



## GSM over Satellite Passenger Ships at Sea



*“RAD’s development of the Vmux-400 enables us to offer mobile services over an IP network with optimal bandwidth usage. The Vmux-400 operates very satisfactorily and has proven its high stability and robustness.”*

Roar Walderhaug, Chief Technology Officer,  
Maritime Communications Partner

### Goal

Enable affordable and accessible GSM connectivity on-board passenger ships cruising the North Sea.

### Solution

Vmux-400 A-bis and A-ter optimization gateways ensure that satellite links are utilized as efficiently as possible, increasing the number of calls over the available bandwidth.

### Benefits

- A-bis (BTS-to-BSC) bandwidth optimized by a factor of up to 3:1
- Satellite bandwidth reduced by 50 percent or more
- Unique clock regeneration enables backhaul over packet-switched networks

## MCP and RAD Make Regular GSM Service Affordable and Accessible on Passenger Ships

### Vmux-400 Lowers Backhaul Costs Across the Radio Access Network

You’re on-board a ship cruising the high seas and you realize that you have to call home. Or someone back home has to call you. But you’re hundreds of kilometers from the nearest cellular operator’s service area. So what do you do? What can they do back home?

Maritime Communications Partner AS (MCP), a Norwegian-based provider of onboard cell phone connectivity to cruise ships and ferries that provides global coverage through leading suppliers of maritime satellite services, has come up with an ideal solution.

MCP employs an Ericsson Base Station System (BSS). The Base Station Controller (BSC) at MCP’s headquarters in the Norwegian coastal town of Grimstad, is connected over IP satellite modems to Base Transceiver Stations (BTSs) on a fleet of cruise ships that each year transport approximately 1.8 million passengers and 200,000 cars on eight North Sea routes between Denmark, Sweden, Norway, Holland, and Great Britain. MCP connected RAD’s Vmux-400 GSM A-bis optimization gateways at both ends of those satellite links.

The Vmux-400 enables cellular operators to lower backhaul costs across the Radio Access Network (RAN) by optimizing A-bis (BTS-to-BSC) bandwidth by a factor of up to 3:1, significantly reducing operating expenses.

“Interoperable with equipment from other major vendors, the Vmux-400 ensures that satellite links are utilized as efficiently as possible, eliminating inefficiencies by not transmitting idle and silent frames,” explains Toby Korall, Senior Product Line Manager at RAD. “In this way, the Vmux-400 can reduce satellite, microwave or wireline bandwidth by 50 percent and more, enabling service providers to offer their customers a more attractive complete solution.”





### GSM over Satellite Passenger Ships at Sea

***“The Vmux-400 can reduce satellite, microwave or wireline bandwidth by 50 percent and more, enabling service providers to offer their customers a more attractive complete solution.”***

Toby Korall, Senior Product Line Manager, RAD Data Communications

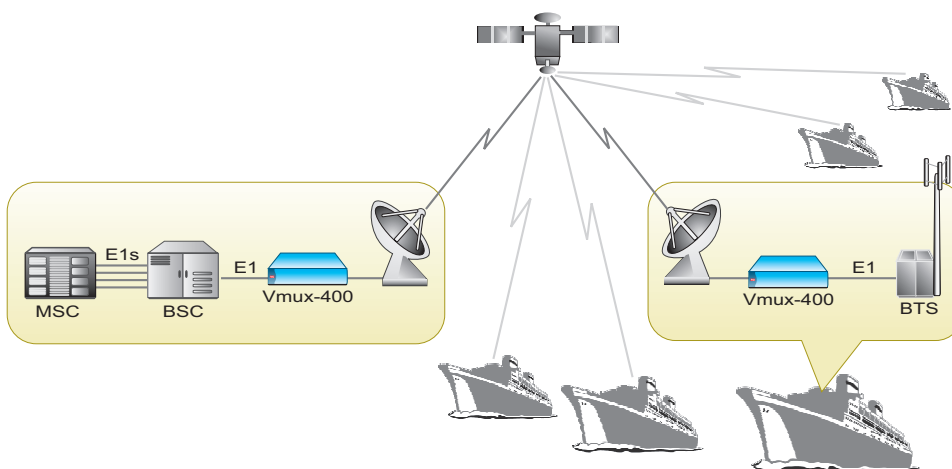


### ***Unique Clock Regeneration Enables Backhaul over Packet Switched Networks***

A unique feature incorporated into the Vmux-400 provides reliable regeneration of very accurate and sensitive 2.048 MHz TDM-based clocks for synchronized network operation between the BSC and BTS. This enables the use of packet-switched networks and, in this case, the IP satellite modems on-board the ships for the transport of cellular voice traffic.

By dynamically supporting different speech codecs, moreover, RAD's Vmux-400 allows up to twelve simultaneous calls using the higher-quality Full Rate codec when demand is low and up to 24 simultaneous calls using the Half Rate codec when demand peaks, doubling the number of cellular calls that are made to and from a ship at any one time.

“RAD's Vmux-400 enables us to offer mobile services over an IP network with optimal bandwidth usage,” adds Roar Walderhaug, MCP's Chief Technology Officer. “The Vmux-



data communications

[www.rad.com](http://www.rad.com)

**Corporate Headquarters**  
RAD Data Communications Ltd.  
24 Raoul Wallenberg Street  
Tel Aviv 69719, Israel  
Tel: 972-3-6458181  
Fax: 972-3-6498250  
email: [market@rad.com](mailto:market@rad.com)

**North America Headquarters**  
RAD Data Communications Inc.  
900 Corporate Drive  
Mahwah, NJ 07430, USA  
Tel: (201) 529-1100  
Toll free: (800) 444-7234  
Fax: (201) 529-5777  
email: [market@radusa.com](mailto:market@radusa.com)