



## Enhancements to Data Models

This section provides an overview of the enhancements made to data models.

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## OpenConfig Data Model Enhancements

*Table 1: Feature History Table*

Feature Name	Release Information	Description
Revised OpenConfig MPLS Model to Version 3.0.1 for Streaming Telemetry	Release 7.3.3	<p>The OpenConfig MPLS data model provides data definitions for Multiprotocol Label Switching (MPLS) configuration and associated signaling and traffic engineering protocols. In this release, the following data models are revised for streaming telemetry from OpenConfig version 2.3.0 to version 3.0.1:</p> <ul style="list-style-type: none"><li>• openconfig-mpls</li><li>• openconfig-mpls-te</li><li>• openconfig-mpls-rsvp</li><li>• openconfig-mpls-igp</li><li>• openconfig-mpls-types</li><li>• openconfig-mpls-sr</li></ul> <p>You can access this data model from the <a href="#">Github</a> repository.</p>

# Install Label in oc-platform Data Model

Table 2: Feature History Table

Feature Name	Release Information	Description
Enhancements to openconfig-platform YANG Data Model	Release 7.3.2	<p>The openconfig-platform YANG data model provides a structure for querying hardware and software router components via the NETCONF protocol. This release delivers an enhanced openconfig-platform YANG data model to provide information about:</p> <ul style="list-style-type: none"> <li>• software version</li> <li>• golden ISO (GISO) label</li> <li>• committed IOS XR packages</li> </ul> <p>You can access this data model from the <a href="#">Github</a> repository.</p>

The openconfig-platform (oc-platform.yang) data model is enhanced to provide the following data:

- IOS XR software version (optionally with GISO label)
- Type, description, operational status of the component. For example, a CPU component reports its utilization, temperature or other physical properties.
- List of the committed IOS XR packages

To retrieve oc-platform information from a router via NETCONF, ensure you configured the router with the SH server and management interface:

```
Router#show run
Building configuration...
!! IOS XR Configuration version = 7.3.2
!! Last configuration change at Tue Sep  7 16:18:14 2016 by USER1
!
.....
.....
netconf-yang agent ssh
ssh server netconf vrf default
interface MgmtEth 0/RP0/CPU0/0
  no shut
  ipv4 address dhcp
```

The following example shows the enhanced `OPERATING_SYSTEM` node component (line card or route processor) of the oc-platform data model:

```
<component>
<name>IOSXR-NODE 0/RP0/CPU0</name>
<config>
<name>0/RP0/CPU0</name>
```

```

</config>
<state>
<name>0/RP0/CPU0</name>
<type xmlns:idx="http://openconfig.net/yang/platform-types">idx:OPERATING_SYSTEM</type>
<location>0/RP0/CPU0</location>
<description>IOS XR Operating System</description>
<software-version>7.3.2</software-version> -----> Label Info
<removable>true</removable>
<oper-status xmlns:idx="http://openconfig.net/yang/platform-types">idx:ACTIVE</oper-status>
</state>
<subcomponents>
  <subcomponent>
    <name><platform>-af-ea-7.3.2v1.0.0.1</name>
    <config>
      <name><platform>-af-ea-7.3.2v1.0.0.1</name>
    </config>
    <state>
      <name><platform>-af-ea-7.3.2v1.0.0.1</name>
    </state>
  </subcomponent>
  ...

```

The following example shows the enhanced `OPERATING_SYSTEM_UPDATE` package component (RPMs) of the oc-platform data model:

```

<component>
<name>IOSXR-PKG/1 <platform>-isis-2.1.0.0-r732</name>
<config>
<name><platform>-isis-2.1.0.0-r732</name>
</config>
<state>
<name><platform>-isis-2.1.0.0-r732</name>
<type xmlns:idx="http://openconfig.net/yang/platform-types">idx:OPERATING_SYSTEM_UPDATE</type>
<description>IOS XR Operating System Update</description>
<software-version>7.3.2</software-version>-----> Label Info
<removable>true</removable>
<oper-status xmlns:idx="http://openconfig.net/yang/platform-types">idx:ACTIVE</oper-status>
</state>
</component>

```

### Associated Commands

- **show install committed**—Shows the committed IOS XR packages.
- **show install committed summary**—Shows a summary of the committed packages along with the committed IOS XR version that is displayed as a label.

# OpenConfig YANG Model:SR-TE Policies

*Table 3: Feature History Table*

Feature Name	Release Information	Description
OpenConfig YANG Model:SR-TE Policies	Release 7.3.4	<p>This release supports the OpenConfig (OC) Segment Routing-Traffic Engineering (SR-TE) YANG data model that provides data definitions for SR-TE policy configuration and associated signaling and traffic engineering protocols. Using the model, you can stream a collection of SR-TE operational statistics, such as color, endpoint, and state.</p> <p>You can access the OC data model from the <a href="#">Github</a> repository.</p>

The OC SR-TE policies YANG Data Model supports Version 0.22. Subscribe to the following sensor path to send a pull request to the YANG leaf, list, or container:

```
openconfig-network-instance:network-instances/network-instance/segment-routing/te-policies
```

The response from the router is a collection of SR-TE operational statistics, such as color, endpoint, and state.

## Limitations

- Segment-list ID
  - All locally-configured segment-lists have a unique segment-list ID except for the BGP TE controller. Instead, the BGP TE controller uses the index of the segment-list as the segment-list ID. This ID depends on the local position of the segment-list and can change over time. Therefore for BGP TE controller, you must stream the entire table of the segment-list to ensure that the segment-list ID is always up-to-date.
- Next-hop index
  - The Next-hop container is imported from the `openconfig-aft-common.yang` module where the next-hop index is defined as Uint64. However, the AFT OC in the FIB uses a positional value of the index and does not identify the next-hop entry separately. Similarly, the next-hop container for OC-SRTE ais also implemented as a positional value of the entry in the list. Ensure that you stream the entire table of the next-hop to get a updated index along with the next-hop entry.

# Aggregate Prefix SID Counters for OpenConfig SR YANG Module

Table 4: Feature History Table

Feature Name	Release Information	Description
Aggregate Prefix SID Counters for OpenConfig SR YANG Module	Release 7.3.4	<p>The following components are now available in the OpenConfig (OC) Segment-Routing (SR) YANG model:</p> <ul style="list-style-type: none"> <li>• The <b>aggregate-sid-counters</b> container in the <b>sr-mpls-top</b> group to aggregate the prefix segment identifier (SID) counters across the router interfaces.</li> <li>• The <b>aggregate-sid-counter</b> and the <b>mpls-label key</b> to aggregate counters across all the router interfaces corresponding to traffic forwarded with a particular prefix-SID.</li> </ul> <p>You can access the OC data model from the <a href="#">Github</a> repository.</p>

The OpenConfig SR YANG model supports Version 0.3. Subscribe to the following sensor path:

`openconfig-mpls/mpls/signaling-protocols/segment-routing/aggregate-sid-counters/aggregate-sid-counter/mpls-label/state`

When a receiver subscribes to the sensor path, the router periodically streams the statistics to telemetry for each SR-label. The default collection interval is 30 seconds.

