

If this is your *First-Time-Use* of MAPS™ Diameter application, then we recommend you follow all the steps explained in [MAPS-Diameter-Quick-Install-Guide](#) to install MAPS™ Diameter application before proceeding with the steps below.

Verification

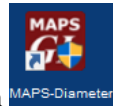
Functional verification of MAPS-Diameter application for S6a interface requires a system with 2 NIC cards for loopback testing. MAPS-Diameter is configured as **HSS** (Home Subscriber Server) on one NIC and as **MME** (Mobility Management Entity) on the other.


Note down the IP addresses of NIC1 and NIC2 on the test PC, and in this example the IP addresses used and configured are:

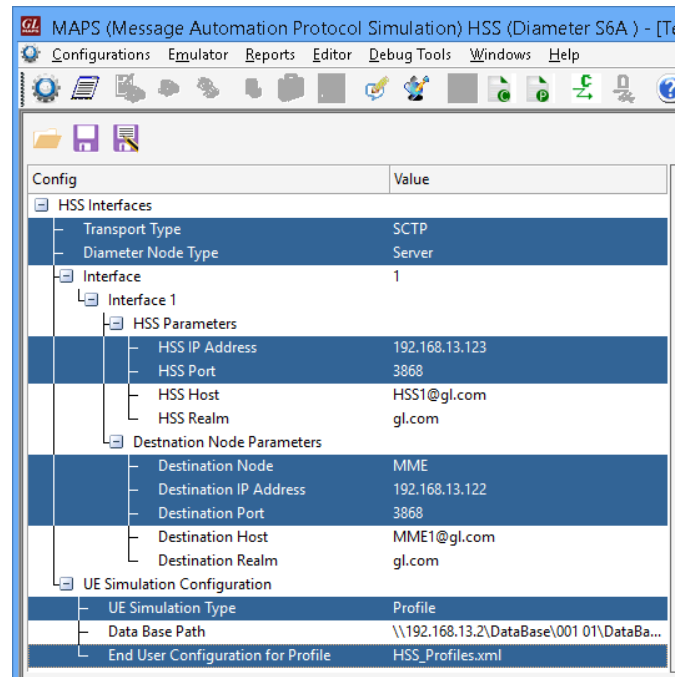
- NIC1 IP address is 192.xx.xx.123, and configured as HSS
- NIC2 IP address is 192.xx.xx.122, and configured as MME

Note: In this test scenario, we have configured MAPS™ Diameter as MME generating calls and HSS to receive calls. It is assumed that both NIC cards on the test PC is connected to a switch or back-to-back using Ethernet cable.

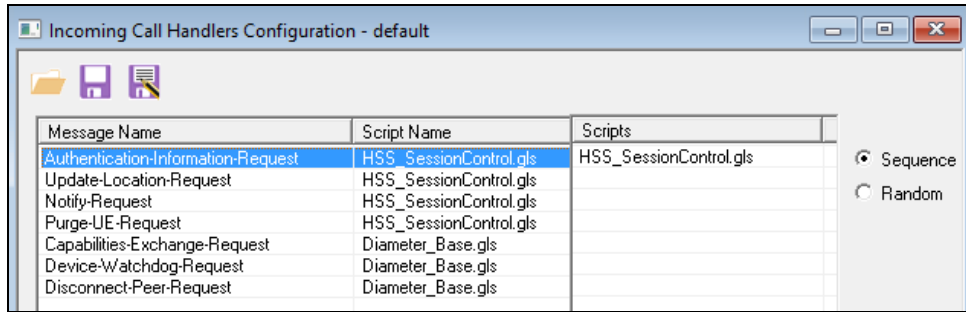
First MAPS™ Diameter (GUI) – (HSS)



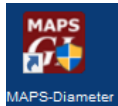
- Right-click on the **MAPS-Diameter** shortcut icon created on the desktop and select 'Run as Administrator'. This instance of MAPS™ is configured for *Call Reception*
- While invoking the first MAPS™ Diameter instance, verify the following in the Protocol Selection window -
 - **Protocol Standard** is set to **Diameter**
 - **Protocol Version** is set to **S6A**
 - Select **Node** as **HSS**, click on **OK**
- By default, Testbed Setup window is displayed loaded with **TestBedDefault** configuration. Verify and validate the following parameter settings:
 - **Transport Type** is set to **SCTP**
 - **Diameter Node Type** is set to **Server**
 - Set **HSS IP Address** to NIC1 IP address (ex: 192.xx.xx.123)
 - Set **HSS Port** to **3868**
 - Verify if **Destination Node** is set to **MME**
 - Set **Destination IP address** to NIC2 IP address (ex: 192.xx.xx.122)
 - Set **Destination Port** to **3868**
 - Set **UE Simulation Type** to **Profiles**
 - Click on the **Save**  button and overwrite the file.




- From MAPS™ Diameter main window, select **Configuration → Incoming Call Handler Configuration**. Verify that the **HSS_SessionControl.gls** script is loaded against the **Authentication Information Request, Update Location Request, Notify Request, and Purge UE Request** messages. Exit from the window.

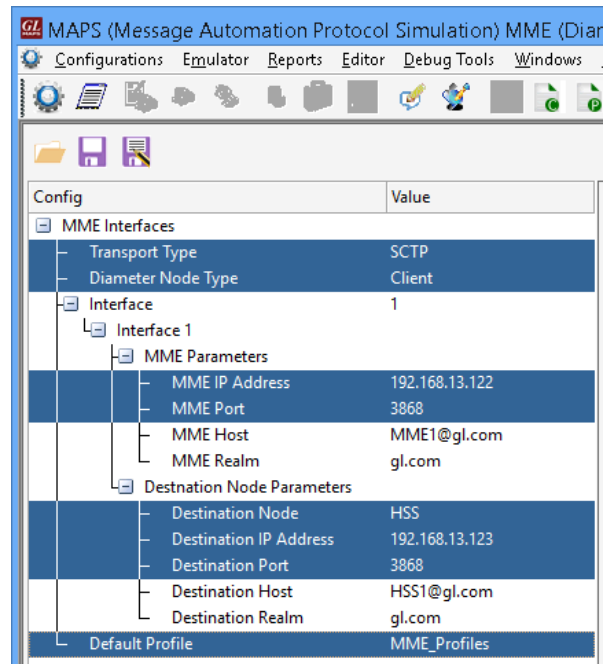


Second MAPS™ Diameter (GUI) – (MME)



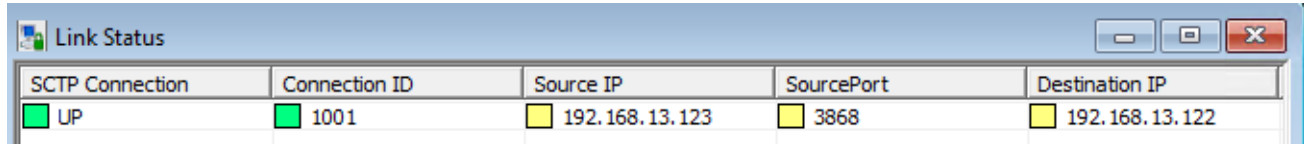
- Right-click on the **MAPS-Diameter** shortcut icon created on the desktop and select 'Run as Administrator'. This instance of MAPS™ is configured for **Call Generation**.
- While invoking the second MAPS™ Diameter instance, verify the following in the **Protocol Selection** window -
 - **Protocol Standard** is set to **Diameter**
 - **Protocol Version** is set to **S6A**
 - Select **Node** as **MME**, click on **OK**
- By default, **Testbed Setup** window is displayed, loaded with **TestBedDefault** configuration. Verify and validate the following parameter settings:

- **Transport Type** is set to **SCTP**
- **Diameter Node Type** is set to **Client**
- Set **MME IP Address** to NIC2 IP address (ex: 192.xx.xx.122)
- Set **MME Port** to **3868**
- Verify if **Destination Node** is set to **HSS**
- Set **Destination IP address** to NIC1 IP address (ex: 192.xx.xx.123)
- Set **Destination Port** to **3868**
- Click **Save**  button and overwrite the same configuration file.





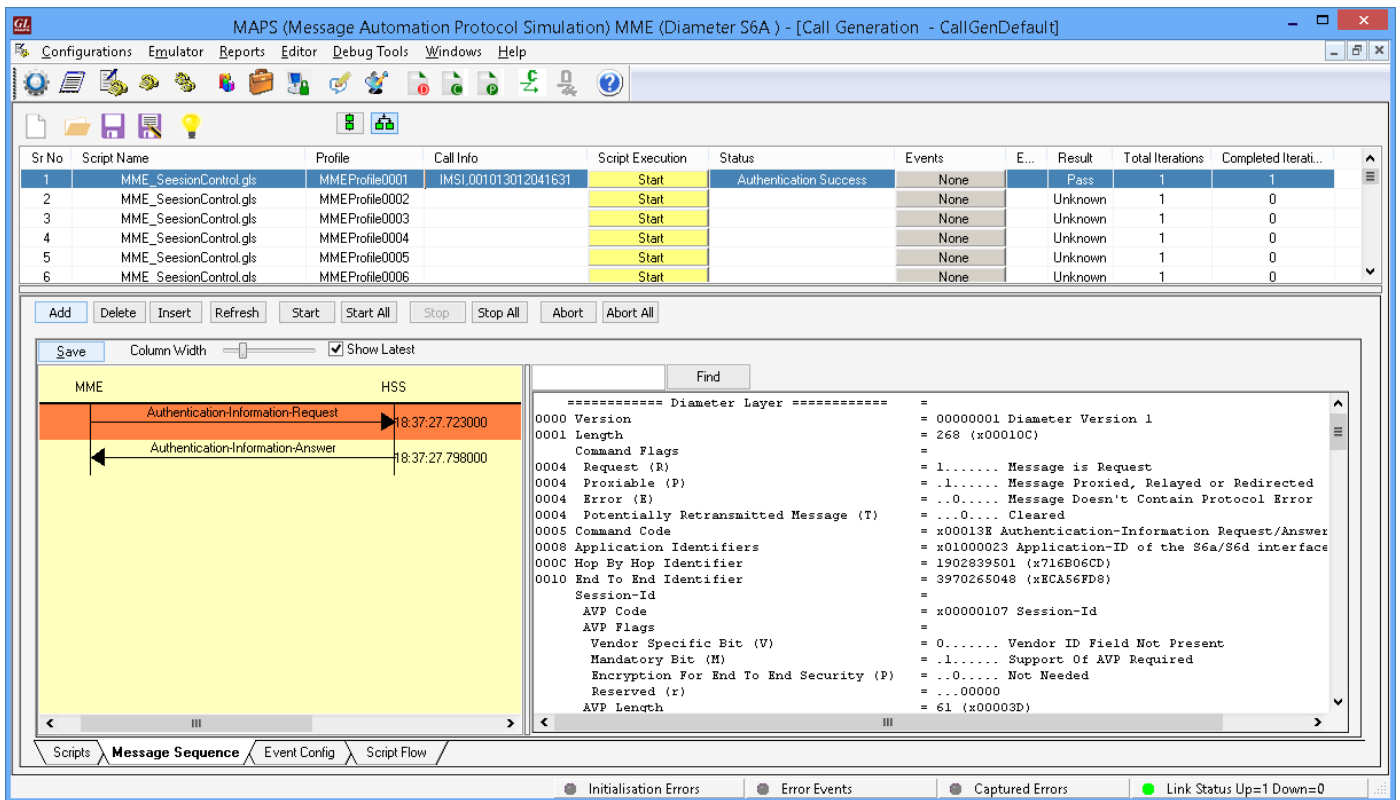
- Start** the testbed on both the MAPS (HSS and MME) instances.

- 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.



SCTP Connection	Connection ID	Source IP	SourcePort	Destination IP
UP	1001	192.168.13.123	3868	192.168.13.122


- Note:** Fails to start SCTP Services and associated SCTP Link status is Down, then **Turn OFF Windows Firewall** (navigate to Control Panel → Systems & Security → Windows Firewall, click Turn Off Windows Firewall for all networks)
- On both instances of MAPS-Diameter (HSS and MME) main window, click **Call Reception**  icon and observe that the **Diameter_Base.gls** script is running.
- In the second MAPS-Diameter (MME) instance, click the **Call Generation**  icon on main window, and invoke the **Call Generation** window.
- By default, you will observe that multiple call instances loaded with **MME_SessionControl.gls** scripts and **MMEProfile0***** profiles.
- Select the first call instance in the Call Generation window, and click **Start** button to initiate the call generation.



Sr No	Script Name	Profile	Call Info	Script Execution	Status	Events	Result	Total Iterations	Completed Iterati...
1	MME_SessionControl.gls	MMEProfile0001	IMSI_001013012041631	Start	Authentication Success	None	Pass	1	1
2	MME_SessionControl.gls	MMEProfile0002		Start		None	Unknown	1	0
3	MME_SessionControl.gls	MMEProfile0003		Start		None	Unknown	1	0
4	MME_SessionControl.gls	MMEProfile0004		Start		None	Unknown	1	0
5	MME_SessionControl.gls	MMEProfile0005		Start		None	Unknown	1	0
6	MME_SessionControl.gls	MMEProfile0006		Start		None	Unknown	1	0

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===== Diameter Layer =====
0000 Version = 00000001 Diameter Version 1
0001 Length = 268 (x00010C)
Command Flags
0004 Request (R) = 1..... Message is Request
0004 Proxiable (P) = .1..... Message Proxied, Relayed or Redirected
0004 Error (E) = ..0.... Message Doesn't Contain Protocol Error
0004 Potentially Retransmitted Message (T) = ...0.... Cleared
0005 Command Code = x00013E Authentication-Information-Request/Answer
0008 Application Identifiers = x0100023 Application-ID of the S6a/S6d interface
000C Hop By Hop Identifier = 1902839501 (x716B06CD)
0010 End To End Identifier = 3970265048 (xECA56FD8)
Session-Id =
AVP Code = x0000107 Session-Id
AVP Flags =
Vendor Specific Bit (V) = 0..... Vendor ID Field Not Present
Mandatory Bit (M) = .1..... Support Of AVP Required
Encryption For End To End Security (P) = ..0.... Not Needed
Reserved (r) = ...00000
AVP Length = 61 (x00003D)
    
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- Return to first instance of MAPS-Diameter (**HSS**), click **Call Reception**  icon, observe that the calls are automatically received running the Rx script.
- Select any message in the ladder diagram and observe the respective decode message on the right pane for the respective message.
- Wait for the calls to terminate, and verify the call flow under the **Message Sequence** tab at both generation and reception end.