MAPS™ LTE eGTP Interface Emulator

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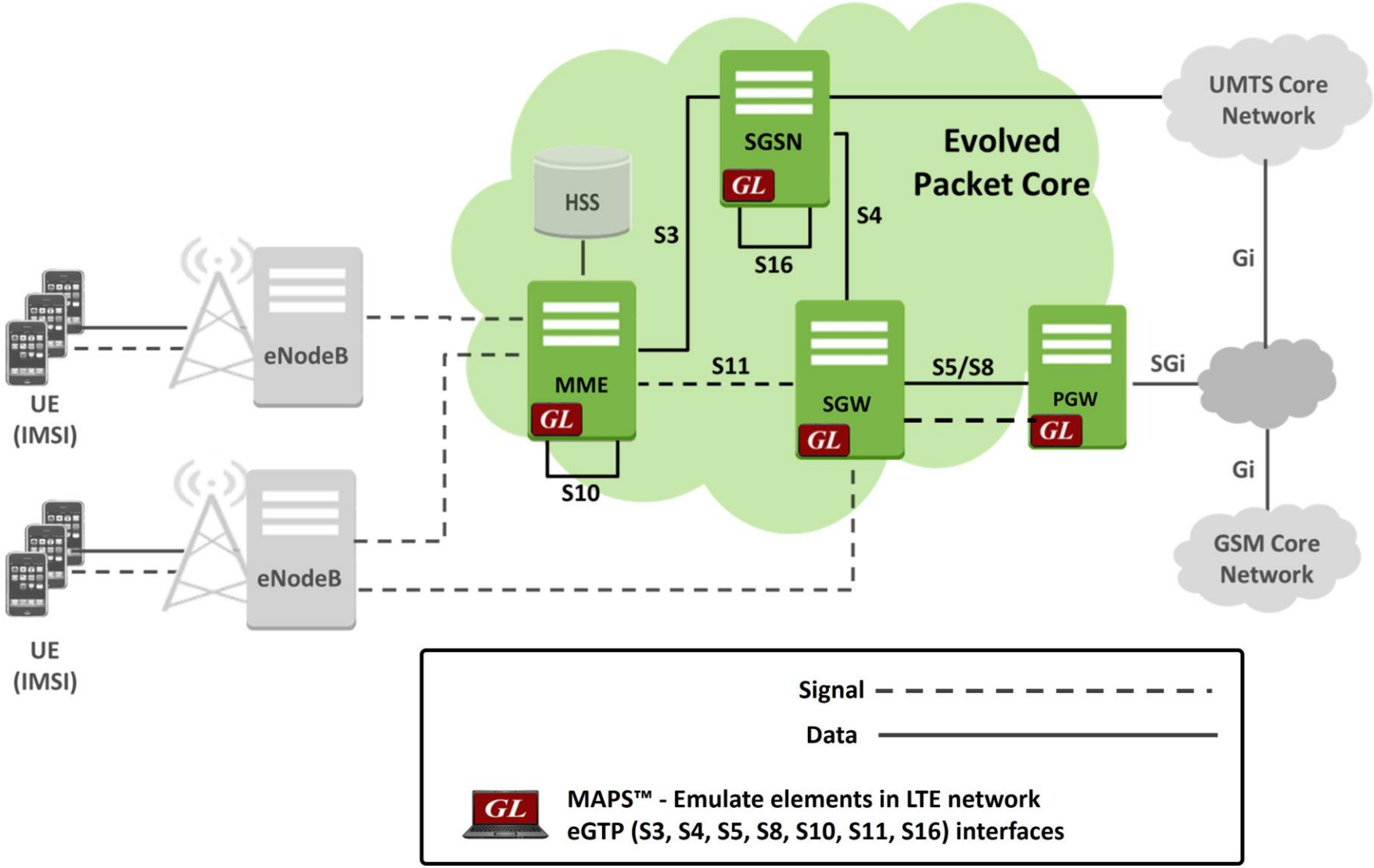
MAPS™ eGTP Interfaces Emulator



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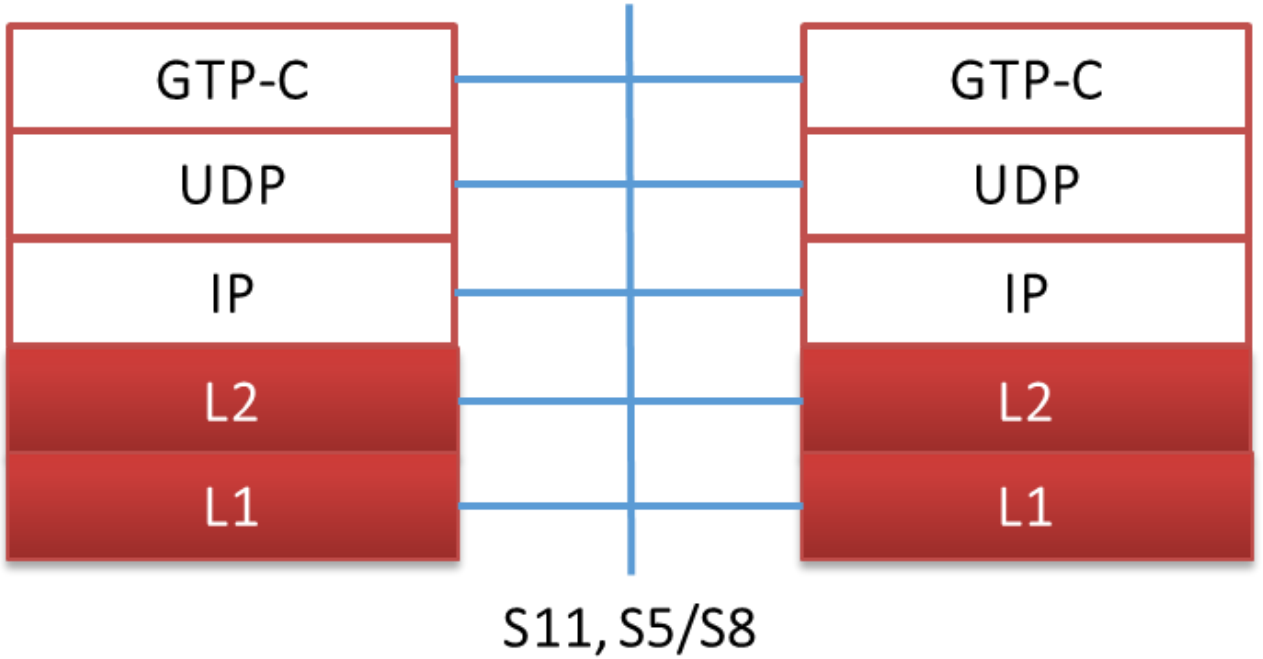
Key Features

- Setup a virtual real-time network simulating 4G-LTE network elements using ‘MAPS™ 4G Wireless Lab Suite’
- Emulate MME, SGW and PDN GW elements in the LTE eGTP interface
- Supports both Control Plane and User-plane simulation across different interfaces
- Supports Path Management and Tunnel Management procedures over eGTP interfaces
- Massive UE simulation (up to 500000) with Auto generation feature for high density load testing
- Generates and responds to hundreds of UE signaling (Load testing)
- Generates and process GTP-C messages (valid and invalid)
- Supports GTP Traffic (GTP User Plane Data) which includes verification like BERT testing, HTTP traffic generation capability - requires additional licensing ‘ETH101’
- Option to offload GTP traffic to Gateway (GGSN)- requires additional licensing ‘ETH102’
- High-volume eGTP-u (User Plane) traffic simulation possible with support of ‘Packet Load’ appliance; both 4Gbps and 40Gbps variants are available to suit customer needs

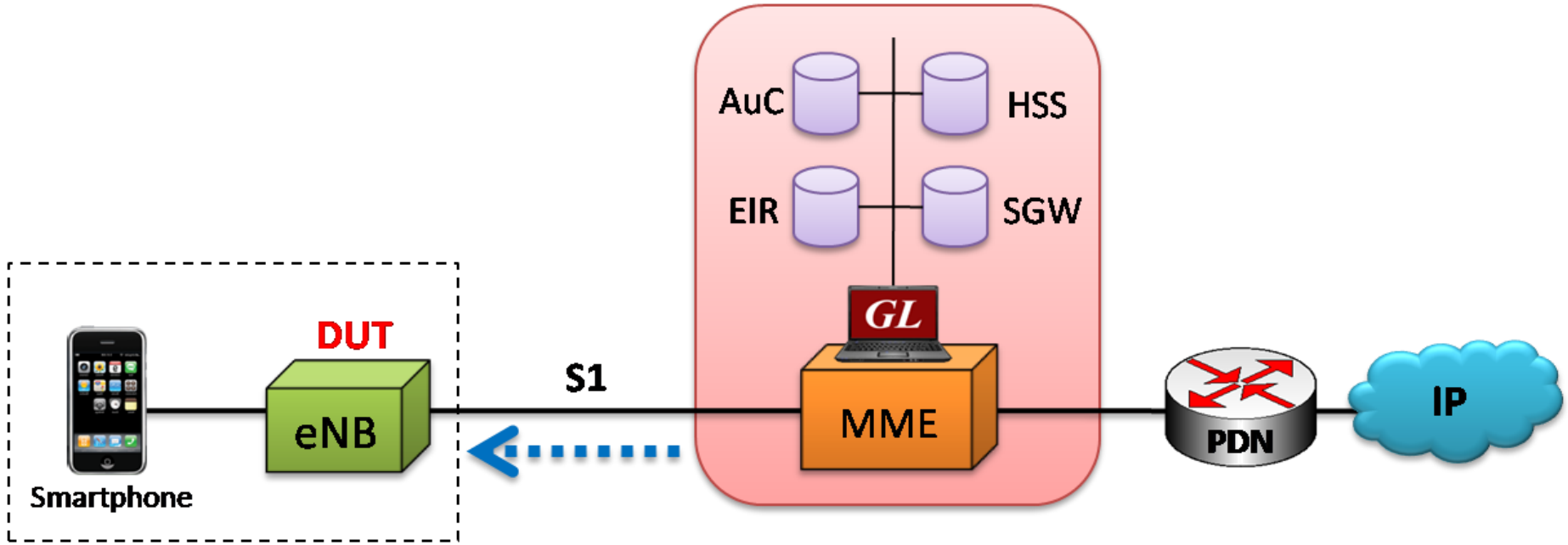
MAPS™ Protocol Stack



Supported Protocols	Standard / Specification Used
S11, S5/S8 Interface	
Evolved GTP (eGTP) for EPS	3GPP TS 29.274 V8.0.0 (2008-12)
Evolved GTP (eGTP) for EPS	3GPP TS 29.274 V9.2.0 (2010-03)

Testing Scenarios

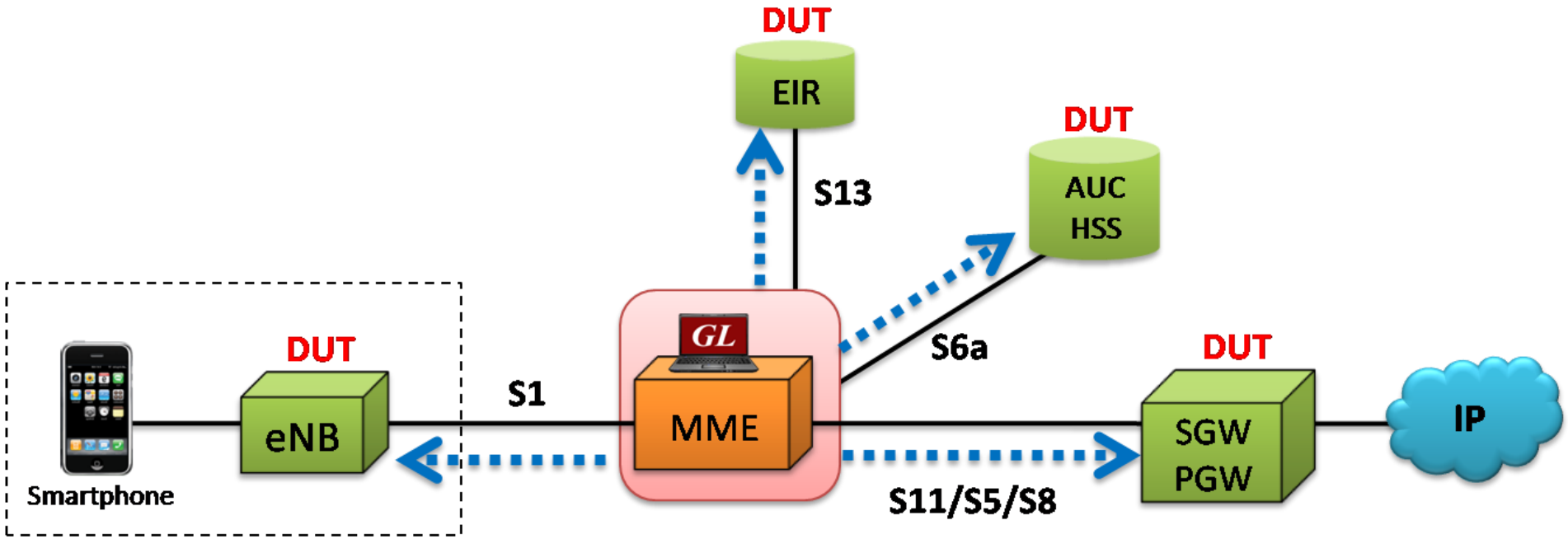
#1 Single Interface Simulation



GL **MAPS™ MME, HSS, AuC, EIR, SGW**

Testing Scenarios (Contd.)

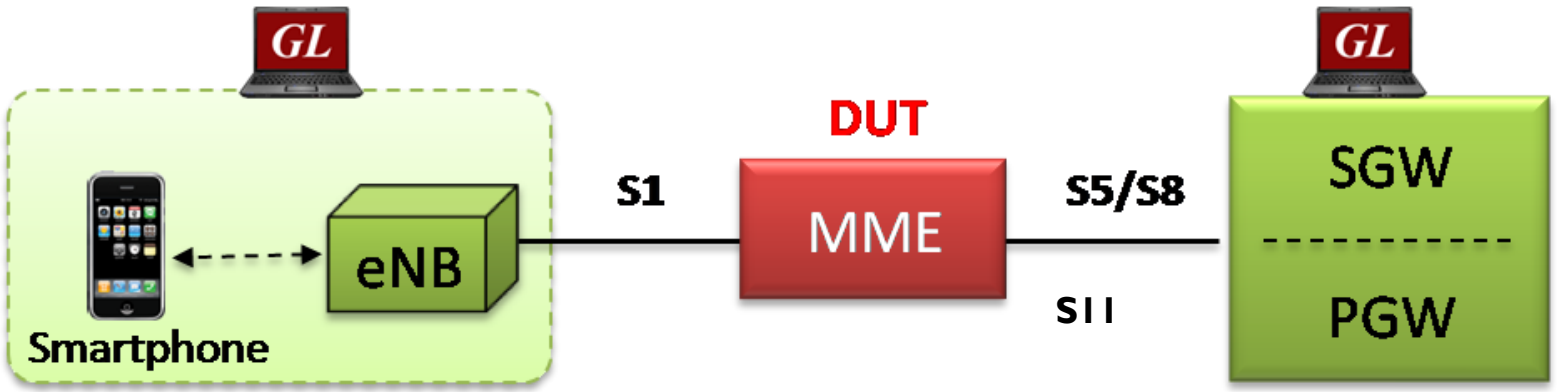
#2 Multi Interface Simulation



MAPS™ MME Emulator in LTE Network

Testing Scenarios (Contd.)

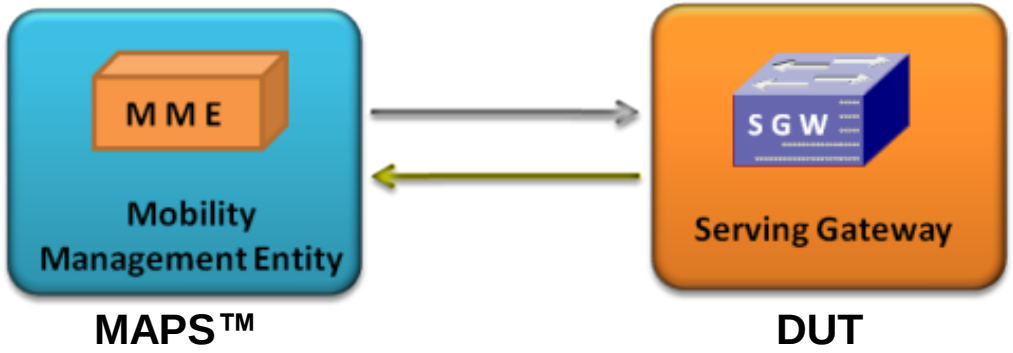
#3 Wrap Around Testing



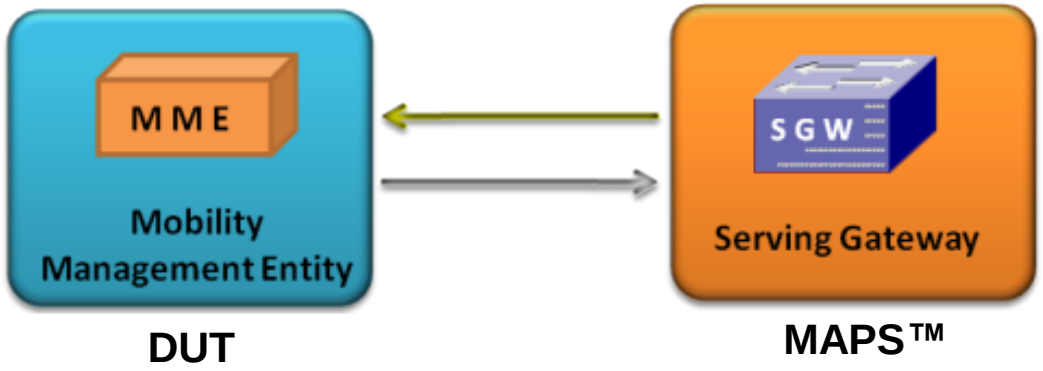
GL **MAPS™ LTE S1, eGTP Emulators**

eGTP (S11) Configurations

Scenario: MAPS™ acting as MME



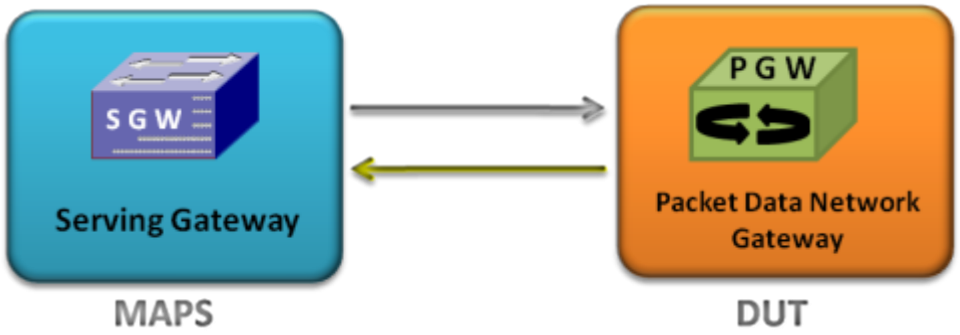
Scenario: MAPS™ acting as SGW



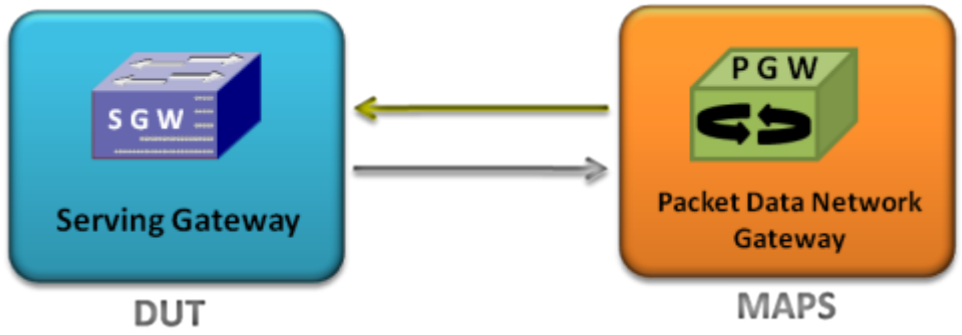
- MAPS™ LTE eGTP can be configured to act as MME testing SGW and vice-versa
- Capable of initiating the message flow towards opposite element and respond to incoming messages

eGTP (S5 S8) Configurations (Contd.)

Scenario: MAPS™ acting as SGW



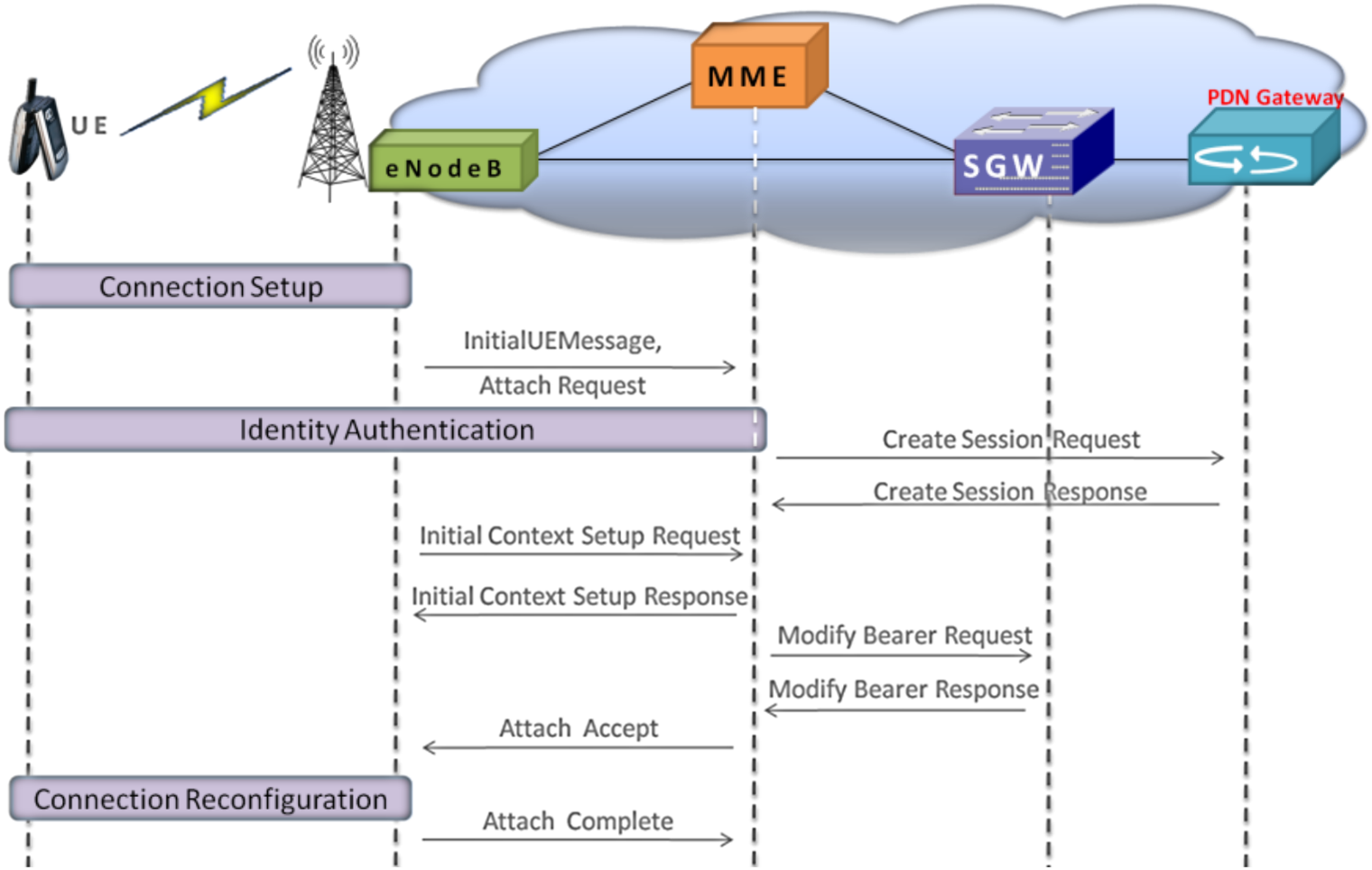
Scenario: MAPS™ acting as PGW



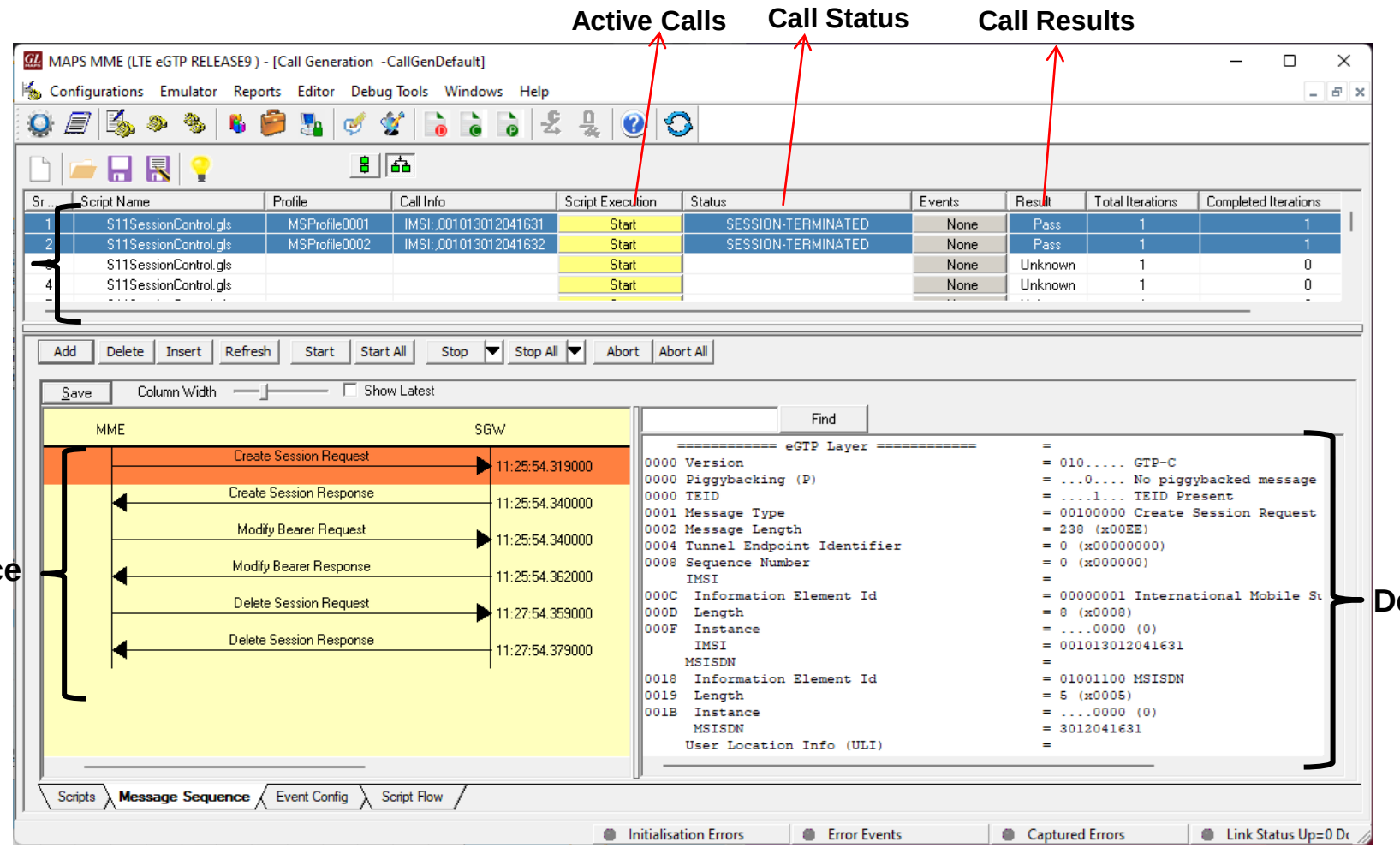
- MAPS™ - LTE eGTP can be configured to act as SGW testing PGW and vice-versa
- Capable of initiating the message flow towards opposite element and respond to incoming messages

LTE - eGTP (S11, S5/S8) Signaling Scenario

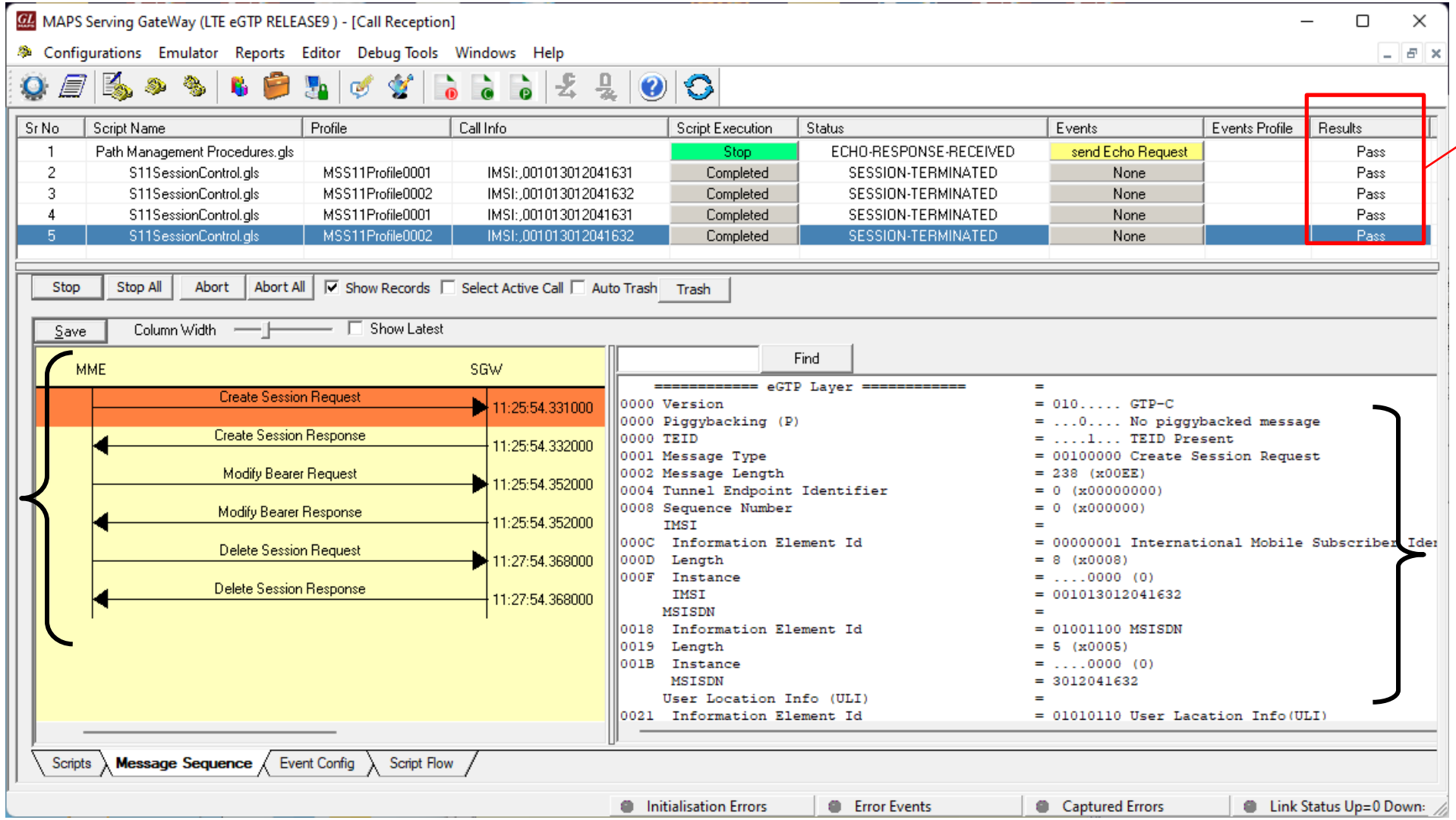
LTE - S11 and S5/S8 interfaces signaling scenario (messages between MME, SGW, and PGW)



LTE eGTP Call Generation



LTE eGTP Incoming Call Reception

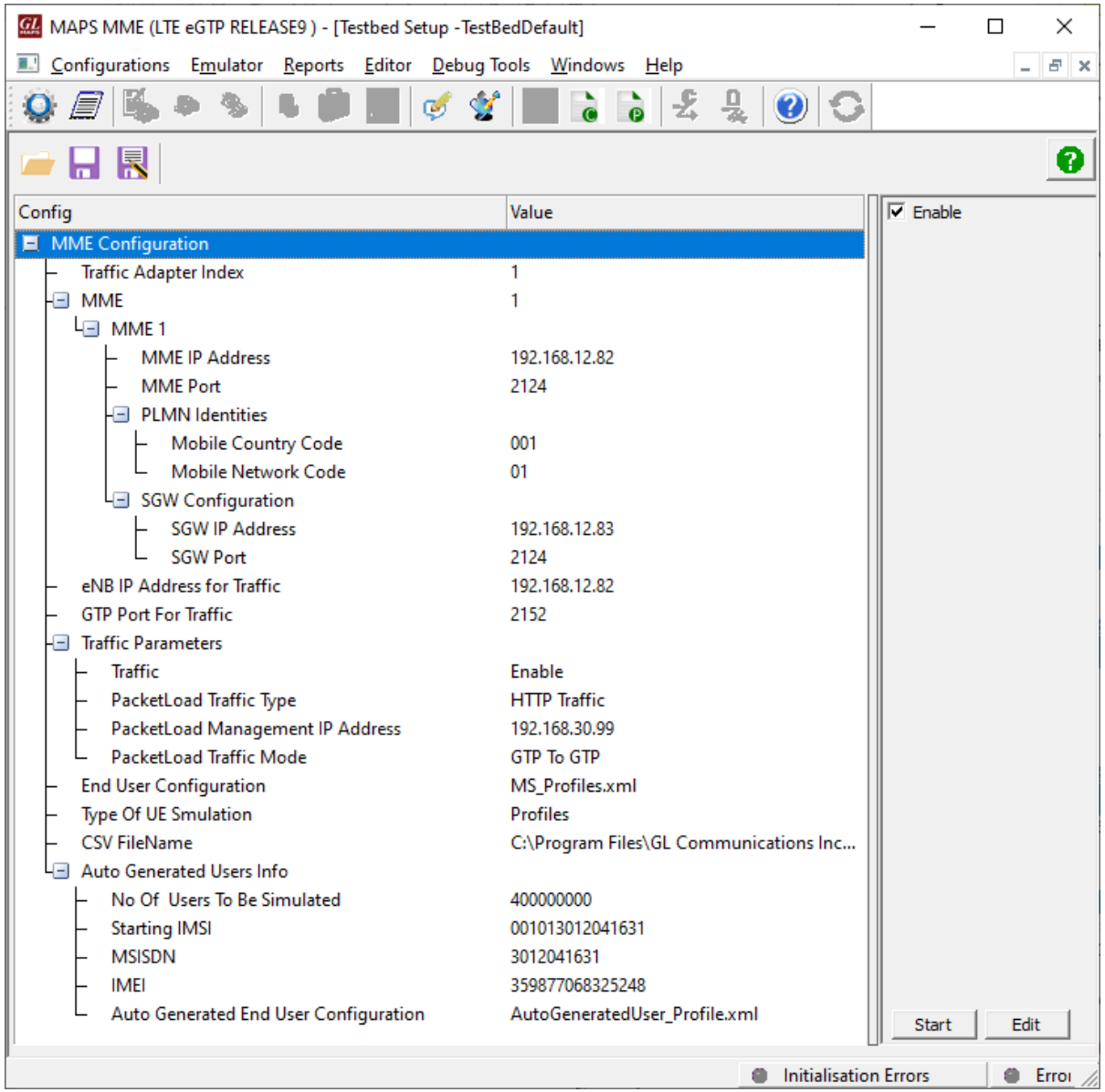


Call Results

Message Sequence

Decode Message

Testbed Configuration



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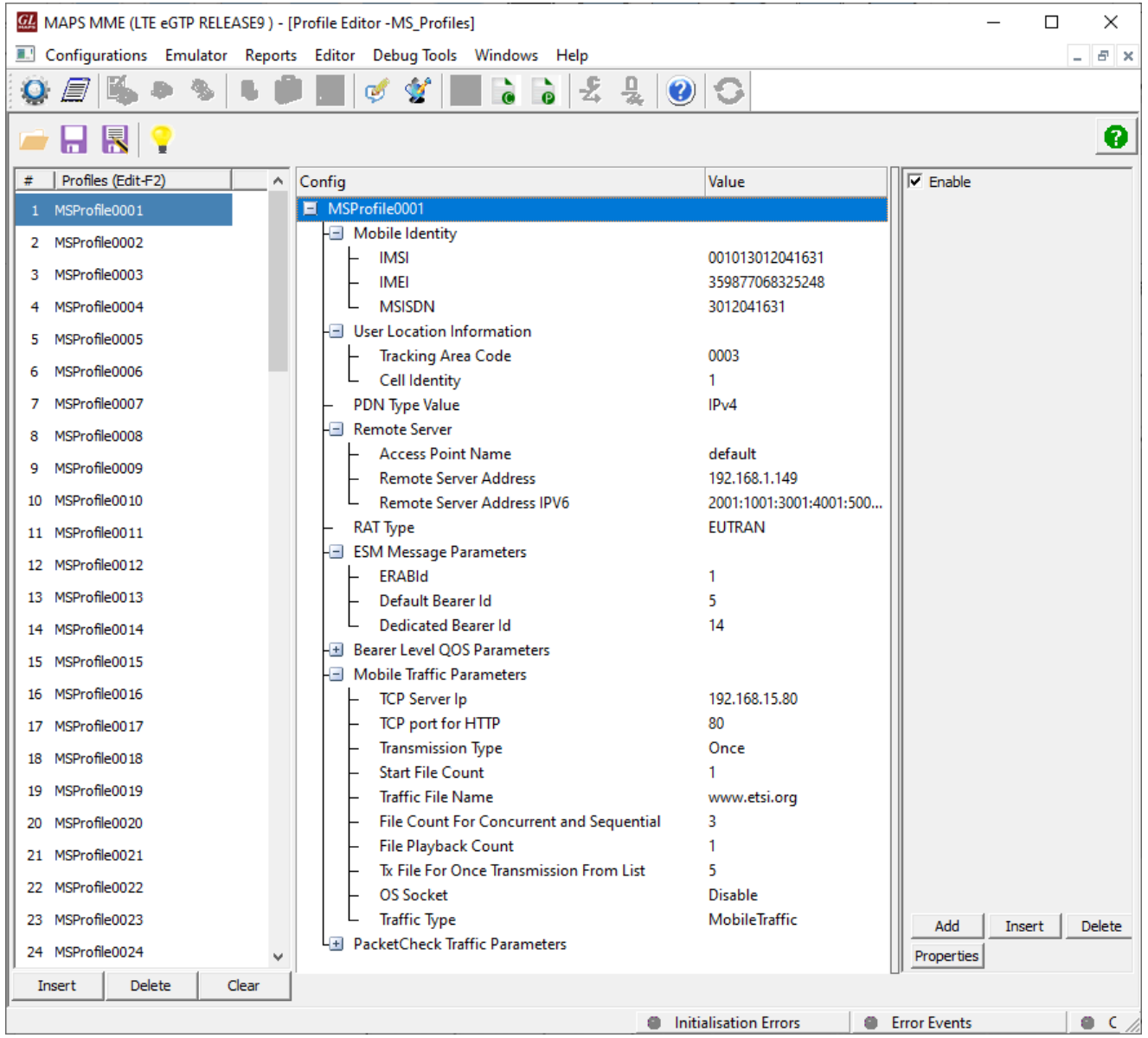
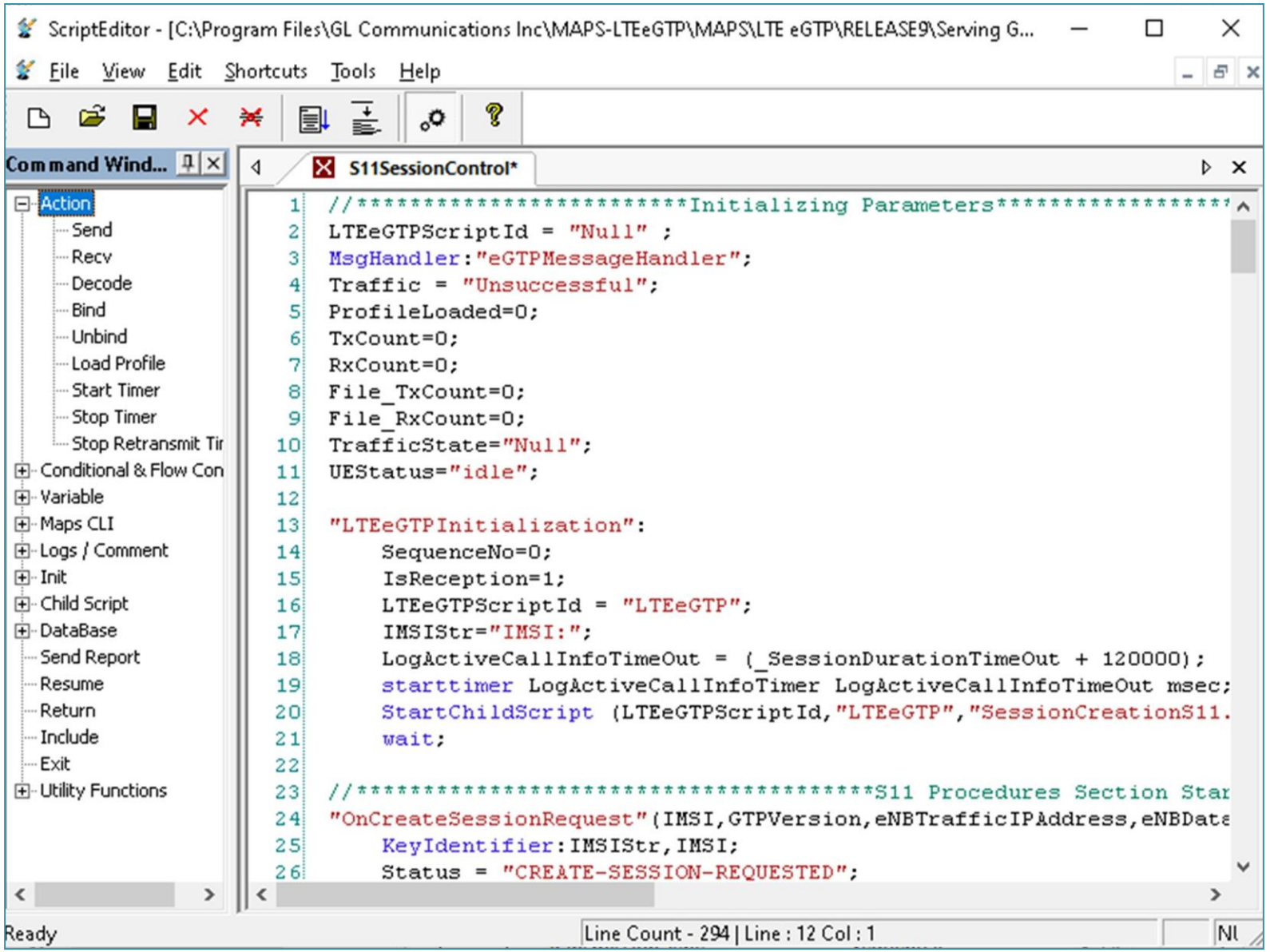
Profile Configuration



Customizations - Call Flow (Scripts)



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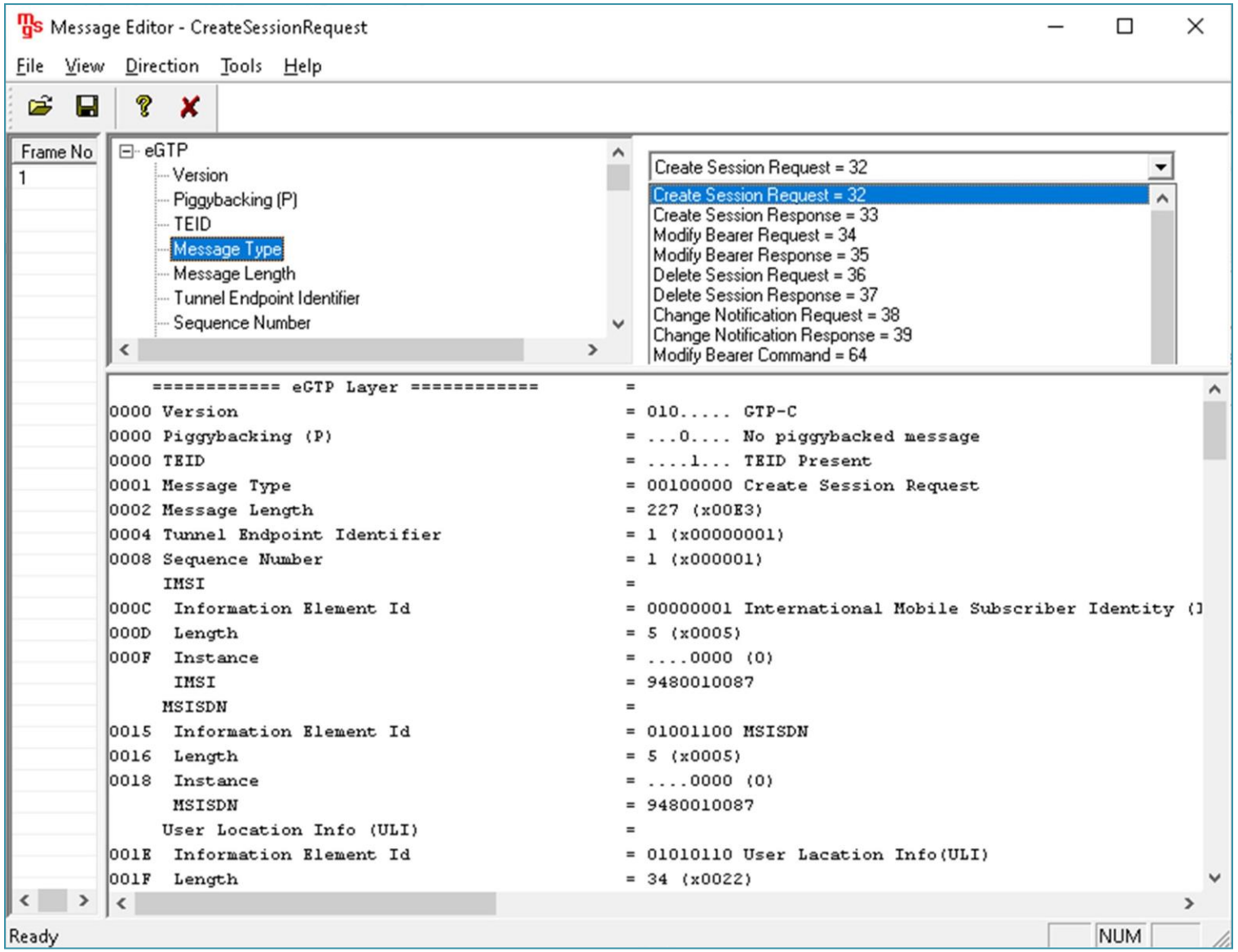
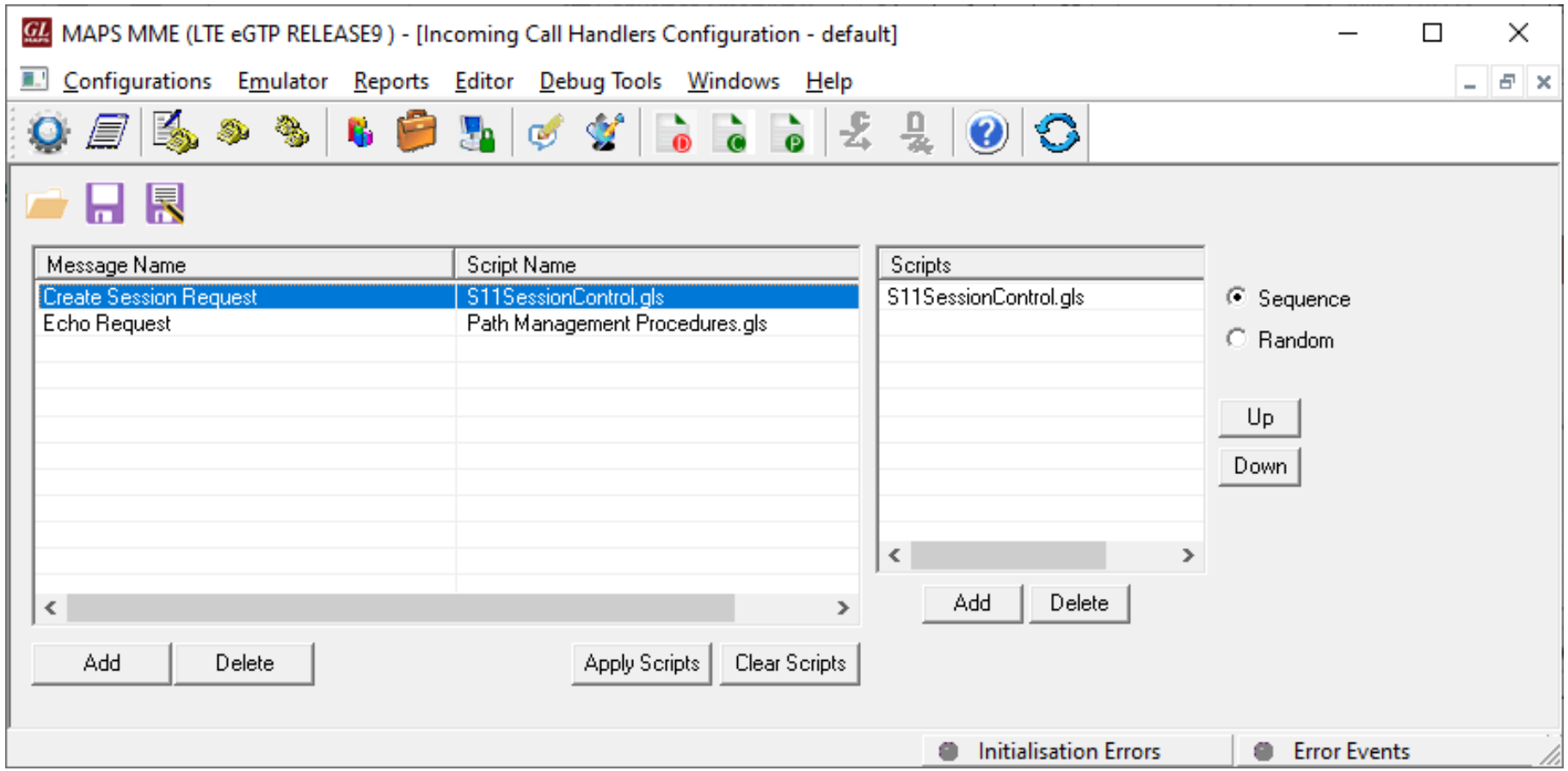
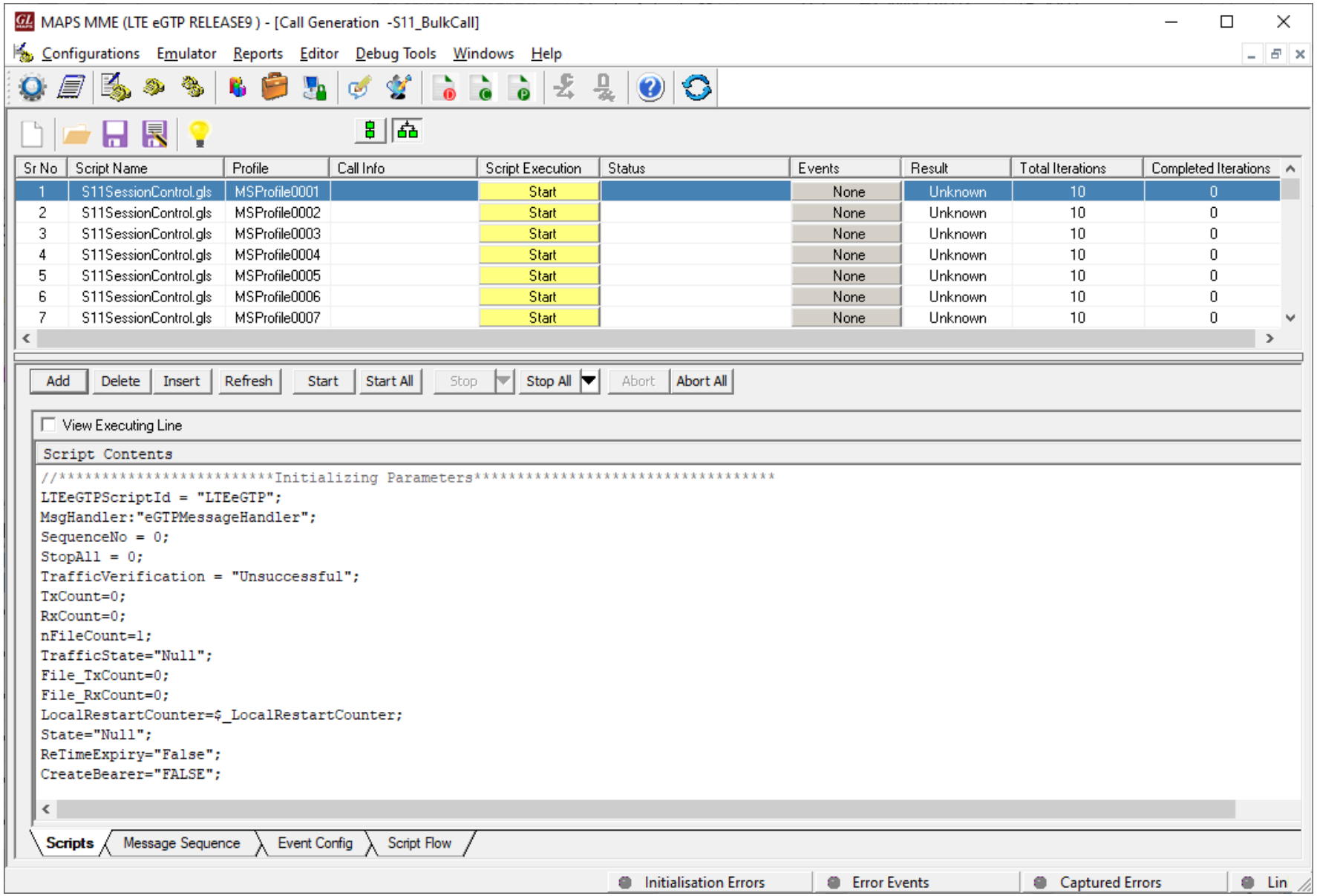
Customizations - Protocol Messages



Incoming Call Handler Configuration



Bulk Call Generation



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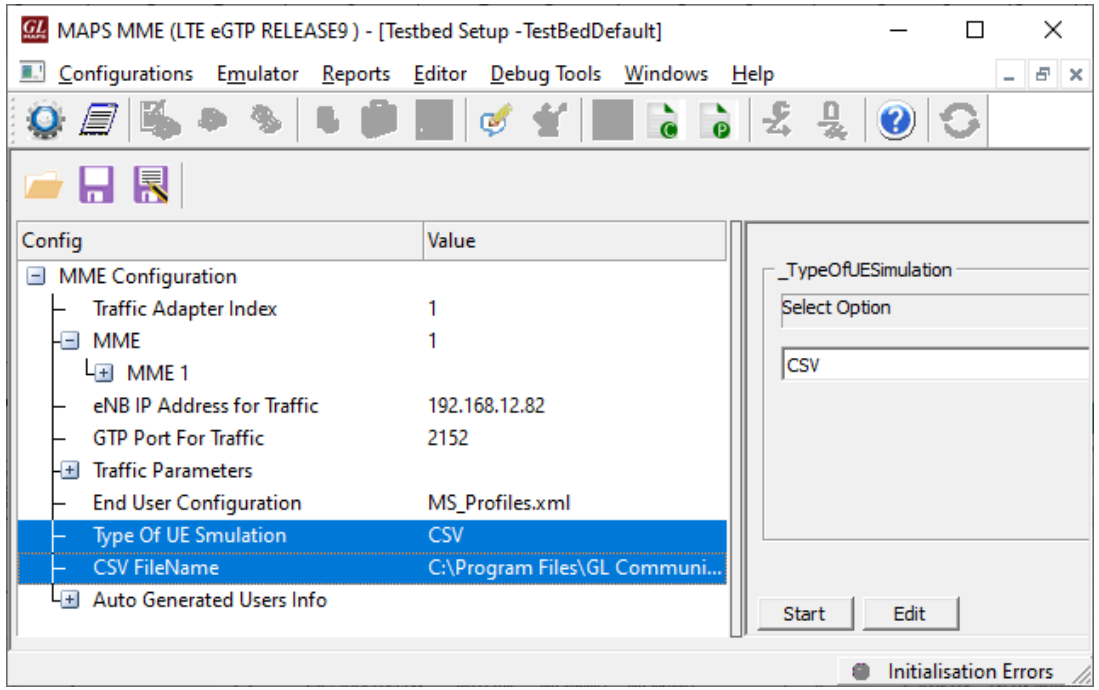
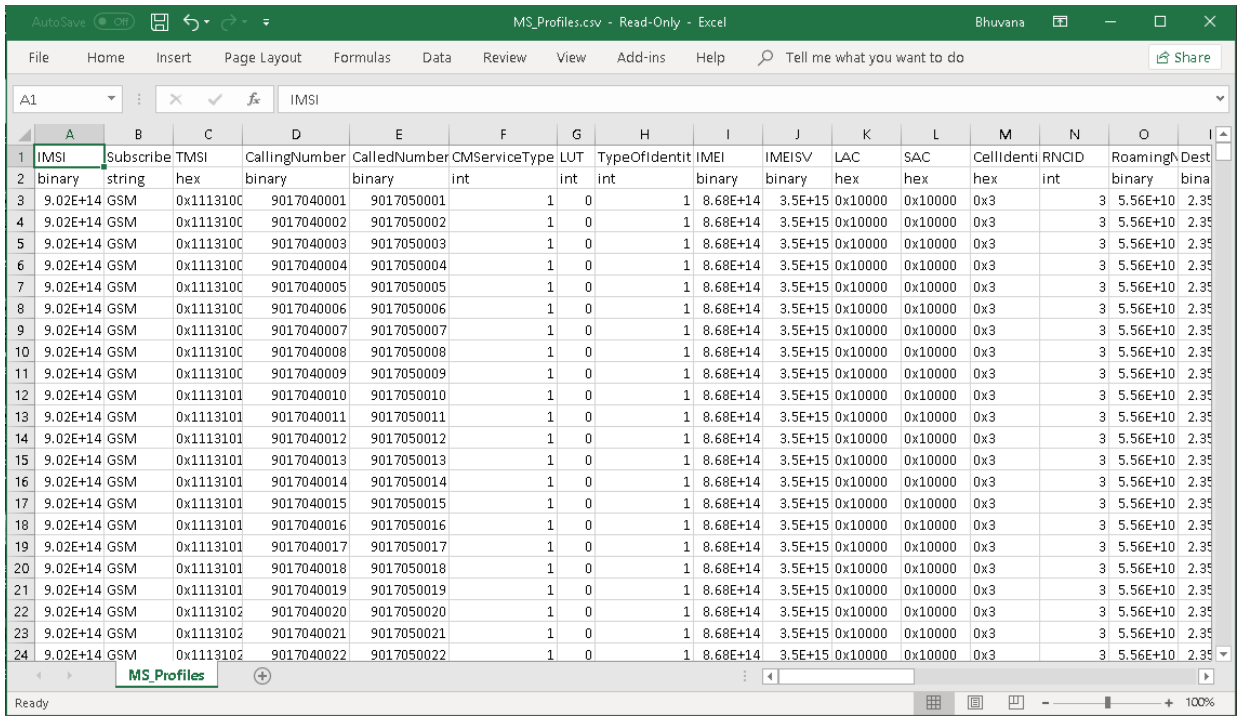
CSV Profiles

TestBed Configuration



Sample CSV Profile



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
1	IMSI	Subscribe	TMSI	CallingNumber	CalledNumber	CMServiceType	LUT	TypeOfIdentit	IMEI	IMEISV	LAC	SAC	CellIdenti	RNCID	RoamingN	Dest
2	binary	string	hex	binary	binary	int	int	int	binary	binary	hex	hex	hex	int	binary	bina
3	9.02E+14	GSM	0x1113100	9017040001	9017050001	1	0	1	8.68E+14	3.5E+15	0x10000	0x10000	0x3	3	5.56E+10	2.35
4	9.02E+14	GSM	0x1113100	9017040002	9017050002	1	0	1	8.68E+14	3.5E+15	0x10000	0x10000	0x3	3	5.56E+10	2.35
5	9.02E+14	GSM	0x1113100	9017040003	9017050003	1	0	1	8.68E+14	3.5E+15	0x10000	0x10000	0x3	3	5.56E+10	2.35
6	9.02E+14	GSM	0x1113100	9017040004	9017050004	1	0	1	8.68E+14	3.5E+15	0x10000	0x10000	0x3	3	5.56E+10	2.35
7	9.02E+14	GSM	0x1113100	9017040005	9017050005	1	0	1	8.68E+14	3.5E+15	0x10000	0x10000	0x3	3	5.56E+10	2.35
8	9.02E+14	GSM	0x1113100	9017040006	9017050006	1	0	1	8.68E+14	3.5E+15	0x10000	0x10000	0x3	3	5.56E+10	2.35
9	9.02E+14	GSM	0x1113100	9017040007	9017050007	1	0	1	8.68E+14	3.5E+15	0x10000	0x10000	0x3	3	5.56E+10	2.35
10	9.02E+14	GSM	0x1113100	9017040008	9017050008	1	0	1	8.68E+14	3.5E+15	0x10000	0x10000	0x3	3	5.56E+10	2.35
11	9.02E+14	GSM	0x1113100	9017040009	9017050009	1	0	1	8.68E+14	3.5E+15	0x10000	0x10000	0x3	3	5.56E+10	2.35
12	9.02E+14	GSM	0x1113101	9017040010	9017050010	1	0	1	8.68E+14	3.5E+15	0x10000	0x10000	0x3	3	5.56E+10	2.35
13	9.02E+14	GSM	0x1113101	9017040011	9017050011	1	0	1	8.68E+14	3.5E+15	0x10000	0x10000	0x3	3	5.56E+10	2.35
14	9.02E+14	GSM	0x1113101	9017040012	9017050012	1	0	1	8.68E+14	3.5E+15	0x10000	0x10000	0x3	3	5.56E+10	2.35
15	9.02E+14	GSM	0x1113101	9017040013	9017050013	1	0	1	8.68E+14	3.5E+15	0x10000	0x10000	0x3	3	5.56E+10	2.35
16	9.02E+14	GSM	0x1113101	9017040014	9017050014	1	0	1	8.68E+14	3.5E+15	0x10000	0x10000	0x3	3	5.56E+10	2.35
17	9.02E+14	GSM	0x1113101	9017040015	9017050015	1	0	1	8.68E+14	3.5E+15	0x10000	0x10000	0x3	3	5.56E+10	2.35
18	9.02E+14	GSM	0x1113101	9017040016	9017050016	1	0	1	8.68E+14	3.5E+15	0x10000	0x10000	0x3	3	5.56E+10	2.35
19	9.02E+14	GSM	0x1113101	9017040017	9017050017	1	0	1	8.68E+14	3.5E+15	0x10000	0x10000	0x3	3	5.56E+10	2.35
20	9.02E+14	GSM	0x1113101	9017040018	9017050018	1	0	1	8.68E+14	3.5E+15	0x10000	0x10000	0x3	3	5.56E+10	2.35
21	9.02E+14	GSM	0x1113101	9017040019	9017050019	1	0	1	8.68E+14	3.5E+15	0x10000	0x10000	0x3	3	5.56E+10	2.35
22	9.02E+14	GSM	0x1113102	9017040020	9017050020	1	0	1	8.68E+14	3.5E+15	0x10000	0x10000	0x3	3	5.56E+10	2.35
23	9.02E+14	GSM	0x1113102	9017040021	9017050021	1	0	1	8.68E+14	3.5E+15	0x10000	0x10000	0x3	3	5.56E+10	2.35
24	9.02E+14	GSM	0x1113102	9017040022	9017050022	1	0	1	8.68E+14	3.5E+15	0x10000	0x10000	0x3	3	5.56E+10	2.35

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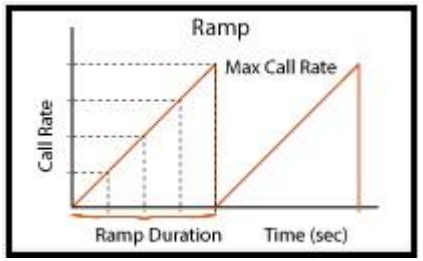
Load Generation

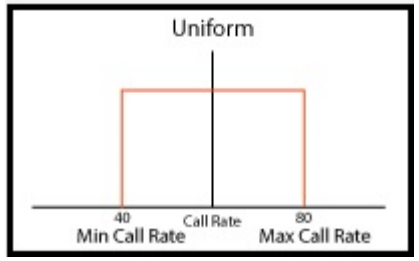
- Stability/Stress and Performance testing using Load Generation
- Different types of Load patterns to distribute load
- User can load multiple patterns for selected script
- User configurable Test Duration, CPS, Maximum and Minimum Call Rate etc

Fixed

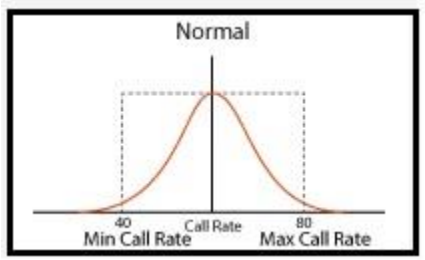
Ramp



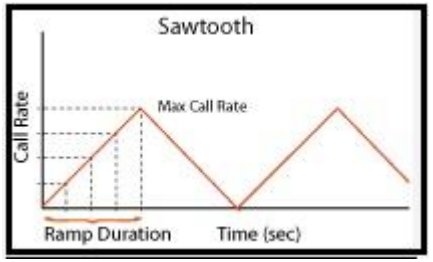
Uniform



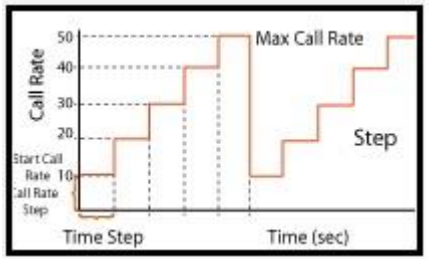
Normal

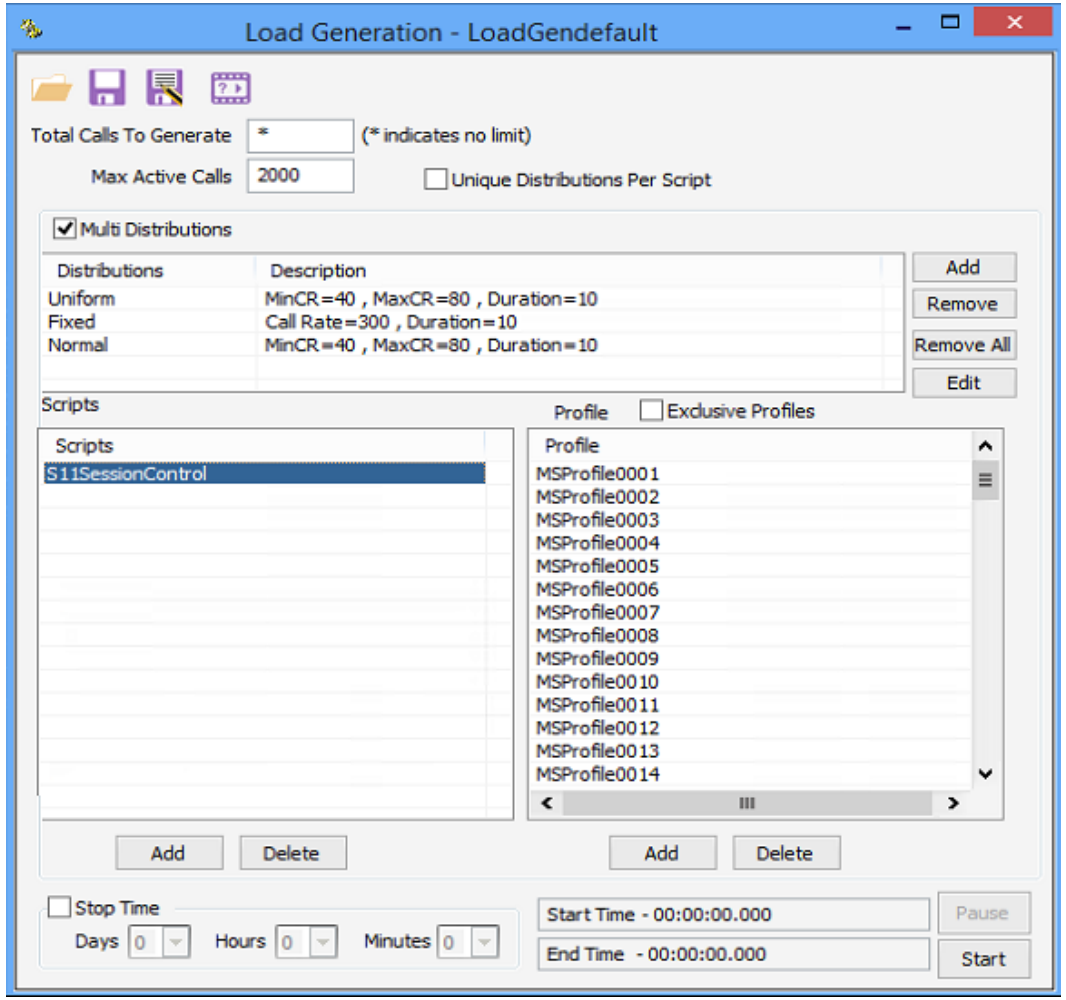


Saw-tooth

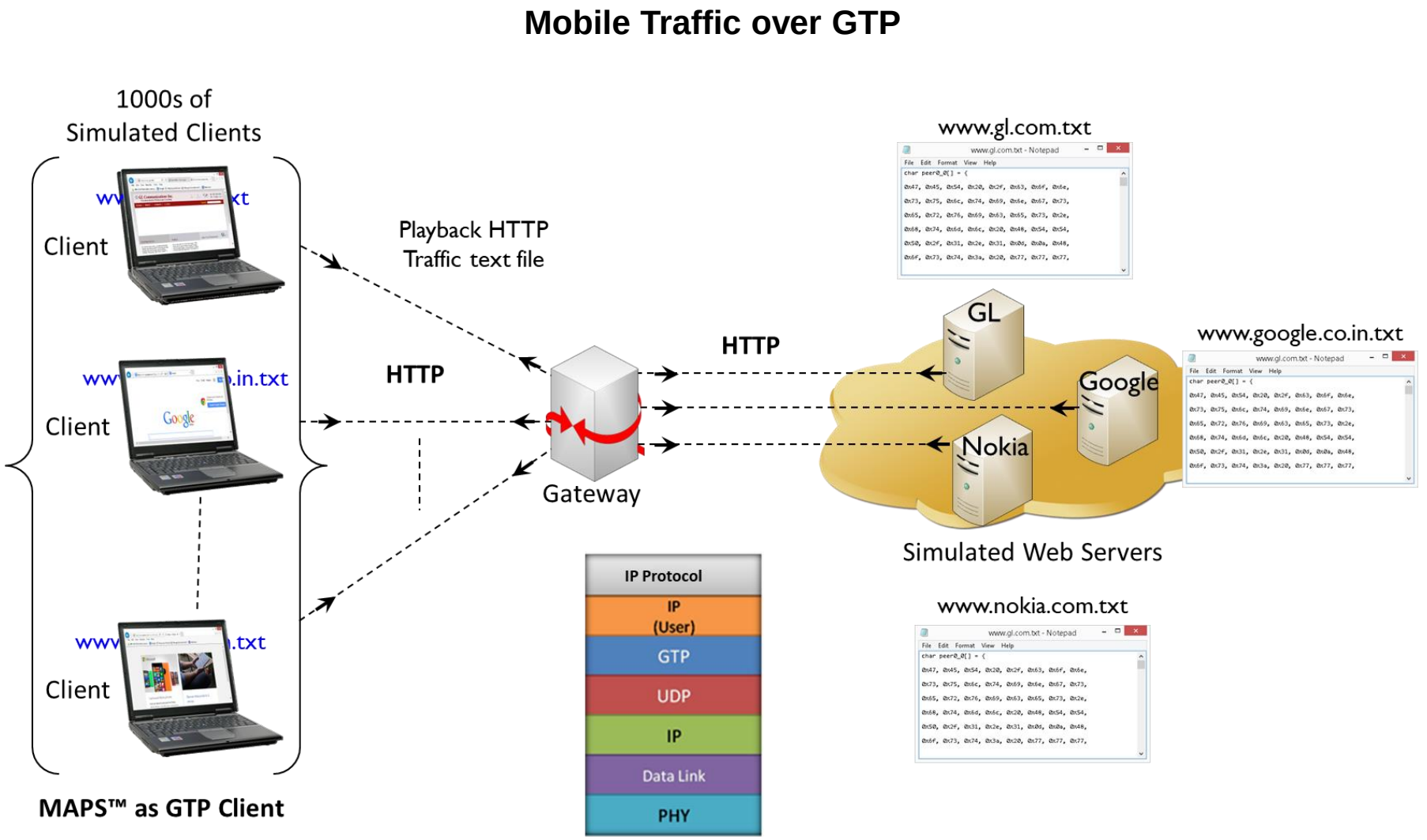


Step



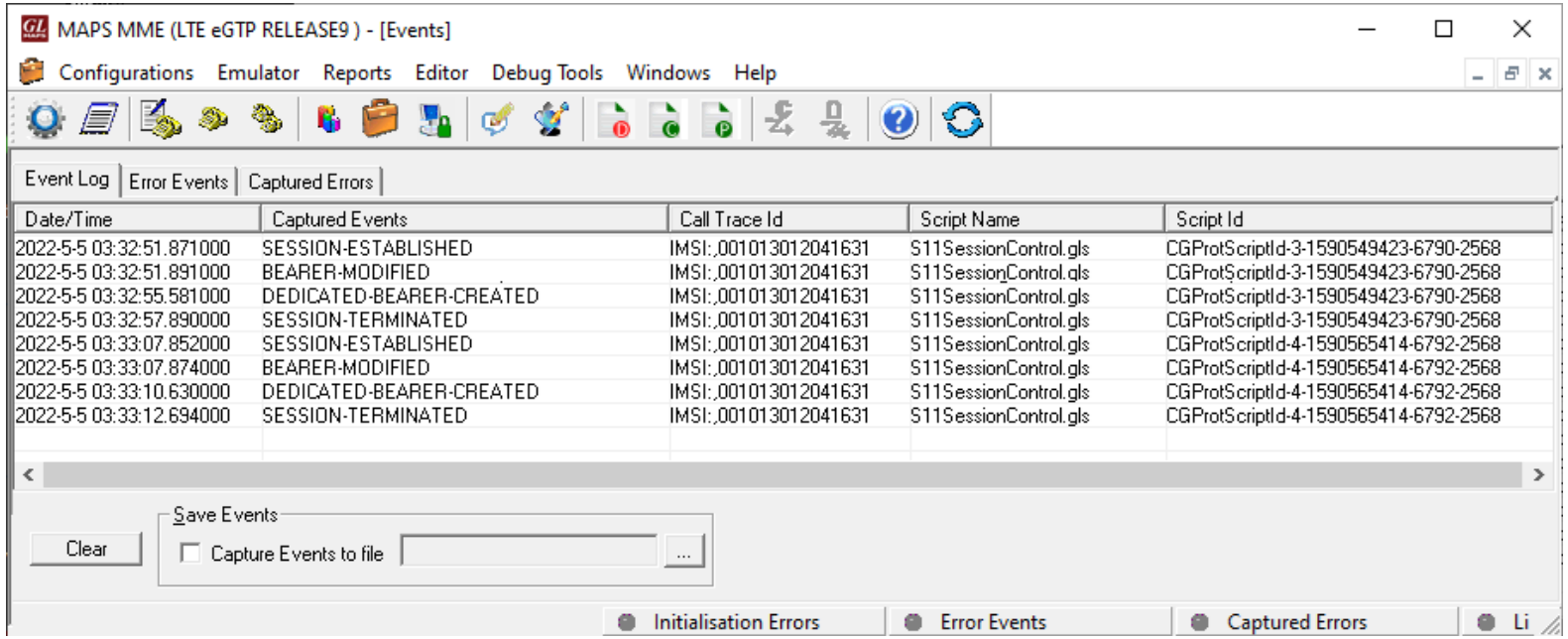


Traffic Simulation in Packet Switched Network

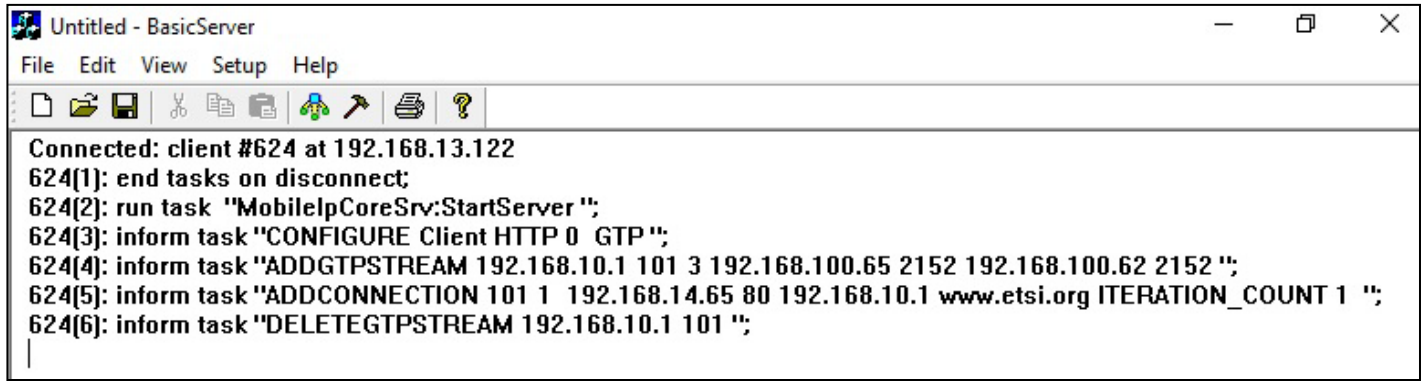


Event and Traffic Log

Event Log



Traffic Log



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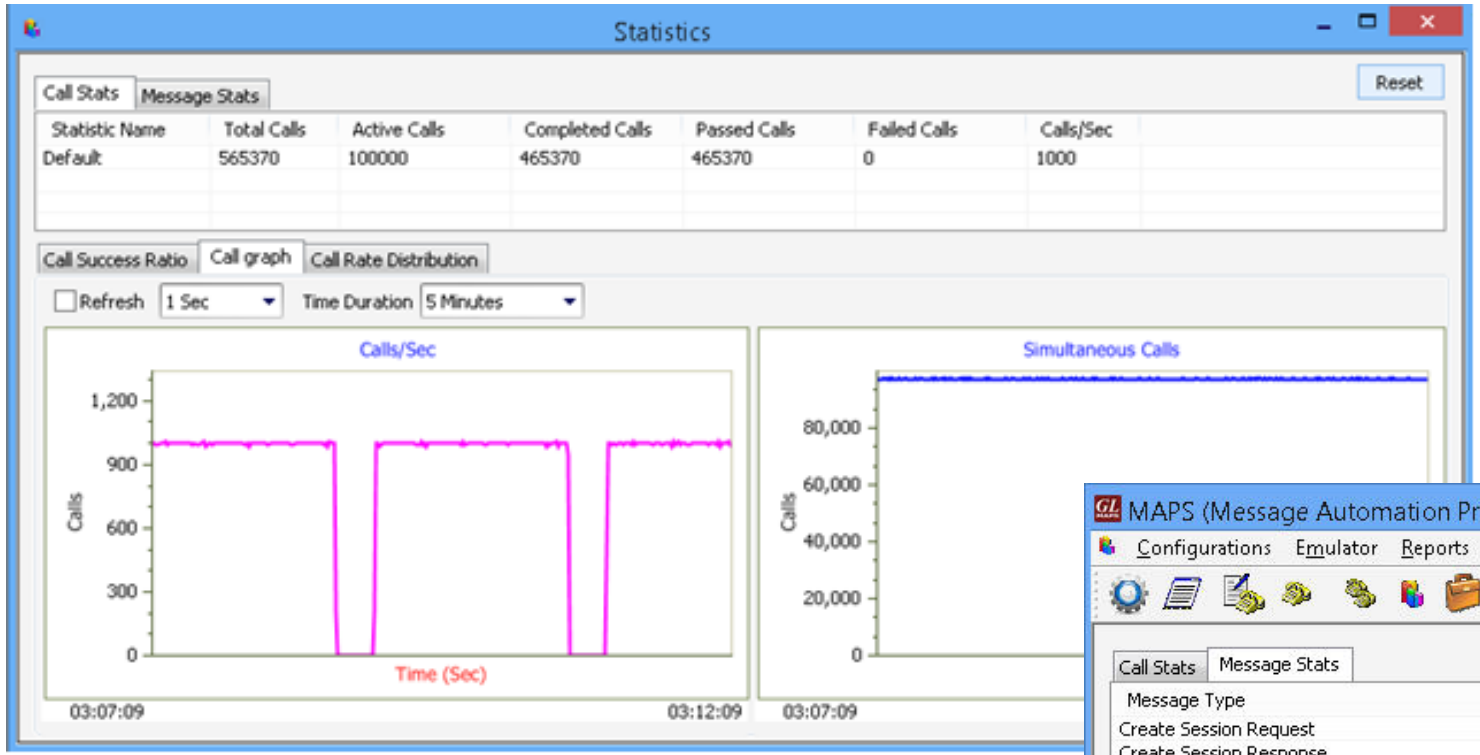
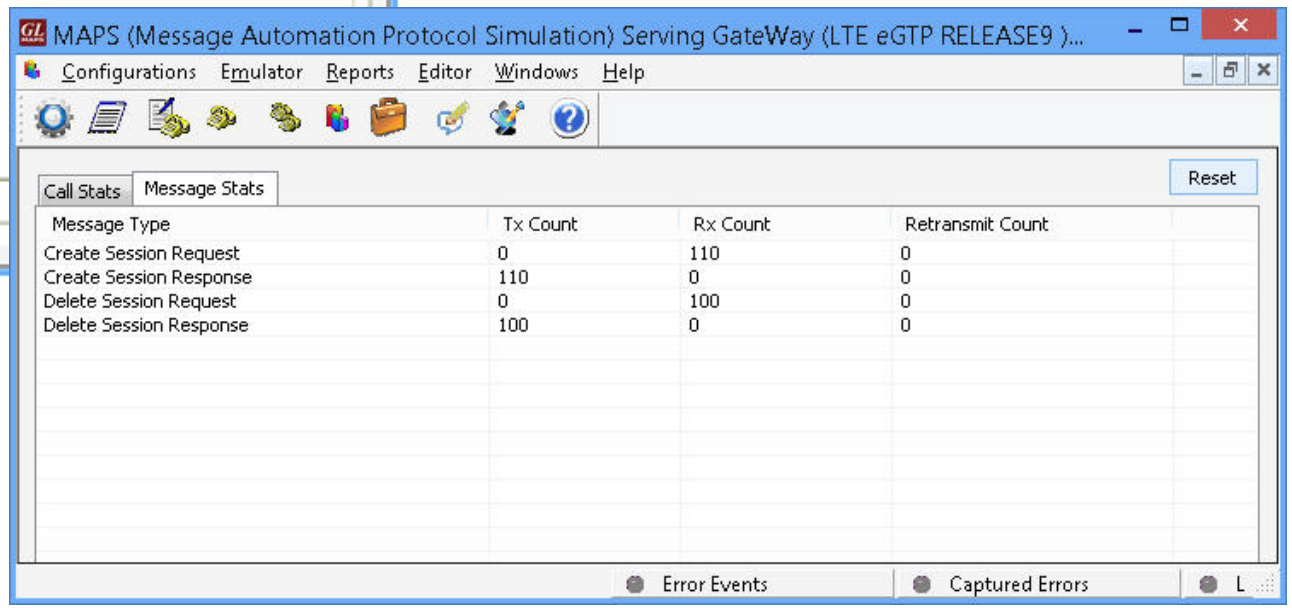
Statistics

Call Statistics



Message Statistics



Statistics and Reports

MOS, R-Factor

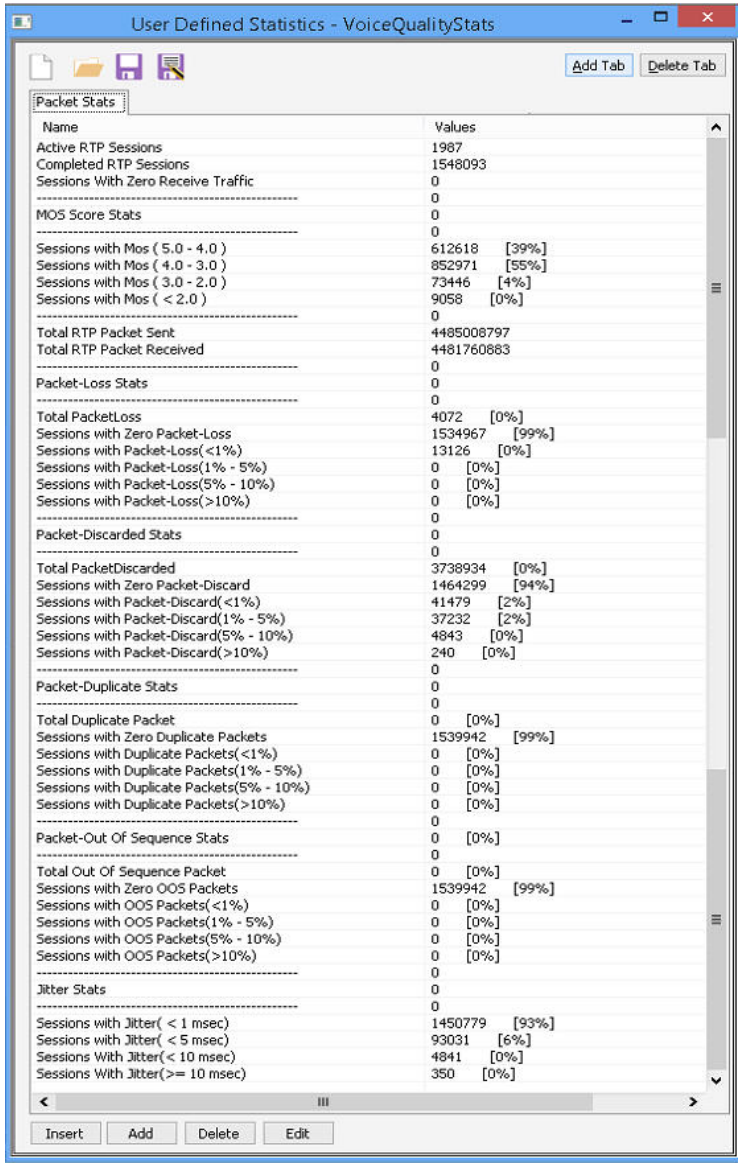
Packet Loss

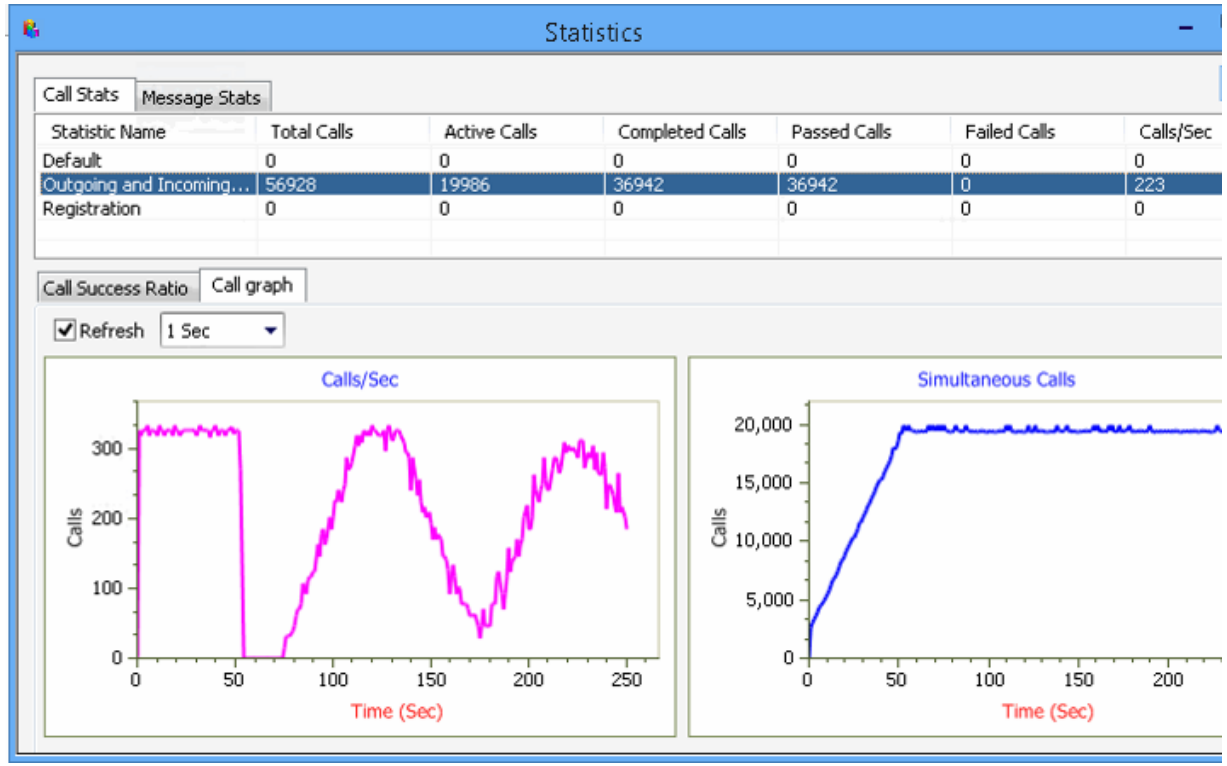
Packets Discarded

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 Call and Instantaneous Calls/Sec.

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Thank you