The First Aggregation OLT for Vertical Industry

Huawei SmartAX MA5600T Series Product

HUAWEI TECHNOLOGIES CO., LTD.

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SmartAX MA5600T

As the first aggregation OLT in the industry, The SmartAX MA5600T series product integrate the aggregation and switching functions, provide the high-density GPON and Ethernet P2P access, abundant GE/10GE ports, high precision clock and strong platform capacity, provide the basic voice, high-speed internet, fluent video, steady TDM and the Ethernet private line services, which can improve the network reliability, reduce the investment in network construction, and reduce the O&M costs.

The MA5600T series product includes the large-capacity MA5600T and the medium-capacity MA5603T. The hardware and software of these two models are fully compatible with each other to reduce the costs of spare parts and O&M costs. The difference of MA5600T and MA5603T is that MA5600T provides 16 service slots and MA5603T provides 6 service slots.

Product platform history

- 2006, global first T-bit OLT for commercial deployment, and IEC InfoVision Award for creative in access platform
- 2008, global first “10G PON ready” OLT, enable FTTx seamless evolution
- 2009, global first access and aggregation Integrated OLT, simplify network architecture
- 2010, global first “IPV6 ready” (phase 2 enhanced) access device certificated by IPV6 forum.

MA5600T

MA5603T

Key Features

Large-capacity platform with Access and Aggregation Integration

- Developed based on the iMAP hardware platform and the IAS software platform of Huawei, the MA5600T series product takes on the advanced architecture and design.
- The switching capacity of the backplane is up to 3.2 Tbit/s, and the bidirectional switching capacity of the control board is up to 480 Gbit/s.
- High density GE/10GE interfaces for cascading, up to 36*10GE or 384*GE interfaces, no need for additional investment of aggregation switches
- Each GPBD board supports eight GPON ports, based on the 1:128 split ratio, the single subrack supports up to 8K ONTs. In 2012, Huawei will launch 16-port GPON board which can supports 16K ONTs.
- Sharing the development platform with Huawei's broadband access devices, the MA5600T series product support the Layer 2 and Layer 3 features of the broadband access devices to provide user-oriented and future-oriented functions.
- GE/GPON/NGPON coexisting on the same platform.
- aggregation switches

Any Access

- Large capacity IPTV service provision, 8K multicast users and 4K multicast channels and 2k concurrent multicast channels
- HQoS support 3-level QoS (Different ISP/ service/user) guarantees OLT wholesale
- Traditional E1 service access, Native TDM or CESoP for traditional E1 service of enterprise and mobile base station access
- E-LAN function for local traffic inter-connection, meet the requirements of enterprise and campus network

Powerful integrated GPON access capability

- Supports high bandwidth. The downstream rate is up to 2.488 Gbit/s and the upstream rate is up to 1.244 Gbit/s.
- Supports long distance. The maximum physical transmission distance of the ONT is 60 km. The physical distance between the farthest ONT and the nearest ONT can be up to 20 km.
- Supports high split ratio. The 8-port GPON board supports 1:128 split ratio, which increases the access capacity and saves the optical fiber resources.
- Support high density. The MA5600T series provides the 8-port and 16-port GPON board to increase the system capacity.

Powerful QoS capability

- Supports priority control (based on the port, MAC address, IP address, TCP port ID, or UDP port ID), priority mapping and modification based on the ToS field and 802.1p, and DSCP differentiated services.
- Supports bandwidth control (based on the port, MAC address, IP address, TCP port ID, or UDP port ID) with a control granularity of 64 kbit/s.
- Supports three queue scheduling modes: priority queue (PQ), weighted round robin (WRR), and PQ+WRR.
- Supports HQoS, which assures the multi-service bandwidth for multiple users: The first level assures the user bandwidth, and the second level assures the bandwidth for each service of each user. This ensures that the assured bandwidth is allocated absolutely and the burst bandwidth is allocated fairly.

Comprehensive security features

1. System security measure

- Protection against the DoS (denial of service) attack
- MAC (media access control) address filtering
- Anti-ICMP/IP packet attack
- Source address routing filtering
- Blacklist

2. User security measure

- DHCP (Dynamic Host Configuration Protocol) Option 82 to enhance the DHCP security
- Binding between MAC/IP addresses and ports
- Anti-MAC spoofing and anti-IP spoofing
- Authentication based on the serial number (SN) and password of the ONU/ONT
- Triple churning encryption
- Encrypted broadcast transmission in the GPON downstream direction for different users, such as AES (advanced encryption standard) 128-bit encryption
- GPON type B OLT dual homing
- Smart link and monitor link for the network with dual upstream channels

Flexible network topology

As a multi-service access platform, the MA5600T series support multiple access modes and multiple network topologies to meet users' network topology requirements on different environment and services.

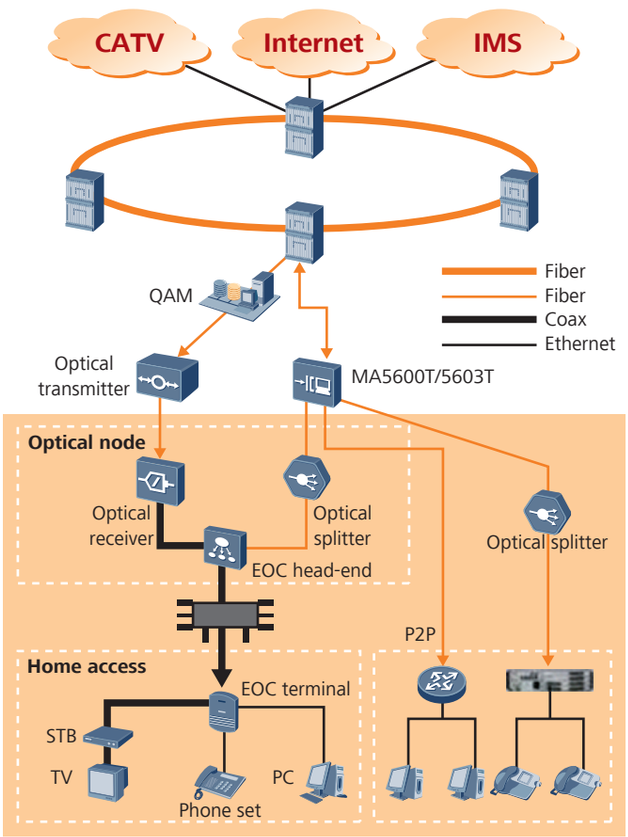

Figure 1 Network topology application for triple play in the broadcast and television industry

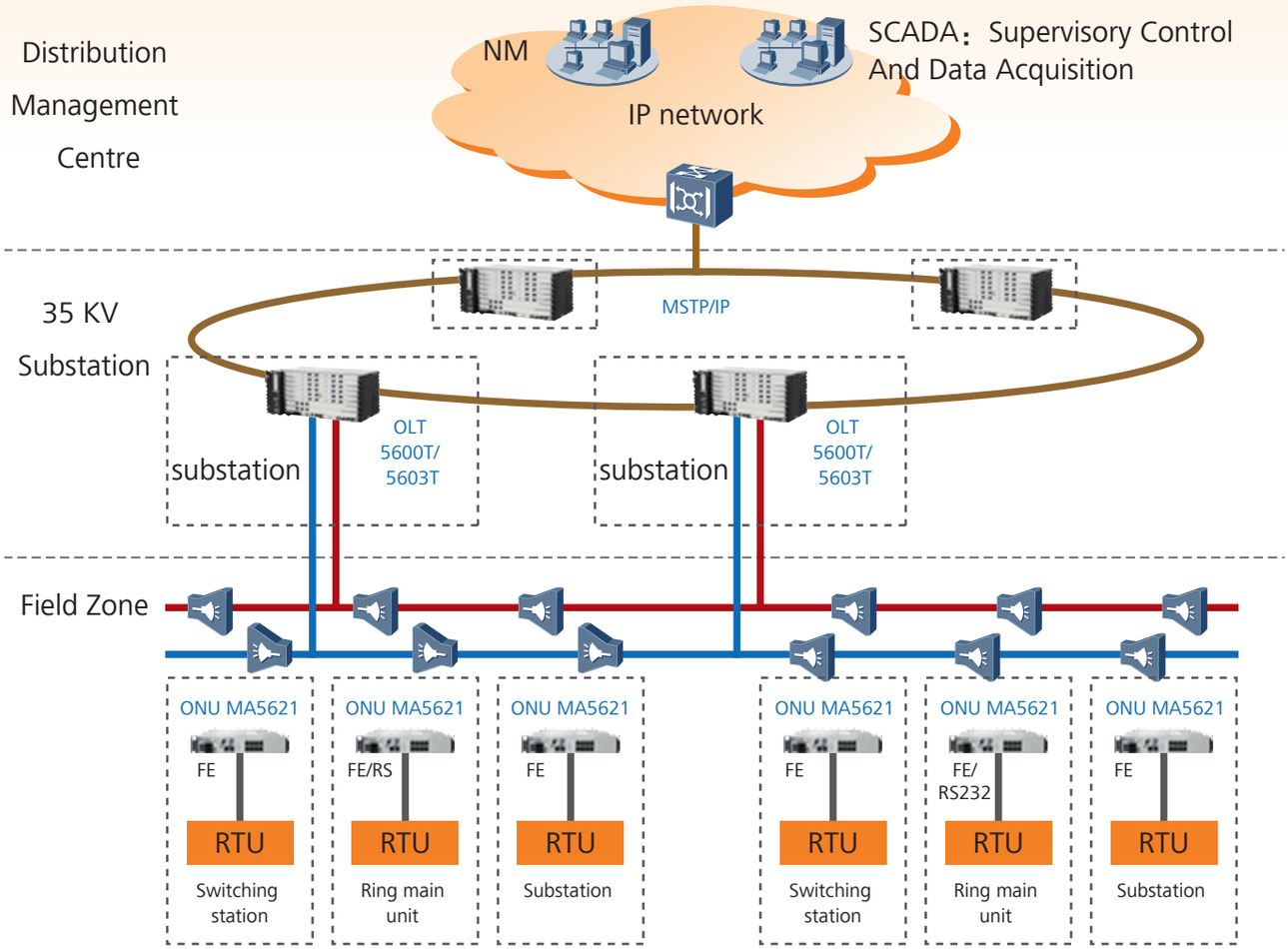

Figure 2 Network topology application for automatic power distribution in the electric power industry

High reliability design

- Adopts 1+1 redundancy backup for the control board and the upstream interface board.
- Provides the lightning-proof and anti-interference functions.
- Supports fault pre-warning on the exhaustive (consumed) units and parts, such as the fan, power supply, and battery.
- The 1+1 (type B) protection for the PON port and the 300 ms level service protection switchover for the backbone optical fiber are supported.
- Supports main control board in-service upgrade .
- Supports high temperature detection to ensure the system safety.
- The functions of querying the board temperature, setting the temperature threshold, and high temperature shutdown are supported.
- Supports hot swappable for all service boards and the control boards.
- Provides soft-start circuit, protective circuit, current-limit protection, and short circuit protection for the input power of the boards in the subrack to protect the boards against lightning strikes and surges.
- Supports GPON type C OLT dual homing.
- Supports smart link and monitor link for the network with dual upstream channels.

Green

- With Huawei self-developed GPON chipsets, the maximum power consumption of the 8-port GPON line card is only 51W
- Unique energy-saving bus, the idle service card can be powered off

Technical Specifications

System performance

- Backplane capacity: 3.2 Tbit/s; switching capacity: 960 Gbit/s; MAC address capacity: 512 K
- Layer 2/Layer 3 line rate forwarding
- Static route/RIP/OSPF/MPLS
- BITS/E1/STM-1/Ethernet clock synchronization mode and IEEE 1588v2 clock synchronization mode

GPON access board

- Adopts the design of 8-port high-density GPON board and 16-port GPON in 2012.
- Supports the SFP pluggable optical module.
- Supports 4 k GEM ports and 1 k T-CONTs.
- Supports a maximum split ratio of 1:128 (class C+ power module is needed).
- Supports the detection and isolation of the ONT that works in the continuous mode.
- Supports the flexible DBA working mode, and the low-delay or high-bandwidth efficiency mode.

Ethernet P2P access board

- Supports 48 FE or GE ports and the SFP pluggable optical module on each board.
- Supports the single-fiber bidirectional optical module.
- Supports the DHCP option 82 relay agent and the PPPoE relay agent.
- Supports Ethernet OAM.
- Supports Ethernet synchronization.

Subrack dimensions (Width x Depth x Height)

- MA5600T subrack: 490 mm x 275.8 mm x 447.2 mm
- MA5603T subrack: 442 mm x 283.2 mm x 263.9 mm

Running environment

- Operating ambient temperature: –25° C to +55° C

Power input

- –48 VDC and dual power input ports (supported)
- Operating voltage range: –38.4 V to –72 V

Enriching Life Through Communication

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