Cambium Networks™

Validated Connectivity for First Responders

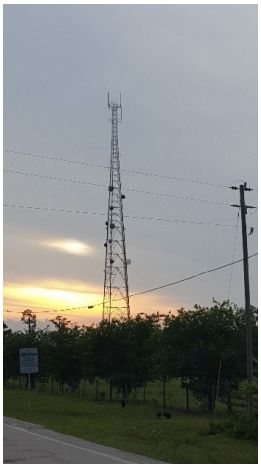
"The results were amazing! Even though we were situated in heavy tree cover, we were able to provide connectivity and throughput beyond expectations to the entire Emergency Services compound."

- BEN HOLYCROSS, RADIO SYSTEMS MANAGER, POLK COUNTY FLORIDA

Challenge

COMMUNICATIONS ARE VITAL IN HELPING FIRST RESPONDERS manage emergency situations. Polk County, Florida is located in the center of the Florida peninsula, and provides emergency assistance and support when hurricanes batter the state. To keep their skills and technology prepared, each year the radio services Joint Communications Support Unit (JCSU) conducts an exercise in a remote location. These exercises are designed to hone technicians' skills, test new technology and applications, and validate that all equipment is functional.

This year, the team elected to test wireless broadband communications equipment from Cambium Networks. To fully test the equipment, the following specific scenarios were tested:



1) Connect a remote area with a 10-mile unlicensed Point-to-Point (PTP) backhaul link
2) Establish remote video surveillance for key roadway and waterway locations
3) Provide high-speed connectivity to all emergency trailers and emergency team camp locations
4) Provide reliable voice/telephone communications
5) Provide WiFi access for devices and laptops

"We know that hurricanes can be coming after June 1st, and each spring we test the team and equipment in the field," says Ben Holycross, Radio Systems Manager, Polk County Florida. "The preparation work we do is serious testing and helps us save lives."

Solution

THE TEST SCENARIOS ADDRESSED EACH ASPECT OF THE NETWORK: BACKHAUL, distribution access, and WiFi. "We needed to rapidly deploy a complete, multi-functional high-speed network," says Tom Coulter, Radio Systems Network Analyst, Polk County.

Given the location had heavy tropical foliage with Non-Line of Sight (NLoS) situations, the technicians selected the PTP 650 backhaul, PMP 450i at 900 MHz for distribution access, and the cnPilot R201P router for WiFi access.

Equipment at the head end tower, would connect with equipment temporarily installed on booms and portable towers in the field.

PTP 650 Wireless Backhaul Infrastructure Solution	
Frequency	4.9 to 6.05 GHz
Throughput	Up to 450 Mbps in a 45 MHz channel
Award-Winning Performance	Highest Capacity in 20 and 40 MHz channel Highest Spectral Efficiency in 20 and 40 MHz channel

PMP 450 Distribution Access Network Platform	
Frequency	900 MHz, 2.4, 3.5, 3.65, and 4.9 to 5.9 GHz
Throughput	Up to 125 Mbps in a 20 MHz channel

cnPilot R201P WiFi Router	
Frequency	2.4 and 5 GHz
Throughput	802.11ac access

Results

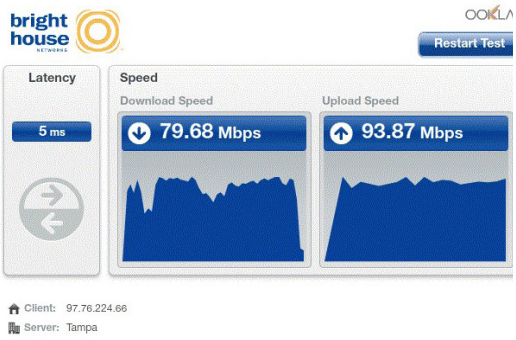
"PERFORMANCE IN THE FIELD WAS GREAT," SAYS COULTER. "WITH the portable tower and the boom on the communications trailer provided by the county, we were able to meet and exceed all we set out to accomplish."

Backhaul

- The PTP 650 link to the field unit was established immediately as the field location tower was raised.

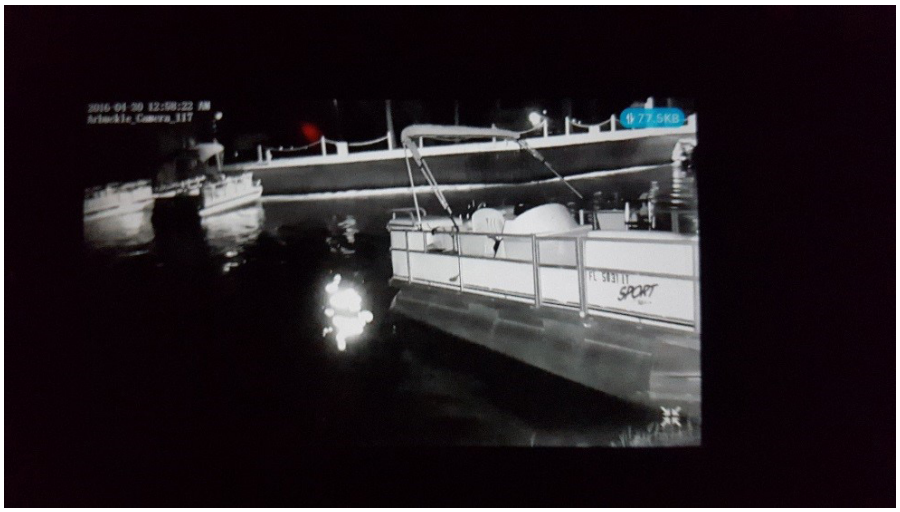
Distribution Access

- Two PMP 450i Access Points (AP) were installed: one using the 5 GHz frequency, and one using the 900 MHz frequency.
    - The 5 GHz PMP 450i AP was mounted at 20 feet above ground to connect the support trailers and camp locations.
    - The 900 MHz PMP 450i AP was installed 40 feet above ground and connected multiple remote video surveillance cameras that were installed deep in the thick foliage. These units were able to provide full motion video over a range of 1.5 miles through several hundred yards of tropical trees and a mile over water.



Why Polk County Chose Cambium Networks:

- **Rapid deployment** to quickly provide connectivity in an emergency situation
- **Non-Line of Sight performance** for reliable communications in areas of dense foliage or obstructions
- **End-to-end connectivity** to ensure that all components of the network interoperate smoothly



WiFi

- Two Cambium cnPilot wireless routers were strategically placed to provide broad coverage for laptops and phones at the outdoor areas of the compound.
- Telephone services were provided by a cnPilot R201P router that has a built-in “analog telephone adaptor” and provides Wi-Fi access. In the area where cellular service is not available, the R201P router using the wireless distribution and backhaul network connected the calls to the outside service provider with no problems.

Next Steps

POLK COUNTY IS READY FOR THE HURRICANES THAT WILL COME. “WE work hard to be prepared,” says Holycross. “Knowing that the disaster communications systems work, gives us confidence when we are called upon and need to respond quickly**.”**