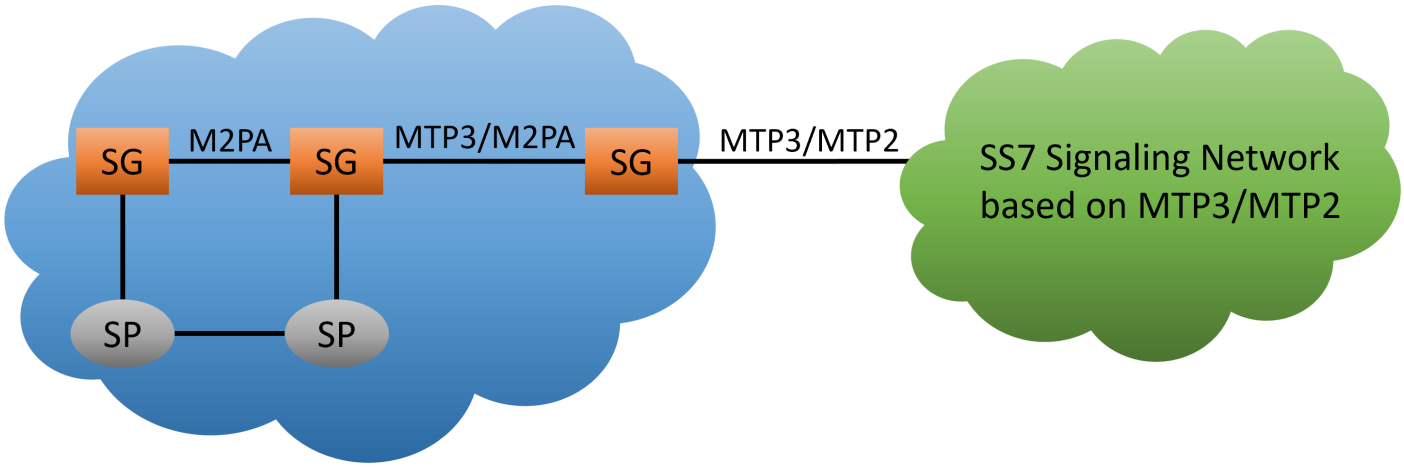
MAPS™ M2PA Conformance



Overview

SIGTRAN protocols are an extension of the SS7 protocol family, transmitted over IP networks. A Signaling Gateway (SG) converts SS7 TDM layers into SIGTRAN IP format. It maintains the same application and call management functions as SS7 but operates through two protocol layers atop the Internet Protocol (IP): Stream Control Transport Protocol (SCTP) and User Adaptation layer. M2PA is part of User Adaption layer in SIGTRAN suite of protocols to transport SS7 over IP.

SIGTRAN currently defines six adaption layers over SCTP and they are - M2PA (Message Transfer Part 2 (MTP2) -User Peer-to-Peer Adaptation Layer), M2UA (MTP2 User), M3UA (MTP 3 User Adaptation), SUA (SCCP-User), IUA (ISDN –User). M2UA provides equivalent set of services of MTP2 to MTP3 layer in a client-server situation (ex: SG-to-MGC). M2PA provides services of MTP2 layer in a peer-to-peer situation (ex: SG-to-SG). The M3UA replaces the traditional SS7 MTP 3 layer in an IP network and enables SS7 protocol's User Parts (e.g. ISUP, SCCP and TUP) to run over IP instead of TDM lines.

GL's Message Automation and Protocol Simulation (MAPS™) M2PA Conformance Test Suite (requires additional licenses) is designed with 40+ test cases, as per IETF RFC 4165 (M2PA Conformance) specifications. It includes inbuilt conformance scripts (*.gls) for M2PA conformance in SSP interface as per 3GPP standards. MAPS™ M2PA Conformance can be configured as SSP with conformance script to emulate various network side procedures such as link state control message signal units, Transmission failure etc. and automating the entire SSP (DUT) testing. MAPS™ acts as User Adaption layer which generates M3UA, M2UA, and M2PA messages.

Supported Test Cases

- Link Alignment
- SCTP Usage
- Messaging
- Link State Control – Expected signal Units/Orders
- Link State Control – Unexpected Signal Units/Orders
- Transmission Failure
- Processor Outage Control
- SU delimitation, Alignment, Error detection and Correction
- Transmission and Reception Protocol
- Congestion Control

For more information, refer to MAPS™ SIGTRAN (SS7 over IP) Protocol Emulator webpage.

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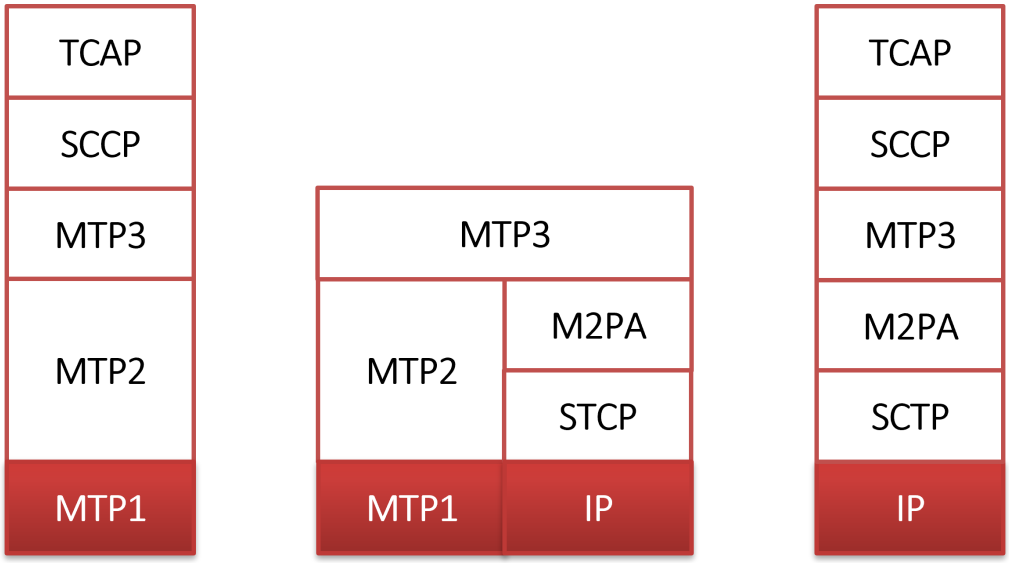
Key Features

- Emulates SSP (Service Switching Point) as both server and client nodes
- Generates and process M2PA (valid and invalid) messages
- Insertion of impairments to create invalid messages
- Supports customization of call flow and message templates using Script and Message Editor
- Ready-to-use scripts for quick testing
- Supports scripted call generation and automated call reception
- Provides Call Statistics and Events Status
- Automation, Remote access, and Schedulers to run tests 24/7

Protocol Stack and Standards



Supported Protocols	Standard / Specification Used
M2PA	RFC 4165
SCTP - Stream Control Transmission Protocol	RFC 9260
M2PA Conformance Test Suite	"ETSI TS 101 591 V1.1.1 (2012-10)" draft-bidulock-sigtran-m2pa-test-08

Testbed Setup Configuration

Testbed setup provides options to establish communication between MAPS™ M2PA Conformance and the DUT. It includes configurations of SCTP mode, Conformance mode, Signaling Gateway, and Signaling Switching Point parameters. Once the testbed setup is properly configured, the Conformance messages can be transmitted and received over the IP network using SCTP to the DUT. The end-user configuration profile is used to configure MAPS™ M2PA Conformance with end terminal parameters.

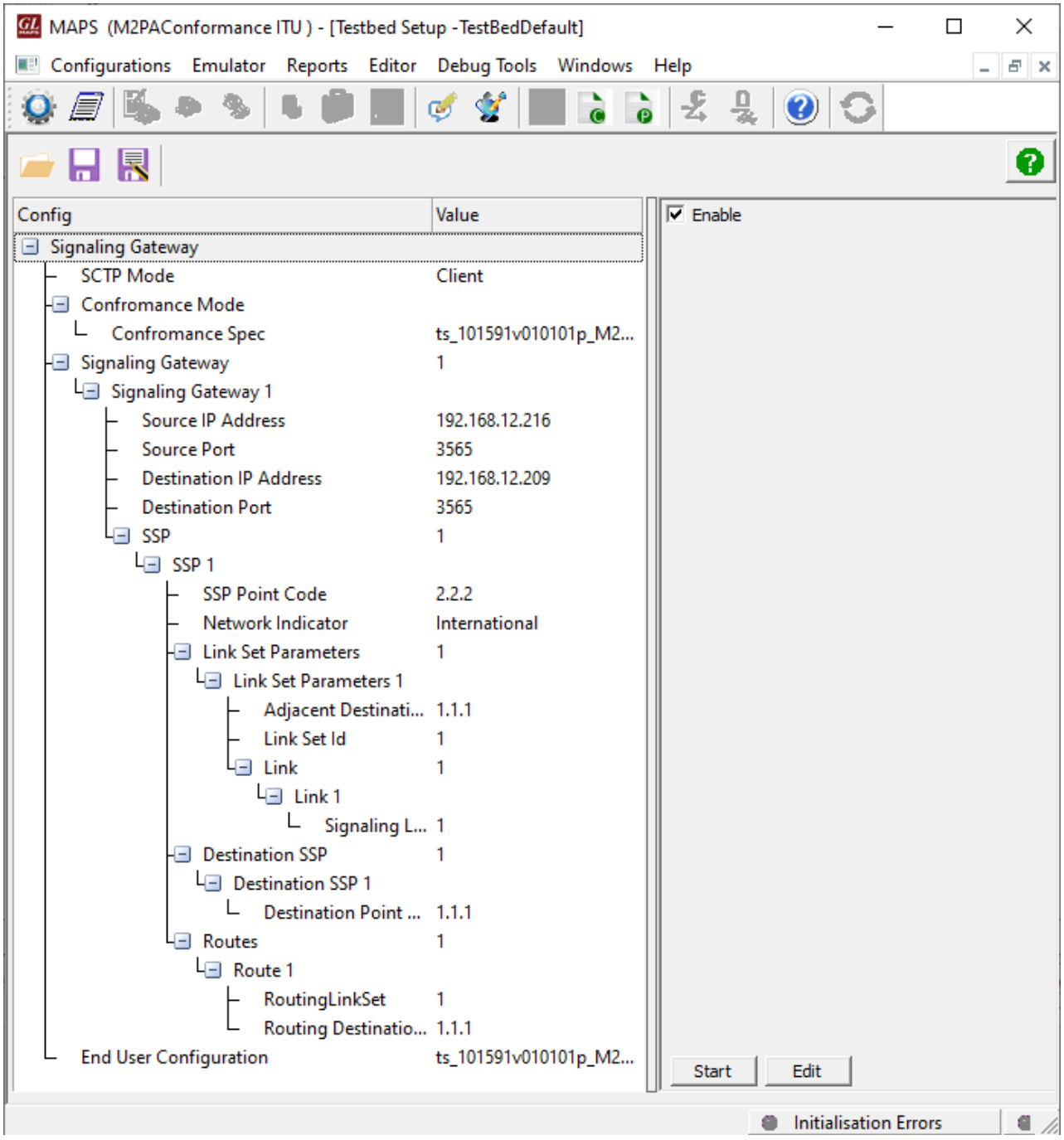


Figure: Testbed Configuration

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.

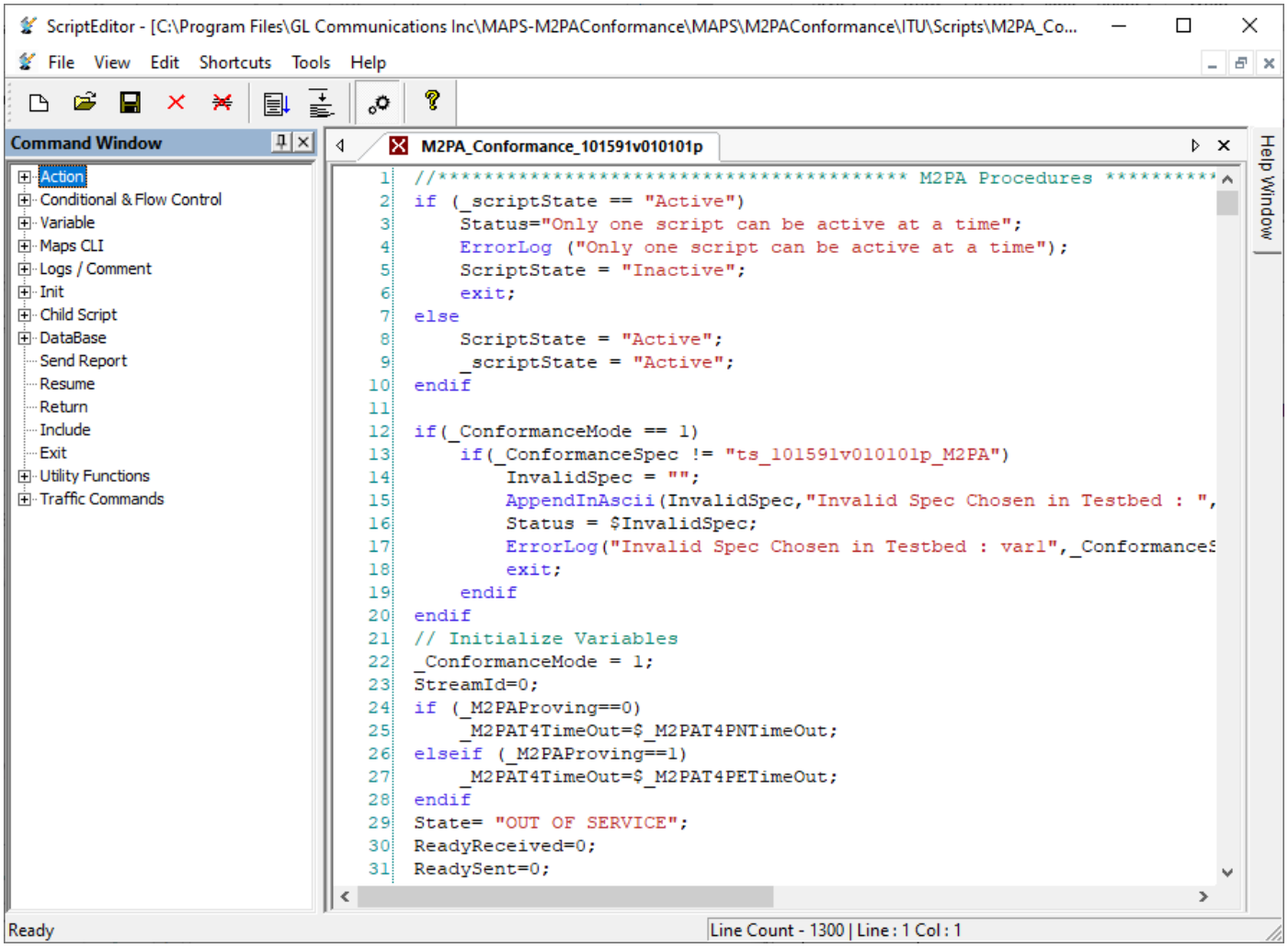


Figure: Script Editor

Profile Editor

The profile editor 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 and to perform conformance testing.

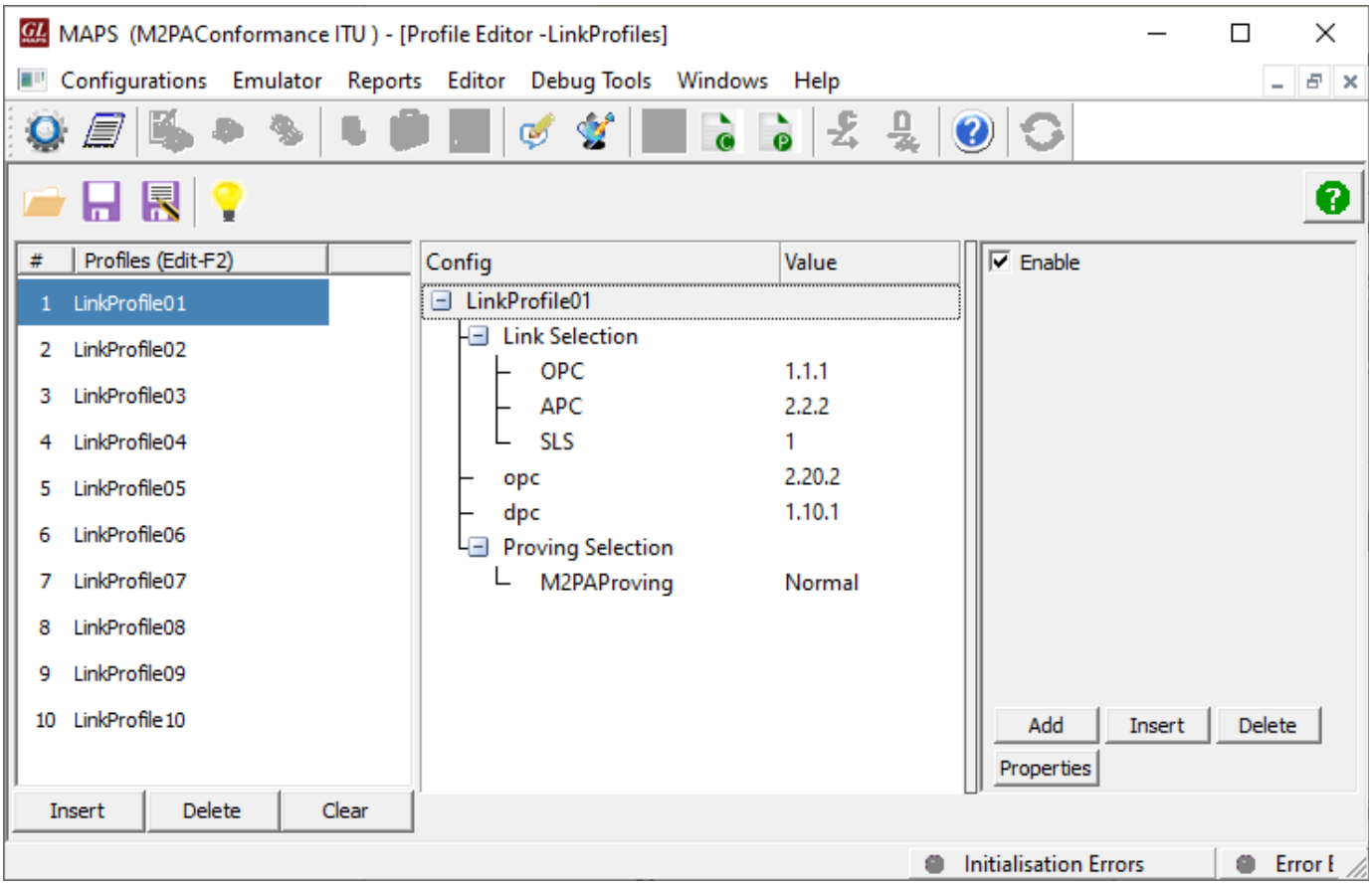


Figure: Profile Editor

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.

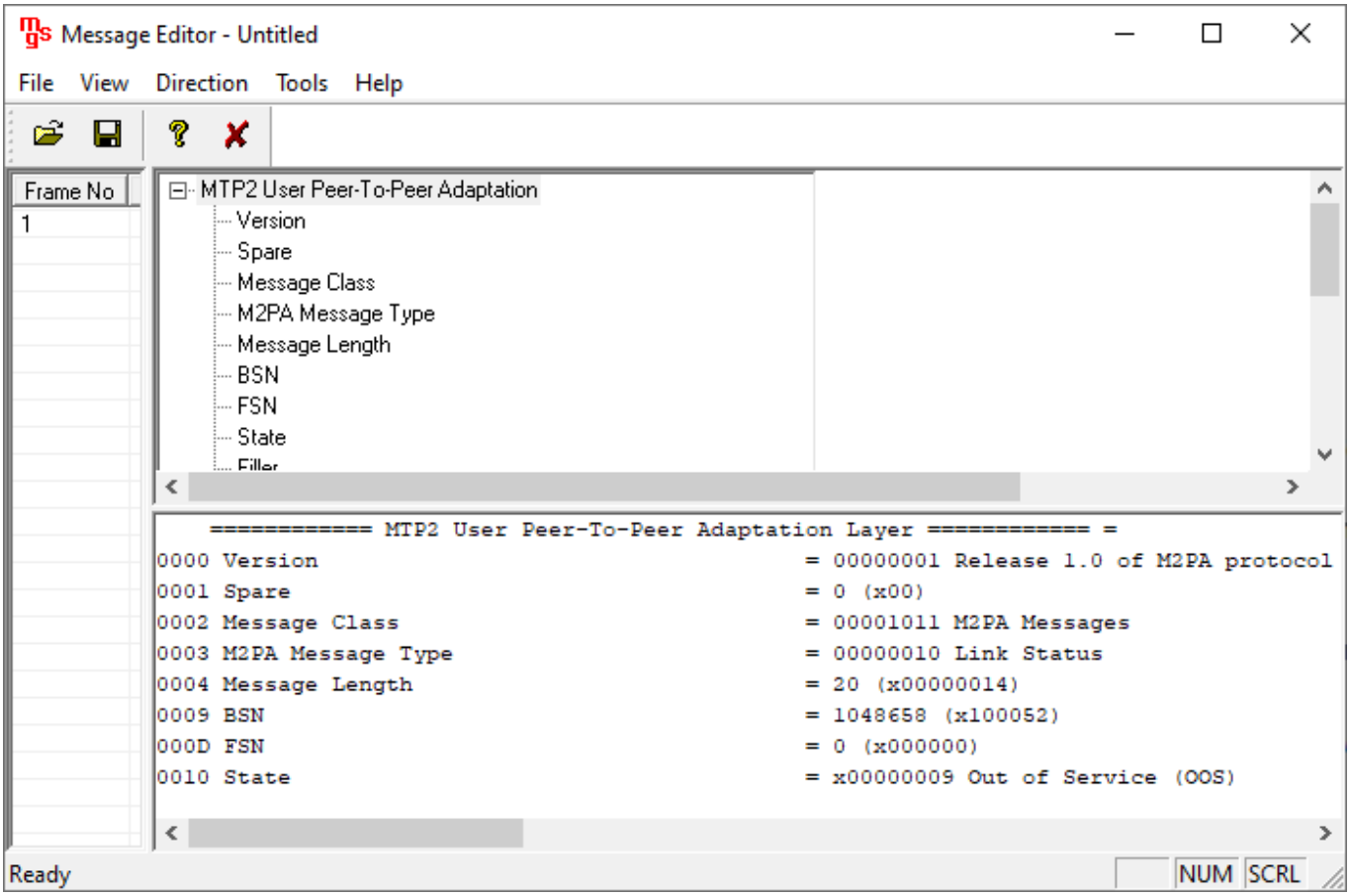


Figure: Message Editor

Call Emulation

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).

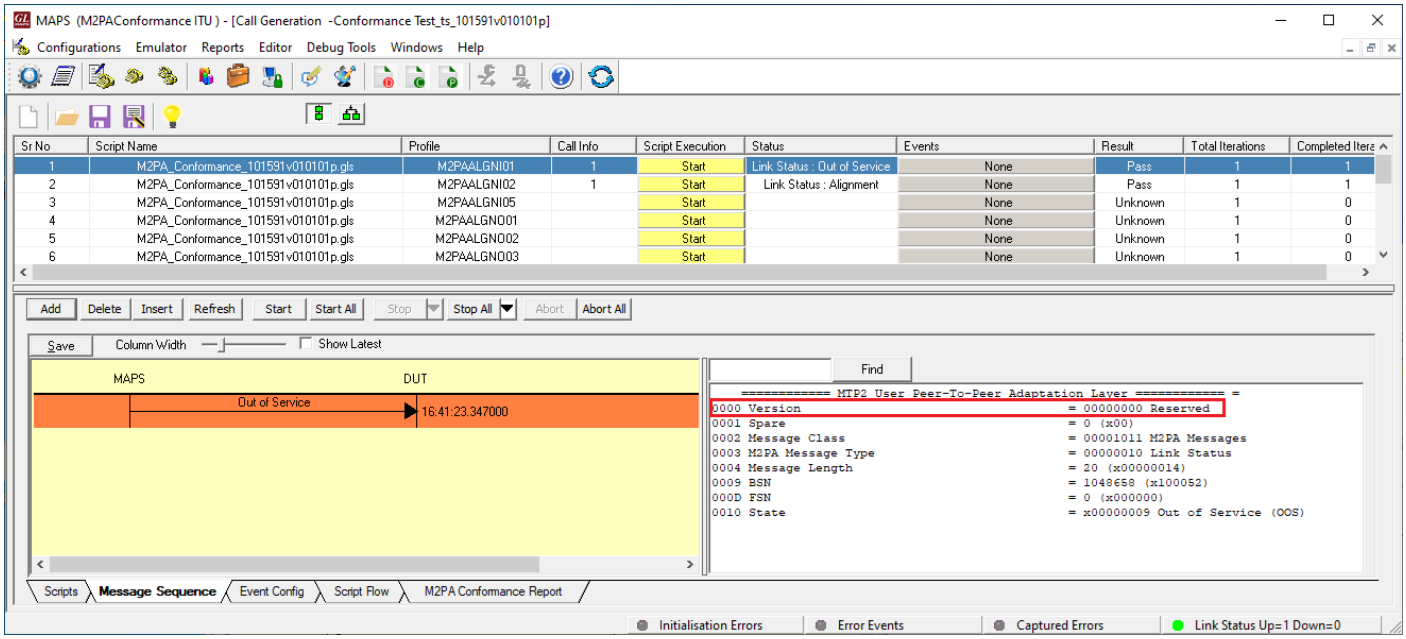


Figure: Call Generation

M2PA Conformance Test Report

The M2PA Conformance Test Report tab displays Date/Time, Test Purpose Number, Status, Test Configuration, Precondition, Reference, Test Description, and Test Result for the selected test case. This information is provided to verify the conformance result, as shown below.

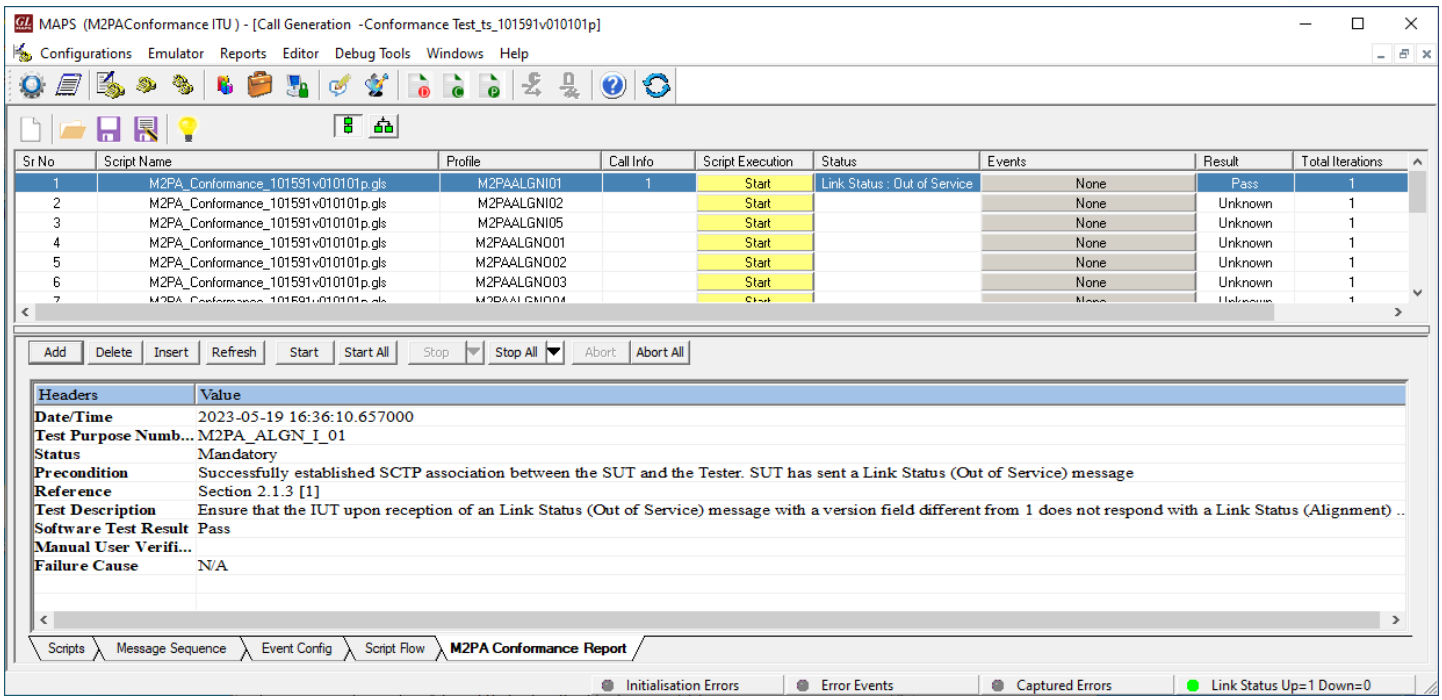


Figure: M2PA Conformance Test Report

Buyer's Guide

Item No	Product Description
PKS130	MAPS™ M2PAConformance MAPS™ SIGTRAN Emulator

Item No	Related Software
PKS129	MAPS™ SCTP Conformance
PKS135	MAPS™ ISDN SIGTRAN (ISDN IP)
PKS136	MAPS™ INAP over IP Emulator (ANSI, ITU)
PKS152	MAPS™ SIGTRAN ANSI MAP

For more information, refer to MAPS™ SIGTRAN (SS7 over IP) Protocol Emulator webpage.

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