



## Georgia Tech Deploys High Density Wi-Fi in Lecture Halls with Aesthetically Pleasing Co-Locating Mounts

### Executive Summary

#### Client:

Georgia Institute of Technology  
Atlanta, GA

#### Client Challenge:

Provide high-density, aesthetically pleasing Wi-Fi throughout large lecture halls.

#### Product Solutions:

##### Co-Locating Mount

Simplifies deployments by installing the access point and antenna together, and presents an aesthetically pleasing appearance.



- Conceals the AP and cables
- Antenna mounting tray articulates for precise beam positioning
- Eliminates long cable runs between AP and external antenna for reduced signal attenuation



Ceiling-Mounted Co-Locating Mount

##### 4 dBi Quad Patch Wi-Fi Antenna

This high-density antenna provides narrow beamwidth with low gain, making it ideal for lower ceilings and multi-level locations that need to limit RF interference and reduce beam “bounce”.



- Dual-band leads, and each cable supports both 2.4 and 5 GHz
- Horizontal beamwidth: 60/45, vertical beamwidth: 50/35
- Supports demanding indoor and outdoor applications in 802.11n and the new 802.11ac wireless communication system.

Wireless technology is an integral part of campus life at Georgia Tech. Students routinely bring multiple wireless devices to class, such as smartphones, tablets, and laptops, and expect to be able to use them to access the Internet for research, view videos, and share online classroom materials. Recently, major renovations were completed in two of Georgia Tech’s large lecture halls and the wireless infrastructure needed to be upgraded too.

#### Challenge

AP antenna selection plays an important role in designing Wi-Fi networks in lecture halls. If high-density Wi-Fi is required, APs with external directional antennas should be used. The narrow beamwidths of the external directional antennas help segment the hundreds of students and their multiple devices into small RF cells for efficient Wi-Fi performance.

Bill Lawrence, IT Project Manager for Georgia Tech, was charged with providing high-density Wi-Fi throughout the lecture halls that would not disrupt the aesthetics of the newly renovated spaces.

“Typically we mount access points on the ceilings or walls, and then use directional antennas mounted adjacent to the access points,” said Lawrence. “The external antennas are important because they help focus energy so that client devices can ‘hear’ that strong signal and they mitigate co-channel interference. However, for the newly renovated lecture halls, we were looking for a more aesthetically pleasing solution.”

#### Solution

Working with Cisco engineers, Lawrence determined that each lecture hall would need a total of eight Cisco Aironet® 3802e access points to ensure coverage and capacity for approximately 170 users. The Cisco Aironet® 3800 Series Wi-Fi access points are highly versatile and ideal for managing wireless capacity and coverage gaps in dense indoor environments. However, the new access points are considerably larger and heavier than older versions of the APs, and Lawrence needed a way to easily and securely mount them, and also conceal them if possible.

“We chose to mount the access points using Ventev’s Co-Locating Mounts. The unique mounting system co-locates the AP with the external antenna in front of it, so you can’t see the AP or the cables. It also eliminates the need to run cable along the ceiling and gives the installer a single unit to install. The new walls of our lecture halls were constructed with niches, and the mounts fit right into those recessed areas. It gave a nice, clean install,” Lawrence said. “We installed two Co-Locating Mounts on the ceiling in the back, and then six were installed on the walls, off-set on each side, to light up different sections of the seating.”

#### Outcome

After the initial installation was complete, engineers did a signal strength test and made minor adjustments to the antennas to minimize beam bounce. The antenna trays on the Co-Locating Mounts articulate +/- 25 degrees which enables precise positioning of the antenna beam for maximum coverage. “We were also able to manage the APs with the wireless controller, making the APs less sensitive when needed,” said Lawrence. “The solution worked well for the new lecture halls and we’re very satisfied.”