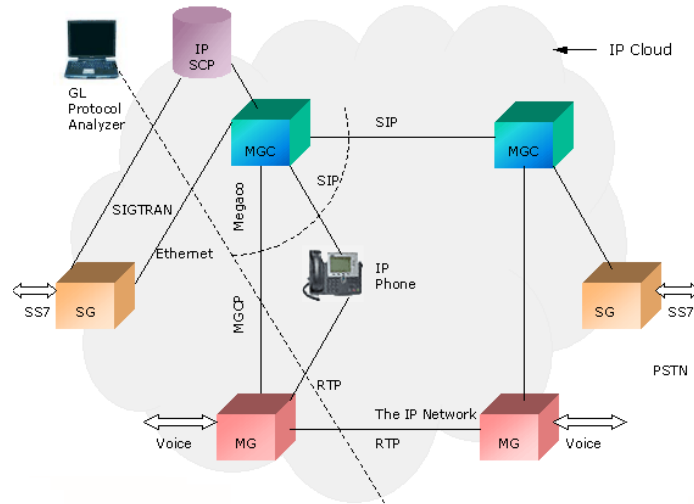


## Protocol Analyzer for Wireless & IP Networks- PacketScan™ (SIGTRAN - Optional)



PacketScan™ - SIGTRAN, MGCP, Megaco, RTP, SIP Protocol Analyzer

Capture, Decode, and Analysis of Calls in SIGTRAN Network

Supports decoding SCTP, and various User Adaption Layers

Real-time and Offline Analysis

Includes Call Detail & Statistics Views

Advanced Filter and Search Features

Powerful and Customizable Reporting Tools

Call Trace Capability Over Various Interfaces

Supports Intelligent Triggers and Actions

Customize Decode Options

### Overview

SIGTRAN protocol decoder software is a VoIP testing tool that permits real-time analysis, call trace, capture, and filtering of SS7 and ISDN signaling messages over IP.

GL's [SIGTRAN](#) analyzer within [PacketScan™-All IP Protocol Analyzer](#) is an optional module (PKV105) available with additional licensing with PacketScan analyzer (PKV100).

GL's [SIGTRAN](#) analyzer offers powerful features to capture, monitor, decode, and collect statistics of SCTP, and user adaptation (UA) layers such as M2UA, M3UA, M2PA, SUA, IUA, ISUP, MAP, CAP, and INAP.

GL's [PacketScan™-All IP Protocol Analyzer](#) supports monitoring most of **2G, 3G** and **4G** protocols over IP network such as GSM, GPRS, UMTS, SIGTRAN, and LTE, in addition to SIP, MGCP, MEGACO, Skinny, SCCP, Diameter, and H.323. For more details, visit <http://www.gl.com/packetscan-all-ip-packet-analyzer.html>.

### Features

- Permits testing and verification of Signaling Gateways.
- 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.
- Supported on Windows® 7/8.1 (32 bit and 64 bit) OS.



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## Protocol Stack

Entire SIGTRAN stack supported by PacketScan™.

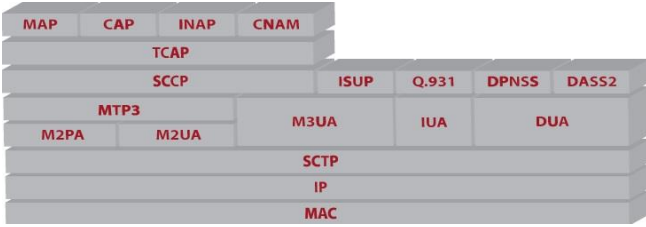


Figure: SIGTRAN Protocol Stack

## Protocol Standards

Supported UMTS IP protocol standards by PacketScan™.

Supported Protocols	Standard / Specification Used
SCTP	RFC 2960
M2UA	RFC 3331
M2PA	RFC 4165
SUA ITU	RFC 3868
SUA ANSI	Internet Engineering Task Force: Draft 2026 (sec.10)
M3UA ITU	RFC 3332
M3UA ANSI	RFC 3332
MTP3 ITU	ITU-Y Q.701-Q.705 / ITU-T Q.782
MTP3 ANSI	T1.111.4-1996
IUA	RFC 4233 / RFC 5133
BICC	BICC pl-080r1, T-REC-Q.1902.2-07/2001, T-REC-Q.1902.3-07/2001
INAP CS1 ITU / ETSI	Q1218 and ETS 300 374 1, Sept, 1994
INAP CS2 ITU	INAP - Capability Set 2. (Q.1228)
INAP CS2 ETSI	INAP - Capability Set 2. (EN 301 140-1-v1.3.4-1999-06)
CAMEL V3	3GPP TS 29.078 V3.15.0
CAMEL V6	3GPP TS 29.078 6.3.0 (2004-09)
MAP R99	3GPP TS 09.02 V7.14.0 (2003-09)
MAP R4	3GPP TS 29.002 V4.18.0
TUP ITU	T-REC-Q.723-11/1988
TCAP ITU	ITU-T Q.771 - Q.775
TCAP ANSI	
IS-41	TIA/EIA, IS41.1-C, IS41.5
SCCP ITU	ITU-T Q.711-Q.714
SCCP ANSI	ANSI rec. T.112 (1996), T1.116.2 (1996)
SCCP ETSI	EN 300 009 -1, sept 1996, 3rd edition
ISUP ITU	ITU - Q.761, Q.762, Q.763 and Q.764
ISUP ETSI	EN 300 356 -1 V3.2.2(1998-08)
ISUP ANSI	ANSI - T1.113.1 to T1.113.4
DPNSS	BTNR 190:June 1992
DASS2	ND1301:2001/03
Q.931	ITU-T Q.931 / Q.932(Facility IE) / Q.955.3 (MLPP Procedures)

## Summary and Detail View of SS7 SIGTRAN

User can select a frame in Summary View to analyze and decode each SS7 SIGTRAN frame in the Detail View.

The detail view of SS7 SIGTRAN call displays the following:

- MAC Layer
- IP Layer
- SCTP Layer
- MTP3 Layer
- ISUP Layer

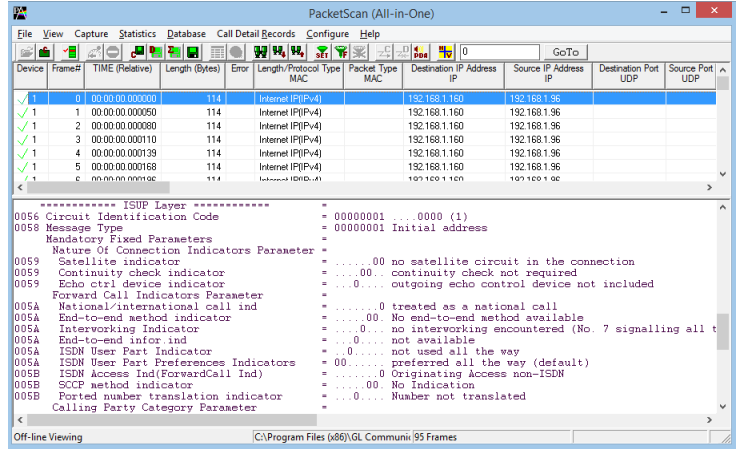


Figure: Detail View of SS7 SIGTRAN

## Summary and Detail View of ISDN SIGTRAN

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

The detail view of ISDN SIGTRAN call displays the following:

- MAC Layer
- IP Layer
- SCTP Layer
- ISDN Q.921 user adaptation Layer
- Q.93x-Layer 3

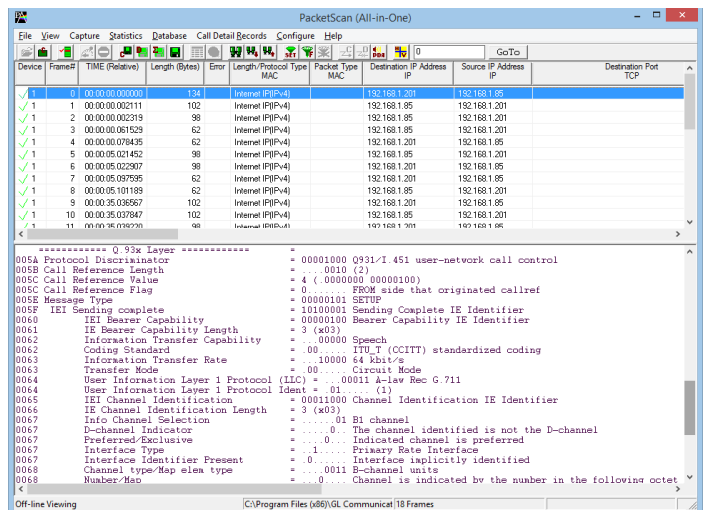


Figure: Detail View of ISDN SIGTRAN



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### SIGTRAN Call Detail Records

Call Detail Records view of SS7 and ISDN SIGTRAN calls over IP 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.

Call ID	Call Status	Protocol	Call Originating (No.)	Call Destination (No.)	Call Start Date & Time	Call Duration	Protocol Specific Info
0	Completed	ISUP	1111111	9999991	2011-05-16 14:31:54.902003	00:00:10.930458	<CIC> 1 <Disposition> 1 <Release
1	Completed	ISUP	1111112	9999992	2011-05-16 14:31:54.902053	00:00:10.930467	<CIC> 2 <Disposition> 1 <Release
2	Completed	ISUP	1111113	9999993	2011-05-16 14:31:54.902093	00:00:10.930459	<CIC> 3 <Disposition> 1 <Release
3	Completed	ISUP	1111114	9999994	2011-05-16 14:31:54.902113	00:00:10.930458	<CIC> 4 <Disposition> 1 <Release
4	Completed	ISUP	1111115	9999995	2011-05-16 14:31:54.902142	00:00:10.930461	<CIC> 5 <Disposition> 1 <Release
5	Completed	ISUP	1111116	9999996	2011-05-16 14:31:54.902171	00:00:10.930462	<CIC> 6 <Disposition> 1 <Release
6	Completed	ISUP	1111117	9999997	2011-05-16 14:31:54.902199	00:00:10.930464	<CIC> 7 <Disposition> 1 <Release
7	Completed	ISUP	1111118	9999998	2011-05-16 14:31:54.902228	00:00:10.930465	<CIC> 8 <Disposition> 1 <Release
8	Completed	ISUP	1111119	9999999	2011-05-16 14:31:54.902278	00:00:10.930466	<CIC> 9 <Disposition> 1 <Release
9	Completed	ISUP	1111120	99999910	2011-05-16 14:31:54.902323	00:00:10.930461	<CIC> 10 <Disposition> 1 <Release
10	Completed	ISUP	1111111	9999991	2011-05-16 14:32:05.882722	00:00:10.823428	<CIC> 1 <Disposition> 1 <Release
11	Completed	ISUP	1111112	9999992	2011-05-16 14:32:05.882739	00:00:10.823436	<CIC> 2 <Disposition> 1 <Release
12	Completed	ISUP	1111113	9999993	2011-05-16 14:32:05.882819	00:00:10.823434	<CIC> 3 <Disposition> 1 <Release
13	Completed	ISUP	1111114	9999994	2011-05-16 14:32:05.882848	00:00:10.823436	<CIC> 4 <Disposition> 1 <Release
14	Active	ISUP	1111115	9999995	2011-05-16 14:32:05.882877	00:00:10.837121	<CIC> 5 <Disposition> 2 <Release
15	Active	ISUP	1111116	9999996	2011-05-16 14:32:05.882906	00:00:10.837192	<CIC> 6 <Disposition> 2 <Release
16	Active	ISUP	1111117	9999997	2011-05-16 14:32:05.882934	00:00:10.837104	<CIC> 7 <Disposition> 2 <Release

Figure: SS7 SIGTRAN CDR View

Call ID	Call Status	Protocol	Call Originating (Number/A.)	Call Destination (Number/A.)	Call Start Date & Time	Call Duration	Protocol Specific Info
0	Completed	ISDN	1111111	9999991	2012-04-23 16:03:54.444547	00:00:35.830220	<CICIN> 4 <Release Complete Cause
1	Completed	ISDN	1111111	9999991	2012-04-23 16:03:54.444547	00:00:35.830220	<CICIN> 4 <Release Complete Cause
2	Completed	ISDN	1111111	9999991	2012-04-23 16:03:54.444547	00:00:35.830220	<CICIN> 4 <Release Complete Cause

Figure: ISDN SIGTRAN CDR View

### 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 SIGTRAN protocols, the following options can be edited to customize the way the PacketScan™ decodes SIGTRAN protocols.

- SIGTRAN standards – ITU or ANSI
- MAP Protocol Version – R99 or R4
- INAP Protocol Version – CS1 or CS2
- CAMEL Protocol Version – Rel6 or Rel3
- BTNR Protocol Identifier - TUP or IUP
- Maximum and Minimum SSN value for INAP in ITU, ANSI and ETSI
- Call Trace Type – TCAP MAP or TCAP CNAM

```

[SIGTRAN_STANDARD]
STANDARD_VALUE = 1 ; Set 1 for ITU. Set 2 for ANSI. Set 3 for ETSI.

[MAP_VERSION]
MAP_VERSION_VALUE = 99 ; Set 99 for Release 99. Set 4 for Release 4.

[INAP_VERSION]
INAP_CS_VERSION_VALUE = 1 ; Set 1 for INAP CS-1. Set 2 for INAP CS-2.

[CAMEL_VERSION]
CAMEL_VERSION_VALUE = 3 ; Set 3 for Camel Version 3. Set 6 for Camel Version 6.

[BTNR_PROTOCOL]
VALUE = 1 ; Set 1 for IUP. Else TUP.

; SCPP SSN values for Ittu.
[PROTOCOL_DECODE_ITU]
SSNCAP_MIN = 146 ;CAP
SSNCAP_MAX = 146 ;CAP
SSNMAP_MIN = 5 ;MAP
SSNMAP_MAX = 10 ;MAP
SSNINAP_MIN = 12 ;INAP
SSNINAP_MAX = 12 ;INAP
    
```

Figure: INI Decode Option for UMTS

### SIGTRAN Statistics

The statistics are calculated based on the SIGTRAN protocol fields. The figure below depicts statistic data based on message types of SS7/ISDN SIGTRAN protocol decodes in PacketScan™.

Message Type	Frame Count(Message Type)
Initial address (1)	21
total Initial address (1)	21
Address complete (6)	20
total Address complete (6)	20
Answer (9)	20
total Answer (9)	20
Release (12)	20
total Release (12)	20
Release Complete (16)	14
total Release Complete (16)	14

Figure: Statistic View of SS7 SIGTRAN

Message Type	Frame Count(Message Type)
ALERTING (1)	1
total ALERTING (1)	1
CALL PROCEEDING (2)	1
total CALL PROCEEDING (2)	1
SETUP (5)	1
total SETUP (5)	1
CONNECT (7)	1
total CONNECT (7)	1
CONNECT ACKNOWLEDGE (15)	1
total CONNECT ACKNOWLEDGE (15)	1
DISCONNECT (69)	1
total DISCONNECT (69)	1
RESTART (70)	1
total RESTART (70)	1
RELEASE (77)	1
total RELEASE (77)	1
RESTART ACKNOWLEDGE (78)	1
total RESTART ACKNOWLEDGE (78)	1
RELEASE COMPLETE (90)	1
total RELEASE COMPLETE (90)	1

Figure: Statistic View of ISDN SIGTRAN



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## Network-Wide Monitoring of SIGTRAN Network

GL's [NetSurveyorWeb™](#) is a web-based client that can connect to SIGTRAN protocol analyzer probe for monitoring the entire SIGTRAN network through a web server that facilitates display of call data records, protocol frames, and KPIs. This system allows you to deploy multiple SIGTRAN 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 information, please <http://www.gl.com/networkmonitoring.html#voip>.

## Buyers Guide

[PKV105](#) – SIGTRAN Offline Analyzer

[PKV106](#) – Offline SIGTRAN Analyzer (Optional with PacketScan™)

[PKV100](#) – PacketScan™ (Real-time and Offline)

[PKV101](#) – PacketScan™ - Offline

[PKV120](#) – PacketScan™ HD – includes PKV100 – Online (not Offline) for temporary audio codec support

[PKV121](#) – PacketScan™ FB - (Offline Analyzer)

PKV301 – LAN Switch w/ Mirror Port

[PKV103](#) – IP Based GSM and UMTS Analyzer, requires PKV100

[PKV109](#) – Offline IP Based GSM and UMTS Analyzer (Optional with PacketScan™)

[PKV107](#) – LTE (Long Term Evolution) Analyzer, requires PKV100

[PKV108](#) – Offline LTE (Long Term Evolution) Analyzer (Optional with PacketScan™), requires PKV101

[PKV104](#) – FaxScan™ - Decodes Fax images in TIFF format from PCAP files

[PCD103](#) – AMR Codec for PacketScan™

[PCD104](#) – EVRC Codec for PacketScan™

[PCD105](#) – EVRC-B Codec for PacketScan™

[PCD106](#) – EVRC-C Codec for PacketScan™

[PKV170](#) – NetSurveyorWeb™ (Network Surveillance Software) for IP Network

[PKV171](#) – Network Surveillance Agent Toolkit



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