Modify Network Properties

Modify Network Properties

Table 3: Feature History

Feature Name	Release Information	Description
Improved Optical Results	Cisco ONP Release 24.3.1	The new network-level properties introduced improve the accuracy of the optical results. • **Ignore APC Penalty**: When enabled, the APC penalty is not considered while calculating the OSNR and power margin. • **SOL Optimized PSD**: When enabled, an optimum PSD value is calculated by considering the SOL Span losses. Also, Cisco ONP sets PSD and drop attenuation to specific values for the CCMD-16 LC card connected to the ports of the OLT-E-C, to achieve optimal RX power for the circuits.

Feature Name	Release Information	Description
Skip Routing Failures in NCS 2000 Network Analysis	Cisco ONP Release 24.3.1	A new **Continue Analysis On Routing Failure** check box is introduced to improve network analysis reliability for larger NCS 2000 networks. When a routing failure occurs, this enhancement moves the network to **Partially Analysed** mode, and move the network to **Design** or **Upgrade** mode to edit properties and correct routing. After the analysis, • successful routing paths appear in the **BOM** and **Optical Reports** tabs. • failed routing paths are not listed in these tabs. • error messages for the individual routing failures appear in the **Messages** tab. • red cross marks appear next to the failed routing paths. This approach prevents a single failure from failing the entire analysis, isolating specific issues to enhance troubleshooting.

Table 4: Feature History

Feature Name	Release Information	Description
New Network Level Properties	Cisco ONP Release 5.2	New Network Level properties are introduced under **Advanced Optical Settings** for NCS 1010 network. You have the flexibility to define custom values for the following properties for the Raman span and validate the optical circuit feasibility. • **Amplifier Gain Range** • **Connector Loss** • **Minimum OSNR Margin** • **Minimum Span Loss for Raman Amplifiers** • **Percentage of Fibers with Higher Aging Loss** • **Generate Cross-Connect** • **Maximum OSC Reach for NCS 1010Raman Amplifiers** • **Retain Auto Placed Raman Spans for Failure** • **Freq Allocation Order** • **Link Power Control** • **Gain Estimator** • **OTDR**

Table 5: Feature History

Feature Name	Release Information	Description
New Bandwidth Properties	Cisco ONP Release 5.1	Cisco ONP introduces the **Statistical Simulation Sigma**, **Statistical Simulation Margin Sigma**, and **OSNR Resolution Bandwidth** properties in this release. When the ideal OSNR values calculated by Cisco ONP are not feasible to be used at the time of deployment, you can modify the values for these properties to customize OSNR margin, power margin, and G-OSNR values to fix the fiber span issues.

Feature Name	Release Information	Description
New Network Level Properties	Cisco ONP Release 5.1	Three new Network Level properties are introduced to enable you to customize the core operations of an NCS 2000 Network. These operations ran in the background in the earlier releases. The new properties available under **Core Operations** as check boxes are: • **Enable LOGO Algorithm**—It runs the Local Optimization Global Optimization (LOGO) algorithm to find the efficient output power setpoint for booster amplifiers. By default, this **Enable LOGO Algorithm** check box is enabled. • **Log Enabled**—It generates, and stores logs only for selected network topologies. This saves a lot of storage space compared to previous implementations in which logs were automatically generated and saved for all topologies. • **Ignore Raman Span Checks**—It ignores the analysis of Raman spans between ROADM sites. This is useful when designing nonstandard network topologies with more than two Raman amplifiers between ROADM sites. Selecting the check box prevents Cisco ONP from raising an error message when analyzing such topologies.

Feature Name	Release Information	Description
BOM Customization for the UCS-based SVO Server Application	Cisco ONP Release 5.1	From this release onwards, the **BOM** does not include any UCS-based SVO server information. It is expected that you add the server PID and quantities manually. Cisco ONP prompts you to add the server by displaying the message "*UCS server is not billed in BoM, please add it as needed.*" in the **Messages** tab of the **Elements** tab.

Use this task to modify the properties of the network.

Before you begin

Log in to Cisco ONP Web Interface.

Step 1 In the network tree, click the network name.

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

Step 2 Modify the following network properties as required.

Property	Platform	Description
Name	NCS 2000 NCS 1010 NCS 1001	Modify the network name as required.
Quick Analysis	NCS 2000	Check the **Quick Analysis** check box to quickly analyze the network by using a less accurate algorithm. The quick analysis option does not optimize the DCU and amplifier placement algorithm, hence resulting in an approximate BoM. To receive an accurate BoM, uncheck the **Quick Analysis** check box.

Property	Platform	Description
DWDM Interfaces	NCS 2000	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	NCS 2000 NCS 1010 NCS 1001	Enter the customer name.
Project	NCS 2000	Choose ANSI (North American standard) or ETSI (European Telecommunications Standards Institute) from the drop-down list. ANSI networks do not allow you to define SDH (ETSI) service demands. ETSI networks do not allow you to define SONET (ANSI) service demands.
	NCS 1010 NCS 1001	Displays the type of the project, ANSI, or ETSI. You cannot edit it.
Measurement Unit	NCS 2000 NCS 1010 NCS 1001	Select the unit of measurement of span length. The available options are Miles and Km.
Chassis Type	NCS 1010	Choose the type of chassis. The available options are: • NCS 1010 • NCS 1020 **Note** When you check the **Enable Special Settings** check box, *NCS 1020* is selected as *Chassis Type* by default.
NCS1014 Grouping	NCS 1010	Enable this property to group all NCS1K14-CCMD-16 cards of a site in NCS1014 shelf.

Property	Platform	Description
A2A Mode	NCS 2000	Choose the A2A (Any to Any) mode. The available options are: • A2A_None • A2A_FAST
A2A Power Output	NCS 2000	The power output value is based on the chosen A2A mode.
A2A Demand Type	NCS 2000	The demand type is based on the chosen A2A mode.
A2A Channel Type	NCS 2000	Choose the type of channel. You can choose multiple types. The available options are: • 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.
SSON	NCS 2000	Indicates whether the network is an SSON network.
Use client Payg	NCS 2000	Check this check box to enable the Pay As You Grow feature on the client cards. The PAYG feature enables you to implement a cost-effective solution when the wavelength requirements are comparatively less than the maximum capacity of the network. 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.
Naming Convention Enabled	NCS 2000	(Display only.) By default, the Naming Convention Enabled option is enabled by default for the networks that are created in Cisco ONP, and you cannot edit it. 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 upon 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.
System Release		

Property	Platform	Description
NCS 1001	NCS 1001	Displays the system release of the NCS 1001 node in the network.
NCS 1010	NCS 1010	Displays the system release of the NCS 1010 node in the network.
NCS 4K	NCS 4000	Displays the system release of the NCS 4000 node in the network.
NCS 2K	NCS 2000	Displays the system release of the NCS 2000 node in the network.
NCS 1K (Available only on the SSON network)	NCS 1004	Displays the system release of the NCS 1004 node in the network.
Previous NCS 2K (Available only on the Release upgraded network)	NCS 2000	Displays the system release of the NCS 2000 node in the network, before the Release upgrade.
Previous NCS 1010 (Available only on the Release upgraded network)	NCS 1010	Displays the system release of the NCS 1010 node in the network, before the Release upgrade.
SVO	NCS 2000	Choose the type of network management solution. The available options are: • Line Card—Chooses SVO card. • Server—Chooses SVO application that is hosted on a server. From Release 5.1, if you select *Server*, the PID for the server does not appear in the BoM report. A warning message "*UCS server is not billed in the BoM, please add it as needed.*" appears in the **Messages** tab of the **Elements** tab. • Auto—Chooses SVO card as default, for SVO solution.
Network Application Configuration		
Install with COSM	NCS 1010	Enable **Install with COSM** to see software license for COSM file for R7.11.1 networks.
Use Coordinates Distance	NCS 2000 NCS 1010 NCS 1001	Check this check-box to use the x and y coordinates to calculate the fiber length.
Raman-Tuner	NCS 1010	Check this check-box to enable the Raman tuner.
Spectrum Utilization	NCS 1010	By default, the spectrum utilization is Short Path First. This field is noneditable.

Property	Platform	Description
Band Type	NCS 1010 NCS 1001	Choose the band type. The available options are: • C-Band • C+L Futuristic • C+L **Note** After creation of a network, you can change the network band type, if required.
NCS 1010 Line Card	NCS 1010	Choose the Line Card faceplate. The available options are: • Standard Faceplate • Enhanced Faceplate The default option is *Enhanced Faceplate*. For R7.10.1 networks, Cisco ONP supports Enhanced NCS 1010 Line Cards. For 7.11.1 networks, Cisco ONP supports Enhanced NCS 1010 Line Cards and NCS1K14-CCMD-16-C/L cards.
Routing Strategy	NCS 1010	Choose default routing priority for circuits based on minimum distance (Length) or minimum number of hops (Hop).
NCS1010 Line Card	NCS 1010	Choose the line card variant that will be applied to all edge sides in the network. The options available are: • Standard Faceplate • Enhanced Faceplate
Max Auto Omni Allowed	NCS 1010	Based on the number that you enter, Cisco ONP will automatically generate up to that many Omni Edges and run the analysis. There is no need for manual creation by the user. The default value is 0.
Optical Algorithm Options		

Property	Platform	Description
Stat Sim Sigma	NCS 2000 NCS 1010 NCS 1001	Choose the Statistical Simulation Sigma (Stat Sim Sigma) value. The available options are 0, 1, 2, and 3. The default value is 3. The Stat Sim Sigma value is used in calculating the SOL G-OSNR, EOL G-OSNR, SOL Power, EOL Power, SOL OSNR margin, EOL OSNR margin, SOL Power margin, and EOL Power margin displayed in the **Optical Results** page. The lower the value you choose, the better is the OSNR and power margins. You can edit this value in Design mode, and Upgrade mode (after unlocking the network). Analyze the network and check the **Optical Results** page to view the updated OSNR and Power values.
Stat Sim Margin Sigma	NCS 2000 NCS 1010 NCS 1001	Choose the Stat Sim Margin Sigma value. The available options are 0, 1, 2, and 3. The default value is 3. You can edit this value in all modes (Design, Analyze (locked state), Upgrade, and Release Upgrade). To view the OSNR margin and power values that get updated based on the value you selected, reopen the **Optical Results** page.
Core Operations		
Enable LOGO Algorithm	NCS 2000	By default, this property is enabled. In non-SSON networks, it is editable. In the SSON network, it is noneditable. This algorithm enables the Cisco ONP to automatically find the optimal output power setpoint for booster amplifiers within a fiber span.
Log Enabled	NCS 2000 NCS 1010 NCS 1001	Check this check-box to enable generation and storage of network logs.
Ignore Raman Span Checks	NCS 2000	Check this check-box to enable network analysis to ignore Raman span checks.
Traffic Algorithm Options		

Property	Platform	Description
Continue Analysis On Routing failure	NCS 2000	Check this check-box to skip routing demand failures when analyzing the networks. Passed demands appear in the *Optical Reports* tab, while failed demands are not listed in the *Optical Reports* tab. Red cross marks appear next to the failed demands in the network tree, and error messages for these failures appear in the *Messages* tab. If any demand fails during the analysis, the network enters the *Partial Analysis* mode. To edit the network, enter the *Design* mode. **Note** If any non-routing issue is present in the network, then the design network will not move to the *Partial Analysis* mode
Advanced Optical Settings		
Enable Special Settings	NCS 1010	Check this check-box to enable the following properties and set default values for them. • Amplifier Gain Range Margin • Connector Loss • Minimum OSNR Margin • Minimum Span loss for Raman Amplifiers • Percentage of Fibers with Higher Ageing Loss • Freq Allocation Order • MC Routing Order • Ignore APC Penalty • SOL optimized PSD If you check the **Enable Special Settings** check box, the following parameters are added to the Device Netconf XML file. • Slot reserve • Unused CCMD-16 ports shutdown • Span baseline-deviation • OTDR Thresholds • Dmux WSS slice attenuation • APC span-loss correction threshold
Amplifier Gain Range Margin	NCS 1010	Enter the amplifier gain range margin. The default value is 3 dB.

Property	Platform	Description
Connector Loss	NCS 1010	For all fibers the default connector loss would be set to 0.5 from 0.25. The default value is 0.5 dB.
Minimum OSNR Margin	NCS 1010	Enter the minimum OSNR margin required for the amplifier. The default value is 1 dB.
Minimum Span Loss for Raman Amplifiers	NCS 1010	This is the minimum required span loss for fiber to be considered for Auto Raman placement. The default value is 27 dB.
Percentage of Fibers with Higher Aging Loss	NCS 1010	Click the field and enter the values for the following fields in the Fiber Sorting Settings window: • Percentage of Fibers with Higher Aging Loss (default value is 40%) • Ageing Loss for Top Fibers (default value is 3 dB) • Ageing Loss for Bottom Fibers (0.75 dB)
Generate Cross-Connect	NCS 1010	Check this check-box to add Cross connect details in the COSM XML
Raman Amplification	NCS 1010	Choose whether Raman amplification is Auto or User Forced. The default option is User Forced.
Maximum Auto Ramans	NCS 1010	Choose the maximum number of Raman enabled links on an end-to-end circuit path. The available options are 0-5, and ALL.
Maximum OSC Reach for Raman Amplifiers	NCS 1010	Enter the maximum span loss for which fiber can be considered for Auto Raman placement. The default value is 33 dB.
Link Tuner	NCS 1010	Choose how to enable the Link Tuner. The available options are Automatic-Enabled, Force-Disabled, and On-Request-Enabled. The default option is **On-Request-Enabled**, when the **Enable Special Settings** check-box is checked, and the **Automatic-Enabled** check-box is unchecked.

Property	Platform	Description
Ignore APC Penality	NCS 1010	By default this check-box remains checked, when the **Enable Special Settings** check-box is checked. Automatic Power Control (APC) penality occurs due to the inherent error in regulating the set-point for power. This penalty is considered while calculating the OSNR and power margin. When this property is enabled, this penalty is ignored during the calculation and thus providing accurate optical results.
Retain Auto Placed Raman Spans for Failure	NCS 1010	In general, automatically placed Raman will be retained only if the circuit becomes feasible with those Raman placements. Otherwise, it will be removed automatically. If you want to retain it, check this check-box. It is disabled by default.
Raman Gain Auto Tuner	NCS 1010	Choose how to calibrate the Raman gain. The available options are Automatic, Automatic-On-request, and No-calibration. The default option is No-Calibration.
SOL Optimized PSD	NCS 1010	By default this check-box remains checked, when the **Enable Special Settings** check-box is checked. When enabled, an optimum PSD value is calculated by considering the SOL Span losses.
Freq Allocation Order	NCS 1010	Choose the Freq Allocation Order. The available options are: • FROM-LOWER-FREQ • FROM-HIGHER-FREQ The default option is FROM-HIGHER-FREQ.
Link Power Control	NCS 1010	Choose how to enable the Link Power Control. The available options are Automatic-Enabled, Force-Disabled, and On-Request-Enabled. The default option is **On-Request-Enabled** , when the **Enable Special Settings** check-box is checked, and **Automatic-Enabled** when the check-box is unchecked.
Gain Estimator	NCS 1010	Choose how to enable the Gain Estimator. The available options are Automatic-Enabled, Force-Disabled, and On-Request-Enabled. The default option is **On-Request-Enabled** , when the **Enable Special Settings** check-box is checked, and **Automatic-Enabled** when the check-box is unchecked.
OTDR	NCS 1010	Choose whether to enable or disable the OTDR. The default option is Enabled.

Property	Platform	Description
MC Routing Order	NCS 1010	Choose routing order for the multicarriers: • CREATION: Based on the *Freq Allocation Order* chosen, the tool allocates frequency based on order carrier creation. • NO-OF-CARRIERS: Based on the *Freq Allocation Order* chosen, the tool allocates frequency to circuits based on the number of carriers. The default option is CREATION.

Step 3 Click **Update**.

Step 4 To modify the advanced properties of the service, click **Show Advanced Properties** or choose **Network** > **Entity Editor**.

Step 5 In the **Entity Editor** window, click the **Site** tab.

Step 6 Click the network, and modify the properties in the right pane.

Step 7 Click **Update**.

Modify Site Properties

Use this task to modify the properties of the site.

Before you begin

Table 6: Feature History

Feature Name	Release Information	Feature Description
Layer-2 SMR Enhancement to Support Second and Third Port Extension	Cisco ONP Release 5.2	This enhancement allows you to extend the contentionless sides in a ROADM site, increasing the number of provisioned contentionless sides in the NCS 2000 networks. New contentionless sides increase the number of traffic channels in the NCS 2000 networks. The new **Reserve Cascaded SMR Port** property reserves more SMR ports to extend the Layer-2 contentionless sides in a ROADM site.

Table 7: 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.

Log in to Cisco ONP Web Interface.

Step 1 In the network tree, expand **Sites**, and click a site.

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

Step 2 Modify the following site properties as required.

Property	Platform	Description
General		
Name	NCS 2000 NCS 1010 NCS 1001	Enter the site name, either alphanumeric or numeric.
Type	NCS 2000	Choose the type of site. For example, ROADM, OLA, PASSTHROUGH, or a Traffic site. • 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.
	NCS 1010	Choose the type of site. For example, ROADM, OLA, or PASSTHROUGH.
	NCS 1001	Displays the type of site.

Property	Platform	Description
MPO Cable	NCS 1010	Choose the type of MPO cable. The options available are: • Auto • 16MPO-MPO • 24MPO-MPO
Node Type	NCS 2000	The default value is FLEX NG-DWDM for all nodes. This field is noneditable.
Equipment Configuration	NCS 2000	Choose the configuration from the drop-down list. This option is available only for the Traffic site. The available options are: • Large CO - NCS 4016 • Small Site - NCS 4016 • Small Site - NCS 4009
Traffic Type (only for Traffic site)	NCS 2000	Choose the traffic type. The available options are: • 4K_1K_2K (for SSON) • 1K_2K (for SSON) • 4K_2K (non- SSON)
SSON	NCS 2000	Indicates whether the network is an SSON network.
SVO	NCS 2000	This property is noneditable at site level. This property enables you to select an SVO card as Server or Line card at the network level.
Layout		
Chassis Type	NCS 2000	Choose the type of chassis. The chassis type is supported for all the sites except the passthrough. The available options are: • M6 Chassis • M15 Chassis • Auto M15 is the default option when you choose Auto.
	NCS 1010	Choose the type of chassis. The available options are: • NCS 1010 • NCS 1020

Property	Platform	Description
NCS1014 Grouping	NCS 1010	Enable this property to group all NCS1K14-CCMD-16 cards of a site in NCS1014 shelf.
Power Supply	NCS 2000 NCS 1010 NCS 1001	Choose the type of Power Supply. The available options are Auto, AC Power, and DC Power. The default option is Auto.
UTS AC Power Cables	NCS 2000 NCS 1010 NCS 1001	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.
C Band		
Structure	NCS 2000	Choose the type of the site. The available options for ROADM and Traffic sites are: • Multi-degree • Line • Terminal For OLA and PASSTHROUGH, it is Line, and you cannot edit it.
	NCS 1010	Choose the type of the site. The available options for ROADM sites are: • Multi-degree • Line • Terminal For OLA and PASSTHROUGH, it is Line, and you cannot edit it.
	NCS 1001	Choose the type of the site. The available options are: • Terminal • Terminal-Section • Terminal-Path

Property	Platform	Description
Functionality	NCS 2000	Displays the site functionality. Following is the functionality available for each type of sites: • Optical Cross Connect (OXC) for ROADM and traffic site • Auto or Line Amplifier for OLA site, Cisco ONP downgrades OLA site to passthrough if OLA is not required. • Passthrough for passthrough site
	NCS 1010	Displays the site functionality. ROADM is the default functionality for all site types.
	NCS 1001	Displays site functionality.
Scalable up to Degree	NCS 2000	This parameter determines the maximum number of degrees, ducts, or line sides that can be supported by the site. For an NCS 2000 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, the value is 2 and is noneditable.
	NCS 1010	For an NCS 1010 site, the available options are 7, 9, 15, 17, 23, 25, and 31. If you choose **Line Card Faceplate** as *Enhanced Faceplate*, for NCS 1010 site, the available options are 3…15, 23, and 31.
Site Type	NCS 2000	Choose the type of site. The available options are: • 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.
	NCS 1010	For NCS 1010 site, the only option is OLT, and it is not editable.
	NCS 1001	Displays the type of site, and it is noneditable.

Property	Platform	Description
L0 Platform	NCS 2000 NCS 1010 NCS 1001	Displays the platform. For example, NCS 1010 , NCS 1001, or NCS 2000.

Step 3 Click **Update**.

Step 4 To modify advanced properties of the site, click **Show Advanced Properties**, or choose **Network** > **Entity Editor**.

Step 5 In the **Entity Editor** window, expand **Sites** under the network tree, choose the site, and modify the following properties that are displayed in the right pane. For more information on entity editor, see Entity Editor.

Properties	Platform	Description
General		
CLLI Code	NCS 1004 NCS 2000 NCS 4000	Enter a string holding the CLLI code.
Site Address	NCS 2000 NCS 1010 NCS 1001	Enter the site address.
Evolved Mesh	NCS 2000	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.
Status	NCS 2000	Displays the status of the network. It shows whether the network is **Up** or **Down**.
Node Protection	NCS 2000	Choose the Node Protection. The available options are: • Same shelf • Separated shelves
Mpo16Lc	NCS 2000	Displays the fan-out module. The default option is 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.
Mpo16ToMpo8	NCS 2000	Choose the required Mpo16 to Mpo8 converter. The available options are: • MPO16ToMPO8Cable • MF-2MPO_ADP

Properties	Platform	Description
MPO Cable	NCS 1010	Choose the required Mpo cable. The available options are: • Auto • 16MPO-MPO • 24MPO-MPO
Cascaded SMR	NCS 2000	Enable this option to add Layer-2 contentionless sides.
Reserve Cascaded SMR Port	NCS 2000	**Note** This property becomes available when you enable *Cascaded SMR*for NCS 2000 networks from Release 11.1.x. Choose the number of ports to reserve for the cascaded SMR. The available options are: • 1, 2, and 3 if Scalable Upto Degree is 12 and 16. • 1 and 2 if Scalable Upto Degree is 8. • 1 if Scalable Upto Degree is 12 and 4.
Flex Spectrum	NCS 2000	By default, this check-box remains checked for a newly created network. You cannot edit it.
Grooming Site	NCS 2000 NCS 4000	When you enable this option, it indicates that OTN traffic can be groomed at this site.
MR-MXP BreakOut Cable	NCS 2000	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	NCS 2000	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.
Band Type	NCS 1010 NCS 1001	Choose the required band type for NCS 1010 R7.9.1.
NCS 1010 Line Card	NCS 1010	Choose whether the Line Card faceplate is Standard Faceplate or Enhanced Faceplate. **Note** If you assigned a **Scalable Upto Degree** value that is supported for both standard and enhance at the site level, then you can select *Standard Faceplate* in one side and *Enhanced Faceplate* in another side.
Bill of Material		

Properties	Platform	Description
License Suite	NCS 1010	Choose whether the License Suite is Essential (RTU + SIA3) or Advanced (RTU + SIA3).
NCS1k Line card license	NCS 1010	Choose whether the License Suite is: • Essential (RTU + SIA3) • Advanced (RTU + SIA3) • Essential (RTU + SIA5) • Advanced (RTU + SIA5)
Enable NCS	NCS 2000	This feature enables NCS features on all sites in the network.
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
New FS-SMR PID	NCS 2000	By default, this check-box remains checked for 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.
Layout		

Properties	Platform	Description
Chassis Type	NCS 2000	Choose the type of chassis. The available options are: • M6, and M15 Chassis for OLA • M6 Chassis for ROADM and Traffic • M15 Chassis for ROADM and Traffic • Auto for all nodes **Note** Chassis type is not supported for the passthrough site.
	NCS 1010	Choose the type of chassis. The available options are: • NCS1010 • NCS1020
NCS1014 Grouping	NCS 1010	Enable this property to group all NCS1K14-CCMD-16 cards of a site in NCS1014 shelf.
Power Supply	NCS 2000	Choose the type of Power Supply. For an NCS 2000 site, the available options are based on the chassis type: • 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
	NCS 1010 NCS 1001	The options available for the NCS 1010 site are Auto, AC Power, and DC power.

Properties	Platform	Description
Controller Card	NCS 2000	Choose the type of the controller card. For an NCS 2000 site, the default controller card is TNCS-2. The available options are based on the chassis type chosen. By default, controller cards that are supported by M15 chassis are listed. The available options are: • 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
	NCS 1010	The following options are available for the NCS 1010 site: • Auto • NCS1010-CNTRL-K9 • NCS1010-CNTRL-B-K9 *NCS1010-CNTRL-B-K9* appears for networks from R7.11.1. **Note** If you enable **Advanced Optical Settings**, Cisco ONP takes the default controller card as *NCS1010-CNTRL-B-K9*, else *NCS1010-CNTRL-K9*. However, you can still change the controller later.
	NCS 1001	CONP takes NCS1K-CNTLR2 as default.
Redundant Controller Card	NCS 2000 NCS 1010 NCS 1001	Choose whether to use a redundant controller card. **Note** When you select **Chassis Type** as *NCS1020*, you can force **Redundant Controller Card** to Yes.

Properties	Platform	Description
Layout Template	NCS 2000	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 (non-critical) 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 the following: • 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.
UTS AC Power Cables	NCS 2000 NCS 1010 NCS 1001	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	NCS 2000	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, 3+1 is the default redundancy power scheme for M15 DC chassis and 2+2 is the default redundancy power scheme for M15 AC chassis. For example, if you choose 3+1 redundant power scheme, there are 3 working power units and 1 protected power unit. For an M6 chassis, the options available are Auto, Yes, and No.
	NCS 1010 NCS 1001	The options available are Auto, 1+0, and 1+1.

Properties	Platform	Description
Raman Adapter Share	NCS 2000	This option is available only for the OLA site. By default, this check box remains checked. This option indicates that MF-2LC-ADP can be shared with EDRA amplifiers and not with RAMAN amplifiers irrespective of the default selection.
ECU Type	NCS 2000	Choose the External Connection Unit (ECU) type from the drop-down list. The options available are based on the chassis type. By default, the ECU applicable for M15 is listed. • 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.
MF Unit	NCS 2000	Choose the mechanical frame for the passive optical modules from the drop-down list. The options available are Auto, MF-6RU/MF-10RU, and 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=.
	NCS 1010	For NCS 1010 site, the available options are Auto, MF-4RU, and MF-1RU.
	NCS 1001	MF-1RU is the default option. This property is noneditable.
Chassis Disaggregation	NCS 2000	If you check this check-box, ROADM, and transponder cards are placed in different chassis.
Map		

Properties	Platform	Description
X Coordinate	NCS 2000 NCS 1010 NCS 1001	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.
Y Coordinate	NCS 2000 NCS 1010 NCS 1001	It represents the latitudinal location of the site. Latitude can be positive or negative (- 90–90), north and south of the Equator.
Position Lock	NCS 2000 NCS 1010 NCS 1001	Check this check box to lock the site position on the map.
C Band		
Shared SMR Port	NCS 2000	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	NCS 2000	Choose the mesh type for the Flex NG-DWDM site. The available options are: • DEG-5/UPG-4 • PPMESH8-5AD DEG-5/UPG-4 is the default value.
Degree Type	NCS 1010	Displays the type of degree. For example, BRK-8.
Pre Equip Degree	NCS 2000	This parameter determines the number of degrees to be considered for the site hardware placement on day 0. For NCS 2000, the values can be None, Auto, 4, 8, 12 or 16. The default option is 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 Upto Degree** parameter.
	NCS 1010	For NCS 1010 site, the options available are Yes and No.

Properties	Platform	Description
SVO		
Chassis License Flush Out	NCS 2000	Allows you to flush out the existing chassis license and purchase a new chassis license.
SVO Pluggables	NCS 2000	You can choose one of the following options from the drop-down list. When you choose Auto, ONS_SC+-10G_SR is the default option. • Auto • ONS-SC +- 10G-SR • ONS-SC +-10G-LR **Note** The SVO pluggables are not applicable for UCS-based SVO network design.
Cisco NMS		
SVO Full License	NCS 2000	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	NCS 2000	Enable this check box to add the High Availability feature to the license package.
Connection Verification License	NCS 2000	Enable this check box to add the Connection Verification feature to the license package.
SVO Flex Spectrum License	NCS 2000	Enable this check box to add the Flex Spectrum feature to the SVO license package. For SSON networks, the Flex Spectrum license is enabled by default.
OTDR License	NCS 2000	Enable this check box to add the OTDR feature to the license package.
3rd party NMS		
3rd party Full License	NCS 2000	Enable this check box to add NBI (North Bound Interface), Alarm Correlation, Performance Monitoring, and Circuit Provisioning features to the license package.
NBI	NCS 2000	Enable this check box to add the NBI feature to the license package.
Alarm Correlation	NCS 2000	Enable this check box to add the Alarm Correlation feature to the license package.
Performance Monitoring	NCS 2000	Enable this check box to add the Performance Monitoring feature to the license package.

Properties	Platform	Description
Circuit Provisioning	NCS 2000	Enable this check box to add the Circuit Provisioning feature to the license package.
Enhanced Face Plate Options		
Degree Priority	NCS 1010	Choose the port type for interconnect degree priority. The available options are: • LC Ports • MPO Group The default option is *LC Ports*. **Note** This field appears only when you select **NCS 1010 Line Card** as *Enhanced Faceplate*.
Add/Drop Shelf Type	NCS 1010	This property is noneditable and appears for networks from R7.11.1.

Step 6 Click **Update**.

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. For a ROADM to be contentionless, the number of drop units must be equal to ROADM degrees.

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

Before you begin

Log in to Cisco ONP Web Interface.

Step 1 Choose **File** > **Open**.

The **Select Network To Open** dialog box appears.

Step 2 Click the network in which you want to add contentionless sides to a site.

The network opens.

Step 3 Choose **Network** > **Entity Editor**.

Step 4 Click the site to which you want to add contentionless sides.

Step 5 Click the **Add Contentionless Side** icon.

Step 6 Enter the appropriate value in the **Enter number of contentionless sides** field.

The number of contentionless sides that can be added to a site depends on the type of site, the **Scalable Upto Degree** property. The following table explains the same.

Table 8: 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

Step 7 To add layer-2 SMR-20 contentionless sides, perform the following steps:

a) Check the **Evolved Mesh** check box.
b) Choose **Site Type** as *SMR-20* or *Auto*.
c) Check the **Cascaded SMR** check box.
d) Choose **Degree Mesh Type** as *DEG-5/UPG-4*.
e) Click **Update**.

You can add 20 more contentionless sides on each site for layer-2 SMR.

Step 8 To add an extended layer-2 SMR-20 contentionless side, 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, sacrificing some Layer-1 contentionless sides. The following table explains the same.

Table 9: 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	Unsupported	Unsupported
	SMR-20	8	12	20	Unsupported	Unsupported
	SMR-20	12	8	20	Unsupported	Unsupported
	SMR-20	16	4	20	Unsupported	Unsupported

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
2	SMR-20	4	Unsupported	Unsupported	Unsupported	Unsupported
	SMR-20	8	11	20	20	Unsupported
	SMR-20	12	7	20	20	Unsupported
	SMR-20	16	3	20	20	Unsupported
3	SMR-20	4	Unsupported	Unsupported	Unsupported	Unsupported
	SMR-20	8	Unsupported	Unsupported	Unsupported	Unsupported
	SMR-20	12	6	20	20	20
	SMR-20	16	2	20	20	20

Step 9 Click **OK**.

Modify Number of Contentionless Side Ports for a Site

Use this task to modify the number of contentionless ports for a side in a ROADM site.

Before you begin

Log in to Cisco ONP Web Interface.

Step 1 Choose **File** > **Open**.

The **Select Network To Open** dialog box appears.

Step 2 Click the network in which you want to modify the number of contentionless ports for a side in a ROADM site.

The network opens.

Step 3 Choose **Network** > **Entity Editor**.

Step 4 Expand a ROADM site and select a contentionless side.

You can view the properties of the side in the right panel.

Step 5 From the **Contentionless Ports** drop-down list, choose the required number of ports.

Click **Update**.

Modify Contentionless Side to a Site in Upgrade Mode

Use the following procedure to modify contentionless sides to a ROADM or traffic site in upgrade mode.

Limitation

- Supports networks from R11.1.x.
- NCS 2000 networks have the limitation of Passive units count up to 126. When you add the second and third L2 contentionless sides, the passive units count goes beyond the limit. In such cases, the tool allows the analysis and notifies the limitation via an error message, *The passive units in this design (count) has exceeded the maximum supported passive units on the NE SW (126). Please review the design with Cisco before proceeding for deployment*.

Before you begin

Set the following conditions.

1. Enable **Evolved Mesh**.
2. Set **Site Type** as *SMR-20* or *Auto*
3. Enable **Cascaded SMR**.
4. Set **Degree Mesh Type** as *DEG-5/UPG-4*.
5. Set **Scalable Upto Degree**.

If the above Prerequisites are not met, you must unlock the site to modify the contentionless sides.

Step 1 Choose **Network** > **Entity Editor**.

Step 2 Click the site to which you want to modify the contentionless sides.

Step 3 Check the **Cascaded SMR** check box if not enabled already.

The **Reserve Cascaded SMR Port** drop-down appears.

Step 4 Choose the SMR port value in **Reserve Cascaded SMR Port**.

To reduce the Layer-2 SMR sides:

a. Choose a lower value.

b. Click **Update**.

If SMR ports are available, the update becomes successful. Else, an error message appears. Perform the following actions:

1. Unlock the site.
2. Start over from Step 1.

To increase the Layer-2 SMR sides:

a. Choose a higher value.

b. Click **Update**.

If SMR ports are available, the update becomes successful. Else, an error message appears. Perform the following actions:

1. Unlock the site.

2. Delete the lowest contentionless side in Layer-1 SMR site.
3. Start over from Step 1.

Step 5 Click the site to which you want to add contentionless sides.

Step 6 Click the **Add Contentionless Side** icon.

Step 7 Enter the appropriate value in the **Enter number of contentionless sides** field.

The number of contentionless sides that can be added to a site depends on the type of site, the **Scalable Upto Degree** property.

Step 8 Click **OK**.

Add L-Band Side to a Site

Use the following procedure to add L-Band sides to an NCS 1010 R7.9.1 site:

Before you begin

Log in to Cisco ONP Web Interface.

Step 1 Choose **File** > **Open**.

The **Select Network To Open** dialog box appears.

Step 2 Click the network in which you want to add the L-Band sides to a site.

The network opens.

Step 3 Choose **Network** > **Entity Editor**.

Step 4 To add the L-Band sides, choose one of the following options:

- Click the site to which you want to add the L-Band sides.

  Note If you add an L-Band side to a site, the corresponding attached sides from other sites also automatically add L-Band sides. A pop-up message appears to indicate the addition of L-Band sides.

- Or, expand the site and click on a side to add L-Band to the selected side only.

Step 5 Click the **Add L-Band** icon.

The L-Band side appears under the required site or side.

Note If ILA or pass-through sites are present in APC domain, then the end-to-end path in the L-band becomes enabled automatically.

Add Omni-Directional Side to a Site

Table 10: Feature History

Feature Name	Release Information	Description
Omnidirectional Configuration Support for NCS 1010 Network	Cisco ONP Release 24.3.1	You can now include both colorless and colored omnidirectional configurations when designing an NCS 1010 network. New Properties Added: • **Add Omni-Directional** icon (under Entity Editor): Use this icon to add the required number of omnidirectional sides. • **Omni Variant** (under Side Properties): Select the desired Add/Drop stage, such as Dual OLT or 4x4 COFS. • **Max Auto Omni Allowed** (under Network Properties): Cisco ONP automatically generates the omni edges based on the number entered. This omnidirectional setup enhances the flexibility of the multidegree topology, allowing channels to be routed through any optical degree during a fiber cut without needing physical fiber reconnections.

The omnidirectional configuration allows you to add/drop traffic to/from any of the node directions in a multidegree topology. This configuration gives flexibility to the multidegree topology to route channels through any of the optical degrees during fiber cut without the need for changing the physical fiber connections.

Note Omni edges are not supported on a Terminal site.

Use the following procedure to add omnidirectional sides to an NCS 1010 site.

Before you begin

Log in to Cisco ONP Web Interface.

Step 1 Choose **File** > **Open**.

The **Select Network To Open** dialog box appears.

Step 2 Click the network in which you want to add contentionless sides to a site.

The network opens.

Step 3 Choose **Network** > **Entity Editor**.

Step 4 Click the site to which you want to add contentionless sides.

Step 5 Click the **Add Omni-Directional** icon.

Step 6 Enter the appropriate value in the **Enter number of Omni Directional sides** field.

The number of omnidirectional sides that can be added to a site depends on the **Scalable Upto Degree** property.

Step 7 Click **OK**.

The omnidirectional sides are created under the site and are labeled as omni-1, and omni-2 and so on. Also, a tag called *Omni* is added to the Omni side to indicate it as an omnidirectional side.

You can add L-band functionality to the side by clicking the **Add L-Band** icon.

Note Cisco ONP will automatically generate up to the number of Omni Edges specified in the **Max Auto Omni Allowed** field under Network properties. Manual creation by the user is not required.

Modify Fiber Properties

Use this task to modify the properties of fiber.

Before you begin

Log in to Cisco ONP Web Interface

Step 1 In the network tree, expand **Fiber**, and select a fiber or click a fiber on the map. The selected fiber will be highlighted in orange.

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

Step 2 Modify the following fiber properties as required.

Property	Platform	Description
General		
Name	NCS 2000 NCS 1010 NCS 1001	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	NCS 2000 NCS 1010 NCS 1001	Displays the source site name. This field is noneditable.

Property	Platform	Description
Destination	NCS 2000 NCS 1010 NCS 1001	Displays the destination site name. This field is noneditable.
Bidirectional	NCS 2000 NCS 1010 NCS 1001	Indicates whether a standard single fiber is used to transmit the data in both directions.

Property	Platform	Description
Fiber Type	NCS 2000	Select the fiber type. Cisco ONP supports the following fibers, and the default fiber type is G652-SMF. • G652-SMF • G652-SMF-28E • True Wave Reach • True Wave RS • True-Wave Plus • True-Wave Minus • True-Wave Classic • Free-Light • Tera-Light • Metro-Core • ELEAF • NDSF • ALLWave • SMF-28 ULL • SMF28-Ultra
	NCS 1010	

Property	Platform	Description
		Select the fiber type. Cisco ONP supports the following fibers, and the default fiber type is G652-SMF. • G652-SMF • G652-SMF-28E • True Wave Reach • True Wave RS • True-Wave Plus • True-Wave Minus • True-Wave Classic • Free-Light • Tera-Light • Metro-Core • ELEAF • NDSF • ALLWave • SMF-28 ULL • SMF28-Ultra
	NCS 1001	• G652-SMF • G652-SMF-28E • True Wave Reach • True Wave RS • Free-Light • Tera-Light • ELEAF

Property	Platform	Description
Length	NCS 2000 NCS 1010 NCS 1001	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 to 1 km or 1 mile. If you change the fiber length, then the tool updates the same in the network tree and the map accordingly. • 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	NCS 2000 NCS 1010 NCS 1001	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.
Business status	NCS 2000 NCS 1010 NCS 1001	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	NCS 2000 NCS 1010 NCS 1001	Choose the measurement unit (Km or Miles) for the fiber span. You can set the measurement unit only for the duct, but not for the fiber pair (couple) or fiber.
Ageing Loss [dB]	NCS 2000 NCS 1010 NCS 1001	Enter the aging loss value for the fiber.
DCN Extension	NCS 2000 NCS 1010 NCS 1001	Check this check box to enable the default use of 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.

Property	Platform	Description
OSC FrameType	NCS 2000	Choose the OSC frame type. The options available are: • Auto • OC3 Frame • GE Frame • FE Frame The default option is Auto. When set in Auto, Cisco ONP uses FE Frame as the preferred frame type.
Ageing Factor	NCS 2000 NCS 1010 NCS 1001	Enter the number to fiber aging factor.
Physical		
Length-Based Loss	NCS 2000 NCS 1010 NCS 1001	The fiber loss value is automatically calculated based on length and loss coefficient, when you check this option.
Tot SOL Loss w/o connectors	NCS 2000 NCS 1010 NCS 1001	Enter the start of life fiber loss value for each span, excluding the connector concentrated loss.
Raman Amplification		
Raman Amplified	NCS 2000	Enable Raman Amplification on the ducts. **Note** When you enable Raman amplification for NCS 2000 system release 12.2, the side property *Enable C+L Band S/C* is automatically disabled and vice versa.

Step 3 Click **Update**.

Step 4 To modify the advanced properties of the fibers, click **Show Advanced Properties**, or choose **Network** > **Entity Editor**.

Step 5 Click the **FIBER** tab in the **Entity Editor** window.

Step 6 Choose the fiber and modify the following properties in the right pane.

Property	Platform	Description
General		
Ageing loss [dB]	NCS 2000 NCS 1010 NCS 1001	Enter the aging loss value.

Property	Platform	Description
DCN Extension	NCS 2000 NCS 1010 NCS 1001	Enable the default use of data connection network (DCN) extension on each span in the network.
OSC Frame Type	NCS 2000 NCS 1010	Choose the OSC frame type. The options available are Auto, OC3 Frame, Gigabit Ethernet Frame, and Fast Ethernet Frame. The default option is Auto. When set in Auto, Cisco ONP uses Fast Ethernet Frame as the preferred frame type.
Aging Factor	NCS 2000 NCS 1010 NCS 1001	Enter the number to factor fiber aging. This factor is multiplied by the SOL total span loss without connectors.
Physical		
Connector Loss A	NCS 2000 NCS 1010 NCS 1001	Connector Loss at Source Site [dB]
Connector Loss B	NCS 2000 NCS 1010 NCS 1001	Connector Loss at Destination Site [dB]
Factors		
Loss Coefficient [dB/km]	NCS 2000 NCS 1010 NCS 1001	Loss is calculated based on the loss coefficient.
PMD Coefficient	NCS 2000 NCS 1010 NCS 1001	Displays the PMD coefficient.
QD C-Band	NCS 2000 NCS 1010 NCS 1001	Displays the secondary order dispersion for C-band.
CD C-Band	NCS 2000 NCS 1010 NCS 1001	Displays the secondary order dispersion for L-band.

Property	Platform	Description
RD Factor	NCS 2000 NCS 1010 NCS 1001	Displays the random dispersion value.
Extended		
Effective Mode Area	NCS 2000 NCS 1010 NCS 1001	Displays the effective mode area [µm^2]
SRS tilt coefficient	NCS 2000 NCS 1010 NCS 1001	Displays the Stimulated Raman Scattering tilt coefficient on the band.
DRBS coefficient	NCS 2000 NCS 1010 NCS 1001	Displays the Rayleigh Scattering capture coefficient.
N2	NCS 2000 NCS 1010 NCS 1001	Nonlinear index of refraction [1e-16 cm^2/W]
LFBR	NCS 2000 NCS 1010 NCS 1001	Length of individual fibers for sigmaDSP [Km]
Totals (The properties under Totals are noneditable)		
Loss EOL	NCS 2000 NCS 1010 NCS 1001	Displays the total loss EOL calculation.
Loss SOL	NCS 2000 NCS 1010 NCS 1001	Displays the total loss SOL calculation.
CD C-Band	NCS 2000 NCS 1010 NCS 1001	Displays the total chromatic dispersion for the C-band.

Property	Platform	Description
QD C-Band	NCS 2000 NCS 1010 NCS 1001	Displays the secondary order dispersion for C-band.
RD	NCS 2000 NCS 1010 NCS 1001	Displays the random dispersion value.
PMD	NCS 2000 NCS 1010 NCS 1001	Displays the Polarization Mode Dispersion (PMD) value.

Step 7 Click **Update**.

Modify Fiber Couple Properties

Use this task to modify properties of the fiber couple.

Before you begin

Log in to Cisco ONP Web Interface.

Step 1 In the network tree, expand **Fiber**, and drill down up to a fiber couple and click the fiber couple.

You can view the basic properties of the fiber couple at the bottom of the network tree.

Step 2 Modify the following fiber couple properties as required.

Property	Platform	Description
General		
Name	• NCS 2000 • NCS 1010 • NCS 1001	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	• NCS 2000 • NCS 1010 • NCS 1001	Displays the source side name. This field is noneditable.

Property	Platform	Description
Destination Side	• NCS 2000 • NCS 1010 • NCS 1001	Displays the destination side name. This field is noneditable.
Length	• NCS 2000 • NCS 1010 • NCS 1001	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.
Factors		
Loss coefficient [dB]	• NCS 2000 • NCS 1010 • NCS 1001	Enter the value of the SOL fiber loss per kilometer used to calculate the loss of each span in the network.
Totals		
Loss SOL	• NCS 2000 • NCS 1010 • NCS 1001	Displays the total loss SOL calculation.
Loss EOL	• NCS 2000 • NCS 1010 • NCS 1001	Displays the total loss EOL calculation.
Physical		
Tot SOL Loss w/o connectors	• NCS 2000 • NCS 1010 • NCS 1001	Enter the start of life fiber loss value for each span, excluding the connector concentrated loss.

Step 3 Click **Update**.

Step 4 To modify advanced properties of the fiber couple, click **Show Advanced Properties**, or choose **Network** > **Entity Editor**.

Step 5 Click the **FIBER** tab in the **Entity Editor** window.

Step 6 Choose the fiber and drill down to the fiber couple, and modify the following properties in the right pane.

Property	Platform	Description
Physical		

Property	Platform	Description
Connector Loss A	• NCS 2000 • NCS 1010	Connector Loss at Source Site [dB]
Connector Loss B	• NCS 2000 • NCS 1010	Connector Loss at Destination Site [dB]
Factors		
PMD coefficient	• NCS 2000 • NCS 1010 • NCS 1001	Displays the PMD coefficient.
Totals (The properties under Totals are noneditable)		
PMD	• NCS 2000 • NCS 1010 • NCS 1001	Displays the PMD value.
Loss EOL	• NCS 2000 • NCS 1010 • NCS 1001	Displays the total loss EOL calculation.
Loss SOL	• NCS 2000 • NCS 1010 • NCS 1001	Displays the total loss SOL calculation.
CD C-Band	• NCS 2000 • NCS 1010 • NCS 1001	Displays the total chromatic dispersion for the C-band.
QD C-Band	• NCS 2000 • NCS 1010 • NCS 1001	Displays the secondary order dispersion for C-band.

Property	Platform	Description
RD	• NCS 2000 • NCS 1010 • NCS 1001	Displays the random dispersion value.

Step 7 Click **Update**.

Modify Service Properties

Use this task to modify the properties of the service.

Before you begin

Log in to Cisco ONP Web Interface.

Step 1 In the network tree, expand **Services** and click a service.

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

Step 2 Modify the following service properties as required.

Property	Platform	Description
General		
Name	NCS 2000	By default, 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.
Type	NCS 2000	Choose the types of service.

Property	Platform	Description
Protection	NCS 2000	Choose the protection type from the drop-down list. Options available are: • Unprotected • 1+1 • Disjoint • S+NS • 1+R • 1+1+R • 1+1+R+R For more information on protection types, see Supported Protection Schemes.
Source	NCS 2000	Displays the source site name.
Destination	NCS 2000	Displays the destination site name.

Step 3 Click **Update**.

Step 4 To modify advanced properties of the service, click **Show Advanced Properties** or choose **Network** > **Entity Editor**.

Step 5 In the **Entity Editor** window, click the **Service** tab.

Step 6 Choose the service under the network tree, and modify the following properties in the right pane.

Property	Platform	Description
General		
Tertiary Source	NCS 2000	From the drop-down list, select the possible site as a tertiary source.

Property	Platform	Description
Tertiary Destination	NCS 2000	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.
Primary Path Forcing		
Path	NCS 2000	Cisco ONP automatically selects the shortest path as working path and also allows you to force the path manually.
Fiber	NCS 2000	Primary path fiber is forcing path for working trail.
Regeneration Platform	NCS 2000	Displays the platform of the regeneration site
Regen Sites	NCS 2000	Choose the regeneration site.
Wavelength	NCS 2000	Click **Edit** to choose the wavelength. The default option is Auto.
ODU Timeslot	NCS 2000	Enter the ODU timeslot value.
Section Wavelength(s)	NCS 2000	Displays the selected **Wavelength**.
Src Channel Type	NCS 2000	Choose the type of source channel. The available options are: • Auto—This is the default option. *Auto* option is the contentionless demand. • Contentionless • Colorless • Colored
Dst Channel Type	NCS 2000	Choose the type of destination channel.

Property	Platform	Description
Secondary Path Forcing (Available only for (1+1)		
Path	NCS 2000	Secondary path is the protected path when the primary path fails. This path is the second best path after the primary path.
Fiber	NCS 2000	Secondary path fiber is for protected service, forcing path for the protected trail.
Regeneration Platform	NCS 2000	Displays the platform of the regeneration site
Regen Sites	NCS 2000	Choose the regeneration site.
Wavelength	NCS 2000	Click **Edit** to choose the wavelength. The default option is Auto.
ODU Timeslot	NCS 2000	Enter the ODU timeslot value.
Section Wavelength(s)	NCS 2000	Displays the selected **Wavelength**.
Src Channel Type	NCS 2000	Choose the type of source channel.
Dst Channel Type	NCS 2000	Choose the type of destination channel.
Restoration 1 Path Forcing (Available for 1+R, 1+1+R, 1+1+R+R)		
Path	NCS 2000	Cisco ONP automatically selects the first restoration path.
Fiber	NCS 2000	Choose the first restoration path fibers.
Restoration 2 Path Forcing (Available for 1+1+R+R)		
Path	NCS 2000	Cisco ONP automatically selects the second restoration path.
Fiber	NCS 2000	Choose the second restoration path fibers.
NCS 1 K Domain		
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 whether the trunk mode is 200G or 300G. By default, Trunk Mode is 200G. **Note** Based on the selected trunk mode, Baud rates are filtered.
Baud Rate	NCS 2000	Choose whether the Baud rates mode as 60 or 69GBd.

Note

- Ensure that you force both primary and secondary path fiber or channel for protected service. Also ensure that the wave type is same for both primary and secondary paths. While doing path forcing, make sure that you perform an end-to-end path forcing from the source to the destination. Analysis fails if the partial path is forced.
- Force the wave path for the wave, which is tagged to the service.
- In case of protection type: 1+1+R+R, 1+1+R, and 1+R, you can force a path in restoration path1 or restoration path2 Fiber that is forced in primary or secondary path Fiber.

Step 7 Click **Update.**

Modify Service Properties for NCS 1010

Table 11: Feature History

Feature Name	Release Information	Feature Description
Transponder Support on NCS 1010 Network	Cisco ONP Release 24.3.1	You can now create optical services for the NCS 1010 network. You can include cards such as NCS1K14-2.4T-K9, NCS1K14-2.4T-X-K9, and NCS1K4-QXP-K9 as native transponder instead of optical sources and check the feasibility of the network. You can generate the traffic report and BoM with the exact count of cards and pluggables based on the requirements, along with licensing details for the OLT card and the transponders.

From Release 24.3.1, you can add services between two NCS 1010 or NCS 1020 sites. Use this task to modify the properties of the service.

Before you begin

Log in to Cisco ONP Web Interface.

Step 1 In the network tree, expand **Services** and click a service.

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

Step 2 Modify the following service properties as required.

Property	Platform	Description
General		
Name	NCS 1010	The services are named as Service-1, Service-2, and so on. You can edit the name.
Type	NCS 1010	Choose the traffic type as 100GE or 400GE.

Property	Platform	Description
Protection	NCS 1010	Protection is not supported for the NCS 1010 network. The only option available is **Unprotected**.
Source	NCS 1010	Displays the source site name.
Destination	NCS 1010	Displays the destination site name.
Encryption	NCS 1010	Check this check box to enable encryption on the service. Encrypted and non-encrypted services will not be aggregated and they use separate trunks.

Step 3 Click **Update**.

Step 4 To modify the advanced properties of the service, click **Show Advanced Properties** or choose **Network** > **Entity Editor**.

Step 5 In the **Entity Editor** window, click the **Service** tab.

Step 6 Choose the service under the network tree, and modify the following properties in the right pane.

Property	Platform	Description
Primary Path		
Path	NCS 1010	Path of the service.
Fiber	NCS 1010	Choose the fiber.
Regen Sites	NCS 1010	Choose the regeneration site.

Property	Platform	Description
Channel	NCS 1010	Choose if a new circuit is to be created or an existing circuit to be used. The available options are: • **Auto**: The system will automatically choose whether to create a new circuit or use an existing one. • **Create New**: A new circuit will be created, and no existing circuits will be used. • Existing circuits (Displays the name of the circuits that are already created): Select an existing circuit to use. If you need to specify a particular circuit, provide the circuit name. **Note** When you select an existing circuit with the following conditions: • **Traffic Type** is set to *Line card* under the circuit properties. • **Trunk Mode** and **Baud Rate** are already defined under the Trail properties You will not be able to select **Trunk Mode** and **Baud Rate** under the Service properties. To edit these properties change the traffic type and change the **Channel** property to *Auto*.
Band Type	NCS 1010	Displays whether it is a C-type to L-type band.
Section Wavelengths	NCS 1010	Choose the wavelength for the regen site that is selected.
Trunk mode	NCS 1010	Choose the trunk mode of the line card. The trunk rate is from 400G to 1200G for NCS1K14-2.4T-K9 and NCS1K14-2.4T-x-K9, from 100G to 400G for NCS1K4-QXP-K9.
Baud Rate	NCS 1010	Displays the baud rate suitable for the trunk rate.
Wavelength	NCS 1010	Click **Edit** to choose the wavelength. The default option is Auto.
Primary Channel Source		
Card Type	NCS 1010	Choose the card for the service. The available options are: • NCS1K14-2.4T-K9 • NCS1K14-2.4T-X-K9 • NCS1K4-QXP-K9
Modulation	NCS 1010	Displays the type of modulation.

Property	Platform	Description
Bundle Mode	NCS 1010	This property is enabled when the NCS1k14-2.4T-X-K9 card is selected. When selected, the routing will be based on Muxponder mode and supports Trunk modes 600G or 1000G.
Sub Mode	NCS 1010	This field is applicable only for the NCS1K4-QXP-K9 card. Choose the required sub mode. The available options are: • 1_E • 0_S
FEC	NCS 1010	Displays the type of FEC supported on the chosen card.
Src Add/Drop Type	NCS 1010	Choose the Add/drop type. The available options are: • Colored • Colorless • Omni-colored • Omni-colorless
Client Interface	NCS 1010	Choose the client pluggable for the selected card.
Client Port	NCS 1010	This property is enabled only when a trunk mode is selected. Choose the client port.
Trunk Type	NCS 1010	The trunk pluggables that are applicable for the selected card is displayed. Choose the required trunk pluggable.
Primary Channel Destination		
Card Type	NCS 1010	Choose the card for the service. The available options are: • NCS1K14-2.4T-K9 • NCS1K14-2.4T-X-K9 • NCS1K4-QXP-K9
Modulation	NCS 1010	Displays the type of modulation.
Bundle Mode	NCS 1010	This property is enabled when the NCS1k14-2.4T-X-K9 card is selected. When selected, routing will be based on Muxponder mode and supports Trunk modes 600G or 1000G.
Sub Mode	NCS 1010	This field is applicable only for the NCS1K4-QXP-K9 card. Choose the required sub mode. The available options are: • 1_E • 0_S

Property	Platform	Description
FEC		Displays the type of FEC supported on the chosen card.
Dst Add/Drop Type	NCS 1010	Choose the Add/drop type. The available options are: • Colored • Colorless • Omni-colored • Omni-colorless
Client Interface	NCS 1010	Choose the client pluggable for the selected card.
Client Port	NCS 1010	This property is enabled only when a trunk mode is selected. Choose the client port.
Trunk Type	NCS 1010	The trunk pluggables that are applicable for the selected card is displayed. Choose the required trunk pluggable.

Step 7 Click **Update.**

Services Aggregation

Table 12: Feature History

Feature Name	Release Information	Feature Description
Services Aggregation	Cisco ONP Release 4.1	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 also export the aggregation reports.

Services aggregation indicates whether two or more services can share the same trunk port or channel. The aggregation is defined based on the properties of the Service Group. When you add services to the Traffic site (of the type 1K-2K-4K) in an SSON network, a **DefaultGroup** is created under the **Services** in the network tree. The services that you add, are associated to the **DefaultGroup**.

Create a New Service Group

Use this task to create a new service group:

Before you begin

Log in to Cisco ONP Web Interface

Step 1 Choose **File** > **Open**.

The **Select Network To Open** dialog box appears.

Step 2 Click a network, where you want to create a new service group.

The network opens.

Step 3 Click the **Ellipsis** icon available in the right side of **Services** under the network tree and choose **Create Service Group**.

A new service group gets created under the Services.

Modify Service Group Properties

Use this task to modify the properties of service group.

Before you begin

Log in to Cisco ONP Web Interface.

Step 1 In the network tree, expand **Services** and click a service group.

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

Step 2 Modify the following service properties as required.

Property	Platform	Description
General		
Name	NCS 2000	By default, 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 name of the services are Site-1-Site-2-1 and Site-1-Site-2-2, respectively.
Demand Types	NCS 2000	Choose the demand type. For default group all demand types are available, and you cannot edit them.
Default Group	NCS 2000	Indicates whether the service group is a default group or a user created group.
NCS 4 K		

Property	Platform	Description
Exclusive LC Usage	NCS 4000	Indicates whether the services belonging to this group must have an exclusive Line Card (LC) or not. 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.
Symmetric Aggregation	NCS 4000	Indicates whether this group allows aggregation of only symmetric services. Services are symmetric if they have same protection scheme. Following are the various protection schemes: • 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 Aggregation Rules, on page 57.
NCS 1 K		
Exclusive LC Usage	NCS 1004	Same as NCS 4 K.
Symmetric Aggregation	NCS 1004	Same as NCS 4 K.

Step 3 Click **Update**.

Aggregation Rules

Following are the rules for any two services (symmetrical or nonsymmetrical) to be aggregated:

- The services must have the same Source and Destination.
- The services must have same paths for the same path types.

  For example:

  - For symmetric aggregation between two “1+1” services, the working path of the first service must match with the working path of the second service and the protection path of the first service must match with the protection path of the second service.
  - For non-symmetric aggregation between “1+1” and “1+1+R” services, the working path of the first service must match with the working path of the second service and the protection path of the first service must match with the protection path of the second service. The restoration path of second service can be anything.

- The services must be configured to use same wavelength for same path types.
- If the wavelength is set to “auto”, it is flexible to be aggregated with other “auto" wavelength or a fixed wavelength.
- The services must be configured to use same trunk mode for same path types.
- The services must be configured to use same regeneration sites for same path types.

Note Demand Type is not used as a constraint for aggregation (except for trunk capacity availability).

Associate a Service to the Newly Created Group

By default, the services are associated to the **DefaultGroup**. But you can change the group.

Before you begin

Log in to Cisco ONP Web Interface.

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

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

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

Step 3 Click **Update**.

Note For an LNI imported network, by default, all the services are present in the Default group. Only when you upgrade the LNI imported network for the first time, you can move the services to other newly created Service Groups without having to unlock them. On subsequent upgrades, you must unlock the services to facilitate the movement between Service Groups. Also, the Service Groups are in locked state in the upgrade mode, unless a complete Network-level unlock has been performed.

What to do next

Export Aggregation Reports

Use this task to export the service aggregation reports:

Before you begin

Log in to Cisco ONP Web Interface.

Step 1 Choose **File** > **Open**.

The **Select Network To Open** dialog box appears.

Step 2 Click an analyzed network.

The network opens.

Step 3 Choose **Export** > **Service Aggregation**.

Step 4 Save the aggregation report in the form of an Excel sheet to your local system.

Modify Wave Properties

Table 13: Feature History

Feature Name	Release Information	Feature Description
PSM Support on Non-SSON Network	Cisco ONP Release 24.3.1	The **PSM-channel** option is now available as a **Protection Type** under the Wave properties for NCS 2000 non-SSON networks. This option allows you to use PSM channel trunk protection with the PSM card during network design, in addition to existing client protection. You can verify the optical feasibility for both working and protection paths, providing all necessary parameters and connections for deployment.

Use the following task to modify the properties of the wave.

Before you begin

Log in to Cisco ONP Web Interface.

Step 1 In the network tree, expand **Waves**, and click a wave.

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

Step 2 Modify the following wave properties as required.

Property	Platform	Description
General		
Label	NCS 2000	By default, the wave is named based on the source and destination sites and the number of waves between them. You can edit the name. 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.
Source Site	NCS 2000	Displays the source site name.
Destination Site	NCS 2000	Displays the destination site name.
Traffic Type	NCS 2000	Choose the traffic type from the drop-down list. The available options are: • 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

Property	Platform	Description
Protection Type	NCS 2000	Choose the protection type. • Unprotected • Client 1+1 • PSM-Channel The *PSM-channel* option is available only for non-SSON networks. PSM-channel is not supported with the colorless Add/Drop MF-6AD-COFS. When you select the *PSM-Channel* option, the Protection Switch Module (PSM) for the Cisco ONS15454 Multiservice Transport Platform (MSTP) (15454-PSM card) is placed in the network to provide protection at the trunk level. The PSM card splits the traffic originated by transponder trunk across the working and protected TX ports. For more information on protection types, see Supported Protection Schemes.
Forecast	NCS 2000	Check this check box to change a present wave to a forecast wave.
Encryption	NCS 2000	Check this check box to enable encryption.

Step 3 Click **Update**.

Modify Media Channel Properties

Use the following task to modify properties of the media channel.

Before you begin

Log in to Cisco ONP Web Interface.

Step 1 In the network tree, expand **Media Channels**, and click a media channel.

You can view the basic properties of the media channel at the bottom of the network tree.

Alternatively, you can choose **Network** > **Entity Editor** > **Services**, expand **Media Channels**, and click a media channel to view the properties.

Step 2 Modify the following properties as required.

Property	Platform	Description
General		

Property	Platform	Description
Label	NCS 2000	By default, the media channel is named based on the source and destination sites and the number of media channels between them. You can edit the name. 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.
Source Site	NCS 2000	Displays the source site name.
Destination Site	NCS 2000	Displays the destination site name.
Traffic Type	NCS 2000	Choose the traffic type from the drop-down list. The available options are: • 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
Protection Type	NCS 2000	Choose the protection type. • **Unprotected** • **Client 1+1** For more information on protection types, see Supported Protection Schemes. 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.
Forecast	NCS 2000	Check this check box to change a present wave to a forecast wave.

Property	Platform	Description
Encryption	NCS 2000	Check this check box to enable encryption.

Step 3 Click **Update**.

Modify Circuit Properties

Use the following task to modify the properties of the circuit in an NCS 1010 network.

Before you begin

Log in to Cisco ONP Web Interface.

Step 1 In the network tree, expand **Circuits**, and click a circuit.

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

Step 2 Modify the following circuit properties as required.

Property	Platform	Description
General		
Label	NCS 1010 NCS 1001	By default, the circuit is named based on the source and destination sites and the number of circuits between them. You can edit the name. For example, if there are two circuits defined between site 1 and site 2, the circuits are named as Site-1-Site-2-1 and Site-1-Site-2-2, respectively.
Source Site	NCS 1010 NCS 1001	Displays the source site name.
Destination Site	NCS 1010 NCS 1001	Displays the destination site name.

Property	Platform	Description
Traffic Type	NCS 1010 NCS 1001	Choose the traffic type from the drop-down list. The available options are: • Optical Source • Pluggable Card • Line Card If you select *Line card* as the **Traffic Type** in the Circuit properties, you can only select a transponder card as the **Card Type** under the Service properties. **Note** QDD interfaces (both as optical source and pluggable) are not supported with colorless BRK-8, BRK-16, and BRK-24 configurations.
Protection Type	NCS 1010 NCS 1001	Choose the protection type. Currently, we support only Unprotected.
Encryption	NCS 1010	The Encryption property gets enabled when you select *Line card* as the **Traffic Type**.
Forecast	NCS 1010 NCS 1001	Check this check box to change a present wave to a forecast wave.

Step 3 Click **Update**.

Modify Trail Properties

Use this task to modify the properties of the trail.

Table 14: Feature History

Feature Name	Release Information	Description
Bright ZR+ Pluggable Support	Cisco ONP Release 5.1	The Bright ZR+ pluggable can now be included in the network design by choosing them as **Card Type** or **Client Interface** under the **Trail** properties. This selection is available for all types of sites. The Bright ZR+ pluggable has high transmit optical power up to 0dBm, high transmit OSNR, and high-density QSFP-DD form factor.

Table 15: Feature History

Feature Name	Release Information	Description
Multilayer Nodes Enhancements	Cisco ONP Release 5.1	You can now choose from the full array of supported **Card Types** and **Client Interfaces** under the **Trail** properties option for the multilayer nodes. Previously, only a limited set of cards were available for selection. With this enhancement, you can design diverse networks leveraging the unique functionalities of all types of cards.

Before you begin

Log in to Cisco ONP Web Interface.

Step 1 In the network tree, expand **Waves**, **Media Channels** or **Circuits**, drill down up to a trail and click a trail.

The basic properties of the trail are displayed at the bottom of the network tree.

Step 2 Modify the following trail properties as required.

Property	Platform	Description
General		
Label	NCS 2000 NCS 1010 NCS 1001	Displays the name of the trail.
Path of Wave	NCS 2000 NCS 1010 NCS 1001	Select a fiber from the drop-down list.
Regen Sites	NCS 2000 NCS 1010	Select the regeneration site.
Source Site	NCS 2000 NCS 1010 NCS 1001	Displays the source site name.
Destination Site	NCS 2000 NCS 1010 NCS 1001	Displays the destination site name.

Property	Platform	Description
Wavelength	NCS 2000 (Non-SSON)	Click **Edit** to choose the wavelength. The default option is Auto.
Central Wavelength [nm]	NCS 2000 NCS 1010 NCS 1001	Click **Edit** to choose the central wavelength. The default option is Auto. **Note** If you select *L-Band* as **Band Type**, the L-band wavelength options appear along with C-band wavelengths for NCS 1010 R7.9.1.
Multicarrier	NCS 2000 NCS 1010	Indicates whether the transmission is a multicarrier transmission.
Trunk Mode	NCS 2000	The trunk mode can be edited only when you choose *400G-XP-LC* as **Card Type**.
	NCS 1010	The trunk mode can be edited only when the **Traffic Type** is set to *Line card* under the circuit properties.
	NCS 1001	Trunk mode is noneditable. *Auto* is default option.
Number Of Carrier(s)	NCS 1010	Enter values 2–16 to add the required number of carriers to the channel. The default value is 1. **Note** If you select *Colorless* or *Omni-Colorless* as **Add/Drop Type** and *Auto* or *OLT/LC/AddDrop* as **Add/Drop Connector**, this property becomes editable. **Note** When you enable bundle mode in line circuit, this value is 2 and non-editable.
Baud Rate	NCS 1010	Choose the baud rate that is suitable for the selected trunk rate.
Filtering Penality	NCS 2000 NCS 1010	Displays the value of the penalties that are caused by the different filter types (OADM, and ROADM).

Step 3 To modify the advanced properties of the trail, click **Show Advanced Properties** or choose **Network** > **Entity Editor**.

Step 4 In the **Entity Editor** window, click the **Service** tab.

Step 5 Expand **Waves**, **Media Channels** or **Circuits**, under the network tree, drill down to the trail, click the trail, and modify the following properties that are displayed in the right pane.

Property	Platform	Description
General		
OSNR Forward [dB]	NCS 2000 (non-SSON)	Displays the forward optical signal to noise ratio.
OSNR Reverse [dB]	NCS 2000 (non-SSON)	Displays the reverse optical signal to noise ratio.

Property	Platform	Description
Band Type	NCS 1010	Choose the required band type for the circuit. **Note** When you select *L-Band* as **Band Type**, then the **Add/Drop Type** field automatically selects *Colorless* and becomes disabled.
	NCS 1001	This property is noneditable. *C-Band* is the default option.
OTN (non-SSON)		
ODUTimeslot	NCS 2000 (non-SSON)	Displays the Optical Data Unit timeslot.
SRLGs	NCS 2000 (non-SSON)	Displays the SRLGs associated with the trail.
OTN Hops	NCS 2000 (non-SSON)	Displays the number of OTN hops.
Quantity	NCS 2000 (non-SSON)	Displays the number of OTN services on the trail.
Source		
Card Type	NCS 2000 NCS 1010	Choose the card used in the source site. See Supported Cards and Pluggables and Supported Optical Sources for more information on the list of supported cards. From Release 5.1, Bright ZR+ pluggables are supported for all the types of sites. Also, there are no limitations on the type of cards that can be chosen for the multilayer nodes. **Note** • Non-SSON • Colored and colorless—Baud rates less than 42 are supported and listed. • Contentionless—Mean power less than –4.4 is supported and listed. • SSON • Colored—Baud rates less than 65 are supported and listed. • Colorless—All interfaces supported and listed. • Contentionless—Mean power less than –4.4 are supported and listed. Mean power = (ochData.txRange.max + ochData.txRange.min)/2 If contentionless is selected for the *source channel type*, the QDD interfaces are not supported.
	NCS 1001	Choose a card type from the drop-down list.

Property	Platform	Description
Client Interface	NCS 2000 NCS 1010	Choose the pluggable from the drop-down list. The pluggables suitable for the chosen card type are displayed. See Supported Cards and Pluggables for more information on the list of supported pluggables. From Release 5.1, Bright ZR+ pluggables are supported for all the types of sites. Also, there are no limitations on the type of cards that can be chosen for the multilayer nodes. 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. The pluggable ERL (QSFP-100G-ERL-S) is supported on the client ports of the 400G-XP LC with 100G traffic type starting from NCS 2000 Release 11.1.3. **Note** When you export the NCS 2000 R11.1.3 network, the Cisco ONP exports the NCS 2000 R11.1.0 report. You must edit the exported report for R11.1.3.
	NCS 1001	This property is noneditable. *Auto* is the default option.
Add/Drop Type	NCS 2000	Choose the type of Add/Drop. The available options are: • Auto • Contentionless • Colorless • Colored
	NCS 1010	Choose the type of Add/Drop. The available options are: • Auto • Colorless • Colored • Omni-Colorless • Omni-Colored
	NCS 1001	This property is noneditable. *Colored* is the default option.

Property	Platform	Description
Add/Drop Connector	NCS 1010	**Note** This property appears when you select **Add/Drop Type** as *Colorless*. Choose the type of Add/Drop Connector. The available options are: • Auto—Auto is OLT/LC/AddDrop. • OLT/LC/Add/Drop—Combination of OLT LC ports and CCMD-16 LC ports • OLT/LC—Direct OLT LC ports • OLT/MPO/Add/Drop—Combination of OLT LC ports and break out units such as BRK-8, BRK-16, BRK-24 MPO ports **Note** This property is applicable only for Enhanced NCS 1010 line cards from R7.11.1.
Modulation	NCS 1010	Displays the type of modulation.
Bundle Mode	NCS 1010	This property is enabled when the NCS1k14-2.4T-X-K9 card is selected. When selected, the routing is based on Muxponder mode and supports Trunk modes 600G or 1000G.
Sub Mode	NCS 1010	This field is applicable only for the NCS1K4-QXP-K9 card. Choose the required sub mode. The available options are: • 1_E • 0_S
FEC	NCS 1010	Displays the type of FEC supported on the chosen card.
Trunk Type	NCS 2000 NCS 1010	Choose the trunk type from the drop-down list.
	NCS 1001	This property is noneditable. *Auto* is the default option.
Contentionless Side	NCS 2000	Choose the contentionless side from the drop-down list.
Launch Power	NCS 1010 NCS 1001	Enter a launch power value. Default option is *Auto*.
Destination		
Card Type	NCS 2000 NCS 1010	The destination card type is auto populated based on the source card type chosen.
	NCS 1001	Choose the card type from the drop-down list.

Property	Platform	Description
Client Interface	NCS 2000 NCS 1010	Choose the pluggable from the drop-down list. The pluggables suitable for the chosen card type are displayed.
	NCS 1001	This property is noneditable. *Auto* is the default option.
Trunk Type	NCS 2000 NCS 1010	Choose the trunk type from the drop-down list.
	NCS 1001	This property is noneditable. *Auto* is the default option.
Add/Drop Type	NCS 2000	Choose the type of the Add/Drop. The available options are: • Auto • Contentionless • Colorless • Colored
	NCS 1010	Choose the type of the Add/Drop. The available options are: • Auto • Colorless • Colored • Omni-Colorless • Omni-Colored
	NCS 1001	*Colored* is the default option.

Property	Platform	Description
Add/Drop Connector	NCS 1010	**Note** This property appears when you select **Add/Drop Type** as *Colorless*. Choose the type of Add/Drop Connector. The available options are: • Auto—Auto is OLT/LC/AddDrop. • OLT/LC/Add/Drop—Combination of OLT LC ports and CCMD-16 LC ports • OLT/LC—Direct OLT LC ports • OLT/MPO/Add/Drop—Combination of OLT LC ports and break out units such as BRK-8, BRK-16, BRK-24 MPO ports **Note** This property is applicable only for Enhanced NCS 1010 line cards.
Modulation	NCS 1010	Displays the type of modulation.
Bundle Mode	NCS 1010	This property is enabled when the NCS1k14-2.4T-X-K9 card is selected. When selected, the routing is based on Muxponder mode and supports Trunk modes 600G or 1000G.
Sub Mode	NCS 1010	This field is applicable only for the NCS1K4-QXP-K9 card. Choose the required sub mode. The available options are: • 1_E • 0_S
FEC	NCS 1010	Displays the type of FEC supported on the chosen card.
Trunk Type	NCS 1010	Choose the trunk pluggable.
Contentionless Side	NCS 2000	Choose the contentionless side from the drop-down list.
Launch Power	NCS 1010 NCS 1001	Enter a launch power value. Default option is *Auto*.

Step 6 Click **Update**.

Modify Section Properties

Use this task to modify properties of the section.

Before you begin

Log in to Cisco ONP Web Interface.

Step 1 In the network tree, expand **Waves**, drill down up to section and click a section.

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

Step 2 Modify the section properties as required.

Section and trail have the same properties. Refer Modify Trail Properties, on page 64 for the descriptions of the properties.

Step 3 Click **Update**.

Modify Side Properties

Table 16: Feature History

Feature Name	Release Information	Feature Description
Colorless Add/Drop Configuration with SMR-9 Card	Cisco ONP Release 24.3.1	In addition to the SMR-20 card, the colorless Add/Drop configuration can now be added to both SSON and non-SSON networks using the SMR-9 card, providing more flexibility to use the available SMR-9 ports for add/drop functionality.

Table 17: Feature History

Feature Name	Release Information	Feature Description
NCS2K-RMN-CTP-C+L support	Cisco ONP Release 5.0	Cisco ONP now supports the passive module, NCS2K-RMN-CTP-C+L (C- and L-band counterpropagating Raman amplifier), starting from the NCS 2000 system release 12.3.1 for SSON and non-SSON networks.

Table 18: 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 task to modify the properties of a side in a site.

Before you begin

Log in to Cisco ONP Web Interface.

Step 1 In the network tree, Choose **Sites** > **Site** > **Site domain** > **Side**.

Step 2 To modify the side properties, perform the following steps:

a) Click **Show Advanced Properties**.

b) In the right pane of the **Entity Editor** window, modify the following properties of the side.

Note You cannot edit the properties of the Pass through site side.

Options	Platform	Description
General		
Label	NCS 2000 NCS 1010 NCS 1001	Displays the label of the side. Editable for NCS 1001. **Note** For L-band nodes, the suffix **L** is added to the side label.
Type	NCS 2000 NCS 1010 NCS 1001	Displays the type of the side. You cannot edit this property.
Omni Variant	NCS 1010	Select the type of omnidirectional add/drop stage. The available options are: • Dual OLT (the default option) • 4x4 COFS (supports only C-band Omni colorless) You can choose 4x4 COFS only if the **Structure** under the **Sites** properties is *Line*. **Note** In a site, all Omni edges must have the same Omni Variant. Changing the Omni Variant for one edge updates the variant for all edges.
Omni Directional Ports	NCS 1010	Enter the number of omnidirectional ports. It is applicable only for the 4x4COFS Omni variant. The available values range from 1 through 4, with a default value of 4.
Node Address	NCS 1010 NCS 1001	Enter the node address

Options	Platform	Description
MPO Cable	NCS 1010	Choose the MPO cable. The available options are: • Auto • 16MPO-MPO • 24MPO-MPO
Colorless Ports (Displayed for Line side)	NCS 2000	Enter the number of colorless ports. From Release 24.3.1, this property is enabled for the SMR-9 card.
Contentionless Ports (Displayed for Contentionless side)	NCS 2000	Choose the number of contentionless ports.

Options	Platform	Description
Enable C+L Band S/C (Displayed for Line side type)	NCS 2000	Cisco ONP supports the following passive modules: • 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. • NCS2K-RMN-CTP-C+L (C- and L-band counterpropagating Raman amplifier), starting from the NCS 2000 system release 12.3 for SSON and non-SSON networks. Check this check box to enable the NCS2K-RMN-CTP-C+L card. **Note** When you enable this option on a side: • If you enable the fiber property *Raman Amplified*, then the *NCS2K-RMN-CTP-C+L* card is automatically forced. • If you disable the fiber property *Raman Amplified*, then the *NCS2K-MF-CL-SC* card is automatically forced. • Fiber property *Raman Amplified is* automatically disabled for NCS 2000 system release 12.2. The NCS2K-RMN-CTP-C+L module appears in the layout.

Options	Platform	Description
Band Type	NCS 1010 NCS 1001	Choose the required band type. The available options are: • C-Band • C+L Futuristic
NCS 1010 Line Card	NCS 1010	Choose whether the Line Card faceplate is Standard Faceplate or Enhanced Faceplate. **Note** If you assigned a **Scalable Upto Degree** value that is supported for both standard and enhance at the site level, then you can select *Standard Faceplate* in one side and *Enhanced Faceplate* in another side.
OSC Pluggable	NCS 1001	Choose the type of OSC pluggable. The available options are: • CWDM-SFP-1510 • CWDM-SFP-1610 • ONS-SC-Z3-1510 • ONS-SC-Z3-1610 • ONS-SE-155-1510
Bill of Material		
License Suite	NCS 1010	Choose whether the License Suite is Essential (RTU +SIA3) or Advanced (RTU +SIA3).
Layout		
Power Supply	NCS 1010 NCS 1001	Choose the type of Power Supply. The available options are Auto, AC Power, and DC Power. The default option is Auto. With the *Auto* option, the default power supply is selected as *DC Power*.
Chassis Type	NCS 1010	Choose the type of chassis. The available options are: • NCS 1010 • NCS 1020

Options	Platform	Description
Controller Card	NCS 1010	Choose the type of the controller card. The available options are: • Auto • NCS1010-CNTRL-K9 • NCS1010-CNTRL-B-K9
	NCS 1001	NCS1K-CNTLR2 is default.
Redundant Controller Card	NCS 1010 NCS 1001	Displays the redundant controller card, if any. Else displays No.
UTS AC Power Cables	NCS 1010 NCS 1001	Choose the type of cables to be used for the AC power supply. You can choose the cables when the **Power Supply** is set as *AC Power* or *DC Power*.
Redundant Power Scheme	NCS 1010 NCS 1001	Choose the redundant power scheme from the drop-down list to configure the number of working and protected power units for the chassis. The available options are Auto, 1+0, and 1+1.
MF Unit	NCS 1010 NCS 1001	Choose the mechanical frame for the passive optical modules from the drop-down list. The options available are Auto, MF-1RU, and MF-4RU.
Enhanced Face Plate Options		
Degree Priority	NCS 1010	Choose the port type for interconnect degree priority. The available options are: • LC Ports • MPO Group The default option is *LC Ports*. **Note** This field appears only when you select **NCS 1010 Line Card** as *Enhanced Faceplate*.
Direct LC Add/Drop	NCS 1010	Choose the number of LC ports to reserve for Direct Add/Drop connection. The range of values is 0–14. This property appears for networks from R7.10.1. The chosen option will not be used for Degree Connection.

c) Click **Update**.

Modify C-Band Amplifier Properties

Table 19: 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 20: 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.

Use this task to modify the properties of a c-band amplifier in a site.

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 Cisco ONP Web Interface

Step 1 In the network tree, choose **Sites** > **Site** > **Site domain** > **Side** > **C-Band**.

Step 2 To modify the amplifier properties, perform the following steps:

a) Click **C-Band Amplifier**.

You can view the properties of the C-Band Amplifier at the bottom of the network tree. For more information, see Supported Amplifiers.

b) Modify the following properties of the amplifier:

You can also modify the properties by choosing the **C-Band Amplifier** under **Network** > **Entity Editor**.

Options	Platform	Description
General		
PSD Shape	NCS 1010	Enter a Power Spectral Density (PSD) value.
Dual Band PSD Shape	NCS 1010	Enter Central PSD and Tilt values.
Raman COP Tilt	NCS 2000	The default value is Auto. You can enter a value.
Pre Tilt	NCS 2000 NCS 1010	The default value is Auto. You can enter a value.
Raman Tilt	NCS 2000 NCS 1010	The default value is Auto. You can enter a value.
Booster Tilt	NCS 2000 NCS 1010	The default value is Auto. You can enter a value.

Options	Platform	Description

Inline Amplifier	NCS 2000	Choose whether inline amplifier can be forced. The available options are:
		• 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 87.
		• 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.
		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, the forced Inline amplifier is not placed.

Options	Platform	Description
From Fiber		
Pre Amp	NCS 2000	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
	NCS 1010	The options available for NCS 1010 are: • Auto • Normal • Extended
	NCS 1001	The options available for NCS 1001 are: • Auto • NCS1001-PRE-1 • NCS1001-PRE-2
Output Power	NCS 2000 NCS 1001	The default value is Auto. You can enter a value.

Options	Platform	Description
Attenuator In	NCS 2000	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	NCS 2000	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	Platform	Description
Booster	NCS 2000	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
	NCS 1010	For NCS 1010, it is OLT-C-EDFA-Bst
	NCS 1001	The option available for NCS 1001 is: • NCS1001-BST
Output Power	NCS 2000 NCS 1001	The default value is Auto. You can enter a value.
Attenuator In	NCS 2000	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	Platform	Description
Attenuator Out	NCS 2000	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		

Options	Platform	Description
Raman Amp	NCS 2000	Choose the Raman amplifier from the drop-down list. **Note** To force the RAMAN amplifier on NCS 2000 node, you must enable **RAMAN amplified** on the fiber, else the **Raman Amp** is disabled, and network analysis fails. **Note** When you enable the fiber property **Raman amplified** and the side property **Enable C+L Band S/C** for NCS 2000 node, **Raman Amp** is automatically forced as *RAMAN-C+L*. The available options for NCS 2000 ROADM and Traffic sites are: • RAMAN-CTP • RAMAN-COP-CTP Raman Amp can be forced only between two nodes. The available options for the OLA site are: • EDRA1-26 • EDRA1-35 • EDRA2-26 • EDRA2-35 • RAMAN-CTP
	NCS 1010	The available options for NCS 1010 ROADM site are: • Auto • None • Raman **Note** For NCS 1010 network, when Raman is forced on one side, Raman is automatically forced on all connected sides (APC Domain). If there are passthrough nodes connected, Raman will be automatically enabled on both sides of the passthrough nodes.
Raman CTP Gain	NCS 2000	Enter a value.
Raman COP Gain	NCS 2000	Enter a value. This field is enabled only when you choose RAMAN-COP-CTP.
Raman Gain	NCS 1010	Displays the Raman gain.

Options	Platform	Description
Static Data	NCS 2000	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	NCS 2000	Edit the value of average linear crosstalk.
Linear XT Six	NCS 2000	Edit the value average linear crosstalk sigma.
NonLinear XT Avg	NCS 2000	Edit the value of average nonlinear crosstalk.
NonLinear XT Sig	NCS 2000	Edit the value of average nonlinear crosstalk sigma.

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

c) Click **Update**.

Modify L-Band Amplifier Properties

Use this task to modify the properties of an L-band amplifier in a site.

Before you begin

Log in to Cisco ONP Web Interface

Step 1 In the network tree, choose **Sites** > **Site** > **Site domain** > **Side** > **L-Band**.

Step 2 To modify the amplifier properties, perform the following steps:

a) Click **L-Band Amplifier**.

You can view the properties of the L-Band Amplifier at the bottom of the network tree. For more information, see Supported Amplifiers.

b) Modify the following properties of the amplifier:

You can also modify the properties by choosing the **L-Band Amplifier** under **Network** > **Entity Editor**.

Options	Platform	Description
General		
PSD Shape	NCS 1010	Enter a Power Spectral Density (PSD) value.
Dual Band PSD Shape	NCS 1010	Enter Central PSD and Tilt values.
Pre Tilt	NCS 1010	The default value is Auto. You can enter a value.
Raman Tilt	NCS 1010	The default value is Auto. You can enter a value.

Options	Platform	Description
Booster Tilt	NCS 1010	The default value is Auto. You can enter a value.
From Fiber		
Pre Amp	NCS 1010	The options available for NCS 1010 are: • Normal • Extended
To Fiber		
Booster	NCS 1010	For NCS 1010, it is OLT-L-EDFA-Bst

c) Click **Update**.

Modify Add/Drop Multiplexer Properties

Table 21: Feature History

Feature Name	Release Information	Description
User-Defined Colorless Ports Distribution for CCMD Card in NCS 1010 Network	Cisco ONP Release 24.3.1	The new property, **Colorless Port Distribution** is introduced under the **Add/Drop Multiplexer** properties. This property allows you to select the number of CCMD cards to connect to the LC ports of the enhanced OLT and determine the number of channels for each chosen CCMD card. It provides the flexibility to choose the desired number of CCMD cards and distribute the colorless ports across them.

Table 22: 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 task to modify the properties of the add/drop multiplexer in a site.

Before you begin

Log in to Cisco ONP Web Interface.

Step 1 In the network tree, Choose **Sites** > **Site** > **Site domain** > **Side** > **C-Band**.

Step 2 To modify the Add/Drop multiplexer card properties, perform the following steps:

a) Click **Add/Drop**.

You can view the properties of the add/drop multiplexer at the bottom of the network tree.

b) Modify the following properties of the add/drop multiplexer:

You can also modify the properties by choosing the **Add/Drop** under **Network** > **Entity Editor**.

Options	Platform	Description
General		

Options	Platform	Description
Colored Add/Drop	NCS 2000	Choose the colored add/drop multiplexer and demultiplexer: The available options are: • MD-64-C—Passive optical multiplexer and demultiplexer module (for SSON network) • None • Auto 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 Shared SMR port and force the required colored Add/Drop. The following options are added automatically based on the colored demands created and the wavelengths forced in the non-SSON network. • MD-48-ODD • MD-48-EVEN • MD-48-ODD + MD-48-EVEN
	NCS 1010	The options available for NCS 1010 are: • Auto • None • MD-32-EVEN • MD-32-ODD • MD-32- ODD+MD-32-EVEN
	NCS 1001	The options available for NCS 1001 are: • Auto • MD-64 • MD-32-EVEN • MD-48-EVEN • MD-48-ODD • MD-48-ODD+MD-48-EVEN • FLD-4 (10 variants) **Note** Choose a Add/Drop type with a Baud rate that matches the Optical Source Baud rates.

Options	Platform	Description
Colorless Add/Drop	NCS 2000	Choose the colorless add/drop multiplexer and demultiplexer. The available options for NCS 2000 are: • Auto • Direct SMR—SMR-20 and SMR-9 cards that are directly connected to the colorless channels through MF-MPO-16-LC and MF-MPO-8-LC respectively. • 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.
	NCS 1010	The options available for NCS 1010 are: • Auto • None • BRK-8 • BRK-16 • BRK-24 **Note** QDD optical sources are not supported (both as optical source and pluggable) with colorless BRK-8, BRK-16, or BRK-24 configurations.
Interlever Type	NCS 2000	Choose the interlever type from the drop-down list. The available options are: • Auto • MpoCable • MD-48-CM **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.
MPO Connector Add/Drop		

Options	Platform	Description
Colorless Add/Drop	NCS 1010	**Note** **MPO Connector Add/Drop** appears for networks from R7.10.1. The options available for NCS 1010 are: • Auto • None • BRK-8 • BRK-16 • BRK-24 **Note** QDD optical sources are not supported (both as optical source and pluggable) with colorless BRK-8, BRK-16, or BRK-24 configurations.
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. **Note** For the R7.10.1 network, you can assign a maximum of 48 colorless ports. The assigned ports are applicable to the MPO ports. For the R7.11.1 network, you can assign a maximum of 128 colorless ports.
LC Connector Add/Drop		
Colorless Add/Drop	NCS 1010	**Note** **LC Connector Add/Drop** appears for networks from R7.11.1. The options available for NCS 1010 are: • Auto • None • NCS1K14-CCMD-16C

Options	Platform	Description
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. **Note** For the R7.10.1 network, you can assign a maximum of 48 colorless ports. The assigned ports are applicable for the LC ports. For the R7.11.1 network, you can assign a maximum of 128 colorless ports.

Options	Platform	Description
Colorless Ports Distribution	NCS 1010	• Click the field to open the **Colorless Ports Distribution** pop-up window. • Choose the CCMD card (NCS1K14-CCMD-16C) for each of the LC ports (A/D 4 - A/D 17). • Select the number of ports for each CCMD card, ensuring the total does not exceed 128. • Click **Submit**. When allocating LC ports, the priority is as follows: **1.** Degree connection **2.** Direct LC ports Only the remaining LC ports can be allocated to CCMD cards. If the Degree Priority under Site Properties is set to LC Ports, the number of CCMD cards that can be forced on the line side edges depends on the number of degrees (including omni and line degrees, depending on the scalable degree) and the Direct LC ports. This is explained in the following formula: If Degree Priority is LC_Ports, Maximum number of CCMDs Allowed = 14 - (scalableUptoDegree - 1) - Direct LC add/drops - Number of Omni Edges The number of ports that you have selected is displayed in the field. When the **Enable Special Settings** under the Network properties is enabled and if the **Colorless Ports Distribution** has not been set previously, it will default to *16,16,0*. In this case three LC ports already used for CCMD card. **Note** For omnidirectional sides, you can select the CCMD card for all the LC ports. After successful analysis of the network, you can view the port distribution under the **Layout** > **Node Diagram** tab. Currently, this property is only supported for the enhanced plate.

c) Click **Update**.

Modify L-Band Add/Drop Multiplexer Properties

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

Before you begin

Log in to Cisco ONP Web Interface.

Step 1 In the network tree, Choose **Sites** > **Site** > **Site domain** > **Side** > **L-Band**.

Step 2 To modify the Add/Drop multiplexer card properties, perform the following steps:

a) Click **Add/Drop**.
You can view the properties of the add/drop multiplexer at the bottom of the network tree.

b) Modify the following properties of the add/drop multiplexer:
You can also modify the properties by choosing the **Add/Drop** under **Network** > **Entity Editor**.

Options	Platform	Description
General		
Colorless Add/Drop	NCS 1010	The options available for NCS 1010 are: • Auto • None • BRK-8 • BRK-16 • BRK-24 **Note** Only L-band optical sources are supported. Pluggables are not supported in L-band networks.
MPO Connector Add/Drop		

Options	Platform	Description
Colorless Add/Drop	NCS 1010	**Note** **MPO Connector Add/Drop** appears for networks from R7.10.1. The options available for NCS 1010 are: • Auto • None • BRK-8 • BRK-16 • BRK-24 **Note** QDD optical sources are not supported (both as optical source and pluggable) with colorless BRK-8, BRK-16, or BRK-24 configurations.
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. **Note** For the R7.10.1 network, you can assign a maximum of 48 colorless ports. The assigned ports are applicable for the MPO ports. For the R7.11.1 network, you can assign a maximum of 128 colorless ports.
LC Connector Add/Drop		
Colorless Add/Drop	NCS 1010	**Note** **LC Connector Add/Drop** appears for networks from R7.11.1. The options available for NCS 1010 are: • Auto • None • NCS1K14-CCMD-16L

Options	Platform	Description
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. **Note** For the R7.10.1 network, you can assign a maximum of 48 colorless ports. The assigned ports are applicable for the LC ports. For the R7.11.1 network, you can assign a maximum of 128 colorless ports.

Options	Platform	Description
Colorless Ports Distribution	NCS 1010	• Click the field to open the **Colorless Ports Distribution** pop-up window. • Choose the CCMD card (NCS1K14-CCMD-16L) for each of the LC ports (A/D 4 - A/D 17). • Select the number of ports for each CCMD card, ensuring the total does not exceed 128. • Click **Submit**. When allocating LC ports, the priority is as follows: **1.** Degree connection **2.** Direct LC ports Only the remaining LC ports can be allocated to CCMD cards. If the Degree Priority under Site Properties is set to LC Ports, the number of CCMD cards that can be forced on the line side edges depends on the number of degrees (including omni and line degrees, depending on the scalable degree) and the Direct LC ports. This is explained in the following formula: If Degree Priority is LC_Ports, Maximum number of CCMDs Allowed = 14 - (scalableUptoDegree - 1) - Direct LC add/drops - Number of Omni Edges The number of ports that you have selected is displayed in the field. When the **Enable Special Settings** under the Network properties is enabled and if the **Colorless Ports Distribution** has not been set previously, it will default to *16,16,0*. In this case three LC ports already used for CCMD card. **Note** For omnidirectional sides, you can select the CCMD card for all the LC ports. After successful analysis of the network, you can view the port distribution under the **Layout** > **Node Diagram** tab. Currently, this property is only supported for the enhanced plate.

c) Click **Update**.

Modify Client Properties

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

Before you begin

Table 23: 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 Cisco ONP Web Interface

Step 1 In the network tree, choose **Sites** > **Site** > **Site domain** > **Side** > **Clients** > **Channel-Attenuators**.

Step 2 In the right pane of the **Entity Editor** window, modify the following properties of the client-side attenuator.

Properties	Platform	Description
General		
Wavelength	NCS 2000	This column displays the selected wavelength.
RX-Attenuator	NCS 2000	Choose an RX-Attenuator from the drop-down list. The default option is Auto. **Note** You must select a wavelength to edit this field.
TX-Attenuator	NCS 2000	Choose a TX-Attenuator from the drop-down list. The default option is Auto. **Note** You must select a wavelength to edit this field.
New Wavelength - Auto	NCS 2000	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.
New Wavelength	NCS 1001	Click **Add** to select a wavelength.

Step 3 Click **Update**.

Sort the Network Elements

You can sort the sites, services, fibers, waves, and SRLG in ascending or descending order. This feature is helpful for huge networks, to find out the required site, fiber, waves, or SRLG names quickly. Click the **Ellipsis** icon available in the right side of the network element, for example **Sites** and choose **Ascending** or **Descending**. You can sort based on alphabets, numbers, or alphanumeric.

Regeneration Support

In optical networks, as the fiber length increases, a loss in the signal ratio and power could occur due to attenuation and dispersion. You require a regenerator to recreate the weak and distorted optical signals through reamplification, regeneration, and retiming processes. The regenerators remove noise and distortion, convert the optical signal to electrical signal, and then convert the signals back to optical signals (OEO conversion). Cisco ONP supports creation of regeneration sites in the network.

Note A regenerator site can only be a ROADM site.

Create a Regeneration Site

Table 24: Feature History

Feature Name	Release Information	Feature Description
Wavelength Forcing at the Section Level	Cisco ONP Release 4.1	This feature allows you to assign different wavelengths for different sections of the Regen sites.

Use the following procedure to create a regeneration site in the network.

Before you begin

Log in to Cisco ONP Web Interface.

Step 1 Choose **File** > **Open**.

The **Select Network To Open** dialog box appears.

Step 2 Select a network from the list of networks. This opens the selected network's map.

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

Step 3 In the network tree, expand **Waves**, select a wave and drill down to its trail.

Note If the network is an SSON network or NCS 1010 network, you see **Media Channels** or **Circuits** respectively. instead of waves. Expand **Media Channels** or **Circuits** , and drill down to its trail.

Step 4 Click the trail.

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

Step 5 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 6 (Optional) 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 7 Click **Update**.

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

Step 8 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 **Central Wavelength** is denoted as a *, when different wavelengths are assigned for different sections.

Multidegree ROADM

In multidegree ROADM, sites have two or more sides and face two or more fibers spans. You can select the degree of a node from the Cisco ONP GUI. The values are 2, 4, 8, 12, and 16 for Evolved Mesh (EV) ON and OFF scenarios. The default value is 4. Degrees 5, 9, and 13 are not supported. EV flag is editable.

Prerequisites for Cascaded SMR

- The **Structure** field under **C Band** in the **Entity Editor** must be Multidegree.
- The **Site Type** field under **C Band** in the **Entity Editor** must be SMR-20.
- The **Evolved Mesh** check box under **General** in the **Entity Editor** must be checked.
- The **Degree Mesh Type** field under **C Band** in the **Entity Editor** must be Auto or DEG-5/UPG-4.
- The **Mpo16TOMpo8** field under **General** in the **Entity Editor** must be MPO16To2MPO8 cable.
- By default, the **Cascaded SMR** check box is unchecked, but you can edit in the design mode as a site property. Check the **Cascaded SMR** check box for contentionless side creation. L2 SMR is supported for both SSON and Non-SSON networks.

- You can edit the **Cascaded SMR** check box when **Evolved Mesh** is ON and the SMR-20 card is selected. You can create Layer 2 SMR sides only after you check the **Cascaded SMR** check box.
- You can create contentionless sides manually and force the contentionless ports. The default value is 16 for the contentionless ports. The range of values is 0–16.

Limitations

- Supports only contentionless add/drop demands.
- Supports Layer-2 SMR for SMR-20 card only.