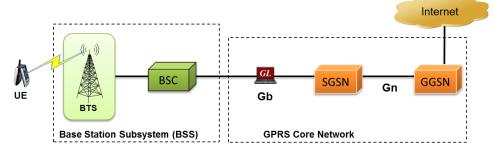


GPRS Analysis for Gb Interface



GPRS Analyzer over T1 E1

Overview

GPRS (General Packet Radio Service) permits continuous data connectivity over wireless GSM networks. For example, mobile phones and laptops can be used to send and receive data over the Internet, e.g. e-mail and WEB surfing are typical examples.

GL's GPRS Analyzer performs real time (and offline) analysis across the Gb (T1/E1) interface. The GPRS Analyzer when connected between SGSN and BSS elements of a GPRS network permits the monitoring of Gb interface.

GL Communications supports the following types of GPRS analyzers:

- Real-time GPRS Analyzer (Pre-requisites: GL's T1/E1 internal cards or USB T1/E1 external units, required licenses and Windows® Operating System.
- Offline GPRS Analyzers (Pre-requisites: Hardware Dongle, and Windows® Operating System.

For more details, please visit our web page http://www.gl.com/gprsanalyzer.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 GB Interface information such as DLCI, FECN, BECN, SAPI, CTL, Session Mgmt Message 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

Filtering and Search

Gb Interface

- Advanced filtering and search based on any user selected protocol fields
- Supports filtering and search based on Gb Interface parameters such as Data Link, Network Service, BssGp, LLC, Gprs Mobility/Session Mgmt, SMS, TOM and SNDCP

Streams

- For Gb interface, streams can be captured on the selected time slots (contiguous or non-contiguous), sub-channels or full bandwidth
- 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

Gb interface supports Call Detail Recording feature, that includes data link groups 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 capability using GL's Network Surveillance System

Capturing

Export Options

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

Display of Detail View

GL's T1 E1 analyzers

Vertically or Horizontally

Non-Intrusive analysis using

Call Detail Recording

Remote Monitoring



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Summary, Detail, and Hex dump Views

The analyzer displays Summary, Detail, and Hex dump View in different panes. The Summary View displays Gb Interface information like DLCI, FECN, BECN, SAPI, CTL, Session Mgmt Message etc. User can select a frame in Summary View to analyze and decode in the Detail View. The Hex dump View displays the frame information in HEX and ASCII formats. The contents of detail and hex dump view can also be copied to clipboard.

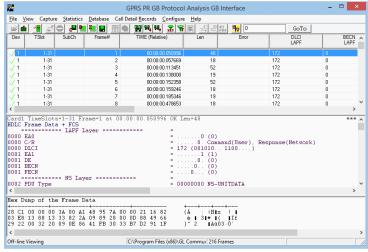


Figure: Summary, Detail, & Hex dump Views

Real-time and Offline Analysis

Users can capture and analyze GPRS frames using either real-time or offline 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 on Gb interface 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.

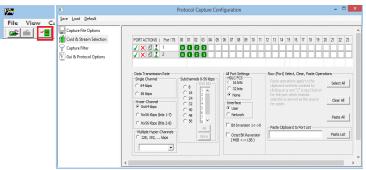


Figure: Stream / Interface Selection for Gb Interface

Filtering and Search

Users can record all or filtered traffic into a trace file. Filter and search capabilities adds a powerful dimension to the GPRS Analyzer. These features isolate required frames from all frames in real-time /offline.

For Gb interface, 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 Frame Number, Time, C/R, SAPI, CTL and more.

Similarly, search capability helps user to search for a particular frame based on specific search criteria.

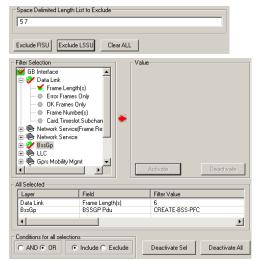


Figure: Real-time and Offline Filter

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



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Call Detail Record & Statistics View

Important call specific parameters like Call ID, Call Status, Call duration, Device Number, BVCI, Call type etc are calculated for Gb Interface. Additionally, users are provided with the option to search a particular call detail record from the captured traces.

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

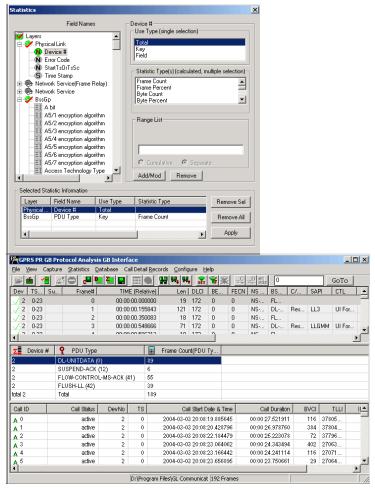


Figure: Statistics & Call Detail Record View for Gb Interface

Supported Protocol Standards

The supported protocol standard in GPRS analyzer are Gb Interface.

Supported Protocols	Specification Used
LAPF	Q.922
BSSGP	3GPP TS 08.18 V8.10.0
LLC	3GPP TS 04.64 V8.7.0
GMM	3GPP TS 04.08 V7.19.0
SMS	3GPP TS 03.40 V7.5.0 / GSM 03.38 version 7.2.0
TOM	3GPP TS 04.64 V8.7.0 (2001-12)-Annex B
SNDCP	3GPP TS 04.64 V8.7.0
SMG	3GPP TS 04.08 V7.19.0
NS	GSM 8.16 ETSI TS 101 299 V8.0.0
IP	RFC 791
TCP	RFC 793
UDP	RFC 768
LLC	3GPP TS 04.64 V8.7.0
MAC	IEEE 802.3
ICMP	RFC 792
GTP / GTPv2 / GTP'	3GPP TS 09.60 V7.9.0 / 3GPP TS 29.060 V6.5.0 / 3GPP TS 32.005 V3.7.0 and 3GPP TS 32.015 V3.12.0

Buyer's guide

XX155- Real-Time GPRS Protocol Analyzer (T1 or E1)

OLV155- Offline GPRS Protocol Analyzer

Related Software

XX090- HDLC Analyzer, & Simulation Software (T1 or E1)

XX150 - Real-time GSM Protocol Analyzer (T1 or E1)

Related Hardware

FTE001 - QuadXpress T1 E1 Main Board (Quad Port)

ETE001 – OctalXpress T1 E1 Daughter boards (Octal Port)

UTE001 - USB based Dual T1/E1 Laptop Analyzer

UTA001/UEA001 – Basic USB based Dual T1/E1 Laptop Analyzer Software

HTE001 - Universal HD T1/E1 PCI Cards

HUT001/HUE001 – Basic Universal HD T1/E1 Software

TTE001 - tScan16™ T1 E1 Boards

XTE001 - Dual Express (PCIe) T1 E1 Boards

*Specifications and features subject to change without notice



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