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# Call Data Records (CDR) for T1 E1 and Packets over IP

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- Call Data Records (CDR)
- Analyzing CDR output using EXCEL®
- CCA, PPP Analyzer, PacketScan™
- Voice Band Analyzer (VBA)

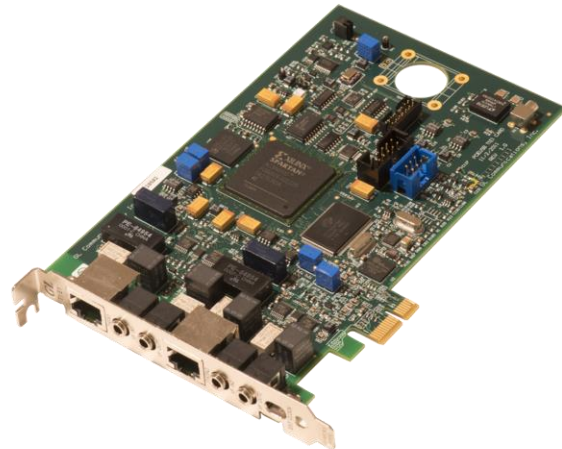
# T1 E1 Hardware Platforms



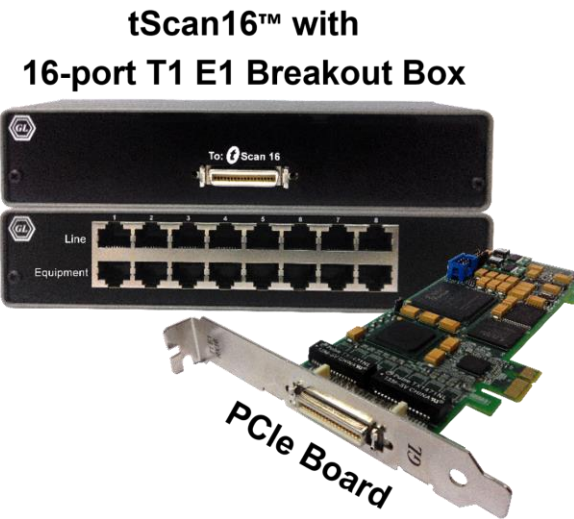
**tProbe™ - Portable USB based T1 E1 VF FXO FXS and Serial Datacom Analyzer**



**Quad / Octal T1 E1 PCIe Card**



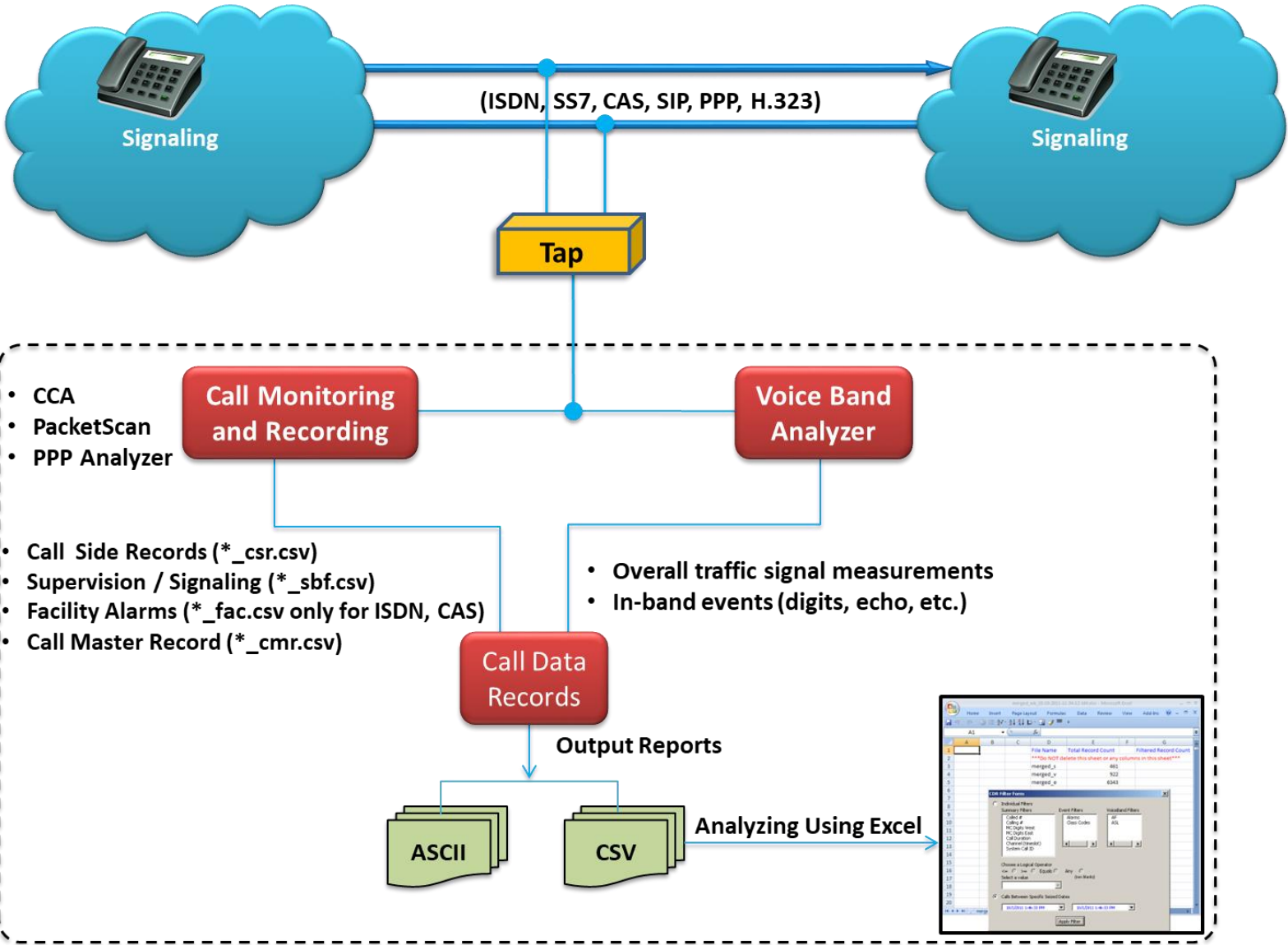
**Dual T1 E1 Express (PCIe) Board**



**tScan16™ with 16-port T1 E1 Breakout Box**

**PCIe Board**

# Overview



# What is Call Data Records?

- **CDR provides comprehensive information on each call occurring on T1 and E1 lines, including,**
  - 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
  - Detailed voiceband event information occurring during the call including dual tones (DTMF, MF, MFC-R2), fax tones, modem signals, and more
  - Detailed analysis of the voiceband call including noise level, speech level, speech activity factor, echo measurements, and more
  - Categorization of the call as voice, fax, modem, or data

# Features

- PPP, SIP, CAS, ISDN Calls Support
- Easy Invocation of Voice Files
- Easier Filtering of Calls of Different Durations
- Advanced Filtering (Mid Call Digits, Release Cause, Carrier Loss)
- Mid Call Digits in Summary Report and Detail Report
- Release / Cause Code in Summary and Detail Report
- User configuration names within CCA

# Call Capture Applications and Analysis Applications

## Call Capture Analysis (CCA)

- CCA captures bidirectional channel data over T1 E1 and records to PCM signal files on a per call basis.
- Records CAS, ISDN, SS7 signaling and alarm events, as well as producing a summary record for each call.
- Logs the capture events in CSV or binary files and feeds these results into VBA and CDR

## Voice Band Analyzer (VBA)

- File Based application that immediately analyzes PCM recorded files from CCA. It is continuously looking for files that CCA has finished capturing
- Noise, digits, voice activity, echo, speech level, DC offset, etc. are measured and recorded

## Call Data Records (CDR)

- Compiles information from CCA and VBA for completed calls into two types of reports Call Summary Report and Call Detail Report

# Call Capture Applications and Analysis Applications (Contd.)

## PacketScan™

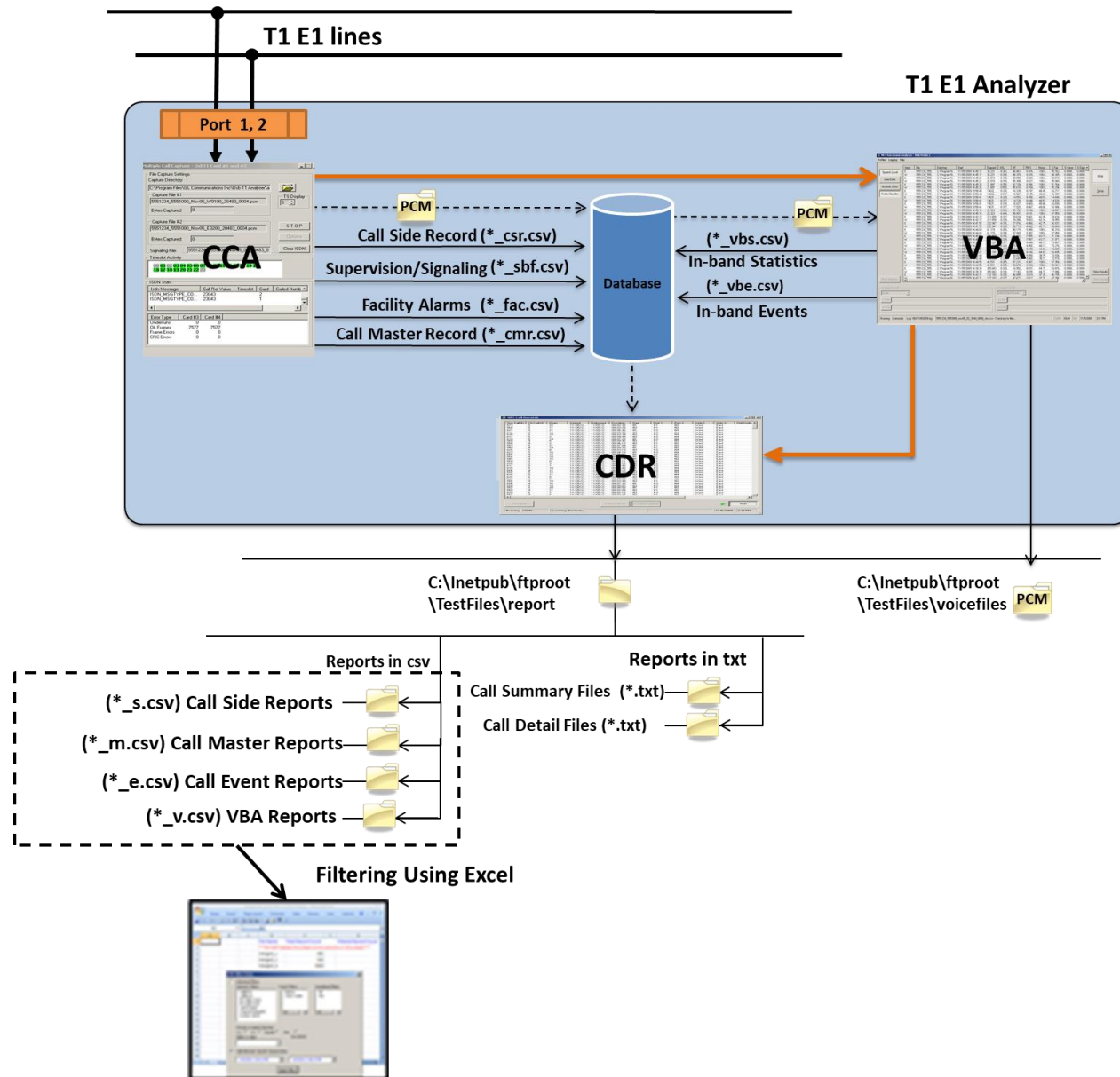
- Used to capture and monitor live IP, VoIP, and IP based video traffic
- Stand-alone tool as well as a probe in a distributed system using a central database
- A powerful Trigger Action feature that can be used to select and save calls (audio or PCAP), sending an email, generating an alert summary, create Call Detail Records, and viewing custom calls in summary view
- Call Detail Record outputs 3 CSV files, call master record, call side record, and call events record, along with the voice file recordings for each direction

## PPP Analyzer

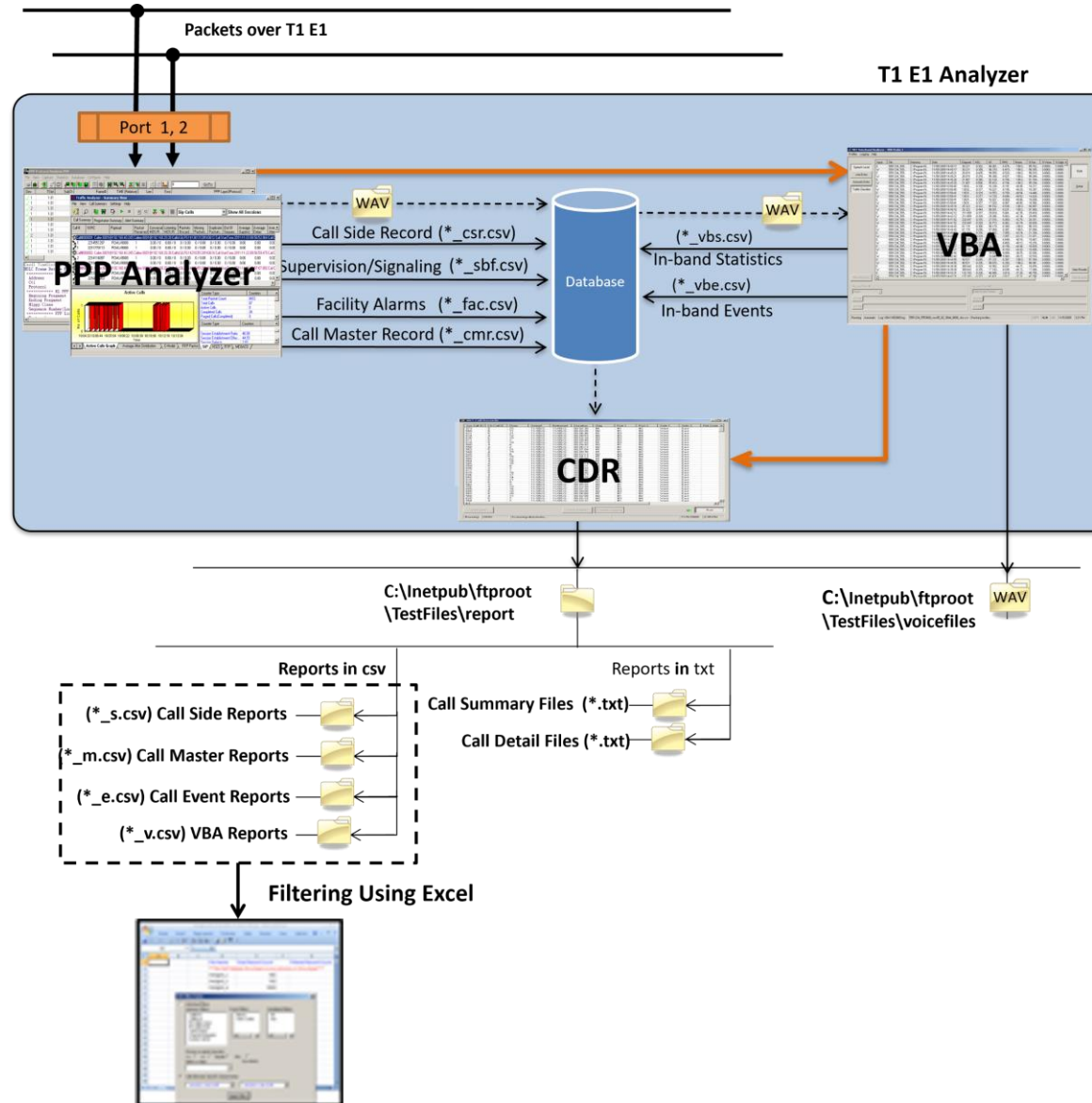
- Used to capture and monitor PPP Protocols over T1 E1
- A powerful Trigger and Action feature that can be used to save calls (audio or PCAP), sending an email, generating an alert summary, create Call Detail Records, and viewing custom calls in summary view
- Call Detail Record outputs 3 CSV files, call master record, call side record, and call events record, along with the voice file recordings for each direction



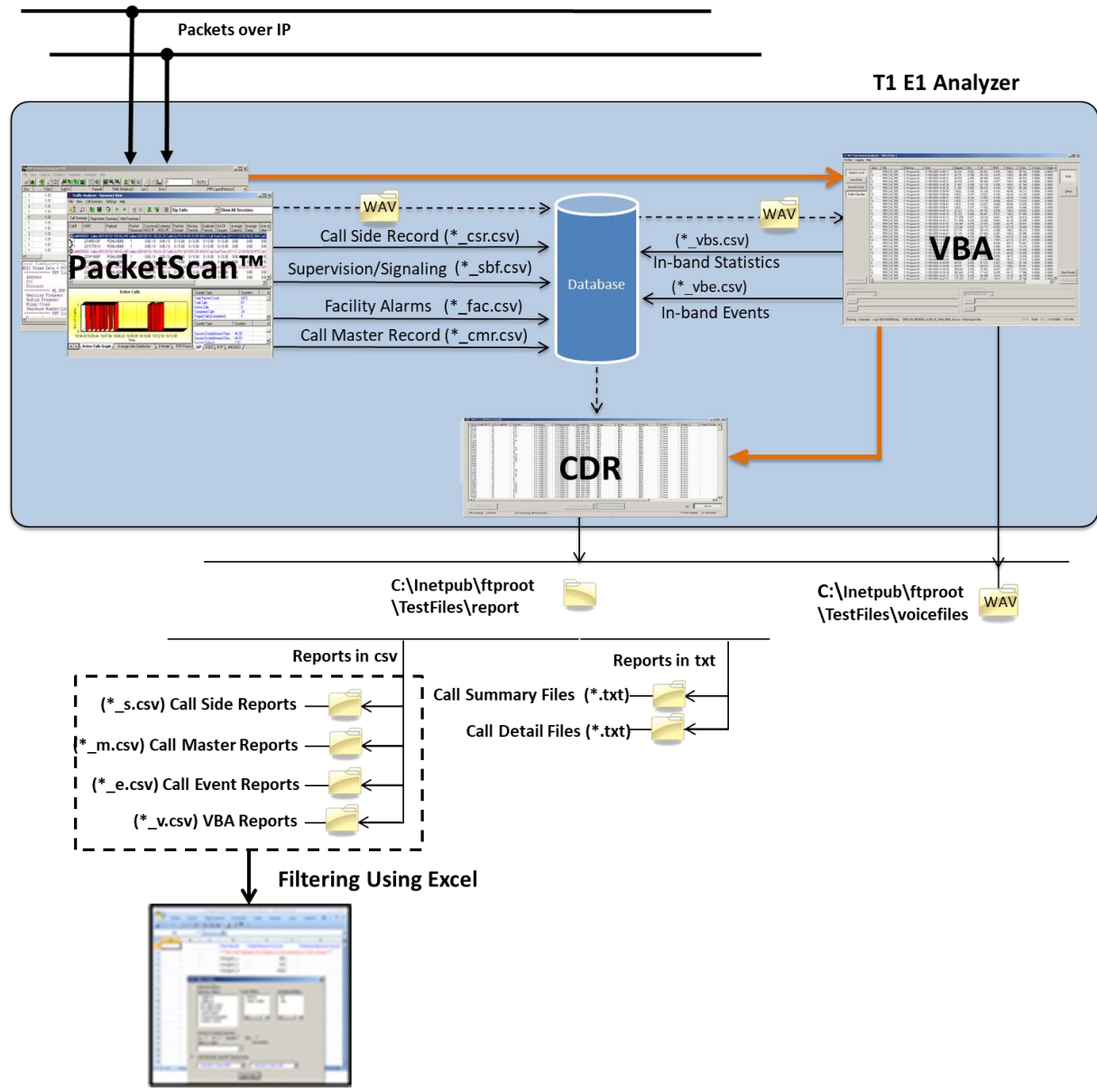
# Overall Configuration with CCA



# Overall Configuration with PPP Analyzer



# Overall Configuration with PacketScan™



# Working with Call Capture Applications, and VBA

The screenshot shows the NRT Call Records application interface. The main window displays a table of call records with columns: Probe ID, Call ID, Orig, Calling, Called, Start, Released, Duration, and Rel Code. Below the table are buttons for 'Configure' and 'Clear D'. At the bottom, there is a status bar with 'Running', 'CAS', and 'Scanning directories...'.

An inset window titled 'Report' is open, showing a file explorer view of the directory 'K:\inetpub\ftproot\Testfiles\_ISDN3d\_tprobe\Report'. The 'Folders' pane on the left shows 'Testfiles', 'Report', and 'voicefiles' (highlighted with a red box). The main pane shows a list of files with columns for 'Name' and 'Size', including files like 'test1024111248\_detail', 'test1024111248\_e', 'test1024111248\_s', 'test1024111248\_summary', 'test1024111248\_v', 'test1024111848\_detail', 'test1024111848\_e', 'test1024111848\_s', 'test1024111848\_summary', 'test1024111848\_v', 'test1025110048\_detail', 'test1025110048\_e', 'test1025110048\_s', and 'test1025110048\_summary'.

Probe ID	Call ID	Orig	Calling	Called	Start	Released	Duration	Rel Code
ATTCARD1	111116111506-1	New York(#2:0)	3016041111	3019241111	11/16/2011 11:15:24	11/16/2011 11:16:58	00:01:34	Normal
ATTCARD1	111116111506-3	New York(#2:2)	3016243333	3019243333	11/16/2011 11:15:24	11/16/2011 11:16:05	00:00:41	Normal
ATTCARD1	111116111506-24	New York(#2:22)	3017242222	3019242229	11/16/2011 11:15:29	11/16/2011 11:16:11	00:00:42	Normal
ATTCARD1	111116111506-2	New York(#2:1)	3016042222	3019242222	11/16/2011 11:15:24	11/16/2011 11:16:07	00:00:43	Normal
ATTCARD1	111116111506-21	New York(#2:20)	3012242220	3019242220	11/16/2011 11:15:25	11/16/2011 11:16:06	00:00:41	Normal
ATTCARD1	111116111506-19	New York(#2:18)	3017242218	3019242218	11/16/2011 11:15:25	11/16/2011 11:16:08	00:00:43	Normal
ATTCARD1	111116111506-18	New York(#2:17)	3015242217	3019242217	11/16/2011 11:15:25	11/16/2011 11:16:08	00:00:43	Normal
ATTCARD1	111116111506-17	New York(#2:16)	3016242216					
ATTCARD1	111116111506-16	New York(#2:15)	3016242215					
ATTCARD1	111116111506-15	New York(#2:14)	3016242214					
ATTCARD1	111116111506-14	New York(#2:13)	3016242213					
ATTCARD1	111116111506-13	New York(#2:12)	3016242212					
ATTCARD1	111116111506-12	New York(#2:11)	3016241011					
ATTCARD1	111116111506-11	New York(#2:10)	3016241010					
ATTCARD1	111116111506-10	New York(#2:9)	3019242289					
ATTCARD1	111116111506-9	New York(#2:8)	3019242288					
ATTCARD1	111116111506-8	New York(#2:7)	3019242237					
ATTCARD1	111116111506-7	New York(#2:6)	3019242236					
ATTCARD1	111116111506-6	New York(#2:5)	3019242235					
ATTCARD1	111116111506-5	New York(#2:4)	3019242234					
ATTCARD1	111116111506-4	New York(#2:3)	3019242233					
ATTCARD1	111116111506-22	New York(#2:21)	3019242221					
ATTCARD1	111116111506-20	New York(#2:19)	3014242219					

- CDR monitors output of Call Capture Application and VBA and generates Call Summary and Call Detail Reports along with Voice Files

# CDR Configuration

**NRT Call Record Configuration**

Select Data Sources

Call Summary Signaling Facility Status Voiceband Signaling System: CAS

Select Source File Location...  
C:\Program Files\GL Communications Inc\Usb T1 Analyzer\capt Include Subfolders

Source File Disposition

Delete Archive

Select Archive File Location...  
C:\Program Files\GL Communications Inc\Usb T1 Analyzer\cdrfiles Replicate Subfolders

Report to...

Database File

File name: CDR Format: CSV ASCII Text  New Report every 1 Hour(s)

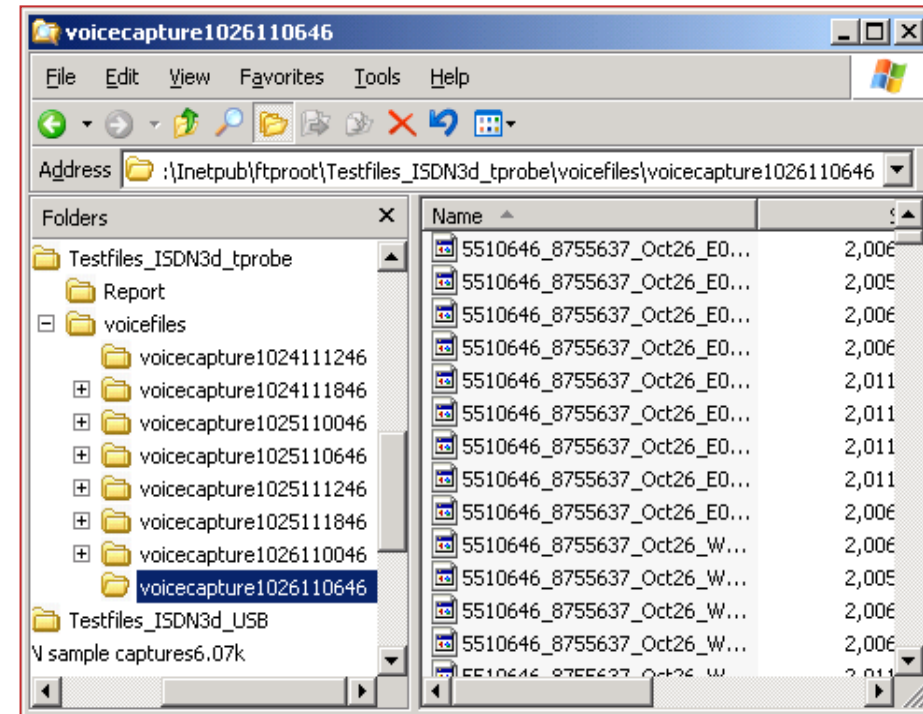
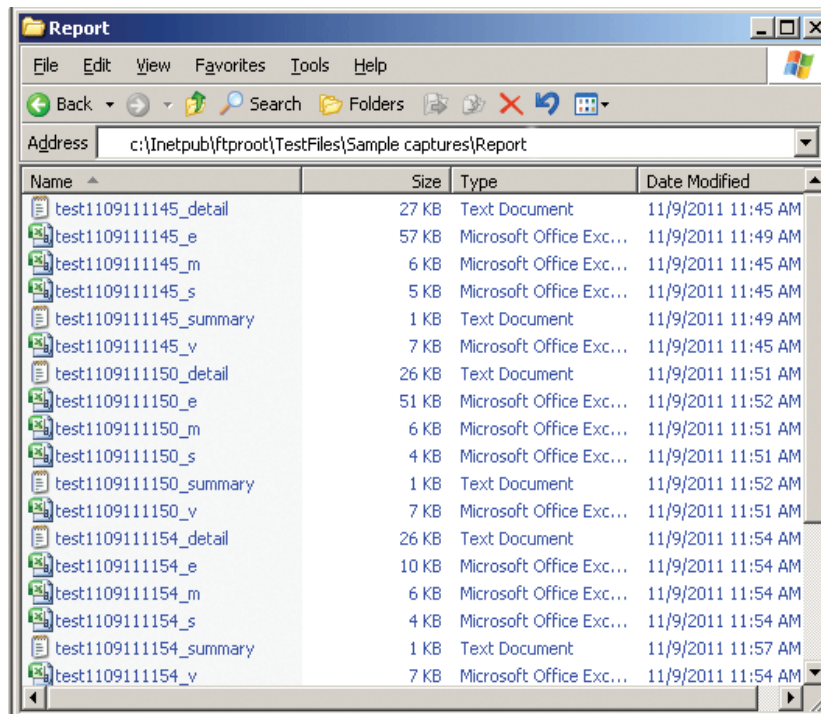
Location... C:\inetpub\wwwroot\testfiles\report

Save Settings... Load Settings... Cancel OK

- Call Capture Applications and VBA output directories are set as CDR Source Directories
- Source types to be analyzed are selected – Call Summary, Signaling, Facility Status, and Voiceband
- CDR report directory contains the CDR output in CSV/ASCII format along with the voice files

# CDR Output

- C:/ Inetpub/ ftproot/ TestFiles/ Reports
  - (\*\_m.csv) Call Master Files
  - (\*\_s.csv) Call Side Information Files
  - (\*\_e.csv) Call Event Files
  - (\*\_v.csv) VBA Files
- C:/ Inetpub/ ftproot/ TestFiles/ Voicefiles



# Output Formats

CDR can be configured to output its results to Text (ASCII) or Comma-Separated Values (“CSV”) files:

- **Text Report**

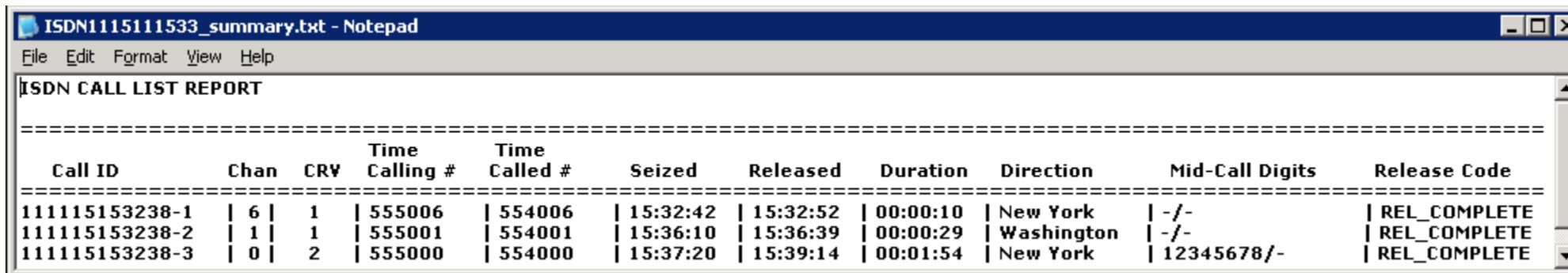
- Call Summary Report
- Call Detail Report

- **CSV** – Call Data Records can be configured to output its results to comma-separated values (CSV) files. The CSV format is a widely-recognized format understood by many popular data management programs including Microsoft® Excel Access. The file name extensions of the CSV files produced by CDR is always \*.csv

- **Call Master** -This includes the time and duration of the call, the identification of the parties involved in the call, an indication of the protocol used for call supervision, the side that originated the call, the success or failure of the call, and the file system location of call recordings
- **Call Side** – This is a record concerning each party participating in the call, i.e., “endpoint”-specific data.
- **Call Events** – Gives an event-by-event account of the call. Events include channel supervision events, sporadic echo, alarms, ISDN calls, and others
- **In-band Summary** – Display depends on the Display Fields configurations for each algorithm in the VBA

# Call Summary Report (ASCII Output Format)

## ISDN Calls

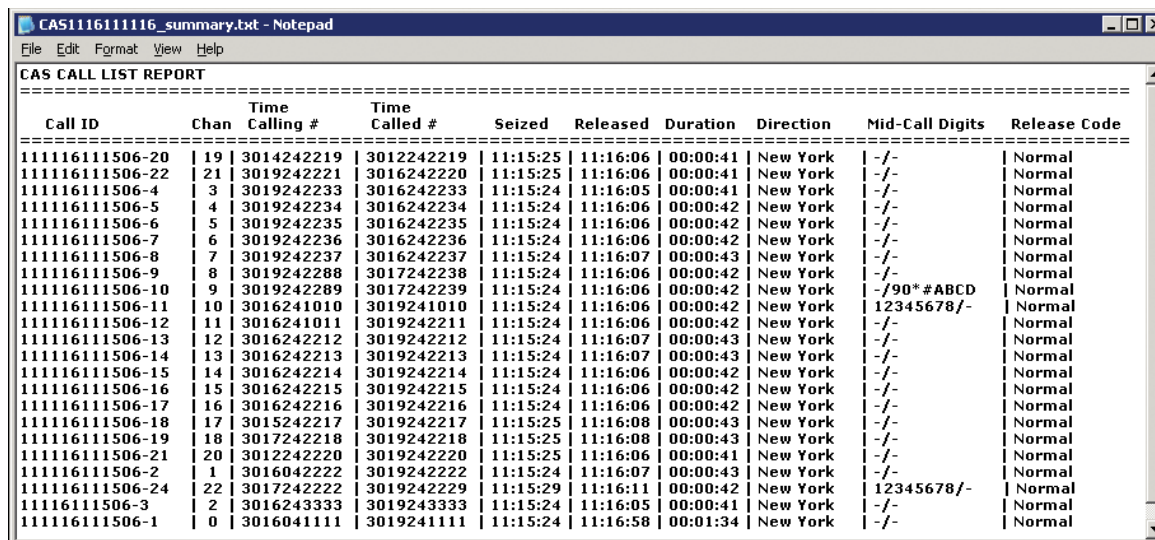


ISDN1115111533\_summary.txt - Notepad

File Edit Format View Help

ISDN CALL LIST REPORT

Call ID	Chan	CRV	Time Calling #	Time Called #	Seized	Released	Duration	Direction	Mid-Call Digits	Release Code
111115153238-1	6	1	555006	554006	15:32:42	15:32:52	00:00:10	New York	-/-	REL_COMPLETE
111115153238-2	1	1	555001	554001	15:36:10	15:36:39	00:00:29	Washington	-/-	REL_COMPLETE
111115153238-3	0	2	555000	554000	15:37:20	15:39:14	00:01:54	New York	12345678/-	REL_COMPLETE



CAS1116111116\_summary.txt - Notepad

File Edit Format View Help

CAS CALL LIST REPORT

Call ID	Chan	Time Calling #	Time Called #	Seized	Released	Duration	Direction	Mid-Call Digits	Release Code
111116111506-20	19	3014242219	3012242219	11:15:25	11:16:06	00:00:41	New York	-/-	Normal
111116111506-22	21	3019242221	3016242220	11:15:25	11:16:06	00:00:41	New York	-/-	Normal
111116111506-4	3	3019242233	3016242233	11:15:24	11:16:05	00:00:41	New York	-/-	Normal
111116111506-5	4	3019242234	3016242234	11:15:24	11:16:06	00:00:42	New York	-/-	Normal
111116111506-6	5	3019242235	3016242235	11:15:24	11:16:06	00:00:42	New York	-/-	Normal
111116111506-7	6	3019242236	3016242236	11:15:24	11:16:06	00:00:42	New York	-/-	Normal
111116111506-8	7	3019242237	3016242237	11:15:24	11:16:07	00:00:43	New York	-/-	Normal
111116111506-9	8	3019242288	3017242238	11:15:24	11:16:06	00:00:42	New York	-/-	Normal
111116111506-10	9	3019242289	3017242239	11:15:24	11:16:06	00:00:42	New York	-/90*#ABCD	Normal
111116111506-11	10	3016241010	3019241010	11:15:24	11:16:06	00:00:42	New York	12345678/-	Normal
111116111506-12	11	3016241011	3019242211	11:15:24	11:16:06	00:00:42	New York	-/-	Normal
111116111506-13	12	3016242212	3019242212	11:15:24	11:16:07	00:00:43	New York	-/-	Normal
111116111506-14	13	3016242213	3019242213	11:15:24	11:16:07	00:00:43	New York	-/-	Normal
111116111506-15	14	3016242214	3019242214	11:15:24	11:16:06	00:00:42	New York	-/-	Normal
111116111506-16	15	3016242215	3019242215	11:15:24	11:16:06	00:00:42	New York	-/-	Normal
111116111506-17	16	3016242216	3019242216	11:15:24	11:16:06	00:00:42	New York	-/-	Normal
111116111506-18	17	3015242217	3019242217	11:15:25	11:16:08	00:00:43	New York	-/-	Normal
111116111506-19	18	3017242218	3019242218	11:15:25	11:16:08	00:00:43	New York	-/-	Normal
111116111506-21	20	3012242220	3019242220	11:15:25	11:16:06	00:00:41	New York	-/-	Normal
111116111506-2	1	3016042222	3019242222	11:15:24	11:16:07	00:00:43	New York	-/-	Normal
111116111506-24	22	3017242222	3019242229	11:15:29	11:16:11	00:00:42	New York	12345678/-	Normal
1111611506-3	2	3016243333	3019243333	11:15:24	11:16:05	00:00:41	New York	-/-	Normal
1111611506-1	0	3016041111	3019241111	11:15:24	11:16:58	00:01:34	New York	-/-	Normal

## CAS Calls

- Each call occupies one line of the report with Channel, CRV, Called Number, Calling Number, Time (Seize/Release information), Call Duration, Call Direction



# Call Summary (ASCII Output Format)

## PPP Calls

PPP0127121305\_summary.txt - Notepad

File Edit Format View Help

SIP CALL LIST REPORT

Call ID	Caller	Callee	Time Seized	Time Released	Duration	Direction	Release Code	PD Delay	SD Delay
GLPG14136131281436 +12	0001@192.168.40.245	0001@192.168.20.20	09:56:52	09:56:57	00:00:05	Left	Normal Call Clea +ring	7	0
GLPG14210351281436 +18	0001@192.168.40.245	0001@192.168.20.20	09:56:59	09:57:05	00:00:06	Left	Normal Call Clea +ring	7	0
GLPG14286451281436 +24	0002@192.168.40.245	0002@192.168.20.20	09:57:07	09:57:09	00:00:02	Left	Normal Call Clea +ring	7	0
GLPG14340351281436 +30	0004@192.168.40.245	0004@192.168.20.20	09:57:12	09:57:25	00:00:13	Left	Normal Call Clea +ring	7	0
GLPG14482701281436 +37	0005@192.168.40.245	0005@192.168.20.20	09:57:26	09:57:39	00:00:13	Left	Normal Call Clea +ring	7	0
GLPG14624571281436 +45	0006@192.168.40.245	0006@192.168.20.20	09:57:40	09:57:45	00:00:05	Left	Normal Call Clea +ring	7	0
GLPG14672851281436 +50	0006@192.168.40.245	0007@192.168.20.20	09:57:45	09:57:50	00:00:05	Left	Normal Call Clea +ring	7	0
GLPG14736601281436 +55	0008@192.168.40.245	0008@192.168.20.20	09:57:52	09:57:56	00:00:04	Left	Normal Call Clea +ring	7	0
GLPG-1893760168182 +2	0001@192.168.40.245	0001@192.168.20.20	10:13:19	10:13:58	00:00:39	Left	Call Failed - Ca +ll Cancelled.	7	0
GLPG-1936369168181 +9	0001@192.168.40.245	0001@192.168.20.20	10:12:36	10:12:36	00:00:00	Left	Call Failed - 40 +0 Bad Request.	5	0
GLPG-1950697168181 +2	0001@192.168.40.245	0001@192.168.20.20	10:12:22	10:12:30	00:00:08	Left	Normal Call Clea +ring	11	0
GLPG-1965697168180 +5	0001@192.168.40.245	0001@192.168.20.20	10:12:07	10:12:15	00:00:08	Left	Normal Call Clea +ring	11	0
GLPG-1980322168179 +8	0001@192.168.40.245	0001@192.168.20.20	10:11:52	10:12:01	00:00:09	Left	Normal Call Clea +ring	11	0
GLPG-1991338168179 +5	0001@192.168.40.245	0001@192.168.20.20	10:11:41	10:11:49	00:00:08	Left	Call Failed - Ca +ll Cancelled.	7	0

# Call Summary (ASCII Output Format)

## SIP Calls

Call ID	Caller	Callee	Time Seized	Time Released	Duration	Direction	Release Code	PD Delay	SD Delay
GLPG-1002823872315 +6	0001@192.168.1.183	0003@192.168.1.223	09:16:35	09:16:42	00:00:07	Left	Normal Call clea +ring	1	0
GLPG-1010620872315 +1	0001@192.168.1.183	0002@192.168.1.223	09:16:27	09:16:35	00:00:08	Left	Normal Call clea +ring	1	0
GLPG-1019636872314 +5	0001@192.168.1.183	0002@192.168.1.223	09:16:18	09:16:25	00:00:07	Left	Normal Call clea +ring	1	0
GLPG-1106839872312 +7	0001@192.168.1.183	0001@192.168.1.223	09:14:51	09:16:07	00:01:16	Left	Normal Call clea +ring	1	0
GLPG-1134948872312 +1	0001@192.168.1.183	0001@192.168.1.223	09:14:23	09:14:49	00:00:26	Left	Normal Call clea +ring	1	0
GLPG-1163042872311 +5	0001@192.168.1.183	0001@192.168.1.223	09:13:55	09:14:21	00:00:26	Left	Normal Call clea +ring	1	0
GLPG-1206042872310 +9	0001@192.168.1.183	0001@192.168.1.223	09:13:12	09:13:51	00:00:39	Left	Normal Call clea +ring	1	0
GLPG-1248651872310 +3	0001@192.168.1.183	0001@192.168.1.223	09:12:29	09:13:09	00:00:40	Left	Normal Call clea +ring	1	0
GLPG-1262964872309 +6	0001@192.168.1.183	0001@192.168.1.223	09:12:15	09:12:23	00:00:08	Left	Normal Call clea +ring	4	0
GLPG-1277964872308 +9	0001@192.168.1.183	0001@192.168.1.223	09:12:00	09:12:08	00:00:08	Left	Normal Call clea +ring	3	0
GLPG-1292573872308 +2	0001@192.168.1.183	0001@192.168.1.223	09:11:45	09:11:54	00:00:09	Left	Normal Call clea +ring	3	0
GLPG-1303573872307 +9	0001@192.168.1.183	0001@192.168.1.223	09:11:34	09:11:42	00:00:08	Left	Call Failed - Ca +ll Cancelled.	1	0
GLPG-1314979872307 +3	0001@192.168.1.183	0001@192.168.1.223	09:11:23	09:11:31	00:00:08	Left	Normal Call clea +ring	1	0
GLPG-1326183872306 +7	0001@192.168.1.183	0001@192.168.1.223	09:11:12	09:11:20	00:00:08	Left	Normal Call clea +ring	2399	0

# Call Detail Report (ISDN Calls)

```

ISDN111511533_detail.txt - Notepad
File Edit Format View Help
===== Call Summary =====
Probe ID: ATTCARD1
Call ID: 11115153238-3
TimeSlot: 0
Call Ref Value: 2
Protocol: ISDN
Data Rate: 64K
Start Time: 11/15/2011 15:37:20
Release Time: 11/15/2011 15:39:14 } Call Duration with
Call Duration: 00:01:54 } Seized & Release time
Originating side: New York (#2)
Terminating side: (#2)
Caller #: 555000 } Called and Calling #s
Called #: 554000
Release Code: REL_COMPLETE
Source Folder: C:\Program Files\GL Communications Inc\tProbe T1
Analyzer\ATT\device1capture1115111532\
Archive Folder: C:\inetpub\ftproot\TestFiles\voicefiles\device1capture1115111532\

CALL SIDE INFORMATION
Value Washington New York
-----
Telephone #: 554000 555000
#Port:Timeslot: #1:0 #2:0
Mid-Call Digits: 12345678
Capt File Name: 554000_555000_Nov15_Washington0100_2_2011_1115_153720.pcm
554000_555000_Nov15_New York0200_2_2011_1115_153720.pcm

CALL EVENTS
-----
Time of Day Since Last Event Since Last Supv Direction T y p Event Resulting Call Duration Status
-----
15:37:20.000 0.000 0.000 New York S SETUP(on)
15:37:20.125 0.125 0.125 Washington S ALERTING(1)
15:37:22.594 2.469 2.469 Washington S CONNECT(255)
15:37:22.719 0.125 0.125 New York S CONN_ACK(15)
15:38:32.040 69.321 Washington V DTMF-1 0.088
15:38:32.231 0.191 Washington V DTMF-2 0.101
15:38:32.435 0.204 Washington V DTMF-3 0.101
15:38:32.639 0.204 Washington V DTMF-4 0.088
15:38:32.830 0.191 Washington V DTMF-5 0.101
15:38:33.034 0.204 Washington V DTMF-6 0.101
15:38:33.238 0.204 Washington V DTMF-7 0.088
15:38:33.429 0.191 Washington V DTMF-8 0.101
15:39:06.188 32.759 103.469 Washington A DDF Error(8)
15:39:06.219 0.031 0.031 Washington A Line Sync Loss
15:39:06.219 0.000 0.000 Washington A Frame Error(on
15:39:06.954 0.735 0.735 Washington A Frame Error(of
15:39:07.688 0.734 0.734 Washington A Bipolar Violat
15:39:07.704 0.016 0.016 Washington A Bipolar Violat
15:39:08.485 0.781 0.781 Washington A Line Sync Loss

IN-BAND SUMMARY
Value Washington New York
-----
Probe W1 E1
Input Label Washington New York
Start 11/15/2011 15:37:20 11/15/2011 15:37:20
Elapsed 113.214 113.214
ASL -10.701504 -100.000000
AF 30.008584 0.000000
RMS -15.929049 -100.000000
Noise -37.269003 -100.000000
% Voice 31.79235 0.000000
% Digits 1.612903 0.000000
% Quiet 0.000000 0.000000
% Idle 66.589862 100.000000
    
```

## Call Summary

## Call Side Information

- voice file names
- called/calling party address

## Call Events

- supervisory messages
- digit detection

## InBand Summary

- signal level, activity factor
- RMS power level, noise level

# Call Detail (CAS Calls)

```

CAS1116111601_detail.txt - Notepad
File Edit Format View Help
CAS CALL LIST REPORT
----- Call Summary -----
Probe ID: ATTCARD1
Call ID: 11116155958-1
Timeslot: 0
Protocol: CAS
Start Time: 11/16/2011 16:00:03 } Call Duration with
Release Time: 11/16/2011 16:01:19 } Seized & Release time
Call Duration: 00:01:16
Originating side: New York (#2)
Terminating side: Washington (#1)
Calling #: 3016041111 } Called and Calling #s
Called #: 3019241111
Release Code: Normal
Source Folder: C:\Program Files\GL Communications Inc\tProbe T1 Analyzer\ATT\devicecapture1116111559\
Archive Folder: C:\inetpub\ftproot\TestFiles\voicefiles\devicecapture1116111559\

CALL SIDE INFORMATION
-----
Value Washington New York
-----
Telephone #: 3019241111 3016041111
#Port:Timeslot: #1:0 #2:0
Mid-Call Digits:
Capt File Name: 3019241111_3016041111_Nov16_Washington100_2011_1116_160003.pcm
3019241111_3016041111_Nov16_New York0200_2011_1116_160003.pcm

CALL EVENTS
-----
Time of Day Since Last Event Since Last Supv Direction Direction p Event Duration Resulting Call Status
-----
16:00:03.000 0.000 0.000 Washington S OnHook(0000)
16:00:03.000 0.000 0.000 New York S OffHook(1111)
16:00:03.465 0.465 0.465 Washington S OffHook(1111)
16:00:03.687 0.222 0.222 Washington S OnHook(0000)
16:00:04.062 0.375 New York V DTMF-3 0.088
16:00:04.228 0.166 New York V DTMF-0 0.075
16:00:04.381 0.153 New York V DTMF-1 0.088
16:00:04.547 0.166 New York V DTMF-9 0.075
16:00:04.700 0.153 New York V DTMF-2 } Midcall Digits
16:00:04.865 0.165 New York V DTMF-4 0.075
16:00:05.018 0.153 New York V DTMF-1 0.088
16:00:05.184 0.166 New York V DTMF-1 0.075
16:00:05.350 0.166 New York V DTMF-1 0.075
16:00:05.503 0.153 New York V DTMF-1 0.088
16:00:05.669 0.166 New York V DTMF-* 0.075
16:00:05.822 0.153 New York V DTMF-3 0.088
16:00:05.987 0.165 New York V DTMF-0 0.075
16:00:06.140 0.153 New York V DTMF-1 0.088
16:00:06.306 0.166 New York V DTMF-6 0.075
16:00:06.459 0.153 New York V DTMF-0 0.088
16:00:06.625 0.166 New York V DTMF-4 0.075
16:00:06.778 0.153 New York V DTMF-1 0.088
16:00:06.944 0.166 New York V DTMF-1 0.075
16:00:07.109 0.165 New York V DTMF-1 0.075
16:00:07.262 0.153 New York V DTMF-1 0.088
16:00:18.732 11.470 15.045 Washington S OffHook(1111)
16:00:30.157 11.425 11.425 New York A OOF Error(2)
16:00:30.172 0.015 0.015 New York A Line Sync Loss
16:00:30.172 0.000 0.000 New York A Frame Error(on
16:00:30.172 0.000 0.000 New York A Alarm Indicat1
16:00:30.172 0.000 0.000 New York A Blue AlarmCon)
16:00:30.322 0.750 0.750 New York A Frame Error(cof
16:00:32.422 1.500 1.500 New York A Line Sync Loss
16:00:32.422 0.000 0.000 New York A Alarm Indicat1
16:00:32.422 0.000 0.000 New York A Blue AlarmCoff
16:00:41.016 8.594 8.594 New York A Line Sync Loss
16:00:41.016 0.000 0.000 New York A Carrier LossCo
16:00:41.016 0.000 0.000 New York A Frame Error(cof
16:00:41.016 0.000 0.000 New York A Bipolar Violat
16:00:41.016 0.000 0.000 New York A Alarm Indicat1
16:00:41.016 0.000 0.000 New York A Yellow AlarmCo
16:00:41.016 0.000 0.000 New York A Blue AlarmCoff
16:00:41.016 0.000 0.000 New York A ES OverFlow(cof
16:00:41.016 0.000 0.000 New York A ES UnderFlowCo
16:01:18.792 37.776 37.776 Washington S OnHook(0000)
16:01:18.996 0.204 0.204 New York S OnHook(0000)

IN-BAND SUMMARY
-----
Value Washington New York
-----
Probe Input W1 E1
Label Washington New York
Start 11/16/2011 16:00:03 11/16/2011 16:00:03
Elapsed 75.999 75.999
ASL -20.508908 -9.315508
AF 80.73789 27.893092 } Active Speech & Noise Level
RMS -21.438354 -14.860541
Noise -77.642253 -75.198396
% Voice 77.364865 74.662162
% Digits 0.000000 4.391892
% Quiet 18.243243 0.000000
% Idle 4.391892 20.945946
    
```

## Call Summary

## Call Side Information

- voice file names
- called/calling party address

## Call Events

- supervisory messages
- digit detection

## InBand Summary

- signal level, activity factor
- RMS power level, noise level

# Call Detail (SIP Calls)

```

SIP0127121044_detail.txt - Notepad
File Edit Format View Help
Probe ID: VoIPProbe
Call ID: GLPG-15796368722031
Protocol: SIP
Start Time: 11/23/2011 09:06:58
Release Time: 11/23/2011 09:07:25 } Call Duration with Seized & Release time
Call Duration: 00:00:27
Originating side: Left
Terminating side: Right
Caller: 0001@192.168.1.183 } Called and Calling #s
Callee: 0001@192.168.1.223
Release Code: Normal Call Clearing
Post-Dial Delay: 1
Session Disconn Delay: 0
Source Folder: C:\Program Files\GL Communications Inc\Packetscan\ATT
Archive Folder: C:\inetpub\ftproot\TestFiles\voiceFiles\VoIPCaptures_2012_1_27_10\

CALL SIDE INFORMATION
Value Left Right
-----
Address : 0001@192.168.1.183 0001@192.168.1.223
SSRC : 1780198401 1776755713
Codec : PCMU/8000 PCMU/8000
Missing Pkt Count : 0 0
Missing Pkt Pct : 0 0
Duplicate Pkt Count : 0 0
Duplicate Pkt Pct : 0 0
Reordered Pkt Count : 0 0
Reordered Pkt Pct : 0 0
Discarded Pkt Count : 0 0
Discarded Pkt Pct : 0 0
Conversational MOS : 4.2 4.2
Conversational R-Factor : 93 93
Listener MOS : 4.2 4.2
Listener R-Factor : 93 93
Average Gap : 20.00 20.00
Minimum Gap : 19.38 19.49
Maximum Gap : 20.66 20.54
Average Delay : 0 0
Minimum Delay : 0 0
Maximum Delay : 0 0
Average Jitter : 0.00 0.00
Minimum Jitter : 0.00 0.00
Maximum Jitter : 0.53 0.50
Avg Inter-Arrival Jitter : 0.00 0.00
Cumulative Packets Lost : 0 0
Capt File Name : VoIPProbe_GLPG-15796368722031_2012_01_27_10-36-23_Left.wav
VoIPProbe_GLPG-15796368722031_2012_01_27_10-36-23_Right.wav

CALL EVENTS
Time of Day Since Last Event Since Last Supv Direction T p Event Duration Source IP Address Destination IP Address SIP Command Sequence
-----
09:06:58.000 0.000 0.000 Left S INVITE 192.168.1.183/54098 192.168.1.223/5060 1 INVITE
09:06:58.001 0.001 0.001 Right S SIP/2.0 100 Trying 192.168.1.223/54098 192.168.1.183/5060 1 INVITE
09:06:58.001 0.000 0.000 Right S SIP/2.0 180 Ringing 192.168.1.223/54098 192.168.1.183/5060 1 INVITE
09:06:59.399 1.398 1.398 Right S SIP/2.0 200 OK 192.168.1.223/54098 192.168.1.183/5060 1 INVITE
09:06:59.401 0.001 0.001 Left S ACK 192.168.1.183/54098 192.168.1.223/5060 1 ACK
09:07:14.426 15.025 0.001 Right V DTMF-3 } Midcall Digits
09:07:14.630 0.204 0.001 Left V DTMF-3 }
09:07:24.998 10.368 25.597 Right S BYE 192.168.1.223/54098 192.168.1.183/5060 2 BYE
09:07:24.999 0.001 0.001 Left S SIP/2.0 200 OK 192.168.1.183/54098 192.168.1.223/5060 2 BYE

IN-BAND SUMMARY
Value Left Right
-----
Probe
Input E1 W1
Label Left Right
Start 01/27/2012 10:37:46 01/27/2012 10:37:46
Elapsed 17.983 17.983
ASL -9.716323 -10.029988
AF 15.143373 16.277555
RMS -17.914097 -17.914097
Noise -84.875096 -84.883320 } Active Speech & Noise Level
% Voice 0.000000 0.000000
% Digits 1.428571 1.428571
% Quiet 0.000000 0.000000
% Idle 98.571429 98.571429
    
```

## Call Summary

### Call Side Information

- voice file names
- called/calling party address
- packet stats

### Call Events

- supervisory messages
- digit detection

### InBand Summary

- signal level, activity factor
- RMS power level, noise level

# Call Detail (PPP Calls)

```

PPPO127121305_detail.txt - Notepad
File Edit Format View Help

Probe ID: MLPPP
Call ID: GLPG19051131284162
Protocol: SIP
Start Time: 11/27/2011 10:05:03
Release Time: 11/27/2011 10:05:30
Call Duration: 00:00:27
Originating side: Left
Terminating side: Right
Caller: 00018192.168.40.245
Callee: 00018192.168.20.20
Release Code: Normal Call Clearing
Post-Dial Delay: 7
Session Discon Delay: 0
Source Folder: C:\Program Files\GL Communications Inc\Usb E1 Analyzer\test\voice files
Archive Folder: C:\Program Files\GL Communications Inc\Usb E1 Analyzer\test\voice files\

CALL SIDE INFORMATION
Value ----- Left ----- Right -----
Address : 00018192.168.40.245 00018192.168.20.20
SSRC : 2010944257 2018168833
Codec : PCMU/6000 PCMU/6000
Missing Pkt Count : 0 0
Duplicate Pkt Count : 0 0
Reordered Pkt Count : 0 0
Discarded Pkt Count : 0 0
Conversational MOS : 4.2 4.2
Conversational R-Factor : 93 93
Listener MOS : 4.2 4.2
Listener R-Factor : 93 93
Average Gap : 19.99 20.00
Minimum Gap : 0.91 18.00
Maximum Gap : 32.00 22.05
Average Delay : 0 0
Minimum Delay : -19 -2
Maximum Delay : 13 2
Average Jitter : 0.00 0.00
Minimum Jitter : 0.00 0.00
Maximum Jitter : 2.77 1.80
Avg Inter-Arrival Jitter : 0.00 0
Cumulative Packets Lost : 0 0
Capt File Name : MLPPP_GLPG19051131284162_2012_01_27_13-05-20_Left.wav
MLPPP_GLPG19051131284162_2012_01_27_13-05-20_Right.wav

Summary of Signaling and duration of each signaling
CALL EVENTS
-----
Time of Day Since Last Event Since Last Supv Direction T p Event Duration Source IP Address Destination IP Address SIP Command Sequence
10:05:03.000 0.000 0.000 Left S INVITE 0.000 192.168.40.245/54098 192.168.20.20/5060 1 INVITE
10:05:03.006 0.006 0.006 Right S SIP/2.0 100 Trying 0.000 192.168.20.20/54098 192.168.40.245/5060 1 INVITE
10:05:03.007 0.007 0.002 Right S SIP/2.0 180 Ringing 0.000 192.168.20.20/54098 192.168.40.245/5060 1 INVITE
10:05:04.401 1.394 1.394 Right S SIP/2.0 200 OK 0.000 192.168.20.20/54098 192.168.40.245/5060 1 INVITE
10:05:04.406 0.005 0.005 Left S ACK 0.000 192.168.40.245/54098 192.168.20.20/5060 1 ACK
10:05:11.138 6.732 0.051 Right V DTMF-1 0.088
10:05:11.304 0.166 0.051 Left V DTMF-2 0.075
10:05:11.355 0.051 0.115 Right V DTMF-1 0.075
10:05:11.470 0.115 0.028 Left V DTMF-3 0.075
10:05:11.508 0.028 0.115 Right V DTMF-2 0.088
10:05:11.623 0.115 0.051 Left V DTMF-4 0.075
10:05:11.674 0.051 0.166 Right V DTMF-3 0.075
10:05:11.840 0.166 2.103 Left V DTMF-4 0.075
10:05:13.943 2.103 0.217 Right V DTMF-5 0.075
10:05:14.160 0.217 5.100 Left V DTMF-6 0.088
10:05:19.260 5.100 0.166 Right V DTMF-7 0.075
10:05:19.426 0.166 0.051 Left V DTMF-8 0.088
10:05:19.477 0.051 0.102 Right V DTMF-7 0.075
10:05:19.579 0.102 0.115 Left V DTMF-8 0.088
10:05:19.630 0.051 0.115 Right V DTMF-7 0.075
10:05:19.745 0.115 0.102 Left V DTMF-9 0.075
10:05:19.796 0.051 0.102 Right V DTMF-8 0.075
10:05:19.898 0.102 0.051 Left V DTMF-9 0.088
10:05:19.949 0.051 0.114 Right V DTMF-8 0.075
10:05:20.063 0.114 0.051 Left V DTMF-9 0.075
10:05:20.114 0.051 0.115 Right V DTMF-# 0.075
10:05:20.229 0.115 0.102 Left V DTMF-# 0.075
10:05:20.280 0.051 0.102 Right V DTMF-# 0.088
10:05:20.382 0.102 0.051 Left V DTMF-A 0.075
10:05:20.433 0.051 0.115 Right V DTMF-A 0.075
10:05:20.548 0.115 0.051 Left V DTMF-B 0.075
10:05:20.599 0.051 0.102 Right V DTMF-B 0.075
10:05:20.701 0.102 0.088 Left V DTMF-C 0.088
10:05:20.752 0.051 0.088 Right V DTMF-B 0.088
10:05:29.996 9.244 25.590 Right S BYE 0.000 192.168.20.20/54098 192.168.40.245/5060 2 BYE
10:05:30.001 0.005 0.005 Left S SIP/2.0 200 OK 0.000 192.168.40.245/54098 192.168.20.20/5060 2 BYE

IN-BAND SUMMARY
Value ----- Left ----- Right -----
Probe E1 W1
Input Label Left Right
Start 01/27/2012 13:05:20 01/27/2012 13:05:20
Elapsed 18.143 18.143
ASL -9.679433 -9.993055
AF 15.849447 17.028495
RMS -17.679292 -17.679292
Noise -78.766975 -78.766975
% Voice 0.000000 0.000000
% Digits 14.285714 15.714286
% Quiet 0.000000 0.000000
% Idle 85.714286 84.285714

Active Speech & Noise Level

```

## Call Summary

## Call Side Information

- voice file names
- called/calling party address
- packet stats

## Call Events

- supervisory messages
- digit detection

## InBand Summary

- signal level, activity factor
- RMS power level, noise level

# Call Events in Detail Report

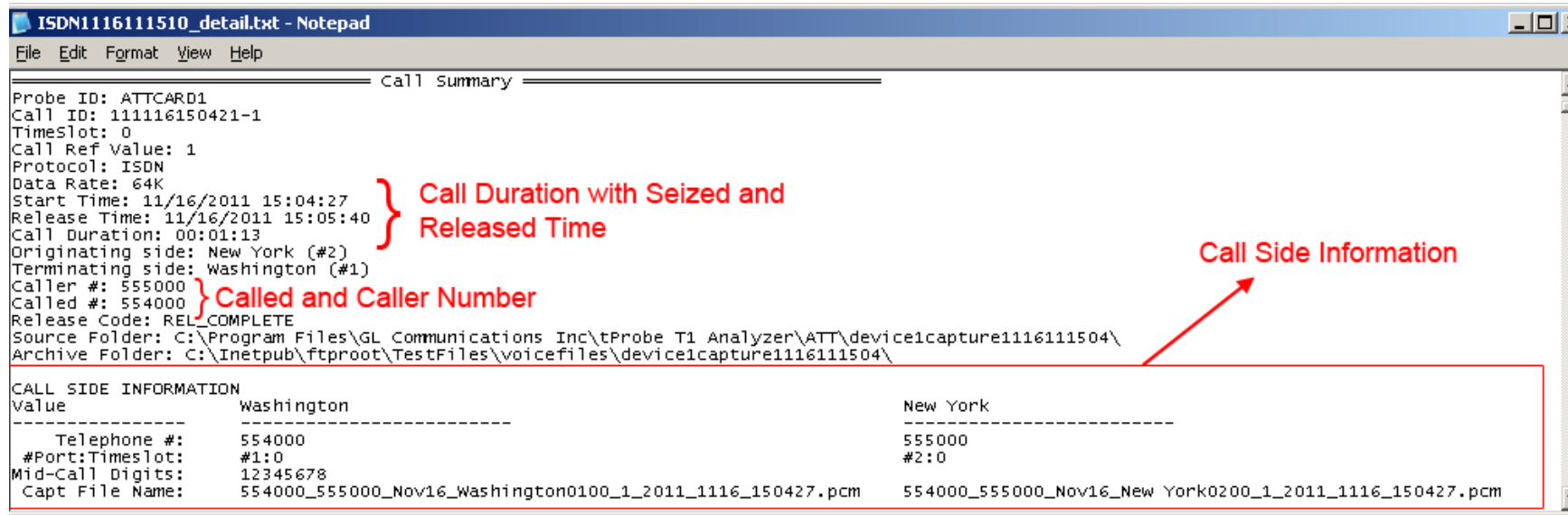
CALL EVENTS							
Time of Day	SinceLast Event	SinceLast Supv.	Direction	T	Event	Dur	Call Status
12:36:11.000	0.000	0.000	Newyork	S	SETUP		
12:36:11.109	0.109	0.109	washington	S	CALL_PROC		
12:36:11.594	0.485	0.485	washington	S	PROGRESS		
12:36:11.594	0.000	0.000	washington	S	ALERTING		
12:36:11.594	0.000	0.000	washington	S	CONNECT		
12:36:11.609	0.015	0.015	Newyork	S	CONN_ACK		
12:36:21.572	9.963		washington	V	DTMF-0	0.101	
12:36:21.776	0.204		washington	V	DTMF-*	0.101	
12:36:21.980	0.204		washington	V	DTMF-#	0.088	
12:36:22.171	0.191		washington	V	DTMF-A	0.101	
12:36:22.375	0.204		washington	V	DTMF-B	0.101	
12:36:22.579	0.204		washington	V	DTMF-C	0.088	
12:38:35.329	132.750	143.720	Newyork	A	OOF Error(4)		
12:38:35.391	0.062	0.062	Newyork	A	Line Sync Loss(on)		
12:38:35.391	0.000	0.000	Newyork	A	Frame Error(on)		
12:38:36.032	0.641	0.641	Newyork	A	Line Sync Loss(off)		
12:38:36.032	0.000	0.000	Newyork	A	Frame Error(off)		
12:38:38.500	2.468	2.468	Newyork	A	OOF Error(22)		
12:38:38.563	0.063	0.063	Newyork	A	Line Sync Loss(on)		
12:38:38.563	0.000	0.000	Newyork	A	Frame Error(on)		
12:38:41.282	0.063	0.063	Newyork	A	Bipolar violation(1)		
12:38:41.313	0.031	0.031	Newyork	A	Bipolar violation(on)		
12:38:52.594	7.594	7.594	washington	A	OOF Error(5)		
12:38:52.641	0.047	0.047	washington	A	Line Sync Loss(on)		
12:38:52.641	0.000	0.000	washington	A	Frame Error(on)		
12:38:54.750	2.109	2.109	washington	A	OOF Error(28)		
12:38:56.391	0.031	0.031	washington	A	Bipolar Violation(1)		
12:38:56.422	0.031	0.031	washington	A	Bipolar Violation(on)		
12:38:57.079	0.657	0.657	washington	A	OOF Error(4)		
12:38:57.094	0.015	0.015	washington	A	Bipolar Violation(1)		
12:38:57.813	0.719	0.719	washington	A	OOF Error(23)		
12:38:57.860	0.047	0.047	washington	A	Bipolar Violation(of)		
12:44:22.641	323.219	323.219	washington	S	RELEASE		
12:44:22.891	0.250	0.250	Newyork	S	DISCONNECT		
12:44:22.937	0.046	0.046	Newyork	S	REL_COMPLETE		

Summary of Signaling and duration of each signaling

BPV, Line Sync Loss, Carrier Loss, Frame Error, and other errors inserted during the call

- **Call Events:** displays an event-by-event account of the call. Events include channel supervision events, mid call digits, and alarms

# Call Summary and Side Information in Detail Report



```
ISDN1116111510_detail.txt - Notepad
File Edit Format View Help
===== Call Summary =====
Probe ID: ATTCARD1
Call ID: 111116150421-1
Timeslot: 0
Call Ref Value: 1
Protocol: ISDN
Data Rate: 64K
Start Time: 11/16/2011 15:04:27
Release Time: 11/16/2011 15:05:40
Call Duration: 00:01:13
Originating side: New York (#2)
Terminating side: Washington (#1)
Caller #: 555000
Called #: 554000
Release Code: REL_COMPLETE
Source Folder: C:\Program Files\GL Communications Inc\tProbe T1 Analyzer\ATT\device1capture1116111504\
Archive Folder: C:\Inetpub\ftproot\TestFiles\voicefiles\device1capture1116111504\

CALL SIDE INFORMATION
Value Washington New York
-----
Telephone #: 554000 555000
#Port:Timeslot: #1:0 #2:0
Mid-Call Digits: 12345678
Capt File Name: 554000_555000_Nov16_Washington0100_1_2011_1116_150427.pcm 554000_555000_Nov16_New York0200_1_2011_1116_150427.pcm
```

- **Call summary:** Displays an overall summary of the call, including Probe ID, Call Id, Timeslot, Call Reference Value, Type of Protocol, Data Rate, Start Time, Release Time, Call Duration, Originating Side, Terminating Side, Called and Caller Number, Release Code, Source Folder, and Archive Folder
- **Call Side Information:** Displays information about Call Side Information, in the above figure call side details are furnished for Washington and New York includes Telephone Number, Port and Timeslot Number, Mid-call Digits, and Captured File Name



# In-Band Statistics in Detail Report

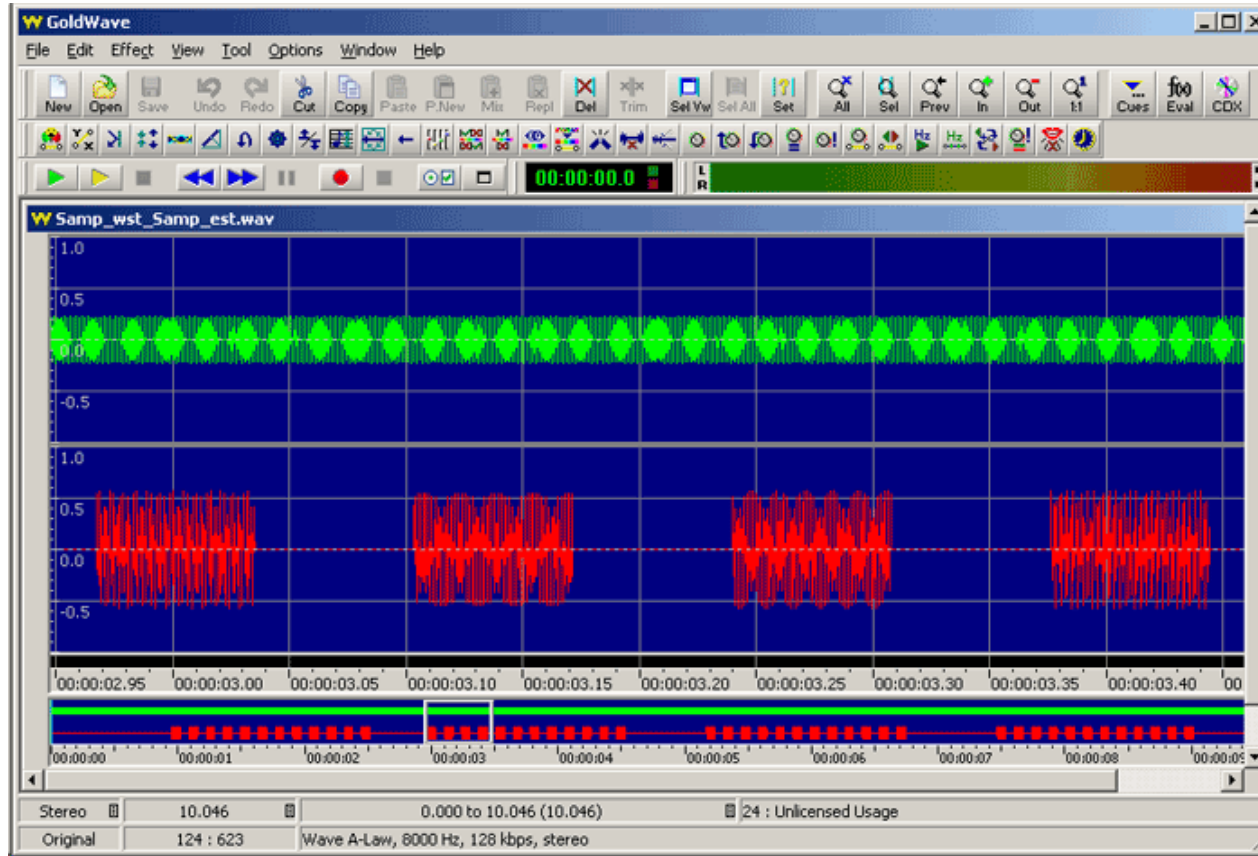
IN-BAND SUMMARY		
Value	Side A	Side B
Probe		
Input	E	W
File	5529976_8747404_Oct20_E0216_21507_2011_1020_123611.pcm	5529976_8747404_Oct20_w0116_21507_2011_1
Src Dir	C:\Program Files\GL Communications Inc\usb T1 Analyzer\ATT\voicecapture1020111235\	
Arch Dir	C:\Inetpub\ftproot\TestFiles\voicefiles\voicecapture1020111235\	
Start	10/20/2011 12:36:11	10/20/2011 12:36:11
Elapsed	185.640	185.640
ASL	-10.685179	-3.208622
AF	57.933560	11.914934
RMS	-13.055877	-12.447706
Noise	-36.612715	-51.924905
% Voice	80.334728	15.341702
% Digits	0.000000	0.697350
% Quiet	0.000000	0.000000
% Idle	1.255230	2.928870

Active Speech and Noise Level

- **In-band summary:** displays in-band summary details dependent on the fields chosen during VBA configuration
- In the example, various Active Speech Level measurements as well as traffic classification estimates are displayed

# View Captured Voice Files

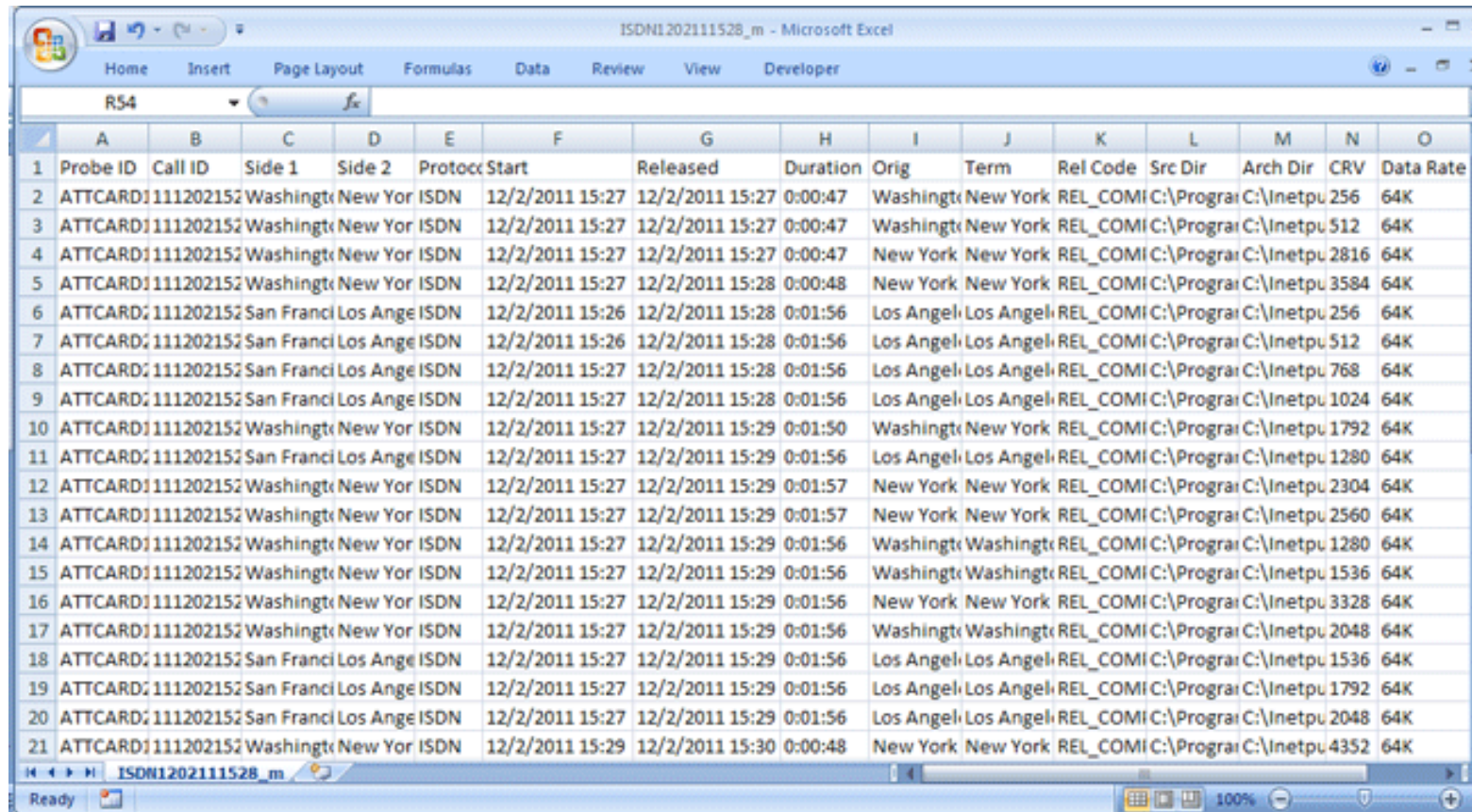
## Goldwave



## Adobe Audition



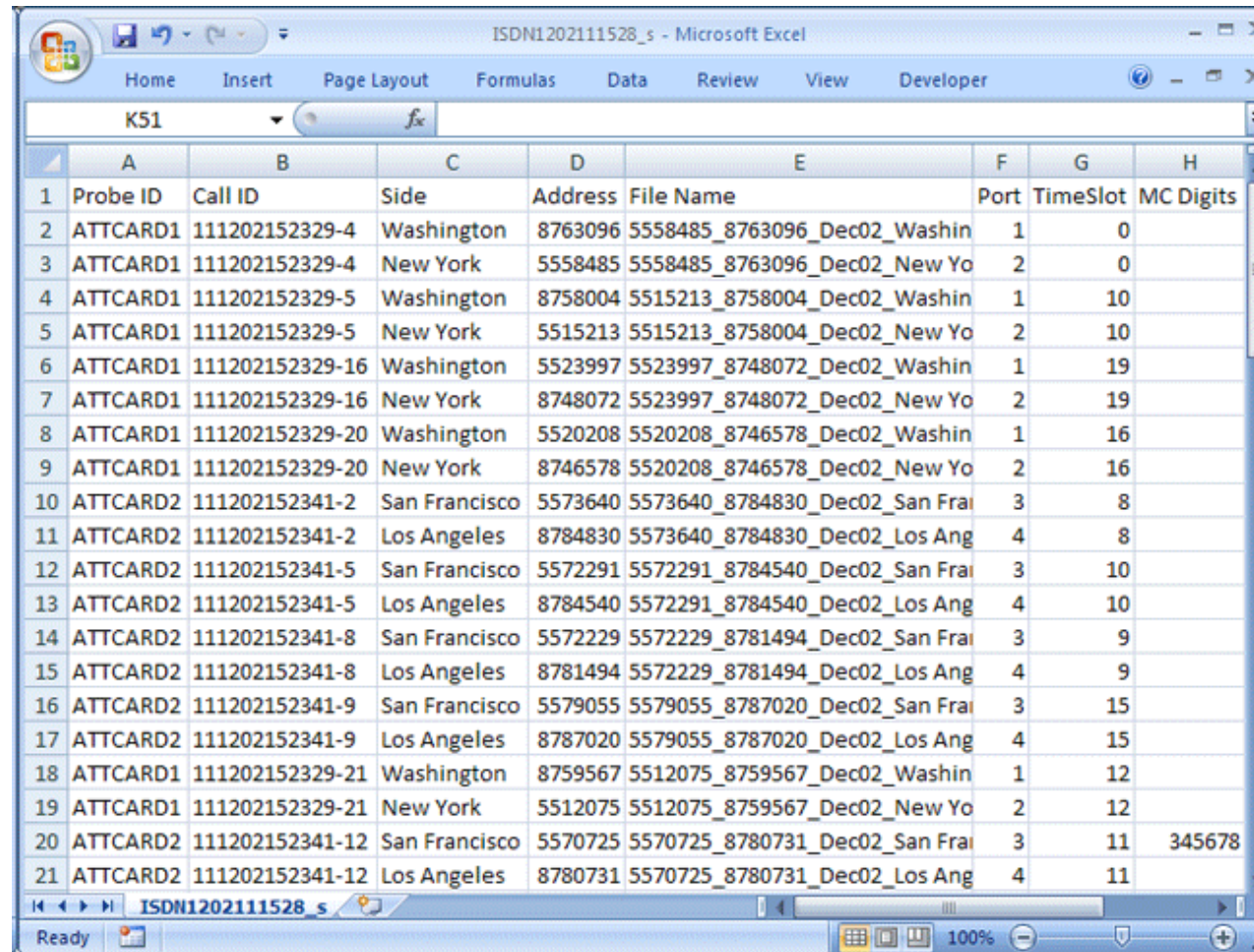
# Call Master Records (\*\_m.csv Output Format)



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
	Probe ID	Call ID	Side 1	Side 2	Protoc	Start	Released	Duration	Orig	Term	Rel Code	Src Dir	Arch Dir	CRV	Data Rate
1	ATTCARD	111202152	Washingt	New Yor	ISDN	12/2/2011 15:27	12/2/2011 15:27	0:00:47	Washingt	New York	REL_COMI	C:\Progra	C:\Inetpu	256	64K
2	ATTCARD	111202152	Washingt	New Yor	ISDN	12/2/2011 15:27	12/2/2011 15:27	0:00:47	Washingt	New York	REL_COMI	C:\Progra	C:\Inetpu	512	64K
3	ATTCARD	111202152	Washingt	New Yor	ISDN	12/2/2011 15:27	12/2/2011 15:27	0:00:47	New York	New York	REL_COMI	C:\Progra	C:\Inetpu	2816	64K
4	ATTCARD	111202152	Washingt	New Yor	ISDN	12/2/2011 15:27	12/2/2011 15:28	0:00:48	New York	New York	REL_COMI	C:\Progra	C:\Inetpu	3584	64K
5	ATTCARD	111202152	San Franci	Los Ange	ISDN	12/2/2011 15:26	12/2/2011 15:28	0:01:56	Los Angel	Los Angel	REL_COMI	C:\Progra	C:\Inetpu	256	64K
6	ATTCARD	111202152	San Franci	Los Ange	ISDN	12/2/2011 15:26	12/2/2011 15:28	0:01:56	Los Angel	Los Angel	REL_COMI	C:\Progra	C:\Inetpu	512	64K
7	ATTCARD	111202152	San Franci	Los Ange	ISDN	12/2/2011 15:27	12/2/2011 15:28	0:01:56	Los Angel	Los Angel	REL_COMI	C:\Progra	C:\Inetpu	768	64K
8	ATTCARD	111202152	San Franci	Los Ange	ISDN	12/2/2011 15:27	12/2/2011 15:28	0:01:56	Los Angel	Los Angel	REL_COMI	C:\Progra	C:\Inetpu	1024	64K
9	ATTCARD	111202152	Washingt	New Yor	ISDN	12/2/2011 15:27	12/2/2011 15:29	0:01:50	Washingt	New York	REL_COMI	C:\Progra	C:\Inetpu	1792	64K
10	ATTCARD	111202152	San Franci	Los Ange	ISDN	12/2/2011 15:27	12/2/2011 15:29	0:01:56	Los Angel	Los Angel	REL_COMI	C:\Progra	C:\Inetpu	1280	64K
11	ATTCARD	111202152	Washingt	New Yor	ISDN	12/2/2011 15:27	12/2/2011 15:29	0:01:57	New York	New York	REL_COMI	C:\Progra	C:\Inetpu	2304	64K
12	ATTCARD	111202152	Washingt	New Yor	ISDN	12/2/2011 15:27	12/2/2011 15:29	0:01:57	New York	New York	REL_COMI	C:\Progra	C:\Inetpu	2560	64K
13	ATTCARD	111202152	Washingt	New Yor	ISDN	12/2/2011 15:27	12/2/2011 15:29	0:01:56	Washingt	Washingt	REL_COMI	C:\Progra	C:\Inetpu	1280	64K
14	ATTCARD	111202152	Washingt	New Yor	ISDN	12/2/2011 15:27	12/2/2011 15:29	0:01:56	Washingt	Washingt	REL_COMI	C:\Progra	C:\Inetpu	1536	64K
15	ATTCARD	111202152	Washingt	New Yor	ISDN	12/2/2011 15:27	12/2/2011 15:29	0:01:56	New York	New York	REL_COMI	C:\Progra	C:\Inetpu	3328	64K
16	ATTCARD	111202152	Washingt	New Yor	ISDN	12/2/2011 15:27	12/2/2011 15:29	0:01:56	Washingt	Washingt	REL_COMI	C:\Progra	C:\Inetpu	2048	64K
17	ATTCARD	111202152	San Franci	Los Ange	ISDN	12/2/2011 15:27	12/2/2011 15:29	0:01:56	Los Angel	Los Angel	REL_COMI	C:\Progra	C:\Inetpu	1536	64K
18	ATTCARD	111202152	San Franci	Los Ange	ISDN	12/2/2011 15:27	12/2/2011 15:29	0:01:56	Los Angel	Los Angel	REL_COMI	C:\Progra	C:\Inetpu	1792	64K
19	ATTCARD	111202152	San Franci	Los Ange	ISDN	12/2/2011 15:27	12/2/2011 15:29	0:01:56	Los Angel	Los Angel	REL_COMI	C:\Progra	C:\Inetpu	2048	64K
20	ATTCARD	111202152	San Franci	Los Ange	ISDN	12/2/2011 15:27	12/2/2011 15:29	0:01:56	Los Angel	Los Angel	REL_COMI	C:\Progra	C:\Inetpu	2048	64K
21	ATTCARD	111202152	Washingt	New Yor	ISDN	12/2/2011 15:29	12/2/2011 15:30	0:00:48	New York	New York	REL_COMI	C:\Progra	C:\Inetpu	4352	64K

- Call Master Record gives information about Protocol Type, Start Date and Time, Released Date and Time, Duration, Originator, Term, Release Code Source Directory, Archive Directory, and other Protocol Specific Parameters

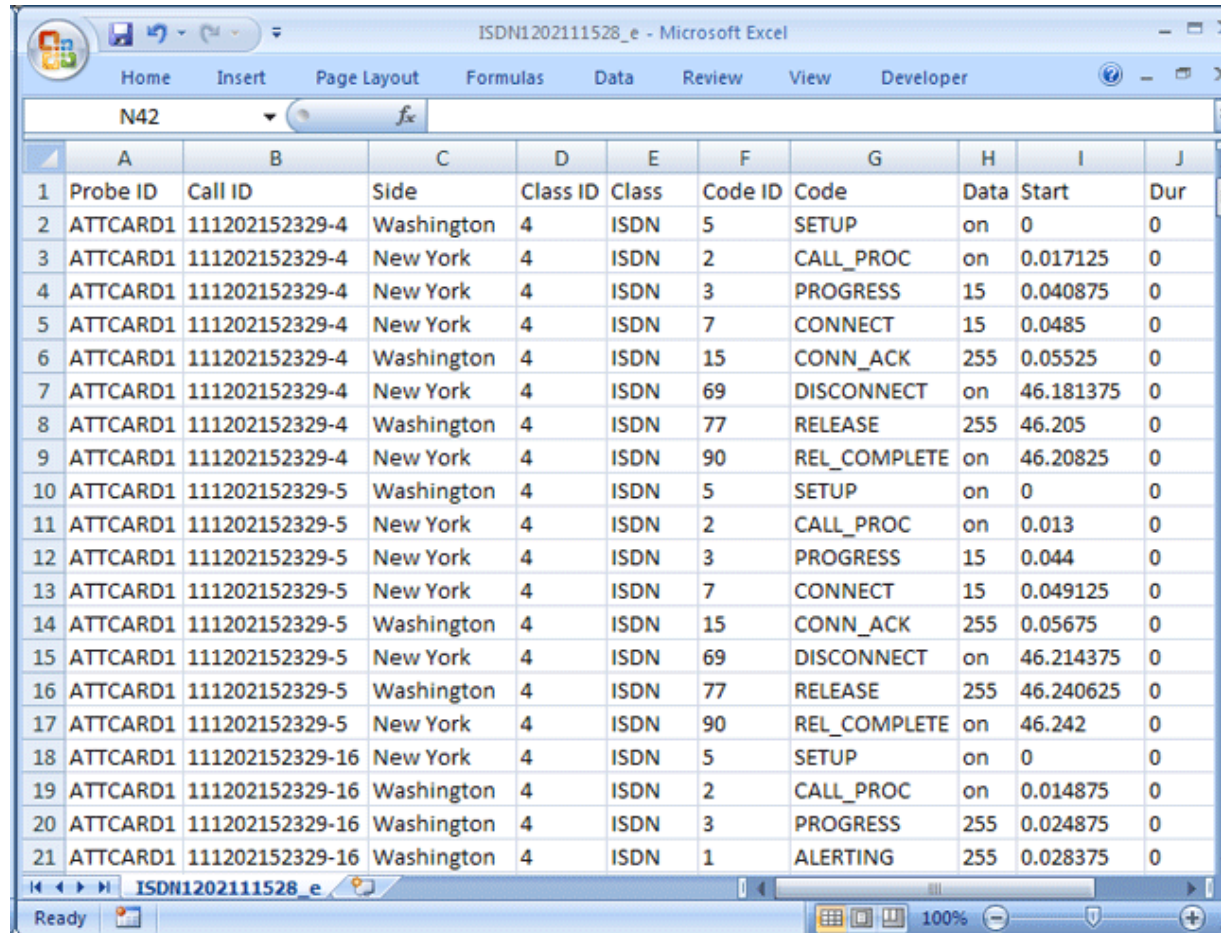
# Call Side Information(\*\_s.csv Output Format)



	A	B	C	D	E	F	G	H
1	Probe ID	Call ID	Side	Address	File Name	Port	TimeSlot	MC Digits
2	ATTCARD1	111202152329-4	Washington	8763096	5558485_8763096_Dec02_Washin	1	0	
3	ATTCARD1	111202152329-4	New York	5558485	5558485_8763096_Dec02_New Yo	2	0	
4	ATTCARD1	111202152329-5	Washington	8758004	5515213_8758004_Dec02_Washin	1	10	
5	ATTCARD1	111202152329-5	New York	5515213	5515213_8758004_Dec02_New Yo	2	10	
6	ATTCARD1	111202152329-16	Washington	5523997	5523997_8748072_Dec02_Washin	1	19	
7	ATTCARD1	111202152329-16	New York	8748072	5523997_8748072_Dec02_New Yo	2	19	
8	ATTCARD1	111202152329-20	Washington	5520208	5520208_8746578_Dec02_Washin	1	16	
9	ATTCARD1	111202152329-20	New York	8746578	5520208_8746578_Dec02_New Yo	2	16	
10	ATTCARD2	111202152341-2	San Francisco	5573640	5573640_8784830_Dec02_San Frai	3	8	
11	ATTCARD2	111202152341-2	Los Angeles	8784830	5573640_8784830_Dec02_Los Ang	4	8	
12	ATTCARD2	111202152341-5	San Francisco	5572291	5572291_8784540_Dec02_San Frai	3	10	
13	ATTCARD2	111202152341-5	Los Angeles	8784540	5572291_8784540_Dec02_Los Ang	4	10	
14	ATTCARD2	111202152341-8	San Francisco	5572229	5572229_8781494_Dec02_San Frai	3	9	
15	ATTCARD2	111202152341-8	Los Angeles	8781494	5572229_8781494_Dec02_Los Ang	4	9	
16	ATTCARD2	111202152341-9	San Francisco	5579055	5579055_8787020_Dec02_San Frai	3	15	
17	ATTCARD2	111202152341-9	Los Angeles	8787020	5579055_8787020_Dec02_Los Ang	4	15	
18	ATTCARD1	111202152329-21	Washington	8759567	5512075_8759567_Dec02_Washin	1	12	
19	ATTCARD1	111202152329-21	New York	5512075	5512075_8759567_Dec02_New Yo	2	12	
20	ATTCARD2	111202152341-12	San Francisco	5570725	5570725_8780731_Dec02_San Frai	3	11	345678
21	ATTCARD2	111202152341-12	Los Angeles	8780731	5570725_8780731_Dec02_Los Ang	4	11	

- Provides information about Address, File name, MC Digits, and other Protocol Specific Parameters

# Call Events Information(\*\_e.csv Output Format)



The screenshot shows a Microsoft Excel spreadsheet titled "ISDN1202111528\_e - Microsoft Excel". The spreadsheet contains a table with 11 columns and 21 rows of data. The columns are labeled as follows: A: Probe ID, B: Call ID, C: Side, D: Class ID, E: Class, F: Code ID, G: Code, H: Data, I: Start, J: Dur. The data rows show various call events such as SETUP, CALL\_PROC, PROGRESS, CONNECT, CONN\_ACK, DISCONNECT, RELEASE, and REL\_COMPLETE, occurring in different locations (Washington, New York) and at different times.

	A	B	C	D	E	F	G	H	I	J
1	Probe ID	Call ID	Side	Class ID	Class	Code ID	Code	Data	Start	Dur
2	ATTCARD1	111202152329-4	Washington	4	ISDN	5	SETUP	on	0	0
3	ATTCARD1	111202152329-4	New York	4	ISDN	2	CALL_PROC	on	0.017125	0
4	ATTCARD1	111202152329-4	New York	4	ISDN	3	PROGRESS	15	0.040875	0
5	ATTCARD1	111202152329-4	New York	4	ISDN	7	CONNECT	15	0.0485	0
6	ATTCARD1	111202152329-4	Washington	4	ISDN	15	CONN_ACK	255	0.05525	0
7	ATTCARD1	111202152329-4	New York	4	ISDN	69	DISCONNECT	on	46.181375	0
8	ATTCARD1	111202152329-4	Washington	4	ISDN	77	RELEASE	255	46.205	0
9	ATTCARD1	111202152329-4	New York	4	ISDN	90	REL_COMPLETE	on	46.20825	0
10	ATTCARD1	111202152329-5	Washington	4	ISDN	5	SETUP	on	0	0
11	ATTCARD1	111202152329-5	New York	4	ISDN	2	CALL_PROC	on	0.013	0
12	ATTCARD1	111202152329-5	New York	4	ISDN	3	PROGRESS	15	0.044	0
13	ATTCARD1	111202152329-5	New York	4	ISDN	7	CONNECT	15	0.049125	0
14	ATTCARD1	111202152329-5	Washington	4	ISDN	15	CONN_ACK	255	0.05675	0
15	ATTCARD1	111202152329-5	New York	4	ISDN	69	DISCONNECT	on	46.214375	0
16	ATTCARD1	111202152329-5	Washington	4	ISDN	77	RELEASE	255	46.240625	0
17	ATTCARD1	111202152329-5	New York	4	ISDN	90	REL_COMPLETE	on	46.242	0
18	ATTCARD1	111202152329-16	New York	4	ISDN	5	SETUP	on	0	0
19	ATTCARD1	111202152329-16	Washington	4	ISDN	2	CALL_PROC	on	0.014875	0
20	ATTCARD1	111202152329-16	Washington	4	ISDN	3	PROGRESS	255	0.024875	0
21	ATTCARD1	111202152329-16	Washington	4	ISDN	1	ALERTING	255	0.028375	0

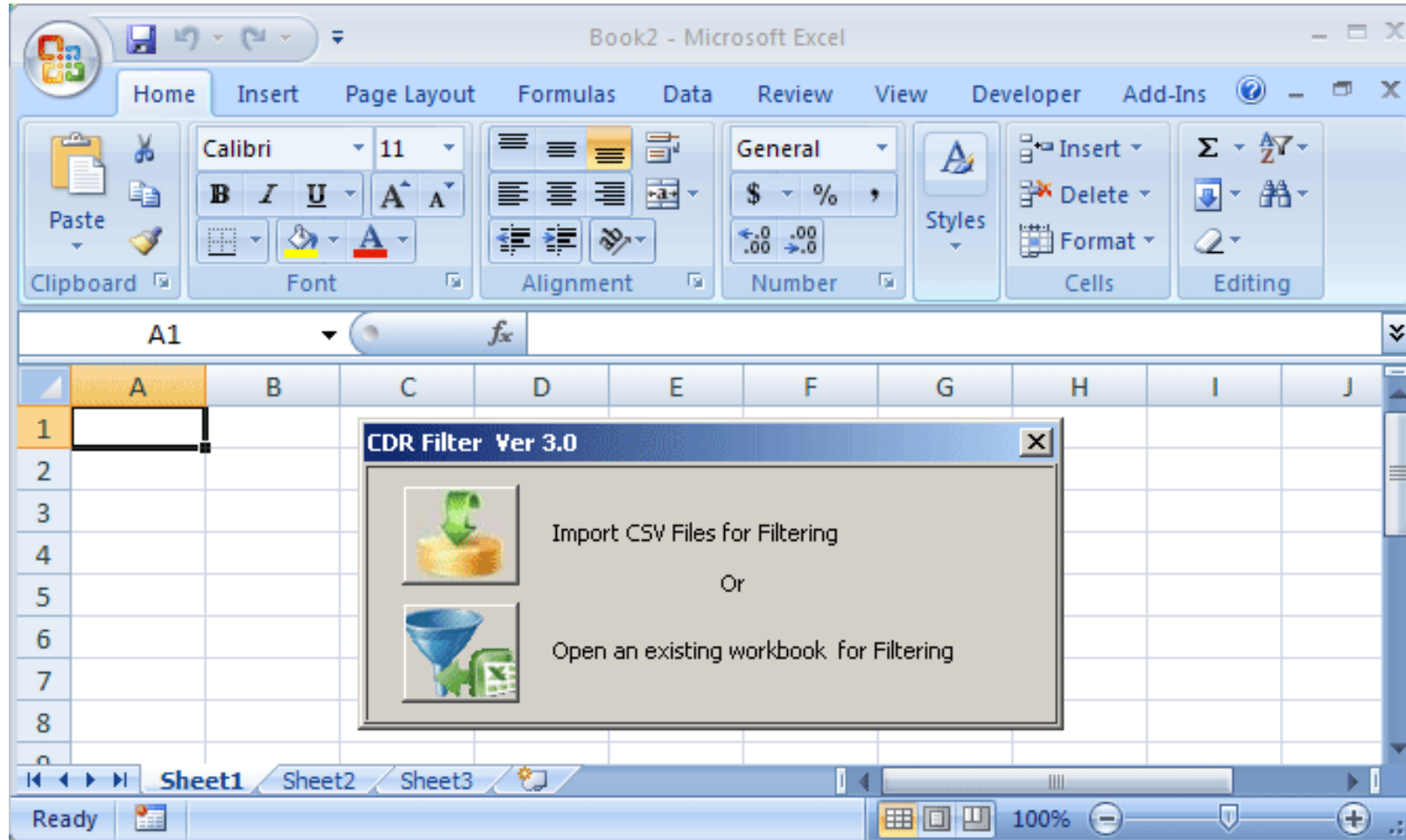
- It gives information about the events for each call, such as Protocol Type, Signaling Messages, Data, Start, and Duration

# Voice Band Call Details(\*\_v.csv Output Formats)

	A	B	C	D	E	F	G	H	I	J	K	L
1	Probe ID	Call ID	Input	Side	ASL	AF	RMS	Noise	% Voice	% Digits	% Quiet	% Idle
2	ATTCARD1	111202152329-4	E1	New York	-13.34086	28.9236	-18.72833	-42.56242	34.10405	0	0	65.895954
3	ATTCARD1	111202152329-4	W1	Washington	-12.84547	85.4308	-13.52932	-30.15544	94.21965	0	0	5.780347
4	ATTCARD1	111202152329-5	E1	New York	-13.35329	29.0275	-18.72519	-42.56908	34.10405	0	0	65.895954
5	ATTCARD1	111202152329-5	W1	Washington	-19.15365	93.9155	-19.42627	-32.09595	100	0	0	0
6	ATTCARD1	111202152329-1	E1	New York	-13.44842	28.2021	-18.9456	-42.75729	32.95455	0	0	67.045455
7	ATTCARD1	111202152329-1	W1	Washington	-19.49922	96.1119	-19.67144	-32.20077	100	0	0	0
8	ATTCARD1	111202152329-2	E1	New York	-13.42818	27.2097	-19.08094	-42.93841	31.81818	0	0	68.181818
9	ATTCARD1	111202152329-2	W1	Washington	-19.7428	97.6705	-19.84516	-32.30474	100	0	0	0
10	ATTCARD2	111202152341-2	E1	Los Angeles	-12.91101	40.6523	-16.82016	-37.07275	45.16854	0	0	54.831461
11	ATTCARD2	111202152341-2	W1	San Francisco	-12.90469	40.6633	-16.81266	-37.07162	45.8427	0	0	54.157303
12	ATTCARD2	111202152341-5	E1	Los Angeles	-12.91878	40.5231	-16.84175	-37.09398	45.16854	0	0	54.831461
13	ATTCARD2	111202152341-5	W1	San Francisco	-12.91882	40.5393	-16.84006	-37.09151	45.16854	0	0	54.831461
14	ATTCARD2	111202152341-8	E1	Los Angeles	-12.90183	40.5015	-16.82712	-37.07934	45.47511	0	0	54.524887
15	ATTCARD2	111202152341-8	W1	San Francisco	-12.90149	40.5129	-16.82555	-37.07645	45.24887	0	0	54.751131
16	ATTCARD2	111202152341-9	E1	Los Angeles	-12.9006	40.5294	-16.82289	-37.07298	45.24887	0	0	54.751131
17	ATTCARD2	111202152341-9	W1	San Francisco	-12.90057	40.5294	-16.82287	-37.07268	45.24887	0	0	54.751131
18	ATTCARD1	111202152329-2	E1	New York	-13.41846	11.4086	-22.84615	-49.66649	13.33333	0	0	86.666667
19	ATTCARD1	111202152329-2	W1	Washington	-20.81535	99.9875	-20.81589	-32.49802	100	0	0	0
20	ATTCARD2	111202152341-1	E1	Los Angeles	-12.88553	40.7036	-16.7892	-37.06454	45.61798	0	0	54.382022
21	ATTCARD2	111202152341-1	W1	San Francisco	-12.90834	36.4547	-17.29081	-38.74371	40.89888	1.1236	0	57.977528

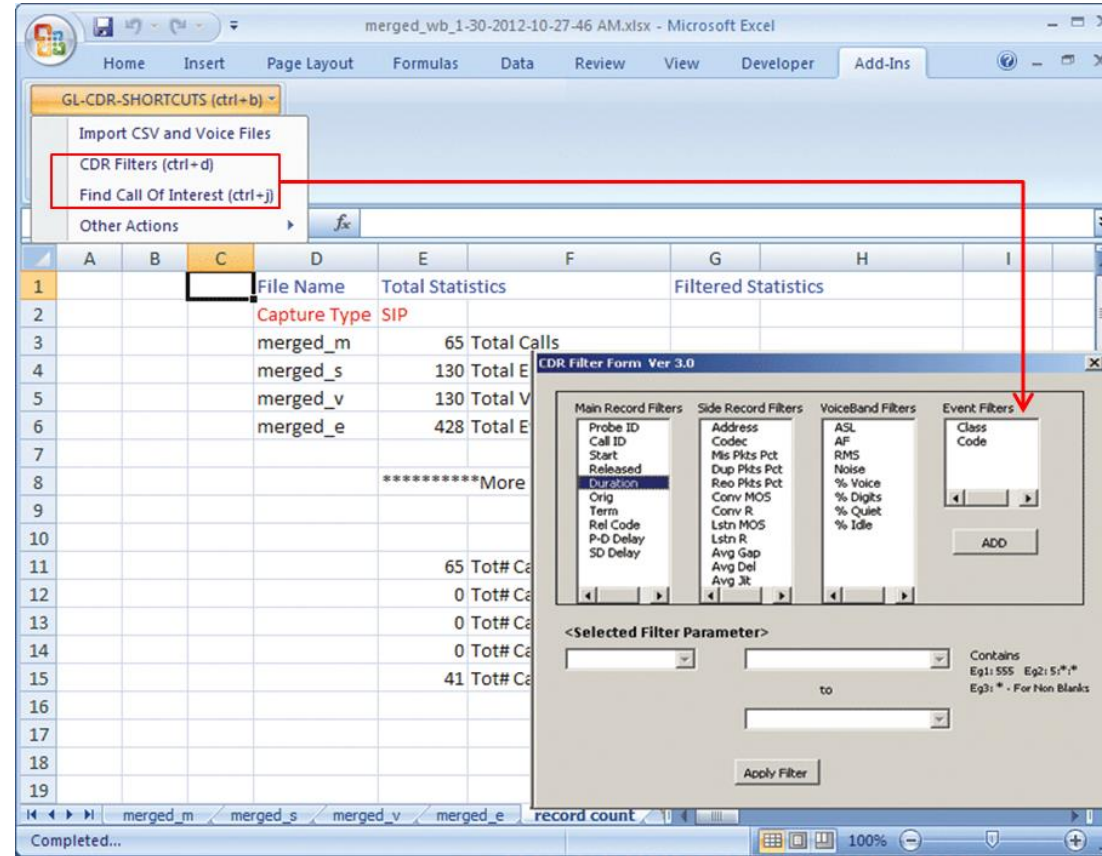
- Voice band call provides the details about Input Points, ASL, AF, RMS, Noise, %Voice, %Digits, %Quiet, and %Idle

# Analyzing CDR Output using EXCEL®



- Imports new CSV files or opens an existing workbook files for filtering

# Call Statistics and Advanced Filter



- User can customize the filters by selecting options in Main Record, Side Record, Voiceband, and Event Filters in CDR Filter Form



# Filtered Calls (Calls of Interest)

The screenshot shows a Microsoft Excel spreadsheet titled "merged\_wb\_1-27-2012-1-06-37 PM.xlsx". The spreadsheet displays a list of calls filtered by start time. A dialog box titled "Calls of Interest" is open, showing details for a specific call. The dialog box has tabs for "Call Summary", "Call Side Information", "Call Events", and "Voiceband Measurements". The "Call Summary" tab is selected, showing the following information:

- Probe ID: MLPPP
- Call ID: GLPG-19803221681798
- Protocol: SIP
- Start Time: 11/23/2011 10:11:52
- Release Time: 11/23/2011 10:12:01
- Call Duration: 00:00:09
- Call Originating Side: Left
- Call Terminating Side: Left
- Release Code: Normal Call Clearing
- Post Dial Delay(PDD): 11
- Session Delay(SD): 0
- Archive Folder: C:\Program Files\GL Communications Inc\Usb E1 Analyzer\test\voice files\

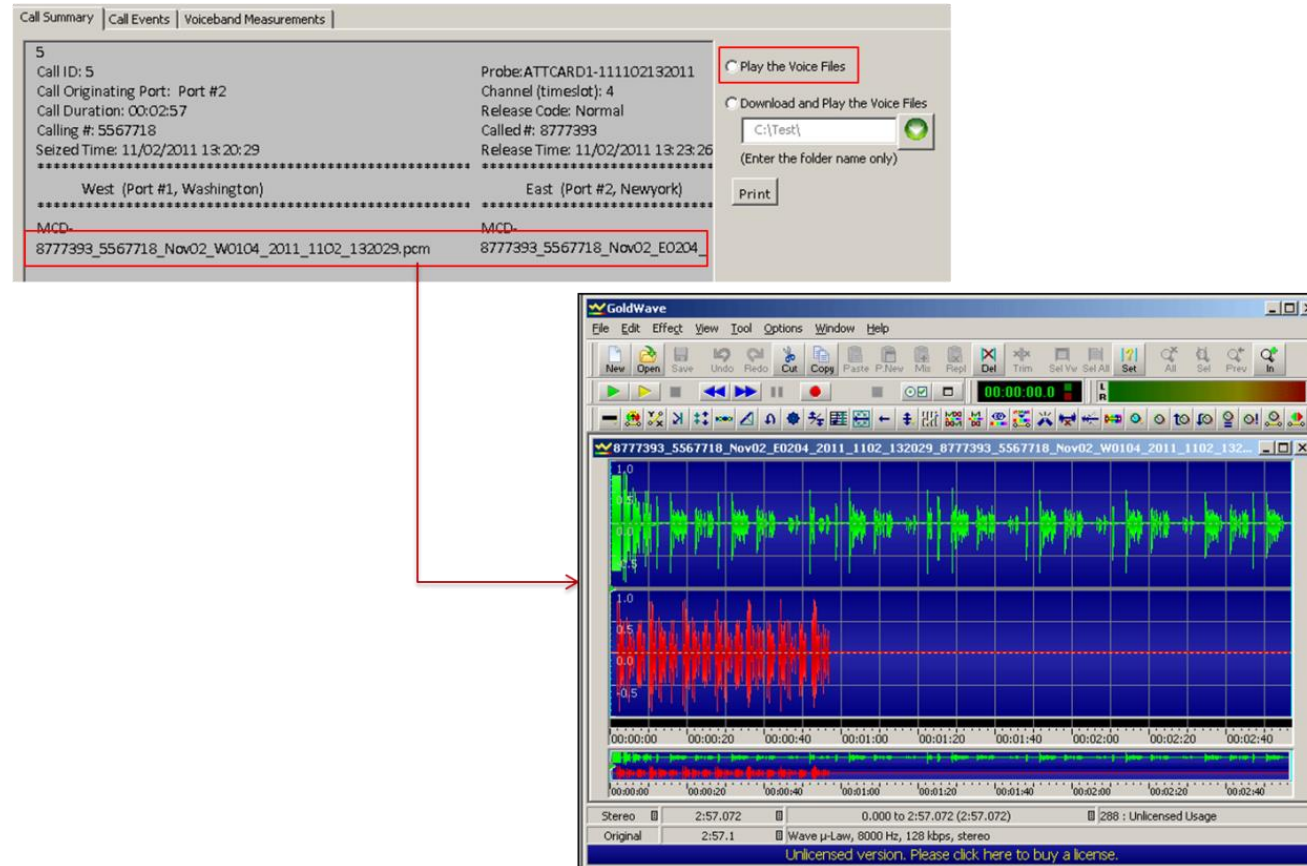
The dialog box also includes options to "Play the Voice Files" (requires the voice file path to have write permissions) and "Download and Play the Voice Files" (with a text box for the folder name, currently containing "C:\Test"). A "Print Selected Record" button is also present.

Probe ID	Call ID	Side 1	Side 2	Protoc	Start	Released	Duration
MLPPP	GLPG-18937601681822	Left	Right	SIP	11/23/2011 10:13:19	11/23/2011 10:13:58	00:00:39
MLPPP	GLPG-19363691681819	Left	Right	SIP	11/23/2011 10:12:36	11/23/2011 10:12:36	00:00:00
MLPPP	GLPG-19506971681812	Left	Right	SIP	11/23/2011 10:12:22	11/23/2011 10:12:30	00:00:08
MLPPP	GLPG-19656971681805	Left	Right	SIP	11/23/2011 10:12:07	11/23/2011 10:12:15	00:00:08
MLPPP	GLPG-19803221681798	Left	Right	SIP	11/23/2011 10:11:52	11/23/2011 10:12:01	00:00:09
MLPPP	GLPG-19913381681795	Left	Right	SIP	11/23/2011 10:11:41	11/23/2011 10:11:49	00:00:08
MLPPP	GLPG-20027601681789	Left	Right	SIP	11/23/2011 10:11:30	11/23/2011 10:11:38	00:00:08
MLPPP	GLPG-20139791681783	Left	Right	SIP	11/23/2011 10:11:19	11/23/2011 10:11:27	00:00:08
MLPPP	GLPG-20233851681777	Left	Right	SIP	11/23/2011 10:11:09	11/23/2011 10:11:18	00:00:09
MLPPP	GLPG1625723128143761	Left	Right	SIP	11/23/2011 10:00:24	11/23/2011 10:00:25	00:00:01
MLPPP	GLPG1629926128143764	Left	Right	SIP	11/23/2011 10:00:28	11/23/2011 10:00:29	00:00:01

Filtered Calls: 24 of 65 Total Calls; Filtering Criteria: Start >=11/23/2011 10:00:24

- Users can customize filtering based on any measurements (ASL, AF, % Digits, %Voice, Mid-call-digits) or signaling messages (ISDN Signaling, CAS Signaling, Release Codes, Call Duration, Call Events)

# Play and Download Voice Files from Calls of Interest



- The voice files of a particular call from the filtered records in Excel® can be downloaded or played back using third-party audio editing tools such as Goldwave®

**Call Capture Applications and Analysis (CCA)**  
**PPP Analyzer**  
**PacketScan™**  
**Voice Band Analyzer**

# Call Capture and Analysis

T1 USB - Analyzer

File Config View Monitor IntrusiveTest Special Applications Window Help

ESF (193E) No Loopback Bridge Int Clk B82S On Card #1

MONITOR T1 (#1)

MONITOR T1 (#2)

Multiple Call Capture - UsbT1 Card #1 and #2

File Capture Settings

Capture Directory: C:\Program Files\GL Communications Inc\Usb T1 Analyzer\

Capture File #1: 5551234\_5551000\_Nov05\_W0100\_20483\_0004.pcm

Bytes Captured: 0

Capture File #2: 5551234\_5551000\_Nov05\_E0200\_20483\_0004.pcm

Bytes Captured: 0

Signaling File: 5551234\_5551000\_Nov05\_00\_20483\_0

Timeslot Activity

00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15  
16 17 18 19 20 21 22 23

ISDN Stats

Isdn Message	Call Ref Value	Timeslot	Card	Called Num
ISDN_MSGTYPE_CO...	23043		2	
ISDN_MSGTYPE_CO...	23043		1	

Error Type

Error Type	Card #3	Card #4
Underruns	0	0
Ok Frames	7577	7577
Frame Errors	0	0
CRC Errors	0	0

Multiple Call Capture - UsbT1 Card #3 and #4

File Capture Settings

Capture Directory: C:\Program Files\GL Communications Inc\Usb T1 Analyzer\

Capture File #1: 5551234\_5551000\_Nov05\_W0300\_24067\_0005.pcm

Bytes Captured: 967584

Capture File #2: 5551234\_5551000\_Nov05\_E0400\_24067\_0005.pcm

Bytes Captured: 967584

Signaling File: 5551234\_5551000\_Nov05\_00\_24067\_0

Timeslot Activity

00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15  
16 17 18 19 20 21 22 23

ISDN Stats

Isdn Message	Call Ref Value	Timeslot	Card	Called Num
ISDN_MSGTYPE_REL...	22531		3	
ISDN_MSGTYPE_REL...	22531	13	4	

Error Type

Error Type	Card #3	Card #4
Underruns	0	0
Ok Frames	7656	7656
Frame Errors	0	0
CRC Errors	0	0

Card 1

VF (Audio)

Tx (VF In) Gain(dB) 0.0

TS 0

Insert

Rx (VF Out) Gain(dB) 0.0

TS 0

Speaker

Set 0-dB

Drop/Insert TSs

Enable

Start 0 Stop 23

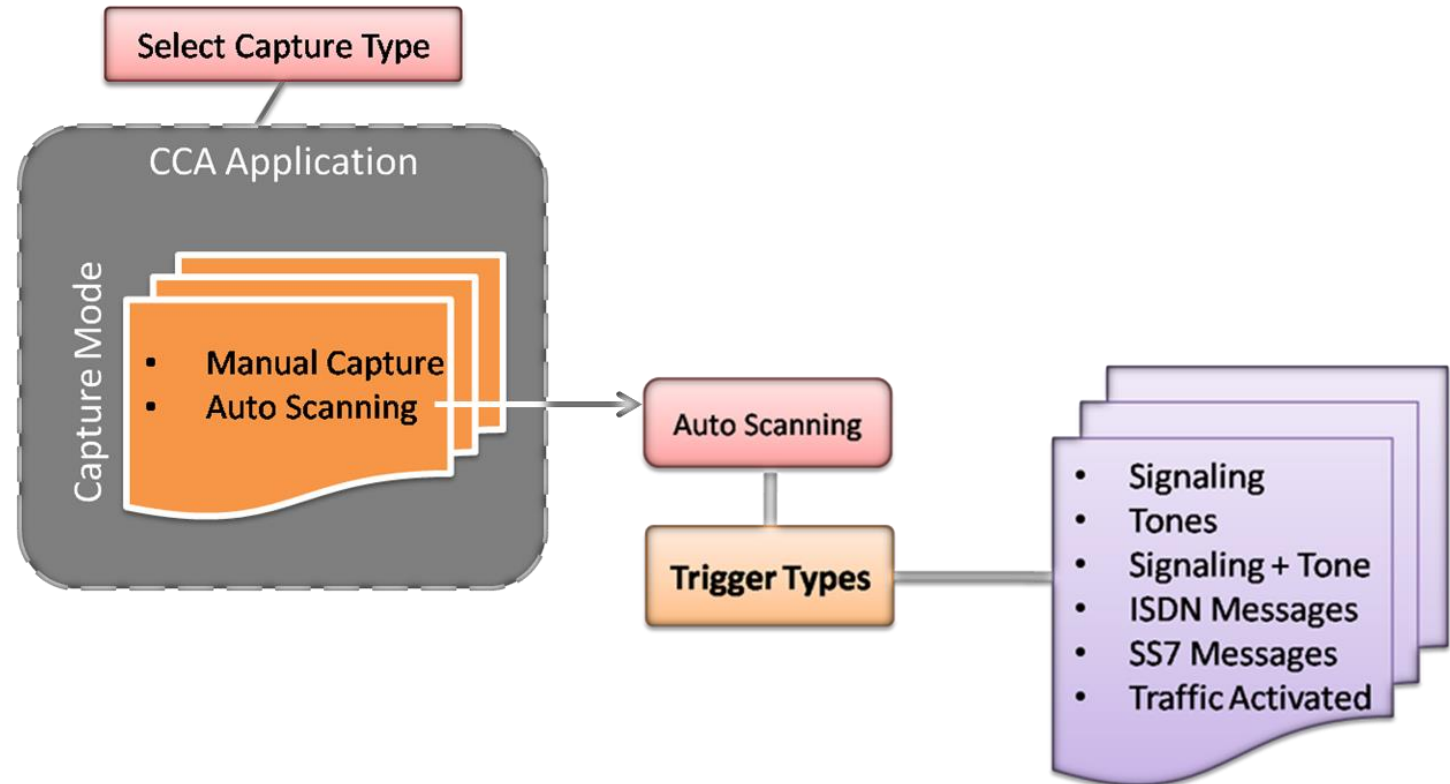
Ready

att

#4 T1 In Sync

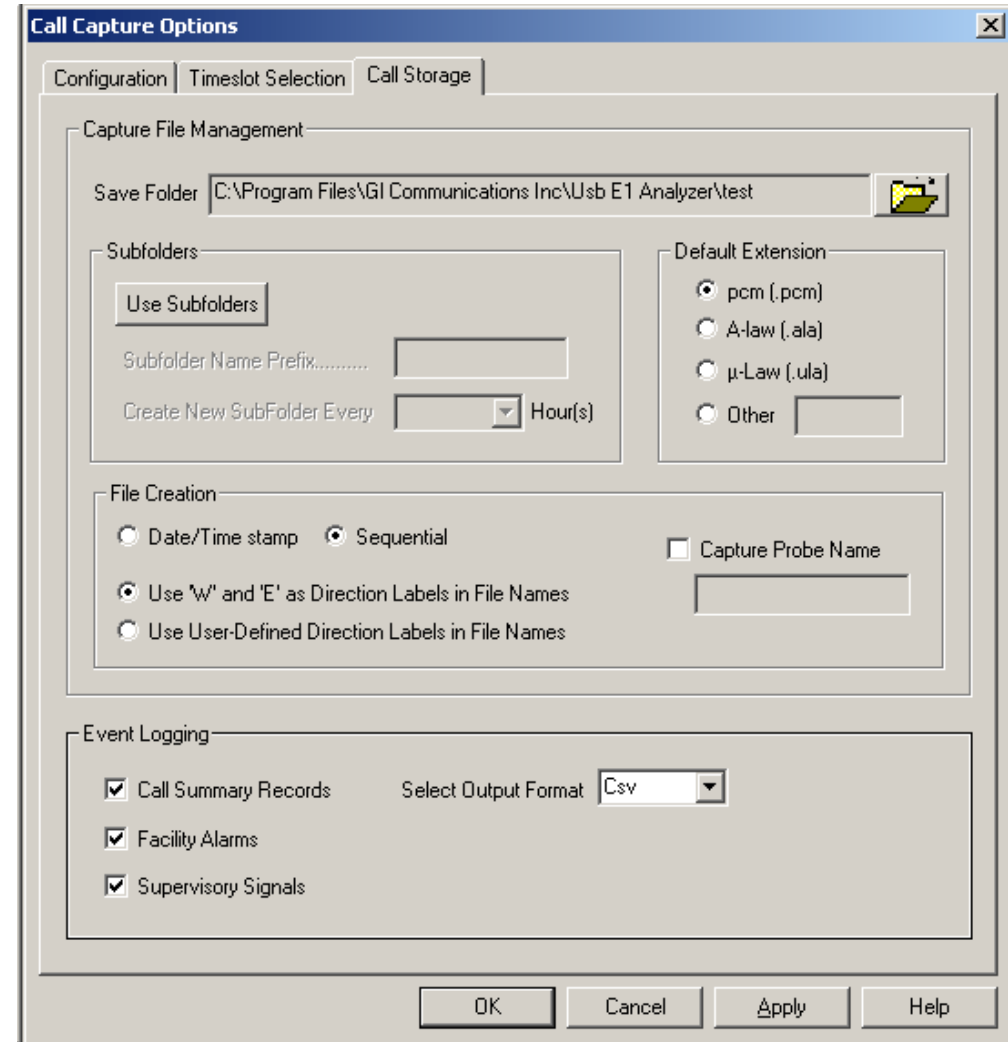
# CCA Capture Modes

- CCA can be set to Auto Scan Mode – with relevant trigger mode for ISDN, CAS, SS7, and other Traffic to automatically start capturing on detecting the require signaling or traffic
- Set corresponding configuration options



# CCA Call Storage

- CCA Call Storage Options (directory, event logging, and file naming convention) is set to allow CDR directly analyze the captured call records



# CCA Call Storage

- Captured file names are named sequentially or with the date/time; File names can be prefixed with Probe names
- Allows to save the captured files into a single folder or in several subfolders
- Option to save call summary records, facility alarms, and supervisory signals into either CSV or binary format
- Default extension such as .pcm, ala, .ula or any other file extension can be given to the captured files

# CCA Output

- CCA captures bidirectional channel data and records it into PCM signal files
- Records signaling and alarm events, as well as producing a summary record for each call
- CCA logs the capture events in CSV or binary files and feed these results into VBA and CDR



# PPP Analyzer

## Analysis and Capture Application

The screenshot displays the PPP Protocol Analysis application interface, which is divided into several functional areas:

- Main Table:** A table listing captured frames with columns for Dev, TSlot, SubCh, Fram..., TIME (Relative), Len, Error, PPP Layer, LCP Code, IPCP Code, and BCF. The first row shows a frame with Dev 1, TSlot 1-31, Fram... 0, TIME 00:00:00.000000, and Len 14.
- Traffic Analyzer - Summary View:** A sub-window showing a summary of SIP calls. It includes a 'Call Summary' table with columns for Call #, SSRC, Payload, Packet Received, Conversat MOS/R..., Listening MOS/R..., Packets Discard..., Missing Packets..., Duplicate Packets..., Out Of Sequen..., Average Gap(ms), Average Delay, Average Jitter, and Average Inter A... The table lists several calls with their respective SSRC and payload details.
- Active Calls Graph:** A 3D bar chart showing the number of active calls over time. The Y-axis is labeled 'No of Calls' and ranges from 0 to 1. The X-axis is labeled 'Time' and shows a range from 10:04:33 to 10:14:17. The graph shows two distinct periods of activity, each with a height of 1 call.
- Hex Dump of the Frame:** A section at the bottom left showing the hexadecimal data of a frame: FF 03 C0 21 09 AC 00.

# PPP Analyzer Features

- Ability to test and perform numerous measurements across WAN- LAN or LAN-LAN connection
- Ability to test and analyze HDLC based PPP protocol, PPP SIGTRAN, and PPP over IP protocols in synchronous environment
- Supports Packet Data Analysis module for real-time IP call analysis including SIP, RTP, MEGACO, H.323, MGCP, and T.38 Fax calls
- Supports decoding of frames with two MLPPP layers
- Triggered Actions and E-mail Support
- Real-time audio/video monitoring of RTP streams; record audio and video data of a session to a file in QuickTime format
- Support for H.263+ provides video capture and videoconference monitoring capability

# PacketScan™

## SIP Analysis and Capture Application

The screenshot displays the PacketScan (VPA) SIP-3261 application interface. The main window shows a list of captured packets with columns for Device (Dev), Frame#, Time, Length (Len), Error, Protocols, and PPPoE Ether Type. The first three packets are Internet IP (IPv4) with lengths of 82, 92, and 82 bytes respectively.

An inset window titled "Traffic Analyzer - Summary View" is open, showing a "Call Summary" table. The table has columns for Call #, SSRC, Payload, Packet Received, Conversat MDS/R..., Listening MDS/R..., Packets Discard..., Missing Packets..., Duplicate Packets..., Out Of Sequen..., Average Gap(ms), and Average Delay. Two call entries are visible:

Call #	SSRC	Payload	Packet Received	Conversat MDS/R...	Listening MDS/R...	Packets Discard...	Missing Packets...	Duplicate Packets...	Out Of Sequen...	Average Gap(ms)	Average Delay
1	33654...	PCMU...	1273	4.18 / ...	4.18 / ...	9 / 0.71	0 / 0.00	0 / 0.00	0 / 0.00	20.19	0.00
2	20617...	PCMU...	1391	1.84 / ...	1.88 / ...	599 / ...	0 / 0.00	6 / 0.43	0 / 0.00	20.30	0.00

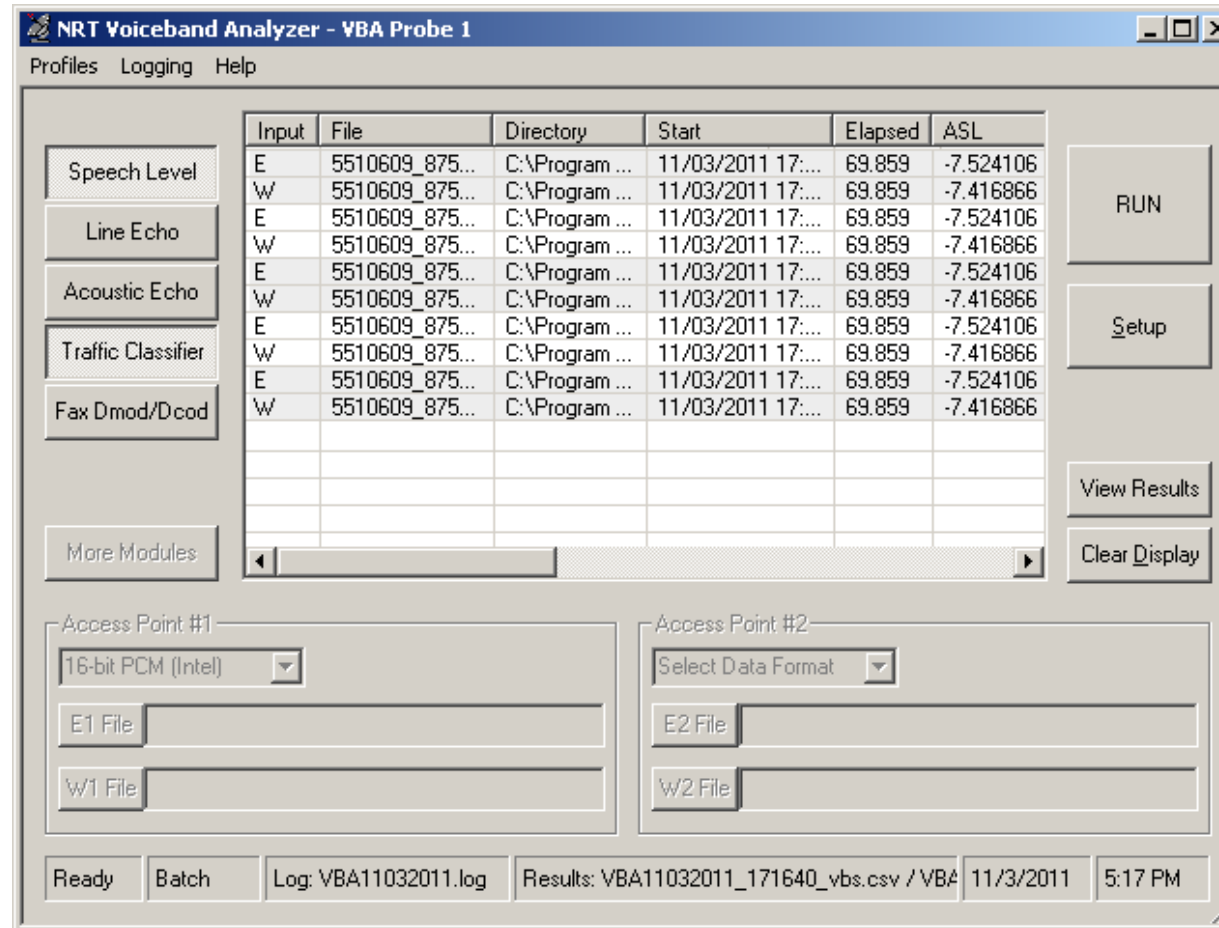
Below the table is an "Active Calls" graph showing the number of calls over time. The y-axis is labeled "No of Calls" and the x-axis is labeled "Time" with timestamps from 18:23:12 to 18:28:12. The graph shows several call events as vertical bars.

The interface also includes a "Hex Dump of the Frame" section at the bottom left, showing hexadecimal data for the selected frame.

# PacketScan™ Features

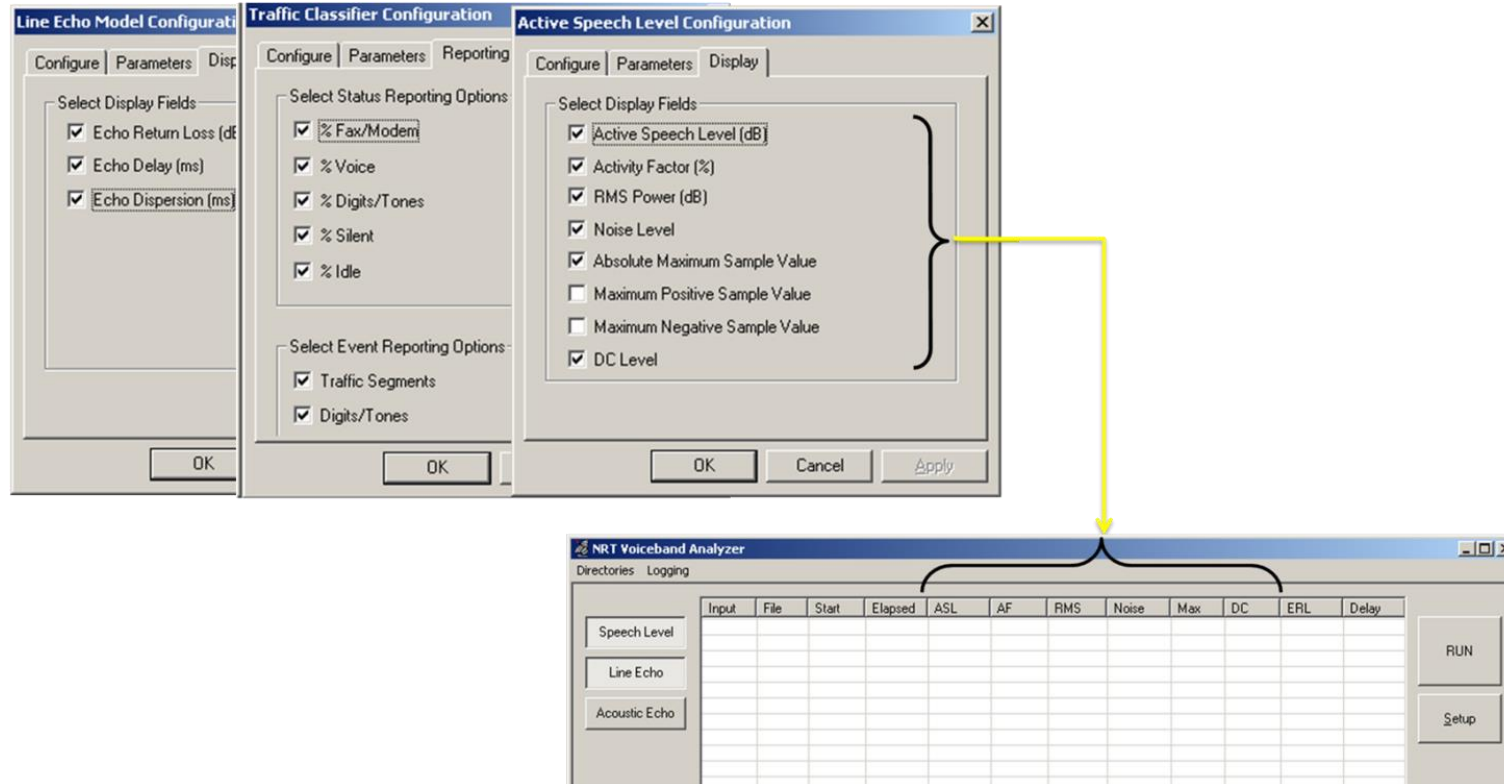
- Supports SIP (SIP Session Initiation Protocol -3261), Megaco3525, Megaco3015, MGCP, H323/H225, and RTP protocols
- Supports decoding of MAC, IP, SIP-I, SIP-T, UDP, TCP, RTP, RTCP, MEGACO, T.38 (Fax over IP), and SMPP (Short Message Peer to Peer Protocol)
- Call detail records (CDR) isolates call specific information i.e., status of each call (i.e., active/completed), duration of completed call, Src and Dst addresses, Call type, Release cause, Conference ID, Call identifier, and more
- Capability to export detail decodes information into an ASCII file
- Packet Data Analysis (PDA) view displays call information in graphical format (Traffic Analyzer Call Quality Matrix- Summary View) as well as in tabular format (RTP Diagnostic - Detail View)
- Call capturing based on call agents or trigger actions such as MOS, R-Factor, jitter, packet loss, duplicate packets, or called / calling numbers (SIP/H323/ MEGACO)
- Supports saving the selected calls from traffic analyzer into \*.HDL or \*.PCAP formats

# Voice Band Analyzer (VBA)



- VBA can be set Auto Analysis mode to automatically analyze the PCM files captured by CCA

# VBA Reporting



- Various parameters that can be included in VBA reports can be selected

# VBA Features

- Provides voice band measurements of the captured signals, including active speech levels, noise level, percent time active, and DC offset
- Standard modules are -ITU-T P.56 Active Voice Level analysis, Line Echo (Hybrid) analysis
- Other Optional Modules include - 2-Wire Echo analysis, Traffic Classifier analysis, and Fax Demodulate / Decode
- Single VBA instance can analyze any number of files
- Analysis of data files continues indefinitely until the execution is stopped manually

**Thank you**