



OcNOS®
Open Compute
Network Operating System
Version 6.4.2

OpenConfig Command Reference
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Preface

This guide contains OpenConfig commands for OcNOS.

Audience

This guide is intended for network administrators and other engineering professionals.

Conventions

[Table 3.1](#) shows the conventions used in this guide.

Table 3.1: Conventions

Convention	Description
<i>Italics</i>	Emphasized terms; titles of books
Note:	Special instructions, suggestions, or warnings
<code>monospaced type</code>	Code elements such as commands, functions, parameters, files, and directories

Support

For support-related questions, contact support@ipinfusion.com.

Comments

If you have comments, or need to report a problem with the content, contact techpubs@ipinfusion.com.

Introduction

Overview

OpenConfig Translation feature designed to enable NETCONF clients to interact with OcNOS (a network operating system) using standardized YANG models, particularly OpenConfig. This feature involves translating data between OpenConfig and OcNOS data models, primarily for `edit-config`, `get-config`, `get`, and `notification` operations. A Translation Framework has been developed to facilitate these translations.

Feature Characteristics

It is primarily designed to work with OpenConfig 2.0.0 and uses the latest models available at the time of implementation.

The feature targets network operators who wish to manage their multi-vendor network using a standardized interface, reducing operational costs and complexity.

Benefits

The OpenConfig Translation benefits are listed below:

Standardization: Allows network operators to manage OcNOS products using standardized YANG models, promoting consistency and simplifying network management.

Multi-Vendor Support: Facilitates the management of multi-vendor networks through a unified interface.

Flexibility: Supports the translation of both OpenConfig and OcNOS data models, offering flexibility to network administrators.

Error Reporting: Enables error reporting using OpenConfig paths, enhancing troubleshooting and diagnostics.

Prerequisites

Here are the prerequisites for OpenConfig Translation:

- The feature depends on using OpenConfig or OcNOS data models in the NETCONF client.
- The OcNOS NetConf server needs to be restarted and configured with translation enabled.
- The translation is based on OpenConfig release 2.0.0.

Troubleshooting

- Error reporting is done using OpenConfig paths; unknown or unsupported leafs are ignored.
- The translation may lead to the rejection of configuration if unsupported parts are encountered.
- Ensure that the correct data models are used, and translations are properly configured.

Limitations

- Certain operations such as "replace" and "create" might not be supported on all nodes.
- Not all network configurations may be visible through NetConf if they are not supported by the translation.
- Support for RPCs and notifications in OpenConfig models are not supported.

OpenConfig Configurations

This document describes the OpenConfig configurations and state attributes supported by OcNOS SP and RON versions 4.2, 5.0, 5.1, 6.1 and 6.2, as well the limitations that apply to some of the paths.

Network-instance Object Values for “type” Attribute

Several protocols are configured inside the Network-instance object, and what distinguishes them is the value of the `/network-instances/network-instance/config/type` attribute. Additionally, for some protocols, it is necessary to configure the leaf `/network-instances/network-instance/encapsulation/config/encapsulation-type`.

Below, there is a table listing all the values used for the current translated protocols.

OcNOS Network Instance (NI) type xpath: <code>/network-instances/network-instance/instance-type</code>	Open Config NI type xpath: <code>/network-instances/network-instance/config/type</code>
vrf	L3VRF DEFAULT_INSTANCE
mac-vrf	L2L3 + leaf <code>/network-instances/network-instance/encapsulation/config/encapsulation-type</code> as "MPLS"
l2ni (bridge)	L2L3
vpls	L2VSI + leaf <code>/network-instances/network-instance/encapsulation/config/encapsulation-type</code> as "MPLS"
vpws	L2P2P + leaf <code>/network-instances/network-instance/encapsulation/config/encapsulation-type</code> as "MPLS"
evpn	L2L3 + leaf <code>/network-instances/network-instance/encapsulation/config/encapsulation-type</code> as "VXLAN"
cross-connect	L2P2P
bridge-domain	L2VSI

Enable OpenConfig Translation

The OpenConfig feature is disabled by default and must be enable using the following CLI command in the OcNOS shell:

```
OcNOS>enable
OcNOS#configure terminal
OcNOS(config)#netconf translation openconfig
OcNOS(config)#commit
OcNOS#show running-config netconf translation
!
netconf translation openconfig
!
```

Or the equivalent NetConf:

```
<netconf-server xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-management-server">
  <netconf-translation>
    <config>
      <translation-mode>openconfig</translation-mode>
    </config>
  </netconf-translation>
</netconf-server>
```

The translation is disabled using the following CLI command in the OcNOS shell:

```
OcNOS>enable
OcNOS#configure terminal
OcNOS(config)#no netconf translation
OcNOS(config)#commit
OcNOS#show running-config netconf translation
OcNOS#
```

To get the OpenConfig data, the corresponding namespace must be given:

```
yangcli ocnos@localhost> sget-config /netconf-server source=running
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
  <data>
    <netconf-server xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-management-server">
      <netconf-translation>
        <config>
          <translation-mode>openconfig</translation-mode>
        </config>
        <state>
          <translation-mode>openconfig</translation-mode>
        </state>
      </netconf-translation>
    </netconf-server>
  </data>
</rpc-reply>
```

OpenConfig Optical Transport Networks

Overview

This document describes the OpenConfig configurations for Optical Transport Networks and state attributes supported by OcNOS OTN versions 5.0 and 5.1 and the limitations which apply for some of the paths.

Enable OpenConfig Translation

The OpenConfig feature is disabled by default and must be enabled using the following CLI command on the OcNOS shell.

```
OcNOS#cml netconf translation (disable|openconfig)
```

Or the equivalent NETCONF RPC:

```
<netconf-translation xmlns="http://ipinfusion.com/ns/zebmcli">
  <status>disable|openconfig</status>
</netconf-translation>
```

Once enabled, the user is still able to get data in OcNOS format, by specifying the required namespace:

```
yangcli ocnos@localhost> sget-config /ipi-interface:interfaces source=running
```

This will generate the following RPC:

```
<get-config xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
  <source>
    <running/>
  </source>
  <filter type="subtree">
    <interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface"/>
  </filter>
</get-config>
```

To get OpenConfig data, the corresponding namespace must be given:

```
yangcli ocnos@localhost> sget-config /oc-if:interfaces source=running
```

```
<get-config xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
  <source>
    <running/>
  </source>
  <filter type="subtree">
    <interfaces xmlns="http://openconfig.net/yang/interfaces"/>
  </filter>
</get-config>
```

If no filter is provided and OpenConfig is enabled, all supported OpenConfig models will be retrieved in OpenConfig format. The OcNOS models for which no translation is supported will be retrieved in OcNOS format.

Enable Coherent modules

For all other configurations, enabling module previously is mandatory.

Configuration

Enable coherent modules (slot 6 and slot 3).

OpenConfig Netconf Payload:

```
<components xmlns="http://openconfig.net/yang/platform">
  <component>
    <name>SLOT-6</name>
    <linecard xmlns="http://openconfig.net/yang/platform/linecard">
      <config>
        <power-admin-state>oc-platform-types:POWER_ENABLED</power-admin-state>
      </config>
    </linecard>
  </component>
  <component>
    <name>SLOT-3</name>
    <linecard xmlns="http://openconfig.net/yang/platform/linecard">
      <config>
        <power-admin-state>oc-platform-types:POWER_ENABLED</power-admin-state>
      </config>
    </linecard>
  </component>
</components>
```

OcNos CLI Command

```
OcNOS#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
OcNOS (config)#coherent-module 6
OcNOS (config-module)#enable
OcNOS (config-module)#commit
```

OcNOS Netconf Payload

```
<terminal-device xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform-
terminal-device">
  <coherent-module>
    <slot-index>3</slot-index>
    <config>
      <slot-index>3</slot-index>
      <service-enable/>
    </config>
  </coherent-module>
  <coherent-module>
    <slot-index>6</slot-index>
    <config>
      <slot-index>6</slot-index>
      <service-enable/>
    </config>
  </coherent-module>
</terminal-device>
```

Validation

Get OpenConfig Payload

```
<filter >
```

```

<components xmlns="http://openconfig.net/yang/platform">
  <component>
    <name>SLOT-6</name>
    <linecard xmlns="http://openconfig.net/yang/platform/linecard">
      <state>
      </state>
    </linecard>
  </component>
</components>
</filter>

```

Get OpenConfig Return

```

<components xmlns="http://openconfig.net/yang/platform">
  <component>
    <name>SLOT-6</name>
    <linecard xmlns="http://openconfig.net/yang/platform/linecard">
      <state>
        <power-admin-state>POWER_ENABLED</power-admin-state>
        <slot-id>6</slot-id>
      </state>
    </linecard>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-types">
      <name>SLOT-6</name>
      <equipment-failure xmlns="http://openconfig.net/yang/alarms">false</equipment-
failure>
      <temperature>
        <alarm-status>false</alarm-status>
      </temperature>
      <id>SLOT-6</id>
      <parent>CHASSIS</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://www.ipinfusion.com/
yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-types:ACTIVE</oper-status>
      <removable>true</removable>
      <part-no>TRB200DAA-01</part-no>
      <serial-no>VCD19330008</serial-no>
      <software-version>NA</software-version>
      <firmware-version>1.5</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>LUMENTUM</mfg-name>
      <location>6</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://www.ipinfusion.com/yang/
ocnos/ipi-oc-platform-types-deviations">oc-platform-types:LINECARD</type>
    </state>
    <subcomponents xmlns="http://openconfig.net/yang/platform">
      <subcomponent>
        <name>PORT-coherent-6</name>
        <state>
          <name>PORT-coherent-6</name>

```

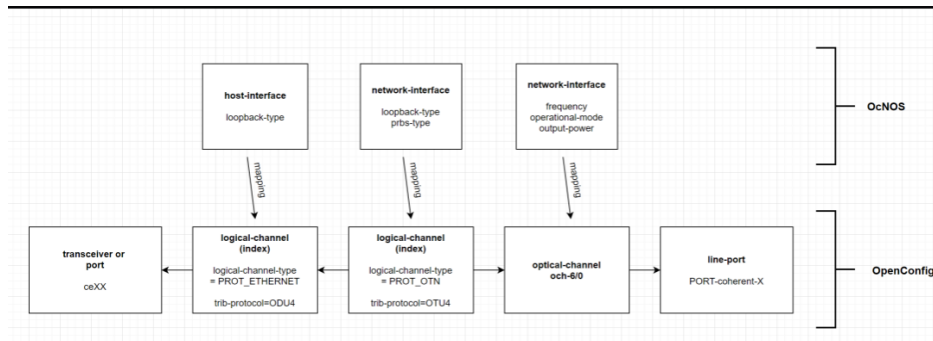
```

    </state>
  </subcomponent>
  <subcomponent>
    <name>PORT-ce27</name>
    <state>
      <name>PORT-ce27</name>
    </state>
  </subcomponent>
  <subcomponent>
    <name>PORT-ce28</name>
    <state>
      <name>PORT-ce28</name>
    </state>
  </subcomponent>
</subcomponents>
</component>
</components>

```

Host Interface, Network Interface, and Logical Channels

Loopback-type and prbs-type of Host Interface and Network interface were translated to logical channels. The picture below shows the correlation.



Optical-channel

- frequency
- operational mode
- output-power

The network interface was translated to an Optical channel and has the same value as a coherent module slot. (i.e. slot 6/ network interface 0 → och-6/0)

Logical-Channel

- loopback-type
- prbs-type

Were translated to logical channels. The index is represented by a 8 digits hexa number, where:

- 2 digits for slot
- 2 digits for network interface
- 2 digits for host interface

To avoid ambiguity, 1 is added to the desired interface.

For example, slot 6 host-interface 1 is represented by 0x060002.

In OpenConfig, this number is translated to decimal 393218.

Slot 4, network-interface 0 is represented by 0x040100.

In OpenConfig, this number is translated to decimal 262400.

Optical-channel and Logical-channel behavior on OcNOS

Both optical-channel and logical-channel are mapped to `/terminal-device/coherent-module/network-interfaces/network-interface` on OcNOS, so some specific information about the configuration and unconfiguration are necessary.

The mapping is:

OcNOS XPATH	OpenConfig XPATH
<code>/terminal-device/coherent-module/network-interfaces/interface/config/frequency</code>	<code>/components/component[name=OCH-X/Y]/optical-channel/config/frequency</code>
<code>/terminal-device/coherent-module/network-interfaces/interface/config/operational-mode</code>	<code>/components/component[name=OCH-X/Y]/optical-channel/config/operational-mode</code>
<code>/terminal-device/coherent-module/network-interfaces/interface/config/target-output-power</code>	<code>/components/component[name=OCH-X/Y]/optical-channel/config/target-output-power</code>
<code>/terminal-device/coherent-module/network-interfaces/interface/config/soft-tx-disable</code>	<code>/terminal-device/logical-channels/channel[index]/config/admin-state</code>
<code>/terminal-device/coherent-module/network-interfaces/interface/config/loopback-type</code>	<code>/terminal-device/logical-channels/channel[index]/config/loopback-mode</code>

When user creates optical-channel or logical-channel for the first time, it already creates the structure of `/terminal-device/coherent-module/network-interfaces/interface/`.

When user wants to delete the entire component OCH or logical-channels/channel, in OcNOS it will try to delete the `/terminal-device/coherent-module/network-interfaces/interface/`. So it is important **to delete only one of them**. The recommended is to delete network-interfaces through component OCH.

Examples:

```
<component operation="delete">
<name>OCH-1/0</name>
<channel operation="delete">
<index>393218</index>
```

In OcNOS there is a restriction that to delete the `network-interfaces/interface`, it must be empty, without any other configuration under it. So, if the user wants to delete on that level, the other configurations must be deleted one by one.

Loopback-type on Host Interface

Use to configure loopback type on the host interface. Two values are possible: FACILITY (shallow in Netconf mode) and TERMINAL (deep in Netconf mode).

Configuration

Configure slot 6, Host-interface 1 loopback -type to shallow.

OpenConfig Netconf Payload

```
<terminal-device xmlns="http://openconfig.net/yang/terminal-device">
  <logical-channels>
    <channel>
      <index>393218</index>
      <config>
        <index>393218</index>
        <loopback-mode>oc-opt-types:FACILITY</loopback-mode>
      </config>
    </channel>
  </logical-channels>
</terminal-device>
```

OcNos CLI Command

```
OcNOS#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
OcNOS (config)#coherent-module 6
OcNOS (config-module)#host-interface 1
OcNOS (config-hostif)#loopback-type shallow
OcNOS (config-hostif)#commit
OcNOS (config-hostif)#
```

OcNOS Netconf Payload

```
<terminal-device xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform-
terminal-device">
  <coherent-module>
    <slot-index>6</slot-index>
    <host-interfaces>
      <interface>
        <host-index>1</host-index>
        <config>
          <host-index>1</host-index>
          <loopback-type>shallow</loopback-type>
        </config>
      </interface>
    </host-interfaces>
  </coherent-module>
</terminal-device>
```

Validation with Netconf get

Get Openconfig Payload

```
<filter type="subtree">
  <terminal-device xmlns="http://openconfig.net/yang/terminal-device">
    <logical-channels>
      <channel>
        <index>393218</index>
        <state/>
      </channel>
    </logical-channels>
  </terminal-device>
</filter>
```



```

    </terminal-device>
  </filter>

```

Get OpenConfig Return

```

<terminal-device xmlns="http://openconfig.net/yang/terminal-device">
  <logical-channels>
    <channel xmlns:oc-opt-types="http://openconfig.net/yang/transport-types">
      <index>393218</index>
      <state>
        <index>393218</index>
        <logical-channel-type>oc-opt-types:PROT_ETHERNET</logical-channel-
type>
        <trib-protocol>oc-opt-types:PROT_ODU4</trib-protocol>
        <description>preset</description>
        <loopback-mode>FACILITY</loopback-mode>
      </state>
      <ethernet>
        <state>
          <out-block-errors>0</out-block-errors>
          <out-pcs-bip-errors>0</out-pcs-bip-errors>
          <in-block-errors>0</in-block-errors>
          <in-pcs-bip-errors>2</in-pcs-bip-errors>
        </state>
      </ethernet>
    </channel>
  </logical-channels>
</terminal-device>

```

Unconfiguration

Use the operation delete to remove this configuration

```

<terminal-device xmlns="http://openconfig.net/yang/terminal-device">
  <logical-channels>
    <channel>
      <index>393218</index>
      <config>
        <index>393218</index>
        <loopback-mode operation='delete' />
      </config>
    </channel>
  </logical-channels>
</terminal-device>

```

Loopback-type on Network Interface

Use to configure loopback type on the network interface. Two values are possible: FACILITY (shallow in Netconf mode) and TERMINAL (deep in Netconf mode).

Configuration

Configuration of deep mode at slot 6, network interface 0.

Configure Loopback-type on Network Interface

Configure slot 6, Network-interface 0 loopback -type to deep.

OpenConfig Netconf Payload

```
<terminal-device xmlns="http://openconfig.net/yang/terminal-device">
  <logical-channels>
    <channel>
      <index>393472</index>
      <config>
        <index>393472</index>
        <loopback-mode>oc-opt-types:TERMINAL</loopback-mode>
      </config>
    </channel>
  </logical-channels>
</terminal-device>
```

OcNos CLI Command

```
OcNOS#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
OcNOS (config)#coherent-module 6
OcNOS (config-module)#network-interface 0
OcNOS (config-netif)#loopback-type deep
OcNOS (config-netif)#commit
```

OcNOS Netconf Payload

```
<terminal-device xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform-
terminal-device">
  <coherent-module>
    <slot-index>6</slot-index>
    <network-interfaces>
      <interface>
        <net-index>0</net-index>
        <config>
          <net-index>0</net-index>
          <loopback-type>deep</loopback-type>
        </config>
      </interface>
    </network-interfaces>
  </coherent-module>
</terminal-device>
```

Validation with Netconf get

Payload Openconfig Get

```
<filter type="subtree">
  <terminal-device xmlns="http://openconfig.net/yang/terminal-device">
    <logical-channels>
      <channel>
        <index>393472</index>
        <state/>
      </channel>
    </logical-channels>
  </terminal-device>
</filter>
```

Get OpenConfig Return

```
<terminal-device xmlns="http://openconfig.net/yang/terminal-device">
  <logical-channels>
    <channel xmlns:oc-opt-types="http://openconfig.net/yang/transport-types">
      <index>393472</index>
      <state>
        <index>393472</index>
        <admin-state>ENABLED</admin-state>
        <logical-channel-type>oc-opt-types:PROT_OTN</logical-channel-type>
        <trib-protocol>oc-opt-types:PROT_OTU4</trib-protocol>
        <description>preset</description>
        <loopback-mode>TERMINAL</loopback-mode>
      </state>
      <logical-channel-assignments>
        <assignment>
          <index>1</index>
          <state>
            <index>1</index>
            <assignment-type>OPTICAL_CHANNEL</assignment-type>
            <optical-channel>OCH-6/0</optical-channel>
          </state>
        </assignment>
      </logical-channel-assignments>
    </channel>
  </logical-channels>
</terminal-device>
```

Unconfiguration

Use the operation delete to remove this configuration

```
<terminal-device xmlns="http://openconfig.net/yang/terminal-device">
  <logical-channels>
    <channel>
      <index>393472</index>
      <config>
        <index>393472</index>
        <loopback-mode operation='delete' />
      </config>
    </channel>
  </logical-channels>
</terminal-device>
```

Disable Coherent-Modules

Configuration

Disable coherent module 6.

OpenConfig Netconf Payload

```
<components xmlns="http://openconfig.net/yang/platform">
  <component>
    <name>SLOT-6</name>
    <linecard xmlns="http://openconfig.net/yang/platform/linecard">
      <config>
        <power-admin-state>oc-platform-types:POWER_DISABLED</power-admin-state>
      </config>
    </linecard>
  </component>
</components>
```

OcNos CLI Command

```
OcNOS#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
OcNOS (config)#coherent-module 6
OcNOS (config-module)#disable
OcNOS (config-module)#commit
```

OcNOS Netconf Payload

```
<terminal-device xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform-terminal-device">
  <coherent-module>
    <slot-index>6</slot-index>
    <config>
      <slot-index>6</slot-index>
      <service-enable operation='delete'/>
    </config>
  </coherent-module>
</terminal-device>
```

Validation with Netconf get

Payload Openconfig Get

```
<filter >
  <components xmlns="http://openconfig.net/yang/platform">
    <component>
      <name>SLOT-6</name>
      <linecard xmlns="http://openconfig.net/yang/platform/linecard">
        <state>
        </state>
      </linecard>
    </component>
  </components>
</filter>
```

Get OpenConfig Return

```

<components xmlns="http://openconfig.net/yang/platform">
  <component>
    <name>SLOT-6</name>
    <linecard xmlns="http://openconfig.net/yang/platform/linecard">
      <state>
        <power-admin-state>POWER_DISABLED</power-admin-state>
        <slot-id>6</slot-id>
      </state>
    </linecard>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <name>SLOT-6</name>
      <equipment-failure xmlns="http://openconfig.net/yang/alarms">false</
equipment-failure>
      <temperature>
        <alarm-status>false</alarm-status>
      </temperature>
      <id>SLOT-6</id>
      <parent>CHASSIS</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:INACTIVE</oper-status>
      <removable>true</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>6</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://www.ipinfusion.com/
yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-types:LINECARD</type>
    </state>
    <subcomponents xmlns="http://openconfig.net/yang/platform">
      <subcomponent>
        <name>PORT-coherent-6</name>
        <state>
          <name>PORT-coherent-6</name>
        </state>
      </subcomponent>
      <subcomponent>
        <name>PORT-ce27</name>
        <state>
          <name>PORT-ce27</name>
        </state>
      </subcomponent>
      <subcomponent>
        <name>PORT-ce28</name>
        <state>
          <name>PORT-ce28</name>
        </state>
      </subcomponent>
    </subcomponents>
  </component>
</components>

```

Operational-Mode

Use this command to select the operational modes, each mode configures specific modulation-format, fec-mode, speed, grid-spacing.

Configuration

Configure operational-mode 6 at slot 6, interface 0.

OpenConfig Netconf Payload

```
<components xmlns="http://openconfig.net/yang/platform">
  <component>
    <name>OCH-6/0</name>
    <optical-channel xmlns="http://openconfig.net/yang/terminal-device">
      <config>
        <operational-mode>6</operational-mode>
      </config>
    </optical-channel>
  </component>
</components>
```

OcNOS CLI Command

```
OcNOS#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
OcNOS(config)#coherent-module 6
OcNOS(config-module)#network-interface 0
OcNOS(config-netif)#operational-mode 6
OcNOS(config-netif)#commit
OcNOS(config-netif)#
```

Netconf OcNOS Payload

```
<terminal-device xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform-
terminal-device">
  <coherent-module>
    <slot-index>6</slot-index>
    <network-interfaces>
      <interface>
        <net-index>0</net-index>
        <config>
          <net-index>0</net-index>
          <operational-mode>6</operational-mode>
        </config>
      </interface>
    </network-interfaces>
  </coherent-module>
</terminal-device>
```

Validation with Netconf get

Payload Openconfig Get

```
<filter type="subtree">
  <components xmlns="http://openconfig.net/yang/platform">
```

```

    <component>
      <name>OCH-6/0</name>
      <optical-channel xmlns="http://openconfig.net/yang/terminal-device">
        <state>
          <operational-mode/>
        </state>
      </optical-channel>
    </component>
  </components>
</filter>

```

Get OpenConfig Return

```

<components xmlns="http://openconfig.net/yang/platform">
  <component>
    <name>OCH-6/0</name>
    <optical-channel xmlns="http://openconfig.net/yang/terminal-device">
      <state>
        <operational-mode>6</operational-mode>
      </state>
    </optical-channel>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>OCH-6/0</id>
      <name>OCH-6/0</name>
      <parent>PORT-coherent-6</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:INACTIVE</oper-status>
      <removable>false</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>0</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://www.ipinfusion.com/
yang/ocnos/ipi-oc-platform-types-deviations">oc-opt-types:OPTICAL_CHANNEL</
type>
    </state>
  </component>
</components>

```

Unconfiguration

Use the operation delete to remove this configuration.

```

<components xmlns="http://openconfig.net/yang/platform">
  <component>
    <name>OCH-6/0</name>
    <optical-channel xmlns="http://openconfig.net/yang/terminal-device">
      <config>
        <operational-mode operation='delete' />
      </config>
    </optical-channel>
  </component>

```

```
</components>
```

Restriction

Acceptable values range 1-6.

Soft-tx-disable

This command is used to disable the transmission of data on a network interface.

Configuration

Disable transmission of slot 6, network interface 0.

OpenConfig Netconf Payload

```
<terminal-device xmlns="http://openconfig.net/yang/terminal-device">
  <logical-channels>
    <channel>
      <index>393472</index>
      <config>
        <index>393472</index>
        <admin-state>oc-opt-types:DISABLED</admin-state>
      </config>
    </channel>
  </logical-channels>
</terminal-device>
```

OcNos CLI Command

```
OcNOS#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
OcNOS(config)#coherent-module 6
OcNOS(config-module)#network-interface 0
OcNOS(config-netif)#soft-tx-disable
OcNOS(config-netif)#commit
OcNOS(config-netif)#
```

Netconf OcNOS Payload

```
<terminal-device xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform-
terminal-device">
  <coherent-module>
    <slot-index>6</slot-index>
    <network-interfaces>
      <interface>
        <net-index>0</net-index>
        <config>
          <net-index>0</net-index>
          <soft-tx-disable/>
        </config>
      </interface>
    </network-interfaces>
  </coherent-module>
</terminal-device>
```

Validation with Netconf get

Payload Openconfig Get

```
<filter type="subtree">
  <terminal-device xmlns="http://openconfig.net/yang/terminal-device">
    <logical-channels>
      <channel>
        <index>393472</index>
        <state>
          <admin-state/>
        </state>
      </channel>
    </logical-channels>
  </terminal-device>
</filter>
```

Get OpenConfig Return

```
<terminal-device xmlns="http://openconfig.net/yang/terminal-device">
  <logical-channels>
    <channel xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
      <index>393472</index>
      <state>
        <index>393472</index>
        <admin-state>DISABLED</admin-state>
        <logical-channel-type>oc-opt-types:PROT_OTN</logical-channel-type>
        <trib-protocol>oc-opt-types:PROT_OTU4</trib-protocol>
        <description>preset</description>
      </state>
      <logical-channel-assignments>
        <assignment>
          <index>1</index>
          <state>
            <index>1</index>
            <assignment-type>OPTICAL_CHANNEL</assignment-type>
            <optical-channel>OCH-6/0</optical-channel>
          </state>
        </assignment>
      </logical-channel-assignments>
    </channel>
  </logical-channels>
</terminal-device>
```

Unconfiguration

Use the operation delete to remove this configuration

```
<terminal-device xmlns="http://openconfig.net/yang/terminal-device">
  <logical-channels>
    <channel>
      <index>196864</index>
      <config>
        <index>196864</index>
        <admin-state operation='delete'>
      </config>
```

```

    </channel>
  </logical-channels>
</terminal-device>

```

tx-laser-freq

This command is used to set the laser frequency for a network interface in Hz, THz, GHz, and MHz.

Configuration

Configure the frequency 196100GHz at slot 6 network interface 0.

OpenConfig Netconf Payload

```

<components xmlns="http://openconfig.net/yang/platform">
  <component>
    <name>OCH-6/0</name>
    <optical-channel xmlns="http://openconfig.net/yang/terminal-device">
      <config>
        <frequency>196100000.000000</frequency>
      </config>
    </optical-channel>
  </component>
</components>

```

OcNos CLI Command

```

OcNOS#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
OcNOS (config)#coherent-module 6
OcNOS (config-module)#network-interface 0
OcNOS (config-netif)#tx-laser-freq 196100000000000Hz
OcNOS (config-netif)#commit

```

Netconf OcNOS Payload

```

<terminal-device xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform-
terminal-device">
  <coherent-module>
    <slot-index>6</slot-index>
    <network-interfaces>
      <interface>
        <net-index>0</net-index>
        <config>
          <net-index>0</net-index>
          <frequency>196100000.000000MHz</frequency>
        </config>
      </interface>
    </network-interfaces>
  </coherent-module>
</terminal-device>

```

Validation with Netconf get

Payload Openconfig Get

```
<filter type="subtree">
  <components xmlns="http://openconfig.net/yang/platform">
    <component>
      <name>OCH-6/0</name>
      <optical-channel xmlns="http://openconfig.net/yang/terminal-device">
        <state>
          <oper-status/>
        </state>
      </optical-channel>
    </component>
  </components>
</filter>
```

Get OpenConfig Return

```
<components xmlns="http://openconfig.net/yang/platform">
  <component>
    <name>OCH-6/0</name>
    <optical-channel xmlns="http://openconfig.net/yang/terminal-device">
      <state>
        <frequency xmlns:ipi-oc-terminal-device-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-terminal-device-deviations">191250000</
frequency>
        <line-port>PORT-coherent-6</line-port>
      </state>
    </optical-channel>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>OCH-6/0</id>
      <name>OCH-6/0</name>
      <parent>PORT-coherent-6</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:DISABLED</oper-status>
      <removable>false</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>0</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://www.ipinfusion.com/
yang/ocnos/ipi-oc-platform-types-deviations">oc-opt-types:OPTICAL_CHANNEL</
type>
    </state>
  </component>
  <component>
    <name>CFP-6</name>
    <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
      <physical-channels>
        <channel>
          <index>1</index>
```

```
<state>
  <index>1</index>
  <output-frequency xmlns:ipi-oc-platform-transceiver-
deviations="http://www.ipinfusion.com/yang/ocnos/ipi-oc-platform-transceiver-
deviations">191250000</output-frequency>
</state>
</channel>
</physical-channels>
</transceiver>
</component>
</components>
```

Unconfiguration

Operation delete is used to remove this configuration.

```
<components xmlns="http://openconfig.net/yang/platform">
  <component>
    <name>OCH-6/0</name>
    <optical-channel xmlns="http://openconfig.net/yang/terminal-device">
      <config>
        <frequency operation='delete' />
      </config>
    </optical-channel>
  </component>
</components>
```

Restriction

The range permitted is correlated to module brand.

tx-output-power

This command is used to set the output power of the network interface in dBm

Configuration

Configure tx-output-power to 1.0dBm at slot6, network-interface 0.

OpenConfig Netconf Payload

```
<components xmlns="http://openconfig.net/yang/platform">
  <component>
    <name>OCH-6/0</name>
    <optical-channel xmlns="http://openconfig.net/yang/terminal-device">
      <config>
        <target-output-power>1.0</target-output-power>
      </config>
    </optical-channel>
  </component>
</components>
```

OcNos CLI Command

```
OcNOS#conf t
```

```

Enter configuration commands, one per line.  End with CNTL/Z.
OcNOS(config)#coherent-module 6
OcNOS(config-module)#network-interface 0
OcNOS(config-netif)#tx-output-power 1.00
OcNOS(config-netif)#commit
OcNOS(config-netif)#

```

Netconf OcNOS Payload

```

<components xmlns="http://openconfig.net/yang/platform">
  <component>
    <name>OCH-6/0</name>
    <optical-channel xmlns="http://openconfig.net/yang/terminal-device">
      <config>
        <target-output-power>1.0</target-output-power>
      </config>
    </optical-channel>
  </component>
</components>

```

Validation with Netconf get

Payload Openconfig Get

```

<filter type="subtree">
  <components xmlns="http://openconfig.net/yang/platform">
    <component>
      <name>OCH-6/0</name>
      <optical-channel xmlns="http://openconfig.net/yang/terminal-device">
        <state>
          <target-output-power/>
        </state>
      </optical-channel>
    </component>
  </components>
</filter>

```

Get OpenConfig Return

```

<components xmlns="http://openconfig.net/yang/platform">
  <component>
    <name>OCH-6/0</name>
    <optical-channel xmlns="http://openconfig.net/yang/terminal-device">
      <state>
        <target-output-power>1.00</target-output-power>
      </state>
    </optical-channel>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>OCH-6/0</id>
      <name>OCH-6/0</name>
      <parent>PORT-coherent-6</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:ACTIVE</oper-status>
      <removable>false</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
    </state>
  </component>
</components>

```

```
<software-version>NA</software-version>
<firmware-version>NA</firmware-version>
<hardware-version>NA</hardware-version>
<description>NA</description>
<mfg-name>NA</mfg-name>
<location>0</location>
<type xmlns:ipi-oc-platform-types-deviations="http://www.ipinfusion.com/
yang/ocnos/ipi-oc-platform-types-deviations">oc-opt-types:OPTICAL_CHANNEL</
type>
  </state>
</component>
</components>
```

Unconfiguration

Operation delete is used to remove this configuration

```
<components xmlns="http://openconfig.net/yang/platform">
  <component>
    <name>OCH-6/0</name>
    <optical-channel xmlns="http://openconfig.net/yang/terminal-device">
      <config>
        <target-output-power operation='delete' />
      </config>
    </optical-channel>
  </component>
</components>
```

Interface Configuration OpenConfig Translation

Configure Interfaces

This XML configuration snippet is used to define and configure network interfaces.

Release

This configuration was introduced in OcNOS version 5.0.

OpenConfig NetConf Payload

Here is the sample OpenConfig NetConf Payload for Interface Configuration.

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe10</name>
    <config>
      <name>xe10</name>
      <enabled>true</enabled>
      <mtu>1450</mtu>
      <description>Test desc for the interface</description>
      <tpid xmlns="http://openconfig.net/yang/vlan" xmlns:oc-vlan-
types="http://openconfig.net/yang/vlan-types">oc-vlan-types:TPID_0X88A8</tpid>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </config>
    <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
      <config>
        <duplex-mode>FULL</duplex-mode>
        <auto-negotiate>false</auto-negotiate>
        <port-speed xmlns:oc-eth="http://openconfig.net/yang/interfaces/
ethernet">oc-eth:SPEED_1GB</port-speed>
      </config>
    </ethernet>
    <subinterfaces>
      <subinterface>
        <index>2</index>
        <config>
          <index>2</index>
          <description>Test subinterface double tagged</description>
          <enabled>true</enabled>
        </config>
        <ipv4 xmlns="http://openconfig.net/yang/interfaces/ip">
          <addresses>
            <address>
              <ip>30.1.1.1</ip>
              <config>
                <ip>30.1.1.1</ip>
                <prefix-length>24</prefix-length>
              </config>
            </address>
            <address>
```

```

        <ip>40.10.10.10</ip>
        <config>
            <ip>40.10.10.10</ip>
            <prefix-length>24</prefix-length>
        </config>
    </address>
</addresses>
</ipv4>
</subinterface>
</subinterfaces>
</interface>
</interfaces>

```

OcNOS CLI Command

The below CLI commands are used for Interface Configuration.

```

interface xe10
description "Test desc for the interface"
speed 1g
duplex full
mtu 1450
switchport dot1q ethertype 0x88A8
no shutdown

interface xe10.2
description "Test subinterface double tagged"
ip address 30.1.1.1/24
ip address 40.10.10.10/24 secondary
no shutdown
encapsulation dot1ad 10 inner-dot1q 200

```

OcNOS NetConf Payload

Here is the sample OcNOS NetConf Payload for Interface Configuration.

```

<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>xe10</name>
    <config>
      <name>xe10</name>
      <enabled>true</enabled>
      <mtu>1450</mtu>
      <description>Test desc for the interface</description>
    </config>
    <extended xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-extended">
      <config>
        <dot1q-ether-type>0x88A8</dot1q-ether-type>
      </config>
    </extended>
    <ethernet xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-ethernet">
      <config>
        <duplex-mode>full</duplex-mode>
        <port-speed>1g</port-speed>
      </config>
    </ethernet>
  </interface>
</interfaces>

```



```

    </ethernet>
  </interface>
  <interface>
    <name>xe10.2</name>
    <config>
      <name>xe10.2</name>
      <description>Test subinterface double tagged</description>
      <enabled>true</enabled>
    </config>
    <ipv4 xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-ip">
      <secondary-addresses>
        <ip-address>40.10.10.10/24</ip-address>
        <config>
          <ip-address>40.10.10.10/24</ip-address>
        </config>
      </secondary-addresses>
      <config>
        <primary-ip-addr>30.1.1.1/24</primary-ip-addr>
      </config>
    </ipv4>
  </interface>
</interfaces>

```

Validation with NetConf get

Here is a NetConf validation response for interface configuration, providing details about the current state of the specified interface.

```

<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe10</name>
    <config>
      <name>xe10</name>
      <mtu>1450</mtu>
      <tpid xmlns="http://openconfig.net/yang/vlan" xmlns:oc-vlan-
types="http://openconfig.net/yang/vlan-types">oc-vlan-types:TPID_0X8100</tpid>
      <description>Test desc for the interface</description>
      <type
type">ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </config>
    <state>
      <name>xe10</name>
      <mtu>1450</mtu>
      <tpid xmlns="http://openconfig.net/yang/vlan-types">TPID_0X8100</
tpid>
      <description>Test desc for the interface</description>
      <logical>false</logical>
      <last-change>0</last-change>
      <oper-status>DOWN</oper-status>
      <admin-status>UP</admin-status>
      <ifindex>10010</ifindex>
      <counters>
        <last-clear>0</last-clear>
        <out-errors>0</out-errors>
        <out-discards>0</out-discards>
        <out-multicast-pkts>0</out-multicast-pkts>

```

```

        <out-broadcast-pkts>0</out-broadcast-pkts>
        <out-unicast-pkts>0</out-unicast-pkts>
        <out-pkts>0</out-pkts>
        <out-octets>0</out-octets>
        <in-fcs-errors>0</in-fcs-errors>
        <in-errors>0</in-errors>
        <in-discards>0</in-discards>
        <in-multicast-pkts>0</in-multicast-pkts>
        <in-broadcast-pkts>0</in-broadcast-pkts>
        <in-unicast-pkts>0</in-unicast-pkts>
        <in-pkts>0</in-pkts>
        <in-octets>0</in-octets>
    </counters>
    <type
      xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </state>
    <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
      <config>
        <duplex-mode>FULL</duplex-mode>
        <auto-negotiate>>false</auto-negotiate>
        <port-speed
          xmlns:oc-eth="http://openconfig.net/yang/interfaces/
ethernet">oc-eth:SPEED_1GB</port-speed>
        </config>
        <state>
          <duplex-mode>FULL</duplex-mode>
          <port-speed
            xmlns:oc-eth="http://openconfig.net/yang/interfaces/
ethernet">oc-eth:SPEED_1GB</port-speed>
          <negotiated-port-speed
            xmlns:oc-eth="http://openconfig.net/yang/interfaces/
ethernet">oc-eth:SPEED_1GB</negotiated-port-speed>
          <negotiated-duplex-mode>FULL</negotiated-duplex-mode>
          <hw-mac-address>b86a.9729.abc5</hw-mac-address>
        </state>
      </ethernet>
    </subinterfaces>
    <subinterface>
      <index>0</index>
      <ipv4 xmlns="http://openconfig.net/yang/interfaces/ip">
        <config>
          <mtu>1450</mtu>
        </config>
      </ipv4>
      <config>
        <index>0</index>
      </config>
      <ipv6 xmlns="http://openconfig.net/yang/interfaces/ip">
        <config>
          <mtu>1450</mtu>
        </config>
      </ipv6>
    </subinterface>
  </subinterfaces>
</interface>
</interfaces>

```

Restrictions

The leaf mentioned below has been restricted to a maximum of 32 characters.

```
/interfaces/interface/name
```

As a general restriction, interface names must have valid OcNOS naming conventions, such as 'eth,' 'xe,' 'ce,' 'so,' 'po,' etc. This naming convention is not configurable.

Configure description

This XML configuration snippet is used to assign a description to a given interface.

Release

This configuration was introduced in OcNOS version 4.2.

OpenConfig NetConf Payload

Here is the sample OpenConfig NetConf Payload to configure interface description.

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe10</name>
    <config>
      <name>xe10</name>
      <enabled>true</enabled>
      <description>Test desc for the interface</description>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </config>
  </interface>
</interfaces>
```

OcNOS CLI Command

The below CLI command is used for configuring interface descriptions.

```
interface xe10
description "Test desc for the interface"
no shutdown
```

OcNOS NetConf Payload

Here is the sample OcNOS NetConf Payload for configuring interface descriptions.

```
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>xe10</name>
    <config>
      <name>xe10</name>
      <enabled>true</enabled>
      <description>Test desc for the interface</description>
    </config>
  </interface>
</interfaces>
```

```

    </interface>
  </interfaces>

```

Validation with NetConf get

Here is a NetConf validation response for configuring interface descriptions, providing details about the current state of the specified interface.

```

    <interfaces xmlns="http://openconfig.net/yang/interfaces">
      <interface>
        <name>xe10</name>
        <config>
          <name>xe10</name>
          <tpid xmlns="http://openconfig.net/yang/vlan" xmlns:oc-vlan-
types="http://openconfig.net/yang/vlan-types">oc-vlan-types:TPID_0X8100</tpid>
          <description>Test desc for the interface</description>
          <type
            xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
          </config>
          <state>
            <name>xe10</name>
            <tpid xmlns="http://openconfig.net/yang/vlan-types">TPID_0X8100</
tpid>
            <description>Test desc for the interface</description>
            <logical>false</logical>
            <last-change>0</last-change>
            <oper-status>DOWN</oper-status>
            <admin-status>UP</admin-status>
            <ifindex>10010</ifindex>
            <counters>
              <last-clear>0</last-clear>
              <out-errors>0</out-errors>
              <out-discards>0</out-discards>
              <out-multicast-pkts>0</out-multicast-pkts>
              <out-broadcast-pkts>0</out-broadcast-pkts>
              <out-unicast-pkts>0</out-unicast-pkts>
              <out-pkts>0</out-pkts>
              <out-octets>0</out-octets>
              <in-fcs-errors>0</in-fcs-errors>
              <in-errors>0</in-errors>
              <in-discards>0</in-discards>
              <in-multicast-pkts>0</in-multicast-pkts>
              <in-broadcast-pkts>0</in-broadcast-pkts>
              <in-unicast-pkts>0</in-unicast-pkts>
              <in-pkts>0</in-pkts>
              <in-octets>0</in-octets>
            </counters>
            <type
              xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
            </state>
            <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
              <state>
                <negotiated-port-speed
                  xmlns:oc-eth="http://openconfig.net/yang/interfaces/
ethernet">oc-eth:SPEED_10GB</negotiated-port-speed>

```

```
        <negotiated-duplex-mode>FULL</negotiated-duplex-mode>
        <hw-mac-address>b86a.97c3.6447</hw-mac-address>
    </state>
</ethernet>
<subinterfaces>
  <subinterface>
    <index>0</index>
    <config>
      <index>0</index>
      <duplex-mode>FULL</duplex-mode>
    </config>
  </subinterface>
</subinterfaces>
</interface>
</interfaces>
```

Restrictions

The leaf mentioned below has been restricted to a maximum of 32 characters.

```
/interfaces/interface/name
```

Configure MTU

This XML configuration snippet is used to set the Maximum Transmission Unit (MTU) for an interface.

Release

This configuration was introduced in OcNOS version 4.2.

OpenConfig NetConf Payload

Here is the sample OpenConfig NetConf Payload to set the MTU for an interface.

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe10</name>
    <config>
      <name>xe10</name>
      <enabled>true</enabled>
      <mtu>1450</mtu>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </config>
  </interface>
</interfaces>
```

OcNOS CLI Command

The below CLI command is used to set the MTU for an interface.

```
interface xe10
mtu 1450
no shutdown
```

OcNOS NetConf Payload

Here is the sample OcNOS NetConf Payload to set the MTU for an interface.

```
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>xe10</name>
    <config>
      <name>xe10</name>
      <enabled>true</enabled>
      <mtu>1450</mtu>
    </config>
  </interface>
</interfaces>
```

Validation with NetConf get

Here is a NetConf validation response for setting the MTU for an interface, providing details about the current state of the specified interface.

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe10</name>
    <config>
      <name>xe10</name>
      <mtu>1450</mtu>
      <tpid xmlns="http://openconfig.net/yang/vlan" xmlns:oc-vlan-
types="http://openconfig.net/yang/vlan-types">oc-vlan-types:TPID_0X8100</tpid>
      <type
        xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </config>
    <state>
      <name>xe10</name>
      <mtu>1450</mtu>
      <tpid xmlns="http://openconfig.net/yang/vlan-types">TPID_0X8100</
tpid>
      <logical>false</logical>
      <last-change>0</last-change>
      <oper-status>DOWN</oper-status>
      <admin-status>UP</admin-status>
      <ifindex>10010</ifindex>
      <counters>
        <last-clear>0</last-clear>
        <out-errors>0</out-errors>
        <out-discards>0</out-discards>
        <out-multicast-pkts>0</out-multicast-pkts>
        <out-broadcast-pkts>0</out-broadcast-pkts>
        <out-unicast-pkts>0</out-unicast-pkts>
        <out-pkts>0</out-pkts>
        <out-octets>0</out-octets>
        <in-fcs-errors>0</in-fcs-errors>
        <in-errors>0</in-errors>
        <in-discards>0</in-discards>
        <in-multicast-pkts>0</in-multicast-pkts>
        <in-broadcast-pkts>0</in-broadcast-pkts>
        <in-unicast-pkts>0</in-unicast-pkts>
```

```
        <in-pkts>0</in-pkts>
        <in-octets>0</in-octets>
    </counters>
    <type
      xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </state>
    <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
      <state>
        <negotiated-port-speed
          xmlns:oc-eth="http://openconfig.net/yang/interfaces/
ethernet">oc-eth:SPEED_10GB</negotiated-port-speed>
        <negotiated-duplex-mode>FULL</negotiated-duplex-mode>
        <hw-mac-address>b86a.97c3.6447</hw-mac-address>
      </state>
    </ethernet>
    <subinterfaces>
      <subinterface>
        <index>0</index>
        <ipv4 xmlns="http://openconfig.net/yang/interfaces/ip">
          <config>
            <mtu>1450</mtu>
          </config>
        </ipv4>
        <config>
          <index>0</index>
        </config>
        <ipv6 xmlns="http://openconfig.net/yang/interfaces/ip">
          <config>
            <mtu>1450</mtu>
          </config>
        </ipv6>
      </subinterface>
    </subinterfaces>
  </interface>
</interfaces>
```

Restrictions

The leaf mentioned below has been restricted to a maximum of 32 characters.

```
/interfaces/interface/name
```

The leaf mentioned below is used only to configure the physical interface.

```
/interfaces/interface/config/mtu
```

Configure Primary IP Address

This XML configuration snippet is used to specify that an IP address and prefix length will be used by the interface.

Release

This configuration was introduced in OcNOS version 4.2.

OpenConfig NetConf Payload

Here is the sample OpenConfig NetConf Payload to indicate that the interface will use an IP address and a prefix length.

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe10</name>
    <config>
      <name>xe10</name>
      <enabled>true</enabled>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </config>
    <subinterfaces>
      <subinterface>
        <index>0</index>
        <ipv4 xmlns="http://openconfig.net/yang/interfaces/ip">
          <addresses>
            <address>
              <ip>30.1.1.1</ip>
              <config>
                <ip>30.1.1.1</ip>
                <prefix-length>24</prefix-length>
              </config>
            </address>
          </addresses>
        </ipv4>
      </subinterface>
    </subinterfaces>
  </interface>
</interfaces>
```

OcNOS CLI Command

The below CLI command is used to configure an IP address and prefix length for an interface.

```
interface xe10
ip address 30.1.1.1/24
no shutdown
```

OcNOS NetConf Payload

Here is a sample OcNOS NetConf Payload for assigning a primary IP address and prefix length to an interface.

```
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>xe10</name>
    <config>
      <name>xe10</name>
      <enabled>true</enabled>
    </config>
    <ipv4 xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-ip">
```



```

        <config>
          <primary-ip-addr>30.1.1.1/24</primary-ip-addr>
        </config>
      </ipv4>
    </interface>
  </interfaces>

```

Validation with NetConf get

Here is a NetConf validation response for assigning a primary IP address and prefix length to an interface, providing details about the current state of the specified interface.

```

      <interfaces xmlns="http://openconfig.net/yang/interfaces">
    <interface>
      <name>xel0</name>
      <config>
        <name>xel0</name>
        <tpid xmlns="http://openconfig.net/yang/vlan" xmlns:oc-vlan-
types="http://openconfig.net/yang/vlan-types">oc-vlan-types:TPID_0X8100</tpid>
        <type
xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
      </config>
      <state>
        <name>xel0</name>
        <tpid xmlns="http://openconfig.net/yang/vlan-types">TPID_0X8100</
tpid>
        <logical>false</logical>
        <last-change>0</last-change>
        <oper-status>DOWN</oper-status>
        <admin-status>UP</admin-status>
        <ifindex>10010</ifindex>
        <counters>
          <last-clear>0</last-clear>
          <out-errors>0</out-errors>
          <out-discards>0</out-discards>
          <out-multicast-pkts>0</out-multicast-pkts>
          <out-broadcast-pkts>0</out-broadcast-pkts>
          <out-unicast-pkts>0</out-unicast-pkts>
          <out-pkts>0</out-pkts>
          <out-octets>0</out-octets>
          <in-fcs-errors>0</in-fcs-errors>
          <in-errors>0</in-errors>
          <in-discards>0</in-discards>
          <in-multicast-pkts>0</in-multicast-pkts>
          <in-broadcast-pkts>0</in-broadcast-pkts>
          <in-unicast-pkts>0</in-unicast-pkts>
          <in-pkts>0</in-pkts>
          <in-octets>0</in-octets>
        </counters>
        <type
xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
      </state>
      <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
        <state>
          <negotiated-port-speed

```

```

        xmlns:oc-eth="http://openconfig.net/yang/interfaces/
ethernet">oc-eth:SPEED_10GB</negotiated-port-speed>
        <negotiated-duplex-mode>FULL</negotiated-duplex-mode>
        <hw-mac-address>b86a.97c3.6447</hw-mac-address>
    </state>
</ethernet>
<subinterfaces>
    <subinterface>
        <index>0</index>
        <ipv4 xmlns="http://openconfig.net/yang/interfaces/ip">
            <addresses>
                <address>
                    <ip>30.1.1.1</ip>
                    <config>
                        <ip>30.1.1.1</ip>
                        <prefix-length>24</prefix-length>
                    </config>
                    <state>
                        <ip>30.1.1.1</ip>
                        <prefix-length>24</prefix-length>
                    </state>
                </address>
            </addresses>
        </ipv4>
        <config>
            <index>0</index>
        </config>
    </subinterface>
</subinterfaces>
</interface>
</interfaces>

```

Restrictions

The leaf mentioned below has been restricted to a maximum of 32 characters.

/interfaces/interface/name

The first entry on the below list will be used as the primary address, as OpenConfig does not have this concept.

/interfaces/interface/subinterfaces/subinterface/ipv4/addresses/address

Configure Secondary IP Address

This XML configuration snippet specifies the use of a secondary IP address and prefix length for an interface. It's important to note that the secondary address cannot be configured if there is no primary IP address present.

Release

This configuration was introduced in OcNOS version 4.2.

OpenConfig NetConf Payload

Here is a sample OpenConfig NetConf payload that specifies the configuration for an interface. This configuration includes the interface type, subinterface details, and IPv4 addresses with their respective prefix lengths.

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe10</name>
    <config>
      <name>xe10</name>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </config>
    <subinterfaces>
      <subinterface>
        <index>0</index>
        <ipv4 xmlns="http://openconfig.net/yang/interfaces/ip">
          <addresses>
            <address>
              <ip>10.10.10.1</ip>
              <config>
                <ip>10.10.10.1</ip>
                <prefix-length>24</prefix-length>
              </config>
            </address>
            <address>
              <ip>11.11.11.1</ip>
              <config>
                <ip>11.11.11.1</ip>
                <prefix-length>24</prefix-length>
              </config>
            </address>
          </addresses>
        </ipv4>
      </subinterface>
    </subinterfaces>
  </interface>
</interfaces>
```

OcNOS CLI Command

The below CLI command is used to configure an interface with both a primary and a secondary IP address.

```
interface xe10
 ip address 10.10.10.1/24
 ip address 11.11.11.1/24 secondary
 no shutdown
```

OcNOS NetConf Payload

Here is a sample OcNOS NetConf Payload for configuring interface with both a primary and a secondary IP address.

```
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
```

```

<interface>
  <name>xe10</name>
  <config>
    <name>xe10</name>
  </config>
  <ipv4 xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-ip">
    <secondary-addresses>
      <ip-address>11.11.11.1/24</ip-address>
      <config>
        <ip-address>11.11.11.1/24</ip-address>
      </config>
    </secondary-addresses>
    <config>
      <primary-ip-addr>10.10.10.1/24</primary-ip-addr>
    </config>
  </ipv4>
</interface>
</interfaces>

```

Validation with NetConf get

Here is a NetConf validation response providing details about the current state of the specified interface, as configured in the OpenConfig YANG model.

```

<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe10</name>
    <config>
      <name>xe10</name>
      <tpid xmlns="http://openconfig.net/yang/vlan" xmlns:oc-vlan-
types="http://openconfig.net/yang/vlan-types">oc-vlan-types:TPID_0X8100</tpid>
      <type
xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </config>
    <state>
      <name>xe10</name>
      <tpid xmlns="http://openconfig.net/yang/vlan-types">TPID_0X8100</
tpid>
      <logical>false</logical>
      <last-change>0</last-change>
      <oper-status>DOWN</oper-status>
      <admin-status>UP</admin-status>
      <ifindex>10010</ifindex>
      <counters>
        <last-clear>0</last-clear>
        <out-errors>0</out-errors>
        <out-discards>0</out-discards>
        <out-multicast-pkts>0</out-multicast-pkts>
        <out-broadcast-pkts>0</out-broadcast-pkts>
        <out-unicast-pkts>0</out-unicast-pkts>
        <out-pkts>0</out-pkts>
        <out-octets>0</out-octets>
        <in-fcs-errors>0</in-fcs-errors>
        <in-errors>0</in-errors>
        <in-discards>0</in-discards>
        <in-multicast-pkts>0</in-multicast-pkts>

```

```

        <in-broadcast-pkts>0</in-broadcast-pkts>
        <in-unicast-pkts>0</in-unicast-pkts>
        <in-pkts>0</in-pkts>
        <in-octets>0</in-octets>
    </counters>
    <type
type">ianaift:ethernetCsmacd</type>
    </state>
    <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
        <state>
            <negotiated-port-speed
ethernet">oc-eth:SPEED_10GB</negotiated-port-speed>
            <negotiated-duplex-mode>FULL</negotiated-duplex-mode>
            <hw-mac-address>b86a.97c3.6447</hw-mac-address>
        </state>
    </ethernet>
    <subinterfaces>
        <subinterface>
            <index>0</index>
            <ipv4 xmlns="http://openconfig.net/yang/interfaces/ip">
                <addresses>
                    <address>
                        <ip>10.10.10.1</ip>
                        <config>
                            <ip>10.10.10.1</ip>
                            <prefix-length>24</prefix-length>
                        </config>
                        <state>
                            <ip>10.10.10.1</ip>
                            <prefix-length>24</prefix-length>
                        </state>
                    </address>
                    <address>
                        <ip>11.11.11.1</ip>
                        <config>
                            <ip>11.11.11.1</ip>
                            <prefix-length>24</prefix-length>
                        </config>
                        <state>
                            <ip>11.11.11.1</ip>
                            <prefix-length>24</prefix-length>
                        </state>
                    </address>
                </addresses>
            </ipv4>
            <config>
                <index>0</index>
            </config>
        </subinterface>
    </subinterfaces>
</interface>
</interfaces>

```

Restrictions

The leaf mentioned below has been restricted to a maximum of 32 characters.

```
/interfaces/interface/name
```

All leaves of the below list, excluding the first entry, will be treated as secondary addresses.

```
/interfaces/interface/subinterfaces/subinterface/ipv4/addresses/address
```

Configure IPv6 Addresses

This XML configuration snippet is used to set the IPv6 addresses of an interface.

Release

This configuration was introduced in OcNOS version 4.2.

OpenConfig NetConf Payload

Here is the sample OpenConfig NetConf Payload for configuring IPv6 addresses on an interface.

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xell</name>
    <config>
      <name>xell</name>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </config>
    <subinterfaces>
      <subinterface>
        <index>0</index>
        <ipv6 xmlns="http://openconfig.net/yang/interfaces/ip">
          <addresses>
            <address>
              <ip>ad0f::ac0f:ab0f</ip>
              <config>
                <ip>ad0f::ac0f:ab0f</ip>
                <prefix-length>64</prefix-length>
              </config>
            </address>
            <address>
              <ip>ae0f::ad0f:ac0f</ip>
              <config>
                <ip>ae0f::ad0f:ac0f</ip>
                <prefix-length>64</prefix-length>
              </config>
            </address>
            <address>
              <ip>f0ca:bebe::cafe</ip>
              <config>
                <ip>f0ca:bebe::cafe</ip>
                <prefix-length>64</prefix-length>
              </config>
            </address>
          </addresses>
        </ipv6>
      </subinterface>
    </subinterfaces>
  </interface>
</interfaces>
```

```
        </address>
      </addresses>
    </ipv6>
  </config>
  <index>0</index>
</config>
</subinterface>
</subinterfaces>
</interface>
</interfaces>
```

OcNOS CLI Command

The below CLI command is used to configure an interface with multiple IPv6 addresses and enable the interface.

```
interface xell
  ipv6 address ad0f::ac0f:ab0f/64
  ipv6 address ae0f::ad0f:ac0f/64
  ipv6 address f0ca:bebe::cafe/64
  no shutdown
!
```

OcNOS NetConf Payload

Here is a sample OcNOS NetConf Payload for configuring an interface with multiple IPv6 addresses.

```
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>xell</name>
    <config>
      <name>xell</name>
    </config>
    <ipv6 xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-ip">
      <addresses>
        <ipv6-address>ad0f::ac0f:ab0f/64</ipv6-address>
        <config>
          <ipv6-address>ad0f::ac0f:ab0f/64</ipv6-address>
        </config>
      </addresses>
      <addresses>
        <ipv6-address>ae0f::ad0f:ac0f/64</ipv6-address>
        <config>
          <ipv6-address>ae0f::ad0f:ac0f/64</ipv6-address>
        </config>
      </addresses>
      <addresses>
        <ipv6-address>f0ca:bebe::cafe/64</ipv6-address>
        <config>
          <ipv6-address>f0ca:bebe::cafe/64</ipv6-address>
        </config>
      </addresses>
    </ipv6>
  </interface>
</interfaces>
```

Validation with NetConf get

The below NetConf validation response provides details about the current state of the specified interface configured with multiple IPv6 addresses using OpenConfig YANG data model elements.

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe10</name>
    <config>
      <name>xe10</name>
      <tpid xmlns="http://openconfig.net/yang/vlan" xmlns:oc-vlan-
types="http://openconfig.net/yang/vlan-types">oc-vlan-types:TPID_0X8100</tpid>
      <type
        xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
      </config>
      <state>
        <name>xe10</name>
        <tpid xmlns="http://openconfig.net/yang/vlan-types">TPID_0X8100</
tpid>
        <logical>false</logical>
        <last-change>0</last-change>
        <oper-status>DOWN</oper-status>
        <admin-status>UP</admin-status>
        <ifindex>10010</ifindex>
        <counters>
          <last-clear>0</last-clear>
          <out-errors>0</out-errors>
          <out-discards>0</out-discards>
          <out-multicast-pkts>0</out-multicast-pkts>
          <out-broadcast-pkts>0</out-broadcast-pkts>
          <out-unicast-pkts>0</out-unicast-pkts>
          <out-pkts>0</out-pkts>
          <out-octets>0</out-octets>
          <in-fcs-errors>0</in-fcs-errors>
          <in-errors>0</in-errors>
          <in-discards>0</in-discards>
          <in-multicast-pkts>0</in-multicast-pkts>
          <in-broadcast-pkts>0</in-broadcast-pkts>
          <in-unicast-pkts>0</in-unicast-pkts>
          <in-pkts>0</in-pkts>
          <in-octets>0</in-octets>
        </counters>
      </state>
      <type
        xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
      </type>
    </interface>
  <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
    <config>
      <duplex-mode>FULL</duplex-mode>
    </config>
    <state>
      <duplex-mode>FULL</duplex-mode>
      <negotiated-port-speed
        xmlns:oc-eth="http://openconfig.net/yang/interfaces/
ethernet">oc-eth:SPEED_10GB</negotiated-port-speed>
      <negotiated-duplex-mode>FULL</negotiated-duplex-mode>
    </state>
  </ethernet>
</interfaces>
```



```
        <hw-mac-address>b86a.97c3.6447</hw-mac-address>
    </state>
</ethernet>
<subinterfaces>
  <subinterface>
    <index>0</index>
    <config>
      <index>0</index>
    </config>
  </subinterface>
</subinterfaces>
</interface>
</interfaces>
```

Restrictions

The leaf mentioned below has been restricted to a maximum of 32 characters.

```
/interfaces/interface/name
```

Configure Duplex-mode

This XML configuration snippet is used to configure the duplex mode for an interface.

Release

This configuration was introduced in OcNOS version 4.2.

OpenConfig NetConf Payload

Here is the sample OpenConfig NetConf Payload to configure interface with the FULL duplex mode enabled.

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xel0</name>
    <config>
      <name>xel0</name>
      <enabled>true</enabled>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </config>
    <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
      <config>
        <duplex-mode>FULL</duplex-mode>
      </config>
    </ethernet>
  </interface>
</interfaces>
```

OcNOS CLI Command

The below CLI command is used to configure an interface with full duplex mode enabled and with no shutdown.

```

interface xe10
duplex full
no shutdown

```

OcNOS NetConf Payload

Here is a sample OcNOS NetConf Payload to configure interface with full duplex mode enabled and ensures that the interface is in the `enabled` state.

```

<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>xe10</name>
    <config>
      <name>xe10</name>
      <enabled>true</enabled>
    </config>
    <ethernet xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-
ethernet">
      <config>
        <duplex-mode>full</duplex-mode>
      </config>
    </ethernet>
  </interface>
</interfaces>

```

Validation with NetConf get

Here is a NetConf validation response provides comprehensive information about the current state of an interface, including its operational and administrative status, traffic counters, and Ethernet configuration details.

```

<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe10</name>
    <config>
      <name>xe10</name>
      <type
        xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
      </config>
      <state>
        <name>xe10</name>
        <logical>false</logical>
        <last-change>0</last-change>
        <oper-status>DOWN</oper-status>
        <admin-status>UP</admin-status>
        <ifindex>10010</ifindex>
        <counters>
          <last-clear>0</last-clear>
          <out-errors>0</out-errors>
          <out-discards>0</out-discards>
          <out-multicast-pkts>0</out-multicast-pkts>
          <out-broadcast-pkts>0</out-broadcast-pkts>
          <out-unicast-pkts>0</out-unicast-pkts>
          <out-pkts>0</out-pkts>
          <out-octets>0</out-octets>
          <in-fcs-errors>0</in-fcs-errors>
          <in-errors>0</in-errors>

```

```

        <in-discards>0</in-discards>
        <in-multicast-pkts>0</in-multicast-pkts>
        <in-broadcast-pkts>0</in-broadcast-pkts>
        <in-unicast-pkts>0</in-unicast-pkts>
        <in-pkts>0</in-pkts>
        <in-octets>0</in-octets>
    </counters>
    <type
type">ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </state>
    <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
        <config>
            <auto-negotiate>false</auto-negotiate>
            <port-speed
ethernet">oc-eth:SPEED_1GB</port-speed>
        </config>
        <state>
            <port-speed
ethernet">oc-eth:SPEED_1GB</port-speed>
            <negotiated-port-speed
ethernet">oc-eth:SPEED_1GB</negotiated-port-speed>
            <negotiated-duplex-mode>FULL</negotiated-duplex-mode>
            <hw-mac-address>b86a.9729.abc5</hw-mac-address>
        </state>
    </ethernet>
    <subinterfaces>
        <subinterface>
            <index>0</index>
            <config>
                <index>0</index>
            </config>
        </subinterface>
    </subinterfaces>
</interface>
</interfaces>

```

Restrictions

The leaf mentioned below has been restricted to a maximum of 32 characters.

```
/interfaces/interface/name
```

Default

By default, the duplex mode for an interface is set to `full duplex`.

Configure Port-Speed

This XML configuration snippet is used to set the link speed of the interface.

Release

This configuration was introduced in OcNOS version 4.2.

OpenConfig NetConf Payload

Here is the sample OpenConfig NetConf Payload that specifies the configuration for an interface. It sets the interface's state to enabled (`true`) and defines it as an Ethernet interface (`ianaift:ethernetCsmacd`). Additionally, it specifies that auto-negotiation for link speed is disabled (`false`) and sets the port speed for a specified Ethernet interface.

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe10</name>
    <config>
      <name>xe10</name>
      <enabled>true</enabled>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </config>
    <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
      <config>
        <auto-negotiate>false</auto-negotiate>
        <port-speed xmlns:oc-eth="http://openconfig.net/yang/interfaces/
ethernet">oc-eth:SPEED_1GB</port-speed>
      </config>
    </ethernet>
  </interface>
</interfaces>
```

OcNOS CLI Command

The below CLI command is used to configure an interface for a speed of 1 gigabit and enable it.

```
interface xe10
speed 1g
no shutdown
```

OcNOS NetConf Payload

Here is a sample OcNOS NetConf Payload that enables an interface and sets its speed.

```
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>xe10</name>
    <config>
      <name>xe10</name>
      <enabled>true</enabled>
    </config>
    <ethernet xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-
ethernet">
      <config>
        <port-speed>1g</port-speed>
      </config>
    </ethernet>
  </interface>
</interfaces>
```

Validation with NetConf get

Here is a NetConf validation response to set the speed of an interface, providing details about the current state of the specified interface.

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe10</name>
    <config>
      <name>xe10</name>
      <tpid xmlns="http://openconfig.net/yang/vlan" xmlns:oc-vlan-
types="http://openconfig.net/yang/vlan-types">oc-vlan-types:TPID_0X8100</tpid>
      <type
        xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
      </config>
      <state>
        <name>xe10</name>
        <tpid xmlns="http://openconfig.net/yang/vlan-types">TPID_0X8100</
tpid>
        <logical>false</logical>
        <last-change>0</last-change>
        <oper-status>DOWN</oper-status>
        <admin-status>UP</admin-status>
        <ifindex>10010</ifindex>
        <counters>
          <last-clear>0</last-clear>
          <out-errors>0</out-errors>
          <out-discards>0</out-discards>
          <out-multicast-pkts>0</out-multicast-pkts>
          <out-broadcast-pkts>0</out-broadcast-pkts>
          <out-unicast-pkts>0</out-unicast-pkts>
          <out-pkts>0</out-pkts>
          <out-octets>0</out-octets>
          <in-fcs-errors>0</in-fcs-errors>
          <in-errors>0</in-errors>
          <in-discards>0</in-discards>
          <in-multicast-pkts>0</in-multicast-pkts>
          <in-broadcast-pkts>0</in-broadcast-pkts>
          <in-unicast-pkts>0</in-unicast-pkts>
          <in-pkts>0</in-pkts>
          <in-octets>0</in-octets>
        </counters>
        <type
          xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
        </state>
        <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
          <state>
            <negotiated-port-speed
              xmlns:oc-eth="http://openconfig.net/yang/interfaces/
ethernet">oc-eth:SPEED_10GB</negotiated-port-speed>
            <negotiated-duplex-mode>FULL</negotiated-duplex-mode>
            <hw-mac-address>b86a.9729.abc5</hw-mac-address>
          </state>
        </ethernet>
      </subinterfaces>
    </interface>
  </interfaces>
```

```
<subinterface>
  <index>0</index>
  <config>
    <index>0</index>
  </config>
</subinterface>
</subinterfaces>
</interface>
</interfaces>
```

Restrictions

The leaf mentioned below has been restricted to a maximum of 32 characters.

```
/interfaces/interface/name
```

This leaf can only be used when the auto-negotiate leaf (../auto-negotiate) is set to false.

```
/interfaces/interface/ethernet/config/port-speed
```

Configure Ethernet Type

This XML configuration snippet is used to specify the Ethernet type for an interface.

Release

This configuration was introduced in OcNOS version 5.0.

OpenConfig NetConf Payload

Here is the sample OpenConfig NetConf Payload that sets the Ethernet Type for an interface.

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe10</name>
    <config>
      <name>xe10</name>
      <enabled>true</enabled>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </config>
    <tpid xmlns="http://openconfig.net/yang/vlan" xmlns:oc-vlan-types="http://
openconfig.net/yang/vlan-types">oc-vlan-types:TPID_0x88A8</tpid>
  </interface>
</interfaces>
```

OcNOS CLI Command

The below CLI command configures VLAN tagging with Ethernet Type on an interface and ensures that the interface is not in shutdown mode.

```
interface xe10
switchport dot1q ethertype 0x88a8
no shutdown
```

OcNOS NetConf Payload

Here is a sample OcNOS NetConf Payload that enables an interface and configures it to use a dot1q Ethernet Type for VLAN tagging.

```
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>xe10</name>
    <config>
      <name>xe10</name>
      <enabled>true</enabled>
    </config>
    <extended xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-extended">
      <config>
        <dot1q-ether-type>0x88a8</dot1q-ether-type>
      </config>
    </extended>
  </interface>
</interfaces>
```

Validation with NetConf get

Here is a NetConf validation response for the specified interface, providing comprehensive details about its current state, including operational and administrative statuses, traffic counters, Ethernet configuration, and VLAN tagging settings.

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe10</name>
    <config>
      <name>xe10</name>
      <tpid xmlns="http://openconfig.net/yang/vlan" xmlns:oc-vlan-
types="http://openconfig.net/yang/vlan-types">oc-vlan-types:TPID_0X8100</tpid>
      <type
xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </config>
    <state>
      <name>xe10</name>
      <tpid xmlns="http://openconfig.net/yang/vlan-types">TPID_0X88a8</
tpid>
      <logical>false</logical>
      <last-change>0</last-change>
      <oper-status>DOWN</oper-status>
      <admin-status>UP</admin-status>
      <ifindex>10010</ifindex>
      <counters>
        <last-clear>0</last-clear>
        <out-errors>0</out-errors>
        <out-discards>0</out-discards>
        <out-multicast-pkts>0</out-multicast-pkts>
        <out-broadcast-pkts>0</out-broadcast-pkts>
        <out-unicast-pkts>0</out-unicast-pkts>
        <out-pkts>0</out-pkts>
        <out-octets>0</out-octets>
        <in-fcs-errors>0</in-fcs-errors>
```

```

        <in-errors>0</in-errors>
        <in-discards>0</in-discards>
        <in-multicast-pkts>0</in-multicast-pkts>
        <in-broadcast-pkts>0</in-broadcast-pkts>
        <in-unicast-pkts>0</in-unicast-pkts>
        <in-pkts>0</in-pkts>
        <in-octets>0</in-octets>
    </counters>
    <type
type">ianaift:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </state>
    <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
    <state>
        <negotiated-port-speed
ethernet">oc-eth:SPEED_10GB</negotiated-port-speed>
        <negotiated-duplex-mode>FULL</negotiated-duplex-mode>
        <hw-mac-address>b86a.9729.abc5</hw-mac-address>
    </state>
    </ethernet>
    <subinterfaces>
    <subinterface>
        <index>0</index>
        <config>
            <index>0</index>
        </config>
    </subinterface>
    </subinterfaces>
    </interface>
</interfaces>

```

Restrictions

The leaf mentioned below has been restricted to a maximum of 32 characters.

```
/interfaces/interface/name
```

Configure Sub-interface with both Primary and Secondary Addresses

This XML configuration snippet sets both primary and secondary IP addresses, each with its corresponding prefix length, for use by a sub-interface.

Release

This configuration was introduced in OcNOS version 4.2.

OpenConfig NetConf Payload

Here is the sample OpenConfig NetConf Payload for configuring sub-interface with two IPv4 addresses, each having the specified prefix length. This payload specifies the IP addresses to be used by the sub-interface with the specified index.


```

<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe10</name>
    <config>
      <name>xe10</name>
    </config>
    <subinterfaces>
      <subinterface>
        <index>10</index>
        <config>
          <index>10</index>
        </config>
        <ipv4 xmlns="http://openconfig.net/yang/interfaces/ip">
          <addresses>
            <address>
              <ip>20.21.22.23</ip>
              <config>
                <ip>20.21.22.23</ip>
                <prefix-length>24</prefix-length>
              </config>
            </address>
            <address>
              <ip>24.25.26.27</ip>
              <config>
                <ip>24.25.26.27</ip>
                <prefix-length>24</prefix-length>
              </config>
            </address>
          </addresses>
        </ipv4>
      </subinterface>
    </subinterfaces>
  </interface>
</interfaces>

```

OcNOS CLI Command

The below CLI command is used to configure a sub-interface with both a primary and a secondary IPv4 address.

```

interface xe10.10
ip address 20.21.22.23/24
ip address 24.25.26.27/24 secondary
!

```

OcNOS NetConf Payload

Here is a sample OcNOS NetConf Payload for configuring a sub-interface with both a primary and a secondary IPv4 address.

```

<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>xe10.10</name>
    <config>
      <name>xe10.10</name>
    </config>
    <ipv4 xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-ip">

```

```

    <secondary-addresses>
      <ip-address>24.25.26.27/24</ip-address>
    </secondary-addresses>
  </config>
  <primary-ip-addr>20.21.22.23/24</primary-ip-addr>
</config>
</ipv4>
</interface>
</interfaces>

```

Validation with NetConf get

Here is a NetConf validation response for configuring a sub-interface with two IPv4 addresses, each with a specified prefix length. The response provides information about the current state of the specified sub-interface, including its operational status, interface index, and traffic counters.

```

<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe10</name>
    <config>
      <name>xe10</name>
    </config>
    <subinterfaces>
      <subinterface>
        <index>10</index>
        <config>
          <index>10</index>
        </config>
        <state>
          <name>xe10.10</name>
          <logical>true</logical>
          <oper-status>DOWN</oper-status>
          <ifindex>20500490</ifindex>
          <counters>
            <last-clear>0</last-clear>
            <out-pkts>0</out-pkts>
            <out-octets>0</out-octets>
            <in-pkts>0</in-pkts>
            <in-octets>0</in-octets>
          </counters>
        </state>
      </subinterface>
    </subinterfaces>
  </interface>
  <ipv4 xmlns="http://openconfig.net/yang/interfaces/ip">
    <addresses>
      <address>
        <ip>20.21.22.23</ip>
        <config>
          <ip>20.21.22.23</ip>
          <prefix-length>24</prefix-length>
        </config>
        <state>
          <ip>20.21.22.23</ip>
          <prefix-length>24</prefix-length>
        </state>
      </address>
    </addresses>
  </ipv4>
</interfaces>

```

```
</address>
<address>
  <ip>24.25.26.27</ip>
  <config>
    <ip>24.25.26.27</ip>
    <prefix-length>24</prefix-length>
  </config>This configuration was introduced
  <state>
    <ip>24.25.26.27</ip>
    <prefix-length>24</prefix-length>
  </state>
</address>
</addresses>
</ipv4>
</subinterface>
</subinterfaces>
</interface>
</interfaces>
```

Restrictions

The leaf mentioned below has been restricted to a maximum of 32 characters.

```
/interfaces/interface/name
```

The first entry on the below list will be used as the primary address, as OpenConfig does not have this concept.

```
/interfaces/interface/subinterfaces/subinterface/ipv4/addresses/address
```

When using OpenConfig translation, use the sub-interface name in the format <ifname>.<id>, as OpenConfig does not support the <ifname>.<id>.<id> format, even though it is allowed by OcNOS CLI.

```
/interfaces/interface/subinterfaces/subinterface/index
```

LACP OpenConfig Translation

Create Static LAG Interface

This XML configuration snippet is used to create a static Link Aggregation Group (LAG) interface with a specified name and configure its settings for a network device.

Release

This configuration was introduced in OcNOS version 5.0.

OpenConfig NetConf Payload

Here is a sample OpenConfig NetConf Payload that configures two Ethernet interfaces to be part of a LAG. The LAG uses the Link Aggregation Control Protocol (LACP) in ACTIVE mode, and it requires a minimum of two member links to be up for the LAG to be operational. Additionally, set the system priority.

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>sa10</name>
    <config>
      <name>sa10</name>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ieee8023adLag</type>
    </config>
    <aggregation xmlns="http://openconfig.net/yang/interfaces/aggregate">
      <config>
        <min-links>2</min-links>
        <lag-type>STATIC</lag-type>
      </config>
    </aggregation>
  </interface>
  <interface>
    <name>xe6</name>
    <config>
      <name>xe6</name>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </config>
    <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
      <config>
        <aggregate-id xmlns="http://openconfig.net/yang/interfaces/
aggregate">sa10</aggregate-id>
        <lacp-mode xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-if-
deviations">ACTIVE</lacp-mode>
      </config>
    </ethernet>
  </interface>
  <interface>
    <name>xe7</name>
    <config>
      <name>xe7</name>
```

```

    <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
  </config>
  <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
    <config>
      <aggregate-id xmlns="http://openconfig.net/yang/interfaces/
aggregate">sa10</aggregate-id>
      <lacp-mode xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-if-
deviations">ACTIVE</lacp-mode>
    </config>
  </ethernet>
</interface>
</interfaces>
<lacp xmlns="http://openconfig.net/yang/lacp">
  <config>
    <system-priority>2</system-priority>
  </config>
</lacp>

```

OcNOS CLI Command

The below CLI commands are used to configure a static LAG interface with a system priority and a minimum required member link count. Ethernet interfaces are also assigned to the static LAG group with the specified identifier.

```

lacp system-priority 2
!
interface sa10
  port-channel min-links 2
!
interface xe6
  static-channel-group 10
!
interface xe7
  static-channel-group 10
!

```

OcNOS NetConf Payload

Here is a sample OcNOS NetConf Payload that configures two Ethernet interfaces to be part of a static LAG with the specified identifier. The LAG requires a minimum of two member links to be operational and uses the LACP mode ACTIVE. Additionally, it sets the system priority for LACP.

This payload includes configurations for both OpenConfig and OcNOS YANG models to ensure compatibility between the two.

```

<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>sa10</name>
    <config>
      <name>sa10</name>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ieee8023adLag</type>
    </config>
    <aggregation xmlns="http://openconfig.net/yang/interfaces/aggregate">
      <config>
        <min-links>2</min-links>
        <lag-type>STATIC</lag-type>
      </config>
    </aggregation>
  </interface>
</interfaces>

```

```

        </config>
    </aggregation>
</interface>
<interface>
    <name>xe6</name>
    <config>
        <name>xe6</name>
        <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </config>
    <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
        <config>
            <aggregate-id xmlns="http://openconfig.net/yang/interfaces/
aggregate">sa10</aggregate-id>
            <lacp-mode xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-
if-deviations">ACTIVE</lacp-mode>
        </config>
    </ethernet>
</interface>
<interface>
    <name>xe7</name>
    <config>
        <name>xe7</name>
        <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </config>
    <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
        <config>
            <aggregate-id xmlns="http://openconfig.net/yang/interfaces/
aggregate">sa10</aggregate-id>
            <lacp-mode xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-
if-deviations">ACTIVE</lacp-mode>
        </config>
    </ethernet>
</interface>
</interfaces>
<lacp xmlns="http://openconfig.net/yang/lacp">
    <config>
        <system-priority>2</system-priority>
    </config>
</lacp>
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
    <interface>
        <name>sa10</name>
        <config>
            <name>sa10</name>
        </config>
        <aggregator xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-
aggregate">
            <config>
                <min-links>2</min-links>
            </config>
        </aggregator>
    </interface>
    <interface>
        <name>xe6</name>
        <config>
            <name>xe6</name>

```

```

    </config>
    <ethernet xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-
ethernet">
      <config />
    </ethernet>
    <member-aggregation xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-
if-aggregate">
      <config>
        <agg-type>static</agg-type>
        <aggregate-id>10</aggregate-id>
        <lacp-mode>active</lacp-mode>
      </config>
    </member-aggregation>
  </interface>
  <interface>
    <name>xe7</name>
    <config>
      <name>xe7</name>
    </config>
    <ethernet xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-
ethernet">
      <config />
    </ethernet>
    <member-aggregation xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-
if-aggregate">
      <config>
        <agg-type>static</agg-type>
        <aggregate-id>10</aggregate-id>
        <lacp-mode>active</lacp-mode>
      </config>
    </member-aggregation>
  </interface>
</interfaces>
<lacp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-lacp">
  <global>
    <config>
      <system-priority>2</system-priority>
    </config>
  </global>
</lacp>

```

Validation with NetConf get

Here is a NetConf validation response defines three interfaces, including a static LAG type that requires a minimum of two member links and has an operational status of UP. Both of the Ethernet interfaces are part of this LAG, and they also have UP operational status. The LAG uses LACP in ACTIVE mode, and it sets the system priority for LACP.

```

<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>sa10</name>
    <config>
      <name>sa10</name>
      <type
xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ieee8023adLag</type>
    </config>
    <state>

```

```

    <name>sa10</name>
    <logical>false</logical>
    <last-change>35600</last-change>
    <oper-status>UP</oper-status>
    <admin-status>UP</admin-status>
    <ifindex>200010</ifindex>
    <counters>
      <last-clear>0</last-clear>
      <out-errors>0</out-errors>
      <out-discards>0</out-discards>
      <out-multicast-pkts>7</out-multicast-pkts>
      <out-broadcast-pkts>0</out-broadcast-pkts>
      <out-unicast-pkts>0</out-unicast-pkts>
      <out-pkts>7</out-pkts>
      <out-octets>774</out-octets>
      <in-fcs-errors>0</in-fcs-errors>
      <in-errors>0</in-errors>
      <in-discards>0</in-discards>
      <in-multicast-pkts>7</in-multicast-pkts>
      <in-broadcast-pkts>0</in-broadcast-pkts>
      <in-unicast-pkts>0</in-unicast-pkts>
      <in-pkts>3852605</in-pkts>
      <in-octets>130989214</in-octets>
    </counters>
    <type
      xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ieee8023adLag</type>
    </state>
    <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
      <state>
        <negotiated-port-speed
          xmlns:oc-eth="http://openconfig.net/yang/interfaces/
ethernet">oc-eth:SPEED_UNKNOWN</negotiated-port-speed>
        <negotiated-duplex-mode>FULL</negotiated-duplex-mode>
        <hw-mac-address>b86a.9729.abf2</hw-mac-address>
      </state>
    </ethernet>
    <subinterfaces>
      <subinterface>
        <index>0</index>
        <config>
          <index>0</index>
        </config>
      </subinterface>
    </subinterfaces>
    <aggregation xmlns="http://openconfig.net/yang/interfaces/aggregate">
      <config>
        <min-links>2</min-links>
        <lag-type>STATIC</lag-type>
      </config>
      <state>
        <min-links>2</min-links>
        <lag-type>STATIC</lag-type>
      </state>
    </aggregation>
  </interface>
</interfaces>

```



```

<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe6</name>
    <config>
      <name>xe6</name>
      <type
type">ianaift:ethernetCsmacd</type>
      </config>
      <state>
        <name>xe6</name>
        <logical>false</logical>
        <last-change>35600</last-change>
        <oper-status>UP</oper-status>
        <admin-status>UP</admin-status>
        <ifindex>10006</ifindex>
        <counters>
          <last-clear>0</last-clear>
          <out-errors>0</out-errors>
          <out-discards>0</out-discards>
          <out-multicast-pkts>0</out-multicast-pkts>
          <out-broadcast-pkts>0</out-broadcast-pkts>
          <out-unicast-pkts>0</out-unicast-pkts>
          <out-pkts>0</out-pkts>
          <out-octets>0</out-octets>
          <in-fcs-errors>0</in-fcs-errors>
          <in-errors>0</in-errors>
          <in-discards>0</in-discards>
          <in-multicast-pkts>7</in-multicast-pkts>
          <in-broadcast-pkts>0</in-broadcast-pkts>
          <in-unicast-pkts>0</in-unicast-pkts>
          <in-pkts>7</in-pkts>
          <in-octets>814</in-octets>
        </counters>
        <type
type">ianaift:ethernetCsmacd</type>
      </state>
      <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
        <state>
          <negotiated-port-speed
ethernet">oc-eth:SPEED_10GB</negotiated-port-speed>
          <negotiated-duplex-mode>FULL</negotiated-duplex-mode>
          <hw-mac-address>b86a.9729.abcl</hw-mac-address>
          <aggregate-id xmlns="http://openconfig.net/yang/interfaces/
aggregate">sa10</aggregate-id>
        </state>
        <config>
          <aggregate-id xmlns="http://openconfig.net/yang/interfaces/
aggregate">sa10</aggregate-id>
          <lacp-mode xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-if-
deviations">ACTIVE</lacp-mode>
        </config>
      </ethernet>
    </subinterfaces>
    <subinterface>
      <index>0</index>

```

```

        <config>
          <index>0</index>
        </config>
      </subinterface>
    </subinterfaces>
  </interface>
</interfaces>
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe7</name>
    <config>
      <name>xe7</name>
      <type
type">ianaift:ethernetCsmacd</type>
        xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
      </config>
      <state>
        <name>xe7</name>
        <logical>false</logical>
        <last-change>15300</last-change>
        <oper-status>UP</oper-status>
        <admin-status>UP</admin-status>
        <ifindex>10007</ifindex>
        <counters>
          <last-clear>0</last-clear>
          <out-errors>0</out-errors>
          <out-discards>0</out-discards>
          <out-multicast-pkts>7</out-multicast-pkts>
          <out-broadcast-pkts>0</out-broadcast-pkts>
          <out-unicast-pkts>0</out-unicast-pkts>
          <out-pkts>7</out-pkts>
          <out-octets>774</out-octets>
          <in-fcs-errors>0</in-fcs-errors>
          <in-errors>0</in-errors>
          <in-discards>0</in-discards>
          <in-multicast-pkts>0</in-multicast-pkts>
          <in-broadcast-pkts>0</in-broadcast-pkts>
          <in-unicast-pkts>0</in-unicast-pkts>
          <in-pkts>4193454</in-pkts>
          <in-octets>142577504</in-octets>
        </counters>
        <type
type">ianaift:ethernetCsmacd</type>
        xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
      </state>
    <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
      <state>
        <negotiated-port-speed
ethernet">oc-eth:SPEED_1GB</negotiated-port-speed>
          xmlns:oc-eth="http://openconfig.net/yang/interfaces/
        <negotiated-duplex-mode>FULL</negotiated-duplex-mode>
        <hw-mac-address>b86a.9729.abc2</hw-mac-address>
        <aggregate-id xmlns="http://openconfig.net/yang/interfaces/
aggregate">sa10</aggregate-id>
      </state>
      <config>
        <aggregate-id xmlns="http://openconfig.net/yang/interfaces/
aggregate">sa10</aggregate-id>

```

```

        <lacp-mode xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-if-
deviations">ACTIVE</lacp-mode>
    </config>
</ethernet>
<subinterfaces>
    <subinterface>
        <index>0</index>
        <config>
            <index>0</index>
        </config>
    </subinterface>
</subinterfaces>
</interface>
</interfaces>
<lacp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-lacp">
    <global>
        <config>
            <system-priority>2</system-priority>
        </config>
        <state>
            <system-priority>2</system-priority>
            <system-id>b8-6a-97-82-11-ba</system-id>
        </state>
    </global>
</lacp>

```

Restrictions

The interface name for a static LAG interface should begin with the text `sa`, followed by a number, such as `sa3`.

```
/interfaces/interface/name
```

The data type of the below leaf has been modified to `uint8`.

```
/interfaces/interface/aggregation/config/min-links
```

The below leaf was not in a supported state.

```
/lacp/interfaces/interface/config/lacp-mode
```

Create Dynamic LAG Interface

This XML configuration snippet is used to create a dynamic Link Aggregation Group (LAG) interface with a specified name and configure its settings for a network device.

Release

This configuration was introduced in OcNOS version 5.0.

OpenConfig NetConf Payload

Here is a sample OpenConfig NetConf Payload that configures an Ethernet interfaces to be a part of a LAG with a specified identifier. The LAG uses the LACP in `ACTIVE` mode, and it requires a minimum of two member links to be operational. Additionally, it sets the system priority for LACP.

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
```

```

    <interface>
      <name>xe10</name>
      <config>
        <name>xe10</name>
        <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
      </config>
      <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">/oc-
if:interfaces/oc-if:interface/oc-if:config/oc-if:name
        <config>
          <lacp-mode xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-
if-deviations">ACTIVE</lacp-mode>
          <aggregate-id xmlns="http://openconfig.net/yang/interfaces/
aggregate">po2</aggregate-id>
        </config>
      </ethernet>
    </interface>
  </interface>
  <interface>
    <name>po2</name>
    <config>
      <name>po2</name>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ieee8023adLag</type>
    </config>
    <aggregation xmlns="http://openconfig.net/yang/interfaces/aggregate">
      <config>
        <min-links>2</min-links>
        <lag-type>LACP</lag-type>
      </config>
    </aggregation>
  </interface>
</interfaces>
<lacp xmlns="http://openconfig.net/yang/lacp">
  <config>
    <system-priority>2</system-priority>
  </config>
  <interfaces>
    <interface>
      <name>xe10</name>
    </interface>
  </interfaces>
</lacp>

```

OcNOS CLI Command

The below CLI commands are used to configure a dynamic LAG interface with a system priority and a minimum required member link count. Ethernet interface is also assigned to the dynamic LAG group with the specified identifier and sets the LACP mode as `ACTIVE`.

```

lacp system-priority 2
!
interface po2
  port-channel min-links 2
!
interface xe10
  channel-group 2 mode active
!

```

OcNOS NetConf Payload

Here is a sample OcNOS NetConf Payload that configures a dynamic LAG interface with a minimum required member link count and assigns an Ethernet interface to the LAG group with LACP mode `ACTIVE`. Additionally, it sets the system priority for LACP.

```
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>xel0</name>
    <config>
      <name>xel0</name>
    </config>
    <member-aggregation xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-aggregate">
      <config>
        <lacp-mode>active</lacp-mode>
        <aggregate-id>2</aggregate-id>
        <agg-type>lacp</agg-type>
      </config>
    </member-aggregation>
  </interface>
  <interface>
    <name>po2</name>
    <config>
      <name>po2</name>
    </config>
    <aggregator xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-aggregate">
      <config>
        <min-links>2</min-links>
      </config>
    </aggregator>
  </interface>
</interfaces>
<lacp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-lacp">
  <global>
    <config>
      <system-priority>2</system-priority>
    </config>
  </global>
</lacp>
```

Validation with NetConf get

Here is a NetConf validation response provides detailed information about the dynamic LAG interface status and configuration, which includes dynamic link aggregation using LACP, minimum member link requirements, operational status, and system priority settings.

```
<rpc-reply xmlns="urn:ietf:params:xml:ns:NETCONF:base:1.0">
  <data>
    <interfaces xmlns="http://openconfig.net/yang/interfaces">
      <interface>
        <name>po2</name>
        <config>
          <name>po2</name>
          <type>
```

```

        xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ieee8023adLag</type>
    </config>
    <state>
        <name>po2</name>
        <logical>>false</logical>
        <last-change>0</last-change>
        <oper-status>DOWN</oper-status>
        <admin-status>UP</admin-status>
        <ifindex>100002</ifindex>
        <counters>
            <last-clear>0</last-clear>
            <out-errors>0</out-errors>
            <out-discards>0</out-discards>
            <out-multicast-pkts>37</out-multicast-pkts>
            <out-broadcast-pkts>0</out-broadcast-pkts>
            <out-unicast-pkts>0</out-unicast-pkts>
            <out-pkts>37</out-pkts>
            <out-octets>4736</out-octets>
            <in-fcs-errors>0</in-fcs-errors>
            <in-errors>0</in-errors>
            <in-discards>0</in-discards>
            <in-multicast-pkts>0</in-multicast-pkts>
            <in-broadcast-pkts>0</in-broadcast-pkts>
            <in-unicast-pkts>0</in-unicast-pkts>
            <in-pkts>0</in-pkts>
            <in-octets>0</in-octets>
        </counters>
        <type
type">ianaift:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ieee8023adLag</type>
    </state>
    <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
        <state>
            <negotiated-port-speed
                xmlns:oc-eth="http://openconfig.net/yang/interfaces/
ethernet">oc-eth:SPEED_UNKNOWN</negotiated-port-speed>
            <negotiated-duplex-mode>HALF</negotiated-duplex-mode>
            <hw-mac-address>b86a.9729.abf2</hw-mac-address>
        </state>
    </ethernet>
    <subinterfaces>
        <subinterface>
            <index>0</index>
            <config>
                <index>0</index>
            </config>
        </subinterface>
    </subinterfaces>
    <aggregation xmlns="http://openconfig.net/yang/interfaces/aggregate">
        <config>
            <min-links>2</min-links>
            <lag-type>LACP</lag-type>
        </config>
        <state>
            <min-links>2</min-links>
            <lag-type>LACP</lag-type>

```

```
        </state>
      </aggregation>
    </interface>
  </interfaces>
</data>
</rpc-reply>
```

Restrictions

The interface name for a dynamic LAG interface should begin with the text `po`, followed by a number, such as `po2`.

```
/interfaces/interface/name
```

The data type of the below leaf has been modified to `uint8`.

```
/interfaces/interface/aggregation/config/min-links
```

The below leaf was not in a supported state.

```
/lacp/interfaces/interface/config/lacp-mode
```

Tunnel Interfaces OpenConfig Translation

Create Tunnel Interface

This XML configuration snippet is used to specify the configuration for an OpenConfig interface with a tunnel type, source and destination IP addresses.

Release

This configuration was introduced in OcNOS version 4.2.

OpenConfig NetConf Payload

Here is the sample OpenConfig NetConf Payload configures an OpenConfig interface as a tunnel type with specific source and destination IP addresses and Time to Live (TTL) settings.

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>Tunnel30</name>
    <config>
      <name>Tunnel30</name>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:tunnel</type>
    </config>
    <tunnel xmlns="http://openconfig.net/yang/interfaces/tunnel">
      <ipv4>
        <addresses>
          <address>
            <ip>40.1.1.1</ip>
            <config>
              <ip>40.1.1.1</ip>
              <prefix-length>24</prefix-length>
            </config>
          </address>
        </addresses>
      </ipv4>
      <config>
        <src>20.2.2.1</src>
        <dst>20.2.2.2</dst>
        <ttl>250</ttl>
      </config>
    </tunnel>
  </interface>
</interfaces>
```

OcNOS CLI Command

The below CLI command is used to configure an interface with an IP address, a tunnel source and destination addresses, and a tunnel TTL value.

```
interface Tunnel30
ip address 40.1.1.1/24
```



```
tunnel source 20.2.2.1
tunnel destination 20.2.2.2
tunnel ttl 250
```

OcNOS NetConf Payload

Here is a sample OcNOS NetConf Payload that configures a Tunnel Interface with the specified source and destination addresses, and a TTL value. It also includes a secondary IPv4 address for the interface.

```
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>Tunnel30</name>
    <config>
      <name>Tunnel30</name>
    </config>
    <tunnel xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-
extended">
      <config>
        <src>20.2.2.1</src>
        <dst>20.2.2.2</dst>
        <ttl>250</ttl>
      </config>
    </tunnel>
    <ipv4 xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-ip">
      <secondary-addresses>
        <ip-address>40.1.1.1/24</ip-address>
        <config>
          <ip-address>40.1.1.1/24</ip-address>
        </config>
      </secondary-addresses>
    </ipv4>
  </interface>
</interfaces>
```

Validation with NetConf get

Here is a NetConf validation response provides an information about the configuration and status of the Tunnel Interface.

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>Tunnel30</name>
    <config>
      <name>Tunnel30</name>
      <type
type">ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:tunnel</type>
      </config>
    <state>
      <name>Tunnel30</name>
      <logical>false</logical>
      <last-change>0</last-change>
      <oper-status>DOWN</oper-status>
      <admin-status>UP</admin-status>
      <ifindex>0</ifindex>
    </state>
  </interface>
</interfaces>
```

```

        xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:tunnel</type>
    </state>
    <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
        <state>
            <negotiated-port-speed
                xmlns:oc-eth="http://openconfig.net/yang/interfaces/
ethernet">oc-eth:SPEED_UNKNOWN</negotiated-port-speed>
            <negotiated-duplex-mode>HALF</negotiated-duplex-mode>
            <hw-mac-address>0000.0000.0000</hw-mac-address>
        </state>
    </ethernet>
    <tunnel xmlns="http://openconfig.net/yang/interfaces/tunnel">
        <ipv4>
            <addresses>
                <address>
                    <ip>40.1.1.1</ip>
                    <config>
                        <ip>40.1.1.1</ip>
                        <prefix-length>24</prefix-length>
                    </config>
                    <state>
                        <ip>40.1.1.1</ip>
                        <prefix-length>24</prefix-length>
                    </state>
                </address>
            </addresses>
        </ipv4>
        <config>
            <src>20.2.2.1</src>
            <dst>20.2.2.2</dst>
            <ttl>250</ttl>
        </config>
        <state>
            <src>20.2.2.1</src>
            <dst>20.2.2.2</dst>
            <ttl>250</ttl>
        </state>
    </tunnel>
</interface>
</interfaces>

```

Restrictions

Tunnel interfaces must begin with `Tunnel` followed by a numerical value, such as `Tunnel130`.

```
/interfaces/interface/name
```

The tunnel configuration parameters `src` and `dst` do not have support for IPv6.

```
/interfaces/interface/tunnel/config/dst
/interfaces/interface/tunnel/config/src
```

The data type of the `ttl` leaf has been updated from `uint8` to `uint16`.

```
/interfaces/interface/tunnel/config/ttl
```

The primary IP address is determined by the first configured address, and it is not possible to delete the primary address without removing the other addresses.

/interfaces/interface/tunnel/ipv4/addresses/address/config/ip

BGP OpenConfig Translation

Create BGP Instance

This XML configuration snippet is used to initiate a BGP process with the specified autonomous system number and router ID.

Release

This configuration was introduced in OcNOS version 4.2.

OpenConfig NetConf Payload

Here is the sample OpenConfig NetConf Payload for configuring a BGP process within a network instance. It sets the BGP autonomous system number (AS) and specifies the router ID.

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
        <identifier>oc-pol-types:BGP</identifier>
        <name>100</name>
        <config>
          <identifier>oc-pol-types:BGP</identifier>
          <name>100</name>
        </config>
        <bgp>
          <global>
            <config>
              <as>100</as>
              <router-id>1.2.3.4</router-id>
            </config>
          </global>
        </bgp>
      </protocol>
    </protocols>
  </network-instance>
</network-instances>
```

OcNOS CLI Command

The below CLI commands are used to configure a BGP process with the AS number and set the BGP router ID.

```
router bgp 100
bgp router-id 1.2.3.4
```

OcNOS NetConf Payload

Here is a sample OcNOS NetConf Payload used to configure a network instance with the name and type. It also configures a BGP instance with an AS number and sets the BGP router ID.

```

<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-network-
instance">
  <network-instance>
    <instance-name>default</instance-name>
    <instance-type>vrf</instance-type>
    <config>
      <instance-name>default</instance-name>
      <instance-type>vrf</instance-type>
    </config>
    <vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vrf">
      <config>
        <vrf-name>default</vrf-name>
      </config>
    </vrf>
  </network-instance>
</network-instances>
<bgp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp">
  <bgp-instances>
    <bgp-instance>
      <bgp-as>100</bgp-as>
      <config>
        <bgp-as>100</bgp-as>
        <router-id>1.2.3.4</router-id>
      </config>
    </bgp-instance>
  </bgp-instances>
</bgp>

```

Validation with NetConf get

Here is a NetConf validation response that provides information about the enabled state and identifiers, as well as details about the BGP global configuration, including the AS number and router ID.

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <config>
      <name>default</name>
      <type
        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:DEFAULT_INSTANCE</type>
      </config>
      <state>
        <name>default</name>
        <type
          xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L3VRF</type>
        </state>
        <protocols>
          <protocol>
            <identifier
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
            <name>DIRECTLY_CONNECTED</name>
            <config>
              <identifier

```

```

        xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:DIRECTLY_CONNECTED</identifier>
        <name>DIRECTLY_CONNECTED</name>
        <enabled>true</enabled>
    </config>
    <state>
        <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:DIRECTLY_CONNECTED</identifier>
        <name>DIRECTLY_CONNECTED</name>
        <enabled>true</enabled>
        </state>
    </protocol>
</protocol>
    <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</identifier>
    <name>100</name>
    <config>
        <identifier
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:BGP</identifier>
            <name>100</name>
            <enabled>true</enabled>
        </config>
        <bgp>
            <global>
                <config>
                    <as>100</as>
                    <router-id>1.2.3.4</router-id>
                </config>
                <state>
                    <as>100</as>
                </state>
            </global>
            <state>
                <router-id>1.2.3.4</router-id>
            </state>
        </global>
    </global>
</bgp>
    <state>
        <enabled>true</enabled>
        <identifier
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:BGP</identifier>
            <name>100</name>
        </state>
    </protocol>
</protocols>
</network-instance>
</network-instances>

```

Restrictions

Leaf /oc-netinst:network-instances/network-instance/protocols/protocol/name

For BGP instances this leaf must have the same number of the `/network-instances/network-instance/protocols/protocol/bgp/global/config/as`.

Delete on leaf `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/global/config/as`

On OpenConfig BGP datamodel the container global do not have any key to identify a single BGP instance, but the BGP AS information is placed under xpath `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/global/config/as`.

On IPI BGP datamodel the BGP AS information is a key for BGP container, and it does not allow the delete on xpath `/ipi-bgp:/bgp/bgp-instances/bgp-instance/config/bgp-as` to avoid delete its own instance key.

In this case, when translation framework detects a delete or remove operation on following OpenConfig xpaths:

```
/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/global
/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/global/
config
/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/global/
config/as
```

It will trigger an error message to NETCONF client and do not execute the delete operation.

To avoid this issue, when user needs to delete or remove a configuration under OpenConfig xpath `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/global/config`, user must adds a "delete" or "remove" operation directly on the leaf or leaves desired to be removed, rather than delete the entire container.

Create BGP Global with Default VRF

This XML configuration snippet is used to set up BGP Global configuration with default VRF.

Release

This configuration was introduced in OcNOS version 6.2.0.

OpenConfig NetConf Payload

Here is the sample OpenConfig NetConf Payload to define BGP settings for the default network instance, including global BGP parameters, neighbor configurations, and address family tables.

Ensure that the AFI-SAFI container is present in the applied configuration to facilitate the configuration of address families.

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <config>
      <name>default</name>
      <type
        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:DEFAULT_INSTANCE</type>
      </config>
      <protocols>
        <protocol>
```

```

    <identifier
      xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</identifier>
    <name>DIRECTLY_CONNECTED</name>
    <config>
      <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
        <name>DIRECTLY_CONNECTED</name>
        <enabled>true</enabled>
      </config>
    </protocol>
  </protocol>
  <identifier
    xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</identifier>
    <name>100</name>
    <bgp>
      <global>
        <afi-safis>
          <afi-safi>
            <afi-safi-name
              xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
            <config>
              <afi-safi-name
                xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                <enabled>true</enabled>
              </config>
              <add-paths>
                <config>
                  <receive>true</receive>
                  <send>true</send>
                  <send-max>2</send-max>
                </config>
              </add-paths>
              <use-multiple-paths>
                <ibgp>
                  <config>
                    <maximum-paths>7</maximum-paths>
                  </config>
                </ibgp>
              </use-multiple-paths>
            </afi-safi>
          </afi-safis>
          <confederation>
            <config>
              <member-as>48</member-as>
              <identifier>600</identifier>
            </config>
          </confederation>
        </global>
      </bgp>
    </config>
    <as>100</as>
    <router-id>1.2.3.4</router-id>
  </config>
  <route-selection-options>
    <config>

```



```

        <enable-aigp>false</enable-aigp>
        <ignore-as-path-length>true</ignore-as-path-length>
        <external-compare-router-id>true</external-compare-router-id>
    </config>
</route-selection-options>
<graceful-restart>
    <config>
        <restart-time>100</restart-time>
        <stale-routes-time>300.00</stale-routes-time>
        <helper-only>false</helper-only>
    </config>
</graceful-restart>
</global>
<neighbors>
    <neighbor>
        <neighbor-address>10.1.1.2</neighbor-address>
        <afi-safis>
            <afi-safi>
                <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                <config>
                    <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                    <enabled>true</enabled>
                </config>
            </afi-safi>
        </afi-safis>
        <config>
            <enabled>true</enabled>
            <neighbor-address>10.1.1.2</neighbor-address>
            <peer-as>100</peer-as>
        </config>
    </neighbor>
</neighbors>
</bgp>
<config>
    <identifier
pol-types:BGP</identifier>
        <name>100</name>
        <enabled>true</enabled>
    </config>
</protocol>
</protocols>
<tables>
    <table>
        <protocol
types:DIRECTLY_CONNECTED</protocol>
            <address-family
types:IPV4</address-family>
            <config>
                <protocol
pol-types:DIRECTLY_CONNECTED</protocol>

```

```

        <address-family
          xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
        </config>
      </table>
      <table>
        <protocol
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</protocol>
          <address-family
            xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
            <config>
              <protocol
                xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
                <address-family
                  xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
                  </config>
                </table>
              </table>
              <protocol
                xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</protocol>
                <address-family
                  xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
                  <config>
                    <protocol
                      xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
                      <address-family
                        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
                        </config>
                      </table>
                    </table>
                  </network-instance>
                </network-instances>

```

OcNOS CLI Command

The below CLI commands are used to configure BGP settings for a specified AS number on a networking device. They define critical attributes of the BGP process, including the router ID, confederation settings, best path selection criteria, graceful restart behavior, and neighbor configuration. Additionally, the commands enable support for IPv4 unicast address families and specify advanced options like additional path handling and maximum path selection for internal BGP peers. The neighbor statement establishes a BGP neighbor relationship with an adjacent router using the IP address and assigns it to a specified AS number.

```

router bgp 100
  bgp router-id 1.2.3.4
  bgp confederation identifier 600
  bgp confederation peers 48
  bgp bestpath as-path ignore
  bgp bestpath aigp ignore
  bgp bestpath compare-routerid

```

```

bgp graceful-restart restart-time 100
bgp graceful-restart stalepath-time 300
bgp graceful-restart graceful-reset
neighbor 10.1.1.2 remote-as 100
!
address-family ipv4 unicast
bgp additional-paths send-receive
bgp additional-paths select best 2
max-paths ibgp 7
neighbor 10.1.1.2 activate
exit-address-family
!

```

OcNOS NetConf Payload

Here is a sample OcNOS NetConf Payload for configuring BGP settings on a network device. It defines a BGP instance with AS number and sets its router ID, graceful restart parameters, route selection options, and address family settings. Specifically, it configures BGP to operate with IPv4 unicast address families, allowing for the exchange of IPv4 unicast routing information. Additionally, the payload specifies additional path handling, maximum path selection for internal BGP peers, and establishes a BGP neighbor relationship with an adjacent router using the IP address.

```

<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-network-
instance">
  <network-instance>
    <instance-name>default</instance-name>
    <instance-type>vrf</instance-type>
    <config>
      <instance-name>default</instance-name>
      <instance-type>vrf</instance-type>
    </config>
    <vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vrf">
      <config>
        <vrf-name>default</vrf-name>
      </config>
    </vrf>
  </network-instance>
</network-instances>
<bgp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp">
  <bgp-instances>
    <bgp-instance>
      <bgp-as>100</bgp-as>
      <config>
        <bgp-as>100</bgp-as>
        <router-id>1.2.3.4</router-id>
      </config>
    </bgp-instance>
  </bgp-instances>
</bgp>

```

Validation with NetConf get

Here is a NetConf validation response indicates the successful validation of a network configuration specified in a NetConf payload. In this specific response, it verifies the correctness of the configuration for a specified network instance with associated protocols and interfaces. The validation ensures that the configuration adheres to the defined network instance types, policy types, and address families. All relevant elements, such as the BGP instance, its parameters, and the associated interfaces, are validated against the specified OpenConfig model.

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <config>
      <name>default</name>
      <type
        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:DEFAULT_INSTANCE</type>
      </config>
      <state>
        <name>default</name>
        <type
          xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:DEFAULT_INSTANCE</type>
        </state>
        <protocols>
          <protocol>
            <identifier
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</identifier>
            <name>DIRECTLY_CONNECTED</name>
            <config>
              <identifier
                xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
              <name>DIRECTLY_CONNECTED</name>
              <enabled>true</enabled>
            </config>
            <state>
              <identifier
                xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
              <name>DIRECTLY_CONNECTED</name>
              <enabled>true</enabled>
            </state>
          </protocol>
          <protocol>
            <identifier
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</identifier>
            <name>100</name>
            <bgp>
              <global>
                <afi-safis>
                  <afi-safi>
                    <afi-safi-name
                      xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                    <config>
                      <afi-safi-name
                        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                      <enabled>true</enabled>
                    </config>
                    <state>
                      <afi-safi-name
                        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>

```

```

        <enabled>true</enabled>
    </state>
    <add-paths>
        <config>
            <receive>true</receive>
            <send>true</send>
            <send-max>2</send-max>
        </config>
        <state>
            <receive>true</receive>
            <send>true</send>
            <send-max>2</send-max>
        </state>
    </add-paths>
    <use-multiple-paths>
        <ibgp>
            <config>
                <maximum-paths>7</maximum-paths>
            </config>
            <state>
                <maximum-paths>7</maximum-paths>
            </state>
        </ibgp>
    </use-multiple-paths>
</afi-safi>
</afi-safis>
<confederation>
    <config>
        <member-as>48</member-as>
        <identifier>600</identifier>
    </config>
    <state>
        <member-as>48</member-as>
        <identifier>600</identifier>
    </state>
</confederation>
<config>
    <as>100</as>
    <router-id>1.2.3.4</router-id>
</config>
<route-selection-options>
    <config>
        <enable-aigp>false</enable-aigp>
        <ignore-as-path-length>true</ignore-as-path-length>
        <external-compare-router-id>true</external-compare-router-id>
    </config>
    <state>
        <enable-aigp>false</enable-aigp>
        <ignore-as-path-length>true</ignore-as-path-length>
        <external-compare-router-id>true</external-compare-router-id>
    </state>
</route-selection-options>
<state>
    <as>100</as>
    <router-id>1.2.3.4</router-id>
    <total-prefixes>0</total-prefixes>
</state>

```

```

    <graceful-restart>
      <config>
        <restart-time>100</restart-time>
        <stale-routes-time>300.00</stale-routes-time>
        <helper-only>false</helper-only>
      </config>
    </state>
  </graceful-restart>
</global>
<neighbors>
  <neighbor>
    <neighbor-address>10.1.1.2</neighbor-address>
    <afi-safis>
      <afi-safi>
        <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
          <config>
            <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
              <enabled>true</enabled>
            </config>
            <state>
              <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                <enabled>true</enabled>
              </state>
            </afi-safi>
          </afi-safis>
        <config>
          <enabled>true</enabled>
          <neighbor-address>10.1.1.2</neighbor-address>
          <peer-as>100</peer-as>
        </config>
        <state>
          <enabled>true</enabled>
          <neighbor-address>10.1.1.2</neighbor-address>
          <peer-as>100</peer-as>
        </state>
      </neighbor>
    </neighbors>
  </bgp>
<config>
  <identifier
    xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</identifier>
    <name>100</name>
    <enabled>true</enabled>
  </config>
  <state>
    <enabled>true</enabled>

```

```

        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</identifier>
        <name>100</name>
      </state>
    </protocol>
  </protocols>
  <tables>
    <table>
      <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</protocol>
      <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
      <config>
        <protocol
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family
          xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
        </config>
      </state>
    </table>
    <table>
      <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
      <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
      </state>
    </table>
    <table>
      <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</protocol>
      <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
      <config>
        <protocol
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family
          xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
        </config>
      </state>
    </table>
    <table>
      <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
      <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
      </state>
    </table>
    <table>
      <protocol

```

```

        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
        <config>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
        </config>
        <state>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
        </state>
        </table>
</tables>
<interfaces>
  <interface>
    <id>eth0</id>
    <config>
      <id>eth0</id>
      <interface>eth0</interface>
    </config>
  </interface>
  <interface>
    <id>eth1</id>
    <config>
      <id>eth1</id>
      <interface>eth1</interface>
    </config>
  </interface>
  <interface>
    <id>eth2</id>
    <config>
      <id>eth2</id>
      <interface>eth2</interface>
    </config>
  </interface>
  <interface>
    <id>eth3</id>
    <config>
      <id>eth3</id>
      <interface>eth3</interface>
    </config>
  </interface>
  <interface>
    <id>eth4</id>
    <config>
      <id>eth4</id>
      <interface>eth4</interface>
    </config>

```



```

</interface>
<interface>
  <id>eth5</id>
  <config>
    <id>eth5</id>
    <interface>eth5</interface>
  </config>
</interface>
<interface>
  <id>eth6</id>
  <config>
    <id>eth6</id>
    <interface>eth6</interface>
  </config>
</interface>
<interface>
  <id>eth7</id>
  <config>
    <id>eth7</id>
    <interface>eth7</interface>
  </config>
</interface>
<interface>
  <id>eth8</id>
  <config>
    <id>eth8</id>
    <interface>eth8</interface>
  </config>
</interface>
<interface>
  <id>lo</id>
  <config>
    <id>lo</id>
    <interface>lo</interface>
  </config>
</interface>
</interfaces>
</network-instance>
</network-instances>

```

Restrictions

- The OcNOS model requires that when configuring paths under `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/global`, the corresponding **AFI-SAFI** configuration must be present at `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/global/afi-safis`. This **AFI-SAFI** information is essential for generating the following paths in the OcNOS model:
 - `/ipi-bgp:bgp/bgp-instance/address-family`
 - `/ipi-bgp:bgp/bgp-instance/peer-group/address-families`
 - `/ipi-bgp:bgp/bgp-instance/address-family-vrf`
- Once the paths under `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/global` have been initially configured on the equipment, subsequent configurations on these paths do not require users to specify the **AFI-SAFI** information. The translation process will automatically retrieve this information from the equipment database.

- For multiple paths configuration, note that the Open Config path `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/global/use-multiple-paths` is not supported. Instead, all multiple paths configurations should be performed under the Open Config path `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/global/afi-safis/afi-safi/use-multiple-paths`. This is because the OcNOS data model centralizes the handling of multiple paths in one location.
- The containers `graceful-restart` and `route-selection-options` can only be configured for the `network-instance` instance named `default`.
- Regarding specific Open Config attributes, the logic for `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/global/graceful-restart/state/helper-only` and `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/global/route-selection-options/config/enable-aigp` is inverted. In the OcNOS data model, a `false` value in Open Config corresponds to a `true` value in the OcNOS data model, and vice versa. This inversion should be taken into account when configuring these attributes.

Create BGP Global with user-defined VRFs

This XML configuration snippet uses the payloads provided in this section to configure BGP Global with user-defined VRF data from the Open Config perspective.

Release

This configuration was introduced in OcNOS version 6.2.0.

OpenConfig NetConf Payload

Here is the sample OpenConfig NetConf Payload used to configure network instances with BGP Global settings. This payload includes configuration for both the `default` network instance and a custom network instance named `red`.

In the `default` instance, BGP Global settings such as the AS number, router ID, route selection options, and graceful restart parameters are configured.

In the `red` network instance, in addition to the common BGP Global settings, specific **AFI-SAFI** settings are configured, including the number of maximum paths for both eBGP and iBGP. This example demonstrates how the payload can be adapted to configure different network instances with unique BGP configurations.

Note: To configure address-families, the **AFI-SAFI container** must be available in the applied configuration.

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <config>
      <name>default</name>
      <type
        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:DEFAULT_INSTANCE</type>
      </config>
      <protocols>
        <protocol>
          <identifier
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</identifier>
          <name>DIRECTLY_CONNECTED</name>
          <config>
```

```

        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
        <name>DIRECTLY_CONNECTED</name>
        <enabled>true</enabled>
      </config>
    </protocol>
  <protocol>
    <identifier
      xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</identifier>
    <name>100</name>
    <bgp>
      <global>
        <config>
          <as>100</as>
          <router-id>1.2.3.4</router-id>
        </config>
        <route-selection-options>
          <config>
            <enable-aigp>false</enable-aigp>
            <ignore-as-path-length>true</ignore-as-path-length>
            <external-compare-router-id>true</external-compare-router-id>
          </config>
        </route-selection-options>
        <graceful-restart>
          <config>
            <restart-time>100</restart-time>
            <stale-routes-time>300.00</stale-routes-time>
            <helper-only>false</helper-only>
          </config>
        </graceful-restart>
      </global>
    </bgp>
  </config>
  <identifier
    xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</identifier>
  <name>100</name>
  <enabled>true</enabled>
</config>
</protocol>
</protocols>
</network-instance>
<network-instance>
  <name>red</name>
  <config>
    <name>red</name>
    <type
      xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L3VRF</type>
    <route-distinguisher>100:200</route-distinguisher>
  </config>
  <protocols>
    <protocol>
      <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</identifier>

```

```

    <name>DIRECTLY_CONNECTED</name>
    <config>
      <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
      <name>DIRECTLY_CONNECTED</name>
      <enabled>true</enabled>
    </config>
  </protocol>
  <protocol>
    <identifier
      xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</identifier>
    <name>100</name>
    <bgp>
      <global>
        <config>
          <as>100</as>
          <router-id>1.2.3.4</router-id>
        </config>
        <afi-safis>
          <afi-safi>
            <afi-safi-name
              xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
            <config>
              <afi-safi-name
                xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
              <enabled>true</enabled>
            </config>
            <use-multiple-paths>
              <ebgp>
                <config>
                  <maximum-paths>10</maximum-paths>
                </config>
              </ebgp>
              <ibgp>
                <config>
                  <maximum-paths>15</maximum-paths>
                </config>
              </ibgp>
            </use-multiple-paths>
          </afi-safi>
        </afi-safis>
        <confederation>
          <config>
            <member-as>48</member-as>
            <identifier>600</identifier>
          </config>
        </confederation>
      </global>
    </bgp>
  </config>
  <identifier
    xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</identifier>
  <name>100</name>

```

```

        <enabled>true</enabled>
    </config>
</protocol>
</protocols>
</network-instance>
</network-instances>

```

OcNOS CLI Command

The below CLI commands are used to configure an IP VRF with a route distinguisher. In addition, the router BGP is configured with various BGP settings, including router ID, bestpath options, graceful restart parameters, and confederation settings. Inside the address-family IPv4 VRF context, the maximum paths for eBGP and iBGP are set. The BGP confederation is also configured with an identifier and peers.

```

ip vrf red
rd 100:200
!
router bgp 100
  bgp router-id 1.2.3.4
  bgp bestpath as-path ignore
  bgp bestpath aigp ignore
  bgp bestpath compare-routerid
  bgp graceful-restart restart-time 100
  bgp graceful-restart stalepath-time 300
  bgp graceful-restart graceful-reset
  !
  address-family ipv4 vrf red
  max-paths ebgp 10
  max-paths ibgp 15
  bgp confederation identifier 600
  bgp confederation peers 48
  exit-address-family
!

```

OcNOS NetConf Payload

Here is a sample OcNOS NetConf Payload to configure a BGP instance with AS number, a router ID, and settings to ignore AIGP for bestpath selection. It also includes graceful restart parameters with a restart time and a stale path max retention time. Additionally, the payload configures route selection options to ignore AS path length and perform external comparisons based on router IDs. Inside the address-family VRF context for IPv4 unicast, it sets the confederation identifier and the peer AS number. Maximum path settings are configured for both eBGP and iBGP paths.

```

<bgp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp">
  <bgp-instances>
    <bgp-instance>
      <bgp-as>100</bgp-as>
      <config>
        <bgp-as>100</bgp-as>
        <router-id>1.2.3.4</router-id>
        <ignore-aigp-for-bestpath />
      </config>
      <graceful-restart>
        <config>
          <restart-time>100</restart-time>

```

```

retention-time>      <stale-path-max-retention-time>300</stale-path-max-
</retention-time>
      <graceful-reset />
    </config>
  </graceful-restart>
  <route-selection>
    <config>
      <ignore-as-path-length />
      <external-compare-router-id />
    </config>
  </route-selection>
  <address-family-vrfs>
    <address-family-vrf>
      <afi>ipv4</afi>
      <safi>unicast</safi>
      <vrf-name>red</vrf-name>
      <confederation>
        <identifier>600</identifier>
        <peer-as-number>48</peer-as-number>
      </confederation>
      <config>
        <afi>ipv4</afi>
        <safi>unicast</safi>
        <vrf-name>red</vrf-name>
      </config>
      <maximum-paths>
        <config>
          <ebgp-max-path>10</ebgp-max-path>
          <ibgp-max-path>15</ibgp-max-path>
        </config>
      </maximum-paths>
    </address-family-vrf>
  </address-family-vrfs>
</bgp-instance>
</bgp-instances>
</bgp>

```

Validation with NetConf get

Here is a NetConf validation response for configuring settings for the default network instance and a network instance. It also includes configurations for protocols, under network instances. Additionally, there are table configurations for IPv4 and IPv6 address families.

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <config>
      <name>default</name>
      <type
        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:DEFAULT_INSTANCE</type>
      </config>
      <state>
        <name>default</name>
        <type
          xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:DEFAULT_INSTANCE</type>

```

```

    </state>
    <protocols>
      <protocol>
        <identifier>
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</identifier>
          <name>DIRECTLY_CONNECTED</name>
          <config>
            <identifier>
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
              <name>DIRECTLY_CONNECTED</name>
              <enabled>true</enabled>
            </config>
          <state>
            <identifier>
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
              <name>DIRECTLY_CONNECTED</name>
              <enabled>true</enabled>
            </state>
          </protocol>
        <protocol>
          <identifier>
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</identifier>
          <name>100</name>
          <bgp>
            <global>
              <config>
                <as>100</as>
                <router-id>1.2.3.4</router-id>
              </config>
              <route-selection-options>
                <config>
                  <enable-aigp>false</enable-aigp>
                  <ignore-as-path-length>true</ignore-as-path-length>
                  <external-compare-router-id>true</external-compare-router-id>
                </config>
                <state>
                  <enable-aigp>false</enable-aigp>
                  <ignore-as-path-length>true</ignore-as-path-length>
                  <external-compare-router-id>true</external-compare-router-id>
                </state>
              </route-selection-options>
              <state>
                <as>100</as>
                <router-id>1.2.3.4</router-id>
                <total-prefixes>0</total-prefixes>
              </state>
              <graceful-restart>
                <config>
                  <restart-time>100</restart-time>
                  <stale-routes-time>300.00</stale-routes-time>
                  <helper-only>false</helper-only>
                </config>
                <state>

```

```

        <restart-time>100</restart-time>
        <stale-routes-time>300.00</stale-routes-time>
        <helper-only>false</helper-only>
    </state>
</graceful-restart>
</global>
</bgp>
<config>
    <identifier
pol-types:BGP xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
    </identifier>
        <name>100</name>
        <enabled>true</enabled>
    </config>
    <state>
        <enabled>true</enabled>
        <identifier
pol-types:BGP xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
    </identifier>
            <name>100</name>
        </state>
    </protocol>
</protocols>
<tables>
    <table>
        <protocol
types:DIRECTLY_CONNECTED xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
        </protocol>
            <address-family
types:IPv4 xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
            </address-family>
                <config>
                    <protocol
pol-types:DIRECTLY_CONNECTED xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
                    </protocol>
                        <address-family
types:IPv4 xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
                        </address-family>
                            <config>
                                <state>
                                    <protocol
pol-types:DIRECTLY_CONNECTED xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
                                    </protocol>
                                        <address-family
types:IPv4 xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
                                        </address-family>
                                            </state>
                                        </table>
                                    <table>
                                        <protocol
types:DIRECTLY_CONNECTED xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
                                        </protocol>
                                            <address-family
types:IPv6 xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
                                            </address-family>
                                                <config>
                                                    <protocol
pol-types:DIRECTLY_CONNECTED xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
                                                    </protocol>

```



```

        <address-family
          xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
        </config>
        <state>
          <protocol
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
            <address-family
              xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
            </state>
          </table>
        </table>
        <protocol
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</protocol>
          <address-family
            xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
          <config>
            <protocol
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
              <address-family
                xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
              </config>
            </table>
          </tables>
        </network-instance>
        <network-instance>
          <name>red</name>
          <config>
            <name>red</name>
            <type
              xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L3VRF</type>
            <route-distinguisher>100:200</route-distinguisher>
          </config>
          <state>
            <name>red</name>
            <type
              xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L3VRF</type>
            <route-distinguisher>100:200</route-distinguisher>
          </state>
          <protocols>
            <protocol>
              <identifier
                xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</identifier>
              <name>DIRECTLY_CONNECTED</name>
              <config>
                <identifier
                  xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
                  <name>DIRECTLY_CONNECTED</name>
                  <enabled>true</enabled>

```

```

    </config>
    <state>
      <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
      <name>DIRECTLY_CONNECTED</name>
      <enabled>true</enabled>
    </state>
  </protocol>
  <protocol>
    <identifier
      xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</identifier>
    <name>100</name>
    <bgp>
      <global>
        <config>
          <as>100</as>
          <router-id>1.2.3.4</router-id>
        </config>
        <afi-safis>
          <afi-safi>
            <afi-safi-name
              xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
            <config>
              <afi-safi-name
                xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
              <enabled>true</enabled>
            </config>
            <state>
              <afi-safi-name
                xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
              </state>
              <use-multiple-paths>
                <ebgp>
                  <config>
                    <maximum-paths>10</maximum-paths>
                  </config>
                  <state>
                    <maximum-paths>10</maximum-paths>
                  </state>
                </ebgp>
                <ibgp>
                  <config>
                    <maximum-paths>15</maximum-paths>
                  </config>
                  <state>
                    <maximum-paths>15</maximum-paths>
                  </state>
                </ibgp>
              </use-multiple-paths>
            </afi-safi>
          </afi-safis>
          <confederation>
            <config>

```

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```

      xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</protocol>
      <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
        <config>
          <protocol
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
            <address-family
              xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
            </config>
          <state>
            <protocol
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
              <address-family
                xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
              </state>
            </table>
          <table>
            <protocol
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</protocol>
              <address-family
                xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
              <config>
                <protocol
                  xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
                  <address-family
                    xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
                  </config>
                <state>
                  <protocol
                    xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
                    <address-family
                      xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
                    </state>
                  </table>
                </tables>
              </network-instance>
            </network-instances>

```

Restrictions

- The `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/global/afi-safis/afi-safi/add-paths` is only available on the network-instance instance named default.
- The container `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/global/graceful-restart` is only available on the network-instance instance named default.

- The container `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/global/route-selection-options` is **only available on the network-instance instance named default**.
- The OcNOS model requires that when configuring paths under `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/global`, the corresponding **AFI-SAFI** configuration must be present at `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/global/afi-safis`. This **AFI-SAFI** information is essential for generating the following paths in the OcNOS model:
 - `/ipi-bgp:bgp/bgp-instance/address-family`
 - `/ipi-bgp:bgp/bgp-instance/peer-group/address-families`
 - `/ipi-bgp:bgp/bgp-instance/address-family-vrf`
- Once the paths under `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/global` have been initially configured on the equipment, subsequent configurations on these paths do not require users to specify the **AFI-SAFI** information. The translation process will automatically retrieve this information from the equipment database.

Configure BGP neighbors

This XML configuration snippet is used to configure neighbors in non-default VRF of BGP.

Release

This configuration was introduced in OcNOS version 4.2.

OpenConfig NetConf Payload

Here is the sample OpenConfig NetConf Payload to configure network instances, specifically two instances: `default` and `VRF1`. It also configures BGP settings within these network instances, including neighbors and address families. Additionally, it configures tables for IPv4 and IPv6 address families within the network instances.

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <config>
      <name>default</name>
      <type
        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:DEFAULT_INSTANCE</type>
      </config>
      <protocols>
        <protocol>
          <identifier
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
          <name>DIRECTLY_CONNECTED</name>
          <config>
            <identifier
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
            <name>DIRECTLY_CONNECTED</name>
            <enabled>true</enabled>
          </config>
        </protocol>
      </protocols>
    </config>
  </network-instance>
</network-instances>
```

```

    <identifier
      xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGPP</identifier>
    <name>123</name>
    <bgp>
      <global>
        <afi-safis>
          <afi-safi>
            <afi-safi-name
              xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
            <config>
              <afi-safi-name
                xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
              <enabled>true</enabled>
            </config>
          </afi-safi>
        </afi-safis>
      </global>
      <neighbors>
        <neighbor>
          <neighbor-address>10.1.1.1</neighbor-address>
          <afi-safis>
            <afi-safi>
              <afi-safi-name
                xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
              <ipv4-unicast>
                <config>
                  <send-default-route>true</send-default-route>
                </config>
                <prefix-limit>
                  <config>
                    <max-prefixes>5</max-prefixes>
                    <warning-threshold-pct>60</warning-threshold-pct>
                  </config>
                </prefix-limit>
              </ipv4-unicast>
            </afi-safi>
          </afi-safis>
        </neighbor>
      </neighbors>
    </bgp>
  </config>
  <enabled>true</enabled>
  <remove-private-as>

```

```

        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:PRIVATE_AS_REMOVE_ALL</remove-private-as>
        <neighbor-address>10.1.1.1</neighbor-address>
        <peer-as>100</peer-as>
        <local-as>300</local-as>
    </config>
    <enable-bfd>
        <config>
            <enabled>true</enabled>
        </config>
    </enable-bfd>
    <transport>
        <config>
            <local-address>eth1</local-address>
        </config>
    </transport>
    <timers>
        <config>
            <keepalive-interval>30.00</keepalive-interval>
            <hold-time>120.00</hold-time>
        </config>
    </timers>
    <ebgp-multihop>
        <config>
            <multihop-ttl>5</multihop-ttl>
            <enabled>true</enabled>
        </config>
    </ebgp-multihop>
</neighbor>
<neighbor>
    <neighbor-address>11.1.1.1</neighbor-address>
    <afi-safi>
        <afi-safi>
            <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
            <ipv4-unicast>
                <prefix-limit>
                    <config>
                        <max-prefixes>7</max-prefixes>
                        <warning-threshold-pct>70</warning-threshold-pct>
                        <prevent-teardown>true</prevent-teardown>
                    </config>
                </prefix-limit>
            </ipv4-unicast>
            <apply-policy>
                <config>
                    <import-policy>rmap1</import-policy>
                    <export-policy>rmap1</export-policy>
                </config>
            </apply-policy>
            <config>
                <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                <enabled>true</enabled>
            </config>

```

```

        <add-paths>
        <config>
        <receive>true</receive>
        <send>true</send>
        </config>
        </add-paths>
        </afi-safi>
    </afi-safis>
    <config>
        <enabled>true</enabled>
        <neighbor-address>11.1.1.1</neighbor-address>
        <peer-as>123</peer-as>
    </config>
</neighbor>
</neighbors>
</bgp>
<config>
    <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</identifier>
        <name>123</name>
        <enabled>true</enabled>
    </config>
</protocol>
</protocols>
<tables>
    <table>
        <protocol
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
            <address-family
                xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
            <config>
                <protocol
                    xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
                    <address-family
                        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
                    </config>
                </table>
            <table>
                <protocol
                    xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
                    <address-family
                        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
                    <config>
                        <protocol
                            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
                            <address-family
                                xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
                            </config>
                        </table>
                    </table>
                </table>
            </table>
        </table>
    </table>

```



```

    <table>
      <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
        <address-family
          xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
          <config>
            <protocol
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
              <address-family
                xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
                </config>
              </table>
            </tables>
          </network-instance>
        <network-instance>
          <name>VRF1</name>
          <config>
            <name>VRF1</name>
            <type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:L3VRF</type>
            <route-distinguisher>1.2.3.4:56</route-distinguisher>
            </config>
          <protocols>
            <protocol>
              <identifier xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:DIRECTLY_CONNECTED</identifier>
              <name>DIRECTLY_CONNECTED</name>
              <config>
                <identifier xmlns:oc-pol-types="http://openconfig.net/
yang/policy-types">oc-pol-types:DIRECTLY_CONNECTED</identifier>
                <name>DIRECTLY_CONNECTED</name>
                <enabled>true</enabled>
              </config>
            </protocol>
            <protocol>
              <identifier xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:BGP</identifier>
              <name>123</name>
              <bgp>
                <global>
                  <config>
                    <as>123</as>
                  </config>
                </global>
                <neighbors>
                  <neighbor>
                    <neighbor-address>20.1.1.2</neighbor-address>
                    <afi-safis>
                      <afi-safi>
                        <afi-safi-name xmlns:oc-bgp-types="http://
openconfig.net/yang/bgp-types">oc-bgp-types:IPv4_UNICAST</afi-safi-name>
                        <config>
                          <afi-safi-name xmlns:oc-bgp-
types="http://openconfig.net/yang/bgp-types">oc-bgp-types:IPv4_UNICAST</afi-
safi-name>

```

```

                                <enabled>true</enabled>
                                </config>
                                <apply-policy>
                                <config>
                                <import-policy>rmap2</import-policy>
policy>
                                <export-policy>rmap2</export-policy>
policy>
                                </config>
                                </apply-policy>
                                <ipv4-unicast>
                                <config>
                                <send-default-route>true</send-default-route>
route>
                                </config>
                                </ipv4-unicast>
                                </afi-safi>
                                </afi-safis>
                                <config>
                                <neighbor-address>20.1.1.2</neighbor-address>
                                <remove-private-as xmlns:oc-bgp-types="http://
openconfig.net/yang/bgp-types">oc-bgp-types:PRIVATE_AS_REMOVE_ALL</remove-
private-as>
                                <description>ebgp_VRF1</description>
                                <local-as>300</local-as>
                                <peer-as>200</peer-as>
                                </config>
                                </neighbor>
                                <neighbor>
                                <neighbor-address>21.1.1.2</neighbor-address>
                                <afi-safis>
                                <afi-safi>
                                <afi-safi-name
                                xmlns:oc-bgp-types="http://openconfig.net/
yang/bgp-types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                                <ipv4-unicast>
                                <prefix-limit>
                                <config>
                                <max-prefixes>5</max-prefixes>
threshold-pct>
                                <warning-threshold-pct>80</warning-threshold-pct>
                                <prevent-teardown>true</prevent-teardown>
                                </config>
                                </prefix-limit>
                                </ipv4-unicast>
                                <config>
                                <afi-safi-name
                                xmlns:oc-bgp-types="http://openconfig.net/
yang/bgp-types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                                <enabled>true</enabled>
                                </config>
                                <graceful-restart>
                                <config>
                                <enabled>true</enabled>
                                </config>
                                </graceful-restart>
                                </afi-safi>
                                </afi-safis>

```

```

        <config>
          <neighbor-address>21.1.1.2</neighbor-address>
          <peer-as>123</peer-as>
          <enabled>true</enabled>
        </config>
      </neighbor>
    </neighbors>
  </bgp>
  <config>
    <identifier xmlns:oc-pol-types="http://openconfig.net/
yang/policy-types">oc-pol-types:BGP</identifier>
    <name>123</name>
    <enabled>true</enabled>
  </config>
</protocol>
</protocols>
<tables>
  <table>
    <protocol xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:DIRECTLY_CONNECTED</protocol>
    <address-family xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">oc-types:IPv4</address-family>
    <config>
      <protocol xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:DIRECTLY_CONNECTED</protocol>
      <address-family xmlns:oc-types="http://openconfig.net/
yang/openconfig-types">oc-types:IPv4</address-family>
    </config>
    </table>
  <table>
    <protocol xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:DIRECTLY_CONNECTED</protocol>
    <address-family xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">oc-types:IPv6</address-family>
    <config>
      <protocol xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:DIRECTLY_CONNECTED</protocol>
      <address-family xmlns:oc-types="http://openconfig.net/
yang/openconfig-types">oc-types:IPv6</address-family>
    </config>
    </table>
  <table>
    <protocol xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:BGP</protocol>
    <address-family xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">oc-types:IPv4</address-family>
    <config>
      <protocol xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:BGP</protocol>
      <address-family xmlns:oc-types="http://openconfig.net/
yang/openconfig-types">oc-types:IPv4</address-family>
    </config>
    </table>
  </tables>
</network-instance>
</network-instances>

```

OcNOS CLI Command

The below CLI commands are used to configure a BGP setup with two address families: global `ipv4 unicast` and `ipv4 vrf VRF1`. It includes various neighbor configurations, prefix limits, route maps, and other BGP parameters to control BGP behavior in both the global and VRF contexts.

```
ip vrf VRF1
rd 100:200
exit
router bgp 123
neighbor 10.1.1.1 remote-as 100
neighbor 10.1.1.1 local-as 300
neighbor 10.1.1.1 fall-over bfd
neighbor 11.1.1.1 remote-as 123
neighbor 10.1.1.1 ebgp-multihop 5
neighbor 10.1.1.1 update-source eth1
neighbor 10.1.1.1 timers 30 120
!
address-family ipv4 unicast
neighbor 10.1.1.1 activate
neighbor 10.1.1.1 remove-private-AS
neighbor 10.1.1.1 maximum-prefix 5 60
neighbor 10.1.1.1 capability graceful-restart
neighbor 10.1.1.1 default-originate
neighbor 11.1.1.1 activate
neighbor 11.1.1.1 additional-paths send-receive
neighbor 11.1.1.1 maximum-prefix 7 70 warning-only
neighbor 11.1.1.1 route-map rmap1 in
neighbor 11.1.1.1 route-map rmap1 out
exit-address-family
!
address-family ipv4 vrf VRF1
neighbor 20.1.1.2 remote-as 200
neighbor 20.1.1.2 local-as 300
neighbor 20.1.1.2 activate
neighbor 20.1.1.2 remove-private-AS
neighbor 20.1.1.2 route-map rmap2 in
neighbor 20.1.1.2 route-map rmap2 out
neighbor 20.1.1.2 default-originate
neighbor 21.1.1.2 remote-as 123
neighbor 21.1.1.2 activate
neighbor 21.1.1.2 maximum-prefix 5 80 warning-only
neighbor 21.1.1.2 capability graceful-restart
neighbor 20.1.1.2 description ebgp_VRF1
exit-address-family
!
```

OcNOS NetConf Payload

Here is a sample OcNOS NetConf Payload to configure BGP settings with VRF support and address-families in an OcNOS network device using the IPI YANG models. It defines BGP peering relationships, specify BGP attributes, and apply route maps within the context of both the global BGP instance and the VRF `VRF1`.

```
<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-network-
instance">
  <network-instance>
```

```

    <instance-name>VRF1</instance-name>
    <instance-type>vrf</instance-type>
    <config>
        <instance-name>VRF1</instance-name>
        <instance-type>vrf</instance-type>
    </config>
    <vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vrf">
        <config>
            <vrf-name>VRF1</vrf-name>
        </config>
        <bgp-vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp-vrf">
            <config>
                <rd-string>100:200</rd-string>
            </config>
        </bgp-vrf>
    </vrf>
</network-instance>
</network-instances>
<bgp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp">
    <bgp-instances>
        <bgp-instance>
            <bgp-as>123</bgp-as>
            <config>
                <bgp-as>123</bgp-as>
            </config>
            <address-families>
                <address-family>
                    <afi>ipv4</afi>
                    <safi>unicast</safi>
                    <config>
                        <afi>ipv4</afi>
                        <safi>unicast</safi>
                    </config>
                </address-family>
            </address-families>
            <peers>
                <peer>
                    <peer-address>10.1.1.1</peer-address>
                    <address-families>
                        <address-family>
                            <afi>ipv4</afi>
                            <safi>unicast</safi>
                            <maximum-prefixes>
                                <prefix-count>5</prefix-count>
                                <config>
                                    <prefix-count>5</prefix-count>
                                    <threshold-percentage>60</threshold-
percentage>
                                </config>
                            </maximum-prefixes>
                        </address-family>
                    </address-families>
                    <activate />
                    <peer-remove-private-as />
                    <capability-graceful-restart />
                    <default-peer-route-map-name />
                </peer>
            </peers>
        </bgp-instance>
    </bgp-instances>
</bgp>

```

```

        </config>
    </address-family>
</address-families>
<config>
    <peer-address>10.1.1.1</peer-address>
    <peer-as>100</peer-as>
    <enable-peer-bfd />
    <peer-local-as>300</peer-local-as>
    <source-identifier>eth1</source-identifier>
</config>
<timers>
    <config>
        <keep-alive>30</keep-alive>
        <hold-time>120</hold-time>
    </config>
</timers>
<ebgp-multihop>
    <config>
        <maximum-hop-count>5</maximum-hop-count>
        <enabled />
    </config>
</ebgp-multihop>
</peer>
<peer>
    <peer-address>11.1.1.1</peer-address>
    <address-families>
        <address-family>
            <afi>ipv4</afi>
            <safi>unicast</safi>
            <maximum-prefixes>
                <maximum-prefix>
                    <prefix-count>7</prefix-count>
                    <config>
                        <prefix-count>7</prefix-count>
                        <threshold-percentage>70</threshold-
percentage>
                            <warning-only />
                    </config>
                </maximum-prefix>
            </maximum-prefixes>
            <route-map-filters>
                <route-map-filter>
                    <route-map-direction>in</route-map-
direction>
                        <config>
                            <route-map-direction>in</route-map-
direction>
                                <route-map-name>rmap1</route-map-name>
                        </config>
                    </route-map-filter>
                    <route-map-filter>
                        <route-map-direction>out</route-map-
direction>
                            <config>
                                <route-map-direction>out</route-map-
direction>
                                    <route-map-name>rmap1</route-map-name>
                            </config>

```

```

        </route-map-filter>
    </route-map-filters>
    <config>
        <afi>ipv4</afi>
        <safi>unicast</safi>
        <additional-paths-mode>receive send</
additional-paths-mode>
        <activate />
    </config>
</address-family>
</address-families>
<config>
    <peer-address>11.1.1.1</peer-address>
    <peer-as>123</peer-as>
</config>
</peer>
</peers>
<address-family-vrfs>
    <address-family-vrf>
        <afi>ipv4</afi>
        <safi>unicast</safi>
        <vrf-name>VRF1</vrf-name>
        <vrf-peers>
            <vrf-peer>
                <peer-address>20.1.1.2</peer-address>
                <route-map-filters>
                    <route-map-filter>
                        <route-map-direction>in</route-map-
direction>
                        <config>
                            <route-map-direction>in</route-map-
direction>
                            <route-map-name>rmap2</route-map-name>
                        </config>
                    </route-map-filter>
                    <route-map-filter>
                        <route-map-direction>out</route-map-
direction>
                        <config>
                            <route-map-direction>out</route-map-
direction>
                            <route-map-name>rmap2</route-map-name>
                        </config>
                    </route-map-filter>
                </route-map-filters>
            </vrf-peer>
            <vrf-peer>
                <peer-address>21.1.1.2</peer-address>
                <maximum-prefixes>
                    <maximum-prefix>

```

```

percentage>
    <prefix-count>5</prefix-count>
    <config>
        <prefix-count>5</prefix-count>
        <threshold-percentage>80</threshold-
percentage>
            <warning-only />
        </config>
    </maximum-prefix>
</maximum-prefixes>
<config>
    <peer-address>21.1.1.2</peer-address>
    <peer-as>123</peer-as>
    <activate />
    <capability-graceful-restart />
</config>
</vrf-peer>
</vrf-peers>
<config>
    <afi>ipv4</afi>
    <safi>unicast</safi>
    <vrf-name>VRF1</vrf-name>
</config>
</address-family-vrf>
</address-family-vrfs>
</bgp-instance>
</bgp-instances>
</bgp>

```

Validation with NetConf get

Here is a NetConf validation response to configure payload for BGP settings in a network instance, including global BGP settings and BGP neighbors.

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGPPolTypes:BGPPolTypes</identifier>
        <name>123</name>
        <bgp>
          <global>
            <config>
              <as>123</as>
            </config>
            <afi-safis>
              <afi-safi>
                <afi-safi-name
                  xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                <config>
                  <afi-safi-name
                    xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>

```



```

        <enabled>true</enabled>
    </config>
</afi-safi>
</afi-safis>
</global>
<neighbors>
    <neighbor>
        <neighbor-address>10.1.1.1</neighbor-address>
        <afi-safis>
            <afi-safi>
                <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                    xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
                    <ipv4-unicast>
                        <config>
                            <send-default-route>true</send-default-route>
                        </config>
                        <prefix-limit>
                            <config>
                                <max-prefixes>5</max-prefixes>
                                <warning-threshold-pct>60</warning-threshold-pct>
                            </config>
                        </prefix-limit>
                    </ipv4-unicast>
                </config>
                <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                    xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
                    <enabled>true</enabled>
                </config>
                <graceful-restart>
                    <config>
                        <enabled>true</enabled>
                    </config>
                </graceful-restart>
            </afi-safi>
        </afi-safis>
    </config>
    <enabled>true</enabled>
    <neighbor-address>10.1.1.1</neighbor-address>
    <peer-as>100</peer-as>
    <local-as>300</local-as>
    <remove-private-as
types">oc-bgp-types:PRIVATE_AS_REMOVE_ALL</remove-private-as>
        </config>
    <enable-bfd>
        <config>
            <enabled>true</enabled>
        </config>
    </enable-bfd>
    <ebgp-multihop>
        <config>
            <enabled>true</enabled>
            <multihop-ttl>5</multihop-ttl>
        </config>
    </ebgp-multihop>

```

```

    <transport>
      <config>
        <local-address>eth1</local-address>
      </config>
    </transport>
  </timers>
  <timers>
    <config>
      <keepalive-interval>30.00</keepalive-interval>
      <hold-time>120.00</hold-time>
    </config>
  </timers>
</neighbor>
<neighbor>
  <neighbor-address>11.1.1.1</neighbor-address>
  <afi-safis>
    <afi-safi>
      <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
      <ipv4-unicast>
        <prefix-limit>
          <config>
            <max-prefixes>7</max-prefixes>
            <warning-threshold-pct>70</warning-threshold-pct>
            <prevent-teardown>true</prevent-teardown>
          </config>
        </prefix-limit>
      </ipv4-unicast>
      <apply-policy>
        <config>
          <import-policy>rmap1</import-policy>
          <export-policy>rmap1</export-policy>
        </config>
      </apply-policy>
      <config>
        <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
        <enabled>true</enabled>
      </config>
      <add-paths>
        <config>
          <receive>true</receive>
          <send>true</send>
        </config>
      </add-paths>
    </afi-safi>
  </afi-safis>
  <config>
    <enabled>true</enabled>
    <neighbor-address>11.1.1.1</neighbor-address>
    <peer-as>123</peer-as>
  </config>
</neighbor>
</neighbors>
</bgp>
</protocol>

```

```

    </protocols>
  </network-instance>
</network-instance>
  <name>management</name>
</network-instance>
</network-instance>
  <name>VRF1</name>
</protocols>
  <protocol>
    <identifier
      xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGPP</identifier>
    <name>123</name>
    <bgp>
      <global>
        <config>
          <as>123</as>
        </config>
        <afi-safis>
          <afi-safi>
            <afi-safi-name
              xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
            <config>
              <afi-safi-name
                xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
              <enabled>true</enabled>
            </config>
          </afi-safi>
        </afi-safis>
      </global>
      <neighbors>
        <neighbor>
          <neighbor-address>20.1.1.2</neighbor-address>
          <afi-safis>
            <afi-safi>
              <afi-safi-name
                xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
              <apply-policy>
                <config>
                  <import-policy>rmap2</import-policy>
                  <export-policy>rmap2</export-policy>
                </config>
              </apply-policy>
              <ipv4-unicast>
                <config>
                  <send-default-route>true</send-default-route>
                </config>
              </ipv4-unicast>
            </config>
            <afi-safi-name
              xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
            <enabled>true</enabled>
          </config>
        </afi-safi>
      </neighbors>
    </bgp>
  </protocol>

```

```

    </afi-safis>
    <apply-policy>
      <config>
        <import-policy>rmap2</import-policy>
        <export-policy>rmap2</export-policy>
      </config>
    </apply-policy>
    <config>
      <neighbor-address>20.1.1.2</neighbor-address>
      <peer-as>200</peer-as>
      <local-as>300</local-as>
      <enabled>true</enabled>
      <remove-private-as
types">oc-bgp-types:PRIVATE_AS_REMOVE_ALL</remove-private-as>
      </config>
    </neighbor>
    <neighbor>
      <neighbor-address>21.1.1.2</neighbor-address>
      <afi-safis>
        <afi-safi>
          <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
          <ipv4-unicast>
            <prefix-limit>
              <config>
                <max-prefixes>5</max-prefixes>
                <warning-threshold-pct>80</warning-threshold-pct>
                <prevent-teardown>true</prevent-teardown>
              </config>
            </prefix-limit>
          </ipv4-unicast>
          <config>
            <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
            <enabled>true</enabled>
          </config>
          <graceful-restart>
            <config>
              <enabled>true</enabled>
            </config>
          </graceful-restart>
        </afi-safi>
      </afi-safis>
    </config>
    <neighbor-address>21.1.1.2</neighbor-address>
    <peer-as>123</peer-as>
    <enabled>true</enabled>
  </config>
</neighbor>
</neighbors>
</bgp>
</protocol>
</protocols>
</network-instance>

```

```
</network-instances>
```

Restrictions

- The leaf `/network-instances/network-instance/protocols/protocol/bgp/neighbors/neighbor/config/remove-private-as` only accepts value the OpenConfig value `PRIVATE_AS_REMOVE_ALL`
- Ensure that the `remove-private-as` leaf has the value `PRIVATE_AS_REMOVE_ALL`.
`/network-instances/network-instance/protocols/protocol/bgp/neighbors/neighbor/config/remove-private-as`
- The below leaf was not supported by the current implementation, but this feature is supported at the AFI-SAFI level of each neighbor.
`/network-instances/network-instance/protocols/protocol/bgp/neighbors/neighbor/apply-policy`
- The below leaf was not supported by the current implementation at the neighbor level, but this feature is supported at the AFI-SAFI level of each neighbor, as well as at the global level (`/network-instances/network-instance/protocols/protocol/bgp/global/graceful-restart`).
`/network-instances/network-instance/protocols/protocol/bgp/neighbors/neighbor/graceful-restart`
- The below leaf was not supported by the current implementation at the neighbor level, but this feature is supported at the global level (`/network-instances/network-instance/protocols/protocol/bgp/global/afi-safis/afi-safi/use-multiple-paths`).
`/network-instances/network-instance/protocols/protocol/bgp/neighbors/neighbor/use-multiple-paths`
- The below leaf is limited to 32 characters and must have the format `<interface>.<subinterface>`, e.g., `eth2.10`.
`/network-instances/network-instance/interfaces/interface/config/id`
- Additional Information: The `apply-policy` feature is supported at the `afi-safi` (Address Family Identifier and Subsequent Address Family Identifier) level for each neighbor.
- The OcNOS model requires that when configuring paths under `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/neighbor`, the corresponding **AFI-SAFI** configuration must be present at `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/neighbors/neighbor/afi-safis`. This **AFI-SAFI** information is essential for generating the following paths in the OcNOS model:
`/ipi-bgp:bgp/bgp-instance/address-family`
`/ipi-bgp:bgp/bgp-instance/peer-group/address-families`
`/ipi-bgp:bgp/bgp-instance/address-family-vrf`
- Once the paths under `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/neighbors` have been initially configured on the equipment, subsequent configurations on these paths do not require users to specify the **AFI-SAFI** information. The translation process will automatically retrieve this information from the equipment database.

Configure eBGP neighbor with TTL

This XML configuration snippet defines the eBGP neighbor with a Time-to-Live (TTL) value.

Release

This configuration was introduced in OcNOS version 4.2.

OpenConfig NetConf Payload

Here is the sample OpenConfig NetConf Payload that defines a network instance named `VRF1` with various configurations, including the route distinguisher, protocols, and tables. Specifically, it sets up BGP protocol with a global AS number and a neighbor with an AS number. The `ebgp-multihop` feature is enabled for this neighbor with a TTL value.

Additionally, the payload defines three tables, one for directly connected IPv4 routes, one for directly connected IPv6 routes, and one for BGP IPv4 routes.

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>VRF1</name>
    <config>
      <name>VRF1</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:L3VRF</type>
      <route-distinguisher>1.2.3.4:56</route-distinguisher>
    </config>
    <protocols>
      <protocol>
        <identifier xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:DIRECTLY_CONNECTED</identifier>
        <name>DIRECTLY_CONNECTED</name>
        <config>
          <identifier xmlns:oc-pol-types="http://openconfig.net/
yang/policy-types">oc-pol-types:DIRECTLY_CONNECTED</identifier>
          <name>DIRECTLY_CONNECTED</name>
          <enabled>true</enabled>
        </config>
      </protocol>
      <protocol>
        <identifier xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:BGP</identifier>
        <name>100</name>
        <bgp>
          <global>
            <config>
              <as>100</as>
            </config>
          </global>
          <neighbors>
            <neighbor>
              <neighbor-address>1.1.1.2</neighbor-address>
              <afi-safis>
                <afi-safi>
                  <afi-safi-name xmlns:oc-bgp-types="http://
openconfig.net/yang/bgp-types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                  <config>
                    <afi-safi-name xmlns:oc-bgp-
types="http://openconfig.net/yang/bgp-types">oc-bgp-types:IPV4_UNICAST</afi-
safi-name>
                    <enabled>true</enabled>
                  </config>
                </afi-safi>
              </afi-safis>
            </config>
            <neighbor-address>1.1.1.2</neighbor-address>
```

```

        <peer-as>200</peer-as>
    </config>
    <ebgp-multihop>
        <config>
            <enabled>true</enabled>
            <multihop-ttl>20</multihop-ttl>
        </config>
    </ebgp-multihop>
</neighbor>
</neighbors>
</bgp>
<config>
    <identifier xmlns:oc-pol-types="http://openconfig.net/
yang/policy-types">oc-pol-types:BGP</identifier>
    <name>100</name>
    <enabled>true</enabled>
</config>
</protocol>
</protocols>
<tables>
    <table>
        <protocol xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">oc-types:IPV4</address-family>
        <config>
            <protocol xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:DIRECTLY_CONNECTED</protocol>
            <address-family xmlns:oc-types="http://openconfig.net/
yang/openconfig-types">oc-types:IPV4</address-family>
        </config>
    </table>
    <table>
        <protocol xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">oc-types:IPV6</address-family>
        <config>
            <protocol xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:DIRECTLY_CONNECTED</protocol>
            <address-family xmlns:oc-types="http://openconfig.net/
yang/openconfig-types">oc-types:IPV6</address-family>
        </config>
    </table>
    <table>
        <protocol xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:BGP</protocol>
        <address-family xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">oc-types:IPV4</address-family>
        <config>
            <protocol xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:BGP</protocol>
            <address-family xmlns:oc-types="http://openconfig.net/
yang/openconfig-types">oc-types:IPV4</address-family>
        </config>
    </table>
</tables>
</network-instance>
</network-instances>

```

OcNOS CLI Command

The below CLI commands are used to configure a BGP neighbor relationship in the `VRF1`, allowing the BGP router with AS number 100 to communicate with a neighbor at IP address 1.1.1.2, which has AS number 200, and the configuration ensures that the session can be established even if the TTL is set to a higher value, in this case, 20.

```
router bgp 100
!
address-family ipv4 vrf VRF1
neighbor 1.1.1.2 remote-as 200
neighbor 1.1.1.2 activate
neighbor 1.1.1.2 ebgp-multihop 20
exit-address-family
!
```

OcNOS NetConf Payload

Here is a sample OcNOS NetConf Payload that defines a VRF instance named `VRF1` with the associated BGP settings. The VRF is set to use IPv4 unicast address-family. Within this VRF, a BGP peering session is established with a remote neighbor having the IP address 1.1.1.2 and AS number 200. To ensure the BGP session can be established, the `ebgp-multihop` feature is enabled with a maximum hop count of 20, allowing the BGP router to communicate with a neighbor that might be multiple hops away. The BGP configuration also specifies a route distinguisher (RD) of 1.2.3.4:56 for the VRF. This configuration is essential for routing and forwarding traffic within the VRF while maintaining isolation from other VRFs or the global routing table.

```
<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-network-
instance">
  <network-instance>
    <instance-name>VRF1</instance-name>
    <instance-type>vrf</instance-type>
    <config>
      <instance-name>VRF1</instance-name>
      <instance-type>vrf</instance-type>
    </config>
    <vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vrf">
      <config>
        <vrf-name>VRF1</vrf-name>
      </config>
      <bgp-vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp-vrf">
        <config>
          <rd-string>1.2.3.4:56</rd-string>
        </config>
      </bgp-vrf>
    </vrf>
  </network-instance>
</network-instances>
<bgp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp">
  <bgp-instances>
    <bgp-instance>
      <bgp-as>100</bgp-as>
      <config>
        <bgp-as>100</bgp-as>
      </config>
      <address-family-vrfs>
```



```

    <address-family-vrf>
      <afi>ipv4</afi>
      <safi>unicast</safi>
      <vrf-name>VRF1</vrf-name>
      <vrf-peers>
        <vrf-peer>
          <peer-address>1.1.1.2</peer-address>
          <config>
            <peer-address>1.1.1.2</peer-address>
            <peer-as>200</peer-as>
          </config>
          <ebgp-multihop>
            <config>
              <maximum-hop-count>20</maximum-hop-count>
            </enabled>
          </config>
        </ebgp-multihop>
      </vrf-peer>
    </vrf-peers>
  </config>
  <afi>ipv4</afi>
  <safi>unicast</safi>
  <vrf-name>VRF1</vrf-name>
</config>
</address-family-vrf>
</address-family-vrfs>
</bgp-instance>
</bgp-instances>
</bgp>

```

Validation with NetConf get

Here is a NetConf validation response for the network instance `VRF1` and its associated BGP settings indicates that the provided configuration is compliant with the expected structure and format defined in the YANG data model for network instances and BGP protocols. This validation response affirms that there are no errors or inconsistencies in the configuration, affirming its readiness for application to the network device. It verifies that the specified parameters, such as route distinguisher, autonomous system numbers, and address families, are correctly defined and align with the defined standards, ensuring smooth and accurate operation within the network infrastructure.

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>VRF1</name>
    <config>
      <name>VRF1</name>
      <type
types"oc-ni-types="http://openconfig.net/yang/network-instance-
types"oc-ni-types:L3VRF</type>
      <route-distinguisher>1.2.3.4:56</route-distinguisher>
    </config>
    <state>
      <name>VRF1</name>
      <type
types"oc-ni-types="http://openconfig.net/yang/network-instance-
types"oc-ni-types:L3VRF</type>
      <route-distinguisher>1.2.3.4:56</route-distinguisher>
    </state>
  </network-instance>
</network-instances>

```

```

    <protocol>
      <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
      <name>DIRECTLY_CONNECTED</name>
      <config>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:DIRECTLY_CONNECTED</identifier>
          <name>DIRECTLY_CONNECTED</name>
          <enabled>true</enabled>
        </config>
      <state>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:DIRECTLY_CONNECTED</identifier>
          <name>DIRECTLY_CONNECTED</name>
          <enabled>true</enabled>
        </state>
      </protocol>
    </protocol>
    <identifier
      xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</identifier>
    <name>100</name>
    <bgp>
      <global>
        <config>
          <as>100</as>
        </config>
        <state>
          <as>100</as>
        </state>
      </global>
      <neighbors>
        <neighbor>
          <neighbor-address>1.1.1.2</neighbor-address>
          <afi-safis>
            <afi-safi>
              <afi-safi-name
                xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
              <config>
                <afi-safi-name
                  xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                  <enabled>true</enabled>
                </config>
              </afi-safi>
            </afi-safis>
          <config>
            <neighbor-address>1.1.1.2</neighbor-address>
            <peer-as>200</peer-as>
            <enabled>true</enabled>
          </config>
          <ebgp-multihop>
            <config>
              <enabled>true</enabled>

```

```

        <multihop-ttl>20</multihop-ttl>
    </config>
    <state>
        <enabled>true</enabled>
        <multihop-ttl>20</multihop-ttl>
    </state>
</ebgp-multihop>
<state>
    <neighbor-address>1.1.1.2</neighbor-address>
    <peer-as>200</peer-as>
    <enabled>true</enabled>
</state>
</neighbor>
</neighbors>
</bgp>
<config>
    <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:BGP</identifier>
    <name>100</name>
    <enabled>true</enabled>
</config>
<state>
    <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:BGP</identifier>
    <name>100</name>
    <enabled>true</enabled>
</state>
</protocol>
</protocols>
<tables>
    <table>
        <protocol
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
        <address-family
            xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
        <config>
            <protocol
                xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:BGP</protocol>
            <address-family
                xmlns:oc-types="http://openconfig.net/yang/openconfig-
types">oc-types:IPv4</address-family>
            </config>
        </table>
    </tables>
</network-instance>
</network-instances>

```

Restrictions

- The leaf `peer-type` in the configuration of the BGP neighbor is not supported.
`/network-instances/network-instance/protocols/protocol/bgp/neighbors/neighbor/`
`config/peer-type`

- The OcNOS model requires that when configuring paths under `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/neighbor`, the corresponding **AFI-SAFI** configuration must be present at `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/neighbors/neighbor/afi-safis`. This **AFI-SAFI** information is essential for generating the following paths in the OcNOS model:
 - `/ipi-bgp:bgp/bgp-instance/address-family`
 - `/ipi-bgp:bgp/bgp-instance/peer-group/address-families`
 - `/ipi-bgp:bgp/bgp-instance/address-family-vrf`
- Once the paths under `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/neighbors` have been initially configured on the equipment, subsequent configurations on these paths do not require users to specify the **AFI-SAFI** information. The translation process will automatically retrieve this information from the equipment database.

Create BGP peer-groups with default VRF

This XML configuration snippet is used to specify that BGP peer-groups should be created within the default VRF.

Release

This configuration was introduced in OcNOS version 5.1.

OpenConfig NetConf Payload

Here is the sample OpenConfig NetConf Payload to configure BGP settings within the `default` network instance. It defines various BGP parameters and peer groups for the specified **AFI-SAFI** combinations, including IPv4 unicast, IPv4 labeled unicast, IPv6 labeled unicast, and L3VPN IPv6 unicast. This configuration includes authentication passwords, timers, route reflector settings, and more for different peer groups such as `ABC`, `peer1`, and `peer2`.

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</identifier>
          <name>100</name>
        <bgp>
          <global>
            <config>
              <as>100</as>
            </config>
            <route-selection-options>
              <config>
                <enable-aigp>true</enable-aigp>
              </config>
              <state>
                <enable-aigp>true</enable-aigp>
              </state>
            </route-selection-options>
            <afi-safis>
              <afi-safi>
                <afi-safi-name
```

```

        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
        <config>
        <afi-safi-name
        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
        <enabled>true</enabled>
        </config>
        </afi-safi>
        <afi-safi>
        <afi-safi-name
        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_LABELED_UNICAST</afi-safi-name>
        <config>
        <afi-safi-name
        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_LABELED_UNICAST</afi-safi-name>
        <enabled>true</enabled>
        </config>
        </afi-safi>
        <afi-safi>
        <afi-safi-name
        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV6_LABELED_UNICAST</afi-safi-name>
        <config>
        <afi-safi-name
        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV6_LABELED_UNICAST</afi-safi-name>
        <enabled>true</enabled>
        </config>
        </afi-safi>
        <afi-safi>
        <afi-safi-name
        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:L3VPN_IPV6_UNICAST</afi-safi-name>
        <config>
        <afi-safi-name
        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:L3VPN_IPV6_UNICAST</afi-safi-name>
        <enabled>true</enabled>
        </config>
        </afi-safi>
        </afi-safis>
    </global>
    <peer-groups>
    <peer-group>
    <peer-group-name>ABC</peer-group-name>
    <config>
    <auth-password>0x9603e78694ace534ea912b9ab53f8a55</auth-
password>
    <peer-group-name>ABC</peer-group-name>
    <peer-as>100</peer-as>
    <description>Non VRF peer-group configs</description>
    </config>
    <enable-bfd>
    <config>
    <enabled>true</enabled>
    </config>

```

```

    </enable-bfd>
    <timers>
      <config>
        <connect-retry>300.00</connect-retry>
        <minimum-advertisement-interval>20.00</minimum-
advertisement-interval>
        <keepalive-interval>300.00</keepalive-interval>
        <hold-time>8200.00</hold-time>
      </config>
    </timers>
    <transport>
      <config>
        <local-address>10.1.1.1</local-address>
        <passive-mode>true</passive-mode>
      </config>
    </transport>
    <afi-safis>
      <afi-safi>
        <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
        <ipv4-unicast>
          <prefix-limit>
            <config>
              <max-prefixes>4294967295</max-prefixes>
              <warning-threshold-pct>100</warning-threshold-pct>
              <prevent-teardown>true</prevent-teardown>
            </config>
          </prefix-limit>
          <config>
            <send-default-route>true</send-default-route>
          </config>
        </ipv4-unicast>
        <config>
          <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
          <enabled>true</enabled>
        </config>
        <apply-policy>
          <config>
            <import-policy>in-map</import-policy>
            <export-policy>out-map</export-policy>
          </config>
        </apply-policy>
      </afi-safi>
    </afi-safis>
    <route-reflector>
      <config>
        <route-reflector-client>true</route-reflector-client>
      </config>
    </route-reflector>
  </peer-group>
  <peer-group>
    <peer-group-name>peer1</peer-group-name>
    <config>
      <auth-password>0x9a20ef22549ad84b</auth-password>

```

```

        <peer-group-name>peer1</peer-group-name>
        <peer-as>200</peer-as>
    </config>
    <ebgp-multihop>
        <config>
            <enabled>true</enabled>
        </config>
    </ebgp-multihop>
    <afi-safis>
        <afi-safi>
            <afi-safi-name
types">oc-bgp-types:IPV4_LABELED_UNICAST</afi-safi-name>
            <config>
                <afi-safi-name
types">oc-bgp-types:IPV4_LABELED_UNICAST</afi-safi-name>
                <enabled>true</enabled>
            </config>
        </afi-safi>
    </afi-safis>
</peer-group>
<peer-group>
    <peer-group-name>peer2</peer-group-name>
    <config>
        <auth-password>0x9603e78694ace534e74f24019f5bfeb5</auth-
password>
        <peer-group-name>peer2</peer-group-name>
        <peer-as>300</peer-as>
    </config>
    <enable-bfd>
        <config>
            <enabled>true</enabled>
        </config>
    </enable-bfd>
    <ebgp-multihop>
        <config>
            <multihop-ttl>10</multihop-ttl>
            <enabled>true</enabled>
        </config>
    </ebgp-multihop>
    <afi-safis>
        <afi-safi>
            <afi-safi-name
types">oc-bgp-types:IPV6_LABELED_UNICAST</afi-safi-name>
            <ipv6-labeled-unicast>
                <prefix-limit>
                    <config>
                        <max-prefixes>1</max-prefixes>
                        <prevent-teardown>true</prevent-teardown>
                    </config>
                </prefix-limit>
            </ipv6-labeled-unicast>
        </config>
        <afi-safi-name
types">oc-bgp-types:IPV6_LABELED_UNICAST</afi-safi-name>

```

```

        <enabled>true</enabled>
      </config>
    </afi-safi>
  <afi-safi>
    <afi-safi-name
      xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:L3VPN_IPV6_UNICAST</afi-safi-name>
    <l3vpn-ipv6-unicast>
      <prefix-limit>
        <config>
          <max-prefixes>12345</max-prefixes>
        </config>
      </prefix-limit>
    </l3vpn-ipv6-unicast>
  </config>
    <afi-safi-name
      xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:L3VPN_IPV6_UNICAST</afi-safi-name>
    <enabled>true</enabled>
  </config>
</afi-safi>
</afi-safis>
</peer-group>
</peer-groups>
</bgp>
</protocol>
</protocols>
</network-instance>
</network-instances>

```

OcNOS CLI Command

The below CLI commands configure various BGP parameters and policies for different neighbors and address families within AS number 100.

```

!
router bgp 100
  neighbor ABC peer-group
  neighbor ABC remote-as 100
  neighbor ABC fall-over bfd multihop
  neighbor peer1 peer-group
  neighbor peer1 remote-as 200
  neighbor peer2 peer-group
  neighbor peer2 remote-as 300
  neighbor peer2 fall-over bfd
  neighbor ABC description Non VRF peer-group configs
  neighbor ABC passive
  neighbor ABC update-source 10.1.1.1
  neighbor ABC authentication-key 0x9603e78694ace534ea912b9ab53f8a55
  neighbor ABC advertisement-interval 20
  neighbor ABC timers 300 8200
  neighbor ABC timers connect 300
  neighbor peer1 ebgp-multihop
  neighbor peer1 authentication-key 0x9a20ef22549ad84b
  neighbor peer2 ebgp-multihop 10
  neighbor peer2 authentication-key 0x9603e78694ace534e74f24019f5bfeb5
!

```



```

address-family ipv4 unicast
neighbor ABC activate
neighbor ABC route-reflector-client
neighbor ABC default-originate
neighbor ABC maximum-prefix 4294967295 100 warning-only
neighbor ABC route-map in-map in
neighbor ABC route-map out-map out
exit-address-family
!
address-family ipv4 labeled-unicast
neighbor peer1 activate
exit-address-family
!
address-family vpnv6 unicast
neighbor peer2 allow-ebgp-vpn
neighbor peer2 activate
neighbor peer2 maximum-prefix 12345
exit-address-family
!
address-family ipv6 labeled-unicast
neighbor peer2 activate
neighbor peer2 maximum-prefix 1 warning-only
exit-address-family
!

```

OcNOS NetConf Payload

Here is a sample OcNOS NetConf Payload to set up BGP peering and routing policies within the given AS number (100) and defines parameters for various address families and peer groups.

```

<bgp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp">
  <bgp-instances>
    <bgp-instance>
      <bgp-as>100</bgp-as>
      <config>
        <bgp-as>100</bgp-as>
      </config>
      <state>
        <bgp-as>100</bgp-as>
        <version>4</version>
        <table-version>1</table-version>
        <total-prefixes>0</total-prefixes>
        <router-run-time-ip-address>0.0.0.0</router-run-time-ip-
address>
        <scan-remain-time>49</scan-remain-time>
      </state>
      <rib>
        <address-family>
          <safi>link-state</safi>
          <afi>link-state</afi>
          <state>
            <safi>link-state</safi>
            <afi>link-state</afi>
          </state>
        </address-family>
      </rib>
    </bgp-instance>
  </bgp-instances>
</bgp>

```

```

    <address-family>
      <afi>ipv4</afi>
      <safi>unicast</safi>
      <config>
        <afi>ipv4</afi>
        <safi>unicast</safi>
      </config>
      <state>
        <afi>ipv4</afi>
        <safi>unicast</safi>
      </state>
    </address-family>
    <address-family>
      <afi>ipv4</afi>
      <safi>labeled-unicast</safi>
      <config>
        <afi>ipv4</afi>
        <safi>labeled-unicast</safi>
      </config>
      <state>
        <afi>ipv4</afi>
        <safi>labeled-unicast</safi>
      </state>
    </address-family>
    <address-family>
      <afi>ipv6</afi>
      <safi>labeled-unicast</safi>
      <config>
        <afi>ipv6</afi>
        <safi>labeled-unicast</safi>
      </config>
      <state>
        <afi>ipv6</afi>
        <safi>labeled-unicast</safi>
      </state>
    </address-family>
    <address-family>
      <afi>ipv6</afi>
      <safi>vpn-unicast</safi>
      <config>
        <afi>ipv6</afi>
        <safi>vpn-unicast</safi>
      </config>
      <state>
        <afi>ipv6</afi>
        <safi>vpn-unicast</safi>
      </state>
    </address-family>
  </address-families>
  <peer-groups>
    <peer-group>
      <peer-group-tag>ABC</peer-group-tag>
      <bgp-passwords>
        <bgp-password>
          <password>0x9603e78694ace534ea912b9ab53f8a55</
password>
        </bgp-password>
      </bgp-passwords>
    </peer-group>
  </peer-groups>
  <config>

```

```

password>                                <password>0x9603e78694ace534ea912b9ab53f8a55</
                                           <auth-key-encrypt>1</auth-key-encrypt>
                                           </config>
                                           <state>
password>                                <password>0x9603e78694ace534ea912b9ab53f8a55</
                                           <auth-key-encrypt>1</auth-key-encrypt>
                                           </state>
                                           </bgp-password>
</bgp-passwords>
<config>
  <peer-group-tag>ABC</peer-group-tag>
  <peer-group-range>static</peer-group-range>
  <peer-as>100</peer-as>
  <enable-peer-bfd />
  <enable-peer-bfd-multihop />
  <peer-description>Non VRF peer-group configs</peer-
description>
  <peer-connect-interval>300</peer-connect-interval>
advertisement-interval> <min-route-advertisement-interval>20</min-route-
  <source-identifier>10.1.1.1</source-identifier>
  <neighbor-passive />
</config>
<state>
  <peer-group-tag>ABC</peer-group-tag>
  <peer-group-range>static</peer-group-range>
  <peer-as>100</peer-as>
  <enable-peer-bfd />
  <enable-peer-bfd-multihop />
  <peer-description>Non VRF peer-group configs</peer-
description>
  <peer-connect-interval>300</peer-connect-interval>
advertisement-interval> <min-route-advertisement-interval>20</min-route-
  <source-identifier>10.1.1.1</source-identifier>
  <neighbor-passive />
</state>
<timers>
  <config>
    <keep-alive>300</keep-alive>
    <hold-time>8200</hold-time>
  </config>
  <state>
    <keep-alive>300</keep-alive>
    <hold-time>8200</hold-time>
  </state>
</timers>
<address-families>
  <address-family>
    <afi>ipv4</afi>
    <safi>unicast</safi>
    <maximum-prefixes>
      <maximum-prefix>
        <prefix-count>4294967295</prefix-count>
      </prefix-count>
    </maximum-prefixes>
  </address-family>
</address-families>

```

```

count>                                <prefix-count>4294967295</prefix-
percentage>                            <threshold-percentage>100</threshold-
                                        <warning-only />
                                        </config>
                                        <state>
count>                                <prefix-count>4294967295</prefix-
percentage>                            <threshold-percentage>100</threshold-
                                        <warning-only />
                                        </state>
                                        </maximum-prefix>
</maximum-prefixes>
<config>
  <afi>ipv4</afi>
  <safi>unicast</safi>
  <activate />
  <default-peer-route-map-name />
  <peer-route-reflector />
</config>
<state>
  <afi>ipv4</afi>
  <safi>unicast</safi>
  <activate />
  <default-peer-route-map-name />
  <peer-route-reflector />
</state>
<route-map-filters>
  <route-map-filter>
direction>                            <route-map-direction>in</route-map-
                                        <config>
direction>                            <route-map-direction>in</route-map-
name>                                <route-map-name>in-map</route-map-
                                        </config>
                                        <state>
direction>                            <route-map-direction>in</route-map-
name>                                <route-map-name>in-map</route-map-
                                        </state>
  </route-map-filter>
  <route-map-filter>
direction>                            <route-map-direction>out</route-map-
                                        <config>
direction>                            <route-map-direction>out</route-map-
name>                                <route-map-name>out-map</route-map-
                                        </config>
                                        <state>
direction>                            <route-map-direction>out</route-map-

```

```

name>
                                <route-map-name>out-map</route-map-
                                </state>
                                </route-map-filter>
                                </route-map-filters>
                                </address-family>
                                </address-families>
</peer-group>
<peer-group>
  <peer-group-tag>peer1</peer-group-tag>
  <bgp-passwords>
    <bgp-password>
      <password>0x9a20ef22549ad84b</password>
      <config>
        <password>0x9a20ef22549ad84b</password>
        <auth-key-encrypt>1</auth-key-encrypt>
      </config>
      <state>
        <password>0x9a20ef22549ad84b</password>
        <auth-key-encrypt>1</auth-key-encrypt>
      </state>
    </bgp-password>
  </bgp-passwords>
  <config>
    <peer-group-tag>peer1</peer-group-tag>
    <peer-group-range>static</peer-group-range>
    <peer-as>200</peer-as>
  </config>
  <state>
    <peer-group-tag>peer1</peer-group-tag>
    <peer-group-range>static</peer-group-range>
    <peer-as>200</peer-as>
  </state>
  <ebgp-multihop>
    <config>
      <enabled />
    </config>
    <state>
      <enabled />
    </state>
  </ebgp-multihop>
  <address-families>
    <address-family>
      <afi>ipv4</afi>
      <safi>labeled-unicast</safi>
      <config>
        <afi>ipv4</afi>
        <safi>labeled-unicast</safi>
        <activate />
      </config>
      <state>
        <afi>ipv4</afi>
        <safi>labeled-unicast</safi>
        <activate />
      </state>
    </address-family>
  </address-families>

```

```

    </peer-group>
  <peer-group>
    <peer-group-tag>peer2</peer-group-tag>
    <bgp-passwords>
      <bgp-password>
        <password>0x9603e78694ace534e74f24019f5bfeb5</
password>
          <config>
            <password>0x9603e78694ace534e74f24019f5bfeb5</
password>
              <auth-key-encrypt>1</auth-key-encrypt>
            </config>
            <state>
              <password>0x9603e78694ace534e74f24019f5bfeb5</
password>
                <auth-key-encrypt>1</auth-key-encrypt>
              </state>
            </bgp-password>
          </bgp-passwords>
        <config>
          <peer-group-tag>peer2</peer-group-tag>
          <peer-group-range>static</peer-group-range>
          <peer-as>300</peer-as>
          <enable-peer-bfd />
        </config>
        <state>
          <peer-group-tag>peer2</peer-group-tag>
          <peer-group-range>static</peer-group-range>
          <peer-as>300</peer-as>
          <enable-peer-bfd />
        </state>
      <ebgp-multihop>
        <config>
          <maximum-hop-count>10</maximum-hop-count>
          <enabled />
        </config>
        <state>
          <maximum-hop-count>10</maximum-hop-count>
          <enabled />
        </state>
      </ebgp-multihop>
    <address-families>
      <address-family>
        <afi>ipv6</afi>
        <safi>labeled-unicast</safi>
        <maximum-prefixes>
          <maximum-prefix>
            <prefix-count>1</prefix-count>
            <config>
              <prefix-count>1</prefix-count>
              <maximum-prefix-warning />
            </config>
            <state>
              <prefix-count>1</prefix-count>
              <maximum-prefix-warning />
            </state>
          </maximum-prefix>

```

```

        </maximum-prefixes>
        <config>
            <afi>ipv6</afi>
            <safi>labeled-unicast</safi>
            <activate />
        </config>
        <state>
            <afi>ipv6</afi>
            <safi>labeled-unicast</safi>
            <activate />
        </state>
    </address-family>
    <address-family>
        <afi>ipv6</afi>
        <safi>vpn-unicast</safi>
        <maximum-prefixes>
            <maximum-prefix>
                <prefix-count>12345</prefix-count>
                <config>
                    <prefix-count>12345</prefix-count>
                </config>
                <state>
                    <prefix-count>12345</prefix-count>
                </state>
            </maximum-prefix>
        </maximum-prefixes>
        <config>
            <afi>ipv6</afi>
            <safi>vpn-unicast</safi>
            <activate />
            <peer-allow-ebgp-vpn />
        </config>
        <state>
            <afi>ipv6</afi>
            <safi>vpn-unicast</safi>
            <activate />
            <peer-allow-ebgp-vpn />
        </state>
    </address-family>
</address-families>
</peer-group>
</peer-groups>
</bgp-instance>
</bgp-instances>
</bgp>

```

Validation with NetConf get

Here is a NetConf validation response that defines several aspects of BGP, including global BGP configuration, peer groups, and AFI-SAFIs for different address families. The configuration also includes authentication settings, timers, transport settings, and route reflection.

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>

```

```

    <protocol>
      <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</identifier>
      <name>100</name>
      <bgp>
        <global>
          <config>
            <as>100</as>
          </config>
          <route-selection-options>
            <config>
              <enable-aigp>true</enable-aigp>
            </config>
            <state>
              <enable-aigp>true</enable-aigp>
            </state>
          </route-selection-options>
          <state>
            <as>100</as>
            <total-prefixes>0</total-prefixes>
          </state>
          <afi-safis>
            <afi-safi>
              <afi-safi-name
                xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
              <config>
                <afi-safi-name
                  xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                <enabled>true</enabled>
              </config>
            </afi-safi>
            <afi-safi>
              <afi-safi-name
                xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_LABELED_UNICAST</afi-safi-name>
              <config>
                <afi-safi-name
                  xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_LABELED_UNICAST</afi-safi-name>
                <enabled>true</enabled>
              </config>
            </afi-safi>
            <afi-safi>
              <afi-safi-name
                xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV6_LABELED_UNICAST</afi-safi-name>
              <config>
                <afi-safi-name
                  xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV6_LABELED_UNICAST</afi-safi-name>
                <enabled>true</enabled>
              </config>
            </afi-safi>
            <afi-safi>
              <afi-safi-name

```



```

        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:L3VPN_IPV6_UNICAST</afi-safi-name>
        <config>
        <afi-safi-name
        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:L3VPN_IPV6_UNICAST</afi-safi-name>
        <enabled>true</enabled>
        </config>
        </afi-safi>
        </afi-safis>
    </global>
    <peer-groups>
    <peer-group>
    <peer-group-name>ABC</peer-group-name>
    <config>
    <auth-password>0x9603e78694ace534ea912b9ab53f8a55</auth-
password>
    <peer-group-name>ABC</peer-group-name>
    <peer-as>100</peer-as>
    <description>Non VRF peer-group configs</description>
    </config>
    <state>
    <auth-password>0x9603e78694ace534ea912b9ab53f8a55</auth-
password>
    <peer-group-name>ABC</peer-group-name>
    <peer-as>100</peer-as>
    <description>Non VRF peer-group configs</description>
    </state>
    <enable-bfd>
    <config>
    <enabled>true</enabled>
    </config>
    <state>
    <enabled>true</enabled>
    </state>
    </enable-bfd>
    <timers>
    <config>
    <connect-retry>300.00</connect-retry>
    <minimum-advertisement-interval>20.00</minimum-
advertisement-interval>
    <keepalive-interval>300.00</keepalive-interval>
    <hold-time>8200.00</hold-time>
    </config>
    <state>
    <connect-retry>300.00</connect-retry>
    <minimum-advertisement-interval>20.00</minimum-
advertisement-interval>
    <keepalive-interval>300.00</keepalive-interval>
    <hold-time>8200.00</hold-time>
    </state>
    </timers>
    <transport>
    <config>
    <local-address>10.1.1.1</local-address>
    <passive-mode>true</passive-mode>
    </config>
    <state>

```

```

        <local-address>10.1.1.1</local-address>
        <passive-mode>true</passive-mode>
    </state>
</transport>
<afi-safis>
    <afi-safi>
        <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
        <ipv4-unicast>
            <prefix-limit>
                <config>
                    <max-prefixes>4294967295</max-prefixes>
                    <warning-threshold-pct>100</warning-threshold-pct>
                    <prevent-teardown>true</prevent-teardown>
                </config>
                <state>
                    <max-prefixes>4294967295</max-prefixes>
                    <warning-threshold-pct>100</warning-threshold-pct>
                    <prevent-teardown>true</prevent-teardown>
                </state>
            </prefix-limit>
            <config>
                <send-default-route>true</send-default-route>
            </config>
            <state>
                <send-default-route>true</send-default-route>
            </state>
        </ipv4-unicast>
        <config>
            <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
            <enabled>true</enabled>
        </config>
        <state>
            <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
            <enabled>true</enabled>
        </state>
        <apply-policy>
            <config>
                <import-policy>in-map</import-policy>
                <export-policy>out-map</export-policy>
            </config>
            <state>
                <import-policy>in-map</import-policy>
                <export-policy>out-map</export-policy>
            </state>
        </apply-policy>
    </afi-safi>
</afi-safis>
<route-reflector>
    <config>
        <route-reflector-client>true</route-reflector-client>
    </config>

```

```

        <state>
          <route-reflector-client>true</route-reflector-client>
        </state>
      </route-reflector>
    </peer-group>
    <peer-group>
      <peer-group-name>peer1</peer-group-name>
      <config>
        <auth-password>0x9a20ef22549ad84b</auth-password>
        <peer-group-name>peer1</peer-group-name>
        <peer-as>200</peer-as>
      </config>
      <state>
        <auth-password>0x9a20ef22549ad84b</auth-password>
        <peer-group-name>peer1</peer-group-name>
        <peer-as>200</peer-as>
      </state>
    </peer-group>
    <ebgp-multihop>
      <config>
        <enabled>true</enabled>
      </config>
      <state>
        <enabled>true</enabled>
      </state>
    </ebgp-multihop>
    <afi-safis>
      <afi-safi>
        <afi-safi-name
          xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_LABELLED_UNICAST</afi-safi-name>
        <config>
          <afi-safi-name
            xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_LABELLED_UNICAST</afi-safi-name>
            <enabled>true</enabled>
          </config>
          <state>
            <afi-safi-name
              xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_LABELLED_UNICAST</afi-safi-name>
              <enabled>true</enabled>
            </state>
          </afi-safi>
        </afi-safis>
      </peer-group>
      <peer-group>
        <peer-group-name>peer2</peer-group-name>
        <config>
          <auth-password>0x9603e78694ace534e74f24019f5bfeb5</auth-
password>
          <peer-group-name>peer2</peer-group-name>
          <peer-as>300</peer-as>
        </config>
        <state>
          <auth-password>0x9603e78694ace534e74f24019f5bfeb5</auth-
password>
          <peer-group-name>peer2</peer-group-name>
          <peer-as>300</peer-as>

```

```

</state>
<enable-bfd>
  <config>
    <enabled>true</enabled>
  </config>
</enable-bfd>
<state>
  <enabled>true</enabled>
</state>
</enable-bfd>
<ebgp-multihop>
  <config>
    <multihop-ttl>10</multihop-ttl>
    <enabled>true</enabled>
  </config>
  <state>
    <enabled>true</enabled>
    <multihop-ttl>10</multihop-ttl>
  </state>
</ebgp-multihop>
<afi-safis>
  <afi-safi>
    <afi-safi-name
types">oc-bgp-types:IPV6_LABELED_UNICAST</afi-safi-name>
    <ipv6-labeled-unicast>
      <prefix-limit>
        <config>
          <max-prefixes>1</max-prefixes>
          <prevent-teardown>true</prevent-teardown>
        </config>
        <state>
          <max-prefixes>1</max-prefixes>
          <prevent-teardown>true</prevent-teardown>
        </state>
      </prefix-limit>
    </ipv6-labeled-unicast>
  </config>
  <afi-safi-name
types">oc-bgp-types:IPV6_LABELED_UNICAST</afi-safi-name>
    <enabled>true</enabled>
  </config>
  <state>
    <afi-safi-name
types">oc-bgp-types:IPV6_LABELED_UNICAST</afi-safi-name>
    <enabled>true</enabled>
  </state>
</afi-safi>
<afi-safi>
  <afi-safi-name
types">oc-bgp-types:L3VPN_IPV6_UNICAST</afi-safi-name>
  <l3vpn-ipv6-unicast>
    <prefix-limit>
      <config>
        <max-prefixes>12345</max-prefixes>

```

```

        </config>
        <state>
            <max-prefixes>12345</max-prefixes>
        </state>
    </prefix-limit>
</l3vpn-ipv6-unicast>
<config>
    <afi-safi-name
types">oc-bgp-types:L3VPN_IPV6_UNICAST</afi-safi-name>
        <enabled>true</enabled>
    </config>
<state>
    <afi-safi-name
types">oc-bgp-types:L3VPN_IPV6_UNICAST</afi-safi-name>
        <enabled>true</enabled>
    </state>
</afi-safi>
</afi-safis>
</peer-group>
</peer-groups>
</bgp>
</protocol>
</protocols>
</network-instance>
</network-instances>

```

Restrictions

- When configuring the `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/peer-groups` and `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/neighbors` paths for the first time, it's essential to include the respective AFI-SAFI configuration to indicate the AFI type: `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/neighbors/neighbor/afi-safis` and `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/peer-groups/peer-group/afi-safis`.

This information is necessary for the OcNOS model to generate the following paths:

```

/ipi-bgp:bgp:bgp-instance/address-family
/ipi-bgp:bgp:bgp-instance/peer-group/address-families
/ipi-bgp:bgp:bgp-instance/address-family-vrf

```

- After the initial configuration of `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/peer-groups` and `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/neighbors` paths on the equipment, subsequent configurations on those paths do not require specifying the AFI-SAFI. The translation process will automatically retrieve this information from the equipment database, simplifying the configuration process for the user.

Create BGP Peer-groups with User-defined VRFs

This XML configuration snippet is used to configure BGP Peer-groups with user-defined VRFs.

Release

This configuration was introduced in OcNOS version 5.1.

OpenConfig NetConf Payload

Here is the sample OpenConfig NetConf Payload that provides a structured representation of the settings for various BGP configurations, such as Autonomous System (AS) numbers, Address Family Identifier and Subsequent Address Family Identifier (AFI-SAFI) settings, authentication, timers, and more.

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</identifier>
        <name>100</name>
        <bgp>
          <global>
            <config>
              <as>100</as>
            </config>
            <route-selection-options>
              <config>
                <enable-aigp>true</enable-aigp>
              </config>
              <state>
                <enable-aigp>true</enable-aigp>
              </state>
            </route-selection-options>
          </global>
        </bgp>
      </protocol>
    </protocols>
  </network-instance>
  <network-instance>
    <name>management</name>
  </network-instance>
  <network-instance>
    <name>vrfA</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</identifier>
        <name>100</name>
        <bgp>
          <global>
            <config>
              <as>100</as>
            </config>
            <afi-safis>
              <afi-safi>
                <afi-safi-name
```

```

        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
        <config>
        <afi-safi-name
        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
        <enabled>true</enabled>
        </config>
        </afi-safi>
        </afi-safis>
    </global>
    <peer-groups>
    <peer-group>
        <peer-group-name>peerA</peer-group-name>
        <afi-safis>
        <afi-safi>
            <afi-safi-name
            xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
            <ipv4-unicast>
                <prefix-limit>
                    <config>
                        <max-prefixes>2331</max-prefixes>
                        <warning-threshold-pct>100</warning-threshold-pct>
                        <prevent-teardown>true</prevent-teardown>
                    </config>
                </prefix-limit>
                <config>
                    <send-default-route>true</send-default-route>
                </config>
            </ipv4-unicast>
            <config>
                <afi-safi-name
                xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                <enabled>true</enabled>
            </config>
            </afi-safi>
        </afi-safis>
        <config>
            <auth-password>0x9603e78694ace534ea912b9ab53f8a55</auth-
password>
            <peer-group-name>peerA</peer-group-name>
            <peer-as>100</peer-as>
            <description>VRFA peer-group configs</description>
        </config>
        <transport>
            <config>
                <local-address>2.2.2.2</local-address>
                <passive-mode>true</passive-mode>
            </config>
        </transport>
        <timers>
            <config>
                <connect-retry>900.00</connect-retry>
                <minimum-advertisement-interval>65535.00</minimum-
advertisement-interval>
                <keepalive-interval>100.00</keepalive-interval>
            </config>
        </timers>
    </peer-group>
    </peer-groups>

```

```

        <hold-time>300.00</hold-time>
    </config>
</timers>
<enable-bfd>
    <config>
        <enabled>true</enabled>
    </config>
</enable-bfd>
<route-reflector>
    <config>
        <route-reflector-client>true</route-reflector-client>
    </config>
</route-reflector>
</peer-group>
</peer-groups>
</bgp>
</protocol>
</protocols>
</network-instance>
<network-instance>
    <name>vrfB</name>
    <protocols>
        <protocol>
            <identifier
                xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</identifier>
            <name>100</name>
            <bgp>
                <global>
                    <config>
                        <as>100</as>
                    </config>
                    <afi-safis>
                        <afi-safi>
                            <afi-safi-name
                                xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV6_UNICAST</afi-safi-name>
                            <config>
                                <afi-safi-name
                                    xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV6_UNICAST</afi-safi-name>
                                <enabled>true</enabled>
                            </config>
                        </afi-safi>
                    </afi-safis>
                </global>
                <peer-groups>
                    <peer-group>
                        <peer-group-name>peerB</peer-group-name>
                        <afi-safis>
                            <afi-safi>
                                <afi-safi-name
                                    xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV6_UNICAST</afi-safi-name>
                                <ipv6-unicast>
                                    <prefix-limit>
                                        <config>

```



```

        <max-prefixes>3123</max-prefixes>
        <prevent-teardown>true</prevent-teardown>
    </config>
</prefix-limit>
<config>
    <send-default-route>true</send-default-route>
</config>
</ipv6-unicast>
<config>
    <afi-safi-name
        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV6_UNICAST</afi-safi-name>
        <enabled>true</enabled>
    </config>
</afi-safi>
</afi-safis>
<config>
    <auth-password>0x9a20ef22549ad84b</auth-password>
    <peer-group-name>peerB</peer-group-name>
    <peer-as>200</peer-as>
    <local-as>300</local-as>
    <description>VRFB peer-group configs</description>
</config>
<enable-bfd>
    <config>
        <enabled>true</enabled>
    </config>
</enable-bfd>
<ebgp-multihop>
    <config>
        <multihop-ttl>100</multihop-ttl>
        <enabled>true</enabled>
    </config>
</ebgp-multihop>
</peer-group>
</peer-groups>
</bgp>
</protocol>
</protocols>
</network-instance>
</network-instances>

```

OcNOS CLI Command

The below CLI commands are used to setup the VRF instances and BGP settings within a network infrastructure. VRFs allow for the segmentation of the network, enabling the isolation of routing domains. In this configuration, two VRFs, named `vrfA` and `vrfB`, are defined with unique Route Distinguisher (RD) values, indicating their separation.

Within the BGP configuration, specific address families for IPv4 and IPv6 are defined, each associated with a corresponding VRF. Peer-groups, neighbors, authentication keys, timers, and various other BGP parameters are configured to facilitate routing and peering relationships in the network.

```

!
ip vrf vrfA
  rd 1:1
!
ip vrf vrfB

```

```

rd 1:2
!
!
router bgp 100
!
address-family ipv4 vrf vrfA
neighbor peerA peer-group
neighbor peerA remote-as 100
neighbor peerA fall-over bfd
neighbor peerA activate
neighbor peerA authentication-key 0x9603e78694ace534ea912b9ab53f8a55
neighbor peerA route-reflector-client
neighbor peerA default-originate
neighbor peerA maximum-prefix 2331 100 warning-only
neighbor peerA description VRFA peer-group configs
neighbor peerA passive
neighbor peerA update-source 2.2.2.2
neighbor peerA advertisement-interval 65535
neighbor peerA timers 100 300
neighbor peerA timers connect 900
exit-address-family
!
address-family ipv6 vrf vrfB
neighbor peerB peer-group
neighbor peerB remote-as 200
neighbor peerB local-as 300
neighbor peerB fall-over bfd multihop
neighbor peerB activate
neighbor peerB authentication-key 0x9a20ef22549ad84b
neighbor peerB default-originate
neighbor peerB maximum-prefix 3123 warning-only
neighbor peerB description VRFB peer-group configs
neighbor peerB ebgp-multihop 100
exit-address-family
!

```

OcNOS NetConf Payload

Here is a sample OcNOS NetConf Payload that illustrates a comprehensive BGP configuration. The configuration is divided into specific sections, each addressing different aspects of BGP operation, security, and peering.

Within this payload, two distinct AFI and SAFI contexts are defined for IPv4 and IPv6 in separate VRF instances named `vrfA` and `vrfB`. Each VRF is associated with specific BGP peer groups, peers, and a range of configurations that dictate the behavior of BGP in these contexts.

The configuration also includes authentication keys, prefix limits, timers, route reflection settings, BFD configuration, and other essential parameters that ensure the proper functioning of BGP in the specified VRFs.

```

<bgp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp">
  <bgp-instances>
    <bgp-instance>
      <bgp-as>100</bgp-as>
      <config>
        <bgp-as>100</bgp-as>
      </config>
      <state>
        <bgp-as>100</bgp-as>
      </state>
    </bgp-instance>
  </bgp-instances>
</bgp>

```

```

        <version>4</version>
        <table-version>1</table-version>
        <total-prefixes>0</total-prefixes>
        <router-run-time-ip-address>0.0.0.0</router-run-time-ip-
address>
        <scan-remain-time>36</scan-remain-time>
    </state>
    <rib>
        <address-family>
            <safi>link-state</safi>
            <afi>link-state</afi>
            <state>
                <safi>link-state</safi>
                <afi>link-state</afi>
            </state>
        </address-family>
    </rib>
    <address-family-vrfs>
        <address-family-vrf>
            <afi>ipv4</afi>
            <safi>unicast</safi>
            <vrf-name>vrfA</vrf-name>
            <config>
                <afi>ipv4</afi>
                <safi>unicast</safi>
                <vrf-name>vrfA</vrf-name>
            </config>
            <state>
                <afi>ipv4</afi>
                <safi>unicast</safi>
                <vrf-name>vrfA</vrf-name>
            </state>
            <peer-groups>
                <peer-group>
                    <peer-group-tag>peerA</peer-group-tag>
                    <bgp-passwords>
                        <bgp-password>
<password>0x9603e78694ace534ea912b9ab53f8a55</password>
                            <config>
<password>0x9603e78694ace534ea912b9ab53f8a55</password>
                                <auth-key-encrypt>1</auth-key-encrypt>
                            </config>
                            <state>
<password>0x9603e78694ace534ea912b9ab53f8a55</password>
                                <auth-key-encrypt>1</auth-key-encrypt>
                            </state>
                        </bgp-password>
                    </bgp-passwords>
                </peer-group>
            </peer-groups>
            <maximum-prefixes>
                <maximum-prefix>
                    <prefix-count>2331</prefix-count>
                </maximum-prefix>
            </maximum-prefixes>
            <threshold-percentage>100</threshold-
percentage>

```

```

percentage>
    <warning-only />
  </config>
  <state>
    <prefix-count>2331</prefix-count>
    <threshold-percentage>100</threshold-
connection-interval>
    <warning-only />
  </state>
</maximum-prefix>
</maximum-prefixes>
<config>
  <peer-group-tag>peerA</peer-group-tag>
  <peer-group-range>static</peer-group-range>
  <peer-as>100</peer-as>
  <source-identifier>2.2.2.2</source-identifier>
  <peer-connection-interval>900</peer-
route-advertisement-interval>
  <neighbor-passive />
  <min-route-advertisement-interval>65535</min-
peer-description>
  <peer-description>VRFA peer-group configs</
  <enable-peer-bfd />
  <activate />
  <default-peer-route-map-name />
  <peer-route-reflector />
</config>
<state>
  <peer-group-tag>peerA</peer-group-tag>
  <peer-group-range>static</peer-group-range>
  <peer-as>100</peer-as>
  <source-identifier>2.2.2.2</source-identifier>
  <peer-connection-interval>900</peer-
connection-interval>
  <neighbor-passive />
  <min-route-advertisement-interval>65535</min-
route-advertisement-interval>
  <peer-description>VRFA peer-group configs</
peer-description>
  <enable-peer-bfd />
  <activate />
  <default-peer-route-map-name />
  <peer-route-reflector />
</state>
<timers>
  <config>
    <keep-alive>100</keep-alive>
    <hold-time>300</hold-time>
  </config>
  <state>
    <keep-alive>100</keep-alive>
    <hold-time>300</hold-time>
  </state>
</timers>
</peer-group>
</peer-groups>
</address-family-vrf>
<address-family-vrf>

```

```

<afi>ipv6</afi>
<safi>unicast</safi>
<vrf-name>vrfB</vrf-name>
<config>
  <afi>ipv6</afi>
  <safi>unicast</safi>
  <vrf-name>vrfB</vrf-name>
</config>
<state>
  <afi>ipv6</afi>
  <safi>unicast</safi>
  <vrf-name>vrfB</vrf-name>
</state>
<peer-groups>
  <peer-group>
    <peer-group-tag>peerB</peer-group-tag>
    <bgp-passwords>
      <bgp-password>
        <password>0x9a20ef22549ad84b</password>
        <config>
          <password>0x9a20ef22549ad84b</
password>
          <auth-key-encrypt>1</auth-key-encrypt>
        </config>
        <state>
          <password>0x9a20ef22549ad84b</
password>
          <auth-key-encrypt>1</auth-key-encrypt>
        </state>
      </bgp-password>
    </bgp-passwords>
    <maximum-prefixes>
      <maximum-prefix>
        <prefix-count>3123</prefix-count>
        <config>
          <prefix-count>3123</prefix-count>
          <maximum-prefix-warning />
        </config>
        <state>
          <prefix-count>3123</prefix-count>
          <maximum-prefix-warning />
        </state>
      </maximum-prefix>
    </maximum-prefixes>
    <config>
      <peer-group-tag>peerB</peer-group-tag>
      <peer-group-range>static</peer-group-range>
      <peer-as>200</peer-as>
      <peer-local-as>300</peer-local-as>
      <peer-description>VRFB peer-group configs</
peer-description>
      <enable-peer-bfd />
      <enable-peer-bfd-multihop />
      <activate />
      <default-peer-route-map-name />
    </config>
    <state>

```

```

peer-description>
    <peer-group-tag>peerB</peer-group-tag>
    <peer-group-range>static</peer-group-range>
    <peer-as>200</peer-as>
    <peer-local-as>300</peer-local-as>
    <peer-description>VRFB peer-group configs</
    <enable-peer-bfd />
    <enable-peer-bfd-multihop />
    <activate />
    <default-peer-route-map-name />
  </state>
  <ebgp-multihop>
    <config>
      <maximum-hop-count>100</maximum-hop-count>
      <enabled />
    </config>
    <state>
      <maximum-hop-count>100</maximum-hop-count>
      <enabled />
    </state>
  </ebgp-multihop>
</peer-group>
</peer-groups>
</address-family-vrf>
</address-family-vrfs>
</bgp-instance>
</bgp-instances>
</bgp>

```

Validation with NetConf get

Here is a NetConf validation response that specifies different network instances, including the default, management, vrfA, and vrfB instances.

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</identifier>
        <name>100</name>
        <bgp>
          <global>
            <config>
              <as>100</as>
            </config>
            <route-selection-options>
              <config>
                <enable-aigp>true</enable-aigp>
              </config>
              <state>
                <enable-aigp>true</enable-aigp>
              </state>
            </route-selection-options>
            <state>

```

```

        <as>100</as>
        <total-prefixes>0</total-prefixes>
    </state>
</global>
</bgp>
</protocol>
</protocols>
</network-instance>
<network-instance>
    <name>management</name>
</network-instance>
<network-instance>
    <name>vrfA</name>
    <protocols>
        <protocol>
            <identifier
types:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</identifier>
            <name>100</name>
            <bgp>
                <global>
                    <config>
                        <as>100</as>
                    </config>
                    <afi-safis>
                        <afi-safi>
                            <afi-safi-name
types">oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                            <config>
                                <afi-safi-name
types">oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                                <enabled>true</enabled>
                            </config>
                            <state>
                                <afi-safi-name
types">oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                                </state>
                            </afi-safi>
                        </afi-safis>
                    </state>
                    <as>100</as>
                </state>
            </global>
            <peer-groups>
                <peer-group>
                    <peer-group-name>peerA</peer-group-name>
                    <afi-safis>
                        <afi-safi>
                            <afi-safi-name
types">oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                            <ipv4-unicast>
                                <prefix-limit>
                                    <config>
                                        <max-prefixes>2331</max-prefixes>

```

```

        <warning-threshold-pct>100</warning-threshold-pct>
        <prevent-teardown>true</prevent-teardown>
    </config>
    <state>
        <max-prefixes>2331</max-prefixes>
        <warning-threshold-pct>100</warning-threshold-pct>
        <prevent-teardown>true</prevent-teardown>
    </state>
</prefix-limit>
<config>
    <send-default-route>true</send-default-route>
</config>
<state>
    <send-default-route>true</send-default-route>
</state>
</ipv4-unicast>
<config>
    <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
        <enabled>true</enabled>
    </config>
    <state>
        <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
        <enabled>true</enabled>
    </state>
</afi-safi>
</afi-safis>
<config>
    <auth-password>0x9603e78694ace534ea912b9ab53f8a55</auth-
password>
    <peer-group-name>peerA</peer-group-name>
    <peer-as>100</peer-as>
    <description>VRFA peer-group configs</description>
</config>
<state>
    <auth-password>0x9603e78694ace534ea912b9ab53f8a55</auth-
password>
    <peer-group-name>peerA</peer-group-name>
    <peer-as>100</peer-as>
    <description>VRFA peer-group configs</description>
</state>
<transport>
    <config>
        <local-address>2.2.2.2</local-address>
        <passive-mode>true</passive-mode>
    </config>
    <state>
        <local-address>2.2.2.2</local-address>
        <passive-mode>true</passive-mode>
    </state>
</transport>
<timers>
    <config>
        <connect-retry>900.00</connect-retry>

```



```

        <minimum-advertisement-interval>65535.00</minimum-
advertisement-interval>
        <keepalive-interval>100.00</keepalive-interval>
        <hold-time>300.00</hold-time>
    </config>
    <state>
        <connect-retry>900.00</connect-retry>
        <minimum-advertisement-interval>65535.00</minimum-
advertisement-interval>
        <keepalive-interval>100.00</keepalive-interval>
        <hold-time>300.00</hold-time>
    </state>
</timers>
<enable-bfd>
    <config>
        <enabled>true</enabled>
    </config>
    <state>
        <enabled>true</enabled>
    </state>
</enable-bfd>
<route-reflector>
    <config>
        <route-reflector-client>true</route-reflector-client>
    </config>
    <state>
        <route-reflector-client>true</route-reflector-client>
    </state>
</route-reflector>
</peer-group>
</peer-groups>
</bgp>
</protocol>
</protocols>
</network-instance>
<network-instance>
    <name>vrfB</name>
    <protocols>
        <protocol>
            <identifier
types:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</identifier>
            <name>100</name>
            <bgp>
                <global>
                    <config>
                        <as>100</as>
                    </config>
                    <afi-safis>
                        <afi-safi>
                            <afi-safi-name
types:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV6_UNICAST</afi-safi-name>
                            <config>
                                <afi-safi-name
types:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV6_UNICAST</afi-safi-name>
                                <enabled>true</enabled>

```

```

        </config>
        <state>
            <afi-safi-name
                xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV6_UNICAST</afi-safi-name>
            </state>
        </afi-safi>
    </afi-safis>
    <state>
        <as>100</as>
    </state>
</global>
<peer-groups>
    <peer-group>
        <peer-group-name>peerB</peer-group-name>
        <afi-safis>
            <afi-safi>
                <afi-safi-name
                    xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV6_UNICAST</afi-safi-name>
                <ipv6-unicast>
                    <prefix-limit>
                        <config>
                            <max-prefixes>3123</max-prefixes>
                            <prevent-teardown>true</prevent-teardown>
                        </config>
                        <state>
                            <max-prefixes>3123</max-prefixes>
                            <prevent-teardown>true</prevent-teardown>
                        </state>
                    </prefix-limit>
                    <config>
                        <send-default-route>true</send-default-route>
                    </config>
                    <state>
                        <send-default-route>true</send-default-route>
                    </state>
                </ipv6-unicast>
                <config>
                    <afi-safi-name
                        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV6_UNICAST</afi-safi-name>
                    <enabled>true</enabled>
                </config>
                <state>
                    <afi-safi-name
                        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV6_UNICAST</afi-safi-name>
                    <enabled>true</enabled>
                </state>
            </afi-safi>
        </afi-safis>
        <config>
            <auth-password>0x9a20ef22549ad84b</auth-password>
            <peer-group-name>peerB</peer-group-name>
            <peer-as>200</peer-as>
            <local-as>300</local-as>
        </config>
    </peer-group>
</peer-groups>

```

```

        <description>VRFB peer-group configs</description>
    </config>
    <state>
        <auth-password>0x9a20ef22549ad84b</auth-password>
        <peer-group-name>peerB</peer-group-name>
        <peer-as>200</peer-as>
        <local-as>300</local-as>
        <description>VRFB peer-group configs</description>
    </state>
    <enable-bfd>
        <config>
            <enabled>true</enabled>
        </config>
        <state>
            <enabled>true</enabled>
        </state>
    </enable-bfd>
    <ebgp-multihop>
        <config>
            <multihop-ttl>100</multihop-ttl>
            <enabled>true</enabled>
        </config>
        <state>
            <enabled>true</enabled>
            <multihop-ttl>100</multihop-ttl>
        </state>
    </ebgp-multihop>
</peer-group>
</peer-groups>
</bgp>
</protocol>
</protocols>
</network-instance>
</network-instances>

```

Restrictions

- When configuring the `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/peer-groups` and `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/neighbors` paths for the first time, it's essential to include the respective AFI-SAFI configuration to indicate the AFI type: `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/neighbors/neighbor/afi-safis` and `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/peer-groups/peer-group/afi-safis`.

This information is necessary for the OcNOS model to generate the following paths:

```

/ipi-bgp:bgp:bgp-instance/address-family
/ipi-bgp:bgp:bgp-instance/peer-group/address-families
/ipi-bgp:bgp:bgp-instance/address-family-vrf

```

After the initial configuration of `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/peer-groups` and `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/neighbors` paths on the equipment, subsequent configurations on those paths do not require specifying the AFI-SAFI. The translation process will automatically retrieve this information from the equipment database, simplifying the configuration process for the user.

Configure Update-source on Neighbor

This XML configuration snippet is used to specify the configuration of the `update-source` parameter on a neighbor in the context of a network device configuration.

Release

This configuration was introduced in OcNOS version 5.0.

OpenConfig NetConf Payload

Here is the sample OpenConfig NetConf Payload that specifies the configuration of a network instance named `default` with BGP. Within this network instance, a BGP peer or neighbor is configured to establish a connection with the IP address `1.1.1.1` and share IPv4 unicast routing information.

In this payload, various parameters such as the local address, peer AS, and AFI-SAFI are configured to enable communication and routing between BGP neighbors.

This XML configuration allows internal BGP sessions to use any available operating interface for establishing TCP connections.

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
        <identifier>oc-pol-types:BGP</identifier>
        <name>100</name>
        <config>
          <identifier>oc-pol-types:BGP</identifier>
          <name>100</name>
          <enabled>true</enabled>
        </config>
      <bgp>
        <global>
          <config>
            <as>100</as>
          </config>
        </global>
        <neighbors>
          <neighbor>
            <afi-safis>
              <afi-safi>
                <afi-safi-name xmlns:oc-bgp-types="http://
openconfig.net/yang/bgp-types">oc-bgp-types:IPv4_UNICAST</afi-safi-name>
                <config>
                  <afi-safi-name xmlns:oc-bgp-types="http://
openconfig.net/yang/bgp-types">oc-bgp-types:IPv4_UNICAST</afi-safi-name>
                  <enabled>true</enabled>
                </config>
              </afi-safi>
            </afi-safis>
            <neighbor-address>1.1.1.1</neighbor-address>
            <config>
              <neighbor-address>1.1.1.1</neighbor-address>
            </config>
          </neighbor>
        </neighbors>
      </bgp>
    </protocols>
  </network-instance>
</network-instances>
```

```

        <peer-as>100</peer-as>
    </config>
    <transport>
        <config>
            <local-address>2.2.2.2</local-address>
        </config>
    </transport>
</neighbor>
</neighbors>
</bgp>
</protocol>
</protocols>
</network-instance>
</network-instances>

```

OcNOS CLI Command

The below CLI commands are to configure a BGP neighbor relationship within the BGP process running on a router with AS number 100. Specifically, it configures a BGP neighbor with the IP address 1.1.1.1, assigns it the same AS number (AS 100), and specifies that the local address for establishing the BGP connection should be 2.2.2.2. This `update-source` parameter ensures that the BGP sessions between the local router and the neighbor use the specified source IP address (2.2.2.2) for their TCP connections.

```

router bgp 100
neighbor 1.1.1.1 remote-as 100
neighbor 1.1.1.1 update-source 2.2.2.2
!

```

OcNOS NetConf Payload

Here is a sample OcNOS NetConf Payload for a BGP instance with AS number 100 is defined. Within this instance, a BGP peer relationship is established with a neighbor having the IP address 1.1.1.1. The payload further specifies that the local router should use the source IP address 2.2.2.2 when communicating with this BGP peer, ensuring proper BGP session establishment and communication.

```

<bgp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp">
  <bgp-instances>
    <bgp-instance>
      <bgp-as>100</bgp-as>
      <config>
        <bgp-as>100</bgp-as>
      </config>
      <peers>
        <peer>
          <peer-address>1.1.1.1</peer-address>
          <config>
            <peer-address>1.1.1.1</peer-address>
            <source-identifier>2.2.2.2</source-identifier>
            <peer-as>100</peer-as>
          </config>
        </peer>
      </peers>
    </bgp-instance>
  </bgp-instances>
</bgp>

```

Validation with NetConf get

Here is a NetConf validation response describing the default network instance, along with its associated protocols. Notably, the response includes information about a BGP instance with an AS number of 100, illustrating its global and neighbor-specific settings. The BGP neighbor relationship is established with an IP address of 1.1.1.1 and is configured to use a local address of 2.2.2.2 for communication.

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <config>
      <name>default</name>
      <type
types">oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:DEFAULT_INSTANCE</type>
      </config>
      <state>
        <name>default</name>
        <type
types">oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L3VRF</type>
        </state>
        <protocols>
          <protocol>
            <identifier
types">oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
            <name>DIRECTLY_CONNECTED</name>
            <config>
              <identifier
types">oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:DIRECTLY_CONNECTED</identifier>
              <name>DIRECTLY_CONNECTED</name>
              <enabled>true</enabled>
            </config>
            <state>
              <identifier
types">oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:DIRECTLY_CONNECTED</identifier>
              <name>DIRECTLY_CONNECTED</name>
              <enabled>true</enabled>
            </state>
          </protocol>
          <protocol>
            <identifier
types">oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</identifier>
            <name>100</name>
            <config>
              <identifier
types">oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:BGP</identifier>
              <name>100</name>
              <enabled>true</enabled>
            </config>
          </protocol>
          <global>
            <config>
```

```

        <as>100</as>
    </config>
    <state>
        <as>100</as>
    </state>
</global>
<neighbors>
    <neighbor>
        <neighbor-address>1.1.1.1</neighbor-address>
        <afi-safis>
            <afi-safi>
                <afi-safi-name xmlns:oc-bgp-types="http://
openconfig.net/yang/bgp-types">oc-bgp-types:IPv4_UNICAST</afi-safi-name>
                <config>
                    <afi-safi-name xmlns:oc-bgp-types="http://
openconfig.net/yang/bgp-types">oc-bgp-types:IPv4_UNICAST</afi-safi-name>
                    <enabled>true</enabled>
                </config>
            </afi-safi>
        </afi-safis>
    </config>
    <neighbor-address>1.1.1.1</neighbor-address>
    <peer-as>100</peer-as>
</config>
<transport>
    <config>
        <local-address>2.2.2.2</local-address>
    </config>
    <state>
        <local-address>2.2.2.2</local-address>
    </state>
</transport>
<state>
    <neighbor-address>1.1.1.1</neighbor-address>
    <peer-as>100</peer-as>
</state>
</neighbor>
</neighbors>
</bgp>
<state>
    <enabled>true</enabled>
    <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:BGP</identifier>
        <name>100</name>
    </state>
</protocol>
</protocols>
</network-instance>
</network-instances>

```

Restrictions

None

Double Link in Load Balance

In this XML configuration snippet, two links are used to ensure service availability, and all traffic is routed through both links simultaneously. If either of these links experiences a failure, all traffic is automatically redirected to the remaining available link.

Release

This configuration was introduced in OcNOS version 5.1.

OpenConfig NetConf Payload

Here is the sample OpenConfig NetConf Payload to indicate the configuration of a network instance named TEST_A9 with associated BGP protocols and peer groups. In this scenario, two peer groups, PPAL_BGP_L3 and BCK_BGP_L3, are defined within BGP, each with its specific settings. The configuration also specifies the use of multiple paths for external BGP (eBGP) sessions and enables IPv4 unicast address families for these peer groups. Furthermore, it outlines neighbor configurations, including their addresses, peer group associations, and additional parameters like local and peer AS numbers.

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>TEST_A9</name>
    <config>
      <name>TEST_A9</name>
      <type>L3VRF</type>
      <route-distinguisher>65000:100</route-distinguisher>
    </config>
    <protocols>
      <protocol>
        <identifier>BGP</identifier>
        <name>65000</name>
        <config>
          <identifier>BGP</identifier>
          <name>65000</name>
          <enabled>true</enabled>
        </config>
        <bgp>
          <peer-groups>
            <peer-group>
              <afi-safis>
                <afi-safi>
                  <afi-safi-name xmlns:oc-bgp-types="http://
openconfig.net/yang/bgp-types">oc-bgp-types:IPv4_UNICAST</afi-safi-name>
                  <config>
                    <afi-safi-name xmlns:oc-bgp-
types="http://openconfig.net/yang/bgp-types">oc-bgp-types:IPv4_UNICAST</afi-
safi-name>
                    <enabled>true</enabled>
                  </config>
                </afi-safi>
              </afi-safis>
              <peer-group-name>PPAL_BGP_L3</peer-group-name>
            <config>
              <peer-group-name>PPAL_BGP_L3</peer-group-name>
```



```

        <peer-as>18746</peer-as>
    </config>
</peer-group>
<peer-group>
    <afi-safis>
        <afi-safi>
            <afi-safi-name xmlns:oc-bgp-types="http://
openconfig.net/yang/bgp-types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
            <config>
                <afi-safi-name xmlns:oc-bgp-
types="http://openconfig.net/yang/bgp-types">oc-bgp-types:IPV4_UNICAST</afi-
safi-name>
                <enabled>true</enabled>
            </config>
        </afi-safi>
    </afi-safis>
    <peer-group-name>BCK_BGP_L3</peer-group-name>
    <config>
        <peer-group-name>BCK_BGP_L3</peer-group-name>
        <peer-as>18010</peer-as>
    </config>
</peer-group>
</peer-groups>
<global>
    <config>
        <as>65000</as>
    </config>
    <use-multiple-paths>
        <config>
            <enabled>true</enabled>
        </config>
    <ebgp>
        <config>
            <maximum-paths>2</maximum-paths>
        </config>
    </ebgp>
</use-multiple-paths>
</global>
<neighbors>
    <neighbor>
        <afi-safis>
            <afi-safi>
                <afi-safi-name xmlns:oc-bgp-types="http://
openconfig.net/yang/bgp-types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                <config>
                    <afi-safi-name xmlns:oc-bgp-
types="http://openconfig.net/yang/bgp-types">oc-bgp-types:IPV4_UNICAST</afi-
safi-name>
                    <enabled>true</enabled>
                </config>
            </afi-safi>
        </afi-safis>
        <neighbor-address>172.17.30.2</neighbor-address>
    </config>
    <peer-group>PPAL_BGP_L3</peer-group>
    <neighbor-address>172.17.30.2</neighbor-
address>
    <peer-as>18747</peer-as>

```

```

        <local-as>65001</local-as>
        <description>PPAL_SESSION</description>
    </config>
</neighbor>
<neighbor>
    <afi-safis>
        <afi-safi>
            <afi-safi-name xmlns:oc-bgp-types="http://
openconfig.net/yang/bgp-types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
            <config>
                <afi-safi-name xmlns:oc-bgp-
types="http://openconfig.net/yang/bgp-types">oc-bgp-types:IPV4_UNICAST</afi-
safi-name>
                <enabled>true</enabled>
            </config>
        </afi-safi>
    </afi-safis>
    <neighbor-address>172.17.40.2</neighbor-address>
</config>
    <peer-group>BCK_BGP_L3</peer-group>
    <neighbor-address>172.17.40.2</neighbor-
address>
    <peer-as>18010</peer-as>
    <local-as>65002</local-as>
    <description>BCK_SESSION</description>
</config>
</neighbor>
</neighbors>
</bgp>
</protocol>
</protocols>
</network-instance>
</network-instances>

```

OcNOS CLI Command

The below CLI commands are used to create a specific VRF instance named `TEST_A9` with a unique route distinguisher (RD) of `65000:100`. Within the BGP configuration for AS number `65000`, two address families, IPv4 and IPv6, are defined for the `TEST_A9` VRF, each allowing up to two paths for eBGP (external BGP) sessions.

The configuration also includes the setup of neighbor relationships, with peers grouped into `PPAL_BGP_L3` and `BCK_BGP_L3` peer groups. Each neighbor is associated with the appropriate peer group, and their remote AS numbers and descriptions are specified.

```

!
ip vrf TEST_A9
  rd 65000:100
!
router bgp 65000
!
  address-family ipv4 vrf TEST_A9
    max-paths ebgp 2
    neighbor BCK_BGP_L3 peer-group
    neighbor BCK_BGP_L3 remote-as 18010
    neighbor BCK_BGP_L3 activate
    neighbor PPAL_BGP_L3 peer-group
    neighbor PPAL_BGP_L3 remote-as 18746

```

```

neighbor PPAL_BGP_L3 activate
neighbor 172.17.30.2 remote-as 18747
neighbor 172.17.30.2 peer-group PPAL_BGP_L3
neighbor 172.17.40.2 remote-as 18010
neighbor 172.17.40.2 peer-group BCK_BGP_L3
neighbor 172.17.30.2 description PPAL_SESSION
neighbor 172.17.40.2 description BCK_SESSION
exit-address-family
!
address-family ipv6 vrf TEST_A9
max-paths ebgp 2
exit-address-family
!

```

OcNOS NetConf Payload

Here is a sample OcNOS NetConf Payload illustrating the configuration of a network instance with associated BGP settings. This configuration is designed to establish BGP sessions within the specified VRF instance and configure BGP-related parameters.

In this payload, the VRF instance type, BGP AS, BGP peering configurations for both IPv4 and IPv6 address families, and the maximum number of paths allowed for eBGP (external BGP) sessions are configured.

```

<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-network-
instance">
  <network-instance>
    <instance-name>TEST_A9</instance-name>
    <instance-type>vrf</instance-type>
    <config>
      <instance-name>TEST_A9</instance-name>
      <instance-type>vrf</instance-type>
    </config>
    <vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vrf">
      <config>
        <vrf-name>TEST_A9</vrf-name>
      </config>
      <bgp-vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp-vrf">
        <config>
          <rd-string>65000:100</rd-string>
        </config>
      </bgp-vrf>
    </vrf>
  </network-instance>
</network-instances>
<bgp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp">
  <bgp-instances>
    <bgp-instance>
      <bgp-as>65000</bgp-as>
      <config>
        <bgp-as>65000</bgp-as>
      </config>
      <address-family-vrfs>
        <address-family-vrf>
          <afi>ipv4</afi>
          <safi>unicast</safi>
          <vrf-name>TEST_A9</vrf-name>
          <vrf-peers>

```

```

        <vrf-peer>
        <peer-address>172.17.30.2</peer-address>
        <config>
        <peer-address>172.17.30.2</peer-address>
        <peer-as>18747</peer-as>
        <peer-description>PPAL_SESSION</peer-
description>
        <mapped-peer-group-tag-af>PPAL_BGP_L3</mapped-
peer-group-tag-af>
        </config>
    </vrf-peer>
    <vrf-peer>
    <peer-address>172.17.40.2</peer-address>
    <config>
    <peer-address>172.17.40.2</peer-address>
    <peer-as>18010</peer-as>
    <peer-description>BCK_SESSION</peer-
description>
    <mapped-peer-group-tag-af>BCK_BGP_L3</mapped-
peer-group-tag-af>
    </config>
</vrf-peer>
</vrf-peers>
<config>
    <afi>ipv4</afi>
    <safi>unicast</safi>
    <vrf-name>TEST_A9</vrf-name>
</config>
<maximum-paths>
    <config>
    <ebgp-max-path>2</ebgp-max-path>
    </config>
</maximum-paths>
<peer-groups>
    <peer-group>
    <peer-group-tag>BCK_BGP_L3</peer-group-tag>
    <config>
    <peer-group-tag>BCK_BGP_L3</peer-group-tag>
    <peer-group-range>static</peer-group-range>
    <peer-as>18010</peer-as>
    <activate />
    </config>
    </peer-group>
    <peer-group>
    <peer-group-tag>PPAL_BGP_L3</peer-group-tag>
    <config>
    <peer-group-tag>PPAL_BGP_L3</peer-group-tag>
    <peer-group-range>static</peer-group-range>
    <peer-as>18746</peer-as>
    <activate />
    </config>
    </peer-group>
</peer-groups>
</address-family-vrf>
<address-family-vrf>
    <afi>ipv6</afi>
    <safi>unicast</safi>

```

```

        <vrf-name>TEST_A9</vrf-name>
        <config>
            <afi>ipv6</afi>
            <safi>unicast</safi>
            <vrf-name>TEST_A9</vrf-name>
        </config>
        <maximum-paths>
            <config>
                <ebgp-max-path>2</ebgp-max-path>
            </config>
        </maximum-paths>
    </address-family-vrf>
</address-family-vrfs>
</bgp-instance>
</bgp-instances>
</bgp>

```

Validation with NetConf get

Here is a NetConf validation response about the network instance's configuration, the BGP AS number, BGP peering details, and protocol tables for both IPv4 and IPv6 address families.

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>TEST_A9</name>
    <config>
      <name>TEST_A9</name>
      <type
        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L3VRF</type>
      <route-distinguisher>65000:100</route-distinguisher>
    </config>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</identifier>
        <name>DIRECTLY_CONNECTED</name>
        <config>
          <identifier
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
            <name>DIRECTLY_CONNECTED</name>
            <enabled>true</enabled>
          </config>
        </protocol>
      </protocol>
      <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</identifier>
        <name>65000</name>
        <bgp>
          <global>
            <config>
              <as>65000</as>
            </config>
            <use-multiple-paths>

```

```

    <config>
      <enabled>true</enabled>
    </config>
  </ebgp>
  <config>
    <maximum-paths>2</maximum-paths>
  </config>
</ebgp>
</use-multiple-paths>
</global>
<neighbors>
  <neighbor>
    <neighbor-address>172.17.30.2</neighbor-address>
    <afi-safis>
      <afi-safi>
        <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
          <config>
            <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
              <enabled>>false</enabled>
            </config>
          </afi-safi>
        </afi-safis>
      <config>
        <enabled>>false</enabled>
        <neighbor-address>172.17.30.2</neighbor-address>
        <peer-as>18747</peer-as>
        <description>PPAL_SESSION</description>
        <peer-group>PPAL_BGP_L3</peer-group>
      </config>
    </neighbor>
    <neighbor>
      <neighbor-address>172.17.40.2</neighbor-address>
      <afi-safis>
        <afi-safi>
          <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
            <config>
              <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                <enabled>>false</enabled>
              </config>
            </afi-safi>
          </afi-safis>
        <config>
          <enabled>>false</enabled>
          <neighbor-address>172.17.40.2</neighbor-address>
          <peer-as>18010</peer-as>
          <description>BCK_SESSION</description>
          <peer-group>BCK_BGP_L3</peer-group>
        </config>
      </neighbor>

```

```

    </neighbors>
    <peer-groups>
      <peer-group>
        <peer-group-name>BCK_BGP_L3</peer-group-name>
        <afi-safis>
          <afi-safi>
            <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
            <config>
              <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
              <enabled>true</enabled>
            </config>
          </afi-safi>
        </afi-safis>
      </config>
      <peer-group-name>BCK_BGP_L3</peer-group-name>
      <peer-as>18010</peer-as>
    </config>
  </peer-group>
  <peer-group>
    <peer-group-name>PPAL_BGP_L3</peer-group-name>
    <afi-safis>
      <afi-safi>
        <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
        <config>
          <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
          <enabled>true</enabled>
        </config>
      </afi-safi>
    </afi-safis>
  </config>
  <peer-group-name>PPAL_BGP_L3</peer-group-name>
  <peer-as>18746</peer-as>
</config>
</peer-group>
</peer-groups>
</bgp>
<config>
  <identifier
types">oc-pol-types:BGP</identifier>
  <name>65000</name>
  <enabled>true</enabled>
</config>
</protocol>
</protocols>
<tables>
  <table>
    <protocol
types">oc-pol-types:DIRECTLY_CONNECTED</protocol>

```

```

    <address-family
      xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
    <config>
      <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family
          xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
        </config>
      </table>
    </table>
    <protocol
      xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</protocol>
      <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
      <config>
        <protocol
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
          <address-family
            xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
          </config>
        </table>
      </table>
      <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</protocol>
        <address-family
          xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
        <config>
          <protocol
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
            <address-family
              xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
            </config>
          </table>
        </table>
        <protocol
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</protocol>
          <address-family
            xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
          <config>
            <protocol
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
              <address-family
                xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
              </config>
            </table>
          </table>
        </config>
      </table>
    </table>
  </table>

```



```

    </table>
  </tables>
</network-instance>
</network-instances>

```

Restrictions

- When configuring the `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/peer-groups` and `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/neighbors` paths for the first time, it's essential to include the respective AFI-SAFI configuration to indicate the AFI type: `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/neighbors/neighbor/afi-safis` and `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/peer-groups/peer-group/afi-safis`.

This information is necessary for the OcNOS model to generate the following paths:

```

/ipi-bgp:bgp/bgp-instance/address-family
/ipi-bgp:bgp/bgp-instance/peer-group/address-families
/ipi-bgp:bgp/bgp-instance/address-family-vrf

```

- After the initial configuration of `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/peer-groups` and `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/neighbors` paths on the equipment, subsequent configurations on those paths do not require specifying the AFI-SAFI. The translation process will automatically retrieve this information from the equipment database, simplifying the configuration process for the user.

Delete BGP instance

In this XML configuration snippet, BGP instances are configured on network-instance on OpenConfig and on container BGP on OcNOS side. Due this difference the delete process need to handle if the operation is trying to delete one VRF instance or the entire BGP instance.

When using OpenConfig, the BGP object on OcNOS database is only deleted by the delete on "default" network-instance. When the delete is execute on VRF network-instance it only deletes the given VRF instance.

If there are VRF instances configured and a delete operation is executed on "default" network-instance, it going to clean only entries configured on "default" network-instance. To remove VRF instances, the user needs to apply a operation delete on VRF instances.

Release

This configuration was introduced in OcNOS version 5.1.

OpenConfig NetConf Payload

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>VRF1</name>
    <protocols>
      <protocol operation="delete">
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</identifier>
        <name>100</name>
      </protocol>
    </protocols>
  </network-instance>
</network-instances>

```

```

    </protocols>
  </network-instance>
</network-instances>

```

Delete default instance:

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol operation="delete">
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</identifier>
          <name>100</name>
        </protocol>
      </protocols>
    </network-instance>
  </network-instances>

```

OcNOS NetConf Payload

Delete VRF instance:

```

<bgp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp">
  <bgp-instances>
    <bgp-instance>
      <bgp-as>100</bgp-as>
      <address-family-vrfs>
        <address-family-vrf operation="delete">
          <afi>ipv4</afi>
          <safi>unicast</safi>
          <vrf-name>VRF1</vrf-name>
        </address-family-vrf>
      </address-family-vrfs>
    </bgp-instance>
  </bgp-instances>
</bgp>

```

Delete default instance:

```

<bgp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp">
  <bgp-instances>
    <bgp-instance operation="delete">
      <bgp-as>100</bgp-as>
    </bgp-instance>
  </bgp-instances>
</bgp>

```

Restrictions

On OpenConfig BGP datamodel the container global do not have any key to identify a single BGP instance, but the BGP AS information is placed under xpath `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/global/config/as`.

On IPI BGP datamodel the BGP AS information is a key for BGP container, and it does not allow the delete on xpath `/ipi-bgp:/bgp/bgp-instances/bgp-instance/config/bgp-as` to avoid delete its own instance key.

In this case, when translation framework detects a delete or remove operation on following OpenConfig xpaths:

```
/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/global
/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/global/
config
/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/global/
config/as
```

It will trigger an error message to NETCONF client and do not execute the delete operation.

To avoid this issue, when user needs to delete or remove a configuration under OpenConfig xpath `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/global/config`, user must add a "delete" or "remove" operation directly on the leaf or leaves desired to be removed, rather than delete the entire container.

BGP RIB Counters IPv4

In this XML configuration snippet, the BGP RIB (Routing information base) is a set of counters to retrieve information about routes from neighbors. In this chapter will be discussed about BGP RIB IPv4.

The containers related to RIB are status only on both Open Config and OcNOS datamodels, and there are no configuration related to this.

On OcNOS the containers are available only after the BGP negotiate routers, before it this tables are empty and could not be retrieved.

The table below show which information each table displays.

OcNOS CLI	OcNOS XPath	Open Config XPath
show ip bgp neighbors <IP-address> routes	/ipi-bgp:bgp/bgp-instance/rib/ address-family/routes/route/next-hop	/oc-netinst:network-instances/network-instance/ protocols/protocol/bgp/rib/afi-safis/afi-safi/ipv4- unicast/loc-rib/routes/route
show ip bgp neighbors <IP-address> received-routes	For default VRF instances: /ipi- bgp:bgp/bgp-instance/address-family- vrf/vrf-peer/peer-adj-in-route/next-hop For non-default VRF instances: /ipi- bgp:bgp/bgp-instance/peer/address- family/peer-adj-in-route/next-hop	/oc-netinst:network-instances/network-instance/ protocols/protocol/bgp/rib/afi-safis/afi-safi/ipv4- unicast/neighbors/neighbor/adj-rib-in-post/routes/ route
show ip bgp neighbors <IP-address> advertised-routes	For default VRF instances: /ipi- bgp:bgp/bgp-instance/address-family- vrf/vrf-peer/peer-adj-out-route/next- hop For non-default VRF instances: /ipi- bgp:bgp/bgp-instance/peer/address- family/peer-adj-out-route/next-hop	/oc-netinst:network-instances/network-instance/ protocols/protocol/bgp/rib/afi-safis/afi-safi/ipv4- unicast/neighbors/neighbor/adj-rib-out-post/routes/ route
To get "last update" information: show ip bgp<IP- address>	/ipi-bgp:bgp/bgp-instance/rib/ address-family/routes/route/next-hop	/oc-netinst:network-instances/network-instance/ protocols/protocol/bgp/rib/afi-safis/afi-safi/ipv4- unicast/loc-rib/routes/route
show ip bgp ipv4 unicast <IP-address>	/ipi-bgp:bgp/bgp-instance/rib/ address-family/routes/route/next-hop	/oc-netinst:network-instances/network-instance/ protocols/protocol/bgp/rib/afi-safis/afi-safi/ipv4- unicast/loc-rib/routes/route

OcNOS CLI	OcNOS XPath	Open Config XPath
When have user-defined VRF: show ip bgp vrf <VRF name>	/ipi-bgp:bgp/bgp-instance/rib/address-family/routes/route/next-hop	/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/rib/afi-safis/afi-safi/ipv4-unicast/loc-rib/routes/route
When have user-defined VRF: show ip bgp vpnv4 vrf <VRF name>	/ipi-bgp:bgp/bgp-instance/rib/address-family/routes/route/next-hop	/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/rib/afi-safis/afi-safi/ipv4-unicast/loc-rib/routes/route
When have user-defined VRF: show ip bgp vpnv4 vrf <VRF name> <IP-address>	/ipi-bgp:bgp/bgp-instance/rib/address-family/routes/route/next-hop	/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/rib/afi-safis/afi-safi/ipv4-unicast/loc-rib/routes/route

Release

This configuration was introduced in OcNOS version 6.2.

OpenConfig NetConf Payload

N/A

OcNOS CLI Command

The config below is just an example to illustrate to counters indicated.

To have a complete BGP RIB scenario it needs more than one equipment configured to work with BGP.

```
router bgp 200
 neighbor 10.10.10.11 remote-as 300
 !
 address-family ipv4 unicast
 redistribute connected
 redistribute static
 neighbor 10.10.10.11 activate
 neighbor 10.10.10.11 soft-reconfiguration inbound
 exit-address-family
 !
```

OcNOS NetConf Payload

```
<bgp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp">
  <bgp-instances>
    <bgp-instance>
      <bgp-as>200</bgp-as>
      <config>
        <bgp-as>200</bgp-as>
      </config>
      <state>
        <bgp-as>200</bgp-as>
      </state>
    </bgp-instance>
  </bgp-instances>
</bgp>
```

```

        <version>4</version>
        <table-version>1</table-version>
        <total-prefixes>2</total-prefixes>
        <router-run-time-ip-address>192.168.122.61</router-run-time-
ip-address>
        <scan-remain-time>16</scan-remain-time>
    </state>
    <rib>
        <address-family>
            <safi>unicast</safi>
            <afi>ipv4</afi>
            <state>
                <safi>unicast</safi>
                <afi>ipv4</afi>
            </state>
            <routes>
                <route>
                    <route-distinguisher>0</route-distinguisher>
                    <network-address>10.10.10.0/24</network-address>
                    <next-hop>
                        <next-hop-address>0.0.0.0</next-hop-address>
                        <state>
                            <next-hop-address>0.0.0.0</next-hop-
address>
                            <peer-network-weight>32768</peer-network-
weight>
                            <bgp-as-path-string>Local</bgp-as-path-
string>
                            <bgp-as-path-4-byte-origin>incomplete</
bgp-as-path-4-byte-origin>
                            <ibgp-metric-route>0</ibgp-metric-route>
                            <route-local-preference>100</route-local-
preference>
                            <last-update-route>2022-12-04T17:50:28Z</
last-update-route>
                            <reflector-client-route>false</reflector-
client-route>
                            <route-dampening-active>false</route-
dampening-active>
                            <history-route>false</history-route>
                            <nexthop-valid-route>true</nexthop-valid-
route>
                            <med-flag-type-route>false</med-flag-type-
route>
                            <valid-route>true</valid-route>
                            <stale-route>false</stale-route>
                            <route-type>sourced</route-type>
                            <ecmp-multi-candidate-route>false</ecmp-
multi-candidate-route>
                            <multi-installed-route>false</multi-
installed-route>
                            <atomic-aggregate-route>false</atomic-
aggregate-route>
                            <selected-route>true</selected-route>
                            <bgp-tx-path-id>-1</bgp-tx-path-id>
                            <bgp-rx-path-id>-1</bgp-rx-path-id>
                        </state>
                    </next-hop>
                </route>
            </routes>
        </address-family>
    </rib>
</state>
</next-hop>
<next-hop>

```

```

address>                                <next-hop-address>10.10.10.11</next-hop-
                                         <state>
address>                                <next-hop-address>10.10.10.11</next-hop-
weight>                                <peer-network-weight>32768</peer-network-
string>                                <bgp-as-path-string>Local</bgp-as-path-
bgp-as-path-4-byte-origin>             <bgp-as-path-4-byte-origin>incomplete</
                                         <ibgp-metric-route>0</ibgp-metric-route>
preference>                             <route-local-preference>100</route-local-
last-update-route>                     <last-update-route>2022-12-04T17:50:28Z</
client-route>                           <reflector-client-route>false</reflector-
dampening-active>                       <route-dampening-active>false</route-
                                         <history-route>false</history-route>
route>                                  <nexthop-valid-route>true</nexthop-valid-
route>                                  <med-flag-type-route>false</med-flag-type-
                                         <valid-route>true</valid-route>
                                         <stale-route>false</stale-route>
                                         <route-type>sourced</route-type>
                                         <ecmp-multi-candidate-route>false</ecmp-
multi-candidate-route>                 <multi-installed-route>false</multi-
installed-route>                        <atomic-aggregate-route>false</atomic-
aggregate-route>                        <selected-route>true</selected-route>
                                         <bgp-tx-path-id>-1</bgp-tx-path-id>
                                         <bgp-rx-path-id>-1</bgp-rx-path-id>
                                         </state>
                                         </next-hop>
                                         <state>
                                         <route-distinguisher>0</route-distinguisher>
                                         <network-address>10.10.10.0/24</network-
address>                                </state>
                                         </route>
                                         <route>
                                         <route-distinguisher>0</route-distinguisher>
                                         <network-address>192.168.122.0</network-address>
                                         <next-hop>
                                         <next-hop-address>0.0.0.0</next-hop-address>
                                         <state>
                                         <next-hop-address>0.0.0.0</next-hop-
address>                                <peer-network-weight>32768</peer-network-
weight>                                <bgp-as-path-string>Local</bgp-as-path-
string>                                <bgp-as-path-4-byte-origin>incomplete</
bgp-as-path-4-byte-origin>             <ibgp-metric-route>0</ibgp-metric-route>

```

```

preference>
last-update-route>
client-route>
dampening-active>
route>
route>
multi-candidate-route>
installed-route>
aggregate-route>
address>
address>
weight>
string>
bgp-as-path-4-byte-origin>
preference>
last-update-route>
client-route>
dampening-active>
route>
route>
multi-candidate-route>
installed-route>

<route-local-preference>100</route-local-
<last-update-route>2022-12-04T17:50:28Z</
<reflector-client-route>false</reflector-
<route-dampening-active>false</route-
<history-route>false</history-route>
<nexthop-valid-route>true</nexthop-valid-
<med-flag-type-route>false</med-flag-type-
<valid-route>true</valid-route>
<stale-route>false</stale-route>
<route-type>sourced</route-type>
<ecmp-multi-candidate-route>false</ecmp-
<multi-installed-route>false</multi-
<atomic-aggregate-route>false</atomic-
<selected-route>true</selected-route>
<bgp-tx-path-id>-1</bgp-tx-path-id>
<bgp-rx-path-id>-1</bgp-rx-path-id>
</state>
</next-hop>
<next-hop>
<next-hop-address>10.10.10.11</next-hop-
<state>
<next-hop-address>10.10.10.11</next-hop-
<peer-network-weight>32768</peer-network-
<bgp-as-path-string>Local</bgp-as-path-
<bgp-as-path-4-byte-origin>incomplete</
<ibgp-metric-route>0</ibgp-metric-route>
<route-local-preference>100</route-local-
<last-update-route>2022-12-04T17:50:28Z</
<reflector-client-route>false</reflector-
<route-dampening-active>false</route-
<history-route>false</history-route>
<nexthop-valid-route>true</nexthop-valid-
<med-flag-type-route>false</med-flag-type-
<valid-route>true</valid-route>
<stale-route>false</stale-route>
<route-type>sourced</route-type>
<ecmp-multi-candidate-route>false</ecmp-
<multi-installed-route>false</multi-

```

```

aggregate-route>                                <atomic-aggregate-route>false</atomic-
                                                <selected-route>true</selected-route>
                                                <bgp-tx-path-id>-1</bgp-tx-path-id>
                                                <bgp-rx-path-id>-1</bgp-rx-path-id>
                                                </state>
</next-hop>
<state>
    <route-distinguisher>0</route-distinguisher>
    <network-address>192.168.122.0</network-
address>
    </state>
</route>
</routes>
</address-family>
<address-family>
    <safi>link-state</safi>
    <afi>link-state</afi>
    <state>
        <safi>link-state</safi>
        <afi>link-state</afi>
    </state>
</address-family>
</rib>
<address-families>
    <address-family>
        <afi>ipv4</afi>
        <safi>unicast</safi>
        <config>
            <afi>ipv4</afi>
            <safi>unicast</safi>
        </config>
        <state>
            <afi>ipv4</afi>
            <safi>unicast</safi>
        </state>
        <route-redirect-lists>
            <route-redirect-list>
                <protocol-type>connected</protocol-type>
                <config>
                    <protocol-type>connected</protocol-type>
                </config>
                <state>
                    <protocol-type>connected</protocol-type>
                </state>
            </route-redirect-list>
            <route-redirect-list>
                <protocol-type>static</protocol-type>
                <config>
                    <protocol-type>static</protocol-type>
                </config>
                <state>
                    <protocol-type>static</protocol-type>
                </state>
            </route-redirect-list>
        </route-redirect-lists>
    </address-family>

```



```

    </address-families>
    <peers>
      <peer>
        <peer-address>10.10.10.11</peer-address>
        <address-families>
          <address-family>
            <afi>ipv4</afi>
            <safi>unicast</safi>
            <peer-adj-out-route>
              <network-address>10.10.10.0/24</network-
address>
                <next-hop>
                  <next-hop-address>10.10.10.10</next-hop-
address>
                    <state>
                      <next-hop-address>10.10.10.10</next-
hop-address>
                        <peer-network-weight>32768</peer-
network-weight>
                          <bgp-as-path-string>Local</bgp-as-
path-string>
                            <bgp-as-path-4-byte-
origin>incomplete</bgp-as-path-4-byte-origin>
                              <ibgp-metric-route>0</ibgp-metric-
route>
                                <route-local-preference>100</route-
local-preference>
                                  <last-update-route>2022-12-
04T17:50:28Z</last-update-route>
                                    <reflector-client-route>false</
reflector-client-route>
                                      <route-dampening-active>false</route-
dampening-active>
                                        <history-route>false</history-route>
                                          <med-flag-type-route>false</med-flag-
type-route>
                                            <valid-route>true</valid-route>
                                              <stale-route>false</stale-route>
                                                <route-type>sourced</route-type>
                                                  <ecmp-multi-candidate-route>false</
ecmp-multi-candidate-route>
                                                    <multi-installed-route>false</multi-
installed-route>
                                                      <atomic-aggregate-route>false</atomic-
aggregate-route>
                                                        <selected-route>true</selected-route>
                                                          <bgp-tx-path-id>-1</bgp-tx-path-id>
                                                            <bgp-rx-path-id>-1</bgp-rx-path-id>
                                                                </state>
                                                                </next-hop>
                                                                <state>
                                                                  <network-address>10.10.10.0/24</network-
address>
                                                                    </state>
                                                                    </peer-adj-out-route>
                                                                    <peer-adj-out-route>
                                                                      <network-address>192.168.122.0</network-
address>
                                                                        <next-hop>

```

```

address>                                <next-hop-address>10.10.10.10</next-hop-
                                         <state>
hop-address>                            <next-hop-address>10.10.10.10</next-
network-weight>                        <peer-network-weight>32768</peer-
path-string>                          <bgp-as-path-string>Local</bgp-as-
                                         <bgp-as-path-4-byte-
origin>incomplete</bgp-as-path-4-byte-origin>
route>                                <ibgp-metric-route>0</ibgp-metric-
                                         <route-local-preference>100</route-
local-preference>                    <last-update-route>2022-12-
04T17:50:28Z</last-update-route>
reflector-client-route>                <reflector-client-route>false</
dampening-active>                    <route-dampening-active>false</route-
                                         <history-route>false</history-route>
type-route>                          <med-flag-type-route>false</med-flag-
                                         <valid-route>true</valid-route>
                                         <stale-route>false</stale-route>
                                         <route-type>sourced</route-type>
                                         <ecmp-multi-candidate-route>false</
ecmp-multi-candidate-route>
installed-route>                      <multi-installed-route>false</multi-
aggregate-route>                    <atomic-aggregate-route>false</atomic-
                                         <selected-route>true</selected-route>
                                         <bgp-tx-path-id>-1</bgp-tx-path-id>
                                         <bgp-rx-path-id>-1</bgp-rx-path-id>
                                         </state>
                                         </next-hop>
                                         <state>
address>                                <network-address>192.168.122.0</network-
                                         </state>
                                         </peer-adj-out-route>
                                         <peer-adj-in-route>
address>                                <network-address>10.10.10.0/24</network-
                                         <next-hop>
address>                                <next-hop-address>10.10.10.11</next-hop-
                                         <state>
hop-address>                            <next-hop-address>10.10.10.11</next-
weight>                                <peer-network-weight>0</peer-network-
string>                                <bgp-as-path-string>300</bgp-as-path-
                                         <bgp-as-path-4-byte-
origin>incomplete</bgp-as-path-4-byte-origin>
route>                                <ibgp-metric-route>0</ibgp-metric-

```

```

route>192.168.122.60</network-remote-address-route>
route-peer-address>
local-preference>
01T00:00:00Z</last-update-route>
reflector-client-route>
dampening-active>
valid-route>
type-route>
ecmp-multi-candidate-route>
installed-route>
aggregate-route>
address>
address>
address>
hop-address>
weight>
string>
origin>incomplete</bgp-as-path-4-byte-origin>
route>
route>192.168.122.60</network-remote-address-route>
route-peer-address>
local-preference>
01T00:00:00Z</last-update-route>
<network-remote-address-
<route-peer-address>10.10.10.11</
<route-local-preference>100</route-
<last-update-route>1970-01-
<reflector-client-route>false</
<route-dampening-active>false</route-
<history-route>false</history-route>
<nexthop-valid-route>false</nexthop-
<med-flag-type-route>false</med-flag-
<valid-route>true</valid-route>
<stale-route>false</stale-route>
<route-type>external</route-type>
<ecmp-multi-candidate-route>false</
<multi-installed-route>false</multi-
<atomic-aggregate-route>false</atomic-
<selected-route>true</selected-route>
<bgp-tx-path-id>0</bgp-tx-path-id>
<bgp-rx-path-id>0</bgp-rx-path-id>
</state>
</next-hop>
<state>
<network-address>10.10.10.0/24</network-
</state>
</peer-adj-in-route>
<peer-adj-in-route>
<network-address>192.168.122.0</network-
<next-hop>
<next-hop-address>10.10.10.11</next-hop-
<state>
<next-hop-address>10.10.10.11</next-
<peer-network-weight>0</peer-network-
<bgp-as-path-string>300</bgp-as-path-
<bgp-as-path-4-byte-
<ibgp-metric-route>0</ibgp-metric-
<network-remote-address-
<route-peer-address>10.10.10.11</
<route-local-preference>100</route-
<last-update-route>1970-01-

```

```

reflector-client-route>                <reflector-client-route>false</
dampening-active>                      <route-dampening-active>false</route-
valid-route>                           <history-route>false</history-route>
type-route>                            <nexthop-valid-route>false</nexthop-
                                        <med-flag-type-route>false</med-flag-
                                        <valid-route>true</valid-route>
                                        <stale-route>false</stale-route>
                                        <route-type>external</route-type>
                                        <ecmp-multi-candidate-route>false</
ecmp-multi-candidate-route>            <multi-installed-route>false</multi-
installed-route>                       <atomic-aggregate-route>false</atomic-
aggregate-route>                      <selected-route>true</selected-route>
                                        <bgp-tx-path-id>0</bgp-tx-path-id>
                                        <bgp-rx-path-id>0</bgp-rx-path-id>
                                        </state>
                                        </next-hop>
                                        <state>
address>                               <network-address>192.168.122.0</network-
                                        </state>
                                        </peer-adj-in-route>
<config>                               <config>
  <afi>ipv4</afi>                     <afi>ipv4</afi>
  <safi>unicast</safi>                 <safi>unicast</safi>
  <activate />                        <activate />
  <soft-reconfig-inbound />           <soft-reconfig-inbound />
</config>                             </config>
<state>                               <state>
  <afi>ipv4</afi>                     <afi>ipv4</afi>
  <safi>unicast</safi>                 <safi>unicast</safi>
  <activate />                        <activate />
  <soft-reconfig-inbound />           <soft-reconfig-inbound />
  <community-count>0</community-count>
  <address-family-capability>advertise-receive</
address-family-capability>            <ipv6-next-hop-global>::</ipv6-next-hop-
global>                               <ipv6-next-hop-local>::</ipv6-next-hop-local>
                                        <remote-port>179</remote-port>
                                        <remote-address>10.10.10.11</remote-address>
                                        <local-host>10.10.10.10</local-host>
                                        <ipv4-next-hop>10.10.10.10</ipv4-next-hop>
                                        <local-port>40394</local-port>
                                        <peer-address-family-table-version>1</peer-
address-family-table-version>         <address-family-table-version>1</address-
family-table-version>                 <prefix-count>2</prefix-count>
                                        <send-prefix-count>2</send-prefix-count>
                                        <count>1</count>
                                        <connection-type>non_shared</connection-type>

```

established-count>	<connection-established-count>1</connection-
time>	<graceful-restart-time>0</graceful-restart-
established-up-time>	<bgp-established-up-time>00:02:24</bgp-
	<last-read-time>00:00:23</last-read-time>
	<bgp-peer-state>established</bgp-peer-state>
	<link-type>external</link-type>
	<router-id>192.168.122.60</router-id>
interval>	<advertisement-interval>30</advertisement-
time>	<calculated-hold-time>90</calculated-hold-
keepalive>	<calculated-keepalive>30</calculated-
received-old-and-new</route-refresh-capability>	<route-refresh-capability>advertised-and-
	<counters>
messages>	<keepalive-in-messages>6</keepalive-in-
messages>	<keepalive-out-messages>6</keepalive-out-
	<open-messages-in>1</open-messages-in>
	<open-messages-out>1</open-messages-out>
	<as-path-count>2</as-path-count>
	<update-message-in>1</update-message-in>
	<update-message-out>1</update-message-out>
count>	<received-packet-count>8</received-packet-
	<notification-in>0</notification-in>
	<notification-out>0</notification-out>
	<packet-in-queue>0</packet-in-queue>
	<packet-out-queue>0</packet-out-queue>
	<sent-packet-count>8</sent-packet-count>
received-packet-count>	<refresh-received-packet-count>0</refresh-
sent-packet-count>	<refresh-sent-packet-count>0</refresh-
	</counters>
	</state>
	<peer-index>
	<state>
	<peer-index>1</peer-index>
	<offset>0</offset>
	<mask>0x2</mask>
	</state>
	</peer-index>
	</address-family>
	</address-families>
	<config>
	<peer-address>10.10.10.11</peer-address>
	<peer-as>300</peer-as>
	</config>
	<state>
	<peer-address>10.10.10.11</peer-address>
	<peer-as>300</peer-as>
	</state>
	</peer>

```

        </peers>
      </bgp-instance>
    </bgp-instances>
  </bgp>

```

Validation with NetConf get

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <config>
      <name>default</name>
      <type
        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:DEFAULT_INSTANCE</type>
      </config>
      <state>
        <name>default</name>
        <type
          xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:DEFAULT_INSTANCE</type>
        </state>
        <protocols>
          <protocol>
            <identifier
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</identifier>
            <name>DIRECTLY_CONNECTED</name>
            <config>
              <identifier
                xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
              <name>DIRECTLY_CONNECTED</name>
              <enabled>true</enabled>
            </config>
            <state>
              <identifier
                xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
              <name>DIRECTLY_CONNECTED</name>
              <enabled>true</enabled>
            </state>
          </protocol>
          <protocol>
            <identifier
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</identifier>
            <name>200</name>
            <bgp>
              <global>
                <afi-safis>
                  <afi-safi>
                    <afi-safi-name
                      xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                    <config>
                      <afi-safi-name

```

```

        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
        <enabled>true</enabled>
    </config>
    <state>
        <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
        <enabled>true</enabled>
    </state>
    </afi-safi>
</afi-safis>
<config>
    <as>200</as>
</config>
<state>
    <as>200</as>
    <total-prefixes>2</total-prefixes>
</state>
</global>
<rib>
    <afi-safis>
        <afi-safi>
            <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
            <ipv4-unicast>
                <loc-rib>
                    <routes>
                        <route>
                            <prefix>10.10.10.0/24</prefix>
                            <origin>0.0.0.0</origin>
                            <path-id>0</path-id>
                            <state>
                                <prefix>10.10.10.0/24</prefix>
                                <origin>0.0.0.0</origin>
                                <path-id>0</path-id>
                                <last-modified>1670176228</last-modified>
                                <valid-route>true</valid-route>
                            </state>
                        </route>
                        <route>
                            <prefix>192.168.122.0</prefix>
                            <origin>0.0.0.0</origin>
                            <path-id>0</path-id>
                            <state>
                                <prefix>192.168.122.0</prefix>
                                <origin>0.0.0.0</origin>
                                <path-id>0</path-id>
                                <last-modified>1670176228</last-modified>
                                <valid-route>true</valid-route>
                            </state>
                        </route>
                    </routes>
                </loc-rib>
            </afi-safi>
        </afi-safis>
    </rib>
    <neighbors>
        <neighbor>

```

```
<neighbor-address>10.10.10.11</neighbor-address>
<state>
  <neighbor-address>10.10.10.11</neighbor-address>
</state>
<adj-rib-out-post>
  <routes>
    <route>
      <prefix>10.10.10.0/24</prefix>
      <path-id>0</path-id>
      <state>
        <prefix>10.10.10.0/24</prefix>
        <path-id>0</path-id>
        <last-modified>1670176228</last-modified>
        <valid-route>true</valid-route>
      </state>
    </route>
    <route>
      <prefix>192.168.122.0</prefix>
      <path-id>0</path-id>
      <state>
        <prefix>192.168.122.0</prefix>
        <path-id>0</path-id>
        <last-modified>1670176228</last-modified>
        <valid-route>true</valid-route>
      </state>
    </route>
  </routes>
</adj-rib-out-post>
<adj-rib-in-post>
  <routes>
    <route>
      <prefix>10.10.10.0/24</prefix>
      <path-id>0</path-id>
      <state>
        <prefix>10.10.10.0/24</prefix>
        <path-id>0</path-id>
        <last-modified>0</last-modified>
        <valid-route>true</valid-route>
      </state>
    </route>
    <route>
      <prefix>192.168.122.0</prefix>
      <path-id>0</path-id>
      <state>
        <prefix>192.168.122.0</prefix>
        <path-id>0</path-id>
        <last-modified>0</last-modified>
        <valid-route>true</valid-route>
      </state>
    </route>
  </routes>
</adj-rib-in-post>
</neighbor>
</neighbors>
</ipv4-unicast>
<state>
  <afi-safi-name
```



```

        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
        </state>
        </afi-safi>
    </afi-safis>
</rib>
<neighbors>
    <neighbor>
        <neighbor-address>10.10.10.11</neighbor-address>
        <afi-safis>
            <afi-safi>
                <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                <config>
                    <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                    <enabled>true</enabled>
                </config>
                <state>
                    <afi-safi-name
types">oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                    <enabled>true</enabled>
                </state>
            </afi-safi>
        </afi-safis>
    <config>
        <enabled>true</enabled>
        <neighbor-address>10.10.10.11</neighbor-address>
        <peer-as>300</peer-as>
    </config>
    <state>
        <enabled>true</enabled>
        <neighbor-address>10.10.10.11</neighbor-address>
        <peer-as>300</peer-as>
    </state>
</neighbor>
</neighbors>
</bgp>
<config>
    <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</identifier>
        <name>200</name>
        <enabled>true</enabled>
    </config>
    <state>
        <enabled>true</enabled>
        <identifier
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</identifier>
            <name>200</name>
        </state>
    </protocol>
</protocols>
</tables>

```

```

    <table>
      <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</protocol>
        <address-family
          xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
          <config>
            <protocol
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
              <address-family
                xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
              </config>
            <state>
              <protocol
                xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
                <address-family
                  xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
                </state>
              </table>
            <table>
              <protocol
                xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</protocol>
                <address-family
                  xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
                  <config>
                    <protocol
                      xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
                      <address-family
                        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
                      </config>
                    <state>
                      <protocol
                        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
                        <address-family
                          xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
                        </state>
                      </table>
                    <table>
                      <protocol
                        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</protocol>
                        <address-family
                          xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
                          <config>
                            <protocol
                              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>

```

```

        <address-family
          xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
        </config>
        <state>
          <protocol
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
            <address-family
              xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
            </state>
          </table>
        </tables>
        <table-connections>
          <table-connection>
            <src-protocol
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</src-protocol>
            <dst-protocol
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</dst-protocol>
            <address-family
              xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
            <config>
              <dst-protocol
                xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</dst-protocol>
              <address-family
                xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
              <dst-instance xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-ni-
augments">200</dst-instance>
              <default-import-policy>ACCEPT_ROUTE</default-import-policy>
              <src-protocol
                xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</src-protocol>
              </config>
            </table-connection>
          <table-connection>
            <src-protocol
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:STATIC</src-protocol>
            <dst-protocol
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</dst-protocol>
            <address-family
              xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
            <config>
              <dst-protocol
                xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</dst-protocol>
              <address-family
                xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
              <dst-instance xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-ni-
augments">200</dst-instance>
              <default-import-policy>ACCEPT_ROUTE</default-import-policy>

```

```

    <src-protocol
      xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:STATIC</src-protocol>
    </config>
  </table-connection>
</table-connections>
</network-instance>
</network-instances>

```

Restrictions

The containers related to RIB are status only on both Open Config and OcNOS datamodels, and there are no configuration related to this.

On OcNOS the containers are available only after the BGP negotiate routers, before it this tables are empty and could not be retrieved.

The paths `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/rib/afi-safi/afi-safi/ipv4-unicast/loc-rib/routes/route` and `/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/rib/afi-safi/afi-safi/ipv6-unicast/loc-rib/routes/route` have some keys with fixed values, the table below show the values. Note the "X" indicate that is valid for IPv4 and IPv6 containers.

OpenConfig XPath	OcNOS XPath
<code>/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/rib/afi-safis/afi-safi/ipvX-unicast/loc-rib/routes/route/origin</code>	Use fixed value: IPv4: "0.0.0.0" IPv6: "0::0"
<code>/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/rib/afi-safis/afi-safi/ipvX-unicast/loc-rib/routes/route/path-id</code>	Fixed value "0"
<code>/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/rib/afi-safis/afi-safi/ipvX-unicast/loc-rib/routes/route/prefix</code>	<code>/ipi-bgp:bgp/bgp-instance/rib/address-family/routes/route/network-address</code>

BGP RIB Counters IPv6

In this XML configuration snippet, the BGP RIB (Routing information base) is a set of counters to retrieve information about routes from neighbors. In this chapter will be discussed about BGP RIB IPv6.

The containers related to RIB are status only on both Open Config and OcNOS datamodels, and there are no configuration related to this.

On OcNOS the containers are available only after the BGP negotiate routers, before it this tables are empty and could not be retrieved.

The table below show which information each table displays.

OcNOS CLI	OcNOS XPath	OpenConfig XPath
show bgp ipv6 neighbors <IP-address IPv6> routes	/ipi-bgp:bgp/bgp-instances/bgp-instance/rib/ address-family/routes/route/next-hop	/oc-netinst:network-instances/network-instance/ protocols/protocol/bgp/rib/afi-safis/afi-safi/ipv6- unicast/loc-rib/routes/route
show bgp ipv6 neighbors <IP-address IPv6> received-routes	For default VRF instances: /ipi-bgp:bgp/bgp- instance/address-family-vrf/vrf-peer/peer-adj- in-route/next-hop For non-default VRF instances: /ipi-bgp:bgp/ bgp-instance/peer/address-family/peer-adj-in- route/next-hop	/oc-netinst:network-instances/network-instance/ protocols/protocol/bgp/rib/afi-safis/afi-safi/ipv6- unicast/neighbors/neighbor/adj-rib-in-post/routes/ route
show bgp ipv6 neighbors <IP-address IPv6> advertised-routes	For default VRF instances: /ipi-bgp:bgp/bgp- instance/address-family-vrf/vrf-peer/peer-adj- out-route/next-hop For non-default VRF instances: /ipi-bgp:bgp/ bgp-instance/peer/address-family/peer-adj- out-route/next-hop	/oc-netinst:network-instances/network-instance/ protocols/protocol/bgp/rib/afi-safis/afi-safi/ipv6- unicast/neighbors/neighbor/adj-rib-out-post/routes/ route
To get “ last update ” information: show bgp ipv6 <IP- address IPv6>	/ipi-bgp:bgp/bgp-instances/bgp-instance/rib/ address-family/routes/route/next-hop	/oc-netinst:network-instances/network-instance/ protocols/protocol/bgp/rib/afi-safis/afi-safi/ipv6- unicast/loc-rib/routes/route
show bgp ipv6 unicast <IP- address IPv6>	/ipi-bgp:bgp/bgp-instances/bgp-instance/rib/ address-family/routes/route/next-hop	/oc-netinst:network-instances/network-instance/ protocols/protocol/bgp/rib/afi-safis/afi-safi/ipv6- unicast/loc-rib/routes/route
When have user-defined VRF, to get “ last update ” information: show ip bgp vpnv6 vrf <VRF name>	/ipi-bgp:bgp/bgp-instances/bgp-instance/rib/ address-family/routes/route/next-hop	/oc-netinst:network-instances/network-instance/ protocols/protocol/bgp/rib/afi-safis/afi-safi/ipv6- unicast/loc-rib/routes/route
When have user-defined VRF, to get “ last update ” information: show ip bgp vpnv6 vrf <VRF name> <IP-address IPv6>	/ipi-bgp:bgp/bgp-instances/bgp-instance/rib/ address-family/routes/route/next-hop	/oc-netinst:network-instances/network-instance/ protocols/protocol/bgp/rib/afi-safis/afi-safi/ipv6- unicast/loc-rib/routes/route
show bgp ipv6 summary	/ipi-bgp:bgp/bgp-instances/bgp-instance/rib/ address-family/routes/route/next-hop	/oc-netinst:network-instances/network-instance/ protocols/protocol/bgp/rib/afi-safis/afi-safi/ipv6- unicast/loc-rib/routes/route

Release

This configuration was introduced in OcNOS version 6.2.

OpenConfig NetConf Payload

N/A

OcNOS CLI Command

The config below is just an example to illustrate to counters indicated.

To have a complete BGP RIB scenario it needs more than one equipment configured to work with BGP.

```

interface eth1
  ipv6 address f0ca::11/48
!
router bgp 200
  neighbor f0ca::10 remote-as 300
  !
  address-family ipv6 unicast
  redistribute connected
  redistribute static
  neighbor f0ca::10 activate
  neighbor f0ca::10 soft-reconfiguration inbound
  exit-address-family
!

```

OcNOS NetConf Payload

```

<bgp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp">
  <bgp-instances>
    <bgp-instance>
      <bgp-as>200</bgp-as>
      <config>
        <bgp-as>200</bgp-as>
      </config>
      <state>
        <bgp-as>200</bgp-as>
        <version>4</version>
        <table-version>1</table-version>
        <total-prefixes>0</total-prefixes>
        <router-run-time-ip-address>192.168.122.60</router-run-time-
ip-address>
        <scan-remain-time>38</scan-remain-time>
      </state>
      <rib>
        <address-family>
          <safi>unicast</safi>
          <afi>ipv6</afi>
          <state>
            <safi>unicast</safi>
            <afi>ipv6</afi>
          </state>
          <routes>
            <route>
              <route-distinguisher>0</route-distinguisher>
              <network-address>b0b0::/64</network-address>
              <next-hop>
                <next-hop-address>::</next-hop-address>
                <state>
                  <next-hop-address>::</next-hop-address>
                  <peer-network-weight>32768</peer-network-
weight>
                  <bgp-as-path-string>Local</bgp-as-path-
string>
                  <bgp-as-path-4-byte-origin>incomplete</
bgp-as-path-4-byte-origin>
                  <ibgp-metric-route>0</ibgp-metric-route>

```

```

preference>
last-update-route>
client-route>
dampening-active>
route>
route>
multi-candidate-route>
installed-route>
aggregate-route>
address>f0ca::10 (fe80::5054:ff:fe78:1f3)
weight>
string>
bgp-as-path-4-byte-origin>
preference>
last-update-route>
client-route>
dampening-active>
route>
route>
multi-candidate-route>
installed-route>

<route-local-preference>100</route-local-
<last-update-route>2022-11-20T22:42:24Z</
<reflector-client-route>false</reflector-
<route-dampening-active>false</route-
<history-route>false</history-route>
<nexthop-valid-route>true</nexthop-valid-
<med-flag-type-route>false</med-flag-type-
<valid-route>true</valid-route>
<stale-route>false</stale-route>
<route-type>sourced</route-type>
<ecmp-multi-candidate-route>false</ecmp-
<multi-installed-route>false</multi-
<atomic-aggregate-route>false</atomic-
<selected-route>true</selected-route>
<bgp-tx-path-id>-1</bgp-tx-path-id>
<bgp-rx-path-id>-1</bgp-rx-path-id>
</state>
</next-hop>
<next-hop>
  <next-hop-
address>f0ca::10 (fe80::5054:ff:fe78:1f3) </next-hop-address>
  <state>
    <next-hop-
address>f0ca::10 (fe80::5054:ff:fe78:1f3) </next-hop-address>
    <peer-network-weight>32768</peer-network-
    <bgp-as-path-string>Local</bgp-as-path-
    <bgp-as-path-4-byte-origin>incomplete</
    <ibgp-metric-route>0</ibgp-metric-route>
    <route-local-preference>100</route-local-
    <last-update-route>2022-11-20T22:42:24Z</
    <reflector-client-route>false</reflector-
    <route-dampening-active>false</route-
    <history-route>false</history-route>
    <nexthop-valid-route>true</nexthop-valid-
    <med-flag-type-route>false</med-flag-type-
    <valid-route>true</valid-route>
    <stale-route>false</stale-route>
    <route-type>sourced</route-type>
    <ecmp-multi-candidate-route>false</ecmp-
    <multi-installed-route>false</multi-

```

```

aggregate-route>                                <atomic-aggregate-route>false</atomic-
                                                <selected-route>true</selected-route>
                                                <bgp-tx-path-id>-1</bgp-tx-path-id>
                                                <bgp-rx-path-id>-1</bgp-rx-path-id>
                                                </state>
</next-hop>
<state>
  <route-distinguisher>0</route-distinguisher>
  <network-address>b0b0::/64</network-address>
</state>
</route>
<route>
  <route-distinguisher>0</route-distinguisher>
  <network-address>f0ca::/24</network-address>
  <next-hop>
    <next-hop-
address>f0ca::10 (fe80::5054:ff:fe78:1f3)</next-hop-address>
    <state>
      <next-hop-
address>f0ca::10 (fe80::5054:ff:fe78:1f3)</next-hop-address>
      <peer-network-weight>0</peer-network-
weight>
      <bgp-med-value>0</bgp-med-value>
      <bgp-as-path-string>300</bgp-as-path-
string>
      <bgp-as-path-4-byte-origin>incomplete</
bgp-as-path-4-byte-origin>
      <ibgp-metric-route>0</ibgp-metric-route>
      <network-remote-address-route>
route>192.168.122.52</network-remote-address-route>
      <originator-id-route>192.168.122.52</
originator-id-route>
      <route-peer-address>f0ca::10</route-peer-
address>
      <route-local-preference>100</route-local-
preference>
      <last-update-route>2022-11-20T22:43:26Z</
last-update-route>
      <reflector-client-route>false</reflector-
client-route>
      <route-dampening-active>false</route-
dampening-active>
      <history-route>false</history-route>
      <nexthop-valid-route>true</nexthop-valid-
route>
      <med-flag-type-route>false</med-flag-type-
route>
      <valid-route>true</valid-route>
      <stale-route>false</stale-route>
      <route-type>external</route-type>
      <ecmp-multi-candidate-route>false</ecmp-
multi-candidate-route>
      <multi-installed-route>false</multi-
installed-route>
      <atomic-aggregate-route>false</atomic-
aggregate-route>
      <selected-route>true</selected-route>
      <bgp-tx-path-id>-1</bgp-tx-path-id>
      <bgp-rx-path-id>-1</bgp-rx-path-id>

```



```

        </state>
      </next-hop>
      <state>
        <route-distinguisher>0</route-distinguisher>
        <network-address>f0ca::/24</network-address>
      </state>
    </route>
    <route>
      <route-distinguisher>0</route-distinguisher>
      <network-address>f0ca::/48</network-address>
      <next-hop>
        <next-hop-address>::</next-hop-address>
        <state>
          <next-hop-address>::</next-hop-address>
          <peer-network-weight>32768</peer-network-
weight>
          <bgp-as-path-string>Local</bgp-as-path-
string>
          <bgp-as-path-4-byte-origin>incomplete</
bgp-as-path-4-byte-origin>
          <ibgp-metric-route>0</ibgp-metric-route>
          <route-local-preference>100</route-local-
preference>
          <last-update-route>2022-11-20T22:42:24Z</
last-update-route>
          <reflector-client-route>false</reflector-
client-route>
          <route-dampening-active>false</route-
dampening-active>
          <history-route>false</history-route>
          <nexthop-valid-route>true</nexthop-valid-
route>
          <med-flag-type-route>false</med-flag-type-
route>
          <valid-route>true</valid-route>
          <stale-route>false</stale-route>
          <route-type>sourced</route-type>
          <ecmp-multi-candidate-route>false</ecmp-
multi-candidate-route>
          <multi-installed-route>false</multi-
installed-route>
          <atomic-aggregate-route>false</atomic-
aggregate-route>
          <selected-route>true</selected-route>
          <bgp-tx-path-id>-1</bgp-tx-path-id>
          <bgp-rx-path-id>-1</bgp-rx-path-id>
        </state>
      </next-hop>
      <state>
        <route-distinguisher>0</route-distinguisher>
        <network-address>f0ca::/48</network-address>
      </state>
    </route>
  </routes>
</address-family>
<address-family>
  <safi>link-state</safi>
  <afi>link-state</afi>
  <state>

```

```

        <safi>link-state</safi>
        <afi>link-state</afi>
    </state>
</address-family>
</rib>
<address-families>
    <address-family>
        <afi>ipv6</afi>
        <safi>unicast</safi>
        <config>
            <afi>ipv6</afi>
            <safi>unicast</safi>
        </config>
        <state>
            <afi>ipv6</afi>
            <safi>unicast</safi>
        </state>
    <route-redirect-lists>
        <route-redirect-list>
            <protocol-type>connected</protocol-type>
            <config>
                <protocol-type>connected</protocol-type>
            </config>
            <state>
                <protocol-type>connected</protocol-type>
            </state>
        </route-redirect-list>
        <route-redirect-list>
            <protocol-type>static</protocol-type>
            <config>
                <protocol-type>static</protocol-type>
            </config>
            <state>
                <protocol-type>static</protocol-type>
            </state>
        </route-redirect-list>
    </route-redirect-lists>
</address-family>
</address-families>
<peers>
    <peer>
        <peer-address>f0ca::10</peer-address>
        <address-families>
            <address-family>
                <afi>ipv6</afi>
                <safi>unicast</safi>
                <peer-adj-out-route>
                    <network-address>b0b0::/64</network-address>
                    <next-hop>
                        <next-hop-
address>f0ca::11(fe80::5054:ff:fed0:8295)</next-hop-address>
                        <state>
                            <next-hop-
address>f0ca::11(fe80::5054:ff:fed0:8295)</next-hop-address>
                            <peer-network-weight>32768</peer-
network-weight>

```

```

path-string>                                <bgp-as-path-string>Local</bgp-as-
origin>incomplete</bgp-as-path-4-byte-      <bgp-as-path-4-byte-
route>                                       <ibgp-metric-route>0</ibgp-metric-
local-preference>                           <route-local-preference>100</route-
20T22:42:24Z</last-update-route>           <last-update-route>2022-11-
reflector-client-route>                     <reflector-client-route>false</
dampening-active>                           <route-dampening-active>false</route-
type-route>                                 <history-route>false</history-route>
                                              <med-flag-type-route>false</med-flag-
                                              <valid-route>true</valid-route>
                                              <stale-route>false</stale-route>
                                              <route-type>sourced</route-type>
                                              <ecmp-multi-candidate-route>false</
ecmp-multi-candidate-route>                 <multi-installed-route>false</multi-
installed-route>                             <atomic-aggregate-route>false</atomic-
aggregate-route>                             <selected-route>true</selected-route>
                                              <bgp-tx-path-id>-1</bgp-tx-path-id>
                                              <bgp-rx-path-id>-1</bgp-rx-path-id>
                                              </state>
                                              </next-hop>
                                              <state>
address>                                     <network-address>b0b0::/64</network-
                                              </state>
                                              </peer-adj-out-route>
                                              <peer-adj-out-route>
                                              <network-address>f0ca::/48</network-address>
                                              <next-hop>
address>f0ca::11 (fe80::5054:ff:fed0:8295) <next-hop-
                                              <state>
address>f0ca::11 (fe80::5054:ff:fed0:8295) <next-hop-
network-weight>                             <peer-network-weight>32768</peer-
path-string>                                <bgp-as-path-string>Local</bgp-as-
origin>incomplete</bgp-as-path-4-byte-      <bgp-as-path-4-byte-
route>                                       <ibgp-metric-route>0</ibgp-metric-
local-preference>                           <route-local-preference>100</route-
20T22:42:24Z</last-update-route>           <last-update-route>2022-11-
reflector-client-route>                     <reflector-client-route>false</
dampening-active>                           <route-dampening-active>false</route-
                                              <history-route>false</history-route>

```

```

type-route>                                <med-flag-type-route>false</med-flag-
                                           <valid-route>true</valid-route>
                                           <stale-route>false</stale-route>
                                           <route-type>sourced</route-type>
                                           <ecmp-multi-candidate-route>false</
ecmp-multi-candidate-route>
                                           <multi-installed-route>false</multi-
installed-route>
                                           <atomic-aggregate-route>false</atomic-
aggregate-route>
                                           <selected-route>true</selected-route>
                                           <bgp-tx-path-id>-1</bgp-tx-path-id>
                                           <bgp-rx-path-id>-1</bgp-rx-path-id>
                                           </state>
                                           </next-hop>
                                           <state>
address>                                <network-address>f0ca::/48</network-
                                           </state>
                                           </peer-adj-out-route>
                                           <peer-adj-in-route>
                                           <network-address>b0b0::/64</network-address>
                                           <next-hop>
                                           <next-hop-
address>f0ca::10 (fe80::5054:ff:fe78:1f3)</next-hop-address>
                                           <state>
                                           <next-hop-
address>f0ca::10 (fe80::5054:ff:fe78:1f3)</next-hop-address>
                                           <peer-network-weight>0</peer-network-
weight>
                                           <bgp-as-path-string>300</bgp-as-path-
string>
                                           <bgp-as-path-4-byte-
origin>incomplete</bgp-as-path-4-byte-origin>
                                           <ibgp-metric-route>0</ibgp-metric-
route>
                                           <network-remote-address-
route>192.168.122.52</network-remote-address-route>
peer-address>                            <route-peer-address>f0ca::10</route-
                                           <route-local-preference>100</route-
local-preference>
                                           <last-update-route>1970-01-
01T00:00:00Z</last-update-route>
                                           <reflector-client-route>false</
reflector-client-route>
                                           <route-dampening-active>false</route-
dampening-active>
                                           <history-route>false</history-route>
                                           <nexthop-valid-route>false</nexthop-
valid-route>
                                           <med-flag-type-route>false</med-flag-
type-route>
                                           <valid-route>true</valid-route>
                                           <stale-route>false</stale-route>
                                           <route-type>external</route-type>
                                           <ecmp-multi-candidate-route>false</
ecmp-multi-candidate-route>

```

```

installed-route>                                <multi-installed-route>>false</multi-
aggregate-route>                                <atomic-aggregate-route>>false</atomic-
                                                <selected-route>>true</selected-route>
                                                <bgp-tx-path-id>0</bgp-tx-path-id>
                                                <bgp-rx-path-id>0</bgp-rx-path-id>
                                                </state>
</next-hop>
<state>
  <network-address>b0b0::/64</network-
address>
  </state>
</peer-adj-in-route>
<peer-adj-in-route>
  <network-address>f0ca::/24</network-address>
  <next-hop>
    <next-hop-
address>f0ca::10 (fe80::5054:ff:fe78:1f3) </next-hop-address>
    <state>
      <next-hop-
address>f0ca::10 (fe80::5054:ff:fe78:1f3) </next-hop-address>
      <peer-network-weight>0</peer-network-
weight>
      <bgp-as-path-string>300</bgp-as-path-
string>
      <bgp-as-path-4-byte-
origin>incomplete</bgp-as-path-4-byte-origin>
      <ibgp-metric-route>0</ibgp-metric-
route>
      <network-remote-address-
route>192.168.122.52</network-remote-address-route>
      <route-peer-address>f0ca::10</route-
peer-address>
      <route-local-preference>100</route-
local-preference>
      <last-update-route>1970-01-
01T00:00:00Z</last-update-route>
      <reflector-client-route>false</
reflector-client-route>
      <route-dampening-active>false</route-
dampening-active>
      <history-route>false</history-route>
      <nexthop-valid-route>false</nexthop-
valid-route>
      <med-flag-type-route>false</med-flag-
type-route>
      <valid-route>true</valid-route>
      <stale-route>false</stale-route>
      <route-type>external</route-type>
      <ecmp-multi-candidate-route>false</
ecmp-multi-candidate-route>
      <multi-installed-route>false</multi-
installed-route>
      <atomic-aggregate-route>false</atomic-
aggregate-route>
      <selected-route>true</selected-route>
      <bgp-tx-path-id>0</bgp-tx-path-id>
      <bgp-rx-path-id>0</bgp-rx-path-id>
    </state>
  </state>

```

```

        </next-hop>
        <state>
            <network-address>f0ca::/24</network-
address>
            </state>
        </peer-adj-in-route>
    <config>
        <afi>ipv6</afi>
        <safi>unicast</safi>
        <activate />
        <soft-reconfig-inbound />
    </config>
    <state>
        <afi>ipv6</afi>
        <safi>unicast</safi>
        <activate />
        <soft-reconfig-inbound />
        <community-count>0</community-count>
        <ipv6-next-hop-global>f0ca::11</ipv6-next-hop-
global>
        <ipv6-next-hop-local>fe80::5054:ff:fed0:8295</
ipv6-next-hop-local>
        <remote-port>54786</remote-port>
        <remote-address>f0ca::10</remote-address>
        <local-host>f0ca::11</local-host>
        <ipv4-next-hop>192.168.122.60</ipv4-next-hop>
        <local-port>179</local-port>
        <peer-address-family-table-version>2</peer-
address-family-table-version>
        <address-family-table-version>2</address-
family-table-version>
        <prefix-count>2</prefix-count>
        <send-prefix-count>2</send-prefix-count>
        <count>1</count>
        <connection-type>shared</connection-type>
        <connection-established-count>1</connection-
established-count>
        <graceful-restart-time>0</graceful-restart-
time>
        <bgp-established-up-time>00:00:33</bgp-
established-up-time>
        <last-read-time>00:00:05</last-read-time>
        <bgp-peer-state>established</bgp-peer-state>
        <link-type>external</link-type>
        <router-id>192.168.122.52</router-id>
        <advertisement-interval>30</advertisement-
interval>
        <calculated-hold-time>90</calculated-hold-
time>
        <calculated-keepalive>30</calculated-
keepalive>
        <route-refresh-capability>advertised-and-
received-old-and-new</route-refresh-capability>
        <capability-ipv6-unicast>advertised-and-
received</capability-ipv6-unicast>
        <counters>
            <keepalive-in-messages>2</keepalive-in-
messages>

```

```

messages>
count>
received-packet-count>
sent-packet-count>

<keepalive-out-messages>2</keepalive-out-
<open-messages-in>1</open-messages-in>
<open-messages-out>2</open-messages-out>
<as-path-count>2</as-path-count>
<update-message-in>1</update-message-in>
<update-message-out>1</update-message-out>
<received-packet-count>4</received-packet-
<notification-in>0</notification-in>
<notification-out>0</notification-out>
<packet-in-queue>0</packet-in-queue>
<packet-out-queue>0</packet-out-queue>
<sent-packet-count>5</sent-packet-count>
<refresh-received-packet-count>0</refresh-
<refresh-sent-packet-count>0</refresh-
</counters>
</state>
<peer-index>
  <state>
    <peer-index>1</peer-index>
    <offset>0</offset>
    <mask>0x2</mask>
  </state>
</peer-index>
</address-family>
</address-families>
<config>
  <peer-address>f0ca::10</peer-address>
  <peer-as>300</peer-as>
</config>
<state>
  <peer-address>f0ca::10</peer-address>
  <peer-as>300</peer-as>
</state>
</peer>
</peers>
</bgp-instance>
</bgp-instances>
</bgp>

```

Validation with NetConf get

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <config>
      <name>default</name>
      <type
        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:DEFAULT_INSTANCE</type>
    </config>
    <state>
      <name>default</name>
      <type

```

```

        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:DEFAULT_INSTANCE</type>
    </state>
    <protocols>
        <protocol>
            <identifier
                xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</identifier>
            <name>DIRECTLY_CONNECTED</name>
            <config>
                <identifier
                    xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
                <name>DIRECTLY_CONNECTED</name>
                <enabled>true</enabled>
            </config>
            <state>
                <identifier
                    xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
                <name>DIRECTLY_CONNECTED</name>
                <enabled>true</enabled>
            </state>
        </protocol>
    </protocols>
    <protocol>
        <identifier
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</identifier>
        <name>200</name>
        <bgp>
            <global>
                <afi-safis>
                    <afi-safi>
                        <afi-safi-name
                            xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV6_UNICAST</afi-safi-name>
                        <config>
                            <afi-safi-name
                                xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV6_UNICAST</afi-safi-name>
                                <enabled>true</enabled>
                            </config>
                            <state>
                                <afi-safi-name
                                    xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV6_UNICAST</afi-safi-name>
                                    <enabled>true</enabled>
                                </state>
                            </afi-safi>
                        </afi-safis>
                    <config>
                        <as>200</as>
                    </config>
                    <state>
                        <as>200</as>
                        <total-prefixes>0</total-prefixes>
                    </state>
                </global>
            </bgp>
        </protocol>
    </state>

```



```

<rib>
  <afi-safis>
    <afi-safi>
      <afi-safi-name
        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV6_UNICAST</afi-safi-name>
      <ipv6-unicast>
        <loc-rib>
          <routes>
            <route>
              <prefix>b0b0::/64</prefix>
              <origin>0::0</origin>
              <path-id>0</path-id>
              <state>
                <prefix>b0b0::/64</prefix>
                <origin>0.0.0.0</origin>
                <path-id>0</path-id>
                <last-modified>1668984144</last-modified>
                <valid-route>true</valid-route>
              </state>
            </route>
            <route>
              <prefix>f0ca::/24</prefix>
              <origin>0::0</origin>
              <path-id>0</path-id>
              <state>
                <prefix>f0ca::/24</prefix>
                <origin>0.0.0.0</origin>
                <path-id>0</path-id>
                <last-modified>1668984206</last-modified>
                <valid-route>true</valid-route>
              </state>
            </route>
            <route>
              <prefix>f0ca::/48</prefix>
              <origin>0::0</origin>
              <path-id>0</path-id>
              <state>
                <prefix>f0ca::/48</prefix>
                <origin>0.0.0.0</origin>
                <path-id>0</path-id>
                <last-modified>1668984144</last-modified>
                <valid-route>true</valid-route>
              </state>
            </route>
          </routes>
        </loc-rib>
      <neighbors>
        <neighbor>
          <neighbor-address>f0ca::10</neighbor-address>
          <state>
            <neighbor-address>f0ca::10</neighbor-address>
          </state>
          <adj-rib-out-post>
            <routes>
              <route>
                <prefix>b0b0::/64</prefix>

```

```

        <path-id>0</path-id>
        <state>
            <prefix>b0b0::/64</prefix>
            <path-id>0</path-id>
            <last-modified>1668984144</last-modified>
            <valid-route>true</valid-route>
        </state>
    </route>
    <route>
        <prefix>f0ca::/48</prefix>
        <path-id>0</path-id>
        <state>
            <prefix>f0ca::/48</prefix>
            <path-id>0</path-id>
            <last-modified>1668984144</last-modified>
            <valid-route>true</valid-route>
        </state>
    </route>
</routes>
</adj-rib-out-post>
<adj-rib-in-post>
    <routes>
        <route>
            <prefix>b0b0::/64</prefix>
            <path-id>0</path-id>
            <state>
                <prefix>b0b0::/64</prefix>
                <path-id>0</path-id>
                <last-modified>0</last-modified>
                <valid-route>true</valid-route>
            </state>
        </route>
        <route>
            <prefix>f0ca::/24</prefix>
            <path-id>0</path-id>
            <state>
                <prefix>f0ca::/24</prefix>
                <path-id>0</path-id>
                <last-modified>0</last-modified>
                <valid-route>true</valid-route>
            </state>
        </route>
    </routes>
</adj-rib-in-post>
</neighbor>
</neighbors>
</ipv6-unicast>
<state>
    <afi-safi-name
        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV6_UNICAST</afi-safi-name>
    </state>
</afi-safi>
</afi-safis>
</rib>
<neighbors>
    <neighbor>

```

```

    <neighbor-address>f0ca::10</neighbor-address>
    <afi-safis>
      <afi-safi>
        <afi-safi-name
          xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV6_UNICAST</afi-safi-name>
          <config>
            <afi-safi-name
              xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV6_UNICAST</afi-safi-name>
              <enabled>true</enabled>
            </config>
            <state>
              <afi-safi-name
                xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:IPV6_UNICAST</afi-safi-name>
                <enabled>true</enabled>
              </state>
            </afi-safi>
          </afi-safis>
        <config>
          <enabled>true</enabled>
          <neighbor-address>f0ca::10</neighbor-address>
          <peer-as>300</peer-as>
        </config>
        <state>
          <enabled>true</enabled>
          <neighbor-address>f0ca::10</neighbor-address>
          <peer-as>300</peer-as>
        </state>
      </neighbor>
    </neighbors>
  </bgp>
  <config>
    <identifier
      xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</identifier>
    <name>200</name>
    <enabled>true</enabled>
  </config>
  <state>
    <enabled>true</enabled>
    <identifier
      xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</identifier>
    <name>200</name>
  </state>
</protocol>
</protocols>
<tables>
  <table>
    <protocol
      xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</protocol>
    <address-family
      xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPV4</address-family>
    <config>

```

```

        <protocol
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family
          xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
        </config>
        <state>
          <protocol
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
            <address-family
              xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
            </state>
          </table>
        </table>
        <table>
          <protocol
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</protocol>
            <address-family
              xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
            <config>
              <protocol
                xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
                <address-family
                  xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
                </config>
                <state>
                  <protocol
                    xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
                    <address-family
                      xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
                    </state>
                  </table>
                </table>
              </table>
            </table>
          <protocol
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</protocol>
            <address-family
              xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
            <config>
              <protocol
                xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
                <address-family
                  xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
                </config>
                <state>
                  <protocol
                    xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>

```

```
        <address-family
          xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
      </state>
    </table>
  </tables>
  <interfaces>
    <interface>
      <id>eth0</id>
      <config>
        <id>eth0</id>
        <interface>eth0</interface>
      </config>
    </interface>
    <interface>
      <id>eth1</id>
      <config>
        <id>eth1</id>
        <interface>eth1</interface>
      </config>
    </interface>
    <interface>
      <id>eth2</id>
      <config>
        <id>eth2</id>
        <interface>eth2</interface>
      </config>
    </interface>
    <interface>
      <id>eth3</id>
      <config>
        <id>eth3</id>
        <interface>eth3</interface>
      </config>
    </interface>
    <interface>
      <id>eth4</id>
      <config>
        <id>eth4</id>
        <interface>eth4</interface>
      </config>
    </interface>
    <interface>
      <id>eth5</id>
      <config>
        <id>eth5</id>
        <interface>eth5</interface>
      </config>
    </interface>
    <interface>
      <id>eth6</id>
      <config>
        <id>eth6</id>
        <interface>eth6</interface>
      </config>
    </interface>
    <interface>
```

```

    <id>eth7</id>
    <config>
      <id>eth7</id>
      <interface>eth7</interface>
    </config>
  </interface>
  <interface>
    <id>eth8</id>
    <config>
      <id>eth8</id>
      <interface>eth8</interface>
    </config>
  </interface>
  <interface>
    <id>lo</id>
    <config>
      <id>lo</id>
      <interface>lo</interface>
    </config>
  </interface>
</interfaces>
<table-connections>
  <table-connection>
    <src-protocol
      xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</src-protocol>
    <dst-protocol
      xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</dst-protocol>
    <address-family
      xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
    <config>
      <dst-protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</dst-protocol>
      <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
      <dst-instance xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-ni-
augments">200</dst-instance>
      <default-import-policy>ACCEPT_ROUTE</default-import-policy>
      <src-protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</src-protocol>
      </config>
    </table-connection>
    <table-connection>
      <src-protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:STATIC</src-protocol>
      <dst-protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</dst-protocol>
      <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
      <config>

```

```

        <dst-protocol
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</dst-protocol>
        <address-family
          xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
        <dst-instance xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-ni-
augments">200</dst-instance>
        <default-import-policy>ACCEPT_ROUTE</default-import-policy>
        <src-protocol
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:STATIC</src-protocol>
        </config>
      </table-connection>
    </table-connections>
  </network-instance>
  <network-instance>
    <name>management</name>
    <config>
      <name>management</name>
      <type
        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L3VRF</type>
      </config>
      <state>
        <name>management</name>
        <type
          xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L3VRF</type>
        </state>
        <protocols>
          <protocol>
            <identifier
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</identifier>
            <name>DIRECTLY_CONNECTED</name>
            <config>
              <identifier
                xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
                <name>DIRECTLY_CONNECTED</name>
                <enabled>true</enabled>
              </config>
              <state>
                <identifier
                  xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
                  <name>DIRECTLY_CONNECTED</name>
                  <enabled>true</enabled>
                </state>
              </protocol>
            </protocols>
          </table>
        </table>
        <protocol
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</protocol>
        <address-family

```

```

        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
        <config>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
        </config>
        <state>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
        </state>
        </table>
        <table>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
        <config>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
        </config>
        <state>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
        </state>
        </table>
        </tables>
        </network-instance>
</network-instances>

```

Restrictions

- The containers related to RIB are status only on both Open Config and OcNOS datamodels, and there are no configuration related to this.
- On OcNOS the containers are available only after the BGP negotiate routers, before it this tables are empty and could not be retrived.
- The paths /oc-netinst:network-instances/network-instance/protocols/protocol/bgp/rib/afi-safi/afi-safi/ipv4-unicast/loc-rib/routes/route and /oc-netinst:network-instances/network-instance/protocols/protocol/bgp/rib/afi-safi/afi-safi/ipv6-

unicast/loc-rib/routes/route have some keys with fixed values, the table below show the values. Note the “X” indicate that is valid for IPv4 and IPv6 containers.

OpenConfig XPath	OcNOS XPath
/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/rib/afi-safis/afi-safi/ipvX-unicast/loc-rib/routes/route/origin	Use fixed value: <ul style="list-style-type: none">• IPV4: “0.0.0.0”• IPV6: “0::0”
/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/rib/afi-safis/afi-safi/ipvX-unicast/loc-rib/routes/route/path-id	Fixed value “0”
/oc-netinst:network-instances/network-instance/protocols/protocol/bgp/rib/afi-safis/afi-safi/ipvX-unicast/loc-rib/routes/route/prefix	/ipi-bgp:bgp/bgp-instance/rib/address-family/routes/route/network-address

OSPFv2 Openconfig Translation

Create OSPF process

This XML configuration snippet is used to create OSPF process.

Release

This configuration was introduced in OcNOS version 4.2.

OpenConfig NETCONF Payload

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe2</name>
    <config>
      <name>xe2</name>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-type">ianaift:eth-
ernetCsmacd</type>
    </config>
    <subinterfaces>
      <subinterface>
        <index>0</index>
        <ipv4 xmlns="http://openconfig.net/yang/interfaces/ip">
          <addresses>
            <address>
              <ip>10.10.10.1</ip>
              <config>
                <ip>10.10.10.1</ip>
                <prefix-length>24</prefix-length>
              </config>
            </address>
          </addresses>
        </ipv4>
        <config>
          <index>0</index>
        </config>
      </subinterface>
    </subinterfaces>
  </interface>
</interfaces>
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
```

```

<identifier>oc-pol-types:OSPF</identifier>
<name>100</name>
<config>
  <identifier xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:OSPF</identifier>
    <name>100</name>
    <enabled>true</enabled>
  </config>
</ospfv2>
<global>
  <config>
    <router-id>2.2.2.2</router-id>
  </config>
</global>
<areas>
  <area>
    <identifier>0.0.0.0</identifier>
    <config>
      <identifier>0.0.0.0</identifier>
    </config>
    <interfaces>
      <interface>
        <id>xe2</id>
        <config>
          <id>xe2</id>
          <network-type xmlns:oc-ospf-types="http://open-
config.net/yang/ospf-types">oc-ospf-types:NON_BROADCAST_NETWORK</network-type>
          <passive>true</passive>
          <authentication-type>simple</authentication-type>
        </config>
        <interface-ref>
          <config>
            <interface>xe2</interface>
          </config>
        </interface-ref>
      </interface>
    </interfaces>
  </area>
</areas>
</ospfv2>
</protocol>
</protocols>
</network-instance>
</network-instances>

```

OcNOS CLI Command

```
ospf area-interface-config-mode
router ospf 100
```

```
ospf router-id 2.2.2.2
area 0.0.0.0 interface xe2
area 0.0.0.0 interface xe2 passive
area 0.0.0.0 interface xe2 network-type non-broadcast
area 0.0.0.0 interface xe2 authentication
!
```

OcNOS NETCONF Payload

```
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>xe2</name>
    <config>
      <name>xe2</name>
    </config>
    <ipv4 xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-ip">
      <config>
        <primary-ip-addr>10.10.10.1/24</primary-ip-addr>
      </config>
    </ipv4>
  </interface>
</interfaces>
<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-network-instance">
  <network-instance>
    <instance-name>default</instance-name>
    <config>
      <instance-name>default</instance-name>
      <instance-type>vrf</instance-type>
    </config>
    <vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vrf">
      <config>
        <vrf-name>default</vrf-name>
      </config>
    </vrf>
    <bridge xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bridge">
      <config>
        <protocol>ieee-vlan-bridge</protocol>
      </config>
    </bridge>
  </network-instance>
</network-instances>
<ospfv2 xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-ospf">
  <processes>
    <process>
      <ospf-id>100</ospf-id>
      <config>
        <router-id>2.2.2.2</router-id>
        <ospf-id>100</ospf-id>
        <vrf-name>default</vrf-name>
```

```

    </config>
    <areas>
      <area>
        <area-id>0.0.0.0</area-id>
        <config>
          <area-id>0.0.0.0</area-id>
        </config>
        <interfaces>
          <interface>
            <name>xe2</name>
            <config>
              <name>xe2</name>
              <network-type>non-broadcast</network-type>
              <passive />
              <authentication-type>simple</authentication-type>
            </config>
          </interface>
        </interfaces>
      </area>
    </areas>
  </process>
</processes>
<global>
  <config>
    <area-interface-config-mode />
  </config>
</global>
</ospfv2>

```

Validation with NETCONF get

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <config>
      <name>default</name>
      <type
        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-ni-
types:DEFAULT_INSTANCE</type>
    </config>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:OSPF</identifier>
        <name>100</name>
        <ospfv2>
          <global>
            <config>

```

```

        <router-id>2.2.2.2</router-id>
    </config>
</global>
<areas>
    <area>
        <identifier>0.0.0.0</identifier>
        <config>
            <identifier>0.0.0.0</identifier>
        </config>
        <state>
            <identifier>0.0.0.0</identifier>
        </state>
        <interfaces>
            <interface>
                <id>xe2</id>
                <config>
                    <id>xe2</id>
                    <network-type
ospf-types:NON_BROADCAST_NETWORK</network-type>
                    <passive>true</passive>
                    <authentication-type>simple</authentication-type>
                </config>
                <interface-ref>
                    <config>
                        <interface>xe2</interface>
                    </config>
                </interface-ref>
                <state>
                    <id>xe2</id>
                    <network-type
ospf-types:NON_BROADCAST_NETWORK</network-type>
                    <passive>true</passive>
                    <authentication-type>simple</authentication-type>
                </state>
            </interface>
        </interfaces>
    </area>
</areas>
</ospfv2>
<config>
    <identifier
types:OSPF</identifier>
        <name>100</name>
        <enabled>true</enabled>
    </config>
</protocol>

```

```

    </protocols>
    <tables>
      <table>
        <protocol
types:OSPF xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:OSPF</protocol>
          <address-family
types:IPV4 xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPV4</address-family>
            <config>
              <protocol
types:OSPF xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:OSPF</protocol>
                <address-family
types:IPV4 xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPV4</address-family>
                  </config>
                </table>
              </tables>
            </network-instance>
          <network-instance>
            <name>management</name>
            <config>
              <name>management</name>
              <type
types:L3VRF xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-ni-
types:L3VRF</type>
                </config>
              </network-instance>
            </network-instances>

```

Restrictions

Area

/network-instances/network-instance/protocols/protocol/ospfv2/areas/area must always be set with interface. At least one.

/network-instances/network-instance/protocols/protocol/ospfv2/areas/area/interfaces/interface

Create OSPF process

This XML configuration snippet is used to create OSPF process.

Release

This configuration was introduced in OcNOS version 6.3.

OpenConfig NETCONF Payload

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>eth1</name>
    <config>
      <name>eth1</name>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-type">ianaift:eth-
ernetCsmacd</type>
    </config>
    <subinterfaces>
      <subinterface>
        <index>0</index>
        <ipv4 xmlns="http://openconfig.net/yang/interfaces/ip">
          <addresses>
            <address>
              <ip>10.10.10.1</ip>
              <config>
                <ip>10.10.10.1</ip>
                <prefix-length>24</prefix-length>
              </config>
            </address>
          </addresses>
        </ipv4>
      </subinterface>
    </subinterfaces>
  </interface>
  <interface>
    <name>eth2</name>
    <config>
      <name>eth2</name>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-type">ianaift:eth-
ernetCsmacd</type>
    </config>
    <subinterfaces>
      <subinterface>
        <index>0</index>
        <ipv4 xmlns="http://openconfig.net/yang/interfaces/ip">
          <addresses>
            <address>
              <ip>20.20.20.1</ip>
              <config>
```



```

        <ip>20.20.20.1</ip>
        <prefix-length>24</prefix-length>
    </config>
</address>
</addresses>
</ipv4>
<config>
    <index>0</index>
</config>
</subinterface>
</subinterfaces>
</interface>
</interfaces>
<network-instances xmlns="http://openconfig.net/yang/network-instance">
    <network-instance>
        <name>default</name>
        <protocols>
            <protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
                <identifier>oc-pol-types:OSPF</identifier>
                <name>100</name>
                <config>
                    <identifier xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:OSPF</identifier>
                    <name>100</name>
                    <enabled>true</enabled>
                </config>
                <ospfv2>
                    <global>
                        <config>
                            <router-id>1.1.1.1</router-id>
                            <log-adjacency-changes>true</log-adjacency-changes>
                            <summary-route-cost-mode>RFC1583_COMPATIBLE</summary-route-
cost-mode>
                        </config>
                        <mpls>
                            <config>
                                <traffic-engineering-extensions>false</traffic-engineer-
ing-extensions>
                            </config>
                        </mpls>
                        <graceful-restart>
                            <config>
                                <enabled>false</enabled>
                            </config>
                        </graceful-restart>
                        <timers>
                            <max-metric>
                                <config>
                                    <set>true</set>

```

```

        <include>MAX_METRIC_INCLUDE_STUB</include>
    </config>
</max-metric>
<lsa-generation>
    <config>
        <initial-delay>100</initial-delay>
        <maximum-delay>100</maximum-delay>
    </config>
</lsa-generation>
<spf>
    <config>
        <initial-delay>400</initial-delay>
        <maximum-delay>4000</maximum-delay>
    </config>
</spf>
</timers>
</global>
<areas>
    <area>
        <identifier>0.0.0.0</identifier>
        <config>
            <identifier>0.0.0.0</identifier>
        </config>
        <interfaces>
            <interface>
                <id>eth1</id>
                <config>
                    <id>eth1</id>
                    <passive>true</passive>
                    <priority>255</priority>
                    <network-type xmlns:oc-ospf-types="http://open-
config.net/yang/ospf-types">oc-ospf-types:POINT_TO_POINT_NETWORK</network-type>
                    <authentication-type>message-digest</authenticati-
tion-type>

                    <metric>65535</metric>
                </config>
                <interface-ref>
                    <config>
                        <interface>eth1</interface>
                    </config>
                </interface-ref>
                <enable-bfd>
                    <config>
                        <enabled>true</enabled>
                    </config>
                </enable-bfd>
                <lsa-filter>
                    <config>
                        <all>true</all>

```

```

        </config>
    </lsa-filter>
    <mpls>
        <config>
            <traffic-engineering-metric>1</traffic-
engineering-metric>

            </config>
            <igp-ldp-sync>
                <config>
                    <enabled>true</enabled>
                    <post-session-up-delay>1000</post-session-
up-delay>

                </config>
            </igp-ldp-sync>
        </mpls>
        <timers>
            <config>
                <dead-interval>2</dead-interval>
                <hello-interval>1</hello-interval>
                <retransmission-interval>1</retransmission-
interval>

            </config>
        </timers>
    </interface>
</interfaces>
</area>
<area>
    <identifier>1.1.1.1</identifier>
    <config>
        <identifier>1.1.1.1</identifier>
    </config>
    <interfaces>
        <interface>
            <id>eth2</id>
            <config>
                <id>eth2</id>
            </config>
            <interface-ref>
                <config>
                    <interface>eth2</interface>
                </config>
            </interface-ref>
        </interface>
    </interfaces>
    <virtual-links>
        <virtual-link>
            <remote-router-id>10.143.74.1</remote-router-id>
            <config>
                <remote-router-id>10.143.74.1</remote-router-id>

```

```

        </config>
      </virtual-link>
    </virtual-links>
  </area>
</areas>
</ospfv2>
</protocol>
</protocols>
</network-instance>
</network-instances>

```

OcNOS CLI Command

```

ospf area-interface-config-mode
router ospf 100
  ospf router-id 1.1.1.1
  max-metric router-lsa include-stub
  compatible rfc1583
  log-adjacency-changes detail
  no capability restart graceful
  timers spf exp 400 4000
  timers throttle lsa all 100 100 100
  area 0.0.0.0 interface eth1
  area 0.0.0.0 interface eth1 passive
  area 0.0.0.0 interface eth1 cost 65535
  area 0.0.0.0 interface eth1 network-type point-to-point
  area 0.0.0.0 interface eth1 priority 255
  area 0.0.0.0 interface eth1 authentication message-digest
  area 0.0.0.0 interface eth1 bfd
  area 0.0.0.0 interface eth1 database-filter all out
  area 0.0.0.0 interface eth1 te-metric 1
  area 0.0.0.0 interface eth1 mpls ldp-igp sync ospf holddown-timer 1
  area 0.0.0.0 interface eth1 dead-interval 2
  area 0.0.0.0 interface eth1 hello-interval 1
  area 0.0.0.0 interface eth1 retransmit-interval 1
  area 1.1.1.1 interface eth2
  area 1.1.1.1 virtual-link 10.143.74.1
  no capability traffic-engineering
  no capability cspf
!

```

OcNOS NETCONF Payload

```

<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>eth1</name>
    <config>
      <name>eth1</name>
    </config>
  </interface>
</interfaces>

```

```
<ipv4 xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-ip">
  <config>
    <primary-ip-addr>10.10.10.1/24</primary-ip-addr>
  </config>
</ipv4>
</interface>
<interface>
  <name>eth2</name>
  <config>
    <name>eth2</name>
  </config>
  <ipv4 xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-ip">
    <config>
      <primary-ip-addr>20.20.20.1/24</primary-ip-addr>
    </config>
  </ipv4>
</interface>
</interfaces>
<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-network-instance">
  <network-instance>
    <instance-name>default</instance-name>
    <config>
      <instance-name>default</instance-name>
      <instance-type>vrf</instance-type>
    </config>
    <vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vrf">
      <config>
        <vrf-name>default</vrf-name>
      </config>
    </vrf>
    <bridge xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bridge">
      <config>
        <protocol>ieee-vlan-bridge</protocol>
      </config>
    </bridge>
  </network-instance>
</network-instances>
<ospfv2 xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-ospf">
  <processes>
    <process>
      <ospf-id>100</ospf-id>
      <config>
        <router-id>1.1.1.1</router-id>
        <ospf-id>100</ospf-id>
        <vrf-name>default</vrf-name>
      </config>
      <capability>
        <config>
          <disable-traffic-engineering />
        </config>
      </capability>
    </process>
  </processes>
</ospfv2>
```

```

        <disable-graceful-restart />
    </config>
</capability>
<max-metric>
    <config>
        <enable-max-router-lsa />
        <include-stub />
    </config>
</max-metric>
<timers>
    <lsa>
        <delays>
            <delay>
                <start-delay>100</start-delay>
                <min-delay>100</min-delay>
                <max-delay>100</max-delay>
                <config>
                    <start-delay>100</start-delay>
                    <min-delay>100</min-delay>
                    <max-delay>100</max-delay>
                </config>
            </delay>
        </delays>
    </lsa>
    <spf>
        <delay>
            <config>
                <min-delay>400</min-delay>
                <max-delay>4000</max-delay>
            </config>
        </delay>
    </spf>
</timers>
<areas>
    <area>
        <area-id>0.0.0.0</area-id>
        <config>
            <area-id>0.0.0.0</area-id>
        </config>
        <interfaces>
            <interface>
                <name>eth1</name>
                <config>
                    <name>eth1</name>
                    <passive/>
                    <priority>255</priority>
                    <network-type>point-to-point</network-type>
                    <authentication-type>message-digest</authentication-type>
                    <cost>65535</cost>
                </config>
            </interface>
        </interfaces>
    </area>
</areas>

```

```

        </config>
        <enable-bfd>
            <config>
                <enabled>enable</enabled>
            </config>
        </enable-bfd>
        <lsa-filter>
            <config>
                <filter-out/>
            </config>
        </lsa-filter>
        <mpls>
            <config>
                <traffic-engineering-metric>1</traffic-engineering-
metric>
            </config>
            <igp-ldp-sync>
                <config>
                    <ldp-igp-sync-enable/>
                    <holddown-timer>1</holddown-timer>
                </config>
            </igp-ldp-sync>
        </mpls>
        <timers>
            <config>
                <dead-interval>2</dead-interval>
                <hello-interval>1</hello-interval>
                <retransmission-interval>1</retransmission-interval>
            </config>
        </timers>
    </interface>
</interfaces>
</area>
<area>
    <area-id>1.1.1.1</area-id>
    <config>
        <area-id>1.1.1.1</area-id>
    </config>
    <interfaces>
        <interface>
            <name>eth2</name>
            <config>
                <name>eth2</name>
            </config>
        </interface>
    </interfaces>
    <virtual-links>
        <virtual-link>
            <remote-router-id>10.143.74.1</remote-router-id>

```

```

        <config>
            <remote-router-id>10.143.74.1</remote-router-id>
        </config>
    </virtual-link>
</virtual-links>
</area>
</areas>
</process>
</processes>
<global>
    <config>
        <area-interface-config-mode/>
    </config>
</global>
</ospfv2>

```

Validation with NETCONF get

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <config>
      <name>default</name>
      <type
types:DEFAULT_INSTANCE xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-ni-
types:DEFAULT_INSTANCE</type>
      </config>
      <protocols>
        <protocol>
          <identifier
types:DIRECTLY_CONNECTED xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</identifier>
          <name>DIRECTLY_CONNECTED</name>
          <config>
            <identifier
types:DIRECTLY_CONNECTED xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</identifier>
            <name>DIRECTLY_CONNECTED</name>
            <enabled>true</enabled>
          </config>
          </protocol>
        </protocol>
        <protocol>
          <identifier
types:OSPF xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:OSPF</identifier>
          <name>100</name>
          <ospfv2>
            <global>
              <config>

```



```

        <router-id>1.1.1.1</router-id>
        <summary-route-cost-mode>RFC1583_COMPATIBLE</summary-route-cost-mode>
        <log-adjacency-changes>true</log-adjacency-changes>
    </config>
    <mpls>
        <config>
            <traffic-engineering-extensions>false</traffic-engineering-exten-
sions>
        </config>
    </mpls>
    <graceful-restart>
        <config>
            <enabled>false</enabled>
        </config>
    </graceful-restart>
    <timers>
        <lsa-generation>
            <config>
                <initial-delay>100</initial-delay>
                <maximum-delay>100</maximum-delay>
            </config>
        </lsa-generation>
        <spf>
            <config>
                <initial-delay>400</initial-delay>
                <maximum-delay>4000</maximum-delay>
            </config>
        </spf>
        <max-metric>
            <config>
                <set>true</set>
                <include
ospf-types:MAX_METRIC_INCLUDE_STUB</include>
            </config>
        </max-metric>
    </timers>
</global>
<areas>
    <area>
        <identifier>0.0.0.0</identifier>
        <config>
            <identifier>0.0.0.0</identifier>
        </config>
        <interfaces>
            <interface>
                <id>eth1</id>
                <config>
                    <id>eth1</id>

```

```

        <metric>65535</metric>
        <network-type
xmlns:oc-ospf-types="http://openconfig.net/yang/ospf-types">oc-
ospf-types:POINT_TO_POINT_NETWORK</network-type>
        <passive>true</passive>
        <priority>255</priority>
        <authentication-type>message-digest</authentication-type>
    </config>
    <interface-ref>
        <config>
            <interface>eth1</interface>
        </config>
    </interface-ref>
    <enable-bfd>
        <config>
            <enabled>true</enabled>
        </config>
    </enable-bfd>
    <lsa-filter>
        <config>
            <all>true</all>
        </config>
    </lsa-filter>
    <mpls>
        <config>
            <traffic-engineering-metric>1</traffic-engineering-metric>
        </config>
        <igp-ldp-sync>
            <config>
                <enabled>true</enabled>
                <post-session-up-delay>1000</post-session-up-delay>
            </config>
        </igp-ldp-sync>
    </mpls>
    <timers>
        <config>
            <dead-interval>2</dead-interval>
            <hello-interval>1</hello-interval>
            <retransmission-interval>1</retransmission-interval>
        </config>
    </timers>
</interface>
</interfaces>
</area>
<area>
    <identifier>1.1.1.1</identifier>
    <config>
        <identifier>1.1.1.1</identifier>
    </config>

```

```

    <interfaces>
      <interface>
        <id>eth2</id>
        <config>
          <id>eth2</id>
        </config>
        <interface-ref>
          <config>
            <interface>eth2</interface>
          </config>
        </interface-ref>
      </interface>
    </interfaces>
    <virtual-links>
      <virtual-link>
        <remote-router-id>10.143.74.1</remote-router-id>
        <config>
          <remote-router-id>10.143.74.1</remote-router-id>
        </config>
      </virtual-link>
    </virtual-links>
  </area>
</areas>
</ospfv2>
<config>
  <identifier
    xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:OSPF</identifier>
    <name>100</name>
    <enabled>true</enabled>
  </config>
</protocol>
</protocols>
<tables>
  <table>
    <protocol
      xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:OSPF</protocol>
    <address-family
      xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
    <config>
      <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:OSPF</protocol>
      <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
    </config>

```

```

        </table>
    </tables>
</network-instance>
<network-instance>
    <name>management</name>
    <config>
        <name>management</name>
        <type
            xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-ni-
types:L3VRF</type>
        </config>
    </tables>
</network-instance>
</network-instances>

```

Restrictions

In OpenConfig, for path `/network-instances/network-instance/protocols/protocol/ospfv2/areas/area/interfaces/interface/mpls/igp-ldp-sync/config/post-session-up-delay`, only steps of 1000 by 1000 should be configured, to prevent broken values from being configured and then being presented rounded in get operations.

Static Routes OpenConfig Translation

Create a static route

This XML configuration snippet is used to specify the destination prefix and mask for the network and a gateway statically create.

Release

This configuration was introduced in OcNOS version 4.2.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>TEST_A9</name>
    <config>
      <name>TEST_A9</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:L3VRF</type>
    </config>
    <protocols>
      <protocol>
        <identifier xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:DIRECTLY_CONNECTED</identifier>
        <name>DIRECTLY_CONNECTED</name>
        <config>
          <identifier xmlns:oc-pol-types="http://openconfig.net/
yang/policy-types">oc-pol-types:DIRECTLY_CONNECTED</identifier>
          <name>DIRECTLY_CONNECTED</name>
          <enabled>true</enabled>
        </config>
      </protocol>
      <protocol>
        <identifier xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:STATIC</identifier>
        <name>static-routes</name>
        <config>
          <identifier xmlns:oc-pol-types="http://openconfig.net/
yang/policy-types">oc-pol-types:STATIC</identifier>
          <name>static-routes</name>
        </config>
        <static-routes>
          <static>
            <prefix>192.168.0.0/24</prefix>
            <next-hops>
              <next-hop>
                <index>172.17.30.2</index>
                <interface-ref>
                  <config>
                    <interface>xe2</interface>
                  </config>
                </interface-ref>
              </next-hop>
            </next-hops>
          </static>
        </static-routes>
      </protocol>
    </protocols>
  </network-instance>
</network-instances>
```

```

        <config>
            <metric>10</metric>
            <index>172.17.30.2</index>
            <next-hop>172.17.30.2</next-hop>
        </config>
    </next-hop>
</next-hops>
<config>
    <prefix>192.168.0.0/24</prefix>
</config>
</static>
</static-routes>
</protocol>
</protocols>
<tables>
    <table>
        <protocol xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">oc-types:IPv4</address-family>
        <config>
            <protocol xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:DIRECTLY_CONNECTED</protocol>
            <address-family xmlns:oc-types="http://openconfig.net/
yang/openconfig-types">oc-types:IPv4</address-family>
            </config>
        </table>
        <table>
            <protocol xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:DIRECTLY_CONNECTED</protocol>
            <address-family xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">oc-types:IPv6</address-family>
            <config>
                <protocol xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:DIRECTLY_CONNECTED</protocol>
                <address-family xmlns:oc-types="http://openconfig.net/
yang/openconfig-types">oc-types:IPv6</address-family>
                </config>
            </table>
            <table>
                <protocol xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:STATIC</protocol>
                <address-family xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">oc-types:IPv4</address-family>
                <config>
                    <protocol xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:STATIC</protocol>
                    <address-family xmlns:oc-types="http://openconfig.net/
yang/openconfig-types">oc-types:IPv4</address-family>
                    </config>
                </table>
            </tables>
        </interfaces>
        <interface>
            <id>xe2</id>
            <config>
                <interface>xe2</interface>
                <id>xe2</id>
            </config>

```

```

        </interface>
    </interfaces>
</network-instance>
</network-instances>

```

OcNOS CLI Command

```

interface xe2
  ip vrf forwarding TEST_A9
!
ip route vrf TEST_A9 192.168.0.0/24 172.17.30.2 xe2 10

```

OcNOS NetConf Payload

```

<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-network-
instance">
  <network-instance>
    <instance-name>TEST_A9</instance-name>
    <instance-type>vrf</instance-type>
    <config>
      <instance-name>TEST_A9</instance-name>
      <instance-type>vrf</instance-type>
    </config>
    <vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vrf">
      <config>
        <vrf-name>TEST_A9</vrf-name>
      </config>
      <static-routes xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-
rib-vrf">
        <ipv4>
          <route>
            <destination-prefix>192.168.0.0/24</destination-
prefix>
            <gateway-address>172.17.30.2</gateway-address>
            <gateway-interface-route>
              <interface-name>xe2</interface-name>
              <config>
                <interface-name>xe2</interface-name>
                <distance>10</distance>
              </config>
            </gateway-interface-route>
            <config>
              <destination-prefix>192.168.0.0/24</destination-
prefix>
              <gateway-address>172.17.30.2</gateway-address>
            </config>
          </route>
        </ipv4>
      </static-routes>
    </vrf>
  </network-instance>
</network-instances>
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>xe2</name>
    <config>
      <name>xe2</name>

```

```

        <vrf-name>TEST_A9</vrf-name>
    </config>
</interface>
</interfaces>

```

Validation with NetConf get

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>TEST_A9</name>
    <config>
      <name>TEST_A9</name>
      <type
        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L3VRF</type>
      </config>
      <state>
        <name>TEST_A9</name>
        <type
          xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L3VRF</type>
        </state>
        <protocols>
          <protocol>
            <identifier
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
            <name>DIRECTLY_CONNECTED</name>
            <config>
              <identifier
                xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:DIRECTLY_CONNECTED</identifier>
              <name>DIRECTLY_CONNECTED</name>
              <enabled>true</enabled>
            </config>
          </protocol>
          <protocol>
            <identifier
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:STATIC</identifier>
            <name>static-routes</name>
            <config>
              <identifier
                xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:STATIC</identifier>
              <name>static-routes</name>
            </config>
            <static-routes>
              <static>
                <prefix>192.168.0.0/24</prefix>
                <next-hops>
                  <next-hop>
                    <index>172.17.30.2</index>
                    <interface-ref>
                      <config>
                        <interface>xe2</interface>
                      </config>

```



```

        <state>
            <interface>xe2</interface>
        </state>
    </interface-ref>
    <config>
        <metric>10</metric>
        <index>172.17.30.2</index>
        <next-hop>172.17.30.2</next-hop>
    </config>
    <state>
        <metric>10</metric>
        <index>172.17.30.2</index>
        <next-hop>172.17.30.2</next-hop>
    </state>
    </next-hop>
</next-hops>
<config>
    <prefix>192.168.0.0/24</prefix>
</config>
<state>
    <prefix>192.168.0.0/24</prefix>
</state>
</static>
</static-routes>
</protocol>
</protocols>
<tables>
    <table>
        <protocol
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family
            xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
        <config>
            <protocol
                xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:DIRECTLY_CONNECTED</protocol>
            <address-family
                xmlns:oc-types="http://openconfig.net/yang/openconfig-
types">oc-types:IPv4</address-family>
            </config>
        </table>
    </table>
    <table>
        <protocol
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family
            xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
        <config>
            <protocol
                xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:DIRECTLY_CONNECTED</protocol>
            <address-family
                xmlns:oc-types="http://openconfig.net/yang/openconfig-
types">oc-types:IPv6</address-family>
            </config>
        </table>
    </table>

```

```

    </table>
  <table>
    <protocol
      xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:STATIC</protocol>
    <address-family
      xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
    <config>
      <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:STATIC</protocol>
      <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-
types">oc-types:IPv4</address-family>
      </config>
    </table>
  </tables>
  <interfaces>
    <interface>
      <id>lo.TEST_A9</id>
      <config>
        <interface>lo.TEST_A9</interface>
        <id>lo.TEST_A9</id>
      </config>
    </interface>
    <interface>
      <id>xe2</id>
      <config>
        <interface>xe2</interface>
        <id>xe2</id>
      </config>
    </interface>
  </interfaces>
</network-instance>
</network-instances>

```

Restrictions

/network-instances/network-instance/protocols/protocol/static-routes/static/next-hops/next-hop

It is necessary to have at least one entry in this list of next hops

/network-instances/network-instance/protocols/protocol/static-routes/static/next-hops/next-hop/index

Whenever config/next-hop leaf is configured, the index MUST have the same value as the next-hop. If not, the index must match the interface name built from interface-ref/config/interface and interface-ref/config/subinterface, e.g., "xe1", "xe2.100", etc.

Create a static route with load balancing

This XML configuration snippet is used to create two paths to a specified the destination prefix and mask for the network and a gateway working in load balancing scenario, with this two links it is possible to guarantee the service

availability. All traffic should be routed throughout both links at the same time and if any of them has a failure all traffic should be routed by available link.

Release

This configuration was introduced in OcNOS version 5.1.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>TEST_A9</name>
    <config>
      <name>TEST_A9</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:L3VRF</type>
    </config>
    <protocols>
      <protocol>
        <identifier xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:DIRECTLY_CONNECTED</identifier>
        <name>DIRECTLY_CONNECTED</name>
        <config>
          <identifier xmlns:oc-pol-types="http://openconfig.net/
yang/policy-types">oc-pol-types:DIRECTLY_CONNECTED</identifier>
          <name>DIRECTLY_CONNECTED</name>
          <enabled>true</enabled>
        </config>
      </protocol>
      <protocol>
        <identifier xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:STATIC</identifier>
        <name>static-routes</name>
        <config>
          <identifier xmlns:oc-pol-types="http://openconfig.net/
yang/policy-types">oc-pol-types:STATIC</identifier>
          <name>static-routes</name>
        </config>
        <static-routes>
          <static>
            <prefix>192.168.0.0/24</prefix>
            <next-hops>
              <next-hop>
                <index>172.17.30.2</index>
                <interface-ref>
                  <config>
                    <interface>xe2</interface>
                  </config>
                </interface-ref>
                <config>
                  <metric>10</metric>
                  <index>172.17.30.2</index>
                  <next-hop>172.17.30.2</next-hop>
                </config>
              </next-hop>
            </next-hop>
          </static>
        </static-routes>
      </protocol>
    </protocols>
  </network-instance>
</network-instances>
```

```

        <index>172.17.31.2</index>
        <interface-ref>
            <config>
                <interface>xel</interface>
            </config>
        </interface-ref>
        <config>
            <metric>10</metric>
            <index>172.17.31.2</index>
            <next-hop>172.17.31.2</next-hop>
        </config>
    </next-hop>
</next-hops>
<config>
    <prefix>192.168.0.0/24</prefix>
</config>
</static>
</static-routes>
</protocol>
</protocols>
<tables>
    <table>
        <protocol xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">oc-types:IPv4</address-family>
        <config>
            <protocol xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:DIRECTLY_CONNECTED</protocol>
            <address-family xmlns:oc-types="http://openconfig.net/
yang/openconfig-types">oc-types:IPv4</address-family>
        </config>
    </table>
    <table>
        <protocol xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">oc-types:IPv6</address-family>
        <config>
            <protocol xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:DIRECTLY_CONNECTED</protocol>
            <address-family xmlns:oc-types="http://openconfig.net/
yang/openconfig-types">oc-types:IPv6</address-family>
        </config>
    </table>
    <table>
        <protocol xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:STATIC</protocol>
        <address-family xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">oc-types:IPv4</address-family>
        <config>
            <protocol xmlns:oc-pol-types="http://openconfig.net/yang/
policy-types">oc-pol-types:STATIC</protocol>
            <address-family xmlns:oc-types="http://openconfig.net/
yang/openconfig-types">oc-types:IPv4</address-family>
        </config>
    </table>
</tables>
</interfaces>

```

```

    <interface>
      <id>xe1</id>
      <config>
        <interface>xe1</interface>
        <id>xe1</id>
      </config>
    </interface>
    <interface>
      <id>xe2</id>
      <config>
        <interface>xe2</interface>
        <id>xe2</id>
      </config>
    </interface>
  </interfaces>
</network-instance>
</network-instances>

```

OcNOS CLI Command

```

interface xe1
  ip vrf forwarding TEST_A9
!
interface xe2
  ip vrf forwarding TEST_A9
!
ip route vrf TEST_A9 192.168.0.0/24 172.17.30.2 xe2 10
ip route vrf TEST_A9 192.168.0.0/24 172.17.31.2 xe1 10

```

OcNOS NetConf Payload

```

<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-network-
instance">
  <network-instance>
    <instance-name>TEST_A9</instance-name>
    <instance-type>vrf</instance-type>
    <config>
      <instance-name>TEST_A9</instance-name>
      <instance-type>vrf</instance-type>
    </config>
    <vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vrf">
      <config>
        <vrf-name>TEST_A9</vrf-name>
      </config>
      <static-routes xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-
rib-vrf">
        <ipv4>
          <route>
            <destination-prefix>192.168.0.0/24</destination-
prefix>
            <gateway-address>172.17.30.2</gateway-address>
            <gateway-interface-route>
              <interface-name>xe2</interface-name>
            <config>
              <interface-name>xe2</interface-name>
              <distance>10</distance>

```

```

        </config>
    </gateway-interface-route>
    <config>
        <destination-prefix>192.168.0.0/24</destination-
prefix>
        <gateway-address>172.17.30.2</gateway-address>
    </config>
</route>
<route>
    <destination-prefix>192.168.0.0/24</destination-
prefix>
    <gateway-address>172.17.31.2</gateway-address>
    <gateway-interface-route>
        <interface-name>xel</interface-name>
        <config>
            <interface-name>xel</interface-name>
            <distance>10</distance>
        </config>
    </gateway-interface-route>
    <config>
        <destination-prefix>192.168.0.0/24</destination-
prefix>
        <gateway-address>172.17.31.2</gateway-address>
    </config>
</route>
</ipv4>
</static-routes>
</vrf>
</network-instance>
</network-instances>

```

Validation with NetConf get

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>TEST_A9</name>
    <config>
      <name>TEST_A9</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L3VRF</type>
    </config>
    <state>
      <name>TEST_A9</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L3VRF</type>
    </state>
    <protocols>
      <protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">
        <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
        <name>DIRECTLY_CONNECTED</name>
        <config>
          <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
          <name>DIRECTLY_CONNECTED</name>
          <enabled>true</enabled>
        </config>
      </protocol>
    </protocols>
  </network-instance>
</network-instances>

```

```

types"> <protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-
<identifier>oc-pol-types:STATIC</identifier>
<name>static-routes</name>
<config>
  <identifier>oc-pol-types:STATIC</identifier>
  <name>static-routes</name>
</config>
<static-routes>
  <static>
    <prefix>192.168.0.0/24</prefix>
    <next-hops>
      <next-hop>
        <index>172.17.30.2</index>
        <interface-ref>
          <config>
            <interface>xe2</interface>
          </config>
          <state>
            <interface>xe2</interface>
          </state>
        </interface-ref>
        <config>
          <metric>10</metric>
          <index>172.17.30.2</index>
          <next-hop>172.17.30.2</next-hop>
        </config>
        <state>
          <metric>10</metric>
          <index>172.17.30.2</index>
          <next-hop>172.17.30.2</next-hop>
        </state>
      </next-hop>
      <next-hop>
        <index>172.17.31.2</index>
        <interface-ref>
          <config>
            <interface>xe1</interface>
          </config>
          <state>
            <interface>xe1</interface>
          </state>
        </interface-ref>
        <config>
          <metric>10</metric>
          <index>172.17.31.2</index>
          <next-hop>172.17.31.2</next-hop>
        </config>
        <state>
          <metric>10</metric>
          <index>172.17.31.2</index>
          <next-hop>172.17.31.2</next-hop>
        </state>
      </next-hop>
    </next-hops>
  </static>
  <config>
    <prefix>192.168.0.0/24</prefix>

```

```

        </config>
        <state>
            <prefix>192.168.0.0/24</prefix>
            <prefix>192.168.0.0/24</prefix>
        </state>
    </static>
</static-routes>
</protocol>
</protocols>
<tables xmlns:oc-types="http://openconfig.net/yang/openconfig-types">
    <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
        <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family>oc-types:IPV4</address-family>
        <config>
            <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
            <address-family>oc-types:IPV4</address-family>
        </config>
    </table>
    <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
        <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family>oc-types:IPV6</address-family>
        <config>
            <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
            <address-family>oc-types:IPV6</address-family>
        </config>
    </table>
    <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
        <protocol>oc-pol-types:STATIC</protocol>
        <address-family>oc-types:IPV4</address-family>
        <config>
            <protocol>oc-pol-types:STATIC</protocol>
            <address-family>oc-types:IPV4</address-family>
        </config>
    </table>
</tables>
<interfaces>
    <interface>
        <id>lo.TEST_A9</id>
        <config>
            <interface>lo.TEST_A9</interface>
            <id>lo.TEST_A9</id>
        </config>
    </interface>
    <interface>
        <id>xel</id>
        <config>
            <interface>xel</interface>
            <id>xel</id>
        </config>
    </interface>
    <interface>
        <id>xe2</id>
        <config>
            <interface>xe2</interface>
            <id>xe2</id>
        </config>
    </interface>

```



```

    </interfaces>
  </network-instance>
</network-instances>

```

Restrictions

/network-instances/network-instance/protocols/protocol/static-routes/static/next-hops/next-hop

It is necessary to have at least one entry in this list of next hops

/network-instances/network-instance/protocols/protocol/static-routes/static/next-hops/next-hop/index

Whenever config/next-hop leaf is configured, the index MUST have the same value as the next-hop. If not, the index must match the interface name built from interface-ref/config/interface and interface-ref/config/subinterface, e.g., "xe1", "xe2.100", etc.

Create a static route with active/standby

This XML configuration snippet is used to create two paths to a specified the destination prefix and mask for the network and a gateway working in active/standby scenario, with these two links, it is possible to guarantee the service availability. All traffic should be routed throughout the active link while the passive link should be configured to be ready to receive the traffic in case of any failure in the active link.

Release

This configuration was introduced in OcNOS version 5.1.

OpenConfig NetConf Payload

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <!-- double link in a single PE of any L3 VPN -->
  <network-instance>
    <name>TEST_A8</name>
    <config>
      <name>TEST_A8</name>
      <type>L3VRF</type>
    </config>
    <interfaces>
      <interface>
        <id>xe2</id>
        <config>
          <id>xe2</id>
          <interface>xe2</interface>
        </config>
      </interface>
      <interface>
        <id>xe4</id>
        <config>
          <id>xe4</id>
          <interface>xe4</interface>
        </config>
      </interface>
    </interfaces>
  </network-instance>
</network-instances>

```

```

</interfaces>
<protocols>
  <protocol>
    <identifier>STATIC</identifier>
    <name>static-route</name>
    <config>
      <identifier>STATIC</identifier>
      <name>static-route</name>
      <enabled>true</enabled>
    </config>
    <static-routes>
      <static>
        <prefix>192.168.0.0/24</prefix>
        <config>
          <prefix>192.168.0.0/24</prefix>
        </config>
        <next-hops>
          <next-hop>
            <index>172.17.30.2</index>
            <config>
              <index>172.17.30.2</index>
              <next-hop>172.17.30.2</next-hop>
              <metric>10</metric>
            </config>
            <interface-ref>
              <config>
                <interface>xe2</interface>
              </config>
            </interface-ref>
          </next-hop>
          <next-hop>
            <index>172.17.40.2</index>
            <config>
              <index>172.17.40.2</index>
              <next-hop>172.17.40.2</next-hop>
              <metric>30</metric>
            </config>
            <interface-ref>
              <config>
                <interface>xe4</interface>
              </config>
            </interface-ref>
          </next-hop>
        </next-hops>
      </static>
    </static-routes>
  </protocol>
</protocols>
</network-instance>
</network-instances>

```

OcNOS CLI Command

```

interface xe2
  ip vrf forwarding TEST_A8
!

```

```

interface xe4
  ip vrf forwarding TEST_A8
!
ip route vrf TEST_A8 192.168.0.0/24 172.17.30.2 xe2 10
ip route vrf TEST_A8 192.168.0.0/24 172.17.40.2 xe4 30
!

```

OcNOS NetConf Payload

```

<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-
network-instance">
  <network-instance>
    <instance-name>TEST_A8</instance-name>
    <instance-type>vrf</instance-type>
    <config>
      <instance-name>TEST_A8</instance-name>
      <instance-type>vrf</instance-type>
    </config>
    <vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vrf">
      <config>
        <vrf-name>TEST_A8</vrf-name>
      </config>
      <static-routes xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-
rib-vrf">
        <ipv4>
          <route>
            <destination-prefix>192.168.0.0/24</destination-prefix>
            <gateway-address>172.17.30.2</gateway-address>
            <gateway-interface-route>
              <interface-name>xe2</interface-name>
              <config>
                <distance>10</distance>
                <interface-name>xe2</interface-name>
              </config>
            </gateway-interface-route>
            <config>
              <gateway-address>172.17.30.2</gateway-address>
              <destination-prefix>192.168.0.0/24</destination-prefix>
            </config>
          </route>
          <route>
            <destination-prefix>192.168.0.0/24</destination-prefix>
            <gateway-address>172.17.40.2</gateway-address>
            <gateway-interface-route>
              <interface-name>xe4</interface-name>
              <config>
                <distance>30</distance>
                <interface-name>xe4</interface-name>
              </config>
            </gateway-interface-route>
            <config>
              <gateway-address>172.17.40.2</gateway-address>
              <destination-prefix>192.168.0.0/24</destination-prefix>
            </config>
          </route>
        </ipv4>
      </static-routes>
    </vrf>
  </network-instance>
</network-instances>

```

```

    </vrf>
  </network-instance>
</network-instances>
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>xe2</name>
    <config>
      <vrf-name>TEST_A8</vrf-name>
      <name>xe2</name>
    </config>
  </interface>
  <interface>
    <name>xe4</name>
    <config>
      <vrf-name>TEST_A8</vrf-name>
      <name>xe4</name>
    </config>
  </interface>
</interfaces>

```

Validation with NetConf get

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>TEST_A8</name>
    <config>
      <name>TEST_A8</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L3VRF</type>
    </config>
    <state>
      <name>TEST_A8</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L3VRF</type>
    </state>
    <protocols>
      <protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">
        <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
        <name>DIRECTLY_CONNECTED</name>
        <config>
          <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
          <name>DIRECTLY_CONNECTED</name>
          <enabled>true</enabled>
        </config>
      </protocol>
      <protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">
        <identifier>oc-pol-types:STATIC</identifier>
        <name>static-routes</name>
        <config>
          <identifier>oc-pol-types:STATIC</identifier>
          <name>static-routes</name>
        </config>
        <static-routes>
          <static>
            <prefix>192.168.0.0/24</prefix>

```

```

<next-hops>
  <next-hop>
    <index>172.17.30.2</index>
    <interface-ref>
      <config>
        <interface>xe2</interface>
      </config>
      <state>
        <interface>xe2</interface>
      </state>
    </interface-ref>
    <config>
      <metric>10</metric>
      <index>172.17.30.2</index>
      <next-hop>172.17.30.2</next-hop>
    </config>
    <state>
      <metric>10</metric>
      <index>172.17.30.2</index>
      <next-hop>172.17.30.2</next-hop>
    </state>
  </next-hop>
  <next-hop>
    <index>172.17.40.2</index>
    <interface-ref>
      <config>
        <interface>xe4</interface>
      </config>
      <state>
        <interface>xe4</interface>
      </state>
    </interface-ref>
    <config>
      <metric>30</metric>
      <index>172.17.40.2</index>
      <next-hop>172.17.40.2</next-hop>
    </config>
    <state>
      <metric>30</metric>
      <index>172.17.40.2</index>
      <next-hop>172.17.40.2</next-hop>
    </state>
  </next-hop>
</next-hops>
<config>
  <prefix>192.168.0.0/24</prefix>
</config>
<state>
  <prefix>192.168.0.0/24</prefix>
  <prefix>192.168.0.0/24</prefix>
</state>
</static>
</static-routes>
</protocol>
</protocols>
<tables xmlns:oc-types="http://openconfig.net/yang/openconfig-types">
  <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">

```

```

    <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
    <address-family>oc-types:IPV4</address-family>
    <config>
      <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
      <address-family>oc-types:IPV4</address-family>
    </config>
  </table>
  <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
    <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
    <address-family>oc-types:IPV6</address-family>
    <config>
      <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
      <address-family>oc-types:IPV6</address-family>
    </config>
  </table>
  <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
    <protocol>oc-pol-types:STATIC</protocol>
    <address-family>oc-types:IPV4</address-family>
    <config>
      <protocol>oc-pol-types:STATIC</protocol>
      <address-family>oc-types:IPV4</address-family>
    </config>
  </table>
</tables>
<interfaces>
  <interface>
    <id>lo.TEST_A8</id>
    <config>
      <interface>lo.TEST_A8</interface>
      <id>lo.TEST_A8</id>
    </config>
  </interface>
  <interface>
    <id>xe2</id>
    <config>
      <interface>xe2</interface>
      <id>xe2</id>
    </config>
  </interface>
  <interface>
    <id>xe4</id>
    <config>
      <interface>xe4</interface>
      <id>xe4</id>
    </config>
  </interface>
</interfaces>
</network-instance>
</network-instances>

```

Restrictions

/network-instances/network-instance/protocols/protocol/static-routes/static/next-hops/next-hop

It is necessary to have at least one entry in this list of next hops.

/network-instances/network-instance/protocols/protocol/static-routes/static/next-hops/
next-hop/index

Whenever config/next-hop leaf is configured, the index MUST have the same value as the next-hop. If not, the index must match the interface name built from interface-ref/config/interface and interface-ref/config/subinterface, e.g., "xe1", "xe2.100", etc.

Use cases

Inside this chapter there are scenarios that could be accomplished using OpenConfig configurations xml files, showing complex interactions between different objects.

LDP Openconfig Translation

Release

This configuration was introduced in OcNOS version 4.2.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <mpls>
      <signaling-protocols>
        <ldp>
          <global>
            <config>
              <lsr-id>1.1.1.1</lsr-id>
            </config>
            <graceful-restart>
              <config>
                <helper-enable>true</helper-enable>
                <reconnect-time>120</reconnect-time>
                <recovery-time>120</recovery-time>
              </config>
            </graceful-restart>
            <authentication>
              <config>
                <authentication-key>IPInfusion</authentication-key>
              </config>
            </authentication>
          </global>
          <interface-attributes>
            <config>
              <hello-interval>20</hello-interval>
              <hello-holdtime>60</hello-holdtime>
            </config>
          </interface-attributes>
          <interfaces>
            <interface>
              <interface-id>xel</interface-id>
              <config>
                <interface-id>xel</interface-id>
                <hello-interval>21845</hello-interval>
                <hello-holdtime>65535</hello-holdtime>
              </config>
              <interface-ref>
                <config>
                  <interface>xel</interface>
                </config>
              </interface-ref>
              <address-families>
                <address-family>
                  <afi-name>IPV4</afi-name>
                  <config>
                    <afi-name>IPV4</afi-name>

```



```

        <enabled>true</enabled>
      </config>
    </address-family>
  </address-families>
</interface>
<interface>
  <interface-id>xe2.1</interface-id>
  <config>
    <interface-id>xe2.1</interface-id>
    <hello-interval>1</hello-interval>
    <hello-holdtime>3</hello-holdtime>
  </config>
  <interface-ref>
    <config>
      <interface>xe2</interface>
      <subinterface>1</subinterface>
    </config>
  </interface-ref>
</address-families>
<address-family>
  <afi-name>IPv4</afi-name>
  <config>
    <afi-name>IPv4</afi-name>
    <enabled>true</enabled>
  </config>
</address-family>
</address-families>
</interface>
</interfaces>
</interface-attributes>
<targeted>
  <address-families>
    <address-family>
      <afi-name>IPv4</afi-name>
      <targets>
        <target>
          <remote-address>10.10.10.2</remote-address>
          <config>
            <local-address>1.1.1.1</local-address>
            <remote-address>10.10.10.2</remote-address>
          </config>
        </target>
        <target>
          <remote-address>2.2.2.2</remote-address>
          <config>
            <remote-address>2.2.2.2</remote-address>
          </config>
        </target>
        <target>
          <remote-address>20.20.20.2</remote-address>
          <config>
            <remote-address>20.20.20.2</remote-address>
          </config>
        </target>
        <target>
          <remote-address>3.3.3.3</remote-address>
          <config>

```

```

        <remote-address>3.3.3.3</remote-address>
      </config>
    </target>
  </targets>
</config>
  <afi-name>IPV4</afi-name>
</config>
</address-family>
</address-families>
<config>
  <hello-interval>21845</hello-interval>
  <hello-holdtime>65535</hello-holdtime>
</config>
</targeted>
<neighbors>
  <neighbor>
    <lsr-id>7.7.7.7</lsr-id>
    <label-space-id>0</label-space-id>
    <authentication>
      <config>
        <authentication-key>VenkoNetworks</authentication-key>
      </config>
    </authentication>
    <config>
      <lsr-id>7.7.7.7</lsr-id>
      <label-space-id>0</label-space-id>
    </config>
  </neighbor>
  <neighbor>
    <lsr-id>9.9.9.9</lsr-id>
    <label-space-id>0</label-space-id>
    <authentication>
      <config>
        <authentication-key>IPIVenko</authentication-key>
      </config>
    </authentication>
    <config>
      <lsr-id>9.9.9.9</lsr-id>
      <label-space-id>0</label-space-id>
    </config>
  </neighbor>
</neighbors>
</ldp>
</signaling-protocols>
</mpls>
</network-instance>
</network-instances>

```

OcNOS CLI Command

```

!
router ldp
  router-id 1.1.1.1
  graceful-restart helper-only
  graceful-restart timers neighbor-liveness 120
  graceful-restart timers max-recovery 120

```

```

targeted-peer ipv4 2.2.2.2
  exit-targeted-peer-mode
targeted-peer ipv4 3.3.3.3
  exit-targeted-peer-mode
targeted-peer ipv4 10.10.10.2
  exit-targeted-peer-mode
targeted-peer ipv4 20.20.20.2
  exit-targeted-peer-mode
transport-address ipv4 1.1.1.1
neighbor all auth md5 password plain-text IPInfusion
neighbor 7.7.7.7 auth md5 password plain-text VenkoNetworks
neighbor 9.9.9.9 auth md5 password plain-text IPIVenko
hold-time 60
hello-interval 20
targeted-peer-hold-time 65535
targeted-peer-hello-interval 21845
!
interface xe1
  enable-ldp ipv4
  ldp hold-time 65535
  ldp hello-interval 21845
!
interface xe2.1
  enable-ldp ipv4
  ldp hold-time 3
  ldp hello-interval 1
!

```

OcNOS NetConf Payload

```

<ldp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-ldp">
  <global>
    <config>
      <ldp-instance>ldp</ldp-instance>
      <router-identifier>1.1.1.1</router-identifier>
    </config>
    <timers>
      <config>
        <hello-interval>20</hello-interval>
        <hello-holdtime>60</hello-holdtime>
      </config>
    </timers>
  </global>
  <graceful-restart>
    <config>
      <enable>helper-only</enable>
      <neighbor-liveness-time>120</neighbor-liveness-time>
      <max-recovery-time>120</max-recovery-time>
    </config>
  </graceful-restart>
  <transport-addresses>
    <transport-address>
      <label-space-identifier>0</label-space-identifier>
      <config>
        <label-space-identifier>0</label-space-identifier>
        <transport-address-ipv4>1.1.1.1</transport-address-ipv4>
      </config>
    </transport-address>
  </transport-addresses>
</ldp>

```

```
</config>
</transport-address>
</transport-addresses>
<peer-authentication>
  <peer-authentication-lists>
    <peer-authentication-list>
      <peer-address>all</peer-address>
      <config>
        <peer-address>all</peer-address>
        <password-type>plain-text</password-type>
        <password>IPInfusion</password>
      </config>
    </peer-authentication-list>
    <peer-authentication-list>
      <peer-address>7.7.7.7</peer-address>
      <config>
        <peer-address>7.7.7.7</peer-address>
        <password-type>plain-text</password-type>
        <password>VenkoNetworks</password>
      </config>
    </peer-authentication-list>
    <peer-authentication-list>
      <peer-address>9.9.9.9</peer-address>
      <config>
        <peer-address>9.9.9.9</peer-address>
        <password-type>plain-text</password-type>
        <password>IPIVenko</password>
      </config>
    </peer-authentication-list>
  </peer-authentication-lists>
</peer-authentication>
<interfaces>
  <interface>
    <name>xel</name>
    <config>
      <name>xel</name>
      <enable-ldp-ipv4></enable-ldp-ipv4>
    </config>
    <hello-timers>
      <config>
        <hello-interval>21845</hello-interval>
        <hello-holdtime>65535</hello-holdtime>
      </config>
    </hello-timers>
  </interface>
  <interface>
    <name>xe2.1</name>
    <config>
      <name>xe2.1</name>
      <enable-ldp-ipv4></enable-ldp-ipv4>
    </config>
    <hello-timers>
      <config>
        <hello-interval>1</hello-interval>
        <hello-holdtime>3</hello-holdtime>
      </config>
    </hello-timers>
  </interface>
</interfaces>
```

```

    </interface>
  </interfaces>
  <targeted-peers>
    <global-timers>
      <config>
        <targeted-global-hello-interval>21845</targeted-global-hello-interval>
        <targeted-global-hello-holdtime>65535</targeted-global-hello-holdtime>
      </config>
    </global-timers>
    <targeted-peer>
      <target-address>10.10.10.2</target-address>
      <config>
        <target-address>10.10.10.2</target-address>
      </config>
    </targeted-peer>
    <targeted-peer>
      <target-address>2.2.2.2</target-address>
      <config>
        <target-address>2.2.2.2</target-address>
      </config>
    </targeted-peer>
    <targeted-peer>
      <target-address>20.20.20.2</target-address>
      <config>
        <target-address>20.20.20.2</target-address>
      </config>
    </targeted-peer>
    <targeted-peer>
      <target-address>3.3.3.3</target-address>
      <config>
        <target-address>3.3.3.3</target-address>
      </config>
    </targeted-peer>
  </targeted-peers>
</ldp>

```

Validation with NetConf get

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <mpls>
      <signaling-protocols>
        <ldp>
          <global>
            <config>
              <lsr-id>1.1.1.1</lsr-id>
            </config>
            <state>
              <lsr-id>1.1.1.1</lsr-id>
            </state>
            <graceful-restart>
              <config>
                <helper-enable>true</helper-enable>
                <reconnect-time>120</reconnect-time>
                <recovery-time>120</recovery-time>
              </config>
            </graceful-restart>
          </global>
        </ldp>
      </signaling-protocols>
    </mpls>
  </network-instance>
</network-instances>

```

```

</config>
<state>
  <helper-enable>true</helper-enable>
  <reconnect-time>120</reconnect-time>
  <recovery-time>120</recovery-time>
</state>
</graceful-restart>
<authentication>
  <config>
    <authentication-key>IPInfusion</authentication-key>
  </config>
  <state>
    <authentication-key>IPInfusion</authentication-key>
  </state>
</authentication>
</global>
<interface-attributes>
  <config>
    <hello-interval>20</hello-interval>
    <hello-holdtime>60</hello-holdtime>
  </config>
  <state>
    <hello-interval>20</hello-interval>
    <hello-holdtime>60</hello-holdtime>
  </state>
<interfaces>
  <interface>
    <interface-id>xel</interface-id>
    <config>
      <interface-id>xel</interface-id>
      <hello-interval>21845</hello-interval>
      <hello-holdtime>65535</hello-holdtime>
    </config>
    <interface-ref>
      <config>
        <interface>xel</interface>
      </config>
      <state>
        <interface>xel</interface>
      </state>
    </interface-ref>
    <address-families>
      <address-family>
        <afi-name>IPv4</afi-name>
        <config>
          <afi-name>IPv4</afi-name>
          <enabled>true</enabled>
        </config>
        <state>
          <afi-name>IPv4</afi-name>
          <enabled>true</enabled>
        </state>
      </address-family>
    </address-families>
  <state>
    <interface-id>xel</interface-id>
    <hello-interval>21845</hello-interval>

```

```

        <hello-holdtime>65535</hello-holdtime>
    </state>
</interface>
<interface>
    <interface-id>xe2.1</interface-id>
    <config>
        <interface-id>xe2.1</interface-id>
        <hello-interval>1</hello-interval>
        <hello-holdtime>3</hello-holdtime>
    </config>
    <interface-ref>
        <config>
            <interface>xe2</interface>
            <subinterface>1</subinterface>
        </config>
        <state>
            <interface>xe2</interface>
            <subinterface>1</subinterface>
        </state>
    </interface-ref>
    <address-families>
        <address-family>
            <afi-name>IPv4</afi-name>
            <config>
                <afi-name>IPv4</afi-name>
                <enabled>true</enabled>
            </config>
            <state>
                <afi-name>IPv4</afi-name>
                <enabled>true</enabled>
            </state>
        </address-family>
    </address-families>
    <state>
        <interface-id>xe2.1</interface-id>
        <hello-interval>1</hello-interval>
        <hello-holdtime>3</hello-holdtime>
    </state>
</interface>
</interfaces>
</interface-attributes>
<targeted>
    <address-families>
        <address-family>
            <afi-name>IPv4</afi-name>
            <targets>
                <target>
                    <remote-address>10.10.10.2</remote-address>
                    <config>
                        <local-address>1.1.1.1</local-address>
                        <remote-address>10.10.10.2</remote-address>
                    </config>
                    <state>
                        <local-address>1.1.1.1</local-address>
                        <remote-address>10.10.10.2</remote-address>
                    </state>
                </target>
            </targets>
        </address-family>
    </address-families>
</targeted>

```

```
<target>
  <remote-address>2.2.2.2</remote-address>
  <config>
    <remote-address>2.2.2.2</remote-address>
  </config>
  <state>
    <remote-address>2.2.2.2</remote-address>
  </state>
</target>
<target>
  <remote-address>20.20.20.2</remote-address>
  <config>
    <remote-address>20.20.20.2</remote-address>
  </config>
  <state>
    <remote-address>20.20.20.2</remote-address>
  </state>
</target>
<target>
  <remote-address>3.3.3.3</remote-address>
  <config>
    <remote-address>3.3.3.3</remote-address>
  </config>
  <state>
    <remote-address>3.3.3.3</remote-address>
  </state>
</target>
</targets>
<config>
  <afi-name>IPV4</afi-name>
</config>
<state>
  <afi-name>IPV4</afi-name>
</state>
</address-family>
</address-families>
<config>
  <hello-interval>21845</hello-interval>
  <hello-holdtime>65535</hello-holdtime>
</config>
<state>
  <hello-interval>21845</hello-interval>
  <hello-holdtime>65535</hello-holdtime>
</state>
</targeted>
<neighbors>
  <neighbor>
    <lsr-id>7.7.7.7</lsr-id>
    <label-space-id>0</label-space-id>
    <authentication>
      <config>
        <authentication-key>VenkoNetworks</authentication-key>
      </config>
      <state>
        <authentication-key>VenkoNetworks</authentication-key>
      </state>
    </authentication>
  </neighbor>
</neighbors>
```



```

    <config>
      <lsr-id>7.7.7.7</lsr-id>
      <label-space-id>0</label-space-id>
    </config>
    <state>
      <lsr-id>7.7.7.7</lsr-id>
      <label-space-id>0</label-space-id>
    </state>
  </neighbor>
  <neighbor>
    <lsr-id>9.9.9.9</lsr-id>
    <label-space-id>0</label-space-id>
    <authentication>
      <config>
        <authentication-key>IPIVenko</authentication-key>
      </config>
      <state>
        <authentication-key>IPIVenko</authentication-key>
      </state>
    </authentication>
    <config>
      <lsr-id>9.9.9.9</lsr-id>
      <label-space-id>0</label-space-id>
    </config>
    <state>
      <lsr-id>9.9.9.9</lsr-id>
      <label-space-id>0</label-space-id>
    </state>
  </neighbor>
</neighbors>
</ldp>
</signaling-protocols>
</mpls>
</network-instance>
</network-instances>

```

Authentication

- Over NETCONF edit-config with OpenConfig namespace it does not matter if authentication-key is encrypted or not, the password will be encrypted, but not double encrypted, and stored as such. The NETCONF get will return the attribute value also encrypted.
- Over CLI if auth md5 password is encrypted the password will be stored as such. The NETCONF get, both IPI namespace and Openconfig, will return the attribute value also encrypted.
- Over CLI if auth md5 password is plain text the password will be stored as such. The NETCONF get, both IPI namespace and Openconfig, will return the attribute value also as plain text.

OpenConfig NETCONF Payload

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <mpls>
      <signaling-protocols>
        <ldp>

```

```

augments">
  <config xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-ni-
    <enabled>true</enabled>
  </config>
  <global>
    <authentication>
      <config>
        <authentication-key>0xc30ffb584ad45ddd</authentication-key>
      </config>
    </authentication>
  </global>
</ldp>
</signaling-protocols>
</mpls>
</network-instance>
</network-instances>

```

OcNOS NETCONF Payload

```

<ldp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-ldp">
  <global>
    <config>
      <ldp-instance>ldp</ldp-instance>
    </config>
  </global>
  <peer-authentication>
    <peer-authentication-lists>
      <peer-authentication-list>
        <peer-address>all</peer-address>
        <config>
          <peer-address>all</peer-address>
          <password-type>encrypt</password-type>
          <password>0xc30ffb584ad45ddd</password>
        </config>
      </peer-authentication-list>
    </peer-authentication-lists>
  </peer-authentication>
</ldp>

```

OcNOS CLI Command

```

router ldp
 neighbor all auth md5 password encrypt 0xc30ffb584ad45ddd

```

OpenConfig NETCONF get Validation

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <mpls>
      <signaling-protocols>
        <ldp>
          <config xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-ni-
augments">
            <enabled>true</enabled>
          </config>
        </ldp>
      </signaling-protocols>
    </mpls>
  </network-instance>
</network-instances>

```

```

    <global>
      <authentication>
        <config>
          <authentication-key>0xc30ffb584ad45ddd</authentication-key>
        </config>
      </authentication>
    </global>
  </ldp>
</signaling-protocols>
</mpls>
</network-instance>
</network-instances>

```

Ocnos NETCONF get Validation

```

<ldp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-ldp">
  <global>
    <config>
      <ldp-instance>ldp</ldp-instance>
    </config>
  </global>
  <peer-authentication>
    <peer-authentication-lists>
      <peer-authentication-list>
        <peer-address>all</peer-address>
        <config>
          <peer-address>all</peer-address>
          <password-type>encrypt</password-type>
          <password>0xc30ffb584ad45ddd</password>
        </config>
      </peer-authentication-list>
    </peer-authentication-lists>
  </peer-authentication>
</ldp>

```

Restrictions

- The label-space-id leaf is hardcoded to 0.
- The local-address leaf inside neighbor container is hardcoded to 0.0.0. for now.
- Only IPv4 address family CLIs are supported as of now.

L3VPN OpenConfig Translation

Create VRF instance

This XML configuration snippet is used to initiate a VRF instances represented by network-instances of type L3VRF, while the default VRF is a network-instance of type DEFAULT_INSTANCE. In OcNOS the default instance must have the name "default".

Release

This configuration was introduced in OcNOS version 4.2.

OpenConfig NETCONF Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>VRF1</name>
    <config>
      <name>VRF1</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-
ni-types:L3VRF</type>
      <router-id>20.20.20.20</router-id>
      <description>"L3VPN Test Instance 1"</description>
      <route-distinguisher>100:1</route-distinguisher>
    </config>
  </network-instance>
</network-instances>
```

OcNOS CLI Command

```
ip vrf VRF1
description "L3VPN Test Instance 1"
router-id 20.20.20.20
rd 100:1
```

OcNOS NETCONF Payload

```
<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-network-instance">
  <network-instance>
    <instance-name>VRF1</instance-name>
    <instance-type>vrf</instance-type>
    <config>
      <instance-name>VRF1</instance-name>
      <instance-type>vrf</instance-type>
    </config>
    <vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vrf">
      <config>
```

```

    <router-id>20.20.20.20</router-id>
    <description>"L3VPN Test Instance 1"</description>
    <vrf-name>VRF1</vrf-name>
  </config>
  <bgp-vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp-vrf">
    <config>
      <rd-string>100:1</rd-string>
    </config>
  </bgp-vrf>
</vrf>
</network-instance>
</network-instances>

```

Validation with NETCONF get

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>VRF1</name>
    <config>
      <name>VRF1</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-
ni-types:L3VRF</type>
      <description>"L3VPN Test Instance 1"</description>
      <router-id>20.20.20.20</router-id>
      <route-distinguisher>100:1</route-distinguisher>
    </config>
    <state>
      <name>VRF1</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-
ni-types:L3VRF</type>
      <description>"L3VPN Test Instance 1"</description>
      <router-id>20.20.20.20</router-id>
      <route-distinguisher>100:1</route-distinguisher>
    </state>
    <protocols>
      <protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
        <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
        <name>DIRECTLY_CONNECTED</name>
        <config>
          <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
          <name>DIRECTLY_CONNECTED</name>
          <enabled>true</enabled>
        </config>
      </protocol>
    </protocols>
    <tables xmlns:oc-types="http://openconfig.net/yang/openconfig-types">
      <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
        <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family>oc-types:IPV4</address-family>

```

```
<config>
  <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
  <address-family>oc-types:IPV4</address-family>
</config>
</table>
<table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
  <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
  <address-family>oc-types:IPV6</address-family>
  <config>
    <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
    <address-family>oc-types:IPV6</address-family>
  </config>
</table>
</tables>
<interfaces>
  <interface>
    <id>lo.VRF1</id>
    <config>
      <interface>lo.VRF1</interface>
      <id>lo.VRF1</id>
    </config>
  </interface>
</interfaces>
</network-instance>
</network-instances>
```

Restrictions

/network-instances/network-instance/config/type

In OcNOS, the instance type is a mandatory parameter, in OpenConfig, if omitted, it will be set to "L3VRF", unless the instance name is set to "default", in which case the type will be "DEFAULT_INSTANCE".

Configure MPLS label mode

This XML configuration snippet is used to configure MPLS label mode.

Release

This configuration was introduced in OcNOS version 4.2.

OpenConfig NETCONF Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>VRF1</name>
    <config>
      <name>VRF1</name>
```

```

    <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-
ni-types:L3VRF</type>
  </config>
  <encapsulation>
    <config>
      <label-allocation-mode xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:PER_PREFIX</label-allocation-mode>
      <encapsulation-type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:MPLS</encapsulation-type>
    </config>
  </encapsulation>
</network-instance>
<network-instance>
  <name>default</name>
  <protocols>
    <protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
      <identifier>oc-pol-types:BGP</identifier>
      <config>
        <identifier>oc-pol-types:BGP</identifier>
      </config>
    </protocol>
  </protocols>
</network-instance>
</network-instances>

```

OcNOS CLI Command

```

ip vrf VRF1
!
mpls label mode vpnv4 vrf VRF1 per-prefix
!

```

OcNOS NETCONF Payload

```

<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-network-instance">
  <network-instance>
    <instance-name>VRF1</instance-name>
    <instance-type>vrf</instance-type>
    <config>
      <instance-name>VRF1</instance-name>
      <instance-type>vrf</instance-type>
    </config>
    <vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vrf">
      <config>
        <vrf-name>VRF1</vrf-name>
      </config>
    </vrf>
  </network-instance>
</network-instances>

```

```

<bgp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp">
  <global>
    <mpls-l3vpn-label-mode>
      <address-family-name>vpn4</address-family-name>
      <vrf-name>VRF1</vrf-name>
      <config>
        <address-family-name>vpn4</address-family-name>
        <vrf-name>VRF1</vrf-name>
        <label-alloc-type>per-prefix</label-alloc-type>
      </config>
    </mpls-l3vpn-label-mode>
  </global>
</bgp>

```

Validation with NETCONF get

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>VRF1</name>
    <config>
      <name>VRF1</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-
ni-types:L3VRF</type>
      <description>"L3VPN Test Instance 1"</description>
      <router-id>20.20.20.20</router-id>
      <route-distinguisher>100:1</route-distinguisher>
    </config>
    <state>
      <name>VRF1</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-
ni-types:L3VRF</type>
      <description>"L3VPN Test Instance 1"</description>
      <router-id>20.20.20.20</router-id>
      <route-distinguisher>100:1</route-distinguisher>
    </state>
    <protocols>
      <protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
        <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
        <name>DIRECTLY_CONNECTED</name>
        <config>
          <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
          <name>DIRECTLY_CONNECTED</name>
          <enabled>true</enabled>
        </config>
      </protocol>
    </protocols>
    <tables xmlns:oc-types="http://openconfig.net/yang/openconfig-types">
      <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
        <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>

```



```

    <address-family>oc-types:IPv4</address-family>
    <config>
      <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
      <address-family>oc-types:IPv4</address-family>
    </config>
  </table>
  <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
    <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
    <address-family>oc-types:IPv6</address-family>
    <config>
      <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
      <address-family>oc-types:IPv6</address-family>
    </config>
  </table>
</tables>
<interfaces>
  <interface>
    <id>lo.VRF1</id>
    <config>
      <interface>lo.VRF1</interface>
      <id>lo.VRF1</id>
    </config>
  </interface>
</interfaces>
<encapsulation>
  <config>
    <label-allocation-mode xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:PER_PREFIX</label-allocation-mode>
    <encapsulation-type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:MPLS</encapsulation-type>
  </config>
</encapsulation>
</network-instance>
</network-instances>

```

Restrictions

/network-instances/network-instance/encapsulation/config/encapsulation-type

Currently, the only supported encapsulation-type is “MPLS”.

/network-instances/network-instance/encapsulation/config/label-allocation-mode

If encapsulation-type MPLS is configured, this leaf is mandatory. The “PER_NEXTHOP” value is not supported.

Create route-targets

This XML configuration snippet is used to initiate a create route-targets.

Release

This configuration was introduced in OcNOS version 4.2.

OpenConfig does not support the configuration of route-targets per network-instance, so a proprietary augment was added.

```
module: openconfig-network-instance
  +--rw network-instances
    +--rw network-instance* [name]
      +--rw ipi-oc-ni-augments:route-targets
        +--rw ipi-oc-ni-augments:route-target* [rt-rd-string]
          +--rw ipi-oc-ni-augments:rt-rd-string    -> ../config/rt-rd-string
          +--rw ipi-oc-ni-augments:config
            | +--rw ipi-oc-ni-augments:rt-rd-string?  rt_rd_string_t
            | +--rw ipi-oc-ni-augments:direction      rt_direction_t
          +--ro ipi-oc-ni-augments:state
            +--ro ipi-oc-ni-augments:rt-rd-string?  rt_rd_string_t
            +--ro ipi-oc-ni-augments:direction?    rt_direction_t
```

For more information on this issue, please refer to <https://github.com/openconfig/public/issues/392>.

OpenConfig NETCONF Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>VRF1</name>
    <config>
      <name>VRF1</name>
    </config>
    <route-targets xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-ni-augments">
      <route-target>
        <rt-rd-string>100:1</rt-rd-string>
        <config>
          <rt-rd-string>100:1</rt-rd-string>
          <direction>EXPORT</direction>
        </config>
      </route-target>
      <route-target>
        <rt-rd-string>200:1</rt-rd-string>
        <config>
          <rt-rd-string>200:1</rt-rd-string>
          <direction>IMPORT</direction>
        </config>
      </route-target>
    </route-targets>
  </network-instance>
</network-instances>
```

```
    </route-targets>
  </network-instance>
</network-instances>
```

OcNOS CLI Command

```
ip vrf VRF1
  route-target export 100:1
  route-target import 200:1
```

OcNOS NETCONF Payload

```
<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-network-instance">
  <network-instance>
    <instance-name>VRF1</instance-name>
    <instance-type>vrf</instance-type>
    <config>
      <instance-name>VRF1</instance-name>
      <instance-type>vrf</instance-type>
    </config>
    <vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vrf">
      <bgp-vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp-vrf">
        <route-target>
          <rt-rd-string>100:1</rt-rd-string>
          <direction>export</direction>
          <config>
            <rt-rd-string>100:1</rt-rd-string>
            <direction>export</direction>
          </config>
        </route-target>
        <route-target>
          <rt-rd-string>200:1</rt-rd-string>
          <direction>import</direction>
          <config>
            <rt-rd-string>200:1</rt-rd-string>
            <direction>import</direction>
          </config>
        </route-target>
      </bgp-vrf>
    </vrf>
  </network-instance>
</network-instances>
```

Validation with NETCONF get

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>VRF1</name>
    <config>
```

```

    <name>VRF1</name>
    <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-
ni-types:L3VRF</type>
    <description>"L3VPN Test Instance 1"</description>
    <router-id>20.20.20.20</router-id>
    <route-distinguisher>100:1</route-distinguisher>
  </config>
  <state>
    <name>VRF1</name>
    <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-
ni-types:L3VRF</type>
    <description>"L3VPN Test Instance 1"</description>
    <router-id>20.20.20.20</router-id>
    <route-distinguisher>100:1</route-distinguisher>
  </state>
  <protocols>
    <protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
      <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
      <name>DIRECTLY_CONNECTED</name>
      <config>
        <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
        <name>DIRECTLY_CONNECTED</name>
        <enabled>true</enabled>
      </config>
    </protocol>
  </protocols>
  <tables xmlns:oc-types="http://openconfig.net/yang/openconfig-types">
    <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
      <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
      <address-family>oc-types:IPV4</address-family>
      <config>
        <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family>oc-types:IPV4</address-family>
      </config>
    </table>
    <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
      <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
      <address-family>oc-types:IPV6</address-family>
      <config>
        <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family>oc-types:IPV6</address-family>
      </config>
    </table>
  </tables>
  <route-targets xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-ni-augments">
    <route-target>
      <rt-rd-string>100:1</rt-rd-string>
      <config>
        <rt-rd-string>100:1</rt-rd-string>

```

```

        <direction>EXPORT</direction>
    </config>
    <state>
        <rt-rd-string>100:1</rt-rd-string>
        <direction>EXPORT</direction>
    </state>
</route-target>
<route-target>
    <rt-rd-string>200:1</rt-rd-string>
    <config>
        <rt-rd-string>200:1</rt-rd-string>
        <direction>IMPORT</direction>
    </config>
    <state>
        <rt-rd-string>200:1</rt-rd-string>
        <direction>IMPORT</direction>
    </state>
</route-target>
</route-targets>
<interfaces>
    <interface>
        <id>lo.VRF1</id>
        <config>
            <interface>lo.VRF1</interface>
            <id>lo.VRF1</id>
        </config>
    </interface>
</interfaces>
<encapsulation>
    <config>
        <label-allocation-mode xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:PER_PREFIX</label-allocation-mode>
        <encapsulation-type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:MPLS</encapsulation-type>
    </config>
</encapsulation>
</network-instance>
</network-instances>

```

Restrictions

This is a proprietary implementation and it can be changed if the support for this feature is added to OpenConfig in the future.

Create extended community sets

Release

This configuration was introduced in OcNOS version 4.2.

OpenConfig NETCONF Payload

```
<routing-policy xmlns="http://openconfig.net/yang/routing-policy">
  <defined-sets>
    <bgp-defined-sets xmlns="http://openconfig.net/yang/bgp-policy">
      <ext-community-sets>
        <ext-community-set>
          <ext-community-set-name>CLIST</ext-community-set-name>
          <config>
            <ext-community-set-name>CLIST</ext-community-set-name>
            <match-set-options>ANY</match-set-options>
            <ext-community-member>route-target:10.10.23.23:30</ext-community-member>
            <ext-community-member>100:15</ext-community-member>
            <ext-community-member>route-target:12.12.24.24:40</ext-community-member>
          </config>
        </ext-community-set>
      </ext-community-sets>
    </bgp-defined-sets>
  </defined-sets>
</routing-policy>
```

OcNOS CLI Command

```
ip extcommunity-list standard CLIST permit soo 100:15
ip extcommunity-list standard CLIST permit rt 10.10.23.23:30
ip extcommunity-list standard CLIST permit rt 12.12.24.24:40
```

OcNOS NETCONF Payload

```
<bgp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp">
  <global>
    <community-lists>
      <extended-community>
        <standard>
          <name>CLIST</name>
          <config>
            <name>CLIST</name>
          </config>
          <action-value>
            <extended-action>permit</extended-action>
            <route-target-soo>rt</route-target-soo>
          </action-value>
        </standard>
      </extended-community>
    </community-lists>
  </global>
</bgp>
```

```

        <value>10.10.23.23:30</value>
        <config>
            <extended-action>permit</extended-action>
            <route-target-soo>rt</route-target-soo>
            <value>10.10.23.23:30</value>
        </config>
    </action-value>
    <action-value>
        <extended-action>permit</extended-action>
        <route-target-soo>soo</route-target-soo>
        <value>100:15</value>
        <config>
            <extended-action>permit</extended-action>
            <route-target-soo>soo</route-target-soo>
            <value>100:15</value>
        </config>
    </action-value>
    <action-value>
        <extended-action>permit</extended-action>
        <route-target-soo>rt</route-target-soo>
        <value>12.12.24.24:40</value>
        <config>
            <extended-action>permit</extended-action>
            <route-target-soo>rt</route-target-soo>
            <value>12.12.24.24:40</value>
        </config>
    </action-value>
</standard>
</extended-community>
</community-lists>
</global>
</bgp>

```

Validation with NETCONF get

```

<routing-policy xmlns="http://openconfig.net/yang/routing-policy">
  <defined-sets>
    <bgp-defined-sets xmlns="http://openconfig.net/yang/bgp-policy">
      <ext-community-sets>
        <ext-community-set>
          <ext-community-set-name>CLIST</ext-community-set-name>
          <config>
            <ext-community-set-name>CLIST</ext-community-set-name>
            <match-set-options>ANY</match-set-options>
            <ext-community-member>route-target:10.10.23.23:30</ext-community-member>
            <ext-community-member>100:15</ext-community-member>
            <ext-community-member>route-target:12.12.24.24:40</ext-community-member>
          </config>
        </ext-community-set>
      </ext-community-sets>
    </bgp-defined-sets>
  </defined-sets>
</routing-policy>

```

```
    </ext-community-sets>
  </bgp-defined-sets>
<tag-sets>
  <tag-set>
    <name>4294967295</name>
    <config>
      <name>4294967295</name>
      <tag-value>4294967295</tag-value>
    </config>
    <state>
      <name>4294967295</name>
      <tag-value>4294967295</tag-value>
    </state>
  </tag-set>
</tag-sets>
</defined-sets>
</routing-policy>
```

Restrictions

/network-instances/network-instance/interfaces/interface/id

This leaf must have the format "<interface>.<subinterface>", e.g., xe10.2, and it is limited to 32 characters.

Add community set to match criteria for route map

Release

This configuration was introduced in OcNOS version 4.2.

OpenConfig NETCONF Payload

```
<routing-policy xmlns="http://openconfig.net/yang/routing-policy">
  <policy-definitions>
    <policy-definition>
      <name>in-VRFl</name>
      <statements>
        <statement>
          <name>10</name>
          <config>
            <name>10</name>
          </config>
          <actions>
            <config>
              <policy-result>ACCEPT_ROUTE</policy-result>
            </config>
          </actions>
        </statement>
      </statements>
    </policy-definition>
  </policy-definitions>
</routing-policy>
```



```
        <conditions>
          <bgp-conditions xmlns="http://openconfig.net/yang/bgp-policy">
            <config>
              <ext-community-set>CLIST</ext-community-set>
            </config>
          </bgp-conditions>
        </conditions>
      </statement>
    </statements>
  </config>
  <name>in-VRF1</name>
</config>
</policy-definition>
<policy-definition>
  <name>out-VRF1</name>
  <statements>
    <statement>
      <name>10</name>
      <config>
        <name>10</name>
      </config>
      <actions>
        <config>
          <policy-result>ACCEPT_ROUTE</policy-result>
        </config>
      </actions>
    </statement>
  </statements>
</config>
  <name>out-VRF1</name>
</config>
</policy-definition>
</policy-definitions>
</routing-policy>
```

OcNOS CLI Command

```
route-map in-VRF1 permit 10
  match extcommunity CLIST
```

```
route-map out-VRF1
  set extcommunity soo 200:25
```

OcNOS NETCONF Payload

```
<routemaps xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-routemap">
  <routemap>
    <routemap-name>in-VRF1</routemap-name>
    <sequence-id>10</sequence-id>
```

```

<config>
  <routermap-name>in-VRF1</routermap-name>
  <sequence-id>10</sequence-id>
  <action>permit</action>
</config>
<match-condition>
  <extended-communities>
    <extended-community>
      <extended-community-identifier>CLIST</extended-community-identifier>
      <config>
        <extended-community-identifier>CLIST</extended-community-identi-
fier>
        <match-type>no-exact-match</match-type>
      </config>
    </extended-community>
  </extended-communities>
</match-condition>
</routermap>
<routermap>
  <routermap-name>out-VRF1</routermap-name>
  <sequence-id>10</sequence-id>
  <config>
    <routermap-name>out-VRF1</routermap-name>
    <sequence-id>10</sequence-id>
    <action>permit</action>
  </config>
  <set-action>
    <config>
      <ext-community-site-of-origin>200:25</ext-community-site-of-origin>
    </config>
  </set-action>
</routermap>
</routermaps>

```

Validation with NETCONF get

```

<routing-policy xmlns="http://openconfig.net/yang/routing-policy">
  <policy-definitions>
    <policy-definition>
      <name>in-VRF1</name>
      <statements>
        <statement>
          <name>10</name>
          <config>
            <name>10</name>
          </config>
          <actions>
            <config>
              <policy-result>ACCEPT_ROUTE</policy-result>
            </config>
          </actions>
        </statement>
      </statements>
    </policy-definition>
  </policy-definitions>
</routing-policy>

```

```

        </config>
        <state>
            <policy-result>ACCEPT_ROUTE</policy-result>
        </state>
    </actions>
    <state>
        <name>10</name>
    </state>
    <conditions>
        <bgp-conditions xmlns="http://openconfig.net/yang/bgp-policy">
            <config>
                <ext-community-set>CLIST</ext-community-set>
            </config>
        </bgp-conditions>
    </conditions>
</statement>
</statements>
<config>
    <name>in-VRFl</name>
</config>
<state>
    <name>in-VRFl</name>
</state>
</policy-definition>
<policy-definition>
    <name>out-VRFl</name>
    <statements>
        <statement>
            <name>10</name>
            <config>
                <name>10</name>
            </config>
            <actions>
                <config>
                    <policy-result>ACCEPT_ROUTE</policy-result>
                </config>
                <state>
                    <policy-result>ACCEPT_ROUTE</policy-result>
                </state>
                <bgp-actions xmlns="http://openconfig.net/yang/bgp-policy"/>
            </actions>
            <state>
                <name>10</name>
            </state>
        </statement>
    </statements>
<config>
    <name>out-VRFl</name>
</config>

```

```

    <state>
      <name>out-VRF1</name>
    </state>
  </policy-definition>
</policy-definitions>
</routing-policy>

```

Restrictions

/network-instances/network-instance/interfaces/interface/id

This leaf must have the format "<interface>.<subinterface>", e.g., xe10.2, and it is limited to 32 characters.

Apply routing policy (route map) as import/export

Release

This configuration was introduced in OcNOS version 4.2.

OpenConfig NETCONF Payload

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>VRF1</name>
    <config>
      <name>VRF1</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-
ni-types:L3VRF</type>
      <router-id>20.20.20.20</router-id>
      <description>"L3VPN Test Instance 1"</description>
      <route-distinguisher>100:1</route-distinguisher>
    </config>
    <inter-instance-policies>
      <apply-policy>
        <config>
          <export-policy>RT_EXPORT_POLICY</export-policy>
          <import-policy>RT_IMPORT_POLICY</import-policy>
        </config>
      </apply-policy>
    </inter-instance-policies>
    <route-targets xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-ni-augments">
      <route-target>
        <rt-rd-string>100:1</rt-rd-string>
        <config>
          <rt-rd-string>100:1</rt-rd-string>
          <direction>BOTH</direction>
        </config>
      </route-target>
    </route-targets>
  </network-instance>
</network-instances>

```

```

    </route-target>
  </route-targets>
</network-instance>
</network-instances>

```

OcNOS CLI Command

```

route-map RT_IMPORT_POLICY
route-map RT_EXPORT_POLICY
!
ip vrf VRF1
  description "L3VPN Test Instance 1"
  router-id 20.20.20.20
  rd 100:1
  route-target both 100:1
  import map RT_IMPORT_POLICY
  export map RT_EXPORT_POLICY
!

```

OcNOS NETCONF Payload

```

<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-network-
instance">
  <network-instance>
    <instance-name>VRF1</instance-name>
    <instance-type>vrf</instance-type>
    <config>
      <instance-name>VRF1</instance-name>
      <instance-type>vrf</instance-type>
    </config>
    <vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vrf">
      <config>
        <router-id>20.20.20.20</router-id>
        <description>"L3VPN Test Instance 2039"</description>
        <vrf-name>VRF1</vrf-name>
      </config>
      <bgp-vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp-vrf">
        <config>
          <rd-string>100:1</rd-string>
          <export-map>RT_EXPORT_POLICY</export-map>
          <import-map>RT_IMPORT_POLICY</import-map>
        </config>
        <route-target>
          <rt-rd-string>100:1</rt-rd-string>
          <config>
            <rt-rd-string>100:1</rt-rd-string>
            <direction>import export</direction>
          </config>
        </route-target>
      </bgp-vrf>
    </vrf>
  </network-instance>
</network-instances>

```

```

    </bgp-vrf>
  </vrf>
</network-instance>
</network-instances>

```

Validation with NETCONF get

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>VRF1</name>
    <config>
      <name>VRF1</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-
ni-types:L3VRF</type>
      <description>"L3VPN Test Instance 1"</description>
      <router-id>20.20.20.20</router-id>
      <route-distinguisher>100:1</route-distinguisher>
    </config>
    <state>
      <name>VRF1</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-
ni-types:L3VRF</type>
      <description>"L3VPN Test Instance 1"</description>
      <router-id>20.20.20.20</router-id>
      <route-distinguisher>100:1</route-distinguisher>
    </state>
    <protocols>
      <protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
        <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
        <name>DIRECTLY_CONNECTED</name>
        <config>
          <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
          <name>DIRECTLY_CONNECTED</name>
          <enabled>true</enabled>
        </config>
        <state>
          <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
          <name>DIRECTLY_CONNECTED</name>
          <enabled>true</enabled>
        </state>
      </protocol>
    </protocols>
  </network-instance>
</network-instances>
<tables xmlns:oc-types="http://openconfig.net/yang/openconfig-types">
  <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
    <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
    <address-family>oc-types:IPV4</address-family>
    <config>
      <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
      <address-family>oc-types:IPV4</address-family>
    </config>
  </table>
</tables>

```

```

    </config>
    <state>
      <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
      <address-family>oc-types:IPV4</address-family>
    </state>
  </table>
  <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
    <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
    <address-family>oc-types:IPV6</address-family>
    <config>
      <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
      <address-family>oc-types:IPV6</address-family>
    </config>
    <state>
      <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
      <address-family>oc-types:IPV6</address-family>
    </state>
  </table>
</tables>
<inter-instance-policies>
  <apply-policy>
    <config>
      <import-policy>in-VRF1</import-policy>
      <export-policy>out-VRF1</export-policy>
    </config>
  </apply-policy>
</inter-instance-policies>
<route-targets xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-ni-augments">
  <route-target>
    <rt-rd-string>100:1</rt-rd-string>
    <config>
      <rt-rd-string>100:1</rt-rd-string>
      <direction>EXPORT</direction>
    </config>
    <state>
      <rt-rd-string>100:1</rt-rd-string>
      <direction>EXPORT</direction>
    </state>
  </route-target>
  <route-target>
    <rt-rd-string>200:1</rt-rd-string>
    <config>
      <rt-rd-string>200:1</rt-rd-string>
      <direction>IMPORT</direction>
    </config>
    <state>
      <rt-rd-string>200:1</rt-rd-string>
      <direction>IMPORT</direction>
    </state>
  </route-target>

```

```

    </route-target>
  </route-targets>
<interfaces>
  <interface>
    <id>lo.VRF1</id>
    <config>
      <interface>lo.VRF1</interface>
      <id>lo.VRF1</id>
    </config>
    <state>
      <interface>lo.VRF1</interface>
      <id>lo.VRF1</id>
    </state>
  </interface>
</interfaces>
<encapsulation>
  <config>
    <label-allocation-mode xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:PER_PREFIX</label-allocation-mode>
    <encapsulation-type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:MPLS</encapsulation-type>
  </config>
</encapsulation>
</network-instance>
</network-instances>

```

Restrictions

/network-instances/network-instance/interfaces/interface/id

This leaf must have the format “<interface>.<subinterface>”, e.g., xe10.2, and it is limited to 32 characters.

Configure interfaces to access VPN

Release

This configuration was introduced in OcNOS version 4.2.

OpenConfig NETCONF Payload

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>VRF1</name>
    <config>
      <name>VRF1</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-
ni-types:L3VRF</type>

```



```

</config>
<interfaces>
  <interface>
    <id>xe2.2000</id>
    <config>
      <interface>xe2</interface>
      <subinterface>2000</subinterface>
      <id>xe2.2000</id>
    </config>
  </interface>
</interfaces>
</network-instance>
</network-instances>
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe2</name>
    <config>
      <name>xe2</name>
    </config>
    <subinterfaces>
      <subinterface>
        <index>2000</index>
        <config>
          <index>2000</index>
        </config>
        <ipv4 xmlns="http://openconfig.net/yang/interfaces/ip">
          <config>
            <mtu>1500</mtu>
          </config>
          <addresses>
            <address>
              <ip>11.12.13.14</ip>
              <config>
                <ip>11.12.13.14</ip>
                <prefix-length>24</prefix-length>
              </config>
            </address>
          </addresses>
        </ipv4>
      </subinterface>
    </subinterfaces>
  </interface>
</interfaces>

```

OcNOS CLI Command

```

interface xe2.2000
  ip vrf forwarding VRF1
  ip address 11.12.13.14/24

```

```
encapsulation dot1q 2000
mtu 1500
```

OcNOS NETCONF Payload

```
<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-network-instance">
  <network-instance>
    <instance-name>VRF1</instance-name>
    <instance-type>vrf</instance-type>
    <config>
      <instance-name>VRF1</instance-name>
      <instance-type>vrf</instance-type>
    </config>
    <vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vrf">
      <config>
        <vrf-name>VRF1</vrf-name>
      </config>
    </vrf>
  </network-instance>
</network-instances>
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>xe2.2000</name>
    <config>
      <name>xe2.2000</name>
      <mtu>1500</mtu>
      <vrf-name>VRF1</vrf-name>
    </config>
    <ipv4 xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-ip">
      <config>
        <primary-ip-addr>11.12.13.14/24</primary-ip-addr>
      </config>
    </ipv4>
    <extended xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-extended">
      <subinterface-encapsulation>
        <vlan-service>
          <config>
            <outer-vlan-id>2000</outer-vlan-id>
            <encapsulation-type>dot1q</encapsulation-type>
          </config>
        </vlan-service>
      </subinterface-encapsulation>
    </extended>
  </interface>
</interfaces>
```

Validation with NETCONF get

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
```

```

<network-instance>
  <name>VRF1</name>
  <config>
    <name>VRF1</name>
    <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-
ni-types:L3VRF</type>
    <description>"L3VPN Test Instance 1"</description>
    <router-id>20.20.20.20</router-id>
    <route-distinguisher>100:1</route-distinguisher>
  </config>
  <state>
    <name>VRF1</name>
    <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-
ni-types:L3VRF</type>
    <description>"L3VPN Test Instance 1"</description>
    <router-id>20.20.20.20</router-id>
    <route-distinguisher>100:1</route-distinguisher>
  </state>
  <protocols>
    <protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
      <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
      <name>DIRECTLY_CONNECTED</name>
      <config>
        <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
        <name>DIRECTLY_CONNECTED</name>
        <enabled>true</enabled>
      </config>
      <state>
        <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
        <name>DIRECTLY_CONNECTED</name>
        <enabled>true</enabled>
      </state>
    </protocol>
  </protocols>
  <tables xmlns:oc-types="http://openconfig.net/yang/openconfig-types">
    <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
      <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
      <address-family>oc-types:IPV4</address-family>
      <config>
        <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family>oc-types:IPV4</address-family>
      </config>
      <state>
        <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family>oc-types:IPV4</address-family>
      </state>
    </table>
    <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
      <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>

```

```

    <address-family>oc-types:IPV6</address-family>
    <config>
      <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
      <address-family>oc-types:IPV6</address-family>
    </config>
    <state>
      <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
      <address-family>oc-types:IPV6</address-family>
    </state>
  </table>
</tables>
<inter-instance-policies>
  <apply-policy>
    <config>
      <import-policy>in-VRF1</import-policy>
      <export-policy>out-VRF1</export-policy>
    </config>
  </apply-policy>
</inter-instance-policies>
<route-targets xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-ni-augments">
  <route-target>
    <rt-rd-string>100:1</rt-rd-string>
    <config>
      <rt-rd-string>100:1</rt-rd-string>
      <direction>EXPORT</direction>
    </config>
    <state>
      <rt-rd-string>100:1</rt-rd-string>
      <direction>EXPORT</direction>
    </state>
  </route-target>
  <route-target>
    <rt-rd-string>200:1</rt-rd-string>
    <config>
      <rt-rd-string>200:1</rt-rd-string>
      <direction>IMPORT</direction>
    </config>
    <state>
      <rt-rd-string>200:1</rt-rd-string>
      <direction>IMPORT</direction>
    </state>
  </route-target>
</route-targets>
<interfaces>
  <interface>
    <id>lo.VRF1</id>
    <config>
      <interface>lo.VRF1</interface>
    </config>
    <id>lo.VRF1</id>
  </interface>
</interfaces>

```

```

    </config>
    <state>
      <interface>lo.VRF1</interface>
      <id>lo.VRF1</id>
    </state>
  </interface>
  <interface>
    <id>xe2.2000</id>
    <config>
      <interface>xe2</interface>
      <subinterface>2000</subinterface>
      <id>xe2.2000</id>
    </config>
    <state>
      <id>xe2</id>
      <interface>xe2</interface>
      <subinterface>2000</subinterface>
    </state>
  </interface>
</interfaces>
<encapsulation>
  <config>
    <label-allocation-mode xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:PER_PREFIX</label-allocation-mode>
    <encapsulation-type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:MPLS</encapsulation-type>
  </config>
</encapsulation>
</network-instance>
</network-instances>

```

Restrictions

/network-instances/network-instance/interfaces/interface/id

This leaf must have the format "<interface>.<subinterface>", e.g., xe10.2, and it is limited to 32 characters.

Configure BGP with neighbors and route redistribution

Release

This configuration was introduced in OcNOS version 4.2.

OpenConfig NETCONF Payload

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>

```

```
<name>VRF1</name>
<protocols>
  <protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
    <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
    <name>DIRECTLY_CONNECTED</name>
    <config>
      <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
      <name>DIRECTLY_CONNECTED</name>
      <enabled>true</enabled>
    </config>
  </protocol>
  <protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
    <identifier>oc-pol-types:BGP</identifier>
    <name>100</name>
    <bgp>
      <global>
        <config>
          <as>100</as>
        </config>
      </global>
      <neighbors>
        <neighbor>
          <neighbor-address>11.12.13.15</neighbor-address>
          <afi-safis>
            <afi-safi xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-types">
              <afi-safi-name>oc-bgp-types:IPV4_UNICAST</afi-safi-name>
              <config>
                <afi-safi-name>oc-bgp-types:IPV4_UNICAST</afi-safi-name>
                <enabled>true</enabled>
              </config>
            </afi-safi>
          </afi-safis>
          <config>
            <neighbor-address>11.12.13.15</neighbor-address>
            <peer-as>200</peer-as>
            <enabled>true</enabled>
          </config>
        </neighbor>
      </neighbors>
    </bgp>
    <config>
      <identifier>oc-pol-types:BGP</identifier>
      <name>100</name>
      <enabled>true</enabled>
    </config>
  </protocol>
</protocols>
<tables xmlns:oc-types="http://openconfig.net/yang/openconfig-types">
  <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
```

```

    <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
    <address-family>oc-types:IPV4</address-family>
    <config>
      <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
      <address-family>oc-types:IPV4</address-family>
    </config>
  </table>
  <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
    <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
    <address-family>oc-types:IPV6</address-family>
    <config>
      <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
      <address-family>oc-types:IPV6</address-family>
    </config>
  </table>
  <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
    <protocol>oc-pol-types:BGP</protocol>
    <address-family>oc-types:IPV4</address-family>
    <config>
      <protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
      <address-family xmlns:oc-types="http://openconfig.net/yang/openconfig-
types">oc-types:IPV4</address-family>
    </config>
  </table>
</tables>
<table-connections xmlns:oc-types="http://openconfig.net/yang/openconfig-types">
  <table-connection xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
    <src-protocol>oc-pol-types:DIRECTLY_CONNECTED</src-protocol>
    <dst-protocol>oc-pol-types:BGP</dst-protocol>
    <address-family>oc-types:IPV4</address-family>
    <config>
      <dst-protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:BGP</dst-protocol>
      <address-family xmlns:oc-types="http://openconfig.net/yang/openconfig-
types">oc-types:IPV4</address-family>
      <dst-instance xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-ni-aug-
ments">100</dst-instance>
      <default-import-policy>ACCEPT_ROUTE</default-import-policy>
      <src-protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:DIRECTLY_CONNECTED</src-protocol>
    </config>
  </table-connection>
</table-connections>
</network-instance>
<network-instance>
  <name>default</name>
  <config>
    <name>default</name>

```

```

    <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-
ni-types:DEFAULT_INSTANCE</type>
  </config>
</protocols>
<protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
  <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
  <name>DIRECTLY_CONNECTED</name>
  <config>
    <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
    <name>DIRECTLY_CONNECTED</name>
    <enabled>true</enabled>
  </config>
</protocol>
<protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
  <identifier>oc-pol-types:BGP</identifier>
  <name>100</name>
  <config>
    <identifier>oc-pol-types:BGP</identifier>
    <name>100</name>
    <enabled>true</enabled>
  </config>
<bgp>
  <global>
    <config>
      <as>100</as>
    </config>
  </global>
  <neighbors>
    <neighbor>
      <neighbor-address>2.2.2.2</neighbor-address>
      <afi-safis>
        <afi-safi xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-types">
          <afi-safi-name>oc-bgp-types:L3VPN_IPV4_UNICAST</afi-safi-name>
          <config>
            <afi-safi-name>oc-bgp-types:L3VPN_IPV4_UNICAST</afi-safi-name>
            <enabled>true</enabled>
          </config>
        </afi-safi>
      </afi-safis>
      <config>
        <neighbor-address>2.2.2.2</neighbor-address>
        <peer-as>100</peer-as>
      </config>
      <transport>
        <config>
          <local-address>1.1.1.1</local-address>
        </config>
      </transport>
    </neighbor>
  </neighbors>

```



```

        </neighbors>
    </bgp>
</protocol>
</protocols>
<tables xmlns:oc-types="http://openconfig.net/yang/openconfig-types">
    <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
        <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family>oc-types:IPv4</address-family>
        <config>
            <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
            <address-family>oc-types:IPv4</address-family>
        </config>
    </table>
    <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
        <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family>oc-types:IPv6</address-family>
        <config>
            <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
            <address-family>oc-types:IPv6</address-family>
        </config>
    </table>
    <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
        <protocol>oc-pol-types:BGP</protocol>
        <address-family>oc-types:IPv4</address-family>
        <config>
            <protocol>oc-pol-types:BGP</protocol>
            <address-family>oc-types:IPv4</address-family>
        </config>
    </table>
</tables>
</network-instance>
</network-instances>

```

OcNOS CLI Command

```

ip vrf VRF1
  rd 1234:5
!
router bgp 100
  neighbor 2.2.2.2 remote-as 100
  neighbor 2.2.2.2 update-source 1.1.1.1
  !
  address-family ipv4 unicast
  exit-address-family
  !
  address-family vpnv4 unicast
  neighbor 2.2.2.2 activate
  exit-address-family
  !

```

```

address-family ipv4 vrf VRF1
redistribute connected
neighbor 11.12.13.15 remote-as 200
neighbor 11.12.13.15 activate
exit-address-family

```

OcNOS NETCONF Payload

```

<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-network-
instance">
  <network-instance>
    <instance-name>default</instance-name>
    <instance-type>vrf</instance-type>
    <config>
      <instance-name>default</instance-name>
      <instance-type>vrf</instance-type>
    </config>
    <vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vrf">
      <config>
        <vrf-name>default</vrf-name>
      </config>
    </vrf>
  </network-instance>
  <network-instance>
    <instance-name>VRF1</instance-name>
    <config>
      <instance-name>VRF1</instance-name>
      <instance-type></instance-type>
    </config>
    <vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vrf">
      <config>
        <vrf-name>VRF1</vrf-name>
      </config>
      <bgp-vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp-vrf">
        <config>
          <rd-string>1234:5</rd-string>
        </config>
      </bgp-vrf>
    </vrf>
    <bridge xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bridge">
      <config>
        <protocol>ieee-vlan-bridge</protocol>
      </config>
    </bridge>
  </network-instance>
</network-instances>
<bgp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp">
  <bgp-instance>
    <bgp-as>100</bgp-as>

```

```
<config>
  <bgp-as>100</bgp-as>
  <bgp-as>100</bgp-as>
</config>
<peer>
  <peer-address>2.2.2.2</peer-address>
  <address-family>
    <afi>ipv4</afi>
    <safi>vpn-unicast</safi>
    <config>
      <afi>ipv4</afi>
      <safi>vpn-unicast</safi>
      <activate />
    </config>
  </address-family>
  <config>
    <peer-address>2.2.2.2</peer-address>
    <peer-as>100</peer-as>
    <source-identifier>1.1.1.1</source-identifier>
  </config>
</peer>
<address-family>
  <afi>ipv4</afi>
  <safi>vpn-unicast</safi>
  <config>
    <afi>ipv4</afi>
    <safi>vpn-unicast</safi>
  </config>
</address-family>
<address-family>
  <afi>ipv4</afi>
  <safi>unicast</safi>
  <config>
    <safi>unicast</safi>
    <afi>ipv4</afi>
  </config>
</address-family>
<address-family-vrf>
  <afi>ipv4</afi>
  <safi>unicast</safi>
  <vrf-name>VRF1</vrf-name>
  <vrf-peer>
    <peer-address>11.12.13.15</peer-address>
    <config>
      <activate />
      <peer-address>11.12.13.15</peer-address>
      <peer-as>200</peer-as>
    </config>
  </vrf-peer>
</address-family-vrf>
```

```

    <config>
      <afi>ipv4</afi>
      <safi>unicast</safi>
      <vrf-name>VRF1</vrf-name>
    </config>
  <config>
    <safi>unicast</safi>
    <afi>ipv4</afi>
    <vrf-name>VRF1</vrf-name>
  </config>
  <route-redirect-list>
    <protocol-type>connected</protocol-type>
    <config>
      <protocol-type>connected</protocol-type>
    </config>
  </route-redirect-list>
</address-family-vrf>
</bgp-instance>
</bgp>

```

Validation with NETCONF get

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>VRF1</name>
    <config>
      <name>VRF1</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-
ni-types:L3VRF</type>
      <description>"L3VPN Test Instance 1"</description>
      <router-id>20.20.20.20</router-id>
      <route-distinguisher>100:1</route-distinguisher>
    </config>
    <state>
      <name>VRF1</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-
ni-types:L3VRF</type>
      <description>"L3VPN Test Instance 1"</description>
      <router-id>20.20.20.20</router-id>
      <route-distinguisher>100:1</route-distinguisher>
    </state>
    <protocols>
      <protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
        <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
        <name>DIRECTLY_CONNECTED</name>
        <config>
          <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
          <name>DIRECTLY_CONNECTED</name>
          <enabled>true</enabled>

```

```
</config>
<state>
  <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
  <name>DIRECTLY_CONNECTED</name>
  <enabled>true</enabled>
</state>
</protocol>
<protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
  <identifier>oc-pol-types:BGP</identifier>
  <name>100</name>
  <bgp>
    <global>
      <config>
        <as>100</as>
      </config>
      <state>
        <as>100</as>
      </state>
    </global>
    <neighbors>
      <neighbor>
        <neighbor-address>11.12.13.15</neighbor-address>
        <afi-safis>
          <afi-safi xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-types">
            <afi-safi-name>oc-bgp-types:IPV4_UNICAST</afi-safi-name>
            <config>
              <afi-safi-name>oc-bgp-types:IPV4_UNICAST</afi-safi-name>
              <enabled>true</enabled>
            </config>
            <state>
              <afi-safi-name>oc-bgp-types:IPV4_UNICAST</afi-safi-name>
              <enabled>true</enabled>
            </state>
          </afi-safi>
        </afi-safis>
        <config>
          <neighbor-address>11.12.13.15</neighbor-address>
          <peer-as>200</peer-as>
          <enabled>true</enabled>
        </config>
        <state>
          <neighbor-address>11.12.13.15</neighbor-address>
          <peer-as>200</peer-as>
          <enabled>true</enabled>
        </state>
      </neighbor>
    </neighbors>
  </bgp>
</config>
```

```

        <identifier>oc-pol-types:BGP</identifier>
        <name>100</name>
        <enabled>true</enabled>
    </config>
    <state>
        <identifier>oc-pol-types:BGP</identifier>
        <name>100</name>
        <enabled>true</enabled>
    </state>
</protocol>
</protocols>
<tables xmlns:oc-types="http://openconfig.net/yang/openconfig-types">
    <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
        <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family>oc-types:IPv4</address-family>
        <config>
            <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
            <address-family>oc-types:IPv4</address-family>
        </config>
        <state>
            <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
            <address-family>oc-types:IPv4</address-family>
        </state>
    </table>
    <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
        <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family>oc-types:IPv6</address-family>
        <config>
            <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
            <address-family>oc-types:IPv6</address-family>
        </config>
        <state>
            <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
            <address-family>oc-types:IPv6</address-family>
        </state>
    </table>
    <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
        <protocol>oc-pol-types:BGP</protocol>
        <address-family>oc-types:IPv4</address-family>
        <config>
            <protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
            <address-family xmlns:oc-types="http://openconfig.net/yang/openconfig-
types">oc-types:IPv4</address-family>
        </config>
    </table>
</tables>
<inter-instance-policies>
    <apply-policy>

```

```

    <config>
      <import-policy>in-VRF1</import-policy>
      <export-policy>out-VRF1</export-policy>
    </config>
  </apply-policy>
</inter-instance-policies>
<route-targets xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-ni-augments">
  <route-target>
    <rt-rd-string>100:1</rt-rd-string>
    <config>
      <rt-rd-string>100:1</rt-rd-string>
      <direction>EXPORT</direction>
    </config>
    <state>
      <rt-rd-string>100:1</rt-rd-string>
      <direction>EXPORT</direction>
    </state>
  </route-target>
  <route-target>
    <rt-rd-string>200:1</rt-rd-string>
    <config>
      <rt-rd-string>200:1</rt-rd-string>
      <direction>IMPORT</direction>
    </config>
    <state>
      <rt-rd-string>200:1</rt-rd-string>
      <direction>IMPORT</direction>
    </state>
  </route-target>
</route-targets>
<interfaces>
  <interface>
    <id>lo.VRF1</id>
    <config>
      <interface>lo.VRF1</interface>
      <id>lo.VRF1</id>
    </config>
    <state>
      <interface>lo.VRF1</interface>
      <id>lo.VRF1</id>
    </state>
  </interface>
  <interface>
    <id>xe2.2000</id>
    <config>
      <interface>xe2</interface>
      <subinterface>2000</subinterface>
      <id>xe2.2000</id>
    </config>
  </interface>
</interfaces>

```

```

    <state>
      <id>xe2</id>
      <interface>xe2</interface>
      <subinterface>2000</subinterface>
    </state>
  </interface>
</interfaces>
<encapsulation>
  <config>
    <label-allocation-mode xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:PER_PREFIX</label-allocation-mode>
    <encapsulation-type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:MPLS</encapsulation-type>
  </config>
</encapsulation>
<table-connections xmlns:oc-types="http://openconfig.net/yang/openconfig-types">
  <table-connection xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
    <src-protocol>oc-pol-types:DIRECTLY_CONNECTED</src-protocol>
    <dst-protocol>oc-pol-types:BGP</dst-protocol>
    <address-family>oc-types:IPV4</address-family>
    <config>
      <dst-protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:BGP</dst-protocol>
      <address-family xmlns:oc-types="http://openconfig.net/yang/openconfig-
types">oc-types:IPV4</address-family>
      <dst-instance xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-ni-aug-
ments">100</dst-instance>
      <default-import-policy>ACCEPT_ROUTE</default-import-policy>
      <src-protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:DIRECTLY_CONNECTED</src-protocol>
    </config>
  </table-connection>
</table-connections>
</network-instance>
<network-instance>
  <name>default</name>
  <config>
    <name>default</name>
    <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-
ni-types:DEFAULT_INSTANCE</type>
  </config>
  <state>
    <name>default</name>
    <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-
ni-types:DEFAULT_INSTANCE</type>
  </state>
  <protocols>
    <protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
      <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>

```



```

<name>DIRECTLY_CONNECTED</name>
<config>
  <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
  <name>DIRECTLY_CONNECTED</name>
  <enabled>true</enabled>
</config>
<state>
  <identifier>oc-pol-types:DIRECTLY_CONNECTED</identifier>
  <name>DIRECTLY_CONNECTED</name>
  <enabled>true</enabled>
</state>
</protocol>
<protocol xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
  <identifier>oc-pol-types:BGP</identifier>
  <name>100</name>
  <config>
    <identifier>oc-pol-types:BGP</identifier>
    <name>100</name>
    <enabled>true</enabled>
  </config>
  <bgp>
    <global>
      <config>
        <as>100</as>
      </config>
      <state>
        <as>100</as>
      </state>
    </global>
    <neighbors>
      <neighbor>
        <neighbor-address>2.2.2.2</neighbor-address>
        <afi-safis>
          <afi-safi xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-types">
            <afi-safi-name>oc-bgp-types:L3VPN_IPV4_UNICAST</afi-safi-name>
            <config>
              <afi-safi-name>oc-bgp-types:L3VPN_IPV4_UNICAST</afi-safi-name>
              <enabled>true</enabled>
            </config>
            <state>
              <afi-safi-name>oc-bgp-types:L3VPN_IPV4_UNICAST</afi-safi-name>
              <enabled>true</enabled>
              <enabled>true</enabled>
            </state>
          </afi-safi>
        </afi-safis>
      </neighbor>
    </neighbors>
  </bgp>
</protocol>
  <config>
    <neighbor-address>2.2.2.2</neighbor-address>
    <peer-as>100</peer-as>
  </config>
</peer>

```

```

    </config>
    <transport>
      <config>
        <local-address>1.1.1.1</local-address>
      </config>
      <state>
        <local-address>1.1.1.1</local-address>
      </state>
    </transport>
    <state>
      <neighbor-address>2.2.2.2</neighbor-address>
      <peer-as>100</peer-as>
    </state>
  </neighbor>
</neighbors>
</bgp>
<state>
  <enabled>true</enabled>
  <identifier>oc-pol-types:BGP</identifier>
  <name>100</name>
</state>
</protocol>
</protocols>
<tables xmlns:oc-types="http://openconfig.net/yang/openconfig-types">
  <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
    <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
    <address-family>oc-types:IPv4</address-family>
    <config>
      <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
      <address-family>oc-types:IPv4</address-family>
    </config>
    <state>
      <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
      <address-family>oc-types:IPv4</address-family>
    </state>
  </table>
  <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">
    <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
    <address-family>oc-types:IPv6</address-family>
    <config>
      <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
      <address-family>oc-types:IPv6</address-family>
    </config>
    <state>
      <protocol>oc-pol-types:DIRECTLY_CONNECTED</protocol>
      <address-family>oc-types:IPv6</address-family>
    </state>
  </table>
  <table xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">

```

```
<protocol>oc-pol-types:BGP</protocol>
<address-family>oc-types:IPV4</address-family>
<config>
  <protocol>oc-pol-types:BGP</protocol>
  <address-family>oc-types:IPV4</address-family>
</config>
</table>
</tables>
<interfaces>
  <interface>
    <id>ce49</id>
    <config>
      <interface>ce49</interface>
      <id>ce49</id>
    </config>
    <state>
      <interface>ce49</interface>
      <id>ce49</id>
    </state>
  </interface>
  <interface>
    <id>ce50</id>
    <config>
      <interface>ce50</interface>
      <id>ce50</id>
    </config>
    <state>
      <interface>ce50</interface>
      <id>ce50</id>
    </state>
  </interface>
  <interface>
    <id>ce51</id>
    <config>
      <interface>ce51</interface>
      <id>ce51</id>
    </config>
    <state>
      <interface>ce51</interface>
      <id>ce51</id>
    </state>
  </interface>
  <interface>
    <id>ce52</id>
    <config>
      <interface>ce52</interface>
      <id>ce52</id>
    </config>
    <state>
```

```
        <interface>ce52</interface>
        <id>ce52</id>
    </state>
</interface>
<interface>
    <id>ce53</id>
    <config>
        <interface>ce53</interface>
        <id>ce53</id>
    </config>
    <state>
        <interface>ce53</interface>
        <id>ce53</id>
    </state>
</interface>
<interface>
    <id>ce54</id>
    <config>
        <interface>ce54</interface>
        <id>ce54</id>
    </config>
    <state>
        <interface>ce54</interface>
        <id>ce54</id>
    </state>
</interface>
<interface>
    <id>lo</id>
    <config>
        <interface>lo</interface>
        <id>lo</id>
    </config>
    <state>
        <interface>lo</interface>
        <id>lo</id>
    </state>
</interface>
<interface>
    <id>xel</id>
    <config>
        <interface>xel</interface>
        <id>xel</id>
    </config>
    <state>
        <interface>xel</interface>
        <id>xel</id>
    </state>
</interface>
<interface>
```

```
<id>xe10</id>
<config>
  <interface>xe10</interface>
  <id>xe10</id>
</config>
<state>
  <interface>xe10</interface>
  <id>xe10</id>
</state>
</interface>
<interface>
  <id>xe11</id>
  <config>
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    <id>xe11</id>
  </config>
  <state>
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    <id>xe11</id>
  </state>
</interface>
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  <id>xe12</id>
  <config>
    <interface>xe12</interface>
    <id>xe12</id>
  </config>
  <state>
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    <id>xe12</id>
  </state>
</interface>
<interface>
  <id>xe13</id>
  <config>
    <interface>xe13</interface>
    <id>xe13</id>
  </config>
  <state>
    <interface>xe13</interface>
    <id>xe13</id>
  </state>
</interface>
<interface>
  <id>xe14</id>
  <config>
    <interface>xe14</interface>
    <id>xe14</id>
  </config>
```

```
<state>
  <interface>xe14</interface>
  <id>xe14</id>
</state>
</interface>
<interface>
  <id>xe15</id>
  <config>
    <interface>xe15</interface>
    <id>xe15</id>
  </config>
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    <id>xe15</id>
  </state>
</interface>
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  <id>xe16</id>
  <config>
    <interface>xe16</interface>
    <id>xe16</id>
  </config>
  <state>
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    <id>xe16</id>
  </state>
</interface>
<interface>
  <id>xe17</id>
  <config>
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    <id>xe17</id>
  </config>
  <state>
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    <id>xe17</id>
  </state>
</interface>
<interface>
  <id>xe18</id>
  <config>
    <interface>xe18</interface>
    <id>xe18</id>
  </config>
  <state>
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    <id>xe18</id>
  </state>
</interface>
```

```
<interface>
  <id>xe19</id>
  <config>
    <interface>xe19</interface>
    <id>xe19</id>
  </config>
  <state>
    <interface>xe19</interface>
    <id>xe19</id>
  </state>
</interface>
<interface>
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  <config>
    <interface>xe2</interface>
    <id>xe2</id>
  </config>
  <state>
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    <id>xe2</id>
  </state>
</interface>
<interface>
  <id>xe20</id>
  <config>
    <interface>xe20</interface>
    <id>xe20</id>
  </config>
  <state>
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    <id>xe20</id>
  </state>
</interface>
<interface>
  <id>xe21</id>
  <config>
    <interface>xe21</interface>
    <id>xe21</id>
  </config>
  <state>
    <interface>xe21</interface>
    <id>xe21</id>
  </state>
</interface>
<interface>
  <id>xe22</id>
  <config>
    <interface>xe22</interface>
    <id>xe22</id>
```

```
</config>
<state>
  <interface>xe22</interface>
  <id>xe22</id>
</state>
</interface>
<interface>
  <id>xe23</id>
  <config>
    <interface>xe23</interface>
    <id>xe23</id>
  </config>
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    <id>xe23</id>
  </state>
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  <config>
    <interface>xe24</interface>
    <id>xe24</id>
  </config>
  <state>
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    <id>xe24</id>
  </state>
</interface>
<interface>
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  <config>
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    <id>xe25</id>
  </config>
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</interface>
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    <id>xe26</id>
  </config>
  <state>
    <interface>xe26</interface>
    <id>xe26</id>
  </state>
</interface>
```



```
</interface>
<interface>
  <id>xe27</id>
  <config>
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    <id>xe27</id>
  </config>
  <state>
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    <id>xe27</id>
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</interface>
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    <id>xe28</id>
  </config>
  <state>
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    <id>xe28</id>
  </state>
</interface>
<interface>
  <id>xe29</id>
  <config>
    <interface>xe29</interface>
    <id>xe29</id>
  </config>
  <state>
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  </state>
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</interface>
<interface>
  <id>xe30</id>
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    <interface>xe30</interface>
```

```
        <id>xe30</id>
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    <state>
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        <id>xe30</id>
    </state>
</interface>
<interface>
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    <config>
        <interface>xe31</interface>
        <id>xe31</id>
    </config>
    <state>
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    </state>
</interface>
<interface>
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    <config>
        <interface>xe32</interface>
        <id>xe32</id>
    </config>
    <state>
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        <id>xe32</id>
    </state>
</interface>
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    <config>
        <interface>xe33</interface>
        <id>xe33</id>
    </config>
    <state>
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        <id>xe33</id>
    </state>
</interface>
<interface>
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    <config>
        <interface>xe34</interface>
        <id>xe34</id>
    </config>
    <state>
        <interface>xe34</interface>
        <id>xe34</id>
```

```
</state>
</interface>
<interface>
  <id>xe35</id>
  <config>
    <interface>xe35</interface>
    <id>xe35</id>
  </config>
  <state>
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    <id>xe35</id>
  </state>
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  <config>
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    <id>xe36</id>
  </config>
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    <id>xe36</id>
  </state>
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</interface>
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  </config>
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  </state>
</interface>
<interface>
  <id>xe39</id>
  <config>
```

```
<interface>xe39</interface>
<id>xe39</id>
</config>
<state>
  <interface>xe39</interface>
  <id>xe39</id>
</state>
</interface>
<interface>
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    <id>xe40</id>
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    <id>xe41</id>
  </config>
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    <id>xe41</id>
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  </config>
  <state>
    <interface>xe42</interface>
```

```
        <id>xe42</id>
    </state>
</interface>
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    <config>
        <interface>xe43</interface>
        <id>xe43</id>
    </config>
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    </state>
</interface>
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    <config>
        <interface>xe44</interface>
        <id>xe44</id>
    </config>
    <state>
        <interface>xe44</interface>
        <id>xe44</id>
    </state>
</interface>
<interface>
    <id>xe45</id>
    <config>
        <interface>xe45</interface>
        <id>xe45</id>
    </config>
    <state>
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        <id>xe45</id>
    </state>
</interface>
<interface>
    <id>xe46</id>
    <config>
        <interface>xe46</interface>
        <id>xe46</id>
    </config>
    <state>
        <interface>xe46</interface>
        <id>xe46</id>
    </state>
</interface>
<interface>
    <id>xe47</id>
```

```
<config>
  <interface>xe47</interface>
  <id>xe47</id>
</config>
<state>
  <interface>xe47</interface>
  <id>xe47</id>
</state>
</interface>
<interface>
  <id>xe48</id>
  <config>
    <interface>xe48</interface>
    <id>xe48</id>
  </config>
  <state>
    <interface>xe48</interface>
    <id>xe48</id>
  </state>
</interface>
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  <id>xe5</id>
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    <id>xe5</id>
  </config>
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  </state>
</interface>
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    <id>xe6</id>
  </config>
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    <id>xe6</id>
  </state>
</interface>
<interface>
  <id>xe7</id>
  <config>
    <interface>xe7</interface>
    <id>xe7</id>
  </config>
  <state>
```

```

        <interface>xe7</interface>
        <id>xe7</id>
    </state>
</interface>
<interface>
    <id>xe8</id>
    <config>
        <interface>xe8</interface>
        <id>xe8</id>
    </config>
    <state>
        <interface>xe8</interface>
        <id>xe8</id>
    </state>
</interface>
<interface>
    <id>xe9</id>
    <config>
        <interface>xe9</interface>
        <id>xe9</id>
    </config>
    <state>
        <interface>xe9</interface>
        <id>xe9</id>
    </state>
</interface>
</interfaces>
</network-instance>
</network-instances>

```

Restrictions

/network-instances/network-instance/interfaces/interface/id

This leaf must have the format "<interface>.<subinterface>", e.g., xe10.2, and it is limited to 32 characters.

L2VPN OpenConfig Translation

Configure VPLS with Ethernet type

The VPLS creates a Ethernet type if the value of the 'pw-encapsulation' attribute is set to 'PWE_Ethernet_Raw_mode'.

Release

This configuration was introduced in OcNOS version 5.1

OpenConfig NETCONF Payload

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
<interface>
  <name>xe24</name>
  <config>
    <name>xe24</name>
    <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
  </config>
  <subinterfaces>
    <subinterface>
      <index>1</index>
      <config>
        <index>1</index>
        <enabled>true</enabled>
      </config>
    </subinterface>
  </subinterfaces>
</interface>
</interfaces>
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>VPLS-TEST</name>
    <config>
      <name>VPLS-TEST</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2VSI</type>
    </config>
    <connection-points>
      <connection-point>
        <connection-point-id>default</connection-point-id>
        <endpoints>
          <endpoint>
            <endpoint-id>1</endpoint-id>
            <config>
              <precedence>1</precedence>
              <type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:REMOTE</type>
            </config>
            <state>
              <precedence>1</precedence>
            </state>
          </endpoint>
        </endpoints>
      </connection-point>
    </connection-points>
  </network-instance>
</network-instances>
```



```

        <remote>
          <config>
            <virtual-circuit-identifier>400</virtual-circuit-identifier>
            <remote-system>4.4.4.4</remote-system>
          </config>
        </remote>
      </endpoint>
    </endpoints>
    <config>
      <connection-point-id>default</connection-point-id>
    </config>
  </connection-point>
</connection-points>
<encapsulation>
  <config>
    <encapsulation-type
      xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:MPLS</encapsulation-type>
    </config>
  </encapsulation>
</interfaces>
  <interface>
    <id>xe24.1</id>
    <config>
      <id>xe24.1</id>
      <interface>xe24</interface>
      <subinterface>1</subinterface>
    </config>
  </interface>
</interfaces>
<mpls>
  <global>
    <config>
      <pw-encapsulation>PWE_ETHERNET_RAW_MODE</pw-encapsulation>
    </config>
  </global>
</mpls>
</network-instance>
</network-instances>

```

OcNOS CLI Command

```

mpls vpls VPLS-TEST1 400
  signaling ldp
  vpls-type ethernet
  vpls-peer 4.4.4.4
  exit-signaling
exit-vpls
!
interface xe24.1 switchport
  encapsulation default
  access-if-vpls
  mpls-vpls VPLS-TEST1

```

OcNOS NETCONF Payload

```

<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <global xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-extended">
    <error-disable>
      <config>
        <error-disable-stp-bpdu-guard>true</error-disable-stp-bpdu-
guard>
      </config>
    </error-disable>
  </global>
  <interface>
    <name>xe24</name>
    <config>
      <name>xe24</name>
    </config>
  </interface>
  <interface>
    <name>xe24.1</name>
    <config>
      <name>xe24.1</name>
      <enable-switchport />
    </config>
  <extended xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-
extended">
    <subinterface-encapsulation>
      <config>
        <encap-default />
      </config>
    </subinterface-encapsulation>
  </extended>
</interface>
</interfaces>
<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-
network-instance">
  <network-instance>
    <instance-name>VPLS-TEST1</instance-name>
    <instance-type>vpls</instance-type>
    <config>
      <instance-name>VPLS-TEST1</instance-name>
      <instance-type>vpls</instance-type>
    </config>
    <vpls-instance xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-
l2vpn-vpls">
      <vpls-peers>
        <vpls-peer>
          <peer-address>4.4.4.4</peer-address>
          <config>
            <peer-address>4.4.4.4</peer-address>
          </config>
        </vpls-peer>
      </vpls-peers>
      <config>
        <signaling-protocol-ldp />
        <vpls-encapsulation-type>ethernet</vpls-encapsulation-type>
      </config>
    </vpls-instance>
  </network-instance>
</network-instances>

```

```

        <vpls-identifier>400</vpls-identifier>
    </config>
</vpls-instance>
</network-instance>
</network-instances>
<vpls xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-l2vpn-vpls">
    <interfaces>
        <interface>
            <name>xe24.1</name>
            <vpls-access>
                <config>
                    <vpls-name>VPLS-TEST1</vpls-name>
                    <enable />
                </config>
            </vpls-access>
            <config>
                <name>xe24.1</name>
            </config>
        </interface>
    </interfaces>
</vpls>

```

Validation with NetConf get

```

<network-instance>
    <name>VPLS-TEST</name>
    <config>
        <name>VPLS-TEST</name>
        <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2VSI</type>
    </config>
    <connection-points>
        <connection-point>
            <connection-point-id>default</connection-point-id>
            <endpoints>
                <endpoint>
                    <endpoint-id>1</endpoint-id>
                    <state>
                        <precedence>1</precedence>
                        <type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:REMOTE</type>
                        <endpoint-id>1</endpoint-id>
                    </state>
                    <config>
                        <type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:REMOTE</type>
                        <endpoint-id>1</endpoint-id>
                    </config>
                    <remote>
                        <config>
                            <virtual-circuit-identifier>400</virtual-circuit-identifier>
                            <remote-system>4.4.4.4</remote-system>
                        </config>
                        <state>
                            <virtual-circuit-identifier>400</virtual-circuit-identifier>
                            <remote-system>4.4.4.4</remote-system>
                        </state>
                    </remote>
                </endpoint>
            </endpoints>
        </connection-point>
    </connection-points>

```

```

        </remote>
    </endpoint>
</endpoints>
<state>
    <connection-point-id>default</connection-point-id>
</state>
<config>
    <connection-point-id>default</connection-point-id>
</config>
</connection-point>
</connection-points>
<state>
    <name>VPLS-TEST</name>
    <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2VSI</type>
</state>
<encapsulation>
    <config>
        <encapsulation-type
            xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:MPLS</encapsulation-type>
        </config>
    <state>
        <encapsulation-type
            xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:MPLS</encapsulation-type>
        </state>
    </encapsulation>
</mpls>
    <global>
        <config>
            <pw-encapsulation>PWE_ETHERNET_RAW_MODE</pw-encapsulation>
        </config>
        <state>
            <pw-encapsulation>PWE_ETHERNET_RAW_MODE</pw-encapsulation>
        </state>
    </global>
</mpls>
</interfaces>
    <interface>
        <id>xe24.1</id>
        <config>
            <id>xe24.1</id>
            <interface>xe24</interface>
            <subinterface>1</subinterface>
        </config>
        <state>
            <id>xe24.1</id>
            <interface>xe24</interface>
            <subinterface>1</subinterface>
        </state>
    </interface>
</interfaces>
<fdb>
    <config>
        <mac-learning>true</mac-learning>
    </config>

```

```

    <state>
      <mac-learning>true</mac-learning>
    </state>
  </fdb>
</network-instance>

```

Restrictions

/network-instances/network-instance/interfaces/interface/id

This leaf must have the format “<interface>.<subinterface>”, e.g., xe10.2, and it is limited to 32 characters.

Currently encapsulation supported is *ethernet*. On OcNOS the the *vpls-type* must always be set as *ethernet*.

The instance-name (for netconf) or name (for CLI) must to be ended with 1 or 2, otherwise the command will be accept by OcNOS, but this vpls won't be translated by Openconfig.

The endpoint-id must to be 1 or 2 in Openconfig payload.

Configure VPLS with VLAN type

The VPLS creates a VLAN type if the value of the 'pw-encapsulation' attribute is set to 'PWE_Ethernet_Tagged_mode'.

Release

This configuration was introduced in OcNOS version 5.1.

OpenConfig NETCONF Payload

```

<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe25</name>
    <config>
      <name>xe25</name>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </config>
    <subinterfaces>
      <subinterface>
        <index>1</index>
        <config>
          <index>1</index>
          <enabled>true</enabled>
        </config>
      </subinterface>
    </subinterfaces>
  </interface>
</interfaces>
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>VPLS-FULL</name>
    <config>
      <name>VPLS-FULL</name>

```

```

    <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2VSI</type>
  </config>
  <connection-points>
    <connection-point>
      <connection-point-id>default</connection-point-id>
      <endpoints>
        <endpoint>
          <endpoint-id>1</endpoint-id>
          <config>
            <type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:REMOTE</type>
            <endpoint-id>1</endpoint-id>
            <precedence>1</precedence>
          </config>
          <remote>
            <config>
              <remote-system>6.6.6.6</remote-system>
              <virtual-circuit-identifier>600</virtual-circuit-identifier>
            </config>
          </remote>
        </endpoint>
      </endpoints>
    </connection-point>
  </connection-points>
  <interfaces>
    <interface>
      <id>xe25.1</id>
      <config>
        <id>xe25.1</id>
        <interface>xe25</interface>
        <subinterface>1</subinterface>
      </config>
    </interface>
  </interfaces>
  <encapsulation>
    <config>
      <encapsulation-type xmlns:oc-ni-types="http://openconfig.net/yang/
network-instance-types">oc-ni-types:MPLS</encapsulation-type>
    </config>
  </encapsulation>
  <mpls>
    <global>
      <config>
        <pw-encapsulation>PWE_ETHERNET_TAGGED_MODE</pw-encapsulation>
      </config>
    </global>
  </mpls>
</network-instance>
</network-instances>

```

OcNOS CLI Command

```
mpls vpls VPLS-FULL1 600
```

```

signaling ldp
 vpls-type vlan
 vpls-peer 6.6.6.6
 exit-signaling
 exit-vpls
!
interface xe25.1 switchport
 encapsulation default
 access-if-vpls
 mpls-vpls VPLS-FULL1

```

OcNOS NETCONF Payload

```

<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <global xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-extended">
    <error-disable>
      <config>
        <error-disable-stp-bpdu-guard>true</error-disable-stp-bpdu-
guard>
      </config>
    </error-disable>
  </global>
  <interface>
    <name>xe25</name>
    <config>
      <name>xe25</name>
    </config>
  </interface>
  <interface>
    <name>xe25.1</name>
    <config>
      <name>xe25.1</name>
      <enable-switchport />
    </config>
  <extended xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-
extended">
    <subinterface-encapsulation>
      <config>
        <encap-default />
      </config>
    </subinterface-encapsulation>
  </extended>
</interface>
</interfaces>
<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-
network-instance">
  <network-instance>
    <instance-name>VPLS-FULL1</instance-name>
    <instance-type>vpls</instance-type>
    <config>
      <instance-name>VPLS-FULL1</instance-name>
      <instance-type>vpls</instance-type>
    </config>
    <vpls-instance xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-
l2vpn-vpls">
      <vpls-peers>
        <vpls-peer>

```

```

        <peer-address>6.6.6.6</peer-address>
      <config>
        <peer-address>6.6.6.6</peer-address>
      </config>
    </vpls-peer>
  <config>
    <signaling-protocol-ldp />
    <vpls-encapsulation-type>vlan</vpls-encapsulation-type>
  </config>
</vpls-peers>
<config>
  <vpls-identifier>600</vpls-identifier>
</config>
</vpls-instance>
</network-instance>
</network-instances>
<vpls xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-l2vpn-vpls">
  <interfaces>
    <interface>
      <name>xe25.1</name>
      <vpls-access>
        <config>
          <vpls-name>VPLS-FULL1</vpls-name>
          <enable />
        </config>
      </vpls-access>
    <config>
      <name>xe25.1</name>
    </config>
    </interface>
  </interfaces>
</vpls>

```

Validation with NetConf get

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>VPLS-FULL</name>
    <config>
      <name>VPLS-FULL</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2VSI</type>
    </config>
    <connection-points>
      <connection-point>
        <connection-point-id>default</connection-point-id>
        <endpoints>
          <endpoint>
            <endpoint-id>1</endpoint-id>
            <state>
              <precedence>1</precedence>
              <type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:REMOTE</type>
              <endpoint-id>1</endpoint-id>
            </state>
          </config>

```



```

        <type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:REMOTE</type>
        <endpoint-id>1</endpoint-id>
      </config>
      <remote>
        <config>
          <virtual-circuit-identifier>600</virtual-circuit-identifier>
          <remote-system>6.6.6.6</remote-system>
        </config>
        <state>
          <virtual-circuit-identifier>600</virtual-circuit-identifier>
          <remote-system>6.6.6.6</remote-system>
        </state>
      </remote>
    </endpoint>
  </endpoints>
  <state>
    <connection-point-id>default</connection-point-id>
  </state>
  <config>
    <connection-point-id>default</connection-point-id>
  </config>
</connection-point>
</connection-points>
<state>
  <name>VPLS-FULL</name>
  <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2VSI</type>
</state>
  <encapsulation>
    <config>
      <encapsulation-type
xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:MPLS</encapsulation-type>
    </config>
    <state>
      <encapsulation-type
xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:MPLS</encapsulation-type>
    </state>
  </encapsulation>
  <mpls>
    <global>
      <config>
        <pw-encapsulation>PWE_ETHERNET_TAGGED_MODE</pw-encapsulation>
      </config>
      <state>
        <pw-encapsulation>PWE_ETHERNET_TAGGED_MODE</pw-encapsulation>
      </state>
    </global>
  </mpls>
  <interfaces>
    <interface>
      <id>xe25.1</id>
      <config>
        <id>xe25.1</id>
      </config>
    </interface>
  </interfaces>

```

```

        <subinterface>1</subinterface>
    </config>
    <state>
        <id>xe25.1</id>
        <interface>xe25</interface>
        <subinterface>1</subinterface>
    </state>
</interface>
</interfaces>
<fdb>
    <config>
        <mac-learning>true</mac-learning>
    </config>
    <state>
        <mac-learning>true</mac-learning>
    </state>
</fdb>
</network-instance>

```

Restrictions

/network-instances/network-instance/interfaces/interface/id

This leaf must have the format "<interface>.<subinterface>", e.g., xe10.2, and it is limited to 32 characters.

Currently encapsulation supported is *ethernet*. On OcNOS the the *vpls-type* must always be set as *ethernet*.

The instance-name (for netconf) or name (for CLI) must to be ended with 1 or 2, otherwise the command will be accept by OcNOS, but this vpls won't be translated by OpenConfig.

The endpoint-id must be 1 or 2 in OpenConfig payload.

Disabling VPLS mac-learning

Release

This configuration was introduced in OcNOS version 5.1.

OpenConfig NETCONF Payload

```

    <interfaces xmlns="http://openconfig.net/yang/interfaces">
    <interface>
        <name>xe2</name>
        <config>
            <name>xe2</name>
            <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
        </config>
        <subinterfaces>
            <subinterface>
                <index>1</index>
                <config>
                    <index>1</index>
                    <enabled>true</enabled>

```

```

        </config>
      </subinterface>
    </subinterfaces>
  </interface>
</interfaces>
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>VPLS-TEST</name>
    <config>
      <name>VPLS-TEST</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2VSI</type>
    </config>
    <connection-points>
      <connection-point>
        <connection-point-id>default</connection-point-id>
        <endpoints>
          <endpoint>
            <endpoint-id>1</endpoint-id>
            <config>
              <type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:REMOTE</type>
              <endpoint-id>1</endpoint-id>
            </config>
            <remote>
              <config>
                <virtual-circuit-identifier>101</virtual-circuit-identifier>
                <remote-system>3.3.3.3</remote-system>
              </config>
            </remote>
          </endpoint>
        </endpoints>
      </connection-point>
    </connection-points>
    <encapsulation>
      <config>
        <encapsulation-type
          xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:MPLS</encapsulation-type>
        </config>
      </encapsulation>
    </interfaces>
    <interface>
      <id>xe2.1</id>
      <config>
        <id>xe2.1</id>
        <interface>xe2</interface>
        <subinterface>1</subinterface>
      </config>
    </interface>
  </interfaces>
  <fdb>
    <config>
      <mac-learning>false</mac-learning>
    </config>
  </fdb>
</network-instance>

```

```
</network-instances>
```

OcNOS CLI Command

```
mpls vpls VPLS-TEST1 101
  signaling ldp
  vpls-peer 3.3.3.3
  exit-signaling
exit-vpls
!
interface xe2.1 switchport
  encapsulation default
  access-if-vpls
  mpls-vpls VPLS-TEST1
  learning disable
```

OcNOS NETCONF Payload

```
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>xe2</name>
    <config>
      <name>xe2</name>
    </config>
  </interface>
  <interface>
    <name>xe2.1</name>
    <config>
      <name>xe2.1</name>
      <enable-switchport />
    </config>
    <extended xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-extended">
      <subinterface-encapsulation>
        <config>
          <encap-default />
        </config>
      </subinterface-encapsulation>
    </extended>
  </interface>
</interfaces>
<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-network-instance">
  <network-instance>
    <instance-name>VPLS-TEST1</instance-name>
    <instance-type>vpls</instance-type>
    <config>
      <instance-name>VPLS-TEST1</instance-name>
      <instance-type>vpls</instance-type>
      </config>
      <vpls-instance xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-l2vpn-vpls">
        <vpls-peers>
          <vpls-peer>
            <peer-address>3.3.3.3</peer-address>
          </vpls-peer>
        </vpls-peers>
      </vpls-instance>
    </config>
  </network-instance>
</network-instances>
```

```

    </vpls-peer>
  </config>
</signaling-protocol-ldp />
</config>
</vpls-peers>
<config>
  <vpls-identifier>101</vpls-identifier>
</config>
</vpls-instance>
</network-instance>
</network-instances>
<vpls xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-l2vpn-vpls">
  <interfaces>
    <interface>
      <name>xe2.1</name>
      <vpls-access>
        <config>
          <vpls-name>VPLS-TEST1</vpls-name>
          <disable-mac-learning />
          <enable />
        </config>
      </vpls-access>
    </config>
  </vpls-access>
</config>
  <name>xe2.1</name>
</config>
</interface>
</interfaces>
</vpls>

```

Validation with NETCONF get

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>VPLS-TEST</name>
    <config>
      <name>VPLS-TEST</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2VSI</type>
    </config>
    <connection-points>
      <connection-point>
        <connection-point-id>default</connection-point-id>
        <endpoints>
          <endpoint>
            <endpoint-id>1</endpoint-id>
            <config>
              <type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:REMOTE</type>
              <endpoint-id>1</endpoint-id>
            </config>
            <remote>
              <config>
                <virtual-circuit-identifier>101</virtual-circuit-identifier>
                <remote-system>3.3.3.3</remote-system>
              </config>
            <state>
              <virtual-circuit-identifier>101</virtual-circuit-identifier>

```

```

        <remote-system>3.3.3.3</remote-system>
      </state>
    </remote>
    <state>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:REMOTE</type>
      <endpoint-id>1</endpoint-id>
    </state>
  </endpoint>
</endpoints>
</connection-point>
</connection-points>
<state>
  <name>VPLS-TEST</name>
  <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2VSI</type>
</state>
<encapsulation>
  <config>
    <encapsulation-type
      xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:MPLS</encapsulation-type>
    </config>
  <state>
    <encapsulation-type
      xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:MPLS</encapsulation-type>
    </state>
  </encapsulation>
</interfaces>
  <interface>
    <id>xe2.1</id>
    <config>
      <id>xe2.1</id>
      <interface>xe2</interface>
      <subinterface>1</subinterface>
    </config>
    <state>
      <id>xe2.1</id>
      <interface>xe2</interface>
      <subinterface>1</subinterface>
    </state>
  </interface>
</interfaces>
<fdb>
  <config>
    <mac-learning>>false</mac-learning>
  </config>
  <state>
    <mac-learning>>false</mac-learning>
  </state>
</fdb>
</network-instance>
</network-instances>
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe2</name>

```

```

<config>
  <name>xe2</name>
  <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
</config>
<state>
  <name>xe2</name>
  <logical>>false</logical>
  <last-change>550600</last-change>
  <oper-status>UP</oper-status>
  <admin-status>UP</admin-status>
  <ifindex>10002</ifindex>
  <counters>
    <last-clear>Never</last-clear>
    <out-errors>0</out-errors>
    <out-discards>0</out-discards>
    <out-multicast-pkts>86</out-multicast-pkts>
    <out-broadcast-pkts>0</out-broadcast-pkts>
    <out-unicast-pkts>0</out-unicast-pkts>
    <out-pkts>86</out-pkts>
    <out-octets>9780</out-octets>
    <in-fcs-errors>0</in-fcs-errors>
    <in-errors>0</in-errors>
    <in-discards>0</in-discards>
    <in-multicast-pkts>3485</in-multicast-pkts>
    <in-broadcast-pkts>0</in-broadcast-pkts>
    <in-unicast-pkts>0</in-unicast-pkts>
    <in-pkts>3485</in-pkts>
    <in-octets>279684</in-octets>
  </counters>
  <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
</state>
<ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
  <state>
    <negotiated-port-speed>SPEED_10GB</negotiated-port-speed>
    <negotiated-duplex-mode>FULL</negotiated-duplex-mode>
    <hw-mac-address>b86a.97be.193f</hw-mac-address>
  </state>
</ethernet>
<subinterfaces>
  <subinterface>
    <index>0</index>
    <config>
      <index>0</index>
    </config>
  </subinterface>
  <subinterface>
    <index>1</index>
    <config>
      <index>1</index>
    </config>
    <state>
      <name>xe2.1</name>
      <logical>true</logical>
      <oper-status>UP</oper-status>
      <ifindex>20484097</ifindex>

```

```

    <counters>
      <last-clear>Never</last-clear>
      <out-pkts>0</out-pkts>
      <out-octets>0</out-octets>
      <in-pkts>0</in-pkts>
      <in-octets>0</in-octets>
    </counters>
  </state>
<ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
  <switched-vlan xmlns="http://openconfig.net/yang/vlan">
    <state>
      <interface-mode>ACCESS</interface-mode>
    </state>
  </switched-vlan>
</ethernet>
</subinterface>
</subinterfaces>
</interface>
</interfaces>

```

Restrictions

/network-instances/network-instance/interfaces/interface/id

This leaf must have the format "<interface>.<subinterface>", e.g., xe10.2, and it is limited to 32 characters.

Configure VPWS

Release

This configuration was introduced in OcNOS version 5.1.

OpenConfig NETCONF Payload

```

<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xel</name>
    <config>
      <name>xel</name>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-type">ianaift:ethernetCsmacd</type>
    </config>
    <subinterfaces>
      <subinterface>
        <index>1</index>
        <config>
          <index>1</index>
          <enabled>true</enabled>
        </config>
      </subinterface>
    </subinterfaces>
  </interface>
</interfaces>

```



```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>VPWS-TEST</name>
    <config>
      <name>VPWS-TEST</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2P2P</type>
    </config>
    <connection-points>
      <connection-point>
        <connection-point-id>default</connection-point-id>
        <endpoints>
          <endpoint>
            <endpoint-id>1</endpoint-id>
            <remote>
              <config>
                <virtual-circuit-identifier>100</virtual-circuit-identifier>
                <remote-system>2.2.2.2</remote-system>
              </config>
            </remote>
            <config>
              <type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:REMOTE</type>
              <endpoint-id>1</endpoint-id>
              <precedence>1</precedence>
            </config>
          </endpoint>
        </endpoints>
      </connection-point>
    </connection-points>
    <encapsulation>
      <config>
        <encapsulation-type xmlns:oc-ni-types="http://openconfig.net/yang/
network-instance-types">oc-ni-types:MPLS</encapsulation-type>
      </config>
    </encapsulation>
    <interfaces>
      <interface>
        <id>xel.1</id>
        <config>
          <id>xel.1</id>
          <interface>xel</interface>
          <subinterface>1</subinterface>
        </config>
      </interface>
    </interfaces>
  </network-instance>
</network-instances>

```

OcNOS CLI Command

```

mpls l2-circuit VPWS-TEST1 100 2.2.2.2
!
interface xel.1 switchport
 encapsulation default
 access-if-vpws

```

```
mpls-l2-circuit VPWS-TEST1 primary
```

OcNOS NETCONF Payload

```
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>xel</name>
    <config>
<name>xel</name>
    </config>
  </interface>
  <interface>
    <name>xel.1</name>
    <config>
<name>xel.1</name>
<enable-switchport />
    </config>
    <extended xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-extended">
<subinterface-encapsulation>
    <config>
<encap-default />
    </config>
</subinterface-encapsulation>
    </extended>
  </interface>
</interfaces>
<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-network-
instance">
  <network-instance>
    <instance-name>VPWS-TEST1</instance-name>
    <instance-type>vpws</instance-type>
    <config>
<instance-name>VPWS-TEST1</instance-name>
<instance-type>vpws</instance-type>
    </config>
    <vpws-instance xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-l2vpn-vpws">
<pseudowire>
    <pseudowire-identifier>100</pseudowire-identifier>
    <peer-address>2.2.2.2</peer-address>
    <config>
<pseudowire-identifier>100</pseudowire-identifier>
<peer-address>2.2.2.2</peer-address>
    </config>
    <default-tagged>
<config>
    <enable-default-tagged-mode />
</config>
    </default-tagged>
</pseudowire>
    </vpws-instance>
  </network-instance>
</network-instances>
<vpws xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-l2vpn-vpws">
  <interfaces>
    <interface>
<name>xel.1</name>
```

```

<vpws-access>
  <config>
<enable />
  </config>
  <bindings>
<binding>
  <vpws-name>VPWS-TEST1</vpws-name>
  <config>
<vpws-name>VPWS-TEST1</vpws-name>
<pseudowire-link-mode>primary</pseudowire-link-mode>
  </config>
</binding>
  </bindings>
</vpws-access>
<config>
  <name>xel.1</name>
</config>
</interface>
</interfaces>
</vpws>

```

Validation with NetConf get

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>VPWS-TEST</name>
    <config>
      <name>VPWS-TEST</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2P2P</type>
    </config>
    <connection-points>
      <connection-point>
        <connection-point-id>default</connection-point-id>
        <endpoints>
          <endpoint>
            <endpoint-id>1</endpoint-id>
            <remote>
              <config>
                <virtual-circuit-identifier>100</virtual-circuit-identifier>
                <remote-system>2.2.2.2</remote-system>
              </config>
              <state>
                <virtual-circuit-identifier>100</virtual-circuit-identifier>
                <remote-system>2.2.2.2</remote-system>
              </state>
            </remote>
          <config>
            <type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:REMOTE</type>
            <endpoint-id>1</endpoint-id>
            <precedence>1</precedence>
          </config>
          <state>
            <type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:REMOTE</type>
            <endpoint-id>1</endpoint-id>

```

```

        <precedence>1</precedence>
    </state>
</endpoint>
</endpoints>
</connection-point>
</connection-points>
<encapsulation>
    <config>
        <encapsulation-type xmlns:oc-ni-types="http://openconfig.net/yang/
network-instance-types">oc-ni-types:MPLS</encapsulation-type>
    </config>
    <state>
        <encapsulation-type xmlns:oc-ni-types="http://openconfig.net/yang/
network-instance-types">oc-ni-types:MPLS</encapsulation-type>
    </state>
</encapsulation>
<interfaces>
    <interface>
        <id>xel.1</id>
        <config>
            <id>xel.1</id>
            <interface>xel</interface>
            <subinterface>1</subinterface>
        </config>
        <state>
            <id>xel.1</id>
            <interface>xel</interface>
            <subinterface>1</subinterface>
        </state>
    </interface>
</interfaces>
</network-instance>
</network-instances>
<interfaces xmlns="http://openconfig.net/yang/interfaces">
    <interface>
        <name>xel</name>
        <config>
            <name>xel</name>
        </config>
        <subinterfaces>
            <subinterface>
                <index>1</index>
                <config>
                    <index>1</index>
                </config>
                <state>
                    <name>xel.1</name>
                    <logical>true</logical>
                    <oper-status>DOWN</oper-status>
                    <ifindex>20482049</ifindex>
                    <counters>
                        <last-clear>0</last-clear>
                        <out-pkts>0</out-pkts>
                        <out-octets>0</out-octets>
                        <in-pkts>0</in-pkts>
                        <in-octets>0</in-octets>
                    </counters>
                </state>
            </subinterface>
        </subinterfaces>
    </interface>
</interfaces>

```

```

    </state>
    <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
      <switched-vlan xmlns="http://openconfig.net/yang/vlan">
        <state>
          <interface-mode>ACCESS</interface-mode>
        </state>
      </switched-vlan>
    </ethernet>
  </subinterface>
</subinterfaces>
</interface>
</interfaces>

```

Restrictions

/network-instances/network-instance/interfaces/interface/id

This leaf must have the format "<interface>.<subinterface>", e.g., xe10.2, and it is limited to 32 characters.

The instance-name (for netconf) or name (for CLI) must to be ended with 1 or 2, otherwise the command will be accept by OcNOS, but this vpws won't be translated by OpenConfig.

The endpoint-id must to be 1 or 2 in OpenConfig payload.

Configure VPWS precedence

Release

This configuration was introduced in OcNOS version 5.1.

OpenConfig NETCONF Payload

```

<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe1</name>
    <config>
      <name>xe1</name>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </config>
    <subinterfaces>
      <subinterface>
        <index>1</index>
        <config>
          <index>1</index>
        </config>
      </subinterface>
    </subinterfaces>
  </interface>
</interfaces>
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>VPWS-TEST</name>

```

```

<config>
  <name>VPWS-TEST</name>
  <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2P2P</type>
</config>
<connection-points>
  <connection-point>
    <connection-point-id>default</connection-point-id>
    <endpoints>
      <endpoint>
        <endpoint-id>1</endpoint-id>
        <remote>
          <config>
            <virtual-circuit-identifier>100</virtual-circuit-identifier>
            <remote-system>2.2.2.2</remote-system>
          </config>
        </remote>
        <config>
          <type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:REMOTE</type>
          <endpoint-id>1</endpoint-id>
          <precedence>1</precedence>
        </config>
      </endpoint>
      <endpoint>
        <endpoint-id>2</endpoint-id>
        <remote>
          <config>
            <virtual-circuit-identifier>200</virtual-circuit-identifier>
            <remote-system>3.3.3.3</remote-system>
          </config>
        </remote>
        <config>
          <type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:REMOTE</type>
          <endpoint-id>2</endpoint-id>
          <precedence>2</precedence>
        </config>
      </endpoint>
    </endpoints>
  </connection-point>
</connection-points>
<encapsulation>
  <config>
    <encapsulation-type
xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:MPLS</encapsulation-type>
  </config>
</encapsulation>
<interfaces>
  <interface>
    <id>xel.1</id>
    <config>
      <id>xel.1</id>
      <interface>xel</interface>
      <subinterface>1</subinterface>
    </config>
  </interface>
</interfaces>

```

```

    </interface>
  </interfaces>
</network-instance>
</network-instances>

```

OcNOS CLI Command

```

mpls l2-circuit VPWS-TEST1 100 2.2.2.2
mpls l2-circuit VPWS-TEST2 200 3.3.3.3
!
interface xe1.1 switchport
 encapsulation default
 access-if-vpws
  mpls-l2-circuit VPWS-TEST1 primary
  mpls-l2-circuit VPWS-TEST2 secondary

```

OcNOS NetConf Payload

```

<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>xe1</name>
    <config>
      <name>xe1</name>
    </config>
  </interface>
  <interface>
    <name>xe1.1</name>
    <config>
      <name>xe1.1</name>
      <enable-switchport />
    </config>
    <extended xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-extended">
      <subinterface-encapsulation>
        <config>
          <encap-default />
        </config>
      </subinterface-encapsulation>
    </extended>
  </interface>
</interfaces>
<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-network-instance">
  <network-instance>
    <instance-name>VPWS-TEST1</instance-name>
    <instance-type>vpws</instance-type>
    <config>
      <instance-name>VPWS-TEST1</instance-name>
      <instance-type>vpws</instance-type>
    </config>
    <vpws-instance xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-l2vpn-vpws">
      <pseudowire>
        <pseudowire-identifier>100</pseudowire-identifier>
        <peer-address>2.2.2.2</peer-address>
      </pseudowire>
    </vpws-instance>
  </network-instance>
  <network-instance>
    <instance-name>VPWS-TEST2</instance-name>
    <instance-type>vpws</instance-type>
    <config>
      <instance-name>VPWS-TEST2</instance-name>
      <instance-type>vpws</instance-type>
    </config>
    <vpws-instance xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-l2vpn-vpws">
      <pseudowire>
        <pseudowire-identifier>200</pseudowire-identifier>
        <peer-address>3.3.3.3</peer-address>
      </pseudowire>
    </vpws-instance>
  </network-instance>
</network-instances>

```

```

    </config>
    <default-tagged>
<config>
    <enable-default-tagged-mode />
</config>
    </default-tagged>
</pseudowire>
    </vpws-instance>
</network-instance>
<network-instance>
    <instance-name>VPWS-TEST2</instance-name>
    <instance-type>vpws</instance-type>
    <config>
<instance-name>VPWS-TEST2</instance-name>
<instance-type>vpws</instance-type>
    </config>
    <vpws-instance xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-l2vpn-vpws">
<pseudowire>
    <pseudowire-identifier>200</pseudowire-identifier>
    <peer-address>3.3.3.3</peer-address>
    <config>
<pseudowire-identifier>200</pseudowire-identifier>
<peer-address>3.3.3.3</peer-address>
    </config>
    <default-tagged>
<config>
    <enable-default-tagged-mode />
</config>
    </default-tagged>
</pseudowire>
    </vpws-instance>
</network-instance>
</network-instances>
<vpws xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-l2vpn-vpws">
    <interfaces>
        <interface>
            <name>xel.1</name>
            <vpws-access>
                <config>
            <enable />
                </config>
                <bindings>
                    <binding>
                        <vpws-name>VPWS-TEST1</vpws-name>
                        <config>
                            <vpws-name>VPWS-TEST1</vpws-name>
                            <pseudowire-link-mode>primary</pseudowire-link-mode>
                        </config>
                    </binding>
                    <binding>
                        <vpws-name>VPWS-TEST2</vpws-name>
                        <config>
                            <vpws-name>VPWS-TEST2</vpws-name>
                            <pseudowire-link-mode>secondary</pseudowire-link-mode>
                        </config>
                    </binding>
                </bindings>
            </config>
        </vpws-access>
    </interface>
    </interfaces>
</vpws>

```



```

</vpws-access>
<config>
  <name>xe1.1</name>
</config>
</interface>
</interfaces>
</vpws>

```

Validation with NetConf get

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>VPWS-TEST</name>
    <config>
      <name>VPWS-TEST</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2P2P</type>
    </config>
    <connection-points>
      <connection-point>
        <connection-point-id>default</connection-point-id>
        <endpoints>
          <endpoint>
            <endpoint-id>1</endpoint-id>
            <remote>
              <config>
                <virtual-circuit-identifier>100</virtual-circuit-identifier>
                <remote-system>2.2.2.2</remote-system>
              </config>
              <state>
                <virtual-circuit-identifier>100</virtual-circuit-identifier>
                <remote-system>2.2.2.2</remote-system>
              </state>
            </remote>
          </config>
          <type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:REMOTE</type>
          <endpoint-id>1</endpoint-id>
          <precedence>1</precedence>
        </config>
        <state>
          <type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:REMOTE</type>
          <endpoint-id>1</endpoint-id>
          <precedence>1</precedence>
        </state>
      </endpoint>
    </endpoint>
    <endpoint-id>2</endpoint-id>
    <remote>
      <config>
        <virtual-circuit-identifier>200</virtual-circuit-identifier>
        <remote-system>3.3.3.3</remote-system>
      </config>
      <state>
        <virtual-circuit-identifier>200</virtual-circuit-identifier>
        <remote-system>3.3.3.3</remote-system>
      </state>
    </remote>
  </connection-point>
</network-instance>
</network-instances>

```

```

        </state>
      </remote>
    <config>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:REMOTE</type>
      <endpoint-id>2</endpoint-id>
      <precedence>2</precedence>
    </config>
    <state>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:REMOTE</type>
      <endpoint-id>2</endpoint-id>
      <precedence>2</precedence>
    </state>
  </endpoint>
</endpoints>
</connection-point>
</connection-points>
<state>
  <name>VPWS-TEST</name>
  <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2P2P</type>
</state>
  <encapsulation>
    <config>
      <encapsulation-type
xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:MPLS</encapsulation-type>
    </config>
    <state>
      <encapsulation-type
xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:MPLS</encapsulation-type>
    </state>
  </encapsulation>
  <interfaces>
    <interface>
      <id>xel.1</id>
      <config>
        <id>xel.1</id>
        <interface>xel</interface>
        <subinterface>1</subinterface>
      </config>
      <state>
        <id>xel.1</id>
        <interface>xel</interface>
        <subinterface>1</subinterface>
      </state>
    </interface>
  </interfaces>
</network-instance>
</network-instances>
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xel</name>
    <config>
      <name>xel</name>

```

```

    <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
  </config>
  <state>
    <name>xel</name>
    <logical>>false</logical>
    <last-change>15100</last-change>
    <oper-status>UP</oper-status>
    <admin-status>UP</admin-status>
    <ifindex>10001</ifindex>
    <counters>
      <last-clear>Never</last-clear>
      <out-errors>0</out-errors>
      <out-discards>0</out-discards>
      <out-multicast-pkts>6</out-multicast-pkts>
      <out-broadcast-pkts>0</out-broadcast-pkts>
      <out-unicast-pkts>0</out-unicast-pkts>
      <out-pkts>6</out-pkts>
      <out-octets>640</out-octets>
      <in-fcs-errors>0</in-fcs-errors>
      <in-errors>0</in-errors>
      <in-discards>0</in-discards>
      <in-multicast-pkts>7</in-multicast-pkts>
      <in-broadcast-pkts>0</in-broadcast-pkts>
      <in-unicast-pkts>0</in-unicast-pkts>
      <in-pkts>7</in-pkts>
      <in-octets>814</in-octets>
    </counters>
    <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
  </state>
  <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
    <state>
      <negotiated-port-speed>SPEED_10GB</negotiated-port-speed>
      <negotiated-duplex-mode>FULL</negotiated-duplex-mode>
      <hw-mac-address>b86a.97be.193e</hw-mac-address>
    </state>
  </ethernet>
  <subinterfaces>
    <subinterface>
      <index>0</index>
      <config>
        <index>0</index>
      </config>
    </subinterface>
    <subinterface>
      <index>1</index>
      <config>
        <index>1</index>
      </config>
      <state>
        <name>xel.1</name>
        <logical>true</logical>
        <oper-status>UP</oper-status>
        <ifindex>20482049</ifindex>
        <counters>
          <last-clear>Never</last-clear>

```

```
        <out-pkts>0</out-pkts>
        <out-octets>0</out-octets>
        <in-pkts>0</in-pkts>
        <in-octets>0</in-octets>
    </counters>
</state>
<ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
    <switched-vlan xmlns="http://openconfig.net/yang/vlan">
        <state>
            <interface-mode>ACCESS</interface-mode>
        </state>
    </switched-vlan>
</ethernet>
</subinterface>
</subinterfaces>
</interface>
</interfaces>
```

Restrictions

/network-instances/network-instance/interfaces/interface/id

This leaf must have the format "<interface>.<subinterface>", e.g., xe10.2, and it is limited to 32 characters.

The instance-name (for netconf) or name (for CLI) must be ended with 1 or 2, otherwise the command will be accepted by OcNOS, but this vpw won't be translated by OpenConfig.

The endpoint-id must be 1 or 2 in OpenConfig payload.

Platform OpenConfig Translation

Description

The read-only state attributes listed here are valid for the platform Edgecore 5912-54X-O-AC-F.

FAN

Display fan status of the boards.

OpenConfig Filter

```
<filter type="subtree">
  <components xmlns="http://openconfig.net/yang/platform">
    <component>
      <state>
        <type>oc-platform-types:FAN</type>
      </state>
      <fan></fan>
    </component>
  </components>
</filter>
```

OpenConfig get result

```
<components xmlns="http://openconfig.net/yang/platform">
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>FAN-1/1</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>FAN-1/1</id>
      <name>FAN-1/1</name>
      <parent>FAN_TRAY-1</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>false</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>1</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:FAN</type>
    </state>
    <fan>
      <state>
```

```

        <speed xmlns="http://openconfig.net/yang/platform/fan">9800</speed>
      </state>
    </fan>
  </component>
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>FAN-1/2</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>FAN-1/2</id>
      <name>FAN-1/2</name>
      <parent>FAN_TRAY-1</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>>false</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>2</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:FAN</type>
    </state>
  </fan>
  <state>
    <speed xmlns="http://openconfig.net/yang/platform/fan">8300</speed>
  </state>
</fan>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>FAN-2/1</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>FAN-2/1</id>
    <name>FAN-2/1</name>
    <parent>FAN_TRAY-2</parent>
    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
    <removable>>false</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>1</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:FAN</type>
  </state>
</fan>

```

```

        <state>
            <speed xmlns="http://openconfig.net/yang/platform/fan">10400</speed>
        </state>
    </fan>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>FAN-2/2</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
        <id>FAN-2/2</id>
        <name>FAN-2/2</name>
        <parent>FAN_TRAY-2</parent>
        <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
        <removable>false</removable>
        <part-no>NA</part-no>
        <serial-no>NA</serial-no>
        <software-version>NA</software-version>
        <firmware-version>NA</firmware-version>
        <hardware-version>NA</hardware-version>
        <description>NA</description>
        <mfg-name>NA</mfg-name>
        <location>2</location>
        <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:FAN</type>
    </state>
</fan>
    <state>
        <speed xmlns="http://openconfig.net/yang/platform/fan">8700</speed>
    </state>
</fan>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>FAN-3/1</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
        <id>FAN-3/1</id>
        <name>FAN-3/1</name>
        <parent>FAN_TRAY-3</parent>
        <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
        <removable>false</removable>
        <part-no>NA</part-no>
        <serial-no>NA</serial-no>
        <software-version>NA</software-version>
        <firmware-version>NA</firmware-version>
        <hardware-version>NA</hardware-version>
        <description>NA</description>
        <mfg-name>NA</mfg-name>
        <location>1</location>
        <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:FAN</type>
    </state>

```

```

    <fan>
      <state>
        <speed xmlns="http://openconfig.net/yang/platform/fan">10300</speed>
      </state>
    </fan>
  </component>
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>FAN-3/2</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>FAN-3/2</id>
      <name>FAN-3/2</name>
      <parent>FAN_TRAY-3</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>false</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>2</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:FAN</type>
    </state>
  </fan>
  <state>
    <speed xmlns="http://openconfig.net/yang/platform/fan">8700</speed>
  </state>
</fan>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>FAN-4/1</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>FAN-4/1</id>
    <name>FAN-4/1</name>
    <parent>FAN_TRAY-4</parent>
    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
    <removable>false</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>1</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:FAN</type>
  </state>
</component>

```



```

    </state>
  </fan>
  <state>
    <speed xmlns="http://openconfig.net/yang/platform/fan">10200</speed>
  </state>
</fan>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>FAN-4/2</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>FAN-4/2</id>
    <name>FAN-4/2</name>
    <parent>FAN_TRAY-4</parent>
    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
    <removable>false</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>2</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:FAN</type>
  </state>
</fan>
  <state>
    <speed xmlns="http://openconfig.net/yang/platform/fan">8600</speed>
  </state>
</fan>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>FAN-5/1</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>FAN-5/1</id>
    <name>FAN-5/1</name>
    <parent>FAN_TRAY-5</parent>
    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
    <removable>false</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>1</location>

```

```

    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:FAN</type>
    </state>
    <fan>
        <state>
            <speed xmlns="http://openconfig.net/yang/platform/fan">10000</speed>
        </state>
    </fan>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>FAN-5/2</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
        <id>FAN-5/2</id>
        <name>FAN-5/2</name>
        <parent>FAN_TRAY-5</parent>
        <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
        <removable>false</removable>
        <part-no>NA</part-no>
        <serial-no>NA</serial-no>
        <software-version>NA</software-version>
        <firmware-version>NA</firmware-version>
        <hardware-version>NA</hardware-version>
        <description>NA</description>
        <mfg-name>NA</mfg-name>
        <location>2</location>
        <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:FAN</type>
    </state>
    <fan>
        <state>
            <speed xmlns="http://openconfig.net/yang/platform/fan">8400</speed>
        </state>
    </fan>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>FAN-6/1</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
        <id>FAN-6/1</id>
        <name>FAN-6/1</name>
        <parent>FAN_TRAY-6</parent>
        <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
        <removable>false</removable>
        <part-no>NA</part-no>
        <serial-no>NA</serial-no>
        <software-version>NA</software-version>
        <firmware-version>NA</firmware-version>
        <hardware-version>NA</hardware-version>
        <description>NA</description>
        <mfg-name>NA</mfg-name>

```

```

        <location>1</location>
        <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:FAN</type>
        </state>
        <fan>
            <state>
                <speed xmlns="http://openconfig.net/yang/platform/fan">10100</speed>
            </state>
        </fan>
    </component>
    <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
        <name>FAN-6/2</name>
        <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
            <id>FAN-6/2</id>
            <name>FAN-6/2</name>
            <parent>FAN_TRAY-6</parent>
            <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
            <removable>false</removable>
            <part-no>NA</part-no>
            <serial-no>NA</serial-no>
            <software-version>NA</software-version>
            <firmware-version>NA</firmware-version>
            <hardware-version>NA</hardware-version>
            <description>NA</description>
            <mfg-name>NA</mfg-name>
            <location>2</location>
            <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:FAN</type>
            </state>
        </fan>
        <state>
            <speed xmlns="http://openconfig.net/yang/platform/fan">8500</speed>
        </state>
    </fan>
</component>

```

OcNOS get result

```

<components xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform">
  <component>
    <name>FAN-1/1</name>
    <state>
      <name>FAN-1/1</name>
      <parent>FAN_TRAY-1</parent>
      <product-name>NA</product-name>
      <oper-status>NA</oper-status>
      <removable>false</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
    </state>
  </component>
</components>

```

```
<description>NA</description>
<mfg-name>NA</mfg-name>
<location>1</location>
<type>fan</type>
</state>
<fan>
  <state>
    <fan-location>front</fan-location>
    <fan-status>running</fan-status>
    <maximum-rpm>21500</maximum-rpm>
    <minimum-rpm>10000</minimum-rpm>
    <rpm>9800</rpm>
    <fan-index>1</fan-index>
  </state>
</fan>
</component>
<component>
  <name>FAN-1/2</name>
  <state>
    <name>FAN-1/2</name>
    <parent>FAN_TRAY-1</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>false</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>2</location>
    <type>fan</type>
  </state>
  <fan>
    <state>
      <fan-location>rear</fan-location>
      <fan-status>running</fan-status>
      <maximum-rpm>18000</maximum-rpm>
      <minimum-rpm>8500</minimum-rpm>
      <rpm>8300</rpm>
      <fan-index>2</fan-index>
    </state>
  </fan>
</component>
<component>
  <name>FAN-2/1</name>
  <state>
    <name>FAN-2/1</name>
    <parent>FAN_TRAY-2</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>false</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
```

```
<hardware-version>NA</hardware-version>
<description>NA</description>
<mfg-name>NA</mfg-name>
<location>1</location>
<type>fan</type>
</state>
<fan>
  <state>
    <fan-location>front</fan-location>
    <fan-status>running</fan-status>
    <maximum-rpm>21500</maximum-rpm>
    <minimum-rpm>10000</minimum-rpm>
    <rpm>10400</rpm>
    <fan-index>1</fan-index>
  </state>
</fan>
</component>
<component>
  <name>FAN-2/2</name>
  <state>
    <name>FAN-2/2</name>
    <parent>FAN_TRAY-2</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>false</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>2</location>
    <type>fan</type>
  </state>
  <fan>
    <state>
      <fan-location>rear</fan-location>
      <fan-status>running</fan-status>
      <maximum-rpm>18000</maximum-rpm>
      <minimum-rpm>8500</minimum-rpm>
      <rpm>8700</rpm>
      <fan-index>2</fan-index>
    </state>
  </fan>
</component>
<component>
  <name>FAN-3/1</name>
  <state>
    <name>FAN-3/1</name>
    <parent>FAN_TRAY-3</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>false</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
```

```
<firmware-version>NA</firmware-version>
<hardware-version>NA</hardware-version>
<description>NA</description>
<mfg-name>NA</mfg-name>
<location>1</location>
<type>fan</type>
</state>
<fan>
  <state>
    <fan-location>front</fan-location>
    <fan-status>running</fan-status>
    <maximum-rpm>21500</maximum-rpm>
    <minimum-rpm>10000</minimum-rpm>
    <rpm>10300</rpm>
    <fan-index>1</fan-index>
  </state>
</fan>
</component>
<component>
  <name>FAN-3/2</name>
  <state>
    <name>FAN-3/2</name>
    <parent>FAN_TRAY-3</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>false</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>2</location>
    <type>fan</type>
  </state>
  <fan>
    <state>
      <fan-location>rear</fan-location>
      <fan-status>running</fan-status>
      <maximum-rpm>18000</maximum-rpm>
      <minimum-rpm>8500</minimum-rpm>
      <rpm>8700</rpm>
      <fan-index>2</fan-index>
    </state>
  </fan>
</component>
<component>
  <name>FAN-4/1</name>
  <state>
    <name>FAN-4/1</name>
    <parent>FAN_TRAY-4</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>false</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
```

```
<software-version>NA</software-version>
<firmware-version>NA</firmware-version>
<hardware-version>NA</hardware-version>
<description>NA</description>
<mfg-name>NA</mfg-name>
<location>1</location>
<type>fan</type>
</state>
<fan>
  <state>
    <fan-location>front</fan-location>
    <fan-status>running</fan-status>
    <maximum-rpm>21500</maximum-rpm>
    <minimum-rpm>10000</minimum-rpm>
    <rpm>10200</rpm>
    <fan-index>1</fan-index>
  </state>
</fan>
</component>
<component>
  <name>FAN-4/2</name>
  <state>
    <name>FAN-4/2</name>
    <parent>FAN_TRAY-4</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>false</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>2</location>
    <type>fan</type>
  </state>
  <fan>
    <state>
      <fan-location>rear</fan-location>
      <fan-status>running</fan-status>
      <maximum-rpm>18000</maximum-rpm>
      <minimum-rpm>8500</minimum-rpm>
      <rpm>8600</rpm>
      <fan-index>2</fan-index>
    </state>
  </fan>
</component>
<component>
  <name>FAN-5/1</name>
  <state>
    <name>FAN-5/1</name>
    <parent>FAN_TRAY-5</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>false</removable>
    <part-no>NA</part-no>
```

```

    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>1</location>
    <type>fan</type>
  </state>
</fan>
<state>
  <fan-location>front</fan-location>
  <fan-status>running</fan-status>
  <maximum-rpm>21500</maximum-rpm>
  <minimum-rpm>10000</minimum-rpm>
  <rpm>10000</rpm>
  <fan-index>1</fan-index>
</state>
</fan>
</component>
<component>
  <name>FAN-5/2</name>
  <state>
    <name>FAN-5/2</name>
    <parent>FAN_TRAY-5</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>false</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>2</location>
    <type>fan</type>
  </state>
</fan>
<state>
  <fan-location>rear</fan-location>
  <fan-status>running</fan-status>
  <maximum-rpm>18000</maximum-rpm>
  <minimum-rpm>8500</minimum-rpm>
  <rpm>8400</rpm>
  <fan-index>2</fan-index>
</state>
</fan>
</component>
<component>
  <name>FAN-6/1</name>
  <state>
    <name>FAN-6/1</name>
    <parent>FAN_TRAY-6</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>false</removable>

```



```

    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>1</location>
    <type>fan</type>
  </state>
</fan>
<state>
  <fan-location>front</fan-location>
  <fan-status>running</fan-status>
  <maximum-rpm>21500</maximum-rpm>
  <minimum-rpm>10000</minimum-rpm>
  <rpm>10100</rpm>
  <fan-index>1</fan-index>
</state>
</fan>
</component>
<component>
  <name>FAN-6/2</name>
  <state>
    <name>FAN-6/2</name>
    <parent>FAN_TRAY-6</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>false</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>2</location>
    <type>fan</type>
  </state>
</fan>
<state>
  <fan-location>rear</fan-location>
  <fan-status>running</fan-status>
  <maximum-rpm>18000</maximum-rpm>
  <minimum-rpm>8500</minimum-rpm>
  <rpm>8500</rpm>
  <fan-index>2</fan-index>
</state>
</fan>
</component>

```

Show command

```
OcNOS#show hardware-information fan
```

Codes : R - Rear Fan, F - Front Fan, U - Unknown

FAN TRAY	FAN	RPM	MINRPM	MAXRPM
1	1 (F)	9800	10000	21500
1	2 (R)	8300	8500	18000
2	1 (F)	10400	10000	21500
2	2 (R)	8700	8500	18000
3	1 (F)	10300	10000	21500
3	2 (R)	8700	8500	18000
4	1 (F)	10100	10000	21500
4	2 (R)	8600	8500	18000
5	1 (F)	10000	10000	21500
5	2 (R)	8400	8500	18000
6	1 (F)	10100	10000	21500
6	2 (R)	8500	8500	18000

RAM

Display memory information of the boards.

Filter

```
<filter type="subtree">
  <components xmlns="http://openconfig.net/yang/platform">
    <component>
      <name>RAM</name>
    </component>
  </components>
</filter>
```

OpenConfig get result

```
<components xmlns="http://openconfig.net/yang/platform">
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>RAM</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>RAM</id>
      <name>RAM</name>
      <parent>CHASSIS</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>false</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>0</location>
```

```

    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:RAM</type>
    <memory>
      <utilized>1118830592</utilized>
      <available>16792944640</available>
    </memory>
  </state>
</component>
</components>

```

OcNOS get result

```

<components xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform">
  <component>
    <name>RAM</name>
    <state>
      <name>RAM</name>
      <parent>CHASSIS</parent>
      <product-name>NA</product-name>
      <oper-status>NA</oper-status>
      <removable>false</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>0</location>
      <type>ram</type>
      <memory>
        <utilized>1066</utilized>
        <available>16015</available>
      </memory>
    </state>
    <ram>
      <state>
        <usage-alert-threshold>90</usage-alert-threshold>
        <usage-critical-threshold>80</usage-critical-threshold>
        <unit-size>1</unit-size>
        <available-high-memory>0</available-high-memory>
        <total-high-memory>0</total-high-memory>
        <current-process-count>214</current-process-count>
        <free-swap>0</free-swap>
        <total-swap>0</total-swap>
        <buffers>18</buffers>
        <shared-memory>8</shared-memory>
        <available-memory>14948</available-memory>
        <used-memory>1066</used-memory>
        <total-memory>16015</total-memory>
      </state>
    </ram>
  </component>
</components>

```

Show command

```
OcNOS#show hardware-information memory
-----
          RAM INFORMATION
-----

Total                : 16015 MB
Used                 : 1067 MB (7 %)
Free                 : 14947 MB (93 %)
Shared               : 8 MB
Buffers              : 17 MB
Total Swap           : 0 MB
Free Swap            : 0 MB
Current Processes    : 217
Total High Memory    : 0 MB
Available High Memory : 0 MB
Unit Size            : 1 Bytes
Alert Threshold      : 90 %
Critical Threshold    : 80 %
-----

          HARD DISK INFORMATION
-----

Serial Number        : F929740043
Model Number         : TS32GMSA370
Firmware Revision    : P1225CH1TS32GMSA370
Cylinders            : 16383
Heads                 : 16
Sectors              : 62533296
Unformatted Bytes/Track : 0
Unformatted Bytes/Sector : 0
Revision No          : 1008.0
Usage Alert Threshold : 90 %
Usage Critical Threshold : 80 %
-----



| Filesystem  | Total | Used | Free  | Use% |
|-------------|-------|------|-------|------|
| /           | 22000 | 6446 | 15554 | 29%  |
| /cfg        | 476   | 90   | 386   | 19%  |
| /installers | 4911  | 282  | 4629  | 6%   |


-----
```

Hard-disk

Display hard-disk information of the boards.

Filter

```
<filter type="subtree">
  <components xmlns="http://openconfig.net/yang/platform">
    <component>
      <name>HARD-DISK</name>
    </component>
  </components>
</filter>
```

```

    </components>
  </filter>

```

OpenConfig get result

```

<components xmlns="http://openconfig.net/yang/platform">
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>HARD-DISK</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>HARD-DISK</id>
      <name>HARD-DISK</name>
      <parent>CHASSIS</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>false</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>0</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:STORAGE</type>
      <memory>
        <utilized>6759120896</utilized>
        <available>23068672000</available>
      </memory>
    </state>
  </component>
</components>

```

OcNOS get result

```

<components xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform">
  <component>
    <name>HARD-DISK</name>
    <state>
      <name>HARD-DISK</name>
      <parent>CHASSIS</parent>
      <product-name>NA</product-name>
      <oper-status>NA</oper-status>
      <removable>false</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>0</location>
      <type>storage</type>
    </state>
  </component>
</components>

```

```

    <memory>
      <utilized>6446</utilized>
      <available>22000</available>
    </memory>
  </state>
  <storage>
    <state>
      <usage-alert-threshold>90</usage-alert-threshold>
      <usage-critical-threshold>80</usage-critical-threshold>
      <free-memory>15554</free-memory>
      <used-memory>6446</used-memory>
      <total-memory>22000</total-memory>
      <revision-number>1008.0</revision-number>
      <unformatted-bytes-or-sector>0</unformatted-bytes-or-sector>
      <unformatted-bytes-or-track>0</unformatted-bytes-or-track>
      <sector-count>62533296</sector-count>
      <head-count>16</head-count>
      <cylinder-count>16383</cylinder-count>
      <firmware-revision>P1225CH1TS32GMSA370          </firmware-
revision>
      <model-number>TS32GMSA370          </model-number>
      <serial-number>F929740043          </serial-number>
    </state>
    <mounted-filesystems>
      <mounted-filesystem>
        <mount-point>/</mount-point>
        <state>
          <mount-point>/</mount-point>
          <usage>29</usage>
          <free>15554</free>
          <used>6446</used>
          <total>22000</total>
        </state>
      </mounted-filesystem>
      <mounted-filesystem>
        <mount-point>/cfg</mount-point>
        <state>
          <mount-point>/cfg</mount-point>
          <usage>19</usage>
          <free>386</free>
          <used>90</used>
          <total>476</total>
        </state>
      </mounted-filesystem>
      <mounted-filesystem>
        <mount-point>/installers</mount-point>
        <state>
          <mount-point>/installers</mount-point>
          <usage>6</usage>
          <free>4629</free>
          <used>282</used>
          <total>4911</total>
        </state>
      </mounted-filesystem>
    </mounted-filesystems>
  </storage>
</component>

```

</components>

Show command

```
OcNOS#show hardware-information memory
```

```

-----
          RAM INFORMATION
-----

Total                : 16015 MB
Used                 : 1067 MB (7 %)
Free                 : 14947 MB (93 %)
Shared               : 8 MB
Buffers              : 17 MB
Total Swap           : 0 MB
Free Swap            : 0 MB
Current Processes    : 217
Total High Memory     : 0 MB
Available High Memory : 0 MB
Unit Size             : 1 Bytes
Alert Threshold       : 90 %
Critical Threshold     : 80 %
-----

          HARD DISK INFORMATION
-----

Serial Number        : F929740043
Model Number          : TS32GMSA370
Firmware Revision     : P1225CH1TS32GMSA370
Cylinders              : 16383
Heads                  : 16
Sectors                : 62533296
Unformatted Bytes/Track : 0
Unformatted Bytes/Sector : 0
Revision No           : 1008.0
Usage Alert Threshold   : 90 %
Usage Critical Threshold : 80 %
-----

```

Filesystem	Total	Used	Free	Use%
/	22000	6446	15554	29%
/cfg	476	90	386	19%
/installers	4911	282	4629	6%

```

-----

```

PSU

Display PSU information.

Filter

```

<filter type="subtree">
  <components xmlns="http://openconfig.net/yang/platform">
    <component>

```

```

    <state>
      <type>oc-platform-types:POWER_SUPPLY</type>
    </state>
  </power-supply/>
</component>
</components>
</filter>

```

OpenConfig get result

```

<components xmlns="http://openconfig.net/yang/platform">
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>PSU-1</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>PSU-1</id>
      <name>PSU-1</name>
      <parent>CHASSIS</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>true</removable>
      <part-no>YM-2651Y</part-no>
      <serial-no>TA100V582031000097</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>3Y POWER</mfg-name>
      <location>1</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:POWER_SUPPLY</type>
    </state>
    <power-supply>
      <state>
        <output-current xmlns="http://openconfig.net/yang/platform/
psu">8.88</output-current>
        <output-voltage xmlns="http://openconfig.net/yang/platform/
psu">11.81</output-voltage>
        <output-power xmlns="http://openconfig.net/yang/platform/
psu">104.00</output-power>
        <enabled xmlns="http://openconfig.net/yang/platform/psu">true</
enabled>
      </state>
    </power-supply>
  </component>
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>PSU-2</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>PSU-2</id>
      <name>PSU-2</name>
      <parent>CHASSIS</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>

```



```

    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>2</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:POWER_SUPPLY</type>
  </state>
  <power-supply>
    <state>
      <enabled xmlns="http://openconfig.net/yang/platform/psu">false</
enabled>
    </state>
  </power-supply>
</component>
</components>

```

OcNOS get result

```

<components xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform">
  <component>
    <name>PSU-1</name>
    <state>
      <name>PSU-1</name>
      <parent>CHASSIS</parent>
      <product-name>NA</product-name>
      <oper-status>NA</oper-status>
      <removable>true</removable>
      <part-no>YM-2651Y</part-no>
      <serial-no>TA100V582031000097</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>3Y POWER</mfg-name>
      <location>1</location>
      <type>power-supply</type>
    </state>
    <power-supply>
      <state>
        <supported-parameters>volt-in volt-out curr-in curr-out power-in
power-out temp-1 temp-2 fan-1 fan-2</supported-parameters>
        <output-power-status>good</output-power-status>
        <input-power-status>good</input-power-status>
        <fan1-rpm>26688</fan1-rpm>
        <temperature-sensor2>31.00</temperature-sensor2>
        <temperature-sensor1>27.00</temperature-sensor1>
        <output-current>8.88</output-current>
        <output-voltage>11.81</output-voltage>
        <power-consumption>105.00</power-consumption>
        <hot-swap-state>unknown</hot-swap-state>
        <operational-status>running</operational-status>
      </state>
    </power-supply>
  </component>
</components>

```

```

    </state>
  </power-supply>
</component>
<component>
  <name>PSU-2</name>
  <state>
    <name>PSU-2</name>
    <parent>CHASSIS</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>2</location>
    <type>power-supply</type>
  </state>
  <power-supply>
    <state>
      <supported-parameters>volt-in volt-out curr-in curr-out power-in
power-out temp-1 temp-2 fan-1 fan-2</supported-parameters>
      <output-power-status>fail</output-power-status>
      <input-power-status>fail</input-power-status>
      <temperature-sensor2>0.00</temperature-sensor2>
      <temperature-sensor1>0.00</temperature-sensor1>
      <hot-swap-state>unknown</hot-swap-state>
      <operational-status>faulty</operational-status>
    </state>
  </power-supply>
</component>

<components xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform">
  <component>
    <name>POWER-RAIL</name>
    <state>
      <name>POWER-RAIL</name>
      <parent>CHASSIS</parent>
      <product-name>NA</product-name>
      <oper-status>NA</oper-status>
      <removable>false</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>0</location>
      <type>power-rail</type>
    </state>
    <power-rail>
      <state>

```

```

    <power-supply-2-ac-alert-power-rail>fail</power-supply-2-ac-alert-
power-rail>
    <power-supply-1-ac-alert-power-rail>good</power-supply-1-ac-alert-
power-rail>
    <power-supply-2-v12-power-rail>fail</power-supply-2-v12-power-rail>
    <power-supply-1-v12-power-rail>good</power-supply-1-v12-power-rail>
    </state>
  </power-rail>
</component>
</components>

```

Show command

```
OcNOS#show hardware-information power
```

System Power Information

```

CMM_PS1_12V_PG           : GOOD
CMM_PS2_12V_PG           : FAIL
CMM_PS1_AC_ALERT         : GOOD
CMM_PS2_AC_ALERT         : FAIL

```

Codes: * Not Supported by device NA Not Applicable

PSU	VOLT-IN	VOLT-OUT	CURR-IN	CURR-OUT	PWR-IN	PWR-OUT
TEMP-1	TEMP-2	FAN-1	FAN-2	PWR_OUT_MAX		
(Celsius)	(Volt)	(Volt)	(Ampere)	(Ampere)	(Watt)	(Watt)
	(Celsius)	(Rpm)	(Rpm)			
1	NA	11.82	NA	8.80	NA	104.00
27.00	31.00	26688	NA*	NA*		

Temperature

Display temperature sensor information of the boards.

Filter

```

<filter type="subtree">
  <components xmlns="http://openconfig.net/yang/platform">
    <component>
      <state>
        <temperature/>
      </state>
    </component>
  </components>
</filter>

```

OpenConfig get result

```

<components xmlns="http://openconfig.net/yang/platform">
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">

```

```

    <name>TEMPERATURE-SENSOR1</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>TEMPERATURE-SENSOR1</id>
      <name>TEMPERATURE-SENSOR1</name>
      <temperature xmlns="http://openconfig.net/yang/platform">
        <alarm-severity>oc-alarm-types:UNKNOWN</alarm-severity>
        <alarm-threshold>0</alarm-threshold>
        <alarm-status>false</alarm-status>
        <interval xmlns:oc-types="http://openconfig.net/yang/openconfig-
types">60000000000</interval>
        <avg xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">29.98</avg>
        <max xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">30.00</max>
        <min xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">29.00</min>
        <instant xmlns:oc-platform-types="http://openconfig.net/yang/
platform-types">30.00</instant>
      </temperature>
    </state>
  </component>
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>TEMPERATURE-SENSOR2</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>TEMPERATURE-SENSOR2</id>
      <name>TEMPERATURE-SENSOR2</name>
      <temperature xmlns="http://openconfig.net/yang/platform">
        <alarm-severity>oc-alarm-types:UNKNOWN</alarm-severity>
        <alarm-threshold>0</alarm-threshold>
        <alarm-status>false</alarm-status>
        <interval xmlns:oc-types="http://openconfig.net/yang/openconfig-
types">60000000000</interval>
        <avg xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">28.98</avg>
        <max xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">29.00</max>
        <min xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">28.00</min>
        <instant xmlns:oc-platform-types="http://openconfig.net/yang/
platform-types">29.00</instant>
      </temperature>
    </state>
  </component>
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>TEMPERATURE-SENSOR3</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>TEMPERATURE-SENSOR3</id>
      <name>TEMPERATURE-SENSOR3</name>
      <temperature xmlns="http://openconfig.net/yang/platform">
        <alarm-severity>oc-alarm-types:UNKNOWN</alarm-severity>
        <alarm-threshold>0</alarm-threshold>
        <alarm-status>false</alarm-status>
        <interval xmlns:oc-types="http://openconfig.net/yang/openconfig-
types">60000000000</interval>

```

```

    <avg xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">28.07</avg>
    <max xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">29.00</max>
    <min xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">28.00</min>
    <instant xmlns:oc-platform-types="http://openconfig.net/yang/
platform-types">28.00</instant>
    </temperature>
  </state>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>TEMPERATURE-BCM Chip</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>TEMPERATURE-BCM Chip</id>
    <name>TEMPERATURE-BCM Chip</name>
    <temperature xmlns="http://openconfig.net/yang/platform">
      <alarm-severity>oc-alarm-types:UNKNOWN</alarm-severity>
      <alarm-threshold>0</alarm-threshold>
      <alarm-status>false</alarm-status>
      <interval xmlns:oc-types="http://openconfig.net/yang/openconfig-
types">6000000000</interval>
      <avg xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">48.49</avg>
      <max xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">49.60</max>
      <min xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">45.70</min>
      <instant xmlns:oc-platform-types="http://openconfig.net/yang/
platform-types">48.60</instant>
    </temperature>
  </state>
</component>
</components>

```

OcNOS get result

```

<components xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform">
  <component>
    <name>TEMPERATURE-SENSOR1</name>
    <state>
      <name>TEMPERATURE-SENSOR1</name>
      <temperature>
        <maximum-critical-temperature>60.00</maximum-critical-temperature>
        <minimum-critical-temperature>10.00</minimum-critical-temperature>
        <maximum-alert-temperature>65.00</maximum-alert-temperature>
        <minimum-alert-temperature>5.00</minimum-alert-temperature>
        <maximum-emergency-temperature>70.00</maximum-emergency-temperature>
        <minimum-emergency-temperature>0.00</minimum-emergency-temperature>
        <alarm-severity>indeterminate</alarm-severity>
        <alarm-threshold>0.00</alarm-threshold>
        <alarm-status>false</alarm-status>
        <sensor-index>0</sensor-index>
        <sensor-name>TEMPERATURE-SENSOR1</sensor-name>
        <interval>60</interval>
        <avg>29.98</avg>
      </temperature>
    </state>
  </component>
</components>

```

```
<max>30.00</max>
<min>29.00</min>
<instant>30.00</instant>
</temperature>
</state>
</component>
<component>
  <name>TEMPERATURE-SENSOR2</name>
  <state>
    <name>TEMPERATURE-SENSOR2</name>
    <temperature>
      <maximum-critical-temperature>60.00</maximum-critical-temperature>
      <minimum-critical-temperature>10.00</minimum-critical-temperature>
      <maximum-alert-temperature>65.00</maximum-alert-temperature>
      <minimum-alert-temperature>5.00</minimum-alert-temperature>
      <maximum-emergency-temperature>70.00</maximum-emergency-temperature>
      <minimum-emergency-temperature>0.00</minimum-emergency-temperature>
      <alarm-severity>indeterminate</alarm-severity>
      <alarm-threshold>0.00</alarm-threshold>
      <alarm-status>false</alarm-status>
      <sensor-index>1</sensor-index>
      <sensor-name>TEMPERATURE-SENSOR2</sensor-name>
      <interval>60</interval>
      <avg>28.98</avg>
      <max>29.00</max>
      <min>28.00</min>
      <instant>29.00</instant>
    </temperature>
  </state>
</component>
<component>
  <name>TEMPERATURE-SENSOR3</name>
  <state>
    <name>TEMPERATURE-SENSOR3</name>
    <temperature>
      <maximum-critical-temperature>60.00</maximum-critical-temperature>
      <minimum-critical-temperature>10.00</minimum-critical-temperature>
      <maximum-alert-temperature>65.00</maximum-alert-temperature>
      <minimum-alert-temperature>5.00</minimum-alert-temperature>
      <maximum-emergency-temperature>70.00</maximum-emergency-temperature>
      <minimum-emergency-temperature>0.00</minimum-emergency-temperature>
      <alarm-severity>indeterminate</alarm-severity>
      <alarm-threshold>0.00</alarm-threshold>
      <alarm-status>false</alarm-status>
      <sensor-index>2</sensor-index>
      <sensor-name>TEMPERATURE-SENSOR3</sensor-name>
      <interval>60</interval>
      <avg>28.07</avg>
      <max>29.00</max>
      <min>28.00</min>
      <instant>28.00</instant>
    </temperature>
  </state>
</component>
<component>
  <name>TEMPERATURE-BCM Chip</name>
  <state>
```

```

<name>TEMPERATURE-BCM Chip</name>
<temperature>
  <maximum-critical-temperature>75.00</maximum-critical-temperature>
  <minimum-critical-temperature>14.00</minimum-critical-temperature>
  <maximum-alert-temperature>80.00</maximum-alert-temperature>
  <minimum-alert-temperature>10.00</minimum-alert-temperature>
  <maximum-emergency-temperature>95.00</maximum-emergency-temperature>
  <minimum-emergency-temperature>0.00</minimum-emergency-temperature>
  <alarm-severity>indeterminate</alarm-severity>
  <alarm-threshold>0.00</alarm-threshold>
  <alarm-status>false</alarm-status>
  <sensor-index>3</sensor-index>
  <sensor-name>TEMPERATURE-BCM Chip</sensor-name>
  <interval>60</interval>
  <avg>48.49</avg>
  <max>49.60</max>
  <min>45.70</min>
  <instant>48.60</instant>
</temperature>
</state>
</component>
</components>

```

Show command

OcNOS#show hardware-information temperature

Board Temp Sensors Temperature in Degree C

```

-----
SENSOR TYPE          CURR  EMER  ALRT CRIT CRIT ALRT EMER  MIN-
TEMP  MAX-TEMP  AVG-TEMP          TEMP  MIN   MIN  MIN  MAX  MAX  MAX
(Monitored since 00 hour,59 min)

-----
SENSOR1          30.00  0    5   10   60   65   70    29.00
30.00    29.98
SENSOR2          29.00  0    5   10   60   65   70    28.00
29.00    28.98
SENSOR3          28.00  0    5   10   60   65   70    28.00
29.00    28.07
BCM Chip          48.10  0   10   14   75   80   95    45.70
49.60    48.48

```

BCM Chip Internal Temperature

```

-----
TEMP MONITOR      CURRENT TEMP      PEAK TEMP
                  (Degree C)      (Degree C)
-----
1                  48.10          49.10
2                  48.10          50.10
3                  42.70          45.20
4                  47.70          50.60

```

Transceiver

Display transceiver presence status and supported list of transceivers.

Filter

```
<filter type="subtree">
  <components xmlns="http://openconfig.net/yang/platform">
    <component>
      <state>
        <type>oc-platform-types:TRANSCEIVER</type>
      </state>
      <transceiver/>
    </component>
  </components>
</filter>
```

OpenConfig get result

```
<components xmlns="http://openconfig.net/yang/platform">
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>SFP-1</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>SFP-1</id>
      <name>SFP-1</name>
      <parent>PORT-xel</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>true</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>1</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
    </state>
    <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
      <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
        <date-code>150908</date-code>
        <serial-no>CN0V250M58V91KC </serial-no>
        <vendor-rev>C </vendor-rev>
        <vendor-part>616740001 </vendor-part>
        <vendor>Amphenol </vendor>
        <connector-type>ipi-oc-transport-types-
deviations:COPPER_PIGTAIL_CONNECTOR</connector-type>
        <form-factor>oc-opt-types:SFP_PLUS</form-factor>
```



```

        <present>PRESENT</present>
      </state>
    </transceiver>
  </component>
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>SFP-2</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>SFP-2</id>
      <name>SFP-2</name>
      <parent>PORT-xe2</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>true</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>2</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
    </state>
    <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
      <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
        <date-code>151119</date-code>
        <serial-no>CN0V250M5BB2NMD </serial-no>
        <vendor-rev>C </vendor-rev>
        <vendor-part>616740001 </vendor-part>
        <vendor>Amphenol </vendor>
        <connector-type>ipi-oc-transport-types-
deviations:COPPER_PIGTAIL_CONNECTOR</connector-type>
        <form-factor>oc-opt-types:SFP_PLUS</form-factor>
        <present>PRESENT</present>
      </state>
    </transceiver>
  </component>
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>SFP-3</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>SFP-3</id>
      <name>SFP-3</name>
      <parent>PORT-xe3</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>true</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>

```

```

    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>3</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <date-code>151119</date-code>
      <serial-no>CN0V250M5BB2NEE </serial-no>
      <vendor-rev>C </vendor-rev>
      <vendor-part>616740001 </vendor-part>
      <vendor>Amphenol </vendor>
      <connector-type>ipi-oc-transport-types-
deviations:COPPER_PIGTAIL_CONNECTOR</connector-type>
      <form-factor>oc-opt-types:SFP_PLUS</form-factor>
      <present>PRESENT</present>
    </state>
  </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>SFP-4</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>SFP-4</id>
    <name>SFP-4</name>
    <parent>PORT-xe4</parent>
    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>4</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <date-code>150907</date-code>
      <serial-no>CN0V250M58V91K9 </serial-no>
      <vendor-rev>C </vendor-rev>
      <vendor-part>616740001 </vendor-part>
      <vendor>Amphenol </vendor>
      <connector-type>ipi-oc-transport-types-
deviations:COPPER_PIGTAIL_CONNECTOR</connector-type>
      <form-factor>oc-opt-types:SFP_PLUS</form-factor>
      <present>PRESENT</present>

```

```

        </state>
      </transceiver>
    </component>
    <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
      <name>SFP-5</name>
      <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
        <id>SFP-5</id>
        <name>SFP-5</name>
        <parent>PORT-xe5</parent>
        <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
        <removable>true</removable>
        <part-no>NA</part-no>
        <serial-no>NA</serial-no>
        <software-version>NA</software-version>
        <firmware-version>NA</firmware-version>
        <hardware-version>NA</hardware-version>
        <description>NA</description>
        <mfg-name>NA</mfg-name>
        <location>5</location>
        <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
      </state>
      <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
        <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
          <present>NOT_PRESENT</present>
        </state>
      </transceiver>
    </component>
    <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
      <name>SFP-6</name>
      <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
        <id>SFP-6</id>
        <name>SFP-6</name>
        <parent>PORT-xe6</parent>
        <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
        <removable>true</removable>
        <part-no>NA</part-no>
        <serial-no>NA</serial-no>
        <software-version>NA</software-version>
        <firmware-version>NA</firmware-version>
        <hardware-version>NA</hardware-version>
        <description>NA</description>
        <mfg-name>NA</mfg-name>
        <location>6</location>
        <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
      </state>
      <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">

```

```

    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <date-code>150908</date-code>
      <serial-no>CN0V250M58V920E </serial-no>
      <vendor-rev>C </vendor-rev>
      <vendor-part>616740001 </vendor-part>
      <vendor>Amphenol </vendor>
      <connector-type>ipi-oc-transport-types-
deviations:COPPER_PIGTAIL_CONNECTOR</connector-type>
      <form-factor>oc-opt-types:SFP_PLUS</form-factor>
      <present>PRESENT</present>
    </state>
  </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>SFP-7</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>SFP-7</id>
    <name>SFP-7</name>
    <parent>PORT-xe7</parent>
    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>7</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <present>NOT_PRESENT</present>
    </state>
  </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>SFP-8</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>SFP-8</id>
    <name>SFP-8</name>
    <parent>PORT-xe8</parent>
    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>

```

```

    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>8</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <present>NOT_PRESENT</present>
    </state>
  </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>SFP-9</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>SFP-9</id>
    <name>SFP-9</name>
    <parent>PORT-xe9</parent>
    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>9</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <present>NOT_PRESENT</present>
    </state>
  </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>SFP-10</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>SFP-10</id>
    <name>SFP-10</name>
    <parent>PORT-xe10</parent>
    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>

```

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    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>10</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <date-code>161221</date-code>
      <serial-no>J11836008016    </serial-no>
      <vendor-rev>01    </vendor-rev>
      <vendor-part>ET5402-DAC-3M    </vendor-part>
      <vendor>Edgecore    </vendor>
      <connector-type>ipi-oc-transport-types-
deviations:COPPER_PIGTAIL_CONNECTOR</connector-type>
      <form-factor>oc-opt-types:SFP_PLUS</form-factor>
      <present>PRESENT</present>
    </state>
  </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>SFP-11</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>SFP-11</id>
    <name>SFP-11</name>
    <parent>PORT-xell</parent>
    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>11</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <date-code>100101</date-code>
      <serial-no>NCI80T1328    </serial-no>
      <vendor-rev>1.0    </vendor-rev>
      <vendor-part>SFP-T    </vendor-part>

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        <vendor>OEM                </vendor>
        <ethernet-pmd>ipi-oc-transport-types-deviations:ETH_1000BASE_T</
ethernet-pmd>
        <connector-type>oc-opt-types:LC_CONNECTOR</connector-type>
        <form-factor>oc-opt-types:SFP_PLUS</form-factor>
        <present>PRESENT</present>
    </state>
</transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>SFP-12</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
        <id>SFP-12</id>
        <name>SFP-12</name>
        <parent>PORT-xel2</parent>
        <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
        <removable>true</removable>
        <part-no>NA</part-no>
        <serial-no>NA</serial-no>
        <software-version>NA</software-version>
        <firmware-version>NA</firmware-version>
        <hardware-version>NA</hardware-version>
        <description>NA</description>
        <mfg-name>NA</mfg-name>
        <location>12</location>
        <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
    </state>
    <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
        <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
            <present>NOT_PRESENT</present>
        </state>
    </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>SFP-13</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
        <id>SFP-13</id>
        <name>SFP-13</name>
        <parent>PORT-xel3</parent>
        <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
        <removable>true</removable>
        <part-no>NA</part-no>
        <serial-no>NA</serial-no>
        <software-version>NA</software-version>
        <firmware-version>NA</firmware-version>
        <hardware-version>NA</hardware-version>
        <description>NA</description>
        <mfg-name>NA</mfg-name>

```

```

        <location>13</location>
        <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
        </state>
        <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
        <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
        <present>NOT_PRESENT</present>
        </state>
        </transceiver>
    </component>
    <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
        <name>SFP-14</name>
        <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
            <id>SFP-14</id>
            <name>SFP-14</name>
            <parent>PORT-xel4</parent>
            <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
            <removable>true</removable>
            <part-no>NA</part-no>
            <serial-no>NA</serial-no>
            <software-version>NA</software-version>
            <firmware-version>NA</firmware-version>
            <hardware-version>NA</hardware-version>
            <description>NA</description>
            <mfg-name>NA</mfg-name>
            <location>14</location>
            <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
            </state>
            <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
            <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
            <present>NOT_PRESENT</present>
            </state>
            </transceiver>
        </component>
        <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
            <name>SFP-15</name>
            <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
                <id>SFP-15</id>
                <name>SFP-15</name>
                <parent>PORT-xel5</parent>
                <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
                <removable>true</removable>
                <part-no>NA</part-no>
                <serial-no>NA</serial-no>
                <software-version>NA</software-version>
                <firmware-version>NA</firmware-version>

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    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>15</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
    </state>
    <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
    <present>NOT_PRESENT</present>
    </state>
    </transceiver>
  </component>
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>SFP-16</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>SFP-16</id>
      <name>SFP-16</name>
      <parent>PORT-xel6</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>true</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>16</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
      </state>
      <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
      <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <present>NOT_PRESENT</present>
      </state>
      </transceiver>
    </component>
    <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
      <name>SFP-17</name>
      <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
        <id>SFP-17</id>
        <name>SFP-17</name>
        <parent>PORT-xel7</parent>
        <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
        <removable>true</removable>
        <part-no>NA</part-no>

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    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>17</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <present>NOT_PRESENT</present>
    </state>
  </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>SFP-18</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>SFP-18</id>
    <name>SFP-18</name>
    <parent>PORT-xe18</parent>
    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>18</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <present>NOT_PRESENT</present>
    </state>
  </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>SFP-19</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>SFP-19</id>
    <name>SFP-19</name>
    <parent>PORT-xe19</parent>

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    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>19</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <present>NOT_PRESENT</present>
    </state>
  </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>SFP-20</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>SFP-20</id>
    <name>SFP-20</name>
    <parent>PORT-xe20</parent>
    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>20</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <present>NOT_PRESENT</present>
    </state>
  </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>SFP-21</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">

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    <id>SFP-21</id>
    <name>SFP-21</name>
    <parent>PORT-xe21</parent>
    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>21</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <present>NOT_PRESENT</present>
    </state>
  </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>SFP-22</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>SFP-22</id>
    <name>SFP-22</name>
    <parent>PORT-xe22</parent>
    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>22</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <present>NOT_PRESENT</present>
    </state>
  </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">

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    <name>SFP-23</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>SFP-23</id>
      <name>SFP-23</name>
      <parent>PORT-xe23</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>true</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>23</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
    </state>
    <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
      <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
        <present>NOT_PRESENT</present>
      </state>
    </transceiver>
  </component>
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>SFP-24</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>SFP-24</id>
      <name>SFP-24</name>
      <parent>PORT-xe24</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>true</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>24</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
    </state>
    <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
      <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
        <present>NOT_PRESENT</present>
      </state>
    </transceiver>
  </component>

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    </component>
    <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
      <name>SFP-25</name>
      <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
        <id>SFP-25</id>
        <name>SFP-25</name>
        <parent>PORT-xe25</parent>
        <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
        <removable>true</removable>
        <part-no>NA</part-no>
        <serial-no>NA</serial-no>
        <software-version>NA</software-version>
        <firmware-version>NA</firmware-version>
        <hardware-version>NA</hardware-version>
        <description>NA</description>
        <mfg-name>NA</mfg-name>
        <location>25</location>
        <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
      </state>
      <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
        <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
          <present>NOT_PRESENT</present>
        </state>
      </transceiver>
    </component>
    <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
      <name>SFP-26</name>
      <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
        <id>SFP-26</id>
        <name>SFP-26</name>
        <parent>PORT-xe26</parent>
        <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
        <removable>true</removable>
        <part-no>NA</part-no>
        <serial-no>NA</serial-no>
        <software-version>NA</software-version>
        <firmware-version>NA</firmware-version>
        <hardware-version>NA</hardware-version>
        <description>NA</description>
        <mfg-name>NA</mfg-name>
        <location>26</location>
        <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
      </state>
      <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
        <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">

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        <present>NOT_PRESENT</present>
      </state>
    </transceiver>
  </component>
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>SFP-27</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>SFP-27</id>
      <name>SFP-27</name>
      <parent>PORT-xe27</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>true</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>27</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
    </state>
    <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
      <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
        <present>NOT_PRESENT</present>
      </state>
    </transceiver>
  </component>
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>SFP-28</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>SFP-28</id>
      <name>SFP-28</name>
      <parent>PORT-xe28</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>true</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>28</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
    </state>
  </component>

```

```

    <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
      <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
        <present>NOT_PRESENT</present>
      </state>
    </transceiver>
  </component>
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>SFP-29</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>SFP-29</id>
      <name>SFP-29</name>
      <parent>PORT-xe29</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>true</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>29</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
    </state>
    <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
      <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
        <present>NOT_PRESENT</present>
      </state>
    </transceiver>
  </component>
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>SFP-30</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>SFP-30</id>
      <name>SFP-30</name>
      <parent>PORT-xe30</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>true</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>30</location>

```



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    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
    </state>
    <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
      <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
        <present>NOT_PRESENT</present>
      </state>
    </transceiver>
  </component>
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>SFP-31</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>SFP-31</id>
      <name>SFP-31</name>
      <parent>PORT-xe31</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>true</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>31</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
    </state>
    <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
      <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
        <present>NOT_PRESENT</present>
      </state>
    </transceiver>
  </component>
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>SFP-32</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>SFP-32</id>
      <name>SFP-32</name>
      <parent>PORT-xe32</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>true</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>

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```

        <description>NA</description>
        <mfg-name>NA</mfg-name>
        <location>32</location>
        <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
    </state>
    <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
        <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
            <present>NOT_PRESENT</present>
        </state>
    </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>SFP-33</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
        <id>SFP-33</id>
        <name>SFP-33</name>
        <parent>PORT-xe33</parent>
        <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
        <removable>true</removable>
        <part-no>NA</part-no>
        <serial-no>NA</serial-no>
        <software-version>NA</software-version>
        <firmware-version>NA</firmware-version>
        <hardware-version>NA</hardware-version>
        <description>NA</description>
        <mfg-name>NA</mfg-name>
        <location>33</location>
        <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
    </state>
    <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
        <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
            <present>NOT_PRESENT</present>
        </state>
    </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>SFP-34</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
        <id>SFP-34</id>
        <name>SFP-34</name>
        <parent>PORT-xe34</parent>
        <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
        <removable>true</removable>
        <part-no>NA</part-no>
        <serial-no>NA</serial-no>

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    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>34</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <present>NOT_PRESENT</present>
    </state>
  </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>SFP-35</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>SFP-35</id>
    <name>SFP-35</name>
    <parent>PORT-xe35</parent>
    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>35</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <present>NOT_PRESENT</present>
    </state>
  </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>SFP-36</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>SFP-36</id>
    <name>SFP-36</name>
    <parent>PORT-xe36</parent>
    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>

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    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>36</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <present>NOT_PRESENT</present>
    </state>
  </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>SFP-37</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>SFP-37</id>
    <name>SFP-37</name>
    <parent>PORT-xe37</parent>
    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>37</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <present>NOT_PRESENT</present>
    </state>
  </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>SFP-38</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>SFP-38</id>
    <name>SFP-38</name>
    <parent>PORT-xe38</parent>

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    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>38</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <present>NOT_PRESENT</present>
    </state>
  </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>SFP-39</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>SFP-39</id>
    <name>SFP-39</name>
    <parent>PORT-xe39</parent>
    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>39</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <present>NOT_PRESENT</present>
    </state>
  </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>SFP-40</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">

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```

    <id>SFP-40</id>
    <name>SFP-40</name>
    <parent>PORT-xe40</parent>
    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>40</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <present>NOT_PRESENT</present>
    </state>
  </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>SFP-41</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>SFP-41</id>
    <name>SFP-41</name>
    <parent>PORT-xe41</parent>
    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>41</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <present>NOT_PRESENT</present>
    </state>
  </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">

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    <name>SFP-42</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>SFP-42</id>
      <name>SFP-42</name>
      <parent>PORT-xe42</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>true</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>42</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
    </state>
    <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
      <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
        <present>NOT_PRESENT</present>
      </state>
    </transceiver>
  </component>
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>SFP-43</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>SFP-43</id>
      <name>SFP-43</name>
      <parent>PORT-xe43</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>true</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>43</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
    </state>
    <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
      <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
        <present>NOT_PRESENT</present>
      </state>
    </transceiver>
  </component>

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    </component>
    <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
      <name>SFP-44</name>
      <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
        <id>SFP-44</id>
        <name>SFP-44</name>
        <parent>PORT-xe44</parent>
        <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
        <removable>true</removable>
        <part-no>NA</part-no>
        <serial-no>NA</serial-no>
        <software-version>NA</software-version>
        <firmware-version>NA</firmware-version>
        <hardware-version>NA</hardware-version>
        <description>NA</description>
        <mfg-name>NA</mfg-name>
        <location>44</location>
        <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
      </state>
      <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
        <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
          <present>NOT_PRESENT</present>
        </state>
      </transceiver>
    </component>
    <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
      <name>SFP-45</name>
      <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
        <id>SFP-45</id>
        <name>SFP-45</name>
        <parent>PORT-xe45</parent>
        <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
        <removable>true</removable>
        <part-no>NA</part-no>
        <serial-no>NA</serial-no>
        <software-version>NA</software-version>
        <firmware-version>NA</firmware-version>
        <hardware-version>NA</hardware-version>
        <description>NA</description>
        <mfg-name>NA</mfg-name>
        <location>45</location>
        <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
      </state>
      <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
        <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">

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        <present>NOT_PRESENT</present>
      </state>
    </transceiver>
  </component>
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>SFP-46</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>SFP-46</id>
      <name>SFP-46</name>
      <parent>PORT-xe46</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>true</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>46</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
    </state>
    <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
      <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
        <present>NOT_PRESENT</present>
      </state>
    </transceiver>
  </component>
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>SFP-47</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>SFP-47</id>
      <name>SFP-47</name>
      <parent>PORT-xe47</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>true</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>47</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
    </state>
  </component>

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    <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
      <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
        <present>NOT_PRESENT</present>
      </state>
    </transceiver>
  </component>
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>SFP-48</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>SFP-48</id>
      <name>SFP-48</name>
      <parent>PORT-xe48</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>true</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>48</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
    </state>
    <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
      <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
        <present>NOT_PRESENT</present>
      </state>
    </transceiver>
  </component>
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>QSFP-49</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>QSFP-49</id>
      <name>QSFP-49</name>
      <parent>PORT-ce49</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>true</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>49</location>

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    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCIEVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <date-code>150727</date-code>
      <serial-no>CN05NP8R57Q7T6J </serial-no>
      <vendor-rev>C </vendor-rev>
      <vendor-part>616750001 </vendor-part>
      <vendor>Amphenol </vendor>
      <ethernet-pmd>oc-opt-types:ETH_40GBASE_CR4</ethernet-pmd>
      <connector-type>ipi-oc-transport-types-
deviations:NO_SEPARABLE_CONNECTOR</connector-type>
      <form-factor>oc-opt-types:QSFP_PLUS</form-factor>
      <present>PRESENT</present>
    </state>
    <physical-channels xmlns="http://openconfig.net/yang/platform/
transceiver">
      <channel>
        <index>1</index>
        <state>
          <index>1</index>
          <laser-bias-current xmlns="http://openconfig.net/yang/platform/
transceiver">
            <instant xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">0.000</instant>
          </laser-bias-current>
          <output-power xmlns="http://openconfig.net/yang/platform/
transceiver">
            <instant xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">0.000</instant>
          </output-power>
          <input-power xmlns="http://openconfig.net/yang/platform/
transceiver">
            <instant xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">0.000</instant>
          </input-power>
        </state>
      </channel>
      <channel>
        <index>2</index>
        <state>
          <index>2</index>
          <laser-bias-current xmlns="http://openconfig.net/yang/platform/
transceiver">
            <instant xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">0.000</instant>
          </laser-bias-current>
          <output-power xmlns="http://openconfig.net/yang/platform/
transceiver">
            <instant xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">0.000</instant>
          </output-power>
          <input-power xmlns="http://openconfig.net/yang/platform/
transceiver">
            <instant xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">0.000</instant>
          </input-power>

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        </state>
      </channel>
    <channel>
      <index>3</index>
      <state>
        <index>3</index>
        <laser-bias-current xmlns="http://openconfig.net/yang/platform/
transceiver">
          <instant xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">0.000</instant>
          </laser-bias-current>
          <output-power xmlns="http://openconfig.net/yang/platform/
transceiver">
            <instant xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">0.000</instant>
            </output-power>
            <input-power xmlns="http://openconfig.net/yang/platform/
transceiver">
              <instant xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">0.000</instant>
              </input-power>
            </state>
          </channel>
        <channel>
          <index>4</index>
          <state>
            <index>4</index>
            <laser-bias-current xmlns="http://openconfig.net/yang/platform/
transceiver">
              <instant xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">0.000</instant>
              </laser-bias-current>
              <output-power xmlns="http://openconfig.net/yang/platform/
transceiver">
                <instant xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">0.000</instant>
                </output-power>
                <input-power xmlns="http://openconfig.net/yang/platform/
transceiver">
                  <instant xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">0.000</instant>
                  </input-power>
                </state>
              </channel>
            </physical-channels>
          </transceiver>
        </component>
      <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
        <name>QSFP-50</name>
        <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
          <id>QSFP-50</id>
          <name>QSFP-50</name>
          <parent>PORT-ce50</parent>
          <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
          <removable>true</removable>
          <part-no>NA</part-no>

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    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>50</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <present>NOT_PRESENT</present>
    </state>
    <physical-channels xmlns="http://openconfig.net/yang/platform/
transceiver">
      <channel>
        <index>1</index>
      </channel>
      <channel>
        <index>2</index>
      </channel>
      <channel>
        <index>3</index>
      </channel>
      <channel>
        <index>4</index>
      </channel>
    </physical-channels>
  </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>QSFP-51</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>QSFP-51</id>
    <name>QSFP-51</name>
    <parent>PORT-ce51</parent>
    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>51</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">

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    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <date-code>170628</date-code>
      <serial-no>J11836008038    </serial-no>
      <vendor-rev>01</vendor-rev>
      <vendor-part>ET7402-100DAC-1M</vendor-part>
      <vendor>Edgecore           </vendor>
      <ethernet-pmd>oc-opt-types:ETH_100GBASE_CR4</ethernet-pmd>
      <connector-type>ipi-oc-transport-types-
deviations:NO_SEPARABLE_CONNECTOR</connector-type>
      <form-factor>oc-opt-types:QSFP28</form-factor>
      <present>PRESENT</present>
    </state>
    <physical-channels xmlns="http://openconfig.net/yang/platform/
transceiver">
      <channel>
        <index>1</index>
        <state>
          <index>1</index>
          <laser-bias-current xmlns="http://openconfig.net/yang/platform/
transceiver">
            <instant xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">0.000</instant>
          </laser-bias-current>
          <output-power xmlns="http://openconfig.net/yang/platform/
transceiver">
            <instant xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">0.000</instant>
          </output-power>
          <input-power xmlns="http://openconfig.net/yang/platform/
transceiver">
            <instant xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">0.000</instant>
          </input-power>
        </state>
      </channel>
      <channel>
        <index>2</index>
        <state>
          <index>2</index>
          <laser-bias-current xmlns="http://openconfig.net/yang/platform/
transceiver">
            <instant xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">0.000</instant>
          </laser-bias-current>
          <output-power xmlns="http://openconfig.net/yang/platform/
transceiver">
            <instant xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">0.000</instant>
          </output-power>
          <input-power xmlns="http://openconfig.net/yang/platform/
transceiver">
            <instant xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">0.000</instant>
          </input-power>
        </state>
      </channel>
      <channel>
        <index>3</index>

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        <state>
          <index>3</index>
          <laser-bias-current xmlns="http://openconfig.net/yang/platform/
transceiver">
            <instant xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">0.000</instant>
          </laser-bias-current>
          <output-power xmlns="http://openconfig.net/yang/platform/
transceiver">
            <instant xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">0.000</instant>
          </output-power>
          <input-power xmlns="http://openconfig.net/yang/platform/
transceiver">
            <instant xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">0.000</instant>
          </input-power>
        </state>
      </channel>
      <channel>
        <index>4</index>
        <state>
          <index>4</index>
          <laser-bias-current xmlns="http://openconfig.net/yang/platform/
transceiver">
            <instant xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">0.000</instant>
          </laser-bias-current>
          <output-power xmlns="http://openconfig.net/yang/platform/
transceiver">
            <instant xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">0.000</instant>
          </output-power>
          <input-power xmlns="http://openconfig.net/yang/platform/
transceiver">
            <instant xmlns:oc-types="http://openconfig.net/yang/
openconfig-types">0.000</instant>
          </input-power>
        </state>
      </channel>
    </physical-channels>
  </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>QSFP-52</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>QSFP-52</id>
    <name>QSFP-52</name>
    <parent>PORT-ce52</parent>
    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
  </state>

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    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>52</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <present>NOT_PRESENT</present>
    </state>
    <physical-channels xmlns="http://openconfig.net/yang/platform/
transceiver">
      <channel>
        <index>1</index>
      </channel>
      <channel>
        <index>2</index>
      </channel>
      <channel>
        <index>3</index>
      </channel>
      <channel>
        <index>4</index>
      </channel>
    </physical-channels>
  </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>QSFP-53</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>QSFP-53</id>
    <name>QSFP-53</name>
    <parent>PORT-ce53</parent>
    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>53</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <present>NOT_PRESENT</present>
    </state>

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    <physical-channels xmlns="http://openconfig.net/yang/platform/
transceiver">
      <channel>
        <index>1</index>
      </channel>
      <channel>
        <index>2</index>
      </channel>
      <channel>
        <index>3</index>
      </channel>
      <channel>
        <index>4</index>
      </channel>
    </physical-channels>
  </transceiver>
</component>
<component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
  <name>QSFP-54</name>
  <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
    <id>QSFP-54</id>
    <name>QSFP-54</name>
    <parent>PORT-ce54</parent>
    <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>54</location>
    <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:TRANSCEIVER</type>
  </state>
  <transceiver xmlns="http://openconfig.net/yang/platform/transceiver">
    <state xmlns:ipi-oc-transport-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-transport-types-deviations">
      <present>NOT_PRESENT</present>
    </state>
    <physical-channels xmlns="http://openconfig.net/yang/platform/
transceiver">
      <channel>
        <index>1</index>
      </channel>
      <channel>
        <index>2</index>
      </channel>
      <channel>
        <index>3</index>
      </channel>
      <channel>

```

```

        <index>4</index>
      </channel>
    </physical-channels>
  </transceiver>
</component>
</components>

```

OcNOS get result

```

<components xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform">
  <component>
    <name>SFP-1</name>
    <state>
      <name>SFP-1</name>
      <parent>PORT-xe1</parent>
      <product-name>NA</product-name>
      <oper-status>NA</oper-status>
      <removable>true</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>1</location>
      <type>transceiver</type>
    </state>
    <transceiver>
      <state>
        <ddm-type>no</ddm-type>
        <vendor-manufacturing-date>150908 </vendor-manufacturing-date>
        <vendor-serial-number>CN0V250M58V91KC </vendor-serial-number>
        <minimum-signalling-rate>0</minimum-signalling-rate>
        <maximum-signalling-rate>0</maximum-signalling-rate>
        <nominal-signalling-rate>103</nominal-signalling-rate>
        <extended-check-code>0x4d</extended-check-code>
        <check-code>0xdf</check-code>
        <vendor-revision-number>C </vendor-revision-number>
        <vendor-part-number>616740001 </vendor-part-number>
        <vendor-ieee-id>0x78 0xa7 0x14</vendor-ieee-id>
        <vendor-name>Amphenol </vendor-name>
        <om4-link-length>1</om4-link-length>
        <om3-link-length>0</om3-link-length>
        <om2-link-length>0</om2-link-length>
        <om1-link-length>0</om1-link-length>
        <link-length-meter>0</link-length-meter>
        <link-length-kilometer>0</link-length-kilometer>
        <serial-encoding-algorithm>enc-undefined</serial-encoding-
algorithm>
        <fiber-channel-transmission-media>twinaxial-pair</fiber-channel-
transmission-media>
        <fiber-channel-transmission-technology>electricalInter-Enclosure
electricalIntra-Enclosure</fiber-channel-transmission-technology>
        <fiber-channel-link-length>short</fiber-channel-link-length>
        <connector-type>copper-pigtail</connector-type>
      </state>
    </transceiver>
  </component>
</components>

```

```

        <transceiver-identifier>sfp-or-sfpplus-or-sfp28</transceiver-
identifier>
        <channel-count>1</channel-count>
        <type>sfp</type>
        <presence>Present</presence>
        <port-no>1</port-no>
    </state>
    <sfp>
        <state>
            <sfp-plus-cable-technology>passive</sfp-plus-cable-technology>
            <sfp-infiniband-compliance-code>ibc-1xcopperpassive</sfp-
infiniband-compliance-code>
            <fiber-channel-sfp-speed>fcs-800mbps fcs-400mbps fcs-200mbps fcs-
100mbps</fiber-channel-sfp-speed>
            <sfp-options-implemented>power-level1</sfp-options-implemented>
            <sfp-identifier>gbic-or-sfp-definedby-twowire-interfaceid-only</
sfp-identifier>
            <recieve-loss-status>NA</recieve-loss-status>
            <transmit-status>on</transmit-status>
        </state>
    </sfp>
</transceiver>
</component>
<component>
    <name>SFP-2</name>
    <state>
        <name>SFP-2</name>
        <parent>PORT-xe2</parent>
        <product-name>NA</product-name>
        <oper-status>NA</oper-status>
        <removable>true</removable>
        <part-no>NA</part-no>
        <serial-no>NA</serial-no>
        <software-version>NA</software-version>
        <firmware-version>NA</firmware-version>
        <hardware-version>NA</hardware-version>
        <description>NA</description>
        <mfg-name>NA</mfg-name>
        <location>2</location>
        <type>transceiver</type>
    </state>
    <transceiver>
        <state>
            <ddm-type>no</ddm-type>
            <vendor-manufacturing-date>151119 </vendor-manufacturing-date>
            <vendor-serial-number>CN0V250M5BB2NMD </vendor-serial-number>
            <minimum-signalling-rate>0</minimum-signalling-rate>
            <maximum-signalling-rate>0</maximum-signalling-rate>
            <nominal-signalling-rate>103</nominal-signalling-rate>
            <extended-check-code>0x57</extended-check-code>
            <check-code>0xdf</check-code>
            <vendor-revision-number>C </vendor-revision-number>
            <vendor-part-number>616740001 </vendor-part-number>
            <vendor-ieee-id>0x78 0xa7 0x14</vendor-ieee-id>
            <vendor-name>Amphenol </vendor-name>
            <om4-link-length>1</om4-link-length>
            <om3-link-length>0</om3-link-length>

```

```

        <om2-link-length>0</om2-link-length>
        <om1-link-length>0</om1-link-length>
        <link-length-meter>0</link-length-meter>
        <link-length-kilometer>0</link-length-kilometer>
        <serial-encoding-algorithm>enc-unspecified</serial-encoding-
algorithm>
        <fiber-channel-transmission-media>twinaxial-pair</fiber-channel-
transmission-media>
        <fiber-channel-transmission-technology>electricalInter-Enclosure
electricalIntra-Enclosure</fiber-channel-transmission-technology>
        <fiber-channel-link-length>short</fiber-channel-link-length>
        <connector-type>copper-pigtail</connector-type>
        <transceiver-identifier>sfp-or-sfpplus-or-sfp28</transceiver-
identifier>
        <channel-count>1</channel-count>
        <type>sfp</type>
        <presence>Present</presence>
        <port-no>2</port-no>
    </state>
    <sfp>
        <state>
            <sfp-plus-cable-technology>passive</sfp-plus-cable-technology>
            <sfp-infiniband-compliance-code>ibc-1xcopperpassive</sfp-
infiniband-compliance-code>
            <fiber-channel-sfp-speed>fcs-800mbps fcs-400mbps fcs-200mbps fcs-
100mbps</fiber-channel-sfp-speed>
            <sfp-options-implemented>power-level1</sfp-options-implemented>
            <sfp-identifier>gbic-or-sfp-definedby-twowire-interfaceid-only</
sfp-identifier>
            <recieve-loss-status>NA</recieve-loss-status>
            <transmit-status>on</transmit-status>
        </state>
    </sfp>
</transceiver>
</component>
<component>
    <name>SFP-3</name>
    <state>
        <name>SFP-3</name>
        <parent>PORT-xe3</parent>
        <product-name>NA</product-name>
        <oper-status>NA</oper-status>
        <removable>true</removable>
        <part-no>NA</part-no>
        <serial-no>NA</serial-no>
        <software-version>NA</software-version>
        <firmware-version>NA</firmware-version>
        <hardware-version>NA</hardware-version>
        <description>NA</description>
        <mfg-name>NA</mfg-name>
        <location>3</location>
        <type>transceiver</type>
    </state>
    <transceiver>
        <state>
            <ddm-type>no</ddm-type>
            <vendor-manufacturing-date>151119 </vendor-manufacturing-date>
            <vendor-serial-number>CN0V250M5BB2NEE </vendor-serial-number>

```

```

    <minimum-signalling-rate>0</minimum-signalling-rate>
    <maximum-signalling-rate>0</maximum-signalling-rate>
    <nominal-signalling-rate>103</nominal-signalling-rate>
    <extended-check-code>0x50</extended-check-code>
    <check-code>0xdf</check-code>
    <vendor-revision-number>C    </vendor-revision-number>
    <vendor-part-number>616740001    </vendor-part-number>
    <vendor-ieee-id>0x78 0xa7 0x14</vendor-ieee-id>
    <vendor-name>Amphenol    </vendor-name>
    <om4-link-length>1</om4-link-length>
    <om3-link-length>0</om3-link-length>
    <om2-link-length>0</om2-link-length>
    <om1-link-length>0</om1-link-length>
    <link-length-meter>0</link-length-meter>
    <link-length-kilometer>0</link-length-kilometer>
    <serial-encoding-algorithm>enc-unspecified</serial-encoding-
algorithm>
    <fiber-channel-transmission-media>twinaxial-pair</fiber-channel-
transmission-media>
    <fiber-channel-transmission-technology>electricalInter-Enclosure
electricalIntra-Enclosure</fiber-channel-transmission-technology>
    <fiber-channel-link-length>short</fiber-channel-link-length>
    <connector-type>copper-pigtail</connector-type>
    <transceiver-identifier>sfp-or-sfpplus-or-sfp28</transceiver-
identifier>
    <channel-count>1</channel-count>
    <type>sfp</type>
    <presence>Present</presence>
    <port-no>3</port-no>
  </state>
  <sfp>
    <state>
      <sfp-plus-cable-technology>passive</sfp-plus-cable-technology>
      <sfp-infiniband-compliance-code>ibc-lxcopperpassive</sfp-
infiniband-compliance-code>
      <fiber-channel-sfp-speed>fcs-800mbps fcs-400mbps fcs-200mbps fcs-
100mbps</fiber-channel-sfp-speed>
      <sfp-options-implemented>power-level1</sfp-options-implemented>
      <sfp-identifier>gbic-or-sfp-definedby-twowire-interfaceid-only</
sfp-identifier>
      <recieve-loss-status>NA</recieve-loss-status>
      <transmit-status>on</transmit-status>
    </state>
  </sfp>
</transceiver>
</component>
<component>
  <name>SFP-4</name>
  <state>
    <name>SFP-4</name>
    <parent>PORT-xe4</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>

```

```

    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>4</location>
    <type>transceiver</type>
  </state>
  <transceiver>
    <state>
      <ddm-type>no</ddm-type>
      <vendor-manufacturing-date>150907  </vendor-manufacturing-date>
      <vendor-serial-number>CN0V250M58V91K9 </vendor-serial-number>
      <minimum-signalling-rate>0</minimum-signalling-rate>
      <maximum-signalling-rate>0</maximum-signalling-rate>
      <nominal-signalling-rate>103</nominal-signalling-rate>
      <extended-check-code>0x42</extended-check-code>
      <check-code>0xdf</check-code>
      <vendor-revision-number>C  </vendor-revision-number>
      <vendor-part-number>616740001  </vendor-part-number>
      <vendor-ieee-id>0x78 0xa7 0x14</vendor-ieee-id>
      <vendor-name>Amphenol  </vendor-name>
      <om4-link-length>1</om4-link-length>
      <om3-link-length>0</om3-link-length>
      <om2-link-length>0</om2-link-length>
      <om1-link-length>0</om1-link-length>
      <link-length-meter>0</link-length-meter>
      <link-length-kilometer>0</link-length-kilometer>
      <serial-encoding-algorithm>enc-unspecified</serial-encoding-
algorithm>
      <fiber-channel-transmission-media>twinaxial-pair</fiber-channel-
transmission-media>
      <fiber-channel-transmission-technology>electricalInter-Enclosure
electricalIntra-Enclosure</fiber-channel-transmission-technology>
      <fiber-channel-link-length>short</fiber-channel-link-length>
      <connector-type>copper-pigtail</connector-type>
      <transceiver-identifier>sfp-or-sfpplus-or-sfp28</transceiver-
identifier>
      <channel-count>1</channel-count>
      <type>sfp</type>
      <presence>Present</presence>
      <port-no>4</port-no>
    </state>
    <sfp>
      <state>
        <sfp-plus-cable-technology>passive</sfp-plus-cable-technology>
        <sfp-infiniband-compliance-code>ibc-1xcopperpassive</sfp-
infiniband-compliance-code>
        <fiber-channel-sfp-speed>fcs-800mbps fcs-400mbps fcs-200mbps fcs-
100mbps</fiber-channel-sfp-speed>
        <sfp-options-implemented>power-level1</sfp-options-implemented>
        <sfp-identifier>gbic-or-sfp-definedby-twowire-interfaceid-only</
sfp-identifier>
        <recieve-loss-status>NA</recieve-loss-status>
        <transmit-status>on</transmit-status>
      </state>
    </sfp>
  </transceiver>
</component>
<component>

```

```

<name>SFP-5</name>
<state>
  <name>SFP-5</name>
  <parent>PORT-xe5</parent>
  <product-name>NA</product-name>
  <oper-status>NA</oper-status>
  <removable>true</removable>
  <part-no>NA</part-no>
  <serial-no>NA</serial-no>
  <software-version>NA</software-version>
  <firmware-version>NA</firmware-version>
  <hardware-version>NA</hardware-version>
  <description>NA</description>
  <mfg-name>NA</mfg-name>
  <location>5</location>
  <type>transceiver</type>
</state>
<transceiver>
  <state>
    <channel-count>1</channel-count>
    <type>sfp</type>
    <presence>Not-Present</presence>
    <port-no>5</port-no>
  </state>
  <sfp>
    <state>
      <recieve-loss-status>NA</recieve-loss-status>
      <transmit-status>off</transmit-status>
    </state>
  </sfp>
</transceiver>
</component>
<component>
  <name>SFP-6</name>
  <state>
    <name>SFP-6</name>
    <parent>PORT-xe6</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>6</location>
    <type>transceiver</type>
  </state>
  <transceiver>
    <state>
      <ddm-type>no</ddm-type>
      <vendor-manufacturing-date>150908 </vendor-manufacturing-date>
      <vendor-serial-number>CN0V250M58V920E </vendor-serial-number>
      <minimum-signalling-rate>0</minimum-signalling-rate>
      <maximum-signalling-rate>0</maximum-signalling-rate>
    </state>
  </transceiver>
</component>

```

```

    <nominal-signalling-rate>103</nominal-signalling-rate>
    <extended-check-code>0x35</extended-check-code>
    <check-code>0xdf</check-code>
    <vendor-revision-number>C    </vendor-revision-number>
    <vendor-part-number>616740001    </vendor-part-number>
    <vendor-ieee-id>0x78 0xa7 0x14</vendor-ieee-id>
    <vendor-name>Amphenol    </vendor-name>
    <om4-link-length>1</om4-link-length>
    <om3-link-length>0</om3-link-length>
    <om2-link-length>0</om2-link-length>
    <om1-link-length>0</om1-link-length>
    <link-length-meter>0</link-length-meter>
    <link-length-kilometer>0</link-length-kilometer>
    <serial-encoding-algorithm>enc-unspecified</serial-encoding-
algorithm>
    <fiber-channel-transmission-media>twinaxial-pair</fiber-channel-
transmission-media>
    <fiber-channel-transmission-technology>electricalInter-Enclosure
electricalIntra-Enclosure</fiber-channel-transmission-technology>
    <fiber-channel-link-length>short</fiber-channel-link-length>
    <connector-type>copper-pigtail</connector-type>
    <transceiver-identifier>sfp-or-sfpplus-or-sfp28</transceiver-
identifier>
    <channel-count>1</channel-count>
    <type>sfp</type>
    <presence>Present</presence>
    <port-no>6</port-no>
  </state>
  <sfp>
    <state>
      <sfp-plus-cable-technology>passive</sfp-plus-cable-technology>
      <sfp-infiniband-compliance-code>ibc-1xcopperpassive</sfp-
infiniband-compliance-code>
      <fiber-channel-sfp-speed>fcs-800mbps fcs-400mbps fcs-200mbps fcs-
100mbps</fiber-channel-sfp-speed>
      <sfp-options-implemented>power-level1</sfp-options-implemented>
      <sfp-identifier>gbic-or-sfp-definedby-twowire-interfaceid-only</
sfp-identifier>
      <recieve-loss-status>NA</recieve-loss-status>
      <transmit-status>on</transmit-status>
    </state>
  </sfp>
</transceiver>
</component>
<component>
  <name>SFP-7</name>
  <state>
    <name>SFP-7</name>
    <parent>PORT-xe7</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>

```



```

    <mfg-name>NA</mfg-name>
    <location>7</location>
    <type>transceiver</type>
  </state>
</transceiver>
<state>
  <channel-count>1</channel-count>
  <type>sfp</type>
  <presence>Not-Present</presence>
  <port-no>7</port-no>
</state>
<sfp>
  <state>
    <recieve-loss-status>NA</recieve-loss-status>
    <transmit-status>off</transmit-status>
  </state>
</sfp>
</transceiver>
</component>
<component>
  <name>SFP-8</name>
  <state>
    <name>SFP-8</name>
    <parent>PORT-xe8</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>8</location>
    <type>transceiver</type>
  </state>
<transceiver>
  <state>
    <channel-count>1</channel-count>
    <type>sfp</type>
    <presence>Not-Present</presence>
    <port-no>8</port-no>
  </state>
  <sfp>
    <state>
      <recieve-loss-status>NA</recieve-loss-status>
      <transmit-status>off</transmit-status>
    </state>
  </sfp>
</transceiver>
</component>
<component>
  <name>SFP-9</name>
  <state>
    <name>SFP-9</name>
    <parent>PORT-xe9</parent>

```

```

    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>9</location>
    <type>transceiver</type>
  </state>
  <transceiver>
    <state>
      <channel-count>1</channel-count>
      <type>sfp</type>
      <presence>Not-Present</presence>
      <port-no>9</port-no>
    </state>
    <sfp>
      <state>
        <recieve-loss-status>NA</recieve-loss-status>
        <transmit-status>off</transmit-status>
      </state>
    </sfp>
  </transceiver>
</component>
<component>
  <name>SFP-10</name>
  <state>
    <name>SFP-10</name>
    <parent>PORT-xe10</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>10</location>
    <type>transceiver</type>
  </state>
  <transceiver>
    <state>
      <ddm-type>no</ddm-type>
      <vendor-manufacturing-date>161221 </vendor-manufacturing-date>
      <vendor-serial-number>J11836008016 </vendor-serial-number>
      <minimum-signalling-rate>0</minimum-signalling-rate>
      <maximum-signalling-rate>0</maximum-signalling-rate>
      <nominal-signalling-rate>103</nominal-signalling-rate>
      <extended-check-code>0x69</extended-check-code>
      <check-code>0x6d</check-code>
      <vendor-revision-number>01 </vendor-revision-number>

```

```

        <vendor-part-number>ET5402-DAC-3M    </vendor-part-number>
        <vendor-ieee-id>0x70 0x72 0xcf</vendor-ieee-id>
        <vendor-name>Edgecore                </vendor-name>
        <om4-link-length>3</om4-link-length>
        <om3-link-length>0</om3-link-length>
        <om2-link-length>0</om2-link-length>
        <om1-link-length>0</om1-link-length>
        <link-length-meter>0</link-length-meter>
        <link-length-kilometer>0</link-length-kilometer>
        <serial-encoding-algorithm>enc-undefined</serial-encoding-
algorithm>
        <connector-type>copper-pigtail</connector-type>
        <transceiver-identifier>sfp-or-sfpplus-or-sfp28</transceiver-
identifier>
        <channel-count>1</channel-count>
        <type>sfp</type>
        <presence>Present</presence>
        <port-no>10</port-no>
    </state>
    <sfp>
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            <sfp-plus-cable-technology>passive</sfp-plus-cable-technology>
            <sfp-options-implemented>power-level1</sfp-options-implemented>
            <sfp-identifier>gbic-or-sfp-defined-by-two-wire-interface-id-only</
sfp-identifier>
            <receive-loss-status>NA</receive-loss-status>
            <transmit-status>on</transmit-status>
        </state>
    </sfp>
</transceiver>
</component>
<component>
    <name>SFP-11</name>
    <state>
        <name>SFP-11</name>
        <parent>PORT-xe11</parent>
        <product-name>NA</product-name>
        <oper-status>NA</oper-status>
        <removable>true</removable>
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        <serial-no>NA</serial-no>
        <software-version>NA</software-version>
        <firmware-version>NA</firmware-version>
        <hardware-version>NA</hardware-version>
        <description>NA</description>
        <mfg-name>NA</mfg-name>
        <location>11</location>
        <type>transceiver</type>
    </state>
    <transceiver>
        <state>
            <ddm-type>no</ddm-type>
            <vendor-manufacturing-date>100101    </vendor-manufacturing-date>
            <vendor-serial-number>NCI80T1328      </vendor-serial-number>
            <minimum-signalling-rate>0</minimum-signalling-rate>
            <maximum-signalling-rate>0</maximum-signalling-rate>
            <nominal-signalling-rate>13</nominal-signalling-rate>

```

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    <extended-check-code>0x87</extended-check-code>
    <check-code>0x82</check-code>
    <vendor-revision-number>1.0 </vendor-revision-number>
    <vendor-part-number>SFP-T </vendor-part-number>
    <vendor-ieee-id>0x0 0x0 0x0</vendor-ieee-id>
    <vendor-name>OEM </vendor-name>
    <om4-link-length>100</om4-link-length>
    <om3-link-length>0</om3-link-length>
    <om2-link-length>0</om2-link-length>
    <om1-link-length>0</om1-link-length>
    <link-length-meter>0</link-length-meter>
    <link-length-kilometer>0</link-length-kilometer>
    <serial-encoding-algorithm>enc-8b-or-10b</serial-encoding-algorithm>
    <ethernet-compliance-code>ec-1000base-t</ethernet-compliance-code>
    <connector-type>lucent-connector</connector-type>
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identifier>
    <channel-count>1</channel-count>
    <type>sfp</type>
    <presence>Present</presence>
    <port-no>11</port-no>
  </state>
</sfp>
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sfp-identifier>
    <recieve-loss-status>on</recieve-loss-status>
    <transmit-status>on</transmit-status>
  </state>
</sfp>
</transceiver>
</component>
<component>
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  <state>
    <name>SFP-12</name>
    <parent>PORT-xe12</parent>
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    <oper-status>NA</oper-status>
    <removable>true</removable>
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    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
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    <mfg-name>NA</mfg-name>
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  </state>
  <transceiver>
    <state>
      <channel-count>1</channel-count>
      <type>sfp</type>
      <presence>Not-Present</presence>
      <port-no>12</port-no>

```

```

    </state>
  <sfp>
    <state>
      <recieve-loss-status>NA</recieve-loss-status>
      <transmit-status>off</transmit-status>
    </state>
  </sfp>
</transceiver>
</component>
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  <name>SFP-13</name>
  <state>
    <name>SFP-13</name>
    <parent>PORT-xe13</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
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    <mfg-name>NA</mfg-name>
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  </state>
<transceiver>
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    <type>sfp</type>
    <presence>Not-Present</presence>
    <port-no>13</port-no>
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      <recieve-loss-status>NA</recieve-loss-status>
      <transmit-status>off</transmit-status>
    </state>
  </sfp>
</transceiver>
</component>
<component>
  <name>SFP-14</name>
  <state>
    <name>SFP-14</name>
    <parent>PORT-xe14</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
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    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>

```

```

    <location>14</location>
    <type>transceiver</type>
  </state>
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    <type>sfp</type>
    <presence>Not-Present</presence>
    <port-no>14</port-no>
  </state>
  <sfp>
    <state>
      <recieve-loss-status>NA</recieve-loss-status>
      <transmit-status>off</transmit-status>
    </state>
  </sfp>
</transceiver>
</component>
<component>
  <name>SFP-15</name>
  <state>
    <name>SFP-15</name>
    <parent>PORT-xe15</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>15</location>
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  </state>
  <transceiver>
    <state>
      <channel-count>1</channel-count>
      <type>sfp</type>
      <presence>Not-Present</presence>
      <port-no>15</port-no>
    </state>
    <sfp>
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        <recieve-loss-status>NA</recieve-loss-status>
        <transmit-status>off</transmit-status>
      </state>
    </sfp>
  </transceiver>
</component>
<component>
  <name>SFP-16</name>
  <state>
    <name>SFP-16</name>
    <parent>PORT-xe16</parent>
    <product-name>NA</product-name>

```

```

    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
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    <mfg-name>NA</mfg-name>
    <location>16</location>
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  </state>
  <transceiver>
    <state>
      <channel-count>1</channel-count>
      <type>sfp</type>
      <presence>Not-Present</presence>
      <port-no>16</port-no>
    </state>
    <sfp>
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        <recieve-loss-status>NA</recieve-loss-status>
        <transmit-status>off</transmit-status>
      </state>
    </sfp>
  </transceiver>
</component>
<component>
  <name>SFP-17</name>
  <state>
    <name>SFP-17</name>
    <parent>PORT-xe17</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
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  <transceiver>
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      <channel-count>1</channel-count>
      <type>sfp</type>
      <presence>Not-Present</presence>
      <port-no>17</port-no>
    </state>
    <sfp>
      <state>
        <recieve-loss-status>NA</recieve-loss-status>
        <transmit-status>off</transmit-status>
      </state>

```

```
    </sfp>
  </transceiver>
</component>
<component>
  <name>SFP-18</name>
  <state>
    <name>SFP-18</name>
    <parent>PORT-xe18</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>18</location>
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  <transceiver>
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      <channel-count>1</channel-count>
      <type>sfp</type>
      <presence>Not-Present</presence>
      <port-no>18</port-no>
    </state>
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  <state>
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    <transmit-status>off</transmit-status>
  </state>
</transceiver>
</component>
<component>
  <name>SFP-19</name>
  <state>
    <name>SFP-19</name>
    <parent>PORT-xe19</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>19</location>
    <type>transceiver</type>
  </state>
  <transceiver>
    <state>
      <channel-count>1</channel-count>
```



```

        <type>sfp</type>
        <presence>Not-Present</presence>
        <port-no>19</port-no>
    </state>
</sfp>
    <state>
        <recieve-loss-status>NA</recieve-loss-status>
        <transmit-status>off</transmit-status>
    </state>
</sfp>
</transceiver>
</component>
<component>
    <name>SFP-20</name>
    <state>
        <name>SFP-20</name>
        <parent>PORT-xe20</parent>
        <product-name>NA</product-name>
        <oper-status>NA</oper-status>
        <removable>true</removable>
        <part-no>NA</part-no>
        <serial-no>NA</serial-no>
        <software-version>NA</software-version>
        <firmware-version>NA</firmware-version>
        <hardware-version>NA</hardware-version>
        <description>NA</description>
        <mfg-name>NA</mfg-name>
        <location>20</location>
        <type>transceiver</type>
    </state>
    <transceiver>
        <state>
            <channel-count>1</channel-count>
            <type>sfp</type>
            <presence>Not-Present</presence>
            <port-no>20</port-no>
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                <transmit-status>off</transmit-status>
            </state>
        </sfp>
    </transceiver>
</component>
<component>
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    <state>
        <name>SFP-21</name>
        <parent>PORT-xe21</parent>
        <product-name>NA</product-name>
        <oper-status>NA</oper-status>
        <removable>true</removable>
        <part-no>NA</part-no>
        <serial-no>NA</serial-no>
        <software-version>NA</software-version>
        <firmware-version>NA</firmware-version>

```

```

    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
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  </state>
</transceiver>
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  <state>
    <channel-count>1</channel-count>
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    <presence>Not-Present</presence>
    <port-no>21</port-no>
  </state>
  <sfp>
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      <recieve-loss-status>NA</recieve-loss-status>
      <transmit-status>off</transmit-status>
    </state>
  </sfp>
</transceiver>
</component>
<component>
  <name>SFP-22</name>
  <state>
    <name>SFP-22</name>
    <parent>PORT-xe22</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>22</location>
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  </state>
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    <channel-count>1</channel-count>
    <type>sfp</type>
    <presence>Not-Present</presence>
    <port-no>22</port-no>
  </state>
  <sfp>
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      <transmit-status>off</transmit-status>
    </state>
  </sfp>
</transceiver>
</component>
<component>
  <name>SFP-23</name>
  <state>

```

```

    <name>SFP-23</name>
    <parent>PORT-xe23</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
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    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>23</location>
    <type>transceiver</type>
  </state>
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  <channel-count>1</channel-count>
  <type>sfp</type>
  <presence>Not-Present</presence>
  <port-no>23</port-no>
</state>
<sfp>
  <state>
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    <transmit-status>off</transmit-status>
  </state>
</sfp>
</transceiver>
</component>
<component>
  <name>SFP-24</name>
  <state>
    <name>SFP-24</name>
    <parent>PORT-xe24</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
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    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>24</location>
    <type>transceiver</type>
  </state>
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  <channel-count>1</channel-count>
  <type>sfp</type>
  <presence>Not-Present</presence>
  <port-no>24</port-no>
</state>
<sfp>
  <state>

```

```
        <recieve-loss-status>NA</recieve-loss-status>
        <transmit-status>off</transmit-status>
    </state>
</sfp>
</transceiver>
</component>
<component>
    <name>SFP-25</name>
    <state>
        <name>SFP-25</name>
        <parent>PORT-xe25</parent>
        <product-name>NA</product-name>
        <oper-status>NA</oper-status>
        <removable>true</removable>
        <part-no>NA</part-no>
        <serial-no>NA</serial-no>
        <software-version>NA</software-version>
        <firmware-version>NA</firmware-version>
        <hardware-version>NA</hardware-version>
        <description>NA</description>
        <mfg-name>NA</mfg-name>
        <location>25</location>
        <type>transceiver</type>
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    <transceiver>
        <state>
            <channel-count>1</channel-count>
            <type>sfp</type>
            <presence>Not-Present</presence>
            <port-no>25</port-no>
        </state>
        <sfp>
            <state>
                <recieve-loss-status>NA</recieve-loss-status>
                <transmit-status>off</transmit-status>
            </state>
        </sfp>
    </transceiver>
</component>
<component>
    <name>SFP-26</name>
    <state>
        <name>SFP-26</name>
        <parent>PORT-xe26</parent>
        <product-name>NA</product-name>
        <oper-status>NA</oper-status>
        <removable>true</removable>
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        <serial-no>NA</serial-no>
        <software-version>NA</software-version>
        <firmware-version>NA</firmware-version>
        <hardware-version>NA</hardware-version>
        <description>NA</description>
        <mfg-name>NA</mfg-name>
        <location>26</location>
        <type>transceiver</type>
    </state>
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```
<transceiver>
  <state>
    <channel-count>1</channel-count>
    <type>sfp</type>
    <presence>Not-Present</presence>
    <port-no>26</port-no>
  </state>
  <sfp>
    <state>
      <recieve-loss-status>NA</recieve-loss-status>
      <transmit-status>off</transmit-status>
    </state>
  </sfp>
</transceiver>
</component>
<component>
  <name>SFP-27</name>
  <state>
    <name>SFP-27</name>
    <parent>PORT-xe27</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>27</location>
    <type>transceiver</type>
  </state>
  <transceiver>
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      <channel-count>1</channel-count>
      <type>sfp</type>
      <presence>Not-Present</presence>
      <port-no>27</port-no>
    </state>
    <sfp>
      <state>
        <recieve-loss-status>NA</recieve-loss-status>
        <transmit-status>off</transmit-status>
      </state>
    </sfp>
  </transceiver>
</component>
<component>
  <name>SFP-28</name>
  <state>
    <name>SFP-28</name>
    <parent>PORT-xe28</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
```

```
<serial-no>NA</serial-no>
<software-version>NA</software-version>
<firmware-version>NA</firmware-version>
<hardware-version>NA</hardware-version>
<description>NA</description>
<mfg-name>NA</mfg-name>
<location>28</location>
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</state>
<transceiver>
  <state>
    <channel-count>1</channel-count>
    <type>sfp</type>
    <presence>Not-Present</presence>
    <port-no>28</port-no>
  </state>
  <sfp>
    <state>
      <recieve-loss-status>NA</recieve-loss-status>
      <transmit-status>off</transmit-status>
    </state>
  </sfp>
</transceiver>
</component>
<component>
  <name>SFP-29</name>
  <state>
    <name>SFP-29</name>
    <parent>PORT-xe29</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>29</location>
    <type>transceiver</type>
  </state>
  <transceiver>
    <state>
      <channel-count>1</channel-count>
      <type>sfp</type>
      <presence>Not-Present</presence>
      <port-no>29</port-no>
    </state>
    <sfp>
      <state>
        <recieve-loss-status>NA</recieve-loss-status>
        <transmit-status>off</transmit-status>
      </state>
    </sfp>
  </transceiver>
</component>
```

```
<component>
  <name>SFP-30</name>
  <state>
    <name>SFP-30</name>
    <parent>PORT-xe30</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>30</location>
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  </state>
  <transceiver>
    <state>
      <channel-count>1</channel-count>
      <type>sfp</type>
      <presence>Not-Present</presence>
      <port-no>30</port-no>
    </state>
    <sfp>
      <state>
        <recieve-loss-status>NA</recieve-loss-status>
        <transmit-status>off</transmit-status>
      </state>
    </sfp>
  </transceiver>
</component>
<component>
  <name>SFP-31</name>
  <state>
    <name>SFP-31</name>
    <parent>PORT-xe31</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>31</location>
    <type>transceiver</type>
  </state>
  <transceiver>
    <state>
      <channel-count>1</channel-count>
      <type>sfp</type>
      <presence>Not-Present</presence>
      <port-no>31</port-no>
```

```

    </state>
  <sfp>
    <state>
      <recieve-loss-status>NA</recieve-loss-status>
      <transmit-status>off</transmit-status>
    </state>
  </sfp>
</transceiver>
</component>
<component>
  <name>SFP-32</name>
  <state>
    <name>SFP-32</name>
    <parent>PORT-xe32</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>32</location>
    <type>transceiver</type>
  </state>
<transceiver>
  <state>
    <channel-count>1</channel-count>
    <type>sfp</type>
    <presence>Not-Present</presence>
    <port-no>32</port-no>
  </state>
  <sfp>
    <state>
      <recieve-loss-status>NA</recieve-loss-status>
      <transmit-status>off</transmit-status>
    </state>
  </sfp>
</transceiver>
</component>
<component>
  <name>SFP-33</name>
  <state>
    <name>SFP-33</name>
    <parent>PORT-xe33</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>

```



```

    <location>33</location>
    <type>transceiver</type>
  </state>
</transceiver>
<state>
  <channel-count>1</channel-count>
  <type>sfp</type>
  <presence>Not-Present</presence>
  <port-no>33</port-no>
</state>
<sfp>
  <state>
    <recieve-loss-status>NA</recieve-loss-status>
    <transmit-status>off</transmit-status>
  </state>
</sfp>
</transceiver>
</component>
<component>
  <name>SFP-34</name>
  <state>
    <name>SFP-34</name>
    <parent>PORT-xe34</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>34</location>
    <type>transceiver</type>
  </state>
<transceiver>
  <state>
    <channel-count>1</channel-count>
    <type>sfp</type>
    <presence>Not-Present</presence>
    <port-no>34</port-no>
  </state>
<sfp>
  <state>
    <recieve-loss-status>NA</recieve-loss-status>
    <transmit-status>off</transmit-status>
  </state>
</sfp>
</transceiver>
</component>
<component>
  <name>SFP-35</name>
  <state>
    <name>SFP-35</name>
    <parent>PORT-xe35</parent>
    <product-name>NA</product-name>

```

```

    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>35</location>
    <type>transceiver</type>
  </state>
  <transceiver>
    <state>
      <channel-count>1</channel-count>
      <type>sfp</type>
      <presence>Not-Present</presence>
      <port-no>35</port-no>
    </state>
    <sfp>
      <state>
        <recieve-loss-status>NA</recieve-loss-status>
        <transmit-status>off</transmit-status>
      </state>
    </sfp>
  </transceiver>
</component>
<component>
  <name>SFP-36</name>
  <state>
    <name>SFP-36</name>
    <parent>PORT-xe36</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>36</location>
    <type>transceiver</type>
  </state>
  <transceiver>
    <state>
      <channel-count>1</channel-count>
      <type>sfp</type>
      <presence>Not-Present</presence>
      <port-no>36</port-no>
    </state>
    <sfp>
      <state>
        <recieve-loss-status>NA</recieve-loss-status>
        <transmit-status>off</transmit-status>
      </state>

```

```

    </sfp>
  </transceiver>
</component>
<component>
  <name>SFP-37</name>
  <state>
    <name>SFP-37</name>
    <parent>PORT-xe37</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>37</location>
    <type>transceiver</type>
  </state>
  <transceiver>
    <state>
      <channel-count>1</channel-count>
      <type>sfp</type>
      <presence>Not-Present</presence>
      <port-no>37</port-no>
    </state>
  </sfp>
  <state>
    <recieve-loss-status>NA</recieve-loss-status>
    <transmit-status>off</transmit-status>
  </state>
</transceiver>
</component>
<component>
  <name>SFP-38</name>
  <state>
    <name>SFP-38</name>
    <parent>PORT-xe38</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>38</location>
    <type>transceiver</type>
  </state>
  <transceiver>
    <state>
      <channel-count>1</channel-count>

```

```
<type>sfp</type>
<presence>Not-Present</presence>
<port-no>38</port-no>
</state>
<sfp>
  <state>
    <recieve-loss-status>NA</recieve-loss-status>
    <transmit-status>off</transmit-status>
  </state>
</sfp>
</transceiver>
</component>
<component>
  <name>SFP-39</name>
  <state>
    <name>SFP-39</name>
    <parent>PORT-xe39</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>39</location>
    <type>transceiver</type>
  </state>
  <transceiver>
    <state>
      <channel-count>1</channel-count>
      <type>sfp</type>
      <presence>Not-Present</presence>
      <port-no>39</port-no>
    </state>
    <sfp>
      <state>
        <recieve-loss-status>NA</recieve-loss-status>
        <transmit-status>off</transmit-status>
      </state>
    </sfp>
  </transceiver>
</component>
<component>
  <name>SFP-40</name>
  <state>
    <name>SFP-40</name>
    <parent>PORT-xe40</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
```

```

    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>40</location>
    <type>transceiver</type>
  </state>
</transceiver>
<transceiver>
  <state>
    <channel-count>1</channel-count>
    <type>sfp</type>
    <presence>Not-Present</presence>
    <port-no>40</port-no>
  </state>
  <sfp>
    <state>
      <recieve-loss-status>NA</recieve-loss-status>
      <transmit-status>off</transmit-status>
    </state>
  </sfp>
</transceiver>
</component>
<component>
  <name>SFP-41</name>
  <state>
    <name>SFP-41</name>
    <parent>PORT-xe41</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>41</location>
    <type>transceiver</type>
  </state>
</transceiver>
<transceiver>
  <state>
    <channel-count>1</channel-count>
    <type>sfp</type>
    <presence>Not-Present</presence>
    <port-no>41</port-no>
  </state>
  <sfp>
    <state>
      <recieve-loss-status>NA</recieve-loss-status>
      <transmit-status>off</transmit-status>
    </state>
  </sfp>
</transceiver>
</component>
<component>
  <name>SFP-42</name>
  <state>

```

```

    <name>SFP-42</name>
    <parent>PORT-xe42</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>42</location>
    <type>transceiver</type>
  </state>
</transceiver>
<state>
  <channel-count>1</channel-count>
  <type>sfp</type>
  <presence>Not-Present</presence>
  <port-no>42</port-no>
</state>
<sfp>
  <state>
    <recieve-loss-status>NA</recieve-loss-status>
    <transmit-status>off</transmit-status>
  </state>
</sfp>
</transceiver>
</component>
<component>
  <name>SFP-43</name>
  <state>
    <name>SFP-43</name>
    <parent>PORT-xe43</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>43</location>
    <type>transceiver</type>
  </state>
</transceiver>
<state>
  <channel-count>1</channel-count>
  <type>sfp</type>
  <presence>Not-Present</presence>
  <port-no>43</port-no>
</state>
<sfp>
  <state>

```

```

        <recieve-loss-status>NA</recieve-loss-status>
        <transmit-status>off</transmit-status>
    </state>
</sfp>
</transceiver>
</component>
<component>
    <name>SFP-44</name>
    <state>
        <name>SFP-44</name>
        <parent>PORT-xe44</parent>
        <product-name>NA</product-name>
        <oper-status>NA</oper-status>
        <removable>true</removable>
        <part-no>NA</part-no>
        <serial-no>NA</serial-no>
        <software-version>NA</software-version>
        <firmware-version>NA</firmware-version>
        <hardware-version>NA</hardware-version>
        <description>NA</description>
        <mfg-name>NA</mfg-name>
        <location>44</location>
        <type>transceiver</type>
    </state>
    <transceiver>
        <state>
            <channel-count>1</channel-count>
            <type>sfp</type>
            <presence>Not-Present</presence>
            <port-no>44</port-no>
        </state>
        <sfp>
            <state>
                <recieve-loss-status>NA</recieve-loss-status>
                <transmit-status>off</transmit-status>
            </state>
        </sfp>
    </transceiver>
</component>
<component>
    <name>SFP-45</name>
    <state>
        <name>SFP-45</name>
        <parent>PORT-xe45</parent>
        <product-name>NA</product-name>
        <oper-status>NA</oper-status>
        <removable>true</removable>
        <part-no>NA</part-no>
        <serial-no>NA</serial-no>
        <software-version>NA</software-version>
        <firmware-version>NA</firmware-version>
        <hardware-version>NA</hardware-version>
        <description>NA</description>
        <mfg-name>NA</mfg-name>
        <location>45</location>
        <type>transceiver</type>
    </state>

```

```
<transceiver>
  <state>
    <channel-count>1</channel-count>
    <type>sfp</type>
    <presence>Not-Present</presence>
    <port-no>45</port-no>
  </state>
  <sfp>
    <state>
      <recieve-loss-status>NA</recieve-loss-status>
      <transmit-status>off</transmit-status>
    </state>
  </sfp>
</transceiver>
</component>
<component>
  <name>SFP-46</name>
  <state>
    <name>SFP-46</name>
    <parent>PORT-xe46</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>46</location>
    <type>transceiver</type>
  </state>
  <transceiver>
    <state>
      <channel-count>1</channel-count>
      <type>sfp</type>
      <presence>Not-Present</presence>
      <port-no>46</port-no>
    </state>
    <sfp>
      <state>
        <recieve-loss-status>NA</recieve-loss-status>
        <transmit-status>off</transmit-status>
      </state>
    </sfp>
  </transceiver>
</component>
<component>
  <name>SFP-47</name>
  <state>
    <name>SFP-47</name>
    <parent>PORT-xe47</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
```



```
<serial-no>NA</serial-no>
<software-version>NA</software-version>
<firmware-version>NA</firmware-version>
<hardware-version>NA</hardware-version>
<description>NA</description>
<mfg-name>NA</mfg-name>
<location>47</location>
<type>transceiver</type>
</state>
<transceiver>
  <state>
    <channel-count>1</channel-count>
    <type>sfp</type>
    <presence>Not-Present</presence>
    <port-no>47</port-no>
  </state>
  <sfp>
    <state>
      <recieve-loss-status>NA</recieve-loss-status>
      <transmit-status>off</transmit-status>
    </state>
  </sfp>
</transceiver>
</component>
<component>
  <name>SFP-48</name>
  <state>
    <name>SFP-48</name>
    <parent>PORT-xe48</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>48</location>
    <type>transceiver</type>
  </state>
  <transceiver>
    <state>
      <channel-count>1</channel-count>
      <type>sfp</type>
      <presence>Not-Present</presence>
      <port-no>48</port-no>
    </state>
    <sfp>
      <state>
        <recieve-loss-status>NA</recieve-loss-status>
        <transmit-status>off</transmit-status>
      </state>
    </sfp>
  </transceiver>
</component>
```

```

<component>
  <name>QSFP-49</name>
  <state>
    <name>QSFP-49</name>
    <parent>PORT-ce49</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>49</location>
    <type>transceiver</type>
  </state>
  <transceiver>
    <state>
      <maximum-case-temperature>70.00</maximum-case-temperature>
      <ddm-type>no</ddm-type>
      <vendor-manufacturing-date>150727 </vendor-manufacturing-date>
      <vendor-serial-number>CN05NP8R57Q7T6J </vendor-serial-number>
      <nominal-signalling-rate>103</nominal-signalling-rate>
      <extended-check-code>0x7c</extended-check-code>
      <check-code>0x98</check-code>
      <vendor-revision-number>C </vendor-revision-number>
      <vendor-part-number>616750001 </vendor-part-number>
      <vendor-ieee-id>0x78 0xa7 0x14</vendor-ieee-id>
      <vendor-name>Amphenol </vendor-name>
      <om4-link-length>1</om4-link-length>
      <om3-link-length>0</om3-link-length>
      <om2-link-length>0</om2-link-length>
      <om1-link-length>0</om1-link-length>
      <link-length-kilometer>0</link-length-kilometer>
      <serial-encoding-algorithm>enc-undefined</serial-encoding-
algorithm>
      <fiber-channel-transmission-media>twinaxial-pair</fiber-channel-
transmission-media>
      <fiber-channel-transmission-technology>electricalInter-Enclosure
electricalIntra-Enclosure</fiber-channel-transmission-technology>
      <fiber-channel-link-length>short</fiber-channel-link-length>
      <ethernet-compliance-code>ec-40gbase-cr4</ethernet-compliance-code>
      <connector-type>no-separable-connector</connector-type>
      <transceiver-identifier>qsfpplus-or-later</transceiver-identifier>
      <channel-count>4</channel-count>
      <type>qsfp</type>
      <presence>Present</presence>
      <port-no>49</port-no>
    </state>
    <qsfp>
      <state>
        <qsfp-options-implemented>tx-cdr-on-or-off-fixed rx-cdr-on-or-off-
fixed rateselect-fixed</qsfp-options-implemented>
        <fiber-channel-qsfp-speed>fcs-800mbps fcs-400mbps fcs-200mbps fcs-
100mbps</fiber-channel-qsfp-speed>
        <qsfp-identifier>powerclass1-1dot5wmax</qsfp-identifier>

```

```

    <lane4-recieve-loss>off</lane4-recieve-loss>
    <lane4-transmission-loss>off</lane4-transmission-loss>
    <lane4-transmission>on</lane4-transmission>
    <lane3-recieve-loss>off</lane3-recieve-loss>
    <lane3-transmission-loss>off</lane3-transmission-loss>
    <lane3-transmission>on</lane3-transmission>
    <lane2-recieve-loss>off</lane2-recieve-loss>
    <lane2-transmission-loss>off</lane2-transmission-loss>
    <lane2-transmission>on</lane2-transmission>
    <lane1-recieve-loss>off</lane1-recieve-loss>
    <lane1-transmission-loss>off</lane1-transmission-loss>
    <lane1-transmission>on</lane1-transmission>
    <power>High</power>
    <reset-status>Normal</reset-status>
  </state>
</qsfp>
<channels>
  <channel>
    <index>1</index>
    <state>
      <index>1</index>
      <laser-bias-current>0.000</laser-bias-current>
      <output-power>0.000</output-power>
      <input-power>0.000</input-power>
    </state>
  </channel>
  <channel>
    <index>2</index>
    <state>
      <index>2</index>
      <laser-bias-current>0.000</laser-bias-current>
      <output-power>0.000</output-power>
      <input-power>0.000</input-power>
    </state>
  </channel>
  <channel>
    <index>3</index>
    <state>
      <index>3</index>
      <laser-bias-current>0.000</laser-bias-current>
      <output-power>0.000</output-power>
      <input-power>0.000</input-power>
    </state>
  </channel>
  <channel>
    <index>4</index>
    <state>
      <index>4</index>
      <laser-bias-current>0.000</laser-bias-current>
      <output-power>0.000</output-power>
      <input-power>0.000</input-power>
    </state>
  </channel>
</channels>
</transceiver>
</component>
<component>

```

```

<name>QSFP-50</name>
<state>
  <name>QSFP-50</name>
  <parent>PORT-ce50</parent>
  <product-name>NA</product-name>
  <oper-status>NA</oper-status>
  <removable>true</removable>
  <part-no>NA</part-no>
  <serial-no>NA</serial-no>
  <software-version>NA</software-version>
  <firmware-version>NA</firmware-version>
  <hardware-version>NA</hardware-version>
  <description>NA</description>
  <mfg-name>NA</mfg-name>
  <location>50</location>
  <type>transceiver</type>
</state>
<transceiver>
  <state>
    <channel-count>4</channel-count>
    <type>qsf</type>
    <presence>Not-Present</presence>
    <port-no>50</port-no>
  </state>
  <qsf>
    <state>
      <lane4-recieve-loss>off</lane4-recieve-loss>
      <lane4-transmission-loss>off</lane4-transmission-loss>
      <lane4-transmission>off</lane4-transmission>
      <lane3-recieve-loss>off</lane3-recieve-loss>
      <lane3-transmission-loss>off</lane3-transmission-loss>
      <lane3-transmission>off</lane3-transmission>
      <lane2-recieve-loss>off</lane2-recieve-loss>
      <lane2-transmission-loss>off</lane2-transmission-loss>
      <lane2-transmission>off</lane2-transmission>
      <lane1-recieve-loss>off</lane1-recieve-loss>
      <lane1-transmission-loss>off</lane1-transmission-loss>
      <lane1-transmission>off</lane1-transmission>
      <power>Low</power>
      <reset-status>Reset</reset-status>
    </state>
  </qsf>
  <channels>
    <channel>
      <index>1</index>
    </channel>
    <channel>
      <index>2</index>
    </channel>
    <channel>
      <index>3</index>
    </channel>
    <channel>
      <index>4</index>
    </channel>
  </channels>
</transceiver>

```

```

</component>
<component>
  <name>QSFP-51</name>
  <state>
    <name>QSFP-51</name>
    <parent>PORT-ce51</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>51</location>
    <type>transceiver</type>
  </state>
  <transceiver>
    <state>
      <maximum-case-temperature>70.00</maximum-case-temperature>
      <ddm-type>no</ddm-type>
      <vendor-manufacturing-date>170628 </vendor-manufacturing-date>
      <vendor-serial-number>J11836008038 </vendor-serial-number>
      <nominal-signalling-rate>255</nominal-signalling-rate>
      <extended-check-code>0x83</extended-check-code>
      <check-code>0x90</check-code>
      <vendor-revision-number>01</vendor-revision-number>
      <vendor-part-number>ET7402-100DAC-1M</vendor-part-number>
      <vendor-ieee-id>0x70 0x72 0xcf</vendor-ieee-id>
      <vendor-name>Edgecore </vendor-name>
      <om4-link-length>1</om4-link-length>
      <om3-link-length>0</om3-link-length>
      <om2-link-length>0</om2-link-length>
      <om1-link-length>0</om1-link-length>
      <link-length-kilometer>0</link-length-kilometer>
      <serial-encoding-algorithm>enc-undefined</serial-encoding-
algorithm>
      <extended-ethernet-compliance-code>eec-100gbase-cr4-or-25gbase-crca-
1</extended-ethernet-compliance-code>
      <connector-type>no-separable-connector</connector-type>
      <transceiver-identifier>qsfp28-or-later</transceiver-identifier>
      <channel-count>4</channel-count>
      <type>qsfp</type>
      <presence>Present</presence>
      <port-no>51</port-no>
    </state>
    <qsfp>
      <state>
        <qsfp-options-implemented>tx-cdr-on-or-off-fixed rx-cdr-on-or-off-
fixed rateselect-fixed</qsfp-options-implemented>
        <qsfp-identifier>powerclass1-1dot5wmax</qsfp-identifier>
        <lane4-recieve-loss>off</lane4-recieve-loss>
        <lane4-transmission-loss>off</lane4-transmission-loss>
        <lane4-transmission>on</lane4-transmission>
        <lane3-recieve-loss>off</lane3-recieve-loss>

```

```

        <lane3-transmission-loss>off</lane3-transmission-loss>
        <lane3-transmission>on</lane3-transmission>
        <lane2-recieve-loss>off</lane2-recieve-loss>
        <lane2-transmission-loss>off</lane2-transmission-loss>
        <lane2-transmission>on</lane2-transmission>
        <lane1-recieve-loss>off</lane1-recieve-loss>
        <lane1-transmission-loss>off</lane1-transmission-loss>
        <lane1-transmission>on</lane1-transmission>
        <power>High</power>
        <reset-status>Normal</reset-status>
    </state>
</qsfp>
<channels>
    <channel>
        <index>1</index>
        <state>
            <index>1</index>
            <laser-bias-current>0.000</laser-bias-current>
            <output-power>0.000</output-power>
            <input-power>0.000</input-power>
        </state>
    </channel>
    <channel>
        <index>2</index>
        <state>
            <index>2</index>
            <laser-bias-current>0.000</laser-bias-current>
            <output-power>0.000</output-power>
            <input-power>0.000</input-power>
        </state>
    </channel>
    <channel>
        <index>3</index>
        <state>
            <index>3</index>
            <laser-bias-current>0.000</laser-bias-current>
            <output-power>0.000</output-power>
            <input-power>0.000</input-power>
        </state>
    </channel>
    <channel>
        <index>4</index>
        <state>
            <index>4</index>
            <laser-bias-current>0.000</laser-bias-current>
            <output-power>0.000</output-power>
            <input-power>0.000</input-power>
        </state>
    </channel>
</channels>
</transceiver>
</component>
<component>
    <name>QSFP-52</name>
    <state>
        <name>QSFP-52</name>
        <parent>PORT-ce52</parent>
    </state>

```

```
<product-name>NA</product-name>
<oper-status>NA</oper-status>
<removable>true</removable>
<part-no>NA</part-no>
<serial-no>NA</serial-no>
<software-version>NA</software-version>
<firmware-version>NA</firmware-version>
<hardware-version>NA</hardware-version>
<description>NA</description>
<mfg-name>NA</mfg-name>
<location>52</location>
<type>transceiver</type>
</state>
<transceiver>
  <state>
    <channel-count>4</channel-count>
    <type>qsfp</type>
    <presence>Not-Present</presence>
    <port-no>52</port-no>
  </state>
  <qsfp>
    <state>
      <lane4-recieve-loss>off</lane4-recieve-loss>
      <lane4-transmission-loss>off</lane4-transmission-loss>
      <lane4-transmission>off</lane4-transmission>
      <lane3-recieve-loss>off</lane3-recieve-loss>
      <lane3-transmission-loss>off</lane3-transmission-loss>
      <lane3-transmission>off</lane3-transmission>
      <lane2-recieve-loss>off</lane2-recieve-loss>
      <lane2-transmission-loss>off</lane2-transmission-loss>
      <lane2-transmission>off</lane2-transmission>
      <lane1-recieve-loss>off</lane1-recieve-loss>
      <lane1-transmission-loss>off</lane1-transmission-loss>
      <lane1-transmission>off</lane1-transmission>
      <power>Low</power>
      <reset-status>Reset</reset-status>
    </state>
  </qsfp>
  <channels>
    <channel>
      <index>1</index>
    </channel>
    <channel>
      <index>2</index>
    </channel>
    <channel>
      <index>3</index>
    </channel>
    <channel>
      <index>4</index>
    </channel>
  </channels>
</transceiver>
</component>
<component>
  <name>QSFP-53</name>
  <state>
```

```

    <name>QSFP-53</name>
    <parent>PORT-ce53</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>true</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>53</location>
    <type>transceiver</type>
  </state>
<transceiver>
  <state>
    <channel-count>4</channel-count>
    <type>qsfp</type>
    <presence>Not-Present</presence>
    <port-no>53</port-no>
  </state>
  <qsfp>
    <state>
      <lane4-recieve-loss>off</lane4-recieve-loss>
      <lane4-transmission-loss>off</lane4-transmission-loss>
      <lane4-transmission>off</lane4-transmission>
      <lane3-recieve-loss>off</lane3-recieve-loss>
      <lane3-transmission-loss>off</lane3-transmission-loss>
      <lane3-transmission>off</lane3-transmission>
      <lane2-recieve-loss>off</lane2-recieve-loss>
      <lane2-transmission-loss>off</lane2-transmission-loss>
      <lane2-transmission>off</lane2-transmission>
      <lane1-recieve-loss>off</lane1-recieve-loss>
      <lane1-transmission-loss>off</lane1-transmission-loss>
      <lane1-transmission>off</lane1-transmission>
      <power>Low</power>
      <reset-status>Reset</reset-status>
    </state>
  </qsfp>
</transceiver>
</component>
<component>

```



```

<name>QSFP-54</name>
<state>
  <name>QSFP-54</name>
  <parent>PORT-ce54</parent>
  <product-name>NA</product-name>
  <oper-status>NA</oper-status>
  <removable>true</removable>
  <part-no>NA</part-no>
  <serial-no>NA</serial-no>
  <software-version>NA</software-version>
  <firmware-version>NA</firmware-version>
  <hardware-version>NA</hardware-version>
  <description>NA</description>
  <mfg-name>NA</mfg-name>
  <location>54</location>
  <type>transceiver</type>
</state>
<transceiver>
  <state>
    <channel-count>4</channel-count>
    <type>qsf</type>
    <presence>Not-Present</presence>
    <port-no>54</port-no>
  </state>
  <qsf>
    <state>
      <lane4-recieve-loss>off</lane4-recieve-loss>
      <lane4-transmission-loss>off</lane4-transmission-loss>
      <lane4-transmission>off</lane4-transmission>
      <lane3-recieve-loss>off</lane3-recieve-loss>
      <lane3-transmission-loss>off</lane3-transmission-loss>
      <lane3-transmission>off</lane3-transmission>
      <lane2-recieve-loss>off</lane2-recieve-loss>
      <lane2-transmission-loss>off</lane2-transmission-loss>
      <lane2-transmission>off</lane2-transmission>
      <lane1-recieve-loss>off</lane1-recieve-loss>
      <lane1-transmission-loss>off</lane1-transmission-loss>
      <lane1-transmission>off</lane1-transmission>
      <power>Low</power>
      <reset-status>Reset</reset-status>
    </state>
  </qsf>
  <channels>
    <channel>
      <index>1</index>
    </channel>
    <channel>
      <index>2</index>
    </channel>
    <channel>
      <index>3</index>
    </channel>
    <channel>
      <index>4</index>
    </channel>
  </channels>
</transceiver>

```

```
</component>
</components>
```

Show command

```
OcNOS#show hardware-information transceiver
```

```
TX      : Transmit status
RX-Los  : Receive status
RESET   : Normal (Out of reset), Reset (In reset)
POWER   : Power level Low/High
-       : NotApplicable
```

```
SFP:[1-48]
```

PORT	PRESENCE	Tx	Rx-Los
1	Present	On	-
2	Present	On	-
3	Present	On	-
4	Present	On	-
5	Not Present	Off	-
6	Present	On	-
7	Not Present	Off	-
8	Not Present	Off	-
9	Not Present	Off	-
10	Present	On	-
11	Present	On	On
12	Not Present	Off	-
13	Not Present	Off	-
14	Not Present	Off	-
15	Not Present	Off	-
16	Not Present	Off	-
17	Not Present	Off	-
18	Not Present	Off	-
19	Not Present	Off	-
20	Not Present	Off	-
21	Not Present	Off	-
22	Not Present	Off	-
23	Not Present	Off	-
24	Not Present	Off	-
25	Not Present	Off	-
26	Not Present	Off	-
27	Not Present	Off	-
28	Not Present	Off	-
29	Not Present	Off	-
30	Not Present	Off	-
31	Not Present	Off	-
32	Not Present	Off	-
33	Not Present	Off	-
34	Not Present	Off	-
35	Not Present	Off	-
36	Not Present	Off	-
37	Not Present	Off	-
38	Not Present	Off	-
39	Not Present	Off	-

40	Not Present	Off	-
41	Not Present	Off	-
42	Not Present	Off	-
43	Not Present	Off	-
44	Not Present	Off	-
45	Not Present	Off	-
46	Not Present	Off	-
47	Not Present	Off	-
48	Not Present	Off	-

QSFP: [49-54]

PORT	PRESENCE	RESET	POWER	LANE		
3	4			1	2	
49 on	Present on	Normal	High	Tx	on	on
Off	Off			Rx-Los	Off	Off
Off	Off			Tx-Los	Off	Off
50 off	Not Present off	Reset	Low	Tx	off	off
Off	Off			Rx-Los	Off	Off
Off	Off			Tx-Los	Off	Off
51 on	Present on	Normal	High	Tx	on	on
Off	Off			Rx-Los	Off	Off
Off	Off			Tx-Los	Off	Off
52 off	Not Present off	Reset	Low	Tx	off	off
Off	Off			Rx-Los	Off	Off
Off	Off			Tx-Los	Off	Off
53 off	Not Present off	Reset	Low	Tx	off	off
Off	Off			Rx-Los	Off	Off
Off	Off			Tx-Los	Off	Off
54 off	Not Present off	Reset	Low	Tx	off	off
Off	Off			Rx-Los	Off	Off
Off	Off			Tx-Los	Off	Off

EEPROM

Display board EEPROM details.

Filter

```
<filter type="subtree">
  <components xmlns="http://openconfig.net/yang/platform">
    <component>
      <state>
        <name>CHASSIS</name>
      </state>
    </component>
  </components>
</filter>
```

OpenConfig get result

```
<components xmlns="http://openconfig.net/yang/platform">
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>CHASSIS</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>CHASSIS</id>
      <name>CHASSIS</name>
      <parent>NA</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:ACTIVE</oper-status>
      <removable>false</removable>
      <part-no>FP3ZZ5654000A</part-no>
      <serial-no>591254X1849052</serial-no>
      <software-version>EC_AS5912-54X-OcNOS-5.0.137a-SP_MPLS-S0-P0</
software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>EC_AS5912-54X</description>
      <mfg-date xmlns="http://openconfig.net/yang/platform">2020-08-
18T21:58:52Z</mfg-date>
      <mfg-name>Accton</mfg-name>
      <location>0</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:CHASSIS</type>
    </state>
  </component>
</components>
```

OcNOS get result

```
<components xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform">
  <component>
    <name>CHASSIS</name>
    <state>
```

```

    <name>CHASSIS</name>
    <parent>NA</parent>
    <product-name>5912-54X-O-AC-F</product-name>
    <oper-status>active</oper-status>
    <removable>false</removable>
    <part-no>FP3ZZ5654000A</part-no>
    <serial-no>591254X1849052</serial-no>
    <software-version>EC_AS5912-54X-OcNOS-5.0.137a-SP_MPLS-S0-P0</
software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>EC_AS5912-54X</description>
    <mfg-date>2020-08-18T21:58:52Z</mfg-date>
    <mfg-name>Accton</mfg-name>
    <location>0</location>
    <type>chassis</type>
  </state>
  <subcomponents>
    <subcomponent>
      <subcomponent-name>HARD-DISK</subcomponent-name>
      <state>
        <subcomponent-name>HARD-DISK</subcomponent-name>
      </state>
    </subcomponent>
    <subcomponent>
      <subcomponent-name>RAM</subcomponent-name>
      <state>
        <subcomponent-name>RAM</subcomponent-name>
      </state>
    </subcomponent>
    <subcomponent>
      <subcomponent-name>CPU</subcomponent-name>
      <state>
        <subcomponent-name>CPU</subcomponent-name>
      </state>
    </subcomponent>
    <subcomponent>
      <subcomponent-name>TEMPERATURE-SENSOR1</subcomponent-name>
      <state>
        <subcomponent-name>TEMPERATURE-SENSOR1</subcomponent-name>
      </state>
    </subcomponent>
    <subcomponent>
      <subcomponent-name>TEMPERATURE-SENSOR2</subcomponent-name>
      <state>
        <subcomponent-name>TEMPERATURE-SENSOR2</subcomponent-name>
      </state>
    </subcomponent>
    <subcomponent>
      <subcomponent-name>TEMPERATURE-SENSOR3</subcomponent-name>
      <state>
        <subcomponent-name>TEMPERATURE-SENSOR3</subcomponent-name>
      </state>
    </subcomponent>
    <subcomponent>
      <subcomponent-name>TEMPERATURE-BCM Chip</subcomponent-name>
      <state>

```

```
        <subcomponent-name>TEMPERATURE-BCM Chip</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>POWER-RAIL</subcomponent-name>
    <state>
        <subcomponent-name>POWER-RAIL</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PSU-1</subcomponent-name>
    <state>
        <subcomponent-name>PSU-1</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PSU-2</subcomponent-name>
    <state>
        <subcomponent-name>PSU-2</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>FAN_TRAY-1</subcomponent-name>
    <state>
        <subcomponent-name>FAN_TRAY-1</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>FAN_TRAY-2</subcomponent-name>
    <state>
        <subcomponent-name>FAN_TRAY-2</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>FAN_TRAY-3</subcomponent-name>
    <state>
        <subcomponent-name>FAN_TRAY-3</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>FAN_TRAY-4</subcomponent-name>
    <state>
        <subcomponent-name>FAN_TRAY-4</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>FAN_TRAY-5</subcomponent-name>
    <state>
        <subcomponent-name>FAN_TRAY-5</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>FAN_TRAY-6</subcomponent-name>
    <state>
        <subcomponent-name>FAN_TRAY-6</subcomponent-name>
    </state>
</subcomponent>
```

```
<subcomponent>
  <subcomponent-name>PORT-lo</subcomponent-name>
  <state>
    <subcomponent-name>PORT-lo</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-eth0</subcomponent-name>
  <state>
    <subcomponent-name>PORT-eth0</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe1</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe1</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe2</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe2</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe3</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe3</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe4</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe4</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe5</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe5</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe6</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe6</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe7</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe7</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe8</subcomponent-name>
  <state>
```

```
        <subcomponent-name>PORT-xe8</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-xe9</subcomponent-name>
    <state>
        <subcomponent-name>PORT-xe9</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-xe10</subcomponent-name>
    <state>
        <subcomponent-name>PORT-xe10</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-xe11</subcomponent-name>
    <state>
        <subcomponent-name>PORT-xe11</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-xe12</subcomponent-name>
    <state>
        <subcomponent-name>PORT-xe12</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-xe13</subcomponent-name>
    <state>
        <subcomponent-name>PORT-xe13</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-xe14</subcomponent-name>
    <state>
        <subcomponent-name>PORT-xe14</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-xe15</subcomponent-name>
    <state>
        <subcomponent-name>PORT-xe15</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-xe16</subcomponent-name>
    <state>
        <subcomponent-name>PORT-xe16</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-xe17</subcomponent-name>
    <state>
        <subcomponent-name>PORT-xe17</subcomponent-name>
    </state>
</subcomponent>
```



```
<subcomponent>
  <subcomponent-name>PORT-xe18</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe18</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe19</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe19</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe20</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe20</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe21</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe21</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe22</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe22</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe23</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe23</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe24</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe24</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe25</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe25</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe26</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe26</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe27</subcomponent-name>
  <state>
```

```
        <subcomponent-name>PORT-xe27</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-xe28</subcomponent-name>
    <state>
        <subcomponent-name>PORT-xe28</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-xe29</subcomponent-name>
    <state>
        <subcomponent-name>PORT-xe29</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-xe30</subcomponent-name>
    <state>
        <subcomponent-name>PORT-xe30</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-xe31</subcomponent-name>
    <state>
        <subcomponent-name>PORT-xe31</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-xe32</subcomponent-name>
    <state>
        <subcomponent-name>PORT-xe32</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-xe33</subcomponent-name>
    <state>
        <subcomponent-name>PORT-xe33</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-xe34</subcomponent-name>
    <state>
        <subcomponent-name>PORT-xe34</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-xe35</subcomponent-name>
    <state>
        <subcomponent-name>PORT-xe35</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-xe36</subcomponent-name>
    <state>
        <subcomponent-name>PORT-xe36</subcomponent-name>
    </state>
</subcomponent>
```

```
<subcomponent>
  <subcomponent-name>PORT-xe37</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe37</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe38</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe38</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe39</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe39</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe40</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe40</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe41</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe41</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe42</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe42</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe43</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe43</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe44</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe44</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe45</subcomponent-name>
  <state>
    <subcomponent-name>PORT-xe45</subcomponent-name>
  </state>
</subcomponent>
<subcomponent>
  <subcomponent-name>PORT-xe46</subcomponent-name>
  <state>
```

```
        <subcomponent-name>PORT-xe46</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-xe47</subcomponent-name>
    <state>
        <subcomponent-name>PORT-xe47</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-xe48</subcomponent-name>
    <state>
        <subcomponent-name>PORT-xe48</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-ce49</subcomponent-name>
    <state>
        <subcomponent-name>PORT-ce49</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-ce50</subcomponent-name>
    <state>
        <subcomponent-name>PORT-ce50</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-ce51</subcomponent-name>
    <state>
        <subcomponent-name>PORT-ce51</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-ce52</subcomponent-name>
    <state>
        <subcomponent-name>PORT-ce52</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-ce53</subcomponent-name>
    <state>
        <subcomponent-name>PORT-ce53</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-ce54</subcomponent-name>
    <state>
        <subcomponent-name>PORT-ce54</subcomponent-name>
    </state>
</subcomponent>
<subcomponent>
    <subcomponent-name>PORT-lo.management</subcomponent-name>
    <state>
        <subcomponent-name>PORT-lo.management</subcomponent-name>
    </state>
</subcomponent>
```

```

    </subcomponents>
    <chassis>
      <state>
        <supported-switch-chip-revision>BCM88370_B0</supported-switch-chip-
revision>
        <supported-label-revision>R0BB</supported-label-revision>
        <fan-board-id>Reserved</fan-board-id>
        <switch-chip-revision>BCM88370_B0</switch-chip-revision>
        <cyclic-redundancy-32bit-value>0x797A6D84</cyclic-redundancy-32bit-
value>
        <diagnostic-version>0.0.5.9</diagnostic-version>
        <vendor-name>Edgecore</vendor-name>
        <onie-version>2018.05.00.04</onie-version>
        <platform-name>x86_64-accton_as5912_54x-r0</platform-name>
        <chassis-100g-ethernet-count>6</chassis-100g-ethernet-count>
        <chassis-50g-ethernet-count>0</chassis-50g-ethernet-count>
        <chassis-40g-ethernet-count>0</chassis-40g-ethernet-count>
        <chassis-25g-ethernet-count>0</chassis-25g-ethernet-count>
        <chassis-10g-ethernet-count>48</chassis-10g-ethernet-count>
        <chassis-1g-ethernet-count>0</chassis-1g-ethernet-count>
        <chassis-fast-ethernet-count>0</chassis-fast-ethernet-count>
        <power-supplies-count>2</power-supplies-count>
        <fan-tray-count>6</fan-tray-count>
        <country-code>TW</country-code>
        <label-revision>R02B</label-revision>
        <mac-address>B8:6A:97:A7:47:3C</mac-address>
        <up-time>517700</up-time>
      </state>
    </chassis>
  </component>
</components>

```

Show command

```
OcNOS#show system-information board-info
```

System Board Information

```
=====
```

```

Product Name       : 5912-54X-O-AC-F
Part Number        : FP3ZZ5654000A
Serial Number      : 591254X1849052
Base MAC Address   : B8:6A:97:A7:47:3C
Manufacture Date   : 08/18/2020 21:58:52
Label Revision     : R02B
Platform Name      : x86_64-accton_as5912_54x-r0
ONIE Version       : 2018.05.00.04
MAC Addresses      : 256
Manufacturer       : Accton
Country Code       : TW
Vendor Name        : Edgecore
Diag Version       : 0.0.5.9
CRC-32             : 0x797A6D84
Switch Chip Revision : BCM88370_B0
CPLD 1 Board Info  : ES5654BQ
Fan Board Id       : Reserved
CPLD 1 PCB version ID : Reserved
CPLD 1 Version     : 9

```

CPLD 2 Version : 6
Fan CPLD Version : 2

CPU

Display CPU load information.

Filter

```
<filter type="subtree">
  <components xmlns="http://openconfig.net/yang/platform">
    <component>
      <state>
        <name>CPU</name>
      </state>
    </component>
  </components>
</filter>
```

OpenConfig get result

```
<components xmlns="http://openconfig.net/yang/platform">
  <component xmlns:oc-opt-types="http://openconfig.net/yang/transport-
types">
    <name>CPU</name>
    <state xmlns:oc-platform-types="http://openconfig.net/yang/platform-
types">
      <id>CPU</id>
      <name>CPU</name>
      <parent>CHASSIS</parent>
      <oper-status xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">ipi-oc-
platform-types-deviations:NA</oper-status>
      <removable>false</removable>
      <part-no>NA</part-no>
      <serial-no>NA</serial-no>
      <software-version>NA</software-version>
      <firmware-version>NA</firmware-version>
      <hardware-version>NA</hardware-version>
      <description>NA</description>
      <mfg-name>NA</mfg-name>
      <location>0</location>
      <type xmlns:ipi-oc-platform-types-deviations="http://
www.ipinfusion.com/yang/ocnos/ipi-oc-platform-types-deviations">oc-platform-
types:CPU</type>
    </state>
  </component>
</components>
```

OcNOS get result

```
<components xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform">
  <component>
    <name>CPU</name>
    <state>
```

```

    <name>CPU</name>
    <parent>CHASSIS</parent>
    <product-name>NA</product-name>
    <oper-status>NA</oper-status>
    <removable>false</removable>
    <part-no>NA</part-no>
    <serial-no>NA</serial-no>
    <software-version>NA</software-version>
    <firmware-version>NA</firmware-version>
    <hardware-version>NA</hardware-version>
    <description>NA</description>
    <mfg-name>NA</mfg-name>
    <location>0</location>
    <type>cpu</type>
  </state>
</cpu>
</component>
</components>

```

Show command

```
OcNOS#show system-information cpu-load
```

```
System CPU-Load Information
=====
```

```

Uptime                : 0 Days 1 Hours 29 Minutes 2 Seconds

Load Average(1 min)   : 5.93% (Crit Thresh : 40%, Alert Thresh : 50%)
Load Average(5 min)   : 4.06% (Crit Thresh : N/A, Alert Thresh : 50%)
Load Average(15 min)  : 3.28% (Crit Thresh : N/A, Alert Thresh : 50%)

Avg CPU Usage         : 3.02%
CPU core 1 Usage      : 3.74% (Crit Thresh : 50%, Alert Thresh : 90%)
CPU core 2 Usage      : 0.93% (Crit Thresh : 50%, Alert Thresh : 90%)
CPU core 3 Usage      : 6.48% (Crit Thresh : 50%, Alert Thresh : 90%)
CPU core 4 Usage      : 0.00% (Crit Thresh : 50%, Alert Thresh : 90%)

```

System OpenConfig Translation

Host

Release

This configuration was introduced in OcNOS version 5.0.

Configuration

Use this command to set the network name for the device. OcNOS uses this name in system prompts and default configuration filenames.

Setting a hostname using this command also sets the hostname in the kernel.

OpenConfig NETCONF Payload

```
<system xmlns="http://openconfig.net/yang/system">
  <config>
    <hostname>host123</hostname>
  </config>
</system>
```

OcNOS CLI command

```
OcNOS#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
OcNOS(config)#hostname host123
OcNOS(config)#commit
```

OcNOS NETCONF Payload

```
<system-info xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-system">
  <config>
    <hostname>host123</hostname>
  </config>
</system-info>
```

Validation

Get OpenConfig Payload

```
<system xmlns="http://openconfig.net/yang/system">
  <config/>
  <state/>
</system>
```

Get OpenConfig Return

```
<system xmlns="http://openconfig.net/yang/system">
```



```
<config>
  <hostname>host123</hostname>
</config>
<state>
  <hostname>host123</hostname>
  <current-datetime>2021-11-18T12:36:44Z</current-datetime>
</state>
</system>
```

Unconfiguration

Use operation='delete' to unconfigure. In this case, the hostname came back to the default name "OcNOS".

OpenConfig NETCONF Payload

```
<system xmlns="http://openconfig.net/yang/system">
  <config>
    <hostname operation="delete" />
  </config>
</system>
```

Restriction

Network name for a system. Per RFC 952 and RFC 1123, a hostname string can contain only the special characters period (".") and hyphen ("-"). These special characters cannot be at the start or end of a hostname. The hostname is limited to between 1 and 63 characters.

TimeZone Clock

Release

This configuration was introduced in OcNOS version 5.0.

Configuration

Use this command to set the system time zone.

OpenConfig NETCONF Payload

```
<system xmlns="http://openconfig.net/yang/system">
  <clock>
    <config>
      <timezone-name>Pacific</timezone-name>
    </config>
  </clock>
</system>
```

OcNOS CLI command

```
OcNOS#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
```

```
OcNOS(config)#clock timezone Pacific
OcNOS(config)#commit
```

OcNOS NETCONF Payload

```
<system xmlns="http://openconfig.net/yang/system">
  <clock>
    <config>
      <timezone-name>Pacific</timezone-name>
    </config>
  </clock>
</system>
```

Validation

Get OpenConfig Payload

```
<system xmlns="http://openconfig.net/yang/system">
  <clock/>
</system>
```

Get OpenConfig Return

```
<system xmlns="http://openconfig.net/yang/system">
  <clock>
    <config>
      <timezone-name>Pacific</timezone-name>
    </config>
    <state>
      <timezone-name>Pacific</timezone-name>
    </state>
  </clock>
</system>
```

Restrictions

Allowed words in the time zone name can be queried with the cli show timezone <macro region> command.

There is currently no way to query this list through OpenConfig.

Rsyslog

Release

This configuration was introduced in OcNOS version 5.0.

Configuration

Use this command to change the VRF of Rsyslog.

OpenConfig NETCONF Payload

```
<system xmlns="http://openconfig.net/yang/system">
  <logging>
    <remote-servers>
      <config xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-sys-
deviations">
        <vrf>management</vrf>
      </config>
    </remote-servers>
  </logging>
</system>
```

OcNOS CLI command

```
OcNOS#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
OcNOS(config)#feature rsyslog vrf management
OcNOS(config)#commit
```

OcNOS NETCONF Payload

```
<logging xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-logging">
  <rsyslog>
    <vrf>management</vrf>
  </rsyslog>
</logging>
```

Validation

Get OpenConfig Payload

```
<system xmlns="http://openconfig.net/yang/system">
  <logging/>
</system>
```

Get OpenConfig Return

```
<system xmlns="http://openconfig.net/yang/system">
  <logging>
    <remote-servers>
      <config xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-sys-
deviations">
        <vrf>management</vrf>
      </config>
      <state xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-sys-
deviations">
        <vrf>management</vrf>
      </state>
    </remote-servers>
  </logging>
</system>
```

Restrictions

The leaf `system/logging/remote-servers/config/vrf` accepts only default or management.

Logging Remote Server

Release

This configuration was introduced in OcNOS version 5.0.

Configuration

Use this command to set a syslog server.

OcNOS supports logging messages to a syslog server in addition to logging to a file or the console (local or ssh/telnet console). Messages can be logged to a local syslog server (the machine on which OcNOS executes) as well as to one or more remote syslog servers.

OpenConfig NETCONF Payload

```
<system xmlns="http://openconfig.net/yang/system">
  <logging>
    <remote-servers>
      <config xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-sys-
deviations">
        <vrf>management</vrf>
      </config>
    <remote-server>
      <host>2.2.2.3</host>
      <config>
        <host>2.2.2.3</host>
      </config>
      <selectors>
        <selector>
          <severity>DEBUG</severity>
          <config>
            <severity>DEBUG</severity>
          </config>
        </selector>
      </selectors>
    </remote-server>
  </remote-servers>
</logging>
</system>
```

OcNOS CLI command

```
OcNOS#conf t
Enter configuration commands, one per line. End with CNTL/Z.
OcNOS(config)#logging remote server 2.2.2.3 7 vrf management
OcNOS(config)#commit
```

OcNOS NETCONF Payload

```
<logging xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-logging">
  <rsyslog>
    <vrf>management</vrf>
    <remote-servers>
      <remote-server>
        <address>2.2.2.3</address>
        <config>
          <address>2.2.2.3</address>
          <severity>7</severity>
        </config>
      </remote-server>
    </remote-servers>
  </rsyslog>
</logging>
```

Validation

Get Openconfig Payload

```
<system xmlns="http://openconfig.net/yang/system">
  <logging/>
</system>
```

Get OpenConfig Return

```
<system xmlns="http://openconfig.net/yang/system">
  <logging>
    <remote-servers>
      <config xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-sys-
deviations">
        <vrf>management</vrf>
      </config>
      <state xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-sys-
deviations">
        <vrf>management</vrf>
      </state>
      <remote-server>
        <host>2.2.2.3</host>
        <config>
          <host>2.2.2.3</host>
        </config>
        <selectors>
          <selector>
            <severity>DEBUG</severity>
            <config>
              <severity>DEBUG</severity>
            </config>
            <state>
              <severity>DEBUG</severity>
            </state>
          </selector>
        </selectors>
      </remote-server>
    </remote-servers>
  </logging>
</system>
```

```

        </selector>
      </selectors>
    <state>
      <host>2.2.2.3</host>
    </state>
  </remote-server>
</remote-servers>
</logging>
</system>

```

Restrictions

- When configure `/system/logging/remote-servers/remote-server/selectors/selector/config/facility` leaf, this is mapped on IPI datamodel as `/logging/global/config/remote-server-facility` leaf, which is a single and global configuration. To avoid issues when configure it, the value of Open Config `facility` leaf must be the same on all `facility` leaves indicated on payload, otherwise the IPI will choose one `facility` value among all the values present on payload to perform the configuration for all `facility` leaves.
- When the delete operation is set on Open Config `/system/logging/remote-servers` path, it will trigger the delete of IPI datamodel `/logging/global/config/remote-server-facility` leaf.
- When all Open Config objects `/system/logging/remote-servers/remote-server` are deleted individually, this will not trigger the of IPI datamodel `/logging/global/config/remote-server-facility` leaf. In this case, this leaf will not be shown on NETCONF get output, but will be shown on CLI `show running-config`.

Logging Remote Facility

Release

This configuration was introduced in OcNOS version 5.0

Configuration

This command is used to set a syslog servers facility.

OcNOS supports logging messages to one or more remote syslog servers, but the same facility is used for all the servers.

No form of this command is used to apply the default facility value, which is local7.

OpenConfig NETCONF Payload

```

<system xmlns="http://openconfig.net/yang/system">
  <logging>
    <remote-servers>
      <config xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-sys-
deviations">
        <vrf>management</vrf>
      </config>
    <remote-server>
      <host>2.2.2.3</host>
      <config>
        <host>2.2.2.3</host>
      </config>
    </remote-server>
  </remote-servers>
</logging>
</system>

```

```
<selectors>
  <selector>
    <facility>oc-log:LOCAL5</facility>
    <severity>DEBUG</severity>
    <config>
      <facility>oc-log:LOCAL5</facility>
      <severity>DEBUG</severity>
    </config>
  </selector>
</selectors>
</remote-server>
</remote-servers>
</logging>
</system>
```

OcNOS CLI command

```
OcNOS#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
OcNOS(config)#logging remote facility local5
OcNOS(config)#commit
```

OcNOS NETCONF Payload

```
<logging>
  <remote-servers>
    <config xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-sys-
deviations">
      <vrf>management</vrf>
    </config>
    <remote-server>
      <host>2.2.2.3</host>
      <config>
        <host>2.2.2.3</host>
      </config>
      <selectors>
        <selector>
          <facility>oc-log:LOCAL5</facility>
          <severity>DEBUG</severity>
          <config>
            <facility>oc-log:LOCAL5</facility>
            <severity>DEBUG</severity>
          </config>
        </selector>
      </selectors>
    </remote-server>
  </remote-servers>
</logging>
```

Validation

Get OpenConfig Payload

```
<system xmlns="http://openconfig.net/yang/system">
  <logging/>
</system>
```

Get OpenConfig Return

```
<system xmlns="http://openconfig.net/yang/system">
  <logging>
    <remote-servers>
      <config xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-sys-
deviations">
        <vrf>management</vrf>
      </config>
      <state xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-sys-
deviations">
        <vrf>management</vrf>
      </state>
      <remote-server>
        <host>2.2.2.3</host>
        <config>
          <host>2.2.2.3</host>
        </config>
        <selectors>
          <selector>
            <facility>oc-log:LOCAL5</facility>
            <severity>DEBUG</severity>
            <config>
              <facility>oc-log:LOCAL5</facility>
              <severity>DEBUG</severity>
            </config>
            <state>
              <facility>oc-log:LOCAL5</facility>
              <severity>DEBUG</severity>
            </state>
          </selector>
        </selectors>
        <state>
          <host>2.2.2.3</host>
        </state>
      </remote-server>
    </remote-servers>
  </logging>
</system>
```

Restrictions

- The `facility` leaf only can be added via OpenConfig to a configured remote server, as it is part of the object's key on `/system/logging/remote-servers/remote-server/selectors/selector` path.
- When configure `/system/logging/remote-servers/remote-server/selectors/selector/config/facility` leaf, this is mapped on IPI datamodel as `/logging/global/config/remote-server-facility` leaf, which is a single and global configuration. To avoid issues when configure it, the value of Open Config `facility` leaf must be the same on all `facility` leaves indicated on payload, otherwise the IPI will choose one `facility` value among all the values present on payload to perform the configuration for all `facility` leaves.
- When the delete operation is set on Open Config `/system/logging/remote-servers` path, it will trigger the delete of IPI datamodel `/logging/global/config/remote-server-facility` leaf.
- When all Open Config objects `/system/logging/remote-servers/remote-server` are deleted individually, this will not trigger the of IPI datamodel `/logging/global/config/remote-server-facility` leaf. In this case, this leaf will not be shown on NETCONF get output, but will be shown on CLI `show running-config`.

Alarms

Release

This configuration was introduced in OcNOS version 5.1.

Configuration

There is no configuration via OpenConfig. The alarm is a runtime attribute. When some event triggers the alarm, It can be viewed via OpenConfig.

However, to enable it is necessary the following command via CLI:

```
OcNOS#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
OcNOS(config)#fault-management enable
OcNOS(config)#commit
```

To enable the Alarm clearing is necessary to change the all logging level to four or more. For this, use the following command via CLI:

```
OcNOS#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
OcNOS(config)#logging level all 4
OcNOS(config)#commit
```

Get OpenConfig Payload

```
<system xmlns="http://openconfig.net/yang/system">
  <alarms/>
</system>
```

Get OpenConfig Return

```
<system xmlns="http://openconfig.net/yang/system">
  <alarms>
    <alarm>
      <id>IFMGR_IF_DOWN:ce2/1</id>
      <state>
        <id>IFMGR_IF_DOWN:ce2/1</id>
        <type-id>EQPT</type-id>
        <severity xmlns:oc-alarm-types="http://openconfig.net/yang/alarms/
types">oc-alarm-types:MAJOR</severity>
        <alarm-reported-timestamp xmlns="http://www.ipinfusion.com/yang/ocnos/
ipi-oc-sys-deviations">Thu Dec 16 2021 20:31:28 UTC</alarm-reported-timestamp>
        <time-created>1639686688</time-created>
        <text>OcNOS [IFMGR_IF_DOWN] Interface ce2/1 changed state to down</
text>
        <resource>ce2/1</resource>
      </state>
    </alarm>
  </alarms>
</system>
```

OcNOS CLI show command

```
OcNOS#show alarm active
Active Alarms received:-
Active Alarm Count: 2
Severity      Status      Alarm Description
MAJOR        Active      OcNOS [IFMGR_IF_DOWN] Interface ce2/1 changed state to
down
```

Restrictions

The alarms will be generated just for some events, the list of which can be found in

<https://jira-ipi.atlassian.net/wiki/spaces/IPI/pages/741900306/Alarms+Datamodel+Design+Document#3.1.3--List-of-supported%2Fregistered-alarms-in-OcNOS-5.1>

<https://jira-ipi.atlassian.net/wiki/spaces/IPI/pages/741900306/Alarms+Datamodel+Design+Document#3.1.2--List-of-supported%2Fregistered-alarms-in-OcNOS-5.0>

VLAN OpenConfig Translation

Match single tagged VLAN

This XML configuration snippet is used to set a single tag VLAN match.

Release

This configuration was introduced in OcNOS version 5.1.

OpenConfig NetConf Payload

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe24</name>
    <config>
      <name>xe24</name>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </config>
    <subinterfaces>
      <subinterface>
        <index>20</index>
        <config>
          <index>20</index>
        </config>
        <vlan xmlns="http://openconfig.net/yang/vlan">
          <match>
            <single-tagged-list>
              <config>
                <vlan-ids>6</vlan-ids>
              </config>
            </single-tagged-list>
          </match>
        </vlan>
      </subinterface>
    </subinterfaces>
  </interface>
</interfaces>
```

OcNOS CLI Command

```
interface xe24.20
  encapsulation dot1q 6
```

OcNOS NetConf Payload

```
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>xe24</name>
    <config>
      <name>xe24</name>
```

```

    </config>
  </interface>
</interface>
  <name>xe24.20</name>
  <config>
    <name>xe24.20</name>
  </config>
  <extended xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-extended">
    <subinterface-encapsulation>
      <single-tag-vlan-matches>
        <single-tag-vlan-match>
          <encapsulation-type>dot1q</encapsulation-type>
          <config>
            <encapsulation-type>dot1q</encapsulation-type>
            <outer-vlan-id>6</outer-vlan-id>
          </config>
        </single-tag-vlan-match>
      </single-tag-vlan-matches>
    </subinterface-encapsulation>
  </extended>
</interface>
</interfaces>

```

Validation with NetConf get

```

<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe24</name>
    <config>
      <name>xe24</name>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-type">ianaift:ethernetCsmacd</type>
    </config>
    <vlan xmlns="http://openconfig.net/yang/vlan">
      <match>
        <single-tagged-list>
          <config>
            <vlan-ids>6</vlan-ids>
          </config>
          <state>
            <vlan-ids>6</vlan-ids>
          </state>
        </single-tagged-list>
      </match>
    </vlan>
  </subinterface>
</subinterfaces>
</interface>
</interfaces>

```

Restrictions

- N/A

Match single tagged VLAN range

This XML configuration snippet is used to set a single tag VLAN range in a subinterface.

Release

This configuration was introduced in OcNOS version 5.1.

OpenConfig NetConf Payload

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe26</name>
    <subinterfaces>
      <subinterface>
        <index>10</index>
        <config>
          <index>10</index>
        </config>
        <vlan xmlns="http://openconfig.net/yang/vlan">
          <match>
            <single-tagged-range>
              <config>
                <low-vlan-id>10</low-vlan-id>
                <high-vlan-id>20</high-vlan-id>
              </config>
            </single-tagged-range>
          </match>
          <ingress-mapping>
            <config>
              <vlan-stack-action>PUSH</vlan-stack-action>
              <vlan-id>15</vlan-id>
              <tpid xmlns:oc-vlan-types="http://openconfig.net/yang/
vlan-types">oc-vlan-types:TPID_0X88A8</tpid>
            </config>
          </ingress-mapping>
        </vlan>
      </subinterface>
    </subinterfaces>
  </interface>
</interfaces>
```

OcNOS CLI Command

```
interface xe26.10 switchport
 encapsulation dot1q 10-20
 rewrite push 0x88a8 15
```

OcNOS NetConf Payload

```
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>xe26</name>
```

```

    <config>
      <name>xe26</name>
    </config>
  </interface>
</interface>
<interface>
  <name>xe26.10</name>
  <config>
    <name>xe26.10</name>
    <enable-switchport />
  </config>
  <extended xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-extended">
    <subinterface-encapsulation>
      <single-tag-vlan-matches>
        <single-tag-vlan-match>
          <encapsulation-type>dot1q</encapsulation-type>
          <config>
            <encapsulation-type>dot1q</encapsulation-type>
            <outer-vlan-id>10-20</outer-vlan-id>
          </config>
        </single-tag-vlan-match>
      </single-tag-vlan-matches>
      <rewrite>
        <config>
          <vlan-action>push</vlan-action>
          <push-outer-vlan-id>15</push-outer-vlan-id>
          <push-tpid>0x88a8</push-tpid>
        </config>
      </rewrite>
    </subinterface-encapsulation>
  </extended>
</interface>
</interfaces>

```

Validation with NetConf get

```

<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe26</name>
    <config>
      <name>xe26</name>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-type">ianaift:ethernetCsmacd</type>
    </config>
    <subinterfaces>
      <subinterface>
        <index>0</index>
        <config>
          <index>0</index>
        </config>
      </subinterface>
      <subinterface>
        <index>10</index>
        <config>
          <index>10</index>
        </config>
      </subinterface>
    </subinterfaces>
  </interface>
</interfaces>

```

```

<name>xe26.10</name>
<logical>true</logical>
<oper-status>DOWN</oper-status>
<ifindex>328531978</ifindex>
<counters>
  <last-clear>0</last-clear>
  <out-pkts>0</out-pkts>
  <out-octets>0</out-octets>
  <in-pkts>0</in-pkts>
  <in-octets>0</in-octets>
</counters>
</state>
<vlan xmlns="http://openconfig.net/yang/vlan">
  <ingress-mapping>
    <config>
      <vlan-stack-action>PUSH</vlan-stack-action>
      <tpid>TPID_0X88A8</tpid>
      <vlan-id>15</vlan-id>
    </config>
    <state>
      <vlan-stack-action>PUSH</vlan-stack-action>
      <tpid>TPID_0X88A8</tpid>
      <vlan-id>15</vlan-id>
    </state>
  </ingress-mapping>
  <match>
    <single-tagged-range>
      <config>
        <low-vlan-id>10</low-vlan-id>
        <high-vlan-id>20</high-vlan-id>
      </config>
      <state>
        <low-vlan-id>10</low-vlan-id>
        <high-vlan-id>20</high-vlan-id>
      </state>
    </single-tagged-range>
  </match>
</vlan>
</subinterface>
</subinterfaces>
</interface>
</interfaces>

```

Restrictions

If OcNOS “switchport” parameter has not been set previously on subinterface, VLAN range match needs to be configured along with ingress-mapping or added in the cross-connect network-instance.

Match double tagged VLAN

This XML configuration snippet is used to set an outer VLAN match in a subinterface.

Release

This configuration was introduced in OcNOS version 5.1.

OpenConfig NetConf Payload

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe37</name>
    <config>
      <name>xe37</name>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </config>
    <subinterfaces>
      <subinterface>
        <index>100</index>
        <config>
          <index>100</index>
        </config>
        <vlan xmlns="http://openconfig.net/yang/vlan">
          <match>
            <double-tagged-outer-list>
              <config>
<outer-vlan-ids>400</outer-vlan-ids>
              </config>
            </double-tagged-outer-list>
          </match>
        </vlan>
      </subinterface>
    </subinterfaces>
  </interface>
</interfaces>
```

OcNOS CLI Command

```
interface xe37.100
  encapsulation dot1ad 400
```

OcNOS NetConf Payload

```
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>xe37</name>
    <config>
      <name>xe37</name>
    </config>
  </interface>
  <interface>
    <name>xe37.100</name>
    <config>
      <name>xe37.100</name>
    </config>
    <extended xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-
extended">
```



```

    <subinterface-encapsulation>
      <single-tag-vlan-matches>
        <single-tag-vlan-match>
          <encapsulation-type>dot1ad</encapsulation-type>
          <config>
            <encapsulation-type>dot1ad</encapsulation-type>
            <outer-vlan-id>400</outer-vlan-id>
          </config>
        </single-tag-vlan-match>
      </single-tag-vlan-matches>
    </subinterface-encapsulation>
  </extended>
</interface>
</interfaces>

```

Validation with NetConf get

```

<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe37</name>
    <config>
      <name>xe37</name>
    </config>
    <subinterfaces>
      <subinterface>
        <index>100</index>
        <config>
          <index>100</index>
        </config>
        <state>
          <name>xe37.100</name>
          <logical>true</logical>
          <oper-status>DOWN</oper-status>
          <ifindex>328892516</ifindex>
          <counters>
            <last-clear>0</last-clear>
            <out-pkts>0</out-pkts>
            <out-octets>0</out-octets>
            <in-pkts>0</in-pkts>
            <in-octets>0</in-octets>
          </counters>
        </state>
      <vlan xmlns="http://openconfig.net/yang/vlan">
        <match>
          <double-tagged-outer-list>
            <config>
              <outer-vlan-ids>400</outer-vlan-ids>
            </config>
            <state>
              <outer-vlan-ids>400</outer-vlan-ids>
            </state>
          </double-tagged-outer-list>
        </match>
      </vlan>
    </subinterface>
  </subinterfaces>

```

```
</interface>
</interfaces>
```

Restrictions

Double-tagged-outer-list does not support the inner-vlan-id configuration.

Match double tagged with outer and inner VLAN

This XML configuration snippet is used to set outer and inner VLAN match in a subinterface.

Release

This configuration was introduced in OcNOS version 5.1.

OpenConfig NetConf Payload

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe25</name>
    <config>
      <name>xe25</name>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </config>
    <subinterfaces>
      <subinterface>
        <index>20</index>
        <config>
          <index>20</index>
        </config>
        <vlan xmlns="http://openconfig.net/yang/vlan">
          <match>
            <double-tagged>
              <config>
                <outer-vlan-id>40</outer-vlan-id>
                <inner-vlan-id>30</inner-vlan-id>
              </config>
            </double-tagged>
          </match>
        </vlan>
      </subinterface>
    </subinterfaces>
  </interface>
</interfaces>
```

OcNOS CLI Command

```
interface xe25.20
  encapsulation dot1ad 40 inner-dot1q 30
```

OcNOS NetConf Payload

```
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>xe25</name>
    <config>
      <name>xe25</name>
    </config>
  </interface>
  <interface>
    <name>xe25.20</name>
    <config>
      <name>xe25.20</name>
    </config>
  <extended xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-
extended">
    <subinterface-encapsulation>
      <double-tag-vlan-matches>
        <double-tag-vlan-match>
          <encapsulation-type>dot1ad</encapsulation-type>
          <outer-vlan-id>40</outer-vlan-id>
          <config>
            <encapsulation-type>dot1ad</encapsulation-type>
            <outer-vlan-id>40</outer-vlan-id>
            <inner-vlan-id>30</inner-vlan-id>
          </config>
        </double-tag-vlan-match>
      </double-tag-vlan-matches>
    </subinterface-encapsulation>
  </extended>
</interface>
</interfaces>
```

Validation with NetConf get

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe25</name>
    <config>
      <name>xe25</name>
    </config>
  <subinterfaces>
    <subinterface>
      <index>20</index>
      <config>
        <index>20</index>
      </config>
      <state>
        <name>xe25.20</name>
        <logical>true</logical>
        <oper-status>DOWN</oper-status>
        <ifindex>328499220</ifindex>
        <counters>
          <last-clear>0</last-clear>
          <out-pkts>0</out-pkts>
          <out-octets>0</out-octets>
        </counters>
      </state>
    </subinterface>
  </subinterfaces>
</interfaces>
```

```

        <in-pkts>0</in-pkts>
        <in-octets>0</in-octets>
      </counters>
    </state>
    <vlan xmlns="http://openconfig.net/yang/vlan">
      <match>
        <double-tagged>
          <config>
            <outer-vlan-id>40</outer-vlan-id>
            <inner-vlan-id>30</inner-vlan-id>
          </config>
          <state>
            <outer-vlan-id>40</outer-vlan-id>
            <inner-vlan-id>30</inner-vlan-id>
          </state>
        </double-tagged>
      </match>
    </vlan>
  </subinterface>
</subinterfaces>
</interface>
</interfaces>

```

Restrictions

- N/A

Ingress-mapping actions

This XML configuration snippet is used to configure an ingress-mapping with VLAN actions. Allowed actions are PUSH, POP and SWAP.

Release

This configuration was introduced in OcNOS version 5.1.

OpenConfig NetConf Payload

```

<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe32</name>
    <config>
      <name>xe32</name>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </config>
    <subinterfaces>
      <subinterface>
        <index>100</index>
        <config>
          <index>100</index>
        </config>
        <vlan xmlns="http://openconfig.net/yang/vlan">

```

```

    <match>
      <single-tagged-list>
        <config>
          <vlan-ids>10</vlan-ids>
        </config>
      </single-tagged-list>
    </match>
    <ingress-mapping>
      <config>
        <vlan-stack-action>SWAP</vlan-stack-action>
        <tpid>TPID_0X8100</tpid>
        <vlan-id>100</vlan-id>
      </config>
    </ingress-mapping>
  </vlan>
</subinterface>
</subinterfaces>
</interface>
</interfaces>

```

OcNOS CLI Command

```

interface xe32.100 switchport
  encapsulation dot1q 10
  rewrite translate 1-to-1 0x8100 100

```

OcNOS NetConf Payload

```

<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>xe32</name>
    <config>
      <name>xe32</name>
    </config>
  </interface>
  <interface>
    <name>xe32.100</name>
    <config>
      <name>xe32.100</name>
      <enable-switchport />
    </config>
    <extended xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-
extended">
      <subinterface-encapsulation>
        <single-tag-vlan-matches>
          <single-tag-vlan-match>
            <encapsulation-type>dot1q</encapsulation-type>
            <config>
              <encapsulation-type>dot1q</encapsulation-type>
              <outer-vlan-id>10</outer-vlan-id>
            </config>
          </single-tag-vlan-match>
        </single-tag-vlan-matches>
        <rewrite>
          <config>
            <vlan-action>translate</vlan-action>

```

```

        <rewrite-translate-action>1-to-1</rewrite-translate-action>
        <dot1q-dot1ad-tpid>0x8100</dot1q-dot1ad-tpid>
        <outer-vlan-id>100</outer-vlan-id>
    </config>
</rewrite>
</subinterface-encapsulation>
</extended>
</interface>
</interfaces>

```

Validation with NetConf get

```

<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe32</name>
    <config>
      <name>xe32</name>
    </config>
    <subinterfaces>
      <subinterface>
        <index>100</index>
        <config>
          <index>100</index>
        </config>
        <state>
          <name>xe32.100</name>
          <logical>true</logical>
          <oper-status>DOWN</oper-status>
          <ifindex>328728676</ifindex>
          <counters>
            <last-clear>0</last-clear>
            <out-pkts>0</out-pkts>
            <out-octets>0</out-octets>
            <in-pkts>0</in-pkts>
            <in-octets>0</in-octets>
          </counters>
        </state>
        <vlan xmlns="http://openconfig.net/yang/vlan">
          <ingress-mapping>
            <config>
              <vlan-stack-action>SWAP</vlan-stack-action>
              <tpid
types">oc-vlan-types="http://openconfig.net/yang/vlan-
types">oc-vlan-types:TPID_0X8100</tpid>
              <vlan-id>100</vlan-id>
            </config>
            <state>
              <vlan-stack-action>SWAP</vlan-stack-action>
              <tpid
types">oc-vlan-types="http://openconfig.net/yang/vlan-
types">oc-vlan-types:TPID_0X8100</tpid>
              <vlan-id>100</vlan-id>
            </state>
          </ingress-mapping>
          <match>
            <single-tagged-list>
              <config>

```

```

        <vlan-ids>10</vlan-ids>
    </config>
    <state>
        <vlan-ids>10</vlan-ids>
    </state>
</single-tagged-list>
</match>
</vlan>
</subinterface>
</subinterfaces>
</interface>
</interfaces>

```

Restrictions

Only for VLAN action PUSH, match is optional. If not used, it will set encapsulation default in OcNOS.

Trunk VLANs in interface

This XML configuration snippet is used to configure a trunk VLAN range in an interface.

Release

This configuration was introduced in OcNOS version 5.1.

OpenConfig NetConf Payload

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>1</name>
    <config>
      <name>1</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2L3</type>
      <bridge-protocol xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-
ni-augments">ieee-vlan-bridge</bridge-protocol>
    </config>
    <vlans>
      <vlan>
        <vlan-id>350</vlan-id>
        <config>
          <vlan-id>350</vlan-id>
          <status>ACTIVE</status>
        </config>
      </vlan>
      <vlan>
        <vlan-id>351</vlan-id>
        <config>
          <vlan-id>351</vlan-id>
          <status>ACTIVE</status>
        </config>
      </vlan>
    </vlans>
  </network-instance>
</network-instances>

```

```

        <vlan-id>352</vlan-id>
        <config>
            <vlan-id>352</vlan-id>
            <status>ACTIVE</status>
        </config>
    </vlan>
</vlans>
    <interfaces>
        <interface>
            <id>xe7</id>
            <config>
                <interface>xe7</interface>
                <id>xe7</id>
            </config>
        </interface>
    </interfaces>
</network-instance>
</network-instances>
<interfaces xmlns="http://openconfig.net/yang/interfaces">
    <interface>
        <name>xe7</name>
        <config>
            <name>xe7</name>
            <tpid xmlns="http://openconfig.net/yang/vlan">TPID_0X8100</tpid>
            <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
        </config>
        <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
            <switched-vlan xmlns="http://openconfig.net/yang/vlan">
                <config>
                    <interface-mode>TRUNK</interface-mode>
                    <trunk-vlans>350..352</trunk-vlans>
                </config>
            </switched-vlan>
        </ethernet>
    </interface>
</interfaces>

```

OcNOS CLI Command

```

bridge 1 protocol ieee vlan-bridge
!
vlan database
    vlan 350-352 bridge 1 state enable
!
interface xe7
    switchport
    dot1ad ethertype 0x8100
    bridge-group 1
    switchport mode trunk
    switchport trunk allowed vlan add 350-352

```

OcNOS NetConf Payload

```

<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-
network-instance">

```



```
<network-instance>
  <instance-name>1</instance-name>
  <instance-type>l2ni</instance-type>
  <bridge xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bridge">
    <config>
      <protocol>ieee-vlan-bridge</protocol>
    </config>
    <vlans xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vlan">
      <vlan>
        <vlan-id>350</vlan-id>
        <config>
          <vlan-id>350</vlan-id>
        </config>
        <customer-vlan>
          <config>
            <state>enable</state>
          </config>
        </customer-vlan>
      </vlan>
      <vlan>
        <vlan-id>351</vlan-id>
        <config>
          <vlan-id>351</vlan-id>
        </config>
        <customer-vlan>
          <config>
            <state>enable</state>
          </config>
        </customer-vlan>
      </vlan>
      <vlan>
        <vlan-id>352</vlan-id>
        <config>
          <vlan-id>352</vlan-id>
        </config>
        <customer-vlan>
          <config>
            <state>enable</state>
          </config>
        </customer-vlan>
      </vlan>
    </vlans>
    <bridge-ports>
      <interface>
        <name>xe7</name>
        <config>
          <name>xe7</name>
        </config>
      </interface>
    </bridge-ports>
  </bridge>
</config>
</instance-name>1</instance-name>
</instance-type>l2ni</instance-type>
</config>
</network-instance>
</network-instances>
```

```

<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>xe7</name>
    <config>
      <name>xe7</name>
      <dot1ad-ether-type>0x8100</dot1ad-ether-type>
      <enable-switchport />
    </config>
    <port-vlan xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-port-
vlan">
      <switched-vlan>
        <interface-mode>trunk</interface-mode>
        <config>
          <interface-mode>trunk</interface-mode>
        </config>
        <allowed-vlan>
          <config>
            <allowed-vlan-id>350-352</allowed-vlan-id>
          </config>
        </allowed-vlan>
      </switched-vlan>
    </port-vlan>
  </interface>
</interfaces>

```

Validation with NetConf get

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>1</name>
    <config>
      <name>1</name>
      <type
types">oc-ni-types:L2L3</type>
        <bridge-protocol xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-
ni-augments">ieee-vlan-bridge</bridge-protocol>
      </config>
      <state>
        <name>1</name>
        <type
types">oc-ni-types:L2L3</type>
      </state>
      <fdb>
        <config>
          <mac-learning>true</mac-learning>
        </config>
      </fdb>
      <interfaces>
        <interface>
          <id>xe7</id>
          <config>
            <id>xe7</id>
            <interface>xe7</interface>
          </config>
          <state>

```



```

        </member>
      </members>
    </vlan>
  </vlans>
</network-instance>
</network-instances>
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe7</name>
    <config>
      <name>xe7</name>
      <tpid xmlns="http://openconfig.net/yang/vlan" xmlns:oc-vlan-
types="http://openconfig.net/yang/vlan-types">oc-vlan-types:TPID_0X8100</tpid>
      <type
        xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </config>
    <state>
      <name>xe7</name>
      <tpid xmlns="http://openconfig.net/yang/vlan" xmlns:oc-vlan-
types="http://openconfig.net/yang/vlan-types">oc-vlan-types:TPID_0X8100</tpid>
      <logical>false</logical>
      <last-change>318900</last-change>
      <oper-status>UP</oper-status>
      <admin-status>UP</admin-status>
      <ifindex>5007</ifindex>
      <counters>
        <last-clear>1642442144</last-clear>
        <out-errors>0</out-errors>
        <out-discards>0</out-discards>
        <out-multicast-pkts>145</out-multicast-pkts>
        <out-broadcast-pkts>0</out-broadcast-pkts>
        <out-unicast-pkts>0</out-unicast-pkts>
        <out-pkts>145</out-pkts>
        <out-octets>9412</out-octets>
        <in-fcs-errors>0</in-fcs-errors>
        <in-errors>0</in-errors>
        <in-discards>0</in-discards>
        <in-multicast-pkts>0</in-multicast-pkts>
        <in-broadcast-pkts>0</in-broadcast-pkts>
        <in-unicast-pkts>0</in-unicast-pkts>
        <in-pkts>0</in-pkts>
        <in-octets>0</in-octets>
      </counters>
      <type
        xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </state>
    <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
      <state>
        <negotiated-port-speed
          xmlns:oc-eth="http://openconfig.net/yang/interfaces/
ethernet">oc-eth:SPEED_1GB</negotiated-port-speed>
        <negotiated-duplex-mode>FULL</negotiated-duplex-mode>
        <hw-mac-address>b8:6a:97:c3:64:44</hw-mac-address>
        <counters>
          <in-crc-errors>0</in-crc-errors>
          <in-jabber-frames>0</in-jabber-frames>

```

```

        <in-fragment-frames>0</in-fragment-frames>
        <in-oversize-frames>0</in-oversize-frames>
    </counters>
</state>
<switched-vlan xmlns="http://openconfig.net/yang/vlan">
    <config>
        <interface-mode>TRUNK</interface-mode>
        <trunk-vlans>350..352</trunk-vlans>
    </config>
    <state>
        <interface-mode>TRUNK</interface-mode>
        <trunk-vlans>350..352</trunk-vlans>
    </state>
</switched-vlan>
</ethernet>
<subinterfaces>
    <subinterface>
        <index>0</index>
        <config>
            <index>0</index>
        </config>
    </subinterface>
</subinterfaces>
</interface>
</interfaces>

```

Restrictions

VLANs associated to trunk interface must also be created and bridge must be associated to the interface.

Trunk VLANs in link aggregation interface

This XML configuration snippet is used to configure a trunk VLAN range in a link aggregation interface.

Release

This configuration was introduced in OcNOS version 5.1.

OpenConfig NetConf Payload

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
    <network-instance>
        <name>1</name>
        <config>
            <name>1</name>
            <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2L3</type>
            <bridge-protocol xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-
ni-augments">ieee-vlan-bridge</bridge-protocol>
        </config>
        <fdb>
            <config>
                <mac-learning>true</mac-learning>
            </config>
        </fdb>
    </network-instance>
</network-instances>

```

```

        </config>
    </fdb>
    <vlans>
        <vlan>
            <vlan-id>300</vlan-id>
        </vlan>
    </vlans>
</config>
    <vlan-id>300</vlan-id>
    <status>ACTIVE</status>
</config>
</vlan>
</vlans>
    <interfaces>
        <interface>
            <id>sa3</id>
            <config>
                <interface>sa3</interface>
                <id>sa3</id>
            </config>
        </interface>
    </interfaces>
</network-instance>
</network-instances>
<interfaces xmlns="http://openconfig.net/yang/interfaces">
    <interface>
        <name>sa3</name>
        <config>
            <name>sa3</name>
            <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ieee8023adLag</type>
            </config>
            <aggregation xmlns="http://openconfig.net/yang/interfaces/aggregate">
                <switched-vlan xmlns="http://openconfig.net/yang/vlan">
                    <config>
                        <interface-mode>TRUNK</interface-mode>
                        <trunk-vlans>300</trunk-vlans>
                    </config>
                </switched-vlan>
                <config>
                    <lag-type>STATIC</lag-type>
                </config>
            </aggregation>
        </interface>
    </interfaces>

```

OcNOS CLI Command

```

interface sa3
  switchport
  bridge-group 1
  switchport mode trunk
  switchport trunk allowed vlan add 300

```

OcNOS NetConf Payload

```

<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-
network-instance">

```

```

<network-instance>
  <instance-name>1</instance-name>
  <instance-type>l2ni</instance-type>
  <bridge xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bridge">
    <config>
      <protocol>ieee-vlan-bridge</protocol>
    </config>
    <vlans xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vlan">
      <vlan>
        <vlan-id>300</vlan-id>
        <config>
          <vlan-id>300</vlan-id>
        </config>
        <customer-vlan>
          <config>
            <state>enable</state>
          </config>
        </customer-vlan>
      </vlan>
    </vlans>
    <bridge-ports>
      <interface>
        <name>sa3</name>
        <config>
          <name>sa3</name>
        </config>
      </interface>
    </bridge-ports>
  </bridge>
</config>
</network-instance>
</network-instances>
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>sa3</name>
    <config>
      <name>sa3</name>
      <enable-switchport />
    </config>
    <port-vlan xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-port-
vlan">
      <switched-vlan>
        <interface-mode>trunk</interface-mode>
        <config>
          <interface-mode>trunk</interface-mode>
        </config>
        <allowed-vlan>
          <config>
            <allowed-vlan-id>300</allowed-vlan-id>
          </config>
        </allowed-vlan>
      </switched-vlan>
    </port-vlan>
  </interface>

```

```
</interfaces>
```

Validation with NetConf get

```
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>sa3</name>
    <config>
      <name>sa3</name>
      <type
        xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ieee8023adLag</type>
      </config>
      <state>
        <name>sa3</name>
        <logical>false</logical>
        <last-change>851000</last-change>
        <oper-status>DOWN</oper-status>
        <admin-status>UP</admin-status>
        <ifindex>200003</ifindex>
        <counters>
          <last-clear>1642447466</last-clear>
          <out-errors>0</out-errors>
          <out-discards>0</out-discards>
          <out-multicast-pkts>0</out-multicast-pkts>
          <out-broadcast-pkts>0</out-broadcast-pkts>
          <out-unicast-pkts>0</out-unicast-pkts>
          <out-pkts>0</out-pkts>
          <out-octets>0</out-octets>
          <in-fcs-errors>0</in-fcs-errors>
          <in-errors>0</in-errors>
          <in-discards>0</in-discards>
          <in-multicast-pkts>0</in-multicast-pkts>
          <in-broadcast-pkts>0</in-broadcast-pkts>
          <in-unicast-pkts>0</in-unicast-pkts>
          <in-pkts>0</in-pkts>
          <in-octets>0</in-octets>
        </counters>
        <type
          xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ieee8023adLag</type>
        </state>
      <ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
        <state>
          <negotiated-port-speed
            xmlns:oc-eth="http://openconfig.net/yang/interfaces/
ethernet">oc-eth:SPEED_UNKNOWN</negotiated-port-speed>
          <negotiated-duplex-mode>FULL</negotiated-duplex-mode>
          <hw-mac-address>0e:00:00:00:00:01</hw-mac-address>
          <counters>
            <in-crc-errors>0</in-crc-errors>
            <in-jabber-frames>0</in-jabber-frames>
            <in-fragment-frames>0</in-fragment-frames>
            <in-oversize-frames>0</in-oversize-frames>
          </counters>
        </state>
      </ethernet>
    </interface>
  </interfaces>
```



```

    <subinterfaces>
      <subinterface>
        <index>0</index>
        <config>
          <index>0</index>
        </config>
      </subinterface>
    </subinterfaces>
    <aggregation xmlns="http://openconfig.net/yang/interfaces/aggregate">
      <switched-vlan xmlns="http://openconfig.net/yang/vlan">
        <config>
          <interface-mode>TRUNK</interface-mode>
          <trunk-vlans>300</trunk-vlans>
        </config>
        <state>
          <interface-mode>TRUNK</interface-mode>
          <trunk-vlans>300</trunk-vlans>
        </state>
      </switched-vlan>
    </aggregation>
    <config>
      <lag-type>STATIC</lag-type>
    </config>
    <state>
      <lag-type>STATIC</lag-type>
    </state>
  </interface>
</interfaces>

```

Restrictions

VLANs associated to trunk LAG must also be created and bridge must be associated to the LAG.

Trunk LAG with native VLAN

This XML configuration snippet is used to configure a native VLAN for a trunk VLAN link aggregation.

Release

This configuration was introduced in OcNOS version 5.1.

OpenConfig NetConf Payload

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>1</name>
    <config>
      <name>1</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-ni-types:L2L3</type>
      <bridge-protocol xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-ni-augments">ieee-vlan-bridge</bridge-protocol>
    </config>
  </network-instance>
</network-instances>

```

```

    <fdb>
      <config>
        <mac-learning>true</mac-learning>
      </config>
    </fdb>
  </vlangs>
  <vlang>
    <vlang-id>300</vlang-id>
  </vlang>
</config>
  <vlang-id>300</vlang-id>
  <status>ACTIVE</status>
</config>
</vlang>
</vlangs>
  <interfaces>
    <interface>
      <id>pol</id>
      <config>
        <interface>pol</interface>
        <id>pol</id>
      </config>
    </interface>
  </interfaces>
</network-instance>
</network-instances>
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>pol</name>
    <config>
      <name>pol</name>
      <tpid xmlns="http://openconfig.net/yang/vlan">TPID_0X8100</tpid>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ieee8023adLag</type>
    </config>
    <aggregation xmlns="http://openconfig.net/yang/interfaces/aggregate">
      <switched-vlan xmlns="http://openconfig.net/yang/vlan">
        <config>
          <interface-mode>TRUNK</interface-mode>
          <native-vlan>300</native-vlan>
          <trunk-vlans>300</trunk-vlans>
        </config>
      </switched-vlan>
    </aggregation>
  </interface>
</interfaces>

```

OcNOS CLI Command

```

interface pol
  switchport
  dot1ad ethertype 0x8100
  bridge-group 1
  switchport mode trunk
  switchport trunk allowed vlan add 300

```

```
switchport trunk native vlan 300
```

OcNOS NetConf Payload

```
<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-
network-instance">
  <network-instance>
    <instance-name>1</instance-name>
    <instance-type>l2ni</instance-type>
    <bridge xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bridge">
      <config>
        <protocol>ieee-vlan-bridge</protocol>
      </config>
      <vlans xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vlan">
        <vlan>
          <vlan-id>300</vlan-id>
          <config>
            <vlan-id>300</vlan-id>
          </config>
          <customer-vlan>
            <config>
              <state>enable</state>
            </config>
          </customer-vlan>
        </vlan>
      </vlans>
      <bridge-ports>
        <interface>
          <name>po1</name>
          <config>
            <name>po1</name>
          </config>
        </interface>
      </bridge-ports>
    </bridge>
    <config>
      <instance-name>1</instance-name>
      <instance-type>l2ni</instance-type>
    </config>
  </network-instance>
</network-instances>
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>po1</name>
    <config>
      <name>po1</name>
      <dot1ad-ether-type>0x8100</dot1ad-ether-type>
      <enable-switchport />
    </config>
    <port-vlan xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-port-
vlan">
      <switched-vlan>
        <interface-mode>trunk</interface-mode>
        <config>
          <interface-mode>trunk</interface-mode>
        </config>
      </switched-vlan>
    </port-vlan>
  </interface>
</interfaces>
```

```

        <config>
          <native-vlan-id>300</native-vlan-id>
        </config>
      </vlangs>
    <allowed-vlan>
      <config>
        <allowed-vlan-id>300</allowed-vlan-id>
      </config>
    </allowed-vlan>
  </switched-vlan>
</port-vlan>
</interface>
</interfaces>

```

Validation with NetConf get

```

<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>pol</name>
    <config>
      <name>pol</name>
      <tpid xmlns="http://openconfig.net/yang/vlan" xmlns:oc-vlan-
types="http://openconfig.net/yang/vlan-types">oc-vlan-types:TPID_0X8100</tpid>
      <type
        xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ieee8023adLag</type>
    </config>
    <state>
      <name>pol</name>
      <tpid xmlns="http://openconfig.net/yang/vlan" xmlns:oc-vlan-
types="http://openconfig.net/yang/vlan-types">oc-vlan-types:TPID_0X8100</tpid>
      <logical>false</logical>
      <last-change>897000</last-change>
      <oper-status>DOWN</oper-status>
      <admin-status>UP</admin-status>
      <ifindex>100001</ifindex>
      <counters>
        <last-clear>1642447926</last-clear>
        <out-errors>0</out-errors>
        <out-discards>0</out-discards>
        <out-multicast-pkts>0</out-multicast-pkts>
        <out-broadcast-pkts>0</out-broadcast-pkts>
        <out-unicast-pkts>0</out-unicast-pkts>
        <out-pkts>0</out-pkts>
        <out-octets>0</out-octets>
        <in-fcs-errors>0</in-fcs-errors>
        <in-errors>0</in-errors>
        <in-discards>0</in-discards>
        <in-multicast-pkts>0</in-multicast-pkts>
        <in-broadcast-pkts>0</in-broadcast-pkts>
        <in-unicast-pkts>0</in-unicast-pkts>
        <in-pkts>0</in-pkts>
        <in-octets>0</in-octets>
      </counters>
      <type
        xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ieee8023adLag</type>

```

```

</state>
<ethernet xmlns="http://openconfig.net/yang/interfaces/ethernet">
  <state>
    <negotiated-port-speed
      xmlns:oc-eth="http://openconfig.net/yang/interfaces/
ethernet">oc-eth:SPEED_UNKNOWN</negotiated-port-speed>
    <negotiated-duplex-mode>FULL</negotiated-duplex-mode>
    <hw-mac-address>0e:00:00:00:00:01</hw-mac-address>
    <counters>
      <in-crc-errors>0</in-crc-errors>
      <in-jabber-frames>0</in-jabber-frames>
      <in-fragment-frames>0</in-fragment-frames>
      <in-oversize-frames>0</in-oversize-frames>
    </counters>
  </state>
</ethernet>
<subinterfaces>
  <subinterface>
    <index>0</index>
    <config>
      <index>0</index>
    </config>
  </subinterface>
</subinterfaces>
<aggregation xmlns="http://openconfig.net/yang/interfaces/aggregate">
  <switched-vlan xmlns="http://openconfig.net/yang/vlan">
    <config>
      <interface-mode>TRUNK</interface-mode>
      <native-vlan>300</native-vlan>
      <trunk-vlans>300</trunk-vlans>
    </config>
    <state>
      <interface-mode>TRUNK</interface-mode>
      <native-vlan>300</native-vlan>
      <trunk-vlans>300</trunk-vlans>
    </state>
  </switched-vlan>
  <config>
    <lag-type>LACP</lag-type>
  </config>
  <state>
    <lag-type>LACP</lag-type>
  </state>
</aggregation>
</interface>
</interfaces>

```

Restrictions

VLANs associated to trunk interface must also be created and bridge must be associated to the interface.

Creation of a cross connect

This XML configuration snippet is used to create a cross connect between 2 subinterfaces.

Release

This configuration was introduced in OcNOS version 5.1.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>test3</name>
    <config>
      <name>test3</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">L2P2P</type>
<description>Test XConnection</description>
    </config>
    <interfaces>
      <interface>
        <id>xe7.10</id>
        <config>
          <id>xe7.10</id>
          <interface>xe7</interface>
          <subinterface>10</subinterface>
        </config>
      </interface>
      <interface>
        <id>xe8.20</id>
        <config>
          <id>xe8.20</id>
          <interface>xe8</interface>
          <subinterface>20</subinterface>
        </config>
      </interface>
    </interfaces>
  </network-instance>
</network-instances>
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe7</name>
    <config>
      <name>xe7</name>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
    </config>
    <subinterfaces>
      <subinterface>
        <index>10</index>
        <config>
          <index>10</index>
        </config>
      <vlan xmlns="http://openconfig.net/yang/vlan">
        <match>
          <single-tagged-list>
            <config>
              <vlan-ids>10</vlan-ids>
            </config>
          </single-tagged-list>
```

```

        </match>
      </vlan>
    </subinterface>
  </subinterfaces>
</interface>
<interface>
  <name>xe8</name>
  <config>
    <name>xe8</name>
    <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
  </config>
  <subinterfaces>
    <subinterface>
      <index>20</index>
      <config>
        <index>20</index>
      </config>
      <vlan xmlns="http://openconfig.net/yang/vlan">
        <match>
          <single-tagged-list>
            <config>
              <vlan-ids>10</vlan-ids>
            </config>
          </single-tagged-list>
        </match>
      </vlan>
    </subinterface>
  </subinterfaces>
</interface>
</interfaces>

```

OcNOS CLI Command

```

interface xe7.10 switchport
  encapsulation dot1q 10
!
interface xe8.20 switchport
  encapsulation dot1q 10
!
cross-connect test3
  description Test XConnection
  interface xe7.10
  interface xe8.20

```

OcNOS NetConf Payload

```

<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-network-
instance">
  <network-instance>
    <instance-name>test3</instance-name>
    <instance-type>cross-connect</instance-type>
    <config>
      <instance-name>test3</instance-name>
      <instance-type>cross-connect</instance-type>
    </config>
  </network-instance>
</network-instances>

```

```

    </config>
    <cross-connect xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-cross-
connect">
      <config>
        <xc-name>test3</xc-name>
        <description>Test XConnection</description>
      </config>
      <cross-connect-interfaces>
        <cross-connect-interface>
          <endpoint-if>eth7.10</endpoint-if>
          <config>
            <endpoint-if>eth7.10</endpoint-if>
          </config>
        </cross-connect-interface>
        <cross-connect-interface>
          <endpoint-if>eth8.20</endpoint-if>
          <config>
            <endpoint-if>eth8.20</endpoint-if>
          </config>
        </cross-connect-interface>
      </cross-connect-interfaces>
    </cross-connect>
  </network-instance>
</network-instances>
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>eth7.10</name>
    <config>
      <name>eth7.10</name>
      <enable-switchport/>
    </config>
    <extended xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-extended">
      <subinterface-encapsulation>
        <single-tag-vlan-matches>
          <single-tag-vlan-match>
            <encapsulation-type>dot1q</encapsulation-type>
            <config>
              <encapsulation-type>dot1q</encapsulation-type>
              <outer-vlan-id>10</outer-vlan-id>
            </config>
          </single-tag-vlan-match>
        </single-tag-vlan-matches>
      </subinterface-encapsulation>
    </extended>
  </interface>
  <interface>
    <name>eth8.20</name>
    <config>
      <name>eth8.20</name>
      <enable-switchport/>
    </config>
    <extended xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-extended">
      <subinterface-encapsulation>
        <single-tag-vlan-matches>
          <single-tag-vlan-match>
            <encapsulation-type>dot1q</encapsulation-type>
            <config>

```



```

        <encapsulation-type>dot1q</encapsulation-type>
        <outer-vlan-id>10</outer-vlan-id>
    </config>
</single-tag-vlan-match>
</single-tag-vlan-matches>
</subinterface-encapsulation>
</extended>
</interface>
</interfaces>

```

Validation with NetConf get

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>test3</name>
    <config>
      <name>test3</name>
      <type
        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2P2P</type>
        <description>Test XConnection</description>
      </config>
      <state>
        <name>test3</name>
        <type
          xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2P2P</type>
          <description>Test XConnection</description>
        </state>
        <interfaces>
          <interface>
            <id>xe7.10</id>
            <config>
              <id>xe7.10</id>
              <interface>xe7</interface>
              <subinterface>10</subinterface>
            </config>
            <state>
              <id>xe7.10</id>
              <interface>xe7</interface>
              <subinterface>10</subinterface>
            </state>
          </interface>
          <interface>
            <id>xe8.20</id>
            <config>
              <id>xe8.20</id>
              <interface>xe8</interface>
              <subinterface>20</subinterface>
            </config>
            <state>
              <id>xe8.20</id>
              <interface>xe8</interface>
              <subinterface>20</subinterface>
            </state>
          </interface>
        </interfaces>
      </state>
    </network-instance>
  </network-instances>

```

```
</network-instance>
</network-instances>
```

Restrictions

- Exactly 2 subinterfaces must be configured along with network-instance creation.
- The old Open Config path `/network-instances/network-instance/config/enabled` is not support after Open Config v1.0.0., and without this path the Cross-Connect feature lost the translation for IPI path `/network-instances/network-instance/cross-connect/config/admin-disable`.

Deletion of a cross connect

This XML configuration snippet is used to delete a cross connect.

Release

This configuration was introduced in OcNOS version 5.1.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance operation="delete">
    <name>test3</name>
  </network-instance>
</network-instances>
```

OcNOS CLI Command

```
OcNOS#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
OcNOS(config)#no cross-connect test3
OcNOS(config)#commit
OcNOS#show running-config cross-connect
!
```

OcNOS NetConf Payload

```
<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-
network-instance">
  <network-instance operation="delete">
    <instance-name>test3</instance-name>
    <instance-type>cross-connect</instance-type>
  </network-instance>
</network-instances>
```

Validation with NetConf get

```
<data/>
```

Restrictions

- N/A

Configure Bridge Domain and associate L2 Subinterfaces

This XML configuration snippet is used to configure L2 Subinterface and attach to Bridge Domain. Please note the subinterfaces are set to L2 implicitly by Bridge Domain instance translation. Because of this, the subinterfaces must either be created in the same transaction as Bridge Domain or created as L2 from CLI or IPI datamodel. Otherwise, if the subinterfaces are created as L3, this would result in error while assigning them to a Bridge Domain instance..

Release

This configuration was introduced in OcNOS version 6.4.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>1</name>
    <config>
      <name>1</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">L2VSI</type>
      <description>Test Bridge Domain</description>
    </config>
    <interfaces>
      <interface>
        <id>xe9.10</id>
        <config>
          <id>xe9.10</id>
          <interface>xe9</interface>
          <subinterface>10</subinterface>
        </config>
      </interface>
      <interface>
        <id>xe10.20</id>
        <config>
          <id>xe10.20</id>
          <interface>xe10</interface>
          <subinterface>20</subinterface>
        </config>
      </interface>
    </interfaces>
  </network-instance>
</network-instances>
<interfaces xmlns="http://openconfig.net/yang/interfaces">
  <interface>
    <name>xe9</name>
    <config>
      <name>xe9</name>
      <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
```

```

</config>
<subinterfaces>
  <subinterface>
    <index>10</index>
    <config>
      <index>10</index>
    </config>
    <vlan xmlns="http://openconfig.net/yang/vlan">
      <match>
        <single-tagged-list>
          <config>
            <vlan-ids>10</vlan-ids>
          </config>
        </single-tagged-list>
      </match>
    </vlan>
  </subinterface>
</subinterfaces>
</interface>
<interface>
  <name>xe10</name>
  <config>
    <name>xe10</name>
    <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-
type">ianaift:ethernetCsmacd</type>
  </config>
  <subinterfaces>
    <subinterface>
      <index>20</index>
      <config>
        <index>20</index>
      </config>
      <vlan xmlns="http://openconfig.net/yang/vlan">
        <match>
          <single-tagged-list>
            <config>
              <vlan-ids>10</vlan-ids>
            </config>
          </single-tagged-list>
        </match>
      </vlan>
    </subinterface>
  </subinterfaces>
</interface>
</interfaces>

```

OcNOS CLI Command

```

interface xe9.10 switchport
  encapsulation dot1q 10
!
interface xe10.20 switchport
  encapsulation dot1q 10
!
bridge-domain 1
  description Test Bridge Domain
  interface xe9.10

```

```
interface xe10.20
!
```

OcNOS NetConf Payload

```
<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-network-
instance">
  <network-instance>
    <instance-name>1</instance-name>
    <instance-type>bridge-domain</instance-type>
    <config>
      <instance-name>1</instance-name>
      <instance-type>bridge-domain</instance-type>
    </config>
    <bridge-domain xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bridge-
domain">
      <config>
        <domain-id>1</domain-id>
        <description>Test Bridge Domain</description>
        <member-interfaces>xe9.10</member-interfaces>
        <member-interfaces>xe10.20</member-interfaces>
      </config>
    </bridge-domain>
  </network-instance>
</network-instances>
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>xe9.10</name>
    <config>
      <enable-switchport/>
      <name>xe9.10</name>
    </config>
    <extended xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-extended">
      <subinterface-encapsulation>
        <single-tag-vlan-matches>
          <single-tag-vlan-match>
            <encapsulation-type>dot1q</encapsulation-type>
            <config>
              <encapsulation-type>dot1q</encapsulation-type>
              <outer-vlan-id>10</outer-vlan-id>
            </config>
          </single-tag-vlan-match>
        </single-tag-vlan-matches>
      </subinterface-encapsulation>
    </extended>
  </interface>
  <interface>
    <name>xe10.20</name>
    <config>
      <enable-switchport/>
      <name>xe10.20</name>
    </config>
    <extended xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-if-extended">
      <subinterface-encapsulation>
        <single-tag-vlan-matches>
          <single-tag-vlan-match>
            <encapsulation-type>dot1q</encapsulation-type>
```

```
        <config>
          <encapsulation-type>dot1q</encapsulation-type>
          <outer-vlan-id>10</outer-vlan-id>
        </config>
      </single-tag-vlan-match>
    </single-tag-vlan-matches>
  </subinterface-encapsulation>
</extended>
</interface>
<interface>
  <name>xe9</name>
  <config>
    <name>xe9</name>
  </config>
</interface>
<interface>
  <name>xe10</name>
  <config>
    <name>xe10</name>
  </config>
</interface>
</interfaces>
```

Restrictions

Bridge Domain instance name must be an integer in the range 1-2147483647.

Deletion of a Bridge Domain instance

This XML configuration snippet is used to delete a Bridge Domain instance.

Release

This configuration was introduced in OcNOS version 6.4.

OpenConfig NetConf Payload

```
<network-instances xmlns="<http://openconfig.net/yang/network-instance">>
  <network-instance operation="delete">
    <name>1</name>
  </network-instance>
</network-instances>
```

OcNOS CLI Command

```
OcNOS#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
OcNOS(config)#no bridge-domain 1
OcNOS(config)#commit
OcNOS#show running-config bridge-domain
!
```

OcNOS NetConf Payload

```
<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-network-instance">>
  <network-instance operation="delete">
    <instance-name>1</instance-name>
    <instance-type>bridge-domain</instance-type>
  </network-instance>
</network-instances>
```

Validation with NetConf get

```
<data/>
```

Restrictions

- N/A

Creation of a VLAN bridge

This XML configuration snippet is used to create a VLAN bridge and assign VLANs to it.

Release

This configuration was introduced in OcNOS version 5.1.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>1</name>
    <config>
      <name>1</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-types">oc-ni-types:L2L3</type>
    </config>
    <vlans>
      <vlan>
        <vlan-id>401</vlan-id>
        <config>
          <vlan-id>401</vlan-id>
          <name>VLAN-401</name>
          <status>ACTIVE</status>
        </config>
      </vlan>
      <vlan>
        <vlan-id>501</vlan-id>
        <config>
          <vlan-id>501</vlan-id>
          <name>VLAN-501</name>
          <status>ACTIVE</status>
        </config>
      </vlan>
    </vlans>
  </network-instance>
</network-instances>
```

```

    </vlan>
  </vlans>
</network-instance>
</network-instances>

```

OcNOS CLI Command

```

bridge 1 protocol ieee vlan-bridge
!
vlan database
  vlan 401 bridge 1 name VLAN-401 state enable
  vlan 501 bridge 1 name VLAN-501 state enable

```

OcNOS NetConf Payload

```

<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-
network-instance">
  <network-instance>
    <instance-name>1</instance-name>
    <instance-type>l2ni</instance-type>
    <bridge xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bridge">
      <config>
        <protocol>ieee-vlan-bridge</protocol>
      </config>
    <vlans xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vlan">
      <vlan>
        <vlan-id>401</vlan-id>
        <config>
          <vlan-id>401</vlan-id>
        </config>
        <customer-vlan>
          <config>
            <name>VLAN-401</name>
            <state>enable</state>
          </config>
        </customer-vlan>
      </vlan>
      <vlan>
        <vlan-id>501</vlan-id>
        <config>
          <vlan-id>501</vlan-id>
        </config>
        <customer-vlan>
          <config>
            <name>VLAN-501</name>
            <state>enable</state>
          </config>
        </customer-vlan>
      </vlan>
    </vlans>
  </bridge>
  <config>
    <instance-name>1</instance-name>
    <instance-type>l2ni</instance-type>
  </config>
</network-instance>

```

```
</network-instances>
```

Validation with NetConf get

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>1</name>
    <config>
      <name>1</name>
      <type
        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2L3</type>
      <bridge-protocol xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-oc-
ni-augments">ieee-vlan-bridge</bridge-protocol>
      </config>
      <state>
        <name>1</name>
        <type
          xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2L3</type>
        </state>
        <fdb>
          <config>
            <mac-learning>true</mac-learning>
          </config>
        </fdb>
        <vlans>
          <vlan>
            <vlan-id>401</vlan-id>
            <config>
              <vlan-id>401</vlan-id>
              <name>VLAN-401</name>
              <status>ACTIVE</status>
            </config>
            <state>
              <vlan-id>401</vlan-id>
              <name>VLAN-401</name>
              <status>ACTIVE</status>
            </state>
          </vlan>
          <vlan>
            <vlan-id>501</vlan-id>
            <config>
              <vlan-id>501</vlan-id>
              <name>VLAN-501</name>
              <status>ACTIVE</status>
            </config>
            <state>
              <vlan-id>501</vlan-id>
              <name>VLAN-501</name>
              <status>ACTIVE</status>
            </state>
          </vlan>
        </vlans>
      </network-instance>
    </network-instances>
```

Restrictions

The network-instance used for bridge must have a name being a number between 1 and 32.

LLDP OpenConfig Translation

Enable management attributes

This command is used to enable LLDP and all the management TLV attributes.

Release

This configuration was introduced in OcNOS version 5.0.

OpenConfig NETCONF Payload

```
<lldp xmlns="http://openconfig.net/yang/lldp">
  <config>
    <enabled>true</enabled>
  </config>
</lldp>
```

OcNOS CLI command

```
lldp run
lldp tlv-select basic-mgmt port-description
lldp tlv-select basic-mgmt system-name
lldp tlv-select basic-mgmt system-capabilities
lldp tlv-select basic-mgmt system-description
lldp tlv-select basic-mgmt management-address
```

OcNOS NETCONF Payload

```
<lldp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-lldpv2">
  <global>
    <global-tlv-control>
      <global-basic-management>
        <config>
          <port-description>true</port-description>
          <management-address>true</management-address>
          <system-capabilities>true</system-capabilities>
          <system-description>true</system-description>
          <system-name>true</system-name>
        </config>
      </global-basic-management>
    </global-tlv-control>
    <config>
      <enable>true</enable>
    </config>
  </global>
</lldp>
```

Validation with NETCONF get

```
<lldp xmlns="http://openconfig.net/yang/lldp">
  <config>
    <enabled>true</enabled>
  </config>
  <state>
    <enabled>true</enabled>
    <counters>
      <entries-aged-out>0</entries-aged-out>
      <frame-discard>0</frame-discard>
      <frame-out>0</frame-out>
      <frame-in>0</frame-in>
    </counters>
    <system-name>OcNOS</system-name>
  </state>
</lldp>
```

Restrictions

N/A

Configure chassis-id

This command is used to set the locally assigned chassis name for the LLDP interface.

Release

This configuration was introduced in OcNOS version 5.0.

OpenConfig NETCONF Payload

```
<lldp xmlns="http://openconfig.net/yang/lldp">
  <config>
    <chassis-id>host7028_AS5912-54X</chassis-id>
  </config>
</lldp>
```

OcNOS CLI command

```
set lldp chassis locally-assigned host7028_AS5912-54X
```

OcNOS NETCONF Payload

```
<lldp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-lldpv2">
  <global>
    <management-if>
      <config>
        <locally-assigned-chassis-id>host7028_AS5912-54X</locally-
assigned-chassis-id>
      </config>
    </management-if>
```

```
</global>
</lldp>
```

Validation with NETCONF get

```
<lldp xmlns="http://openconfig.net/yang/lldp">
  <config>
    <enabled>true</enabled>
    <chassis-id>host7028_AS5912-54X</chassis-id>
    <chassis-id-type>MAC_ADDRESS</chassis-id-type>
  </config>
  <state>
    <enabled>true</enabled>
    <counters>
      <entries-aged-out>0</entries-aged-out>
      <frame-discard>0</frame-discard>
      <frame-out>0</frame-out>
      <frame-in>0</frame-in>
    </counters>
    <system-name>OcNOS</system-name>
    <chassis-id>host7028_AS5912-54X</chassis-id>
    <chassis-id-type>MAC_ADDRESS</chassis-id-type>
  </state>
</lldp>
```

Restrictions

MAC_ADDRESS chassis type is fixed and assumed by default.

Configure suppress advertisement

This command is used to configure suppress TLV advertisement for one or more attributes.

Release

This configuration was introduced in OcNOS version 5.0.

OpenConfig NETCONF Payload

```
<lldp xmlns="http://openconfig.net/yang/lldp">
  <config>
    <suppress-tlv-advertisement>SYSTEM_DESCRIPTION</suppress-tlv-advertisement>
  </config>
</lldp>
```

OcNOS CLI command

```
no lldp tlv-select basic-mgmt system-description
```

OcNOS NETCONF Payload

```
<lldp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-lldpv2">
  <global>
    <global-tlv-control>
      <global-basic-management>
        <config>
          <system-description>false</system-description>
        </config>
      </global-basic-management>
    </global-tlv-control>
  </global>
</lldp>
```

Validation with NETCONF get

```
<lldp xmlns="http://openconfig.net/yang/lldp">
  <config>
    <enabled>true</enabled>
    <suppress-tlv-advertisement
      xmlns:oc-lldp-types="http://openconfig.net/yang/lldp/types">oc-lldp-
types:SYSTEM_DESCRIPTION</suppress-tlv-advertisement>
    <chassis-id>host7028_AS5912-54X</chassis-id>
    <chassis-id-type>MAC_ADDRESS</chassis-id-type>
  </config>
  <state>
    <enabled>true</enabled>
    <counters>
      <entries-aged-out>0</entries-aged-out>
      <frame-discard>0</frame-discard>
      <frame-out>0</frame-out>
      <frame-in>0</frame-in>
    </counters>
    <suppress-tlv-advertisement
      xmlns:oc-lldp-types="http://openconfig.net/yang/lldp/types">oc-lldp-
types:SYSTEM_DESCRIPTION</suppress-tlv-advertisement>
    <system-name>OcNOS</system-name>
    <chassis-id>host7028_AS5912-54X</chassis-id>
    <chassis-id-type>MAC_ADDRESS</chassis-id-type>
  </state>
</lldp>
```

Restrictions

By default, all basic tlvs are disabled and can be configured using this leaf. Default behaviour is 'suppressed', so this leaf-list will only show up if at least one advertisement is enabled. As OpenConfig and OcNOS have a reverse logic for the TLV (suppress vs enable), when the suppress is present on OpenConfig, the translation forces deletion of the attribute on the Ocnos side. This is equivalent to deleting a config that does not exist. Error may be returned in this case.

Configure system name

This command is used to configure the system-name (hostname).

Release

This configuration was introduced in OcNOS version 5.0.

OpenConfig NETCONF Payload

```
<lldp xmlns="http://openconfig.net/yang/lldp">
  <config>
    <system-name>host7028</system-name>
  </config>
</lldp>
```

OcNOS CLI command

```
hostname host7028
```

OcNOS NETCONF Payload

```
<system-info xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-system">
  <config>
    <hostname>host7028</hostname>
  </config>
</system-info>
```

Validation with NETCONF get

Filter:

```
<get xmlns="urn:ietf:params:xml:ns:NETCONF:base:1.0">
  <filter type="subtree">
    <system-info xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-system">
      <config>
        <hostname />
      </config>
    </system-info>
  </filter>
</get>
```

Result:

```
<system xmlns="http://openconfig.net/yang/system">
  <config>
    <hostname>host7028</hostname>
  </config>
</system>
```

Restrictions

This is the same configuration of system hostname, so both were modified when it is applied. The same restrictions for system hostname apply: per RFC 952 and RFC 1123, a hostname string can contain only the special characters period (".") and hyphen ("-"). These special characters cannot be at the start or end of a hostname. The hostname is limited to between 1 and 63 characters.

Enable LLDP on an interface

This command is used to enable LLDP on an interface.

Release

This configuration was introduced in OcNOS version 5.0.

OpenConfig NETCONF Payload

```
<lldp xmlns="http://openconfig.net/yang/lldp">
  <interfaces>
    <interface>
      <name>xe10</name>
      <config>
        <enabled>true</enabled>
      </config>
    </interface>
  </interfaces>
</lldp>
```

OcNOS CLI command

```
interface xe10
  lldp-agent
  set lldp enable txrx
```

OcNOS NETCONF Payload

```
<lldp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-lldpv2">
  <interfaces>
    <interface>
      <name>xe10</name>
      <agent>
        <agent-type>default</agent-type>
        <config>
          <enable-tx-rx>txrx</enable-tx-rx>
          <agent-type>default</agent-type>
        </config>
      </agent>
    </interface>
  </interfaces>
</lldp>
```

Validation with NETCONF get

```
<lldp xmlns="http://openconfig.net/yang/lldp">
  <interfaces>
    <interface>
      <name>xe10</name>
      <config>
        <name>xe10</name>
      </config>
    </interface>
  </interfaces>
</lldp>
```



```
        <enabled>true</enabled>
    </config>
</interface>
</interfaces>
</lldp>
```

Restrictions

Enabled set as true will configure mode tx-rx in OcNOS. When enabled = false, the OcNOS mode will be set as rx-only.

LLDP get attributes

The following attributes are read-only (runtime) attributes for LLDP.

Counters

This command is used to display LLDP counters.

Filter

```
<filter>
<lldp xmlns="http://openconfig.net/yang/lldp">
<state>
<counters/>
</state>
</lldp>
</filter>
```

OpenConfig get result

```
<lldp xmlns="http://openconfig.net/yang/lldp">
  <state>
    <enabled>true</enabled>
    <counters>
      <entries-aged-out>0</entries-aged-out>
      <frame-discard>0</frame-discard>
      <frame-out>0</frame-out>
      <frame-in>1</frame-in>
    </counters>
  </state>
</lldp>
```

OcNOS get result

```
<lldp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-lldpv2">
  <global>
    <state>
      <counters>
        <remote-ageouts>0</remote-ageouts>
        <remote-drops>0</remote-drops>
        <remote-deletes>0</remote-deletes>
        <remote-inserts>1</remote-inserts>
```

```
    </counters>
  </state>
</global>
</lldp>
```

Restrictions

Only the counters remote-ageouts, remote-drops, remote-deletes, remote-inserts are supported.

Interface counters

This command is used to display LLDP interface counters.

Filter

```
<filter>
<lldp xmlns="http://openconfig.net/yang/lldp">
<interfaces>
<interface>
<name>ce50</name>
<state>
<counters/>
</state>
</interface>
</interfaces>
</lldp>
</filter>
```

OpenConfig get result

```
<lldp xmlns="http://openconfig.net/yang/lldp">
  <interfaces>
    <interface>
      <name>xel</name>
      <config>
        <name>xel</name>
      </config>
      <state>
        <counters>
          <frame-out>14</frame-out>
        </counters>
      </state>
    </interface>
  </interfaces>
</lldp>
```

OcNOS get result

```
<lldp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-lldpv2">
  <interfaces>
    <interface>
      <name>xel</name>
      <agent>
```

```
<agent-type>default</agent-type>
<transmit>
  <state>
    <tx-fast-init>2</tx-fast-init>
    <tx-credit-max>9</tx-credit-max>
    <message-fast-tx>222</message-fast-tx>
    <message-tx-hold-multiplier>88</message-tx-hold-multiplier>
    <message-tx-interval>999</message-tx-interval>
    <reinit-delay>6</reinit-delay>
    <tx-ttl>65535</tx-ttl>
    <counters>
      <frames-out>14</frames-out>
    </counters>
  </state>
</transmit>
</agent>
</interface>
</interfaces>
</lldp>
```

Restrictions

Only the counter frame-out is supported.

Neighbors

This command is used to display neighbors.

Filter

```
<filter>
<lldp xmlns="http://openconfig.net/yang/lldp">
<interfaces>
<interface>
<name>ce50</name>
<neighbors>
<neighbor>
</neighbor>
</neighbors>
</interface>
</interfaces>
</lldp>
</filter>
```

OpenConfig get result

```
<lldp xmlns="http://openconfig.net/yang/lldp">
  <interfaces>
    <interface>
      <name>xel</name>
      <config>
        <name>xel</name>
      </config>
    </interface>
  </interfaces>
</lldp>
```

```

    <neighbors>
      <neighbor>
        <id>b86a.97be.193e</id>
        <state><id>b86a.97be.193e</id><system-description>Hardware
Model:EC_AS5912-54X</system-description>1<ttl>121</ttl><port-id-
type>MAC_ADDRESS</port-id-type><port-description>xel</port-description><port-
id>b86a.97be.193e</port-id><chassis-id-type>NETWORK_ADDRESS</chassis-id-
type><chassis-id>10.12.89.136</chassis-id><system-name>7031</system-
name><management-address>b86a.97a7.253c</management-address><management-
address-type>MAC Address</management-address-type></state>
        <capabilities xmlns:oc-lldp-types="http://openconfig.net/yang/
lldp/types">
          <capability>
            <name>oc-lldp-types:MAC_BRIDGE</name>
            <state>
              <name>oc-lldp-types:MAC_BRIDGE</name>
              <enabled>true</enabled>
            </state>
          </capability>
          <capability>
            <name>oc-lldp-types:ROUTER</name>
            <state>
              <name>oc-lldp-types:ROUTER</name>
              <enabled>true</enabled>
            </state>
          </capability>
        </capabilities>
        <custom-tlvs>
          <tlv>
            <type>127</type>
            <oui>00-12-0F</oui>
            <oui-subtype>4</oui-subtype>
            <state>
              <type>127</type>
              <oui>00-12-0F</oui>
              <oui-subtype>4</oui-subtype>
              <value>1518</value>
            </state>
          </tlv>
          <tlv>
            <type>127</type>
            <oui>00-12-0F</oui>
            <oui-subtype>1</oui-subtype>
            <state>
              <type>127</type>
              <oui>00-12-0F</oui>
              <oui-subtype>1</oui-subtype>
              <value>11654</value>
            </state>
          </tlv>
          <tlv>
            <type>127</type>
            <oui>00-80-C2</oui>
            <oui-subtype>2</oui-subtype>
            <state>
              <type>127</type>
              <oui>00-80-C2</oui>
              <oui-subtype>2</oui-subtype>

```

```

        <value>0</value>
      </state>
    </tlv>
  <tlv>
    <type>127</type>
    <oui>00-80-C2</oui>
    <oui-subtype>1</oui-subtype>
    <state>
      <type>127</type>
      <oui>00-80-C2</oui>
      <oui-subtype>1</oui-subtype>
      <value>0</value>
    </state>
  </tlv>
</custom-tlvs>
</neighbor>
</neighbors>
</interface>
</interfaces>
</lldp>

```

OcNOS get result

```

<lldp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-lldpv2">
  <interfaces>
    <interface>
      <name>xel</name>
      <neighbors>
        <agent>
          <agent-type>default</agent-type>
          <neighbor>
            <mac-address>b86a.97be.193e</mac-address>
            <state>
              <mac-address>b86a.97be.193e</mac-address>
              <system-capabilities-enabled>Bridge Router</system-
capabilities-enabled>
              <system-capabilities>Bridge Router</system-capabilities>
              <system-description>Hardware Model:EC_AS5912-54X</system-
description>
              <max-frame-size>1518</max-frame-size>
              <link-aggregate-capability>Capable</link-aggregate-
capability>
              <operational-mau-type>54</operational-mau-type>
              <auto-negotiation-capability>16</auto-negotiation-
capability>
              <auto-negotiation-support>1</auto-negotiation-support>
              <management-vlan>0</management-vlan>
              <vid-usage-digest>0</vid-usage-digest>
              <pp-vlanid>0</pp-vlanid>
              <port-vlan-id>0</port-vlan-id>
              <ttl>121</ttl>
              <port-sub-type>3</port-sub-type>
              <port-description>xel</port-description>
              <port-id>b86a.97be.193e</port-id>
              <chassis-id-type>5</chassis-id-type>
              <chassis-component>10.12.89.136</chassis-component>
              <system-name>7031</system-name>
            </state>
          </neighbor>
        </agent>
      </neighbors>
    </interface>
  </interfaces>
</lldp>

```

```

type>
    <management-list>
      <address>b86a.97a7.253c</address>
      <oid>0</oid>
      <interface-number>10001</interface-number>
      <interface-number-sub-type>ifindex</interface-number-sub-
    <address-sub-type>MAC Address</address-sub-type>
    </management-list>
  </state>
</neighbor>
</agent>
</neighbors>
</interface>
</interfaces>
</lldp>

```

Neighbors name and description

This command is used to display neighbors' name and description.

Filter

```

<filter>
<lldp xmlns="http://openconfig.net/yang/lldp">
<interfaces>
<interface>
<neighbors>
<neighbor>
<name>ce50</name>
<state>
<system-name/>
<description/>
<id/>
<ttl/>
</state>
</neighbor>
</neighbors>
</interface>
</interfaces>
</lldp>
</filter>

```

OpenConfig get result

```

<lldp xmlns="http://openconfig.net/yang/lldp">
  <interfaces>
    <interface>
      <name>eth0</name>
      <config>
        <name>eth0</name>
      </config>
      <neighbors>
        <neighbor>
          <id>08f1.ea53.dbf2</id>

```

```

        <state>
          <id>08f1.ea53.dbf2</id>
          <system-description>HPE OfficeConnect Switch 1920S 24G 2SFP
JL381A PD.01.05 Linux 3.6.5-ac96795c U-Boot 2012.10-00118-g3773021 (Oct 11
2016 - 15:39:54)</system-description>
          <system-name>LAB1-SW13</system-name>
        </state>
      </neighbor>
    </neighbors>
  </interface>
  <interface>
    <name>xe2</name>
    <config>
      <name>xe2</name>
    </config>
    <neighbors>
      <neighbor>
        <id>b86a.97be.193f</id>
        <state>
          <id>b86a.97be.193f</id>
          <system-description>Hardware Model:EC_AS5912-54X</system-
description>
          <system-name>7031</system-name>
        </state>
      </neighbor>
    </neighbors>
  </interface>
  <interface>
    <name>xe1</name>
    <config>
      <name>xe1</name>
    </config>
    <neighbors>
      <neighbor>
        <id>b86a.97be.193e</id>
        <state>
          <id>b86a.97be.193e</id>
          <system-description>Hardware Model:EC_AS5912-54X</system-
description>
          <system-name>7031</system-name>
        </state>
      </neighbor>
    </neighbors>
  </interface>
</interfaces>
</lldp>

```

OcNOS get result

```

<lldp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-lldpv2">
  <interfaces>
    <interface>
      <name>xe1</name>
      <neighbors>
        <agent>
          <agent-type>default</agent-type>

```

```

<neighbor>
  <mac-address>b86a.97be.193e</mac-address>
  <state>
    <mac-address>b86a.97be.193e</mac-address>
    <system-capabilities-enabled>Bridge Router</system-capabilities-enabled>
    <system-capabilities>Bridge Router</system-capabilities>
    <system-description>Hardware Model:EC_AS5912-54X</system-description>
    <max-frame-size>1518</max-frame-size>
    <link-aggregate-capability>Capable</link-aggregate-capability>
    <operational-mau-type>54</operational-mau-type>
    <auto-negotiation-capability>16</auto-negotiation-capability>
    <auto-negotiation-support>1</auto-negotiation-support>
    <management-vlan>0</management-vlan>
    <vid-usage-digest>0</vid-usage-digest>
    <pp-vlanid>0</pp-vlanid>
    <port-vlan-id>0</port-vlan-id>
    <ttl>121</ttl>
    <port-sub-type>3</port-sub-type>
    <port-description>xel</port-description>
    <port-id>b86a.97be.193e</port-id>
    <chassis-id-type>5</chassis-id-type>
    <chassis-component>10.12.89.136</chassis-component>
    <system-name>7031</system-name>
    <management-list>
      <address>b86a.97a7.253c</address>
      <oid>0</oid>
      <interface-number>10001</interface-number>
      <interface-number-sub-type>ifindex</interface-number-sub-type>
      <address-sub-type>MAC Address</address-sub-type>
    </management-list>
  </state>
</neighbor>
</agent>
</neighbors>
</interface>
</interfaces>
</lldp>

```

Neighbors chassis-id, type and ttl

This command is used to display neighbors' chassis-id, type and ttl.

Filter

```

<filter>
<lldp xmlns="http://openconfig.net/yang/lldp">
  <interfaces>
    <interface>

```



```

<neighbors>
<neighbor>
<name>ce50</name>
<state>
<chassis-id/>
<chassis-id-type/>
<id/>
<ttl/>
</state>
</neighbor>
</neighbors>
</interface>
</interfaces>
</lldp>
</filter>

```

OpenConfig get result

```

<lldp xmlns="http://openconfig.net/yang/lldp">
  <interfaces>
    <interface>
      <name>eth0</name>
      <config>
        <name>eth0</name>
      </config>
      <neighbors>
        <neighbor>
          <id>08f1.ea53.dbf2</id>
          <state>
            <id>08f1.ea53.dbf2</id>
            <chassis-id>08f1.ea53.dbf0</chassis-id>
            <chassis-id-type>MAC_ADDRESS</chassis-id-type>
            <ttl>120</ttl>
          </state>
        </neighbor>
      </neighbors>
    </interface>
    <interface>
      <name>xe2</name>
      <config>
        <name>xe2</name>
      </config>
      <neighbors>
        <neighbor>
          <id>b86a.97be.193f</id>
          <state>
            <id>b86a.97be.193f</id>
            <chassis-id>b86a.97a7.253c</chassis-id>
            <chassis-id-type>MAC_ADDRESS</chassis-id-type>
            <ttl>121</ttl>
          </state>
        </neighbor>
      </neighbors>
    </interface>
    <interface>
      <name>xe1</name>

```

```

<config>
  <name>xel</name>
</config>
<neighbors>
  <neighbor>
    <id>b86a.97be.193e</id>
    <state>
      <id>b86a.97be.193e</id>
      <chassis-id>10.12.89.136</chassis-id>
      <chassis-id-type>NETWORK_ADDRESS</chassis-id-type>
      <ttl>121</ttl>
    </state>
  </neighbor>
</neighbors>
</interface>
</interfaces>
</lldp>

```

OcNOS get result

```

<lldp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-lldpv2">
  <interfaces>
    <interface>
      <name>xel</name>
      <neighbors>
        <agent>
          <agent-type>default</agent-type>
          <neighbor>
            <mac-address>b86a.97be.193e</mac-address>
            <state>
              <mac-address>b86a.97be.193e</mac-address>
              <system-capabilities-enabled>Bridge Router</system-
capabilities-enabled>
              <system-capabilities>Bridge Router</system-capabilities>
              <system-description>Hardware Model:EC_AS5912-54X</system-
description>
              <max-frame-size>1518</max-frame-size>
              <link-aggregate-capability>Capable</link-aggregate-
capability>
              <operational-mau-type>54</operational-mau-type>
              <auto-negotiation-capability>16</auto-negotiation-
capability>
              <auto-negotiation-support>1</auto-negotiation-support>
              <management-vlan>0</management-vlan>
              <vid-usage-digest>0</vid-usage-digest>
              <pp-vlanid>0</pp-vlanid>
              <port-vlan-id>0</port-vlan-id>
              <ttl>121</ttl>
              <port-sub-type>3</port-sub-type>
              <port-description>xel</port-description>
              <port-id>b86a.97be.193e</port-id>
              <chassis-id-type>5</chassis-id-type>
              <chassis-component>10.12.89.136</chassis-component>
              <system-name>7031</system-name>
              <management-list>
                <address>b86a.97a7.253c</address>
                <oid>0</oid>

```

```

        <interface-number>10001</interface-number>
        <interface-number-sub-type>ifindex</interface-number-sub-
type>
        <address-sub-type>MAC Address</address-sub-type>
        </management-list>
    </state>
</neighbor>
</agent>
</neighbors>
</interface>
</interfaces>
</lldp>

```

Neighbors port-id, type and description

This is used to display neighbors' port-id, port-id-type and port-description.

Filter

```

<filter>
<lldp xmlns="http://openconfig.net/yang/lldp">
<interfaces>
<interface>
<neighbors>
<neighbor>
<name>ce50</name>
<state>
<port-id/>
<port-id-type/>
<port-description/>
<management-address/>
<management-address-type/>
</state>
</neighbor>
</neighbors>
</interface>
</interfaces>
</lldp>
</filter>

```

OpenConfig get result

```

<lldp xmlns="http://openconfig.net/yang/lldp">
<interfaces>
<interface>
<name>eth0</name>
<config>
<name>eth0</name>
</config>
<neighbors>
<neighbor>
<id>08f1.ea53.dbf2</id>
<state>
<id>08f1.ea53.dbf2</id>

```

```

        <port-id>08f1.ea53.dbf2</port-id>
        <port-id-type>MAC_ADDRESS</port-id-type>
        <port-description>19</port-description>
    </state>
</neighbor>
</neighbors>
</interface>
<interface>
    <name>xe2</name>
    <config>
        <name>xe2</name>
    </config>
    <neighbors>
        <neighbor>
            <id>b86a.97be.193f</id>
            <state>
                <id>b86a.97be.193f</id>
                <port-id>b86a.97be.193f</port-id>
                <port-id-type>MAC_ADDRESS</port-id-type>
                <port-description>xe2</port-description>
            </state>
        </neighbor>
    </neighbors>
</interface>
<interface>
    <name>xe1</name>
    <config>
        <name>xe1</name>
    </config>
    <neighbors>
        <neighbor>
            <id>b86a.97be.193e</id>
            <state>
                <id>b86a.97be.193e</id>
                <port-id>b86a.97be.193e</port-id>
                <port-id-type>MAC_ADDRESS</port-id-type>
                <port-description>xe1</port-description>
            </state>
        </neighbor>
    </neighbors>
</interface>
</interfaces>
</lldp>

```

OcNOS get result

```

<lldp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-lldpv2">
  <interfaces>
    <interface>
      <name>xe1</name>
      <neighbors>
        <agent>
          <agent-type>default</agent-type>
        </agent>
        <neighbor>
          <mac-address>b86a.97be.193e</mac-address>
          <state>

```

```

        <mac-address>b86a.97be.193e</mac-address>
        <system-capabilities-enabled>Bridge Router</system-
capabilities-enabled>
        <system-capabilities>Bridge Router</system-capabilities>
description>
        <system-description>Hardware Model:EC_AS5912-54X</system-
description>
        <max-frame-size>1518</max-frame-size>
        <link-aggregate-capability>Capable</link-aggregate-
capability>
        <operational-mau-type>54</operational-mau-type>
        <auto-negotiation-capability>16</auto-negotiation-
capability>
        <auto-negotiation-support>1</auto-negotiation-support>
        <management-vlan>0</management-vlan>
        <vid-usage-digest>0</vid-usage-digest>
        <pp-vlanid>0</pp-vlanid>
        <port-vlan-id>0</port-vlan-id>
        <ttl>121</ttl>
        <port-sub-type>3</port-sub-type>
        <port-description>xel</port-description>
        <port-id>b86a.97be.193e</port-id>
        <chassis-id-type>5</chassis-id-type>
        <chassis-component>10.12.89.136</chassis-component>
        <system-name>7031</system-name>
        <management-list>
            <address>b86a.97a7.253c</address>
            <oid>0</oid>
            <interface-number>10001</interface-number>
            <interface-number-sub-type>ifindex</interface-number-sub-
type>
            <address-sub-type>MAC Address</address-sub-type>
        </management-list>
    </state>
</neighbor>
</agents>
</neighbors>
</interface>
</interfaces>
</lldp>

```

Neighbors custom TLVs type/subtype

This command is used to display neighbors' custom TLVs type/subtype.

Filter

```

<filter>
<lldp xmlns="http://openconfig.net/yang/lldp">
<interfaces>
<interface>
<neighbors>
<neighbor>
<custom-tlvs>
<tlv>
<state>

```

```

<type>127</type>
<oui>00-80-C2</oui>
<config/>
</state>
</tlv>
</custom-tlvs>
</neighbor>
</neighbors>
</interface>
</interfaces>
</lldp>
</filter>

```

OpenConfig get result

```

<lldp xmlns="http://openconfig.net/yang/lldp">
  <interfaces>
    <interface>
      <name>eth0</name>
      <config>
        <name>eth0</name>
      </config>
      <neighbors>
        <neighbor>
          <id>08f1.ea53.dbf2</id>
          <state><id>08f1.ea53.dbf2</id><system-description>HPE
OfficeConnect Switch 1920S 24G 2SFP JL381A PD.01.05 Linux 3.6.5-ac96795c U-
Boot 2012.10-00118-g3773021 (Oct 11 2016 - 15:39:54)</system-
description>0<ttl>120</ttl><port-id-type>MAC ADDRESS</port-id-type><port-
description>19</port-description><port-id>08f1.ea53.dbf2</port-id><chassis-id-
type>MAC ADDRESS</chassis-id-type><chassis-id>08f1.ea53.dbf0</chassis-
id><system-name>LAB1-SW13</system-name><management-address>10.12.89.123</
management-address><management-address-type>IP Address</management-address-
type></state>
        <capabilities xmlns:oc-lldp-types="http://openconfig.net/yang/
lldp/types">
          <capability>
            <name>oc-lldp-types:MAC_BRIDGE</name>
            <state>
              <name>oc-lldp-types:MAC_BRIDGE</name>
              <enabled>true</enabled>
            </state>
          </capability>
          <capability>
            <name>oc-lldp-types:ROUTER</name>
            <state>
              <name>oc-lldp-types:ROUTER</name>
              <enabled>false</enabled>
            </state>
          </capability>
        </capabilities>
      <custom-tlvs>
        <tlv>
          <type>127</type>
          <oui>00-12-0F</oui>
          <oui-subtype>4</oui-subtype>
          <state>
            <type>127</type>

```

```

        <oui>00-12-0F</oui>
        <oui-subtype>4</oui-subtype>
        <value>0</value>
      </state>
    </tlv>
    <tlv>
      <type>127</type>
      <oui>00-12-0F</oui>
      <oui-subtype>1</oui-subtype>
      <state>
        <type>127</type>
        <oui>00-12-0F</oui>
        <oui-subtype>1</oui-subtype>
        <value>000</value>
      </state>
    </tlv>
    <tlv>
      <type>127</type>
      <oui>00-80-C2</oui>
      <oui-subtype>2</oui-subtype>
      <state>
        <type>127</type>
        <oui>00-80-C2</oui>
        <oui-subtype>2</oui-subtype>
        <value>0</value>
      </state>
    </tlv>
    <tlv>
      <type>127</type>
      <oui>00-80-C2</oui>
      <oui-subtype>1</oui-subtype>
      <state>
        <type>127</type>
        <oui>00-80-C2</oui>
        <oui-subtype>1</oui-subtype>
        <value>0</value>
      </state>
    </tlv>
  </custom-tlvs>
</neighbor>
</neighbors>
</interface>
<interface>
  <name>xe2</name>
  <config>
    <name>xe2</name>
  </config>
  <neighbors>
    <neighbor>
      <id>b86a.97be.193f</id>
      <state><id>b86a.97be.193f</id><system-description>Hardware
Model:EC_AS5912-54X</system-description>1<ttl>121</ttl><port-id-
type>MAC_ADDRESS</port-id-type><port-description>xe2</port-description><port-
id>b86a.97be.193f</port-id><chassis-id-type>MAC_ADDRESS</chassis-id-
type><chassis-id>b86a.97a7.253c</chassis-id><system-name>7031</system-
name><management-address>b86a.97a7.253c</management-address><management-
address-type>MAC Address</management-address-type></state>

```

```

lldp/types">
  <capabilities xmlns:oc-lldp-types="http://openconfig.net/yang/
    <capability>
      <name>oc-lldp-types:MAC_BRIDGE</name>
      <state>
        <name>oc-lldp-types:MAC_BRIDGE</name>
        <enabled>true</enabled>
      </state>
    </capability>
    <capability>
      <name>oc-lldp-types:ROUTER</name>
      <state>
        <name>oc-lldp-types:ROUTER</name>
        <enabled>true</enabled>
      </state>
    </capability>
  </capabilities>
  <custom-tlvs>
    <tlv>
      <type>127</type>
      <oui>00-12-0F</oui>
      <oui-subtype>4</oui-subtype>
      <state>
        <type>127</type>
        <oui>00-12-0F</oui>
        <oui-subtype>4</oui-subtype>
        <value>1518</value>
      </state>
    </tlv>
    <tlv>
      <type>127</type>
      <oui>00-12-0F</oui>
      <oui-subtype>1</oui-subtype>
      <state>
        <type>127</type>
        <oui>00-12-0F</oui>
        <oui-subtype>1</oui-subtype>
        <value>11654</value>
      </state>
    </tlv>
    <tlv>
      <type>127</type>
      <oui>00-80-C2</oui>
      <oui-subtype>2</oui-subtype>
      <state>
        <type>127</type>
        <oui>00-80-C2</oui>
        <oui-subtype>2</oui-subtype>
        <value>0</value>
      </state>
    </tlv>
    <tlv>
      <type>127</type>
      <oui>00-80-C2</oui>
      <oui-subtype>1</oui-subtype>
      <state>
        <type>127</type>

```



```

        <oui>00-80-C2</oui>
        <oui-subtype>1</oui-subtype>
        <value>0</value>
      </state>
    </tlv>
  </custom-tlvs>
</neighbors>
</interface>
<interface>
  <name>xel</name>
  <config>
    <name>xel</name>
  </config>
  <neighbors>
    <neighbor>
      <id>b86a.97be.193e</id>
      <state><id>b86a.97be.193e</id><system-description>Hardware
Model:EC_AS5912-54X</system-description>1<ttl>121</ttl><port-id-
type>MAC_ADDRESS</port-id-type><port-description>xel</port-description><port-
id>b86a.97be.193e</port-id><chassis-id-type>NETWORK_ADDRESS</chassis-id-
type><chassis-id>10.12.89.136</chassis-id><system-name>7031</system-
name><management-address>b86a.97a7.253c</management-address><management-
address-type>MAC Address</management-address-type></state>
    <capabilities xmlns:oc-lldp-types="http://openconfig.net/yang/
lldp/types">
      <capability>
        <name>oc-lldp-types:MAC_BRIDGE</name>
        <state>
          <name>oc-lldp-types:MAC_BRIDGE</name>
          <enabled>true</enabled>
        </state>
      </capability>
      <capability>
        <name>oc-lldp-types:ROUTER</name>
        <state>
          <name>oc-lldp-types:ROUTER</name>
          <enabled>true</enabled>
        </state>
      </capability>
    </capabilities>
  <custom-tlvs>
    <tlv>
      <type>127</type>
      <oui>00-12-0F</oui>
      <oui-subtype>4</oui-subtype>
      <state>
        <type>127</type>
        <oui>00-12-0F</oui>
        <oui-subtype>4</oui-subtype>
        <value>1518</value>
      </state>
    </tlv>
    <tlv>
      <type>127</type>
      <oui>00-12-0F</oui>
      <oui-subtype>1</oui-subtype>
      <state>

```

```

        <type>127</type>
        <oui>00-12-0F</oui>
        <oui-subtype>1</oui-subtype>
        <value>11654</value>
      </state>
    </tlv>
    <tlv>
      <type>127</type>
      <oui>00-80-C2</oui>
      <oui-subtype>2</oui-subtype>
      <state>
        <type>127</type>
        <oui>00-80-C2</oui>
        <oui-subtype>2</oui-subtype>
        <value>0</value>
      </state>
    </tlv>
    <tlv>
      <type>127</type>
      <oui>00-80-C2</oui>
      <oui-subtype>1</oui-subtype>
      <state>
        <type>127</type>
        <oui>00-80-C2</oui>
        <oui-subtype>1</oui-subtype>
        <value>0</value>
      </state>
    </tlv>
  </custom-tlvs>
</neighbor>
</neighbors>
</interface>
</interfaces>
</lldp>

```

OcNOS get result

```

<lldp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-lldpv2">
  <interfaces>
    <interface>
      <name>xel</name>
      <neighbors>
        <agent>
          <agent-type>default</agent-type>
          <neighbor>
            <mac-address>b86a.97be.193e</mac-address>
            <state>
              <mac-address>b86a.97be.193e</mac-address>
              <pp-vlanid>0</pp-vlanid>
            </state>
          </neighbor>
        </agent>
      </neighbors>
    </interface>
  </interfaces>
</lldp>

```

Neighbors custom TLVs

This command is used to display neighbors' custom TLVs.

Filter

```
<filter>
<lldp xmlns="http://openconfig.net/yang/lldp">
<interfaces>
<interface>
<name>ce50</name>
<neighbors>
<neighbor>
<custom-tlvs>
<tlv>
<type>127</type>
<oui>0-80-C2</oui>
</tlv>
</custom-tlvs>
</neighbor>
</neighbors>
</interface>
</interfaces>
</lldp>
</filter>
```

OpenConfig get result

```
<lldp xmlns="http://openconfig.net/yang/lldp">
  <interfaces>
    <interface>
      <name>xel</name>
      <config>
        <name>xel</name>
      </config>
      <neighbors>
        <neighbor>
          <id>b86a.97be.193e</id>
          <state><id>b86a.97be.193e</id><system-description>Hardware
Model:EC_AS5912-54X</system-description><ttl>121</ttl><port-id-
type>MAC_ADDRESS</port-id-type><port-description>xel</port-description><port-
id>b86a.97be.193e</port-id><chassis-id-type>NETWORK_ADDRESS</chassis-id-
type><chassis-id>10.12.89.136</chassis-id><system-name>7031</system-
name><management-address>b86a.97a7.253c</management-address><management-
address-type>MAC Address</management-address-type></state>
          <capabilities xmlns:oc-lldp-types="http://openconfig.net/yang/
lldp/types">
            <capability>
              <name>oc-lldp-types:MAC_BRIDGE</name>
              <state>
                <name>oc-lldp-types:MAC_BRIDGE</name>
                <enabled>true</enabled>
              </state>
            </capability>
          </capabilities>
        </neighbor>
      </neighbors>
    </interface>
  </interfaces>
</lldp>
```

```
        <name>oc-lldp-types:ROUTER</name>
        <state>
          <name>oc-lldp-types:ROUTER</name>
          <enabled>true</enabled>
        </state>
      </capability>
    </capabilities>
  <custom-tlvs>
    <tlv>
      <type>127</type>
      <oui>00-12-0F</oui>
      <oui-subtype>4</oui-subtype>
      <state>
        <type>127</type>
        <oui>00-12-0F</oui>
        <oui-subtype>4</oui-subtype>
        <value>1518</value>
      </state>
    </tlv>
    <tlv>
      <type>127</type>
      <oui>00-12-0F</oui>
      <oui-subtype>1</oui-subtype>
      <state>
        <type>127</type>
        <oui>00-12-0F</oui>
        <oui-subtype>1</oui-subtype>
        <value>11654</value>
      </state>
    </tlv>
    <tlv>
      <type>127</type>
      <oui>00-80-C2</oui>
      <oui-subtype>2</oui-subtype>
      <state>
        <type>127</type>
        <oui>00-80-C2</oui>
        <oui-subtype>2</oui-subtype>
        <value>0</value>
      </state>
    </tlv>
    <tlv>
      <type>127</type>
      <oui>00-80-C2</oui>
      <oui-subtype>1</oui-subtype>
      <state>
        <type>127</type>
        <oui>00-80-C2</oui>
        <oui-subtype>1</oui-subtype>
        <value>0</value>
      </state>
    </tlv>
  </custom-tlvs>
</neighbor>
</neighbors>
</interface>
</interfaces>
```

```
</lldp>
```

OcNOS get result

```
<lldp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-lldpv2">
  <interfaces>
    <interface>
      <name>xel</name>
      <neighbors>
        <agent>
          <agent-type>default</agent-type>
          <neighbor>
            <mac-address>b86a.97be.193e</mac-address>
            <state>
              <mac-address>b86a.97be.193e</mac-address>
              <port-vlan-id>0</port-vlan-id>
            </state>
          </neighbor>
        </agent>
      </neighbors>
    </interface>
  </interfaces>
</lldp>
```

Filter

```
<filter>
<lldp xmlns="http://openconfig.net/yang/lldp">
  <interfaces>
    <interface>
      <name>ce50</name>
      <neighbors>
        <neighbor>
          <custom-tlvs>
            <tlv>
              <type>127</type>
              <oui>00-12-0F</oui>
              <oui-subtype>1</oui-subtype>
            </tlv>
          </custom-tlvs>
        </neighbor>
      </neighbors>
    </interface>
  </interfaces>
</lldp>
</filter>
```

OpenConfig get result

```
<lldp xmlns="http://openconfig.net/yang/lldp">
  <interfaces>
    <interface>
      <name>xel</name>
      <config>
        <name>xel</name>
      </config>
    </interface>
  </interfaces>
</lldp>
```

```

    <neighbors>
      <neighbor>
        <id>b86a.97be.193e</id>
        <state><id>b86a.97be.193e</id><system-description>Hardware
Model:EC_AS5912-54X</system-description>1<ttl>121</ttl><port-id-
type>MAC_ADDRESS</port-id-type><port-description>xel</port-description><port-
id>b86a.97be.193e</port-id><chassis-id-type>NETWORK_ADDRESS</chassis-id-
type><chassis-id>10.12.89.136</chassis-id><system-name>7031</system-
name><management-address>b86a.97a7.253c</management-address><management-
address-type>MAC Address</management-address-type></state>
      <capabilities xmlns:oc-lldp-types="http://openconfig.net/yang/
lldp/types">
        <capability>
          <name>oc-lldp-types:MAC_BRIDGE</name>
          <state>
            <name>oc-lldp-types:MAC_BRIDGE</name>
            <enabled>true</enabled>
          </state>
        </capability>
        <capability>
          <name>oc-lldp-types:ROUTER</name>
          <state>
            <name>oc-lldp-types:ROUTER</name>
            <enabled>true</enabled>
          </state>
        </capability>
      </capabilities>
      <custom-tlvs>
        <tlv>
          <type>127</type>
          <oui>00-12-0F</oui>
          <oui-subtype>4</oui-subtype>
          <state>
            <type>127</type>
            <oui>00-12-0F</oui>
            <oui-subtype>4</oui-subtype>
            <value>1518</value>
          </state>
        </tlv>
        <tlv>
          <type>127</type>
          <oui>00-12-0F</oui>
          <oui-subtype>1</oui-subtype>
          <state>
            <type>127</type>
            <oui>00-12-0F</oui>
            <oui-subtype>1</oui-subtype>
            <value>11654</value>
          </state>
        </tlv>
        <tlv>
          <type>127</type>
          <oui>00-80-C2</oui>
          <oui-subtype>2</oui-subtype>
          <state>
            <type>127</type>
            <oui>00-80-C2</oui>
            <oui-subtype>2</oui-subtype>

```

```
        <value>0</value>
      </state>
    </tlv>
  <tlv>
    <type>127</type>
    <oui>00-80-C2</oui>
    <oui-subtype>1</oui-subtype>
    <state>
      <type>127</type>
      <oui>00-80-C2</oui>
      <oui-subtype>1</oui-subtype>
      <value>0</value>
    </state>
  </tlv>
</custom-tlvs>
</neighbor>
</neighbors>
</interface>
</interfaces>
</lldp>
```

OcNOS get result

```
<lldp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-lldpv2">
  <interfaces>
    <interface>
      <name>xel</name>
      <neighbors>
        <agent>
          <agent-type>default</agent-type>
          <neighbor>
            <mac-address>b86a.97be.193e</mac-address>
            <state>
              <mac-address>b86a.97be.193e</mac-address>
              <auto-negotiation-support>1</auto-negotiation-support>
            </state>
          </neighbor>
        </agent>
      </neighbors>
    </interface>
  </interfaces>
</lldp>
```

Neighbors capabilities

This command is used to display neighbors' capabilities.

Filter

```
<filter>
<lldp xmlns="http://openconfig.net/yang/lldp">
  <interfaces>
    <interface>
      <name>ce50</name>
```

```

<neighbors>
<neighbor>
<capabilities>
<capability>
<name/>
<config/>
<state/>
</capability>
</capabilities>
</neighbor>
</neighbors>
</interface>
</interfaces>
</lldp>
</filter>

```

OpenConfig get result

```

<lldp xmlns="http://openconfig.net/yang/lldp">
  <interfaces>
    <interface>
      <name>xel</name>
      <config>
        <name>xel</name>
      </config>
      <neighbors>
        <neighbor>
          <id>b86a.97be.193e</id>
          <state><id>b86a.97be.193e</id><system-description>Hardware
Model:EC_AS5912-54X</system-description>1<ttl>121</ttl><port-id-
type>MAC_ADDRESS</port-id-type><port-description>xel</port-description><port-
id>b86a.97be.193e</port-id><chassis-id-type>NETWORK_ADDRESS</chassis-id-
type><chassis-id>10.12.89.136</chassis-id><system-name>7031</system-
name><management-address>b86a.97be.193e</management-address><management-
address-type>MAC Address</management-address-type></state>
          <capabilities xmlns:oc-lldp-types="http://openconfig.net/yang/
lldp/types">
            <capability>
              <name>oc-lldp-types:MAC_BRIDGE</name>
              <state>
                <name>oc-lldp-types:MAC_BRIDGE</name>
                <enabled>true</enabled>
              </state>
            </capability>
            <capability>
              <name>oc-lldp-types:ROUTER</name>
              <state>
                <name>oc-lldp-types:ROUTER</name>
                <enabled>true</enabled>
              </state>
            </capability>
          </capabilities>
          <custom-tlvs>
            <tlv>
              <type>127</type>
              <oui>00-12-0F</oui>
              <oui-subtype>4</oui-subtype>
              <state>

```



```
        <type>127</type>
        <oui>00-12-0F</oui>
        <oui-subtype>4</oui-subtype>
        <value>1522</value>
    </state>
</tlv>
<tlv>
    <type>127</type>
    <oui>00-12-0F</oui>
    <oui-subtype>1</oui-subtype>
    <state>
        <type>127</type>
        <oui>00-12-0F</oui>
        <oui-subtype>1</oui-subtype>
        <value>11654</value>
    </state>
</tlv>
<tlv>
    <type>127</type>
    <oui>00-80-C2</oui>
    <oui-subtype>4</oui-subtype>
    <state>
        <type>127</type>
        <oui>00-80-C2</oui>
        <oui-subtype>4</oui-subtype>
        <value>Rapid-Spanning-Tree-Protocol</value>
    </state>
</tlv>
<tlv>
    <type>127</type>
    <oui>00-80-C2</oui>
    <oui-subtype>2</oui-subtype>
    <state>
        <type>127</type>
        <oui>00-80-C2</oui>
        <oui-subtype>2</oui-subtype>
        <value>0</value>
    </state>
</tlv>
<tlv>
    <type>127</type>
    <oui>00-80-C2</oui>
    <oui-subtype>1</oui-subtype>
    <state>
        <type>127</type>
        <oui>00-80-C2</oui>
        <oui-subtype>1</oui-subtype>
        <value>1</value>
    </state>
</tlv>
<tlv>
    <type>127</type>
    <oui>00-80-C2</oui>
    <oui-subtype>3</oui-subtype>
    <state>
        <type>127</type>
        <oui>00-80-C2</oui>
```

```
        <oui-subtype>3</oui-subtype>
        <value>1default</value>
      </state>
    </tlv>
  </custom-tlvs>
</neighbor>
</neighbors>
</interface>
</interfaces>
</lldp>
```

OcNOS get result

```
<lldp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-lldpv2">
  <interfaces>
    <interface>
      <name>xel</name>
      <neighbors>
        <agent>
          <agent-type>default</agent-type>
          <neighbor>
            <mac-address>b86a.97be.193e</mac-address>
            <state>
              <mac-address>b86a.97be.193e</mac-address>
              <port-vlan-id>0</port-vlan-id>
            </state>
          </neighbor>
        </agent>
      </neighbors>
    </interface>
  </interfaces>
</lldp>
```

ACL Openconfig Translation

Configure Primary IP Address

This XML configuration snippet is used to create an ACL (access control list) entry to operate over L2 data traffic..

Release

This configuration was introduced in OcNOS version 6.1.0.

OpenConfig NetConf Payload

```
<acl xmlns="http://openconfig.net/yang/acl">
  <acl-sets>
    <acl-set>
      <name>ACL_OC_L2</name>
      <type
        xmlns:oc-acl="http://openconfig.net/yang/acl">oc-acl:ACL_L2</type>
      <config>
        <name>ACL_OC_L2</name>
        <type
          xmlns:oc-acl="http://openconfig.net/yang/acl">oc-acl:ACL_L2</type>
        <description>ACL L2 CFG Test</description>
      </config>
      <acl-entries>
        <acl-entry>
          <sequence-id>1</sequence-id>
          <config>
            <sequence-id>1</sequence-id>
          </config>
          <l2>
            <config>
              <destination-mac>00BB.CCDD.EEFF</destination-mac>
              <destination-mac-mask>AC00.0000.0000</destination-mac-mask>
              <ethertype>ETHERTYPE_IPV4</ethertype>
              <source-mac>0000.CCDD.EEFF</source-mac>
              <source-mac-mask>AABB.0000.0000</source-mac-mask>
            </config>
          </l2>
          <actions>
            <config>
              <forwarding-action
                xmlns:oc-acl="http://openconfig.net/yang/acl">oc-acl:ACCEPT</
forwarding-action>
              </config>
            </actions>
          </acl-entry>
        </acl-entries>
      </acl-set>
    </acl-sets>
  </acl>
```

OcNOS CLI Command

```
mac access-list ACL_OC_L2
  remark ACL L2 CFG Test
  1 permit 0000.CCDD.EEFF AABB.0000.0000 00BB.CCDD.EEFF AC00.0000.0000 ipv4
!
```

OcNOS NetConf Payload

```
<acl xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-acl">
  <acl-sets>
    <acl-set>
      <name>ACL_OC_L2</name>
      <type>mac</type>
      <config>
        <name>ACL_OC_L2</name>
        <type>mac</type>
        <description>ACL L2 CFG Test</description>
      </config>
      <acl-entries>
        <acl-entry>
          <sequence-id>1</sequence-id>
          <config>
            <sequence-id>1</sequence-id>
            </config>
            <mac>
              <config>
                <destination-mac-address>0000.0000.0000</destination-mac-
address>
                <destination-mac-mask>AA32.CCDD.EE10</destination-mac-mask>
                <ethertype>ipv4</ethertype>
                <source-mac-address>0000.0000.00EE</source-mac-address>
                <source-mac-mask>AABB.CCDD.EE11</source-mac-mask>
                <forwarding-action>permit</forwarding-action>
              </config>
            </mac>
          </acl-entry>
        </acl-entries>
      </acl-set>
    </acl-sets>
  </acl>
```

Validation with NetConf get

```
<acl xmlns="http://openconfig.net/yang/acl">
  <acl-sets>
    <acl-set>
      <name>ACL_OC_L2</name>
      <type>
        xmlns:oc-acl="http://openconfig.net/yang/acl">oc-acl:ACL_L2</type>
      <config>
        <name>ACL_OC_L2</name>
        <type>
          xmlns:oc-acl="http://openconfig.net/yang/acl">oc-acl:ACL_L2</
type>
        <description>ACL L2 CFG Test</description>
```

```

</config>
<acl-entries>
  <acl-entry>
    <sequence-id>1</sequence-id>
    <config>
      <sequence-id>1</sequence-id>
    </config>
    <mac>
      <config>
        <source-mac>0000.CCDD.EEFF</source-mac>
        <source-mac-mask>AABB.0000.0000</source-mac-mask>
        <ethertype>ETHERTYPE_IPV4</ethertype>
        <destination-mac>00BB.CCDD.EEFF</destination-mac>
        <destination-mac-mask>AC00.0000.0000</destination-mac-mask>
      </config>
    </mac>
    <actions>
      <config>
        <forwarding-action
          xmlns:oc-acl="http://openconfig.net/yang/acl">oc-
acl:ACCEPT</forwarding-action>
        </config>
      </actions>
    </acl-entry>
  </acl-entries>
</acl-set>
</acl-sets>
</acl>

```

Restrictions

- N/A

Create IPv4 entries

This XML configuration snippet is used to create an ACL entry to operate over IPv4 data traffic.

Release

This configuration was introduced in OcNOS version 6.1.0.

OpenConfig NetConf Payload

```

<acl xmlns="http://openconfig.net/yang/acl">
  <acl-sets>
    <acl-set>
      <name>ACL_OC_IPV4</name>
      <type
type>
        xmlns:oc-acl="http://openconfig.net/yang/acl">oc-acl:ACL_IPV4</
        <config>
          <name>ACL_OC_IPV4</name>
          <type

```

```

type>          xmlns:oc-acl="http://openconfig.net/yang/acl">oc-acl:ACL_IPV4</
<description>ACL TFW Test</description>
</config>
<acl-entries>
  <acl-entry>
    <sequence-id>10</sequence-id>
    <config>
      <sequence-id>10</sequence-id>
    </config>
    <ipv4>
      <config>
        <source-address>1.1.1.0/24</source-address>
        <destination-address>2.2.2.0/24</destination-address>
        <dscp>18</dscp>
        <protocol>6</protocol>
      </config>
    </ipv4>
    <actions>
      <config>
        <forwarding-action
acl:ACCEPT</forwarding-action>
        </config>
      </actions>
      <transport>
        <config>
          <explicit-tcp-flags
packet-match-types">oc-pkt-match-types:TCP_SYN</explicit-tcp-flags>
          <source-port>22</source-port>
          <destination-port>80</destination-port>
        </config>
      </transport>
    </acl-entry>
  </acl-entries>
</acl-set>
</acl-sets>
</acl>

```

OcNOS CLI Command

```

ip access-list ACL_OC_IPV4
  remark ACL TFW Test
  10 permit tcp 1.1.1.0/24 2.2.2.0/24 dscp af21 syn
!
```

OcNOS NetConf Payload

```

<acl xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-acl">
  <acl-sets>
    <acl-set>
      <name>ACL_OC_IPV4</name>
      <type>ip</type>
      <config>
        <name>ACL_OC_IPV4</name>

```

```

    <type>ip</type>
    <description>ACL TFW Test</description>
  </config>
  <acl-entries>
    <acl-entry>
      <sequence-id>10</sequence-id>
      <config>
        <sequence-id>10</sequence-id>
      </config>
      <ipv4>
        <config>
          <source-address>1.1.1.0/24</source-address>
          <destination-address>2.2.2.0/24</destination-address>
          <dscp>18</dscp>
          <protocol-tcp />
          <tcp-source-port>22</tcp-source-port>
          <tcp-destination-port>80</tcp-destination-port>
          <tcp-flags>syn</tcp-flags>
          <forwarding-action>permit</forwarding-action>
        </config>
      </ipv4>
    </acl-entry>
  </acl-entries>
</acl-set>
</acl-sets>
</acl>

```

Validation with NetConf get

```

<acl xmlns="http://openconfig.net/yang/acl">
  <acl-sets>
    <acl-set>
      <name>ACL_OC_IPV4</name>
      <type
type>
        xmlns:oc-acl="http://openconfig.net/yang/acl">oc-acl:ACL_IPV4</
type>
        <config>
          <name>ACL_OC_IPV4</name>
          <type
type>
            xmlns:oc-acl="http://openconfig.net/yang/acl">oc-acl:ACL_IPV4</
            <description>ACL TFW Test</description>
          </config>
          <acl-entries>
            <acl-entry>
              <sequence-id>10</sequence-id>
              <config>
                <sequence-id>10</sequence-id>
              </config>
              <ipv4>
                <config>
                  <source-address>1.1.1.0/24</source-address>
                  <destination-address>2.2.2.0/24</destination-address>
                  <dscp>18</dscp>
                  <protocol>6</protocol>
                </config>
              </ipv4>
            </acl-entry>
          </acl-entries>
        </type>
      </acl-set>
    </acl-sets>
  </acl>

```

```

    <actions>
      <config>
        <forwarding-action
          xmlns:oc-acl="http://openconfig.net/yang/acl">oc-
acl:ACCEPT</forwarding-action>
        </config>
      </actions>
    </transport>
    <config>
      <explicit-tcp-flags
        xmlns:oc-pkt-match-types="http://openconfig.net/yang/
packet-match-types">oc-pkt-match-types:TCP_SYN</explicit-tcp-flags>
      </config>
    </transport>
  </acl-entry>
</acl-entries>
</acl-set>
</acl-sets>
</acl>

```

Restrictions

- The old Open Config leaf `/oc-acl:acl/acl-sets/acl-set/acl-entries/acl-entry[sequence-id]/transport/config/tcp-flags` and was renamed on Open Config v2.0.0., now it is named `explicit-tcp-flags`. The new XPath is `/oc-acl:acl/acl-sets/acl-set/acl-entries/acl-entry/transport/config/explicit-tcp-flags`.
- OpenConfig leaves `/acl/acl-sets/acl-set/acl-entries/acl-entry/transport/config/explicit-tcp-flags` and `/acl/acl-sets/acl-set/acl-entries/acl-entry/transport/state/explicit-tcp-flags` have the following mapping:

OpenConfig XPath <code>/oc-acl:acl/acl-sets/acl-set/acl-entries/acl-entry/transport/config/explicit-tcp-flags</code>	OcNOS XPath <code>/acl/acl-sets/acl-set/acl-entries/acl-entry/ipv4/config/tcp-flags</code>
TCP_ACK	ack
TCP_FIN	fin
TCP_PSH	psh
TCP_RST	rst
TCP_SYN	syn
TCP_URG	urg
TCP_IPI_ESTABLISHED (Pay attention, this value was add by OcNOS through deviation file <code>ipi-oc-acl-deviations.yang</code>)	established

Create IPv6 entries

This XML configuration snippet is used to create an ACL (access control list) entry to operate over IPv6 data traffic.

Release

This configuration was introduced in OcNOS version 6.1.0.

OpenConfig NetConf Payload

```

    <acl xmlns="http://openconfig.net/yang/acl">
      <acl-sets>
        <acl-set>
          <name>ACL_OC_IPV6</name>
          <type
type>
            xmlns:oc-acl="http://openconfig.net/yang/acl">oc-acl:ACL_IPV6</
type>
            <config>
              <name>ACL_OC_IPV6</name>
              <type
type>
                xmlns:oc-acl="http://openconfig.net/yang/acl">oc-acl:ACL_IPV6</
                <description>ACL TFW Test</description>
            </config>
            <acl-entries>
              <acl-entry>
                <sequence-id>11</sequence-id>
                <config>
                  <sequence-id>11</sequence-id>
                </config>
                <ipv6>
                  <config>
                    <source-address>2000::/8</source-address>
                    <destination-address>2001::/16</destination-address>
                    <dscp>23</dscp>
                    <protocol>6</protocol>
                  </config>
                </ipv6>
                <actions>
                  <config>
                    <forwarding-action
acl:REJECT</forwarding-action>
                    xmlns:oc-acl="http://openconfig.net/yang/acl">oc-
                    </config>
                  </actions>
                </acl-entry>
              </acl-entries>
            </acl-set>
          </acl-sets>
        </acl>

```

OcNOS CLI Command

```

ipv6 access-list ACL_OC_IPV6
  remark ACL TFW Test
  11 deny tcp 2000::/8 2001::/16 dscp 23
!

```

OcNOS NetConf Payload

```

<acl xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-acl">
  <acl-sets>
    <acl-set>
      <name>ACL_OC_IPV6</name>

```

```

<type>ipv6</type>
<config>
  <name>ACL_OC_IPV6</name>
  <type>ipv6</type>
  <description>ACL TFW Test</description>
</config>
<acl-entries>
  <acl-entry>
    <sequence-id>11</sequence-id>
    <config>
      <sequence-id>11</sequence-id>
    </config>
    <ipv6>
      <config>
        <source-address>2000::/8</source-address>
        <destination-address>2001::/16</destination-address>
        <dscp>23</dscp>
        <protocol-tcp />
        <forwarding-action>deny</forwarding-action>
      </config>
    </ipv6>
  </acl-entry>
</acl-entries>
</acl-set>
</acl-sets>
</acl>

```

Validation with NetConf get

```

<acl xmlns="http://openconfig.net/yang/acl">
  <acl-sets>
    <acl-set>
      <name>ACL_OC_IPV6</name>
      <type
type>
        xmlns:oc-acl="http://openconfig.net/yang/acl">oc-acl:ACL_IPV6</
type>
        <config>
          <name>ACL_OC_IPV6</name>
          <type
type>
            xmlns:oc-acl="http://openconfig.net/yang/acl">oc-acl:ACL_IPV6</
            <description>ACL TFW Test</description>
          </config>
          <acl-entries>
            <acl-entry>
              <sequence-id>11</sequence-id>
              <config>
                <sequence-id>11</sequence-id>
              </config>
              <ipv6>
                <config>
                  <source-address>2000::/8</source-address>
                  <destination-address>2001::/16</destination-address>
                  <dscp>23</dscp>
                  <protocol>6</protocol>
                </config>
              </ipv6>
            </acl-entry>
          </acl-entries>
        </type>
      </acl-set>
    </acl-sets>
  </acl>

```

```

    <actions>
      <config>
        <forwarding-action
          xmlns:oc-acl="http://openconfig.net/yang/acl">oc-
acl:REJECT</forwarding-action>
        </config>
      </actions>
    </acl-entry>
  </acl-entries>
</acl-set>
</acl-sets>
</acl>

```

Restrictions

- The old Open Config leaf `/oc-acl:acl/acl-sets/acl-set/acl-entries/acl-entry[sequence-id]/transport/config/tcp-flags` was renamed on Open Config v2.0.0., now it is named `explicit-tcp-flags`. The new XPath is `/oc-acl:acl/acl-sets/acl-set/acl-entries/acl-entry/transport/config/explicit-tcp-flags`.
- OpenConfig leaves `/acl/acl-sets/acl-set/acl-entries/acl-entry/transport/config/explicit-tcp-flags` and `/acl/acl-sets/acl-set/acl-entries/acl-entry/transport/state/explicit-tcp-flags` have the following mapping:

OpenConfig XPath <code>/oc-acl:acl/acl-sets/acl-set/acl-entries/acl-entry/transport/config/explicit-tcp-flags</code>	OcNOS XPath <code>/acl/acl-sets/acl-set/acl-entries/acl-entry/ipv6/config/tcp-flags</code>
TCP_ACK	ack
TCP_FIN	fin
TCP_PSH	psh
TCP_RST	rst
TCP_SYN	syn
TCP_URG	urg
TCP_IPI_ESTABLISHED (Pay attention, this value was add by OcNOS through deviation file <code>ipi-oc-acl-deviations.yang</code>)	established

Create interfaces egress for IPv4/IPv6

This XML configuration snippet is used to associate an ACL (access control list) entry type IPv4/IPv6 to an interface on egress direction.

The interface can associate only one ACL (access control list) entry at time..

Release

This configuration was introduced in OcNOS version 6.1.0.

OpenConfig NetConf Payload

```
<acl xmlns="http://openconfig.net/yang/acl">
  <interfaces>
    <interface>
      <id>eth1</id>
      <config>
        <id>eth1</id>
      </config>
      <egress-acl-sets>
        <egress-acl-set>
          <type
            xmlns:oc-acl="http://openconfig.net/yang/acl">oc-
acl:ACL_IPV4</type>
            <set-name>ACL_OC_IPV4</set-name>
            <config>
              <set-name>ACL_OC_IPV4</set-name>
              <type
                xmlns:oc-acl="http://openconfig.net/yang/acl">oc-
acl:ACL_IPV4</type>
              </config>
            </egress-acl-set>
          </egress-acl-sets>
          <interface-ref>
            <config>
              <interface>eth1</interface>
            </config>
          </interface-ref>
        </interface>
      </interfaces>
    </acl>
```

OcNOS CLI Command

```
ip access-list ACL_OC_IPV4
  remark ACL TFW Test
  10 permit tcp 1.1.1.0/24 2.2.2.0/24 dscp af21 syn
!
interface eth1
  ip access-group ACL_OC_IPV4 out
```

OcNOS NetConf Payload

```
<acl xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-acl">
  <interfaces>
    <interface>
      <name>eth1</name>
      <config>
        <name>eth1</name>
      </config>
      <egress-acl-sets>
        <egress-acl-set>
          <acl-type>ip</acl-type>
          <access-groups>
            <access-group>
              <acl-name>ACL_OC_IPV4</acl-name>
```

```

        <config>
          <acl-name>ACL_OC_IPV4</acl-name>
        </config>
      </access-group>
    </access-groups>
  <config>
    <acl-type>ip</acl-type>
  </config>
</egress-acl-set>
</egress-acl-sets>
</interface>
</interfaces>
</acl>

```

Validation with NetConf get

```

<acl xmlns="http://openconfig.net/yang/acl">
  <interfaces>
    <interface>
      <id>eth1</id>
      <config>
        <id>eth1</id>
      </config>
      <egress-acl-sets>
        <egress-acl-set>
          <type
acl:ACL_IPV4</type>
            xmlns:oc-acl="http://openconfig.net/yang/acl">oc-
              <set-name>ACL_OC_IPV4</set-name>
              <config>
                <set-name>ACL_OC_IPV4</set-name>
                <type
acl:ACL_IPV4</type>
                  xmlns:oc-acl="http://openconfig.net/yang/acl">oc-
                    </config>
                    </egress-acl-set>
                  </egress-acl-sets>
                  <interface-ref>
                    <config>
                      <interface>eth1</interface>
                    </config>
                  </interface-ref>
                </interface>
              </interfaces>
            </acl>

```

Restrictions

Only one ACL entry can be associate on interface on egress direction.

/acl/interfaces/interface/id

This leaf must have the format "<interface>.<subinterface>", e.g., xe10.2, and it is limited to 32 characters.

Create interfaces ingress for IPv4/IPv6

This XML configuration snippet is used to associate an ACL (access control list) entry type IPv4/IPv6 to an interface on ingress direction.

The interface can associate only one ACL (access control list) entry at time.

Release

This configuration was introduced in OcNOS version 6.1.0.

OpenConfig NetConf Payload

```
<acl xmlns="http://openconfig.net/yang/acl">
  <interfaces>
    <interface>
      <id>eth1</id>
      <config>
        <id>eth1</id>
      </config>
      <ingress-acl-sets>
        <ingress-acl-set>
          <type
            xmlns:oc-acl="http://openconfig.net/yang/acl">oc-
acl:ACL_IPV4</type>
          <set-name>ACL_OC_IPV4</set-name>
          <config>
            <set-name>ACL_OC_IPV4</set-name>
            <type
              xmlns:oc-acl="http://openconfig.net/yang/acl">oc-
acl:ACL_IPV4</type>
            </config>
          </ingress-acl-set>
        </ingress-acl-sets>
        <interface-ref>
          <config>
            <interface>eth1</interface>
          </config>
        </interface-ref>
      </interface>
    </interfaces>
  </acl>
```

OcNOS CLI Command

```
ip access-list ACL_OC_IPV4
  remark ACL TFW Test
  10 permit tcp 1.1.1.0/24 2.2.2.0/24 dscp af21 syn
!
interface eth1
  ip access-group ACL_OC_IPV4 in
```

OcNOS NetConf Payload

```
<acl xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-acl">
  <interfaces>
    <interface>
      <name>eth1</name>
      <config>
        <name>eth1</name>
      </config>
      <ingress-acl-sets>
        <ingress-acl-set>
          <acl-type>ip</acl-type>
          <access-groups>
            <access-group>
              <acl-name>ACL_OC_IPV4</acl-name>
              <config>
                <acl-name>ACL_OC_IPV4</acl-name>
              </config>
            </access-group>
          </access-groups>
          <config>
            <acl-type>ip</acl-type>
          </config>
        </ingress-acl-set>
      </ingress-acl-sets>
    </interface>
  </interfaces>
</acl>
```

Validation with NetConf get

```
<acl xmlns="http://openconfig.net/yang/acl">
  <interfaces>
    <interface>
      <id>eth1</id>
      <config>
        <id>eth1</id>
      </config>
      <ingress-acl-sets>
        <ingress-acl-set>
          <type
            xmlns:oc-acl="http://openconfig.net/yang/acl">oc-
acl:ACL_IPV4</type>
          <set-name>ACL_OC_IPV4</set-name>
          <config>
            <set-name>ACL_OC_IPV4</set-name>
            <type
              xmlns:oc-acl="http://openconfig.net/yang/acl">oc-
acl:ACL_IPV4</type>
          </config>
          </ingress-acl-set>
        </ingress-acl-sets>
        <interface-ref>
          <config>
            <interface>eth1</interface>
          </config>
```

```

    </interface-ref>
  </interface>
</interfaces>
</acl>

```

Restrictions

Only one ACL (access control list) entry can be associate on interface on ingress direction.

/acl/interfaces/interface/id

This leaf must have the format “<interface>.<subinterface>”, e.g., xe10.2, and it is limited to 32 characters.

Create interfaces egress for L2

This XML configuration snippet is used to associate an ACL (access control list) entry type L2 to an interface on egress direction.

The interface can associate only one ACL (access control list) entry at time.

Release

This configuration was introduced in OcNOS version 6.1.0.

OpenConfig NetConf Payload

```

<acl xmlns="http://openconfig.net/yang/acl">
  <interfaces>
    <interface>
      <id>eth3</id>
      <config>
        <id>eth3</id>
      </config>
      <egress-acl-sets>
        <egress-acl-set>
          <type
type>
            xmlns:oc-acl="http://openconfig.net/yang/acl">oc-acl:ACL_L2</
            <set-name>ACL_OC_L2</set-name>
          <config>
            <set-name>ACL_OC_L2</set-name>
            <type
acl:ACL_L2</type>
              xmlns:oc-acl="http://openconfig.net/yang/acl">oc-
              </config>
            </egress-acl-set>
          </egress-acl-sets>
        <interface-ref>
          <config>
            <interface>eth3</interface>
          </config>
        </interface-ref>
      </interface>

```



```

    </interfaces>
  </acl>

```

OcNOS CLI Command

```

mac access-list ACL_OC_L2
  remark ACL L2 CFG Test
  1 permit 0000.CCDD.EE FF ABBB.0000.0000 00BB.CCDD.EE FF AC00.0000.0000 ipv4
!
interface eth3
  mac access-group ACL_OC_L2 out
!

```

OcNOS NetConf Payload

```

<acl xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-acl">
  <interfaces>
    <interface>
      <name>eth3</name>
      <config>
        <name>eth3</name>
      </config>
      <egress-acl-sets>
        <egress-acl-set>
          <acl-type>mac</acl-type>
          <access-groups>
            <access-group>
              <acl-name>ACL_OC_L2</acl-name>
              <config>
                <acl-name>ACL_OC_L2</acl-name>
              </config>
            </access-group>
          </access-groups>
          <config>
            <acl-type>mac</acl-type>
          </config>
        </egress-acl-set>
      </egress-acl-sets>
    </interface>
  </interfaces>
</acl>

```

Validation with NetConf get

```

<acl xmlns="http://openconfig.net/yang/acl">
  <interfaces>
    <interface>
      <id>eth3</id>
      <config>
        <id>eth3</id>
      </config>
      <egress-acl-sets>
        <egress-acl-set>
          <type
            xmlns:oc-acl="http://openconfig.net/yang/acl">oc-acl:ACL_L2</
type>

```

```

        <set-name>ACL_OC_L2</set-name>
        <config>
            <set-name>ACL_OC_L2</set-name>
            <type
acl:ACL_L2</type>
                xmlns:oc-acl="http://openconfig.net/yang/acl">oc-
            </config>
        </egress-acl-set>
    </egress-acl-sets>
    <interface-ref>
        <config>
            <interface>eth3</interface>
        </config>
    </interface-ref>
</interface>
</interfaces>
</acl>

```

Restrictions

Only one ACL (access control list) entry can be associate on interface on egress direction.

/acl/interfaces/interface/id

This leaf must have the format "<interface>.<subinterface>", e.g., xe10.2, and it is limited to 32 characters.

Create interfaces ingress for L2

This XML configuration snippet is used to associate an ACL (access control list) entry type L2 to an interface on ingress direction.

The interface can associate only one ACL entry at time..

Release

This configuration was introduced in OcNOS version 6.1.0.

OpenConfig NetConf Payload

```

    <acl xmlns="http://openconfig.net/yang/acl">
        <interfaces>
            <interface>
                <id>eth3</id>
                <config>
                    <id>eth3</id>
                </config>
                <ingress-acl-sets>
                    <ingress-acl-set>
                        <type
type>
                            xmlns:oc-acl="http://openconfig.net/yang/acl">oc-acl:ACL_L2</
                                <set-name>ACL_OC_L2</set-name>
                                <config>
                                    <set-name>ACL_OC_L2</set-name>

```

```

        <type
          xmlns:oc-acl="http://openconfig.net/yang/acl">oc-
acl:ACL_L2</type>
        </config>
      </ingress-acl-set>
    </ingress-acl-sets>
    <interface-ref>
      <config>
        <interface>eth3</interface>
      </config>
    </interface-ref>
  </interface>
</interfaces>
</acl>

```

OcNOS CLI Command

```

mac access-list ACL_OC_L2
  remark ACL L2 CFG Test
  1 permit 0000.CCDD.EEFF AABB.0000.0000 00BB.CCDD.EEFF AC00.0000.0000 ipv4
!
interface eth3
  mac access-group ACL_OC_L2 in
!

```

OcNOS NetConf Payload

```

<acl xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-acl">
  <interfaces>
    <interface>
      <name>eth3</name>
      <config>
        <name>eth3</name>
      </config>
      <ingress-acl-sets>
        <ingress-acl-set>
          <acl-type>mac</acl-type>
          <access-groups>
            <access-group>
              <acl-name>ACL_OC_L2</acl-name>
              <config>
                <acl-name>ACL_OC_L2</acl-name>
              </config>
            </access-group>
          </access-groups>
        </ingress-acl-set>
      </ingress-acl-sets>
    </interface>
  </interfaces>
</acl>

```

Validation with NetConf get

```

    <acl xmlns="http://openconfig.net/yang/acl">
      <interfaces>
        <interface>
          <id>eth3</id>
          <config>
            <id>eth3</id>
          </config>
          <ingress-acl-sets>
            <ingress-acl-set>
              <type
type>
                xmlns:oc-acl="http://openconfig.net/yang/acl">oc-acl:ACL_L2</
                <set-name>ACL_OC_L2</set-name>
              <config>
                <set-name>ACL_OC_L2</set-name>
                <type
acl:ACL_L2</type>
                xmlns:oc-acl="http://openconfig.net/yang/acl">oc-
                </config>
              </ingress-acl-set>
            </ingress-acl-sets>
          <interface-ref>
            <config>
              <interface>eth3</interface>
            </config>
          </interface-ref>
        </interface>
      </interfaces>
    </acl>

```

Restrictions

Only one ACL (access control list) entry can be associate on interface on ingress direction.

/acl/interfaces/interface/id

This leaf must have the format "<interface>.<subinterface>", e.g., xe10.2, and it is limited to 32 characters.

QoS OpenConfig Translation

Enable QoS on OcNOS

Release

This configuration was introduced in OcNOS version 6.1.0

Configuration

On OcNOS model the QoS feature need to be enabled before can start configure QoS features.
On Open Config model there is no equivalent configuration.

OpenConfig NETCONF Payload

There is no equivalent configuration.

OcNOS CLI command

```
hardware-profile filter ingress-ipv4-qos enable
qos enable
```

OcNOS NETCONF Payload

```
<profiles xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform">
  <hardware-profile>
    <filters>
      <config>
        <ingress-ipv4-qos/>
      </config>
    </filters>
  </hardware-profile>
</profiles>
<qos xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-qos">
  <global>
    <config>
      <enable-qos/>
    </config>
  </global>
</qos>
```

Validation with NETCONF get

There is no equivalent configuration.

Restrictions

N/A

Enable QoS Profile on OcNOS

Release

This configuration was introduced in OcNOS version 5.1.

Configuration

On OcNOS model the QoS feature need the Hw profile to be enable on SP Hardware types.
On Open Config model there is no equivalent configuration.

OpenConfig NETCONF Payload

There is no equivalent configuration.

OcNOS CLI command

```
hardware-profile filter ingress-ipv4-qos enable
```

OcNOS NETCONF Payload

```
<profiles xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform">
  <hardware-profile xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform">
    <filters xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform">
      <config xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform">
        <ingress-ipv4-qos/>
      </config>
    </filters>
  </hardware-profile>
</profiles>
```

Validation with NETCONF get

There is no equivalent configuration.

Restrictions

None.

Create Classifiers profiles

Release

This configuration was introduced in OcNOS version 6.1.0.

Configuration

The Open Config QoS Classifiers is a profile responsible to handle data traffic classification.

This configuration do not have a direct equivalent object on OcNOS model, and to configure classifier on OcNOS model it needs to be translated to ACL, class-maps and policy-maps objects to have the expected configuration.

OpenConfig NETCONF Payload

```
<qos xmlns="http://openconfig.net/yang/qos">
  <queues>
    <queue>
      <name>q0</name>
      <config>
        <name>q0</name>
        <queue-id>0</queue-id>
      </config>
    </queue>
    <queue>
      <name>q1</name>
      <config>
        <name>q1</name>
        <queue-id>1</queue-id>
      </config>
    </queue>
  </queues>
  <queue-management-profiles>
    <queue-management-profile>
      <name>q0</name>
      <config>
        <name>q0</name>
      </config>
      <wred>
        <uniform>
          <config>
            <min-threshold>128000</min-threshold>
            <max-threshold>256000</max-threshold>
          </config>
        </uniform>
      </wred>
    </queue-management-profile>
    <queue-management-profile>
      <name>q1</name>
      <config>
        <name>q1</name>
      </config>
      <wred>
```

```

        <uniform>
            <config>
                <min-threshold>256000</min-threshold>
                <max-threshold>512000</max-threshold>
            </config>
        </uniform>
    </wred>
</queue-management-profile>
</queue-management-profiles>
<forwarding-groups>
    <forwarding-group>
        <name>q0</name>
        <config>
            <name>q0</name>
            <output-queue>q0</output-queue>
        </config>
    </forwarding-group>
</forwarding-groups>
<classifiers>
    <classifier>
        <name>IN_CUSTOMERIF</name>
        <config>
            <name>IN_CUSTOMERIF</name>
            <type>IPV4</type>
        </config>
        <terms>
            <term>
                <id>10</id>
                <config>
                    <id>10</id>
                </config>
                <conditions>
                    <ipv4>
                        <config>
                            <source-address>1.1.1.1/24</source-address>
                            <destination-address>2.2.2.2/24</destination-
address>
                                <dscp>af21</dscp>
                            </config>
                        </ipv4>
                    </conditions>
                    <actions>
                        <config>
                            <target-group>q0</target-group>
                        </config>
                    </actions>
                </term>
            <term>
                <id>20</id>
                <config>
                    <id>20</id>
                </config>
                <conditions>
                    <ipv4>
                        <config>
                            <source-address>3.3.3.3/24</source-address>

```



```

                                <destination-address>4.4.4.4/24</destination-
address>
                                <dscp>26</dscp>
                                </config>
                                </ipv4>
                                </conditions>
                                <actions>
                                    <config>
                                        <target-group>q1</target-group>
                                    </config>
                                </actions>
                                </term>
                            </terms>
                        </classifier>
                    </classifiers>
                </qos>

```

OcNOS CLI command

```

hardware-profile filter ingress-ipv4-qos enable
qos enable
!
ip access-list IN_CUSTOMERIF$10
 1 permit tcp 1.1.1.0/24 2.2.2.0/24 dscp af21
ip access-list IN_CUSTOMERIF$20
 1 permit tcp 3.3.3.0/24 4.4.4.0/24 dscp af31
!
class-map type qos match-any IN_CUSTOMERIF$10
 match access-group IN_CUSTOMERIF$10
!
class-map type qos match-any IN_CUSTOMERIF$20
 match access-group IN_CUSTOMERIF$20
!
policy-map type qos IN_CUSTOMERIF
 class type qos IN_CUSTOMERIF$10
   set queue 0
   exit
 class type qos IN_CUSTOMERIF$20
   set queue 1
   exit
!

```

OcNOS NETCONF Payload

```

<profiles xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform">
  <hardware-profile>
    <filters>
      <config>
        <ingress-ipv4-qos/>
      </config>
    </filters>
  </hardware-profile>
</profiles>
<acl xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-acl">
  <acl-sets>
    <acl-set>

```

```

<name>IN_CUSTOMERIF$10</name>
<type>ip</type>
<config>
  <name>IN_CUSTOMERIF$10</name>
  <type>ip</type>
</config>
<acl-entries>
  <acl-entry>
    <sequence-id>1</sequence-id>
    <config>
      <sequence-id>1</sequence-id>
    </config>
    <ipv4>
      <config>
        <forwarding-action>permit</forwarding-action>
        <source-address>1.1.1.0/24</source-address>
        <destination-address>2.2.2.0/24</destination-address>
        <dscp>af21</dscp>
        <protocol-tcp/>
      </config>
    </ipv4>
  </acl-entry>
</acl-entries>
</acl-set>
<acl-set>
  <name>IN_CUSTOMERIF$20</name>
  <type>ip</type>
  <config>
    <name>IN_CUSTOMERIF$20</name>
    <type>ip</type>
  </config>
  <acl-entries>
    <acl-entry>
      <sequence-id>1</sequence-id>
      <config>
        <sequence-id>1</sequence-id>
      </config>
      <ipv4>
        <config>
          <forwarding-action>permit</forwarding-action>
          <source-address>3.3.3.0/24</source-address>
          <destination-address>4.4.4.0/24</destination-address>
          <dscp>af31</dscp>
          <protocol-tcp/>
        </config>
      </ipv4>
    </acl-entry>
  </acl-entries>
</acl-set>
</acl-sets>
</acl>
<qos xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-qos">
  <global>
    <config>
      <enable-qos/>
    </config>
  <class-maps>

```

```

    <class-map>
      <name>IN_CUSTOMERIF$10</name>
      <config>
        <name>IN_CUSTOMERIF$10</name>
        <type>qos</type>
        <match-criteria>match-any</match-criteria>
      </config>
    </class-map>
  </match-any-conditions>
  <config>
    <access-control-list-name>IN_CUSTOMERIF$10</access-control-
list-name>
    </config>
  </match-any-conditions>
</class-map>
<class-map>
  <name>IN_CUSTOMERIF$20</name>
  <config>
    <name>IN_CUSTOMERIF$20</name>
    <type>qos</type>
    <match-criteria>match-any</match-criteria>
  </config>
  <match-any-conditions>
    <config>
      <access-control-list-name>IN_CUSTOMERIF$20</access-control-
list-name>
      </config>
    </match-any-conditions>
  </class-map>
</class-maps>
<policy-maps>
  <policy-map>
    <policy-map-name>IN_CUSTOMERIF</policy-map-name>
    <config>
      <policy-map-name>IN_CUSTOMERIF</policy-map-name>
      <type>qos</type>
    </config>
    <classes>
      <class>
        <class-map-name>IN_CUSTOMERIF$10</class-map-name>
        <config>
          <class-map-name>IN_CUSTOMERIF$10</class-map-name>
          <type>qos</type>
        </config>
        <qos-mode>
          <config>
            <queue-id>0</queue-id>
          </config>
        </qos-mode>
      </class>
      <class>
        <class-map-name>IN_CUSTOMERIF$20</class-map-name>
        <config>
          <class-map-name>IN_CUSTOMERIF$20</class-map-name>
          <type>qos</type>
        </config>
        <qos-mode>
          <config>

```

```

        <queue-id>1</queue-id>
    </config>
</qos-mode>
</class>
</classes>
</policy-map>
</policy-maps>
</global>
</qos>

```

Validation with NETCONF get

```

<qos xmlns="http://openconfig.net/yang/qos">
  <classifiers>
    <classifier>
      <name>IN_CUSTOMERIF</name>
      <config>
        <name>IN_CUSTOMERIF</name>
        <type>IPv4</type>
      </config>
      <state>
        <name>IN_CUSTOMERIF</name>
        <type>IPv4</type>
      </state>
      <terms>
        <term>
          <id>10</id>
          <config>
            <id>10</id>
          </config>
          <state>
            <id>10</id>
          </state>
          <actions>
            <config>
              <target-group>q0</target-group>
            </config>
            <state>
              <target-group>q0</target-group>
            </state>
          </actions>
          <conditions>
            <ipv4>
              <config>
                <source-address>1.1.1.0/24</source-address>
                <destination-address>2.2.2.0/24</destination-address>
                <dscp>18</dscp>
              </config>
              <state>
                <source-address>1.1.1.0/24</source-address>
                <destination-address>2.2.2.0/24</destination-address>
                <dscp>18</dscp>
              </state>
            </ipv4>
          </conditions>
        </term>
      </terms>
    </classifier>
  </classifiers>
</qos>

```

```

    <term>
      <id>20</id>
      <config>
        <id>20</id>
      </config>
      <state>
        <id>20</id>
      </state>
      <actions>
        <config>
          <target-group>q1</target-group>
        </config>
        <state>
          <target-group>q1</target-group>
        </state>
      </actions>
      <conditions>
        <ipv4>
          <config>
            <source-address>3.3.3.0/24</source-address>
            <destination-address>4.4.4.0/24</destination-address>
            <dscp>26</dscp>
          </config>
          <state>
            <source-address>3.3.3.0/24</source-address>
            <destination-address>4.4.4.0/24</destination-address>
            <dscp>26</dscp>
          </state>
        </ipv4>
      </conditions>
    </term>
  </terms>
</classifier>
</classifiers>
<queue-management-profiles>
  <queue-management-profile>
    <name>q0</name>
    <config>
      <name>q0</name>
    </config>
    <state>
      <name>q0</name>
    </state>
    <wred>
      <uniform>
        <config>
          <min-threshold>128000</min-threshold>
          <max-threshold>256000</max-threshold>
        </config>
        <state>
          <min-threshold>128000</min-threshold>
          <max-threshold>256000</max-threshold>
        </state>
      </uniform>
    </wred>
  </queue-management-profile>
</queue-management-profile>

```

```
<name>q1</name>
<config>
  <name>q1</name>
</config>
<state>
  <name>q1</name>
</state>
<wred>
  <uniform>
    <config>
      <min-threshold>256000</min-threshold>
      <max-threshold>512000</max-threshold>
    </config>
    <state>
      <min-threshold>256000</min-threshold>
      <max-threshold>512000</max-threshold>
    </state>
  </uniform>
</wred>
</queue-management-profile>
</queue-management-profiles>
<forwarding-groups>
  <forwarding-group>
    <name>q0</name>
    <config>
      <name>q0</name>
      <output-queue>q0</output-queue>
    </config>
    <state>
      <name>q0</name>
      <output-queue>q0</output-queue>
    </state>
  </forwarding-group>
</forwarding-groups>
<queues>
  <queue>
    <name>q0</name>
    <config>
      <name>q0</name>
      <queue-id>0</queue-id>
    </config>
    <state>
      <name>q0</name>
      <queue-id>0</queue-id>
    </state>
  </queue>
  <queue>
    <name>q1</name>
    <config>
      <name>q1</name>
      <queue-id>1</queue-id>
    </config>
    <state>
      <name>q1</name>
      <queue-id>1</queue-id>
    </state>
  </queue>
</queues>
```

```
</queues>
</qos>
```

Restrictions

This translation is only available for SP Hardware type.

All paths below have restrictions:

- `/qos/interfaces/interface/output/classifiers`
This association is not support on OcNOS model.
- `/qos/classifiers/classifier/terms/term/actions/remark`
This association is not support on OcNOS model.
- `/qos/queue-management-profiles` is available on Open Config versions newer than v1.0.0.
- `/qos/queues` was restructured on Open Config versions newer than v1.0.0.

Create Forwarding-groups profiles

Release

This configuration was introduced in OcNOS version 6.1.0.

Configuration

The Open Config profile Forwarding-Group do not have a equivalent model on OcNOS model, so this object is stored inside Translation Auxiliary Database.

The object name on Open Config format allows any string value, but on OcNOS all forwarding-profiles have fixed names that follow this pattern “**q[0-7]**”, so it was added one deviation to force **Forwarding-groups** leaf “**name**” follow this pattern.

OpenConfig NETCONF Payload

```
<qos xmlns="http://openconfig.net/yang/qos">
  <forwarding-groups>
    <forwarding-group>
      <name>q0</name>
      <config>
        <name>q0</name>
        <output-queue>q0</output-queue>iority>
      </config>
    </forwarding-group>
  </forwarding-groups>
</qos>
```

OcNOS CLI command

There is no equivalent configuration.

OcNOS NETCONF Payload

There is no equivalent configuration.

Validation with NETCONF get

```
<qos xmlns="http://openconfig.net/yang/qos">
  <forwarding-groups>
    <forwarding-group>
      <name>q0</name>
      <config>
        <name>q0</name>
        <output-queue>q0</output-queue>
      </config>
      <state>
        <name>q0</name>
        <output-queue>q0</output-queue>
      </state>
    </forwarding-group>
  </forwarding-groups>
</qos>
```

Restrictions

- This translation is only available for SP Hardware type.
- Paths `/qos/forwarding-groups/forwarding-group/name` and `/qos/forwarding-groups/forwarding-group/config/name` have leaf name have fixed names that follow this pattern “q[0-7]”

Create Queues and Queue-Management-profiles entries

Release

This configuration was introduced in OcNOS version 6.1.0.

Configuration

The Open Config profiles **Queues** and **Queue-Management-Profiles** do not have a equivalent model on OcNOS model, so this object is stored inside Translation Auxiliary Database.

The Open Config profiles **Queues** and **Queue-Management-Profiles** is used to configure on OcNOS model **"random-detect"** configuration from policy-map type queuing object.

The object name on Open Config format allows any string value, but on OcNOS they have fixed names that follow this pattern “q[0-7]”, so it was added one deviation to force **Queues** and **Queue-Management-Profiles** leaf “name” follow this pattern.

OpenConfig NETCONF Payload

```
<qos xmlns="http://openconfig.net/yang/qos">
  <queues>
```



```

    <queue>
      <name>q0</name>
      <config>
        <name>q0</name>
        <queue-id>0</queue-id>
      </config>
    </queue>
    <queue>
      <name>q1</name>
      <config>
        <name>q1</name>
        <queue-id>1</queue-id>
      </config>
    </queue>
  </queues>
  <queue-management-profiles>
    <queue-management-profile>
      <name>q0</name>
      <config>
        <name>q0</name>
      </config>
      <wred>
        <uniform>
          <config>
            <min-threshold>128000</min-threshold>
            <max-threshold>256000</max-threshold>
          </config>
        </uniform>
      </wred>
    </queue-management-profile>
    <queue-management-profile>
      <name>q1</name>
      <config>
        <name>q1</name>
      </config>
      <wred>
        <uniform>
          <config>
            <min-threshold>256000</min-threshold>
            <max-threshold>512000</max-threshold>
          </config>
        </uniform>
      </wred>
    </queue-management-profile>
  </queue-management-profiles>
</qos>

```

OcNOS CLI command

There is no equivalent configuration.

OcNOS NETCONF Payload

There is no equivalent configuration.

Validation with NETCONF get

```

<qos xmlns="http://openconfig.net/yang/qos">
  <queues>
    <queue>
      <name>q0</name>
      <config>
        <name>q0</name>
        <queue-id>0</queue-id>
      </config>
      <state>
        <name>q0</name>
        <queue-id>0</queue-id>
      </state>
    </queue>
  </queues>
  <queue-management-profiles>
    <queue-management-profile>
      <name>q0</name>
      <config>
        <name>q0</name>
      </config>
      <state>
        <name>q0</name>
      </state>
      <wred>
        <uniform>
          <config>
            <min-threshold>128000</min-threshold>
            <max-threshold>256000</max-threshold>
          </config>
          <state>
            <min-threshold>128000</min-threshold>
            <max-threshold>256000</max-threshold>
          </state>
        </uniform>
      </wred>
    </queue-management-profile>
    <queue-management-profile>
      <name>q1</name>
      <config>
        <name>q1</name>
      </config>
      <state>
        <name>q1</name>
      </state>
      <wred>
        <uniform>
          <config>
            <min-threshold>256000</min-threshold>
            <max-threshold>512000</max-threshold>
          </config>
          <state>
            <min-threshold>256000</min-threshold>
            <max-threshold>512000</max-threshold>
          </state>
        </uniform>
      </wred>
    </queue-management-profile>
  </queue-management-profiles>
</qos>

```

```
    </wred>
  </queue-management-profile>
</queue-management-profiles>
</qos>
```

Restrictions

- This translation is only available for SP Hardware type.
- Path `/qos/queue-management-profiles` is available on Open Config versions newer than v1.0.0.
- Path `/qos/queues` was restructured on Open Config versions newer than v1.0.0.
- The path `/qos/interfaces/interface/output/queues` have its association is not support on OcNOS models.
- The path `/qos/interfaces/interface/input/queues/queue[name]/config/queue-management-profile` have its association is not support on OcNOS models.
- Paths below have leaf name have fixed names that follow this pattern “q[0-7]”
- `/qos/queues/queue/name`
- `/qos/queues/queue/config/name`
- `/qos/queue-management-profiles/queue-management-profile/name`
- `/qos/queue-management-profiles/queue-management-profile/config/name`

Create Scheduler-policies entries

Release

This configuration was introduced in OcNOS version 6.1.0.

Configuration

Use this command to set a one-rate-two-color VLAN match.

OpenConfig NETCONF Payload

```
<qos xmlns="http://openconfig.net/yang/qos">
  <queues>
    <queue>
      <name>q0</name>
      <config>
        <name>q0</name>
        <queue-id>0</queue-id>
      </config>
    </queue>
    <queue>
      <name>q1</name>
      <config>
        <name>q1</name>
        <queue-id>1</queue-id>
      </config>
    </queue>
  </queues>
</qos>
```

```

    </queue>
</queues>
<queue-management-profiles>
  <queue-management-profile>
    <name>q0</name>
    <config>
      <name>q0</name>
    </config>
    <wred>
      <uniform>
        <config>
          <min-threshold>128000</min-threshold>
          <max-threshold>256000</max-threshold>
        </config>
      </uniform>
    </wred>
  </queue-management-profile>
  <queue-management-profile>
    <name>q1</name>
    <config>
      <name>q1</name>
    </config>
    <wred>
      <uniform>
        <config>
          <min-threshold>256000</min-threshold>
          <max-threshold>512000</max-threshold>
        </config>
      </uniform>
    </wred>
  </queue-management-profile>
</queue-management-profiles>
<forwarding-groups>
  <forwarding-group>
    <name>q0</name>
    <config>
      <name>q0</name>
      <output-queue>q0</output-queue>
    </config>
  </forwarding-group>
</forwarding-groups>
<classifiers>
  <classifier>
    <name>IN_CUSTOMERIF</name>
    <config>
      <name>IN_CUSTOMERIF</name>
      <type>IPv4</type>
    </config>
    <terms>
      <term>
        <id>10</id>
        <config>
          <id>10</id>
        </config>
        <conditions>
          <ipv4>
            <config>

```

```

                                <source-address>1.1.1.1/24</source-address>
                                <destination-address>2.2.2.2/24</destination-
address>
                                <dscp>af21</dscp>
                                </config>
                                </ipv4>
                                </conditions>
                                <actions>
                                    <config>
                                        <target-group>q0</target-group>
                                    </config>
                                </actions>
                                </term>
                                <term>
                                    <id>20</id>
                                    <config>
                                        <id>20</id>
                                    </config>
                                    <conditions>
                                        <ipv4>
                                            <config>
                                                <source-address>3.3.3.3/24</source-address>
                                                <destination-address>4.4.4.4/24</destination-
address>
                                                <dscp>26</dscp>
                                            </config>
                                        </ipv4>
                                    </conditions>
                                    <actions>
                                        <config>
                                            <target-group>q1</target-group>
                                        </config>
                                    </actions>
                                </term>
                            </terms>
                        </classifier>
                    </classifiers>
                    <scheduler-policies>
                        <scheduler-policy>
                            <name>SCHEDULER_POLICY_1</name>
                            <config>
                                <name>SCHEDULER_POLICY_1</name>
                            </config>
                        <schedulers>
                            <scheduler>
                                <sequence>10</sequence>
                                <config>
                                    <sequence>10</sequence>
                                    <type>oc-qos-
types:QOS_SCHEDULER_TYPE:ONE_RATE_TWO_COLOR</type>
                                    <priority>2</priority>
                                </config>
                                <inputs>
                                    <input>
                                        <id>SCHEDULER_POLICY_AF1</id>
                                        <config>
                                            <id>SCHEDULER_POLICY_AF1</id>

```

```

        <input-type>QUEUE</input-type>
        <queue>q0</queue>
        <weight>5</weight>
    </config>
</input>
<input>
    <id>SCHEDULER_POLICY_AF2</id>
    <config>
        <id>SCHEDULER_POLICY_AF2</id>
        <input-type>QUEUE</input-type>
        <queue>q1</queue>
        <weight>15</weight>
    </config>
</input>
</inputs>
<one-rate-two-color>
    <config>
        <cir>256000000</cir>
        <max-queue-depth-bytes>64000</max-queue-depth-
bytes>
        <queuing-behavior>SHAPE</queuing-behavior>
    </config>
</one-rate-two-color>
</scheduler>
</schedulers>
</scheduler-policy>
</scheduler-policies>
</qos>

```

OcNOS CLI command

```

hardware-profile filter ingress-ipv4-qos enable
qos enable
!
ip access-list IN_CUSTOMERIF$10
  1 permit tcp 1.1.1.0/24 2.2.2.0/24 dscp af21
ip access-list IN_CUSTOMERIF$20
  1 permit tcp 3.3.3.0/24 4.4.4.0/24 dscp af31
!
class-map type qos match-any IN_CUSTOMERIF$10
  match access-group IN_CUSTOMERIF$10
!
class-map type qos match-any IN_CUSTOMERIF$20
  match access-group IN_CUSTOMERIF$20
!
policy-map type qos IN_CUSTOMERIF
  class type qos IN_CUSTOMERIF$10
    set queue 0
  exit
  class type qos IN_CUSTOMERIF$20
    set queue 1
  exit
!
policy-map type queuing default SCHEDULER_POLICY_1
  class type queuing default q0
    shape 256000000 kbps
    wfq-queue weight 5

```

```

    queue-limit 64000 bytes
    random-detect min-threshold 128000 bytes max-threshold 256000 bytes drop-
probability 80
    exit
    class type queuing default q1
    shape 256000000 kbps
    wfq-queue weight 15
    queue-limit 64000 bytes
    random-detect min-threshold 256000 bytes max-threshold 512000 bytes drop-
probability 80
    exit
!
```

OcNOS NETCONF Payload

```

<profiles xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform">
  <hardware-profile>
    <filters>
      <config>
        <ingress-ipv4-qos/>
      </config>
    </filters>
  </hardware-profile>
</profiles>
<acl xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-acl">
  <acl-sets>
    <acl-set>
      <name>IN_CUSTOMERIF$10</name>
      <type>ip</type>
      <config>
        <name>IN_CUSTOMERIF$10</name>
        <type>ip</type>
      </config>
      <acl-entries>
        <acl-entry>
          <sequence-id>1</sequence-id>
          <config>
            <sequence-id>1</sequence-id>
          </config>
          <ipv4>
            <config>
              <forwarding-action>permit</forwarding-action>
              <source-address>1.1.1.0/24</source-address>
              <destination-address>2.2.2.0/24</destination-address>
              <dscp>af21</dscp>
              <protocol-tcp/>
            </config>
          </ipv4>
        </acl-entry>
      </acl-entries>
    </acl-set>
    <acl-set>
      <name>IN_CUSTOMERIF$20</name>
      <type>ip</type>
      <config>
        <name>IN_CUSTOMERIF$20</name>
        <type>ip</type>
      </config>
    </acl-set>
  </acl-sets>
</acl>
```

```

</config>
<acl-entries>
  <acl-entry>
    <sequence-id>1</sequence-id>
    <config>
      <sequence-id>1</sequence-id>
    </config>
    <ipv4>
      <config>
        <forwarding-action>permit</forwarding-action>
        <source-address>3.3.3.0/24</source-address>
        <destination-address>4.4.4.0/24</destination-address>
        <dscp>af31</dscp>
        <protocol-tcp/>
      </config>
    </ipv4>
  </acl-entry>
</acl-entries>
</acl-set>
</acl-sets>
</acl>
<qos xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-qos">
  <global>
    <config>
      <enable-qos/>
      <statistics-enabled/>
    </config>
    <class-maps>
      <class-map>
        <name>IN_CUSTOMERIF$10</name>
        <config>
          <name>IN_CUSTOMERIF$10</name>
          <type>qos</type>
          <match-criteria>match-any</match-criteria>
        </config>
        <match-any-conditions>
          <config>
            <access-control-list-name>IN_CUSTOMERIF$10</access-control-list-
name>
          </config>
        </match-any-conditions>
      </class-map>
      <class-map>
        <name>IN_CUSTOMERIF$20</name>
        <config>
          <name>IN_CUSTOMERIF$20</name>
          <type>qos</type>
          <match-criteria>match-any</match-criteria>
        </config>
        <match-any-conditions>
          <config>
            <access-control-list-name>IN_CUSTOMERIF$20</access-control-list-
name>
          </config>
        </match-any-conditions>
      </class-map>
    </class-maps>

```



```

<policy-maps>
  <policy-map>
    <policy-map-name>IN_CUSTOMERIF</policy-map-name>
    <config>
      <policy-map-name>IN_CUSTOMERIF</policy-map-name>
      <type>qos</type>
    </config>
    <classes>
      <class>
        <class-map-name>IN_CUSTOMERIF$10</class-map-name>
        <config>
          <class-map-name>IN_CUSTOMERIF$10</class-map-name>
          <type>qos</type>
        </config>
        <qos-mode>
          <config>
            <queue-id>0</queue-id>
          </config>
        </qos-mode>
      </class>
      <class>
        <class-map-name>IN_CUSTOMERIF$20</class-map-name>
        <config>
          <class-map-name>IN_CUSTOMERIF$20</class-map-name>
          <type>qos</type>
        </config>
        <qos-mode>
          <config>
            <queue-id>1</queue-id>
          </config>
        </qos-mode>
      </class>
    </classes>
  </policy-map>
  <policy-map>
    <policy-map-name>SCHEDULER_POLICY_1</policy-map-name>
    <config>
      <policy-map-name>SCHEDULER_POLICY_1</policy-map-name>
      <type>queuing-default</type>
    </config>
    <classes>
      <class>
        <class-map-name>q0</class-map-name>
        <config>
          <class-map-name>q0</class-map-name>
          <type>queuing-default</type>
        </config>
        <queue-mode>
          <config>
            <weighted-fair-queueing-queue-weight>5</weighted-fair-
queueing-queue-weight>
          </config>
          <red>
            <wreds>
              <wred>
                <color>all</color>
              </wred>
            </wreds>
          </red>
        </queue-mode>
      </class>
    </classes>
  </policy-map>

```

```

        <color>all</color>
        <min-threshold>128000</min-threshold>
        <min-threshold-unit>bytes</min-threshold-unit>
        <max-threshold>256000</max-threshold>
        <max-threshold-unit>bytes</max-threshold-unit>
        <drop-probability>80</drop-probability>
    </config>
</wred>
</wreds>
</red>
<tail-drops>
    <tail-drop>
        <max-threshold>64000</max-threshold>
        <max-threshold-type>bytes</max-threshold-type>
        <config>
            <max-threshold>64000</max-threshold>
            <max-threshold-type>bytes</max-threshold-type>
        </config>
    </tail-drop>
</tail-drops>
<shapes>
    <shape>
        <rate-value>256000000</rate-value>
        <rate-unit>kbps</rate-unit>
        <config>
            <rate-value>256000000</rate-value>
            <rate-unit>kbps</rate-unit>
        </config>
    </shape>
</shapes>
</queue-mode>
</class>
<class>
    <class-map-name>q1</class-map-name>
    <config>
        <class-map-name>q1</class-map-name>
        <type>queuing-default</type>
    </config>
    <queue-mode>
        <config>
            <weighted-fair-queueing-queue-weight>15</weighted-fair-
queueing-queue-weight>
        </config>
    </red>
    <wreds>
        <wred>
            <color>all</color>
            <config>
                <color>all</color>
                <min-threshold>256000</min-threshold>
                <min-threshold-unit>bytes</min-threshold-unit>
                <max-threshold>512000</max-threshold>
                <max-threshold-unit>bytes</max-threshold-unit>
                <drop-probability>80</drop-probability>
            </config>
        </wred>
    </wreds>

```

```

    </red>
    <tail-drops>
      <tail-drop>
        <max-threshold>64000</max-threshold>
        <max-threshold-type>bytes</max-threshold-type>
        <config>
          <max-threshold>64000</max-threshold>
          <max-threshold-type>bytes</max-threshold-type>
        </config>
      </tail-drop>
    </tail-drops>
    <shapes>
      <shape>
        <rate-value>256000000</rate-value>
        <rate-unit>kbps</rate-unit>
        <config>
          <rate-value>256000000</rate-value>
          <rate-unit>kbps</rate-unit>
        </config>
      </shape>
    </shapes>
  </queue-mode>
</class>
</classes>
</policy-map>
<policy-map>
  <policy-map-name>subif-default-out-policy</policy-map-name>
  <config>
    <policy-map-name>subif-default-out-policy</policy-map-name>
    <type>queuing-default</type>
  </config>
  <classes>
    <class>
      <class-map-name>q1</class-map-name>
      <config>
        <class-map-name>q1</class-map-name>
        <type>queuing-default</type>
      </config>
      <queue-mode>
        <config>
          <priority-level>0</priority-level>
        </config>
      </queue-mode>
    </class>
    <class>
      <class-map-name>q2</class-map-name>
      <config>
        <class-map-name>q2</class-map-name>
        <type>queuing-default</type>
      </config>
      <queue-mode>
        <config>
          <priority-level>0</priority-level>
        </config>
      </queue-mode>
    </class>
  </class>

```

```
<class-map-name>q3</class-map-name>
<config>
  <class-map-name>q3</class-map-name>
  <type>queuing-default</type>
</config>
<queue-mode>
  <config>
    <priority-level>0</priority-level>
  </config>
</queue-mode>
</class>
<class>
  <class-map-name>q4</class-map-name>
  <config>
    <class-map-name>q4</class-map-name>
    <type>queuing-default</type>
  </config>
  <queue-mode>
    <config>
      <priority-level>0</priority-level>
    </config>
  </queue-mode>
</class>
<class>
  <class-map-name>q5</class-map-name>
  <config>
    <class-map-name>q5</class-map-name>
    <type>queuing-default</type>
  </config>
  <queue-mode>
    <config>
      <priority-level>0</priority-level>
    </config>
  </queue-mode>
</class>
<class>
  <class-map-name>q6</class-map-name>
  <config>
    <class-map-name>q6</class-map-name>
    <type>queuing-default</type>
  </config>
  <queue-mode>
    <config>
      <priority-level>0</priority-level>
    </config>
  </queue-mode>
</class>
<class>
  <class-map-name>q7</class-map-name>
  <config>
    <class-map-name>q7</class-map-name>
    <type>queuing-default</type>
  </config>
  <queue-mode>
    <config>
      <priority-level>0</priority-level>
    </config>
  </queue-mode>
</class>
```

```

        </queue-mode>
    </class>
</classes>
</policy-map>
</policy-maps>
</global>
</qos>

```

Validation with NETCONF get

```

<qos xmlns="http://openconfig.net/yang/qos">
  <classifiers>
    <classifier>
      <name>IN_CUSTOMERIF</name>
      <config>
        <name>IN_CUSTOMERIF</name>
        <type>IPv4</type>
      </config>
      <state>
        <name>IN_CUSTOMERIF</name>
        <type>IPv4</type>
      </state>
      <terms>
        <term>
          <id>10</id>
          <config>
            <id>10</id>
          </config>
          <state>
            <id>10</id>
          </state>
          <actions>
            <config>
              <target-group>q0</target-group>
            </config>
            <state>
              <target-group>q0</target-group>
            </state>
          </actions>
          <conditions>
            <ipv4>
              <config>
                <source-address>1.1.1.0/24</source-address>
                <destination-address>2.2.2.0/24</destination-address>
                <dscp>18</dscp>
              </config>
              <state>
                <source-address>1.1.1.0/24</source-address>
                <destination-address>2.2.2.0/24</destination-address>
                <dscp>18</dscp>
              </state>
            </ipv4>
          </conditions>
        </term>
        <term>
          <id>20</id>

```

```

    <config>
      <id>20</id>
    </config>
  </state>
  <id>20</id>
</state>
<actions>
  <config>
    <target-group>q1</target-group>
  </config>
  <state>
    <target-group>q1</target-group>
  </state>
</actions>
<conditions>
  <ipv4>
    <config>
      <source-address>3.3.3.0/24</source-address>
      <destination-address>4.4.4.0/24</destination-address>
      <dscp>26</dscp>
    </config>
    <state>
      <source-address>3.3.3.0/24</source-address>
      <destination-address>4.4.4.0/24</destination-address>
      <dscp>26</dscp>
    </state>
  </ipv4>
</conditions>
</term>
</terms>
</classifier>
</classifiers>
<scheduler-policies>
  <scheduler-policy>
    <name>SCHEDULER_POLICY_1</name>
    <config>
      <name>SCHEDULER_POLICY_1</name>
    </config>
    <state>
      <name>SCHEDULER_POLICY_1</name>
    </state>
  </scheduler-policy>
</scheduler-policies>
<schedulers>
  <scheduler>
    <sequence>10</sequence>
    <config>
      <sequence>10</sequence>
      <type>
        xmlns:oc-qos-types="http://openconfig.net/yang/qos-types">oc-
qos-types:ONE_RATE_TWO_COLOR</type>
      <priority>STRICT</priority>
    </config>
    <inputs>
      <input>
        <id>SCHEDULER_POLICY_AF1</id>
        <config>
          <id>SCHEDULER_POLICY_AF1</id>
          <queue>q0</queue>
        </config>
      </input>
    </inputs>
  </scheduler>
</schedulers>

```

```

        <weight>5</weight>
        <input-type>QUEUE</input-type>
    </config>
    <state>
        <weight>5</weight>
        <id>SCHEDULER_POLICY_AF1</id>
        <queue>q0</queue>
        <input-type>QUEUE</input-type>
    </state>
</input>
<input>
    <id>SCHEDULER_POLICY_AF2</id>
    <config>
        <id>SCHEDULER_POLICY_AF2</id>
        <queue>q1</queue>
        <weight>15</weight>
        <input-type>QUEUE</input-type>
    </config>
    <state>
        <weight>15</weight>
        <id>SCHEDULER_POLICY_AF2</id>
        <queue>q1</queue>
        <input-type>QUEUE</input-type>
    </state>
</input>
</inputs>
<state>
    <sequence>10</sequence>
    <type>
        xmlns:oc-qos-types="http://openconfig.net/yang/qos-types">oc-
qos-types:ONE_RATE_TWO_COLOR</type>
    <priority>STRICT</priority>
</state>
<one-rate-two-color>
    <state>
        <queuing-behavior>SHAPE</queuing-behavior>
        <max-queue-depth-bytes>64000</max-queue-depth-bytes>
        <cir>256000000</cir>
    </state>
    <config>
        <max-queue-depth-bytes>64000</max-queue-depth-bytes>
        <cir>256000000</cir>
        <queuing-behavior>SHAPE</queuing-behavior>
    </config>
</one-rate-two-color>
</scheduler>
</schedulers>
</scheduler-policy>
</scheduler-policies>
<queue-management-profiles>
    <queue-management-profile>
        <name>q0</name>
        <config>
            <name>q0</name>
        </config>
        <state>
            <name>q0</name>

```

```
</state>
<wred>
  <uniform>
    <config>
      <min-threshold>128000</min-threshold>
      <max-threshold>256000</max-threshold>
      <weight>20</weight>
      <max-threshold>90</max-threshold>
    </config>
    <state>
      <min-threshold>128000</min-threshold>
      <max-threshold>256000</max-threshold>
      <weight>20</weight>
      <max-threshold>90</max-threshold>
    </state>
  </uniform>
</wred>
</queue-management-profile>
<queue-management-profile>
  <name>q1</name>
  <config>
    <name>q1</name>
  </config>
  <state>
    <name>q1</name>
  </state>
  <wred>
    <uniform>
      <config>
        <min-threshold>256000</min-threshold>
        <max-threshold>512000</max-threshold>
        <weight>10</weight>
        <max-threshold>70</max-threshold>
      </config>
      <state>
        <min-threshold>256000</min-threshold>
        <max-threshold>512000</max-threshold>
        <weight>10</weight>
        <max-threshold>70</max-threshold>
      </state>
    </uniform>
  </wred>
</queue-management-profile>
</queue-management-profiles>
<forwarding-groups>
  <forwarding-group>
    <name>q0</name>
    <config>
      <name>q0</name>
      <output-queue>q0</output-queue>
      <fabric-priority>128</fabric-priority>
    </config>
    <state>
      <name>q0</name>
      <output-queue>q0</output-queue>
      <fabric-priority>128</fabric-priority>
    </state>
  </forwarding-group>
</forwarding-groups>
```



```

    </forwarding-group>
  </forwarding-groups>
  <queues>
    <queue>
      <name>q0</name>
      <config>
        <name>q0</name>
        <queue-id>0</queue-id>
      </config>
      <state>
        <name>q0</name>
        <queue-id>0</queue-id>
      </state>
    </queue>
    <queue>
      <name>q1</name>
      <config>
        <name>q1</name>
        <queue-id>1</queue-id>
      </config>
      <state>
        <name>q1</name>
        <queue-id>1</queue-id>
      </state>
    </queue>
  </queues>
</qos>

```

Restrictions

This translation is only translated for SP Hardware type.

- Path `/qos/queue-management-profiles` is available on Open Config versions newer than v1.0.0.
- Path `/qos/queues` was restructured on Open Config versions newer than v1.0.0.
- The only valid value for path `/qos/scheduler-policies/scheduler-policy/schedulers/scheduler/config/priority` is **“STRICT”**.
- Path `/qos/scheduler-policies/scheduler-policy/schedulers/scheduler/inputs/input/config/queue` have leaf name have fixed names that follow this pattern **“q[0-7]”**
- All paths below have restrictions:
 - `/qos/interfaces/interface/input/scheduler-policy`
This association is not valid on OcNOS, and is not support.
 - `/qos/scheduler-policies/scheduler-policy/schedulers/scheduler/output`
This association is not valid on OcNOS, and is not support.
 - `/qos/scheduler-policies/scheduler-policy/schedulers/scheduler/one-rate-two-color/config/bc`
This association is not valid on OcNOS, and is not support.
 - `/qos/scheduler-policies/scheduler-policy/schedulers/scheduler/one-rate-two-color/config/cir-pct`
This association is not valid on OcNOS, and is not support.
 - `/qos/scheduler-policies/scheduler-policy/schedulers/scheduler`
This list have a fixed max-element as one entry.

- `/qos/scheduler-policies/scheduler-policy/schedulers/scheduler/config/type`
This configurations has a fixed value as "ONE_RATE_TWO_COLOR".
- `/qos/scheduler-policies/scheduler-policy/schedulers/scheduler/inputs/input/config/input-type`
This configurations has a fixed value as "QUEUE".
- `/qos/scheduler-policies/scheduler-policy/schedulers/scheduler/one-rate-two-color/config/cir-pct-remaining`
This association is not valid on OcNOS, and is not support.
- `/qos/scheduler-policies/scheduler-policy/schedulers/scheduler/one-rate-two-color/config/queuing-behavior`
This configurations has a fixed value as "SHAPE".
- `/qos/scheduler-policies/scheduler-policy/schedulers/scheduler/one-rate-two-color/config/max-queue-depth-packets`
This association is not valid on OcNOS, and is not support.
- `/qos/scheduler-policies/scheduler-policy/schedulers/scheduler/one-rate-two-color/config/max-queue-depth-percent`
This association is not valid on OcNOS, and is not support.
- `/qos/scheduler-policies/scheduler-policy/schedulers/scheduler/one-rate-two-color/conform-action`
This association is not valid on OcNOS, and is not support.
- `/qos/scheduler-policies/scheduler-policy/schedulers/scheduler/one-rate-two-color/exceed-action`
This association is not valid on OcNOS, and is not support.
- `/qos/scheduler-policies/scheduler-policy/schedulers/scheduler/two-rate-three-color`
This association is not valid on OcNOS, and is not support.

Create interfaces classifier association

Release

This configuration was introduced in OcNOS version 6.1.0.

Configuration

On Open Config model the classifier profile can be associated to an interface on egress and ingress direction, and also it allow a list of classifiers to be associate to an interface.

But on OcNOS model the interface only allow the associate one classifier object, and the association is on ingress direction.

OpenConfig NETCONF Payload

```
<qos xmlns="http://openconfig.net/yang/qos">
  <queues>
    <queue>
      <name>q0</name>
      <config>
        <name>q0</name>
```

```

        <queue-id>0</queue-id>
      </config>
    </queue>
  </queues>
  <queue-management-profiles>
    <queue-management-profile>
      <name>q0</name>
      <config>
        <name>q0</name>
      </config>
      <wred>
        <uniform>
          <config>
            <min-threshold>128000</min-threshold>
            <max-threshold>256000</max-threshold>
            <weight>20</weight>
            <max-drop-probability-percent>90</max-drop-
probability-percent>
          </config>
        </uniform>
      </wred>
    </queue-management-profile>
  </queue-management-profiles>
  <forwarding-groups>
    <forwarding-group>
      <name>q0</name>
      <config>
        <name>q0</name>
        <output-queue>q0</output-queue>
      </config>
    </forwarding-group>
  </forwarding-groups>
  <classifiers>
    <classifier>
      <name>IN_CUSTOMERIF</name>
      <config>
        <name>IN_CUSTOMERIF</name>
        <type>IPv4</type>
      </config>
      <terms>
        <term>
          <id>10</id>
          <config>
            <id>10</id>
          </config>
          <conditions>
            <ipv4>
              <config>
                <source-address>1.1.1.1/24</source-address>
                <destination-address>2.2.2.2/24</destination-
address>
                <dscp>af21</dscp>
              </config>
            </ipv4>
          </conditions>
          <actions>
            <config>

```

```

        <target-group>q0</target-group>
      </config>
    </actions>
  </term>
</terms>
</classifier>
</classifiers>
<interfaces>
  <interface>
    <interface-id>eth2</interface-id>
    <config>
      <interface-id>eth2</interface-id>
    </config>
    <interface-ref>
      <config>
        <interface>eth2</interface>
      </config>
    </interface-ref>
    <input>
      <classifiers>
        <classifier>
          <type>IPV4</type>
          <config>
            <name>IN_CUSTOMERIF</name>
            <type>IPV4</type>
          </config>
        </classifier>
      </classifiers>
    </input>
  </interface>
</interfaces>
</qos>

```

OcNOS CLI command

```

hardware-profile filter ingress-ipv4-qos enable
qos enable
!
ip access-list IN_CUSTOMERIF$10
  1 permit tcp 1.1.1.0/24 2.2.2.0/24 dscp af21
!
class-map type qos match-any IN_CUSTOMERIF$10
  match access-group IN_CUSTOMERIF$10
!
policy-map type qos IN_CUSTOMERIF
  class type qos IN_CUSTOMERIF$10
    set queue 0
  exit
  class type qos IN_CUSTOMERIF$20
    set queue 1
  exit
!
interface eth2
  service-policy type qos input IN_CUSTOMERIF
!

```

OcNOS NETCONF Payload

```

<profiles xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform">
  <hardware-profile>
    <filters>
      <config>
        <ingress-ipv4-qos/>
      </config>
    </filters>
  </hardware-profile>
</profiles>
<acl xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-acl">
  <acl-sets>
    <acl-set>
      <acl-set>
        <name>IN_CUSTOMERIF$10</name>
        <type>ip</type>
        <config>
          <name>IN_CUSTOMERIF$10</name>
          <type>ip</type>
        </config>
        <acl-entries>
          <acl-entry>
            <sequence-id>1</sequence-id>
            <config>
              <sequence-id>1</sequence-id>
            </config>
            <ipv4>
              <config>
                <forwarding-action>permit</forwarding-action>
                <source-address>1.1.1.0/24</source-address>
                <destination-address>2.2.2.0/24</destination-address>
                <dscp>af21</dscp>
                <protocol-tcp/>
              </config>
            </ipv4>
          </acl-entry>
        </acl-entries>
      </acl-set>
    </acl-sets>
  </acl>
  <qos xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-qos">
    <global>
      <config>
        <enable-qos/>
      </config>
      <class-maps>
        <class-map>
          <name>IN_CUSTOMERIF$10</name>
          <config>
            <name>IN_CUSTOMERIF$10</name>
            <type>qos</type>
            <match-criteria>match-any</match-criteria>
          </config>
          <match-any-conditions>
            <config>
              <access-control-list-name>IN_CUSTOMERIF$10</access-control-
list-name>

```

```

        </config>
    </match-any-conditions>
</class-map>
</class-maps>
<policy-maps>
  <policy-map>
    <policy-map-name>IN_CUSTOMERIF</policy-map-name>
    <config>
      <policy-map-name>IN_CUSTOMERIF</policy-map-name>
      <type>qos</type>
    </config>
    <classes>
      <class>
        <class-map-name>IN_CUSTOMERIF$10</class-map-name>
        <config>
          <class-map-name>IN_CUSTOMERIF$10</class-map-name>
          <type>qos</type>
        </config>
        <qos-mode>
          <config>
            <queue-id>0</queue-id>
          </config>
        </qos-mode>
      </class>
    </classes>
  </policy-map>
</policy-maps>
</global>
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-qos-if">
  <interface>
    <name>eth2</name>
    <config>
      <name>eth2</name>
    </config>
    <service-policy>
      <ingress>
        <config>
          <type-qos-policy-map-name>IN_CUSTOMERIF</type-qos-policy-map-
name>
        </config>
      </ingress>
    </service-policy>
  </interface>
</interfaces>

```

Validation with NETCONF get

```

<qos xmlns="http://openconfig.net/yang/qos">
  <classifiers>
    <classifier>
      <name>IN_CUSTOMERIF</name>
      <config>
        <name>IN_CUSTOMERIF</name>
        <type>IPV4</type>
      </config>
    <state>
      <name>IN_CUSTOMERIF</name>
    </state>
  </classifiers>
</qos>

```

```
<type>IPV4</type>
</state>
<terms>
  <term>
    <id>10</id>
    <config>
      <id>10</id>
    </config>
    <state>
      <id>10</id>
    </state>
    <actions>
      <config>
        <target-group>q0</target-group>
      </config>
      <state>
        <target-group>q0</target-group>
      </state>
    </actions>
    <conditions>
      <ipv4>
        <config>
          <source-address>1.1.1.0/24</source-address>
          <destination-address>2.2.2.0/24</destination-address>
          <dscp>18</dscp>
        </config>
        <state>
          <source-address>1.1.1.0/24</source-address>
          <destination-address>2.2.2.0/24</destination-address>
          <dscp>18</dscp>
        </state>
      </ipv4>
    </conditions>
  </term>
  <term>
    <id>20</id>
    <config>
      <id>20</id>
    </config>
    <state>
      <id>20</id>
    </state>
    <actions>
      <config>
        <target-group>q1</target-group>
      </config>
      <state>
        <target-group>q1</target-group>
      </state>
    </actions>
    <conditions>
      <ipv4>
        <config>
          <source-address>3.3.3.0/24</source-address>
          <destination-address>4.4.4.0/24</destination-address>
          <dscp>26</dscp>
        </config>
```

```

        <state>
          <source-address>3.3.3.0/24</source-address>
          <destination-address>4.4.4.0/24</destination-address>
          <dscp>26</dscp>
        </state>
      </ipv4>
    </conditions>
  </term>
</terms>
</classifier>
</classifiers>
</interfaces>
<interface>
  <interface-id>eth2</interface-id>
  <config>
    <interface-id>eth2</interface-id>
  </config>
  <input>
    <classifiers>
      <classifier>
        <config>
          <name>IN_CUSTOMERIF</name>
          <type>IPV4</type>
        </config>
        <type>IPV4</type>
        <state>
          <name>IN_CUSTOMERIF</name>
          <type>IPV4</type>
        </state>
        <terms>
          <term>
            <id>10</id>
            <state>
              <id>10</id>
              <matched-packets>0</matched-packets>
              <matched-octets>0</matched-octets>
            </state>
          </term>
          <term>
            <id>20</id>
            <state>
              <id>20</id>
              <matched-packets>0</matched-packets>
              <matched-octets>0</matched-octets>
            </state>
          </term>
        </terms>
      </classifier>
    </classifiers>
  </input>
  <interface-ref>
    <config>
      <interface>eth2</interface>
    </config>
    <state>
      <interface>eth2</interface>
    </state>
  </interface-ref>

```



```
    </interface-ref>
    <state>
      <interface-id>eth2</interface-id>
    </state>
  </interface>
</interfaces>
<queue-management-profiles>
  <queue-management-profile>
    <name>q0</name>
    <config>
      <name>q0</name>
    </config>
    <state>
      <name>q0</name>
    </state>
    <wred>
      <uniform>
        <config>
          <min-threshold>128000</min-threshold>
          <max-threshold>256000</max-threshold>
          <weight>20</weight>
          <max-threshold>90</max-threshold>
        </config>
        <state>
          <min-threshold>128000</min-threshold>
          <max-threshold>256000</max-threshold>
          <weight>20</weight>
          <max-threshold>90</max-threshold>
        </state>
      </uniform>
    </wred>
  </queue-management-profile>
  <queue-management-profile>
    <name>q1</name>
    <config>
      <name>q1</name>
    </config>
    <state>
      <name>q1</name>
    </state>
    <wred>
      <uniform>
        <config>
          <min-threshold>256000</min-threshold>
          <max-threshold>512000</max-threshold>
          <weight>10</weight>
          <max-threshold>70</max-threshold>
        </config>
        <state>
          <min-threshold>256000</min-threshold>
          <max-threshold>512000</max-threshold>
          <weight>10</weight>
          <max-threshold>70</max-threshold>
        </state>
      </uniform>
    </wred>
  </queue-management-profile>
</queue-management-profiles>
```

```

</queue-management-profiles>
<forwarding-groups>
  <forwarding-group>
    <name>q0</name>
    <config>
      <name>q0</name>
      <output-queue>q0</output-queue>
      <fabric-priority>128</fabric-priority>
    </config>
    <state>
      <name>q0</name>
      <output-queue>q0</output-queue>
      <fabric-priority>128</fabric-priority>
    </state>
  </forwarding-group>
</forwarding-groups>
<queues>
  <queue>
    <name>q0</name>
    <config>
      <name>q0</name>
      <queue-id>0</queue-id>
    </config>
    <state>
      <name>q0</name>
      <queue-id>0</queue-id>
    </state>
  </queue>
  <queue>
    <name>q1</name>
    <config>
      <name>q1</name>
      <queue-id>1</queue-id>
    </config>
    <state>
      <name>q1</name>
      <queue-id>1</queue-id>
    </state>
  </queue>
</queues>
</qos>

```

Restrictions

This translation is only available for SP Hardware type.

- Path `/qos/queue-management-profiles` is available on Open Config versions newer than **v1.0.0**.
- Path `/qos/queues` was restructured on Open Config versions newer than **v1.0.0**.
- All paths below have restrictions:
- `/qos/interfaces/interface/input/classifiers`
Only one entry can be insert on this list.
- `/qos/interfaces/interface/output/classifiers`
This association is not support on OcNOS model.

- /qos/interfaces/interface/interface-id
This leaf must have the format “interface.subinterface”, e.g., xe10.2, and it is limited to 32 characters.

Create interfaces scheduler-policies association

Release

This configuration was introduced in OcNOS version 6.1.0.

Configuration

On Open Config model the scheduler-policies profile can be associated to an interface on egress and ingress direction. But on OcNOS model the interface only allow the associate one scheduler-policies object, and the association is on ingress direction.

OpenConfig NETCONF Payload

```
<qos xmlns="http://openconfig.net/yang/qos">
  <queues>
    <queue>
      <name>q0</name>
      <config>
        <name>q0</name>
        <queue-id>0</queue-id>
      </config>
    </queue>
  </queues>
  <queue-management-profiles>
    <queue-management-profile>
      <name>q0</name>
      <config>
        <name>q0</name>
      </config>
      <wred>
        <uniform>
          <config>
            <min-threshold>128000</min-threshold>
            <max-threshold>256000</max-threshold>
            <weight>20</weight>
            <max-drop-probability-percent>90</max-drop-
probability-percent>
          </config>
        </uniform>
      </wred>
    </queue-management-profile>
  </queue-management-profiles>
  <forwarding-groups>
    <forwarding-group>
      <name>q0</name>
      <config>
        <name>q0</name>
```

```

        <output-queue>q0</output-queue>
    </config>
</forwarding-group>
</forwarding-groups>
<scheduler-policies>
    <scheduler-policy>
        <name>SCHEDULER_POLICY_1</name>
        <config>
            <name>SCHEDULER_POLICY_1</name>
        </config>
        <schedulers>
            <scheduler>
                <sequence>10</sequence>
                <config>
                    <sequence>10</sequence>
                    <type>ONE_RATE_TWO_COLOR</type>
                    <priority>STRICT</priority>
                </config>
                <inputs>
                    <input>
                        <id>SCHEDULER_POLICY_AF1</id>
                        <config>
                            <id>SCHEDULER_POLICY_AF1</id>
                            <input-type>QUEUE</input-type>
                            <queue>q0</queue>
                            <weight>5</weight>
                        </config>
                    </input>
                </inputs>
                <one-rate-two-color>
                    <config>
                        <cir>256000000</cir>
                        <max-queue-depth-bytes>64000</max-queue-depth-
bytes>
                        <queuing-behavior>SHAPE</queuing-behavior>
                    </config>
                </one-rate-two-color>
            </scheduler>
        </schedulers>
    </scheduler-policy>
</scheduler-policies>
<interfaces>
    <interface>
        <interface-id>eth2</interface-id>
        <config>
            <interface-id>eth2</interface-id>
        </config>
        <interface-ref>
            <config>
                <interface>eth2</interface>
            </config>
        </interface-ref>
        <output>
            <scheduler-policy>
                <config>
                    <name>SCHEDULER_POLICY_1</name>
                </config>
            </scheduler-policy>
        </output>
    </interface>
</interfaces>

```

```

        </scheduler-policy>
    </output>
</interface>
</interfaces>
</qos>

```

OcNOS CLI command

```

hardware-profile filter ingress-ipv4-qos enable
qos enable
!
policy-map type queuing default SCHEDULER_POLICY_1
  class type queuing default q0
    shape 256000000 kbps
    wfq-queue weight 5
    queue-limit 64000 bytes
    random-detect min-threshold 128000 bytes max-threshold 256000 bytes drop-
probability 80
  exit
!
interface eth2
  service-policy type queuing output SCHEDULER_POLICY_1
!

```

OcNOS NETCONF Payload

```

<profiles xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-platform">
  <hardware-profile>
    <filters>
      <config>
        <ingress-ipv4-qos/>
      </config>
    </filters>
  </hardware-profile>
</profiles>
<qos xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-qos">
  <global>
    <config>
      <enable-qos/>
    </config>
    <policy-maps>
      <policy-map>
        <policy-map-name>SCHEDULER_POLICY_1</policy-map-name>
        <config>
          <policy-map-name>SCHEDULER_POLICY_1</policy-map-name>
          <type>queuing-default</type>
        </config>
        <classes>
          <class>
            <class-map-name>q0</class-map-name>
            <config>
              <class-map-name>q0</class-map-name>
              <type>queuing-default</type>
            </config>
            <queue-mode>
              <config>

```

```

        <weighted-fair-queueing-queue-weight>5</weighted-fair-
queueing-queue-weight>
    </config>
    <red>
        <wreds>
            <wred>
                <color>all</color>
                <config>
                    <color>all</color>
                    <min-threshold>128000</min-threshold>
                    <min-threshold-unit>bytes</min-threshold-unit>
                    <max-threshold>256000</max-threshold>
                    <max-threshold-unit>bytes</max-threshold-unit>
                    <drop-probability>80</drop-probability>
                </config>
            </wred>
        </wreds>
    </red>
    <tail-drops>
        <tail-drop>
            <max-threshold>64000</max-threshold>
            <max-threshold-type>bytes</max-threshold-type>
            <config>
                <max-threshold>64000</max-threshold>
                <max-threshold-type>bytes</max-threshold-type>
            </config>
        </tail-drop>
    </tail-drops>
    <shapes>
        <shape>
            <rate-value>256000000</rate-value>
            <rate-unit>kbps</rate-unit>
            <config>
                <rate-value>256000000</rate-value>
                <rate-unit>kbps</rate-unit>
            </config>
        </shape>
    </shapes>
</queue-mode>
</class>
</classes>
</policy-map>
</policy-maps>
</global>
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-qos-if">
    <interface>
        <name>eth2</name>
        <config>
            <name>eth2</name>
        </config>
        <service-policy>
            <egress>
                <config>
                    <type-queuing-policy-map-name>SCHEDULER_POLICY_1</type-
queuing-policy-map-name>
                </config>
            </egress>

```

```

    </service-policy>
  </interface>
</interfaces>
</qos>

```

Validation with NETCONF get

```

<qos xmlns="http://openconfig.net/yang/qos">
  <scheduler-policies>
    <scheduler-policy>
      <name>SCHEDULER_POLICY_1</name>
      <config>
        <name>SCHEDULER_POLICY_1</name>
      </config>
      <state>
        <name>SCHEDULER_POLICY_1</name>
      </state>
      <schedulers>
        <scheduler>
          <sequence>10</sequence>
          <config>
            <sequence>10</sequence>
            <type
qos-types:ONE_RATE_TWO_COLOR xmlns:oc-qos-types="http://openconfig.net/yang/qos-types">oc-
            <priority>STRICT</priority>
          </config>
          <inputs>
            <input>
              <id>SCHEDULER_POLICY_AF1</id>
              <config>
                <id>SCHEDULER_POLICY_AF1</id>
                <queue>q0</queue>
                <weight>5</weight>
                <input-type>QUEUE</input-type>
              </config>
              <state>
                <weight>5</weight>
                <id>SCHEDULER_POLICY_AF1</id>
                <queue>q0</queue>
                <input-type>QUEUE</input-type>
              </state>
            </input>
            <input>
              <id>SCHEDULER_POLICY_AF2</id>
              <config>
                <id>SCHEDULER_POLICY_AF2</id>
                <queue>q1</queue>
                <weight>15</weight>
                <input-type>QUEUE</input-type>
              </config>
              <state>
                <weight>15</weight>
                <id>SCHEDULER_POLICY_AF2</id>
                <queue>q1</queue>
                <input-type>QUEUE</input-type>
              </state>
            </input>
          </inputs>
        </scheduler>
      </schedulers>
    </scheduler-policy>
  </scheduler-policies>
</qos>

```

```

        </input>
    </inputs>
    <state>
        <sequence>10</sequence>
        <type
qos-types:ONE_RATE_TWO_COLOR</type>
        <priority>STRICT</priority>
    </state>
    <one-rate-two-color>
        <state>
            <queuing-behavior>SHAPE</queuing-behavior>
            <max-queue-depth-bytes>64000</max-queue-depth-bytes>
            <cir>256000000</cir>
        </state>
        <config>
            <max-queue-depth-bytes>64000</max-queue-depth-bytes>
            <cir>256000000</cir>
            <queuing-behavior>SHAPE</queuing-behavior>
        </config>
    </one-rate-two-color>
</scheduler>
</schedulers>
</scheduler-policy>
</scheduler-policies>
<interfaces>
    <interface>
        <interface-id>eth2</interface-id>
        <config>
            <interface-id>eth2</interface-id>
        </config>
        <output>
            <scheduler-policy>
                <config>
                    <name>SCHEDULER_POLICY_1</name>
                </config>
                <state>
                    <name>SCHEDULER_POLICY_1</name>
                </state>
                <schedulers>
                    <scheduler>
                        <sequence>10</sequence>
                        <state>
                            <sequence>10</sequence>
                            <conforming-octets>0</conforming-octets>
                            <conforming-pkts>0</conforming-pkts>
                            <exceeding-octets>0</exceeding-octets>
                            <exceeding-pkts>0</exceeding-pkts>
                        </state>
                    </scheduler>
                </schedulers>
            </scheduler-policy>
        </output>
        <interface-ref>
            <config>
                <interface>eth2</interface>
            </config>

```



```
<state>
  <interface>eth2</interface>
</state>
</interface-ref>
<state>
  <interface-id>eth2</interface-id>
</state>
</interface>
</interfaces>
<queue-management-profiles>
  <queue-management-profile>
    <name>q0</name>
    <config>
      <name>q0</name>
    </config>
    <state>
      <name>q0</name>
    </state>
    <wred>
      <uniform>
        <config>
          <min-threshold>128000</min-threshold>
          <max-threshold>256000</max-threshold>
          <weight>20</weight>
          <max-threshold>90</max-threshold>
        </config>
        <state>
          <min-threshold>128000</min-threshold>
          <max-threshold>256000</max-threshold>
          <weight>20</weight>
          <max-threshold>90</max-threshold>
        </state>
      </uniform>
    </wred>
  </queue-management-profile>
  <queue-management-profile>
    <name>q1</name>
    <config>
      <name>q1</name>
    </config>
    <state>
      <name>q1</name>
    </state>
    <wred>
      <uniform>
        <config>
          <min-threshold>256000</min-threshold>
          <max-threshold>512000</max-threshold>
          <weight>10</weight>
          <max-threshold>70</max-threshold>
        </config>
        <state>
          <min-threshold>256000</min-threshold>
          <max-threshold>512000</max-threshold>
          <weight>10</weight>
          <max-threshold>70</max-threshold>
        </state>
      </uniform>
    </wred>
  </queue-management-profile>
</queue-management-profiles>
```

```

        </uniform>
    </wred>
</queue-management-profile>
</queue-management-profiles>
<forwarding-groups>
  <forwarding-group>
    <name>q0</name>
    <config>
      <name>q0</name>
      <output-queue>q0</output-queue>
      <fabric-priority>128</fabric-priority>
    </config>
    <state>
      <name>q0</name>
      <output-queue>q0</output-queue>
      <fabric-priority>128</fabric-priority>
    </state>
  </forwarding-group>
</forwarding-groups>
<queues>
  <queue>
    <name>q0</name>
    <config>
      <name>q0</name>
      <queue-id>0</queue-id>
    </config>
    <state>
      <name>q0</name>
      <queue-id>0</queue-id>
    </state>
  </queue>
  <queue>
    <name>q1</name>
    <config>
      <name>q1</name>
      <queue-id>1</queue-id>
    </config>
    <state>
      <name>q1</name>
      <queue-id>1</queue-id>
    </state>
  </queue>
</queues>
</qos>

```

Restrictions

This translation is only available for SP Hardware type.

- Path `/qos/queue-management-profiles` is available on Open Config versions newer than **v1.0.0**.
- Path `/qos/queues` was restructured on Open Config versions newer than **v1.0.0**.

All paths below have restrictions:

- `/qos/interfaces/interface/interface-id`
This leaf must have the format “**<interface>.<subinterface>**”, e.g., xe10.2, and it is limited to 32 characters.

EVPN Openconfig Translation

Configure EVPN-MAC with inter-instance-policies

This XML configuration snippet is used to configure only the MAC-VRF entry with route-target configured..

Release

This configuration was introduced in OcNOS version 6.1.0.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>object-test</name>
    <config>
      <name>object-test</name>
      <type xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2L3</type>
      <router-id>102.143.73.1</router-id>
      <route-distinguisher>102.143.73.1:2</route-distinguisher>
    </config>
    <encapsulation>
      <config>
        <encapsulation-type>MPLS</encapsulation-type>
      </config>
    </encapsulation>
    <inter-instance-policies>
      <import-export-policy>
        <config>
          <export-route-target>6:6</export-route-target>
          <import-route-target>6:6</import-route-target>
          <export-route-target>3:3</export-route-target>
        </config>
      </import-export-policy>
    </inter-instance-policies>
  </network-instance>
</network-instances>
```

OcNOS CLI Command

```
mac vrf object-test
  router-id 102.143.73.1
  rd 102.143.73.1:2
  route-target export 3:3
  route-target both 6:6
!
```

OcNOS NetConf Payload

```
<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-network-
instance">
```

```

<network-instance>
  <instance-name>object-test</instance-name>
  <instance-type>mac-vrf</instance-type>
  <config>
    <instance-name>object-test</instance-name>
    <instance-type>mac-vrf</instance-type>
  </config>
  <vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vrf">
    <config>
      <vrf-name>object-test</vrf-name>
      <router-id>102.143.73.1</router-id>
    </config>
    <bgp-vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp-vrf">
      <config>
        <rd-string>102.143.73.1:2</rd-string>
      </config>
      <route-target>
        <rt-rd-string>3:3</rt-rd-string>
        <config>
          <rt-rd-string>3:3</rt-rd-string>
          <direction>export</direction>
        </config>
      </route-target>
      <route-target>
        <rt-rd-string>6:6</rt-rd-string>
        <config>
          <rt-rd-string>6:6</rt-rd-string>
          <direction>import export</direction>
        </config>
      </route-target>
    </bgp-vrf>
  </vrf>
</network-instance>
</network-instances>

```

Validation with NetConf get

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>object-test</name>
    <config>
      <name>object-test</name>
      <type
        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2L3</type>
      <router-id>102.143.73.1</router-id>
      <route-distinguisher>102.143.73.1:2</route-distinguisher>
    </config>
    <encapsulation>
      <config>
        <encapsulation-type
          xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:MPLS</encapsulation-type>
        </config>
      <state>
        <encapsulation-type

```

```

        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:MPLS</encapsulation-type>
    </state>
</encapsulation>
<state>
    <name>object-test</name>
    <type
        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2L3</type>
    <router-id>102.143.73.1</router-id>
    <route-distinguisher>102.143.73.1:2</route-distinguisher>
</state>
<inter-instance-policies>
    <import-export-policy>
        <config>
            <export-route-target>3:3</export-route-target>
            <export-route-target>6:6</export-route-target>
            <import-route-target>6:6</import-route-target>
        </config>
        <state>
            <export-route-target>3:3</export-route-target>
            <export-route-target>6:6</export-route-target>
            <import-route-target>6:6</import-route-target>
        </state>
    </import-export-policy>
</inter-instance-policies>
</network-instance>
</network-instances>

```

Restrictions

- Cannot configure by Open Config the MAC-VRF entry without route-target.
- The leaves below must be configured:
 - network-instances/network-instance/config/router-id
 - network-instances/network-instance/config/route-distinguisher

Configure EVPN-VPLS type

This XML configuration snippet is used to configure EVPN-VPLS type.

Release

This configuration was introduced in OcNOS version 6.1.0.

Initial Configuration:

```

router ldp
!
interface lo
 ip address 10.143.73.1/32 secondary
!
interface eth4

```

```

ip address 10.255.128.8/31
label-switching
enable-ldp ipv4
!
interface eth2.1001 switchport
encapsulation dot1q 1001
!
ospf area-interface-config-mode
router ospf 100
ospf router-id 10.143.73.1
area 0.0.0.0 interface eth4
area 0.0.0.0 interface lo

```

OcNOS CLI Command

```

evpn mpls enable
!
mac vrf vpls1001
router-id 10.143.73.1
rd 10.143.73.1:1001
route-target both 1001:1001
!
evpn mpls vtep-ip-global 10.143.73.1
!
evpn mpls id 1001
host-reachability-protocol evpn-bgp vpls1001
!
interface eth2.1001 switchport
encapsulation dot1q 1001
access-if-evpn
map vpn-id 1001
!
router bgp 65010
neighbor 10.143.73.3 remote-as 65010
neighbor 10.143.73.3 update-source lo
!
address-family l2vpn evpn
neighbor 10.143.73.3 activate
exit-address-family

```

OcNOS NetConf Payload

```

<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-network-
instance">
  <network-instance>
    <instance-name>default</instance-name>
    <instance-type>vrf</instance-type>
    <vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vrf">
      <config>
        <vrf-name>default</vrf-name>
      </config>
    </vrf>
  </network-instance>
  <network-instance>
    <instance-name>default</instance-name>
    <instance-type>vrf</instance-type>
  </network-instance>
</network-instances>

```

```

    </config>
</network-instance>
<network-instance>
  <instance-name>vppls1001</instance-name>
  <instance-type>mac-vrf</instance-type>
  <config>
    <instance-name>vppls1001</instance-name>
    <instance-type>mac-vrf</instance-type>
  </config>
  <vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vrf">
    <config>
      <vrf-name>vppls1001</vrf-name>
    </config>
    <bgp-vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp-vrf">
      <config>
        <rd-string>10.143.73.1:1001</rd-string>
      </config>
      <route-target>
        <rt-rd-string>1001:1001</rt-rd-string>
        <config>
          <rt-rd-string>1001:1001</rt-rd-string>
          <direction>import export</direction>
        </config>
      </route-target>
    </bgp-vrf>
  </vrf>
</network-instance>
</network-instances>
<bgp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp">
  <bgp-instance>
    <bgp-as>65010</bgp-as>
    <config>
      <bgp-as>65010</bgp-as>
    </config>
    <peer>
      <peer-address>10.143.73.3</peer-address>
      <config>
        <peer-address>10.143.73.3</peer-address>
        <peer-as>65010</peer-as>
        <source-identifier>lo</source-identifier>
      </config>
      <address-family>
        <afi>l2vpn</afi>
        <safi>evpn</safi>
        <config>
          <afi>l2vpn</afi>
          <safi>evpn</safi>
          <activate />
        </config>
      </address-family>
    </peer>
    <address-family>
      <afi>l2vpn</afi>
      <safi>evpn</safi>
      <config>
        <afi>l2vpn</afi>
        <safi>evpn</safi>

```

```

    </config>
  </address-family>
</bgp-instance>
</bgp>
<evpn-mpls xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-evpn-mpls">
  <mpls-tenant>
    <tenant-identifier>1001</tenant-identifier>
    <config>
      <vrf-name>vpls1001</vrf-name>
      <tenant-identifier>1001</tenant-identifier>
    </config>
  </mpls-tenant>
  <global>
    <config>
      <enable-evpn-mpls />
      <vtep-ipv4>10.143.73.1</vtep-ipv4>
    </config>
  </global>
</evpn-mpls>
<evpn xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-ethernet-vpn">
  <interfaces>
    <interface>
      <name>eth2.1001</name>
      <config>
        <name>eth2.1001</name>
      </config>
      <access-interfaces>
        <access-interface>
          <access-if>access-if-evpn</access-if>
          <config>
            <access-if>access-if-evpn</access-if>
            <evpn-identifier>1001</evpn-identifier>
          </config>
        </access-interface>
      </access-interfaces>
    </interface>
  </interfaces>
</evpn>
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>eth2.1001</name>
    <config>
      <enable-switchport />
    </config>
  </interface>
</interfaces>

```

OpenConfig NETCONF Payload

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <config>
      <name>default</name>
      <type
        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:DEFAULT_INSTANCE</type>

```



```

    </config>
  <protocols>
    <protocol>
      <identifier>
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
        <name>DIRECTLY_CONNECTED</name>
        <config>
          <identifier>
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:DIRECTLY_CONNECTED</identifier>
            <name>DIRECTLY_CONNECTED</name>
            <enabled>true</enabled>
          </config>
        </protocol>
      </protocol>
      <identifier>
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:OSPF</identifier>
        <name>100</name>
        <ospfv2>
          <global>
            <config>
              <router-id>10.143.73.1</router-id>
              <log-adjacency-changes>>false</log-adjacency-changes>
            </config>
          </global>
          <areas>
            <area>
              <identifier>0.0.0.0</identifier>
              <config>
                <identifier>0.0.0.0</identifier>
              </config>
              <interfaces>
                <interface>
                  <id>eth4</id>
                  <config>
                    <id>eth4</id>
                  </config>
                  <interface-ref>
                    <config>
                      <interface>eth4</interface>
                    </config>
                  </interface-ref>
                </interface>
                <interface>
                  <id>lo</id>
                  <config>
                    <id>lo</id>
                  </config>
                  <interface-ref>
                    <config>
                      <interface>lo</interface>
                    </config>
                  </interface-ref>
                </interface>
              </interfaces>

```

```

        </area>
    </areas>
</ospfv2>
<config>
    <identifier
types">oc-pol-types:OSPF</identifier>
        <name>100</name>
        <enabled>true</enabled>
    </config>
</protocol>
<protocol>
    <identifier
types">oc-pol-types:BGP</identifier>
        <name>65010</name>
    <bgp>
        <global>
            <config>
                <as>65010</as>
            </config>
            <afi-safis>
                <afi-safi>
                    <afi-safi-name
types">oc-bgp-types:L2VPN_EVPN</afi-safi-name>
                        <config>
                            <afi-safi-name
types">oc-bgp-types:L2VPN_EVPN</afi-safi-name>
                                    <enabled>true</enabled>
                        </config>
                    </afi-safi>
                </afi-safis>
            </global>
            <neighbors>
                <neighbor>
                    <neighbor-address>10.143.73.3</neighbor-address>
                    <afi-safis>
                        <afi-safi>
                            <afi-safi-name
types">oc-bgp-types:L2VPN_EVPN</afi-safi-name>
                                    <config>
                                        <afi-safi-name
types">oc-bgp-types:L2VPN_EVPN</afi-safi-name>
                                            <enabled>true</enabled>
                                        </config>
                                    </afi-safi>
                                </afi-safis>
                            <config>
                                <enabled>true</enabled>
                                <neighbor-address>10.143.73.3</neighbor-address>
                                <peer-as>65010</peer-as>
                            </config>
                        </transport>
                    <config>

```

```

        <local-address>lo</local-address>
    </config>
</transport>
</neighbor>
</neighbors>
</bgp>
<config>
    <identifier
types">oc-pol-types:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:DIRECTLY_CONNECTED</protocol>
        <name>65010</name>
        <enabled>true</enabled>
    </config>
</protocol>
</protocols>
<tables>
    <table>
        <protocol
types">oc-pol-types:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
types:IPV4</address-family>
        <config>
            <protocol
types">oc-pol-types:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:DIRECTLY_CONNECTED</protocol>
                <address-family
types">oc-types:oc-types="http://openconfig.net/yang/openconfig-
types">oc-types:IPV4</address-family>
                    <config>
                        <protocol
types">oc-pol-types:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:DIRECTLY_CONNECTED</protocol>
                            <address-family
types">oc-types:oc-types="http://openconfig.net/yang/openconfig-
types">oc-types:IPV6</address-family>
                                <config>
                                    <protocol
types">oc-pol-types:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:DIRECTLY_CONNECTED</protocol>
                                        <address-family
types">oc-types:oc-types="http://openconfig.net/yang/openconfig-
types">oc-types:IPV6</address-family>
                                            <config>
                                                <protocol
types">oc-pol-types:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:STATIC</protocol>
                                                    <address-family
types">oc-types:oc-types="http://openconfig.net/yang/openconfig-
types">oc-types:IPV4</address-family>
                                                        <config>
                                                            <protocol
types">oc-pol-types:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:STATIC</protocol>

```

```

        <address-family
          xmlns:oc-types="http://openconfig.net/yang/openconfig-
types">oc-types:IPV4</address-family>
        </config>
      </table>
    <table>
      <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:STATIC</protocol>
      <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPV6</address-family>
      <config>
        <protocol
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:STATIC</protocol>
          <address-family
            xmlns:oc-types="http://openconfig.net/yang/openconfig-
types">oc-types:IPV6</address-family>
          </config>
        </table>
      </table>
      <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:OSPF</protocol>
      <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPV4</address-family>
      <config>
        <protocol
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:OSPF</protocol>
          <address-family
            xmlns:oc-types="http://openconfig.net/yang/openconfig-
types">oc-types:IPV4</address-family>
          </config>
        </table>
      </table>
      <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
      <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPV4</address-family>
      <config>
        <protocol
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:BGP</protocol>
          <address-family
            xmlns:oc-types="http://openconfig.net/yang/openconfig-
types">oc-types:IPV4</address-family>
          </config>
        </table>
      </table>
      <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
      <address-family

```

```

        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPV6</address-family>
        <config>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:BGP</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-
types">oc-types:IPV6</address-family>
        </config>
        </table>
        <table>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:MPLS</address-family>
        <config>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:BGP</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-
types">oc-types:MPLS</address-family>
        </config>
        </table>
        </tables>
        </network-instance>
        <network-instance>
        <name>vpls1001</name>
        <config>
        <name>vpls1001</name>
        <type
        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2L3</type>
        <router-id>10.143.73.1</router-id>
        <route-distinguisher>10.143.73.1:1001</route-distinguisher>
        </config>
        <encapsulation>
        <config>
        <encapsulation-type
        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:MPLS</encapsulation-type>
        </config>
        </encapsulation>
        <inter-instance-policies>
        <import-export-policy>
        <config>
        <export-route-target>1001:1001</export-route-target>
        <import-route-target>1001:1001</import-route-target>
        </config>
        </import-export-policy>
        </inter-instance-policies>
        <connection-points>
        <connection-point>
        <connection-point-id>1001</connection-point-id>
        <config>

```

```

        <connection-point-id>1001</connection-point-id>
    </config>
</endpoints>
    <endpoint>
        <endpoint-id>1001</endpoint-id>
        <config>
            <endpoint-id>1001</endpoint-id>
        </config>
        <local>
            <config>
                <interface>eth2</interface>
                <subinterface>1001</subinterface>
            </config>
        </local>
        <remote/>
    </endpoint>
</endpoints>
</connection-point>
</connection-points>
<evpn>
    <evpn-instances>
        <evpn-instance>
            <evi>1001</evi>
            <config>
                <evi>1001</evi>
                <encapsulation-type
                    xmlns:oc-ni-types="http://openconfig.net/yang/network-
instance-types">oc-ni-types:MPLS</encapsulation-type>
            </config>
        </evpn-instance>
    </evpn-instances>
</evpn>
</network-instance>
</network-instances>

```

Validation with NetConf get

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
    <network-instance>
        <name>default</name>
        <config>
            <name>default</name>
            <type
                xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:DEFAULT_INSTANCE</type>
            </config>
            <state>
                <name>default</name>
                <type
                    xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:DEFAULT_INSTANCE</type>
                </state>
            <protocols>
                <protocol>
                    <identifier>

```

```

      xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</identifier>
      <name>DIRECTLY_CONNECTED</name>
      <config>
        <identifier
      pol-types:DIRECTLY_CONNECTED</identifier>
        <name>DIRECTLY_CONNECTED</name>
        <enabled>true</enabled>
      </config>
      <state>
        <identifier
      pol-types:DIRECTLY_CONNECTED</identifier>
        <name>DIRECTLY_CONNECTED</name>
        <enabled>true</enabled>
      </state>
    </protocol>
  </protocol>
  <identifier
types:OSPF</identifier>
    <name>100</name>
    <ospfv2>
      <global>
        <config>
          <router-id>10.143.73.1</router-id>
          <log-adjacency-changes>>false</log-adjacency-changes>
        </config>
        <state>
          <log-adjacency-changes>>false</log-adjacency-changes>
          <router-id>10.143.73.1</router-id>
        </state>
      </global>
      <areas>
        <area>
          <identifier>0.0.0.0</identifier>
          <config>
            <identifier>0.0.0.0</identifier>
          </config>
          <state>
            <identifier>0.0.0.0</identifier>
          </state>
          <interfaces>
            <interface>
              <id>eth4</id>
              <config>
                <id>eth4</id>
              </config>
              <interface-ref>
                <config>
                  <interface>eth4</interface>
                </config>
              </interface-ref>
              <state>
                <id>eth4</id>
              </state>
            </interface>
          </interfaces>
        </area>
      </areas>
    </ospfv2>
  </identifier>

```

```

        </interface>
        <interface>
            <id>lo</id>
            <config>
                <id>lo</id>
            </config>
            <interface-ref>
                <config>
                    <interface>lo</interface>
                </config>
            </interface-ref>
            <state>
                <id>lo</id>
            </state>
        </interface>
    </interfaces>
</area>
</areas>
</ospfv2>
<config>
    <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:OSPF</identifier>
        <name>100</name>
        <enabled>true</enabled>
    </config>
</protocol>
<protocol>
    <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</identifier>
        <name>65010</name>
        <bgp>
            <global>
                <config>
                    <as>65010</as>
                </config>
                <state>
                    <as>65010</as>
                    <total-prefixes>0</total-prefixes>
                </state>
                <afi-safis>
                    <afi-safi>
                        <afi-safi-name
                            xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:L2VPN_EVPN</afi-safi-name>
                        <config>
                            <afi-safi-name
                                xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:L2VPN_EVPN</afi-safi-name>
                                <enabled>true</enabled>
                            </config>
                            <add-paths>
                                <state>
                                    <receive>false</receive>
                                    <send>false</send>
                                </state>

```



```

        </add-paths>
        <state>
            <afi-safi-name
                xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:L2VPN_EVPN</afi-safi-name>
                <enabled>true</enabled>
            </state>
        </afi-safi>
    </afi-safis>
</global>
<neighbors>
    <neighbor>
        <neighbor-address>10.143.73.3</neighbor-address>
        <afi-safis>
            <afi-safi>
                <afi-safi-name
                    xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:L2VPN_EVPN</afi-safi-name>
                <config>
                    <afi-safi-name
                        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:L2VPN_EVPN</afi-safi-name>
                        <enabled>true</enabled>
                    </config>
                    <state>
                        <afi-safi-name
                            xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:L2VPN_EVPN</afi-safi-name>
                            <enabled>true</enabled>
                        </state>
                    </afi-safi>
                </afi-safis>
            <config>
                <enabled>true</enabled>
                <neighbor-address>10.143.73.3</neighbor-address>
                <peer-as>65010</peer-as>
            </config>
            <transport>
                <config>
                    <local-address>lo</local-address>
                </config>
                <state>
                    <local-address>lo</local-address>
                </state>
            </transport>
            <state>
                <enabled>true</enabled>
                <neighbor-address>10.143.73.3</neighbor-address>
                <peer-as>65010</peer-as>
            </state>
        </neighbor>
    </neighbors>
</bgp>
<config>
    <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGPP</identifier>
    <name>65010</name>

```

```

        <enabled>true</enabled>
    </config>
    <state>
        <enabled>true</enabled>
        <identifier
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</identifier>
            <name>65010</name>
        </state>
    </protocol>
</protocols>
<tables>
    <table>
        <protocol
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</protocol>
            <address-family
                xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
                <config>
                    <protocol
                        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
                        <address-family
                            xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
                            <config>
                                <state>
                                    <protocol
                                        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
                                        <address-family
                                            xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
                                            </state>
                                        </table>
                                    </table>
                                </config>
                            </state>
                        </table>
                    </table>
                </config>
            </address-family>
            <config>
                <protocol
                    xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
                    <address-family
                        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
                        <config>
                            <protocol
                                xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
                                <address-family
                                    xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
                                    <config>
                                        <state>
                                            <protocol
                                                xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
                                                <address-family
                                                    xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
                                                    </state>
                                                </table>
                                            </table>
                                        </config>
                                    </state>
                                </table>
                            </config>
                        </address-family>
                    </config>
                </table>
            </table>
        </table>
    </table>

```

```

    </table>
    <table>
      <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:STATIC</protocol>
      <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
      <config>
        <protocol
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:STATIC</protocol>
          <address-family
            xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
          </config>
        </table>
      <table>
        <protocol
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:STATIC</protocol>
          <address-family
            xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
          <config>
            <protocol
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:STATIC</protocol>
              <address-family
                xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
              </config>
            </table>
          <table>
            <protocol
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:OSPF</protocol>
              <address-family
                xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
              <config>
                <protocol
                  xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:OSPF</protocol>
                  <address-family
                    xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
                  </config>
                </table>
              <table>
                <protocol
                  xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</protocol>
                  <address-family
                    xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
                  <config>
                    <protocol

```

```

        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
        </config>
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        <table>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
        <config>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
        </config>
        </table>
        <table>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:MPLS</address-family>
        <config>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:MPLS</address-family>
        </config>
        <state>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:MPLS</address-family>
        </state>
        </table>
        </tables>
        <interfaces>
        <interface>
        <id>eth0</id>
        <config>
        <id>eth0</id>
        <interface>eth0</interface>
        </config>
        <state>
        <id>eth0</id>
        <interface>eth0</interface>
        </state>

```

```
</interface>
<interface>
  <id>eth1</id>
  <config>
    <id>eth1</id>
    <interface>eth1</interface>
  </config>
  <state>
    <id>eth1</id>
    <interface>eth1</interface>
  </state>
</interface>
<interface>
  <id>eth2</id>
  <config>
    <id>eth2</id>
    <interface>eth2</interface>
  </config>
  <state>
    <id>eth2</id>
    <interface>eth2</interface>
  </state>
</interface>
<interface>
  <id>eth2.1001</id>
  <config>
    <id>eth2.1001</id>
    <interface>eth2</interface>
    <subinterface>1001</subinterface>
  </config>
  <state>
    <id>eth2.1001</id>
    <interface>eth2</interface>
    <subinterface>1001</subinterface>
  </state>
</interface>
<interface>
  <id>eth3</id>
  <config>
    <id>eth3</id>
    <interface>eth3</interface>
  </config>
  <state>
    <id>eth3</id>
    <interface>eth3</interface>
  </state>
</interface>
<interface>
  <id>eth4</id>
  <config>
    <id>eth4</id>
    <interface>eth4</interface>
  </config>
  <state>
    <id>eth4</id>
    <interface>eth4</interface>
  </state>
</interface>
```

```
</interface>
<interface>
  <id>eth5</id>
  <config>
    <id>eth5</id>
    <interface>eth5</interface>
  </config>
  <state>
    <id>eth5</id>
    <interface>eth5</interface>
  </state>
</interface>
<interface>
  <id>eth6</id>
  <config>
    <id>eth6</id>
    <interface>eth6</interface>
  </config>
  <state>
    <id>eth6</id>
    <interface>eth6</interface>
  </state>
</interface>
<interface>
  <id>eth7</id>
  <config>
    <id>eth7</id>
    <interface>eth7</interface>
  </config>
  <state>
    <id>eth7</id>
    <interface>eth7</interface>
  </state>
</interface>
<interface>
  <id>eth8</id>
  <config>
    <id>eth8</id>
    <interface>eth8</interface>
  </config>
  <state>
    <id>eth8</id>
    <interface>eth8</interface>
  </state>
</interface>
<interface>
  <id>lo</id>
  <config>
    <id>lo</id>
    <interface>lo</interface>
  </config>
  <state>
    <id>lo</id>
    <interface>lo</interface>
  </state>
</interface>
</interfaces>
```

```

<mpls>
  <signaling-protocols>
    <ldp>
      <interface-attributes>
        <interfaces>
          <interface>
            <interface-id>eth4</interface-id>
            <config>
              <interface-id>eth4</interface-id>
            </config>
            <address-families>
              <address-family>
                <afi-name>IPV4</afi-name>
                <config>
                  <afi-name>IPV4</afi-name>
                  <enabled>true</enabled>
                </config>
              </address-family>
              <address-family>
                <afi-name>IPV6</afi-name>
                <config>
                  <afi-name>IPV6</afi-name>
                  <enabled>false</enabled>
                </config>
              </address-family>
            </address-families>
          </interface>
        </interfaces>
      </interface-attributes>
    </ldp>
  </signaling-protocols>
</global>
<interface-attributes>
  <interface>
    <interface-id>eth4</interface-id>
    <config>
      <interface-id>eth4</interface-id>
      <mpls-enabled>true</mpls-enabled>
    </config>
    <interface-ref>
      <config>
        <interface>eth4</interface>
      </config>
    </interface-ref>
    <state>
      <mpls-enabled>true</mpls-enabled>
    </state>
  </interface>
</interface-attributes>
</global>
</mpls>
</network-instance>
<network-instance>
  <name>vppls1001</name>
  <config>
    <name>vppls1001</name>
    <type>

```

```

        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2L3</type>
        <router-id>10.143.73.1</router-id>
        <route-distinguisher>10.143.73.1:1001</route-distinguisher>
    </config>
    <encapsulation>
        <config>
            <encapsulation-type
types">oc-ni-types:MPLS</encapsulation-type>
            </config>
            <state>
                <encapsulation-type
types">oc-ni-types:MPLS</encapsulation-type>
                </state>
            </encapsulation>
            <state>
                <name>vppls1001</name>
                <type
types">oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2L3</type>
                <router-id>10.143.73.1</router-id>
                <route-distinguisher>10.143.73.1:1001</route-distinguisher>
            </state>
            <inter-instance-policies>
                <import-export-policy>
                    <config>
                        <export-route-target>1001:1001</export-route-target>
                        <import-route-target>1001:1001</import-route-target>
                    </config>
                    <state>
                        <export-route-target>1001:1001</export-route-target>
                        <import-route-target>1001:1001</import-route-target>
                    </state>
                </import-export-policy>
            </inter-instance-policies>
            <connection-points>
                <connection-point>
                    <connection-point-id>1001</connection-point-id>
                    <config>
                        <connection-point-id>1001</connection-point-id>
                    </config>
                    <endpoints>
                        <endpoint>
                            <endpoint-id>1001</endpoint-id>
                            <config>
                                <endpoint-id>1001</endpoint-id>
                            </config>
                            <state>
                                <endpoint-id>1001</endpoint-id>
                            </state>
                            <local>
                                <config>
                                    <interface>eth2</interface>
                                    <subinterface>1001</subinterface>
                                </config>

```



```

        <state>
            <interface>eth2</interface>
            <subinterface>1001</subinterface>
        </state>
    </local>
    <remote/>
</endpoint>
</endpoints>
<state>
    <connection-point-id>1001</connection-point-id>
</state>
</connection-point>
</connection-points>
<evpn>
    <evpn-instances>
        <evpn-instance>
            <evi>1001</evi>
            <config>
                <evi>1001</evi>
                <encapsulation-type
types">oc-ni-types:MPLS</encapsulation-type>
            </config>
            <state>
                <evi>1001</evi>
                <encapsulation-type
types">oc-ni-types:MPLS</encapsulation-type>
            </state>
            </evpn-instance>
        </evpn-instances>
    </evpn>
</network-instance>
</network-instances>

```

Restrictions

- The paths below do not have a translation from Open Config model to OcNOS model, If user try to apply a configuration using with only paths below, it will not be applied on OcNOS side:
 /network-instances/network-instance/connection-points
 /network-instances/network-instance/connection-points/connection-point/endpoints
 Those containers are used only to handle "virtual-circuit-identifier" attribute and "local" container, and only when those attributes are configured the translation will translate the configuration.
- /network-instances/network-instance/connection-points
 The deletion of this attribute will only delete the configurations of "virtual-circuit-identifier" and "local" container. In order to delete all configuration from "evpn-mpls" container, the delete operation must be placed on the path /
 network-instances/network-instance/evpn/evpn-instances/evpn-instance[evi].

Configure EVPN-VPWS type

This XML configuration snippet is used to configure EVPN-VPWS type.

Release

This configuration was introduced in OcNOS version 6.1.0.

Initial Configuration:

```
router ldp
!
interface lo
 ip address 10.143.73.1/32 secondary
!
interface eth4
 ip address 10.255.128.8/31
 label-switching
 enable-ldp ipv4
!
interface eth2.2 switchport
 encapsulation dot1q 2
!
ospf area-interface-config-mode
 router ospf 100
 ospf router-id 10.143.73.1
 area 0.0.0.0 interface eth4
 area 0.0.0.0 interface lo
```

OcNOS CLI Command

```
evpn mpls enable
!
mac vrf vrf2
 router-id 10.143.73.1
 rd 10.143.73.1:2
 route-target both 2:2
!
evpn mpls vtep-ip-global 10.143.73.1
!
evpn mpls id 2 xconnect target-mpls-id 252
 host-reachability-protocol evpn-bgp vrf2
!
interface eth2.2 switchport
 encapsulation dot1q 2
 access-if-evpn
 map vpn-id 2
!
router bgp 65010
 neighbor 10.143.73.3 remote-as 65010
 neighbor 10.143.73.3 update-source lo
!
 address-family l2vpn evpn
 neighbor 10.143.73.3 activate
 exit-address-family
```

OcNOS NetConf Payload

```
<network-instances xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-network-
instance">
  <network-instance>
    <instance-name>default</instance-name>
    <instance-type>vrf</instance-type>
    <vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vrf">
      <config>
        <vrf-name>default</vrf-name>
      </config>
    </vrf>
    <config>
      <instance-name>default</instance-name>
      <instance-type>vrf</instance-type>
    </config>
  </network-instance>
  <network-instance>
    <instance-name>vrf2</instance-name>
    <instance-type>mac-vrf</instance-type>
    <config>
      <instance-name>vrf2</instance-name>
      <instance-type>mac-vrf</instance-type>
    </config>
    <vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-vrf">
      <config>
        <vrf-name>vrf2</vrf-name>
      </config>
      <bgp-vrf xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp-vrf">
        <config>
          <rd-string>10.143.73.1:2</rd-string>
        </config>
        <route-target>
          <rt-rd-string>2:2</rt-rd-string>
          <config>
            <rt-rd-string>2:2</rt-rd-string>
            <direction>import export</direction>
          </config>
        </route-target>
      </bgp-vrf>
    </vrf>
  </network-instance>
</network-instances>
<bgp xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-bgp">
  <bgp-instance>
    <bgp-as>65010</bgp-as>
    <config>
      <bgp-as>65010</bgp-as>
    </config>
    <peer>
      <peer-address>10.143.73.3</peer-address>
      <config>
        <peer-address>10.143.73.3</peer-address>
        <peer-as>65010</peer-as>
        <source-identifier>lo</source-identifier>
      </config>
    </peer>
  </bgp-instance>
</bgp>
```

```

    <afi>l2vpn</afi>
    <safi>evpn</safi>
    <config>
      <afi>l2vpn</afi>
      <safi>evpn</safi>
      <activate />
    </config>
  </address-family>
</peer>
<address-family>
  <afi>l2vpn</afi>
  <safi>evpn</safi>
  <config>
    <afi>l2vpn</afi>
    <safi>evpn</safi>
  </config>
</address-family>
</bgp-instance>
</bgp>
<evpn-mpls xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-evpn-mpls">
  <mpls-tenant>
    <tenant-identifier>2</tenant-identifier>
    <config>
      <vrf-name>vrf2</vrf-name>
      <tenant-identifier>2</tenant-identifier>
      <vpws-identifier>252</vpws-identifier>
    </config>
  </mpls-tenant>
</global>
  <config>
    <enable-evpn-mpls />
    <vtep-ipv4>10.143.73.1</vtep-ipv4>
  </config>
</global>
</evpn-mpls>
<evpn xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-ethernet-vpn">
  <interfaces>
    <interface>
      <name>eth2.2</name>
      <config>
        <name>eth2.2</name>
      </config>
      <access-interfaces>
        <access-interface>
          <access-if>access-if-evpn</access-if>
          <config>
            <access-if>access-if-evpn</access-if>
            <evpn-identifier>2</evpn-identifier>
          </config>
        </access-interface>
      </access-interfaces>
    </interface>
  </interfaces>
</evpn>
<interfaces xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-interface">
  <interface>
    <name>eth2.2</name>

```

```

    <config>
      <enable-switchport />
    </config>
  </interface>
</interfaces>

```

OpenConfig NETCONF Payload

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <config>
      <name>default</name>
      <type
        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:DEFAULT_INSTANCE</type>
      </config>
      <protocols>
        <protocol>
          <identifier
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</identifier>
          <name>DIRECTLY_CONNECTED</name>
          <config>
            <identifier
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
            <name>DIRECTLY_CONNECTED</name>
            <enabled>true</enabled>
          </config>
        </protocol>
        <protocol>
          <identifier
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:OSPF</identifier>
          <name>100</name>
          <ospfv2>
            <global>
              <config>
                <router-id>10.143.73.1</router-id>
                <log-adjacency-changes>false</log-adjacency-changes>
              </config>
            </global>
            <areas>
              <area>
                <identifier>0.0.0.0</identifier>
                <config>
                  <identifier>0.0.0.0</identifier>
                </config>
                <interfaces>
                  <interface>
                    <id>eth4</id>
                    <config>
                      <id>eth4</id>
                    </config>
                    <interface-ref>

```

```

        <config>
            <interface>eth4</interface>
        </config>
    </interface-ref>
</interface>
<interface>
    <id>lo</id>
    <config>
        <id>lo</id>
    </config>
    <interface-ref>
        <config>
            <interface>lo</interface>
        </config>
    </interface-ref>
</interface>
</interfaces>
</area>
</areas>
</ospfv2>
<config>
    <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:OSPF</identifier>
        <name>100</name>
        <enabled>true</enabled>
    </config>
</protocol>
<protocol>
    <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</identifier>
        <name>65010</name>
        <bgp>
            <global>
                <config>
                    <as>65010</as>
                </config>
                <afi-safis>
                    <afi-safi>
                        <afi-safi-name
                            xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:L2VPN_EVPN</afi-safi-name>
                        <config>
                            <afi-safi-name
                                xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:L2VPN_EVPN</afi-safi-name>
                                <enabled>true</enabled>
                            </config>
                        </afi-safi>
                    </afi-safis>
                </global>
            <neighbors>
                <neighbor>
                    <neighbor-address>10.143.73.3</neighbor-address>
                    <afi-safis>
                        <afi-safi>

```

```

    <afi-safi-name
      xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:L2VPN_EVPN</afi-safi-name>
    <config>
      <afi-safi-name
        xmlns:oc-bgp-types="http://openconfig.net/yang/bgp-
types">oc-bgp-types:L2VPN_EVPN</afi-safi-name>
        <enabled>true</enabled>
      </config>
    </afi-safi>
  </afi-safis>
  <config>
    <enabled>true</enabled>
    <neighbor-address>10.143.73.3</neighbor-address>
    <peer-as>65010</peer-as>
  </config>
  <transport>
    <config>
      <local-address>lo</local-address>
    </config>
  </transport>
</neighbor>
</neighbors>
</bgp>
<config>
  <identifier
    xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGPP</identifier>
    <name>65010</name>
    <enabled>true</enabled>
  </config>
</protocol>
</protocols>
<tables>
  <table>
    <protocol
      xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</protocol>
      <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
        <config>
          <protocol
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
            <address-family
              xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
              </config>
            </table>
          <table>
            <protocol
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</protocol>
              <address-family
                xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
                <config>

```

```

        <protocol
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family
          xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPV6</address-family>
        </config>
      </table>
    </table>
    <protocol
      xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:STATIC</protocol>
      <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPV4</address-family>
      <config>
        <protocol
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:STATIC</protocol>
          <address-family
            xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPV4</address-family>
          </config>
        </table>
      </table>
      <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:STATIC</protocol>
        <address-family
          xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPV6</address-family>
        <config>
          <protocol
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:STATIC</protocol>
            <address-family
              xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPV6</address-family>
            </config>
          </table>
        </table>
        <protocol
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:OSPF</protocol>
          <address-family
            xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPV4</address-family>
          <config>
            <protocol
              xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:OSPF</protocol>
              <address-family
                xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPV4</address-family>
              </config>
            </table>
          </table>
        <protocol

```



```

        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
        <config>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
        </config>
        </table>
        <table>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
        <config>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
        </config>
        </table>
        <table>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:MPLS</address-family>
        <config>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:MPLS</address-family>
        </config>
        </table>
        </tables>
    </network-instance>
    <network-instance>
        <name>vrf2</name>
        <config>
            <name>vrf2</name>
            <type
            xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2L3</type>
            <router-id>10.143.73.1</router-id>
            <route-distinguisher>10.143.73.1:2</route-distinguisher>
            </config>
            <encapsulation>

```

```

    <config>
      <encapsulation-type
        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:MPLS</encapsulation-type>
      </config>
    </encapsulation>
    <inter-instance-policies>
      <import-export-policy>
        <config>
          <export-route-target>2:2</export-route-target>
          <import-route-target>2:2</import-route-target>
        </config>
      </import-export-policy>
    </inter-instance-policies>
    <connection-points>
      <connection-point>
        <connection-point-id>2</connection-point-id>
        <config>
          <connection-point-id>2</connection-point-id>
        </config>
        <endpoints>
          <endpoint>
            <endpoint-id>2</endpoint-id>
            <config>
              <endpoint-id>2</endpoint-id>
            </config>
            <local>
              <config>
                <interface>eth2</interface>
                <subinterface>2</subinterface>
              </config>
            </local>
            <remote>
              <config>
                <virtual-circuit-identifier>252</virtual-circuit-identifier>
              </config>
            </remote>
          </endpoint>
        </endpoints>
      </connection-point>
    </connection-points>
    <evpn>
      <evpn-instances>
        <evpn-instance>
          <evi>2</evi>
          <config>
            <evi>2</evi>
            <encapsulation-type
              xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:MPLS</encapsulation-type>
            </config>
          </evpn-instance>
        </evpn-instances>
      </evpn>
    </network-instance>
  </network-instances>

```

Validation with NetConf get

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <config>
      <name>default</name>
      <type
        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:DEFAULT_INSTANCE</type>
      </config>
    <state>
      <name>default</name>
      <type
        xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:DEFAULT_INSTANCE</type>
      </state>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</identifier>
        <name>DIRECTLY_CONNECTED</name>
        <config>
          <identifier
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
          <name>DIRECTLY_CONNECTED</name>
          <enabled>true</enabled>
        </config>
        <state>
          <identifier
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</identifier>
          <name>DIRECTLY_CONNECTED</name>
          <enabled>true</enabled>
        </state>
      </protocol>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:OSPF</identifier>
        <name>100</name>
        <ospfv2>
          <global>
            <config>
              <router-id>10.143.73.1</router-id>
              <log-adjacency-changes>false</log-adjacency-changes>
            </config>
            <state>
              <log-adjacency-changes>false</log-adjacency-changes>
              <router-id>10.143.73.1</router-id>
            </state>
          </global>
          <areas>
            <area>
              <identifier>0.0.0.0</identifier>
              <config>
```

```

        <identifier>0.0.0.0</identifier>
    </config>
    <state>
        <identifier>0.0.0.0</identifier>
    </state>
    <interfaces>
        <interface>
            <id>eth4</id>
            <config>
                <id>eth4</id>
            </config>
            <interface-ref>
                <config>
                    <interface>eth4</interface>
                </config>
            </interface-ref>
            <state>
                <id>eth4</id>
            </state>
        </interface>
        <interface>
            <id>lo</id>
            <config>
                <id>lo</id>
            </config>
            <interface-ref>
                <config>
                    <interface>lo</interface>
                </config>
            </interface-ref>
            <state>
                <id>lo</id>
            </state>
        </interface>
    </interfaces>
</area>
</areas>
</ospfv2>
<config>
    <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:OSPF</identifier>
        <name>100</name>
        <enabled>true</enabled>
    </config>
</protocol>
<protocol>
    <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</identifier>
        <name>65010</name>
    <bgp>
        <global>
            <config>
                <as>65010</as>
            </config>
            <state>

```

```

        <as>65010</as>
        <total-prefixes>0</total-prefixes>
    </state>
    <afi-safis>
        <afi-safi>
            <afi-safi-name
types">oc-bgp-types:L2VPN_EVPN</afi-safi-name>
            <config>
                <afi-safi-name
types">oc-bgp-types:L2VPN_EVPN</afi-safi-name>
                <enabled>true</enabled>
            </config>
            <add-paths>
                <state>
                    <receive>false</receive>
                    <send>false</send>
                </state>
            </add-paths>
            <state>
                <afi-safi-name
types">oc-bgp-types:L2VPN_EVPN</afi-safi-name>
                <enabled>true</enabled>
            </state>
        </afi-safi>
    </afi-safis>
</global>
<neighbors>
    <neighbor>
        <neighbor-address>10.143.73.3</neighbor-address>
        <afi-safis>
            <afi-safi>
                <afi-safi-name
types">oc-bgp-types:L2VPN_EVPN</afi-safi-name>
                <config>
                    <afi-safi-name
types">oc-bgp-types:L2VPN_EVPN</afi-safi-name>
                    <enabled>true</enabled>
                </config>
                <state>
                    <afi-safi-name
types">oc-bgp-types:L2VPN_EVPN</afi-safi-name>
                    <enabled>true</enabled>
                </state>
            </afi-safi>
        </afi-safis>
        <config>
            <enabled>true</enabled>
            <neighbor-address>10.143.73.3</neighbor-address>
            <peer-as>65010</peer-as>
        </config>
    </neighbor>
</neighbors>
    <transport>
        <config>

```

```

        <local-address>lo</local-address>
    </config>
    <state>
        <local-address>lo</local-address>
    </state>
</transport>
<state>
    <enabled>true</enabled>
    <neighbor-address>10.143.73.3</neighbor-address>
    <peer-as>65010</peer-as>
</state>
</neighbor>
</neighbors>
</bgp>
<config>
    <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</identifier>
        <name>65010</name>
        <enabled>true</enabled>
    </config>
    <state>
        <enabled>true</enabled>
        <identifier
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</identifier>
            <name>65010</name>
        </state>
    </protocol>
</protocols>
<tables>
    <table>
        <protocol
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</protocol>
            <address-family
                xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
                <config>
                    <protocol
                        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
                        <address-family
                            xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
                            <config>
                                <state>
                                    <protocol
                                        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
                                        <address-family
                                            xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
                                            </state>
                                        </table>
                                    <table>
                                        <protocol

```

```

        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:DIRECTLY_CONNECTED</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
        <config>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
        </config>
        <state>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:DIRECTLY_CONNECTED</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
        </state>
        </table>
        <table>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:STATIC</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
        <config>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:STATIC</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
        </config>
        </table>
        <table>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:STATIC</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
        <config>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:STATIC</protocol>
        <address-family
        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
        </config>
        </table>
        <table>
        <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:OSPF</protocol>
        <address-family

```

```

        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
    <config>
        <protocol
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:OSPF</protocol>
            <address-family
                xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
            </config>
        </table>
    </table>
    <protocol
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</protocol>
        <address-family
            xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
        <config>
            <protocol
                xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
                <address-family
                    xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv4</address-family>
                </config>
            </table>
        </table>
        <protocol
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</protocol>
            <address-family
                xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
            <config>
                <protocol
                    xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
                    <address-family
                        xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:IPv6</address-family>
                    </config>
                </table>
            </table>
            <protocol
                xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:BGP</protocol>
                <address-family
                    xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:MPLS</address-family>
                <config>
                    <protocol
                        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
                        <address-family
                            xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:MPLS</address-family>
                        </config>
                    </state>

```



```
<protocol
  xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:BGP</protocol>
  <address-family
    xmlns:oc-types="http://openconfig.net/yang/openconfig-types">oc-
types:MPLS</address-family>
    </state>
  </table>
</tables>
<interfaces>
  <interface>
    <id>eth0</id>
    <config>
      <id>eth0</id>
      <interface>eth0</interface>
    </config>
  </interface>
  <interface>
    <id>eth1</id>
    <config>
      <id>eth1</id>
      <interface>eth1</interface>
    </config>
  </interface>
  <interface>
    <id>eth2</id>
    <config>
      <id>eth2</id>
      <interface>eth2</interface>
    </config>
  </interface>
  <interface>
    <id>eth2.2</id>
    <config>
      <id>eth2.2</id>
      <interface>eth2</interface>
      <subinterface>2</subinterface>
    </config>
  </interface>
  <interface>
    <id>eth3</id>
    <config>
      <id>eth3</id>
      <interface>eth3</interface>
    </config>
  </interface>
  <interface>
    <id>eth4</id>
    <config>
      <id>eth4</id>
      <interface>eth4</interface>
    </config>
  </interface>
  <interface>
    <id>eth5</id>
    <config>
      <id>eth5</id>
```

```

    <interface>eth5</interface>
  </config>
</interface>
<interface>
  <id>eth6</id>
  <config>
    <id>eth6</id>
    <interface>eth6</interface>
  </config>
</interface>
<interface>
  <id>eth7</id>
  <config>
    <id>eth7</id>
    <interface>eth7</interface>
  </config>
</interface>
<interface>
  <id>eth8</id>
  <config>
    <id>eth8</id>
    <interface>eth8</interface>
  </config>
</interface>
<interface>
  <id>lo</id>
  <config>
    <id>lo</id>
    <interface>lo</interface>
  </config>
</interface>
</interfaces>
<mpls>
  <signaling-protocols>
    <ldp>
      <interface-attributes>
        <interfaces>
          <interface>
            <interface-id>eth4</interface-id>
            <config>
              <interface-id>eth4</interface-id>
            </config>
            <address-families>
              <address-family>
                <afi-name>IPV4</afi-name>
                <config>
                  <afi-name>IPV4</afi-name>
                  <enabled>true</enabled>
                </config>
              </address-family>
              <address-family>
                <afi-name>IPV6</afi-name>
                <config>
                  <afi-name>IPV6</afi-name>
                  <enabled>false</enabled>
                </config>
              </address-family>
            </address-families>
          </interface>
        </interfaces>
      </interface-attributes>
    </ldp>
  </signaling-protocols>
</mpls>

```

```

        </address-families>
    </interface>
</interfaces>
</interface-attributes>
</ldp>
</signaling-protocols>
<global>
    <interface-attributes>
        <interface>
            <interface-id>eth4</interface-id>
            <config>
                <interface-id>eth4</interface-id>
                <mpls-enabled>true</mpls-enabled>
            </config>
            <interface-ref>
                <config>
                    <interface>eth4</interface>
                </config>
            </interface-ref>
            <state>
                <mpls-enabled>true</mpls-enabled>
            </state>
        </interface>
    </interface-attributes>
</global>
</mpls>
</network-instance>
<network-instance>
    <name>vrf2</name>
    <config>
        <name>vrf2</name>
        <type
            xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2L3</type>
        <router-id>10.143.73.1</router-id>
        <route-distinguisher>10.143.73.1:2</route-distinguisher>
    </config>
    <encapsulation>
        <config>
            <encapsulation-type
                xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:MPLS</encapsulation-type>
            </config>
            <state>
                <encapsulation-type
                    xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:MPLS</encapsulation-type>
                </state>
            </encapsulation>
            <state>
                <name>vrf2</name>
                <type
                    xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:L2L3</type>
                <router-id>10.143.73.1</router-id>
                <route-distinguisher>10.143.73.1:2</route-distinguisher>
            </state>

```

```
<inter-instance-policies>
  <import-export-policy>
    <config>
      <export-route-target>2:2</export-route-target>
      <import-route-target>2:2</import-route-target>
    </config>
    <state>
      <export-route-target>2:2</export-route-target>
      <import-route-target>2:2</import-route-target>
    </state>
  </import-export-policy>
</inter-instance-policies>
<connection-points>
  <connection-point>
    <connection-point-id>2</connection-point-id>
    <config>
      <connection-point-id>2</connection-point-id>
    </config>
    <endpoints>
      <endpoint>
        <endpoint-id>2</endpoint-id>
        <config>
          <endpoint-id>2</endpoint-id>
        </config>
        <state>
          <endpoint-id>2</endpoint-id>
        </state>
        <local>
          <config>
            <interface>eth2</interface>
            <subinterface>2</subinterface>
          </config>
          <state>
            <interface>eth2</interface>
            <subinterface>2</subinterface>
          </state>
        </local>
        <remote>
          <config>
            <virtual-circuit-identifier>252</virtual-circuit-identifier>
          </config>
          <state>
            <virtual-circuit-identifier>252</virtual-circuit-identifier>
          </state>
        </remote>
      </endpoint>
    </endpoints>
    <state>
      <connection-point-id>2</connection-point-id>
    </state>
  </connection-point>
</connection-points>
<evpn>
  <evpn-instances>
    <evpn-instance>
      <evi>2</evi>
      <config>
```

```

        <evi>2</evi>
        <encapsulation-type
            xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:MPLS</encapsulation-type>
        </config>
        <state>
            <evi>2</evi>
            <encapsulation-type
                xmlns:oc-ni-types="http://openconfig.net/yang/network-instance-
types">oc-ni-types:MPLS</encapsulation-type>
            </state>
        </evpn-instance>
    </evpn-instances>
</evpn>
</network-instance>
</network-instances>

```

Restrictions

- The paths below do not have a translation from Open Config model to OcNOS model, If user try to apply a configuration using with only paths below, it will not be applied on OcNOS side:

```
/network-instances/network-instance/connection-points
```

```
/network-instances/network-instance/connection-points/connection-point/endpoints
```

Those containers are used only to handle "virtual-circuit-identifier" attribute and "local" container, and only when those attributes are configured the translation will translate the configuration.

```
/network-instances/network-instance/connection-point
```

- The deletion of this attribute will only delete the configurations of "virtual-circuit-identifier" and "local" container. In order to delete all configuration from "evpn-mpls" container, the delete operation must be placed on the path

```
/network-instances/network-instance/evpn/evpn-instances/evpn-instance
```

ISIS OpenConfig Translation

General Restrictions

Operation create

- NETCONF's `operation="create"` is only supported at objectlist elements, e.g. `/network-instances/network-instance/protocols/protocol/isis/interfaces/interface[interface-id]`. Payloads with this operation on other elements might have undefined behavior.

Deletion of AFI-SAFI

By default AF-IPv4 is always present on IS-IS global configuration and cannot be deleted. Deletion of this entry affects only its children configuration, if any. No error message is expected otherwise.

When deleting `/oc-netinst:network-instances/network-instance/protocols/protocol/isis/global/afi-safi` or `/oc-netinst:network-instances/network-instance/protocols/protocol/isis/global/afi-safi/af`, what will happen:

- The `operation="delete"` will be placed at the supported attribute's nodes.
- If AF-IPv6 is configured, it will remove the entire element from `af` object-list.

Create IS-IS instance

This XML configuration snippet is used to configure an IS-IS instance.

Release

This configuration was introduced in OcNOS version 6.4.1.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:ISIS</identifier>
        <name>ABC</name>
        <isis>
          <global>
            <afi-safi>
              <af>
                <afi-name
                  xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
                <safi-name
```

```

        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
        <config>
        <afi-name
        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
        <safi-name
        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
        </config>
        </af>
        </afi-safi>
        </global>
        </isis>
        <config>
        <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:ISIS</identifier>
        <name>ABC</name>
        <enabled>true</enabled>
        </config>
        </protocol>
        </protocols>
        </network-instance>
        </network-instances>

```

OcNOS CLI Command

```
router isis ABC
```

OcNOS NetConf Payload

```

<isis xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-isis">
  <isis-instances>
    <isis-instance>
      <instance>ABC</instance>
      <config>
        <instance>ABC</instance>
        <vrf-name>default</vrf-name>
      </config>
    </isis-instance>
  </isis-instances>
</isis>

```

Restrictions

- Cannot configure an instance without AF-IPv4 support.
- AF-IPv4 cannot be deleted.
- Only safi-name UNICAST is supported.
- operation="create" is not supported on the objectlist isis/global/afi-safi/af.

Configure global parameters

This XML configuration snippet is used to configure IS-IS global parameters:

- metric
- level-capability
- maximum-area-addresses
- net

Release

This configuration was introduced in OcNOS version 6.4.1.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:ISIS</identifier>
        <name>ABC</name>
        <isis>
          <global>
            <afi-safi>
              <afi>
                <afi-name
                  xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
                <safi-name
                  xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
                <config>
                  <afi-name
                    xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
                  <safi-name
                    xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
                  <metric>10</metric>
                </config>
              </afi>
            </afi-safi>
          <config>
            <level-capability>LEVEL_2</level-capability>
            <maximum-area-addresses>5</maximum-area-addresses>
            <net>49.0000.0000.0001.00</net>
          </config>
        </global>
      </isis>
    </config>
    <identifier
      xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:ISIS</identifier>
    <name>ABC</name>
    <enabled>true</enabled>
  </config>
</network-instance>
</network-instances>
```



```
    </protocol>
  </protocols>
</network-instance>
</network-instances>
```

OcNOS CLI Command

```
router isis ABC
  distance 10
  is-type level-2-only
  max-area-address 5
  net 49.0000.0000.0001.00
```

OcNOS NetConf Payload

```
<isis xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-isis">
  <isis-instances>
    <isis-instance>
      <instance>ABC</instance>
      <config>
        <instance>ABC</instance>
        <distance>10</distance>
        <vrf-name>default</vrf-name>
        <level-capability>level-2-only</level-capability>
        <maximum-area-addresses>5</maximum-area-addresses>
      </config>
      <network-entity-title>
        <config>
          <net>49.0000.0000.0001.00</net>
        </config>
      </network-entity-title>
    </isis-instance>
  </isis-instances>
</isis>
```

Restrictions

- N/A

Configure level traffic-engineering

This XML configuration snippet is used to configure IS-IS level traffic-engineering.

Release

This configuration was introduced in OcNOS version 6.4.1.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
```

```

    <protocols>
      <protocol>
        <identifier xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:ISIS</identifier>
        <name>ABC</name>
        <isis>
          <levels >
            <level >
              <level-number>1</level-number>
              <config >
                <metric-style>WIDE_METRIC</metric-style>
                <level-number>1</level-number>
              </config>
              <traffic-engineering >
                <config>
                  <ipv4-router-id operation='delete' />
                  <enabled>true</enabled>
                </config>
              </traffic-engineering>
            </level>
            <level >
              <level-number>2</level-number>
              <config>
                <metric-style>WIDE_METRIC</metric-style>
                <level-number>2</level-number>
              </config>
              <traffic-engineering>
                <config>
                  <ipv4-router-id />
                  <enabled>true</enabled>
                </config>
              </traffic-engineering>
            </level>
          </levels>
        </isis>
        <config>
          <identifier xmlns:oc-pol-types="http://openconfig.net/yang/policy-
types">oc-pol-types:ISIS</identifier>
          <name>ABC</name>
          <enabled>true</enabled>
        </config>
      </protocol>
    </protocols>
  </network-instance>
</network-instances>

```

OcNOS CLI Command

```

router isis ABC
mpls traffic-eng router-id 10.10.0.23

router isis ABC
mpls traffic-eng ipv6 router-id 10.10.0.23

```

OcNOS NetConf Payload

```
<isis xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-isis">
  <isis-instances>
    <isis-instance>
      <instance>ABC</instance>
      <config>
        <instance>ABC</instance>
        <vrf-name>default</vrf-name>
      </config>
      <metric>
        <style>wide</style>
        <level-number>level-1-2</level-number>
        <config>
          <style>wide</style>
          <level-number>level-1-2</level-number>
        </config>
      </metric>
      <traffic-engineering>
        <config>
          <ipv4-router-id>10.10.0.11</ipv4-router-id>
        </config>
      </traffic-engineering>
      <mpls-traffic-engg>
        <config>
          <enable-level-1 />
          <enable-level-2 />
        </config>
      </mpls-traffic-engg>
    </isis-instance>
  </isis-instances>
</isis>
```

Restrictions

- When configuring traffic-engineering on the OcNOS side, the router-id will be set up at both levels (level-1 and level-2) on the OpenConfig side.
- The configuration on the OpenConfig side must have the router-ids for both levels the same.
- Deletion will only work if the router-ids for both levels are deleted.

Configure AF IPv6 support

This XML configuration snippet is used to configure IS-IS instance with IPv6 support.

Release

This configuration was introduced in OcNOS version 6.4.1.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
```

```

    <name>default</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:ISIS</identifier>
          <name>ABCV6</name>
          <isis>
            <global>
              <afi-safi>
                <af>
                  <afi-name
                    xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPV4</afi-name>
                    <safi-name
                      xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
                      <config>
                        <afi-name
                          xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPV4</afi-name>
                          <safi-name
                            xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
                            </config>
                        </af>
                      <af>
                        <afi-name
                          xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPV6</afi-name>
                          <safi-name
                            xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
                            <config>
                              <afi-name
                                xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPV6</afi-name>
                                <safi-name
                                  xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
                                  </config>
                              </af>
                            </afi-safi>
                          </global>
                        </isis>
                      <config>
                        <identifier
                          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:ISIS</identifier>
                          <name>ABCV6</name>
                          <enabled>true</enabled>
                        </config>
                      </protocol>
                    </protocols>
                  </network-instance>
                </network-instances>

```

OcNOS CLI Command

```
router isis ABCv6
address-family ipv6
```

OcNOS NetConf Payload

```
<isis xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-isis">
  <isis-instances>
    <isis-instance>
      <instance>ABCv6</instance>
      <config>
        <instance>ABCv6</instance>
        <vrf-name>default</vrf-name>
      </config>
      <address-family-ipv6>
        <config>
          <afi-name>ipv6</afi-name>
        </config>
      </address-family-ipv6>
    </isis-instance>
  </isis-instances>
</isis>
```

Restrictions

- N/A

Configure metric parameter on AF IPv6

This XML configuration snippet is used to configure IS-IS global parameter metric on AF IPv6.

Release

This configuration was introduced in OcNOS version 6.4.1.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:ISIS</identifier>
        <name>ABCv6</name>
        <isis>
          <global>
            <afi-safi>
              <af>
                <afi-name
```

```

        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
        <safi-name
        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
        <config>
        <afi-name
        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
        <safi-name
        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
        </config>
        </af>
        <af>
        <afi-name
        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv6</afi-name>
        <safi-name
        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
        <config>
        <afi-name
        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv6</afi-name>
        <safi-name
        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
        <metric>20</metric>
        </config>
        </af>
        </afi-safi>
        </global>
        </isis>
        <config>
        <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:ISIS</identifier>
        <name>ABCv6</name>
        <enabled>true</enabled>
        </config>
        </protocol>
        </protocols>
        </network-instance>
        </network-instances>

```

OcNOS CLI Command

```

router isis ABCv6
 address-family ipv6
   distance 20
 exit-address-family

```

OcNOS NetConf Payload

```

<isis xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-isis">
  <isis-instances>
    <isis-instance>

```

```
<instance>ABCv6</instance>
<config>
  <instance>ABCv6</instance>
  <vrf-name>default</vrf-name>
</config>
<address-family-ipv6>
  <config>
    <afi-name>ipv6</afi-name>
    <administrative-distance>20</administrative-distance>
  </config>
</address-family-ipv6>
</isis-instance>
</isis-instances>
</isis>
```

Restrictions

- N/A

Configure Global Timers parameters

This XML configuration snippet is used to configure IS-IS global timers parameter:

- lsp-refresh-interval
- lsp-lifetime-interval
- spf-first-interval
- spf-second-interval
- lsp-max-wait-interval

Release

This configuration was introduced in OcNOS version 6.4.1.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:ISIS</identifier>
          <name>ABC</name>
        <isis>
          <global>
            <afi-safi>
              <af>
                <afi-name
                  xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
                <safi-name
```

```

        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
        <config>
        <afi-name
        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPV4</afi-name>
        <safi-name
        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
        </config>
        </af>
        </afi-safi>
        <timers>
        <config>
        <lsp-refresh-interval>1</lsp-refresh-interval>
        <lsp-lifetime-interval>350</lsp-lifetime-interval>
        </config>
        <spf>
        <config>
        <spf-first-interval>0</spf-first-interval>
        <spf-second-interval>2147483647</spf-second-interval>
        </config>
        </spf>
        <lsp-generation>
        <config>
        <lsp-max-wait-interval>40</lsp-max-wait-interval>
        </config>
        </lsp-generation>
        </timers>
        </global>
        </isis>
        <config>
        <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:ISIS</identifier>
        <name>ABC</name>
        <enabled>true</enabled>
        </config>
        </protocol>
        </protocols>
        </network-instance>
        </network-instances>

```

OcNOS CLI Command

```

router isis ABC
  lsp-gen-interval 40
  lsp-refresh-interval 1
  max-lsp-lifetime 350
  spf-interval-exp 0 2147483647

```

OcNOS NetConf Payload

```

<isis xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-isis">
  <isis-instances>
    <isis-instance>
      <instance>ABC</instance>

```



```
<config>
  <instance>ABC</instance>
  <vrf-name>default</vrf-name>
</config>
<timers>
  <config>
    <lsp-refresh-interval>1</lsp-refresh-interval>
    <lsp-lifetime-interval>350</lsp-lifetime-interval>
  </config>
</timers>
<spf-levels>
  <spf-level>
    <level>level-1-2</level>
    <spf-delay>
      <spf-min-delay>0</spf-min-delay>
      <spf-max-delay>2147483647</spf-max-delay>
      <config>
        <spf-min-delay>0</spf-min-delay>
        <spf-max-delay>2147483647</spf-max-delay>
      </config>
    </spf-delay>
    <config>
      <level>level-1-2</level>
    </config>
  </spf-level>
</spf-levels>
<levels>
  <level>
    <type>level-1-2</type>
    <config>
      <type>level-1-2</type>
      <lsp-max-wait-interval>40</lsp-max-wait-interval>
    </config>
  </level>
</levels>
</isis-instance>
</isis-instances>
</isis>
```

Restrictions

- Timer spf-interval-exp is only supported on OcNOS level-1-2.
- Timer max-lsp-lifetime is only supported on OcNOS level-1-2.
- Timer lsp-max-wait-interval is only supported on OcNOS level-1-2.

Configure Global Transport parameter

This XML configuration snippet is used to configure IS-IS global transport parameter lsp-mtu-size.

Release

This configuration was introduced in OcNOS version 6.4.1.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:ISIS</identifier>
          <name>ABC</name>
          <isis>
            <global>
              <afi-safi>
                <af>
                  <afi-name
                    xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPV4</afi-name>
                    <safi-name
                      xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
                      <config>
                        <afi-name
                          xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPV4</afi-name>
                          <safi-name
                            xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
                            </config>
                        </afi-name>
                      </config>
                    </af>
                  </afi-safi>
                <transport>
                  <config>
                    <lsp-mtu-size>600</lsp-mtu-size>
                  </config>
                </transport>
              </global>
            </isis>
          </config>
          <identifier
            xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:ISIS</identifier>
          <name>ABC</name>
          <enabled>true</enabled>
        </config>
      </protocol>
    </protocols>
  </network-instance>
</network-instances>
```

OcNOS CLI Command

```
router isis ABC
  lsp-mtu 600
```

OcNOS NetConf Payload

```
<isis xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-isis">
  <isis-instances>
    <isis-instance>
      <instance>ABC</instance>
      <config>
        <instance>ABC</instance>
        <vrf-name>default</vrf-name>
      </config>
      <levels>
        <level>
          <type>level-1-2</type>
          <config>
            <type>level-1-2</type>
            <lsp-mtu-size>600</lsp-mtu-size>
          </config>
        </level>
      </levels>
    </isis-instance>
  </isis-instances>
</isis>
```

Restrictions

- The parameter lsp-mtu-size is only supported on OcNOS level-1-2;

Configure LSP-BIT parameter

This XML configuration snippet is used to configure IS-IS global parameter LSP-BIT's set-bit and set-bit-on-boot.

Release

This configuration was introduced in OcNOS version 6.4.1.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:ISIS</identifier>
        <name>ABC</name>
        <isis>
          <global>
            <afi-safi>
              <af>
                <afi-name
                  xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
```

```

        <safi-name
          xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
        <config>
          <afi-name
            xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPV4</afi-name>
          <safi-name
            xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
          </config>
        </af>
      </afi-safi>
    <lsp-bit>
      <overload-bit>
        <config>
          <set-bit>true</set-bit>
          <set-bit-on-boot>true</set-bit-on-boot>
        </config>
        <reset-triggers>
          <reset-trigger>
            <reset-trigger
              xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:WAIT_FOR_BGP</reset-trigger>
            <config>
              <reset-trigger
                xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:WAIT_FOR_BGP</reset-trigger>
              </config>
            </reset-trigger>
          </reset-triggers>
        </overload-bit>
      </lsp-bit>
    </global>
  </isis>
</config>
<identifier
  xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:ISIS</identifier>
  <name>ABC</name>
  <enabled>true</enabled>
</config>
</protocol>
</protocols>
</network-instance>
</network-instances>

```

OcNOS CLI Command

```

router isis ABC
  set-overload-bit on-startup wait-for-bgp

```

OcNOS NetConf Payload

```

<isis xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-isis">
  <isis-instances>
    <isis-instance>

```

```
<instance>ABC</instance>
<config>
  <instance>ABC</instance>
  <vrf-name>default</vrf-name>
</config>
<lsp-over-load>
  <config>
    <enabled/>
    <set-bit-on-boot>wait-for-bgp</set-bit-on-boot>
  </config>
</lsp-over-load>
</isis-instance>
</isis-instances>
</isis>
```

Restrictions

- When set-bit-on-boot is set, reset-trigger is always oc-isis-types: WAIT_FOR_BGP;
- operation="create" is not supported on objectlist lsp-bit/overload-bit/reset-triggers/reset-trigger.

Configure Inter-level Propagation Policies parameter

This XML configuration snippet is used to configure IS-IS inter-level propagation policies:

- level1-to-level2
- level2-to-level1

Release

This configuration was introduced in OcNOS version 6.4.1.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:ISIS</identifier>
        <name>ABC</name>
        <isis>
          <global>
            <afi-safi>
              <af>
                <afi-name
                  xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
                <safi-name
                  xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
```

```

        <config>
          <afi-name
            xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
          <safi-name
            xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
        </config>
      </af>
    </afi-safi>
    <inter-level-propagation-policies>
      <level1-to-level2>
        <config>
          <default-import-policy>ACCEPT_ROUTE</default-import-policy>
        </config>
      </level1-to-level2>
      <level2-to-level1>
        <config>
          <default-import-policy>ACCEPT_ROUTE</default-import-policy>
        </config>
      </level2-to-level1>
    </inter-level-propagation-policies>
  </global>
</isis>
<config>
  <identifier
    xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:ISIS</identifier>
    <name>ABC</name>
    <enabled>true</enabled>
  </config>
</protocol>
</protocols>
</network-instance>
</network-instances>

```

OcNOS CLI Command

```

router isis ABC
 redistribute isis level-1 into level-2
 redistribute isis level-2 into level-1

```

OcNOS NetConf Payload

```

<isis xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-isis">
  <isis-instances>
    <isis-instance>
      <instance>ABC</instance>
      <config>
        <instance>ABC</instance>
        <vrf-name>default</vrf-name>
      </config>
      <address-family-ipv4>
        <redistribute-level-1-into-2>
          <enable/>
        </redistribute-level-1-into-2>
      </address-family-ipv4>
    </isis-instance>
  </isis-instances>
</isis>

```

```

        <enable/>
    </config>
</redistribute-level-1-into-2>
<redistribute-level-2-into-1>
    <enable/>
    <config>
        <enable/>
    </config>
</redistribute-level-2-into-1>
</address-family-ipv4>
</isis-instance>
</isis-instances>
</isis>

```

Restrictions

- N/A

Configure Graceful Restart parameter

This XML configuration snippet is used to configure IS-IS graceful restart.

Release

This configuration was introduced in OcNOS version 6.4.1.

OpenConfig NetConf Payload

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:ISIS</identifier>
        <name>ABC</name>
        <isis>
          <global>
            <afi-safi>
              <afi>
                <afi-name
                  xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
                <safi-name
                  xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
                <config>
                  <afi-name
                    xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
                  <safi-name
                    xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>

```

```
        </config>
      </af>
    </afi-safi>
  <graceful-restart>
    <config>
      <enabled>>false</enabled>
    </config>
  </graceful-restart>
</global>
</isis>
<config>
  <identifier
    xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:ISIS</identifier>
    <name>ABC</name>
    <enabled>true</enabled>
  </config>
</protocol>
</protocols>
</network-instance>
</network-instances>
```

OcNOS CLI Command

```
router isis ABC
no capability restart graceful
```

OcNOS NetConf Payload

```
<isis xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-isis">
  <isis-instances>
    <isis-instance>
      <instance>ABC</instance>
      <config>
        <instance>ABC</instance>
        <vrf-name>default</vrf-name>
        <disable-gr-capability/>
      </config>
    </isis-instance>
  </isis-instances>
</isis>
```

Restrictions

- On OcNOS, IS-IS Graceful Restart is enabled by default;

Configure Metric Style parameter

This XML configuration snippet is used to configure IS-IS metric-style.

Release

This configuration was introduced in OcNOS version 6.4.1.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:ISIS</identifier>
        <name>ABC</name>
        <isis>
          <levels>
            <level>
              <level-number>1</level-number>
              <config>
                <metric-style>WIDE_METRIC</metric-style>
                <level-number>1</level-number>
              </config>
            </level>
          </levels>
          <global>
            <afi-safi>
              <af>
                <afi-name
                  xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
                <safi-name
                  xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
                <config>
                  <afi-name
                    xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
                  <safi-name
                    xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
                  </config>
                </af>
              </afi-safi>
            </global>
          </isis>
        </config>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:ISIS</identifier>
        <name>ABC</name>
        <enabled>true</enabled>
      </config>
    </protocol>
  </protocols>
</network-instance>
</network-instances>
```

OcNOS CLI Command

```
router isis ABC
```

```
metric-style wide level-1
```

OcNOS NetConf Payload

```
<isis xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-isis">
  <isis-instances>
    <isis-instance>
      <instance>ABC</instance>
      <metric>
        <style>wide</style>
        <level-number>level-1</level-number>
        <config>
          <style>wide</style>
          <level-number>level-1</level-number>
        </config>
      </metric>
    </isis-instance>
  </isis-instances>
</isis>
```

Restrictions

- Configuring metric-style on both levels together, both values must match;

Configure Authentication parameter

This XML configuration snippet is used to configure IS-IS instance authentication.

Release

This configuration was introduced in OcNOS version 6.4.1.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:ISIS</identifier>
        <name>ABC</name>
        <isis>
          <global>
            <afi-safi>
              <af>
                <afi-name
```

```

        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
        <safi-name
        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
        <config>
        <afi-name
        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
        <safi-name
        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
        </config>
        </af>
        </afi-safi>
    </global>
    <levels>
    <level>
        <level-number>1</level-number>
        <authentication>
        <config>
            <auth-password>A-PWD</auth-password>
        </config>
        </authentication>
        <config>
            <level-number>1</level-number>
        </config>
    </level>
    <level>
        <level-number>2</level-number>
        <authentication>
        <config>
            <auth-password>D-PWD</auth-password>
        </config>
        </authentication>
        <config>
            <level-number>2</level-number>
        </config>
    </level>
    </levels>
</isis>
<config>
    <identifier
        xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-
pol-types:ISIS</identifier>
        <name>ABC</name>
        <enabled>true</enabled>
    </config>
</protocol>
</protocols>
</network-instance>
</network-instances>

```

OcNOS CLI Command

```

router isis ABC
  area-password A-PWD

```

domain-password D-PWD

OcNOS NetConf Payload

```
<isis xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-isis">
  <isis-instances>
    <isis-instance>
      <instance>ABC</instance>
      <config>
        <instance>ABC</instance>
        <vrf-name>default</vrf-name>
      </config>
      <area-authentication>
        <config>
          <area-password>A-PWD</area-password>
        </config>
      </area-authentication>
      <domain-authentication>
        <config>
          <domain-password>D-PWD</domain-password>
        </config>
      </domain-authentication>
    </isis-instance>
  </isis-instances>
</isis>
```

Restrictions

- N/A

Configure Interface IS-IS parameter

This XML configuration snippet is used to associate an interface to an IS-IS instance:

- interface-id
- hello-padding.

Release

This configuration was introduced in OcNOS version 6.4.1.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:ISIS</identifier>
        <name>ABC</name>
      </protocol>
    </protocols>
  </network-instance>
</network-instances>
```

```

<interfaces>
  <interface>
    <interface-id>eth2</interface-id>
    <interface-ref>
      <config>
        <interface>eth2</interface>
      </config>
    </interface-ref>
    <config>
      <interface-id>eth2</interface-id>
      <hello-padding>STRICT</hello-padding>
    </config>
    <afi-safi>
      <af>
        <afi-name
          xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPV4</afi-name>
        <safi-name
          xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
        <config>
          <afi-name
            xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPV4</afi-name>
          <safi-name
            xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
          </config>
        </af>
      </afi-safi>
    </interface>
  </interfaces>
</isis>
</protocol>
</protocols>
</network-instance>
</network-instances>

```

OcNOS CLI Command

```

interface eth2
 ip address 22.22.22.10/24
 ip router isis ABC

```

OcNOS NetConf Payload

```

<isis xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-isis">
  <interfaces>
    <interface>
      <name>eth2</name>
      <config>
        <name>eth2</name>
      </config>
      <interface-parameters>
        <config>
          <ipv4-instance-tag>ABC</ipv4-instance-tag>
        </config>
      </interface-parameters>
    </interface>
  </interfaces>
</isis>

```

```

    </interface-parameters>
  </interface>
</interfaces>
</isis>

```

Restrictions

- There's a deviation to make `oc-netinst:isis/interfaces/interface/afi-safi/af` mandatory when an `oc-netinst:isis/interfaces/interface` is being configured;
- On OcNOS, IS-IS interface-related configuration can be applied even if the IS-IS instance is not yet created. In case this happens, edit operations using OpenConfig namespace won't work, and GET operation won't retrieve those interfaces.

Configure Interface Authentication parameter

This XML configuration snippet is used to configure IS-IS interface authentication.

Release

This configuration was introduced in OcNOS version 6.4.1.

OpenConfig NetConf Payload

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:ISIS</identifier>
        <name>ABC</name>
        <isis>
          <interfaces>
            <interface>
              <interface-id>eth2</interface-id>
              <interface-ref>
                <config>
                  <interface>eth2</interface>
                </config>
              </interface-ref>
              <config>
                <interface-id>eth2</interface-id>
                <hello-padding>STRICT</hello-padding>
              </config>
              <afi-safi>
                <af>
                  <afi-name
                    xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
                  <safi-name
                    xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>

```

```

        <config>
        <afi-name
            xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
        <safi-name
            xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
        </config>
    </af>
</afi-safi>
<levels>
    <level>
        <level-number>1</level-number>
        <config>
            <level-number>1</level-number>
        </config>
        <hello-authentication>
            <config>
                <auth-password>ABCDEFGHJIJ</auth-password>
            </config>
        </hello-authentication>
    </level>
</levels>
</interface>
</interfaces>
</isis>
</protocol>
</protocols>
</network-instance>
</network-instances>

```

OcNOS CLI Command

```

interface eth2
ip address 22.22.22.10/24
ip router isis ABC
isis password ABCDEFGHJIJ level-1

```

OcNOS NetConf Payload

```

<isis xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-isis">
  <interfaces>
    <interface>
      <name>eth2</name>
      <config>
        <name>eth2</name>
      </config>
      <interface-parameters>
        <config>
          <ipv4-instance-tag>ABC</ipv4-instance-tag>
        </config>
        <level-infos>
          <level-info>
            <level>level-1</level>
            <config>
              <level>level-1</level>
            </config>
          </level-info>
        </level-infos>
      </interface-parameters>
    </interface>
  </interfaces>
</isis>

```

```
        <password>ABCDEFGHJIJ</password>
    </config>
</level-info>
</level-infos>
</interface-parameters>
</interface>
</interfaces>
</isis>
```

Restrictions

- N/A

Configure Interface IGP-LDP-SYNC parameter

This XML configuration snippet is used to configure IS-IS igp-ldp-sync parameter.

Release

This configuration was introduced in OcNOS version 6.4.1.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:ISIS</identifier>
        <name>ABC</name>
        <isis>
          <interfaces>
            <interface>
              <interface-id>eth2</interface-id>
              <interface-ref>
                <config>
                  <interface>eth2</interface>
                </config>
              </interface-ref>
            </config>
            <interface-id>eth2</interface-id>
            <hello-padding>STRICT</hello-padding>
          </config>
          <afi-safi>
            <afi>
              <afi-name
                xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPV4</afi-name>
              <safi-name
                xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
```



```

        <config>
        <afi-name
            xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
        <safi-name
            xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
        </config>
    </af>
</afi-safi>
<mpls>
    <igp-ldp-sync>
        <config>
            <enabled>true</enabled>
        </config>
    </igp-ldp-sync>
</mpls>
</interface>
</interfaces>
</isis>
</protocol>
</protocols>
</network-instance>
</network-instances>

```

OcNOS CLI Command

```

interface eth2
  mpls ldp-igp sync isis level-1-2

```

OcNOS NetConf Payload

```

<isis xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-isis">
  <interfaces>
    <interface>
      <name>eth2</name>
      <config>
        <name>eth2</name>
      </config>
      <interface-parameters>
        <config>
          <ipv4-instance-tag>ABC</ipv4-instance-tag>
        </config>
      </interface-parameters>
      <igp-ldp-sync>
        <config>
          <level>level-1-2</level>
          <hold-timer>70000</hold-timer>
        </config>
      </igp-ldp-sync>
    </interface>
  </interfaces>
</isis>

```

Restrictions

- When `igp-ldp-sync` is configured, OcNOS will use a default hold-timer value of 70000;
- This parameter is only supported on OcNOS level-1-2;

Configure Interface circuit-type parameter

This XML configuration snippet is used to configure IS-IS interface's circuit-type parameter.

Release

This configuration was introduced in OcNOS version 6.4.1.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:ISIS</identifier>
        <name>ABC</name>
        <isis>
          <interfaces>
            <interface>
              <interface-id>eth2</interface-id>
              <interface-ref>
                <config>
                  <interface>eth2</interface>
                </config>
              </interface-ref>
              <config>
                <interface-id>eth2</interface-id>
                <hello-padding>STRICT</hello-padding>
                <circuit-type>POINT_TO_POINT</circuit-type>
              </config>
              <afi-safi>
                <af>
                  <afi-name
                    xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPV4</afi-name>
                  <safi-name
                    xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
                  <config>
                    <afi-name
                      xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPV4</afi-name>
                    <safi-name
                      xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
```

```
        </config>
      </af>
    </afi-safi>
  </interface>
</interfaces>
</isis>
</protocol>
</protocols>
</network-instance>
</network-instances>
```

OcNOS CLI Command

```
interface eth2
  isis network point-to-point
```

OcNOS NetConf Payload

```
<isis xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-isis">
  <interfaces>
    <interface>
      <name>eth2</name>
      <config>
        <name>eth2</name>
      </config>
      <interface-parameters>
        <config>
          <network-type>point-to-point</network-type>
          <ipv4-instance-tag>ABC</ipv4-instance-tag>
        </config>
      </interface-parameters>
    </interface>
  </interfaces>
</isis>
```

Restrictions

- N/A

Configure Primary IP Address

This XML configuration snippet is used to configure IS-IS hello-padding parameter.

Release

This configuration was introduced in OcNOS version 6.4.1.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
```

```

    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:ISIS</identifier>
        <name>ABC</name>
        <isis>
          <interfaces>
            <interface>
              <interface-id>eth2</interface-id>
              <interface-ref>
                <config>
                  <interface>eth2</interface>
                </config>
              </interface-ref>
              <config>
                <interface-id>eth2</interface-id>
                <hello-padding>DISABLE</hello-padding>
              </config>
              <afi-safi>
                <af>
                  <afi-name
                    xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
                  <safi-name
                    xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
                  <config>
                    <afi-name
                      xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
                    <safi-name
                      xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
                    </config>
                  </af>
                </afi-safi>
              </interface>
            </interfaces>
          </isis>
        </protocol>
      </protocols>
    </network-instance>

```

OcNOS CLI Command

```

interface eth2
no isis hello padding

```

OcNOS NetConf Payload

```

<isis xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-isis">
  <interfaces>
    <interface>
      <name>eth2</name>
      <config>
        <name>eth2</name>

```

```

</config>
<interface-parameters>
  <config>
    <ipv4-instance-tag>ABC</ipv4-instance-tag>
    <disable-padding/>
  </config>
</interface-parameters>
</interface>
</interfaces>
</isis>

```

Restrictions

- On OcNOS, IS-IS hello-padding is enabled by default;
- Only OpenConfig's DISABLE value is supported;

Configure Interface passive parameter

This XML configuration snippet is used to configure IS-IS passive parameter.

Release

This configuration was introduced in OcNOS version 6.4.1.

OpenConfig NetConf Payload

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:ISIS</identifier>
        <name>ABC</name>
        <isis>
          <interfaces>
            <interface>
              <interface-id>eth2</interface-id>
              <config>
                <interface-id>eth2</interface-id>
                <passive>true</passive>
                <hello-padding>STRICT</hello-padding>
              </config>
              <interface-ref>
                <config>
                  <interface>eth2</interface>
                </config>
              </interface-ref>
            </afi-safi>
            <af>
              <afi-name

```

```

        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
        <safi-name
        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
        <config>
        <afi-name
        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
        <safi-name
        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
        </config>
        </af>
        </afi-safi>
        </interface>
        </interfaces>
        </isis>
        </protocol>
        </protocols>
        </network-instance>
</network-instances>

```

OcNOS CLI Command

```

router isis ABC
  passive-interface eth2

```

OcNOS NetConf Payload

```

<isis xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-isis">
  <isis-instances>
    <isis-instance>
      <instance>ABC</instance>
      <config>
        <instance>ABC</instance>
        <vrf-name>default</vrf-name>
      </config>
      <passive-interfaces>
        <passive-interface>
          <name>eth2</name>
          <config>
            <name>eth2</name>
          </config>
        </passive-interface>
      </passive-interfaces>
    </isis-instance>
  </isis-instances>
</isis>

```

Restrictions

- N/A

Configure Interface IPv6 AF parameter

This XML configuration snippet is used to configure IS-IS IPv6 support parameter.

Release

This configuration was introduced in OcNOS version 6.4.1.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:ISIS</identifier>
        <name>ABCV6</name>
        <isis>
          <interfaces>
            <interface>
              <interface-id>eth3</interface-id>
              <interface-ref>
                <config>
                  <interface>eth3</interface>
                </config>
              </interface-ref>
              <config>
                <interface-id>eth3</interface-id>
                <hello-padding>STRICT</hello-padding>
              </config>
              <afi-safi>
                <af>
                  <afi-name
                    xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPV6</afi-name>
                  <safi-name
                    xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
                  <config>
                    <afi-name
                      xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPV6</afi-name>
                    <safi-name
                      xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
                    </config>
                  </af>
                </afi-safi>
              </interface>
            </interfaces>
          </isis>
        </protocol>
```

```
    </protocols>
  </network-instance>
</network-instances>
```

OcNOS CLI Command

```
interface eth3
  ipv6 router isis ABCv6
```

OcNOS NetConf Payload

```
<isis xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-isis">
  <interfaces>
    <interface>
      <name>eth3</name>
      <config>
        <name>eth3</name>
      </config>
      <interface-parameters>
        <config>
          <ipv6-instance-tag>ABCv6</ipv6-instance-tag>
        </config>
      </interface-parameters>
    </interface>
  </interfaces>
</isis>
```

Restrictions

- N/A

Configure Interface BFD parameter

This XML configuration snippet is used to configure IS-IS enable-bfd parameter..

Release

This configuration was introduced in OcNOS version 6.4.1.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:ISIS</identifier>
        <name>ABC</name>
        <isis>
          <interfaces>
```



```

<interface>
  <interface-id>eth2</interface-id>
  <interface-ref>
    <config>
      <interface>eth2</interface>
    </config>
  </interface-ref>
  <config>
    <interface-id>eth2</interface-id>
    <hello-padding>STRICT</hello-padding>
  </config>
  <afi-safi>
    <af>
      <afi-name
        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
      <safi-name
        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
      <config>
        <afi-name
          xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
        <safi-name
          xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
        </config>
      </af>
    </afi-safi>
    <enable-bfd>
      <config>
        <enabled>true</enabled>
      </config>
    </enable-bfd>
  </interface>
</interfaces>
</isis>
</protocol>
</protocols>
</network-instance>
</network-instances>

```

OcNOS CLI Command

```

interface eth2
  isis bfd

```

OcNOS NetConf Payload

```

<isis xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-isis">
  <interfaces>
    <interface>
      <name>eth2</name>
      <config>
        <name>eth2</name>
      </config>
      <interface-parameters>

```

```
<config>
  <ipv4-instance-tag>ABC</ipv4-instance-tag>
</config>
<bfd>
  <config>
    <enable/>
  </config>
</bfd>
</interface-parameters>
</interface>
</interfaces>
</isis>
```

Restrictions

- N/A

Configure Interface Priority parameter

This XML configuration snippet is used to configure IS-IS priority parameter.

Release

This configuration was introduced in OcNOS version 6.4.1.

OpenConfig NetConf Payload

```
<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:ISIS</identifier>
        <name>ABC</name>
        <isis>
          <interfaces>
            <interface>
              <interface-id>eth2</interface-id>
              <interface-ref>
                <config>
                  <interface>eth2</interface>
                </config>
              </interface-ref>
            </interface>
          </interfaces>
          <config>
            <interface-id>eth2</interface-id>
            <hello-padding>STRICT</hello-padding>
          </config>
          <afi-safi>
            <af>
              <afi-name
```

```

        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
        <safi-name
        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
        <config>
        <afi-name
        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
        <safi-name
        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
        </config>
        </af>
        </afi-safi>
        <levels>
        <level>
        <level-number>1</level-number>
        <config>
        <level-number>1</level-number>
        <priority>50</priority>
        </config>
        </level>
        </levels>
        </interface>
        </interfaces>
        </isis>
        </protocol>
        </protocols>
        </network-instance>
        </network-instances>

```

OcNOS CLI Command

```

interface eth2
  isis priority 50 level-1

```

OcNOS NetConf Payload

```

<isis xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-isis">
  <interfaces>
    <interface>
      <name>eth2</name>
      <config>
        <name>eth2</name>
      </config>
      <interface-parameters>
        <config>
          <ipv4-instance-tag>ABC</ipv4-instance-tag>
        </config>
        <level-infos>
          <level-info>
            <level>level-1</level>
            <config>
              <level>level-1</level>
              <priority>50</priority>
            </config>
          </level-info>
        </level-infos>
      </interface-parameters>
    </interface>
  </interfaces>
</isis>

```

```

        </level-info>
      </level-infos>
    </interface-parameters>
  </interface>
</interfaces>
</isis>

```

Restrictions

- The OcNOS level-1-2 value for level-info is not supported by OpenConfig;

Configure Interface Timers parameter

This XML configuration snippet is used to configure IS-IS parameters:

- hello-interval
- hello-multiplier

Release

This configuration was introduced in OcNOS version 6.4.1.

OpenConfig NetConf Payload

```

<network-instances xmlns="http://openconfig.net/yang/network-instance">
  <network-instance>
    <name>default</name>
    <protocols>
      <protocol>
        <identifier
          xmlns:oc-pol-types="http://openconfig.net/yang/policy-types">oc-pol-
types:ISIS</identifier>
        <name>ABC</name>
        <isis>
          <interfaces>
            <interface>
              <interface-id>eth2</interface-id>
              <interface-ref>
                <config>
                  <interface>eth2</interface>
                </config>
              </interface-ref>
            </config>
            <interface-id>eth2</interface-id>
            <hello-padding>STRICT</hello-padding>
          </config>
          <afi-safi>
            <afi>
              <afi-name
                xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPV4</afi-name>
              <safi-name

```

```

        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
        <config>
        <afi-name
        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:IPv4</afi-name>
        <safi-name
        xmlns:oc-isis-types="http://openconfig.net/yang/isis-
types">oc-isis-types:UNICAST</safi-name>
        </config>
        </af>
        </afi-safi>
        <levels>
        <level>
        <level-number>1</level-number>
        <config>
        <level-number>1</level-number>
        </config>
        <timers>
        <config>
        <hello-interval>1</hello-interval>
        </config>
        </timers>
        </level>
        <level>
        <level-number>2</level-number>
        <config>
        <level-number>2</level-number>
        </config>
        <timers>
        <config>
        <hello-multiplier>2</hello-multiplier>
        </config>
        </timers>
        </level>
        </levels>
        </interface>
        </interfaces>
        </isis>
        </protocol>
        </protocols>
        </network-instance>
        </network-instances>

```

OcNOS CLI Command

```

interface eth2
  isis hello-interval 1 level-1
  isis hello-multiplier 2 level-2

```

OcNOS NetConf Payload

```

<isis xmlns="http://www.ipinfusion.com/yang/ocnos/ipi-isis">
  <interfaces>
    <interface>
      <name>eth2</name>

```

```
<config>
  <name>eth2</name>
</config>
<interface-parameters>
  <config>
    <ipv4-instance-tag>ABC</ipv4-instance-tag>
  </config>
  <level-infos>
    <level-info>
      <level>level-1</level>
      <config>
        <level>level-1</level>
        <hello-interval>1</hello-interval>
      </config>
    </level-info>
    <level-info>
      <level>level-2</level>
      <config>
        <level>level-2</level>
        <hello-multiplier>2</hello-multiplier>
      </config>
    </level-info>
  </level-infos>
</interface-parameters>
</interface>
</interfaces>
</isis>
```

Restrictions

- The OcNOS level-1-2 value for level-info is not supported by OpenConfig.