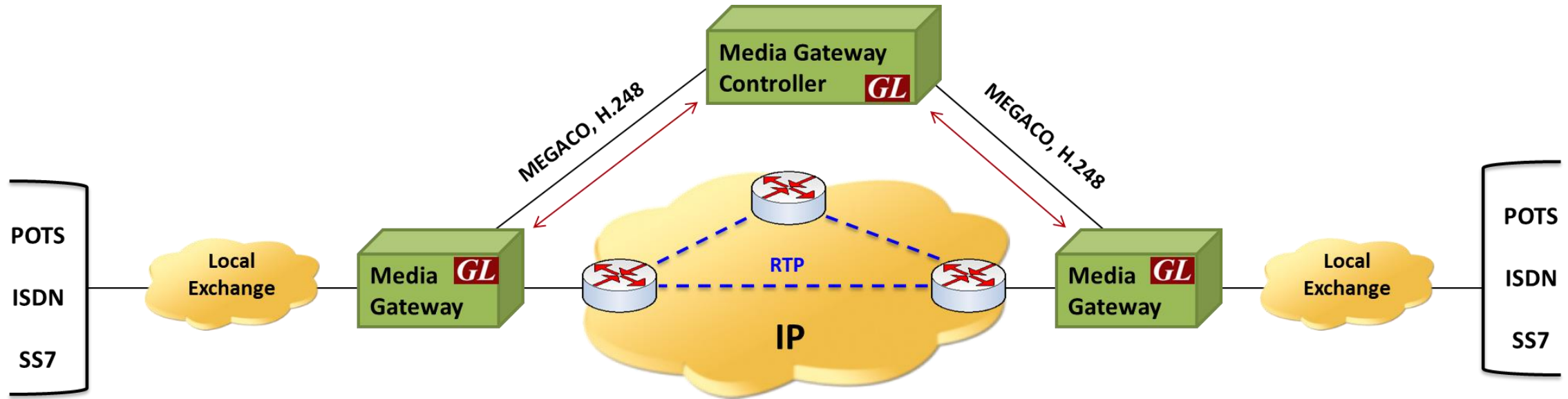

MAPS™ MEGACO/H.248 and MGCP EMULATOR

MEGACO/H.248 and MGCP Protocol Emulation



818 West Diamond Avenue - Third Floor, Gaithersburg, MD 20878
Phone: (301) 670-4784 Fax: (301) 670-9187 Email: info@gl.com
Website: <http://www.gl.com>

MAPS™ MEGACO Protocol Emulator



MAPS™ Megaco (H.248)
(2K simultaneous calls per NIC card)



MAPS™ Megaco (H.248)
HD RTP Generator Hardware
(w/ 2 x 10G cards; w/ 4 x 1G cards)

— Signaling

- - - Traffic

Highlights

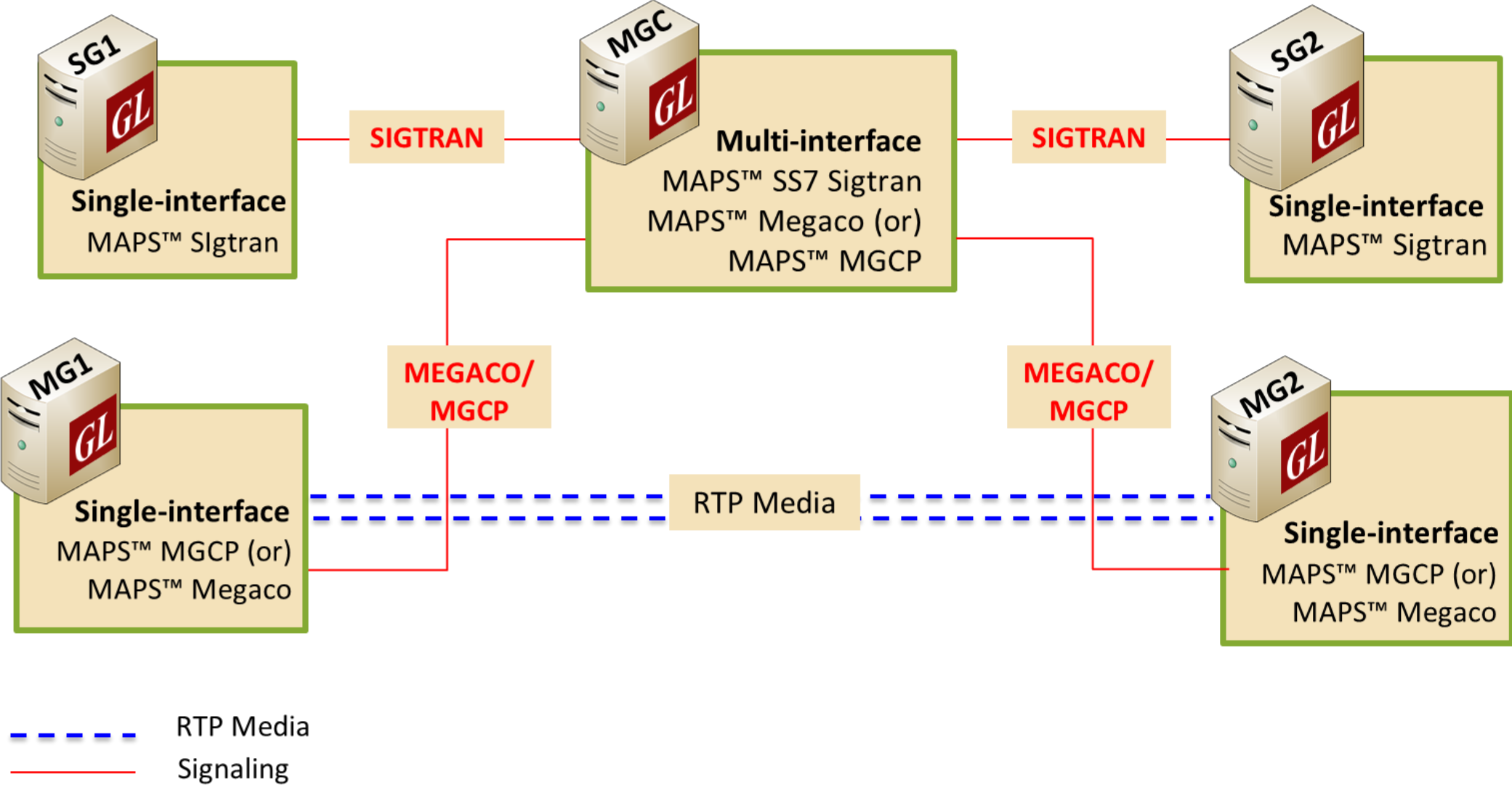
- Simulates Media Gateway (MG) and Media Gateway Controller (MGC)
- Complete end to end test environment for 2G, 3G and VoIP networks
- Fully integrated, complete test environment for MGCP
- Supports all the MGCP commands as per the protocol specification such as CRCX, NTFY, MDCX, RQNT, AUER, AUCX, DLCX, EPCF, and RSIP
- 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 Multi-interface signaling (using SIGTRAN) and RTP media (using MGCP) simulation
- Supports transmission and detection of various RTP traffic such as, digits, voice file, single tone, and dual tones in IP networks
- Multi-protocol call trace for 2G, 3G, PSTN calls

Supported Protocol Standards

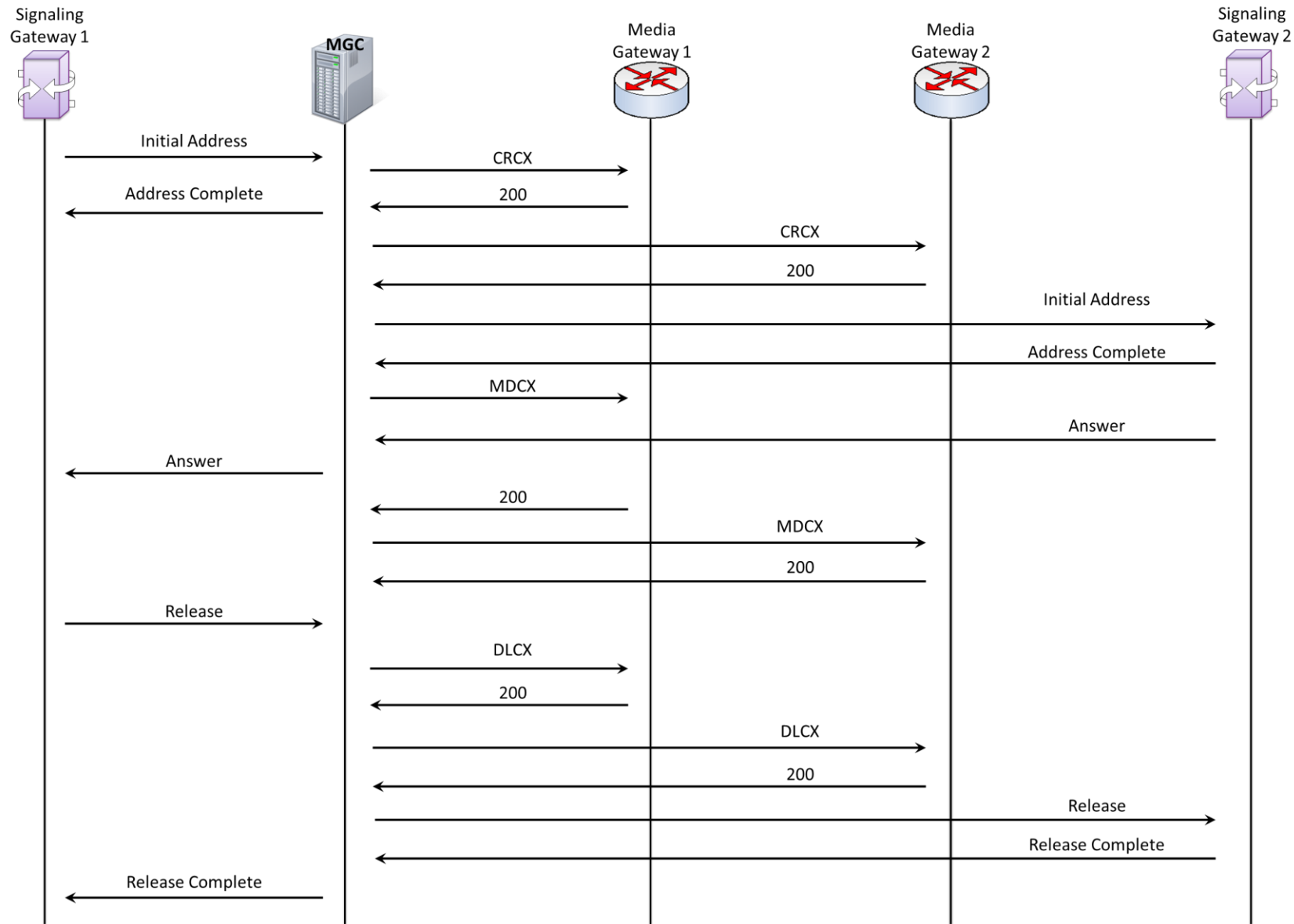
Supported Protocols	Specification Used
MEGACO/H.248	IETF RFC 3525 / ITU-T Recommendation H.248, ETSI TS 102 374-2 (2004-11) ITU-T Rec. H.248.45 ITU-T Rec. H.248.59 (08/2007) ITU-T Rec. Q.1950 (12/2002) ITU-T Rec. H.248.14 (03/2002) 3GPP TS 29.232 v5.6.0 3GPP TS 29.232 v4.1.0 T-REC-H.248.1-201303-I Q.1950 Annex A

MGC Multi Interface Simulation (MEGACO and MGCP)

MGC Multi-Interface End-to-End Lab Test Setup



MGC Multi-Interface End-to-End Call Simulation (MGCP)



MAPS™ MGC Multi-Interface End-to-End Call Simulation (MEGACO)

MAPS (Message Automation Protocol Simulation) (Isup-Sigtran) (MEGACO) - [Call Reception]

Sr No	Script Name	Call Info	Script Execution	Status	Events	Results
1	Check_SCTP_Status.gls		Stop	Monitoring SCTP Status	None	Unknown
2	InitiateM3UA.gls	2	Stop	ASP ACTIVE	None	Pass
3	InitiateM3UA.gls	3	Stop	ASP ACTIVE	None	Pass
4	MGC_Control.gls	1.1.1.2.2.2.1 <-> 3.3.3.4.4.4.4000	Completed	Call Released	None	Pass
5	MGC_Control.gls	1.1.1.2.2.2.1861 <-> 3.3.3.4.4.4.3014	Stop	ContextDeleted	None	Unknown
6	MGC_Control.gls	1.1.1.2.2.2.1988 <-> 3.3.3.4.4.4.3013	Stop	ContextDeleted	None	Unknown
7	MGC_Control.gls	1.1.1.2.2.2.1989 <-> 3.3.3.4.4.4.3012	Stop	ContextDeleted	None	Unknown
8	MGC_Control.gls	1.1.1.2.2.2.1871 <-> 3.3.3.4.4.4.3011	Stop	ContextDeleted	None	Unknown
9	MGC_Control.gls	1.1.1.2.2.2.1996 <-> 3.3.3.4.4.4.3010	Stop	ContextDeleted	None	Unknown
10	MGC_Control.gls	1.1.1.2.2.2.1854 <-> 3.3.3.4.4.4.3009	Stop	ContextDeleted	None	Unknown
11	MGC_Control.gls	1.1.1.2.2.2.1867 <-> 3.3.3.4.4.4.3008	Stop	ContextDeleted	None	Unknown
12	MGC_Control.gls	1.1.1.2.2.2.308 <-> 3.3.3.4.4.4.2453	Stop	ContextModified	None	Pass
13	MGC_Control.gls	1.1.1.2.2.2.358 <-> 3.3.3.4.4.4.2452	Stop	ContextModified	None	Pass


```

sequenceDiagram
    participant SG1
    participant MGC
    participant MG1 as MediaGateway1
    participant MG2 as MediaGateway2
    participant SG2

    MGC->>SG1: Initial Address 10:10:55.757000
    SG1->>MGC: Address Complete 10:10:55.757000
    MGC->>MG1: Add 10:10:55.765000
    MG1->>MGC: Add Reply 10:10:56.046000
    MGC->>MG2: Add 10:10:56.046000
    MG2->>MGC: Add Reply 10:10:56.478000
    MGC->>SG2: Initial Address 10:10:56.5420
    SG2->>MGC: Address Complete 10:10:56.7900
    MGC->>MG1: Modify 10:10:56.790000
    MG1->>MGC: Answer 10:10:56.7900
    MGC->>MG1: Modify Reply 10:10:56.796000
    MG1->>MGC: Modify 10:10:56.796000
    MGC->>MG2: Modify Reply 10:10:56.808000
    MGC->>SG1: Release 10:11:10.085000
    SG1->>MG1: Subtract 10:11:10.087000
    MG1->>MGC: Subtract Reply 10:11:10.092000
    MGC->>MG2: Subtract 10:11:10.093000
    MG2->>MGC: Subtract Reply 10:11:10.124000
    MGC->>SG2: Release 10:11:10.1260
    SG2->>MGC: Release Complete 10:11:10.1650
    MGC->>SG1: Release Complete 10:11:10.167000
    
```



```

===== MTP3 User Adaptation Layer =====
0000 Version = 00000001 Release 1.0
0002 Message Class = 00000001 Transfer
0003 Transfer Message Type = 00000001 Payload Data
0004 Message Length = 62 (x00000034)
Protocol Data =
0008 Tag = x0210 Transfer Protocol
000A Length = 44 (x002C)
Originating Point Code =
000E Point Code = 1.1.1(001000 000100)
Destination Point Code =
0012 Point Code = 2.2.2(010000 000100)
0014 Service Indicator = 00000001 ISDN User Part
0015 Network Indicator = 00000000 International
0016 Message Priority = 00000000 Priority Code
0017 Signalling Link Selection = 1 (x01)

===== ISUP Layer =====
0018 Circuit Identification Code = 00000001 ....0000 (1)
001A Message Type = 00000001 Initial address
Mandatory Fixed Parameters =
Nature Of Connection Indicators Parameter =
001B Satellite indicator = 00000000 no satellite
001B Continuity check indicator = 00000000 continuity check
001B Echo ctrl dev.ind(Nat.Conn.Ind) = 00000000 outgoing echo
Forward Call Indicators Parameter =
001C National/international call ind = 00000000 treated as a
001C End-to-end method indicator = 00000000 No end-to-end
001C Interworking Indicator = 00000000 no interworking
001C End-to-end infor.ind(ForwardCall.Ind) = 00000000 not available
001C ISDN User Part Indicator = 00000000 not used all
001C ISDN User Part Preferences Indicators = 00000000 preferred all
001D ISDN Access Ind(ForwardCall Ind) = 00000000 Originating ?
001D SCCP method indicator = 00000000 No Indicator
001D Ported number translation indicator = 00000000 Number not trans
Calling Party Category Parameter =
001E Calling Party's Category = 00000000 calling party
Transmission Medium Requirement Parameter =
001F Transmission Medium Requirement = 00000000 speech
Pointer to Mandatory Parameter =
0020 Pointer to optional parameters = Param offset x02 (2)
0021 Pointer to optional parameters = x09 (9)
Mandatory Variable Length Parameters =
Called Party Number = mandatory parameter
0022 Parameter length = 7
0023 Nature of add.ind(CalledParty#) = 00001000 international
0023 Odd/even Indicator = 00000000 even number called
0024 Spare = 00000000 (0)
0024 Numbering Plan Indicator = 00100000 ISDN (Telepho
0024 Internal Network Number Indic = 00000000 routing to sr
0025 Called Address Signal = 4445875006
Optional Variable Length Parameters =
Calling Party Number = optional parameter
002A Parameter name = 0A
    
```


MAPS™ MGC Multi-Interface End-to-End Call Simulation (MGCP)

MAPS (Message Automation Protocol Simulation) (Isup-Sigtran) (MGCP) - [Call Reception]

Configurations Emulator Reports Editor Debug Tools Windows Help

Sr No	Script Name	Call Info	Script Execution	Status	Events	Even
1	Check_SCTP_Status.gls		Stop		Monitoring SCTP Status	None
2	InitiateM3UA.gls	2	Stop		ASP ACTIVE	None
3	InitiateM3UA.gls	3	Stop		ASP ACTIVE	None
4	MGC_Control.gls	1.1.1.2.2.2.1 <-> 3.3.3.4.4.4.4000	Completed		Call Released	None

Stop Stop All Abort Abort All Show Records Select Active Call Auto Trash Trash

Save Column Width Show Latest

```

sequenceDiagram
    participant SG1
    participant MGC
    participant MediaGateway1
    participant MediaGateway2
    participant SG2

    SG1->>MGC: Initial Address 18:56:49.923000
    MGC->>MediaGateway1: CRDX 18:56:49.936000
    MediaGateway1->>MGC: 200 18:56:50.496000
    MGC->>MediaGateway2: CRDX 18:56:50.497000
    MediaGateway2->>MGC: 200 18:56:50.730000
    MGC->>SG2: Initial Address 18:56:51.089000
    SG2->>MGC: Address Complete 18:56:51.089000
    MGC->>MediaGateway1: MDCX 18:56:51.089000
    MediaGateway1->>MGC: Answer 18:56:51.089000
    MGC->>SG1: Answer 18:56:51.089000
    MGC->>MediaGateway2: MDCX 18:56:51.097000
    MediaGateway2->>MGC: 200 18:56:51.098000
    MGC->>MediaGateway1: MDCX 18:56:51.098000
    MediaGateway1->>MGC: 200 18:56:51.106000
    MGC->>SG1: Release 18:57:13.123000
    SG1->>MediaGateway1: DLX 18:57:13.124000
    MediaGateway1->>MGC: 250 18:57:13.133000
    MGC->>MediaGateway2: DLX 18:57:13.133000
    MediaGateway2->>MGC: 250 18:57:13.141000
    MGC->>SG2: Release 18:57:13.141000
    SG2->>MGC: Release Complete 18:57:13.173000
    MGC->>SG1: Release Complete 18:57:13.173000
    
```

```

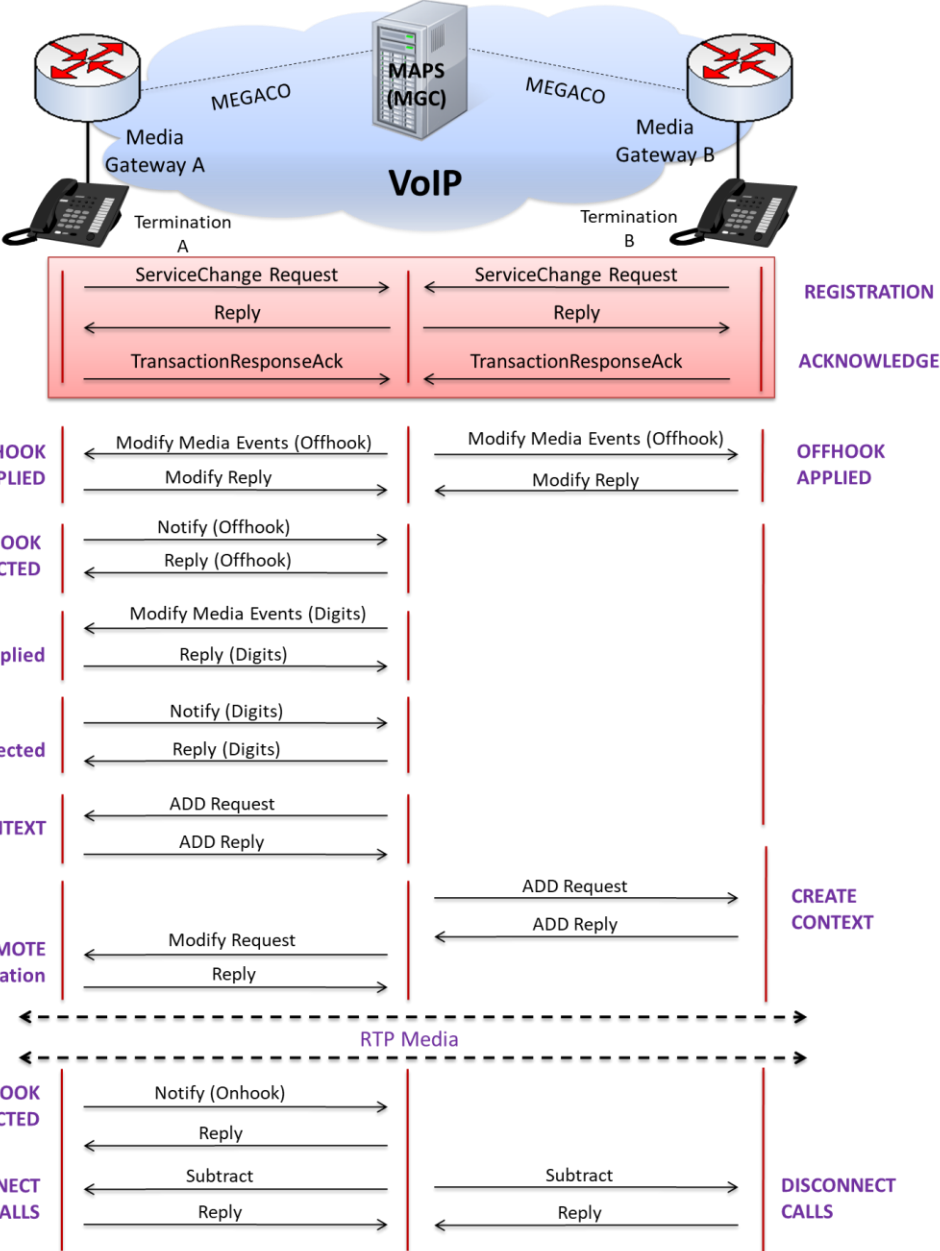
----- MTP3 User Adaptation Layer -----
0000 Version = 00000001 Release 1.0
0002 Message Class = 00000001 Transfer
0003 Transfer Message Type = 00000001 Payload Data
0004 Message Length = 52 (x00000034)
Protocol Data
0008 Tag = x0210 Transfer Protocol I
000A Length = 44 (x002C)
000E Originating Point Code = 1.1.1(...001000 00001001)
0010 Point Code
0012 Destination Point Code = 2.2.2(...010000 00010010)
0014 Point Code = ...0101 ISDN User Part
0016 Service Indicator = ...00 ISDN International m
0015 Network Indicator = ...00 International m
0016 Message Priority = ...00 Priority Code 0
0017 Signalling Link Selection = 1 (x01)

----- ISUP Layer -----
0018 Circuit Identification Code = 00000001 ...0000 (1)
001A Message Type = 00000001 Initial address
Mandatory Fixed Parameters
Nature Of Connection Indicators Parameter =
001B Satellite indicator = ...00 no satellite cli
001B Continuity check indicator = ...00.. continuity check
001B Echo ctrl dev.ind(Nat.Conn.Ind) = ...0.... outgoing echo cr
Forward Call Indicators Parameter
001C National/international call ind = ...0... treated as a nat
001C End-to-end method indicator = ...00.. No end-to-end m
001C Interworking Indicator = ...0.... no interworking
001C End-to-end infor.ind(ForwardCall.Ind) = ...0.... not available
001C ISDN User Part Indicator = ...0.... not used all th
001C ISDN User Part Preferences Indicators = 00.... preferred all th
001D ISDN Access Ind(ForwardCall Ind) = ...0.... Originating Acc
001D SCCP method indicator = ...00.. No Indication
001D Ported number translation indicator = ...0.... Number not tran
Calling Party Category Parameter
001E Calling Party's Category = 00000000 calling party's
Transmission Medium Requirement Parameter =
001F Transmission Medium Requirement = 00000000 speech
0020 Pointer to Mandatory Parameter = Parm0 offset x02 (2)
0021 Pointer to optional parameters = x09 (9)
Mandatory Variable Length Parameters
Called Party Number = mandatory parameter
0022 Parameter length = 7
0023 Nature of add.ind(CalledParty#) = .0000100 international m
0023 Odd/even Indicator = 0.... even number of c
0024 Spare = ...0000 (0)
0024 Numbering Plan Indicator = .001.... ISDN (Telephony)
0024 Internal Network Number Indic = 0.... routing to inte
0025 Called Address Signal = 4445375006
Optional Variable Length Parameters
Calling Party Number = optional parameter
002A Parameter name = 0A
002B Parameter length = 7
    
```

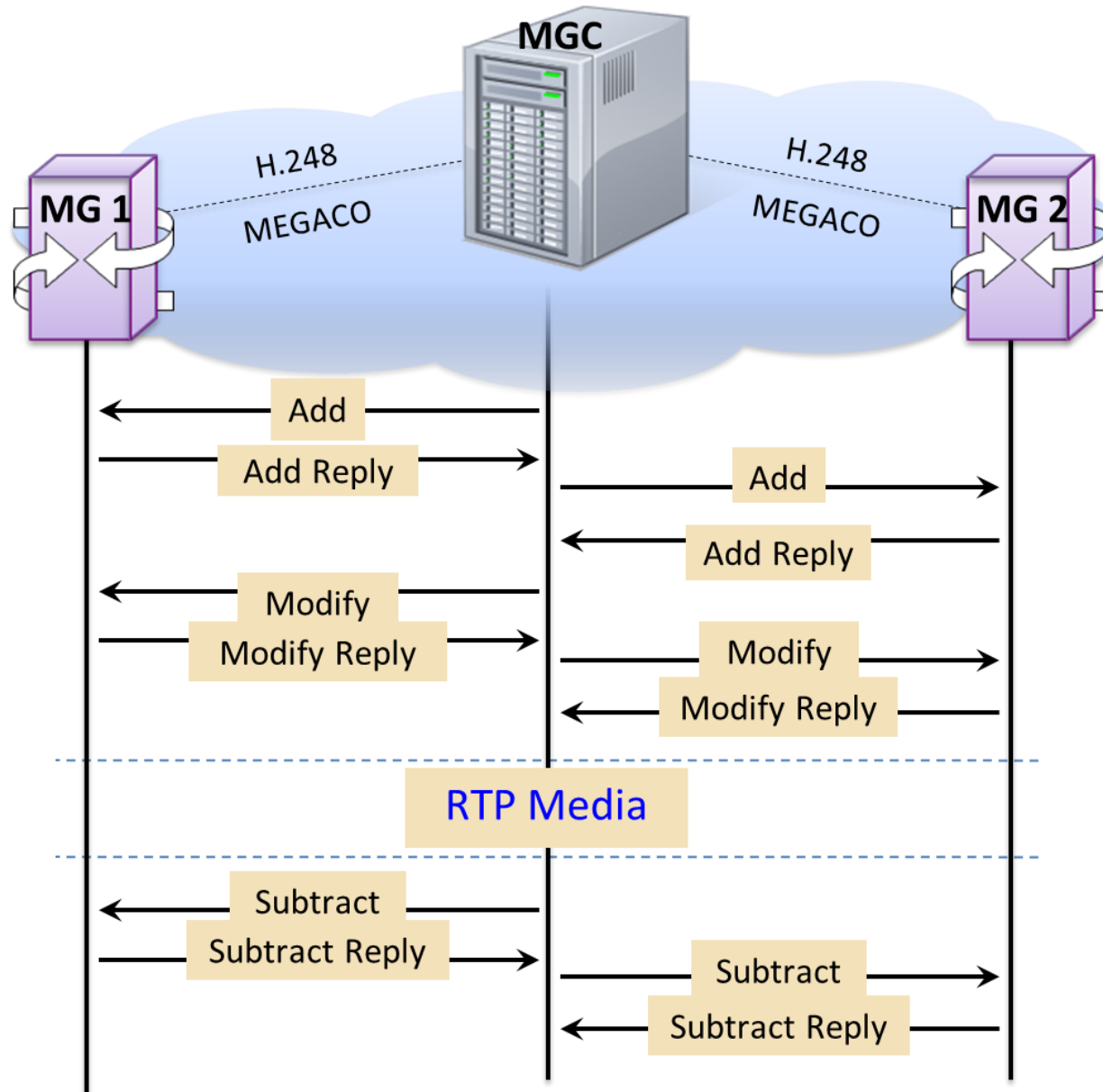
Scripts Message Sequence Event Config Script Flow

MAPS™ MEGACO (H.248) in Analog and Digital Network

Residential Gateway Simulation in Analog Network

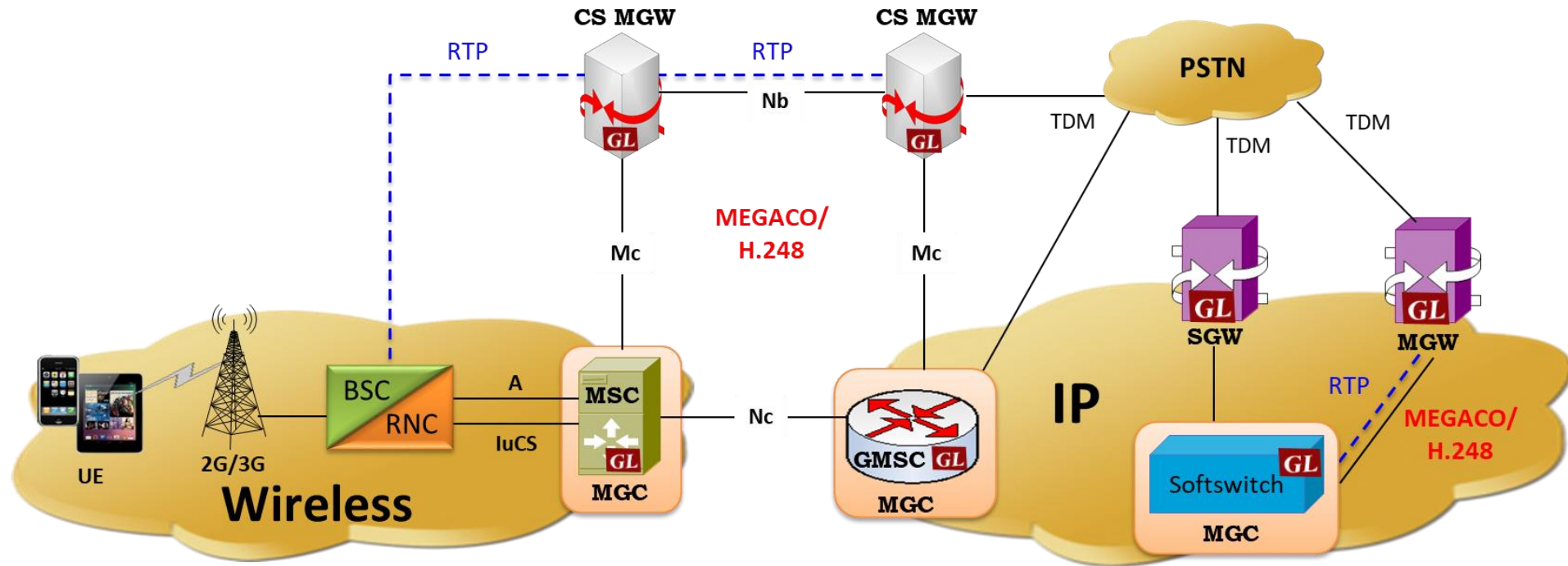


Trunking Gateway Simulation in Digital Network



MAPS™ MEGACO (H.248) in 2G 3G Network

MAPS™ MEGACO/H.248 Protocol Emulator in 2G, 3G Network



MAPS™ MEGACO/ H.248 Protocol Emulator
(2K simultaneous calls per NIC card)



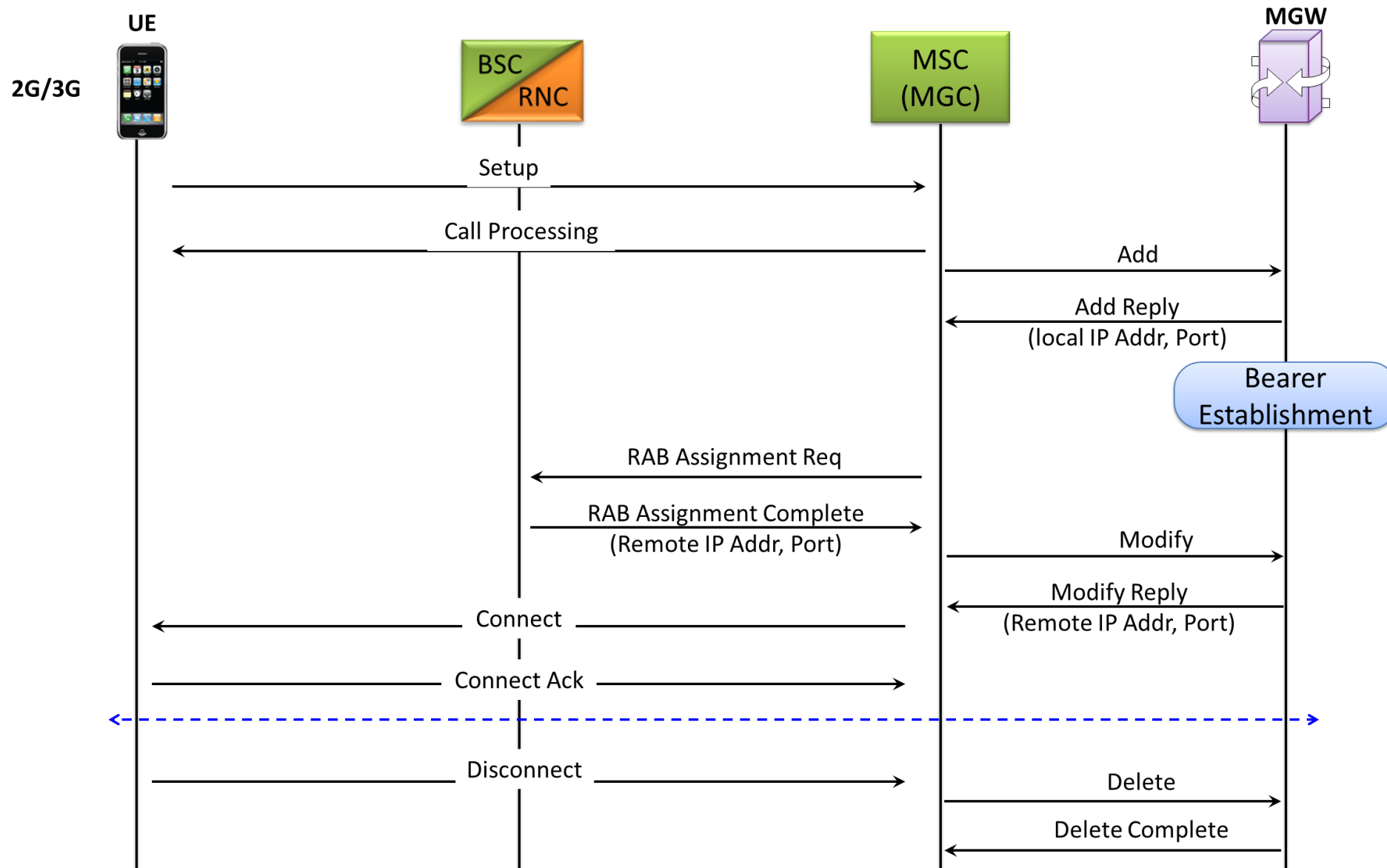
**MAPS™ MEGACO
HD RTP Generator Hardware**
(w/ 4 x 1G cards)

————— Signaling
- - - - - Traffic

Highlights

- Simulates Media Gateways (MG) and Media Gateways Controller (MGC)
- With MAPS™ MGC Multi-interface (requires additional licenses), both end-to-end signaling (using SIGTRAN) and RTP media (using MEGACO) simulation can be performed
- Both text based and binary based syntax are supported in MEGACO
- Complete end to end test environment for 2G, 3G and VoIP networks
- Fully integrated, complete test environment for MEGACO/ H.248
- Supports commands such as Add, Subtract, Notify, Modify, Move, Service Change, Audit Value, and Audit Capabilities
- Supports message templates for each MEGACO (H.248) message and customization of the field values
- Facilitates defining variables for the various protocol fields of the selected MEGACO (H.248) message type

H.248 (Binary) Protocol Procedure



MGC H248 Testbed Configuration

Config

Config	Value
Configurations	
RTP Media Type	Regular
MGC	2
MGC 1	
MGC IP Address	192.168.1.246
MGC Port	1905
MGW IP Address	192.168.1.246
MGW Port	3985
MGC 2	
MGC IP Address	192.168.1.139
MGC Port	1905
MGW IP Address	192.168.1.139
MGW Port	3985
End User Configurations	UserConfigProfiles.xml

_RTPMediaType
Select Option
Regular

Start Edit

● Error Events ● Captured Errors ● Link Status Up=0 Down=0

MGC H248 Profile Configuration

The screenshot shows the 'Profile Editor - UserConfigProfiles' window. The main area is divided into three sections:

- Profiles List:** A table with columns '#', 'Profiles (Edit-F2)', 'Config', and 'Value'. It contains one entry: '1 Profile0001'.
- Configuration Tree:** A tree view for 'Profile0001' with the following structure:
 - Profile0001
 - Local Descriptors
 - Remote Descriptors
 - Remote Media IP Address: 192.168.1.126
 - Remote Media Port: 1024
- Property Editor:** A panel for editing the selected 'Remote Media Port' property. It has a label 'RemoteMediaPort', a prompt 'Enter Integer', and a text box containing '1024'. Below the text box are buttons for 'Add', 'Insert', 'Delete', and 'Properties'.

At the bottom left of the window, there are buttons for 'Insert', 'Delete', and 'Clear'.

MGC H248 Incoming Call Handler Configuration

The screenshot shows a software window titled "Incoming Call Handlers Configuration - default". The window contains a table with two columns: "Message Name" and "Script Name". The first row in the table has "Service Change Request" in the "Message Name" column and "InitiateServiceHandler.gls" in the "Script Name" column. To the right of the table is a "Scripts" list containing "InitiateServiceHandler.gls". Below the "Scripts" list are radio buttons for "Sequence" (selected) and "Random". There are also "Up" and "Down" buttons. At the bottom of the window are "Add", "Delete", and "Clear" buttons for the table, and "Add" and "Delete" buttons for the "Scripts" list.

Message Name	Script Name
Service Change Request	InitiateServiceHandler.gls

Scripts

- InitiateServiceHandler.gls
-
-
-
-
-
-

Sequence
 Random

Up
Down

Add Delete Clear Add Delete

MGC H248 Call Generation

GL MAPS (Message Automation Protocol Simulation) Media Gateway Controller (H248 3GPP SCTP) - [Call Generation - CallGenDefault]

Configurations Emulator Reports Editor Utilities Windows Help

Sr No	Script Name	Profile	Call Info	Script Execution	Status	Events	Event...	Result	Total Iterations	Com
1	H248Call.gls	Profile0001	CxId,0x00000001,T.rmlId,0x0000000000000002	Stop	Delete Context Initiated	None		Unknown	1	
2				Start		None		Unknown	1	

Add Delete Insert Refresh Start Start All Stop Stop All Abort Abort All

Save Column Width Show Latest

MGC MGW0

```

graph TD
    MGC -- Add Request --> MGW0["17:11:39.805000"]
    MGW0 -- Add Reply --> MGC["17:11:40.204000"]
    MGC -- Add Request --> MGW0["17:11:40.216000"]
    MGW0 -- Add Reply --> MGC["17:11:40.232000"]
    MGC -- Mod Request --> MGW0["17:11:40.258000"]
    MGW0 -- Mod Reply --> MGC["17:11:43.338000"]
    MGC -- Subtract Request --> MGW0["17:11:53.399000"]
    MGW0 -- Subtract Reply --> MGC["17:11:53.437000"]
    
```

```

===== Megaco-Binary Layer =====
MEDIA-GATEWAY-CONTROL DEFINITIONS
0000 MegacoMessage = CHOICE
0001 Length = TAG 00110000 UNIV CONST SEQUENCE/SEQ OF
0002 Message = TAG 10100001 CONTEXT CONST (IMPLICIT SEQUENCE)
0003 Length = 58 (x3A)
0004 version = TAG 10000000 CONTEXT PRIM (IMPLICIT INTEGER)
0005 Length = 1 (x01)
0006 Value = 1 (x01)
0007 mId = TAG EXPLICIT CHOICE 10100001 CONTEXT CONST
0008 Length = 12 (x0C)
0009 mId = CHOICE
0009 ip4Address = TAG 10100000 CONTEXT CONST (IMPLICIT SEQUENCE)
000A Length = 10 (x0A)
000B ip4 Address = TAG 10000000 CONTEXT PRIM Tag
000C Length = 4 (x04)
000D IPv4 Address = 192.168.1.246 (xCOA801F6)
0011 portNumber = TAG 10000001 CONTEXT PRIM (IMPLICIT INTEGER)
0012 Length = 2 (x02)
0013 Value = 3985 (x0F91)
    
```

Scripts Message Sequence Event Config Script Flow Capture Events

Error Events Captured Errors Link Status Up=1 Down=0

MGC H248 Call Reception

MAPS (Message Automation Protocol Simulation) Media Gateway (H248 3GPP SCTP) - [Call Reception]

Configurations Emulator Reports Editor Utilities Windows Help

Sr No	Script Name	Call Info	Script Execution	Status	Events	Events Profile
1	Check_SCTP_Status...		Stop	Monitoring SCTP Status	None	
2	InitiateServiceHandle...	Cxtld,0x00,T_rmlid,0xFFFFFFFF	Stop	Monitoring Service Change	None	
3	H248Call.gls	Cxtld,0x00000001,T_rmlid,0x0000000000000002	Completed	Add Context Requested	None	

Abort Abort All Show Records Auto Trash Trash

Save Column Width Show Latest

MGC MG

```

sequenceDiagram
    participant MGC
    participant MG
    MGC->>MG: Add Request 17:11:39.946000
    MG-->>MGC: Add Reply 17:11:40.188000
    MGC->>MG: Add Request 17:11:40.222000
    MG-->>MGC: Add Reply 17:11:40.225000
    MGC->>MG: Mod Request 17:11:40.271000
    MG-->>MGC: Mod Reply 17:11:43.330000
    MGC->>MG: Subtract Request 17:11:53.406000
    MG-->>MGC: Subtract Reply 17:11:53.428000
    
```

```

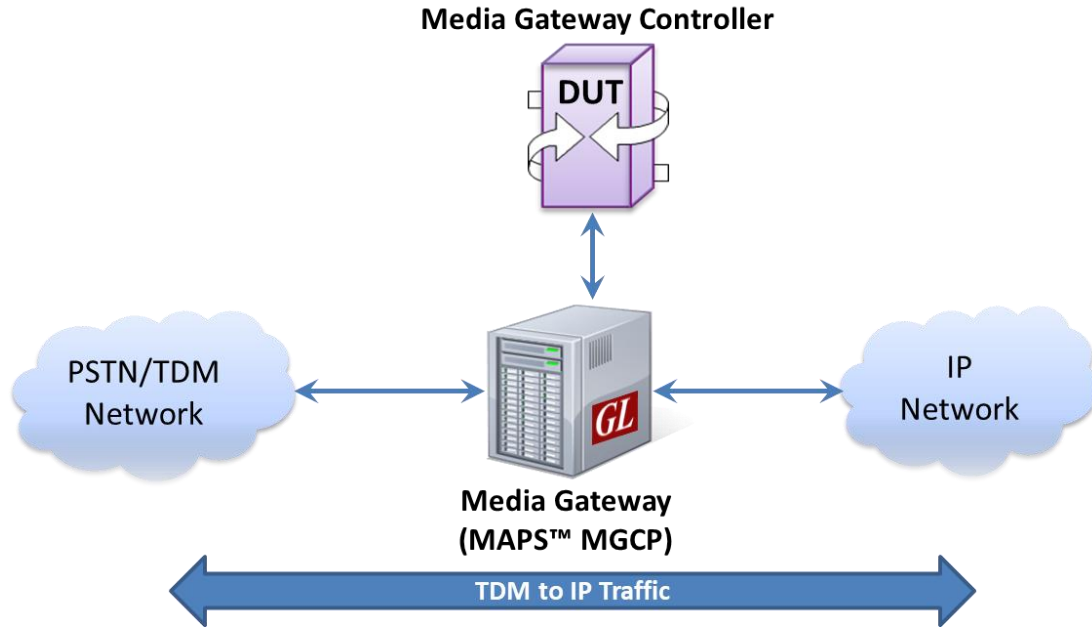
===== Megaco-Binary Layer =====
MEDIA-GATEWAY-CONTROL DEFINITIONS = CHOICE
0000 MegacoMessage = TAG 00110000 UNIV CONST SEQUENCE/SEQ OF
0001 Length = 60 (x3C)
0002 Message = TAG 10100001 CONTEXT CONST (IMPLICIT SEQU
0003 Length = 58 (x3A)
0004 version = TAG 10000000 CONTEXT PRIM (IMPLICIT INTEG
0005 Length = 1 (x01)
0006 Value = 1 (x01)
0007 mId = TAG EXPLICIT CHOICE 10100001 CONTEXT CONS
0008 Length = 12 (x0C)
0009 mId = CHOICE
000A ip4Address = TAG 10100000 CONTEXT CONST (IMPLICIT SEQU
000B Length = 10 (x0A)
000C ip4 Address = TAG 10000000 CONTEXT PRIM Tag
000D Length = 4 (x04)
000E IPv4 Address = 192.168.1.246 (xCOA801F6)
000F portNumber = TAG 10000001 CONTEXT PRIM (IMPLICIT INTEG
0010 Length = 2 (x02)
0011 Value = 3335 (x0D83)
    
```

Scripts **Message Sequence** Event Config Script Flow Capture Events

● Error Events ● Captured Errors ● Link Status Up=1 Down=0

MAPS™ MEGACO Conformance

MGC Conformance Testing

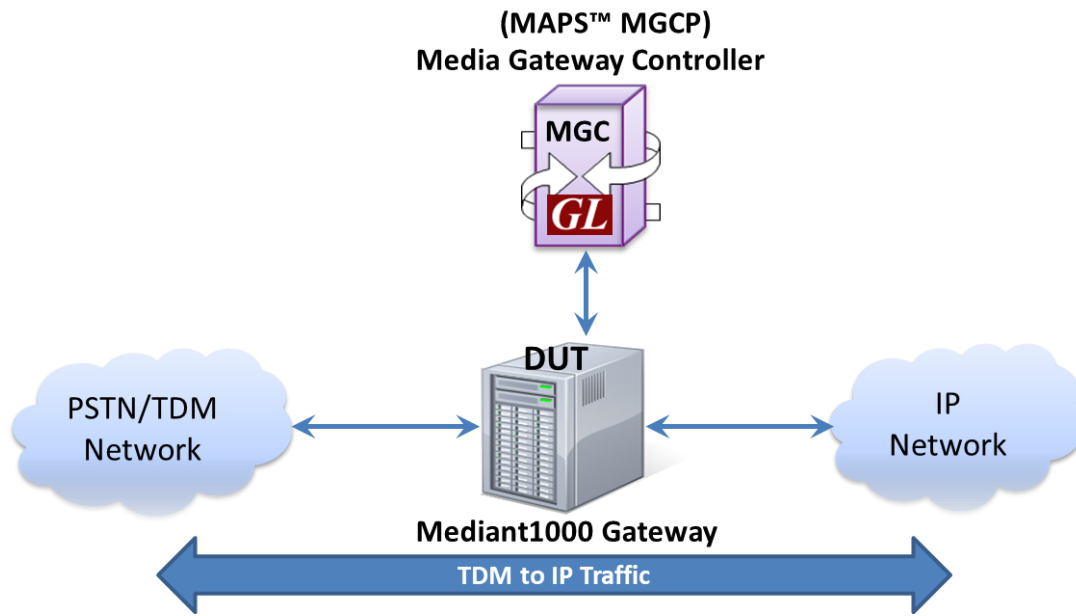


The screenshot shows the **MAPS (Message Automation Protocol Simulation) Media Gateway (MGCP IETF)** software interface. The main window displays a table of test results:

Sr No	Script Name	Profile	Call Info	Script Execution	Status	Events	Events Profile	Result	Total Iterations	Completed Iterations
1	MG_Registration.gls	MGProfile01		Start		None		Pass	1	1

Below the table, there are buttons for **Add**, **Delete**, **Insert**, **Start**, **Abort**, **Refresh**, **Start All**, and **Abort All**. A sequence diagram is visible, showing a **RSIP** message from **MAPS** to **DUT** at **17.24.50.990000**, and a **200** response from **DUT** back to **MAPS** at the same time. The right pane shows the log output: **RSIP 4 *8(192.168.1.242) MGCP 1.0** and **RM: Restart**.

MG Conformance Testing



GL MAPS (Message Automation Protocol Simulation) Media Gateway Controller (MGCP IETF) - [Call Generation - Conf_TP's_CRGX_Valid]

Configurations Emulator Reports Editor Windows Help

Sr ...	Script Name	Profile	Call Info	Script Exec...	Status	Events	Events Profile	Result	Total Iterations	Completed Iteration
1	Conf_TX_MGC_TP_MG_V_CR_01.gls	MGC-RGW/Profile01		Start	ConnectionCreated	None		Pass	1	1
2	Conf_TX_MGC_TP_MG_V_CR_02.gls	MGC-RGW/Profile01		Start	ConnectionCreated	None		Pass	1	1
3	Conf_TX_MGC_TP_MG_V_CR_03.gls	MGC-RGW/Profile01		Start	ConnectionCreated	None		Pass	1	1
4	Conf_TX_MGC_TP_MG_V_CR_04.gls	MGC-RGW/Profile01		Start	ConnectionCreated	None		Pass	1	1
5	Conf_TX_MGC_TP_MG_V_CR_05.gls	MGC-RGW/Profile01		Start	ConnectionCreated	None		Pass	1	1
6	Conf_TX_MGC_TP_MG_V_CR_06.gls	MGC-RGW/Profile01		Start	Invalid mode	None		Fail	1	1
7	Conf_TX_MGC_TP_MG_V_CR_07.gls	MGC-RGW/Profile01		Start	ConnectionCreated	None		Pass	1	1
8	Conf_TX_MGC_TP_MG_V_CR_08.gls	MGC-RGW/Profile01		Start	ConnectionCreated	None		Pass	1	1
9	Conf_TX_MGC_TP_MG_V_CR_09.gls	MGC-RGW/Profile01		Start	ConnectionCreated	None		Pass	1	1
10	Conf_TX_MGC_TP_MG_V_CR_10.gls	MGC-RGW/Profile01		Start	ConnectionCreated	None		Pass	1	1
11	Conf_TX_MGC_TP_MG_V_CR_11.gls	MGC-RGW/Profile01		Start	ConnectionCreated	None		Pass	1	1

Add Delete Insert Start Abort Refresh Start All Abort All

MAPS

DUT

CRGX → 18:34:54.593000

← 200 18:34:54.593000

DLCX → 18:34:54.593000

← 250 18:34:54.609000

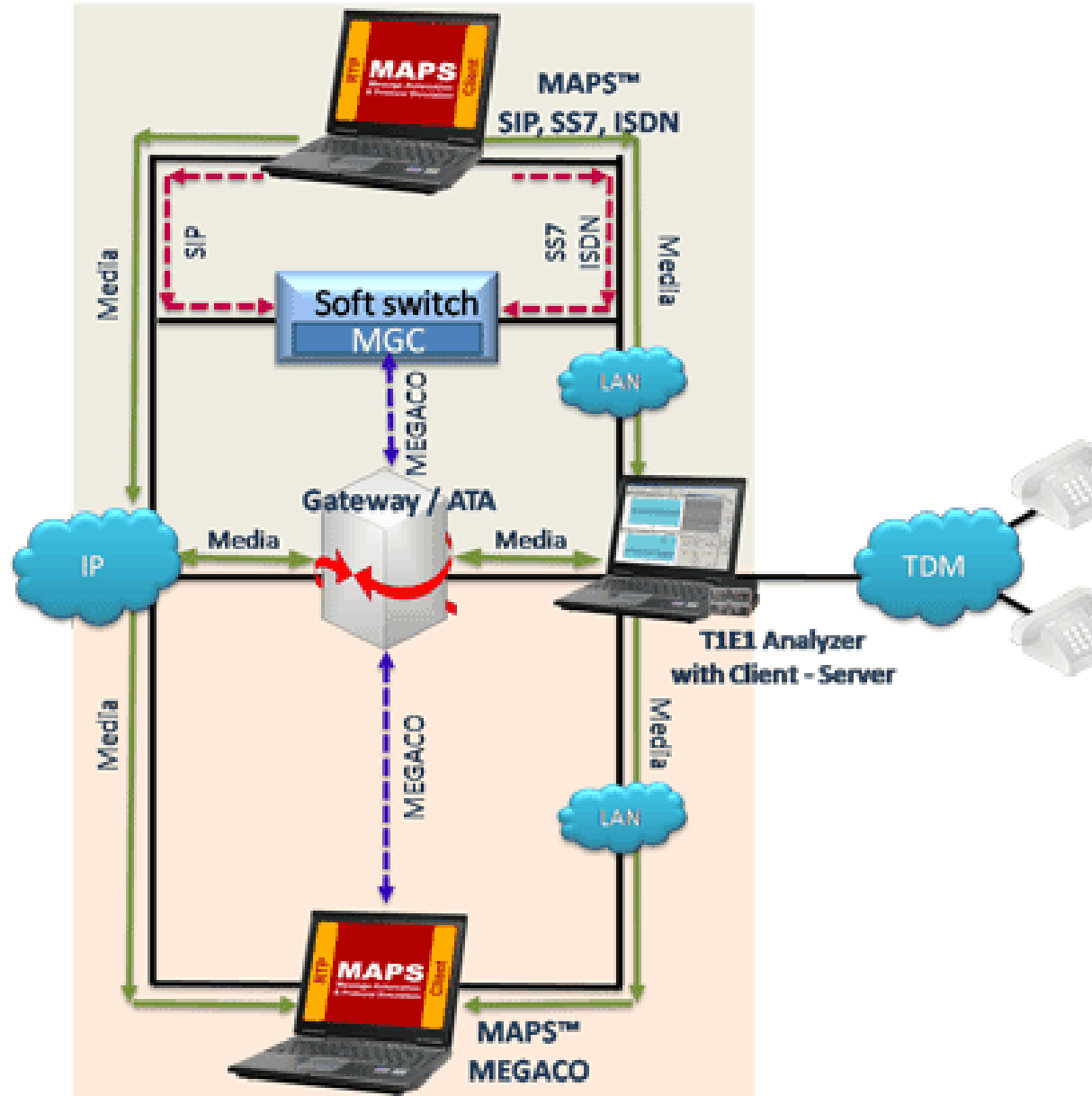
```

200 14 OK
I: 7
v=0
o=- 7 0 IN IP4 192.168.1.220
s=Cisco SDP 0
c=IN IP4 192.168.1.220
t=0 0
a=audio 18672 RTP/AVP 8 100
a=rtpmap:100 X-NSE/8000
a=fatp:100 200-202
a=X-sgm:0
a=X-cap: 1 audio RTP/AVP 100
a=X-cpar: a=rtpmap:100 X-NSE/8000
a=X-cpar: a=fatp:100 200-202
a=X-cap: 2 image udpt1 t38
                
```

Scripts Message Sequence Event Config Script Flow

End-to-End Gateway Testing

End-to-End Gateway Testing



High Density (HD) Traffic Simulation (MEGACO and MGCP)

High Density (HD) RTP Traffic Simulation



- Rackmount network appliance with 4x1GigE NIC
- Transport over UDP and TCP, IPv4 and IPv6, and TLS for secure transport
- Easily achieve up to 20,000 endpoints per appliance (5000 per port)
- Up to 350 calls per second (with RTP traffic)
- Scales to around 100,000 to 200,000 endpoints with use of Master Controller for single point of control
- Manage 10+ MAPS™ systems with single point of control from Master Controller

Call Generation

GL MAPS (Message Automation Protocol Simulation) Media Gateway Controller (H248 3GPP SCTP) - [Call Generation - CallGenDefault]

Configurations Emulator Reports Editor Utilities Windows Help

Sr No	Script Name	Profile	Call Info	Script Execution	Status	Events	Event...	Result	Total Iterations	Com
1	H248Call.gls	Profile0001	Cxrlid,0x00000001.T.rmlid,0x0000000000000002	Stop	Deleteb Context Initiated	None		Unknown	1	
2				Start		None		Unknown	1	

Column Width Show Latest

```

===== Megaco-Binary Layer =====
MEDIA-GATEWAY-CONTROL DEFINITIONS
0000 MegacoMessage = CHOICE
0001 Length = TAG 00110000 UNIV CONST SEQUENCE/SEQ OF
0002 Message = TAG 10100001 CONTEXT CONST (IMPLICIT SEQUENCE)
0003 Length = 58 (x3A)
0004 version = TAG 10000000 CONTEXT PRIM (IMPLICIT INTEGER)
0005 Length = 1 (x01)
0006 Value = 1 (x01)
0007 mId = TAG EXPLICIT CHOICE 10100001 CONTEXT CONST
0008 Length = 12 (x0C)
0009 mId = CHOICE
0009 ip4Address = TAG 10100000 CONTEXT CONST (IMPLICIT SEQUENCE)
000A Length = 10 (x0A)
000B ip4 Address = TAG 10000000 CONTEXT PRIM Tag
000C Length = 4 (x04)
000D IPv4 Address = 192.168.1.246 (xCOA801F6)
0011 portNumber = TAG 10000001 CONTEXT PRIM (IMPLICIT INTEGER)
0012 Length = 2 (x02)
0013 Value = 3985 (x0F91)
          
```

Error Events
 Captured Errors
 Link Status Up=1 Down=0

Bulk Call Reception

MAPS (Message Automation Protocol Simulation) Media Gateway (H248 3GPP SCTP) - [Call Reception]

Configurations Emulator Reports Editor Utilities Windows Help

Sr No	Script Name	Call Info	Script Execution	Status	Events	Events Profile
1	Check_SCTP_Status...		Stop	Monitoring SCTP Status	None	
2	InitiateServiceHandle...	Cxtld,0x00,Tmld,0xFFFFFFFF	Stop	Monitoring Service Change	None	
3	H248Call_gls	Cxtld,0x00000001,Tmld,0x0000000000000002	Completed	Add Context Requested	None	

Abort Abort All Show Records Auto Trash Trash

Save Column Width Show Latest

MGC MG

Add Request → 17:11:39.946000

Add Reply ← 17:11:40.188000

Add Request → 17:11:40.222000

Add Reply ← 17:11:40.225000

Mod Request → 17:11:40.271000

Mod Reply ← 17:11:43.330000

Subtract Request → 17:11:53.406000

Subtract Reply ← 17:11:53.428000

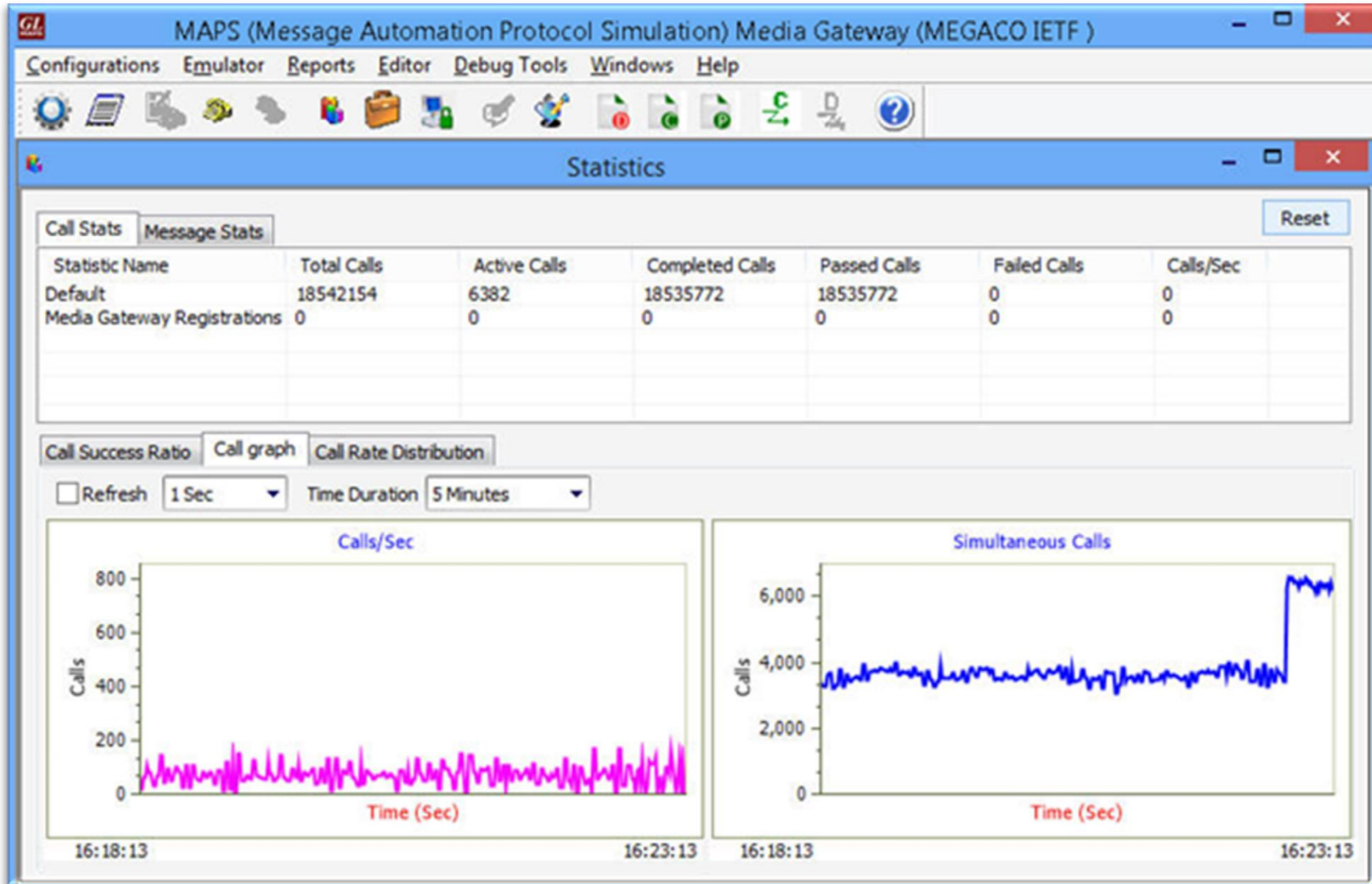
```

===== Megaco-Binary Layer =====
MEDIA-GATEWAY-CONTROL DEFINITIONS = CHOICE
0000 MegacoMessage = TAG 00110000 UNIV CONST SEQUENCE/SEQ OF
0001 Length = 60 (x3C)
0002 Message = TAG 10100001 CONTEXT CONST (IMPLICIT SEQU
0003 Length = 58 (x3A)
0004 version = TAG 10000000 CONTEXT PRIM (IMPLICIT INTEG
0005 Length = 1 (x01)
0006 Value = 1 (x01)
0007 mId = TAG EXPLICIT CHOICE 10100001 CONTEXT CONS
0008 Length = 12 (x0C)
0009 mId = CHOICE
000A ip4Address = TAG 10100000 CONTEXT CONST (IMPLICIT SEQU
000B Length = 10 (x0A)
000C ip4 Address = TAG 10000000 CONTEXT PRIM Tag
000D Length = 4 (x04)
000E IPv4 Address = 192.168.1.246 (xCOA801F6)
0010 portNumber = TAG 10000001 CONTEXT PRIM (IMPLICIT INTEG
0011 Length = 2 (x02)
0012 Value = 3005 (x0B05)
                    
```

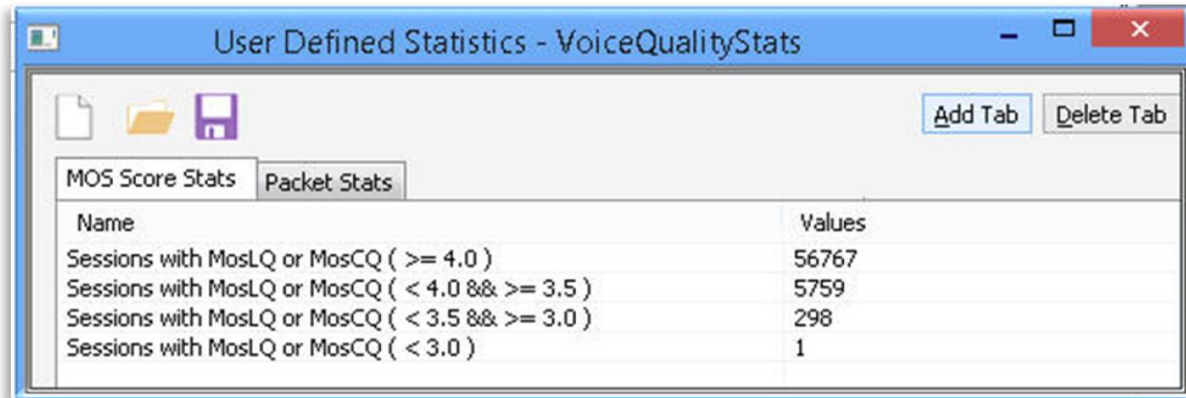
Scripts **Message Sequence** Event Config Script Flow Capture Events

● Error Events ● Captured Errors ● Link Status Up=1 Down=0

Bulk Call Simulation Results

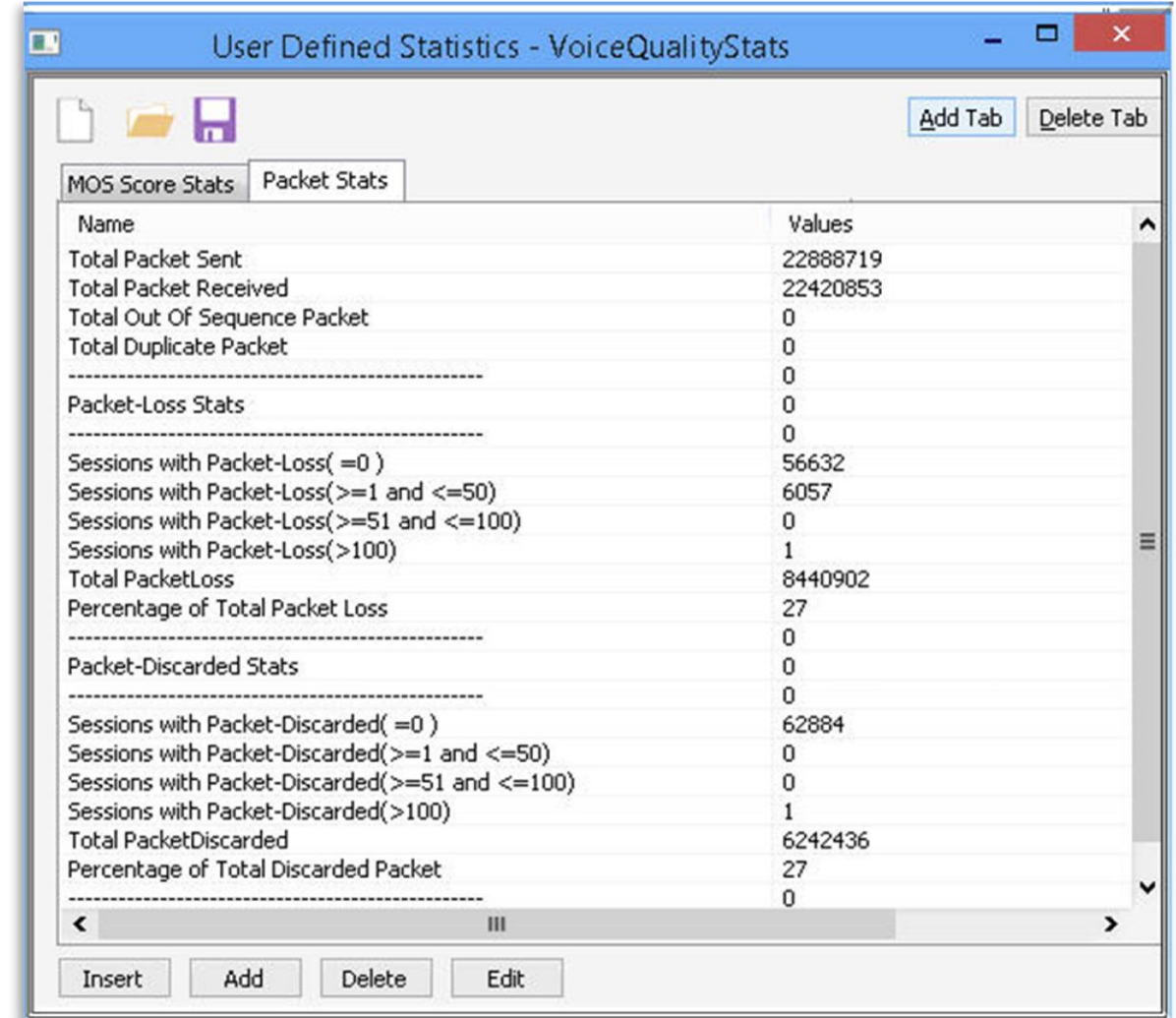


Speech Quality Metrics (R Factor and MOS)



The screenshot shows a window titled "User Defined Statistics - VoiceQualityStats" with a "MOS Score Stats" tab selected. The table displays the following data:

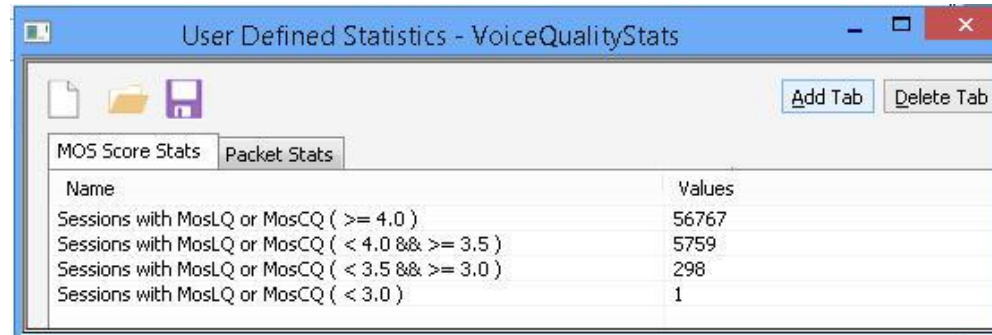
Name	Values
Sessions with MosLQ or MosCQ (≥ 4.0)	56767
Sessions with MosLQ or MosCQ (< 4.0 && ≥ 3.5)	5759
Sessions with MosLQ or MosCQ (< 3.5 && ≥ 3.0)	298
Sessions with MosLQ or MosCQ (< 3.0)	1



The screenshot shows the same window with the "Packet Stats" tab selected. The table displays the following data:

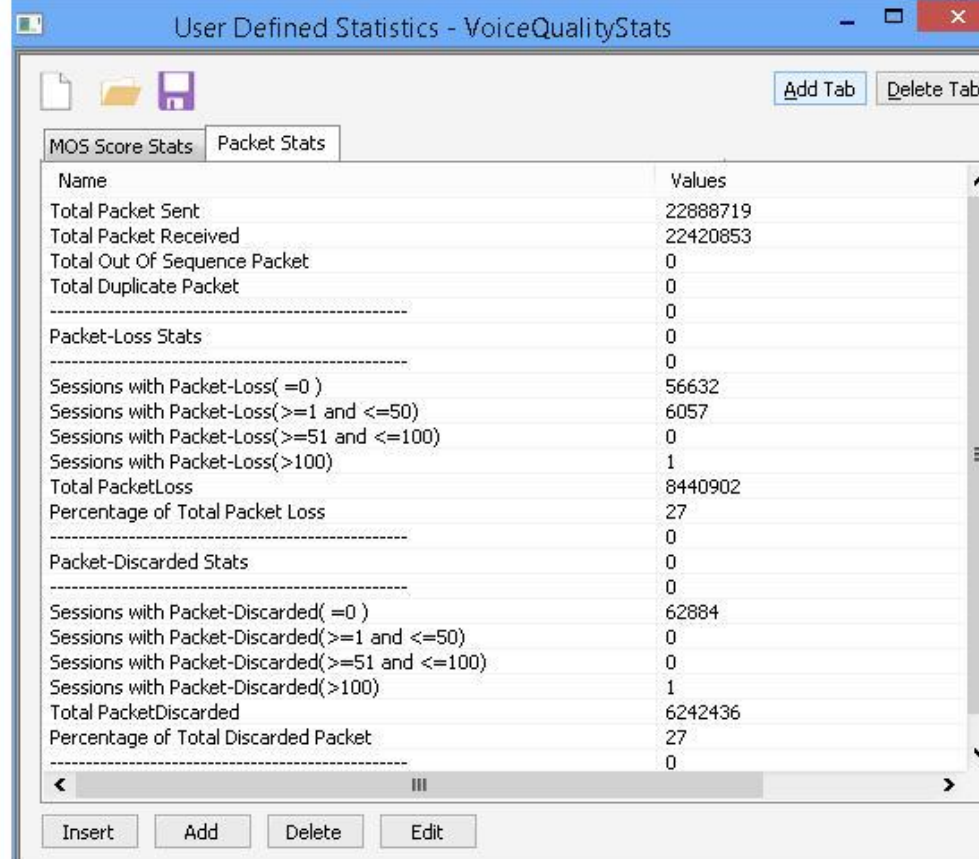
Name	Values
Total Packet Sent	22888719
Total Packet Received	22420853
Total Out Of Sequence Packet	0
Total Duplicate Packet	0
-----	0
Packet-Loss Stats	0
-----	0
Sessions with Packet-Loss(=0)	56632
Sessions with Packet-Loss(≥ 1 and ≤ 50)	6057
Sessions with Packet-Loss(≥ 51 and ≤ 100)	0
Sessions with Packet-Loss(> 100)	1
Total PacketLoss	8440902
Percentage of Total Packet Loss	27
-----	0
Packet-Discarded Stats	0
-----	0
Sessions with Packet-Discarded(=0)	62884
Sessions with Packet-Discarded(≥ 1 and ≤ 50)	0
Sessions with Packet-Discarded(≥ 51 and ≤ 100)	0
Sessions with Packet-Discarded(> 100)	1
Total PacketDiscarded	6242436
Percentage of Total Discarded Packet	27
-----	0

Voice Quality Statistics



The screenshot shows a window titled "User Defined Statistics - VoiceQualityStats" with a tab labeled "MOS Score Stats". The table below displays the data for this tab.

Name	Values
Sessions with MosLQ or MosCQ (≥ 4.0)	56767
Sessions with MosLQ or MosCQ (< 4.0 && ≥ 3.5)	5759
Sessions with MosLQ or MosCQ (< 3.5 && ≥ 3.0)	298
Sessions with MosLQ or MosCQ (< 3.0)	1



The screenshot shows the same window with a tab labeled "Packet Stats". The table below displays the data for this tab.

Name	Values
Total Packet Sent	22888719
Total Packet Received	22420853
Total Out Of Sequence Packet	0
Total Duplicate Packet	0
-----	0
Packet-Loss Stats	0
-----	0
Sessions with Packet-Loss(=0)	56632
Sessions with Packet-Loss(≥ 1 and ≤ 50)	6057
Sessions with Packet-Loss(≥ 51 and ≤ 100)	0
Sessions with Packet-Loss(> 100)	1
Total PacketLoss	8440902
Percentage of Total Packet Loss	27
-----	0
Packet-Discarded Stats	0
-----	0
Sessions with Packet-Discarded(=0)	62884
Sessions with Packet-Discarded(≥ 1 and ≤ 50)	0
Sessions with Packet-Discarded(≥ 51 and ≤ 100)	0
Sessions with Packet-Discarded(> 100)	1
Total PacketDiscarded	6242436
Percentage of Total Discarded Packet	27
-----	0

THANK YOU