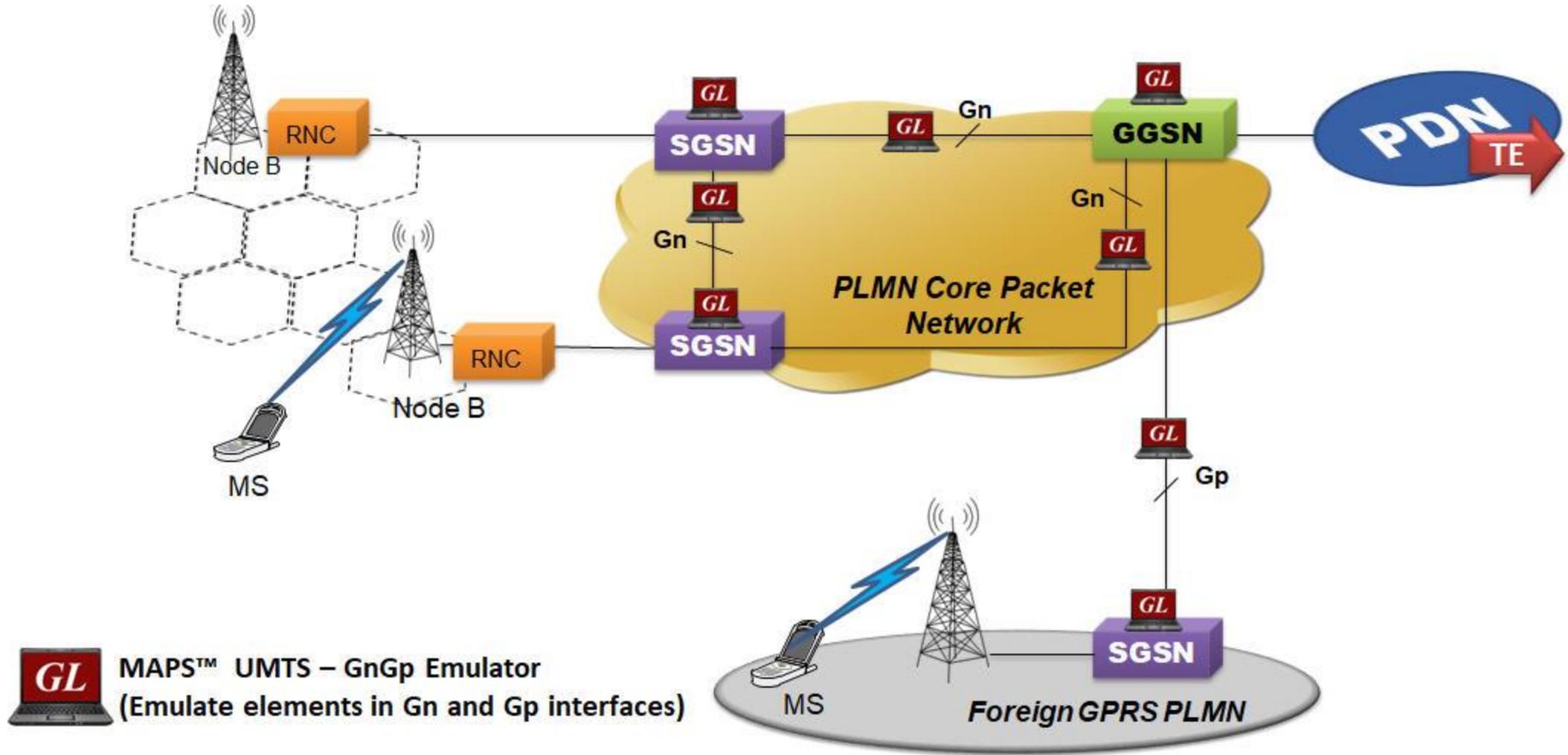

MAPS™ UMTS Emulator Gn and Gp Interfaces

(UMTS Gn and Gp Interface Emulation)



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

MAPS™ UMTS Gn, Gp Interfaces



Main Features

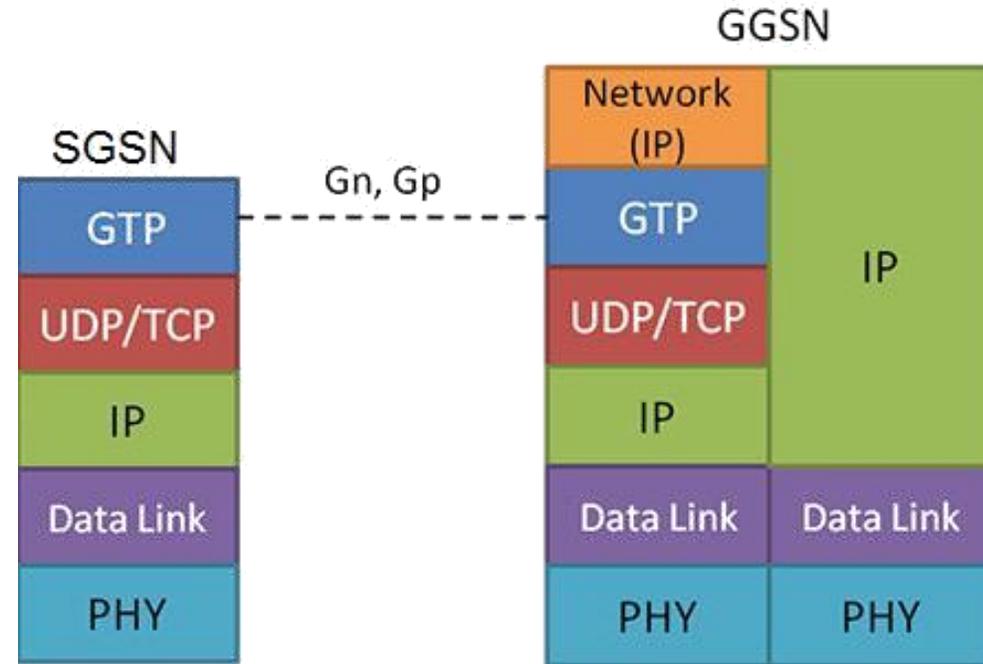
- Setup a virtual real-time network emulating 3G-UMTS network elements using 'MAPS™ 3G Wireless Lab Suite'
- Emulates SGSN and GGSN
- Supports GTP Control plane
- Generates hundreds of Control Signalling (Load Testing)
- Generates and processes GTP messages
- High-volume user plane traffic emulation possible with support of Packet Load appliance; both 4Gbps and 40Gbps variants are available to suit customer needs
- Supports GTP Traffic (GTP User Plane Data) which includes verification like BERT testing, HTTP traffic generation capability, GGSN can be connected to real IP network to emulate Gateway testing
- Auto generation feature allows Massive UE emulation for high density load testing
- Insertion of impairments to create invalid messages
- Supports customization of call flows and message templates using Script and Message editors
- Supports scripted call generation and automated call reception
- Supports large number of subscribers with CSV based profiles for bulk call generation

Applications

- Provides fault insertion, and erroneous call flows testing capability
- Functional testing, Regression testing and Conformance testing of network elements
- Ready scripts makes testing procedure simpler, less time consuming and hence time to market products
- QoS requests for greater or lesser bandwidth
- UMTS lab setup can be used in educational institutions for training purposes

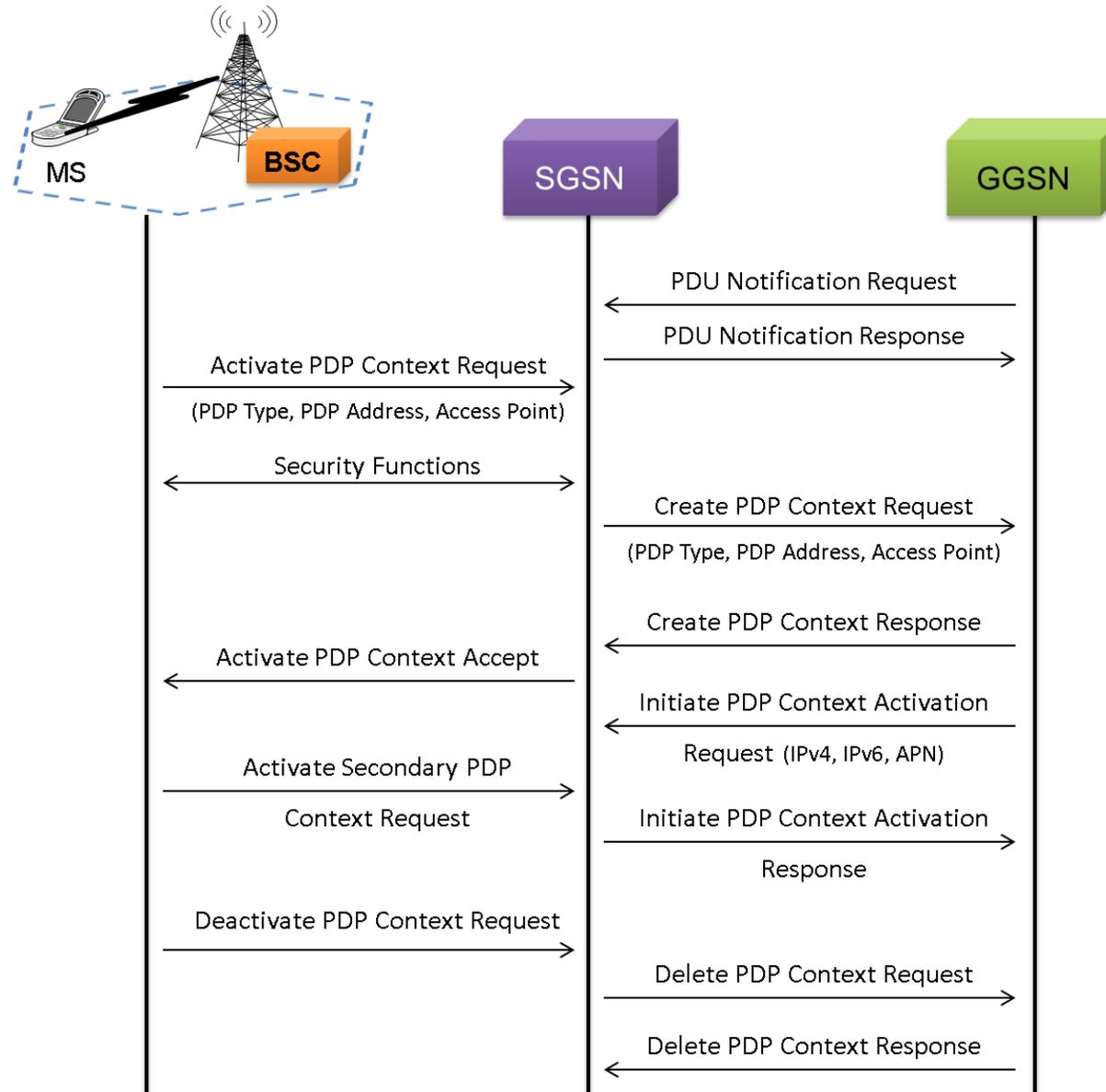
UMTS GnGp Protocol Stack

GTP → GPRS Tunneling Protocol
TCP → Transmission Control Protocol
UDP → User Datagram Protocol
IP → Internet Protocol



Supported Protocols	Specification Used
GnGp Interface	
GTP	TS 29.060 V9.2.0 (2010-03)

GTP Signaling Procedure



Testbed Configuration

The screenshot shows the configuration window for MAPS SGSN (UMTS GnGp 3GPP). The window title is "MAPS SGSN (UMTS GnGp 3GPP) - [Testbed Setup - TestBedDefault]". The menu bar includes "Configurations", "Emulator", "Reports", "Editor", "Debug Tools", "Windows", and "Help". The toolbar contains icons for settings, help, and other functions.

The main configuration area is divided into two panes. The left pane shows a tree view of configuration items, and the right pane shows the values for these items. The "Enable" checkbox is checked.

Config	Value
UMTS GnGp	
Adapter Index	0
SGSN	1
SGSN 1	
SGSN IP Address	192.168.12.27
SGSN Port	2123
SGSN IP Address For Traffic	192.168.15.27
GTP Port For Traffic	2152
Supported GGSN	
GGSN IP Address	192.168.12.26
GGSN Port	2123
Traffic Parameters	
Traffic	Enable
PacketLoad Traffic Type	HTTP Traffic
PacketLoad Management IP Address	192.168.30.99
PacketLoad Traffic Mode	GTP To GTP
UE Simulation Parameters	
Type Of UE Simulation	Profile
End User Configuration	MS_Profiles.xml
CSV File Name	C:\Program Files\GL Communicatio...
Auto Generated Users Info	
No Of Users To Be Simulated	400000000
Starting IMSI	001013014041741
MSISDN	3014041741
Auto Generated End User Configuration	AutoGeneratedUser_Profile.xml

Buttons: Start, Edit

Initialisation Errors

Profile Configuration

The screenshot displays the 'Profile Editor - MS_Profiles' window. The interface is divided into several sections:

- Left Panel:** A list of profiles from MSProfile0001 to MSProfile0028. MSProfile0001 is selected.
- Center Panel:** A tree view of configuration parameters for MSProfile0001. The parameters and their values are as follows:

Config	Value
MSProfile0001	
Mobile Identity	
IMSI	901700000000638
IMEI Software Version	012345678902132
MSISDN	9017000638
NSAPI	
Primary NSAPI	5
Secondary NSAPI	6
Access Point Name	default
PDP Context Rejection Cause	192
RAT Type	UTRAN
MS Time Zone	+1 Adjustment for Daylight Sa...
User Location Information	
Geographic Location Type	Geographic Location field is i...
MCC	204
MNC	04
LAC	220
SAC	12940
RAC	255
CI	22
Evolved Allocation or Retention Priority	
PreEmption Velnurability	PRE-EMPTION VELNURABILIT...
PreEmprion Capability	PRE-EMPTION CAPABILITY DI...
Traffic Parameters	
Mobile Traffic Parameters	
Udp Src Port	2152
Udp Dst Port	2152
HTTP Server IP Address	192.168.15.65
TCP port for HTTP	80
Transmission Type	Once
Start File Count	1
Traffic File Name	www.etsi.org
File Count For Concurrent Or Sequential	3
TxFile For Once Transmission From List	3
File Play Back Count	1
OS Socket	Disable
Traffic Type	Mobile Traffic
- Right Panel:** A detailed view of the IMSI configuration, showing an 'Enter Digit' field with the value '901700000000638' entered.
- Bottom Panel:** A status bar with buttons for 'Insert', 'Delete', and 'Clear', and a log area showing 'Initialisation Errors', 'Error Events', 'Captured Errors', and 'Lin'.

Incoming Call Handler Configuration

MAPS GGSN (UMTS GnGp 3GPP) - [Incoming Call Handlers Configuration - default]

Configurations Emulator Reports Editor Debug Tools Windows Help

Message Name	Script Name
Create PDP Context Request	GGSNSessionControl.gls
SGSN Context Request	SGSNContextRequest.gls

Scripts

- GGSNSessionControl.gls

Sequence
 Random

Up
Down

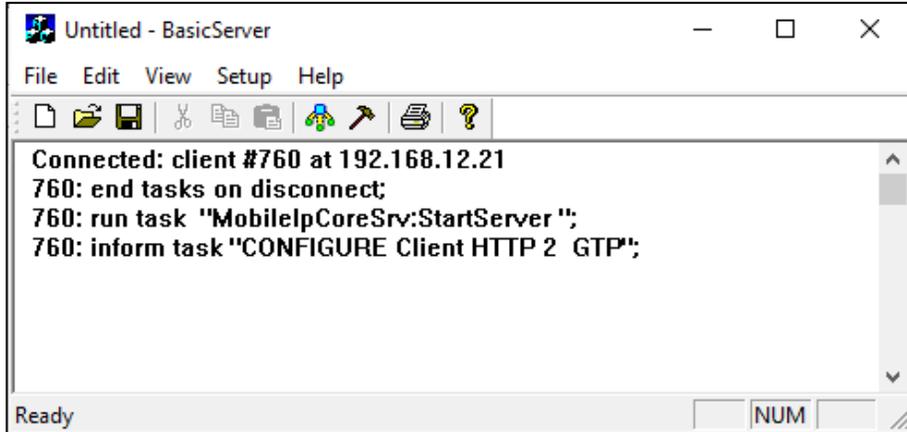
Add Delete

Add Delete Apply Scripts Clear Scripts

Initialisation Errors Error

UMTS GnGp Log

Server Connection Log



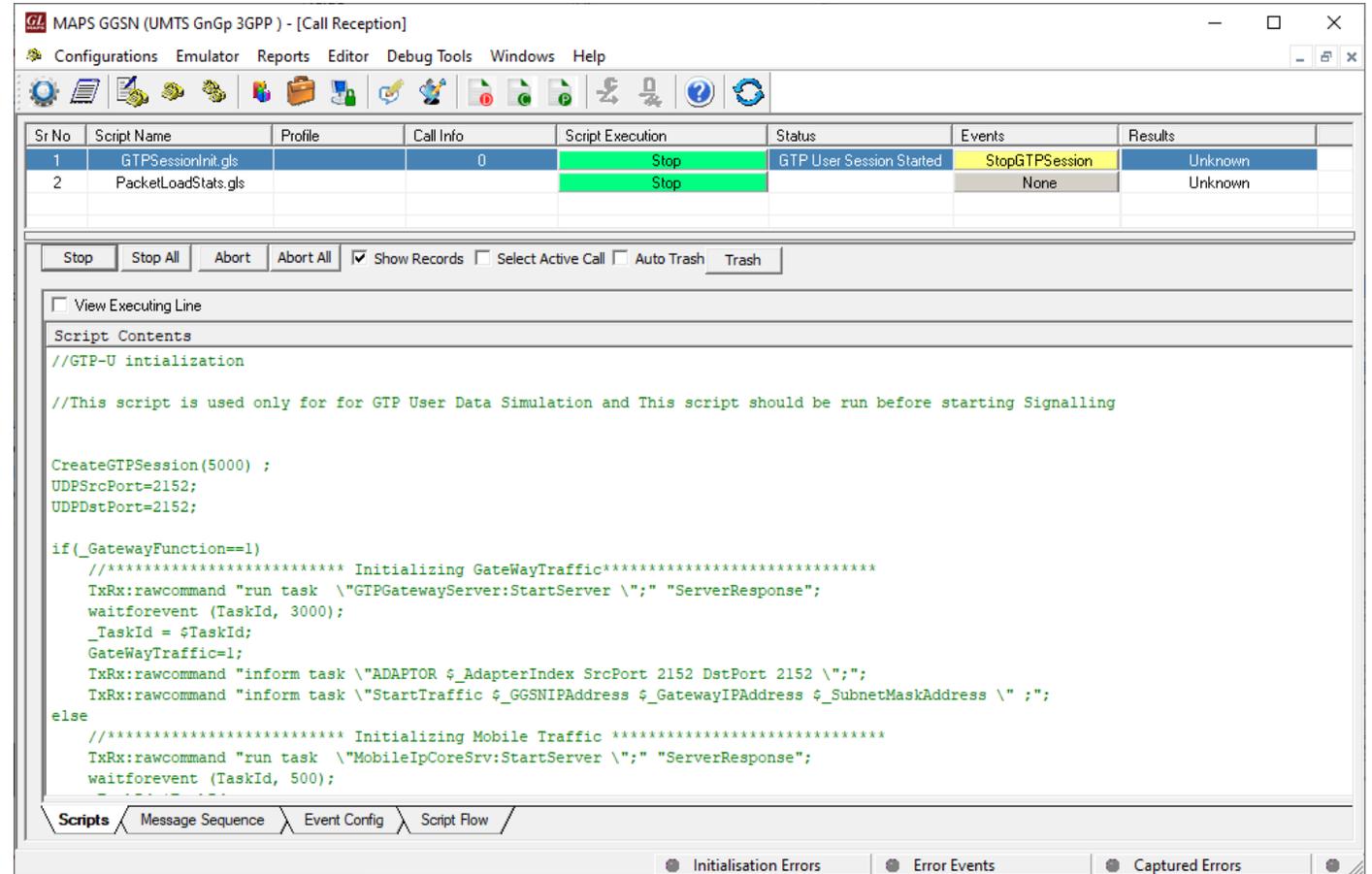
Untitled - BasicServer

File Edit View Setup Help

```
Connected: client #760 at 192.168.12.21
760: end tasks on disconnect;
760: run task "MobileIpCoreSrv:StartServer ";
760: inform task "CONFIGURE Client HTTP 2 GTP";
```

Ready NUM

Active GTP Sessions



GL MAPS GGSN (UMTS GnGp 3GPP) - [Call Reception]

Configurations Emulator Reports Editor Debug Tools Windows Help

Sr No	Script Name	Profile	Call Info	Script Execution	Status	Events	Results
1	GTPSessionInit.gls		0	Stop	GTP User Session Started	StopGTPSession	Unknown
2	PacketLoadStats.gls			Stop		None	Unknown

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

View Executing Line

Script Contents

```
//GTP-U initialization

//This script is used only for for GTP User Data Simulation and This script should be run before starting Signalling

CreateGTPSession(5000) ;
UDPSrcPort=2152;
UDPdstPort=2152;

if (_GatewayFunction==1)
//***** Initializing GateWayTraffic*****
TxRx:rawcommand "run task \"GTPGatewayServer:StartServer \";" "ServerResponse";
waitforevent (TaskId, 3000);
_TaskId = $TaskId;
GateWayTraffic=1;
TxRx:rawcommand "inform task \"ADAPTOR $ _AdapterIndex SrcPort 2152 DstPort 2152 \";";
TxRx:rawcommand "inform task \"StartTraffic $ _GGSNIPAddress $ _GatewayIPAddress $ _SubnetMaskAddress \";";
else
//***** Initializing Mobile Traffic *****
TxRx:rawcommand "run task \"MobileIpCoreSrv:StartServer \";" "ServerResponse";
waitforevent (TaskId, 500);
```

Scripts Message Sequence Event Config Script Flow

Initialisation Errors Error Events Captured Errors

UMTS GnGp Call Generation

MAPS SGSN (UMTS GnGp 3GPP) - [Call Generation - CallGenDefault]

Configurations Emulator Reports Editor Debug Tools Windows Help

Sr No	Script Name	Profile	Call Info	Script Execution	Status	Events	Result	Total Iterations	Completed Iterations
1	GnGpSessionControl.gls	MSPProfile0001	TEID.:4,IMSI.:901700000000638	Start	Pri PDP Context Deleted	None	Pass	1	1
2	GnGpSessionControl.gls	MSPProfile0002		Start		None	Unknown	1	0
3	GnGpSessionControl.gls	MSPProfile0003		Start		None	Unknown	1	0
4	GnGpSessionControl.gls	MSPProfile0004		Start		None	Unknown	1	0
5	GnGpSessionControl.gls	MSPProfile0005		Start		None	Unknown	1	0

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

Save Column Width Show Latest

SGSN GGSN

```

Create PDP Context Request → 12:57:33.956000
Create PDP Context Response ← 12:57:33.978000
Update PDP Context Request → 12:57:37.210000
Update PDP Context Response ← 12:57:37.232000
Delete PDP Context Request → 12:58:33.995000
Delete PDP Context Response ← 12:58:34.016000
                    
```

Find

```

===== GTP'/GTP Layer =====
0000 Version = 001..... GTP V1
0000 Protocol Type = ...1.... GTP V2
GTP Layer Message
0000 Spare = ....0... (0)
0000 E = .....0.. Not Present
0000 S = .....1. Present
0000 PN = .....0 Not Present
0001 Message Type = 00010000 Create PDP
0002 Length of GTP Message = 169 (x00A9)
0004 Tunnel Endpoint Identifier = 0 (x00000000)
0008 Sequence Number = 11268 (x2C04)
000A Spare = 00000000 (0)
End of Extension Hdrs
000B Spare = 00000000 (0)
IMSI
000C IE Identifier(IMSI) = 00000010 IMSI
000D IMSI = 901700000000638
Routing Area Identity (RAI) =
                    
```

Scripts Message Sequence Event Config Script Flow

Initialisation Errors Error Events Captured Errors Link Stat

UMTS GnGp Call Reception

GL MAPS GGSN (UMTS GnGp 3GPP) - [Call Reception]

Configurations Emulator Reports Editor Debug Tools Windows Help

Sr No	Script Name	Profile	Call Info	Script Execution	Status	Events	Results
1	GGSNSessionControl.gls	MSProfile0001	GGSNTEIDSig.7,IMSI.901700000000638	Completed	Pri PDP Context Deleted	None	Pass

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

Save Column Width Show Latest

SGSN	GGSN
→ Create PDP Context Request	14:26:34.422000
← Create PDP Context Response	14:26:34.423000
→ Update PDP Context Request	14:26:53.120000
← Update PDP Context Response	14:26:53.121000
→ Delete PDP Context Request	14:27:34.442000
← Delete PDP Context Response	14:27:34.442000

Find

```

===== GTP'/GTP Layer =====
0000 Version = 001..... GI
0000 Protocol Type = ...1..... GI
      GTP Layer Message =
0000 Spare = ....0... (C
0000 E = .....0... Nc
0000 S = .....1. Pr
0000 PN = .....0 Nc
0001 Message Type = 00010000 Cr
0002 Length of GTP Message = 169 (x00A9)
0004 Tunnel Endpoint Identifier = 0 (x0000000C
0008 Sequence Number = 11268 (x2CC
000A Spare = 00000000 (C
      End of Extension Hdrs =
000B Spare = 00000000 (C
      IMSI =
000C IP Identifier (IMSI) = 00000010 TM
    
```

Scripts **Message Sequence** Event Config Script Flow

● Initialisation Errors ● Error Events ● Captured Errors

UMTS Gn, Gp Events and Traffic Log

Server Connection Log

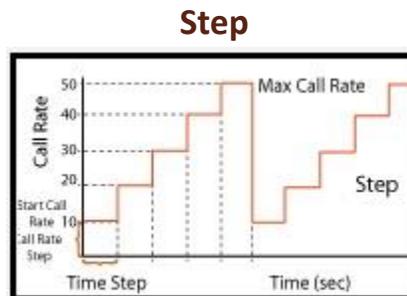
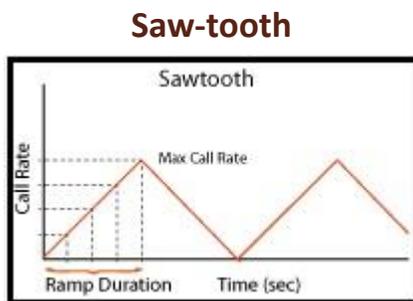
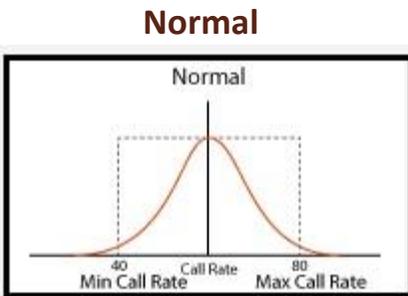
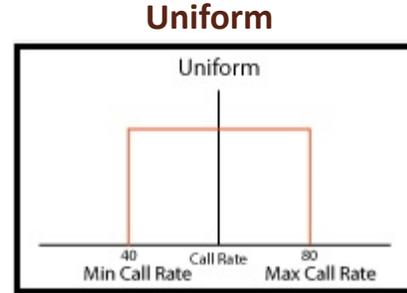
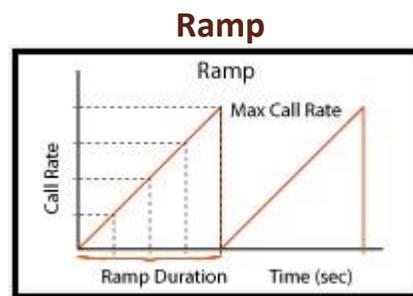
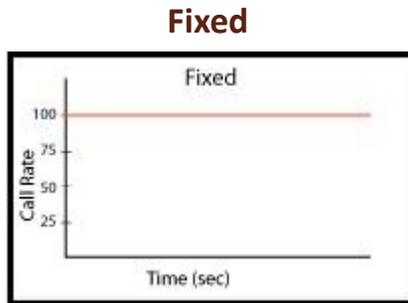
Date/Time	Captured Events	Call Trace Id	Script Name	Script Id
2016-8-10 12:39:39.666000	Task Started			ProtScriptId_66_78544882-1694-6864
2016-8-10 12:39:39.668000	GTP User Traffic Session Started on Task Id :: 3		GTPSessionInit.gls	ProtScriptId_66_78544882-1694-6864
2016-8-10 12:39:46.640000	Loded profile = MSProfile0001	2.9017000000000638	GTPDPContextGGSN.gls	ProtScriptId_62_78552360-1695-4936
2016-8-10 12:39:46.641000	Pri PDP Context Registered	GGSNTEIDSig.2,JMSI.9017000000000638	GGSNSessionControl.gls	ProtScriptId_62_78552360-1695-4936
2016-8-10 12:39:46.641000	GTP-U Mobile-Traffic Started	GGSNTEIDSig.2,JMSI.9017000000000638	GGSNSessionControl.gls	ProtScriptId_62_78552360-1695-4936
2016-8-10 12:40:07.003000	Pri PDP Context Deleted	GGSNTEIDSig.2,JMSI.9017000000000638	GGSNSessionControl.gls	ProtScriptId_62_78552360-1695-4936
2016-8-10 15:09:35.762000	Loded profile = MSProfile0001	4.9017000000000638	GTPDPContextGGSN.gls	ProtScriptId_67_87541820-1699-6864
2016-8-10 15:09:35.763000	Pri PDP Context Registered	GGSNTEIDSig.4,JMSI.9017000000000638	GGSNSessionControl.gls	ProtScriptId_67_87541820-1699-6864
2016-8-10 15:09:35.763000	GTP-U Mobile-Traffic Started	GGSNTEIDSig.4,JMSI.9017000000000638	GGSNSessionControl.gls	ProtScriptId_67_87541820-1699-6864
2016-8-10 15:09:51.909000	Pri PDP Context Deleted	GGSNTEIDSig.4,JMSI.9017000000000638	GGSNSessionControl.gls	ProtScriptId_67_87541820-1699-6864
2016-8-10 15:13:02.956000	Loded profile = MSProfile0001	5.9017000000000638	GTPDPContextGGSN.gls	ProtScriptId_64_87749020-1701-7728
2016-8-10 15:13:02.957000	Pri PDP Context Registered	GGSNTEIDSig.5,JMSI.9017000000000638	GGSNSessionControl.gls	ProtScriptId_64_87749020-1701-7728
2016-8-10 15:13:02.957000	GTP-U Mobile-Traffic Started	GGSNTEIDSig.5,JMSI.9017000000000638	GGSNSessionControl.gls	ProtScriptId_64_87749020-1701-7728
2016-8-10 15:13:06.731000	Initiate PDP Context Activation Request: N/W Request	GGSNTEIDSig.5,JMSI.9017000000000638	GGSNSessionControl.gls	ProtScriptId_64_87749020-1701-7728
2016-8-10 15:13:06.757000	Secondary PDP Registered	GGSNTEIDSig.5,JMSI.9017000000000638	GGSNSessionControl.gls	ProtScriptId_64_87749020-1701-7728
2016-8-10 15:13:06.763000	Loded profile = MSProfile0001	5.4045049480010087	GTPDPContextGGSN.gls	ProtScriptId_64_87749020-1701-7728
2016-8-10 15:13:06.765000	Sec PDP Context Registered	GGSNTEIDSig.5,JMSI.4045049480010087	GGSNSessionControl.gls	ProtScriptId_64_87749020-1701-7728
2016-8-10 15:13:06.765000	GTP-U Mobile-Traffic Started	GGSNTEIDSig.5,JMSI.4045049480010087	GGSNSessionControl.gls	ProtScriptId_64_87749020-1701-7728
2016-8-10 15:13:08.961000	Update PDP Context Initiated	GGSNTEIDSig.5,JMSI.4045049480010087	GGSNSessionControl.gls	ProtScriptId_64_87749020-1701-7728
2016-8-10 15:13:08.961000	Traffic Paused	GGSNTEIDSig.5,JMSI.4045049480010087	GGSNSessionControl.gls	ProtScriptId_64_87749020-1701-7728
2016-8-10 15:13:08.978000	PDP Context Updated	GGSNTEIDSig.5,JMSI.4045049480010087	GGSNSessionControl.gls	ProtScriptId_64_87749020-1701-7728
2016-8-10 15:13:08.978000	Traffic Resumed	GGSNTEIDSig.5,JMSI.4045049480010087	GGSNSessionControl.gls	ProtScriptId_64_87749020-1701-7728
2016-8-10 15:13:12.226000	Pri PDP Context Deleted	GGSNTEIDSig.5,JMSI.4045049480010087	GGSNSessionControl.gls	ProtScriptId_64_87749020-1701-7728

SGSN Traffic Log in Server Console

```
Untitled - BasicServer
File Edit View Setup Help
Connected: client #760 at 192.168.12.21
760: end tasks on disconnect;
760: run task "MobileIpCoreSrv:StartServer ";
760: inform task "CONFIGURE Client HTTP 2 GTP";
760: inform task "ADDGTPSTREAM 192.168.22.1 1002 2 192.168.200.158 2152 192.168.200.193 2152 ";
760: inform task "ADDCONNECTION 1002 2 192.168.158.60 80 192.168.22.1 www.etsi.org ITERATION_COUNT 1 ";
760: inform task "ADDCONNECTION 1002 3 192.168.158.60 80 192.168.22.1 img5a.flixcart.com ITERATION_COUNT 1 ";
760: inform task "ADDCONNECTION 1002 4 192.168.158.60 80 192.168.22.1 icdn.raaga.com ITERATION_COUNT 1 ";
760: inform task "DELETEGTPSTREAM 192.168.22.1 1002 ";
Ready NUM
```

Load Generation

- Stability/Stress and Performance testing using Load Generation
- Different types of Load patterns to distribute load
- User can load multiple patterns for selected script
- User configurable Test Duration, CPS, Maximum and Minimum Call Rate etc.



MAPS SGSN (UMTS GnGp 3GPP) - [Load Generation - LoadGendefault]

Configurations Emulator Reports Editor Debug Tools Windows Help

Total Calls To Generate * (* indicates no limit)

Max Active Calls 2500 Unique Distributions Per Script

Multi Distributions Iteration * (* indicates no limit)

Distributions	Description	Add
Uniform	MinCR=40, MaxCR=80, Duration=10.00	Remove
Ramp	StartCR=1, Ramp Dur=10, MaxCR=100, Duration=10.00	Remove All
Fixed	Call Rate=250, Duration=10.00	Edit

Scripts

GnGpSessionControl

Profile Exclusive Profiles

MSProfile0001

MSProfile0002

MSProfile0003

MSProfile0004

MSProfile0005

MSProfile0006

MSProfile0007

MSProfile0008

MSProfile0009

MSProfile0010

MSProfile0011

MSProfile0012

MSProfile0013

Add Delete Add Delete

Stop Time

Days 0 Hours 0 Minutes 0

Start Time - 00:00:00.000

End Time - 00:00:00.000

Pause Start

Initialisation Err

UMTS GnGp Bulk Call Generation

GL MAPS SGSN (UMTS GnGp 3GPP) - [Call Generation - CallGenDefault]

Configurations Emulator Reports Editor Debug Tools Windows Help

Sr No	Script Name	Profile	Call Info	Script Execution	Status	Events	Events Profile	Result	Total Iterations	Completed Iterati
1	GnGpSessionControl.gls	MSPProfile0001		Start		None		Unknown	10	0
2	GnGpSessionControl.gls	MSPProfile0002		Start		None		Unknown	10	0
3	GnGpSessionControl.gls	MSPProfile0003		Start		None		Unknown	10	0
4	GnGpSessionControl.gls	MSPProfile0004		Start		None		Unknown	10	0
5	GnGpSessionControl.gls	MSPProfile0005		Start		None		Unknown	10	0

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

View Executing Line

Script Contents

```
TxCount=0;
RxCount=0;
File_TxCount=0;
File_RxCount=0;
nFileCount=0;
GnGpScriptId = "Null" ;
Traffic="Null";
_IPStep=1;
APN=$_APNName;
SGSNAddressSignaling=$_SGSNIPAddress;
SGSNAddressUserTraffic=$_SGSNIPAddressTraff;
MsgHandler:"GnGpMessageHandler";
TEIDStr="TEID:";
IMSIstr="IMSI:";
KeyIdentifier: TEIDStr, SGSNTEIDSig, IMSIstr, IMSI;
IsCallReception = 0;
InterCallDuration = $_InterCallDuration;
DistributionType = $_DistributionType;
SessionDurationTimeOut=$_SessionDurationTimeOut;
```

Scripts Message Sequence Event Config Script Flow

Initialisation Errors Error Events Captured Errors Link

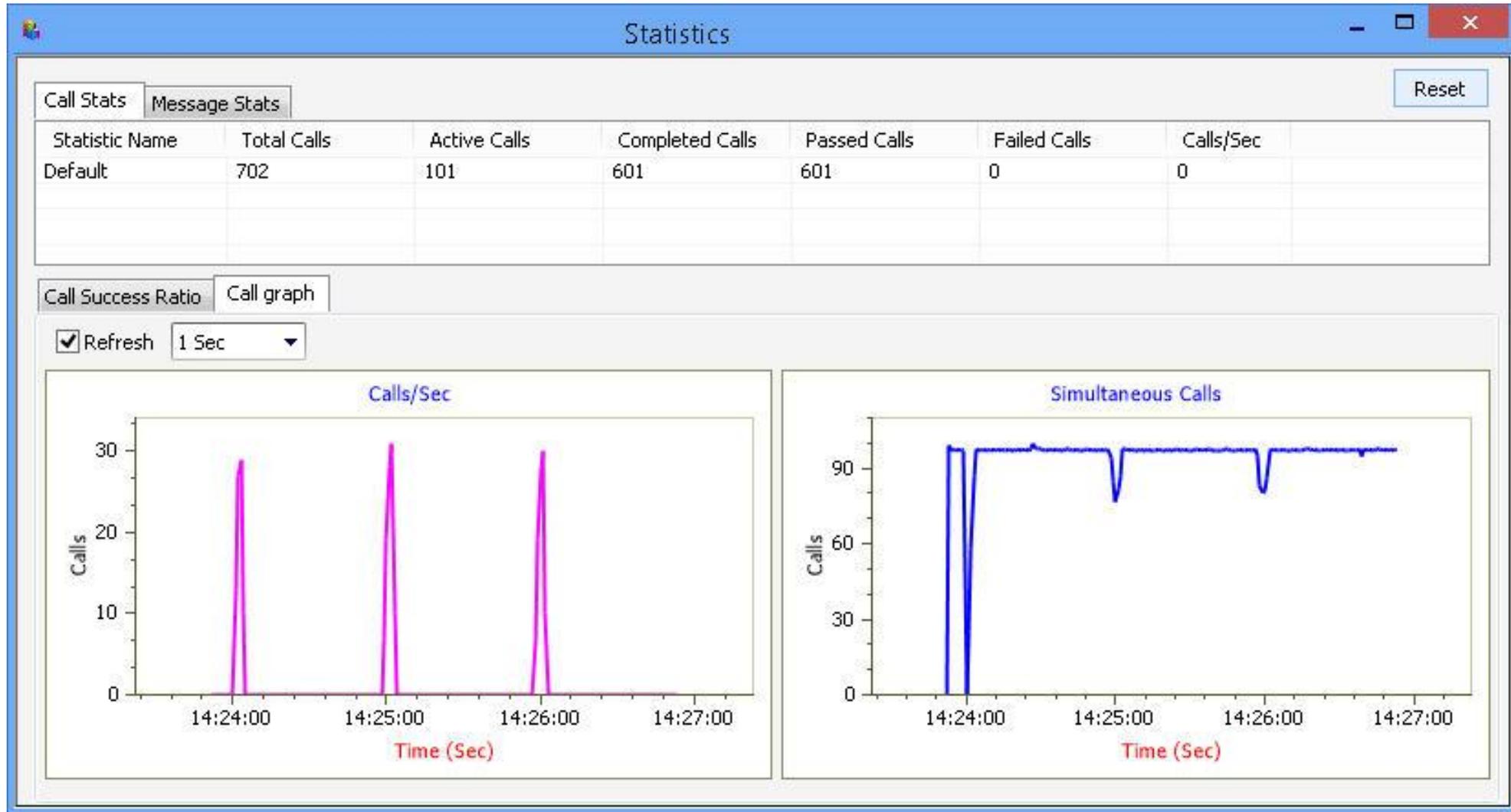
Bulk Call Generation with Autogenerated Users

The screenshot shows the MAPS GGSN (UMTS GnGp 3GPP) configuration interface. The main configuration table is as follows:

Config	Value
UMTS GnGp	
Adapter Index	0
GGSN Configurations	1
GGSN Configurations 1	
GGSN IP Address	192.168.13.38
GGSN Port	2124
GGSN IP Address For Traffic	192.168.127.160
GTP Port For Traffic	2152
Supported SGSN	
SGSN IP Address	192.168.13.29
SGSN Port	2123
Traffic	Disable
PacketLoad Management IP Address	192.168.12.60
Traffic Type	Mobile Traffic
PacketLoad Traffic Type	HTTP Traffic
End User Configuration	MS_Profiles.xml
Protocol Configuration Options	
Auto Generated Users Info	
Auto Generated Users	Enable
No Of Users To Be Simulated	4000000000
Starting IMSI	001013014041741
Starting End User Address	192.168.165.1
Auto Generated End User Profile	AutoGeneratedUser_Profile.xml

On the right side of the window, the '_AutoGeneratedUsers' section is visible, showing a 'Select Option' dropdown menu currently set to 'Enable'. Below this section are 'Start' and 'Edit' buttons.

Bulk Call Simulation Results



Global Configuration

Config	Value
Global Configuration	
Protocol Specific Timers	
T3 Response Timer	6000000
Echo Request Timer	600000000
Default Session Duration in msec	60000
Inter Call Duration in msec	100
Randomization Parameters	
Enable Randomization in msec	Disable
Distribution Type	Uniform Distribution
Minimum SessionDuration in msec	20000
Maximum SessionDuration in msec	40000
Minimum InterCallDuration in msec	5000
Maximum InterCallDuration in msec	10000
Accept Or Reject PDP Contexts	
For Secondary PDP Context	Accept
For Update PDP Context	Accept
Graph	Enable
PacketLoad Configurations	
Traffic Rate	Fixed Bandwidth
Bandwidth Per User	20
For Random Bandwidth	
Minimum Bandwidth	50
Maximum Bandwidth	100
HTTP File Name	22000_Bytes.txt
PCAP File Name	ETSI.pcap
PCAP File Selection Mode	Dynamic
HTTP Web Server IPAddress	192.168.20.65
Access Point Name	default

The configuration editor for the selected parameter shows:

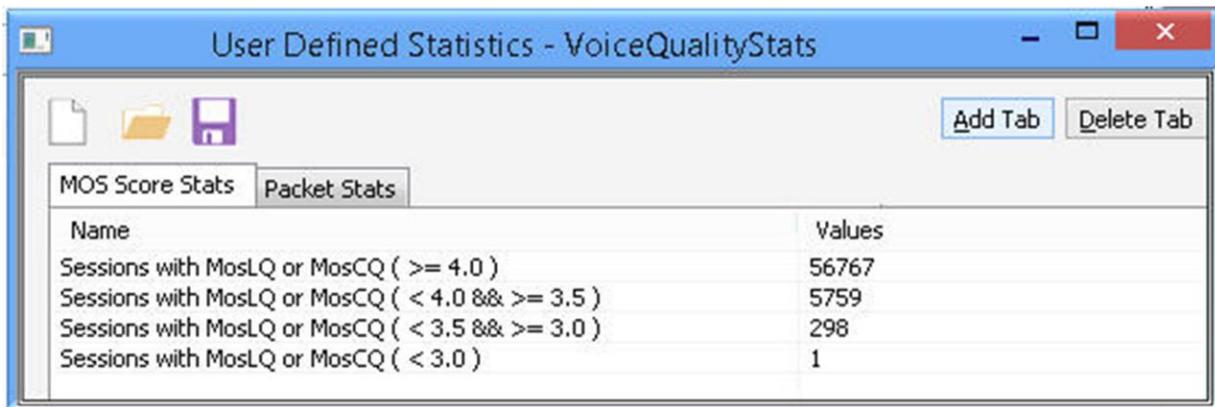
_T3ResponseTimeOut

Enter Integer

6000000

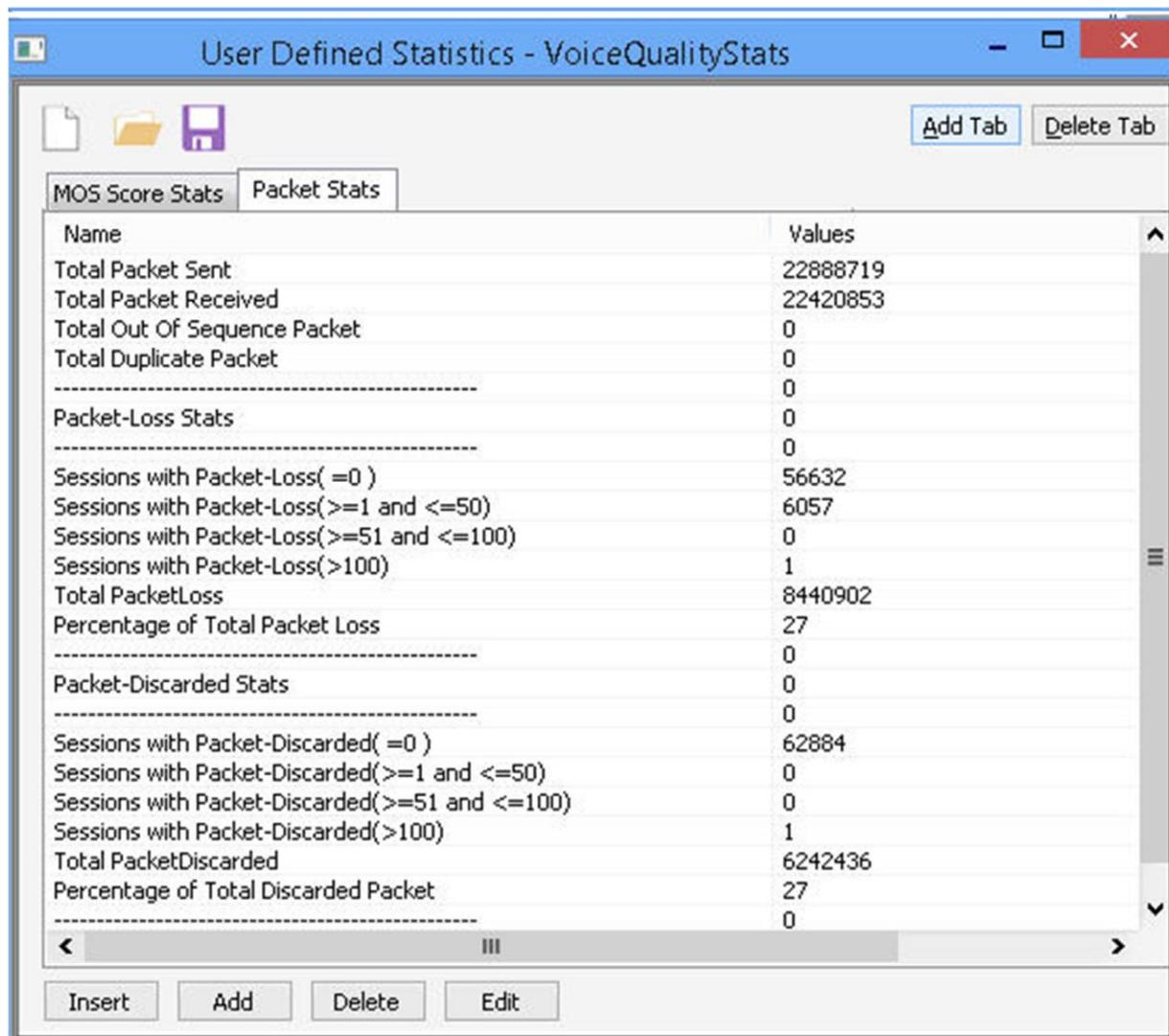
Buttons: Apply, Edit

Speech Quality Metrics (R Factor and MOS)



The screenshot shows a window titled "User Defined Statistics - VoiceQualityStats" with a tab labeled "MOS Score Stats". The window contains a table with 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 a window titled "User Defined Statistics - VoiceQualityStats" with a tab labeled "Packet Stats". The window contains a table with 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

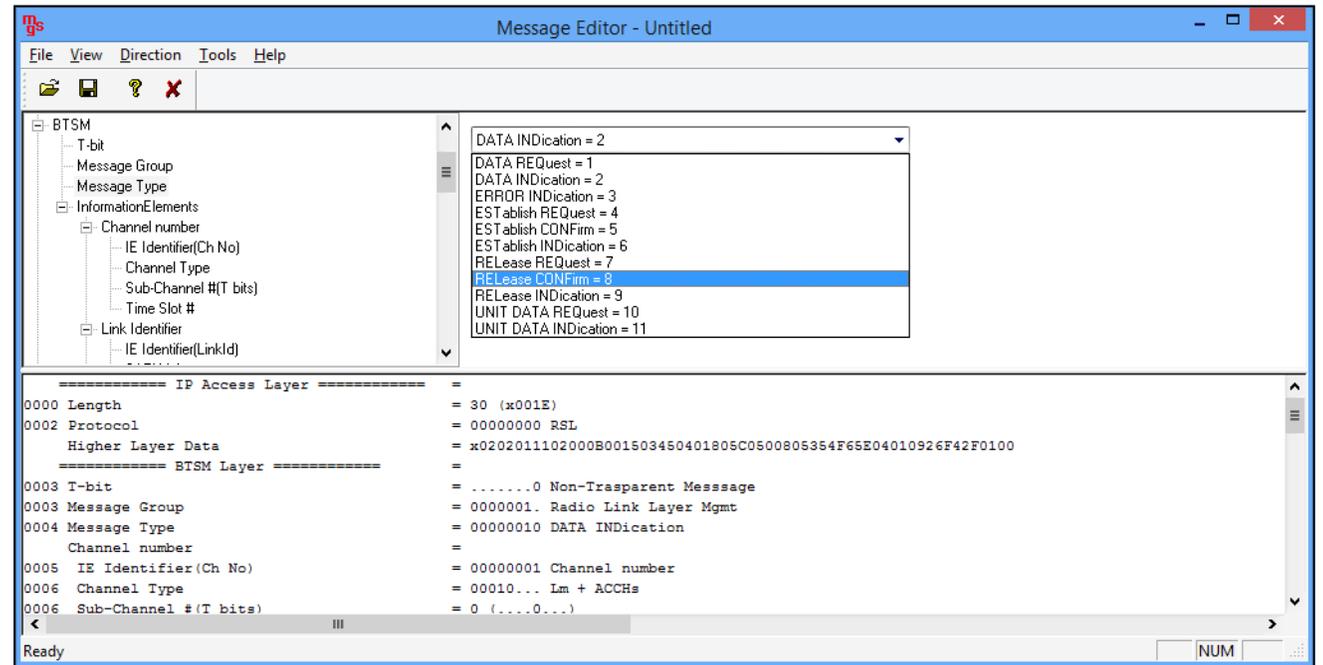
Customizations - Call Flow (Scripts)

```
ScriptEditor - [C:\Program Files\GL Communications Inc\MAPS-GnGp\MAPS\UMTS GnGp\3GPP\SGSN\Scripts\GnGpSessionControl...
File View Edit Shortcuts Tools Help
Command Window
  Action
  Conditional & Flow Control
  Variable
  Maps CLI
  Logs / Comment
  Init
  Child Script
  DataBase
  Send Report
  Resume
  Return
  Include
  Exit
  Utility Functions
GnGpSessionControl
1
2 TxCount=0;
3 RxCount=0;
4 File_TxCount=0;
5 File_RxCount=0;
6 nFileCount=0;
7 GnGpScriptId = "Null" ;
8 Traffic="Null";
9 _IPStep=1;
10 APN=$_APNName;
11 SGSNAddressSignaling=$_SGSNIPAddress;
12 SGSNAddressUserTraffic=$_SGSNIPAddressTraff;
13 MsgHandler:"GnGpMessageHandler";
14 TEIDStr="TEID:";
15 IMSIstr="IMSI:";
16 KeyIdentifier: TEIDStr, SGSNTEIDSig, IMSIstr, IMSI;
17 IsCallReception = 0;
18 InterCallDuration = $_InterCallDuration;
19 DistributionType = $_DistributionType;
20 SessionDurationTimeOut=$_SessionDurationTimeOut;
21 if(_Traffic=="ENABLE" && TrafficType == "HDTraffic" && HDTrafficTask != "Added")
22     ErrorLog("Wait Until HD Traffic Task is started, place a call after few secs");
23     exit;
```

Ready Line Count - 492 | Line: 1 Col: 1 NUM

Customizations - Protocol Messages

- When the script sends a message, it does so by loading a hdl file template from disk (“SGsAP-PAGING-REQUEST.hdl” in the right-hand screenshot)
- These message templates provide the actual structure of the message, the script simply populates it with values contained in its variables
- These messages are customizable by the user, header fields can be altered and removed. Binary-based messages are edited in our provided message editor



Customizations - User Events

MAPS (Message Automation Protocol Simulation) [Call Generation - CallGenDefault]

Configurations Emulator Reports Editor Windows Help

Sr No	Script Name	Profile	Call Info	Script Execution	Status	Events	Events ...	Result	Total Iterations	Completed Iterations
1	Isup_Call.gls	Card1TS01	1.1.1.2.2.2.1	Abort	File Sent	Retrieve		Pass	1	0
2	Call.gls	Card1TS02		Start		None				0
3	Call.gls	Card1TS03		Start		None				0
4	Call.gls	Card1TS04		Start		None				0
5	Call.gls	Card1TS05		Start		None				0
6	Call.gls	Card1TS06		Start		None				0
7	Call.gls	Card1TS07		Start		None				0
8	Call.gls	Card1TS08		Start		None		Unknown	1	0

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

View Executing Line

Script Contents

```
"Hold":
  CallHoldInitiated = 1;
  (ISUPScriptId) goto "Hold";
  resume;

"Retrieve":
  CallHoldInitiated = 0;
  (ISUPScriptId) goto "Retrieve";
  resume;

"Suspend":
  SuspendInitiated = 1;
  (ISUPScriptId) goto "Suspend Call";
  resume;
```

Scripts Message Sequence Event Config Script Flow

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

Control moves to "Retrieve" section, after selecting the "Retrieve" User Event

Customizations - Statistics and Reports

MOS, R-Factor

Packet Loss

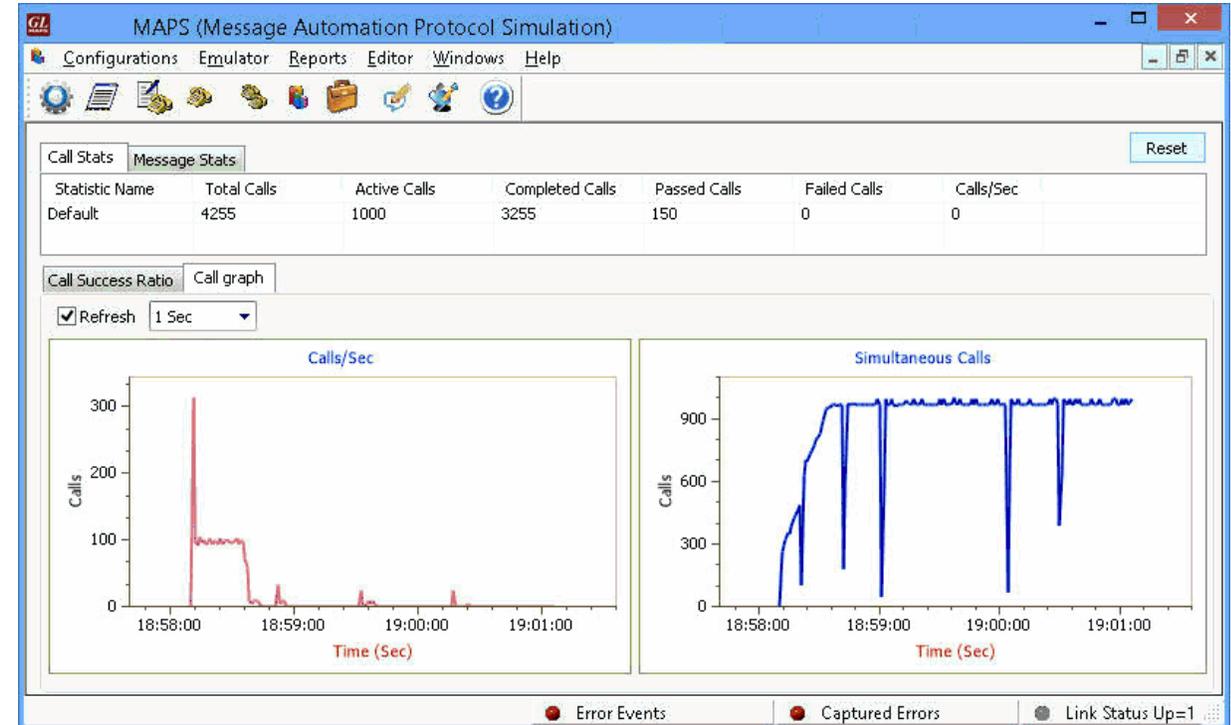
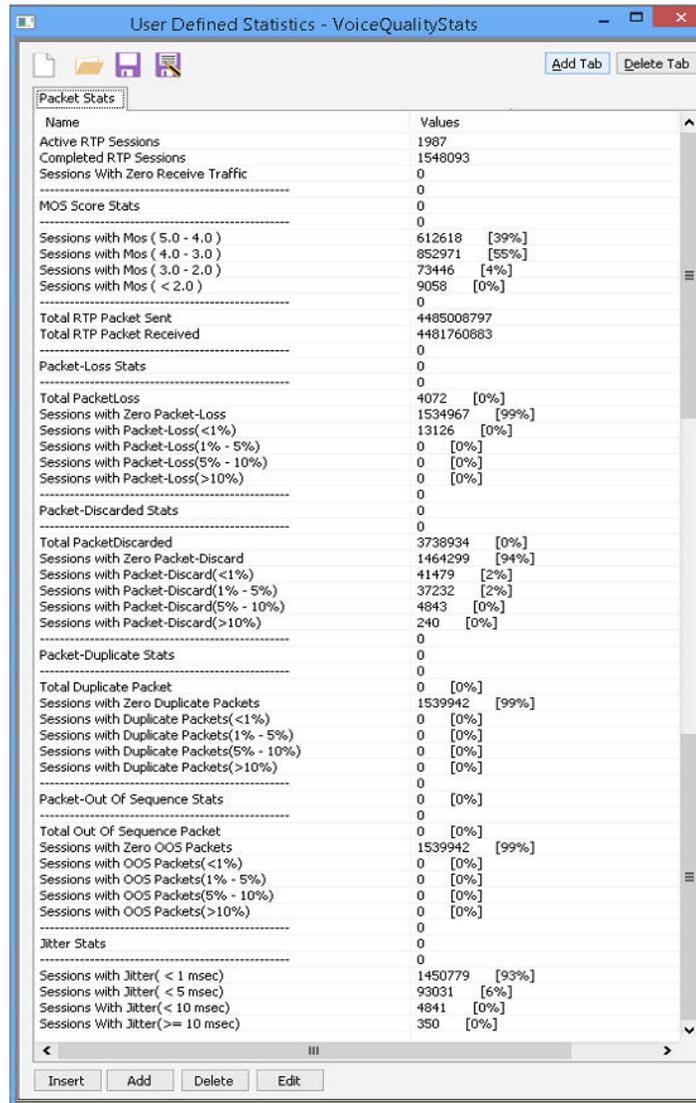
Packets Discarded

Duplicate Packets

Out-Of-Sequence

Packets

Jitter Statistics



Call Stats provide a running tabular log of system level stats, tracked stats include: Total Calls, Active Calls, Completed Calls, Passed Calls, Failed Calls, Instantaneous Calls/Sec

THANK YOU