**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 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 /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.


**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 require additional licenses.
- User-defined configuration MAPS as MGC with required IP address and port address to establish communication channel.
- 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.
- Supports Client-Server functionality with additional license; clients supported are TCL, Python, VBScript, Java, .Net clients

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### Configuration

This allows setting up test environment while configuring MAPSTM 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 MAPSTM (MGC) and the test unit Media Gateway (MG).

#### Scenario 1: MAPSTM acting as MG

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

#### Scenario 2: MAPSTM acting as MGC

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

### Testbed Setup Configuration

The configuration window allows users to setup the required test environment to establish communication between MAPSTM and the DUT. It includes configuration parameters to set MAPSTM 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 MAPSTM MGCP with MG or MGC end-point terminal parameters.

### 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.

### 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.

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**Figure:** MAPSTM MGCP simulating MG

**Figure:** MAPSTM MGCP simulating MGC

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**Call Generation and Reception**

In call generation, MAPS™ is configured for the outgoing 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.

**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.

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**Figure: Call Generation & Events Log**

**Figure: Typical MGCP Call Procedure**
**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, 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 (AUXC) 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 (AUXC) Procedures
- Audit Endpoint (AUEP) Procedures
- Endpoint Configuration (EPCF) Procedures
- Error Handling (EH) Procedures
- Notify (NTFY) Procedures
- Notification Request (RQNT) Procedures
- FAX and Piggybacked Procedures

**Buyer’s Guide**

**PKS124** - Maps™ MGCP Protocol Emulation with Conformance Test Suite

**PKS109** - Maps™ RTP HD

**PKS101** - SIP Core (additional)

**PKS102** - RTP Soft Core for RTP Traffic Generation

**PKS103** - RTP IuUP Soft Core

**PKS107** - RTP EUROCAE ED137

**PKS108** - RTP Voice Quality Measurements

**PCD103** - AMR codec for Maps™

**PCD104** - EVRC codec for Maps™

**PCD105** - EVR_B codec for Maps™

**PCD106** - EVR_C codec for Maps™

**Related Software**

**PKS120** - Maps™ SIP

**PKS121** - Maps™ SIP Conformance Test Suite (Test Scripts)

**PKS122** - Maps™ MEGACO

**PKS123** - Maps™ MEGACO Conformance Test Suite (Test Scripts)

**PKS135** - Maps™ ISDN-SIGTRAN (ISDN over IP)

**PKS130** - Maps™ SIGTRAN (SS7 over IP)

**PKS140** - Maps™ LTE S1 Interface

**PKS142** - Maps™ LTE eGTP (S11, S5/S8) Interfaces

**PKS164** - Maps™ UMTS IuPS (over IP) Interface Emulation

**PKS160** - Maps™ UMTS IuCS and IuH Interface Emulation

**PKS126** - Maps™ SIP-I for SIP ISUP Interface Emulation

**XXX651** - Maps™ CAS Emulator (requires T1/E1 Analyzer, includes CLI)