

# Emergency and Multimedia Priority Services

Ericsson Service-Aware Policy Controller

## FACILITY DESCRIPTION

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# 1 Emergency and Multimedia Priority Services Introduction

This document describes the Emergency Services function and Multimedia Priority Services (MPS) function provided by the SAPC.

Emergency services function includes support for emergency IP-CAN sessions and IMS emergency calls.

Multimedia priority services function includes support for subscription-based priority services and on-demand IMS priority services.

## 2 Emergency Services Function

### 2.1 Emergency Services Overview

The SAPC supports IMS emergency services according to the principles and requirements of 3GPP TS 23.167.

The functionality involves support of two inter-related aspects:

- Emergency bearer service: IP-CAN session provided through an emergency APN.
- IMS emergency call: dynamic service initiated by the AF (P-CSCF) that uses an emergency IP-CAN session.

The following picture shows a high-level flow for the establishment of an IMS emergency call over LTE/EPC access.

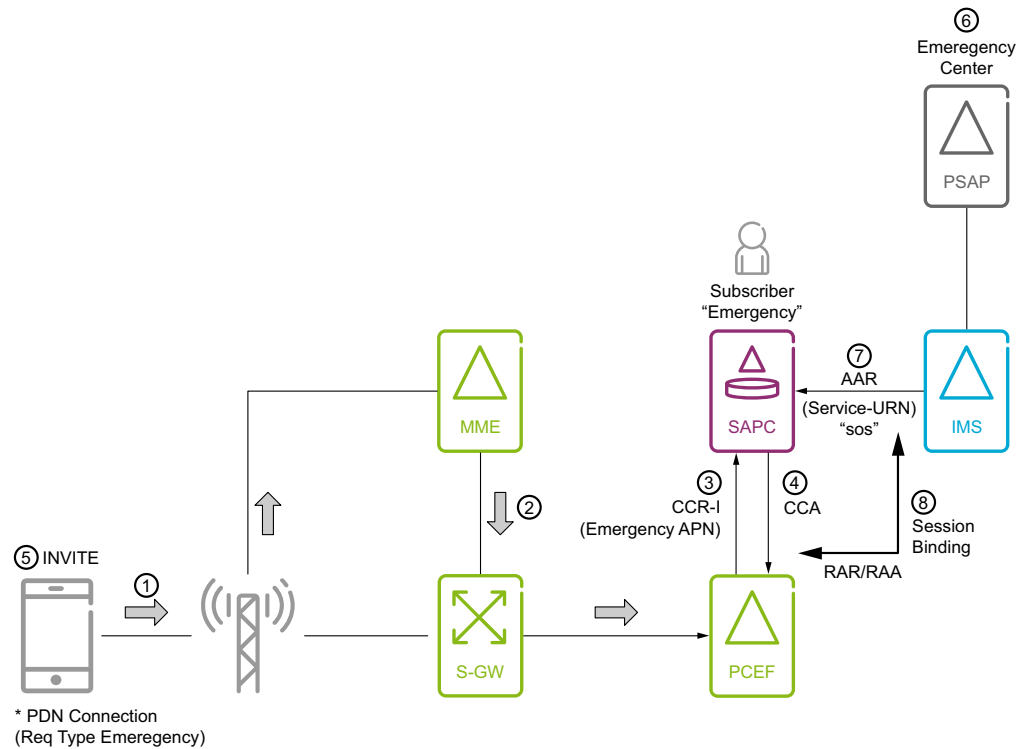


Figure 1 Overview of IMS Emergency Call

- 1. When the UE terminal wants to establish an IMS emergency call, first it requests a PDN connection for emergency purposes by sending a PDN connectivity request with a Request Type set to Emergency.
- 2. The MME/S-GW verifies that the request is allowed and triggers the establishment of the IP-CAN session through an emergency APN. The PDN-GW allocates an IP address and initiates the Gx session establishment.
- 3-4. The SAPC identifies that the IP-CAN session is for emergency services upon detection of an emergency APN at initial CCR, then the SAPC installs PCC rules to restrict the traffic to emergency destinations and IMS signalling, with the authorized QoS that applies to the default EPS bearer for emergency services.
- 5-6. Once the radio bearer is established, the UE may initiate the IMS emergency call by sending the INVITE request to the IMS network and subsequent application layer signalling.
- 7. The AF (P-CSCF) establishes an Rx session towards the SAPC indicating in the AAR message that the new AF session relates to emergency traffic.
- 8. The SAPC performs session binding and ensures that the AF session relates to emergency traffic. Then the SAPC performs dynamic service classification and qualification, and provides the PCC rules with the authorized QoS for IMS emergency calls.



## 2.2 Emergency Subscriber Profile

To support emergency services, the SAPC makes use of a special Emergency Subscriber Profile configured with all operator policies required to make authorization and policy decisions for IP-CAN sessions restricted to emergency services. This allows the SAPC to provide IMS emergency services to roaming and non-roaming subscribers regardless of being provisioned in the SAPC subscriber database, even when the Subscription-Id AVP is not received during IP-CAN session establishment.

The Emergency Subscriber Profile can be provisioned as any other subscriber. However, there is data not applicable to emergency services. Policy controls applicable for emergency session shall be IP-CAN Session Access Control, Service Access Control, Charging Control and Bearer QoS Control and BW Management.

Autoprovisioning and unknown subscriber functionality does not apply to emergency services. If the Emergency Subscriber Profile is not provisioned in the SAPC and a request for emergency IP-CAN session is received, the request is handled using an empty default Emergency Subscriber Profile.

## 2.3 Emergency Bearer Service

Emergency bearer services are network services provided through an emergency APN to support IMS emergency calls. Emergency bearer services do not require a subscription, and restrict data traffic to emergency destinations and IMS signalling.

The SAPC allows the configuration of a list of emergency APNs and determines, based on the information received on the Called-Station-ID AVP, if the IP-CAN session establishment request refers to an emergency service. Then the SAPC makes use of the information stored in the Emergency Subscriber Profile to evaluate the operator configured policies and obtain the data to be sent towards PCEF.

**Note:** The most relevant policy controls for emergency services are: IP-CAN Session Access Control, Service Access Control, and QoS Control for the Default Bearer.

For emergency services, the UE terminal may not have sufficient credentials to be authenticated in the network and provide only an equipment identifier. The SAPC offers the possibility to accept requests to establish emergency bearer services where the PCEF does not include the Subscription-Id AVP in the CCR Initial message, but includes the IMEI within the User-Equipment-Info AVP. The functionality to accept unauthenticated emergency services with IMEI identifier can be enabled or disabled by configuration of the SAPC.



## 2.4 IMS Emergency Calls

IMS emergency calls are prioritized Multimedia Telephony (MMTel) calls that connect the UE to an emergency center/PSAP and binds to an emergency IP-CAN session. The P-CSCF indicates that the new AF session relates to emergency traffic by setting the Service-URN AVP to a top-level service type of "sos" (for example "sos.ambulance", "sos.police").

On reception of a request for AF session establishment, the SAPC reads the information received in the Service-URN AVP, performs session binding, service classification, authorization, and qualification.

When performing session binding, the SAPC needs to make sure that there is no misuse of emergency IP-CAN sessions, and that the emergency bearer service is not used to make normal IMS calls. Hence, if an AF session for a non-emergency call binds to an emergency IP-CAN session, the request is rejected by the SAPC.

The SAPC allows the operator to use the Service-URN information received from the AF in the dynamic service classification process. Example of typical service classification patterns for IMS emergency calls is the following:

Table 1 Example of Dynamic Service Classification Patterns for IMS Emergency Calls

Classification Patterns for IMS Emergency Calls			
Application Identifier	Media Pattern	Service-Urn	Service-Id
urn%3Aurn-xxx%3A3gpp-service.ims.icsi.mmtel	type=audio	sos.police	EmergencyPolice
urn%3Aurn-xxx%3A3gpp-service.ims.icsi.mmtel	type=audio	sos.ambulance	EmergencyAmbulance

Emergency services can be prioritized, according to operator local policies and regulations, during the dynamic service qualification process by provisioning the ARP value in the QoS profile that applies to IMS emergency calls.

## 3 Multimedia Priority Services Function

### 3.1 Multimedia Priority Services Overview

The SAPC supports multimedia priority services (MPS) based on 3GPP TS 22.153.





The MPS functionality allows qualified and authorized users (Service Users) to obtain priority access over other users in congestion situations.

There are two different types of multimedia priority services depending on how the priority is granted to the subscriber:

- Subscription-based Multimedia Priority Services, where the service user is allocated an MPS subscription and each session originated from that subscriber is prioritized based on the subscription profile.
- On-demand IMS Multimedia Priority Services, where the service user is granted priority from the AF (P-CSCF network function) on a session basis.

## 3.2 Subscription-based Multimedia Priority Services

The subscription-based MPS functionality allows the operator to provision subscribers (government-authorized personnel, emergency officials, and so on) that have priority access to network resources over other users, in situations such as during congestion.

The SAPC uses the Bearer QoS Control and Service QoS Control functionality, together with subscription data, to allocate a QoS profile to the default bearer and authorized services (PCC rules).

The SAPC supports the following two subscription-based priority services:

- EPS Bearer Priority Service. This service is a priority data bearer service that enables the prioritization of all data traffic.
- IMS Signalling Priority Service. This service prioritizes IMS signalling traffic only.

### 3.2.1 MPS Subscription Data

To support subscription-based MPS, the SAPC stores MPS subscription data in MPS profiles and allocates them to authorized subscribers by means of static qualification data.

The subscription data include the following information:

- MPS Type: indicates subscription to either EPS bearer priority service or IMS signalling priority service.
- MPS Priority Level: indicates the subscriber priority level (1–15) regarding both the EPS bearer priority service and IMS signalling priority service. The value 1 represents the highest priority level and 15 the lowest priority level.

Subscribers that do not have an MPS profile allocated are not entitled to priority treatment.

### 3.2.2 EPS Bearer Priority Service

For EPS bearer priority service, the SAPC sets the ARP and QCI parameters so that all data traffic for a given subscriber is prioritized.

The SAPC evaluates the operator policies for Bearer QoS Control and Service QoS Control, and takes into account MPS subscription information to derive the authorized QoS for the default bearer and to derive the authorized QoS per PCC rule.

The following picture shows a flow on how to activate the EPS bearer priority service over LTE/EPC access.

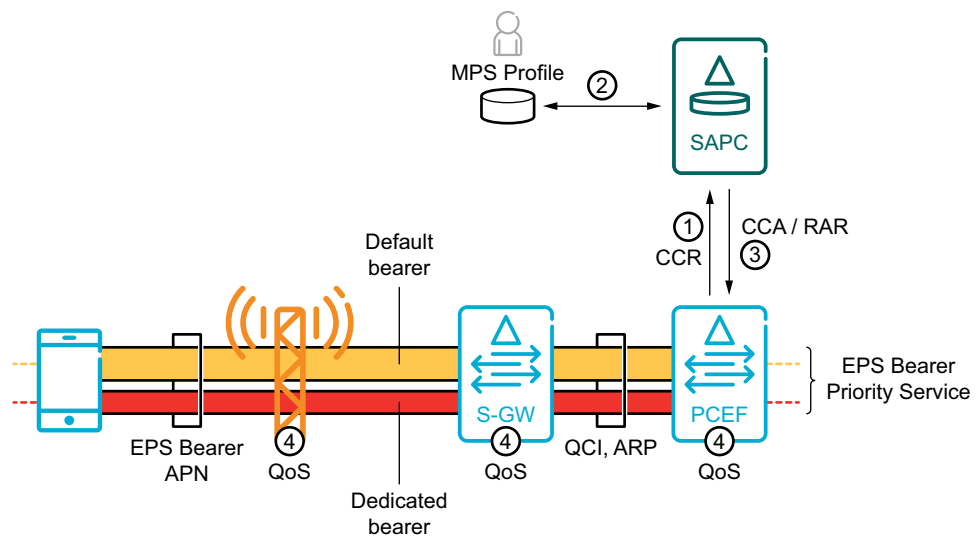


Figure 2 Overview of EPS Bearer Priority Service

- 1. The EPS bearer priority service is activated during IP-CAN session establishment, when the PCEF makes a request for PCC rules and QoS information for the default bearer over an APN for EPS bearer. Other events, such as AF session establishment or MPS profile update, that result in a reauthorization of the subscriber policies also trigger a re-evaluation of the EPS bearer priority service.
- 2. The SAPC obtains the subscriber data, which includes the MPS profile.
- 3. The SAPC performs Bearer QoS Control and Service QoS Control, derives the QCI and ARP parameters, and answers back to the PCEF.
- 4. The PCEF ensures that all traffic for this subscriber is treated with priority in the transport and radio access network.



### 3.2.3 IMS Signalling Priority Service

For IMS signalling priority service, the SAPC sets the ARP and QCI parameters so that only the IMS signalling bearer is prioritized for a given MPS subscriber.

The SAPC allows configuration of a list of APNs enabled for IMS and determines, based on the information received in the Called Station ID, if the IP-CAN session establishment request relates to IMS. Then the SAPC evaluates the configured operator policies for Bearer QoS Control and takes into account MPS subscription information to derive the authorized QoS for the default bearer and for the dedicated IMS signalling bearer (if applicable).

**Note:** The IMS signalling bearer may be carried over the default bearer or a dedicated bearer. Ericsson recommends configuring the IMS signalling bearer to be carried over the default bearer with a QCI value of 5.

The following picture shows a flow on how to activate the IMS signalling priority service over LTE/EPC access.

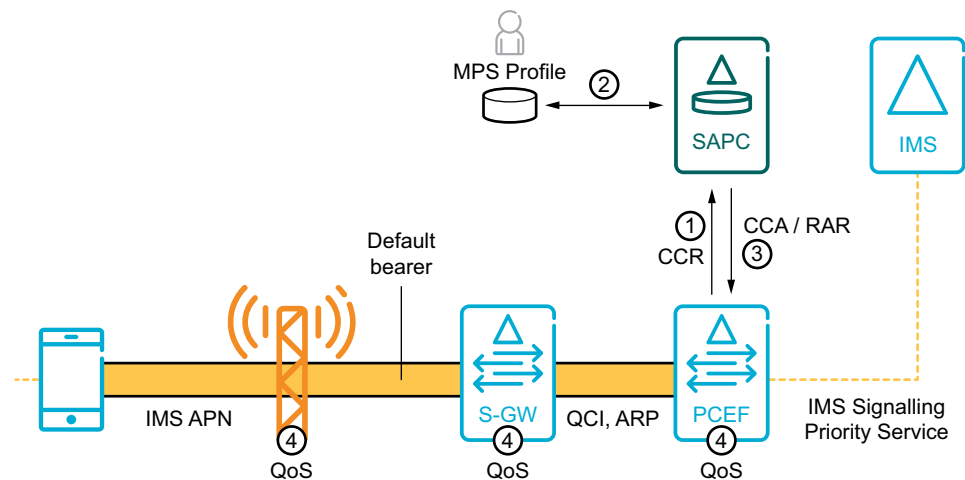


Figure 3 Overview of IMS Signalling Priority Service

- 1. The IMS signalling priority service is activated during IP-CAN session establishment, when the PCEF makes a request for QoS information for the default bearer over an APN dedicated for IMS access. Other events, such as MPS profile update, that result in a reauthorization of the subscriber policies also trigger a re-evaluation of the IMS signalling priority service.
- 2. The SAPC obtains the subscriber data which includes the MPS profile.
- 3. The SAPC performs Bearer QoS Control, derives the QCI and ARP parameters, and sends to the PCEF the authorized QoS for the default bearer.
- 4. The PCEF ensures that IMS signalling traffic for this subscriber is treated with priority in the transport and radio access network.

### 3.3 IMS Multimedia Priority Service

The SAPC supports on-demand prioritization of dynamic services initiated from the AF (P-CSCF) over the Rx interface.

The following picture shows a flow on how to activate the IMS multimedia priority service through the IMS.

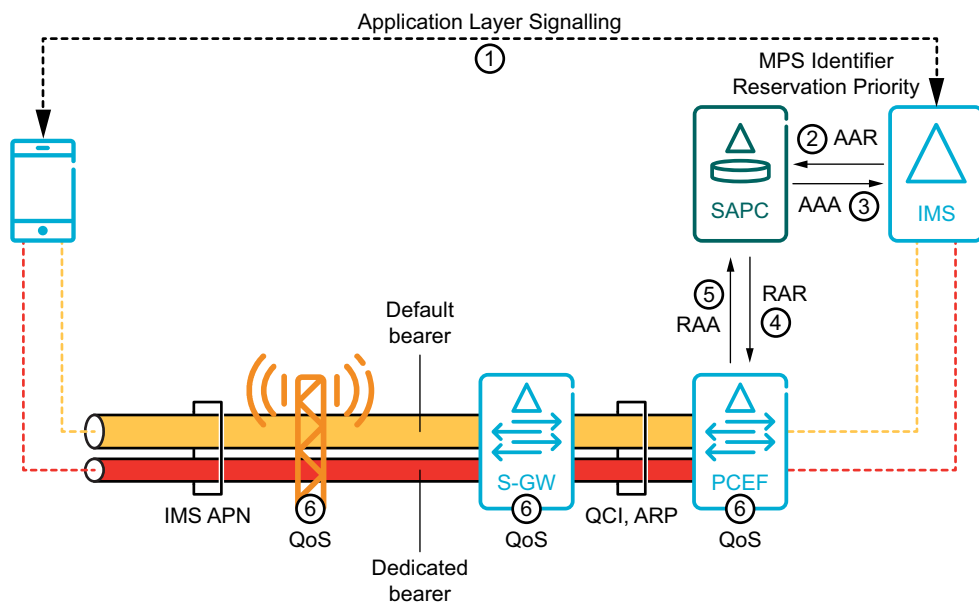


Figure 4 Overview of IMS Multimedia Priority Service

- 1. The UE initiates an IMS call by sending the INVITE request to the IMS network and subsequent application layer signalling.
- 2. The AF establishes an Rx session towards the SAPC by including the MPS Identifier and Reservation Priority in an AA-Request.
- 3-5. The SAPC performs Dynamic Service Classification, Authorization and Qualification. The SAPC derives the PCC rules and the authorized QoS corresponding to the IMS multimedia priority services and sends to the PCEF. The PCEF ensures that media traffic for this subscriber is treated with priority in network resources over other users, in situations such as during congestion.

The SAPC allows the operator to use the MPS Identifier and Reservation Priority information received from the AF in the rules and policies. Using the policies, the SAPC classifies the dynamic services and assign a QoS profile to a particular service in the dynamic service qualification process. Example of typical service classification and qualification patterns for government-oriented priority services is the following:



Table 2 Example of Dynamic Service Classification and Qualification Patterns for Multimedia Priority Services

Dynamic Service Classification and Qualification Patterns for Multimedia Priority Services				
Application Identifier	Media Pattern	MPS Identifier	Reservation Priority	Description
urn%3Aurn-xx%3A3gpp-service.ims.ic si.mmtel	type=audio	NGN-PS Voice	15	MMTel voice service with highest priority that may be granted to Executive Leaders
urn%3Aurn-xx%3A3gpp-service.ims.ic si.mmtel	type=video	NGN-PS Video	13	MMTel video service with high priority that may be granted to Public Health officials
any	type=data	NGN-PS GBR Data	11	GBR data service with priority that may be granted to Disaster Recovery personnel

In addition, the SAPC evaluates the configured policies for Bearer QoS Control to derive the authorized QoS for the default bearer. The MPS Identifier and Reservation Priority information can also be used in the rules and policies for Bearer QoS Control.

## 4 Overload Protection for Emergency and Multimedia Priority Services

In overload situation, the SAPC prioritizes MPS events over events handled with lower priority which are rejected or discarded.

The SAPC allows configuration of a list of APNs corresponding to the MPS types provisioned for the subscriber. In overload situation, the SAPC prioritizes the Gx session establishment and modification based on the received APNs and MPS information.

For more information, see [Overload Control](#).



## 5 Emergency and Multimedia Priority Services Network Deployments

### 5.1 Emergency Services

The SAPC can provide emergency services in the following network elements:

- In the bearer plane (PCEFs) side:
  - Ericsson EPG, through Rel9 Gx onwards.
  - Standard 3GPP PCEF, through Rel9 Gx onwards.
- In the application plane (AF) side:
  - Ericsson SBG, through Rel9 Rx onwards.
  - Standard 3GPP AF, through Rel9 Rx onwards.

### 5.2 Multimedia Priority Services

The SAPC can provide multimedia priority services with the following network elements:

- In the bearer plane (PCEFs) side:
  - Ericsson EPG, through Rel9 Gx onwards.
  - Standard 3GPP PCEF, through Rel9 Gx onwards.
- In the application plane (AF) side:
  - Ericsson SBG or P-CSCF, through Rel10 Rx onwards.
  - Standard 3GPP AF, through Rel10 Rx onwards.

## 6 Emergency Services Traffic Cases

This chapter explains the interfaces and the traffic interactions between the network nodes involved in Emergency Services. For detailed description of each of the interfaces supported, the corresponding interface description should be consulted.



The precondition to all traffic cases is that a diameter connection is already established between the SAPC and the PCEF and between the SAPC and the AF. In addition, all the required policy controls are enabled for the PCEF, and support for dynamic PCC rules is enabled for the GGSN/PDN GW:

- The Service Access policy control is required to perform Service Access control. The Bearer QoS policy control is required to perform QoS control. The Service Charging policy control is required to perform Service Charging Control.
- “Dynamic Policy control” functionality, under license control, need to be active; otherwise SAPC rejects any Gx/Rx message by answering with the DIAMETER\_UNABLE\_TO\_COMPLY=5012 Result-Code.

**Note:** Emergency establishments shall never be rejected because of license capacity exceeded. Nevertheless, emergency sessions are taken into account for the overall IP-CAN and AF session capacity count.

## 6.1 Protocol Binding for Rel9 Rx Onwards and standard Rel9 Gx Onwards

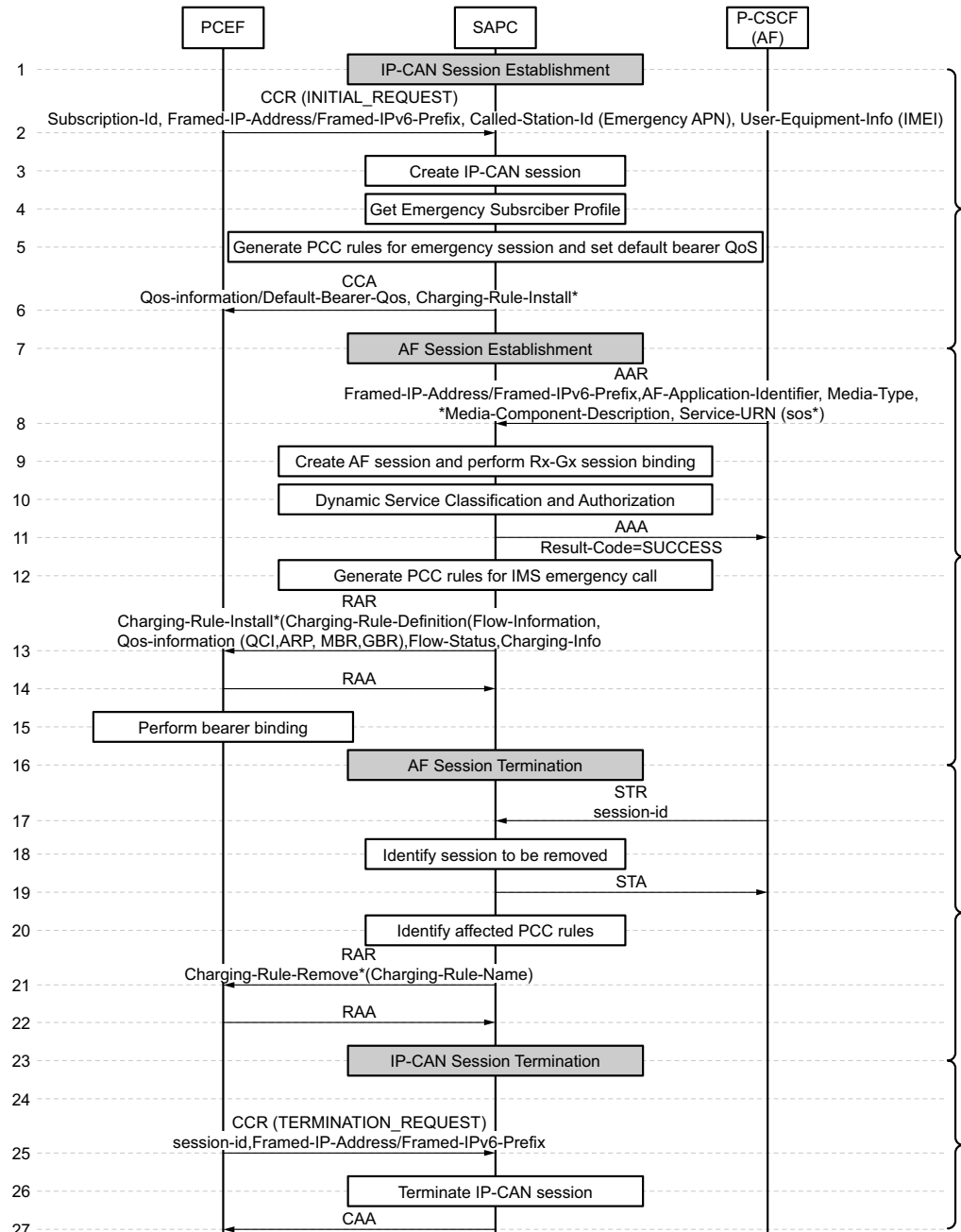


Figure 5 IMS Emergency Call Establishment

### IP-CAN session establishment

- 2.The SAPC receives a Gx CCR-initial message from the PCEF indicating IP-CAN session establishment for an emergency bearer service by using the





standard IP-CAN session establishment procedures with the following main differences:

- Called-Station-ID AVP contains an emergency APN that is defined in the SAPC list of emergency APNs.
- If Subscription-Id AVP is received, the User-Equipment-Info AVP is optional. If Subscription-Id AVP is not received, the CCR-initial message must include the IMEI within the User-Equipment-Info AVP. If neither Subscription-Id AVP nor User-Equipment-Info AVP are received, the SAPC returns a CCA message with experimental result code DIAMETER\_ERROR\_INITIAL\_PARAMETERS (5140). Similarly, if Subscription-Id AVP is missing and unauthenticated emergency services are not allowed according to the SAPC configuration, the SAPC rejects the session establishment with the same experimental result code (5140).
- 3–5. The SAPC creates an IP-CAN session for this subscriber request and PCEF, and calls for the special Emergency Subscriber Profile. This profile contains the static and preconfigured services that are authorized to be installed at the PCEF, the authorized QoS of default bearer for emergency services and the configured operator rules to make policy decisions for emergency IP-CAN sessions. SAPC can handle emergency sessions without the Emergency Subscriber profile provisioned.
- 6. The SAPC sends a CCA message to the PCEF including PCC rules, charging information and default bearer QoS.

#### **AF session establishment**

- Steps 8–15 are similar to the ones explained in *Dynamic Policy Control (Rx)*, during standard AF Session Establishment, with the following differences highlighted below.
- 8. The AAR message includes the Service-URN AVP to indicate that the new AF session refers to an IMS emergency call.
- 9. When performing session binding, the SAPC needs to make sure that there is no misuse of emergency IP-CAN sessions so that the prioritized bearer service is used to make normal IMS calls. Hence if the AF session is bound to an emergency IP-CAN session and the Service-URN AVP is not received or it does not contain a top-level service type of "sos", the SAPC returns an AAA command with Experimental-Result-Code AVP set to the value UNAUTHORIZED\_NON\_EMERGENCY\_SESSION (5066) to the P-CSCF.
- 10–11. The SAPC identifies and classifies the IMS emergency call by using the Service-URN information received from the P-CSCF in the dynamic service classification process. If an IMS emergency call binds to a non-emergency IP-CAN session, the SAPC does not ignore the value of Service-URN AVP. In addition, the SAPC performs dynamic service authorization.
- 12–13. The SAPC derives the dynamic PCC rules and sends this information to the PCEF. The QoS per media subcomponent is obtained by using the Dynamic



Services Qualification function. Provisioning of the PCC rules at the PCEF shall ensure that a new dedicated bearer is established for the Emergency service.

- 14–15. The PCEF accepts the installation of PCC rules and performs bearer binding.

#### **AF session termination**

- 17–22. The P-CSCF sends an STR message to indicate the termination of the AF session for an IMS Emergency service, and the SAPC removes the PCC rules assigned to the terminated IMS emergency call by using a RAR command with Charging-Rule-Remove AVP.

#### **IP-CAN session termination**

- 24–26. Once the IMS emergency call has been terminated and when the inactivity timer expires, the PCEF initiates an IP-CAN session termination request for the IP-CAN session restricted to emergency services.

## **7 Multimedia Priority Services Traffic Cases**

### **7.1 Subscription-based Multimedia Priority Services (Protocol Binding for Standard Rel9 Gx Onwards)**

#### **7.1.1 IP-CAN Session Lifetime for Service Users**

This traffic flow is the same to the IP-CAN Session Lifetime in *Access and Charging Control (Gx)*.

The difference relies in that the subscriber data contains an MPS profile. The SAPC takes into account the MPS subscription information in the evaluation of the policies that derives the authorized QoS for the default bearer and the authorized QoS per PCC rule (if applicable).

#### **7.1.2 Update MPS Subscription Data**

This traffic case describes subscriber reauthorization owing to a change in the subscription information for multimedia priority services. The traffic flow is the same to the Update Subscriber Profile in *Subscription and Policy Management*, with the following particular conditions.



- 1. Subscriber data may be updated by adding an MPS Profile to the subscriber, deleting the MPS profile allocated to a subscriber or modifying an existing MPS profile.
- 3-8. Update of MPS subscription data typically does not affect the result of the IP-CAN Bearer Access Control, but merely the ARP and QCI of the default bearer and active PCC rules for the particular subscriber. When the SAPC reauthorizes the IP-CAN session, the policy controls Bearer QoS Control and Service QoS Control are re-evaluated.

The SAPC sends an RAR message to the PCEF with the updated QoS applicable for the PCC rules and the default bearer.

Update of MPS subscription data effectively triggers the invocation, revocation, or modification of multimedia priority services.

### **Invocation of EPS Bearer Priority Service**

When the EPS Bearer Priority Service is activated owing to a change in the subscriber profile, the SAPC:

- Modifies the ARP of the default bearer
- Modifies the ARP and QCI of all PCC rules installed for this subscriber

### **Revocation of EPS Bearer Priority Service**

When the EPS Bearer Priority Service is deactivated owing to a change in the subscriber profile, the SAPC:

- Applies the normal ARP to the default bearer
- Changes ARP and QCI values for all PCC rules previously prioritized

### **Invocation of IMS Signalling Priority Service**

When the IMS Signalling Priority Service is activated owing to a change in the subscriber profile, the SAPC:

- Modifies the ARP of the default bearer for IP sessions provided through an IMS APN
- If necessary, modify the ARP and QCI of all PCC rules corresponding to the AF signalling bearer

### **Revocation of IMS Signalling Priority Service**

When the IMS Signalling Priority Service is deactivated owing to a change in the subscriber profile, the SAPC:

- Applies the normal ARP to the default bearer in IP sessions provided through an IMS APN

- Changes the ARP and QCI of all PCC rules assigned to the AF signalling bearer that were previously prioritized

## 7.2 IMS Multimedia Priority Services (Protocol Binding for Rel10 Rx Onwards)

### 7.2.1 Priority AF Session Establishment or Modification

This traffic case shows how the SAPC handles multimedia priority services according to the AF's request in AF session establishment or modification.

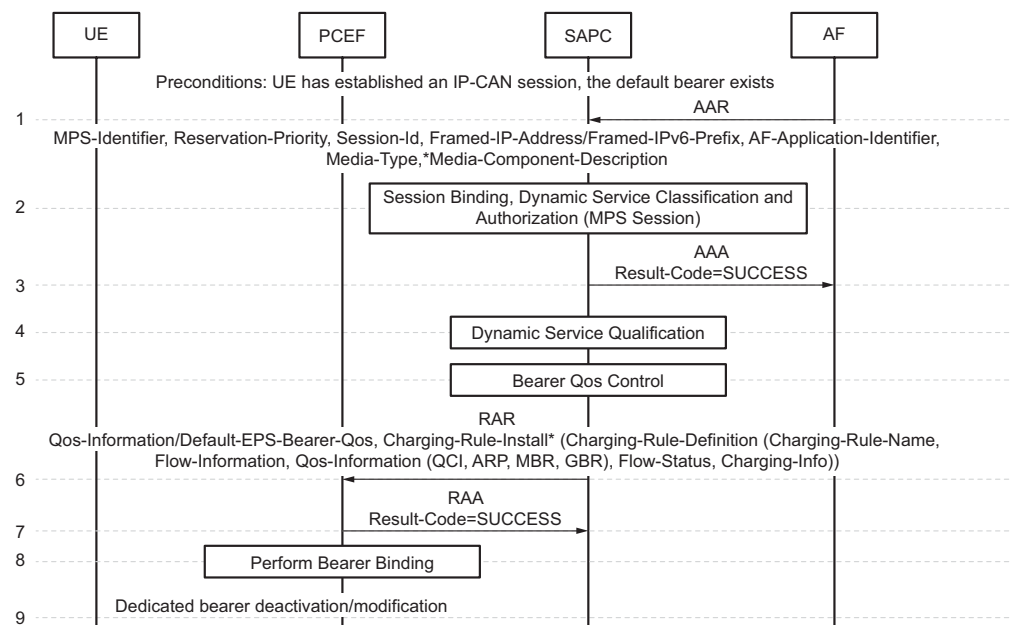


Figure 6 Priority AF Session Establishment or Modification

- 1. The AAR message includes the MPS-Identifier AVP and the Reservation-Priority AVP.
  - The MPS-Identifier AVP indicates that the AF session relates to a multimedia priority service. It contains the national variant for MPS service name, NGN-PS for example.
  - The Reservation-Priority AVP includes the priority value of the related priority service in an enumerated value from DEFAULT (0) to PRIORITY-FIFTEEN(15), with DEFAULT (0) as the lowest priority.

The AF may specify the Reservation-Priority AVP at request level in the AAR to assign a priority to the Rx session, or in the Media-Component-Description AVP to assign a priority to the IP flows. The SAPC allocates the priority of each media sub-component, according to the Reservation-Priority AVP received from the



Media-Component-Description AVP, or, if not available, according to the Reservation-Priority AVP received from AAR.

If the Reservation-Priority AVP is not specified in the AAR message, the requested priority is set to DEFAULT (0).

- 2. The SAPC determines that the AF session establishment request relates to MPS. Then the SAPC performs Gx-Rx session binding and performs Dynamic Service Classification to classify the dynamic services by using the MPS information received from the AF. In addition, the SAPC performs Dynamic Service Authorization.
- 3. The SAPC answers back to the AF with an AAA including the Result-Code AVP with value SUCCESS.
- 4-5. The SAPC derives the PCC rules corresponding to the IMS multimedia priority services by using the Dynamic Service Qualification function and sets the ARP and QCI of these PCC rules as required by the operator policies. The SAPC also performs Bearer QoS Control and sets the ARP of the default bearer as appropriate for the prioritized services.
- 6. The SAPC sends to the PCEF the QoS for the default bearer, the dynamic PCC rules and QoS information per each PCC rule.
- 7-9. The PCEF accepts the installation of PCC rules and performs bearer binding.

## 7.2.2

### Priority AF Session Termination

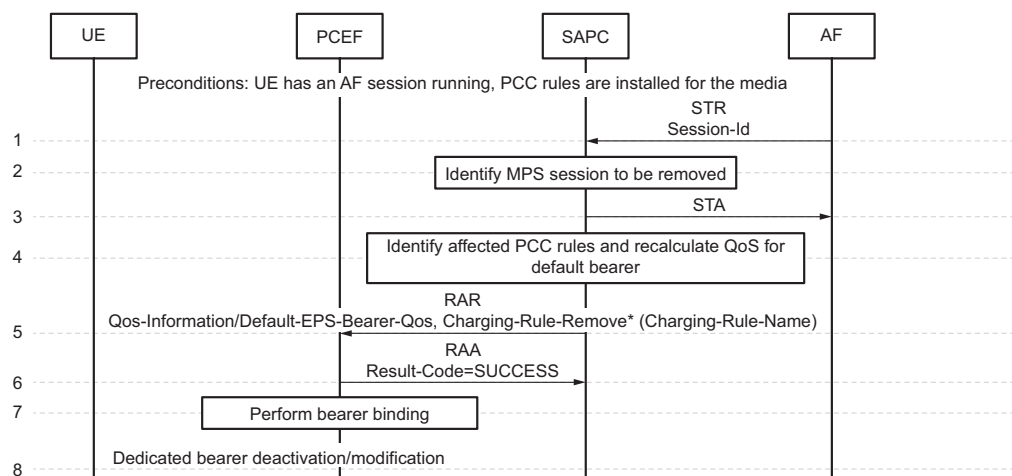


Figure 7 Priority AF Session Termination

- 1. The AF sends an STR message to indicate the termination of the AF session for multimedia priority services.
- 2-3. The SAPC identifies that the session to be removed is related to multimedia priority services and accepts the termination of the AF session.

- 4. The SAPC identifies the affected PCC rules and also performs Bearer QoS Control to re-evaluate the QCI and ARP of the default bearer.
  - If there are no more multimedia priority services on the IP-CAN bearer, the SAPC applies the normal (non-priority) ARP to the default bearer.
  - If there are other multimedia priority services on the IP-CAN bearer, the SAPC sets the ARP of the default bearer according to the ongoing services and configured policies.
- 5. The SAPC sends an RAR to remove the PCC rules and update the QoS information of the default bearer.
- 6-8. The PCEF accepts the transaction, performs the bearer binding, and deactivates or modifies the dedicated and default bearers.

## 7.3 AF Session Establishment or Modification for Service Users

This traffic case describes non-priority AF session establishment or modification for a subscriber that has provisioned an MPS profile.

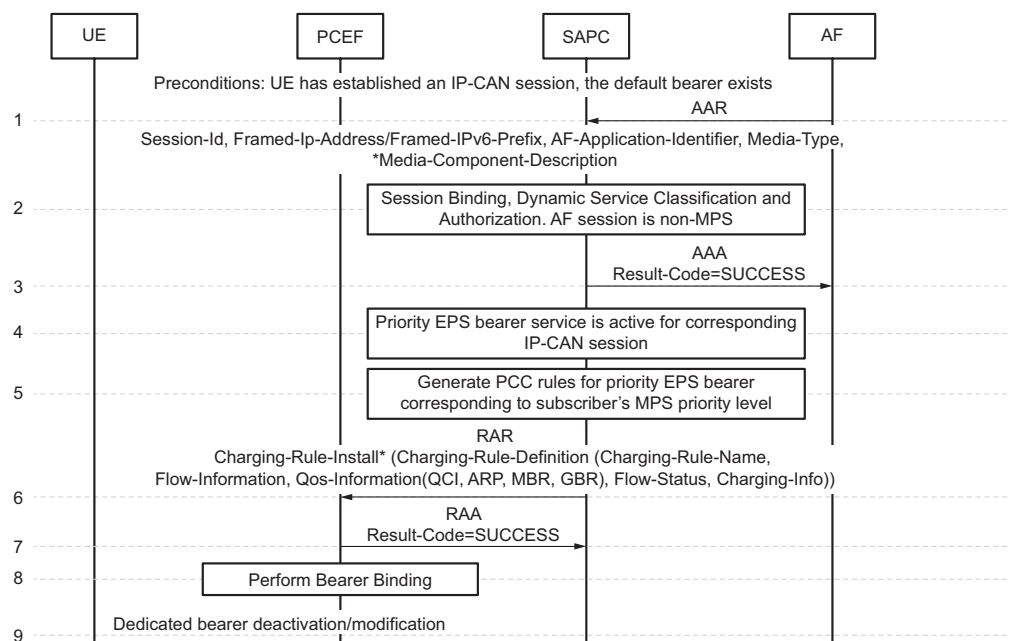


Figure 8 AF Session Establishment or Modification for MPS Subscriber

- 1. The SAPC sends an AAR to the SAPC, not including the MPS-Identifier AVP and the Reservation-Priority AVP.
- 2. The SAPC performs session binding, Dynamic Service Classification and Dynamic Service Authorization.



- 3. The SAPC answers back to the AF with an AAA including the Result-Code AVP with value SUCCESS.
- 4. The SAPC gets the subscriber MPS data and finds that the IP-CAN session relates to a priority EPS bearer service.
- 5. The SAPC identifies the media components and generates the dynamic PCC rules by using the Dynamic Service Qualification function. The SAPC uses the MPS subscription data and operator policies to derive the QoS allocated to each PCC rule.
- 6. The SAPC sends to the PCEF the dynamic PCC rules and QoS information.
- 7. The PCEF accepts the installation of PCC rules.
- 8-9. The PCEF ensures that data traffic for this subscriber is treated with priority in the transport and radio access network.

## 8 Emergency and Multimedia Priority Services Error Handling

Table 3 Error Handling

Error Condition	Action	Code
The SAPC receives an AAR to request an emergency or multimedia priority service and the corresponding functionality license is not active.	The SAPC returns an AAA indicating an error	Result-Code AVP set to DIAMETER_UNABLE_TO_COMPLY (5012)
The SAPC receives a CCR for an emergency IP-CAN session establishment where Subscription-Id AVP and User-Equipment-Info AVP are missing.	The SAPC returns a CCA indicating an error	Experimental-Result-Code AVP set to DIAMETER_ERROR_INITIAL_PARAMETERS (5140)



Error Condition	Action	Code
The SAPC receives a CCR for an emergency IP-CAN session establishment where Subscription-Id AVP is missing and unauthenticated emergency services are not allowed.	The SAPC returns a CCA indicating an error	Experimental-Result-Code AVP set to DIAMETER_ERROR_INITIAL_PARAMETERS (5140)
The SAPC receives an AF session that binds to an emergency IP-CAN session and the Service-URN AVP is missing or does not contain a top-level service type of "sos".	The SAPC returns an AAA indicating an error	Experimental-Result-Code AVP set to UNAUTHORIZED_NON_EMERGENCY_SESSION (5066)
The SAPC rejects an emergency or MPS session establishment or modification due to overload protection.	The SAPC returns a CCA/AAA indicating an error.	Result-Code AVP set to DIAMETER_TOO_BUSY (3004)

## 9 Emergency Services Restrictions

The following list shows the functions that are applicable to Emergency subscriber profile:

- Bearer QoS and Bandwidth management.
- Access and Charging (except One Time Redirect and Content Filtering).

Subscriber groups are not applicable to Emergency subscriber profile.

When a subscriber profile is removed, but there is an associated emergency IP-CAN session, the SAPC does not request to the PCEF the IP-CAN session termination (see [Subscription and Policy Management](#)). The IP-CAN session remains alive until the PCEF initiates an IP-CAN session termination request.





The following Dynamic Policy Control functions (see Dynamic Policy Control (Rx)) do not apply for IMS emergency calls:

- Notification of Signalling Path Status.
- Provisioning of AF Signalling Flow Information
- IP-CAN Type Change Notification





# Reference List

## Standards

- [1] IP Multimedia Subsystem (IMS) emergency sessions - 3GPP TS 23.167
- [2] Multimedia priority service - 3GPP TS 22.153