



## Configuring Breakout Patch Panel

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The client ports can operate at 10G mode using an external breakout patch panel.

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### Breakout Patch Panel

The key features of the breakout patch panel are as follows:

- Has 20 MPO ports in the back side that can be connected to 20 QSFP+ client ports of NCS 1002.
- Has 4 \* 10G client ports in the front side for each MPO port.
- Has dual power supply.

The benefits of using the breakout patch panel are as follows:

- Labels are assigned to each 10G client port and MPO port. 10G client ports are labeled 0-1 0-2 0-3 0-4, 1-1, 1-2, 1-3, 1-4, and so on. MPO ports are labeled 0, 1, 2, 3, and so on.
- Link status LED indication is provided to each 10G client port and MPO port.

The breakout patch panel can be connected to NCS 1002 using the following methods:

- The RJ45 Ethernet port, ETH2, available in the rear side of NCS 1002, is used to connect the breakout patch panel back-to-back with NCS 1002. This port is visible as MgmtEth0/RP0/CPU0/2 in IOS XR. The user must configure the ETH2 interface to bring up the back-to-back IP network.
- Management LAN, ETH0, can be used to connect breakout patch panel with NCS 1002. The user needs to manually bring up the patch panel using the serial port on the patch panel.

### Configure Breakout Patch Panel

**Connect Patch Panel Back-to-back with NCS 1002**



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**Note** Bring up the ETH2 interface in 198.51.100 network.

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```
configure
interface interface
ipv4 ipv4 address subnetmask
no shut
exit
patch-panel
exit
commit
```

### Example

The following is a sample to configure the breakout patch panel by connecting patch panel back-to-back with NCS 1002.

```
configure
interface MgmtEth0/RP0/CPU0/2
ipv4 address 198.51.100.4 255.255.255.0
no shut
exit
patch-panel
exit
commit
```

### Connect Patch Panel with NCS 1002 Using Management LAN

The user needs to manually configure the ETH0 interface of the patch panel.

Issue the following commands from the patch panel.

```
sudo ifconfig eth0 ipaddress ipaddress netmask ipaddress up
```

```
sudo route add default gw ipaddress
```

Issue the following commands from NCS 1002.

```
patch-panel
ipv4 ipv4 address
exit
commit
```

### Example

The following is a sample to configure the breakout patch panel using the management LAN.

From the patch panel:

```
sudo ifconfig eth0 192.0.2.19 netmask 255.255.255.0 up
sudo route add default gw 198.51.100.98
```

From NCS 1002:

```
patch-panel
ipv4 198.51.100.176
exit
commit
```

## Display Patch Panel Events

### show patch-panel events

```
Mon Oct 24 12:07:19.963 UTC
{u'fimo_alarms_history_header': u'History of Alarms and Events'}
{u'fimo_alarms_history_help': u'(Time) (ID) (Type) (Message)'}
{u'events_800': u'(2016/09/17 18:37:58) (4360) (Event) (Vars were changed; from IP:
198.51.100.125 table: port/b827eba9fb157000/LC2 data: port_led_color: off, port_led_mode:
solid)'}
{u'events_799': u'(2016/09/17 18:37:58) (4360) (Event) (Vars were changed; from IP:
198.51.100.125 table: port/b827eba9fb157000/LC3 data: port_led_color: off, port_led_mode:
solid)'}
{u'events_798': u'(2016/09/17 18:37:57) (4360) (Event) (Vars were changed; from IP:
198.51.100.125 table: port/b827eba9fb157000/LC4 data: port_led_color: off, port_led_mode:
solid)'}
{u'events_797': u'(2016/09/17 18:37:57) (4360) (Event) (Vars were changed; from IP:
198.51.100.125 table: port/b827eba9fb157000/LC5 data: port_led_color: off, port_led_mode:
solid)'}
{u'events_796': u'(2016/09/17 18:37:57) (4360) (Event) (Vars were changed; from IP:
198.51.100.125 table: port/b827eba9fb157000/LC8 data: port_led_color: off, port_led_mode:
solid)'}
{u'events_795': u'(2016/09/17 18:37:57) (4360) (Event) (Vars were changed; from IP:
198.51.100.125 table: port/b827eba9fb157000/LC9 data: port_led_color: off, port_led_mode:
solid)'}
{u'events_794': u'(2016/09/17 18:37:56) (4360) (Event) (Vars were changed; from IP:
198.51.100.125 table: port/b827eba9fb157000/LC10 data: port_led_color: off, port_led_mode:
solid)'}
{u'events_793': u'(2016/09/17 18:37:56) (4360) (Event) (Vars were changed; from IP:
198.51.100.125 table: port/b827eba9fb157000/LC11 data: port_led_color: off, port_led_mode:
solid)'}
{u'events_792': u'(2016/09/17 18:37:56) (4360) (Event) (Vars were changed; from IP:
198.51.100.125 table: port/b827eba9fb157000/LC12 data: port_led_color: off, port_led_mode:
solid)'}
{u'events_791': u'(2016/09/17 18:37:55) (4360) (Event) (Vars were changed; from IP:
198.51.100.125 table: port/b827eba9fb157000/LC13 data: port_led_color: off, port_led_mode:
solid)'}
{u'events_790': u'(2016/09/17 18:37:55) (4360) (Event) (Vars were changed; from IP:
198.51.100.125 table: port/b827eba9fb157000/LC14 data: port_led_color: off, port_led_mode:
solid)'}
{u'events_789': u'(2016/09/17 18:37:55) (4360) (Event) (Vars were changed; from IP:
198.51.100.125 table: port/b827eba9fb157000/LC15 data: port_led_color: off, port_led_mode:
solid)'}
{u'events_788': u'(2016/09/17 18:37:55) (4360) (Event) (Vars were changed; from IP:
198.51.100.125 table: port/b827eba9fb157000/LC16 data: port_led_color: off, port_led_mode:
solid)'}
{u'events_787': u'(2016/09/17 18:37:54) (4360) (Event) (Vars were changed; from IP:
198.51.100.125 table: port/b827eba9fb157000/LC17 data: port_led_color: off, port_led_mode:
solid)'}
{u'events_786': u'(2016/09/17 18:37:54) (4360) (Event) (Vars were changed; from IP:
198.51.100.125 table: port/b827eba9fb157000/LC18 data: port_led_color: off, port_led_mode:
```

```
solid)'}  
{u'events_785': u'(2016/09/17 18:37:54) (4360) (Event) (Vars were changed; from IP:  
198.51.100.125 table: port/b827eba9fb157000/LC19 data: port_led_color: off, port_led_mode:  
solid)'}  
{u'events_784': u'(2016/09/17 18:37:54) (4360) (Event) (Vars were changed; from IP:  
198.51.100.125 table: port/b827eba9fb157000/LC20 data: port_led_color: off, port_led_mode:  
solid)'}  
{u'events_783': u'(2016/09/17 18:37:53) (4360) (Event) (Vars were changed; from IP:  
198.51.100.125 table: port/b827eba9fb157000/LC1 data: port_led_color: off, port_led_mode:  
solid)'}  
{u'events_782': u'(2016/09/17 18:37:53) (4360) (Event) (Vars were changed; from IP:  
198.51.100.125 table: port/b827eba9fb157000/MPO86 data: port_led_color: off, port_led_mode:  
solid)'}  
{u'events_781': u'(2016/09/17 18:37:53) (4360) (Event) (Vars were changed; from IP:  
198.51.100.125 table: port/b827eba9fb157000/MPO87 data: port_led_color: off, port_led_mode:  
solid)'}  
}
```

The **patch-panel reset** command is used to reset the patch panel.

### Alarms in Breakout Patch Panel

Two alarms, **NOT ABLE TO COMMUNICATE WITH PATCH-PANEL** and **PATCH-PANEL POWER REDUNDANCY LOST**, are raised for the breakout patch panel. For description and clearing procedures of these alarms, see the Alarm Troubleshooting chapter in the *Troubleshooting Guide for Cisco NCS 1000 Series*.