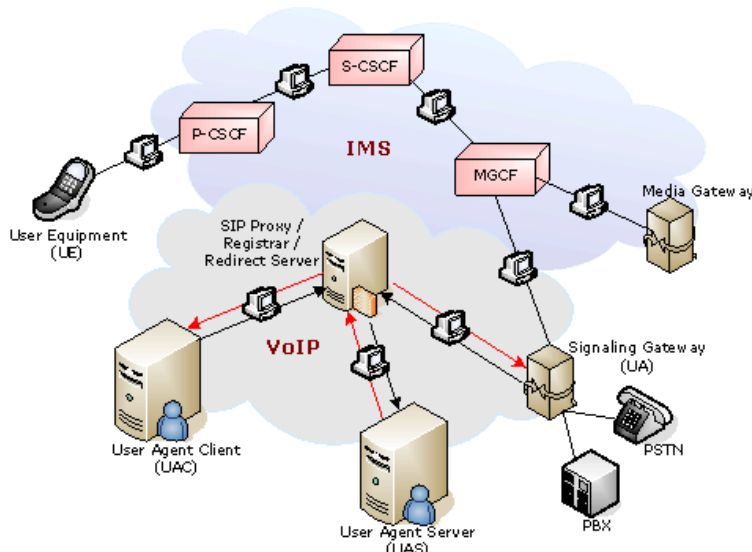


Message Automation & Protocol Simulation (MAPS)

MAPS - SIP (ETSI TS 102 027-2)



Simulates UAC, UAS, Proxy, Registrars, Registrants, & Redirect Servers

Support End-to-End Gateway Testing

Conformance & Functionality Testing

Supports both UDP and TCP

SIP Conformance Testing based on ETSI TS 102 027

Full customization of all SIP headers and message body

Easy scripting with user-defined variables, & conditions

Tests instant messaging and push-to-talk features

Overview

The Message Automation & Protocol Simulation (MAPS) -SIP support testing for SIP proxy servers, redirect servers, registrars and user agents such as SIP phones. Test cases include general messaging and call flow scenarios for multimedia call session setup and control over IP networks. Logging and pass/fail results are also reported.

This test tool can be used to simulate any interface in a SIP network and perform protocol conformance testing (SIP protocol implementations). The application is available as -

- MAPS - SIP Protocol Test Tool (Item # PKS120)
- MAPS - SIP Conformance Test Suite (Item #PKS121)

The MAPS - SIP Conformance Suite is designed with 300+ test cases, as per SIP specification of ETSI TS 102 027-2 V3.1.1 (2004-11) standard.

Test cases verify conformance of actions such as registration, call control, proxies and redirect servers. For more details refer to <http://www.gl.com/mapssip.html>.

Main Features

- Simulates UAC, UAS, Proxy, Registrars, Registrants, Redirect Servers, and so on
- Allows user to create early media (media can be transferred or received even before call is established) scenario
- Supports full customization of all SIP headers and message body
- Provides fault insertion, and erroneous call flows testing capability
- Supports call generation using scripts (only signaling)
- Ready scripts makes testing procedure simpler, less time consuming, and hence time to market the products
- Tests instant messaging and push-to-talk features
- Handles retransmissions and remote retransmissions
- Handles strict routing & loose routing, when requests are routed through proxies
- Supports both UDP and TCP transport protocols
- Support end-to-end gateway testing
- Supported on Windows XP/2000 Operating System



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Configurations

The MAPS testing tool can simulate messaging from different SIP entities such as the User Agent Client (MAPS) - to - DUT (UAS - Proxy, Redirect Server), and User Agent Server (MAPS)-to- DUT (DUT - SoftPhone, IPPhone).

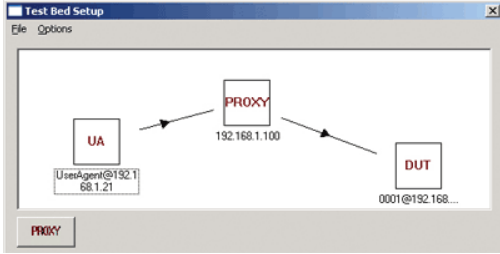


Figure- SIP Test Configuration Window

Scenario 1:

MAPS acting as UAS receives messages from UAC (DUT). DUT can be configured as UAC to generate SIP messages.

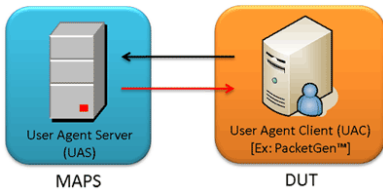


Figure: MAPS acting as UAS and testing UAC

Scenario 2:

MAPS can be configured to act as UAC and to test Redirect Server and/or UAS. This allows the redirection call scenarios to be automated and test DUTs.

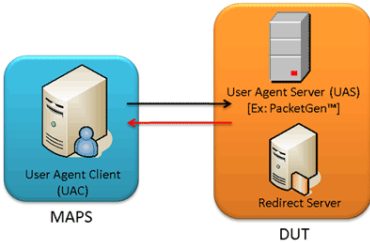


Figure: MAPS acting as UAC and testing Redirect server or UAS

Scenario 3:

MAPS can be configured to act as UAC and UAS simultaneously so that entire Proxy testing can be automated.

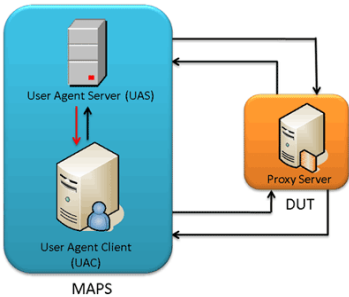


Figure: MAPS acting as UAS and UAC to test Proxy Server

Scenario 4:

Here MAPS acts as Registrar and receives registration request messages from Registrant (DUT) while conforming Registrant.

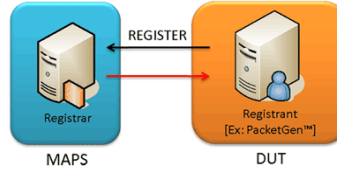


Figure: MAPS acting as Registrar to test Registrant

Scenario 5:

MAPS can be configured to act as Registrant and to generate registration request messages to automate the entire Registrant (DUT) testing.

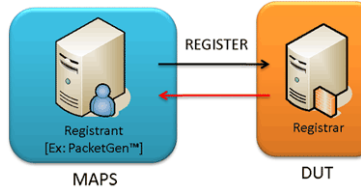


Figure: MAPS acting as Registrant to test Registrar

Scenario 6:

MAPS can be used as a tool to evaluate Gateway / ATA product features such as call connectivity, call signaling, traffic generation, voice quality testing, codec, and hundreds of other features.

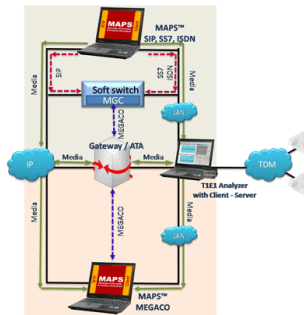


Figure: MAPS acting as Registrant to test Registrar

Script Log and Message sequence

The bottom-right pane shows Script Log, during the execution of the script.

Message Sequence displays the pictorial view of the messages flowing between the MAPS and the DUT. UAC message sequence is displayed for the scripts being executed. In case of UAS, MAPS executes the selected script and waits for incoming calls.

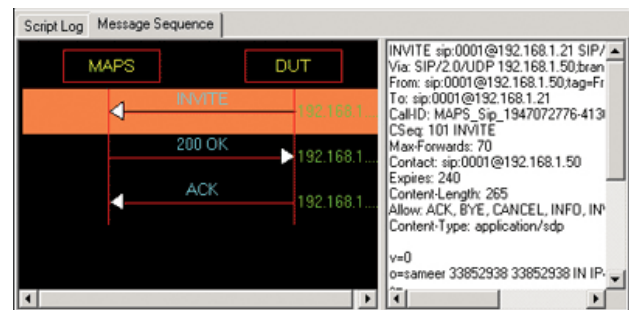


Figure- Script Log and Message Sequence

Scripts Execution

The lines of scripts executed appear in Green color and instructions that are not executed remain black.

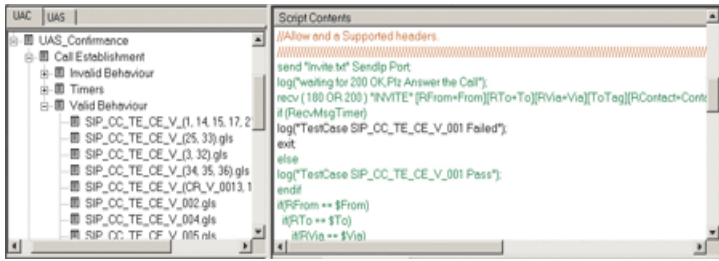


Figure- UAS Script Execution

Execute Registrar Conformance Scripts

To simulate the messages generated by UAS, users can execute the set of UAC_Conformance inbuilt scripts. The first active instruction of UAC script is a Recv instruction. A UAC script always waits for an incoming message before execution. If any incoming message is received, then MAPS checks the method of incoming message with the first 'recv' instruction.

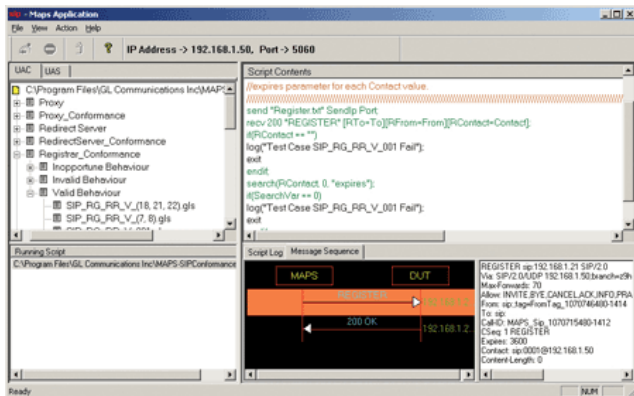


Figure: Registrar Conformance Script Execution – Valid Behavior

Execute UAC Conformance Scripts

To simulate the messages generated by UAS, users can execute the set of UAC_Conformance inbuilt scripts. The first active instruction of UAC script is a Recv instruction. A UAC script always waits for an incoming message before execution. If any incoming message is received, then MAPS checks the method of incoming message with the first 'recv' instruction.

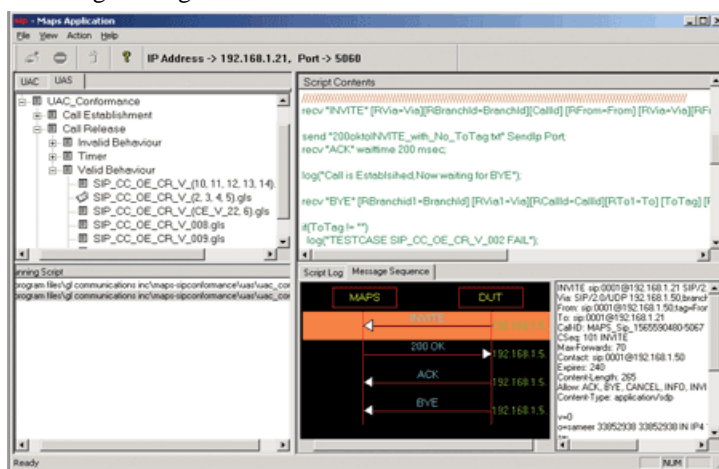


Figure: Call Establishment from originating endpoints (UAC)

Execute Proxy Conformance Scripts

For Proxy conformance, users can execute the set of Proxy Conformance inbuilt scripts. Here MAPS acts as both UAS and UAC sending and receiving SIP messages while testing proxy (DUT). All the requests received from UAC (MAPS) are replied back with the unmodified messages as seen in the message sequence window below.

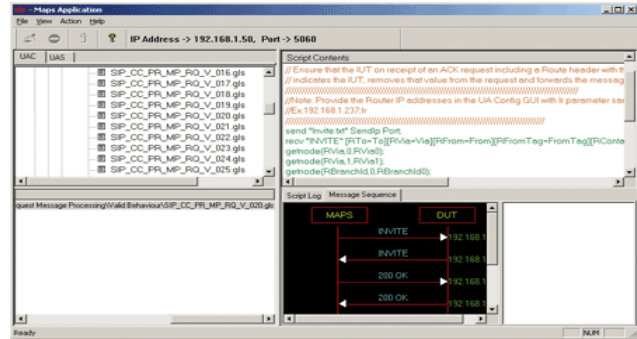


Figure- Proxy Client Transaction – Valid behavior

Execute Redirect Server Conformance Scripts

In Redirect Server conformance, MAPS executes a set of inbuilt Redirect Server. MAPS acts as UAC and sends messages to test Redirect Server (DUT). Redirect Server (DUT) sends response to the caller UAC (MAPS) as seen in the Message Sequence window. A redirection response to the caller (MAPS) includes a Contact header set to the registered location of the callee.

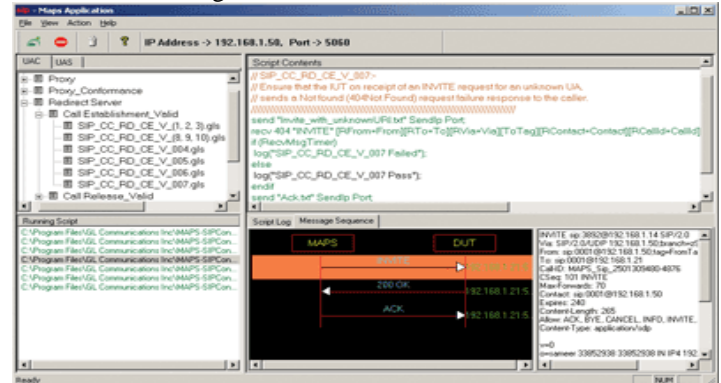


Figure: Redirect Conformance Script Execution – Valid Behavior

Execute UAS Conformance Scripts

MAPS (DUT) executing at the specified IP Address, sends REGISTER request to DUT (Registrar).

The Registrar generates the ACK reply for the request received and then sends 200 OK message to MAPS request.

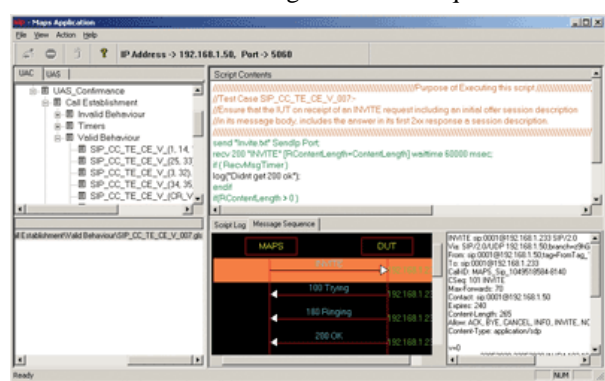


Figure- Call Establishment from terminating endpoints (UAS)

Execute Registrant Conformance Scripts

MAPS includes inbuilt Registrant conformance scripts (*.gls) that allows itself to act as Registrar and perform Registrant Conformance testing.

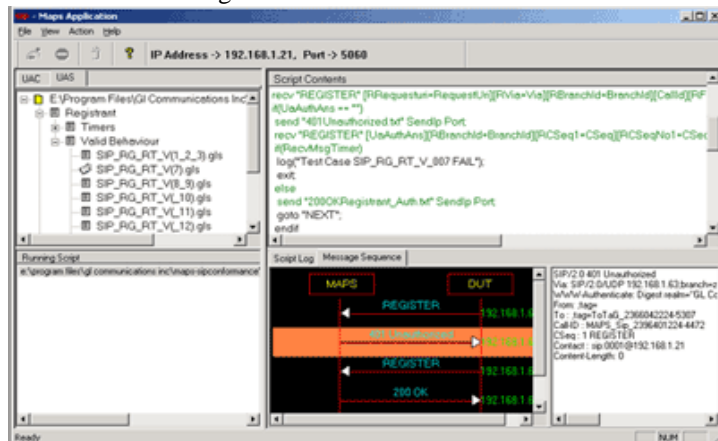


Figure- Registrant Conformance Script Execution

SIP Conformance Testing

MAPS include inbuilt Proxy-conformance, RedirectServer conformance, Registrar-conformance, and UAS-conformance scripts (*.gls) that allow testing the Proxy, Redirect Server, Registrar and UAS as per ETSI standard.

MAPS also includes inbuilt UAC-conformance scripts (*.gls) that allow the application to act as User Agent Server. These scripts are used for UAC testing as per ETSI standard.

Sequences Tested

- **Test Purposes For Registration – Proxy**
 - Message Processing > Request
 - Valid Behavior – Supports 66 (of 67) Test cases
 - Invalid Behavior – Supports 4 (of 4) Test cases
 - Message Processing > Response
 - Valid Behavior – Supports 52 (of 53) Test cases
 - Transaction > Client
 - Valid Behavior – Supports 14 (of 14) Test cases
 - Timer – Supports 19 (of 19) Test cases
 - Transaction > Server
 - Valid Behavior – Supports 29 (of 29) Test cases
 - Timer – Supports 9 (of 9) Test cases
- **Test Purposes For Registration – Redirect Server**
 - Call Establishment
 - Valid Behavior - Supports 10 (of 10) Test cases
 - Call Release
 - Valid Behavior - Supports 3 (of 3) Test cases
- **Test Purposes For Registration – Registrant**
 - Timers - Supports 7 (of 7) Test cases
 - Valid Behavior – Supports 18 (of 20) Test cases
- **Test Purposes For Registration – Registrar**
 - Valid Behavior – Supports 22 (of 22) Test cases
 - Invalid Behavior - Supports 4 (of 4) Test Cases
 - Inopportune Behavior - Supports 3 (of 3) Test Cases

- **Test Purposes For Call Control – UAC**
 - Call Establishment from Originating endpoints–
 - Valid Behavior – Supports 49 (of 53) Test cases
 - Timers – Supports 10 (of 12) Test Cases
 - Call Release from Originating endpoints
 - Valid Behavior – Supports 14 (of 15) Test cases
 - Timers – Supports 8 (of 8) Test cases
 - Session Modification from Originating endpoints
 - Valid Behavior – Supports 2 (of 2) Test cases
- **Test Purposes For Call Control –UAS**
 - Call Establishment from Terminating endpoints
 - Valid Behavior – Supports 34 (of 36) Test Cases
 - Invalid Behavior – Supports 2 (of 2) Test Cases
 - Timer – Supports 12 (of 12) Test Cases
 - Call Release from Terminating endpoints
 - Valid Behavior – Supports 23 (of 22) Test Cases
 - Invalid Behavior – Supports 5 (of 5) Test Cases
 - Timers – Supports 1 (of 1) Test Case
 - Session Modification from Terminating endpoints
 - Valid Behavior – Supports 3 (of 3) Test Cases
 - Invalid Behavior – Supports 1 (of 1) Test Case

Buyer's Guide:

[PKS120](#) – MAPS for SIP

[PKS121](#)– MAPS - SIP Conformance Suite

Related Software

[PKS122](#) – MAPS for MEGACO

[PKS123](#) – MAPS - MEGACO Conformance Suite

[PKS100](#) – PacketGen™

[PKV100](#) – PacketScan™ (Online and Offline)

[PKV101](#) – PacketScan™ - Offline

[PKV105](#) – SIGTRAN

[IPN010](#) – IPNetSim™ - 100Mbps of through bandwidth

[IPN100](#) – IPNetSim™ - 1Gbps of through bandwidth

[IPN400](#) – IPNetSim™ - 1Gbps w/ 4 links through bandwidth

[VQT004](#) – VQT with PESQ, PAMS and PSQM

[VQT002](#) – VQT with PESQ only

[XX062](#) – Echo Path Delay/Loss Simulation Software