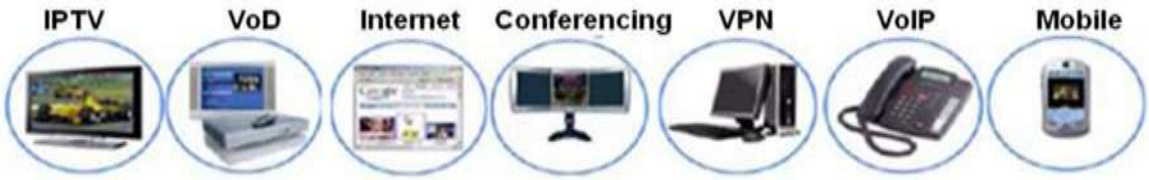
Broadband Services over GPON

GPON can deliver a multitude of services, such as:



and more…

Some of the FTTx services offerings that are being provided today on GPON Broadband access Networks around the world are:

- **Internet:** up to 1Gbps Downstream and upstream Data with CIR and PIR Rate Data Plans, VPN over Broadband, Low Latency Interactive Gaming,…
- **Video Conferencing and Telephony:** Face to Face Tele-Presence conferencing, EventCasts, Point-to-point and Point-to-Multipoint Video Conferencing,…
- **IPTV:** Multiple Set top Boxes per ONT, HDTV VoD (MPEG2/ MPEG4) replacing Linear Broadcast & Staggercast, Multiple Providers, Streaming Web Video Services, Interactive Video (e.g. select camera angle, instant replays etc), Interactive Long Distance Learning,…
- **CCTV:** PTZ High-Resolution Surveillance HD >24Megapixels,…
- **Voice (VoIP) Telephony:** FXS POTS, Basic Phone, Supplementary Services, VVoBB (Voice and Video over Broad Band), IP PBX,…
- **Private-line Data:** VPNoBB (Virtual Private Network over Broad Band), ILLoBB (Internet Leased Line over Broad Band) using TLS (MEF E-LAN), E1 TDM
- **MEF interconnection**: E-Line (Point-to-Point) (BBF 1:1 VLAN), E-LAN (Multipoint-to-Multipoint), E-Tree (Point-to-Multipoint) (BBF N:1 VLAN), Carrier Ethernet Service Transport, Carrier Ethernet Service Access,…
- **Secure Wi-Fi Hotspots**: Wireless TV, Tablet Mobility, 3G offloading,…
- **Value-added Services (VAS)**: Online Data Backup and Sharing to the Cloud using High rate Upload, Security, Surveillance, Connected Home, Digital Video Recorders (DVR), Digital Channel Guides, Digital Newspapers, On-demand Audio/Music Channels, Femto Cell access points, e-Education Long Distance Learning,…

Literally any communications service you can think of that requires up to 2.3Gbps of bandwidth can be delivered over GPON.

GPON Reachability

GPON can be used for long distance transmission of up to 60km - that is 20 km at 128 split with Class B+ OLT optics, 35 to 40 km at 64 split with Class C+ OLT optics, and 60km with lower split or with GPON optical reach extenders.

GPON OLT Class B+/C+ Optical Power Consideration

OLT	ITU-T-G.984.2 Amd.1	ITU-T-G.984.2 Amd.2
	Class B+	Class C+
Minimum Loss	13 dB	15 dB
Maximum Loss	28 dB	32 dB (1.)

Note 1: Class C+ OLT sensitivity assumes the use of the optional RS(255,239) FEC capability of the GPON TC layer.

GPON ONT Class B+/C+ Optical Power Consideration

ONT	Class B+ Compliant	Class C+ Compliant
Mean Launch Power (min)	+0.5 dBm	+0.5 dBm
Mean Launch Power (max)	+5 dBm	+5 dBm
Maximum sensitivity (5.)	-27dBm /-28 dBm (1.)	-28 dBm (2.) / 30 dBm (3.)
Receiver Overload	-8dBm	-8dBm (4.)

Note 1: If ONT maximum End-of-Life sensitivity is -27dBM then the OLT Mean Launch power must be at least +1dBm to achieve the Class B+ optical link budget of 28dBm

Note 2: Class B+ sensitivity does not assume the use of the optional RS(255,239) FEC capability of the GPON TC layer

Note 3: Class C+ sensitivity assumes the use of the optional RS(255,239) FEC capability of the GPON TC layer

Note 4: Class C+ ONU (optical interface of the ONT) overload is set at -8dBm to be common with class B+, even though 10dBm is sufficient

Note 5: Sensitivity measured at BER better than 1x10-10, factoring in aging and worst case PMD

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