

Non-Intrusive Record, Analysis, and Playback T1/E1 Calls

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 Quality, Modem/Fax Calls

Capture Any Traffic of Specified Power Level

ISDN Triggering with Filtering options

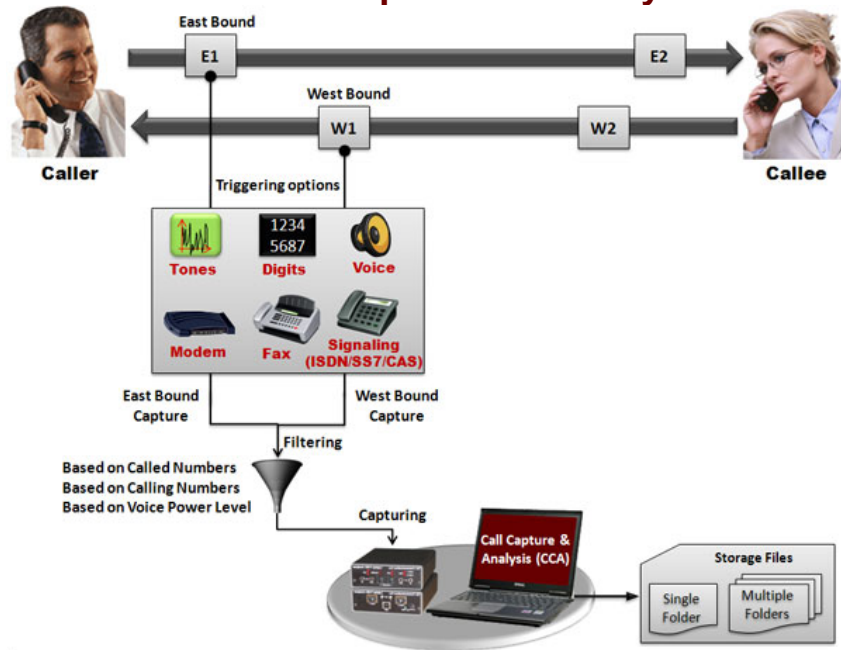
Automatic & Manual Termination of Recording

Automatic Conversion of Files to WAV File Format

Stamping Captured Files Sequentially or with Date/time

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

T1/E1 Call Capture and Analysis



Overview

The Call Capture and Analysis (CCA) application is used to capture calls directly from the T1/E1 lines. The system uses T1/E1 Analyzer hardware to interface non-intrusively with T1 or E1 lines. Users can capture on east and west directions simultaneously in both manual and auto scanning. For auto scanning, ISDN, SS7, CAS (R1, wink start, MFC-R2), and Traffic (voice, fax, modem, tones, & any traffic with specified power level) activated signaling triggers are supported. 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/Goldwave).

Main Features

- Both manual and auto scanning capture modes can be triggered from both directions (east and west) of transmission simultaneously.
- Captured PCM data is saved as two synchronized disk files (east and west directions) for post processing.
- All call data are captured including signaling bits, voice-band data, signaling protocol data (e.g. DTMF or MF digits), various types of traffic such as fax, modem, voice, and any traffic with specified power level.
- Unlike other traffic options, triggering on voice traffic can be fine-tuned to the power level of the voice data.
- Voice power level can be set to filter out weak or undesirable voice data.
- ISDN calls are recorded with CRV, ISDN message type, channel, and direction, called & calling numbers. ISDN calls can be captured with customized called & calling number filter.
- "Call filtering" feature is used to capture calls with a user-defined called and calling numbers rather than all calls.
- Various "File Naming" conventions based on the type of capture. The file naming conventions suit various types of capture applications such as MFC-R2, signaling, ISDN capture, manual capture etc.
- The digit-parsing feature of CCA application helps to distinguish CAS R1 or MFC-R2 calls by prefixing called or calling numbers to the filename.

For more details, visit our web page <http://www.gl.com/callrec1.html>.



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Applications of CCA

The Call Capture Application (CCA) is used to initiate recording of calls, either automatically or manually. The software has the capability to non-intrusively record calls with signaling and data directly from T1/E1 and 2-Wire lines. Indicated in the figure below are the channels on which ISDN calls are recorded and the files names to which data is stored. Scanning mode is possible wherein all 24 or 30 channels are scanned for call initiation and recording.

Typical applications are:

- Call recording for post analysis
- Call activity, call density, and call volume analysis
- Monitoring and recording Fax, Voice, Modem, ISDN, SS7, and CAS calls
- Filtering of Calls by "called" and "calling" number
- Call activity, call density, and call volume analysis

Call Management: Card #2 (E1) - Switch End

TimeSlot	Called Nr	Calling Nr	Last Cause	Release Cause
01. Connected	554000	555000		Normal clear
02. Connected	554001	555001		Normal clear
03. Connected	554002	555002		Normal clear
04. Connected	554003	555003		Normal clear
05. Connected	554004	555004		Normal clear
06. Connected	554005	555005		Normal clear
07. Connected	554006	555006		Normal clear
08. Connected	554007	555007		Normal clear
09. Connected	554008	555008		Normal clear
10. Connected	554009	555009		Normal clear
11. Connected	554010	555010		Normal clear
12. Connected	554011	555011		Normal clear
13. Connected				
14. Connected				
15. Connected				
16. UnAvail				
17. Connected				
18. Connected				
19. Connected				
20. Connected				
21. Connected				
22. Connected				
23. Connected				
24. Connected				
25. Connected				
26. Connected				
27. Connected				
28. Connected				
29. Connected				
30. Connected				
31. Connected				

Multiple Call Capture

File Capture Settings

Capture Directory: E:\Program Files\GI Communications Inc\FolderCreatedOn02

Capture File #1: 554000_555000_Feb02w01_1_0001.pcm
Bytes Captured: 565696

Capture File #2: 554000_555000_Feb02E01_1_0001.pcm
Bytes Captured: 565696

Signaling File: Feb02S01_1_0001.sbf

Timeslot Activity: 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

ISDN Stats

Isdn Message	Call Ref Value	Timeslot	Card	Called Numb
ISDN_MSG_SETUP	22	23	2	554022
ISDN_MSG_SETUP	23	24	2	554023
ISDN_MSG_SETUP	24	25	2	554024
ISDN_MSG_SETUP	25	26	2	554025
ISDN_MSG_SETUP	26	27	2	554026

Error Type	Card #1	Card #2
Underruns	0	0
Ok Frames	160	160
Frame Errors	0	0
CRC Errors	0	0

Figure: ISDN Call Capture

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.

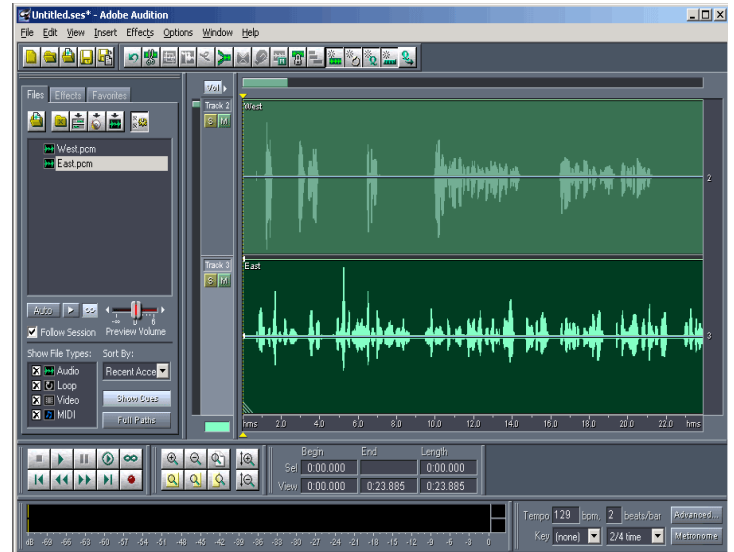


Figure: Adobe Audition Software

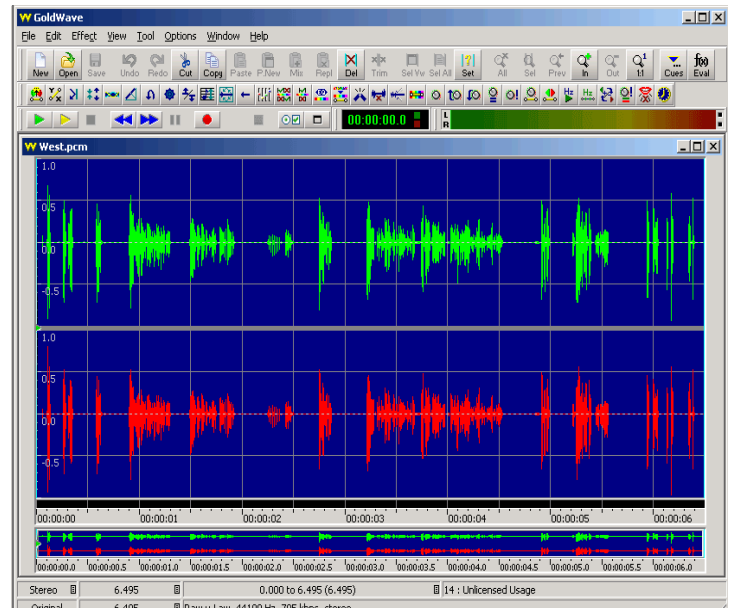


Figure: Gold Wave Software

Call Capture in Auto-scan Mode

SS7 Call Capture Option

SS7 voice calls are kept in CIC (Circuit Identification Codes) groups. When an SS7 call is detected, an Origination Point Code (OPC), a Destination Point Code (DPC), and a CIC # is retrieved. If the comparison holds good capture task is performed, otherwise the call is discarded. Incoming calls are detected on the signaling timeslot. All of the CIC #'s and timeslot #'s in the entry are contiguous. Calls are filtered based on originating/destination number that matches with the filtering definition set for SS7.

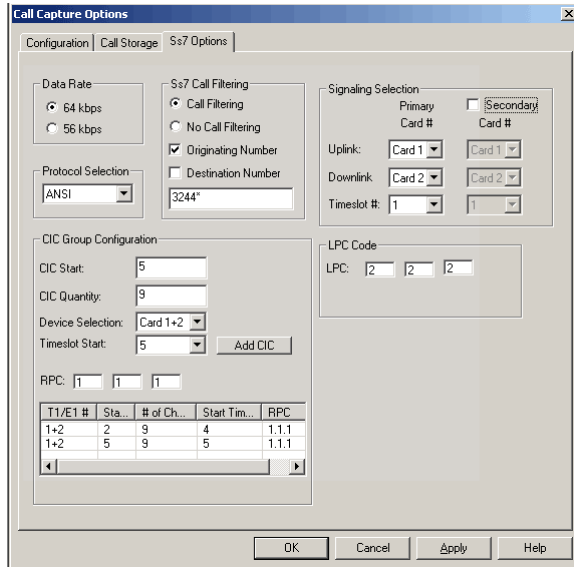


Figure: SS7 Options

ISDN Call Capture Option with NFAS

The CCA gets triggered when any ISDN calls are placed. Capture occurs after the ISDN message, "SETUP", is detected with the called/calling number that matches the filtering definition for ISDN Call Filtering Options. CCA can be set to capture the ISDN calls on the trunks that contain D-Channel using options under NFAS.

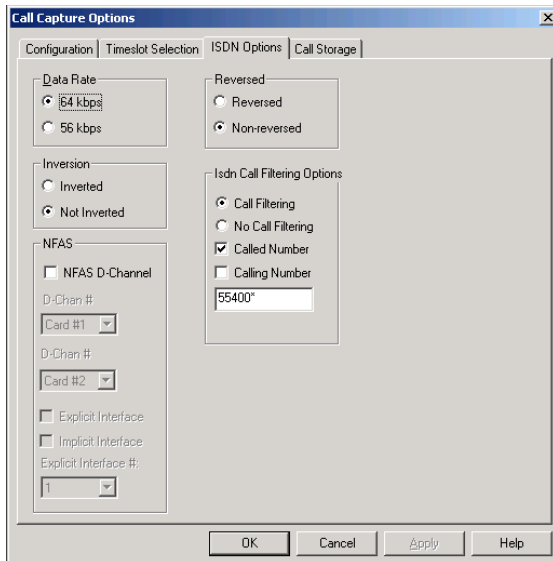


Figure: ISDN Options

Traffic Activated Call Capture Option

CCA also includes trigger for capturing 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 the use of the traffic algorithms. A 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. Additionally, the voice power level can be set to filter out weak or undesirable voice data.

Capture can be terminated either by specifying the silence parameters in seconds or user-defined capture limit time in minutes.

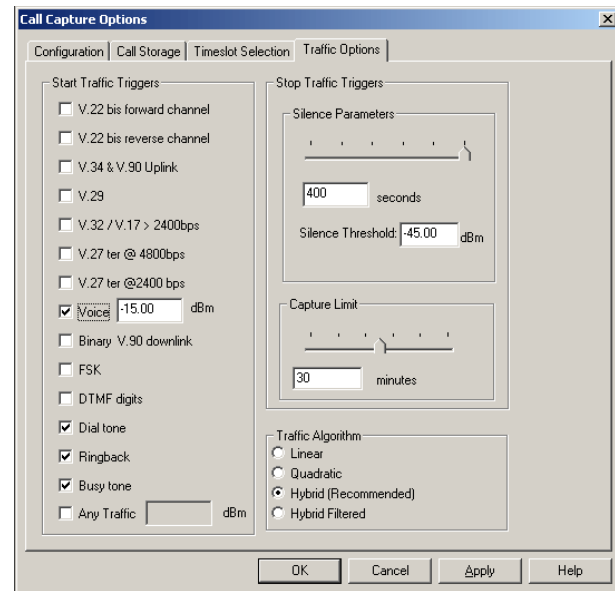


Figure: Traffic Options

Digits, Tones, Signaling Capture Options

User-defined option is available for Tone and Signaling + Tone capture trigger options. This feature allows defining the type of tone(s) that CCA application should detect. The application can only detect single and/or dual tones. Various other options such as Power Threshold, Inter-burst Length Threshold, Absolute Twist Threshold, & S/N ratio can be specified for the tones defined.

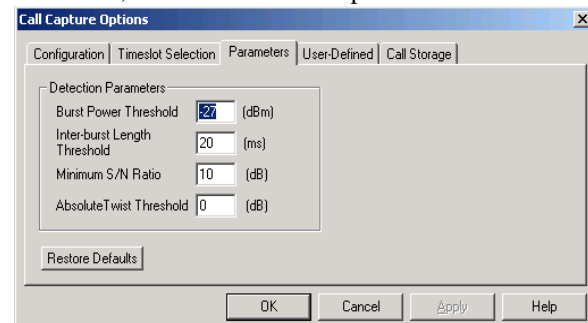


Figure: Tone Parameters Option

Other Call Capture Options

The options include specifying Auto-scan mode or Manual scan mode, Start & stop signaling bits for the beginning & ending capture process, Devices, Time limit for recording, Wait for tone, CAS digit parsing, & File naming convention.

Auto Scanning and Manual Capture are the two basic capture Modes. Different ways to trigger an Auto-Scanning Capture Mode are - Signaling, Tone, Signaling + Tone, ISDN Message, SS7 Message, & Traffic such as fax, modem, voice, and any type of signal with specified power level.

The CAS Digit Parser is used for CAS R1 protocol calls to name the call files using the digits that are prefixed to the rest of the filenames. The File Naming Convention is based on the capture type for signaling.

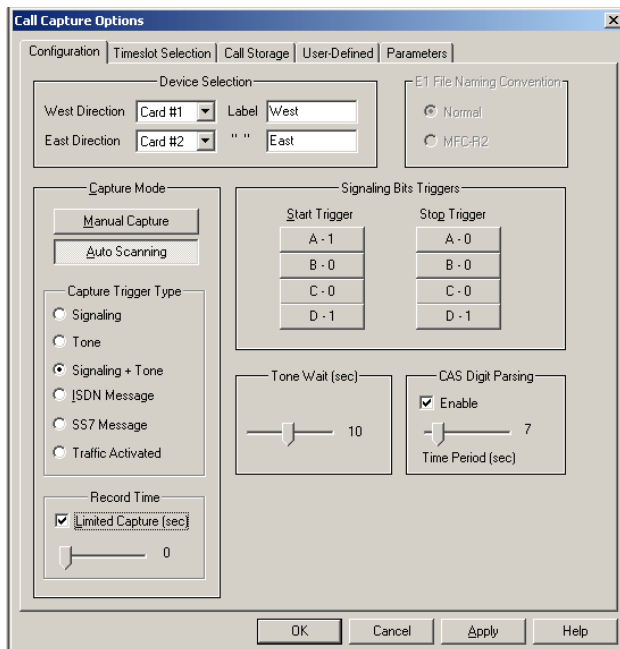


Figure: Capture Options

CCA with other GL applications

2-Wire Analog Hardware Tap - Using the 2-wire Phone Tap adaptor, one can non-intrusively 'tap' into the analog 2-wire line via the RJ11 interface and then capture the bi-directional voice/fax/modem traffic with CCA.

GLInsight™ - The captured files can be analyzed using GL Insight™ 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 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 CCA.

Voice Band Analyzer - VBA is an optional component that operates in near-real-time, processing the signal files recorded by CCA.

Call Storage

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, μ -law, & others) as specified by the user. Subfolders option helps users to set duration to create new folders (ex: every 1 hr, 2 hr, 3 hr, ...) with the folder name as specified. Ex: With '3' as Create New Subfolder Every, and 'FolderCreatedOn' 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-FolderCreatedOn0122091808.

File Creation provides an option to the user of stamping captured files sequentially or with the date/time. Event Logging allows users to save the call summary records, facility alarms, and supervisory signaling messages as CSV or binary files.

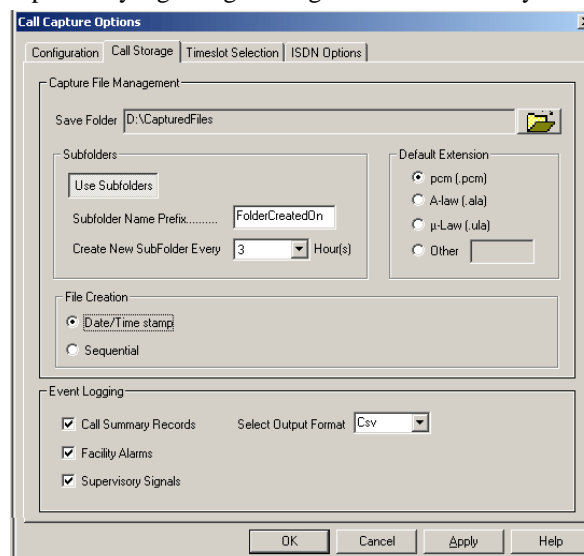


Figure: Call Storage Option

Buyers Guide

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

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

Related Hardware

[UTA001/UEA001](#)- Basic USB based Dual T1 or E1 Laptop Analyzer Software

[HUT001/HUE001](#) – Basic Universal HD T1/E1 Software

Related Software

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

[XX020](#) - Record/Playback File Software

[SA026](#) - Adobe Audition Software

[SA048](#) - Goldwave Software

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

[VQT035](#) - FXO RJ11 Hardware Tap and Audio Capture Software

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

[CM0031](#) - Call Management Utility

[XX625](#) - CAS Simulator

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

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