

ITU-T G.984.x Portable GPON Protocol Analyzer (GPON Doctor 4000)

Features

- **Chipset-Less Implementation**
High performance hardware exclusively developed for this product. Analysis is therefore not biased by any vendor proprietary GPON hardware implementation.
- **PON Passive and position independent**
Being passive, allows its connection to any point of the PON without altering its working status. It also provides an innovative ranging method to automatically compensate the distance to OLT.
- **Capture+Analyze+Evaluate**
Starting from the captured data, it is capable of inferring the network topology and applying a series of rules to verify the level of compliance with the ITU-T G.984.x standard.
- **Real time user traffic extraction**
Allows the decryption, in real time of a Multicast plus 2 bidirectional GEM ports and their extraction for analysis by GPON Doctor or an external Upper-layer traffic analyzer.
- **Remote Analysis**
If connected to an IP network, it allows to analyze a PON network from a remote management workstation.
- **BBForum TR-156/TR-167 Analysis**
Infers, within the ODN, the tagging behaviour and VLAN filtering done at the ONTs according to OLT OMCI configuration. Q-in-Q compliant.
- **Windows XP Embedded**
Easy to use interface that allows to run other analysis and office applications needed in the lab everyday work.

GPON Doctor

GPON Doctor 4000 is an "All in a box" GPON FTTH protocol sniffer and analyzer, able to be connected to any location within your ODN (Optical Distribution Network) and capture downstream and upstream bit-level information. It interprets all control and management information (OAM, PLOAM and OMCI), and provides real time upper layers traffic extraction. Being portable and fully oriented for interoperability tests it is a perfect tool for GPON equipment vendors and Telcos in GPON deployment/maintenance phases.

Capture+Analyze+Evaluate

GPON Doctor is a complete and autonomous solution, including a dedicated hardware GPON traffic capture card, an "off the shelf" chassis and a processing software capable of analyzing and evaluating the captured data.

The add-hoc high performance **traffic capture hardware** includes last generation optical modules. Capable of automatic synchronization with the GPON network for accuracy in the Downstream and Upstream frames capture.

The **Analysis Software** interprets the captured data and allows the operator to inspect the control flow from the first to the last frame, selecting and filtering data following configurable criteria. It also analyzes the content of the control information **inferring the topology and state of a GPON network** (ONTs detected, data channels established, configuration exchanged, bandwidth statistics and OMCI entities-relation diagram).

The **GPON Standard Evaluation System** applies a set of contextualized, dynamic rules to test if the captured traffic complies with the ITU-T G.984.x protocol. It generates a final report, listing all protocol violations and possible sources of malfunction.

Interoperability Test Cases validation. Through the combination of OMCI messages analysis and real time user traffic extraction.



Portability

GPON Doctor 4000 is very easy to carry out with a weight of 3.5 Kilos, a battery duration of 1 usage hour, and a 14" robust touch screen.

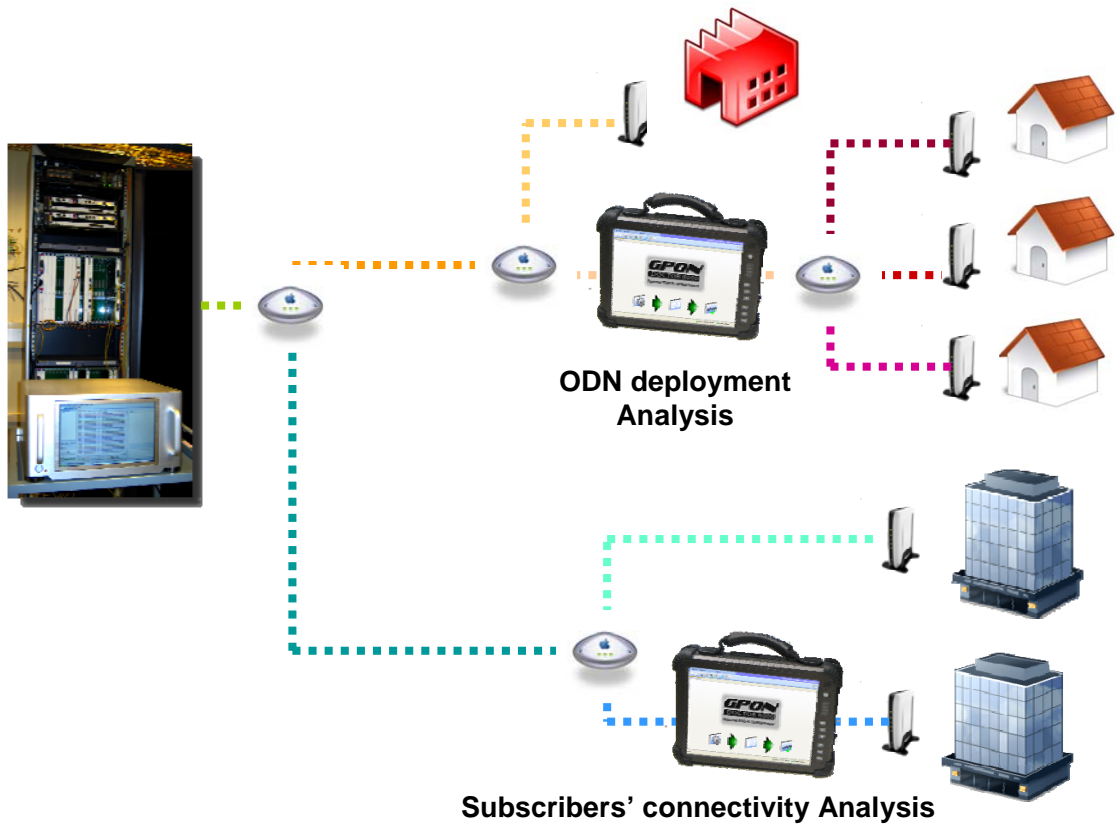
Windows XP Embedded

Based in Windows XP Embedded, GPON Doctor 4000 can include (according to customer needs) other office and analysis tools for other protocols used over the PON. **Very intuitive and easy to use,**

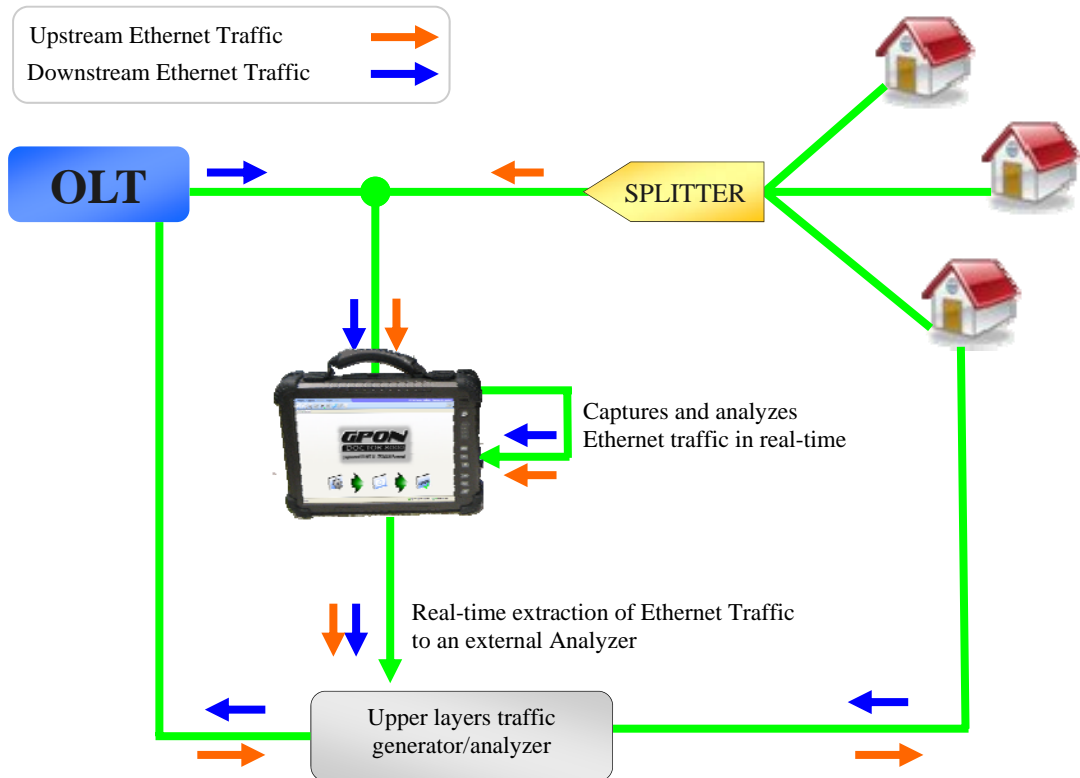
Applications

- Fundamental tool for Fiber to the Home GPON network deployment.
- Underperformance and malfunction analysis for already setup GPON networks.
- Resolution of Interoperability issues that arise among different vendors equipment while coexisting in a Telco access network .
- Evaluation of standard compliance during the development of GPON OLTs and ONTs
- Upper layers protocols over GPON analysis through its 10/100/1000 BaseT Ethernet interface.

Analysis Scenarios



Analysis and evaluation in GPON Networks

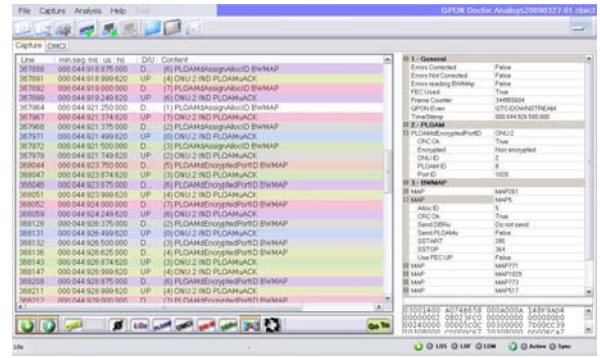


Real-time upper layer traffic extraction

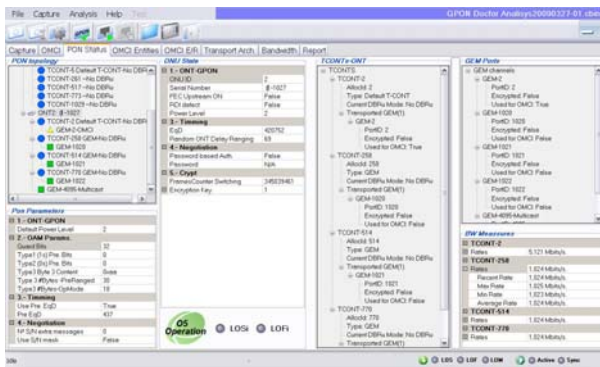
Application Screenshots



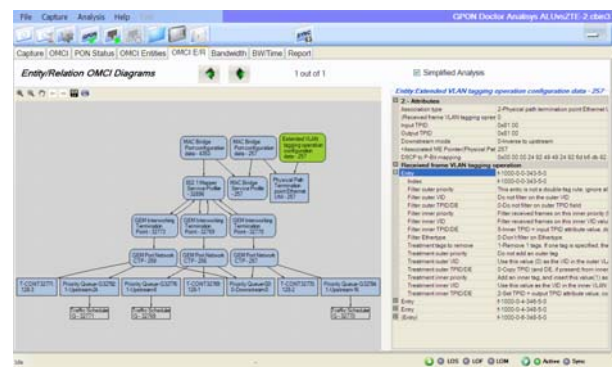
Start screen



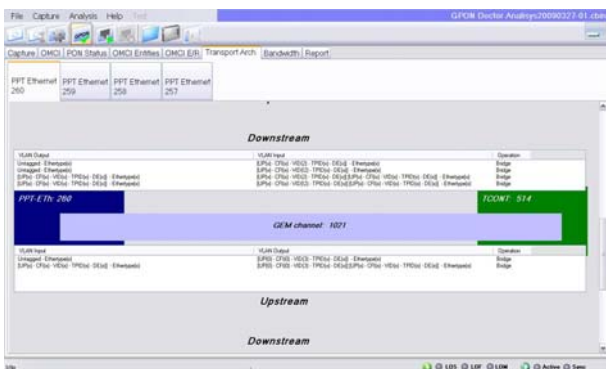
Captured traces exploration window



PON topology and ONTs GTC state



Entity-Relation diagram of the OMCI entities



PON transport architecture
T-CONT+GEMport+VID+TC+PPTP
association map



Bandwidth distribution analysis per
T-CONTs for every ONT in the PON