

LGS INNOVATIONS

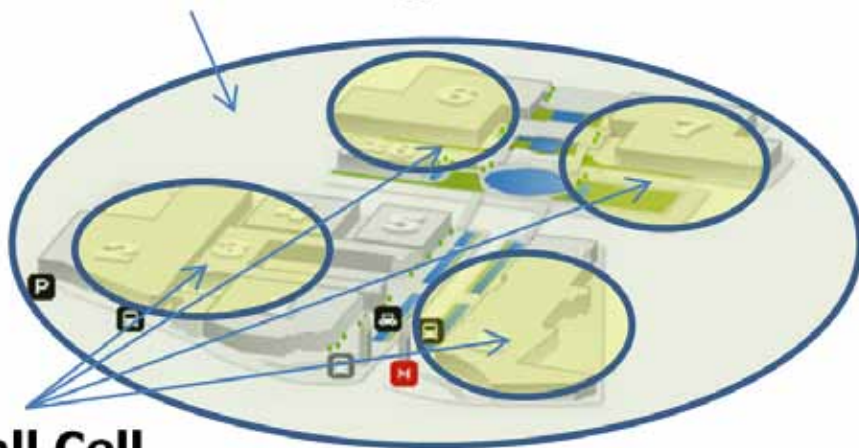
SMALL CELL NETWORK SOLUTIONS

Global mobile data traffic is projected to increase nearly tenfold by 2019¹. The explosion in mobile devices and the data we generate with them is creating coverage gaps in the macro-cell networks that deliver today's mobile traffic. These macro-cell networks were designed to work in large, outdoor areas—yet today, 80 percent of all data funneled to mobile devices is being consumed indoors².

For users working in urban areas, office buildings, government or corporate campuses, military bases, hospitals, and other similar locations, it's increasingly important to be able to make calls and access the network using their mobile device from their place of work—without encountering the poor or unavailable signals caused by gaps in network coverage.



Macro Cell Coverage



Small Cell Coverage

Small-cells—low-powered radio access nodes with an operable range of 10 meters to one or two kilometers—can provide the spot capacity needed to fill these coverage gaps, offering up to 12x higher capacity than networks using macro-cell technologies alone. Small-cell users benefit from seamless mobility between macro and metro networks, enjoying 5-bar voice service, higher data throughput rates, faster and more reliable connections, and increased battery life. Small-cell networks offer similar benefits to

vehicle-based networks, providing “on the move” coverage and improved data sharing in remote field operations and in classified “hot spot” areas.

LGS Small Cell Solutions

LGS Innovations delivers a proven series of small-cell solutions to address macro network gaps.

The Nokia 9962 Multi-Standard Enterprise Cell, developed in collaboration with Qualcomm Technologies, delivers in-building wireless services to support continued growth in data traffic and Voice-over-LTE (VoLTE) service. The 9962 is first small cell of its type to support both 3G and 4G LTE connectivity through a single chipset, delivering low-power, plug-and-play, small form-factor cells that are software configurable to support a mix of 3G, 4G, and Wi-Fi technologies. The 9962 easily integrates with existing end-to-end networks, including gateway, packet core, and common operations, administration, and management (OA&M) functions.

The 9764 Metro Cell Outdoor (MCO) solution, another component of the Nokia end-to-end small-cell LTE solution, comprises a range of high-capacity small cells in a compact design for maximum installation flexibility. The 9764 MCO small cells improve coverage and capacity for LTE or wideband code division multiple access (WCDMA) in dense urban areas, large or smaller public venues, and rural regions. The 9764 MCO integrates a baseband with power amplifiers, filters, and directional antennas in a small form factor, offering a cost-effective alternative to macro-cell-only deployments.

¹Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update 2014–2019 (white paper)

²Amdocs 2015 State of the RAN (white paper)

Wireless Networks with Small Cells

LGS can deliver small-cell architectures to meet a variety of client needs, delivering in-building or outdoor service. In addition to W-CDMA and LTE wireless technologies, our offerings can also provide Wi-Fi offloading services where a private network could be used for dedicated usage. If an agency has their own core network or is using a commercial carrier, LGS can provide the infrastructure necessary for cellular and Wi-Fi service. Network elements for authentication, security, network service selection and gateways are part of our portfolio. Many of these elements are built using the same systems found in our IP networking portfolio.

Self-Organizing Networks (SONs)

LGS solutions enable self-configuring and self-organizing networks (SON) in distributed and centralized environments, eliminating the need for manually configuring cellular base stations and optimizing the radio access network (RAN). These traditional, labor-intensive functions are unmanageable when deploying small cells. SON technology allows base stations to configure and optimize themselves automatically and autonomously, without user intervention using a SON distributed across the base stations.

In addition to automated, plug-and-play configuration, SON solutions reduce handover failures and network interference, minimize call drops, and maximize resources and users' quality of experience (QoE). The Nokia 9959 Network Performance Optimizer (NPO) includes centralized SON features and advanced analytics algorithms to increase the efficiency of network monitoring, troubleshooting, and optimization, improving network quality of service (QoS) while reducing the cost of operations.



ABOUT LGS INNOVATIONS

LGS Innovations delivers mission-critical communications products, R&D, and supporting services to U.S. defense, intelligence, and civilian agencies, state and local governments, critical infrastructure operators, and commercial customers around the world. We create advanced solutions in wireless communications, signals processing and analysis, optical networking, photonics, routing and switching, and spectrum management.

These solutions drive mission success in Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR), cyberspace operations, and network assurance. By incorporating best-in-class commercial and custom technologies with a full suite of offerings in research and development, engineering, integration, and product applications, our solutions improve efficiency, reduce costs, and provide an information advantage to our customers.

LGS has a history and culture of innovation, and maintains strong ties to our Bell Labs legacy of inventive development. Our intellectual curiosity keeps us on the cutting edge of technology and leverages our 75-year history of creating next-generation communications solutions to support critical operations.

LGS Innovations is a U.S.-owned company headquartered in Herndon, Virginia, with offices across the U.S. and overseas. We employ more than 1,000 associates around the world, including 750 scientists and engineers. Do you have a passion for innovation? So do we. Learn more at www.lgsinnovations.com.



LGS INNOVATIONS
13665 Dulles Technology Drive, Suite 301
Herndon, VA 20171

TEL: 1-866-LGS-4243 (1-866-547-4243)
URL: www.lgsinnovations.com

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