

Feature

The New Battle For The Maritime Customer...

by Alan Gottlieb

As the demand for fixed price broadband soars at sea, legions of VSAT providers are invading the maritime market with new services targeted at Inmarsat's market. Gottlieb International Group is pleased to provide an overview of the new players, their services, their strategies and how they are likely to emerge as the new leaders in broadband maritime communication.

The Maritime market is rapidly evolving. Thanks to the proliferation of Ku-band availability over deep ocean routes, new seamless C-band connectivity, automatic IP switching devices and automatic re-positioning of Ku- and C-band antennas at sea, it is no longer necessary to depend on L-band services that are charged by the byte. Fixed price broadband at sea and over deep ocean transcontinental routes is now available and practical for any ship spending more than \$3,000 per month on pay-by-the-byte **Inmarsat** services.

As the demand for high volume transmission at sea rises, **Gottlieb International Group** predicts that L-band usage will be confined to a back-up role for large fleet owners with high data demands, or a primary service for those vessels with very low data transmission volumes, typically ships using 100 to 300 megabytes per/month of data transmission with monthly by-the-byte billings of less than \$3,000.

This dramatic market shift opens huge maritime opportunities for traditional VSAT providers, and the biggest players are rushing to take advantage of what is proving to be a stunning market opportunity.

The Opportunity

While market estimates vary by shipping segment, containerships and tankers alone constitute over 10,000 vessels. Even with the recession, these segments are still growing around 10 percent per/year. In addition, car carriers, general cargo vessels, off-shore oil service fleets and other vessels constitute an additional 30,000 – 40,000 vessels, many of which would be targets for the new fixed price broadband services.

While the revenue opportunity suggests that today's available market is around \$360 million for just the containerships and tankers, adoption by other segments and the sale of broadband dependent maritime software applications and services could drive the market size to well over \$1 billion in the next three- to five-years. The availability of this market to VSAT is only a recent event driven by the proliferation of Ku-band services over deep ocean and new technological innovation. According to *Esben Flo*, COO of **Ship Equip** in Norway, only around 800 vessels out of the 10,000 tankers and containerships have VSAT, so the potential for growth is significant.

Barriers to Entry

Gottlieb International Group's market research has conclusively demonstrated that vessel owners and operators have little knowledge of the satellite alternatives available to them as well as the numerous potential economic benefits derived from the installation of fixed-price broadband.

After meeting with dozens of operators in Greece, Germany, and Denmark, we found that while savvy on IT issues, vessel owners and operators long-standing dependence on **Inmarsat** has left them devoid of knowledge regarding other voice and data communication alternatives. Therefore, successful market penetration requires that vendors of VSAT services come armed not only with a dependable, fixed-price broadband pipe but are able to offer access to services and applications that make use of the resource and thereby justify the investment in the new technology.

Satellite Coverage

Ku services are rapidly proliferating across global ocean routes making it possible in the very near future to circumnavigate the globe by roaming across approxi-

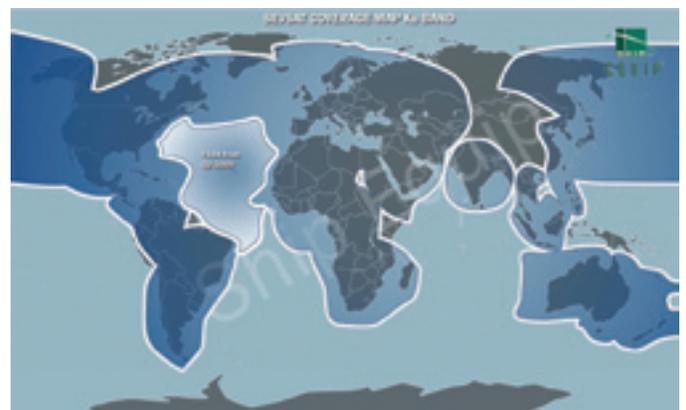


Figure 1 — World Ku-band coverage

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mately 20 satellite beams. **Telesat** did launch **Telstar 11N** and the satellite will cover a substantial portion of the Atlantic and facilitate sailings from the continental U.S. and Europe to South American Ports. **GE-23** now covers major Pacific Ocean routes and **Eutelsat** has recently announced plans to fill among other areas, the last major Ku gap over the Southern Indian Ocean.

Intelsat, on the other hand, has recently introduced a promising new C-band service with seamless global coverage as part of its **GlobalConnex** network. Using this service, vessels can maintain a constant IP address while transversing the globe, as well as enjoy the advantages of automatic beam switching. Hence, depending on individual need, shipboard space availability and budget, ship owners will have a choice of VSAT options available. Both the C- and Ku- depend on the latest hardware innovations.

Hardware Technology

For the Ku providers, two new developments have made services practical. As Ku-band is not always



Figure 2—Intelsat's Network Broadband Maritime Service

available across every possible ocean route and is sometimes disrupted by rain fade, L-band is a necessary back-up solution.

Hardware provider **Virtek** in Norway is the leading developer of IP switching hardware. They produce an innovative product called the **Commbbox** that facilitates least-cost-routing via automatically (or manually) switching between IP streams. In addition to least cost routing the Virtek Commbbox has a unique store



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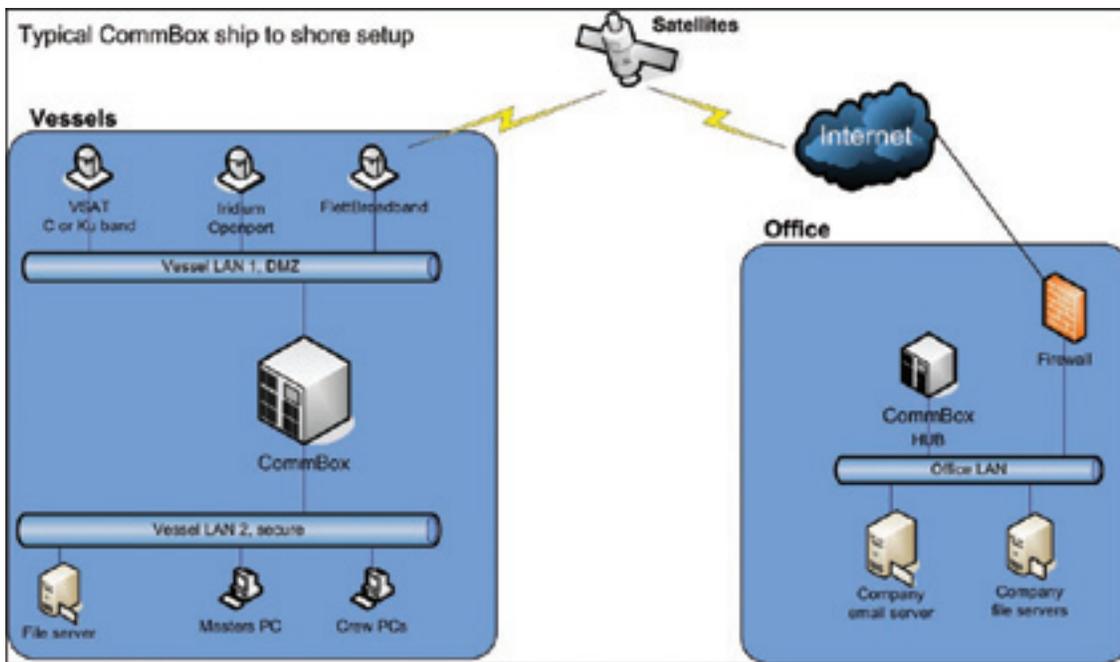


Figure 3 — Ku-/L-band Hybrid infrastructure with Virtek Commbox

and forward feature that facilitates storing non-urgent, broadband intensive transmissions until the vessel is in range of Ku-band beams. Using the Virtek infrastructure, vessels use Ku- fixed price broadband when ever available, and only employ **Fleet Broadband** or **Iridium's** new **OpenPort** when Ku is unavailable.

Most Ku- and C-band systems depend on automatic beam switching technology developed by iDirect and Vipersat. Use of either system facilitates automatic re-pointing of the satellite antennas as a ship transits the globe. It is the combination of automatic beam switching and IP least cost routing combined with greatly enhanced C- and Ku-band coverage's of ocean routes that has opened the door to an unprecedented rush by VSAT providers into the maritime market. Here is a review of the new offerings from **Intelsat/Hughes**, **Ship Equip**, **KVH**, **Speedcast**, **SingTel**, **Iridium**, and **Globalstar** all of whom will compete in the merchant segment with existing players, **Vizada (Marlink)**, **Sea-Mobile**, **Radio Holland** and others.

The New Services

Intelsat

Intelsat has two major maritime initiatives underway according to Jay Yass, Intelsat Vice President of Network Services. The satellite operator offers an enterprise grade global, seamless C-band service called

Network Broadband Global Maritime, featuring "always on" broadband access, constant IP address and automatic beam switching via the **iDirect** platform. While originally focused on world oil and gas shipping markets, the C-band service is gaining greater acceptance in commercial shipping segments.

For those operators undeterred by the higher initial antenna cost and additional space requirement,

a C-band maritime communications system is a solid choice.

Schlumberger and **KT** of Korea, among others, are currently reselling Intelsat's Network Broadband Global Maritime service. In addition to offering a C-band service to oilfield and commercial shipping, Intelsat is also providing a commercial grade Ku-band service to the yachting market via a **Hughes Network Systems** platform. The Ku-band service is available in the Caribbean, Gulf of Mexico, and Coastal U.S., and runs on the Hughes DVBS2 platform, featuring a 60cm spread spectrum antenna.

Intelsat is also exploring value-added services that can be offered, at a distributors or re-sellers option, to their end-user customers. This is designed to allow the distributor to either add value with its own service, or, if it prefers, re-sell one offered by Intelsat.

Ship Equip

Ship Equip is the de facto leader and early pioneer in the installation of both Ku- and C- band VSAT systems aboard commercial shipping. Based in Alesund, Norway, the company is a "first mover" in the provision of both C- and Ku-band turnkey global and regional services, marketing its offerings under the brand name **Sevsat**. Gottlieb International Group recently spoke with **Esben Flo**, COO, regarding trends and the future

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of VSAT in maritime.

According to Flo, adoption of both C-and Ku-fixed priced broadband is being driven by increased requirements for transfer of data from ship to shore and vice versa, the need to manage and upgrade software applications, crew welfare and shipboard machinery going IP. In particular, the trend toward monitoring and control of shipboard systems and equipment is of special interest.

In the future, notes Flo, ship owners will be able to monitor the performance of most shipboard systems, predict failures and diagnose problems, all from shore over broadband IP links. As more and more systems and equipment are equipped with sensors, the ability to make use of the resultant data for efficiency improvement will further drive the need for “always on” VSAT connectivity.

At the moment, Flo sees no significant letup in the demand for VSAT systems despite the recession and, in fact, Ship Equip has actually seen a significant increase

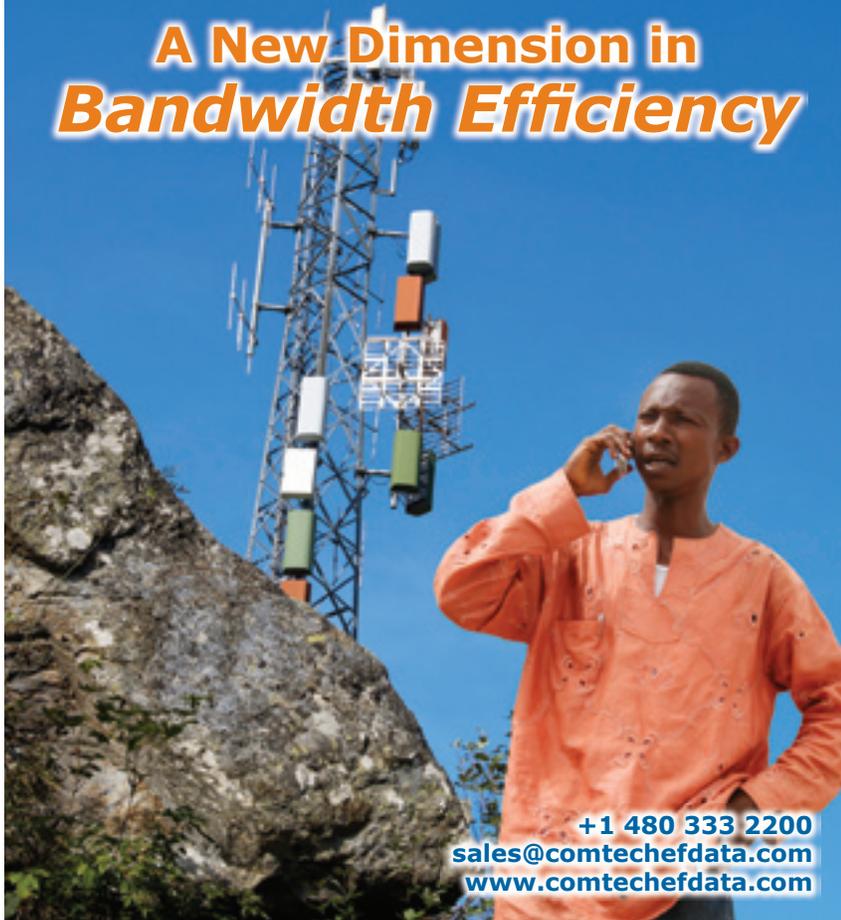
in business in recent months. He notes that both Ku- and C-band systems are popular and points out a “surprising trend” in the growth of the C-band installations. Undoubtedly, a major contributor to the Company’s success is its product offerings (iDirect platform, automatic antenna re-pointing with constant IP address and wide band L&B) and “turn key” rental plan.

Flo sees 2008 as “turning point” in the adoption of VSAT services and expects much greater market penetration in 2009-2010. In order to meet rising demand in the coming years, the company has purchased three transponders of capacity on the Telstar 11N satellite covering Europe, Atlantic, and U.S.

KVH

An intriguing and technologically innovative new offering to the Maritime space comes from KVH in Middletown, Rhode Island. Launched in October 2007, the Mini VSAT service is unique in many aspects and could become the de facto standard for delivery of marine VSAT services. Gottlieb International Group interviewed *Brent Bruun*, V.P. of Sales and Business Development for KVH,

A New Dimension in Bandwidth Efficiency



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to gain an overview of the system's unique features.

Unlike the other services that rely on either the iDirect TDMA technology or Vipersat and employ a 1.2m antenna, Mini VSAT uses a **Viasat Arlight** platform and a 60cm spread spectrum antenna. According to Bruun, the platform relies on an innovative spectrum re-use scheme that overlays send and receive signals thereby minimizing the need for transponder resources. The result is 512 X 256 Kbps with two VoIP ports service that will offer global coverage at an under \$3,000 per/month (ex-hardware) price point. In addition to the highly competitive bandwidth pricing, the system has other strengths:

All hardware components are sold as a ready to install fully integrated package thereby eliminating the need to source antenna, satellite modem and other components



Figure 4 — KVH 60cm Antenna allows mounting on high masts above superstructure, which reduces blockages

from separate suppliers. The hardware cost of the complete package is as much as a one-third less than a comparable 1.2m Ku- system.

Unlike a conventional 1.2m Ku- antenna, the 60cm unit weighs only 60 lbs. This means a crane is not required to hoist the antenna aboard a vessel, significantly lowering installation costs. While a 1.2m unit can take up to two days to install, the fully integrated KVH unit can be installed in four to six hours and be accomplished while the ship is underway, a huge advantage due to the limited time most containerships are in port. Installation costs are estimated at \$2,000 or less vs. \$5,000 to \$10,000 for a 1.2m unit.

The small size of the antenna makes it practical to mount on a high mast significantly reducing the potential for blockages and likely negates the need for a second antenna, a solution that may be needed with conventional 1.2m systems.

In terms of coverage, KVH expects to offer full global coverage by the end of 2009 and has already contracted with GE-Sat for the critical Trans-Pacific route. In addition, KVH is offering a hybrid configuration that combines the Mini VSAT with Inmarsat Fleet Broadband, a configuration that uses Ku- as the primary carrier with Inmarsat as the back up assuring full coverage — no matter where a ship might travel.

Since its launch in October of 2007, the system has successfully operated over North America, North Atlantic, Caribbean, and European areas, a proven performance that has led to a recent agreement with **Thrane & Thrane** to distribute the system under Thrane and Thrane's own private label. Both Thrane and Thrane and KVH's own global network of distributors will handle sales, distribution and hardware service. Network operations have been, and will be, handled by Viasat. Assuming successful global deployment and a high quality of service, the unique features of the mini VSAT are compelling.

Speedcast/Eutelsat

Speedcast and Eutelsat have invested significant technological resources and are aggressively pursuing the maritime market together. The two companies have jointly expanded their Ku-band coverage to create an expansive coverage and service network. Marketed

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under the slogan *Connecting Oceans*, the service represents a serious challenge to established L-band providers and a boon to vessel operators demanding fixed-price broadband services at affordable prices.

With 15 beams deployed and with automatic beam switching enabled, they offer coverage of most of the world's shipping routes. Ku- antennas ranging from 60cm to 1m are available as well as C-band coverage with 2.4m antennas. The entire network is monitored and controlled from a Hong Kong teleport under a Global NMS and employing the same technology platforms at associated teleports. While service level and technology are well served, the companies acknowledge the importance of sales and marketing.

While they acknowledge that the market is highly competitive, they believe that "misinformation leading to confusion in the marketplace entertained by certain players who do not accept the technological evolution underway" is likely the greatest barrier to market entry.

To address this issue, Speedcast and Eutelsat have partnered with **Furuno** of Japan and others. Furuno is a major manufacturer and provider of maritime systems with an extensive global distribution and sales presence. We believe that the joint effort by Speedcast and Eutelsat supported by their extensive satellite coverage and versatile platform will make a significant impact in the maritime market.

Hughes Network Systems

HNS is actively deploying its own HughesNet maritime service featuring the innovative *HX DVBS2* TDMA platform using a 60cm stabilized antennas and above. The offering leverages best of breed technology features such as DVBS2 outroute with Adaptive Coding/Modulation, Adaptive Inroute Selection with TDMA channel spreading, and industry leading integrated data compression and acceleration technologies. According to *Ramesh Ramaswamy*, HNS Assistant Vice President International Marketing, the HNS service is possible due to the combination of a superior platform and Hughes extensive service experience gained as the largest satellite broadband managed provider in the world.

Currently the service is available in Europe and the Caribbean in a variety of speeds from 128K and above upstream and up to 2 Mbps downstream. In terms of pricing, HSN delivers the services at highly competitive

price levels. Initial market focus will be the Oil & Gas industry with expansion into the global maritime market. The HX platform is also being used by Intelsat to offer services over the Caribbean for leisure markets in the Coastal Maritime brand.

While they believe the technology and experience of HNS sets it apart as a VSAT market leader, Ramaswamy agrees that successful distribution; and marketing and sales will be critical. In that regard, HNS will be facing numerous competitors most of whom have a significant maritime presence and established sales and distribution channels. However, in view of the fact that the maritime VSAT market is growing and relatively untapped, there should be significant opportunity for HNS.

Singtel

Singtel has recently launched a C-band maritime service offering speeds from 15k Kbps to 1 Mbps using 1.5 and 1.5m antenna. The new service permits simultaneous voice and data communications ship to shore and is primarily targeted at vessels operating the Southeast Asian region.

Iridium

Iridium's recent product offering, **OpenPort**, is a significant challenge to Fleet Broadband (FB) at the lower end of the market. Essentially it offers speeds up to 128 Kbs and, like FB, is charged by volume. Virtues of the system include charges approximately one-third less per/Megabyte and a clever lightweight and small pie-shaped Antenna that weights less than 20 lbs., and costs under \$5,000.

In response to OpenPort, Iridium has announced **Fleet Broadband 150**, a service designed to compete directly against the OpenPort product.

Globalstar

Globalstar new constellation is scheduled for launch beginning in 2009. Combined with the accompanying ground network upgrades, the new networks represent a significant technological advance over its existing satellites and, according to *Tom Colby*, COO, will support a significant upgrade in existing capability as well as new offerings to the maritime market.

To date, Globalstar has offered a simplex personal distress device known as **Spot** and a commercial

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transponder-like device to manage commercial fishing fleets through provision of location information. In addition, through integration with a partner's duplex device, the commercial device will be re-programmable to provide distress notification. These services are available using the existing satellite constellation.

Like the current Globalstar network, the new constellation will provide S-band for 2-way voice and duplex data communication and L-band to support its asset tracking and spot products. More significant is the fact that the legacy constellation uses channel sharing and compression to achieve up to 256 Kbps data speed. In addition to supporting the legacy products, the next generation satellites and network will also offer 256 Kbps speeds without channel sharing or compression making them significantly superior to the current offering. In addition, S-band antennas are small and lightweight ranging from a one square inch patch antenna to pole-like configurations ranging from 4cm to one-half meter in height.

While coverage of the service will be limited to coastal shipping and North Atlantic coverage due to the need to communicate with land-based ground stations, this arrangement results in lower latency, reduction of echo and superior voice communication. Based on convenience and low installation costs, we expect Globalstar services to be a viable alternative Inmarsat and Iridium OpenPort in regional, low data requirement applications.

More Choices and Technologies

The market that was once the exclusive domain of Inmarsat is rapidly becoming a battleground as Ku-, C- and competitive L-band services invade the maritime space. Vessel owners now have more choices and technologies to choose from than ever before, many of which are highly sophisticated and backed by major companies with established reputations and major sales and distribution networks. As the demand for Internet connectivity at sea rises, new leaders are emerging to satisfy the rising demand for fixed priced connectivity. These new services offer the potential for new IP based communication, enhanced ship operation and, for the crew, an end to the isolation of the deep ocean.

About the author

Alan's firm, Gottlieb International Group Inc., specializes in market research, business development and sales and busi-



ness development of satellite and wireless communication technologies to numerous vertical markets. In particular, his firm specializes in assisting satellite providers in penetration of Oil & Gas, Maritime, International Construction and Mining markets. His career encompasses an unusual diversity of sales and marketing background in many segments of the wireless industry including VSAT, Cellular and Mobile Commerce.

He has served as Vice President of Sales for Audiovox Communications, Director of Sales for Southeast Asia for COMSAT and Aether Systems, and Corporate Market Research Manager for a Division of Baker International (now Baker-Hughes). Mr. Gottlieb has been responsible for initiating and managing successful market entries into Southeast Asia and the South Pacific Markets and assisting satellite and wireless related companies with diversification into new market vertical niches and international geographies. Major clients have included Intelsat, Inmarsat, Verestar, Globecom Systems, Sonic Telecom, Frontier Technology, and THISS Technologies, (Singapore), Sonic Telecom, the National Technical Information Services and the Office of Post and Telecom of French Polynesia.

He is a native of Washington, D.C. and holds a Masters Degree in International Business from Thunderbird Graduate School and a B.A. from Stetson University. He has published numerous articles in Sat News and is a frequent speaker at Offshore Communications, ISCe, the Washington Satellite Exhibition, and other industry events. He can be reached at +1-703-622-8520. Website: www.gottliebinternationalgroup.com