MT2 PON Platform

First and only multi-usage PON processing platform

G-PON - XG-PON - XGS-PON - NG-PON2

NG-PON2
XGS-PON
XG-PON
G-PON

Analyzer
/
OLT Emulator

- Supplied in a transport case that makes tests on the fields easy

- The tool used for the **official BBF.247 certification**
- High performance : Handles **4 x 10Gb/s ports**
- May be used as either an **Analyzer** or an **OLT emulator**
- Multi layer analysis for **current and next generation PONs**
- Software licenses available for **GPON**, **XG-PON, XGS-PON and NG-PON2***
- Ethernet/Wifi managing interface, **LAN/WAN Access**
- **Complete, User friendly Graphic User Interface**
- Highly integrated and portable design : 18 x18 x 3 cm, <1 kg
- Robust and sturdy aluminum casing also available as rackable

*: Q2 2020

MT2 has been leading the way in broadband signals analysis for some years now.

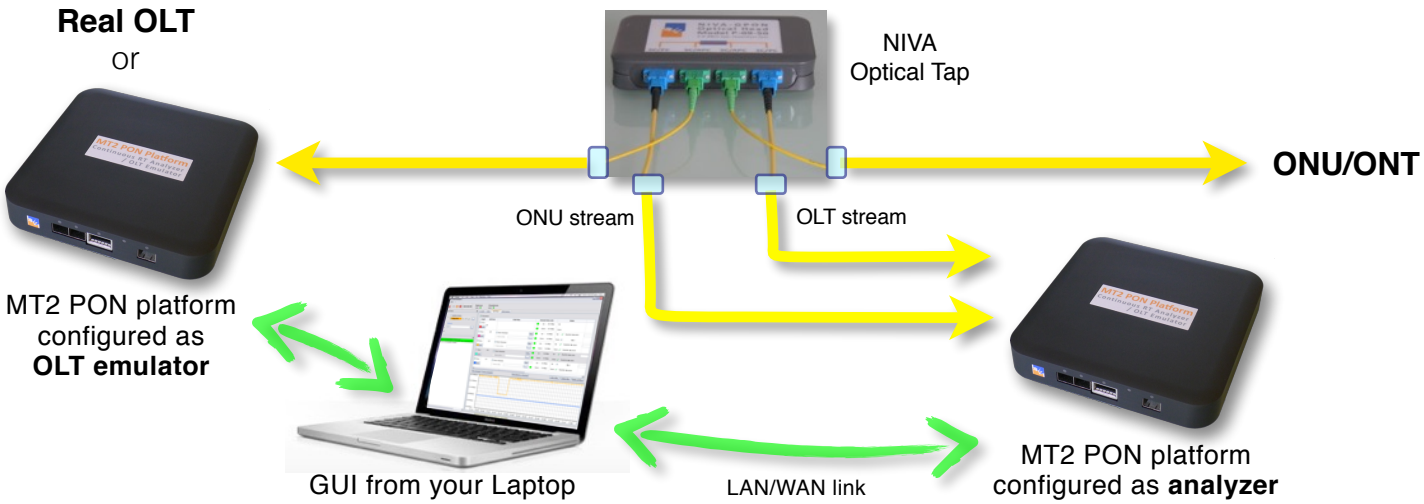
The success of our tools, stems from both its **user-friendliness** and its ability to process the data **continuously and in real time**: a unique feature in very high bandwidth signal analysis.

Our **neutrality** and **independence from any chipset** has convinced both the **Broadband Forum** and the **LAN** (official BBF.247 certification lab) to use MT2 eOLT emulator for **BBF.247 ONU conformance testing.**

With newer, faster standards such as **XG(S)-PON or NG-PON2**, real-time analysis of data has become a tougher challenge, and MT2 is now proud to present **the first and only G-PON/XG-PON/XGS-PON/NG-PON2 capable tool on the market.**

MT2 PON platform may be configured to work as either an **analyzer** or an **OLT emulator**, for either **G-PON, XG-PON, XGS-PON or NG-PON2** protocols, in a tiny form factor: it is the swiss-knife of optical analysis.

The PON platform is controlled through a **network connection** (LAN or WAN access) from a regular PC hosting the GUI software (Analyzer/Emulator).



MT2 PON Platform is a multi-usage optical processing unit. Configuration is achieved using the proper software licenses, which may be purchased independently (unlimited or annual license). Available licenses are:

Standard \ Function	Analyzer	OLT Emulator
NG-PON2	✔ NIVA-NGPON2*	✔ eOLT-NGPON2*
XGS-PON	✔ NIVA-XGSPON	✔ eOLT-XGSPON
XG-PON	✔ NIVA-XGPON	✔ eOLT-XGPON
GPON	✔ NIVA-GPON	✔ eOLT-GPON

*: Q2 2020

Use cases examples: chipset development, certification/standard testing (BBF.247, BBF WT-255, ...), ONU development, service validation, interoperability testing, in-site high-level debugging...

Power: 12V. A universal power block is provided (100/240 V - 50/60 Hz)

Data interfaces: 3 SFP+ (up to 10 Gb/s) - 1 10 Gb/s XFP
Control interface: 1 1000 Base T Ethernet, Wifi

Form factor: 18 x 18 x 3 cm

Weight: 700g (without transceiver and power block)

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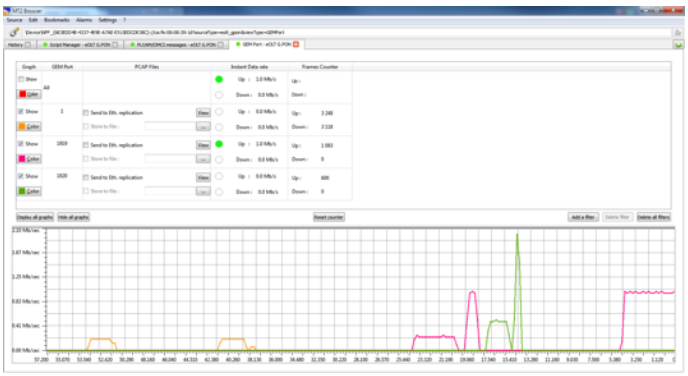
The MT2 PONPlatform as a Real Time Analyzer

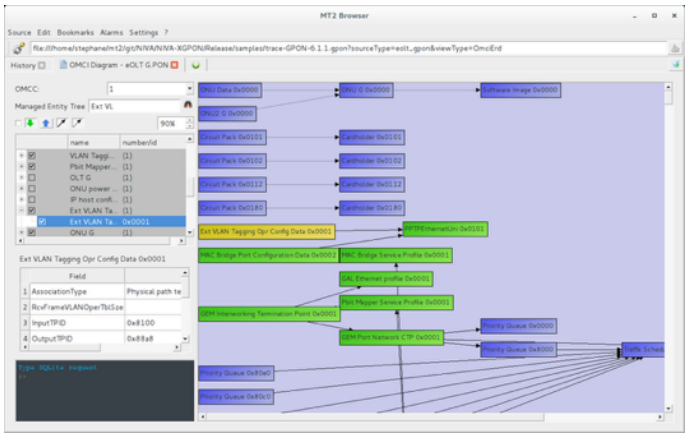
NIVA-xGPON, for a comprehensive understanding of a real PON network

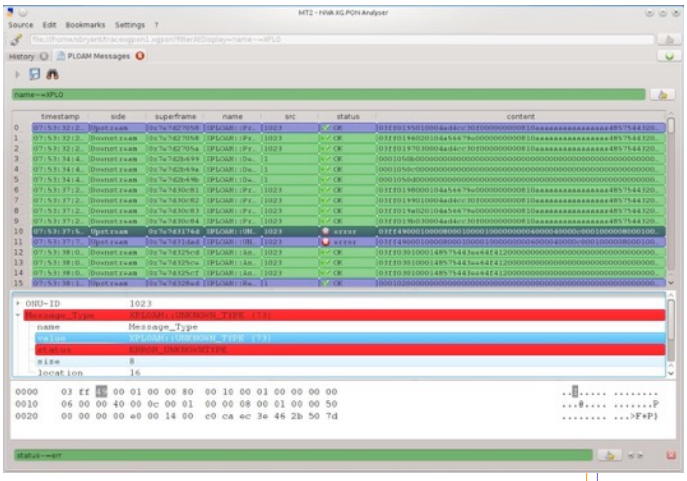
- No xPON-specific chipset.
- Accurate data recovery for upstream bursts.
- Decoding according to **ITU G.987, G.984, G.9807 & G.989**
- **Deep analysis** of exchanges for **PLOAM and OMCI messages**, with errors highlighting.
- **DBA analysis**, follow-up of upstream bandwidth allocated for each ONU/Alloc-ID.
- Optional **raw data recording**
- **Easy data mining** - Filtering/searching wizard
- Alarms and triggers.



The comfort of a Real Time monitoring tool for Interop testing !

- **Native Real-Time** acquisition and decoding.
- Simple/Clear GUI, **Plug and play**, no calibration setup.
- **Immediate monitoring** of the PON events (ONU ranging, authentication, OMCI MIB setup ...).
- **OMCI diagram generation** for browsing the actual MIB in place.
- Integrated **standard document helper.**
- **On-line and Off-line** analysis.
- **Automatic discovery of GEM ports** and VLAN-IDs, with bandwidth graph.
- **Ethernet Data Replication** for IP-level analysis.
- Complete **XML export** for PLOAM and OMCI exchanges.
- **Alarms & triggers**, for automated capture





So useful for field expertise & troubleshooting

- Completely **passive optical tap** taking place at ONT or OLT side.
- Follow-up of **OMCI alarms**.
- **Filtering** of PLOAM and OMCI messages according to types and ONU-ID.
- **Protocol messages diff function.**
- IP-level **export to PCAP files**, including powerful filtering.
- Ease of transport (**compact appliance**), and remote control from a laptop.

The MT2 PONPlatform as an OLT Emulator

eOLT xG-PON - The heart of a BBF.247 testbed !

From development to deployment, the perfect tool for ONU testing and qualification:

PLOAM & DBA :

- **Compliant with ITU-T G.984.3 & G.987.3 (GPON & XG-PON)**
- **Generate and Receive every PLOAM messages:**
  - Tuning all the fields/parameters
  - Ability to generate non standard arbitrary PLOAM messages
- **Arbitrary Bandwidth allocation:**
  - Generation of Serial Number & Ranging Requests
  - Complete handling of BWmap entries for each AllocID

OMCI :

- **Compliant with ITU-T G.988**
- **Independent from any OMCI stack vendor**
- **Handles OMCI mechanisms:**
  - MIB reset & MIB upload
  - Alarms, AVC, Software Download
- **Generation and Reception of Create/Get/Set/Delete requests**
- **Generation of arbitrary raw OMCI Requests**
- **Handling of proprietary Managed Entities**

Ethernet :

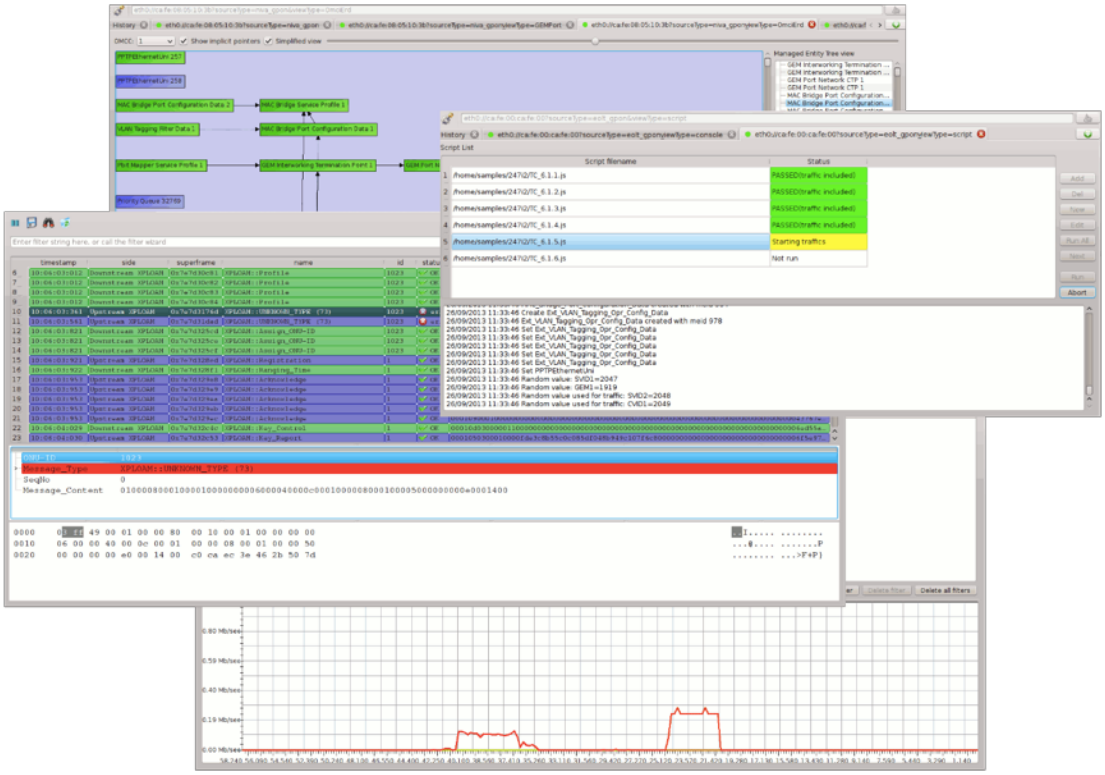
- **Capability of generation of arbitrary frame pattern**
- **Forwards traffic in upstream - from PON to 1000baseT**
- **Forwards traffic in downstream - from 1000baseT to PON**
- **Generation of AES encrypted traffic**

Miscellaneous :

- **Complete automatization of the scripts execution saving hours of work**
- **Activation of FEC encoding**
- **Arbitrary Bit Error Rate injection**
- **Generation of LOS/LOF alarms**
- **Generation of intentional BIP corruption**
- **Upstream burst monitoring to detect windows Drift**

GUI Client :

- **Lightweight application running on Win32**
- **Enhanced reporting capabilities (HTML & PDF)**
- **Control over a Command Line Interface (CLI)**
- **Includes integrated help**
- **Script management**
- **Integrated Editor with color highlighting**
- **Embeds Javascript engine**
- **Includes debug/log capability**
- **Integration of third-party traffic generator**
- **Vendor neutral**
- **Automated script generation from field capture**



MT2 PONPlatform - G-PON, XG-PON, XGS-PON and NG-PON2 tool !
Analyzer «NIVA»

		MT2 - NIVA-GPON Analyzer	MT2 - NIVA-XGPON Analyzer	MT2 - NIVA-XGSGPON Analyzer	MT2 - NIVA-NGPON2 Analyzer
Type	Specification	Note	Note	Note	Note
Standards	Compliant with BBF TR-156	✔	✔	✔	✔
	Compliant with BBF TR-280	✔	✔	✔	✔
	Compliant with ITU G.984.x	✔			
	Compliant with ITU G.987.x		✔	✔	
	Compliant with ITU G.9807.x			✔	
	Compliant with ITU G.989.x				✔ (Q2 2020)
	Compliant with ITU G.984.3 (G-PON) amendment 1, 2 and 3	✔			
	Compliant with ITU G.984.4 (OMCI) amendment 1 and 2	✔			
	Compliant with ITU G.988 (OMCI) amendment 1 and 2	✔	✔	✔	✔
	May be used in association with the eOLT to test the BBF.247 test suite.	✔	✔	✔ when applicable	✔ when applicable
Data Rate	Supports the full bandwidth G-PON - 2.5Gbits/s downstream and 1.2Gbits/s upstream.	✔			
	Supports the full bandwidth XG-PON - 10Gbits/s downstream and 2.5Gbits/s upstream.		✔		
	Supports the full bandwidth XGS-PON - 10Gbits/s downstream and 10Gbits/s upstream.			✔	
	Supports the full bandwidth NG-PON2 - 1 channel 10Gbits/s downstream and 10Gbits/s upstream.				✔ (Q2 2020)
	Traffic is time-stamped (ns resolution)	✔	✔	✔	✔
	Ethernet replication payload up to 1 Gbits/s	✔	✔	✔	✔
	Ethernet replication payload up to 10 Gbits/s	Option	Option	Option	Option
Real-Time	Runs in continuous Real-Time	✔	✔	✔	✔
	Analysis processed on the fly	✔	✔	✔	✔
	Monitoring 24/7	✔	✔	✔	✔
	dedicated captures mechanisms for GTC, PLOAM OMCI exchanges	✔	✔	✔	✔
Non Intrusive	Use of passive optical heads	✔	✔	✔	✔
	Standard insertion loss 3.6 dB including connection	✔	✔	✔	✔
	Special insertion loss of 2dB on OLT side with specific optical head	✔	✔	✔	✔
	Optical heads may be installed permanently if needed	✔	✔	✔	✔
Independence and neutrality	Does not use GPON chipset	✔	✔	✔	✔
	No calibration needed	✔	✔	✔	✔
Memory	No memory constraints - Data processed on the fly	✔	✔	✔	✔
Filtering	Filtering by GEM ports	✔	✔	✔	✔
	Filtering on IP content	✔	✔	✔	✔
	Filtering per protocol/ONU ID, TCONT, Managed Entity	✔	✔	✔	✔
	Customizable filters & alarms	✔	✔	✔	✔
Supervision	PON Tree monitoring (ONT states, GEM, TCONT, VLAN mappings, etc.) in real time	✔	✔	✔	✔
OMCI Diagram	OMCI Diagram creation with easy access to entity history (alarms, errors, etc.)	✔	✔	✔	✔
QoS/DBA Analysis	Dynamic graphical QoS analysis (Bwmap graphs & captures per ONU ID/TCONT, real user throughput graph per ONU/GEMPort/Alloc-ID)	✔	✔	✔	✔
ONU's	Support multiple ONUs up to 128	✔	✔	✔	✔
Encryption	Detection and decryption of encrypted ports	✔	✔	✔	✔
	OMCC channel included	✔	✔	✔	✔
Off-line mode	Record of traffic possible and limited by Hard Disk	✔	✔	✔	✔
	Replay and analysis of recorded traffic	✔	✔	✔	✔
Data Export	PLOAM traffic to XML files	✔	✔	✔	✔
	OMCI to XML, SqLite files	✔	✔	✔	✔
	Ethernet payload to pcap files	✔	✔	✔	✔
	Ethernet replication payload up to 1 or 10 Gbits/s	✔	✔	✔	✔
	Complete export of BWmap entries in CSV files	✔	✔	✔	✔
Remote Access	Client-Server architecture (GUI = Client)	✔	✔	✔	✔
	GUI runs on a regular Windows PC (Intel)	✔	✔	✔	✔
	GUI can be installed on several host machines - No limitation in numbers of users	✔	✔	✔	✔
	User friendly GUI	✔	✔	✔	✔
GUI host machine	32 or 64 bits Windows PC	✔	✔	✔	✔
	>= Intel Core2	✔	✔	✔	✔
	Standard desktop or laptop Machine	✔	✔	✔	✔
	1G Ethernet mandatory (or better)	✔	✔	✔	✔
Working environment	Room Temperature between 0° up to 40°C	✔	✔	✔	✔
	Air humidity between 10% up to 85% (without condensation)	✔	✔	✔	✔

MT2 PONPlatform - G-PON, XG-PON, XGS-PON and NG-PON2 tool !
OLT emulator «eOLT»

Type	Specification	MT2 - eOLT-GPON OLT Emulator	MT2 - eOLT-XGPON OLT Emulator	MT2 - eOLT-XGSGPON OLT Emulator	MT2 - eOLT-NGPON2 OLT Emulator
Standards	Compliant with BBF TR-156	✔	✔	✔	✔
	Compliant with BBF TR-280	✔	✔	✔	✔
	Compliant with ITU G.984.x	✔			
	Compliant with ITU G.987.x		✔	✔	
	Compliant with ITU G.9807.x			✔	
	Compliant with ITU G.989.x				✔
	Compliant with ITU G.984.4 (OMCI)	✔			
	Compliant with ITU G.988 (OMCI)	✔	✔	✔	✔
	Provided with the full BBF.247 official test suite.	✔	✔	✔	✔
	Support for upcoming issues of BBF.247 is guaranteed	✔	✔	✔	✔
Independence and neutrality	**Independent from any GPON chipset**	✔	✔	✔	✔
	Independent from any OMCI stack vendor	✔	✔	✔	✔
	No calibration needed	✔	✔	✔	✔
Remote Access	Client-Server architecture (GUI = Client)	✔	✔	✔	✔
	GUI runs on a regular Windows PC (Intel)	✔	✔	✔	✔
	GUI can be installed on several host machines	✔	✔	✔	✔
	User friendly GUI	✔	✔	✔	✔
Scripting / Automation	Scripting in Javascript	✔	✔	✔	✔
	Preexisting primitives	✔	✔	✔	✔
	Full BBF.247 certification test suite included	✔	✔	✔	✔
	Run series of scripts	✔	✔	✔	✔
	Automation wizard	✔	✔	✔	✔
	Automated test verdict (passed/failed)	✔	✔	✔	✔
Standard / Proprietary support	generate compliant or arbitrary frame patterns/protocol entities (PLOAM, Bandwidth, OMCI, ...)	✔	✔	✔	✔
	PLOAM messages natively supported	✔	✔	✔	✔
	OMCI mechanisms natively supported	✔	✔	✔	✔
	Bandwidth Allocation managed per AllocID	✔	✔	✔	✔
Error Generation	Arbitrary error patterns can be inserted in the bitstream	✔	✔	✔	✔
ONUs	Multiple ONUs supported	✔	✔	✔	✔
Ethernet features	eOLT can be used in integration with third-party traffic generator (forwarding capabilities from/to PON to/from 1000BaseT Ethernet)	✔	✔	✔	✔
	Generate arbitrary Ethernet frame patterns	✔	✔	✔	✔
	Generate AES encrypted traffic	✔	✔	✔	✔
GUI	User friendly GUI	✔	✔	✔	✔
GUI host machine	32 or 64 bits Windows PC	✔	✔	✔	✔
	>= Intel Core2	✔	✔	✔	✔
	Standard desktop or laptop Machine	✔	✔	✔	✔
	1G Ethernet mandatory (or better)	✔	✔	✔	✔