transmode

Data sheet

Pre-configured
TS-Series

TS-100 Ethernet Extension

A pre-configured solution for cost efficient Ethernet transport

Key benefits:

- Pre-configured solution for reduced Time To Market and Time To Revenue
- Optimized for enterprise, campus or private optical networks
- Efficient transport of four Gigabit Ethernet signals
- Cost efficient utilization of one fiber pair
- Plug and forget system operation through Intelligent WDM (iWDM™)
- Automatic protocol and bit-rate detection via iWDM
- Future-proof solution with expansion capacity to 16x GbE

The TS-100-Ethernet-Extention (TS-100-Eth-Ext) configuration is a powerful pre-configured solution consisting of components from Transmode's TS-Series platform enabling optimized and cost efficient transport networks based on CWDM/DWDM technology.

TS-100-Ethernet-Extention

The TS-100-Eth-Ext configuration consists of two end nodes. Each end node consists of two TS-100 chassis that are cascade-connected using the same management interface for both chassis. Each node holds one 5800 Muxponder, one 4ch CWDM filter and one Node Management Board (NMB), see figure below.

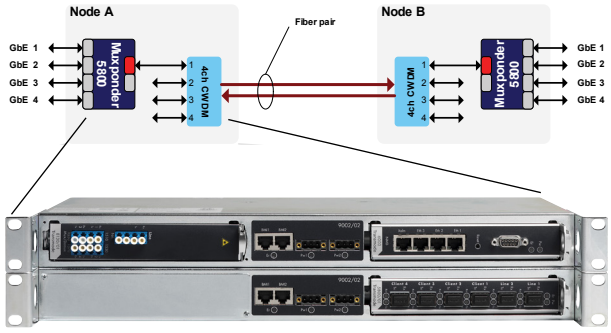

Fig. 1 The TS-100-Eth-Ext configuration

This solution enables transparent transportation of 4 independent GbE signals on one fiber pair and hit-less upgrade possibilities. Each GbE signal is TDM multiplexed and combined onto one line signal that is connected to a 4ch CWDM filter. Depending on which line interface is chosen, the reach can be up to 70km. See table below for link budget and reach. The client interfaces can be either MM, SM or electrical.

Hit-less upgrade

The CWDM filter provides the possibility to add new services hit-less by utilizing the three remaining WDM channels at a later stage. By doing this, the TS-100-Eth-Ext configuration can be upgraded to support up to 16 GbE signals over the same fiber pair with no affect on the traffic already running on the system, see figure to the right. This is realized by connecting additional muxponder boards to the three additional channels on the CWDM filter. This can of course be done in steps, either by adding one or two muxponders in the first step, or all three at once. To hold all three additional muxponders, one additional TS-100 chassis is required.

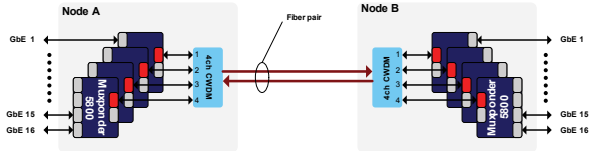

Fig. 2 16xGbE supported over the same fiber pair

Element Node Management

The Element Node Management software resides on the NMB and is used as a node manager and/or a transfer agent to higher level network management systems by using industry standard SNMP as the network management protocol. The NMB presents the node information with graphic elements and easy data overview in a standard web browser. For advanced fault tracing or configuration, data is presented in data logs with date and time stamps. For remote access, embedded management channel with IP connectivity can be configured between the two nodes.

Fig. 3 The Element Node Management interface

TS-Series

The TS-Series is a simple to use, scalable and intelligent C/DWDM solution, ideal for network operators delivering managed services such as metro Ethernet and storage area networks to enterprises and other bandwidth-hungry organizations. The TS-Series WDM platform is easy to install, commission and manage without compromising functionality or per formance.

The low-cost, operational simplicity, broad protocol support and pay-as-you-grow architecture of the TS-Series make it appealing to users deploying their own private networks over dark fiber

The TS-Series is ideally suited for applications such as storage area networking, business continuity & disaster recovery, LAN extension and metro Ethernet service transport, video transport and optical infrastructure projects. TS-Series in short:

- iWDM features include automatic protocol and bit-rate detection that allow a "plug and forget" system operation.
- Modular system architecture enables seamless integration of DWDM and CWDM wavelengths on the same fiber, amplified or unamplified networking, fiber pair or single fiber networking and multiple chassis size options
- All services are supported by a single card type with interchangeable SFP or XFP optics on both the client and line side. This simplifies planning and minimizes spare holdings
- Supports 100 Mb/s to 2.5 Gb/s, 4 Gb/s and 10 Gb/s clients and C/DWDM line rates.
- Low-cost, 4 x Gigabit Ethernet aggregation board.
- Remote node management through in-band management channels.
- Full carrier-grade network management system with fault management and performance monitoring.

Technical specifications:

Topology	Point-to-point	Possibility to add 1+1 line protection functionality
Link distance	40 or 70 km	
Applications	Transparent transport of 4xGbE Possibility to upgrade to 16xGbE by adding CWDM filter, chassis and Muxponders without affecting the existing traffic (hitless)	
Optics	Client: 850/1310nm/1000Base-T (SFP)	Line: CWDM (SFP) Laser class 1
Modules	Chassis with room for two Plug-In-Units (PIU)	PIUs Pluggable SFP transceivers
Environmental	0 to +55°C/32 to 131°F	Relative humidity 95%, non-condensing
Regulatory	IEC 60950-1, EN 60950-1, ANSI/UL 60950-1, CAN/CSAC22.2 60950-1 EN 300 386, EN 55 022, EN 60 825-1 FCC Part 15 EN 61 000-3-2, -3	EN 61 000-4-2, -3, -4, -5, -6, -11 ETL listed and CE marked NEBS Level3 compliance ETSI compliant
Power	AC and/or DC	Power consumption max. 50W per TS-100 chassis (Typical 30W)
Physical (Height x Width x Depth)	44 x 483 x 240 mm / 1.75 x 19.0 x 9.44" (TS-100 chassis)	Only front access
Management	Embedded Management channel (IP connectivity) SNMP agent Graphical User Interface (GUI) Auto discovery of plug-in units Inheritance feature and "Hot swap"	Ethernet management over LAN. Handles web, ftp and Telnet Command Line interface, CLI, through the console port or a telnet session Simple Network Management Protocol, SNMPv2 SSH HTTPS

Configuration specification:

Configuration Codes	Distance and Link Budget	Description
TS-100-Eth-Ext-40-XX	Max 40km and 13 dB	Two nodes which enables transparent transport of four GbE signals. For full component list see table below.
TS-100-Eth-Ext-70-XX	Max 70km and 23 dB Min link attenuation 8 dB	"XX" in the order code refers to the type of client interfaces used, Multimode (MM), Single mode (SM) or electrical (EL).

Order specification:

Order Codes with component description	TS-100-Eth-Ext-40-SM	TS-100-Eth-Ext-40-MM	TS-100-Eth-Ext-40-EL	TS-100-Eth-Ext-70-SM	TS-100-Eth-Ext-70-MM	TS-100-Eth-Ext-70-EL
19" Chassis, 1U, 2slots, DC (9002/02)	4	4	4	4	4	4
AC/DC converter (external) for 9002/02 (9202/01)	8	8	8	8	8	8
Node Management Board including SNMP (6003)	2	2	2	2	2	2
CWDM Mux/Demux: 4ch (8130)	2	2	2	2	2	2
GbE Muxponder with Embedded Management Channel (5800/01)	2	2	2	2	2	2
SFP, CWDM, SM, 1/2/4 Gb/s, 40 km (TRX100045/01)	2	2	2			
SFP, CWDM, SM, 1/2/4 Gb/s, 70 km (TRX100052/01)				2	2	2
SFP, 850nm, MM,100-2500Mb/s,100m (TRX100006)		8			8	
SFP, 1310nm, SM, 100-2500Mb/s, 2km (TRX100007)	8			8		
SFP, Elec. 1000Base-T, 1250Mb/s,100m (TRX100025)			8			8
Double LC-LC Patch Cord fiber cable SM 9/125, 0.5m (CAB100012/005)	2	2	2	2	2	2

For other configurations, please contact your Transmode Sales represenative. See www.transmode.com/contact for contact details.

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