## TRANSMISSION RATES THROUGH TIME

In the last five decades, the telecom industry's need for more bandwidth has resulted in the ramping up of transmission rates. On one hand, optical transport networks (OTN) replaced SONET/SDH to become the "networks of choice" to carry Ethernet services. On the other, Ethernet networks evolved into being able to handle all bandwidth-intensive applications on their own.

This graphic shows a clear timeline view of the merger between optical and Ethernet technologies from the first bit to 100G and beyond.

Networking interface that enables

computers to interconnect based



Deployment of 2.5

optical systems

2.5G 1990

**Optical Transport Network (OTN)** Replaces SONET/SDH as the main transport network. First line of OTN containers: ODU1 (2.7 Gbit/s), ODU2 (10.7 Gbit/s), ODU3 (43 Gbit/s).

**EXFO** introduces first 100G Tester

40/100G

**OTN Revision** 

New transport container ODU0 (1.25 Gbit/s) adapted for 1GE, and ODU4 (111 Gbit/s) for 100GE traffic. ODUFlex is also added to provide a flexible container up to 100G.

100G

2011-2016 Deployment of

100GE

**Ethernet Standard** 

101 10 01 0°1 1°1 1°0, 01

1987

Ethernet standardization by the Institute of Electrical and Electronics Engineers (IEEE) based on IEEE 802.3.

1G 2000-2005

Deployment of 1GE

1000

2010

100G Ethernet standard 100G Ethernet standardization by the IEEE.

2009-2015

Dominance of 10GE and 10G optical

Standardization of 40/100GE

4005

2014 400G

Calls beyond 100G IEEE, ITU-T and OIF. Work begins on 400GE and OTU5.

2009-2010

1962 T1/DS1 (1.544 Mbits/s) Mainly used for telephone communication transporting

64 Kbit/s channels.

SONET/SDH (Bellcore) Main transport mechanism carrying multiple synchronous channels. Key rate of 2.5 Gbit/s

40G 2006-2008

Deployment of 40G

400G 2012

First software-programmable coherent solution, scaling from 100G to 400G.

BIT RATE

ETHERNET

1966 Introduction of optical fiber

1977

First live optical fiber telephone call

2000-2008 10G

Implementation of routers Deployment of 10G SONET/SDH

2009 100G

Deployment of 100G

2014-2030

Dominance of 100GE CFP 100GE



1973

Ethernet

on coax cable.