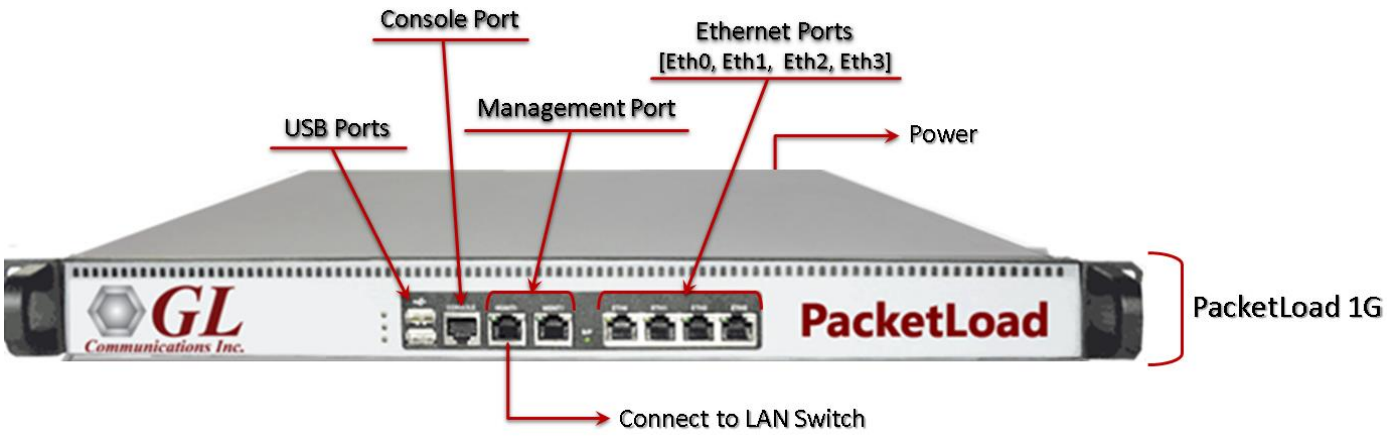
If this is your First-Time-Use of MAPS™ LTE eGTP (S5S8 interface) application, then we recommend you follow all the steps explained in MAPS-LTE-eGTP-Quick-Install-Guide to install MAPS™ LTE eGTP application before proceeding with the steps below.

PacketLoad Web Configurations

PacketLoad is available in following platform variants -

- **PacketLoad™ 4 x 1Gbps (PKS172)** - Data Traffic Generator 1U Rack Appliance with 4 x 1Gbps NIC interfaces: total capacity of up to 4 Gbits/sec Stateful TCP/HTTP Traffic.

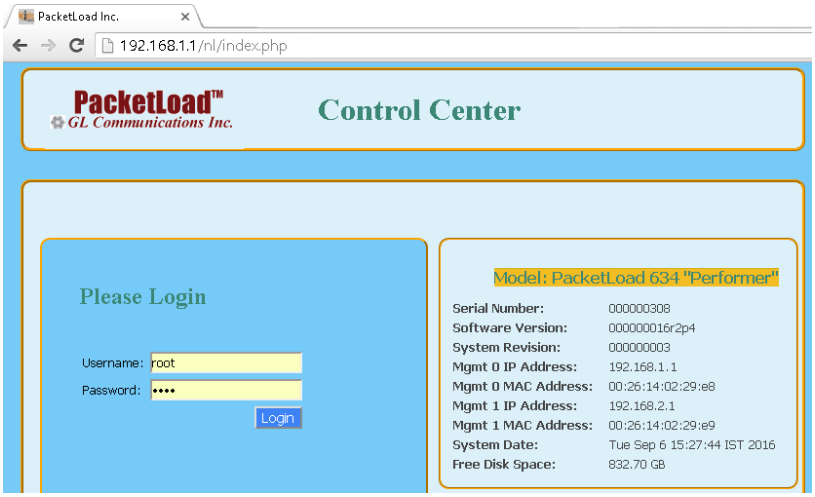


- **PacketLoad™ 4 x 10Gbps (PKS174)** - Data Traffic Generator 2U Rack Appliance with 4 x 10Gbps NIC interfaces: total capacity of up to 40 Gbits/sec Stateful TCP/HTTP Traffic

- Place the device on a sturdy surface or install into a 19" rack.
- Do not block any airflow vents for proper operation and cooling. The system uses side and back vents for cooling.
- On a single-4-port setup, the first 2 ports (non-Management) from left to right (Eth0 and Eth1) are Server ports, and the last 2 ports (Eth2 and Eth3) are Client ports. The ports are paired "Eth0-Eth2" and "Eth1- Eth3". For multi-box configurations, all ports can be configured as Servers or Clients. The ports are used as Server—Client pairs for testing the DUT. Appropriate Ethernet cables should be used.
- Insert the power cable into device and then into the power outlet. The switch in the back of the system turns on the system. Insert the Ethernet cable into port MGMT0, and the other end into your Laptop or PC, or your network

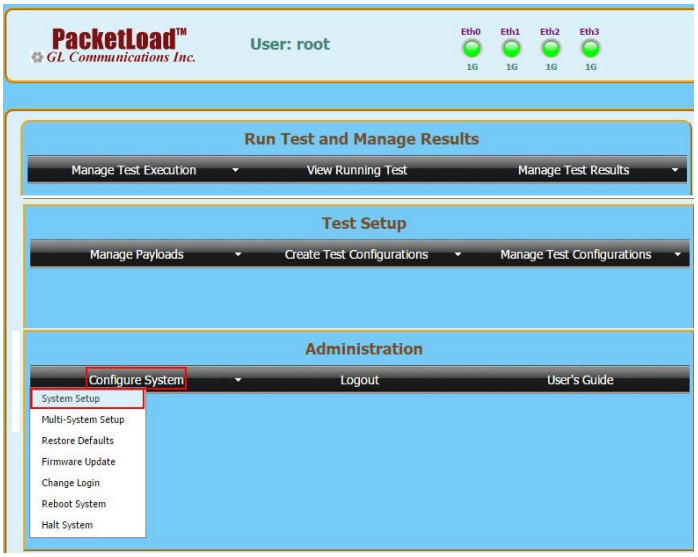
Access the Configuration

- Assign an IP address to the PacketLoad device. Make sure that the PC and the PacketLoad device are in the same subnet.
- Access the device using the browser by entering the IP address assigned to the PacketLoad appliance, http://192.168.1.1



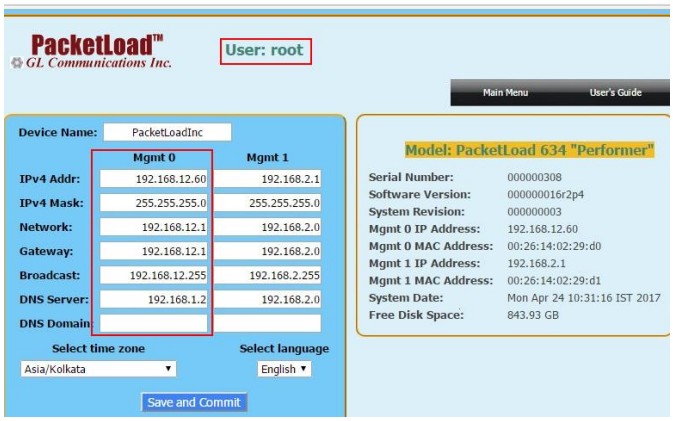
Note: The Login page also provides the PacketLoad appliance model details such as the Serial Number, Software Version, IP address, MAC Address, and other related information as seen in the figure

- Provide the following login credentials:
  - Username = root
  - Password = root
- Click "Login" button and login to the main menu as seen in the figure below.



- Under the **Administration** menu click on **Configure System** and select the **System Setup** from the drop down to configure the IP address for **Management Ports** (Mgmt 0, Mgmt 1)

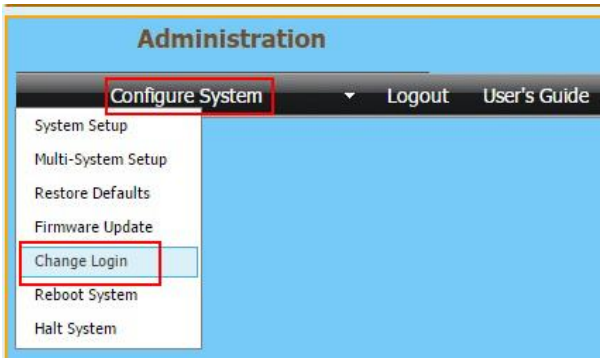
- Configure the system by defining all the new parameters
  - Assign new **IPV4** address (make sure that the PC and PacketLoad should be in the same subnet series)
  - Enter all the other network parameters and save the configuration
  - Click on **Save and Commit**, PacketLoad will save all the changes made into the configuration and restart the networking configuration.



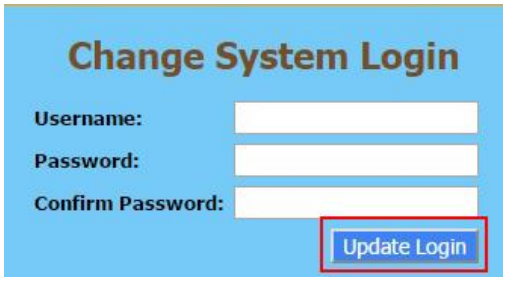
Note: - Record these values for future reference if needed.

- PacketLoad now will be found at the new address as configured, to access the device go to web browser and enter the new address **http:// new_address**

- To change the login credentials, click on the **Configure System** under **Administration** and select **Change Login.**



- Enter the new Username, Password and click on the Update Login.



PacketLoad Software Installation

PacketLoad software installation is required to load different traffic (HTTP/PCAP) configurations on to the PacketLoad 1G/10G Hardware device.

- Run the **MAPS-PacketLoadx64.exe** executable file from GL's installation USB stick. Follow the on-screen instruction to complete the installation procedure.

- Double-click on the **PacketLoad** shortcut icon 

ctreated on the desktop to invoke MAPS™ Packet Load application.

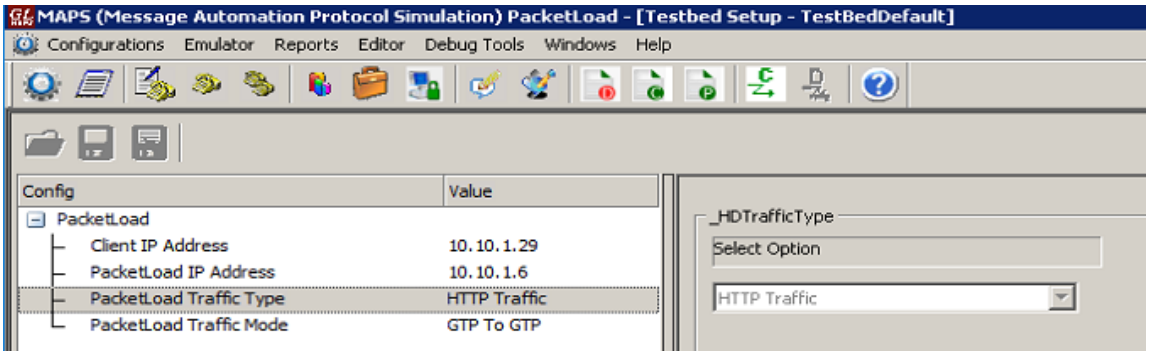
- By default, Testbed Setup Configuration window is invoked. By default, **'TestBedDefault'** configuration is loaded in the window. Verify and validate the highlighted parameter settings:

  Client IP Address = [Local IP address]

  PacketLoad IP Address = [Device Management Port IP address]

  PaketLoad Traffic Type = HTTP/PCAP Traffic

  PaketLoad Traffic Mode = GTP to GTP



PacketLoad Profile Configuration

- From main window, select **Editor → Profile Editor**. This will invoke Profile Editor window.
- By default, in the Profile Editor window **PacketLoad Configurations** file is displayed**.**
- On the left-pane, select **PacketLoadConfiguration**, and set the **PacketLoad Traffic Type** as **PCAP/HTTP**.
- If **PacketLoad Traffic Type** is set to **PCAP,** the following are configured -

  HTTP Rate Percentage = 0

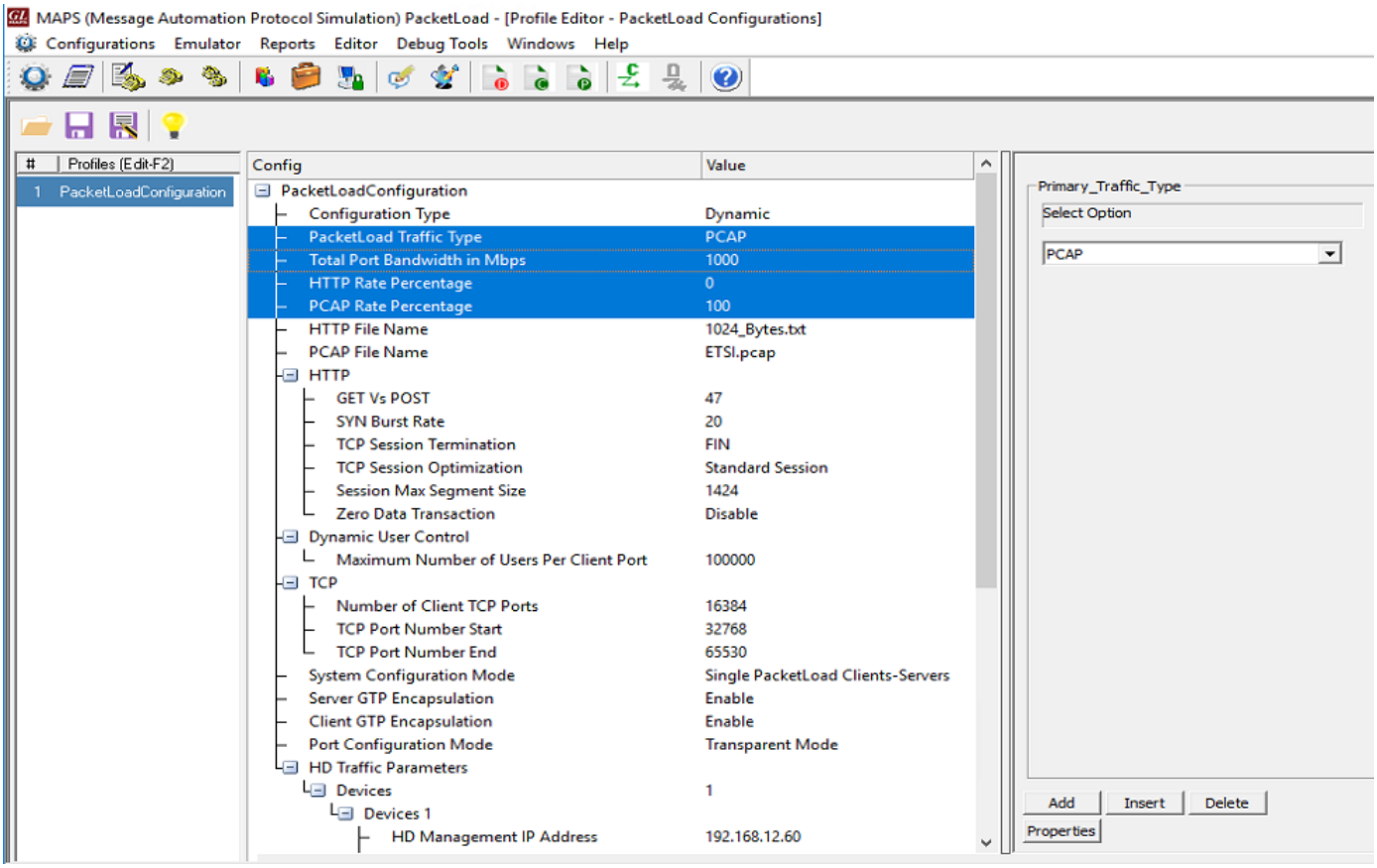
  PCAP Rate Percentage = 100
- If **PacketLoad Traffic Type** is set to **HTTP,** the following are configured -

  HTTP Rate Percentage = 100

  PCAP Rate Percentage = 0
- Depending on the PackLoad device connected (1G/10G), configure the Total Port Bandwidth in Mbps

  For 1G PacketLoad device, configure Total Port Bandwidth in Mbps = 1000

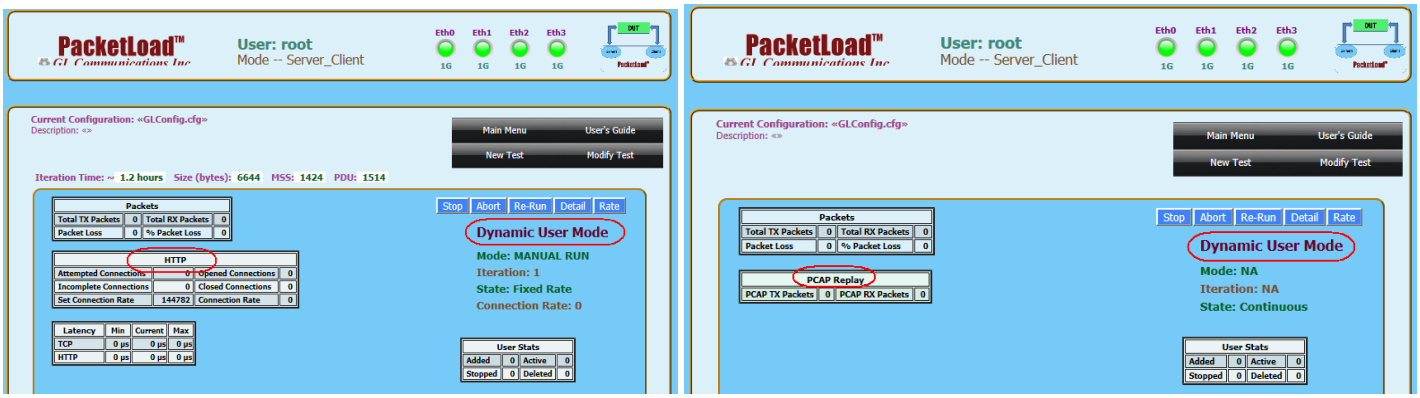
  Similarly, for 10G PacketLoad device, configure Total Port Bandwidth in Mbps = 10000
- Click on  to save the profile. Exit from Profile Editor window.



- Click on **Start** to start the Test Bed Setup.

Note:
Ensure to start Packet Load before running LTE eGTP (S5S8) application configured.

- The PCAP or HTTP traffic configuration can be verified in the PacketLoad web browser (http://192.168.1.1), refer to figure below.



MAPS™ LTE eGTP (S5S8) application Verification

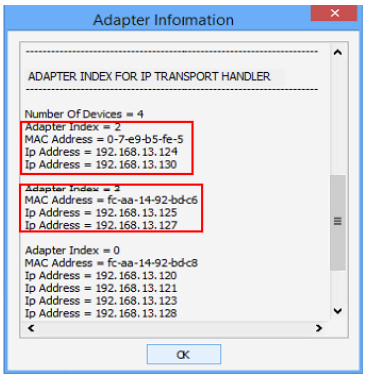
Functional verification of MAPS-LTEeGTP application requires a system with 2 NIC cards for testing. MAPS-LTEeGTP is configured as **PDN GW** (Packet Data Network GateWay) on one NIC and as **SGW** (Serving Gateway) on the other.

Note down the IP address of NIC1 and NIC2, in this example the IP addresses used and configured are:

- NIC1 IP address is 192.xx.xx.125, and configured as **PDN GW**
- NIC2 IP address is 192.xx.xx.124, and configured as **SGW**

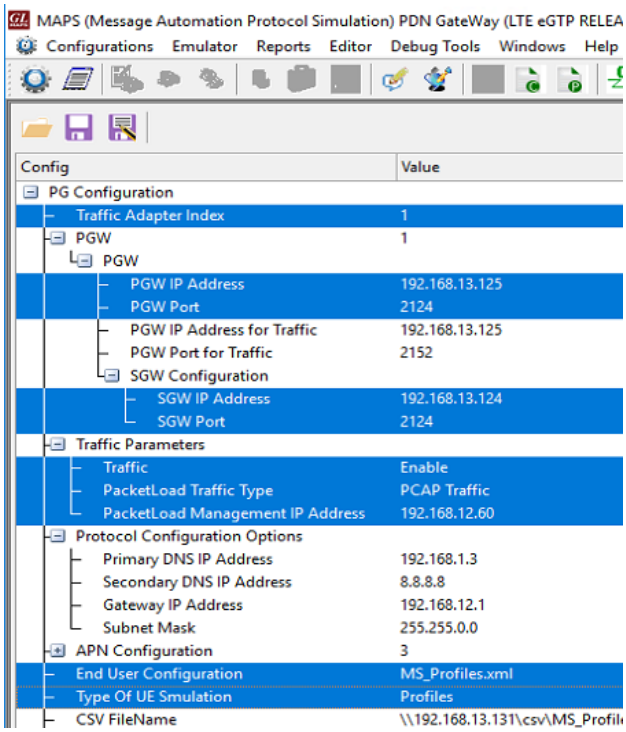
***Note:** In this test scenario, we have configured MAPS™ LTEeGTP as SGW generating calls and PDN GW to receive calls.

First MAPS™ LTEeGTP (GUI) – (PGW)

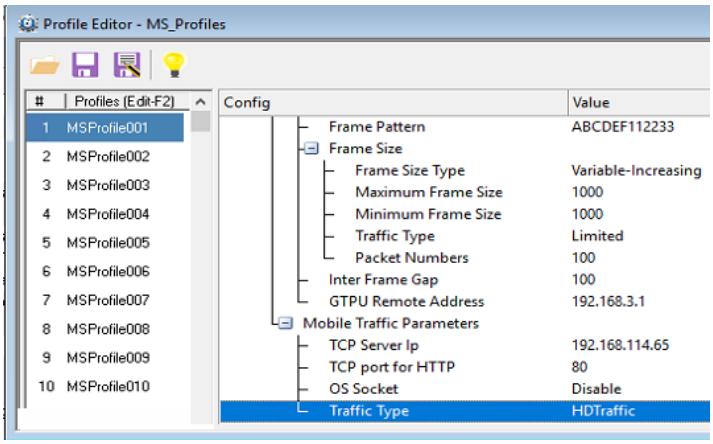


- Right-click on the **MAPS-LTEeGTP** application using shortcut icon created on the desktop and select **'Run as Administrator'**. This instance of MAPS™ is configured for ***Call Reception***
- While invoking the first **MAPS-LTEeGTP** instance, verify the following in the Protocol Selection window -
  - Protocol Standard is set to **LTE eGTP**
  - Protocol Version to **RELEASE 9**
  - Select Node as **PDN GateWay.** Click **Ok**

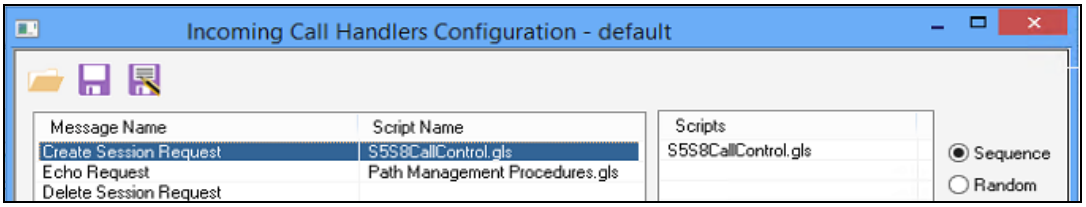
- By default, **Testbed Setup** window is displayed, loaded with **TestBedDefault** configuration. Verify and validate the following parameter settings:
  - The **Display Adapter Info** option from the **Help** menu displays all the network adapters available in the system. Choose and set the **Traffic Adapter Index** value displayed against the IP address in use.
  - Set **PGW IP Address** to 192.xx.xx.125 (NIC1 IP address)
  - Set **PGW Port** to 2124
  - Set **SGW IP Address** to 192.xx.xx.124 (NIC2 IP address)
  - Set **SGW Port** to 2124
  - Set **Traffic** = Enable
  - Set PacketLoad Traffic Type = PCAP/HTTP Traffic [Note: Make sure that the same PCAP/ HTTP traffic type is also configured in the PacketLoad Testbed Setup]
  - Set PacketLoad Management IP Address = PacketLoad Device IP Address
  - Click **Save** button and save the changes to the same the **TestBedDefault** configuration file.



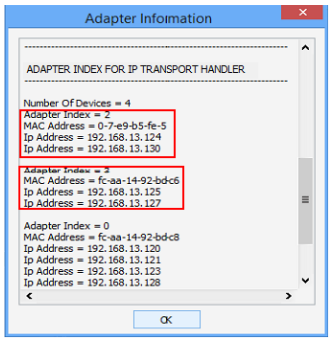
- From main window, select **Editor → Profile Editor**. This will invoke Profile Editor window.
- On the Profile Editor window, click on and select **MS_Profiles.** Click on OK.
- Select **MSProfile001**, scroll-down to **Mobile Traffic Parameters**, and set the **Traffic Type** as **HDTraffic**.
- Click on to save the profile.
- Start the PGW TestBed Setup.



- On the same **MAPS-LTEeGTP** main window, from **Configuration** menu → select **Incoming Call Handler Configuration** and invoke the window. Verify that **S5S8CallControl.gls** script is set against **Create Session Request** message. Exit from the window.



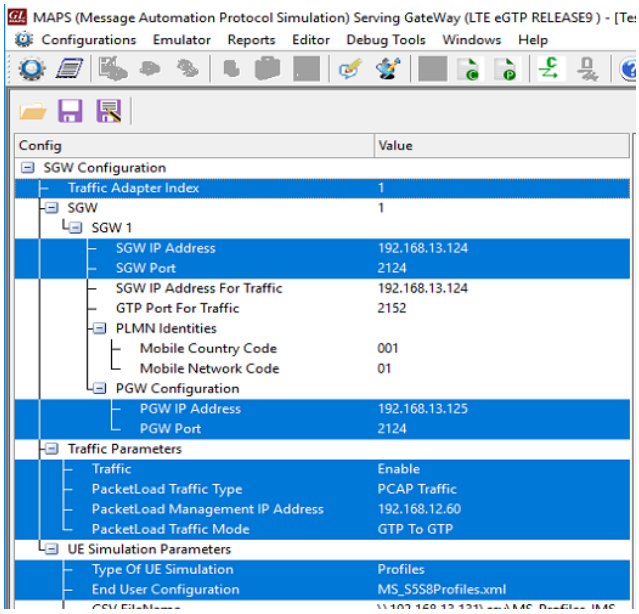
Second MAPS™ LTEeGTP (GUI) – (SGW)



- Right-click on the **MAPS-LTEeGTP** application using shortcut icon created on the desktop and select **'Run as Administrator'**. This instance of MAPS™ is configured for ***Call Generation.***

- While invoking the second **MAPS-LTEeGTP** instance, verify the following in the Protocol Selection window -
  - **Protocol Standard** is set to **LTE eGTP**
  - **Protocol Version** to **RELEASE 9**
  - Select **Node** as **Serving GateWay.** Click **Ok**

- By default, **Testbed Setup** window is displayed. Click and select **TestBedDefault_S5S8** and check for the parameter default values as listed below:



  - The **Display Adapter Info** option from the **Help** menu displays all the network adapters available in the system. Choose and set the **Traffic Adapter Index** value displayed against the IP address in use.
  - Set **SGW IP Address** to 192.xx.xx.124 (NIC2 IP address)
  - Set **SGW Port** to 2124
  - Set **PGW IP Address** to 192.xx.xx.125 (NIC1 IP address)
  - Set **PGW Port** to 2124
  - Traffic = Enable
  - Set PacketLoad Traffic Type = PCAP/HTTP Traffic [Note: Make sure that the same PCAP/ HTTP traffic type is also configured in the PacketLoad Testbed Setup]
  - Set PacketLoad Management IP Address = PacketLoad Device IP Address
  - Click **Save** button and save the changes to the same **TestBedDefault_S5S8** file.

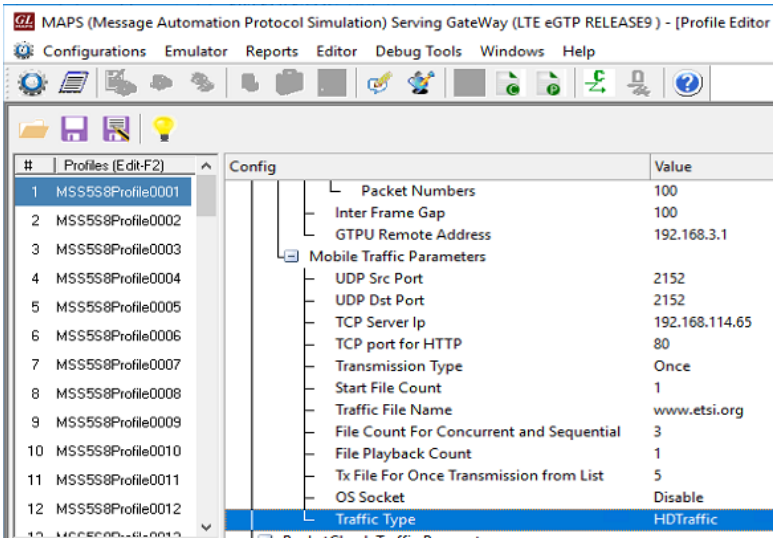
- From main window, select **Editor → Profile Editor**. This will invoke Profile Editor window.

- On the Profile Editor window, click on and select **MS_S5S8Profiles.** Click on OK.

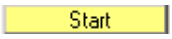
- Select **MSS5S8Profile0001**, scroll-down to **Mobile Traffic Parameters**, and set the **Traffic Type** as **HDTraffic**.

- Click on to save the profile.

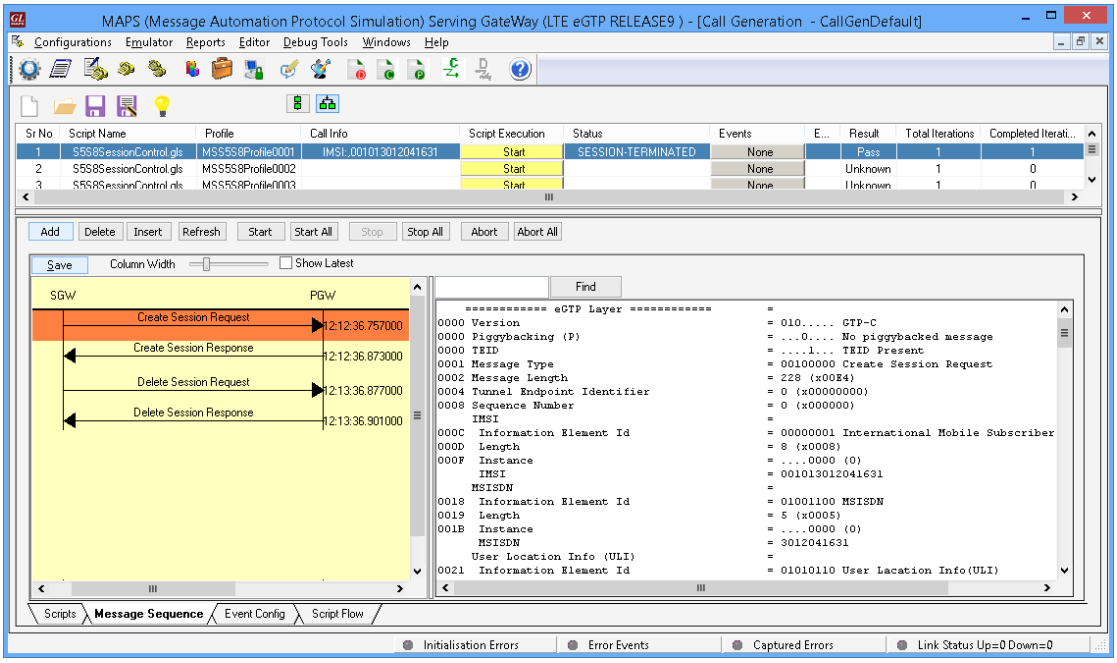
- Start the SGW TestBed Setup.



- In the second **MAPS-LTEeGTP** (SGW) instance, click the ***Call Generation***  icon on main window, and invoke the ***Call Generation*** window.

  - By default, you will observe multiple call instances loaded with **S5S8SessionControl.gls** scripts and **MSS5S8Profile00**** profiles. **Note:** If the profile is not loaded, click on the call instance in the Profile column and select the configured **MSS5S8Profile0001** profile and set it for the call instance.
  - Select the call instance loaded with **S5S8SessionControl.gls** script and **MSS5S8Profile0001** profile in the Call Generation window and click  button to initiate the call generation.

- Wait for the calls to terminate and verify the call flow under the **Message Sequence** tab at both generation and reception end.
- Select any message in the ladder diagram and observe the respective decode message on the right pane for the respective message.



- Return to first instance of **MAPS-LTEeGTP** (PGW), click  icon and invoke the **Call Reception** window. Observe that the calls are automatically received running the Rx script**.**

- On MAPS™ SGW (or PGW) main menu, from **Report** menu → select **User Defined Statistics** to invoke Statistics window.
- Similarly, from MAPS™ SGW (or PGW) main menu, from **Report** menu → select **User Defined Graphs** to invoke Graphs window as shown below. All the four graphs Bandwidth on each port, HTTP and TCP Traffic Graph, and number of Added and Stopped Users ratio Graph are displayed as shown in the figure below.