



Cost-Effective Shipboard Video Chat

Achieving maximum performance from minimum bandwidth

The promise of ever greater quantities of bandwidth and airtime is re-shaping maritime communications, but the constraints of satellite delivery mean that applications such as video and VOIP must still be optimized for end users.

By Martin Killian
VSAT Product Manager, Globecommm Maritime

GLOBECOMM

www.globecommm.com

Maritime communications have come a long way in a short space of time and the near future will see them go further at an even faster pace.

A new generation of High Throughput Satellites, supporting much higher bandwidth, present new opportunities to maritime, energy and offshore users, who are used to the reliable if unspectacular performance of L-band. HTS services, designed for mobility customers and theoretically offering connectivity at speeds close to land-based broadband, could finally usher in the connected ship; fully wired for data gathering, energy efficiency and crew welfare and enjoying always-on communication with the shore.

Even before the first HTS satellites are in service, the changes are already apparent. Just like their shore-based counterparts, officers and crews are being promised ever-increasing bandwidth and apparently unlimited data plans. A recent maritime industry communications conference heard from an airtime distribution partner, who described a crew email and Internet service that had to be controlled not for Web access but by time of day, in order that crew got their mandated hours of rest.



So the stage seems set, for if not a revolution, then at least continued evolution. A step-change from sub-broadband communications speed to consistently available 512k-1MB and faster services to open the door to a range of applications, moving the crew from phones and email to always-on Internet; replacing scarce shipboard data with structured information drawn from real-time monitoring and optimization systems, too. There are regulatory drivers; tracking, monitoring and electronic chart updates and many potential value-adds; remote management and IT support, scheduling, weather services, VOIP and videoconferencing.

Risks of Revolution

But in step with this evolution comes a short term risk; that airtime vendors and service providers are raising expectations beyond what can be delivered onboard ship in a cost-effective and practical manner.

The torrent of data that we experience ashore, streaming to a growing variety of devices, has also forced the pace of application adoption onboard ship, principally because seafarers, not

Ships will need to work smarter with their bandwidth, using optimized hardware and software products that keep bills at reasonable levels while giving access to the services that users need.



unreasonably, would like to do the things afloat that they do ashore. These include enjoying not just unfettered access to the Internet but using applications for chat, voice and video calls.

As a result, this area of data traffic is booming, even as voice calling continues to decline. But the reality is that outside VSAT installations, it will be a long time before the vast majority of ships experience anything like HTS throughput. Many may never do so. This may be good news for legacy L-band providers, but for shipowners and their crews, there will be a long tail of demand not just for L-band but for applications which are specifically tailored for use over maritime satellite connections.

Demand for VOIP and video chat onboard ship is growing strongly. Ship visits by Globecom Maritime staff often start with the crew asking if they will be getting video chat or instant messaging “this time.” On one occasion, an engineer dispatched to work on the communications system was button-holed at the top of the gangway and the scuttlebutt made its way around the ship so fast that the rest of the crew had asked him the same question by the time he left.



But even though demand is increasing, no one should imagine that such applications are designed or suited for onboard use. Because they usually are free to download, the perception in the user’s mind is that they are somehow free to use as well.

In fact, the opposite is true. Using current voice and video chat programs onboard ship over a data circuit will chew through bandwidth faster than you can reload a scratch card. In doing so, it distorts airtime traffic figures, bolstering the impression that demand for crew data usage is virtually unquenchable.

The law of unintended consequences has contrived to create a situation where, on a ship with more restricted bandwidth availability, the majority of traffic will be business communications. Install a VSAT or a larger Inmarsat access plan and the business portion diminishes as the crew makes more and more use of the Internet, chat and the like. But they will end up with much higher bills if they are paying for the access themselves.

The Way Forward

So what’s the way forward? It would be easy here to say that the maritime industry is old-fashioned – a lagging adopter of new technologies – and leave it at that. But the fact is that mariners and managers alike want to be able to use these technologies.

Videoconferencing in particular has been touted for a decade or more as the solution for fixing technical problems without the need to dispatch an engineer to attend the ship. As a driver of crew welfare, the value of VOIP and video can hardly be denied.



It is Globecommm Maritime's contention that shipping will to some extent continue to be subject to severe limits on bandwidth compared to shoreside users. Therefore, to deliver anything like a shoreside experience, ships will need to work smarter with their bandwidth, using optimized hardware and software products that keep bills at reasonable levels while giving access to the services that users need.

In anticipating that the trend towards crew usage of voice and video over IP channels will likely continue, Globecommm has been examining how to make these services deliverable in a context that works for both shipowner and seafarer.

Two new Globecommm Maritime products, Access Chat and Access Chat Plus, have been specifically designed to address this obvious need. They offer a very high quality VOIP and video chat experience which is specifically designed for shipboard use. Access Chat provides instant messaging and VOIP calling/conferencing while Access Chat Plus provides the same with the addition of video calling/conferencing.

Optimizing Bandwidth for Live Chat

AccessChat and Access Chat Plus are very 'light' products both in terms of set up and data usage. Both applications are no more than 1Mb in size and can be installed easily and quickly on any Windows or Android device (an Apple operating system version is due in Q2 2013) or a USB stick, enabling them to be used across multiple devices. Both can be installed without the need for proprietary ship management software, making them convenient for crew.



Access Chat and Chat Plus are not free and each user will require a license key to use it. But the key difference is in their bandwidth optimization.

There are a number of means of calculating data usage over VOIP, but for the most common application, all the results average around 1.38MB per minute for voice, 7.5MB per minute for a video call and 30MB a minute for video conferencing for three people. To find out how much maritime users might be paying – and how much they could be saving – we ran some comparisons.

BANDWIDTH CONSUMPTION		
Application	Standard VOIP	AC/AC Plus
Two-person, three-minute voice conversation	4.14 Mb	575 Kb
Two-person, six-minute video and voice chat	8.2 Mb	2.9 Mb
Four-person, 30-minute video and voice chat	900 Mb	11.7 Mb

In our tests, a two-person, voice-only, three minute conversation over a typical VOIP application used 4.14MB of data. Over Access Chat, just 575KB was used. A six-minute video and voice chat between two people over Access Chat Plus generated data traffic of just 2.9MB. Over standard VOIP, the same call would use 8.2MB.



Finally, a 30 minute video chat session between four people, three of them using video, one using voice only, would run to about 900MB using commercially available video conferencing products. Access Chat reduced the data load to 11.7MB.

Bandwidth usage over Access Chat is configurable per user or customer and can be adjusted on the fly by the user. It will also work effectively on narrow bandwidth. VOIP calls can be made over data pipes as low as 8kbps and video calls with throughput rates as low as 40kbps. Typically, a user will get the same quality as a typical land-based call but will use 10% of the bandwidth.

Access Chat and Access Chat Plus are available in a range of pricing options for corporate and crew use, with customized pricing available when the service is bundled with Globecomm Maritime airtime service contracts.

We have been hearing for at least a decade about the revolution in maritime communications. And it could be that for some users the HTS era will deliver a much better Internet experience at sea. But that revolution is not going to reach everyone. Many shipowners and managers will continue to keep bandwidth tied down and seek out highly specialized and optimized products to meet the demands of a new generation of crew.

- **Access Chat** provides instant messaging and VOIP calling/conferencing
- **Access Chat Plus** provides the same with the addition of video calling/conferencing.

We can be certain that the demand for better communications for bridge and crew will remain and grow. Now a solution that fits the need is available, affordable and practical, shipowners and manager need not deny their crew access, but instead put the right tools in their hands.

About Globecomm

Globecomm is a leading global provider of managed network communication solutions. Employing our expertise in emerging communication technologies, we are able to offer a comprehensive suite of system integration, system products, and network services enabling a complete end-to-end solution for our customers. We believe our integrated approach – offering in-house design and engineering expertise combined with a world-class global network and our 24x7 network operating centers – provides a unique value to customers. As a network solution provider, we leverage our global network to provide customers managed access services to the Internet backbone, video content, the public switched telephone network or their corporate headquarters, or government offices. We currently have customers for which we are providing such services in the United States, Europe, South America, Africa, the Middle East, and Asia.



- We offer a wide range of hosted and managed communications services that leverage our global transmission capacity and our network of data center, content management and switching facilities.
- Our expert teams can also advise you on the best ways to meet your critical communications needs, while our specialized laboratories evaluate broadcast, IP and other technologies for customers.
- We can engineer and integrate individual systems or complex networks, and then support them through the lifecycle.
- Our engineering expertise has also produced a wide range of satellite and wireless terminal products ready for quick and cost-effective deployment.

Globecomm makes one vital commitment to our customers: that the solutions we provide will work, no matter what. Founded by engineers, Globecomm provides services and products supported by one of the industry's largest in-house engineering staffs. When we build components into our services and products, you can count on the fact that we have tested them exhaustively for reliability, compatibility and cost-effectiveness. That's why suppliers have come to rely on us for improvements to the products they provide.

About the Author

Martin Killian joined the Telaurus subsidiary of Globecomm in 2010 and has been the VSAT Product Manager of Globecomm Maritime since the brand was launched in 2011. Prior to that he worked at France Telecom Mobile Satellite Communications and subsequently Vizada as an Account Manager and Director of Commercial Sales, Americas. Martin holds a Master of Science in International Business from Florida Atlantic University, as well as a BS in Marketing from FAU.

