HN9400 Satellite Router

Dual Ka-/Ku-band high-throughput satellite router with advanced adaptive LDPC coding

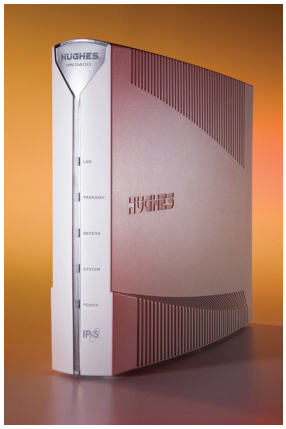
The Hughes HN9400 is a new-generation, dual Ka-/Ku-band broadband satellite router designed for high-throughput satellite applications. The HN9400 incorporates advanced LDPC coding and other new features, making it the ideal platform to deliver even the most bandwidth demanding services on today's Ka- and Ku-band satellites, while being future-proof for the next-generation, high-throughput systems.

High Throughput, High Efficiency, and Future Proof

Fully compliant with the industry-leading IPoS standard, the HN9400 is a powerful satellite router featuring high performance on both the DVB-S2/ACM forward channel, as well as the adaptive LDPC coding return channel. An advanced, Hughes-developed LDPC coding scheme on the return channel provides significant error coding improvement over turbo code resulting in minimum use of satellite bandwidth. The adaptive coding on the return channel enables the unit to dynamically change FEC rates, burst-to-burst, based on link conditions, to achieve the highest throughput while maintaining high link availability. Through the combination of adaptive LDPC coding and a powerful processor, the HN9400 supports upstream burst rates of 3.6 Mbps, making the HN9400 an ideal platform for next-generation, high-throughput satellite systems.

To enable superior end-user performance, the HN9400 includes a full set of integrated Wide Area Network (WAN) optimization features. Accelerated TCP and HTTP performance features, including HTTP pre-fetch (objects are locally cached on the HN9400) along with DNS caching, enable fast Web browsing. Integrated header and packet payload compression both conserves bandwidth and contributes to high performance.

A full-featured IP router, the HN9400 supports a switching capacity up to 5,000 packets per second eliminating the need for an external router. IP routing and addressing features implemented in the HN9400 include the RIPV2 and BGP routing protocols, virtual router redundancy protocol (VRRP) with policy-based routing, DHCP server or relay, as well as network address translation (NAT) and port address translation (PAT). The HN9400 also handles end-to-end VLAN tags complying with the 802.1P and Q standards and each VLAN may be configured with its own quality of service (QOS). Government and enterprise users can be confident of the security of information running over the HN9400, as it uses a hardware-based conditional access system and optionally AES 256 encryption for user traffic.



Network operations are easy to perform as the HN9400 features an integrated Web server supporting a Web browser interface for commissioning and troubleshooting. Full-featured, built-in diagnostics provide historical information about network performance or error conditions. An integrated LAN sniffer eliminates the need for onsite presence during trouble-shooting. The HN9400 is centrally managed for software configurations and downloads.

Adaptive LDPC Coding

The HN9400 incorporates an innovative adaptive LDPC coding scheme, developed by Hughes, on the return, enabling superior modem performance. The adaptive LDPC's ability to run with minimal link margin results in maximum bandwidth efficiency. Additionally, the HN9400's use of variable burst LDPC code block lengths sized to the amount of IP data to be transmitted further increases the return channel efficiency. Overall, the adaptive LDPC coding on the return channel yields more than 20 percent bandwidth efficiency improvement over competing systems.

Features

- Adaptive LDPC coding on return channel
- MF/TDMA return channel with Aloha diversity
- DVB-S2 with Adaptive Coding and Modulation (ACM) on forward channel
- High throughput satellite router featuring throughput of
  - Up to 60 Mbps multicast
  - Up to 45 Mbps UDP
  - Up to 15 Mbps TCP
  - Up to 5,000 packets per second
- Software and configuration updates via download from the NOC
- Implements Performance Enhancement Proxy (PEP) software to accelerate throughput performance by optimizing the TCP transmission over the satellite, delivering superior user experience and link efficiency
- Implements Hughes TurboPage® software to accelerate HTTP traffic for fast browser access
- Quality of Service (QoS) features include: IQoS (Inbound Quality of Service), bi-directional DSCP, and outbound bandwidth management.
- Secure Network Transmission with bi-directional IPSEC and AES-256 encryption (optional)
- Configuration, status monitoring, and commissioning via the Network Operations Center (NOC)
- Acts as a local router providing:
  - Static and dynamic addressing
  - DHCP server or relay
  - DNS caching
  - Full RIPV2 and BGP routing support
  - VRRP
  - Multicasts to the LAN by using IGMP
  - NAT/PAT
  - End-to-end VLAN support with configurable QOS per VLAN
  - Firewall support through integrated access control lists
- Remote terminal management via the Hughes Vision® Network Management System or Unified Element Manager and SNMP
- Universal power supply supports international voltage ranges and frequencies and has a detachable power cord
- User-friendly LED display indicating terminal operational status

Technical Specifications

Physical Interfaces

Two 10/100BaseT Ethernet LAN RJ45 ports

Satellite & Antenna Specifications

Outbound transmission format:	DVB-S2
Information Rate: (Receive or Outbound Channel)	Up to 121 Mbps
Information Rate: (Transmit or Inbound Channel)	Up to 3.6 Mbps
Symbol Rate (Receive):	1 to 45 Msps (in 1 Msps steps)
Symbol Rate (Transmit):	256, 512, 1024, 2048 ksps
Encoding (Receive):	DVB-S2 LDPC/BCH
Encoding (Transmit):	LDPC FEC 1/2, 2/3, 4/5 and 9/10, Turbocode FEC 1/2, 2/3, and 4/5
Frequency Range:	Ka-/Ku-band
Modulation (Receive):	QPSK, 8PSK, 16APSK
Modulation (Transmit):	OQPSK
Bit Error Rate (Receive):	10^{-10} or better
Bit Error Rate (Transmit):	10^{-7} or better
Antenna:	74 cm, 89 cm, 98 cm, 120 cm, 180 cm
Radio:	1 and 2 watt Ka- or Ku-band

Mechanical & Environmental

Weight:	1.6 lbs (.726 kg)
Dimensions:	8.05" H x 1.55" W x 8.95" D (20.4 cm H x 3.9 cm W x 22.7 cm D)
Operating Temperature:	0° C to 50° C
Input Power:	90 to 264 VAC; 50 to 60 Hz
DC Power Supply (Optional):	12 to 24 VDC

For additional information, please contact Hughes at globalsales@hughes.com or visit www.hughes.com.

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