Beemar buzzes online with broadband

A combination of a small footprint installation, high availability, guaranteed data rates, and maritime expertise was all that Beemar could have asked for when it came to selecting a VSAT broadband service for its fleet renewal

When the global offshore vessel service provider, Beemar, rolled out a fleet of sophisticated platform supply vessels (PSVs), it knew the ships would need to have broadband access to the outside world.

'Our vessels support everything from deepwater oil production, deep shelf exploration, offshore and sub-sea construction, to seismic and special well service support. In all cases, fast Internet and reliable phone service are required to coordinate resources and personnel. The connectivity also serves a crew retention role by enabling workers to keep in touch with their families,' explains Darrel Plaisance, Beemar vice president and chief operating officer.

The operator eventually turned to a fully-managed solution from Hughes Network Systems and Environmental Safety Services International (ESSI) that includes high-speed Internet access, voice, and email as well as onboard WiFi. Plaisance notes that because the solution is managed, 'it's one less thing for us to worry about.'

The Hughes solution is providing satellite broadband to Beemar's vessels operating off the coast of Mexico, as well as in the Caribbean. This, for example, allows a PSV supporting an offshore surveying project in the Caribbean to transmit real-time data to the customer's headquarters for analysis, greatly reducing remote staffing and travel costs. In addition, the company is able to perform remote diagnostics on critical system electronics that keep the vessels operational at sea.

The installation and on ongoing support is carried out by specialist maritime systems integrator, Environmental Safety Systems International (ESSI). To date, it has installed VSAT gyro-stabilised satellite antennas on eight vessels in the fleet, with four more ships under construction. According to ESSI president Kim Adams, the vessels are fitted with either 60cm or 1m antennas and different service plans and network designs, depending upon their specific requirements. ESSI also provides 24x7 customer support and online vessel tracking services.

While Hughes is the heavyweight player in the high-speed satellite Internet market in the U.S., it is a relative newcomer to the maritime market, launching its VSAT-based service early in 2009. The company has a close working relationship with ESSI, a partner that deals with installation, ongoing maintenance, and provides tier-1 and tier-2 support and value-added applications such as vessel tracking, customised billing, equipment leasing, and engine monitoring. For this reason, the Beemar project marks an important milestone. 'They have a very modern fleet with a sophisticated kit onboard and they operate worldwide. It counts for a lot and we are proud to have satisfied their requirements,' says Vinod Shukla, senior vice president, international division at Hughes.

Committed strategy

'We realised very early on that we would have to differentiate ourselves from the multitude of VSAT

Committed Information Rates act as a guarantee, which eliminate customer uncertainty

BT Shyamakrishnan, Hughes Network Systems

▲ Hughes is providing broadband to Beemar vessels operating off the coast of Mexico and in the Caribbean

suppliers in the maritime marketplace. Our strategy has been to focus on high availability and reliability with an enterprise-grade solution,' continues Shukla. 'Our services are designed to deliver Committed Information Rates (CIR) and not the more commonly quoted best-effort/shared bandwidth rates, thereby assuring the ship owner of reliable communications in critical situations.'

This approach seems to be paying dividends, especially with offshore customers in the Gulf of Mexico. Moreover, honing in on CIRs avoids the confusion (and dissatisfaction) that can arise with best-effort/shared bandwidth services being used in crowded waters, where ships are fighting to get their share of the available bandwidth.

'When researching the maritime market, we discovered owners using VSAT in a shared environment never really knew whether they were getting the service they had paid for. Of course, such concerns typically rise to the surface when the link to the satellite seems to be underperforming. In these cases, it is understandable why ship owners can sometimes feel short-changed. CIR acts as a guarantee, which eliminates customer uncertainty,' says BT Shyamakrishnan, Hughes business development manager for the maritime market segment.

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To further enhance transparency, ship owners can log into the Hughes network operations centre (NOC) to access usage reports and a host of other metrics detailing service performance, such as ping response time, antenna signal strength, and up/down throughput. This data also allows trend analysis and thus strategic planning. 'A shore-based manager can quickly see if certain vessels need more – or less – bandwidth to match their typical usage profile,' suggests Shyamakrishnan.

If there are performance issues, Hughes can delve more deeply into this repository in order to identify possible causes and from there suggest solutions. 'We can determine, for example, if there is a rogue PC onboard a vessel that is hogging the link with Windows updates, etc. By passing this information back, the ship owner can then resolve the problem,' explains Shyamakrishnan.

Three-axis stabilisation

For its services, Hughes has assessed and qualified antennas in various sizes from 60cm to 1.5m from all leading manufacturers. The company also claims to be the first to roll-out a three-axis stabilised 60cm design on the commercial market. Most 60cm antennas designed for the whiteboat market and re-purposed for commercial use have only double-axis stabilisation.

The different sizes are necessary to cater to the different geographic locations in which the vessels are working and the different vessel sizes. In the case of Beemar, 60cm units suffice for vessels based in the Gulf of Mexico. 'To achieve a given performance, the size of antenna required increases according to how far away a vessel is located from the centre of the satellite's coverage footprint,' says Shyamakrishnan.

Because the service and hardware is supplied on a lease basis, Hughes will swap out an existing antenna for a larger one, if needed, in the event a vessel needs to leave a region for a different project. This approach is well suited to the project-based nature of the offshore business.

The communications requirements of individual vessels will vary according to the type of project in which they are in-

▲ The HX200 satellite router provides flexible Quality of Service features

volved. As hinted above, one vessel in the Beemar fleet was doing exploration work, which called for intensive video streaming back to the vessel's customer's headquarters in Houston. 'Video is bandwidth hungry, but the lease model allows flexibility in the service plan. The user can adjust it depending on their needs at the time; in this case, upwards,' stresses Shyamakrishnan. 'Once the exploration and video streaming had finished, Beemar sent in a request to revert back to the lower rates. There are no hardware changes, as the adjustments are made from our NOC.'

Traffic management

Moreover, Hughes recognises that there are two types of people on offshore vessels: personnel employed by the ship owner and a team from the end customer, typically a major oil company. To save administrative headaches, the communications bill can be split between the two, thanks to a dual-LAN modem which segregates traffic generated by the owner from that of the end customer. In the example above, the oil major might have agreed to pay the bill for the premium service needed for heavy video streaming.

Because it is a fully-managed service, Hughes, in partnership with ESSI, can deliver a whole array of equipment. This ranges from essentials such as the antenna and accompanying below-deck boxes, to network switches, VoIP handsets, and other telephony solutions, to a heavy-duty fax, uninterruptible power supply, and even a GPS compass if the ship's gyrocompass is inaccessible. (Stabilised antennas need to know where the ship is heading to continually track the satellite.) ESSI has developed a rack that brings all these elements together in a compact and organised package.

The high-performance Hughes satellite router incorporates a number of troubleshooting mechanisms to facilitate remote maintenance from the NOC. A particular highlight is the so-called Ethernet sniffer, which can be used to monitor and analyse data moving around the onboard network. It is useful in detecting the source of local spikes in traffic, which may be affecting the performance of the satellite link.

Finally, the two companies can help fine-tune existing applications for usage in a maritime satcoms environment. 'Many shipping companies use custom-developed software for managing their daily reports, personnel, operations, inventory, and other resources, which are not necessarily designed with satcoms in mind,' says Emil Regard of ESSI. 'There are many things we can implement to optimise and improve the applications performance over VSAT networks, for example, to reduce the number of handshakes required when talking to a shore-based SAP or SQL database.'

As the demand for always-on, broadband connections at a fixed monthly rate has increased, more and more commercial shipping companies are looking for services like Hughes Maritime Broadband. While most develop business plans to anticipate the value the service brings, they often find the uses and applications grow significantly once the service is installed. It is common for these companies to participate in month-long pilot programs to explore the applications and uses. More often than not, the service stays onboard as the companies find the price is well worth the additional productivity.