



CommScope helps the United Center  
elevate their wireless network to 5G



The United Center is the largest NBA indoor arena and the second-largest NHL venue by capacity. Home to the Chicago Bulls and the Chicago Blackhawks, this 960,000-square-foot facility hosts more than 200 events a year, including concerts, conventions, ice skating shows and professional wrestling. Depending on the seating configuration, it can accommodate nearly 20,000 hockey fans or more than 23,000 concertgoers at a time.

## Keeping on top of evolving technology

For more than 10 years, the United Center has entrusted American Tower (a global leading digital infrastructure provider) and CommScope to provide optimal connectivity for its fans, visitors and staff. But as smartphones and social media evolved, the arena needed to deliver more capacity and throughput fast. To keep up with the increasing wireless demand, the United Center deployed ERA® digital DAS in 2018 to accommodate LTE and 4G technology. Shortly after this was operational, the goalposts had moved again: 5G had just been launched.

With the introduction of 5G came an opportunity to support more speed and higher density to the expanding fan base that attended the United

Center. By deploying remote radios with the ability to support C-band and mid-band (2.5 GHz) frequencies, the United Center could accommodate more spectral capacity, which meant higher data transmissions.

In addition, CommScope offered 5G network solutions that could do more with less. For example, although 5G requires a denser deployment of remote units to properly support the higher frequencies, the United Center would need fewer of CommScope's carrier access points (APs) due to their MIMO (multiple-input, multiple-output) feature.

## Working in a bowl

Because of its tiered seating configuration, the United Center's oval-shaped arena creates a bowl effect for wireless signals, which can

result in poor, overlapping coverage. To address the arena's bowl-like shape, antennas and aggregation points had to be strategically located.

In addition to the challenging tech side of the equation came a legacy directive for any deployment: All new technology needed to be hidden from fans and could not in any way alter the appearance of this iconic arena. "One of the things that we really pride ourselves on is that we're still able to compete from a technology and an aesthetic perspective," said Bob Gorman, Senior Director of Technical Operations, United Center.

Because the United Center hosts an array of events—from basketball games to hockey matches, concerts, shows and conventions—the various seating configurations make it difficult to secure permanent

locations for equipment, so finding creative ways to deliver a premium wireless network experience would be paramount.

One such solution was embedding antennas in the dasher boards that surround the ice rink. In another, small antennas were installed in handrails, and a special fabricator was hired to create small shrouds to enclose them. The antennas and cabling were painted to seamlessly blend with the arena aesthetic. Making the technology invisible to the visitors or fans was considered critical to its lifecycle. "If antennas are placed where fans can interact or disrupt them, they will." said Gorman.

Following the approval of the arena's design plan, the next challenge would be scheduling the installation.

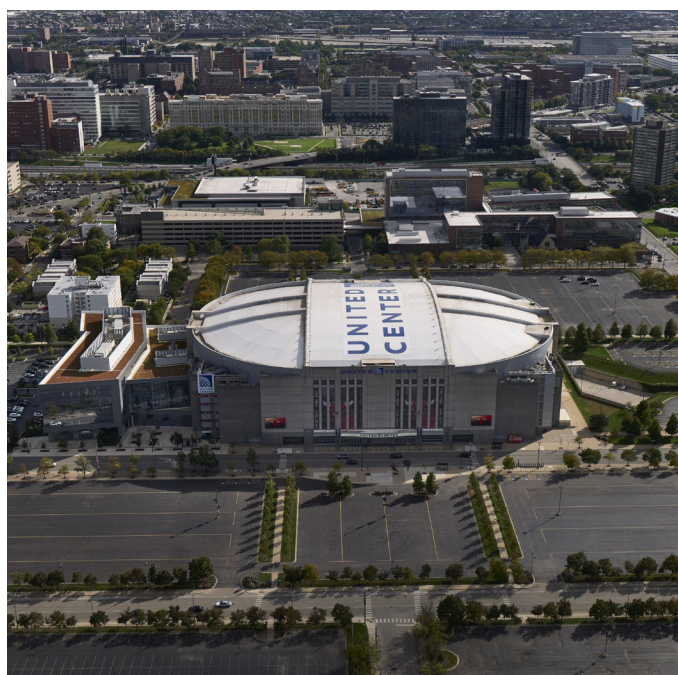
### Finding time at the busiest arena around

Deploying a network upgrade in a large public venue can be simple when it can be shut down for a few days. But the United Center isn't your typical arena. With fewer than 100 non-event days a year—which doesn't include rehearsals, warmups and practices on the court or ice rink—finding valuable pockets of time to deploy upgrades was tricky.

"Having a true dark day in [our] venue is almost impossible," said Gorman. "The logistics of trying to do an installation at that kind of a tempo meant that, in the mornings, we were popping seats, scanning concrete to identify where to drill cores, before putting that seat back together [for an event]. Later that night after the shows or rehearsals were over, the crew would work on a third shift to make those cores happen."

Over a number of days and nights, CommScope and American Tower collaborated closely with United Center to update the digital DAS network. They deployed multiple power class remote units and new antennas throughout the facility, including in the ceiling and under seats as well as coring through the concrete—all of which was tied together using CommScope's SYSTMIX<sup>®</sup> copper and fiber structured cabling.

But there was one more caveat to the deployment: The United Center needed all network equipment to adhere to a unique set of instructions. "It's critical that anything



that gets installed is sealed and waterproof, and that includes the cores themselves,” said Gorman. This was an important footnote because the arena power-washes and sanitizes the entire audience section after each event.

## Looking to the future

Following the deployment of 5G throughout the arena, Gorman and the United Center have been pleased with the network performance. Not only can fans now actively participate in the sports team apps without buffering, but they can also enjoy food-and-beverage service by ordering digitally on their phones from their seat.

In addition to creating one of the most advanced large public venue

5G networks in the U.S., the United Center also tapped CommScope’s RUCKUS Networks to revamp their in-house Wi-Fi® network. Following a significant Wi-Fi redesign and deployment of patent-laden RUCKUS® APs, the United Center’s

**Read the United Center Wi-Fi Case Study here**

internal wireless network now rivals those found in some of the newest arenas in the world.

What’s even more impressive is how the United Center provides all of this top-of-the-line wireless networking in a sustainable manner. By deploying

CommScope’s digital ERA DAS, the United Center delivers exceptional wireless performance while simultaneously reducing equipment space—cutting down on cooling costs and power utilization.

Today, Gorman continues to rely on CommScope for all of the United Center’s technology needs. “Our DAS is all CommScope hardware,” said Gorman, “as well as our Wi-Fi network hardware, our cable management, our cabling, even our terminations and face plates.” By turning to CommScope as his one-stop wireless vendor, Gorman gains peace of mind that his wireless networks will run optimally and smoothly the first time around and every time after that.



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