

V8106

PON OLT for high-density passive optical networks



V8106

V8106 is a modular GPON OLT platform. It provides flexible and high capacity PON access and redundant 4x 10 GbE uplinks, scalability and line rate performance with a 960 Gbps non-blocking switch fabric. V8106 introduces a highly flexible design. Out of the same shelf GPON and XGS-PON can be supported. This allows operators to fully customize it to the local network requirements.

The PON layer is terminated on the interface unit and translated to Ethernet uplink to be transported through an Ethernet/IP environment. V8106 can be equipped with up to 6 service interface units and 2 network interface units. For improved system reliability, it adopts the design of full redundancy architecture with dual SFUs (Switch Fabric Unit), PSUs (Power Supply Units) and FANs (Fan Units).

- High-density chassis with up to 96 GPON or 48 XGS-PON-Ports
- Connects up to 12,288 residential and business subscribers (1:128 split ratio)
- Up to 960 Gbps layer-3 non-blocked switch fabric
- Optimised for VoIP, IP-TV, high-speed internet data
- Fully redundant system architecture
- Supports a wide range of different SFP/SFP+ modules for customised connections
- Network management with UNEM/INAS

■ PON benefits

The PON technology targets at improving performance and interoperability, and adds support for new applications, services, and deployment scenarios. While GPON provides data rates of 2.5/1.25Gbps XGS-PON is able to support symmetrical 10Gbps per port. Among these changes are improvements in data rate and reach performance, diagnostics, and stand-by mode, to name a few.

V8106 introduces a point-to-multipoint concept with the PON technology, which enables a cost-effective FTTx service. The reason why PON is considered as a cost-effective solution is its usage of a passive splitter rather than an active switching system.

The benefits of the passive splitter are as follows:

- No power supply is needed.
- No maintenance is needed.

■ Dynamic Bandwidth Allocation (DBA)

V8106 supports DBA algorithms based on two kinds of methods: Non-Status Reporting (NSR) and Status Reporting (SR), both NSR and SR DBA (G.984.3).

Through Dynamic Bandwidth Allocation (DBA), a PON can be oversubscribed for upstream traffic.

■ Equipment options

V8106 is a robust chassis that can be equipped with different plug-in units. So the access node can be optimally adopted to the local requirements. With up to 17 plug-in modules the maximum expansion stage is:

- 6-slot: Subscriber Interface Unit
 - 16 Port GPON Unit
 - 8 Port XGS-PON Unit
- 2-slot: Network Interface Unit
- 2-slot: Switching Fabric Unit
- 1-slot: Clock Interface Unit (future release)
- 1-slot: Offload Processor Unit (future release)
- 2-slot: Power Supply Unit
- 2-slot: Fan Module Unit
- 1-slot: Dust Filter Unit

■ Maximum reliability

To additionally increase the system reliability, V8106 supports redundant operation. In this case dual switching modules and dual trunk modules will be used. The system also support dual power supplies and dual fan units. For GPON operation type-B protection scheme is supported as well.

The active switch is internally linked to all PON units. The switch receives traffic from the PON units and updates their own forwarding database in the same manner so that they can keep identical data to make a forwarding decision. The active switch can send traffic back to the interface units and receive traffic from these for address learning.

■ Network architecture

V8106 is a network element, which includes the necessary service adaptation functions to support the delivery of multiple services, such as Ethernet, IP telephony, and video services. V8106 provides robustness in operation. Adding or removing ONTs doesn't affect traffic of subscribers on other ONTs even on the same OLT port. Up to 128 termination points can be attached to a PON OLT port via passive optical splitter.

An ONT connects the user specific network to PON. The ONT can be occupied by a single subscriber and also can be a gateway of the local network.

■ Network management

Large scale PON deployments with V8106 can easily be operated with the network management system UNEM/INAS.

Local or remote configuration by CLI and SNMP is supported by V8106 as well.

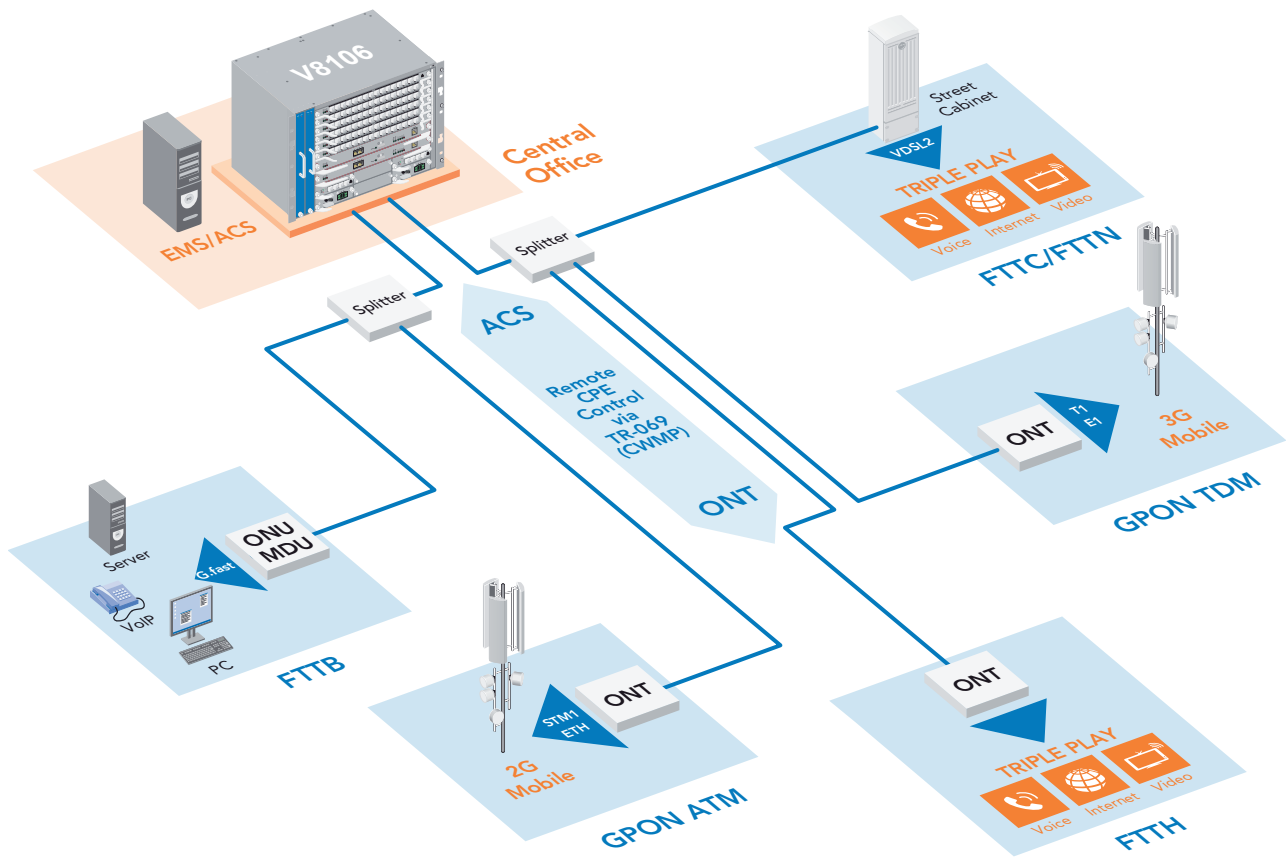


Figure 1: Different network architectures with V8106

Technical data

General	
Function	Modular GPON/XGS-PON OLT
Number of slots for units	17
Slots for GPON units	6
Slots for network units	2
Slots for switch units	2
GPON unit	
Number of interfaces per unit	16x GPON SFP
Redundancy	Yes, with two switch units
Laser type	Laser diode class 1 (defined in IEC 60825-1)
GPON OLT compliancy	Class B+ according to ITU-T G.984.2 Class C+ according to ITU-T G.984.2
XGS-PON unit	
Number of interfaces per unit	8x XGS-PON XFP
Standard supported	ITU G.9807.1 (10Gbps/10Gbps)
Network units	
Number of interfaces per unit	4x 10GBase-R (SFP+)
Redundancy (hot-standby)	yes
Switch units	
Redundancy (hot-standby)	yes
Standards supported	Standard Ethernet bridging, link aggregation, 4 k active VLANs for 802.1q tagged frame
Spanning Tree Protocol supported	STP, RSTP, MSTP
Jumbo frame supported	Up to 9 k
Layer-3 features	16 k/8 k routing entries for IPv4/IPv6, static routing, RIPV1/v2, OSPFv2, BGPv4, Virtual Router Redundancy Protocol (VRRP)
Multicast features	IGMPv2/v3, 4k L2 and L3 multicast entries, IGMP snooping, IGMP proxy, IGMP static join, Multicast VLAN Registration (MVR)
Quality of Service	
Standards supported	Traffic scheduling (SP, WRR, DWRR) ,8 queues per port, port rate limit with ingress/egress shaping, conditional rate limiting Queue mapping according to ingress/egress port, MAC, 802.1q, 802.1p, ToS/DSCP, IP SA/DA, TCP/UDP Access control lists based on port, MAC address, EtherType, IP SA/DA, IP multicast address, TCP/UDP
Security	
Standards supported	Storm control for broadcast, multicast and unknown unicast packets 802.1x MAC/port-based authentication, DoS protection, outband management, IP source guard, secure shell (SSH)
Management	
Interface position	On switch units
Ethernet interface for local management	10/100/1000Base-T (RJ45)
Serial interface	CLI RS-232
Standards supported	Serial/Telnet (CLI), SNMPv1/v2/v3, DHCP server, client, relay with option 82, single IP management, RMON, Syslog, Link Layer Discovery Protocol (LLDP)
ONT management	ITU-T G.984.4 ONT Management & Control Interface (OMCI) Remote ONT/ONU management Automatic ONT ranging
Mechanics	
Dimensions (W x H x D)	482.6 mm x 265.9 mm x 280.0 mm
Weight	9.1 kg
Power supply	
Input voltage	-48/60 V DC
Operation environment	
Operation temperature	-20 to 55°C
Humidity	0 % to 90 % (non-condensing)