



# Troubleshooting of Optical Application Alarms

This chapter provides a description, severity, and troubleshooting procedure for each commonly encountered optical application alarm and condition in Cisco NCS 1020. When an alarm is raised, refer to its clearing procedure.

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## APC-BLOCKED-RX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The APC-BLOCKED-RX alarm is raised when:

- The APC domain (OLT—OLT) is down due to:
  - Fiber cut in the receive (RX) direction of the span in the network.

- Network events such as: OTS controller fail or shutdown, OSC fail or shutdown, LC reload, RP reload, and power cycle events.
- The topology is not discovered by the OSPF end-to-end and the connection bring up is pending.
- The user configured amplifier safety conditions, such as Optical safety remote interlock (OSRI) and Automatic power reduction (APR), and so on.
- Safety condition is triggered due to a High Back Reflection event.
- The participating agent nodes have locally disabled the APC.

## Clear the APC-BLOCKED-RX Alarm

This alarm gets cleared when:

- The fiber issues are resolved and the network connectivity is restored in the receive direction.
- All the participating nodes are recovered from High Availability (HA) events.
- The end-to-end topology is discovered using the **show olc apc** command.
- All the safety conditions are cleared from the network.
- Verify that all the agent nodes in the domain have APC enabled using the **show olc apc** command.

If the alarm does not clear, log into the Technical Support Website at <http://www.cisco.com/c/en/us/support/index.html> for more information or call Cisco TAC (1 800 553-2447).

## APC-BLOCKED-TX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The APC-BLOCKED-TX alarm is raised when:

- The APC domain (OLT—OLT) is down due to:
  - Fiber cut in the transmit (TX) direction of the span in the network.
  - Network events such as: OTS controller fail or shutdown, OSC fail or shutdown, LC reload, RP reload, and power cycle events.
- The topology is not discovered by the OSPF end-to-end and the connection bring up is pending.
- The user configured amplifier safety conditions, such as Optical safety remote interlock (OSRI) and Automatic power reduction (APR), and so on.
- Safety condition is triggered due to a High Back Reflection event.
- The participating agent nodes have locally disabled the APC.

## Clear the APC-BLOCKED-TX Alarm

This alarm gets cleared when:

- The fiber issues are resolved and the network connectivity is restored in the transmit direction.
- All the participating nodes are recovered from High Availability (HA) events.
- The end-to-end topology is discovered using the **show olc apc** command.
- All the safety conditions are cleared from the network.
- Verify that all the agent nodes in the domain have APC enabled using the **show olc apc** command.

If the alarm does not clear, log into the Technical Support Website at <http://www.cisco.com/c/en/us/support/index.html> for more information or call Cisco TAC (1 800 553-2447).

## APC-OUT-OF-RANGE-TX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The APC-OUT-OF-RANGE-TX alarm is raised when the APC system fails to regulate and achieve the target PSD power level in the transmit direction.

The possible conditions are:

- amplifier gain is exhausted in a particular gain range.
- WSS range (0-25 dB) is exhausted for a single or multiple channels.
- DGE range (0-3 dB) is exhausted for a single or multiple channels.
- increased span loss and the amplifier gain is not enough to achieve the target PSD.

## Clear the APC-OUT-OF-RANGE-TX Alarm

This alarm gets cleared in the following conditions:

- If the requested amplifier gain is outside the current configured gain range, change it to the correct gain-range using the **controller ots egress-ampli-gain-range** *{normal | extended}*.
- If the WSS range is exhausted for a channel, check and correct the power levels on the add ports and ensure that there is no extra attenuation added due to a bad patchcord.
- Check the TX power is configured as required using the **show controllers osc** command. If required, configure the TX power using the **controller osc transmit-power** *value* command.
- Check and clear if there are any **SPAN-LOSS-OUT-OF-RANGE** alarms.

If the alarm does not clear, log into the Technical Support Website at <http://www.cisco.com/c/en/us/support/index.html> for more information or call Cisco TAC (1 800 553-2447).

## APC-OUT-OF-RANGE-RX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The APC-OUT-OF-RANGE-RX alarm is raised when the APC system fails to regulate and achieve the target PSD power level in the receive direction.

The possible conditions are:

- amplifier gain is exhausted in a particular gain range.
- WSS range (0-25 dB) is exhausted for a single or multiple channels.
- DGE range (0-3 dB) is exhausted for a single or multiple channels.
- increased span loss and the amplifier gain is not enough to achieve the target PSD.

### Clear the APC-OUT-OF-RANGE-RX Alarm

This alarm gets cleared in the following conditions:

- If the requested amplifier gain is outside the current configured gain range, change it to the correct gain-range using the **controller ots egress-ampli-gain-range** *{normal | extended}*.
- If the WSS range is exhausted for a channel, check and correct the power levels on the add ports and ensure that there is no extra attenuation added due to a bad patchcord.
- Check the RX power is configured as required using the **show controllers osc** command. If required, configure the RX power using the **controller osc transmit-power** *value* command.
- Check and clear if there are any **SPAN-LOSS-OUT-OF-RANGE** alarms.

If the alarm does not clear, log into the Technical Support Website at <http://www.cisco.com/c/en/us/support/index.html> for more information or call Cisco TAC (1 800 553-2447).

## APC-PARTIAL-TOPOLOGY

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The APC-PARTIAL-TOPOLOGY alarm is raised when:

- The APC domain (OLT—OLT) is down due to:
  - Fiber cut in one of the spans in the network.
  - Network events such as: OTS Controller fail/shutdown, OSC fail/shutdown, LC reload, RP reload, and powercycle events.
- The topology is not discovered by the OSPF end-to-end and the connection bring up is pending.

## Clear the APC-PARTIAL-TOPOLOGY Alarm

This alarm gets cleared when:

- The fiber issues in the network are resolved, and the connectivity is restored.
- All the participating nodes are recovered from HA events.
- The OSPF is able to discover the topology OLT to OLT.
- All the safety conditions are cleared from the network.

If the alarm does not clear, log into the Technical Support Website at <http://www.cisco.com/c/en/us/support/index.html> for more information or call Cisco TAC (1 800 553-2447).

## NEIGHBOUR-MISSING

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The *Neighbour not found* alarm is raised when a neighbour node is not discoverable or unreachable. This can happen due to any of the following reasons:

- OSPF configuration is not correct.
- Cut in the fiber cable that connects to the neighboring node.

## Clear the NEIGHBOUR-MISSING Alarm

This alarm is cleared when the neighbour node is reachable and OSPF is able to discover the topology.

To clear the alarm:

### Procedure

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- Step 1** Check the OSPF neighbors connections are established using the **show ospf neighbor** command.
  - Step 2** Check the OSPF configurations are correct. For more details, refer to the [Understanding Remote Node Management Using OSC](#).
  - Step 3** Check and repair any cuts in the fiber cable that connects to the neighboring node.
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## RX-BELOW-MIN-PSD

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: Controller

The *Receive Channel Power Below Minimum Power Spectral Density* alarm is raised on a OLT Add/Drop port when the input power of channel falls below the configured minimum Power Spectral Density (PSD) threshold. The default value for the minimum PSD threshold is -24 dBm.

## Clear the RX-BELOW-MIN-PSD Alarm

This alarm is cleared when the input channel power exceeds the minimum PSD threshold value.

To clear the alarm:

### Before you begin

### Procedure

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- Step 1** Check the PSD values using the **show olc apc-local regulation-info** command. If the *Ampli-Input PSD* value of a channel is below the *PSD Minimum* threshold, proceed to the next step.
- Step 2** Change the minimum PSD threshold using the **psd-min <value>** command.
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## SPAN-LOSS-OUT-OF-RANGE

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The Span Loss Value Out Of Range (SPAN-LOSS-OUT-OF-RANGE) alarm is raised when the span loss measured is not within the configured threshold range.

## Clear the SPAN-LOSS-OUT-OF-RANGE Alarm

Check and fix any fiber related issues using the OTDR scan measurements results stored in the SOR file. Use the **show controllers ots R/S/I/P otdr-info direction** command to view the OTDR scan events and the location of the SOR file.

If the alarm does not clear, log into the Technical Support Website at <http://www.cisco.com/c/en/us/support/index.html> for more information or call Cisco TAC (1 800 553-2447).

## APC-TARGET-PSD-NOT-MET-RX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: Optical Line Controller




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**Note** The default value for APC-ALARM-DISCREPANCY-THRESHOLD is set to 1dB and the default value of APC-ALARM-HOLD-OFF-TIMER is set to 30 secs.

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The APC-TARGET-PSD-NOT-MET-RX alarm is raised when:

- The difference between the target PSD and current PSD value is more than the APC-ALARM-DISCREPANCY-THRESHOLD value in the receive direction after the APC-ALARM-HOLD-OFF-TIMER expires.
- There is a change in spanloss in the upstream direction for a short time.
- There is no change in spanloss, the reduction in power can also lead to the discrepancy which can raise the alarm.

## Clear the APC-TARGET-PSD-NOT-MET-RX Alarm

This alarm gets cleared when:

- The Force APC Correction is done using the CLI **olc start-apc-correction** at the respective controller.
- If the alarm is raised due to the change in spanloss in the upstream direction for a short time, it is cleared once the APC correction is completed. Use the **show olc apc** command to view APC status.
- If the alarm is raised due to no change in spanloss or reduction in power then the amplifier must be checked for the power reduction which is causing the discrepancy. To check if automatic power reduction is enabled on a node amplifier, use the **show olc apc** command.



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**Note** APC-ALARM-DISCREPANCY-THRESHOLD and APC-ALARM-HOLD-OFF-TIMER are configurable parameters that can be configured to required values.

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If the alarm does not clear, log into the Technical Support Website at <http://www.cisco.com/c/en/us/support/index.html> for more information or call Cisco TAC (1 800 553-2447).

## APC-TARGET-PSD-NOT-MET-TX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: Optical Line Controller



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**Note** The default value for APC-ALARM-DISCREPANCY-THRESHOLD is set to 1dB and the default value of APC-ALARM-HOLD-OFF-TIMER is set to 30 secs.

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The TARGET-PSD-NOT-MET-TX alarm is raised when:

- The difference between the target PSD and current PSD value is more than the APC-ALARM-DISCREPANCY-THRESHOLD value in the transmit direction after the APC-ALARM-HOLD-OFF-TIMER expires.
- There is a change in spanloss in the upstream direction for a short time.
- There is no change in spanloss, the reduction in power can also lead to the discrepancy which can raise the alarm.

## Clear the APC-TARGET-PSD-NOT-MET-TX Alarm

This alarm gets cleared when:

- The Force APC Correction is done using the CLI **olc start-apc-correction** at the respective controller.
- If the alarm is raised due to the change in spanloss in the upstream direction for a short time, it is cleared once the APC correction is completed.
- If the alarm is raised due to no change in spanloss or reduction in power then the amplifier must be checked for the power reduction which is causing the discrepancy.



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**Note** APC-ALARM-DISCREPANCY-THRESHOLD and APC-ALARM-HOLD-OFF-TIMER are configurable parameters that can be configured to required values.

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If the alarm does not clear, log into the Technical Support Website at <http://www.cisco.com/c/en/us/support/index.html> for more information or call Cisco TAC (1 800 553-2447).

## OTDR-ABS-ATTENUATION-EXCEEDED-RX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The OTDR Attenuation Exceeded Absolute Threshold - Receive Direction alarm is raised when any attenuation event in the last scan exceeds the absolute threshold in the Rx direction.

## Clear the OTDR-ABS-ATTENUATION-EXCEEDED-RX Alarm

### Procedure

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The alarm is cleared automatically when one of the following conditions is satisfied:

- The value of the excess attenuation threshold that is configured is lower than the magnitude of the attenuation event.
- The attenuation event in the last scan is below the threshold.

If the alarm does not clear, log into the Technical Support Website at <http://www.cisco.com/c/en/us/support/index.html> for more information or call Cisco TAC (1 800 553-2447).

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## OTDR-ABS-ATTENUATION-EXCEEDED-TX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller



The OTDR Attenuation Exceeded Absolute Threshold - Transmit Direction alarm is raised when any attenuation event in the last scan exceeds the absolute threshold in the Tx direction.

## Clear the OTDR-ABS-ATTENUATION-EXCEEDED-TX Alarm

### Procedure

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The alarm is cleared automatically when one of the following conditions is satisfied:

- The value of the excess attenuation threshold that is configured is lower than the magnitude of the attenuation event.
- The attenuation event in the last scan is below the threshold.

If the alarm does not clear, log into the Technical Support Website at <http://www.cisco.com/c/en/us/support/index.html> for more information or call Cisco TAC (1 800 553-2447).

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## OTDR-ABS-ORL-EXCEEDED-RX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The ORL Exceeded Threshold - Receive Direction alarm is raised if the current ORL value crosses its threshold value.

## Clear the OTDR-ABS-ORL-EXCEEDED-RX Alarm

### Procedure

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**Step 1** Clean the fiber causing the major reflection contribution.

Major reflection contribution can be found in the OTDR Scans.

**Step 2** Alternatively, change the ORL threshold using the command **Controller Ots R/S/I/P otdr rx auto excess-orl-threshold value**

If the alarm does not clear, log into the Technical Support Website at <http://www.cisco.com/c/en/us/support/index.html> for more information or call Cisco TAC (1 800 553-2447).

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## OTDR-ABS-ORL-EXCEEDED-TX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The ORL Exceeded Threshold - Transmit Direction alarm is raised if the current ORL value crosses its threshold value.

## Clear the OTDR-ABS-ORL-EXCEEDED-TX Alarm

### Procedure

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- Step 1** Clean the fiber causing the major reflection contribution.  
Major reflection contribution can be found in the OTDR Scans.
- Step 2** Alternatively, change the ORL threshold using the command **Controller Ots R/S/I/P otdr tx auto excess-orl-threshold value**
- If the alarm does not clear, log into the Technical Support Website at <http://www.cisco.com/c/en/us/support/index.html> for more information or call Cisco TAC (1 800 553-2447).
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## OTDR-ABS-REFLECTANCE-EXCEEDED-RX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The OTDR Reflectance Exceeded Absolute Threshold - Receive Direction alarm is raised when the reflectance event in the last scan exceeds the absolute threshold in the Rx direction.

## Clear the OTDR-ABS-REFLECTANCE-EXCEEDED-RX Alarm

### Procedure

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The alarm is cleared automatically when one of the following conditions is satisfied:

- The excess reflection threshold that is configured is lower than the magnitude of the reflective event.
- The reflectance event in the last scan is below the threshold.

If the alarm does not clear, log in to the Technical Support Website at <http://www.cisco.com/c/en/us/support/index.html> for more information or call Cisco TAC (1 800 553-2447).

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## OTDR-ABS-REFLECTANCE-EXCEEDED-TX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The OTDR Reflectance Exceeded Absolute Threshold - Transmit Direction alarm is raised when the reflectance event in the last scan exceeds the absolute threshold in the Tx direction.

### Clear the OTDR-ABS-REFLECTANCE-EXCEEDED-TX Alarm

#### Procedure

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The alarm is cleared automatically when one of the following conditions is satisfied:

- The excess reflection threshold that is configured is lower than the magnitude of the reflective event.
- The reflectance event in the last scan is below the threshold.

If the alarm does not clear, log in to the Technical Support Website at <http://www.cisco.com/c/en/us/support/index.html> for more information or call Cisco TAC (1 800 553-2447).

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## OTDR-SCAN-FAILED-RX

Default Severity: Major (MJ), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The OTDR Scan Failed - Receive Direction is raised when the OTDR scan fails and no result is provided to the user.

### Clear the OTDR-SCAN-FAILED-RX Alarm

#### Procedure

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This alarm is cleared after performing a successful OTDR scan in Rx direction.

If the alarm does not clear, log into the Technical Support Website at <http://www.cisco.com/c/en/us/support/index.html> for more information or call Cisco TAC (1 800 553-2447).

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## OTDR-SCAN-FAILED-TX

Default Severity: Major (MJ), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The OTDR Scan Failed - Transmit Direction alarm is raised when the OTDR scan fails and no result is provided to the user.

### Clear the OTDR-SCAN-FAILED-TX Alarm

#### Procedure

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This alarm is cleared after performing a successful OTDR scan in Tx direction.

If the alarm does not clear, log into the Technical Support Website at <http://www.cisco.com/c/en/us/support/index.html> for more information or call Cisco TAC (1 800 553-2447).

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## OTDR-SCAN-IN-PROGRESS-RX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The OTDR Scan In Progress – Receive Direction alarm is raised when OTDR scan is running in Rx direction.

### Clear the OTDR-SCAN-IN-PROGRESS-RX Alarm

#### Procedure

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The alarm is cleared automatically when the OTDR scan is completed or terminated by the user.

If the alarm does not clear, log into the Technical Support Website at <http://www.cisco.com/c/en/us/support/index.html> for more information or call Cisco TAC (1 800 553-2447).

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## OTDR-SCAN-IN-PROGRESS-TX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The OTDR Scan In Progress – Transmit Direction alarm is raised when OTDR scan is running in Tx direction.

## Clear the OTDR-SCAN-IN-PROGRESS-TX Alarm

### Procedure

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The alarm is cleared automatically when the OTDR scan is completed or terminated by the user.

If the alarm does not clear, log into the Technical Support Website at <http://www.cisco.com/c/en/us/support/index.html> for more information or call Cisco TAC (1 800 553-2447).

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Clear the OTDR-SCAN-IN-PROGRESS-TX Alarm