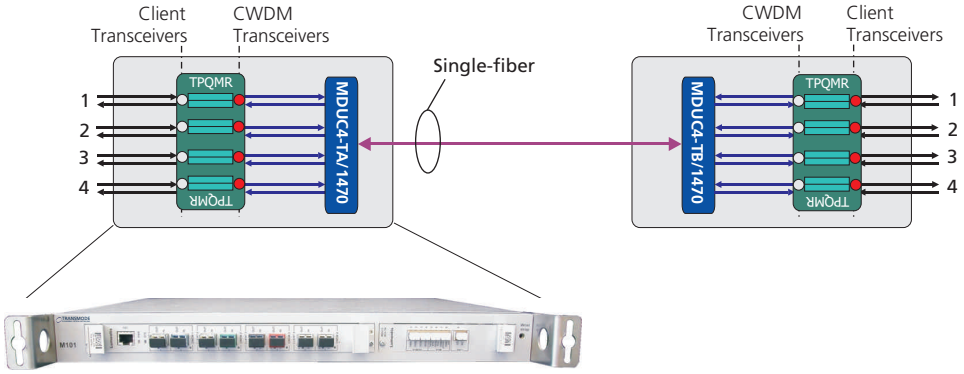
# CWDM Access Networking

This Application Note covers a couple of networking examples for access applications. The TM-Series has a vast variety of networking solutions to address any need that can arise in an access, metro or regional network. Contact Transmode or a Transmode representative for more information.

## MultiService Networks

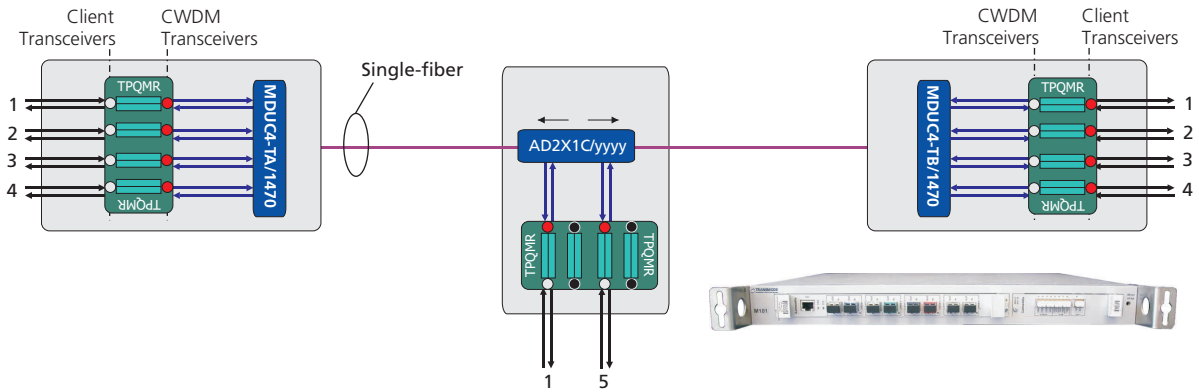



This point-to-point networking example uses the Quad MultiRate xWDM Transponder (TPQMR).
The TPQMR has four Transponder functions on a single board. Pluggable transceivers (SFP's) are used on both client and line interfaces. Both CWDM and DWDM SFP's are supported. See separate Data Sheet for more details.

The example is a CWDM network where the TPQMR is connected to a 4ch CWDM Mux/DeMux (MDU). These two plug-in units fits perfectly into a TM-101 or TM-102 chassis providing a network with the following features:

- 1U high, 4-channel CWDM solution utilizing a single-fiber
- Point-to-point network using CWDM SFP's of 40km, 80km, 100km @ 2.5Gb/s or 120km @ GbE types
- Protocol and bit rate transparent of any service 100Mb/s to 2.5Gb/s
- Pluggable Transceivers (SFP) for easy configuration of each service
- Automatic Proticol Recognition removes need for manual configuration.
- Auto in-service on all interfaces; all interfaces are initially set in admin status down and blocking alarms. When a signal is connected to an interface it is automatically set in admin status up.
- Embedded Node Manager TM-ENM with CLI and Braphical User Interface (GUI) via a standard Internet browser

The TPQMR is the perfect choice when the traffic is a mix of different formats. An example can be collection of STM-16, GBE-signals and 2G Fibre-channel. No HW changes are required if MultiRate SFP's are used on the client interfaces.
The TPQMR can easily be used as a regenerator function by inserting CWDM SFP's on both client and line interfaces. Multiple point-to-point links can then be cascaded to extend the transmission distance.




As noted above, the point-to-point network is applied on one of the single-fibers in the fibre-pair. The second single-fiber can be used for a bus network using the same components.

The figure above shows a bus network where the intermediate node is based on the TPQMR and a 1ch east-west AD-filter. Again the TM-101 or TM-102 chassis can be used for all nodes.

*This AN covers a small portion of all available units within the TM-platform.*

*See separate Data Sheets and Application Notes for more information about other products and other networking examples*


TM-101/-102


TM-301


TM-3000

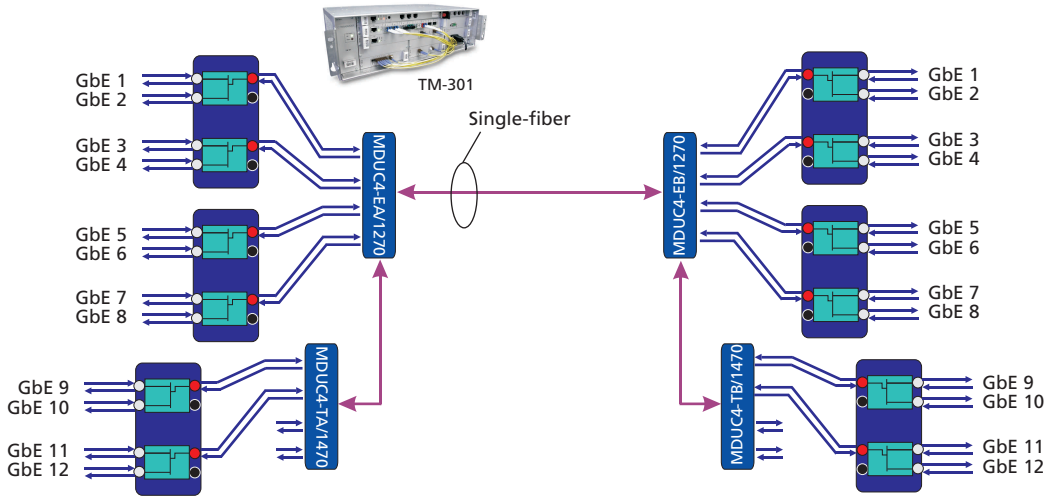

Double Dual GbE Transponder


Quad MultiRate Transponder


8-port SDH/SONET MuxPonder


4xSTM-16/STM-64 MuxPonder

# GbE Networks

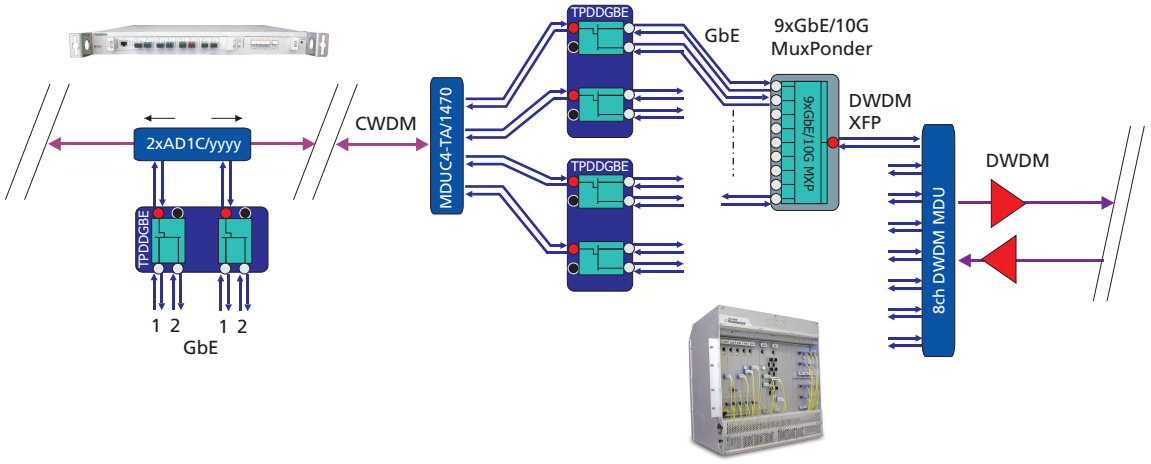



This point-to-point networking example uses the Double-Dual GbE Transponder (TPDDGBE).
This is a dedicated GbE Transponder where two GbE-signals are multiplexed onto a 2.5G line signal. Two identical and individual functions are placed on the same unit. Pluggable transceivers (SFP's) are used on both client and line interfaces. Both CWDM and DWDM SFP's are supported. See separate Data Sheet for more details.

The example is a CWDM network where three TPDDGBE are connected to 4ch CWDM MDU's (low + high band). The three TPDDGBE units generates 6 CWDM wavelengths giving a 12xGbE network over a single-fiber. Each node entails three full-sized units (TPDDGBE) and two half-sized units (4ch MDU). The TM-301 chassis can house this combination.

- 3U high, 12-channel CWDM solution utilizing a single-fiber
- Point-to-point network using CWDM SFP's of 40km, 80km, 100km @ 2.5Gb/s
- Pluggable Transceivers (SFP) for easy configuration of each service. Supports both optical and electrical GbE-signals.
- Auto in-service on all interfaces; all interfaces are initially set in admin status down and blocking alarms. When a signal is connected to an interface it is automatically set in admin status up.
- Embedded Node Manager TM-ENM with CLI and Braphical User Interface (GUI) via a standard Internet browser
- Embedded management channels eases remote management.
- GbE-utilization PM on client signals.

The TPDDGBE is the perfect choice when the traffic is GbE.
The TPDDGBE can easily be converted into a 4x regenerator function by inserting CWDM SFP's on both client and line interfaces. Multiple point-to-point links can then be cascaded to extend the transmission distance.




This second example uses the TPDDGBE in a bus network. A number of collector nodes with one TPDDGBE and a 2x 1ch AD filter into a TM-101 or TM-102 chassis are placed in a collector ring. In the hub node multiple TPDDGBE units connect the GbE-signals to a 9xGbE/10G MuxPonder for further transport into is connected to an amplified DWDM network. This hub node is large and a TM-3000 chassis is used to house all needed plug-in unit. This example shows how the different building blocks and chassis alternatives can be used to create cost-effective solutions in collector networks as well as back-haul networks for GbE signals. Even 10GbE-signals can be collected on the same CWDM fiber as the GbE signals. Contact Transmode or a Transmode representative for more information. .

*The TM-series Platform entails both CWDM and DWDM solutions in single-fibre or fibre-pair configurations. All in the same card cage, one the same fibre and under the same node and network management system.*


6-port Ethernet Demarcation Unit

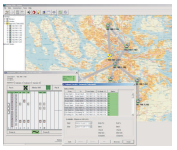

9xGbE/10G Muxponder


10G Tunable Transponder


Double 10GbE DWDM Transponder


ROADM


Embedded Node Manager (ENM)


Transmode Network Manager (TNM)

AN-CWDM-ACC
Rev B Mar 2008



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