

## XTM SERIES

## iWDM-PON SOLUTION

### Providing High Capacity in Multiple Access Applications

The Infinera Intelligent WDM (iWDM®)-Passive Optical Network(PON) solution is part of the Infinera XTM Series and XTG Series. It allows operators to enjoy the benefits of a scalable, low-cost, passive and centralized optical architecture, while extending optical transparency from the core to the access network. The iWDM-PON solution provides an open, standards-based approach that offers high capacity in access applications such as fiber to the x (FTTx), enterprise/business services and mobile backhaul.

#### iWDM-PON and Layer 2 Products – Ideal in Multiple Access Applications

The Infinera iWDM-PON solution adds colorless pluggable optics technology to the XTM Series portfolio of transponders, muxponders, packet-optical transport switches (EMXP), Ethernet demarcation units (EDU) and WDM filters.

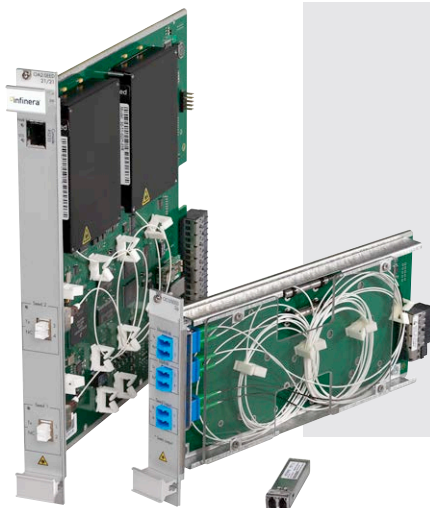
This colorless technology creates a solution with cost-efficient operations that is open, standardized and extremely flexible, particularly when used in combination with Infinera's Layer 3 metro and access products. This makes it very well-suited for high-density services, such as those offered in enterprise and mobile backhaul networks.

#### Products in the iWDM-PON Solution

The iWDM-PON solution is based on the following products:

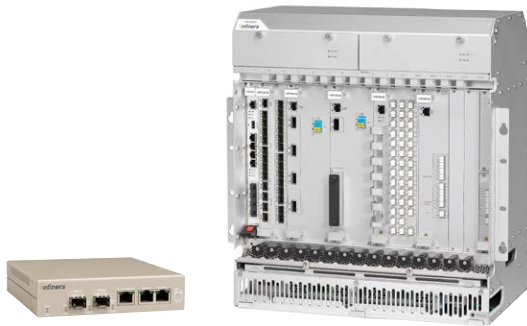
- Seed light unit
- Seed light coupler unit
- Colorless gigabit Ethernet SFPs
- XTG Series passive DWDM filters

The colorless GbE SFP works together with the seed light unit and the seed light coupler unit, which are described in more detail below.



#### Key benefits:

- Built on the proven Infinera XTM Series and XTG Series
- An open and standardized solution providing a common base for multiple services and access applications
- Lower operational expenditure (OpEx) due to the use of colorless WDM access technology
- High deployment flexibility – wide variety of different service and reach combinations
- Based on standard C-Band DWDM grid, which gives optical transparency from access to core – no optical to electrical to optical conversion (OEO) requirement in the central office



**Fig 1.** The Infinera iWDM-PON Uses the TM-3000 in Central Office Locations and Can Use the EDU or Other CPE.

### Colorless Technology Offers Cost Efficiency

The colorless GbE SFP allows cost-efficient operations due to:

- Fast and simple deployment – no need for color management or configuration
- Simple SFP inventory – one SFP for all endpoints
- Minimized configuration and commissioning errors – eliminates wavelength tuning/selection activities

The colorless GbE SFP supports up to 40 different wavelengths in the same unit, i.e. the same SFP can tune into 40 different wavelengths.

### How Does Seed Light Work?

In order to make the colorless SFP operate as expected, a seed light is required within the system. The seed light unit adds this seed light to the system. The seed light unit sends out a broadband light source from the central office out toward each WDM-PON access node that contains a colorless SFP and is connected to the access network filter structure.

When receiving the seed light from the central office, each SFP tunes in to that specific frequency. The SFP therefore tunes to the specific wavelength that is defined by the physical fiber/filter infrastructure, providing operational simplicity and high security. For example an SFP located at an endpoint that is connected to wavelength number 23 in the fiber plant will automatically tune to wavelength 23 only.

The seed light coupler unit is a passive device that is also located in the central office node and adds the seeding signal to the line fiber. The seed light unit and seed light coupler unit are separated

in two boards. This allows replacement of the seed light unit without affecting the non-injection-locked traffic, as well as enables the use of redundant seed light units.

### MSA-compliant Pluggable Interface

As the colorless interface is based on the SFP's MSA (multi-source agreement), an open and flexible solution is offered, enabling use in any Infinera customer premises equipment (CPE) configuration or third-party CPE.

### Standard Wavelength Grid

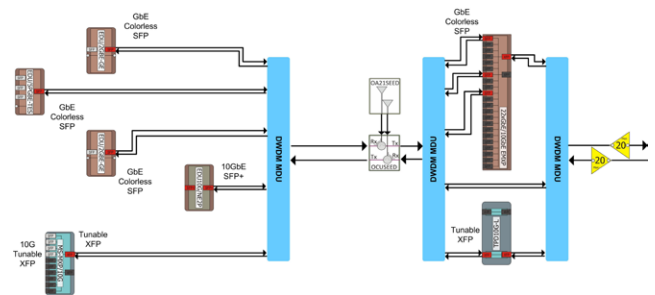
The iWDM-PON solution operates in the C-band only. This is a key advantage as it makes it possible to combine iWDM-PON with standard DWDM interfaces in the same access network over the same fiber infrastructure.

The solution supports standard, fixed DWDM SFPs, tunable or fixed DWDM XFPs in addition to the WDM-PON colorless SFPs. Thanks to this, services that are required outside the reach and/or capacity capabilities of the colorless GbE SFP can simply be commissioned using another unit from the range of supported interfaces. This could, for example, be a standard fixed or tunable interface with longer reach and/or higher capacity than the colorless GbE SFP supports.

Furthermore, the use of the C-band also gives the possibility to grow from 1 Gb/s to 100 Gb/s over the same access solution.

### Optical Transparency

The iWDM-PON solution uses the same wavelength grid as in metro and metro core networks, providing unmatched flexibility when it

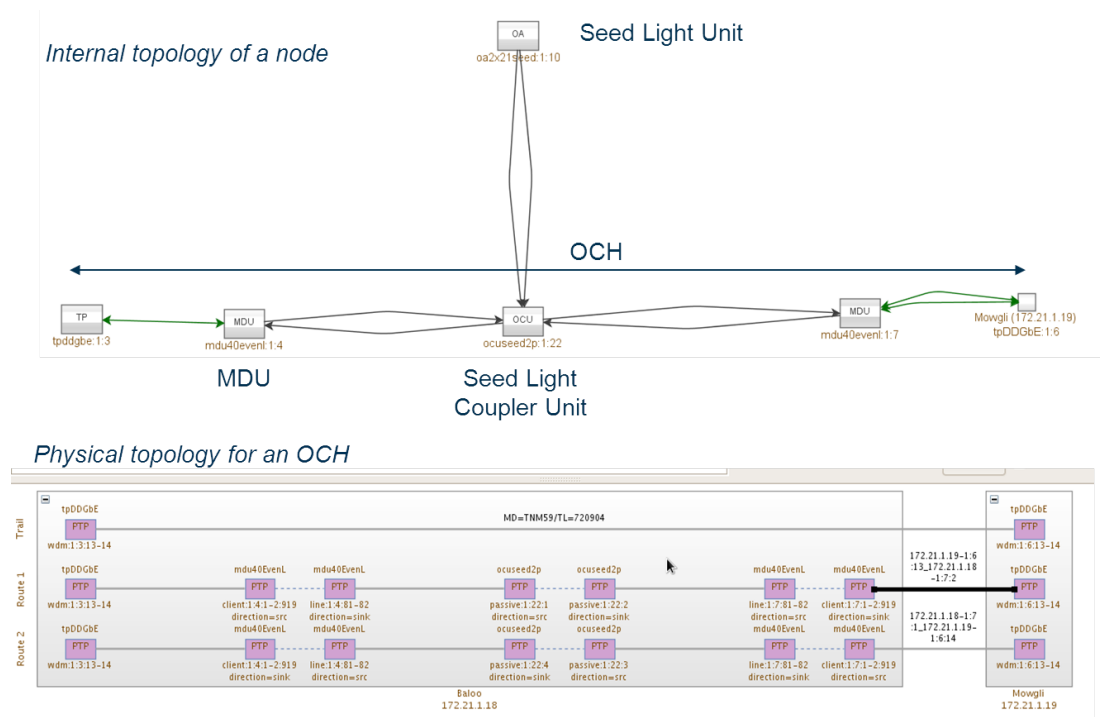


**Fig 2.** Configuration Showing a 40-channel Filter Solution with Tunable XFP.

comes to the mixing of services and capacities in the same network infrastructure. This optical transparency enables a service to span all the way from the metro core out to the access network without the need for OEO conversion at the central office as the service moves from the metro network to the WDM-PON access network.

### Easy Management via DNA-M

Infinera Digital Network Administrator for XTM Series (DNA-M) provides a user-friendly GUI for managing iWDM-PON units and services.



**Fig 3.** iWDM-PON Seed Light Unit and Seed Light Coupler Unit Are Managed Via the User-friendly GUI of DNA-M.

**Specifications (Seed Light Unit)**

Mounting	One-slot plug-in unit in TM-3000, TM-301 or TM-102 chassis
Power Consumption	Max 24 W (Dual DC interface -48 V and -60 V primary power)
Released Versions	Dual 21 dBm seed light unit

**Specifications (Seed Light Coupler Unit)**

Mounting	Half slot plug-in unit in TM-3000, TM-301 or TM-102 chassis
Power Consumption	Max 0.1 W
Released Versions	Two-port seed light coupler unit

**Filter Options**

40-channel system using two 40-channel filters
40-channel system using 5x band splitter combined with 4- or 8-channel filters in each endpoint
40-channel system using 5x 8 ch cascaded filters

**Specifications (Colorless SFP)**

Standards	DWDM SFP MSA-compliant, DMI interface
Interface	GbE full duplex
Reach	20 km
Released Versions	SFP, DWDM, Inj-lo, 1.25 Gb/s, 20 km
Channels	Supports 40 channels in DWDM ITU grid C-band 100 GHz
Other Available Interfaces Include (Not Colorless)	Fixed or Tunable 10 Gb/s XFP 40 km/70 km Fixed XFP 8 Gb/s XFP 40 km/70 km Fixed SFP 4 Gb/s 40 km/70 km Fixed SFP 2.7 Gb/s 120 km

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

