CASE STUDY

# Large Venue Public Access

GEORGIA WORLD CONGRESS CENTER

## Massive Public Convention Facility Moves to Smarter Wi-Fi to Increase Service Revenues

Operated by the state of Georgia, the Georgia World Congress Center Authority (GWCC), one of the largest public conference facilities in the United States, needed to solve a problem that was getting bigger by the day: flaky Wi-Fi.

When an exhibition or professional athletic event was in town, more and more users were demanding dependable Wi-Fi connectivity wherever they roamed. And there's lots of roaming. The GWCC is a massive facility that includes a 3.9 million square foot, seven-level convention center, the 71,250 seat Georgia Dome and the 21-acre Centennial Olympic Park.

One of the largest conference centers in the U.S., the Georgia World Congress Center in Atlanta needed a better, smarter Wi-Fi system to increase service revenue.

According to the GWCC, the problem was easy to identify but hard to fix: the existing Wi-Fi infrastructure just couldn't keep up. Wireless coverage was spotty, performance was erratic, connections were unstable and dealing with huge numbers of concurrent users topped the list of problems to be solved.

These problems fell into the lap of CCLD Networks, the exclusive onsite telecommunications provider for the GWCC who provisions Internet services to show managers, exhibitors and attendees as well as providing infrastructure management services for the GWCC.

"Given the size of the facility and the number of potential users at any given time that needed to be supported via Wi-Fi, this was a daunting challenge," said Sam Brown, IT Director at CCLD Networks. "Wi-Fi has become a pre-requisite for doing business at public venues such as these so it better work well and work well everywhere because customers are paying for it. Though we had deployed a lot of Wi-Fi APs, our existing system just couldn't deliver a 'carrier-class' service, and that's what we and our customers needed."

Throughout GWCC, 172 Enterasys HiPath AP2620 802.11a/b/g acess points (APs) had been installed in the ceiling grids and were being managed by HiPath C2400 controllers. However coverage holes and performance problems remained. "The GWCC is quite unique in its structure and layout," said Brown. "Not only is it huge, but there's a lot of concrete, metal and unusual nooks and crannies that either attenuate Wi-Fi signals or make them next to impossible to penetrate."

Beyond coverage, new clients were requesting higher speed 802.11n Wi-Fi to support streaming video for education sessions and the GWCC was interested in using voice over Wi-Fi for inter-staff communications.

But most important, client density was the central issue. "At these exhibitions you literally get hundreds of simultaneous users trying to access the Wi-Fi network," said Brown. "For an AP to handle hundreds of client associations at any given time really isn't the issue. The issue is how the Wi-Fi system can automatically optimize the use of the shared spectrum."

### COMPANY OVERVIEW

Located in the heart of downtown Atlanta, the Georgia World Congress Center Authority -- which includes the 3.9 million square foot convention center, the 71,250-seat Georgia Dome and 21-acre Centennial Olympic Park -- ranks among the top 5 largest convention center in the country as well as one of the best sports and entertainment venues in the world.

### REQUIREMENTS

- Build reliable Wi-Fi access network that provides ubiquitous coverage for 3.9 million square feet conference center and adjacent structures
- High-speed 802.11n that could support IP-based video streaming
- Support for large numbers of concurrent users per AP
- Automatic migration of 5GHz-capable devices to the 5GHz band (i.e. bandsteering)
- Reliable wireless backhaul and the ability to easily add APs on demand to increase capacity through smart Wi-Fi meshing

### SOLUTION

- 90 ZoneFlex 7962 dual-band 802.11n indoor Smart Wi-Fi APs
- Redundant ZoneDirector 3100 Smart wireless LAN controllers

### BENEFITS

- Better coverage with fewer Wi-Fi APs
- Decreased the number of access points within the conference center by 40%
- Better utilization of the RF spectrum through beamforming, bandsteering and airtime fairness
- Support for Spectralink VoIP phones
- Lower overall total cost of owernship
- Simpler deployment and management of the Wi-Fi system
- The ability to add Wi-Fi capacity on demand with smart mesh networking
- Rate limiting per user per SSID

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*"With the increasing volume of wireless-enabled devices , Wi-Fi has become an essential part of our service revenue and a strategic asset for the GWCC.*

*We could no longer get by with a good-enough, convenient Wi-Fi access. We needed a system that could deliver the density, range and reliability expected from a service-class network but on a very large scale."*

**Sam Brown**
*IT Director*
CCLD Networks

"A lot of customers will tell you how many people will be using the network, but what they often fail to mention is where those users will be located," said Brown. "Most of the time all the users are crowded into a particular area. This requires us to architect wireless for worst case scenarios and have an architecture that is extremely flexible."

After evaluating offerings from Cisco, Aruba, Trapeze and others, CCLD Networks selected the ZoneFlex 802.11n system from Ruckus Wireless.

According to CCLD, two key capabilities set the ZoneFlex system apart: 1) the ability to easily add Wi-Fi capacity on demand using Smart Mesh Technology and 2) the combination of dynamic beamforming, bandsteering and airtime fairness to deal with high-capacity situations.

Unlike any other Wi-Fi system available on the market, the Ruckus ZoneFlex system integrates a smart antenna array that forms and directs Wi-Fi signals only where they are needed - automatically steering them around obstacles and interference sources.

This same smart antenna system provides longer range, more resilient wireless backhaul links thereby increasing performance by reducing mesh hop transits and dynamically picking the best signal path for every packet.

"We found that the ZoneFlex system really had the best implementation of Wi-Fi meshing we could find," said Brown. "We needed fewer access points to cover a given area and could easily add APs at a moments notice to increase capacity in a given area."

With dynamic beamforming, ZoneFlex APs are better able to optimize the use of RF spectrum and minimize co-channel interference. Two APs located next to each other can effectively occupy the same channel as each smart antenna is directing Wi-Fi transmissions over a specific signal path best suited for that client, ignoring other interference sources.

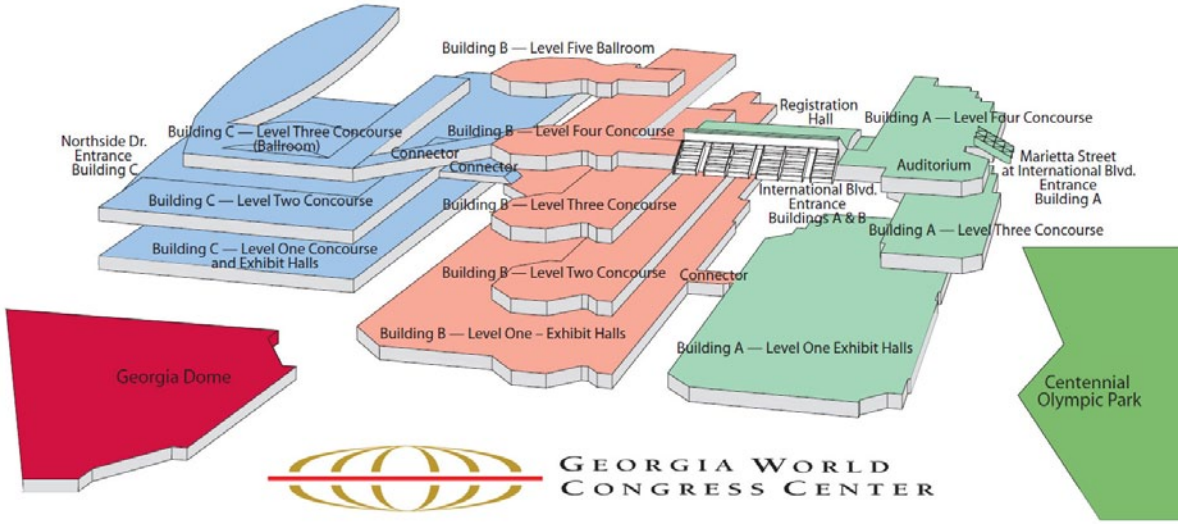
When combined with the ability to direct dual-band capable clients to the 5GHz spectrum and providing equal time-sliced access to the spectrum for all clients (airtime fairness), client density issues are minimized.

At GWCC, different events bring with them different types of electronic equipment that can wreak havoc on the Wi-Fi network. "Medical shows have proven to be extremely difficult to navigate with Wi-Fi," said Brown. "We needed a system that could mitigate interference. This has proven to be a useful tool in dealing with such environments."

CCLD installed 90 ZoneFlex dual-band 7962 802.11n Smart Wi-Fi APs and a Ruckus ZoneDirector 3100 to manage the entire environment. "The surprising thing for us was that the Ruckus system was well below the cost of competing systems but provided features and functions that the others didn't," said Brown.

Looking forward, CCLD is considering Wi-Fi to cover the entire bowl of the Georgia Dome, for point-of-sale, video and CCTV applications. "We now have a network that functions more as a utility and gives us the flexibility to think about future applications. This is exactly how Wi-Fi should work," concluded Brown.

**RIGHT:** One of the largest public facilities in the U.S. the GWCC turned to dual-band 802.11n Smart Wi-Fi for its 3.9 million square foot convention center which includes the 71,000 seat Georgia Dome and the 21-acre Centennial Olympic Park.

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