MAPS™ UMTS Emulator Gn and Gp Interfaces

(UMTS Gn and Gp Interface Emulation)

MAPS™ UMTS Gn, Gp Interfaces

MAPS™ UMTS – GnGp Emulator
(Emulate elements in Gn and 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

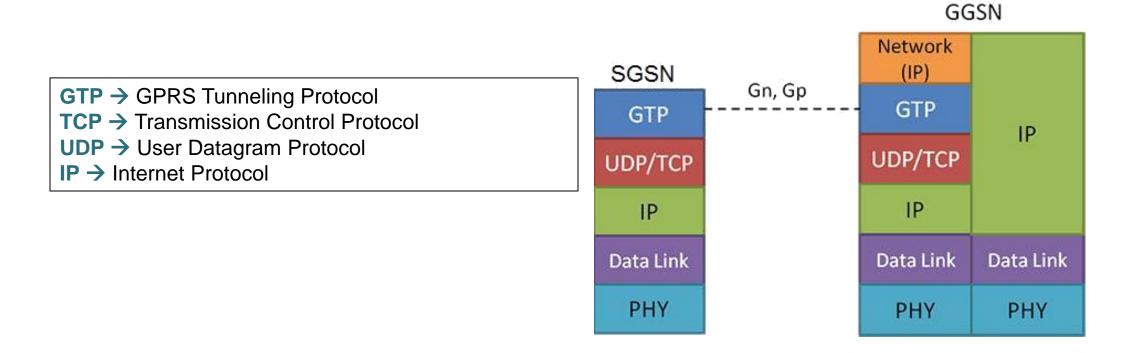- Supports large number of subscribers with CSV based profiles for bulk call generation

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
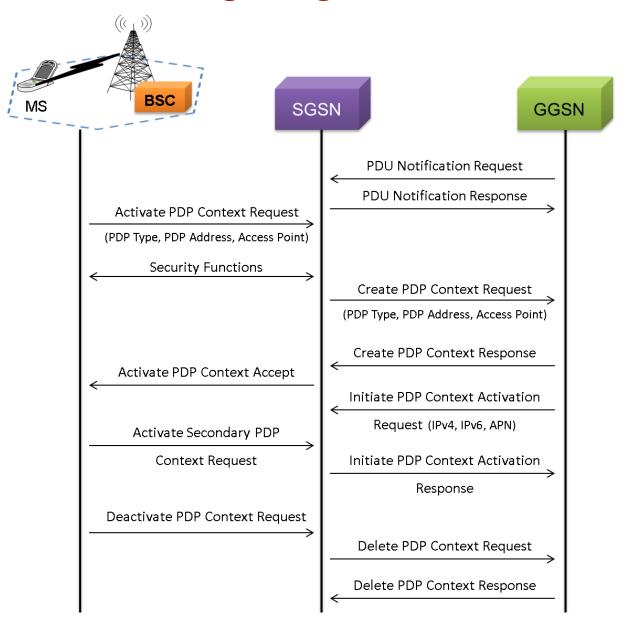
UMTS GnGp Protocol Stack

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
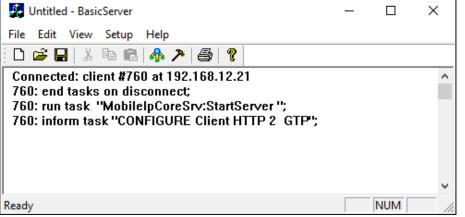
Testbed Configuration

Profile Configuration

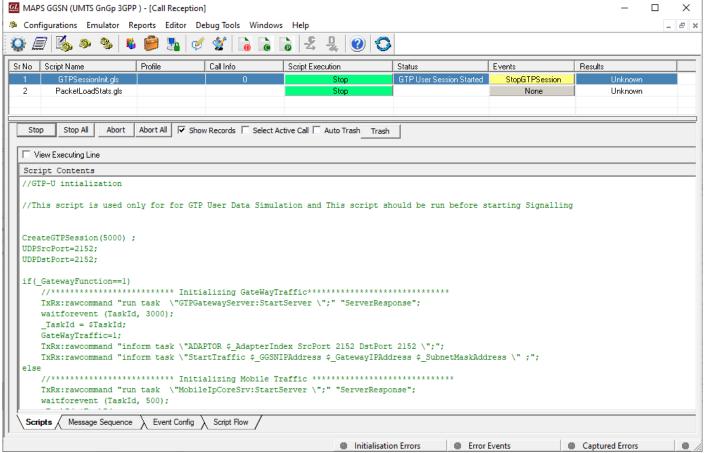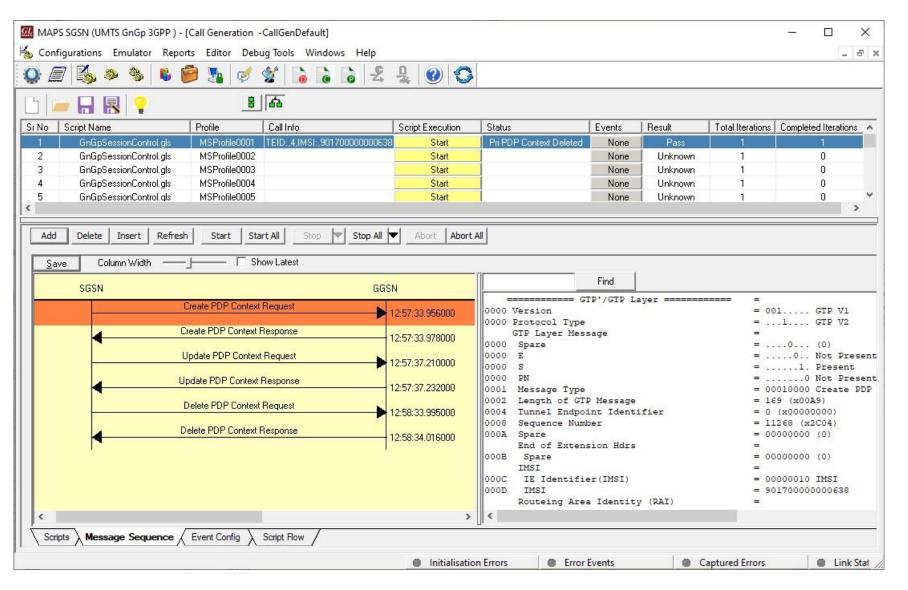# Incoming Call Handler Configuration

UMTS GnGp Log
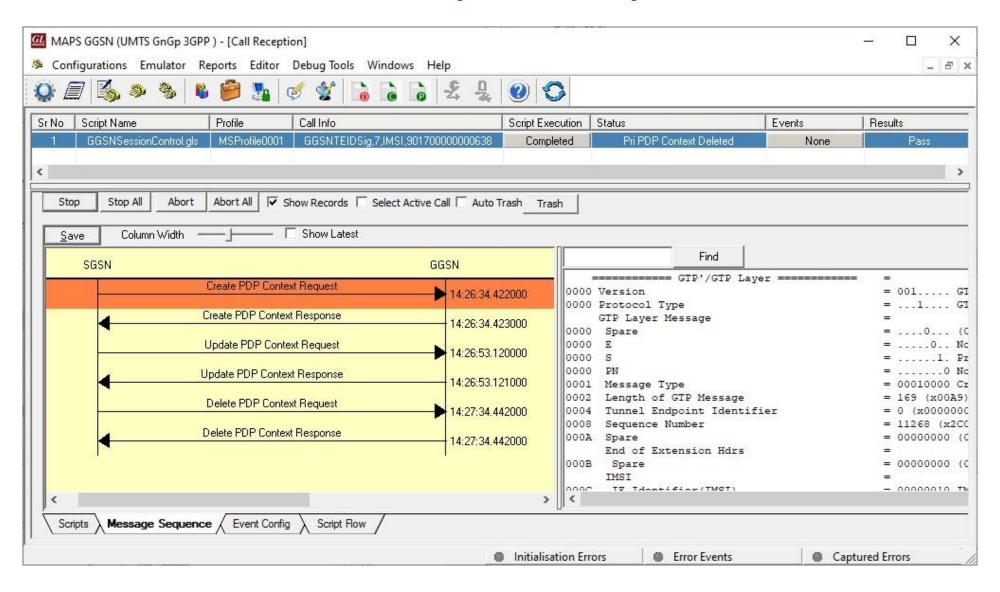
Server Connection Log

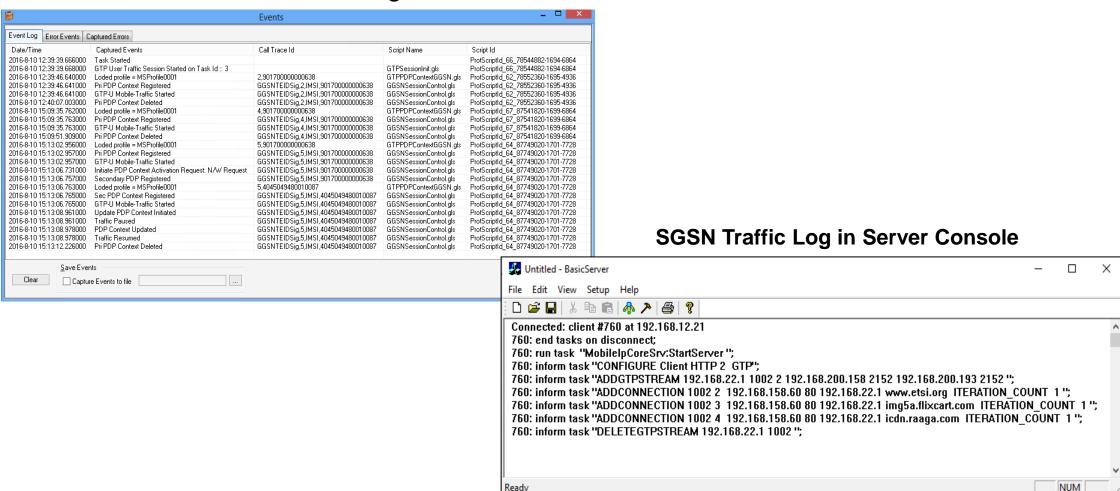## Active GTP Sessions

UMTS GnGp Call Generation

UMTS GnGp Call Reception
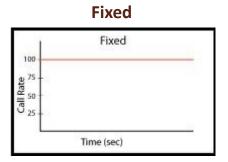
UMTS Gn, Gp Events and Traffic Log

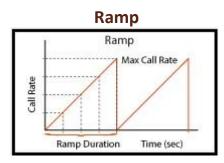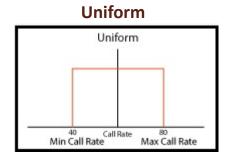**Server Connection Log**

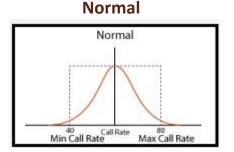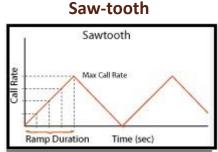**SGSN Traffic Log in Server Console**

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.
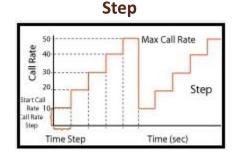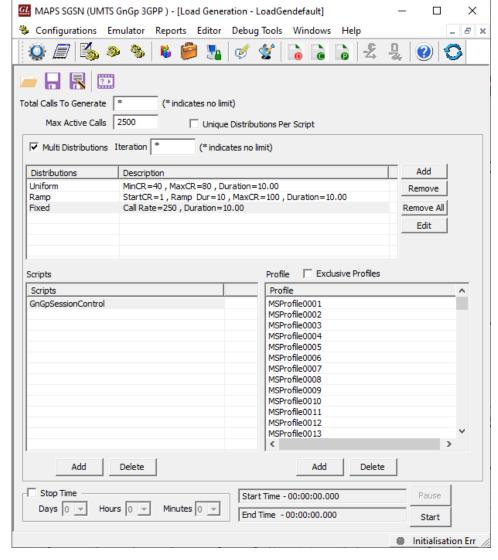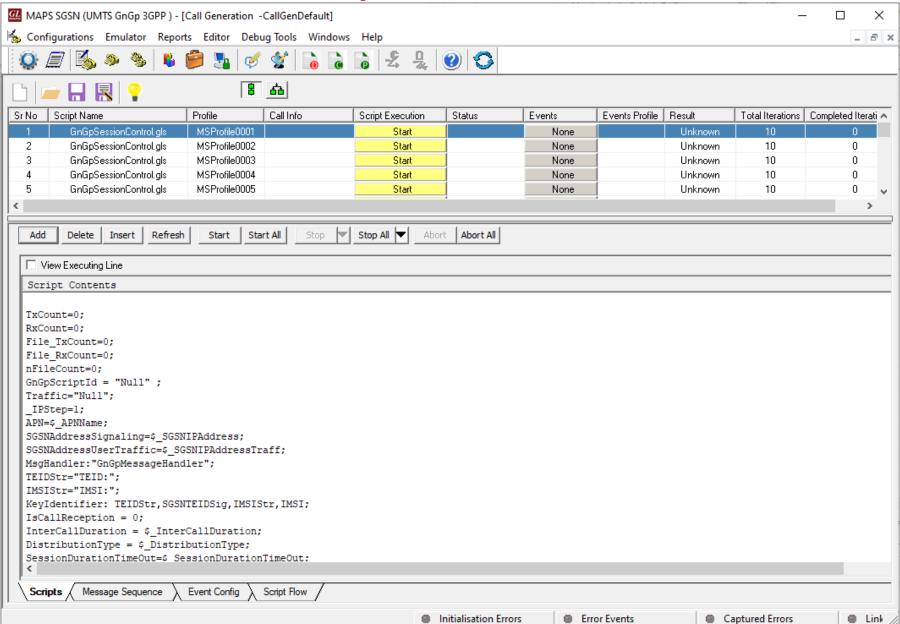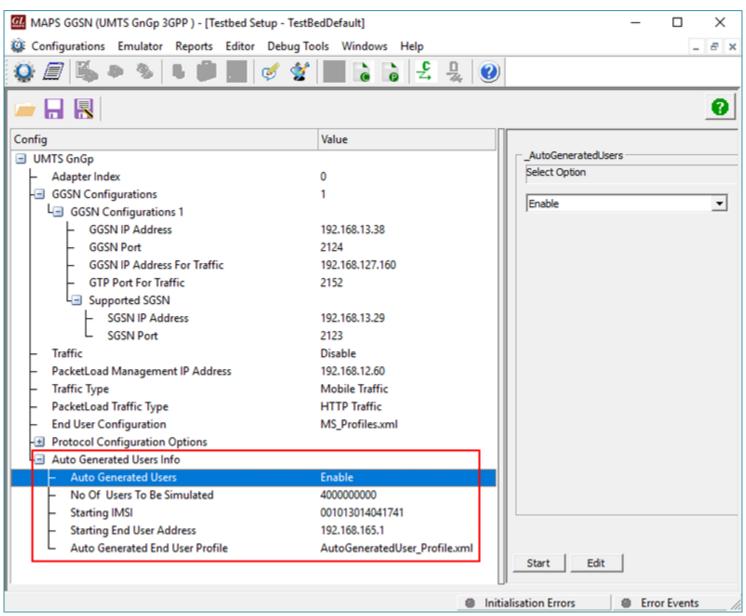

Fixed

Ramp

Uniform

Normal

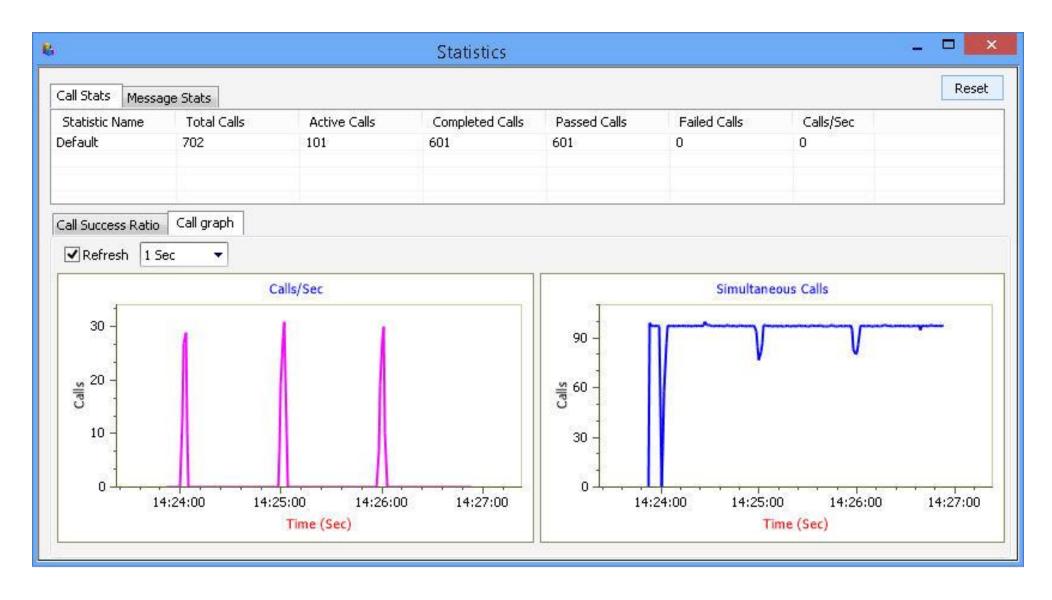**Saw-tooth**

Step

UMTS GnGp Bulk Call Generation

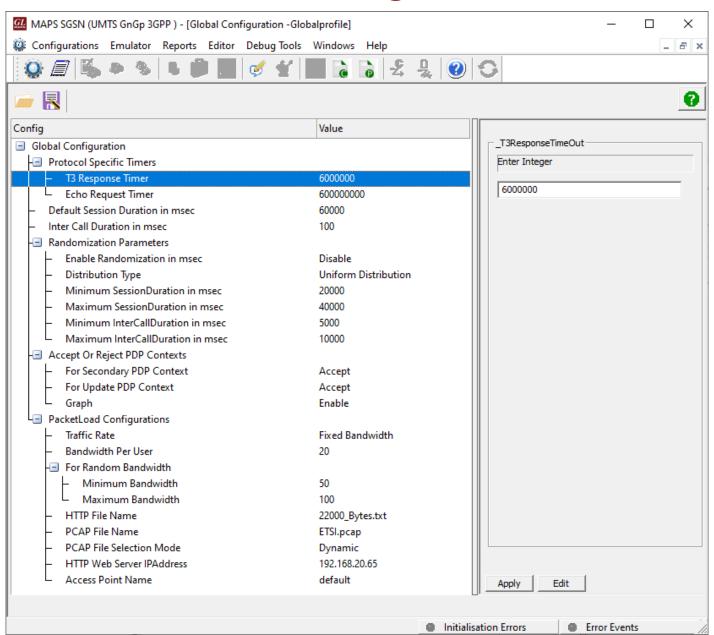# Bulk Call Generation with Autogenerated Users
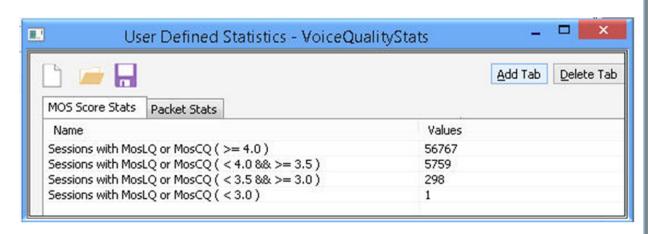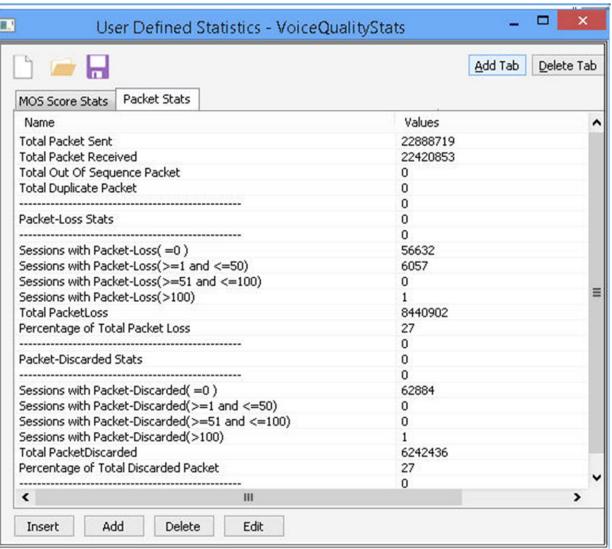
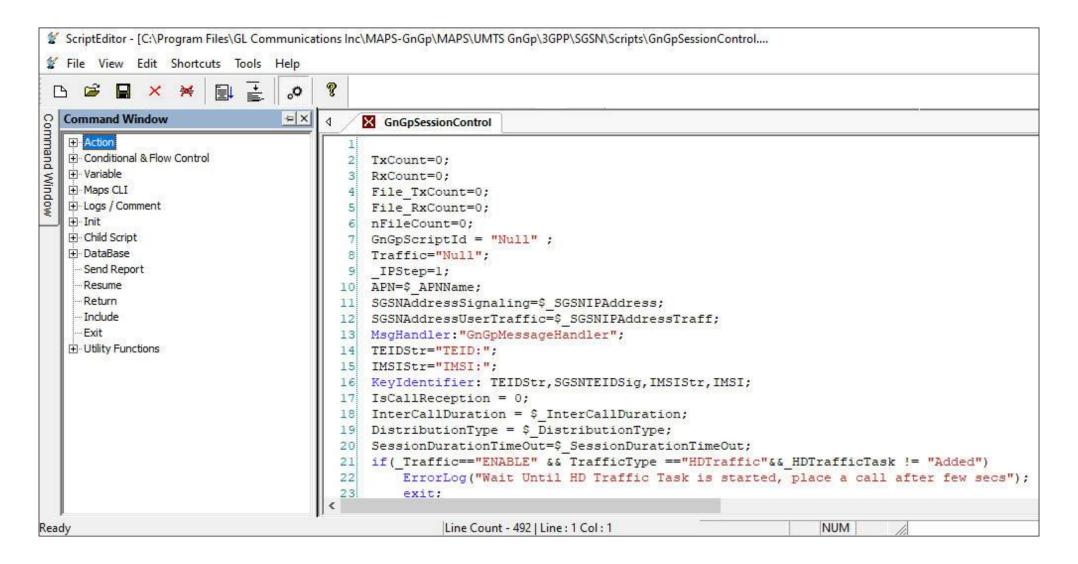# Bulk Call Simulation Results

Global Configuration

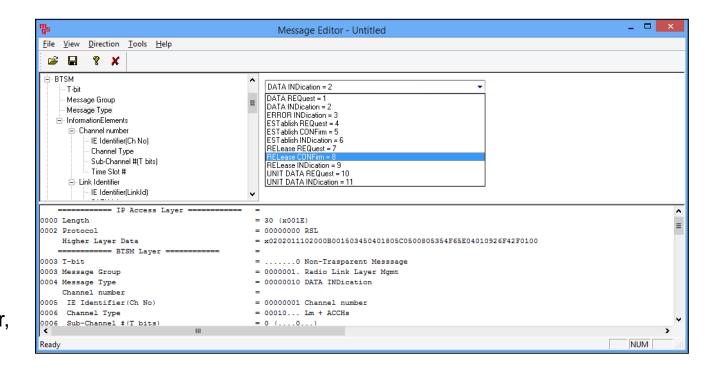# Speech Quality Metrics (R Factor and MOS)

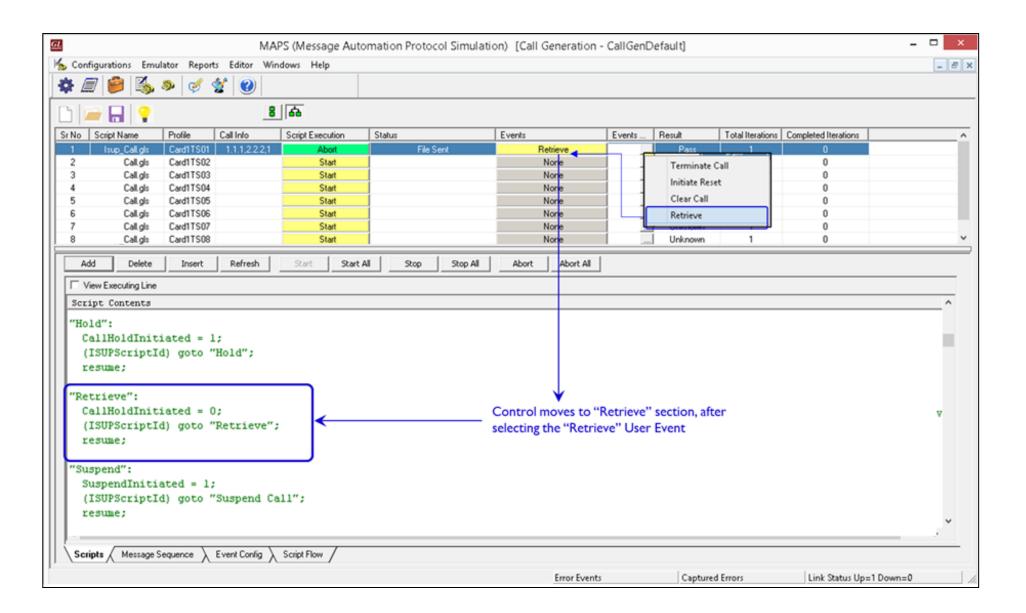# Customizations - Call Flow (Scripts)

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

Customizations - Statistics and Reports
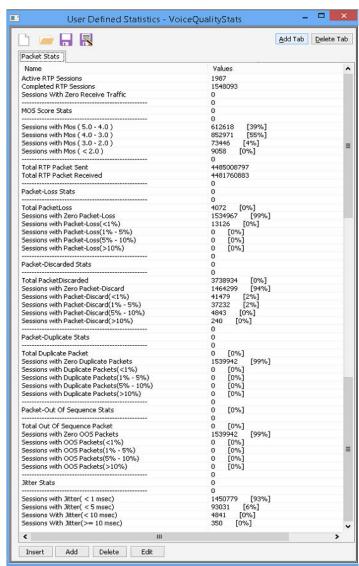
MOS, R-Factor
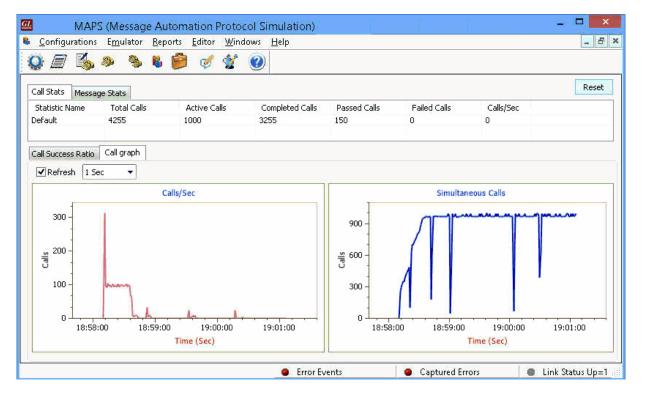
Packet Loss

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