CATALOG 2023

PRODUCTS AND SOLUTIONS

RAISECOM

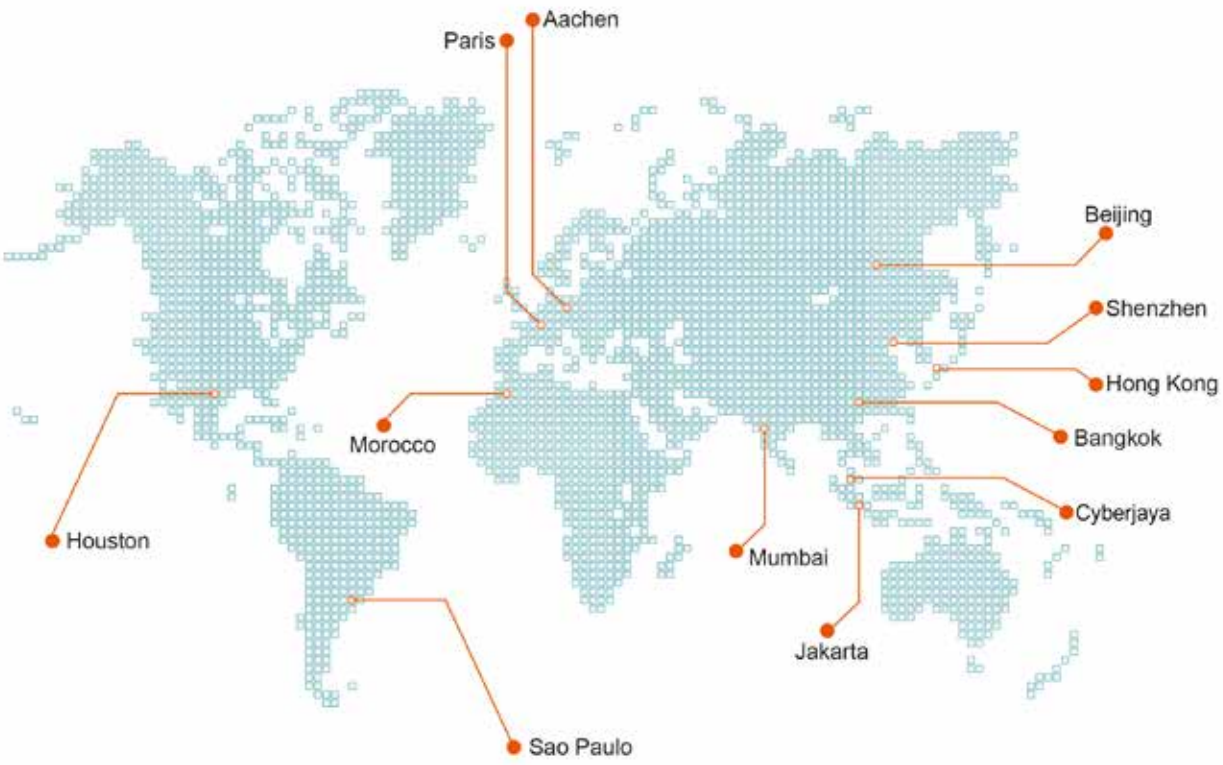
About Raisecom

Raisecom is a global leading vendor providing comprehensive telecommunication and networking solutions. Headquartered in Beijing and listed on Shanghai Stock Exchange (SHA: 603803), Raisecom has been growing remarkably in last decade and serving partners and customers over 80 countries worldwide.

Consisted with more than three R&D centers and two manufacturing facilities in China, Raisecom is capable of harnessing local talents and supply chain resource to design, develop and provide best-in-class cost-efficient products. Through well-established local representative offices and branch companies spread in every continent, Raisecom has always been dedicated to providing tailored Packet Transport, Optical Transport, Broadband Access, Industrial and IoT Networking solutions to its service provider and vertical industry customers locally.

Raisecom has been certified and acquired world-recognized quality system standards such as ISO9001:2015, ISO14001:2015 and ISO45001:2018 for product development, manufacturing process, environmental and occupational health & safety. The products have also been designed to comply with CE, UL, RoHS and CSA regulations for different markets.

Raisecom Global Presence



CONTENTS

Solutions

PRODUCTS

Fixed-Line Operator

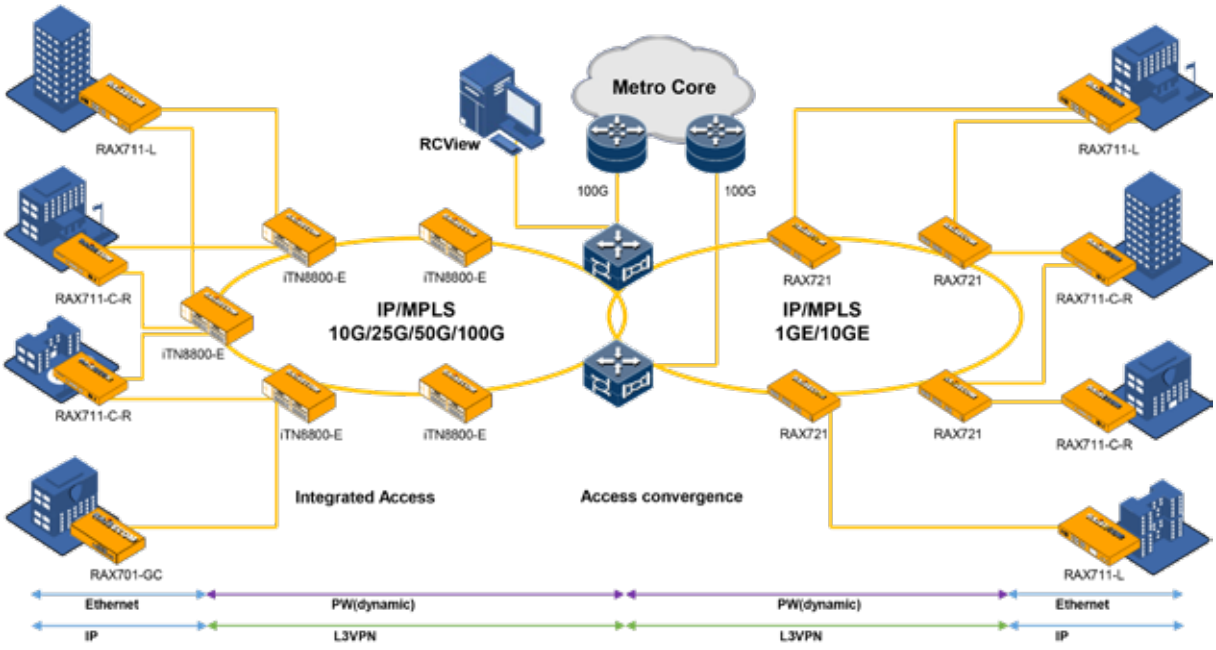
Raisecom telecommunications solutions present a comprehensive range of access and aggregation solutions and technologies, targeting incumbent carriers, telecom service providers, T2/T3 alternative operators as well as private fixed-line operators.

Raisecom solutions deliver services with assured bandwidth, guaranteed data security, minimized network outages, and with the ability to deliver end-to-end carrier-grade services with a reliable and predefined SLA. They are enabled with highly resiliency and intelligent demarcation features in a versatile access infrastructure offering data rates range from 2Mbps to 100Gbps, they are widely accepted and welcomed in sensitive business leased line service markets.

Telecom operators need to offer various services, while attempting to harness and maintain their infrastructure invested in different generations. As a premium partner, Raisecom provides the most flexible combinations of products and solutions which bring advanced networking technologies, end-to-end management, and easy-to-maintain and easy-to-use solutions together.

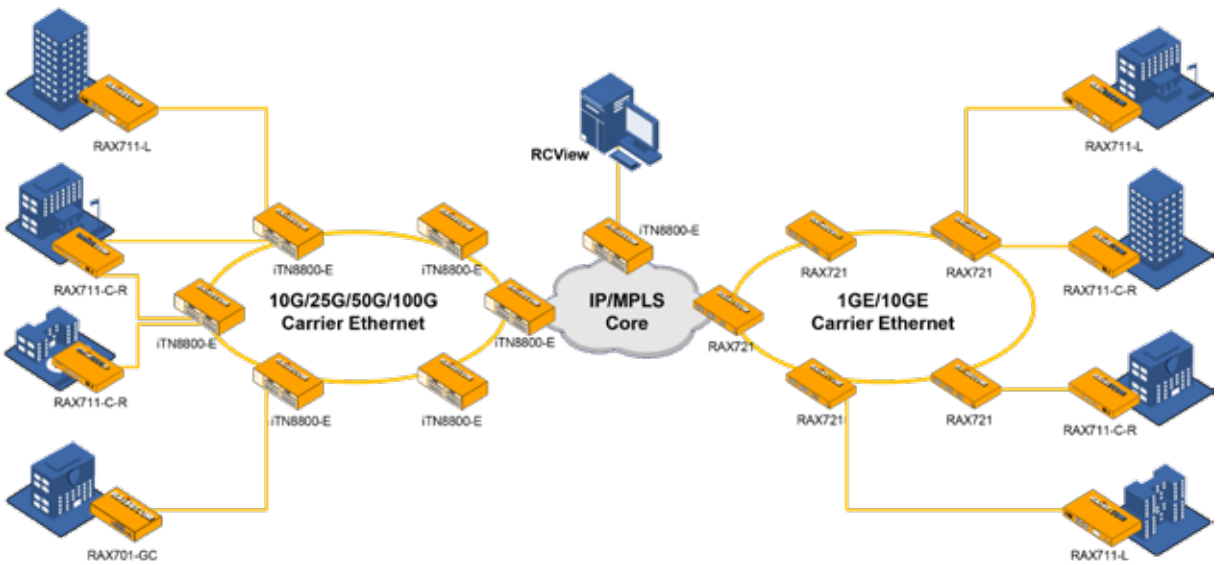
Business Leased-Line Service by L2/L3VPN over MPLS

- Compact-designed intelligent L2/L3 CPE and high-performance pre-aggregator
- Various VPN over MPLS: VPWS, VPLS, H-VPLS, MS-PW, L3VPN, EVPN*, inter-AS L2/L3VPN and E1 over MPLS/UDP/MEF by CES
- Various tunnel technology: static LSP, LDP, MPLS-TE, MPLS tunnel Policy
- DHCPv4/v6 ZTP reliability remote site easy online without any configuration
- Service reliability ensured by TE FRR/hot-standby, LDP FRR, ECMP, PW redundancy/hot-standby
- Service OAM MPLS Ping/Trace, MPLS OAM, BFD, and SLA Y.1731, TWAMP*, Y.1564, RFC2544
- End-to-End service delivery and management on GUI*



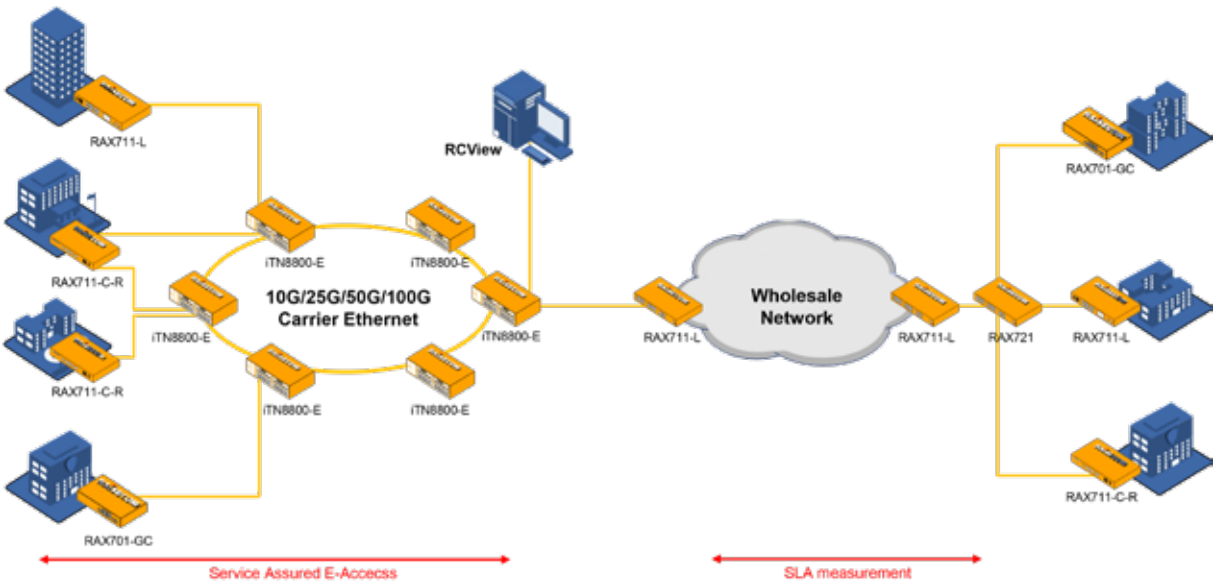
Carrier Ethernet Leased-Line with Guaranteed SLA

- Compact-designed intelligent Carrier Ethernet CPE and pre-aggregator
- CE2.0 compliant EVC/OVC services: E-Line, E-LAN, E-Tree, E-Access
- QoS, flexible hierarchical bandwidth guarantee, Port + VLAN + Cos
- Y.1564 Service Activation Test run from UNI to UNI
- SLA implemented by ITU-T Y.1731 LM/DM
- User-friendly GUI for SAT and SLA



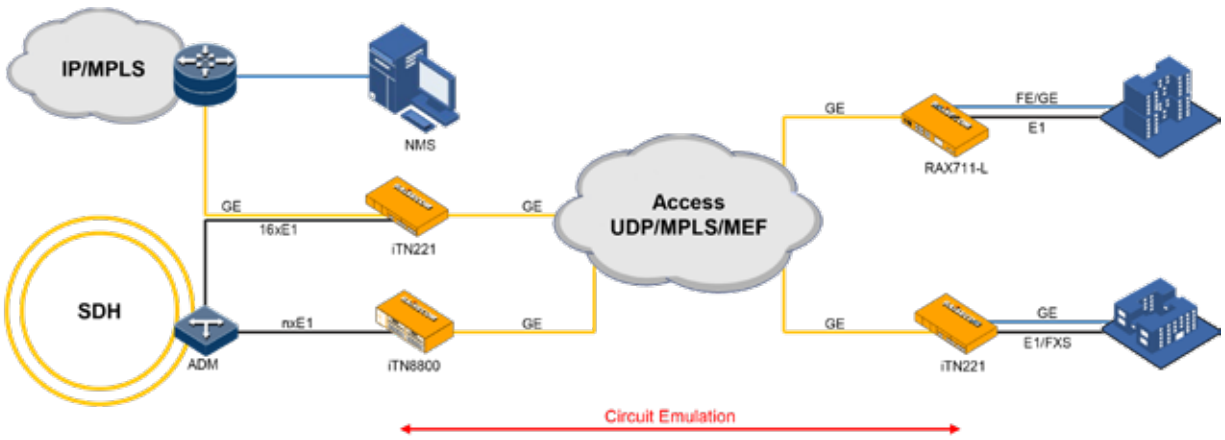
Wholesale Leased-Line with Guaranteed SLA

- Compact-designed intelligent Carrier Ethernet CPE and pre-aggregator
- CE2.0 compliant EVC/OVC services: E-Line, E-LAN, E-Tree, E-Access
- QoS, flexible hierarchical bandwidth guarantee, Port + VLAN + Cos
- Y.1564 Service Activation Test run from UNI to UNI
- SLA implemented by ITU-T Y.1731 LM/DM
- User-friendly GUI for SAT and SLA



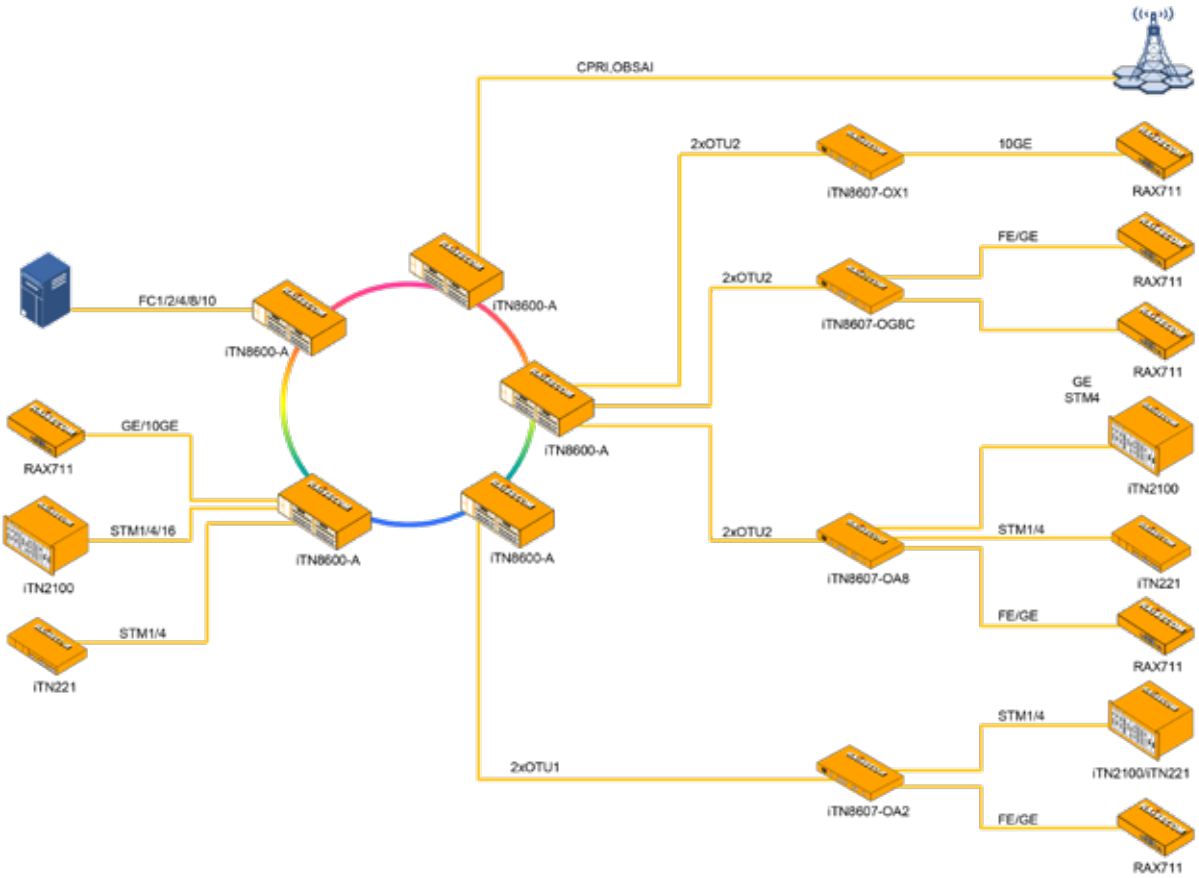
TDM Extension over Packet Network

- Ensuring service providers with a smoothly migration from legacy TDM to packet infrastructure
- Various legacy service access capability addressing different network terminals flexibly
- Pseudo-wire solutions range from CPEs to medium and large sized aggregators
- Flexibility of TDM emulated service granularities from Nx64K, E1 to STM-1 circuits
- Supporting point-to-point and point-to-multipoint network topologies
- SyncE and PTP clocking guarantee high-quality synchronization for TDM services



Multi-Service OTN Metro Access Networks

- Comprehensive OTN/DWDM based solution for metro access and aggregation fiber networks
- Multi-service transport including 1GE/10GE, STM-1/4/16/64, OTU1/OTU2, FC1G/2G/4G/8G/10G, CPRI, and OBSAI
- End-to-end OTN-based business leased line access with iTN8607 series pizza-box CPEs
- Cost-efficient and secure 100G/200G/400G Data Center Interconnect solutions
- Seamless network migration with integrated PTN/OTN/SDH switching backplane at the same time
- Comprehensive NMS platform enabling automatic deploying, commissioning and monitoring of services



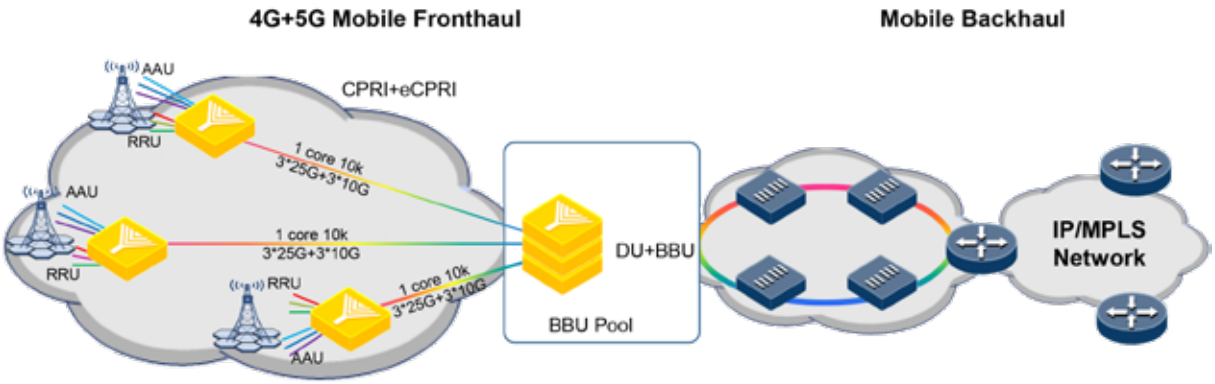
Mobile Operator

The rapid growing number of bandwidth-savvy smartphones and smart devices continuously drives mobile operators to improve their networks. This includes improved efficiency, increased bandwidth capacity and expanded coverage. The choice of mobile backhaul and mobile fronthaul technologies is becoming critical for operators aiming at delivering guaranteed mobile services and remain profitable in an era of declined ARPU.

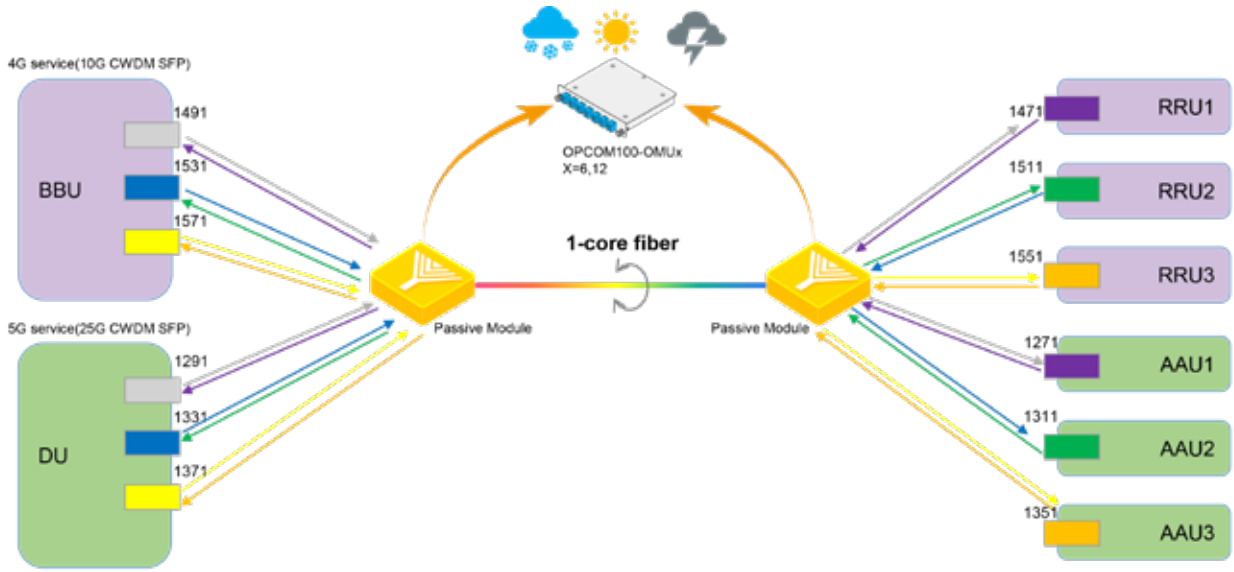
Raisecom mobile backhaul solutions provide voice-sensitive and data-intensive traffic at affordable costs. They enable reliable and smooth migrations of different generations (2G, 3G and 4G/LTE) mobile services over legacy SDH to packet-based networks. These carefully engineered solutions include some of the following capabilities: auto-provisioning, bandwidth optimization and performance monitoring, which assist in reducing OpEx and increasing network availability.

The mobile fronthaul solution is widely deployed in C-RAN architecture to optimize fiber utilization. Raisecom provides diversified passive and semi-passive solutions to address cost sensitive scenario and fiber intelligent management scenario respectively.

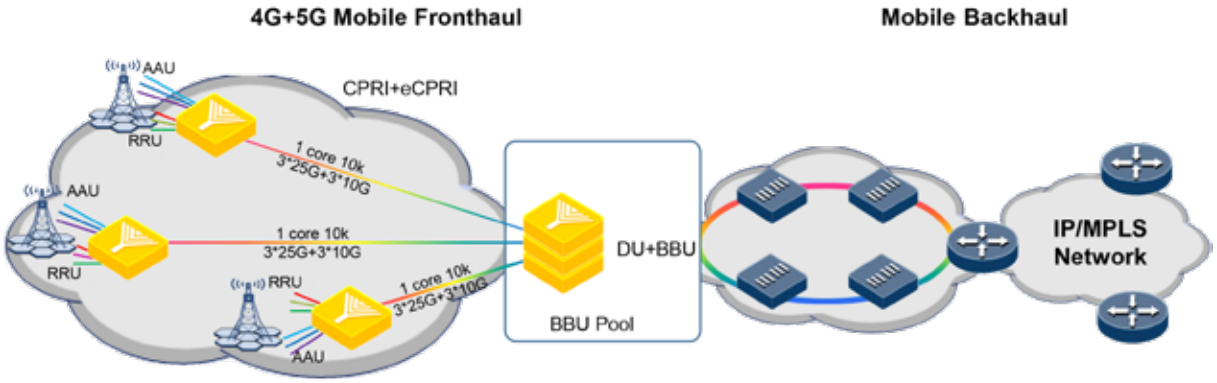
Passive 4G/5G Mobile Fronthaul



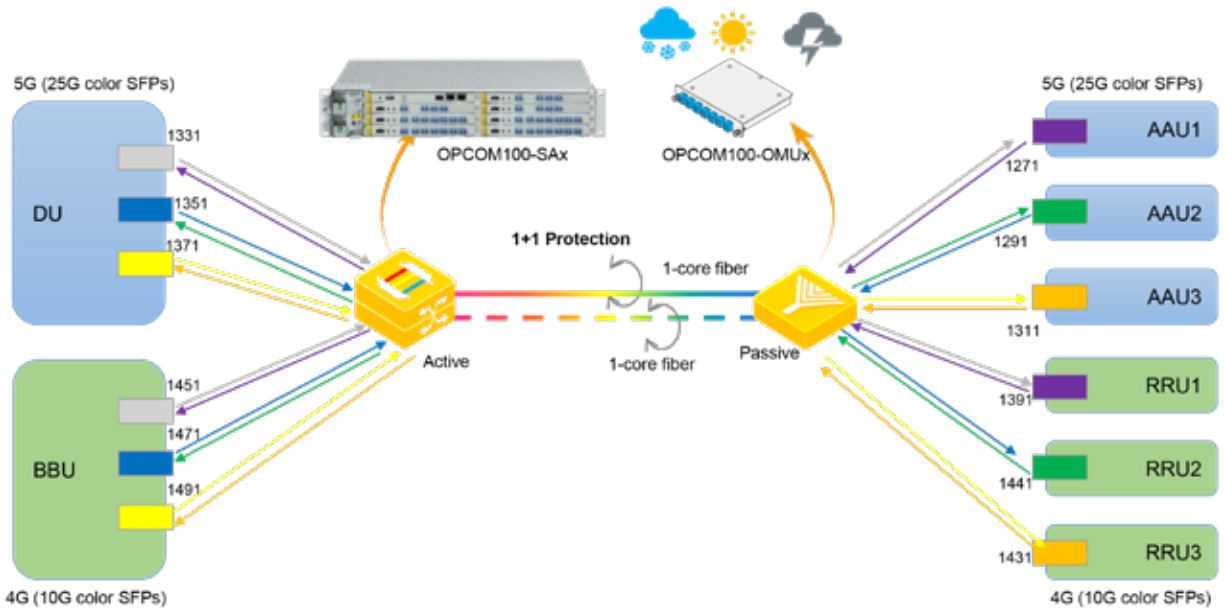
CWDM Semi-Passive Mobile Fronthaul Solution



Semi-Passive 4G/5G Mobile Fronthaul

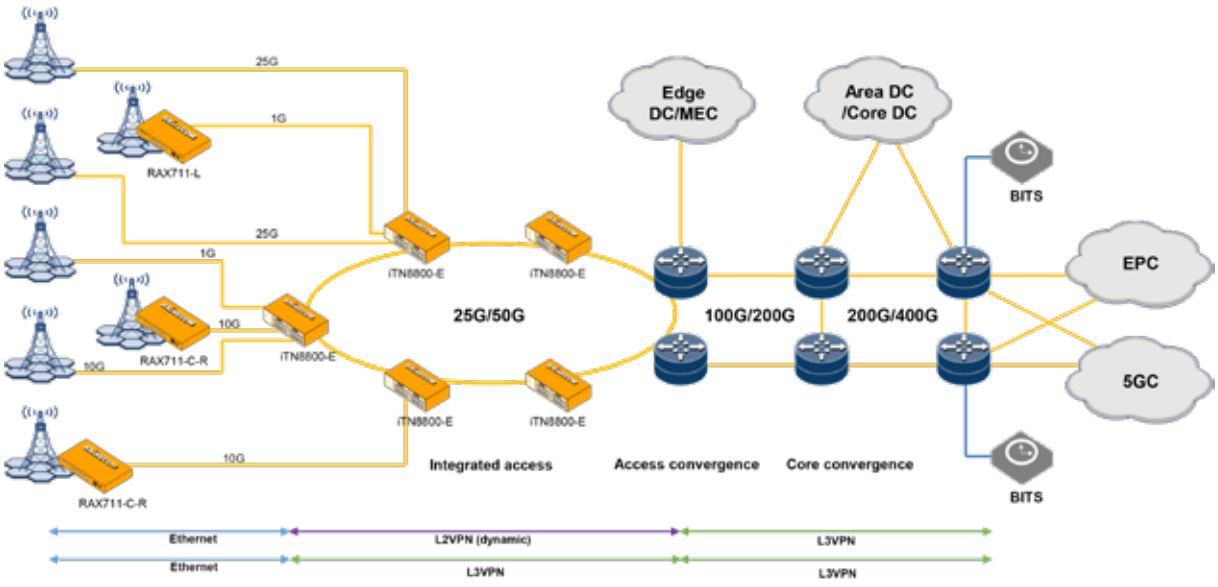


CWDM Passive Mobile Fronthaul Solution



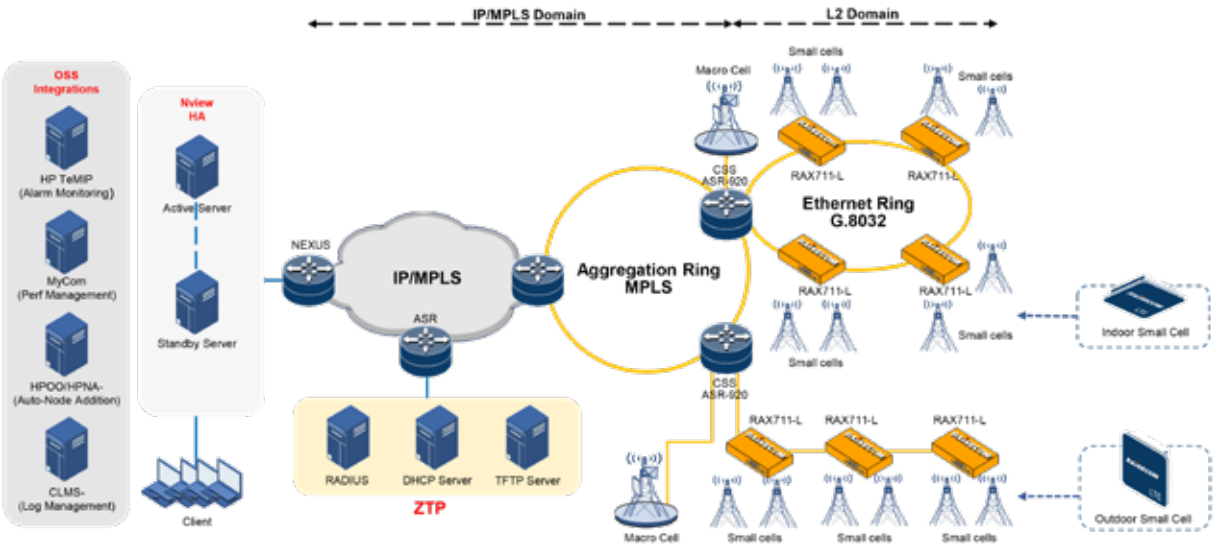
Transport Upgrade for 5G Mobile Backhaul

- Access bandwidth upgrade from 1G/10G to 25G/50G*/100G for 5G eMBB nodes
- Chassis based solution provides redundancy in switching fabrics and power supplies
- Sufficient 1G/10G ports resources on chassis-based and 1U standalone devices
- Backhauling services delivered by L2VPN access to L3VPN or L3VPN all-the-way
- Next-generation EVPN*, SR* and SDN help reduce network complexity, increase scalability and flexibility



Dependable 4G/LTE Small Cell Backhaul

- Cost-efficient and reliable solution for small cell backhauling
- Extended operating temperature range suitable for outdoor deployment
- Zero-touch provisioning helps save OpEx significantly
- High network reliability guaranteed by standard G.8032 ERPS
- Support traffic classification and prioritization
- MLD Snooping for IPv6 multicast traffic management
- 1588v2 TC for synchronization across the network



Small Cells for Improving Mobile Coverage and Throughput

- Indoor small cells for mobile operators to effectively improve their mobile coverage and throughput
- Integrate baseband, RF and antenna, implement full functions of a base station
- Featuring intelligent SON, self-startup, automatic configuration, and flexible deployment
- Support multiple backhaul modes, such as GPON/XGS-PON, IPRAN and Internet
- Support MIMO dual-way balancing and end monitoring
- Adopt highly integrated chipset solution with high price performance ratio

Small Cells for Mobile Coverage in Sparsely Populated Area

- Integrate baseband, RF and antenna implement full functions of a base station
- Support mask-mount and building-mount installation
- Feature intelligent SON, self-startup, automatic configuration, and flexible deployment
- Support multiple backhaul modes, such as GPON/XGS-PON, IPRAN and Internet
- Support MIMO dual-antenna Rx and Tx, maximizing downlink rate
- Provide a high output power, applicable for long-distance coverage in rural and mountainous areas

ISP and Cable Operator

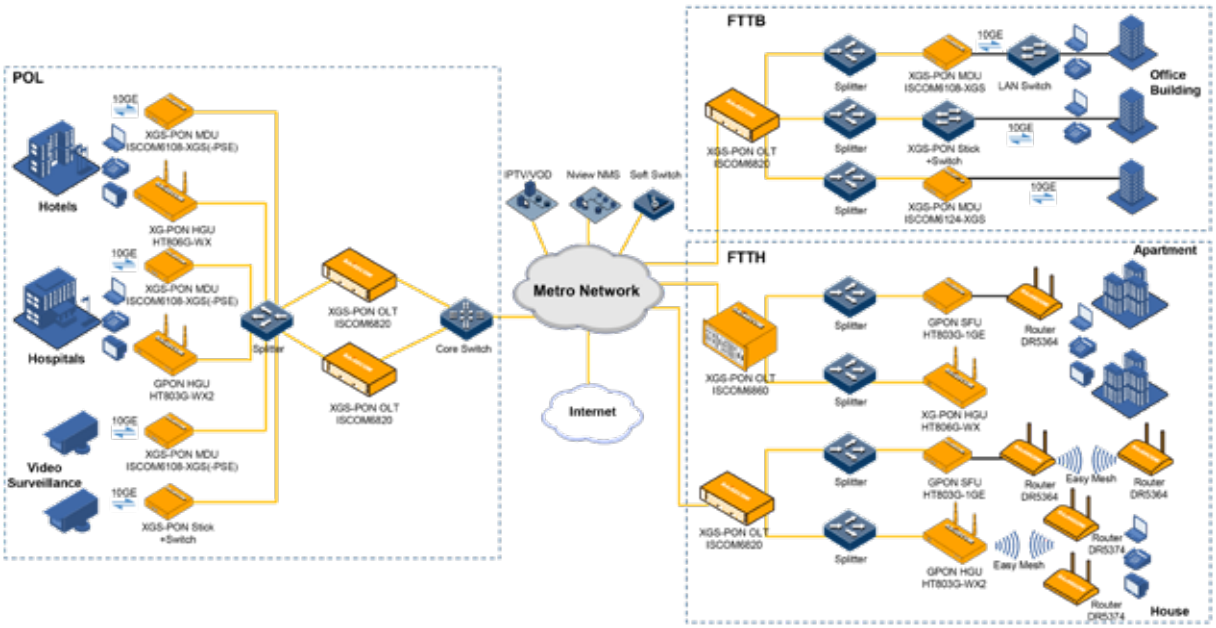
More and more consumers are witnessing the benefits of Fiber to the Home (FTTH) technologies. In addition to the ultra-fast Internet access, these users can also benefit from Triple-Play services (Internet + voice + IPTV/CATV) using the same infrastructure at reasonable cost. Some broadband service providers are now adding a fourth service (Mobile/FMC) which increases the bandwidth usage and the need for QoS.

Raisecom offers both Active Ethernet (AON – Active Optical Networks) and passive optical network (PON – Passive Optical Networks) access and aggregation solutions for high-density metro residential access. Comprehensive streams of Internet, voice, video and sometimes cellular can be delivered to rural and less populated areas with low-cost fiber, copper and wireless connections.

The versatile solutions enable fast deployments and pay-as-you-grow approach.

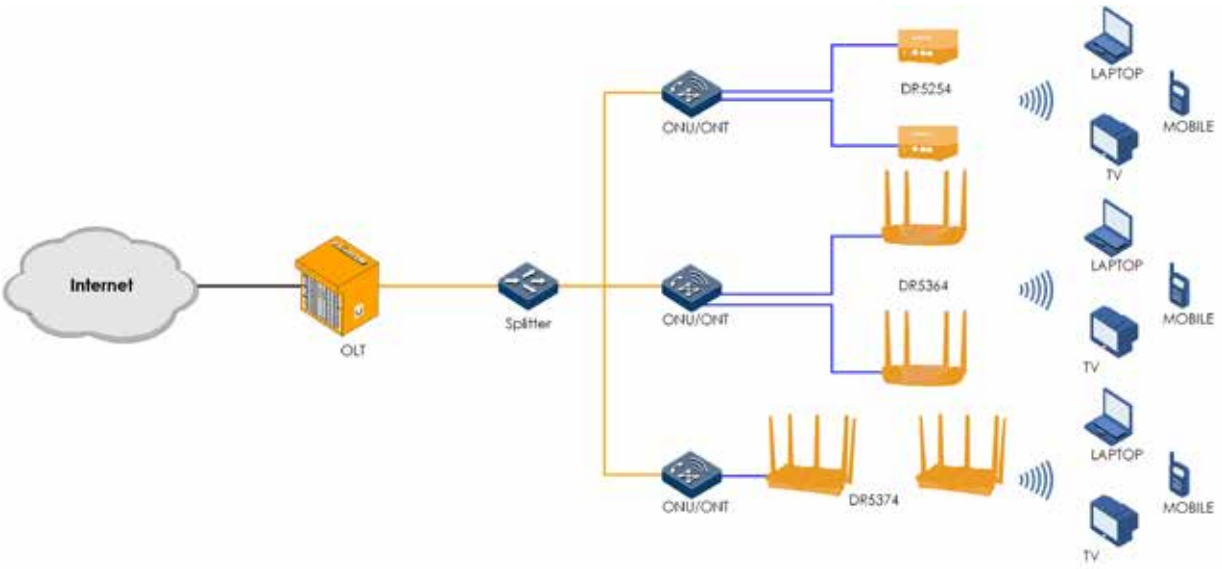
Comprehensive FTTx Broadband Access

- Various sized GPON OLTs & various capacity demands for ISP's and cable operators' deployment
- Optimized solutions for different scales from 500 to 20,000 subscribers
- The pay-as-you-grow approach and auto-provisioning enable fast deployment and future growth
- Various ONT types enable ISPs and cable operators to offer different service tariffs to subscribers
- Carrier-grade NMS platform helps reduce provisioning cost with "Zero Touch" provisioning tools



Wi-Fi 5/6 Residential Gateway for Smart Home Networking

- Complete smart home networking solution with ONTs and routers for quality indoor Wi-Fi coverage
- Full gigabit speed with latest Wi-Fi 5/6 technologies for high-speed Internet surfing, 4K/8K IPTV, and online gaming
- Smooth WLAN user experience for multiple tenants with MU-MIMO functions
- Wi-Fi 6 router supports easy mesh function for high reliability and coverage
- Active protection against from malicious attacks with firewall, encryption and access control function
- Unified network management via RCView, web GUI and APPs



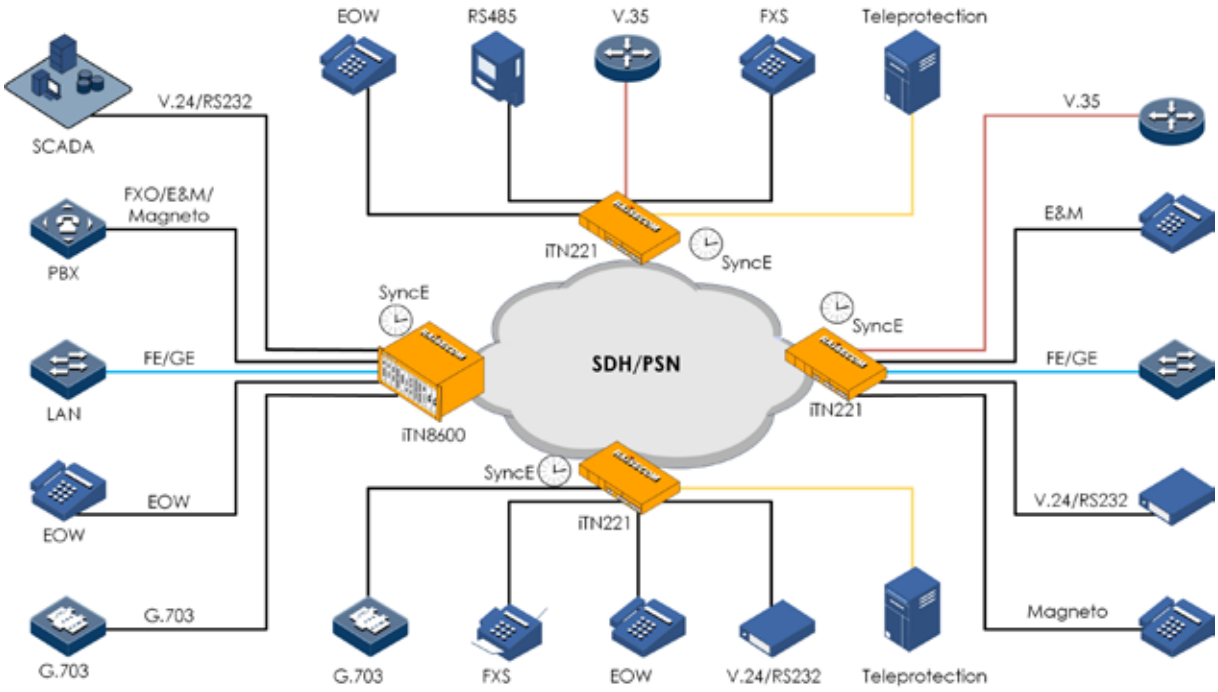
Mission Critical Network

Industrial and utility applications present unique challenges for network planners. First, they involve mission-critical traffic, which may be closely related to public safety and people's daily life that requires high network reliability and resiliency. Typically, it is needed to support various types of traffics, such as low-speed data communication, digital and analog voice, TDM circuits and analog control, mobile traffic, multimedia traffic, integrated surveillance and broadband access and more. In addition, the equipment must survive a wide range of environmental conditions and comply with the stringent industrial conditions.

Raisecom provides PCM connectivity solutions for SCADA traffic as well as Ethernet/PTN based industrial products. This combination serves next-generation bandwidth demands in the fields of energy (power, gas, oil, mining and hydro), transportation, public information and so on.

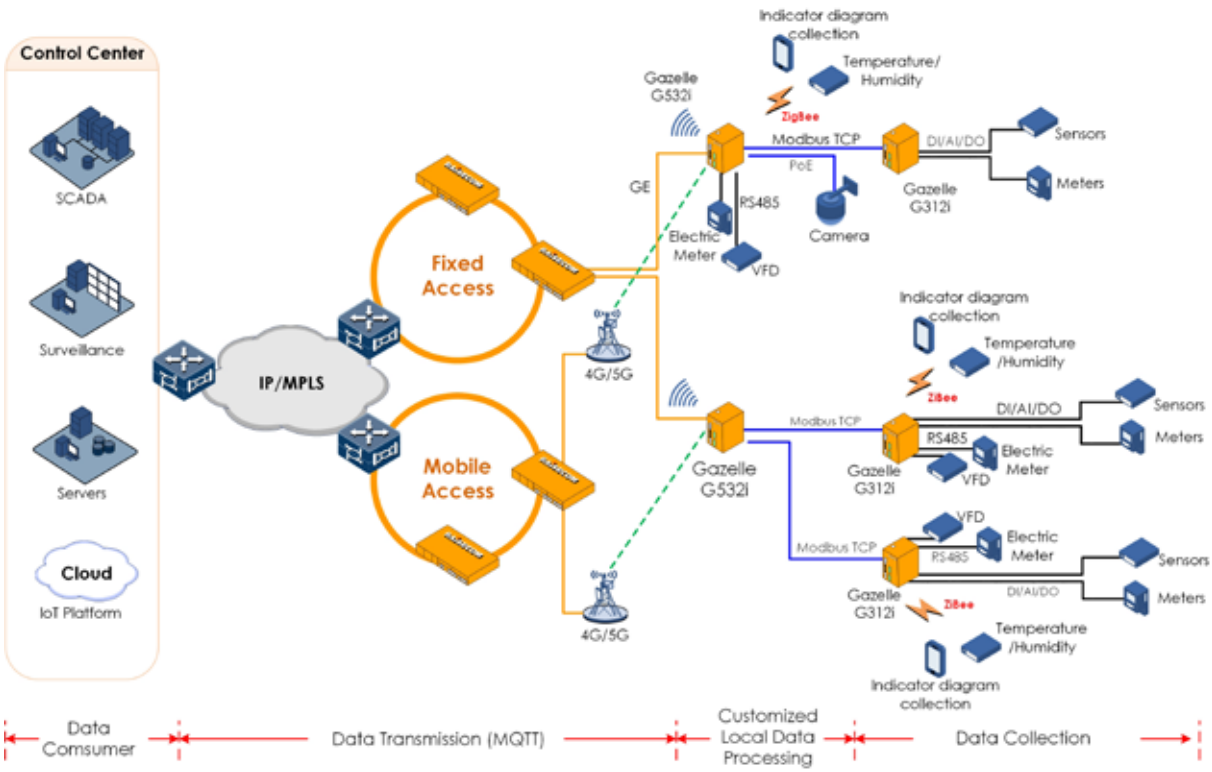
Multi-Service Access over SDH/PSN for Mission Critical Networks

• Access service types include STM-1, E1, Ethernet, EOW, FXS/FXO, E&M, Magneto Telephone, V.24, RS232, RS422, RS485, G.703 and C37.94, covering most common interface needs in mission critical networks
• SDH and PSN dual backplane guarantees a smooth migration from SDH to packet networks, including Carrier Ethernet, MPLS-TP and IP/MPLS
• Redundancy in power supply, cross connect matrix, switching matrix, and uplink builds up a fully redundant system with high-reliability
• Flexible clocking solutions are fit for the actual deployment plans of customers
• Available with 6U chassis and 1.5U compact chassis for different locations



Intelligent Environment Monitoring System for Power Substations and Oil Rigs

• Intelligent IoT gateways realize data collection, edge computing and data transmission in compact DIN-rail design
• Various interfaces (Ethernet, PoE, RS232/485, DI/AI/DO and ZigBee) greatly reduce the number of devices and connections
• Real-time local data processing powered by high-performance ARM/x86 processors, significantly increasing network transmission efficiency
• Built-in open platform for developers for customizations with cloud-based industrial applications
• Fixed and 4G/5G uplink working in back-up guarantees high transmission reliability
• Industrial-grade hardware design ensures stable operating in harsh environment

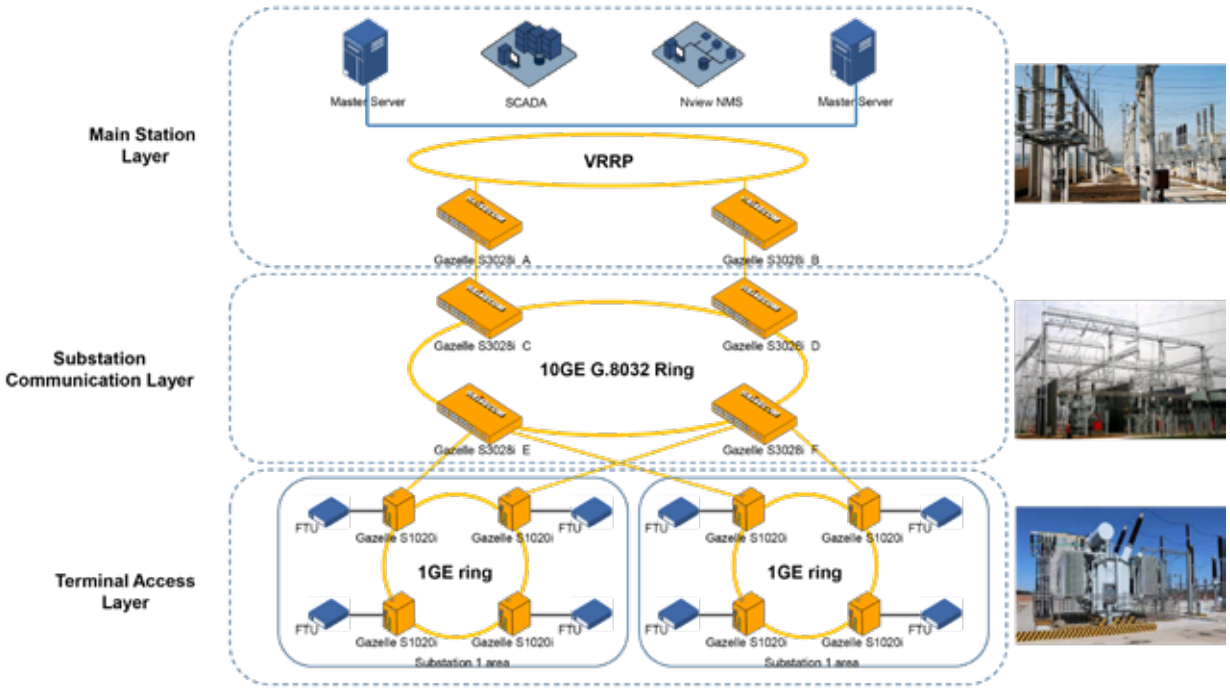


Highway Security, Monitoring and Automation

• Comprehensive Industrial Switch product line to help highway operators build up private networks for their surveillance, controlling and toll gate systems
• Complete stand-alone aggregation switches and DIN-rail access switches for different locations and cabinets
• IEEE802.3af/at/bt compliant PoE options for enabling various different power consumption devices
• Flexible and versatile ring networks based on telecom-grade ITU-T G.8032 ERPS to ensure sub-50ms switchover

Substation Interconnection for the Environment Monitoring System of Utilities

- IEC61850-3 and IEEE 1613 compliant Industrial Switches for power substation networking
- Complete stand-alone aggregation switches and DIN-rail access switches for different locations and cabinets
- Flexible and versatile ring networks based on telecom-grade ITU-T G.8032 ERPS to ensure sub-50ms switchover



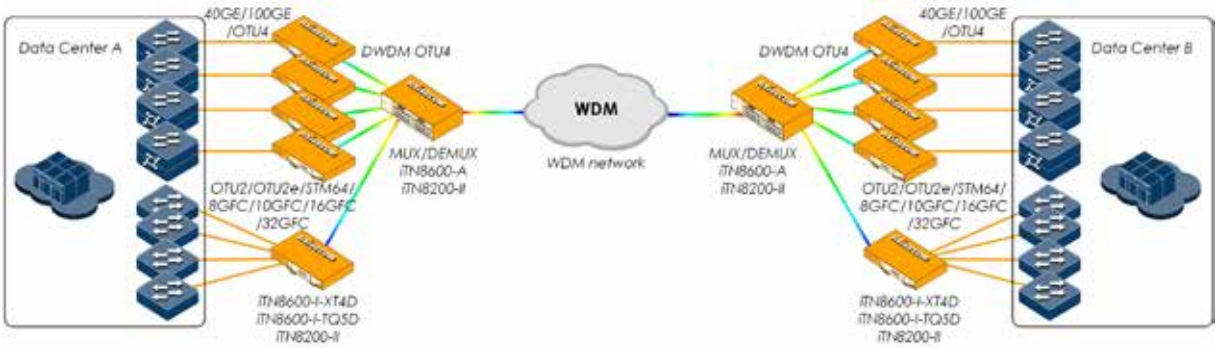
Enterprise and Government

Small-and-medium-sizes enterprises create a vast marketplace for telecommunication service providers and system integrators, offering versatile business solutions with secure LAN networking, high-speed Internet and cloud. The nature of efficient and intelligent information processing is a crucial factor for SME owners to stay in the market, requiring secured, powerful, and cost-effective networking.

Raisecom provides secure and cost-effective VPN access solutions for SME users to overcome the challenges such as lack of competent IT infrastructure, limited budget and cyber security requirement. Raisecom solutions are ideal for LAN networking, service integration and customer benefit maximization. These solutions assist SMEs to fully utilize private and public cloud network by combining routing, Ethernet switching, voice-support, 3G/4G backup, Wi-Fi, VPN, and cyber security features.

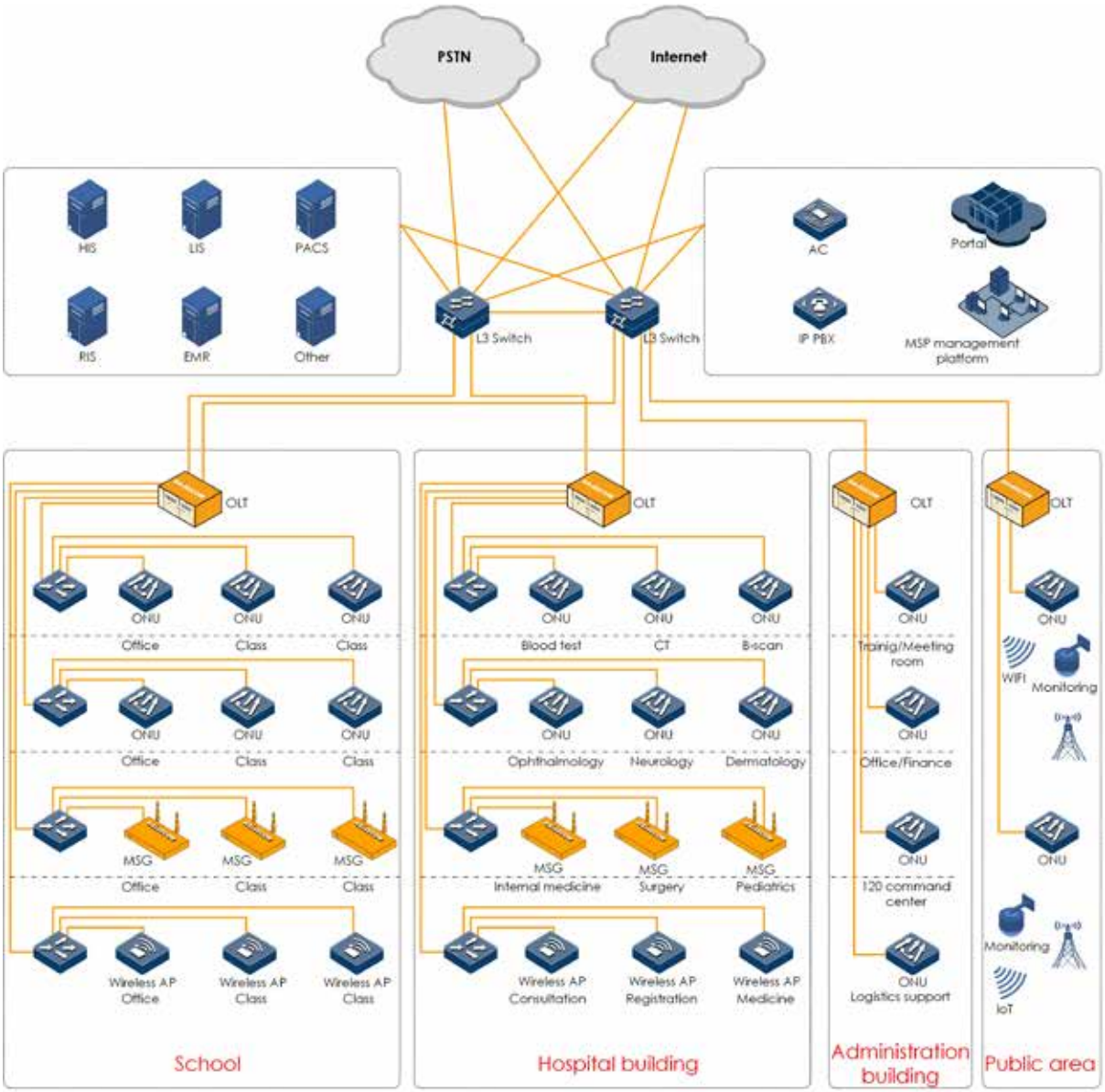
100G/200G/400G Data Center Interconnect

- Coherent 100G/200G/400G CFP2 based transmission with GFEC and SD-FEC at line side
- Maximum transmission 96x100G/200, 48x400G
- Flexible wavelength assignment
- Multi-service access for Ethernet, OTN, SDH and Fiber Channel at client side
- Hardware based encryption transmission (optional)



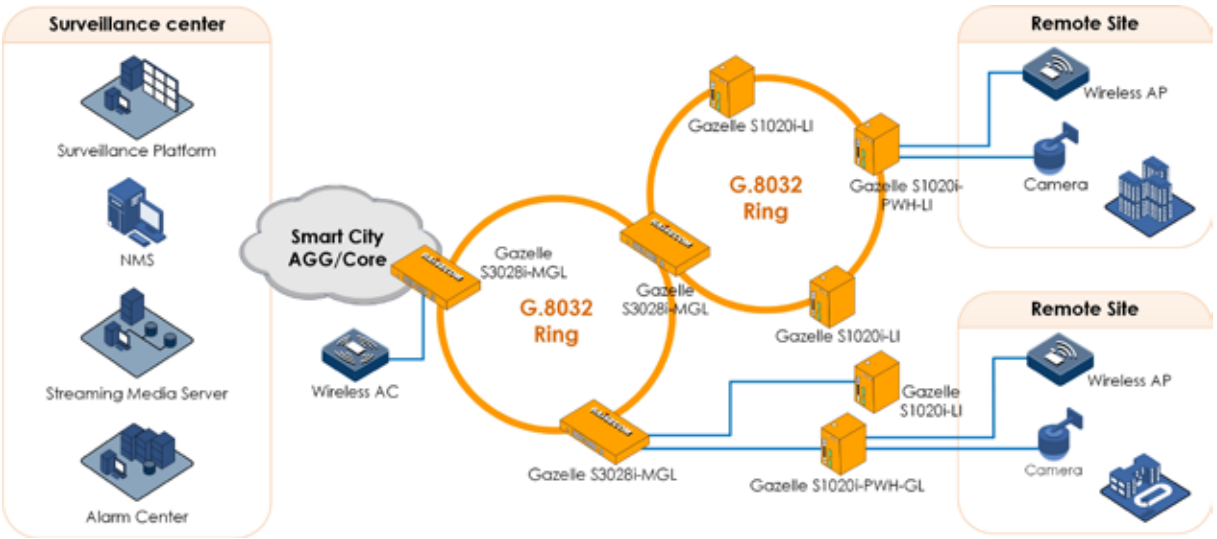
Passive Optical LAN (POL) Network

• Ideal and cost-efficient hardware design for up to 4,000 subscribers per chassis
• Pay-as-you-grow business model enabled by full modular designed OLT delivering GPON and XGS-PON
• Simple and easy-to-maintain passive optical network to deliver all-types of enterprise networking traffics, including Internet, voice and video with strengthened security, 5G, Wi-Fi 5/6 and IoT cloud
• Carrier-grade NMS for implementing "Zero-Touch" auto-provisioning and reducing deployment hassles



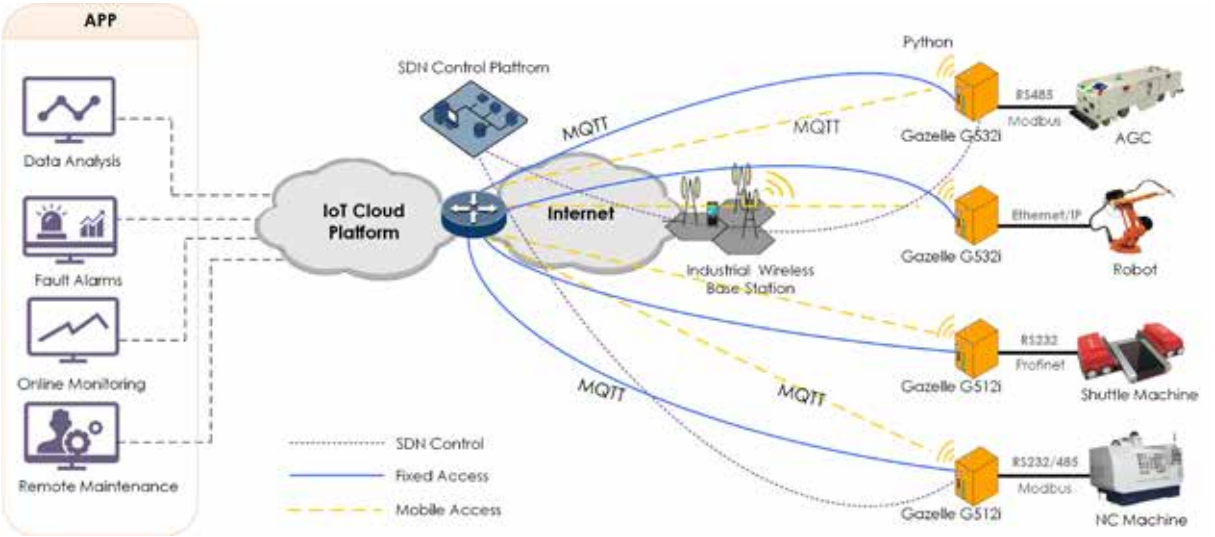
Public Video Surveillance and Wi-Fi Hot-Spot

- Cost-efficient solution tailored for safe/smart city infrastructure installation
- Standard IEEE802.3af/at/bt compliant PoE options to feed various purposed cameras and Wireless APs
- Industrial-grade design and telecom-grade resiliency features guarantee high reliability
- Prioritized traffic forwarding policy and efficient broadcast/multicast traffic handling
- Different rack-mounted and DIN-rail form factors for different indoor and outdoor installation sites



AIoT for Automated Industry 4.0

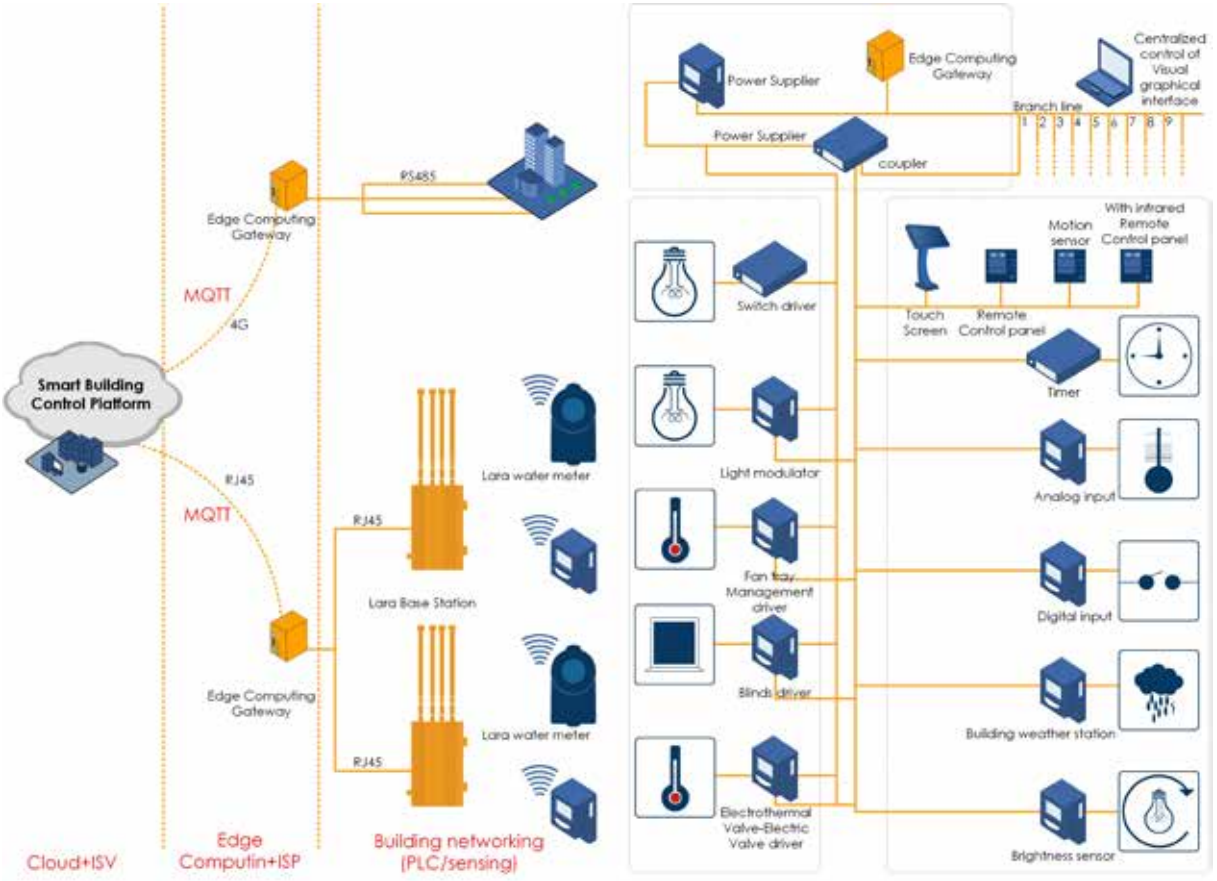
• Comprehensive industrial IoT gateways to ensure long-term stable operation in harsh environment
• Fixed and mobile access in backup for un-interrupted data transmission
• Various types of interfaces (Ethernet, RS232/485, Lora & ZigBee) to address various sensors and controllers
• Various industrial communication protocols (Modbus & Profibus) for different types of machines
• Built-in edge computing unit for data acquisition, filtering, cleaning, storage, monitoring, reporting, logic processing and other functions with customization options
• Open Linux-based platform for customized data processing and interfacing with cloud-based IoT platforms



Smart Building Automation

Raisecom smart industrial gateways are ideal for deployment and integration into smart building DCS system through customer dedicated IoT platforms. Based on cloud-based platforms, the smart gateways implement various operations such as enabling, monitoring, and managing smart terminals in buildings, and realize energy saving, optimization and intelligent control through edge computing and data analysis.

- Multi-protocol collection
- Edge computing
- Storage of history data
- Safety protection
- Energy consumption perception, energy-saving
- Linkage between buildings, big data analysis
- Remote processing of faults, saving manpower



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

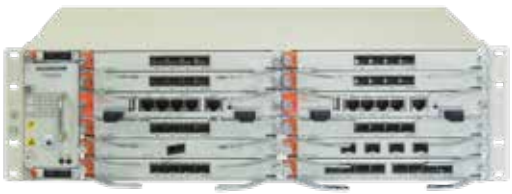
iTN8800-A

The iTN8800-A is a modular pre-aggregation and aggregation platform which supporting up to 200G switching capacity in a single slot. It provides a comprehensive interface set, supporting E1, STM-1, GE, 10G, 25G, 40G, 50G, 100G and 200G interfaces in a 5U-hight chassis. It supports Layer 2 VPN, Layer 3 VPN, Ethernet VPN and Multicast services, which is perfect for government and enterprise leased-line service delivery, Internet access, Cloud connection, and campus networking. The Segment Routing (SR), Segment Routing version 6 (SRv6), Ethernet VPN(EVPN) and Flexible Ethernet (FlexE) ensure that the device can perfectly match the comprehensive multi-service application scenarios of the 5G era.

iTN8800-A

iTN8800-E

The iTN8800-E is a chassis-based IP/MPLS service pre-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, 100G to 200G
- 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 H-CAR
- VPWS, VPLS, H-VPLS, L3VPN over MPLS with service status and performance monitoring
- Full routing 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, Segment Routing and SRv6 for greater network simplicity, agility and scalability
- FlexE enables hard pipes for various services in the network (only on iTN8800-A)
- NETCONF/YANG model to support SDN environment
- SyncE and IEEE 1588v2 TC/BC/OC for clock 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

Chassis

- iTN8800-A-DC: iTN8800-A chassis with fan module & 2 x DC power modules
- iTN8800-E-DC: iTN8800-E chassis with fan module & 2 x DC power modules
- iTN8800-E-AC: iTN8800-E chassis with fan module & 2 x AC power modules

Main control cards

- iTN8800-A-NXU: iTN8800-A management & control module
- iTN8800-E-NXU: iTN8800-E management & control module

Service cards

- 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-RX2: 2x10GE module (SFP+) or 2x1GE module (SFP)
- iTN8800-A-RX4: 4x10GE module (SFP+) or 4x1GE module (SFP)
- iTN8800-A-RX8: 8x10GE module (SFP+) or 8x1GE module (SFP)
- iTN8800-A-RG8: 8xGE module (SFP)
- iTN8800-A-RG10: 10xGE module (SFP)
- iTN8800-A-RS4: 4xSTM-1 interfaces module
- iTN8800-A-RS2: 2xSTM-1 interfaces module
- iTN8800-A-RE16-BL: 16xE1 interfaces module (2 E1 in one RJ45 connector)

P/N	iTN8800-E	iTN8800-A
Number of Slots	2 for control modules 10 for service modules	2 for control modules 14 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	Up to 14x100GE/40GE Up to 28x50GE Up to 56x25GE Up to 56x10GE Up to 140x1GE Up to 128xE1 Up to 32xSTM-1
Clocking	SyncE, IEEE 1588 TC/BC/OC	
Dimension(mm)	444 (L) × 220 (W) × 132.5(H)	444 (L) × 220 (W) × 222.3(H)
Power Supply	Redundant, Hot-swappable -40 to -57V DC	
Power Consumption	Full Load: ≤516W	Full Load: TBD
Operating Temperature	-5~55°C	

Ethernet/IP-MPLS Pre-Aggregation Pizza-Box

RAX721-A-XF
RAX721-AL-XF

RAX721-A
RAX721-AL

RAX721-B
RAX721-BL

RAX721-A-T
RAX721-AL-T

RAX721-B-T
RAX721-BL-T

RAX721-A/B series

RAX721-A/B are a series of compact Ethernet and IP/MPLS pre-aggregation devices. They are optimized for metro access and pre-aggregation, leased-line service delivery and multi-service pre-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-A/B 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: 28x10GE SFP+ interfaces
- RAX721-A: 4x10GE SFP+ uplink interfaces and 24x1GE SFP downlink interfaces
- RAX721-A-T: 4x10GE SFP+ uplink interfaces and 24x1GE RJ45 downlink interfaces
- RAX721-B: 4x10GE SFP+ uplink interfaces and 48x1GE SFP downlink interfaces
- RAX721-B-T: 4x10GE SFP+ uplink interfaces and 48x1GE RJ45 downlink interfaces
- RAX721-AL-XF: 28x10GE SFP+ interfaces
- RAX721-AL: 4x10GE SFP+ uplink interfaces and 24x1GE SFP downlink interfaces
- RAX721-AL-T: 4x10GE SFP+ uplink interfaces and 24x1GE RJ45 downlink interfaces
- RAX721-BL: 4x10GE SFP+ uplink interfaces and 48x1GE SFP downlink interfaces
- RAX721-BL-T: 4x10GE SFP+ uplink interfaces and 48x1GE RJ45 downlink interfaces

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 routing 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
- NETCONF/YANG model to support SDN environment
- High reliability guaranteed by redundant power supplies, dual systems, spanning tree protocol family, LACP, MC-LAG and standard ITU-T G.8031/8032
- Various of Zero-Touch Provisioning
- Management security ensured by AAA and ACL
- User friendly standard SNMP-based GUI management
- Ethernet models(with letter "L") can be smoothly upgraded to IP/MPLS with license

P/N	RAX721-A-XF RAX721-AL-XF	RAX721-A RAX721-AL	RAX721-A-T RAX721-AL-T	RAX721-B RAX721-BL	RAX721-B-T RAX721-BL-T
NNI Interface	4×10GE SFP+ or 4×1GE SFP	4×10GE SFP+ or 4×1GE SFP	4×10GE SFP+ or 4×1GE SFP	4×10GE SFP+ or 4×1GE SFP	4×10GE SFP+ or 4×1GE SFP
UNI Interface	24×10GE SFP+/1GE SFP	24×1GE SFP	24×1GE RJ45	48×1GE SFP	48x1GE RJ45
Dimension(mm)	360 (L) × 440 (W) × 44(H)				
Power supply	Dual redundant, Hot-swappable 100-240V AC, -36 to -72V DC				
Power Consumption	≤75W	≤75W	≤52W	≤93W	≤58W
Operating Temperature	-5~55℃				
Full featured	RAX721-A-XF	RAX721-A	RAX721-A-T	RAX721-B	RAX721-B-T
Basic featured	RAX721-AL-XF	RAX721-AL	RAX721-AL-T	RAX721-BL	RAX721-BL-T
Licensable	RAX721-AL-XF only	RAX721-AL only	RAX721-AL-T only	RAX721-BL only	RAX721-BL-T only

100GE IP-MPLS Pre-Aggregation/CE Demarcation Pizza-Box

RAX721-C-2C24
RAX721-CL-2C24

RAX721-C-4C24
RAX721-CL-4C24

RAX721-C-6C48
RAX721-CL-6C48

RAX721-C series

RRAX721-C are a series of compact IP/MPLS pre-aggregation or CE demarcation devices. They are purpose-built for high capacity required metro pre-aggregation, leased-line service delivery pre-aggregation and carrier ethernet demarcator. Supporting 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. They support rich Layer 2 and Layer 3 features, with advanced QoS features, customers' services at different levels can be flexibly and finely scheduled, and support various VPN services over IP-MPLS networks, to implement services isolation through network virtualization, greatly improved network capacity and utilization.

- RAX721-C-2C24: 2x100GE QSFP28 uplink interfaces and 24x10GE SFP+ downlink interfaces
- RAX721-C-4C24: 4x100GE QSFP28 uplink interfaces and 24x25GE SFP28 downlink interfaces
- RAX721-C-6C48: 6x100GE QSFP28 uplink interfaces and 48x10GE SFP+ downlink interfaces
- RAX721-CL-2C24: 2x100GE QSFP28 uplink interfaces and 24x10GE SFP+ downlink interfaces
- RAX721-CL-4C24: 4x100GE QSFP28 uplink interfaces and 24x25GE SFP28 downlink interfaces
- RAX721-CL-6C48: 6x100GE QSFP28 uplink interfaces and 48x10GE SFP+ downlink interfaces

FEATURES

- Compact hardware design providing high port density in 1U space with 100GE port type
- 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 routing protocol stack, RIP, OSPF, IS-IS and BGP
- Multicast traffic management by IGMP v1/v2/v3, PIM-SM, IGMP snooping and MLD
- Ethernet VPN, Segment Routing and Segment Routing ver. 6 for greater network simplicity, agility and scalability
- NETCONF/YANG model to support SDN environment
- High reliability guaranteed by redundant power supplies, dual systems, spanning tree protocol family, LACP, MC-LAG and standard ITU-T G.8031/8032
- Various of Zero-Touch Provisioning
- Management security ensured by AAA and ACL
- User friendly standard SNMP-based GUI management
- Ethernet models(with letter "L") can be smoothly upgraded to IP/MPLS with license

P/N	RAX721-C-2C24 RAX721-CL-2C24	RAX721-C-4C24 RAX721-CL-4C24	RAX721-C-6C48 RAX721-CL-6C48
NNI Interface	2×100GE QSFP28 or 2×40GE QSFP+	4×100GE QSFP28 or 4×40GE QSFP+	6×100GE QSFP28 or 6×40GE QSFP+
UNI Interface	24×10GE SFP+/1GE SFP	24×25GE SFP28/10GE SFP+	48×10GE SFP+/1GE SFP
Dimension(mm)	360 (L) × 440 (W) × 44(H)		
Power supply	Dual redundant, Hot-swappable 100-240V AC, -36 to -72V DC		
Power Consumption	≤73W	TBD	TBD
Operating Temperature	-5~55°C	TBD	
Full featured	RAX721-C-2C24	RAX721-C-4C24	RAX721-C-6C48
Basic featured	RAX721-CL-2C24	RAX721-CL-4C24	RAX721-CL-6C48
Licensable	RAX721-CL-2C24 only	RAX721-CL-4C24 only	RAX721-CL-6C48 only

1G/10GE IP-MPLS/CE Demarcation Device

RAX711-C-R Series

The 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 ensure 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-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-C-R
NNI Interface	4 x 10GE SFP+
UNI Interface	12 x GE SFP
E1 PWE	N/A
Clocking	SyncE & IEEE 1588 TC
Dimension(mm)	220 (L) × 266 (W) × 44(H)
Power	100/240V AC, -36 to -72V DC Full Load: ≤40W
Working Temperature	-20~65°C
MTU/Jumbo Frame	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-4GC4E1-BL-S

RAX711-L-4GC4E1-S

RAX711-L-4GC

RAX711-L-4GE

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-4GC4E1-BL-S	RAX711-L-4GC4E1-S	RAX711-L-4GC	RAX711-L-4GE
NNI Interface	2 x GE SFP				
UNI Interface	1 x GE combo	4 x GE combo			4 x GE RJ-45
E1 Circuit Emulation	○	4 x E1(RJ-45)	4 x E1(DB-37)	○	
2Mbps/Hz	○	●		○	
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				
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. In all, 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, includes the chassis, main card, dual 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

Chapter 2

Optical Transport Network

OTN (Optical Transport Network) systems smoothly handle ever-increasing bandwidth demands for data services and for mobile backhaul, fronthaul, and Data Center interconnection, by integrating the functionality of transport, multiplexing, switching, protection, and management of customer traffic in a single box. Compact OTN systems easily meet the high bandwidth demands of public and private clouds as well as software-defined networks. The 4G/5G applications can enable carriers to save fiber resources when deploying mobile fronthaul infrastructure.

Multi-Service OTN Platform

iTN8600-A

The iTN8600-A is a new generation of intelligent transmission device developed in house by Raisecom, which is a full-service access transmission platform dominated by key account service and high bandwidth integrated service. iTN8600-A is aimed at access and aggregation layer of metro networks, for delivering leased line services and aggregating OTN connections. The iTN8600-A is featured with 3 different switching fabrics including OTN, MPLT-TP and SDH. When populated with different line cards, it can be flexibly deployed as an OTN/DWDM transport platform, a Carrier Ethernet and MPLT-TP aggregation system, or a next-generation SDH multiplexer, providing all types of services access and aggregation including Fast Ethernet, Gigabit Ethernet, E1, STM-1, STM-4, STM-16, Fiber Channels, OUT-1 and OUT-2.

iTN8600-A

FEATURES

- iTN8600-A is a 5U chassis supporting 2 NMS cards, up to 15 service cards, 2 power supply cards and 1 fan
- iTN8600-A has a high integrated device with front outlet design and supports sub-card hot swapping, -48VDC power supply, 1+1 power supply protection
- Flexible access to STM-1/4/16/64, OC-192, FE/GE, 10GE, FC 1G/2G/4G/8G/10G, OTU1/OTU2, etc.
- Support EOS, ETH over OTN, SDH over OTN, EOS over OTN, MPLS-TP over OTN, and MPLS-TP service encryption
- Packets switching capability: 280G
- Support 48 × GE access, 24 × 10GE access
- Up to 90G VC4, 20G VC12/VC3
- Hybrid encryption and scheduling capabilities from SDH/PKT/ODUk to OTN
- Support real-time DM delay measurement for PM and TCM

System and Sub-cards

NMS switching card

- iTN8600-A-NXU: iTN8600-A NMS switching card
- iTN8600-AUX: OSC Auxiliary interface card, used in cooperation with the iTN8600-A-NXU

OTN card

- iTN8600-AO2DE: 8-port any service aggregation OTU2 card
- iTN8600-A-MX4: 4-port OTU2 line card

PTN card

- iTN8600-A-PG8: 8 x GE service interface card
- iTN8600-A-PX4: 4 x 10GE service interface card

SDH card

- iTN8600-A-SH2: 2 x STM-16, or 4 x STM-4, or 1 x STM-16 + 2 x STM-4 SDH aggregation card
- iTN8600-A-SH2A: 2 x STM-16, or 4 x STM-4, or 1 x STM-16 + 2 x STM-4 SDH aggregation card
- iTN8600-A-SG8D: 8 x GE EOS card
- iTN8600-A-SH8 (SDH mode): 8 x STM-1/4 or 2 x STM-16 SDH tributary card
- iTN8600-A-SH8 (EOS mode): 8 x GE EOS tributary card
- iTN8600-SE16: 16 x E1 tributary card

PCM card

- iTN8600-AUDIO: 16 x FXS/FXO/magneto telephone voice card
- iTN8600-RS24: 16 x RS232, or 8 x RS485, or 8 x V24 card

Optical card

- iTN8600-DM16E: 16-wavelength DWDM MUX card
- iTN8600-DD16E: 16-wavelength DWDM DEMUX card
- iTN8600-DMU40: 40-wavelength DWDM MUX card
- iTN8600-DDU40: 40-wavelength DWDM DEMUX card
- iTN8600-OMD8: 8-wavelength CWDM MUX and DEMUX card
- iTN8600-DAD4D: DWDM 4-ch dual-fiber bidirectional optical ADM card
- iTN8600-DAD8: DWDM 8-ch dual-fiber unidirectional optical ADM card
- iTN8600-FDU: 2-ch OSC multiplexing card
- iTN8600-OLP: Optical line 1+1 protection card
- iTN8600-OTU5E: 5-ch enhanced bidirectional transponder card
- iTN8600-OPA: EDFA optical pre-amplifier card
- iTN8600-OBA: EDFA optical booster amplifier card
- iTN8600-OBA20: EDFA optical booster amplifier card
- iTN8600-OLA20: EDFA optical line amplifier card

Compact Multi-Service OTN Platform

iTN8600-E

The iTN8600-E is a new intelligent all-service access and transmission platform designed for future-proof networks. It integrates OTN, MPLS-TP and SDH cross connection matrix and provides all types of services converged. It can be flexibly deployed by network operators where they need to offer Ethernet, MPLS-TP, fiber channels, OTN channels, SDH circuits or a mix of all. It will act as an ideal and complete solution for small and medium-sized PoP sites for addressing various customer needs.

Working against Raisecom RAX series devices, iTN8600 can act as a small aggregation device, grooming different services and bandwidth from customer premises while constituting ring or meshed network topologies. It is commonly deployed for service provider OTN edge aggregation, mobile backhauling and fronthauling, data center interconnect as well as high-capacity business leased-line connectivity. The product can be managed by a GUI-based NView NNM system to simplify configuration, service provisioning and performance monitoring in real-time.

iTN8600-E

FEATURES

- Universal switching and flexible grooming for OTN, SDH, and packet services
- All service access capability, including E1, STM-1/4/16/64, OC-192, FE/GE, 10GE, OTU1/OTU2, CPRI, OBSAI, FC-1G/2G/4G/8G/10G, etc.
- Maximum DWDM 40λ x 10G/100G/200G Line capacity
- 240G packet switching capability
- EP-Line, EVP-Line, EP-Tree, EVP-Tree, EP-LAN, EVP-LAN
- MPLS-TP, static LSP, L2VPN and VPLS
- Support VC4/VC3/VC12 SDH cross connection
- G.8113.1 OAM, 802.1ag/Y.1731/SLA OAM and 802.3ah OAM
- Support ODUk OTN cross connection
- System management card and power supply module redundancy
- Support Auto Laser Shutdown (ALS) protection and Dying Gasp
- Redundancy and reliability with 1+1 OCh and SNCP on OTN side, ITU-T G.8031 (ELPS), G.8032 (ERPS) and LAG protection on Ethernet side, MPLS-TP G.8131 LSP/PW 1:1 protection on PTN side and 1+1 MSP, SNCP, on SDH side
- Network Management via in-band and out-of-band network channels

System and Sub-cards

Chassis and NMS cards

- iTN8000-E-DC, 3U/12 slot chassis
- iTN8600-E-NXU, management and control card for iTN8600-E
- iTN8600-AUX: OSC Auxiliary interface card, used in cooperation with the iTN8600-E-NXU

OTN card

- iTN8600-A-MX4: 4-port OTU2 line card
- iTN8600-AO2DE: 8-port any service aggregation OTU2 card

PTN card

- iTN8600-A-PG8: 8-port GE service interface card
- iTN8600-A-PX4: 4-port 10GE service interface card

SDH card

- iTN8600-A-SH2: 2 x STM-16, or 4 x STM-4, or 1 x STM-16 + 2 x STM-4 SDH aggregation card
- iTN8600-A-SH2A: 2 x STM-16, or 4 x STM-4, or 1 x STM-16 + 2 x STM-4 SDH aggregation card
- iTN8600-A-SG8D: 8 x FE/GbE EOS card
- iTN8600-A-SH8 (SDH mode): 8 x STM11/4 or 2 x STM-16 SDH tributary card
- iTN8600-A-SH8 (EOS mode): 8 x GbE EOS tributary card
- iTN8600-SE16: 16 x E1 tributary card

Optical card

- iTN8600-DM16E: 16-wavelength DWDM multiplexing card
- iTN8600-DD16E: 16-wavelength DWDM demultiplexing card
- iTN8600-OMD8: 8-wavelength CWDM MUX and DEMUX card
- iTN8600-OLP: Optical line 1+1 protection card
- iTN8600-OTU5E: 5-ch enhanced bidirectional transponder card
- iTN8600-DMU40: 40-wavelength DWDM MUX card
- iTN8600-DDU40: 40-wavelength DWDM DEMUX card
- iTN8600-DAD4D: DWDM 4-ch dual-fiber bidirectional optical ADM card
- iTN8600-DAD8: DWDM 8-ch dual-fiber unidirectional optical ADM card
- iTN8600-FDU: 2-ch OSC multiplexing card
- iTN8600-OPA: EDFA optical pre-amplifier card
- iTN8600-OBA: EDFA optical booster amplifier card
- iTN8600-OBA20: EDFA optical booster amplifier card
- iTN8600-OLA20: EDFA optical line amplifier card

PCM card

- iTN8600-AUDIO: 16 x FXS/FXO/magneto telephone voice card
- iTN8600-RS24: 16 x RS232, or 8 x RS485, or 8 x V24 card

100G/200G OTN DCI-BOX

iTN8600-I-XT4D, iTN8600-I-TQ5D

iTN8600-I-XT4D is a standalone high density 1RU 19-inch 100G/200G DWDM/OTN Transponder/Muxponder device. By adopting advanced hardware-based encryption technologies and ASIC chipsets, iTN8600-I-XT4D is fully compliant with ITU-T G.709 and G.798 standards to address cyber security needs, thus suitable for datacenter interconnection, native or alien lambda transponder for metro optical transport network. It is convenient to be managed by NMS system via SNMP.

iTN8600-I-TQ5D (service card, working in iTN8600-I chassis) is a highly integrated OTN/DWDM transponder card, which meets the application requirements of Data Center Interconnect and cloud services, as well as alien lambda insertion in existing DWDM metro and long-haul networks. By adopting coherent optical transceivers, each TQ5D service card can support 2x200G DCO CFP2 at network side and 4x100G QSFP28 at client side. Each iTN8600-I chassis can be deployed with 4xTQ5D service cards, reaching a total capacity up to 1.6Tbps.

iTN8600-I-XT4D

iTN8600-I-TQ5D

FEATURES

• iTN8600-I-XT4D

- 1U, 19-inch standalone device
- Dual 110V/220VAC or dual-48VDC redundancy power supplies
- Support SFP+, SFP28, 40G QSFP+ or 100G QSFP28 at client side
- Support 100/200G coherent CFP2 or 100G grey CFP2 ER4/LR4 at line side
- Support GFEC, SD-FEC/OFEC on line port
- Support 2400km long distance
- Support hardware-based AES-256 encryption
- Support GCC0, GCC1 and GCC2 in-band DCN management
- Support SNMP for out-of-band DCN management
- Total capacity is 200Gbps

iTN8600-I-TQ5D

- 1U, 19-inch standalone device
- Dual 110V/220VAC or dual-48VDC redundancy power supplies
- Act as alien lambda for 40x100G/200G OTN/DWDM applications
- Support SD-FEC
- support 1200km long distance
- Up to 4 x TQ5D in each iTN8600-I chassis, each TQ5D supporting 4 x100GE/OTU4 to 2 x 100G/200G coherent optics
- Up to 1.6Tbps total capacity per each iTN8600-I chassis

P/N	iTN8600-I-XT4D	iTN8600-I-TQ5D
Line interface	2 x CFP2 100G port (coherent CFP2, grey CFP2 ER4/LR4) Or 1 x CFP2 200G port (coherent CFP2)	2 x CFP2 100G/200G OTN each TQ5D card 8 x CFP2 100G/200G OTN in iTN8600-I
Client interface	2 x 100G (100GE, OTU4 in QSFP28) 20 x 10G (10GE, STM-64, 8G/10G FC, OTU2(e)) 12 x 10G any (SFP+) + 2 x 40GE (QSFP+) 12 x 16G FC (SFP+) 6 x 32G FC (SFP28)	4 x 100G 100GE/OTU4 (QSFP28) each TQ5D card 16 x 100GE/OTU4 in iTN8600-I
Power Supply	AC: Input 100–240V, DC: Input -40 to -57V	AC: Input 100–240V, DC: Input -40 to -57V
Power Consumption	<150W	< 350W
Dimension(mm)	440(L) x 360(W) x 45(H)	442.4(W) x 440(D) x 44(H)
Operation Temperature	General: -5°C ~ 50°C	-5°C ~ 40°C

100G/200G/400G OTN DCI-BOX

iTN8200-II

Raisecom iTN8200 is a new generation 400G DWDM/OTN intelligent transmission network platform, which adopts a standard 19 inch, 2U chassis, up to 8 service slots. The compact design improves the equipment integration and reduces the overall space occupied by the equipment.

This new 400G platform integrated with EDFA, ROADM, FOADM, OCM, OTDR, 100/200/400G transponder and muxponder, which meets the application needs of DCI (data center interconnect), cloud business and so on. It provides high-density interface access and up to 400G uplink bandwidth, meets the growing demand for bandwidth and services of the customers.

iTN8200-II

FEATURES

- 2U,19-inch, suitable for 600mm deep cabinet installation
- 8 small cards, or 4 large cards, up to 48/96 wavelengths DWDM, 400G per slot, 3.2T in total
- up to 48/96 wavelengths DWDM
- Featured with 2 cores, WDM/OTN, among which services can be scheduled
- LCD, display the local IP, alarm, etc.
- Support line rate for OTU4, 2xOTU4, 400G OTN
- Support client rate for 10GE, 100GE, and OTU4
- EDFA, Booster amplifier, line-amplifier, Pre-amplifier
- Operating temperature 0°C~40°C (altitude: 0~1800m)
- Operating humidity: Long term: 5%–85% RH (non-condensing, indoor)
- Positioned in DCI high-speed interconnection and OTN access network
- Support multiple services in the client side and line side
- Support long-distance service transmission to effectively utilize the fiber resources of the network
- Support point-to-point networking and paired transmission services between two devices
- Support unified network management and out-of-band network management
- Support fully modular pluggable, LCD information status panel, HVDC input and CRPS
- Easy for maintenance and expansion and conducive to improving green energy efficiency, and more in line with data center planning

System and Sub-cards

Chassis and NMS cards

- iTN8200-II-DC: iTN8200, 2U chassis,19'', include 2 DC power cards and 3 FAN cards
- iTN8200-II-NTU: iTN8200 Management card, supports device management, and 1+1 Hardware redundancy
- iTN8200-II-NMI: iTN8200-NTU interface card, including 2 NM ports, and 2 MUX ports
- iTN8200-II-NUI: iTN8200 LCD monitor car, showing IP, Alarm, etc.

200G/400G Transponder cards

- iTN8200-II-TQ6S, 400G transponder, 4x100G mux into 1x400G
- iTN8200-II-TQ5D, 2*200G transponder, 2x100G mux into 1x200G; 4x100G on downlink, 2 x 200G on uplink

200G Muxponder card

- iTN8200-II-TM5S: 10x10G and 1x100G on downlink, 1x200G on uplink
- iTN8200-II-XT5S: 20x10G on downlink, and 1x200G on uplink

Optical cards

- iTN8200-II-OA25: BA+PA1
- iTN8200-II-OA35: BA+PA2
- iTN8200-II-OLA25: LA1+LA1
- iTN8200-II-OLA35A: LA1+LA2
- iTN8200-II-OLA35B: LA2+LA2
- iTN8200-II-OP1: 1-ch Optical Line Protection card
- iTN8200-II-OP2: 2-ch Optical Line Protection card
- iTN8200-II-TWS: 9-ch WSS ROADM, integrated with BA, PA, VOA
- iTN8200-II-TFF: 4-ch FOADM, integrated with VOA
- iTN8200-II-OCM: 8-ch optical channel monitor
- iTN8200-II-OTDR: 8-ch OTDR card
- iTN8200-II-MUX48: 48-ch Mux+Demux,1U,19-inch,100GHz, C band
- iTN8200-II-MUX96: 96-ch Mux+Demux,2U,19-inch,50GHz, C band

Compact WDM Pizza Box

iTN8601-OTM4, iTN8601-OTMx

iTN8600 pizza box is a 1U, 19-inch multi-service access device, it can access STM-1/4/16/64, FE/GE, 10GE, OTU1/OTU2, CPRI, OBSAI, FC-1G/2G/4G/8G/10G services. iTN8601 can access up to 4 x 10G and 1 x 2.5G services to a single-strand optical fiber, easy to deploy and maintain. It can be used to conveniently expand fiber capacity in the last-mile circuits and efficiently increase existing fiber capacities to solve the problem of scarce channels in cities and suburban areas.

iTN8601-OTM4

iTN8601-OTMx

FEATURES

• iTN8601-OTM4-LL: 1U, 19", compact WDM device, 60km transmission distance, left-side device. Client-side interface: 4 any interfaces (1.25Gbit/s~11.3Gbit/s), line side with single-strand fiber port. Left and right-side devices must be used in pairs

• iTN8601-OTM4-LR: 1U, 19", compact WDM device, 60km transmission distance, right-side device. Client-side interface: 4 any interfaces (1.25Gbit/s~11.3Gbit/s), line side with single-strand fiber port. Left and right-side devices must be used in pairs

• iTN8601-OTMx-SL: 1U, 19", compact WDM device, 30km transmission distance, left-side device. Client-side interface: 4x10G + 1x2.5G interfaces, line side with single-strand fiber-port. Left and right-side devices must be used in pairs

• iTN8601-OTMx-SR: 1U, 19", compact WDM device, 30km transmission distance, right-side device. Client-side interface: 4x10G + 1x2.5G interfaces, line side with single-strand fiber-port. Left and right-side devices must be used in pairs

Compact OTN Pizza Box

iTN8607-OA8, iTN8607-OA2

iTN8607 series pizza-boxes are 1RU 19-inch multi-service OTN access devices, providing STM-1/4, FE/GE and other optical access services.

iTN8607 provide universal multiplexing of STM-1/4, FE/GE/10GE and other optical services to OTU1/OTU2 fiber lines, supporting 1+1 protection, easy to deploy and maintain. They are ideal solutions for Data Center Interconnection, OTN-based business leased lines and other fiber-based access application scenarios.

iTN8607-OA8

iTN8607-OA2

FEATURES

• iTN8607-OA8: 1U, 19'', compact OTN access device. Client-side interface: 8 x FE/GE/STM-1/STM-4; Line side interface: 2 x OTU2, supporting 1+1 protection

• iTN8607-OA2: 1U, 19'', compact OTN access device. Client-side interface: 2 x FE/GE/STM-1/STM-4, 2 x FE/GE, or 1 x FE/GE + 1 x STM-1/STM-4; Line side interface: 2 x OTU1, supporting 1+1 protection

Semi-Passive WDM Platform

OPCOM100-SA Series

Raisecom Semi-Passive WDM Platform includes Central Office (CO) devices and remote devices. OPCOM100-SA CO devices include OPCOM100-SA2/3/5 series 2U, 3U and 5U chassis, OPCOM100-SA2/3/5-NMU network management cards, and OPCOM100-CPM active single-strand fiber bidirectional 6/12-wavelength CWDM multiplexing cards with protection. The OPCOM100-OMU remote devices are 1U-high, passive, single-strand fiber bidirectional 6/12-wavelength CWDM multiplexer/demultiplexer with protection. It can be installed stand alone or in a plug-in encapsulation box, such as the PB3/PB16.

OPCOM100-SA series are widely used for 4G/5G mobile fronthaul optical fiber capacity expansion, unilateral wavelength conversion, and Semi-Passive CWDM-based business leased line access scenarios.

FEATURES

• WDM semi-passive solution includes an active Central Office side and passive remote side

• Manageable and easy-to-maintain remotely

• Single-strand fiber based for bidirectional services

• Line side 1+1 network protection

• Uninterrupted services during power failure

• 4G/5G/mixed access, saving fiber resources

OPCOM100-SA2

OPCOM100-SA3

OPCOM100-SA5

Chapter 3
xPON

xPON networks provide high throughput point-to-multipoint connections from the Point of Presence (POP) to customer premises. It is popularly used in massive deployment for broadband triple-play services, offering a competitive CapEx and OpEx business model for ISPs and cable operators. Raisecom xPON product line provides both GPON and next-generation 10G PON as XG/XGS-PON technologies for different access bandwidth profiles. A variety of symmetric/asymmetric 2.5GE/10GE downstream and 1.25GE/10GE upstream bit rates are available for ISPs and cable operators to choose their most suitable solutions.

Raisecom xPON portfolio offers a handful of selections at central office side, including large-sized, medium-sized, small-sized and compact rack-mounted OLTs to address different scenarios from intensive populated metropolitans to scattered suburban areas. At subscriber side, various ONTs ranging from simple bridge units (SFU), multi-dwelling units (MDU), home gateway units (HGU) to enterprise and industrial hardened models for different network architectures. In addition to product form factors, Raisecom also differentiates one variety from another according to application scenarios. Low density models serve rural and suburban areas, while those with high density are competent to metropolitan service area coverage. A wide selection of automation tools such as TR-069 based auto provisioning, remote network management and performance monitoring and redundant network topologies are also provided for ISPs and cable operators to achieve a profitable business mode in FTTX deployment rollout.

10GPON/GPON OLT Platform

ISCOM6800, **ISCOM6860**

The ISCOM6800 is a 13U large-sized integrated platform compatible with both ITU-T G.984/G.987/G.9807 GPON/10GPON standards and IEEE802.3ah/802.3av based EPON/10GEPON standards. The system can access up to 28,672 subscribers ONUs/ONTs with a max 1:128 fiber split ratio of total 224 PON ports. ISCOM6800 also possesses great switching capacities and can be used to aggregate and transport data, voice and video traffic from other OLTs over Ethernet backplane. Enhanced network manageability, reliability and redundancy are supported with ring and dual-homing protection mechanisms and hot-swappable redundant DC power supplies. The system supports multi-purpose access and aggregation of PON and Active Ethernet traffics at the same time.

ISCOM6800

The ISCOM6860 is the medium-sized carrier-grade Optical Line Terminal (OLT) platform. It offers GPON, XG/XGS-PON, EPON, 10GEPON, and Active Ethernet access, for all types of ISPs and cable operators to address medium-size service area coverage. ISCOM6860 is equipped with a high backplane bandwidth of 2.88Tbit/s, high switching capacity of 1.44Tbit/s, and 1:1 backplane redundancy for wirespeed non-blocking forwarding and high reliability services. It provides up to 112 PON ports thus up to 14,336 subscriber ONUs based on a 1:128 fiber split ratio. Raisecom has adopted green concept in line cards and fan units design to save energy by lowering down power consumption and emissions. ISCOM6860 is an ideal solution for FTTx, POL, Triple-Play with CATV overlay, business leased line services and etc.

ISCOM6860

FEATURES

ISCOM6800

- Available with mixed line cards for up to 224 x GE or 72 x 10GE interfaces for uplink and Active Ethernet access
- Up to 224 x GPON/EPON interfaces per chassis
- Up to 112 x 10GEPON interfaces per chassis
- Up to 112 x XGS combo PON interfaces per chassis
- 2 x SMCA control cards supporting real-time redundancy
- Up to 28,672 subscribers per chassis based on 1:128 split ratio
- ITU-T G.984 (GPON)
- IEEE 802.3ah (EPON) and IEEE 802.3av (10GEPON)
- Storm control of broadcast, multicast and DLF packets
- Trunk group and Link Aggregation Control Protocol (LACP)
- 1+1 automatic protection and link diagnostic for each PON port
- VLAN, Q-in-Q, QoS, DBA
- IGMP, Multicast VLAN Registration (MVR), DHCP and Option 82
- AES-128 encryption and triple churning
- Hot-swappable redundant power supplies
- CLI, Telnet, SSHv2 and SNMP (NView NMS)

FEATURES

ISCOM6860

- Support Layer 2 wirespeed forwarding
- Support up to 112 GPON/XGS-PON/EPON interfaces per chassis
- Support up to 56 10GEPON interfaces per chassis
- Support up to 56 XGS combo PON interfaces per chassis
- Support broadband, voice, IPTV and more services ISPs and cable operators
- Support 1:1 hot-swappable SMC control cards and DC power supplies
- Carrier-grade Type B/C/D PON network protection
- VLAN, including selective Q-in-Q, VLAN mapping and aggregation
- Complete QoS, including dynamic assignment of bandwidth, priority control, multiple traffic classification modes, multiple queue scheduling modes, etc. to meet different QoS requirements for VoIP, video, and Internet access services
- Complete ACL, including L2/L3/L4 and customized policies
- MSTP, link aggregation, DHCP, interface isolation
- Layer 2 multicast, IGMP Snooping, Proxy, MVR, and controllable multicast
- With a low power consumption design for all cards, overall power consumption is below 1000W
- An intelligent fan with automatic speed adjustment according to chassis temperature prolongs its lifespan, reduces noise, and saves energy

System and Sub-card

ISCOM6800

- ISCOM6800-18-A, 13U/18-slot chassis with an airflow tray and cable array
- ISCOM6800-SMCA, switching and control card in Slot 9 and 10. 1 console port (RJ45) for local CLI and 1 SNMP out-of-band MGMT interface (RJ45)
- ISCOM6800-EP16, EPON line card, 16 x EPON SFP ports, working in Slot 1-8 and 11-16
- ISCOM6800-XEP8, 10G EPON line card, 8 x 10GEPON SFP+ ports, working in Slot 1-8 and 11-16
- ISCOM6800-XC8A, XGS-PON combo line card, 8 x combo PON SFP+ ports, working in Slot 1-8 and 11-16
- ISCOM6800-GP16, GPON line card, 16 x GPON SFP ports, working in Slot 1-8 and 11-16
- ISCOM6800-GE16, Ethernet line card, 16 x GbE SFP ports, working in Slot 1-8 and 11-16
- ISCOM6800-XP4L, 10GbE line card, 4 x 10GE SFP+ ports, working in Slot 1-8 and 11-16
- ISCOM6800-XP4A, 10GE line card, 4 x 10GE SFP+ ports, working in Slot 19 and 20
- ISCOM6800-XP2A, 10GE line card, 2 x 10GE SFP+ ports, working in Slot 19 and 20

ISCOM6860

- ISCOM6860-10, 6U chassis without fan array
- ISCOM6860-10-FANS381, intelligent fan array
- ISCOM6800-SMCA, switching and control card in Slot 1 and 2. 1 console port (RJ45) for local CLI and 1 SNMP out-of-band MGMT interface (RJ45)
- ISCOM6800-EP16, EPON line card, 16 x EPON SFP ports, working in Slot 3-9
- ISCOM6800-XEP8, 10G EPON line card, 8 x 10GEPON SFP+ ports, working in Slot 3-9
- ISCOM6800-XG16, XGS-PON line card, 16 x XGS-PON ports, working in Slot 3-9
- ISCOM6800-XC8A, XGS-PON combo line card, 8 x combo PON SFP+ ports, working in Slot 3-9
- ISCOM6800-GP16, GPON line card, 16 x GPON SFP ports, working in Slot 3-9
- ISCOM6800-GE16, Ethernet line card, 16 x GbE SFP ports, working in Slot 3-9
- ISCOM6800-XP4A, 10GE line card, 4 x 10GE SFP+ ports, working in Slot 10
- ISCOM6800-XP2A, 10GE line card, 2 x 10GE SFP+ ports, working in Slot 10
- ISCOM6800-XP4L, 10GE line card, 4 x 10GE SFP+ ports, working in Slot 3-9
- RPA2161-S-220S54, 1U 19" rack-mounted 220VAC to -48VDC rectifier
- RPD2151-48S48, DC -48V power rectifier for RPA2161-S-220S54

Small-Sized 10G Combo PON OLT

ISCOM6820

The ISCOM6820 is a new-generation compact small-capacity 2U-plug-in Optical Line Terminal (OLT) platform developed by Raisecom. It supports mixed insertion of GPON and XG(S)-PON cards, and provides rich features and flexible deployment modes for networking, thus meeting requirements for low-density and long-distance fiber access. It can be deployed in such scenarios as non-dense coverage areas, outdoor areas, limited-space areas, and areas with prolonged-distance coverage.

The ISCOM6820 is equipped with high backplane bandwidth and high switching capacity, and non-blocking forwarding and high reliability for all services. Cards and fans adopt green energy-saving design to lower power consumption and emissions.

ISCOM6820

FEATURES

• Up to 16 XG(S)-PON Combo interfaces, allowing GPON/XG-PON/XGS-PON ONUs to coexist under the same PON interface. Each PON interface supports up to 256 GPON/XG-PON/XGS-PON ONUs. The device supports up to twelve 10GE uplink interfaces
• Accessing broadband, voice, IPTV, and other services to meet various accessing applications of carriers and industrial users
• Uplink MCC 1+1 load balancing, hot-swapping for all cards
• Type B PON protection, meeting carrier-grade requirements
• VLAN, including selective QinQ, VLAN mapping and aggregation
• Complete QoS, including DBA, priority control, multiple traffic classification modes and multiple queue scheduling modes, thus meeting different QoS requirements on VoIP, video, and Internet access services
• Complete ACL, including L2, L3, L4, and user-defined ACLs
• Static multicast, IGMP Snooping, Proxy, MVR, and controllable multicast
• Link aggregation, DHCP, interface isolation

System and Sub-card

• ISCOM6820-SMUA, Uplink MCC, with 6 x 10GE (SFP+) interfaces (without SFP modules)
• ISCOM6800-XCOA, Service card, with 8 XG(S)-PON Combo interfaces (without SFP modules)
• ISCOM6800-XCHA, Service card, with 16 XG(S)-PON Combo interfaces (without SFP modules)
• ISCOM6800-GPHA, Service card, with 16 GPON interfaces (without SFP modules)

Small-Sized GPON OLT

ISCOM6820-GP

ISCOM6820-GP is a 2U small-sized OLT that complies with the GPON's ITU-T G.984 standard. The device can support up to 32 x GPON ports and 4 x 10GbE uplink ports. The ISCOM6820-GP can aggregate a maximum of 4,096 subscribers ONUs/ONTs in a max fiber split ratio of 1:128.

The complete modular design of the ISCOM6820-GP enables excessive flexibility in deploying, maintaining and expanding services at reduced CapEx and OpEx. Designed for large enterprises, SME and residential fiber access, the ISCOM6820-GP offers a broad range of features delivering triple-play services, simplifying management, and providing high network reliability. The security is assured by implementations of RADIUS and/or TACACS+ authentications, while maximum network uptime is guaranteed by ring protection architecture, real-time monitoring and hot-swappable redundant power supplies.

ISCOM6820-GP

FEATURES

- Available with up to 32 x GPON ports
- Up to 1:128 split ratio for max 4,096 subscribers per full-load chassis
- VLAN, Q-in-Q, QoS, DBA
- Link diagnostic, port backup/isolation/protection/monitoring, bi-directional FEC
- ARP, DHCP relay, DHCP v4/v6, IGMP snooping v1/v2, IPv4 and IPv6
- Support complete ACL, including L2/L3/L4 and customized policies
- Anti-DDoS, RADIUS, TACACS+, and Storm control
- Service classification per port/VLAN/CoS (DSCP)
- SP, WRR, DRR and SP+WRR queue scheduling modes
- SFP digital diagnostic (DDM), fan, CPU, voltage and temperature monitoring
- ITU-T G.984 (GPON)
- CE and RoHS compliant, RMON I and II standards
- CLI, Telnet, SSHv2 and SNMP (NView NMS)

System and Sub-card

- ISCOM6820-MCUA: 2 x 10GbE SFP+ ports line card in Slot 1 and 2. 1 console port (RJ45) for local CLI and 1 SNMP out-of-band MGMT interface (RJ45)
- ISCOM6820-GPSC: 16 x GPON SFP ports line card with switching fabric on board in Slot 3
- ISCOM6800-GP16: 16 x GPON SFP ports line card, in Slot 4

Compact GPON OLT

ISCOM5508-GP

The ISCOM5508-GP is a compact GPON OLT with enhanced functionality that complies with ITU-T G.984 GPON standard. The device can provide up to 8 GPON ports, 10 x 1GbE and 2 x 10GbE uplink interfaces, also supporting 1 CATV input and 4 triple-lambda outputs on WDFA4 expansion card. The full modular design of the ISCOM5508-GP enables maximum flexibility in deploying, maintaining and expanding services while maintaining a low total cost of ownership. Designed for small ISPs and cable operators for residential fiber broadband access, ISCOM5508-GP offers a broad range of features delivering triple-play services, simplifying network management, and providing a high network reliability. The security is assured by implementations of RADIUS and/or TACACS+ authentications, while maximum network uptime is guaranteed by ring architecture, real-time monitoring and hot-swappable redundant power supplies.

ISCOM5508-GP

FEATURES

- Available with up to 8 GPON ports, 12 x 1GbE and 2 x 10GbE uplink interfaces
- Up to 1,024 subscribers with 1:128 max fiber split ratio for 20km transmission distance
- VLAN, Q-in-Q, QoS, DBA
- Link diagnostic, port backup/isolation/protection/monitoring, bi-directional FEC
- ARP, DHCP relay, DHCP v4/v6, IGMP snooping v1/v2, IPv4 and IPv6
- Support complete ACL, including L2/L3/L4 and customized policies
- Anti-DDoS, RADIUS, TACACS+ and Storm control
- Service classification per port/VLAN/CoS (DSCP)
- SP, WRR, DRR and SP+WRR queue scheduling modes
- SFP digital diagnostic (DDM), fan, CPU, voltage and temperature monitoring
- High performance and network reliability
- Efficient space, flexible installation and easy operation
- CE and RoHS compliant, RMON I and II standards
- CLI, Telnet, SSHv2 and SNMP (NView NMS)

System and Sub-card

- ISCOM5508-GPSC, the MCU with 4 x GPON SFP ports + 2 x 10GbE (SFP) + 2 x 1GbE (SFP) + 2 x 1GbE (RJ45) in Slot 1. 1 console port for local CLI and 1 SNMP out-of-band MGMT interface
- ISCOM5508-GP4A, GPON line card with 4 x GPON SFP ports in Slot 3
- ISCOM5508-WDFA4, EDFA+WDM line card with 1 x CATV RF Input (1550nm, SC/APC) + 4 x GPON input (1310nm/1490nm, LC/PC) + 4 x output (triple-lambda, LC/APC), in Slot 2 or 3
- ISCOM5508-GE4B, Ethernet line card with 4 x 1GbE SFP ports, in Slot 2 or 3

Outdoor GPON OLT

ISCOM5508Q-GP

ISCOM5508Q-GP is an outdoor hardened GPON OLT with cast aluminum casing targeted for outdoor installation. It supports 2 x GE ports, 2 x GE SFP ports, 2 x 10GE SFP+ ports, and 8 x GPON ports. The cast aluminum chassis supports extended operating temperature range and lightning/dust/water proof. The module is also equipped with Bluetooth connection as a convenient way for the console maintenance without connecting a serial cable. It supports max 1:128 fiber split ratio, thus very suitable for deployment in low population density areas.

ISCOM5508Q-GP

FEATURES

- Support 2 x 10GbE uplink ports
- 8 GPON ports with1:128 split ratio
- Support complete ACL including L2/L3/L4 and customized policies
- Support multicast, IGMP snooping, IGMP proxy and MVR
- Complete QoS support including DBA, priority control, traffic classification and queue scheduling
- Embedded dual power supplies
- IP67 protection to meet dust-proof and water-proof requirements
- Wide operating temperature from -10°C to 55°C

GPON SFU ONT

ISCOM HT803G-1GE, ISCOM HT803G-1GC, ISCOM5104-GP-HB

The ISCOM HT803G series SFU type bridge optical network terminal (ONT) devices provide a dependable transparent connection to deliver residential broadband access including high speed data and IPTV/CATV services. They provide a simple and straightforward way for ISPs and cable operators to terminate their fiber connections to curb, basements, rooms and enterprise equipment rooms to deliver residential triple-play services as well as business L2 connections. End subscribers will have full freedom to choose any type and generation home gateways or enterprise gateways that fulfill their needs for indoor networking. All GPON FTTX ONTs offer advanced end-to-end management and monitoring functionalities, either on Raisecom NView platform or be integrated/ interoperated with other vendor OLT equipment.

ISCOM HT803G-1GC

ISCOM HT803G-1GE

The ISOCM5104G-GP-HB is a GPON bridge ONT with 4 x GbE LAN ports, targeted for small and medium sized enterprises in multi-LAN equipment interconnect, video monitoring, and other indoor networking applications. It is designed with a metal enclosure, dependable and durable, featuring high protection level, high lightning proof level, thus suitable for various indoor and outdoor cabinet deployment environment.

ISCOM5104-GP-HB

P/N	ISCOM HT803G-1GE	ISCOM HT803G-1GC	ISCOM5104-GP-HB
WAN Interface	1 x GPON port, Class B+		
LAN Interface	1 x GE interface		4 x GE interface
CATV Interface	NA	1 x RF	NA
VLAN, QinQ	Support VLAN, QinQ, QoS, DBA		
Dimension(mm)	80(L) × 80(W) × 26(H)	140(L) × 105(W) × 39(H)	150(L) × 115(W) × 30(H)
Consumption	< 5W		
Management	CLI, SNMP and OMCI via OLT		

GPON HGU ONT

ISCOM HT803G-WS2, ISCOM HT803G-WX2

The ISCOM HT803G series optical network terminal (ONT) gateways provide a flexible mix of residential services including high speed Internet, IPTV, and voice services. They also provide state-of-the-art Wi-Fi 5/6 connections with MIMO antennas for better indoor coverage for residential and small-and-medium enterprise business subscribers. They offer flexible choices in terms of LAN interfaces such as Gigabit Ethernet ports, POTS (FXS) ports and Wi-Fi 5/6 WLAN compliant with IEEE 802.11b/g/n/ac/ax.

All GPON FTTX ONUs offer advanced end-to-end management and monitoring functionality, based on TR-069 based auto provisioning and SNMP monitoring. With latest Wi-Fi 6 technology, wireless data rates can reach 3000Mbps to offer better and faster user experience in home networking.

ISCOM HT803G-WS2

ISCOM HT803G-WX2

P/N	ISCOM HT803G-WS2(M)	ISCOM HT803G-WS2(N)	ISCOM HT803G-WX2
WAN Interface	1 x GPON Class B+		
LAN Interface	4 x GbE		
POTS	2 x FXS	NA	2 x FXS
USB	1 x USB2.0		1 x USB3.0
WLAN	802.11 b/g/n/ac, 2.4GHz & 5GHz, up to 4 SSIDs, MIMO 2 x 2, 2 x external antennas		802.11 b/g/n/ac/ax, 2.4GHz & 5GHz, up to 4 SSIDs, MIMO 2 x 2, 6 x external antennas
Dimension(mm)	184(L) × 129(W) × 38(H)		217(L) × 142(W) × 40(H)
Consumption	<18W		<24W
TCP/IP	Support PPPoE Client, DHCP Server/Client, NAT, Static Route, ALG and W-iFi Bridge		
Mesh	NA		Easy Mesh
Management	Web management, Telnet, CLI and OMCI, TR-069		

10GPON/GPON Stick ONT

ISCOM HT801-GSFP, ISCOM HT801-XGSFP

The ISCOM HT801-GSFP is a GPON ONT stick with MAC. It is in the SFP form and can be inserted into MSA-compliant SFP cages on switches, IP cameras, Small Cells, routers, DSLAMs, or other devices to implement various networking application requirements. In this way, GPON network provides an infrastructure with less complexity in communication and connectivity, lower power consumption and cost, as well as improved network reliability.

ISCOM HT801-GSFP

The ISCOM HT801-XGSFP is a symmetrical XGS-PON ONT Stick with XGS-PON MAC. Encapsulated in SFP+ form factor, it can act as a miniature XGS-PON SFU ONT bridge independently and work against an XGS-PON OLT device. It can be flexibly inserted and deployed in any hosting devices that provide an open and standard SFP+ cage with adequate power consumption support.

ISCOM HT801-XGSFP

FEATURES

- SFP/SFP+ form factor, small size, elegant appearance, and light weight
- Compliance with ITU-T G.984/G.988/G.9807
- Cost-effective and suitable for large-scale applications
- Fully compatible with OLTs of other vendors

XGS-PON MDU

ISCOM6108-XGS, ISCOM6108-XGS-PSE

The ISCOM6108-XGS is an XGS-PON MDU product developed by Raisecom for all-optical-fiber parks. It provides XGS-PON access for uplink and downlink 10G bandwidth, and provides one 2.5GE electrical interface, 7 GE electrical interfaces, and one 10GE optical interface in the downlink, so it can access services with rate higher than GE and provide users with high-quality data, high-definition video services, and other services.

ISCOM6108-XGS

The ISCOM6108-XGS-PSE is an XGS-PON MDU product developed by Raisecom for all-optical-fiber parks. It provides XGS-PON access for uplink and downlink 10G bandwidth, and provides one 2.5GE electrical interface, 7 GE electrical interfaces, and one 10GE optical interface in the downlink. The Ethernet electrical interface complies with IEEE 802.3af/at, and it can supply up to 30W power. It can access services with rate higher than GE and provide users with high-quality data, high-definition video services, and other services.

ISCOM6124-XGS, ISCOM6124-XGS -PSE

The ISCOM6124-XGS is an XGS-PON MDU product developed by Raisecom for all-optical-fiber parks. It provides XGS-PON access for uplink and downlink 10G bandwidth, and provides 24 GE electrical interfaces, and two 10GE optical interface in the downlink, so it can access services with rate higher than GE and provide users with high-quality data, high-definition video services, and other services.

ISCOM6124-XGS

The ISCOM6124-XGS is an XGS-PON MDU product developed by Raisecom for all-optical-fiber parks. It provides XGS-PON access for uplink and downlink 10G bandwidth, and provides 24 GE electrical interfaces, and two 10GE optical interface in the downlink, The Ethernet electrical interface complies with IEEE 802.3af/at, and it can supply up to 30W power. It can access services with rate higher than GE and provide users with high-quality data, high-definition video services, and other services.

FEATURES

- Compliance with ITU-T G.987.x
- Adopt fanless zero-noise design to minimize noise towards residents
- Iron-shell MDU, strong and durable, high safety protection class, high lightning protection indicators, high product quality
- Working at -20 to 55°C and with lightning protection level of ±6 kV in common mode, thus adaptive to various areas
- 2.5GE electrical interfaces or 10GE optical interfaces, able to access services with rate higher than GE
- Support optional PoE type. The entire device supports up to 120W or 360W power

SOHO/Enterprise Gateway

MSG2200 Series, MSG2100E Series

Raisecom PON/Ethernet gateway family consists of data-access gateway like MSG2200 series and converged gateway like MSG2100E series. MSG2200/MSG2100E series products are the third-generation gateway launched by Raisecom, which meet the needs of SMEs, schools, industry branches, micro enterprises and street shops for bandwidth acceleration and performance improvement, and have SD-WAN access and VPN tunnel capabilities. The products adopt dual-core/quad-core CPU technology, integrating data, voice, security, wireless and other functions to provide users with integrated network access solutions of gigabit broadband and smart government & enterprises.

The MSG2200/MSG2100E series products have cloud platform access capabilities, establish a VxLAN tunnel as the cloud access terminal for SDN controller and vCPEs.

Users can flexibly deploy multiple services on the same platform to reduce the network operation and maintenance costs.

MSG2100E-UPON-4V

MSG2100E-UPON-16V-AC

MSG2200-T4

MSG2200-UP

FEATURES

Performance and reliability

• High performance and low power consumption, dual-core/quad-core CPU, 900MHz/1.2GHz
• Small size and good durability
• No fan, no noise, and high reliability

Interface type

• Provide EPON/GPON self-adaptive uplink mode, and optional USB external 4G uplink link backup in WAN side
• Provide GE ports in LAN side, and one of them can be configured as the uplink port

Routing access

• Support IPV4/IPV6 dual stack, DS-lite tunnel
• Support routing, bridging, NAT, port mapping, DHCP, UPNP and other functions to meet users' basic access requirements
• Support VLAN management and MAC management to facilitate equipment service and port planning
• Support static routing and policy routing protocols
• Support routing backup
• Support multicast IGMP Snooping and IGMP Proxy
• Support rich and flexible QoS scheduling mechanisms: PQ, WRR, etc.

VPN function

• Support multiple VPNs such as IPSec, L2TP, and GRE
• Support VxLAN, which can uplink to SDN controller and vCPE

Security function

• Support firewall and access control policies
• Support DDoS, anti-ARP attack, and port scanning defense
• Support MAC, IP and URL filtering
• Support various user authentication modes, such as Radius/LDAP/IP/MAC, support web page push, and various Portal protocols

Voice function (except MSG2100-UPON-AC, MSG2200 series)

• Support SIP, H.248 and IMS-SIP voice protocols at the same time
• Support G.711a/u, G.723, G.726, G.729 voice codec auto-negotiation
• In terms of voice service, the PSTN supplementary services such as holding, waiting, forwarding calls, three-way calling, hotline service, and Centrex can be implemented to form a rich and powerful overall IP voice solution, providing customers with more voice service experiences

Management function

• Support multiple management modes, such as TR-069, Web, and SNMP to facilitate service provisioning and operation & maintenance management
• Support zero-configuration for plug and play
• Support NAT-traversal to solve the problem of network management connection between public network and private network

Software Features		
L2/3 function	Access function	Support routing, bridging, NAT, port mapping, DHCP, UPNP and other functions to meet users' basic access requirements Support IEEE 802.11, MAC management, and VLAN management Support 4G uplink link backup
	Multicast function	Support multicast IGMP Snooping, and IGMP Proxy
	Speed limit function	Support port speed limit, and QoS speed limit
	Routing	Support static routing, policy routing, and route backup
Voice function (except MSG2100/MSG2200 series)		Support SIP, H.248 and IMS-SIP voice protocols Support G.711a/u, G.723, G.726, G.729 voice codec Support T.30/T.38 fax, three-way calling, DND, and call accounting functions
IPv4/IPv6		Support IPv4/IPv6 dual stack, Routing & data forwarding, DS-lite tunnel
Advanced features	VPN	Support IPSec VPN, L2TP VPN, GRE VPN, VxLAN VPN, and PKI management
	QoS	Support priority mapping, traffic monitoring (CAR), traffic shaping, congestion management, and priority management
	Security	Support basic firewall, website filtering, MAC address filtering, and access control Anti ARP and DDoS attacks Support Web authentication, RADIUS authentication, and illegal IP detection

P/N	MSG2200-UP	MSG2100E-UPON-4V	MSG2100E-UPON-16V-AC	MSG2200-T4
WAN	1 x EPON/GPON self-adaptive interface			
4G interface	optional USB external 4G NIC			
LAN	4GE			8GE
Voice interface	NA	4 x FXS voice interfaces	16 x FXS voice interfaces	8 x FXS voice interfaces
USB interface	USB2.0/3.0 high-speed interface			
WLAN	IEEE 802.1b/g/n/ac (4x4 MIMO), 4 external 5dBi antennas	IEEE 802.1b/g/n (2 x 2 MIMO), single-frequency 2.4G Hz, 2 external 5dBi antennas		
Weight	1.2Kg	0.9Kg	2.1Kg	1.7Kg
Dimension(mm)	260(L) x 130(W) x 43(H) (metal shell)		440(L) x 220(W) x 43(H) (metal shell)	320(L) x 200(W) x 43(H) (metal shell)
Power Supply	+12V power adapter		AC 220V power supply	
Max power consumption	≤21W	≤12W	≤27W	≤22W
Operating environment	Operating humidity: 10% ~ 90%, non-condensing Operating temperature: -5°C ~ 55°C;			
Storage environment	Environment temperature: -25°C ~ 70°C; Environment humidity: 10% ~ 90%, non-condensing			
Dust level	IP20			

Standalone CATV EDFA

RC5827A-4, RC5830A-8, RC5833A-16, RC5836A-32X-WS

Raisecom standalone CATV EDFA includes models of RC5827A-4, RC5830A-8, RC5833A-16, RC5836A-32X-WS. All models are 19- inch standalone product, integrated by splitter, optical amplifier, and 1270 & 1310/1490 & 1571/1550nm wavelength multiplexer, supports 1 or 2 CATV input port, up to 32 PON input ports and 32 COM (CATV+PON) ports. It is optical switch integrated for models with 2 CATV input port. Output power for each EDFA output port is 19dBm. All models support dual AC/DC power supplies and redundant backup.

RC5830A-PWR-D is a pluggable power supply module for RC5827A-4, RC5830A-8, and RC5833A-16. The output power is -48V DC. RC5830A-FAN is a pluggable Fan module for RC5827A-4, RC5830A-8, and RC5833A-16.

RC5830A-8

FEATURES

- 1540nm~1565nm operating bandwidth for optical amplifier
- Low Noise Figure: Max. ≤5.5dB, (@Pin=0dBm, λ=1550nm)
- High performance, high reliability
- Polarization dependent gain: Max. 0.4dBm
- Polarization mode dispersion: Max. 0.5ps
- Input and output pump leakage: -30dBm
- 1550nm output optical port, multiplex 1310nm/1490nm or 1270nm/1571nm data stream
- Be compatible with be compatible with any FTTx PON Technology: EPON/GEPON, GPON and XGS-PON
- Perfect RS232, SNMP
- Efficient space, flexible installation and easy operation

Splitter

Passive Optical Splitter

The optical splitter is a passive optical plug-and-play device, which connects OLT and ONUs with multiple fiber ends. A splitter is generally deployed in an optical distribution network, allowing carriers to split optical signals to numerous customer premises. Raisecom provides various optical splitters with the following split ratios: 1:2, 1:4, 1:8, 1:16, 1:32, 1:64 to 1:128. The series is classified as indoor, indoor/outdoor and outdoor optical splitters.

Outdoor Optical Splitter

Indoor/Outdoor Optical Splitter

Chapter 4

Smart Residential Gateway

As the core of the smart home, the router can be connected to various smart terminals, such as TV, phone, pad, speaker, STB, Xbox, VR glasses, etc. These demands put many requirements on the router. For performance and multi-terminal access scenario, Raisecom DR series router uses high-quality CPU and Wi-Fi chips. For far different categories of family members, DR series router implements access control, such as parental control (teenage mode). For covering different types of houses, we use multiple antennas, even mesh networking technology to achieve full coverage. For the use of equipment, we have implemented a three-step fast configuration and also provided safety guarantees. The DR series of wireless network router launched by the Raisecom intelligent networking terminal product line aims to meet the needs of smart home, via access fiber to home, network full coverage in a house, combine intelligent control, information exchange and consumption services effectively, provide uses with complete, high performance, reliable, standard innovative broadband service experience.

Residential Gateway

DR5254, DR5364, DR5374 series

As the hub connecting Internet at home, wireless routers are widely used in daily life and become an indispensable network device at home. With the upgrade of optical fiber and the rapid development of communication technology, home broadband access demand is also upgraded, which brings higher performance requirements for home routers. The DR series router aims to use the wireless technology to change the home network, so that every family can enjoy unlimited high-bandwidth networks.

DR5254 & DR5364 & DR5374 are the main models of the intelligent networking terminal, which uplink to the gateway through a network cable and then downlink with high-speed network extension service through wired and wireless methods. It adopts the high-powered CPU to ensure system operating fast and stable. It has 1 GE WAN port, 2 GE LAN ports for Wi-Fi 5 router 3 GE LAN ports for Wi-Fi- 6 router, and 4/5 Omni-directional antennas. DR5374 supports Wi-Fi 6 which is a new generation of IEEE802.11ax wireless technology, and provides wider coverage and more efficient transmission. The total dual-band concurrent bandwidth is up to 3000Mbps, which enables users surf internet faster and smoother.

DR5254

DR5364

DR5374

FEATURES

Elegant Appearance

• Be suitable for desktop layout; support built-in antennas on DR5254 and external antennas on DR5364/DR5374 appearances

High-speed full-gigabit networks

• Upgrade the bandwidth just in one step; adopt full-Gigabit network port design, 1 Gigabit WAN port, and 2 Gigabit LAN ports for Wi-Fi 5 router, 3Gigabit LAN ports for Wi-Fi 6 router

• Max. 1200Mbps for Wi-Fi 5 router and Max. 3000Mbps for Wi-Fi 6 router

High-performance antenna

• 4/5 high-performance antennas to achieve the Omni-directional family coverage

• 2.4GHz with strong wall penetration and wide coverage, while 5GHz with low latency and high rate

WAN/LAN auto-adaption

• With the support of the network port automatic identify technology, you can plug in any Gigabit Ethernet ports as you like, and there will be auto-recognized uplink/downlink port

IPv6

• All-round upgrade to support IPv6 (compatible with IPv4), more addresses, more secure

Band-steering

• Combined 2.4GHz and 5GHz to one SSID, intelligent automatically connects users' devices to faster frequency

Easy Setup

• Easy setup in 3 steps with Smart Phone, easy to use

P/N	DR5254	DR5364	DR5374
WAN Interface	1 x Gigabit WAN port		
LAN Interface	2 x Gigabit LAN ports	3 x Gigabit LAN ports	
CPU	Dual-core 900MHz		Dual-core 1GHz
RAM	128 MB	256 MB	
Flash	128 MB		
WLAN	802.11 b/g/n/ac, AC1200, 2.4 GHz & 5 GHz, 2x2 MU-MIMO, 4 x built-in 3dBi antennas	802.11 b/g/n/ac/ax, AX1800, 2.4 GHz & 5 GHz, 2x2 MU-MIMO, 4 x external 5dBi antennas	802.11 b/g/n/ac/ax, AX3000, 2.4 GHz & 5 GHz, 2x2 MU-MIMO, 5 x external 5dBi antennas
Dimension(mm)	105(L) × 105(W) × 68(H)	220(L) × 130(W) × 36(H)	225(L) × 146(W) × 37(H)
Power Supply	12V DC, 1A	12V DC, 1.5A	
Software	Support PPPoE, DHCP Server/Client, static IP, WPS, IPv4/IPv6, DNS client/relay, NAT, Firewall, parent control, Terminal management, DMZ, IGMP snooping/proxy		
Mesh	NA	Easy mesh	
Management	Web management		

Chapter 5

Ethernet Switch and Industrial Switch

Raisecom offers a complete product line of Carrier Ethernet (CE) switches, aggregation and demarcation devices. The MEF-certified Carrier Ethernet 2.0 product line can be used to deliver E-Line, E-LAN, E-Tree, and E-Access services. These services can provide end-to-end SLA and QoS monitoring and full-service performance visibility as well as OAM, CFM, multi-CoS and other carrier-grade Ethernet protocols. Typically used to provide SLAs and service assurance for business services, CE2.0 products are vital for demarcation between service providers.

Based on mature Ethernet technologies, Industrial Ethernet products and solutions are gaining popularity in many vertical industries, utilities, transportation and public market sectors for their enhanced manageability, network redundancy, scalability, and comprehensive performance monitoring. In addition, the managed Industrial Ethernet technologies also assist with the integration of many systems over a scalable network across wired and wireless LANs and WANs.

Gazelle series products are mainly designed for complicated application scenarios in the industry fields, such as smart grid, traffic control and surveillance systems. The selected models are specially adapted with advanced performance on QoS, network security, resiliency and reliability for a wide range of industrial applications. In addition, this series, complying with IEC 61580-3 and IEEE 1613, can ensure high standards of EMI immunity and error-free communication that is significant in power plants, substations, transmission lines and ammeter readings. Their hardened hardware design supports effective and efficient protection mechanism with sub 50ms switchover protection by ITU-T G.8032 ERPS, increasing network reliability and reducing the cabling and wiring complexity.

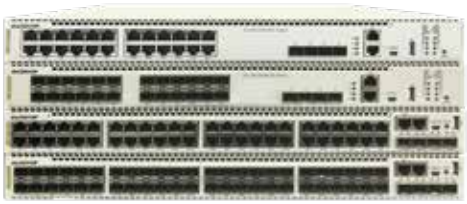
L2/L3 Aggregation Switch

ISCOM S5600-EI Series

The ISCOM S5600-EI series switches are the new-generation and high-efficiency Layer 2/3 Gigabit Ethernet switches. This series adopt a new-generation switching software platform based on Linux OS and flexible hardware design, such as ISCOM S5600-28C-EI (24x1GE RJ45 + 4x1/10GE SFP+), ISCOM S5600-28C-EI-24F (24x1GE SFP + 4x1/10GE SFP+), ISCOM S5600-52C-EI (48x1GE RJ45 + 4x1/10GE SFP+), ISCOM S5600-52C-EI-48F (48x1GE SFP + 4x1/10GE SFP+), and supporting one slot for extension cards on the rear panel. There are 4 different extension cards to choose from, 8x10GE SFP+, 8x1GE SFP, 8x1GE RJ45 and 2x40GE QSFP+ ports.

The ISCOM S5600-EI series feature high reliability, high security, easy maintenance, simple management. They adopt advanced OAM protocols, meeting the carrier's requirements for MEF CE2.0 standards to deliver EPL, EVPL, EP-LAN, EVP-LAN and E-Access services. The ISCOM S5600-EI series also support state-of-the-art IPv4/IPv6 unicast/multicast protocols and Intelligent Stacking Framework (ISF) technology.

With these features, they can be widely applied to various networking scenarios. For example, they can function as edge devices on the MAN, aggregation switches on a campus or enterprise network, or gigabit access in the Internet/Enterprise Data Center (IDC/EDC).



ISCOM S5600-EI Series

FEATURES

- High capacity, high density
- High reliability and protection
  - STP, RSTP, MSTP
  - LACP
  - ITU-T G.8032 with fault switching time less than 50ms (the fault detection can be based on physical interface and CFM CC)
  - Dual-system and dual-configuration-file redundancy backup
- ISF Stacking (not compatible with L3 features)
  - Up to 2 devices
  - Liner connection of ring connection
  - Uplink connect
- OAM and SLA
  - Point-to-point: EEE802.3ah
  - End-to-end: hardware IEEE802.1ag to implement 3.3ms CC monitoring
  - Rich SLA, ITU-T Y.1731
  - MEF CE2.0 certified E-Line, E-LAN, E-TREE and E-Access services
  - Hardware BFD
- Various security guarantees
  - Various AAA mode such as RADIUS and TACACS+
  - IEEE 802.1x authentication
  - Port secure MAC and limits on the MAC addresses to stop attacks from illegal users
  - Various ACL policies to control packet forwarding flexibly
  - DHCPv4/v6 Snooping and Option 82/18/37 to avoid DHCP attacks
  - DAI and IP Source Guard based on the DHCP binding table to prevent ARP flooding attacks and IP attacks
  - Broadcast storm and loop detection to ensure the stability of the network
  - Lightning protection for the power supply and all the Ethernet electric interfaces and protect hardware investment of the customer
- Fine tunable QoS
  - Rich scheduling policies such as SP, WRR, or SP + WRR, DRR, or SP+DRR
  - Dual-bucket three-color CAR based on the traffic and H-CAR
  - Statistics based on traffic
- IPv6 Ready
  - IPv6 management
  - IPv6 ACL
  - DHCPv6 Snooping, RA Snooping and Option18/37 to ensure the network security
  - MLD Snooping to ensure the IPv6 multicast monitoring
- Advanced management system
  - SNMP, RMON, Telnet, SSH management interface to increase the usability of the device
  - Automatic configuration and loading. The administrator can put the configuration file set in advance to the TFTP server for the automatic loading of the switch while it is booting, thus simplifying the management and maintenance

P/N	ISCOM S5600-28C-EI	ISCOM S5600-28C-EI-24F	ISCOM S5600-52C-EI	ISCOM S5600-52C-EI-48F
Port Number & Type	24x10/100/1000 RJ45 + 4 x 1G/10G SFP+	24x100/1000 SFP + 4 x 1G/10G SFP+	48x10/100/1000 RJ45 + 4 x 1G/10G SFP+	48x100/1000 SFP + 4 x 1G/10G SFP+
Extension Card	One slot for the extension card: 2x40GE QSFP+, 8x10GE SFP+, 8x1GE SFP, 8x1G RJ45			
Management interface	1 SNMP interface (RJ45) 2 console interface: 1 RJ45 console and 1 mini-USB console (high priority) 1 USB (reserved, non-function now)			
Dimension(mm) (L) x (W) x (H)	1U, 19" (444 x 420 x 44.4)			
Device Weight (kg)	5.4kg (no PSU)	5.3kg (no PSU)	5.6kg (no PSU)	5.5kg (no PSU)
Power Supplies Weight(kg)	0.8kg for each PSU			
Power Supplies	hot-swappable dual power supplies: dual AC /dual DC/AC+DC also support single power supply: AC/DC			
Voltage Scope	AC 220V(100~240V), DC 48V(-36~-72V)			
MAX Device Power (Single/Daul Power supplies) (W)	39/43	59/63	51/56	86/90
MAX Card Power (W)	2x40GE QSFP+ card: 14W 8x10G SFP+ card: 16.6W 8x1GE SFP card: 8W 8x1G RJ45 card: 5.3W			
FAN Noise	< 60 dBA			
Working Temperature	0-50°C			
Relevant Humidity	10%–90% RH (non-condensing)			
Anti-thunder	cable port anti-thunder CM 6kv power anti-thunder AC: DM 6kv / CM 6kv DC: DM 1kv / DM 2kv			
Jumbo Frame	10KB			
Buffer	4MB			
Memory (SRAM)	1GB			
Flash	1GB			
Switch Capacity (Gbps)	128 + 160 (with 40G expansion card)		176 + 160 (with 40G expansion card)	
Packets Switch Rate (Mpps)	95 + 121 (with 40G expansion card)		131 + 121 (with 40G expansion card)	

L2 Access Switch

ISCOM2600(-PWR/PWH) Series

The ISCOM2600(-PWR/PWH) series switches is the new-generation and cost-effective Layer 2 Gigabit Ethernet switches. It adopts a route switching software platform based on the Linux OS, and a high-performance hardware platform. With multiple interface types, such as ISCOM2608G-2GE/-PWR, ISCOM2600-12G/-28G, ISCOM2600-12X/-PWR, ISCOM2600-28X/-PWR/-PWH, ISCOM2600-28X-24F, ISCOM2600-54X, it can provide flexible networking modes.

Featuring high reliability, high access security guarantee, easy administration, and simple management, it can meet carriers' requirements. In addition, it supports static route, ready IPv6, intelligent PoE, and so on. Therefore, it is widely adopted, such as access device of enterprises, campuses, residences, and CDN.

ISCOM2600(-PWR/PWH) Series

FEATURES

- High capacity, high density
- High reliability and protection
  - STP, RSTP, MSTP, and multi-RSTP
  - LACP and MLACP
  - ITU-T G.8032 with fault switching time less than 50ms
  - Dual-system and dual-configuration-file redundancy backup
- Various security guarantees
  - Various AAA mode such as RADIUS and TACACS+
  - IEEE 802.1x authentication
  - Port secure MAC and limits on the MAC addresses to stop attacks from illegal users
  - Various ACL policies to control packet forwarding flexibly
  - DHCPv4/v6 Snooping and Option 82/18/37 to avoid DHCP attacks
  - DAI and IP Source Guard based on the DHCP binding table to prevent ARP flooding attacks and IP attacks
  - Broadcast storm and loop detection to ensure the stability of the network
  - Lightning protection for the power supply and all the Ethernet electric interfaces and protect hardware investment of the customer
- Fine tunable QoS
  - Rich scheduling policy such as SP, WRR, or SP+WRR, DRR, or SP+DRR
  - Dual-bucket three-color CAR based on the traffic and H-CAR
  - Statistics based on traffic
- IPv6 Ready
  - IPv6 management
  - IPv6 ACL
  - DHCPv6 Snooping, RA Snooping and Option18/37 to ensure the network security
  - MLD Snooping to ensure the IPv6 multicast monitoring
- Smart PoE
  - IEEE802.3af/IEEE802.3at/IEEE802.3bt standard
  - PD alive-check
  - Configuring reboot the PD at a specific time each weak
  - Supplying power during specified time interval
- Advanced management system
  - SNMP, RMON, Telnet, SSH and provide friendly WEB management interface to increase the usability of the device
  - Automatic configuration and loading. The administrator can put the configuration file set in advance to the TFTP server for the automatic loading of the switch while it is booting, thus simplifying the management and maintenance

P/N	ISCOM2608G-2GE/-PWR	ISCOM2600-12G	ISCOM2600-28G
Port type	Uplink: 2 x GE SFP Downlink: 8 x GE RJ45	Uplink: 4 x GE SFP Downlink: 8 x GE RJ45	Uplink: 4 x GE SFP Downlink: 24 x GE RJ45
Management interface	1 Console interface and 1 SNMP(RJ45) interface (ISCOM2608G-2GE/-PWR has no SNMP port)		
Switching capacity	20Gbit/s	24Gbit/s	56Gbit/s
Packets switch rate	14.88Mpps	17.86Mpps	41.66Mpps
Dimension(mm)	260(L) × 130(W) × 43.6(H) PoE: 300(L) × 220(W) × 43.6(H)	260(L) × 130(W) × 43.6(H)	440(L) × 220(W) × 43.6(H)
Weight(kg)	<1.08 PoE: <2.5	< 1.8	< 2.6
Max Power consumption	< 20w PoE: <150w, 124w power supply	< 26w	< 40w
Hardware	Power: single AC/DC Fan: no fan design Working temperature: 0–50°C Relevant humidity: 10%–90% RH (non-condensing) Voltage range: AC 220V(100~240V), DC 48V(-36~-72V) anti-thunder (cable port): 6kV MTU: 9216B		

P/N	ISCOM2600-12X/-PWR	ISCOM2600-28X/-PWR/-PWH ISCOM2600-28X-24F	ISCOM2600-54X-HI
Port type	Uplink: 4 x GE/10G SFP+ Downlink: 8 x GE RJ45	Uplink: 4 x GE/10G SFP+ Downlink: 24 x GE RJ45 or 24 x GE SFP	Uplink: 4 x GE/10G SFP+ Downlink: 48 x GE RJ45
Management interface	1 Console interface and 1 SNMP(RJ45) interface		
Switching capacity	96Gbit/s	128Gbit/s	176Gbit/s
Packets switch rate	71.5Mpps	95.3Mpps	130.9Mpps
Dimension(mm)	260(L) × 130(W) × 43.6(H) PoE: 300(L) × 220(W) × 43.6(H)	440(L) × 220(W) × 43.6(H) PoE: 440(L) × 300(W) × 43.6(H)	440(L) × 300(W) × 43.6(H)
Weight(kg)	<1.8 PoE: <3.3	< 2.6 PoE: <4.95	< 4.3
Max Power consumption	< 26w PoE: <150w, 124w power supply	<40w POE: <550w 510w power supply	< 45w
Hardware	Power: single AC/DC Fan: no fan design (without POE model) Working temperature: 0–50°C AC:220V(100-240V) DC:48V(-36-72V) Anti-thunder: 6KV MTU:9216B	Power: single/dual AC, dual DC, or AC_DC POE model Power: single AC/DC or dual AC/DC Fan: no fan design (Only for ISCOM2600-28X model) Working temperature: 0–50°C AC:220V(100-240V) DC:48V(-36-72V) Anti-thunder: 6KV MTU:9216B	Power: single/dual AC, dual DC, or AC_DC Fan: with Fan design Working temperature: 0–50°C AC:220V(100-240V) DC:48V(-36-72V) Anti-thunder: 6KV MTU:9216B

L2 DIN-Rail Unmanaged Industrial Switch

ISCOM1000-I Series

The ISCOM1000-I DIN-Rail switches consist of unmanaged industrial switches with a wide selection of port numbers, speed, and media types. ISCOM1000-I series are designed for industrial automation and control in industrial field. This DIN-Rail switches series can operate stably for a long time in harsh environments which are IP40 rated, support dual power supplies input, adopt low-power fanless cooling technology with a wide operating temperature ranging from - 40 to 75˚C, and ensure up to 35-year Mean Time Between Failures (MTBF) and a 3-year warranty.

ISCOM1000-I-FX-FE

ISCOM1000-I-FX-7FE

ISCOM1000-I-8FE

ISCOM1000-I Series Unmanaged L2 DIN-Rail

P/N	ISCOM 1000-I-FX-FE-x-DCW24	ISCOM 1000-I-FX-4FE-x-DCW24	ISCOM 1000-I-5FE-DCW24	ISCOM 1000-I-FX-7FE-x-DCW24	ISCOM 1000-I-8FE-DCW24
Port number & Type	1x100M M/S1/S2 fiber 1x10/100M RJ45	1x100M M/S1/S2 fiber 4x10/100M RJ45	5x10/100M RJ45	1x100M M/S1/S2 fiber 7x10/100M RJ45	8x10/100M RJ45
Dimension (mm)	32(W)x100(D)x120(H)	32(W)x100(D)x120(H)	32(W)x100(D)x120(H)	56(W)x105(D)x135(H)	56(W)x105(D)x135(H)
Weight (kg)	0.43	0.56	0.56	0.68	0.68
Power Supply	DC: Dual inputs				
Voltage Scope	DC: 12V/24VDC (9~36VDC)				
MAX power (W)	2.5	4	4	5.5	5.5
Jumbo Frame	10K bytes				
Switch Capacity (Mbps)	400	1000	1000	1600	1600
Working Temperature	-40˚C to 75˚C				
Protection Level	IP40				

L2 DIN-Rail Managed Industrial Switch

Gazelle S1000i-LI Series, Gazelle S1010i-GL Series, Gazelle S1020i-GL Series, Gazelle 1020i-LI Series, Gazelle S1020i-PWH/PWR-GL Series

The Gazelle DIN-Rail switches consist of compact and manageable industrial switches with a wide selection of port numbers, speed and media types. Gazelle S1010i-GL and Gazelle S1020i-GL series are designed for Automatic Control System (ACS) in industrial field, while Gazelle S1000i-Li and Gazelle S1020i-Li series are cost-efficient solutions designed to meet the requirements of safe city, smart transpotation, and industrial data backhaul. In addition, the Gazelle S1020i-PWR-GL series and the Gazelle S1020i-PWH-GL Series provide port with standard IEEE802.3bt, IEEE802.3at, and IEEE802.1af support. All these DIN-Rail switches enable delivery of reliable, continuous, and manageable services by complying with some industrial regulations and standards, which can operate stably for a long time in harsh environments. Network redundancy and reliability are guaranteed with LACP, G.8032 ERPS (<50ms switch-over time). All these DIN-Rail switches are IP40 rated, support dual power supplies input, adopt low-power fanless cooling technology with a wide operating temperature ranging from - 40 to 75˚C, and ensure up to 35-year Mean Time Between Failures (MTBF) and a 3-year warranty. They can support wall mounting and also rack mounting. Additionally, the Gazelle S1000i series, the Gazelle S1010i-GL Series, Gazelle S1020i-PWH-GL Series and the Gazelle S1020i(-PWR)-GL Series are designed to satisfy the requirements of data transmission in areas of smart grid (IEC 61850-3, IEEE 1613), transportation (EN50121-4), energy and industrial automation.

Gazelle S1000i-LI Series

Gazelle S1020i-GL Series

Gazelle S1020i-PWH-GL Series

Gazelle S1020i-LI Series

Gazelle S1000i-LI Series Cost-effective L2 GE DIN-Rail

P/N	Gazelle S 1000i-2GF-8GE-LI	Gazelle S 1000i-2GF-4GE-LI	Gazelle S 1000i-4GF-8GE-LI
Interfaces	2x100/1000M SFP 8x10/100/1000M RJ45	2x100/1000M SFP 4x10/100/1000M RJ45	4x100/1000M SFP 8x10/100/1000M RJ45
Dimension(mm)	80(W) × 121(D) × 150(H)	56(W) × 105(D) × 135(H)	80(W) × 121(D) × 150(H)
Weight(kg)	1	1	1
Power Supply	AC: single input		
Voltage Scope	AC: 110V/220VAC (100~240VAC)		
MAX power(W)	7		11
Jumbo Frame	10K bytes		
Switch Capacity	20	12	24
Working Temperature	-40˚C to 75˚C		
Protection Level	IP40		

Gazelle S1010i-GL/S1020i-GL Series L2 GE DIN-Rail

P/N	Gazelle S1010i-GF-2GE-GL	Gazelle S1020i-2GF-4GE--GL	Gazelle S1020i-4GF-8GE-GL
Interfaces	1x100/1000M SFP 2x10/100/1000M RJ45	2x100/1000M SFP 4x10/100/1000M RJ45	4x100/1000M SFP 8x10/100/1000M RJ45
Dimension(mm)	56(W) × 105(D) × 135(H)		80(W) × 130(D) × 150(H)
Weight(kg)	0.7		1.0
Power Supply	AC: single input DCW24: dual input DCW48: dual input	AC: single input DCW48: dual input	
Voltage Scope	AC: 110V/220VAC (100~240VAC) & 220VDC (170~300VDC) DCW24: 12V/24V(10~36VDC) DCW48: 24V/48V(20~72VDC)	AC: 110V/220VAC (100~240VAC) 220VDC (170~300VDC) DCW48: 24V/48V(20~72VDC)	
MAX power(W)	4	7	12
Jumbo Frame	10K bytes		
Switch Capacity	6	12	24
Working Temperature	-40˚C to 75˚C		
Protection Level	IP40		
Compliance	CE, UL/FCC IEC 61850-3, IEEE 1613, EN50121-4		

Gazelle S1020i-LI Series L2 GE DIN-Rail

P/N	Gazelle S1020i-2GF-4GE-LI	Gazelle S1020i-2GF-8GE-LI	Gazelle S1020i-4GF-8GE-LI
Interfaces	2x1000M SFP 4x10/100/1000M RJ45	2x1000M SFP 8x10/100/1000M RJ45	4x1000M SFP 8x10/100/1000M RJ45
Dimension(mm)	56(W) × 105(D) × 135(H)	80(W) × 130(D) × 150(H)	
Weight(kg)	0.7	1.0	1.1
Power Supply	DCW24: dual input		
Voltage Scope	DCW24: 12/24V(9~36VDC)		
MAX power(W)	7	8	12
Jumbo Frame	10K bytes		
Switch Capacity (Gbps)	12	20	24
Working Temperature	-40˚C to 75˚C		
Protection Level	IP40		

Gazelle S1020i-LI Series L2 GE DIN-Rail with Serial Ports

P/N	Gazelle S1020i-2GF-4GE-2R-LI	Gazelle S1020i-8GF-8GE-2R-LI
Interfaces	2x1000M SFP 4x10/100/1000M RJ45 2x RS232/485 serial ports	8x1000M SFP 8x10/100/1000M RJ45 2x RS232/485 serial ports
Dimension(mm)	56(W) × 105(D) × 135(H)	80(W) × 130(D) × 150(H)
Weight(kg)	0.7	1.2
Power Supply	DCW24: dual input	
Voltage Scope	DCW24: 12/24V(9~36VDC)	
MAX power(W)	8	16
Jumbo Frame	10K bytes	
Switch Capacity (Gbps)	12	32
Working Temperature	-40˚C to 75˚C	
Protection Level	IP40	

Gazelle S1020i-PWH-GL/PWR-GL Series L2 GE PoE DIN-Rail

P/N	Gazelle S1020i-2GF-4GE-PWH-GL	Gazelle S1020i-4GF-8GE-PWH-GL	Gazelle S1020i-2GF-8GE-PWR-GL
Interfaces	2x100/1000M SFP 4x10/100/1000M RJ45 PoE	4x100/1000M SFP 8 x10/100/1000M RJ45 PoE	2x1000M SFP 8x10/100/1000M RJ45 PoE
Dimension(mm)	80(W) x 130(D) x 150(H)	98(W) x 155(D) x 177(H)	80(W) × 130(D) × 150(H)
Weight(kg)	0.9	1.5	0.9
Power Supply	DC48: dual input		
Voltage Scope	DCW48: 48V(44~57VDC)		
MAX power(W)	10+180	15+360	12+240
MAX POE power(W)	180	360	240
Jumbo Frame	9K bytes		10K bytes
Switch Capacity (Gbps)	12	24	20
Working Temperature	-40˚C to 75˚C		
Protection Level	IP40		
Compliance	CE, UL/FCC EN 50121-4		

L2/L3 19" Rack-Mounted Industrial Switch

Gazelle S3028i-LF Series, Gazelle S3028i-MGL Series, Gazelle S3028i-CGS, ISCOM3052G(K)

The Gazelle 19" rack-mounted switches are designed to satisfy the broadband backbone transportation and aggregation requirements under rigorous industrial and business conditions. The products support a flexible electrical and SFP optical interface with combinations of up to 4 x 10GE/GE uplinks and 48 x GE downlinks. The Gazelle S3028i-LF series are cost-effective 1U rack-mount industrial switches with cost efficiency. This series switches are specially designed to meet requirements for industrial automation control systems, and have a very flexible port portfolio. The Gazelle S3028i-PWH-MGL adopts a standard 1U chassis and offers high-density interfaces, including four 1/10Gbit/s uplink optical interfaces, max twenty-four 100/1000Mbit/s auto-negotiation downlink optical interfaces, and Max sixteen 1000Mbit/s PoE interfaces. The Gazelle S3028i-MGL enables maximum flexibility when configured, in rings (intersect ring and tangent ring topologies), ensuring sub-50ms switchover time. Enhanced security is provided by supporting IEEE802.1x, RADIUS and other authentication methods. The ISCOM3052G GE modular NMS-managed Layer 3 industrial switch is specially designed for the Automatic Control System (ACS) in the industrial field, which can operate stably for a long time in harsh environments. The ISCOM3052G adopts a fully modular design, provides high-density interfaces, and is configurable and scalable. It supports complete Layer 3 routing protocols, delivers industry-leading ring network technologies, supports multiple industrial redundant ring network protocols. The Gazelle S3028i-CGS GE NMS-managed Layer 3 industrial switch has 1U rack-mount design and is also specially designed for the Automatic Control System (ACS) in the industrial field, which can operate stably for a long time in harsh environments. The S3028i-CGS provides high-density interfaces, including twelve 1/10Gbit/s uplink optical interfaces, max twenty-four 10/100/1000Mbit/s auto-negotiation electrical downlink interfaces. It supports complete Layer 3 routing protocols, delivers industry-leading ring network technologies, supports multiple industrial redundant ring network protocols. All these Rack-Mountable series Switches can sustain high performance in extreme environments. They also claim a fanless design, as well as IP40 dust protection housing, a redundant power supply, and are compliant with IEC 61850-3, IEEE 1613, and EN50121-4. All these switches adopt low-power fanless cooling technology with a wide operating temperature ranging from - 40 to 85˚C, and ensure up to 35-year Mean Time Between Failures (MTBF) and a 3-year warranty.

Gazelle S3028i-MGL

Gazelle S3028i-CGS

Gazelle S3028i-LF Series

ISCOM3052G(K)

Gazelle S3028i-LF Series Cost-Effective L2 GE Rack-Mounted

P/N	Gazelle S3028i-4GF-24GE-LF	Gazelle S3028i-4GX-16GE8GF-LF	Gazelle S3028i-4X-24FE-LF
Interfaces	4x1GE SFP 24x10/100/1000M RJ45	4x1G Combo 16x10/100/1000M RJ45 + 8x1GE SFP	4x100M fixed fiber ports 24x10/100M RJ45
Dimension (mm)	1U, 19" 440(L) x 300(D) x 43.6(H)		
Weight (kg)	2		
Power Supply	HIP/D, HIP/S, DC/S or DC/D		
MAX power (W)	30		
Voltage Scope	HIP: 110/220VAC (100~240VAC) 110/220VDC (88~300VDC) DC: 24/48VDC (20~72VDC)		
Jumbo Frame	10K bytes		
Switch Capacity (Gbps)	56		5.6
Working Temperature	-40˚C to 75˚C		
Protection Level	IP40		
Compliance	CE, UL/FCC		

Gazelle S3028i-CGS & ISCOM3052G(K) L3 GE Rack-Mounted

P/N	Gazelle S3028i-12XF-24GE-CGS	ISCOM3052G(K)
Interfaces	12x10GE SFP+ 24x10/100/1000M RJ45	4x10GE SFP+ 12x1GE combo + 12x10/100/1000M RJ45 3 expansion slots
Card	N/A	Expansion cards: 8GE: 8x10/100/1000M RJ45 8GF: 8x100/1000M SFP
Dimension (mm)	1U, 19" 440(L) x 320(D) x 44(H)	2U, 19" 440(L) x 320(D) x 88(H)
Weight (kg)	4.1	9.1
Power Supply	AC/D or DC/D	AC/D or AC/S
MAX power (W)	65	49
Voltage Scope	AC: 110/220VAC (100~240VAC) & 110/220VDC (88~300VDC) DC: 24/48VDC (20-72VDC)	AC: 110/220VAC (100~240VAC) & 110/220VDC (88~300VDC)
Jumbo Frame	10K bytes	
Switch Capacity (Gbps)	440	176
Working Temperature	-40˚C to 75˚C	
Protection Level	IP40	
Compliance	CE, UL/FCC IEC 61850-3, IEEE 1613, EN50121-4	

Gazelle S3028i-MGL Series L2 GE Rack-Mounted

P/N	Gazelle S3028i-4XF-16GE-PWH-MGL	Gazelle S3028i-4XF-16GE-MGL	Gazelle S3028i-4XF-16GF-MGL
Interfaces	4x10GE SFP+ 4x1GE combo + 12x10/100/1000M RJ45 (POE+/POE++) 1 expansion slot	4x10GE SFP+ 4x1GE combo + 12x10/100/1000M RJ45 1 expansion slot	4x10GE SFP+ 4x1GE combo + 12x100/1000M SFP 1 expansion slot
Card	Expansion cards: 8GE: 8x10/100/1000M RJ45; 8GF: 8x100/1000M SFP		
Dimension (mm)	1U, 19" 440(L) x 320(D) x 44(H)		
Weight (kg)	2.1		
Power Supply	HIP/D, HIP/S, DC/S or DC/D		
MAX power (W)	50+480		50
MAX POE power (W)	480		N/A
Voltage Scope	HIP: 110/220VAC (100~240VAC) & 110/220VDC (88~300VDC) DC: 24/48VDC (20~72VDC)		
Jumbo Frame	10K bytes		
Switch Capacity (Gbps)	128		
Working Temperature	-40˚C to 75˚C		
Protection Level	IP40		
Compliance	CE, UL/FCC IEC 61850-3, IEEE 1613, EN50121-4		

IoT Industrial Gateway

Gazelle G512i, Gazelle G532i

The Gazelle G series industrial IoT gateway transmits data from many industrial devices in different areas to the remote cloud center for device monitoring, device diagnosis, program maintenance, and fault alarm, providing users with a simple and reliable remote transmission solution of industrial Internet data for industrial mutual control, device diagnosis, program maintenance and fault alarm.

Gazelle G512i

Gazelle G532i

FEATURES

- High industrial protection level, ensuring long-term and stable operation of the device
- Offline cache of data, up to 1-month data
- Multiple network modes, supporting 2G/3G/4G networks of carriers and self-built Lora networks
- Multiple pre-configured cloud access capabilities, supporting PaaS networking
- Optional CAN expansion module, easily expanding various interfaces
- Container technology, facilitating secondary development for customers

Feature	Sub-feature	Gazelle G512i	Gazelle G532i
Hardware performance	CPU	ARM Cortex-A7 single-core 528Mhz–696Mhz	ARM Cortex-A53 dual-core 1.2Ghz
	Memory	512MB DDR3L	1GB DDR3L
	FLASH	1GB Nand flash	8GB eMMC
Interfaces	Serial interface	2*4-pin RS485	3*4-pin RS485 1*4-pin RS232
	Ethernet interface	2 x 100 Mbit/s RJ45	WAN/LAN: 4x10/100/1000M RJ45 LAN: 4x10/100/1000M RJ45 + 2x100/1000M SFP
	PoE	N/A	802.3af/at/bt, up to120W
	Wireless	802.11n 1x1 150Mbps	5G: supports 5G NR NR/LTE-TDD/LTE-FDD/WCDMA systems. Zigbee
	CPU	ARM Cortex-A7 single-core 528Mhz–696Mhz	ARM Cortex-A53 dual-core 1.2Ghz
	4G/5G	LTE-FDD Band 1/3/5/7/8/20/28, LTE-TDD Band 38/40, UMTS Band 1/5/8	5G Band: N1/N2/N3/N5/N7/N8/N12/N20/N25/N28/N40/N41/N66/N71/N77/N78/N79 LTE-FDD Band: B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B29/B30/B32/B66/B71 LTE-TDD Band: B34/B38/B39/B40/B41/B42/B43/B48 LTE DL 4x4 MIMO: B1/B2/B3/B4/B7/B25/B30/B38/B40/B41/B42/B43/B48/B66 UMTS Band: B1/B2/B3/B4/B5/B8
	SIM card	Mirco SIM card	Dual Mirco SIM card
	TF card	Up to 128 GB	N/A
Power Supply	Power interface	24VDC	24VDC
	Power Consumption	7W	30W+PoE 120W
Dimension	Dimension(mm)	56(W) × 105(D) × 135(H)	80(W) × 130(W) × 150(H)
	Antenna	2 X SMA; 1 X RSMA	6 X SMA; 1 X RSMA
Working Environment	Protection Level	IP40	IP40
	Working Temperature	-40°C to 70°C	-25°C to 70°C
	Storage temperature	-40°C to 85°C	-40°C to 85°C
	Working humidity	5–95% RH (non-condensing)	5–95% RH (non-condensing)
Compliance	CE, UL/FCC		

Chapter 6
Small Cell

Small Cell base stations are critical supplementary pieces for mobile networks. They are always considered and deployed to eliminate network blind spots. While high-power large-capacity macro cell base stations provide major network coverage over open areas and long ranges, small cell base stations can be flexibly deployed to strengthen mobile signal quality in either dense population hot-spots such as shopping malls, cinemas, theatres and so on, or cover difficult terrains and rural areas where the population is not much worthy building macro cell stations.

Small cell base station installation can also help to improve the user experience of mobile subscribers. In hot-spot areas, the deployment of small cells can effectively balance wireless channels bandwidth, so that data transfer speeds can be efficiently improved. Small cells can also help to to extend handset battery life by reducing transmission power draw, so they won't always work in high power mode to connect macro stations.

Small/Pico/Femto Cell Device

BLBS3211-BxP43, BLBS3211-Bx, BLBS3221-Bx

To meet various requirements of mobile operators, Raisecom has developed a variety of in-door and out-door 4G/LTE small cell base stations.

The BLBS3211-BxP43 hardened Small Cell base station is targeting out-door rural areas coverage where it's not worthy installing large-capacity stations for scarce population.

The enterprise-level Pico Cell BLBS3211-Bx series are mainly targeting for strengthen wireless signal in-door coverage and quality in office buildings, shopping malls, factories, and other in-door business environment.

The residential-level Femto Cell BLBS3221-Bx series are used for wireless signal strengthen in residential houses and flats, in which their basements, underground parking and elevators are often not very well covered by regular macro base stations.

BLBS3221-Bx

BLBS3211-Bx

BLBS3211-BxP43

FEATURES

• Provide complete feature set of standard LTE base stations and LTE-class data throughput, integrated with baseband, RF, and antennas

• Featured by intelligent SON, self-startup, auto provisioning, and flexible deployment

• Multiple backhauling modes, including GPON-based Internet, Carrier Ethernet and IP/MPLS based L2/L3 leased lines

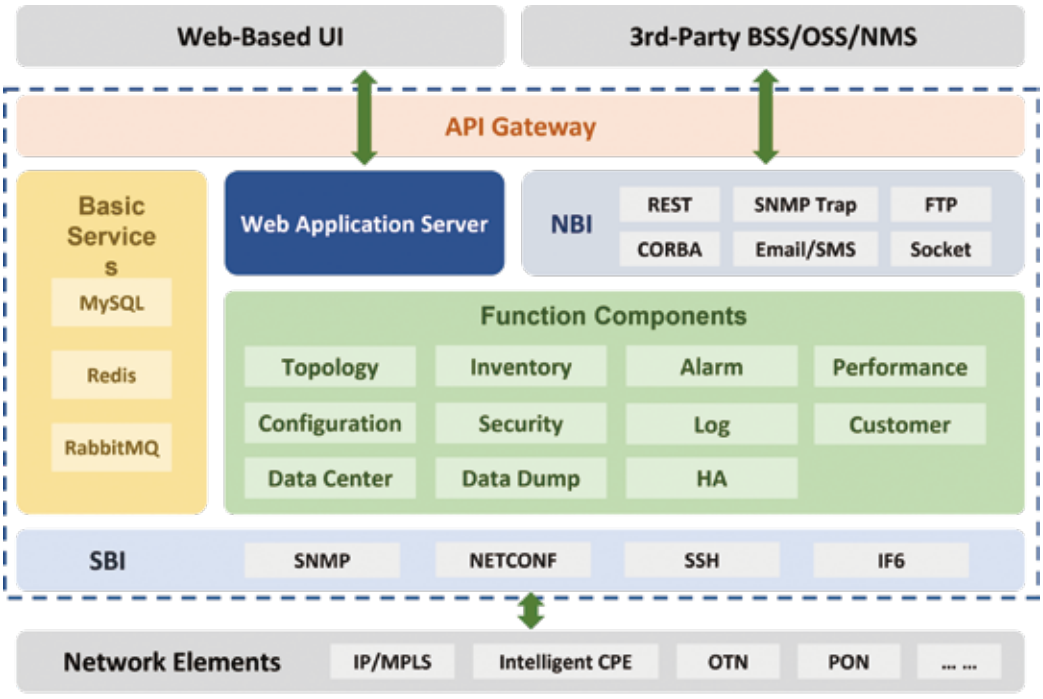
P/N	Outdoor micro cell BLBS3211-BxP43	Enterprise level pico cell BLBS3211-Bx	Home level femto cell BLBS3221-Bx
Working frequency band	Band 1/3/5/8	Band 1/3	Band 1/3
System bandwidth	5M/10M/20 M	10M/20 M	10M/20 M
Maximum output power	2 x 20 W or 1 x 40 W	2 x 125 mW	2 x 50 mW
MIMO capacity	2 x 2 MIMO	2 x 2 MIMO	2 x 2 MIMO
User capacity	Support 128 activated users	Support 32 activated users and 96 online users per carrier	Support 16 activated users and 48 online users per carrier
Device weight	≤ 13 kg	≤ 0.8 kg	≤ 0.5 kg
Power supply mode	220 VAC power	PoE or 220 VAC power adaptor	Power adaptor
Device interface	1 WAN interface, 1 LAN interface, 1 SFP interface, 1 GPS interface	1 WAN interface, 1 LAN interface, 1 SFP interface, 1 GPS interface, and 1 USIM card socket	1 WAN interface, 1 LAN interface and 1 USIM card socket
Installation mode	Wall-mount or mask-mount	Ceiling-mount or wall-mount	Desktop
Working temperature	-40 to +55°C	-5 to +45°C	-5 to +40°C
Protection class	IP65	IP30 (indoor)	IP30 (indoor)

Chapter 7. Network Management System

The ultimate goal of developing a network management system is to maximize the network efficiency and minimize the operation costs. Raisecom RCView is designed with FCAPS management and referring to TMN architecture. It supports various northbound interfaces for interfacing with Upper-Level NMS/OSS/BSS. Raisecom RCView runs on Linux OS and adopts Browser/Server structure.

Raisecom RCView is composed by different function components and different EMS for different Raisecom product families. It supports topology management, inventory management, configuration management, alarm management, performance management, security management, log management and customer management. It provides a data center function to help customer easily plan element backup/upgrade in batch. It also provides self-management for the server to keep monitoring the system and guarantee a health running.

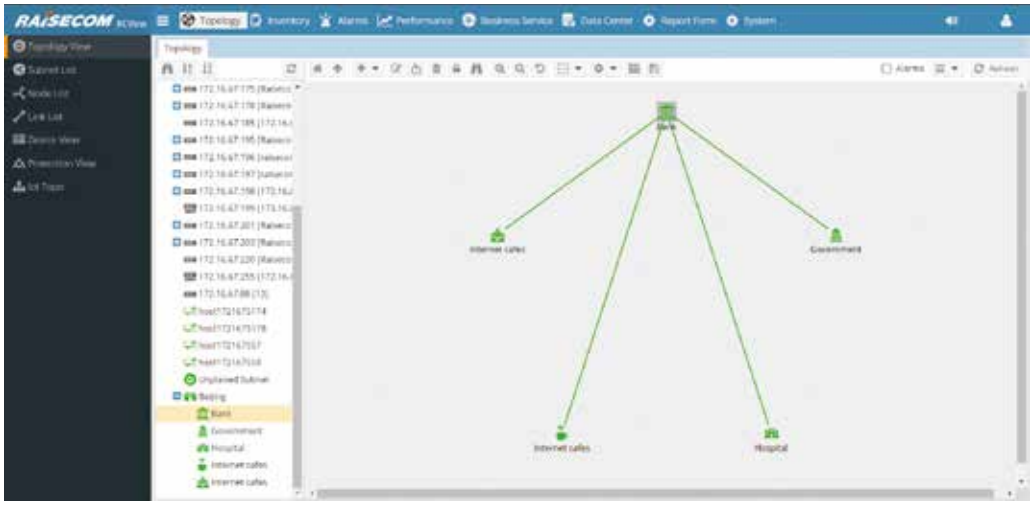
The deployment of Raisecom RCView can be very flexible. It can be deployed in stand-alone, HA, cluster, and HA + cluster mode. The deployed system can be easily adjusted and upgraded to support an ever-growing large-scale network.



Topology Management

The topology management of RCView displays the managed network on a user-friendly GUI. Network elements are organized by subnets and the network layout can be easily customized. The GUI shows real-time alarm status of subnets, network elements and links.

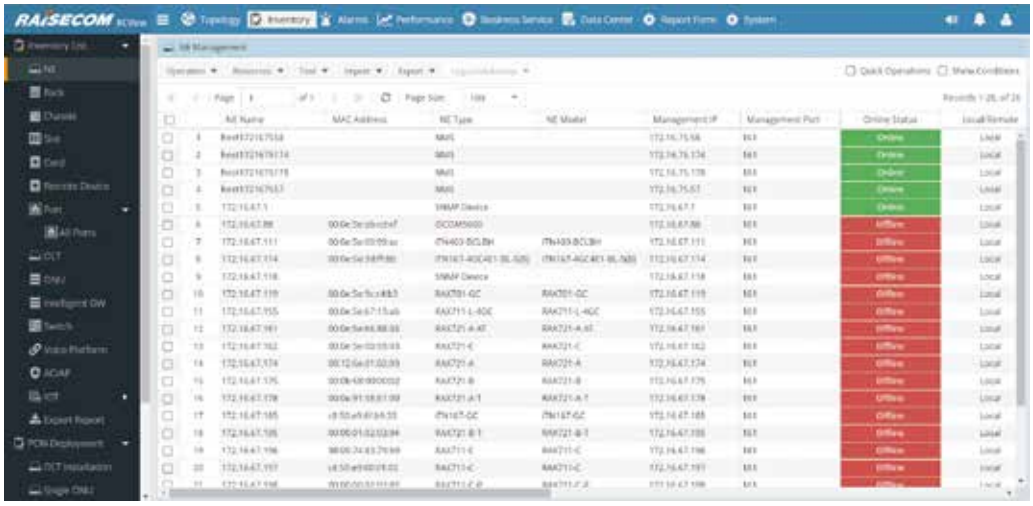
- Multi-level topology displaying
- Manual or automatic topology layout
- Devices auto-discovery
- Current alarm status on NEs and links
- Quick location of failure in the network



Inventory Management

All inventory related information is well-organized and displayed in RCView inventory management by categories of network element, rack, chassis, slot, card, remote, and port.

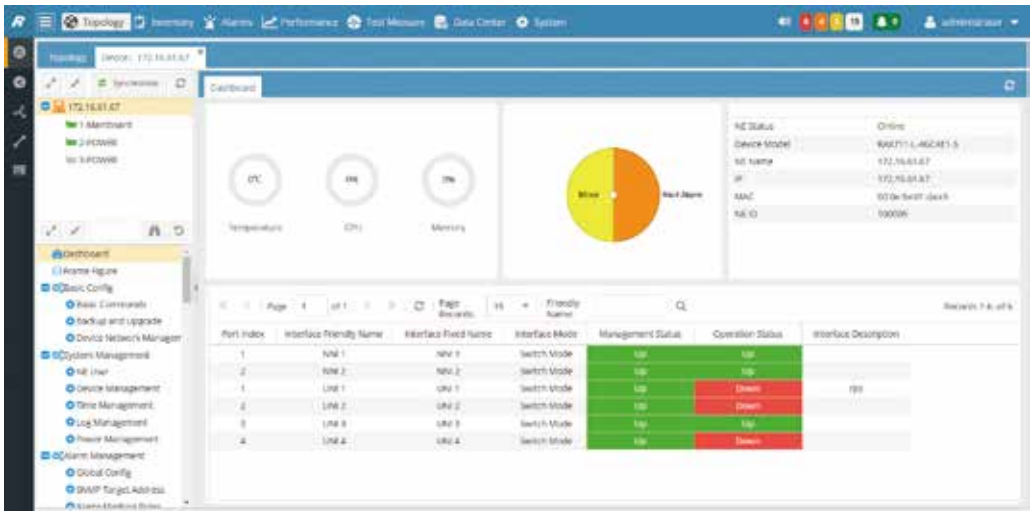
- Comprehensive inventory description with customer and fault information
- Unified query platform for rapid search of inventories
- Synchronization mechanism guarantees RCView showing real-time status of network resources



Configuration Management

RCView configuration management provides a user-friendly interface for device configuration and service provision. RCView always shows real-time configuration and status of the network elements which is guaranteed by synchronization mechanism.

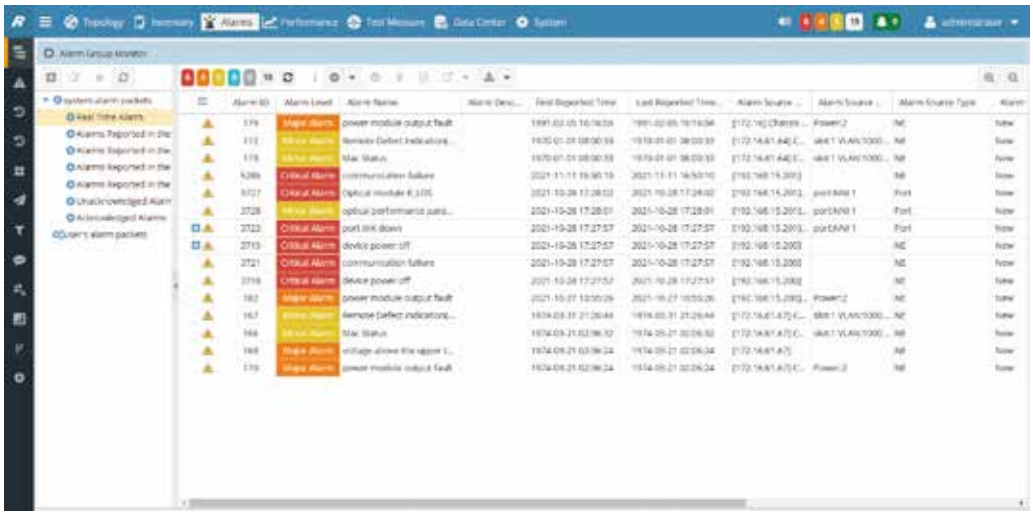
- Uniform platform for EMS for different product families
- User-friendly device configuration/status displaying
- Batch configuration for same device types
- End to end service provision and management for MEF and MPLS VPN services*



Fault Management

RCView fault management receives and analyzes alarms from managed network elements. Alarms are organized in current alarm list and history alarm list.

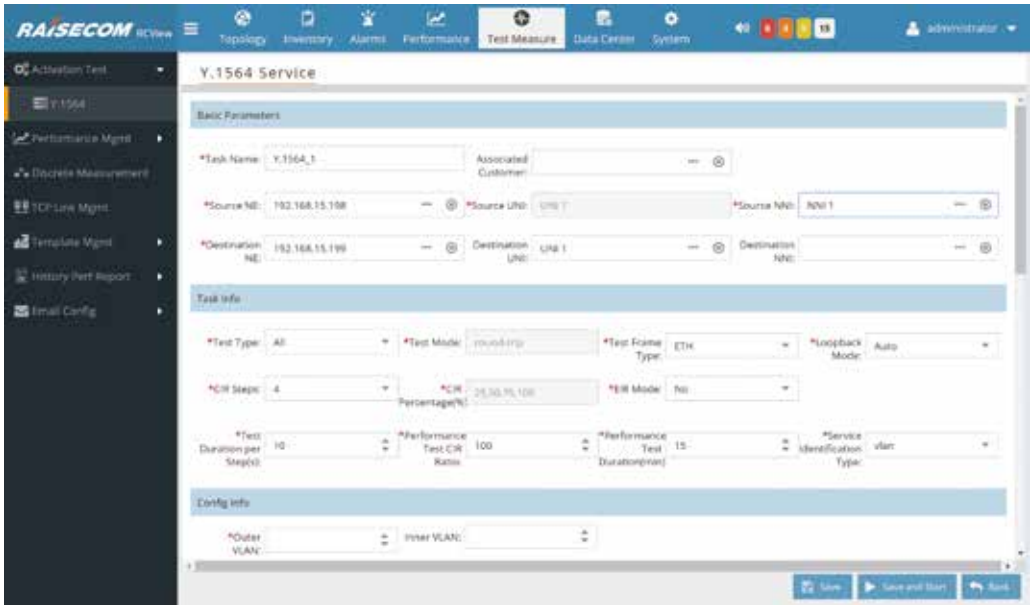
- Standard five-level alarm display with different colors showing different severity
- Alarm filter tools available to show only selected alarms on the list
- Alarm troubleshooting library recording troubleshooting experience
- Received alarms can be forwarded to 3rd-party system by SNMP trap, Socket(xml), Email and SMS



Performance Management

The performance management of RCView collects and displays (in table or graph) real-time and history performance data on device CPU utilization, port statistics, DDM statistics, and etc. It can also deploy service SLA tests like Y.1564, Y.1731, TWAMP and generate customized service SLA reports.

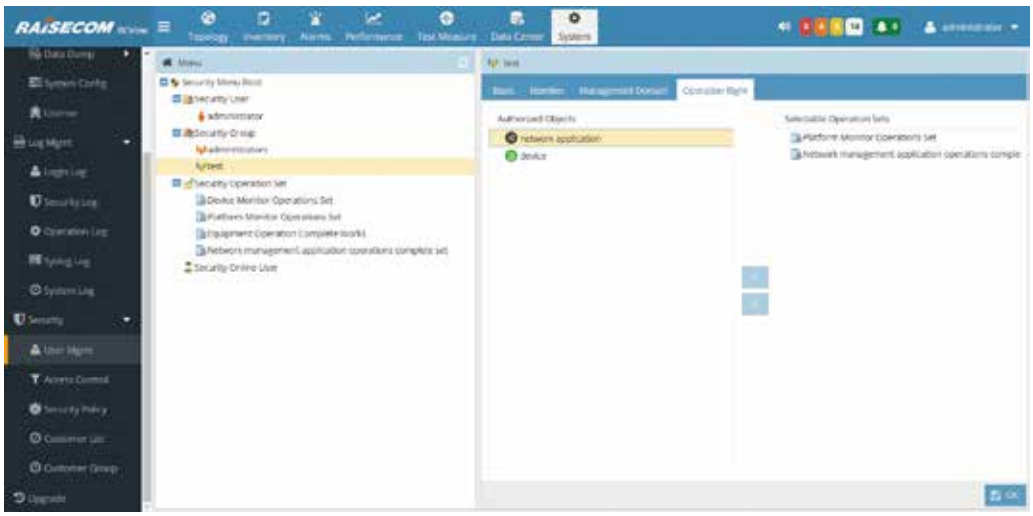
- Uniform performance management interface for all managed devices
- Real-time and history performance data collection and displaying
- Service SAT and SLA tests (like Y.1564, Y.1731, TWAMP) schedule and perform
- Performance report generate, customize and export



Security Management

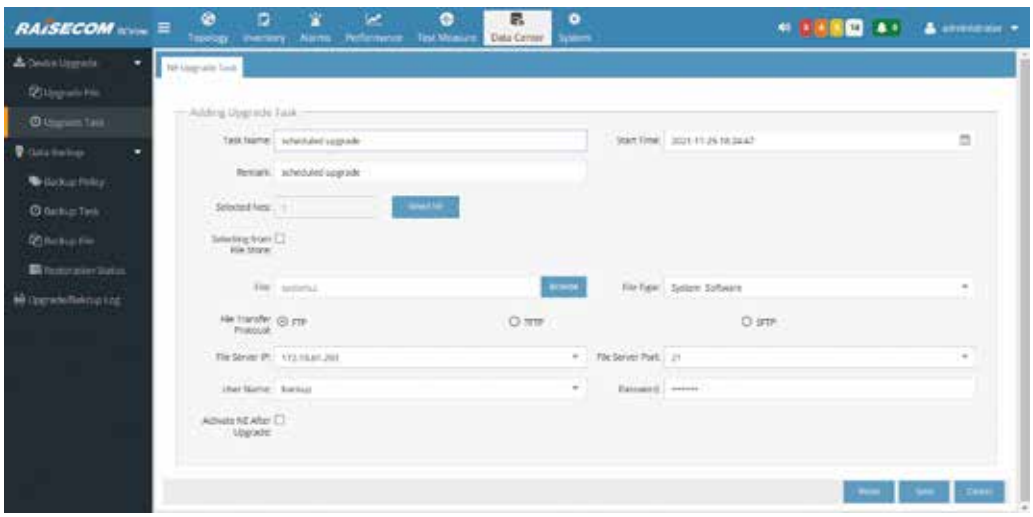
User groups with different authorities over different network domains can be created on RCView. Only authorized users are allowed to log in the system and operate. The security mechanism protects the system from illegal access, unauthorized use and other hazards.

- Multi-domain multi-authority management
- Different user profiles have different read and/or write authorities over different subnets
- Client access control mechanism
- Unauthorized login deny mechanism
- System and device operation logs available for online check and export



Data Center

RCView data center provides a unified interface for device software management, scheduled batch software upgrade and configuration backup. It helps network administrator to easily plan upgrades and backups of the network and save maintenance costs.



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