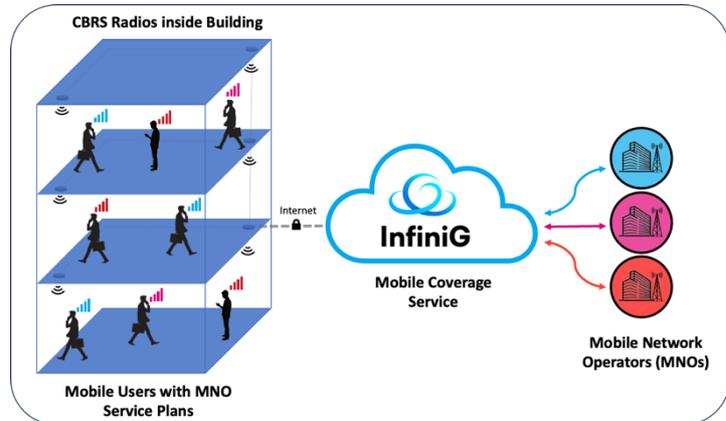


## Adding Mobile Coverage to your Nokia Private Network

InfiniG provides reliable mobile coverage in commercial buildings at a significantly lower cost than alternatives. Its Mobile Coverage as-a-Service (MCaaS) Cloud-based solution uses small radio nodes that share cellular airwaves, infrastructure, and the building's existing Internet to connect users to their mobile network operator's service.

This Application Note describes how you can add InfiniG mobile coverage to a building where you already have a private CBRS network with a Nokia Radio Access

Network (RAN). InfiniG recently partnered with Nokia to enable adding mobile coverage to subscribers of public Mobile Network Operators (MNOs) using the same RAN. It also addresses common upgrade scenarios and considerations such as performance and security when sharing Private and Public network resources.



### What is Mobile Coverage?

Private Networks have proliferated in recent years with the advent of CBRS, particularly in the manufacturing, transportation and utilities sectors. These Enterprises saw a clear need for a robust network to drive high-performance private applications such as advanced manufacturing, internet-of-things (IoT) and AI, and were able to justify these investments with a strong operational ROI. However, at some point executives would inevitably ask, “If we invested \$\$\$ in such a great cellular network, why doesn’t my phone get a signal here?”

Mobile coverage refers to the use of a cellular network for the benefit of subscribers of public MNO services, namely employees, customers, contractors, visitors, tenants, students, patients and guests. Such coverage is normally provided by MNOs from their outdoor towers, or “Macro” networks. However, for a variety of reasons that include distance from towers, foliage and man-made obstructions, building materials and density, and outdoor congestion, cellular signals from the Macro networks fail to provide adequate coverage inside thousands of private commercial buildings across the United States.

### Why is Mobile Coverage Important?

As the person responsible for information and telecommunications solutions at your Enterprise’s facilities, poor mobile coverage means that people in your building will suffer from:

- **Disruption:** Dropped calls and trouble staying connected.
- **Poor Communications:** Increased risk of miscommunications in critical settings like hospitals, refusal to return to the office, or a decrease in the value of a commercial property forcing churn to the competition.
- **Low Productivity:** Not getting a stable connection for simple things like having a conversation, scanning a QR code, searching health records, streaming an application or getting digital room keys. Arguably, the mobile phone is today’s most powerful business tool.
- **Safety:** Not able to call 911 for help or get critical public safety alerts in case of an emergency.
- **Dissatisfaction:** Complaining to others about their experience.

The bottom line is that mobile coverage has become essential. Think of it as the “fourth utility”.

## Benefits of Neutral Host Mobile Coverage

Neutral host mobile coverage offers the following benefits:

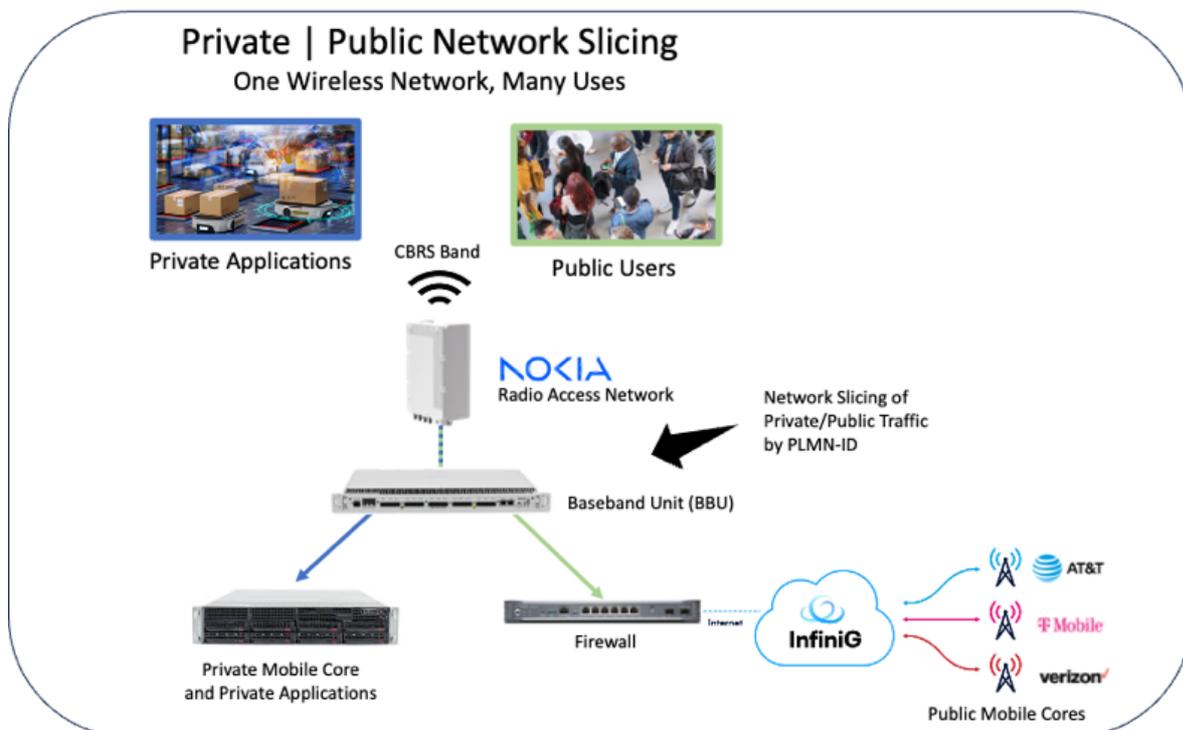
- **Improved Productivity.** Employee and visitor's phones just work. No need to stand by the windows, ask for a password or look for an open WiFi network. They bring their own SIM cards and plans, so there is no need for the enterprise to issue or manage access.
- **Increased Safety.** Anyone in the building can call 911 for help, regardless of mobile plan. They also get public safety alerts (Amber, Presidential, Emergency) based on their location.
- **Lower Cost.** Sharing the physical infrastructure results in a lower overall cost of the solution, making it accessible to far more buildings and campuses. In addition, the cost justification for deploying a solution can be shared between public mobile coverage and private applications.

## Introducing InfiniG Mobile Coverage as-a-Service (MCaaS)<sup>™</sup>

InfiniG's Mobile Coverage as-a-Service combines the performance and reliability of a Nokia RAN with InfiniG's Cloud-based Multi-Operator Core Network (MOCN) service and relationships with the Mobile Network Operators. With MCaaS, the Nokia RAN infrastructure simply advertises the network identity codes (PLMN-IDs) of each participating MNO in addition to that of the private network, resulting in a powerful yet cost-effective solution to mobile coverage.

Each service shares all aspects of the network infrastructure, including radio channels, antennas, cables, radio units, baseband processors and even the connection to the Internet. However, most critically, public and private calls and data are handled separately and securely from each other.

The following diagram shows a typical architecture of an MCaaS Private-Public deployment:



## Why Neutral Host Mobile Coverage with Nokia and InfiniG?

Nokia is a leading global telecom infrastructure company, with their cellular equipment and solutions powering over 125 MNO networks worldwide. InfiniG's founders developed and implemented the first neutral host mobile coverage solution at Meta (Facebook) deploying over 40 buildings totaling over 8 million square feet.

Together, Nokia and InfiniG offer significant benefits over the alternatives:

- **Carrier-Class Infrastructure.** Nokia's infrastructure is designed to meet the extreme demands of mobile service providers, who require unmatched reliability, scalability, performance and security.
- **Leveraged Investment.** Serve private and public users with the same network infrastructure. Adding MCaaS to an existing Nokia private network requires no additional equipment. It's all done with an Internet connection and InfiniG's Cloud-based service.
- **Performance.** Nokia's infrastructure can prioritize private enterprise traffic so that public users do not negatively impact the performance of private network applications. There can even be separate CBRS channels for private and public users, so the traffic is separate from the start.
- **Security.** All public traffic is encrypted and isolated from private enterprise traffic, like how VLANs handle traffic over a single physical medium. Only devices with private network SIMs issued by the enterprise get access to the private LAN, while all others travel over the Internet inside an end-to-end IPSec tunnel terminated at each MNO. InfiniG has worked with the MNOs to ensure their traffic stays secure with a multi-layered approach that includes advanced technologies such as Zero-Trust Architecture and Cloud-native Security with Advanced Threat Protection, matched with robust security policies.
- **Simplicity.** No need to negotiate agreements with each individual MNO. InfiniG handles everything related to the MNO, including maintaining secure connections and tracking Key Performance Indicators (KPIs) to ensure MNO subscribers enjoy the best experience possible while in the enterprise building.

## Adding Mobile Coverage to a Nokia RAN

The easiest upgrade path is when a Nokia-based CBRS private network has already been deployed in a building, i.e., a "brownfield" scenario. In this case InfiniG will check the private network design to make sure that the coverage is adequate for mobile users, specifically -105 dBm in 95% of the area of the building where people are. In most cases the existing coverage will be sufficient, but in some cases additional radios may be required. A common example of this is a building that has separate factory and office areas, and the original private network was built to cover just the factory area. In this case, radios may be added to the office area so that those users enjoy mobile coverage and don't drop calls when moving from one area to the other. In either case, InfiniG will review the existing design and provide recommendations.

Once InfiniG validates the existing coverage, then customers or partners can simply purchase mobile coverage service from InfiniG. The cost entails a one-time On-Boarding fee plus an annual service fee for each CBRS antenna or "Transmission Point." Significant discounts for large deployments and longer terms are available. Since there is no equipment to purchase, ship, or install, the service can be up in just a few weeks.

## About Outdoor CBRS Networks

It should be noted that adding mobile coverage to an outdoor private network is generally not allowed. The reason is that most MNOs already have outdoor mobile coverage on their Macro networks. Exceptions can be made for very remote areas such as mines or oil & gas facilities, but they should be considered a special case and would need prior validation. If a facility has a private network that is both indoors and outdoors, only the indoor radios would broadcast the PLMN-ID of the participating MNOs, thus restricting mobile coverage inside the buildings while the whole facility gets the private network.

## Deploying a Greenfield Mobile Coverage Network

In many situations there is no existing private network, such as in an office building. In such "greenfield" case, InfiniG will work design the Nokia wireless network from the start to support public mobile users. Of course, a private network can easily be enabled later without additional infrastructure.

## Summary

The partnership of Nokia and InfiniG offers a compelling solution that significantly addresses the challenges of inadequate indoor mobile coverage from public Mobile Network Operators. The solution leverages existing or new private cellular network infrastructure to provide seamless mobile connectivity, offering substantial advantages over traditional Distributed Antenna Systems (DAS).

MCaaS combines Nokia's carrier-class CBRS RAN with InfiniG's Cloud-based Multi-Operator Core Network (MOCN) service, enabling a single infrastructure to serve both private enterprise applications and public MNO subscribers. Key benefits include improved productivity, enhanced safety (e.g., 911 access, public safety alerts), and a lower overall cost due to shared physical infrastructure. The solution boasts robust security, isolating public and private traffic, and simplifies operations by centralizing MNO negotiations through InfiniG.

MCaaS offers flexible deployment options, including integration with existing Nokia private networks (brownfield), new deployments (greenfield), and a cost-effective upgrade path for end-of-life DAS systems. This upgrade reuses passive DAS components while replacing active elements with Nokia's distributed RAN, leading to higher capacity, enterprise visibility into telecom usage, less disruption during installation, and simpler 4G to 5G upgrades. Ultimately, MCaaS provides a powerful, secure, and cost-efficient alternative for enterprises seeking to ensure comprehensive and high-performance indoor mobile coverage.

## About InfiniG

InfiniG delivers mobile phone coverage as a service to building owners and enterprises. The company leverages CBRS spectrum, the latest MOCN and Cloud technologies, and close relationships with the major US mobile operators to provide high-quality mobile service to offices, hotels, hospitals, schools, warehouses, campuses and any other location with poor mobile coverage.