## Software and License Installation

**Note1*: *If you have purchased* **MAPS™ GSM A IP 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.*

- 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

Functional verification requires a Regular NIC card and a GL's HD card installed in the MAPS™ HD network appliance.

The regular PC NIC is connected to a managed switch using Ethernet cable as shown in the figure here.
The four ports on GL's HD NIC card are connected in loopback as shown in the figure –
P0 connected to P2
P1 is connected to P3 ports.

Regular NIC is used for GSM Signaling and to invoke RTP cores (communication between MAPS™ and RtpCore) and GL's HD NIC is used to pump and receive RTP Traffic.

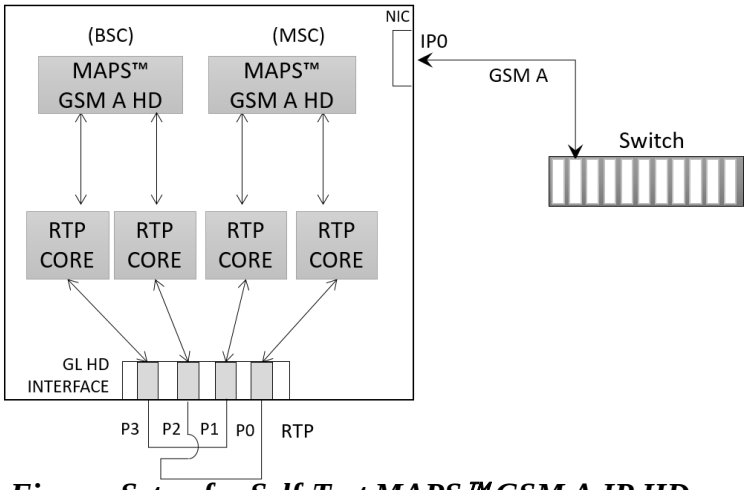



***Figure: Setup for Self-Test MAPS™ GSM A IP HD***

GL's HD card connections verification:
Verify that network cables are properly connected. You should feel and hear a small click while plugging the cables into the port. Also, you can use the monitoring tool (refer to Troubleshoot section) to check the Ethernet links status on GL's HD NIC is UP or DOWN.
For illustration purposes, we assume the IP address of the Regular NIC card is configured as 192.xx.xx.241 (NIC 1).

Invoke 2 instances of **MAPS™ GSM A IP HD** application instances (one for each NIC) using the short cut icon 

created on the desktop. The configurations below allow **first instance** of MAPS™ GSM A configured as **BSC** (Base Station Controller). Similarly, the **second instance** of MAPS™ GSM as **MSC** (Mobile Station Controller). Both instances use **Regular NIC IP address** as source and destination endpoints 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 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:
  - *Set **M3UA Termination Type*** to ***ASP***, to handle client association.
  - *Set **RTP Simulation** option* to ***Enable***
  - Set ***RTP Hardware Interface Type*** option *to **GL's High density Interface Card***
  - **BSC Parameters**

    Set ***BSC IP Address*** to the **Regular NIC IP address**

    Set ***MGW IP Address*** to the **Regular NIC IP address**

    Verify that ***BSC Port*** is set to ***2905***

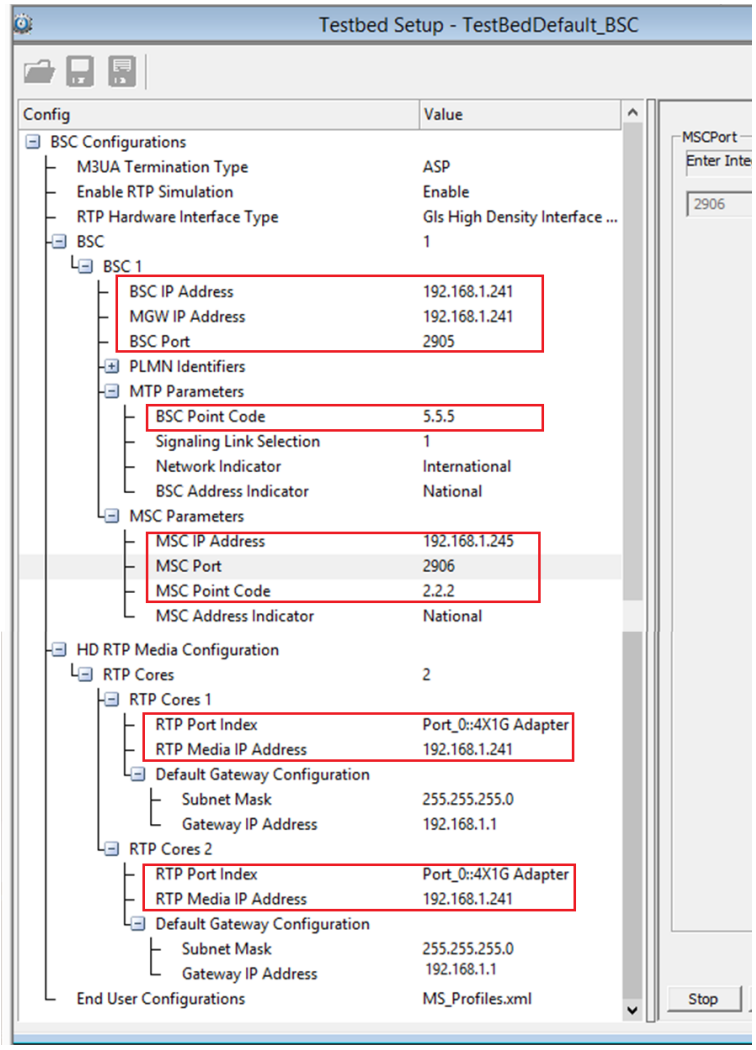
    Verify that ***BSC Point Code*** is set to ***5.5.5***
  - **MSC Parameters**

    Set ***MSC IP address*** to the **Regular NIC 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**

    **Number of RTP-Cores**: Set to 2, and click Apply. For this self-test setup, we are invoking 2 RTP-Cores only.




**RTP Core 1 Configurations:**

**RTP Port Index:** By default, set to ***Port_0::4x1G*** Adapter.

**RTP Media IP Address:** Specify the RTP Core IP address. (Enter the **Regular NIC IP address** here, Ex: 192.168.1.241)

**Gateway IP Address:** Set this to 192.168.1.1

**RTP Core 2 Configurations:**

**RTP Port Index:** By default, set to ***Port_1::4x1G*** Adapter.

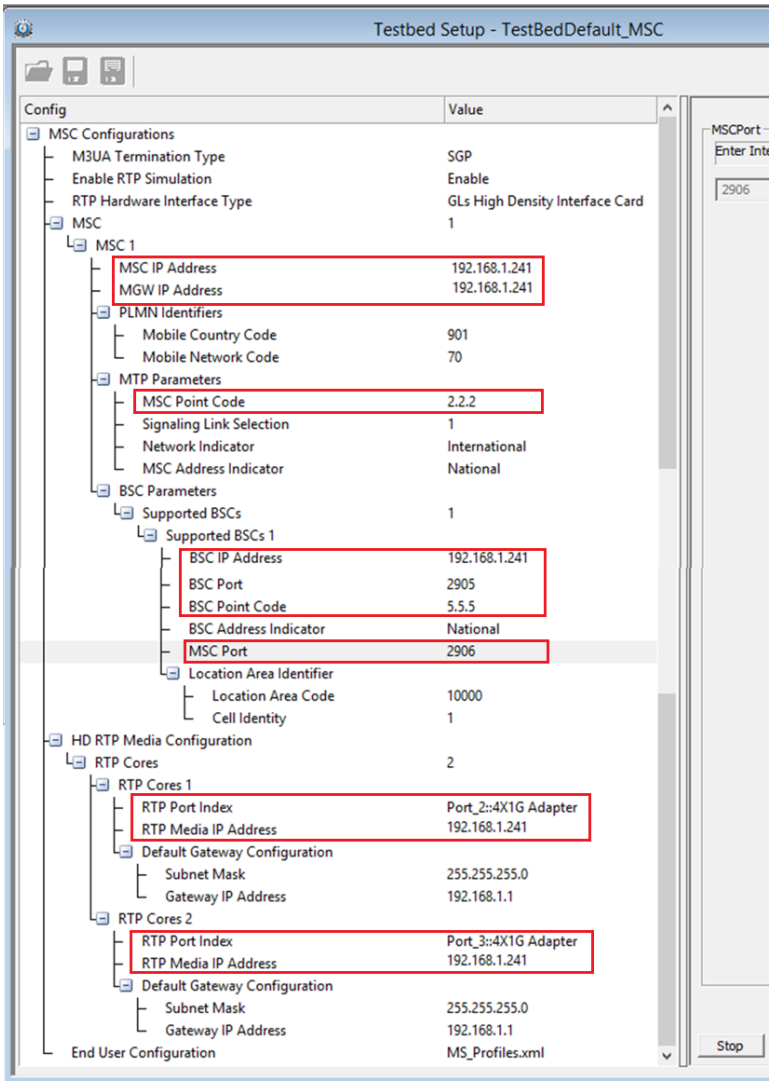
**RTP Media IP Address:** Specify the RTP Core IP address. (Enter the **Regular NIC IP address** here, Ex: 192.168.1.241)

**Gateway IP Address:** Set this to 192.168.1.1

- From the main menu, select ***Editor*** > ***Profile Editor.*** Click ***Load Configuration*** icon and select ***"MS_Profiles"***
  - Select ***MSProfile0001*** 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 ***TxOnly*** *type*
  - Click on the ***Save*** icon and replace the ***MS_Profiles*** file. Close the Profile Editor window.

## Second MAPS™ GSM A IP HD as MSC (Instance 2)

- 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.
  - *Set* ***RTP Simulation*** option *to* ***Enable***
  - Set ***RTP Hardware Interface Type*** option *to* ***GL's High density Interface Card***
  - **MSC Parameters**
    Set ***MSC IP Address*** to the **Regular NIC IP address**
    Set ***MGW IP Address*** to the **Regular NIC IP address**
    Verify that ***MSC Point Code*** is set to ***2.2.2***
    Verify that ***MSC Port*** to ***2906***
  - **BSC Parameters**
    Set ***BSC IP Address*** to the **Regular NIC IP address**
    Verify that ***BSC Point Code*** is set to ***5.5.5***
    Verify that ***BSC Port*** is set to ***2905***
  - ***HD RTP Media* Configuration**
    **Number of RTP-Cores**: Set to 2, and click Apply. For this self-test setup, we are invoking 2 RTP-Cores only.



**RTP Core 1 Configurations:**

**RTP Port Index:** By default, set to ***Port_2::4x1G*** Adapter.

**RTP Media IP Address:** Specify the RTP Core IP address. (Enter the **Regular NIC IP address** here, Ex: 192.168.1.241)

**Gateway IP Address:** Set this to 192.168.1.1

**RTP Core 2 Configurations:**

**RTP Port Index:** By default, set to ***Port_3::4x1G*** Adapter.

**RTP Media IP Address:** Specify the RTP Core IP address. (Enter the **Regular NIC IP address** here, Ex: 192.168.1.241)

**Gateway IP Address:** Set this to 192.168.1.1

- 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 ***MSProfile0001*** 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 ***TxOnly*** *type*
  - Click on the ***Save*** icon and replace the ***MS_Profiles*** file. Close the Profile Editor window.
- Invoke **GlobalProfile.txt** file from the installation directories -

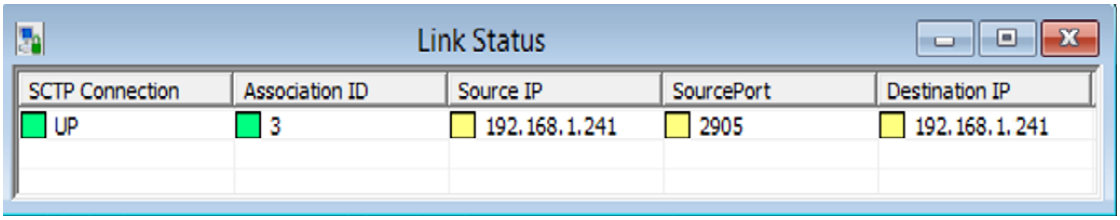
  MAPS-GSMAIP\MAPS\GSMAIP\GSM900\BSC\M3UA\Profiles

  MAPS-GSMAIP\MAPS\GSMAIP\GSM900\MSC\M3UA\Profiles

  and verify that **RTPCoreIDSelection** is set to **'1'** as shown in the screen. This allows for self-test MAPS-GSM A in loop back mode on GL's HD NIC. To do normal testing, change this value back to '0' and restart MAPS-GSM A instances.

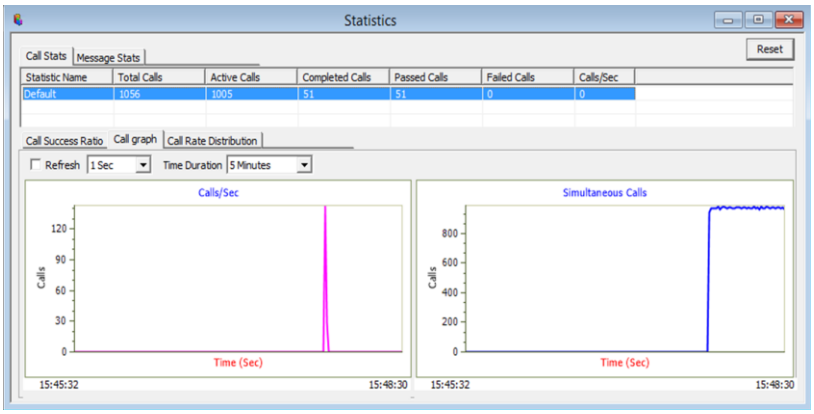
- Now, **Start** the testbed on both MAPS™ GSMAIP (BSC and MSC) instances and wait for 4 RTP-Core console windows to appear. If the RTP Core console does not invoke with the MAPS™ TestBed start-up, refer to Troubleshoot section explained in this document.

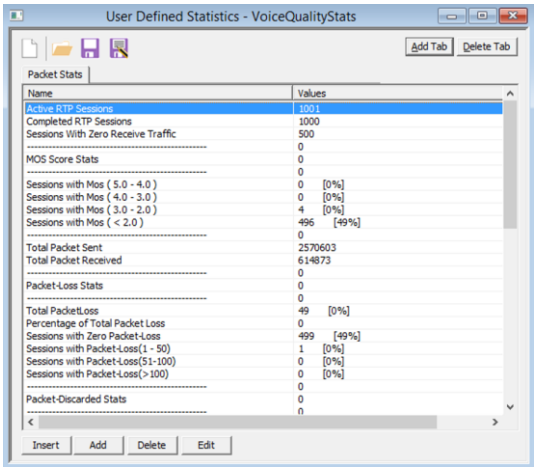

- Click ***Call Reception*** icon from the MAPS™ main GUI on both instances of MAPS™ GSM A IP (BSC and MSC) and observe the ***Check_SCTP_Status.gls*** script activated in the ***Call Reception*** window. On both the MAPS instances, select ***Reports*** menu > ***Link Status*** window to verify the link status. Verify that the ***SCTP Link*** Status is ***UP*** (indicated in Green color) before placing the call. If SCTP connection is not up, then refer to Troubleshoot section explained in this document.



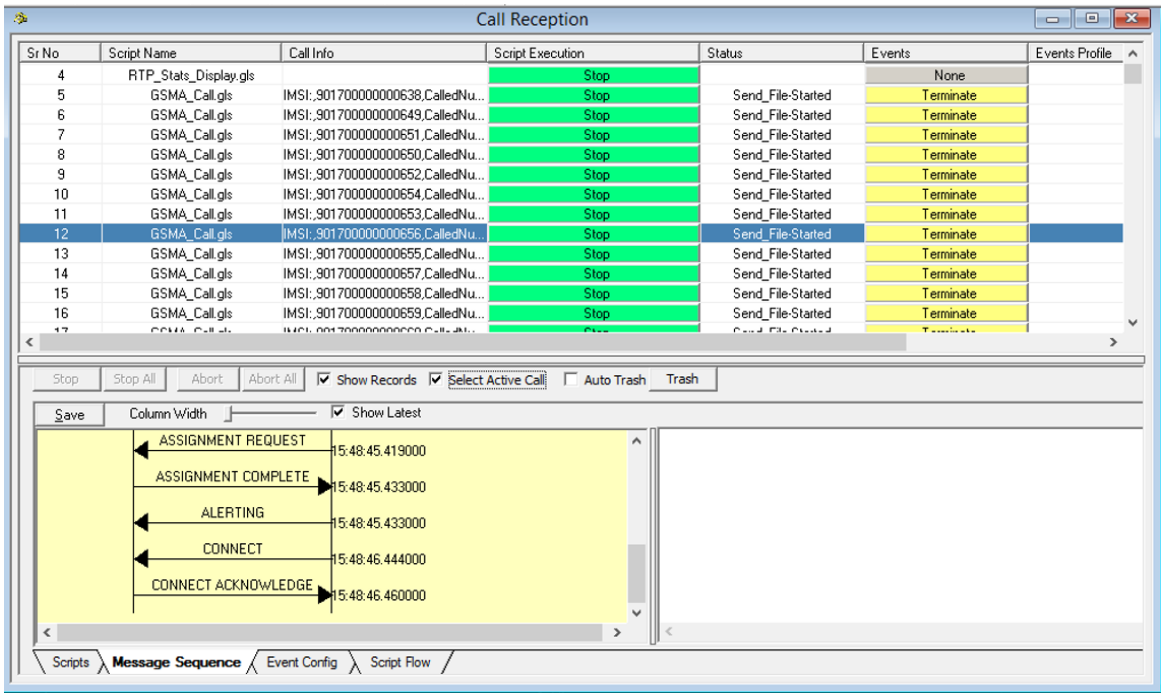
- At MAPS™ GSM A BSC, select ***Emulator*** **>** ***Load Generation*** or click on  icon to invoke the **Load Generation** from main menu
  - Total calls to Generate by default is set to '*', indicates no limit
  - **Maximum Active calls** to **1000**
  - Leave the Multi-Distributions option disabled.
  - Select the **Statistical Distribution** pattern as **Fixed** from the drop-down list.
  - Set **Call Rate** to **250**
  - Verify that IuCS.gls script is added under scripts
  - Verify that all MS profiles are added under profiles
  - Click **Start** button to initiate bulk call generation.

- In the same MAPS™ GSM A BSC instance, from **Reports** menu -> invoke **Statistics** window. Observe the Call Statistics.
- Also, from **Report** menu -> invoke **User Defined Statistics** and observe the **Packet Statistics**



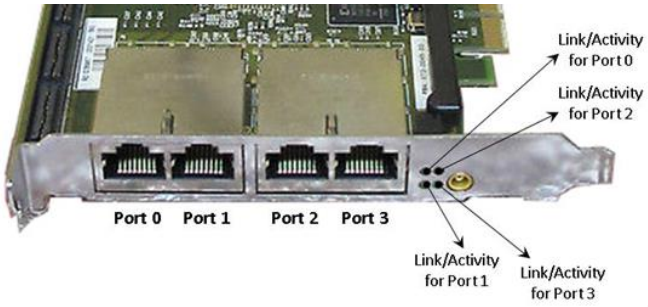



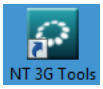

- Observe that the calls are automatically received at the ***Call Reception (MSC)*** window running the Rx script.



## Troubleshoot

- Check manually the LEDs on GL's HD card. Blinking LEDs indicate traffic activity, and Green LEDs indicate just the link up status




- Click 

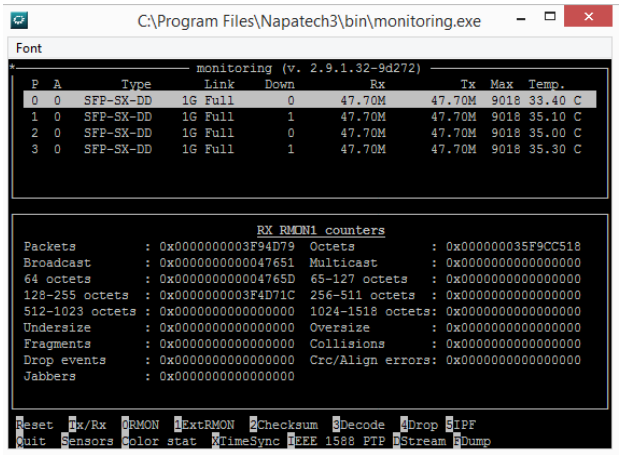
icon from the desktop and invoke **NT 3G Tools** console window. Type **monitoring.exe** command to invoke the following monitoring utility. This displays the link status of each SFP Type connection and the auto negotiated link speed Also observe the Tx and Rx traffic statistics on each port after the bulk call simulation.

  P - Port number

  A - Adapter number

  Type - Connection type

  Link - Link speed (Down indicates cable is unplugged or SFP module is incompatible)




- ***"Security Error: Application is not licensed"*** error indicates a problem with either your dongle or license file.
  - First verify that the dongle is plugged in and the red light is ON
  - 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 ***PKS137*** *MAPS™ GSM A IP*, ***PKS102 RTP Soft Core*** and ***PKS109*** *MAPS™ RTP HD* against the dongle 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.

- If the SIP/RTP Core console does not invoke with the MAPS™ TestBed start-up, check for the following:
  - Verify that the IP Address in the TestBed setup are configured with the proper IP address of the 2 Regular NICs. These should free IP address within the same subnet, and when connected to a switch, no IP Conflicts should be reported. If the system is connected to a LAN, contact your system administrator to avoid IP address conflicts before you perform the steps below.
  - RTP Soft Core licenses may not be installed for the dongle used. Run ***appl_list.exe*** available in the ***C:\Program Files\GL Communications Inc\GLDONGLE*** directory. Verify that ***PKS102 RTP Soft Core*** and ***PKS109 MAPS™ HD RTP*** are listed.

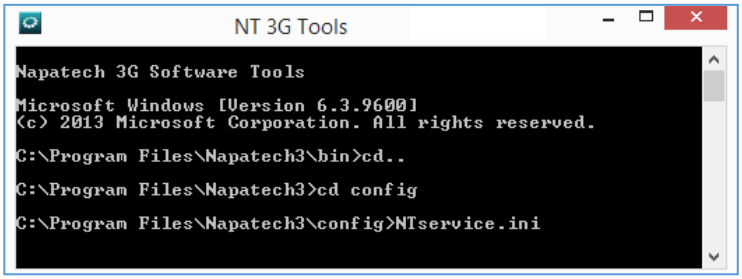
- *If you get the error "**Fails to start SCTP Services and associated SCTP Link status is Down"**,* follow the steps below -

  You should ***Turn off Windows Firewall*** on Windows® and on any 3rd 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.

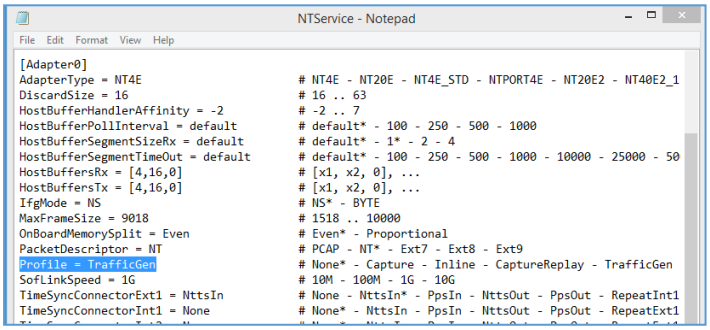
  Run ***MAPS™ application as administrator*** – right-click select 'Run as Administrator' option.

- If the Tx and Rx traffic statistics on each port after the bulk call simulation is shoing incorrectly, click 

icon from the desktop and invoke **NT 3G Tools** console window.




  - Type the commands as shown in the screen below and from the **C:\Program Files\Napatech3\config** directory, to open **NTservice.ini** file.




  - Make sure that **Profile** parameter in the file is set to '**TrafficGen'**. If not make this change, save the file in the same location (you will need Administrator priviledges to give write permission to this folder).

- 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.