BTM Tx Voice Pkt Drp Errors

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Introduction

This document discusses broadband trunk module (BTM) transmit voice packet drop errors (`Tx Voice Pkt Drp`) and provides steps to troubleshoot these errors.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

The information in this document applies to the Cisco IGX" BTM with E1, E2, E3, and T3 backcards.

Conventions

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

Error Definition

BTM packet drop errors indicate the number of cells that are discarded from these trunk queues:

Queue	Definition
Voice	Voice activity detection (VAD) voice traffic.
Timestamped (TS)	Low−speed data, voice−signaling traffic.
Non−timestamped (Non−TS)	High−speed data, non−VAD voice, and modem traffic.
Control Card (CC)	Network processor module (NPM) and first two packets of talkspurt traffic. (This was the High Priority queue.)
Bursty data A	Non−Foresight Frame Relay and

(BData A)	high−level data link control (HDLC) frame−forwarded traffic.
Bursty data B (BData B)	Foresight Frame Relay and HDLC frame−forwarded traffic.

`Tx Voice Pkt Drp` errors can have these causes:

- Issue the SuperUser−level **dsptrkutl** command, to check for high trunk utilization. Packet drops can occur when trunk utilization reaches 85 percent. This situation most likely occurs if the utilization of connections was underestimated during configuration. For statistical real−time services such as voice with VAD trunk bandwidth is assigned to each connection based on the configuration. VAD is available for voice connections; it is a feature that only assembles FastPackets when voice is detected.

  If the assumption about how much bandwidth VAD can save was too optimistic, then the connections can generate more FastPackets than the trunk can handle. BTM queue overflow can result in `Tx Voice Pkt Drp` errors on the trunk.

  This scenario frequently occurs if VAD no longer works properly because of an inappropriate configuration. Inappropriate configuration can occur when the VAD threshold is set too high or too low. Such conditions can cause the source IGX channelized voice module (CVM) or universal voice module (UVM) to generate FastPackets, even when the talker is quiet. For more information about VAD tuning, refer to Voice Parameters and Tuning Guide for the IGX 8400, VISM, 3810, FastPAD, and VNS.

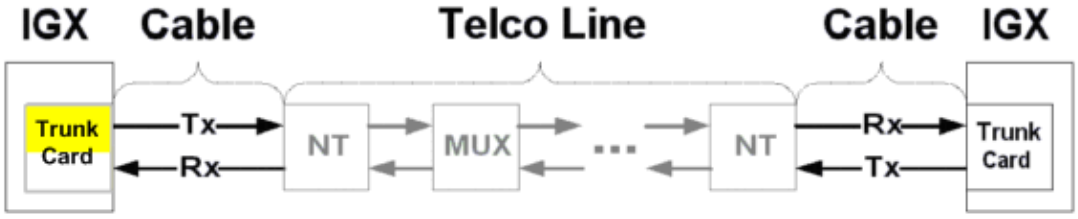
  Actual fill grade can vary quickly for the voice queue, and the rate of FastPackets per connection depends on caller behavior, talk patterns and background noise. Therefore, packet drops on trunk queues typically do not follow predictable patterns. More `Tx Voice Pkt Drp` errors occur during peak hours than during off−peak hours.

  A few discarded cells will not impact service. If a small number of packet drops occurs, monitor the trunk for a few days and take action only if discards reduce voice quality. If this is the case, the most likely symptom reported will be choppy voice.
- Issue the SuperUser−level **cnftrkparm** command, to check for misconfigured trunk parameters.

Error Example

The likely location of equipment errors is highlighted in yellow in this diagram:

Tx Voice Pkt Drop



- NT Network Termination
- MUX The Multiplexer in the Telco line path
- Rx Receive
- Tx Transmit

Troubleshooting

Follow these steps to troubleshoot the error:

1. Issue the SuperUser−level **dsptrkutl** command to check current trunk utilization.

    a. Issue the **clrtrkerrs** command frequently to clear trunk error statistics.
    b. When the **dsptrkerrs** command shows dropped packets, issue the **dsptrkutl** command to find current trunk utilization. If the `Peak Interval Utilization` field is higher than 85 percent, then queue overflows are causing the packet drops.
    c. Issue the **dsptrks** command to identify the distant−end switch and trunk number.
    d. Issue the **vt** command to open a virtual session with the distant−end switch. Issue the aforementioned commands, to verify the trunk errors and utilization at the distant end.
    e. For immediate relief, route voice connections over alternate trunks. Issue the SuperUser−level **dsptrkcons** command to identify the total number of connections that are routed over the problem trunk.
    f. Issue the **dsprts** command to identify the connection identifiers and the current route for all of the connections that are routed across the problem trunk.
    g. Issue one of these SuperUser−level commands to display utilization for each connection that is routed across the problem trunk:

        ◊ voice connection: **dsputl**
        ◊ data connection: **dspdutl**
        ◊ ATM or Frame Relay connection: **dspchstats**
2. To resolve the problem, evaluate the network design of connection parameters and correct, if necessary. For voice connections, the parameter that affects trunk bandwidth allocation is utilization.

    a. Issue the **dspcon** and **dspchcnf** commands to verify connection settings.
    b. To change utilization, issue the **cnfchutl** command. The lower the configured utilization for a voice connection is, the greater the number of voice connections that will be loaded onto one trunk by the routing algorithm. The higher the number of voice connections, the higher the probability of `Tx Voice Pkt Drp` errors.
3. For switch software to allocate the correct amount of bandwidth required on the BTM trunk, the configured utilization value must reflect the actual activity on the connection. Packet drops occur when the configured utilization of many voice connections is lower than their actual use.

    a. Issue the SuperUser−level **cnftrkstats**, **dsptrkstatcnf**, and **dsptrkstathist** commands to collect and view target trunk statistics.

        Note: The statistics require significant network process module (NPM) processing time, so enable them only for troubleshooting activities.
    b. Use Cisco WAN Manager statistics to evaluate trunk use over the long term.
4. Issue the **cnftrkparm** command to check all trunk parameters.

    a. Compare the problem trunk settings to the default values or to other trunks that have similar traffic without packet drops. Important parameters for voice connections are the `Transmit Queue Depth` settings for the `rt−VBR`, `TS`, and `Non−TS` fields of **cnftrkparm**.
    b. Consider specific network requirements before you change the queue depth, because changes will affect all voice connections on this trunk.

If the problem persists after you perform the troubleshooting steps, contact Cisco Systems Technical Support:

- Phone: (800) 553−24HR or (408) 526−7209

- Website: Technical Support − Cisco Systems
- E−mail: tac@cisco.com

Related Information

- **How to Distinguish Between Different IGX NTM Models**
- **International Telephony Union (ITU) Recommendation G.704**
- **IGX 8400 BTM Trunk Error Troubleshooting and Definitions**
- **Cisco WAN Switching Solutions − Cisco Documentation**
- **Guide to New Names and Colors for WAN Switching Products**
- **Downloads − WAN Switching Software (registered customers only)**
- **Technical Support − Cisco Systems**

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