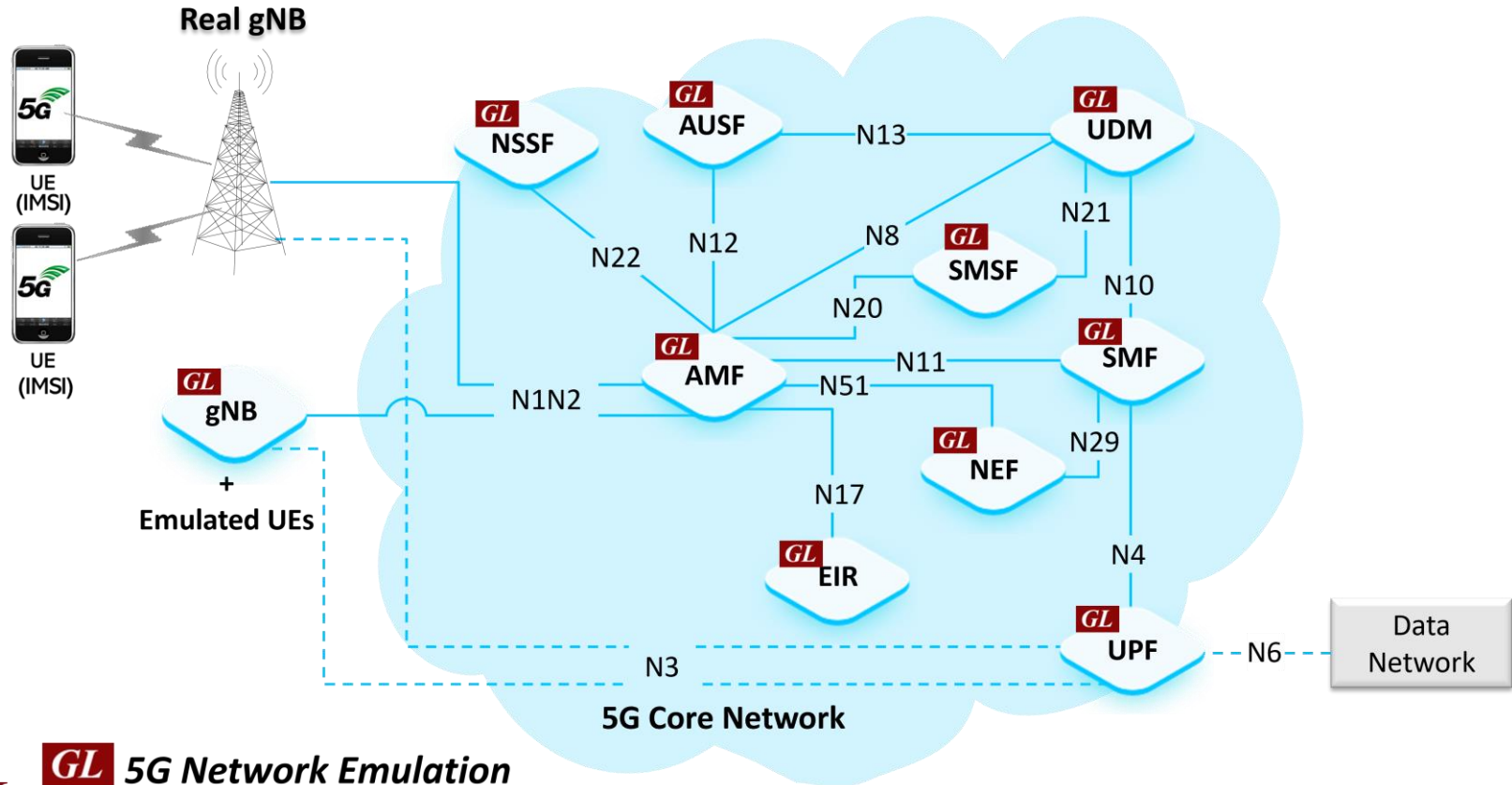

MAPS™ 5G N1N2 Interface Emulator

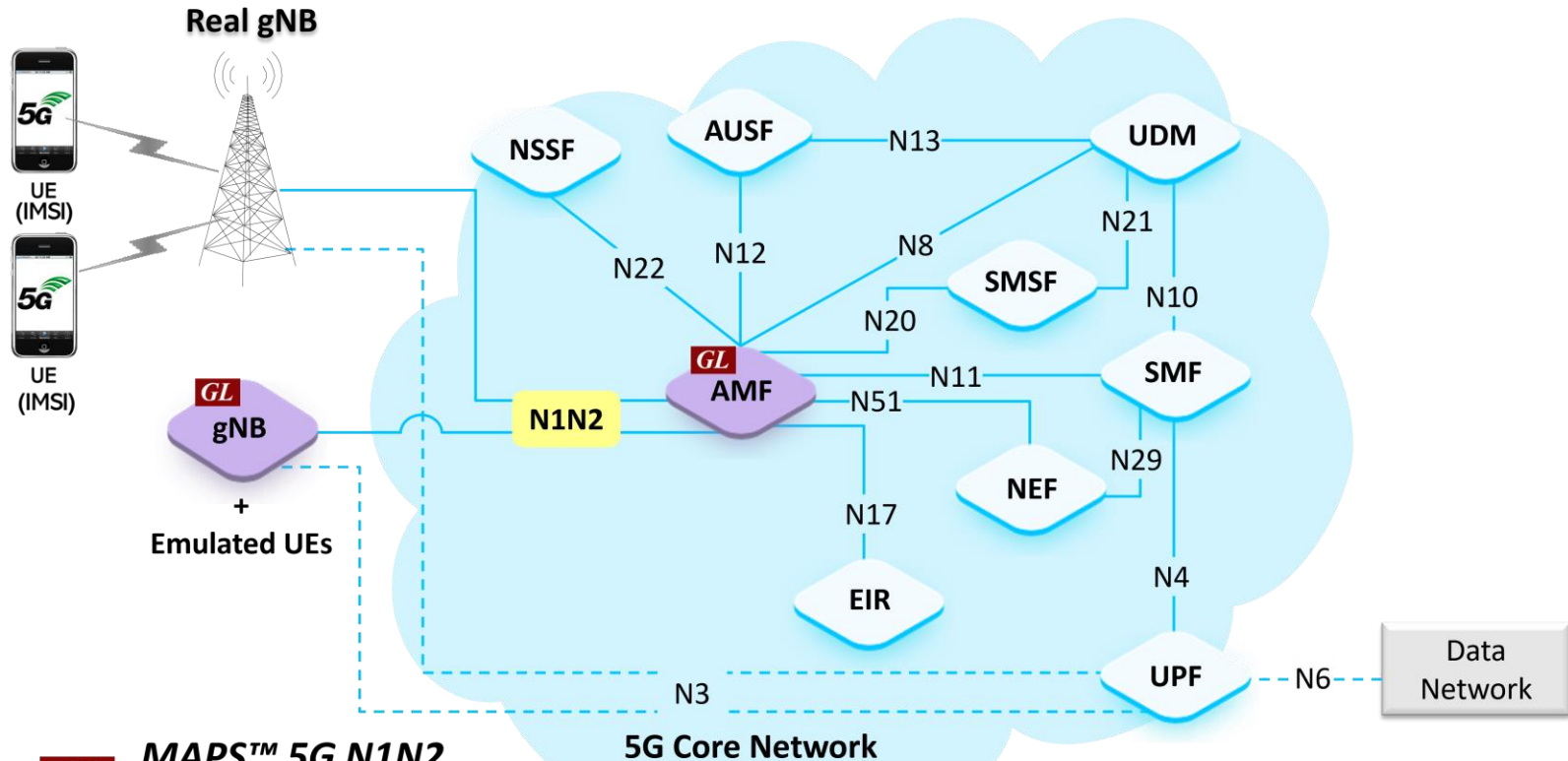


818 West Diamond Avenue - Third Floor, Gaithersburg, MD 20878
Phone: (301) 670-4784 Fax: (301) 670-9187 Email: info@gl.com
Website: <https://www.gl.com>

5G Network Diagram



MAPS™ 5G N1N2 Interface Network Architecture

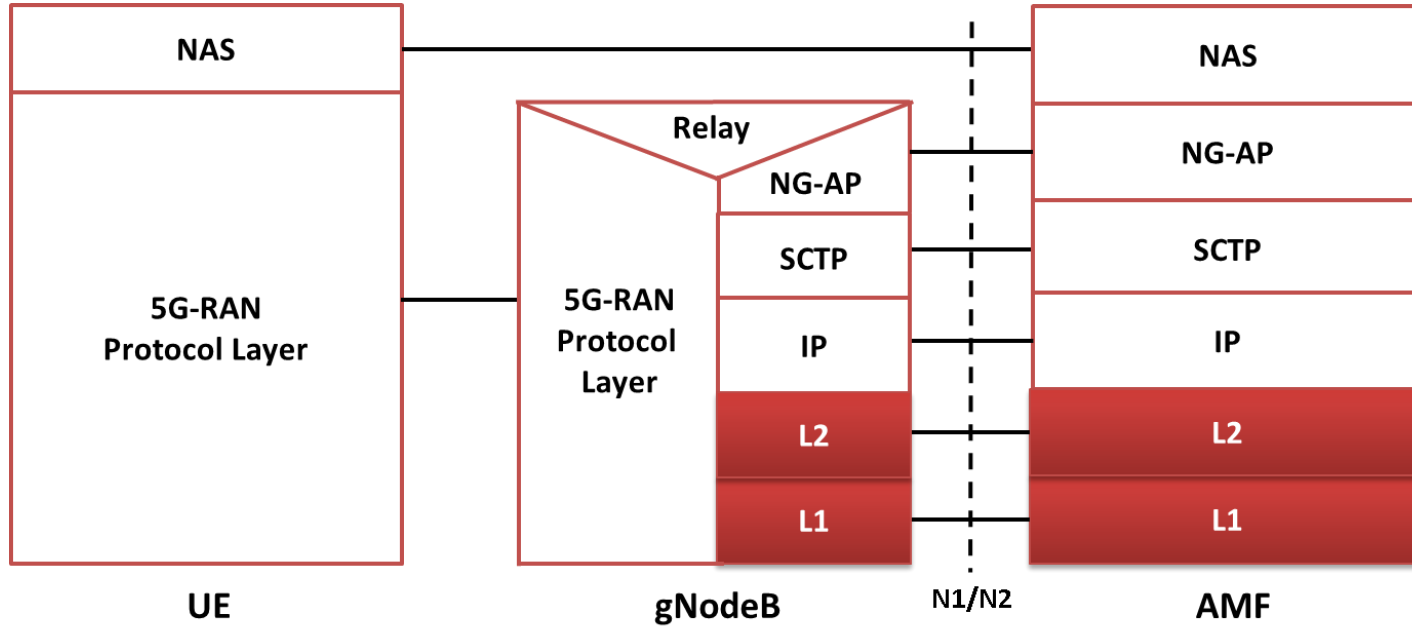


MAPS™ 5G N1N2
Interfaces Emulator

Features

- End-to-End 5G Network Emulation
- Emulate UE+gNodeB and AMF nodes
- Supports Control plane signaling and User plane traffic
- Generate and process NGAP/NAS (valid and invalid) messages
- Insertion of impairments to create invalid messages
- Supports customization of call flow and message templates using Script and Message Editor
- Ready-to-use scripts for quick testing
- Supports scripted call generation and automated call reception
- Emulate Massive UEs (up to 64,000) with Voice Traffic
- Emulate User-plane GTP traffic at high line rates (up to 40 Gbps)
- Provides Call Statistics and Events Status
- Supports Command Line Interface (CLI) using Python API Client

Protocol Stack Specification



Protocol Stack Specification (Contd.)

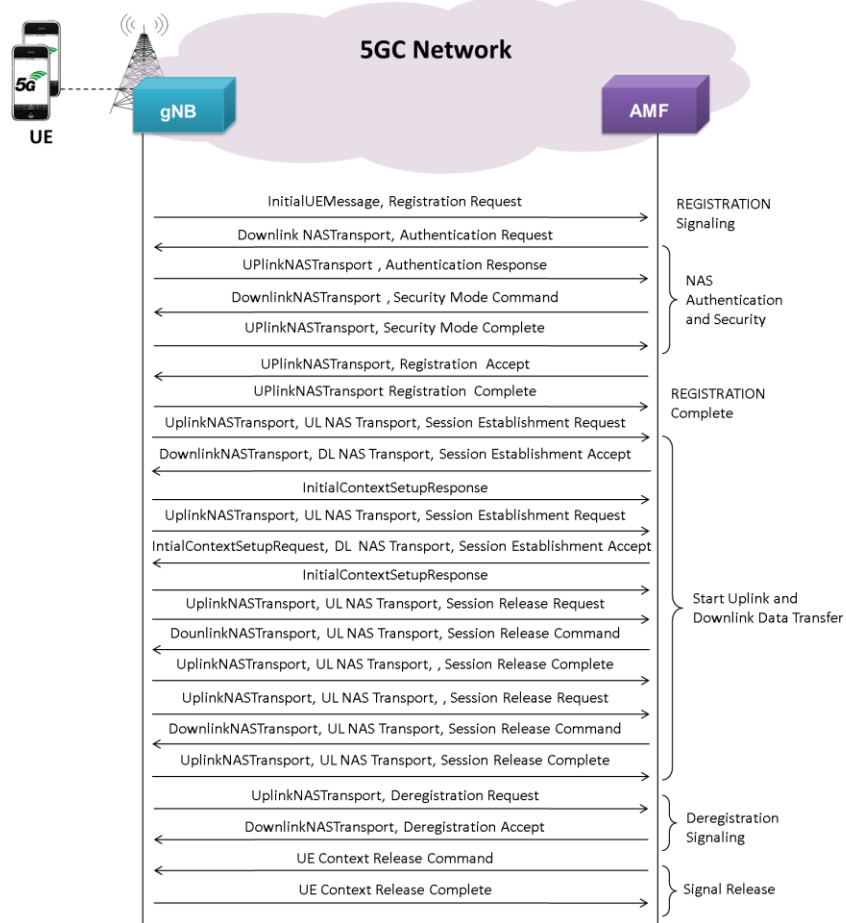
Supported Protocols	Standard / Specification Used
N1N2 Interface (gNB - AMF)	TS24.501
NG-AP	3GPP TS 38.413 V0.7.0 (2018-03)
SCTP	RFC 4960
Non-Access-Stratum (NAS)	3GPP TS 24.501 V1.0.0 (2018-3)
NR and NG-RAN	3GPP TS 28.300 V2.0.0 (2017-12)

- NG Application Protocol (NGAP): Application Layer Protocol between the gNodeB and the AMF
- SCTP for the control plane (SCTP): This protocol guarantees delivery of signaling messages between AMF and gNodeB (N1N2). SCTP is defined in RFC 2960

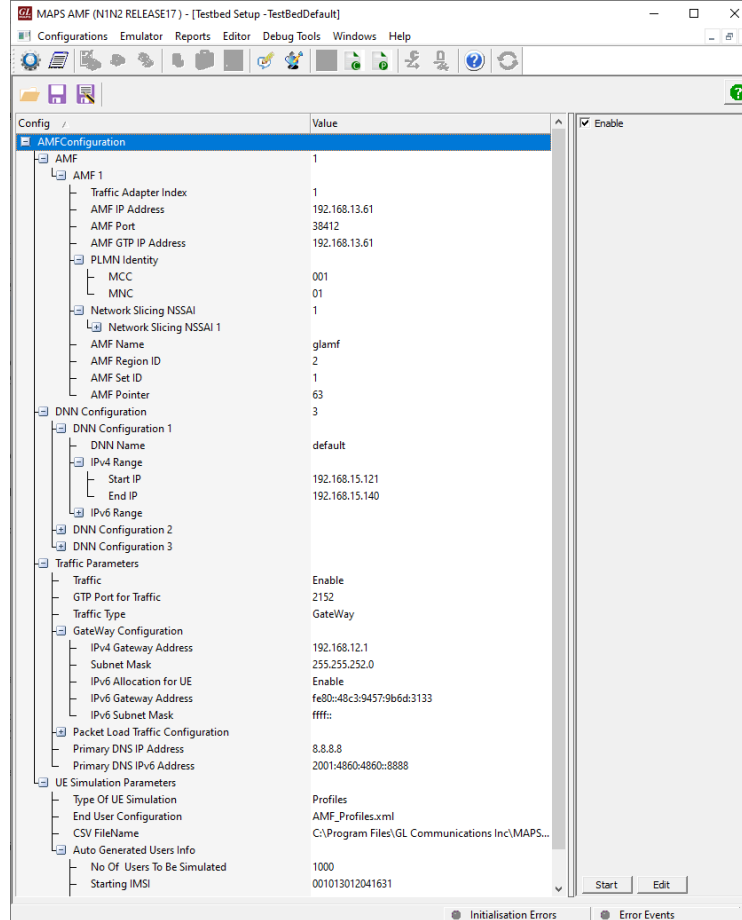
MAPS™ 5G Call Scenarios

- UE Registration Signaling
 - Initial UE Message
 - Downlink NAS Transport
 - Uplink NAS Transport
 - Registration Procedure
 - Authentication Procedure
 - Security Mode Procedure
 - PDN Connectivity Request
 - Initial Context Setup Procedure
- Session Establishment Procedure
 - Session Establishment Request
 - Session Establishment Accept
- Session Release Procedure
 - Session Release Request
 - Session Release Command
 - Session Release Complete
- Deregistration procedures
 - Deregistration Request
 - Deregistration Accept
- UE Context Release Procedure
 - UE Context Release Command
 - UE Context Release Complete

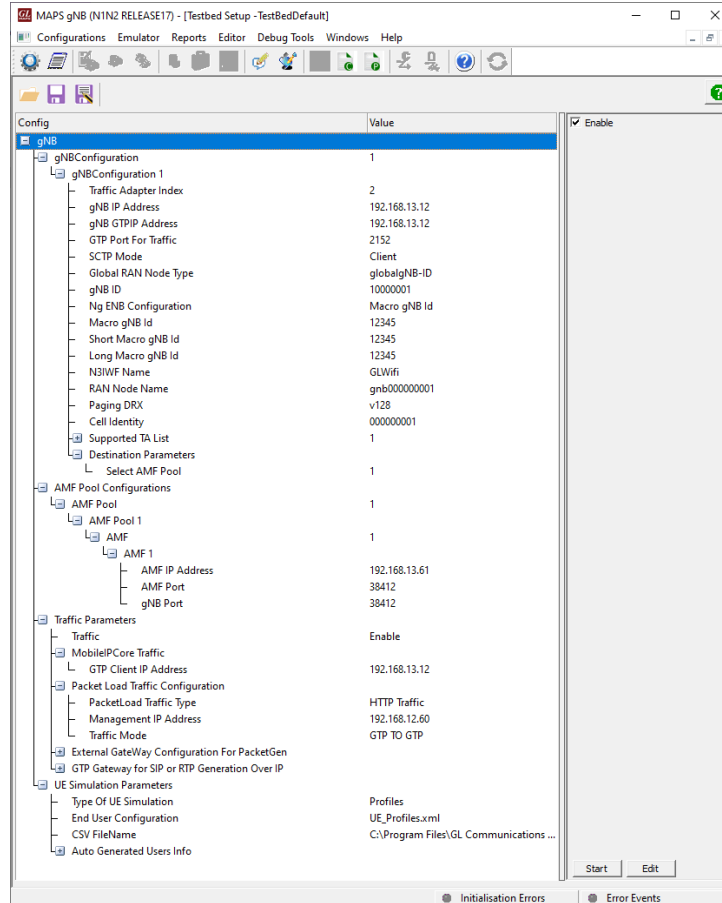
MAPS™ 5G N1N2 Call Scenario



Testbed Configuration (AMF)



Testbed Configuration (gNB)



Profile Configuration (AMF)

MAPS AMF (N1N2 RELEASE17) - [Profile Editor -AMF_Profiles]

Configurations Emulator Reports Editor Debug Tools Windows Help

Profiles (Edit-F2)

#	Profiles (Edit-F2)	Config	Value	Enable
1	MSIN3012041631	MSIN3012041631		<input checked="" type="checkbox"/>
2	MSIN3012041632			
3	MSIN3012041633			
4	MSIN3012041634			
5	MSIN3012041635			
6	MSIN3012041636			
7	MSIN3012041637			
8	MSIN3012041638			
9	MSIN3012041639			
10	MSIN3012041640			
11	MSIN3012041641			
12	MSIN3012041642			
13	MSIN3012041643			
14	MSIN3012041644			
15	MSIN3012041645			
16	MSIN3012041646			
17	MSIN3012041647			
18	MSIN3012041648			
19	MSIN3012041649			
20	MSIN3012041650			
21	MSIN3012041651			
22	MSIN3012041652			
23	MSIN3012041653			
24	MSIN3012041654			
25	MSIN3012041655			
26	MSIN3012041656			
27	MSIN3012041657			
28	MSIN3012041658			
29	MSIN3012041659			

Mobile Identity

- Type Of Identity: SUCI
- IMSI: 001013012041631
- SUCI
 - SUPI Format: IMSI
 - Protection Scheme Identifier: Null Scheme
 - Home Network Public Key Identifier: 0
- IMEI: 359877068325248
- IMEISV: 1234567890123001
- MSISDN: 3012041631

Authentication Parameters

- Authentication Type: 5G-AKA
- Authentication Algorithm Type: Milenage
- Key: 00112233445566778899aabbccddeeff
- Operator Variant Parameter Type: OPc
- OP: 0102030405060708091011121314151601...
- OPc: 01020304050607080910111213141516
- AMF: 8000
- SQN: 000000000079
- Integrity and Encryption Algorithm Selection: 7
- NAS Key Set Identifier: Native Security Context
- Type Of Security Context Flag: Native Security Context

Required QOS

Network Initiated Deregistration Parameters

SMS Call Parameters

UE Context

- PCSCF IP Address: 192.168.12.181
- PCSCF IPv6 Address: fe80::48c3:9457:9b6d:3133
- IMS Voice Over PS Support: Supported
- DNN: internet

QOS Rule

Session AMBR

Traffic Parameters

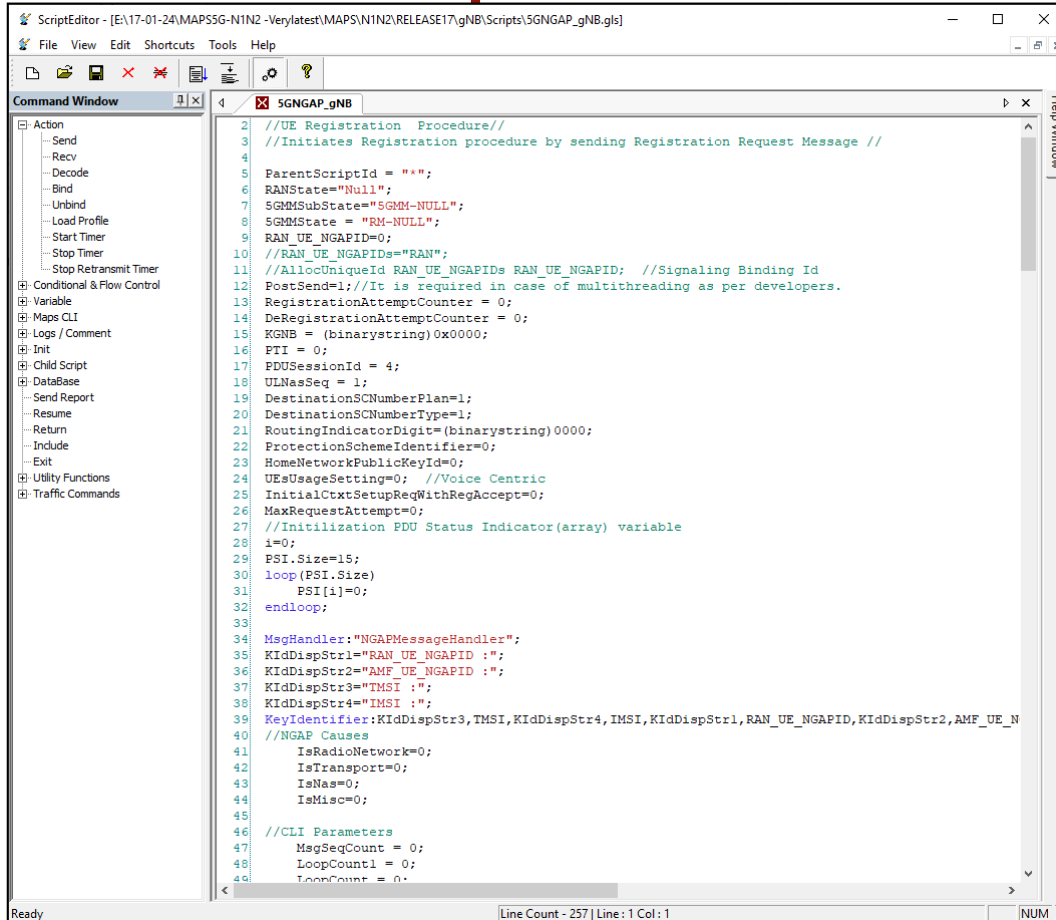
- PacketCheck Traffic Parameters
- Mobile Traffic Parameters
 - TCP Server Ip: 192.168.15.80
 - TCP port for HTTP: 80
 - OS Socket: Enable

Add Insert Delete

Properties

Initialisation Errors Error Events Captured Errors

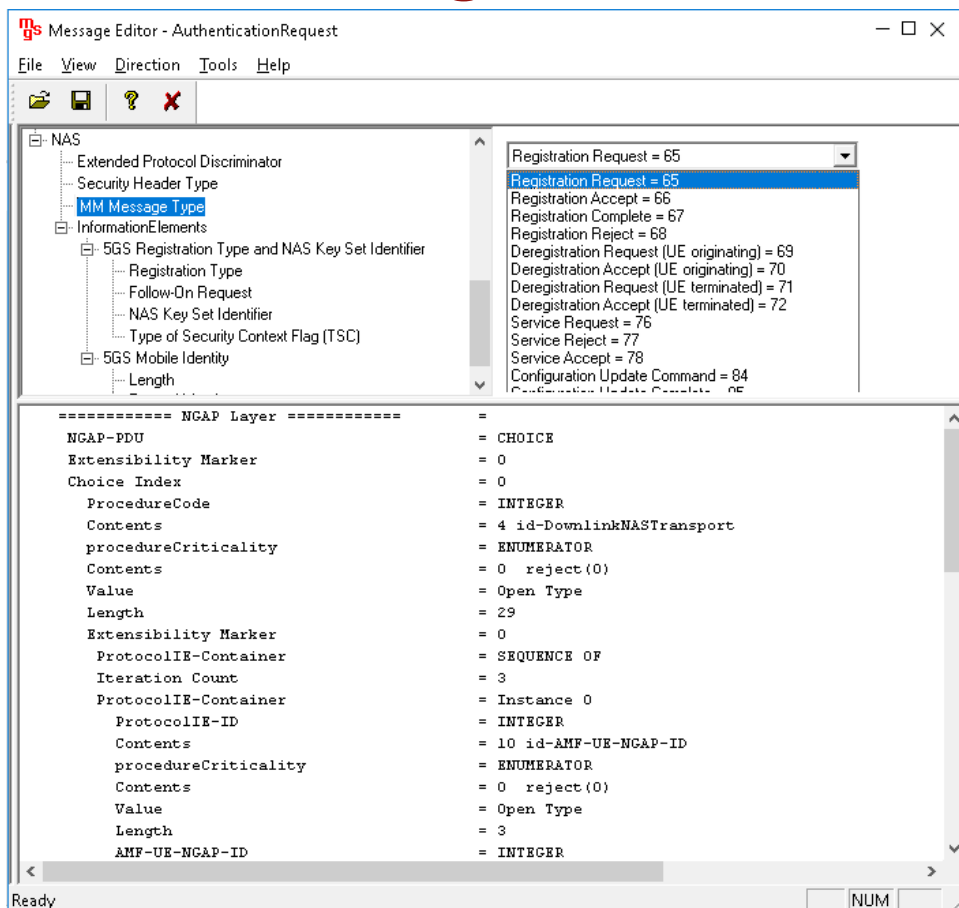
Script Editor



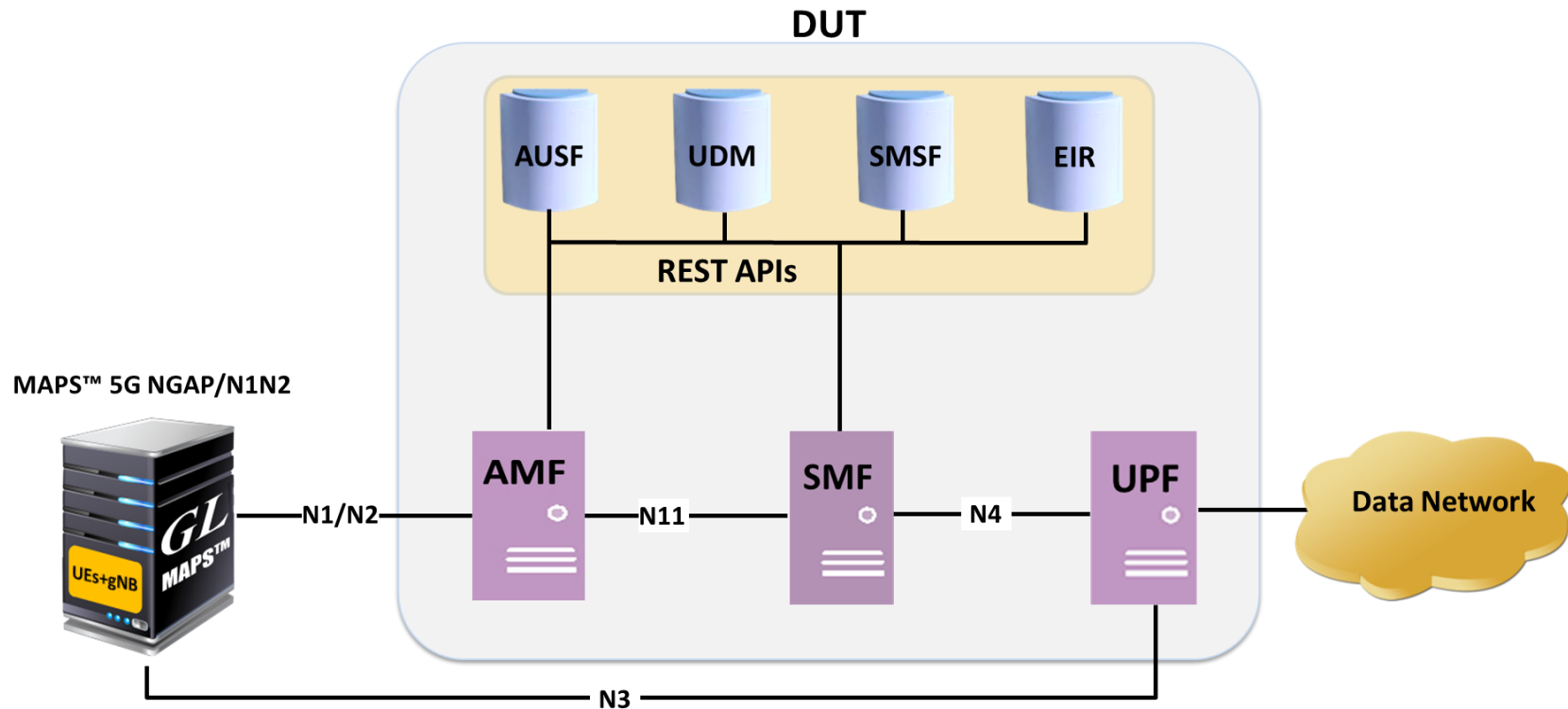
The screenshot shows a script editor window titled "ScriptEditor - [E:\17-01-24\MAPSSG-N1N2 -Verylatest\MAPS\N1N2\RELEASE17\gNB\Scripts\5GNGAP_gNB.gls]". The window has a menu bar (File, View, Edit, Shortcuts, Tools, Help) and a toolbar. On the left is a "Command Window" pane with a tree view containing categories like Action, Variable, Maps CLI, Logs / Comment, Init, Child Script, DataBase, Send Report, Resume, Return, Include, Exit, Utility Functions, and Traffic Commands. The main area displays a script for "5GNGAP_gNB" with line numbers 1 through 49. The script is a C-like language with comments and function calls. The status bar at the bottom indicates "Line Count - 257 | Line: 1 Col: 1" and "NUM".

```
1 //UE Registration Procedure//
2 //Initiates Registration procedure by sending Registration Request Message //
3
4
5 ParentScriptId = "";
6 RANState="Null";
7 SGMMSubState="SGMM-NULL";
8 SGMMState = "RM-NULL";
9 RAN_UE_NGAPID=0;
10 //RAN_UE_NGAPIDs="RAN";
11 //AllocUniqueId RAN_UE_NGAPIDs RAN_UE_NGAPID; //Signaling Binding Id
12 PostSend=1; //It is required in case of multithreading as per developers.
13 RegistrationAttemptCounter = 0;
14 DeRegistrationAttemptCounter = 0;
15 KGNB = (binarystring) 0x0000;
16 PTI = 0;
17 PDUSessionId = 4;
18 ULNasSeq = 1;
19 DestinationSCNNumberPlan=1;
20 DestinationSCNNumberType=1;
21 RoutingIndicatorDigit=(binarystring) 0000;
22 ProtectionSchemeIdentifier=0;
23 HomeNetworkPublicKeyId=0;
24 UEsUsageSetting=0; //Voice Centric
25 InitialCtxtSetupReqWithRegAccept=0;
26 MaxRequestAttempt=0;
27 //Initialization PDU Status Indicator(array) variable
28 i=0;
29 PSI.Size=15;
30 loop(PSI.Size)
31     PSI[i]=0;
32 endloop;
33
34 MsgHandler:"NGAPMessageHandler";
35 KidDispStr1="RAN_UE_NGAPID :";
36 KidDispStr2="AMF_UE_NGAPID :";
37 KidDispStr3="TMSI :";
38 KidDispStr4="IMSI :";
39 KeyIdentifier:KidDispStr3,TMSI,KidDispStr4,IMSI,KidDispStr1,RAN_UE_NGAPID,KidDispStr2,AMF_UE_N
40 //NGAP Causes
41     IsRadioNetwork=0;
42     IsTransport=0;
43     IsNas=0;
44     IsMisc=0;
45
46 //CLI Parameters
47     MsgSeqCount = 0;
48     LoopCount1 = 0;
49     LoopCount = 0;
```

Message Editor

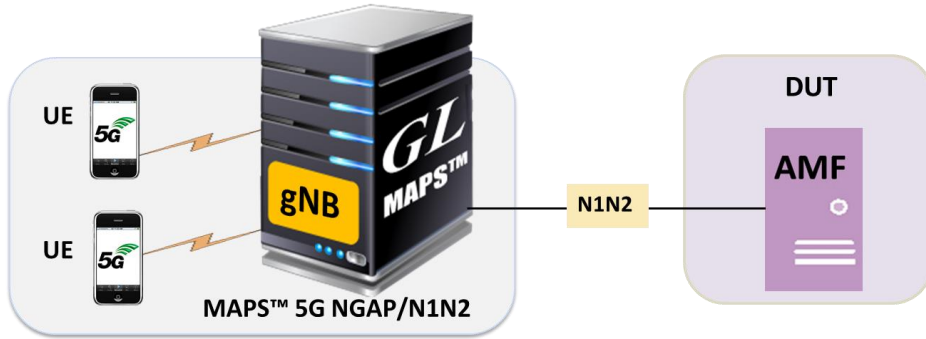


MAPS™ gNB Emulator testing 5G Core Network

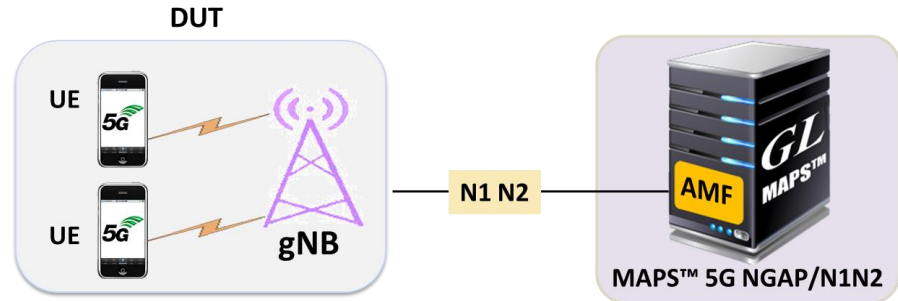


MAPS™ 5G N1N2 Use Cases

MAPS™ N1N2 configured as AMF to test gNB (DUT)

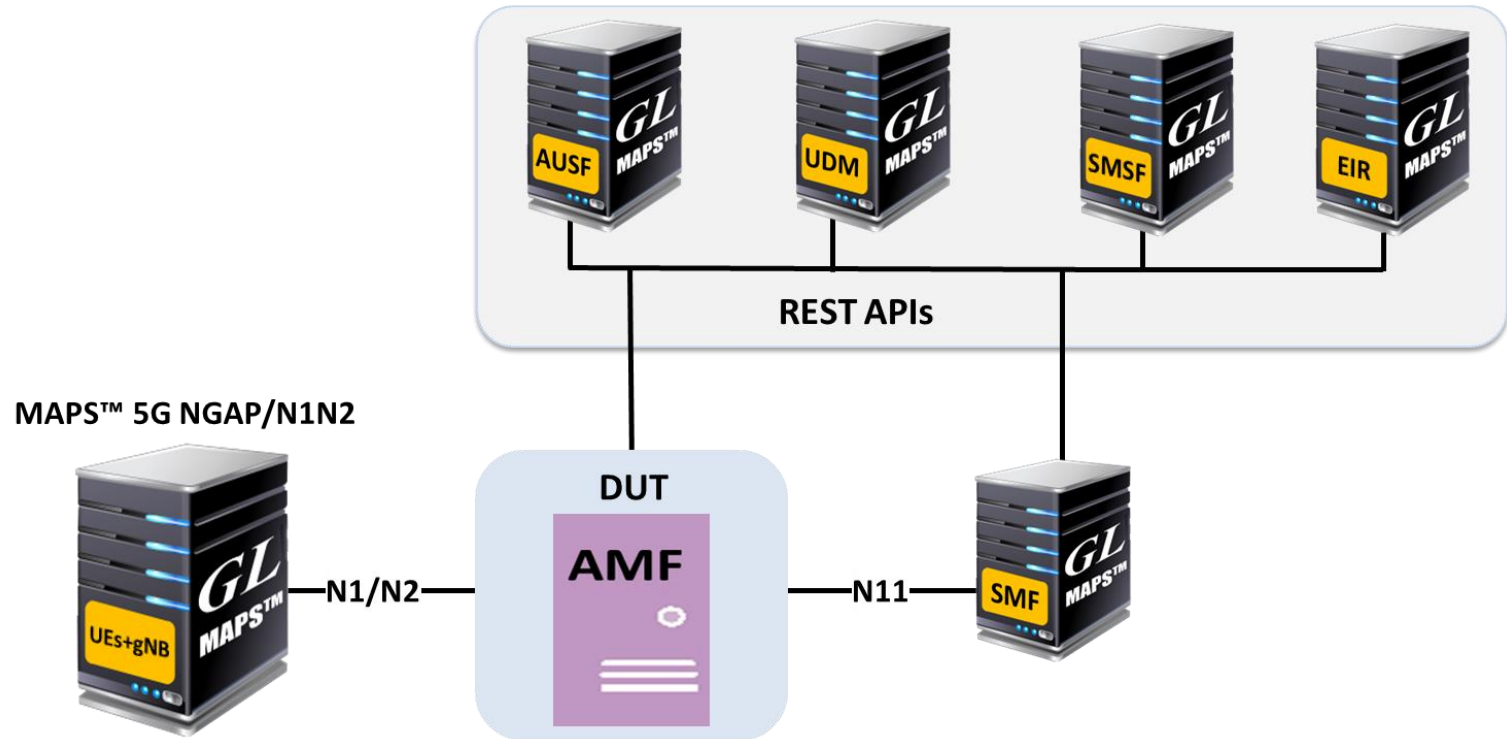


MAPS™ N1N2 configured as gNB to test AMF (DUT)



MAPS™ 5G N1N2 Use Cases (Contd.)

Wrap Around Testing of AMF



MAPS™ 5G N1N2 Interface – Call Generation

MAPS gNB (N1N2 RELEASE17) - [Call Generation - CallGenDefault]

Configurations Emulator Reports Editor Debug Tools Windows Help

Sr No	Script Name	Profile	Call Info	Script Execution	Status	Events Profile	Result	Total Iterations	Completed Iterations
1	5GNGAP_UESessionControl.gls	MSIN3012041631	TMSI_0x80FBD308JMSI_001013012	Start	UE CONTEXT RELEASED		Pass	1	1
2	5GNGAP_UESessionControl.gls	MSIN3012041632		Start			Unknown	1	0
3	5GNGAP_UESessionControl.gls	MSIN3012041633		Start			Unknown	1	0
4	5GNGAP_UESessionControl.gls	MSIN3012041634		Start			Unknown	1	0
5	5GNGAP_UESessionControl.gls	MSIN3012041635		Start			Unknown	1	0

Add Delete Insert Refresh Start Start All Stop Stop All Abort Abort All

Save Column Width Show Latest

gNB 0 AMF 0

InitialUEMessage, Registration Request 11:18:15.231000

DownlinkNASTransport, Authentication Request 11:18:16.057000

UplinkNASTransport, Authentication Response 11:18:16.058000

DownlinkNASTransport, Security Mode Command 11:18:16.157000

UplinkNASTransport, Security Mode Complete 11:18:16.158000

InitialContextSetupRequest, Registration Accept 11:18:16.267000

InitialContextSetupResponse 11:18:16.269000

UplinkNASTransport, Registration Complete 11:18:16.270000

UplinkNASTransport, UL NAS Transport, Session Establishment Request 11:18:16.313000

PDUSessionResourceSetupRequest, DL NAS Transport, Session Establishment Accept 11:18:16.458000

PDUSessionResourceSetupResponse 11:18:16.462000

UplinkNASTransport, UL NAS Transport, Session Establishment Request 11:18:16.466000

PDUSessionResourceSetupRequest, DL NAS Transport, Session Establishment Accept 11:18:16.556000

PDUSessionResourceSetupResponse 11:18:16.558000

UplinkNASTransport, UL NAS Transport, Session Release Request 11:18:25.879000

PDUSessionResourceReleaseCommand, DL NAS Transport, Session Release Command 11:18:25.971000

PDUSessionResourceReleaseResponse 11:18:25.973000

UplinkNASTransport, UL NAS Transport, Session Release Complete 11:18:25.973000

UplinkNASTransport, UL NAS Transport, Session Release Request 11:18:25.974000

Find

NGAP-PDU = InitiatingMessage (0)
InitiatingMessage = 15 id-InitialUEMessage
ProcedureCode = 0 reject (0)
procedureCriticality = 0 reject (0)
Value =
InitialUEMessage =
ProtocolIE-Container = 6 Items
Item =
ProtocolIE-Field =
ProtocolIE-ID = 85 id-RAN-UE-NGAP-ID
procedureCriticality = 0 reject (0)
Value =
RAN-UE-NGAP-ID = 2
Item = 1
ProtocolIE-Field =
ProtocolIE-ID = 38 id-NAS-PDU
procedureCriticality = 0 reject (0)
Value =
NAS-PDU = x7E00417100D0100F110000
Item = 2
ProtocolIE-Field =
ProtocolIE-ID = 121 id-UserLocationInformation
procedureCriticality = 0 reject (0)
Value =
UserLocationInformation = userLocationInformationNR
userLocationInformationNR =
nr-OCI =
pLMNIdentity =
MCC = 001
MNC = 01
nrCellIdentity = 0000000000
tAI =
pLMNIdentity =
MCC = 001
MNC = 01
tAC = x000001
Item = 3
ProtocolIE-Field =
ProtocolIE-ID = 90 id-RRCEstablishmentCause
procedureCriticality = 0 reject (0)

Scripts Message Sequence Event Config Script Flow

Initialisation Errors Error Events Captured Errors Link Status Up=1 Down=0

MAPS™ 5G N1N2 Interface – Call Reception

MAPS AMF (N1N2 RELEASE17) - [Call Reception]

Configurations Emulator Reports Editor Debug Tools Windows Help

Sr No	Script Name	Profile	Call Info	Script Execution	Status	Events	Events Profile	Results
1	NGAPManagementHandler.gls		RANName: gnb000000001, gNBId: 0x10000001, ConnectionId: 1001	Stop	NG Setup Successful	SendAMFConfigurationUpdate		Pass
2	AMFSessionControl.gls		MSIN: 3012041631	Completed	UE-CONTEXT RELEASED	None		Pass

Stop Stop All Abort Abort All ☒ Show Records ☐ Select Active Call ☐ Auto Trash ☐ Trash ☐ Show Hidden Calls

Save Column Width ☐ Show Latest

gNB 0 AMF

InitialUEMessage, Registration Request 16:50:59.792000

DownlinkNASTransport, Authentication Request 16:50:59.821000

UplinkNASTransport, Authentication Response 16:50:59.991000

DownlinkNASTransport, Security Mode Command 16:51:00.006000

UplinkNASTransport, Security Mode Complete 16:51:00.188000

InitialContextSetupRequest, Registration Accept 16:51:00.210000

InitialContextSetupResponse 16:51:00.390000

UplinkNASTransport, Registration Complete 16:51:00.395000

UplinkNASTransport, UL NAS Transport, Session Establishment Request 16:51:00.400000

PDUSessionResourceSetupRequest, DL NAS Transport, Session Establishment Accept 16:51:00.423000

PDUSessionResourceSetupResponse 16:51:00.590000

UplinkNASTransport, UL NAS Transport, Session Establishment Request 16:51:00.596000

PDUSessionResourceSetupRequest, DL NAS Transport, Session Establishment Accept 16:51:00.606000

PDUSessionResourceSetupResponse 16:51:00.690000

UplinkNASTransport, UL NAS Transport, Session Release Request 16:52:00.783000

PDUSessionResourceReleaseCommand, DL NAS Transport, Session Release Command 16:52:00.809000

PDUSessionResourceReleaseResponse 16:52:00.884000

UplinkNASTransport, UL NAS Transport, Session Release Complete 16:52:00.984000

UplinkNASTransport, UL NAS Transport, Session Release Request 16:52:00.988000

PDUSessionResourceReleaseCommand, DL NAS Transport, Session Release Command 16:52:00.989000

PDUSessionResourceReleaseResponse 16:52:01.085000

UplinkNASTransport, UL NAS Transport, Session Release Complete 16:52:01.088000

Find

NGAP-PDU

InitiatingMessage = InitiatingMessage (0)

ProcedureCode = 15 id-InitialUEMessage

procedureCriticality = 0 reject(0)

Value

InitialUEMessage

ProtocolIE-Container = 6 Items

Item

ProtocolIE-Field

ProtocolIE-ID = 86 id-RAN-UE-NGAP-ID

procedureCriticality = 0 reject(0)

Value

RAN-UE-NGAP-ID = 2

Item

ProtocolIE-Field

ProtocolIE-ID = 38 id-NAS-PDU

procedureCriticality = 0 reject(0)

Value

NAS-PDU = x7E004171000D0100F11000000000321406

Item

ProtocolIE-Field

ProtocolIE-ID = 121 id-UserLocationInformation

procedureCriticality = 0 reject(0)

Value

UserLocationInformation

UserLocationInformationNR = userLocationInformationNR (1)

nr-CGI

plmnIdentity

MCC = 001

MNC = 01

nrCellIdentity

taI = 000000000

plmnIdentity

MCC = 001

MNC = 01

taI = x000001

Item

ProtocolIE-Field

ProtocolIE-ID = 90 id-RRCEstablishmentCause

procedureCriticality = 0 reject(0)

Value

RRCEstablishmentCause = 3 mo-Signalling(3)

Item

ProtocolIE-Field

ProtocolIE-ID = 3 id-AMFSetID

procedureCriticality = 0 reject(0)

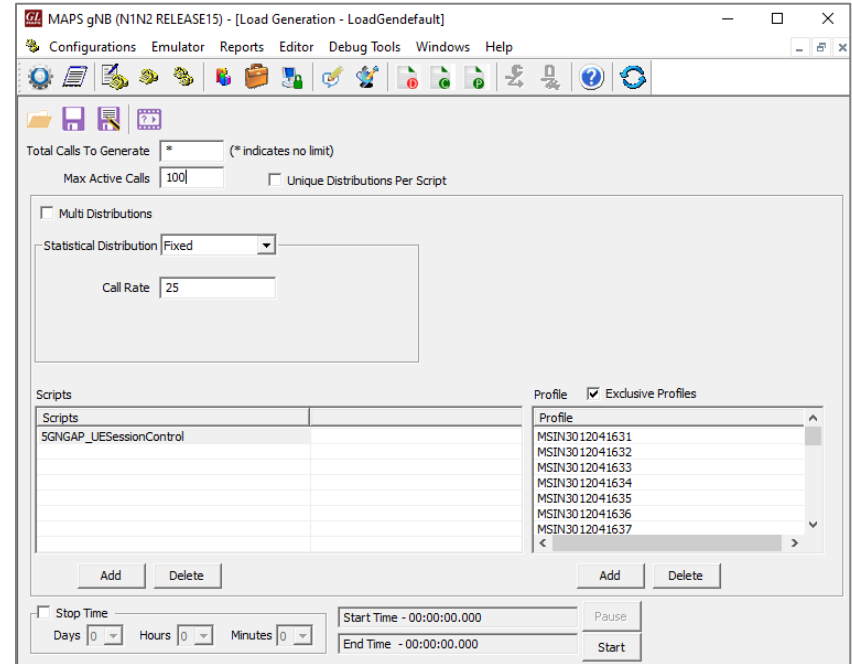
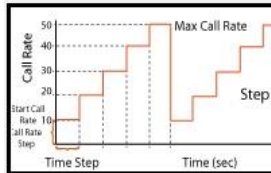
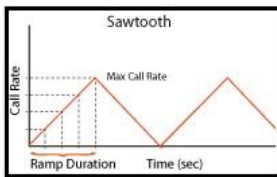
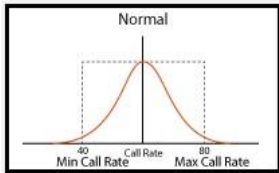
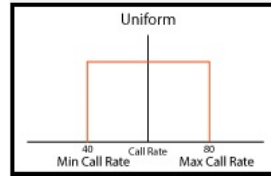
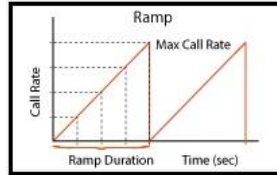
Activate Window

GL Communications

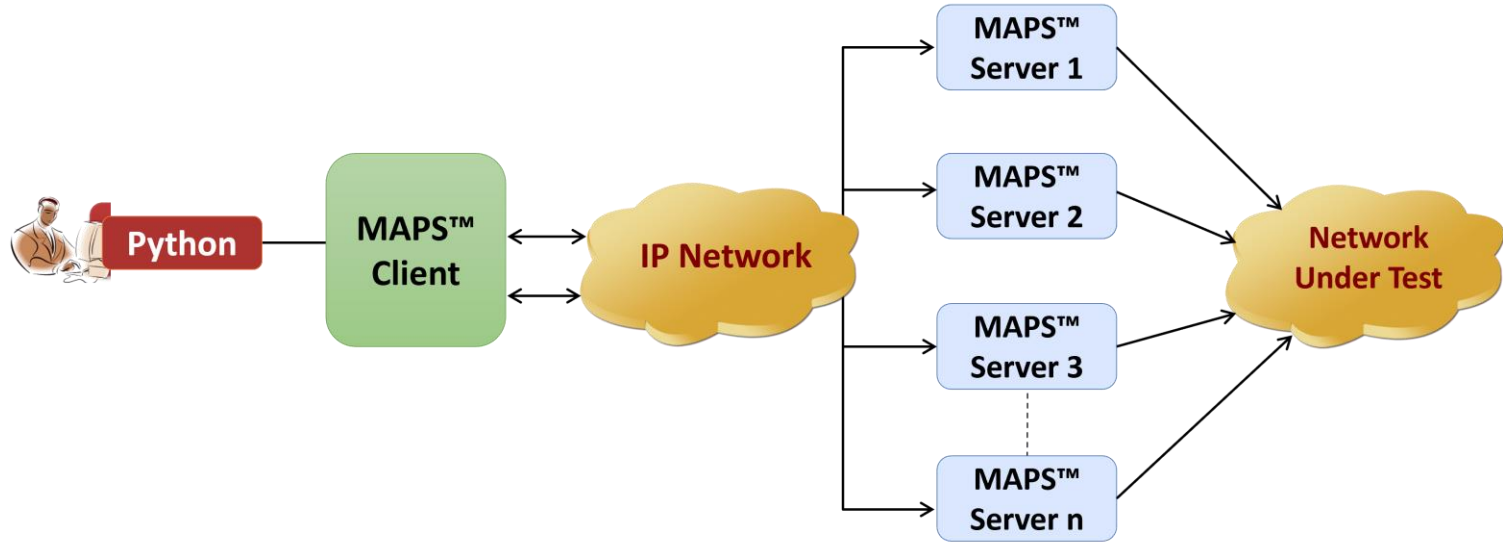
Initialisation Errors Error Events Captured Errors Link Status Up=1 Down=0

Load Generation

- Stability/Stress and Performance testing using Load Generation
- Different types of Load patterns to distribute load
- User can load multiple patterns for selected script
- User configurable Test Duration, CPS, Maximum and Minimum Call Rate etc.



MAPS™ API Architecture



- API wraps our proprietary scripting language in standard languages familiar to the user:
 - Python
- Clients and Servers support a “Many-to-Many” relationship, making it very easy for users to develop complex test cases involving multiple signaling protocols

CLI/API Support

Python Client

```
Python 3.7.5 Shell
File Edit Shell Debug Options Window Help
Python 3.7.5 (tags/v3.7.5:5802a39a0b, Oct 15 2019, 00:11:34) [MSC v.1916 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
* RESTART: C:\Program Files\GL Communications Inc\MAPSS5G-NIN2\MAPSCLI\PythonClient\examples\gNB\NIN2_PlaceCall_Default.py
NIN2 Server Connection... True
NIN2 Testbed Starting ... 0
True
NIN2 Profile Loading... True
Check NGAP Link Status... True
NIN2 Call Initiated... True
Call Status... RM-REGISTER-INITIATED
Call Status... REGISTRATION-COMPLETED

PDU Session Initiate for Dnn lms ... True
PDU Session Established

PDU Session Initiate for Dnn internet ... True
PDU Session Established

De-register Initiated... True
Total Signalling Messages: 25
NIN2 Call's LastMSGrcv.....
Time Stamp      Route      Message
12:11:23.444    <-      UEContextReleaseCommand, , ,

***** NIN2 Call Message Flow *****
CLI(gNB)      <->      DUT(AMF)

Time Stamp      Route      Message
12:11:10.624    ->      InitialUEMessage, Registration Request
12:11:11.537    <-      DownlinkNASTransport, Authentication Request, ,
12:11:11.552    ->      UplinkNASTransport, Authentication Response
12:11:11.637    <-      DownlinkNASTransport, Security Mode Command, ,
12:11:11.650    ->      UplinkNASTransport, Security Mode Complete
12:11:11.903    <-      InitialContextSetupRequest, Registration Accept, ,
12:11:11.929    ->      InitialContextSetupResponse
12:11:11.937    ->      UplinkNASTransport, Registration Complete
12:11:12.046    <-      UplinkNASTransport, UL NAS Transport, Session Establishment Request
12:11:12.244    <-      PDUResourceSetupRequest, DL NAS Transport, , Session Establishment Accept
12:11:12.324    ->      PDU Session Resource Setup Response
12:11:12.464    <-      UplinkNASTransport, UL NAS Transport, Session Establishment Request
12:11:12.639    <-      PDUResourceSetupRequest, DL NAS Transport, , Session Establishment Accept
12:11:12.707    ->      PDU Session Resource Setup Response
12:11:12.859    <-      UplinkNASTransport, UL NAS Transport, Session Release Request
12:11:12.946    <-      PDUResourceReleaseCommand, DL NAS Transport, , Session Release Command
12:11:12.959    ->      PDU Session Resource Release Response
12:11:12.969    <-      UplinkNASTransport, UL NAS Transport, Session Release Complete
12:11:12.983    <-      UplinkNASTransport, UL NAS Transport, Session Release Request
12:11:12.945    <-      PDUResourceReleaseCommand, DL NAS Transport, , Session Release Command
12:11:12.955    ->      PDU Session Resource Release Response
12:11:12.962    <-      UplinkNASTransport, UL NAS Transport, Session Release Complete
12:11:12.993    <-      UplinkNASTransport, Deregistration Request
12:11:12.944    <-      UEContextReleaseCommand, , ,
12:11:12.953    ->      UEContextReleaseComplete
NIN2 Script Stopping... True
NIN2 Server Disconnecting... True
>>>

***** RESTART: C:\Program Files\GL Communications Inc\MAPSS5G-NIN2\MAPSCLI\PythonClient\examples\gNB\NIN2_PlaceCall_Default.py *****
```

MAPS™ CLI Server

```
CLI MapsCLI gNB (NIN2 RELEASE17)
File Edit View
View Latest Command

1 :: 2024-2-19 12:19:37.252000 : Start "TestBedDefault.xml" # "gNB[0].gNBIPAddress[0]"="192.168.12.28","TypeOfUESimulation"="XML";
1 :: 2024-2-19 12:19:51.469000 : LoadProfile "UE_Profiles.xml"
1 :: 2024-2-19 12:19:59.012000 : StartScript 1 "SGNGAP_UESessionControl.gls" "MSIN3012041631" 1 "MSIN"=(binarystring)3012041631,"TMSI"=(binarystring)001013012041631,"
1 :: 2024-2-19 12:20:01.201000 : UserEvent 1 "IsTransportUp";
1 :: 2024-2-19 12:20:03.600000 : UserEvent 1 "StartRegistration";
1 :: 2024-2-19 12:20:05.250000 : UserEvent 1 "SessionEstablish";
1 :: 2024-2-19 12:20:05.580000 : UserEvent 1 "SessionEstablish";
1 :: 2024-2-19 12:20:15.852000 : UserEvent 1 "DeRegister";
1 :: 2024-2-19 12:20:26.244000 : UserEvent 1 "GetMessageCount";
1 :: 2024-2-19 12:20:26.349000 : UserEvent 1 "GetLastReceivedMessage";
1 :: 2024-2-19 12:20:26.454000 : UserEvent 1 "GetMessageCount";
1 :: 2024-2-19 12:20:26.574000 : UserEvent 1 "GetMessageInfo" # "Index"=0;
1 :: 2024-2-19 12:20:26.679000 : UserEvent 1 "GetMessageInfo" # "Index"=1;
1 :: 2024-2-19 12:20:26.783000 : UserEvent 1 "GetMessageInfo" # "Index"=2;
1 :: 2024-2-19 12:20:26.888000 : UserEvent 1 "GetMessageInfo" # "Index"=3;
1 :: 2024-2-19 12:20:27.008000 : UserEvent 1 "GetMessageInfo" # "Index"=4;
1 :: 2024-2-19 12:20:27.113000 : UserEvent 1 "GetMessageInfo" # "Index"=5;
1 :: 2024-2-19 12:20:27.218000 : UserEvent 1 "GetMessageInfo" # "Index"=6;
1 :: 2024-2-19 12:20:27.338000 : UserEvent 1 "GetMessageInfo" # "Index"=7;
1 :: 2024-2-19 12:20:27.443000 : UserEvent 1 "GetMessageInfo" # "Index"=8;
1 :: 2024-2-19 12:20:27.548000 : UserEvent 1 "GetMessageInfo" # "Index"=9;
1 :: 2024-2-19 12:20:27.653000 : UserEvent 1 "GetMessageInfo" # "Index"=10;
1 :: 2024-2-19 12:20:27.773000 : UserEvent 1 "GetMessageInfo" # "Index"=11;
1 :: 2024-2-19 12:20:27.878000 : UserEvent 1 "GetMessageInfo" # "Index"=12;
1 :: 2024-2-19 12:20:28.103000 : UserEvent 1 "GetMessageInfo" # "Index"=13;
1 :: 2024-2-19 12:20:28.208000 : UserEvent 1 "GetMessageInfo" # "Index"=14;
1 :: 2024-2-19 12:20:28.313000 : UserEvent 1 "GetMessageInfo" # "Index"=15;
1 :: 2024-2-19 12:20:28.418000 : UserEvent 1 "GetMessageInfo" # "Index"=16;
1 :: 2024-2-19 12:20:28.538000 : UserEvent 1 "GetMessageInfo" # "Index"=17;
1 :: 2024-2-19 12:20:28.643000 : UserEvent 1 "GetMessageInfo" # "Index"=18;
1 :: 2024-2-19 12:20:28.748000 : UserEvent 1 "GetMessageInfo" # "Index"=19;
1 :: 2024-2-19 12:20:28.973000 : UserEvent 1 "GetMessageInfo" # "Index"=20;
1 :: 2024-2-19 12:20:29.078000 : UserEvent 1 "GetMessageInfo" # "Index"=21;
1 :: 2024-2-19 12:20:29.198000 : UserEvent 1 "GetMessageInfo" # "Index"=22;
1 :: 2024-2-19 12:20:29.303000 : UserEvent 1 "GetMessageInfo" # "Index"=23;
1 :: 2024-2-19 12:20:29.408000 : UserEvent 1 "GetMessageInfo" # "Index"=24;
1 :: 2024-2-19 12:20:30.728000 : StopScript 1;
ServerLog:errCode = 0,errString = connection has been gracefully closed for ClientId =1

NUM
```

Thank you