



A single network for
SCADA and mobile
Wi-Fi devices

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Case study

Gas field communications in Oklahoma

A dry gas play in southeastern Oklahoma hosts two field offices and has approximately 50 operators. They had been using two separate private networks one 900 MHz wireless system dedicated to SCADA applications.

Customer needs

- High capacity outdoor network capable of reliable operation in environment with many trees and hills
- Concurrent support for SCADA and Wi-Fi access
- Mobile routers capable of withstanding rugged environmental conditions

Solution

- High performance wireless network capable of operating reliably under a range of harsh environmental conditions
- Capacity and security to support multiple concurrent applications
- Deployment flexibility – routers deployable as PTP nodes and as Wi-Fi hot zones

Results

A Hitachi Energy Wireless broadband network replaced two networks (a 900 MHz network and a Wi-Fi network) providing higher capacity, better coverage, high reliability and significant reduced OPEX

Systems and services

- Hitachi Energy Wireless broadband wireless mesh network
- Tropos 6320 mesh routers
 - Tropos 4310-XA mobile mesh routers

Additionally, Wi-Fi hotspots were deployed at multiple outdoor locations providing field workers with Internet access. Field workers used the network for downloading and updating work orders in the field, reporting problems to operations, downloading maps, user guides and other materials, and email. A single PTP link was used for backhaul of both networks.

Challenges

Field workers complained the performance and reliability of the Wi-Fi network was poor. IT responded by conducting a network assessment to determine why the Wi-Fi network was underperforming. They identified the primary issues related to the Wi-Fi network design and implementation, which were both sub-optimal and negatively impacted performance and coverage. In addition, all Internet connectivity was being routed through one of the two offices with Internet connections. This was also sub-optimal and slowed network performance.

In addition, the terrain in the area surrounding each office presents challenges for wireless communications, with its numerous trees and hills that can reduce signal strength and coverage.





Solution

IT evaluated the cost to upgrade the existing Wi-Fi network versus replacing it with Tropos and determined that it would be more cost-effective to use a Tropos plus it would provide better performance and coverage. They also determined that the network needed to be reconfigured and a new PTP backhaul solution was required to increase performance.

Tropos wireless mesh routers have the flexibility to be easily configured as either mesh or PTP nodes which can be ideal for installations such as this which required both Wi-Fi hot zones as well as PTP links in between. This approach reduces costs and complexity versus deploying and maintaining communication equipment from multiple vendors. Tropos nodes between the field offices were configured as PTP links. The terrain between the two office is relatively flat. The Tropos network performs at full capacity across two and three mile links, providing a cost effective alternative to PTP nodes.

Multiple Tropos 6320 mesh routers are configured to create Wi-Fi hot zones and connect to 10 Tropos routers used to form PTP links for backhaul to the two field offices. The Tropos network is divided into two segments, each using one of the offices to connect to the Internet. The first office has three

Tropos PTP links and extends approximately 20 miles; the second office has two Tropos PTP links and extends approximately 20 miles. Multiple Tropos 6320s are configured as gateways and mounted on towers alongside of the Tropos PTP backhaul links. The remaining Tropos 6320s provide hot zone connectivity with eight to nine miles as the average link between the nodes; the longest link is 10 miles.

Several Tropos 4310-XA mobile mesh routers have been installed in the vehicles of SCADA technicians, providing them with more extensive coverage across the play.

Results

A Tropos network replaced two networks (a 900 MHz network and a Wi-Fi network) and proved to be the more cost effective choice. The Tropos network also provides higher capacity, better coverage, and reliability vs the alternatives. The flexibility of Tropos routers to be utilized in both mesh and PTP configurations reduced the complexity and ongoing OPEX in the gas field.

Click the link to learn more about Hitachi Energy Wireless communication networks for oil and gas.

Hitachi Energy
marketing-update@hitachienergy.com
hitachienergy.com