

Joint ITU-T/IEEE Workshop on Next Generation Optical Access Systems

Session 4

Transmission mechanisms of optical access

Compare ITU-T & IEEE Studies

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Highlights - IEEE 1G & 10G EPONs: Factors that Influenced the Architecture and Specification

- Convergence of Communications, Computing, and Entertainment is happening faster than anybody anticipated.
- To survive, carriers need to become service providers, or revenue streams will bypass them.
- Carriers and vendors need to study how to support large-scale IP video in PON access networks (DBA issues, scalability, management).
- This work is needed for all NG PON technologies, regardless of which transport layer is used (EPON or GPON).

Highlights - Consideration for possible synergies between next generations ITU-T GPON & IEEE EPON

- EPON & GPON had Regional applications and Regional requirement differences due to the different standard bodies they originated from
- NG GPON & NG EPON will inherit part of the regional applications & requirements differences
- So it is unlikely to have common specifications for NG GPON & NG EPON.
- However, it is surely possible to support compatible building blocks that can benefit both NG GPON & NG EPON. e.g. Exploration of PHY layer commonalties between IEEE and ITU.

Highlights - Inter-Connected Concepts: Towards a Unified PON System

- 10G symmetric (XG-PON2) looks very promising for convergence of IEEE and ITU systems
- IEEE standard defines PHY & much of the TC layer
- ITU and DSL-F defines the “system” e.g.
 - DBA, Security, FCAPS management Service model
- However, an alternative system with 10G down/~2.5G up (XG-PON1) is also needed
 - Possible reuse of some IEEE components, but with ITU PHY and TC layer specifications
- Both XG-PONs would belong to the common “system” standard

Conclusions

- Carriers and vendors need to study how to support large-scale IP video in PON access networks (DBA issues, scalability, management).
- This work is needed for all NG PON technologies, regardless of which transport layer is used (EPON or GPON).
- Possible to support compatible building blocks that can benefit both NG GPON & NG EPON. e.g. Exploration of PHY layer commonalties between IEEE and ITU.
- Symmetric 10G looks very promising for converged PON system

Recommendations

- ITU & IEEE 802 to work together to support compatible building blocks that can benefit both NG GPON & NG EPON.
- ITU to consider defining the “system” in conjunction with IEEE 802 & other groups such as DSLF etc,
 - As work is needed for all NG PON technologies, regardless of which transport layer is used (EPON or GPON),
 - Some examples of defining the system are : Dynamic Bandwidth Allocation (DBA), Security, Management Service Model.
- ITU , in conjunction with IEEE 802, to study how to support large-scale IP video in PON access networks. This will benefit the emerging video industry such as operators and vendors.