

1x8 ROADM/50GHz

Multi-degree ROADM for flexible optical networks

Key benefits:

- Creates the ability to add/drop any wavelength from/to any port giving maximum flexibility in wavelength allocation
- Dynamic selection of add-drop wavelengths per port enables hitless topology changes
- Built-in Variable Optical Attenuator (VOA) for easier channel power balancing
- 8 individual add-drop ports enables multidimensional nodes
- Compact design, giving small footprint
- Fully integrated with TM-Series and Transmode Network Manager
- Can be installed in existing TM-chassis and networks
- Low Power Design ensures low total cost of ownership

The 1x8 ROADM is a powerful part of Transmode’s TM-Series platform enabling optimized and cost efficient high capacity transport networks based on DWDM technology.

Optimized for dynamic network applications

The 1x8 ROADM is a compact solution for all network topologies aiming for a future proof dynamic traffic design, with hitless changes in wavelength routing. The 1x8 ROADM unit - fully supported as a plug-in unit in the TM-3000 chassis - works as a building block for reconfigurable add-drop nodes of up to 8 dimensions.

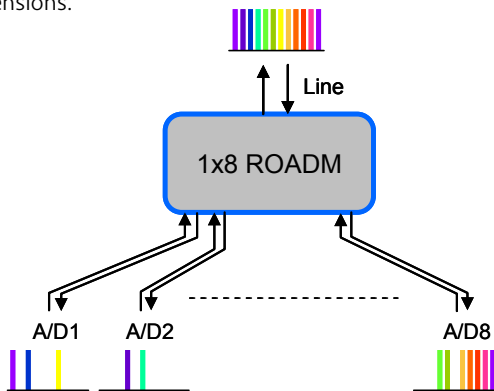


Fig. 1 Schematic principle of 1x8 ROADM add-drop function

The 1x8 ROADM has 8 individual add-drop ports. The add ports use a Wavelength Selective Switch (WSS) to dynamically select which of the 80 DWDM channels on the ITU-T 50GHz C-band grid can be added to the line signal for each add port. An Optical Coupler is used to distribute the incoming line signal to the drop ports. One of the drop ports has a lower optical loss, optimized for the local drop. A DWDM add-drop filter or Mux/Demux unit is always used for locally terminating traffic.

The 1x8 ROADM includes Variable Optical Attenuator (VOA) functionality on all wavelengths added to the line signal. This facilitates channel power balancing in amplified networks.



Grouping of ports on different units can be done in the node management software to enable the setting of identical channel selection. Also restrictions on channel selection can be made on individual or grouped ports to simplify commissioning and minimize the risk for faulty handling.

Multi-dimensional node applications

The 8 individual add-drop ports of the 1x8 ROADM enable hitless redirection of traffic in multi-dimensional nodes. By grouping up to 8 units and interconnecting the add-drop ports, up to 8-dimensional nodes can be created, where traffic from any line can be directed to any other line or be locally dropped. A 50GHz compatible Mux/Demux is used to separate the terminated channels.

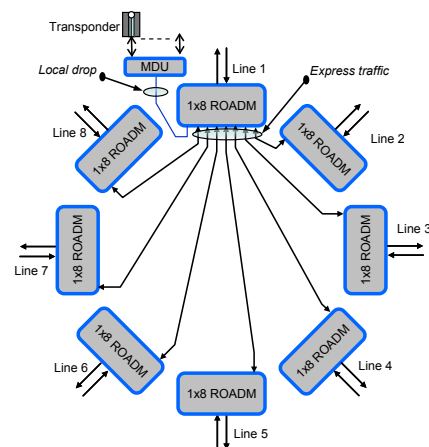


Fig. 2 8-dimensional node. Full connections only shown for Line 1

It is possible to create directionless nodes using an extra 1x8 ROADM unit to direct the local traffic to the preferred line fiber. Each wavelength can be directed as required on an individual basis. It is possible to have both fixed and directionless AD in the node.

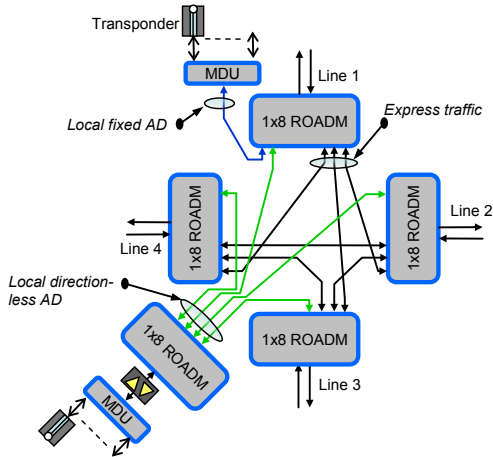


Fig. 3 A 4-dimensional node with both fixed and directionless traffic

Linear add-drop applications

For ring and bus network structures the 1x8 ROADM enables dynamic add-drop nodes with 2-dimensional east- and westbound traffic by pairing two units and connecting them via one of the add-drop ports for the express traffic.

Initially, locally terminating traffic could be allocated to one of the add-drop ports, keeping the remaining ports for traffic upgrades or for scaling into multidimensional nodes

Low Power Design

A 1x8 ROADM consumes less than 6W. 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.

The 1x8 ROADM can be mounted in a TM-3000 chassis where it occupies 2 full-size slots.

Technical specifications:

Software release 15.0 or later

Insertion loss (see figure)	Add [A/D Rx] - [Line Tx] : 7.0 dB Drop [Line Rx] - [A/D 8, Local A/D, Tx] : 5.9dB Drop [Line Rx] - [A/D 1-7 Tx] : 12.3 dB	
Range	80 channels on 50GHz ITU-T C-band grid	
Add ports	Wavelength Selective Switch (WSS)	
Drop ports	Passive Optical Coupler	
Line side features	Variable Optical Attenuator (VOA) functionality on all individual wavelengths	
No of add/drop ports	8	
Switching time	Max 250ms	
VOA	Range: 0 - 15dB Step size: 0.1dB	
Dimensions	Occupies two full-size slots in a TM-3000 chassis	
Power consumption	6W	

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.
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