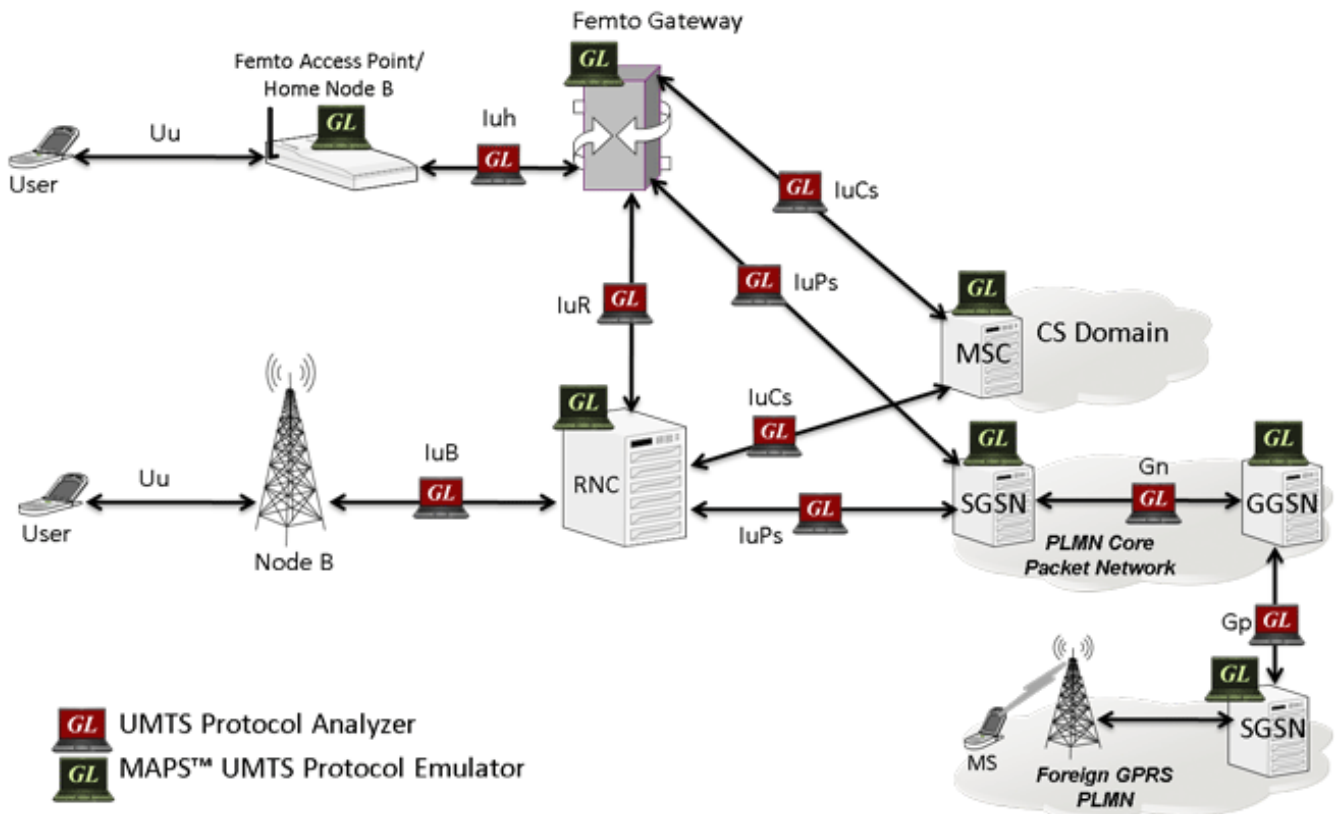


# PacketScan™ UMTS Protocol Analyzer for Wireless & IP Networks



## Overview

**Universal Mobile Telecommunications System (UMTS)** is a 3rd generation mobile technology that can support greater data rates for voice and video data to the wireless end users. UMTS is capable of handling both Circuit-Switched (CS) as well as Packet-Switched (PS) data simultaneously through its UTRAN network. It helps in fault diagnosis and troubleshooting of UMTS network

GL's [UMTS Analyzer over IP](#) within PacketScan™-All IP Protocol Analyzer is an optional module (PKV103) available with additional licensing with PacketScan analyzer (PKV100). GL's **UMTS Analyzer over IP** analyzer offers powerful features to capture, monitor, decode, and collect statistics of UMTS signaling messages over IP.

For more details, refer [PacketScan™-All IP Protocol Analyzer](#) webpage.



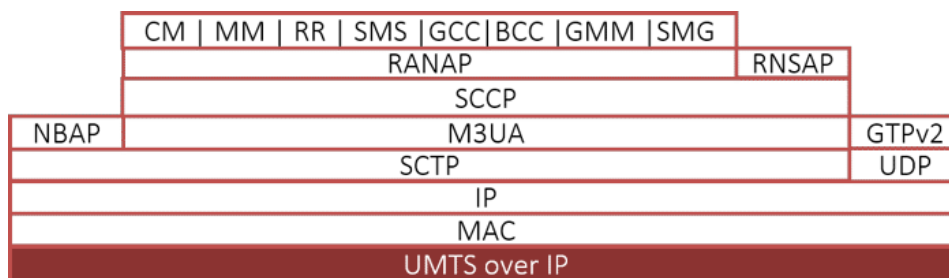
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(Web) [www.gl.com](http://www.gl.com) - (V) +1-301-670-4784 (F) +1-301-670-9187 - (E-Mail) [info@gl.com](mailto:info@gl.com)

## Main Features

- Decode and analyze different control plane protocols i.e. NBAP, RNSAP, RANAP and more over IuCS, IuH, and IuPS interfaces
- Test RNC, MSC, Home NodeB (HnB) and Home NodeB Gateway (HN GW) entities
- Supports decoding of AMR and AMR\_WB codec with IuUP Header
- Advanced filtering and search based on any user selected protocol fields
- Any protocol field can be added to the summary view, filtering, and search features providing users more flexibility to monitor required protocol fields
- Trigger intelligent actions based on signaling and traffic conditions
- Support for Multi-technology, Multi-protocol
- Displays Summary, Detail, Hex dump, Statistics, and Call Detail Views
- 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
- Call Detail View displays called/ calling number, released calls, call status, & more
- Provides a consolidated interface for all the important settings required in the analyzer. All the configuration settings done in any of these options can be saved to a file, loaded from a configuration file
- Allows the captured frames to be saved to a trace file using different conventions such as user-defined prefixes, date-time prefixes, total number of files, file size, frame count, or time limit
- Supported on Windows® 8 and above (32 bit and 64 bit) Operating System

## Protocol Stack and Standards

Entire GSM IP stack supported by PacketScan™.



Supported Protocols	Standard / Specification Used
NBAP	3GPP TS 25.433 V6.3.0 (2004-09)
RANAP	3GPP TS 25.413 V6.3.0 (2004-09)
RNSAP	3GPP TS 25.423 V6.4.0 (2004-12)
SCCP ITU	ITU-T Q.711-Q.714
M3UA	RFC 3332
SCTP	RFC 2960
GMM (GPRS Mobility Management)	3GPP TS 24.008 V5.0.0
CC	3GPP TS 24.008 V5.0.0
MM	3GPP TS 24.008 V5.0.0
RR	3GPP TS 04.18 V8.13.0
GCC (Group Call Control)	3GPP TS 44.068 V9.0.0
BCC (Broadcast Call Control)	3GPP TS 44.069 V9.0.0
SMG (GPRS Session Management)	3GPP TS 24.008 V5.0.0
SMS	3GPP TS 03.40 V7.5.0 & 3GPP TS 04.11 V7.1.0 GSM 03.38 version 7.2.0

## Summary and Detail View of luH

User can select a frame in Summary View to analyze and decode each UMTS luH frame in the Detail View.

The detail view of UMTS luH call displays the following:

- MAC Layer
- IP Layer
- SCTP Layer
- RUA Layer
- RANAP Layer
- MM, CC, RR, SMS Layer

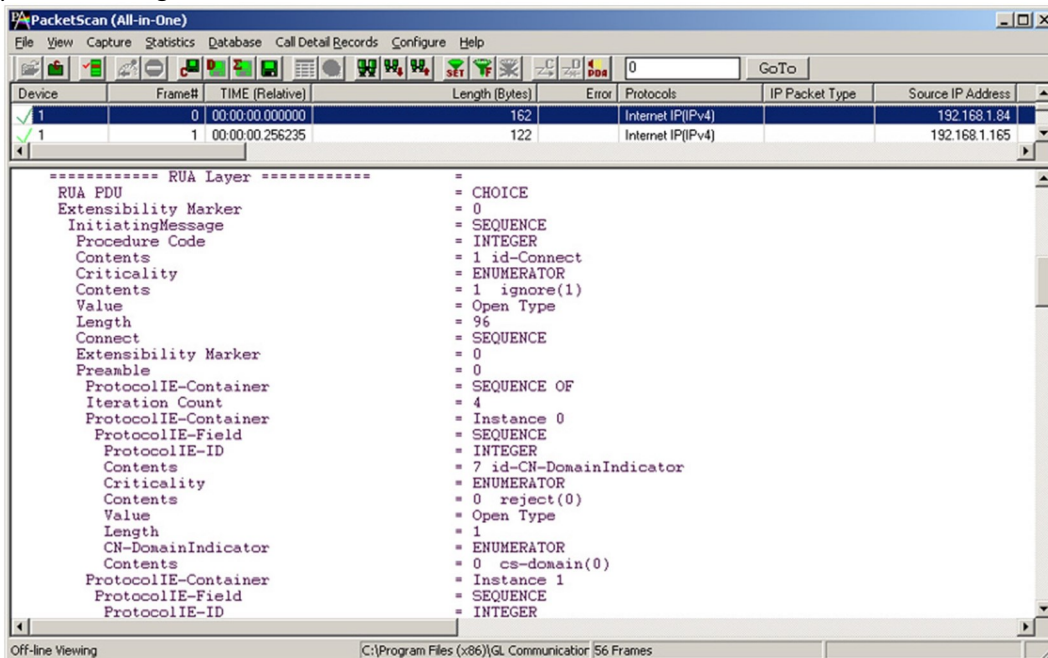


Figure: Detail View of UMTS luH over IP

## Summary and Detail View of luCS

User can select a frame in Summary View to analyze and decode each UMTS IP frame in the Detail View.

The detail view of UMTS IP call displays the following:

- MAC Layer
- IP Layer
- SCTP Layer
- M3UA Layer
- SCCP Layer
- RANAP Layer
- GMM Layer
- MM Layer
- CC Layer

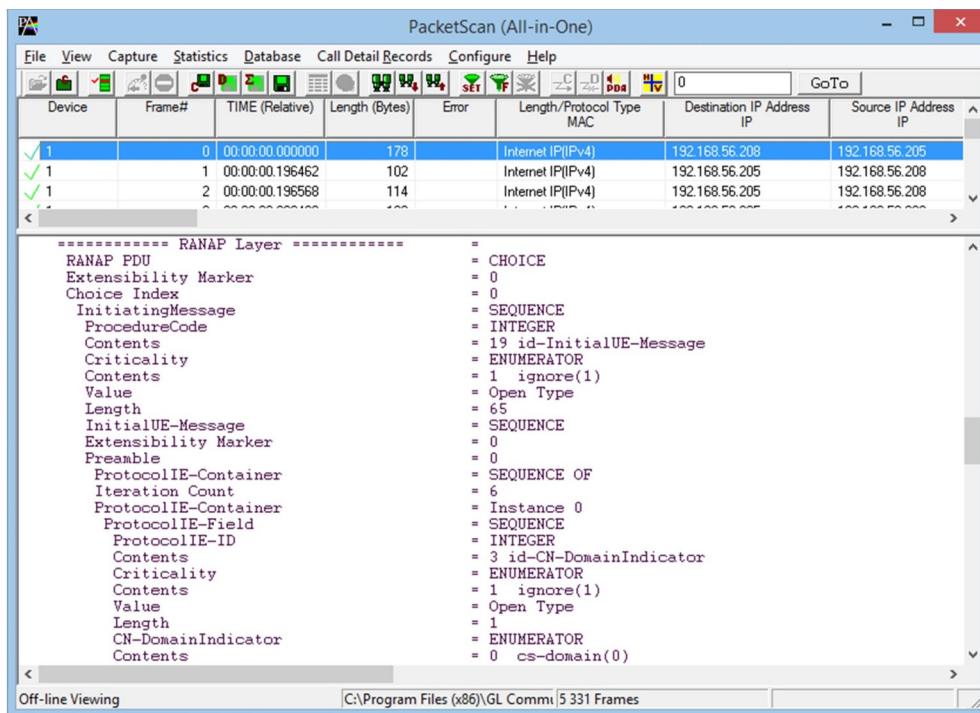


Figure: Detail View of UMTS luCS over IP

## UMTS Call Detail Records over IP

It displays the following fields - Call ID, Call status, Protocol, Call Originating (Number/Address), Call Destination (Number/Address), Call Start Date & Time, Call Duration, and Protocol Specific Information.

Device	Frame#	TIME (Relative)	Length (Bytes)	Error	Length/Protocol Type MAC	Chunk Length SCTP	Destination IP Address IP	Source IP Address IP	Destination Port UDP
✓ 1	0	-1392:13:15.609494	182		Internet IP(IPv4)		192.168.1.165	192.168.1.84	
✓ 1	1	-1392:13:15.463236	102		Internet IP(IPv4)		192.168.1.84	192.168.1.165	
✓ 1	2	-1392:13:15.462834	130		Internet IP(IPv4)		192.168.1.84	192.168.1.165	
✓ 1	3	-1392:13:15.423911	118		Internet IP(IPv4)		192.168.1.165	192.168.1.84	
✓ 1	4	-1392:13:15.418300	130		Internet IP(IPv4)		192.168.1.84	192.168.1.165	
✓ 1	5	-1392:13:15.389857	106		Internet IP(IPv4)		192.168.1.165	192.168.1.84	
✓ 1	6	-1392:13:15.388883	114		Internet IP(IPv4)		192.168.1.84	192.168.1.165	
✓ 1	7	-1392:13:15.374888	122		Internet IP(IPv4)		192.168.1.165	192.168.1.84	
✓ 1	8	-1392:13:15.371580	130		Internet IP(IPv4)		192.168.1.84	192.168.1.165	

Call ID	Call Status	Protocol	Call Originating (Number...	Call Destination (N...	Call Start Date & Time	Call Duration	Protocol Specific Info
3	Completed	UMTS	405060000000000-IMSI	9845090005	2012-04-23 14:05:41....	00:00:06.8732...	<Call Type> Call Setup <SLR> 5 ...
4	Completed	UMTS	405060000000000-IMSI	8254268000	2012-04-23 14:05:54....	00:00:07.3865...	<Call Type> Call Setup <SLR> 6 ...
5	Completed	UMTS	405060000000000-IMSI		2012-04-23 14:06:08....	00:00:00.0288...	<Call Type> Location Update <S...

Off-line Viewing C:\Program Files (x86)\GL Commun 428 Frames

Figure: CDR View

## UMTS Statistics

The Statistics are calculated based on the UMTS protocol fields. The figure below depicts statistic data based on message types of GSM Phase2+ in PacketScan™.

Device	Frame#	TIME (Relative)	Length (Bytes)	Error	Message Type SCCP	Length/Protocol Type MAC	Destination IP Address IP	Source IP Address IP
✓ 1	0	00:00:00.000000	178		CR connection request	Internet IP(IPv4)	192.168.56.208	192.168.56.205
✓ 1	1	00:00:00.196462	102		CC connection confirm	Internet IP(IPv4)	192.168.56.205	192.168.56.208
✓ 1	2	00:00:00.196568	114		DT1 data form 1	Internet IP(IPv4)	192.168.56.205	192.168.56.208
✓ 1	3	00:00:00.292463	122		DT1 data form 1	Internet IP(IPv4)	192.168.56.205	192.168.56.208

Message Type	Frame Count(Message Type)
CR connection request (1)	1
total CR connection request (1)	1
CC connection confirm (2)	1
total CC connection confirm (2)	1
RLSD released (4)	1
total RLSD released (4)	1
RLC release complete (5)	1
total RLC release complete (5)	1
DT1 data form 1 (6)	14
total DT1 data form 1 (6)	14

C:\Program Files (x86)\GL Comrn 5 331 Frames

Figure: Statistic View

## UMTS luCS Call Flow Analysis in PDA

Displays a UMTS luCS call graph with decode of the selected message displayed to the right of message sequence.

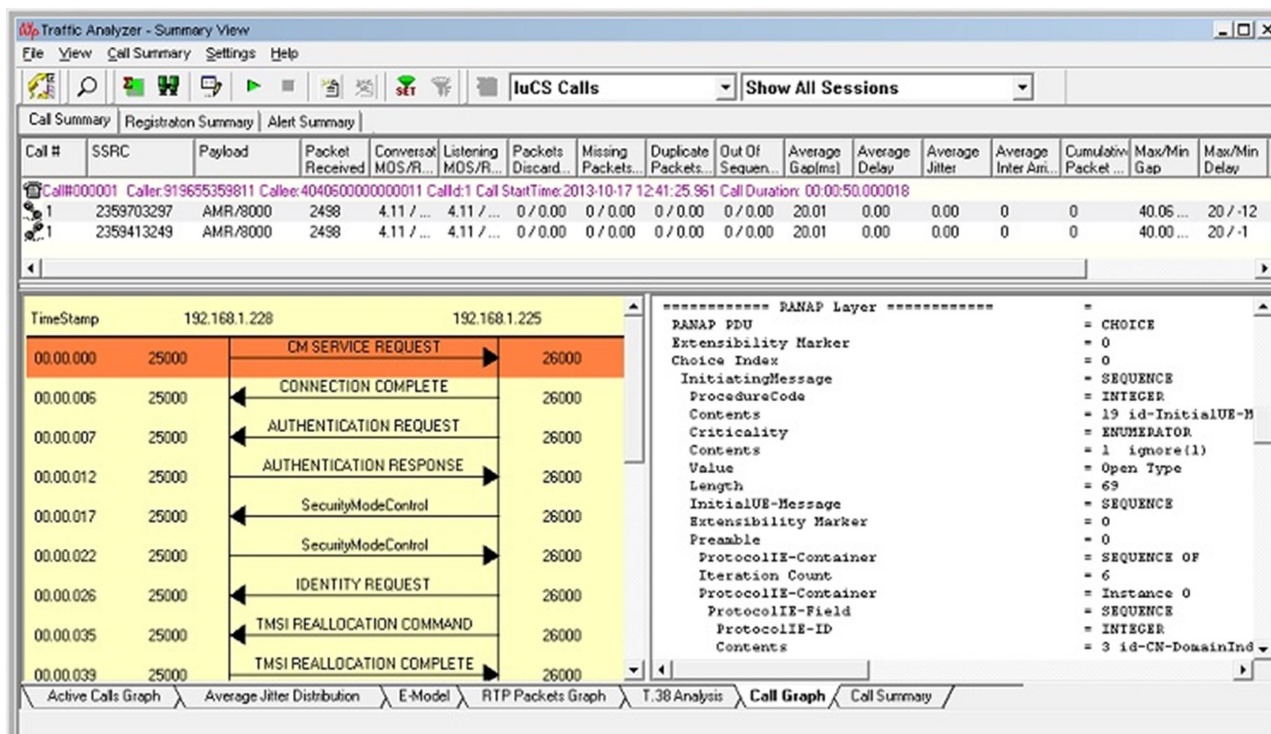


Figure: UMTS luCS Call Flow Ladder Diagram

## INI Decode Options

The .INI file configuration enables the user to enter the required custom value for each protocol in the PacketScanProt.ini file (located in Program Files\GL Communication Inc) to get proper decodes. For UMTS protocols, user can enter the FDD or TDD mode. Also, set the IuCS\_GSMA\_PROCESS\_FLAG to 1 to decode UMTS signaling messages over IP.

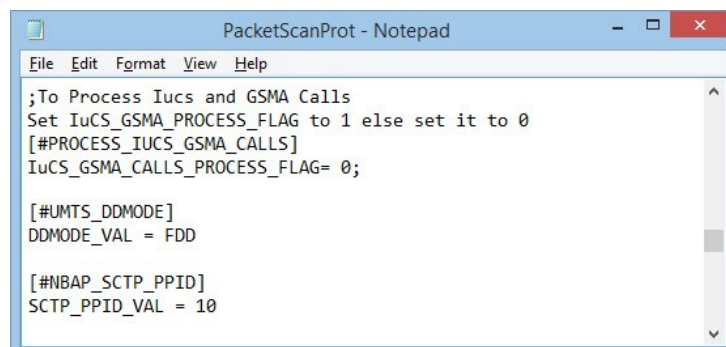


Figure: INI Decode Option for UMTS

## Network-Wide Monitoring of UMTS Network

GL's NetSurveyorWeb™ is a web-based client that can connect to UMTS protocol analyzer probe for monitoring the entire UMTS network through a web server that facilitates display of call data records, protocol frames, and KPIs. This system allows you to deploy multiple UMTS Analyzer probes to be deployed at strategic locations in a network, transmit and collect voice, data, protocol, statistics, and performance information, and relay this information to a central / distributed network management system (NMS).

For more details, refer [NetSurveyorWeb™](#) webpage.

## Buyer's Guide

Item No	Product Description
<a href="#">PKV103</a>	IP Based GSM and UMTS Analyzer, requires PKV100
<a href="#">PKV109</a>	Offline GSM and UMTS Analyzer, requires PKV101
<a href="#">PKV100</a>	PacketScan™ (Real-time and Offline)
<a href="#">PKV101</a>	PacketScan™ - Offline
<a href="#">PKV120</a>	PacketScan™ HD – High Density IP Traffic Analyzer w/ 4x1GigE - includes PKV100 – Online (not Offline) for temporary audio codec support
<a href="#">PKV122</a>	PacketScan™ HD – High Density IP Traffic Analyzer w/ 2x10GigE - includes PKV100 – Online (not Offline) for temporary audio codec support
<a href="#">PKV170</a>	NetSurveyorWeb™ (Network Surveillance Software) for IP Network

For more details, refer [PacketScan™-All IP Protocol Analyzer](#) webpage.



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