

## Software and License Installation

**\*Note1:** If you have purchased MAPS™ HD product, you will receive a network appliance with all the necessary PC hardware interfaces, Operating System, required MAPS™ applications, GL's HD NICs, and licenses pre-installed. And therefore, you will need to only plug-in the monitor, and connect the network appliance to the power outlet. Then connect the USB Hardware Dongle you have received with the shipment, and proceed to verification steps.

- PC Requirements
  - Windows® 7 and above Operating System (64 bit Only).
  - Core i7 (or equivalent), 32 GB Memory, GL's HD NIC (**4x 1 Gbps / 2x10 Gbps NIC ports**), Regular PC NIC, and USB 2.0 Ports.
- NOW PLUG-IN the USB Hardware Dongle to the PC to the USB 2.0 port of your computer. A red light should appear on the dongle indicating that the device is functioning correctly and ready to use.
- You can verify if the purchased licenses are installed. Navigate to **C:\Program Files\GL Communications Inc\GLDONGLE** directory, execute **appl\_list.exe** and confirm that the following licenses are listed:
  - PKS137 (MAPS™ GSM A IP)
  - PKS102 (RTP Traffic)
  - PKS109 (HD RTP Traffic) **\*\*Note2**

**\*\*Note2:** Additional licenses may be required for optional codecs and other traffic options. Please verify that all licenses purchased are displayed using the **appl\_list.exe** utility.

## Verification

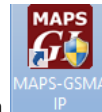
For functional verification, the **MAPS™ GSMAIP HD** application installed on each PC can be configured as (BSC or MSC) GSMA network entities. The following steps explain MAPS™ GSMAoIP configuration on the PCs to simulate Location Update and Mobile Originating procedures between MSC and BSC nodes. It can also be configured to handle RTP traffic automatically over signaling.

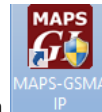

On HD PC1, MAPS™ is configured as **MSC** (Mobile Switching Center), and on HD PC2, MAPS™ is configured as **BSC** (Base Station Controller) node simulating GSM A interface procedures and RTP traffic.



GL's HD card connections verification:

Verify that network cables are properly connected. Make sure that the cable connectors are pushed in correctly. You should feel and hear a small click while plugging the cables. Also, you can use the monitoring tool (refer to [Troubleshoot](#) section) to check the Ethernet links UP or DOWN status.

### On PC1, MAPS™ GSMAIP (GUI) – (MSC)









- Invoke **MAPS-GSMAIP HD** application using shortcut icon  on the desktop. This instance of MAPS™ is configured for **Call Reception**
- While invoking the first MAPS™ GSMAIP instance, verify the following in the **Protocol Selection** window -
  - **Protocol Standard** is set to **GsmAIP**
  - **Protocol Version** to **GSM900**
  - Select **Node** as **MSC**
  - Select **Transport** as **M3UA**. Click **Ok**
- On the **Test Bed Default** window, click **Load Configuration** icon  and select **TestBedDefault** and check for the settings as below:
  - **M3UA Termination Type** is set to **SGP**, to handle server association.

- **Enable RTP** Traffic
- **RTP Hardware Interface Type** as “GL’s High Density Interface Card” (If you have purchased PKS109 - HD RTP Traffic License)
- Set **MSC IP Address** to the Source PC IP address
- Set **MGW IP Address** to the Source PC IP address
- Verify that **MSC Port** to **2906**
- Verify that **MSC Point Code** is set to **2.2.2**
- Set **BSC IP Address** to the Destination PC IP address
- Verify that **BSC Port** is set to **2905**
- Verify that **BSC Point Code** is set to **5.5.5**
- **HD RTP Media Configuration** – Verify the RTP Media IP address for each RTP Core, which are automatically set for all the 4 RTP Cores.
- Select **Configuration > Incoming Call Handler Configuration** from the main menu
  - Verify that the **GSMA\_Call.gls** script is loaded against LocationUpdate and CM Request messages.
- From the main menu, select **Editor > Profile Editor**. Click **Load Configuration** icon  and select “**MS\_Profiles**”
  - Select **MSPProfile0001** profile from left pane
  - Set **Type of Call** to **Terminate MO Call**
  - Set **Service Type for MT Call** = **Speech Call** to allow voice traffic over signaling
  - Scroll down to **Traffic Configuration** > set **Traffic Type** to **Auto Traffic File**. This option allows to automatically send and receive voice files.
  - Set the **Traffic Direction** to **Tx Rx type**
  - Click on the **Save** icon  and replace the **MS\_Profiles** file. Close the Profile Editor window.

### On HD PC2, MAPS™ GSMAIP (GUI) – (BSC)



- Invoke **MAPS-GSMAIP HD** application using shortcut icon on the desktop . This instance of MAPS™ is configured for **Call Generation**
- While invoking the MAPS™ GSMAIP instance, verify the following in the **Protocol Selection** window -
  - **Protocol Standard** is set to **GsmAIP**
  - **Protocol Version** to **GSM900**
  - Select **Node** as **BSC**
  - Select **Transport** as **M3UA**. Click **Ok**
- On the **Test Bed Default** window, Click **Load Configuration** icon  and select **TestBedDefault** and check for the configuration settings as below:
  - **M3UA Termination Type** is set to **ASP**, to handle client association.
  - **Enable RTP** Traffic
  - **RTP Hardware Interface Type** as “GL’s High Density Interface Card” (If you have purchased PKS109 - HD RTP Traffic License)
  - Set **BSC IP Address** to the Source PC IP address
  - Set **MGW IP Address** to the Source PC IP address
  - Verify that **BSC Port** is set to **2905**
  - Verify that **BSC Point Code** is set to **5.5.5**
  - Set **MSC IP address** to the Destination PC IP address

- Verify that **MSC Port** is set to **2906**
- Verify that **MSC Point Code** is set to **2.2.2**
- **HD RTP Media Configuration** – Verify the RTP Media IP address for each RTP Core, which are automatically set for all the 4 RTP Cores.
- From the main menu, select **Editor > Profile Editor**. Click **Load Configuration** icon  and select **“MS\_Profiles”**
  - Select **MSPProfile0001** profile from left pane
  - Set **CM Service Type** to **Mobile Originating Call Establishment**
  - Scroll down to **Traffic Configuration** > set **Traffic Type** to **Auto Traffic File**. This option allows to automatically send and receive voice files.
  - Set the **Traffic Direction** to **Tx Rx type**
  - Click on the **Save** icon  and replace the **MS\_Profiles** file. Close the Profile Editor window.
- **Start** testbed in both the MAPS™ GSMAIP (BSC and MSC) instances.
- Once the Testbed is started MAPS™ is internally connected to the RTP core, which can be verified as shown in the RTP Core console window. **Note:** Wait till all the 4 RTP Cores are initialized, as initialization of all the 4 RTP cores might take few minutes. On both the HD PCs, from the main menu, select **Reports > Link Status** option to verify the link status. **Note:** Once the test bed setup is started on both the instances of MAPS™ GSMAIP (BSC and MSC) verify that the **SCTP Link** Status is **UP** (indicated in Green color) from the **Reports** menu before placing the call. If SCTP connection is not up, then refer to [Troubleshoot](#) section explained in this document.
- From the MAPS™ main GUI, click **Call Reception**  icon on both instances of MAPS™ GSM A IP (BSC and MSC) and observe the **Check\_SCTP\_Status.gls** script activated in the **Call Reception** window.
- At BSC, select **Emulator > Load Generation** from main menu
- By default, **GSMA\_Call.gls** script and **MSPProfile00\*\*** profiles are loaded.
  - Total calls to Generate by default is set to ‘\*’, (indicates no limit)
  - Maximum Active calls to 2000.
  - Fixed statistical distribution pattern
- Click **Start** button to initiate the bulk call generation.
- Return to MAPS™ MSC instance on HD PC1, click  icon and open **Call Reception**.
- Observe that the calls are automatically received at the **Call Reception (MSC)** window running the Rx script.
- Also, observe that the **MobileOriginating** procedure is initiated following the **LocationUpdating** procedure and the RTP traffic reported as sent/received under the **Captured Events** tab at both generation and reception end.
- To verify results, invoke **Statistics** window from **Reports** menu, to view the number of calls passed/failed, which are also plotted as pie-graph, Calls per sec graph, and Simultaneous calls per sec graph. Switch to Message Stats tab to view the statistics of the messages sent/received related to GSMAIP protocol.
- Observe the RTP packets received on each port of the GL’s HD card logged in the RTP Core console

## Troubleshoot

- **“Security Error: Application is not licensed”**, if you see this error when you run MAPS™ GSMAIP 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
  - Run **appl\_list.exe**. Verify that there is a line in the table reading **PKS137 MAPS™ GSMAIP** with the serial number you noted above.
- **Fails to start SCTP Services and associated SCTP Link status is Down**, follow the steps below -

- Run **MAPS™ GSMAoIP application as administrator** – right-click select ‘Run as Administrator’ option.
  - You should **Turn off Windows Firewall** on Windows® and on any 3<sup>rd</sup> party Anti-Virus software that may be installed on the PC to allow SCTP Link Status to be up. **Turn OFF Windows Firewall** - navigate to Control Panel > Systems & Security > Windows Firewall, click Turn Off Windows® Firewall for all networks.
- Verify Physical Connection
    - Check manually the LEDs on the HD card connected, if the GL’s HD Interface card is located at local system
    - To verify from remote location, run **Monitoring.exe** utility, which displays the link status SFP Type connection and the auto negotiated link speed.
    - Important Column Description:
      - P - Port number
      - A - Adapter number
      - Type - Connection type
      - Link - Link speed (Down indicates cable is unplugged or SFP module is incompatible)

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monitoring (v. 2.9.1.32-9d272)
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P  A      Type      Link      Down      Rx      Tx      Max      Temp.
0  0      SFP-CU      1G Full      0      0.00M      0.00M      9018      N/A
1  0      SFP-SX-DD      Down      1      0.00M      0.00M      9018      42.70 C
2  0      SFP-CU      1G Full      0      0.00M      0.00M      9018      N/A
3  0      SFP-CU      1G Full      0      0.00M      0.00M      9018      N/A

TX RMON1 counters
Packets      : 0x0000000000000000  Octets      : 0x0000000000000000
Broadcast    : 0x0000000000000000  Multicast   : 0x0000000000000000
64 octets    : 0x0000000000000000  65-127 octets : 0x0000000000000000
128-255 octets : 0x0000000000000000  256-511 octets : 0x0000000000000000
512-1023 octets : 0x0000000000000000  1024-1518 octets: 0x0000000000000000
Undersize    : 0x0000000000000000  Oversize    : 0x0000000000000000
Fragments    : 0x0000000000000000  Collisions  : 0x0000000000000000
Drop events   : 0x0000000000000000  Crc/Align errors: 0x0000000000000000
Jabbers      : 0x0000000000000000

Reset  1Tx/Rx  0RMON  1ExtRMON  2Checksum  3Decode  4Drop  5IPF
Quit   6Sensors  7Color stat  8TimeSync  9IEEE 1588 PTP  0Stream  1Dump
  
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- If you cannot resolve the issues, please contact the appointed technical support person. If you do not know the technical support contact, please reach us at [info@gl.com](mailto:info@gl.com).