



M2M CONTROL CASE STUDY

Colorado Golf Course

FreeWave WP201 Enables Golf Course Employees, Guests, and M2M ControlC

Colorado – In 2016, a local Colorado golf course needed a wireless communication solution for its employees and guests as well as a solution to control its irrigation system and associated pumps. Providing reliable high-speed connectivity available all day, every day to personnel, smart devices, mechanical equipment, and many other property locations was important to support the course's future business needs. FreeWave Technologies designed and implemented a Wi-Fi network that met these requirements.

Expectations

FreeWave met with golf course management and operations to learn about and understand their expectations for the network, which included:

- One network to provide Voice, Video, Data and Sensor (VVDS™) communications.
- High speed internet access in specific areas where employees and guests require access including the club house, snack bar, tournament pavilion, pro shop, and driving range.
- The ability to control the irrigation and pumping system from anywhere within the network.

The above image illustrates the internet access coverage requirements.

WavePro Network Solution and Installation

Working collaboratively, FreeWave and the customer selected a solution based on FreeWave's WavePro™ WP201 product. The WP201 is a dual band, mesh product that would allow Wi-Fi coverage in the required areas and needed communication throughout the network on the course. Using both 2.4GHz and 5.8GHz frequencies, it maximizes speed, bandwidth, and traffic for the customer and guests.

FreeWave conducted a site survey of the golf course to evaluate power availability, WP201 installation assets (e.g., buildings, poles, or towers), proximity to critical equipment (e.g., pump and irrigation controllers) and Wi-Fi coverage areas.

The FreeWave team determined that network infrastructure would be five WavePro WP201 units connected wirelessly over a 5.8GHz self-healing mesh network and would connect to the Internet Point of Presence (POP) provided by the client.

Each of the five WP201s simultaneously provided a Wi-Fi coverage area of approximately 400 meters in diameter. Smart phones, tablets, laptops, and other devices were then able to connect wirelessly on the 2.4GHz connection with a link rates up to 80Mbps. Strategic antenna selection at various critical points helped to provide the needed range and performance.

Powering the WP201s at each of the sites was achieved using the WP201's 802.3at PoE+ injector. The PoE+ Injector can be up to 100 meter from the WP201 and requires a single CAT5e or CAT6 Ethernet cable to provide both power to the WP201 and wired communication data rates up to 1Gbps. In this network, the PoE+ Injectors were concealed and protected within building structures with a single Ethernet cable routed to the WP201.

For optimal Wi-Fi coverage, the ruggedized, industrial-grade WP201s were installed at outdoor locations since they are more than capable of dealing with the Colorado weather year-round.

Highlights of a WavePro Network

With the installation of the WavePro network, the golf course now has an industrial grade, Wi-Fi network that addresses their current Wi-Fi and M2M requirements. Benefits include:

HIGHLIGHTS OF A WAVEPRO NETWORK

- > Wi-Fi and Internet accessibility with a 99.9% link reliability to course employees and guests. WavePro's self-healing and self-discovery features ensure this reliability.
- > The ability to control irrigation and pump systems.
- > Quick and low cost installation with simple operation through a single Internet POP.
- > Increased efficiency and productivity through improved communication among employees.
- > A single expandable network that transports (VVDS™) information.
- > With 100Mbps link rates available over the 5.8GHz links and by utilizing WavePro's meshing protocol that creates the interconnecting infrastructure, the golf course can easily expand its Wi-Fi coverage by simply adding additional WP201s. When added, the WP201s will utilize self-discovery to build the network and optimize link performance.



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