



OPTIMIZING COMMUNICATIONS FOR **OFFSHORE OIL & GAS**

Satellite-based networks have become the infrastructure of choice for offshore oil and gas applications due to advancements in stabilized antenna systems, technologies for optimizing bandwidth and methods of sharing bandwidth capacity. While each organization is unique, there are common requirements for offshore oil and gas communications that can be addressed with advanced solutions, including:

- Immediate, highly reliable and cost-effective connectivity from exploration vessels, workboats, production platforms and tankers to offices onshore
- Transmission of voice communications, video and real-time data from above and below the water line
- Local and wide area networks for transport of business applications, continuous monitoring and measurement data
- Equipment that can withstand harsh environments
- Simplified configuration and network management for deepwater facilities and vessels where specialized communications staff may not be “on site”

RELIABLE
CONNECTIVITY

IMMEDIATE
REMOTE ACCESS

SUPERIOR
PERFORMANCE

LINK EFFICIENCY

AUTOMATIC
APPLICATION
DETECTION



COMTECH EF DATA SOLUTIONS

Comtech EF Data offers reliable, flexible and cost-effective solutions for your satellite-based network infrastructure. Our unique technologies can help solve your communication challenges between onshore offices and your geographically dispersed rigs and vessels. With products installed in 160+ countries, our satellite modems, bandwidth and capacity management systems and RF products facilitate communications for offshore oil and gas facilities.

SATELLITE MODEMS

We offer the widest range of bandwidth efficient modems available in the satellite industry. Based on innovative designs, our modems include application software to provide superior performance and features. Ideal for optimizing satellite communications, our modems are designed using highly advanced FPGA-based architectures and powerful 32-bit processors, allowing an unprecedented feature set and flexibility. Most systems are available in a 1RU chassis, providing the rack adaptability you need for offshore facilities and vessels.



Available with numerous configurations and options, our family of bandwidth efficient modems offers key functionality for satellite-based fixed and mobile network communications.

Flexible Configurations

To support deployment in remote and hub environments, we offer both L-Band and 70/140 MHz systems, plus data rates from 2.4 kbps to 155 Mbps. Our extensive range of IF frequencies provides the options you need for operation with single or multiple transponders, and configurations to accommodate Low Noise Block Converters and Block Up Converters.

Variety of Forward Error Correction & Modulation

We offer traditional and advanced forward error correction. When combined with higher order modulation, our solutions provide increased coding gain, lower decoding delay and significant bandwidth and power savings. Ideal combinations are available to support small aperture antennas that are commonplace in remote and mobile applications, such as 5/16 Turbo Product Coding forward error correction with BPSK modulation.

Single Carrier Per Channel (SCPC) Operation

Our modems utilize SCPC operation, which is the lowest overhead and most efficient method for satellite communications transport.

SATELLITE MODEMS

Fast Acquisition SCPC Demodulators

When establishing or re-establishing connectivity due to blockages, our modems can quickly acquire the signal for continued communications.

IP-Based Functionality

Modems configured with the IP Module maximize network efficiency. Advanced features available with the IP Module are:

- Header Compression – Configurable on a per-route basis and can reduce the required Voice over Internet Protocol (VoIP) bandwidth by as much as 60%
- Payload Compression – Reduces the data frame size and satellite bandwidth required to transmit across links, optimizing traffic and reducing bandwidth up to 40%
- Quality of Service (QoS) – Reduces jitter and latency for real time traffic, provides priority treatment to mission critical applications and allows non-critical traffic to use the remaining bandwidth

DoubleTalk™ Carrier-in-Carrier®

Our revolutionary DoubleTalk Carrier-in-Carrier is based on Applied Signal Technology's patented "Adaptive Cancellation" technology that allows full duplex satellite links to transmit concurrently in the same segment of transponder bandwidth – doubling your throughput. And, when combined with our advanced forward error correction and modulation techniques, DoubleTalk Carrier-in-Carrier delivers unprecedented satellite transponder utilization.

With the flexibility and features provided by our modems, you can increase link efficiency, optimize bandwidth and reduce the total cost of ownership associated with satellite communications.



Optimize Bandwidth

Increase Link Efficiency

Reduce Total Cost of Ownership



RF PRODUCTS

We offer an extensive line of RF products – converters, block up converters, amplifiers, transceivers and terminals – for a range of configurations. Tailored to withstand harsh environments, rugged platforms, field replaceable power supplies, redundancy and a variety of frequencies are just some of the options available.

Block Up Converters (BUCs)

Our LPOD family of BUC products are designed to meet the special needs of the offshore sector.

Radome-enclosed antenna systems provide both thermal and size/weight challenges. Comtech's

extensive experience in the design of outdoor RF transceivers led to the LPOD family's efficient thermal and mechanical package.



Recognizing the evolution of L-Band IF systems, the LPOD is designed to eliminate the traditional requirement for the modem to supply a DC power source and a 10 MHz reference to the BUCs and LNBs. The LPOD's optional internal reference and LNB bias T greatly simplify multi-carrier operation and provide cost-effective redundant solutions.

Amplifiers

We offer a full amplifier product line with varying configurations – indoor, outdoor and low noise. The outdoor Solid State Power Amplifiers (SSPAs) are typically the category of choice by the offshore oil and gas organizations.

Transceivers

Flexibility and ease of installation are integral to the transceiver line. We offer a line of high-performance C-, X- and Ku-Band transceivers and a multi-band system, the MBT-4000. The MBT-4000 is a unique, outdoor Multi-Band RF transceiver. It performs C-, X- or Ku-Band to L-Band down conversion and L-Band to C-, X- or Ku-Band up conversion. The rugged construction of the MBT-4000 is ideal for mobile and transportable applications.

VIPERSAT NETWORK PRODUCTS – BANDWIDTH & CAPACITY MANAGEMENT

Establishing and managing communication networks is easy with our bandwidth and capacity management products, Vipersat Management System (VMS) and Vipersat Circuit Scheduler (VCS). The Vipersat Network Products integrate with our satellite modems to provide a seamless IP-based infrastructure for satellite networking. The solution is based on dynamically managed SCPC (dSCPC) and automatic application switching technologies. All aspects of the satellite network can be configured, controlled and monitored by VMS. And, VCS coordinates and optimizes network usage while assuring the highest available quality of service. Our solutions increase satellite network efficiency, reduce the bandwidth required for offshore data collection, and provide real-time, interactive connectivity.

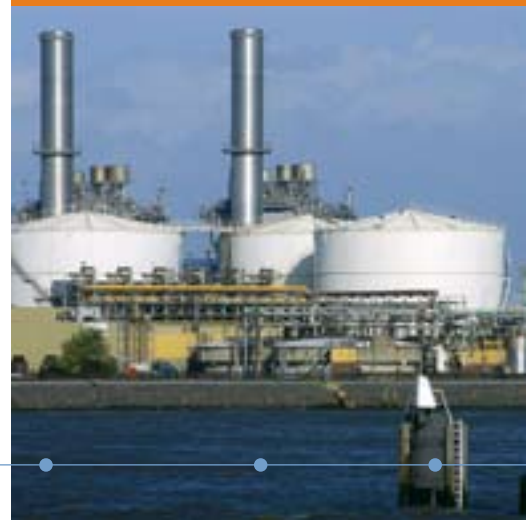


Dynamic Bandwidth Allocation

The dynamic SCPC technology automatically resizes the SCPC carrier from the offshore site or vessel, based on the application, QoS rule or data load. DAMA carriers and associated RF constraints are avoided. The SCPC carrier can also be resized via a pre-determined schedule using the VCS or manually resized by the VMS operator.

Remote Office

Field personnel no longer need to depend on cellular or satellite phone services. Utilizing VoIP phones for connectivity to your organization's telephone system, accessing e-mail and transmitting file transfers are all possible via our real-time, interactive, two-way connectivity between remote locations and your hub. And, with adequate RF sizing of your remote antenna and BUC, operators can have mesh connectivity between remotes for VoIP calls and video conferences.





VIPERSAT NETWORK PRODUCTS – BANDWIDTH & CAPACITY MANAGEMENT

Network Entry

Vessels or platforms equipped with Vipersat-enabled IP modems plus the appropriate antenna equipment can automatically join the network. The VMS detects the new node and sends tuning commands to the modem, switching it out of burst mode and into a dedicated SCPC connection. This connection provides low latency and requires limited bandwidth.

Satellite Roaming

Our satellite roaming functionality ensures connectivity for vessels on-the-move through different satellite footprints. Through the use of an integrated location server, Roaming Oceanic Satellite Server (ROSS), remote modems can interface with stabilized, auto-tracking antennae – initiating and monitoring connectivity, and controlling the modem configuration during satellite handoff. The ROSS server provides considerable added value, including:

- Link budget mapping – contains a series of images representing individual satellite footprints and calculates link budgets on the fly
- New transmission control mapping – identifies transmit or don't transmit regions; disables transmission based on location
- World vector shoreline database rendering – provides database of world vector shorelines with better resolution than the Federal Communication Commission (FCC) and Earth Station on Vessels (ESV) requirements

Comtech EF Data offers reliable connectivity, immediate remote access, superior link efficiency and performance for your satellite-based network infrastructure. Our unique technologies can help solve your communication challenges for exploration/drilling, production and transportation. Contact us to learn more – our specialists are prepared to assess where our solutions can benefit your network.



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