# T1 (E1) Multiple Call Capture and Analysis



#### **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 information, please visit <u>T1/E1 Multi Call Capture and Analysis</u> webpage.

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#### **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) and 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 of 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

### **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.

Multi Call Capture for Tone - Untitled										
File Edit Trigger Options Process										
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\tPro	be T1 Analyzer		Edit	Abort
2	CCA2	1	2	11-21	C:\	C:\Program Files\GL Communications Inc\tProbe T1 Analyzer			Edit	Abort
TS	TS Status		We	st Filename	Bytes Cap	East Filename	Bytes Cap			Signaling Fil 🔺
0	Capturing	C:\Program Fil	es\GL Commu	nications	1023408	C:\Program Files\GL Communications	1023408	C:\P	rogram Files\GL C	ommunications.
1	Capturing	C:\Program Fil	es\GL Commu	nications	1023408	C:\Program Files\GL Communications	1023408	C:\P	rogram Files\GL C	ommunications
2	Capturing	C:\Program Fil	es\GL Commu	nications	1023408	C:\Program Files\GL Communications	1023408	C:\P	rogram Files\GL C	ommunications
3	Capturing	C:\Program Fil	es\GL Commu	nications	1023408	C:\Program Files\GL Communications	1023408	C:\P	rogram Files\GL C	ommunications
4	Capturing	C:\Program Fil	es\GL Commu	nications	1023408	C:\Program Files\GL Communications	1023408	C:\P	rogram Files\GL C	ommunications
5	Capturing	C:\Program Fil	es\GL Commu	nications	1023408	C:\Program Files\GL Communications	1023408	C:\P	rogram Files\GL C	ommunications
6	Capturing	C:\Program Fil	es\GL Commu	nications	1023408	C:\Program Files\GL Communications	1023408	C:\P	rogram Files\GL C	ommunications
7	Capturing	C:\Program Fil	es\GL Commu	nications	1023408	C:\Program Files\GL Communications	1023408	C:\P	rogram Files\GL C	ommunications
8	Capturing	C:\Program Fil	es\GL Commu	nications	1023408	C:\Program Files\GL Communications	1023408	C:\P	rogram Files\GL C	ommunications
9	Capturing	C:\Program Fil	es\GL Commu	nications	1023408	C:\Program Files\GL Communications	1023408	C:\P	rogram Files\GL C	ommunications. 🦲
10	Capturing	C:\Program Fil	es\GL Commu	nications	1023408	C:\Program Files\GL Communications	1023408	C:\P	rogram Files\GL C	ommunications
11	Idle			-	0	-	0			-
12	Idle			-	0	-	0			-
13	Idle			-	0	-	0			-
14	Idle			-	0	-	0			-
15	Idle			-	0	-	0			- 🗸
CCA Details / Timeslots Map /										

#### **Call Capture Analysis**



#### **Operating Modes**

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



**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.



**Adobe Audition Software** 



**Gold Wave Software** 

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#### **SS7 Call Capture**

The Multi CCA allows to detect and capture SS7 calls by defining DPC, OPC, and CIC 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.

Configure CCA								×
Card Selection	SS7 Conf	iguration	Call Storage					
Data Rate G 64 kbps C 56 kbps Protocol Select None	tion	SS7 Call Fi No Call Call Filt Origina Destina	Itering Filtering tering ting Number ation Number	-Signal Uplink Down Times	ling Se : link lot	Primary Card Card 1 V Card 2 V 23 V	Secondary Card	
CIC Group Cot CIC Start CIC Quantity Device Select Timeslot Start OPC 1 T1/E1 # S 1+2 1 1+2 1	infiguration 100 8 ion Card 11 1 itart CIC 00	1+2 ¥ ¥ of Cha.	Add CIC . Start Time 1 11	] slot	De	stination Point	Code	
				App	oly	ОК	Cancel	

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.

Configure CCA	2
Card Selection ISDN Co	nfiguration Call Storage
Card Selection ISDN Co Data Rate © 64 kbps © 56 kbps Call Filtering Option © No Filtering © Filter Calls © Called Number © Calling Number	And Call Storage       Image: Card #1       Image: Card #1       Image: Card #1       Image: Card #2       Image: Card #2
	Apply OK Cancel

**ISDN Options** 

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### **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 and 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.

Configure CCA X					
Card Selection Traffic Configuration Call Storage					
Start Traffic Triggers V.22 bis forward channel V.22 bis reverse channel V.24 & V.90 Uplink V.29 V.32 / V.17 > 2400bps V.37 ter @ 4800bps V.27 ter @ 2400 bps V.27 ter @ 2400 bps V.27 ter @ 2400 bps Sinary V.90 downlink Binary V.90 downlink FSK	Stop Traffic Triggers         Silence Parameters         , , , , , , , , , , , , , , , , , , ,				
DTMF digits Dial tone Ringback Busy tone Any Traffic dBm	Traffic Algorithm C Linear C Quadratic C Hybrid (Recommended) C Hybrid Filtered				
	Apply OK Cancel				

**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 and S/N ratio can be specified for the defined tones.

Configure CCA X								
Card Selection Tone Configuration Call Storage								
User Defined								
Label	Lo Freq	Hi Freq	Tones					
a	1004	0	[Insert]					
			Remove					
			⊆lear					
			File					
			Load Defs					
(Set "Hi Free" I	to 0 for Mon	o Topec)	Save Defs					
(Sec nineq i	to o for Mon	o rones)						
Detection Paramet	Detection Parameters Tone Wait(sec)							
Burst Power Thre	Burst Power Threshold -27 (dBm)							
Inter-burst Leng Threshold	th 20	) (ms)						
Minimum S/N Rat	io 10	) (dB)						
	Resto	re Defaults						
			Apply OK Cancel					

**Tone Parameters Option** 

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### **Call Storage**

Multi CCA supports creation of subfolders automatically based on the system time and 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 and 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, and others) as specified by the user.

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

Configure CCA	×				
Card Selection ISDN Configuration Call Storage					
Capture File Management					
Save Folder C:\Program Files\GL Communications Inc\USB T1 Subfolders Use Subfolders Subfolder Name Create New SubFolder Every File Creation File Creation O Date/Time stamp Sequential Use Default Direction Sequential Sequential Sequential	Analyzer Default Extension © pcm (.pcm) O A-law (.ala) O µ-Law (.ula) O Other me CCA1 on(W' and 'E') in filenames				
Event Logging  Call Summary Records Select Output Format Csv  Facility Alarms  Supervisory Signals	E1 File Naming Convention     Normal     MFC-R2				
Apply	OK Cancel				

**Call Storage Options** 

#### Multi CCA with other GL applications

#### GLInsight™

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

#### **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

Item No	Product Description
<u>XX030</u>	Multi Call Capture Analysis Software and its accessories
<u>XX031</u>	Multi CCA with Traffic Activated Triggering
Item No	Related Software
<u>CDR032</u>	Call Data Records (CDR) Software
<u>SA048</u>	Goldwave Software
<u>VBA032</u>	Near Real-time Voice-band Analyzer
<u>VQT035</u>	2-wire Voice Recorder
<u>XX680</u>	T1/E1 Traffic Classifier
<u>FXT001</u> / <u>FXT002</u>	GLInsight™ Single Fax Analysis – TDM/IP
<u>MDT001</u> /	GLInsight™ Single Modem Analysis-TDM/IP

Item No	Related Hardware
<u>PTE001</u>	tProbe™ Dual T1 E1 Laptop Analyzer
<u>TTE001</u>	tScan16™ T1 E1 Boards
<u>XTE001</u>	Dual Express (PCIe) T1 E1 Boards
<u>FTE001</u>	QuadXpress T1 E1 Main Board (Quad Port)
ETE001	OctalXpress T1 E1 Daughter boards (Octal Port)

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

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