

# PRODUCT CATALOG

## Chapter 1. Packet Transport Network

IP/MPLS provider edge and customer edge products offer high performance MPLS switching & routing and effortless scalability. Raisecom brings the benefits from an MPLS core all the way to the customer premises with its IP/MPLS portfolio, delivering services with adjustable bandwidth and dedicated SLA, without increasing network complexity and expenses. Raisecom IP/MPLS solutions help service providers flexibly optimize their network loads, improve their service performance, and reduce their total cost of ownership.

## IP/MPLS Aggregation and PE Platform

### iTN8800-E

The iTN8800-E is a chassis-based IP/MPLS service aggregation devices. It provides Fast and Gigabit Ethernet, 10GbE, 25GbE, 40GbE, 50GbE and 100GbE interfaces, as well as legacy E1 and STM-1 circuit emulation interfaces in a 3U-height chassis with 10 slots for various types of service cards. These various interfaces ensure iTN8800-E chassis work with Raisecom intelligent CPEs to deliver and aggregate services on unified monitoring and management platform. The total access and aggregation solution is perfect for business leased-line service delivery, mobile backhauling, Internet accessing, cloud connection, and campus networking.



iTN8800-E

## FEATURES

- Modular design providing flexibility in hardware configuration
- High reliability guaranteed by dual redundant power supply modules, and dual control modules
- Various Ethernet interface cards available providing Ethernet interfaces from 1G, 10G, 25G, 40G, 50G to 100G
- IPv4/IPv6 dual-stack
- MEF CE2.0 complied E-Line, E-LAN, E-Tree, E-Access service with OAM and hardware-based SLA
- Fine-tuned QoS and HCAR
- VPWS, VPLS, H-VPLS, L3VPN over MPLS with service status and performance monitoring
- Full IGP/EGP protocol stack, RIP, OSPF, IS-IS and BGP
- Multicast traffic management by IGMPv1/v2/v3, PIM-SM, IGMP snooping, MLD v1/v2 and snooping
- Ethernet VPN and Segment Routing for greater network simplicity, agility and scalability\*
- SyncE and IEEE 1588v2 TC/BC for synchronization\*
- High network flexibility and resiliency guaranteed by spanning tree protocol family, LACP, MC-LAG\*, standard ITU-T G.8031/8032
- Management security ensured by AAA and ACL
- User friendly standard SNMP-based GUI management

## System and Sub-cards

- iTN8800-E-DC: iTN8800-E chassis with fan module & 2 x DC power modules
- iTN8800-E-NXU: iTN8800-E management & control module
- iTN8800-A-RC1: 1x100GE module (QSFP28) or 1x40GE module (QSFP+)\*
- iTN8800-A-RL2: 2x50GE module (QSFP28)\*
- iTN8800-A-RK4: 4x25GE module (SFP28) or 4x10GE module (SFP+)
- iTN8800-A-RX4: 4x10GE module (SFP+) or 4x1GE module (SFP)
- iTN8800-A-RG8: 8xGE module (SFP)
- iTN8800-A-RG10: 10xGE module (SFP)\*
- iTN8800-A-RS4: 4xSTM-1 interfaces module\*
- iTN8800-E-RE16-BL: 16xE1 interfaces module (2 E1 in one RJ45 connector)

P/N	iTN8800-E
Number of Slots	2 for control modules 10 for service modules
Interface	Up to 2x100GE/40GE* Up to 4x50GE* Up to 8x25GE Up to 28x10GE Up to 100x1GE* Up to 96xE1 Up to 24xSTM-1*
Clocking	SyncE*, IEEE 1588 TC/BC*
Dimension(mm)	444 (L) × 220 (W) × 132.5(H)
Power	Redundant, Hot-swappable -40 to -57V DC Full Load: ≤516W
Operating Temperature	-5~55°C

## IP/MPLS Pre-Aggregation Pizza-Box

### RAX721 series

RAX721 are a series of compact IP/MPLS pre-aggregation devices. They are optimized for metro access and aggregation, leased-line service delivery and multi-service aggregation. Standard CE2.0 service models, VPN over MPLS, and the support of various OAM and SLA features greatly simplify service delivery and monitoring for service providers. With the support of rich L2/L3 unicast and multicast traffic control protocols, advanced QoS and high reliability technologies based on both hardware and software, RAX721 series are very flexible and reliable service aggregators for enterprise network, campus network, and residential LAN as well. They can deliver multiple services (Internet, VoIP, IPTV, video surveillance...) and be deployed in various networking topologies. And the support of IPv4/v6 makes it a future-proof investment for service providers.

- RAX721-A-XF provides 28x10GE SFP+ interfaces.
- RAX721-A provides 4x10GE SFP+ uplink interfaces and 24x1GE SFP downlink interfaces.
- RAX721-A-T provides 4x10GE SFP+ uplink interfaces and 24x1GE RJ45 downlink interfaces.
- RAX721-B provides 4x10GE SFP+ uplink interfaces and 48x1GE SFP downlink interfaces.
- RAX721-B-T provides 4x10GE SFP+ uplink interfaces and 48x1GE RJ45 downlink interfaces.



RAX721-A-XF



RAX721-A



RAX721-B



RAX721-A-T



RAX721-B-T

## FEATURES

- Compact hardware design providing high port density in 1U space
- IPv4/IPv6 dual-stack
- MEF CE2.0 complied E-Line, E-LAN, E-Tree, E-Access service with OAM and hardware-based SLA
- Fine-tuned QoS and HCAR
- MPLS VPWS, VPLS, H-VPLS, L3VPN with service status and performance monitoring
- Full IGP/EGP protocol stack, RIP, OSPF, IS-IS and BGP
- Multicast traffic management by IGMP v1/v2/v3, PIM-SM, IGMP snooping and MLD
- Ethernet VPN and Segment Routing for greater network simplicity, agility and scalability\*
- High reliability guaranteed by redundant power supplies, dual systems, spanning tree protocol family, LACP, MC-LAG and standard ITU-T G.8031/8032
- Zero-Touch Provisioning
- Management security ensured by AAA and ACL
- User friendly standard SNMP-based GUI management

P/N	RAX721-A-XF	RAX721-A	RAX721-A-T	RAX721-B	RAX721-B-T
NNI Interface	4x10GE SFP+ or 4x1GE SFP	4x10GE SFP+ or 4x1GE SFP	4x10GE SFP+ or 4x1GE SFP	4x10GE SFP+ or 4x1GE SFP	4x10GE SFP+ or 4x1GE SFP
UNI Interface	24x10GE SFP+/1GE SFP	24x1GE SFP	24x1GE RJ45	48x1GE SFP	48x1GE RJ45
Dimension(mm)	360 (L) x 440 (W) x 44(H)				
Power	Dual redundant, Hot-swappable 100-240V AC, -36 to -72V DC Power Consumption: ≤75W				
OperatingTemperature	-5~55°C				

## 1G/10G MPLS/CE Demarcation Device

### RAX711-R Series, RAX711-C-R Series

The RAX711-R and RAX711-C-R series are designed for 1G/10G leased line service delivery and 4G/5G mobile backhauling. They are the most compact and cost-effective MPLS Customer Edge devices, providing customers with affordable MPLS network accessibility. The support for standard CE2.0 services (E-Line, E-LAN, E-Tree, E-Access), various service models over MPLS (VPWS, VPLS, H-VPLS, L3VPN), and advanced OAM, SLA, resiliency features, ensures service providers great flexibility and reliability in service design and deployment. The devices can operate in extended temperature range. And the support of SyncE and IEEE 1588v2 makes it ready for MBH applications. The IP/MPLS demarcation products are fully compatible with both the Raisecom IP/MPLS aggregation PE router, pre-aggregation pizza-boxes as well as 3rd-party vendor equipment on existing MPLS networks.



RAX711-R



RAX711-C-R

## FEATURES

- Dual hot-swappable power supplies with voltage/temperature monitoring
- Compact design in half-19-inch width
- Zero-touch provisioning
- Standard CE2.0 services and VPWS, VPLS, H-VPLS, L3VPN over MPLS
- Flexibility in traffic classification ensures customer-defined SLA
- Full set of protection mechanisms for Ethernet, IP and MPLS services
- Standard ITU-T Y.1564 SAT and RFC2544 test
- Hardware-based end-to-end SLA performance monitoring
- TWAMP light (Generator & Reflector), ICMP echo
- Synchronization: SyncE and IEEE 1588 TC
- User-friendly CLI/GUI-based management

P/N	RAX711-R	RAX711-C-R
NNI Interface	2 x GE SFP	4 x 10GE SFP+
UNI Interface	4 x GE combo	12 x GE SFP
E1 PWE	4 x E1	N/A
Clocking	SyncE	SyncE & IEEE 1588 TC
Dimension(mm)	220 (L) x 180 (W) x 43.6(H)	220 (L) x 266 (W) x 44(H)
Power	100-240V AC, -36 to -72V DC Full Load: ≤ 20W	100/240V AC, -36 to -72V DC Full Load: ≤ 40W
Working Temperature	-20~65°C	-20~65°C
MTU/Jumbo Frame	16,360 Bytes	12,288 Bytes

## Carrier Ethernet Demarcation Device

### RAX701-GC Series, RAX711-L Series

The Carrier Ethernet Demarcation Devices are widely deployed for delivering MEF CE2.0 compliant E-Line, E-LAN, E-Tree, and E-Access services for alternative service providers, enterprises/institutions, small/medium businesses, and mobile backhauling scenarios. The very compact design makes it easy for deployment. Both RAX701-GC and RAX711-L series support zero-touch auto-provisioning and standard ITU-T Y.1564 SAT for convenient and assured service commissioning. Customer required end-to-end SLA of classified services is also guaranteed by the support for CFM and ITU-T Y.1731 SLA. All performance data is well presented on GUI web portals. The service-based QoS helps to differentiate traffic flows and commit forwarding priorities within each EVC. And the support of ITU-T G.8031/8032 ELPS/ERPS helps the EDD flexibly fit in different network topologies.



RAX701-GC



RAX711-L

## FEATURES

- Compact hardware design
- Zero-touch provisioning
- MEF CE2.0 certified E-Line, E-LAN, E-TREE and E-Access services
- L2VPN over MPLS with MPLS-TP OAM and protection features
- ITU-T G.8031/8032 ELPS/ERPS with sub-50ms switch-over time
- ITU-T Y.1564 SAT and RFC2544 test
- Hardware-based IEEE802.3ah OAM, 802.1ag CFM and Y.1731/SLA
- TWAMP light (Generator & Reflector)
- Synchronization with SyncE and IEEE 1588 TC
- User-friendly CLI/GUI-based management

P/N	RAX701-GC	RAX711-L
NNI Interface	2 x GE SFP	
UNI Interface	1 x GE combo	4 x GE combo
E1 Circuit Emulation	N/A	4 x E1
Clocking	IEEE 1588 TC	SyncE & IEEE 1588 TC
Dimension(mm)	180 (L) × 160 (W) × 43.6(H)	220 (L) × 180 (W) × 43.6(H)
Power	100-240V AC, -36 to -72V DC WP Full Load: ≤ 12W	100/240V AC, -36 to -72V DC, 24V DC Full Load: ≤25W
Operating Temperature	-20~65°C	-20~65°C
MTU/Jumbo Frame	12,288 Bytes	

## Multi-Service PTN/CE Aggregator

### iTN221

The iTN221 is a “Pizza Box” (full ETSI compliant) 1.5RU-sized next generation multiservice access equipment. It offers a dual-core architecture for both packet and SDH/TDM transmission. The iTN221 supports up to 2x1G and/or 2xSTM-1/4 uplink capacities, and a built-in PDH multiplexing with non-blocking cross connect matrix at 64kbps granularity. Its TDM pseudo-wire functionality enables a smooth TDM to Ethernet/IP/MPLS network migration. The iTN221 supports three service slots for various expansion cards, including voice (FXS/FXO/E&M), Ethernet (GE/FE), C37.94, 64K co-directional, low-speed RS232/RS485 data etc. It provides utilities and transportation companies with reliable connectivity for controlling signals, mission critical data, voice, video monitoring and electrical tele-protection services. It supports the smooth transition from legacy PDH/SDH to packet transmission networks. For mission critical services, the system maximizes network uptime and provides carrier-class network availability by adopting G.8032/G.8031 Ethernet and G.8131/Wrapping-Steering MPLS-TP protection that provide sub-50ms switching over as well as hot-swappable redundant power supplies. Extensive management capabilities are provided for all aspects from equipment installation and service provisioning to real-time system operation and performance monitoring. The iTN221 offers a cost-effective solution for providing MEF-compliant CE2.0 Ethernet services, as well as E1 pseudo-wire connectivity for lease-lined and utility private networking with integrated SyncE and 1588v2 PTP. Altogether, the iTN221 can be used to reduce customer's CapEx and OpEx, while building a future-proof infrastructure without wasting existing legacy equipment investment.



iTN221

## FEATURES

- Converged dual switching backplanes to deliver Ethernet and TDM traffic in one system
- Available with 2x1G SFP uplinks, 4xGE on the mainboard and 4xGE on expansion card
- Available with 2xSTM-1/4 in SFP
- Available with E1 TDM, E1 PWE3, GE, voice, V.24/RS232, C37.94 tele-protection and co-directional 64k at client side
- E-Line, E-LAN and E-Tree are compliant with MEF CE2.0 standard
- Uplink redundancy and resiliency with ITU-T G.8031 (ELPS), G.8032 (ERPS) on Ethernet side, G.8131 MPLS-TP liner protection and wrapping/steering, MPLS-TP ring protection on PTN side, and 1+1 liner MSP, SNCP, 1+1 LPP on SDH side
- IEEE802.3ah, 802.1ag, ITU-T Y.1731/SLA, L2 MPLS-TP LSP/PW/OAM
- VLAN, QinQ, QoS, LACP, and static MPLS-TP
- PWE3 supports SAToP and CESoP modes, MPLS, CESoETH (MEF) and UDP/IP encapsulations
- Compliant with IEEE 1588 TC mode and SyncE
- 2Mbit and 2MHz input/output external clock ports
- Dry contact Alarm Relay (Input/output alarms)
- Extended temperature range (-20 to 65°C)
- Environmental Standards: CE, UL, EN 50121-4, IEC61000-4-2/3/4/5/6/7/8/9, 11/12/13/14, 29 IEC61850-3
- SNMP (NView compatible) via in-band and out-of-band network channels

## System and Sub-cards

- iTN221-4GE, including the chassis, main card, double power, fans, and three sub card slots
- The main card includes: 2xSTM-1/4 SFP, 2xGE SFP uplinks, 8xE1 DB37 and 4xGE RJ45
- iTN221-SUB-C64K, G.703 co-directional sub-card, 4 ports
- iTN221-SUB-RS24, serial interface sub-card, 4xV.24/RS422/RS485 or 8xRS232 ports
- iTN221-SUB-TP, C37.94 sub-card, 2 optical interfaces, Nx64k (N=1-12) per channel
- iTN221-SUB-10FXS, FXS sub-card, 10 ports
- iTN221-SUB-10FXO, FXO sub-card, 10 ports
- iTN221-SUB-4GE, Ethernet sub-card, 4xGE service ports
- iTN221-SUB-4E1, E1 sub-card, 4 ports
- iTN221-SUB-4E&M, E&M sub-card, 4 ports
- iTN221-SUB-8MT, 8 Magneto Telephone ports
- iTN221-SUB-V35, V.35/X.21 sub-card, 1 port

P/N	iTN221
Chassis(high)	1.5U
Number of Service slots	3
SDH cross-connect	8x8 VC4 or 504x504 VC12
Packet switch capacity	16G
STM-16 interface	N/A
STM-1/4 interface	2
E1 channel	20
EOS interface	8
Fast Ethernet port	16
GbE port	16
10GbE port	N/A
Circuit Emulation	20 x E1/T1
PCM Interface	FXS/FXO/E&M/MT, V.24/RS232/RS422/RS485, G.703 CoDir, V.35, C37.94