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Core Network and Interoperability Testing (INT);
Diameter Conformance testing for S9 interface;
(3GPP™ Release 10);
Part 2: Test Suite Structure (TSS) and Test Purposes (TP)

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Core Network and Interoperability Testing (INT).

The present document is part 2 of a multi-part deliverable covering the test specifications for the Diameter protocol on the S9 interface, as identified below:

Part 1: "Protocol Implementation Conformance Statement (PICS)";

Part 2: "Test Suite Structure (TSS) and Test Purposes (TP)";

Part 3: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification".

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

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1 Scope

The present document provides the Test Suite Structure (TSS) and Test Purposes (TP) for the test specifications for the Diameter protocol on the S9 interface as specified in ETSI TS 129 215 [1] in compliance with the relevant requirements and in accordance with the relevant guidance given in ISO/IEC 9646-7 [4] and ETSI ETS 300 406 [5].

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

[1] ETSI TS 129 215 (V10.6.0): "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Policy and Charging Control (PCC) over S9 reference point; Stage 3 (3GPP TS 29.215 version 10.6.0 Release 10)".

[2] ETSI TS 103 262-1: " Core Network and Interoperability Testing (INT); Diameter Conformance testing for S9 interface; (3GPP Release 10); Part 1: Protocol Implementation Conformance Statement (PICS)".

[3] ISO/IEC 9646-1: "Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 1: General concepts".

[4] ISO/IEC 9646-7: "Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 7: Implementation Conformance Statements".

[5] ETSI ETS 300 406: "Methods for testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".

[6] IETF RFC 3588: "Diameter Base Protocol".

[7] ETSI TS 129 212 (V10.5.0): "Universal Mobile Telecommunications System (UMTS); LTE; Policy and charging control over Gx/Sd reference point (3GPP TS 29.212 version 10.5.0 Release 10)".

[8] ETSI TS 129 213 (V10.11.0): "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Policy and charging control signalling flows and Quality of Service (QoS) parameter mapping (3GPP TS 29.213 version 10.11.0 Release 10)".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

Not applicable.

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in ETSI TS 129 215 [1] and the following apply:

Abstract Test Method (ATM): Refer to ISO/IEC 9646-1 [3].

Abstract Test Suite (ATS): Refer to ISO/IEC 9646-1 [3].

Implementation Under Test (IUT): Refer to ISO/IEC 9646-1 [3].

Test Purpose (TP): Refer to ISO/IEC 9646-1 [3].

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in ETSI TS 129 215 [1] and the following apply:

TP	Test Purpose
TSS	Test Suite Structure

4 Test Suite Structure (TSS) and Test Purposes (TP)

4.1 Test Suite Structure

4.1.1 TP naming convention

TPs are numbered, starting at 001, within each group. Groups are organized according to the TSS.

Table 1: TP identifier naming convention scheme

Identifier: **<TP>_<iut>_<scope>_<nn>**			
<tp>	=	Test Purpose:	fixed to "TP"
<iut>	=	type of IUT:	HPCRF or VPCRF
<scope>	=	group	MS S9 Message Syntax
			HSE Home Access/S9 Session Establishment
			HSM Home Access/S9 Session Modification
			HPQ Home Access/Provision of QoS Rules
			HST Home Access/S9 Session Termination
			HMB Home Access/Multiple BBERF Handling
			HDS Home Access/Deferred Session Linking Handling
			HSL Home Access/Session Linking Handling When Multiple PDN Connection to a single APN
			VQR Visited Access/QoS and PCC Rules
			VPQ Visited Access/Provision of QoS and PCC Rules
			VST Visited Access/S9 Session/Subsession Termination
			VMB Visited Access/Multiple BBERF Handling
			VRS Visited Access/Rx over S9
			VEH Visited Access/Event Handling
			VDS Visited Access/Deferred Session Linking Handling
			VSL Visited Access/Session Linking Handling When Multiple PDN Connection to a single APN
			VIF Visited Access/IP Flow mobility support
<nn>	=	sequential number	(01 to 99)

4.1.2 Test strategy

As the base standard ETSI TS 129 215 [1] contains no explicit requirements for testing, the TPs were generated as a result of an analysis of the base standard and the PICS specification ETSI TS 103 262-1 [2].

4.1.3 TP structure

Each TP has been written in a manner which is consistent with all other TPs. The intention of this is to make the TPs more readable and checkable. A particular structure has been used which is illustrated in table 2. This table should be read in conjunction with any TP, i.e. please use a TP as an example to facilitate the full comprehension of table 2.

Table 2: Structure of a single TP

TP part	Text	Example
Header	**<Identifier>** **<clause number in base ETSI TS 129 215 [1] >** **<PICS reference>**	see table 1 **clause 4.4.1** **A.2/3**
Summary	*Short free text description of the test objective*	Verify that the IUT can successfully process all mandatory AVPs in a CC-Request received due to IP-CAN session establishment.
Initial condition (optional)	*Free text description of the condition that the IUT has reached before the test purpose applies.*	The IUT has received AF provisions information about the AF signalling flows between UE and AF.
Start point **Stimulus**	Ensure that the IUT in the <state> *see IETF RFC 3588 [6] clause 5.6* *and/or further actions before stimulus* *if the action is sending/receiving* *see below for message structure* <**trigger**>, *see below for message structure* *or* <goal>	 Open state having sent an AA-Request on receipt of a Capabilities-Exchange-Request (see note 2) to require PCC supervision
Reaction	<**action**>. *if the action is sending* *see below for message structure* <next action>, *etc.*	sends, saves, does, etc.
Message structure	<message type> *a)* containing a(n) <avp name> AVP *b)* indicating <coding of the field> and *back to a) or b) (see note 3)*	Capabilities-Exchange-Answer, etc. (see note 2) Vendor-Id, etc.

NOTE 1: Text in italics will not appear in TPs and text between <> is filled in for each TP and may differ from one TP to the next.

NOTE 2: All messages are considered as "valid and compatible" unless otherwise specified in the test purpose. This includes the presence of all mandatory AVPs as specified in IETF RFC 3588 [6] and in ETSI TS 129 215 [1], clause 5.

NOTE 3: An AVP can be embedded into another AVP. This is expressed by indentations, e.g. if Message1 contains AVP1 and AVP2 where AVP1 has AVP3 embedded this will be expressed like this:

```
sends/receives Message 1
    containing AVP1
        containing AVP3
            indicating ...
    containing AVP2
        indicating ...
```

4.2 Test Purposes

4.2.0 PICS references

All PICS items referred to in this clause are as specified in ETSI TS 103 262-1 [2] unless indicated otherwise by another numbered reference. PICS items are only meant for test selection, therefore only PICS items with status optional or conditional are explicitly mentioned.

4.2.1 H-PCRF Role

4.2.1.0 Test Selection

IUT takes the role of the H-PCRF; PICS A.2/1

4.2.1.1 S9 Messages

TP_HPCRF_MS_01	**Standards Reference: 5.5.3**	**PICS item:**
Summary:	Verify that the IUT can successfully process all mandatory AVPs in a CC-Request received due to IP-CAN session establishment.	
Test purpose:	Ensure that the IUT **on receipt of a CC-Request** containing a Session-Id AVP containing an Auth-Application-Id AVP containing an Origin-Host AVP containing an Origin-Realm AVP containing a Destination-Realm AVP containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a CC-Request-Number AVP containing a Subscription-Id AVP containing the user identification containing an IP-CAN-Type AVP containing the type of IP-CAN containing a RAT-Type AVP containing the radio access technology containing a Framed-IP-Address AVP indicating the full IP address of the UE, **sends a CC-Answer** containing a Session-Id AVP containing an Auth-Application-Id AVP containing an Origin-Host AVP containing an Origin-Realm AVP containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a CC-Request-Number AVP containing a Result-Code AVP indicating DIAMETER_SUCCESS.	
Comments:		

4.2.1.2 Home access

4.2.1.2.0 Test Selection

IUT takes the role of the H-PCRF; PICS A.2/1.1

4.2.1.2.1 S9 Session Establishment

TP_HPCRF_HSE_01	**Standards Reference:** **4.5.1.1 and 4.5.2.1 ¶ 19 and** **ETSI TS 129 212 [7], 4a.5.1 ¶ 3**	**PICS item:** **A.3/1**
Summary:	Verify that the IUT can successfully provision QoS rules due to case 2a for S9 session establishment.	
Test purpose:	Ensure that the IUT **on receipt of a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Subscription-Id AVP indicating IMSI containing a AN-GW-Address AVP indicating access network gateway address containing attributes provided by the BBERF **sends a CC-Answer** containing a QoS-Rule-Install AVP containing a Result-Code AVP indicating DIAMETER_SUCCESS.	
Comments:		

TP_HPCRF_HSE_02	**Standards Reference:** **4.5.1.1 and 4.5.2.1 ¶ 20**	**PICS item:** **A.3/1**
Summary:	Verify that the IUT can successfully provision QoS rules in CCA command due to case 2b for S9 session establishment.	
Test purpose:	Ensure that the IUT **on receipt of a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Subscription-Id AVP indicating IMSI containing a AN-GW-Address AVP indicating access network gateway address containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a session-id from Gxx containing a Subsession-Operation AVP indicating ESTABLISHMENT containing attributes provided by the BBERF **sends a CC-Answer** containing a Subsession-Decision-Info AVP containing a QoS-Rule-Install AVP containing a Result-Code AVP indicating DIAMETER_SUCCESS.	
Comments:		

4.2.1.2.2 S9 Session Modification

TP_HPCRF_HSM_01	Standards Reference: 4.5.1.1 and 4.5.2.1 ¶1 9 and ETSI TS 129 212 [7], 4a.5.1 ¶ 7	PICS item:
Summary:	Verify that the IUT can successfully provision QoS rules due to case 2a for S9 session modification.	
Test purpose:	Ensure that the IUT **on receipt of a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a QoS-Rule-Report AVP containing attributes provided by the BBERF **sends a CC-Answer** containing a QoS-Rule-Install AVP containing a Result-Code AVP indicating DIAMETER_SUCCESS.	
Comments:	NOTE: CCR and CCA command with INITIAL_REQUEST exchanged before above check.	

TP_HPCRF_HSM_02	Standards Reference: 4.5.1.1 and 4.5.2.1 ¶ 20 and ETSI TS 129 212 [7], 4a.5.1 ¶ 7	PICS item:
Summary:	Verify that the IUT can successfully provision QoS rules in CCA command due to case 2b for S9 session modification.	
Test purpose:	Ensure that the IUT **on receipt of a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a QoS-Rule-Report AVP containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a session-id from Gxx containing a Subsession-Operation AVP indicating MODIFICATION containing attributes provided by the BBERF **sends a CC-Answer** containing a Subsession-Decision-Info AVP containing a QoS-Rule-Install AVP containing a Result-Code AVP indicating DIAMETER_SUCCESS.	
Comments:	NOTE: CCR and CCA command with INITIAL_REQUEST exchanged before above check.	

TP_HPCRF_HSM_03	**Standards Reference:** **4.5.1.1 and 4.5.2.1 ¶ 21, 22 and ETSI TS 129 212 [7], 4a.5.1 ¶ 7**	**PICS item:**
Summary:	Verify that the IUT in case of incomplete, erroneous or missing information when it is not able to provision a policy decision to a specific subsession sends CC-Answer with appropriate error within Experimental-Result-Code AVP at the command level and Subsession-Decision-Info AVP for each of the rejected subssesions.	
Test purpose:	Ensure that the IUT **on receipt of a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a QoS-Rule-Report AVP containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates an erroneous session-id from Gxx containing a Subsession-Operation AVP indicating MODIFICATION containing attributes provided by the BBERF **sends a CC-Answer** containing an Experimental-Result AVP containing an Experimental-Result-Code AVP indicating DIAMETER_ERROR_SUBSESSION containing a Subsession-Decision-Info AVP containing a Subsession-Id AVP indicating rejected value (containing an Experimental-Result AVP **or** containing a Result-Code AVP).	
Comments:	NOTE 1: CCR and CCA command with INITIAL_REQUEST exchanged before above check. NOTE 2: Case 2b used.	

TP_HPCRF_HSM_04	**Standards Reference:** **4.5.1.1 and 4.5.2.1 ¶ 21, 23 and ETSI TS 129 212 [7], 4a.5.1 ¶ 7**	**PICS item:**
Summary:	Verify that the IUT, in case of incomplete, erroneous or missing information when it is not able to provision a policy decision to any of the subsessions or provision a policy decision at the command level, sends a CC-Answer with appropriate error within Experimental-Result-Code AVP.	
Test purpose:	Ensure that the IUT **on receipt of a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a QoS-Rule-Report AVP containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a session-id from Gxx containing a Subsession-Operation AVP indicating MODIFICATION containing a QoS-Information AVP indicating QoS exceeding the subscriber bandwidth containing attributes provided by the BBERF **sends a CC-Answer** containing an Experimental-Result AVP containing an Experimental-Result-Code AVP indicating DIAMETER_ERROR_INITIAL_PARAMETERS.	
Comments:	NOTE 1: CCR and CCA command with INITIAL_REQUEST exchanged before above check. NOTE 2: Case 2b used.	

4.2.1.2.3 Provision of QoS Rules by the H-PCRF

TP_HPCRF_HPQ_01	Standards Reference: 4.5.2.2 ¶ 3	PICS item: A.4/1
Summary:	Verify that the IUT can successfully provision QoS rules without obtaining a request from the V-PCRF due to case 2a.	
Test purpose:	Ensure that the IUT **to indicate** a request for QoS rules, **sends an RA-Request** containing a QoS-Rule-Install AVP.	
Comments:		

TP_HPCRF_HPQ_02	Standards Reference: 4.5.2.2 ¶ 4	PICS item: A.4/1
Summary:	Verify that the IUT can successfully provision QoS rules without obtaining a request from the V-PCRF due to case 2b.	
Test purpose:	Ensure that the IUT **to indicate** a request for QoS rules, **sends an RA-Request** containing a Subsession-Decision-Info AVP containing a QoS-Rule-Install AVP.	
Comments:		

4.2.1.2.4 S9 Session Termination

TP_HPCRF_HST_01	Standards Reference: 4.5.1.1 and 4.5.2.3 ¶ 2, 3 (item 1)	PICS item: A.3/2
Summary:	Verify that the IUT when it receives CC-Request for S9 session termination sends CC-Answer due to case 2a.	
Test purpose:	Ensure that the IUT **on receipt of a CC-Request** containing a CC-Request-Type AVP indicating TERMINATION_REQUEST containing attributes provided by the BBERF **sends a CC-Answer** containing a Result-Code AVP indicating DIAMETER_SUCCESS.	
Comments:	NOTE: CCR and CCA command with INITIAL_REQUEST exchanged before above check.	

TP_HPCRF_HST_02	Standards Reference: 4.5.1.2 and 4.5.2.3 ¶ 4, 5 (item 2)	PICS item: A.3/2
Summary:	Verify that the IUT when it receives CC-Request for S9 subsession termination sends CC-Answer due to case 2b.	
Test purpose:	Ensure that the IUT **on receipt of a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a subsession-id from Gxx containing a Subsession-Operation AVP indicating TERMINATION **sends a CC-Answer** containing a Subsession-Decision-Info AVP containing a Subsession-Id AVP containing a Result-Code AVP indicating DIAMETER_SUCCESS.	
Comments:	NOTE: CCR and CCA command with INITIAL_REQUEST exchanged before above check.	

TP_HPCRF_HST_03	Standards Reference: 4.5.1.2 and 4.5.2.4 ¶ 3	PICS item: A.3/2
Summary:	Verify that the IUT sends RA-Request to terminate the S9 session towards V-PCRF due to an internal trigger or trigger from the SPR and in case 2a.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 session termination, **sends an RA-Request** containing a Session-Release-Cause AVP.	
Comments:	NOTE: CCR and CCA command with INITIAL_REQUEST exchanged before above check.	

TP_HPCRF_HST_04	Standards Reference: 4.5.1.2 and 4.5.2.4 ¶ 4	PICS item: A.3/2
Summary:	Verify that the IUT sends RA-Request to terminate the S9 session towards V-PCRF due to an internal trigger or trigger from the SPR and in case 2b.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 subsession termination, **sends an RA-Request** containing a Subsession-Decision-Info AVP containing a Session-Release-Cause AVP.	
Comments:	NOTE: CCR and CCA command with INITIAL_REQUEST exchanged before above check.	

4.2.1.2.5 Multiple BBERF Handling

TP_HPCRF_HMB_01	Standards Reference: 4.5.1.4 and 4.5.2.5.2 ¶ 6 and ETSI TS 129 212 [7], 4a.5.7.2	PICS item: A.4/3.1
Summary:	Verify that the IUT can successfully send a CC-Answer in case when request is received for multiple BBERF handling associated with the same IP-CAN session during handover upon Gateway Control Session establishment due to case 2a.	
Test purpose:	Ensure that the IUT **on receipt of a CC-Request** containing a Session-Id AVP indicating existing gateway control session containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Multiple-BBERF-Action AVP indicating ESTABLISHMENT containing a AN-GW-Address AVP **sends a CC-Answer** containing a Result-Code AVP indicating DIAMETER_SUCCESS.	
Comments:	NOTE: CCR and CCA command with INITIAL_REQUEST for old BBERF exchanged before above check.	

TP_HPCRF_HMB_02	**Standards Reference:** **4.5.1.4 and 4.5.2.5.2 ¶ 6 and ETSI TS 129 212 [7], 4a.5.7.2**	**PICS item:** **A.4/3.1**
Summary:	Verify that the IUT can successfully send a CC-Answer in case when request is received for multiple BBERF handling associated with the same IP-CAN session during handover upon Gateway Control Session establishment due to case 2b.	
Test purpose:	Ensure that the IUT **on receipt of a CC-Request** containing a Session-Id AVP indicating existing gateway control session containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a session-id from Gxx containing a Subsession-Operation AVP indicating MODIFICATION containing a Multiple-BBERF-Action AVP indicating ESTABLISHMENT containing a AN-GW-Address AVP **sends a CC-Answer** containing a Result-Code AVP indicating DIAMETER_SUCCESS.	
Comments:	NOTE: CCR and CCA command with INITIAL_REQUEST for old BBERF exchanged before above check.	

TP_HPCRF_HMB_03	**Standards Reference:** **4.5.1.4 and 4.5.2.5.2 ¶ 9 and ETSI TS 129 212 [7], 4a.5.7.2**	**PICS item:** **A.4/3.1**
Summary:	Verify that the IUT can successfully send a CC-Answer in case when request is received for multiple BBERF handling associated with the same IP-CAN session during handover upon Gateway Control Session modification due to case 2a.	
Test purpose:	Ensure that the IUT **on receipt of a CC-Request** containing a Session-Id AVP indicating existing gateway control session containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Multiple-BBERF-Action AVP indicating ESTABLISHMENT containing a AN-GW-Address AVP **sends a CC-Answer** containing a Result-Code AVP indicating DIAMETER_SUCCESS.	
Comments:	NOTE: CCR and CCA command with INITIAL_REQUEST and UPDATE_REQUEST for old BBERF exchanged before above check.	

TP_HPCRF_HMB_04	Standards Reference: 4.5.1.4 and 4.5.2.5.2 ¶ 9 and ETSI TS 129 212 [7], 4a.5.7.2	PICS item: A.4/3.1
Summary:	Verify that the IUT can successfully send a CC-Answer in case when a request is received for multiple BBERF handlings associated with the same IP-CAN session during handover upon Gateway Control Session modification due to case 2b.	
Test purpose:	Ensure that the IUT **on receipt of a CC-Request** containing a Session-Id AVP indicating existing gateway control session containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a session-id from Gxx containing a Subsession-Operation AVP indicating MODIFICATION containing a Multiple-BBERF-Action AVP indicating ESTABLISHMENT containing a AN-GW-Address AVP **sends a CC-Answer** containing a Result-Code AVP indicating DIAMETER_SUCCESS.	
Comments:	NOTE: CCR and CCA command with INITIAL_REQUEST and UPDATE_REQUEST for old BBERF exchanged before above check.	

TP_HPCRF_HMB_05	Standards Reference: 4.5.1.4 and 4.5.2.5.2 ¶ 14, 15 and ETSI TS 129 212 [7], 4a.5.7.2	PICS item: A.4/3.1
Summary:	Verify that the IUT can successfully send a CC-Answer in case when the request is received for multiple BBERF handling associated with the same IP-CAN session during handover upon Gateway Control Session termination due to case 2a.	
Test purpose:	Ensure that the IUT **on receipt of a CC-Request** containing a Session-Id AVP indicating existing gateway control session containing a CC-Request-Type AVP indicating TERMINATION_REQUEST containing a Multiple-BBERF-Action AVP indicating TERMINATION containing a AN-GW-Address AVP **sends a CC-Answer** containing a Result-Code AVP indicating DIAMETER_SUCCESS.	
Comments:	NOTE: CCR and CCA command with INITIAL_REQUEST for old BBERF exchanged before above check.	

TP_HPCRF_HMB_06	Standards Reference: 4.5.1.4 and 4.5.2.5.2 ¶ 14, 16 and ETSI TS 129 212 [7], 4a.5.7.2	PICS item: A.4/3.1
Summary:	Verify that the IUT can successfully send a CC-Answer in case when the request is received for multiple BBERF handling associated with the same IP-CAN session during handover upon Gateway Control Session termination due to case 2b.	
Test purpose:	Ensure that the IUT **on receipt of a CC-Request** containing a Session-Id AVP indicating existing gateway control session containing a CC-Request-Type AVP indicating TERMINATION_REQUEST containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a session-id from Gxx containing a Subsession-Operation AVP indicating MODIFICATION containing a Multiple-BBERF-Action AVP indicating TERMINATION containing a AN-GW-Address AVP **sends a CC-Answer** containing a Result-Code AVP indicating DIAMETER_SUCCESS.	
Comments:	NOTE: CCR and CCA command with INITIAL_REQUEST for old BBERF exchanged before above check.	

TP_HPCRF_HMB_07	Standards Reference: 4.5.1.4 and 4.5.2.5.2 ¶ 20	PICS item: A.4/3.1
Summary:	Verify that the IUT sends RA-Request to terminate the S9 session towards V-PCRF for multiple BBERF handling due to an internal trigger or trigger from the SPR and in case 2a.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 session termination in case of multiple BBERF handling, **sends an RA-Request** containing a Session-Release-Cause AVP containing a Multiple-BBERF-Action AVP indicating TERMINATION containing an AN-GW-Address AVP.	
Comments:	NOTE: CCR and CCA command with INITIAL_REQUEST exchanged before above check.	

4.2.1.3 Visited access

4.2.1.3.0 Test Selection

IUT takes the role of the H-PCRF; PICS A.2/1.2

4.2.1.3.1 QoS and PCC Rules

TP_HPCRF_VQR_01	Standards Reference: 4.5.1.1 and 4.5.3.1 ¶ 2, 6, 7, 8, 13, 14, 15 and ETSI TS 129 212 [7], 4.5.1 (item 2)	PICS item:
Summary:	Verify that the IUT in case of incomplete, erroneous or missing information when it is not able to provision a policy decision to a specific subsession sends CC-Answer with appropriate error within Experimental-Result-Code AVP at the command level and Subsession-Decision-Info AVP for each of the rejected subssesions.	
Test purpose:	Ensure that the IUT **on receipt of a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Charging-Rule-Report AVP containing previously provisioned PCC rule(s) and their status containing an Event-Trigger AVP containing the reason for the IP-CAN session modification containing a Subsession-Enforcement-Info AVP containing an erroneous Subsession-Id AVP indicates a session-id mapped from Gx containing a Subsession-Operation AVP indicating MODIFICATION **sends a CC-Answer** containing an Experimental-Result AVP containing an Experimental-Result-Code AVP indicating DIAMETER_ERROR_SUBSESSION containing a Subsession-Decision-Info AVP containing a Subsession-Id AVP indicating rejected value (containing an Experimental-Result AVP **or** containing a Result-Code AVP).	
Comments:	NOTE: CCR and CCA command with INITIAL_REQUEST exchanged before above check.	

TP_HPCRF_VQR_02	Standards Reference: 4.5.1.1 and 4.5.3.1 ¶ 3, 6, 7, 8, 14, 15 and ETSI TS 129 212 [7], 4a.5.1 ¶ 7	PICS item:
Summary:	Verify that the IUT, in case of incomplete, erroneous or missing information when it is not able to provision a policy decision to a specific subsession, sends CC-Answer with appropriate error within Experimental-Result-Code AVP at the command level and Subsession-Decision-Info AVP for each of the rejected subssesions.	
Test purpose:	Ensure that the IUT **on receipt of a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Charging-Rule-Report AVP containing previously provisioned PCC rule(s) and their status containing an Event-Trigger AVP containing the reason for the IP-CAN session modification containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a session-id mapped from Gxx containing a Subsession-Operation AVP indicating MODIFICATION containing a QoS-Information AVP indicating QoS exceeding the subscriber bandwidth **sends a CC-Answer** containing an Experimental-Result AVP containing an Experimental-Result-Code AVP indicating DIAMETER_ERROR_SUBSESSION	
Comments:	NOTE 1: CCR and CCA command with INITIAL_REQUEST exchanged before above check. NOTE 2: Case 2b used.	

TP_HPCRF_VQR_03	Standards Reference: 4.5.1.1 and 4.5.3.1 ¶ 2, 6, 7, 8, 13, 14, 16 and ETSI TS 129 212 [7], 4.5.1 (item 2)	PICS item:
Summary:	Verify that the IUT, in case of incomplete, erroneous or missing information when it is not able to provision a policy decision to any of the subsessions or provision a policy decision at the command level, sends CC-Answer with appropriate error within Experimental-Result-Code AVP.	
Test purpose:	Ensure that the IUT **on receipt of a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Charging-Rule-Report AVP containing previously provisioned PCC rule(s) and their status containing an Event-Trigger AVP containing the reason for the IP-CAN session modification containing a Subsession-Enforcement-Info AVP containing an erroneous Subsession-Id AVP indicates a session-id mapped from Gx containing a Subsession-Operation AVP indicating MODIFICATION **sends a CC-Answer** containing an Experimental-Result AVP containing an Experimental-Result-Code AVP indicating DIAMETER_ERROR_INITIAL_PARAMETERS containing a Subsession-Decision-Info AVP containing a Subsession-Id AVP indicating rejected value.	
Comments:	NOTE: CCR and CCA command with INITIAL_REQUEST exchanged before above check.	

TP_HPCRF_VQR_04	Standards Reference: 4.5.1.1 and 4.5.3.1 ¶ 3, 6, 7, 8, 14, 16 and ETSI TS 129 212 [7], 4a.5.1 ¶ 7	PICS item:
Summary:	Verify that the IUT, in case of incomplete, erroneous or missing information when it is not able to provision a policy decision to any of the subsessions or provision a policy decision at the command level, sends CC-Answer with appropriate error within Experimental-Result-Code AVP.	
Test purpose:	Ensure that the IUT **on receipt of a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Charging-Rule-Report AVP containing previously provisioned PCC rule(s) and their status containing an Event-Trigger AVP containing the reason for the IP-CAN session modification containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a session-id mapped from Gxx containing a Subsession-Operation AVP indicating MODIFICATION containing a QoS-Information AVP indicating QoS exceeding the subscriber bandwidth **sends a CC-Answer** containing an Experimental-Result AVP containing an Experimental-Result-Code AVP indicating DIAMETER_ERROR_INITIAL_PARAMETERS containing a Subsession-Decision-Info AVP containing a Subsession-Id AVP indicating rejected value.	
Comments:	NOTE 1: CCR and CCA command with INITIAL_REQUEST exchanged before above check. NOTE 2: Case 2b used.	

4.2.1.3.2 Provision of QoS and PCC Rules

TP_HPCRF_VPQ_01	Standards Reference: 4.5.3.2 ¶ 1, 2	PICS item: A.5/6.1
Summary:	Verify that the IUT provisions QoS rules for case 2a in the CC-Answer using PULL procedure.	
Test purpose:	Ensure that the IUT **on receipt of a CC-Request** **sends a CC-Answer** containing a QoS_Rule_Install AVP.	
Comments:		

TP_HPCRF_VPQ_02	Standards Reference: 4.5.3.2 ¶ 1, 2	PICS item: A.5/6.1
Summary:	Verify that the IUT provisions PCC rules for other cases in the CC-Answer using PULL procedure.	
Test purpose:	Ensure that the IUT **on receipt of a CC-Request** **sends a CC-Answer** containing a Subsession-Decision-Info AVP containing a Subsession-Id AVP containing a Charging-Rule-Install AVP.	
Comments:		

TP_HPCRF_VPQ_03	Standards Reference: 4.5.3.2 ¶ 1, 3	PICS item: A.5/6.2
Summary:	Verify that the IUT provisions QoS rules for case 2a in the RA-Request using PUSH procedure.	
Test purpose:	Ensure that the IUT **to indicate** a request to provision QoS rules using PUSH procedure, **sends an RA-Request** containing a QoS_Rule_Install AVP.	
Comments:		

TP_HPCRF_VPQ_04	Standards Reference: 4.5.3.2 ¶ 1, 3	PICS item: A.5/6.2
Summary:	Verify that the IUT provisions PCC rules for other cases in the RA-Request using PUSH procedure.	
Test purpose:	Ensure that the IUT **to indicate** a request to provision PCC rules using PUSH procedure, **sends an RA-Request** containing a Subsession-Decision-Info AVP containing a Subsession-Id AVP containing a Charging-Rule-Install AVP.	
Comments:		

TP_HPCRF_VPQ_05	Standards Reference: 4.5.3.2 ¶ 1, 3	PICS item: A.5/6.2
Summary:	Verify that the IUT is able to remove provisioned PCC rules with the RA-Request using PUSH procedure.	
Test purpose:	Ensure that the IUT **to indicate** a request to provision PCC rules using PUSH procedure, **sends an RA-Request** containing a Subsession-Decision-Info AVP containing a Subsession-Id AVP containing a Charging-Rule-Install AVP **on receipt of an RA-Answer** **sends an RA-Request** containing a Subsession-Decision-Info AVP containing a Subsession-Id AVP containing a Charging-Rule-Remove AVP.	
Comments:		

4.2.1.3.3 S9 Session/Subsession Termination

TP_HPCRF_VST_01	Standards Reference: 4.5.1.1 and 4.5.3.3 ¶ 2, 8	PICS item: A.3/2
Summary:	Verify that the IUT when it receives CC-Request for S9 session termination sends CC-Answer due to case 2a.	
Test purpose:	Ensure that the IUT **on receipt of a CC-Request** containing a CC-Request-Type AVP indicating TERMINATION_REQUEST **sends a CC-Answer** containing a Result-Code AVP indicating DIAMETER_SUCCESS.	
Comments:	NOTE 1: CCR and CCA command with INITIAL_REQUEST exchanged before above check. NOTE 2: AF could be informed over Rx interface about IP-CAN session termination and in this case H-PCRF sends AS-Request towards AF.	

TP_HPCRF_VST_02	Standards Reference: 4.5.1.2 and 4.5.3.3 ¶ 3, 8	PICS item: A.3/2
Summary:	Verify that the IUT when it receives CC-Request for S9 subsession termination sends CC-Answer.	
Test purpose:	Ensure that the IUT **on receipt of a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a subsession-id from Gxx containing a Subsession-Operation AVP indicating TERMINATION **sends a CC-Answer** containing a Subsession-Decision-Info AVP containing a Subsession-Id AVP containing a Result-Code AVP indicating DIAMETER_SUCCESS.	
Comments:	NOTE 1: CCR and CCA command with INITIAL_REQUEST exchanged before above check. NOTE 2: AF could be informed over Rx interface about IP-CAN session termination and in this case H-PCRF sends AS-Request towards AF.	

TP_HPCRF_VST_03	Standards Reference: 4.5.1.2 and 4.5.3.4 ¶ 1 and 4.5.2.4 ¶ 3	PICS item: A.3/2 and A.5/7
Summary:	Verify that the IUT sends RA-Request to terminate the S9 session towards V-PCRF due to an internal trigger or trigger from the SPR and in case 2a.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 session termination, **sends an RA-Request** containing a Session-Release-Cause AVP.	
Comments:	NOTE: CCR and CCA command with INITIAL_REQUEST exchanged before above check.	

TP_HPCRF_VST_04	Standards Reference: 4.5.1.2 and 4.5.3.4 ¶ 1 and 4.5.2.4 ¶ 4	PICS item: A.3/2 and A.5/7
Summary:	Verify that the IUT sends RA-Request to terminate the S9 session towards V-PCRF due to an internal trigger or trigger from the SPR and in case 2b.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 subsession termination, **sends an RA-Request** containing a Subsession-Decision-Info AVP containing a Session-Release-Cause AVP.	
Comments:	NOTE: CCR and CCA command with INITIAL_REQUEST exchanged before above check.	

4.2.2 V-PCRF Role

4.2.2.0 Test Selection

IUT takes the role of the V-PCRF; PICS A.2/2

4.2.2.1 S9 Messages

TP_VPCRF_MS_01	Standards Reference: 5.5.2	PICS item:
Summary:	Verify that the IUT can indicate request for PCC rules at IP-CAN session establishment with a CC-Request.	
Initial condition:		
Test purpose:	Ensure that the IUT **to indicate** a request for PCC rules at IP-CAN session establishment, **sends a CC-Request** containing a Session-Id AVP containing an Auth-Application-Id AVP containing an Origin-Host AVP containing an Origin-Realm AVP containing a Destination-Realm AVP containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a CC-Request-Number AVP.	
Comments:		

4.2.2.2 Home Access

4.2.2.2.0 Test Selection

IUT takes the role of the V-PCRF; PICS A.2/2.1

4.2.2.2.1 S9 Session Establishment

TP_VPCRF_HSE_01	Standards Reference: 4.5.1.1 and 4.5.2.1¶2,4,5 (item 1 with case 2a 1st dashed line) and ETSI TS 129 212 [7], 4a.5.1 ¶ 3 and ETSI TS 129 213 [8], 4.0 ¶ 6	PICS item: A.6/1
Summary:	Verify that the IUT establishes a new S9 session towards H-PCRF in case when IUT receives CCR with CC-Request-type "INITIAL_REQUEST" from BBERF over Gxx interface for home access that cannot be associated with any existing S9 session to the H-PCRF for that UE.	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Subscription-Id AVP indicating IMSI containing a AN-GW-Address AVP indicating access network gateway address **not** containing a Called-Station-Id AVP.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 session establishment, **sends a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Subscription-Id AVP indicating IMSI containing a AN-GW-Address AVP indicating access network gateway address containing attributes provided by the BBERF	
Comments:		

TP_VPCRF_HSE_02	**Standards Reference:** **4.5.1.1 and 4.5.2.1 ¶ 2, 7, 8 (item 1 with case 2b) and ETSI TS 129 212 [7], 4a.5.1 ¶ 3 and ETSI TS 129 213 [8], 4.0 ¶ 6**	**PICS item:** **A.6/1**
Summary:	Verify that the IUT establishes a new S9 session towards H-PCRF in case when IUT receives CCR with CC-Request-type "INITIAL_REQUEST" from BBERF over Gxx interface for home access that cannot be associated with any existing S9 session to the H-PCRF for that UE.	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Subscription-Id AVP indicating IMSI containing a AN-GW-Address AVP indicating access network gateway address containing a Called-Station-Id AVP indicating PDN information.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 session establishment, **sends a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Subscription-Id AVP indicating IMSI containing a AN-GW-Address AVP indicating access network gateway address containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a session-id from Gxx containing a Subsession-Operation AVP indicating ESTABLISHMENT containing attributes provided by the BBERF	
Comments:		

4.2.2.2.2 S9 Session Modification

TP_VPCRF_HSM_01	**Standards Reference:** **4.5.1.1 and 4.5.2.1 ¶ 13, 14, 15 (item 2 with case 2a) and ETSI TS 129 212 [7], 4a.5.1 ¶ 7 and ETSI TS 129 213 [8], 4.0 ¶ 6**	**PICS item:**
Summary:	Verify that the IUT sends CC-Request to modify an S9 session towards H-PCRF in case when IUT receives CCR with CC-Request-type "UPDATE_REQUEST" from BBERF over Gxx interface for home access.	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a QoS-Rule-Report AVP **not** containing a Called-Station-Id AVP.	
Test purpose:	Ensure that the IUT **to indicate** a request with updated information, **sends a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a QoS-Rule-Report AVP containing attributes provided by the BBERF	
Comments:		

TP_VPCRF_HSM_02	**Standards Reference:** **4.5.1.1 and 4.5.2.1 ¶ 13, 14, 16 (item 2 with case 2b) and ETSI TS 129 212 [7], 4a.5.1 ¶ 7 and ETSI TS 129 213 [8], 4.0 ¶ 6**	**PICS item:**
Summary:	Verify that the IUT sends CC-Request to modify an S9 session towards H-PCRF in case when IUT receives CCR with CC-Request-type "UPDATE_REQUEST" from BBERF over Gxx interface for home.	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a QoS-Rule-Report AVP containing a Called-Station-Id AVP indicating PDN information.	
Test purpose:	Ensure that the IUT **to indicate** a request with updated information, **sends a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a session-id mapped from Gxx containing a Subsession-Operation AVP indicating MODIFICATION containing a QoS-Rule-Report AVP containing attributes provided by the BBERF	
Comments:		

TP_VPCRF_HSM_03	**Standards Reference:** **4.5.1.1 and 4.5.2.1 ¶ 26, 27, 28 (3rd numbered list item 1a for case 2a) and ETSI TS 129 213 [8], 4.0 ¶ 6**	**PICS item:**
Summary:	Verify that the IUT validates the QoS Rules contained in CC-Answer and if QoS validation fails sends CC-Request due to case 2a to indicate that QoS rules were not accepted.	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a QoS-Rule-Report AVP **not** containing a Called-Station-Id AVP.	
Test purpose:	Ensure that the IUT **to indicate** a request with updated information, **sends a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a QoS-Rule-Report AVP containing attributes provided by the BBERF **on receipt of a CC-Answer** containing a QoS-Rule-Install AVP containing a QoS-Rule-Name AVP indicating not acceptable QoS-Rules **sends a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a QoS-Rule-Report AVP containing a QoS-Rule-Name AVP indicating not accepted QoS-Rules containing a Rule-Failure-Code AVP indicating UNSUCCESSFUL_QOS_VALIDATION containing a QoS-Information AVP indicating the acceptable QoS	
Comments:		

TP_VPCRF_HSM_04	**Standards Reference:** **4.5.1.1 and 4.5.2.1 ¶ 26, 27, 29** **(3rd numbered list item 1b for case 2b)** **and ETSI TS 129 213 [8], 4.0 ¶ 6**	**PICS item:**
Summary:	Verify that the IUT validates the QoS Rules contained in CC-Answer and if QoS validation fails sends CC-Request due to case 2b to indicate that QoS rules were not accepted.	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a QoS-Rule-Report AVP containing a Called-Station-Id AVP indicating PDN information.	
Test purpose:	Ensure that the IUT **to indicate** a request with updated information, **sends a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a session-id from Gxx containing a Subsession-Operation AVP indicating MODIFICATION containing a QoS-Rule-Report AVP containing attributes provided by the BBERF **on receipt of a CC-Answer** containing a QoS-Rule-Install AVP containing a QoS-Rule-Name AVP indicating not acceptable QoS-Rules **sends a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP containing a QoS-Rule-Report AVP containing a QoS-Rule-Name AVP indicating not accepted QoS-Rules containing a Rule-Failure-Code AVP indicating UNSUCCESSFUL_QOS_VALIDATION containing a QoS-Information AVP indicating the acceptable QoS	
Comments:		

4.2.2.2.3 Provision of QoS Rules by the H-PCRF

TP_VPCRF_HPQ_01	Standards Reference: 4.5.2.2 ¶ 7	PICS item:
Summary:	Verify that the IUT validates the QoS Rules contained in RA-Request and if QoS validation fails sends RA-Answer due to case 2a to indicate that QoS rules were not accepted.	
Initial condition:		
Test purpose:	Ensure that the IUT **on receipt of an RA-Request** containing a QoS-Rule-Install AVP indicating not acceptable QoS-Rules, **sends an RA-Answer** containing an Experimental-Result AVP containing an Experimental-Result-Code AVP indicating DIAMETER_PCC_RULE_EVENT containing a QoS-Rule-Report AVP containing a QoS-Rule-Name AVP **or** indicating not accepted QoS-Rules containing a Rule-Failure-Code AVP indicating UNSUCCESSFUL_QOS_VALIDATION containing a QoS-Information AVP indicating the acceptable QoS.	
Comments:		

TP_VPCRF_HPQ_02	Standards Reference: 4.5.2.2 ¶ 8	PICS item:
Summary:	Verify that the IUT validates the QoS Rules contained in RA-Request and if QoS validation fails sends RA-Answer due to case 2b to indicate that QoS rules were not accepted.	
Initial condition:		
Test purpose:	Ensure that the IUT **on receipt of an RA-Request** containing a Subsession-Decision-Info AVP containing a QoS-Rule-Install AVP indicating not acceptable QoS-Rules, **sends an RA-Answer** containing an Experimental-Result AVP containing an Experimental-Result-Code AVP indicating DIAMETER_PCC_RULE_EVENT containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP containing a QoS-Rule-Report AVP containing a QoS-Rule-Name AVP indicating not accepted QoS-Rules containing a Rule-Failure-Code AVP indicating UNSUCCESSFUL_QOS_VALIDATION containing a QoS-Information AVP indicating the acceptable QoS.	
Comments:		

TP_VPCRF_HPQ_03	Standards Reference: 4.5.2.2 ¶ 10	PICS item:
Summary:	Verify that the IUT validates the QoS Rules contained in RA-Request and if QoS validation succeeds sends RA-Answer due to case 2a and with corresponding result code.	
Initial condition:		
Test purpose:	Ensure that the IUT **on receipt of an RA-Request** containing a QoS-Rule-Install AVP indicating acceptable QoS-Rules, **sends an RA-Answer** containing a Result-Code AVP indicating DIAMETER_SUCCESS.	
Comments:		

TP_VPCRF_HPQ_04	Standards Reference: 4.5.2.2 ¶ 11	PICS item:
Summary:	Verify that the IUT validates the QoS Rules contained in RA-Request and if QoS validation succeeds sends RA-Answer due to case 2b and with S9 Subsession-Enforcement-Info AVP for each specific S9 subsession with the corresponding result code.	
Initial condition:		
Test purpose:	Ensure that the IUT **on receipt of an RA-Request** containing a Subsession-Decision-Info AVP containing a QoS-Rule-Install AVP indicating acceptable QoS-Rules, **sends an RA-Answer** containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicating acceptable QoS-Rules containing a Result-Code AVP indicating DIAMETER_SUCCESS.	
Comments:		

4.2.2.2.4 S9 Session Termination

TP_VPCRF_HST_01	Standards Reference: 4.5.1.2 and 4.5.2.3 ¶ 2	PICS item: A.6/2
Summary:	Verify that the IUT sends CC-Request to terminate the last S9 session towards H-PCRF in case when IUT receives CCR with CC-Request-type "TERMINATION_REQUEST" from BBERF over Gxx interface for home access for the roaming user.	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating TERMINATION_REQUEST **not** containing a Called-Station-Id AVP.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 session termination, **sends a CC-Request** containing a CC-Request-Type AVP indicating TERMINATION_REQUEST.	
Comments:		

TP_VPCRF_HST_02	Standards Reference: 4.5.1.2 and 4.5.2.3 ¶ 4	PICS item: A.6/2
Summary:	Verify that the IUT sends CC-Request to update the S9 session towards H-PCRF if there are remaining S9 subsessions for the roaming user for the case when IUT receives CCR with CC-Request-type "TERMINATION_REQUEST" from BBERF over Gxx interface for home access for the roaming user.	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating TERMINATION_REQUEST containing a Called-Station-Id AVP indicating PDN information.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 session update, **sends a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a subsession-id from Gxx containing a Subsession-Operation AVP indicating TERMINATION.	
Comments:		

TP_VPCRF_HST_03	Standards Reference: 4.5.1.2 and 4.5.2.4 ¶ 3	PICS item: A.6/2
Summary:	Verify that the IUT when it receives RA-Request for S9 session termination sends corresponding RA-Answer to H-PCRF for case 2a.	
Initial condition:		
Test purpose:	Ensure that the IUT **on receipt of an RA-Request** containing a Session-Release-Cause AVP **sends an RA-Answer**	
Comments:		

TP_VPCRF_HST_04	Standards Reference: 4.5.1.2 and 4.5.2.4 ¶ 4	PICS item: A.6/2
Summary:	Verify that the IUT when it receives RA-Request for S9 session termination sends corresponding RA-Answer to H-PCRF for case 2b.	
Initial condition:		
Test purpose:	Ensure that the IUT **on receipt of an RA-Request** containing a Subsession-Decision-Info AVP containing a Session-Release-Cause AVP **sends an RA-Answer**	
Comments:		

4.2.2.2.5 Multiple BBERF Handling

TP_VPCRF_HMB_01	Standards Reference: 4.5.1.4 and 4.5.2.5.2 ¶ 3, 4 (item 1 with case 2a)	PICS item: A.7/2.1
Summary:	Verify that the IUT modifies an S9 session towards H-PCRF in case when IUT receives CCR for Gateway Control Session Establishment from a new BBERF over Gxx interface for home access and case 2a applies.	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Subscription-Id AVP indicating IMSI containing a AN-GW-Address AVP indicating access network gateway address **not** containing a Called-Station-Id AVP.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 session modification in case of new BBERF, **sends a CC-Request** containing a Session-Id AVP indicating existing gateway control session containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Multiple-BBERF-Action AVP indicating ESTABLISHMENT containing an AN-GW-Address AVP	
Comments:	NOTE: Two BBERF components are present as a test components.	

TP_VPCRF_HMB_02	Standards Reference: 4.5.1.4 and 4.5.2.5.2 ¶ 3, 5 (item 1 with case 2b)	PICS item: A.7/2.1
Summary:	Verify that the IUT modifies an S9 subsession towards H-PCRF in case when IUT receives CCR for Gateway Control Session Establishment from a new BBERF over Gxx interface for home access and case 2b applies.	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Subscription-Id AVP indicating IMSI containing a AN-GW-Address AVP indicating access network gateway address containing a Called-Station-Id AVP indicating PDN information.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 session modification in case of new BBERF, **sends a CC-Request** containing a Session-Id AVP indicating existing gateway control session containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a session-id from Gxx containing a Subsession-Operation AVP indicating MODIFICATION containing a Multiple-BBERF-Action AVP indicating ESTABLISHMENT containing an AN-GW-Address AVP.	
Comments:	NOTE: Two BBERF components are present as a test components.	

TP_VPCRF_HMB_03	Standards Reference: 4.5.1.4 and 4.5.2.5.2 ¶ 9	PICS item: A.7/2.1
Summary:	Verify that the IUT modifies an S9 session towards H-PCRF in case when IUT receives CCR for Gateway Control Session Modification from a new BBERF over Gxx interface for home access and case 2a applies.	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a QoS-Rule-Report AVP **not** containing a Called-Station-Id AVP.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 session modification in case of new BBERF, **sends a CC-Request** containing a Session-Id AVP indicating existing gateway control session containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Multiple-BBERF-Action AVP indicating ESTABLISHMENT containing an AN-GW-Address AVP	
Comments:	NOTE: Two BBERF components are present as a test components.	

TP_VPCRF_HMB_04	Standards Reference: 4.5.1.4 and 4.5.2.5.2 ¶ 9	PICS item: A.7/2.1
Summary:	Verify that the IUT modifies an S9 subsession towards H-PCRF in case when IUT receives CCR for Gateway Control Session Modification from a new BBERF over Gxx interface for home access and case 2b applies.	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a QoS-Rule-Report AVP containing a Called-Station-Id AVP indicating PDN information.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 session modification in case of new BBERF, **sends a CC-Request** containing a Session-Id AVP indicating existing gateway control session containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a session-id from Gxx containing a Subsession-Operation AVP indicating MODIFICATION containing a Multiple-BBERF-Action AVP indicating ESTABLISHMENT containing an AN-GW-Address AVP.	
Comments:	NOTE: Two BBERF components are present as a test components.	

TP_VPCRF_HMB_05	Standards Reference: 4.5.1.4 and 4.5.2.5.2 ¶ 14, 15	PICS item: A.7/2.1
Summary:	Verify that the IUT terminates an S9 session towards H-PCRF in case when IUT receives CCR for Gateway Control Session Termination from a new BBERF over Gxx interface for home access and case 2a applies.	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating TERMINATION_REQUEST **not** containing a Called-Station-Id AVP.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 session termination in case of new BBERF, **sends a CC-Request** containing a Session-Id AVP indicating existing gateway control session containing a CC-Request-Type AVP indicating TERMINATION_REQUEST containing a Multiple-BBERF-Action AVP indicating TERMINATION containing an AN-GW-Address AVP	
Comments:	NOTE: Two BBERF components are present as a test components.	

TP_VPCRF_HMB_06	Standards Reference: 4.5.1.4 and 4.5.2.5.2 ¶ 14, 16	PICS item: A.7/2.1
Summary:	Verify that the IUT terminates an S9 subsession towards H-PCRF in case when IUT receives CCR for Gateway Control Session Termination from a new BBERF over Gxx interface for home access and case 2b applies.	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating TERMINATION_REQUEST containing a Called-Station-Id AVP indicating PDN information.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 session termination in case of new BBERF, **sends a CC-Request** containing a Session-Id AVP indicating existing gateway control session containing a CC-Request-Type AVP indicating TERMINATION_REQUEST containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a session-id from Gxx containing a Subsession-Operation AVP indicating MODIFICATION containing a Multiple-BBERF-Action AVP indicating TERMINATION containing an AN-GW-Address AVP.	
Comments:	NOTE: Two BBERF components are present as a test components.	

TP_VPCRF_HMB_07	Standards Reference: 4.5.1.4 and 4.5.2.5.2 ¶ 20	PICS item: A.7/2.1
Summary:	Verify that the IUT when receives RA-Request for S9 session termination in case of multiple BBERF handling sends corresponding RA-Answer to H-PCRF.	
Initial condition:		
Test purpose:	Ensure that the IUT **on receipt of an RA-Request** containing a Session-Release-Cause AVP containing a Multiple-BBERF-Action AVP indicating TERMINATION containing an AN-GW-Address AVP **sends an RA-Answer**	
Comments:	NOTE: Two BBERF components are present as a test components.	

4.2.2.2.6 Deferred Session Linking Handling

TP_VPCRF_HDS_01	**Standards Reference:** **4.5.2.6 ¶ 4**	**PICS item:** **A.6/11**
Summary:	Verify that the IUT establishes a new S9 subsession towards H-PCRF in case when IUT receives CCR with CC-Request-type "INITIAL_REQUEST" and Session-Linking-Indicator AVP from BBERF over Gxx interface for home access.	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Subscription-Id AVP containing the user identification containing a AN-GW-Address AVP containing the access network gateway address containing an IP-CAN-Type AVP containing the type of IP-CAN containing a RAT-Type AVP containing the radio access technology containing a Framed-IP-Address AVP indicating the full IP address of the UE containing a Session-Linking-Indicator AVP indicating SESSION_LINKING_DEFERRED.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 subsession establishment with deferred session linking, **sends a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a new subsession-id containing a Subsession-Operation AVP indicating ESTABLISHMENT containing a Session-Linking-Indicator AVP indicating SESSION_LINKING_DEFERRED	
Comments:	NOTE: Two BBERF components are present as a test components.	

4.2.2.2.7 Session Linking Handling When Multiple PDN Connection to a single APN

TP_VPCRF_HSL_01	**Standards Reference:** **4.5.2.7 ¶ 3**	**PICS item:** **A.6/12**
Summary:	Verify that when the IUT receives CCR with CC-Request-type "INITIAL_REQUEST" and PDN-Connection-Id AVP from BBERF over Gxx interface for home access due to case 2b and there is not already established S9 session for this roaming user the IUT establishes a new S9 session towards H-PCRF.	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Subscription-Id AVP containing the user identification containing a AN-GW-Address AVP containing the access network gateway address containing an IP-CAN-Type AVP containing the type of IP-CAN containing a RAT-Type AVP containing the radio access technology containing a Framed-IP-Address AVP indicating the full IP address of the UE containing a PDN-Connection-ID AVP containing a Called-Station-Id AVP indicating PDN information.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 session establishment for roaming user, **sends a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Subscription-Id AVP containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a new S9 subsession-id containing a Subsession-Operation AVP indicating ESTABLISHMENT containing a PDN-Connection-ID AVP containing a Called-Station-Id AVP.	
Comments:	NOTE: Two BBERF components are present as a test components.	

4.2.2.3 Visited access

4.2.2.3.0 Test Selection

IUT takes the role of the V-PCRF; PICS A.2/2.2

4.2.2.3.1 QoS and PCC Rules

TP_VPCRF_VQR_01	Standards Reference: 4.5.1.1 and 4.5.3.1 ¶ 2, 5, 7, 8, 11 and ETSI TS 129 212 [7], 4.5.1 ¶ 3	PICS item: A.8/3
Summary:	Verify that when the IUT receives CCR with CC-Request-type "INITIAL_REQUEST" from PCEF for a roaming user it establishes a new S9 session towards H-PCRF if there is no existing S9 session for this roaming user.	
Initial condition:	The IUT is connected with PCEF over Gx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Subscription-Id AVP containing the user identification containing an IP-CAN-Type AVP containing the type of IP-CAN containing a RAT-Type AVP containing the radio access technology containing a Framed-IP-Address AVP indicating the full IP address of the UE containing a Charging-Rule-Report AVP containing a PCC-Rule-Name AVP.	
Test purpose:	Ensure that the IUT **to indicate** a request for PCC rules for a roaming user, **sends a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Charging-Rule-Report AVP containing a Charging-Rule-Name AVP. containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a session-id mapped from Gx containing a Subsession-Operation AVP indicating ESTABLISHMENT.	
Comments:		

TP_VPCRF_VQR_02	Standards Reference: 4.5.1.1 and 4.5.3.1 ¶ 3, 5, 7, 8 and ETSI TS 129 212 [7], 4a.5.1 ¶ 3	PICS item: A.8/3
Summary:	Verify that when the IUT receives CCR with CC-Request-type "INITIAL_REQUEST" from BBERF in case 2a for a roaming user it establishes a new S9 session towards H-PCRF if there is no existing S9 session for this roaming user.	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Subscription-Id AVP indicating IMSI containing a AN-GW-Address AVP indicating access network gateway address containing a QoS-Rule-Report AVP containing QoS-Rule-Name AVP **not** containing a Called-Station-Id AVP.	
Test purpose:	Ensure that the IUT **to indicate** a request for PCC rules for a roaming user, **sends a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a QoS-Rule-Report AVP containing QoS-Rule-Name AVP.	
Comments:		

TP_VPCRF_VQR_03	Standards Reference: 4.5.1.1 and 4.5.3.1 ¶ 3, 5, 7, 9, 11 and ETSI TS 129 212 [7], 4a.5.1 ¶ 3	PICS item: A.8/3
Summary:	Verify that when the IUT receives CCR with CC-Request-type "INITIAL_REQUEST" from BBERF in case 2b for a roaming user it does not establish a new S9 subsession towards H-PCRF if there is no existing S9 session for this roaming user.	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a QoS-Rule-Report AVP containing QoS-Rule-Name AVP containing a Called-Station-Id AVP indicating PDN information.	
Test purpose:	Ensure that the IUT **to indicate** a request for PCC rules for a roaming user, **sends a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a QoS-Rule-Report AVP containing QoS-Rule-Name AVP containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a session-id mapped from Gxx containing a Subsession-Operation AVP indicating ESTABLISHMENT.	
Comments:		

TP_VPCRF_VQR_04	Standards Reference: 4.5.1.1 and 4.5.3.1 ¶ 2, 6, 7, 8, 13 and ETSI TS 129 212 [7], 4.5.1 (item 2)	PICS item: A.8/3
Summary:	Verify that when the IUT receives CCR with CC-Request-type "UPDATE_REQUEST" from PCEF for a roaming user it updates an existing S9 session towards H-PCRF if there is existing S9 session for this roaming user.	
Initial condition:	The IUT is connected with PCEF over Gx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Charging-Rule-Report AVP containing a PCC-Rule-Name AVP.	
Test purpose:	Ensure that the IUT **to indicate** a request for PCC rules for a roaming user, **sends a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Charging-Rule-Report AVP containing a PCC-Rule-Name AVP containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a session-id mapped from Gx containing a Subsession-Operation AVP indicating MODIFICATION.	
Comments:		

TP_VPCRF_VQR_05	Standards Reference: 4.5.1.1 and 4.5.3.1 ¶ 3, 6, 7, 8 and ETSI TS 129 212 [7], 4a.5.1 ¶ 7	PICS item: A.8/3
Summary:	Verify that when the IUT receives CCR with CC-Request-type "UPDATE_REQUEST" from BBERF in case 2a for a roaming user it updates an existing S9 session towards H-PCRF if there is existing S9 session for this roaming user.	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a QoS-Rule-Report AVP containing QoS-Rule-Name AVP **not** containing a Called-Station-Id AVP.	
Test purpose:	Ensure that the IUT **to indicate** a request for PCC rules for a roaming user, **sends a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a QoS-Rule-Report AVP containing QoS-Rule-Name AVP.	
Comments:		

TP_VPCRF_VQR_06	Standards Reference: 4.5.1.1 and 4.5.3.1 ¶ 3, 6, 7, 9, 13 and ETSI TS 129 212 [7], 4a.5.1 ¶ 7	PICS item: A.8/3
Summary:	Verify that when the IUT receives CCR with CC-Request-type "UPDATE_REQUEST" from BBERF in case 2b for a roaming user it updates an existing S9 session towards H-PCRF if there is existing S9 session for this roaming user.	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a QoS-Rule-Report AVP containing QoS-Rule-Name AVP containing a Called-Station-Id AVP indicating PDN information.	
Test purpose:	Ensure that the IUT **to indicate** a request for PCC rules for a roaming user, **sends a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a QoS-Rule-Report AVP containing QoS-Rule-Name AVP containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a session-id mapped from Gxx containing a Subsession-Operation AVP indicating MODIFICATION.	
Comments:		

4.2.2.3.2 Provision of QoS and PCC Rules

TP_VPCRF_VPQ_01	Standards Reference: 4.5.3.2 ¶ 5	PICS item: A.8/4.2
Summary:	Verify that the IUT checks the QoS information which is provisioned at command level and in case if validation fails it sends corresponding RA-Answer.	
Initial condition:		
Test purpose:	Ensure that the IUT **on receipt of an RA-Request** containing a QoS_Rule_Install AVP containing a QoS_Rule_Name AVP indicating not acceptable QoS information **sends an RA-Answer** containing an Experimental-Result AVP containing an Experimental-Result-Code AVP indicating DIAMETER_PCC_RULE_EVENT containing a QoS-Rule-Report AVP containing a QoS-Rule-Name AVP indicating not acceptable QoS rule containing a Rule-Failure-Code AVP indicating UNSUCCESSFUL_QOS_VALIDATION containing a QoS-Information AVP indicating acceptable QoS	
Comments:		

TP_VPCRF_VPQ_02	Standards Reference: 4.5.3.2 ¶ 7, 14, 16	PICS item: A.8/4.2
Summary:	Verify that the IUT checks the QoS information which is provisioned at subsession level and in case the validation for all subsessions fails sends corresponding RA-Answer.	
Initial condition:		
Test purpose:	Ensure that the IUT **on receipt of an RA-Request** containing a Subsession-Decision-Info AVP containing a Subsession-Id AVP containing a QoS-Rule-Install AVP indicating not acceptable QoS information **sends an RA-Answer** containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicating rejected subsession containing an Experimental-Result AVP containing an Experimental-Result-Code AVP indicating DIAMETER_PCC_RULE_EVENT containing a QoS-Rule-Report AVP containing a QoS-Rule-Name AVP indicating not acceptable QoS rule containing a Rule-Failure-Code AVP indicating UNSUCCESSFUL_QOS_VALIDATION containing a QoS-Information AVP indicating acceptable QoS (containing an Experimental-Result AVP indicating DIAMETER_ERROR_SUBSESSION **or** containing a Result-Code AVP indicating DIAMETER_ERROR_SUBSESSION).	
Comments:		

4.2.2.3.3 S9 Session/Subsession Termination

TP_VPCRF_VST_01	Standards Reference: 4.5.1.2 and 4.5.3.3 ¶ 2	PICS item: A.8/5
Summary:	Verify that the IUT sends CC-Request to terminate S9 session or the last S9 subsession towards H-PCRF in case when IUT receives CCR with CC-Request-type "TERMINATION_REQUEST" from PCEF over Gx interface for visited access for the roaming user.	
Initial condition:	The IUT is connected with PCEF over Gx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating TERMINATION_REQUEST.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 session termination or last S9 subsession termination, **sends a CC-Request** containing a CC-Request-Type AVP indicating TERMINATION_REQUEST.	
Comments:	NOTE: Received indication of an IP-CAN Session Termination from PCEF.	

TP_VPCRF_VST_02	Standards Reference: 4.5.1.2 and 4.5.3.3 ¶ 2	PICS item: A.8/5
Summary:	Verify that the IUT sends CC-Request to terminate S9 session or the last S9 subsession towards H-PCRF in case when IUT receives CCR with CC-Request-type "TERMINATION_REQUEST" from BBERF over Gxx interface for visited access for the roaming user.	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating TERMINATION_REQUEST**.**	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 session termination or last S9 subsession termination, **sends a CC-Request** containing a CC-Request-Type AVP indicating TERMINATION_REQUEST.	
Comments:	NOTE: Received indication of an IP-CAN Session Termination from BBERF.	

TP_VPCRF_VST_03	Standards Reference: 4.5.1.2 and 4.5.3.3 ¶ 3	PICS item: A.8/5
Summary:	Verify that the IUT sends CC-Request to update the S9 subsession towards H-PCRF if there are remaining S9 subsessions for the roaming user for the case when IUT receives CCR with CC-Request-type "TERMINATION_REQUEST" from BBERF over Gxx interface for visited access for the roaming user.	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating TERMINATION_REQUEST.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 session update, **sends a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a subsession-id from Gxx containing a Subsession-Operation AVP indicating TERMINATION.	
Comments:		

TP_VPCRF_VST_04	Standards Reference: 4.5.1.2 and 4.5.3.4 ¶ 1 and 4.5.2.4 ¶ 3	PICS item:
Summary:	Verify that the IUT when it receives RA-Request for S9 session termination it sends corresponding RA-Answer to H-PCRF.	
Initial condition:		
Test purpose:	Ensure that the IUT **on receipt of an RA-Request** containing a Session-Release-Cause AVP **sends an RA-Answer**	
Comments:		

TP_VPCRF_VST_05	Standards Reference: 4.5.1.2 and 4.5.3.4 ¶ 1 and 4.5.3.4 ¶ 4	PICS item:
Summary:	Verify that the IUT when it receives RA-Request for S9 subsession termination it sends corresponding RA-Answer to H-PCRF for case 2b.	
Initial condition:		
Test purpose:	Ensure that the IUT **on receipt of an RA-Request** containing a Subsession-Decision-Info AVP containing a Session-Release-Cause AVP **sends an RA-Answer**	
Comments:		

4.2.2.3.4 Multiple BBERF Handling

TP_VPCRF_VMB_01	Standards Reference: 4.5.3.5 ¶ 6 and ETSI TS 129 212 [7], 5.3.7 value (21)	PICS item:
Summary:	Verify that the IUT when it receives an IP-CAN session modification from PCEF due to handover with event trigger set to AN_GW_CHANGE it sends a CCR message to H-PCRF with the same Event-Trigger AVP.	
Initial condition:	The IUT is connected with PCEF over Gx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Charging-Rule-Report AVP containing previously provisioned PCC rule(s) and their status containing an Event-Trigger AVP indicating AN_GW_CHANGE containing an AN-GW-Address AVP.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 session modification in case of event trigger, **sends a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Charging-Rule-Report AVP containing previously provisioned PCC rule(s) and their status containing an Event-Trigger AVP indicating AN_GW_CHANGE containing an AN-GW-Address AVP.	
Comments:		

TP_VPCRF_VMB_02	Standards Reference: 4.5.3.5 ¶ 6 and ETSI TS 129 212 [7], 5.3.7 value (7)	PICS item:
Summary:	Verify that the IUT when it receives an IP-CAN session modification from PCEF due to handover with event trigger set to IP-CAN_CHANGE sends a CCR message to H-PCRF with the same Event-Trigger AVP.	
Initial condition:	The IUT is connected with PCEF over Gx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Charging-Rule-Report AVP containing previously provisioned PCC rule(s) and their status containing an Event-Trigger AVP indicating IP-CAN_CHANGE containing an IP-CAN-Type AVP containing a RAT-Type AVP.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 session modification in case of event trigger, **sends a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Charging-Rule-Report AVP containing previously provisioned PCC rule(s) and their status containing an Event-Trigger AVP indicating IP-CAN_CHANGE containing an IP-CAN-Type AVP containing a RAT-Type AVP.	
Comments:		

4.2.2.3.5 Deferred Session Linking Handling

TP_VPCRF_VDS_01	Standards Reference: 4.5.3.7 ¶ 3	PICS item: A.6/11
Summary:	Verify that the IUT does not send a CCR to H-PCRF when IUT receives a CCR for Gateway Control Session Establishment including Session-Linking-Indicator AVP set to value "SESSION_LINKING_DEFERRED" from new BBERF related with an existing Gateway Control session.	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Subscription-Id AVP containing the user identification containing a AN-GW-Address AVP containing the access network gateway address containing an IP-CAN-Type AVP containing the type of IP-CAN containing a RAT-Type AVP containing the radio access technology containing a Framed-IP-Address AVP indicating the full IP address of the UE containing a Session-Linking-Indicator AVP indicating SESSION_LINKING_DEFERRED **sends a CC-Answer**.	
Test purpose:	Ensure that the IUT does **not send a CC-Request.**	
Comments:		

TP_VPCRF_VDS_02	Standards Reference: 4.5.3.7 ¶ 4	PICS item: A.6/11
Summary:	Verify that the IUT sends a CCR to H-PCRF to modify the S9 subsession when IUT receives the CCR for IP-CAN session modification that has the same values in the Subscription-Id AVP and Called-Station-Id AVP as the new Gateway Control session	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Subscription-Id AVP containing the user identification containing a Called-Station-Id AVP.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 subsession modification with deferred session linking, **sends a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates already allocated subsession-id containing a Subsession-Operation AVP indicating MODIFICATION.	
Comments:		

TP_VPCRF_VDS_03	Standards Reference: 4.5.3.7 ¶ 5	PICS item: A.6/11
Summary:	Verify that the IUT sends a CCR to H-PCRF to establish a new S9 subsession identifier when IUT receives the CCR for IP-CAN session establishment that has the same values in the Subscription-Id AVP and Called-Station-Id AVP as the new Gateway Control session.	
Initial condition:	The IUT is connected with BBERF over Gxx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Subscription-Id AVP containing the user identification containing a AN-GW-Address AVP containing the access network gateway address containing an IP-CAN-Type AVP containing the type of IP-CAN containing a RAT-Type AVP containing the radio access technology containing a Framed-IP-Address AVP indicating the full IP address of the UE containing a Called-Station-Id AVP.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 subsession modification with deferred session linking, **sends a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates new subsession-id containing a Subsession-Operation AVP indicating ESTABLISHMENT.	
Comments:		

4.2.2.3.6 Session Linking Handling When Multiple PDN Connection to a single APN

TP_VPCRF_VSL_01	**Standards Reference:** **4.5.3.8 ¶ 3**	**PICS item:** **A.6/12**
Summary:	Verify that when the IUT receives CCR with CC-Request-type "INITIAL_REQUEST" and PDN-Connection-Id AVP from PCEF for visited access due to case 2b and there is not already established S9 session for this roaming user it establishes a new S9 session towards H-PCRF.	
Initial condition:	The IUT is connected with PCEF over Gx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Subscription-Id AVP containing the user identification containing an IP-CAN-Type AVP containing the type of IP-CAN containing a RAT-Type AVP containing the radio access technology containing a Framed-IP-Address AVP indicating the full IP address of the UE containing a PDN-Connection-ID AVP containing a Called-Station-Id AVP indicating PDN information.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 session establishment for roaming user, **sends a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Subscription-Id AVP containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a new S9 subsession-id containing a Subsession-Operation AVP indicating ESTABLISHMENT **not** containing a PDN-Connection-ID AVP.	
Comments:		

4.2.2.3.7 IP flow mobility support

TP_VPCRF_VIF_01	**Standards Reference:** **4.5.3.9 ¶ 2**	**PICS item:**
Summary:	Verify that when the IUT receives a CCR command for IP-CAN Session establishment with the Routing-Rule-Install AVP from the PCEF it sends CCR to H-PCRF to established a new S9 subsession.	
Initial condition:	The IUT is connected with PCEF over Gx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Subscription-Id AVP containing the user identification containing an IP-CAN-Type AVP containing the type of IP-CAN containing a RAT-Type AVP containing the radio access technology containing a Framed-IP-Address AVP indicating the full IP address of the UE containing a Routing-Rule-Install AVP containing one or more Routing-Rule-Definition AVPs containing a Routing-Filter AVP.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 session establishment for IP flow mobility, **sends a CC-Request** containing a CC-Request-Type AVP indicating INITIAL_REQUEST containing a Subscription-Id AVP containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a new S9 subsession-id containing a Subsession-Operation AVP indicating ESTABLISHMENT containing a Routing-Rule-Install AVP.	
Comments:	NOTE: V-PCRF knows that AN_GW_CHANGE or IP-CAN_CHANGE event trigger is installed on H-PCRF.	

TP_VPCRF_VIF_02	**Standards Reference:** **4.5.3.9 ¶ 3**	**PICS item:**
Summary:	Verify that when the IUT receives a CCR command for IP-CAN Session modification with the Routing-Rule-Install AVP from the PCEF it sends CCR to H-PCRF to modify S9 subsession.	
Initial condition:	The IUT is connected with PCEF over Gx interface and **receive a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Subscription-Id AVP containing the user identification containing an IP-CAN-Type AVP containing the type of IP-CAN containing a RAT-Type AVP containing the radio access technology containing a Framed-IP-Address AVP indicating the full IP address of the UE containing a Routing-Rule-Remove AVP containing an Event-Trigger AVP indicating ROUTING RULE CHANGE.	
Test purpose:	Ensure that the IUT **to indicate** a request for S9 session establishment for IP flow mobility, **sends a CC-Request** containing a CC-Request-Type AVP indicating UPDATE_REQUEST containing a Subscription-Id AVP containing a Subsession-Enforcement-Info AVP containing a Subsession-Id AVP indicates a new S9 subsession-id containing a Subsession-Operation AVP indicating MODIFICATION containing a Routing-Rule-Remove AVP containing an Event-Trigger AVP indicating ROUTING RULE CHANGE.	
Comments:	NOTE: V-PCRF knows that AN_GW_CHANGE or IP-CAN_CHANGE event trigger is installed on H-PCRF.	

History

Document history		
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