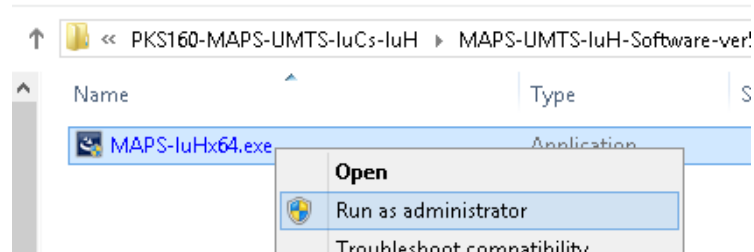


## Software and License Installation

**DO NOT CONNECT USB DONGLE TO THE PC FIRST.** Perform Software installation first, followed by License installation and then plug-in the USB hardware dongle to the PC.

- PC Requirements
  - Windows® 7 and above Operating System (**64 bit Only**).
  - Core i3 to i7 (or equivalent), 4 GB Memory, NIC, and USB 2.0 Ports.
- Plug-in the **USB Installation Stick** (pen drive) to the PC. This is provided with the shipment package by GL Communications.
- Navigate to **PKS160-MAPS-UMTS-IuCs-IuH\MAPS-UMTS-IuH-Software-verXX** folder, right click **MAPS-IuHx64.exe** and select **Run as Administrator**. Follow the onscreen instructions and complete the installation.




- Navigate back to root directory in USB installation stick (pen drive) to **GL-Dongle License Installer** folder, execute **GLDongleLicenseInstaller\_x64.exe**. Follow the onscreen instructions and complete the installation.
- NOW PLUG-IN the USB Dongle to the PC to the USB 2.0 port of your computer. Windows® should install all required drivers automatically. A red light should appear on the dongle indicating that the device is functioning correctly and ready to use.
- It is recommended to reboot the system after the software installation. If you had problems with installation so far, refer to [Troubleshoot](#) section explained in this document.
- You can verify if the required licenses are installed. Navigate to **C:\Program Files\GL Communications Inc\GLDONGLE** directory, execute **appl\_list.exe** and confirm that the PKS160 (UMTS-Iu-CS and Iuh Interface Emulation) and PKS102 (PacketGen RTP Soft Core) licenses are listed.




## Verification

For functional verification of **MAPS™ IuH** application, can be configured as **HnB** (Home Node B), and **HnB-GW** (Home Node B - Gateway) nodes simulating IuH interface generating MOC, MTC, LUC procedures and to automatically handle CS domain RTP traffic.





The following explains **MAPS™ IuH** configuration on the same PC in loopback mode.

### First MAPS™ IuH (GUI) – (HnB-GW)

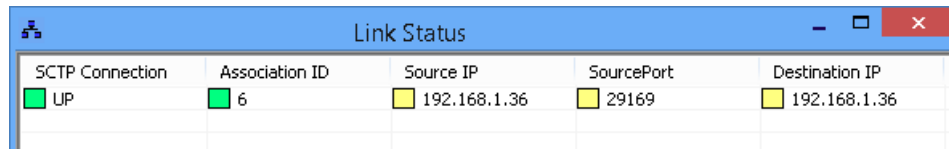
- Right-click on **MAPS-IuH** application shortcut icon created on the desktop and select 'Run as Administrator' to invoke the application. The first instance of MAPS™ is configured for **Call Reception**.
- While invoking the first MAPS-IuH instance, verify the following in the Protocol Selection window -
  - **Protocol Standard** is set to **UMTS IuH**
  - **Protocol Version** to **3GPP**
  - Select **Node** as **HNB GateWay**. Click **Ok**
- By default, **Testbed Setup** window is displayed. Click  and select **SelfTest Configuration** and check for the parameter default values as listed below:
  - **Enable or Disable RTP Traffic option** = **Enable**

- Set **HnB-GW IP Address** to PC IP address
  - Set **MGW IP Address** to PC IP address
  - By default, **HNBGW Port** is set to **29169**
  - Set **HnB IP address** to PC IP address
  - By default, **HnB Port** is set to **29167**
  - Click  **Save** button and overwrite the **SelfTest Configuration** file.
- On the same MAPS-IuH main window, from **Configuration** menu > select **Incoming Call Handler Configuration**. Verify that **IuH\_CS\_Call.gls** script is set against CM SERVICE REQUEST, LOCATION UPDATING REQUEST, and PAGING RESPONSE messages. Exit from the window.
  - From MAPS main window, select **Editor > Profile Editor**. Click  and select **MS\_Profiles** and from the left pane, choose **MSPprofile0001** profile. Verify the **following settings**:
    - Set Type of Call = Terminate MO Call, Service Type for MT Call = Speech Call,
    - Make sure that the LAC = 0001, SAC = 0001, and RAC = 0001 parameter values are same as configured in the testbed setup window.
    - Set Codec Options = PCMU
    - In Traffic Config list > set **Traffic Type = Auto Traffic File** and **Traffic Direction = TxRx**.
    - Click  **Save** button and overwrite **MS\_Profiles** file. Exit from the Profile Editor window.



## Second MAPS™ IuH (GUI) – (HnB)

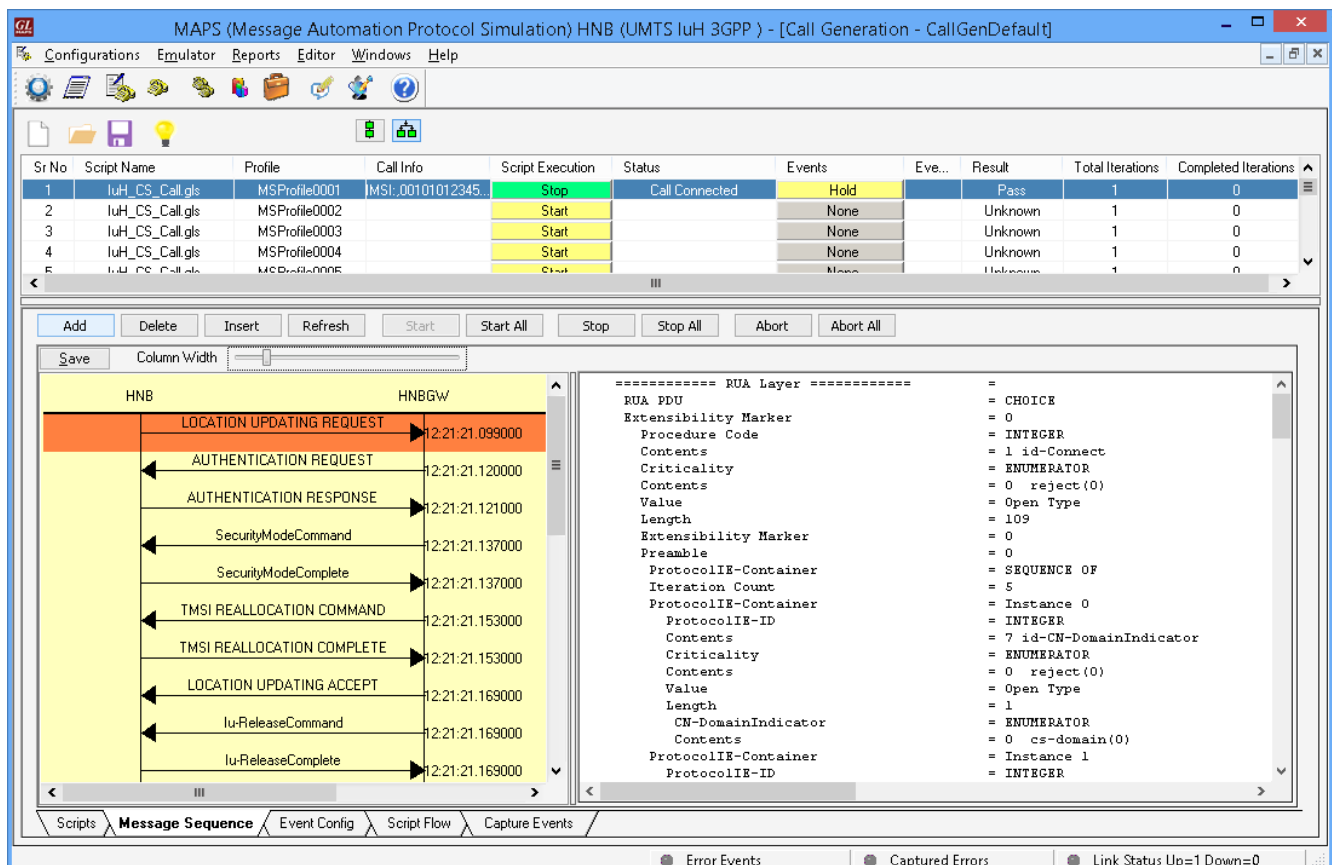
- Right-click on **MAPS-IuH** application shortcut icon created on the desktop and select ‘Run as Administrator’ to invoke the application. The first instance of MAPS™ is configured for **Call Generation**.
- While invoking the second MAPS-IuH instance, verify the following in the Protocol Selection window
  - **Protocol Standard** is set to **UMTS IuH**
  - **Protocol Version** to **3GPP**
  - Select **Node** as **HnB**. Click **Ok**
- By default, **Testbed Setup** window is displayed. Click  and select **SelfTest Configuration** and check for the parameter default values as listed below:
  - **Enable or Disable RTP Traffic option** = Enable
  - Set **HnB-GW IP Address** to PC IP address
  - Set **MGW IP Address** to PC IP address
  - By default, **HnB Port** is set to **29167**
  - Set **HnB IP address** to PC IP address
  - By default, **HNBGW Port** is set to **29169**
  - Click  **Save** button and overwrite the **SelfTest Configuration** file.
- From MAPS main window, select **Editor > Profile Editor**. Click  and select **MS\_Profiles** and from the left pane, choose **MSPprofile0001** profile. Verify the **following settings**:
  - Set CM Service Type = Mobile Originating Call Establishment; **Location Update Type = Normal location updating**
  - Make sure that the LAC = 0001, SAC = 0001, and RAC = 0001 parameter values are same as configured in the testbed setup window.
  - Set Codec Options = PCMU
  - In Traffic Config list > set **Traffic Type = Auto Traffic File** and **Traffic Direction = TxRx**.
  - Click  **Save** button and overwrite **MS\_Profiles** file. Exit from the Profile Editor window.

- **Start** the testbed on both the MAPS instances (HNB and HNB GW)
- On both the MAPS instances main window, from **Reports** menu > select **Link Status** option to verify the link status. Verify that the **SCTP Link Status** is **UP** (indicated in Green color) before placing the call. Refer to [troubleshoot](#) section for any issues.



SCTP Connection	Association ID	Source IP	SourcePort	Destination IP
UP	6	192.168.1.36	29169	192.168.1.36

- On both instances of MAPS-IuH (HNB and HNB GW) main window, click **Call Reception**  icon and observe that the **Check\_SCTP\_Status.gls** script is activated.
- In the second MAPS-IuH (HNB) instance, click the **Call Generation**  icon on main window, and invoke the **Call Generation** window.
- By default, multiple call instances loaded with **IuH\_CS\_Call.gls** script with **MSPProfile0\*\*** profiles are displayed. Select the instance loaded with **IuH\_CS\_Call.gls** script with **MSPProfile0001** profile and click **Start** button to initiate call generation.
- Return to first instance of MAPS-IuH (HNB GW), in the **Call Reception** window, observe that the calls are automatically received running the Rx script.
- 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.

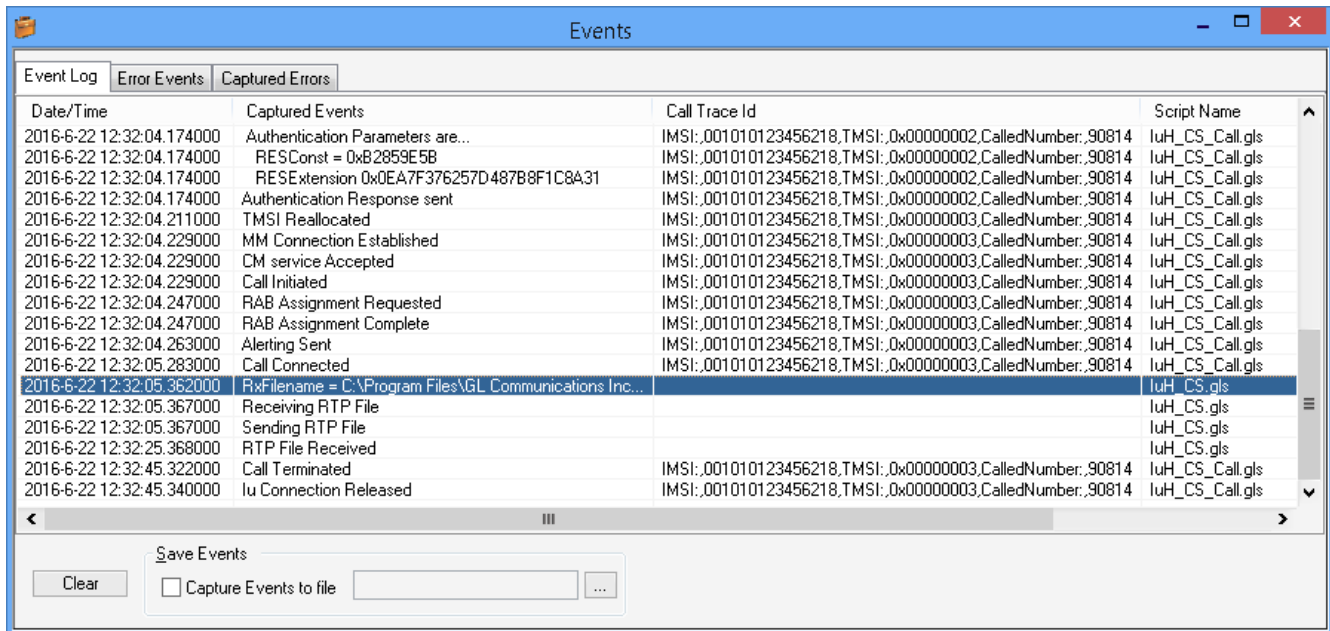


Sr No	Script Name	Profile	Call Info	Script Execution	Status	Events	Eve...	Result	Total Iterations	Completed Iterations
1	IuH_CS_Call.gls	MSPProfile0001	MSI:00101012345	Stop	Call Connected	Hold		Pass	1	0
2	IuH_CS_Call.gls	MSPProfile0002		Start		None		Unknown	1	0
3	IuH_CS_Call.gls	MSPProfile0003		Start		None		Unknown	1	0
4	IuH_CS_Call.gls	MSPProfile0004		Start		None		Unknown	1	0
5	IuH_CS_Call.gls	MSPProfile0005		Start		None		Unknown	1	0

```

===== RUA Layer =====
RUA PDU = CHOICE
Extensibility Marker = 0
Procedure Code = INTEGER
Contents = 1 id-Connect
Criticality = ENUMERATOR
Contents = 0 reject(0)
Value = Open Type
Length = 109
Extensibility Marker = 0
Preamble = 0
ProtocolIE-Container = SEQUENCE OF
Iteration Count = 5
ProtocolIE-Container = Instance 0
ProtocolIE-ID = INTEGER
Contents = 7 id-CN-DomainIndicator
Criticality = ENUMERATOR
Contents = 0 reject(0)
Value = Open Type
Length = 1
CN-DomainIndicator = ENUMERATOR
Contents = 0 cs-domain(0)
ProtocolIE-Container = Instance 1
ProtocolIE-ID = INTEGER
    
```

- From MAPS main window, from **Reports** menu > select **Events**. In **Event Tab** observe the call established and traffic log details.



Date/Time	Captured Events	Call Trace Id	Script Name
2016-6-22 12:32:04.174000	Authentication Parameters are...	IMSI;.001010123456218,TMSI;.0x00000002,CalledNumber;.90814	IuH_CS_Call.gls
2016-6-22 12:32:04.174000	RESConst = 0xB2859E5B	IMSI;.001010123456218,TMSI;.0x00000002,CalledNumber;.90814	IuH_CS_Call.gls
2016-6-22 12:32:04.174000	RESExtension 0x0EA7F376257D487B8F1C8A31	IMSI;.001010123456218,TMSI;.0x00000002,CalledNumber;.90814	IuH_CS_Call.gls
2016-6-22 12:32:04.211000	Authentication Response sent	IMSI;.001010123456218,TMSI;.0x00000002,CalledNumber;.90814	IuH_CS_Call.gls
2016-6-22 12:32:04.229000	TMSI Reallocated	IMSI;.001010123456218,TMSI;.0x00000003,CalledNumber;.90814	IuH_CS_Call.gls
2016-6-22 12:32:04.229000	MM Connection Established	IMSI;.001010123456218,TMSI;.0x00000003,CalledNumber;.90814	IuH_CS_Call.gls
2016-6-22 12:32:04.229000	CM service Accepted	IMSI;.001010123456218,TMSI;.0x00000003,CalledNumber;.90814	IuH_CS_Call.gls
2016-6-22 12:32:04.247000	Call Initiated	IMSI;.001010123456218,TMSI;.0x00000003,CalledNumber;.90814	IuH_CS_Call.gls
2016-6-22 12:32:04.247000	RAB Assignment Requested	IMSI;.001010123456218,TMSI;.0x00000003,CalledNumber;.90814	IuH_CS_Call.gls
2016-6-22 12:32:04.247000	RAB Assignment Complete	IMSI;.001010123456218,TMSI;.0x00000003,CalledNumber;.90814	IuH_CS_Call.gls
2016-6-22 12:32:04.263000	Alerting Sent	IMSI;.001010123456218,TMSI;.0x00000003,CalledNumber;.90814	IuH_CS_Call.gls
2016-6-22 12:32:05.283000	Call Connected	IMSI;.001010123456218,TMSI;.0x00000003,CalledNumber;.90814	IuH_CS_Call.gls
2016-6-22 12:32:05.362000	RxFilename = C:\Program Files\GL Communications Inc...		IuH_CS.gls
2016-6-22 12:32:05.367000	Receiving RTP File		IuH_CS.gls
2016-6-22 12:32:05.367000	Sending RTP File		IuH_CS.gls
2016-6-22 12:32:25.368000	RTP File Received		IuH_CS.gls
2016-6-22 12:32:45.322000	Call Terminated	IMSI;.001010123456218,TMSI;.0x00000003,CalledNumber;.90814	IuH_CS_Call.gls
2016-6-22 12:32:45.340000	Iu Connection Released	IMSI;.001010123456218,TMSI;.0x00000003,CalledNumber;.90814	IuH_CS_Call.gls

## Troubleshoot

- “Unknown device” error while installing USB Dongle.** If you see this error, ensure you have installed the GL Dongle License Installer software first and then plugged the USB Dongle to the PC. The USB Dongle will then be recognized as “SafeNetInc. USB Key” and appropriate drivers will get installed automatically. If problem still persists, plug the USB Dongle to a different USB2.0 port and try again.
- “Security Error: Application is not licensed”,** if you see this error when you run MAPS™ IuH it indicates a problem with either your dongle or license file.
  - First verify that the dongle is plugged in and the red light is on
  - To use MAPS™ 64-bit version – use *GLDongleLicenseInstaller\_x64.exe* utility to install licenses
  - Navigate to **C:\Program Files\GL Communications Inc\GLDONGLE**
  - Run *haspinfohl.exe*. Verify that Status is **OK** and make a note of the Serial #.
  - Run *appl\_list.exe*. Verify that there is a line in the table reading **PKS160 UMTS-Iu-CS and Iuh Interface Emulation and PKS102 PacketGen RTP Soft Core** with the serial number you noted above.
  - If the dongle does not appear in *haspinfohl.exe*, verify that it appears as a USB device in the **Windows Device Manager**. If it does not appear even in the device manager, remove the dongle and plug it into a different USB port, preferably one directly on the motherboard.
- Error: Fails to start SCTP Services and associated SCTP Link status is Down,** follow the steps below -
  - Run **MAPS™ IuH application as administrator** – right-click and select Run as Administrator option.
  - **Turn OFF Windows Firewall** - navigate to Control Panel > Systems & Security > Windows Firewall, click Turn Off Windows Firewall for all networks.
- If you cannot resolve the issues, please contact GL Communications at [info@gl.com](mailto:info@gl.com) for technical support.