HX System TGW100 Transportable Gateway

HUGHES®

Scalable broadband satellite system for smaller, rapidly deployable networks

From Hughes, the world leader in satellite broadband networking, the HX TGW100 is designed and optimized for smaller, rapidly deployable networks where provisioning high-quality, high-bandwidth links is critical. Fully compatible with the advanced HX System family, the HX TGW100 employs flexible and efficient satellite broadband technology to support a wide range of commercial and government applications.

The HX TGW100 is suited for applications where network transportability is critical—including homeland security, continuity of operations, tactical military, and remote news gathering. Standing just 24" in height, the HX TGW100 is a size- and cost-efficient solution to support the rapid deployment of smaller satellite networks in difficult operating conditions.

Based on the same architecture as the larger, fully-redundant HX System gateway, the HX TGW100 provides unsurpassed flexibility and scalability in a small, powerful package. It comes in a compact eight rack unit (RU) transit case optimized for rapid network deployment. With the addition of an expansion pod, the HX TGW100 can easily be scaled to support the entire suite of HX System services for larger networks. Personnel trained to operate the HX TGW100 are also able to operate larger-scaled HX regional hubs because of the common product architecture and network management system, the HX ExpertNMS™.

HX TGW100 Architecture

The HX TGW100 architecture is highly modular and scalable, and enables rapid deployment and provisioning of HX System services from a single comprehensive platform. Fully compliant with DVB-S2/IPoS, the world's leading satellite transmission standard and including Adaptive Coding and Modulation (ACM), bandwidth efficiency and flexibility are at the core of the HX TGW100 design. For example, one or more terminals can be selected for guaranteed inroute bandwidth, while the remaining terminals share fair access via a truly dynamic bandwidth assignment algorithm. The HX TGW100 supports outbound data rates of up to 121 Mbps and inbound data rates of up to 9.6 Mbps.

HX TGW100 Features

- Supports star and star/mesh configurations
- AES encryption option for both outroute and inroute channels
- Supports seamless, geographically diverse redundancy option
- Intelligent, protocol-sensitive bandwidth assignment for optimum performance and efficiency for each application
- Wide range of Quality of Service (QoS) options including dedicated bandwidth assignments
- Efficiently engineered IP transport that supports data and real time voice (VoIP) applications
- HX ExpertNMS is used to configure and manage the gateway and remote terminals
- Optimized for SCPC replacement
- Supports SATCOM on-the-move (mobile) terminals
- Supports mesh connectivity for single-hop, remote-to-remote connections

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 2.5 million satellite terminals to customers in over 100 countries.

Services Supported

- Broadband WAN connectivity to corporate and government intranets
- Secure, private IP networking
- High-speed video streaming
- Multicast data delivery
- Multimedia applications including MPEG-4 video
- VoIP telephony
- Serial protocols including Async, SDLC, X.25
- SATCOM on-the-move (mobile terminal) operation

The DVB-S2/IPoS with ACM Advantages

The HX TGW100 is fully compliant with the global IPoS standard, the world's first standard to be approved by the TIA, ETSI, and ITU standards organizations, and which incorporates the DVB-S2 standard. The Hughes implementation includes ACM, which yields up to 50 percent more efficient bandwidth utilization and higher throughputs than the DVB-S specification.

DVB-S2/IPoS with ACM advantages include:

- Clearly defined interface conforms to the ETSI SI-SAP standard enabling back-end systems to work easily with the HX infrastructure
- Optimum transmission efficiency through a combination of coding and modulation of the outbound channel that can be configured for each remote terminal
- Continually optimized link performance (even during high rain conditions) by dynamic adjustment of error-correcting codes and modulation based on signal quality feedback from remote terminals
- Truly dynamic bandwidth assignment—remote sites with no traffic are assigned no resources
- Multiple inroute quality of service options—Committed Information Rates (CIRs) per active remote terminal or group of terminals

Technical Specifications

Forward Channel

Standard Modulation	DVB-S2 with Adaptive Coding and
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, 4096 and 6192 ksps
Coding	TurboCode Rate 1/2, 2/3, 4/5
Transmit Bit Rates	Up to 9.6 Mbps

Size and Scalability (Base Configuration)

Single 10 RU transit case with 2 expansion slots for customer equipment

Supports up to 1000 terminals

Supports up to 9 inbound/mesh channels with expansion slots for up to 18 inbounds

Security

Conditional Access and Outbound Channel Encryption Standard

Optional AES256 IPSec bidirectional encryption

Optional FIPS 140-2 Certified Enhanced Signaling Security – Meets TRANSEC standards

Network Management System

Hughes HX ExpertNMS

Remote Terminals and Appliances Supported

HX 50 Broadband Terminal

HX 200 Broadband Satellite Router

HX 260 Mesh/Star Broadband Terminal

HX 280 Mesh/Star with Enhanced Security Broadband Satellite Router

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