Global Maritime Communications: Delivering Bits Through The Confusion

By Rick Simonian, President, Maritime Solutions, Harris CapRock Communications

As one of the oldest forms of long-distance transportation, maritime vessels have been the backbone of commerce in nearly every region of the world for thousands of years. Approximately 90 percent of world trade is carried by the international shipping industry, nations' defense and security efforts depend on navies and coast guards, millions of passengers every year go on cruise and ferry vessels, and there is a vast armada of service, supply and scientific vessels worldwide.

Most of the landmasses around the world have experienced a dramatic increase in connectivity over the past 20 years through expansion of terrestrial and cellular networks, as well as microwave and satellite coverage. Although communications to ships have improved during this period, the connections at sea still greatly lag behind what people are used to on land. The convergence of voice, video and data to all-IP networks has simultaneously simplified and complicated the end-user's decision process. Users now know that it is possible to connect every device and data source on a ship to a single network, and they expect that the solutions should be as simple as their home enterprise solutions. But the IP revolution has also driven an explosion of new products and services, dramatically increasing demands on maritime communication networks.

Apart from the many technical intricacies of maintaining a reliable link from a vessel to a satellite hundreds or thousands of miles away, the satellite communications industry has simply experienced growth faster than many users can keep up with it. Although the technology exists to produce an at-sea communications experience similar to that experienced by a user's home office, many customers have trouble selecting the combination of technologies, network equipment and services that address their needs most efficiently and cost effectively.

Bringing The Sea Home

Few markets within the high technology industry have experienced growth and evolution quite as rapidly as maritime SATCOM. Even as recently as 10 years ago, making a phone call or accessing a corporate network from a ship was a tightly controlled luxury; now this connection is becoming an expectation of passengers and crew. Satellite communications have become the standard for many offshore operations, and the capacity of satellite technology has expanded to include hardware, software and capabilities that didn't previously exist. Not only has this growth expanded our ability to connect to virtually every ocean region, but it has also improved operational efficiencies, safety, and crew morale and welfare. But as overworked radio officers and IT staff will quickly point out, once the end-users are given a connection, they just want more!

Onboard stabilized antennas today are smaller, more functional and more reliable than they have been in the past. This translates into less-intrusive hardware, requiring far less time and maintenance from crew members and technicians, with lower risk of downtime. The recent trend has been for single antennas to operate on multiple satellite bands and to automatically switch between satellites to overcome blockage or movement out of a satellite footprint.

After 20 years of this technology being used for government vessels, we're seeing a migration to the commercial marketplace. In short, users can get a lot more function out of the same amount of hardware, which substantially cuts equipment costs and maintenance requirements. Baseband technology, which is basically how digital information is carried between the satellite, the ship and the Land Earth Station, has also improved the effectiveness of satellite service, taking advantage of technologies such as **TDMA**, **CDMA** and **dSCPC** to maximize the number of bits that can be sent over the scarce satellite spectrum.

With widening hardware capabilities, SATCOM users have also developed higher expectations of service. Whether users are engaged in social networking, supply chain processing, basic voice, video and data communication, or utilizing onboard applications for business and passenger information, seafarers require more bandwidth from their networks. At **Harris CapRock,** we have seen our typical user's monthly data consumption double over the past two years, and the demand is not abating.

Given the rate at which these developments have progressed, it's safe to predict that the landscape of satellite technology five years from now may very well bring an entirely different set of capabilities and user demands, as maritime operations grow digitally closer to their home offices. And with these developments, we can undoubtedly expect to see new problems and confusions arise.

Multiple Options Breed Inefficiencies

In fact, technological developments have already created quite a bit of confusion for users shopping the SATCOM market. With so many different technologies to address varied needs, choosing the most appropriate solution from a laundry list of signals and hardware is no easy task. Should a network use an open or closed (proprietary) system? C-, Ku-, L- or Ka-band? What about hybrid networks that also use **GSM** or **WiMAX**? What type of antenna? It's not easy to decide what will suit the needs of extensive operations when there are so many technologies available.

Sometimes buying decisions are made just on cost, or on a portion of the true lifecycle cost, and many times the marketing hype of a solution is not matched by real-world performance which can leave a bitter taste in the buyer's mouth. The decision making process is daunting to even the most knowledgeable IT department. On top of that, changes to industry regulations and growing data transmission requirements make implementing a satellite network even more difficult. After all, when signing a long term contract, can the company be confident that its needs several years from now will be met by the same solution they are committing to today?

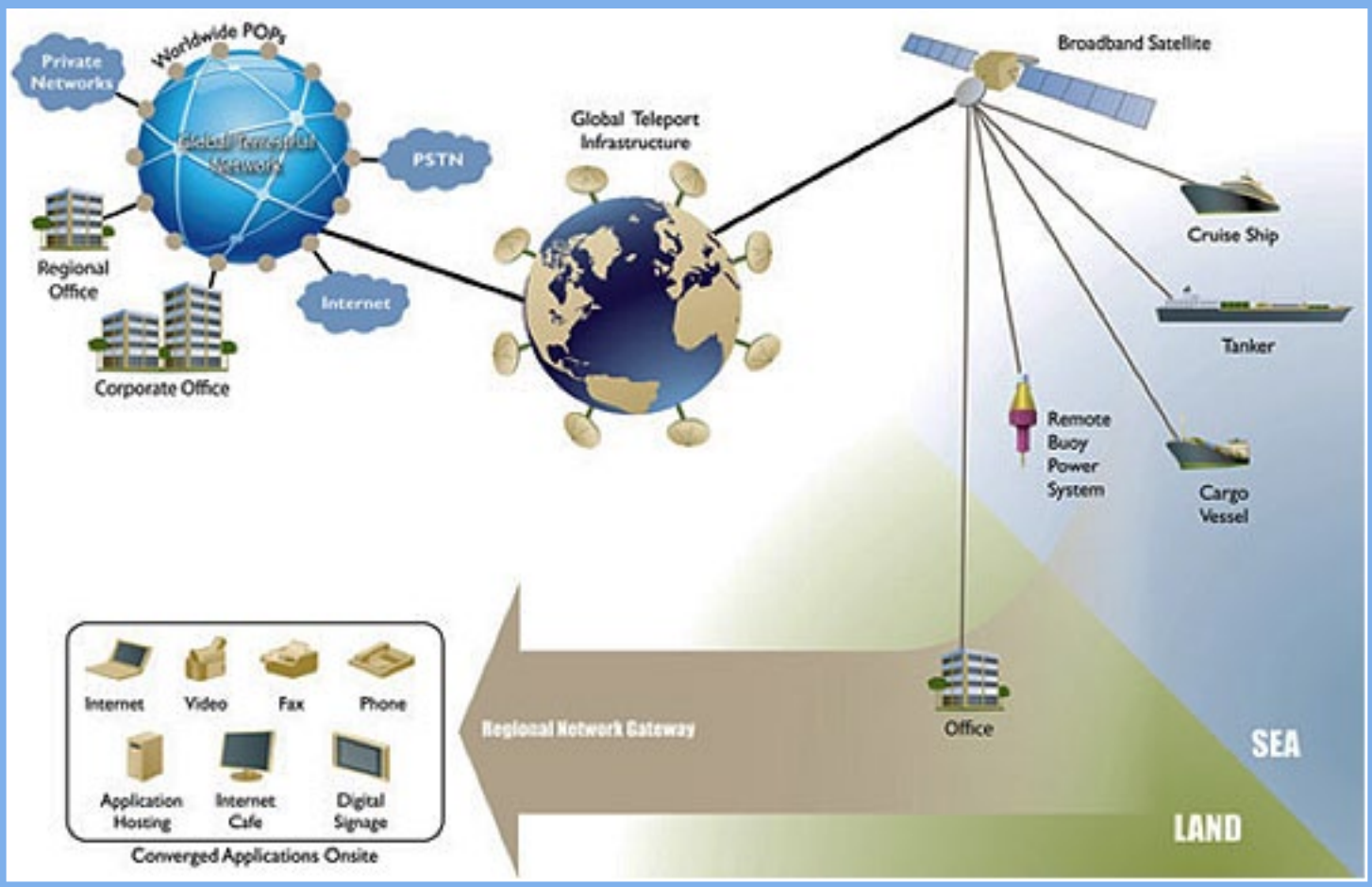
Even beyond the pace of technology changes, the industry is also changing quickly. Regional service providers are being consolidated through mergers and acquisitions. Operators are trying to become service providers. Telecommunications companies are entering the maritime satellite market. Distribution channels and pricing models are changing radically. The multitude of responses to a tender for fleet communications services can force buyers to think through another separate set of questions. How much bandwidth is needed and how should it be managed? Are bundled services necessary? Is a global or regional provider needed? How long should a contract last? Should the costs be treated as capital or operational expenses? Are applications bundled with the service or should those be separate contracts? The good news for the buyers is that competition and innovation in this market is alive and well!

Partnering To Allow Focus On Customer Missions

The truth is that many users really aren't interested in the types of signals available or choosing an antenna. They're more concerned with how well the network operates and how much it costs. Users seek confidence in knowing that they're receiving reliable coverage beyond their current geographic regions. They need the administrative capabilities to monitor assets, resource availability, crew and guest usage, and security. They want it future-proof. And they need it to be affordable. The customer basically wants an Ethernet cable connected from the mainland to the ship!

This is what has driven many companies to consider using a communications partner to help select and deliver the right combination of services and technologies to meet their needs. By managing the entire system, communication service providers have the ability to build a solution looking through an unbiased lens that optimizes technologies to address the specific needs of a client while also charting a course for the future. By working with a capable global service provider, users can focus more on their core missions and less on worrying about the complexity of the communications solution.

In addition, a communications service provider can build a service plan that will grow alongside its customers' operations. For example, some of our customers with large fleets are well served by a cost-effective 60 cm antenna with C-band service to provide basic voice and text messaging services. As we work with the fleet, or portions of the fleet, to build a case for increased performance or additional applications, we can lead the transition and upgrade process.



Harris CapRock's Global Teleport Infrastructure Newton Road infrastructure in Aberdeen, Scotland

On the other hand, some of our sites are better served by a high-capacity submarine fiber connection rather than satellite, or a hybrid network with both satellite and shore-side wireless networks. At the high end, we can now deliver more than 100 mbps of service to a single vessel nearly anywhere in the world, a level of service not practical just two years ago! Maritime communications customers ought to be focused on how they serve their own customers, how they make money and how they distinguish themselves in their market; a communications service provider can enable that focus by handling the complexities of the network.

Maritime technology has progressed rapidly to support the mission critical communication needs of the world's fleets, but that progress is far from over. We can expect to see many more innovations in the coming years, specifically for communications networks. By building a scalable and evolving global network with a combination of technologies to suit each company's needs, an end-to-end service provider allows crew and passengers across the oceans to continue to grow digitally closer to their home offices and reach operational efficiencies previously inconceivable.

About the author

Rick Simonian is president of Maritime Solutions at Harris CapRock Communications, a premier global provider of managed satellite and terrestrial communications solutions specifically for remote and harsh environments serving the energy, government and maritime markets. Harris CapRock owns and operates a robust global infrastructure that includes teleports on six continents, five 24/7 customer service centers, AssuredCare customer service and network management program, local presence in 23 countries and more than 275 global field service personnel supporting customer locations across North America, Central and South America, Europe, West Africa and Asia-Pacific regions. Harris CapRock offers a variety of end-to-end solutions supporting maritime operations for cruise, commercial shipping, marine systems, seafloor networks, and service and supply applications.