

Outdoor/In Wi-Fi



Smarter Outdoor Wi-Fi Network Delivers DSL-Like Broadband Service Indoors to Massive Condo Complex

For most, a wrath of God lightning storm taking out all the broadband Wi-Fi access to residents at the Sunbird Resort would have been considered a catastrophe. But for Sunbird and its systems integrator, Network Solutions, it was a blessing in disguise presenting a unique opportunity to provide better Wi-Fi service to an important client and to solve a few issues that had plagued the original design.

An oceanfront property with 288 condo units, the Sunbird Resort has two twelve story towers but no physical Ethernet cabling available to provide high-speed broadband access. The only practical solution was to build an outdoor Wi-Fi network that could shoot signals indoors to residents.

But the height of the two resort towers made it especially difficult. Access points (APs) needed to be deployed far enough away from the property to get a good angle and strong signals into all the condos. Also, the rooms have large windows and sliding glass doors which allowed the existing network to provide decent performance in the room adjacent to them, but most of the unit was a dead-zone. Users had to sit next to a window for acceptable results.

"This is not a new property, so there was no way to get any wiring into the individual rooms without tearing the place apart," said Stephen Durr, President of Network Solutions, Inc., a leading wireless systems integration company. The most economical way to solve this problem was to build a reliable DSL-like wireless network that could cover every square inch of the property with the least amount of capital and operational expense. But obviously this was much easier said than done."

The previous WiFi network included nine Lite Station 2, 2.4GHz wireless transmitters and nine LiteStation 5, 5GHz wireless bridges from Ubiquiti Networks. However, these devices couldn't be centrally or uniformly managed and the system was unable to deliver a strong signal and consistent performance throughout the condo. A key design consideration was to deploy fewer devices that could reach farther, deliver a more stable connection, and be centrally managed. What's more, the legacy system couldn't adapt to environmental changes such as interference and other common obstructions that constantly caused Wi-Fi performance problems.

With limited fixed-line access, Network needed to transport Sunbird's client traffic from each condominium over a wireless mesh backbone. This meant highly reliable and adaptive Wi-Fi connections between mesh APs as well as to root APs were essential. A three megabits/second synchronous fiber optic PONS circuit provides broadband capacity into the entire facility.



A ZoneFlex 2741 802.11g "root AP" mounted on the recreation building signals out to other mesh APs located on broadcast towers around the 5-acre property.

OVERVIEW

Located in Panama Beach, Florida, the Sunbird Resort is a 5-acre premiere gulf front resort with more than 650 feet of beachfront, two 12-floor private condominium towers with over 225,000 square feet housing 288 units.

PROBLEM

- Existing legacy outdoor Wi-Fi network didn't provide ubiquitous coverage
- No way for Wi-Fi network to adapt to Wi-Fi interference, changing environmental conditions
- No central Wi-Fi management made troubleshooting and administration difficult
- Legacy devices supported only a single SSID

SOLUTION

- 6 ZoneFlex 2741 2.4Ghz outdoor Wi-Fi access points
- 1 ZoneDirector 1006 Smart WLAN controller

BENEFITS

- Replaced 18 legacy outdoor Wi-Fi devices with 6 Ruckus Smart Wi-Fi outdoor APs.
- Complete coverage throughout the entire property
- Signal penetration inside the buildings
- Central management for entire wireless network
- Resilient mesh connections ensure high availability
- Lower cost solution than previous system with better coverage, performance and management





CASE STUDY Outdoor/In Wi-Fi

"We were surprised to discover that we could replace the existing 18-node outdoor wireless network with only six ZoneFlex 2741s."

But what amazed us more was that the six ZoneFlex 2741s provided coverage into the building and units where we previously were unable to get any signal.

We now have in place a reliable outdoor Wi-Fi network that delivers reliable DSL-like broadband access to hundreds of residents at the lowest possible cost.

Stephen Durr
Networkx Solutions, Inc.

"When we deployed our first network, there was no affordable or reliable Wi-Fi technology that offered high-gain, long-range signals that could automatically adapt to environment changes," said Durr. "Then we found Ruckus."

Networkx replaced Sunbird's 18-node legacy outdoor wireless network with six Ruckus ZoneFlex 2741 outdoor Smart Wi-Fi APs. Each of the ZoneFlex 2741 integrates a smart antenna array that supports dynamic beamforming technology. Dynamic beamforming uses intelligent antenna arrays with an advanced best path selection software control system to automatically form and direct Wi-Fi signals toward requesting clients. This increases reliability by enabling signals to be constantly routed over the best available signal path and allows for a two- to four-fold increase in signal range.

A communications room within the recreation center was the only place where a fixed line broadband connection came into the property. It was here where Networkx deployed two redundant "root" APs that could communicate with other mesh APs along with a ZoneDirector 1006 controller to manage everything. Four mesh APs were deployed on 16 foot tall broadcast towers approximately

At the Sunbird Condominium Complex it took only six ZoneFlex 2741 802.11g outdoor Smart Wi-Fi APs to replace the previous 18-node network while providing better coverage and performance both indoors and out.

Two root (wired) APs bridge traffic from four mesh APs mounted on 16-foot towers around the property.

A single ZoneDirector provides complete administration control and centralized management of the entire wireless LAN.

The outdoor Ruckus Wireless network is the only means of broadband connectivity inside the condos and outside the property.

250 to 300 feet apart that were sprinkled around the property on the beach and in the parking lot.

Unlike other outdoor mesh systems, the Ruckus mesh APs require no individual configuration. A simple check box within the ZoneDirector Smart/OS software automatically enables smart wireless meshing. When mesh APs are deployed, they use the adaptive smart antenna array to automatically establish a highly resilient connection to a wired or "root" APs - either directly or through another mesh node. In the event a root AP fails, mesh nodes automatically reconfigure to avoid any loss of service.

Two SSIDs, one for owners with WPA2 encryption and an open SSID for guests are broadcast from every outdoor AP. For limited-time guests, the Ruckus Guest Pass features allows fast and simple generation of a unique passkey with an expiration date.

"With this new technology we are now seeing average signal strength inside the buildings of 50 to 80 percent where we saw less than 30 percent before," said Durr. "With Smart Wi-Fi we can now confidently deliver reliable and wire-like broadband access from the outside-in at a dramatically reduced cost and much faster ROI."

