industry verticals for IoT include building automation, security and surveillance, factory and industrial automation, and portable asset tracking. These devices are seamlessly integrated into business workflows, serving to support, enhance, or replace traditional operations through data-driven and context-aware decision-making within a rules-based framework. Many of these devices are mission-critical, relying heavily on network-enabled computing to perform functions essential for their operations. A significant portion of these devices is either mobile or placed in remote or challenging-to-access locations, posing a substantial difficulty for connection using solely wired connectivity options.

Private wireless networks are ideal for addressing enterprise connectivity needs. Wireless networks of any type add a level of flexibility not available with wired networks. To move a connected device with a wired network may involve moving the network as well. This process is often expensive, and in certain situations not possible. Cellular network technology provides several advantages, including mobility design (moving devices) and connection reliability, supporting greater coverage due to increased power levels, and allowing for much higher device density. Private 5G networks are not likely to replace Wi-Fi and wired networks entirely; instead, they will cover use cases that other technologies do not address or may not efficiently handle.

Private cellular networks currently serve many industries, including manufacturing, retail, healthcare, logistics, transportation, education, and the defense sector. They are used to support a range of mission-critical and reliable, as well as peripheral, use cases spanning mobile, IT, OT, and IoT endpoints. The continued evolution of information and communication technologies (ICTs) includes innovations in network functions virtualization (NFV), containerization and microservices-based architecture, identity and access management, intelligent spectrum management technologies, neutral host networking, spectrum democratization, innovations in artificial intelligence for IT operations (AIOps) and machine learning operations (MLOps), and emerging monetization models underpinned by converged charging architectures. These innovations present opportunities to deliver differentiated connectivity through private networks that can directly tackle the data networking challenges within the enterprise.

Highway 9 Networks, a California-based company, has developed a unique cloud-based approach to enterprise mobile networking. The company's mobile cloud private wireless networking solution is designed to provide the essential communication services for businesses to maintain secure, always-on, high-performance mobile connections across their entire premises. Its full-stack mobile cloud solution

leverages best-in-class software, cloud, and radio technologies to address key enterprise mobility challenges. Importantly, the solution is designed to facilitate seamless IT and telco integration, a feature sorely missing from competing private networks. With the Highway 9 Mobile Cloud, enterprise customers can use their existing network infrastructure, tools and frameworks to oversee deployments and operations, enhancing efficiency, ease of control, and cost savings.

Technology Leverage

Highway 9 Mobile Cloud is a local, on-campus solution that delivers pervasive, mobile, responsive, and secure connectivity. Comprised of the Mobile Network, Mobile Edge, and Mobile Services layers, Mobile Cloud is a comprehensive system that integrates all the essential components required for successful enterprise deployment and operation.[1] Similar to how the Highway 9 Networks team has previously tackled communication challenges using software-defined technologies, an enterprise footprint is established through the cloud-native Mobile Cloud solution.

Highway 9 Mobile Cloud is built on the foundations of the private mobile network, taking the attributes of public cellular networks and deploying them locally with IT control. Cellular radio devices are shipped to customers, who can install them similarly to Wi-Fi access points. In addition to the radio networking component, the Mobile Cloud includes associated mobile elements such as SIM cards, enabling access to the deployed networking component (private network), managing spectrum and radios, front haul and back haul, as well as configuring and inserting devices—all provided in an integrated, easy-to-deploy, cloud-native manner.

A next-generation private mobile networking solution cannot live solely by telco rules within an enterprise. It must be designed to simplify the lives of users, particularly enterprise IT. The Highway 9 Mobile Cloud seamlessly integrates into existing IT infrastructure, positioning itself as an extension of the current network. It offers capabilities such as sharing the same IP space, dovetailing with the same firewall policies, compatibility with secure access service edge (SASE) deployments, and integration with existing mobile device management (MDM) implementations. Conversely, the network should not function as an isolated entity in the enterprise. Endpoints can maintain connectivity through a seamless handover on public networks when they move outside the coverage area of the Highway 9 Mobile Cloud private network.[2]

A reliable, high-performance data and control network for smart AI devices is the essence of Highway 9 Mobile Cloud. Telecommunications, IT, and OT worlds are converging fast in the AI-driven smart enterprise landscape. Chief information officers (CIOs) must strive to enable smart operations, whether it's their logistic centers, manufacturing operations, or back offices. The future of enterprise communications will be defined by IT owning the control and management plane and using AI technology

[1] The Mobile Network component includes the cellular network and the connected devices installed by customers. The Mobile Edge includes distributed, scale out 4G/5G packet cores. The edge component with the control plane can be deployed as a virtual machine on premises, on a Kubernetes system, on a standard server, or through the public cloud. The AI-aware Mobile Services layer includes cloud-based management system provided by Highway 9 Networks.

[2] Beyond the private mobile cloud, mobile devices and apps initially connect to operators through their respective plans. However, as time progresses, the mobile cloud integrates with telco networks to provide ubiquitous coverage.

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to deliver integrated services. This intelligence will be supported by edge/localized computing, management, and storage solutions, all of which are integrated into Highway 9 Mobile Cloud.

Cloud-based management for Day 0, 1, and 2 tasks with end-to-end visibility is an essential requirement for successful enterprise deployments. The Highway 9 Mobile Cloud offers all this and more. For Day 0 of deployment, for example, Mobile Cloud provides zero-touch provisioning of both its software layers and on-premises radios. On Day 1, it provides auto-configuration of the system and its services. On Day 2, Mobile Cloud enables a 360-degree view of all system components, including spectrum and subscriber identity module (SIM) management, radio management, packet core management, and network edge management. All these capabilities are offered through a single console. Customers can either manage the software-as-a-service (SaaS)-based system themselves, or work with a partner for management tasks.

A simplified cloud-based operating model tailored specifically for enterprise IT to support business-critical mobile networking is the cornerstone of the Highway 9 Mobile Cloud solution. It emphasizes optimized architecture strategies, such as distributed scale-out packet cores over centralized, scale-up approaches. Additionally, out-of-the-box deployments streamline implementation processes. These features are necessary to support the dynamic network topography required for sustaining technology-driven enterprise operations.

Competing solutions in the private cellular networking sector address basic connectivity needs, often overlooking ease of deployment, integration, management, and full deployment visibility, resulting in issues like shadow IT and inadequate service assurance. For providers of distributed antenna systems (DAS), cost and limited customization pose significant challenges This is particularly true for CSPs, who may find it impractical to sponsor DAS implementations at every desired major location due to cost considerations and fluctuating demand. The Highway 9 Mobile Cloud solution and its value proposition resonate across diverse industries, with strong early success in higher education, manufacturing/warehousing, and commercial real estate, providing solid validation for Highway 9 Networks' approach.

Customer Impact

A significant differentiator for the company is that customers manage their Highway 9 Mobile Cloud deployments using existing networking teams, eliminating the need to invest in dedicated, specialized cellular-savvy resources. Highway 9 Networks has carefully formulated its go-to-market (GTM) strategy to avoid overextension in primary use cases, routes to market, or geographical reach. The first aspect of the company's GTM strategy involves working with enterprise customers, with a focus on North America, and deploying an experienced direct enterprise sales team with a specific background in private 5G and Wi-Fi. Highway 9 Networks is expected to expand its industry partnerships with CSPs and other participants in

the telecommunications, hardware, and enterprise networking sectors within the next 12 months, further solidifying its presence in the connected solutions ecosystem space.

The second aspect of Highway 9 Networks' GTM strategy involves working with the 3 primary US mobile providers to address the technical and deployment challenges they may have with customers, especially concerning continuous coverage indoors and across indoor/outdoor environments like college campuses or large corporate premises, as well as extending the life of DAS or exploring new options. This is a differentiating factor for Highway 9 Networks' solution, which addresses a broad range of enterprise use cases, rather than being limited to solely enabling local connectivity, as is the case with most competing implementations.

In addition to providing customers with a pure cloud-based model and experience, Highway 9 Networks offers direct access to a qualified customer success team, along with access to the founding team for design and consultative guidance. The ease of extensibility to support increasing partner integrations and support services, a framework for supporting all future smart devices as they become available, and low total cost of ownership (TCO) enabled by a forward-thinking integrative strategy collectively ensure optimal value delivery to enterprise customers.

The amount of control and visibility offered by the Highway 9 Mobile Cloud solution is noteworthy. For example, the solution enables virtual mobile zones for user-defined use cases, with short-hand macros for user, application, and network groups/zones. Highway 9 Networks uses AI internally on its platform for telemetry data collection, self-optimizing networking functions, and security (anomaly detection and correlation). The company expects to integrate additional AI applications across its service portfolio and operational aspects for applications, including customer care, partner engagement, and digital operations.

Conclusion

Highway 9 Networks' Mobile Cloud provides comprehensive coverage in the enterprise, guarantees reliable connectivity for priority apps and services, and is strategically designed to support the connectivity needs of AI-driven machines and sensors within a modern, AI-centric enterprise. The solution is built from the ground up to address these pivotal enterprise requirements. Ease of deployment, comprehensive visibility and control, and future-proof implementation have helped Highway 9 Networks maximize value for its enterprise customers.

With its strong overall performance, Highway 9 Networks earns Frost & Sullivan's 2024 North American Enabling Technology Leadership Award in the enterprise mobile networking industry.

What You Need to Know about the Enabling Technology Leadership Recognition

Frost & Sullivan's Enabling Technology Leadership Award recognizes the company that applies its technology in new ways to improve existing products and services and elevate the customer experience.

Best Practices Award Analysis

For the Enabling Technology Leadership Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

Technology Leverage

Commitment to Innovation: Continuous emerging technology adoption and creation enables new product development and enhances product performance

Commitment to Creativity: Company leverages technology advancements to push the limits of form and function in the pursuit of white space innovation

Stage Gate Efficiency: Technology adoption enhances the stage gate process for launching new products and solutions

Commercialization Success: Company displays a proven track record of taking new technologies to market with a high success rate

Application Diversity: Company develops and/or integrates technology that serves multiple applications and multiple environments

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

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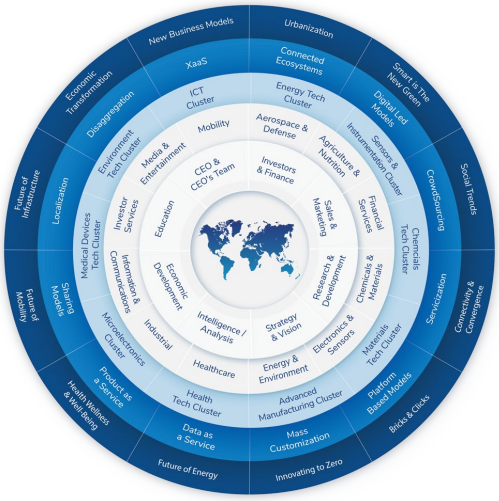
Key Impacts:

- **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)