

Simulates Signaling Gateway & Media Gateway Controller

Analysis and Simulation Capability on par with any Protocol Tester in the Market

Deployment of Products with Multiple Features & Protocols

Supports Add, Subtract, Notify, Modify, Move, ServiceChange, AuditValue, & AuditCapabilities

Call Flow Customization with Message & Sequence Editors

Registers Gateways, & Manages ServiceChange Requests

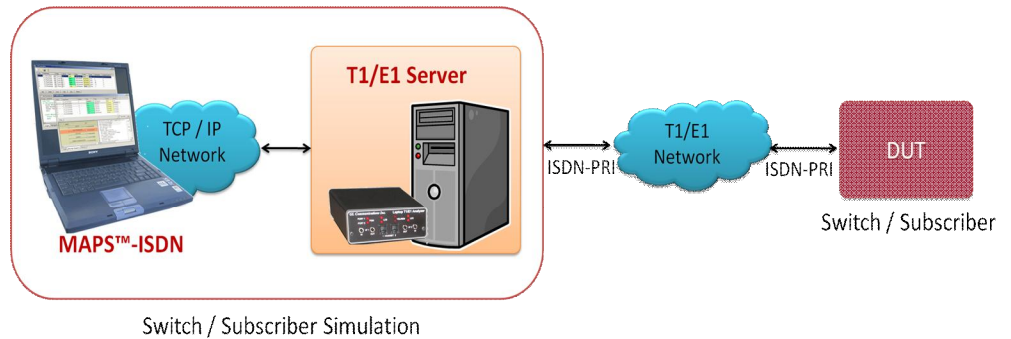
Graphically Depicts Call Flows in Ladder Diagrams

Provides Fault Insertion, & Erroneous Call Flow Testing

Ready Scripts for Simpler & Less Time Consuming Tests

Message Automation & Protocol Simulation (MAPS™)

MAPS™ ISDN Emulator



Overview

GL's MAPS™ ISDN is an advanced protocol simulator/tester for ISDN simulation over TDM (T1/E1) and generates high volumes of ISDN traffic. The tester can simulate ISDN signaling as defined by the ITU-T standards. Currently this test tool is used to perform testing using ISDN protocol messages over T1/E1, and offers a complete solution for testing, troubleshooting, and maintenance of devices and networks implementing PRI ISDN. It is useful to test ISDN products designed for either U or S/T interface, including network terminations, Type 1 terminating equipment, and terminal adapters.

MAPS™ ISDN also incorporates the flexibility to modify ISDN call parameters & message contents (arbitrary manipulation of messages, information elements and message sequence on the different protocols). This flexibility ensures that the MAPS™ ISDN communicates with the system under test. It is even possible to emulate a complete ISDN connection (switch to subscriber) all in the same PC with a dual interface card or dual laptop analyzer. Link status (Lap D) is also configured.

MAPS™ ISDN supports powerful utilities like Message Editor and Script Editor which allow new scenarios to be created or existing scenarios to be modified using ISDN messages & parameters.

For more details refer to <http://www.gl.com/maps-isdn.html>.

Main Features

- ISDN simulation over TDM (E1/T1)
 - Supports transmission and detection of TDM traffic - digits, voice file, single /dual tones
 - Multiple T1/E1 line interfaces supported
 - Access to all ISDN Message Parameters such as Setup, Connect, Release messages, and more
 - Switch and Subscriber Emulation
 - Provides various release cause codes such as rejected, no user response, user busy, congested, and so on to troubleshoot the problems in ISDN
 - User controlled access to optional ISDN parameters such as timers
 - Impairments can be applied to messages to simulate error conditions
 - Supports customization of call flows and message templates using Script editor and Message editor.
 - Ready-to-use scripts for quick testing
 - Supports scripted call generation and automated call reception.
 - Provides protocol trace with full message decoding, and graphical ladder diagrams of call flow with time stamp
 - Provides call statistics with associated captured events and error events during call simulation
- Provides protocol trace with full message decoding, custom trace, and graphical ladder diagrams during active simulation



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Working Principle

- **Message Templates** – Forms the backbone of MAPS™ application that contains various protocol fields with default values.
- **Script Editor** –
 - Creates a script for scenario based testing (call flow)
 - Uses pre-defined message templates in the script
 - Access protocol fields as variables using import/export files
- **Message Editor** – Used to edit / create 'Message Templates'.
- **Profile Editor** – Creates or edit profiles containing values assigned to the variables replacing the original values.
- **Event Profile Editor** – Allows you to create Event Profiles for user-defined events in a script. The value in the profiles can be changed during script execution.

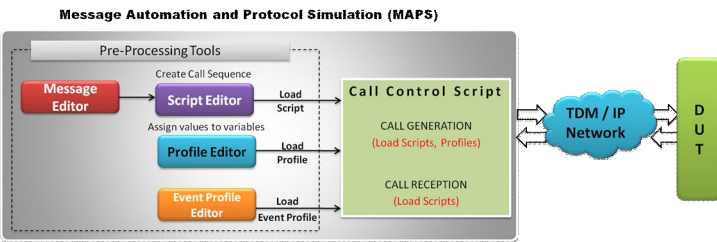


Figure: MAPS™ application Working Principle

Testbed Setup Configuration

Test Bed setup is provided to establish communication between MAPS™-ISDN and the DUT. It includes parameters for configuring T1/E1 (GL) server, LAPD Task and LAPD signaling to transmit and receive ISDN messages over LAPD layer.

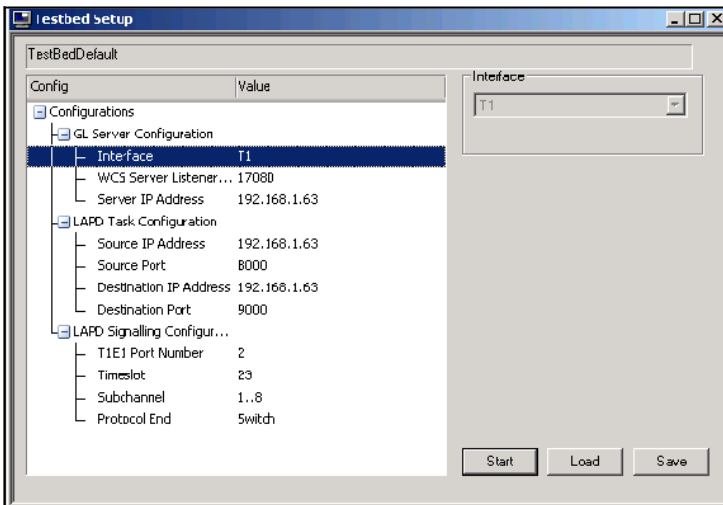


Figure: Testbed Setup

Pre-processing Tools

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.

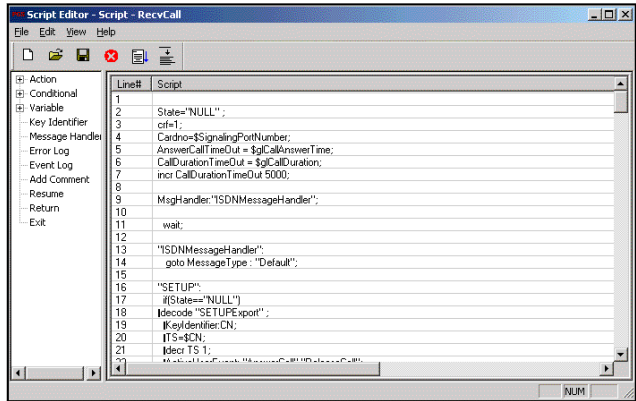


Figure: Script Editor

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 comprises of mandatory fixed parameters, mandatory variable parameters, and optional variable parameters.

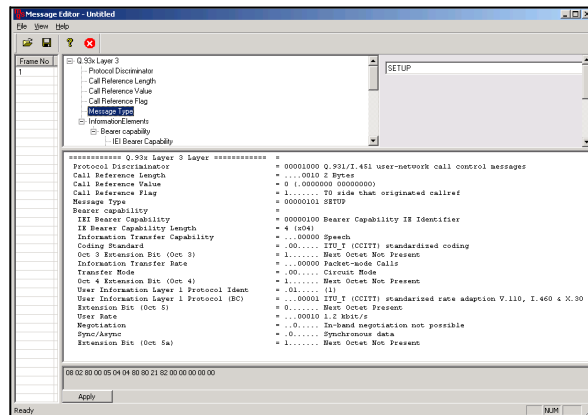


Figure: Message Editor

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.

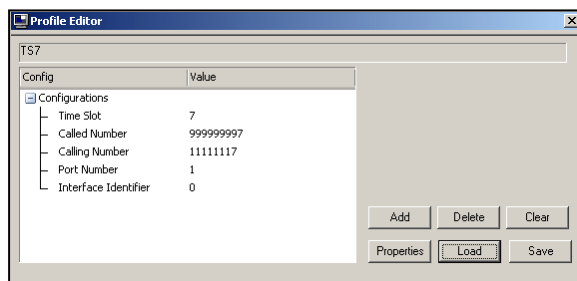


Figure: Profile Editor



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Call Generation and Reception

In call generation, MAPS™ is configured for the out going messages, while in call receive mode, it is configured to respond to incoming messages. Tests can be configured to run once, multiple iterations and continuously. Also, allows users to create multiple entries using quick configuration feature.

The editor allows to run the 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.

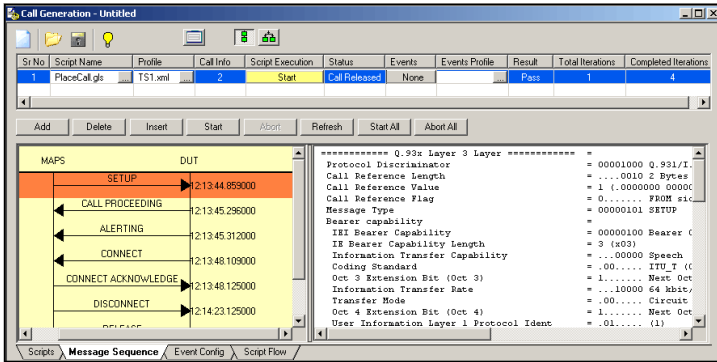


Figure: Call Generation

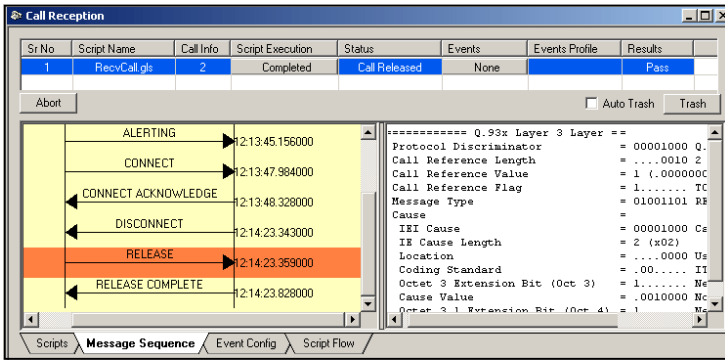


Figure: Call Reception

Incoming Call Handler Configuration

The script configuration option is used to preset the script required to handle all possible ISDN signaling and call control messages against particular message expected to arrive.

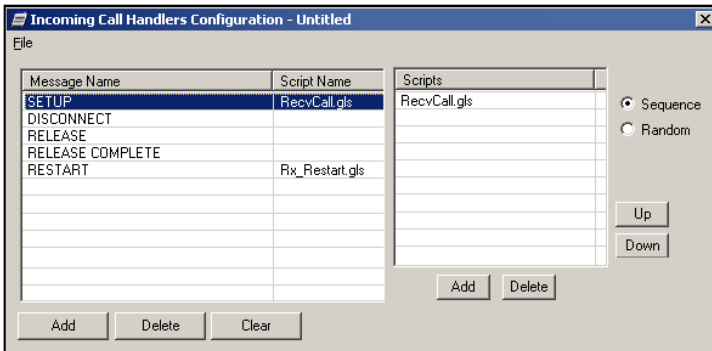


Figure: Incoming Call Handler

MAPS™ ISDN Call Flow Scenarios

Scenario 1: MAPS™-ISDN acting as Subscriber (Caller) and testing DUT.

MAPS™-ISDN is considered as Caller (Subscriber) and initiates call flow by sending SETUP message to the DUT.

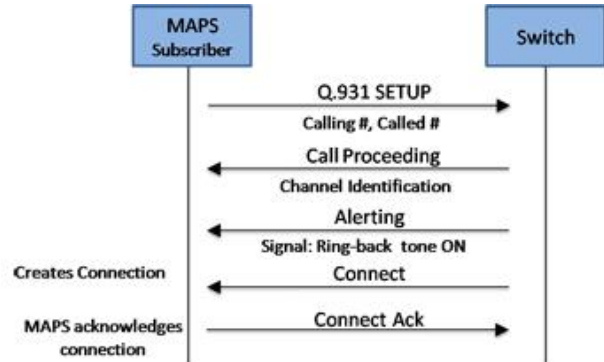


Figure: MAPS™-ISDN acting as Subscriber

Sample Place Call Script

```
send "SETUP" "SETUPImport";
rcv "CALL PROCEEDING" "CallproceedingExport";
rcv "ALERTING" "AlertingExport";
rcv "CONNECT" "ConnectExport";
send "ConnectAcknowledge" "ConnectAcknowledgeImport";
```

Scenario 2: MAPS™-ISDN acting as Switch (Callee)

MAPS™-ISDN is considered as the Switch processing the call flow by receiving the SETUP message from the caller.

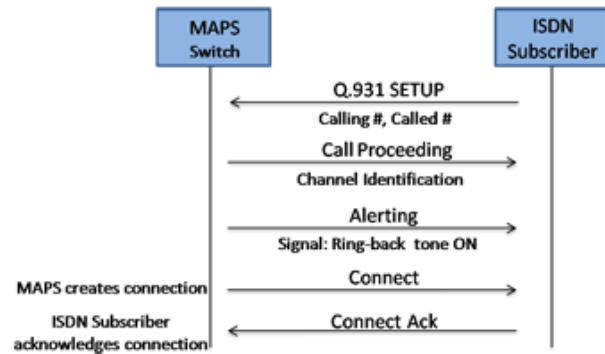


Figure: MAPS™-ISDN acting as Switch

Sample Answer Call Script

```
rcv "SETUP" "SETUPEXport";
send "CALL PROCEEDING" "CallproceedingImport";
send "ALERTING" "AlertingImport";
send "CONNECT" "ConnectImport";
rcv "ConnectAcknowledge" "ConnectAcknowledgeExport";
```



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Supported Protocol Standards

Available Standards	Standard / Specification Used
Q.931	ITU-T Q.931 / Q.932(Facility IE) / Q.955.3 (MLPP Procedures)
4ESS	ISDN PRI (TR-41449)
5ESS	ISDN PRI (Lucent Tech - 5ESS 2000)
BELL	ISDN PRI (Bell Core SR-NWT-002343)
DMS-100	Nortel's Switch DMS 100 NIS-A2111-1
DMS-250	Nortel's Switch DMS 250 NIS-A2111-4
QSIG ECMA	Standard ECMA-143 4th Edition - December 2001

Buyer's Guide

[XX648](#) – MAPS™ ISDN Emulator

[XX600](#) – Basic Client/Server Scripted Control Software

[xx600](#), [xx610](#), [xx620](#) - TDM Traffic Options

Related Software

[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

[PKS164](#) - MAPS™ UMTS – IuPS Interface Emulation

[PKS160](#) - MAPS™ UMTS – IuCS and Iuh Interface Emulation

[XX165](#) - T1 or E1 UMTS Protocol Analyzer

[OLV165](#) - Offline UMTS Protocol Analyzer

[LTS206](#) - OC-3 / STM-1 UMTS Protocol Analysis

[LTS306](#) - OC-12 / STM-4 UMTS Protocol Analysis

[PKS135](#) - MAPS™ ISDN -SIGTRAN (ISDN over IP)

[XX100](#) - ISDN Analyzer Software

[XX692](#) – MAPS™ GSM- A Interface Emulator

[XX693](#) – MAPS™ GSM -Abis Interface Emulator

Related Software...

[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

[PKS125](#) - MAPS™ MGCP Conformance Test Suite (Test Scripts)

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> webpage.



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