Appendix

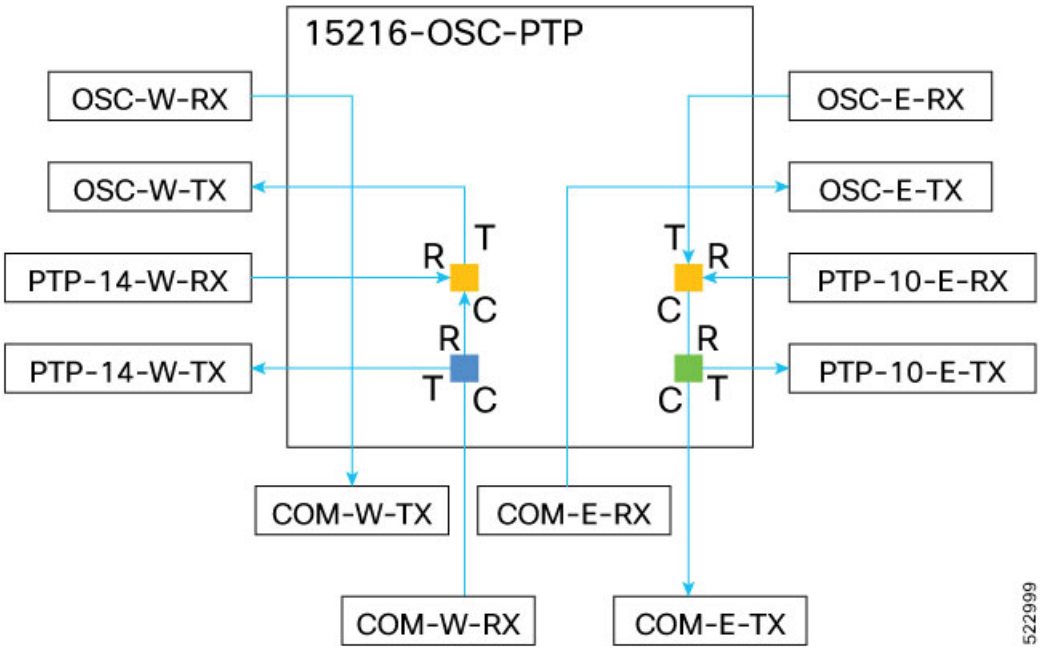
Cisco ONS 15216 OSC PTP Filter Module

The Cisco ONS 15216-OSC-PTP Filter module is used in the NCS 2000 network to multiplex and demultiplex the optical signals that are provided by the DWDM SFPs. The module carries the PTP signal at 1510 and 1514 nm and the standard OSC signal at 1518 nm.

The following lists the module's operations:

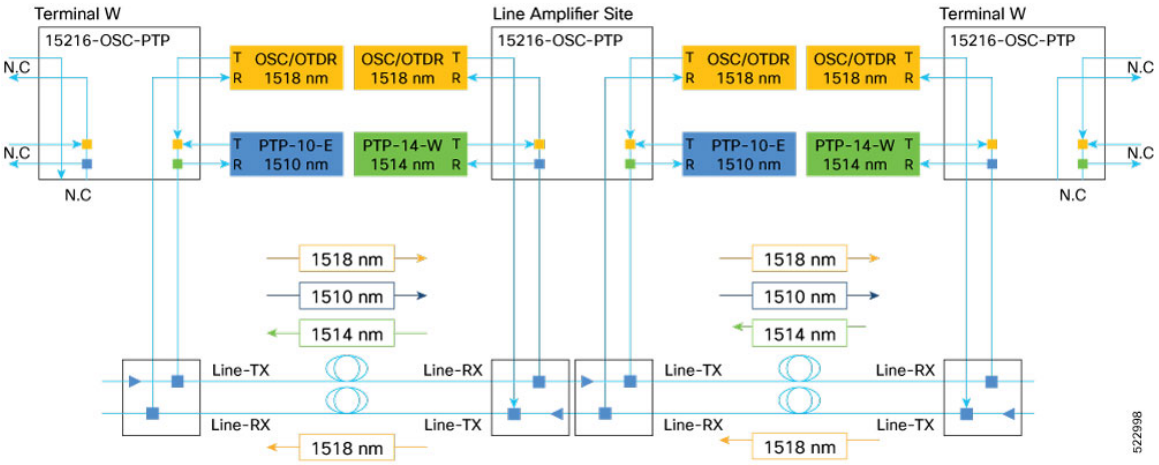
- The 1510- and 1518-nm wavelengths are separated from the composite signal entering the COM-W-RX port, and routed toward the PTP-14-W-TX and OSC-W-TX ports respectively.
- The 1514-nm wavelength is received from the PTP-14-W-RX port, and combined toward the COM-W-RX port.
- On the other direction, the 1518- and 1510-nm wavelengths are received respectively from the OSC-E-RX and PTP-10-E-RX ports, and combined toward the COM-E-TX port.
- The 1514-nm wavelength entering the COM-E-TX port is separated, and routed to the PTP-10-E-TX port.
- The path from OSC-W-RX to COM-W-TX is a simple bypass path (no filtering). The same bypass path applies for the COM-E-RX to OSC-E-TX ports.

Figure 1: 15216-OSC-PTP Filter Module Optical Block Diagram



Note The filter propagates the 1510 and 1514-nm signals on the same optical fiber between two adjacent nodes in the opposite direction.

Figure 2: OSC + PTP Signal Transmission Block Diagram



Features

The Cisco ONS 15216-OSC-PTP Filter module has the following features:

- Thin-film DWDM 100GHz-spaced filters for multiplexing and demultiplexing of optical transmission channels, which are modulated up to 100Gbits.
- Passive device without active temperature control (Athermal design).
- Optical connectivity using LC-UPC connectors and 900 micrometer fiber.
- Integrated tap coupler (PLC or fused fiber).

Port Label Description

The following table provides the connection ports, description, and the type of connectors used for each port. All ports are on the module faceplate, which is equipped with optical LC adapters.

The following table describes the port labels and its descriptions for the PTP filter module.

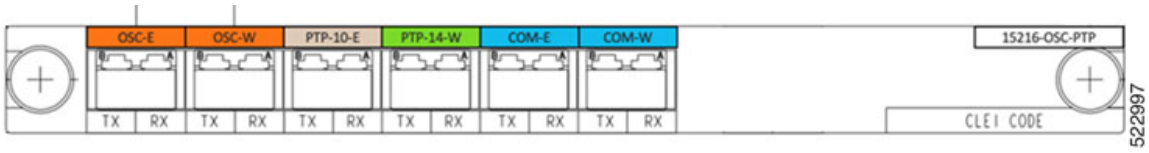
Table 1: Port Label Description

Port	Color	Direction	Type of Connector	Description
OSC-E	Orange	TX	LC-UPC II	Optical Service Channel output to East Direction
		RX		Optical Service Channel input from East Direction
OSC-W	Orange	TX	LC-UPC II	Optical Service Channel output to West Direction
		RX		Optical Service Channel input from West Direction
PTP-10-E	Beige	TX	LC-UPC II	Precision Time Protocol output to East Direction
		RX		Precision Time Protocol input from East Direction
PTP-14-W	Lime Green	TX	LC-UPC II	Precision Time Protocol output to West Direction
		RX		Precision Time Protocol input from West Direction
COM-E	Cyan	TX	LC-UPC II	Common output to East Direction
		RX		Common input from East Direction
COM-W	Cyan	TX	LC-UPC II	Common output to West Direction
		RX		Common input from West Direction

Port Identification Label

The port identification label provides port identification of the Cisco 15216-OSC-PTP Filter module. The port label is placed on the faceplate of the Cisco 15216-OSC-PTP Filter module.

Figure 3: Cisco 15216-OSC-PTP Filter Module Label



Optical Specifications

The following table provides the optical specifications of the Cisco 15216-OSC-PTP Filter module.

Table 2: Optical Specifications

Parameter	Minimum	Maximum	Unit	Note
Operating Temperature Range	–5	70	ºC	—
Storage Temperature Range	–40	85	ºC	non-condensing
Operating Humidity Range	5	95	%RH	—
Power Handling	500		mW	Any port
Wavelength Range COM-paths	1500	1520	nm	—
Passband	+/– 1	—	nm	see Figure 1: 15216-OSC-PTP Filter Module Optical Block Diagram, on page 2.
PDL	—	0.2	dB	—
PMD	—	0.1	ps	—
Chromatic Dispersion ADD/DROP path	—	± 10	ps/nm	any optical path
Group Delay Ripple	—	5	ps	peak to peak ripple
Return Loss	45	—	dB	Any port
Directivity	50	—	dB	Any path

The following table provides the optical path specification for each path in the ONS-15216-OSC-PTP Filter module.

Table 3: Optical Path Specifications

Parameter	Condition	Minimum	Maximum	Unit

Isolation Transmission path	—	>30	—	dB
Isolation Reflection path	—	>13	—	dB
OSC-W-RX to COM-W-TX	at 1518 nm	—	<0.3	dB
COM-W-RX to OSC-W-TX	at 1518 nm	—	<1.3	dB
PTP-14-W-RX to COM-W-RX	at 1514 nm	—	<1.0	dB
COM-W-RX to PTP-14-W-TX	at 1510 nm	—	<0.8	dB
OSC-E-RX to COM-E-TX	at 1518 nm	—	<1.3	dB
COM-E-RX to OSC-E-TX	at 1518 nm	—	<0.3	dB
PTP-10-E-RX to COM-E-TX	at 1510 nm	—	<1.0	dB

Safety Information

Before you install, operate, or service this product, you must read the Regulatory Compliance and Safety Information for Cisco Optical Transport Products document for important safety information and warning translations.

This product is compliant with the GR 1089, UL60950 /CSA 22.2 No. 60950-00, and IEC 60950 standards.

Laser Radiation Emission Restrictions

The Class 1M Laser safety and warning label is affixed to this product and indicates that the product should never be used or installed in an optical network with emissions higher than Class 1M.

Warning Class 1M laser radiation when open. Do not view directly with optical instruments. Statement 281

Warning Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments. Statement 1051

Laser Safety During Operation

Warning Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments. Statement 1051

Electrical Safety

This product is optically and electrically passive and requires no electrical connections. No electrostatic discharge (ESD) or other electrical safety considerations apply.