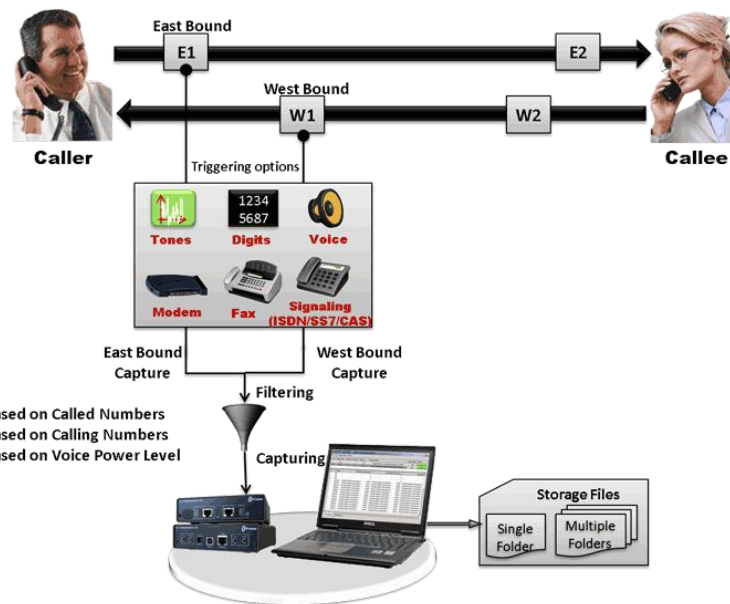


## T1 (E1) Multiple Call Capture and Analysis



Non-Intrusively Record, Analyze, and Playback Calls

Control Multiple Instances in a Single GUI

Analyze ISDN, SS7, Voice, Fax, Modem, & Tones

Analyze DTMF, MF, or MFC-R2 Digits

Analyze Signaling Protocols

View Calls in Time, Spectral, or Spectrogram Modes

Analyze Voice Modem, and Fax Quality

Capture Any Traffic of Specified Power Level

ISDN Triggering with Filtering options

Automatic & Manual Modes of Recording

Logs Call Summary, Facility Alarms, & Supervisory Signals (\*.csv or binary)

### Overview

**Multi CCA** is used to monitor hundreds of calls, capture the bidirectional data, signaling and traffic, simultaneously from multiple T1/E1 lines, based on the user-defined trigger configurations. Once the capture trigger type is selected, users can control and run multiple capture instances on different T1/E1 ports from a single GUI.

Results from Multi CCA include -

- voice capture for both directions
- complete signaling information for each direction for CAS, ISDN, MFC-R2, and SS7
- all alarms and errors occurring during the call including BPV, Frame Errors, CRC errors, LOS, and more

Subsequently, captured calls can be played back and analyzed in time and spectral modes using a commercial sound card, built-in high fidelity speakers, and audio viewing software (Adobe Audition, or Goldwave).

For more details on Multi CCA, refer to <http://www.gl.com/t1e1-multiple-call-capture-analysis.html>

### Main Features

- Run multiple capture instances on different T1/E1 ports from a single GUI.
- Ability to capture calls using different Triggering modes ;both signaling (CAS -R1, wink start, MFC-R2), message based (ISDN, SS7) & traffic (voice, fax, modem, tones, digits...) activated triggers supported.
- Each capture instance is identified by a unique probe name, and can have different trigger options, such as the timeslot selection, output directory, record time, and so on.
- Capability of capturing on both directions simultaneously or from a single direction, East or West side
- Supports capturing of various types of traffic including signaling bits, voice-band data, and signaling protocol data (e.g. DTMF or MF digits).
- Different encoding formats supported (u-law, A-law, PCM).
- Provides an option of stamping the captured files sequentially or with date/time.
- "Call filtering" feature is used to capture calls with a user-defined called or calling numbers rather than all calls in case of ISDN and SS7 calls.



**GL Communications Inc.**

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## Applications of Multi CCA

- Call recording for post analysis
- Analysis of single/dual tones, DTMF and MF digit purity (frequency, power, duration)
- Analysis of call quality (speech levels, noise levels, echo return loss, speech clipping, impulse noise, and other impairments)
- Call activity analysis
- Signaling protocol analysis (off/on durations, wink durations, etc.)
- Monitoring and recording ISDN calls at various network elements such as ISDN bridges, routers etc.

CC No	Capture Name	West(Port)	East(Port)	Timeslots	Storage Location	Trigger Option	Action
1	CCA1	1	2	0-10	C:\Program Files\GL Communications Inc\Probe T1 Analyzer	Edit	Abort
2	CCA2	1	2	11-21	C:\Program Files\GL Communications Inc\Probe T1 Analyzer	Edit	Abort

TS	TS Status	West Filename	Bytes Cap...	East Filename	Bytes Cap...	Signaling Fil...
0	Capturing	C:\Program Files\GL Communications...	1023408	C:\Program Files\GL Communications...	1023408	C:\Program Files\GL Communications...
1	Capturing	C:\Program Files\GL Communications...	1023408	C:\Program Files\GL Communications...	1023408	C:\Program Files\GL Communications...
2	Capturing	C:\Program Files\GL Communications...	1023408	C:\Program Files\GL Communications...	1023408	C:\Program Files\GL Communications...
3	Capturing	C:\Program Files\GL Communications...	1023408	C:\Program Files\GL Communications...	1023408	C:\Program Files\GL Communications...
4	Capturing	C:\Program Files\GL Communications...	1023408	C:\Program Files\GL Communications...	1023408	C:\Program Files\GL Communications...
5	Capturing	C:\Program Files\GL Communications...	1023408	C:\Program Files\GL Communications...	1023408	C:\Program Files\GL Communications...
6	Capturing	C:\Program Files\GL Communications...	1023408	C:\Program Files\GL Communications...	1023408	C:\Program Files\GL Communications...
7	Capturing	C:\Program Files\GL Communications...	1023408	C:\Program Files\GL Communications...	1023408	C:\Program Files\GL Communications...
8	Capturing	C:\Program Files\GL Communications...	1023408	C:\Program Files\GL Communications...	1023408	C:\Program Files\GL Communications...
9	Capturing	C:\Program Files\GL Communications...	1023408	C:\Program Files\GL Communications...	1023408	C:\Program Files\GL Communications...
10	Capturing	C:\Program Files\GL Communications...	1023408	C:\Program Files\GL Communications...	1023408	C:\Program Files\GL Communications...
11	Idle	-	0	-	0	-
12	Idle	-	0	-	0	-
13	Idle	-	0	-	0	-
14	Idle	-	0	-	0	-
15	Idle	-	0	-	0	-
16	Idle	-	0	-	0	-

Figure: Call Capture Analysis

## Operating Modes

Different ways to trigger Capture are – Manual, Signaling, Tone, Signaling + Tone, ISDN Signaling, SS7 Signaling & Traffic such as fax, modem, voice, and any type of signal with specified power level.

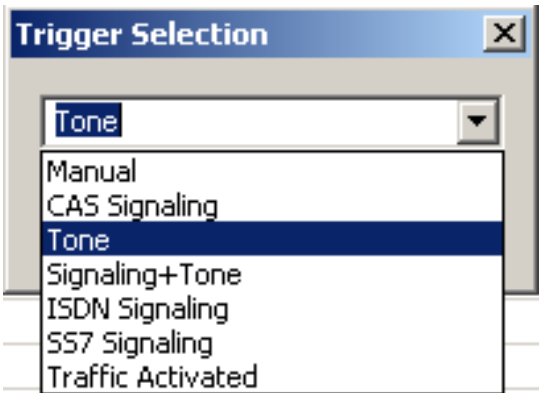


Figure: Triggering Modes

## Oscilloscope (Time) and Spectral (Frequency) Views

There are several methods for viewing captured files supported by various third-party visualization programs such as **Adobe Audition** and **Goldwave** programs. Adobe Audition and Goldwave are used with a variety of file formats including PCM, wav, and others. Adobe Audition and Goldwave can be used to visualize both East and West files. Any of these graphical software programs should be installed in order to directly invoke application.

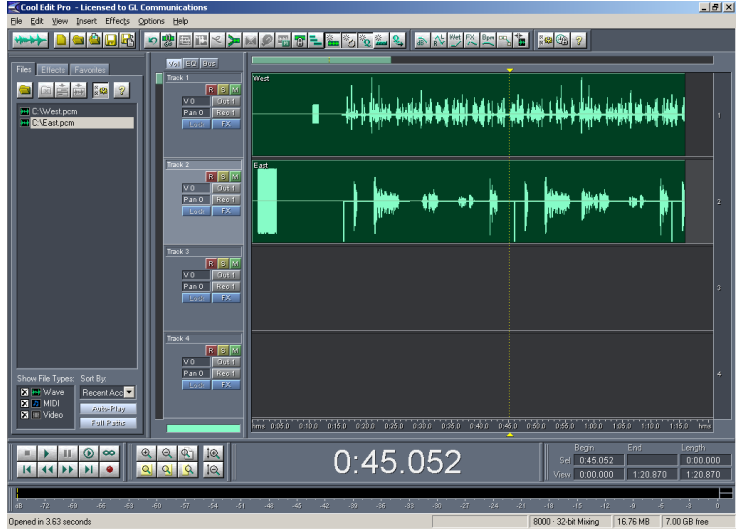


Figure: Adobe Audition Software

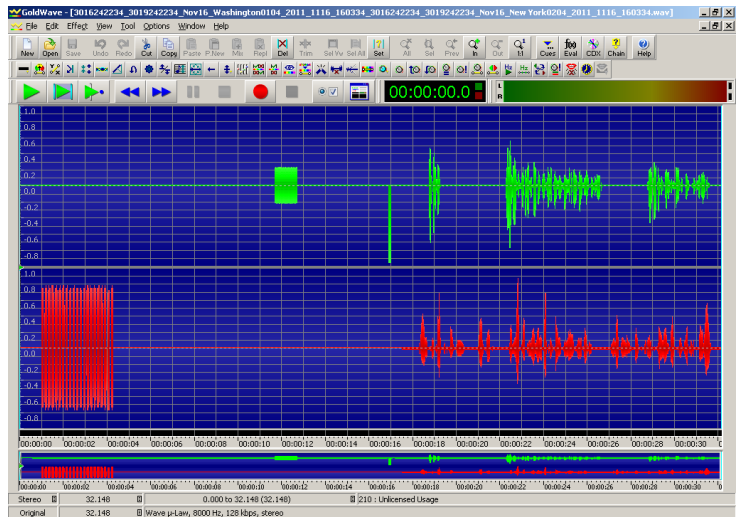


Figure: Gold Wave Software



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## SS7 Call Capture

SS7 calls are defined in CIC groups. CIC group Configuration is used to assign CIC to a particular cardno:timeslot/ a set of CIC to a set of cardno:timeslot.

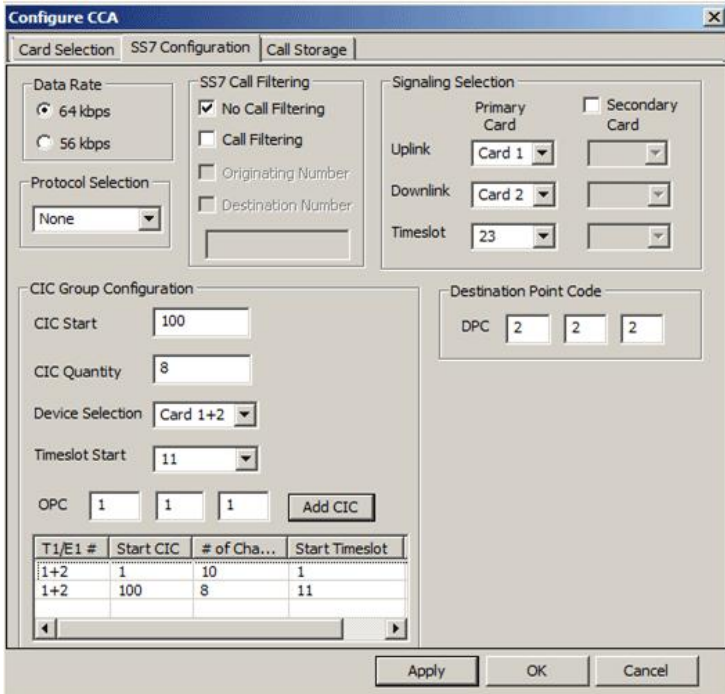


Figure: SS7 Options

## ISDN Call Capture Option with NFAS

The Multi CCA gets triggered when any ISDN calls are placed. Capture occurs after the ISDN message, "SETUP", is detected. Call filtering option is available, which allows application to capture calls only on the called/calling number defined by the user. Multi CCA also supports NFAS.

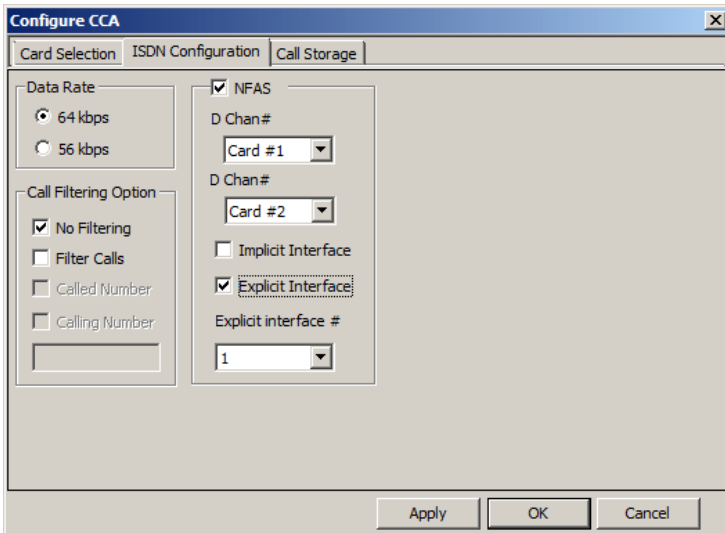


Figure: ISDN Options

## Traffic Triggered Call Capture

Multi CCA also includes a feature to trigger capturing of calls based on various types of traffic such as fax, modem, voice, standard tones, digits, and so on. They are V.22 bis forward channel, V.22 bis reverse channel, V.34 & V.90 uplink, V.29, V.32/ V.17 > 2400 bps, V.27 ter @ 4800 bps, V.27 ter @ 2400 bps, Voice, binary V.90 downlink, FSK, DTMF digits, Dial tone, Ringback, and Busy tone. Detecting the above types of traffic requires use of the traffic classifier.

2048 byte (256 ms) block of data is sent to the traffic classifier. The traffic classifier determines if the data is one of the accepted types of traffic. If the condition is met, then capture of the traffic data commences.

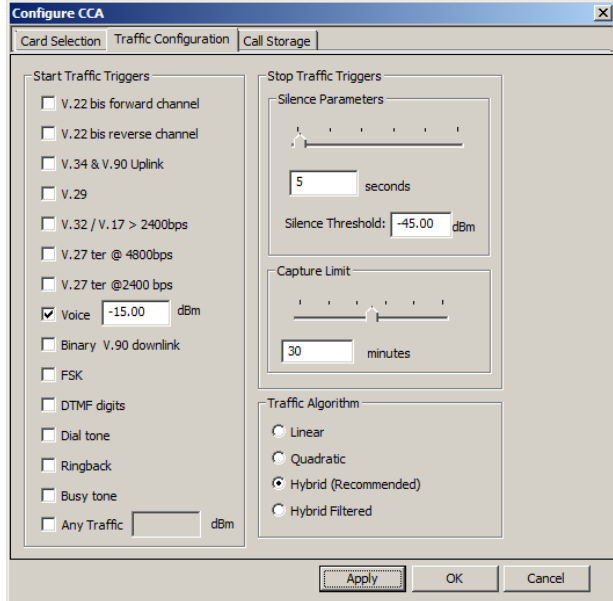


Figure: Traffic Options

## Tone Triggered Call Capture

User can define the single and/or dual tones need to be detected by the application. Various other options such as Power Threshold, Inter-burst Length Threshold & S/N ratio can be specified for the defined tones.

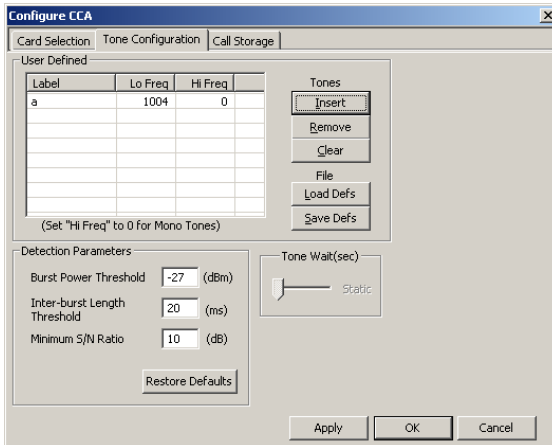


Figure: Tone Parameters Option



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## Call Storage

Multi CCA supports creation of subfolders automatically based on the system time & date and user-specified time-period.

**File Creation** provides options for stamping captured files sequentially or with the date/time, user-defined direction labels, probe name etc.

Multi CCA supports creation of subfolders automatically based on the system time & date and user-specified time-period using the Call Storage feature. 'Save Folder' option places all the files captured in a desired directory with the file extension (pcm, a-law,  $\mu$ -law, & others) as specified by the user.

Ex: With '3' as Create New Subfolder Every value, and 'Voicecapture' as Subfolder Name Prefix value, it will create folders every 3 Hours with the system date & time automatically appended to the folder name, for example-Voicecapture0122091808.

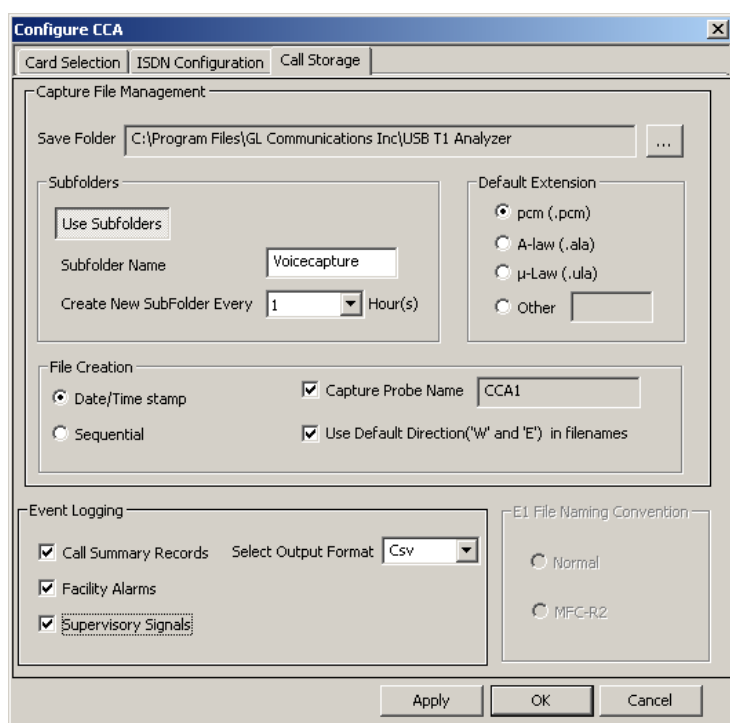


Figure: Call Storage Options

## Multi CCA with other GL applications

**GLInsight™** - The captured files can be analyzed using GLInsight™ Modem and Fax Analysis Software for 2-wire Analog interface.

**Call Management Utility** – Provides all the necessary management tools to perform function of recording voice calls. Call records are immediately generated, indexed, and displayed once a voice recording over T1 or E1 lines is completed by the Multi CCA.

**Call Data Records** – Call Data Records is an optional application that produces call summary and call detail reports based on the input event log files (\*\_csr.csv, \*\_fac.csv, \*\_sbf.csv) of Multi CCA.

**Voice Band Analyzer** - VBA operates in near-real-time, processing the signal files recorded by Multi CCA. It is an analysis tool that monitors voice band network traffic for monitoring speech and noise levels, and line echo.

## Buyer's Guide

[XX030](#) - Multi Call Capture Analysis Software and its accessories

[XX031](#) – Multi CCA with Traffic Activated Triggering

## Related Hardware

[PTE001](#) - tProbe™ Dual T1 E1 Laptop Analyzer (Requires Basic Software)

[FTE001](#) - QuadXpress T1E1 Main Board

[ETE001](#) - OctalXpress T1E1 Main Board plus Daughter Board

[HTE001](#) - Universal T1/E1 Card (Requires Basic Software)

[UTE001](#) - Portable USB based Dual T1/E1 Laptop Analyzer (Requires Basic Software)

## Related Software

[CDR032](#) - Call Data Records (CDR) Software

[SA026](#) - Adobe Audition Software

[SA048](#) - Goldwave Software

[VBA032](#) - Near Real-time Voice-band Analyzer

[VQT035](#) - 2-wire Voice Recorder

[XX680](#) - T1/E1 Traffic Classifier

[CM0031](#) - Call Management Utility

[FXT001/FXT002](#) - GLInsight™ Single Fax Analysis – TDM/IP

[MDT001/MDT002](#) - GLInsight™ Single Modem Analysis-TDM/IP



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