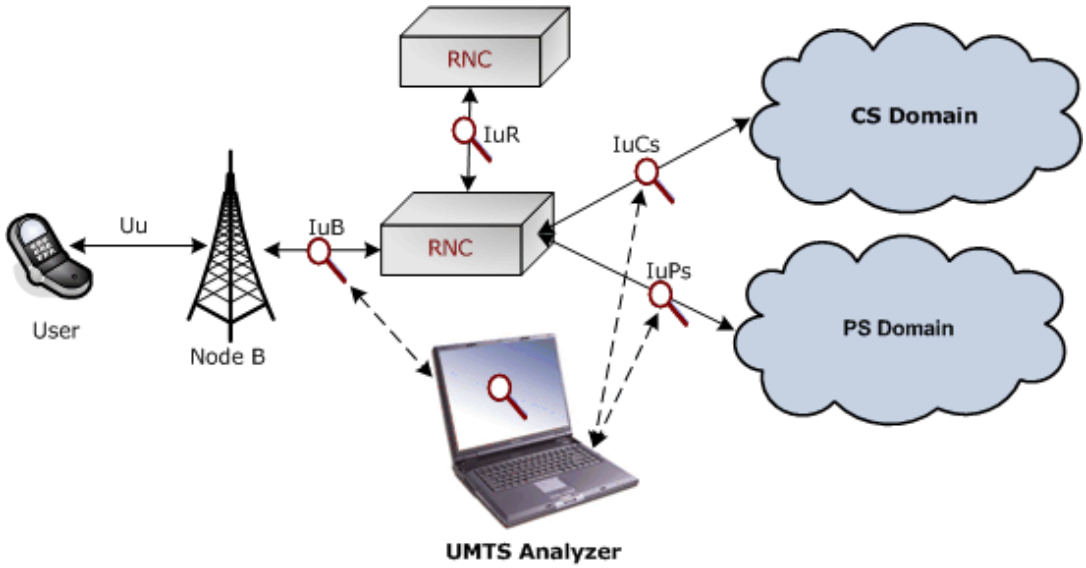
UMTS Protocol Analyzer
(Legacy Product)



Overview

UMTS (Universal Mobile Telecommunications System) being an access network in the mobile communication area provides a common interface to both GSM and GPRS core network. UMTS is capable of handling both Circuit-Switched (CS) as well as Packet-Switched (PS) data simultaneously through its UTRAN network.

GL's **LightSpeed1000 UMTS Analyzer** is capable of capturing, decoding, and performing various test measurements across various interfaces i.e. Iub, Iur, IuCs and IuPs interfaces of the UMTS network based ATM transport layer. It helps in fault diagnosis and troubleshooting of UMTS network. Multiple instances of UMTS Analyzer can run simultaneously capturing data (real time and off-line) on multiple OC-3 or OC-12 interfaces.

For more details, visit UMTS Protocol Analyzer for OC-3/STM-1 and OC-12/STM-4 webpage.

Main Features

Display Features

- Displays Summary, Detail, Hex-dump, and Statistics Views
- Summary View provides the information about few important fields (Dev #, Time Slot, VPI/VCI, PT, HEC, OSF, AAL type, CID, AAL type 2 signaling message (ALCAP message) and more in a tabular format
- 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
- Hex dump View displays the frame information in HEX and ASCII format, the contents of this view can also be copied to clipboard
- Statistics View displays statistics based on frame count, byte count, frames/sec, bytes/sec etc. for the entire capture data
- 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

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Supported Protocols

- Decodes different control plane protocols i.e. NBAP, RANAP, RNSAP, ALCAP, SSCOP etc. and user plane protocols i.e. Iu-UP, Iub-FP, AMR and more
- Decode NAS protocols (i.e. CC/MM/SM/SMS/GMM) along with the UTRAN specific protocols

Filtering and Search

- Advanced filtering and search based on any user selected protocol fields

Capturing Streams and Decoding Frames

- Captures, decodes, filters, and reassembles AAL-2 and AAL-5 frames in real-time, from within the ATM cells according to user defined VPI/VCI
- Supports simultaneous decode of multiple streams of UMTS traffic on multiple OC-3 or OC-12 interfaces

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 raw data can be played back using raw data playback application

Remote Monitoring

- Remote monitoring capability using GL's Network Surveillance System

Additional Features

- Ability to configure .ini file for VPI and VCI (for ALCAP, NBAP, RANAP, and so on)
- Performs numerous measurements across Iub, Iur, IuCs and IuPs interfaces

Summary, Detail, and Hex dump Views

The analyzer displays Summary, Detail and Hex dump View in different panes. The Summary View displays Frame Number, Time, Length, Error, VPI, VCI, PT, HEC, OSF, AAL Type, CID, LI, UUI, CPI and Frame Type message. 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.

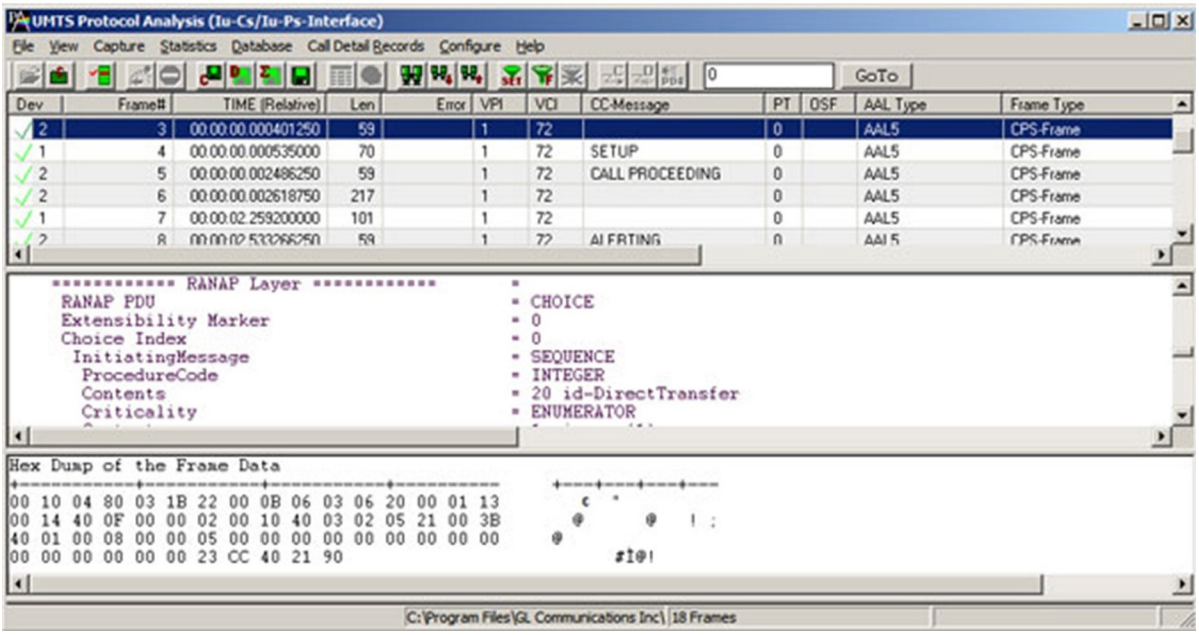

Figure: Summary, Detail, and Hex dump Views

Real-time and Offline Analysis

Users can analyze UMTS 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. UMTS analyzer is capable of capturing & reassembling frames that were transmitted with bit inversion, octet bit reversion, user/network side, ATM mapping, scrambling, and inverse multiplexing (IMA). The captured raw data can be transmitted using playback file application.

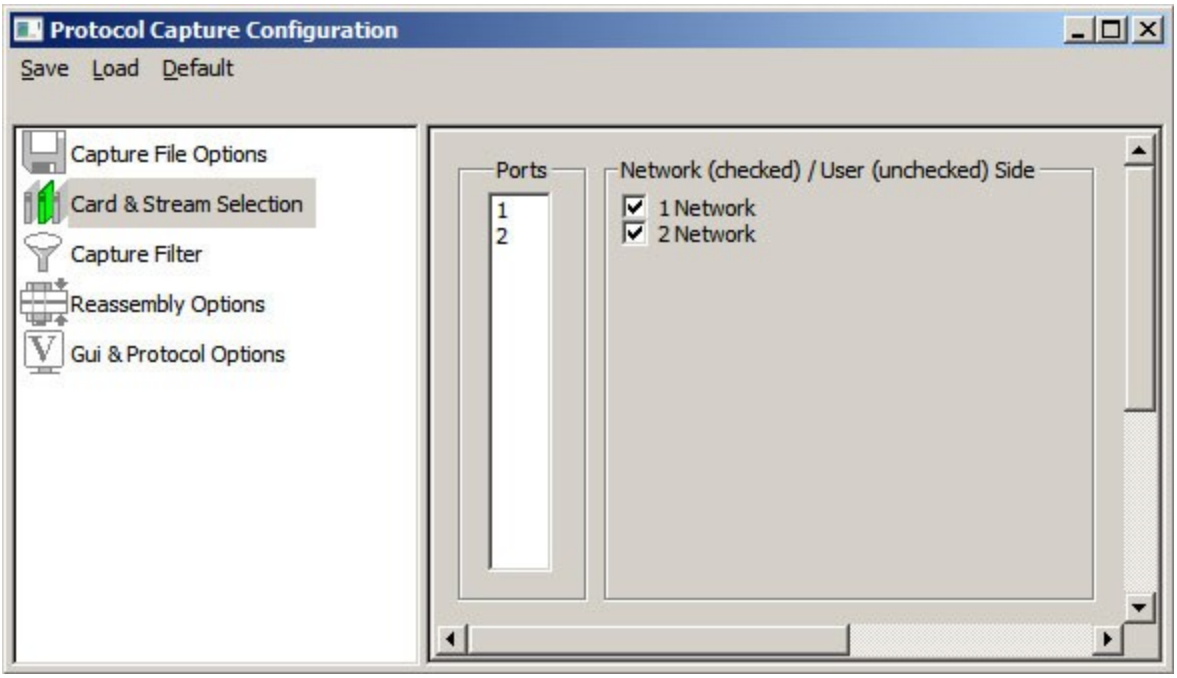

Figure: Stream / Interface Selection

Filtering and Search

Users can record all or filtered traffic into a trace file. Filter and search capabilities adds a powerful dimension to the UMTS Analyzer. These features isolate required frames from the captured frames in real-time, as well as offline. Users can specify custom VPI, VCI, and PT type values to filter frames during real-time capture. The frames can also be filtered after completion of capture based on Frame Number, Time, Length, Error, VPI, VCI, PT, HEC, OSF, AAL Type, CID, LI, UUI, and more. Similarly, Search capability helps user to search for a particular frame based on specific search criteria.

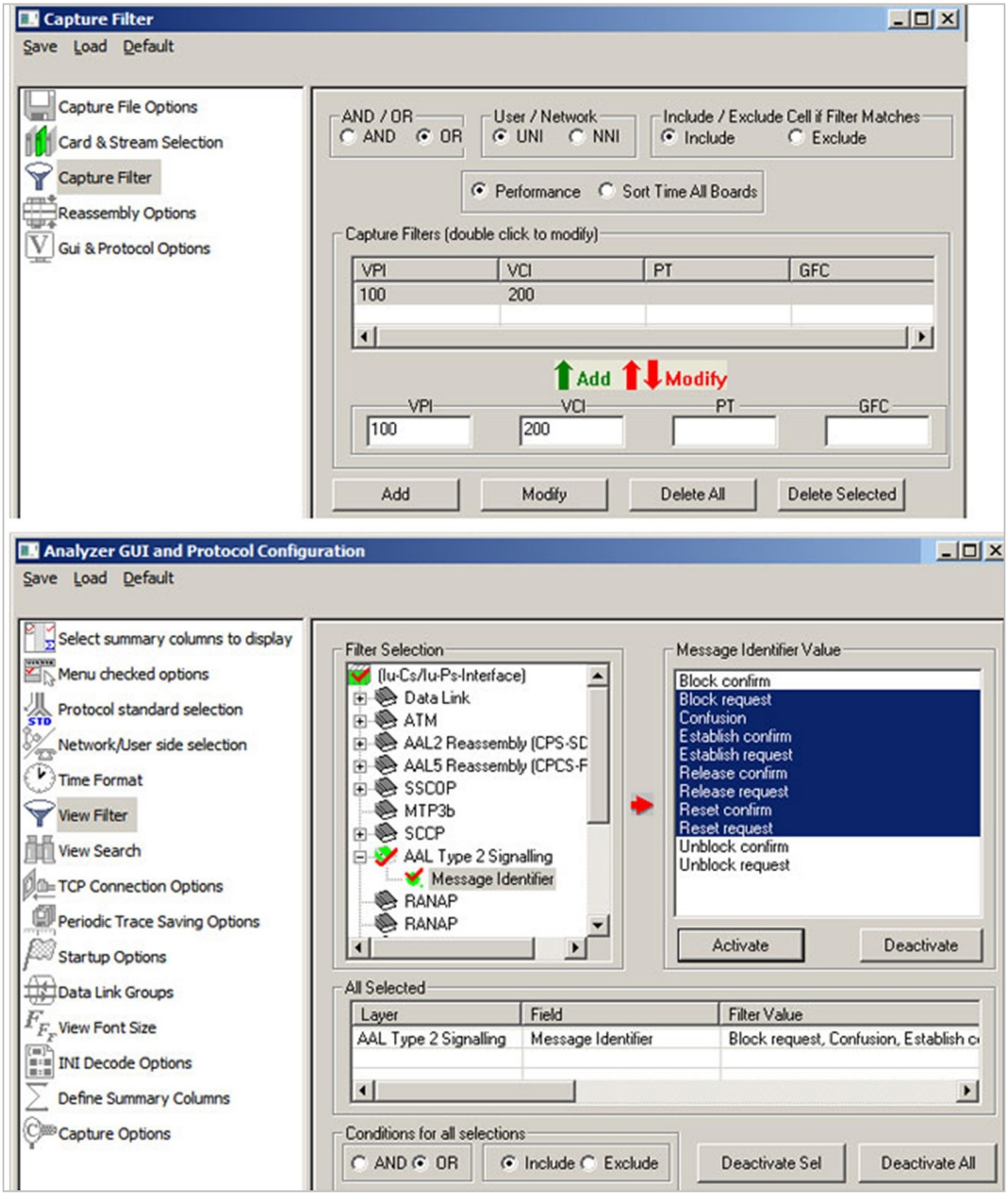

Figure: Real-time and Offline Filter

Reassembly

Using reassembly option user can specify VPI / VCI value to reassemble using the segmentation and reassembly rules defined by the specified AAL type.

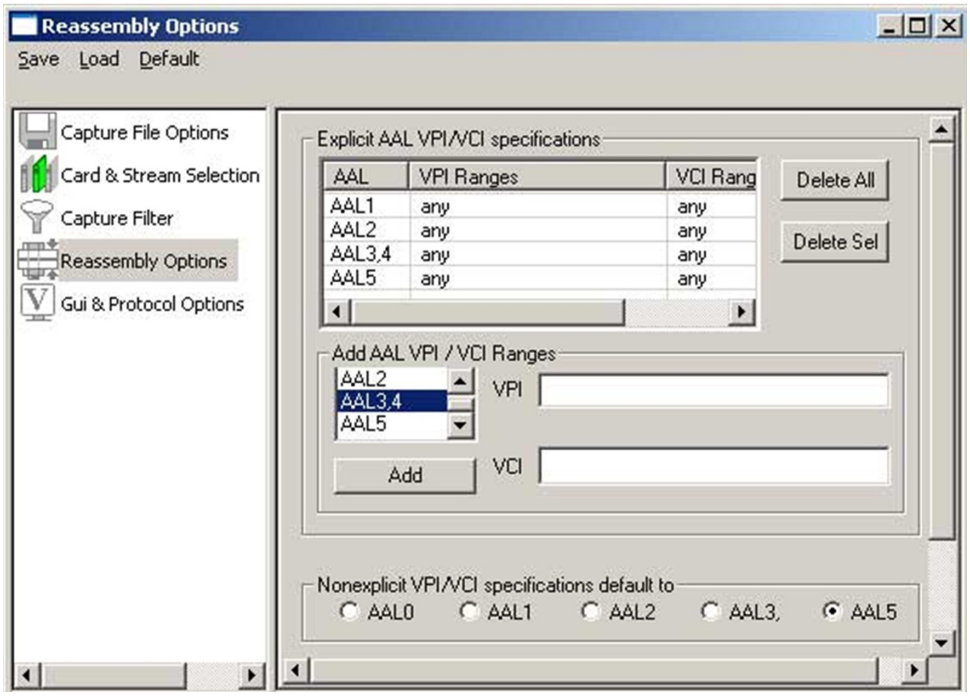

Figure: Reassembly Options

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. Users may also just revert to the default settings using the default option.

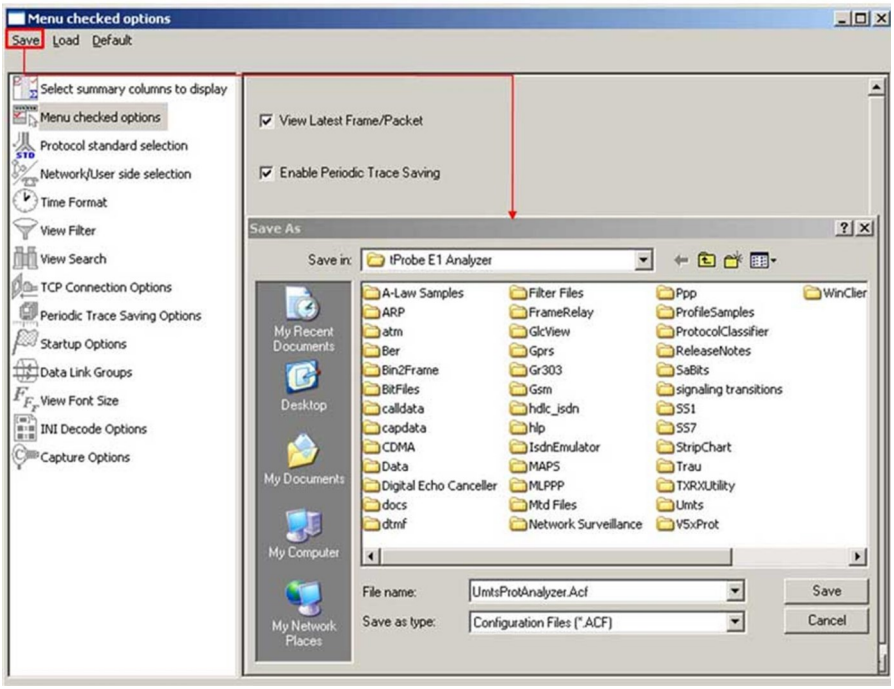

Figure: Save / Load Configuration

Call Detail Record & Statistics View

Important call specific parameters like Call ID, Call disposition, Call duration, Mobile ID, Called/Calling Number, Call type (SMS/PDP/Setup/Location update etc) are displayed in the 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 UMTS network on protocol fields and parameters.

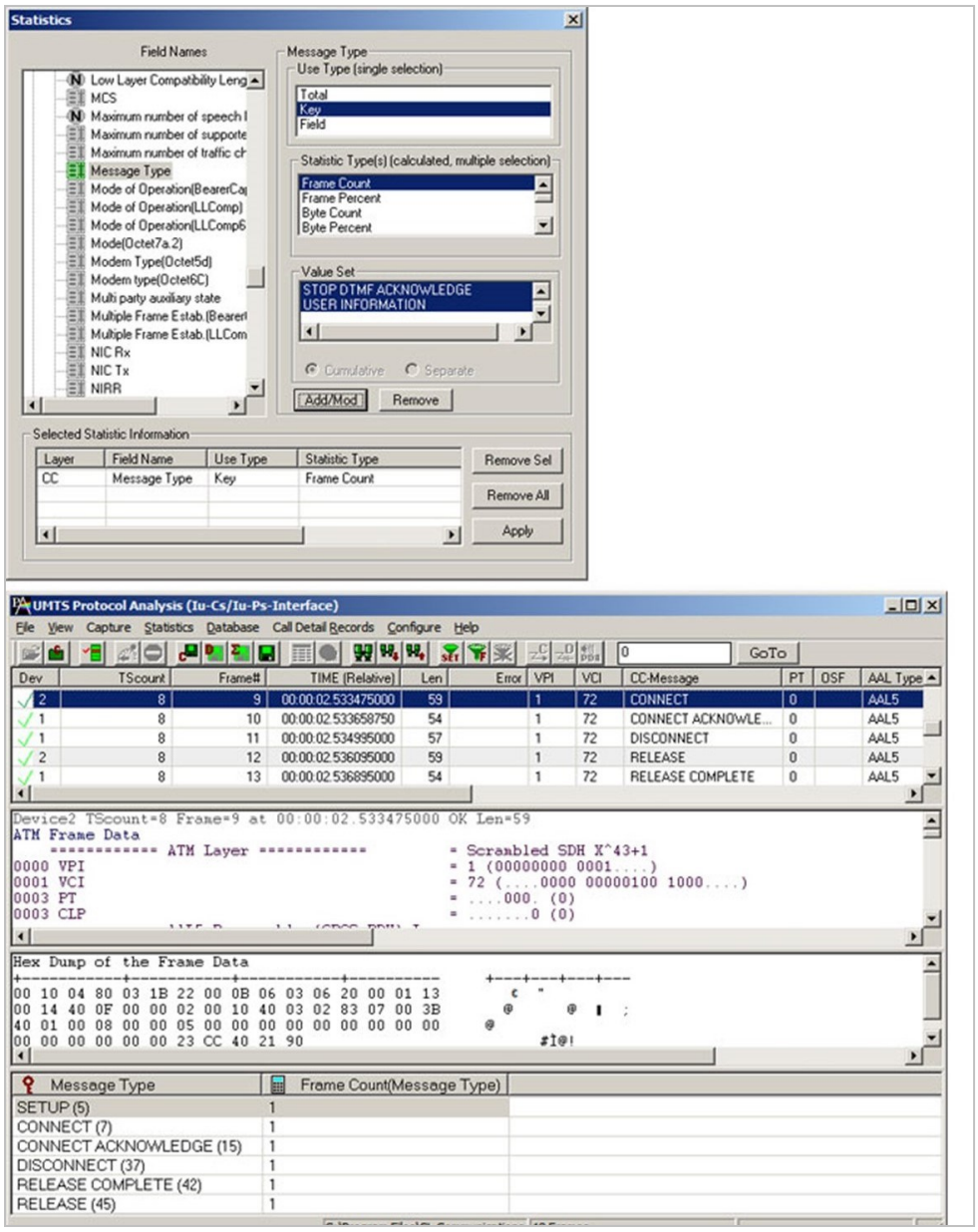

Figure: Statistics and Call Detail Record View

Supported Protocols Standards and Specifications

Available Standards	Supported Protocols	Specification Used
Iub-Interface	ATM	ITU-T I.361
Iu-Cs/Iu-Ps-Interface	AAL	ITU-T I.363
Iur-Interface	AAL2	Class B (ITU-T I.363.2)
	AAL5	Class C & D (ITU-T I.363.5)
	SSCOP	ITU-T Q.2110
	SSCF for UNI	ITU-T Q.2130 (07/94)
	AAL Type 2 (ALCAP)	ITU-T Recommendation Q.2630.1
	NBAP	3GPP TS 25.433 V6.3.0 (2004-09)
	Iub FP	GPP TS 25.427 V6.1.0 (2004-12) and 3GPP TS 25.435 V6.1.0(2004-03)
	RANAP	3GPP TS 25.413 V6.3.0 (2004-09)
	Iu-UP	GPP TS 25.415 V6.1.0
	MTP3-B	ITU-T Recommendation Q.2210
	RNSAP	3GPP TS 25.423 V6.4.0 (2004-12)
	SCCP ITU / ANSI	ITU-T Q.711-Q.714 / ANSI T1.112-1996
	SCTP	RFC 2960
	IP	RFC 791
	UDP	RFC 768
	GMM (GPRS Mobility Management) / SMG (GPRS Session Management)	3GPP TS 04.08 V7.19.0
	GSM CC / GSM MM	3GPP TS 04.08 V7.17.0
	SMS	3GPP TS 03.40 V7.5.0 & 3GPP TS 04.11 V7.1.0 GSM 03.38 version 7.2.0
	AMR	3GPP TS 26.101 V6.0.0
	SSSAR	ITU-T I.366.1
	UMTS MAC RLC	3GPP TS 25.321 V6.1.0 and 3GPP TS 25.322 V6.1.0
	RRC	3GPP TS 25.331 V6.4.0
	M3UA	RFC 3332
	SSCF-NNI (Service Specific Coordination Function - Network Node Interface) Protocol	ITU-T Recommendation Q.2140 (02/95)
	SAAL-NNI (Signaling ATM Adaptation Layer - Network Node Interface	ITU-T Recommendation Q.2100 (07/94)

Buyer's Guide

Item No	Product Description
LTS206	OC-3 / STM-1 UMTS Protocol Analysis
LTS306	OC-12 / STM-4 UMTS Protocol Analysis

Item No	Related Software
LTS200	OC-3 / STM-1 ATM Monitor, BERT, Tx/Rx Test, RAW
LTS300	OC-12 / STM-4 ATM Monitor, BERT, Tx/Rx Test, RAW
LTS201	OC-3 / STM-1 PoS Monitor, BERT, Tx/Rx Test, RAW
LTS301	OC-12 / STM-4 PoS Monitor, BERT, Tx/Rx Test, RAW
LTS202	OC-3 / STM-1 ATM and RAW Record / Playback
LTS203	OC-3 / STM-1 PoS and RAW Record / Playback
LTS303	OC-12 / STM-4 PoS and RAW Record / Playback
LTS204	OC-3 / STM-1 ATM Protocol Analysis
LTS304	OC-12 / STM-4 ATM Protocol Analysis
LTS206	OC-3 / STM-1 UMTS Protocol Analysis
LTS306	OC-12 / STM-4 UMTS Protocol Analysis

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Buyer's Guide (*Contd.*)

Item No	Related Hardware
LTS100	Lightspeed1000™ - Dual OC-3/12 STM-1/4 PCIe Card
LTS105	Lightspeed1000™ - Portable Dual OC-3/12 STM-1/4 USB Unit
LTS404	SFP, Single Mode
LTS405	SFP, Multimode
SA019a	1 Gbps / 10 Gbps Fiber Optic Cable, Single-Mode, Duplex LC to Duplex LC
SA019b	1 Gbps / 10 Gbps Fiber Optic Cable, Single-Mode, Duplex LC to Duplex SC
SA019c	1 Gbps / 10 Gbps Fiber Optic Cable, Multi-Mode, Duplex LC to Duplex LC
SA019d	1 Gbps / 10 Gbps Fiber Optic Cable, Multi-Mode, Duplex LC to Duplex SC
SA019e	40G / 100G Fiber Optic Cable, Multi-Mode
SA019f	40G / 100G Fiber Optic Cable, Single-Mode

Note: PCs which include GL hardware/software require Intel or AMD processors for compliance.

For more details, visit UMTS Protocol Analyzer for OC-3/STM-1 and OC-12/STM-4 webpage.

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