GPON Xpert™ Lite – The Compact GPON Analyzer and Troubleshooting Tool

Telecom service providers and equipment manufacturers often have a need to troubleshoot GPON-related issues in the field or at customer sites. TraceSpan's GPON Tracer™ handheld testing solution provides a variety of real-time indications for on-site troubleshooting, but in some cases deeper analysis is needed.

GPON Xpert Lite adds the on-site GPON analysis functionality to GPON Tracer. It is based on the world-recognized GPON Xpert analyzer and uses the same field-proven analysis engine and a similar user interface.

GPON Xpert Lite – Architecture and Functionality

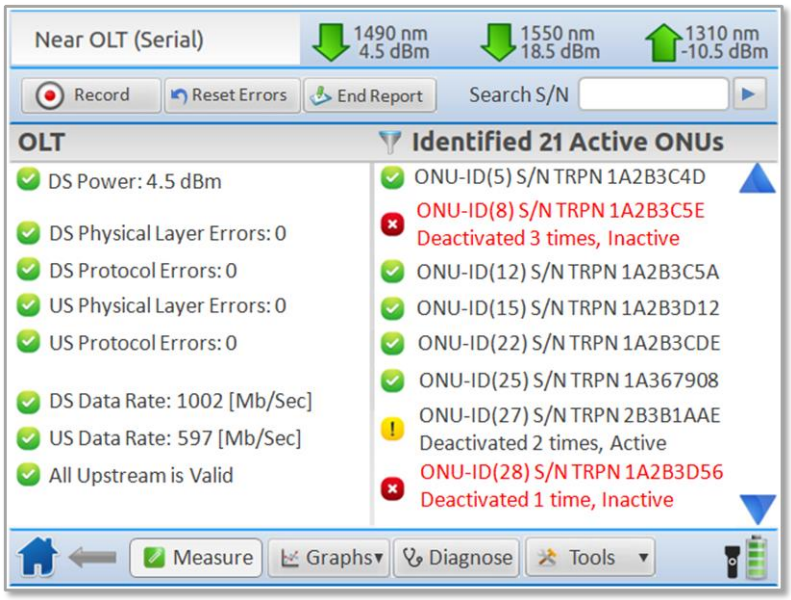
GPON Xpert Lite makes use of GPON Tracer as a measurement and recording device to provide real-time indications and to record the GPON data and a laptop-based software application for detailed analysis. The following sections describe the indications that it provides in real-time and the main analysis results.

Real-time Indications

The following indications are provided in real-time in textual and graphical formats:

- Optical power levels for the OLT and for every one of the ONUs on the PON
- Identification of all the active ONUs on the relevant section of the PON
- ONU identification by the manufacturer's S/N for all the ONUs that went through the ranging process
- Downstream and upstream data rates
- Physical layer errors and data errors
- ONU deactivations, including deactivations resulting from power outage (Dying Gasp)
- The password for every one of the ONUs
- A list of problems that were identified on the PON, including traffic congestion, ONU power outage, ONU password conflict, rogue ONU etc.

The following diagram provides an example of the screenshot when connecting at the OLT side.

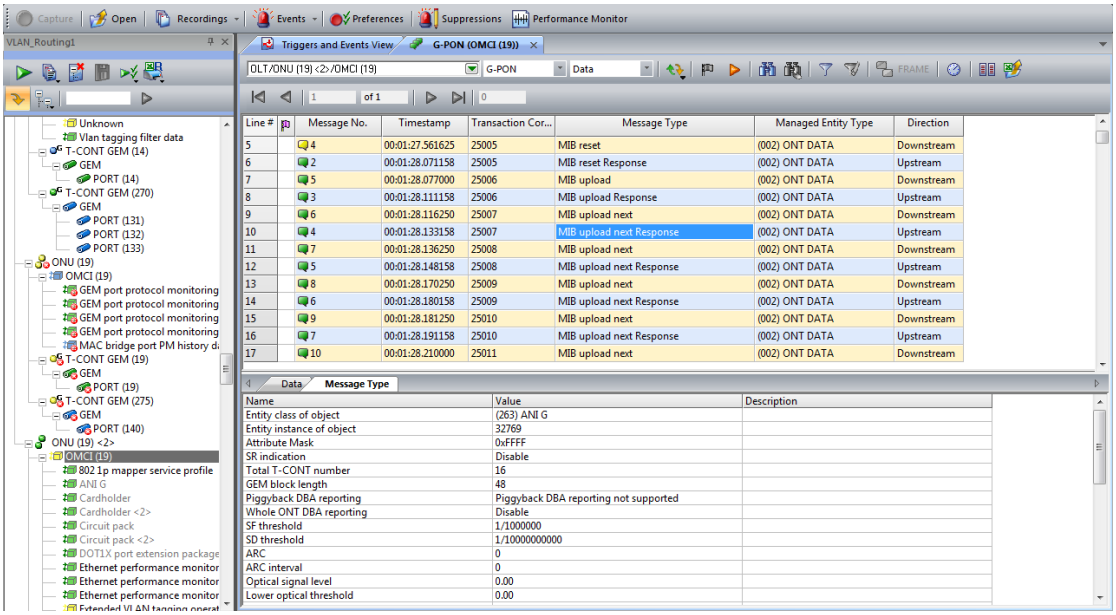


Analysis Results

The following indications are provided after analyzing the recording:

- Representation of the network topology, including the ONUs, T-CONTs, GEM Ports and OMCI MEs.
- Color-coding of the network topology tree to indicate unexpected behaviors in different severity levels
- Detailed view of the GTC layer frame headers
- Detailed view of PLOAM message contents
- GEM layer analysis
- Detailed OMCI analysis, including:
    - OMCI messages
    - List of MEs and their attributes
    - A relations diagram of selected MEs or of the full OMCI MIB
- VLAN routing diagram, displaying the configured traffic flow in a graphical format, including VLAN IDs and C-tags, S-tags, P-bits and Ethertypes for any selected T-CONT
- Performance graphs, showing various performance metrics such as data rates, allocations and errors in a graphical and textual format. The performance graphs can be defined up to the GEM port level.

The following diagram provides a typical example of the analysis results.



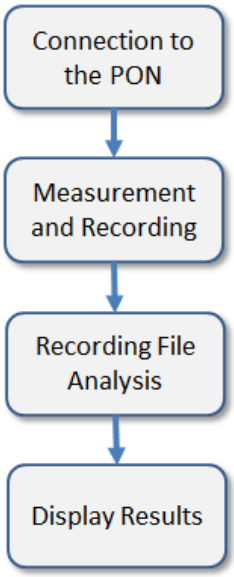
Data Export and Reporting

GPON Xpert Lite provides the same variety of options as GPON Xpert for exporting the analyzed data to different formats:

- Export of the raw data contents of GTC header frames and OMCI messages to Microsoft Excel format (CSV)
- Export of the captured upper layer data to PCAP format (optional)
- Exporting the messages and diagrams to HTML format to create a detailed user-friendly HTML report

GPON Xpert Lite – Work Flow

The typical workflow for GPON Xpert lite is described in the following diagram:

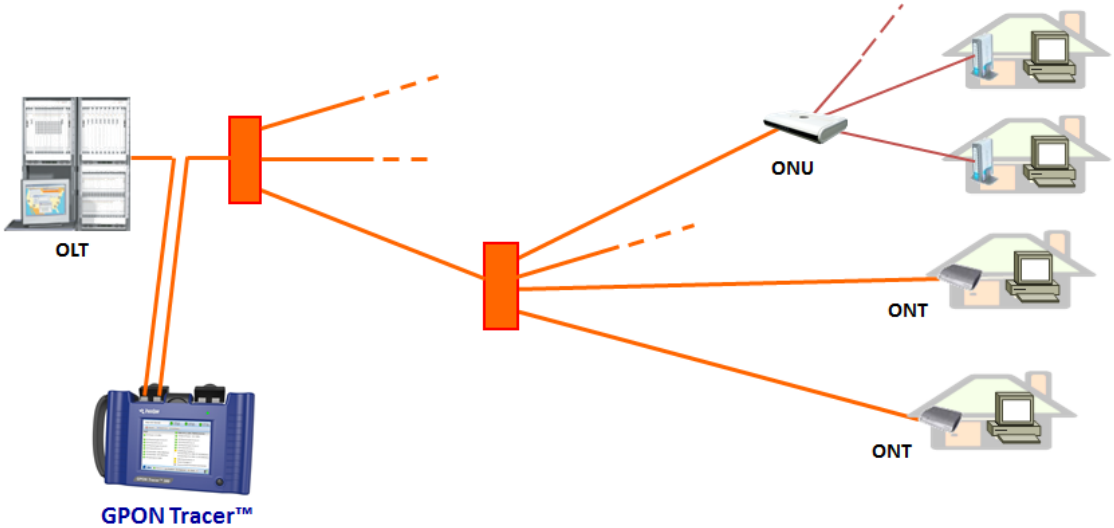


The following sections provide more details about the different steps in the process.

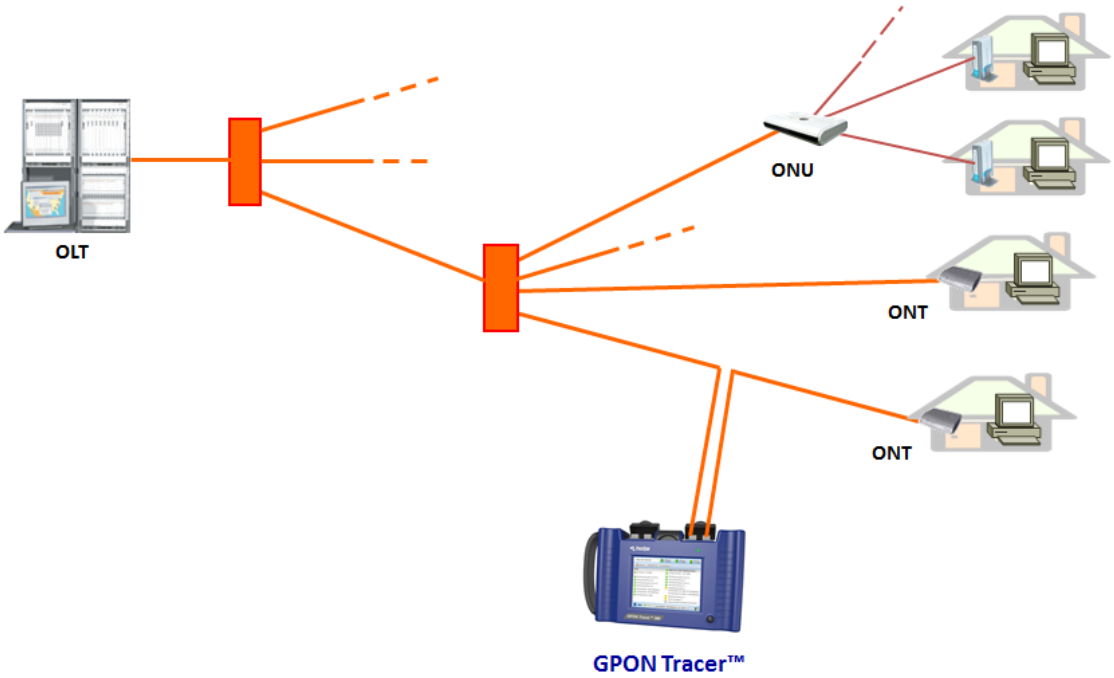
Connection to the PON, Measurement and Recording

GPON Xpert Lite makes use of GPON Tracer as its measurement and recording device, and has several options for connection to the PON:

- Connection at the OLT side, in either serial or parallel connection mode. This mode provides the option to capture data for the whole PON.



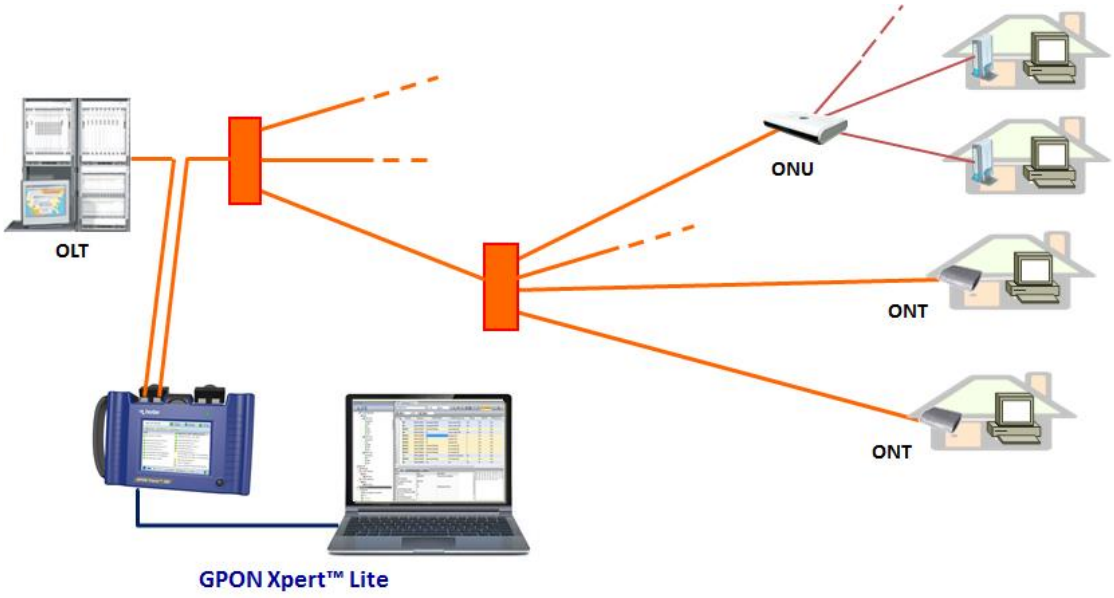
- Connection at the ONU side. This mode allows capture of the upstream data from a single ONU and the downstream data for the whole PON.



Real-time indications are shown during the connection and the data can be recorded for full analysis.

Recording File Analysis and Display of Results

To analyze the recorded data, the laptop running the GPON Xpert Lite software application should be connected to the GPON Tracer. This can be done while GPON Tracer is connected to the PON.



As an alternative, it can also be done later in a separate site.

Selected analysis results are displayed on the laptop screen during the analysis. The full analysis information is available immediately when the analysis is complete.

GPON Xpert Lite – Benefits and Advantages

- Two functionalities in one:
    - GPON Tracer for real-time measurements
    - GPON Xpert Lite for detailed analysis of the GTC, GEM and OMCI layer with optional export to PCAP
- Compact battery-powered measurement device with touch screen for real-time indications
- Similar intuitive user-interface as the field-proven GPON Xpert
- Detailed multi-layer analysis:
    - GTC, GEM and OMCI layers
    - Export to PCAP of the upper layer data for the whole PON (not limited to a number of GEM ports).
- Standards compliance:
    - Support of the OMCI Baseline and Extended messages.
    - Support of the latest GPON standard G.984.3, including PON-ID and the ONU Power Management.
    - Support of the latest OMCI G.988 amendments with option to force analysis according to earlier OMCI versions.
    - Support of vendor-specific OMCI MEs with a built-in tool for defining the vendor-specific MEs.
- Reporting:
    - Detailed HTML report including diagrams and message details.

Specifications

Item	Specification
GPON Tracer Physical Dimensions	• Height: 167 mm (6.5 in) • Width: 256 mm (10 in) • Depth: 54 mm (2.1 in) • Weight: 1.8 kg (4 lb.) (including batteries)
Touch Screen Display	5.7" resistive touch screen Screen resolution: 640 pixel x 480 pixel
Power Consumption	20 Watts maximum
Battery Backup Time	4 hours of operation in typical usage scenarios
EMC	FCC 47CFR Part 15, Subpart B, Class A EN 61326-1, Class A
Safety	IEC 61010-1, EN 61010-1
Shock and Vibration	ETSI EN 300 019-2-7
Operating Environment	Temperature: 0°- 40°C (32°-104°F) Humidity: 10% to 90% non-condensing

TraceSpan™ Communications Contact Information

E-mail: info@tracespan.com
Web: www.tracespan.com

Note: *Product design and specifications are subject to change without notice*