GPON Doctor **OLTe**

OLT emulator that behaves like a normal OLT acting as the termination point of the PON.

ALBEDO

New generation GPON Analyzers: **GPONDOCTOR**

GPON product line

GPONDOCTOR **2k5**

GPONDOCTOR **4k5**

OLT **Emulator**

GPONDOCTOR **10K**

XGSPON product line

GPONDOCTOR **9K5**

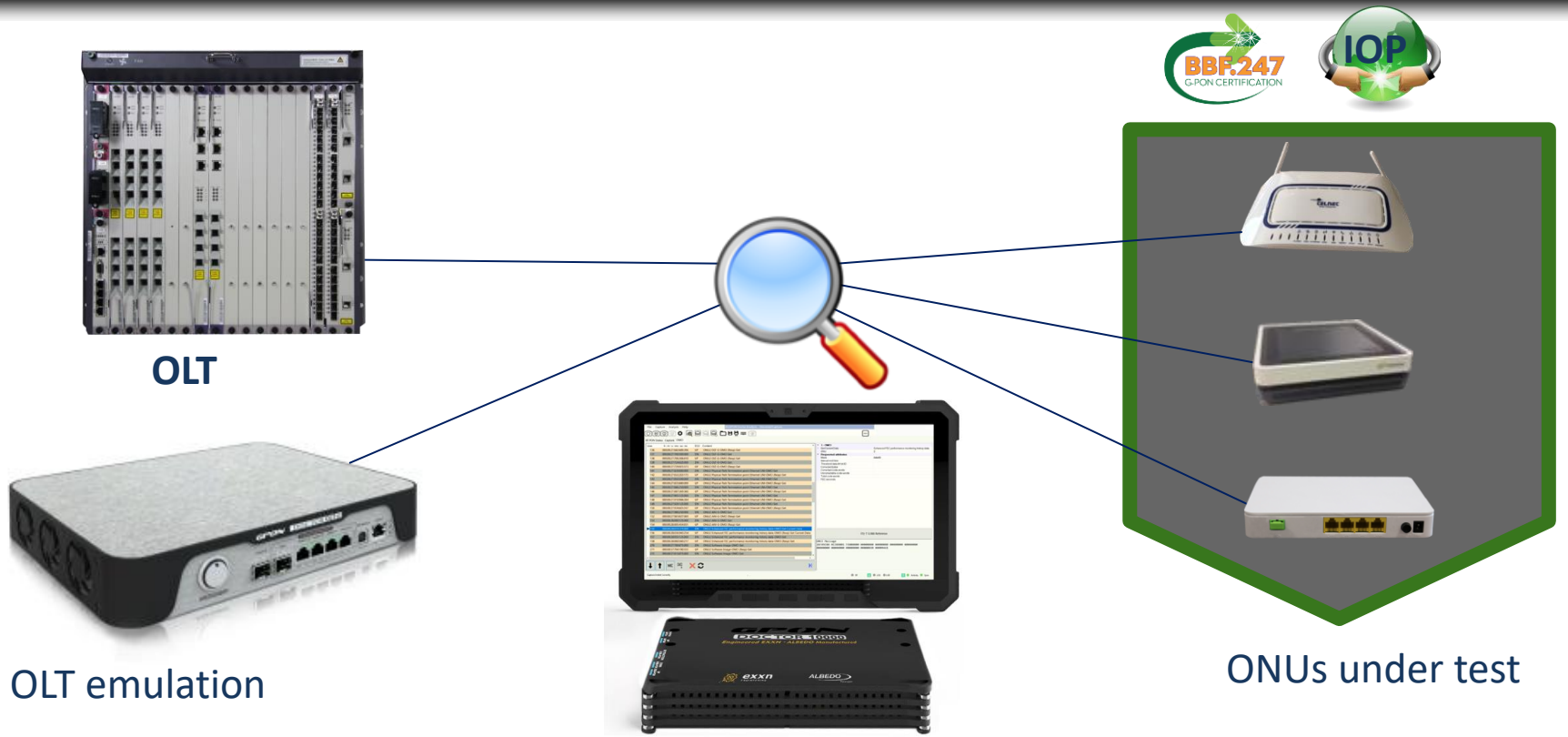
GPONDOCTOR **9k7**

GPONDOCTOR **10K**

Main **Applications**

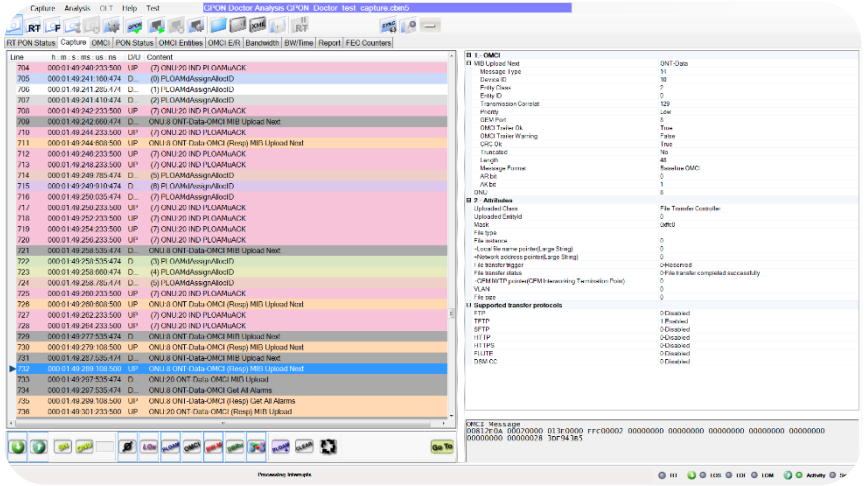
- Troubleshooting operator GPON & XGS-PON deployments
- GPON & XGS-PON network optimisation
- Interoperability analysis between OLT and ONT vendors
- GPON & XGS-PON chipset development
- Real-time IP services traffic extraction
- Automation of GPON test plans

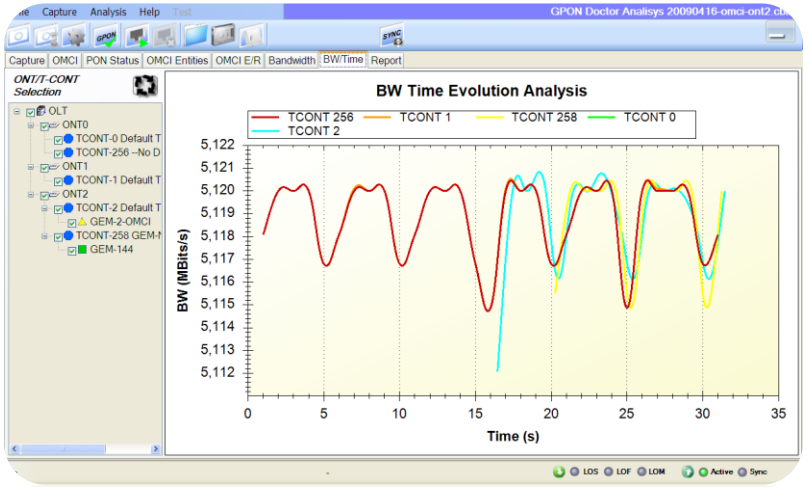
ONU Conformity & Interoperability



- GPON Doctor OLTe serves as an OLT, designed specifically for ONT/ONU interoperability testing.
- It is a reference tool for laboratory engineers involved in the planning phase of GPON networks and manufacturers of active GPON elements.
- The OLTe is an ideal complement to the GPONDoctor 2500/4500/10000, as it converts the captured data into scripts that enable commercial OLT behaviors to be emulated.
- As an OLT emulator, this tool is highly adaptable, enabling users to manually configure provisioning models or use scripts.
- Note that ONUs and OLTs produced by different manufacturers may not be compatible.

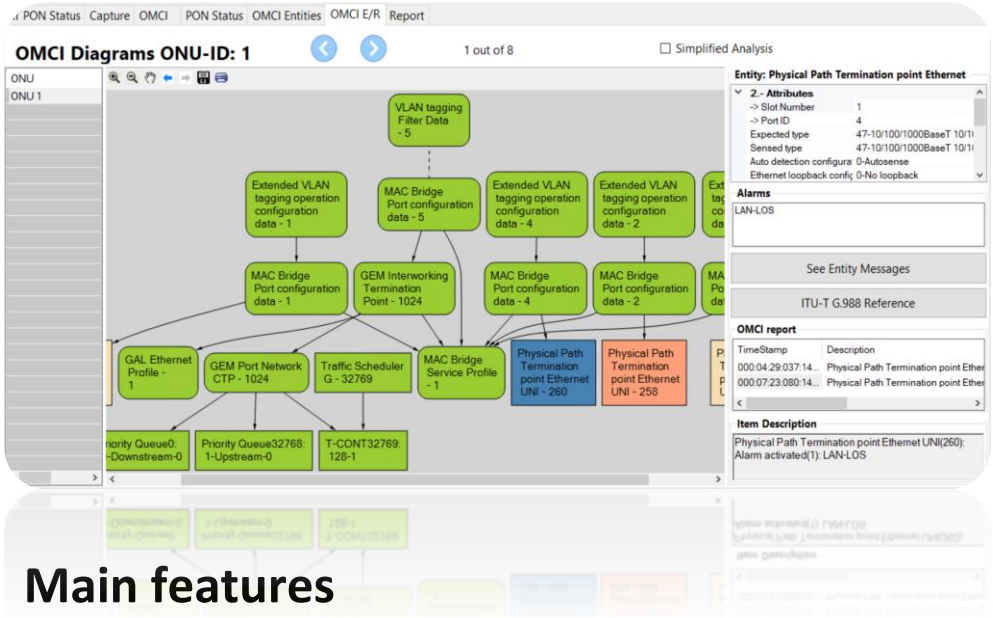
Use cases

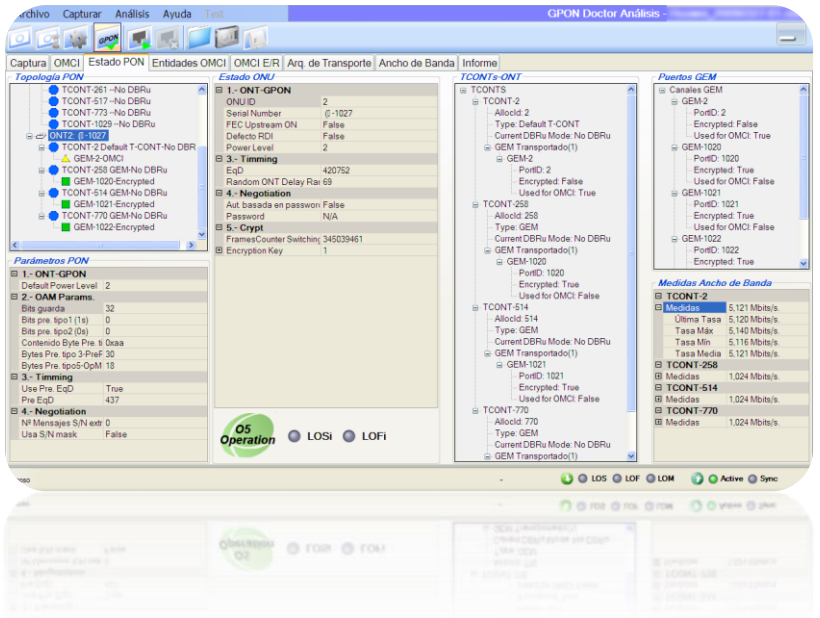




- Fundamental tool for optimisation of GPON network deployment
- Events, deviation diagnosis and analysis for deployed GPON networks
- Interoperability troubleshooting between multi-vendors equipment coexisting in a telco access network
- Analysis of user traffic within the GPON through the Ethernet interface
- ITU-T G984.x, G988 interoperability test (GPON)
- ITU-T G.9807.1/G.987.2/G.987.3/G.988 interoperability test (XGSPON)
- GPON issues delimitation within an FTTH network.
- Full knowledge of the PON state and all its active elements (OLT/ONTs)

Technical Specifications





Main features

- Capture of GTC frames
- Real-time capture of PLOAM + OMCI + Negotiation BWMaps
- Several capture modes:
  - Real time
  - Scheduled
  - Full
- Displays the PON topology: ONUs, T-CONTs, Ports
- Reports ONTs state
- Report of inconsistencies and violations of ITU-G.984.x/G988
- Real-Time IP Services regeneration and monitoring: Multicast Video, Voice
- Runs on Windows 10 Pro

Technical Specifications

GPONDOCTOR
capture module

DELL Latitude 7220
Rugged tablet

Interfaces:

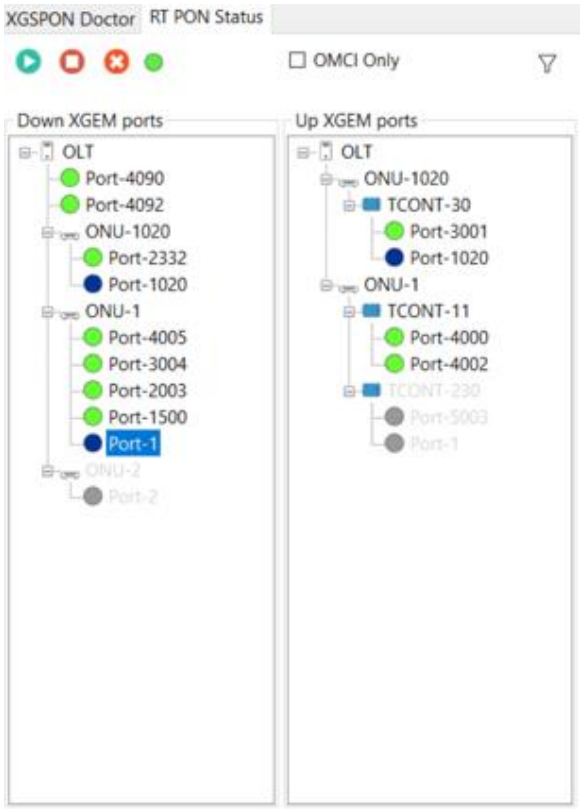
- Touch screen. 11,6” HD (1366×768) 16:9 direct-view outdoor-readable display with glove-capable multi-touch and Gorilla Glass 3 (except GD 2K5)
- Gigabit Ethernet Capture/Management Port: QinQ VLAN Transparent/Stripping configurable
- WiFi 802.11ac interface, both for sniffing and IP management purposes
- IP Services Real-Time Extraction port: 1000Base-T External network protocol analyser plugin
- USB Type C port (GD4K5, GD9K5, GD10K)
- USB 3.0 to easy transfer data, traces and reports (all range)

Capture & extraction

- GPON Doctor 4k5
  - Downstream: SFP single mode 1490nm @2,5Gbps
  - Upstream: SFP single mode 1310nm @1,25Gbps
  - RJ45 interface for traffic extraction

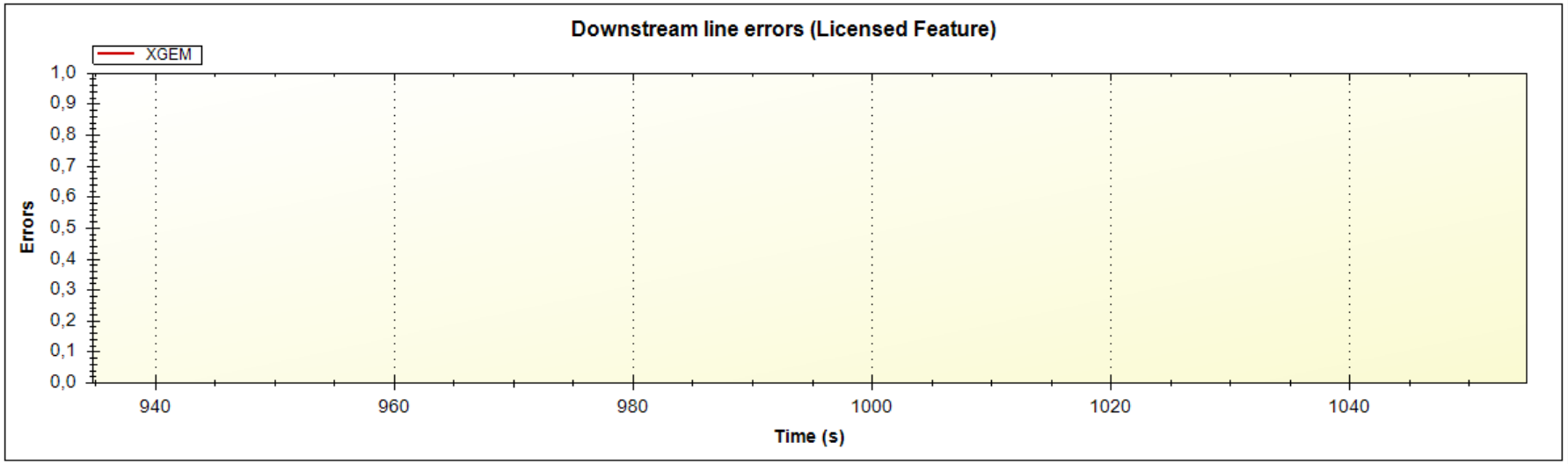
- GPON Doctor 10k
  - 1: DS XGSPON: SFP single mode 1578nm @10Gbps
  - 2: US XGSPON: SFP single mode 1270nm @10Gbps
  - 3: Reserved for future use
  - 4: DS GPON: SFP single mode 1490nm @2,5Gbps
  - 5: US GPON: SFP single mode 1310nm @1,25Gbps

Feature: **PON topology**

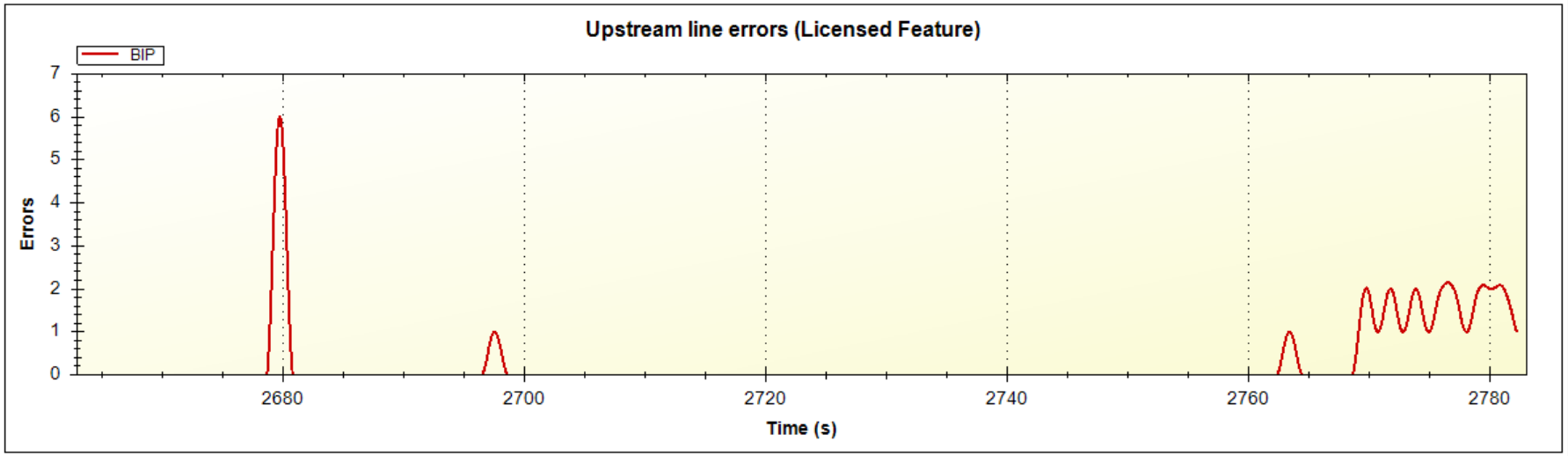


- Downstream hierarchy: ONTs and Ports detected
- Upstream hierarchy: ONTs, T-CONTs, and Ports detected
- Port Activity

Feature: **Link Integrity**



SFC and OC HEC: 0 / 0 / 16,86 M Uncorrectable / Correctable / Received
HLend and BWMap HEC: 0 / 0 / 11,59 M Uncorrectable / Correctable / Received
XGEM header HEC: 0 / 0 / 142,72 G Uncorrectable / Correctable / Received

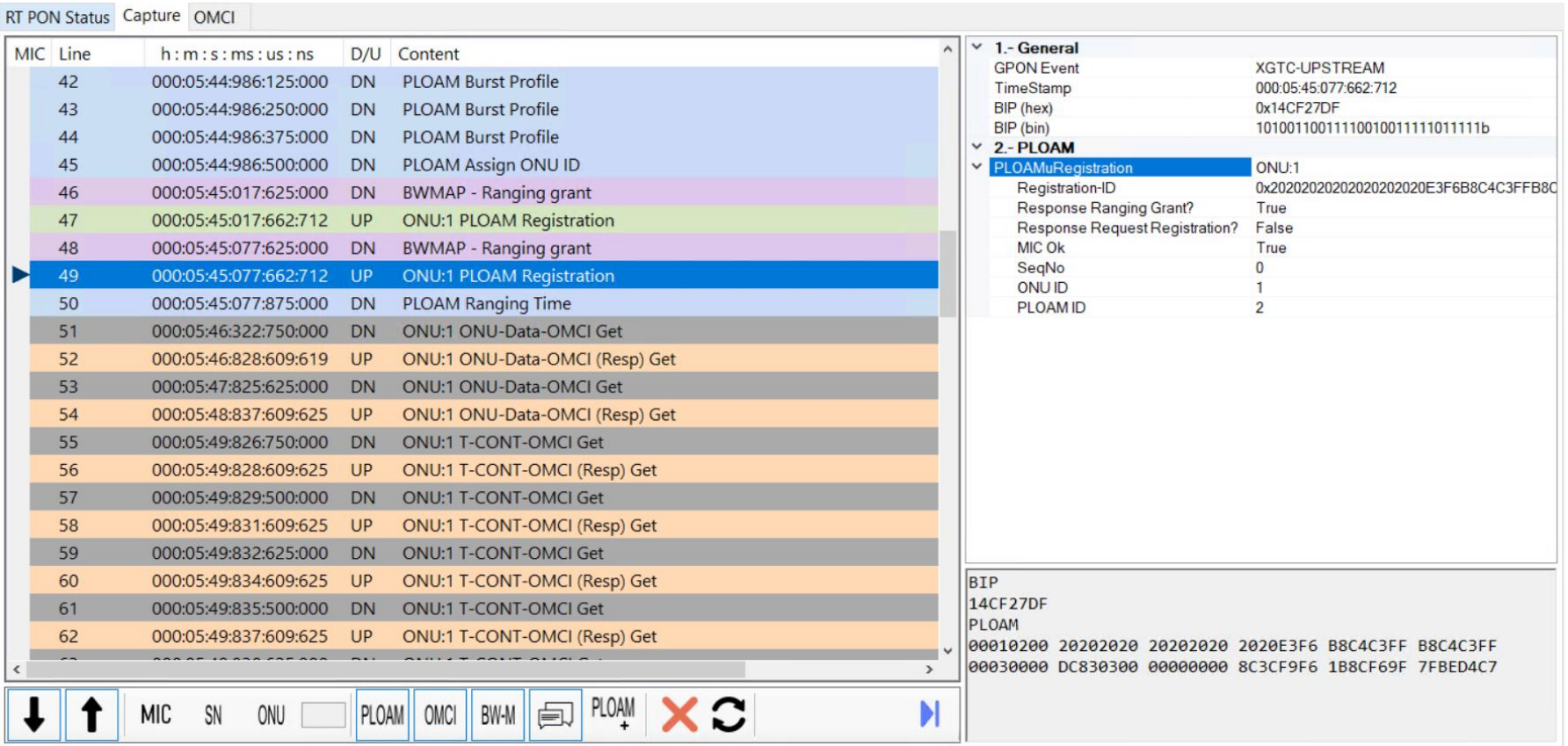


Fixed FS Header HEC: 0 / 0 / 5,40 M Uncorrectable / Correctable / Received
XGEM header HEC: 0 / 0 / 208,97 M Uncorrectable / Correctable / Received
BIP: 29 / 5,40 M Errors / Bursts

Feature: **Bandwidth monitor**

- Assigned to a T-CONT
- Utilisation: Port, ONU, Aggregated

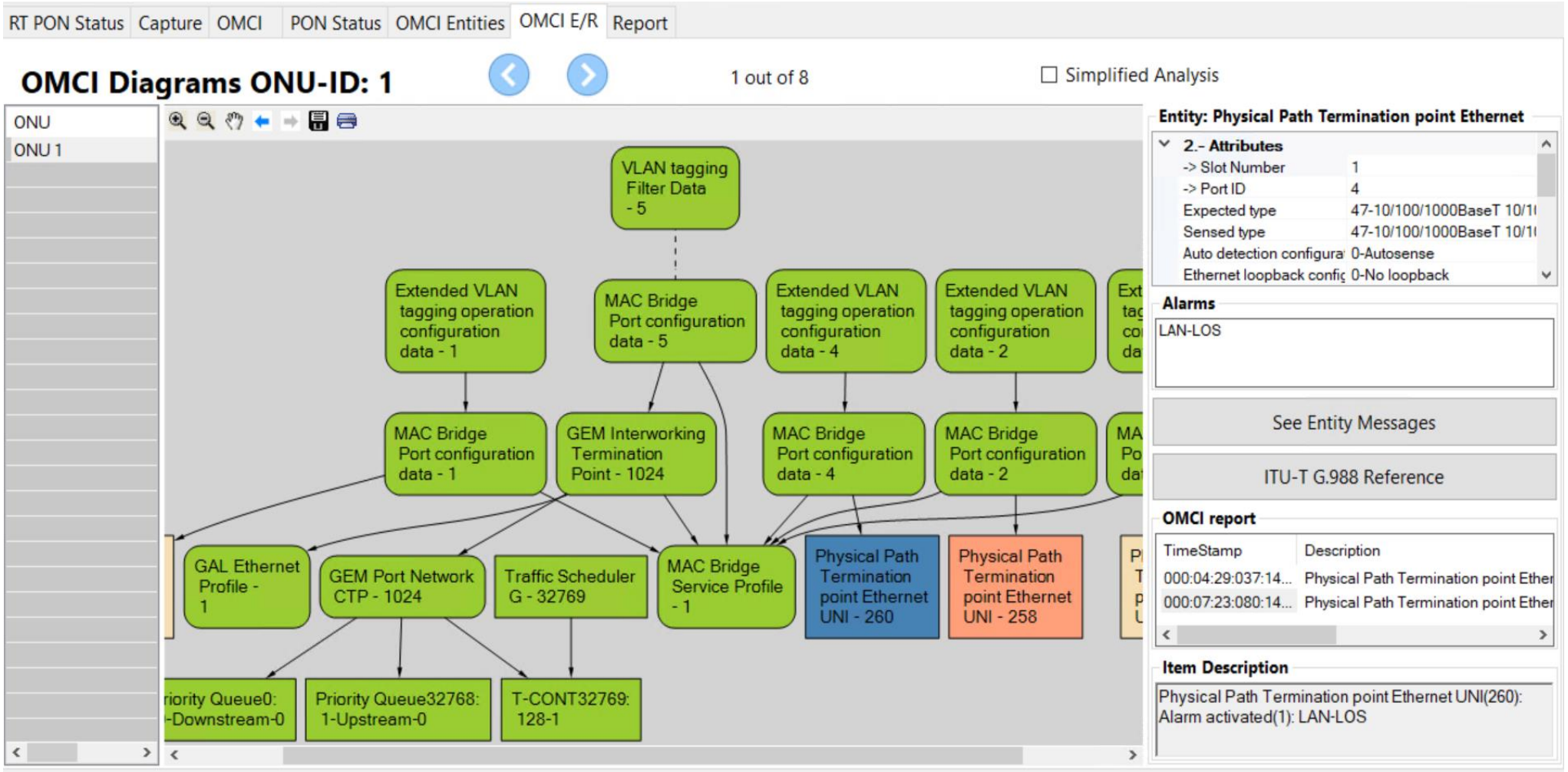
Feature: **Capture**



- Real Time capture:
  - PLOAM and OMCI messages
  - BWMAPs: SN Request and Ranging grant
  - Message interpretation

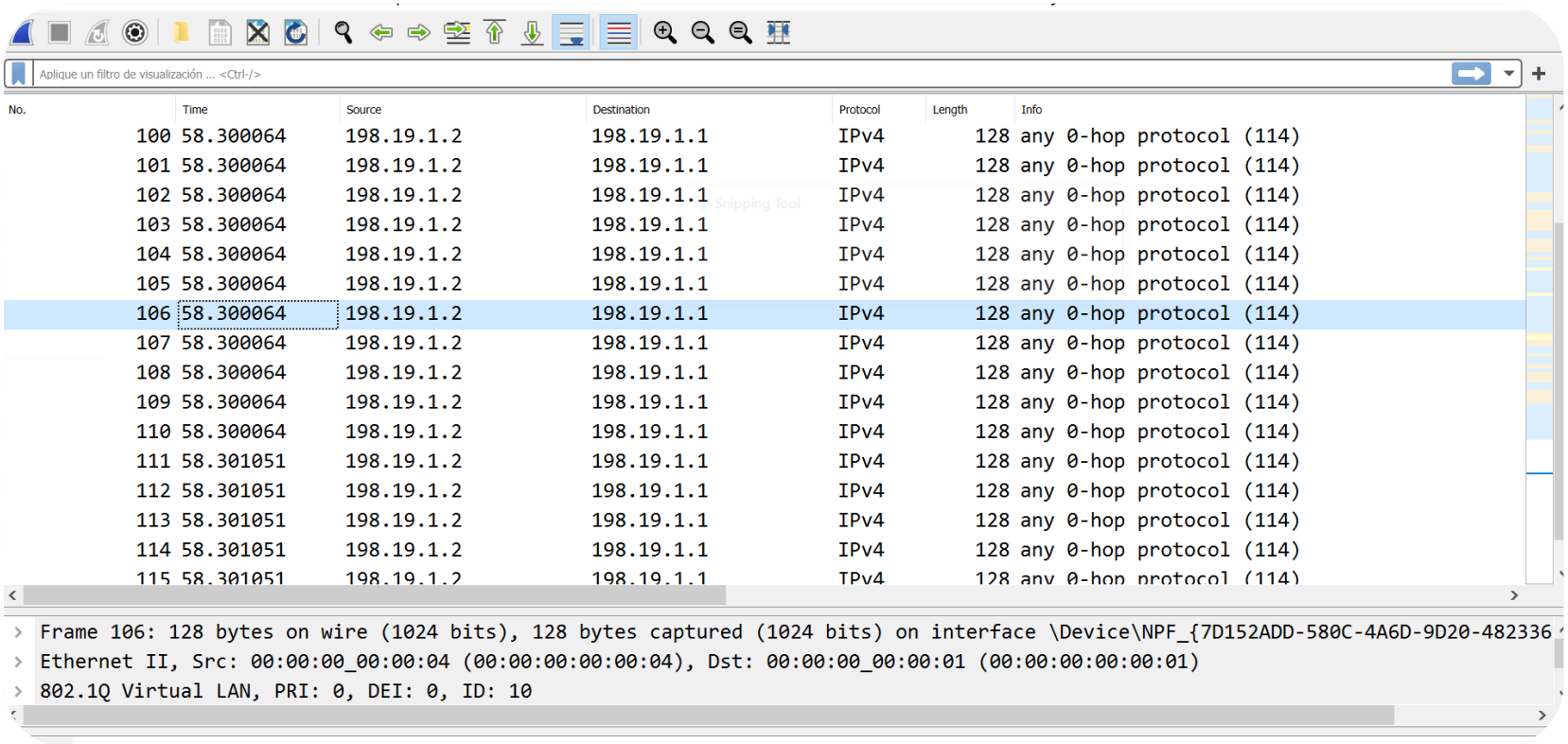
- Full Capture
  - All GTC messages

Feature: **Analysis**

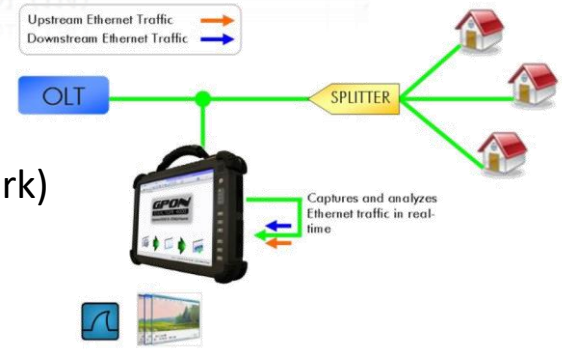


- OMCI E/R diagrams
- Issues detection

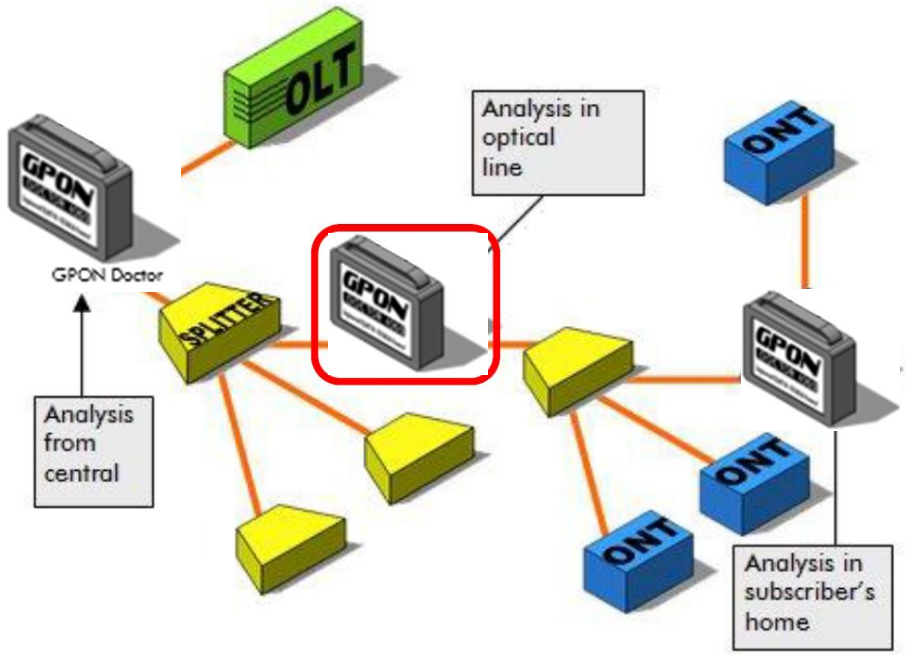
Feature: **Traffic Extraction**



- Unlimited ports in downstream and upstream
- Extracted traffic ready to be analysed with a third-party App (WireShark)



Typical setup for testing in PON: **colorless splitter**



GPON DOCTOR 4500

GPON UP

GPON DOWN

ONT

OLT

Future GPON services offered by **Albedo**

- GPON and XGSPON network (remote) diagnostic assistance
- Advanced GPON and XGSPON training
- Customized development of automated test suites
- Tailored development of new functionalities

That' all

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in Test we Trust