

Introduction

The PGW Functional Tester is an automated test suite for testing the correctness of an implementation of LTE PDN Gateway (PGW) according to the 3GPP TS 23.401, TS 23.402, TS 29.274 (GTPv2-C), TS 29.281 (GTPv1-U), TS 29.212 (Gx), TS 32.296 (OCS), TS 29.275 (PMIP), TS 23.272 (CSFB), TS 29.274, TS 29.213, RFC 3588 (DRA), TS 32.299 (OFCS) and other relevant Release 10 standards.

Test Coverage

There are total 352 test cases with “E-UTRAN Initial Attach”, “Online Charging”, “Offline Charging”, “UE Requested Bearer Resource Handling”, “Network Initiated Dedicated Bearer Handling”, “ENodeB Requested Bearer Release”, “GERAN Initial Attach”, “UTRAN Initial Attach”, “E-UTRAN To UTRAN Iu Mode Inter RAT Handover” and other procedures.

The test cases exercise the following interfaces:

- 1) S5, S8
- 2) Gx Gy and Gz
- 3) SGi

Version 10.1.0.7 Beta

Release Date: June 06, 2014

Component Versions

- **PGW Functional Tester : 10.1.0.7**
- **Test Executive : 2.0.0.23**
- **Test Builder version : 5.0.0.3**

Total number of available test cases: 352

Major modifications:

- Test cases restructured based on scenarios instead of interfaces.
- Testbed Setup dialog clean-up and re-organization.
- Test Builder to allow users to create their own test cases.
- User plane validation is added for most of the test scenarios.

List of new test cases

Test case/section number	Test case / section description	No of Test cases	Comments
4.3	APN Restriction	3	
21	CS Fallback And SRVCC Related Procedures	7	
22	Path Failure Handling	2	
23.9	Usage Monitoring	6	
24.3	Session Charging With Reservation	6	
29.2	Roaming	2	
29.4	Trace Activation and Deactivation	1	

Test case/section number	Test case / section description	No of Test cases	Comments
31	UE Time Zone	9	
15.1.2	MS initiated dedicated bearer modification	4	
15.1.3	MS initiated dedicated bearer deletion	3	
15.2.1	NW initiated dedicated bearer creation	2	
15.2.2	NW initiated dedicated bearer modification	2	
15.2.3	NW initiated dedicated bearer deletion	2	
29	PMIP Based S5 or S8 Procedure	7	
30.1	Error Indication	2	
32	DRA in EPC	7	
26.3	Bidirectional Data Transfer (GATE function)	2	
	Total	67	

Resolved Issues

Issue #	Summary
8451	New test case required with charging characteristics in Create Session Request.
8940	For Test Case 2.2.5.1, Rule activation and Rule Deactivation time values should be user configurable.
8934	For test case id's 2.2.1.19 to 2.2.2.2, Re-activation and Re-deactivation Time should be user configurable.

Known Issues

Issue #	Summary
9509	For Add Packet Filter/ Replace Packet Filter operation, Parameter List is not added in Bearer Resource Command. Affected test cases are 15.1.2.1, 15.1.2.2, 6.2.3, 6.2.4, 6.4.14 and 6.4.13.

Version 10.0.0.6 Beta

Release Date: December 06, 2013

Component Versions

- **PGW Functional Tester : 10.0.0.6**
- **Test Executive : 2.0.0.22**
- **PGW Functional Tester Test Procedures : 10.0.2**

Total Available Test cases : 316 (Total : 321, Unavailable Mode : 5)

Resolved Issues

Issue #	Summary
8928	TC 2.x: Test PCRF should send configurable Charging-Rule-Name in the CCA message.
8929	TC 2.2.1.7: Tester should send a Create Session Request during Initial Attach with IMEI and wait for CCR with User Equipment type set to IMEI from SGW DUT.
8933	TC 2.2.1.13: Tester should wait for APN AMBR in bits/second format.
8960	TC 2.2.2: Test PCRF should send packet filter in Charging Rule Install AVP in RAR message.
8964	Test SGW should send configurable 'UE Time Zone' value in the Create Session Request message.

Known Issues

Issue #	Summary
6155	All the test cases can not be run at a time.
6157	On aborting a test, the FT may become unresponsive.
9049	TC 2.4.2.3 and 2.4.2.4: Test PCRF should send packet filter in Charging Rule Install AVP in RAR message.

Version 10.0.0.4 Beta

Release Date: October 21, 2013

Component Versions

- **PGW Functional Tester : 10.0.0.4**
- **Test Executive : 2.0.0.22**
- **PGW Functional Tester Test Procedures : 10.0.2**

Resolved Issues

Issue #	Summary
8527	TC 2.4.2.5 and 2.4.2.6: Test OFCS should send configurable Acct-Interim-Interval in the ACA message.
7331	TC 2.2.1.9: On receiving a CCR during Initial Attach with CCR type Update-Request and event trigger as UE-IP Address-Allocate, Test PCRF should send CCA.
8425, 8429	TC 2.4.2.2, 2.4.2.3 and 2.4.2.4: On receiving an ACR request initiated for a dedicated bearer charging , the Test OFCS should send an ACA response.
8476	TC 3.2.2.5 and 3.2.4.1: FT should accept valid failure cause value for these test cases.
8450	TC 3.3.1.1 and 3.3.1.3: Test-case displays tcl error "Can't read rule Name: no such variable".

Known Issues

Issue #	Summary
6155	All the test cases can not be run at a time.
6157	On aborting a test, the FT may become unresponsive.
8451	Charging Characteristics in Create Session Request should be configurable.

10.0.0.2 Beta

Release Date: August 16, 2013

Component Versions

- **PGW Functional Tester : 10.0.0.2**
- **Test Executive : 2.0.0.21**
- **PGW Functional Tester Test Procedures : 10.0.1**

New in this release

1. Release 10 compliance.
2. 17 new test cases related to Emergency Session, UE based DHCP based IP Address allocation, Error Indication on S5/S8-U interface.

Resolved Issues

Issue #	Summary
7331	TC 2.2.1.9: Whenever the FT receives CCR with event Trigger set to UP_IP_ADDRESS_ALLOCATE, FT should respond with CCA to DUT.
7710	TC 3.2.3.4: Added a new test case related to TFT operation code "Delete Existing TFT" in the Delete Bearer Request section.
7509	TC 2.4.2.5 & 2.4.2.6: Added 2 new test cases for "Interim Default Accounting Session" and "Interim Network Initiated Dedicated Accounting Session" respectively.
7971	TC 3.3: FT should send 'Flow Description' AVP in 'Flow-Information' AVP in 'Charging-Rule-Definition' AVP in 'Charging-Rule-Install' AVP.

Known Issues

Issue #	Summary
6155	All the test cases can not be run at a time.
6157	On aborting a test, the FT may become unresponsive.

Version 3.1.0.2 Beta**Release Date:** April 26, 2013**New in this release**

1. 3 new test cases related to session based charging on Gz interface (2.4.2.2, 2.4.2.3 and 2.4.2.4)

Version 3.0.0.5 Beta**Release Date:** March 19, 2013**Version 3.0.0.4 Beta****Release Date:** February 01, 2013**Version 3.0.0.1 Beta****Release Date:** October 30, 2012**New in this release**

1. If the "Diameter Session Creation" flag is set to "YES", the tester expects a Capability Exchange Request before the test begins.
2. For the "DL Data Transfer" (4.1.1 section) test cases, route for the simulated UE address with the PGW as the gateway is added and deleted by test scripts.
3. Redundant "UE IP Address" field has been removed from Test Bed Setup "PDN Configuration".
4. More help information added in Test Bed Setup configuration fields.

Version 3.0.0.0 Beta**Release Date:** March 14, 2012**New in this release**

1. Dynamic PCC Rules are supported for all the Test Cases.
2. Non 3GPP Accesses module.
3. Data Transfer module.
4. Serving RNS Relocation
5. Inter SGSN RAU With S4 SGSNs
6. PDP Context Activation
7. Secondary PDP Context Activation

Version 2.0.0.0 Beta**Release Date:** December 29, 2011**New in this release**

2. E-UTRAN To GERAN A Gb Mode Inter RAT Handover
3. E-UTRAN To UTRAN Iu Mode Inter RAT Handover
4. GERAN Initial Attach
5. GERAN A Gb Mode To E-UTRAN Inter RAT Handover
6. UTRAN Initial Attach
7. UTRAN Iu Mode To E-UTRAN Inter RAT Handover