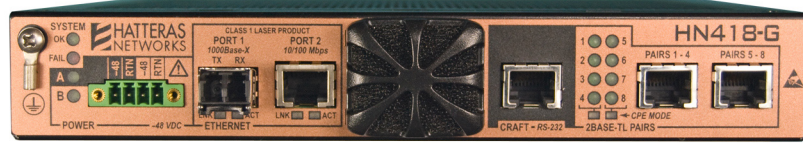


Applications:

- Ethernet Business Services via Ethernet over Copper
- Mobile Wireless Backhaul
- DSLAM Backhaul
- Dedicated Internet Access
- Transparent LAN Services
- Private Line Ethernet Services
- Layered VoIP Transport
- Multi-Tenant Ethernet Services
- VPNs

Key Features:

- 2, 4 or 8 pair copper variants
- Up to 15Mbps per copper pair
- Optical SFP option
- Full front access
- Environmentally hardened
- NEBS level 3 & ETSI-certified
- T1.417 compliant
- Universal deployment at central office, cell tower or customer demarcation
- CPEs managed by CO device
- IEEE802.3ah-certified
- Carrier Class OAM
- Non-disruptive copper pair add/delete
- Advanced QoS
- MEF 9,14,21 Certified
- TDR support for facility qualification and maintenance



Hatteras Networks' HN400 series award winning Ethernet service delivery products extend the Ethernet Services to sites without access to fiber. Boasting a powerful Ethernet in the First Mile (EFM) solution, the HN400 series quickly and economically delivers managed, symmetrical bandwidth and services at rates of up to 15 Mbps per pair over outside plant copper utilizing standards-based 2BASE-TL technology (Ethernet over Bonded Copper).

Carriers can now offer symmetrical, broadband connectivity, and Ethernet Services to business sites, cell towers and DSLAMs at speeds of 10-20 Mbps - even over 100 Mbps - without the expense and delays associated with fiber deployment. The HN400I series solution offers a powerful successor to T1's... reaching much greater distances without repeaters, yielding a 7+ factor improvement in speed, with greater reliability at lower cost. Using the HN400 series, carriers can leverage existing copper assets to deliver symmetrical, high-bandwidth Ethernet services with the quality of traditional private-line services. These services can be delivered at full CSA (customer serving area) distances.

HN400 series is deployable at either the Customer Premise (CP) or Central Office (CO) locations. Carriers can either physically separate management and data traffic on the two ports, or logically separate the traffic using in-band VLAN capabilities. Likewise, the two ports can support two separate services from the same or different customers. The HN400 series provides carriers with increased deployment flexibility and reduced OPEX and inventory, since carriers only need to carry inventory for one model. With the HN418 models, optical connectivity (Small Form factor pluggable 100 BASE-X and 1000 BASE-X) is supported to reach customer or network equipment too far for normal CAT5 cabling at fast Ethernet and gigabit Ethernet rates..

The HN400 series family is a half-rack-wide / 1 RU-high, carrier-class, temperature-hardened set of platforms that enable carriers of all sizes to quickly and economically deliver valuable business broadband services over their copper infrastructure. The HN400I series are fully compatible with the Hatteras Networks HN6100 and HN4000 Ethernet Edge switching platforms, which provides Layer 2 aggregation and switching for subtended HN400s for the delivery of transparent Metro Ethernet services.

The HN400 series implements the IEEE standard for Ethernet OAM, with extensions to facilitate deployment and simplify remote management, while maintaining full interoperability with existing Ethernet switches, routers and Ethernet ADMs. The products also provides a comprehensive, user-friendly command-line interface (CLI), SNMP, for alarming and remote management, a fully featured Element Management System (EMS), and an embedded Web Manager that requires no client software - all of which can be accessed over any in-band or out-of-band IP interface.

Guaranteed Services and Multiple SLAs Per Customer with Robust support for traffic management, VLANs, stacked VLANs (Q-in-Q) and Ethernet Class-of-Service (CoS) enables carriers to offer a rich assortment of high-margin, value-added services backed by comprehensive service-level agreements (SLAs). Unlike competing products, adding or deleting pairs to a bonded group does not disrupt the end-user service... yielding guaranteed uptime.

Product features

Interfaces:

- 2, 4 or 8 pair copper variants.
- IEEE 802.3ah, 2BASE-TL, ITU-T G.991.2.bis (Annex A, B, F & G). ANSI T1.417 Spectral compliance and UK ANFP Spectral compliance via RJ-21. Sealing current applied to all copper pairs.

Operation Deployment Efficiencies:

- Pair Identification via Tone Generation and Opens/Shorts
- Time Domain Reflectometer
 - Prequalify a loop to determine the suitability for, and expected performance of, the intended service
 - Detect cable damage (e.g. cuts) without the need to dispatch to the remote site
 - Detect both powered and unpowered CPE unit

Ethernet & Routing Features:

- DHCP server, NAT firewall, ACLs, Static Routes, RIPv2
- IGMP Snooping
- MEF E-LINE, E-LAN, and E-TREE
- 802.1d Bridging
- 802.1q VLANs, VLAN stacking (aka Q-in -Q), S-VLAN
- 802.1p Prioritization
- 802.3x Flow Control and pause frames
- MAC Filtering
- All Ethernet Ports perform auto-negotiation, Full or half duplex
- VLAN Tag ID writing, stacking, stripping, and re-writing and
- VLAN Bundling and VLAN Pruning
- RFC 791 IP, RFC 792 ICMP, RFC 793 TCP, RFC 768 UDP, RFC 826 ARP, RFC 1122 Host Requirements
- Auto/Manual MDI/MDIX
- Local Switching between Ethernet Ports
- 1600 Byte MTU

Traffic Management:

- 8 COS Classifications Mapped to 4 Queues
- Queue management using Customizable Weighted Fair Queuing, Strict Priority, and Combination
- COS based upon 802. 1p, VLAN ID (802. 1q), DSCP, and fixed per port
- Traffic Policing with dual leaky bucket algorithm
- Traffic Rate Shaping
- Broadcast, Multicast, and Unknown Storm Control

Mechanical:

- Compact 1 RU size, full front access
- Dimensions: Width 8.5" (216mm); Height: 1.38" (35mm); Depth: 9.08" (231mm)
- Weight: 3.0 lbs (1.36 kg)
- Rack Mounting in 19" and 23" EIA/ANSI and WECO racks;
- 600mm wide ETSI racks

Management, Security, and Diagnostics:

- Craft Interface RS-232 via RJ-45 connector
- Imbedded Web GUI (Web Manager), Command Line Interface
- Telnet (client and server)
- FTP and TFTP
- RFC 1155 TCP/IP management
- RMON
- IEEE 802.3ah OAM
- SNTPv3 - Time Synchronization
- DHCP
- Error logging and SNMP Trap alarms based on GR-474-CORE and GR-883-CORE
- SSHv2, HTTP/HTTPS, SSL
- TACACS+ and RADIUS
- Management IP Access Control List
- Audit Log, Event Log, Boot Log, and Syslog
- Link Trace, Ping, L2 Ping, Trace Route
- Test TCP, Link Loss Forwarding
- Auto Discovery
- IEEE 801ag CFM
- ITUY.1731ETH-OAM
- CLEI Coded
- Traffic Generator/Monitor

Electrical:

- Power: 14 Watts typical at -48 VDC with Redundant Feeds
- Optional AC/DC 120/240 power supply (both variants available)
- Input Voltage: -48V

Certifications and Compliance:

- NEBS Level 3 (GR-63-CORE and GR-1089-CORE)
- GR-3108 Class 1 and 2
- T1/E1 ports meet all OSP requirements
- ANSI T1.403
- MEF Certifications: MEF 9 and MEF 14
- FCC Part 15 Class A / FCC Part 68
- EN 55022 Class A
- ITU K.20/K.21
- ETSI EN 300 386
- ETSI 300 019, T1.2, T2.2, T3.5
- Safety: EN/UL 60950-1 / IEC 60950-1
- CE Mark
- R&TTE 1999/5/EC

Environmental:

- Environmentally hardened with extended temperature range, -40°C (-40°F) to +75°C (+167°F), per GR-3108 Class 2 and ETSI 300 019 T3.5
- Storage and Transportation Temperature: -40C (-40F) to +70C (+158F)
- Operating Humidity: 5% to 85%, per GR-63
- Storage and Transportation Humidity: 5% to 95% non-condensing

Model Number	Description
HN402-CP-1E-I	2 pair CP - 1 10/100BASE-TX port with system s/w
HN404-CP-1E-I	4 pair CP - 1 10/100BASE-TX port with system s/w
HN408-CP-1E-I	8 pair CP - 1 10/100BASE-TX port with system s/w
HN404-U-2E-I-T	TDR equipped 4 pair Universal - 2 10/100BASE-TX port with system s/w
HN408-U-2E-I-T	TDR equipped 8 pair Universal - 2 10/100BASE-TX port with system s/w
HN418-U-2E-I	8 pair Universal - 1 100BASE-X and 1 10/100BASE-TX port with system s/w ***(SFP required)***
HN414-U-2E-T-G	TDR equipped 4 pair Universal - 1 10/100BASE-TX port and 1 1000 Base-X port with system s/w ***(Optical or Copper GigE SFP required)***
HN418-U-2E-T-G	TDR equipped 8 pair Universal - 1 10/100BASE-TX port and 1 1000 Base-X port with system s/w ***(Optical or Copper GigE SFP required)***

