



## Working Principle

- **Message Editor** - Used to edit / create Message Templates
- **Message Templates** - Backbone of MAPS™ application that contains various protocol fields with default values
- **Script Editor** -
  - Creates a script for scenario based testing (call flow) with DUT
  - Uses pre-defined message templates in the script
  - Access protocol fields as variables using import/export files
- **Profile Editor** – allows to edit the values of the variables using GUI, to replace the original values of the variables in the message template.
- **Event Profile Editor** - allows you to create Event Profiles for user-defined events in a script. The values of the variables in the user-events can be changed during script execution.

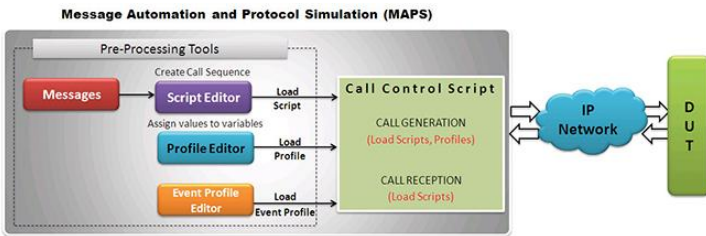


Figure: MAPS™ application Working Principle

## Test Bed Setup

Test Bed Setup is provided to establish communication between MAPS™ SIGTRAN-ISDN over IP and the DUT. It includes configuration parameters to be set for IUA signaling parameters and SCTP configuration. Once the SCTP layer is configured properly, ISDN messages can be transmitted and received over IP network using SCTP to the DUT.

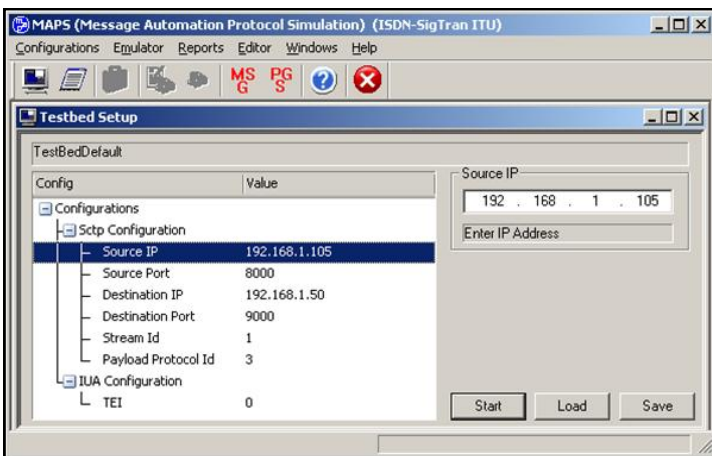


Figure: Testbed Setup

## Pre-processing Tools

**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 are comprised of mandatory fixed parameters, mandatory variable parameters, and optional variable parameters.

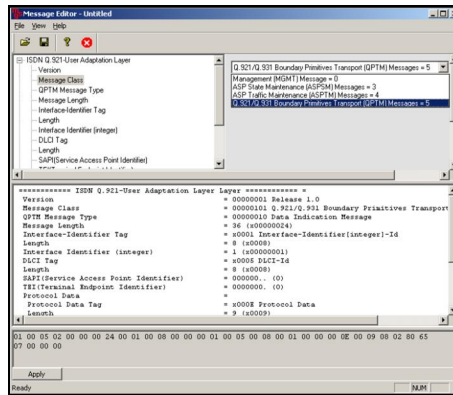


Figure: Message Editor

**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.

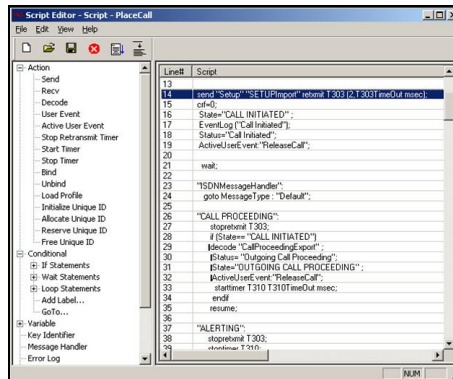


Figure: Script Editor

**Profile Editor** - This feature allows to edit the values of the variables using GUI, to replace the original values of the variables in the message template.

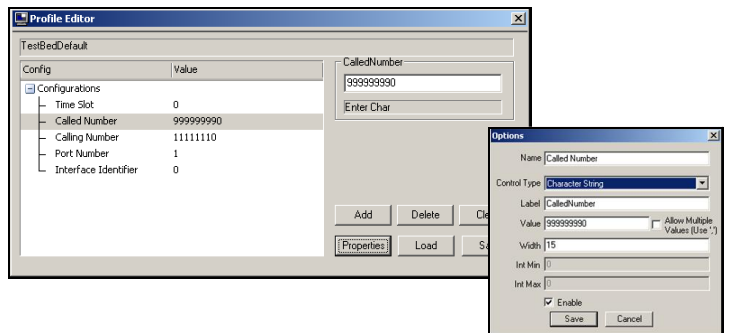


Figure: Profile Editor



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## Call Generation and Call Reception

In call generation, MAPS™ is configured for sending outgoing messages, while in call receive mode, it is configured to respond to incoming messages. Tests can be configured to run once, multiple times or even continuously. Users are also able to create multiple entries using quick configuration feature.

The editor permits running 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.

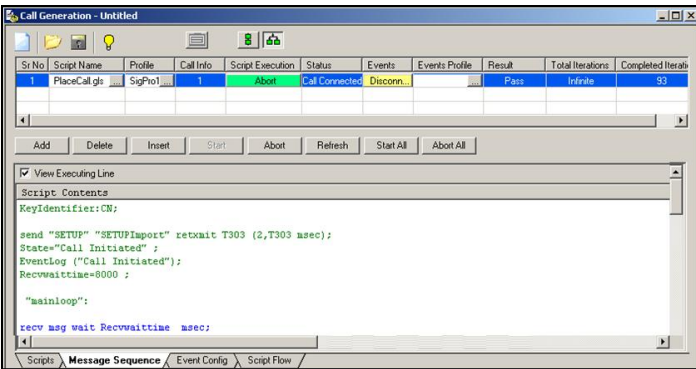


Figure: Call Generation

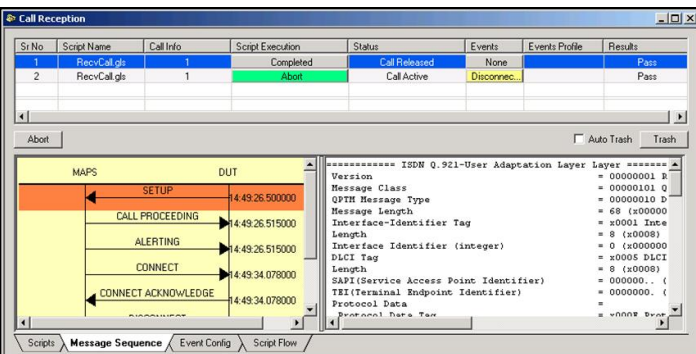


Figure: Call Reception

## Incoming Call Handlers Configuration

The script configuration option is used to preset the script required to handle all possible signaling and call control messages against particular message expected to arrive.

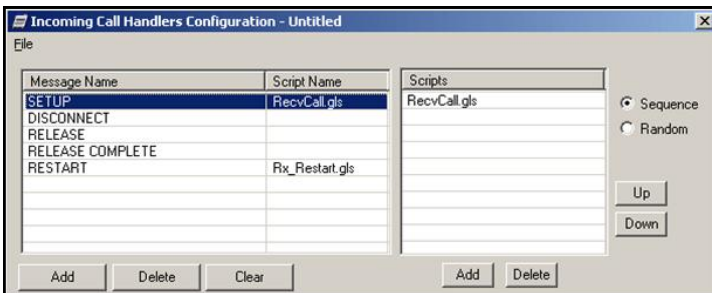
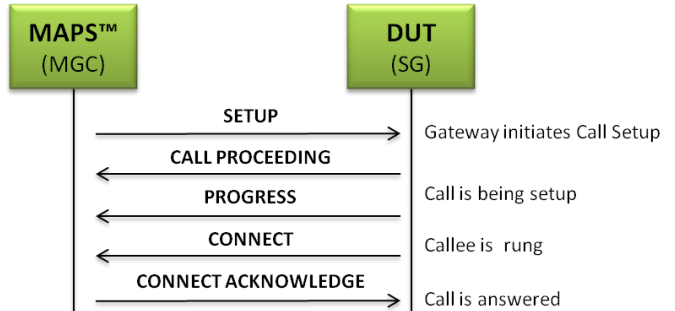


Figure: Incoming Call Handler

## SIGTRAN-ISDN over IP Call Flow Scenarios

### Scenario 1: MAPS™ SIGTRAN-ISDN over IP acting as MGC and testing DUT (SG)

MAPS™ SIGTRAN-ISDN over IP is considered as MGC (Media Gateway Controller) and initiates the call flow by sending SETUP message and ensures that the DUT (SG) sends a CALL PROCEEDING, ALTERING, and CONNECT messages in response.

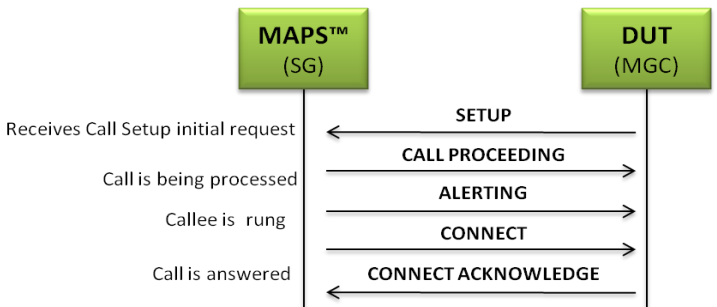


### Sample Place Call Script

```
MsgHandler:"ISDNMessageHandler";
send "Setup" "SETUPImport" "StreamId" = StreamId retransmit T303 (2,T303Timeout msec);
decode "CallProceedingExport";
decode "AlertingExport";
decode "ConnectExport";
send "ConnectAcknowledge" "ConnectAcknowledgeImport" "StreamId" = StreamId;
```

### Scenario 2: MAPS™ ISDN-SIGTRAN resides at the network terminal acting as SG

MAPS™ ISDN-SIGTRAN is considered as the SG (Network) processing the call flow by receiving the SETUP message from the caller (MGC).



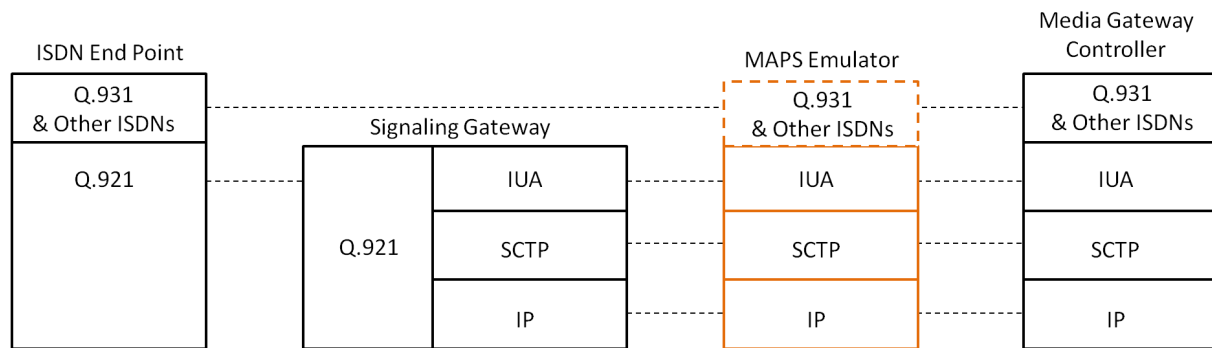
### Sample Answer Call Script

```
MsgHandler:"ISDNMessageHandler";
decode "SETUPExport";
send "CallProceeding" "CallProceedingImport" "StreamId" = StreamId;
send "Alerting" "AlertImport" "StreamId" = StreamId;
send "Connect" "ConnectImport" "StreamId" = StreamId;
decode "ConnectacknowledgeExport";
```



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## Supported Protocols and Specifications



Supported Protocols	Standard / Specification Used
Q.931	ITU-T Q.931 / Q.932(Facility IE) / Q.955.3 (MLPP Procedures)
4ESS	ISDN PRI (TR-41449)
5ESS	ISDN PRI (Lucent Tech - 5ESS 2000)
BELL	ISDN PRI (Bell Core SR-NWT-002343)
DMS-100	Nortel's switch DMS 100 NIS-A2111-1
DMS-250	Nortel's switch DMS 250 NIS-A2111-4
QSIG ECMA	Standard ECMA-143 4th Edition - December 2001
IUA	RFC 4233 Integrated Services Digital Network (ISDN) Q.921 - User Adaptation Layer

### Buyer's Guide

[PKS135](#) - MAPS™ ISDN SIGTRAN (ISDN over IP) Emulator

#### Related Software

[PKV105](#) - SIGTRAN Analyzer

[XX100](#) - ISDN Analyzer Software

[XX648](#) – MAPS™ ISDN

[XX692](#) – MAPS™ GSM A Interface Emulator

[XX693](#) – MAPS™ GSM A bis Interface Emulator

[XX600](#) – Basic Client/Server Scripted Control Software

[PKS130](#) - MAPS™ SIGTRAN (SS7 over IP)

[XX120](#) - SS7 Analysis Software

[PKS140](#) - MAPS™ LTE - S1 Interface

[PKS142](#) - MAPS™ LTE - eGTP (S3, S4, S5, S8, S10, S11 and S16) Interfaces

[PKV107](#) - LTE Protocol Analyzer

[PKS164](#) - MAPS™ UMTS – Iu-PS Interface Emulation

[PKS160](#) - MAPS™ UMTS – Iu-CS and Iuh Interface Emulation

#### Related Software...

[XX165](#) - T1 or E1 UMTS Protocol Analyzer

[OLV165](#) - Offline UMTS 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)

[PKS126](#) - MAPS™ SIP-I

#### Related Hardware

[HTE001](#) - Universal HD T1 or E1 PCI Cards

[UTE001](#) - USB based Dual T1 or E1 Laptop Analyzer

[PTE001](#) - tProbe™ T1 E1 Base Unit



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