ISDN Sigtran Simulation over IUA IP Transport Layer

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Deployment of Products with Multiple Features & Protocols

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Simulates Signaling Gateway & Media Gateway Controller

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Protocol ITU-T Q.921 / Q.931 Standards

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Supports TDM Traffic over IP

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Call Flow Customization with Message & Sequence Editors

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Generates and Processes All ISDN Messages such as Setup, Connect, Release, and more

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Graphically Depicts Call Flows in Ladder Diagrams

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Provides Fault Insertion, & Erroneous Call Flow Testing

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Ready Scripts for Simpler & Less Time Consuming Tests

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GL’s MAPS™ ISDN SIGTRAN (ISDN over IP) is an advanced protocol simulator/tester used for ISDN simulation over IP. The tester can simulate ISDN signaling specification as defined by the ITU-T (Q.921/ Q.931) standards. This is a powerful test tool used to create detailed ISDN protocol messages over IP, and offers a complete solution for testing, troubleshooting, and maintenance of devices and networks implementing PRI ISDN and BRI ISDN. The test tool can act as the SG when testing the MGC or as the MGC when testing the SG.

MAPS™ ISDN SIGTRAN Emulator supports both PRI (Primary Rate Interface or 23B +D) and BRI (Basic Rate Interface, or 2B + D) ISDN network types. ISDN BRI is referred to as 2B + D, as it includes 2 bearer ‘B’ channels each with 64 kbit/s rate and one 16 kbit/s signaling channel (‘D’ channel or data channel). ISDN PRI when carried over an E1 includes 30 ‘B’ channels and over T1 has 23 ‘B’ channels of 64 kbit/s, shared with ‘D’ channel of 64 kbit/s.

MAPS™ ISDN SIGTRAN protocol test tool simulates complete ISDN connection from TDM to Signaling Gateway (SG) and Media Gateway Controller (MGC) supporting both PRI ISDN (with traffic) and BRI ISDN interfaces. MAPS™ ISDN SIGTRAN connects to traditional ISDN interfaces and IP-enabled signaling nodes and offloads TDM traffic to IP networks. The various supported TDM traffic types include File, Digits, Tones, FAX, IVR, Dynamic VF, and Voice Quality Testing. MAPS™ can be configured to auto start the traffic over ISDN signaling or manually define traffic at run time.

MAPS™ can be configured as a server-side application, to enable remote controlling of the application through multiple command-line based clients. In TCL environment client application includes a MapsTclIfc.dll file, a packaged library that enables communication with the Server. Supported clients include TCL, Python, VBScript, Java, and .Net.

GL also provides a GUI based SIGTRAN (ISDN over IP) Protocol Analyzer for on-line capture and decode of the signaling in real-time both during tests and as a stand-alone tracer for live systems. For more details, refer to http://www.gl.com/maps-isdn-sigtran-emulator.html.

**Main Features**

- Simulates ISDN signaling over IP (ISDN-SIGTRAN)
- Testing Media Gateway Controller (MGC), Signaling Gateway (SG)
- User-friendly GUI for configuring the IUA IP layer
- Supports interfacing with both high-speed PRI (Primary Rate Interface or 23B +D) and low-speed BRI (Basic Rate Interface, or 2B + D) digital lines.
- Generates and process all ISDN messages such as Setup, Connect, Release messages, & more
- User controlled access to optional ISDN parameters such as timers
- Provides various release cause codes such as rejected, no user response, user busy, congested, and so on to troubleshoot the problems in ISDN
- Impairments can be applied to messages to simulate error conditions
- Supports TDM traffic (including digits, voice file, tones, IVR, FAX, Dynamic VF, IVR and Voice Quality Testing) over IP.
- Supports Client-Server functionality requires additional license; clients supported are TCL, Python, VBScript, Java, and .Net
Test Bed Setup

Test Bed Setup is provided to establish communication between MAPS™ ISDN SIGTRAN and the DUT. It includes configuration parameters to be set for IUA signaling parameters and SCTP configuration. Once the SCTP layer is configured properly, ISDN messages can be transmitted and received over IP network using SCTP to the DUT. End user is configured with the default profile configuring MAPS™ ISDN SIGTRAN with Subscriber or Switch parameters.

Pre-processing Tools...

Profile Editor

This feature allows loading profile to edit the values of the variables using GUI, replacing the original value of the variables in the message template. An XML file defines a set of multiple profiles with varying parameter values that allow users to configure call instances in call generation and to receive calls. Traffic profiles are available in PRI ISDN SIGTRAN supporting various traffic types - Auto Traffic Digits, Auto Traffic File, Auto Traffic Tones, IVR, and User-defined traffic.

Message Editor

With message editor, users can build a template for each protocol message type. The value for each field may be changed in the message template prior to testing. The protocol fields are comprised of mandatory fixed parameters, mandatory variable parameters, and optional variable parameters.

Script Editor

The script editor allows the user to create / edit scripts and access protocol fields as variables for the message template parameters. The script uses pre-defined message templates to perform send and receive actions.

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Call Generation and Call Reception

In call generation, MAPS™ is configured for sending outgoing messages, while in call receive mode, it is configured to respond to incoming messages. Tests can be configured to run once, multiple times or even continuously. Users are also able to create multiple entries using quick configuration feature. The editor permits running added scripts sequentially (order in which the scripts are added in the window) or randomly (any script from the list of added script) as per the call flow requirements.

The test scripts may be started manually or they can be automatically triggered by incoming messages.

Typical ISDN Call Procedure over IP

MAPS™ ISDN SIGTRAN is considered as MGC (Media Gateway Controller) and initiates the call flow by sending SETUP message and ensures that the DUT (SG) sends a CALL PROCEEDING, ALTERING, and CONNECT messages in response.

MAPS™ ISDN-SIGTRAN can also be configured as DUT acting as SG (Network) processing the call flow by receiving the SETUP message from the caller (MGC).
Supported Protocols and Specifications

<table>
<thead>
<tr>
<th>Supported Protocols</th>
<th>Standard / Specification Used</th>
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<tbody>
<tr>
<td>Q.931</td>
<td>ITU-T Q.931 / Q.932(Facility IE) / Q.955.3 (MLPP Procedures)</td>
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<tr>
<td>IUA</td>
<td>RFC 4233 Integrated Services Digital Network (ISDN) Q.921 - User Adaptation Layer</td>
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Buyer's Guide

**PKS135** - MAPS™ ISDN SIGTRAN (ISDN over IP) Emulator

**Related Software**

PKV105 - SIGTRAN Analyzer

XX610 - w/ Transmit and Receive File capability

XX620 - w/ DTMF/MF/MFC-R2 + answer/place call capability

XXFT0 - Fax Emulation for T1 E1 and Analog Interfaces

XX100 - ISDN Analyzer Software

XX648 – MAPS™ ISDN

XX692 – MAPS™ GSM A Interface Emulator

XX693 – MAPS™ GSM A bis Interface Emulator

PKS130 - MAPS™ SIGTRAN (SS7 over IP)

XX120 - SS7 Analysis Software

PKS140 - MAPS™ LTE - S1 Interface

PKS142 - MAPS™ LTE - eGTP (S3, S4, S5, S8, S10, S11 and S16) Interfaces

PKV107 - LTE Protocol Analyzer

Related Software...

**PKS164** - MAPS™ UMTS – Iu-PS Interface Emulation

**PKS160** - MAPS™ UMTS – Iu-CS and Iuh Interface Emulation

**XX165** - T1 or E1 UMTS Protocol Analyzer

**OLV165** - Offline UMTS Protocol Analyzer

**PKS120** - MAPS™ SIP

**PKS121** - MAPS™ SIP Conformance Test Suite (Test Scripts)

**PKS122** – MAPS™ MEGACO

**PKS123** – MAPS™ MEGACO Conformance Test Suite (Test Scripts)

**PKS124** - MAPS™ MGCP & Conformance Test Suite (Test Scripts)

**PKS126** - MAPS™ SIP-I

Related Hardware

**HTE001** - Universal HD T1 or E1 PCI Cards

**UTE001** - USB based Dual T1 or E1 Laptop Analyzer

**PTE001** - tProbe™ T1 E1 Base Unit

For complete list of MAPS™ products, refer to [http://www.gl.com/maps.html](http://www.gl.com/maps.html) webpage.