The Pavilion at Ole Miss

History

The successful completion of the Ole Miss/ C Spire Vaught Hemingway stadium in 2014 earned Infolink and Xirrus a second phase of a deployment at the Pavilion which opened its doors on January 7, 2016. The Infolink/ Xirrus team deployed the latest Xirrus technology, extending the core of the network into the arena which leveraged virtualization, a software defined network and carrier owned fiber transport.

Project Requirements

1. 9500 person capacity new basketball arena
2. 15,000 potential IoT (Internet of Things) users
3. Seamless coverage
4. Database integration for automatic access for "known" users

Image 1 – Customer Branding

Customer Objectives

- World Class Wi-Fi with Carrier Integration (see Image 1)
    - Full capacity of user devices in 2x2 configuration
    - Must be capable of providing service to different groups of users
        - QoS
        - VLANs
- All 802.11 AC
- Lay ground work for future implementation of triangulated location over Wi-Fi
- Support for multiple customer applications including
    - Ticketing
    - Concessions
    - All sports and rebel rewards apps

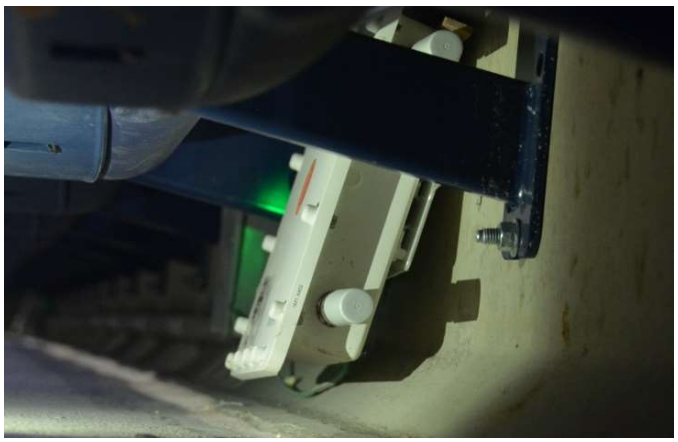

Image 2 – Custom under seat housing which is now called the XD2 stadium AP

Infolink Services provided

1. Site Survey
2. Detailed specification
3. Sub-contractor coordination
4. Wireless Architecture – wireless propagation analysis and design
5. Infolink Advanced Analytics
6. Install, commission & test

Results

- Blazing fast network speeds (See Figure 2)
- Bandwidth Service provider for
    - Ticketing

- Concessions
- Digital Signage

- Customized housing for AP to fit seat/ arena design
- Extremely efficient use of spectrum leaves more additional capacity than anticipated

Challenge at an Arena

Closed environment and the RF environment quickly becomes saturated because of high densities of people. Infolink worked with the venue architect and seat manufacturer to figure out how much space was available for an AP to mount behind and underneath the seats. Infolink then worked with Xirrus to develop the XD 2 Stadium AP (See Image 2). Locating the APs within the crowd effectively isolates the RF signal from inter-AP interference enabling greater spectral efficiency and thus higher overall system throughput.

Innovation

Tiered morphology of the building lends itself to high density application if the Wi-Fi radios are embedded in the crowd. The challenge arises with cabling support of the AP's. In this case the precast concrete structure of the seating tiers only allowed penetration on the horizontal tread of the structure. InfoLink's strategy was to use the steps, that had to be poured in place, to be used to penetrate the concrete and then route the conduit inside the step for concealment as well as eliminate any trip hazard and reduce overall amount of exposed conduit (See Image 2).

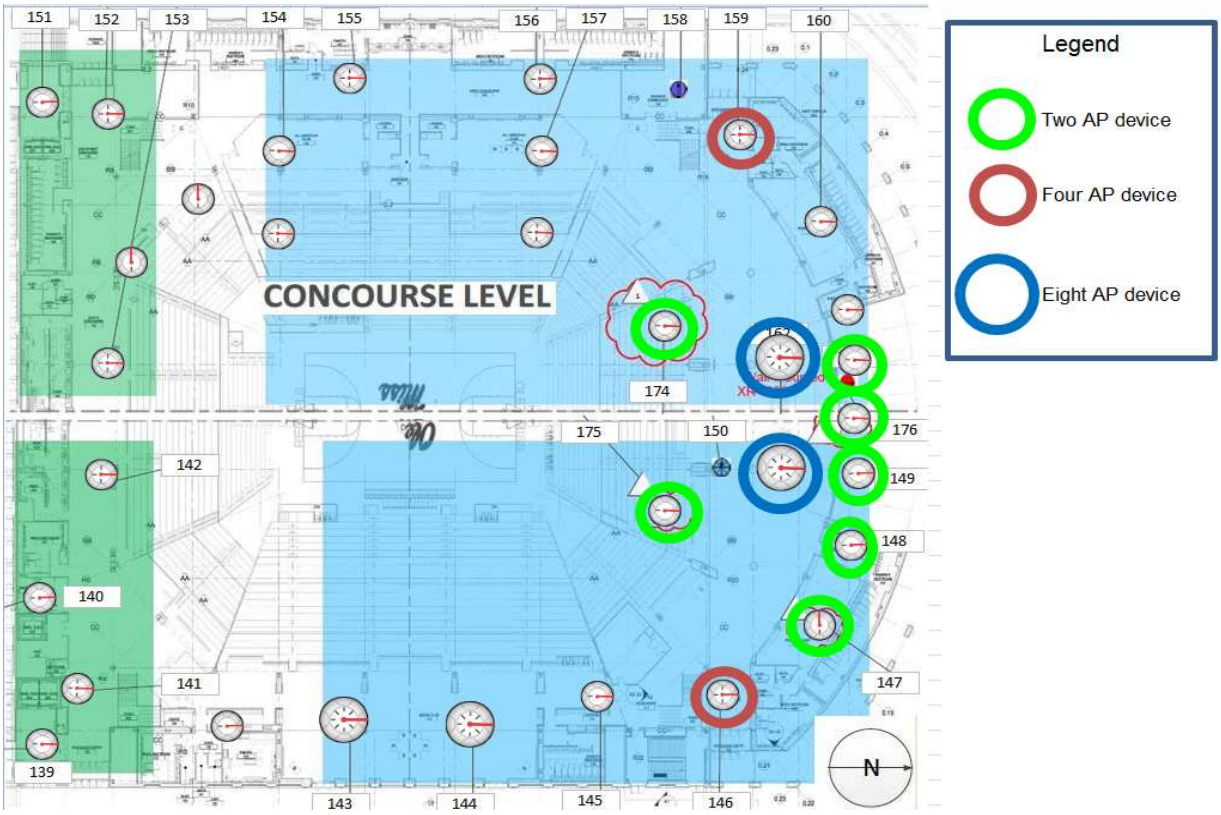

Figure 1 - Different arrays with radio quantities, note: not all arrays are displayed.

The service level expectation for this system is very high. The nature of Wi-Fi's backward compatibility means that slower, older devices connected to a specific AP will force all other devices to use the older modulation methods, resulting in slower speeds for all. The specific architecture and equipment chosen for this project provides a method for addressing this issue. Xirrus' software defined radio and distributed processing enables band and protocol control (See Figure 1). 802.11ac capable devices can be allowed to connect to specific radios and older slower standard radios can be rejected and forced to connect to other available APs. This enables the most modern devices to perform to the best of their capabilities, resulting in speeds well over up to 150 Mb/s over 20 MHz channels (See Figure 2).

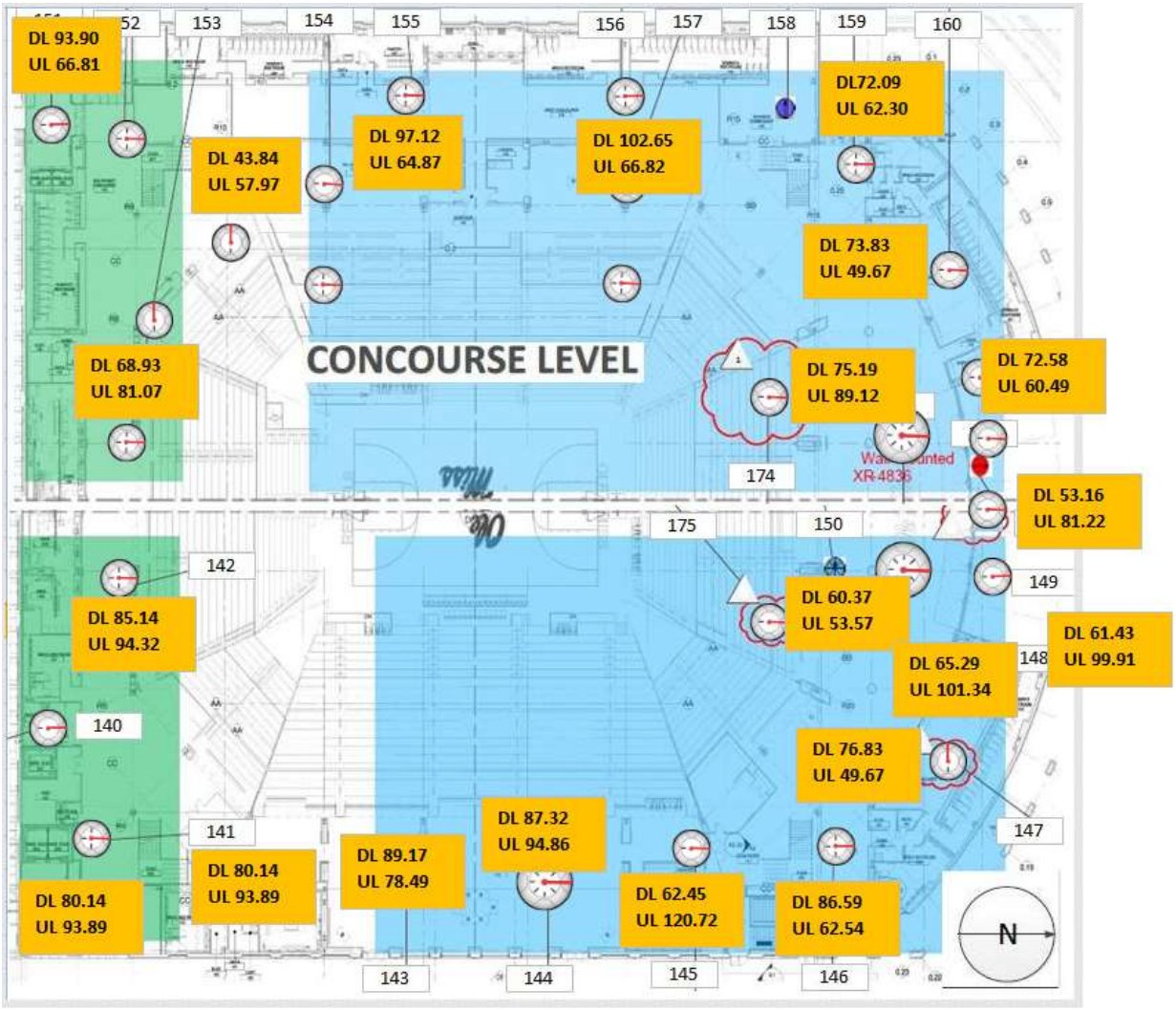

Figure 2 – Speed Tests from various arrays after optimization

.