

# NAVIGATING NEW WATERS How to Leverage VSAT Innovation to Meet Growing Customer Needs





## The Next Wave of Connectivity

VSAT networks rule the seas. The question is no longer whether VSAT is the right choice for onboard connectivity, but how will maritime operators get the most value from their connectivity investment as they manage larger deployments and support a growing range of applications.

Here's what the picture looks like today: commercial shipping vessels sending diagnostic data back to shore, cruise ships connecting floating communities, yachts streaming live TV for passengers who can't miss a play, oil rigs supporting video surveillance to keep people and operations safe. And across these sectors, the goal is a fully connected operation that accommodates passengers, crew and business operations.

With the popularity of VSAT, more vessels are coming online than ever before. Northern Sky Research forecasts that 173,000 vessels will be added to the addressable maritime market over the next 10 years, with demand for capacity soaring. Already, VSAT maritime services have grown at a rate of 40% or more annually over the past five years (COMSYS). Market growth of fishing and yachts will top 100,000 by 2026.

For VSAT service providers, the maritime market brings new opportunity, but also new challenges. Managing a global wireless network across the ocean is increasingly complex — with more vessels to manage, more applications to support and more types of connectivity becoming available. That makes it ever more difficult to ensure a reliable service and manage costs.

Thankfully, a new wave of technology innovation can help maritime service providers cast a wider net — raising bandwidth levels, expanding coverage areas, and lowering both the cost of connectivity to end users as well as their own operating costs.



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## **Accessing High-Speed Capacity**

If there's one trend that defines a majority of the maritime market, it's the need for high-speed bandwidth. And one critical solution is High Throughput Satellites (HTS). For end users, HTS provides higher data rates and ability to power smaller, more compact terminals which is projected to make the VSAT service more economical.

NSR predicts that nearly 100 Gbps of HTS capacity will come online from GEO and Non-GEO orbits across C-, Ku- and Ka-bands, with average compound annual growth across all orbits and frequencies over 25 percent.

Several new HTS programs, based on the ST Engineering iDirect platform, are offering a range of business models that service providers can leverage to pursue a myriad of opportunities.



IntelsatOne Flex for Maritime is a customizable "Wholesale Mbps" service offered to Intelsat's maritime service providers, which uses capacity from across the Intelsat fleet, including Intelsat's next generation EpicNG satellites, the IntelsatOne global ground infrastructure and the HTS-optimized Velocity® platform, into one ecosystem. This integrated approach enables maritime service providers to gain simple access to Intelsat's mobility network while allowing them to maintain full control over their service differentiation.



SES Skala enables maritime customers to have easy access to customizable bandwidth and coverage packages, ensuring satellite capacity is effectively utilized. Vessels traversing the oceans can be serviced with seamless roaming, leveraging SES's global fleet of satellites.



Telenor is taking a regional approach with THOR 7, which delivers a Ka-band HTS payload over the North, Mediterranean and Baltic Seas.



Inmarsat Global Xpress (GX) provides seamless global coverage over Ka-band based on a managed service model. With GX, service providers can procure high-speed capacity over any maritime route, delivering a consistent customer experience.

Coming on the heels of HTS is the rise of Low Earth Orbit (LEO) satellites. LEO constellations are projected to add exponentially more high-speed bandwidth to the skies. This will accelerate the need for LEO/MEO/GEO interoperability to ensure the right capacity can be delivered for the optimal applications. Operators want to create hybrid services with spacecraft operating at different orbits, perhaps with different waveforms or capabilities, leveraging the unique attributes each constellation has to offer.



#### Scale Bandwidth

#### **Managing Service Levels in Complex Mobility Environments**

As more capacity across more beams and overlapping service areas are coming online, global bandwidth management is becoming increasingly important and future requirements call for expanded capabilities. How bandwidth is managed at a network level determines overall quality of service across vessel, ensures individual vessel Service Level Agreements (SLAs) experience, and maximizes investment in capacity.

Service providers will need a solution that can select and pool satellite capacity across multiple spot beams and satellite constellations, then leverage the combined bandwidth pool to partitioning bandwidth across their global customer deployments through the creation of SLAs that can be dynamically configured to prioritize traffic across vessels, applications and end-user types.



#### Implement Intelligent Terminals

#### **Innovations in Onboard VSAT Technology**

Satellite operators have been innovating to bring to market more abundant, and more cost-effective high-speed capacity. And ground infrastructure providers have been transforming the VSAT modem and antenna to leverage this new capacity introducing more compact and powerful technology offerings that improve hardware economics, increase data throughput, and make installation and maintenance more efficient.

Advancement in flat-panel antennas have increased network speeds and reduced operation costs. The result has been antennas that are smaller, thinner and more aerodynamic, combined with greater bandwidth capacity. These antennas' electronic steering capabilities also represent a significant advancement over traditional mechanical methods when it comes to ensuring constant satellite connection.

Today there are more than 10 manufacturers of flat-panel antenna models. The VSAT antenna industry is further innovating by offering an ultra-compact integrated terminal (a router board embedded in flat-panel antenna) and through multi-band antennas so vessels can connect to the best available network.

The VSAT modem is a technology lynchpin for delivering and advancing maritime service. The decision to install or replace a terminal system must factor in considerable CAPEX, OPEX and product longevity. That's why ground infrastructure manufacturers are developing software-defined modems that can be continually upgraded over-the-air to increase network capabilities and throughput levels, while dramatically extending the deployment life and minimizing installation costs and downtime.

## **A Platform for Opportunity**

ST Engineering iDirect is the clear leader in VSAT ground infrastructure for the maritime market with over 20 years of experience in mobility. Half of all VSAT terminals installed on maritime vessels are made by ST Engineering iDirect, according to Comsys. And nine of the top-10 maritime satellite service providers, according to NSR, rely on our platform to deliver the services needed for the "fully connected vessel."

Our high performance portfolio of modems, the highpowered Evolution and Velocity iQ series and the Dialog MDM series, provide a wide variety of choices to match application requirements to capabilities.

And as we look to the future we are advancing an open, converged platform to support multi-orbit capacity and multi-waveform terminals to enable our partners to deliver the right capacity for the right application at the right cost model to ensure a high-quality and seamless user experience.

We are driving the industry forward, delivering the best technology for maritime service providers to capture today's existing demands and capture new opportunities no matter which route they choose.

### The Standard of Excellence in Mobility

Our platforms are distinguished by a comprehensive range of advanced mobility technologies, such as:

- High bandwidth efficiencies with DVB-S2X
  and ACM
- Multiple return technologies for various traffic patterns: Adaptive TDMA, SCPC and MxDMA
- Automatic Beam Switching. A vessel can automatically connect to satellite beams as it travels across multiple footprints guaranteeing a seamless connectivity without any IP session interruptions.
- Global Bandwidth Management (GBWM) Service providers can easily configure, manage and control onboard remotes to ensure a high-quality connection.
- Quality of Service. Service providers can manage the use of bandwidth across their entire deployment to prioritize service levels based on multiple criteria, including bandwidth profiles for individual vessels or even specific onboard applications.
- OpenAMIP<sup>®</sup>. An industry-wide, open-source IP based protocol that facilitates the exchange of information between the antenna and the satellite router.
- Advanced Security. ST Engineering iDirect supports critical information security risk management principles, such as those reflected in the ISO 27001 standard and NIST Cybersecurity Framework.

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