

## 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.

- 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:
  - PKS122 (MAPS™ MEGACO)
  - 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

The configuration explained below allows MAPS™ MEGACO application to act as MGC (Media Gateway Controller) as well as MG (Media Gateway). This example requires 2 PCs, PC 1 is configured as MGC and PC 2 is configured as MG1 and MG2 to control TGW (Trunking Gateway). MGC accepts registrations from the MG and both the MG1 and MG2 on PC2 will handle the RTP traffic (Auto Traffic Files/Digits/Tones, User Defined Traffic, and IVR).

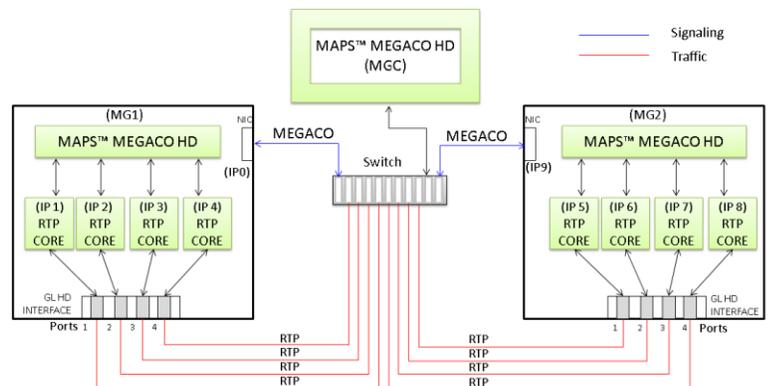
Functional verification requires Regular PC NIC card and 2 GL’s HD cards installed in the MAPS™ HD network appliance.

The regular PC NIC is connected to a managed switch using Ethernet cables as shown in the figure.

The four ports on each of GL’s HD cards are connected to the same switch as shown in the figure:

P0, P1, P2, P3 on HD card 1 are connected to switch  
P4, P5, P6, P7 on HD card 2 are connected to the same switch

Regular NIC is used for Signaling and to invoke RTP cores (communication between MAPS™ and RtpCore) and GL’s HD cards are used to pump and receive traffic.



### GL’s HD card connections verification:

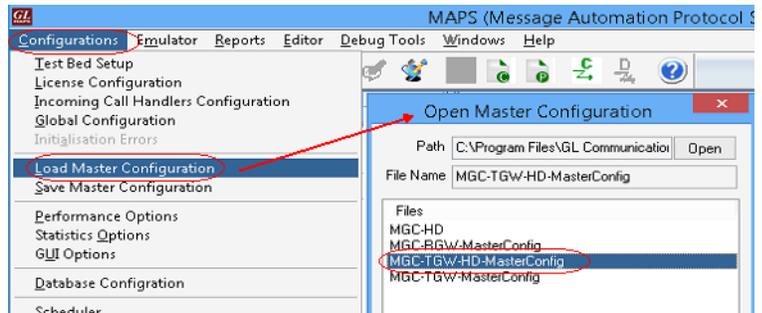
Verify that network cables are properly connected and locked. Also, you can use the monitoring tool (refer to Troubleshoot section) to check the Ethernet links status on GL’s HD NIC is UP or DOWN.

For illustration purposes, we assume the IP address of the Regular NIC cards are configured as MGC - 10.xx.xx.34 and MG1 & MG2 - 192.xx.xx.35.

## MAPS™ MEGACO configured as MGC (PC #1)

- Invoke MAPS™ MEGACO application installed on the PC.
- The Protocol Selection window is prompted with the following settings:
  - Protocol Standard as **MEGACO**
  - Protocol Version as **IETF**
  - Select Node as **Media Gateway Controller**. Click **OK**

- From MAPS main menu → click **Configurations** → select **Load Master Configuration** option → select **MGC-TGW-HD-MasterConfig** file.



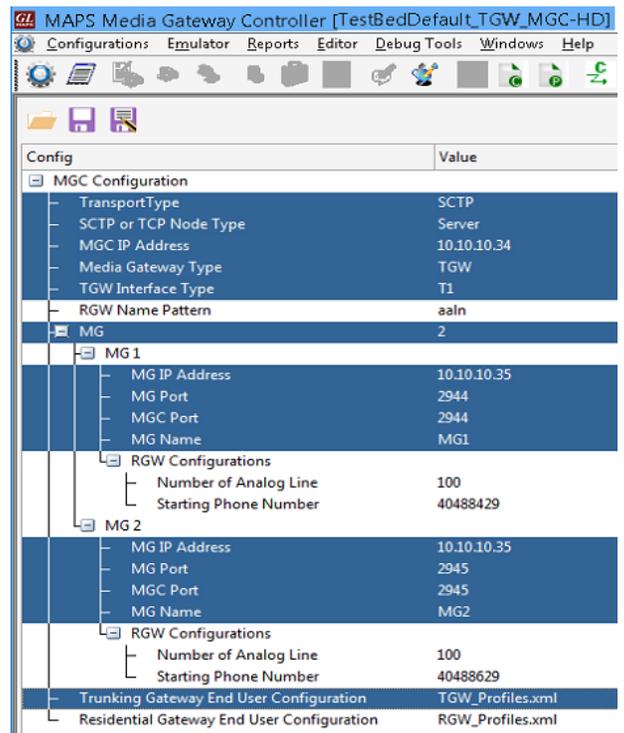
- Now, in the TestBed window, verify and validate the following parameter settings:
  - Set **Transport Type** to **SCTP**
  - **SCTP or TCP Node Type** to **Server**
  - Set the **MGC IP** to 10.xx.xx.34 (PC IP address where MGC is running)
  - Set **Media Gateway Type** to **TGW**
  - Set **TGW Interface Type** to **T1**

### MG1 (Trunking Gateway 1)

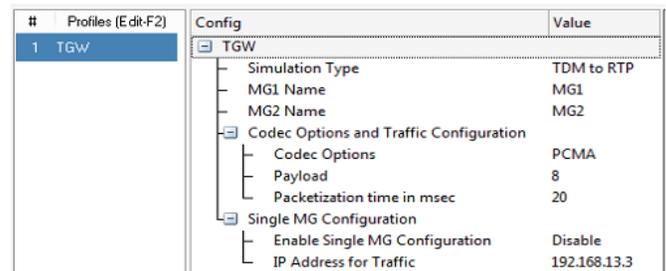
- Verify that the **MG IP** is set to PC2 (MG1) IP address (Ex: (10.xx.xx.35))
- Set **MG Port** to **2944**
- Set **MGC Port** to **2944**

### MG2 (Trunking Gateway 2)

- Verify that the **MG IP** is set to PC2 (MG2) IP address (Ex: (10.xx.xx.35))
- Set **MG Port** to **2945**
- Set **MGC Port** to **2945**
- Click  **Save As** button option and save the configurations with **TestBedDefault\_TGW\_MGC-HD.xml** filename.



- Select **Editor** → **Profile Editor** and the window is invoked displaying **TGW\_Profiles** configuration. Make sure that options are set as shown below.
  - Simulation Type is set to **TDM to RTP**
  - Set MG1 Name as **MG1**
  - Set MG2 Name as **MG2**
  - Codec Options as **PCMA**



## MAPS™ MEGACO configured as MG1 (PC #2)

- Invoke MAPS™ MEGACO application installed on the PC.
- The Protocol Selection window is prompted with the following settings:
  - Protocol Standard as **MEGACO**
  - Protocol Version as **IETF**
  - Select Node as **Media Gateway**. Click **OK**
- From MAPS main menu → click **Configurations** → select **Load Master Configuration** option → select **MG1-MasterConfig\_TGW-HD** file.
- Now, in the TestBed window, verify and validate the following parameter settings:
  - Set **Enable RTP Simulation** to **True**
  - Set **RTP Hardware Interface Type** to **GL's High Density Interface Card** (If you have purchased PKS109 - HD RTP Traffic License)
  - Set the Media IP address same as MG IP address (10.xx.xx.35)
  - Set Transport Type to **SCTP**
  - Set SCTP or TCP Node Type to **Client**
  - Set Physical Termination Type to **TGW**
  - Set the MG IP to 10.xx.xx.35 (PC IP address where MG is running)
  - Set MG Port to 2944
  - Set the MGC IP address where the MGC is running (10.xx.xx.34)
  - Set MGC Port to 2944
  - Set **TDM Termination Name** to **Card/TS**
  - Set **Number of Cards** to **1668** (required to generate 40k calls)
  - Set **TDM Interface Type** to **T1**
  - Set **T1E1 WCS Server Port** to **17090**

### HD RTP Media Configuration

**Number of RTP-Cores:** Set to 4 and click **Apply**. In this test setup, we are invoking 4 RTP-Cores only.

#### RTP Core 1 Configurations:

**RTP Port Index:** Set this to **Port\_0::4x1G** Adapter.

**RTP Media IP Address:** Specify the RTP Core IP address. (Enter the **HD Port1 IP address** here, Ex: 192.168.12.241)

#### RTP Core 2 Configurations:

**RTP Port Index:** Set this to **Port\_1::4x1G** Adapter.

**RTP Media IP Address:** Specify the RTP Core IP address. (Enter the **HD Port2 IP address** here, Ex: 192.168.12.242)

#### RTP Core 3 Configurations:

**RTP Port Index:** Set this to **Port\_2::4x1G** Adapter.

**RTP Media IP Address:** Specify the RTP Core IP address. (Enter the **HD Port3 IP address** here, Ex: 192.168.12.243)

#### RTP Core 4 Configurations:

**RTP Port Index:** Set this to **Port\_3::4x1G** Adapter.

**RTP Media IP Address:** Specify the RTP Core IP address. (Enter the **HD Port4 IP address** here, Ex: 192.168.12.244)

Config	Value
MG Configuration	
Enable RTP Simulation	True
RTP Hardware Interface Type	GL's High Density Interface Card
Normal RTP Media Configuration	
Media IP Address	10.10.10.35
TransportType	SCTP
SCTP or TCP Node Type	Client
Physical Termination Type	TGW
MG	1
MG1	
MG IP Address	10.10.10.35
MG Port	2944
MGC IP Address	10.10.10.34
MGC Port	2944
Physical Termination Parameters	
TDM Configurations	
TDM Termination Name	Card/TS
Number of Cards	1668
Enable TDM Connection	False
TDM InterfaceType	T1
T1E1 WCS Server IP Address	0.0.0.0
T1E1 WCS Server Port	17090
Analog Configurations	
RTP Configurations	
HD RTP Media Configuration	
RTP Cores	4
RTP Cores 1	
RTP Port Index	Port_0::4X1G Adapter
RTP Media IP Address	192.168.12.241
Default Gateway Configuration	
Subnet Mask	255.255.255.0
Gateway IP Address	192.168.12.1
RTP Cores 2	
RTP Port Index	Port_1::4X1G Adapter
RTP Media IP Address	192.168.12.242
Default Gateway Configuration	
Subnet Mask	255.255.255.0
Gateway IP Address	192.168.12.1
RTP Cores 3	
RTP Port Index	Port_2::4X1G Adapter
RTP Media IP Address	192.168.12.243
Default Gateway Configuration	
Subnet Mask	255.255.255.0
Gateway IP Address	192.168.12.1
RTP Cores 4	
RTP Port Index	Port_3::4X1G Adapter
RTP Media IP Address	192.168.12.244
Default Gateway Configuration	
Subnet Mask	255.255.255.0
Gateway IP Address	192.168.12.1
Enable Bulk Call for RGW using CSV	Enable
CSV File Name	RGW_Profiles1.csv
End User Configuration for RGW	RGW_Profiles1.xml
End User Configuration for TGW	MG_Profiles.xml

- By default, **End User Configuration for TGW** is set to **MG\_Profiles.xml**
- Click  **Save As** button option and save the configurations with **TestBedDefault\_TGW\_HD\_MG1.xml** filename.

## MAPS™ MEGACO configured as MG2 (PC #2)

- Invoke another instance of MAPS™ MEGACO application installed on the PC.
- The Protocol Selection window is prompted with the following settings:
  - Protocol Standard as **MEGACO**
  - Protocol Version as **IETF**
  - Select Node as **Media Gateway**. Click **OK**
- From MAPS main menu → click **Configurations** → select **Load Master Configuration** option → select **MG2-MasterConfig\_TGW-HD** file.
- Now, in the TestBed window, verify and validate the following parameter settings:

- Set **Enable RTP Simulation** to **True**
- Set **RTP Hardware Interface Type** to **GL's High Density Interface Card** (If you have purchased PKS109 - HD RTP Traffic License)
- Set the Media IP address same as MG IP address (10.xx.xx.35)
- Set Transport Type to **SCTP**
- Set SCTP or TCP Node Type to **Client**
- Set Physical Termination Type to **TGW**
- Set the MG IP to 10.xx.xx.35 (PC IP address where MG is running)
- Set **MG Port** to **2945**
- Set the **MGC IP address** where the MGC is running (10.xx.xx.34)
- Set **MGC Port** to **2945**
- Set **TDM Termination Name** to **Card/TS**
- Set **Number of Cards** to **1668** (required to generate 40k calls)
- Set **TDM Interface Type** to **T1**
- Set **T1E1 WCS Server Port** to **17090**

### HD RTP Media Configuration

**Number of RTP-Cores:** Set to 4 and click **Apply**. In this test setup, we are invoking 4 RTP-Cores only.

#### RTP Core 1 Configurations:

**RTP Port Index:** Set this to **Port\_4::4x1G** Adapter.

**RTP Media IP Address:** Specify the RTP Core IP address. (Enter the **HD Port1 IP address** here, Ex: 192.168.12.246)

#### RTP Core 2 Configurations:

**RTP Port Index:** Set this to **Port\_5::4x1G** Adapter.

**RTP Media IP Address:** Specify the RTP Core IP address. (Enter the **HD Port2 IP address** here, Ex: 192.168.12.247)

Config	Value
MG Configuration	
Enable RTP Simulation	True
RTP Hardware Interface Type	GL's High Density Interface Card
Normal RTP Media Configuration	
Media IP Address	10.10.10.35
TransportType	SCTP
SCTP or TCP Node Type	Client
Physical Termination Type	TGW
MG	1
MG1	
MG IP Address	10.10.10.35
MG Port	2945
MGC IP Address	10.10.10.34
MGC Port	2945
Physical Termination Parameters	
TDM Configurations	
TDM Termination Name	Card/TS
Number of Cards	1668
Enable TDM Connection	False
TDM InterfaceType	T1
T1E1 WCS Server IP Address	0.0.0.0
T1E1 WCS Server Port	17090
Analog Configurations	
RTP Configurations	
HD RTP Media Configuration	
RTP Cores	4
RTP Cores 1	
RTP Port Index	Port_4::4x1G Adapter
RTP Media IP Address	192.168.12.246
Default Gateway Configuration	
Subnet Mask	255.255.255.0
Gateway IP Address	192.168.12.1
RTP Cores 2	
RTP Port Index	Port_5::4x1G Adapter
RTP Media IP Address	192.168.12.247
Default Gateway Configuration	
Subnet Mask	255.255.255.0
Gateway IP Address	192.168.12.1
RTP Cores 3	
RTP Port Index	Port_6::4x1G Adapter
RTP Media IP Address	192.168.12.248
Default Gateway Configuration	
Subnet Mask	255.255.255.0
Gateway IP Address	192.168.12.1
RTP Cores 4	
RTP Port Index	Port_7::4x1G Adapter
RTP Media IP Address	192.168.12.249
Default Gateway Configuration	
Subnet Mask	255.255.255.0
Gateway IP Address	192.168.12.1
Enable Bulk Call for RGW using CSV	Enable
CSV File Name	RGW_Profiles2.csv
End User Configuration for RGW	RGW_Profiles2.xml
End User Configuration for TGW	MG_Profiles.xml

### RTP Core 3 Configurations:

**RTP Port Index:** Set this to *Port\_6::4x1G* Adapter.

**RTP Media IP Address:** Specify the RTP Core IP address. (Enter the **HD Port3 IP address** here, Ex: 192.168.12.248)

### RTP Core 4 Configurations:

**RTP Port Index:** Set this to *Port\_7::4x1G* Adapter.

**RTP Media IP Address:** Specify the RTP Core IP address. (Enter the **HD Port4 IP address** here, Ex: 192.168.12.249)

➤ By default, **End User Configuration for TGW** is set to *MG\_Profiles.xml*

- Click  **Save As** button option and save the configurations with **TestBedDefault\_TGW\_HD\_MG2.xml** filename.

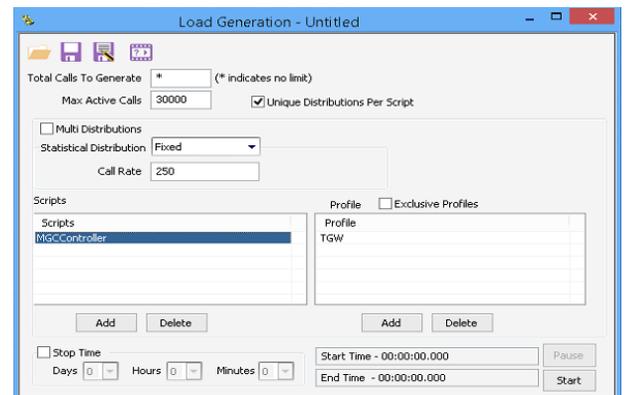
- Click **Start** to start MG1, MG2, and MGC testbed setup on both the PCs. Wait for 8 RTP-Core console windows to appear. If the RTP Core console does not invoke with the MAPS™ TestBed start-up, refer to [Troubleshoot](#) section explained in this document.



- On PC2, click **Call Reception** icon  on both MG1, MG2 and observe the **InitiateServiceHandler.gls** script activated in the Call Reception window.

- On PC1 (MGC), from **Emulator** → **Load Generation** from main menu

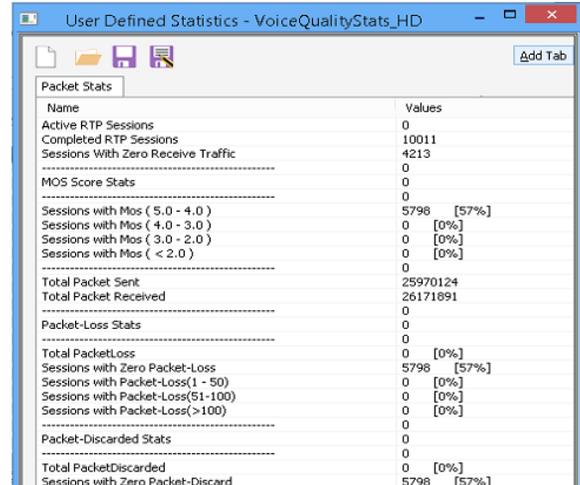
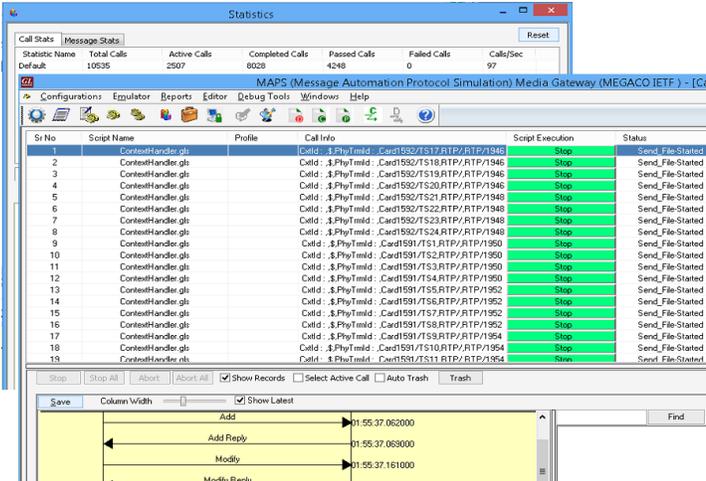
- By default, *MGCController.gls* script and *TGW* profiles are loaded.
  - Total calls to Generate by default is set to ‘\*’, (indicates no limit)
  - Maximum Active calls to 30000.
  - Fixed statistical distribution pattern
  - Set Call Rate to 250



- Click **Start** button to initiate the bulk call generation.

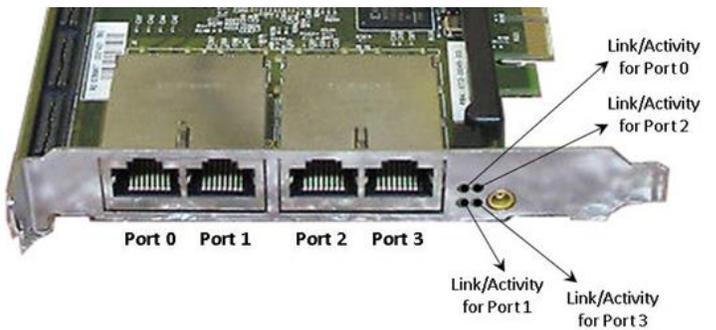
- On both MG1 & MG2 MAPS™ MEGACO instances, click  icon and open **Call Reception**.
- Observe that the calls are automatically received at the **Call Reception (MG1 & MG2)** window running the Rx script.
- On this MAPS Megaco HD instance as well, from **Reports** menu → invoke **Statistics** window. Observe the Outgoing and Incoming Call Stats.

- From **Report** menu → invoke **User Defined Statistics** window. Click  icon and select **VoiceQualityStats\_HD** configuration, observe the **QoS Statistics**.

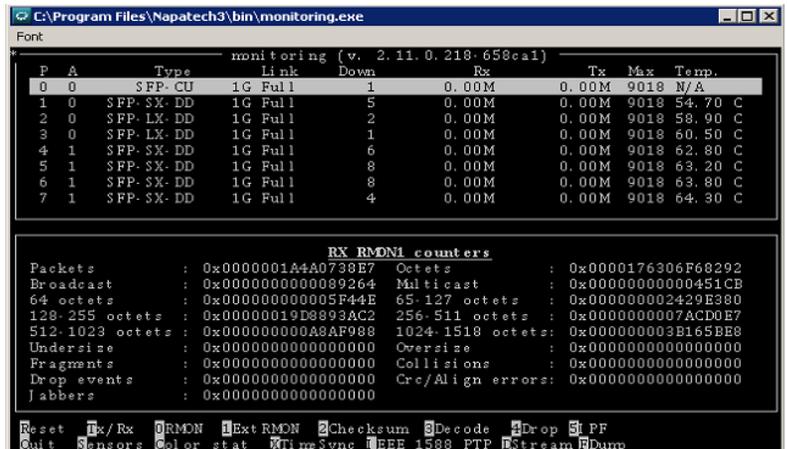


## Troubleshoot

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



- Click **NT 3G Tools** 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.



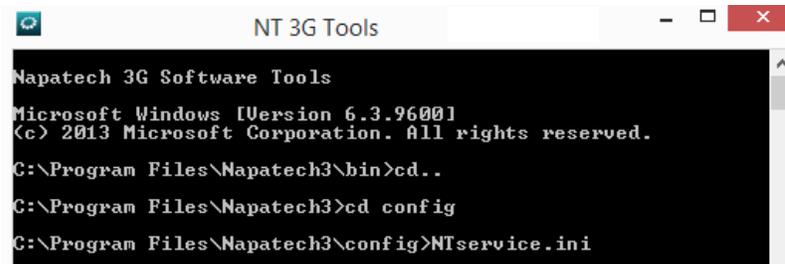
P - Port number

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 **PKS122 MAPS™ Megaco, PKS109 MAPS™ HD** 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.
- If the SIP/RTP Core console does not invoke with the MAPS™ TestBed start-up, check for the following:
  - Verify that the MG1, MG2, and MGC IP Addresses are configured with the proper IP address of the Regular NIC cards. 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 there is a line in the table reading **PKS102 RTP Soft Core** with the serial number you noted above.
- If the Tx and Rx traffic statistics on each port after the bulk call simulation is showing 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. Press **Enter**.

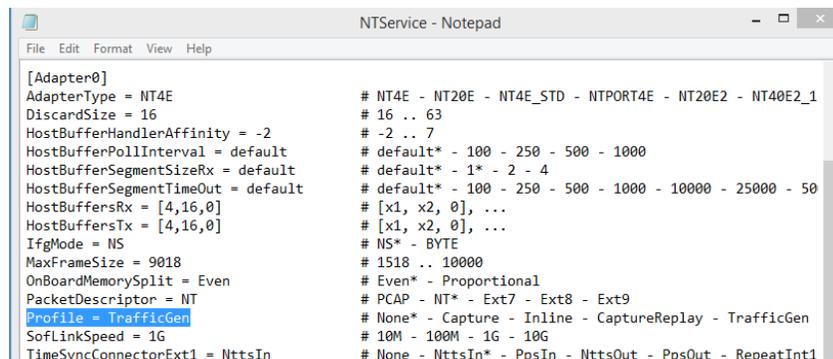


```

NT 3G Tools
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Napatech 3G Software Tools
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.

C:\Program Files\Napatech3\bin>cd .
C:\Program Files\Napatech3>cd config
C:\Program Files\Napatech3\config>NTservice.ini
  
```

- 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 privileges to give write permission to this folder).



```

NTService - Notepad
-----
File Edit Format View Help

[Adapter0]
AdapterType = NT4E # NT4E - NT20E - NT4E_STD - NTPORT4E - NT20E2 - NT40E2_1
DiscardSize = 16 # 16 .. 63
HostBufferHandlerAffinity = -2 # -2 .. 7
HostBufferPollInterval = default # default* - 100 - 250 - 500 - 1000
HostBufferSegmentSizeRx = default # default* - 1* - 2 - 4
HostBufferSegmentTimeout = default # default* - 100 - 250 - 500 - 1000 - 10000 - 25000 - 50
HostBuffersRx = [4,16,0] # [x1, x2, 0], ...
HostBuffersTx = [4,16,0] # [x1, x2, 0], ...
IfgMode = NS # NS* - BYTE
MaxFrameSize = 9018 # 1518 .. 10000
OnBoardMemorySplit = Even # Even* - Proportional
PacketDescriptor = NT # PCAP - NT* - Ext7 - Ext8 - Ext9
Profile = TrafficGen # None* - Capture - Inline - CaptureReplay - TrafficGen
SoftLinkSpeed = 1G # 10M - 100M - 1G - 10G
TimeSyncConnectorExt1 = NttsIn # None - NttsIn* - PpsIn - NttsOut - PpsOut - RepeatInt1
  
```

- 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).