# RAISECOM
Raisecom Technology Co., Ltd

RAX711-H

DOCSIS 3.0 NID

Raisecom RAX711-H is the first generation DOCSIS NID which include 4*GE RJ45 nterfaces and 1 * coax interface in a compact size. RAX711-H supplies MEF CE2.0 carrier-grade service and helps the MSO to improve the business service level.

Based on the most cost-effective solution for cable MSOs to leverage their network and provide commercial services to business customers.

RAX711-H support 8*4 DOCSIS capacity, and combines the Cable Modem and L2 NID to reduce CapEx/OpEx;
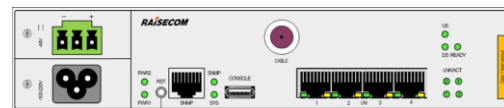
RAX711-H-4GE-DC_AC

Highlights >>

Network Security	Upgraded security with port-isolation, basic ACL, broadcast/multicast/DLF storm control, unique port loopback detection, and DHCP Client/Option82 functionality
MEF CE2.0	MEF ELINE, ELAN, ETREE service available
Ethernet OAM	IEEE 802.3ah Link OAM, IEEE 802.1ag end-to-end connectivity OAM and ITU-T Y.1731 end-to-end service and performance, SLA reporting
Management	Auto-Provisioning, plug&play, single IP for all the connected remote devices, end to end configuration Device management and VPN service management in Nview platform
SAT	Service activation test using Y.1564 up to 8 stream, act as a generator or a reflector
QoS	Advanced QoS technology allows stream-marking based on CoS, DSCP, IP precedence and priority; scheduling modes including SP, WRR, SP+WRR; WRED, flow-based mirroring/rate-limit/redirection/VLAN swapping and rewriting
Power Reliability	Dual hot-swappable power supply, with voltage/temperature alarms
TWAMP-Light	Standard IP SLA measurement, include generator and reflector
SLA Portal	B/S architecture, SLA TWAMP KPIs monitor(include FD, FDV, FLR, availability, bandwidth, bandwidth utilization)
E2E Provisioning	Standard MEF40 architecture, include bandwidth/performance/coslable profile GUI, standard service modules(ELINE, ELAN, ETREE), and End-to-End configuration based on service
DOCISIS Capacity	Support DOCSIS / EuroDOCSIS 3.0, 2.0, 1.1, 1.0 standard, and support 8*4 Capacity

DOCISIS Capacity (continued):

Downstream:

    Channel width: 6MHz

    Bandwidth: 108-1002MHz

    Bonding: up to 8 channels

Upstream:

    Bandwidth: 6-42Hz

    Bonding: Up to 4 channels
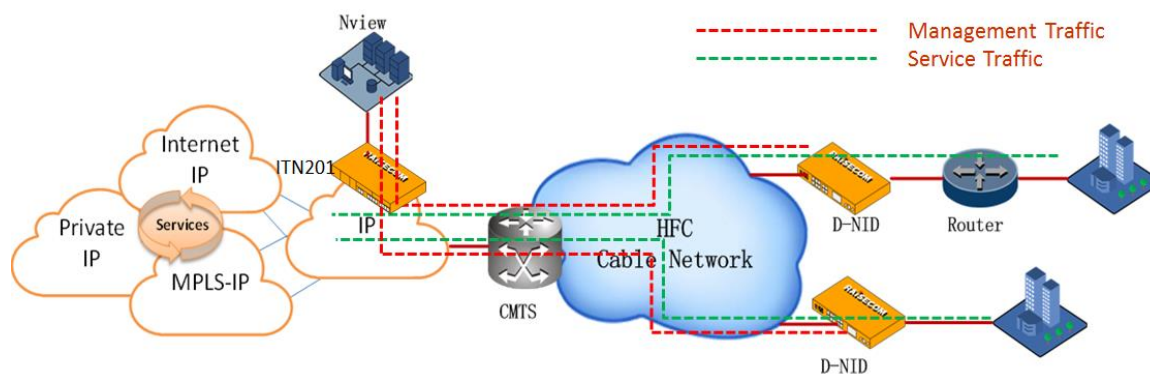
Application >>

D-NID Application

Large Enterprise, Small/Medium Business services Application

The RAX711-H can work in conjunction with the iTN201 for Large Enterprise, Small/Medium Business services. Its capacity, service-based QoS, and protection mechanism allow "cloud computing" applications, Imaging/video distributions, business data storage/recovery, Layer2-VPNs, etc. Meanwhile, such solutions enable Carrier-grade end-to-end SLA (hardware-based) performance monitoring for Ethernet jitter, frame delay and packet loss. Layer2/3 loopbacks enable service throughput testing and troubleshooting. The RAX711-H enables MEF CE2.0 L2VPN services over DOCSIS.

Solution Highlight:

1. The RAX711-H combines the Cable Modem and L2 NID to reduce CapEx/OpEx;

2. Carrier-level OAM and SLA help to improve the service quality;

3. Rapid service deployment based on unified network management platform;

4. DOCSIS3.0 is available，HFC BSoD intelligent solution;

5. Compact, Space-saving, power hot-swappable NID device;

6. If necessary, a SOHO router could connect D-NID to extend the solution;

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Key Features >>

Switching Mode	Store and forward mode; Supports jumbo frame
Ethernet	MTU:12,288 byte Up to 8k MAC Support 4,094VLANs (C-tag), stacked VLANs (QinQ, S-tag) Layer 2 loopback on single and multiple flows Layer 2 control protocol (L2CP) handling
IP Services	DHCP client, option61 IPv4, Static management routing
Traffic Management	Service classification per port/VLAN/CoS(DSCP) Support SP, WRR and SP+WRR scheduling modes, and up to 8 queues per port MEF-compliant 3-color policing with color-aware and color-blind mode Bandwidth throttling per port/VLAN/CoS(DSCP), CIR/EIR per flow
Security	ACL based on VLAN, CoS, MAC, EtherType, IPv4, IPv6, or user-define RADIUS, TACACS+ Storm control (broadcast, multicast, DLF)
Reliability	Link aggregation group (LAG) Interface backup ITU-T G.8031 Ethernet link protection switching (ELPS) and G.8032 Ethernet ring protection switching (ERPS) with the automatic protection switchover time less than 50ms Port/VLAN-based Ethernet local loop detection Fault propagation AC&DC dual-feed power supplies
Ethernet OAM	IEEE 802.3ah EFM-OAM link management IEEE 802.1ag connectivity fault management (CFM) with 3.3ms CCM resolution ITU-T Y.1731 performance monitoring (PM) Hardware-based frame delay (FD) measurement Y.1564 TWMAP-Light Hardware-based SLA KPIs per port or EVC, which include throughput, delay, jitter, packet loss and availability Dying gasp message in case of power failure
Auto-Provisioning	Auto-establishment of management tunnels across L2/L3 networks
System Management	Remote management via SNMP v1/v2/v3, Telnet and SSH v1/v2 Local management via console interface MEF 36 compliant MIB

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	KeepAlive, RMON, LLDP, Syslog
	Port/VLAN/CoS-based statistics
	SFP digital diagnostic management (DDM)
	temperature and CPU monitoring
	Voltage and temperature monitoring
	Dual system
Fault Propagation	From line to client interface fault propagation (user configurable);
	Client interface fault propagation

Specifications >>

Performance	Switching fabric: 8Gbps;
Physical Interface	Management port: 1 console (USB);
	1 out band SNMP(RJ45)
	Client interfaces:4 x GE RJ45
	Network interfaces:1 x Coax interface
Power Specs	100/240V AC, -36 to -72V DC 24V DC
	Full load: ≤25W
User Conditions	Operating temperature: -10~50˚C ;
	Storage temperature: -25~70˚C ;
	Humidity: 10~90% non-condensing
Dimensions	220(W)mm x 180(D)mm x 43.6(H)mm

Compliances >>

Standards & protocols	IEEE802.3,802.3u
	IEEE802.3ad Link Aggregation
	IEEE802.1p,802.1Q VLAN
	IEEE802.1ad QinQ
	IEEE802.3ah OAM IEEE802.1ag CFM
	ITU-T Y.1731 Services OAM
	ITU-T G.8031 ELPS ITU-T G.8032 ERPS
	IGMP v1/v2/v3
	SNMPv1/v2c/v3
	CE certified ,UL RoHS compliance
	EMI Class A
	MEF6,8,9,10,11,13,14,16,17,20,31,36
	CE2.0- compliance
	DOCSIS / EuroDOCSIS 3.0, 2.0, 1.1, 1.0

	DOCSIS®	EURODOCSIS™
RF DOWNSTREAM		
Operating Frequency Range (center)	111 to 999 MHz	112 to 1002MHz
Tuner Frequency Range	Edge-to-edge 54-1002, 85-1002, 108-1002 MHz	108 to 1002MHz
Tuner	Full band capture frontend with 8 fully independent digital tuners	
Demodulation	8 demodulators, 64 QAM or 256 QAM	
Maximum Raw Data Rate	8 downstream channels, each 6 MHz channel: 42.88 Mbps for 256 QAM and 30.34 Mbps for 64 QAM	8 downstream channels, each 8 MHz channel: 55.62 Mbps for 256 QAM and 41.71 Mbps for 64 QAM

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Bandwidth per Channel	6MHz	8MHz
Operating Level Range	-15 to +15dBmV	+43 to +73 dBµV for 64 QAM +47 to +77 dBµV for 256 QAM
Input Impedance	75 ohms	
RF UPSTREAM		
Operating Frequency Range (edge-edge)	5 to 42 MHz, 5 to 65 MHz, or 5 to 85 MHz	5 to 65 MHz,　or 5 to 85 MHz
Upstream Transmission	4 upstream channels	
Modulation	QPSK, 8 QAM, 16 QAM, 32 QAM, 64 QAM at ATDMA Mode QPSK, 8 QAM, 16 QAM, 32 QAM, 64 QAM, 128 QAM at SCDMA mode	QPSK, 8 QAM, 16 QAM, 32 QAM, 64 QAM at ATDMA Mode QPSK, 8 QAM, 16 QAM, 32 QAM, 64 QAM, 128 QAM at SCDMA mode
Maximum Data Rate per channel	Chnl Width (MHz)　Raw Data Rate (Mb/s)	Chnl Width (MHz)　Raw Data Rate (Mb/s)
Modulation		
QPSK	1.6　2.56	1.6　2.56
16 QAM	1.6　5.12	1.6　5.12
QPSK	3.2　5.12	3.2　5.12
16 QAM	3.2　10.24	3.2　10.24
32 QAM	3.2　12.8	3.2　12.8
8 QAM	6.4　15.4	6.4　15.4
16 QAM	6.4　20.5	6.4　20.5
32 QAM	6.4　25.6	6.4　25.6
64 QAM	6.4　30.72	6.4　30.72
RF	Female "F" type	

Ordering Information >>

RAX711-H-4GE-X	4 RJ45 interfaces, X = Pluggable 1:1 Hot-swappable dual redundant power - AC and/ or DC