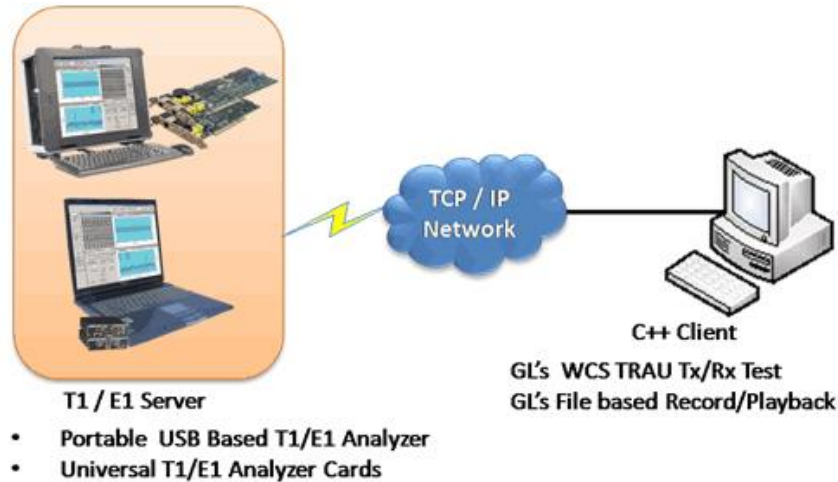


# WCS TRAU Traffic Emulation and Analysis

(WCS TRAU Tx/Rx Test & WCS TRAU Record / Playback)



## Overview

GL provides client-server based TRAU Record/Playback, and TRAU Emulation & Analysis modules.

The WCS TRAU Tx/Rx Test (TrauTerr) module is a GUI based client as well as command-line based client application, which can simulate & analyze TRAU/CCU (BTS or BSC end) on GL's T1/E1 cards. The application is capable of generating and receiving TRAU traffic (with or without impairments) based on the codec type, and time alignment (if specified). The frames are transmitted through the 16 or 8 kbps channels. Traffic source can be sequence number, HDL files (containing trau frames), flat binary file, and user-defined frames (ASCII HEX string/file). This application can be used to test the correctness of the received data, by comparing with predefined patterns.

The File based TRAU Record /Playback is a command-line based client module that allows transmission / reception of TRAU frames in \*.hdl file format.

GL's Windows Client/Server software allows the user of T1/E1 analysis cards, the capability of remote operation, automation, and multi-site connectivity. Server software can run multiple tasks simultaneously at the request of the client software.

For more information, please visit [TRAU Traffic Analysis and Emulation](#) webpage.

## Main Features

- Simulates TRAU traffic over Abis and Ater interfaces.
- Can be used to test the backhaul network. (Backhaul network is the traffic generated by BTS which is transported to the corresponding BSC across a network).
- Ideal solution for remote access & automated testing using command line scripts.
- Can create multiple sessions of uplink or downlink in 8/16 Kbps.
- Supports speech codec for verification of correct data transmission which includes GSM codecs such as GSM 6.10(FR), Half Rate (HR), Enhanced full rate (EFR), Adaptive multi Rate (AMR - Rates 4.75, 5.15, 5.90, 6.70, 7.4, 7.95, 10.2, & 12.2 kbps) and Adaptive Multi Rate-Wide Band (AMR-WB - Rates 6,.60, 8,.85, 12,.65 kbps).
- Payload traffic generation and verification using Sequence number, HDL file (containing packets/frames), Flat binary file, and User-defined frame (ASCII HEX file) for each session independently.
- Time Alignment can be applied in the TRAU frames.
- Supports various impairments - CRC error, frame duplication, and more.
- Provides detailed test (Tx/Rx) results for each TRAU session.



818 West Diamond Avenue - Third Floor, Gaithersburg, MD 20878, U.S.A  
(Web) [www.gl.com](http://www.gl.com) - (V) +1-301-670-4784 (F) +1-301-670-9187 - (E-Mail) [info@gl.com](mailto:info@gl.com)

## Adding TRAU Sessions

Various TRAU session of 8 or 16 Kbps transmission rate can be added by specifying the device number, channel, and sub-channel. The sessions can be of various codecs and uplink or downlink directions.

For 8kbps rate, HR, AMR Lower Codec (4.75kbps, 5.15kbps, 5.90kbps), AMR6.4kbps and AMR7.4kbps are supported, while for 16kbps transmission rate, FR (GSM 610), EFR, AMR, AMR-WB, and HR codecs are supported.

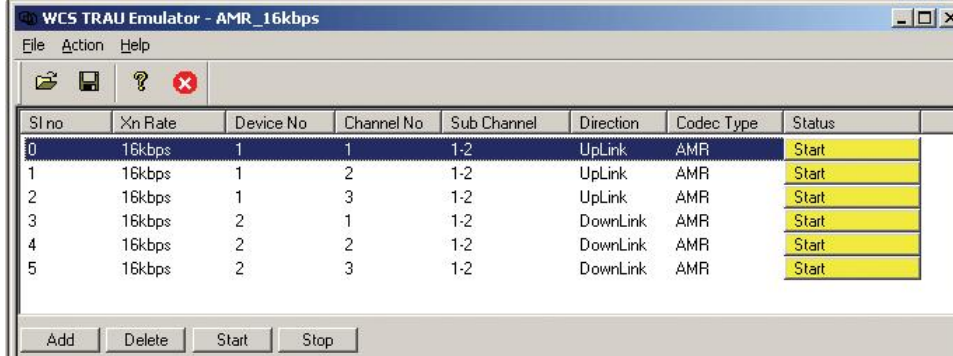


Figure: WCS TRAU Emulator

## Traffic Generation and Reception

The traffic is generated and received on the individual TRAU session. The Tx parameters are used to generate traffic and Rx parameters are used as reference to verify the received frames. Payload data can be sequence numbers, frames from HDL file, raw data from flat binary file, and user-defined frame from ACSII based HEX file.

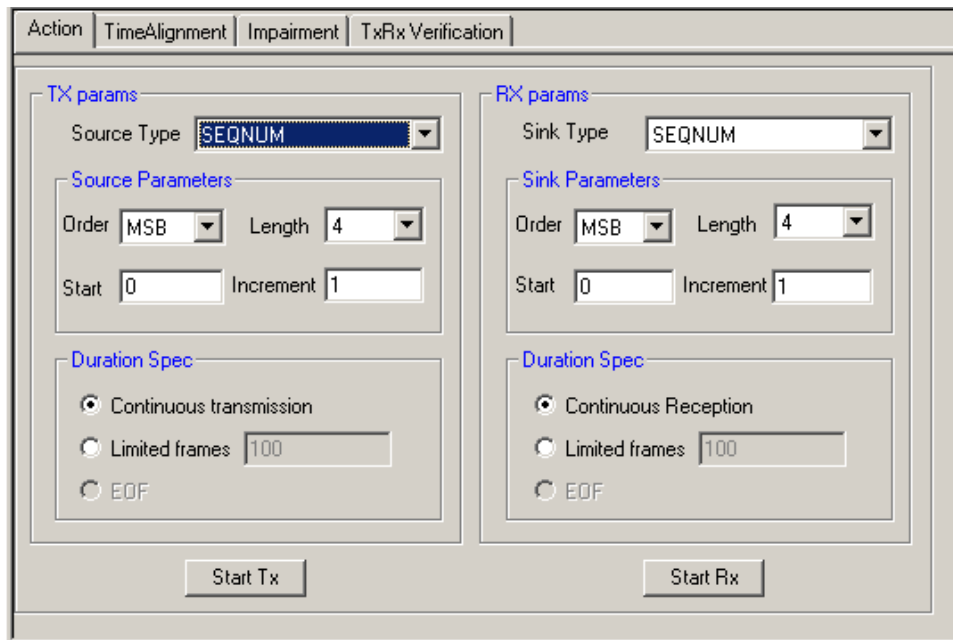


Figure: Traffic Generation and Verification

## Impairment and Time Alignment

Various impairments can be introduced before frames are transmitted or during traffic generation. The frames can be impaired by applying impairment to a particular TRAU session. One can specify a limited number of impairments or continuous impairments.

**Time alignment** can be applied to the specified TRAU frames with specified interval once the transmission is started. The TRAU frames can be delayed or advanced by specified value in msec/uSec.

The image shows two side-by-side screenshots of a software interface for traffic generation and verification. The left screenshot shows the 'TimeAlignment' tab with the following settings: TA type is 'XT', TA Sequence is '10 msec' and '125 uSec', Interval for every TA is '10 frames', Repeat Sequence is '-1 times', and there is a 'Transmit Frame with TA Delay/Advance' button. The right screenshot shows the 'Impairment' tab with 'Enable' checked, 'Impairment Duration' set to 'Repeat 1' and 'Skip 1', 'Impairment Type' set to 'DUPLICATE', and 'Options' set to 'Duplicate Count 1'.

Figure: Traffic Generation and Verification

## Buyer's Guide

Item No	Product Description
<a href="#">XX646</a>	w/TRAU Tx/Rx Test
<a href="#">XX153</a>	T1/E1 Real-time TRAU Protocol Analyzer, TRAU Traffic Playback, TRAU Toolbox™
<a href="#">XX150</a>	GSM Protocol Analyzer
<a href="#">XX155</a>	GPRS Protocol Analyzer
Item No	Related Hardware
	*Specifications and features subject to change without notice.
<a href="#">UTE001</a>	USB based Dual T1 or E1 Laptop Analyzer
<a href="#">HTE001</a>	Universal HD T1 or E1 PCI Cards
<a href="#">FTE001</a>	QuadXpress T1 E1 Main Board (Quad Port)
<a href="#">ETE001</a>	OctalXpress T1 E1 Daughter boards (Octal Port)
<a href="#">PTE001</a>	tProbe™ Dual T1 E1 Laptop Analyzer (Require Basic Software)
<a href="#">XTE001</a>	Dual Express (PCIe) T1 E1 Boards

For more information, please visit [TRAU Traffic Analysis and Emulation](#) webpage.



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818 West Diamond Avenue - Third Floor, Gaithersburg, MD 20878, U.S.A  
 (Web) [www.gl.com](http://www.gl.com) - (V) +1-301-670-4784 (F) +1-301-670-9187 - (E-Mail) [info@gl.com](mailto:info@gl.com)