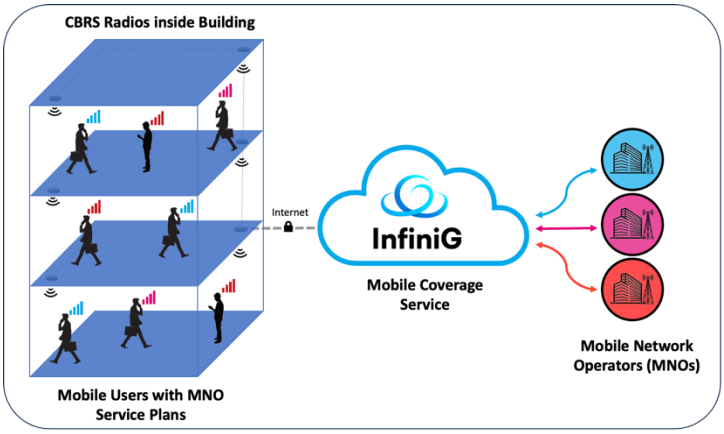
Upgrading an End-of-Life DAS

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 upgrade a DAS to InfiniG mobile coverage while minimizing cost and disruption.



About In-Building Mobile Coverage

Mobile coverage refers to the use of a cellular network for the benefit of subscribers of public mobile services. Such coverage is normally provided by Mobile Network Operators (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.

In the past, MNOs have deployed in-building mobile coverage solutions in the form of Distributed Antenna Systems (DAS), usually in high-profile venues or for their largest corporate customers. Most of these solutions were deployed around 2010 and are now reaching their useful end-of-life (EoL). More importantly, DAS deployments are very complex and costly for the MNOs to join and maintain, thus their investment in them has plummeted in recent years. Increasingly, they have tried to shift the cost to the enterprise customer, the building owner or even a third-party who would then monetize the coverage.

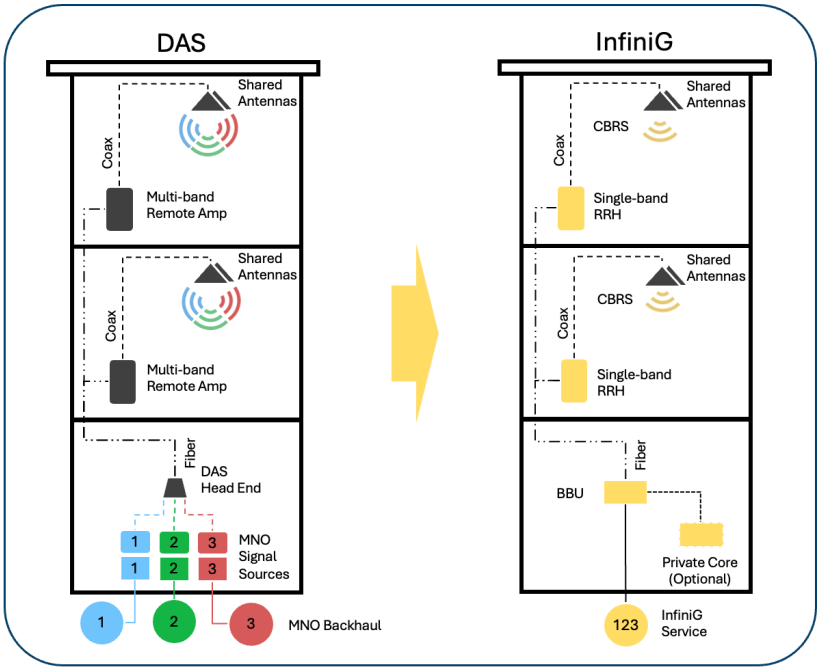
Upgrading a DAS

Many enterprises and building owners are now finding out that their DAS is end-of-life (EoL), meaning that they can no longer get parts or service for the equipment. More importantly, even if they could preserve the equipment, their original 5 or 10 -year MNO retransmission agreements are expiring, and the mobile operators are not keen to renew them[1].

InfiniG's mobile coverage service combines a Nokia carrier-class CBRS radio network with InfiniG's Cloud-based Multi-Operator Core Network (MOCN) service to enable a new approach for upgrading end-of-life DAS networks around the country. The service includes all three MNOs and even private network applications with any InfiniG Connect™ partner.

This approach reuses the existing ceiling-mounted DAS antenna and cables, while replacing the active components with a Nokia innovative distributed RAN (D-RAN) solution. Note that this approach uses Micro RRHs, which are Category B CBRS radios and would not normally be installed indoors, but Nokia's unique feature integration with the CBRS SAS (Spectrum Access System) and InfiniG's design expertise ensure that RF power stays within the FCC CBRS rules for indoor deployments. The following diagram illustrates the migration from a DAS to InfiniG's mobile coverage service:

[1] https://propmodo.com/no-signal-no-support-das-funding-shifts-from-the-carriers-to-you/



There are multiple benefits to this approach:

- **Lower Cost**. The Nokia D-RAN solution reuses most RF components. In addition, it consolidates multiple multi-band radio and baseband equipment from each MNO into a single, single-band CBRS signal source that is shared among all mobile operators.
- **Visibility**. With the old DAS, all usage and location data went directly to the MNOs. With this approach, the Enterprise gets a host of valuable analytics on telecom usage within the building across all MNOs. In addition, with the old DAS the MNOs had no visibility to the health of the network. With the InfiniG solution they get the same visibility and KPIs they get from their own mobile networks.
- **Less Disruption**. Any changes involve equipment inside telecom closets. Installers don't have to get to the ceiling or behind walls, minimizing workplace disruption. No tenting required. And with InfiniG handling all the MNOs technical, operational and contractual requirements behind the scenes, there's only "one throat to choke" for the Enterprise or building owner. InfiniG methodically migrates any existing MNOs on the DAS one at a time, again to minimize disruption.
- **Higher Capacity**. The overall capacity of this solution is 10x to 20x that of DAS. It leverages all 150 MHz of CBRS spectrum inside the building, rather than whatever 10 or 20 MHz slice the MNOs can carve out from the Macro network for the DAS. D-RAN also takes advantage of newer technologies such as MIMO and channel reuse that were simply not available when the DAS was first deployed.
- **Private Network**. Adding a private network for enterprise applications is as simple as adding private core software to the network. This opens a whole set of AI capabilities and benefits to the enterprise.
- **Future Proof**. 4G to 5G upgrades are as simple as a software upgrade on the D-RAN's baseband unit (BBU). All downstream radio equipment is independent of technology. That's why the D-RAN architecture is preferred by the MNOs!

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.