Pulse Code Modulation (PCM) Audio Capture

The Pulse Code Modulation (PCM) Audio capture feature is used for debugging audio quality issues. PCM capture refers to an existing Digital Signal Processor (DSP) feature by which the digital audio signal at various nodes in the audio signal processing path of a voice channel may be intercepted and uploaded to the host router using specialized DSP-to-host message packets. Cisco IOS file services allow a file containing interleaved audio and debug data (.dat) to be created in the local file system or a remote TFTP server. This .dat file is then decoded and deinterleaved into separate, synchronized .wav files for each of the signal interception nodes. This feature is typically employed for capture of audio test signals in troubleshooting specific voice issues such as echo. Signals may be captured at any or all of the defined nodes, including the input-output nodes of an echo canceller (Rin, Sin, Sout), the Acoustic Shock Protection circuit, and the Noise Reduction module. Additional nodes of interest will be added as new signal processing features are introduced.

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see Bug Search Tool and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table at the end of this module.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Information about PCM Audio Capture

PCM Audio Capture

The following are the enhancements to the PCM Audio Capture feature:

- Separate PCM capture and Banjo logger feature so that they do not share the same data (.dat) file; they have their own data file.
- One PCM call per data file is generated dynamically. The filename contains information such as voice port type and number, call ID, calling and called number, GUID, DSP channel number, and time stamp.
- A user on the TDM-TDM or TDM-VoIP call can dynamically enable and disable PCM capture by entering predefined start and stop Dual Tone Multi-Frequency (DTMF) digits.
- More test points or streams can be captured.

Note PCM capture is a CPU-intensive feature, and you must not enable several PCM capture sessions while running heavy traffic.

How to Configure PCM Audio Capture

Configuring PCM Audio Capture

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **voice pcm capture buffer** *number*
4. **voice pcm capture destination** *url*
5. **voice pcm capture on-demand-trigger**
6. **voice pcm capture user-trigger-string** *start-string stop-string* **stream** *bitmap* **duration** *call-duration*
7. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable**	Enables privileged EXEC mode.

	Command or Action	Purpose
	Example: `Router> enable`	• Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**voice pcm capture buffer** *number* **Example:** `Router(config)# voice pcm capture buffer 10`	Configures the number of PCM capture buffers. The Range is from 0 to 200000. To change the PCM capture buffer size, you must first configure it with 0 and then configure it with the desired number.
Step 4	**voice pcm capture destination** *url* **Example:** `Router(config)# voice pcm capture destination tftp://10.10.1.2/acphan/`	Configures or changes the destination URL for storing captured data.
Step 5	**voice pcm capture on-demand-trigger** **Example:** `Router(config)# voice pcm capture on-demand-trigger`	Configures user-triggered PCM capture.

Step 6	**voice pcm capture user-trigger-string** *start-string stop-string* **stream** *bitmap* **duration** *call-duration*
	Example:
	`Router(config)# voice pcm capture #132 #543 stream ff duration 230`
		Changes the default user trigger PCM capture start and stop string, stream, and duration.
		• The start and stop string must have different values.
		• PCM stream bitmap is in hexadecimal. The range is from 1 to FFFFFFF.
		• The stream bitmap definitions are as follows:
		  • bit 0—Rin
		  • bit 1—Sin
		  • bit 2—Sout
		  • bit 3—nonNLP Sout
		  • bit 4—fax modem in
		  • bit 5—fax modem out

	Command or Action	Purpose
		• bit 6—from IP network to TDM earpiece direction: ASP input • bit 7—from IP network to TDM earpiece direction: ASP output • bit 8—NR in • bit 9—NR out • bit 10—from TDM mic to IP network: ASP in • bit 11—from TDM mic to IP network: ASP out
Step 7	**end** **Example:** `Router(config)# end`	Returns to privileged EXEC mode.

Verifying PCM Audio Capture

Perform this task to verify the configuration for the PCM Audio Capture feature.

SUMMARY STEPS

1. **enable**
2. **show voice pcm capture**

DETAILED STEPS

Step 1 **enable**

Example:
`Router>` **enable**

Enables privileged EXEC mode.

Step 2 **show voice pcm capture**

Example:
`Router#` **show voice pcm capture**

```
PCM Capture is on and is logging to URL tftp://10.10.1.2/acphan/
50198 messages sent to URL, 0 messages dropped
Message Buffer (total:inuse:free) 200000:0:200000
```

```
Buffer Memory: 68000000 bytes, Message size: 340 bytes
```

Displays the configured PCM capture buffer and destination, number of saved messages/packets, number of dropped messages/packets, and number of buffers allocated, both used and free.

Additional References for Cisco UBE Serviceability

Related Documents

Related Topic	Document Title
Cisco IOS commands	Cisco IOS Master Command List, All Releases
Voice commands	• Cisco IOS Voice Command Reference - A through C • Cisco IOS Voice Command Reference - D through I • Cisco IOS Voice Command Reference - K through R • Cisco IOS Voice Command Reference - S Commands • Cisco IOS Voice Command Reference - T through Z Commands

Technical Assistance

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	http://www.cisco.com/cisco/web/support/index.html

Feature Information for Pulse Code Modulation (PCM) Audio Capture

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

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Table 1: Feature Information for Pulse Code Modulation (PCM) Audio Capture

Feature Name	Releases	Feature Information
Pulse Code Modulation (PCM) Audio Capture	15.2(2)T	The PCM Capture feature is used for debugging audio quality issues. In Cisco IOS Release 15.2(2)T, this feature was implemented on the Cisco Unified Border Element . The following commands were introduced or modified: show voice pcm capture, voice pcm capture.
Pulse Code Modulation (PCM) Audio Capture	Cisco IOS XE Release 3.6S	The PCM Capture feature is used for debugging audio quality issues. In Cisco IOS XE Release 3.6S, this feature was implemented on the Cisco Unified Border Element (Enterprise) The following commands were introduced or modified: show voice pcm capture, voice pcm capture.