## Software and License Installation

**Note1*: *If you have purchased* **MAPS™ IuCS HD** *product, you will receive a network appliance with all the necessary PC hardware interfaces, including Regular NIC cards, Operating System (Windows® 64-bit Only), required MAPS™ applications, GL's High Density NICs (4x 1 Gbps), and all required 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.
- Ensure that the MAPS™ UMTS IuCS application and the below listed licenses are installed on the network appliance. To 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:
  - PKS160 (MAPS™ UMTS IuCS)
  - 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 cards 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 cables 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 IuCS Signaling and to invoke RTP cores (communication between MAPS™ and RtpCore) and GL's HD NIC is used to pump and receive RTP Traffic.

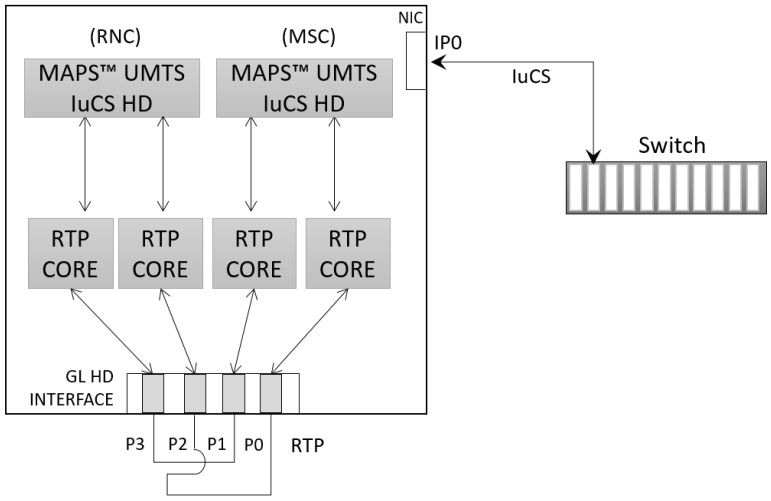



***Figure: Setup for Self-Test MAPS™ UMTS IuCS HD***

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™ UMTS IuCS** application instances (one for each NIC). The configurations below allow **first instance** of MAPS™ UMTS IuCS configured as **RNC** (Radio Network Controller). Similarly, the **second instance** of MAPS™ UMTS IuCS is configured as **MSC** (Mobile Switching Center). Both use **Regular NIC IP address** as source and destination endpoints to simulate IuCS interface generating MOC, MTC, LUC procedure messages and to automatically handle RTP traffic in UMTS network.

## First MAPS™ UMTS IuCS HD as RNC (Instance 1)

- Right-click on **MAPS-UMTS IuCS** short-cut icon 

created on the desktop and select '**Run as Administrator**'.
- This instance of MAPS-UMTS IuCS is configured as **RNC node.** Verify the following and click **OK.**
  - **Protocol Standard** is set to **IuCS**
  - **Protocol Version** to **3GPP**
  - Select **Node** as **RNC.**
  - **Transport** to **SCTP.** Click **Ok**
- By default, **Testbed Setup** window is displayed loaded with **TestBedDefault** configuration. Verify the following settings.
  - **M3UA Termination Type** is set to **ASP**, to handle client association
  - Set **RTP Simulation = Enable**
  - Set **RTP Hardware Interface Type = GL's High density Interface Card**
  - **RNC Parameters**
    - Set **RNC IP Address** to **Regular NIC IP address**
    - Set **MGW IP Address** to **Regular NIC IP address**
    - **RNC Port** is set to **2905**
    - RNC Point Code is set to 1.1.1
  - **MSC Parameters**
    - Set **MSC IP address** to **Regular NIC IP address**
    - **MSC Port** is set to **2906**
    - 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)

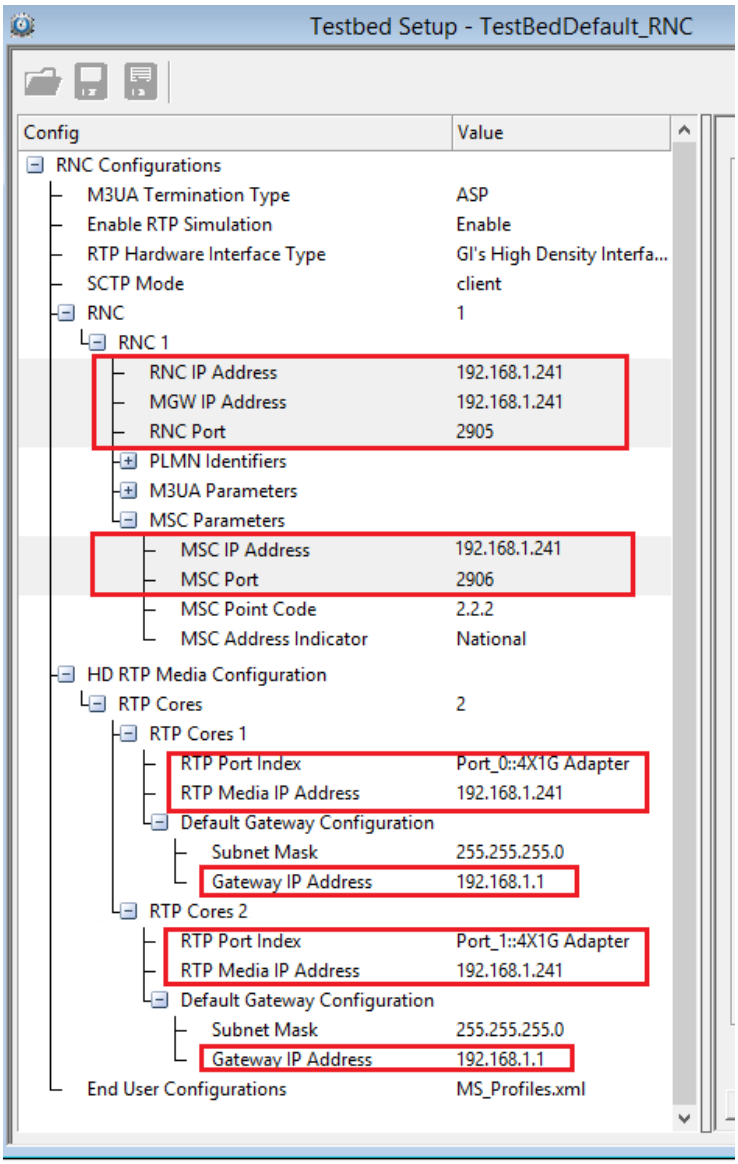
    **Gateway IP Address:** Set this to 192.168.1.1

    **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

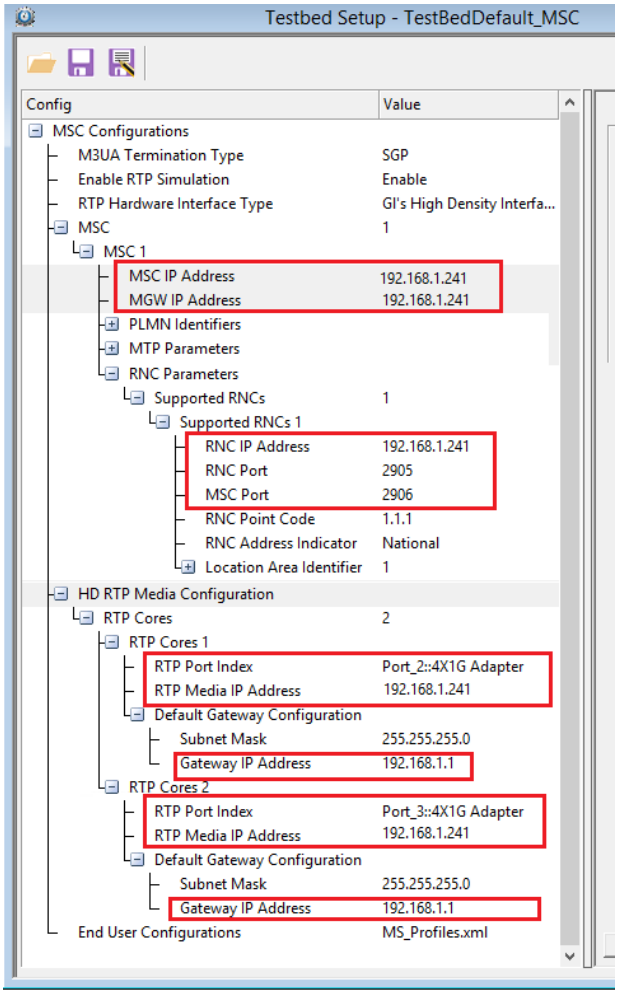



- Click  **Save As** button option and save with **TestBedDefault_RNC .xml** file name.

- From MAPS™ IuCS main window, select **Editor > Profile Editor.** Click and select **MS_Profiles** and from the left pane, choose **MSProfile0001** profile. Verify the **following settings:**
  - Set **CM Service Type** = Mobile Originating Call Establishment; **Location Update Type** = Normal location updating
  - Make sure that the LAC = 1000, SAC = 1000, and RNC ID = 1 parameter values are same as configured in the testbed setup window.
  - Set **Codec** Options = AMR-OA-Mode0 (Indicates AMR with Octet Aligned packing format, 4.75 kbps bit rate and Voice Activity Detection enabled.)
  - In Traffic Config list > set **Traffic Type = Auto Traffic File** and **Traffic Direction = TxOnly**.
  - Click **Save** button and overwrite **MS_Profiles** file. Exit from the Profile Editor window.
- Exit from the Profile Editor window.

## Second MAPS™ UMTS IuCS HD as MSC (Instance 2)

- Right-click on **MAPS-UMTS IuCS** short-cut icon created on the desktop and select '**Run as Administrator**'.
- This instance of MAPS-UMTS IuCS is configured as **MSC node.** Verify the following and click **OK.**
  - **Protocol Standard** is set to **IuCS**
  - **Protocol Version** to **3GPP**
  - Select **Node** as **RNC.**
  - **Transport** to **SCTP.** Click **Ok**
- By default, **Testbed Setup** window is displayed loaded with **TestBedDefault** configuration. Verify the following settings.
  - **M3UA Termination Type** is set to **SGP**, to handle server association
  - Set **RTP Simulation = Enable**
  - Set **RTP Hardware Interface Type = GL's High density Interface Card**
  - **MSC Parameters**
    - Set **MSC IP address** to **Regular NIC IP address**
    - Set **MGW IP Address** to **Regular NIC IP address**
    - **MSC Port** is set to **2906**
    - MSC Point Code is set to 2.2.2
  - **RNC Parameters**
    - Set **RNC IP Address** to **Regular NIC IP address**
    - **RNC Port** is set to **2905**
    - RNC Point Code is set to 1.1.1
  - **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.

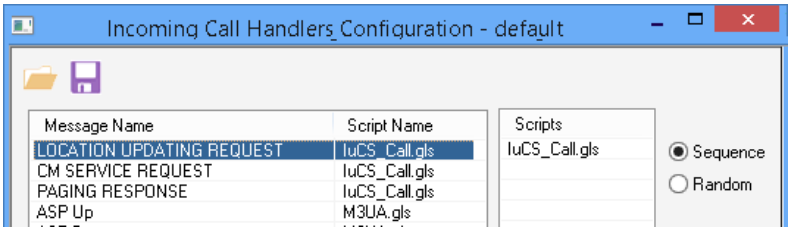
**RTP Media IP Address:** Specify the RTP Core IP address. (Enter the **Regular NIC IP address** here, Ex: 192.168.1.241)

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

- Click **Save As** button option and save with **TestBedDefault_MSC .xml** file name.

- From MAPS™ IuCS main window, select **Editor > Profile Editor.** Click and select **MS_Profiles** and from the left pane, choose **MSProfile0001** profile. Verify the **following settings:**
  - Set Type of Call = **Terminate MO C**all, Service Type for MT Call = **Speech Call,**
  - Make sure that the LAC = 1000, SAC = 1000, RAC=10, and RNC ID = 1 parameter values are same as configured in the testbed setup window.
  - Set **Codec** Options = AMR-OA-Mode0 (Indicates AMR with Octet Aligned packing format, 4.75 kbps bit rate and Voice Activity Detection enabled)
  - In Traffic Config list > set **Traffic Type = Auto Traffic File** and **Traffic Direction = TxOnly**.
  - Click **Save** button and overwrite **MS_Profiles** file. Exit from the Profile Editor window.

- On the same MAPS-IuCS main window, from **Configuration** menu > select **Incoming Call Handler Configuration**. Verify that **IuCS_Call.gls** script is set against LOCATION UPDATING REQUEST, CM SERVICE REQUEST, and PAGING RESPONSE messages. Exit from the window.

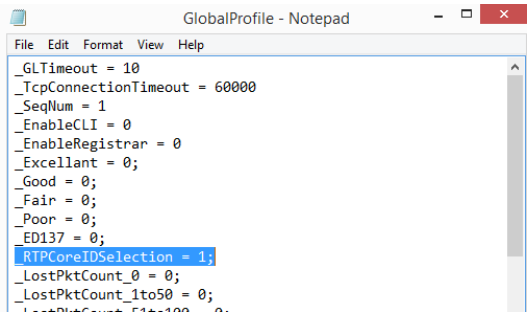



- Invoke **GlobalProfile.txt** file from the installation directories -

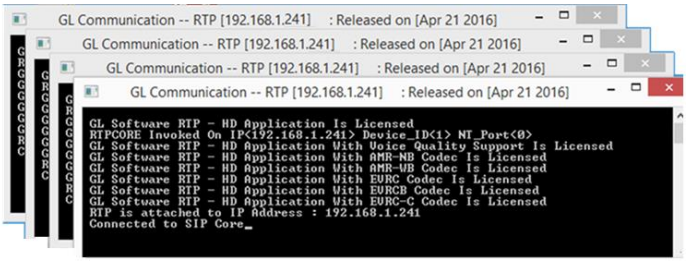
  \MAPS-IuCS\MAPS\UMTS IUCS\3GPP\RNC\SCTP\Profiles

  \MAPS-IuCS\MAPS\UMTS IUCS\3GPP\MSC\SCTP\Profiles

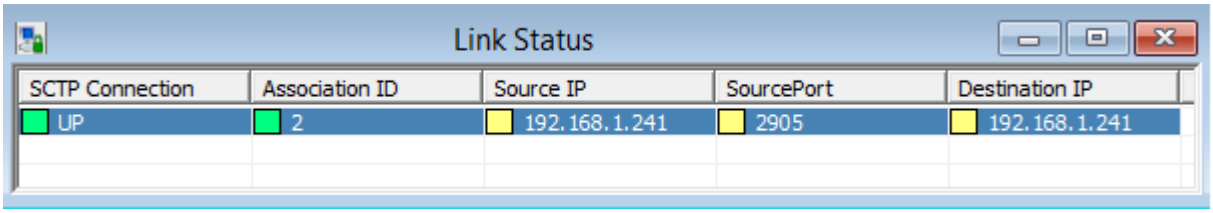
  and verify that **RTPCoreIDSelection** is set to **'1'** as shown in the screen. This allows for self-test MAPS-UMTS IuCS in loop back mode on GL's HD NIC. To do normal testing, change this value back to '0' and restart MAPS™ UMTS IuCS instances.




- Now, **Start** both the testbed 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.



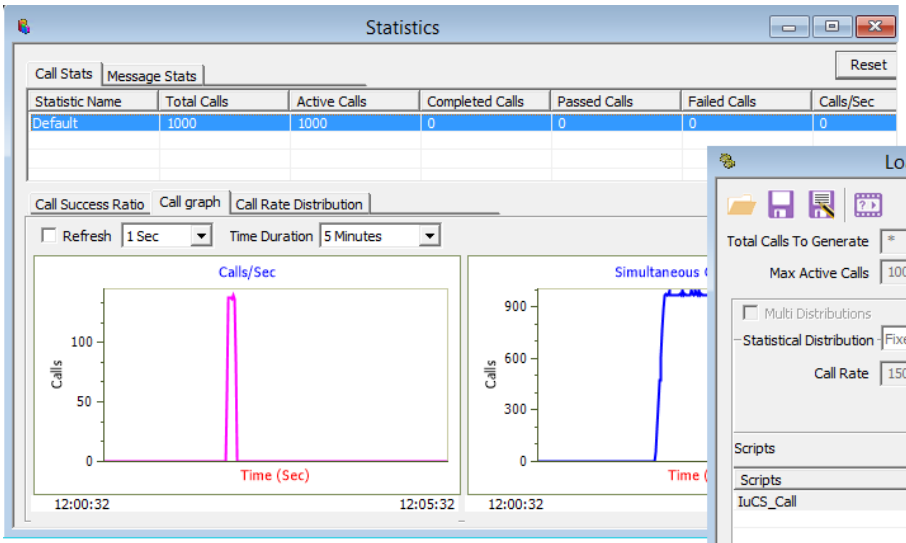
- On both the MAPS instances, select ***Reports*** menu > ***Link Status*** window to verify the link status. Verify that the ***SCTP Link*** Status is ***UP*** (indicated in Green color) before placing the call. Refer to troubleshoot section for any issues.

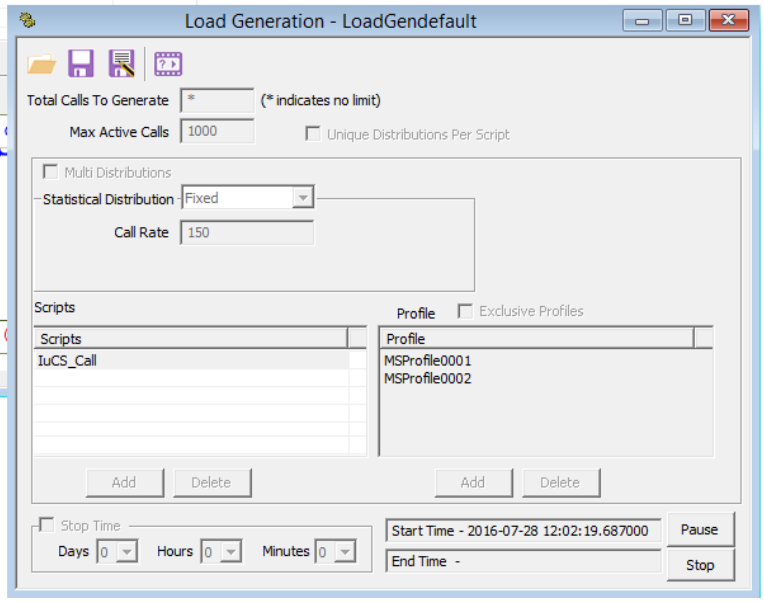




- From any of the MAPS™ UMTS IuCS instance, click on  icon to invoke the ***Load Generation*** window. Verify the following settings:

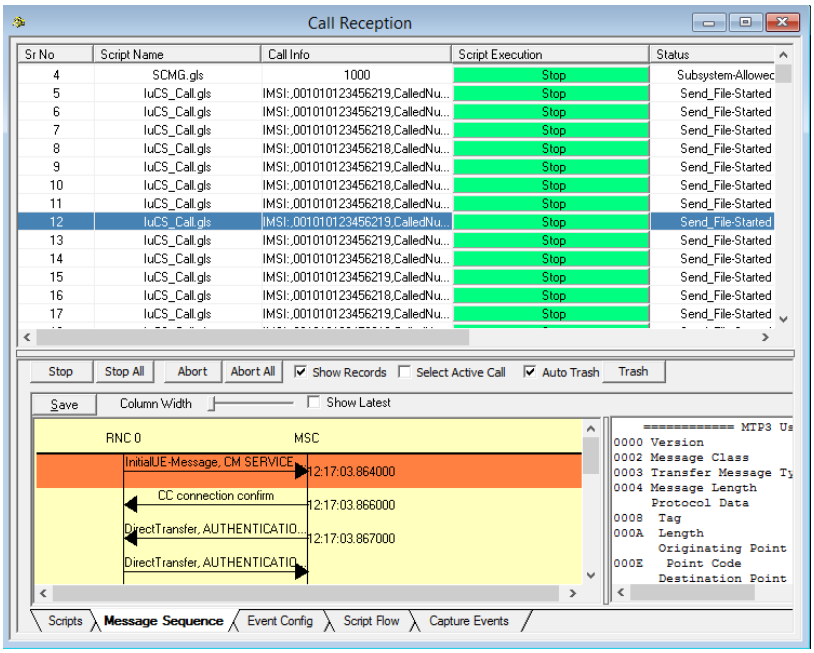
  - Total calls to Generate by default is set to '*', indicates no limit
  - **Maximum Active calls** to 1000
  - Leave the Multi-Distributions option disabled.
  - Select the **Statistical Distribution** pattern as **Fixed** from the drop-down list.
  - Set **Call Rate** to 250
  - Click **Add** and select **IuCS.gls** script
  - Click **Add** and select **MSProfile0001** and **MSProfile0002** profiles.
  - Click **Start** button to initiate bulk call generation.

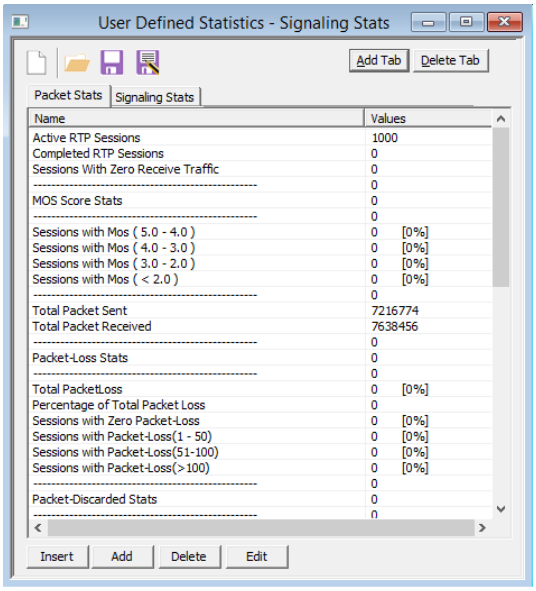
- In the same MAPS™ UMTS IuCS instance, from **Reports** menu -> invoke **Statistics** window. Observe the Call Statistics.



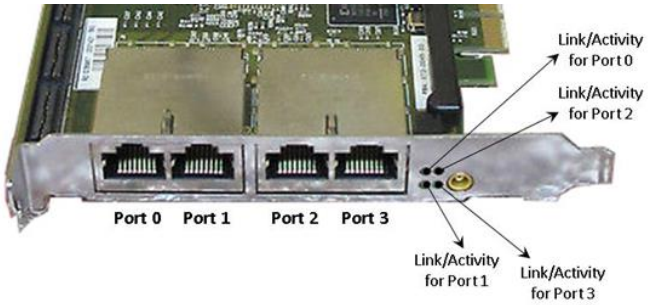
- In the other MAPS™ UMTS IuCS instance, click  icon and open **Call Reception** window and observe the bulk calls being received. On this MAPS UMTS IuCS instance as well, from **Reports** menu -> invoke **Statistics** window. Observe the Call Statistics
- Also, from **Report** menu -> invoke **User Defined Statistics** and observe the **Packet Statistics**

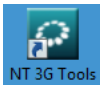



## Troubleshoot

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




- Click 

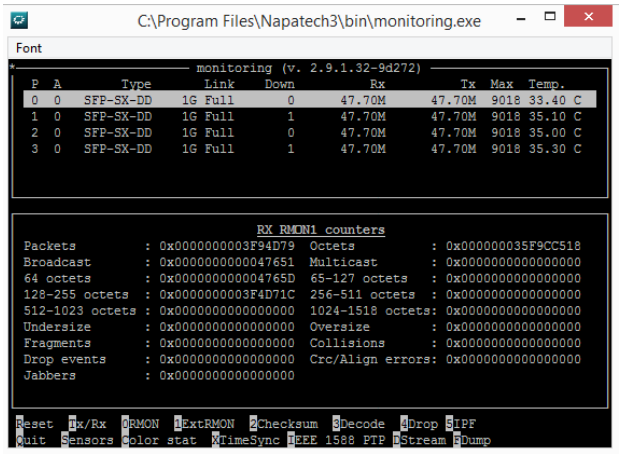
icon from the desktop and invoke **NT 3G Tools** console window. Type **monitoring.exe** command to invoke the following monitoring utility. This displays the link status of each SFP Type connection and the auto negotiated link speed Also observe the Tx and Rx traffic statistics on each port after the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

  P - Port number

  A - Adapter number

  Type - Connection type

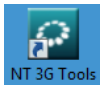
  Link - Link speed (Down indicates cable is unplugged or SFP module is incompatible)



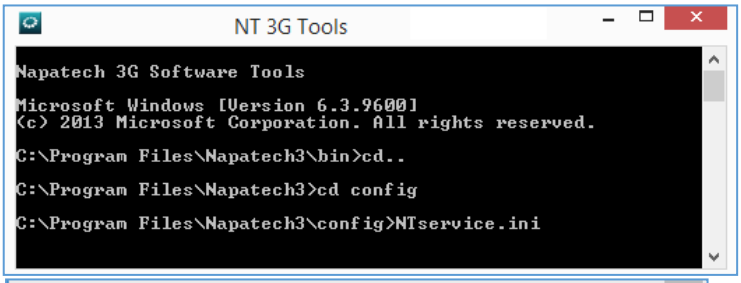
- ***"Security Error: Application is not licensed"*** error indicates a problem with either your dongle or license file.
  - First verify that the dongle is plugged in and the red light is ON
  - Navigate to ***C:\Program Files\GL Communications Inc\GLDONGLE***
  - Run ***haspinfohl.exe***. Verify that Status is **OK** and make a note of the Serial #.
  - Run ***appl_list.exe***. Verify that there is a line in the table reading ***PKS160*** *MAPS™ UMTS IuCS****, 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.

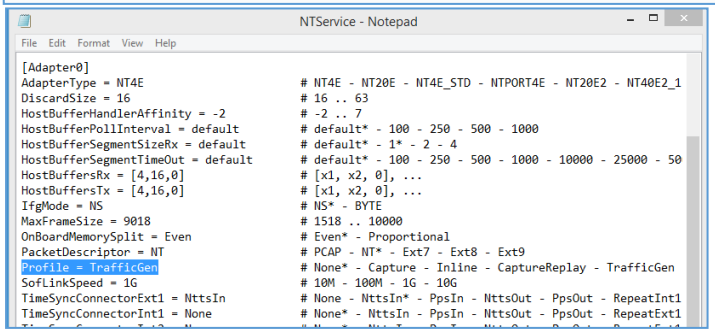
- If the SIP/RTP Core console does not invoke with the MAPS™ TestBed start-up, check for the following:
  - Verify that the IP Address in the TestBed setup are configured with the proper IP address of the 2 Regular NICs. These should free IP address within the same subnet, and when connected to a switch, 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.