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3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Framework for Gq'/Rx Harmonization (Release 8)



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Contents

Foreword	7
Introduction	7
1 Scope	7
2 References.....	7
3 Definitions, symbols and abbreviations	8
3.1 Definitions	8
3.3 Abbreviations.....	8
4 Comparison of Functionalities	8
4.1 Functionality: Basis Reservation and Admission Procedures.....	8
4.1.1 General.....	8
4.1.2 Description for both Gq' and Rx Reference Points	9
4.1.3 Comparison of Functional Procedures	9
4.1.3.1 General.....	9
4.1.3.2 Functional Procedure: Initial Admission and Reservation	9
4.1.3.2.1 General.....	9
4.1.3.2.2 Comparison of the Initial Admission and Reservation Functional Procedure on Rx and Gq'.....	9
4.1.3.2.2.1 Support on Rx	9
4.1.3.2.2.2 Support on Gq'	10
4.1.3.2.2.3 Comparison of the Initial Admission and Reservation functional procedure	12
4.1.3.2.3 Comparison of Functional Parameters for the Initial Admission and Reservation functional procedure.....	13
4.1.3.3 Functional Procedure: Modification Procedure	15
4.1.3.3.1 General.....	15
4.1.3.3.2 Comparison of the Modification Functional Procedure on Rx and Gq'	15
4.1.3.3.2.1 Support on Rx	15
4.1.3.3.2.2 Support on Gq'	15
4.1.3.3.2.3 Comparison of the Modification functional procedure	15
4.1.3.3.3 Comparison of Functional Parameters for the Modification functional procedure	15
4.1.3.4 Functional Procedure: Termination	17
4.1.3.4.1 General.....	17
4.1.3.4.2 Comparison of the Termination Functional Procedure on Rx and Gq'	17
4.1.3.4.2.1 Support on Rx	17
4.1.3.4.2.2 Support on Gq'	17
4.1.3.4.2.3 Comparison of the Termination functional procedure	17
4.1.3.4.3 Comparison of Functional Parameters for the functional Termination procedure	17
4.1.3.5 Functional Procedure: Subscription to Notification of IP-CAN session and bearer events.....	17
4.1.3.5.1 General.....	17
4.1.3.5.2 Comparison of the subscription and notifications of IP-CAN Session and Bearer events Functional Procedure on Rx and Gq'	18
4.1.4 Selected Proposal for Harmonization of functionality Basis Reservation and Admission Procedures	18
4.2 Functionality: NAPT Control.....	18
4.2.1 General.....	18
4.2.2 Description for both Gq' and Rx Reference Points	19
4.2.3 Comparison of Functional Procedures	19
4.2.3.1 Functional Procedure: NAPT Binding Creation.....	19
4.2.3.1.1 General.....	19
4.2.3.1.2 Comparison of the NAPT Binding Creation Functional Procedure on Rx and Gq'	19
4.2.3.1.2.1 Support on Rx	19
4.2.3.1.2.2 Support on Gq'	19
4.2.3.1.2.3 Comparison of the NAPT Binding Creation functional procedure	20
4.2.3.1.3 Comparison of Functional Parameters for the NAPT Binding Creation functional procedure	20
4.2.3.2 Functional Procedure: NAPT Binding Modification	20
4.2.3.2.1 General.....	20
4.2.3.2.2 Comparison of NAPT Binding Modification Functional Procedure on Rx and Gq'	21

4.2.3.2.2.1	Support on Rx	21
4.2.3.2.2.2	Support on Gq'	21
4.2.3.2.2.3	Comparison of the NAPT Binding Modification functional procedure	21
4.2.3.2.3	Comparison of Functional Parameters for the NAPT Binding Modification functional procedure	21
4.2.4	Selected Proposal for Harmonization of the NAT Control functionality	22
4.3	Functionality: Soft-State Model	22
4.3.1	General	22
4.3.2	Description for both Gq' and Rx Reference Points	22
4.3.3	Comparison of Functional Procedures	22
4.3.3.1	Functional Procedure: Initial Admission in the Soft-State model	22
4.3.3.1.1	General	22
4.3.3.1.2	Comparison of Initial Admission Functional Procedure in the Soft-State model on Rx and Gq'	22
4.3.3.1.2.1	Support on Rx	22
4.3.3.1.2.2	Support on Gq'	22
4.3.3.1.2.3	Comparison of Initial Admission functional procedure in the Soft-State model	23
4.3.3.1.3	Comparison of Functional Parameters for the Initial Admission functional procedure in the Soft-State model	23
4.3.3.2	Functional Procedure: Refresh of a temporary session	23
4.3.3.2.1	General	23
4.3.3.2.2	Comparison of the Refresh Functional Procedure on Rx and Gq'	23
4.3.3.2.2.1	Support on Rx	23
4.3.3.2.2.2	Support on Gq'	24
4.3.3.2.2.3	Comparison of the Refresh functional procedure	24
4.3.3.2.3	Comparison of Functional Parameters for the Refresh functional procedure	24
4.3.3.3	Functional Procedure: Imminent termination notification	24
4.3.3.3.1	General	24
4.3.3.3.2	Comparison of the Imminent termination notification Functional Procedure on Rx and Gq'	24
4.3.3.3.2.1	Support on Rx	24
4.3.3.3.2.2	Support on Gq'	24
4.3.3.3.2.3	Comparison of the Imminent Termination Notification functional procedure	25
4.3.3.3.3	Comparison of Functional Parameters for the Imminent Termination Notification functional procedure	25
4.3.3.4	Functional Procedure: Notification of expired Session	25
4.4.3.4.1	General	25
4.3.3.4.2	Comparison of the Notification of expired Session Functional Procedure on Rx and Gq'	25
4.3.3.4.2.1	Support on Rx	25
4.3.3.4.2.2	Support on Gq'	25
4.3.3.4.2.3	Comparison of the Notification of Expired Session functional procedure	25
4.3.3.4.3	Comparison of Functional Parameters for the Notification of Expired Session functional procedure	26
4.3.4	Selected Proposal for the Harmonization of the Soft-State model functionality	26
4.4	Functionality: Support of Emergency Calls	26
4.4.1	General	26
4.4.2	Description for both Gq' and Rx Reference Points	26
4.4.3	Comparison of Functional Procedures	26
4.4.3.1	Functional Procedure: Initial Admission and Reservation	26
4.4.3.1.1	General	26
4.4.3.1.2	Comparison of the support of the emergency calls within the initial admission and reservation procedure on Rx and Gq'	26
4.4.3.1.2.1	Support on Rx	26
4.4.3.1.2.2	Support on Gq'	26
4.4.3.1.2.3	Comparison of the support of the emergency calls within the initial admission and reservation procedure	27
4.4.3.1.3	Comparison of Functional Parameters for the support of emergency calls	27
4.4.3.2	Functional Procedure: Modification	27
4.5	Functionality: Overbooking Control	27
4.5.1	General	27
4.5.2	Description for both Gq' and Rx Reference Points	27
4.5.3	Comparison of Functional Procedures	27
4.5.3.1	General	27
4.5.3.2	Functional Procedure: Initial Reservation	28

4.5.3.2.1	Comparison of the overbooking functionality within the initial reservation procedure Rx and Gq'	28
4.5.3.2.1.1	Support on Rx	28
4.5.3.2.1.2	Support on Gq'	28
4.5.3.2.1.3	Comparison of the overbooking functionality within the initial reservation procedure between Gq' and Rx	28
4.5.3.3	Functional Procedure: Modification	28
4.5.3.4	Comparison of Functional Parameters for the overbooking functionality	28
4.5.4	Selected Proposal for Harmonization of overbooking indicator	28
4.6	Functionality: Policy Context Selection	29
4.6.1	General	29
4.6.2	Description for both Gq' and Rx Reference Points	29
4.6.3	Comparison of Functional Procedures	29
4.6.3.1	Functional Procedure: Policy Context Selection	29
4.6.3.1.1	General	29
4.6.3.1.2	Comparison of Policy Context Selection on Rx and Gq'	29
4.6.3.1.2.1	Support on Rx	29
4.6.3.1.2.2	Support on Gq'	29
4.6.3.1.2.3	Comparison of Policy Context Selection	29
4.6.3.1.3	Comparison of Functional Parameters for Policy Context Selection	30
4.7	Functionality: Error Reporting	30
4.7.1	General	30
4.7.2	Description for both Gq' and Rx Reference Points	30
4.7.3	Comparison of Functional Procedures	30
4.7.3.1	Functional Procedure: Error Reporting	30
4.7.3.1.1	General	30
4.7.3.1.2	Comparison of the Error Reporting Functional Procedure on Rx and Gq'	30
4.8	Void	31
5	Overall Harmonization	31
6	Functionalities and Procedures in support of Migration	31
6.1	General	31
6.2	Migration in case of full harmonization	31
6.2.1	Introduction	31
6.2.2	Profile selection	32
6.2.3	Use of the selected profile	34
6.2.3.1	General	34
6.2.3.2	Parameters selection	34
6.2.3.3	Sequencing of requests and responses	34
6.2.4	Architectural impacts	35
6.2	Migration in case of partial harmonization	35
7	General Conclusions	35
Annex A (informative): Documentation of Analysis		35
A.1	Functionality Basis Reservation and Admission Procedures	35
A.1.1	General	35
A.1.2	Option a for Harmonization	35
A.1.2.1	Globally Unique (IP) Address	36
A.1.2.2	Reservation Priority	36
A.1.2.3	Media Component Description	36
A.1.2.4	AF Application Identifier	36
A.1.2.5	Flow Grouping	36
A.1.2.6	Service Class	36
A.1.2.7	Service Information Status	36
A.1.2.8	Acceptable Service Information	36
A.1.2.9	Access Network Charging Information	36
A.1.2.10	Access Type Information	36
A.1.2.11	Notification Events	37
A.1.2.12	Error Reporting	37
A.2	Functionality NAPT Control	37
A.2.1	General	37

A.2.2	Option a for Harmonization	37
A.2.2.1	Functional Procedure NAPT Binding Creation	37
A.2.2.1.1	Approach for Harmonization of Functional Procedure NAPT Binding Creation	37
A.2.2.1.2	Functional Parameters	37
A.2.2.2	Functional Procedure NAPT Binding Modification	38
A.2.2.2.1	Approach for Harmonization of Functional Procedure NAPT Binding Modification	38
A.2.2.2.2	Functional Parameters	38
A.2.2.2	Analysis of Option a.....	38
A.3	Soft-State model Functionality	39
A.3.1	General	39
A.3.1	Option a for Harmonization	39
A.3.1.1	Initial Admission Functional Procedure in the Soft-State model	39
A.3.1.1.1	Approach for Harmonization of the Initial Admission Functional Procedure in the Soft-State model.....	39
A.3.1.1.2	Functional Parameters	39
A.3.1.2	Refresh Functional Procedure in the Soft-State model	39
A.3.1.2.1	Approach for Harmonization of the Refresh Functional Procedure in the Soft-State model	39
A.3.1.2.2	Functional Parameters	39
A.3.1.3	Analysis of Option a.....	39
A.4	Functionality: Support of Emergency Calls	40
A.4.1	General	40
A.4.2	Option a for Harmonization	40
A.4.2.1	Functional Procedure: Initial Request.....	40
A.4.2.1.1	Approach for Harmonization of Initial Request Functional Procedure	40
A.4.2.1.2	Functional Parameters	40
A.4.2.2	Functional Procedure: modification request	40
A.4.2.2.1	Approach for Harmonization of the modification Functional Procedure.....	40
A.4.2.2.2	Functional Parameters	40
A.4.2.3	Analysis of Option a.....	40
A.5	Functionality: Overbooking Indicator	41
A.5.1	General	41
A.5.2	Option a for Harmonization	41
A.5.2.1	Overbooking Indication Within The Initial Reservation Functional Procedure	41
A.5.2.1.1	Approach for Harmonization of the overbooking indicator within the Initial Reservation Functional Procedure.....	41
A.5.2.1.2	Functional Parameters	41
A.5.2.2	Overbooking Indicator Within The Modification Functional Procedure	41
A.5.2.2.1	Approach for Harmonization of the overbooking indicator within the Modification Functional Procedure.....	41
A.5.2.2.2	Functional Parameters	41
A.5.2.3	Analysis of Option a.....	41
A.6	Policy Context Selection Functionality	42
A.6.1	General	42
A.6.1	Option a for Harmonization	42
A.6.1.1	Functional Procedure Policy Context Selection	42
A.6.1.1.1	Approach for Harmonization of the Policy Context Selection Functional Procedure	42
A.6.1.1.2	Functional Parameters	42
A.6.1.2	Analysis of Option a.....	42
A.7	Void	42
A.8	Overall Harmonization	42
A.8.1	General.....	42
A.8.1	Option a for Harmonization	42
A.8.1.1	Architectural Aspects	42
A.8.1.2	Analysis of Option a.....	43
Annex B (informative):	Change history	43

Foreword

This Technical Report has been produced by the 3rd Generation Partnership Project (3GPP).

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Introduction

As part of the agreement of moving common IMS work from ETSI TISPAN to 3GPP, there is a need to harmonize the Gq' and Rx reference points, taking into account impact on architecture and protocol aspects. This document addresses the need to perform this work in 3GPP on the IMS-facing reference point, and will provide the basis for the changes that are required for the harmonization of the Gq' and Rx reference points.

1 Scope

This document provides information that will be used to align the Rx and Gq' reference points. The document analyses several options and recommends options for alignment, taking the architectural and protocol aspects into account.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TS 23.203: "Policy and charging control architecture"

[2] ETSI TS 183.017: "Resource and Admission Control: DIAMETER protocol for session based policy set-up information exchange between the Application Function (AF) and the Service Policy Decision Function (SPDF); Protocol specification"

- [3] ETSI ES 282 003: "Telecommunications and Internet Converged Services and Protocols for Advanced Networking (TISPAN); Resource and Admission Control Sub-system (RACS); Functional Architecture; Release 2"
- [4] ETSI TS 183 048: "Telecommunications and Internet Converged Services and Protocols for Advanced Networking (TISPAN); Resource & Admission Control System (RACS); Protocol Signaling flows specification; RACS Stage 3"

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the following definitions apply:

Functionality: Logical group of actions that a functional entity can be used for. A functionality may or may not be supported on a given reference point. Support of a functionality on a given reference point is achieved through a set of procedures.

Examples of functionalities include (non exhaustive list) support of NAT, support of emergency calls.

Procedure: A procedure is an interaction between two entities. A set of procedures can be grouped in order to support a given functionality. A procedure involves a set of messages/commands and parameters. The set of parameters used by a given command/message for a given procedure may differ from the set of parameters used by the same command/message for a different procedure.

Examples of procedures include (non exhaustive list) the initial reservation procedure, the modification procedure, the termination procedure.

Parameter: A piece of information used by a procedure

Functional procedure: A stage 2 procedure.

Functional Parameter: A parameter used in a functional parameter

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

AF	Application Function
PCC	Policy and Charging Control
RACS	Resource and Admission Control Subs-system

4 Comparison of Functionalities

This clause compares each functionality supported on the Gq' and/or Rx reference point, and selects a proposal for harmonization. This clause also addresses cases where a functionality is covered on one reference point and not on the other.

4.1 Functionality: Basis Reservation and Admission Procedures

4.1.1 General

This clause compares the support of the basis Reservation and Admission procedures on Rx and on Gq' and proposes an option for harmonization. The basis procedures are those that are essential for the interactions between AF and RACS or between AF and PCC, and that are not restricted to specific services and/or deployments.

4.1.2 Description for both Gq' and Rx Reference Points

This clause provides an overview of the basis Reservation and Admission procedures.

The basis Reservation and Admission procedures are applicable on Rx.

The basis Reservation and Admission procedures are applicable on Gq'.

4.1.3 Comparison of Functional Procedures

4.1.3.1 General

The following tables indicates which basis procedure on the Rx reference point relates to which basis procedure on the Gq' reference point.

Functional Procedure on Rx	Functional Procedure on Gq'
AF Session Establishment	Initial Reservation for a Session
AF Session Modification	Session Modification Procedure
AF Session Termination	Session Termination Procedure
Subscription and Notification of IP-CAN session and bearer events	Subscription and Notification of IP-CAN session and bearer events

4.1.3.2 Functional Procedure: Initial Admission and Reservation

4.1.3.2.1 General

This clause compares the AF Session Establishment procedure of the Rx reference point with the Initial Reservation for a Session procedure of the Gq' reference point.

4.1.3.2.2 Comparison of the Initial Admission and Reservation Functional Procedure on Rx and Gq'

4.1.3.2.2.1 Support on Rx

The AF Session Establishment procedure is supported on Rx.

When a new AF session is established and media information for this AF session is available at the AF, the AF attempts to create a session on the PCRF. In order to do so, the AF sends an Initial Request over the Rx reference point.

The AF provides:

- The UE's IP address (M)
- The Subscriber Identifier (O)
- The Service Information (M). This is for example the IP address of the IP flow(s), port numbers to be used, information on media types, etc.
- An indication whether the media IP flow(s) should be enabled or disabled (M)
- An indication of the particular service the AF session belongs to (O)
- An identifier used for charging correlation purposes (O)
- An identifier of the events the AF wants to subscribe to (O)

- An indication of the stage of the service information negotiation, i.e. whether the service information has been successfully negotiated, or not (preliminary information) (O)
- The Priority associated with the Initial Request (O)
- The Priority associated with the individual medias within the Service information (O)
- Additionally, SIP Forking scenarios in IMS require an indication of whether several SIP dialogues are related to one Rx session (O).

NOTE: SIP Forking is specific to some IMS based services and should as such be treated as a dedicated functionality.

For the normal case, the AF provides service information that has been fully negotiated (e.g. based on the SDP answer). In this case the PCRF shall authorize the session and generate corresponding PCC rules.

The AF may optionally provide preliminary service information not fully negotiated yet (e.g. based on the SDP offer) at an earlier stage. Upon receipt of such preliminary service information, the PCRF shall perform an early authorization check of the service information. For GPRS, the PCRF shall not yet generate corresponding PCC rules.

The PCRF:

- Performs Session Binding, i.e. the PCRF attempts to correlate the provided UE's IP Address to an existing IP-CAN Session.
- Processes the received Service Information according to the operator policy and decides whether the request is granted or not.
- May send a request to the SPR in order to receive subscription-related information (in case the PCRF does not have it). This is beyond the scope of Rx reference point.
- Depending on the Bearer Control Mode selected by the IP-CAN, the PCRF may perform IP-CAN Bearer(s) binding. The QoS demand in the PCC rule, as well as the service data flow template are input to the bearer binding
- Authorizes the request. The priority associated with the request and/or the medias may be taken into account.
- Decides whether the PCEF needs to be triggered and may attempt to install the corresponding PCC Rules on the impacted IP-CAN Bearers (via the Gx reference point). This is beyond the scope of the Rx reference point.
- Returns a single Answer to the AF (i.e. request granted or denied).
 - In case the request is accepted, the PCRF may provide to the AF with access network type and charging information.
 - In case the request is denied, the PCRF indicates the reason why the Request has been denied.

In the case that PCC rules are to be installed at the PCEF, the PCRF provides a response to the AF without waiting for the result of the PCC rule installation at the PCEF. In this sense, a successful response to the AF does not mean that related QoS resources are already available

4.1.3.2.2.2 Support on Gq'

The Initial Reservation for a Session procedure is supported on Gq'.

The approach on the Gq' reference point to support the Initial Reservation for a Session procedure is the following:

The AF provides:

- The UE's Globally Unique IP address and/or the Subscriber Identifier. One of (UE's Globally Unique IP address, Subscriber Identifier) must be included.
- The Service Information (M). This is for example the IP address of the IP flow(s), port numbers to be used, information on media types, etc. The service information provided to the SPDF includes:

- An indication whether the media IP flow(s) should be enabled or disabled (M)
- An indication of the class of transport services to be applied (e.g. forwarding behaviour) (O).
- An indication of the traffic characteristic of the flow (e.g. burstiness and packet size) (O).
- An indication of the particular service the AF session belongs to (O)
- An indication of the service class requested by the AF (O)
- An identifier used for charging correlation purposes (O)
- An identifier of the events the AF wants to subscribe to (O)
- An indication of whether no other IP Flows shall be transported together with the listed IP Flows in the same IP-CAN bearer (O)
- The Priority associated with the Initial Request (O)
- The Priority associated with the individual medias within the Service information (O)
- An indication of whether a hard-state or soft-state reservation is needed (O). In case of a soft-state reservation, the AF includes the requested Maximum Lifetime of the Session. In case of hard-state reservation, the AF does not include the maximum lifetime of the session.
- Input IP addresses and ports, in case address translation needs to occur on the user plane (O)
- Additionally, SIP Forking scenarios in IMS deployments require an indication of whether several SIP dialogues are related to one Rx session (O).

NOTE: SIP Forking is specific to some IMS based services and should as such be treated as a dedicated functionality.

If the AF determines that address translation needs to occur on the user plane, the AF interacts with the SPDF both at reception of the SDP offer and at reception of the SDP answer. The SPDF interacts with the BGF in order to configure binding information from both sides of the communication path at the BGF. The SPDF will normally also interact with the A-RACF at this stage. The SPDF waits for the interactions with the A-RACF and BGF to be completed before providing an answer to the AF.

Otherwise, the AF provides service information to the SPDF at reception of service information that has been fully negotiated (e.g. at reception of the SDP answer). The SPDF then completes the interactions towards both the A-RACF and the BGF before providing an answer to the AF.

The SPDF:

- Processes the received Service Information according to the operator policy and decides whether the request is granted or not.
- May take the priority associated with the request and/or the medias into account.
- Decides whether the A-RACF and/or BGF need to be contacted.
 - In case the A-RACF is contacted, the SPDF delegates the subscriber profile binding, IP Session binding, transport binding, and resource availability verification to the A-RACF.
 - The SPDF may control the opening/closing of pinholes on the BGF.
- Waits for the answers from the A-RACF and from the BGF, determines the combined result and then returns a single Answer to the AF (i.e. request granted or denied). In case the request is denied, the AF indicates the reason why the Request has been denied.

4.1.3.2.2.3 Comparison of the Initial Admission and Reservation functional procedure

This clause provides a verbal comparison of functional procedure Initial Reservation for a Session. Commonalties exist between the operations performed over the Rx and Gq' reference points. Commonalties also exist in the operations executed at the protocol endpoints (AF e.g. P-CSCF in IMS, the SPDF and PCRF):

- AF provides session information over Gq' and Rx reference points using the same Diameter command (i.e. AAR/AAA) and using almost the same set of parameters.
- Both SPDF and PCRF perform policy-based decisions using operator policies
- Both SPDF and PCRF are able to control the gate status of related IP flows (i.e. IP flows are enabled or disabled to pass through the IP-CAN) as requested by the AF..
- Both SPDF and PCRF may attempt to install policy/PCC rules upon the Initial Admission and Reservation Request from the AF

Differences exist between the operations performed over Rx and Gq' reference points and at the protocol endpoints :

- The SPDF does not determine the IP Session and transport resources corresponding to the UE's IP Address (This is delegated to the A-RACF), while the PCRF determines the IP-CAN Session may determine the IP-CAN Bearers.
- The SPDF does not correlate the request with a Subscriber profile (this is delegated to the A-RACF), while the PCRF may attempt to correlate the request with a subscriber profile.
- The SPDF determines whether or not to push the policy to the BGF based on the contents of the AA-Request and on local policy rules. The Gq' AA-Request may contain AVPs such as the Reservation-Class AVP and/or Binding-Information AVP. The PCRF determines whether to push the PCC rules to the PCEF or to wait for the PCEF to pull them based on the Bearer Control Mode.
- Not only the UE's IP address is required on the Gq' reference point, but the Globally Unique Address (the combination of the UE's IP Address with the Realm, i.e. the Domain in which the IP Address is meaningful).
- On the Rx reference point, the AF always interacts with the PCRF at reception of SDP answer and may interact with the PCRF at reception of SDP offer. The procedures executed by the PCRF differ in each case so the AF needs to explicitly indicate the stage of the service information negotiation to the PCRF. On the Gq' reference point, interactions with the SPDF are required both at reception of SDP offer and SDP answer in the case that address translation needs to occur on the user plane in both directions. The SPDF executes the same processing rules in each case (interactions with A-RACF and BGF) so the AF does not need to explicitly indicate the stage of the service information negotiation to the SPDF.
- On the Rx reference point, the AF does not indicate the requested duration of the reservation. As such, on Rx, there is also no explicit support of the hard-state and soft-state reservation models. On the Gq' reference point, the AF may indicate the requested duration of the reservation and may as such indicate whether a soft-state or hard-state reservation is required.
- On the Rx reference point, the AF controls the gate status of related IP flows (i.e. requests the PCRF that related IP flows are enabled or disabled to pass through the IP-CAN). NA(P)T control is however not possible over Rx (see subclause 4.2).
- On the Rx reference point, in case the request is denied, the PCRF may indicate to the AF the reason why the Request has been denied and may provide a set of acceptable service information. On the Gq' reference point, the SPDF is not capable of providing a set of acceptable service information to the AF in case the request is denied.
- On the Gq' reference point, the AF is able to provide additional information affecting the Service Information which are not available over the Rx reference point, like service class, transport class and reservation class.
- On the Gq' reference point, the SPDF waits for the answers from the A-RACF and from the BGF before returning an answer to the AF (i.e. request granted or denied). On the Rx reference point, the PCRF does not wait for subsequent PCC rule activation procedures to be completed in order to provide an answer to the AF.

4.1.3.2.3 Comparison of Functional Parameters for the Initial Admission and Reservation functional procedure

This clause compares the set of functional parameters used on the Rx and Gq' reference points for the Initial Admission and Reservation functional procedure. The AF uses a diameter AAR command to execute this function both over Rx and Gq' reference points. The following set of parameters may be used for this operation:

Functional Parameter	Description	Rx		Gq'	
		Applicable (Y/N)	Category (M/O/C)	Applicable (Y/N)	Category (M/O/C)
Globally Unique Address • IP Address • Realm	The combination of • IP Address of the UE or RGW (NOTE 1) • Domain in which the IP Address is meaningful	Y • Y • N	M • M • -	Y • Y • Y	C (NOTE 2) • C • C
Subscriber ID	The identifier of the subscriber	Y	O	Y	C (Notes 2, 3)
Session ID	unique identifier of the session	Y	M	Y	M
AF ID	Global unique Identifier for the AF	Y	M	Y	M
Priority (Reservation-Priority)	Priority associated with the Request (provided at Diameter command level) or with the media flows (i.e. provided at media component level). (NOTE 4)	Y	O	Y	O
Service Information (Media-Component-Description)	Medias and Flows descriptions (NOTE 5)	Y	M	Y	M
AF Application Identifier	Indication of the type of service the particular AF session belongs to (NOTE 6)	Y	O	Y	O
Identifier for Charging Correlation (AF-Charging-Identifier)	AF Charging Identifier to be used for charging correlation.	Y	O	Y	O
SIP-Forking-Indication	In IMS SIP Forking scenarios, an indication of whether several SIP dialogues are related to one session	Y	O	Y	O
Binding-Information and Latching-Indicator	Binding and latching information required for NA(P)T, hosted NA(P)T and NA(P)T-PT control (NOTE 7).	N	-	Y	O
Duration of Reservation	Requested duration of the reservation	N	-	Y	O
Flow-Grouping	Indication of whether no other IP Flows shall be transported together with the listed IP Flows in the same IP-CAN bearer	N	-	Y	O
Service-Class	Indication of the service class requested by the AF.	N	-	Y	O
Service-Info-Status	Indication of the status of the service information that the AF is providing to the PCRF.	Y	O	N	-
Acceptable-Service-Info	Indication of the maximum bandwidth for an AF session and/or for specific media components that will be authorized by the PCRF	Y	O	N	-
Access Network Charging Information	IP Address of the network entity within the access network performing charging (e.g. the GGSN IP address) and Charging identifier assigned to related IP Flows.	Y	O	N	-
Access Type information (IP-CAN-Type, RAT-Type)	Information provided to the AF about the specific type of IP-CAN and RAT the user is connected to.	Y	O	N	-

NOTE 1: In Gq', the information of the IP address the user is making use of is provided within the Globally-Unique-Address AVP. In Rx, the IP address information is provided directly at diameter command level.

NOTE 2: One of Globally Unique Address / Subscriber ID must be provided

NOTE 3: From a stage 3 perspective, it must be noticed that the User-Name AVP is used on Gq', while the Subscription-ID AVP is used on Rx.

NOTE 4: Over Rx reference point, Reservation-Priority AVP is only included in the AAR request from the AF. Over Gq' reference point, the SPDF can additionally include a Reservation-Priority AVP in the AAA response back to the AF.

NOTE 5: Both Rx and Gq' provide Flow -Status information within Media-Component-Description AVP. In Gq', information regarding Reservation-Class and Transport-Class is additionally provided.

NOTE 6: In Rx, AF-Application-Identifier may be supplied either at Diameter command level or per media component. In Gq', the AF-Application-Identifier is only provided per media component. In Rx, this AVP may convey the IMS Communication Service Identifier.

NOTE 7: For more information on NA(P)T control procedures performed over Gq' reference point refer to section 4.2.

Functional Parameter	Description	Rx		Gq'	
		Applicable (Y/N)	Category (M/O/C)	Applicable (Y/N)	Category (M/O/C)
NOTE 8: For more information on Soft/Hard State reservation models over Gq' reference point refer to section 4.3.					

4.1.3.3 Functional Procedure: Modification Procedure

4.1.3.3.1 General

This clause compares the AF Session Modification procedure of the Rx reference point with the Session Modification procedure of the Gq' reference point.

4.1.3.3.2 Comparison of the Modification Functional Procedure on Rx and Gq'

4.1.3.3.2.1 Support on Rx

The Modification procedure is supported on Rx.

The approach on the Rx reference point to support the Modification procedure is the following: During the Modification procedure the AF may attempt to modify the session created previously (AF Session Establishment). This includes for example modification of the Service Information, indication of the stage of the service information negotiation (e.g. in case the service information has been successfully negotiated), indication to the PCRF that gates must be opened and/or that the installed PCC Rule must be modified.

4.1.3.3.2.2 Support on Gq'

The Modification procedure is supported on Gq'.

The approach on the Gq' reference point to support the Modification procedure is the following: During the Modification procedure the AF may attempt to modify the session created previously (Initial Reservation for a Session). This includes for example modification of the Service Information, indication to the SPDF that gates must be opened and/or that the installed Transport Policy Rule must be modified. The Modification procedure may also be used by the AF to refresh an existing AF Session, and/or to extend the reservation lifetime. In this case, the AF may not include any Service Information.

4.1.3.3.2.3 Comparison of the Modification functional procedure

This clause provides a verbal comparison of the Modification functional procedure.

The same conclusions as for the Initial Admission and Reservation Procedure apply.

In addition, the Modification Procedure over the Gq' reference point may also be used by the AF to refresh (Refresh-only procedure) an existing Session. In this case, the AF does not need to include the Service Information (assuming that the Service Information does not need to be changed). This is not supported over the Rx reference point.

4.1.3.3.3 Comparison of Functional Parameters for the Modification functional procedure

This clause compares the set of functional parameters used on the Rx and Gq' reference points for the Modification functional procedure. The AF uses a diameter AAR command to execute this function both over Rx and Gq' reference points. The following set of parameters may be used for this operation::

Functional Parameter	Description	Rx		Gq'	
		Applicable (Y/N)	Category (M/O/C)	Applicable (Y/N)	Category (M/O/C)
Globally Unique Address • IP Address • Realm	The combination of • IP Address of the UE or RGW (NOTE 1) • Domain in which the IP Address is meaningful	Y • Y • N	M • M • -	Y • Y • Y	O (note 2) • O • O
Subscriber ID	The identifier of the subscriber	Y	O	Y	o (notes 2, 3)
Session ID	unique identifier of the reservation	Y	M	Y	M
AF ID	Global unique Identifier for the AF	Y	M	Y	M
Priority (Reservation-Priority)	Priority associated with the Request (provided at Diameter command level) or with the media flows (i.e. provided at media component level). (NOTE 4)	Y	O	Y	O
Service Information (Media-Component-Description)	Medias and Flows descriptions (NOTE 5)	Y	M	Y	O
AF Application Identifier	Indication of the type of service the AF session belongs to (NOTE 6)	Y	O	Y	O
Priority at the level of medias and flows	Priority associated with the medias and flows, i.e. as part of the Service Information	Y	O	Y	O
Identifier for Charging Correlation (AF-Charging-Identifier)	AF Charging Identifier to be used for charging correlation.	Y	O	Y	O
SIP-Forking-Indication	In IMS SIP Forking scenarios, an indication of whether several SIP dialogues are related to one session	Y	O	Y	O
Binding-Information and Latching-Indicator	Binding and latching information required for NA(P)T, hosted NA(P)T and NA(P)T-PT control (NOTE 7).	N	-	Y	O
Duration of Reservation (Authorization-Lifetime and Authorization-Grace-Period)	Requested duration of the reservation (NOTE 8)	N	-	Y	O
Flow-Grouping	Indication of whether no other IP Flows shall be transported together with the listed IP Flows in the same IP-CAN bearer	N	-	Y	O
Service-Class	Indication of the service class requested by the AF.	N	-	Y	O
Service-Info-Status	Indication of the status of the service information that the AF is providing to the PCRF.	Y	O	N	-
Acceptable-Service-Info	Indication of the maximum bandwidth for an AF session and/or for specific media components that will be authorized by the PCRF	Y	O	N	-
Access Network Charging Information	IP Address of the network entity within the access network performing charging (e.g. the GGSN IP address) and Charging identifier assigned to related IP Flows.	Y	O	N	-
Access Type information (IP-CAN-Type, RAT-Type)	Information provided to the AF about the specific type of IP-CAN and RAT the user is connected to.	Y	O	N	-
NOTE 1: In Gq', the information of the IP address the user is making use of is provided within the Globally-Unique-Address AVP. In Rx, the IP address information is provided directly at diameter command level.					
NOTE 2: One of Globally Unique Address / Subscriber ID must be provided					
NOTE 3: From a stage 3 perspective, it must be noticed that the User-Name AVP is used on Gq', while the Subscription-ID AVP is used on Rx					
NOTE 4: Over Rx reference point, Reservation-Priority AVP is only included in the AAR request from the AF. Over Gq' reference point, the SPDF can additionally include a Reservation-Priority AVP in the AAA response back to the AF.					
NOTE 5: Both Rx and Gq' provide Flow -Status information within Media-Component-Description AVP. In Gq', information regarding Reservation-Class and Transport-Class is additionally provided. In the case of Gq' reference point the AF may not provide service information if the modification procedure is meant to refresh the existing session.					
NOTE 6: In Rx, AF-Application-Identifier may be supplied either at Diameter command level or per media component. In Gq', the AF-					

Functional Parameter	Description	Rx		Gq'	
		Applicable (Y/N)	Category (M/O/C)	Applicable (Y/N)	Category (M/O/C)
Application-Identifier is only provided per media component. In Rx, this AVP may convey the IMS Communication Service Identifier.					
NOTE 7: For more information on NA(P)T control procedures performed over Gq' reference point refer to section 4.2.					
NOTE 8: For more information on Soft/Hard State reservation models over Gq' reference point refer to section 4.3.					

4.1.3.4 Functional Procedure: Termination

4.1.3.4.1 General

This clause compares the AF Session Termination procedure of the Rx reference point with Session Termination procedure of the Gq' reference point.

4.1.3.4.2 Comparison of the Termination Functional Procedure on Rx and Gq'

4.1.3.4.2.1 Support on Rx

The Termination procedure is supported on Rx.

The approach on the Rx reference point to support the Termination procedure is the following: When the AF receives an internal or external trigger for a session release, the AF sends a session termination request to the PCRF to request the removal of the session. The PCRF identifies the corresponding AF Session and returns a single answer to the AF. Afterwards, the PCRF triggers the PCEF to remove the PCC Rules for the IP flow(s) of this AF session.

4.1.3.4.2.2 Support on Gq'

The Termination procedure is supported on Gq'.

The approach on the Gq' reference point to support the Termination procedure is the following: When the AF receives a trigger for a session release, the AF sends a session termination request to the SPDF the request the removal of the session. The SPDF triggers the A-RACF (over Rq) if a corresponding session has been created before. The SPDF triggers the BGF (over Ia) in order to close the corresponding gates.

4.1.3.4.2.3 Comparison of the Termination functional procedure

This clause provides a verbal comparison of the Termination functional procedure. The Termination Procedures on the Rx and Gq' reference point are similar.

4.1.3.4.3 Comparison of Functional Parameters for the functional Termination procedure

This clause compares the set of functional parameters used on the Rx and Gq' reference points for the Termination functional procedure:

Functional Parameter	Description	Rx		Gq'	
		Applicable (Y/N)	Category (M/O/C)	Applicable (Y/N)	Category (M/O/C)
Session ID	unique identifier of the reservation	Y	M	Y	M

4.1.3.5 Functional Procedure: Subscription to Notification of IP-CAN session and bearer events

4.1.3.5.1 General

This clause compares the procedures for the subscription and notification of IP-CAN session and bearer events of the Rx and Gq' reference points.

The procedures for subscription and notification of IP-CAN Session and Bearer events are available both at Rx and Gq' reference points.

Both for the Rx and Gq' reference points, the AF may subscribe to notifications of IP-CAN Session and Bearer events at initial provisioning or at modification of session information. In order to do this, the AF includes the specific IP-CAN Session and/or bearer event type it would like to receive notifications of. The AF may subscribe to multiple IP-CAN Session and/or Bearer events at the same time.

When the PCRF or the SPDF detect that the conditions of any of the events previously subscribed by the AF have been met, the PCRF/SPDF provide the corresponding notification to the AF over the Rx and Gq' reference points respectively.

However, the set of IP-CAN Session and Bearer events the AF is able to subscribe over Rx and Gq' reference points differ. The following sections describe and compare which types of events are available over each interface and which are not.

4.1.3.5.2 Comparison of the subscription and notifications of IP-CAN Session and Bearer events Functional Procedure on Rx and Gq'

This clause provides a verbal comparison of functional procedure for subscription and notifications of IP-CAN session and bearer events.

The procedure for subscription and notifications of IP-CAN session and Bearer events are the same over Rx and Gq' reference point. The set of the actual IP-CAN Session and Bearer events the AF is able to subscribe over Rx and Gq' reference points is however different in each case.

- Subscription to INDICATION_OF_LOSS/RECOVERY/RELEASE_OF_BEARER is possible over both reference points.

However, Rx defines a particular use of the subscription to INDICATION_OF_LOSS_OF_BEARER and INDICATION_OF_RELEASE_OF_BEARER where if the service information provided by the AF within the same AAR command corresponds with AF signalling IP flows (e.g. SIP signalling in the case of IMS) the subscription to these events is used by the AF to be notified of temporal and permanent loss of the signalling connectivity respectively.

This particular usage of the subscription to these events is not available over Gq' reference point.

- Subscription to extra IP-CAN Session and Bearer events is possible over Rx reference point:

CHARGING_CORRELATION_EXCHANGE
INDICATION_OF_ESTABLISHMENT_OF_BEARER
IP-CAN_CHANGE

- Subscription to extra IP-CAN Session and Bearer events is possible over Gq' reference point:

INDICATION_OF_SUBSCRIBER_DETACHMENT
INDICATION_OF_RESERVATION_EXPIRATION

4.1.4 Selected Proposal for Harmonization of functionality Basis Reservation and Admission Procedures

This clause indicates which proposal for harmonization of functionality Basis Reservation and Admission Procedures has been selected. The clause provides the information for each of the Basis Reservation and Admission Procedures. Interested readers may refer to Annex A for full information of the analysis.

4.2 Functionality: NAPT Control

4.2.1 General

This clause compares how the NAPT Control functionality is currently addressed on Rx and on Gq' and proposes an option for harmonization.

4.2.2 Description for both Gq' and Rx Reference Points

This clause provides an overview of the NAPT Control functionality.

The NAPT Control functionality is not applicable on Rx.

NOTE: It must be noted that NAPT is not currently supported on the Rx reference point, but is instead performed over another reference point (Iq, see TS 23.228).

The NAPT Control functionality is applicable on Gq'.

4.2.3 Comparison of Functional Procedures

4.2.3.1 Functional Procedure: NAPT Binding Creation

4.2.3.1.1 General

This clause compares how the NAPT Binding Creation functional procedure (part of the functionality NAPT Control) is currently addressed on Rx and on Gq'.

4.2.3.1.2 Comparison of the NAPT Binding Creation Functional Procedure on Rx and Gq'

4.2.3.1.2.1 Support on Rx

The NAPT Binding Creation procedure is not supported on Rx.

4.2.3.1.2.2 Support on Gq'

The NAPT Binding Creation procedure is supported on Gq'.

The approach on the Gq' reference point to support the NAPT Binding Creation procedure is the following:

- Information related to the NAPT Binding Creation is conveyed as part of the Initial Reservation Request over the Gq' reference point. This includes a Latching Indication showing that the served endpoint is behind a hosted NAPT¹
- The following functional entities are involved:
 - The AF is the NAPT Proxy, i.e. it receives a signaling request, extracts the input address/port for which NAPT needs to be performed and a translation for the input address/port (i.e. the NAPT binding).
 - The SPDF controls the enforcement of NAPT on the BGF.
 - The BGF translates the input transport address and returns the NAPT Binding Output(s) to the SPDF.
- Procedure at the originating (respectively: terminating) side:
 - The AF populates the Initial Reservation Request with address & port information related to the end user in the originating side (respectively: to the terminating side) and sends this information to the SPDF.
 - The SPDF communicates the address/port received from the AF to the BGF and requests translations from the BGF (i.e. the corresponding access-side and core-side NAPT bindings on the BGF).
 - The BGF translates the transport address received from the SPDF and returns the corresponding translation(s) (i.e. access-side and core-side NAPT bindings) to the SPDF.
 - The SPDF communicates the corresponding access-side and core-side NAPT bindings to the AF.

¹ As described in clause 6.2.5.1 of reference [3]

- The AF communicates the core-side NAPT Binding to the remote side (respectively: end user in the terminating side).

4.2.3.1.2.3 Comparison of the NAPT Binding Creation functional procedure

This clause provides a verbal comparison of the NAPT Binding Creation functional procedure.

NAPT Binding Creation is supported over the Gq' reference point, but is not supported over the Rx reference point.

4.2.3.1.3 Comparison of Functional Parameters for the NAPT Binding Creation functional procedure

This clause compares the set of functional parameters used on the Rx and Gq' reference points for the NAPT Binding Creation functional procedure:

Functional Parameter	Description	Rx		Gq'	
		Applicable (Y/N)	Category (M/O/C)	Applicable (Y/N)	Category (M/O/C)
Input Binding Information	This functional parameter contains the transport address for which a translation is requested: <ul style="list-style-type: none"> • in the originating side: end user's IP Address/port in the originating side • in the terminating side: IP Address/Port communicated by the originating side 	N	-	Y	M
Access-side Output Binding Information	This functional parameter contains a translated transport address: <ul style="list-style-type: none"> • In the originating side: access-side address/port bound to the end user's IP Address/port • In the terminating side: access-side address/port bound to the IP address/port provided by the originating side. 	N	-	Y	C ²
Core-side Output Binding Information	This functional parameter contains a translated transport address: <ul style="list-style-type: none"> • In the originating side: core-side IP address/port bound to the end user's IP Address/port • In the terminating side: core-side IP address/port bound to the IP address/port provided by the originating side. 	N	-	Y	C ³
Latching Indication	Indicates that the served endpoint is behind a hosted-NAPT, or that updated addressing information for that endpoint is available.	N	-	Y	C ⁴

4.2.3.2 Functional Procedure: NAPT Binding Modification

4.2.3.2.1 General

This clause compares how the NAPT Binding Modification functional procedure (part of the functionality NAPT Control) is currently addressed on Rx and on Gq'.

² Access-side info is optional in the originating side, and is mandatory in the terminating side.

³ Access-side info is optional in the originating side, and is mandatory in the terminating side.

⁴ Mandatory at session creation, optional at session modification.

4.2.3.2.2 Comparison of NAPT Binding Modification Functional Procedure on Rx and Gq'

4.2.3.2.2.1 Support on Rx

The NAPT Binding Modification procedure is not supported on Rx.

4.2.3.2.2.2 Support on Gq'

The NAPT Binding Modification procedure is supported on Gq'.

The approach on the Gq' reference point to support the NAPT Binding Modification procedure is the following:

- Information related to the NAPT Binding Modification is conveyed as part of the Modification Request over the Gq' reference point. This includes a Latching Indication when updated addressing information is available for a served endpoint behind a hosted-NAPT⁵.
- The same following functional entities as for the NAPT Binding Creation procedure are involved.
- Procedure at the originating (respectively: terminating) side:
 - The AF populates the Modification Request with address & port information received from the terminating (respectively: from the end user in the terminating side) and sends this information to the SPDF.
 - The SPDF communicates the information received from the AF in order to modify the terminations on the BGF.
 - The BGF modifies the terminations and returns to the SPDF the corresponding access -side and core-side NAPT bindings.
 - The SPDF communicates the updated terminations to the AF.
 - The AF communicates the access -side (respectively: core-side) NAPT Binding on the BGF to the end user in the originating side (respectively: to the originating side).

4.2.3.2.2.3 Comparison of the NAPT Binding Modification functional procedure

This clause provides a verbal comparison of the NAPT Binding Modification functional procedure.

NAPT Binding Creation is supported over the Gq' reference point, but is not supported over the Rx reference point.

4.2.3.2.3 Comparison of Functional Parameters for the NAPT Binding Modification functional procedure

This clause compares the set of functional parameters used on the Rx and Gq' reference points for the NAPT Binding Modification functional procedure:

Functional Parameter	Description	Rx		Gq'	
		Applicable (Y/N)	Category (M/O/C)	Applicable (Y/N)	Category (M/O/C)
Input Binding Information	See clause 4.2.3.1.3	N	-	Y	M
Access-side Output Binding Information	See clause 4.2.3.1.3	N	-	Y	C
Core-side Output Binding Information	See clause 4.2.3.1.3	N	-	Y	C
Latching Indication	See clause 4.2.3.1.3	N	-	Y	C

⁵ As described in clause 6.2.5.1 of reference [3]

4.2.4 Selected Proposal for Harmonization of the NAT Control functionality

This clause indicates which proposal for harmonization of NAPT Control functionality has been selected. The clause provides the information for each individual functional procedure in the NAPT Control functionality. Interested readers may refer to Annex A for full information of the analysis.

4.3 Functionality: Soft-State Model

4.3.1 General

This clause compares how the Soft-State Model functionality is currently addressed on Rx and on Gq' and proposes an option for harmonization.

In the Soft-State model, the sessions on the server (i.e. SPDF in case of the Gq' reference point) are temporary. Such temporary sessions must be refreshed/extended by the AF otherwise they will be terminated by the server (i.e. SPDF in case of the Gq' reference point).

The Soft-State model therefore includes the following procedures:

- Initial Admission in the Soft-State model
- Refresh of a temporary session
- Notification of imminent expiration
- Notification of session expired.

4.3.2 Description for both Gq' and Rx Reference Points

This clause provides an overview of the Soft-State Model functionality.

The Soft-State Model functionality is not applicable on Rx.

The Soft-State Model functionality is applicable on Gq'.

4.3.3 Comparison of Functional Procedures

4.3.3.1 Functional Procedure: Initial Admission in the Soft-State model

4.3.3.1.1 General

This clause compares how the Initial Admission functional procedure in the Soft-State model is currently addressed on Rx and on Gq'.

4.3.3.1.2 Comparison of Initial Admission Functional Procedure in the Soft-State model on Rx and Gq'

4.3.3.1.2.1 Support on Rx

The Initial Admission procedure in the Soft-State model is not supported on Rx.

4.3.3.1.2.2 Support on Gq'

The Initial Admission procedure in the Soft-State model is supported on Gq'.

The approach on the Gq' reference point to support the Initial Admission procedure in the Soft-State model is the following:

When a new AF session is established and media information for this AF session is available at the AF, the AF attempts to create a session on the SPDF.

In case the AF needs to create a temporary session on the SPDF, the AF includes the expected Reservation Lifetime in the Initial Admission Request sent to the SPDF over the Gq' reference point.

Assuming that the SPDF is able to grant the Initial Admission Request, whether the session will be permanent (hard-state) or temporary (soft-state) is at the discretion of the SPDF, independently of the presence or absence of the expected Reservation Lifetime in the Initial Admission Request from the AF. That is, even if the AF does not specify the expected Reservation Lifetime in the Initial Admission Request (i.e. the AF is willing to establish a permanent session on the SPDF), the SPDF may decide to create a temporary session.

In case of Soft-State model, the SPDF returns the maximum Reservation Lifetime in the Initial Admission Answer to the AF. The Maximum Reservation Lifetime returned by the SPDF is smaller than or equal to the Reservation Lifetime requested by the AF.

The AF must refresh the session before expiration of the Reservation Lifetime. Otherwise, the session will be terminated by the SPDF upon expiration of the Reservation Lifetime.

4.3.3.1.2.3 Comparison of Initial Admission functional procedure in the Soft-State model

This clause provides a verbal comparison of Initial Admission functional procedure in the Soft-State model.

The procedure is supported on Gq' and is not supported on Rx.

4.3.3.1.3 Comparison of Functional Parameters for the Initial Admission functional procedure in the Soft-State model

This clause compares the set of functional parameters used on the Rx and Gq' reference points for the Initial Admission functional procedure in the Soft-State model:

Functional Parameter	Description	Rx		Gq'	
		Applicable (Y/N)	Category (M/O/C)	Applicable (Y/N)	Category (M/O/C)
Session ID	Unique identifier of the session	N	-	Y	M
Reservation Lifetime	In the Initial Admission request from the AF, this functional parameter indicates the duration of the corresponding session, as expected by the AF. In the Initial Admission answer to the AF, this functional parameter indicates the maximum allowed duration of the corresponding session.	N	-	Y	O
NOTE: Other functional parameters, besides the Reservation Lifetime, are obviously included in the Initial Admission Request and Answer. These parameters are anyway beyond the scope of the Soft-State model.					

4.3.3.2 Functional Procedure: Refresh of a temporary session

4.3.3.2.1 General

This clause compares how the Refresh functional procedure (part of the Soft-State model) is currently addressed on Rx and on Gq'.

4.3.3.2.2 Comparison of the Refresh Functional Procedure on Rx and Gq'

4.3.3.2.2.1 Support on Rx

Since the Soft-State model is not supported on Rx, the Refresh procedure is not supported on Rx.

4.3.3.2.2.2 Support on Gq'

The Refresh procedure is supported on Gq'.

The approach on the Gq' reference point to support the Refresh procedure is the following:

Temporary sessions created on the SPDF must be refreshed/extended by the AF before expiration of the Reservation Lifetime, otherwise they will be terminated by the SPDF.

In order to refresh an existing session, the AF sends a Refresh request to the SPDF. The AF includes the Session ID of the corresponding session. The AF may in addition include the requested Reservation Lifetime, in order to indicate to the SPDF the additional Reservation Lifetime, as expected by the AF.

The SPDF decides whether the session can be extended. In case the SPDF decides that the reservation can be extended, the SPDF indicates in the Refresh answer to the AF the maximum additional reservation lifetime. As for the Initial Admission Request, the maximum reservation lifetime returned by the SPDF is smaller than or equal to the Reservation Lifetime requested by the AF.

4.3.3.2.2.3 Comparison of the Refresh functional procedure

This clause provides a verbal comparison of the Refresh functional procedure.

The Procedure is supported on Gq' and is not supported on Rx, since the Soft-State model is not supported on Rx.

4.3.3.2.3 Comparison of Functional Parameters for the Refresh functional procedure

This clause compares the set of functional parameters used on the Rx and Gq' reference points for the Refresh functional procedure:

Functional Parameter	Description	Rx		Gq'	
		Applicable (Y/N)	Category (M/O/C)	Applicable (Y/N)	Category (M/O/C)
Session ID	Unique identifier of the session	N	-	Y	M
Reservation Lifetime	In the Refresh request from the AF, this functional parameter indicates the additional duration of the corresponding session, as expected by the AF. In the Refresh answer to the AF, this functional parameter indicates the maximum allowed duration of the corresponding session.	N	-	Y	O
NOTE: Other functional parameters, besides the Reservation Lifetime, are obviously included in the Refresh Request and Answer.					

4.3.3.3 Functional Procedure: Imminent termination notification

4.3.3.3.1 General

This clause compares how the Imminent termination notification functional procedure (part of the Soft-State model) is currently addressed on Rx and on Gq'.

4.3.3.3.2 Comparison of the Imminent termination notification Functional Procedure on Rx and Gq'

4.3.3.3.2.1 Support on Rx

Since the Soft-State model is not supported on Rx, the Imminent termination notification procedure is not supported on Rx.

4.3.3.3.2.2 Support on Gq'

The Imminent Termination Notification procedure is supported on Gq'.

The approach on the Gq' reference point to support the Imminent Termination Notification procedure is the following: When a temporary session is about to expire, the SPDF may send a Notification of Imminent Termination to the AF in order to force the AF to refresh the session.

The AF must subsequently refresh the session, otherwise the session will be terminated by the SPDF upon expiration of the Reservation Lifetime.

4.3.3.3.2.3 Comparison of the Imminent Termination Notification functional procedure

This clause provides a verbal comparison of the Imminent Termination Notification functional procedure.

The Procedure is supported on Gq' and is not supported on Rx.

4.3.3.3.3 Comparison of Functional Parameters for the Imminent Termination Notification functional procedure

This clause compares the set of functional parameters used on the Rx and Gq' reference points for the Imminent Termination Notification functional procedure:

Functional Parameter	Description	Rx		Gq'	
		Applicable (Y/N)	Category (M/O/C)	Applicable (Y/N)	Category (M/O/C)
Session ID	Unique identifier of the session that is about to expire.	N	-	Y	M

4.3.3.4 Functional Procedure: Notification of expired Session

4.4.3.4.1 General

This clause compares how the Notification of expired Session functional procedure (part of the Soft-State model) is currently addressed on Rx and on Gq'.

4.3.3.4.2 Comparison of the Notification of expired Session Functional Procedure on Rx and Gq'

4.3.3.4.2.1 Support on Rx

Since the Soft-State model is not supported on Rx, the Notification of expired Session procedure is not supported on Rx.

4.3.3.4.2.2 Support on Gq'

The Notification of Expired Session procedure is supported on Gq'.

The approach on the Gq' reference point to support the Notification of Expired Session procedure is the following: After a temporary session has expired, the SPDF terminates the session and may send a Notification to the AF in order to indicate that the session has expired.

NOTE: The SPDF may terminate the session and send the corresponding Notification after an additional "Grace Period".

4.3.3.4.2.3 Comparison of the Notification of Expired Session functional procedure

This clause provides a verbal comparison of the Notification of Expired Session functional procedure.

The Procedure is supported on Gq' and is not supported on Rx, since the Soft-State model is not supported on Rx.

4.3.3.4.3 Comparison of Functional Parameters for the Notification of Expired Session functional procedure

This clause compares the set of functional parameters used on the Rx and Gq' reference points for the Notification of Expired Session functional procedure:

Functional Parameter	Description	Rx		Gq'	
		Applicable (Y/N)	Category (M/O/C)	Applicable (Y/N)	Category (M/O/C)
Session ID	unique identifier of the expired/terminated session	N	-	Y	M

4.3.4 Selected Proposal for the Harmonization of the Soft-State model functionality

This clause indicates which proposal for the harmonization of the Soft-State model functionality has been selected. The clause provides the information for each individual functional procedure in the Soft-State model. Interested readers may refer to Annex A for full information of the analysis.

4.4 Functionality: Support of Emergency Calls

4.4.1 General

This clause compares the support of the emergency calls on Rx and on Gq' and proposes an option for harmonization.

4.4.2 Description for both Gq' and Rx Reference Points

The support of emergency calls is applicable on Rx.

The support of emergency calls is applicable on Gq'.

4.4.3 Comparison of Functional Procedures

4.4.3.1 Functional Procedure: Initial Admission and Reservation

4.4.3.1.1 General

This clause compares how the support of emergency calls within the initial admission and reservation procedure is currently addressed on Rx and on Gq'.

4.4.3.1.2 Comparison of the support of the emergency calls within the initial admission and reservation procedure on Rx and Gq'

4.4.3.1.2.1 Support on Rx

The Rx reference point provides support of emergency calls within the initial reservation and admission procedure.

The approach on the Rx reference point is the following: When a new AF session is established, if the AF recognizes that the AF session establishment request corresponds to an emergency call, the AF attempts to create a session on the PCRF, including an indication that the new session relates to emergency traffic.

4.4.3.1.2.2 Support on Gq'

The approach on the Gq' reference point is the following: When a new AF session is established, if the AF recognizes that the AF session establishment request corresponds to an emergency call, the AF attempts to create a session on the RACS, and includes in the request a Service Class corresponding to emergency calls as described in [4].

4.4.3.1.2.3 Comparison of the support of the emergency calls within the initial admission and reservation procedure

This clause provides a verbal comparison of the support of the emergency calls within the initial admission and reservation procedure.

Support of the emergency calls on the Rx reference point is based on an explicit indication that the request to the PCRF corresponds to emergency traffic.

On the Gq' reference point, a request corresponding to an emergency session is mapped to a Service Class associated to emergency calls.

4.4.3.1.3 Comparison of Functional Parameters for the support of emergency calls

This clause compares the set of functional parameters used on the Rx and Gq' reference points for the support of emergency calls.

Functional Parameter	Description	Rx		Gq'	
		Applicable (Y/N)	Category (M/O/C)	Applicable (Y/N)	Category (M/O/C)
Indication of Emergency Call	Indicates whether the request is associated with an emergency AF Session.	Y	O	N	-
Service Class	A request corresponding to an emergency session is mapped to a Service Class associated with emergency calls.	N	-	Y	O

4.4.3.2 Functional Procedure: Modification

Support of the emergency call on Rx and on Gq' within the modification procedure is the same as within the initial request.

4.5 Functionality: Overbooking Control

4.5.1 General

This clause compares how the overbooking functionality is currently addressed on Rx and on Gq' and proposes an option for harmonization.

4.5.2 Description for both Gq' and Rx Reference Points

This clause provides an overview of the overbooking functionality.

The overbooking functionality is not applicable on Rx.

NOTE: It must be noted that overbooking functionality is not currently supported on the Rx reference point and is not performed in any other reference point with the 3GPP.

The overbooking functionality is applicable on Gq'.

4.5.3 Comparison of Functional Procedures

4.5.3.1 General

Overbooking admission control: A situation whereby the A-RACF considers that different AF-sessions can reserve the same resources bearing in mind that these resources cannot be committed to more than one AF-session at a time. This enables optimal resource management in certain service conditions (e.g. Call Hold, Communication waiting).

4.5.3.2 Functional Procedure: Initial Reservation

4.5.3.2.1 Comparison of the overbooking functionality within the initial reservation procedure Rx and Gq'

4.5.3.2.1.1 Support on Rx

The overbooking functionality is not supported within the initial reservation procedure on Rx.

4.5.3.2.1.2 Support on Gq'

The Gq' reference point supports the overbooking indicator. This indicator allows in certain situation (call hold, call waiting) to reserve the same resource by multiple AF-sessions, at the condition that this resource can not be committed by more than one AF-session. This functional parameter is optional and is exchanged in the AA request between the AF and the SPDF.

4.5.3.2.1.3 Comparison of the overbooking functionality within the initial reservation procedure between Gq' and Rx

This clause provides a verbal comparison of the overbooking functionality within the initial reservation procedure.

Overbooking is supported within the initial reservation procedure over the Gq' reference point, but is not supported within the initial reservation procedure over the Rx reference point.

4.5.3.3 Functional Procedure: Modification

The same analysis and comparison as for the initial reservation procedure applies.

4.5.3.4 Comparison of Functional Parameters for the overbooking functionality

This clause compares the set of functional parameters used on the Rx and Gq' reference points for the overbooking functionality.

Functional Parameter	Description	Rx		Gq'	
		Applicable (Y/N)	Category (M/O/C)	Applicable (Y/N)	Category (M/O/C)
Overbooking indicator	<p>This parameter is sent over the Gq' interface and is exchanged between the AF and the SPDF:</p> <p>Possible values:</p> <ul style="list-style-type: none"> • 0: when the value of overbooking indicator is equal to zero then there is no need for overbooking. • 1: if the value is equal to one then overbooking is required. <p>The overbooking parameter is optional</p>	N	-	Y	O

4.5.4 Selected Proposal for Harmonization of overbooking indicator

This clause indicates which proposal for harmonization of overbooking indicator has been selected. Interested readers may refer to Annex A for full information of the analysis.

To be completed

4.6 Functionality: Policy Context Selection

4.6.1 General

This clause compares how policy context selection functionality is currently addressed on the Rx and Gq' reference points.

In regards to multicast, the IPTV BC service needs to communicate the list of channels authorized to be delivered to a subscriber line. Hence, the concept of an authorization context was introduced in the RACS stage 2 to address this need in an application agnostic way. An authorization package ID referencing this list needs to be passed across the Gq' reference point.

4.6.2 Description for both Gq' and Rx Reference Points

This clause provides an overview of functionality for policy context selection.

The policy context selection functionality is not applicable on Rx at this time.

The policy context selection functionality is applicable on Gq'.

4.6.3 Comparison of Functional Procedures

4.6.3.1 Functional Procedure: Policy Context Selection

4.6.3.1.1 General

This clause compares how the policy context selection functional procedure at initial reservation of a session is currently addressed on Rx and on Gq'.

4.6.3.1.2 Comparison of Policy Context Selection on Rx and Gq'

4.6.3.1.2.1 Support on Rx

Policy context selection is not supported on Rx.

4.6.3.1.2.2 Support on Gq'

Policy context selection is supported on Gq'.

The approach on the Gq' reference point to support policy context selection is the following:

When a new AF session is established and media information for this AF session is available at the AF, the AF attempts to create a session on the SPDF.

The AF may specify the authorization context of a media component or a session respectively. In the case of a multicast media reservation, the derived authorization context stored in A-RACF may provide information on the multicast channels allowed or not allowed during the session and their respective QoS requirements.

When the AF modifies an existing session, the authorization context of a media component or a session may also be modified. The new authorization context replaces any authorization context previously associated to the media component. Similarly, any new session level authorization context replaces any authorization context previously associated to the session.

4.6.3.1.2.3 Comparison of Policy Context Selection

This clause provides a verbal comparison of the policy context selection procedure.

Policy context selection is supported on Gq' and is not supported on Rx.

4.6.3.1.3 Comparison of Functional Parameters for Policy Context Selection

This clause compares the set of functional parameters used on the Rx and Gq' reference points for policy context selection:

Functional Parameter	Description	Rx		Gq'	
		Applicable (Y/N)	Category (M/O/C)	Applicable (Y/N)	Category (M/O/C)
Media Authorization Context ID	Identifies an authorization context requested by the AF associated to a media flow	N	-	Y	O
Authorization Package ID	Identifies an authorization context requested by the AF for the session	N	-	Y	O

4.7 Functionality: Error Reporting

4.7.1 General

This clause compares how functionality for Error Reporting is currently addressed on Rx and on Gq' reference points.

4.7.2 Description for both Gq' and Rx Reference Points

This clause provides an overview of the functionality for Error Reporting.

The Error Reporting functionality is applicable on Rx.

The Error Reporting functionality is applicable on Gq'.

4.7.3 Comparison of Functional Procedures

4.7.3.1 Functional Procedure: Error Reporting

4.7.3.1.1 General

This clause compares the procedures for reporting error conditions to the AF available at the Rx and Gq' reference points.

The same procedure for reporting error conditions to the AF are available both at Rx and Gq' reference points.

There will be circumstances where the service information provided by the AF at initial provisioning or modification of service information can not be accepted by the PCRF or the SPDF. When this occurs, the PCRF/SPDF provides a response to the AF including an unsuccessful result code. Additional information on the type of error condition that made the original request fail will be also included.

However, the set of error conditions reported to the AF over Rx and Gq' reference points differ. The following sections describe and compare which types of error conditions are available over each interface and which are not.

4.7.3.1.2 Comparison of the Error Reporting Functional Procedure on Rx and Gq'

This clause provides a verbal comparison of functional procedure for reporting error conditions to the AF.

The procedure for reporting error conditions to the AF are the same over Rx and Gq' reference point.

The set of the actual error conditions reported to the AF available over Rx and Gq' reference points is however different in each case.

- Reporting of INVALID_SERVICE_INFORMATION and FILTER_RESTRICTIONS is possible over both reference points.

- Reporting of extra error conditions to the AF is possible over Rx reference point:
REQUESTED_SERVICE_NOT_AUTHORIZED
DUPLICATED_AF_SESSION
IP-CAN_SESSION_NOT_AVAILABLE

Mind that these types of errors reported over Rx reference point are locally generated at the PCRF.

- Reporting of extra error conditions to the AF is possible over Gq' reference point:
INSUFFICIENT_RESOURCES
COMMIT_FAILURE
REFRESH_FAILURE
QOS_PROFILE_FAILURE
ACCESS_PROFILE_FAILURE
PRIORITY_NOT_GRANTED
MODIFICATION_FAILURE
BINDING_FAILURE

Mind that these types of errors reported over Gq' reference point are generated at and reported by the underlying access system (e.g. A-RACF and/or BGF). The SPDF simply progresses the notification of the error towards the AF.

4.8 Void

5 Overall Harmonization

This clause provides the necessary information for the overall harmonization of the Gq' and Rx reference points (i.e. over all functionalities). The information is required to make sure that harmonization of individual functionalities leads to a Harmonized Gq'/Rx reference point.

6 Functionalities and Procedures in support of Migration

6.1 General

This clause presents the functionalities and procedures that are required in order to support the migration towards a harmonized reference point. This clause does not consider functionalities and/or procedures that were already supported by at least one of the reference points (such functionalities/procedures are addressed in clause 4).

Editor's note: Aspects that need to be covered in this clause include (non exhaustive list): version negotiation at the AF and at the PCC/RACS side; interworking procedures during transition phases; AF rules for selecting the appropriate parameters subset when issuing a request over the harmonized reference point.

6.2 Migration in case of full harmonization

6.2.1 Introduction

This clause describes functionalities and procedures that are required in order to support the migration towards a fully harmonized reference point, tentatively called Rx'. In the above context, full harmonization means that all the functions

available to application functions through the Rx and Gq' reference point are also available through the Rx' reference point.

NOTE: Whether this includes integrating the functions of the Iq reference point in this converged reference point requires further studies.

Editor's note: Definition and analysis of this full harmonisation option is not yet available in this TR and requires for further studies.

6.2.2 Profile selection

As result of the present study, under the above assumption, the Rx protocol profile will be extended with several A VPs thereby supporting the same level of service than the Gq' protocol profile. Application Functions will have the option to access resource control services using either profile. Although both profiles are based on the DIAMETER protocol, they are not compatible as they correspond to different DIAMETER applications (16777222 and 16777236 or a new value).

When either the Application Function or the resource control system (i.e. RACS or PCC) supports both profiles, the Diameter procedure for exchanging capabilities (CER/CEA commands) will enable the determination of the application/profile to use.

In cases where the two peers have no applications in common, the capability exchange procedure will lead to the disconnection of the transport layer connection. In order to avoid this situation, insertion of mediation functions is required. Such mediation functions can be co-located with the entry point in the resource control system (i.e. the PCRF or SPDF), with the AF or implemented as stand alone equipment units.

NOTE: In the later case, the stand alone equipment unit may also provide the function of a Diameter Routing Agent as identified in 3GPP TR 29.804.

Table 1 and Table 2 provide a summary of the combinations that may be encountered. Combinations described in Table 2 do not occur if Rx and Rx' use the same DIAMETER application identifier.

Table 1: Protocol profile combinations (Gq' and Rx')

		Application Function supports		
		Both	Gq'	Rx'
Resource Control System supports	Both	Negotiation	Negotiated to Gq'	Negotiated to Rx'
	Gq'	Negotiated to Gq'	Gq'	Capabilities Exchange fails Mediation Required
	Rx'	Negotiated to Rx'	Capabilities Exchange fails Mediation Required	Rx'

Table 2: Protocol profile combinations (Rx and Rx')

		Application Function supports		
		Both	Rx	Rx'
Resource Control System supports	Both	Negotiation	Negotiated to Rx	Negotiated to Rx'
	Rx	Negotiated to Rx	Rx	Capabilities Exchange fails

				Mediation Required
	Rx'	Negotiated to Rx'	Capabilities Exchange fails Mediation Required	Rx'

Figure 1 and 2 illustrate various protocol combinations that may be supported by mediation functions.

NOTE: Whether the Iq reference point (represented using dotted lines) will continue to be used requires further studies and depends on whether the integration of the functions it supports is covered by the full harmonization scenario.

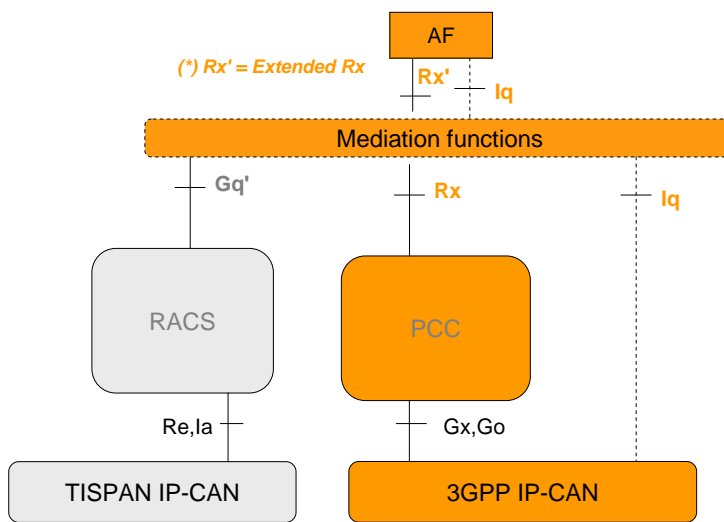


Figure 1: Mediation from Rx' to Gq' and Rx

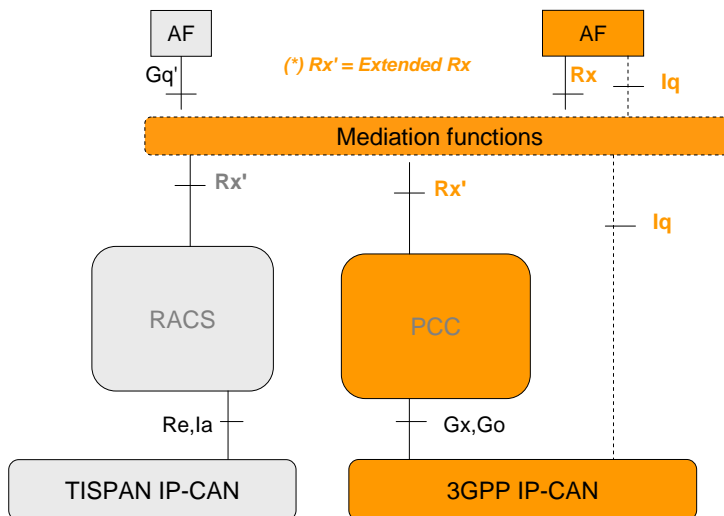


Figure 2: Mediation from Gq' and Rx to Rx'

6.2.3 Use of the selected profile

6.2.3.1 General

If the extended Rx profile (see Figure 1) has been selected as a result of the capabilities exchange procedure or of the insertion of a mediation function, the following questions remain:

- How does the AF know which sub-set of the extended Rx interface to use?
- How does the AF know the sequence of events to be generated/received?

The following subclauses assume that when a resource control platform receiving the Rx commands supports both RACS and PCC, different DIAMETER destination addresses are used.

6.2.3.2 Parameters selection

The following two approaches can be considered regarding the selection of parameters (AVPs) to be included by an AF in a DIAMETER command:

- **Option #1** The AF determines the type of resource control system from the type of (access) network from which a related application layer message was received. This information can be retrieved from the CLF or provisioned on the AF. Then the AF determines the list of AVPs to be supplied based on this knowledge.

NOTE: Alternatively the AF may determine the type of resource control system by attempting to connect to one type of subsystem first and by attempting to connect to the other type of subsystem if the first attempt is not successful.

- **Option #2:** The AF provides as much as information as possible to the resource control system. This system will then discard the irrelevant information.
- **Option #3:** The AF provides as much as information as possible to the resource control system. A mediation function will then discard the irrelevant information (See figure 2).

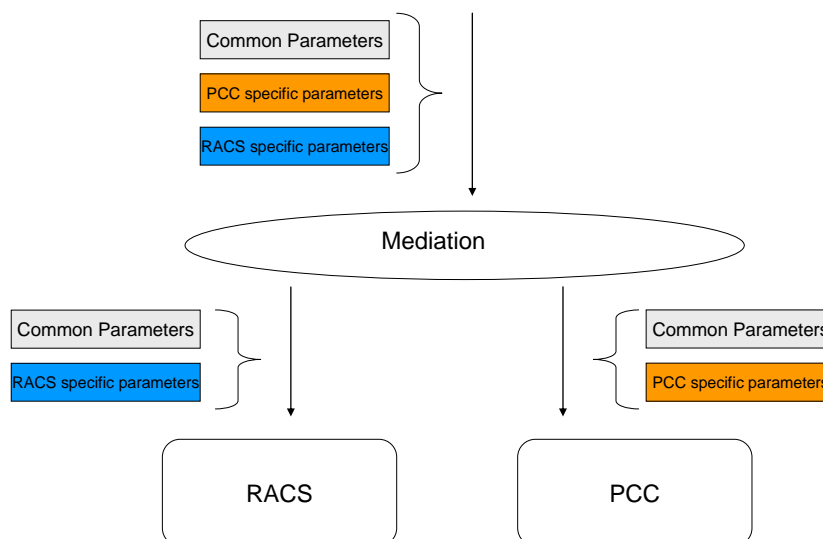


Figure 3: Filtering of protocol parameters

6.2.3.3 Sequencing of requests and responses

The following two approaches can be considered regarding the sequencing of commands sent and received by an AF:

- **Option #1** The AF determines the type of resource control system from the type of (access) network through which a related application layer. This information can be retrieved from the CLF or provisioned on the AF. Then the AF determines the order of messages to be sent and received.
- **Option #2:** The AF implements a single access independent logic for interacting with a resource control platform. A media function performs the required adaptation to the state machine supported by the resource control platform.

Option 1 requires the AF to support two protocol state machines unless this AF is associated to a single type of access / resource control system.

Option 2 requires standardisation of the interworking procedures performed by the mediation function.

6.2.4 Architectural impacts

Mediation functions can be modelled as a new functional entity, tentatively called Policy Control Mediation Function (PCMF), to be added to both the RACS and PCC architectures or will be integrated as elementary functions in existing functional entities. This requires further study.

6.2 Migration in case of partial harmonization

To be provided

7 General Conclusions

This clause presents general conclusions and guidelines regarding the harmonization of the Rx and Gq' reference points.

Annex A (informative): Documentation of Analysis

This section documents the key aspects of the discussions related to the harmonization of each functionality.

A.1 Functionality Basis Reservation and Admission Procedures

A.1.1 General

This clause details the options for harmonization of the Basis Reservation and Admission Procedures which have been considered.

A.1.2 Option a for Harmonization

This option proposes a harmonized protocol definition in terms of functional parameters and functional parameter value support. Not every functional parameter or parameter value will be however applicable to both scenarios so specific processing rules may be defined for the protocol endpoints (P-CSCF and SPDF/PCRF) depending on the type of access.

The harmonized protocol definition shall support the list of functional parameters defined in clause 4 as specified at the Gq' and/or the Rx reference points. Special considerations are listed in the following subclauses of this Annex and in other sections of this Annex.

Editor's Note: It is FFS whether each particular functional element applies to TISPA-N and/or 3GPP environments.

The list of IP-CAN session and bearer events the P-CSCF is able to subscribe to and the list type of errors that can be reported to the P-CSCF as described in sections 4.1.3.5.2 and 4.x shall be also harmonized.

A.1.2.1 Globally Unique (IP) Address

In order to harmonize the Rx and Gq' protocol definition, it is proposed that the Globally Unique Address is used as used over the Gq' reference points instead of simply the UE's IP address as used over the Rx reference point. In order to guarantee backward compatibility with previous specifications of the Rx reference point it is proposed to create a special value of the Realm (DEFAULT) which can be used when there is no realm or no overlapping addresses.

A.1.2.2 Reservation Priority

The harmonized Rx/Gq' protocol definition shall include the indication of Reservation-Priority also in the response to the AF (i.e. within the Diameter AAA Command).

Editor's Note: It is FFS whether this is an essential consideration for the harmonized Gq'/Rx protocol definition.

A.1.2.3 Media Component Description

The harmonized Rx/Gq' protocol definition shall support optional parameters within the Media-Component-Description for a Media-Authorization-Context-ID and the indication of Reservation-Class and Transport-Class requested by the AF as defined at the Gq' reference point.

A.1.2.4 AF Application Identifier

The harmonized Rx/Gq' protocol definition shall support the identifier of the type of service the particular AF session belongs to (AF-Application-Identifier) both at Diameter command and media component level.

A.1.2.5 Flow Grouping

Editor's Note: It is FFS whether the indication of whether no other IP Flows shall be transported together with the listed IP Flows in the same IP-CAN bearer is relevant for the harmonized Gq'/Rx protocol definition.

A.1.2.6 Service Class

The harmonized Rx/Gq' protocol definition shall support an identifier for Service-Class requested by the AF as defined at the Gq' reference point.

A.1.2.7 Service Information Status

The harmonized Rx/Gq' protocol definition shall support an indication of the negotiation status of the service information provided by the AF as defined at the Rx reference point.

A.1.2.8 Acceptable Service Information

The harmonized Rx/Gq' protocol definition shall support in the response to the AF an indication of the maximum bandwidth for an AF session and/or for specific media components that will be authorized as defined at the Rx reference point.

A.1.2.9 Access Network Charging Information

The harmonized Rx/Gq' protocol definition shall support in the response to the AF the IP Address of the network entity within the access network performing charging (e.g. the GGSN IP address) and the Charging identifier assigned to related IP Flows as defined at the Rx reference point.

It shall be possible for the AF to subscribe to the exchange of charging correlation information over the harmonized Rx/Gq' protocol definition as defined at the Rx reference point.

A.1.2.10 Access Type Information

The harmonized Rx/Gq' protocol definition shall support in the response to the AF the information about the IP-CAN type and Radio Access Type the user is connected to as defined at the Rx reference point.

It shall be possible for the AF to subscribe to notifications of change of the type of access network over the harmonized Rx/Gq' protocol definition as defined at the Rx reference point.

A.1.2.11 Notification Events

The harmonized Rx/Gq' protocol definition shall support the possibility for the AF to subscribe to notification of the IP-CAN session and Bearer events described in section 4.1.3.5.2 as specified by the Gq' and/or the Rx reference points.

The particular use of the subscription to INDICATION_OF_LOSS_OF_BEARER and INDICATION_OF_RELEASE_OF_BEARER events defined at the Rx reference point for the notification of temporal and permanent loss of the signalling connectivity respectively shall be supported by the harmonized Gq'/Rx protocol definition.

A.1.2.12 Error Reporting

The harmonized Rx/Gq' protocol definition shall support the reporting of the error conditions described in section 4.1.3.6.2 as specified by the Gq' and/or the Rx reference points.

A.2 Functionality NAPT Control

A.2.1 General

This clause details the options for harmonization of functionality XYZ which have been considered.

A.2.2 Option a for Harmonization

A.2.2.1 Functional Procedure NAPT Binding Creation

A.2.2.1.1 Approach for Harmonization of Functional Procedure NAPT Binding Creation

Extend the Rx reference point with NAPT Binding Creation procedure, together with the addition of the same functional parameters as those used on the Gq' reference point for the NAPT Binding Creation procedure.

A.2.2.1.2 Functional Parameters

The harmonization of functional procedure NAPT Binding Creation in option a is based on the following set of functional parameters:

Functional Parameter	Description	Category
Input Binding Information	This functional parameter contains the transport address for which a translation is requested: - in the originating side: end user's IP Address/port in the originating side - in the terminating side: IP Address/Port communicated by the originating side	M
Access-side Output Binding Information	This functional parameter contains a translated transport address: - In the originating side: access-side address/port bound to the end user's IP Address/port - In the terminating side: access-side address/port bound to the IP address/port provided by the originating side.	C ⁶
Core-side Output Binding Information	This functional parameter contains a translated transport address: - In the originating side: core-side IP address/port bound to the end user's IP Address/port - In the terminating side: core-side IP address/port bound to the IP address/port provided by the originating side.	C ⁷
Latching Indication	Indicates that the served endpoint is behind a hosted-NAPT, or that updated addressing information for that endpoint is available.	C ⁸

A.2.2.2 Functional Procedure NAPT Binding Modification

A.2.2.2.1 Approach for Harmonization of Functional Procedure NAPT Binding Modification

Extend the Rx reference point with NAPT Binding Modification procedure, together with the addition of the same functional parameters as those used on the Gq' reference point for the NAPT Binding Modification procedure.

A.2.2.2.2 Functional Parameters

The harmonization of functional procedure NAPT Binding Modification in option a is based on the following set of functional parameters:

Functional Parameter	Description	Category
Input Binding Information	See clause A.2.2.1.2	M
Access-side Output Binding Information	See clause A.2.2.1.2	C ⁹
Core-side Output Binding Information	See clause A.2.2.1.2	C ¹⁰
Latching Indication	See clause A.2.2.1.2	C

A.2.2.2 Analysis of Option a

This clause indicates the strengths and weaknesses of option a. The clause may also indicate the issues that have been faced with this option.

⁶ Access-side info is optional in the originating side, and is mandatory in the terminating side.

⁷ Access-side info is optional in the originating side, and is mandatory in the terminating side.

⁸ Mandatory at session creation, optional at session modification.

⁹ Access-side info is optional in the originating side, and is mandatory in the terminating side.

¹⁰ Access-side info is optional in the originating side, and is mandatory in the terminating side.

A.3 Soft-State model Functionality

A.3.1 General

This clause details the options for harmonization of functionality XYZ which have been considered.

A.3.1 Option a for Harmonization

A.3.1.1 Initial Admission Functional Procedure in the Soft-State model

A.3.1.1.1 Approach for Harmonization of the Initial Admission Functional Procedure in the Soft-State model

It is proposed to complement the Initial Admission Request and Initial Admission Answer on the harmonized reference point with the Reservation Lifetime as an optional functional parameter.

A.3.1.1.2 Functional Parameters

The harmonization of the Initial Admission functional procedure in the Soft-State model in option a is based on the following set of functional parameters:

Functional Parameter	Description	Category
Session ID	Unique identifier of the session	M
Reservation Lifetime	In the Initial Admission request from the AF, this functional parameter indicates the duration of the corresponding session, as expected by the AF. In the Initial Admission answer to the AF, this functional parameter indicates the maximum allowed duration of the corresponding session.	O

A.3.1.2 Refresh Functional Procedure in the Soft-State model

A.3.1.2.1 Approach for Harmonization of the Refresh Functional Procedure in the Soft-State model

It is proposed to add this procedure, to let the AF refresh an existing temporary session.

A.3.1.2.2 Functional Parameters

The harmonization of the Refresh functional procedure in the Soft-State model in option a is based on the following set of functional parameters:

Functional Parameter	Description	Category
Session ID	Unique identifier of the session	M
Reservation Lifetime	In the Initial Admission request from the AF, this functional parameter indicates the duration of the corresponding session, as expected by the AF. In the Initial Admission answer to the AF, this functional parameter indicates the maximum allowed duration of the corresponding session.	O

A.3.1.3 Analysis of Option a

This clause indicates the strengths and weaknesses of option a. The clause may also indicate the issues that have been faced with this option.

This option helps guaranteeing a seamless migration between the Gq' reference point and the harmonization reference point.

A.4 Functionality: Support of Emergency Calls

A.4.1 General

This clause details the options for harmonization of the support of emergency calls which have been considered.

A.4.2 Option a for Harmonization

A.4.2.1 Functional Procedure: Initial Request

A.4.2.1.1 Approach for Harmonization of Initial Request Functional Procedure

It is proposed to adopt for the Gq' reference point the same approach as for the Rx reference point, i.e. to complement the Gq' reference point with an explicit indication that the request to the RACS corresponds to emergency traffic. It is further proposed to not use the Service Class for this purpose.

A.4.2.1.2 Functional Parameters

The harmonization of the Initial Request functional procedure in this option is based on the following set of functional parameters:

Functional Parameter	Description	Category
Indication of Emergency Call	Indicates that the request is associated with an emergency AF Session.	O

A.4.2.2 Functional Procedure: modification request

A.4.2.2.1 Approach for Harmonization of the modification Functional Procedure

Same proposal as for the initial reservation procedure (See clause [A.x.1.1.1](#))

A.4.2.2.2 Functional Parameters

Same proposal as for the initial reservation procedure (See clause [A.x.1.1.2](#))

A.4.2.3 Analysis of Option a

This clause indicates the strengths and weaknesses of this option. The clause may also indicate the issues that have been faced with this option.

- Strengths:
 - Explicit indication that the request is associated with an emergency call;
 - Simple approach for the alignment of the support of emergency calls on Gq' and Rx.
- Weaknesses:
 - May create a backward compatibility issue with the previous specification of the Gq' reference point (for TISPAN R1 and R2), as a different approach is used for identifying a request associated with an emergency session.

A.5 Functionality: Overbooking Indicator

A.5.1 General

This clause details the options for harmonization of overbooking functionality which have been considered.

A.5.2 Option a for Harmonization

A.5.2.1 Overbooking Indication Within The Initial Reservation Functional Procedure

A.5.2.1.1 Approach for Harmonization of the overbooking indicator within the Initial Reservation Functional Procedure

Extend the Rx reference point with the same set of procedures as those supported on the Gq' reference point, together with the addition of the same functional parameters as those used on the Gq' reference points for these procedures.

A.5.2.1.2 Functional Parameters

The harmonization of the support of overbooking within the Initial Reservation functional procedure in option a is based on the following set of functional parameters:

Functional Parameter	Description	Category
Overbooking indication	Indicates that the AF requires processing the resource request in overbooking mode. Possible values: <ul style="list-style-type: none"> • 0: when the value of overbooking indicator is equal to zero then there is no need for overbooking, • 1: if the value is equal to one then overbooking is required. 	O

A.5.2.2 Overbooking Indicator Within The Modification Functional Procedure

A.5.2.2.1 Approach for Harmonization of the overbooking indicator within the Modification Functional Procedure

A.5.2.2.2 Functional Parameters

The harmonization of the support of overbooking within the Modification functional procedure in option a is based on the following set of functional parameters:

Functional Parameter	Description	Category
Overbooking indicator	See clause A.4.2.1.2	O

Editor's note: A change request is required against Gq' in order to clarify the possible transitions of the overbooking indicator between the initial reservation and the modification procedure

A.5.2.3 Analysis of Option a

This clause indicates the strengths and weaknesses of option a. The clause may also indicate the issues that have been faced with this option.

Editor's note: this annex will be completed at a later stageA.6 Policy Context Selection Functionality

A.6.1 General

This clause details the options for harmonization of Policy Context Selection functionality which have been considered.

A.6.1 Option a for Harmonization

A.6.1.1 Functional Procedure Policy Context Selection

A.6.1.1.1 Approach for Harmonization of the Policy Context Selection Functional Procedure

It is proposed to complement the Initial Admission Request and modification Request for the harmonized protocol definition with the Media Authorization Context ID and Authorization Package ID as optional functional parameters.

A.6.1.1.2 Functional Parameters

The harmonization of the Initial Admission Request and modification Request functional procedures in option a is based on the following set of functional parameters:

Functional Parameter	Description	Category
Media Authorization Context ID	Identifies an authorization context requested by the AF associated to a media flow	O
Authorization Package ID	Identifies an authorization context requested by the AF for the session	O

A.6.1.2 Analysis of Option a

This clause indicates the strengths and weaknesses of option a. The clause may also indicate the issues that have been faced with this option.

This option helps guaranteeing a seamless migration between the Gq' reference point and a harmonized reference point.

A.7 Void

A.8 Overall Harmonization

A.8.1 General

This clause details the options for overall harmonization including architectural aspects.

A.8.1 Option a for Harmonization

A.8.1.1 Architectural Aspects

In the Release 8 timeframe, it is proposed that TISPAN RACS and 3GPP PCC continue to use their own policy and access architectures. P-CSCF interactions for policy control and related policy procedures towards underlying access layer would still be executed according to the processing rules defined for each environment.

This implies that during Release 8 timeframe:

- A P-CSCF keeps on interacting with a SPDF in TISPAN environments and with a PCRF in 3GPP environments.

In practice, this means that in the Rel-8 timeframe, the reference point between the P-CSCF and a TISPAN SPDF (e.g. Gq'+) will still be different from the reference point between the P-CSCF and a 3GPP PCRF (e.g. Rx+). Harmonization of specific functionalities including functional procedures, functional parameters and functional parameter values (as proposed in other sections of this Annex) may still be possible during Rel-8 timeframe in the two different reference points.

- A P-CSCF continues to use Iq reference point for NAPT control in a 3GPP environment and Gq'/Ia reference points in a TISPAN environment.

A.8.1.2 Analysis of Option a

The comparison of the procedures at the protocol end-points and the policy and access architectures in the respective TISPAN and 3GPP environments leads to the conclusion that while a pure protocol alignment may be reasonably easy to implement, the integration of TISPAN's SPDF functionality into 3GPP's PCRF is not by any means a straight forward matter.

Furthermore, the alignment of the policy architectures and policy control procedures in TISPAN and in 3GPP requires an in-depth architectural analysis, taking into consideration alignment with 3GPP Evolved Packet Core architecture, and the evolution of the PCC architecture defined in 3GPP during Release 8.

At this point in the development of Release 8, it is highly undesirable to modify the policy and access architecture (e.g. to enable additional reference points to the PCRF for NAPT control procedures towards a BGF). Beyond Release 8, further consideration may be given to investigating such a common architecture for TISPAN and 3GPP, depending on the interest from both communities. This architectural analysis represents significant work (including requirements understanding) not feasible for Release 8 timeline.

Annex B (informative): Change history

Change history								
Date	TSG #	TSG Doc.	CR	Rev	Cat	Subject/Comment	Old	New
2007-11	-	-	-	-	-	First draft	-	0.1.0
2008-02	SA2#63		S2-081341	-	-	Skeleton draft submitted to SA2#63	-	0.1.1
2008-02	SA2#63		S2-081722	1	-	Revision of S2-081341	0.1.1	0.1.2
2008-02	SA2#63				-	Output of SA2#63	0.1.2	0.2.0
2008-04	TISPAN 2-04-SA2 Joint Meeting			-	-	Output	0.2.0	0.3.0