



ISDN Test Solutions

December 2014

- **ISDN over T1 E1**
 - ◆ ISDN PRI Emulation (GUI Based) in T1 E1 Analyzer
 - ◆ ISDN PRI Emulation (Script Based)
 - ◆ Scripted ISDN Emulation in MAPS™
 - ◆ ISDN Emulation for Voice Quality Testing and Analysis (VQuad™)
 - ◆ ISDN PRI Analyzer - Real-time/ Remote/ Offline
 - ◆ ISDN PRI Triggered Call Capture and Analysis (CCA)
 - ◆ Storage and Analysis of ISDN PRI Calls (CDR)
- **ISDN over IP**
 - ◆ SIGTRAN ISDN over IP Protocol Analyzer-Real-time/ Remote/ Offline
 - ◆ Packet Analysis - Real-time/ Remote/ Offline
 - ◆ Scripted ISDN over IP (ISDN SIGTRAN) Emulation using MAPS™
- **Network Surveillance and Monitoring**
 - ◆ Network Surveillance System for ISDN PRI Networks
 - ◆ ISDN Console Based Decode Agent Clients
 - ◆ Automatic detection of ISDN Protocols

GL Communications Inc.

818 West Diamond Avenue - Third Floor, Gaithersburg, MD 20878
Phone: (301) 670-4784 Fax: (301) 670-9187 Email: info@gl.com

ISDN over T1 E1



PRI - ISDN Emulation

GL's ISDN Emulator for T1 E1 network is available as GUI based application through which the various ISDN configurations can easily be created, thereby allowing the ISDN Emulator to be fully functional within a few minutes. This ISDN configuration includes selection of various ISDN standards, variants & NFAS, etc. The ISDN Emulator also incorporates the flexibility to modify ISDN call parameters & message content. This flexibility ensures that the ISDN emulator will communicate with the system under test. It's even possible to emulate a complete ISDN connection (switch to subscriber) all in the same PC with a dual interface card.

For more information, visit <http://www.gl.com/isdnemulator.html>



PRI - ISDN Emulation (Script Based)

The client-server based ISDN Emulator emulates ISDN calls over T1/E1 links. It also allows configuring the ISDN layer parameters, called/calling numbering plan/type, ISDN service type, place or accept call for each timeslot or for the whole trunk, switch and subscriber emulation, simple NFAS setup for T1, and performs various other tasks on remote clients.

For more information, visit <http://www.gl.com/wcsisdnemulator.html>



ISDN over T1 E1



Scripted ISDN Emulation using MAPS™

GL's MAPS™ ISDN is an advanced protocol simulator/ tester for ISDN protocol over TDM (T1 E1) and generates high volumes of ISDN traffic. The tester can simulate ISDN signaling as defined by the ITU-T standards. Currently this test tool is used to perform testing using ISDN protocol messages over T1/E1, and offers a complete solution for testing, troubleshooting, and maintenance of devices and networks implementing PRI ISDN. It is useful to test ISDN products designed for either U or S/T interface, including network terminations, Type 1 terminating equipment, and terminal adapters.

For more information, visit <http://www.gl.com/maps-isdn.html>

ISDN Emulation for Voice Quality Testing and Analysis using VQuad™

ISDN Emulation for Voice Quality Testing and Analysis uses USB Lite platform with GL's VQuad™ for T1 E1 line interfacing and provides QoS measurements.

The VQuad™ with TDM option includes the HD Universal Dual T1/E1 Card or tProbe™ T1 E1 Base Unit or Portable USB T1 E1 Analyzer for a truly portable solution. Using T1/E1 Analyzer VQuad™ can generate and receive up to 8 simultaneous PRI ISDN calls on either T1 or E1 trunks. Included with the PRI ISDN are all variants associated with ANSI and ETSI specifications.

For more information, visit <http://www.gl.com/VQinTDM.html>



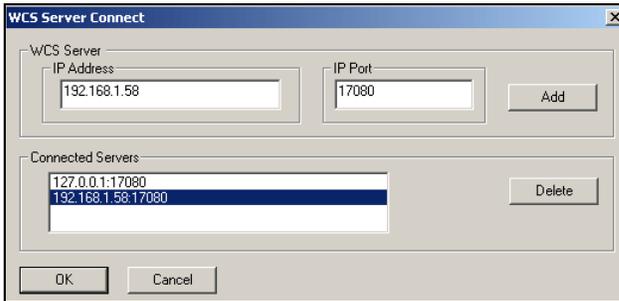
ISDN over T1 E1



PRI-ISDN Protocol Analyzer

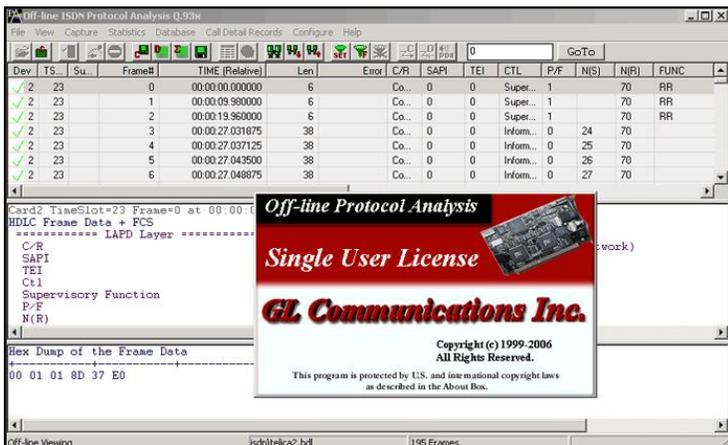
GL's ISDN analyzer can capture and analyze stream of frames on an ISDN PRI link. It decodes LAPD according to Q.921, while, the ISDN information parsing is done based on the user's selection of ITU Q.931, ISDN ANSI, AT&T/Lucent switch 4ESS and 5ESS (TR41449, TR41459 and 235-900-342), Nortel's switch DMS-100 and DMS-250 (NIS-A2111-1 and NIS-A211-4), Bellcore National ISDN-2 (NI-2), Euro ISDN (ETS-300 102-1), ARINC 746, ETSI 300-102, QSIG ETSI/ECMA, National ISDN PRI CPE, DPNSS, and DASS2. GL Communications supports both Real-time and Remote/Offline ISDN analyzers.

For more information on ISDN Protocol Analyzer, visit <http://www.gl.com/isdn.html>



Remote PRI-ISDN Protocol Analyzer

Users can capture and analyze D-Channel with remote analyzers and record all or filtered traffic into a trace file. The recorded trace file can be used for offline analysis or exported to a comma-delimited file, or ASCII file. Real-time capturing requires user to specify timeslots, bit inversion, octet bit reversion, user/network side, FCS, and data transmission rate. Recorded trace files can be transmitted back on T1/E1 using the HDLC File Playback application.



For more information, visit <http://www.gl.com/isdn.html>



ISDN over T1 E1



PRI ISDN Triggered Call Capture and Analysis

PRI ISDN Triggered Call Capture and Analysis (CCA) captures a call based on ISDN signaling; the ISDN signaling and the voiceband capture are available for viewing.

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. NFAS is a standard option available for ISDN PRI call processing system. This allows a single D channel to control multiple PRI trunks. In case of GL's Dual T1/E1 Analyzer, a maximum of 95 B-Channels, i.e., up to 4 trunks are supported.

For more information, visit <http://www.gl.com/callrec1.html>

Storage and Analysis of ISDN PRI Calls

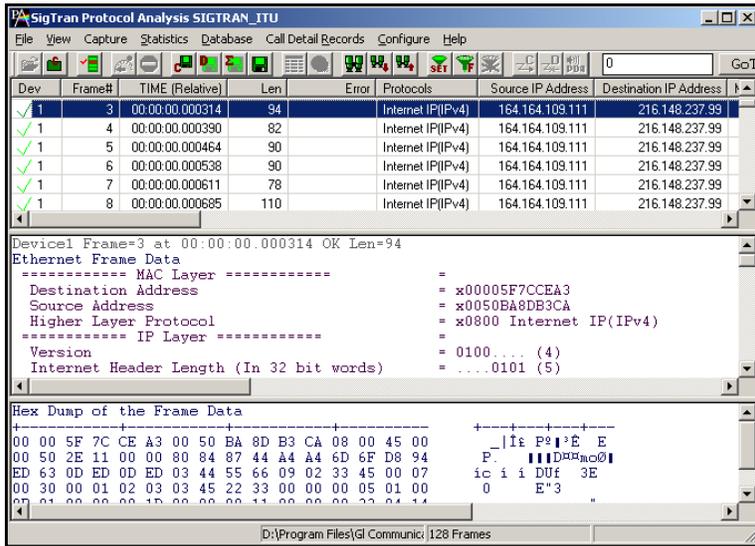
Complete Storage and Analysis of every ISDN PRI Call on any number of T1 or E1 lines.

Capture gets triggered when any ISDN calls are placed. Called and calling number can be gathered as part of the capture process and attached to the captured file name. During call capture, the following parameters are displayed: ISDN message types, CRV, time slot, card number, called and calling numbers.

For more information on ISDN call analysis, visit <http://www.gl.com/calldatarecords.html>



ISDN over IP

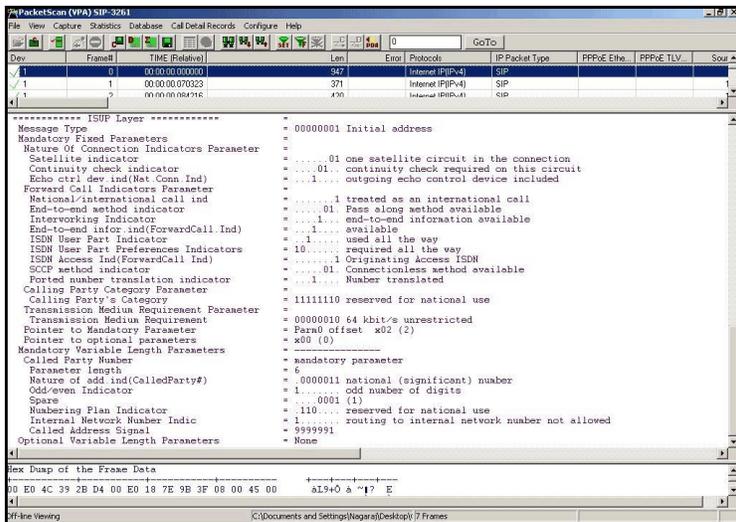


SIGTRAN ISDN over IP Protocol Analyzer

GL's SIGTRAN Analyzer captures and displays various types of ISDN SIGTRAN messages for all the frames in real-time and records all or filters traffic into a trace file.

It also supports off-line analysis, where the users can analyze the recorded trace files and export to ASCII file, or can be printed.

For more information on ISDN SIGTRAN Protocol Analyzer, visit <http://www.gl.com/sigtran.html>



Packet Analysis (Real-time / Offline)

GL's PacketScan™ software tool provides extensive real-time reporting using graphical charts and statistics of live IP, VoIP, and IP based Video traffic.

PacketScan™ Analyzer decode host of IP protocols, including SIP-I and SIP-T decodes, which carry ISUP (ISDN) signaling.

For more information on Packet Analysis, visit <http://www.gl.com/packetscan.html>



ISDN over IP

Scripted ISDN over IP (ISDN SIGTRAN) Emulation using MAPS™

The screenshot shows the MAPS software interface. The top window displays a call log with columns for Sr No, Script Name, Profile, Call Info, Script Execution, Status, Events, Events Profile, Result, Total Iterations, and Completed Iterations. Below this, a message sequence diagram (DUT) shows the call setup process with messages like SETUP, CALL PROCEEDING, ALERTING, CONNECT, and DISCONNECT. A detailed view of the ISDN 0.921-User Adaptation Layer Layer is also visible, showing parameters like Version, Message Class, Q.921 Message Type, and various identifiers.

MAPS™ ISDN SIGTRAN is an advanced protocol simulator/ tester used for ISDN simulation over IP. The tester can simulate a complete ISDN connection between SG (Signaling Gateway) to MGC (Media Gateway Controller), where ISDN signaling are as defined by the ITU-T Q.921 / Q.931 standards.

The screenshot shows the MAPS software interface. The top window displays a call log with columns for Sr No, Script Name, Call Info, Script Execution, Status, Events, Events Profile, Results, and Total Iterations. Below this, a message sequence diagram (DUT) shows the call release process with messages like SETUP, CALL PROCEEDING, ALERTING, CONNECT, and DISCONNECT. A detailed view of the ISDN 0.921-User Adaptation Layer Layer is also visible, showing parameters like Version, Message Class, Q.921/Q.931 Boundary Prm, and various identifiers.

The application is built with ready-to-use scripts, which generates and processes all ISDN messages including Setup, Connect, Release messages and others.

For more information, visit <http://www.gl.com/maps-isdn-sigtran-emulator.html>



Network Surveillance and Monitoring



Automatic Detection of ISDN Protocols

The Protocol Identifier application can identify various protocols carried over T1 or E1 lines. It is capable of detecting ISDN signaling over T1 or E1 helping technicians to quickly identify the timeslot of signaling links for further protocol analysis.

For more information, visit <http://www.gl.com/protocol-identifier.html>

```
isdn.ini - Notepad
File Edit Format View Help
[WCSPROTAN]
Module=wcsPaIsdnT1
IpAddr=127.0.0.1
IpPort=17090
ProtocolStandard="Q.93x"
LayerFilter.0="Q.93x Layer 3"
;==== Capture Streams====
;HC.0=#3:0..23
;HC.1=#4:0..23
;TS.0=#5:23
;TS.1=#6:23
TS.0=#1:16
TS.1=#2:16
;SEND=HDR DATA FIELDS CDRS
SEND=FIELDS CDRS
```

ISDN Console Based Decode Agent Clients

ConsFldCdrToCsv is a console based client application for WCS Protocol Decode Agent Modules (PDAM). Currently the console client application monitors ISDN Links, decodes multiple ISDN protocol standards, filters user-specified protocol parameters, builds CDRs, and streams over TCP/IP to remote site. The client is controlled by an *.INI file that is passed as a parameter. ISDN.ini is the INI configuration files comprising of the decoding parameters required to perform ISDN real-time analysis.

For more information, visit <http://www.gl.com/ss7isdnpdainwcs.html>



Network Surveillance and Monitoring

ISDN PRI Network Surveillance System

The NetSurveyor™ is a user-friendly web-based client which accesses the results provided by the GL's ISDN signaling probes through a web server. As depicted in the screenshot, one can view real-time and historic data including call ID, probe name/location, call disposition, called and called number, call duration. Use the Network Surveillance System for ISDN PRI networks to monitor signaling, and collect CDRs.

GL's ISDN Network Monitoring System uses an open three tier distributed architecture driven by non-intrusive hardware probes, intelligent software, and a database engine.

For more information, visit

<http://www.gl.com/netsurveyor.html>

<http://www.gl.com/netsurveyordemo.html>

CALLID	LINKNAME	PROBENAME	DISPOSITION	CALLINGNUMBER	CALLEDNUMBER	STARTTIME	DURATION	OPC
4833280	IL - MD8&UT - NV,MO - IL,VA - AZ,MD8& - VA,NV - MO,AZ - UT	R4P1	1	5552000	0576059953	2010-01-25 13:23:06.26625	00:00:42.0960	1.102
4833279	IL - MD8&UT - NV,MO - IL,VA - AZ,MD8& - VA,NV - MO,AZ - UT	R4P2	1	5552000	0576059953	2010-01-25 13:23:06.087625	00:00:42.0661	1.102
4833278	MO - NV,AZ - VA,IL - MO,NV - UT,UT - AZ,MD3 - IL,VA - MD3	R4P1	1	5551000	6013329960	2010-01-25 13:22:56.079375	00:00:50.0977	1.102
4833277	MO - NV,AZ - VA,IL - MO,NV - UT,UT - AZ,MD3 - IL,VA - MD3	R4P2	1	5551000	6013329960	2010-01-25 13:22:56.700375	00:00:50.0672	1.102
4833276	IL - MO,MO - IL,MD3 - IL,WA - MO,IL - MD3,MO - WA	R4P1	1	5551000	1994529962	2010-01-25 13:23:11.835625	00:00:35.0872	1.102
4833275	IL - MO,MO - IL,MD3 - IL,WA - MO,IL - MD3,MO - WA	R4P2	1	5551000	1994529962	2010-01-25 13:23:11.655625	00:00:35.0580	1.102
4833274	MD1 - MD8&AZ - VA,MD8& - MD1,VA - AZ,UT - AZ,UT - CA,MD8& - VA,VA - MD8&AZ - UT,CA - UT	R4P1	1	5552000	1600609954	2010-01-25 13:23:04.389375	00:00:42.1273	1.101
4833273	MD1 - MD8&AZ - VA,MD8& - MD1,VA - AZ,UT - AZ,UT - CA,MD8& - VA,VA - MD8&AZ - UT,CA - UT	R4P2	1	5552000	1600609954	2010-01-25 13:23:04.217375	00:00:42.0825	1.101
4833272	WA - AZ,AZ - VA,IL - MD3,MO - IL,VA - MD3,MO - WA	R4P1	1	5554000	4831639962	2010-01-25 13:22:54.220375	00:00:52.1031	1.102

