

Modify Network Properties

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Modify network properties

Table 1: Feature History

Follow these steps to modify the properties of the network.

Before you begin

Log in to the Cisco ONP web interface.

Procedure

Step 1 Open the network where you want to modify the network properties.

Step 2 Choose **Network** > **Entity Editor**.

Alternatively, click the network name in the network tree, and click **Show Advanced Properties** displayed under the network tree.

Step 3 In the **Entity Editor** window, click the **Site** tab.

Step 4 Click the network name, and modify the properties in the right pane. For the property descriptions, refer to:

- General properties of a network, on page 2
- System release properties, on page 4

Step 5 Click **Update**.

General properties of a network

This table describes various general properties of a network.

Table 2: General properties of a network

Property	Description	Available Options	Default option
Name	Displays the network name. You can modify the name.	—	—
Quick Analysis	This check box allows you to quickly analyze the network by using a less accurate algorithm. The quick analysis option does not optimize the DCU and amplifier placement algorithm, resulting in an approximate BoM. For an accurate BoM, uncheck the **Quick Analysis** check box.	—	—

Property	Description	Available Options	Default option
DWDM Interfaces	Cisco ONP supports 100G and 200G transceivers as DWDM interfaces. This option is applicable only for automatically created waves, when OTN services are present.	• 100G: The entire network chooses the 100G wavelength for transmission. • 200G: The entire network chooses the 200G wavelength for transmission. If you enable both 100G and 200G options, by default, the entire network chooses the 200G wavelength for transmission. If the 200G wavelength is not optically feasible, then it selects 100G automatically for transmission.	—
Customer Name	Enter the customer name.	—	—
Platform	Allows you to choose the platform type.	• ANSI • ETSI ANSI networks do not allow you to define SDH (ETSI) service demands. ETSI networks do not allow you to define SONET (ANSI) service demands.	ANSI
Measurement Unit	Displays the unit of measurement of span length. You cannot edit it.	km	km
A2A Mode	Any to Any (A2A) mode.	• A2A_None • A2A_FAST	A2A_None
A2A Power Output	The power output value is based on the chosen A2A mode.	—	—
A2A Demand Type	The demand type is based on the chosen A2A mode.	—	—

Property	Description	Available Options	Default option
A2A Channel TypeContentionless	Type of channel. You can choose multiple types.	• Contentionless: This property enables an N-degree ROADM node to accommodate N wavelengths of the same frequency from a single add or drop device. • Colorless: The colorless property enables tuning of channel wavelengths without changing the optical interface of the port. • Colored: The Colored property dedicates a separate port for each wavelength.	Contentionless
SSON	Indicates whether the network is an SSON network.	—	—
Use client Payg	This check box enables the Pay As You Grow feature on the client cards. The PAYG feature provides a cost-effective solution for fewer wavelength requirements. A standard card is configured to work on maximum supported wavelengths, whereas a PAYG license comprises license restricted cards and a base license. So, instead of purchasing a standard card, you can purchase a PAYG license.	—	—

System release properties

The table provides details about different system release properties of a network.

Table 3: System release properties

Property	Description	Options available	Default
NCS 4K	Displays the system release of the NCS 4000 node in the network.	—	—
NCS 2K	Displays the system release of the NCS 2000 node in the network.	—	—
NCS 1K (Available only on the SSON network)	Displays the system release of the NCS 1004 node in the network.	—	—
Previous NCS 2K (Available only on the Release upgraded network)	Displays the system release of the NCS 2000 node in the network, before the Release upgrade.	—	—
Naming Convention Enabled	Naming Convention Enabled is automatically turned on when networks are created in Cisco ONP, and cannot be edited. By default, the sides are named from T, S, R, Q, P, O, N, M, L, K, J, I, H, G, F, E, and index, depending on the used Scalable Upto parameter. • You can import a mpz network without naming convention enabled, but the Cascaded SMR option remains disabled. • You cannot edit the label name of the side.	—	—
SVO	Type of network management solution.	• SVO: Chooses SVO card. • UCS: Chooses SVO application that is hosted on a server. • Auto: Chooses SVO card as default, for SVO solution.	Auto

Modify site properties

Table 4: Feature History

Feature Name	Release Information	Feature Description
Shared SMR Port	Cisco ONP Release 4.2	You can enable the **Colored Add/Drop** property. This feature supports the use of contentionless and colored demands that are connected to the same port of an SMR card. With the **Shared SMR Port** enabled, you can create and validate the contentionless and colored configuration on a 16-degree SMR-20 node.

Use this procedure to modify the properties of the site.

Before you begin

Log in to the Cisco ONP web interface.

Procedure

Step 1 Open the network where you want to modify the site properties.

Step 2 Choose **Network** > **Entity Editor**.

Step 3 In the **Entity Editor** window, navigate to **Sites** > **Site**

Step 4 Choose the site and modify the properties in the next pane. For the property descriptions, refer to:

- General site properties, on page 7
- C-Band properties, on page 10
- Layout properties, on page 11
- Cisco NMS properties, on page 15
- Third party NMS properties, on page 15
- Map properties, on page 16
- Bill of materials properties, on page 17
- SVO properties, on page 20

Step 5 Click **Update**.

General site properties

This table describes the descriptions of various general properties for sites.

Table 5: General site properties

Property	Description	Available options	Default
Name	Enter the site name, either alphanumeric or numeric.	—	—
Type	Choose the type of site.	• ROADM • OLA • Traffic • Passthrough **Note** • You can add a passthrough site as a place holder. You cannot add services or waves to this site and therefore cannot generate the report. Later, you can convert the passthrough site to a ROADM, OLA, or the Traffic site in the design mode. • OLA is an optical line amplifier site that is used only for amplification. You cannot add service or waves on this site. • You cannot add a Traffic site of the type 4K-2K into an SSON network.	The site type that you chose while designing.
Node Type	This field is noneditable.	FLEX NG-DWDM	FLEX NG-DWDM

Property	Description	Available options	Default
Equipment Configuration	Choose the configuration from the drop-down list. This option is available only for the Traffic site.	• Large CO - NCS 4016 • Small Site - NCS 4016 • Small Site - NCS 4009	Large CO - NCS 4016
Traffic Type	Choose the traffic type. This option is available only for the Traffic site.	• 4K_1K_2K (for SSON) • 1K_2K (for SSON) • 4K_2K (non- SSON)	• 4K_1K_2K (for SSON) • 4K_2K (non- SSON)
SSON	Indicates whether the network is an SSON network.	—	—
CLLI Code	Enter a string holding the CLLI code.	—	—
Site Address	Enter the site address.	—	—
Evolved Mesh	By default, this option is unchecked. When you enable this feature on the network, it is automatically enabled on the associated sites of the network.	—	This option remains enabled.
Status	Displays the status of the network. It shows whether the network is **Up** or **Down**.	—	—
Weight Lbs	Displays the weight of all the units of the site, in pounds.	—	—
Node Protection	Choose the Node Protection.	• Same shelf • Separated shelves	Same shelf

Property	Description	Available options	Default
Mpo16Lc	Displays the fan-out module.	MF-MPO-16LC The MPO-16 to 16-LC fan-out module is a double slot module with one MPO-16 connector (COM) and eight LC duplex connectors. The MPO-16 connector is compatible with the SMR20 FS EXP and 16-AD-CCO FS units.	MF-MPO-16LC
Mpo16ToMpo8	Choose the required Mpo16 to Mpo8 converter.	• MPO16ToMPO8Cable • MF-2MPO_ADP	MPO16ToMPO8Cable
Cascaded SMR	Enable this option to add Layer-2 contentionless sides.	—	—
Flex Spectrum	By default, this check-box remains checked for a newly created network. You cannot edit it.	—	This check-box remains checked for a newly created network.
Grooming Site	When you enable this option, it indicates that OTN traffic can be groomed at this site.	—	—
MR-MXP BreakOut Cable	Check this check box to use the ONS-MPO-MPOLC-10 breakout cable to interconnect the client ports of the MR-MXP card with the NCS2K-MF-MPO-20LC passive module.	—	—
8X10G-FO	Check this check box to use the NCS2K-MF-8X10G-FO passive module only for 10G on the client-side of the NCS2K-400G-XP card. By default, this passive module is enabled.	—	—

C-Band properties

This table describes the descriptions of various C-Band properties under sites.

Table 6: C-band properties

Property	Description	Available options	Default
Structure	Displays the structure of the site: Multi degree and Terminal for ROADM and Traffic sites, and Line for OLA and Passthrough sites. This field is noneditable.		
Functionality	Displays the site functionality. This field is noneditable. Thee functionalities available for each type of site are: • Optical Cross Connect (OXC) for ROADM and traffic site • Auto for OLA site, Cisco ONP downgrades OLA site to passthrough if OLA is not required. • Passthrough for passthrough site	—	—
Scalable up to Degree	This parameter determines the maximum number of degrees, ducts, or line sides that can be supported by the site. The available options are 2, 4, 8, 12, and 16. The default option is 4. The network is scalable up to 16 degrees for ROADM and Traffic sites. Choose 2 to have a LINE ROADM site. For OLA and passthrough, the value is 2 and is noneditable.		
Site Type	Choose the type of site.	• Auto **Note** When you choose Auto, the default option is SMR-20. • SMR-20 • SMR-9 The Site type is Line for the OLA site.	Auto

Property	Description	Available options	Default
Shared SMR Port	Check this check box to connect Contentionless unit 16-AD-CCOFS and Colored unit MD-48-ODD/Even to the same MPO port of SMR-20. When Shared SMR port is enabled, MD-48-ODD/EVEN unit connects to the specific side of SMR-20 through MPO-8LC and UPG-4 instead of directly connecting to SMR-20 through MPO-16LC. **Note** Shared SMR port becomes disabled, if • **Degree Mesh Type** property is *PPMESH8-5AD* • Or, **Site Type** property is *SMR-9* and **Scalable Upto Degree** property is *8*	—	—
Degree Mesh Type	Choose the mesh type for the Flex NG-DWDM site.	• DEG-5/UPG-4 • PPMESH8-5AD	DEG-5/UPG-4
Site Type	Displays the type of the site. For example, OLT.	—	—
L0 Platform	Displays the platform.	—	—
Degree Type	Displays the type of degree. For example, BRK-8.	—	—
Pre Equip Degree	This parameter determines the number of degrees to be considered for the site hardware placement on day 0.	• None • Auto • 4 • 8 • 12 • 16	None If you choose None, only the sides that are present in the Cisco ONP GUI are shown. The values in the drop-down list are populated based on the value of scalable up to degree parameter.

Layout properties

This table describes the descriptions of various layout properties under sites.

Table 7: Layout properties

Property	Description	Available options	Default
Chassis Type	Choose the type of chassis. Chassis type is supported for all the sites except the passthrough.	• M6 Chassis • M15 Chassis • Auto M15 is the default option when you choose Auto.	Auto
Power Supply	Choose the type of Power Supply	• Auto • AC Power • DC Power	DC Power
Chassis Type	Choose the type of chassis. The available options are: **Note** Chassis type is not supported for the passthrough site.	• M6, and M15 Chassis for OLA • M6 Chassis for ROADM and Traffic • M15 Chassis for ROADM and Traffic • Auto for all nodes	Auto
Power Supply	Choose the type of Power Supply.	• Auto for all types of chassis • AC Power, DC power for M15 and M2 chassis • AC Power, DC Power, AC2 Power, DC40 Power, and DC20 Power for M6 chassis	Auto
Controller Card	Choose the type of the controller card.	• Auto • TNC/TSC, TNC-E/TSC-E, TNCS, TNCS-0, TNCS-2, and TNCS-20 for M2 chassis • TNC/TSC, TNC-E/TSC-E, TNCS, TNCS-0, TNCS-2, and TNCS-20 for M6 chassis • TNCS, TNCS-0 TNCS-2, TNCS-20 for M15 chassis	For an NCS 2000 site controller card is TNC available options are b chassis type chosen. E controller cards that a M15 chassis are listed
Redundant Controller Card	Choose whether to use a redundant controller card. This property is editable in NCS 1010 only when the chassis type is 1020.	—	—

Property	Description	Available options	Default
Layout Template	Choose the required layout template. **Note** After the chosen layout template is applied, all layout properties will be reset and disabled. **Note** After design analysis, if the applied layout template is not considered for card placement in the layout, check for the error message (noncritical) under the **Elements > Messages** tab. If you see a template-related error which indicates that there is a mismatch between the cards that are defined in the template and the cards that are created on the site, perform these steps: • Export the template from the **Layout** page, and modify it as required. • Import the modified template using the **Manage > Layout Template** option. • Switch to Design mode and apply the template to the site using the **Entity Editor**. • Reanalyze the network to get the correct layout populated.	List of available layout templates	—
UTS AC Power Cables	Choose the type of cables to be used for the AC power supply.	Cables are listed based on the country type and the Chassis type selected.	—
Redundant Power Scheme	Choose the redundant power scheme from the drop-down list to configure the number of working and protected power units for the chassis.	For an NCS 2000 site, the options available are based on the chassis type. For M15 chassis, the options available are 1+0, 1+1, 2+0, 2+1, 3+0, 3+1, 2+2. For example, if you choose 3+1 redundant power scheme, there are 3 working power units and 1 protected power unit. For M6 chassis, the options available are Auto, Yes, and No.	3+1 is the default scheme for M15 D the default redund for M15 AC chass

Property	Description	Available options	Default
Raman Adapter Share	This option is available only for the OLA site. This option indicates that MF-2LC-ADP can be shared with EDRA amplifiers and not with RAMAN amplifiers irrespective of the default selection.	—	By default, this check checked.
ECU Type	Choose the External Connection Unit (ECU) type.	The options available are based on the chassis type. • ECU—Has 12 USB 2.0 ports and supports IEEE1588v2 PTP, time-of-day (ToD), and pulse-per-second (PPS) inputs. • ECU-S—Similar to ECU except that it has eight USB 2.0 ports and two USB 3.0 ports. • ECU60-S—Variant of ECU-S introduced for the NCS 2006 when the shelf is powered at –60VDC nominal input voltage. ECU-S and ECU60-S are supported only for M6 chassis.	By default, the ECU ap is listed.
MF Unit	Choose the mechanical frame for the passive optical modules from the drop-down list.	• Auto • MF-6RU/MF-10RU • MF-1RU • The NCS2K-MF-1RU has four slots for the passive optical modules. • The NCS2K-MF-6RU supports up to 14 single-slot passive optical modules such as any combination of NCS2K-MF-DEG-5, CS2K-MF-UPG-4, or Connection Verification (CV) units. • The NCS2K-MF10-6RU supports up to 10 double-slot passive optical modules such as NCS2K-MF-MPO-16LC=.	Auto
Chassis Disaggregation	If you check this check-box, ROADM and transponder cards are placed in different chassis.	—	—

Cisco NMS properties

This table describes the descriptions of various Cisco NMS properties under sites.

Table 8: Cisco NMS properties

Property		Available options	Default
SVO Full License	Enable this check box to add High Availability (Feature and License), Connection Verification license, Flex Spectrum license, and OTDR license packaged in it.	—	—
High Availability	Enable this check box to add the High Availability feature to the license package.	—	—
Connection Verification License	Enable this check box to add the Connection Verification feature to the license package.	—	—
Flex Spectrum License	Enable this check box to add the Flex Spectrum feature to the license package. For SSON networks, the Flex Spectrum license is enabled by default.	—	—
OTDR License	Enable this check box to add the OTDR feature to the license package.	—	—

Third party NMS properties

This table describes the descriptions of various Third party NMS properties under sites.

Table 9: Third party NMS properties

Property		Available options	Default
3rd party Full License	Enable this check box to add NBI (North Bound Interface), Alarm Correlation, Performance Monitoring, and Circuit Provisioning features to the license package.	—	—
NBI	Enable this check box to add the NBI feature to the license package.	—	—
Alarm Correlation	Enable this check box to add the Alarm Correlation feature to the license package.	—	—
Performance Monitoring	Enable this check box to add the Performance Monitoring feature to the license package.	—	—
Circuit Provisioning	Enable this check box to add the Circuit Provisioning feature to the license package.	—	—

Map properties

This table describes the descriptions of various map properties under sites.

Table 10: Map properties

Properties	Description	Available options	Default
X Coordinate	It represents the longitudinal location of the site. Longitude can be positive or negative (-180 to 180). Negative is west of Greenwich, and positive is eastward.	—	—

Properties	Description	Available options	Default
Y Coordinate	It represents the latitudinal location of the site. Latitude can be positive or negative (- 90–90), north and south of the Equator.	—	—
Position Lock	Check this check box to lock the site position on the map.	—	—

Bill of materials properties

This table describes the descriptions of various layout properties under sites.

Table 11: Bill of materials properties

Properties	Description	Available options	Default
Bill of Material			
Enable NCS	This feature enables NCS features on all sites in the network.	—	—
Use PAYG	The Pay As You Grow (PAYG) functionality significantly reduces the initial setup cost and enables the purchase of another wavelength capacity on a need basis. PAYG enables port-based cost or licensing for SMR-9 and SMR-20 cards.	—	—

Properties	Description	Available options	Default
Connection Verification	Enable this check box to: • Validate the correct optical interconnection between the optical cards inside a Flex ROADM. • Measure the insertion loss of the external passive path. • Validate the quality of the connections to the patch panel. • Check if the insertion loss is within the expected value. These cards support connection verification: • SMR20 FS CV • MF-DEG-5-CV • MF-MPO-16LC-CV • MF-UPG-4-CV	—	—
New FS-SMR PID	By default, this check-box remains checked for a newly created network. You cannot edit it. This option enables displaying of the new SMR-20 PID in the BOM page. You can enable this option when you unlock an mpz network where SMR-20 is selected, during an upgrade or release upgrade.	—	—

Table 12: Bill of materials properties

Property	Platform	Description	Available options	Default
Enable NCS	NCS 2000	This feature enables NCS features on all sites in the network.	—	—

Property	Platform	Description	Available options	Default
Use PAYG	NCS 2000	The Pay As You Grow (PAYG) functionality significantly reduces the initial setup cost and enables the purchase of another wavelength capacity on a need basis. PAYG enables port-based cost or licensing for SMR-9 and SMR-20 cards.	—	—
Connection Verification	NCS 2000	Enable this check box to: • Validate the correct optical interconnection between the optical cards inside a Flex ROADM. • Measure the insertion loss of the external passive path. • Validate the quality of the connections to the patch panel. • Check if the insertion loss is within the expected value. The following cards support connection verification: • SMR20 FS CV • MF-DEG-5-CV • MF-MPO-16LC-CV • MF-UPG-4-CV	—	—

Property	Platform	Description	Available options	Default
New FS-SMR PID	NCS 2000	You cannot edit this option. This option enables displaying of the new SMR-20 PID in the BOM page. You can enable this option when you unlock an mpz network where SMR-20 is selected, during an upgrade or release upgrade.	—	This check-box remains checked for newly created network.

Enhanced face plate properties

This table describes the descriptions of various Enhanced face plate properties under sites.

Table 13: Enhanced face plate properties

SVO properties

This table describes the descriptions of various **SVO** properties of a site.

Table 14: SVO properties

Properties	Description	Available options	Default
Chassis License Flush Out	Allows you to flush out the existing chassis license and purchase new chassis license.	—	—
SVO Pluggables	Choose the pluggable. **Note** The SVO pluggables are not applicable for UCS-based SVO network design.	• Auto • ONS-SC +- 10G-SR • ONS-SC +-10G-LR	Auto When you choose Auto, ONS_SC+-10G_SR is the default option.

Add contentionless side to a site

Contentionless functionality on a site refers to the contentionless add or drop ability of an N-degree ROADM node to accommodate N wavelengths of the same frequency from a single add or drop device. A ROADM is contentionless when the number of drop units equals the number of ROADM degrees.

Use the following procedure to add contentionless sides to a ROADM or traffic site.

Before you begin

Log in to the Cisco ONP web interface.

Procedure

Step 1 Open the network in which you want to add contentionless sides to a site.

Step 2 Choose **Network** > **Entity Editor**.

Step 3 Click the site to which you want to add contentionless sides.

Step 4 Click the **Add Contentionless Side** icon.

Step 5 Enter the appropriate value in the **Enter number of contentionless sides** field.

The number of contentionless sides you can add to a site depends on the site type and the **Scalable Upto Degree** property.

If you want to add contentionless sides to	Then..
Layer-1 SMR site	Enter the appropriate value in the **Enter number of contentionless sides** field.
Layer-2 SMR-20 site	• Check the **Evolved Mesh** check box. • Select **Site Type** as *SMR-20* or *Auto*. • Check the **Cascaded SMR** check box. • Select **Degree Mesh Type** as *DEG-5/UPG-4*. • Click **Update**. • Enter the appropriate value in the **Enter number of contentionless sides** field. See Contentionless sides for Layer-1 SMR, on page 22.

If you want to add contentionless sides to	Then..
Extended Layer-2 SMR-20 site	• Choose the **Reserve Cascaded SMR Port** value. **Note** The **Reserve Cascaded SMR Port** drop-down property is available for NCS 2000 networks from R11.1.x. Based on the N-degree and Layer-2 SMR, you can add more contentionless sides on each site for the extended layer-2 SMR, but this will reduce the number of Layer-1 contentionless sides. • Click **Update**. • Enter the appropriate value in the **Enter number of contentionless sides** field. See Contentionless sides for extended Layer-2 SMR, on page 23.

Step 6 Click **OK**.

Contentionless sides for Layer-1 SMR

This table explains how many contentionless sides you can add to a site based on the site type, and the **Scalable Upto Degree** property.

Table 15: Contentionless sides for Layer-1 SMR

Site type	Scalable upto degree	Number of contentionless sides
SMR-20	4	16
SMR-20	8	12
SMR-20	12	8
SMR-20	16	4
SMR-20	Line	8
SMR-20	Terminal	8
SMR-9	4	5
SMR-9	8	1

Contentionless sides for extended Layer-2 SMR

This table shows how many contentionless sides you can add to each site for the extended layer-2 SMR site. The number depends on the N-degree and Layer-2 SMR configuration

Table 16: Contentionless Sides for extended Layer-2 SMR

Reserve cascaded SMR port	Site type	Scalable upto degree	No. of contentionless sides for Layer-1 side	No. of contentionless sides with 1st Port Layer-2	No. of contentionless sides with 2nd Port Layer-2	No. of contentionless sides with 3rd Port Layer-2
1	SMR-20	4	16	20	Not supported	Not supported
	SMR-20	8	12	20	Not supported	Not supported
	SMR-20	12	8	20	Not supported	Not supported
	SMR-20	16	4	20	Not supported	Not supported
2	SMR-20	4	Not supported	Not supported	Not supported	Not supported
	SMR-20	8	11	20	20	Not supported
	SMR-20	12	7	20	20	Not supported
	SMR-20	16	3	20	20	Not supported
3	SMR-20	4	Not supported	Not supported	Not supported	Not supported
	SMR-20	8	Not supported	Not supported	Not supported	Not supported
	SMR-20	12	6	20	20	20
	SMR-20	16	2	20	20	20

Modify the number of contentionless side ports at a site

Follow these steps to modify the number of contentionless ports for a side in a ROADM site.

Before you begin

Log in to the Cisco ONP web interface.

Procedure

Step 1 Open the network in which you want to modify the number of contentionless ports for a side in a site.

Step 2 Choose **Network** > **Entity Editor**.

Step 3 Expand a ROADM site, and select a contentionless side.

The properties of the side are displayed in the right panel.

Step 4 From the **Contentionless Ports** drop-down list, select the required number of ports.

Click **Update**.

Modify fiber properties

Use this procedure to modify the properties of a fiber.

Before you begin

Log in to the Cisco ONP web interface

Procedure

Step 1 Open the network where you want to modify the fiber properties.

Step 2 Choose **Network** > **Entity Editor**.

Step 3 Click the **Fiber** tab in the **Entity Editor** window.

Step 4 Choose the fiber and modify the required properties. For the property descriptions, refer to:

- General fiber properties, on page 24
- Physical and Raman amplification properties of fiber, on page 29
- Factors properties of fiber, on page 27
- Extended and totals properties of a fiber, on page 28

Step 5 Click **Update**.

General fiber properties

This table describes various general properties of the optical fiber connected between the sites.

Table 17: General fiber properties

Property	Description	Available options	Default
Name	By default, the name of the fiber is based on the number of fibers between the source and destination sites. You can edit the name.	—	—
Source	Displays the source site name. This field is noneditable.	—	—

Property	Description	Available options	Default
Destination	Displays the destination site name. This field is noneditable.	—	—
Bidirectional	Indicates whether a standard single fiber is used to transmit the data in both directions.	—	—
Fiber Type	Select the fiber type.	• G652-SMF-28E • TWR • MC • TWPlus • TWMinus • TWClassic • FL • TL • G652-SMF • ELEAF • True wave	G652-SMF

Property	Description	Available options	Default
Length	Displays the span length of the fiber connecting a source and destination site. If necessary, change the span length manually. • The Cisco ONP tool automatically updates the fiber length based on the actual geographical map. If you change the fiber length, then the Cisco ONP tool updates the same in the network tree and the map accordingly for the first time. Later, the fiber length does not change, when you drag and drop the sites in the map. • In the network tree pane, expand **Fiber** and select the fiber couple, A-Z and Z-A. The properties pane displays the fiber couple name, source side, destination side, its span length, loss, and, Polarization Mode Dispersion (PMD) value. • You can enter the different span length and loss values for the individual fibers in a fiber couple.	—	—
Network status	Displays the status of the network, whether the network is being deployed or not. If the network is not deployed, it shows the status as UNDISCOVERED.	—	—

Property	Description	Available options	Default
Business status	Displays the status of the fiber in a business perspective view. If fiber is not deployed, it shows the status as FUTURE. This field is noneditable.	—	—
Measurement Units	Choose the measurement unit .You can set the measurement unit only for the duct, but not for the fiber pair (couple) or fiber.	• Km • Miles	Km
Aging Loss [dB]	Enter the aging loss value for the fiber.	—	—
DCN Extension	Check this check box to enable the default use of a data connection network (DCN) extension on each span in the project. This setting implies that the optical service channel (OSC) channel is not used to connect the two nodes.	—	—
OSC FrameType	Choose the OSC frame type. Cisco ONP uses FE Frame as the preferred frame type.	• Auto • OC3 Frame • GE Frame • FE Frame	Auto
Aging Factor	Enter the number to factor fiber aging. This factor is multiplied by the SOL total span loss without connectors.	—	—

Factors properties of fiber

This table describes various factors properties of the optical fiber.

Table 18: Factors properties of fiber

Property	Description	Available options	Default
Loss Coefficient [dB/km]	Loss is calculated based on the loss coefficient.	—	—

Property	Description	Available options	Default
QD C-Band	Displays the secondary order dispersion for C-band.	—	—
CD C-Band	Displays the secondary order dispersion for L-band.	—	—
RD Factor	Displays the random dispersion value.	—	—

Extended and totals properties of a fiber

This table describes various extended and totals properties of the optical fiber.

Table 19: Extended and totals properties

Property	Description	Available options	Default
Extended			
Effective Mode Area	Displays the effective mode area [µm^2]	—	—
SRS tilt coefficient	Displays the Stimulated Raman Scattering tilt coefficient on the band.	—	—
DRBS coefficient	Displays the Rayleigh Scattering capture coefficient.	—	—
N2	Nonlinear index of refraction [1e-16 cm^2/W]	—	—
LFBR	Length of individual fibers for sigmaDSP [Km]	—	—
Totals **(The properties under Totals are noneditable)**			
PMD	Displays the Polarization Mode Dispersion (PMD) value.	—	—
Loss EOL	Displays the total loss EOL calculation.	—	—
Loss SOL	Displays the total loss SOL calculation.	—	—
CD C-Band	Displays the total chromatic dispersion for the C-band.	—	—
QD C-Band	Displays the secondary order dispersion for C-band.	—	—
RD	Displays the random dispersion value.	—	—

Physical and Raman amplification properties of fiber

This table describes various physical and Raman amplification properties of the optical fiber.

Table 20: Physical and Raman amplification properties of fiber

Property	Description	Available options	Default
Physical			
Length-Based Loss	The fiber loss value is automatically calculated based on length and loss coefficient, when you check this option.	—	—
Tot SOL Loss w/o connectors	Enter the start of life fiber loss value for each span, excluding the connector concentrated loss.	—	—
Connector Loss A	Connector Loss at Source Site [dB]	—	—
Connector Loss B	Connector Loss at Destination Site [dB]	—	—
Raman Amplification			
Raman Amplified	Enable Raman Amplification on the ducts. **Note** When you enable Raman amplification, the side property *Enable C+L Band S/C* is automatically disabled.	—	—

Modify fiber couple properties

Use this procedure to modify the properties of a fiber couple.

Before you begin

Log in to the Cisco ONP web interface

Procedure

Step 1 Open the network where you want to modify the fiber couple properties.

Step 2 Choose **Network** > **Entity Editor**.

Step 3 Click the **Fiber** tab in the **Entity Editor** window.

Step 4 Choose the fiber and drill down to the fiber couple, and modify the required properties. For the property descriptions, refer to:

- General properties of a fiber couple, on page 30
- Physical and factors properties of a fiber couple, on page 31
- Totals properties of a fiber couple, on page 31

Step 5 Click **Update**.

General properties of a fiber couple

This table describes various general properties of an optical fiber couple.

Table 21: General fiber couple properties

Property	Description	Available options	Default
Name	By default, fiber couple is named based on the fiber name followed by COUPLE-AZ or COUPLE-ZA. The sides that are connected by the fiber couple are indicated inside brackets. The name is noneditable.	—	—
Source Side	Displays the source side name. This field is noneditable.	—	—
Destination Side	Displays the destination side name. This field is noneditable.	—	—
Length	Automatically displays the span length of the fiber connecting a source and destination side. Change the span length manually, if necessary. You can enter the different span length and loss values for the individual fibers in a fiber couple.	—	—

Physical and factors properties of a fiber couple

This table describes various physical and factors properties of an optical fiber couple.

Table 22: Physical and factors properties of a fiber couple

Property	Description
Physical	
Tot SOL Loss w/o connectors	Enter the start of life fiber loss value for each span, excluding the connector concentrated loss.
Connector Loss A	Connector Loss at Source Site [dB]
Connector Loss B	Connector Loss at Destination Site [dB]
Factors	
Loss coefficient [dB]	Enter the value of the SOL fiber loss per kilometer used to calculate the loss of each span in the network.
PMD coefficient	Displays the PMD coefficient.

Totals properties of a fiber couple

This table describes various Totals properties of an optical fiber couple. The properties under Totals are noneditable

Table 23: Totals properties

Property	Description	Available options	Default
PMD	Displays the Polarization Mode Dispersion (PMD) value.	—	—
Loss EOL	Displays the total loss EOL calculation.	—	—
Loss SOL	Displays the total loss SOL calculation.	—	—
CD C-Band	Displays the total chromatic dispersion for the C-band.	—	—
QD C-Band	Displays the secondary order dispersion for C-band.	—	—
RD	Displays the random dispersion value.	—	—

Modify service properties

Use this procedure to modify the properties of the service.

Before you begin

Log in to the Cisco ONP web interface.

Procedure

Step 1 Open the network where you want to modify the service properties.

Step 2 Choose **Network** > **Entity Editor**.

Step 3 In the **Entity Editor** window, click the **Service** tab.

Step 4 Choose the service under the **Serives** tab, and modify the properties in the right pane. For the property descriptions, refer to:

- General service properties, on page 32
- Primary and secondary paths forcing properties, on page 33

Note

- Force both primary and secondary path fiber or channel to enable protected service. Ensure the wave type matches for both paths.
- Apply path forcing end-to-end, from the source to the destination. If you force only a partial path, the analysis fails.
- Force the wave path tagged to the service.
- For protection types 1+1+R+R, 1+1+R, and 1+R, you can force a path in restoration path1 or restoration path2. Fiber can also be forced in the primary or secondary path.

Step 5 Click **Update.**

General service properties

Table 24: General service properties

Property	Description		
Name	The service name is based on the source and destination sites and the number of services between them. You can edit the name. For example, if there are two services between site 1 and site 2, the names of the services are Site-1-Site-2-1 and Site-1-Site-2-2, respectively.	—	—
Client Type	Choose the type of service.	• 10GE • 100GE • STM-64	100GE

Property	Description		
Protection	Choose the protection type from the drop-down list. For more information on protection types, see #unique_135.	• Unprotected • 1+1 • Disjoint • S+NS • 1+R • 1+1+R • 1+1+R+R	1+1
Source	Displays the source site name.	—	—
Destination	Displays the destination site name.	—	—
Tertiary Source	From the drop-down list, select the possible site as a tertiary source.	Lists the available sites	—
Tertiary Destination	From the drop-down list, select the possible site as a tertiary destination. Tertiary source and tertiary destination are enabled only when you select the protection scheme as Unprotected Disjoint. You can select either tertiary destination or both tertiary source and tertiary destination. • If you select only the tertiary destination, the demand is created between the source and destination and between the source and tertiary destination. These do not have common fibers in the path, which are disjoint. • If you select both tertiary source and tertiary destination, two unprotected demands are created between the source to destination, and tertiary source to tertiary destination. The demands are disjoint to each other.	Lists the available sites	—

Primary and secondary paths forcing properties

These tables describe the primary and secondary paths forcing properties for services. Secondary path is available only for (1+1) .

Table 25: Primary path forcing properties

Property	Description	Available options	Default
Path	Cisco ONP automatically selects the shortest path as working path and also allows you to force the path manually.	—	—

Property	Description	Available options	Default
Fiber	Primary path fiber is forcing path for working trail.	—	—
Regeneration Platform	Displays the platform of the regeneration site	—	—
Regen Sites	Choose the regeneration site.	Lists the available regeration sites	—
Wavelength	Click **Edit** to choose the wavelength.	Displays multiple wavelength options.	Auto
ODU Timeslot	Enter the ODU timeslot value.	—	—
Section Wavelength(s)	Displays the selected **Wavelength**.	—	—
Src Channel Type	Choose the type of source channel.	• Auto: Auto option is the contentionless demand. • Contentionless • Colorless • Colored	Auto
Dst Channel Type	Choose the type of destination channel.	Auto-populated based on the Src channel type.	—

Table 26: Secondary path forcing properties

Property	Description	Available options	Default
Path	Secondary path is the protected path when the primary path fails. This path is the second best path after the primary path.	—	—
Fiber	Secondary path fiber is for protected service, forcing path for the protected trail.	—	—
Regeneration Platform	Displays the platform of the regeneration site	—	—
Regen Sites	Choose the regeneration site.	Lists the available regeneration sites.	—
Wavelength	Click **Edit** to choose the wavelength.	Displays multiple wavelength options.	—

Property	Description	Available options	Default
ODU Timeslot	Enter the ODU timeslot value.	—	—
Section Wavelength(s)	Displays the selected **Wavelength**.	—	—
Src Channel Type	Choose the type of source channel.	• Auto: Auto option is the contentionless demand. • Contentionless • Colorless • Colored	Auto
Dst Channel Type	Auto-populated based on the Src channel type. You can still change the type. When you change the Dst channel type, Src channel type also changes to the same.	• Auto: Auto option is the contentionless demand. • Contentionless • Colorless • Colored	Same as the Src channel type.

NCS1K domain properties

This table describes the various NCS1K domain properties for services.

Table 27: NCS1K domain properties

Property	Platform	Description	Available options	Default
Client Type	NCS 2000	Displays the client type. By default, client type is OTU4.	—	—
Interface Type	NCS 2000	Displays the interface type. By default, interface type is BH.	—	—
Trunk Mode	NCS 2000	Choose the trunk mode. **Note** Based on the selected trunk mode, Baud rates are filtered.	• 200G • 300G	200G

Property	Platform	Description	Available options	Default
Baud Rate	NCS 2000	Choose whether the Baud rates mode as 60 or 69GBd.	• 60GBd • 69GBd	60GBd

Services aggregation

Table 28: Feature History

Feature Name	Release Information	Feature Description
Services Aggregation	Cisco ONP Release 4.1	The services aggregation feature allows two or more services to share the same trunk port or channel. By default, the services are added to the DefaultGroup. You can export aggregation reports.

You can use services aggregation to allow multiple services to share the same connection point, such as a trunk port or channel. This ability to share is determined by the characteristics defined in their **Service Group**.

Specifically, when you add services to a 1K-2K-4K Traffic site within an **SSON network**, the system automatically creates a **DefaultGroup** under **Services** in the network tree. All the services you add are then automatically associated with **DefaultGroup**.

Create a new service group

Follow these steps to create a new service group.

Before you begin

Log in to the Cisco ONP web interface

Procedure

Step 1 Open the network where you want to create a new service group.

Step 2 Right-click **Services** under the network tree and choose **Create Service Group**.

A new service group appears under Services.

Modify service group properties

Follow these steps to modify the properties of a service group.

Before you begin

Log in to the Cisco ONP web interface.

Procedure

Step 1 Open the network where you want to modify the service group properties.

Step 2 Choose **Network** > **Entity Editor**.

Step 3 In the **Entity Editor** window, click the **Services** tab, and click a service group.

Step 4 Modify the service group properties as required.

See Service group properties, on page 37.

Step 5 Click **Update**.

Service group properties

This table describes various service group properties.

Table 29: Service group properties

Property	Description	Available options	Default option
General			
Name	By default, Cisco ONP provides a servive group name. For example, Group-1. Edit the name if needed. For example, if there are two services between site 1 and site 2, the name of the services are Site-1-Site-2-1 and Site-1-Site-2-2, respectively.	—	Group-1
Demand Types	Select the demand type. For default group all demand types are available, and you cannot edit them.	—	—
Default Group	Indicates whether the service group is a default group or a user created group.	—	—
NCS 4 K			
Exclusive LC Usage	Indicates whether the services belonging to this group must have an exclusive Line Card (LC). For example, when you check this check box, neither the Client LC nor the Trunk LC of the services belonging to this group can be shared by services belonging to any other groups.	—	—

Property	Description	Available options	Default option
Symmetric Aggregation	Indicates whether this group allows aggregation of only symmetric services. Services are symmetric if they have same protection scheme. • Unprotected • 1+R • 1+1 • 1+1+R • 1+1+R+R For Example, all "1+1" services are symmetrical. If you check this check box, this service group allows aggregation of only symmetrical services. For example, "Unprotected" can be aggregated only with "Unprotected", "1+R" only with "1+R", "1+1" only with "1+1", and so on. If this check box is unchecked, this service group allows aggregation of symmetrical and unsymmetrical services together. For example, "Unprotected" can be aggregated with either "Unprotected", "1+R", "1+1" "1+1+R" or "1+1+R+R". See Rules for aggregating services, on page 38	—	—
NCS 1 K			
Exclusive LC Usage	Same as NCS 4 K.	—	—
Symmetric Aggregation	Same as NCS 4 K.	—	—

Rules for aggregating services

These rules must be satisfied for any two services, whether symmetrical or non-symmetrical, to be aggregated:

1. Both services must have identical source and destination points.
2. The paths of the two services must align for the same path types.

- Example for symmetric aggregation:

  When aggregating two "1+1" services, the working path of the first service must match the working path of the second service, and similarly, the protection paths of both services must also match.

- Example for non-symmetric aggregation:

  When aggregating a "1+1" service with a "1+1+R" service, the working path and protection path of the first service must match the corresponding paths of the second service. However, the restoration path of the second service can differ.

3. Both services must use the same wavelength for the same path types.
   - If the wavelength is set to "auto," it can be aggregated with either another "auto" wavelength or a fixed wavelength.
4. Both services must have the same trunk mode configuration for the same path types.
5. The regeneration sites for both services must align for the same path types.
6. The demand type is not a constraint for aggregation, except when considering trunk capacity availability.

Associate a service with the newly created group

By default, the services are associated with the **DefaultGroup**. However, you can change the group.

Follow these steps to associate a service to the newly created group.

Before you begin

Log in to the Cisco ONP web interface.

Procedure

Step 1 In the network tree, click the service that you want to associate to a group.

You can view the properties of the network at the bottom of the network tree.

Step 2 Selct the group from the **Service Group** drop-down list.

Step 3 Click **Update**.

Note
For an LNI-imported network, all services are in the Default group by default. When you upgrade the LNI-imported network for the first time, you can move the services to other newly created Service Groups without unlocking them. For later upgrades, unlock the services before moving them between Service Groups. The Service Groups stay locked during upgrade mode unless you perform a complete network-level unlock.

Export aggregation reports

Follow these steps to export the service aggregation reports.

Before you begin

Log in to the Cisco ONP web interface.

Procedure

Step 1 Open an analyzed network to export the aggregation reports.
Step 2 Choose **Export** > **Service Aggregation**.
Step 3 Save the aggregation report as an Excel file to your local system.

Modify wave properties

Follow these steps to modify the properties of the wave.

Before you begin

Log in to the Cisco ONP web interface.

Procedure

Step 1 Open the network where you want to modify the wave properties.
Step 2 Choose **Network** > **Entity Editor**.
Step 3 In the **Entity Editor** window, click the **Services** tab, and click a wave.
Step 4 Modify the wave properties as required.

See Wave properties, on page 40.

Step 5 Click **Update**.

Wave properties

This table describes various wave properties.

Table 30: Wave properties

Property	Description	Available options	Default option
General			

Property	Description	Available options	Default option
Label	Displays the wave name.	—	By default, the wave is named based on the source and destination sites and the number of waves between them. For example, if there are two waves defined between site 1 and site 2, the waves are named as Site-1-Site-2-1 and Site-1-Site-2-2, respectively. Edit the name if required.
Source Site	Displays the source site name.	—	—
Destination Site	Displays the destination site name.	—	—
Traffic Type	Select the traffic type.	• Optical Source • 100GE • 10GE LAN PHY • 40GE LAN PHY • Fiber Channel 10G • Fiber Channel 16G • Fiber Channel 8G • OC-192/STM-64 • OTU2 • OTU2e • OTU4 • Pluggable Card	Optical Source

Property	Description	Available options	Default option
Protection Type	Choose the protection type. For more information on protection types, see #unique_135. For Client 1+1, ensure that the sites have contentionless sides for the analysis to be successful. By default, Cisco ONP finds both span and node disjoint path for Client1+1 protected waves, but it allows you to force span and node disjoint path.	• Unprotected • Client 1+1	Unprotected
Forecast	Check this check box to change a present wave to a forecast wave.	—	—
Encryption	Check this check box to enable encryption.	—	—

Modify media channel properties

Follow these steps to modify properties of the media channel.

Before you begin

Log in to the Cisco ONP web interface.

Procedure

Step 1 Open the network where you want to modify the media channel properties.

Step 2 Choose **Network** > **Entity Editor**.

Step 3 In the **Entity Editor** window, click the **Services** tab, and click a media channel.

Step 4 Modify the media channel properties as required.

See Media channel properties, on page 42.

Step 5 Click **Update**.

Media channel properties

This table describes various media channel properties.

Table 31: Media channel properties

Property	Description	Available options	Default option
General			
Label	Displays the media channel name.	—	By default, the media channel is named based on the source and destination sites and the number of media channels between them. For example, if there are two media channels between site 1 and site 2, they are named as Site-1-Site-2-1 and Site-1-Site-2-2, respectively. Edit the name if required.
Source Site	Displays the source site name.	—	—
Destination Site	Displays the destination site name.	—	—
Traffic Type	Select the traffic type.	• Optical Source • 100GE • 10GE LAN PHY • 40GE LAN PHY • Fiber Channel 10G • Fiber Channel 16G • Fiber Channel 8G • OC-192/STM-64 • OTU2 • OTU2e • OTU4 • Pluggable Card	Optical Source

Property	Description	Available options	Default option
Protection Type	Select the protection type. For more information on protection types, see #unique_135. For Client 1+1, ensure that the sites have contentionless sides for the analysis to be successful. By default, Cisco ONP finds both span and node disjoint path for Client1+1 protected waves, but allows you to force span and node disjoint path.	• Unprotected • Client 1+1	Unprotected
Forecast	Check this check box to change a present wave to a forecast wave.	—	—
Encryption	Check this check box to enable encryption.	—	—

Modify trail properties

Follow these steps to modify the properties of the trail.

Before you begin

Log in to the Cisco ONP web interface.

Procedure

Step 1 Open the network where you want to modify the trail properties.

Step 2 Choose **Network** > **Entity Editor**.

Step 3 In the **Entity Editor** window, click the **Services** tab.

Step 4 Expand **Waves**, or **Media Channels**.

Step 5 Navigate to the required trail and click it.

Step 6 Modify the trail properties as required. See

- General trail properties, on page 45
- OTN trail properties, on page 46
- Source and destination trail properties, on page 46

Step 7 Click **Update**.

General trail properties

This table describes various general trail properties.

Table 32: General trail properties

Property	Description	Available options	Default option
Label	Displays the name of the trail. You can edit the name.	—	Available options
Path of Wave	Select a fiber.	Displays the fibers available in the network.	—
Regen Sites	Select the regeneration site.	Displays the regeneration sites available in the network.	—
Source Site	Displays the source site name.	—	—
Destination Site	Displays the destination site name.	—	—
Wavelength	Click **Edit** to choose the wavelength.	Diaplys multiple wavelengths.	Auto
Central Wavelength	Click **Edit** to choose the central wavelength.	Displays multiple wavelengths.	Auto
Multicarrier	Indicates whether the transmission is a multicarrier transmission.	—	—
Trunk Mode	Select the trunk mode.	See Supported Cards and Pluggables	—
OSNR Forward [dB]	Displays the forward optical signal to noise ratio.	—	—
OSNR Reverse [dB]	Displays the reverse optical signal to noise ratio.	—	—
Colorless	Indicates whether colorless functionality is enabled on the trail.	—	—
Omnidirectional	Indicates whether omnidirectional functionality is enabled on the trail.	—	—
Contentionless	Indicates whether contentionless functionality is enabled on the trail.	—	—

Property	Description	Available options	Default option
Filtering Penality	Displays the value of the penalties that are caused by the different filter types (OADM, and ROADM).	—	—

OTN trail properties

This table lists and defines OTN trail properties.

Table 33: OTN trail properties

Property	Description	Available options	Default option
First ODU	Displays the first Optical Data Unit.	—	—
Last ODU	Displays the last Optical Data Unit.	—	—
SRLGs	Displays the SRLGs associated with the trail.	—	—
OTN Hops	Displays the number of OTN hops.	—	—
Quantity	Displays the number of OTN services on the trail.	—	—

Source and destination trail properties

This table lists and defines various source and destination trail properties.

Table 34: Source and destination trail properties

Property	Description	Available options	Default option
Source			
Src Card Type	Select the card used in the source site.	See Supported Cards and Pluggables and Supported Optical Sources for more details about the list of supported cards.	200G-SD-FEC

Property	Description	Available options	Default option
Src Client Interface	Select a pluggable from the drop-down list.	The pluggables suitable for the chosen card type are displayed. Supported Cards and Pluggables for more information on the list of supported pluggables. The pluggable FR-1(QSFP-100G-FR-S) is supported on the client ports of the 400G-XP LC starting from NCS 2000 Release 11.1.0.	Auto
Src Channel Type	Select the type of source channel.	The available options are: • Auto • Contentionless • Colorless • Colored	Auto
Src Trunk Type	Select the trunk type from the drop-down list.	See Supported Cards and Pluggables	Auto
Src Contentionless Side	Select the contentionless side from the drop-down list.	Displays the available contentionless sides.	Auto
Destination			
Dst Card Type	The destination card type is auto populated based on the source card type chosen.	—	—
Dst Client Interface	Select a pluggable from the drop-down list. The pluggables suitable for the chosen card type are displayed.	See Supported Cards and Pluggables	Auto
Dst Trunk Type	Select the trunk type from the drop-down list.	See Supported Cards and Pluggables	Auto
Dst Channel Type	Select the type of the destination channel.	The available options are: • Auto • Contentionless • Colorless • Colored	Auto

Property	Description	Available options	Default option
Dst Contentionless Side	Select the contentionless side from the drop-down list.	Displays the available contentionless sides.	Auto

Modify section properties

Follow these steps to modify properties of the section.

Before you begin

Log in to the Cisco ONP web interface.

Procedure

Step 1 Open the network where you want to modify the section properties.

Step 2 Choose **Network** > **Entity Editor**.

Step 3 In the **Entity Editor** window, click the **Services** tab.

Step 4 Expand **Waves**, or **Media Channels**.

Step 5 Navigate to a trail and select a section within the trail.

Step 6 Modify the section properties.

The section and the trail have the same properties. See these references for descriptions of the properties.

- General trail properties, on page 45
- OTN trail properties, on page 46
- Source and destination trail properties, on page 46

Step 7 Click **Update**.

Modify side properties

Table 35: Feature History

Table 36: Feature History

Feature Name	Release Information	Feature Description
Support for NCS2K-MF-CL-SC (C and L-band combiner and splitter)	Cisco ONP Release 4.2	Cisco ONP supports the passive module, NCS2K-MF-CL-SC (C and L-band combiner and splitter), starting from the NCS 2000 system release 12.2 for SSON and non-SSON networks. This feature enables combining C and L band wavelengths.

Use this procedure to modify the properties of a side in a site.

Before you begin

Log in to the Cisco ONP web interface.

Procedure

Step 1 Open the network where you want to modify the side properties of a site.

Step 2 Choose **Network** > **Entity Editor**.

Step 3 In the **Entity Editor** window, navigate to **Sites** > **Site** > **Side**.

Step 4 Modify the side properties as required. See these references for the property descriptions.

- General side properties, on page 49

Step 5 Click **Update.**

General side properties

This table describes various general properties for the sides of a site.

Property	Description	Available options	Default
Label	Displays the label of the side.	—	—
Type	Displays the type of the side: Line or Contentionless	—	—

Property	Description	Available options	Default
Colorless Ports (Displayed for Line side)	Enter the number of colorless ports. From Release 24.3.1, this property is enabled for SMR-9 card	—	—
Contentionless Ports (Displayed for Contentionless side)	Choose the number of contentionless ports.	—	—

Property	Description	Available options	Default
Enable C+L Band S/C (Displayed for Line side type)	Cisco ONP supports the passive module, NCS2K-MF-CL-SC (C and L-band combiner and splitter), starting from the NCS 2000 system release 12.2 for SSON and non-SSON networks. Check this check box to enable the NCS2K-MF-CL-SC card. This card is supported for ROADM, OLA, and traffic nodes, but not on the passthrough node. **Note** When you enable this option on a side: • It is automatically enabled on the side that is connected to the selected side through a fiber. • The fiber property *Raman Amplified is* automatically disabled, and the opposite way. • This card introduces a certain amount of attenuation and insertion loss that is reflected in the ANS parameters. The NCS2K-MF-CL-SC module does not appear in the layout.	—	—

Modify C-band amplifier properties

Use this procedure to modify the properties of C-band amplifiers in a site.

Table 37: Feature History

Feature Name	Release Information	Feature Description
Manual Editing of Raman COP values	Cisco ONP Release 4.1	This feature allows you to edit the crosstalk values of the Raman COP amplifier in the SSON network, starting from NCS 2000 Release 11.1.

Table 38: Feature History

Feature Name	Release Information	Feature Description
Inline Amplifier	Cisco ONP Release 4.2	The **Inline Amplifier** option allows you to enable an inline amplifier in the network. You can simulate the optical feasibility of the network with and without an inline amplifier. Based on the colorless or colored add/drop type selected and the QSFP-DD pluggable status, a default inline amplifier is enabled for the network.

Note Make sure that SMR card is forced on the site before you update the c-band amplifier properties.

Before you begin

Log in to the Cisco ONP web interface

Procedure

Step 1 Open the network where you want to modify the C-band properties.

Step 2 Choose **Network** > **Entity Editor**.

Alternatively, click the network name in the network tree, and click **Show Advanced Properties** displayed under the network tree.

Step 3 In the **Entity Editor** window, click the **Site** tab.

Step 4 Choose **Sites** > **Site** > **Site domain** > **Side** > **C-Band**.

Step 5 Click **C-Band Amplifier** and modify the properties. For detailed property descriptions, refer to:

- General properties of a C-band amplifier, on page 53
- C-band amplifier and attenuator options, on page 56
- Raman amplification properties of a C-band amplifier, on page 59

General properties of a C-band amplifier

This table lists the general properties of a C-band amplifier.

Table 39: General properties of a C-band amplifier

Options	Description	Available options	Default
Raman COP Tilt	Enter a value.	—	Auto
Pre Tilt	Enter a value.	—	Auto
Raman Tilt	Enter a value.	—	Auto
Booster Tilt	Enter a value.	—	Auto

Options	Description	Available options	Default

Inline Amplifier		• Yes—EDFA17 or EDFA35 amplifier is chosen as the default amplifier when you choose colored add/drop module MD-64-C or colorless add/drop MF-6AD-CFS, respectively. See Modify Add/Drop multiplexer properties, on page 61.
		• No—No amplifier can be forced.
		• Auto
		  • EDFA17 amplifier is chosen as the default amplifier when any one of the demands aggregated in MD-64-C has low launch power optical resource or QSFP-DD pluggable is forced.
		  • EDFA35 amplifier is chosen as the default amplifier when any one of the demands aggregated in MF-6AD-CFS has low launch power optical resource or QSFP-DD pluggable is forced.
			Auto

Options	Description	Available options	Default
	Choose whether inline amplifier can be forced. **Note** When you configure MF-6AD-CFS+EDFA35 in an SSON or non-SSON network, the optical results show system error for the demands of the same or different types. This error affects the what-if analysis. Hence we recommend choosing the appropriate channel and client attenuators so that the inline amplifier works at the proper gain range. You can view the amplifier added in the **IPC**, **BOM**, and **Layout** tabs, after the successful analysis. **Note** • When you add a QDD demand while upgrading a network where the Inline Amplifier property is set as *no*, the inline amplifier can be included in the network only if you unlock the side and set the Inline amplifier property as *Auto* or *Yes*. • Default colorless configuration does not require inline amplifier. • When there are no demands passing through the colored or colorless Add/Drop device,		

Options	Description	Available options	Default
	the forced Inline amplifier is not placed.		

C-band amplifier and attenuator options

This table describes the various C-band amplifier and attenuator options you can choose in the C-band proeprties.

Table 40: C-band amplifier and attenuator options

Options	Description		
From Fiber			
Pre Amp	Choose a preamplifier from the drop-down list. The default value is Auto. To enable this field for ROADM and Traffic nodes, you must choose SMR-9 or SMR-20 from the **Site Type** drop-down list under the Site properties. If you choose SMR-9, the available options are: • SMR9-FS-EDFA17-PRE • SMR9-FS-EDFA24-PRE • SMR9-FS-EDFA24-PRE If you choose SMR-20, the available options are: • SMR20-FS-EDFA17-PRE • SMR20-FS-EDFA24-PRE For the OLA site, the available options are: • EDFA35-35-PRE • EDFA35-24-PRE • OPT -EDFA-17 • OPT -EDFA-24		

Options	Description		
Output Power	The default value is Auto. You can enter a value.		
Attenuator In	This field is enabled only when you choose a preamplifier. Choose an attenuator from the drop-down list. The available options are: • ATT-LC-2 • ATT-LC-3 • ATT-LC-5 • ATT-LC-7 • ATT-LC-10 • ATT-LC-12 • ATT-LC-15 • ATT-LC-18		
Attenuator Out	This field is enabled only when you choose a preamplifier. Choose an attenuator from the drop-down list. The available options are: • ATT-LC-2 • ATT-LC-3 • ATT-LC-5 • ATT-LC-7 • ATT-LC-10 • ATT-LC-12 • ATT-LC-15 • ATT-LC-18		
To Fiber			

Options	Description		
Booster	The default value is Auto. To enable this field for ROADM and Traffic nodes, you must choose SMR-9 or SMR-20 from the **Site Type** drop-down list under the Site properties. If you choose SMR-20, the default booster is 20SMR-FS-BST. If you choose SMR-9, default booster is SMR9-FS-EDFA-BST. For the OLA node, the available options are: • EDFA35-35-BST • EDFA35-24-BST • OPT -EDFA-17 • OPT -EDFA-24		
Output Power	The default value is Auto. You can enter a value.		
Attenuator In	This field is enabled only when you choose a booster. Choose an attenuator from the drop-down list. The available options are: • ATT-LC-2 • ATT-LC-3 • ATT-LC-5 • ATT-LC-7 • ATT-LC-10 • ATT-LC-12 • ATT-LC-15 • ATT-LC-18		

Options	Description		
Attenuator Out	This field is enabled only when you choose a booster. Choose an attenuator from the drop-down list. The available options are: • ATT-LC-2 • ATT-LC-3 • ATT-LC-5 • ATT-LC-7 • ATT-LC-10 • ATT-LC-12 • ATT-LC-15 • ATT-LC-18		

Raman amplification properties of a C-band amplifier

This table describes the Raman amplification properties of a C-band amplifier.

Table 41: Raman amplification properties of a C-band amplifier

Options	Description		
Raman Amp	Choose the Raman amplifier from the drop-down list. **Note** To force the RAMAN amplifier, you must enable **RAMAN amplified** on the fiber, else the **Raman Amp** is disabled, and network analysis fails.	The available options for ROADM and Traffic sites are: • Auto • RAMAN-CTP • RAMAN-COP-CTP Raman Amp can be forced only between two nodes. The available options for the OLA site are: • Auto • EDRA1-26 • EDRA1-35 • EDRA2-26 • EDRA2-35 • RAMAN-CTP	Auto
Raman CTP Gain	Enter a value.	—	—
Raman COP Gain	Enter a value. This field is enabled only when you choose RAMAN-COP-CTP.	—	—
Static Data	By default, this option is disabled. Enable it to edit the crosstalk values of the Raman COP amplifier. **Note** Static data is supported from Release 11.1 for SSON network.	—	—
Linear XT Avg	Edit the value of average linear crosstalk.	-99.0	-99.0
Linear XT Six	Edit the value average linear crosstalk sigma.	0.0	0.0

Options	Description		
NonLinear XT Avg	Edit the value of average nonlinear crosstalk.	-99.0	-99.0
NonLinear XT Sig	Edit the value of average nonlinear crosstalk sigma.	0.0	0.0

Note Raman crosstalk values are present in the ANS file under *logoparameters* section.

Modify Add/Drop multiplexer properties

Table 42: Feature History

Feature Name	Release Information	Feature Description		
Modify Properties of Add/Drop Multiplexer and Demultiplexer	Cisco ONP Release 4.2	You can create and validate network designs by choosing colored and colorless add/drop multiplexers and demultiplexers, and interlever under **C-Band** > **Add/Drop**. The following options are supported in this release:		
		Type of Add/Drop	Options	Network Supported
		Colorless	• Direct SMR • MF-6AD-CFS	• SSON • Non-SSON
		Colored	• MD-64-C • MD-48-ODD • MD-48-EVEN • MD-48-ODD + MD-48-EVEN	• SSON • Non-SSON
		Interlever	• MpoCable • MD-48-CM	• Non-SSON

Use this procedure to modify the properties of the add/drop multiplexer in a site.

Before you begin

Log in to the Cisco ONP web interface.

Procedure

Step 1 Open the network where you want to modify the Add/Drop multiplexer properties.

Step 2 Choose **Network** > **Entity Editor**.

Step 3 In the **Entity Editor** window, navigate to **Sites** > **Site** > **Site domain** > **Side** > **C-Band**

Step 4 Click **Add/Drop** and modify the properties in the next pane. For the property descriptions, refer to Add/Drop multiplexer properties, on page 62.:

Step 5 Click **Update**.

Add/Drop multiplexer properties

This table describes the general properties of the Add/Drop multiplexers.

Table 43: Add/Drop multiplexer properties

Options	Description	Available options	Default
Colored Add/Drop	Choose the colored add/drop multiplexer and demultiplexer. To mix 16-AD-CCOFS and MD-48-ODD/EVEN on the same MPO port of SMR-20, and connect MD-48-ODD/EVEN to SMR-20 by using MPO-8LC and UPG-4, enable the Shared SMR port and select the required colored Add/Drop.	• MD-64-C: Passive optical multiplexer and demultiplexer module (for SSON network) • None • Auto Cisco ONP adds some options automatically based on the colored demands created and the wavelengths you configure in the non-SSON network. These options include: • MD-48-ODD • MD-48-EVEN • MD-48-ODD + MD-48-EVEN	Auto

Options	Description	Available options	Default
Colorless Add/Drop	Choose the colorless add/drop multiplexer and demultiplexer.	• Auto • Direct SMR: SMR-20 card that is directly connected to the colorless channels through MF-MPO-16-LC. **Note** If the **Site Type** property is set to *SMR-9*, the **Colorless Ports** property under the Side will be disabled. • MF-6AD-CFS: 6 Port Add/Drop Module (supported only for ROADM starting from NCS 2000 system release 11.0, and traffic site). **Note** If you choose MF-6AD-CFS for a side, we recommend you to choose the same for other sides of the site.	Auto
Interlever Type	Choose the interlever type from the drop-down list. **Note** **Interlever Type** property is visible and editable only for Line sides of Multi-Degree nodes having **Site Type** property as *SMR-9* and **Scalable Upto Degree** property as *8* under the C-Band tab at the Site level.	• Auto • MpoCable • MD-48-CM	Auto

Table 44: Add/Drop multiplexer properties

Options	Platform	Description	Available options	Default
Colored Add/Drop	NCS 2000	Choose the colored add/drop multiplexer and demultiplexer. To mix 16-AD-CCOFS and MD-48-ODD/EVEN on the same MPO port of SMR-20 and connect MD-48-ODD/EVEN to SMR-20 via MPO-8LC and UPG-4, enable the Shared SMR port and select the required colored Add/Drop.	• MD-64-C: Passive optical multiplexer and demultiplexer module (for SSON network) • None • Auto Cisco ONP adds some options automatically based on the colored demands created and the wavelengths you configure in the non-SSON network. These options include: • MD-48-ODD • MD-48-EVEN • MD-48-ODD + MD-48-EVEN	Auto
	NCS 1010	Choose the colored add/drop multiplexer and demultiplexer for NCS 1010.	• Auto • None • MD-32-EVEN • MD-32-ODD • MD-32-ODD+MD-32-EVEN	Auto
	Colorless Add/Drop	NCS 2000	Choose the colorless add/drop multiplexer and demultiplexer for NCS 2000.	Auto

Options	Platform	Description	Available options	Default	
				• Auto • Direct SMR: SMR-20 card that is directly connected to the colorless channels through MF-MPO-16-LC. **Note** If the **Site Type** property is set to *SMR-9*, the **Colorless Ports** property under the Side will be disabled. • MF-6AD-CFS: 6 Port Add/Drop Module (supported only for ROADM starting from NCS 2000 system release 11.0, and traffic site). **Note** If you choose MF-6AD-CFS for a side, choose the same for other sides of the site.	
		NCS 1010	Choose the colored add/drop multiplexer and demultiplexer for NCS 1010. **Note** QDD optical sources are not supported (both as optical source and pluggable) with colorless BRK-8, BRK-16, or BRK-24 configurations.	• Auto • None • BRK-8 • BRK-16 • BRK-24	Auto

Options	Platform	Description	Available options	Default
Colorless Ports	NCS 1010	Enter the number of colorless ports. The default value is 0. If you do not change the default value, Cisco ONP automatically calculates the number of colorless ports based on the number of circuits added and colorless add/drop units forced.	—	—
Interlever Type	NCS 2000	Choose the interlever type from the drop-down list. **Note** **Interlever Type** property is visible and editable only for Line sides of Multi-Degree nodes having **Site Type** property as *SMR-9* and **Scalable Upto Degree** property as *8* under the C-Band tab at the Site level.	• Auto • MpoCable • MD-48-CM	Auto

MPO connector properties

This table describes the properties of MPO connectors that are used in Add/Drop multiplexers.

Table 45: MPO connector Add/Drop properties

LC connector properties

This table describes the properties of LC connectors that are used in Add/Drop multiplexers.

Table 46: LC connector Add/Drop properties

Modify client properties

Use this task to modify the properties of a client-side attenuator in a site.

Before you begin

Table 47: Feature History

Feature Name	Release Information	Feature Description
Channel Attenuators	Cisco ONP Release 4.2	You can set up channel attenuators for QSFP-DD demands. You can choose different channel attenuators based on the specific configuration and check for the optical feasibility of the channel.

Log in to the Cisco ONP web interface

Procedure

Step 1 Open the network where you want to modify the client properties.

Step 2 Choose **Network** > **Entity Editor**.

Alternatively, click the network name in the network tree, and click **Show Advanced Properties** displayed under the network tree.

Step 3 In the **Entity Editor** window, click the **Site** tab.

Step 4 Choose **Sites** > **Site** > **Site domain** > **Side** > **Clients** > **Channel-Attenuators**.

Step 5 In the right pane of the **Entity Editor** window, modify properties of the client-side attenuator.

See Client properties, on page 67 for the descriptions.

Step 6 Click **Update**.

Client properties

This table describes various System Release properties under the Network properties.

Options	Description	Available options	Default option
General			
Wavelength	This column displays the selected wavelength.	—	—

Options	Description	Available options	Default option
New Wavelength - Auto	Click **Edit** to select a Flex Grid or Fixed Grid wavelength. **Note** Select **Fixed Grid (64-Chs)** for SSON network with NCS1K-MD-64-C card. **Note** NCS1K-MD-64-C card has First Channel limitation for Colored sites. First Channel (196.1 THz) in Fixed Grid (64-Chs) wavelength supports only Terminal Add/Drop sites and not ROADM sites.		
RX-Attenuator	Choose an RX-Attenuator from the drop-down list. **Note** You must select a wavelength to edit this field.	• Auto • None • ATT-LC-2 • ATT-LC-3 • ATT-LC-5 • ATT-LC-7 • ATT-LC-10 • ATT-LC-12 • ATT-LC-15 • ATT-LC-18	Auto

Options	Description	Available options	Default option
TX-Attenuator	Choose a TX-Attenuator from the drop-down list. **Note** You must select a wavelength to edit this field.	• Auto • None • ATT-LC-2 • ATT-LC-3 • ATT-LC-5 • ATT-LC-7 • ATT-LC-10 • ATT-LC-12 • ATT-LC-15 • ATT-LC-18	Auto

Sort the Network Elements

You can sort the sites, services, fibers, waves, and SRLG in ascending or descending order. This feature is useful for huge networks, making it quick to locate the required site, fiber, wave, or SRLG names.

Follow these steps to sort the network elements in the network tree.

Procedure

Step 1 Open the network where you want to sort the network elements.

Step 2 Right-click the network element in the network tree, such as **Sites**, and choose **Ascending** or **Descending**.

The network elements are sorted based on the alphabets, numbers, and, alphanumeric.

Regeneration support

Signal degradation in optical networks

As the fiber length increases in an optical network, unavoidable issues such as attenuation and dispersion lead to signal loss and power degradation. These problems can significantly affect the network's performance over long distances, necessitating the need for regenerators to maintain efficient signal transmission.

Role of regenerators

To address signal degradation, regenerators are used at specific points in the network to recover and strengthen optical signals. They achieve this through Optical-Electrical-Optical (OEO) conversion, which involves:

- Converting the weak optical signal into an electrical signal.
- Cleaning and amplifying the electrical signal.
- Converting the restored signal back into an optical format, known as Optical-Electrical-Optical (OEO) conversion.

Cisco ONP and regeneration sites

Cisco ONP supports the establishment of regeneration sites within optical networks. These sites are essential in maintaining signal integrity over long distances by utilizing regenerators to enhance the network's overall performance.

Note A regenerator site can only be a ROADM site.

Create a regeneration site

Table 48: Feature History

Feature Name	Release Information	Feature Description
Wavelength Forcing at the Section Level	Cisco ONP Release 4.1	This feature enables you to assign distinct wavelengths to various sections of the Regen sites

Follow these steps to create a regeneration site in the network.

Before you begin

Log in to the Cisco ONP web interface.

Procedure

Step 1 Open the network where you want to create a regeneration site.

Step 2 In the network tree, expand **Waves**, select a wave and drill down to its trail.

Note
If the network is an SSON network , you see **Media Channels** instead of waves. Expand **Media Channels** , and drill down to its trail.

Step 3 Click the trail to view its properties.

Step 4 From the **Regen Sites** drop-down list, select a regeneration site.

Note
If you select a fiber from the **Path of Wave** drop-down list, you cannot select any regeneration site to force a path. Similarly, if you select a regeneration site, you cannot force a path for the wave. However, if you want to force a fiber, select the fiber from the **Path of Wave** drop-down list available under the section properties.

Step 5 If required, select the wavelength of each section in the properties for non-SSON network.

Note
For the SSON network, you can select the wavelength only at the trial level.

Step 6 Click **Update**.

Whenever a regeneration site is created, a new section is added along with the existing section under the trail. Regeneration can be performed using any two cards back-to-back or with a dedicated regenerator card.

Step 7 Click **Analyze** to analyze the network.

After analysis, if you click trail or section in the network tree, the map highlights the trail in orange color and the section in green color.

Note
You can assign different wavelengths for different sections. The **Wavelength** property under trail is denoted as "*", when different wavelengths are assigned for different sections.

You can also add a regeneration site when you are designing a new network or upgrading a network.

Multidegree ROADM

A multidegree ROADM is a network node configuration that

- enables a site to connect to two or more fiber spans,
- allows flexible routing of wavelengths across multiple paths in a mesh network, and
- supports higher degrees than simpler ROADMs, which typically connect only two directions.

You can design a multidegree ROADM configuration in Cisco ONP using cascaded SMR .

Design a multidegree ROADM site using cascaded SMR

Use this procedure to design a multidegree ROADM site in your network, using cascaded SMR modules.

When designing a multidegree ROADM site using cascaded SMR, be aware of these limitations:

- The configuration only supports contentionless add/drop demands.
- Layer-2 SMR is supported only for the SMR-20 card.

Before you begin

Log in to the Cisco ONP web interface.

Procedure

Step 1 Design a network. For detailed instructions, see the Manually design a network using Cisco ONP task.

Step 2 Modify these site properties.

- Set the **Structure** to *Multidegree* in the **C Band** section.
- Set the **Site Type** to *SMR-20* in the **C Band** section.
- Set **Degree Mesh Type** to *Auto* or to *DEG-5/UPG-4* in the **C Band** section.
- Check the **Evolved Mesh** and **Cascaded SMR** check boxes in the **General** section.
- Set the **Mpo16TOMpo8** to *MPO16To2MPO8* cable in the **General** section.

Step 3 Add a contentionless side to the site. For detailed steps, see the Add contentionless side to a site, on page 20 task.

Step 4 Modify the number of contentionless side ports for the site as needed. For detailed steps, see the Modify the number of contentionless side ports at a site , on page 23 task.