

Optimal Optical LAN Solutions for Enterprise & Residential Applications

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ITU-T/BBF/CCSA/ETSI fibre in-premises
network workshop

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In-building broadband evolution

Driven by broadband access technologies & Wi-Fi



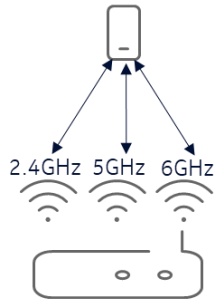
In building network capacity needs to align with the highest offered service

Wi-Fi 7 (IEEE 802.11be)

Main characteristics and benefits

Multi-link operation

- Boost throughput
- Improve latency
- Increase reliability
- Traffic differentiation



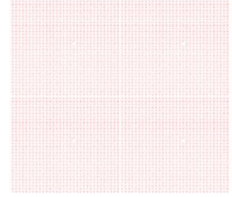
Enhanced QoS



Throughput x3.75

- Ch. width: 320MHz
- 4096QAM
- Increased spatial streams
- With MLO

12 bits per symbol



Max data rate:

- On 6GHz: 23Gbps
- With MLO: 36Gbps

 G Fiber Labs presents

20 Gig + Wi-Fi 7

We're very excited to introduce a first-of-its-kind experience that allows select customers to explore the latest internet frontier with symmetrical speeds up to 20 gigabits. But that's not all. We're offering the service with a custom G Fiber Wi-Fi 7 router equipped with the latest certified Wi-Fi standard in the market.¹

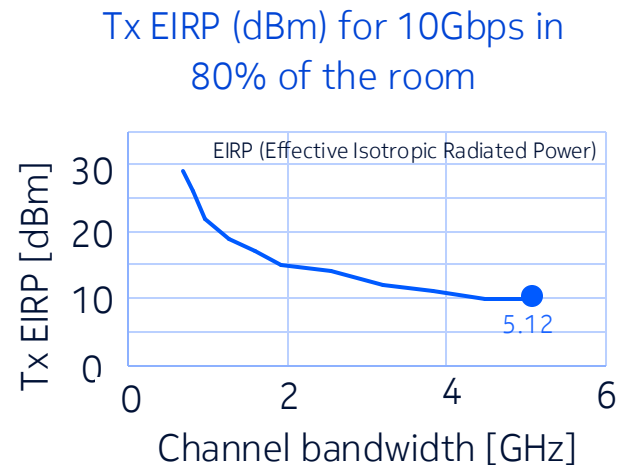
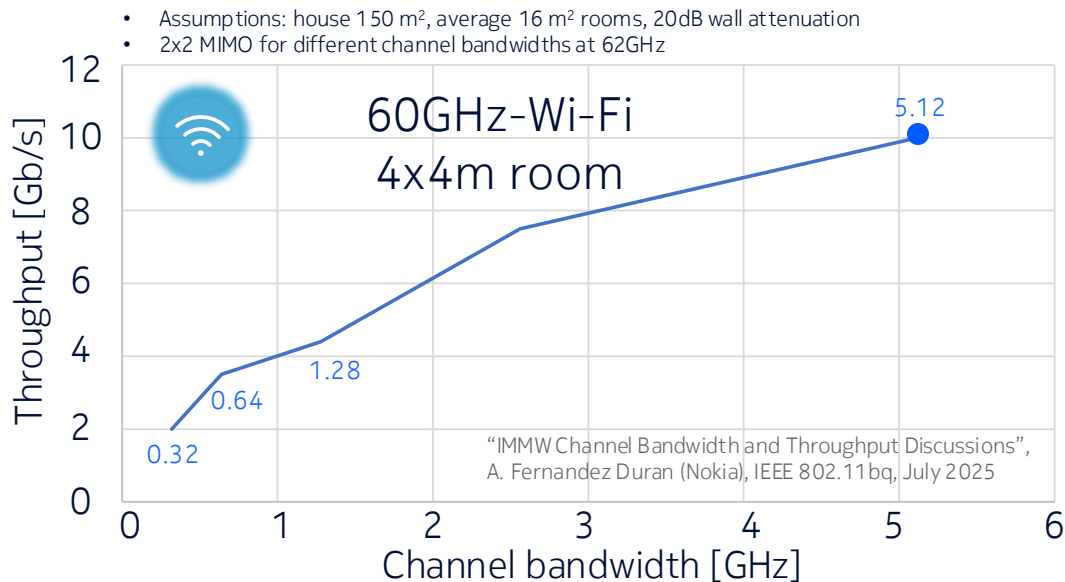
Ready to try 20 Gig?

mmWave Wi-Fi progression – 802.11bq

Increased channel bandwidth could offer pervasive >10G per device performance

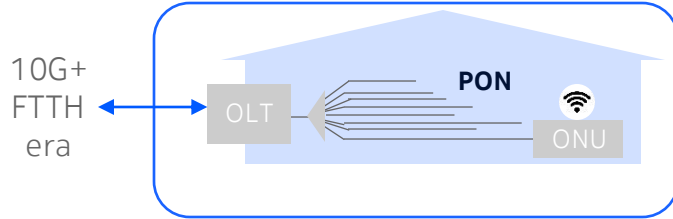
Objective is a single user performance of $\geq 10\text{Gb/s}$ at 80% coverage per room

Increase in available bandwidth reduces transceiver conducted power output requirement



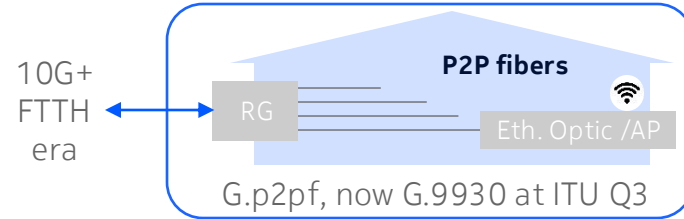
In-building optical network topologies

P2MP Optical LAN



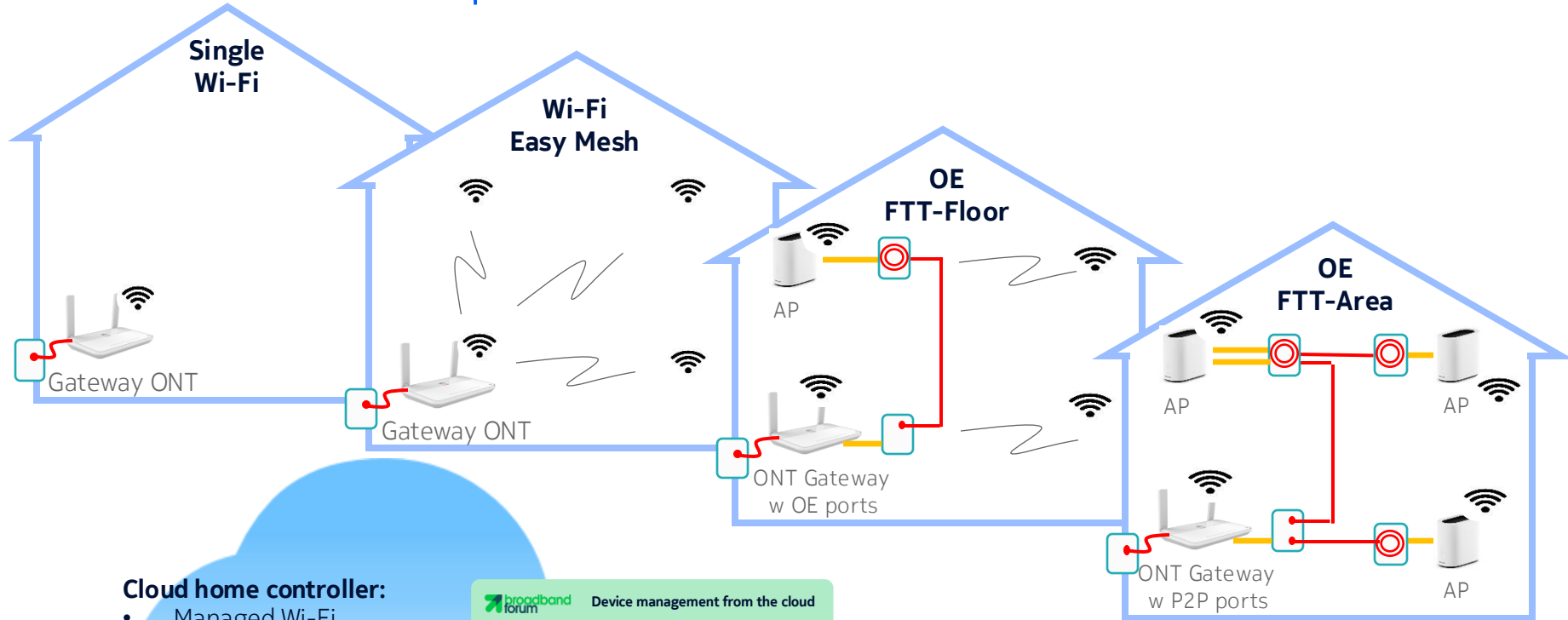
- One OLT / RG connection per network / ODN
- Multiple ONU / device connections per network / ODN
- Includes optical power splitter / PLC

Optical Ethernet



- One RG optical transceiver / cable per attached device
- Uses traditional ethernet optical transceiver technology
- No additional passives used

In home network optical Ethernet evolution



Cloud home controller:

- Managed Wi-Fi
- Device management
- Application management



Device management from the cloud

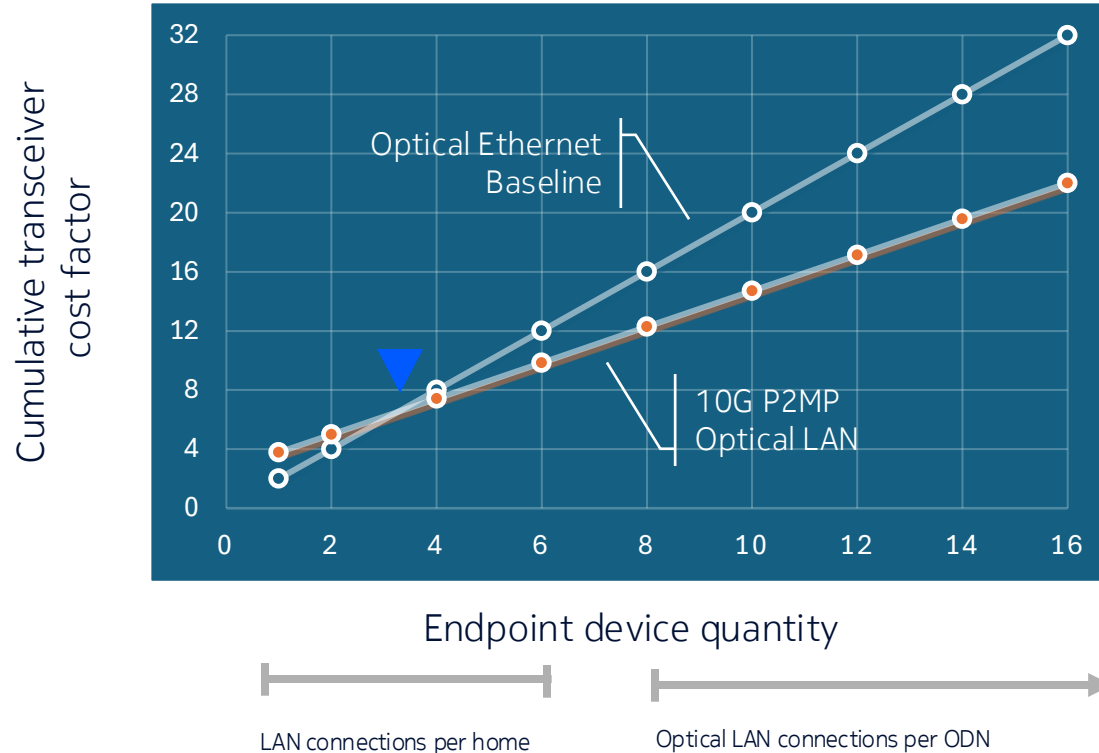
USP/TR-369
TR-069

TR-181

USP Agent
(OB-USP-A)

USP: user service platform

Solution cost factor



- P2P: 10GE, 10km, adapted to Bi-Di SFP-family
- P2MP: XGS-PON
- ASP estimates for 2025, LightCounting 2025 reports
- No cabling and labor cost, e.g. no in-home splitter

Current enterprise connectivity solutions pose challenges

Large equipment / capital footprint

Floor / access level switches connect each user

Opex intensive

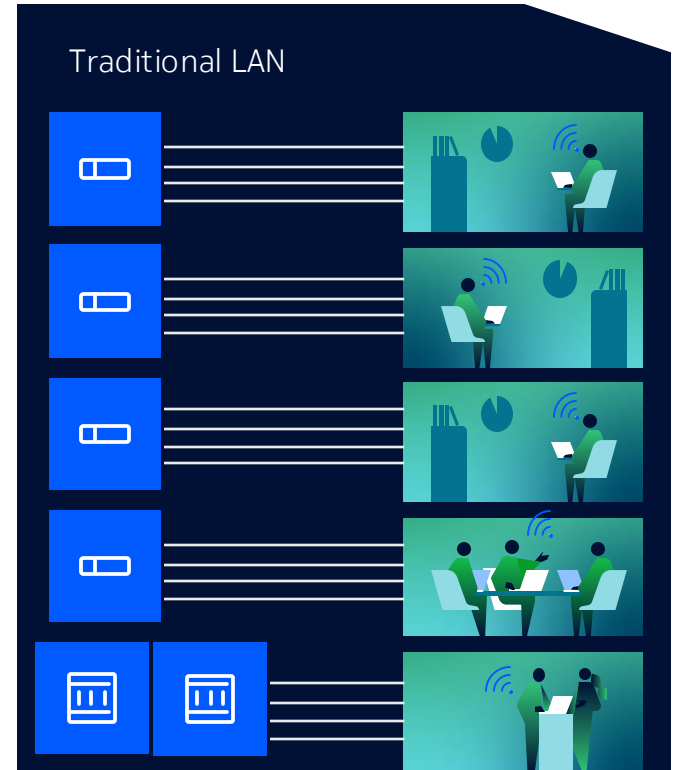
Cascade of active devices increases management burden

Continuous refresh

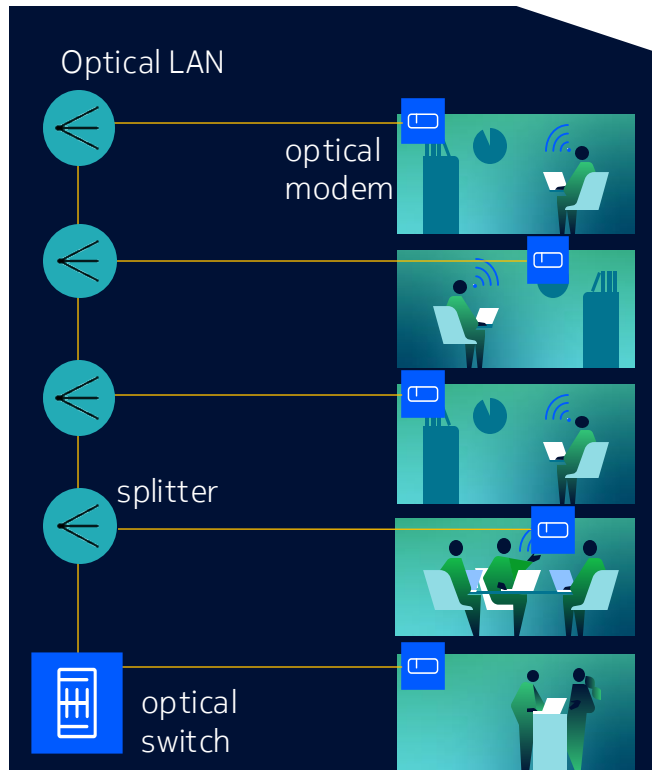
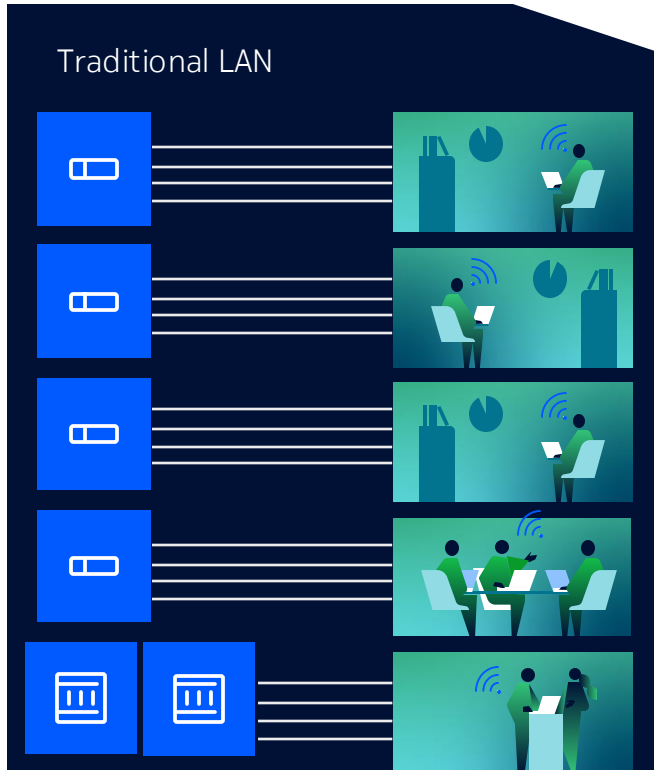
Equipment and cable refresh needed every 5-10 years

Inefficient

180KWh/user/year energy impact, high cost / bit delivered



All-fiber Optical LAN solutions future-proof enterprise networks



Benefits

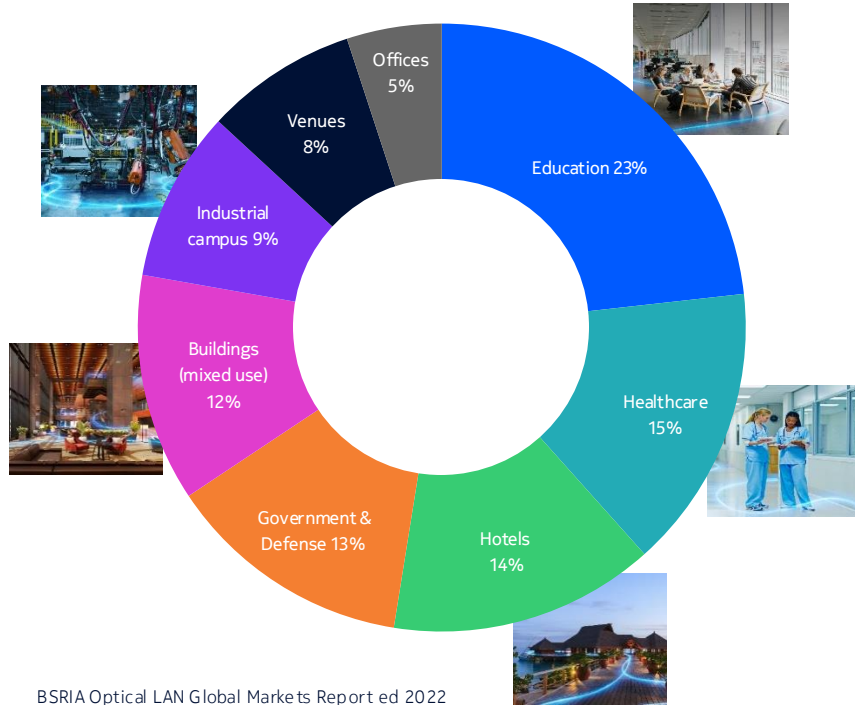
70% less cabling

50+ years lifespan

40% energy savings

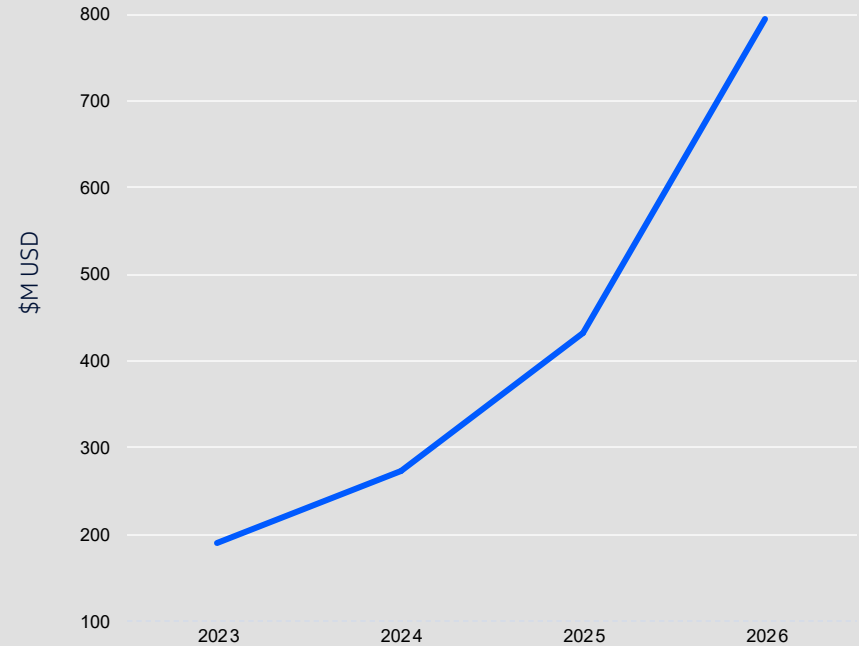
50% TCO savings

Optical LAN rapidly growing across segments



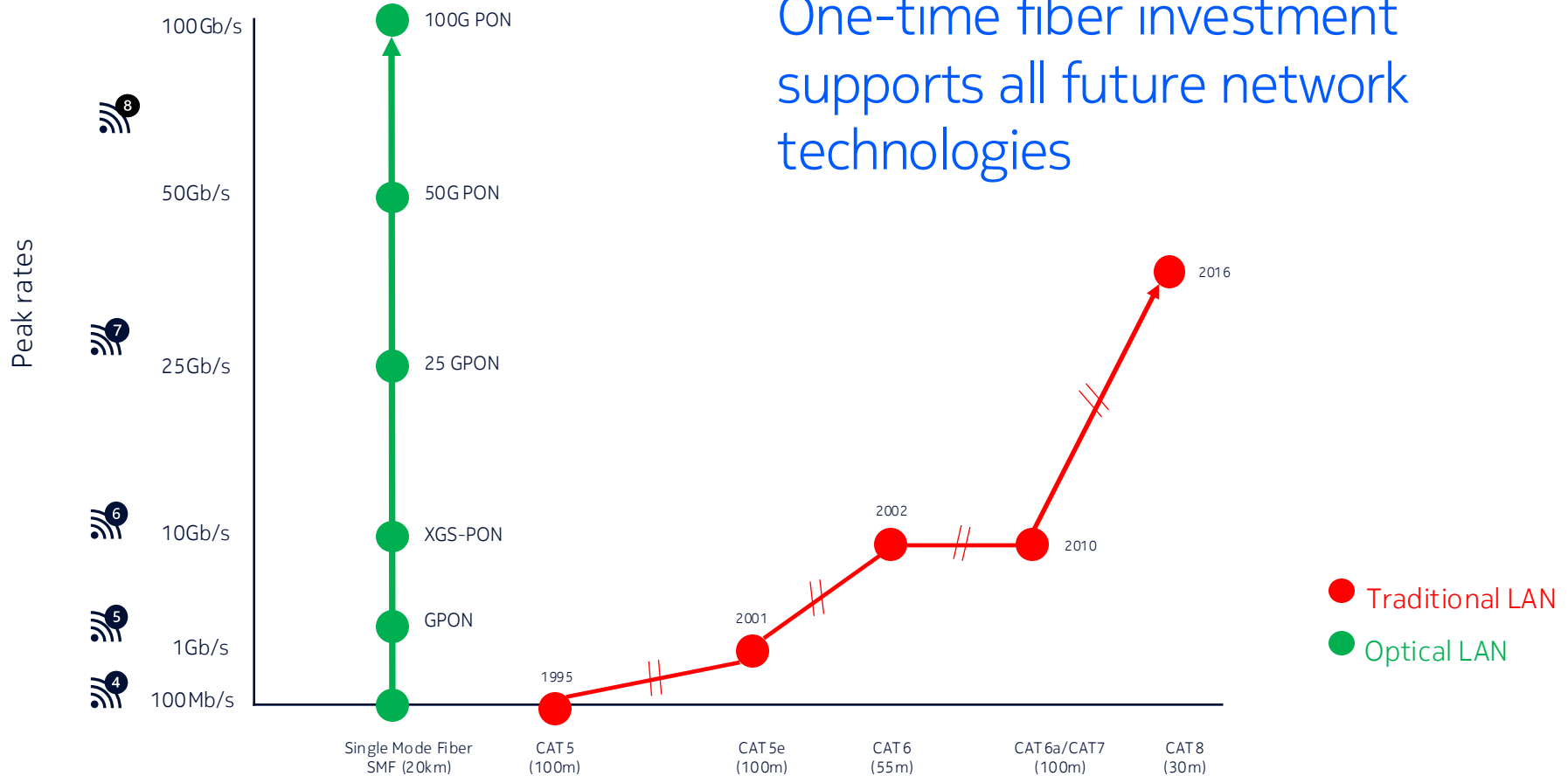
BSRIA Optical LAN Global Markets Report ed 2022

Optical LAN market forecast (optical switches and modems)



Nokia market forecast study based on Omdia POL opportunity study, May 2023

One-time fiber investment
supports all future network
technologies



NOKIA