



Case Study: Phillips 66 Protecting Oil Pipelines via Industrial IoT Over Satellite

Phillips 66's IIoT (SCADA) network serves more than 700 locations throughout the United States



Executive Summary

The Challenge

- Meet the energy industry's stringent regulatory and technology requirements
- Provide enhanced safety and compliance monitoring of Phillips 66 assets

The Solution

- Upgrade Phillips 66's satellite communications network to the most advanced VSAT technology
- Deploy the SkyEdge II-c VSAT network to provide the ultimate network security, performance and availability

Benefits of Gilat

- Provide oil and gas companies (including rigs, platforms, vessels, pipelines and offices) with fast, reliable, secure integrated communications
- Quality of Service without compromise
- High performance, reduced complexity, ensured security



Gilat's SkyEdge II-c VSAT network services represent the ultimate in network security and availability.

Phillips 66 is a diversified U.S. energy manufacturing and logistics company headquartered in Houston, Texas. The company processes, transports, stores and markets fuels and products globally. They operate a SCADA (Supervisory Control and Data Acquisition) network which is used to monitor Phillips 66's pipeline and plants, including refineries, control valves and general pipeline assets.

The Challenge:

Raw material extraction from oil and gas fields is a complex process which requires an expansive infrastructure system. One component of this system are the pipelines which are the key transport mechanism for oil & gas companies. They provide a safe, efficient and cost-effective means of transport for processed and unprocessed materials and operate continuously both within and outside of regular working hours.

To preemptively diagnose possible safety and/or productivity issues, pipelines must be closely monitored around the clock. However, pipeline infrastructure is usually placed in remote areas where no terrestrial network infrastructure is available. Therefore, satellite communications are essential to the running of energy companies that rely on fast, reliable, secure and ubiquitous data connectivity to operate.

These same companies must also abide by the requirements set forth by both state and federal regulators; they must continuously upgrade and revamp their monitoring systems to keep their operations safe, productive, environmentally friendly and efficient.

Phillips 66 operates a SCADA (Supervisory Control and Data Acquisition) network which is used to monitor their pipeline and plants, including refineries, control valves and general pipeline assets. Phillips 66 needed to upgrade their satellite communications network, which provides communication services across tens of thousands of pipeline miles and 64 terminal locations, in order to maintain effective and efficient business operations and achieve enhanced monitoring of their assets to meet the latest safety and compliance requirements of the energy industry.

The Solution:

Enterprises, like oil and gas companies, have at times been reluctant to utilize satellite communication services due to concerns regarding their mission-critical applications, the required robustness of the connection and security when extending their Virtual Private Network (VPN) applications. Since VPN applications were not specifically designed for satellite networks, they often have trouble staying connected due to the inadequate performance of the satellite connection.

However, understanding the benefits of satellite communications to reach remote pipeline and terminal locations, Phillips 66 decided to upgrade their satellite communication network to the industry's leading satellite communication technology, Gilat's SkyEdge II-c VSAT platform. The platform's superior technology provides the ultimate in network connectivity, security and availability in order to effectively monitor Phillips 66 assets. The first sites that were upgraded are located on Phillips 66's new Gray Oak pipeline, which extends from Midland/Odessa to Corpus Christi, Texas. The remainder of the network was subsequently upgraded as well.

Gilat Satellite Networks' SkyEdge II-c platform overcomes all the concerns raised by Phillips 66 in operating their IIoT (SCADA) network over satellite:

Performance: Gilat's solution ensures high performance over the satellite link, supported by its TCP acceleration technique. Gilat's acceleration technique is embedded in the VSAT and as such provides even better performance. In addition, this integrated embedded acceleration solution is highly efficient due to having only a single box to manage.

Reducing Complexity: oil and gas companies can extend their VPNs over satellite with SkyEdge II-c Layer 2 services with acceleration, thus minimizing complexity. By connecting the customer premises (for example, an MNO, Telco or ISP) and the carrier core (EPC, Corporate or BRAS) with a satellite based transparent IP VPN, energy companies maintain the efficacy of their VPN with the addition of the satellite component. As a matter of fact, SkyEdge II-c Layer-2 networks are field deployed worldwide with Tier1/Tier2 Telco networks.

Ensuring Security: Gilat further provides the best end-to-end security from the oil and gas company's remote locations and facilities to the servers at Phillip 66's Corporate Data Center with Layer 2 or 3. SkyEdge II-c delivers embedded encrypted TCP acceleration from the customer device all the way to the Security Gateway at the Data Center. This includes IPsec implemented in the VSAT, securing connectivity from the customer device to the VSAT.

The Gilat Advantage:

Gilat offers an innovative, high-performance VSAT solution catered specifically to the demanding broadband needs of the oil & gas industry. This flexible and scalable solution is comprised of an advanced VSAT hub platform, as well as a range of terminals, antenna systems and BUCs that deliver reliable broadband communications to distant platforms and fleets. Gilat's solution supports multiple backup options to avoid failures, QoS-based traffic differentiation per application, seamless interoperability with Ethernet, MPLS and IP backbones, and advanced acceleration and optimization for Internet traffic.

Gilat's SkyEdge II-c platform is field-proven and successfully deployed in multiple energy companies worldwide. With Gilat's solution, energy companies achieve true high-speed broadband connectivity for voice, data and video services with better security, operational efficiencies and lower costs. Our set of VSATs support varied needs and as such the VSATs are fine-tuned, addressing capabilities such as support of low power requirements, climate proof needs, end-to-end encryption and support of thousands of connections per site.