



June 2012 Edition - Asia-Pacific (APAC)

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A Case In Point: Offshore Connectivity Via Satellite

CNOOC selects Gilat's advanced SkyEdge II MF-TDMA VSAT multi-service high performance platform

China National Offshore Oil Company (CNOOC) needed to provide integrated voice, video and data networks to improve communications among its offshore oil and gas drilling rigs, production platforms, offshore facilities, corporate headquarters, Internet and local PSTN networks. A TDMA based network was sought to replace an existing SCPC network. The new network needs and mesh topologies for a mix of stationary platforms as well as ships. CNOOC chose Gilat's SkyEdge II System to implement the new infrastructure. SkyEdge II's high performance and low Total Cost of Ownership now provides a networking solution fulfilling CNOOC

The Client + The Project

CNOOC provides communications services to the oil and gas industries in China's South Sea. One of its critical needs is to provide communications between offshore drilling platforms, among the platforms and ships, and to have all connected to various onshore management and executive sites. CNOOC's main challenge is to achieve cost effective reliable voice, video and high speed data communications in a simple-to-operate network.

CNOOC was already experienced with satellite technology having operated a Single Channel Per Carrier (SCPC) network. However, the company required a better long-term cost effective solution that would provide the advanced network services it needed to meet current and future needs. This solution had to be highly reliable and meet the changing needs of multi-media communications in remote location voice, video and data applications. Likewise, the solution chosen by CNOOC would have to be easy to install and operate, enabling users at sea—on rigs, platforms and ships—to configure a remote terminal with minimal effort. As the business is high revenue and highly competitive, secure and high-speed remote communications was mandatory for supporting its production operations.

The Challenge

Oil is a key element keeping China's economic growth engine moving forward. As petroleum prices increase, offshore oil production platforms are being pushed to keep their production moving smoothly forward. Communications is a vital link in enabling smooth operation of production, handling of proper logistics for supply ships, keeping engineers and management in constant contact with workers, and enhancing and improving production.

However, providing direct business communications isn't the only concern. In addition, employees often work long periods on a platform before rotating back to land. To enhance morale on the platforms, it is important to provide workers a way of calling, not only the office, but also family Internet.

On the technical side, CNOOC's mix of sites, stationary platforms and ships require on-the-move broadband connectivity. Thus, the VSAT network needs to be fully integrated stabilized antennas. Platforms support large and relatively heavier antennas, while ships need smaller auto-stabilized antennas. The different sites also have different platform needs, especially in the Return Channel, while ships are limited to smaller channels as a result of their smaller antennas. Thus, a network efficient and concurrently support both higher data rates for some sites and smaller channels for others.

Finally, one of the offshore sites' biggest challenges is the need to support both star (site-to-center) and mesh (direct site-to-site) network topologies. While hub-and-spoke connecting Internet and similar server centric applications, voice and video suffer significantly, especially if there is an increase in latency, such as from a "double-hop" where they have to communicate to each other. Therefore, CNOOC very much required a single network that could provide both topologies in a cost effective manner in terms of CAPEX for the capacity.

The Solution

CNOOC selected Gilat's advanced SkyEdge II MF-TDMA VSAT multi-service high performance platform because it fully met their requirements to support Voice over IP, broadcast communications using both Mesh and Star topologies.

SkyEdge II provides high speed connectivity to VSATs with advanced bandwidth on-demand algorithms, enabling improved services using less satellite capacity than CN Advanced Quality of Service (QoS) provides reserved satellite capacity and guarantees low delay and low jitter transport for voice, video conferencing and other multimedia mechanism ensures the highest quality even during network congestion maintaining continued superior user experience.

SkyEdge II's full mesh topology with direct communications between VSATs reduces satellite delay, shrinks the bandwidth required for rig-to-rig voice and video calls, and and wasted satellite capacity. Packet payload compression, IP header compression and voice silence suppression minimize the bandwidth required per call while still providing connectivity between platform workers, corporate offices and ships. In addition, SkyEdge II's mesh topology also supports data connectivity including TCP acceleration.



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By supporting direct site-to-site access of local servers with excellent user experience, SkyEdge II's fully adaptive outbound DVB-S2 ACM and ICM adaptive inbound channels fade or adverse conditions, CNOOC's communication links remain strong. SkyEdge II's adaptive inbound mechanisms support multiple inbound channel rates, including and mesh traffic.



CNOOC is using three channel rates: 128ksps, 256ksps and 512ksps. For small antennas, VoIP mesh, or in adverse conditions, the system automatically transmits from the smaller channels. For high-speed video conferencing requiring higher throughputs, higher speed channels are used. Transmission between channels can change burst-by-burst, thus supporting several sites (which can comprise of several mesh sites and the hub for star) on several channel sizes. In addition, the broadband network efficiency simultaneously handles various sites with different needs.

Finally, in meeting CNOOC's request for lowering OPEX at installation and afterwards, Gilat's SkyEdge II solution's minimal on-site configuration and afterwards, crew training, regular maintenance and hiccups related to lack of profit greatly add to extra costs during early system use were dramatically reduced.

"The successful deployment of Gilat's CNOOC VSAT network demonstrates our ability to meet the complex, high-per quality communications needs of one of the region's, and world's leading energy-services companies and once again is a testament to our ability to cater to the maritime Colson, Regional Vice President, Gilat Satellite Networks.

Expectations Realized

All together, the solution's simplicity of use coupled with its new powerful technical capabilities not only enables CNOOC to run its maritime oil and gas communications but also provides it with extensive new applications not previously possessed.

Using SkyEdge II, CNOOC now has fast and reliable communications service linking its entire maritime oil and gas operations together in one network.

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