



Configure 400G TXP and MXP Data Paths

This chapter describes the required configurations for configuring the 400G TXP and MXP datapaths using CFP2 DCO.

From Release 7.5.1 onwards the OTN-XP card supports Openconfig configuration for Muxponder Mode 4x100G MXP and 400G TXP on ports 12 and 13 for CFP2 DCO.

Table 1: Feature History

Feature Name	Release Information	Feature Description
OC Support for 400G TXP/MXP	Cisco IOS XR Release 7.5.1	<p>This feature allows you to configure the 400G TXP and 400G MXP using CFP2 DCO.</p> <p>On the OTN-XP card, you can configure OC datapath on a single 400GE or 4x100G payload that is received over the client port as a 400G signal over DWDM on the line side.</p> <p>The card improves efficiency, performance, and flexibility for customer networks allowing 400GE or 4x100G client transport over 400G WDM wavelength.</p>

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Slices and Port Mapping on 400G TXP/MXP

The 400G MXP and 400G TXP can be configured with the same LC mode. Following are the supported operating modes to configure 400G TXP and 400G MXP datapaths:

- 2x400G-TXP
- 2x4x100G-MXP

- Mix of MXP/TXP

The following tables shows port mapping for slices 0 and 1.

Table 2: 400G-TXP: Ports Mapping for Slice 0

Client Port	Port 10
Trunk Port	Port 12
Client Payload	400GE
Trunk Rate	400G (OTUC4)
Client Optics	QDD-400G-DR4-S, QDD-400G-FR-S, QDD-400G-LR8
Trunk Optics	ONS-CFP2D-400G-C

Table 3: 400G-TXP: Ports Mapping for Slice 1

Client Port	Port 8
Trunk Port	Port 13
Client Payload	400GE
Trunk Rate	400G (OTUC4)
Client Optics	QDD-400G-DR4-S, QDD-400G-FR4-S, QDD-400G-LR8
Trunk Optics	ONS-CFP2D-400G-C

Table 4: 4x100G-MXP: Ports Mapping for Slice 0

Client Port	Port 1,6,7 and 10
Trunk Port	Port 12
Client Payload	100GE and OTU4
Trunk Rate	400G (OTUC4)
Client Optics	ONS-QSFP28-LR4, QSFP-100G-FR-S, QSFP-100G-SR4-S, QSFP-100G-CWDM4-S, QSFP-100G-LR4-S
Trunk Optics	ONS-CFP2D-400G-C

Table 5: 4x100G-MXP: Ports Mapping for Slice 1

Client Port	Port 0,4,5 and 8
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Trunk Port	Port 13
Client Payload	100GE and OTU4
Trunk Rate	400G (OTUC4)
Client Optics	QDD-400G-DR4-S, QDD-400G-ZR-S
Trunk Optics	ONS-QSFP28-LR4, QSFP-100G-FR-S, QSFP-100G-SR4-S, QSFP-100G-CWDM4-S, QSFP-100G-LR4-S

Configuring 400G TXP/MXP Clients

The following table explains the different commands used for 100G, OTU4, and 400GE client ports.

Table 6: Configuration Details for 100G, OTU4, and 400GE Client Ports

Client Port	Logical Channel	Optical Channel	ODUCn	Coherent DSP	Optical Channel
100G	<pre>"index": 101, "rate-class": "BE4E100", "description": "Client Logical Channel", "admin-state": "ENABLED", "loopback-mode": "NONE", "trib-protocol": "R10UC", "logical-chanel-type": "R10CN"</pre>	<pre>"index": 201, "rate-class": "BE4E100", "admin-state": "ENABLED", "loopback-mode": "NONE", "description": "Client Logical Channel", "trib-protocol": "R10O", "logical-chanel-type": "R10CN"</pre>	<pre>"index": 112, "config": { "index": 112, "admin-state": "ENABLED", "description": "Trunk-side-ODUCn", "rate-class": "BE4E400", "trib-protocol": "R10CN", "logical-chanel-type": "R10CN"</pre>	<pre>"index": 212, "config": { "index": 212, "admin-state": "ENABLED", "loopback-mode": "NONE", "description": "Coherent DSP", "rate-class": "BE4E400", "logical-chanel-type": "R10CN"</pre>	<pre>"name": "0/1-Optics0/1/0/12", "config": { "frequency": "193100000", "target-output-power": -700, "operational-mode": 4178, "line-port": "0/1-Optics0/1/0/12"</pre>
OTU4	<pre>"index": 101, "rate-class": "BE4E100", "description": "Client Logical Channel", "admin-state": "ENABLED", "loopback-mode": "NONE", "trib-protocol": "R10O", "logical-chanel-type": "R10CN"</pre>	<pre>"index": 201, "rate-class": "BE4E100", "admin-state": "ENABLED", "loopback-mode": "NONE", "description": "Client Logical Channel", "trib-protocol": "R10O", "logical-chanel-type": "R10CN"</pre>	<pre>"index": 112, "config": { "index": 112, "admin-state": "ENABLED", "description": "Trunk-side-ODUCn", "rate-class": "BE4E400", "trib-protocol": "R10CN", "logical-chanel-type": "R10CN"</pre>	<pre>"index": 212, "config": { "index": 212, "admin-state": "ENABLED", "loopback-mode": "NONE", "description": "Coherent DSP", "rate-class": "BE4E400", "logical-chanel-type": "R10CN"</pre>	<pre>"name": "0/1-Optics0/1/0/12", "config": { "frequency": "193100000", "target-output-power": -700, "operational-mode": 4178, "line-port": "0/1-Optics0/1/0/12"</pre>

Client Port	Logical Channel	Optical Channel	ODUCn	Coherent DSP	Optical Channel
400GE	<pre>"index": 101, "rate-class": "openconfig-transport-types:TRIB_RATE_400G", "description": "Client Logical Channel", "admin-state": "ENABLED", "loopback-mode": "NONE", "trib-protocol": "openconfig-transport-types:TRIB_RATE_400G", "logical-channel-type": "openconfig-transport-types:R101HBN", "openconfig-transport-types:R101CN"</pre>	<pre>"index": 201, "rate-class": "openconfig-transport-types:TRIB_RATE_400G", "admin-state": "ENABLED", "loopback-mode": "NONE", "description": "Client Logical Channel", "trib-protocol": "openconfig-transport-types:R101HBN", "openconfig-transport-types:R101CN"</pre>	<pre>"index": 112, "config": { "index": 112, "admin-state": "ENABLED", "description": "Trunk-side-ODUCn", "rate-class": "openconfig-transport-types:TRIB_RATE_400G", "trib-protocol": "openconfig-transport-types:R101CN", "logical-channel-type": "openconfig-transport-types:R101CN"</pre>	<pre>"index": 212, "config": { "index": 212, "admin-state": "ENABLED", "loopback-mode": "NONE", "description": "Coherent DSP", "rate-class": "openconfig-transport-types:TRIB_RATE_400G", "logical-channel-type": "openconfig-transport-types:R101CN"</pre>	<pre>"name": "0/1-OpticalChannel0/1/0/12", "openconfig-transport-types:R101CN", "config": { "frequency": "193100000", "target-output-power": "-700", "operational-mode": "4178", "line-port": "0/1-Optics0/1/0/12"</pre>

Sample Configuration

Configuring 400G TXP with CFP2 Single Slice

The following is a sample to configure the 400G TXP with CFP2 single slice:

```
{
  "openconfig-terminal-device:terminal-device": {
    "logical-channels": {
      "channel": [
        {
          "index": 112,
          "config": {
            "index": 112,
            "admin-state": "ENABLED",
            "description": "Trunk-side-ODUCn",
            "rate-class": "openconfig-transport-types:TRIB_RATE_400G",
            "trib-protocol": "openconfig-transport-types:PROT_ODUCN",
            "logical-channel-type": "openconfig-transport-types:PROT_OTN"
          },
          "logical-channel-assignments": {
            "assignment": [
              {
                "index": 1,
                "config": {
                  "index": 1,
                  "allocation": "400",
                  "assignment-type": "LOGICAL_CHANNEL",
                  "description": "logical to Logical",
                  "logical-channel": 212
                }
              }
            ]
          }
        }
      ]
    },
    {
      "index": 212,
      "config": {
        "index": 212,
        "admin-state": "ENABLED",
        "loopback-mode": "NONE",
```

```

        "description": "Coherent DSP",
        "rate-class": "openconfig-transport-types:TRIB_RATE_400G",
        "logical-channel-type": "openconfig-transport-types:PROT_OTN"
    },
    "logical-channel-assignments": {
        "assignment": [
            {
                "index": 1,
                "config": {
                    "index": 1,
                    "allocation": "400",
                    "assignment-type": "OPTICAL_CHANNEL",
                    "description": "logical to optical",
                    "optical-channel": "0/1-OpticalChannel0/1/0/12"
                }
            }
        ]
    }
},
{
    "index": 101,
    "config": {
        "index": 101,
        "rate-class": "openconfig-transport-types:TRIB_RATE_400G",
        "description": "Client Logical Channel",
        "admin-state": "ENABLED",
        "loopback-mode": "NONE",
        "trib-protocol": "openconfig-transport-types:PROT_400GE",
        "logical-channel-type": "openconfig-transport-types:PROT_ETHERNET"
    },
    "ingress": {
        "config": {
            "transceiver": "0/1-Optics0/1/0/10"
        }
    },
    "logical-channel-assignments": {
        "assignment": [
            {
                "index": 1,
                "config": {
                    "index": 1,
                    "allocation": "400",
                    "assignment-type": "LOGICAL_CHANNEL",
                    "description": "logical to logical assignemnt",
                    "logical-channel": 201
                }
            }
        ]
    }
},
{
    "index": 201,
    "config": {
        "index": 201,
        "rate-class": "openconfig-transport-types:TRIB_RATE_400G",
        "admin-state": "ENABLED",
        "loopback-mode": "NONE",
        "description": "Client Logical Channel",
        "trib-protocol": "openconfig-transport-types:PROT_ODUFLEX_CBR",
        "logical-channel-type": "openconfig-transport-types:PROT_OTN"
    },
    "logical-channel-assignments": {
        "assignment": [
            {

```

```

    "index": 1,
    "config": {
      "index": 1,
      "allocation": "400",
      "assignment-type": "LOGICAL_CHANNEL",
      "description": "logical to Logical",
      "logical-channel": 112
    }
  ]
}
],
},
"openconfig-platform:components": {
  "component": [
    {
      "name": "0/1-OpticalChannel0/1/0/12",
      "openconfig-terminal-device:optical-channel": {
        "config": {
          "frequency": "193100000",
          "target-output-power": -700,
          "operational-mode": 4178,
          "line-port": "0/1-Optics0/1/0/12"
        }
      }
    },
    {
      "name": "0/1",
      "properties": {
        "property": [
          {
            "name": "LCMODE",
            "config": {
              "name": "LCMODE",
              "value": "4x100g-MxP-400G-tXp"
            }
          }
        ]
      }
    }
  ]
}
}
}

```

400G TXP/MXP Support

This topic lists the OC models, Alarm and Features supported by the 400G TXP/MXP datapaths:

Table 7: Supported OC Models

Model	Feature
openconfig-platform.yang	Inventory and LC Mode
openconfig-platform-transceiver.yang	Pluggable Inventory and Oper Data
openconfig-terminal-device.yang	Logical and Optical Channels – Datapath and OperData

Model	Feature
openconfig-interface.yang	Optical Interface Enable/Disable (shut/no-shut)

Table 8: Supported Alarm

Alarm
openconfig-system.yang (augmented with Openconfig-alarms)

Supported Features

- Client loopback support for 100G/OTU4/400G logical channel
- Trunk loopback support for Coherent DSP Optical channel
- Admin-state support for all Logical and Optical channel
- Laser Squelch and als-delay for ethernet client
- Client Fec
- LLDP



Note The 400G TXP/MXP does not support Trail Trace Identifier (TTI).
