

# Modify Network Properties


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# Modify network properties

*Table 3: 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:<br>• **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.<br>• **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.<br>• **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. |

***Table 4: 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.<br>• **Ignore APC Penalty**: When enabled, the APC penalty is not considered while calculating the OSNR and power margin.<br>• **SOL Optimized PSD**: When enabled, an optimum PSD value is calculated by considering the SOL Span losses.<br>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.<br>After the analysis,<br>• successful routing paths appear in the **BOM** and **Optical Reports** tabs.<br>• failed routing paths are not listed in these tabs.<br>• error messages for the individual routing failures appear in the **Messages** tab.<br>• red cross marks appear next to the failed routing paths.<br>This approach prevents a single failure from failing the entire analysis, isolating specific issues to enhance troubleshooting. |

*Table 5: 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.<br>• **Amplifier Gain Range**<br>• **Connector Loss**<br>• **Minimum OSNR Margin**<br>• **Minimum Span Loss for Raman Amplifiers**<br>• **Percentage of Fibers with Higher Aging Loss**<br>• **Generate Cross-Connect**<br>• **Maximum OSC Reach for NCS 1010Raman Amplifiers**<br>• **Retain Auto Placed Raman Spans for Failure**<br>• **Freq Allocation Order**<br>• **Link Power Control**<br>• **Gain Estimator**<br>• **OTDR** |

Follow these steps to modify the properties of the network.

### Before you begin

Log in to the Cisco ONP web interface.

### Procedure

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

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

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

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

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

- General properties of a network, on page 7
- System release properties, on page 12
- Network application configuration properties, on page 13
- Core operations properties, on page 16
- Optical algorithm and traffic algorithm options properties, on page 14
- Advanced Optical Settings properties, on page 17

**Step 5** Click **Update**.

# General properties of a network

This table describes various general properties of a network.

***Table 6: General properties of a network***

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| **Name** | NCS 2000<br>NCS 1010<br>NCS 1001 | Displays the network name. You can modify the name. | — | — |
| **Quick Analysis** | NCS 2000 | This check box allows you to quickly analyze the network by using a less accurate algorithm.<br>The quick analysis option does not optimize the DCU and amplifier placement algorithm, resulting in an approximate BoM.<br>For an accurate BoM, uncheck the **Quick Analysis** check box. | — | — |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| **DWDM Interfaces** | NCS 2000 | Cisco ONP supports 100G and 200G transceivers as DWDM interfaces.<br>This option is applicable only for automatically created waves, when OTN services are present. | • 100G: The entire network chooses the 100G wavelength for transmission.<br>• 200G: The entire network chooses the 200G wavelength for transmission.<br>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<br>NCS 1010<br>NCS 1001 | Enter the customer name. | — | — |
| **Project** | NCS 2000 | Allows you to choose the project type. | • ANSI<br>• ETSI<br>ANSI networks do not allow you to define SDH (ETSI) service demands. ETSI networks do not allow you to define SONET (ANSI) service demands. | ANSI |
| | **NCS 1010**<br>**NCS 1001** | Displays the type of the project, ANSI, or ETSI. You cannot edit it. | — | — |
| **Measurement Unit** | NCS 2000<br>NCS 1010<br>NCS 1001 | The unit of measurement of span length. | • km<br>• miles | km |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| **Chassis Type** | NCS 1010 | Choose the type of chassis. The available options are:<br>**Note** When you check the **Enable Special Settings** check box, *NCS 1020* is selected as *Chassis Type* by default. | • NCS 1010<br>• NCS 1020 | NCS 1010 |
| **NCS1014 Grouping** | NCS 1010 | This property groups all NCS1K14-CCMD-16 cards of a site in NCS1014 shelf. | — | — |
| | **A2A Mode** | NCS 2000 | Allows you to choose A2A (Any to Any) mode. | • A2A_None<br>• A2A_FAST | A2A_None |
| **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. | — | — |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| **A2A Channel Type** | NCS 2000 | The type of channel. You can choose multiple types. | • Contentionless: This property enables an N-degree ROADM node to accommodate N wavelengths of the same frequency from a single add or drop device.<br>• Colorless: The colorless property enables tuning of channel wavelengths without changing the optical interface of the port.<br>• Colored: The Colored property dedicates a separate port for each wavelength. | Contentionless |
| **SSON** | NCS 2000 | Indicates whether the network is an SSON network. | — | — |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| **Use client Payg** | NCS 2000 | This check box to enables the Pay As You Grow feature on the client cards.<br>The PAYG feature provides a cost-effective solution for fewer wavelength requirements. A standard card is configured to work on maximum supported wavelengths, whereas a PAYG license comprises license restricted cards and a base license. So, instead of purchasing a standard card, you can purchase a PAYG license. | — | — |
| **Naming Convention Enabled** | NCS 2000 | (Display only.) By default, the Naming Convention Enabled option is enabled 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.<br>• You can import a mpz network without naming convention enabled, but the Cascaded SMR option remains disabled.<br>• You cannot edit the label name of the side. | — | — |

# System release properties

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

***Table 7: System release properties***

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| **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. | — | — |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| **SVO** | NCS 2000 | The type of network management solution. | • Line Card: Chooses SVO card.<br>• 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.<br>• Auto: Chooses SVO card as default, for SVO solution. | SVO |

# Network application configuration properties

This table describes various network application configuration properties.

***Table 8: Network application configuration properties***

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| **Install with COSM** | NCS 1010 | This check box enables you to see software license for COSM file for R7.11.1 networks. | — | — |
| **Use Coordinates Distance** | NCS 2000<br>NCS 1010<br>NCS 1001 | This check box enables the use of x and y coordinates to calculate the fiber length. | — | — |
| **Raman-Tuner** | NCS 1010 | This check box enables the Raman tuner. | — | — |
| **Spectrum Utilization** | NCS 1010 | Displays , the spectrum utilization. This field is non-editable. | — | Shortest Path First. |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| **Band Type** | NCS 1010<br>NCS 1001 | The type of band. | • C-Band<br>• C+L Futuristic<br>• C+L<br>**Note** After creating a network, you can change the network band type if required. | C-Band |
| **NCS 1010 Line Card** | NCS 1010 | The type of Line Card faceplate. | • Standard Faceplate<br>• Enhanced Faceplate<br>For R7.10.1 networks, Cisco ONP supports Enhanced NCS 1010 Line Cards. For R7.11.1 networks, Cisco ONP supports Enhanced NCS 1010 Line Cards and NCS1K14-CCMD-16-C/L cards. | Enhanced Faceplate |
| **Routing Strategy** | NCS 1010 | The default routing priority for circuits based on minimum distance or minimum number of hops. | • HOP<br>• LENGTH | HOP |
| **NCS1010 Line Card** | NCS 1010 | The line card variant that will be applied to all edge sides in the network. | • Standard Faceplate<br>• Enhanced 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. | — | 0 |

# Optical algorithm and traffic algorithm options properties

This table describes various optical algorithm and traffic options properties of a network

*Table 9: Optical algorithm and traffic algorithm options properties*

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| **Stat Sim Sigma** | NCS 2000<br>NCS 1010<br>NCS 1001 | The Statistical Simulation Sigma (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. Choosing a lower value improves both OSNR and power margins.<br>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. | • 1<br>• 2<br>• 3 | 3 |
| **Stat Sim Margin Sigma** | NCS 2000<br>NCS 1010<br>NCS 1001 | You can edit the Stat Sim Margin Sigma 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. | • 1<br>• 2<br>• 3 | 3 |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| **Continue Analysis On Routing Failure** | NCS 2000 | This check box skips routing demand failures. Passed demands are listed in the **Optical Reports** tab, while failed demands are excluded.<br>Failed demands are marked with red crosses in the network tree, with error messages displayed in the **Messages** tab. If any demand fails, the network switches to Partial Analysis mode.<br>**Note**<br>If any non-routing issue is present in the network, then the design network will not move to the *Partial Analysis mode* | — | — |

# Core operations properties

This table describes various core operations properties of a network.

***Table 10: Core Operations properties***

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| **Enable LOGO Algorithm** | NCS 2000 | This property is enabled by default. If you are using a non-SSON network, you can edit it; however, in an SSON network, it remains non-editable.<br>This algorithm enables the Cisco ONP to automatically find the optimal output power setpoint for booster amplifiers within a fiber span. | — | — |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| **Log Enabled** | NCS 2000<br>NCS 1010<br>NCS 1001 | This check box enables generation and storage of network logs. | — | — |
| **Ignore Raman Span Checks** | NCS 2000 | When enabled, network analysis ignores Raman span checks. | — | — |

# Advanced Optical Settings properties

This table describes various Advanced Optical Settings properties.

*Table 11: Advanced Optical Settings properties*

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| Enable Special Settings | NCS 1010 | This check box enables these properties and sets their default values.<br>• Amplifier Gain Range Margin<br>• Connector Loss<br>• Minimum OSNR Margin<br>• Minimum Span loss for Raman Amplifiers<br>• Percentage of Fibers with Higher Ageing Loss<br>• Freq Allocation Order<br>• MC Routing Order<br>• Ignore APC Penalty<br>• SOL optimized PSD<br>If you check the **Enable Special Settings** check box, these parameters are added to the Device Netconf XML file.<br>• Slot reserve<br>• Unused CCMD-16 ports shutdown<br>• Span baseline-deviation<br>• OTDR Thresholds<br>• Dmux WSS slice attenuation<br>• APC span-loss correction threshold | — | — |
| Amplifier Gain Range Margin | NCS 1010 | Enter the amplifier gain range margin. | — | 3 dB |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| Connector Loss | NCS 1010 | Enter the connector loss value. | 0.25 - 0.5 | 0.5 |
| Minimum OSNR Margin | NCS 1010 | Enter the minimum OSNR margin required for the amplifier. | — | 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. | — | 27 dB |
| Percentage of Fibers with Higher Aging Loss | NCS 1010 | When you click the field and a Fiber Sorting Settings window opens: | • Percentage of Fibers with Higher Aging Loss<br>• Ageing Loss for Top Fibers<br>• Ageing Loss for Bottom Fibers | • Percentage of Fibers with Higher Aging Loss: 40%<br>• Ageing Loss for Top Fibers: 3 dB)<br>• 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 | The type of Raman amplification. | • Auto<br>• User Forced | User Forced |
| Maximum Auto Ramans | NCS 1010 | The maximum number of Raman enabled links on an end-to-end circuit path. | • 1<br>• 2<br>• 3<br>• 4<br>• 5<br>• All | 5 |
| Maximum OSC Reach for Raman Amplifiers | NCS 1010 | The maximum span loss for which fiber can be considered for Auto Raman placement. | — | The default value is 33 dB. |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| Link Tuner | NCS 1010 | Choose how to enable the Link Tuner. | • Automatic-Enabled<br>• Force-Disabled<br>• 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. |
| Ignore APC Penality | NCS 1010 | By default, this check box remains checked, when the **Enable Special Settings** check box is checked.<br>Automatic Power Control (APC) penalty 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.<br>It is disabled by default. | — | — |
| Raman Gain Auto Tuner | NCS 1010 | Choose how to calibrate the Raman gain. | • Automatic<br>• Automatic-On-request<br>• No-calibration | No-calibration |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| 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 | The Freq Allocation Order. | • FROM-LOWER-FREQ<br>• FROM-HIGHER-FREQ | FROM-HIGHER-FREQ |
| Link Power Control | NCS 1010 | Choose how to enable the Link Power Control. | • Automatic-Enabled<br>• Force-Disabled<br>• 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 | Allows you to choose how to enable the Gain Estimator. | • Automatic-Enabled<br>• Force-Disabled<br>• 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 | Enables or disables the OTDR. By default, this is enabled. | — | — |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| MC Routing Order | NCS 1010 | Routing order for the multicarriers. | • CREATION: Based on the *Freq Allocation Order* chosen, the tool allocates frequency based on order carrier creation.<br>• NO-OF-CARRIERS: Based on the *Freq Allocation Order* chosen, the tool allocates frequency to circuits based on the number of carriers. | CREATION |

# Modify site properties

***Table 12: 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 13: Feature History*

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

Use this procedure to modify the properties of the site.

### Before you begin

Log in to the Cisco ONP web interface.

### Procedure

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

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

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

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

- General site properties, on page 23
- C-Band properties, on page 28
- Layout properties, on page 33
- Cisco NMS properties, on page 42
- Third party NMS properties, on page 45
- Map properties, on page 46
- Bill of materials properties, on page 47
- SVO properties, on page 50
- Enhanced face plate properties, on page 50

**Step 5** Click **Update**.

# General site properties

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

*Table 14: General site properties*

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Name** | NCS 2000<br>NCS 1010<br>NCS 1001 | Enter the site name, either alphanumeric or numeric. | — | — |
| **Type** | NCS 2000 | Choose the type of site. | • ROADM<br>• OLA<br>• Traffic<br>• Passthrough<br>**Note**<br>• 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.<br>• OLA is an optical line amplifier site that is used only for amplification. You cannot add service or waves on this site. | The site type that you chose while designing. |
| | **NCS 1010** | Choose the type of site. | • ROADM<br>• OLA<br>• Traffic<br>• Passthrough | ROADM |
| | **NCS 1001** | Displays the type of site. | — | — |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **MPO Cable** | NCS 1010 | Choose the type of MPO cable. | • Auto<br>• 16MPO-MPO<br>• 24MPO-MPO | Auto |
| **Node Type** | NCS 2000 | This field is noneditable. | FLEX NG-DWDM | FLEX NG-DWDM |
| **Equipment Configuration** | NCS 2000 | Choose the configuration from the drop-down list. This option is available only for the Traffic site.<br>• Large CO - NCS 4016<br>• Small Site - NCS 4016<br>• Small Site - NCS 4009 | • Large CO - NCS 4016<br>• Small Site - NCS 4016<br>• Small Site - NCS 4009 | Large CO - NCS 4016 |
| **Traffic Type (only for Traffic site)** | NCS 2000 | Choose the traffic type. | • 4K_1K_2K (for SSON)<br>• 1K_2K (for SSON)<br>• 4K_2K (non- SSON) | • 4K_1K_2K (for SSON)<br>• 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 chooses SVO card as Server or Line card at the network level. | — | — |
| **CLLI Code** | NCS 1004<br>NCS 2000<br>NCS 4000 | Enter a string holding the CLLI code. | — | — |
| **Site Address** | NCS 2000<br>NCS 1010<br>NCS 1001 | Enter the site address. | — | — |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **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. | — | This option remains unchecked. |
| **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. | • Same shelf<br>• Separated shelves | Same shelf |
| **Mpo16Lc** | NCS 2000 | Displays the fan-out module. | MF-MPO-16LC<br>The MPO-16 to 16-LC fan-out module is a double slot module with one MPO-16 connector (COM) and eight LC duplex connectors. The MPO-16 connector is compatible with the SMR20 FS EXP and 16-AD-CCO FS units. | MF-MPO-16LC |
| **Mpo16ToMpo8** | NCS 2000 | Choose the required Mpo16 to Mpo8 converter. | • MPO16ToMPO8Cable<br>• MF-2MPO_ADP | MPO16ToMPO8Cable |
| **MPO Cable** | NCS 1010 | Choose the required Mpo cable.<br>• Auto<br>• 16MPO-MPO<br>• 24MPO-MPO | • Auto<br>• 16MPO-MPO<br>• 24MPO-MPO | Auto |
| **Cascaded SMR** | NCS 2000 | Enable this option to add Layer-2 contentionless sides. | — | — |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **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.<br><br>Choose the number of ports to reserve for the cascaded SMR. | • 1, 2, and 3 if Scalable Upto Degree is 12 and 16.<br>• 1 and 2 if Scalable Upto Degree is 8.<br>• 1 if Scalable Upto Degree is 12 and 4. | 1 |
| **Flex Spectrum** | NCS 2000 | You cannot edit this option. | — | This check-box remains checked for a newly created network. |
| **Grooming Site** | NCS 2000<br>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<br>NCS 1001 | Choose the required band type for NCS 1010 R7.9.1. | • C-Band<br>• C+L futuristic<br>• L-band | C-Band |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **NCS 1010 Line Card** | NCS 1010 | Choose whether the Line Card faceplate is Standard Faceplate or Enhanced Faceplate.<br>**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. | • Enhanced Faceplate<br>• Standard Faceplate | Enhanced Faceplate |

# C-Band properties

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

*Table 15: C-band properties*

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Structure** | NCS 2000 | Choose the type of the site. | The available options for ROADM and Traffic sites are:<br>• Multi-degree<br>• Line<br>• Terminal<br>For OLA and PASSTHROUGH, it is Line, and you cannot edit it. | Line |
| | **NCS 1010** | Choose the type of the site. | The available options for ROADM sites are:<br>• Multi-degree<br>• Line<br>• Terminal<br>For OLA and PASSTHROUGH, it is Line, and you cannot edit it. | Line |
| | **NCS 1001** | Choose the type of the site. | • Terminal<br>• Terminal-Section<br>• Terminal-Path | Terminal |
| | **Functionality** | NCS 2000 | | — |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| | | | Displays the site functionality.<br>The functionalities available for each type of site are:<br>• Optical Cross Connect (OXC) for ROADM and traffic site<br>• Auto or Line Amplifier for OLA site, Cisco ONP downgrades OLA site to passthrough if OLA is not required.<br>• Passthrough for passthrough site | |
| **NCS 1010** | | Displays the site functionality. ROADM is the default functionality for all site types. | — | — |
| **NCS 1001** | | Displays site functionality. | — | — |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **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. | • None<br>• Auto<br>• 4<br>• 8<br>• 12<br>• 16<br>The network is scalable up to 16 degrees for ROADM and Traffic sites. Choose 2 to have a LINE ROADM site.<br>For OLA, the value is 2 and is noneditable. | 4 |
| | **NCS 1010** | | • 7<br>• 9<br>• 15<br>• 17<br>• 23<br>• 25<br>• 31<br>If you choose **Line Card Faceplate** as *Enhanced Faceplate*, for NCS 1010 site, the available options are 3…15, 23, and 31. | 7 |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Site Type** | NCS 2000 | Choose the type of site.<br>The Site type is Line for the OLA site. | • Auto<br>When you choose Auto, the default option is SMR-20.<br>• SMR-20<br>• SMR-9 | Auto |
| | **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. | — | — |
| **L0 Platform** | NCS 2000<br>NCS 1010<br>NCS 1001 | Displays the platform. For example, NCS 1010 , NCS 1001, or NCS 2000. | — | — |
| **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.<br>**Note**<br>Shared SMR port becomes disabled, if<br>• **Degree Mesh Type** property is *PPMESH8-5AD*<br>• Or, **Site Type** property is *SMR-9* and **Scalable Upto Degree** property is *8* | — | — |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Degree Mesh Type** | NCS 2000 | Choose the mesh type for the Flex NG-DWDM site. | • DEG-5/UPG-4<br>• PPMESH8-5AD | DEG-5/UPG-4 |
| **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. | • None<br>• Auto<br>• 4<br>• 8<br>• 12<br>• 16 | None<br>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. | — | — |

# Layout properties

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

***Table 16: Layout properties***

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Chassis Type** | NCS 2000 | Choose the type of chassis. | • M6 Chassis<br>• M15 Chassis<br>• Auto<br>M15 is the default option when you choose Auto.<br>The chassis type is supported for all the sites except the passthrough. | Auto |
| | **NCS 1010** | | • NCS 1010<br>• NCS 1020 | NCS 1010 |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **NCS1014 Grouping** | NCS 1010 | Enable this property to group all NCS1K14-CCMD-16 cards of a site in NCS1014 shelf. | — | — |
| | **Power Supply** | NCS 2000<br>NCS 1010<br>NCS 1001 | Choose the type of Power Supply. | • Auto<br>• AC Power<br>• DC Power | Auto |
| **UTS AC Power Cables** | NCS 2000<br>NCS 1010<br>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. | — |
| **Chassis Type** | NCS 2000 | Choose the type of chassis.<br>**Note** Chassis type is not supported for the passthrough site. | • M6, and M15 Chassis for OLA<br>• M6 Chassis for ROADM and Traffic<br>• M15 Chassis for ROADM and Traffic<br>• Auto for all nodes | Auto |
| | **NCS 1010** | | • NCS1010<br>• NCS1020 | NCS1010 |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Power Supply** | NCS 2000 | Choose the type of Power Supply. | For an NCS 2000 site, the available options are based on the chassis type:<br>• Auto for all types of chassis<br>• AC Power, DC power for M15 and M2 chassis<br>• AC Power, DC Power, AC2 Power, DC40 Power, and DC20 Power for M6 chassis | Auto |
| | **NCS 1010**<br>**NCS 1001** | | • Auto<br>• AC Power<br>• DC Power | Auto |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Controller Card** | NCS 2000 | Choose the type of the controller card.<br>**Note** For NCS 1010, 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. | 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.<br>• Auto<br>• TNC/TSC, TNC-E/TSC-E, TNCS, TNCS-0, TNCS-2, and TNCS-20 for M2 chassis<br>• TNC/TSC, TNC-E/TSC-E, TNCS, TNCS-0, TNCS-2, and TNCS-20 for M6 chassis<br>• TNCS, TNCS-0 TNCS-2, TNCS-20 for M15 chassis | Auto |
| | **NCS 1010** | | • Auto<br>• NCS1010-CNTRL-K9<br>• NCS1010-CNTRL-B-K9<br>*NCS1010-CNTRL-B-K9* appears for networks from R7.11.1. | Auto |
| | **NCS 1001** | | NCS1K-CNTLR2 | NCS1K-CNTLR2 |
| | **Redundant Controller Card** | | NCS 2000<br>NCS 1010<br>NCS 1001 | |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| | | | | Choose whether to use a redundant controller card.<br>**Note**<br>When you select **Chassis Type** as *NCS1020*, you can force **Redundant Controller Card** to Yes. |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Layout Template** | NCS 2000 | | | |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| | | Choose the required layout template.<br>**Note**<br>After the chosen layout template is applied, all layout properties will be reset and disabled.<br>**Note**<br>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:<br>• Export the template from the **Layout** page, and modify it as required.<br>• Import the modified template using the **Manage** > **Layout Template** option.<br>• Switch to Design mode and apply the template to the site using the **Entity Editor**.<br>• Reanalyze the network to get the correct layout populated. | | |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **UTS AC Power Cables** | NCS 2000<br>NCS 1010<br>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.<br>For an M6 chassis, the options available are Auto, Yes, and No. | 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. |
| | **NCS 1010**<br>**NCS 1001** | The options available are Auto, . | • Auto<br>• 1+0<br>• 1+1 | Auto |
| **Raman Adapter Share** | NCS 2000 | This option is available only for the OLA site. This option indicates that MF-2LC-ADP can be shared with EDRA amplifiers and not with RAMAN amplifiers irrespective of the default selection. | — | By default, this check box remains checked. |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **ECU Type** | NCS 2000 | Choose the External Connection Unit (ECU) type from the drop-down list. | • Auto<br>• ECU—Has 12 USB 2.0 ports and supports IEEE1588v2 PTP, time-of-day (ToD), and pulse-per-second (PPS) inputs.<br>• ECU-S—Similar to ECU except that it has eight USB 2.0 ports and two USB 3.0 ports.<br>• ECU60-S—Variant of ECU-S introduced for the NCS 2006 when the shelf is powered at –60VDC nominal input voltage.<br><br>ECU-S and ECU60-S are supported only for M6 chassis. | Auto |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **MF Unit** | NCS 2000 | Choose the mechanical frame for the passive optical modules from the drop-down list. | • Auto<br>• MF-6RU/MF-10RU<br>• MF-1RU<br>• The NCS2K-MF-1RU has four slots for the passive optical modules.<br>• 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.<br>• The NCS2K-MF10-6RU supports up to 10 double-slot passive optical modules such as NCS2K-MF-MPO-16LC=. | Auto |
| | **NCS 1010** | | • Auto<br>• MF-4RU<br>• MF-1RU | MF-1RU |
| | **NCS 1001** | | MF-1RU | MF-1RU |
| **Chassis Disaggregation** | NCS 2000 | If you check this check-box, ROADM, and transponder cards are placed in different chassis. | — | — |

# Cisco NMS properties

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

*Table 17: Cisco NMS properties*

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **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. | — | — |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **High Availability** | NCS 2000 | Enable this check box to add the High Availability feature to the license package.<br>Choose the high availability options:<br>• Auto: Based on analysis and default behavior.<br>• Local HA: Both active and standby SVO cards are placed on the same node.<br>• None: No SVO card present.<br>• Only Active: No High Availability. Only Primary SVO card is added.<br>• Geo HA: SVO cards are placed in two different sites located at different geographical locations, but adjacent to each other. See Rules and Behavior that are applicable for the selection. | — | — |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **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. | — | — |

# Third party NMS properties

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

***Table 18: Third party NMS properties***

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **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. | — | — |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **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. | — | — |
| **Circuit Provisioning** | NCS 2000 | Enable this check box to add the Circuit Provisioning feature to the license package. | — | — |

# Map properties

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

***Table 19: Map properties***

| Properties | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **X Coordinate** | NCS 2000<br>NCS 1010<br>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<br>NCS 1010<br>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<br>NCS 1010<br>NCS 1001 | Check this check box to lock the site position on the map. | — | — |

# Bill of materials properties

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

*Table 20: Bill of materials properties*

| Property | Platform | Description | Available options | Default | |
|---|---|---|---|---|---|
| **License Suite** | NCS 1010 | Choose whether the License Suite is Essential (RTU + SIA3) or Advanced (RTU + SIA3). | | | |
| | **NCS1k Line card license** | NCS 1010 | Choose the License Suite. | • Essential (RTU + SIA3)<br>• Advanced (RTU + SIA3)<br>• Essential (RTU + SIA5)<br>• Advanced (RTU + SIA5) | Essential (RTU + SIA3) |
| **Enable NCS** | NCS 2000 | This feature enables NCS features on all sites in the network. | — | — | |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Use PAYG** | NCS 2000 | The Pay As You Grow (PAYG) functionality significantly reduces the initial setup cost and enables the purchase of another wavelength capacity on a need basis.<br>PAYG enables port-based cost or licensing for SMR-9 and SMR-20 cards. | — | — |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Connection Verification** | NCS 2000 | Enable this check box to:<br>• Validate the correct optical interconnection between the optical cards inside a Flex ROADM.<br>• Measure the insertion loss of the external passive path.<br>• Validate the quality of the connections to the patch panel.<br>• Check if the insertion loss is within the expected value.<br>The following cards support connection verification:<br>• SMR20 FS CV<br>• MF-DEG-5-CV<br>• MF-MPO-16LC-CV<br>• MF-UPG-4-CV | — | — |

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

# Enhanced face plate properties

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

***Table 21: Enhanced face plate properties***

| Property | Platform | Description | Availabe options | Default |
|---|---|---|---|---|
| **Degree Priority** | NCS 1010 | Choose the port type for interconnect degree priority.<br>**Note** This field appears only when you select **NCS 1010 Line Card** as *Enhanced Faceplate*. | • LC Ports<br>• MPO Group | LC Ports |
| **Add/Drop Shelf Type** | NCS 1010 | This property is noneditable and appears for networks from R7.11.1. | — | — |

# SVO properties

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

*Table 22: SVO properties*

| Properties | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **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 | Choose the pluggable.<br>**Note** The SVO pluggables are not applicable for UCS-based SVO network design. | • Auto<br>• ONS-SC +-10G-SR<br>• ONS-SC +-10G-LR | Auto<br>When you choose Auto, ONS_SC+-10G_SR is the default option. |

# Add contentionless side to a site

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

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

### Before you begin

Log in to the Cisco ONP web interface.

### Procedure

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

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

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

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

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

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

| If you want to add contentionless sides to | Then.. |
|---|---|
| Layer-1 SMR site | Enter the appropriate value in the **Enter number of contentionless sides** field. |

| If you want to add contentionless sides to | Then.. |
|---|---|
| Layer-2 SMR-20 site | • Check the **Evolved Mesh** check box.<br>• Select **Site Type** as *SMR-20* or *Auto*.<br>• Check the **Cascaded SMR** check box.<br>• Select **Degree Mesh Type** as *DEG-5/UPG-4*.<br>• Click **Update**.<br>• Enter the appropriate value in the **Enter number of contentionless sides** field.<br>See Contentionless sides for Layer-1 SMR, on page 52. |
| Extended Layer-2 SMR-20 site | • Choose the **Reserve Cascaded SMR Port** value.<br>**Note**<br>The **Reserve Cascaded SMR Port** drop-down property is available for NCS 2000 networks from R11.1.x.<br>Based on the N-degree and Layer-2 SMR, you can add more contentionless sides on each site for the extended layer-2 SMR, but this will reduce the number of Layer-1 contentionless sides.<br>• Click **Update**.<br>• Enter the appropriate value in the **Enter number of contentionless sides** field.<br>See Contentionless sides for extended Layer-2 SMR, on page 53. |

**Step 6** Click **OK**.

## Contentionless sides for Layer-1 SMR

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

***Table 23: 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 |

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

## Contentionless sides for extended Layer-2 SMR

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

*Table 24: Contentionless Sides for extended Layer-2 SMR*

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

## Modify the number of contentionless side ports at a site

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

### Before you begin

Log in to the Cisco ONP web interface.

### Procedure

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

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

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

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

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

Click **Update**.

# Modify contentionless side to a site in upgrade mode

### Limitations

- This feature supports networks running software release version 11.1.x or later.
- 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 through 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*.

Follow these steps to modify contentionless sides to a ROADM or traffic site in upgrade mode.

### Before you begin

Open the network, upgrade it, and set these site properties in the **Entity Editor** window.

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

If these prerequisites are not met, you must unlock the site to modify the contentionless sides.

### Procedure

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

**Step 2** Click the site where 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 is successful. Else, an error message appears. Perform these actions:

1. Unlock the site.
2. Delete the lowest contentionless side from the 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 and the **Scalable Upto Degree** property.

**Step 8** Click **OK**.

# Add L-Band side to a site

Follow these steps to add L-Band sides to an NCS 1010 R7.9.1 site.

### Before you begin

Log in to the Cisco ONP web interface.

### Procedure

**Step 1** Open the network in which you want to add the L-Band sides to a site.

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

**Step 3** To add the L-Band sides:

- 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 on other sites also receive L-Band sides automatically.

- Expand the site and click on a side to add L-Band to the selected side only.

**Step 4** 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 the APC domain, the end-to-end path in the L-band is enabled automatically.

# Add omni-directional sides to a site

*Table 25: 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.<br>New Properties Added:<br>• **Add Omni-Directional** icon (under Entity Editor): Use this icon to add the required number of omnidirectional sides.<br>• **Omni Variant** (under Side Properties): Select the desired Add/Drop stage, such as Dual OLT or 4x4 COFS.<br>• **Max Auto Omni Allowed** (under Network Properties): Cisco ONP automatically generates the omni edges based on the number entered.<br>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 or drop traffic to any of the node directions in a multidegree topology. This configuration provides flexibility, enabling channels to be routed through any of the optical degrees during a fiber cut without needing to change the physical fiber connections.

**Note** Omni edges are not supported on a Terminal site.

Follow these steps to add omnidirectional sides to an NCS 1010 site.

### Before you begin

Log in to the Cisco ONP web interface.

### Procedure

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

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

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

**Step 4** Click the **Add Omni-Directional** icon.

**Step 5** 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 6** Click **OK**.

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

To add L-band functionality to the side, click 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 procedure to modify the properties of a fiber.

**Before you begin**

Log in to the Cisco ONP web interface

### Procedure

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

When you click a fiber on the map, it will be highlighted in orange

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

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

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

- General fiber properties, on page 59
- Physical and Raman amplification properties of fiber, on page 66
- Factors properties of fiber, on page 64
- Extended and totals properties of a fiber, on page 65

**Step 5** Click **Update**.

# General fiber properties

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

***Table 26: General fiber properties***

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Name** | NCS 2000<br>NCS 1010<br>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<br>NCS 1010<br>NCS 1001 | Displays the source site name. This field is noneditable. | — | — |
| **Destination** | NCS 2000<br>NCS 1010<br>NCS 1001 | Displays the destination site name. This field is noneditable. | — | — |
| **Bidirectional** | NCS 2000<br>NCS 1010<br>NCS 1001 | Indicates whether a standard single fiber is used to transmit the data in both directions. | — | — |

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

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| | **NCS 1001** | Select the fiber type. | • G652-SMF<br>• G652-SMF-28E<br>• True Wave Reach<br>• True Wave RS<br>• Free-Light<br>• Tera-Light<br>• ELEAF | |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Length** | NCS 2000<br>NCS 1010<br>NCS 1001 | Displays the span length of the fiber connecting a source and destination site. If necessary, change the span length manually.<br>• 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.<br>• 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.<br>• You can enter the different span length and loss values for the individual fibers in a fiber couple. | — | — |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Network status** | NCS 2000<br>NCS 1010<br>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<br>NCS 1010<br>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<br>NCS 1010<br>NCS 1001 | Choose the measurement unit .You can set the measurement unit only for the duct, but not for the fiber pair (couple) or fiber. | • Km<br>• Miles | Km |
| **Ageing Loss [dB]** | NCS 2000<br>NCS 1010<br>NCS 1001 | Enter the aging loss value for the fiber. | — | — |
| **DCN Extension** | NCS 2000<br>NCS 1010<br>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 | Available options | Default |
|---|---|---|---|---|
| **OSC FrameType** | NCS 2000 | Choose the OSC frame type.<br>When set in Auto, Cisco ONP uses FE Frame as the preferred frame type. | • Auto<br>• OC3 Frame<br>• GE Frame<br>• FE Frame | Auto |
| **Ageing Factor** | NCS 2000<br>NCS 1010<br>NCS 1001 | Enter the number to fiber aging factor. | — | — |

# Factors properties of fiber

This table describes various factors properties of the optical fiber.

***Table 27: Factors properties of fiber***

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Loss Coefficient [dB/km]** | NCS 2000<br>NCS 1010<br>NCS 1001 | Loss is calculated based on the loss coefficient. | — | — |
| **PMD Coefficient** | NCS 2000<br>NCS 1010<br>NCS 1001 | Displays the PMD coefficient. | — | — |
| **QD C-Band** | NCS 2000<br>NCS 1010<br>NCS 1001 | Displays the secondary order dispersion for C-band. | — | — |
| **CD C-Band** | NCS 2000<br>NCS 1010<br>NCS 1001 | Displays the secondary order dispersion for L-band. | — | — |
| **RD Factor** | NCS 2000<br>NCS 1010<br>NCS 1001 | Displays the random dispersion value. | — | — |

# Extended and totals properties of a fiber

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

***Table 28: Extended and totals properties***

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

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **QD C-Band** | NCS 2000<br>NCS 1010<br>NCS 1001 | Displays the secondary order dispersion for C-band. | — | — |
| **RD** | NCS 2000<br>NCS 1010<br>NCS 1001 | Displays the random dispersion value. | — | — |
| **PMD** | NCS 2000<br>NCS 1010<br>NCS 1001 | Displays the Polarization Mode Dispersion (PMD) value. | — | — |

# Physical and Raman amplification properties of fiber

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

***Table 29: Physical and Raman amplification properties of fiber***

| Property | Description | Available options | Default |
|---|---|---|---|
| **Physical** | | | |
| **Length-Based Loss** | The fiber loss value is automatically calculated based on length and loss coefficient, when you check this option. | — | — |
| **Tot SOL Loss w/o connectors** | Enter the start of life fiber loss value for each span, excluding the connector concentrated loss. | — | — |
| **Connector Loss A** | Connector Loss at Source Site [dB] | — | — |
| **Connector Loss B** | Connector Loss at Destination Site [dB] | — | — |
| **Raman Amplification** | | | |

| Property | Description | Available options | Default |
|---|---|---|---|
| **Raman Amplified** | Enable Raman Amplification on the ducts.<br>**Note** When you enable Raman amplification, the side property *Enable C+L Band S/C* is automatically disabled. | — | — |

| Property | Platform | Description | | |
|---|---|---|---|---|
| **Physical** | | | | |
| **Length-Based Loss** | NCS 2000<br>NCS 1010<br>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<br>NCS 1010<br>NCS 1001 | Enter the start of life fiber loss value for each span, excluding the connector concentrated loss. | — | — |
| **Connector Loss A** | NCS 2000<br>NCS 1010<br>NCS 1001 | Connector Loss at Source Site [dB] | — | — |
| **Connector Loss B** | NCS 2000<br>NCS 1010<br>NCS 1001 | Connector Loss at Destination Site [dB] | — | — |
| **Raman Amplification** | | | | |
| **Raman Amplified** | NCS 2000 | Enable Raman Amplification on the ducts.<br>**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. | — | — |

# Modify fiber couple properties

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

**Before you begin**

Log in to the Cisco ONP web interface

**Procedure**

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

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

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

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

- General properties of a fiber couple, on page 68
- Physical and factors properties of a fiber couple, on page 69
- Totals properties of a fiber couple, on page 70

**Step 5** Click **Update**.

# General properties of a fiber couple

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

***Table 30: General fiber couple properties***

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **General** | | | — | — |
| **Name** | • NCS 2000<br>• NCS 1010<br>• 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. | — | — |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Source Side** | • NCS 2000<br>• NCS 1010<br>• NCS 1001 | Displays the source side name. This field is noneditable. | — | — |
| **Destination Side** | • NCS 2000<br>• NCS 1010<br>• NCS 1001 | Displays the destination side name. This field is noneditable. | — | — |
| **Length** | • NCS 2000<br>• NCS 1010<br>• NCS 1001 | Automatically displays the span length of the fiber connecting a source and destination side. Change the span length manually, if necessary.<br>You can enter the different span length and loss values for the individual fibers in a fiber couple. | — | — |

# Physical and factors properties of a fiber couple

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

| Property | Platform | Description |
|---|---|---|
| **Physical** | | |
| **Tot SOL Loss w/o connectors** | • NCS 2000<br>• NCS 1010<br>• NCS 1001 | Enter the start of life fiber loss value for each span, excluding the connector concentrated loss. |
| **Connector Loss A** | • NCS 2000<br>• NCS 1010 | Connector Loss at Source Site [dB] |

| Property | Platform | Description |
|---|---|---|
| **Connector Loss B** | • NCS 2000<br>• NCS 1010 | Connector Loss at Destination Site [dB] |
| **Factors** | | |
| **PMD coefficient** | • NCS 2000<br>• NCS 1010<br>• NCS 1001 | Displays the PMD coefficient. |
| **Loss coefficient [dB]** | • NCS 2000<br>• NCS 1010<br>• NCS 1001 | Enter the value of the SOL fiber loss per kilometer used to calculate the loss of each span in the network. |

# Totals properties of a fiber couple

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

***Table 31: Totals properties***

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Loss EOL** | NCS 2000<br>NCS 1010<br>NCS 1001 | Displays the total loss EOL calculation. | — | — |
| **Loss SOL** | NCS 2000<br>NCS 1010<br>NCS 1001 | Displays the total loss SOL calculation. | — | — |
| **CD C-Band** | NCS 2000<br>NCS 1010<br>NCS 1001 | Displays the total chromatic dispersion for the C-band. | — | — |
| **QD C-Band** | NCS 2000<br>NCS 1010<br>NCS 1001 | Displays the secondary order dispersion for C-band. | — | — |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **RD** | NCS 2000<br>NCS 1010<br>NCS 1001 | Displays the random dispersion value. | — | — |
| **PMD** | NCS 2000<br>NCS 1010<br>NCS 1001 | Displays the Polarization Mode Dispersion (PMD) value. | — | — |

# Modify service properties

Use this procedure to modify the properties of the service.

### Before you begin

Log in to the Cisco ONP web interface.

### Procedure

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

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

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

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

- General service properties, on page 72
- Primary and secondary paths forcing properties, on page 73
- NCS1K domain properties, on page 75

**Note**

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

**Step 5** Click **Update.**

# General service properties

*Table 32: General service properties*

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Name** | NCS 2000 | The service name is based on the source and destination sites and the number of services between them. You can edit the name.<br>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. | • 10GE<br>• 100GE<br>• STM-64 | 100GE |
| **Protection** | NCS 2000 | Choose the protection type from the drop-down list.<br>For more information on protection types, see #unique_170. | • Unprotected<br>• 1+1<br>• Disjoint<br>• S+NS<br>• 1+R<br>• 1+1+R<br>• 1+1+R+R | 1+1 |
| **Source** | NCS 2000 | Displays the source site name. | 1+1 | 1+1 |
| **Destination** | NCS 2000 | Displays the destination site name. | — | — |
| **Tertiary Source** | NCS 2000 | From the drop-down list, select the possible site as a tertiary source. | Lists the available sites | — |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Tertiary Destination** | NCS 2000 | From the drop-down list, select the possible site as a tertiary destination.<br>Tertiary source and tertiary destination are enabled only when you select the protection scheme as Unprotected Disjoint.<br>You can select either tertiary destination or both tertiary source and tertiary destination.<br>• 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.<br>• If you select both tertiary source and tertiary destination, two unprotected demands are created between the source to destination, and tertiary source to tertiary destination. The demands are disjoint to each other. | Lists the available sites | — |

# Primary and secondary paths forcing properties

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

*Table 33: Primary path forcing properties*

| Property | Platform | Description | | |
|---|---|---|---|---|
| **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. | Lists the available sites. | — |
| **Wavelength** | NCS 2000 | Click **Edit** to choose the wavelength. The default option is Auto. | Lists various wavelengths | — |
| **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. | • Auto: *Auto* option is the contentionless demand.<br>• Contentionless<br>• Colorless<br>• Colored | Auto |
| **Dst Channel Type** | NCS 2000 | Auto-populated based on the Src channel type. You can still change the type. When you change the Dst channel type, Src channel type also changes to the same. | • Auto: Auto option is the contentionless demand.<br>• Contentionless<br>• Colorless<br>• Colored | Same as the Src channel type. |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **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. | Lists the available sites. | — |
| **Wavelength** | NCS 2000 | Click **Edit** to choose the wavelength. The default option is Auto. | Lists various wavelengths | — |
| **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. | • Auto: *Auto* option is the contentionless demand.<br>• Contentionless<br>• Colorless<br>• Colored | Auto |
| **Dst Channel Type** | NCS 2000 | Choose the type of destination channel. | • Auto: Auto option is the contentionless demand.<br>• Contentionless<br>• Colorless<br>• Colored | Same as the Src channel type. |

# NCS1K domain properties

This table describes the various NCS1K domain properties for services.

*Table 34: NCS1K domain properties*

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Client Type** | NCS 2000 | Displays the client type. By default, client type is OTU4. | — | — |
| **Interface Type** | NCS 2000 | Displays the interface type. By default, interface type is BH. | — | — |
| **Trunk Mode** | NCS 2000 | Choose the trunk mode.<br>**Note** Based on the selected trunk mode, Baud rates are filtered. | • 200G<br>• 300G | 200G |
| **Baud Rate** | NCS 2000 | Choose whether the Baud rates mode as 60 or 69GBd. | • 60GBd<br>• 69GBd | 60GBd |

# Modify service properties for NCS 1010

*Table 35: 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. Follow these steps to modify the properties of the service.

### Before you begin

Log in to the Cisco ONP web interface.

### Procedure

**Step 1** Open the NCS 1010 network where you want to modify the service properties.

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

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

**Step 4** Choose the service under the network tree, and modify the properties in the right pane. See these references for the property descriptions.

- General service properties for NCS 1010 network , on page 77
- Primary path service properties for NCS 1010 network, on page 78
- Primary channel service properties for NCS 1010 network, on page 80

**Step 5** Click **Update**.

# General service properties for NCS 1010 network

This table lists the general service properties applicable for the NCS 1010 network.

***Table 36: General service properties for NCS 1010 network***

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **General** | | | | |
| Name | NCS 1010 | Services are named Service-1, Service-2, and so on.<br>You can edit the name. | — | — |
| Type | NCS 1010 | Choose the traffic type. | • 100GE<br>• 400GE | 100GE |
| Protection | NCS 1010 | Protection is not supported for the NCS 1010 network. | Unprotected | Unprotected |
| Source | NCS 1010 | Displays the source site name. | — | — |
| Destination | NCS 1010 | Displays the destination site name. | — | — |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| Encryption | NCS 1010 | Check this check box to enable encryption on the service.<br>Encrypted and non-encrypted services will not be aggregated. They use separate trunks.<br>**Note** Encryption is supported only for NCS1K14-2.4T-X-K9 and NCS1K4-QXP-K9 | — | — |

# Primary path service properties for NCS 1010 network

This table lists the primary path service properties applicable for the NCS 1010 network.

***Table 37: Service properties for primary path in NCS 1010 network***

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| Path | NCS 1010 | Displays the path of the service. | — | — |
| Fiber | NCS 1010 | Select the fiber. | Displays the available fibers. | — |
| Regen Sites | NCS 1010 | Select the regeneration site. | Displays the possible regeneration site. | — |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| Channel | NCS 1010 | Choose whether to create a new circuit or use an existing circuit.<br>**Note**<br>When you select an existing circuit with the following conditions:<br>• **Traffic Type** is set to *Transponder Card* under the circuit properties.<br>• **Trunk Mode** and **Baud Rate** are already defined under the Trail properties<br>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* or *Create New*. | • **Auto**:he system automatically chooses whether to create a new circuit or use an existing one.<br>• **Create New**: A new circuit is created, and no existing circuits are used.<br>• Existing circuits (shows the names of the circuits that are already created): Select an existing circuit to use. To specify a particular circuit, choose one from the drop-down list. | Auto |
| Band Type | NCS 1010 | Displays whether it is a C-band type or L-band type. | — | — |
| Section Wavelengths | NCS 1010 | Choose the wavelength for the regen site that is selected. | Displays multiple fixed grid wavelengths | Auto |
| Trunk mode | NCS 1010 | Choose the trunk mode of the line card. | For NCS1K14-2.4T-K9 and NCS1K14-2.4T-X-K9, the trunk rate ranges from 400G to 1200G. For NCS1K4-QXP-K9, the trunk rate ranges from 100G to 400G. | Auto |
| Baud Rate | NCS 1010 | Displays the baud rate that is suitable for the trunk rate. | — | — |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| Wavelength | NCS 1010 | Click **Edit** to choose the wavelength. | • Auto<br>• Fixed Grid(64 Chs) | Auto |

# Primary channel service properties for NCS 1010 network

This table lists the primary channel service properties applicable for the NCS 1010 network.

***Table 38: Service properties for primary channel in NCS 1010 network***

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Primary Channel Source** | | | | |
| **Card Type** | NCS 1010 | Select the card for the service. | • Auto<br>• NCS1K14-2.4T-K9<br>• NCS1K14-2.4T-X-K9<br>• NCS1K4-QXP-K9 | Auto |
| **Modulation** | NCS 1010 | Displays the type of modulation. | — | — |
| **Bundle Mode** | NCS 1010 | This property is enabled when you select the NCS1K14-2.4T-X-K9 card. When enabled, routing is based on Muxponder mode and supports trunk modes of 600G or 1000G.<br>**Note**<br>Default value for trunk mode will be 600G when bundle mode is enabled. | — | — |
| **Trunk Mode** | NCS 1010 | Select a trunk mode from the drop-down list. | The options for trunk mode changes based on the selected Card Type. | Auto |
| **Sub Mode** | NCS 1010 | This field is applicable only for the NCS1K4-QXP-K9 card. Choose the required sub mode. | • 1_E<br>• 0_S | 1_E<br>— |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **FEC** | NCS 1010 | Displays the type of FEC supported on the chosen card. | — | — |
| **Src Add/Drop Type** | NCS 1010 | Select the Add/drop type. | • Auto<br>• Colored<br>• Colorless<br>• Omni-colored<br>• Omni-colorless | Auto |
| **Client Interface** | NCS 1010 | Choose the client pluggable for the selected card. | • Auto<br>• QDD-400G-FR4-S<br>• QDD-400G-AOC1M<br>• QDD-400G-DR4-S<br>• QDD-400G-LR4-S | Auto |
| **Client Port** | NCS 1010 | This property is enabled only when a trunk mode is selected. Choose the client port. | • Auto<br>• 1<br>• 2<br>• 3<br>• 4<br>• 5<br>• 6 | Auto |
| **Trunk Type** | NCS 1010 | The trunk pluggables that are applicable for the selected card are displayed. Choose the required trunk pluggable. | — | — |
| **Primary Channel Destination** | | | | |
| **Card Type** | NCS 1010 | Select the card for the service. | • Auto<br>• NCS1K14-2.4T-K9<br>• NCS1K14-2.4T-X-K9<br>• NCS1K4-QXP-K9 | Auto |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Modulation** | NCS 1010 | Displays the type of modulation. | — | — |
| **Bundle Mode** | NCS 1010<br>t | 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.<br>**Note** The default value for trunk mode is 600G when bundle mode is enabled. | — | — |
| **Trunk Mode** | NCS 1010 | Select a trunk mode from the drop-down list. | he options for trunk mode change based on the selected card type. | Auto |
| **Sub Mode** | NCS 1010 | This field is applicable only for the NCS1K4-QXP-K9 card. Choose the required sub mode. | • 1_E<br>• 0_S | 1_E |
| **FEC** | NCS 1010 | Displays the type of FEC supported on the chosen card. | — | — |
| **Dst Add/Drop Type** | NCS 1010 | Select the Add/drop type. | • Auto<br>• Colored<br>• Colorless<br>• Omni-colored<br>• Omni-colorless | Auto |
| **Client Interface** | NCS 1010 | Select the client pluggable for the selected card. | • Auto<br>• QDD-400G-FR4-S<br>• QDD-400G-AOC1M<br>• QDD-400G-DR4-S<br>• QDD-400G-LR4-S | Auto |

| Property | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **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 options that are applicable for the selected card are displayed. Choose the required trunk pluggable. | See Supported Cards and Pluggables | Auto |

# Services aggregation

*Table 39: Feature History*

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

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

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

## Create a new service group

Follow these steps to create a new service group.

### Before you begin

Log in to the Cisco ONP web interface

### Procedure

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

**Step 2** Click the **Ellipsis** icon on the right side of **Services** under the network tree and choose **Create Service Group**.

A new service group appears under Services.

# Modify service group properties

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

### Before you begin

Log in to the Cisco ONP web interface.

### Procedure

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

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

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

**Step 4** Modify the service group properties as required.

See Service group properties, on page 84.

**Step 5** Click **Update**.

## Service group properties

This table describes various service group properties.

*Table 40: Service group properties*

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| **General** | | | | |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| Name | NCS 2000 | Displays the group name. Edit the name if needed. | — | By default, the service name is based on the source and destination sites and the number of services between them.<br>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 | Select 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** | | | | |
| Exclusive LC Usage | NCS 4000 | Indicates whether the services belonging to this group must have an exclusive Line Card (LC).<br>For example, when you check this check box, neither the Client LC nor the Trunk LC of the services belonging to this group can be shared by services belonging to any other groups. | — | — |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| 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:<br>For Example, all “1+1” services are symmetrical.<br>If you check this check box, this service group allows aggregation of only symmetrical services.<br>For example, “Unprotected” can be aggregated only with “Unprotected”, “1+R” only with “1+R”, “1+1” only with “1+1”, and so on.<br>If this check box is unchecked, this service group allows aggregation of symmetrical and unsymmetrical services together.<br>For example, “Unprotected” can be aggregated with either “Unprotected”, “1+R”, “1+1” “1+1+R” or “1+1+R+R”.<br>See Rules for aggregating services, on page 86. | — | — |
| **NCS 1 K** | | | | |
| Exclusive LC Usage | NCS 1004 | Same as NCS 4 K. | — | — |
| Symmetric Aggregation | NCS 1004 | Same as NCS 4 K. | — | — |

# Rules for aggregating services

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

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

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

- Example for non-symmetric aggregation:

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

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

# Associate a service with the newly created group

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

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

### Before you begin

Log in to the Cisco ONP web interface.

### Procedure

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

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

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

**Step 3** Click **Update**.

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

# Export aggregation reports

Follow these steps to export the service aggregation reports.

### Before you begin

Log in to the Cisco ONP web interface.

### Procedure

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

# Modify wave properties

*Table 41: 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. |

Follow these steps to modify the properties of the wave.

### Before you begin

Log in to the Cisco ONP web interface.

### Procedure

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

See Wave properties, on page 89.

**Step 5** Click **Update**.

# Wave properties

This table describes various wave properties.

***Table 42: Wave properties***

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| **General** | | | | |
| Label | NCS 2000 | Displays the name of the wave. | — | By default, the wave is named based on the source and destination sites and the number of waves between them.<br>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.<br>Edit the name if needed. |
| Source Site | NCS 2000 | Displays the source site name. | — | — |
| Destination Site | NCS 2000 | Displays the destination site name. | — | — |
| Traffic Type | NCS 2000 | Select the traffic type. | • Optical Source<br>• 100GE<br>• 10GE LAN PHY<br>• 40GE LAN PHY<br>• Fiber Channel 10G<br>• Fiber Channel 16G<br>• Fiber Channel 8G<br>• OC-192/STM-64<br>• OTU2<br>• OTU2e<br>• OTU4<br>• Pluggable Card | Optical Source |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| Protection Type | NCS 2000 | Select the protection type. | • Unprotected<br>• Client 1+1<br>• PSM-Channel<br>The *PSM-channel* option is available only for non-SSON networks. PSM-channel is not supported with the colorless Add/Drop MF-6AD-COFS.<br>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.<br>For more information on protection types, see #unique_170. | Unprotected |
| 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. | — | — |

# Modify media channel properties

Follow these steps to modify properties of the media channel.

### Before you begin

Log in to the Cisco ONP web interface.

### Procedure

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

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

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

**Step 4** Modify the media channel properties as required.

See Media channel properties, on page 91.

**Step 5** Click **Update**.

# Media channel properties

This table describes various media channel properties.

*Table 43: Media channel properties*

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| **General** | | | | |
| Label | NCS 2000 | Displays the media channel name. | — | By default, the media channel is named based on the source and destination sites and the number of media channels between them.<br>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.<br>Edit the name if required. |
| Source Site | NCS 2000 | Displays the source site name. | — | — |
| Destination Site | NCS 2000 | Displays the destination site name. | — | — |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| Traffic Type | NCS 2000 | Select the traffic type. | • Optical Source<br>• 100GE<br>• 10GE LAN PHY<br>• 40GE LAN PHY<br>• Fiber Channel 10G<br>• Fiber Channel 16G<br>• Fiber Channel 8G<br>• OC-192/STM-64<br>• OTU2<br>• OTU2e<br>• OTU4<br>• Pluggable Card | Optical Source |
| Protection Type | NCS 2000 | Select the protection type.<br>For more information on protection types, see #unique_170.<br>For Client 1+1, ensure that the sites have contentionless sides for the analysis to be successful. By default, Cisco ONP finds both span and node disjoint path for Client1+1 protected waves, but allows you to force span and node disjoint path. | • Unprotected<br>• Client 1+1 | Unprotected |
| 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. | — | — |

# Modify circuit properties

Follow these steps to modify the properties of the circuit in an NCS 1010 network.

### Before you begin

Log in to the Cisco ONP web interface.

### Procedure

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

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

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

**Step 4** Modify the circuit properties as required.

See Circuit properties, on page 93.

**Step 5** Click **Update**.

# Circuit properties

This table describes various circuit properties.

***Table 44: Circuit properties***

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| **General** | | | | |
| Label | NCS 1010<br>NCS 1001 | Displays the name of the circuit. | — | By default, the circuit is named based on the source and destination sites and the number of circuits between them. \<br>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.<br>Edit the name if required. |
| Source Site | NCS 1010<br>NCS 1001 | Displays the name of the source site. | — | — |
| Destination Site | NCS 1010<br>NCS 1001 | Displays the name of the destination site. | — | — |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| Traffic Type | NCS 1010<br>NCS 1001 | Select the traffic type. | • Optical Source<br>• Pluggable Card<br>• Transponder Card | Optical Source |
| Protection Type | NCS 1010<br>NCS 1001 | Select the protection type. | Currently, we support only Unprotected. | Unprotected |
| Forecast | NCS 1010<br>NCS 1001 | Check this check box to change a present circuit to a forecast wave. | — | — |
| Encryption | NCS 1010 | The Encryption property is enabled when you select *Line card* as the **Traffic Type**. | — | — |

# Modify trail properties

***Table 45: 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 46: 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. |

Follow these steps to modify the properties of the trail.

### Before you begin

Log in to the Cisco ONP web interface.

### Procedure

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

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

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

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

**Step 5** Navigate to the required trail and click it.

**Step 6** Modify the trail properties as required. See

- General trail properties, on page 95
- OTN trail properties, on page 98
- Source and destination trail properties, on page 98

**Step 7** Click **Update**.

# General trail properties

This table describes various general trail properties.

*Table 47: General trail properties*

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| Label | NCS 2000<br>NCS 1010<br>NCS 1001 | Displays the name of the trail. | — | — |
| Path of Wave | NCS 2000<br>NCS 1010<br>NCS 1001 | Select a fiber. | — | — |
| Regen Sites | NCS 2000<br>NCS 1010 | Select the regeneration site. | — | — |
| Source Site | NCS 2000<br>NCS 1010<br>NCS 1001 | Displays the source site name. | — | — |
| Destination Site | NCS 2000<br>NCS 1010<br>NCS 1001 | Displays the destination site name. | — | — |
| Wavelength | NCS 2000 (Non-SSON) | Click **Edit** to choose the wavelength. | — | Auto |
| Central Wavelength [nm] | NCS 2000<br>NCS 1010<br>NCS 1001 | Click **Edit** to select the central wavelength. | Multiple C-band and L-band wavelengths are listed.<br>**Note**<br>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. | Auto |
| Multicarrier | NCS 2000<br>NCS 1010 | Indicates whether the transmission is a multicarrier transmission. | — | — |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| Trunk Mode | NCS 2000 | The trunk mode can be edited only when you choose *400G-XP-LC* as **Card Type**. | See Supported Cards and Pluggables | Auto |
| | NCS 1010 | The trunk mode can be edited only when the **Traffic Type** is set to *Line card* under the circuit properties. | See Supported Cards and Pluggables | Auto |
| | NCS 1001 | Trunk mode is noneditable. | — | — |
| Number Of Carrier(s) | NCS 1010 | Enter the to add the required number of carriers to the channel. | 2-16<br>**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.<br>**Note** When you enable bundle mode in line circuit, this value is 2 and non-editable. | 1 |
| Baud Rate | NCS 1010 | Select the baud rate that is suitable for the selected trunk rate. | — | — |
| Filtering Penality | NCS 2000<br>NCS 1010 | Displays the value of the penalties that are caused by the different filter types (OADM, and ROADM). | — | — |
| 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 | Available options | Default option |
|---|---|---|---|---|
| Band Type | NCS 1010 | Select the required band type for the circuit.<br>**Note** When you select *L-Band* as **Band Type**, then the **Add/Drop Type** field automatically selects *Colorless* and becomes disabled. | • Auto<br>• L-band<br>• C-band | Auto |
| | NCS 1001 | This property is noneditable. *C-Band* is the default option. | | C-band |

# OTN trail properties

This table lists and defines OTN trail properties.

| Property | Platform | Description | Available options | 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 and destination trail properties

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

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| **Source** | | | | |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| Card Type | NCS 2000<br>NCS 1010 | Select the card used in the source site. | | 200G-SD-FEC |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| | | | See Supported Cards and Pluggables and Supported Optical Sources for more details about the list of supported cards.<br>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.<br>**Note**<br>• Non-SSON<br>• Colored and colorless—Baud rates less than 42 are supported and listed.<br>• Colorless—Mean power less than –4.4 is supported and listed.<br>• SSON<br>• Colored—Baud rates less than 65 are supported and listed.<br>• Colorless—All interfaces supported and listed.<br>• Colorless—Mean power less than –4.4 are supported and listed.<br>Mean power = (ochData.txRange.max + ochData.txRange.min)/2 | |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| | | | If contentionless is selected for the *source channel type*, the QDD interfaces are not supported. | |
| | NCS 1001 | Select a card type from the drop-down list. | See Supported Cards and Pluggables and Supported Optical Sources for more details about the list of supported cards. | |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| Client Interface | NCS 2000<br>NCS 1010 | Select a pluggable from the drop-down list. | The pluggables suitable for the chosen card type are displayed.<br>See Supported Cards and Pluggables for more information on the list of supported pluggables.<br>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.<br>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.<br>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.<br>**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. | Auto |
| | NCS 1001 | This property is noneditable. | — | Auto |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| Add/Drop Type | NCS 2000 | Select the type of Add/Drop. | The available options are:<br>• Auto<br>• Colorless<br>• Colored | Auto |
| | NCS 1010 | Select the type of Add/Drop. | The available options are:<br>• Auto<br>• Colorless<br>• Colored<br>• Omni-Colorless<br>• Omni-Colored | Auto |
| | NCS 1001 | This property is noneditable. *Colored* is the default option. | — | Colored |
| Add/Drop Connector | NCS 1010 | **Note** This property appears when you select **Add/Drop Type** as *Colorless*.<br><br>Select the type of Add/Drop Connector. | The available options are:<br>• Auto—Auto is OLT/LC/AddDrop.<br>• OLT/LC/AddDrop—Combination of OLT LC ports and CCMD-16 LC ports<br>• OLT/LC—Direct OLT LC ports<br>• OLT/MPO/AddDrop—Combination of OLT LC ports and break out units such as BRK-8, BRK-16, BRK-24 MPO ports<br><br>**Note** This property is applicable only for Enhanced NCS 1010 line cards from R7.11.1. | Auto |
| Modulation | NCS 1010 | Displays the type of modulation. | — | — |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| 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. Select the required sub mode. | The available options are:<br>• 1_E<br>• 0_S | 1_E |
| FEC | NCS 1010 | Displays the type of FEC supported on the chosen card. | The available options are:<br>• OFEC<br>• CFEC | OFEC |
| Trunk Type | NCS 2000<br>NCS 1010 | Select the trunk type from the drop-down list. | See Supported Cards and Pluggables and Supported Optical Sources for more details about the list of supported cards. | Auto |
| | NCS 1001 | This property is noneditable. | — | Auto |
| Contentionless Side | NCS 2000 | Select the contentionless side from the drop-down list. | Displays the available contentionless sides. | Auto |
| Launch Power | NCS 1010<br>NCS 1001 | Enter a launch power value. D | — | Auto |
| **Destination** | | | | |
| Card Type | NCS 2000<br>NCS 1010 | The destination card type is auto populated based on the source card type chosen. | — | — |
| | NCS 1001 | Select the card type from the drop-down list. | See Supported Cards and Pluggables and Supported Optical Sources for more details about the list of supported cards. | [illegible] |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| Client Interface | NCS 2000<br>NCS 1010 | Select a pluggable from the drop-down list. The pluggables suitable for the chosen card type are displayed. | See Supported Cards and Pluggables and Supported Optical Sources for more details about the list of supported cards. | Auto |
| | NCS 1001 | This property is noneditable. | — | Auto |
| Trunk Type | NCS 2000<br>NCS 1010 | Select the trunk type from the drop-down list. | See Supported Cards and Pluggables and Supported Optical Sources for more details about the list of supported cards. | Auto |
| | NCS 1001 | This property is noneditable. | — | Auto |
| Add/Drop Type | NCS 2000 | Select the type of the Add/Drop. | The available options are:<br>• Auto<br>• Contentionless<br>• Colorless<br>• Colored | Auto |
| | NCS 1010 | Select the type of the Add/Drop. | The available options are:<br>• Auto<br>• Colorless<br>• Colored<br>• Omni-Colorless<br>• Omni-Colored | Auto |
| | NCS 1001 | This property is noneditable. | — | Colored |

| Property | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| Add/Drop Connector | NCS 1010 | **Note** This property appears when you select **Add/Drop Type** as *Colorless*.<br><br>Select the type of Add/Drop Connector.<br><br>**Note** This property is applicable only for Enhanced NCS 1010 line cards. | The available options are:<br>• Auto—Auto is OLT/LC/AddDrop.<br>• OLT/LC/AddDrop—Combination of OLT LC ports and CCMD-16 LC ports<br>• OLT/LC—Direct OLT LC ports<br>• OLT/MPO/AddDrop—Combination of OLT LC ports and break out units such as BRK-8, BRK-16, BRK-24 MPO ports | Auto |
| 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. Select the required sub mode. | The available options are:<br>• 1_E<br>• 0_S | 1_E |
| FEC | NCS 1010 | Displays the type of FEC supported on the chosen card. | — | — |
| Trunk Type | NCS 1010 | Select the trunk pluggable. | See Supported Cards and Pluggables | Auto |
| Contentionless Side | NCS 2000 | Select the contentionless side from the drop-down list. | Displays the available contentionless sides. | Auto |
| Launch Power | NCS 1010<br>NCS 1001 | Enter a launch power value. | — | Auto |

# Modify section properties

Follow these steps to modify properties of the section.

### Before you begin

Log in to the Cisco ONP web interface.

### Procedure

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

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

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

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

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

**Step 6** Modify the section properties.

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

- General trail properties, on page 95
- OTN trail properties, on page 98
- Source and destination trail properties, on page 98

**Step 7** Click **Update**.

# Modify side properties

*Table 48: 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 49: 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 50: Feature History*

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

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

### Before you begin

Log in to the Cisco ONP web interface.

### Procedure

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

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

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

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

- General side properties, on page 108
- Bill of materials and layout properties for sides, on page 115
- Enhanced face plate properties for sides, on page 116

**Step 5** Click **Update.**

# General side properties

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

| Options | Platform | Description | | |
|---|---|---|---|---|
| **Label** | NCS 2000<br>NCS 1010<br>NCS 1001 | Displays the label of the side.<br>Editable for NCS 1001.<br>**Note** For L-band nodes, the suffix **L** is added to the side label. | — | — |
| **Type** | NCS 2000<br>NCS 1010<br>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. | • Dual OLT<br>• 4x4 COFS (supports only C-band Omni colorless)<br>You can choose 4x4 COFS only if the **Structure** under the **Sites** properties is *Line*.<br>**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. | Dual OLT |
| **Omni Directional Ports** | NCS 1010 | Enter the number of omnidirectional ports.<br>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<br>NCS 1001 | Enter the node address | — | — |

| Options | Platform | Description | | |
|---|---|---|---|---|
| **MPO Cable** | NCS 1010 | Choose the MPO cable. | • Auto<br>• 16MPO-MPO<br>• 24MPO-MPO | Auto |
| **Colorless Ports (Displayed for Line side)** | NCS 2000 | Enter the number of colorless ports.<br>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. | 1-16 | 16 |

| Options | Platform | Description | | |
|---|---|---|---|---|
| **Enable C+L Band S/C (Displayed for Line side type)** | NCS 2000 | | — | — |

| Options | Platform | Description | | |
|---|---|---|---|---|
| | | Cisco ONP supports the following passive modules:<br>• 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.<br>**Note** When you enable this option on a side:<br>• It is automatically enabled on the side that is connected to the selected side through a fiber.<br>• The fiber property *Raman Amplified is* automatically disabled, and the opposite way.<br>• This card introduces a certain amount of attenuation and insertion loss that is reflected in the | | |

| Options | Platform | Description | | |
|---|---|---|---|---|
| | | ANS parameters.<br><br>The NCS2K-MF-CL-SC module does not appear in the layout. | | |

| Options | Platform | Description | | |
|---|---|---|---|---|
| | | • 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.<br>**Note** When you enable this option on a side:<br>• If you enable the fiber property *Raman Amplified*, then the *NCS2K-RMN-CTP-C+L* card is automatically forced.<br>• If you disable the fiber property *Raman Amplified*, then the *NCS2K-MF-CL-SC* card is automatically forced.<br>• Fiber property *Raman Amplified is* automatically disabled for NCS 2000 system release 12.2.<br>The NCS2K-RMN-CTP-C+L module appears in the layout. | | |
| **Band Type** | NCS 1010<br>NCS 1001 | Choose the required band type. | • C-Band<br>• C+L Futuristic | C-Band |

| Options | Platform | Description | | |
|---|---|---|---|---|
| **NCS 1010 Line Card** | NCS 1010 | Choose whether the Line Card faceplate is Standard Faceplate or Enhanced Faceplate.<br>**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. | • Standard Faceplate<br>• Enhanced Faceplate | Standard Faceplate |
| **OSC Pluggable** | NCS 1001 | Choose the type of OSC pluggable. | • CWDM-SFP-1510<br>• CWDM-SFP-1610<br>• ONS-SC-Z3-1510<br>• ONS-SC-Z3-1610<br>• ONS-SE-155-1510 | CWDM-SFP-1510 |

# Bill of materials and layout properties for sides

This table describes various bill of materials and layout properties for the sides of a site.

***Table 51: Bill of materials and layout properties for sides***

| Options | Platform | Description |
|---|---|---|
| **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<br>NCS 1001 | Choose the type of Power Supply. The available options are Auto, AC Power, and DC Power.<br>The default option is Auto.<br>With the *Auto* option, the default power supply is selected as *DC Power*. |

| Options | Platform | Description |
|---|---|---|
| **Chassis Type** | NCS 1010 | Choose the type of chassis. The available options are:<br>• NCS 1010<br>• NCS 1020 |
| **Controller Card** | NCS 1010 | Choose the type of the controller card. The available options are:<br>• Auto<br>• NCS1010-CNTRL-K9<br>• NCS1010-CNTRL-B-K9 |
| | **NCS 1001** | NCS1K-CNTLR2 is default. |
| **Redundant Controller Card** | NCS 1010<br>NCS 1001 | Displays the redundant controller card, if any. Else displays No. |
| **UTS AC Power Cables** | NCS 1010<br>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<br>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<br>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. |
| **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.<br>The chosen option will not be used for Degree Connection. |

# Enhanced face plate properties for sides

This table describes various enhanced face plate properties for the sides of a site.

*Table 52: Enhanced face plate properties for sides*

| Options | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Degree Priority** | NCS 1010 | Choose the port type for interconnect degree priority.<br>**Note** This field appears only when you select **NCS 1010 Line Card** as *Enhanced Faceplate*. | • LC Ports<br>• MPO Group | LC Ports |
| **Direct LC Add/Drop** | NCS 1010 | Choose the number of LC ports to reserve for Direct Add/Drop connection. This property appears for networks from R7.10.1.<br>The chosen option will not be used for Degree Connection. | The range of values is 0–14. | |

# Modify C-band amplifier properties

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

*Table 53: 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 54: Feature History*

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

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

**Before you begin**

Log in to the Cisco ONP web interface

**Procedure**

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

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

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

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

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

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

- General properties of a C-band amplifier, on page 118
- C-band amplifier and attenuator options, on page 122
- Raman amplification properties of a C-band amplifier, on page 126

# General properties of a C-band amplifier

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

| Options | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **PSD Shape** | NCS 1010 | Enter a value. | — | Auto |

| Options | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Dual Band PSD Shape** | NCS 1010 | Enter a value. | — | Auto |
| **Raman COP Tilt** | NCS 2000 | Enter a value. | — | Auto |
| **Pre Tilt** | NCS 2000<br>NCS 1010 | Enter a value. | — | Auto |
| **Raman Tilt** | NCS 2000<br>NCS 1010 | Enter a value. | — | Auto |
| **Booster Tilt** | NCS 2000<br>NCS 1010 | Enter a value. | — | Auto |

| Options | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Inline Amplifier** | NCS 2000 | | • 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 130.<br>• No—No amplifier can be forced.<br>• Auto<br>  • 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.<br>  • EDFA35 amplifier is chosen as the default amplifier when any one of the demands aggregated in MF-6AD-CFS has low launch power optical resource or QSFP-DD pluggable is forced. | Auto |

| Options | Platform | Description | Available options | Default |
|---|---|---|---|---|
| | | Choose whether inline amplifier can be forced.<br>**Note**<br>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.<br>You can view the amplifier added in the **IPC**, **BOM**, and **Layout** tabs, after the successful analysis.<br>**Note**<br>• 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*.<br>• Default colorless configuration does not require inline amplifier.<br>• When there are no demands passing through the colored or colorless Add/Drop device, | | |

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

# C-band amplifier and attenuator options

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

***Table 55: C-band amplifier and attenuator options***

| Options | Platform | Description | | |
|---|---|---|---|---|
| **From Fiber** | | | | |

| Options | Platform | Description | | |
|---|---|---|---|---|
| **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.<br>If you choose SMR-9, the available options are:<br>• SMR9-FS-EDFA17-PRE<br>• SMR9-FS-EDFA24-PRE<br>• SMR9-FS-EDFA24-PRE<br>If you choose SMR-20, the available options are:<br>• SMR20-FS-EDFA17-PRE<br>• SMR20-FS-EDFA24-PRE<br>For the OLA site, the available options are:<br>• EDFA35-35-PRE<br>• EDFA35-24-PRE<br>• OPT -EDFA-17<br>• OPT -EDFA-24 | | |
| | **NCS 1010** | The options available for NCS 1010 are:<br>• Auto<br>• Normal<br>• Extended | | |
| | **NCS 1001** | The options available for NCS 1001 are:<br>• Auto<br>• NCS1001-PRE-1<br>• NCS1001-PRE-2 | | |

| Options | Platform | Description | | |
|---|---|---|---|---|
| | **Output Power** | NCS 2000<br>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 preamplifier. Choose an attenuator from the drop-down list. The available options are:<br>• ATT-LC-2<br>• ATT-LC-3<br>• ATT-LC-5<br>• ATT-LC-7<br>• ATT-LC-10<br>• ATT-LC-12<br>• ATT-LC-15<br>• 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:<br>• ATT-LC-2<br>• ATT-LC-3<br>• ATT-LC-5<br>• ATT-LC-7<br>• ATT-LC-10<br>• ATT-LC-12<br>• ATT-LC-15<br>• 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.<br>If you choose SMR-20, the default booster is 20SMR-FS-BST.<br>If you choose SMR-9, default booster is SMR9-FS-EDFA-BST.<br>For the OLA node, the available options are:<br>• EDFA35-35-BST<br>• EDFA35-24-BST<br>• OPT -EDFA-17<br>• OPT -EDFA-24 | | |
| | **NCS 1010** | For NCS 1010, it is OLT-C-EDFA-Bst | | |
| | **NCS 1001** | The option available for NCS 1001 is:<br>• NCS1001-BST | | |
| **Output Power** | NCS 2000<br>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 booster. Choose an attenuator from the drop-down list. The available options are:<br>• ATT-LC-2<br>• ATT-LC-3<br>• ATT-LC-5<br>• ATT-LC-7<br>• ATT-LC-10<br>• ATT-LC-12<br>• ATT-LC-15<br>• ATT-LC-18 | | |
| **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:<br>• ATT-LC-2<br>• ATT-LC-3<br>• ATT-LC-5<br>• ATT-LC-7<br>• ATT-LC-10<br>• ATT-LC-12<br>• ATT-LC-15<br>• ATT-LC-18 | | |

# Raman amplification properties of a C-band amplifier

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

*Table 56: Raman amplification properties of a C-band amplifier*

| Options | Platform | Description | | |
|---|---|---|---|---|
| **Raman Amp** | NCS 2000 | Choose the Raman amplifier from the drop-down list.<br>**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.<br>**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:<br>• Auto<br>• RAMAN-CTP<br>• RAMAN-COP-CTP<br>Raman Amp can be forced only between two nodes.<br>The available options for the OLA site are:<br>• Auto<br>• EDRA1-26<br>• EDRA1-35<br>• EDRA2-26<br>• EDRA2-35<br>• RAMAN-CTP | Auto |
| | **NCS 1010** | Choose the Raman amplifier from the drop-down list.<br>**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. | • Auto<br>• None<br>• Raman | Auto |
| **Raman CTP Gain** | NCS 2000 | Enter a value. | — | — |

| Options | Platform | Description | | |
|---|---|---|---|---|
| **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. | — | — |
| **Static Data** | NCS 2000 | By default, this option is disabled. Enable it to edit the crosstalk values of the Raman COP amplifier.<br>**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.

# 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 the Cisco ONP web interface

### Procedure

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

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

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

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

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

**Step 5** Click **L-Band Amplifier** to modify the properties.

See L-band properties, on page 129.

**Step 6** Click **Update**.

# L-band properties

This table describes various L-band properties.

***Table 57: L-band properties***

| 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 | Enter a value. | — | Auto |
| Raman Tilt | NCS 1010 | Enter a value. | — | Auto |
| Booster Tilt | NCS 1010 | Enter a value. | — | Auto |
| **From Fiber** | | | | |
| Pre Amp | NCS 1010 | Choose the pre amplifier | • Normal<br>• Extended | |
| **To Fiber** | | | | |
| Booster | NCS 1010 | Displays the Booster amplifier. | — | OLT-L-EDFA-Bst |

# Modify Add/Drop multiplexer properties

*Table 58: 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 59: Feature History*

<table>
<tr><th>Feature Name</th><th>Release Information</th><th colspan="3">Feature Description</th></tr>
<tr><td rowspan="5">Modify Properties of Add/Drop Multiplexer and Demultiplexer</td><td rowspan="5">Cisco ONP Release 4.2</td><td colspan="3">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:</td></tr>
<tr><td>Type of Add/Drop</td><td>Options</td><td>Network Supported</td></tr>
<tr><td>Colorless</td><td>• Direct SMR<br>• MF-6AD-CFS</td><td>• SSON<br>• Non-SSON</td></tr>
<tr><td>Colored</td><td>• MD-64-C<br>• MD-48-ODD<br>• MD-48-EVEN<br>• MD-48-ODD + MD-48-EVEN</td><td>• SSON<br>• Non-SSON</td></tr>
<tr><td>Interlever</td><td>• MpoCable<br>• MD-48-CM</td><td>• Non-SSON</td></tr>
</table>

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

### Before you begin

Log in to the Cisco ONP web interface.

### Procedure

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

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

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

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

- General Add/Drop multiplexer properties, on page 131
- MPO connector properties, on page 134
- LC connector properties, on page 135

**Step 5** Click **Update**.

# General Add/Drop multiplexer properties

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

*Table 60: General Add/Drop multiplexer properties*

| Options | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Colored Add/Drop** | NCS 2000 | Choose the colored add/drop multiplexer and demultiplexer.<br>To mix 16-AD-CCOFS and MD-48-ODD/EVEN on the same MPO port of SMR-20 and connect MD-48-ODD/EVEN to SMR-20 via MPO-8LC and UPG-4, enable the Shared SMR port and select the required colored Add/Drop. | • MD-64-C: Passive optical multiplexer and demultiplexer module (for SSON network)<br>• None<br>• Auto<br>Cisco ONP adds some options automatically based on the colored demands created and the wavelengths you configure in the non-SSON network. These options include:<br>• MD-48-ODD<br>• MD-48-EVEN<br>• MD-48-ODD + MD-48-EVEN | Auto |
| | **NCS 1010** | Choose the colored add/drop multiplexer and demultiplexer for NCS 1010. | • Auto<br>• None<br>• MD-32-EVEN<br>• MD-32-ODD<br>• MD-32-ODD+MD-32-EVEN | Auto |
| | **NCS 1001** | Choose the colored add/drop multiplexer and demultiplexer for NCS 1001.<br>**Note**<br>Choose an Add/Drop type with a Baud rate that matches the Optical Source Baud rates. | • Auto<br>• MD-64<br>• MD-32-EVEN<br>• MD-48-EVEN<br>• MD-48-ODD<br>• MD48ODD+MD48EVEN<br>• FLD-4 (10 variants) | Auto |
| | **Colorless Add/Drop** | NCS 2000 | | Auto |

| Options | Platform | Description | Available options | Default |
|---|---|---|---|---|
| | | | Choose the colorless add/drop multiplexer and demultiplexer for NCS 2000. | • Auto<br>• 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.<br>• MF-6AD-CFS: 6 Port Add/Drop Module (supported only for ROADM starting from NCS 2000 system release 11.0, and traffic site).<br>**Note** If you choose MF-6AD-CFS for a side, choose the same for other sides of the site. |
| **NCS 1010** | | Choose the colored add/drop multiplexer and demultiplexer for NCS 1010.<br>**Note** QDD optical sources are not supported (both as optical source and pluggable) with colorless BRK-8, BRK-16, or BRK-24 configurations. | • Auto<br>• None<br>• BRK-8<br>• BRK-16<br>• BRK-24 | Auto |

| Options | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Interlever Type** | NCS 2000 | Choose the interlever type from the drop-down list.<br>**Note**<br>**Interlever Type** property is visible and editable only for Line sides of Multi-Degree nodes having **Site Type** property as *SMR-9* and **Scalable Upto Degree** property as *8* under the C-Band tab at the Site level. | • Auto<br>• MpoCable<br>• MD-48-CM | Auto |

# MPO connector properties

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

***Table 61: MPO connector Add/Drop properties***

| Options | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Colorless Add/Drop** | NCS 1010 | **Note**<br>**MPO Connector Add/Drop** appears for networks from R7.10.1.<br>**Note**<br>You cannot use QDD optical sources (as either an optical source or pluggable) with colorless BRK-8, BRK-16, or BRK-24 configurations. | • Auto<br>• None<br>• BRK-8<br>• BRK-16<br>• BRK-24 | Auto |

| Options | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Colorless Ports** | NCS 1010 | Enter the number of colorless ports.<br>**Note**<br>For the R7.10.1 network, you can assign a maximum of 48 colorless ports. The assigned ports are applicable to the MPO ports.<br>For the R7.11.1 network, you can assign a maximum of 128 colorless ports. | — | 0<br>If you keep the default value, Cisco ONP automatically calculates the number of colorless ports based on the number of circuits you added and colorless add/drop units you have configured. |

# LC connector properties

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

***Table 62: LC connector Add/Drop properties***

| Options | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Colorless Add/Drop** | NCS 1010 | **Note**<br>**LC Connector Add/Drop** appears for networks from R7.11.1. | • Auto<br>• None<br>• NCS1K14-CCMD-16C | Auto |
| **Colorless Ports** | NCS 1010 | Enter the number of colorless ports.<br>**Note**<br>For the R7.10.1 network, you can assign a maximum of 48 colorless ports. The assigned ports are applicable for the LC ports.<br>For the R7.11.1 network, you can assign a maximum of 128 colorless ports. | — | 0<br>If you keep the default value, Cisco ONP automatically calculates the number of colorless ports based on the number of circuits you added and colorless add/drop units you have configured. |

| Options | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Colorless Ports Distribution** | NCS 1010 | | — | — |

| Options | Platform | Description | Available options | Default |
|---|---|---|---|---|
| | | • Click the field to open the **Colorless Ports Distribution** pop-up window.<br>• Choose the NCS1K14-CCMD-16C for each of the LC ports, A/D 4 to A/D 17.<br>• Select the number of ports for each CCMD card, ensuring the total does not exceed 128.<br>• Click **Submit**.<br><br>When allocating LC ports, consider these priorities:<br>**1.** Degree connection<br>**2.** Direct LC ports<br><br>You can allocate CCMD cards only to LC ports that remain after other allocations.<br>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.<br>This is explained in this formula:<br>Maximum number of CCMDs Allowed = 14 - (scalableUptoDegree - 1) - Direct LC add/drops - Number of Omni Edges<br>The number of ports that you have selected is displayed in the field. | | |

| Options | Platform | Description | Available options | Default |
|---|---|---|---|---|
| | | When the **Enable Special Settings** under the Network properties is enabled, and if the **Colorless Ports Distribution** has not been set previously, the property defaults to *16, 16, 0*. In this case, three LC ports are already used for CCMD card.<br>**Note**<br>For omnidirectional sides, you can select the CCMD card for every LC port.<br><br>After successful analysis of the network, you can view the port distribution under the **Layout** > **Node Diagram** tab.<br><br>Currently, this property is supported only for the enhanced plate. | | |

# Modify L-Band Add/Drop multiplexer properties

Use this procedure to modify the properties of the Add/Drop multiplexer in a site.

### Before you begin

Log in to the Cisco ONP web interface.

### Procedure

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

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

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

**Step 4** Click **Add/Drop** and modify the properties in the next pane. Refer to L-band Add/Drop multiplexer properties, on page 138 for property descriptions.

# L-band Add/Drop multiplexer properties

This table describes the properties of L-band Add/Drop multiplexers.

*Table 63: L-band Add/Drop multiplexers properties*

| Options | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **General** | | | | |
| **Colorless Add/Drop** | NCS 1010 | **Note** Only L-band optical sources are supported. Pluggables are not supported in L-band networks. | • Auto<br>• None<br>• BRK-8<br>• BRK-16<br>• BRK-24 | Auto |
| **MPO Connector Add/Drop** | | | | |
| **Colorless Add/Drop** | NCS 1010 | **Note** **MPO Connector Add/Drop** appears for networks from R7.10.1.<br>**Note** QDD optical sources are not supported (both as optical source and pluggable) with colorless BRK-8, BRK-16, or BRK-24 configurations. | • Auto<br>• None<br>• BRK-8<br>• BRK-16<br>• BRK-24 | Auto |
| **Colorless Ports** | NCS 1010 | Enter the number of colorless ports. | — | 0<br>If you keep the default value, Cisco ONP automatically calculates the number of colorless ports based on the number of circuits you added and colorless add/drop units you have configured.<br>**Note** For the R7.10.1 network, you can assign a maximum of 48 colorless ports. The assigned ports are applicable for a combination of LC and MPO ports.<br>For the R7.11.1 network, you can assign a maximum of 128 colorless ports. |

| Options | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **LC Connector Add/Drop** | | | | |
| **Colorless Add/Drop** | NCS 1010 | **Note** **LC Connector Add/Drop** appears for networks from R7.11.1. | • Auto<br>• None<br>• NCS1K14-CCMD-16L | Auto |
| **Colorless Ports** | NCS 1010 | Enter the number of colorless ports. | — | **Note** For the R7.10.1 network, you can assign a maximum of 48 colorless ports. The assigned ports are applicable for a combination of LC and MPO ports.<br>For the R7.11.1 network, you can assign a maximum of 128 colorless ports. |

| Options | Platform | Description | Available options | Default |
|---|---|---|---|---|
| **Colorless Ports Distribution** | NCS 1010 | | — | — |

| Options | Platform | Description | Available options | Default |
|---|---|---|---|---|
| | | • Click the field to open the **Colorless Ports Distribution** pop-up window.<br>• Choose the NCS1K14-CCMD-16C for each of the LC ports, A/D 4 to A/D 17.<br>• Select the number of ports for each CCMD card, ensuring the total does not exceed 128.<br>• Click **Submit**.<br><br>When allocating LC ports, consider these priorities:<br>**1.** Degree connection<br>**2.** Direct LC ports<br><br>You can allocate CCMD cards only to LC ports that remain after other allocations.<br>If the Degree Priority under Site Properties is set to LC Ports, the number of CCMD cards that can be selectd 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.<br>This is explained in this formula:<br>Maximum number of CCMDs Allowed = 14 - (scalableUptoDegree - 1) - Direct LC add/drops - Number of Omni Edges<br>The number of ports that you have selected is displayed in the field. | | |

| Options | Platform | Description | Available options | Default |
|---|---|---|---|---|
| | | When the **Enable Special Settings** under the Network properties is enabled, and if the **Colorless Ports Distribution** has not been set previously, the property defaults to *16, 16, 0*. In this case, three LC ports are already used for CCMD card.<br>**Note**<br>For omnidirectional sides, you can select the CCMD card for every LC port.<br>After successful analysis of the network, you can view the port distribution under the **Layout** > **Node Diagram** tab.<br>This property is supported only for the enhanced plate. | | |

# Modify client properties

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

### Before you begin

***Table 64: Feature History***

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

Log in to the Cisco ONP web interface

### Procedure

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

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

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

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

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

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

See Client properties, on page 144 for the descriptions.

**Step 6** Click **Update**.

# Client properties

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

| Properties | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| **General** | | | | |
| Wavelength | NCS 2000 | This column displays the selected wavelength. | — | — |
| New Wavelength - Auto | NCS 2000 | Click **Edit** to select a Flex Grid or Fixed Grid wavelength.<br>**Note** Select **Fixed Grid (64-Chs)** for SSON network with NCS1K-MD-64-C card.<br>**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. | — | — |

| Properties | Platform | Description | Available options | Default option |
|---|---|---|---|---|
| RX-Attenuator | NCS 2000 | Choose an RX-Attenuator from the drop-down list.<br>**Note** You must select a wavelength to edit this field. | • Auto<br>• None<br>• ATT-LC-2<br>• ATT-LC-3<br>• ATT-LC-5<br>• ATT-LC-7<br>• ATT-LC-10<br>• ATT-LC-12<br>• ATT-LC-15<br>• ATT-LC-18 | Auto |
| TX-Attenuator | NCS 2000 | Choose a TX-Attenuator from the drop-down list.<br>**Note** You must select a wavelength to edit this field. | • Auto<br>• None<br>• ATT-LC-2<br>• ATT-LC-3<br>• ATT-LC-5<br>• ATT-LC-7<br>• ATT-LC-10<br>• ATT-LC-12<br>• ATT-LC-15<br>• ATT-LC-18 | Auto |
| New Wavelength | NCS 1001 | Click **Add** to select a wavelength. | | |

# Sort the Network Elements

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

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

**Procedure**

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

**Step 2** Click the **Ellipsis** icon available in the right side of the network element in the network tree, such as **Sites**, and choose **Ascending** or **Descending**.

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

# Regeneration support

### Signal degradation in optical networks

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

### Role of regenerators

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

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

### Cisco ONP and regeneration sites

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

**Note** A regenerator site can only be a ROADM site.

# Create a regeneration site

*Table 65: Feature History*

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

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

### Before you begin

Log in to the Cisco ONP web interface.

### Procedure

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

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

**Note**
If the network is an SSON network or an 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 3** Click the trail to view its properties.

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

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

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

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

**Step 6** Click **Update**.

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

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

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

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

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

# Multidegree ROADM

A multidegree ROADM is a network node configuration that

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

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

## Design a multidegree ROADM site using cascaded SMR

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

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

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

**Before you begin**

Log in to the Cisco ONP web interface.

**Procedure**

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

**Step 2** Modify these site properties.

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

**Step 3** Add a contentionless side to the site. For detailed steps, see the Add contentionless side to a site, on page 51 task.

**Step 4** Modify the number of contentionless side ports for the site as needed. For detailed steps, see the Modify the number of contentionless side ports at a site , on page 53 task.