BOMA presents “Distributed Antenna Systems & Staying Connected”

January 17, 2023 - Owners Developers & Managers

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New York, NY BOMA New York hosted its first-ever proptech seminar entitled, “Distributed Antenna Systems & Staying Connected,” a timely, information-packed presentation by Connectivity Wireless, one of the nation’s largest providers of in-building cellular wireless solutions.

As described by Connectivity Wireless’ Mark Niehus, senior vice president, Strategic Services, and Garth Doone, area vice president – Northeast, cellular coverage within buildings arguably has become as important as other traditional utility services, earning the moniker “the fourth utility.”

Doone opened the seminar by stating that cellular augmentation within high-rise buildings is trending as owners and tenants alike demand robust 5G service and its attendant, emerging technologies such as the Internet of Things (IoT).

Simply stated, Doone said that over the past two decades, management has been hearing from tenants about their need for reliable in-building cell service. He said, “It began with ‘I just want my cellphone to work;’ to, ‘I need my cellphone to work;’ to nowadays, ‘If my cellphone doesn’t work here, then I can’t work here!’”

The problem, of course, is that the cellular system was designed to operate outdoors, originally for users with car phones. By design, cell towers (the vast “macro” of cell service) provide poor or non-existent signal penetration into buildings, especially steel and concrete high-rise properties. Doone even threw in a trivia question, asking seminar attendees to guess the signal-stopping power of one inch of low-E glass compared to concrete. His answer, “It’s equivalent to 18 inches of concrete!”

Fortunately, there are several wireless solutions on the market, including distributed networks such as distributed antenna systems (DAS), boosters, and small cells.

Comparing the advantages to the drawbacks, boosters only amplify the ambient cell tower signals. “If that signal is poor outdoors,” Doone said, “it won’t be good inside.”

Small cell installations work well, as they complement the existing cell tower system, and can be mounted on utility poles. For indoor coverage, small cells can provide an affordable and user friendly option; most major carriers offer an in-building small cell solution. However, as Doone explained, these solutions are usually “only a single carrier solution,” furthermore they do not scale well for installations over about 50,000 s/f because “you need to provide power for each small cell, you need to backhaul to the carrier, and the solution is “not intelligent.” He said, “Small cells cannot cooperate with each other and interference can lead to a poor user experience in larger installations”

Active DAS, on the other hand, is designed, for large, high-rise buildings. The carrier provides a fiber circuit with the signal source directly into a head-end equipment room within the building to accommodate the need for capacity in larger buildings. From there, the signal is distributed upwards throughout the building with fiber cabling risers to antennas on each floor. Active DAS antennas are

compatible with all carriers and provide an opportunity for a neutral host experience - all carriers supported – by the same antennas, interference issues are resolved and the system is designed so that the signal is stronger than the macro signal and does not “bleed over” to other properties.

On active calls, the system automatically hands off the call to the cell tower macro when the user walks out of the building. “It’s a great user experience,” he said.

Both Doone and Niehus agree that most DAS systems have a 10-year lifespan, as today’s 5G technology and hardware continue to evolve. Ongoing development is already bringing lower latency, increased speed for uploading and downloading, and higher density for increasing numbers of IoT connected devices within buildings – all with less energy use.

Several seminar attendees commented that the trend is toward “going as wirelessly as possible.”

In an aside to the latest emerging technologies such as Citizens Broadband Radio Service (CBRS), Doone explained that the technology is still in the “crawl before walk” stage and is not, at present, an alternative to DAS. We believe that CBRS is emerging from crawl stage and entering the walk stage. The crawl stage enabled us to develop and understand the ROI for CBRS and deploy several proof-of-concept models. In the “walk” stage we will be able to start commercialization of CBRS, initiate the monetization model and start harnessing the power of the new currency, data. In short, there are many benefits that CBRS offers that will drive the enterprise to deploy private networks and neutral host networks that use CBRS.

In conclusion, Doone explained that owners should “know before you go.” For example, do building owners want a straightforward solution for better cellular/data coverage and faster speeds throughout their property? Are owners looking to create a smart-building environment capable of supporting IoT devices? What about building automation for improving operational efficiencies?

Doone, Niehus and several attendees also believed that a leasing agreement with a DAS provider would be preferable to outright equipment ownership, installation and maintenance, and that the majority of today’s market uses a lease model. Advantages are that costs are known upfront and are locked in – usually over a 10-year term -- as opex, rather than capex, and as Niehus said, “Leases negate worries about technology obsolescence.”