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Nautical Nodes for Offices Afloat

In the early 1970s, a group of forward-looking and influential U.S. shipping executives began thinking about a satellite network for the global maritime industry. They hired an engineering team from Comsat to detail a vision for such a system. This work led to Marisat, a 1976 U.S. endeavor, and preceded the 1979 founding of Inmarsat, originally under the auspices of the United Nations. The advances in maritime communications, no longer futuristic, have brought Internet capabilities to ships at sea. Shortwave has been largely superseded by satellite communications. This article gives an overview for the busy maritime executive of the leading providers of satellite communications services and some of their more exciting maritime offerings.

The Dawn of a New Age

Crew retention and the desire to keep morale high aboard vessels is a central problem confronting maritime companies throughout the world. Often, this category includes keeping crews connected with their families, sometimes half a world away, through email and telephone calls. But other morale boosters could be television and video feeds. Michiel Meijer, Maritime Market Manager for Stratos Global, said, "One of today's most effective ways to improve shipboard life for seafarers is to provide advanced voice, private emails and SMS communications systems that are powerful, economical, easy to use, and available away from the bridge." The next level in crew communications – providing crewmembers with Internet access – is expected to become the norm in the coming years, according to Meijer and other providers interviewed by *MarEx*.

The business side, now fueling the growing uptake of high-speed service at sea, might include the time-sensitive transmission of electronic chart updates. Globe Wireless, an industry leader, reports that remote engine monitoring is driving its clients' uptake of higher speed, "always on" communications. Stratos' Meijer, in describing a host of new applications, also cited the burgeoning area of remote IT support, telling *MarEx*, "Vessels are complex systems, with fewer people aboard than in previous years. They may need remote access to get support from specialists ashore."

Investors have increasingly demonstrated their confidence in the business of maritime satellite communications, which has been driven by dual trends – privatization and consolidation. Inmarsat morphed from a quasi-UN organization to a financial stock market offering (with the intermediate step of privatization followed by investment from Apax Partners and Permira). Private equity firm BC Partners recently took control of Intelsat – another satellite network with its origins in the 1970s. Globe Wireless and Broadpoint, both owned by private investors, have built their businesses serving seafarers, with the burgeoning offshore oil business playing an important role. Both have expanded internationally.

Providers have ramped up through mergers and acquisitions to better serve customers. Stratos, owned by a Canadian investor group since late 2007, has grown through horizontal mergers. It is a distributor of Inmarsat services, but it is also a sales channel for Intelsat (with more than 50 "birds" deployed in high orbits) and Iridium, a system in "Low Earth Orbit" (LEO). In the U.S Gulf oil patch, Broadpoint, a provider of voice and data services to the offshore industry, has also chosen the merger route as three smaller companies have combined to help it pursue its international expansion. In mid-2007, Globe Wireless's acquisitions of Seawave (an onboard, least-cost voice and data message router) and Rydex (a maritime email provider) cemented what Globe President Frank Coles had called Globe's "ability to provide airtime over a wide variety of communications pipes."

Inmarsat's "FleetBroadband" Service

The big buzz in the marketplace centers around Inmarsat's formal introduction of its much-heralded "FleetBroadband" high-speed data and voice service. Inmarsat's Piers Cunningham, who oversees its maritime business, tells *MarEx* that "FleetBroadband will be the new standard for high-speed maritime Internet communications. It's different from VSAT. It operates on a different band with much smaller antennas. It's based on the Broadband Global Area Network (BGAN) platform that has operated successfully for land-based users since the rollout in late 2005." Cunningham added, "FleetBroadband will supersede a family of Fleet maritime products that were rolled out beginning in 2002. For us, it's a natural evolution of our maritime portfolio. We expect the uptake to occur over the next 18 to 24 months."

FleetBroadband (operating in the "L" Band of the satellite spectrum, which enables smaller antennas than those required for V-SAT's "C" and "Ku" bands) offers data speeds of up to 492 kb/sec. Once the third of Inmarsat's Fourth Generation satellites is operational, later in 2008, the new system will offer near-worldwide coverage.

Stratos, as the world 's largest distributor of Inmarsat services, is offering FleetBroadband to shipping customers, and Michiel Meijer stressed that "As FleetBroadband antennas are small (35cm/60cm), the installation process is rapid. Ships won't be delayed. They can maintain their commercial trade schedules. It's a standard IP service that can be seamlessly integrated with the head-office network."

MarEx asked Meijer, in the process of still finalizing the pricing on the new offering, why a shipowner would choose FleetBroadband instead of a service such as

OceanVSAT, provided by Intelsat. He explained that "Both pipes are similar. They both support similar throughput speeds. It really depends on the expected usage of the channels. VSAT pricing is fixed irrespective of usage, so it's a better deal for a heavy user, while FleetBroadband customers pay according to their usage."

"The industry is increasingly regulated. There is heavier demand for data exchange. The tanker segment is trailblazing now. It is trying many new applications…"

In describing FleetBroadband, Inmarsat's Cunningham told *MarEx*, "We know that many parts of the maritime industry want increased bandwidth. FleetBroadband comes in two flavors. Both support 4kbps voice, Group 3 fax and standard 3G SMS functionality."

Cunningham further explained that, "Our FB500 package offers standard IP connectivity of up to 432kbps, with guaranteed or 'streaming' IP data rates up to 256kbps. It also supports 64kbps ISDN connectivity for legacy applications. The above-deck dome diameter is around 57cm, and weighs about 18kg. The FB250 configuration offers 284kbps, with streaming IP available at up to 128kbps. The dome is smaller, about 25cm diameter, and lighter, at around 2.5kg."

Both Cunningham and Meijer talked about a world of video-based applications and customers who were exploring new ways of working to enhance operational efficiency. Through Meijer's extensive customer contact, he sees customer demand increasing for communications tied to applications that reduce fuel consumption, either directly through engine performance monitoring or indirectly through more efficient weather routing aided by frequent chart and weather map downloads. Cunningham stressed that "The industry is increasingly regulated. There is heavier demand for data exchange. The tanker segment is trailblazing now. It is trying many new applications – for example, in remotely looking at emissions. The freight market has been good in tankers, and other sectors, including IT and communications, have supported new applications."

Another exciting application is Frontline Communicator, a wireless node allowing video transmissions to be uploaded from the vessel. Meijer described a recent onboard product demonstration where shore-side engineers could see what their colleague aboard the vessel, with a helmet-mounted camera, was seeing as he examined a malfunctioning diesel engine. Cunningham explained that Frontline Communicator, running through a Fleet 77, was used to provide Internet video feeds of onboard conditions in sailing's Volvo Ocean Race.

Sea Tel: Antenna King

One member of the original Comsat team, Bob Matthews, the recently retired founder of leading stabilized antenna provider Sea Tel, has never looked back since its founding in 1978. Sea Tel holds patents on the familiar marine satellite antenna housed inside a radome. Today, Sea Tel offers stabilized antennas for voice and data communications and for satellite TV (a big attraction for merchant crews and for yachting customers). Intelsat has now announced that Sea Tel's "9707" C Band antenna will be supporting enhanced service on Intelsat's new C Band service. According to Peter Broadhurst, Sea Tel's Vice President for Sales, "We have 25,000 successful installations. We were the first to bring VSAT, Direct-TV, L-Band and X-Band to maritime satellite communications."

Broadpoint: Provider to the Oil Patch

Broadpoint is "new" in name only, the result of rebranding that occurred after the merger in 2007 of three stalwarts in the oil patch: Petrocom, Coastel Communications and SOLA Communications. "The individual businesses go back more than 25 years," says Broadpoint CEO Ken Wright, who cut his teeth engineering communications networks for far-flung mining operations. Wright explained that the business combination and financial infusion will support Broadpoint's move "…toward industry leadership. We need a wide range of offerings to serve our customers. We now have the base, a critical mass, to move to a much higher level." He described a strategy of "following the customers and their assets abroad – to offshore Africa, India, the Middle East, and the Pacific Rim. We've been in the Gulf of Campeche for ten years."

In elaborating on Broadpoint's strategy, Wright told *MarEx*: "The new company is far more than the 'sum of the parts' of the three business that we've put together." The Broadpoint business builds on Petrocom's pioneering cell phone network in the Gulf of Mexico, serving users exploring for and producing oil and gas, and myriad of others supporting them. "We have a large GSM network – the Petrocom legacy – and we have roaming partners all over North America. Our users are installing WiMax networks aboard vessels," Wright said.

He described the company's mantra as "moving the enterprise communications environment to the offshore sector." These days, that environment includes capabilities such as remote engine or process monitoring, and also leveraging the capabilities of experts on shore. Wright, like Cunningham and Meijer, told *MarEx* that video applications have been a big driver for broadband applications. In Broadpoint's case, a number of customer executives have been motivated by forensic applications, where recordings are available for insurance or investigative purposes (after an accident). "Through VSAT," he said, citing another important application, "an engineer in the office can watch the view from a ROV in real time – for example, in well intermediation or in an underwater pipeline repair."

Stratos' OceanVSAT Brand

Stratos is a distribution partner for both Inmarsat's FleetBroadband and Intelsat's C Band Network Broadband Global Maritime Service, which Stratos markets under its OceanVSAT brand. Stratos' Meijer told *MarEx* that "Stratos is the largest supplier of mobile satellite services to the maritime industry. OceanVSAT offers global, always-on broadband access for a fixed monthly fee. We also offer customer network management, application support and installation, and maintenance of terminals on vessels. Customers choose us because of our extensive portfolio of value-added services." An example of those value-added services is Stratos' AmosConnect Crew service, which combines private email, text messaging and international calling.

In talking further about OceanVSAT, Meijer mentioned two additional features that meet fleet managers' demands, "It offers an Automatic Beam Switching system, which seamlessly transfers service between Intelsat's satellites, eliminating any manual interference. The second feature, Intelsat's Global Network Monitoring System, lets a fleet manager monitor all remote locations from a single monitoring site, probably the head office."

Globe Wireless – "A Network of Networks"

Globe Wireless, describing itself as "A Network of Networks," is vertically integrated, with its satellite communications distribution capabilities augmented by its own digital high-frequency radio network. Frank Coles said, "As an independent company, we work with customers to recommend satellite communications systems to suit their requirements." In response to demand for high-speed connectivity from its customers, numbering some 500 ship operators, Globe announced two important distribution agreements. Iridium, a constellation of 66 low-earth-orbiting satellites, has appointed Globe Wireless as a Charter Distribution Partner for its new OpenPort service, which will offer a Broadband internet protocol (IP) data plus voice lines. With speeds up to 128 kbps, the cost will be lower than higher-speed services and "allow us to continue to meet our customers' increasing requirements for bandwidth while maintaining cost control," said Coles.

Globe Wireless has also been selected by Intelsat to be a distributor for its Network Global C Band service (where speeds can reach as high as 2 mbps), and is a Virtual Network Operator (VNO) for the service. "We can build and manage fleet-wide networks for our customers," said Globe Wireless' Shane Rossbacher. The IT manager at a new Globe customer, Rederiet Stenersen in Bergen, Norway, commented, "Globe Wireless' VSAT services will allow us to offer better services to our crew for browsing, email and voice calling, while at the same time improving communications between ships and our offices." Stenersen's fleet includes 13 chemical/product tankers on the water now, and six newbuilds.

Small and Powerful

The evolving antenna technology and smaller footprint have also contributed to the growth in satellite communications. Broadpoint's Ken Wright underscored this point, saying, "Deck space is valuable on vessels in the U.S. Gulf. The smaller footprint of the new antennas greatly expands the marketplace. Mid-tier companies and outfits with smaller boats can now consider VSAT."

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Sea Tel's Broadhurst tells *MarEx*, "With the increasing popularity of VSATs and the higher-power satellites, Sea Tel was able to manufacture smaller VSAT antennas in the 1m size. We have now moved to the 60cm size with our Model 2406. This allows smaller vessels to take advantage of the fixed pricing of VSAT services. Smaller vessels are all now trialing the 2406 and the options and applications it brings."

Though technology drives the communications business, the personal touch still counts. Broadpoint's Wright told *MarEx*, "We are relatively small compared to giants in the business, but we use that to our customers' advantage. Small means nimble with quicker decisions. It's actually a core strength."

***Mar*Ex**

GLOSSARY - C Band (3400 to 4800 mHz), Ku Band (10700 to 12750 mHz), Ka Band (19000 to 22000 mHz), L Band (800 to 2000 mHz), X Band (7000 to 9000 mHz)