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When green initiatives and wireless are at odds

Philly property owner loads cellular, Wi-Fi signals onto DAS

By Joanie Wexler, Network World
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Every now and then, the luxury of a Greenfield deployment comes along. Starting from scratch provides the opportunity to create an eco-friendly environment and install the latest and greatest network technology. But what if the two goals are at odds?

Eco-friendly building designs aren't always compatible with wireless signals. Liberty Property Trust, owner and developer of the year-old Comcast Center in Philadelphia, learned this when it set about constructing the 970-foot-high, 57-story building. The 1.2 million square-foot skyscraper went live at One Pennsylvania Plaza last year and became home to cable giant Comcast's headquarters, six other office tenants and 18 retail tenants.

Green building designers often put low-emitting, or "low-e" glass on the exterior of buildings – glass with special coating that boosts energy efficiencies. However, cellular signals cannot transmit through the coated glass as porously as untreated glass, says Fred Dougherty, VP, portfolio technology at Liberty Property Trust.

Conserving energy, then, could screw up cellular coverage indoors. This creates a bit of a pickle for buildings that must support cellular signals indoors to serve tenants and the cell phone-toting public. Some must support cellular signals to comply with public safety mandates, as well.

Indeed, Liberty Property's design team wanted to ensure that the building had a Leadership in Energy and Environmental Design (LEED) rating for environmentally sustainable construction while also building the "most technically advanced structure in Philadelphia," Dougherty says.

Another challenge was the sheer height of the building. "Above 15 floors, a handset 'sees' a whole bunch of [cellular stations] and it's hard to select one. You can get what's called 'clipping,' where you might have four bars of service, then it suddenly drops," says Dougherty.

To circumvent these issues, the company installed a structured interior signal distribution system using dual fiber risers and indoor microcell equipment from the largest U.S. mobile carriers – AT&T, Sprint Nextel, Verizon Wireless and T-Mobile. The distributed access system (DAS) it chose, the Universal Wireless System from MobileAccess, distributes the various carriers' licensed-spectrum signals, as well as Wi-Fi signals, via cabling to antennas distributed throughout the building. For its part, Comcast has piggybacked its Cisco wireless LAN traffic onto the DAS, though the system can also distribute signals from any vendor's Wi-Fi system.

Dougherty said his company went for the system because it was very modular with a fiber backbone. "Different tenants, floor by floor, can hook up to it. This removes redundant overlay networks and is most cost-effective," he explains.

Given that Wi-Fi runs in unlicensed spectrum, next-door tenants within a building are generally prone to interference from one another. "That will likely be more of an issue in years to come, but the structured system removes some of that gamble," Dougherty says.

When does it make sense to load Wi-Fi traffic onto a DAS? We'll explore that next time.

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