

## XTM SERIES

# 1X8 ROADM/50 GHz

## Multi-degree ROADM for Flexible Optical Networks

The 1x8 reconfigurable optical add-drop multiplexer (ROADM) is a powerful part of the Infinera XTM Series, enabling optimized and cost-efficient high capacity transport networks based on dense wavelength-division multiplexing (DWDM) technology.

### Optimized for Dynamic Network Applications

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

The 1x8 ROADM has eight 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 50 GHz C-band grid to add

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 (MDU) is 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 of faulty handling.



### 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 VOA for easier channel power balancing
- Eight individual add-drop ports enables multidimensional nodes
- Compact design with a small footprint
- Fully integrated with XTM Series and Digital Network Administrator for XTM Series (DNA-M)
- Low power design ensures low total cost of ownership

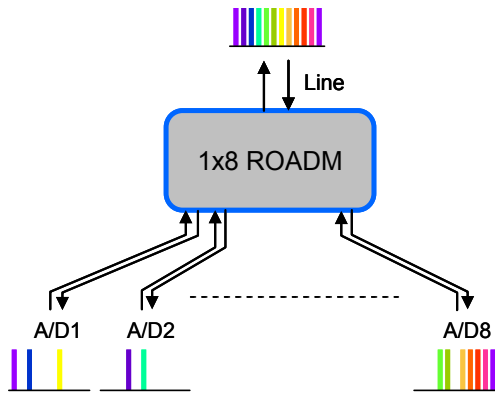


Fig 1. Schematic Principle of 1x8 ROADM Add-drop Function.

### Multi-dimensional Node Applications

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

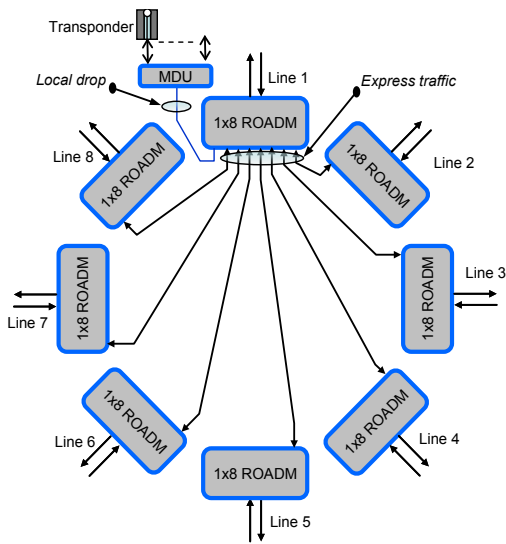


Fig 2. Eight-dimensional Node. Full Connections Only Shown for Line 1.

It is possible to create directionless nodes using an extra 1x8 ROADM unit to direct the local traffic to a preferred line fiber. Each wavelength can be directed as required on an individual basis. The 1X8 ROADM provides both fixed and directionless add-drop (AD) functionality in the node.

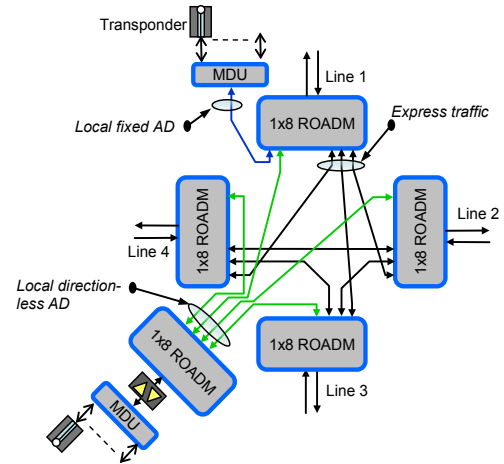


Fig 3. A Four-dimensional Node with Both Fixed and Directionless Traffic.

### Linear Add-drop Applications

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

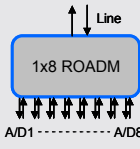
Initially, locally terminating traffic may be allocated to one of the add-drop ports, keeping the remaining ports for traffic upgrades or for scaling into multidimensional nodes.

### Low Power Design

A 1x8 ROADM consumes less than 6 watts (W). Low power consumption in combination with a small footprint reduces site costs to provide more capacity at sites with restrictions on power consumption, cooling and space.

The 1x8 ROADM can be mounted in a TM-3000 or TM-3000/II chassis, where it occupies two full-size slots.

**Specifications**

Insertion Loss (See Figure)	Add [A/D Rx] – [Line Tx]: 7.0 dB Drop [Line Rx] – [A/D 8, Local A/D, Tx]: 5.9 dB Drop [Line Rx] – [A/D 1-7 Tx]: 12.3 dB	
Range	80 channels on 50 GHz 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 250 ms	
VOA	Range: 0 – 15 dB Step size: 0.1 dB	
Dimensions	Occupies two full-size slots in a TM-3000 or TM-3000/II chassis	
Power Consumption	6 W	

Specifications and Features Are Subject to Change

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