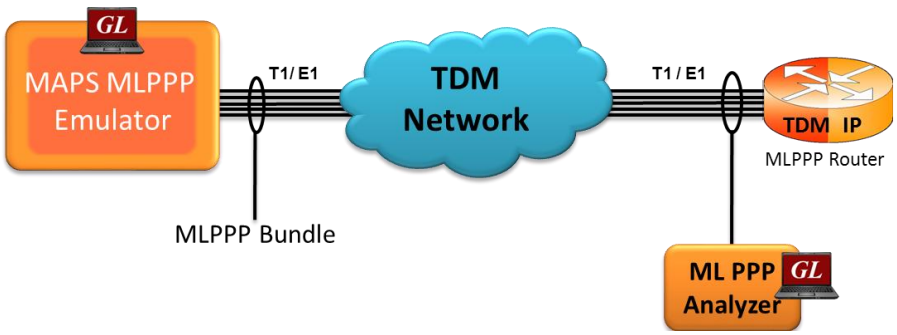
MAPS™ MC-MLPPP Emulator

(Scripted MLPPP Conformance Testing)



Emulate MC-MLPPP, MLPPP, and PPP Links

Configured as Bridge or Router in the Network

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

Call Flow Customization with Message & Sequence Editors

Control Protocol Negotiation using IPCP or PPPMuxCP

Graphically Depicts Call Flows in Ladder Diagrams

Provides Fault Insertion, & Erroneous Call Flow Testing

Ready Scripts for Simpler & Less Time Consuming Tests

Overview

GL's MAPS™ MLPPP is an advanced protocol simulator/tester for MC-MLPPP/MLPPP/PPP protocol over TDM (T1 E1). The tester can simulate a complete PPP/MLPPP link between two peers (Router or a Switch), with MLPPP signaling conforming to IETF specifications.

The MAPS™ MLPPP supports testing network elements, error tracking, regression testing, conformance testing, and load testing/call generation. The test tool is able to run pre-defined test scenarios against MLPPP test objects in a controlled & deterministic manner. The test tool also incorporates the flexibility to modify call parameters & message contents (arbitrary manipulation of messages, information elements and message sequence on the different protocols).

MAPS™ MLPPP conformance scripts, suitable for conformance tests and functional tests, where test objects can be accurately, reliably and comfortably validated for compliance with IETF standard. MAPS™ MLPPP supports powerful utilities like Message Editor and Script Editor which allow new scenarios to be created or existing scenarios to be modified using MLPPP messages & parameters.

For more details, please visit http://www.gl.com/maps-mlppp-emulator.html web page.

Main Features

- Performs MC-MLPPP as well as PPP simulation over TDM (T1/E1).
- Supports LCP with the following negotiation options -
  - PPP options: MRU (Maximum Receive Unit), ACFC (Address and Control Field Compression), PFC (Protocol Field Compression), and Magic Number
  - MLPPP Options: MRRU (Maximum Received Reconstructed Unit), Short Sequence Header format, Long sequence header format, Endpoint Discrimination, and Multi-class
  - Multi-Class Options: Multilink Header Format
- Supports the following NCP: IPCP (RFC 1332), IPCP Extensions (RFC 1877), and PPPMuxCP (RFC 3153).
- Supports IP compression negotiation option conforming to RFC 3544.
- Supports customization of call flows using Script editor & Message editor.
- Ready-to-use scripts for quick testing.
- 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.

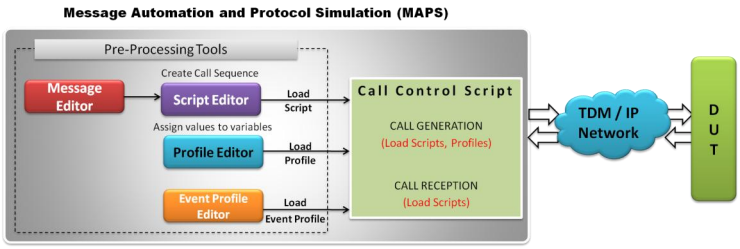

Figure: MAPS™ application Working Principle

Testbed Setup Configuration

Test Bed setup is provided to establish communication between MAPS™ MLPPP and the DUT. It includes parameters for configuring T1/E1 (GL) server, source/destination IP address, link type, and link configuration to transmit and receive messages MLPPP/PPP messages.

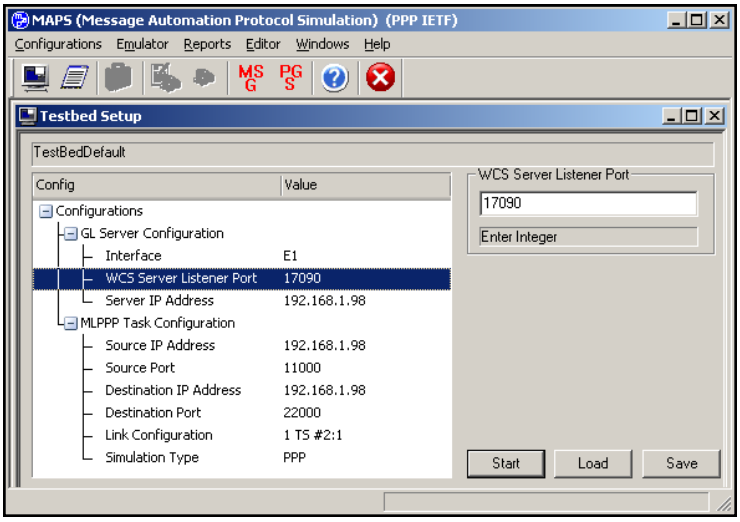

Figure: Testbed Setup

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.

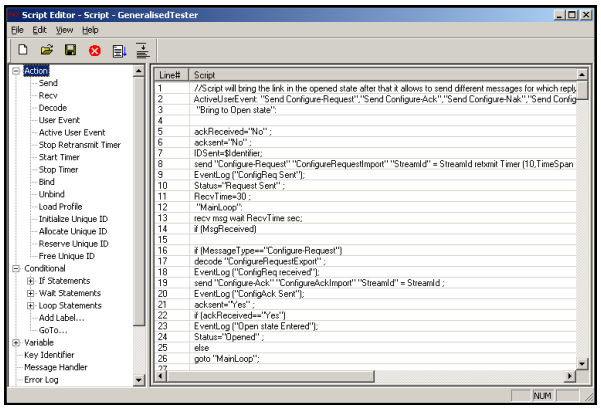

Figure: Script Editor

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, & optional variable parameters.

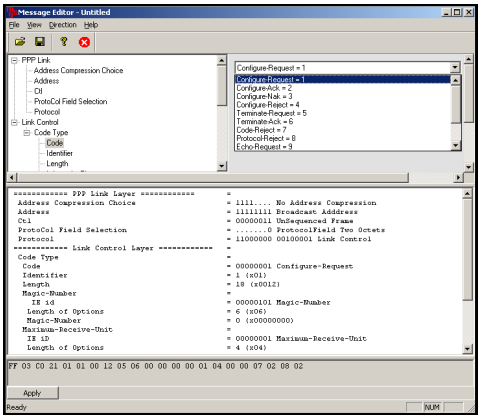

Figure: Message Editor

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.

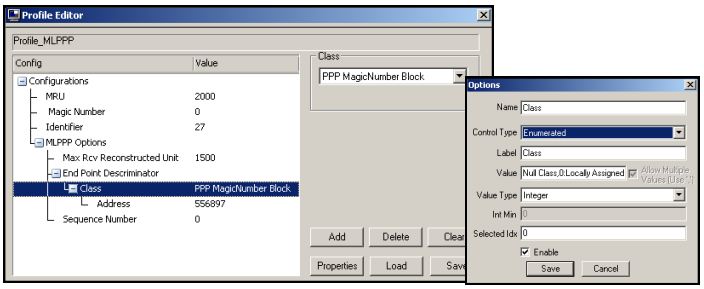

Figure: Profile Editor

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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.

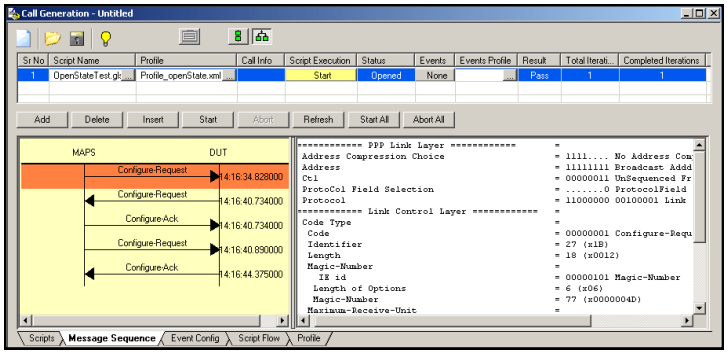

Figure: Call Generation

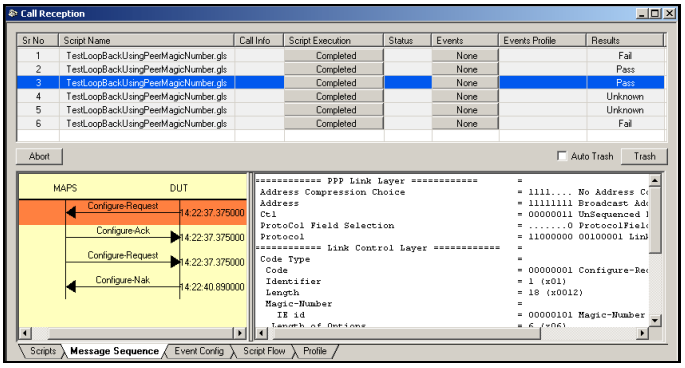

Figure: Call Reception

Incoming Call Handler Configuration

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

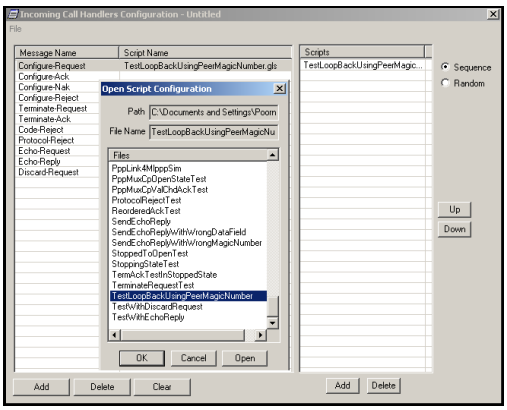

Figure: Incoming Call Handler

MAPS™ MLPPP Call Flow Scenarios

Scenario 1: MAPS™ MLPPP configured to generate call

MAPS™ MLPPP is configured as one of the peer ends initiating the call flow by sending CONFIGURE REQUEST message with Magic Number, Maximum Receive Unit, Protocol Field Compression and Address Field Compression Fields. MAPS™ receives Configure-Ack and the link is set to open state.

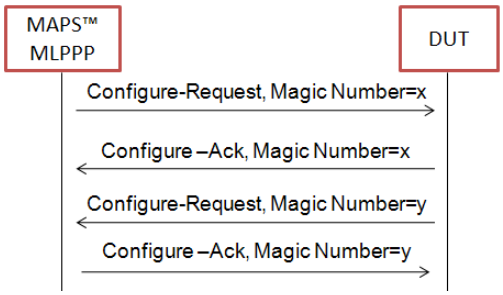

Figure: MAPS™ MLPPP Call Generation (OpenstateTest.gls)

Sample Place Call Script

```
send "Configure-Request"
"ConfigureRequestImport""StreamId"=StreamId
retxmit Timer (10,TimeSpan sec);
decode "ConfigureRequestExport" ;
send "Configure-Ack"
"ConfigureAckImport""StreamId"=StreamId ;
decode "ConfigureAckExport" ;
send "Configure-Request"
"ConfigureRequestImport""StreamId"=StreamId
retxmit Timer (10,TimeSpan sec);
```

Scenario 2: MAPS™ MLPPP configured to receive calls

MAPS™ MLPPP is configured to receive the incoming messages and reply with the expected messages, thus testing the DUT.

According to the answer script (TestLoopBackUsingPeer MagicNumber.gls), MAPS™ receives Configure-Nak with new Magic Number from the DUT for the configure-request sent with the received Peer's magic number.

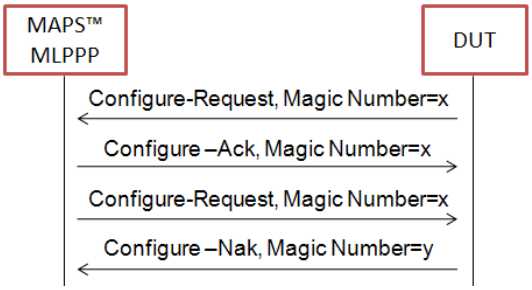

Figure: MAPS™ MLPPP Call Reception (TestLoopBackUsingPeerMagicNumber.gls)

Sample Answer Call Script

```
decode "ConfigureRequestExport";
send "Configure-Ack"
"ConfigureAckImport""StreamId"=StreamId;
send "Configure-Request"
"ConfigureRequestImport""StreamId"=StreamId;
decode "ConfigureNakExport";
```

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Supported Protocol Standards

Supported Protocols	Standard / Specification Used
Point-to-Point Protocol	RFC1661
Multi-Link PPP	RFC1990
Multi-Class Extension to Multi-Link PPP	RFC2686
IPCP	RFC1332
IPCP Extensions	RFC1877
PPPMuxCP	RFC3153

Buyer's Guide

XX652- MAPS™ MC-MLPPP Conformance Scripts

XX600 – Basic Client/Server Scripted Control Software

Related Software

XX135 - Real-time T1 or E1 MLPPP Analyzer

XX635 - PPP Emulation

XX636 - MC-MLPPP Emulation

XX648 - MAPS™ ISDN Emulator

PKS130 - MAPS™ SIGTRAN (SS7 over IP)

XX120 - SS7 Analysis Software

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...

XX649 - MAPS™ MAP Emulator

XX651 - MAPS™ CAS Emulator

PKS140 - MAPS™ LTE -S1 Interface

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

PKV107 - LTE 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

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 - ***t***Probe™ T1 or E1 Base Unit

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

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