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T3 Alarm Troubleshooting

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Introduction

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Troubleshoot the Alarm

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rxLOF/Receiver has Loss of Frame

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Related Information

Introduction

This document describes how to identify and troubleshoot various alarms on a T3 line.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

This document is not restricted to specific software and hardware versions.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Conventions

For more information on document conventions, refer to the Cisco Technical Tips Conventions.

Identify the Alarm

Based on the type of Port Adapter used, the following Cisco IOS® software commands display the T3 interface status specific to the controller hardware:

- PA-T3: **show interfaces serial**

```
dodi#show interfaces serial 5/0
Serial5/0 is down, line protocol is down
...
rxLOS active, rxLOF inactive, rxAIS inactive
txAIS inactive, rxRAI inactive, txRAI active
```

- PA-MC-T3: **show controllers T3**

```
dodi#show controllers T3 4/0
T3 4/0 is down.
...
Transmitter is sending remote alarm.
Receiver has loss of signal. Framing is M23, Line Code is B3ZS,
Clock Source is Internal
...
```

This information is useful for diagnostic tasks performed by the technical support personnel.

Troubleshoot the Alarm

This section addresses the various types of alarms, and outlines the procedures to correct them.

rxLOS/Receiver has Loss of Signal

A receive (rx) Loss Of Signal (LOS) alarm indicates that the RX port on the Port Adapter does not receive a valid physical T3 signal.

To clear the rxLOS alarm, complete these steps:

1. Ensure that the cable between the interface port, and the T3 Service Provider's equipment (or remote T3 terminal equipment) is connected correctly. Ensure that the cable is hooked up to the correct ports. Correct the cable connections if necessary.
2. Check the 75 ohms coaxial cable integrity. To do so, look for breaks or other physical abnormalities in the cable. Replace the cable if necessary.

rxLOF/Receiver has Loss of Frame

A receive (rx) Loss Of Framing (LOF) alarm implies that the input port is not receiving framing, or has lost synchronization on the received framing.

To clear the rxLOF alarm, complete these steps:

1. Check whether the framing format configured on the port matches the framing format on the line.
2. Try the other framing format, and check whether the alarm clears.
3. Work with your service provider to configure a remote loopback on the affected interface. Then run an unframed bit error rate tester (BERT). This test will enable you to determine whether there are problems on the line.

If this does not fix the problem, see the rxLOS/Receiver has Loss of Signal section.

rxAIS/Receiver is Getting AIS

A receive (rx) Alarm Indication Signal (AIS) alarm indicates an error occurring on the T3 line upstream from the equipment that is connected to the port.

The AIS alarm is declared when an AIS signal (all 1s) is detected at the input, and still exists after the Loss Of Frame alarm is declared active (caused by the unframed nature of the all 1s signal). The AIS alarm is cleared when the Loss Of Frame alarm is cleared.

To clear the rxAIS alarm, ask your service provider to check for an incorrect internal configuration (within the telephone company), or a failure in their upstream connections.

Also, ask your service provider to trace the source of the AIS signal.

rxRAI/Receiver has Remote Alarm

A receive (rx) Remote Alarm Indication (RAI) alarm means that the far-end equipment has a problem with the signal that it receives from the local equipment.

RAI indicates a problem between the transmitter of the router interface, and the far-end T3 receiver. However, the problem may not be in the segment between the router and the adjacent node.

To clear the rxRAI alarm, complete these steps:

1. Insert an external loopback cable into the port. For more information, see the *Hard Plug Loopback Tests for T3 Lines* section of the *T3 Error Events Troubleshooting* document.
2. Check whether there are any alarms. If you do not see any alarms, the local hardware is probably in good condition. In that case, complete these steps:
 - a. Check the cabling. Ensure that the coaxial cable between the interface port and the T3 service provider's equipment (or T3 terminal equipment), is connected correctly. Ensure that the cable is connected to the correct ports. Correct the cable connections if necessary.
 - b. Check the cable integrity. To do so, look for breaks or other physical abnormalities in the coaxial cable. Replace the cable if necessary.
 - c. Check the settings at the remote end, and verify whether they match your port settings. If the problem persists, contact your service provider.
3. Remove the loopback cable, and reconnect your T3 line.
4. Check the coaxial cabling.
5. Power cycle the router.
6. Connect the T3 line to a different port. Configure the port with the same settings as the T3 line. If the problem is resolved, the fault lies with the port. In this case, complete these steps:
 - a. Reconnect the T3 line to the original port.
 - b. Perform a hardware loop test. For more information, see *Hard Plug Loopback Test for T1 Lines Flowchart*.

txRAI/Transmitter is Sending Remote Alarm

A transmit (tx) remote alarm indication (RAI) at a T3 interface indicates that the interface has a problem with the signal that it receives from the remote equipment.

To clear the txRAI alarm, complete these steps:

1. Check the settings at the remote end to ensure that they match your port settings.
2. A txRAI alarm is caused by an active receiver alarm. This alarm indicates the problem that the T3 port/card has with the signal from the far-end equipment. Troubleshoot the condition to resolve the txRAI.

txAIS

A transmit (TX) Alarm Indication Signal (AIS) is declared when the T3 serial interface is shut down (PA-T3 only), and consists of sending all ones (1s) in an unframed T3 signal.

To clear the txAIS alarm, use the **no shutdown** command to bring the T3 serial interface up.

Note: When the T3 controller on PA-MC-T3 is shut down, it does not send a T3 electrical signal on its TX port.

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NetPro Discussion Forums – Featured Conversations for Access
Network Infrastructure: Remote Access

Related Information

- **T3 Error Events Troubleshooting**
- **Hard Plug Loopback Test for T1 Lines Flowchart**
- **Technical Support – Cisco Systems**

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