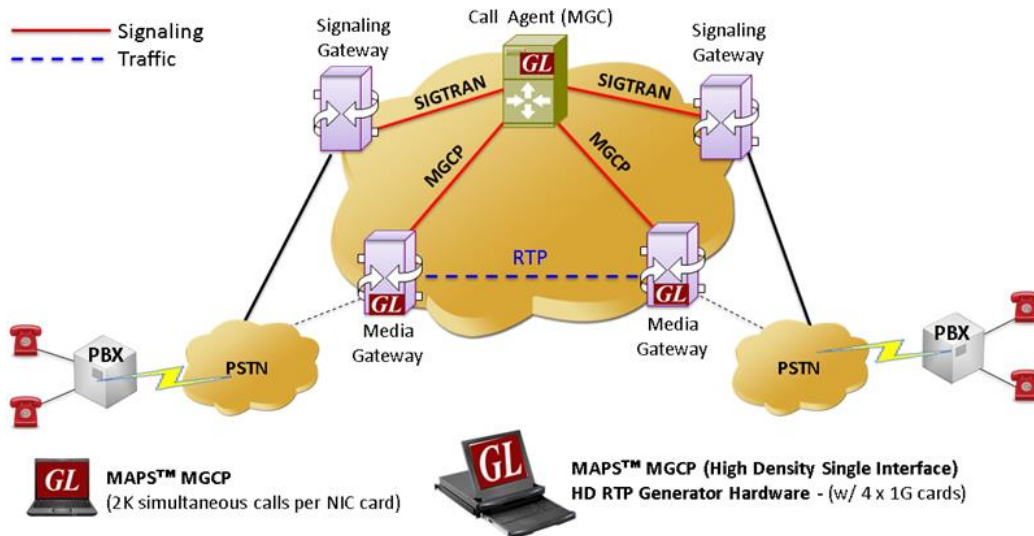# MAPS™ MGCP (RFC 3435 – IETF)

Overview

The Media Gateway Control Protocol (MGCP) is a signaling and call control protocol used between the Media Gateway Controller (MGC) and Media Gateway (MG).

GL's **Message Automation & Protocol Simulation (MAPS™)** designed for MGCP Testing can simulate Media Gateway Controller (MGC) as a set of transactions and can also simulate RTP traffic with additional license. The transactions are composed of a command and a mandatory response. The commands from MGC to MG includes - Create Connection (CRCX), Modify Connection (MDCX), Delete Connection (DLCX), Notification Request (RQNT), Audit Endpoint (AUEP), and Audit Connection (AUCX). The commands from MG to MGC include – Notify (NTFY), Restart in Progress (RSIP).

The **MAPS™ MGCP Conformance Test Suite** is also available supporting protocol conformance testing (MGCP protocol implementations) as per MGCP IETF (RFC 3435) and ITU standards. The MAPS™ MGCP Protocol Conformance Test Suite is designed with 70+ test cases used to verify conformance of actions such as call control using MGCP signaling.

With the purchase of **RTP Core license (PKS102),** MAPS™ supports transmission and detection of various RTP traffic such as, digits, voice file, single tone, and dual tones.

MAPS™ MGCP also supports high volume of calls with traffic simulation using GL's HD RTP Generator Hardware, which has four 10G Ethernet ports. MAPS™ HD (High Density) network appliance is designed to easily achieve up to 20,000 endpoints per appliance (5000 per port). This high density multi-protocol 1U rack mounted Network Simulation Appliance is available as 4x1GigE (PKV120) version.

For more information, please visit MAPS™ MGCP Protocol Simulator webpage.

Main Features

- Simulates Media Gateway Controller (MGC) and Media Gateway (MG).
- Supports transmission and detection of RTP traffic - digits, voice file, single /dual tones.
- Supported codec types includes G.711, G.729, G.726, GSM, AMR, EVRC, SMV, iLBC, SPEEX, G.722, and more. *AMR, EVRC variants requires additional licenses.
- User-defined configuration MAPS as MGC with required IP address and port address to establish communication channel.
- Supports Conformance Testing with 70+ test cases as per RFC 3435 standard.
- Generates and processes MGCP valid and invalid messages.
- Supports all MGCP commands such as CRCX, NTFY, MDCX, RQNT, AUEP, AUCX, DLCX, EPCF, and RSIP.
- High density of up to 20,000 calls with traffic is easily achievable per appliance (5000 calls per port)
- Supports message templates for each MGCP message and customization of the field values.
- Facilitates defining variables for the various protocol fields of the selected MGCP message type.

Configuration

This allows setting up test environment while configuring MAPS™ to simulate Media Gateway Controller (MGC) while testing Media Gateway (MG). For MGCP, the setup is configured with Source IP and Port address, which establishing a communication channel between the MAPS™ (MGC) and the test unit Media Gateway (MG).

Scenario 1: MAPS™ acting as MG

MAPS™ can be configured to act as MG, so that entire MGC testing can be automated using conformance scripts.
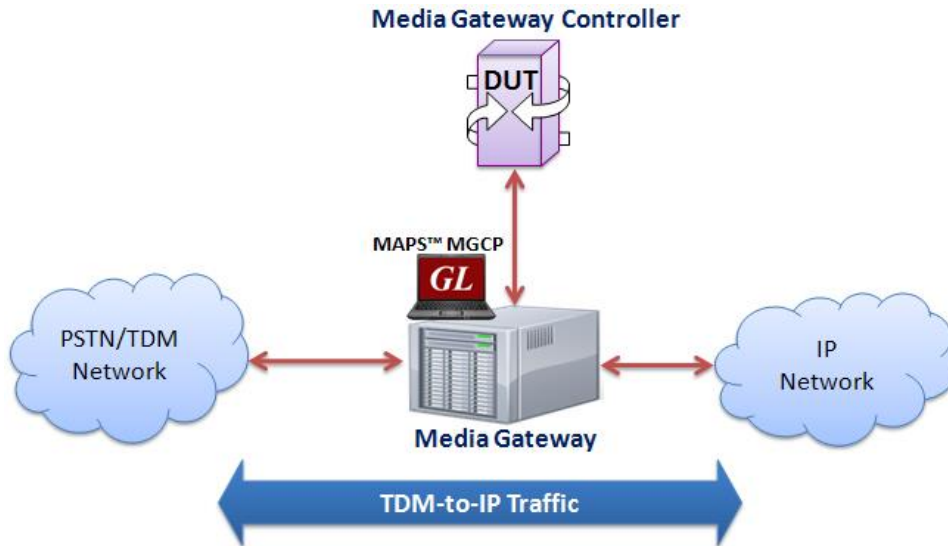

Figure: MAPS™ MGCP simulating MG

Scenario 2: MAPS™ acting as MGC

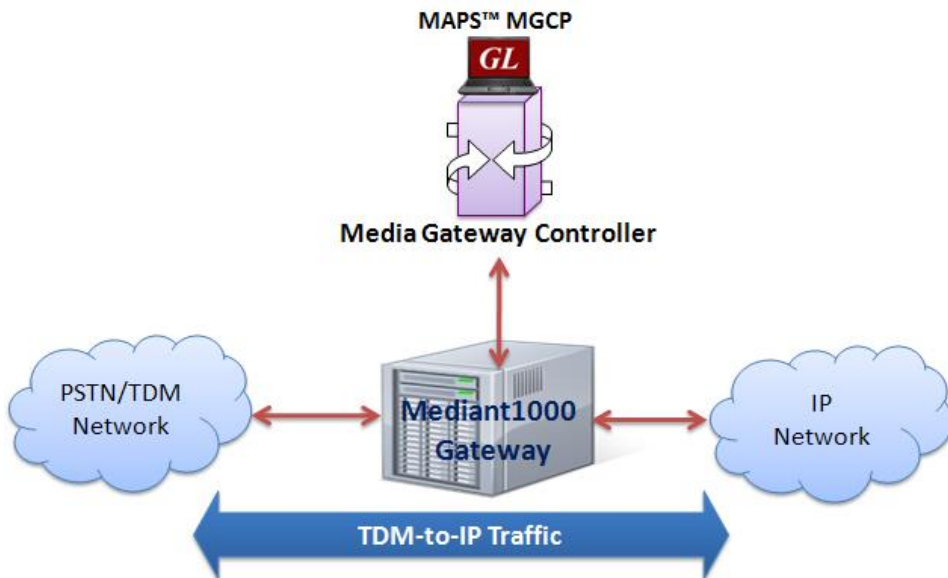As seen in the figure below, MAPS™ can be configured to act as MGC, so that Gateway testing can be automated.

Figure: MAPS™ MGCP simulating MGC

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Testbed Setup Configuration

The configuration window allows users to setup the required test environment to establish communication between MAPS™ and the DUT. It includes configuration parameters to set MAPS™ to act as Media Gateway Controller (MGC) while testing Media Gateway (MG). With appropriate MGC and MG IP & Port Address configuration, MGCP messages can be transmitted and received over network.

Default profile is used to configure MAPS™ MGCP with MG or MGC end-point terminal parameters.
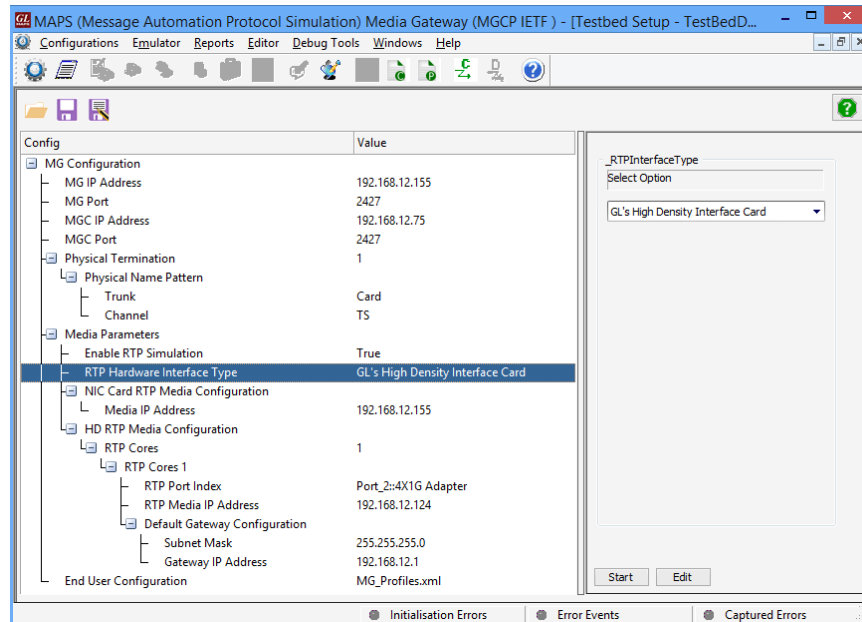

Figure: Testbed setup Configuration

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.
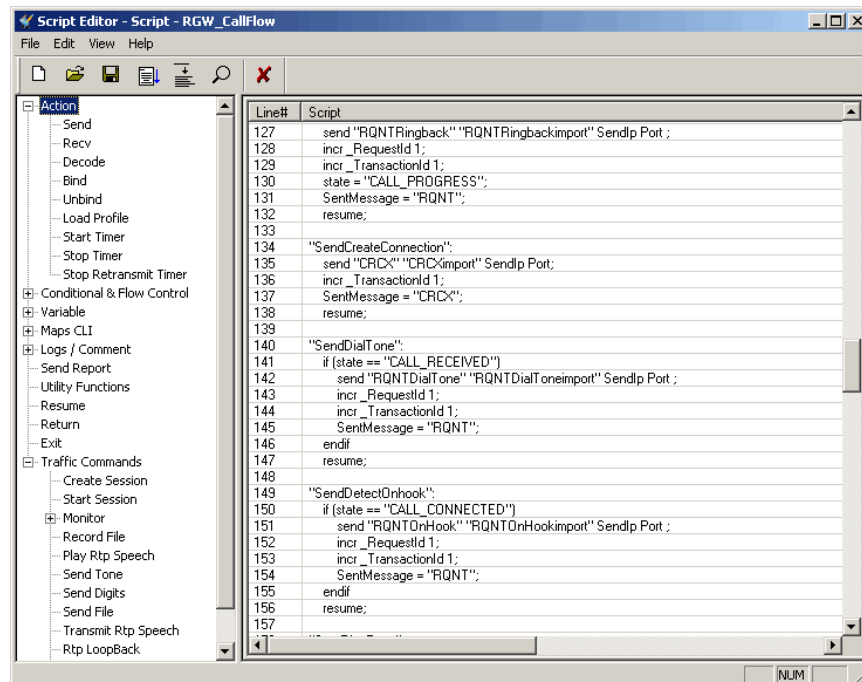

Figure: Script Editor

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Pre-processing Tools *(Contd.)*

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.
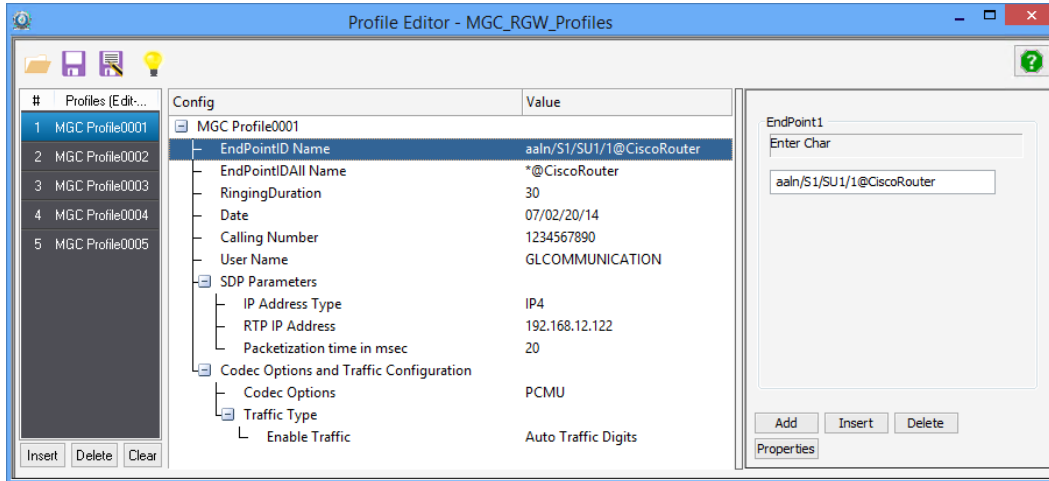

Figure: Profilr Editor

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).

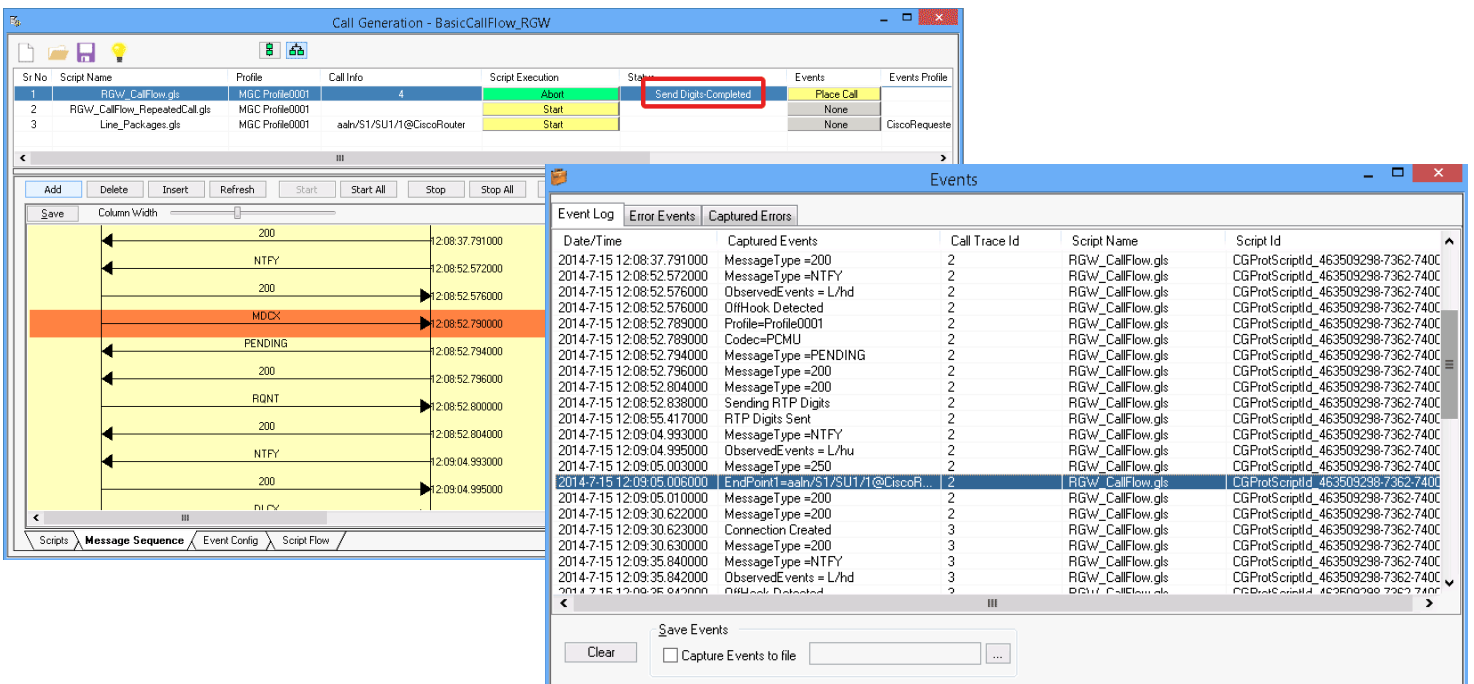The test scripts may be started manually or they can be automatically triggered by incoming messages.

Figure: Call Generation & Events Log

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Typical MGCP Call Procedure

MAPS™ acts as MG and sends RSIP (Restart In Progress) message to the DUT (MGC) indicating that it is in the process of restarting.

After receiving Registration request from Media Gateway and informed about the resources available in the Gateway to place a Call, MAPS™ configured also as MGC (Network) initiates the call flow.

To manage the connection on a Media Gateway, MGC uses Create Connection (CRCX) command to create the connection. Now, the two-way call is established to exchange the media. Media Gateway sends a Delete Connection (DLCX) command to delete the connection for its self-management.
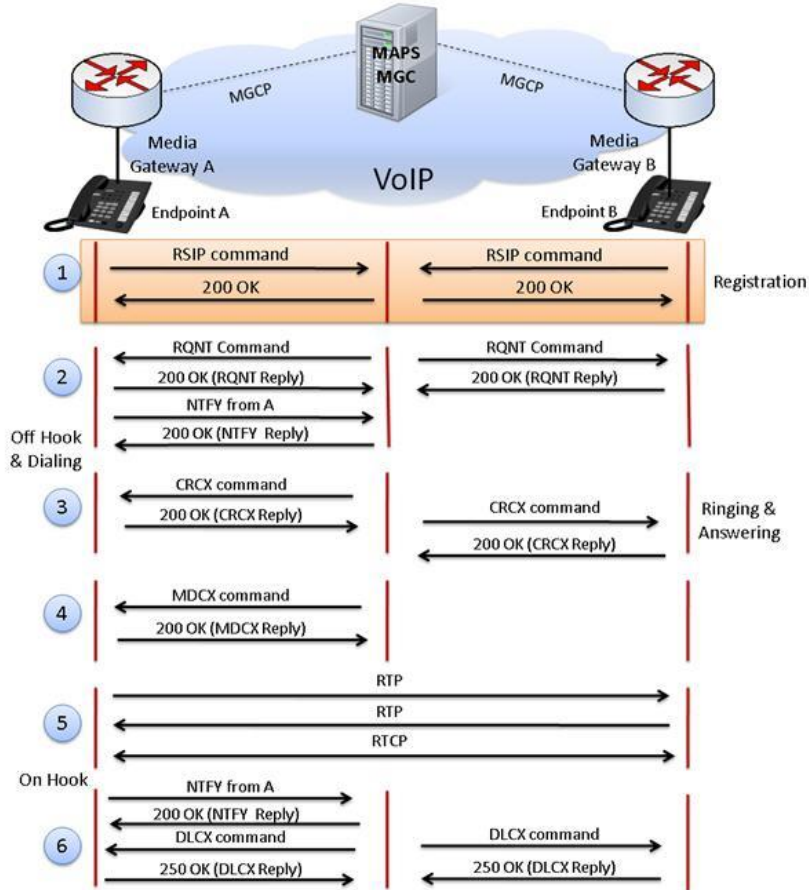

Figure: Typical MGCP Call Procedure

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MGC Multi-Interface

Multi-Interface Test Setup

MAPS™ Media Gateway Controller (MGC) a multi interface simulator is configured to handle signalling and call control between the Signalling Gateway (SG) and Media Gateway (MG) across the network.

MAPS™ MGC simulates SS7 signalling procedure between the SGs on both the ends of the network while handling bulk traffic (RTP Media) between the MG terminals.
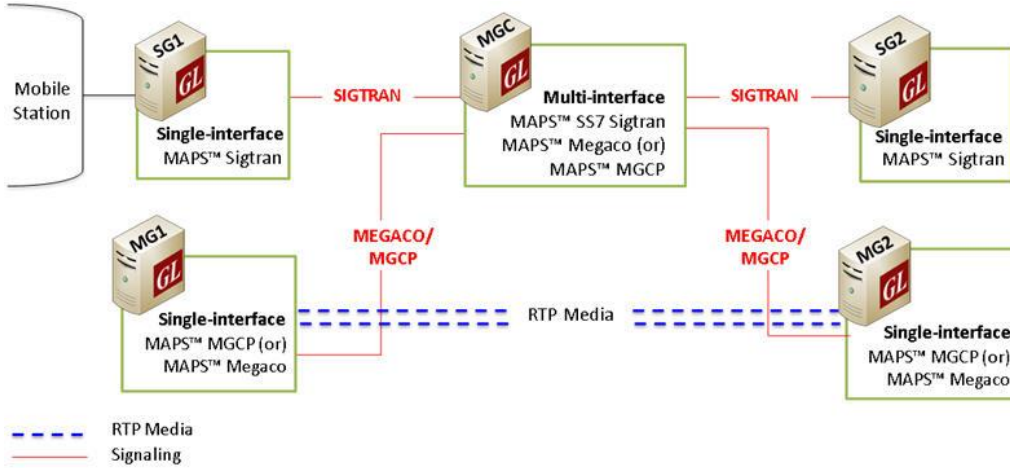

Figure: MGC Multi Interface End to End Set up

Multi-Interface Call Simulation using MAPS™ MGCP

GL's MAPS™ MGCP can be configured to act as MGC, controlling singling between the SGs and handling bulk traffic between the MGs in a multi-Interface MGCP network. The screenshot below depicts the SS7 Sigtran signalling flow between the SGs and MGCP and procedure between MGs simulated using MAPS MGC (multi-interface).
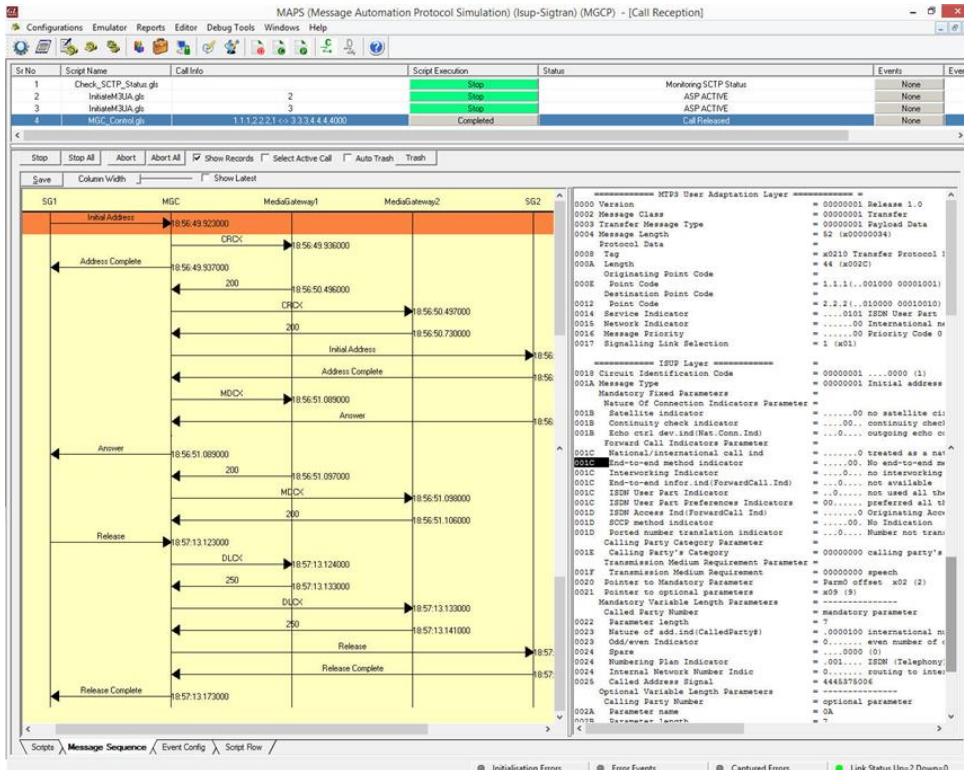

Figure: Multi-Interface MGC Call Simulation

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MAPS™ MGCP Conformance Testing

MAPS™ includes inbuilt MGC-conformance, and MG conformance, scripts (*.gls) that allow testing the MGC and MG entities as per IETF RFC 3435 standard.

MAPS™ supports CRCX, RQNT, NTFY, MDCX, DLCX, RSIP, AUCX, AUEF, EPCF and EH procedures.

Conformance Tests Includes

Test Purposes for Media Gateway (MG)

- Create Connection (CRCX) Procedures
- Modify Connection (MDCX) Procedures
- Delete Connection (DLCX) Procedures
- Audit Connection (AUCX) Procedures
- Audit Endpoint (AUEP) Procedures
- Notify (NTFY) Procedures
- Notification Request (RQNT) Procedures
- RequestInProgress (RSIP) Procedures
- Error Handling (EH) Procedures
- Endpoint Configuration (EPCF) Procedures

Test Purposes for Media Gateway Controller (MGC)

- Create Connection (CRCX) Procedures
- Modify Connection (MDCX) Procedures
- Delete Connection (DLCX) Procedures
- Audit Connection (AUCX) Procedures
- Audit Endpoint (AUEP) Procedures
- Endpoint Configuration (EPCF) Procedures
- Error Handling (EH) Procedures
- Notify (NTFY) Procedures
- Notification Request (RQNT) Procedures
- FAX and Piggybacked Procedures

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Buyer's Guide

Item No	Product Description
PKS124	MAPS™ MGCP Protocol Emulation with Conformance Test Suite
PKS109	MAPS™ RTP HD
PKS102	RTP Soft Core for RTP Traffic Generation
PKS103	RTP IuUP Soft Core
PKS108	RTP Voice Quality Measurements
PCD103	AMR codec for MAPS™

Note: PCs which include GL hardware/software require Intel or AMD processors for compliance.

For more information, please visit Signaling and Traffic Simulator webpage.