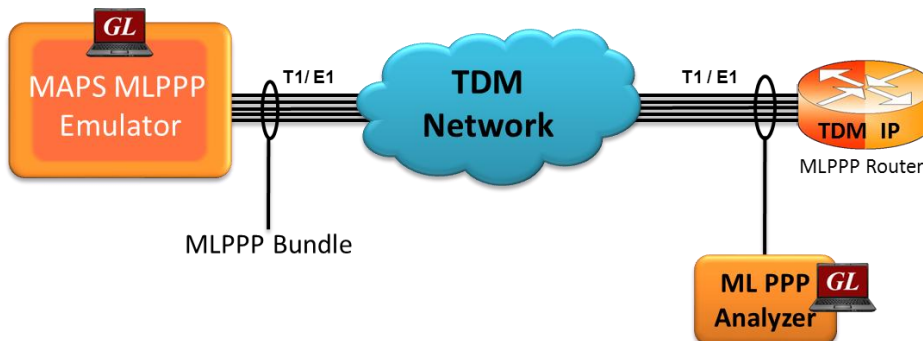


## MAPS™ MC-MLPPP Emulator (Scripted MLPPP Conformance Testing)



Emulate MC-MLPPP, MLPPP, and PPP Links



Configured as Bridge or Router in the Network



IETF Specification Conformance



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™ (Message Automation and Protocol Simulation) platform is a general purpose Protocol Emulator for various protocols encountered in the telecom space. MC-MLPPP is one such advanced protocol simulator/tester for Multi Class, Multi Link, PPP protocols over TDM (T1 E1). The tester can simulate a complete PPP or MLPPP link between two peers, 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 are 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 conformance 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.



**GL Communications Inc.**

818 West Diamond Avenue - Third Floor, Gaithersburg, MD 20878, U.S.A

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

## Testbed Setup Configuration

Test Bed setup is provided to establish communication between MAPS™ MLPPP and the DUT. It includes MLPPP task configuration parameters such as Link configuration, and Simulation Type to transmit and receive messages MLPPP/PPP messages.

Default profile used to configure MAPS™ MLPPP end terminals with test parameters.

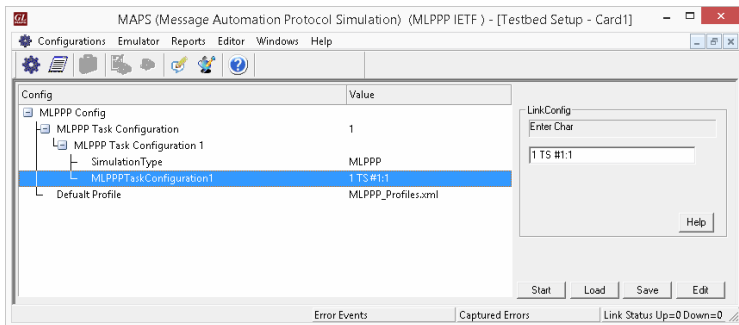


Figure: Testbed Setup

## 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.

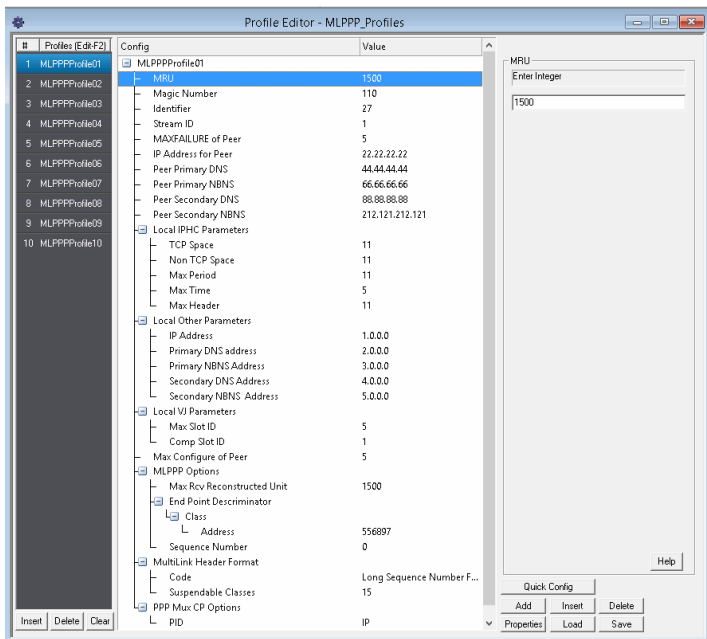


Figure: Profile Editor

## 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.

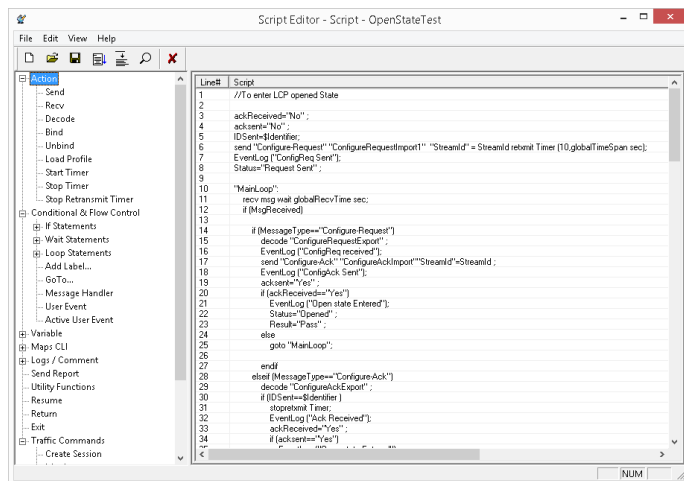


Figure: Script Editor

### 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.

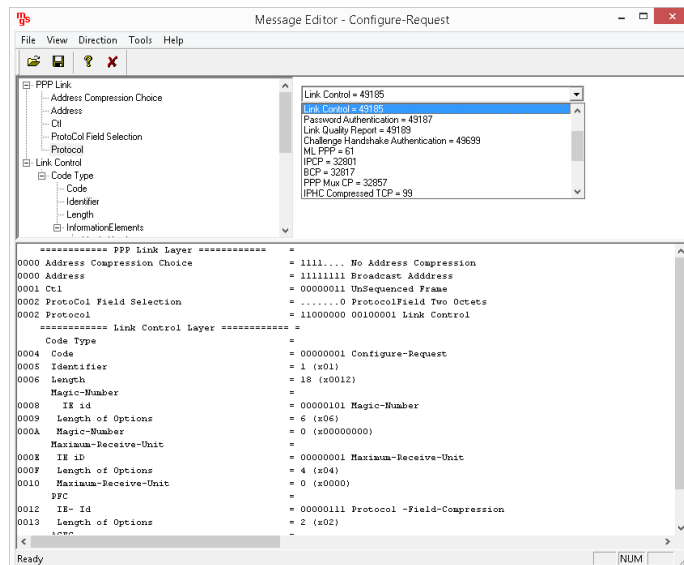


Figure: Message Editor



818 West Diamond Avenue - Third Floor, Gaithersburg, MD 20878, U.S.A  
 (Web) <http://www.gl.com/> - (V) +1-301-670-4784 (F) +1-301-670-9187 - (E-Mail) [gl-info@gl.com](mailto:gl-info@gl.com)

## 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.

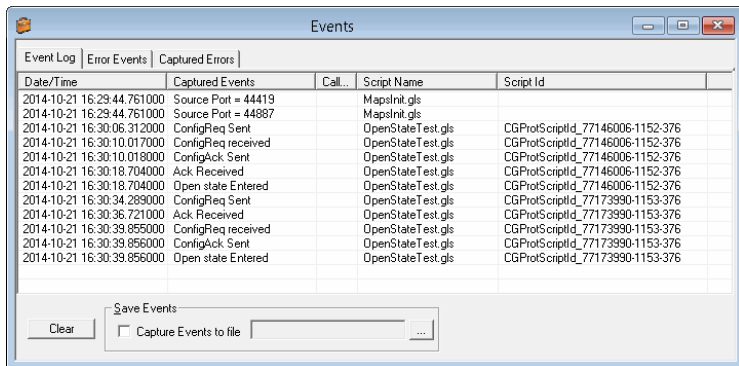
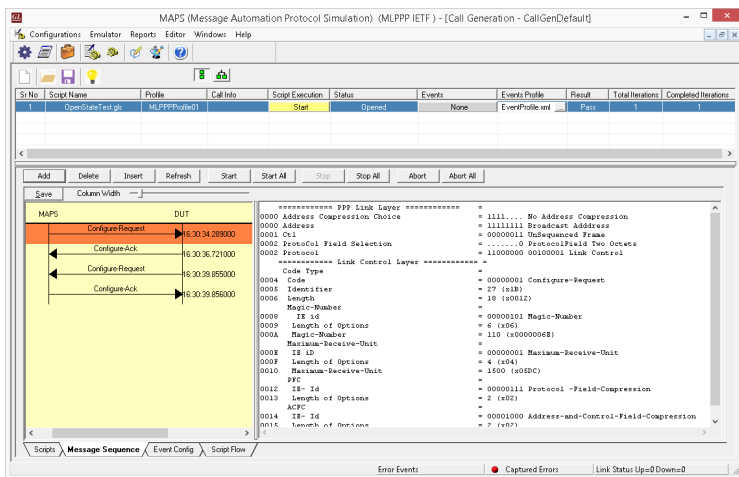


Figure: Call Generation and Events Log

## Typical MLPPP Call Procedure

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.

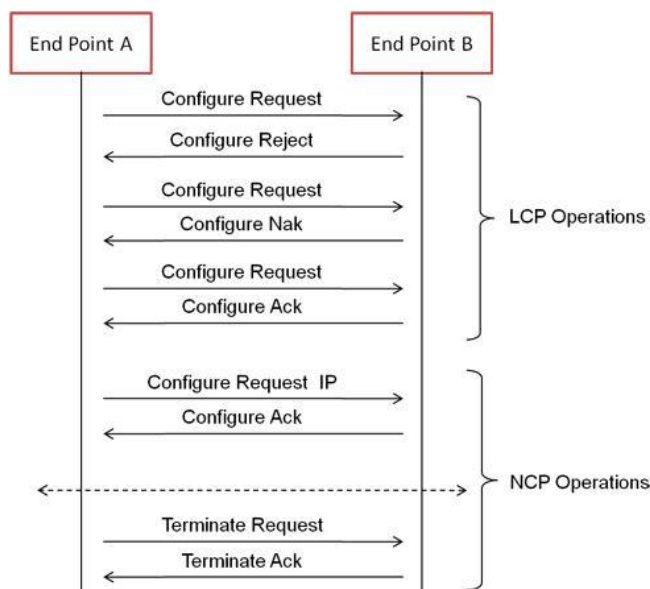


Figure: MLPPP Call Procedure

Supported Conformance Tests are:

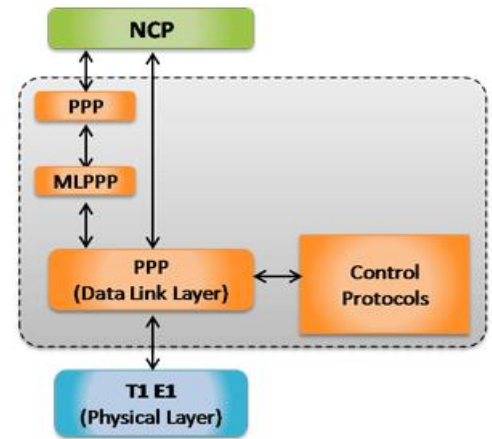
- PPP Conformance Test Scripts
  - Link Establishment Phase
  - Link Maintenance Phase
  - Link Terminating Phase
  - Generalized Test
  - NCP Negotiation Phase
- MLPPP Conformance Test Scripts
  - Link Establishment Phase
  - Link Maintenance Phase
  - Link Terminating Phase
  - MLPPP Generalized Test
- MLPPP Bundle Test Scripts
  - PPP Links for MLPPP Bundle
  - MLPPP Short Sequence Test
  - MLPPP Initialize Sequence Number Test
  - MLPPP Control Field Test
  - NCP over MLPPP/PPP
  - Bundle Echo Test
- Multi-Class MLPPP Test Scripts
- PPP MUX CP Test Scripts



818 West Diamond Avenue - Third Floor, Gaithersburg, MD 20878, U.S.A  
 (Web) <http://www.gl.com/> - (V) +1-301-670-4784 (F) +1-301-670-9187 - (E-Mail) [gl-info@gl.com](mailto:gl-info@gl.com)

## 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

### Related Software

[XX135](#) - Real-time T1 or E1 MLPPP Analyzer  
[XX635](#) - PPP Emulation  
[XX636](#) - MC-MLPPP Emulator  
[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  
[XX649](#) - MAPS™ SS7 Emulator  
[XX694](#) - MAPS™ MAP (B, C, D, E, F, G, and H interfaces)

### Related Software...

[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](#) - tProbe™ T1 or E1 Base Unit  
[FTE001](#) - QuadXpress T1E1 Main Board (Quad Port– requires additional licenses)  
[ETE001](#) - OctalXpress T1E1 Main Board plus Daughter Board (Octal Port– requires additional licenses)

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



818 West Diamond Avenue - Third Floor, Gaithersburg, MD 20878, U.S.A  
 (Web) <http://www.gl.com/> - (V) +1-301-670-4784 (F) +1-301-670-9187 - (E-Mail) [gl-info@gl.com](mailto:gl-info@gl.com)