UNIVERSAL HARDWARE PLATFORM

COMMUNICATION ON THE MOVE
UHP COTM

Capabilities
- Support for different antennas
- Seamless global coverage
- High-speed connectivity
- Flexible topology and waveforms
- Efficient use of satellite bandwidth
- Easy to deploy and operate
- Reliable equipment with redundancy

Advantages
- Scalable solutions applicable for fishing boats, SNG and cruise ships
- Meets demands of the most complex mobility applications
- Reliable broadband access for the crew and passengers everywhere
- Efficient multiservice VSAT platform for fixed and COTM terminals
WHY USE UHP FOR COTM?

- Bandwidth-efficient **DVB-S2X** modulation and coding
- Highest **TDMA efficiency**: 96% and fast BW allocation
- Support for cellular backhaul 2G/3G/LTE traffic for wireless roaming onboard
- **OpenAMIP** and other proprietary protocols to interface with mobile antennas
- Automatic **beam switching** with change of frequencies and mode of operation
- Support for multi-spot **High-Throughput Satellites**
- **Doppler effect** compensation up to 1300 km/h speeds
- Compact, light-weight, low-power **router board for integration** into antennas
COMMUNICATION ON THE MOVE
TDM/SCPC NETWORK

- Dedicated SCPC channels to each ship
- MODCODs up 64APSK in both directions
- Data rates up to 225 Mbps in both directions
- Shared forward (TDM) channel with statistical traffic multiplexing and advanced QoS
- Low-CAPEX scalable TDM/SCPC Hub that can be software-upgraded to TDM/TDMA Hub
- Recommended for networks with a small number of terminals and very intensive traffic, e.g. cruise ships with Tx traffic above 10 Mbps
COMMUNICATION ON THE MOVE
TDM/TDMA NETWORK

- Forward (TDM) channel with DVB-S2X MODCODs and 225 Mbps throughput
- MF-TDMA return channel with MODCODs up to 16APSK and throughput up to 27 Mbps/carrier
- Automatic ACM and TLC in both directions
- Dynamic bandwidth allocation with intelligent QoS both in forward and return channels
- Recommended for networks with multiple terminals and modest traffic in return channel, e.g. cargo/small ships, airplanes, SNG vehicles
COMMUNICATION ON THE MOVE
TDM/SCPC MULTI-SPOT NETWORK

- Dedicated SCPC channels to each ship
- MODCODs up 64APSK in both directions
- Data rates up to 225 Mbps duplex
- Shared forward (TDM) channel with statistical traffic multiplexing and advanced QoS
- Requires forward TDM channel and capacity for SCPC return channels in each spot-beam
- Automatic beam switching
- Recommended for networks with a small number of terminals and very intensive traffic, e.g. cruise ships with Tx traffic above 10 Mbps
COMMUNICATION ON THE MOVE
TDM/TDMA MULTI-SPOT NETWORK

- Forward (TDM) channel with DVB-S2X MODCODs and up to 225 Mbps throughput
- MF-TDMA return channel with MODCODs up to 16APSK and throughput up to 27 Mbps/carrier
- Requires TDM/TDMA subnetwork in each spot-beam of the target coverage
- Supports automatic beam switching with TDM/TDMA or TDM/SCPC network topologies
- Recommended for networks with multiple terminals and modest traffic in return channel, e.g. cargo/small ships, airplanes, SNG vehicles
UNIVERSAL HARDWARE PLATFORM

DISRUPTIVE INNOVATIONS
SOFTWARE DEFINED NETWORK

- Universal routers for all network roles
- Dynamic SW-definable mode of operation
- Quick and easy transfer/swap of the functionality SW licenses
- Reduced CAPEX for spare parts and network upgrades
- Quick and easy field replacement and change of network topology

- Powerful L3/L2 router with 190,000 pps
- Mesh: eliminate double bandwidth allocation
- Multiple configuration profiles
- Embedded Computer for advanced applications and traffic processing
- Sophisticated QoS with VLAN management and built-in 2G, 3G & LTE backhaul optimization
BANDWIDTH EFFICIENCY

- Dual DVB-S2X demodulators with separate IF inputs
- Up to 500 Msps DVB-S2X ACM up to 256APSK
- Integrated high-speed DVB-S2X modulator for SCPC return channel
- Proprietary encapsulation with 99% efficiency and advanced QoS
- Up to 20% savings on bandwidth

- Multichannel MF-TDMA LDPC demodulator
- 12 MODCODs with QPSK, 8PSK & 16APSK
- Data rates up to 27 Mbps/terminal
- Hubless and Mesh topologies
- Highest TDMA efficiency of 96% and flexible frame structure
- >20% advantage over other TDMA implementations
MULTI-SPOT HTS HUB

- Designed for multi-spot HTS networks
- Based on low-CAPEX universal controllers
- Required functionality is activated by SW license as network develops
- Easy SW license transfer between teleports, beams and satellites
- Cost-effective scalability up to 64 spot-beams and 500 000 terminals
- Self-healing network architecture
- Dynamically assigned network roles
- Automatic M:N local and geographic redundancy
- M:N site diversity with multiple teleports for increased availability
- Saves over 40% of Hub CAPEX due to functionality SW license reuse
DUAL-GATEWAY

- Hierarchical multilevel topologies with basic STAR terminals
- Direct connectivity of the terminal with the Hub and respective Gateway
- Unlimited number of regional Gateways
- High spectral efficiency of all TDM channels of the Hub and Gateways
- Compatible with multi-sport HTS satellites and dual-band solutions
- Dual-Gateway ensures more than 50% savings compared to Mesh network
BEAM SWITCHING

- Preconfigured, locally-stored coverage maps and network parameters
- Automatic round-robin and map-based switchover between satellites or beams
- Change of mode of operation when required
- Automatic adjustment of uplink power and Doppler effect compensation up to 1300 km/h
- Communications with mobile antenna based on standard OpenAMIP protocol
- COTM terminal retains the same IP address after switchover to another hosting network
QUALITY OF SERVICE

- Classification of IP packets
- Customized action rules
- Traffic policy manager
- Multichannel hierarchic traffic-shaper:
  - CIR – committed data rate
  - MIR – maximum data rate
  - MIR to CIR slope factor
  - Day/Night CIR change
- Multiple Tx priority queues with Class-Based Queueing