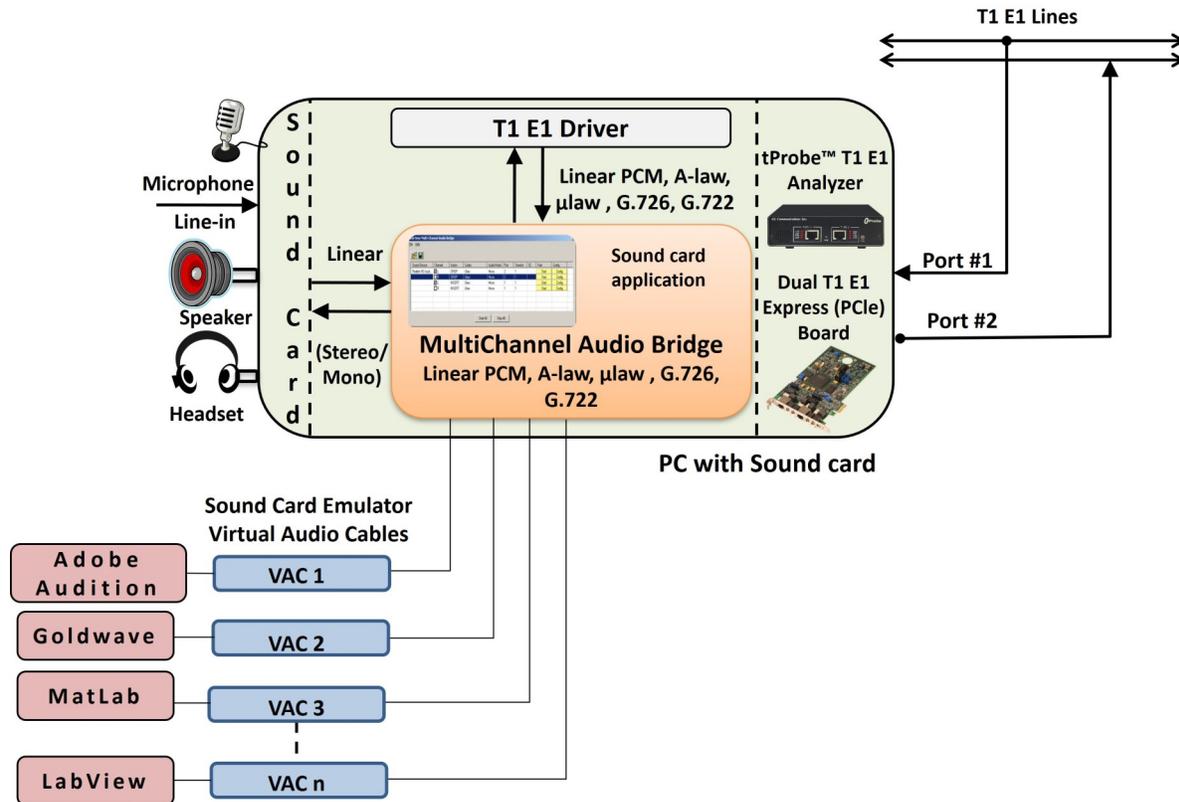


# Real-Time Multi-Channel Audio Bridge



## Overview

The Real-Time Multi-Channel Audio Bridge has the ability to send and receive audio between a sound card and T1 E1 timeslots. Real-Time Multi-Channel Audio Bridge application provides a bridge between T1 E1 timeslots and single or multichannel sound card(s). The application allows user to insert speech onto T1 E1 timeslots using the PC microphone.

Also, listen to speech on T1 E1 timeslots using PC speakers or Headphones. This application is available as a part of basic applications with all T1 E1 analyzers.

This powerful optional application can also interwork with other “sound card aware” applications like Goldwave, Adobe Audition, Audacity, Matlab, LabView and many others. In this case, third party “virtual sound card” software is required, e.g. VAC (Virtual Audio Cable).

For more details, refer to [Real-Time Multi-Channel Audio Bridge](#) webpage.

## Main Features

- Insert speech on T1 E1 lines using microphone connected to the sound card i.e., stream audio to channel/subchannel from the sound card
- Listen/Drop speech on T1 E1 lines using PC speakers or Headphone using sound card - Stream audio from channel/subchannel to sound card
- Supported codecs are A-law, Mu-law, 16 k Linear PCM, G.726 40 Kbps, 32 Kbps, 24 Kbps, 16 Kbps data rates, and G.722
- Mono and Stereo audio modes supported
- Configure Drop and Insert, codec type, Mono/Stereo Audio Mode, port, Channel, Subchannel for a sound device
- Automatic detection of sound devices including Virtual Audio Cable (VAC)



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## Applications

- Audio editing applications like Gold Wave, Adobe Audition that normally send or receive audio streams to / from a sound card can be directed to timeslots on GL's T1 E1 cards
- Real-time transmit streaming from sound card and viewing of receiving stream
- Trouble shoot audio problems on T1 E1 timeslots
- Audio editing features/ special effects such as noise reduction, delay, echo, fade, equalization can be performed with sound aware programs
- Supports non-contiguous timeslots for performing Drop and Insert actions

## Audio Bridge Configuration

This application can be used on T1 E1 channels carrying voice traffic from within trunks. With drop function, the audio from the loudspeaker helps to quickly verify the faults such as noise, echo, and power level differences. With insert function, users can overwrite any channel with test tones to perform loopback tests without disrupting the remaining channels. By comparing T1 E1 results, technicians can determine if the problem is at the source or the T1 E1 portion of the network. This application also eliminates the need to externally drop or insert audio from/to VF ports.

Action	Sound Device	Audio Mode	Channel	Codec	Samples (sec)	Port	Start TS	Start SC	Start
DROPP	Speakers (Realtek High Definiti	Stereo	L	G.726 40 Kbps	8000	1	1	4	Start
		Stereo	R	Ulaw	8000	1	1	1	Start
DROPP	Speakers (Realtek High Definiti	Stereo	L	G.726 40 Kbps	8000	2	1	4	Start
		Stereo	R	Ulaw	8000	2	1	1	Start
DROPP	Realtek Digital Output (Realtek	Stereo	L	Alaw	8000	1	0	1	Start
		Stereo	R	16-Bits Linear PCM	8000	1	0	1	Start

**Audio Bridge Configuration**

### Drop (to PC sound card) & Insert (from PC sound card) Actions

The audio signals from selected T1 E1 channels can be dropped on the Left and Right channels of the PC sound card. Similarly, the audio signals from the PC sound card can be inserted on the selected T1 E1 channels.

Action	Sound Device	Audio Mode	Channel	Codec	Samples (sec)	Port	Start TS	Start SC	Start
DROPP	Speakers (Realtek High Definiti	Stereo	L	Ulaw	8000	1	0	1	Start
		Stereo	R	Ulaw	8000	1	0	1	Start
INSERT	FrontMic (Realtek High Definiti	Mono		Ulaw	8000	1	0	1	Start
INSERT	FrontMic (Realtek High Definiti	Mono		Ulaw	8000	1	0	1	Start

**Drop and Insert Actions**

## Mono and Stereo Modes

In **Mono mode** (Ex: intercom, telephone), all the audio input signals are mixed together and routed through a single audio channel (Left). By default, audio mode is set to Mono.

In **Stereo mode** (Ex: radio – multiple sources) utilizes two independent audio signal channels, and the input heard through speakers will be an apparent image of the original sound source. In this case, both L (Left) and R (Right) channels carry audio signals.

Action	Sound Device	Audio Mode	Channel	Codec	Samples (sec)
DROP	Speakers (Realtek High Definiti	Stereo	L	G722	16000
		Stereo	R	Ulaw	8000
INSERT	FrontMic (Realtek High Definiti	Mono		G.726 40 Kbps	8000
INSERT	FrontMic (Realtek High Definiti	Mono		Ulaw	8000

**Mono and Stereo Mode**

## Codec Selection

- 16-Bits Linear PCM codec with compatible bit rates and audio sampling frequencies can support up to 8 audio channels.
- Both A-Law and Mu-Law PCM (64kbps), 8 bits are required to represent each sample.
- G.726 is a speech codec standard covering the transmission of voice at rates of 16, 24, 32, and 40 kbit/s.
- G.722 is an ITU-T standard 7 kHz wideband speech codec operating at 64 kbit/s. G.722 sample audio data at a rate of 16 kHz (using 14 bits), double that of traditional telephony interfaces, which results in superior audio quality and clarity.

## Card Number, Timeslots, and Subchannels

In a Dual T1 E1 Card, card #1 and card #2 are available cards for test. Normally, if card #1 is chosen for Drop then the opposite card, i.e., card #2 is chosen for Insert or vice-versa. Supports non-contiguous timeslots for performing Drop and Insert actions. Timeslots 0 to 23 for T1 and 0 to 31 for E1 are available for testing. The data may be transmitted on any of the user-defined bits (contiguous only), in which case, corresponding DS0 bits under Subchannels 8-56 kbps pane must be selected. Depending on the codec type, the number of subchannels can be selected. For example for 32 kbps pipe the following sub channel selections are valid 1-4,2-5, 3-6, 4-7.

Action	Sound Device	Audio Mode	Channel	Codec	Samples (sec)	Port	Start TS	Start SC	Start
INSERT	mic (2- High Definition Audio D	Mono		G.726 40 Kbps	8000	1	0	2	Start
DROP	Headphones (2- High Definition	Mono		G.726 40 Kbps	8000	1	0	2	Start
DROP	Digital Audio (S/PDIF) (2- High	Mono		Ulaw	8000	1	0	1	Start

**Port Number, Timeslot, and Subchannels**

## Buyer's Guide

Item No	Product Description
<a href="#">XX017</a>	Real-time Multi-Channel Audio Bridge (Available as a part of basic applications in T1 E1 analyzer)

Item No	Related Software
<a href="#">XX020</a>	Record and Playback of Files
<a href="#">SA048</a>	Goldwave Software

Item No	Related Hardware
<a href="#">PTE001</a>	tProbe™ Dual T1 E1 Laptop Analyzer with Basic Analyzer Software
<a href="#">FTE001</a>	QuadXpress T1 E1 Main Board (Quad Port– requires additional licenses)
<a href="#">ETE001</a>	OctalXpress T1 E1 Main Board plus Daughter Board (Octal Port– requires additional licenses)
<a href="#">XTE001</a>	Dual T1 E1 Express (PCIe) Boards (requires additional licenses)

**Note:** PCs which include GL hardware/software require Intel or AMD processors for compliance.

For more details, refer to [Real-Time Multi-Channel Audio Bridge](#) webpage.