Leveraging the Satellite Communications Advantage Through Maximizing Network Hierarchy Flexibility

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ROMANTIS GROUP

ROMANTIS is a vertically integrated group of the companies specialized in satellite communications, generating value for its customers through superior services. ROMANTIS group members are specialized in capacity trading, VSAT hardware manufacturing and service provisioning based on own satellite platforms deployed worldwide. Our focus is on Service providers for corporate and government customers in variety of market segments: telecom, corporate, broadcasting and etc.
# Satellite communications in Oil & Gas industry

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Requirements for Oil & Gas - class VSAT

- Flexible topology, supporting P2P, Star and Mesh
- Compatible with fixed and mobile antennas
- Bandwidth on demand with multilevel QoS
- Efficiency for reversible and asymmetric traffic
- Best cost of ownership regardless of network size
- Ready to be built-in, low power consumption
- Reliable operations with minimal maintenance

Previous days multiple technologies were used to meet such requirements...
...Today there is just one universal VSAT platform that does even more
Introducing ROMANTIS UHP Universal Hardware Platform

- Various modes of operation: SCPC, TDM/SCPC, TDM/TDMA, TDMA Full Mesh
- All topologies: “Point-to-Point”, “Star”, “Hybrid”, “Full Mesh”
- High-speed communications with throughput up to 85 Mbps per terminal
- DVB-S2 VSAT technology with bandwidth-efficient LDPC coding in TDMA channel
- Innovative TDMA protocol with proven efficiency of 96%
- Built-in adaptive 500-channel traffic manager specially designed for VSAT
- Ultra-low latency VSAT system with round-trip delay about 570 ms
- Support of VLAN, multi-level QoS, codec-independent handling of real-time traffic
- Local management console and Network Management System
- Ultra-fast startup - network is operational in 20 seconds after power up
ROMANTIS UHP Satellite Router is “all-in-one” technology with architecture based on single, universal hardware platform supporting various functionality. All supported modes of operation are software selectable without need in hardware replacement or on site visits:

- **SCPC Terminal** used to implement dedicated SCPC channels of any asymmetry or can be a part of TDM/SCPC multisite network
- **TDM/TDMA Terminal** acts as a remote earth station of TDM/TDMA network, communicating with network Hub with “Star” topology
- **TDM/TDMA MESH Terminal** remote station of TDM/TDMA networks that supports “Mesh” topology with another terminals
- **TDM/TDMA Hub** performs network management and gateway functionality for TDM/TDMA and TDM/TDMA Mesh terminals
- **TDM/TDMA Inroute** additional Inroute (TDMA) channels for TDM/TDMA Hubs allowing to increase network bandwidth and number of supported terminals
- **Full Mesh TDMA Terminal** hub-less earth station that interacts with another similar stations with “Full Mesh” topology
Dedicated Channels

- Multi-purpose trunk channels
- Transmission of real-time traffic
- GSM Backhaul
- Connection of remote offices
- Content/data delivery

UHP Advantages:
- High-speed transmission
- Low latency and jitter
- Minimal CAPEX and OPEX
Star-topology networks

- Corporate Networks
- Broadband Access, UTS
- Redundancy Networks
- GSM Backhaul
- SCADA

UHP Advantages:
- Efficient capacity utilization
- Industry lowest CAPEX and fast deployment
- Full flexibility of network topology and mode of operation
Multi-level topology networks

- Corporate Networks with advanced regional hierarchy
- Telephony Networks with multiple gateways
- Multi-level Videoconferencing

UHP Advantages:
- Any topology without HW replacement
- Efficient capacity utilization
- High scalability
Any topologies w/o hardware replacement

Point-to-Point

Star

Hybrid

Full Mesh

Every site may act as remote terminal, TDM/TDMA Hub or hub-less TDMA station

Various modes of operations and supported topologies can be activated remotely by software
Intelligent Bandwidth Management

Supported carrier modes:

• **TDM** – Outroute channels for “hub and spoke” networks
• **TDMA** – Inroute channels for “hub and spoke” networks / Full Mesh network carrier
• **SCPC** – P2P permanent, high throughput links and IP broadcasting networks
• **cSCPC** – controlled, on-demand SCPC channels

Bandwidth efficiency:

• True IP over satellite without superfluous encapsulations
• LDPC coding in any type of supported carriers
• Innovative TDMA protocol with efficiency up to 96% vs SCPC
• Adaptive dynamic bandwidth allocation without Aloha
• Automatic uplink power control at every site
Conditional Bandwidth Setup
TDM/TDMA/cSCPC network

Setup #1. Normal operations
- Outroute channel from Hub to all network terminals
- Inroute channels shared by all network terminals for transmission to Hub or to other terminals (Mesh)

Setup #2. Collaboration / Telepresence
- On demand SCPC carrier transmitted from any assigned site with high-resolution video, RT data and other mission-critical information required for remote situation analysis and decision making

Various carrier setups can be preconfigured and easily activated from the Hub on-demand
TDMA Quasi-Star Networks

- Single TDMA carrier to receive and transmit data for all sites
- Best efficiency for asymmetric and reversible traffic
- Statistic multiplexing between all the sites and directions
- “Quasi-Star” topology with small apertures on remotes
- Hub-less operations with unlimited number of gateways
- The minimal network can be deployed just in 120 kHz
Customization-friendly VSAT Platform

- Industry-smallest, light-weight VSAT platform
- Metal-case unit for standalone use or built-in board for OEM customization
- High reliability due to single-board design without fan and any mechanical contacts
- Low power consumption allows using terminals with various power sources
- LAN and Serial user interfaces
- Rack-mounting kit holding up to 2 routers
Compatibility with various RFUs and antennas

- Standard L-band interface compatible with C, Ku and Ka-band RFUs, provisioning of DC power and 10MHz
- BUC transmission off when outbound Rx lost
- Open interface to antenna controllers for exchange info about actual geo location and signal quality
- Several configuration profiles support beam roaming for mobile applications
- Compact design, 24VDC power supply allows installing UHP router directly into all-outdoor systems or just inside a radome
- Digital and analog signals for satellite pointing/tracking guidance
Thank you for your attention!

For more information visit – WWW.ROMANTIS.COM