

# **Optical Channel Circuits and Virtual Patchcords Reference**

This chapter explains the Cisco ONS 15454 dense wavelength division multiplexing (DWDM) optical channel (OCH) circuit types and virtual patchcords that can be provisioned on the ONS 15454. Circuit types include the OCH client connection (OCHCC), the OCH trail, and the OCH network connection (OCHNC). Virtual patchcords include internal patchcords and provisionable (external) patchcords (PPCs).

Note

Unless otherwise specified, "ONS 15454" refers to both ANSI and ETSI shelf assemblies.

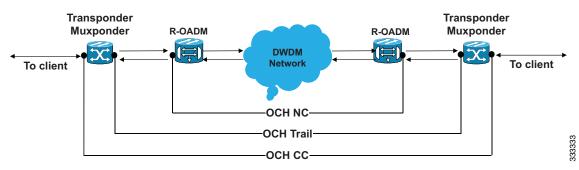
## **11.1 Optical Channel Circuits**

The ONS 15454 DWDM optical circuits provide end-to-end connectivity using three OCH circuit types:

- Optical Channel Network Connections (OCHNC)
- Optical Channel Client Connections (OCHCC)
- Optical Channel Trails (OCH Trails)

A graphical representation of OCH circuits is shown in Figure 11-1.

#### Figure 11-1 Optical Channel Circuits



#### **11.1.1 OCHNC Circuits**

OCHNC circuits establish connectivity between two optical nodes on a specified C-band wavelength. The connection is made through the ports present on the wavelength selective switches, multiplexers, demultiplexer, and add/drop cards. In an OCHNC circuit, the wavelength from a source OCH port ingresses to a DWDM system and then egresses from the DWDM system to the destination OCH port. The source and destination OCH port details are listed in Table 11-1.

Card	Source Ports	<b>Destination Ports</b>
32WSS	ADD-RX	—
32WSS-L		
40-WSS-C		
32MUX-O	CHAN-RX	—
40-MUX-C		
32DMX-O		CHAN-TX
32DMX		
32DMX-L		
40-DMX-C		
4MD	CHAN-RX	CHAN-TX
AD-1B-xx.x		
AD-4B-xx.x		
AD-1C-xx.x		
AD-4C-xx.x		

Table 11-1OCHNC Ports

#### 11.1.2 OCHCC Circuits

OCHCC circuits extend the OCHNC to create an optical connection from the source client port to the destination client port of the TXP/MXP cards. An OCHCC circuit represents the actual end-to-end client service passing through the DWDM system.

Each OCHCC circuit is associated to a pair of client or trunk ports on the transponder (TXP), muxponder (MXP), GE\_XP (in layer-1 DWDM mode), 10GE\_XP (in layer-1 DWDM mode), or ITU-T line card.

The OCHCCs can manage splitter protection as a single protected circuit. However, for the Y-Cable protection, two OCHCC circuits and two protection groups are required.

#### 11.1.3 OCH Trail Circuits

OCH trail circuits transport the OCHCCs. The OCH trail circuit creates an optical connection from the source trunk port to the destination trunk port of the Transponder (TXP), Muxponder (MXP), GE\_XP, 10GE\_XP, or ITU-T line card. The OCH trail represents the common connection between the two cards, over which all the client OCHCC circuits, SVLAN circuits or STS circuits are carried.

Once an OCHCC is created, a corresponding OCH Trail is automatically created. If the OCHCC is created between two TXP, MXP, GE\_XP, or 10GE\_XP cards, two circuits are created in the CTC. These are:

One OCHCC (at client port endpoints)

One OCH trail (at trunk port endpoints)

If the OCHCC is created between two TXPP or two MXPP cards, three circuits are created in the CTC. These are:

- One OCHCC (at client port endpoints)
- Two OCH Trails (at trunk port endpoints) One for the working and other for the protect trunk.

Note

On a TXP, MXP, and GE\_XP card (in layer 1 DWDM mode), additional OCHCC circuits are created over the same OCH trail.



On a TXP, MXP, GE\_XP (in layer 1 DWDM mode), and 10GE\_XP (in layer 1 DWDM mode) card, the OCH trail cannot be created independently, and is created along with the first OCHCC creation on the card. However, on a GE\_XP card (in layer-2 DWDM mode), 10GE\_XP card (in layer-2 DWDM mode), and ADM\_10G card, an OCH trail can be created between the trunk ports for the upper layer circuits (SVLAN in GE\_XP/10GE\_XP and STS in ADM\_10G). No OCHCC is supported in these cases.

If the OCHCC is created between two ITU-T line cards, only one trunk port belongs to the OCHCC at each end of the circuit. Table 11-2 lists the ports that can be OCHCC and OCH trail endpoints.

Card	OCHCC	OCH Trail
TXPs	Any client port	Any trunk port
MXPs		
GE_XP		
10GE_XP		
ADM-10G		
ITU-T line cards:	Any trunk port	Any trunk port
• OC48/STM64 EH		
• OC192 SR/STM64		
• MRC-12		
• MRC-2.5-12		
• MRC-2.5G-4		

Table 11-2OCHCC and OCH Trail Ports

Figure 11-2 shows the relationships and optical flow between the OCHCC, OCH trail, and OCHNC circuits.

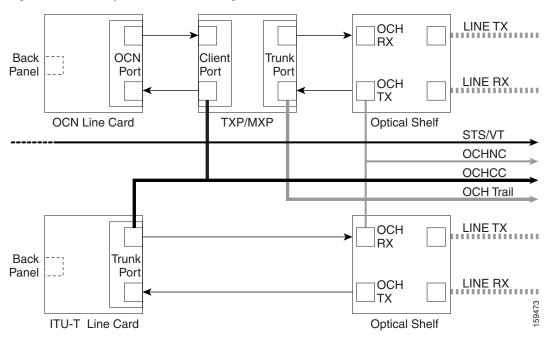


Figure 11-2 Optical Channel Management

#### **11.1.4 Administrative and Service States**

OCHCCs, OCH trails, and OCHNCs occupy three different optical layers. Each OCH circuit has its own administrative and service states. The OCHCCs impose additional restrictions on changes that can be made to client card port administrative state.

The OCHCC service state is the sum of the OCHCC service state and the OCH trail service state. When creating an OCHCC circuit, you can specify an initial state for both the OCHCC and the OCH trail layers, including the source and destination port states. The ANSI/ETSI administrative states for the OCHCC circuits and connections are:

- IS/Unlocked
- IS,AINS/Unlocked,AutomaticInService
- OOS,DSBLD/Locked,disabled

OCHCC service states and source and destination port states can be changed independently. You can manually modify client card port states in all traffic conditions. Setting an OCHCC circuit to OOS,DSBLD/Locked,disabled state has no effect on OCHCC client card ports.

An OCH trail is created automatically when you create an OCHCC. OCH trails can be created independently between OCH-10G cards and GE\_XP and 10GE\_XP when they are provisioned in Layer 2 Over DWDM mode. The OCH trail ANSI/ETSI administrative states include:

- IS/Unlocked
- IS,AINS/Unlocked,automaticInService
- OOS,DSBLD/Locked,disabled

You can modify OCH trail circuit states from the Edit Circuit window. Placing an OCH trail OOS,DSBLD/Locked,disabled causes the following state changes:

- The state of the OCH trail ports changes to OOS,DSBLD/Locked,disabled.
- The OCHNC state changes to OOS,DSBLD/Locked,disabled.

Changing the OCH trail state to IS,AINS/Unlocked,automaticInService causes the following state changes:

- The state of the OCH trail trunk ports changes to IS/Unlocked.
- The OCHNC state changes to IS,AINS/Unlocked,automaticInService.

The OCH trail service state is the sum of the OCHCC trunk port state and the OCHNC (if applicable) state. Changing the client card trunk ports to OOS,DSBLD/Locked,disabled when the OCH trail state IS/Unlocked will cause the OCH trail state to change to OOS,DSBLD/Locked,disabled and its status to change to Partial.

The OCHNC circuit states are not linked to the OCHCC circuit states. The administrative states for the OCHNC circuit layer are:

- IS,AINS/Unlocked,AutomaticInService
- OOS,DSBLD/Locked,disabled

When you create an OCHNC, you can set the target OCHNC circuit state to IS/Unlocked or OOS,DSBLD/Locked,disabled. You can create an OCHNC even if OCHNC source and destination ports are OOS,MT/Locked,maintenance. The OCHNC circuit state will remain OOS-AU,AINS/Unlocked-disabled,automaticInService until the port maintenance state is removed. During maintenance or laser shutdown, the following behavior occurs:

- If OCHNCs or their end ports move into an AINS/AutomaticInService state because of user maintenance activity on an OCHCC circuit (for example, you change an optical transport section (OTS) port to OOS,DSBLD/Locked,disabled), Cisco Transport Controller (CTC) suppresses the loss of service (LOS) alarms on the TXP, MXP, GE\_XP, 10GE\_XP, or ITU-T line card trunk ports and raises a Trail Signal Fail condition. Line card trunk port alarms are not changed, however.
- If TXP client or trunk port are set to OOS,DSBLD/Locked,disabled state (for example, a laser is turned off) and the OCH trunk and OCH filter ports are located in the same node, the OCH filter LOS alarm is demoted by a Trail Signal Fail condition.

OCHCCs are associated with the client card end ports. Therefore, the following port parameters cannot be changed when they carry an OCHCC:

- Wavelength
- Service (or payload type)
- Splitter protection
- ITU-T G.709
- Forward error correction (FEC)
- Mapping

Certain OCHCC parameters, such as service type, service size, and OCHNC wavelength can only be modified by deleting and recreating the OCHCC. If the OCHCC has MXP end ports, you can modify services and parameters on client ports that are not allocated to the OCHCC. Some client port parameters, such as Ethernet frame size and distance extension, are not part of an OCHCC so they can be modified if not restricted by the port state. For addition information about administrative and service states, see Appendix B, "Administrative and Service States."

## **11.1.5 Creating and Deleting OCHCCs**

To create an OCHCC, you must know the client port states and their parameters. If the client port state is IS/Unlocked, OCHCC creation will fail if the OTN line parameters (ITU-T G.709, FEC, signal fail bit error rate (SF BER), and signal degrade bit error rate (SD BER) on the OCHCC differ from what is provisioned on the trunk port. The port state must be changed to OOS-DSLB/Locked, disabled in order to complete the OCHCC.

If you delete an OCHCC, you can specify the administrative state to apply to the client card ports. For example, you can have the ports placed in OOS,DSBLD/Locked,disabled state after an OCHCC is deleted. If you delete an OCHCC that originates and terminates on MXP cards, the MXP trunk port states can only be changed if the trunk ports do not carry other OCHCCs.

### **11.1.6 OCHCCs and Service and Communications Channels**

Although optical service channels (OSCs), generic communications channels (GCCs), and data communications channels (DCCs) are not managed by OCHCCs, the following restrictions must be considered when creating or deleting OCHCCs on ports with service or communication channels:

- Creating an OCHCC when the port has a service or a communications channel is present—OCHCC creation will fail if the OCHCC parameters are incompatible with the GCC/DCC/GCC. For example, you cannot disable ITU-T G.709 on the OCHCC if a GCC carried by the port requires the parameter to be enabled.
- Creating a service or communications channel on ports with OCHCCs—OCHCC creation will fail if the GCC/DCC/GCC parameters are incompatible with the OCHCC.
- Deleting an OCHCC on ports with service or communications channels—If an OSC/GCC/DCC is present on a TXP, MXP, GE\_XP, 20GE\_XP, or ITU-T line card client or trunk port, you cannot set these ports to the OOS,DSBLD/Locked,disabled state after the OCHCC circuit is deleted.

## **11.2 Virtual Patchcords**

TXP, MXP, TXPP, MXPP, GE\_XP, 10GE\_XP, and ADM-10G client ports and DWDM filter ports can be located in different nodes or in the same single-shelf or multishelf node. ITU-T line card trunk ports and the corresponding DWDM filter ports are usually located in different nodes.

OCHCC provisioning requires a virtual patchcord between the client card trunk ports and the DWDM filter ports. Depending on the physical layout, this can be an internal patchcord or a provisionable (external) patchcord (PPC). Both patchcord types are bidirectional. However, each direction is managed as a separate patchcord.

Internal patchcords provide virtual links between the two sides of a DWDM shelf, either in single-shelf or multishelf mode. They are viewed and managed on the Provisioning > WDM-ANS > Internal Patchcords tab (Figure 11-3).

59491

L

tcc24 - Cisco						
le <u>E</u> dit <u>V</u> iew ]	<u>T</u> ools <u>H</u> elp					
) 👦 🗛 🗳	3 🏗 🕜 🧇	🔿 🏠 🦊	🚳 🔀 🚳 🛃 '	Ϋ́Μ		
	tcc24			-		
	0MJ 7M	1N				
ode Addr : 10	0 58 64 24			Rack :	1	
	/3/06 12:35 AM	1				
	ISC015					
uthority : Su W Version: 08	uperuser 8.00-X06H-03.0	0				
	actory Default			1 2 3 5 6 7 8	12 14	
	ide A - Enable ide B - Enable					
Si	ide C - Enable	ed.				
Si	ide D - Enable	ad b		Shelf		
				7 1	0 12 13 14 16 <mark>17</mark>	
				Shelf	2	
					15.15.19	
Jarms Conditions	History Circuite	Provisionin	1 Inventory Maintena			
larms Conditions	History Circuits	Provisionin	J Inventory Maintena	nce		
General		1	9 Inventory Maintena rds Port Status Node			
General Network		1	rds Port Status Node			Wavelength ⊊
General Network OSI		rnal Patchco From	rds Port Status Node	Setup Optical Side		Wavelength ⊂
General Network OSI Security	Provisioning Inter	rnal Patchco From -BST),Port 2	rds Port Status Node (COM-TX)	Setup Optical Side		Wavelength T
General Network OSI Security SNMP	Provisioning Inter Shelf 1, Slot 1 (OPT- Shelf 1, Slot 1 (OPT- Shelf 1, Slot 2 (OPT-	rnal Patchco From -BST),Port 2 -BST),Port 4 -PRE),Port 2	rds Port Status Node (COM-TX) (OSC-TX) (COM-TX)	Optical Side         To           Sheff 1, Side 2 (OTT-PED, Port 1 (COM-RX)         Sheff 1, Side 8 (OSCM), Port 2 (OSC-RX)           Sheff 1, Side 8 (OSCM), Port 1 2 (COM-RX)         Sheff 1, Side 8 (OW XC), Port 1 2 (COM-RX)	N/A N/A	Wavelength T
General Network OSI Security SNMP Comm Channels	Provisioning Inter Shelf 1, Slot 1 (OPT- Shelf 1, Slot 1 (OPT- Shelf 1, Slot 2 (OPT- Shelf 1, Slot 3 (40 W	rnal Patchco From -BST),Port 2 -BST),Port 4 -PRE),Port 2 VXC),Port 10	rds Port Status Node (COM-TX) (OSC-TX) (COM-TX) (DROP-TX)	Setup         Optical Side           To T         To T           Shelf 1, Sick 2 (OPT-PRE), Port 1 (COM-RX)         Shelf 1, Sick 8 (GSCM), Port 2 (OSC-RX)           Shelf 1, Sick 3 (40 WXC), Port 12 (COM-RX)         Shelf 1, Sick 3 (40 WXC), Port 12 (COM-RX)	N/A N/A N/A	Wavelength T
General Network OSI Security SNMP Comm Channels Alarm Profiles	Provisioning Inter Shelf 1, Slot 1 (OPT- Shelf 1, Slot 1 (OPT- Shelf 1, Slot 2 (OPT- Shelf 1, Slot 3 (40 W Shelf 1, Slot 3 (40 W	rnal Patchco From -BST),Port 2 -BST),Port 4 -PRE),Port 2 WXC),Port 10 WXC),Port 13	rds Port Status Node (COM-TX) (COK-TX) (COM-TX) (COM-TX) (COM-TX)	Setup         Optical Side           Shef 1, Slot 2 (OFT-PRE), Port 1 (COM-RX)           Shef 1, Slot 3 (SOM), Port 2 (COM-RX)           Shef 1, Slot 6 (40 UXC), Port 12 (COM-RX)           Shef 1, Slot 6 (40 DPK C), Port 12 (COM-RX)           Shef 1, Slot 6 (40 DPK C), Port 12 (COM-RX)           Shef 1, Slot 6 (40 DPK C), Port 12 (COM-RX)	N/A N/A N/A N/A	Wavelength T
General Network OSI Security SNMP Comm Channels Alarm Profiles Defaults	Provisioning Inter Shelf 1,Slot 1 (OPT- Shelf 1,Slot 1 (OPT- Shelf 1,Slot 2 (OPT- Shelf 1,Slot 2 (OPT- Shelf 1,Slot 3 (40 W Shelf 1,Slot 5 (40 M	rnal Patchco From -BST),Port 2 -BST),Port 4 -PRE),Port 2 VXC),Port 10 VXC),Port 13 UX),Port 41	rds Port Status Node (COM-TX) (COM-TX) (COM-TX) (COM-TX) (COM-TX) (COM-TX)	Setup         Optical Side           To T         To T           Shelf 1, Slot 2 (OPT-PRE), Port 1 (COM-RX)         Shelf 1, Slot 8 (OSCM), Port 2 (OSC-RX)           Shelf 1, Slot 8 (OW WC), Port 1 (COM-RX)         Shelf 1, Slot 6 (40 DWK C), Port 1 (COM-RX)           Shelf 1, Slot 8 (40 DWK C), Port 1 (COM-RX)         Shelf 1, Slot 3 (40 DWK C), Port 1 (COM-RX)           Shelf 1, Slot 3 (40 WKC), Port 1 (COM-RX)         Shelf 1, Slot 3 (40 WKC), Port 1 (COM-RX)	N/A N/A N/A N/A	Wavelength T
General Network OSI Security SNMP Comm Channels Alarm Profiles Defaults WDM-ANS	Provisioning Inter Shelf 1, Slot 1 (OPT- Shelf 1, Slot 1 (OPT- Shelf 1, Slot 2 (OPT- Shelf 1, Slot 3 (40 W Shelf 1, Slot 3 (40 W Shelf 1, Slot 5 (40 M Shelf 1, Slot 6 (40 D	rnal Patchco From -BST),Port 2 -BST),Port 4 -PRE),Port 2 VXC),Port 10 VXC),Port 13 MUX),Port 41 MX C),Port 41	Port Status         Node           (COM-TX)         (OSC-TX)           (COM-TX)         (COM-TX)           (COM-TX)         (COM-TX)           (COM-TX)         (COM-TX)           (COM-TX)         (COM-TX)	Setup         Optical Side           Shefi L, Sket 2 (OPT-PRE), Port 1 (COM-RX)           Shefi L, Sket 2 (SoVM, Port 2 (COM-RX))           Shefi L, Sket 2 (40 WKC), Port 12 (COM-RX)           Shefi L, Sket 3 (40 WKC), Port 12 (COM-RX)           Shefi L, Sket 3 (40 WKC), Port 12 (COM-RX)           Shefi L, Sket 3 (40 WKC), Port 14 (COM-RX)           Shefi L, Sket 3 (40 WKC), Port 14 (COM-RX)           Shefi L, Sket 3 (40 WKC), Port 9 (ADD-RX)           Shefi L, Sket 3 (40 WKC), Port 9 (ADD-RX)	N/A N/A N/A N/A 1532.68 nm	Wavelength 🤆
General Network OSI Security SIMP Comm Channels Alarm Profiles Defaults WDM-ANS	Provisioning Inter Shelf 1,Slot 1 (OPT- Shelf 1,Slot 1 (OPT- Shelf 1,Slot 2 (OPT- Shelf 1,Slot 3 (40 W Shelf 1,Slot 3 (40 W Shelf 1,Slot 5 (40 M Shelf 1,Slot 6 (40 D Shelf 1,Slot 6 (0SC)	rnal Patchco From -BST),Port 2 -BST),Port 4 -PRE),Port 10 VXC),Port 10 VXC),Port 13 MUX),Port 41 MX C),Port 3 (O	Port Status         Node           (COM-TX)         (COM-TX)           (GSC-TX)         (COM-TX)           (CROP-TX)         (COM-TX)           (COM-TX)         (COM-TX)	Setup         Optical Side           Shefi J, Slot 2 (OPT-PRE), Port 1 (COM-RX)           Shefi J, Slot 8 (OSCM), Port 2 (OSC-RX)           Shefi J, Slot 8 (OSCM), Port 2 (OSC-RX)           Shefi J, Slot 8 (OD MX C), Port 11 (COM-RX)           Shefi J, Slot 8 (OD MX C), Port 12 (COM-RX)           Shefi J, Slot 8 (OD MX C), Port 12 (COM-RX)           Shefi J, Slot 8 (OD MX C), Port 9 (ADD-RX)           Shefi J, Slot 8 (ADM_LOG, Port 9 (ADD-RX)           Shefi J, Slot 8 (ADM_LOG, Port 9 (ADD-RX)           Shefi J, Slot 8 (COM_LOG, Port 19 (Trunk)           Shefi J, Slot 8 (COM_ST)           Shefi J,	N/A N/A N/A N/A 1532.68 nm N/A	Wavelength T
General Network OSI Security SNMP Comm Channels Alarm Profiles Defaults WDM-ANS	Provisioning Inter Shelf 1, Slot 1 (OPT- Shelf 1, Slot 1 (OPT- Shelf 1, Slot 2 (OPT- Shelf 1, Slot 2 (OPT- Shelf 1, Slot 3 (40 W Shelf 1, Slot 5 (40 M Shelf 1, Slot 5 (40 M Shelf 1, Slot 6 (40 D Shelf 1, Slot 6 (0SC) Shelf 2, Slot 10 (OSC	rnal Patchco From -BST),Port 2 -BST),Port 4 -PRE),Port 10 VXC),Port 11 UX),Port 13 UX),Port 3 (MX C),Port 3 (O CM),Port 3 (O	Port Status         Node           (COM-Tx)         (05C-Tx)           (COM-Tx)         (0ROP-Tx)           (COM-Tx)         (COM-Tx)           (COM-Tx)         (COM-Tx)           (COM-Tx)         Soc-Tx)           SC-TX)         Soc-Tx)	Setup         Optical Side           Tor         Tor           Shelf L, Slot 2 (OPT-PRE), Port 1 (COM-RX)           Shelf L, Slot 3 (SOM), Port 2 (COM-RX)           Shelf L, Slot 3 (O WCC), Port 12 (COM-RX)           Shelf L, Slot 3 (O WCC), Port 12 (COM-RX)           Shelf L, Slot 3 (O WCC), Port 12 (COM-RX)           Shelf L, Slot 3 (O WCC), Port 12 (COM-RX)           Shelf L, Slot 3 (O WCC), Port 12 (COM-RX)           Shelf L, Slot 3 (O WCC), Port 1 (COM-RX)           Shelf L, Slot 3 (O WCC), Port 1 (COM-RX)           Shelf L, Slot 3 (O WCC), Port 1 (COM-RX)           Shelf L, Slot 3 (O WCC), Port 1 (COM-RX)           Shelf L, Slot 3 (COM C), Port 3 (GOC-RX)           Shelf L, Slot 1 (OPT-BST), Port 3 (GOC-RX)           Shelf L, Slot 1 (OPT-BST), Port 3 (GOC-RX)	N/A N/A N/A N/A 1532.68 nm	Wavelength T
General Network OSI Security SNMP Comm Channels Alarm Profiles Defaults WDM-ANS	Provisioning Inter Shelf 1,Slot 1 (OPT- Shelf 1,Slot 1 (OPT- Shelf 1,Slot 2 (OPT- Shelf 1,Slot 3 (40 W Shelf 1,Slot 3 (40 W Shelf 1,Slot 5 (40 M Shelf 1,Slot 6 (40 D Shelf 1,Slot 6 (0SC)	rnal Patchco From -BST),Port 2 -BST),Port 4 -PRE),Port 2 WXC),Port 10 WXC),Port 13 MXC),Port 4 MXC),Port 3 (0 M),Port 3 (0 CM),Port 3 (0	rds Port Status Node (COM-TX) (COM-TX) (COM-TX) (COM-TX) (COM-TX) (COM-TX) (COM-TX) (COM-TX) (COM-TX) SC-TX) DSC-TX) 3 (CHAN-TX)	Setup         Optical Side           Shefi J, Slot 2 (OPT-PRE), Port 1 (COM-RX)           Shefi J, Slot 8 (OSCM), Port 2 (OSC-RX)           Shefi J, Slot 8 (OSCM), Port 2 (OSC-RX)           Shefi J, Slot 8 (OD MX C), Port 11 (COM-RX)           Shefi J, Slot 8 (OD MX C), Port 12 (COM-RX)           Shefi J, Slot 8 (OD MX C), Port 12 (COM-RX)           Shefi J, Slot 8 (OD MX C), Port 9 (ADD-RX)           Shefi J, Slot 8 (ADM_LOG, Port 9 (ADD-RX)           Shefi J, Slot 8 (ADM_LOG, Port 9 (ADD-RX)           Shefi J, Slot 8 (COM_LOG, Port 19 (Trunk)           Shefi J, Slot 8 (COM_ST)           Shefi J,	N/A N/A N/A N/A N/A I 532.c6 nm N/A N/A N/A	Wavelength 🕾
General Network OSI Security SNMP Corm Channels Alarm Profiles Defaults WDM-ANS	Provisioning Inter Shelf 1, Slot 1 (OPT- Shelf 1, Slot 1 (OPT- Shelf 1, Slot 1 (OPT- Shelf 1, Slot 3 (40 W Shelf 1, Slot 3 (40 W Shelf 1, Slot 3 (40 W Shelf 1, Slot 5 (40 M Shelf 1, Slot 6 (40 D Shelf 1, Slot 8 (05G) Shelf 2, Slot 10 (OS Shelf 2, Slot 12 (40)	rnal Patchco From -BST),Port 2 -BST),Port 4 -PRE),Port 3 VXC),Port 10 VXC),Port 10 VXC),Port 11 MIX C),Port 41 MIX C),Port 3 (0 CM),Port 3 (0 DMX C),Port 4	Port Status         Node           (COM-TX)         (OSC-TX)           (COM-TX)         (COM-TX)	Setup         Optical Side           Shef 1, Slot 2 (OFT-PRE), Port 1 (COM-RX)           Shef 1, Slot 2 (SOM, Port 2 (SGC-RX)           Shef 1, Slot 3 (40 WXC), Port 1 2 (COM-RX)           Shef 1, Slot 3 (40 WXC), Port 1 2 (COM-RX)           Shef 1, Slot 3 (40 WXC), Port 1 2 (COM-RX)           Shef 1, Slot 3 (40 WXC), Port 1 2 (COM-RX)           Shef 1, Slot 3 (40 WXC), Port 9 (ADD-RX)           Shef 1, Slot 3 (40 WXC), Port 9 (ADD-RX)           Shef 1, Slot 1 (OFT-BST), Port 1 (COM-RX)           Shef 2, Slot 1 (20 HT-ST), Port 3 (SGC-RX)           Shef 2, Slot 1 (20 HT-ST), Port 3 (SGC-RX)           Shef 2, Slot 1 (20 HOX C), Port 1 3 (Turk)           Shef 2, Slot 1 (20 HOX C), Port 1 (COM-RX)           Shef 2, Slot 1 (20 HOX C), Port 1 (COM-RX)	N/A N/A N/A N/A N/A N/A N/A N/A 1531.90 nm N/A N/A N/A	Wavelength T
General Network OSI Security SINMP Comm Channels Alarm Profiles Defaults WDM-ANIS	Provisioning Inte Shelf 1,5lot 1 (OPT: Shelf 1,5lot 1 (OPT: Shelf 1,5lot 2 (OPT: Shelf 1,5lot 2 (OPT: Shelf 1,5lot 3 (40 M Shelf 1,5lot 5 (40 M Shelf 1,5lot 5 (40 K Shelf 1,5lot 8 (OSC) Shelf 2,5lot 12 (40) Shelf 2,5lot 12 (40) Shelf 2,5lot 13 (40)	rnal Patchco From -BST),Port 2 -BST),Port 4 -PRE),Port 2 VXC),Port 10 VXC),Port 1 VXC),Port 3 (CM),Port 3 (CM),Port 3 (CM),Port 3 (CM),Port 3 (CM),Port 4 MUX),Port 4 (CM),Port 4 (CM),POR 4	Instruction         Node           C(COM-TX)         (COM-TX)           (COM-TX)         (COM-TX)	Setup         Optical Side           To T         To T           Shelf L, Slot 2 (OPT-PRE), Port 1 (COM-RX)         Shelf L, Slot 3 (GSM), Port 2 (CSC-RX)           Shelf L, Slot 3 (GM WCC), Port 1 2 (COM-RX)         Shelf L, Slot 3 (GM WCC), Port 1 2 (COM-RX)           Shelf L, Slot 3 (GM WCC), Port 1 2 (COM-RX)         Shelf L, Slot 1 (GPT-BST), Port 1 (COM-RX)           Shelf L, Slot 1 (GPT-BST), Port 3 (GSC-RX)         Shelf L, Slot 1 (GM WCC), Port 9 (GSC-RX)           Shelf L, Slot 1 (GM L, GSL), Port 3 (GSC-RX)         Shelf 2, Slot 1 (GM WCC), Port 9 (GSC-RX)           Shelf 2, Slot 1 (GM WCC), Port 9 (GSC-RX)         Shelf 2, Slot 1 (GM WCC), Port 9 (GSC-RX)           Shelf 2, Slot 1 (GM WCC), Port 9 (GSC-RX)         Shelf 2, Slot 1 (GM WCC), Port 9 (GSC-RX)           Shelf 2, Slot 1 (GM WCC), Port 9 (GSC-RX)         Shelf 2, Slot 1 (GM WCC), Port 9 (GSC-RX)           Shelf 2, Slot 1 2 (GM WCC), Port 9 (GSC-RX)         Shelf 2, Slot 1 (GM WCC), Port 9 (GSC-RX)           Shelf 2, Slot 1 2 (GM WCC), Port 9 (GSC-RX)         Shelf 2, Slot 1 (GOR-RX)           Shelf 2, Slot 1 2 (GM WCC), Port 9 (GSC-RX)         Shelf 2, Slot 1 (GOR-RX)	N/A N/A N/A N/A N/A 1532,68 mm N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A	Wavelength 🤆
General Network OSI Security SIMP Comm Channels Alarm Profiles Defaults WDM-ANS	Provisioning Inter Shelf 1,5lot 1 (OPT- Shelf 1,5lot 2 (OPT- Shelf 1,5lot 2 (OPT- Shelf 1,5lot 3 (40 W Bhelf 1,5lot 3 (40 W Bhelf 1,5lot 3 (40 K Shelf 1,5lot 5 (40 M Shelf 1,5lot 5 (40 M Shelf 2,5lot 1 (40 Shelf 2,5lot 13 (40) Shelf 2,5lot 13 (40) Shelf 2,5lot 13 (40) Shelf 2,5lot 14 (40)	rnal Patchco From -BST),Port 2 -BST),Port 4 -PRE),Port 2 -WXC),Port 10 WXC),Port 10 WXC),Port 10 WXC),Port 3 (0 CM),Port 3 (0 CM),Port 3 (0 CM),Port 3 WXC),Port 1 T-PRE),Port	Comparing         Port Status         Node           CCOMTN         (056-Tr)         (056-Tr)           (COM-Tr)         (060-Tr)         (060-Tr)           (COM-Tr)         (040-Tr)         (040-Tr)           (COM-Tr)         (040-Tr)         (040-Tr)           (COM-Tr)         (040-Tr)         (040-Tr)           (COM-Tr)         (040-Tr)         (040-Tr)           (COM-Tr)         (040-Tr)         (060-Tr)           0 (060-Tr)         (060-Tr)         (060-Tr)           3 (COM-Tr)         (COM-Tr)         (COM-TR)	Setup         Optical Side           Shef 1, Slot 2 (OPT-PRE), Port 1 (COM-RX)           Shef 1, Slot 2 (SOM, Port 2 (COM-RX)           Shef 1, Slot 2 (GW, Port 12 (COM-RX)           Shef 1, Slot 2 (GW, Port 9 (ADD-RX)           Shef 1, Slot 2 (GW, TS), Port 1 (COM-RX)           Shef 1, Slot 2 (GW, TS), Port 9 (ADD-RX)           Shef 1, Slot 2 (GW, TS), Port 9 (ADD-RX)           Shef 2, Slot 12 (CM-RS), Port 1 (COM-RX)           Shef 2, Slot 12 (ADM, 10G), Port 19 (Turk)           Shef 2, Slot 12 (ADM, 10G), Port 19 (Turk)           Shef 2, Slot 12 (ADM, 10G), Port 19 (Turk)           Shef 2, Slot 12 (ADM, 10G), Port 19 (Turk)           Shef 2, Slot 12 (ADM, 10G), Port 19 (Turk)           Shef 2, Slot 12 (ADM, 10G), Port 19 (Turk)           Shef 2, Slot 14 (ADW, XC), Port 14 (COM-RX)           Shef 2, Slot 14 (ADW, XC), Port 14 (COM-RX)           Shef 2, Slot 14 (ADW, XC), Port 14 (COM-RX)           Shef 2, Slot 17 (ADW, XC), Port 14 (COM-RX)	N/A N/A N/A N/A N/A 1532.68 nm N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A	Wavelength 🗂
General Network OSI Security SNMP Comm Channels Alarm Profiles Defaults WDM-ANS	Provisioning Inte Shelf 1, Sok 1 (OPT: Shelf 1, Sok 1 (OPT: Shelf 1, Sok 2 (OPT: Shelf 1, Sok 2 (OPT: Shelf 1, Sok 3 (GOW Shelf 1, Sok 3 (GOW Shelf 1, Sok 3 (GOW Shelf 1, Sok 3 (GOK Shelf 2, Sok 1 3 (GO) Shelf 2, Sok 1 2 (GO) Shelf 2, Sok 1 4 (GO Shelf 2, Sok 1 4 (GO) Shelf 2, Sok 1 7 (GOF)	rnal Patchco From -BST),Port 2 -BST),Port 4 -PRE),Port 2 -BST),Port 4 -PRE),Port 2 WXC),Port 10 (WXC),Port 10 (WXC),Port 3 (OM),Port 3 (O	Common Company         Node           CCOM-TX)         (OSC-TX)           (CSM-TX)         (OSC-TX)           (COM-TX)         (ORC0-TX)           (COM-TX)         (COM-TX)	Setup         Optical Side           To T         To T           Shelf L, Slot 2 (OPT-PRE), Port 1 (COM-RX)         Shelf L, Slot 3 (SGN), Port 2 (COM-RX)           Shelf L, Slot 3 (OD MC, Opt 12 (COM-RX)         Shelf L, Slot 3 (OD MC, Opt 12 (COM-RX)           Shelf L, Slot 3 (OD MC, Opt 12 (COM-RX)         Shelf L, Slot 3 (OD MC, Opt 12 (COM-RX)           Shelf L, Slot 1 (OPT-BST), Port 13 (COM-RX)         Shelf L, Slot 1 (OPT-BST), Port 13 (COM-RX)           Shelf L, Slot 1 (OPT-BST), Port 13 (COM-RX)         Shelf L, Slot 1 (OPT-BST), Port 13 (COC-RX)           Shelf L, Slot 1 (OPT-BST), Port 13 (COC-RX)         Shelf 2, Slot 12 (ADD _LOG), Port 19 (Trunk)           Shelf 2, Slot 1 (4 (OD WC), Port 4 (COM-RX))         Shelf 2, Slot 12 (ADD _LOG), Port 14 (COM-RX)           Shelf 2, Slot 1 (4 (OD WC), Port 4 (COM-RX))         Shelf 2, Slot 12 (ADD (MC), Port 14 (COM-RX))           Shelf 2, Slot 1 (COM = SST), Port 13 (COM-RX)         Shelf 2, Slot 12 (COM-RX))           Shelf 2, Slot 12 (ADD (MC), Port 12 (COM-RX))         Shelf 2, Slot 12 (COM-RX))           Shelf 2, Slot 12 (ADD (MC), Port 12 (COM-RX))         Shelf 2, Slot 12 (ADD (MC), Port 12 (COM-RX))           Shelf 2, Slot 12 (ADD (MC), Port 12 (COM-RX))         Shelf 2, Slot 12 (ADD (MC), Port 12 (COM-RX))	N/A N/A N/A N/A N/A 1552.68 nm N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A	Wavelength T
General Network OSI Security SNMP Comm Channels Alarm Profiles Defaults WDM-ANS	Provisioning Inte Sheff 1,50c1 (OPT: Sheff 1,50c1 (OPT: Sheff 1,50c2 (OPT) Sheff 1,50c2 (OPT) Sheff 1,50c2 3(OP Sheff 1,50c3 3(OP Sheff 1,50c5 3(OPT) Sheff 2,50c1 3(OPT) Sheff 2,50c1 13 (OPT) Sheff 2,50c1 13 (OPT) Sheff 2,50c1 13 (OPT) Sheff 2,50c1 14 (OPT) Sheff 2,50c1 15 (OPT)	rnal Patchco From -BST),Port 2 -BST),Port 4 -PRE),Port 2 WXC),Port 10 WXC),Port 41 MX C),Port 41 MX C),Port 41 MX C),Port 41 MX C),Port 41 MX C),Port 1 MXC),Port 1 MXC),Port 1 MXC),Port 1 -SST),Port 1 -FSST),Port 1 -FSST),Port 1 -SST),Port 1 -SST,Port 1	Comparing         Node           CCOMTX)         (OSC-TX)           (OSC-TX)         (OSC-TX)           (COM-TX)         (OSC-TX)           (COM-TX)         (OSC-TX)           (COM-TX)         (COM-TX)           (COM-TX)         (OSC-TX)           (COM-TX)         (COM-TX)	Setup         Optical Side           Shef I., Slot 2 (OPT-PRE), Port 1 (COM-RX)           Shef I., Slot 2 (SOM, Port 2 (COM-RX)           Shef I., Slot 2 (SOM, Port 2 (COM-RX)           Shef I., Slot 3 (40 WKC), Port 12 (COM-RX)           Shef I., Slot 3 (40 WKC), Port 12 (COM-RX)           Shef I., Slot 3 (40 WKC), Port 1 (COM-RX)           Shef I., Slot 3 (40 WKC), Port 1 (COM-RX)           Shef I., Slot 3 (40 WKC), Port 9 (ADD-RX)           Shef I., Slot 3 (40 WKC), Port 9 (ADD-RX)           Shef I., Slot 3 (40 WKC), Port 9 (ADD-RX)           Shef I., Slot 1 (CPT-BST), Port 3 (COM-RX)           Shef I., Slot 1 (40 WKC), Port 9 (ADD-RX)           Shef I., Slot 1 (40 WKC), Port 1 (CM-RX)           Shef I., Slot 1 (40 WKC), Port 1 (CM-RX)           Shef I., Slot 1 (40 WKC), Port 1 (CM-RX)           Shef I., Slot 1 (40 WKC), Port 1 (CM-RX)           Shef I., Slot 1 (40 WKC), Port 1 (CM-RX)           Shef I., Slot 1 (40 WKC), Port 1 (CM-RX)           Shef I., Slot 1 (40 WKC), Port 1 (CM-RX)           Shef I., Slot 1 (40 WKC), Port 1 (CM-RX)           Shef I., Slot 1 (CM-RK), Slot 1 (CM-RX)           Shef I., Slot 1 (CM-RK)	N/A N/A N/A N/A N/A 1532.66 mm N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A	Wavelength 🕾
General Network OSI Security SNMP Comm Channels Alarm Profiles Defaults WDM-ANS	Provisioning Inte Shelf 1, 50k 1 (OPT: Shelf 1, 50k 2 (OPT: Shelf 1, 50k 2 (OPT: Shelf 1, 50k 2 (OPT: Shelf 1, 50k 3 (OOV Shelf 1, 50k 3 (OOV Shelf 1, 50k 6 (OD Shelf 2, 50k 12 (OO) Shelf 2, 50k 12 (OO) Shelf 2, 50k 12 (OO) Shelf 2, 50k 14 (OO) Shelf 2, 50k 14 (OO) Shelf 2, 50k 14 (OO) Shelf 2, 50k 14 (OO) Shelf 2, 50k 17 (OP) Shelf 2, 50k 17 (OP) Shelf 2, 50k 17 (OP)	rnal Patchco From BST),Port 2 -BST),Port 2 -BST),Port 4 -PRE),Port 2 -WC),Port 10 -WC),Port 1 -WC),Port 1 -WC),Port 3 -WC),Port 1 -WC),Port 1 -THST),Port 1 -T-BST),Port 1 -T-BST),Port 1 -WC),Port 1	Common         Port Status         Node           (COM-TX)         (COM-TX)         (COM-TX)           (COM-TX)         (COM-TX)         (COM-TX)	Setup         Optical Side           Shef 1, Side 2 (OFT-PRE), Port 1 (COM-RX)           Shef 1, Side 2 (SOFT-PRE), Port 1 2 (COM-RX)           Shef 1, Side 3 (40 WXC), Port 1 2 (COM-RX)           Shef 1, Side 3 (40 WXC), Port 1 2 (COM-RX)           Shef 1, Side 3 (40 WXC), Port 1 2 (COM-RX)           Shef 1, Side 1 (40 WXC), Port 1 2 (COM-RX)           Shef 1, Side 1 (40 WXC), Port 1 2 (COM-RX)           Shef 1, Side 1 (40 WXC), Port 1 9 (COM-RX)           Shef 2, Side 1 (20 PL-BST), Port 3 (SGC-RX)           Shef 2, Side 1 2 (ADM_100), Port 3 (SGC-RX)           Shef 2, Side 1 2 (ADM_100), Port 3 (SGC-RX)           Shef 2, Side 1 2 (ADM_100), Port 3 (SGC-RX)           Shef 2, Side 1 2 (ADM_100), Port 3 (SGC-RX)           Shef 2, Side 1 2 (ADM_100), Port 3 (SGC-RX)           Shef 2, Side 1 2 (ADM_100), Port 3 (SGC-RX)           Shef 2, Side 1 4 (AD WXC), Port 1 2 (COM-RX)           Shef 2, Side 1 4 (AD WXC), Port 1 2 (COM-RX)           Shef 2, Side 1 6 (OFT-FRE), Port 1 (COM-RX)           Shef 2, Side 1 6 (OFT-FRE), Port 1 (COM-RX)           Shef 2, Side 1 6 (OFT-FRE), Port 1 (COM-RX)           Shef 2, Side 1 1 (COT-AMP 17), Port 1 (COM-RX)           Shef 2, Side 1 1 (COT-AMP 1 (COM-RX)           Shef 2, Side 1 1 (COT-AMP 1 (COM-RX)           Shef 2, Side 1 1 (COT-AMP 1 (COM-RX)           Shef 2, Side 1 1 (COM-RX)	N/A N/A N/A N/A N/A L52.c8 rm N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A	Wavelength T
General Network OSI Security SMMP Comm Channels Alarm Profiles Defaults WDM-ANS	Provisioning Inte Shell 1,50t 1 (OPT: Shell 1,50t 2 (OPT: Shell 1,50t 2 (OPT: Shell 1,50t 2 (OPT: Shell 1,50t 2 (OPT) Shell 1,50t 3 (40 W Shell 1,50t 3 (40 W Shell 1,50t 3 (40 W Shell 2,50t 10 (OS Shell 2,50t 10 (OS Shell 2,50t 13 (40) Shell 2,50t 13 (50) Shell 2,50t 13 (50)	rnal Patchco From -BST),Port 2 -BST),Port 2 -BST),Port 4 -PRE),Port 2 WXC),Port 10 WXC),Port 10 WXC),Port 10 WXC),Port 3 (CM),Port 3 (CM),Port 3 (CM),Port 3 (CM),Port 3 (CM),Port 3 (CM),Port 3 (CM),Port 3 (CM),Port 1 -T-BST),Port 1 -T-BST),Port 1 -1 -10G),Port 1 1 -1 (1)G),Port 1	Comparing         Node           CCOM-TX)         (OSC-TX)           (OSC-TX)         (OSC-TX)           (COM-TX)         (OSC-TX)           (COM-TX)         (OSC-TX)           (COM-TX)         (COM-TX)           (CIAM-TX)         SC-TX)           SC-TX)         SC-TX)           SC-TX)         (COM-TX)           (COM-TX)         (COM-TX)           (COM-TX)         (COM-TX)           2 (COM-TX)         2 (COM-TX)           2 (COM-TX)         2 (COM-TX)           2 (COM-TX)         10 (OSC-TX)           9 (FOR-TX)         10 (OSC-TX)           9 (COM-TX)         10 (OSC-TX)           9 (TANA)         10 (TANA)	Setup         Optical Side           Shef L, Slot 2 (OFT-PRE), Port 1 (COM-RX)           Shef L, Slot 2 (OSC-RX)           Shef L, Slot 2 (OSC-RX)           Shef L, Slot 2 (OM XC), Port 12 (COM-RX)           Shef L, Slot 2 (OM XC), Port 12 (COM-RX)           Shef L, Slot 2 (OM XC), Port 12 (COM-RX)           Shef L, Slot 2 (OM XC), Port 12 (COM-RX)           Shef L, Slot 2 (OM XC), Port 12 (COM-RX)           Shef L, Slot 2 (OFT-ST), Port 3 (ACO-RX)           Shef L, Slot 1 (OFT-ST), Port 3 (SGC-RX)           Shef L, Slot 1 (OFT-ST), Port 3 (GGC-RX)           Shef L, Slot 1 (OFT-ST), Port 1 (COM-RX)           Shef 2, Slot 1 2 (OFT-ST), Port 1 (COM-RX)           Shef 2, Slot 1 10 (OSCM), Port 1 2 (COM-RX)           Shef 2, Slot 1 10 (OSCM), Port 1 (COM-RX)           Shef 2, Slot 10 (OSCM), Port 1 (COM-RX)      <	N/A	Wavelength 🦟
General Network OSI Security SNMP Comm Channels Alarm Profiles Defaults WDM-ANS	Provisioning Inte Shelf 1, 50k 1 (OPT: Shelf 1, 50k 2 (OPT: Shelf 1, 50k 2 (OPT: Shelf 1, 50k 2 (OPT: Shelf 1, 50k 3 (OOV Shelf 1, 50k 3 (OOV Shelf 1, 50k 6 (OD Shelf 2, 50k 12 (OO) Shelf 2, 50k 12 (OO) Shelf 2, 50k 12 (OO) Shelf 2, 50k 14 (OO) Shelf 2, 50k 14 (OO) Shelf 2, 50k 14 (OO) Shelf 2, 50k 14 (OO) Shelf 2, 50k 17 (OP) Shelf 2, 50k 17 (OP) Shelf 2, 50k 17 (OP)	rnal Patchco From -BST),Port 2 -BST),Port 2 -BST),Port 4 -PRE),Port 2 WC),Port 10 WC),Port 41 WC),Port 3 (DMC),Port 3 (DMC),Port 3 (DMC),Port 3 (DMC),Port 3 (DMC),Port 3 (DMC),Port 11 (T-PRE),Port 11 (1_00),Port 11 (1_00)	Common         Node           CCOMTX)         (COMTX)           (CSG-TX)         (CSG-TX)           (COMTX)         (CGM-TX)           (CGM-TX)         (CGM-TX)	Setup         Optical Side           Shef 1, Side 2 (OFT-PRE), Port 1 (COM-RX)           Shef 1, Side 2 (SOFT-PRE), Port 1 2 (COM-RX)           Shef 1, Side 3 (40 WXC), Port 1 2 (COM-RX)           Shef 1, Side 3 (40 WXC), Port 1 2 (COM-RX)           Shef 1, Side 3 (40 WXC), Port 1 2 (COM-RX)           Shef 1, Side 1 (40 WXC), Port 1 2 (COM-RX)           Shef 1, Side 1 (40 WXC), Port 1 2 (COM-RX)           Shef 1, Side 1 (40 WXC), Port 1 9 (COM-RX)           Shef 2, Side 1 (20 PL-BST), Port 3 (SGC-RX)           Shef 2, Side 1 2 (ADM_100), Port 3 (SGC-RX)           Shef 2, Side 1 2 (ADM_100), Port 3 (SGC-RX)           Shef 2, Side 1 2 (ADM_100), Port 3 (SGC-RX)           Shef 2, Side 1 2 (ADM_100), Port 3 (SGC-RX)           Shef 2, Side 1 2 (ADM_100), Port 3 (SGC-RX)           Shef 2, Side 1 2 (ADM_100), Port 3 (SGC-RX)           Shef 2, Side 1 4 (AD WXC), Port 1 2 (COM-RX)           Shef 2, Side 1 4 (AD WXC), Port 1 2 (COM-RX)           Shef 2, Side 1 6 (OFT-FRE), Port 1 (COM-RX)           Shef 2, Side 1 6 (OFT-FRE), Port 1 (COM-RX)           Shef 2, Side 1 6 (OFT-FRE), Port 1 (COM-RX)           Shef 2, Side 1 1 (COT-AMP 17), Port 1 (COM-RX)           Shef 2, Side 1 1 (COT-AMP 1 (COM-RX)           Shef 2, Side 1 1 (COT-AMP 1 (COM-RX)           Shef 2, Side 1 1 (COT-AMP 1 (COM-RX)           Shef 2, Side 1 1 (COM-RX)	N/A N/A N/A N/A N/A L52.c8 rm N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A	
General Network OSI Security SNMP Comm Channels Alarm Profiles Defaults WDM-ANS	Provisioning Inte Shelf 1, 5lot 1 (OPT: Shelf 1, 5lot 2 (OPT: Shelf 1, 5lot 8 (OSC Shelf 2, 5lot 1, 5lot 8 (OSC Shelf 2, 5lot 12 (OD Shelf 2, 5lot 12 (OD Shelf 2, 5lot 12 (OD Shelf 2, 5lot 14 (OD Shelf 2, 5lot 14 (OD Shelf 2, 5lot 14 (OD Shelf 2, 5lot 14 (OD Shelf 2, 5lot 15 (OPT) Shelf 2, 5lot 15 (OPT)	rnal Patchco From -BST),Port 2 -BST),Port 2 -BST),Port 4 -PRE),Port 2 WC),Port 10 WC),Port 41 WC),Port 3 (DMC),Port 3 (DMC),Port 3 (DMC),Port 3 (DMC),Port 3 (DMC),Port 3 (DMC),Port 11 (T-PRE),Port 11 (1_00),Port 11 (1_00)	Common         Node           CCOMTX)         (COMTX)           (CSG-TX)         (CSG-TX)           (COMTX)         (CGM-TX)           (CGM-TX)         (CGM-TX)	Setup         Optical Side           Shef 1, Side 2 (OFT-PRE), Port 1 (COM-RX)           Shef 1, Side 2 (SOM), Port 2 (CSC-RX)           Shef 1, Side 3 (SOM), Port 2 (CSC-RX)           Shef 1, Side 3 (SOM), Port 2 (CSC-RX)           Shef 1, Side 3 (AO UMCC), Port 1 2 (COM-RX)           Shef 1, Side 3 (AO UMCC), Port 1 2 (COM-RX)           Shef 1, Side 3 (AO UMCC), Port 1 2 (COM-RX)           Shef 1, Side 3 (AO UMCC), Port 1 2 (COM-RX)           Shef 1, Side 1 (OFT-BST), Port 1 (COM-RX)           Shef 2, Side 1 (OFT-BST), Port 1 (COM-RX)           Shef 2, Side 1 (AO UMCC), Port 1 3 (Turk)           Shef 2, Side 1 (AO UMCC), Port 1 3 (Turk)           Shef 2, Side 1 (AO UMCC), Port 1 (COM-RX)           Shef 2, Side 1 (AO UMCC), Port 1 (COM-RX)           Shef 2, Side 1 (AO UMCC), Port 1 (COM-RX)           Shef 2, Side 1 (AO UMCC), Port 1 (COM-RX)           Shef 2, Side 1 (AO UMCC), Port 1 (COM-RX)           Shef 2, Side 1 (AO UMCC), Port 1 (COM-RX)           Shef 2, Side 1 (AO UMCC), Port 1 (COM-RX)           Shef 2, Side 1 (AO UMCC), Port 1 (COM-RX)           Shef 2, Side 1 (AM UMCC), Port 1 (COM-RX)           Shef 2, Side 1 (AM UMC), Port 1 (CM-RX)           Shef 2, Side 1 (AM UMC), Port 1 (CM-RX)           Shef 2, Side 1 (AM UMC), Port 1 (CM-RX)           Shef 2, Side 1 (AM UMC), Port 1 (CMARX)           Shef 2, Side	N/A           N/A           N/A           N/A           N/A           IS52.68 mm           IS53.90 mm           N/A           N/A	Wavelength T
General Network OSI Security SMMP Comm Channels Adam Profiles Defaults WDM-ANS	Provisioning Inte Shelf 1, 5lot 1 (OPT: Shelf 1, 5lot 2 (OPT: Shelf 1, 5lot 8 (OSC Shelf 2, 5lot 1, 5lot 8 (OSC Shelf 2, 5lot 12 (OD Shelf 2, 5lot 12 (OD Shelf 2, 5lot 12 (OD Shelf 2, 5lot 14 (OD Shelf 2, 5lot 14 (OD Shelf 2, 5lot 14 (OD Shelf 2, 5lot 14 (OD Shelf 2, 5lot 15 (OPT) Shelf 2, 5lot 15 (OPT)	rnal Patchco From -BST),Port 2 -BST),Port 2 -BST),Port 4 -PRE),Port 2 WC),Port 10 WC),Port 41 WC),Port 3 (DMC),Port 3 (DMC),Port 3 (DMC),Port 3 (DMC),Port 3 (DMC),Port 3 (DMC),Port 11 (T-PRE),Port 11 (1_00),Port 11 (1_00)	Common         Node           CCOMTX)         (COMTX)           (CSG-TX)         (CSG-TX)           (COMTX)         (CGM-TX)           (CGM-TX)         (CGM-TX)	Setup         Optical Side           Shef 1, Side 2 (OFT-PRE), Port 1 (COM-RX)           Shef 1, Side 2 (SOM), Port 2 (CSC-RX)           Shef 1, Side 3 (SOM), Port 2 (CSC-RX)           Shef 1, Side 3 (SOM), Port 2 (CSC-RX)           Shef 1, Side 3 (AO UMCC), Port 1 2 (COM-RX)           Shef 1, Side 3 (AO UMCC), Port 1 2 (COM-RX)           Shef 1, Side 3 (AO UMCC), Port 1 2 (COM-RX)           Shef 1, Side 3 (AO UMCC), Port 1 2 (COM-RX)           Shef 1, Side 1 (OFT-BST), Port 1 (COM-RX)           Shef 2, Side 1 (OFT-BST), Port 1 (COM-RX)           Shef 2, Side 1 (AO UMCC), Port 1 3 (Turk)           Shef 2, Side 1 (AO UMCC), Port 1 3 (Turk)           Shef 2, Side 1 (AO UMCC), Port 1 (COM-RX)           Shef 2, Side 1 (AO UMCC), Port 1 (COM-RX)           Shef 2, Side 1 (AO UMCC), Port 1 (COM-RX)           Shef 2, Side 1 (AO UMCC), Port 1 (COM-RX)           Shef 2, Side 1 (AO UMCC), Port 1 (COM-RX)           Shef 2, Side 1 (AO UMCC), Port 1 (COM-RX)           Shef 2, Side 1 (AO UMCC), Port 1 (COM-RX)           Shef 2, Side 1 (AO UMCC), Port 1 (COM-RX)           Shef 2, Side 1 (AM UMCC), Port 1 (COM-RX)           Shef 2, Side 1 (AM UMC), Port 1 (CM-RX)           Shef 2, Side 1 (AM UMC), Port 1 (CM-RX)           Shef 2, Side 1 (AM UMC), Port 1 (CM-RX)           Shef 2, Side 1 (AM UMC), Port 1 (CMARX)           Shef 2, Side	N/A           N/A           N/A           N/A           N/A           IS52.68 mm           IS53.90 mm           N/A           N/A	

Figure 11-3 Internal Patchcords Tab

CTC calculates internal patchcords automatically after you click the Default Patchcords button on the Internal Patchcords tab. However, some internal patchcords cannot be calculated because of the card types that are installed and/or the card positions within a shelf. These internal patchcords must be created manually. For example, internal patchcords related to optical bypass circuits must be manually provisioned. When you create an internal patchcord manually, the Internal Patchcord Creation wizard asks you to choose one of the following internal patchcord types:

- OCH-Trunk to OCH-Filter—Creates an internal patchcord between the trunk port of a TXP, MXP, GE\_XP, 10GE\_XP, or ITU-T line card, and an OCH filter card (wavelength selective switch, multiplexer, or demultiplexer).
- OTS/OCH to OTS/OCH—Creates an internal patchcord between two OTS OCH ports.



If an OTS-to-OTS PPC is created between nodes, it will no longer function if the node Security Mode mode is enabled (see "DLP-G264 Enable Node Security Mode" section on page 3-20). The reason for this is that if the Secure mode is enabled, it is no longer possible for the DCN extension feature to use the LAN interface to extend the internal network (due to the network isolation in this configuration mode). The result is that the topology discovery on the OTS-to-OTS PPC no longer operates.

• If the GCC, DCC, or OSC link between two nodes is disconnected that is also connected by a PPC link, the PPC link disappears from the CTC network view. The PPC link re-appears in the CTC network view after 15 secs (the time that OSPF takes to re-converge) if the nodes are connected to a LAN.

Table 11-3 shows the internal patchcord OCH trunk, OCH filter, and OTS/OCH ports.

Card	OCH Trunk Ports	OCH Filter Ports	OTS/OCH Ports
TXPs	Any trunk port	—	—
MXPs			
GE_XP			
10GE_XP			
ADM-10G			
ITU-T line cards			
OPT-BST	_	—	COM-TX
OPT-BST-E			COM-RX
OPT-BST-L			OSC-TX
			OSC-RX
OPT-AMP-17-C	—	—	COM-TX
OPT-AMP-L			COM-RX
			OSC-TX <sup>1</sup>
			OSC-RX <sup>1</sup>
			DC-TX <sup>1</sup>
			DC-RX <sup>1</sup>
OPT-PRE	—	—	COM-TX
			COM-RX
			DC-TX
			DC-RX
OSCM	—	—	COM-TX
OSC-CSM			COM-RX
			OSC-TX
			OSC-RX
32MUX	—	Any CHAN RX port	COM-TX
32MUX-O			
40-MUX-C			

Table 11-3Internal Patchcord Ports

Card	OCH Trunk Ports	OCH Filter Ports	<b>OTS/OCH Ports</b>
32DMX	_	Any CHAN TX port	COM-RX
32DMX-L			
32DMX-O			
40-DMX-C			
32WSS	_	Any ADD port	COM-TX
32WSS-L			COM-RX
40-WSS-C			EXP-TX
			EXP-RX
			DROP-TX
40-WXC-C	—		ADD-RX
			DROP-TX
			COM TX
			COM RX
MMU			EXP A TX
			EXP A RX

Table 11-3	Internal Patchcord Ports	s (continued)
		, ,,

1. When provisioned in OPT-PRE mode.

PPCs are created and managed from the network view Provisioning > Provisionable Patchcord (PPC) tab (Figure 11-4), or from the node view (single-shelf mode) or multiself view (multishelf mode) Provisioning > Comm Channel > PPC tab.

Alares Desfiles		· · · · · · · · · · · · · · · · · · ·	Termination ID 1	Ternination Node	Scope: All V V Q	Sot/Port/Side
Network View 17 CR 3 MJ 21 MN toc20 Critical : 0 titiacr : 0 titinor : 0 Alarms Conditions History Circuits Security Alarm Profiles BLSR Overhead Circuits 1 Provisionable Pachetords (PRC) Server Trails 2 Se	Provisioning Maintenance stchcord Termentons regrands no D Orgination Nov tzc26	de Corganation Shelf/Side/Port/Side	Termination ID	Ternination Node	Termination Shelf/S	
17 CR     3 MJ     21 MN       ccc20     Coc21     0       Gajor     0     0       Lipor     0     0       Marms     Conditions     History       Circuits     E     0       Alams     Porthead     1       Provisionable Patchcords (PPC)     2     3       Wa Due Portle     2     3	Provisioning Mantenance      Kechangen	de Origination Shelf/Slot/Port/Side	Termination ID			
Security Pat Alarm Profiles Ori BLSR 1 Overhead Circuits 1 Provisionable Patchcords (PPC) 2 Server Trails 2 W AN IN Brofile 3	stchcord Terminations rigination ID Origination No tcc26	de Origination Shelf/Slot/Port/Side slot 3 (MMU), port 6, side C	1			ilot/Port/Side
Alarm Profiles BLSR Overhead Circuits Provisionable Patchcords (PPC) Server Trails 3	rigination ID Origination No	slot 3 (MMU), port 6, side ⊂	1			ilot/Port/Side
BLSR 1 Overhead Circuits 1 Provisionable Patchcords (PPC) 2 Server Trails 2 WI AN DB Profile 3	tcc26	slot 3 (MMU), port 6, side ⊂	1			ilot/Port/Side
Overhead Circuits 1 rovisionable Patchcords (PPC) 2 Server Trails 3 VI AN DB Profile 3				tcc24	chelf 3 dot 3 (40 WYC) no	
visionable Patchcords (PPC) 2 Server Trails 2 VI AN DB Profile 3	tcc22	slot 16 (ADM, 10G), port 19 (Trupk)	1			
VLAN DB Profile 3					shelf 1, slot 6 (40 MUX), por	
VI AN DB Profile 3	tcc30	shelf 1, slot 5 (40 DMX C), port 3, side A	2		slot 16 (ADM_10G), port 19 (	Trunk)
	tcc24	shelf 3, slot 3 (40 WXC), port 13, side C	2		slot 3 (MMU), port 5, side C	
	tcc26	slot 15 (MMU), port 6, side D	3		shelf 3, slot 14 (40 WXC), po	
	tcc22	slot 14 (ADM_10G), port 19 (Trunk)	3		shelf 2, slot 6 (40 MUX), por	
4	tcc30	shelf 2, slot 5 (40 DMX C), port 4, side B	4		slot 14 (ADM_10G), port 19 (	
4	tcc24	shelf 3, slot 14 (40 WXC), port 13, side D	4	tcc26	slot 15 (MMU), port 5, side D	
<ul> <li>Image: Construction of the second seco</li></ul>	Create Delete		Ш			Help

Figure 11-4 Network View Provisionable Patchcords Tab

PPCs are required when the TXP, MXP, GE\_XP, 10GE\_XP, ADM-10G, or ITU-T line card is installed in a different node than the OCH filter ports. They can also be used to create OTS-to-OTS links between shelves that do not have OSC connectivity. PPCs are routable and can be used for network topology discovery by Open Shortest Path First (OSPF). GCCs and DCCs are not required for PPC creation. When you create a PPC, the PPC Creation wizard asks you to choose one of the following PPC types:

- OCH-Trunk to OCH-Trunk—Creates a PPC between two OCH trunk ports on TXP, MXP, GE\_XP, 10GE\_XP, ADM\_10G, or ITU-T line cards.
- OTS to OTS—Creates a PPC between two OTS ports. This option establishes data communications network (DCN) connectivity between nodes that do not have OSCM or OSC-CSM cards installed and therefore do not have OSC connectivity. CTC selects the OTS ports after you choose the origination and termination sides.
- OCH-Trunk to OCH-Filter—Creates a PPC between a OCH trunk port on a TXP, MXP, GE\_XP, 10GE\_XP, ADM-10G, or ITU-T line card and an OCH filter port on a multiplexer, demultiplexer, or wavelength selective switch card.

Table 11-4 shows the PPC OCH trunk, OCH filter, and OTS ports.

Card	OCH Trunk Port	OTS Port	OCH Filter Port
TXPs	Any trunk port		_
MXPs			
GE_XP			
10GE_XP			
ADM-10G			
ITU-T line cards			
OPT-BST	—	COM RX <sup>1</sup>	_
OPT-BST-E		LINE RX	
OPT-BST-L		LINE TX	
OPT-AMP-17-C	—	COM RX <sup>2</sup>	_
OPT-AMP-L		COM TX <sup>3</sup>	
		LINE RX <sup>3</sup>	
		LINE TX <sup>3</sup>	
OPT-PRE	—	COM RX <sup>4</sup>	_
		COM TX <sup>4</sup>	
OSC-CSM	—	COM RX <sup>1</sup>	_
		LINE RX	
		LINE TX	
32MUX	—	—	Any CHAN RX port
32MUX-O			
40-MUX-C			
32DMX	—		Any CHAN TX port
32DMX-L			
32DMX-O			
40-DMX-C			
32WSS	—		Any ADD port
32WSS-L			
40-WSS-C			
40-WXC-C	—	COM RX	_
		СОМ ТХ	
MMU	—	EXP A RX	_
		EXP A TX	

Table 11-4Provisionable Patchcord Ports

1. Line nodes only.

2. When Card Mode is OPT-PRE.

3. When Card Mode is OPT-LINE.

4. Line nodes with two OPT-PRE cards and no BST cards installed.

For OCH trunk to OCH filter PPCs, the following rules and conditions apply:

- GCC and DCC links are not required to create a PPC.
- PPCs can be created for preprovisioned or physically installed cards.
- The OCH trunk and OCH filter ports must be on the same wavelength. CTC checks the ports for wavelength compatibility automatically during PPC provisioning.
- For OC-48/STM-16 and OC-192/STM-64 ITU-T line cards, the wavelength compatibility check is performed only when the cards are installed. The check is not performed for preprovisioned cards.
- For all other preprovisioned cards, a wavelength compatibility check is not performed if card is set to First Tunable Wavelength. The wavelength is automatically provisioned on the port, according to the add/drop port that you chose when you created the PPC.

For OCH-trunk to OCH-trunk PPCs, the following rules and conditions apply:

- Patchcords can be created on preprovisioned or physically installed cards.
- Trunk-to-trunk connections require compatible wavelengths if the port is equipped. A check is automatically performed during patchcord provisioning to ensure wavelength compatibility of ports.
- For connections involving one or more preprovisioned ports, no compatibility check is performed.