

Take the Office to the Field

For years, technicians operating in oil and gas fields have operated in isolation in their daily work. Their routine consisted of driving to the field to collect data, take notes and collect images of field assets, and then travel to the next location. At the end of the day, they would go to a remote



office and upload report files, download work orders, and make calls. While most petrochemical operations have equipped the field assets with SCADA automation networks for equipment, some are finding that overlaying the Field Area Network (FAN) with wireless broadband connectivity is a sensible way to provide real time information required.

WHY WIRELESS BROADBAND

Industrial operations with broad field operations need immediate access to information to increase operation efficiency, and improve employee and customer safety. Private fixed wireless broadband networks offer proven secure communication, and can be rapidly deployed to provide connectivity across the entire field area network at a fraction of the cost of wired or fiber technology.

In one major gas field in North America, an industrial operator had SCADA automation for facilities, and deployed an overlay of wireless broadband to provide 24/7 connectivity across a 300 square mile (800 square km) field operation area. The all-wireless network consists of:

- Long-range, high-capacity licensed microwave Point-to-Point (PTP) backhaul
 - 6 - 38 GHz licensed spectrum
 - Multi-gigabits throughput capacity

- High-speed Point-to-Multipoint (PMP) wireless distribution transport
 - 900 MHz, 2.4, 3, 5 GHz spectrum
 - 200+ Mbps throughput capacity
- 802.11ac WiFi outdoor access layer
 - 2.4 and 5 GHz WiFi
 - IP67-rated industrial grade components

Using LINKPlanner wireless network planning software, the operator was able to rapidly develop a detailed network configuration including a prediction of throughput and performance at all locations throughout the field area.

This private network is under complete control and is dedicated to the exclusive use of the industrial operator. Using a network monitoring system, they can quickly identify and isolate communication maintenance issues, and maximize network availability and maintenance activities prioritized to the specific needs of the operation.

Since its initial deployment in 2013, the network has continued to provide reliable streaming video, voice, and data transfer connectivity. Field technicians have been consistently able to upload reports, download work orders, and stay in communication with the home office through harsh winters, hot summer conditions, and heavy storms. The private network has performed as well or better than communications from a service provider.

As the operations have evolved, the operator has identified additional SCADA locations that are in locations beyond the coverage of their initial SCADA system deployment. To access information from these sensors, the operator is deploying the cnReach wireless narrowband solution. This wireless system connects directly to the all-IP wireless broadband network infrastructure, and has built-in I/O capabilities to provide a fully integrated SCADA solution at these remote locations.

The capabilities of this IP-based communications infrastructure are boundless. The network gracefully supports the addition of video surveillance systems, which are being deployed for environment and personnel safety compliance, and serve as a theft and vandalism deterrent. As more communications applications are added to the network, the private network infrastructure grows in strategic importance and the investment is leveraged across a broad set of benefits.

A STRATEGY FOR INFORMATION CONSOLIDATION

With the efficiency and safety advantages that the Industrial Internet of Things (IIoT) has to offer, the long-term solution is an all IP-based network that integrates communications transport solutions for the entire Field Area Network including:

- SCADA
- Process control
- Data transfer
- Voice
- Streaming video

This integrated solution is available today, and can maximize efficiency while minimizing costs with a private network tailored to meet the specific needs of the business. With most industrial operations already equipped with a network providing some of these functions, industrial operators are taking steps to migrate to such fully integrated solutions while getting best advantage from their current communications infrastructure investment.



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