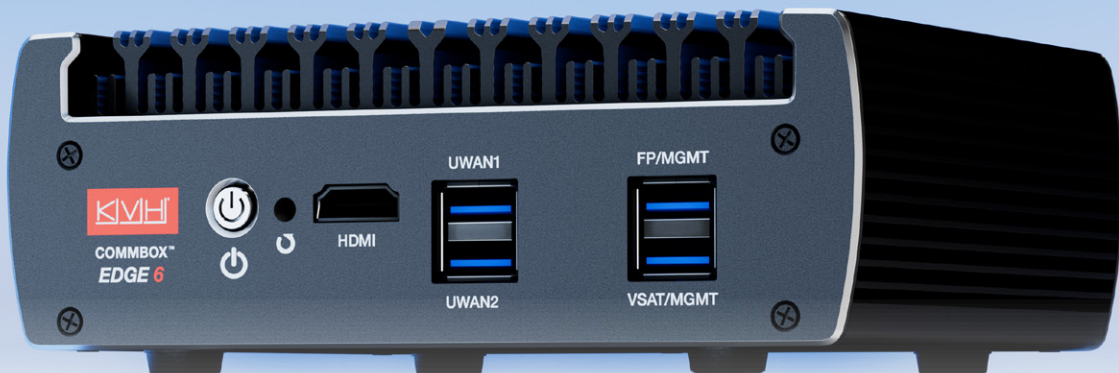


CASE STUDY

Smart Switching:

CommBox™ Edge Dynamic SD-WAN Delivers Efficient Operations, Fast Connectivity, and Improved Crew Welfare for LNG Fleet



Summary

A global liquefied natural gas (LNG) fleet faced connectivity challenges for operations and crew as they expanded their vessels' onboard network to include VSAT, Starlink, and Iridium Certus. The fleet intended these wide area networks (WANs) to support vessel operations and crew welfare while ensuring stable network connectivity and business continuity.

However, the initial WAN configuration made it difficult for the fleet to use all three networks efficiently due to a lack of dynamic integration and management. The LNG company worked with KVH to deploy the CommBox Edge Communications Gateway to take full advantage of the SD-WAN capabilities and other features to equip each vessel with dynamic connection switching and superior Internet access for the crew while improving reliability and rapid response to ensure continuity.

The LNG Connectivity Challenge

The LNG fleet needed to find ways to support their network connections and operations without disruptions. Initially, the vessel configuration was a VSAT terminal plus Iridium Certus with automatic switching from the primary service (VSAT) to the backup (Certus) in case of disruption or technical issues. The VSAT system also supported vessel operations and crew connectivity, raising bandwidth usage and cybersecurity concerns.

“The VSAT system was only used for crew welfare on a shared PC in a common area. There wasn’t the ability to bring your own device and access the Internet,” said Robert Blackman, KVH’s Senior Manager, Service Business Development.

In this configuration, the fleet prioritized vessel operations over crew welfare. This ensured business needs received the connectivity required, but diminished the fleet’s ability to provide a suitable level of crew connectivity to help maintain seafarers’ mental health and improve morale. As a result, the LNG fleet decided to add Starlink to expand access to necessary bandwidth for crew members and vessel operations. Thanks to its high speed and affordable data, Starlink offered the capacity to support multiple users for crew connectivity. However, there were several key challenges:

- *“You have these crew members bringing their own devices. They’re just going to chew through the bandwidth quickly,”* said Robert Blackman, Senior Manager, Service Business Development.
- Additionally, there was no integration between Starlink and VSAT. Each vessel could not take full advantage of the two primary systems – Starlink and VSAT – to support business connectivity and operations in case of an outage without manual reconfiguration of the onboard networking.

As a result, the LNG fleet could not take full advantage of the services they had on board, failed to maximize the efficiency offered by multiple WANs, and didn’t have flexible, dynamic control over the network operations and use.

The Solution: CommBox Edge and Dynamic SD-WAN

Fleet managers contacted KVH to determine if the CommBox Edge Communication Gateway would be a potential solution. The CommBox Edge integrates and manages all onboard communications, including 5G/LTE, VSAT, Starlink, OneWeb, Wi-Fi, Ethernet, and more. The easy integration and user interface enable the rapid creation of hybrid and bonded networks along with detailed data and app policies that can be applied fleetwide. Fleet managers were very interested in the expansive suite of cloud-managed tools to integrate and manage all their onboard connections, including:



Monitoring real-time data and usage with an intuitive dashboard



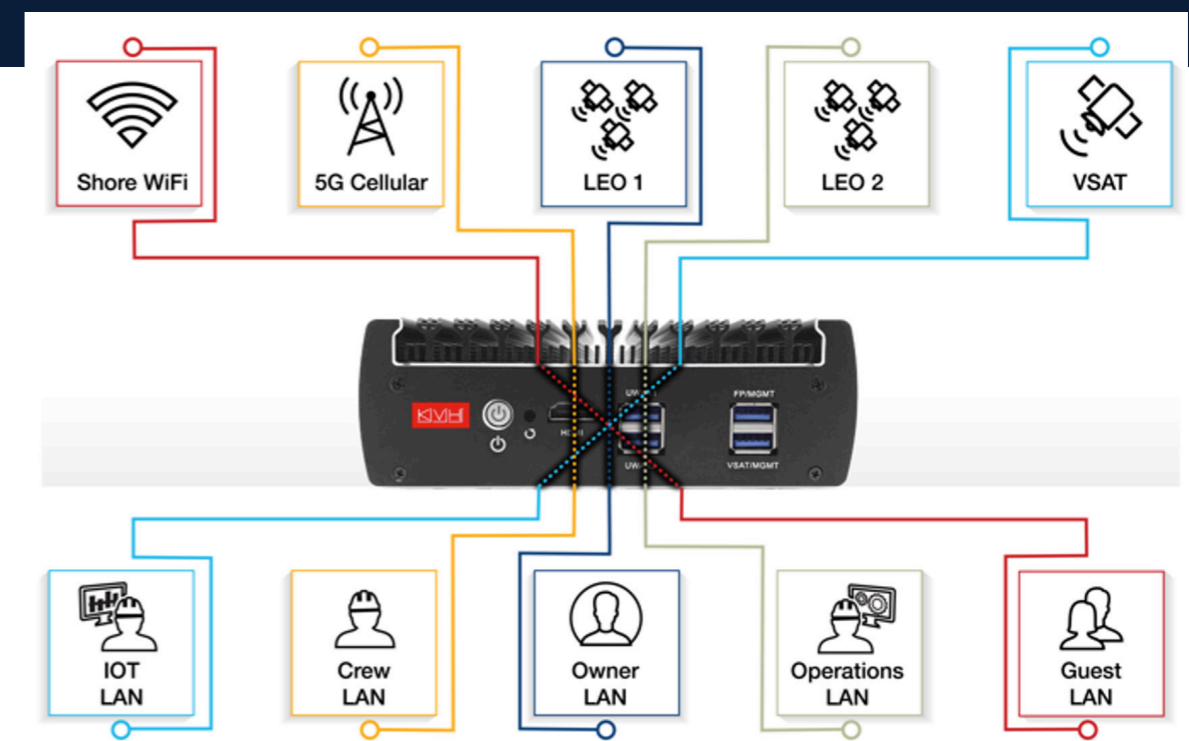
Managing Starlink and other WAN sources with ease



Bonding networks and optimizing routing for higher performance

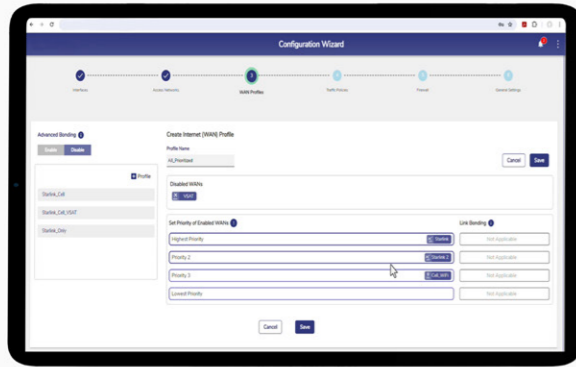


Protecting onboard systems with deep packet inspection, traffic policies, VPN, and the Secure Suite



CommBox Edge can connect with and manage as many as 12 WANs and create and manage as many as 30 LANs, with dynamic switching and performance adjustments





CommBox Edge WAN Connection switching (SD-WAN) relies on easily defined WAN Profiles to control Connection Switching (Selecting the WAN Route), Connection Bonding + Balancing (WAN Routing over multiple connections at the same time), Virtual IP Options, and a POP Egress Option

The highest priority was CommBox Edge’s dynamic Software-Defined Wide Area Network (SD-WAN) management, which delivers efficient traffic distribution across networks. With the CommBox Edge onboard, LNG vessel and IT managers could manage all WAN sources – Starlink, VSAT, and Iridium Certus – via a single cloud-based tool.

Working with KVH application engineers, the LNG IT team defined and deployed multiple network and user profiles along with rules to manage which applications and services would use each network at any given time. This offers not only outstanding versatility but rapid failover and superior business continuity.

“We go beyond simple connection switching. CommBox Edge permits you to create multiple switching profiles to give you redundancy that you might not have had before,” explained Chris D’lorio, KVH’s Senior Director of Application Engineering. *“You can distribute the traffic over different connections and have other connections serve as the backup or failover for those connections. For example, this new approach enables our customer to rely on Starlink for crew access on the LNG vessels while providing operations with its own dedicated, high-availability pipe. But now, Starlink can also serve as a rapid, automatic failover option to ensure no operational interruption should there be an issue with the VSAT.”*

At the same time, CommBox Edge offers easy management of separate local area networks and connectivity for crew members and vessel operations.

“Now you’re providing crew welfare, but it’s not interfering with the operations. In fact, it’s actually enhancing vessel operation because you’re giving them redundancy,” added D’lorio. *“The segregation of crew and operational networks ensures that there’s no interference by crew members using the same data for vessel operations.”*



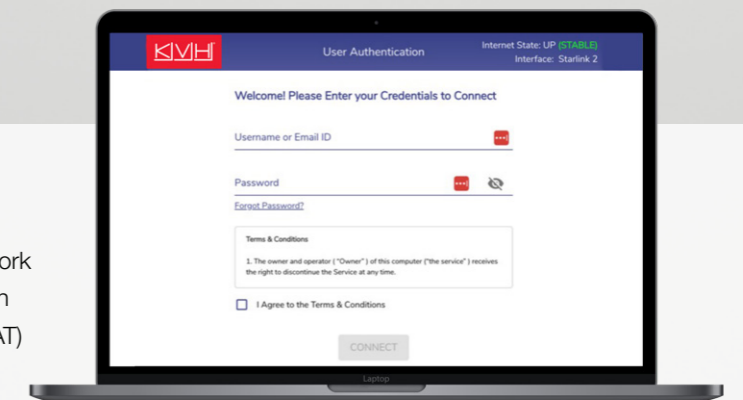
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The combination of Commbox Edge and Starlink also delivers a new level of control regarding crew member network usage, including on their own devices.

“CommBox Edge enabled us to set up a captive portal onboard each vessel,” Blackman said. *“This approach allows the fleet IT manager or vessel captain to allocate a certain amount of data per day, week, or month to crew members based on the profile created in CommBox Edge and assigned to them. Crew members can log into the secure portal when off watch and use their data as they see fit, whether calling home, using social media, helping their kids with homework, or making sure that their bills at home get paid. Once they have consumed their data for that period, crew members wait until the cycle is finished for their next data allocation.”*

The CommBox Edge Captive Portal offers easy management of crew connectivity with access and permissions dynamically changing based on the network available (e.g., video streaming might be allowed when connected to Starlink but not when connected to VSAT)





Conclusion: Improved Efficiency and Happier Crew

The LNG fleet came to KVH with several critical challenges, including the inefficient use of its onboard WAN options and the challenges of managing crew connectivity to ensure crew welfare and morale. The deployment of CommBox Edge and its SD-WAN and Captive Portal capabilities overcame these challenges. The Starlink, VSAT, and Iridium Certus services are now fully integrated, enabling each WAN to back up the others automatically. The available services and applications dynamically change based on the network in use, taking full advantage of Starlink's speed and lower-cost data, while restricting non-essential activities over the VSAT.

And from a crew welfare perspective, Robert Blackman explains, *"this fleet has 10 vessels and 349 users. That means our customer and KVH have given 349 mariners access to the Internet to communicate with their families easily and affordably."*



Want to learn more?

Visit kvh.com/edge and kvh.com/edgesecure

For additional details about CommBox Edge's network and bandwidth management and cybersecurity capabilities.

