Hughes HX200
Broadband Satellite Router

Rack mountable, high-performance satellite router

The HX200 is a high-performance satellite router designed to provide carrier-grade IP services using dynamically assigned high-bandwidth satellite IP connectivity. The HX200 satellite router provides high Qualify of Service (QoS) features including Adaptive Constant Bit Rate (CBR) bandwidth assignment that delivers high-quality, low jitter bandwidth for real-time traffic such as Voice over IP (VoIP) or videoconferencing. With integrated IP features including RIPv1, RIPv2, BGP, DHCP, NAT/PAT, and DNS Server/Relay functionality, together with a high-performance satellite modem, the HX200 is a full-featured IP router. The HX200 enables high-performance IP connectivity for a variety of applications including cellular backhaul, MPLS extension services, virtual leased line, mobile services and other high-bandwidth solutions.

Target Markets

- Voice/data broadband IP connections
- GSM backhaul, SCPC/MCPC replacement links
- MPLS extension services
- Embassy and government networks
- Air traffic control
- Private, leased-line services
- Maritime, air and ground-based mobile networks

HX System Architecture

The HX System provides true IP broadband connectivity via satellite. The HX System is based on a "star" network topology where the outbound channel is DVB-S2 with Adaptive Coding and Modulation (ACM). The return channel of the HX System is FDMA/TDMA using the IPoS standard for broadband over satellite. With a DVB-S/DVB-S2 outbound carrier supporting rates up to 121 Mbps and multiple inbound carriers supporting rates up to 3.2 Mbps, the HX System provides the high throughput needed for high QoS networking.

Efficiency and flexibility in utilizing satellite bandwidth are at the core of the HX200 design. Each link can be configured to provide a QoS tailored for the requirements of each link. This includes such capabilities as defining a minimum, guaranteed, and maximum Committed Information Rate (CIR), CBR (Adaptive and On-Demand) and Best Effort, thereby allowing service providers to develop a service tailored to their customers' specific requirements. In addition, the HX System bandwidth allocation scheme uses an Aloha channel for initial traffic requests (and only the initial traffic request), which means that remotes are able to release all TDMA channel assignments when they are idle. This frees up unused bandwidth and allows an operator to make more efficient use of space segment resources.

The HX System from Hughes, the world leader in satellite networking, is designed and optimized for small and mobile networks where the provision of high-quality and high-bandwidth links are the most important criteria. Building upon the heritage and capabilities of the more than 1.5 million broadband satellite terminals shipped by Hughes, the HX System incorporates many of the advanced features pioneered by Hughes including integrated TCP acceleration and advanced IP networking features. Hughes' broadband satellite products are based on global standards approved by TIA, ETSI, and ITU, including IPoS/DVB-S2, RSM-A, and GMR-1.

Features

- Quality of Service features include:
  - On-demand constant bit rate (CBR) services
  - Adaptive CBR with minimum, maximum, and user-definable step sizes
  - Committed Information Rate(CIR) with minimum, guaranteed, and maximum rates
  - Backlog-based dynamic stream with weighted fair queuing
  - Class-based weighted prioritization
  - Multicast data delivery
  - Four levels of IP traffic prioritization
- Bandwidth allocation
  - Supports both preassigned (static) traffic assignment and dynamic traffic assignment
  - Idle remotes can be configured to release all network resources
- Acts as a local router providing:
  - Static and dynamic addressing
  - DHCP server or relay
  - DNS caching
  - RIPV1, RIPV2, BGP routing support
  - Multicasts to and from the LAN by using IGMP
  - NAT/PAT
  - VRRP
  - VLAN tagging
  - Firewall support through integrated access control lists
- Supports unicast and multicast IP traffic
- Software and configuration updates via download from the HX Gateway
- Implements dynamic, self-tuning Performance Enhancement Proxy (PEP) software to accelerate the throughput performance by optimizing the TCP transmission over the satellite, delivering superior user experience and link efficiency
- Bidirectional data compression (optional)
- Configuration, status monitoring, and commissioning via the NOC
- Embedded Web interface for local status and troubleshooting
- Remote terminal management via the Hughes Unified Element Manager and SNMP agent
- User-friendly LED display indicating terminal operational status
- Closed loop control between hub and remote
- Dynamic outbound coding and modulation changes based on received signal
- Dynamic inbound coding changes based on received signal
- Dynamic remote uplink power control

Technical Specifications

Physical Interfaces

Two 10/100BaseT Ethernet LAN RJ45 ports (independent subnets)

One Serial Port (RS-422 or RS-232)

Satellite Specifications

Outbound Channel	DVB-S2 with Adaptive Coding and Modulation or DVB-S
Outbound Rate	1 - 45 Msps (in 0.5 Msps steps)
Outbound Modulation	QPSK, 8PSK (Adaptive Modulation)
Outbound Coding	BCH with LDPC 3/5, 1/2, 2/3, 3/4, 5/6, 8/9, 9/10 (Adaptive Coding)
Inbound Channel	IPoS (FDMA/TDMA)
Inbound Channel Rate	256, 512, 1024, 2048 ksps
Inbound Channel Modulation	OQPSK
Inbound Channel Coding	Rate 1/2, 2/3, 4/5 with TurboCode (Adaptive Coding)
Bit Error Rate (Receive)	10^{-10} or better
Bit Error Rate (Transmit)	10^{-7} or better
Interface to ODU	Industry standard BUC (L-Band) or Hughes saturated carrier BUC

HX200 Mechanical and Environmental

1U rack mount unit for 19" rack	
Weight (IDU)	5.5 lbs (2.5 kg)
Dimensions	19"W x 1.75"H x 14"D (48.26cm W x 4.45cm H 35.6cm D)
Operating Temperature:	+32° F (0° C) to 122° F (+50° C)

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

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