Beyond Broadband: Converged Access and Backhaul for Profitable FTTX Rollouts

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Software Enabled Transformation
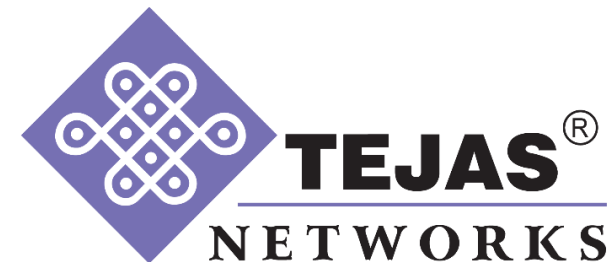
The Age of Digital Living, Studying and Working

Work-from-Home

Remote working and greater use of digital modes of interaction for business

Healthcare

Use of telemedicine and smart health solutions; high-speed connectivity to hospitals

Study@Home

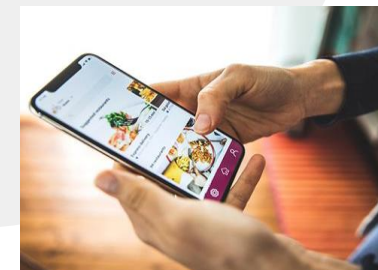Online learning using both live and recorded videos; use of MOOC platforms

Businesses

Accelerated digital transformation and "cloudification" of businesses

Over-the-Top Entertainment

Video streaming and video calling; Cloud gaming and eSports growing in popularity

Digital Economy

Extensive use of e/m-commerce apps due to social distancing restrictions

Covid-19 has accelerated the demand for high-speed fiber broadband; but profitable FTTX delivery continues to be a challenge

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FTTX: Coverage Gaps due to Rollout Complexity

- Copper-based broadband being fast displaced by fiber broadband (FTTX)
  - xDSL declining by -7.5% CAGR from 2018-25
- Strong adoption of XPON flavors for delivering fiber broadband services
- Right of Way (ROW) issues often limit FTTX coverage in certain urban scenarios
- Fixed Wireless (FWA) is a good option to fill FTTX service gaps
  - FWA can be deployed quickly (incl. self-install options) lowering time-to-market
  - Works well for up to 300Mbps speeds
- ISPs also need low-cost pathways to seamlessly scale access bandwidths e.g., from 2.5G to 10G-PON
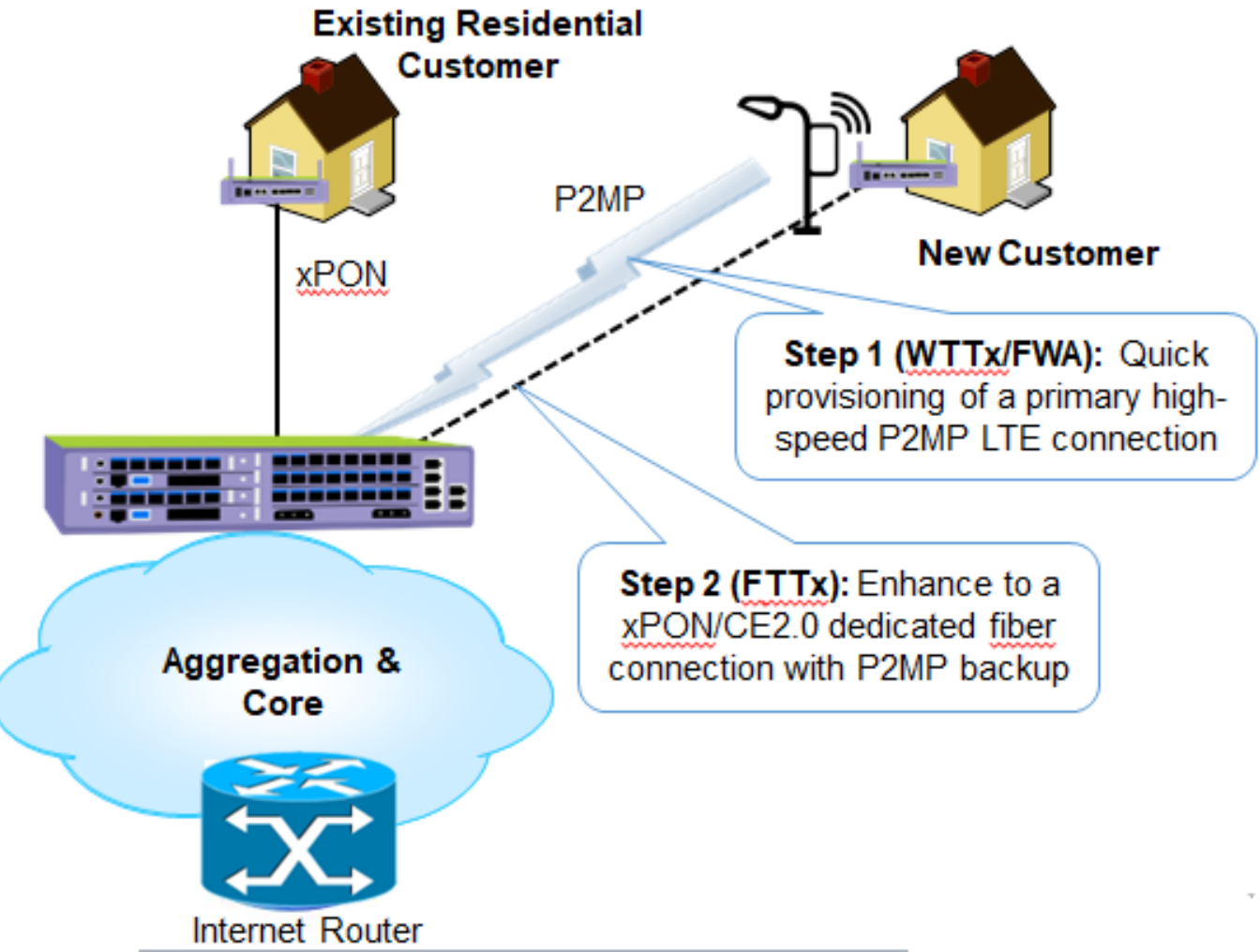
Global Broadband Access Expenditure ($M)

Fixed-broadband tariffs by technology and speed

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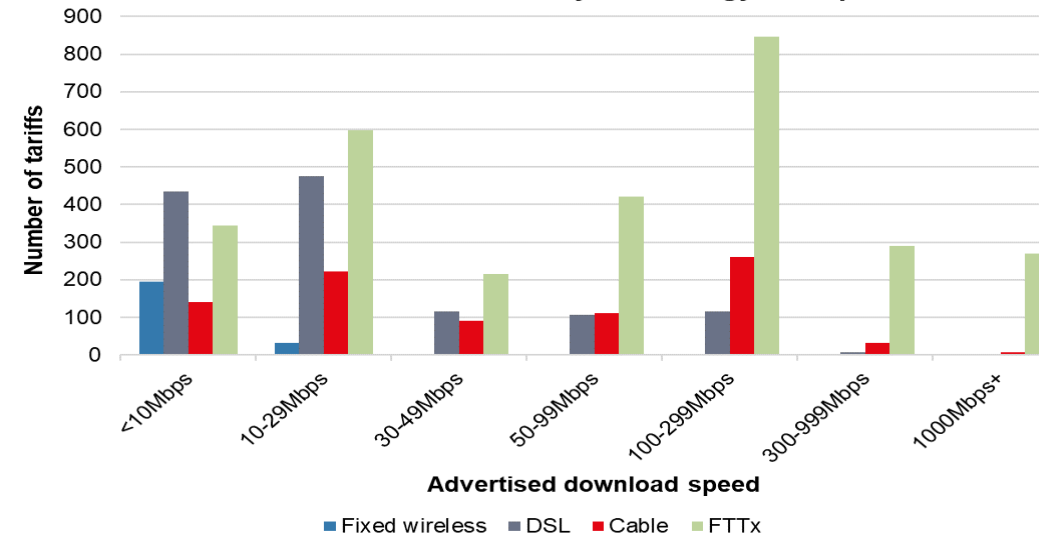
FWA + FTTx : Faster way to reach customer

FWA can be a short term customer acquisition strategy before FTTx (for high capacity users) or a permanent solution for low capacity users.
FWA can act as a back up network for improving FTTx reliability for MSMEs
Single platform to deliver FWA and FTTx can save operational cost

FWA and/or FTTx Decision based on Operating and Capital expenditures, Time-to-Market, Fiber access and Government regulations

Existing Residential Customer

xPON

P2MP

New Customer

Step 1 (WTTx/FWA): Quick provisioning of a primary high-speed P2MP LTE connection

Step 2 (FTTx): Enhance to a xPON/CE2.0 dedicated fiber connection with P2MP backup

Aggregation & Core

Internet Router

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Growing Demand for Business Ethernet Services

- Enterprises are accelerating their digital transformation and cloud migration plans
- This trend is creating a strong demand for dedicated high-speed private-line services (Ethernet, OTN)
- Unlike home broadband users, enterprises demand stringent SLAs requiring advanced QoS features
  - Low latency, High Availability, Flexible Bandwidth, Security, Real-time Performance Monitoring
  - Small Businesses should be offered low-cost options such as 10G-PON
- Legacy TDM services have a long tail; they should be supported both natively and in emulated formats
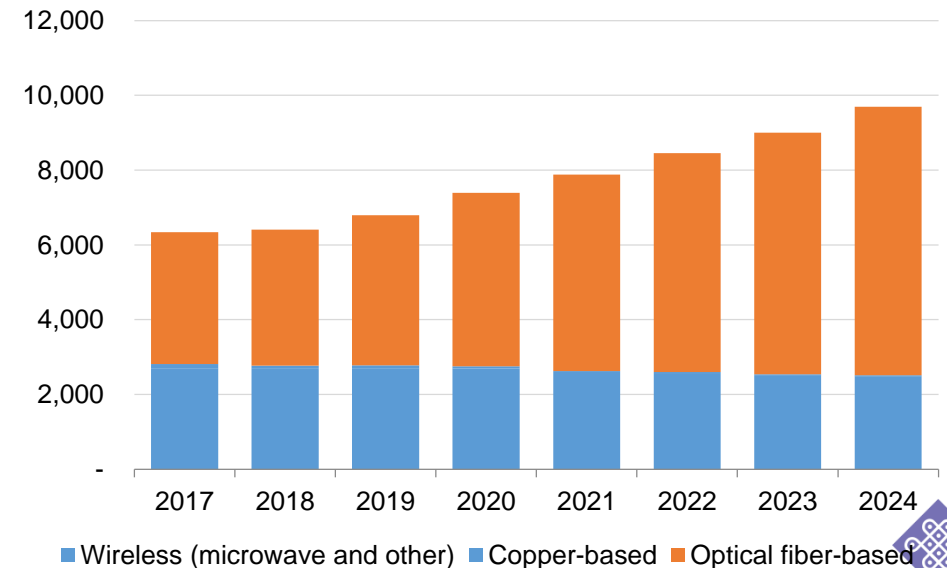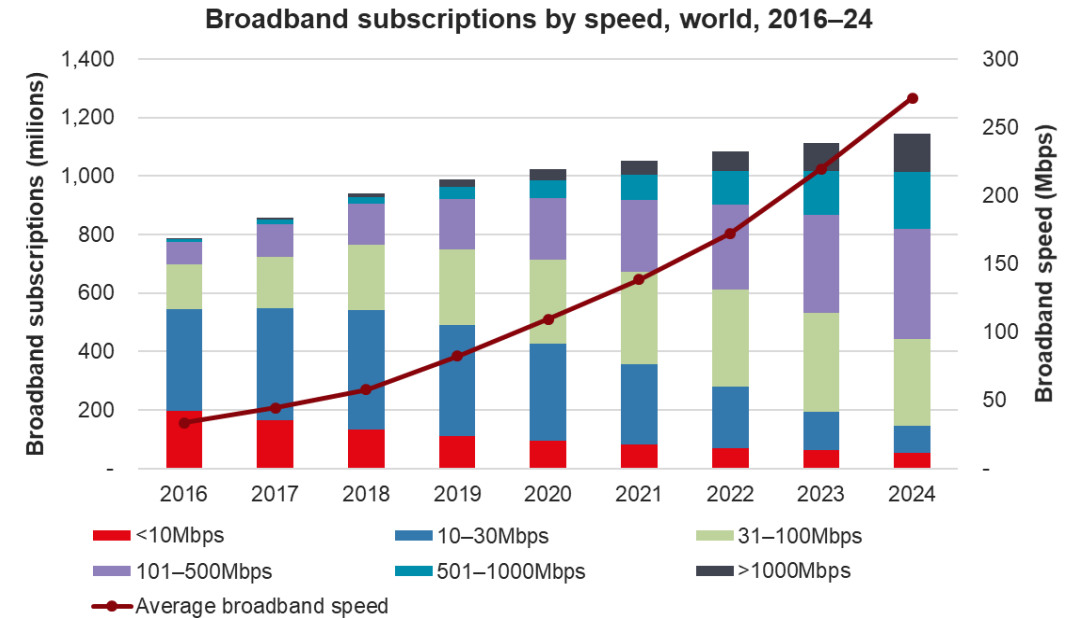

Source: Omdia, *Premium OTN, the Next-Generation Private Line, a Revenue Opportunity*   © 2020 Omdia
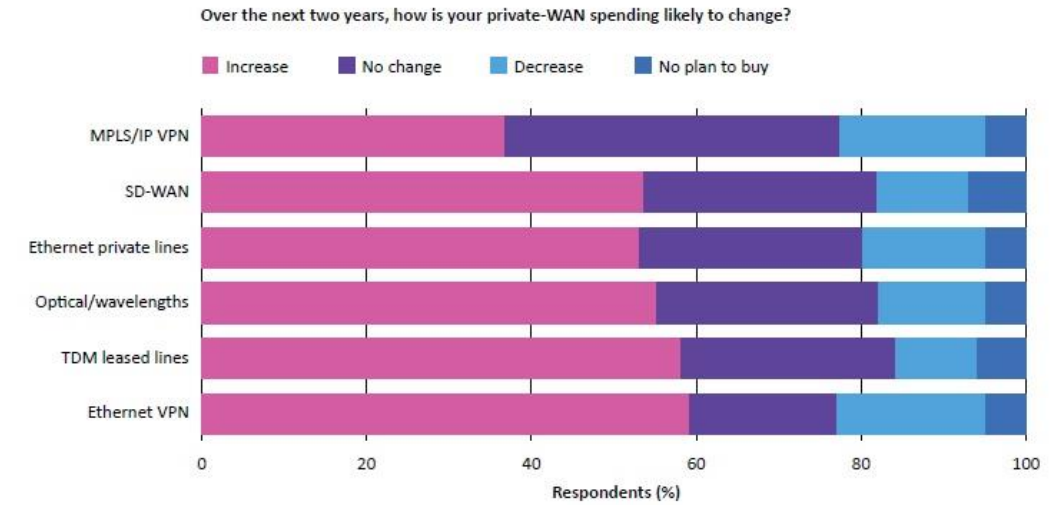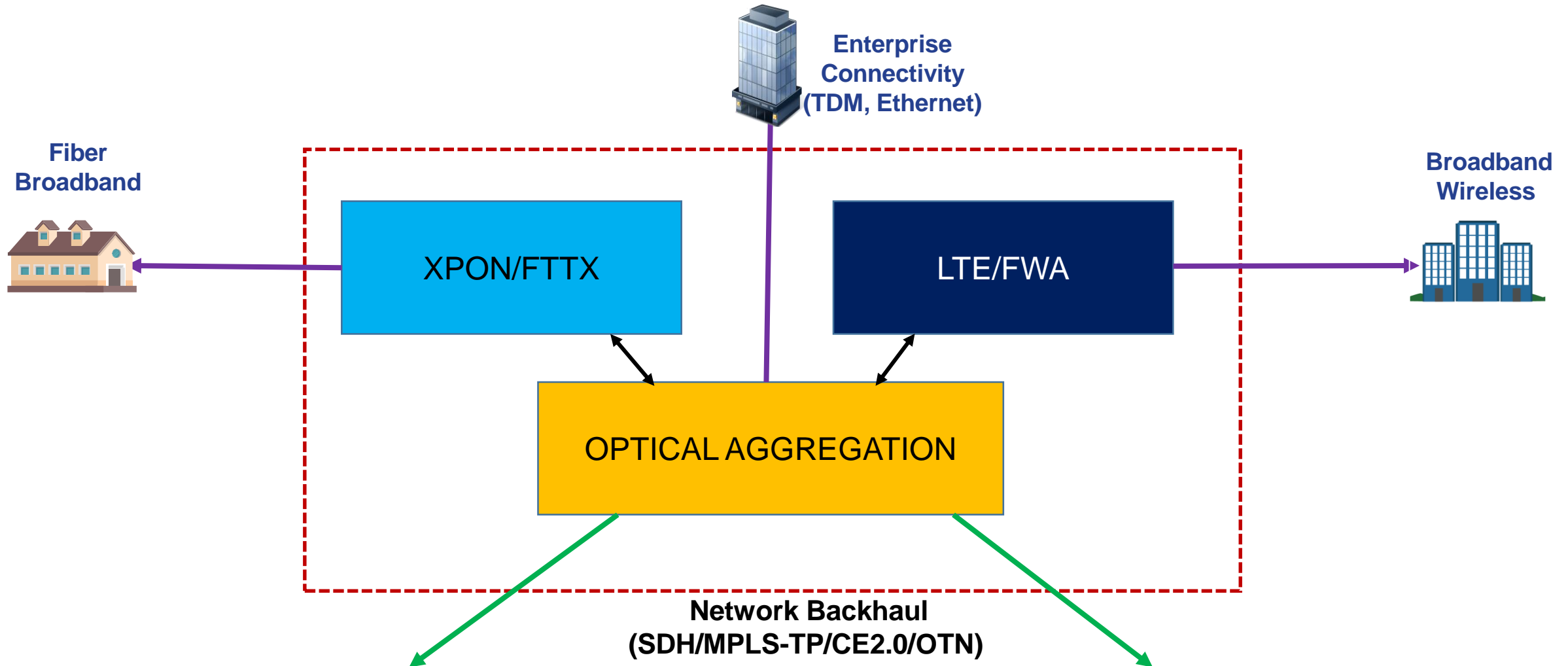
Scalable Backhaul for Exploding Broadband Traffic

- Average broadband speed expected to triple worldwide in 3-4 years
- High-capacity backhaul is critical to deliver superior Quality of Experience (QoE) to broadband users
- Fiber is emerging as the de-facto medium for backhaul; however ISPs demand greater flexibility in terms of transport technology choices
    - MPLS Transport and IP
    - Carrier Ethernet
    - OTN
- Terabit-scale packet switching with 100GE backhaul to be delivered in a compact form factor

Broadband subscriptions by speed, world, 2016–24

Conventional Approach: Multi-chassis Solution

Enterprise Connectivity (TDM, Ethernet)

Fiber Broadband

Broadband Wireless

XPON/FTTX

LTE/FWA

OPTICAL AGGREGATION

Network Backhaul
(SDH/MPLS-TP/CE2.0/OTN)

Larger capital investments due to the need for stand-alone products for each technology; significant overhead of stranded bandwidth

Higher operational costs for real-estate, energy, manpower, training; lower service reliability due to complex interconnections & points-of-failure

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TJ1400 UCB: Converges Multiple Access and Backhaul Technologies in one Shelf

Enterprise Data Services & Mobile Backhaul

Optical Fiber Access for Homes/Businesses

Licensed Wireless Access

Ethernet TDM, CES

XPON

LTE (4G/5G)

**Transport**
MPLS/CE2.0/OTN

World's most Versatile Universal Access and Backhaul Platform

49% TCO savings achieved when compared to stand-alone options

Tejas Networks: A Snapshot

- **India's leading pure-play, R&D-driven telecom product company**
  - Founded in 2000; Headquartered in Bangalore
  - Top-10 globally (Source: Ovum); #1 in Optical Aggregation in India
  - Cumulative Revenues of over US $1 Billion
  - Customers in 75+ countries; Installed in 500+ Networks
  - Successful deployments in all major telco networks in India- Jio, Airtel, Tata, VI
  - Over 15 year track record of supplies for Govt. networks such as BSNL, BBNL, Utilities (Powergrid, RailTel, Oil & gas) and Defence networks
  - Largest GPON equipment supplier for BharatNet and Railway WiFi projects

- **Technology differentiation: "Software-defined Hardware"**
  - Innovative use of programmable silicon for time-to-market and cost advantage
  - Focus on innovation: 349 global patents and 300+ silicon IPs
  - Top-3 R&D spender (% of annual sales) among public companies in India
  - Globally competitive: Innovation + TL9000 Quality + Cost
  - Award-winning products: CSIR Award for Innovation, National Technology Award and many more prestigious global and Indian awards

- **Financially strong with an innovative business model**
  - Went public in the year 2017- first deep-tech Indian startup to go IPO
  - Leveraging 4X India R&D cost advantage to create globally competitive products
  - Success in India leading to global success; cumulative exports of over US $400M

Award Winning Products

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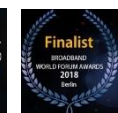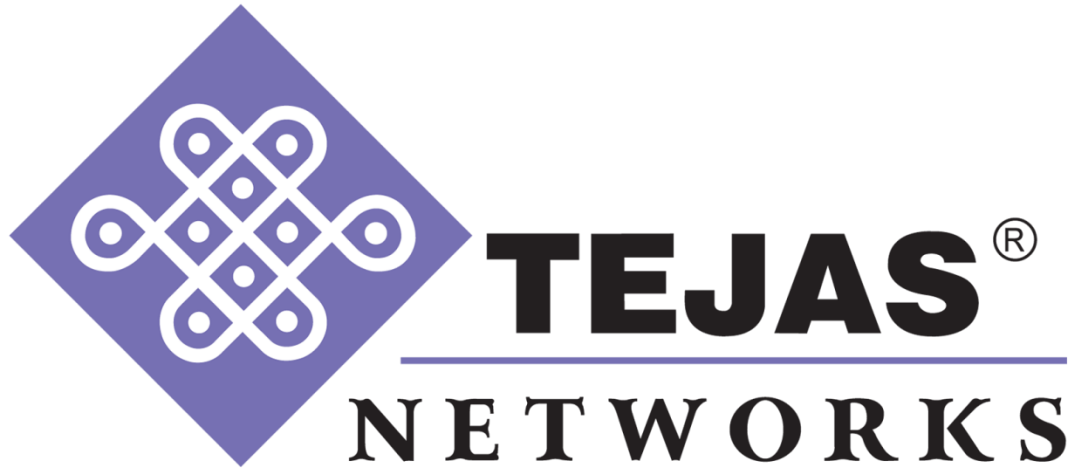
Thank you!

Question & Answer Session