

# BTM Line Code Errors

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## Introduction

This document discusses the `BTM Line Code Err` and provides steps on how to troubleshoot this error message.

## Prerequisites

### Requirements

There are no specific requirements for this document.

### Components Used

This error applies to the IGX Broadband Trunk Module (BTM) with E1, E2, E3, and T3 backcards.

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.

## Error Definition

The `Line Code Err` indicates a bipolar violation (BPV) in the line coding for the BTM trunk. For T3 trunks, bipolar with three zero substitution (B3ZS) line coding is used. For E1, E2, and E3 trunks, high density bipolar of order three (HDB3) line coding is used.

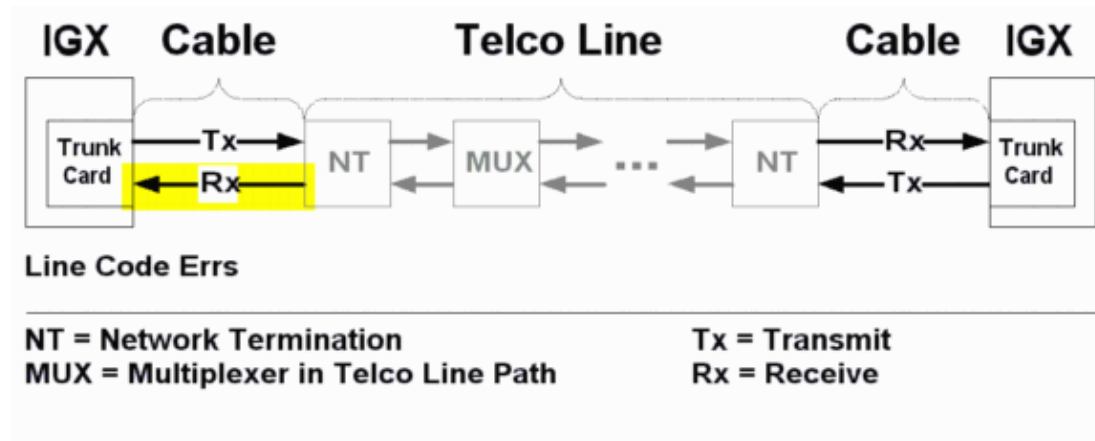
A BPV error event for a B3ZS- or HDB3-coded signal is the occurrence of a pulse of the same polarity as the previous pulse without being a part of the zero substitution code. A BPV typically indicates that a data error has occurred. BPVs cannot pass through higher order transmissions systems. As a result, BPVs cannot be used to determine end-to-end performance. BPVs indicate problems in near-end facilities.

A `Line Code Err` typically involves a local BTM receiver, cable, or network termination (NT) transmitter. Multiplexers on the path do not relay the errors to the next cable segment. Possible causes include:

- Line code configuration mismatches
- Hardware malfunction
- Loose or unconnected shield ground wires
- Bridge taps
- Timing problems
- Electrical interference

## Error Example

The likely location of equipment errors is highlighted in yellow.



## Troubleshooting

The following troubleshooting activities are intrusive. Perform these steps in a maintenance window only

- if user traffic is affected
- or
- if the `dsprks` command indicates an error condition still persists such as when the trunk is not in `Clear-OK`.

Both ends of the trunk must be active during troubleshooting.

1. Issue the `dsprks` command to verify that the trunk is active. If the trunk number is not displayed in the `dsprks` screen, the trunk is not active. To activate a trunk, issue the `uptrk` command.
2. Check the line coding setting by using the `dsprkcnf` command to verify whether they match the settings configured on the Telco side of the trunk.

**Note:** You cannot change the line coding on a BTM trunk. Discrepancies in line coding must be resolved in the Telco equipment.

3. Check the line-coding setting at the distant-end trunk.
  - a. Virtual terminal to the remote IGX by issuing the `vt` command.
  - b. Issue the `dsprkcnf` command at the remote IGX to verify whether the line coding setting of the BTM trunk matches that of the remote Telco equipment.

4. Check cabling between the local BTM card set and the next device upstream, which typically is the local network termination (NT).
  - a. Leave the local cabling connected to the BTM back card but remove it from the NT.
  - b. Connect the transmit (Tx) end to the receive (Rx) end of the open cable to loop it back to the local trunk card.

For E1, use a loopback plug.

For T3/E3, use a BNC connector.

- c. Alternatively, you can place the local NT into the metallic loop toward the local customer premises equipment (CPE). The CPE is the local BTM card set.
  - d. If the **dsptkerrs** command no longer shows incremental errors, the cable and the local trunk module are working properly.
  - e. Monitor the **dsptkerrs** command for a few minutes before restoring the cable configuration. If **dsptkerrs** continues to show incremental errors, continue with Step 5.
5. Check the local hardware by placing a loopback plug for E1 or loopback cable for T3/E3 onto the BTM backcard connector. Issue the **dsptkerrs** command. If information from the command:
    - ◆ Does not show incremental errors, the BTM card set is working properly.
    - ◆ Indicates incremental errors, replace the BTM card set and check for incremental errors.
    - ◆ Does not show incremental errors, replace the cabling and check for incremental errors.
    - ◆ Does not show incremental errors, the cable and BTM card set are working properly.

If the problem persists after performing the troubleshooting steps, please contact the Cisco Systems Technical Assistance Center (TAC) at (800) 553-24HR, (408) 526-7209, the Cisco TAC web site, or send e-mail to [tac@cisco.com](mailto:tac@cisco.com).

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## Related Information

- [WAN Switching Network Synchronization Fundamentals](#)
- [IGX 8400 BTM Trunk Error Troubleshooting and Definitions](#)
- [International Telephony Union \(ITU\) Recommendation G.704](#)
- [Cisco WAN Switching Solutions – Cisco Documentation](#)
- [Guide to New Names and Colors for WAN Switching Products](#)
- [Technical Support – Cisco Systems](#)

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