User's Guide

Call Progress Tones Wizard (CPTWizard) Utility

HD VoIP Sounds Better

AudioCodes

Version 6.2 Build 2.8

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Notice

This document describes how to use the AudioCodes Call Progress Tones Wizard (CPTWizard) utility.

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Abbreviations and Terminology

Each abbreviation, unless widely used, is spelled out in full when first used.

Reader's Notes

1 Introduction

This document describes the AudioCodes proprietary Call Progress Tones Wizard (CPTWizard) utility.

The CPTWizard facilitates the provisioning of an FXO device by recording and analyzing Call Progress Tones (CPT) generated by any PBX or telephone network. The CPTWizard creates a basic CPT *ini* file and dat files, providing a good starting point when configuring an FXO device. The *ini* file contains definitions for all relevant CPT; the dat file (which can also be created using DConvert – refer to *DConvert Utility User's Guide*) is in a format that is suitable for loading to the device.

Reader's Notes

2 Installing CPTWizard

The CPTWizard may be include in your shipped software package.

The CPTWizard can be installed on any computer running Windows 2000 or Windows XP. Windows-compliant networking and audio peripherals are required for full functionality. Approximately 5 MB of hard disk space is required.

Before you can use CPTWizard, the FXO device must meet the following conditions:

- Connected to a PBX with two physical phone lines.
- Configured with factory default settings.
- No phone calls during the process.

Note: You must use the CPTWizard version that corresponds to the device's software version.

➢ **To install CPTWizard:**

- Copy the CPTWizard files from the supplied installation kit to any folder on your computer.

Reader's Notes

3 CPT Detection and File Creation with CPTWizard

The CPT file creation using CPTWizard is described in the following chronologically listed subsections.

3.1 Starting CPTWizard and Connecting to FXO Device

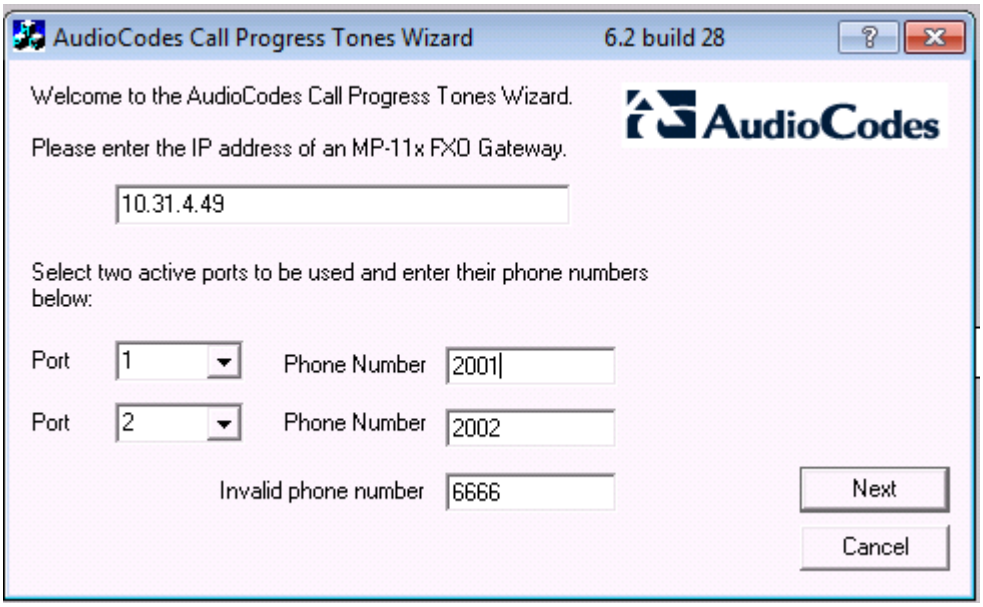
The procedure below describes how to start the CPTWizard and to connect it to the FXO device.

➢ **To start CPTWizard and connect it to the FXO device:**

1. Start CPTWizard by doing one of the following:
   - Double-click the *CPTWizard.exe* file,
     - or -
   - On your desktop, double-click the  icon.

   The following screen is displayed:

Figure 3-1: Initial Settings Screen

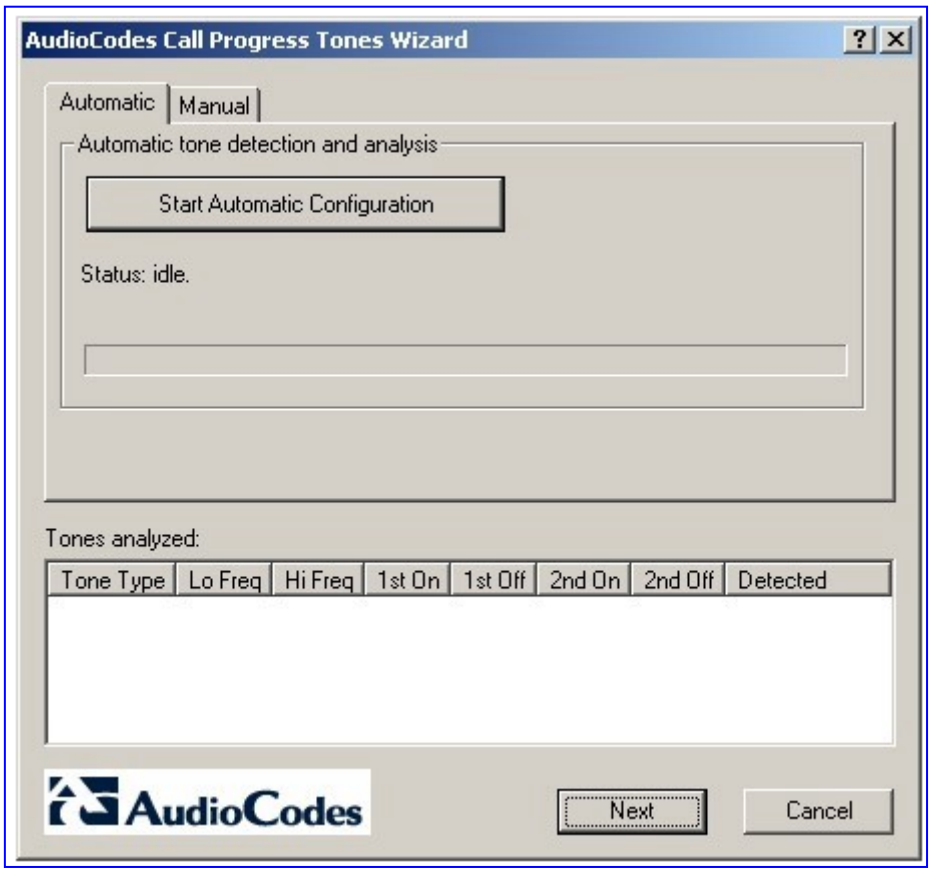


2. Enter the IP address of the FXO device.
3. Select the device's ports that are connected to your PBX, and specify the phone number of each extension.
4. In the 'Invalid phone number' field, enter a number that generates a 'fast busy' tone when dialed. Usually any incorrect phone number should cause a 'fast busy' tone.
5. Click **Next**.

3.2 Automatic CPT Detection and Recording

Once the connection between the CPTWizard and the FXO device is established, the recording screen is displayed:

Figure 3-2: Recording Screen - Automatic Mode

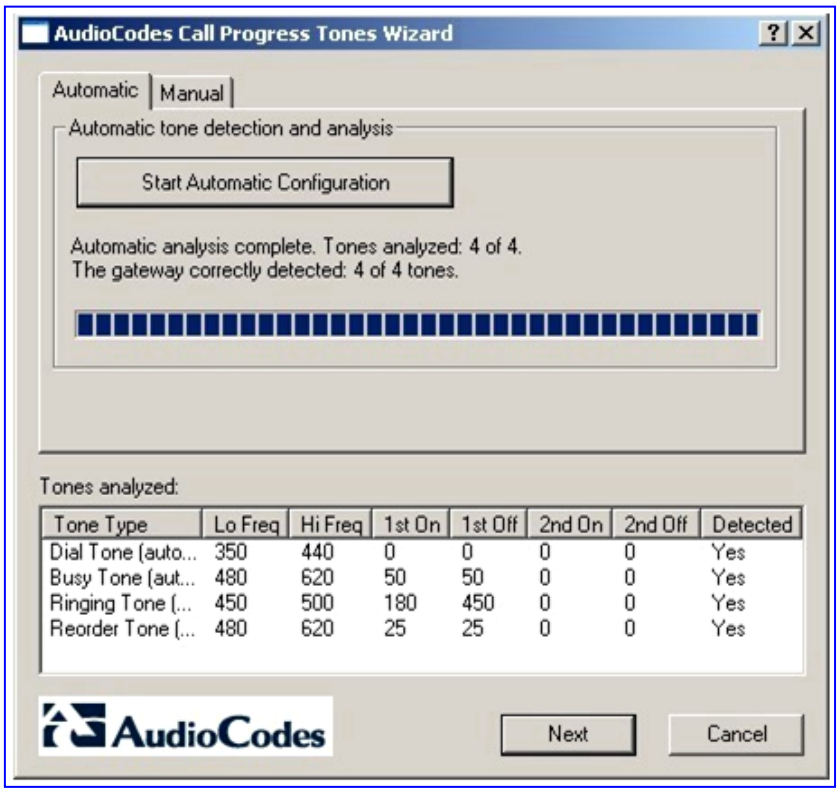


➢ **To start recording in automatic mode:**

1. Click the **Start Automatic Configuration** button; the wizard starts the following Call Progress Tones detection sequence (the operation takes approximately 60 seconds to complete):
   a. Sets port 1 to offhook, and then listens to the dial tone.
   b. Sets port 1 and port 2 to offhook, dials the number of port 2, and then listens to the busy tone.
   c. Sets port 1 to offhook, dials the number of port 2, and then listens to the Ringback tone.
   d. Sets port 1 to offhook, dials an invalid number, and then listens to the reorder tone.

2. The wizard then analyzes the recorded Call Progress Tones and displays a message specifying the tones that were detected (by the device) and analyzed (by the wizard) correctly. At the end of a successful detection operation, the detected Call Progress Tones are displayed in the Tones Analyzed pane, as shown in the figure below:

Figure 3-3: Recording Screen after Automatic Detection



3. All four Call Progress Tones are saved (as standard A-law PCM at 8000 bits per sample) in the same directory as the *CPTWizard.exe* file is located, with the following names:
   - *cpt_recorded_dialtone.pcm*
   - *cpt_recorded_busytone.pcm*
   - *cpt_recorded_ringtone.pcm*
   - *cpt_recorded_invalidtone.pcm*
4. At this stage, you can either click **Next** to generate a Call Progress Tones *ini* and *dat* files and terminate the wizard, or continue to manual recording mode.

Notes:

- If the device is configured correctly (with a Call Progress Tones *dat* file loaded to the device), all four Call Progress Tones are detected by the device. By noting whether the device detects the tones or not, you can determine how well the Call Progress Tones *dat* file matches your PBX. During the first run of the CPTWizard, it is likely that the device does not detect any tones.
- Some tones cannot be detected by the FXO device (such as 3-frequency tones and complex cadences). CPTWizard is therefore limited to detecting only those tones that can be detected on the FXO device.

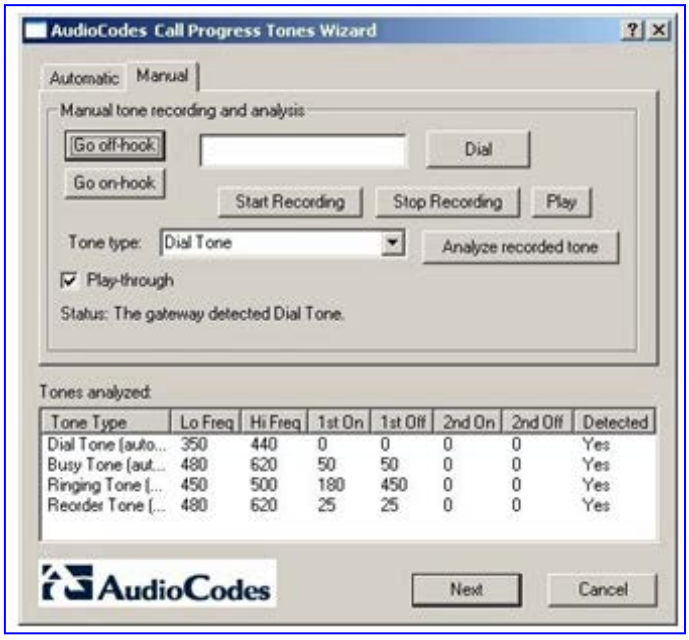
3.3 Manual CPT Detection and Recording

In manual mode, you can record and analyze tones included in the Call Progress Tones *ini* and dat files in addition to the tones analyzed when in automatic mode.

➢ **To start recording in manual mode:**

1. In the recording screen, click the **Manual** tab; the 'Manual Tone Recording' pane is displayed.

Figure 3-4: Recording Screen - Manual Mode



2. Select the **Play-through** check box to hear the tones through your PC speakers.
3. Click the **Go off-hook** button, enter a number to dial in the 'Dial' field, and then click the **Dial** button.
4. When you're ready to record, click the **Start Recording** button.
5. When the desired tone is complete, click **Stop Recording**. (The recorded tone is saved as 'cpt_manual_tone.pcm'.)

Note: Due to some PC audio hardware limitations, you may hear 'clicks' in play-through mode. You can ignore these clicks.

6. From the 'Tone type' drop-down list, select the tone type, and then click **Analyze recorded tone**; the analyzed tone is added to the 'Tones analyzed' list at the bottom of the screen. It is possible to record and analyze several different tones for the same tone type (e.g., different types of 'busy' signal).
7. Repeat the process for more tones, as necessary.
8. When you're finished adding tones to the list, click **Next** to generate a Call Progress Tones *ini* and dat files and terminate the wizard.

3.4 Created ini and dat CPT Files

Once the wizard completes the Call Progress Tone detection, a text file named *call_progress_tones.ini* and a binary file named *call_progress_tones.dat* are created in the same directory in which the *CPTWizard.exe* file is located. The latter is ready for loading to the device and it contains the same output which the DConvert utility would produce when processing the *ini* file.

The *ini* file contains the following information:

- Information on each tone that was recorded and analyzed by the wizard. This information includes frequencies and cadence (on/off) times, which is required when converting the *ini* file to dat.

  Below shows an example of an *ini* file with Call Progress Tone properties:

```
[CALL PROGRESS TONE #1]
Tone Type=1
Low Freq [Hz]=350
High Freq [Hz]=440
Low Freq Level [-dBm]=0
High Freq Level [-dBm]=0
First Signal On Time [10msec]=0
First Signal Off Time [10msec]=0
Second Signal On Time [10msec]=0
Second Signal Off Time [10msec]=0
```

- Information relating to possible matches of *each* tone with the CPTWizard's internal database of common tones. This information is specified as comments in the file and is ignored when converting the *ini* file to a dat file.

  Below shows an example of a file with Call Progress Tone database matches:

```
# Recorded tone: Busy Tone (automatic configuration)
## Matches: PBX name=ITU Anguilla, Tone name=Busy tone
## Matches: PBX name=ITU Antigua and Barbuda, Tone name=Busy
tone
## Matches: PBX name=ITU Barbados, Tone name=Busy tone
## Matches: PBX name=ITU Bermuda, Tone name=Busy tone
## Matches: PBX name=ITU British Virgin Islan, Tone name=Busy
tone
## Matches: PBX name=ITU Canada, Tone name=Busy tone
## Matches: PBX name=ITU Dominica (Commonweal, Tone name=Busy
tone
## Matches: PBX name=ITU Hongkong, China, Tone name=Busy tone
## Matches: PBX name=ITU Jamaica, Tone name=Busy tone
## Matches: PBX name=ITU Korea (Republic of), Tone name=Busy
tone
## Matches: PBX name=ITU Montserrat, Tone name=Busy tone
```

- Information relating to matches of *all* tones recorded with the CPTWizard's internal database. The database is scanned to find one or more PBX definitions that match all recorded tones (i.e., dial tone, busy tone, ringing tone, reorder tone and any other manually-recorded tone - all match the definitions of the PBX). If a match is found, the entire PBX definition is reported (as comments) in the *ini* file using the same format.

  Below shows an example of a file with full PBX/Country Database match:

```
## Some tones matched PBX/country Audc US
## Additional database tones guessed below (remove #'s to
use).
#
# # Audc US, US Ringback tone
# [CALL PROGRESS TONE #5]
# Tone Type=2
# Low Freq [Hz]=450
# High Freq [Hz]=500
# Low Freq Level [-dBm]=0
# High Freq Level [-dBm]=0
# First Signal On Time [10msec]=180
# First Signal Off Time [10msec]=450
# Second Signal On Time [10msec]=0
# Second Signal Off Time [10msec]=0
```

Notes:

- If a match is found in the database, consider using the database's definitions instead of the recorded definitions, as they might be more accurate.
- For full operability of the FXO device, it may be necessary to edit this file and add more Call Progress Tone definitions. Sample Call Progress Tones *ini* files are available in the release package.
- When the call progress tones *ini* is complete, the corresponding dat file is ready for download. After loading this file to the device, repeat the automatic detection phase discussed above, and verify that the device detects all four call progress tones correctly.
- Manually changing the *ini* file causes the dat file to be outdated and it therefore, needs to be re-generated according to the new *ini* file. A dat file may be regenerated by clicking the **Regenerate** button at the final dialog or by using the DConvert utility.

4 Adding a Reorder Tone to the CPT File

The following procedure describes how to add a Reorder tone that a PBX generates to indicate a disconnected call, to the CPT file.

➢ **To add a Reorder tone to the CPT file:**

1. Make a call (using G.711) between the device FXO, which is connected to the PBX, and a remote entity in the IP network.
2. Capture the call using a network sniffer such as Wireshark.
3. Disconnect the call from the PBX side, and then wait approximately 30 seconds before stopping the Wireshark recording.
4. In the network trace, locate the RTP stream sent from the FXO.
5. Save the RTP payload on your PC as a *.pcm file by clicking **Save Payload** (**Statistics** menu > **RTP** > **Stream Analysis**). (Note: ensure that you select the 'forward' option.)
6. Open the *.pcm file in a voice recording utility such as CoolEdit.
7. Locate the tone that the PBX played to indicate the disconnected call (if such a tone exists).
8. Locate the attributes of the tone -- its frequency and interval (on / off time).
9. In the Call Progress Tones file, add a new Reorder Tone with the attributes you found in the previous step. Ensure that you update the numbers of the successive tones and the total number of tones in the beginning of the file.
10. Create a Call Progress Tones.dat file using the DConvert Utility (refer to the *DConvert Utility User's Guide*).
11. Load the new file to the device, and then reset the device.

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