

TDM/TDMA HUB

MULTISERVICE VSAT NETWORK

TDM/TDMA STAR

TDM/TDMA MESH

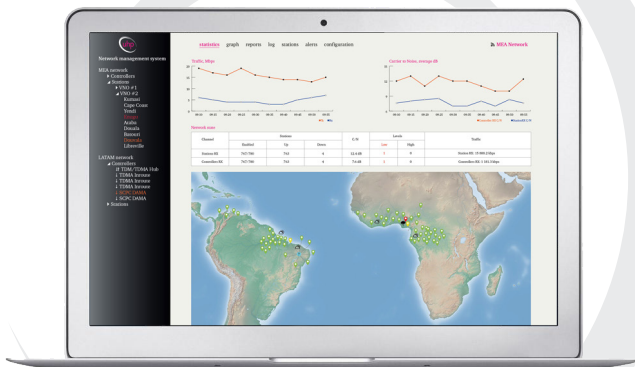
TDM/SCPC

DUAL GATEWAY

VNO SUPPORT

1:1 REDUNDANCY

UHP TDM/TDMA Hub has a high-availability modular design, based on principles of distributed computing. The Software-Defined Architecture pioneered by UHP Networks is at the core of the Hub design. The Hub is composed of Universal Controllers (UC), interconnected with Gigabit Ethernet links on the data side and with IF splitter/combiner on the IF side. Each UC is implemented with a single UHP-200 module and has two IF interfaces and two Gigabit Ethernet interfaces. Depending on the software license installed, a specific UC can operate as Outroute Controller (OC) generating a single Outroute TDM (DVB) carrier, Multi-Carrier (MCD) Inroute Controller (IC) capable of receiving up to 4 TDMA carriers, SCPC DAMA transmitter or receiver. UC may have no specific license installed, in which case it serves as a standby resource in the UHP Smart Redundancy™ scheme.



A single 1RU unit UHP-240 houses two UC and can implement up to two OC and up to two MCD-IC. Extra Outroutes and Inroutes can be added by growing the number of UC with appropriate licenses. The Hub can support any redundancy scheme for any of its elements, and also geographical redundancy for multiples Hubs.

The Network Management System (NMS) runs on a Linux server. It is separate from the Hub, so its failure would not bring down the VSAT network. While the NMS optional in a basic Hub, it is required in the high-end Hub designed to control a network operating over High-Throughput Satellite (HTS) with multiple spot beams.

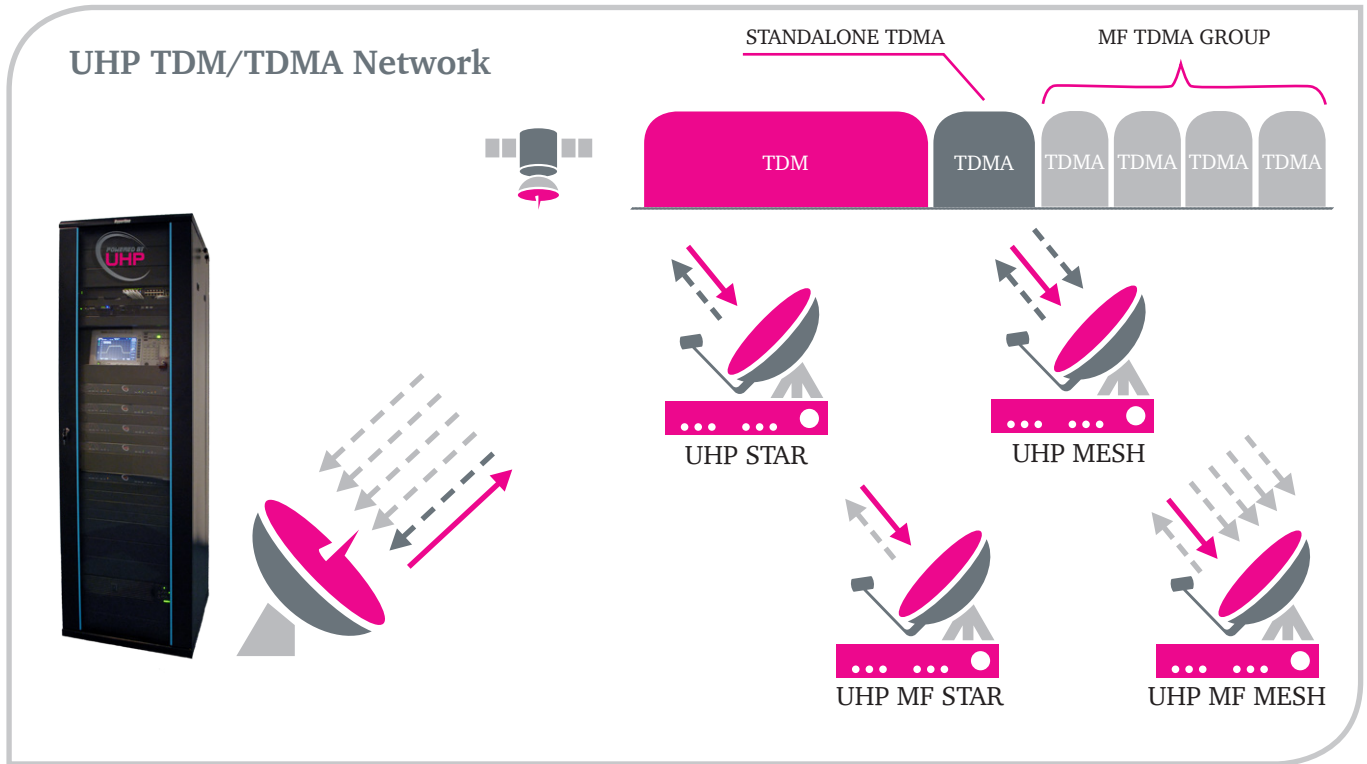


- Support of various topologies: 'Hub and Spoke', 'Dual Gateway', 'Mesh', 'MF TDMA Mesh'
- Easy and cost-effective scalability up to 254 TDMA Inbound channels and 500 000 terminals per network
- Efficient DVB-S2/S2X ACM modulations with 5% or 20% roll-off and support for wideband HTS transponders
- Multichannel MF-TDMA demodulator with innovative protocol and proven efficiency of 96% vs. SCPC
- Adaptive coding and modulation (ACM) in forward and return channels, including SCPC and TDMA modes
- Ultra-low latency VSAT system with round-trip delay about 570 ms for TDMA mode of operations
- Support of VLAN, multi-level QoS, codec-independent handling of real-time traffic, TCP acceleration
- Fast network startup — network is ready for use in less than a minute upon power-up
- User-friendly Network Management System with multi-user web-interface and VNO support
- Support of 1:1 automatic redundancy without use of external controllers

UHP Smart Redundancy

facilitates self-healing architecture for a single VSAT Hub and also for multiple geographically diverse (redundant) Hubs. Architecture of the Hub with Smart Redundancy is not different from a traditional Hub architecture, but all the controllers are universal and can assume any role. The NMS dynamically assigns specific roles to the universal controllers. Smart Redundancy dramatically increases network availability level while only requiring a very modest investment.

UHP TDM/TDMA Network



UHP-2XX SERIES TDM/TDMA HUB SPECIFICATIONS

NETWORK		
Topology	Star, Dual-Gateway, Mesh	
Modes of operation	TDM/TDMA Star, TDM/TDMA Mesh, TDM/SCPC, TDM/SCPC-DAMA	
Network role	HB - Hub controller with 1 TDM and up to 4 MF-TDMA; IC - Inroute controller with up to 4 MF-TDMA	
Network size	Up to 252 TDMA Inroute channels or MF groups and 500 000 terminals per network	
Frequency bands	C, X, Ku, Ka, including multi-beam HTS satellites	
TDM CHANNEL	MODULATOR	DEMODULATOR
Standard	DVB-S2 / DVB-S2X with Adaptive Coding and Modulation	
Channels	One universal SCPC/TDMA modulator	Two demodulators with selectable IF inputs Rx1 and Rx2
Modulation	QPSK, 8PSK, 16APSK, 32APSK, 64APSK; Roll-off: 5% or 20%;	QPSK, 8PSK, 16APSK, 32APSK, 64APSK, 128APSK, 256APSK
FEC	1/4, 14/45, 1/3, 2/5, 9/20, 7/15, 1/2, 8/15, 11/20, 26/45, 3/5, 23/36, 2/3, 25/36, 32/45, 13/18, 3/4, 7/9, 4/5, 5/6, 77/90, 8/9, 13/45	All DVB-S2 & DVB-S2X MODCODs
Symbol Rate	300 kbps - 65 Msps; step 1 kbps (51 Msps @32APSK, 43 Msps @64APSK)	300 kbps - 500 Msps
Data Rate	150 kbps - 225 Mbps	150 kbps - 225 Mbps
QoS	8-level prioritization, traffic policies, CIR, MIR, group QoS, hierarchic traffic shaper, FAP	
TDMA CHANNEL	MODULATOR	DEMODULATOR
Standard	LDPC TDMA with Adaptive Coding and Modulation	
Channels	One universal SCPC/TDMA modulator	Four-channel MF-TDMA demodulator
Modulation	QPSK, 8PSK, 16APSK; Roll-off: 5%, 20%	QPSK, 8PSK, 16APSK
FEC	1/2, 2/3, 3/4, 5/6	1/2, 2/3, 3/4, 5/6
Symbol Rate	100 kbps - 8 Msps; step 1 kbps	100 kbps - 8 Msps; (8 Msps aggregate for all channels)
Data Rate	100 kbps - 26.7 Mbps	100 kbps - 26.7 Mbps
TDMA Protocol	Frame 50 -1000 ms, 14 slot sizes, manageable minimal bandwidth; slot-to-slot fast MF-TDMA hopping	
QoS	8-level prioritization, traffic policies, CIR, MIR, group QoS, hierarchic traffic shaper, FAP	
ROUTER		
Performance	Up to 190 000 packets per second	
Support	DSCP, multiple IP/VLANs, NAT*, proxy ARP, L2 Bridging, TCP Acceleration, Jumbo frames, AES-256	
Protocols	IPv4/IPv6*, IGMP, cRTP, SNMP, RIP, SNT, TFTP, PPP, DHCP, DHCP Relay	
Management	HTTP interface, SNMP, Telnet, NMS with VNO support	

These specifications are subject to change without notice

* Available in a future SW release



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