

XTM SERIES

DOUBLE 10 GbE TRANSPONDER

A Versatile 10 Gigabit Ethernet Transponder

The **Double 10 GbE Transponder** is a powerful part of the Infinera XTM Series, which enables optimized and cost-efficient networks based on CWDM and DWDM technology.

Optimized for Metro Regional Applications

The Double 10 GbE Transponder (TPD10GBE) enables the transport of 10 gigabit Ethernet signals within metro regional applications. The use of XFP pluggable optics enables the unit to be used in CWDM access networks, and forward error correction (FEC) in combination with DWDM XFPs enables the same unit to be used in metro regional applications.

Based on the Infinera iWDM® Concept

The TPD10GBE is based on the Infinera Intelligent WDM (iWDM) concept. iWDM enables the unit to be configured in different operational modes. The TPD10GBE can be configured as two transponders, as a single transponder with two line interfaces giving sub-50 ms line protection (see Figure 1) or as two regenerator functions enabling extension of networks via cascading (see Figure 2).

This flexibility reduces operational expenditure (OpEx) since the same plug-in unit can be used for multiple purposes. The regenerator mode can also be used to convert from a CWDM to a DWDM network by using corresponding XFP transceivers on the interfaces. Another application is to use the regenerator mode to convert from one DWDM wavelength to another.



Key benefits:

- Compact and cost-effective; two transponder functions in one plug-in unit
- Built-in FEC enables use in long-haul networks
- Multi-functional plug-in unit. The same hardware can be used in dual transponder, single transponder with 1+1 line protection or dual regenerator configurations
- Technology-agnostic. Pluggable transceivers enable use in CWDM as well as DWDM networks
- Tunable optics for full flexibility and cost-efficient spare management
- Low power design ensures low total cost of ownership

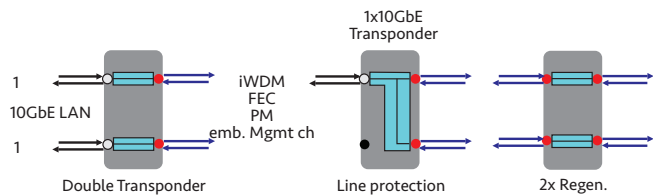


Fig 1. Different Operating Modes of the TPD10GbE, Giving Valuable Flexibility.

The line coding also provides embedded management channels, quality check of transmission and injection of trail trace labels for validation of circuit connection.

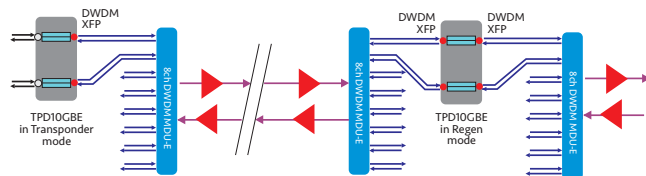


Fig 2. Cascaded Network.

Interoperability with Other XTM Series Products

The client interface of the TPD10GbE recognizes a signal originating from a 9xGbE/10 Gb/s muxponder. This enables management connectivity between these two units, thus giving remote management access if the 9xGbE/10 Gb/s muxponder is placed in, for example, a TM-102 chassis at a customer site (see Figure 3).

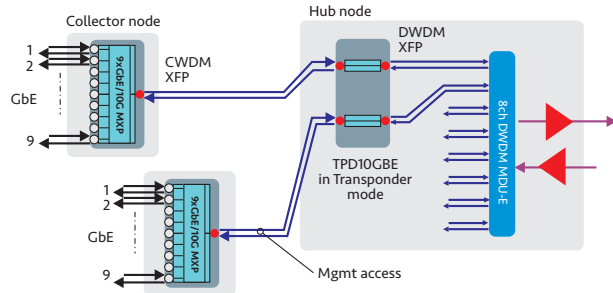


Fig 3. Management Access Toward 9xGbE/10 Gb/s Muxponder.

Figure 3 shows an example in which 9xGbE/10 Gb/s muxponder units are placed in TM-102 chassis at customer premises. Both are connected directly on a fiber pair via CWDM to the client ports of the TPD10GbE transponder. The embedded management channels are then extracted from the client ports and provide remote management access to the collector nodes.

The line coding of the TPD10GbE is compatible with the 9xGbE/10 Gb/s FEC muxponder. This enables use of the TPD10GbE in regenerator mode to cascade the line signal from the 9xGbE/10 Gb/s FEC muxponder over multiple optical subnetworks as shown in Figure 4 below.

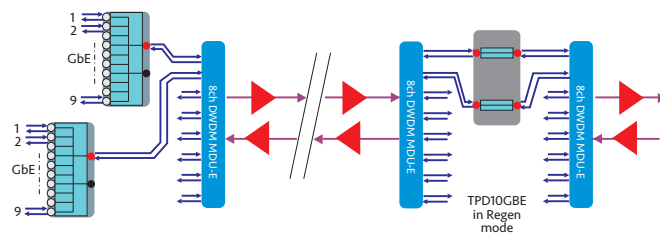


Fig 4. Cascaded Networks Using TPD10GbE.

Tailored Network Element Options

The TPD10GbE transponder can be mounted in any of the XTM Series chassis options:

- As a self-managed network element in a 1U TM-102 chassis
- As one of many traffic units in a TM-3000/II (11U) or TM-301 (3U) chassis

This enables a tailored setup depending on the current and future capacity needs of the site.

In the TM-102 option, the TPD10GbE initiates the complete Embedded Node Manager, including a web server on the onboard microprocessor, i.e. no control unit is required to manage the node. This enables local management simply by connecting any PC or workstation and launching a standard Internet browser. The embedded management channels enable easy remote management via the line signal. There is therefore no need to provide access to the customer data communication network (DCN) network if the TPD10GbE is placed at a customer site.

Low Power Design

A fully equipped TPD10 GbE transponder unit consumes less than 40 W, equating to less than 20 W per transponder function. Low power consumption in combination with a small footprint reduces site costs and enables more capacity to be handled at sites with restrictions on power consumption, cooling and space.



Specifications

Supported Traffic Formats	10 GbE LAN 10 GbE WAN STM-64/OC-192
Layer 1 Performance Monitoring	Gigabit Ethernet: based on loss of optical signal, loss of sync Line signal: based on FEC coding Collected every 15 min/24 h and presented according to G.784/G.826 using ES, SES, etc.
Protection	Via two line ports set in 1+1 protection. Non-revertive switching <50 ms
Power Consumption	Max 40 W in transponder mode (fully equipped with client and DWDM XFPs) Max 45 W in regenerator mode with all ports active and using DWDM XFPs
Misc Line Interface Features	Embedded management channels on line signals Trail trace insertion to validate connection Forward error correction (FEC) using RS(255,239)
Operational Modes	2x transponder 1x transponder with 1+1 line protection 2x regenerator mode (with embedded management channels on all 4 line ports)
Interfaces	Client interfaces: XFP MM, SM @ 1310 nm/1550 nm versions. Including "single-strand" transceivers enabling direct operation on a single-fiber configuration without need for a DWDM filter Line interfaces: XFP 40 km/70 km CWDM (up to 8 channels) or DWDM (up to 40 channels via standard XFPs, 80 channels via tunable XFP), also including single-strand transceivers

Specifications and Features Are Subject to Change

Global Headquarters
140 Caspian Court
Sunnyvale, CA 94089
USA
Tel: 1 408 572 5200
Fax: 1 408 572 5454
www.infinera.com

US Sales Contacts
sales-am@infinera.com

Asia and Pacific Rim
Infinera Asia Limited
8th floor
Samsung Hub
3 Church Street
Singapore 049483
Tel: +65 6408 3320
sales-apac@infinera.com

Europe, Middle East,
Africa
Infinera Limited
125 Finsbury Pavement
London EC2A 1NQ,
United Kingdom
Tel: +44 207 065 1340
sales-emea@infinera.com

Customer Service and
Technical Support
North America
Tel: 877 INF 5288
Outside North America
Tel: 1 408 572 5288
techsupport@infinera.com

