Oil and gas fields can span thousands of square miles in remote areas. The TropOS 6420-XA broadband mesh router from ABB Wireless is an ideal well pad communications hub, meeting requirements throughout the pad’s life cycle. ABB Wireless networks are reliable, high-capacity networks that can cover large areas, increasing efficiency and safety.

Using a TropOS 6420-XA in all well pad life cycle phases provides benefits not offered by the common practice of deploying a different network at each stage. Not considering the beginning-to-end requirements for well pad communications is costly. Each time a network is installed, cost and downtime increase. Using an ABB Wireless network during all phases of a well pad's life cycle eliminates unnecessary downtime and cost.

The life cycle of an unconventional oil or gas well pad can be divided into four phases: drilling, fracking, completion and production. During each stage, communications are required to support all well pad applications from lease to production.

Drilling
Key applications during drilling include geospatial reserve data access, MWD/LWD, remotely steerable down-hole tools and field worker applications. Video is often desired for monitoring worker and site safety.
Traditionally, drilling contractors use one or more VSAT connections during this phase. At an average cost of $1,000 per day per VSAT connection and a 30-day typical length for this phase, communication costs can total $30,000 for just one VSAT link during drilling.

Installing a TropOS 6420-XA at the initiation of pad construction can eliminate VSAT fees and provide broadband performance to drilling crews. The TropOS 6420-XA has 600 Mbps total wireless data rate compared to VSAT’s maximum of 16 Mbps on the downlink. The money saved by replacing VSAT connections during drilling more than covers the cost of deploying a TropOS router as a well pad communications hub.

Fracking
During hydrofracturing, critical applications such as well casing pressure measurements, measurement of injection materials, seismic monitoring, video monitoring and field worker applications are required. Again, a VSAT connection is used for an average of 30 days, incurring another $30,000 charge.

Alternatively, the same TropOS mesh router used during drilling can be used during fracking, eliminating the VSAT connection at no additional cost.

Completion
During completion and while the well awaits entry into production, applications include well hole pressure measurement and SCADA. In this phase, there is often no communication link to the well pad. A roustabout must drive to the pad to obtain data. Alternatively, narrowband radios are sometimes deployed. Narrowband enables infrequent collection of basic data. Applications such as control of devices on the pad and video monitoring cannot be supported, so periodic on-site visits by roustabouts are still necessary.

A TropOS 6420-XA deployed at the start of drilling will provide reliable broadband connectivity during completion. It will support more frequent polling, enabling faster problem detection and resolution. Mobile workers visiting the pad can connect to the network, improving productivity. Should video monitoring for safety and/or security be desired, the network will also support live video feeds.

Production
Production places the most demands on the network. It must support applications including high resolution data, video, SCADA, pump off control, flow computers, emissions monitoring, asset monitoring and field worker access.

In the past, a narrowband radio was typically deployed at each pad. Since narrowband’s capacity is typically 100 kbps or less, it supports neither video nor high resolution data. Narrowband often succumbs to interference, lowering reliability. Polls can be lost and critical data missed. Mobile workers have no in-field data access.

A TropOS 6420-XA installed before drilling saves the cost of buying and installing narrowband radios while offering the higher capacity and reliability required by production applications.