

Analyzes Multiple ISDN Stream of Frames

Non-Intrusive Analysis Using GL's T1/E1 Analyzers

Supports ITU, ANSI, QSIG, Nortel, Bell NI2, DPNSS, & DASS2, National ISDN PRI

Simultaneous Decoding of Multiple D-Channels on the Different T1/E1 Channels

Summary, Detail, Hexdump Statistics and Call Detail Views

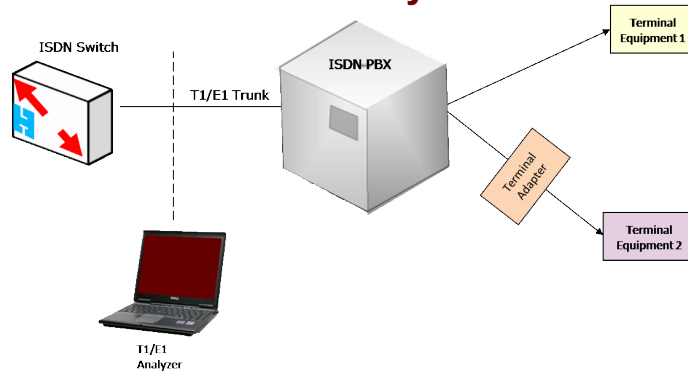
Real-time Filter and Search

Real-time & Offline Analysis

HDLC Playback Option for the Recorded Trace Files

Statistics based on Frame Count, Byte Count, and more

ISDN Analyzer



The Integrated Services Digital Network (ISDN) system allows voice, data and video to be transmitted simultaneously across the world using end-to-end digital connectivity. ISDN is an integrated solution for providing basic telephony and data services, whilst offering more telephony services such as supplementary services. 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), QSIG ETSI, ANSI T1.607, DPNSS, DASS2, ARINC 746, ETSI 300-102, QSIG ETSI/ECMA, National ISDN PRI CPE (Telcordia – SR-4994), DPNSS, and DASS2 . GL Communications supports the following types of ISDN analyzers:

- Real-time ISDN Analyzer (Pre-requisites: GL's T1/E1 internal cards or USB T1/E1 external units, required licenses and Windows® Operating System)
- Remote/Offline ISDN Analyzer (Pre-requisites: Hardware Dongles and Windows® Operating System)

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

Main Features

- Display Features
- Displays Summary, Detail, Hex-dump, and Statistics Views
 - Detail View
 - Displays decodes of a user-selected frame from the summary view
 - Provides options to display or hide the required protocol layers
 - Contents of this view can also be copied to clipboard
 - Provides option to toggle detail view vertically or horizontally as feasible for the user.
 - Summary View displays Dev #, Time Slot, Frame #, LAPD information, ISDN Message types, and etc in a tabular format.
 - Any protocol field can be added to the summary view, filtering, and search features providing users more flexibility to monitor required protocol fields.
 - Option to combine data from multiple columns under one column.
- Supported Protocols
- Q.93x, 4ESS, 5ESS, ETSI 300-102, Bell NI2, DMS-100, DMS-250, QSIG ETSI, ISDN ANSI, DPNSS, DASS2, ARINC 746, QSIG ECMA, and Nation ISDN PRI
- Filtering / Search
- Advanced filtering and search based on any user selected protocol fields
- Capturing Streams
- Streams can be captured on the selected time slots (contiguous or non-contiguous), sub-channels or full bandwidth.
 - Frames can be transmitted/captured in either 64 kbps, 56 kbps, n x 64 kbps, or n x 56 kbps data channels (hyper-channels)
 - Variations accommodated in the software include inverted or non-inverted data, and byte reversal or non-reversal.
 - Multiple streams of ISDN traffic on various T1/E1 channels can be simultaneously decoded with different GUI instances.



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Main Features (continued)

- Export Options**
 - Exports Summary View information to a comma delimited file for subsequent import into a database or spreadsheet.
 - Capability to export detailed decode information to an ASCII file
- Record/Playback**
 - Recorded trace files can be played back using HDLC playback application.
- Call Detail Recording**
 - Call Detail Recording feature includes data link groups that help in defining the direction of the calls in a given network and form logical groups comprised of unidirectional (either 'Forward' or 'Backward') data links.
- Remote Monitoring**
 - Remote monitoring capability using GL's Network Surveillance System.
- Additional Features**
 - Status bar displaying information regarding running percent utilization, Number of frames captured, CRC errors and Frame errors etc.
 - Trace files for analysis can be loaded through simple command-line arguments.
 - Multiple trace files can be loaded simultaneously with different GUI instances for offline analysis.

Summary, Detail, and Hex dump Views

The analyzer displays Summary, Detail, and Hex Dump Views in different panes. The Summary View displays Device Number, Frame Number, Time, Length, C/R, SAPI, TEI, P/F, N(S), N(R), Func, CRV, Called and Calling No and so on. User can select a frame in Summary View to analyze and decode each frame in the Detail View. The Hex dump View displays the frame information in HEX and ASCII octet dump formats. The contents of detail and hex dump view can also be copied to clipboard.

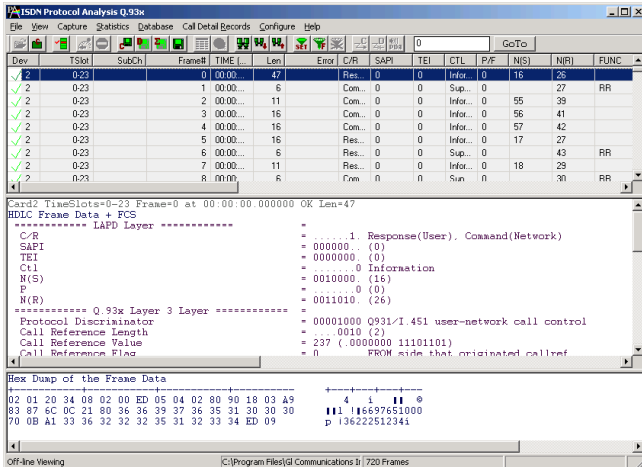


Figure: Summary, Detail, & Hex dump Views

Real-time and Offline Analysis

Users can capture and analyze ISDN frames using either real-time or 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 file can be played back on T1/E1 using the HDLC file Playback application.

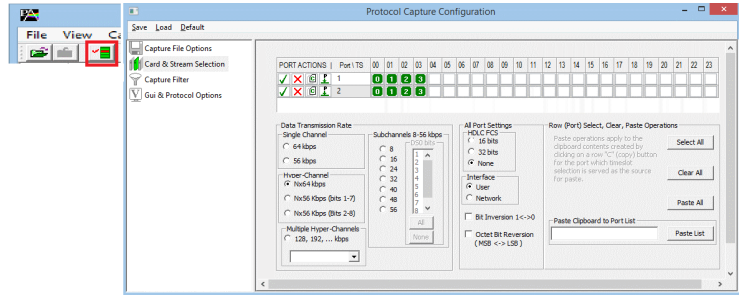


Figure: Stream / Interface Selection

Filtering and Search

Users can record all or filtered traffic into a trace file. Filter and search capabilities adds as another powerful feature to the ISDN analyzer. These features isolate required frames from all the captured frames in real-time/remote/offline. Users can specify custom values for frame length to filter frames during real-time capture. The frames can also be filtered after completion of capture based on C/R, SAPI, TEI, CTL, different ISDN message types and more. Similarly, search capability helps user to search for a particular frame based on specific search criteria.

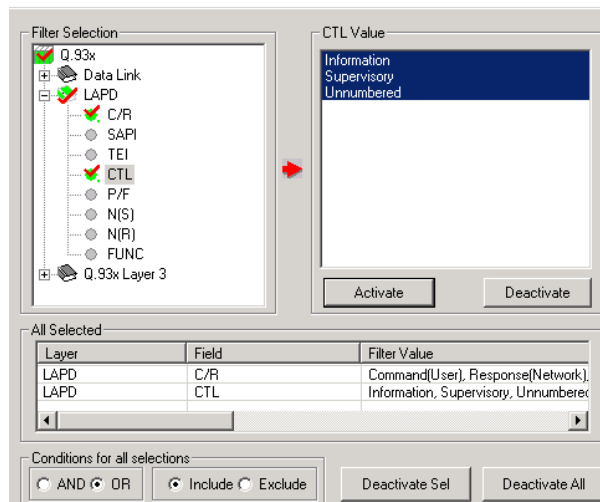
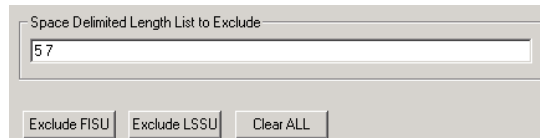


Figure: Real-time and Offline Filter



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Call Detail Record & Statistics View

Important call specific parameters like Call Id, Calling No, Called No, Call duration, status of each call (i.e. Active/Completed), Device No, Timeslot, CRV, etc are calculated based on signaling messages and displayed in Call Detail Record View. Additionally, users are provided with the option to search a particular call detail record from the captured traces.

Various statistics can be obtained in statistics view to study the performance and trend in the ISDN network based on protocol fields and parameters.

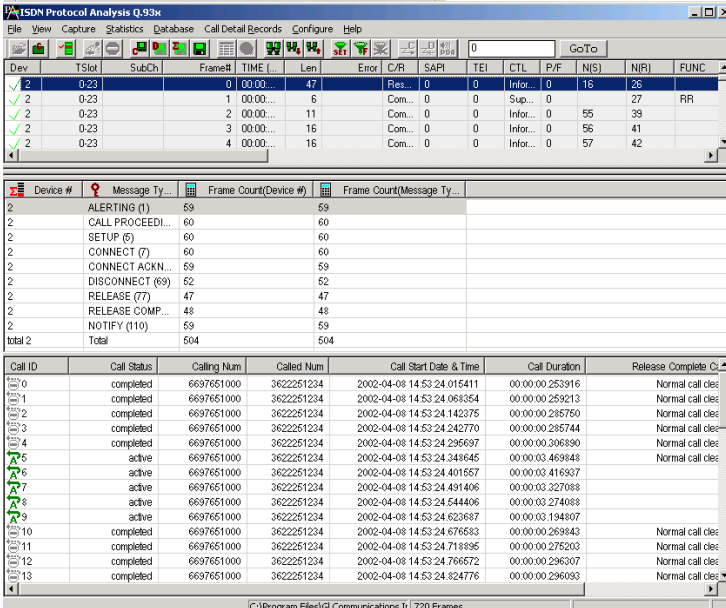
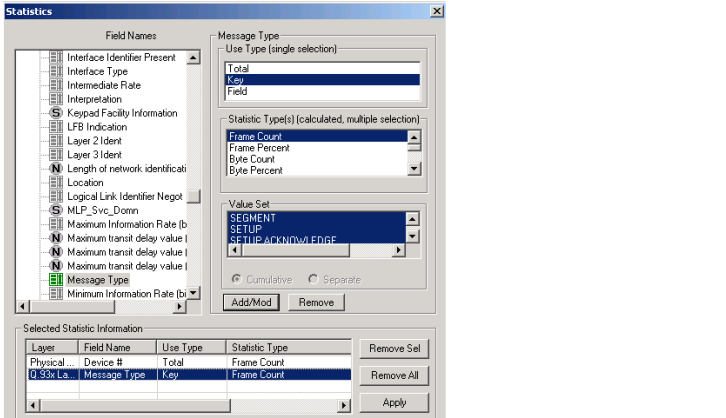


Figure: Statistics & Call Detail Record View

Save / Load All Configuration Settings

Protocol Configuration window provides a consolidated interface for all the important settings required in the analyzer. This includes various options such as protocol selection, startup options, stream/interface selection, filter/search criteria and so on. All the configuration settings can be saved to a file and then loaded for future operations, or user may just revert to the default values using the default option.

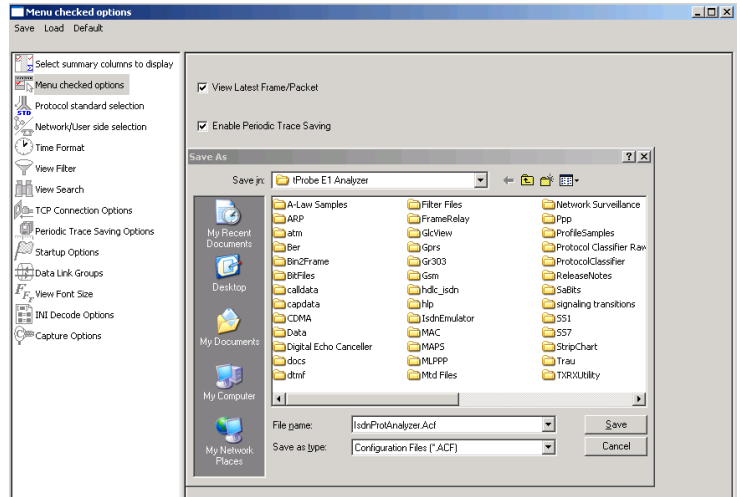


Figure: Save / Load Configuration

ISDN Emulation Tools

ISDN Emulation using GUI

GL's ISDN Emulator for T1E1 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.

ISDN Emulation using Client-Server

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.

Scripted ISDN Emulation using MAPS™

GL's MAPS™ ISDN is an advanced protocol simulator/tester for ISDN simulation over TDM (T1E1) and generates high volumes of ISDN traffic. The tester can simulate ISDN signaling as defined by the ITU-T, 4ESS, 5ESS, and BELL standards.

Scripted ISDN SIGTRAN Emulation using MAPS™

GL's MAPS™-ISDN-SIGTRAN is an advanced protocol simulator/tester used for ISDN simulation over IP. It simulates a complete ISDN connection between SG (Signaling Gateway) to MGC (Media Gateway Controller), as defined by the ITU-T Q.921 / Q.931 standards.



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Supported Protocol Standards

The supported protocol standards in ISDN analyzer are Q.93x, 4ESS, 5ESS, ETSI 300-102, Bell NI2, DMS-100, DMS-250, QSIG ETSI, ISDN ANSI, DPNSS, DASS2, ARINC 746, QSIG ECMA, and Nation ISDN PRI

Supported Protocols	Specification Used
LAPD	CCITT Q.920/921 ITU-T Q.931
Q.931	Q.932(Facility IE) / Q.955.3 (MLPP Procedures)
4ESS	ISDN PRI (TR-41449, TR41459 and 235-900-342)
5ESS	ISDN PRI (Lucent Tech - 5ESS 2000)
ETSI (Euro ISDN)	ETS 300 - 102
BELL NI2 (Bellcore National ISDN-2)	ISDN PRI (Bell Core SR-NWT-002343)
QSIG-ETSI	ETS 300 196-1: August 1993 / ETS 300 102-1: December 1990 ANSI T1.607-1998,
ANSI	ANSIT1.619-1992 (R2005) and T1.619a-1994(R2007) (MLPP Procedures)
DASS2	BTNR 190:June 1992
DPNSS	ND1301:2001/03
ARINC-746	ARINC CHARACTERISTIC 746-5
QSIG ECMA	Standard ECMA-143 4th Edition - December 2001
Nortel's switch DMS 100	NIS-A2111-1
Nortel's switch DMS 250	NIS-A2111-4
National ISDN PRI CPE	Telcordia – SR-4994

Buyer's guide

[XX100](#) – T1/E1 Real-Time ISDN Protocol Analyzer

[OLV100](#) – Offline/Remote ISDN Protocol Analyzer

Related Hardware

[PTE001](#) - tProbe™ Dual T1/E1 Analyzer (Require Basic Software)

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

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

[FTE001](#) – QuadXpress T1 E1 Main Board (Quad Port)

[ETE001](#) – OctalXpress T1 E1 Daughter boards (Octal Port)

[TTE001](#) – tScan16™ T1 E1 Boards

[XTE001](#) – Dual Express (PCIe) T1 E1 Boards

Related Software

[XX090](#) - HDLC Analysis & Simulation Software (T1/E1)

[XX105](#) - ISDN Emulator (T1 or E1)

[XX629](#) - ISDN Emulator (T1 or E1) w/ command line interface

[XX648](#) - Message Automation and Protocol Simulation (MAPS™) for ISDN



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