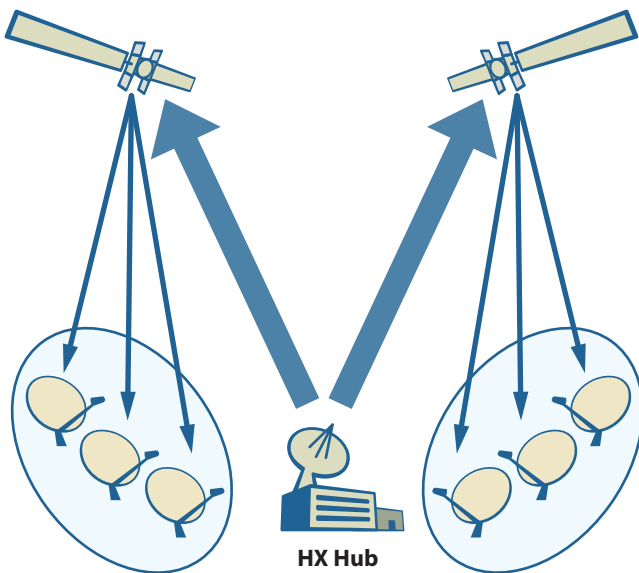


Satellite broadband IP hub system featuring integrated multi-transponder, multi-satellite capability

Designed and optimized for high-quality, IP broadband networking, as well as specialized applications such as mobility and mesh networking, the HX Multi-satellite Gateway is the core component within the HX System. Utilizing a DVB-S2 carrier with Adaptive Coding and Modulation (ACM) for the forward channel and highly efficient FDMA/TDMA for the return/mesh channels, the HX Gateway is the foundation for a range of powerful satellite broadband services.



Efficiency and flexibility in utilizing satellite bandwidth are key considerations in the design of the HX System. Each link in star or mesh mode can be configured to provide a Quality of Service (QoS) tailored to an individual remote terminal. And each network node can be independently configured with unique Committed Information Rates (CIRs), thereby allowing a service provider to develop a service tailored to their customers' specific requirements. In addition, the HX System bandwidth allocation scheme is designed so that idle terminals can be configured to release all bandwidth assignments, thus ensuring optimal bandwidth utilization.

The HX System from Hughes, the world leader in broadband satellite networks and services, is designed and optimized for smaller and mobile networks, including maritime and airborne applications, where the provision of high-quality and high-bandwidth links is paramount. Capable of simultaneous mesh, star, and multi-star configurations, the HX System builds upon the capabilities and global success of the high-performance HN System, incorporating many advanced features pioneered by Hughes, including integrated TCP acceleration and advanced IP networking. Its broadband satellite products are based on global standards approved by TIA, ETSI, and ITU, including IPoS/DVB-S2, RSM-A, and GMR-1. To date, Hughes has shipped more than 2.2 million satellite terminals to customers in over 100 countries.

HX Gateway Features

- Pure IP system designed for carrier-grade applications
- Support for multi-satellite or multi-transponder operation
- Virtual Network Operator (VNO) capability
- Advanced bandwidth management including QoS per router as well as iQoS
- Unique network security with integrated conditional access
- Automatic commissioning of remote terminals
- Powerful network management with extensive diagnostics
- Active redundancy for all critical components
- Highly modular design with virtually unlimited scalability

Services Supported

- MPLS extension services
- Private IP network for corporate intranets
- Cellular backhaul
- WiMax backhaul
- Mobility including land, maritime, and aeronautical
- Mesh networking for VoIP, videoconferencing
- VoIP telephony
- SCADA
- Broadband Internet access

HX System Features

- DVB-S2 with ACM for forward channel
- MF-TDMA with AIS
- Mesh support (optional)
- IPoS compliant transport layer
- Outroute encryption and conditional access
- iQoS plans
- PEP TCP acceleration
- IP prioritization
- Inroute IP header compression
- PEP and TCP payload compression
- Secondary satellite frequency support
- HTTP acceleration (optional)

Technical Specifications

Forward Channel

Standard	DVB-S2 with Adaptive Coding and Modulation
Frequency Bands	C, Extended C, X, Ku, Ka
Modulation	QPSK, 8PSK, 16APSK
Symbol Rates	1 to 45 Msps (in steps of 1 Msps)
Coding Rates	LDPC with BCH outer code, ACM-capable, 1/2, 2/3, 3/4, 5/6, 7/8, 8/9, 9/10 (not all rates are supported for QPSK, 8PSK, 16APSK)
Transmit Bit Rates	Up to 121 Mbps

Return Channel

Standard	IPoS
Modulation	OQPSK (Saturated and Linear modes)
Symbol Rates	256, 512, 1024, 2048, 4086 ksp/s
Coding	TurboCode Rate 1/2, 2/3, 4/5
Transmit Bit Rates	Up to 6.4 Mbps

Size and Scalability (Base Configuration)

Single 24U rack
Supports up to 45 Msps forward channel
Supports up to 18 TDMA channels (with aggregate of up to 5 Msps)
Supports up to 20 Mbps IP throughput

Expansion Capability of Base Rack

Supports 1 additional forward channel with return channel
Supports up to 4 additional CDS units
Supports up to 4 additional IP Gateway units
Further expansion achieved through additional equipment rack

Security

Integrated Conditional Access Control (CAC) and DES encryption of outbound channel
Optional AES 256 encryption available

Network Management System

Hughes HX ExpertNMS™

Remote Routers Supported

HX50
HX100
HX150
HX200
HX260
HX280

For additional information, please contact us at globalsales@hns.com or visit our Web site at www.hughes.com.