How's the coverage in your building?

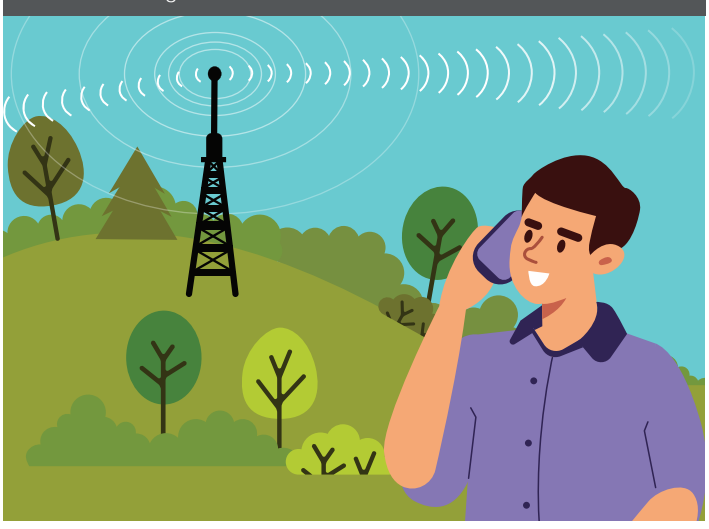
If you are constantly dealing with tenant complaints about poor mobile phone reception inside your building, it's likely that some combination of natural and man-made barriers are to blame. The good news is solutions like Distributed Antenna Systems (DAS) can address these issues, especially now that providing adequate cellular coverage in your building is no longer optional.

That's because many tenants are now choosing locations that offer superior indoor mobile phone reception, which has become essential for their business operations. Also, many municipalities now require building owners to provide adequate indoor coverage to support public safety services and the mobile devices used by first responders.

And looking to the future, to attract and retain tenants, your building's IT infrastructure will need to support an explosion of new mobile-enabled devices on different mobile platforms, such as the Internet of Things (IoT), 5G technology, and 4K-CCTV, with a large majority of that traffic occurring indoors.

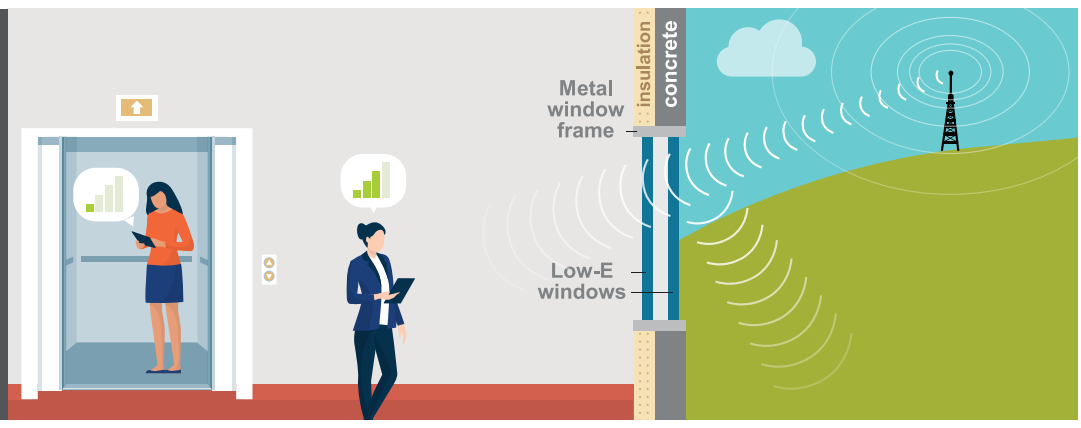
The Barriers To Good Indoor Coverage

A cell phone is essentially a radio that uses radio frequency (RF) waves to transmit and receive digitized voice and data. The phone communicates with the mobile phone carrier's antennas mounted on towers that transmit and receive signals to / from the carrier's central switching office.

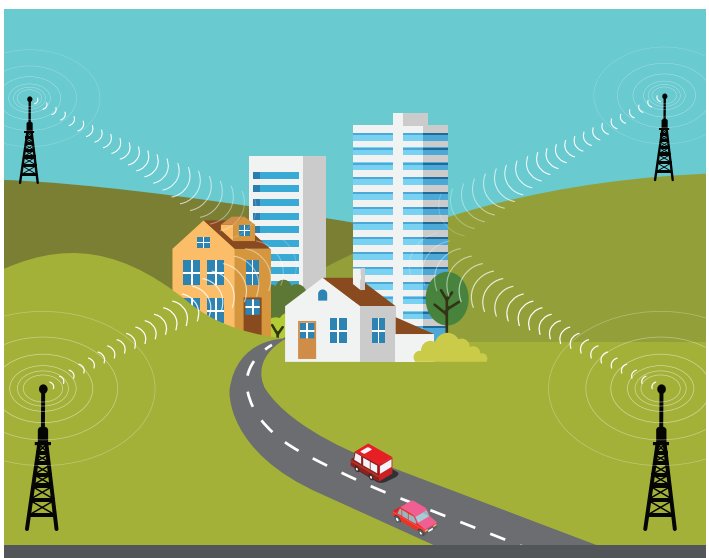


Natural objects like hills, mountains, heavy vegetation, and even some weather conditions can block RF signals from entering your building. If you are in a densely populated area, other physical obstacles like surrounding buildings or parking structures can also block the RF signal from local cell towers.

RF signals also have difficulty penetrating common building materials like metal, concrete, and insulation. Green building standards present additional challenges as many require using energy-efficient building materials, like Low-E windows, which impede RF signals.



The deeper you go in the building, the weaker the signal gets, until your phone may show just 0-1 bars of coverage.



Signal Too Weak or Too Strong

Not all carriers (Verizon, AT&T, T Mobile, Sprint, etc.) are able to provide the same signal strength throughout their service territories. This means signals from some carriers may reach inside the building while others cannot.

You could be experiencing the opposite problem, where your building is receiving too many overlapping signals from the surrounding cell towers, creating excessive signal "noise" or interference. You still won't have reliable connectivity even though your phone shows 4-5 bars of coverage.

Good Signal But Not Enough Capacity

As more people try to receive a signal from the local cell tower, download speeds slow, and dropped calls increase. If your building is fully occupied, the standard signal from the cell towers may not support your building's demand for cellular reception.

Frequency Too High

The frequency at which each carrier operates can make a difference too. That's because RF signals at lower frequencies are better at penetrating building materials than those at higher frequencies.

In the US, commercial cellular services now operate between 600 and 2600 MHz depending on the carrier. 5G services will be operating at much higher mmWave frequencies, which will add to the indoor coverage challenge as these services get rolled out.

Solving The Coverage Conundrum

Your building is likely experiencing some combination of these coverage challenges. But these can all be overcome with a properly designed and implemented DAS that will distribute the signals from one or more carriers to every corner of your building or campus. The flexible nature of DAS enables a custom solution, scaled to your exact requirements.

The latest generation of DAS uses a "fiber-to-the-edge" design, using lightning-fast fiber optic cables to carry the RF signals to the distributed antennas. This design improves on earlier generations of DAS that relied solely on coax cables or some mix of fiber and coax.

The 100% fiber-based solution is less expensive to install and operate versus coax systems. It also provides greater bandwidth and speeds to meet all current requirements as well as the next generation of services.

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