HVAC MONITORING AND CONTROL CAPABILITIES CASE STUDY

Duke Energy Florida

FreeWave WP201 Enables HVAC Monitoring and Control Capabilities

FreeWave Technologies, a leader in industrial, secure Machine to Machine (M2M) and Internet of Things (IoT) wireless networking solutions, has installed WavePro™ (WP201™) shorthaul Point- to-Point and Wi-Fi hotspot platform units to enable HVAC monitoring and control capabilities.

In 2015, Duke Energy Florida (DEF) began transitioning the Direct Load Control (DLC) switches used for its residential load management program (EnergyWise Home) away from one-way paging technology to a newer two-way Wi-Fi and cellular solution. One large scale deployment of these switches involved 275 air conditioning units spread across two rooftops at a residential senior living community. Through this technology, each of the HVAC units may be cycled temporarily during energy curtailment events by a Wi-Fi enabled switch.

For DEF's Load Management System (LMS) to increase its effectiveness over previous one-way paging systems, two-way communications were required for switch monitoring and control. Wi-Fi was selected to simplify unit installation and program operation. Figure 1 illustrates the general data and information flow from (LMS) to the rooftop HVAC units.

Implementation

Implementing the Wi-Fi based load control program required two-way communications in two areas; 1) from the LMS to the rooftop, and 2) from the rooftop to the HVAC controllers.

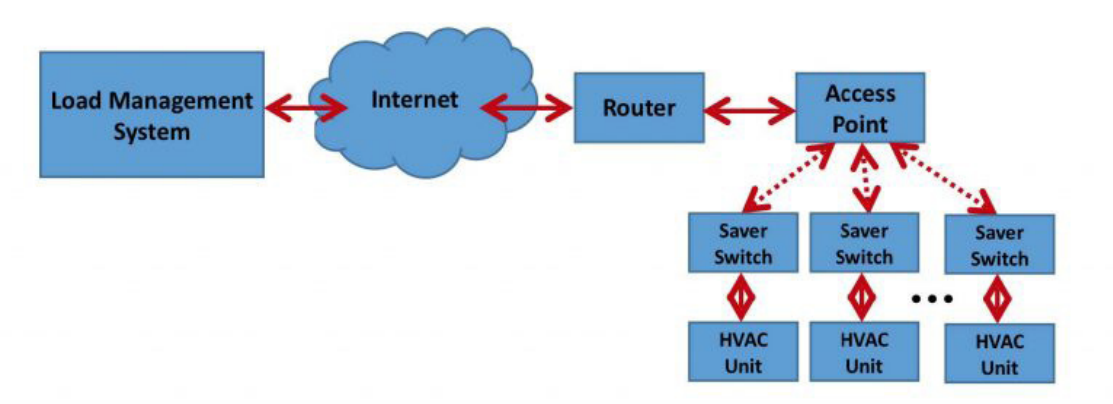
A local internet provider was used to provide communications from the LMS to a rooftop Internet Point of Presence (POP). With proper firewalling on both ends of the Internet service, a reliable, cost effective and secure link was easily installed to one rooftop.

To provide communications from the rooftop Internet POP to the HVAC units, two pieces of equipment were selected.

- Converged 2.4GHz Wi-Fi enabled IntelliPEAK controller and
- A FreeWave industrial dual-band WavePro WP201-100 access point

These components were selected because of their ability to communicate with many end devices over standard 802.11 protocols and because of their ruggedness in the Florida outdoor environment, which is characterized by direct solar loading, high temperatures, heavy rain and high humidity.

With the communications from the LMS to the rooftop POP at one residential tower and with the HVAC controllers installed, two WP201s were installed on each rooftop. Figure 2 illustrates the installation of the WP201 Access Points, the HVAC units and IntelliPEAK controllers located between the HVAC units.



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