ITU-T The leader on PON Standards

G.987 — 10-Gigabit-capable passive optical network (XG-PON) systems: Definitions, abbreviations and acronyms

Establishes common terms and acronyms used in the G.987 series, as well as delineates various optical access topologies.

G.987.1 — 10-Gigabit-capable passive optical network (XG-PON) systems: General requirements

Lists system-level requirements for XG-PON systems. Most significantly, the XG-PON system can coexist with a G-PON system on the same ODN. Provides examples of the wide variety of SNIs, UNIs and system configurations possible.

G.987.2 — 10-Gigabit-capable passive optical network (XG-PON) systems: Physical media dependent (PMD) layer specification

Defines the physical layer interface specifications for the system operating at the nominal data rates of 10 Gbit/s downstream, 2.5 Gbit/s upstream.

G.987.3 — 10-Gigabit-capable passive optical network (XG-PON) systems: Transmission convergence specification

Defines the frame format, forward error correction, media access control method, ranging and activation scheme, physical layer OAM and security features for the XG-PON system.

G.988 — ONU management and control interface specification (OMCI)

Defines the managed entities of a protocol independent MIB for ONU FCAPS management, suitable for PON and point-to-point systems, including XG-PON, G-PON and Gigabit Ethernet. Defines the management control channel, protocol and messages.

XG-PON means

- Full compatibility with G-PON — by virtue of a wavelength plan, blocking filters and loss budget that allow coexistence on a common PON infrastructure

- Support for single-sided and mid-span reach extension, with reach of up to 60 km

- Full service support — including voice, TDM, Ethernet (up to Gigabit rates), xDSL, wireless backhaul

- Powerful Operation Administration Maintenance and Provisioning (OAM&P) capabilities providing a feature-rich service management system

- Advanced security features including authentication, rogue detection and information privacy

- Power-saving features on top of the already considerable power-efficient nature of fibre access
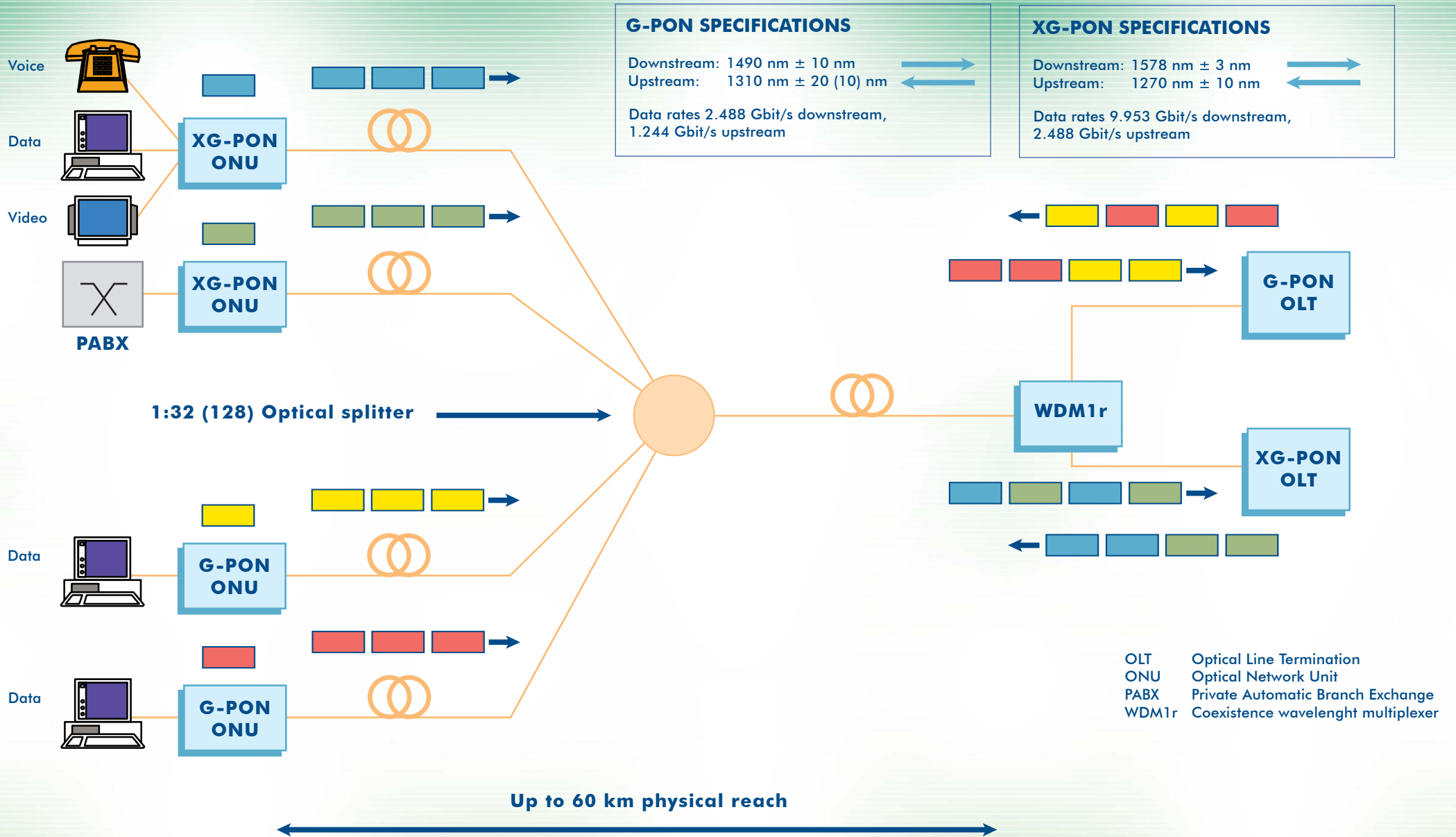
XG-PON
TEN-GIGABIT-CAPABLE PASSIVE OPTICAL NETWORKS

Your full service fibre optic access network transport solution

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International Telecommunication Union

Voice

Data

Video

PABX

XG-PON ONU

XG-PON ONU

1:32 (128) Optical splitter

Data

G-PON ONU

Data

G-PON ONU

G-PON SPECIFICATIONS

Downstream: 1490 nm ± 10 nm
Upstream: 1310 nm ± 20 (10) nm

Data rates 2.488 Gbit/s downstream,
1.244 Gbit/s upstream

XG-PON SPECIFICATIONS

Downstream: 1578 nm ± 3 nm
Upstream: 1270 nm ± 10 nm

Data rates 9.953 Gbit/s downstream,
2.488 Gbit/s upstream

G-PON OLT

WDM1r

XG-PON OLT

OLT	Optical Line Termination
ONU	Optical Network Unit
PABX	Private Automatic Branch Exchange
WDM1r	Coexistence wavelenght multiplexer

Up to 60 km physical reach

ITU-T Study Group 15 Question 2 is responsible for the develop-
ment of Recommendations in the area of optical systems for access
networks.