OpenConfig support for EDFA2 card

Table 1: Feature History

Feature Name	Release Information	Feature Description
MOLS2.0 Signal Span Loss Control Enhancement	Cisco IOS XR Release 25.4.1	

Feature Name	Release Information	Feature Description
		The enhanced signal span loss control enables you to set the expected and threshold values for managing RX signal span loss.

The enhancement enables the line system to:

- monitor the change in RX signal span loss value,
- compare the current and expected RX signal span loss values,
- check if the span loss difference is within the set threshold values, and
- raise the relevant alarms, if the span loss difference is more than the threshold values.

New CLI parameters added for span-loss attribute on the LINE OTS controller are:

- **rx-expected-span-loss**
- **rx-exp-rel-thr-deg <10…420>**
- **rx-exp-rel-thr-fail <10...420>**

To enable the expected RX signal span loss:

`rx-expected-span-loss`

To disable the expected RX signal span loss:

`no span-loss rx-expected-span-loss`

Modified YANG models are:

- Native YANG Model - **Cisco-IOS-XR-olc-cfg.yang**
- Open Config model - **openconfig-transport-line-common.yang**

New alarms are introduced:

- **OLC_SPAN_LOSS_FM_RX_SIGNAL_DEGRADE** - Rx signal span loss degraded
- **OLC_SPAN_LOSS_FM_RX_SIGNAL_FAIL** - Rx signal span loss failed |

Feature Name	Release Information	Feature Description
Enhanced Channel Automatic Power Control (APC) support on EDFA2 Card	Cisco IOS XR Release 25.4.1	This feature introduces enhanced channel control and management on the EDFA2 card, enhancing configuration and management capabilities. It allows users to configure the expected input power at full channel load as a single, unified parameter, streamlining previous legacy BST1 configurations with new CLI commands. These commands automatically configure BST1 gain and facilitate the raising or clearing of two new alarms per channel for improved monitoring. Additionally, this feature enables users to control the initial setup of channels, amplifiers, and thresholds required for Metro Open Line System (MOLS) deployment. New Alarms introduced: • OLC_APC_FM_CHANNEL_LOW_INPUT_POWER • OLC_APC_FM_CHANNEL_HIGH_INPUT_POWER New CLI commands introduced: • channel-minimum-input-psd • expected-total-input-power • channel-rx-power-low-rel-thr • channel-rx-power-high-rel-thr You can configure these commands using the OpenConfig model. The transport line common model is augmented to support channel configuration on the EDFA2 card.
OC UDC support on EDFA2 card	Cisco IOS XR Release 25.4.1	This feature introduces UDC capability, allowing UDC traffic on the EDFA2 card using OpenConfig models. The NCS 1014 supports PTP ports, which can be converted to UDC ports for carrying UDC traffic. These pluggables are supported: • ONS-SI-GE-LX • GLC-TE

Feature Name	Release Information	Feature Description
Enhancement in OC support for EDFA2 card	Cisco IOS XR Release 25.3.1	The EDFA2 card OC model offers enhanced management and monitoring capabilities through the following updates to the transport line common model and the introduction of a new YANG model: • **Thresholds leaves**: Configuration and state support for OTS ports, OSC-4, Optics OSC, and Coherent Probe ports. • **Admin-state leaves**: Configuration and state support for OTS ports, OSC-4, Optics OSC, and Coherent Probe ports. • **Supervisory-channels leaves**: Power monitoring support for the OSC-4 port. • **New YANG model**: Support for the `openconfig-terminal-device.yang` model, enabling Coherent Probe configuration.
Enhancement in OC support for EDFA2 card	Cisco IOS XR Release 25.2.1	The EDFA2 card now supports these OpenConfig models for retrieving operational and real-time telemetry data. • `openconfig-channel-monitor.yang` • `openconfig-transport-line-common.yang` In addition to the previously supported operational and telemetry data retrieval, these models now support configuration on the EDFA2 cards. • `openconfig-optical-amplifier.yang` • `openconfig-optical-attenuator.yang` • `openconfig-wavelength-router.yang`
OC support for EDFA2 card	Cisco IOS XR Release 25.1.1	The Open Configuration (OC) support is introduced for the EDFA2 card and the OTDR pluggable. This enables you to retrieve the operational data and real-time telemetry data using these data models: • `openconfig-optical-amplifier.yang` • `openconfig-optical-attenuator.yang` • `openconfig-wavelength-router.yang` • `openconfig/gnoi/OTDR.proto`

EDFA2 card

The EDFA2 line card is an optical amplifier for the NCS1014 Chassis. It functions as a DWDM optical terminal and includes a C-band bidirectional amplifier with channel power control capabilities. This card supports Optical Supervisory Channel (OSC) and Optical Time Domain Reflectometer (OTDR) functionalities.

The card comprises an optical module, pluggable cages for OTDR and OSC, and a DWDM trunk interface. It features integrated management for alarms, performance monitoring, and optical power level control.

Supported OpenConfig Yang models

The NCS1K14-EDFA2 card supports these OpenConfig models:

✎

Note   In Release 25.1.1, only MDT is supported, and EDT is not supported. Additionally, only operational data is supported.

Table 2: Supported OC models

Release	Model	Feature
R25.1.1	openconfig-optical-amplifier.yang	State of the optical amplifier.
	openconfig-optical-attenuator.yang	State of the optical attenuator.
	openconfig-wavelength-router.yang	State of the media channels and optical interfaces.
	openconfig/gnoi/OTDR.proto	Initiating forced OTDR scan.
R25.2.1	openconfig-channel-monitor.yang	State of the optical channel monitor.
	openconfig-transport-line-common.yang	State of the optical transport line system.
R25.3.1	openconfig-terminal-device.yang	Logical and Optical Channels – Datapath and OperData.

Supported functions for OpenConfig models

This table highlights the functions supported by the OpenConfig models in releases 25.1.1, 25.2.1, and 25.3.1.

Table 3: Supported functions for OpenConfig models

OC model	Operational data support	Configuration support	EDT support
configure-optical-amplifier.yang	R25.1.1	R25.2.1	—

OC model	Operational data support	Configuration support	EDT support
openconfig-optical-attenuator.yang	R25.1.1	R25.2.1	—
openconfig-wavelength-router.yang	R25.1.1	R25.2.1	R25.2.1
openconfig/gnoi/OTDR.proto	R25.1.1	—	—
openconfig-channel-monitor.yang	R25.2.1	—	—
openconfig-transport-line-common.yang	R25.2.1	R25.3.1	—
openconfig-terminal-device.yang	R25.3.1	R25.3.1	R25.3.1

Naming conventions

This section describes the naming conventions used in the OpenConfig models supported by the NCS1K14-EDFA2 card.

OpenConfig amplifier model

Figure 1: Optical diagram of NCS1K14-EDFA2 card representing amplifiers
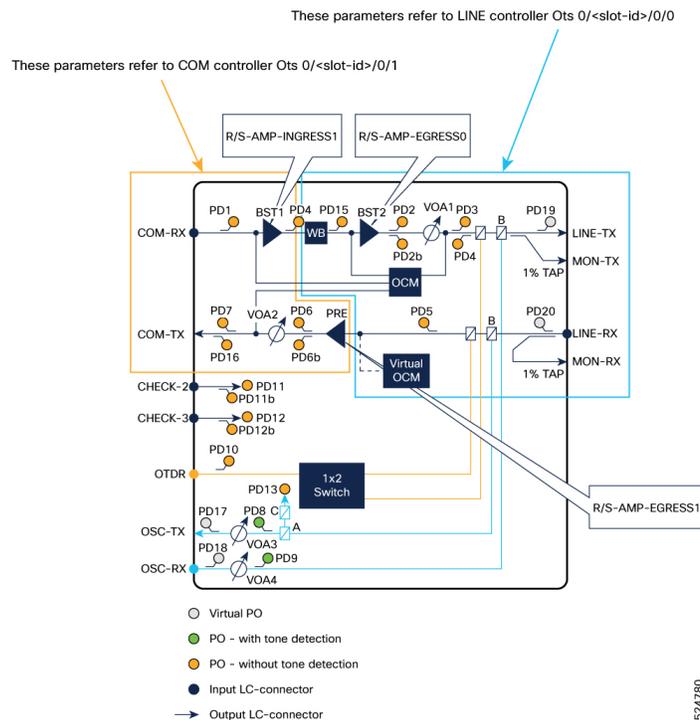
In this optical block diagram, amplifiers are categorized as follows:

  • **BST1**: Represented as an ingress amplifier.

- **BST2**: Represented as an egress amplifier.

- **PRE amplifier parameters**: Represented as egress amplifiers.

The naming convention for amplifiers is structured as follows:

`R/S-AMP-<AMP-TYPE>P`

Where:

- **R** stands for Rack.

- **S** stands for Slot.

- **AMP** is the suffix used to denote an amplifier.

- **AMP-TYPE** indicates the type of amplifier.

- **P** stands for Port ID.

Examples:

- `R/S-AMP-EGRESS0`

- `R/S-AMP-EGRESS1`

- `R/S-AMP-INGRESS1`

OpenConfig attenuator model

Figure 2: Optical diagram of NCS1K14-EDFA2 card representing attenuators
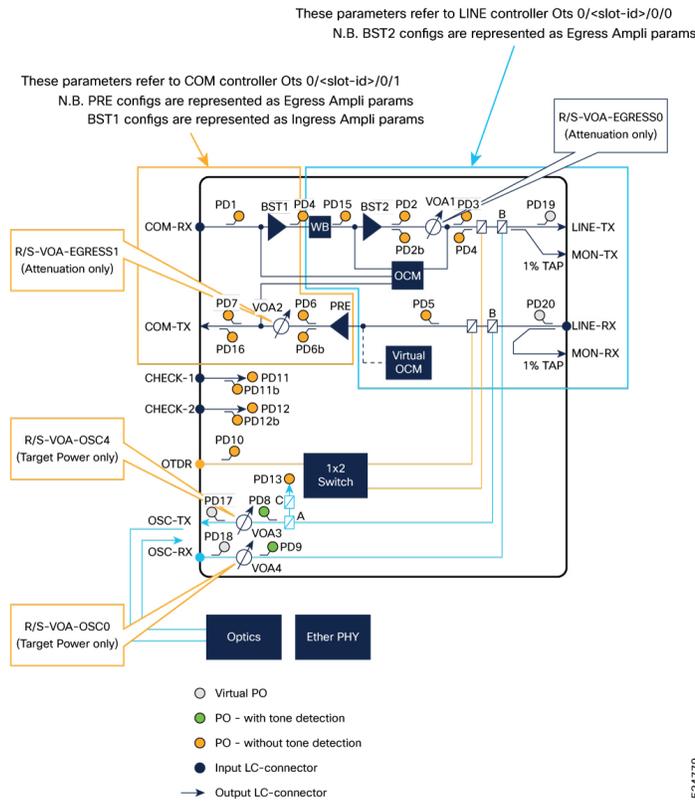
The naming convention for the attenuator model is as follows:

- `R/S-VOA-EGRESS0`

- `R/S-VOA-EGRESS1`

- `R/S-VOA-OSC0`

- `R/S-VOA-OSC4`

Where:

- **R** stands for Rack.

- **S** stands for Slot.

- **VOA** indicates a Variable Optical Attenuator.

- The suffix specifies the type and port number, such as **EGRESS** or **OSC**.

OpenConfig wavelength model

Openconfig supplies a 3-byte value called the 'index'. This value is interpreted as follows:

- **First Byte**: Represents the channel identifier, which can range from 1 to 97.

- **Second and Third Bytes**: Indicate the rack and slot numbers.

Example:

If Openconfig provides an 'index' value of "100":

- **Channel Identifier**: 1

- **Node Location Name**: 0/0/NXR0 on the native side

This means the channel identifier is 1, and because the rack and slot are fixed at 0, the location name is formatted as "0/0/NXR0".

OpenConfig channel monitor model

The naming convention for the channel monitor:

- `R/S-CHMON-RX-0`

- `R/S-CHMON-TX-0`

- `R/S-CHMON-RX-1`

- `R/S-CHMON-TX-1`

OpenConfig transport line common model

As safety ports are already modeled in the inventory, the transport line common model will utilize the same `ots R/S/I/P` representation.

From release 25.4.1, the transport line common model supports Enhanced Channel APC and span loss control through augmented leaves.

OpenConfig UDC naming convention

The OC component `[name]` contains PTP ports like `0/RP0/CPU-PTP0` and `0/RP0/CPU-PTP1`. The OC property `[name]` can be set to the value `UDC-ATTACH-0`.

Structure of Yang models supported on NCS1K14-EDFA2

This structure describes the leave structure of YANG models supported on NCS1K14-EDFA2 card:

✎

Note   The leaves that are in bold are augmented.

Supported leaves for OpenConfig attenuator model

From R25.1.1, these leaves are supported for get-oper and telemetry:

```
+--rw optical-attenuator
    +--rw attenuators
    |  +--rw attenuator* [name]
    |     +--rw name                                 -> ../config/name
    |     +--rw config
```

```
|      |  +--rw name?                          string
|      |  +--rw target-output-power?           decimal64
|      |  +--rw attenuation?                   decimal64
|      +--ro state
|         +--ro name?                          string
|         +--ro attenuation-mode?        identityref
|         +--ro target-output-power?     decimal64
|         +--ro attenuation?                   decimal64
|         +--ro enabled?                       boolean
|         +--ro component?                 -> /oc-platform:components/component/name

|         +--ro actual-attenuation
|         |  +--ro instant?                    decimal64
|         |  +--ro output-power-total
|         |  +--ro instant?                    decimal64
|         |  +--ro avg?                        decimal64
|         |  +--ro min?                        decimal64
|         |  +--ro max?                        decimal64
|         |  +--ro interval?                   oc-types:stat-interval
|         |  +--ro min-time?                   oc-types:timeticks64
|         |  +--ro max-time?                   oc-types:timeticks64
|         +--ro optical-return-loss
|         |  +--ro instant?                    decimal64
|         |  +--ro avg?                        decimal64
|         |  +--ro min?                        decimal64
|         |  +--ro max?                        decimal64
|         |  +--ro interval?                   oc-types:stat-interval
|         |  +--ro min-time?                   oc-types:timeticks64
|         |  +--ro max-time?                   oc-types:timeticks64
```

From R25.2.1, these leaves are supported for NETCONF/GNMI operations, including get, edit-config, and telemetry:

```
+--rw optical-attenuator
     +--rw attenuators
     |  +--rw attenuator* [name]
     |     +--rw name                          -> ../config/name
     |     +--rw config
     |     |  +--rw name?                       string
     |     |  +--rw attenuation-mode?     identityref
     |     |  +--rw target-output-power?  decimal64
     |     |  +--rw attenuation?                decimal64
     |     |  +--rw enabled?                    boolean
     |     +--ro state
     |        +--ro name?                       string
     |        +--ro attenuation-mode?     identityref
     |        +--ro target-output-power?  decimal64
     |        +--ro attenuation?                decimal64
     |        +--ro enabled?                    boolean
     |      +--ro component?               -> /oc-platform:components/component/name

     |         |      +--ro actual-attenuation
     |    |  +--ro instant?                     decimal64
     |    |      +--ro output-power-total
     |    |  +--ro instant?                     decimal64
     |    |  +--ro avg?                         decimal64
     |    |  +--ro min?                         decimal64
     |    |  +--ro max?                         decimal64
     |    |  +--ro interval?                    oc-types:stat-interval
     |    |  +--ro min-time?                    oc-types:timeticks64
     |    |  +--ro max-time?                    oc-types:timeticks64
     |    +--ro optical-return-loss
     |    |  +--ro instant?                     decimal64
     |    |  +--ro avg?                         decimal64
```

```
        |       |  +--ro min?                              decimal64
        |       |  +--ro max?                              decimal64
        |       |  +--ro interval?                         oc-types:stat-interval
        |       |  +--ro min-time?                    oc-types:timeticks64
        |       |  +--ro max-time?                    oc-types:timeticks64


    +--ro state
        |           +--ro name?                          string
        |           +--ro target-output-power?      decimal64
        |           +--ro attenuation?                   decimal64
        |           +--ro enabled?                       boolean
        |         +--ro component?                  -> /oc-platform:components/component/name

        |           +--ro actual-attenuation
        |           |  +--ro instant?                    decimal64
        |           +--ro output-power-total
        |           |  +--ro instant?                    decimal64
        |           |  +--ro avg?                        decimal64
        |           |  +--ro min?                        decimal64
        |           |  +--ro max?                        decimal64
        |           |  +--ro interval?                   oc-types:stat-interval
        |           |  +--ro min-time?              oc-types:timeticks64
        |           |  +--ro max-time?              oc-types:timeticks64
        |           +--ro optical-return-loss
        |           |  +--ro instant?                    decimal64
        |           |  +--ro avg?                        decimal64
        |           |  +--ro min?                        decimal64
        |           |  +--ro max?                        decimal64
        |           |  +--ro interval?                   oc-types:stat-interval
        |           |  +--ro min-time?              oc-types:timeticks64
        |           |  +--ro max-time?              oc-types:timeticks64
```

Supported leaves for OpenConfig amplifier model

From R25.1.1, these leaves are supported for get-oper and telemetry:

```
|  +--rw amplifier* [name]
    |      +--rw name      -> ../config/name
    |      +--rw config
    |      |  +--rw name?                string (Amplifier name)
    |      |  +--rw type?                identityref
    |      |  +--rw target-gain?         decimal64
    |      |  +--rw target-gain-tilt?    decimal64
    |      |  +--rw gain-range?          identityref (LOW: Normal, High: Extended)
    |      |  +--rw amp-mode?            identityref
    |      |  +--rw enabled?             boolean
    |      |  +--rw fiber-type-profile?  identityref
    |      +--ro state
    |         +--ro name?                string
    |         +--ro type?                identityref
    |         +--ro target-gain?         decimal64
    |         +--ro target-gain-tilt?    decimal64
    |         +--ro gain-range?          identityref
    |         +--ro amp-mode?            identityref
    |         +--ro enabled?             boolean
    |         +--ro fiber-type-profile?  identityref
    |         +--ro component?           -> /oc-platform:components/component/name
    |         +--ro actual-gain
    |         |  +--ro instant?    decimal64
    |         |  +--ro avg?        decimal64
    |         |  +--ro min?        decimal64
    |         |  +--ro max?        decimal64
```

```
|           |  +--ro interval?   oc-types:stat-interval
|           |  +--ro min-time?   oc-types:timeticks64
|           |  +--ro max-time?   oc-types:timeticks64
|        +--ro actual-gain-tilt
|           |  +--ro instant?    decimal64
|           |  +--ro avg?        decimal64
|           |  +--ro min?        decimal64
|           |  +--ro max?        decimal64
|           |  +--ro interval?   oc-types:stat-interval
|           |  +--ro min-time?   oc-types:timeticks64
|           |  +--ro max-time?   oc-types:timeticks64
|        +--ro input-power-total
|           |  +--ro instant?    decimal64.
|           |  +--ro avg?        decimal64
|           |  +--ro min?        decimal64
|           |  +--ro max?        decimal64
|           |  +--ro interval?   oc-types:stat-interval
|           |  +--ro min-time?   oc-types:timeticks64
|           |  +--ro max-time?   oc-types:timeticks64
|        +--ro input-power-c-band.
|           |  +--ro instant?    decimal64
|           |  +--ro avg?        decimal64
|           |  +--ro min?        decimal64
|           |  +--ro max?        decimal64
|           |  +--ro interval?   oc-types:stat-interval
|           |  +--ro min-time?   oc-types:timeticks64
|           |  +--ro max-time?   oc-types:timeticks64
|        +--ro output-power-total -→ total tx power
|           |  +--ro instant?    decimal64
|           |  +--ro avg?        decimal64
|           |  +--ro min?        decimal64
|           |  +--ro max?        decimal64
|           |  +--ro interval?   oc-types:stat-interval
|           |  +--ro min-time?   oc-types:timeticks64
|           |  +--ro max-time?   oc-types:timeticks64
|        +--ro output-power-c-band → tx signal power
|           |  +--ro instant?    decimal64
|           |  +--ro avg?        decimal64
|           |  +--ro min?        decimal64
|           |  +--ro max?        decimal64
|           |  +--ro interval?   oc-types:stat-interval
|           |  +--ro min-time?   oc-types:timeticks64
|           |  +--ro max-time?   oc-types:timeticks64
|        +--ro optical-return-loss
|              +--ro instant?    decimal64
|              +--ro avg?        decimal64
|              +--ro min?        decimal64
|              +--ro max?        decimal64
|              +--ro interval?   oc-types:stat-interval
|              +--ro min-time?   oc-types:timeticks64
|              +--ro max-time?   oc-types:timeticks64
+--rw supervisory-channels
   +--rw supervisory-channel* [interface]
      +--rw interface    -> ../config/interface
      +--rw config
      |  +--rw interface?   oc-if:base-interface-ref
      +--ro state
         +--ro interface?                oc-if:base-interface-ref
         +--ro input-power. → Rx power
         |  +--ro instant?    decimal64
         |  +--ro avg?        decimal64
         |  +--ro min?        decimal64
         |  +--ro max?        decimal64
         |  +--ro interval?   oc-types:stat-interval
```

```
                              |  +--ro min-time?   oc-types:timeticks64
                              |  +--ro max-time?   oc-types:timeticks64
                              +--ro output-power.  → Tx power
                              |  +--ro instant?    decimal64
                              |  +--ro avg?        decimal64
                              |  +--ro min?        decimal64
                              |  +--ro max?        decimal64
                              |  +--ro interval?   oc-types:stat-interval
                              |  +--ro min-time?   oc-types:timeticks64
                              |  +--ro max-time?   oc-types:timeticks64
```

From R25.2.1, these leaves are supported for NETCONF/GNMI operations, including get, edit-config, and telemetry:

```
+-rw optical-amplifier
     +--rw amplifiers
     |  +--rw amplifier* [name]
     |     +--rw name        -> ../config/name
     |     +--rw config
     |     |  +--rw name?                  string
     |     |  +--rw type?                  identityref
     |     |  +--rw target-gain?           decimal64
     |     |  +--rw target-gain-tilt?      decimal64
     |     |  +--rw gain-range?            identityref
     |     |  +--rw amp-mode?              identityref
     |     |  +--rw enabled?               boolean
     |     |  +--rw fiber-type-profile?    identityref
     |     +--ro state
     |        +--ro name?                  string
     |        +--ro type?                  identityref
     |        +--ro target-gain?           decimal64
     |        +--ro target-gain-tilt?      decimal64
     |        +--ro gain-range?            identityref
     |        +--ro amp-mode?              identityref
     |        +--ro enabled?               boolean
     |        +--ro fiber-type-profile?    identityref
     |        +--ro component?             -> /oc-platform:components/component/name
     |        +--ro actual-gain
     |        |  +--ro instant?   decimal64
     |        |  +--ro avg?       decimal64
     |        |  +--ro min?       decimal64
     |        |  +--ro max?       decimal64
     |        |  +--ro interval?  oc-types:stat-interval
     |        |  +--ro min-time?  oc-types:timeticks64
     |        |  +--ro max-time?  oc-types:timeticks64
     |        +--ro actual-gain-tilt
     |        |  +--ro instant?   decimal64
     |        |  +--ro avg?       decimal64
     |        |  +--ro min?       decimal64
     |        |  +--ro max?       decimal64
     |        |  +--ro interval?  oc-types:stat-interval
     |        |  +--ro min-time?  oc-types:timeticks64
     |        |  +--ro max-time?  oc-types:timeticks64
     |        +--ro input-power-total
     |        |  +--ro instant?   decimal64
     |        |  +--ro avg?       decimal64
     |        |  +--ro min?       decimal64
     |        |  +--ro max?       decimal64
     |        |  +--ro interval?  oc-types:stat-interval
     |        |  +--ro min-time?  oc-types:timeticks64
     |        |  +--ro max-time?  oc-types:timeticks64
     |        +--ro input-power-c-band
     |        |  +--ro instant?   decimal64
     |        |  +--ro avg?       decimal64
```

```
           |        |   +--ro min?        decimal64
           |        |   +--ro max?        decimal64
           |        |   +--ro interval?   oc-types:stat-interval
           |        |   +--ro min-time?   oc-types:timeticks64
           |        |   +--ro max-time?   oc-types:timeticks64
           |        +--ro output-power-total -→ total tx power
           |        |   +--ro instant?    decimal64
           |        |   +--ro avg?        decimal64
           |        |   +--ro min?        decimal64
           |        |   +--ro max?        decimal64
           |        |   +--ro interval?   oc-types:stat-interval
           |        |   +--ro min-time?   oc-types:timeticks64
           |        |   +--ro max-time?   oc-types:timeticks64
           |        +--ro output-power-c-band → tx signal power
           |        |   +--ro instant?    decimal64
           |        |   +--ro avg?        decimal64
           |        |   +--ro min?        decimal64
           |        |   +--ro max?        decimal64
           |        |   +--ro interval?   oc-types:stat-interval
           |        |   +--ro min-time?   oc-types:timeticks64
           |        |   +--ro max-time?   oc-types:timeticks64
           |        +--ro optical-return-loss → OPBRR
           |            +--ro instant?    decimal64
           |            +--ro avg?        decimal64
           |            +--ro min?        decimal64
           |            +--ro max?        decimal64
           |            +--ro interval?   oc-types:stat-interval
           |            +--ro min-time?   oc-types:timeticks64
           |            +--ro max-time?   oc-types:timeticks64
        +--rw supervisory-channels
           +--rw supervisory-channel* [interface]
              +--rw interface    -> ../config/interface
              +--rw config
              |  +--rw interface?   oc-if:base-interface-ref
              +--ro state
                 +--ro interface?              oc-if:base-interface-ref
                 +--ro input-power. → Rx power
                 |  +--ro instant?    decimal64
                 |  +--ro avg?        decimal64
                 |  +--ro min?        decimal64
                 |  +--ro max?        decimal64
                 |  +--ro interval?   oc-types:stat-interval
                 |  +--ro min-time?   oc-types:timeticks64
                 |  +--ro max-time?   oc-types:timeticks64
                 +--ro output-power. → Tx power
                 |  +--ro instant?    decimal64
                 |  +--ro avg?        decimal64
                 |  +--ro min?        decimal64
                 |  +--ro max?        decimal64
                 |  +--ro interval?   oc-types:stat-interval
                 |  +--ro min-time?   oc-types:timeticks64
                 |  +--ro max-time?   oc-types:timeticks64
     |     +--ro state
           |     +--ro name?                 string
           |     +--ro type?                 identityref
           |     +--ro target-gain?          decimal64
           |     +--ro target-gain-tilt?     decimal64
           |     +--ro gain-range?           identityref
           |     +--ro amp-mode?             identityref
           |     +--ro enabled?              boolean
           |     +--ro fiber-type-profile?   identityref -→
           |     +--ro component?            -> /oc-platform:components/component/name
```

```
|               +--ro actual-gain
|               | +--ro instant?    decimal64
|               | +--ro avg?        decimal64
|               | +--ro min?        decimal64
|               | +--ro max?        decimal64
|               | +--ro interval?   oc-types:stat-interval
|               | +--ro min-time?   oc-types:timeticks64
|               | +--ro max-time?   oc-types:timeticks64
|               +--ro actual-gain-tilt
|               | +--ro instant?    decimal64
|               | +--ro avg?        decimal64
|               | +--ro min?        decimal64
|               | +--ro max?        decimal64
|               | +--ro interval?   oc-types:stat-interval
|               | +--ro min-time?   oc-types:timeticks64
|               | +--ro max-time?   oc-types:timeticks64
...........
|       +--ro optical-return-loss.
|               +--ro instant?    decimal64
|               +--ro avg?        decimal64
|               +--ro min?        decimal64
|               +--ro max?        decimal64
|               +--ro interval?   oc-types:stat-interval
|               +--ro min-time?   oc-types:timeticks64
|               +--ro max-time?   oc-types:timeticks64

+--rw supervisory-channels
        +--rw supervisory-channel* [interface]
            +--rw interface    -> ../config/interface
            +--rw config
            | +--rw interface?   oc-if:base-interface-ref
            +--ro state
                +--ro interface?             oc-if:base-interface-ref
                +--ro input-power. → Rx power
                | +--ro instant?    decimal64
                | +--ro avg?        decimal64
                | +--ro min?        decimal64
                | +--ro max?        decimal64
                | +--ro interval?   oc-types:stat-interval
                | +--ro min-time?   oc-types:timeticks64
                | +--ro max-time?   oc-types:timeticks64
                +--ro output-power. → Tx power
                | +--ro instant?    decimal64
                | +--ro avg?        decimal64
                | +--ro min?        decimal64
                | +--ro max?        decimal64
                | +--ro interval?   oc-types:stat-interval
                | +--ro min-time?   oc-types:timeticks64
                | +--ro max-time?   oc-types:timeticks64
```

Supported leaves for OpenConfig Wavelength router model

From R25.1.1, these leaves are supported for get-oper and telemetry:

```
module: openconfig-wavelength-router
  +--rw wavelength-router
     +--rw media-channels
     |  +--rw channel* [index]
     |     +--rw index                   -> ../config/index
     |     +--rw config
     |     | +--rw index?                      uint32
     |     | +--rw lower-frequency?            oc-opt-types:frequency-type
     |     | +--rw upper-frequency?            oc-opt-types:frequency-type
     |     | +--rw admin-status?              oc-opt-types:admin-state-type
```

```
|      +--ro state
|      | +--ro index?                      uint32
|      | +--ro lower-frequency?            oc-opt-types:frequency-type
|      | +--ro upper-frequency?            oc-opt-types:frequency-type
|      | +--ro admin-status?               oc-opt-types:admin-state-type
|      | +--ro oper-status?                enumeration
|     +--rw source
|     | +--rw config
|     | | +--rw port-name?   -> /oc-platform:components/component/name
|     | +--ro state
|     |    +--ro port-name?   -> /oc-platform:components/component/name
|     +--rw dest
|     | +--rw config
|     | | +--rw port-name?   -> /oc-platform:components/component/name
|     | +--ro state
|     |    +--ro port-name?   -> /oc-platform:components/component/name
+--rw port-spectrum-power-profiles
|  +--rw port* [name]
|  |   +--rw name                    -> ../config/name
|  |  +--rw config
|  |  | +--rw name?   -> /oc-platform:components/component/name
|  |  +--ro state
|  |  | +--ro name?   -> /oc-platform:components/component/name
```

From R25.2.1, these leaves are supported for NETCONF/GNMI operations, including get, edit-config, and telemetry:

```
module: openconfig-wavelength-router
 +--rw wavelength-router
    +--rw media-channels
    |  +--rw channel* [index]
    |     +--rw index                  -> ../config/index
    |     +--rw config
    |     | +--rw index?               uint32
    |     | +--rw lower-frequency?      oc-opt-types:frequency-type
    |     | +--rw upper-frequency?      oc-opt-types:frequency-type
    |     | +--rw admin-status?         oc-opt-types:admin-state-type
    |     +--ro state
    |     | +--ro index?               uint32
    |     | +--ro lower-frequency?      oc-opt-types:frequency-type
    |     | +--ro upper-frequency?      oc-opt-types:frequency-type
    |     | +--ro admin-status?         oc-opt-types:admin-state-type
    |     | +--ro oper-status?          enumeration
    +--rw port-spectrum-power-profiles
    |  +--rw port* [name]
    |  |   +--rw name                    -> ../config/name
    |  |  +--rw config
    |  |  | +--rw name?   -> /oc-platform:components/component/name
    |  |  +--ro state
    |  |  | +--ro name?   -> /oc-platform:components/component/name
    |  |  +--rw oc-wave-ext:extended
    |  |  | +--rw config
    |  |  | | +--rw oc-wave-ext:regulation-enable?   boolean
    |  |  |  +--ro state
    |  |  |   | +--rw oc-wave-ext:regulation-enable?   boolean
    |  |  +--rw spectrum-power-profile
    |  |  | +--rw distribution* [lower-frequency upper-frequency]
    |  |  | | +--rw lower-frequency    -> ../config/lower-frequency
    |  |  | | +--rw upper-frequency    -> ../config/upper-frequency
    |  |  | | +--rw config
    |  |  | | | +--rw lower-frequency?   oc-opt-types:frequency-type
    |  |  | | | +--rw upper-frequency?   oc-opt-types:frequency-type
    |  |  | | | +--rw target-power?      decimal64
```

```
|   |  |  |  +--ro state
|   |  |  |  |    +--ro lower-frequency?   oc-opt-types:frequency-type
|   |  |      |    +--ro upper-frequency?   oc-opt-types:frequency-type
|   |  |      |    +--ro target-power?      decimal64

module: openconfig-wavelength-router
  +--rw wavelength-router
    +--rw media-channels
    |  +--rw channel* [index]
    |     +--rw index                      -> ../config/index
    |     +--ro state
    |     |  +--ro index?                            uint32
    |     |  +--ro lower-frequency?                  oc-opt-types:frequency-type
    |     |  +--ro upper-frequency?                  oc-opt-types:frequency-type
    |     |  +--ro admin-status?                     oc-opt-types:admin-state-type
    |     |  +--ro oper-status?                      enumeration
    +--rw port-spectrum-power-profiles
    |  +--rw port* [name]
    |  |  +--rw name                       -> ../config/name
    |  |  +--rw config
    |  |  |  +--rw name?   -> /oc-platform:components/component/name
    |  |  +--ro state
    |  |  |  +--ro name?   -> /oc-platform:components/component/name
    |  |  +--rw oc-wave-ext:extended
    |  |  |  +--ro state
    |  |  |  |  +--rw oc-wave-ext:regulation-enable?   boolean
    |  |  +--rw spectrum-power-profile
    |  |  |  +--rw distribution* [lower-frequency upper-frequency]
    |  |  |  |  +--rw lower-frequency    -> ../config/lower-frequency
    |  |  |  |  +--rw upper-frequency    -> ../config/upper-frequency
    |  |  |  |  +--rw config
    |  |  |  |  |  +--rw lower-frequency?   oc-opt-types:frequency-type
    |  |  |  |  |  +--rw upper-frequency?   oc-opt-types:frequency-type
    |  |  |  |  |  +--rw target-power?      decimal64
    |  |  |  |  +--ro state
    |  |  |  |  |    +--ro lower-frequency?   oc-opt-types:frequency-type
    |  |  |          +--ro upper-frequency?   oc-opt-types:frequency-type
    |  |  |          +--ro target-power?      decimal64
```

EDT supported leaf

From R25.2.1, telemetry EDT supports both channel addition and deletion. These OpenConfig leaves are included in the EDT functionality:

- `openconfig-wavelength-router/wavelength-router/media-channels/channel[index]/state/index`

- `openconfig-wavelength-router/wavelength-router/media-channels/channel[index]/state/upper-frequency`

- `openconfig-wavelength-router/wavelength-router/media-channels/channel[index]/state/lower-frequency`

Supported leaves for OpenConfig channel monitor model

From R25.2.1, these leaves are supported for get-oper and telemetry:

```
+--rw channel-monitors
    +--rw channel-monitor* [name]
        +--rw name        -> ../config/name
        +--rw config
        +--ro state
        |  +--ro name?          -> /oc-platform:components/component/name
        |  +--ro monitor-port?   -> /oc-platform:components/component/name
        +--rw channels
            +--ro channel* [lower-frequency upper-frequency]
```

```
                     +--ro lower-frequency    -> ../state/lower-frequency
                     +--ro upper-frequency    -> ../state/upper-frequency
                     +--ro state
                        +--ro lower-frequency?   oc-opt-types:frequency-type
                        +--ro upper-frequency?   oc-opt-types:frequency-type
                        +--ro power?             decimal64

               +--ro state
               | +--ro name?           -> /oc-platform:components/component/name
               | +--ro monitor-port?   -> /oc-platform:components/component/name
               +--rw channels
                  +--ro channel* [lower-frequency upper-frequency]
                     +--ro state
                        +--ro lower-frequency?   oc-opt-types:frequency-type
                        +--ro upper-frequency?   oc-opt-types:frequency-type
                        +--ro power?             decimal64
```

Supported leaves for OpenConfig transport line common model

From R25.2.1, these leaves are supported for get-oper and telemetry:

```
module: opencofig-transport-line-common
  augment /oc-platform:components/oc-platform:component/oc-platform:port:
    +--rw optical-port
       +--ro state
          +--ro admin-state?        oc-opt-types:admin-state-type
          | +--ro instant?    decimal64
```

From R25.3.1, these leaves for NETCONF/GNMI is updated for operations, edit-config, thresholds, and telemetry:

```
    +--rw optical-port
       +--rw config
       | +--rw admin-state?   oc-opt-types:admin-state-type
       +--ro state
          +--ro admin-state?         oc-opt-types:admin-state-type
          +--ro input-power
          | +--ro instant?   decimal64
          | +--ro avg?       decimal64
          | +--ro min?       decimal64
          | +--ro max?       decimal64
          | +--ro interval?  oc-types:stat-interval
          | +--ro min-time?  oc-types:timeticks64
          | +--ro max-time?  oc-types:timeticks64
          +--ro output-power
             +--ro instant?   decimal64
             +--ro avg?       decimal64
             +--ro min?       decimal64
             +--ro max?       decimal64
             +--ro interval?  oc-types:stat-interval
             +--ro min-time?  oc-types:timeticks64
             +--ro max-time?  oc-types:timeticks64
       +-- rw cisco
          +--rw thresholds
             +--rw config
                +--rw input-signal-power-lower?    decimal64
                +--rw input-signal-power-upper?    decimal64
                +--rw output-signal-power-lower?    decimal64
                +--rw output -signal-power-upper?    decimal64
             +--ro state
                +--ro input-signal-power-lower?    decimal64
                +--ro input-signal-power-upper?    decimal64
                +--ro output-signal-power-lower?    decimal64
                +--ro output -signal-power-upper?    decimal64
```

```
+--rw optical-port
   +--ro state
      +--ro admin-state?        oc-opt-types:admin-state-type
      +--ro input-power
      |  +--ro instant?    decimal64
      |  +--ro avg?        decimal64
      |  +--ro min?        decimal64
      |  +--ro max?        decimal64
      |  +--ro interval?   oc-types:stat-interval
      |  +--ro min-time?   oc-types:timeticks64
      |  +--ro max-time?   oc-types:timeticks64
      +--ro output-power
         +--ro instant?    decimal64
         +--ro avg?        decimal64
         +--ro min?        decimal64
         +--ro max?        decimal64
         +--ro interval?   oc-types:stat-interval
         +--ro min-time?   oc-types:timeticks64
         +--ro max-time?   oc-types:timeticks64
   +-- ro cisco
      +--ro thresholds
         +--ro state
            +--rw input-signal-power-lower?    decimal64
            +--rw input-signal-power-upper?    decimal64
            +--rw output-signal-power-lower?    decimal64
            +--rw output -signal-power-upper?    decimal64
```

Enhanced Channel APC through OpenConfig transport line common model augmentation

From Release 25.4.1, new augmentations extend the transport line common model leaves to support channel APC. These extended leaves support edit-config, thresholds, and telemetry operations through NETCONF/GNMI.

Telemetry is supported with a 10-second reporting cadence.

```
module: openconfig-transport-line-common
  augment /oc-platform:components/oc-platform:component/oc-platform:port: >>
    +--rw optical-port
       +--rw config
       |  +--rw admin-state?   oc-opt-types:admin-state-type
       +--ro state
          +--ro admin-state?        oc-opt-types:admin-state-type
          +--ro input-power
          |  +--ro instant?    decimal64
          |  +--ro avg?        decimal64
          |  +--ro min?        decimal64
          |  +--ro max?        decimal64
          |  +--ro interval?   oc-types:stat-interval
          |  +--ro min-time?   oc-types:timeticks64
          |  +--ro max-time?   oc-types:timeticks64
          +--ro output-power
             +--ro instant?    decimal64
             +--ro avg?        decimal64
             +--ro min?        decimal64
             +--ro max?        decimal64
             +--ro interval?   oc-types:stat-interval
             +--ro min-time?   oc-types:timeticks64
             +--ro max-time?   oc-types:timeticks64
       +-- rw cisco
          +--rw thresholds
             +--rw config
                +--rw input-signal-power-lower?    decimal64
```

```
                              +--rw input-signal-power-upper?    decimal64
                              +--rw output-signal-power-lower?    decimal64
                              +--rw output -signal-power-upper?    decimal64
                    +--rw input-channel-power-delta-lower?  decimal64
                       +--rw input-channel-power-delta-upper?   decimal64
                          +--ro state
                              +--ro input-signal-power-lower?    decimal64
                              +--ro input-signal-power-upper?    decimal64
                              +--ro output-signal-power-lower?    decimal64
                              +--ro output -signal-power-upper?    decimal64
                    +--ro input-channel-power-delta-lower?  decimal64
                       +--ro input-channel-power-delta-upper?   decimal64
                       +--rw channel-control
                          +-rw config
                       +--rw channel-minimum-input-psd?    decimal64
                              +--rw input-power-total-expected?    decimal64
                          +-ro state
                       +--ro channel-minimum-input-psd?    decimal64
                              +--ro input-power-total-expected?    decimal64
```

Enhanced Span Loss Control through OpenConfig transport line common model augmentation

From Release 25.4.1, new augmentations extend the transport line common model leaves to support enhanced span loss. These extended leaves support edit-config, thresholds, and telemetry operations through NETCONF/GNMI.

Telemetry is supported with a 10-second reporting cadence.

```
        +--rw optical-port
            +--rw config
            |   +--rw admin-state?   oc-opt-types:admin-state-type
            +--ro state
                +--ro admin-state?         oc-opt-types:admin-state-type
                +--ro input-power
                |   +--ro instant?    decimal64
                |   +--ro avg?        decimal64
                |   +--ro min?        decimal64
                |   +--ro max?        decimal64
                |   +--ro interval?   oc-types:stat-interval
                |   +--ro min-time?   oc-types:timeticks64
                |   +--ro max-time?   oc-types:timeticks64
                +--ro output-power
                    +--ro instant?    decimal64
                    +--ro avg?        decimal64
                    +--ro min?        decimal64
                    +--ro max?        decimal64
                    +--ro interval?   oc-types:stat-interval
                    +--ro min-time?   oc-types:timeticks64
                    +--ro max-time?   oc-types:timeticks64
        +-- rw cisco
            +--rw thresholds
                +--rw config
                    +--rw input-signal-power-lower?    decimal64
                    +--rw input-signal-power-upper?    decimal64
                    +--rw output-signal-power-lower?    decimal64
                    +--rw output -signal-power-upper?    decimal64
                +--rw input-channel-power-delta-lower?  decimal64
                +--rw input-channel-power-delta-upper?   decimal64
        +-- rw cisco
            +--rw thresholds
                +--rw config
                    +--rw input-signal-power-lower?    decimal64
```

```
                            +--rw input-signal-power-upper?     decimal64
                            +--rw output-signal-power-lower?     decimal64
                            +--rw output -signal-power-upper?     decimal64
                            +--rw input-channel-power-delta-lower?  decimal64
                            +--rw input-channel-power-delta-upper?   decimal64
                            +--ro rx-expected-span-loss?    decimal64
                            +--rw rx-span-loss-deg-rel-thr?    decimal64
                            +--rw rx-span-loss-fail-rel-thr?    decimal64
                  +--ro state
                     +--ro input-signal-power-lower?     decimal64
                     +--ro input-signal-power-upper?     decimal64
                   +--ro output-signal-power-lower?     decimal64
                     +--ro output -signal-power-upper?     decimal64
                     +--ro input-channel-power-delta-lower?  decimal64
                     +--ro input-channel-power-delta-upper?   decimal64
                     +--ro rx-expected-span-loss?    decimal64
                     +--ro rx-span-loss-deg-rel-thr?    decimal64
                     +--ro rx-span-loss-fail-rel-thr?    decimal64
                  +--rw channel-control
                     +--rw config
                        +--rw channel-blocking-input-psd?     decimal64
                        +--rw input-power-total-expected?     decimal64
                     +--ro state
                        +--rw channel-blocking-input-psd?     decimal64
                        +--rw input-power-total-expected?     decimal64
            +--rw oc-line-com-ext:span-loss
                  +--ro oc-line-com-ext:state
                     +--ro oc-line-com-ext:rx-signal-span-loss?                        decimal64
                     +--ro oc-line-com-ext:rx-calibration-baseline-span-loss?   decimal64
```

Supported leaves for OpenConfig terminal-device model

From Release 25.3.1, the terminal-device module is supported in the EDFA2 card. It is a terminal optics device model that enables the management of client and line-side terminal systems in a DWDM transport network.

The existing model, which currently supports NCS 1004, will be extended to include the EDFA2 card. A dummy client support for coherent probe is utilized for Netconf operations. A dummy client will be created exclusively when the ingress client port configuration (`opencofig-terminal-device/terminal-device/logical-channels/channel[index]/ingress/config/transceiver`) is not provided. If this configuration is present, a capability mismatch alarm will be raised.

Only Port 7 optics is supported as the Coherent port. Additionally, it exclusively supports the 100GE tributary protocol, with a maximum supported bandwidth of 100.

From R25.3.1, these leaves are supported for NETCONF/GNMI operations, including get, edit-config, thresholds,and telemetry:

```
module: openconfig-terminal-device
   +--rw terminal-device
      +--rw config
      +--ro state
      +--rw logical-channels
      |  +--rw channel* [index]
      |     +--rw index      -> ../config/index
      |     +--rw config
      |     |  +--rw index?                uint32
      |     |  +--rw description?          string
      |     |  +--rw admin-state? oc-opt-types:admin-state-type
      |     |  +--rw rate-class?           identityref
      |     |  +--rw trib-protocol?        identityref
      |     |  +--rw logical-channel-type?  identityref
      |        +--ro state
```

```
|       |  +--ro index?                      uint32
|       |  +--ro description?                string
|       |  +--ro admin-state?                oc-opt-types:admin-state-type
|       |  +--ro rate-class?                 identityref
|       |  +--ro trib-protocol?              identityref
|       |  +--ro logical-channel-type?       identityref
|       |  +--ro link-state?                 enumeration
|      +--rw otn
|       |  |  +--ro errored-seconds?              yang:counter64
|       |  |  +--ro severely-errored-seconds?    yang:counter64
|       |  |  +--ro unavailable-seconds?         yang:counter64
|       |  |  +--ro fec-uncorrectable-words?
|       |  |  +--ro fec-corrected-bits?          yang:counter64
|       |  |  +--ro background-block-errors?     yang:counter64
|       |  |                                     yang:counter64
|       |  |  +--ro pre-fec-ber
|       |  |  |  +--ro instant?   decimal64
|       |  |  |  +--ro avg?       decimal64
|       |  |  |  +--ro min?       decimal64
|       |  |  |  +--ro max?       decimal64
........................
........................ (truncated)
    +--rw optical-channel
      +--rw config
      |  +--rw frequency?            oc-opt-types:frequency-type
      |  +--rw target-output-power?  decimal64
      |  +--rw operational-mode?     uint16
      |  +--rw line-port?            -> /oc-platform:components/component/name
      +--ro state
      |  +--ro frequency?             oc-opt-types:frequency-type
      |  +--ro target-output-power?    decimal64
      |  +--ro operational-mode?       uint16
      |  +--ro line-port?             -> /oc-platform:components/component/name
........................
........................ (truncated)

        +--rw oc-opt-ext:thresholds
          +--rw oc-opt-ext:config
          |  +--rw oc-opt-ext:input-signal-power-lower?   decimal64
          |  +--rw oc-opt-ext:input-signal-power-upper?   decimal64
          +--ro oc-opt-ext:state
            +--ro oc-opt-ext:input-signal-power-lower?   decimal64
            +--ro oc-opt-ext:input-signal-power-upper?   decimal64
```

OpenConfig UDC support

From Release 25.4.1, the system supports UDC capability. The EDFA2 card does not provide Ethernet ports for exporting UDC. In the NCS 1014 chassis, PTP ports carry UDC traffic which can be converted to UDC ports for carrying UDC traffic, but OSC ports take over these PTP ports and prioritize OSC traffic. You can configure PTP ports for UDC using CLI and UM-based native YANG. Now, OpenConfig also supports configuring PTP ports for UDC traffic.

The system does not support the EDT leaf.

You can use these leaves for NETCONF and gNMI operations, including get, edit-config, thresholds, and telemetry:

```
+--rw components
|   +--rw component [name]
|   |   +--rw name      -> ../config/name   identityref (Component name – 0/RP0/CPU0-PTP0
or 0/RP0/CPU0-PTP1)
|   |   +--rw properties
|   |   |   +--rw property [name]
|   |   |   +--rw name      -> ../config/name   identityref (Property name (UDC-ATTACH-0)
```

```
|   |   |   +--rw config
|   |   |   |   +--rw name?                    string (Property name (UDC-ATTACH-0)
|   |   |   |   +--rw value?                     string (GigabitEthernetR/S/I/P)
|   |   |   +--ro state
|   |   |   |   +--ro name?                    string (Property name (UDC-ATTACH-0)
|   |   |   |   +--ro value?                      string (GigabitEthernetR/S/I/P)
 +--ro state
 |   +--ro name?                    string (Property name (UDC-ATTACH-0)
 |   +--ro value?                      string (GigabitEthernetR/S/I/P)
```

Sample configurations

This section presents sample configurations and telemetry outputs for the OC models supported on the EDFA2 card.

OpenConfig attenuator model

This is a sample to configure and get operational data using the OC-Attenuator model:

```
{
    "openconfig-optical-attenuator:optical-attenuator": {
        "attenuators": {
            "attenuator": [
                {
                    "name":"0/0-VOA-EGRESS0",
"state":{
                    }
                }
```

```
{
    "openconfig-optical-attenuator:optical-attenuator": {
        "attenuators": {
            "attenuator": [
                {
                    "name":"0/0-VOA-OSC0",
                    "state":{
                    }
                }
```

OpenConfig amplifier model

This is a sample to configure and get operational data using the OC-Amplifier model:

```
 <get>
<filter>
<optical-amplifier xmlns="http://openconfig.net/yang/optical-amplfier">
<amplifiers/>
 <supervisory-channels/>
</optical-amplifier>
</filter>
</get>

<edit-config>
<target>
<candidate/>
 </target>
<config>
<optical-amplifier xmlns="http://openconfig.net/yang/optical-amplfier">
   <amplifiers>
    <amplifier>
     <name>0/0-AMP-EGRESS0</name>
```

```
    <config>
    <name>0/0-AMP-EGRESS0</name>
    <amp-mode>CONSTANT_GAIN</amp-mode>
    <type>EDFA</type>
<fiber-type-profile>SSMF</fiber-type-profile>
    <target-gain>16.00</target-gain>
    <target-gain-tilt>0.00</target-gain-tilt>
    </config>
  <cisco xmlns="http://cisco.com/ns/yang/Cisco-IOS-XR-openconfig-optical-amplifier-ext">
    <extended>
     <config>
      <regulation-enabled>true</regulation-enabled>
     </config>
    </extended>
   </cisco>
  </amplifier>
 </amplifiers>
 </optical-amplifier>
</config>
</edit-config>
```

OpenConfig wavelength model

This is a sample to configure and get operational data using the OC-Wavelength model:

```
"openconfig-wavelength-router:wavelength-router": {
 "port-spectrum-power-profiles": {
  "port": [
   {
    "name": "Ots0/0/0/0",
    "Cisco-IOS-XR-openconfig-wavelength-router-ext:extended": {
     "state": {
      "regulation-enable": false
     }
    },
    "state": {
     "name": "Ots0/0/0{
/0"

  },
  "media-channels": {
   "channel": [
    {
     "index": 100,
     "state": {
     "index": 100,
     "lower-frequency": "193950000",
     "upper-frequency": "194050000",
     "admin-status": "enabled",
     "oper-status": "up"
     }
```

Wavelength router model

This is a sample to configure and get operational data for frequency convention in spectrum-power-profile and distribution for wavelength router model:

```
<edit-config>
<target><candidate/></target>
<config>
    <wavelength-router xmlns="http://openconfig.net/yang/wavelength-router">
      <port-spectrum-power-profiles>
        <port>
```

```
                    <name>Ots0/0/0/0</name>
                      <config>
                        <name>Ots0/0/0/0</name>
                      </config>
                    <spectrum-power-profile>
                      <distribution>
                        <lower-frequency>191200000</lower-frequency>
                        <upper-frequency>196175000</upper-frequency>
<config>
                        <lower-frequency>191200000</lower-frequency>
                        <upper-frequency>196175000</upper-frequency>
                        <target-power xmlns:nc="urn:ietf:params:xml:ns:netconf:base:1.0"
nc:operation="create">-1.25</target-power>
                      </config>
                      </distribution>
                    </spectrum-power-profile>
                  </port>
              </port-spectrum-power-profiles>
          </wavelength-router>
</config>
</edit-config>

Request:
<get>
  <filter type="subtree">
    <wavelength-router xmlns="http://openconfig.net/yang/wavelength-router">
      <port-spectrum-power-profiles>
        <port>
          <name>Ots0/0/0/0</name>
          <spectrum-power-profile>
          </spectrum-power-profile>
        </port>
      </port-spectrum-power-profiles>
    </wavelength-router>
  </filter>
</get>
Response:
<?xml version="1.0"?>
<rpc-reply message-id="d78bc8c8-4e99-431b-9a8c-cab3d87e25cc"
xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
 <data>
  <wavelength-router xmlns="http://openconfig.net/yang/wavelength-router">
   <port-spectrum-power-profiles>
    <port>
     <name>Ots0/0/0/0</name>
     <spectrum-power-profile>
      <distribution>
       <lower-frequency>191200000</lower-frequency>
       <upper-frequency>196175000</upper-frequency>
       <state>
        <target-power>-1.20</target-power>
        <upper-frequency>196175000</upper-frequency>
        <lower-frequency>191200000</lower-frequency>
       </state>
       <config>
        <target-power>-1.25</target-power>
        <upper-frequency>196175000</upper-frequency>
        <lower-frequency>191200000</lower-frequency>
       </config>
      </distribution>
     </spectrum-power-profile>
    </port>
   </port-spectrum-power-profiles>
  </wavelength-router>
```

```
 </data>
</rpc-reply>
```

OpenConfig channel monitor model

This is a sample to get operational data using the OC-Channel monitor model:

```
{
  "openconfig-channel-monitor:channel-monitors": {
            "channel-monitor": [
                       {
            "name": "0/0-CHMON-RX-0",
            "channels":
            {
                 "channel":{}
             }

{
  "openconfig-channel-monitor:channel-monitors": {
            "channel-monitor": [
                       {
            "name": "0/0-CHMON-TX-0",
            "channels":
            {
                 "channel":{}
             }
```

This is a sample output to get data for single channel:

```
get data xpath:
/channel-monitors/channel-monitor/channels/channel[lower-frequency=191400000][upper-frequency=191406250]/state

Response:
[
  {
    "source": "10.127.126.174:57400",
    "timestamp": 1749368365802571706,
    "time": "2025-06-08T13:09:25.802571706+05:30",
    "updates": [
      {
        "Path":
"openconfig:channel-monitors/channel-monitor[name=0/0-CHMON-RX-0]/channels/channel[lower-frequency=191400000][upper-frequency=191406250]/state",

        "values": {
          "channel-monitors/channel-monitor/channels/channel/state": {
            "lower-frequency": "191400000",
            "upper-frequency": "191406250"
          }
        }
      },
      {
        "Path":
"openconfig:channel-monitors/channel-monitor[name=0/0-CHMON-TX-0]/channels/channel[lower-frequency=191400000][upper-frequency=191406250]/state",

        "values": {
          "channel-monitors/channel-monitor/channels/channel/state": {
            "lower-frequency": "191400000",
            "power": "-31.30",
            "upper-frequency": "191406250"
          }
        }
      },
      {
        "Path":
```

"openconfig:channel-monitors/channel-monitor[name=0/0-CHMON-RX-1]/channels/channel[lower-frequency=191400000][upper-frequency=191406250]/state",

```
        "values": {
          "channel-monitors/channel-monitor/channels/channel/state": {
            "lower-frequency": "191400000",
            "power": "0.00",
            "upper-frequency": "191406250"
          }
        }
      },
      {
        "Path":
```
"openconfig:channel-monitors/channel-monitor[name=0/0-CHMON-TX-1]/channels/channel[lower-frequency=191400000][upper-frequency=191406250]/state",

```
        "values": {
          "channel-monitors/channel-monitor/channels/channel/state": {
            "lower-frequency": "191400000",
            "power": "-26.60",
            "upper-frequency": "191406250"
          ]
```

OpenConfig transport line common model

This is a sample output for EDFA2 line interface:

```
{
    "source": "10.127.126.174:57400",
    "timestamp": 1749368046243415426,
    "time": "2025-06-08T13:04:06.243415426+05:30",
    "updates": [
      {
        "Path": "openconfig:components/component[name=Ots0/0/0/0]/port/optical-port/state",

        "values": {
          "components/component/port/optical-port/state": {
            "admin-state": "enabled",
            "input-power": {
              "instant": "-9.65"
                  }
        }
```

Sample output for Release 25.3.1:

```
[
  {
    "source": "10.127.126.176:57400",
    "timestamp": 1756891018884482368,
    "time": "2025-09-03T14:46:58.884482368+05:30",
    "updates": [
      {
        "Path": "openconfig:components/component[name=Ots0/3/0/0]/port/optical-port",
        "values": {
          "components/component/port/optical-port": {
            "Cisco-IOS-XR-openconfig-transport-line-common-ext:cisco": {
              "thresholds": {
                "state": {
                  "input-signal-power-lower": "-47.00",
                  "output-signal-power-lower": "-7.00"
                }
              }
            },
```

```
                              "state": {
                                "admin-state": "enabled",
                                "input-power": {
                                  "avg": "-10.10",
                                  "instant": "-10.09",
                                  "interval": "10000000000",
                                  "max": "-10.09",
                                  "max-time": "1756891000907584499",
                                  "min": "-10.11",
                                  "min-time": "1756891000907584499"
                                },
                                "output-power": {
                                  "avg": "5.46",
                                  "instant": "5.46",
                                  "interval": "10000000000",
                                  "max": "5.46",
                                  "max-time": "1756891000907584499",
                                  "min": "5.45",
                                  "min-time": "1756891000907584499"
                                }
                              }
                            }
                          }
                        },
                        {
                          "Path": "openconfig:components/component[name=Ots0/3/0/1]/port/optical-port",
                          "values": {
                            "components/component/port/optical-port": {
                              "Cisco-IOS-XR-openconfig-transport-line-common-ext:cisco": {
                                "thresholds": {
                                  "state": {
                                    "input-channel-power-delta-lower": "-3.00",
                                    "input-channel-power-delta-upper": "3.00",
                                    "input-signal-power-lower": "-30.00",
                                    "output-signal-power-lower": "-7.00"
                                  }
                                }
                              },
                              "state": {
                                "admin-state": "enabled",
                                "input-power": {
                                  "avg": "-4.46",
                                  "instant": "-4.46",
                                  "interval": "10000000000",
                                  "max": "-4.46",
                                  "max-time": "1756891000907599978",
                                  "min": "-4.46",
                                  "min-time": "1756891000907599978"
                                },
                                "output-power": {
                                  "avg": "8.41",
                                  "instant": "8.43",
                                  "interval": "10000000000",
                                  "max": "8.42",
                                  "max-time": "1756891000907599978",
                                  "min": "8.39",
                                  "min-time": "1756891003905812683"
                                }
                              }
                          },
                          {
                            "Path": "openconfig:components/component[name=Ots0/3/0/2]/port/optical-port",
                            "values": {
                              "components/component/port/optical-port": {
                                "Cisco-IOS-XR-openconfig-transport-line-common-ext:cisco": {
```

```
                "thresholds": {
                  "state": {
                    "input-signal-power-lower": "-40.00"
                  }
                }
              },
              "state": {
                "admin-state": "enabled",
                "input-power": {
                  "avg": "-17.03",
                  "instant": "-16.99",
                  "interval": "10000000000",
                  "max": "-17.00",
                  "max-time": "1756891000907615778",
                  "min": "-17.05",
                  "min-time": "1756891001905617411"
          },
          {
            "Path": "openconfig:components/component[name=Ots0/3/0/3]/port/optical-port",
            "values": {
              "components/component/port/optical-port": {
                "Cisco-IOS-XR-openconfig-transport-line-common-ext:cisco": {
                  "thresholds": {
                    "state": {
                      "input-signal-power-lower": "-40.00"
                    }
                  }
                },
                "state": {
                  "admin-state": "enabled",
                  "input-power": {
                    "avg": "-20.98",
                    "instant": "-20.95",
                    "interval": "10000000000",
                    "max": "-20.98",
                    "max-time": "1756891000907630336",
                    "min": "-21.01",
                    "min-time": "1756891000907630336"
          },
          {
            "Path": "openconfig:components/component[name=Osc0/3/0/4]/port/optical-port",
            "values": {
              "components/component/port/optical-port": {
                "Cisco-IOS-XR-openconfig-transport-line-common-ext:cisco": {
                  "thresholds": {
                    "state": {
                      "input-signal-power-lower": "-17.00",
                      "output-signal-power-lower": "-42.00"
                    }
                  }
                },
                "state": {
                  "admin-state": "enabled",
                  "input-power": {
                    "avg": "4.19",
                    "instant": "4.19",
                    "interval": "10000000000",
                    "max": "4.19",
                    "max-time": "1756891000907569297",
                    "min": "4.19",
                    "min-time": "1756891000907569297"
                  },
```

```
                                "output-power": {
                                    "avg": "-17.24",
                                    "instant": "-17.24",
                                    "interval": "10000000000",
                                    "max": "-17.24",
                                    "max-time": "1756891000907569297",
                                    "min": "-17.26",
                                    "min-time": "1756891001905566687"

                    },
                    {
                        "Path": "openconfig:components/component[name=Optics0/3/0/5]/port/optical-port",
                        "values": {
                            "components/component/port/optical-port": {
                                "Cisco-IOS-XR-openconfig-transport-line-common-ext:cisco": {
                                    "thresholds": {
                                        "state": {
                                            "input-signal-power-lower": "-30.00",
                                            "input-signal-power-upper": "5.00",
                                            "output-signal-power-lower": "0.00",
                                            "output-signal-power-upper": "8.00"
                                        }
                                    }
                                },
                                "state": {
                                    "admin-state": "enabled",
                                    "input-power": {
                                        "avg": "-19.00",
                                        "instant": "-18.99",
                                        "interval": "10000000000",
                                        "max": "-19.00",
                                        "max-time": "1756891000907645382",
                                        "min": "-19.03",
                                        "min-time": "1756891000907645382"
                                    },
                                    "output-power": {
                                        "avg": "4.65",
                                        "instant": "4.64",
                                        "interval": "10000000000",
                                        "max": "4.66",
                                        "max-time": "1756891003905863164",
                                        "min": "4.64",
                                        "min-time": "1756891001905650733"
                                    }
                            },
                    {
                        "Path": "openconfig:components/component[name=Optics0/3/0/7]/port/optical-port",
                        "values": {
                            "components/component/port/optical-port": {
                                "Cisco-IOS-XR-openconfig-transport-line-common-ext:cisco": {
                                    "thresholds": {
                                        "state": {
                                            "input-signal-power-lower": "-30.00",
                                            "input-signal-power-upper": "3.00",
                                            "output-signal-power-lower": "-16.00",
                                            "output-signal-power-upper": "0.00"
                                        }
                                    }
                                },
                                "state": {
                                    "admin-state": "enabled",
                                    "input-power": {
                                        "avg": "-7.71",
                                        "interval": "10000000000",
```

```
              "max": "-7.67",
              "max-time": "1756891000907490205",
              "min": "-7.76",
              "min-time": "1756891000907490205"
            },
            "output-power": {
              "avg": "-2.17",
              "interval": "10000000000",
              "max": "-2.16",
              "max-time": "1756891000907490205",
              "min": "-2.19",
              "min-time": "1756891009905462714"
            }
          ]
      ]
]
```

OpenConfig parameters for span loss control

The highlighted lines are the parameters for the span loss controller.

OC configuration for span loss control

This example highlights the parameters to configure expected span loss.

Note

- **rx-expected-span-loss**—enables span loss base line. This field is mandatory.

- **rx-span-loss-deg-rel-thr**—sets RX span loss degrade threshold. The default is 3.0 dB.

- **rx-span-loss-fail-rel-thr**—sets RX span loss fail threshold. The default is 5.0 dB.

If you don't set the **rx-span-loss-deg-rel-thr** and **rx-span-loss-fail-rel-thr** values, the system takes the default values. If you want to set non-default values for rx-span-loss-deg-rel-thr and rx-span-loss-fail-rel-thr, then edit the configuration as in this example.

Example

```
{
    "openconfig-platform:components": {
        "component": [
            {
                "config": {
                    "name": "Ots0/1/0/0"
                },
                "name": "Ots0/1/0/0",
                "port": {
                    "openconfig-transport-line-common:optical-port": {
                        "Cisco-IOS-XR-openconfig-transport-line-common-ext:cisco": {
                            "thresholds": {
                                "config": {
                                    "rx-expected-span-loss": "23.00",
                                    "rx-span-loss-deg-rel-thr": "3.00",
                                    "rx-span-loss-fail-rel-thr": "5.00"
                                }
                            }
                        }
                    }
                }
            }
        ]
    }
}
```

OC Xpath request to get configuration and state data for span loss base line
Xpath

`Xpath:components/component[name=Ots0/3/0/0]/port/optical-port □ EDFA2 card on Slot 03 for line port 0`

Example

```
[
  {
    "source": "10.127.126.176:57400",
    "timestamp": 1764919500851171600,
    "time": "2025-12-05T12:55:00.8511716+05:30",
    "updates": [
      {
        "Path": "openconfig:components/component[name=Ots0/3/0/0]/port/optical-port",
        "values": {
          "components/component/port/optical-port": {
            "Cisco-IOS-XR-openconfig-transport-line-common-ext:cisco": {
              "span-loss": {
                "state": {
                  "rx-calibration-baseline-span-loss": "11.15", ----□rx-signal-span-loss
at the time of expected Span loss set on the system
                  "rx-signal-span-loss": "11.17" ---□ actual Rx-signal-Span Loss
                }
              },
              "thresholds": {
                "config": {
                  "rx-expected-span-loss": "11.10" ---□ Configure expected rx-signal Span
loss on the system
                },
                "state": {
                  "input-signal-power-lower": "-47.00",
                  "output-signal-power-lower": "-7.00",
                  "rx-expected-span-loss": "11.10",  ---□ State Rx-Signal Span Loss
                  "rx-span-loss-deg-rel-thr": "3.00", ---□ default thresholds for rx-span
loss degrade
                  "rx-span-loss-fail-rel-thr": "5.00"   ---□ default fail threshold for
rx-signal span loss
                }
              }
            }
          },
```

OpenConfig span loss alarms

The OpenConfig module for span loss control supports these alarms.

OpenConfig span loss degrade alarm

This output highlights the alarm name and its ID type.

```
  {
        "Path": "openconfig:system/alarms/alarm[id=XR/HW_OTS/33#MODULE/TRC/1:PORT/OTS/0]",
        "values": {
          "system/alarms/alarm": {
            "id": "XR/HW_OTS/33#MODULE/TRC/1:PORT/OTS/0",
            "state": {
              "id": "XR/HW_OTS/33#MODULE/TRC/1:PORT/OTS/0",
              "resource": "Ots0/1/0/0",
              "severity": "openconfig-alarm-types:MINOR",
              "text": "Rx signal span loss degraded",
              "time-created": "1764922397",
              "type-id": "openconfig-alarm-types:MBLINE_SPAN_LOSS_DEG"
            }
          }
```

```
            }
        }
```

OpenConfig span loss fail alarm

This output highlights the alarm name and its ID type.

```
{
        "Path": "openconfig:system/alarms/alarm[id=XR/HW_OTS/34#MODULE/TRC/1:PORT/OTS/0]",
        "values": {
          "system/alarms/alarm": {
            "id": "XR/HW_OTS/34#MODULE/TRC/1:PORT/OTS/0",
            "state": {
              "id": "XR/HW_OTS/34#MODULE/TRC/1:PORT/OTS/0",
              "resource": "Ots0/1/0/0",
              "severity": "openconfig-alarm-types:MAJOR",
              "text": "Rx signal span loss failed",
              "time-created": "1764922557",
              "type-id": "openconfig-alarm-types:MBLINE_SPAN_LOSS_FAIL"
            }
          }
        }
 }
```

Table 4: Default threshold value for Ots and Osc controller

Controller	Leaf	Threshold value
OtsR/S/I/0	input-signal-power-lower	-47 dBM
	output-signal-power-lower	-7 dBM
OtsR/S/I/1	input-signal-power-lower	-30 dBM
	output-signal-power-lower	-7 dBM
OtsR/S/I/2	input-signal-power-lower	-40 dBM
OtsR/S/I/3	input-signal-power-lower	-40 dBM
OscR/S/I/4	input-signal-power-lower	-17 dBM
	output-signal-power-lower	-42 dBM

Table 5: Default threshold value for Optics Interface of OSC and Coherent Probe port

Controllers	Leaf	Threshold value
OSC Optics OpticsR/S/I/5	input-signal-power-lower	-30.00 dBM
	input-signal-power-upper	5.00 dBM
	output-signal-power-lower	0.00 dBM
	output-signal-power-upper	8.00 dBM
Coherent Probe Optics OpticsR/S/I/7	input-signal-power-lower	-30.00 dBM
	input-signal-power-upper	3.00 dBM
	output-signal-power-lower	-16.00 dBM
	output-signal-power-upper	0.00 dBM

OpenConfig terminal device model

From Release 25.3.1, OpenConfig terminal device model is supported. This is a sample output for Coherent probe configuration:

```json
{
  "openconfig-terminal-device:terminal-device": {
    "logical-channels": {
      "channel": [
        {
          "index": 30000,
          "config": {
            "loopback-mode": "NONE",
            "logical-channel-type": "openconfig-transport-types:PROT_ETHERNET",
            "trib-protocol": "openconfig-transport-types:PROT_100GE",
            "rate-class": "openconfig-transport-types:TRIB_RATE_100G",
            "admin-state": "ENABLED",
            "description": "ETH Logical Channel",
            "index": 30000
          },
          "logical-channel-assignments": {
            "assignment": [
              {
                "index": 1,
                "config": {
                  "allocation": 100,
                  "logical-channel": 30001,
                  "assignment-type": "LOGICAL_CHANNEL",
                  "description": "ETH to Coherent assignment",
                  "index": 1
                }
              }

        {
          "index": 30001,
          "config": {
            "loopback-mode": "NONE",
            "logical-channel-type": "openconfig-transport-types:PROT_OTN",
            "admin-state": "ENABLED",
            "description": "Coherent Logical Channel",
            "index": 30001
          },
          "logical-channel-assignments": {
            "assignment": [
              {
                "index": 1,
                "config": {
                  "allocation": 100,
                  "assignment-type": "OPTICAL_CHANNEL",
                  "optical-channel": "OpticalChannel0/1/0/7",
                  "description": "Coherent to optical assignment",
                  "index": 1
                }

  }
}
```

UDC configuration query

The configuration query should apply settings to the component `[name]` for `0/RP0/CPU0`, as well as for any instances of `0/RP0/CPU0` whose names include 'PTP' (such as `0/RP0/CPU-PTP0` and `0/RP0/CPU-PTP1`).

This is a sample to configure and get operational data for UDC.

Sample Netconf query

```
<edit-config>
<target>
  <candidate/>
</target>
<config>
  <components xmlns="http://openconfig.net/yang/platform">
    <component>
      <name>0/RP0/CPU0</name>
      <config>
        <name>0/RP0/CPU0</name>
      </config>
    </component>
    <component>
      <name>0/RP0/CPU0-PTP0</name>
      <config>
        <name>0/RP0/CPU0-PTP0</name>
      </config>
      <properties>
        <property>
          <name>UDC-ATTACH-0</name>
          <config>
            <name>UDC-ATTACH-0</name>
            <value>GigabitEthernet0/0/0/5</value>
          </config>
        </property>
      </properties>
    </component>
  </components>
</config>
</edit-config>
```

Sample OC Config rpc

```
"openconfig-platform:components": {
  "component": [
    {
      "name": "0/RP0/CPU0",
      "config": {
        "name": "0/RP0/CPU0"
      }
    },
    {
      "name": "0/RP0/CPU0-PTP0",
      "config": {
          "name": "0/RP0/CPU0-PTP0"
      },
      "properties": {
        "property": {
          "name": "UDC-ATTACH-0",
          "config": {
            "name": "UDC-ATTACH-0",
            "value": "GigabitEthernet0/3/0/5"
          }
        }
      }
    }
  ]
}
```

OpenConfig xpath to retrieve specific state data

openconfig-platform:/components/component[name=0/RP0/CPU0-PTP1]/properties/property[name=UDC-ATTACH-0]

This is a sample output.

```
[
  {
    "source": "10.127.126.176:57400",
    "timestamp": 1765515166176355802,
    "time": "2025-12-12T10:22:46.176355802+05:30",
    "updates": [
      {
        "Path":
"openconfig:components/component[name=0/RP0/CPU0-PTP1]/properties/property[name=UDC-ATTACH-0]",
        "values": {
          "components/component/properties/property": {
            "config": {
              "name": "UDC-ATTACH-0",
              "value": "GigabitEthernet0/3/0/5"
            },
            "name": "UDC-ATTACH-0",
            "state": {
              "name": "UDC-ATTACH-0",
              "value": "GigabitEthernet0/3/0/5"
            }
          }
        }
      }
    ]
  }
]
```

OTDR gNOI protocols

An OTDR gNOI protocol is a network management protocol that

- enables remote initiation and monitoring of Optical Time Domain Reflectometer (OTDR) scans,

- reports scan results and manages error handling during a scan, and

- provides standardized messaging between optical network devices and management systems.

Table 6: Feature History

Feature Name	Release Information	Feature Description
gNOI otdr.proto enhancements	Cisco IOS XR Release 25.4.1	The gNOI otdr.proto has these enhancements: • Displays total measured loss and total measured length in OTDR results, in addition to existing measurements. • Allows assignment of unique names to SOR files for easier identification. • Organizes SOR files from auto and manual OTDR scans into separate folders to distinguish between file types. • Provides an option to disable Auto Negotiation, which is set to false by default, directly from the gNOI proto.

In Release 25.1.1, OTDR gNOI supports only manual initiation of OTDR scans.

For further details on the protocol definition, refer to the gnoi otdr proto definition..

These enhancements aim to improve the functionality and usability of the gNOI otdr.proto in Release 25.4.1.

- Total measured loss and total measured length are provided alongside existing measurements, enhancing the data available for analysis.

- Unique names are assigned to SOR files based on user-assigned names. This approach aids in file identification and retrieval and makes it easier to manage and locate specific files.

- Manual and auto SOR files are organized into separate folders. This organization facilitates easier access and management of these files.

- The gNOI proto includes an option to disable Auto Negotiation, which is set to false by default.

The OTDR label must adhere to these limitations: Only dot, hyphen, and underscore characters are permitted. The maximum file name length is 255 characters, and the maximum label length is 55 characters.

OTDR proto fields and corresponding status mappings

This table lists the responses received for the OTDR proto and the corresponding OTDR status as displayed in the CLI and Cisco-IOS-XR-controller-ots-oper.yang model:

OTDR proto fields	Corresponding OTDR status of OTDR in CLI and native yang model
Error codes corresponding to OTDR initiation	

OTDR proto fields	Corresponding OTDR status of OTDR in CLI and native yang model
InitiateError_HARDWARE_FAILURE	OTDR_SCAN_STATUS_COMM_FAILED
	OTDR_SCAN_STATUS_ERROR
InitiateError_ALREADY_IN_PROGRESS	OPTICS_CERR_OTDR_SCAN_ALREADY_IN_PROGRESS
InitiateError_UNSPECIFIED	OPTICS_CERR_OTDR_SCAN_NOT_SUPPORTED
	OPTICS_CERR_OTDR_MODULE_NOT_DISCOVERED_OR_INVAL_ERRORS
	OPTICS_CERR_OTDR_PLUGGABLE_NOT_PRESENT
	OPTICS_CERR_OTDR_PATCH_CONNECTION_MISSING
	OPTICS_CERR_OTDR_LOCKED_BY_ANOTHER_ENTITY
	OTDR_SCAN_STATUS_STOPPED
	OTDR_SCAN_STATUS_ERROR
	OTDR_SCAN_STATUS_TIMEOUT
	OTDR_SCAN_STATUS_OTDR_LOCAL_RES_NOT_AVAILABLE
	OTDR_SCAN_STATUS_SPAN_RES_FAILED
	OTDR_SCAN_STATUS_SCAN_NOT_ALLOWED
	OTDR_SCAN_STATUS_SCAN_UNKNOWN
Status corresponding to OTDR progression	
InitiateProgress_PENDING	OTDR_SCAN_STATUS_WAITING_SPAN_RESERVATION
InitiateProgress_RUNNING	OTDR_SCAN_STATUS_MEASURING
	OTDR_SCAN_STATUS_DATA_PROCESSING
InitiateProgress_COMPLETE	OTDR_SCAN_STATUS_DATA_READY
OTDR measurements	
total_loss_db	Total Measured Loss
total_length_m	Total Measured Length
optical_return_loss_db	optical_return_loss
local_path	Sor file
discovered_fiber_type	not supported
average_loss_db_km	not supported
Events	
distance_m	location

OTDR proto fields	Corresponding OTDR status of OTDR in CLI and native yang model
loss_db	In case of non-reflective event, loss_db is equivalent to magnitude
Reflection_db	In case reflective event, reflection_db is equivalent to magnitude

Sample output of gNOI OTDR clients

This section provides various sample outputs and error messages generated by gNOI OTDR client scan operations.

The gNOI OTDR scan was run with the default disable_auto_negotiation set to false and the label configured.

```
/auto/mgbl/utils/OTDR/otdr-client -ip 10.58.230.221 -port 57400 -username ncs1014 -password
 lablab -component_path "openconfig:/components/component[name=Ots0/3/0/0-Tx]"  -label
"test1234._-"  -disable_auto_negotiation=false

2025/09/16 10:41:01 Initiating OTDR Scan Request:

02:40s - OTDR COMPLETE   [################################################]


2025/09/16 10:43:42 OTDR Trace Results:

Local Path: /harddisk:/otdr/test1234._-_kepler-230-221_OTDR_Ots0_3_0_0_TX_20250916-050400.sor

Total Loss (dB):              6.58
Total Length (m):             21190.8203
Optical Return Loss (dB):     28.00
Average Fiber Loss (dB/km):   0.00
Discovered Fiber Type:        FTP_UNKNOWN

Events:
Event#          Distance(m)     Loss(dB)        Reflection(dB)
1                  11.02           0.00             -30.61
2                  11.02           2.72              0.00
3               21190.82           0.00             -32.13
4               21190.82          10.00              0.00
```

The gNOI OTDR scan was run with disable_auto_negotiation set to true and the label configured.

```
gNOI OTDR Scan run with  disabe_auto_negotiation as true and Label set:

bgl-ads-2160:~ > /auto/mgbl/utils/OTDR/otdr-client -ip 10.58.230.221 -port 57400 -username
 ncs1014 -password lablab -component_path
"openconfig:/components/component[name=Ots0/3/0/0-Tx]"  -label "test1234._-"
-disable_auto_negotiation=true
2025/09/16 11:00:04 Initiating OTDR Scan Request:

02:40s - OTDR COMPLETE   [################################################]


2025/09/16 11:02:45 OTDR Trace Results:

Local Path: /harddisk:/otdr/test1234._-_kepler-230-221_OTDR_Ots0_3_0_0_TX_20250916-052302.sor

Total Loss (dB):              6.68
```

```
Total Length (m):            21203.9395
Optical Return Loss (dB):    30.00
Average Fiber Loss (dB/km):  0.00
Discovered Fiber Type:       FTP_UNKNOWN

Events:
Event#        Distance(m)    Loss(dB)       Reflection(dB)
1                10.69           0.00            -32.31
2                10.69           2.80             0.00
3             21203.94           0.00            -31.96
4             21203.94          10.00             0.00
```

The following error message appears when an OC OTDR scan is run while an FE side OTDR scan is already in progress in the same direction.

```
bgl-ads-2160:~ > /auto/mgbl/utils/OTDR/otdr-client -ip 10.58.230.221 -port 57400 -username
 ncs1014 -password lablab -component_path
"openconfig:/components/component[name=Ots0/3/0/0-Tx]"  -label "test1234._-"
-disable_auto_negotiation=false

2025/09/16 10:52:07 Initiating OTDR Scan Request:

00:00s - OTDR ERRORED   [                                                  ]


2025/09/16 10:52:08 Error: UNSPECIFIED : 'optics' detected the 'warning' condition 'OTDR
Scan cannot be started as it is locked by Another Entity/Application.'
bgl-ads-2160:~ >
```