GPONDoctor REPORTS - Maria Alejandro

The Road to the Deep Understanding of your FTTH Network Proactive versus Reactive Network Management.

Higher Quality of Experience (QoE) required by current (and future) services and the need of sharing network resources in an efficient way, lead network providers to acquire a deep knowledge of the capabilities of their networks. Definitely, pre-testing the network under error conditions increases the efficiency in problem solving.

Currently, when a Network Infrastructure Provider wants to deploy a FTTH Network, it is common to see that the infrastructure provider concentrates most of the efforts on the definition of the network architecture.
This is not a simple task and in this definition some important aspects must be considered, such as:

- The requirements of the services that are going to be provided.
- The legacy network - in case the deployment does not start from scratch and it's an evolution/migration from a network based on other technologies.
- The scope of the network to be created, in terms of the number of users and their location.

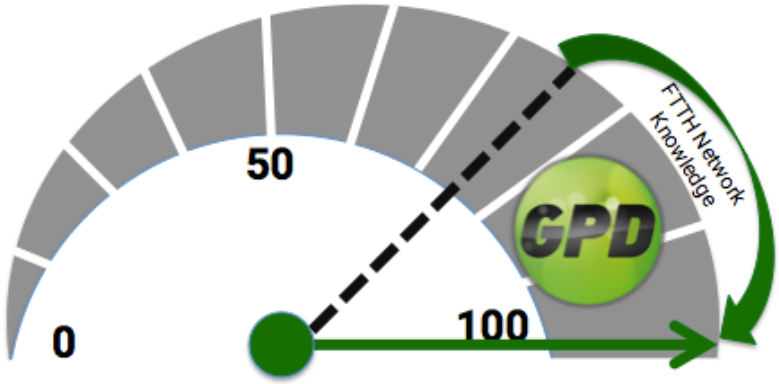
As a first step, with the main objective of reducing risks and increasing Time to Market, many providers prefer to deploy single-vendor solutions. This way everything seems to be better controlled and the "nightmare" of interoperability is avoided. Based on the architecture defined by the operator, the manufacturer that provides the GPON equipment (basically OLTs and ONUs) configures the network and provides the operator with a Network Monitoring System (NMS) that allows the control of the entire network from one single point.

This NMS keeps track of events and reports the status of the elements in the network. This way the NMS allows maintaining the network without having to go too deep into the GPON protocol details. This is preferred, as the NMS has critical high level features, such as configuration, alarm management, SLA monitoring, and more.

However, it's important to be careful, as this abstraction might become a double-edged sword. The farther you go from the low level details of your network, the harder it is to achieve the objective of maximizing both the network profit and the Quality of Experience of the services being provided.

With this direction, there is one exercise we strongly recommend. In a lab environment configured according to your real network architecture, subject

your equipment to error conditions and analyze the information and events reported by the Network Management System. Based on the results, define your own cause-effect matrix and use this valuable knowledge of your system to quickly react when alarms are declared or even anticipated error conditions when certain parameters announce that problems are about to happen.



Enabling your network work at a maximum performance

GPONDoctor provides solutions to enhance your knowledge of your FTTH network. Our analyzer, combined with a hardware/software "PON check" module, allows editing the downstream frame and test how the network reacts upon certain conditions. For sure it is interesting to inject CRC errors and simulate line errors conditions and, for example, modify BWMAPs and see what happens when the ONUs do not transmit when desired.

This way, GPONDoctor provides the tools to acquire full knowledge of the strengths and weakness of your network devices.

Furthermore, this network expertise becomes a must when moving from single to multi vendor deployments. Multi-vendor scenarios are normally achieved including, for the first stage, new vendor's equipment at the subscribers' premises. For this purpose the network provider must perfectly define the set of requirements the devices must fulfill in order to interoperate with the devices at the central office.