

Carrier-grade satellite broadband hub

The HN NOC_{XT} is the carrier-grade hub system from Hughes, optimized to support medium- to large-scale satellite broadband networks and the ideal solution for service providers and large enterprises that demand the highest performance and quality for their customers. Unsurpassed in flexibility and scalability, the HN NOC_{XT} is designed with a highly efficient architecture incorporating numerous advanced features, including guaranteed quality of service (QoS) levels for bandwidth management and industry-leading advanced acceleration and compression technologies.

The HN System is the most advanced and widely deployed satellite broadband infrastructure worldwide from the leader in broadband satellite networks and services. Compliant with the IP over Satellite (IPoS) global standard, the world's first to be approved by TIA, ETSI, and ITU, the HN System is the ideal choice to deliver high-speed IP services over satellite, supporting an expanding range of multi-media, video, data, and voice applications.

HN NOC_{XT} Architecture

The HN NOC_{XT} is designed as a compact and efficient single-rack package that is highly modular and scalable, enabling rapid provisioning of any mix of satellite broadband services from a single, comprehensive platform. The base configuration of the HN NOC_{XT} can be readily expanded to accommodate multiple 121 Mbps forward channels and over 70 Mbps of return channel traffic, all in a single rack.

Efficiency and flexibility in utilizing satellite bandwidth are at the core of its 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. Inactive remote terminals are released from all network resources thereby optimizing the use of network resources for active terminals.

The HN System's unmatched flexibility, efficiency, and high quality of service have earned it the reputation as the most advanced and cost-effective technology available in the marketplace.

Reduce Network Operations Cost and Increase Network Availability

- Industry-leading bandwidth efficiency and network availability with:
 - Forward Channel DVB-S2 with Adaptive Coding and Modulation (ACM)
 - Return Channel using MF-TDMA, frequency hopping, and variable burst size
 - Return Channel with Hughes TurboCode® or Adaptive LDPC coding
- Bidirectional IP header and payload compression, including TCP, UDP, and RTP compression

Simplify Network Operations

- Software updates, configuration, status monitoring, and commissioning centrally controlled via the Network Operations Center (NOC)
- Remote terminal management via the Hughes Vision® Network Management System and SNMP
- LED display indicating terminal operational status
- Integrated local web interface for terminal status, troubleshooting, and diagnostics
- Universal power supply supports international voltage ranges and frequencies and has a detachable power cord



Hughes Network Systems, LLC (Hughes) is the world's leading provider of satellite broadband for home and office, delivering innovative network technologies, managed services, and solutions for enterprises and governments globally. HughesNet® is the #1 high-speed satellite Internet service in the marketplace, with offerings to suit every budget. To date, Hughes has shipped more than 2.5 million systems to customers in over 100 countries, representing over 50 percent market share. Its products employ global standards approved by the TIA, ETSI, and ITU organizations, including IPoS/DVB-S2, RSM-A, and GMR-1. Headquartered outside Washington, D.C., in Germantown, Maryland, USA, Hughes operates sales and support offices worldwide, and is a wholly owned subsidiary of EchoStar Corporation (NASDAQ: SATS), a premier global provider of satellite operations and digital TV solutions. For additional information about Hughes, please visit www.hughes.com.

Features

Services and Applications

- Broadband Internet access
- Private IP network for corporate intranets including:
 - Banking and Financial
 - Retail
 - Oil and Gas
 - Travel
- Public services including:
 - Telephony
 - Internet Kiosk
 - Education
 - Government
- High availability networking
- Multicast data delivery
- Multimedia applications including MPEG4 video
- VoIP services

Powerful IP Features

- Static and dynamic addressing
- Full RIPV1, RIPV2, and BGP routing support
- VRRP for high availability networking
- Multicasts to the LAN by using IGMP
- NAT/PAT
- 802.1P and 802.1Q for end-to-end VLAN support with configurable QoS per VLAN

WAN Optimization and Acceleration

- Integrated Performance Enhancement Proxy (PEP) software to accelerate throughput performance by optimizing the TCP transmission over the satellite, delivering superior user experience and link efficiency
- Integrated Hughes TurboPage® software to accelerate HTTP traffic for fast browser access
- DNS caching

Differentiated Services

- Intelligent, protocol-sensitive bandwidth assignment for optimum performance and efficiency of each application
- IQoS (Inbound Quality of Service) plans for allocation of bandwidth to a group or individual terminal
- Traffic prioritization based on IP addressing, ports, or DSCP values

System Technical Specifications

Outbound Channel

Outbound (forward) channel format	DVB-S2 with Adaptive Coding and Modulation
Frequency	C-, Extended C-, Ku-, Ka-band
Modulation	QPSK/8PSK/16APSK
Symbol Rates	1 to 45 Msps
DVB-S2 Encoding	LDPC with BCH outer code, ACM capable Rates 1/2, 2/3, 3/4, 5/6, 7/8, 8/9, 9/10

Inbound Channel

Inbound (return) channel format	IPoS Multi-frequency (MF) / Time Division Multiple Access (TDMA)
Transmit Modulation	OQPSK
Symbol rate	256 - 2048 Ksps
Transmit Coding	Hughes TurboCode, LDPC

Security

Integrated Conditional Access and DES encryption of outbound channel
Bidirectional IPSEC with AES-256 (optional)

Size & Scalability

Base Configuration	Single 45U rack
	Supports over 5,000 terminals
Multi satellite	Base rack wired for multi-satellite expansion

Environmental

Temperature	+10 C to +35 C
Relative Humidity	10% to 80% non-condensing
Altitude	-100 ft to 6,000 ft

Power Supply	120/240 VAC, 50/60 Hz
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Network Management System	Hughes Vision NMS
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Remote Terminals & Appliances Supported

HN7000S Series
HN9200
HN9400
HN1040 Voice Appliance
HN1030 Serial Appliance
HN6000

The IPoS Advantage

The entire HN System family of broadband satellite terminals is compliant with the global IPoS standard, resulting in superior overall performance and efficiency. A clearly defined, satellite-independent access interface conforming to the ETSI SI-SAP standard enables back-end systems to be easily integrated with the HN infrastructure. IPoS provides truly dynamic bandwidth assignment—remote sites requiring no traffic capacity are assigned no resources.

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

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