
MAPS™ - M3UA Conformance Testing

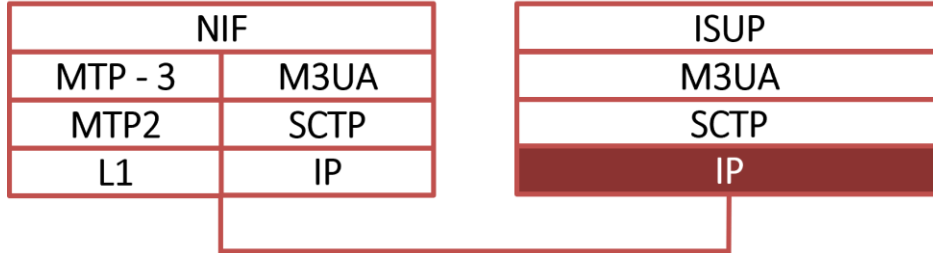


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Features

- Emulates Application Server Process (ASP) and Signaling Gateway Process (SGP) nodes
- Generates and process M3UA (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
- Provides Call Statistics and Events Status
- Automation, Remote access, and Schedulers to run tests 24/7

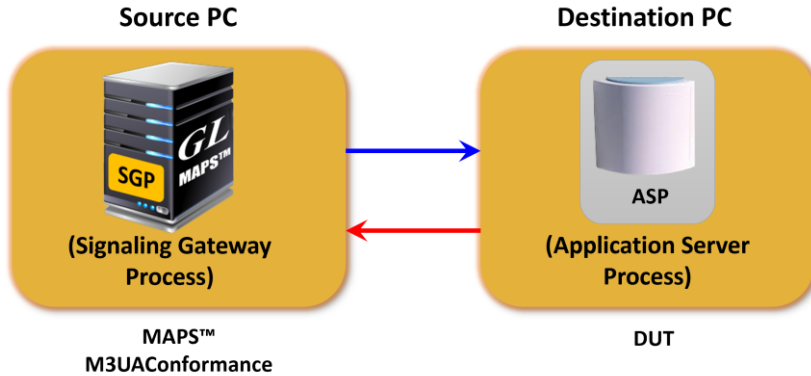
Protocol Stack Specification



Supported Protocols	Standard / Specification Used
NIF - Nodal Interworking Function	TS 102 381 [1]
M3UA	RFC 3332
SCTP - Stream Control Transmission Protocol	RFC 4960
MTP2 - Message Transfer Part 2	Q.703, ITU-T Blue Book
MTP3 - Message Transfer Part 3	Q.703, ITU-T Blue Book

MAPS™ M3UA Conformance Testing – Use Cases

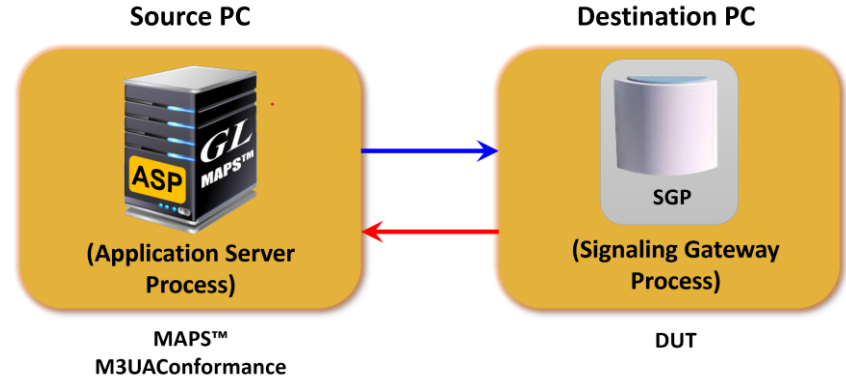
ASP Testing



- In SGP Testing, SGP node is the device under test and the other node ASP interacting with the SGP node is acting as MAPS™ M3UA Conformance

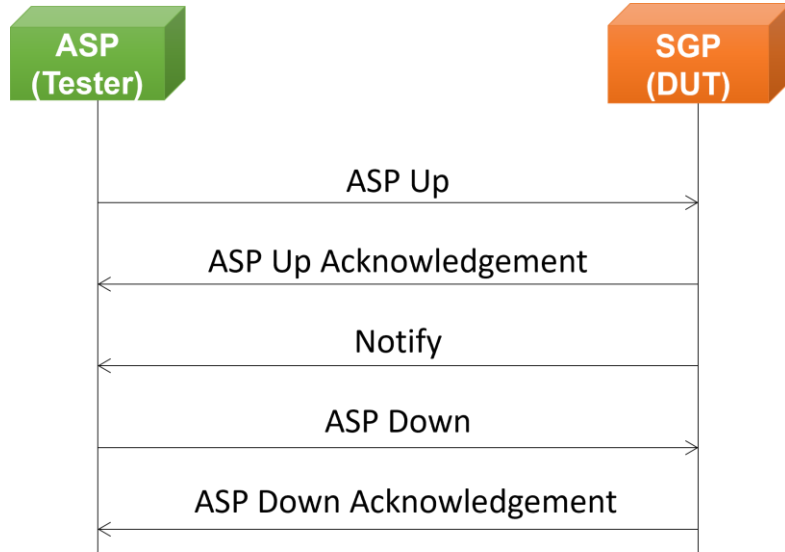
- In ASP Testing, ASP node is the device under test and the other node SGP interacting with the ASP node is acting as MAPS™ M3UA Conformance

SGP Testing

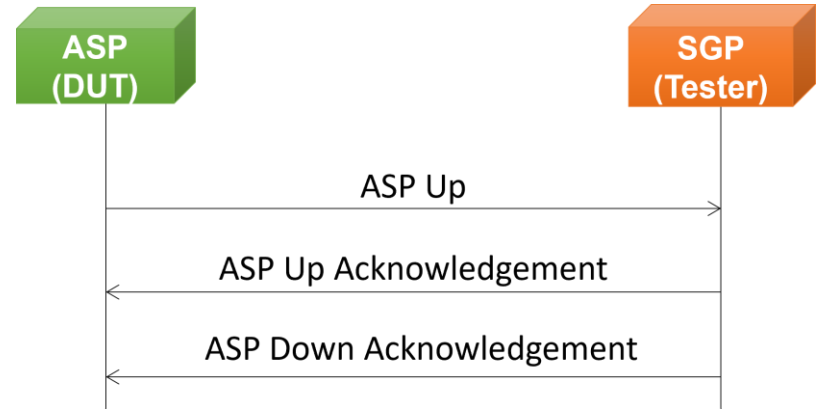


MAPS™ M3UA Conformance Call Scenarios

M3UA_Conformance_ASP Testcase



M3UA_Conformance_SGP Testcase



Testbed Configurations

The screenshot displays the MAPS ASP (M3UAConformance ITU) configuration window. The window title is "MAPS ASP (M3UAConformance ITU) - [Testbed Setup - TestBedDefault]". The menu bar includes "Configurations", "Emulator", "Reports", "Editor", "Debug Tools", "Windows", and "Help". The toolbar contains various icons for file operations and system functions. The main area is divided into a tree view on the left and a table on the right. The tree view shows the configuration hierarchy, and the table lists the configuration items and their values. A "Start" button and an "Edit" button are visible at the bottom right of the table.

Config	Value	<input checked="" type="checkbox"/> Enable
ASP Configuration		
ASP Simulation Mode	Simulation Mode	
ASPs	1	
ASPs 1		
SCTP Association		
ASP SCTP Mode	Client	
ASP IP Address	192.168.12.83	
ASP Source Port	2904	
SGP IP Address	192.168.12.82	
SGP Port	2905	
ASP Identifier Configuration		
Include ASP Identifier	True	
ASP Identifier	1	
Traffic Mode Configuration		
Include Traffic Mode Type	True	
Traffic Mode Type	Override	
AS Configuration		
Dynamic Registration	True	
Include Routing Context in ASP Active	True	
SS7 Link Configuration		
SS7 Links	1	
SS7 Links 1		
Local RK Identifier	2	
M3UA Routing Context Indicator	Present	
M3UA Routing Context	1	
M3UA NetworkAppearance Indicator	Present	
M3UA Network Appearance	1	
Network Indicator	International	
Signaling Link Selection	0	
Destination Point Code	1.1.1	
Conformance Test Configuration	ASP_Conformance_Profiles.x...	

Profile Configurations

MAPS ASP (M3UAConformance ITU) - [Profile Editor -ASP_Conformance_Profiles]

Configurations Emulator Reports Editor Debug Tools Windows Help

Profiles (Edit-F2)

#	Profile	Value	Enable
1	M3UASGPASPSMV001	M3UA Conformance	<input checked="" type="checkbox"/>
2	M3UASGPASPSMV003	Test Case Name	M3UA_SGP_ASPSM_V_001
3	M3UASGPASPSMV005	Invalid ASPID for M3UASGPASPSMV009	
4	M3UASGPASPSMV009	ASP ID	6
5	M3UASGPASPSMI001	Invalid Version for M3UASGPASPSMI001	
6	M3UASGPASPSMI002	Invalid M3UA Version	2
7	M3UASGPASPSMI003	Heartbeatdata for ASPTMV010 and ASPTMV011	
8	M3UASGPASPSMI004	Heartbeat Data	98745623
9	M3UASGPASPSMI004	RC not provisioned at SGP for M3UASGPASPTMI005	
10	M3UASGPASPSMO001	Not Provisioned RC	2
11	M3UASGPASPSMO003	Dynamic Routing Key for M3UASGPRKMW002	
12	M3UASGPASPSMO004	Dynamic Routing Key	5
13	M3UASGPASPTMV001	Invalid Routing Key for M3UASGPRKMI003	
14	M3UASGPASPTMV003	Invalid Routing Key	25
15	M3UASGPASPTMV005	Invalid DPC for M3UASGPRKMI004	
16	M3UASGPASPTMV006	Invalid DPC	6.6.6
17	M3UASGPASPTMV008	Invalid NA for M3UASGPRKMI005	
18	M3UASGPASPTMV010	Invalid NA	13
19	M3UASGPASPTMV011	Invalid RC for M3UASGPRKMI007 and M3UASGPRKMI021	
20	M3UASGPASPTMV013	Invalid RC	30
21	M3UASGPASPTMV014	Non Existing Routing Key for M3UASGPRKMI008	
22	M3UASGPASPTMV015	Non existing Routing	15

Insert Delete Clear

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

Global Configuration

MAPS ASP (M3UAConformance ITU) - [Global Configuration -Globalprofile]

Configurations Emulator Reports Editor Debug Tools Windows Help

Config Value

Global Configuration

- M3UA Parameters
 - Dynamic Registration Not Required
- M3UA Specific Timers
 - TackTimer in msec 2000
 - TbeatTimer in msec 30000
- Export Message Sequence Disable
- User Intervention Disable
- User Intervention Timer in sec 60

Enable

Apply Edit

Initialisation Errors Error Events Cap

Incoming Call Handler Configuration

The screenshot shows the 'Incoming Call Handlers Configuration' window in MAPS SGP. The window title is 'MAPS SGP (M3UAConformance ITU) - [Incoming Call Handlers Configuration - conformance]'. The menu bar includes 'Configurations', 'Emulator', 'Reports', 'Editor', 'Debug Tools', 'Windows', and 'Help'. The toolbar contains icons for settings, help, and other functions.

Message Name	Script Name
ASP Up	Conformance.gls
ASP Down	Conformance.gls
ASP Active	Conformance.gls
ASP Inactive	Conformance.gls

Scripts

- Conformance.gls

Sequence
 Random

Up
Down

Add Delete

Add Delete

Apply Scripts Clear Scripts

Initialisation Errors Error Events

Script Editor

```
ScriptEditor - [C:\Program Files\GL Communications Inc\MAPS-M3UAConformance\MAPS\M3UAConformance\ITU\ASP\Scripts\M3UA_ASP.gls]
File View Edit Shortcuts Tools Help
Command Window
M3UA_ASP
1 //-----#M3UA_Profiles.xml#-----to force load the profile
2 //***** M3UA Procedures *****
3
4 // Initialize Variables
5
6 KeyIdentifier: ConnectionId;
7 HeartbeatData=(hexstring)0x5634523;
8 Data = (hexstring)0x1234;
9 ASPid=1;
10 StreamID=0;
11 ASPState = "ASP DOWN";
12 MsgHandler : "M3UA MessageHandler";
13 Status = "Waiting For SCTP status UP";
14
15 if (MsgReceived)
16     wait;
17 else
18     if (Invoked==1)
19         ConnectionIdentifier=1;
20         aspid= (ConnectionIdentifier-1);
21     endif
22     aspid = 0;
23     ConnectionId= _ASP[aspid].ConnectionId;
24     SCTPStatus = $_ASP[aspid].SCTPStatus;
25     DynamicRegistration= ASP[aspid].DynamicRegistration;
26     if (SCTPStatus != "UP")
27         ErrorLog ("SCTP is not UP on this Connection : ", ConnectionId);
28         exit;
29     else
30         goto "Send ASPUP";
31     endif
32 endif
33
34 wait;
35
36 "M3UA MessageHandler":
37     goto MessageType : "Default";
38
Ready | Line Count - 1084 | Line: 50 Col: 30
```

Message Editor

The screenshot shows the 'Message Editor - Untitled' window. The menu bar includes 'File', 'View', 'Direction', 'Tools', and 'Help'. The toolbar contains icons for file operations and help. The main area is divided into a tree view on the left and a parameter list on the right. The tree view shows 'MTP3 User Adaptation' expanded with sub-items: 'Version', 'Message Class', 'ASPTM Message Type', 'Message Length', 'Parameter Tag', 'Parameter Length', and 'Parameter Value'. The parameter list on the right shows various MTP3 User Adaptation parameters, with 'ASP Traffic Maintenance (ASPTM) = 4' selected. Below this, a hex dump shows the binary representation of these parameters.

ASP Traffic Maintenance (ASPTM) = 4
Management (MGMT) = 0
Transfer = 1
SS7 Signalling Network Management (SSNM) = 2
ASP State Maintenance (ASPSM) = 3
ASP Traffic Maintenance (ASPTM) = 4
Routing Key Management (RKM) = 9
Q.921/Q.931 Boundary Primitives Transport (QPTM) = 5
MTP2 User Adaptation (MAUP) = 6
Connectionless = 7
Connection-Oriented = 8
Interface Identifier Management (IIM) = 10
Reserved by the IETF = 11
Reserved for IETF-Defined Message Class extensions = 128

```
===== MTP3 User Adaptation Layer =====  
0000 Version = 00000001 Release 1.0  
0002 Message Class = 00000100 ASP Traffic Maintenance (ASPTM)  
0003 ASPTM Message Type = 00000000 Reserved  
0004 Message Length = 12 (x0000000C)  
Parameter Tag = x0000 Unknown  
Parameter Length = 4 (x00004)
```

MAPS™ M3UA Conformance – Call Emulation

Call Generation

The screenshot displays the MAPS ASP (M3UAConformance ITU) software interface. The main window title is "MAPS ASP (M3UAConformance ITU) - [Call Generation -All_ASP_Testcases]". The menu bar includes "Configurations", "Emulator", "Reports", "Editor", "Debug Tools", "Windows", and "Help". The toolbar contains various icons for file operations and execution.

The main area shows a table with the following data:

Sr...	Script Name	Profile	Call Info	Script Execution	Status	Events	Events Profile	Result	Total Iterations	Completed Iterat
1	M3UA_Conformance_ASP.gls	M3UASGPASPSMV001	1	Start	ASP Down	None		Pass	1	1
2	M3UA_Conformance_ASP.gls	M3UASGPASPSMV003		Start		None		Unknown	1	0
3	M3UA_Conformance_ASP.gls	M3UASGPASPSMV005		Start		None		Unknown	1	0
4	M3UA_Conformance_ASP.gls	M3UASGPASPSMV009		Start		None		Unknown	1	0

Below the table are buttons for "Add", "Delete", "Insert", "Refresh", "Start", "Start All", "Stop", "Stop All", "Abort", and "Abort All".

The "Message Sequence" tab is active, showing a sequence diagram between "ASPT(ester)" and "SGP(DUT)". The sequence includes:

- ASP Up (17:23:48.268000)
- ASP Up Acknowledgement (17:23:48.351000)
- Notify (17:23:48.352000)
- ASP Down (17:23:58.354000)
- ASP Down Acknowledgement (17:23:58.458000)

The "Find" tab shows the following MTP3 User Adaptation Layer parameters:

```
===== MTP3 User Adaptation Layer ===== =
0000 Version = 00000001 Release 1.0
0002 Message Class = 00000011 ASP State Mainte
0003 ASPSM Message Type = 00000001 ASP Up
0004 Message Length = 16 (x00000010)
    ASP Identifier =
0008 Tag = x0011 ASP Identifier
000A Length = 8 (x0008)
000C ASP Identifier = 1 (x00000001)
```

The status bar at the bottom shows: "Initialisation Errors", "Error Events", "Captured Errors", and "Link Status Up=1 Down=0".

MAPS™ M3UA Conformance – Call Emulation

Call Reception

S...	Script Name	Profile	Call Info	Script Execution	Status	Events	Events Profile	Results
1	Check_SCTP_Status.gls			Stop		None		Unknown
2	M3UA_SGP.gls		1000	Completed	ASP Down	None		Pass

ASP[Tester]	SGP[DUT]
	ASP Up 17:43:39.332000
ASP Up Acknowledgement 17:43:39.333000	
	Notify 17:43:39.334000
ASP Down 17:43:49.452000	
ASP Down Acknowledgement 17:43:49.453000	

```

===== MTP3 User Adaptation Layer =====
0000 Version = 00000001 Re
0002 Message Class = 00000011 AS
0003 ASPSM Message Type = 00000001 AS
0004 Message Length = 16 (x00000000)
      ASP Identifier =
0008 Tag = x0011 ASP I
000A Length = 8 (x0008)
000C ASP Identifier = 1 (x00000000)
    
```

Thank you