

10G Access Solution

Small footprint 10G Access for high capacity networks

- A 1U solution for small footprint and cost optimization
- Integrated manageable filters
- Embedded management channels enabling remote configuration
- Fully tunable optical interfaces
- Low Power Design for minimized power consumption
- One clear demarcation point between operator and customer network
- Standardized transport over Ethernet and OTN
- Managed as part of the transport network

Transmode's 10G Access solution is built to address the requirement for high capacity CPEs (Customer Premises Equipment). With today's trend of deploying fiber deeper into the access network, high capacities such as 10G, which were previously typically reserved for the metro network, can now be a reality in the access network. Hence, high capacity CPEs are required in order to capitalize on this infrastructure investment. The CPE is also required as a point of demarcation between different areas of responsibility within the network.

Built for high capacity requirements

Enterprises with high capacity needs, for instance within the financial, media or datacenter industry, typically have the need for high bandwidth access connections such as 10G. With Transmode's 10G Access solution operators are able to offer 10G connections in a compact and cost efficient solution. The solution creates a demarcation point between the network being operated by the operator and the business network being operated by the business customer.

Small footprint and Low Power Design

With the small footprint (only 1U high), low power consumption, integrated filters and fully tunable optical interfaces, Transmode's 10G Access solution provides operators with an affordable CPE that is easily managed as part of the optical network.

Two versions – Layer 2 Ethernet and Layer 1 Optical

The solution, which is available in two versions; 10G Ethernet Access and 10G OTN Access, offers transport of both Ethernet, SDH/SONET and OTN services. It makes up a low cost but yet high capacity offering for the network operator.



10G Ethernet Access Solution



10G OTN Access Solution

Other compact access node options are available in the TM-Series, including Layer 1 and Layer 2 Muxponders that provide sub-10G access over a 10G uplink in the same small footprint, such as the EMXP110 which provides ten GbE ports and two 10GbE ports.

10G Ethernet Access Solution

Transmode's 10G Ethernet Access solution provides full flexibility for a range of service offerings. The solution enables per port based services for up to four 10G Ethernet ports.

The solution provides different services aggregated on Ethernet using bandwidth profiles and different traffic classes to separate the services. The Fault Management (FM) and Performance Monitoring (PM) capabilities provide in-service surveillance for connectivity and measurement of availability and frame loss end-to-end through the entire network. The FM and PM tools are standard based and fully interoperable.

The 10G Ethernet Access solution provides powerful UNI and E-NNI concepts providing E-LINE, E-LAN or E-TREE services as defined by Metro Ethernet Forum. The 10G Ethernet access services are always fully transparent for all types of customer traffic, enabling even the most advanced datacenter virtualization or cloud computing services. There are point-to-point or ring protection schemes to provide carrier-class sub 50 ms protection in network operator topologies.

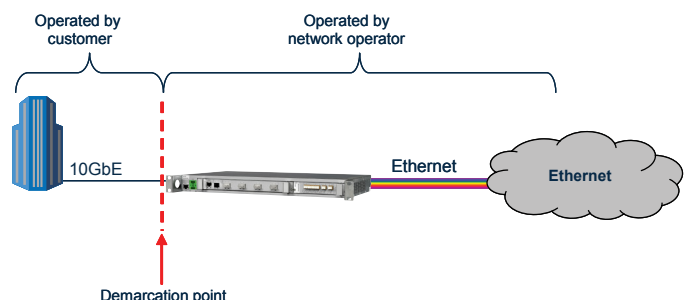


Fig 1. 10G Ethernet Access Solution

10G OTN Access Solution

Transmode's 10G OTN Access solution gives the operator a clear optical demarcation point with standard OTN mapping right at the point of service delivery for high capacity customers. This gives a single solution for all typical 10G services such as STM-64/OC-192, 10GbE-LAN, 10GbE-WAN and OTU-2.

The standardized 10G OTN transport and the versatile and powerful performance monitoring within OTN provides superior end-to-end surveillance of the service quality through any network, including multi-vendor or multi-operator networks. The FEC coding of the line signal together with the built-in filter enables the 10G Access point to be located further out from the network and integrated in existing WDM networks.

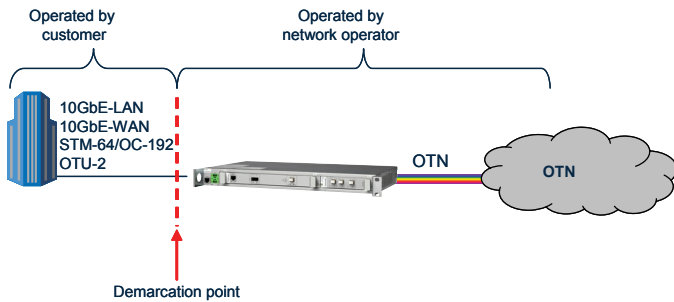


Fig 2. 10G OTN Access Solution providing optical services

Fully tunable optics

The remote configuration through embedded management channels and the fully tunable laser of the line signal, simplify installation and commissioning and complete the concept of one single solution for all 10G access locations.

Technical Specifications 10G Ethernet Access solution:

Line interface	XFP: With or without tunable laser for up to 80 DWDM channels. CWDM 8 channels
Client interface	XFP: MM, SM @ 1310nm/1550nm SFP: MM, SM, Electrical 100/1000BASE-T
Supported functionality	ITU-T G.8032 Ethernet Ring Protection IEEE 802.3ad Link Aggregation E-LINE, E-LAN and E-TREE services BW profiles w. CIR,CBS, EIR and EBS 8 Strict/WRR queues w. Min/Max shaping Synchronous Ethernet
Performance Monitoring & OAM	IEEE 802.1ag Continuity Check ITU-T Y.1731 Performance Monitoring Port Mirroring Management VLAN for inband management
Power consumption	Max 50W (including optics)
Filter options	CWDM and DWDM filters for single fiber or fiber pair*

* Please see TM-Series documentation for selection of filters

For additional technical specifications, please see the following datasheets:

- Ethernet Muxponder (TM-EMXP)
- OTN Transponder (TM-TP10GOTN_TC)

Technical Specifications 10G OTN Access solution:

Line interface	Fixed tunable laser for 80 DWDM channels G.709 FEC coding
Client interface	XFP: MM, SM @ 1310nm/1550nm
Supported functionality	G.709 mapping and transport of: 10GbE-LAN 10GbE-WAN STM-64/OC-192 OTU2/OTU2e
Performance Monitoring & OAM	Layer-1 performance monitoring on all G.709 monitors on both client and line, presented according to G.8201 & G.826. Embedded management channels on GCC according to G.709.
Power consumption	Max 35W (including optics)
Filter options	DWDM filters for single fiber or fiber pair*

The specifications and information within this document are subject to change without further notice. All statements, information and recommendations are believed to be accurate but are presented without warranty of any kind. Contact Transmode for more details.