Analyze Multiple GSM Links across A, Abis, Mobis, Gs, Ls, Lb, Lp, and Up

Supports MTP2, MTP3, SCCP, BSSMAP, MM, CC, SMS, BTSIM, RR, and more.

Supports National and International Variants

Decodes RR Layer Non-Transparent Messages

Real-time & Offline Analysis

Summary, Detail, Hex-dump, Statistics, & Call-Detail Views

Search & Filter Capabilities

Transmit Recorded Trace Files

Statistics Based on Frame-Count, Byte-Count, and more

Packet Data Analysis with Call Statistics and Graphs

GSM Analyzer Overview

GL’s GSM Analyzer is used to analyze GSM protocols, a switching and signaling telecommunication protocol between MSC & BSC, BSC & BTS and so on. GSM Analyzer also supports decoding proprietary 'Mobis' Interface (Motorola equivalent of the GSM A-bis interface - requires additional license XX151) between BSC (Base Site Controller) - BTS (Base Transceiver Station) and BSC (Base Site Controller) - PCU (Packet Controller Unit).

GSM Analyzer also supports complete analysis, decode and monitoring of GSM-Railway (GSM-R) - an international wireless communications standard for railway communication and applications.

These probes now supports Packet Data Analyzer with recording capabilities. Packet Data Analysis (PDA) is an outstanding tool for live monitoring of signaling and traffic over TDM. Allowing users to monitor live TDM networks including capture, analysis, and reporting of every call-in-detail.

GSM analyzer collects physical and line level status and performance information, voice, data, protocol, statistics, and transmit information to a central / distributed Network Management System (NMS).

GL Communications supports the following types of GSM analyzers:

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

For more information on GSM Analyzer, refer to http://www.gl.com/gsmanalyzer.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 MTP2, MTP3 information, GSM Message types, information about various channels used during the call, and so on 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
A, A-bis, Mobis, Gs, Up, Ls, Lb, and Lp

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)
- Multiple streams of GSM traffic on various T1 E1 channels can be simultaneously decoded with different GUI instances

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

Additional Features
- Decoding of many RR layer non-transparent messages such as “System Information”, “Measurement Result”, “Immediate Assignment” etc.
- Decodes many SS layer messages such as Register, Facility, Release Complete
- User to User Information IE is added to GSM CC, BCC and GCC protocols to support GSM-R features according to EIRENE specification (H 22 T 0001 2) and ETSI TS 102 610

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

Packet Data Analyzer (PDA)
- Provides options to capture voice, digits, tones or FAX traffic.
- Segregates, captures, and collects statistics on TDM calls.
- Provides graphical representation of call analysis, such as ladder diagrams of protocols
GSM-R Services

- Supports monitoring GSM-R services as per GSM supplementary services (GSM-SS).
  - Enhanced Multi-Level Precedence and Pre-emption (eMLPP)
  - Line identification services like CLIP, CLIR etc
  - Call Forwarding, Call Waiting, and Call Hold
  - MultiParty
  - Closed User Group
  - Advice of Charge
  - Call Barring and Call Deflection
  - User-to-user signalling
  - Follow Me (Based on USSD and CF)
  - Voice Group Call Service (VGCS)
  - Voice Broadcast Service (VBS)
  - Location Services, USSD and more.

Summary, Detail, and Hex dump Views

The analyzer displays Summary, Detail, and Hex Dump Views in different panes. Summary View displays Dev#, Time Slot, Frame#, Time, Length, Error, BSN, BIB, FSN, FIB, Status Field, SLC, DPC, OPC, SCCP Message, 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 format. The contents of detail and hex dump view can also be copied to clipboard.

Real-time and Offline Analysis

Users can capture and analyze GSM frames in real-time 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 using the HDLC Playback application.

Filtering and Search

Users can record all or filtered traffic into a trace file. Filter and search capabilities adds a powerful feature to the GSM analyzer. These features isolate required frames from captured frames in real-time, as well as 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 Data Link, MTP2, MTP3, SCCP, LAPD, BSM, RR, MM and more.

Similarly, search capability helps user to search for a particular frame based on specific search criteria.
**Call Detail Record & Statistics View**

Important call specific parameters like Call ID, Call disposition, Call duration, OPC/DPC, Call type (point-to-point/point-to-multipoint etc) are calculated based on signaling messages, and displayed in Call Detail 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 GSM network based on protocol fields and parameters.

**Detail Packet Analysis (PDA)**

Packet Data Analysis (PDA) is an outstanding tool for live monitoring of signaling and traffic over TDM. Packet Data Analysis (PDA) is distributed with GL's CAS, ISDN, SS7, and GSM protocol analyzer. Allowing users to monitor live TDM networks including capture, analysis, and reporting of every call-in detail.

GL's Packet Analyzers can capture TDM traffic over different transmission lines, including T1, E1, T3, E3, and OC-3 STM-1 / OC-12 STM-4. PDA then processes the captured frames, identifies, and segregates calls based on signaling parameters to generate reports.

Performance metrics for each call includes Caller & Callee id information, call duration, status, call-initiated time, call established time, call stop time, call terminator, call failure reason, and total signalling frames. Graphs are provided for key values to give a pictorial representation of the statistics.

**Scripted GSM Emulation over A & Abis interfaces using MAPS™**

GL's GSM A Interface Emulator is an advanced protocol simulator/tester for GSM simulation over A Interface that can simulate BSSMAP and DTAP messages and signaling specification as defined by 3GPP standards.

For more details, visit [http://www.gl.com/maps-gsma.html](http://www.gl.com/maps-gsma.html).

GL's GSM Abis Interface Emulator is an advanced protocol simulator/tester for GSM simulation over Abis Interface that can simulate BTSMAP messages and signaling specification as defined by 3GPP standards.

**Supported Protocol Standards**

The supported protocol standards in GSM analyzer are A Abis, Gs, Up, Lb, Ls, Lp, and Mobis.

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<th>Supported Protocols</th>
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<td>RFC 793, RFC 768, RFC 791, IEEE 802.3</td>
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<td>MTP2</td>
<td>Q.703, ITU-T Blue Book / ANSI T1.111-1996</td>
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<td>Q.704, ITU-T Blue Book / ANSI T1.111-1996</td>
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<td>SCCP</td>
<td>Q.713, CCITT (ITU-T) Blue Book / ANSI T1.112-1996</td>
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<td>GSM Phase2 + BSSMAP / DTAP (BSSAP/DTAP)</td>
<td>3GPP TS 48.008 10.0.0</td>
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<td>SMS</td>
<td>3GPP TS 03.40 V7.5.0 &amp; 3GPP TS 04.11 V7.1.0 GSM 03.38 version 7.2.0 Release 1998</td>
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<td>Test &amp; Network Management Messages (ITU / ANSI)</td>
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<td>MM / CC</td>
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<tr>
<td>GSM-SS</td>
<td>3GPP TS 24.080 Release 5.</td>
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<td></td>
<td>– EIRENE FRS (Functional Requirements Specification) 7.1</td>
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<td>LAPD</td>
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<td>BSSAP +</td>
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<td>SMLCPP / BSSlap</td>
<td>3GPP TS 44.031 V 7.5.0 / 3GPP TS 44.071 V 6.0.0</td>
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<tr>
<td>BSSAP-L (BSSMAP-L/DTAP-L)</td>
<td>3GPP TS 49.031 V7.3.0</td>
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<td></td>
<td>TS 24.008, Mobile radio interface layer 3 specification, Core Network Protocols - Stage 3</td>
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<td>TS 25.331, RRC Protocol Specification</td>
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<td>UMA Protocols (Stage 3) R1.0.4</td>
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<tr>
<td>GCC / BCC</td>
<td>3GPP TS 44.068 V9.0.0 / 3GPP TS 44.069 V9.0.0</td>
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**Related Hardware**

- **PT** – tProbe™ Dual T1 E1 Laptop Analyzer (Require Basic Software)
- **HTE** – Universal T1/E1 Card (Require Basic Software)
- **UTE** – Portable USB based Dual T1 or E1 Laptop Analyzer (Require Basic Software)
- **FTE** – QuadXpress T1 E1 Main Board (Quad Port)
- **UTE** – OctalXpress T1 E1 Daughter boards (Octal Port)
- **TTE** – tScan1™ T1 E1 Boards
- **XTE** – Dual Express (PCle) T1 E1 Boards

*Specifications and features subject to change without notice.

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**Buyer’s guide**

- **XX150** – Real-time GSM Protocol Analyzer (T1 or E1)
- **OLV150** – Offline GSM Analyzer
- **XX151** – GSM Motorola Mobis option (Optional license)

**Related Software**

- **XX090** – HDLC Capture and Playback Software (T1 or E1)
- **XX120** – Real time SS7 Analysis Software (T1 or E1)
- **XX153** – TRAU Analysis & Emulation Software
- **XX155** – GPRS Analysis Software
- **XX600** – Basic Client/Server Scripted Control Software (Included with Basic Software)
- **XX693** – GSM A-bis Interface Emulator
- **XX692** – GSM A Interface Emulator

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