H-Pico Heights™ Remote Gateway

Typical Users
- Mobile Network Operators
- Oil & Gas
- Corporate Enterprise
- Service Provider Multi-User Environments
- Non-Governmental Organization (NGO)
- Media
- Government

Common Applications
- Mobile Backhaul
- Offshore Communications
- Latency Sensitive Business Applications
- IP Trunking & Internet Access
- Satellite News Gathering
- Content Distribution Networks

Overview

The Heights™ Networking Platform is engineered to elevate your services with unparalleled horsepower, efficiency and intelligence. The Heights platform was designed with the service provider and its multi-user environments in mind, from concept to operation.

Heights combines our most efficient waveforms, header compression, WAN optimization, proven dynamic bandwidth and power management along with bi-directional ACM capability to provide the highest user throughput, highest availability, and most optimal resource utilization available in the industry.

Heights meets the demands of those operating on traditional wide beams while providing distinct advantages for those with High Throughput Satellites (HTS) in their future. Heights is HTS ready, allowing service providers to leverage the significant increases in performance these new designs will offer for inbound links.

Purpose-built to unleash the potential of these tight spot beams, Heights remote gateways provide the strongest processing performance, maximizing user IP bits per Hz while realizing significant gains in user IP bits per Amplifier (BUC) Watt.

The H-Pico Heights Remote Gateway supports multiple remote to hub throughput tiers up to 10 Mbps, which is managed via a centralized licensing capability. This scheme allows users to standardize on a single remote platform for low to medium capacity sites, simplifying stocking and sparing. Additionally, H-Pico supports inbound hub to remote symbol rates up to 500 Msps with standards-based DVB-S2X MODCODs supporting up to 256APSK.

Heights Dynamic Network Access (H-DNA)

H-DNA is an evolutionary dynamic network access technology designed for Heights return links that:
- Rapidly adapts to changing environments
- Delivers superior efficiency & Quality of Experience (QoE)
- Instantly assigns capacity based on network-wide demand
- Intelligently utilizes total network bandwidth at all times

H-DNA is designed to provide network wide fast switching on a sub-second interval making the process seamless and transparent to end users for real-time as well as non real-time applications. H-DNA leverages Comtech's high performance VersaFEC-2 waveforms with ACM, dynamic power control, high performance packet processing, network wide multi-tier QoS and IP optimization technology to enable unprecedented bandwidth efficiency and superior QoE. H-DNA fast switching and bandwidth allocation mechanism allows a Heights network to respond rapidly to changing traffic and link conditions while maintaining lowest latency and jitter for superior QoE and maximum bandwidth utilization efficiency.

H-DNA is fast, flexible and uncompromising, delivering unprecedented benefits to users and service providers alike.

Compelling Remote Horsepower

H-Pico incorporates a quad-core processor enabling high efficiency and throughput with multi-layer optimization. The increased EIRP and G/T performance of new HTS spacecraft allows for significantly higher throughput. However, this increased throughput cannot be met if the underlying packet processing is not able to keep up with the increased traffic flow. The H-Pico can support demanding user applications in a HTS environment enabling service providers to take full advantage of the potential of these new HTS designs and grow service levels as end users' demands grow.

Seamless Bridge Point-to-Multipoint (BPM)

The Heights Networking Platform supports BPM for true layer 2 operation enabling seamless integration with service provider networks. A Heights network operating in BPM mode can be viewed as an Ethernet switch supporting VLAN and MPLS while benefiting from bi-directional IP optimization, network wide multi-tier QoS, ACM, and dynamic bandwidth management. H-Pico includes extensive VLAN support including VLAN Access mode, trunk mode, and QinQ. H-Pico supports traffic classification and QoS by VLAN ID as well as MPLS Traffic Class Field (formerly referred to as EXP bits).

Benefits

- High throughput capabilities support increasing end user traffic demands
- Multiple throughput tiers managed by centralized software licensing simplify stocking and sparing
- Future-proof design allows remote gateways to take advantage of significant throughput increase potential of new HTS designs
- High performance waveforms combined with multi-layer optimization delivers the highest user IP bits per Hz, as well as highest user IP bits per Amplifier (BUC) Watt, minimizing Total Cost of Ownership (TCO) over network life
- Seamless Bridge Point-to-Multipoint mode provides seamless integration with service provider network
- Extensive VLAN support enabling traffic separation for multi-user environments

H-Pico Back Panel

Specifications

Transmit

Data Rate Tiers	Up to 10 Mbps (Software license centrally managed)
Symbol Rate	Up to 5 Msps Minimum symbol rate is 128 ksps for BPSK, QPSK, and 8-ARY, 256 ksps for 16-ARY, 32-ARY
FEC	VersaFEC-2
Modulation	BPSK, QPSK, 8-ARY, 16-ARY, 32-ARY
Transmit Filter Rolloff	5%, 10%, 15%, 20%, 25%, 35%
Return ACM	Yes

Receive

Data Rate	Up to 20 Mbps to a single H-Pico remote
Symbol Rate	1 – 500 Msps (shared outbound)
FEC	DVB-S2X
Demodulation	QPSK, 8PSK/APSK, 16APSK, 32APSK, 64APSK, 128APSK, 256APSK
Filter Rolloff	5%, 10%, 15%, 20%, 25%, 35%
Outbound ACM	Yes
RF Connector	F-Type Female

Packets per Second Aggregate PPS (TX+RX)	>10,000 (Header Compression enabled) >30,000 (Header Compression disabled)
Gigabit Ethernet Traffic Port	3

TCP and TCP within GTP Acceleration (Option)

Accelerated Sessions	500 Accelerated Sessions (all sessions over 500 will be passed without being accelerated)

Modulator Specifications

Operating Frequency	950 to 2150 MHz L-Band, 100 Hz frequency resolution
Impedance / Connector	50 Ohm, Type N female (F-Type female adaptor available)
Output Power	0 to -40 dBm, 0.1 dB steps
Power Accuracy	+/- 0.5 dB of nominal at 25 deg C
Frequency Stability	$\pm$ 0.06 ppm ($\pm$ 6 x 10-8), 0 to 50°C (32 to 122°F)
Frequency Reference	Internal
Harmonics and Spurious	Better than -50 dBc/4 kHz (typically < -60 dBc/4KHz) Measured from Fo +/- 300 MHz
BUC Reference (10 MHz)	Via TX IF center conductor, 10.0 MHz $\pm$ 0.06 ppm, selectable on/off, 0 dBm $\pm$ 2.5 dB
BUC Power Supply (HW Option)	24 VDC, 3.75 Amps max., 90 W @ 50°C Supplied through TX IF center conductor and selectable on/off via M&C control

Demodulator Specifications

Operating Frequency	950 to 2150 MHz L-Band, 100 Hz frequency resolution
Input Power Range, Desired Carrier	-60 dBm + 10 log (symbol rate in Msps) to -25 dBm
Absolute Maximum, No Damage	0 dBm
Acquisition Range	+/- 100 kHz
Adaptive Equalizer	Corrects up to 3 dB tilt
LNB Reference (10 MHz)	Via RX IF center conductor, 10.0 MHz ± 0.06 ppm Selectable on/off, -2.5 dBm ± 2.5 dB
LNB Voltage	Selectable on/off, 13 VDC, 18 VDC
LNB Current	400 mA, maximum
Monitor Functions	Es/No estimate, receive signal level, frequency offset

Physical, Power & Environmental

Modem Dimensions (1/2 RU) (height x width x depth)	1.75" x 8.0" x 6.0" (4.4 x 20.3 x 15.2 cm) approximate
Power Supply Options (60W AC external) (160W AC external) (24V DC direct to chassis) (48V DC/DC external)	AC: 100-240 VAC, 47Hz-63Hz IEC 320 input (3.15 x 5.0 x 12.5 cm) 4-PIN KPJX Female DC: 34-67 VDC, screw terminal post input (3.2 x 12.5 x 10.2 cm)
Power Consumption (typical)	< 30W (excluding optional BUC supply)
Operating Temperature	0 to 50°C
Storage Temperature	–20 to 70°C
Humidity	95% maximum, non-condensing

Hardware Options

- Upgraded 160W external power supply to provide 24 VDC, 3.75A @ 50°C BUC Power Supply