

# SyncE+PTP+GbE+E1+Jitter+Wander



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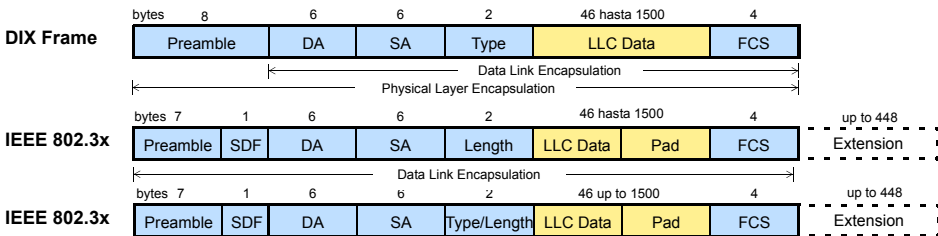


Fig. 1 IEEE 802.3 formats

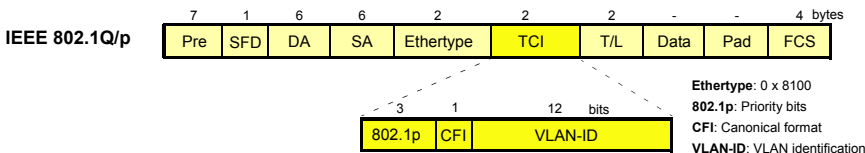


Fig. 2 Ethernet VLAN

## Autonegotiation Base Page 10/100/1000BASE-T

Priority resolution

Highest

- 1000BASE-T Full Duplex
- 1000BASE-T
- 100BASE-T2 Full Duplex
- 100BASE-TX Full Duplex
- 100BASE-T2
- 100BASE-T4
- 100BASE-T
- 100BASE-T Full Duplex
- 10BASE-T

Lowest

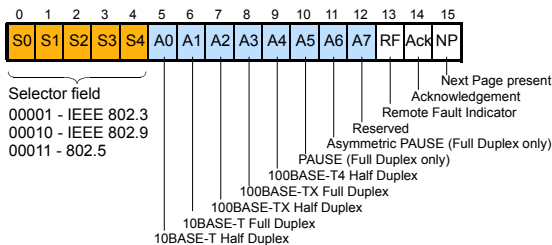


Fig. 3 Autonegotiation Base Page.

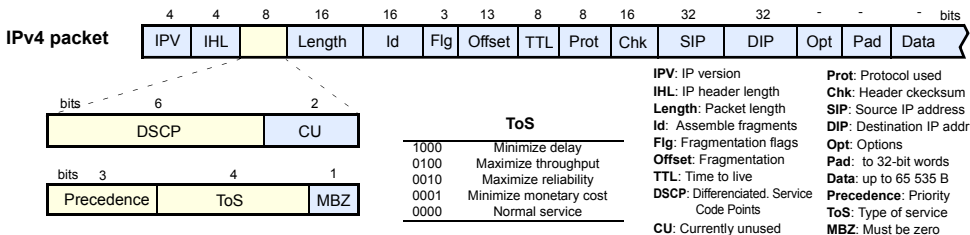


Fig. 4 VLAN and Traffic marking.

ALBEDO Telecom is a manufacturer of test, measurement and monitoring solutions. We supply tools to install, troubleshoot and maintain those infrastructures that support voice, video, internet and data applications. ALBEDO core expertise range from SyncE, GbE, E1, TDM, Jitter/Wander, QoS, and SLA technologies that we have implemented on WAN EMULATORS, Filtering / Aggregation TAPS, hand-held TESTERS, and MONITORING Systems



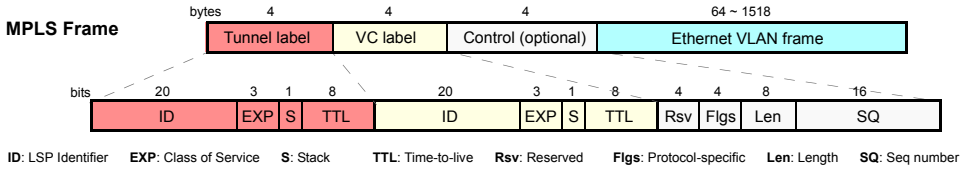


Fig. 5 MPLS encapsulation

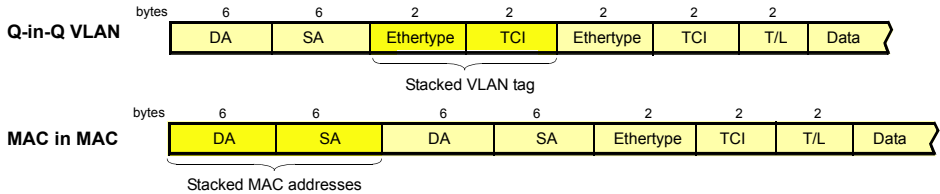


Fig. 6 Ethernet framings for Carrier Class Ethernet.

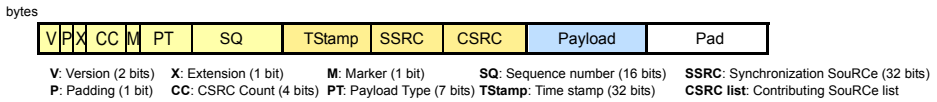


Fig. 7 RTP packets.

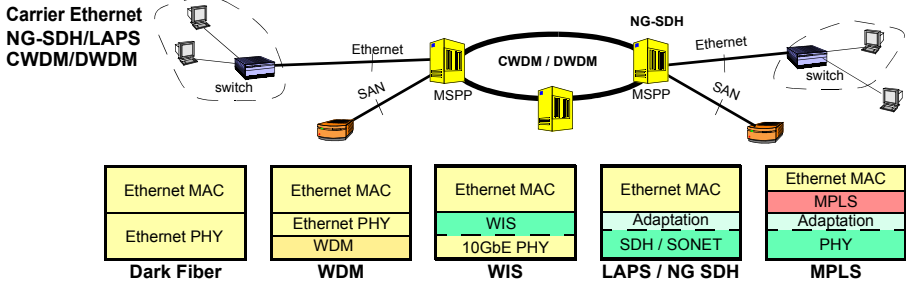


Fig. 8 Carrier Ethernet and Protocols.

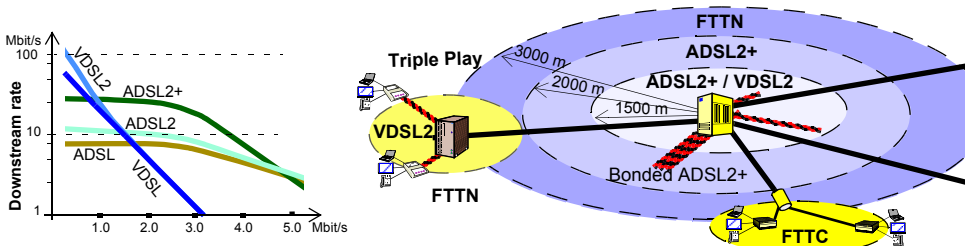


Fig. 9 DSL and FTTx.

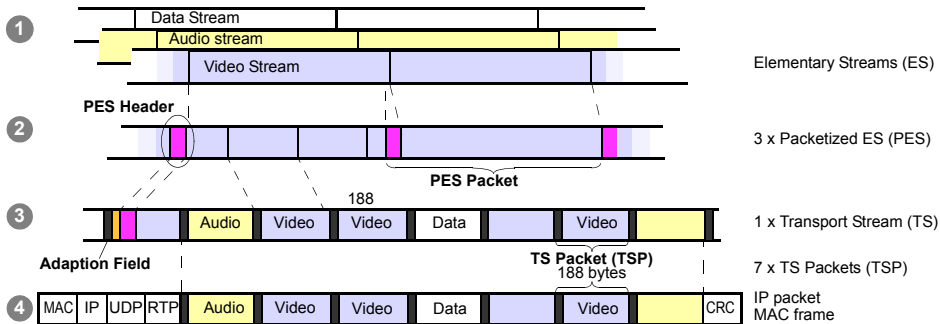
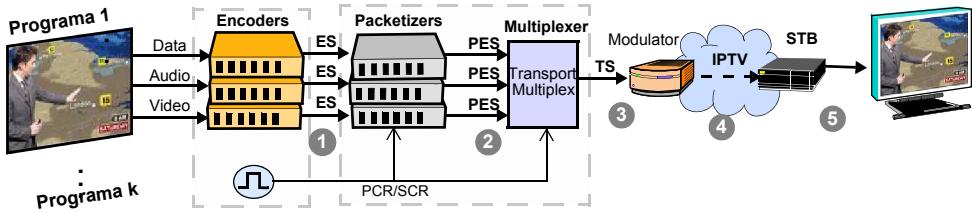


Fig. 10 Packetized Elementary Stream (PES), Transport Stream Packets (TSP), Transport Stream (TS)

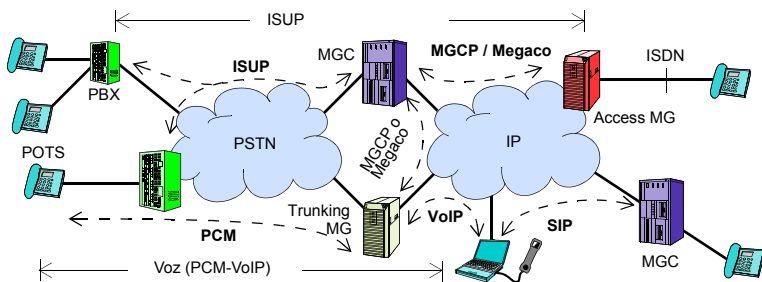


Fig. 11 VoIP and POTS Communications between MGs and MGCs use MGCP or Megaco.

R	MOS	
100	4.5	Objective
94	4.4	
90	4.3	Acceptable
80	4.0	
70	3.6	Unacceptable
60	3.1	
50	2.6	
0	1.0	

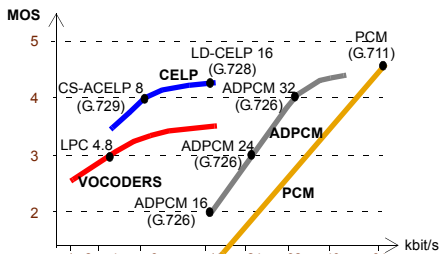


Fig. 12 R-factor and MOS (G.109, G.107 Annex B)

	APON / BPON	GPON	EPON	P2P Ethernet
Standard	ITU-T G.983	ITU-T G.984	IEEE 802.3ah	IEEE 802.3ah
Downstream rate (Mbaud)	155, 622	1244, 2488	1250	1250
Downstream throughput (Mbit/s)	136, 543	1144, 2289	899	925
Upstream rate (Mbaud)	155, 622	622, 1244	1250	1250
Upstream throughput (Mbit/s)	136, 543	572, 1144	836	925
Downstream efficiency	87 %	92 %	72 %	74 %
Upstream efficiency	87 %	92 %	67 %	74 %
Split ratio	1:32	1:32, 1:64	1:32, 1:64 (with FEC)	1:1
Range (km)	20	20	20	10
Encapsulation	ATM	GEM / ATM	Ethernet	Ethernet
Encryption	AES	AES	Not standard	Not standard
Network Protection	Standard	Standard	Not standard	Not standard

Fig. 13 Optical access.

# Ether.Genius GbE / E1 / SyncE

ALBEDO Ether.Genius ALBEDO Ether.Genius is a multitechnology Ethernet tester that supports all the functionalities you need to install, commission and troubleshoot telecom services based on GbE, SyncE, PTP, Jitter, Wander, E1, Datacom and VF. Ether.Genius is a dual port GbE tester that can add all the features required by simple software upgrade.

## Next Generation Multitechnology

- Y.1564 (e-SAM) FTD, 2-way FDV, FDV, 2-way FTD, FLR, SES, PEU and PEA
- Complete statistics for Y.1731 QoS
- Synchronous Ethernet (ITU-T O.174)
- Line frequency (MHz), offset (ppm), drift (ppm/s) [clause 10]
- MTIE / TDEV measurement [ITU-T O.172 clause 10]
- Jitter / Wander generation [ITU-T O.174 section 8.4]
- Generation / Decoding ESMC and SSM [ITU-T G.8264]
- Y.1564 Test & Results (eSAM)
- FULL and automatic RFC 2544 Test
- Test for VLAN, Q-in-Q, ToS and DSCP
- Multistreams to test IPTV, VoIP, and Critical Data
- E1 pulse mask, Jitter/Wander, Frame Relay
- xSFP, 2x1000BASE-T, 2xBNC, 2xUSB, DTE, DCE, and SD card
- Remote Control by RJ25 VNC

Made in EU  
designed in 2011

## Field SyncE test

The new ALBEDO Ether.Genius is a field tester well equipped to deploy and troubleshoot both SyncE infrastructures, and Gigabit Ethernet as well, supporting new standards such as Y.1564 & Y.1731 to verify the QoS and SLA and those required for Synchronous Ethernet such as ESMC, Wander measurements, and PTP / IEEE 1588v2 support, including Master Clock operation using internal and external clock references.

