Technical Specification Group Services and System Aspects *TSGS#15(02)0134*

Meeting #15, Jeju-do, Korea, 5-14 March 2002

Source: **TSG SA WG2**
Title: **CRs on 23.207 v.5.2.0**
Agenda Item: **7.2.3**

The following Change Requests (CRs) have been approved by TSG SA WG2 and are requested to be approved by TSG SA plenary #15.
Note: the source of all these CRs is now S2, even if the name of the originating company(ies) is still reflected on the cover page of all the attached CRs.

Tdoc #	Title	Spec	CR #	cat	Rel	WI
S2-020265	Removal of packet handling action from PCF decision	23.207	014r1	F	5	E2EQoS
S2-020585	Incorrect Place of the RAB Procedures in Section 6.3.2	23.207	020	F	5	IMS-CCR
S2-020781	Editorial Corrections of QoS Interaction Procedures Flows	23.207	021r1	D	5	IMS-CCR
S2-020782	Corrections of the Indication of PDP Context Release Procedure	23.207	022r1	F	5	IMS-CCR
S2-020783	Corrections in 6.3 Session Flow: QoS Interaction Procedures	23.207	023r1	F	5	IMS-CCR
S2-020786	Authorization of QoS Resources	23.207	017r1	F	5	IMS-CCR
S2-020852	Number of media components per PDP Context	23.207	019	B	5	E2EQoS

<table>
<tr><td colspan="3" align="right">CR-Form-v5</td></tr>
<tr><td colspan="3" align="center"><h1>CHANGE REQUEST</h1></td></tr>
</table>

| ⌘ | **23.207** CR **014** | ⌘**rev** **1-** ⌘ | Current version: | **5.2.0** ⌘ |

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘   (U)SIM ☐   ME/UE ☐   Radio Access Network ☐   Core Network **X**

Title: ⌘	Removal of packet handling action from PCF decision	
Source: ⌘	Nokia	
Work item code: ⌘	E2E QoS	***Date:*** ⌘ 14.01.2002

Category: ⌘ **F**

Use one of the following categories:
F (correction)
A (corresponds to a correction in an earlier release)
B (addition of feature),
C (functional modification of feature)
D (editorial modification)
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Release: ⌘ REL-5

Use one of the following releases:
2   (GSM Phase 2)
R96   (Release 1996)
R97   (Release 1997)
R98   (Release 1998)
R99   (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change: ⌘	The reasons for proposing not to mandate the removal of the packet handling action from the PCF decision are:

- The PCF does not have the required knowledge about the transport network resources and the UMTS operator's requirements, to configure the handling actions in the GGSN.

- If the handling action comes as a part of the PCF decision, it can contradict with the actions already specified by the traffic conditioner and mapper in 23.107

- In case when the PDP context is used to carry many IP flows, the GGSN needs to combine the PCF IP flow based authorization into PDP context authorization. However, the handling actions cannot be combined.

Summary of change: ⌘	After discussions at the meeting, this This contribution proposes to indicate in the text that the GGSN may ignore the packet handling action. the handling action to be removed from the PCF authorization decision given that the parameter can result in contradicting actions in the GGSN.

Consequences if not approved: ⌘	If the parameter - handling action is mandated is not removed then there is a real possibility of inconsistent and contradictory actions to be performed by the GGSN.

Clauses affected: ⌘	5.3.2

Other specs affected:	⌘ ☐	Other core specifications ⌘	
	☐	Test specifications	
	☐	O&M Specifications	

Other comments: ⌘	

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at:
http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

5.3.2 Information Elements Exchanged via Go Interface

The COPS protocol supports several messages between a client and server. These messages consist of the following operations that may be performed:

- Client-Open/Client-Accept/Client-Close

- Request

- Decision

- Report State

- Delete Request State

- Keep Alive

- Synchronize State Request/Synchronize State Complete

Additional UMTS-specific information elements must be included in COPS messages to support the policy and QoS inter-working functions identified in Section 5.3.1. Consistent with the COPS framework, the Go interface is identified by a "client type" allocated for a UMTS COPS client (GGSN).

All of the information described in the remainder of this section applies specifically to the GGSN COPS client type. The events specific to the UMTS or IP bearer service would trigger the request messages from the UMTS PEP to the PCF. The information elements specific to UMTS would be standardized and carried in the UMTS specific interactions between the PCF and the GGSN.

A **Request** (REQ) message from the GGSN to the PCF shall allow the GGSN to request policy and QoS inter-working information for an IP flow identified by binding information (described below).

A **Decision** (DEC) message from the PCF to the GGSN contains decision objects. A Decision object shall include one of the following commands:

- NULL Decision (No configuration data available)

- Install (Admit request/Install configuration, Commit)

- Remove (Remove request/Remove configuration)

These commands are used to:

- Authorize QoS/Revoke QoS authorization for one or more IP flows

- Control forwarding for one or more IP flows

The **responses** from the PEP to the PCF include an acknowledgement and/or an error response to commands received by the PEP. The following response messages shall be supported:

- Report State (Success/Failure/Accounting) (RPT)

The **Delete Request State (DRQ)** message from the PEP to the PCF indicates that the request state identified by the client handle is no longer available/relevant at the GGSN so the corresponding state may likewise be removed at the PCF. The DRQ message includes the reason why the request state was deleted.

The Install command used to Authorize QoS contains the following policy and QoS inter-working information associated with an IP flow:

- UMTS specific Binding information (e.g. Token)

- Packet classifier (e.g. RSVP filterspec)

- Authorized flowspec

- ~~Packet handling action~~Packet handling action

- DSCP

- Event generation information

Binding information associates the policy and QoS inter-working information in the message with a PDP context. The binding information includes 1) an authorization token sent by the P-CSCF to the UE during SIP signaling. , and may include 2) one flow identifier used by the UE, GGSN and PCF to uniquely identify an IP media flow.

The authorization token shall be unique locally. The authorization token conforms to the IETF specification on SIP Extensions for Media Authorization.

A flow identifier identifies an IP media flow associated with the SIP session. Flow identifiers are based on the ordering of media flows in the SDP. A flow identifier combined with the authorization token shall be sufficient to uniquely identify an IP media flow.

The packet classifier includes the standard 5-tuple: (source IP address, destination IP address, source port, destination port, protocol), identifying a set of packets associated with a unidirectional flow.   Elements of the 5-tuple may be wild-carded.

The authorized flowspec provides an upper bound on the resources that can be reserved or allocated for an IP flow. The authorized flowspec is expressed as an Intserv-style flowspec .

~~The packet handling action defines the packet handling that should be accorded to in-profile and out-of-profile packets matching the packet classifier. In-profile traffic is defined to be traffic that is within the authorized flowspec.~~

The packet handling action defines the packet handling that should be accorded to in-profile and out-of-profile packets matching the packet classifier. In-profile traffic is defined to be traffic that is within the authorized flowspec. The packet handling action may be ignored by the GGSN.

 The DSCP from the PCF shall determine the highest QoS class that can be applied to this IP flow.

Event generation information contains opaque information that the GGSN includes in usage records (e.g. CDR)associated with the authorized UMTS bearers.   The event generation information includes information identifying the authorized IP flow. It also includes information used to correlate usage records from the GGSN with SIP session records from the P-CSCF.

The messages which revoke QoS authorisation or remove configuration information provide only the information that is needed to perform the action (e.g., the COPS handle element, which is used as a way of identifying the installed decision information).

CR-Form-v3

CHANGE REQUEST

⌘ **TS 23.207 CR 020** ⌘ rev ⌘ Current version: **5.2.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network X

Title: ⌘	Incorrect Place of the RAB Procedures in Section 6.3.2	
Source: ⌘	Siemens	
Work item code: ⌘	IMS-CCR	*Date:* ⌘ 13th February 2002
Category: ⌘	F	*Release:* ⌘ REL-5

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can
be found in 3GPP TR 21.900.

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change: ⌘	In the message flows in section '6.3.2 Resource Reservation Message Flows' the RAB procedures are not at the right place.
Summary of change: ⌘	RAB procedures are moved to right place regarding 23.060. Additionally the wording is aligned to TS 23.060.
Consequences if not approved: ⌘	Message flows would be incorrect.

Clauses affected: ⌘	6.3.2

Other specs Affected: ⌘	☐ Other core specifications ⌘
	☐ Test specifications
	☐ O&M Specifications

Other comments: ⌘	

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

6.3.2 Resource Reservation Message Flows

6.3.2.1 Service-based Local Policy

For this case, Service-based Local Policy is added to the GPRS bearer establishment procedures specified in TS23.060.
This section provides the flows for bearer establishment, resource reservation and policy control with PDP Context setup and DiffServ inter-working.
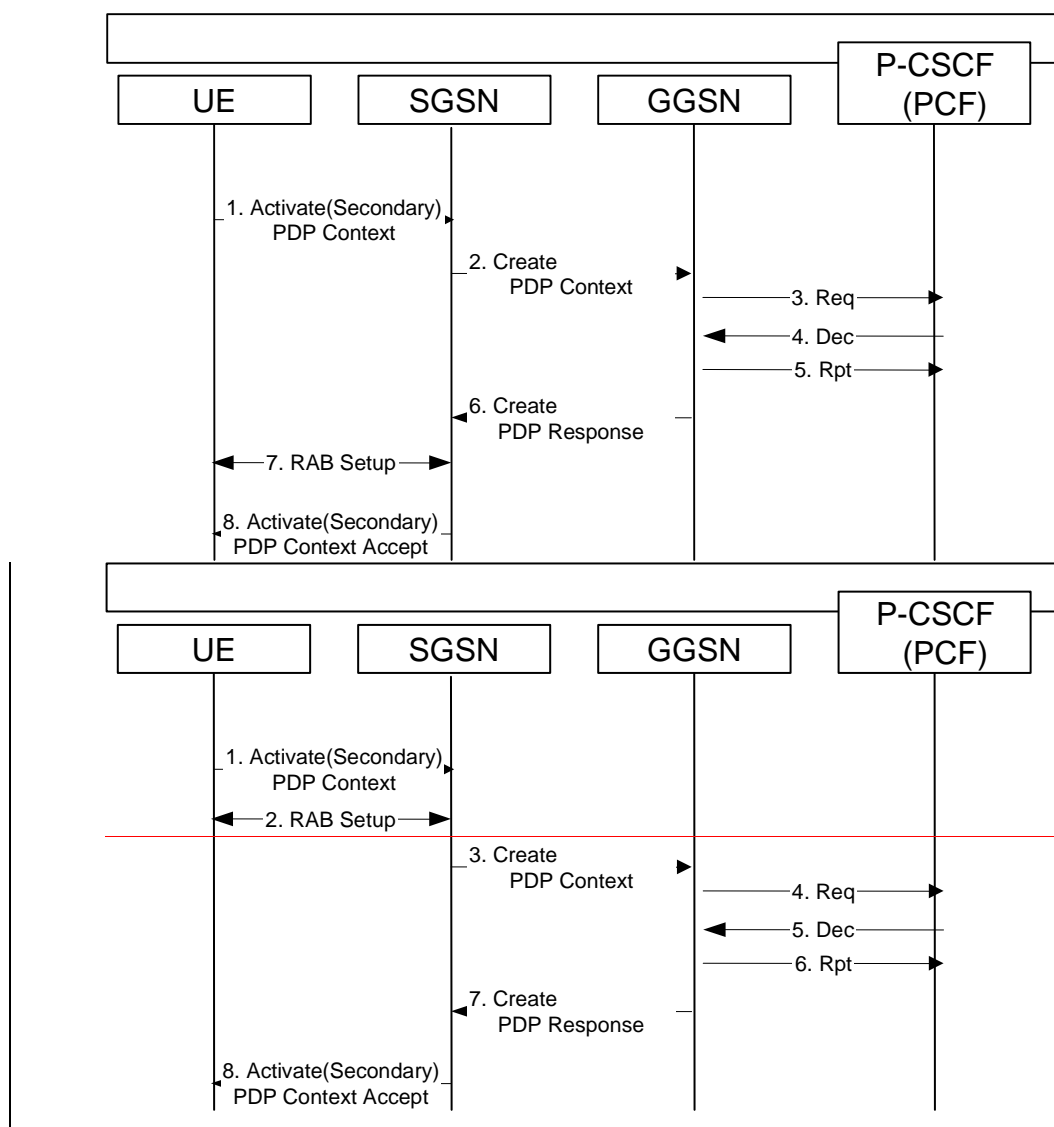The following figure is applicable to both the Mobile Originating (MO) side and the Mobile Terminating (MT) side.

Figure 4: Service-based Local Policy

1) The UE sends an Activate (Secondary) PDP Context message to the SGSN with the UMTS QoS parameters. The UE includes the Binding Information in the Activate PDP Context message.

2) The radio access bearer (RAB) setup procedure is performed.

2̲3̶) The SGSN sends the corresponding Create PDP Context message to the GGSN.

3<s>4</s>) The GGSN sends a COPS REQ message with the Binding Information to the PCF in order to obtain relevant policy information.

4<s>5</s>) The PCF sends a COPS DEC message back to the GGSN.

5<s>6</s>) The GGSN sends a COPS RPT message back to the PCF.

6<s>7)</s> The GGSN maps IP flow based policy information into PDP context based policy information and uses the PDP context based policy information to accept the PDP activation request, and sends a Create PDP Context Response message back to SGSN.

7) RAB setup is done by the RAB Assignment procedure.

8) The SGSN sends an Activate (Secondary) PDP Context Accept message to UE.

6.3.2.2   Resource Reservation with End-to-End RSVP

For this case, RSVP is added to the GPRS bearer establishment procedures specified in TS23.060, with no Service-based local policy.

Note: The diagrams in this subsection depict one possible signalling sequence, however, the alternative signalling sequences below are possible:

- to trigger the Create PDP Context Request message after the PATH message.

- to trigger the Create PDP Context Request message after the RESV message.

- to trigger only one PDP context after all RSVP exchanges have completed.

Note: The diagrams in this subsection depict the case when the GGSN is not RSVP aware, however, the alternative of GGSN being RSVP aware is also possible.

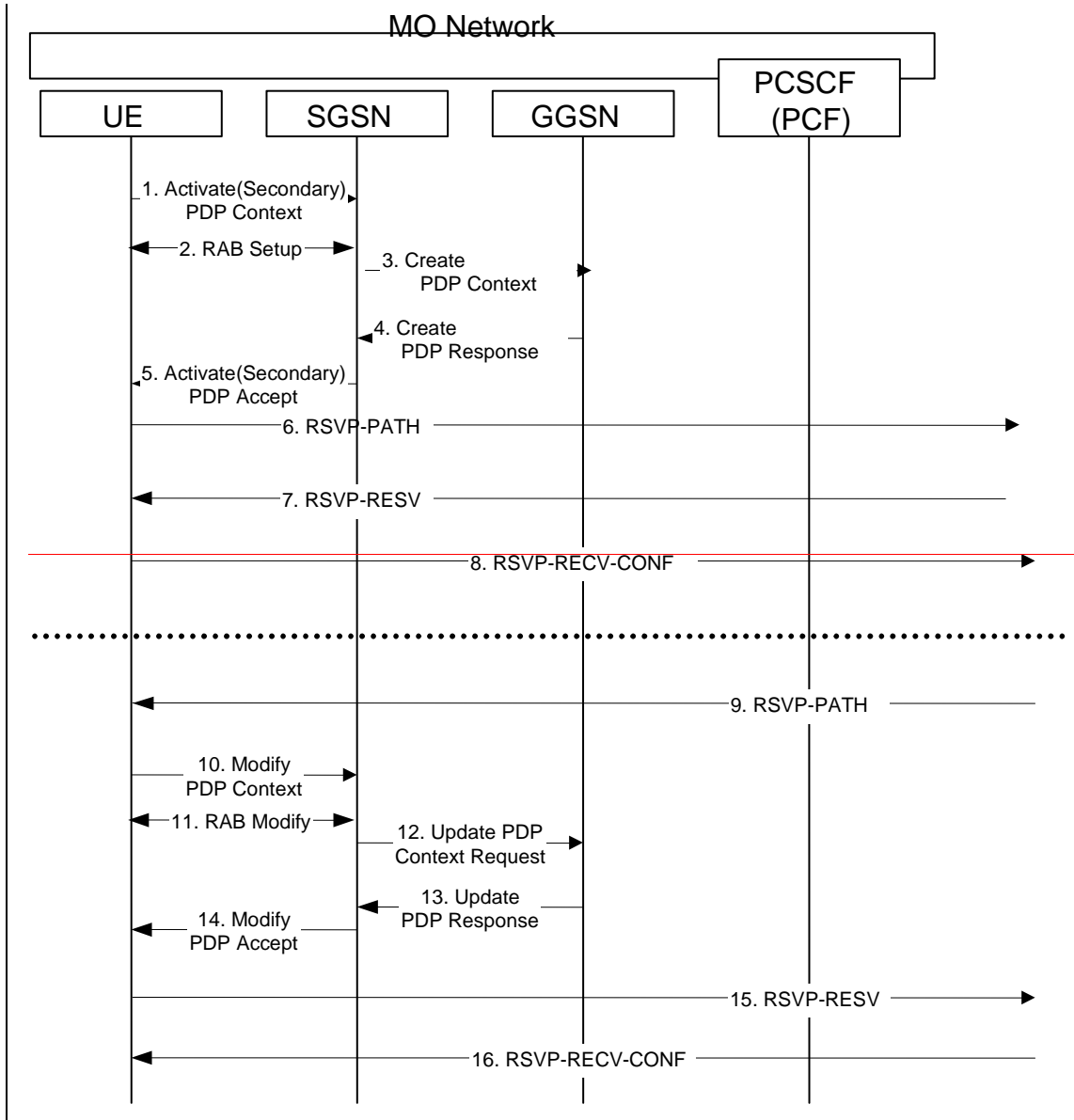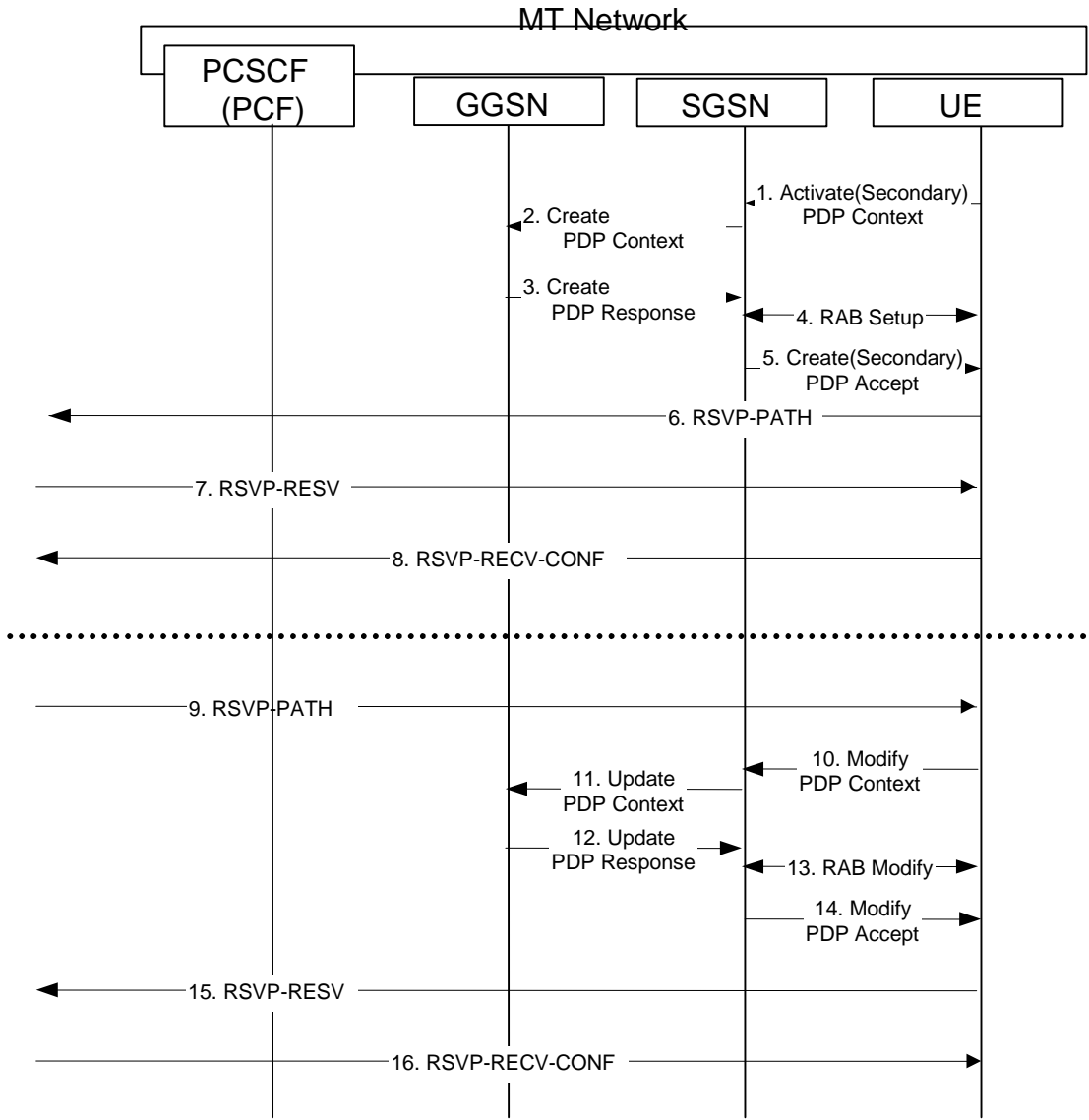The following figure is applicable to the Mobile Originating (MO) side.

Figure 5: MO Resource Reservation with End-to-End RSVP

Note: There is no timing relationship between the set of flows for the uplink (above the line) and the downlink (below the line).

1) The UE sends an Activate (Secondary) PDP Context message to the SGSN with the UMTS QoS parameters.

2) ~~The radio access bearer (RAB) setup procedure is performed.~~

2~~3~~) The SGSN sends the corresponding Create PDP Context message to the GGSN.

3~~4~~) The GGSN authorizes the PDP context activation request according to the local operator's IP bearer resource based policy, the local operator's admission control function and the GPRS roaming agreements and sends a Create PDP Context Response message back to the SGSN.

4) RAB setup is done by the RAB Assignment procedure.

5) The SGSN sends an Activate (Secondary) PDP Context Accept message to UE.

6) UE sends an RSVP PATH message to the next hop, through the GGSN. The GGSN does not process the RSVP PATH message. Alternatively, the GGSN may process the RSVP PATH message and forward it to the next hop.

7) The UE receives the RSVP RESV message in the downlink direction, through the GGSN. The GGSN does not process the RSVP RESV message. Alternatively, the GGSN may process the RSVP RESV message and forward it to the UE.

8) The UE sends a RSVP RESV-CONF message to the next hop. The use of the RESV-CONF message is optional.

9) The UE receives a RSVP PATH message in the downlink direction, through the GGSN. The GGSN does not process the RSVP PATH message. Alternatively, the GGSN may process the incoming RSVP PATH message and forward it to the UE.

10) The UE may send a Modify PDP Context message to the SGSN with the necessary modification to UMTS QoS parameters according to the received RSVP PATH message.

11) The radio access bearer (RAB) modification procedure is performed.

11~~12~~)   The SGSN sends the corresponding Update PDP Context Request message to the GGSN.

12)~~13)~~   The GGSN authorizes the PDP context modification according to the local operator's IP bearer resource based policy, the local operator's admission control function and the GPRS roaming agreements and sends an Update PDP Context Response message back to the SGSN.

13)   The radio access bearer modification may be performed by the RAB Assignment procedure.

14) The SGSN sends a Modify PDP Context Accept message to UE.

15) UE sends the RSVP RESV message to the next hop, through the GGSN. The GGSN does not process the RSVP RESV message. Alternatively, the GGSN may process the RSVP RESV message and forward it to the next hop.

16) The UE receives the RSVP RESV-CONF message in the downlink direction. The use of the RESV-CONF message is optional.

The following figure is applicable to the Mobile Terminating (MT) side. As the flow is the mirror of the Mobile Originating (MO) side, the step-by-step description is omitted.
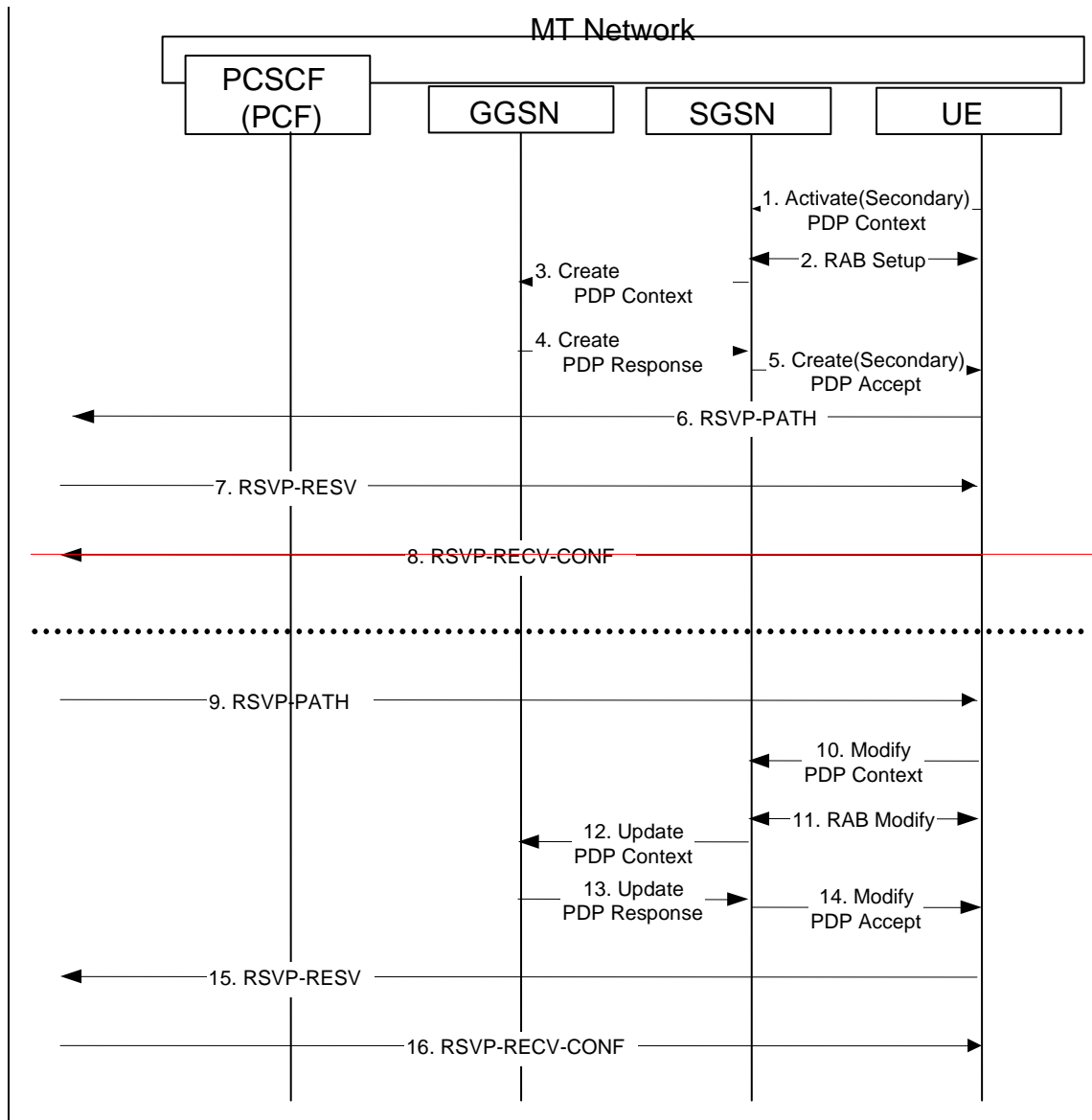
Figure 6: MT Resource Reservation with End-to-End RSVP

Note: There is no timing relationship between the set of flows for the uplink (above the line) and the downlink (below the line).

6.3.2.3 Resource Reservation with End-to-End RSVP and Service-based Local Policy

For this case, Service-based Local Policy and RSVP are added to the GPRS bearer establishment procedures specified in TS23.060.

Note: The diagrams in this subsection depict one possible signalling sequence, however, the alternative signalling sequences below are possible:

- to trigger the Create PDP Context Request message after the PATH message.

- to trigger the Create PDP Context Request message after the RESV message.

- to trigger only one PDP context after all RSVP exchanges have completed.

Note: The diagrams in this subsection depict the case when the GGSN is RSVP aware, however, the alternative of GGSN not being RSVP aware is also possible.

This section provides the flows for bearer establishment, resource reservation and policy control with RSVP.

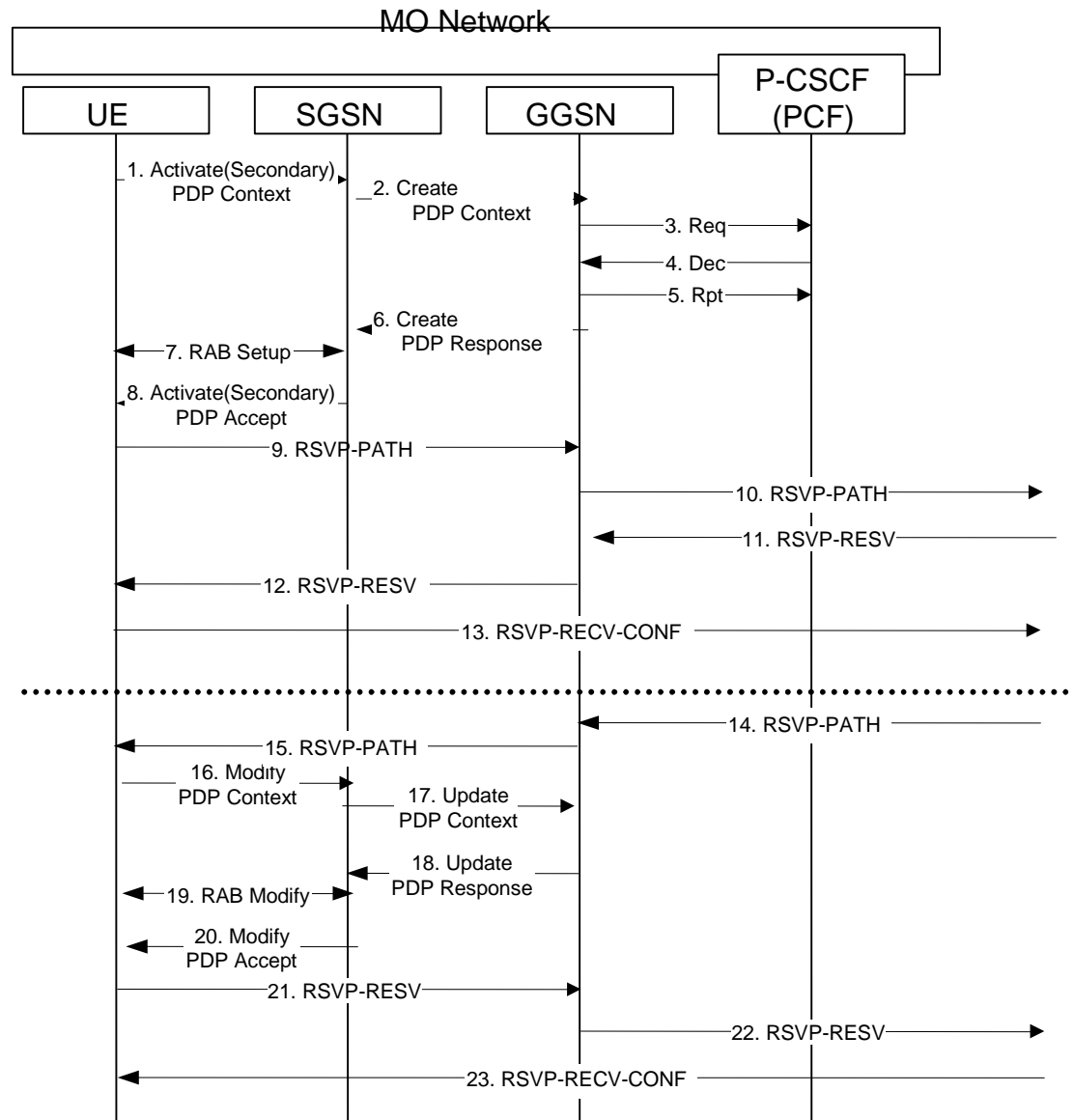The following figure is applicable to the Mobile Originating (MO) side.

Figure 7: MO Resource Reservation with End-to-End RSVP and Service-based Local Policy

Note: There is no timing relationship between the set of flows for the uplink (above the line) and the downlink (below the line).

1) The UE sends an Activate (Secondary) PDP Context message to the SGSN with the UMTS QoS parameters. The UE includes the Binding Information in the Activate PDP Context message.

2) The radio access bearer (RAB) setup procedure is performed.

23) The SGSN sends the corresponding Create PDP Context message to the GGSN.

34) The GGSN sends a COPS REQ message with the Binding Information to the PCF in order to obtain relevant policy information.

45) The PCF sends a COPS DEC message back to the GGSN.

5~~6~~)The GGSN sends a COPS RPT message back to the PCF.

6~~7~~)The GGSN maps IP flow based policy information into PDP context based policy information and uses the PDP context based policy information to accept the PDP activation request, and sends a Create PDP Context Response message back to SGSN. The GGSN may cache the policy information.

7) RAB setup is done by the RAB Assignment procedure.

8) The SGSN sends an Activate (Secondary) PDP Context Accept message to UE.

9) UE sends a RSVP PATH message to GGSN. The UE includes the Binding Information.

Note: If the decision was previously cached locally at the GGSN, it may not be necessary to query the PCF again. Otherwise the GGSN may have to query the PCF.

10)The GGSN uses the policy information to accept the RSVP PATH message, and forwards the RSVP PATH message to the next hop.

11)The GGSN receives the RSVP RESV message in the downlink direction.

Note: If the decision was previously cached locally at the GGSN, it may not be necessary to query the PCF again. Otherwise the GGSN may have to query the PCF.

12)The GGSN uses the policy information to accept the RSVP RESV message, and forwards the RSVP RESV message to the UE.

13)The UE sends a RSVP RESV-CONF message to the next hop. The use of the RESV-CONF message is optional.

14)The GGSN receives a RSVP PATH message in the downlink direction.

15)The GGSN forwards the RSVP PATH message to the UE.

16)The UE may send a Modify PDP Context message to the SGSN with the necessary modification to UMTS QoS parameters according to the received RSVP PATH message. The UE includes the Binding Information in the Modify PDP Context message.

17)The radio access bearer (RAB) modification procedure is performed.

17~~8~~) The SGSN sends the corresponding Update PDP Context message to the GGSN.

Note: If the decision was previously cached locally at the GGSN, it may not be necessary to query the PCF again. Otherwise the GGSN may have to query the PCF.

18~~9~~) The GGSN uses the policy information to accept the PDP modification request, and sends a Update PDP Context Response message back to SGSN.

19)The radio access bearer modification may be performed by the RAB Assignment procedure.

20)The SGSN sends a Modify PDP Context Accept message to UE.

Note: Steps 16 to 20 are optional if the existing PDP context already satisfies the QoS requirements.
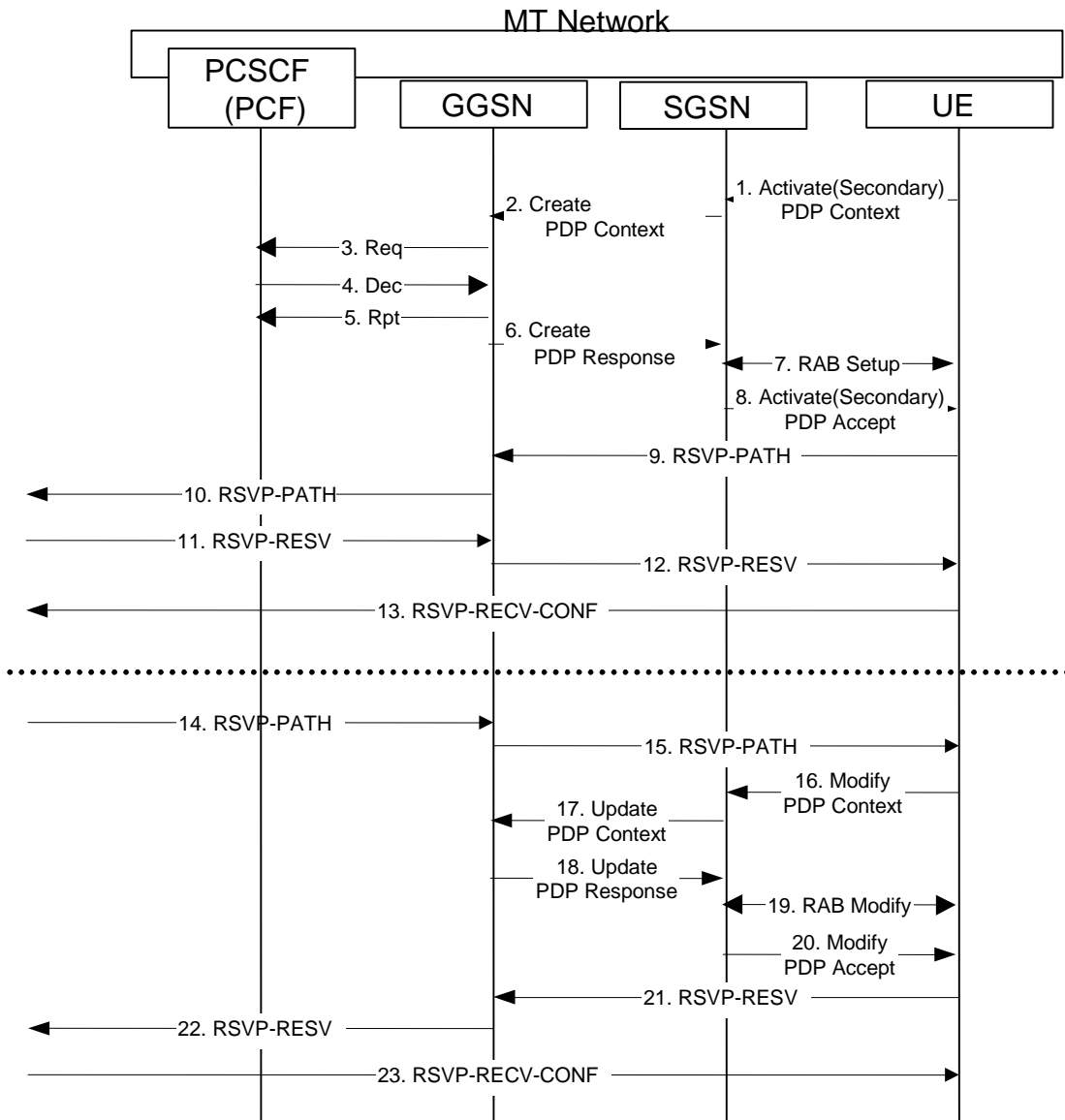
21)The UE sends a RSVP RESV message to the GGSN. The UE includes the Binding Information in the RSVP RESV message.

Note: If the decision was previously cached locally at the GGSN, it may not be necessary to query the PCF again. Otherwise the GGSN may have to query the PCF.

22)The GGSN uses the policy information to accept the RSVP RESV message, and forwards the RSVP RESV message to the next hop.

23) The UE receives the RSVP RESV-CONF message in the downlink direction. The use of the RESV-CONF message is optional.

The following figure is applicable to the Mobile Terminating (MT) side. As the flow is the mirror of the Mobile Originating (MO) side, the step-by-step description is omitted.
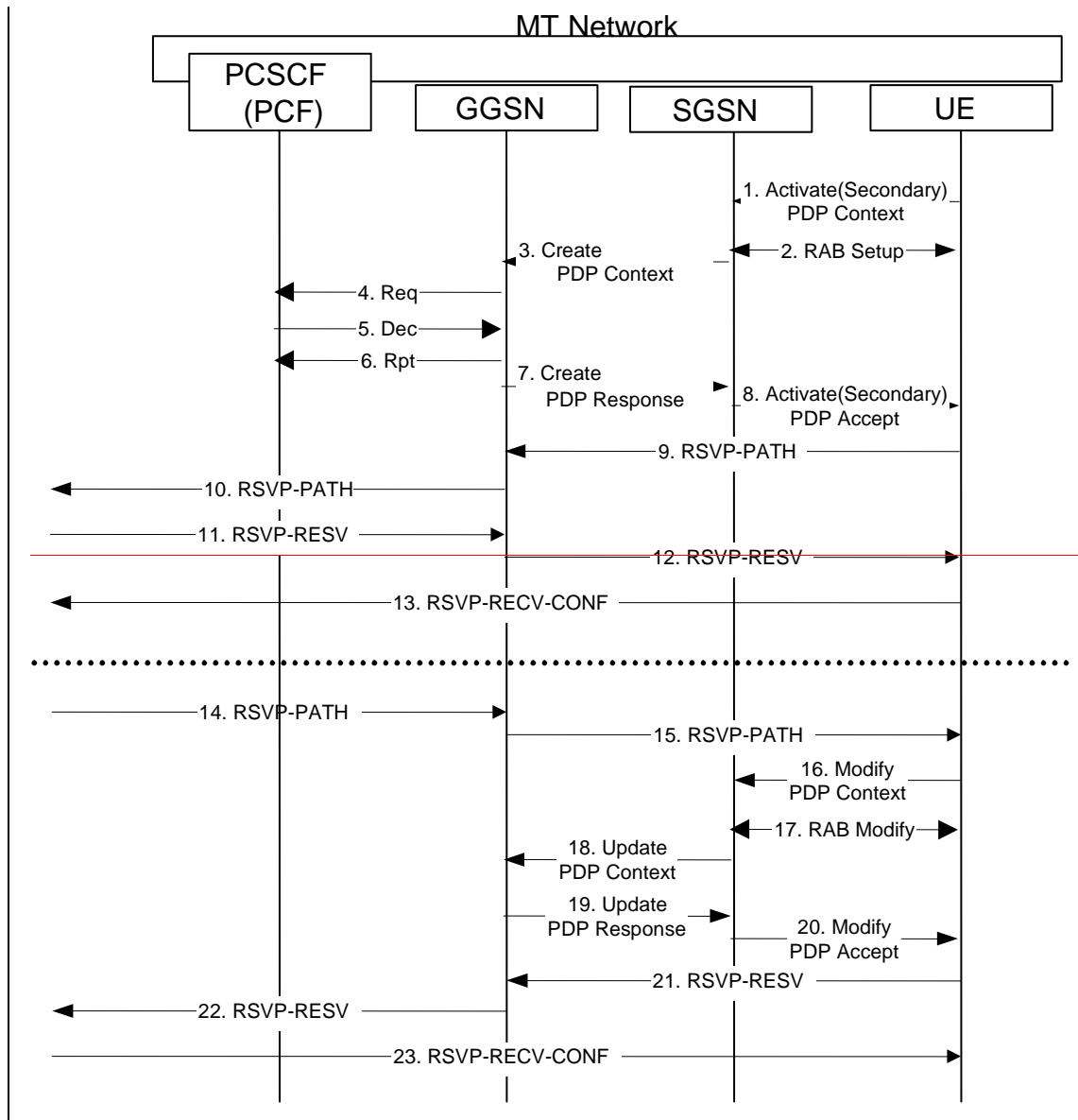
Figure 8: MT Resource Reservation with End-to-End RSVP and Service-based Local Policy

Note: There is no timing relationship between the set of flows for the uplink (above the line) and the downlink (below the line).

6.3.2.4 (void)

CR-Form-v3

CHANGE REQUEST

| ⌘ | **TS 23.207 CR 021** | ⌘ | rev | **1** | ⌘ | Current version: | **5.2.0** | ⌘ |

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Editorial Corrections of QoS Interaction Procedures Flows		
Source:	⌘	Siemens		
Work item code:	⌘	IMS-CCR	**Date:** ⌘	13th February 2002
Category:	⌘	**D**	**Release:** ⌘	REL-5

Use one of the following categories:	*Use one of the following releases:*
***F** (essential correction)*	*2 (GSM Phase 2)*
***A** (corresponds to a correction in an earlier release)*	*R96 (Release 1996)*
***B** (Addition of feature),*	*R97 (Release 1997)*
***C** (Functional modification of feature)*	*R98 (Release 1998)*
***D** (Editorial modification)*	*R99 (Release 1999)*
Detailed explanations of the above categories can	*REL-4 (Release 4)*
be found in 3GPP TR 21.900.	*REL-5 (Release 5)*

Reason for change:	⌘	The flow in Figure 3 Authorize QoS Resources contains only an incoming and outgoing message. A block 'Authorize QoS Resources' is added. In this flow there is no interaction for the GGSN therefore the GGSN is deleted. The description of the Approval of QoS Commit reads in step 4 that the message is send to the next hop. Now the wording of the 'Authorize QoS Resources' procedure is used.
Summary of change:	⌘	In Figure 3 a block 'Authorize QoS Resources' is added and the GGSN is deleted. The wording of step 4 of the 'Approval of QoS Commit' is generalized.
Consequences if not approved:	⌘	

Clauses affected:	⌘	6.3.1; 6.3.3

Other specs Affected:	⌘	☐ Other core specifications	⌘	
		☐ Test specifications		
		☐ O&M Specifications		

Other comments:	⌘	

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

6.3.1 Authorize QoS Resources

The Authorize QoS Resources procedure is triggered by the P-CSCF receiving a SDP message. The SDP message contains sufficient information about the session, such as the end-points, bandwidth requirements, and the characteristics of the media exchange.

The PCF shall authorize the required QoS resources for the session and install the IP bearer level policy based on information from the P-CSCF. In order to ensure that the IP bearer flow correlates to the one approved during the SIP session establishment, the SIP extensions for media authorization proposed in IETF shall be used.

The Authorization-Token is generated by the PCF and sent to the UE. For the originating UE, the Authorization-Token shall be included in the SIP message (183) from P-CSCF to the UE. For the terminating UE, the Authorization-Token shall be included in the SIP Invite message from P-CSCF to the UE.

The PCF makes decision and communicates these decisions to the IP BS Manager in the GGSN, which is the Policy Enforcement Point (PEP) for the IP bearer service. The interface between the PCF and PEP is the COPS protocol defined by IETF.

For the purpose of the initial authorization of QoS resources the pull operation shall be used. (Reference Section 5.3 Go interface for details.)

The following figure is applicable to both the Mobile Originating (MO) side and the Mobile Terminating (MT) side.
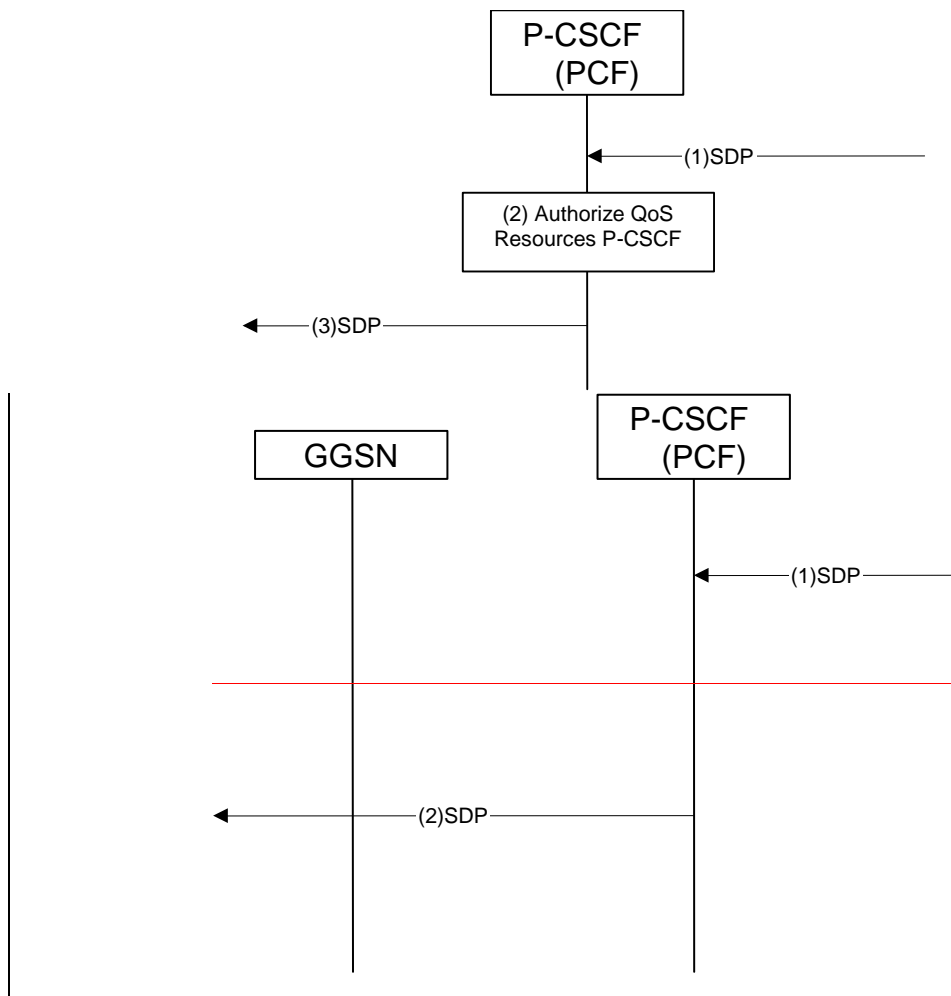
Figure 3: Authorize QoS Resources

1) The SIP "SDP" message is received by the P-CSCF. ~~The PCF shall authorize the required QoS resources for the session and install the IP bearer level policy based on information from the P-CSCF.~~

2) The PCF shall authorize the required QoS resources for the session and install the IP bearer level policy based on information from the P-CSCF.

32) Upon successful authorization of the session, the P-CSCF forwards the SDP message to the UE for the originating side. For the terminating side, the P-CSCF forwards the SDP message to the terminating S-CSCF.

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NEXT MODIFICATION

</div>

6.3.3 Approval of QoS Commit

The Approval of QoS Commit procedure is triggered by the P-CSCF receiving a 200 OK message.
The following figure is applicable to both the Mobile Originating (MO) side and the Mobile Terminating (MT) side.
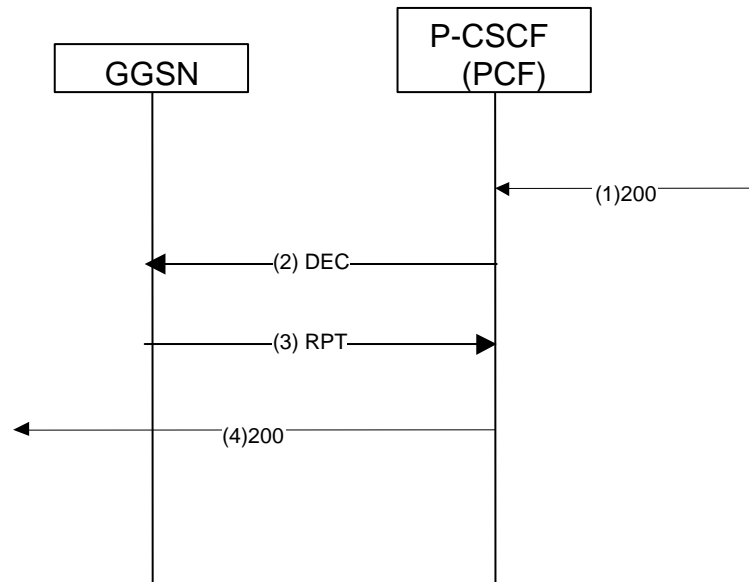

Figure 11: Approval of QoS Commit

1) The P-CSCF receives the 200 OK message. PCF approves the QoS Commit based on local policy.

2) The PCF shall send a COPS DEC message to the GGSN to open the 'gate' e.g., enable the use of the authorised QoS resources, unless this was done based on local policy at the time the QoS resources were authorised.

3) The GGSN receives the COPS DEC message and opens the 'gate' e.g., enables the use of the authorised QoS resources, and sends a COPS RPT message back to the PCF.

4) The P-CSCF forwards the 200 OK message to the ~~next hop.~~ UE for the originating side. For the terminating side, the P-CSCF forwards the SDP message to the terminating S-CSCF.

CR-Form-v3

CHANGE REQUEST

| ⌘ | **TS 23.207** CR **022** | ⌘ | rev | **1** | ⌘ | Current version: | **5.2.0** | ⌘ |

For HELP on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: ⌘   (U)SIM ☐   ME/UE ☐   Radio Access Network ☐   Core Network X

Title:	⌘	Corrections of the Indication of PDP Context Release Procedure
Source:	⌘	Siemens
Work item code: ⌘	IMS-CCR	***Date:*** ⌘ 13th February 2002
Category: ⌘	**F**	***Release:*** ⌘ REL-5

Use <u>one</u> of the following categories: **F** (essential correction) **A** (corresponds to a correction in an earlier release) **B** (Addition of feature), **C** (Functional modification of feature) **D** (Editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

Reason for change:	⌘	Step 1 of the Indication of PDP Context Release procedure reads The SGSN deactivates the PDP Context. But the SGSN is only one possible initiator of the context deactivation. In most cases the MS will initiate the context release. Step 3 describes that the P-CSCF(PCF) should initiate a session termination after receiving the Indication of PDP Context Release. The behaviour of the P-CSCF(PCF) should not be part of the Indication of PDP Context Release procedure. This behaviour is described in 23.228 section 5.10.3 Network initiated session release.
Summary of change: ⌘		The wording of step 1 is generalised. Step 3 is deleted.
Consequences if not approved:	⌘	Message flows would be incorrect.

Clauses affected:	⌘	6.3.6
Other specs Affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

6.3.6　Indication of PDP Context Release

The "Indication of PDP Context Release" procedure is used upon the release of a PDP Context that was established based on authorisation from the PCF.
The following figure presents the "Indication of PDP Context Release" procedure.
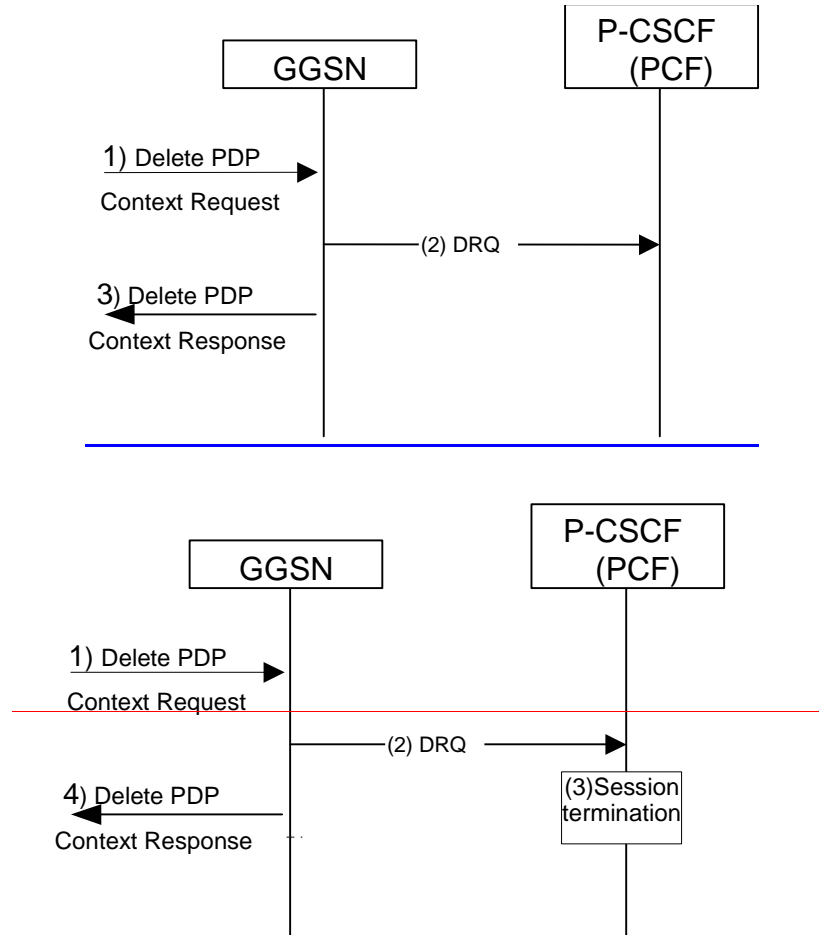
Figure 14: Indication of PDP Context Release

1) ~~The SGSN deactivates~~ The GGSN receives a Delete PDP Context request for the PDP context related to the media flow ~~by sending the Delete PDP Context Request message to the GGSN~~.

2) The GGSN sends a COPS DRQ message to the P-CSCF(PCF).

3) ~~The P-CSCF(PCF) receives the COPS DRQ message and should initiate a session termination.~~

3~~4~~)The GGSN sends the Delete PDP Context Response message to the SGSN to acknowledge the PDP context deletion.

~~Note: Step 4 may also occur at the same time or before Step 3.~~

CR-Form-v3

CHANGE REQUEST

| ⌘ | **TS 23.207** CR **023** | ⌘ | rev | **1** | ⌘ | Current version: | **5.2.0** | ⌘ |

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title: ⌘	Corrections in 6.3 Session Flow: QoS Interaction Procedures	
Source: ⌘	Siemens	
Work item code: ⌘	IMS-CCR	***Date:*** ⌘ 13th February 2002
Category: ⌘ **F**		***Release:*** ⌘ REL-5

Use *one* of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can
be found in 3GPP TR 21.900.

Use *one* of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change: ⌘	This CR corrects several inconsistencies. In section '6.3. Session Flow: QoS Interaction Procedures' the QoS interaction procedures are listed. But only three of them are mentioned. Further below procedures are listed which cannot be used in case Service-based Local Policy is not used. But only two procedures are mentioned. The title of section 6.3.2.1 is 'Service-based Local Policy'. This section describes only the bearer establishment, resource reservation and policy control. But service-based local policy contains more functionality e.g. approval and removal of QoS commit. The procedure 'Revoke Authorization for GPRS and IP Resources' is at some places named 'Revoke Authorization for UMTS and IP Resources'. In the description of 'Removal of QoS Commit' and 'Revoke Authorization for GPRS and IP Resources' procedures it is stated that the PCF decision is sent to the GGSN corresponding to the previous 'Authorize QoS Resources' request. It works only if resources are also reserved. In TS23.060 and in TS32.207 the procedure name 'PDP Context Modification' is used, but different types of procedures are considered. This CR introduces for the procedure in TS23.207 the name 'Indication of PDP Context Modification'.
Summary of change: ⌘	The lists of procedures in section 6.3 are completed. The title of section 6.3.2.1 is changed to 'Resource Reservation with Service-based Local Policy'. The name of the procedure 'Revoke Authorization for GPRS and IP Resources' is corrected. The 'Resource Reservation' procedure is added in the description in section 6.3.4 and 6.3.5. The name of the 'PDP Context Modification' procedure is changed to 'Indication of PDP Context Modification'.
Consequences if not approved: ⌘	The specification would contain inconsistencies.

Clauses affected:	⌘ 6.3			
Other specs Affected:	⌘ **X**	Other core specifications	⌘	23.228
		Test specifications		
		O&M Specifications		
Other comments:	⌘			

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

6.3 Session Flow: QoS Interaction Procedures

This section highlights possible additions to the GPRS bearer establishment procedures specified in TS23.060 for support of IM Services, and describes the QoS interactions involved within the sub-procedure blocks for Authorize QoS Resources, Resource Reservation with Service-based Local Policy, ~~and~~ Approval of QoS Commit, Removal of QoS Commit, Revoke Authorization for GPRS and IP Resources, Indication of PDP Context Release, and Indication of PDP Context Modification in Chapter 5: 'IP multimedia subsystem procedures' of TS23.228. The possible additions refer to procedures on the use of Service-based Local Policy, and RSVP Signalling as well as the allowed combinations.

It shall be possible according to operator choice to use solely the GPRS bearer establishment procedures specified in TS23.060 without the additions described in this section.

For cases where Service-based Local Policy is not used, the Authorize QoS Resources, ~~and~~ the Resource Reservation with Service-based Local Policy, the Approval of QoS Commit, the Removal QoS Commit, Revoke Authorization for GPRS and IP Resources, the Indication of PDP Context Release, and the Indication of PDP Context Modification sub-procedure blocks are effectively non-existent in TS23.228.

For the flow sequences involving RSVP, the following are assumed:

- the successful setup of RSVP signalling.
- bi-directional PDP contexts are being set up.

For the flow sequences involving Authorize QoS Resources and Approval of QoS Commit, the following are assumed:

- the successful authorization of QoS resources.
- the successful approval of QoS commit.

> Note: Whether 'gate' corresponds to a single IP flow or multiple IP flows is FFS.

> Note: 'Activate (Secondary) PDP Context' here means that either Primary or Secondary PDP context may be activated.

> Note: When necessary, it is assumed that there is an existing PDP context that carries signalling (e.g., RSVP) between the UE and GGSN.

6.3.1 Authorize QoS Resources

The Authorize QoS Resources procedure is triggered by the P-CSCF receiving a SDP message. The SDP message contains sufficient information about the session, such as the end-points, bandwidth requirements, and the characteristics of the media exchange.

The PCF shall authorize the required QoS resources for the session and install the IP bearer level policy based on information from the P-CSCF. In order to ensure that the IP bearer flow correlates to the one approved during the SIP session establishment, the SIP extensions for media authorization proposed in IETF shall be used.

The Authorization-Token is generated by the PCF and sent to the UE. For the originating UE, the Authorization-Token shall be included in the SIP message (183) from P-CSCF to the UE. For the terminating UE, the Authorization-Token shall be included in the SIP Invite message from P-CSCF to the UE.

The PCF makes decision and communicates these decisions to the IP BS Manager in the GGSN, which is the Policy Enforcement Point (PEP) for the IP bearer service. The interface between the PCF and PEP is the COPS protocol defined by IETF. For the purpose of the initial authorization of QoS resources the pull operation shall be used. (Reference Section 5.3 Go interface for details.)
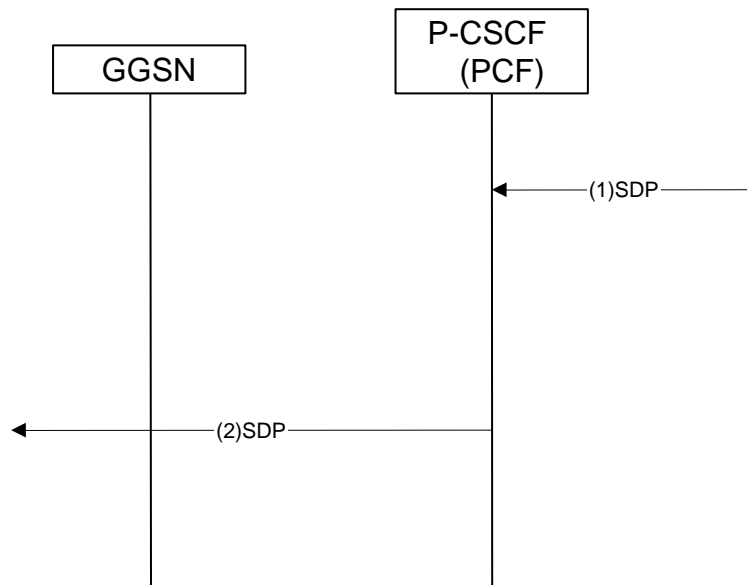The following figure is applicable to both the Mobile Originating (MO) side and the Mobile Terminating (MT) side.

Figure 3: Authorize QoS Resources

1) The SIP "SDP" message is received by the P-CSCF. The PCF shall authorize the required QoS resources for the session and install the IP bearer level policy based on information from the P-CSCF.

2) Upon successful authorization of the session, the P-CSCF forwards the SDP message to the UE for the originating side. For the terminating side, the P-CSCF forwards the SDP message to the terminating S-CSCF.

6.3.2 Resource Reservation Message Flows

6.3.2.1 Resource Reservation with Service-based Local Policy

For this case, Service-based Local Policy is added to the GPRS bearer establishment procedures specified in TS23.060.
This section provides the flows for bearer establishment, resource reservation and policy control with PDP Context setup and DiffServ inter-working.
The following figure is applicable to both the Mobile Originating (MO) side and the Mobile Terminating (MT) side.
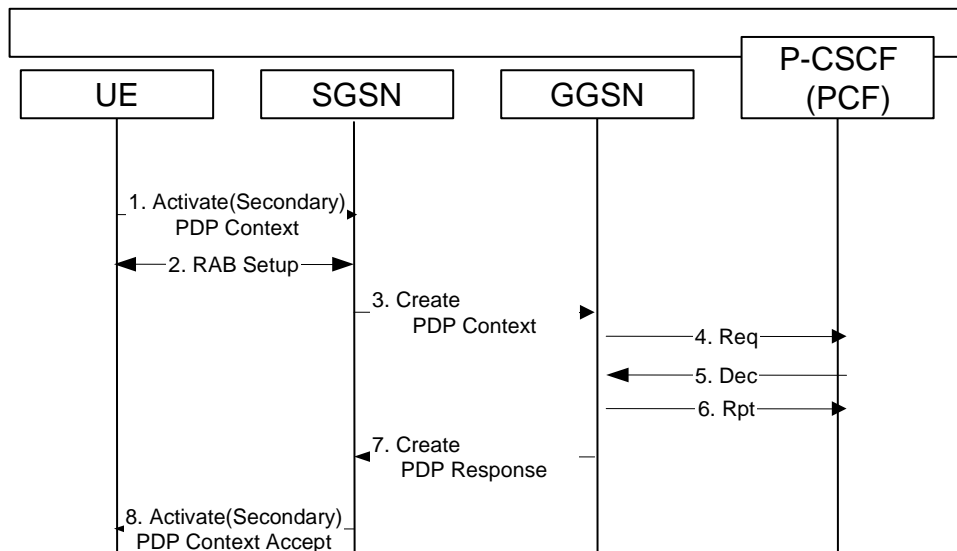
Figure 4: Resource Reservation with Service-based Local Policy

1) The UE sends an Activate (Secondary) PDP Context message to the SGSN with the UMTS QoS parameters. The UE includes the Binding Information in the Activate PDP Context message.

2) The radio access bearer (RAB) setup procedure is performed.

3) The SGSN sends the corresponding Create PDP Context message to the GGSN.

4) The GGSN sends a COPS REQ message with the Binding Information to the PCF in order to obtain relevant policy information.

5) The PCF sends a COPS DEC message back to the GGSN.

6) The GGSN sends a COPS RPT message back to the PCF.

7) The GGSN maps IP flow based policy information into PDP context based policy information and uses the PDP context based policy information to accept the PDP activation request, and sends a Create PDP Context Response message back to SGSN.

8) The SGSN sends an Activate (Secondary) PDP Context Accept message to UE.

6.3.2.2 Resource Reservation with End-to-End RSVP

For this case, RSVP is added to the GPRS bearer establishment procedures specified in TS23.060, with no Service-based local policy.

Note: The diagrams in this subsection depict one possible signalling sequence, however, the alternative signalling sequences below are possible:

- to trigger the Create PDP Context Request message after the PATH message.

- to trigger the Create PDP Context Request message after the RESV message.

- to trigger only one PDP context after all RSVP exchanges have completed.

Note: The diagrams in this subsection depict the case when the GGSN is not RSVP aware, however, the alternative of GGSN being RSVP aware is also possible.

The following figure is applicable to the Mobile Originating (MO) side.
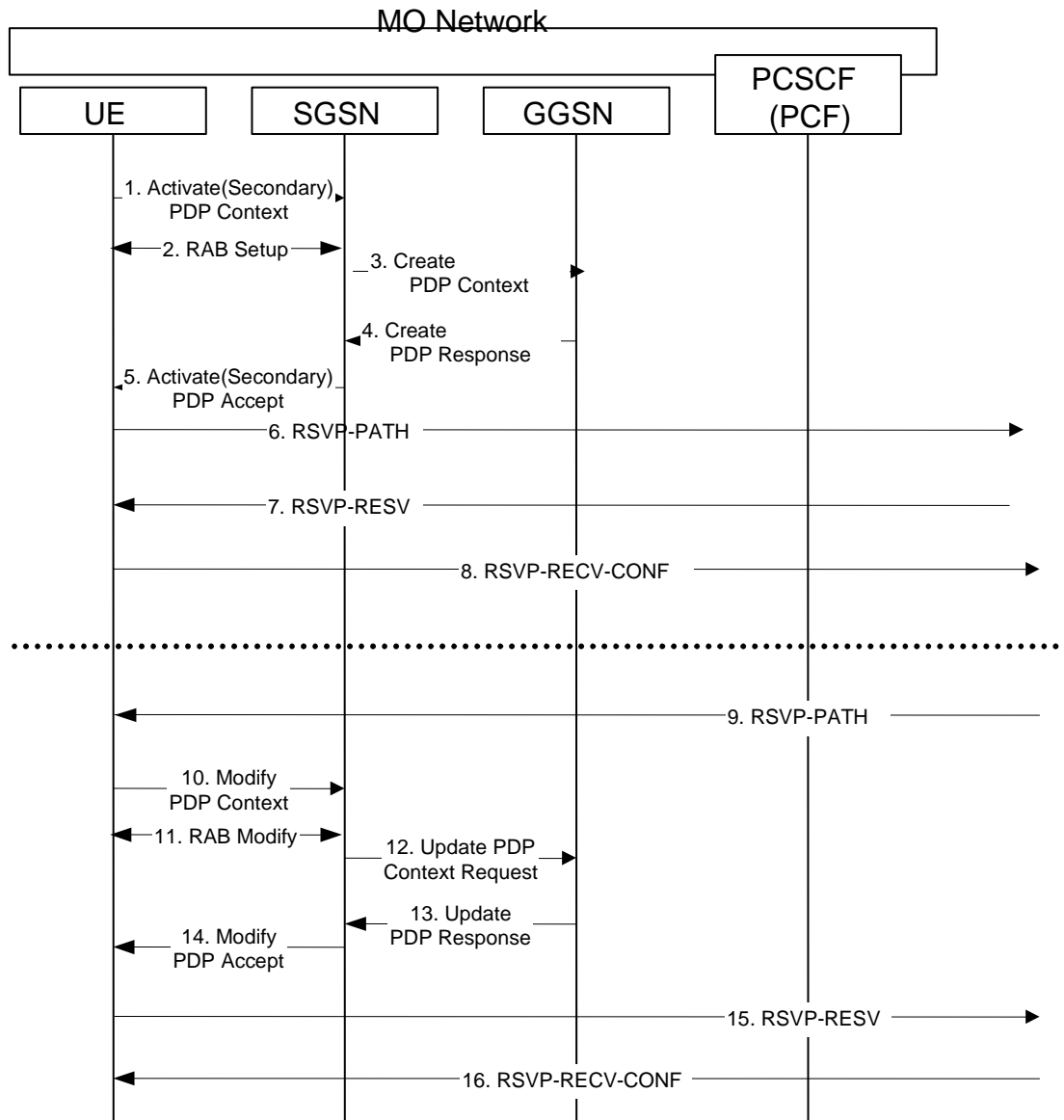
Figure 5: MO Resource Reservation with End-to-End RSVP

Note: There is no timing relationship between the set of flows for the uplink (above the line) and the downlink (below the line).

1) The UE sends an Activate (Secondary) PDP Context message to the SGSN with the UMTS QoS parameters.

2) The radio access bearer (RAB) setup procedure is performed.

3) The SGSN sends the corresponding Create PDP Context message to the GGSN.

4) The GGSN authorizes the PDP context activation request according to the local operator's IP bearer resource based policy, the local operator's admission control function and the GPRS roaming agreements and sends a Create PDP Context Response message back to the SGSN.

5) The SGSN sends an Activate (Secondary) PDP Context Accept message to UE.

6) UE sends an RSVP PATH message to the next hop, through the GGSN. The GGSN does not process the RSVP PATH message. Alternatively, the GGSN may process the RSVP PATH message and forward it to the next hop.

7) The UE receives the RSVP RESV message in the downlink direction, through the GGSN. The GGSN does not process the RSVP RESV message. Alternatively, the GGSN may process the RSVP RESV message and forward it to the UE.

8) The UE sends a RSVP RESV-CONF message to the next hop. The use of the RESV-CONF message is optional.

9) The UE receives a RSVP PATH message in the downlink direction, through the GGSN. The GGSN does not process the RSVP PATH message. Alternatively, the GGSN may process the incoming RSVP PATH message and forward it to the UE.

10) The UE may send a Modify PDP Context message to the SGSN with the necessary modification to UMTS QoS parameters according to the received RSVP PATH message.

11) The radio access bearer (RAB) modification procedure is performed.

12) The SGSN sends the corresponding Update PDP Context Request message to the GGSN.

13)   The GGSN authorizes the PDP context modification according to the local operator's IP bearer resource based policy, the local operator's admission control function and the GPRS roaming agreements and sends an Update PDP Context Response message back to the SGSN.

14) The SGSN sends a Modify PDP Context Accept message to UE.

15) UE sends the RSVP RESV message to the next hop, through the GGSN. The GGSN does not process the RSVP RESV message. Alternatively, the GGSN may process the RSVP RESV message and forward it to the next hop.

16) The UE receives the RSVP RESV-CONF message in the downlink direction. The use of the RESV-CONF message is optional.

The following figure is applicable to the Mobile Terminating (MT) side. As the flow is the mirror of the Mobile Originating (MO) side, the step-by-step description is omitted.
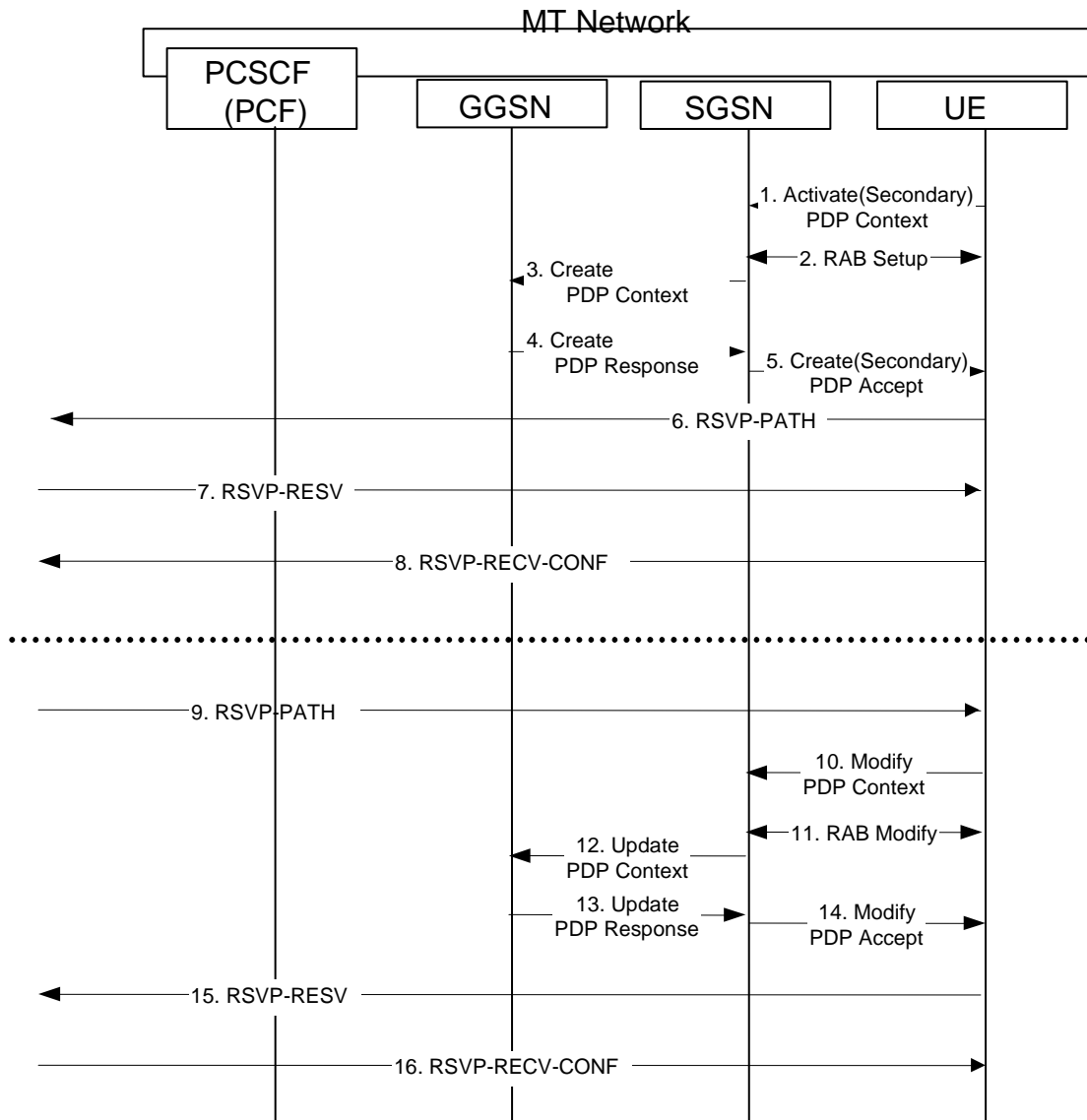
Figure 6: MT Resource Reservation with End-to-End RSVP

Note: There is no timing relationship between the set of flows for the uplink (above the line) and the downlink (below the line).

6.3.2.3 Resource Reservation with End-to-End RSVP and Service-based Local Policy

For this case, Service-based Local Policy and RSVP are added to the GPRS bearer establishment procedures specified in TS23.060.

Note: The diagrams in this subsection depict one possible signalling sequence, however, the alternative signalling sequences below are possible:

- to trigger the Create PDP Context Request message after the PATH message.

- to trigger the Create PDP Context Request message after the RESV message.

- to trigger only one PDP context after all RSVP exchanges have completed.

Note: The diagrams in this subsection depict the case when the GGSN is RSVP aware, however, the alternative of GGSN not being RSVP aware is also possible.

This section provides the flows for bearer establishment, resource reservation and policy control with RSVP.
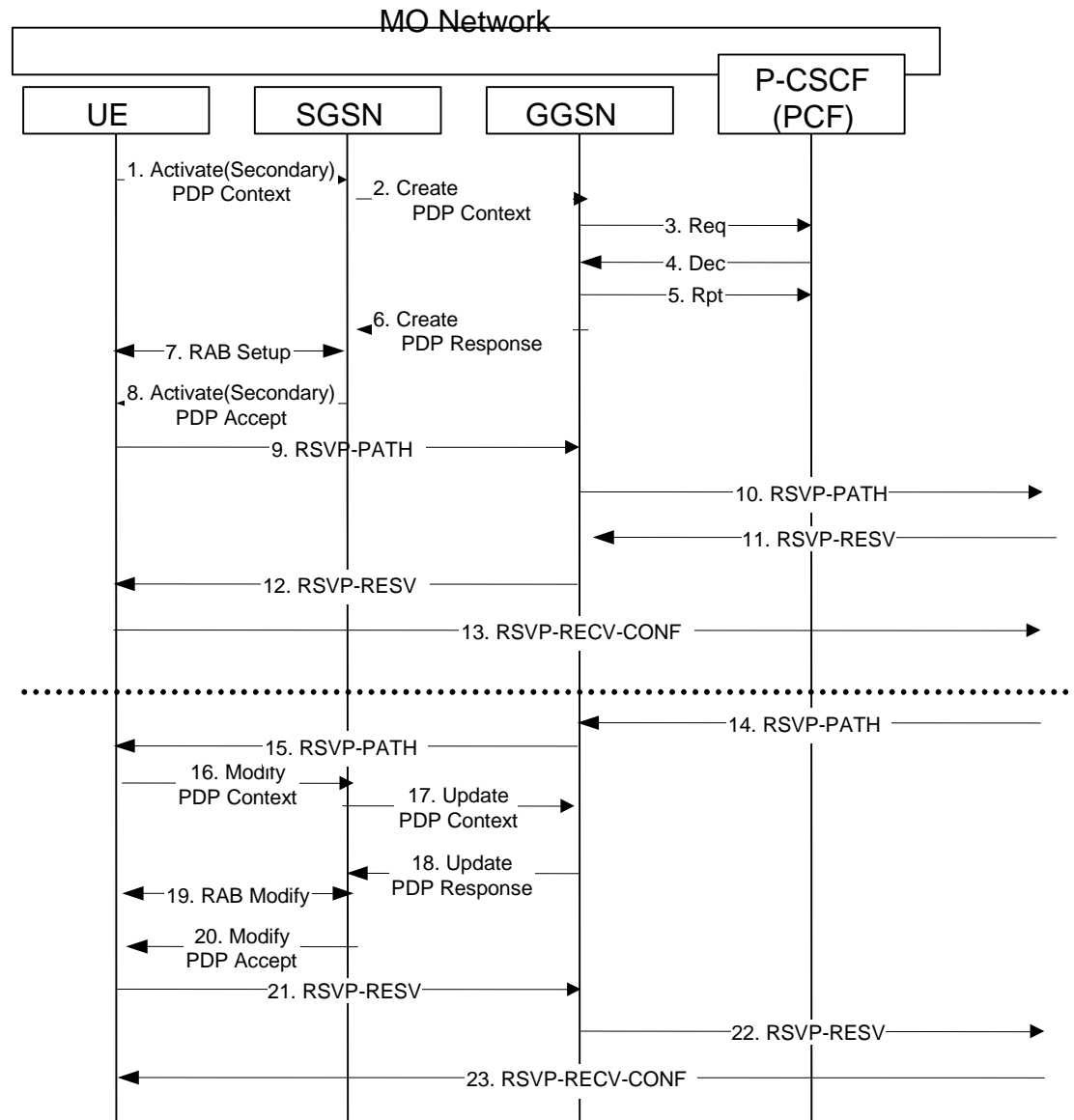The following figure is applicable to the Mobile Originating (MO) side.

Figure 7: MO Resource Reservation with End-to-End RSVP and Service-based Local Policy

Note: There is no timing relationship between the set of flows for the uplink (above the line) and the downlink (below the line).

1) The UE sends an Activate (Secondary) PDP Context message to the SGSN with the UMTS QoS parameters. The UE includes the Binding Information in the Activate PDP Context message.

2) The radio access bearer (RAB) setup procedure is performed.

3) The SGSN sends the corresponding Create PDP Context message to the GGSN.

4) The GGSN sends a COPS REQ message with the Binding Information to the PCF in order to obtain relevant policy information.

5) The PCF sends a COPS DEC message back to the GGSN.

6) The GGSN sends a COPS RPT message back to the PCF.

7) The GGSN maps IP flow based policy information into PDP context based policy information and uses the PDP context based policy information to accept the PDP activation request, and sends a Create PDP Context Response message back to SGSN. The GGSN may cache the policy information.

8) The SGSN sends an Activate (Secondary) PDP Context Accept message to UE.

9) UE sends a RSVP PATH message to GGSN. The UE includes the Binding Information.

Note: If the decision was previously cached locally at the GGSN, it may not be necessary to query the PCF again. Otherwise the GGSN may have to query the PCF.

10) The GGSN uses the policy information to accept the RSVP PATH message, and forwards the RSVP PATH message to the next hop.

11) The GGSN receives the RSVP RESV message in the downlink direction.

Note: If the decision was previously cached locally at the GGSN, it may not be necessary to query the PCF again. Otherwise the GGSN may have to query the PCF.

12) The GGSN uses the policy information to accept the RSVP RESV message, and forwards the RSVP RESV message to the UE.

13) The UE sends a RSVP RESV-CONF message to the next hop. The use of the RESV-CONF message is optional.

14) The GGSN receives a RSVP PATH message in the downlink direction. .

15) The GGSN forwards the RSVP PATH message to the UE.

16) The UE may send a Modify PDP Context message to the SGSN with the necessary modification to UMTS QoS parameters according to the received RSVP PATH message. The UE includes the Binding Information in the Modify PDP Context message.

17) The radio access bearer (RAB) modification procedure is performed.

18) The SGSN sends the corresponding Update PDP Context message to the GGSN.

Note: If the decision was previously cached locally at the GGSN, it may not be necessary to query the PCF again. Otherwise the GGSN may have to query the PCF.

19) The GGSN uses the policy information to accept the PDP modification request, and sends a Update PDP Context Response message back to SGSN.

20) The SGSN sends a Modify PDP Context Accept message to UE.

Note: Steps 16 to 20 are optional if the existing PDP context already satisfies the QoS requirements.

21) The UE sends a RSVP RESV message to the GGSN. The UE includes the Binding Information in the RSVP RESV message.

Note: If the decision was previously cached locally at the GGSN, it may not be necessary to query the PCF again. Otherwise the GGSN may have to query the PCF.

22) The GGSN uses the policy information to accept the RSVP RESV message, and forwards the RSVP RESV message to the next hop.

23) The UE receives the RSVP RESV-CONF message in the downlink direction. The use of the RESV-CONF message is optional.

The following figure is applicable to the Mobile Terminating (MT) side. As the flow is the mirror of the Mobile Originating (MO) side, the step-by-step description is omitted.
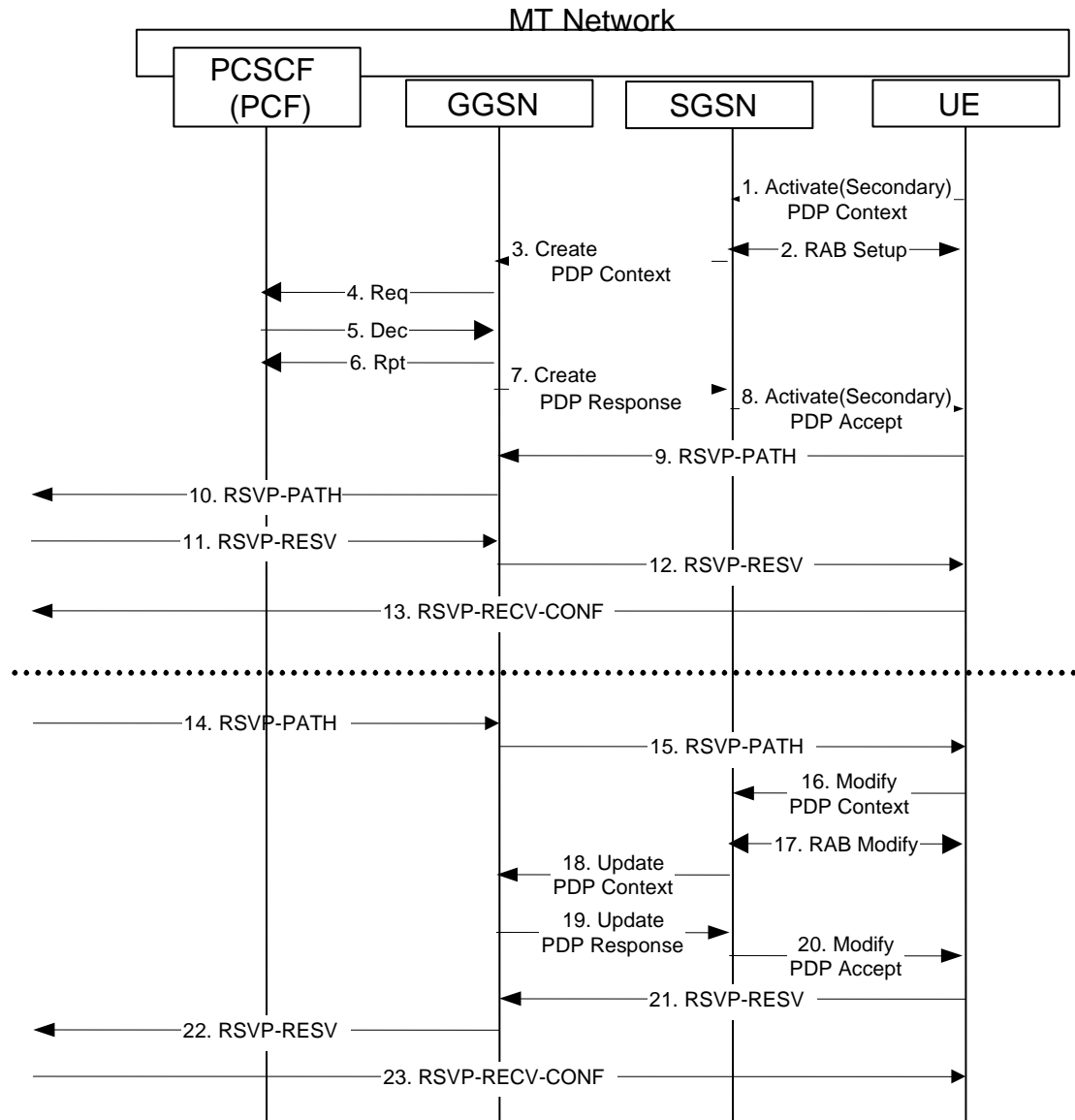

Figure 8: MT Resource Reservation with End-to-End RSVP and Service-based Local Policy

Note: There is no timing relationship between the set of flows for the uplink (above the line) and the downlink (below the line).

6.3.2.4 (void)

6.3.3 Approval of QoS Commit

The Approval of QoS Commit procedure is triggered by the P-CSCF receiving a 200 OK message.
The following figure is applicable to both the Mobile Originating (MO) side and the Mobile Terminating (MT) side.

Figure 11: Approval of QoS Commit

1) The P-CSCF receives the 200 OK message. PCF approves the QoS Commit based on local policy.

2) The PCF shall send a COPS DEC message to the GGSN to open the 'gate' e.g., enable the use of the authorised QoS resources, unless this was done based on local policy at the time the QoS resources were authorised.

3) The GGSN receives the COPS DEC message and opens the 'gate' e.g., enables the use of the authorised QoS resources, and sends a COPS RPT message back to the PCF.

4) The P-CSCF forwards the 200 OK message to the next hop.

6.3.4   Removal of QoS cCommit

The "Removal of QoS commit" procedure is used e.g. when a media component of a session is put on hold. (e.g. in case of a media re-negotiation or call hold). The P-CSCF (PCF) provides final decision on removal of QoS commit for the authorized media stream to the GGSN. The PCF decision of "Removal of QoS commit" shall be sent as a separate decision to the GGSN corresponding to the previous "Authorize QoS Resources" and "Resource Reservation with Service-based Local Policy" request.
The GGSN closes the gate, and the media flow will be blocked.
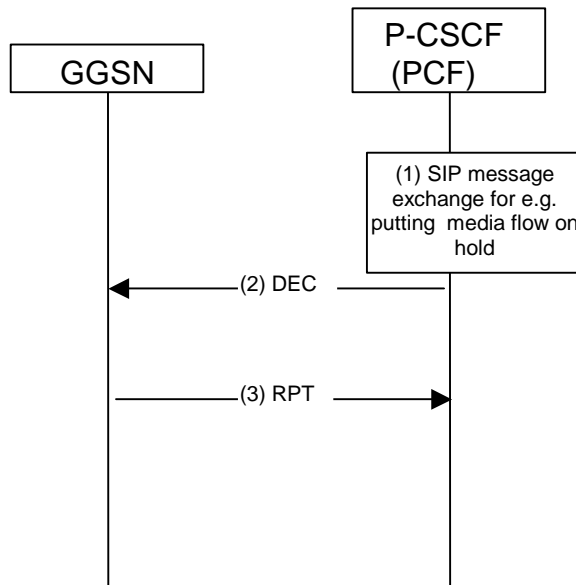The following figure presents the "Removal of QoS commit" procedure.

Figure 12: Removal of QoS commit

1) SIP message exchanges for e.g., putting a media flow on hold are carried out.

2) The PCF shall send a COPS DEC message to the GGSN to close the 'gate'.

3) The GGSN receives the COPS DEC message, closes the gate, and sends a COPS RPT message back to the PCF.

6.3.5 Revoke Authorization for GPRS and IP Resources

The "Revoke Authorization for GPRS and IP resources" procedure is used e.g. upon session release. The PCF decision of "Revoke Authorization for ~~UMTS~~ GPRS and IP Resources" shall be sent as a separate decision to the GGSN corresponding to the previous "Authorize QoS Resources" and "Resource Reservation with Service-based Local Policy" request.
The following figure presents the "Revoke Authorization for ~~UMTS~~ GPRS and IP Resources" procedure. This procedure is applied for user plane PDP context(s).
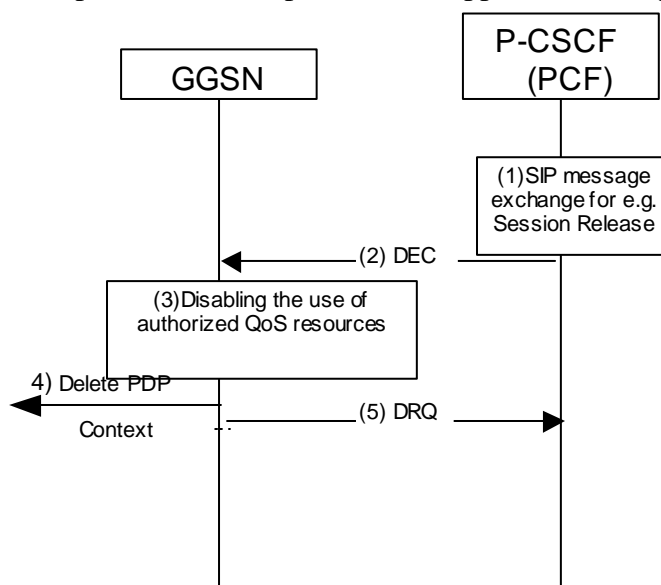

Figure 13: Revoke Authorization for GPRS and IP R~~r~~esources

1) SIP message exchanges for e.g. session release are carried out.

2) The PCF shall send a COPS DEC (Decision) message to the GGSN. It includes binding information which identifies the PDP context to be deactivated.

3) The GGSN receives the COPS DEC message, and disables the use of the authorized QoS resources.

4) The GGSN initiates deactivation of the PDP context used for the IP multimedia session, in case the UE has not done it before.

5) The GGSN sends a COPS DRQ (Delete Request State) message back to the PCF.

6.3.6 Indication of PDP Context Release

The "Indication of PDP Context Release" procedure is used upon the release of a PDP Context that was established based on authorisation from the PCF.
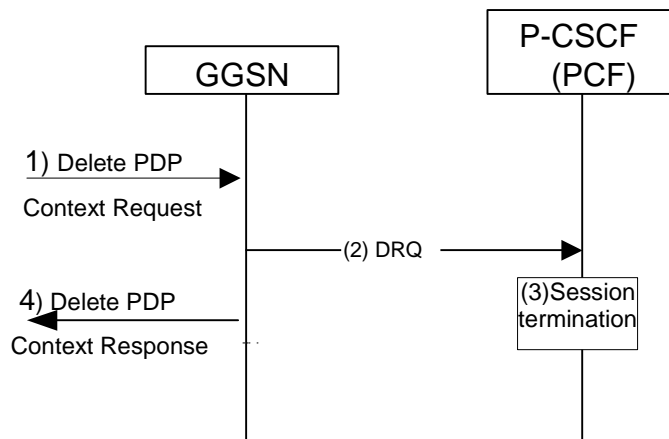The following figure presents the "Indication of PDP Context Release" procedure.

Figure 14: Indication of PDP Context Release

1) The SGSN deactivates the PDP context related to the media flow by sending the Delete PDP Context Request message to the GGSN.

2) The GGSN sends a COPS DRQ message to the P-CSCF(PCF).

3) The P-CSCF(PCF) receives the COPS DRQ message and should initiate a session termination.

4) The GGSN sends the Delete PDP Context Response message to the SGSN to acknowledge the PDP context deletion.

Note: Step 4 may also occur at the same time or before Step 3.

6.3.7 Indication of PDP Context Modification

The "Indication of Modification of PDP Context Modification" procedure is used when a PDP Context is modified such that the requested QoS falls outside of the limits that were authorized at PDP context activation (or last modification) or such that the maximum bit rate (downlink and uplink) is downgraded to 0 kbit/s. In this case, the GGSN communicates with the PCF as described below. The following figures present the "Indication of Modification of PDP Context Modification" procedure.

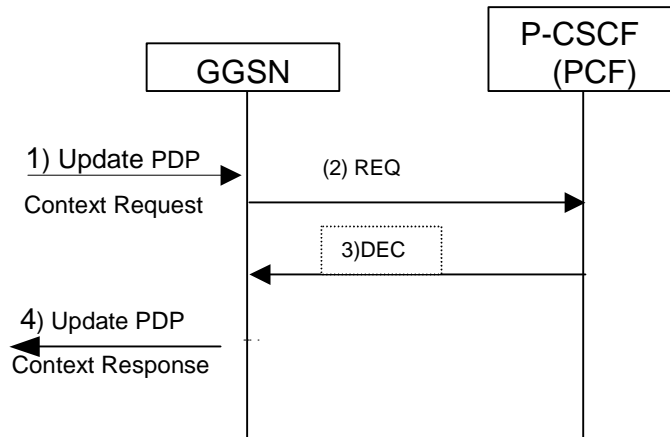**Figure 15: Indication of ~~Modification of~~ PDP Context Modification**

1) A request to modify the PDP context related to the media flow is indicated by sending the Update PDP Context Request message to the GGSN.

2) The GGSN sends a COPS REQ message to the P-CSCF(PCF).

3) The P-CSCF(PCF) receives the COPS REQ message, notes the requested modification and decides whether it should be accepted or rejected; and informs the GGSN of the decision. In case the maximum bit rate (downlink and uplink) were downgraded to 0 kbit/s the P-CSCF(PCF) shall accept the modification.

4) If the P-CSCF(PCF) accepted the modification, the GGSN sends the Update PDP Context Response message to the SGSN to acknowledge the PDP context modification.

CR-Form-v3

CHANGE REQUEST

⌘	**TS 23.207 CR 017**	⌘ rev **1** ⌘	Current version:	**5.2.0**	⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Authorization of QoS Resources
Source:	⌘	Orange France
Work item code: ⌘	IMS - CCR	***Date:*** ⌘ 10.02.2002
Category: ⌘	**F**	***Release:*** ⌘ REL-5

Use <u>one</u> of the following categories: **F** *(essential correction)* **A** *(corresponds to a correction in an earlier release)* **B** *(Addition of feature),* **C** *(Functional modification of feature)* **D** *(Editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.	Use <u>one</u> of the following releases: 2 *(GSM Phase 2)* R96 *(Release 1996)* R97 *(Release 1997)* R98 *(Release 1998)* R99 *(Release 1999)* REL-4 *(Release 4)* REL-5 *(Release 5)*

Reason for change:	⌘	Possible misunderstanding between the Resources Authorization process and the authorisation-token delivery within "Authorize QoS Resources" procedure
Summary of change: ⌘		In 23.207 v5.2.0, "Authorize QoS Resources" procedure (§6.3.1) indicates that "The Authorize QoS Resources procedure is triggered by the **P-CSCF receiving a SDP message."** "The Authorization-Token is generated by the PCF and sent to the UE. For the originating UE, the Authorization-Token shall be included in the SIP message (183) from P-CSCF to the UE. For the terminating UE, the Authorization-Token shall be -included in the SIP **Invite message from P-CSCF to the UE.**" Consequently, the authorization-token delivery should not be considered as part of the "Authorize QoS Resources" procedure and should be done prior to the procedure for the Termating part. The paragraph regarding the use of the Authorization token is deleted. Nonetheless the same information is available in section 6.1.3, Procedures in the P-CSCF(PCF).
Consequences if not approved:	⌘	The delivery of the Authorization token will not be possible.

Clauses affected:	⌘	6.3.1 Authorize QoS Resources
Other specs Affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

6.3.1   Authorize QoS Resources

The Authorize QoS Resources procedure is triggered by the P-CSCF receiving a SDP message. The SDP message contains sufficient information about the session, such as the end-points, bandwidth requirements, and the characteristics of the media exchange.

The PCF shall authorize the required QoS resources for the session and install the IP bearer level policy based on information from the P-CSCF. In order to ensure that the IP bearer flow correlates to the one approved during the SIP session establishment, the SIP extensions for media authorization proposed in IETF shall be used.

~~Beside the "Authorize QoS Resources procedure ", Tthe Authorization-Token is generated by the PCF and sent to the UE. For the originating UE, the Authorization-Token shall be included in the SIP message (183) from P-CSCF to the UE. For the terminating UE, the Authorization-Token shall be included in the SIP Invite message from P-CSCF to the UE.~~

The PCF makes decision and communicates these decisions to the IP BS Manager in the GGSN, which is the Policy Enforcement Point (PEP) for the IP bearer service. The interface between the PCF and PEP is the COPS protocol defined by IETF.

For the purpose of the initial authorization of QoS resources the pull operation shall be used. (Reference Section 5.3 Go interface for details.)

The following figure is applicable to both the Mobile Originating (MO) side and the Mobile Terminating (MT) side.
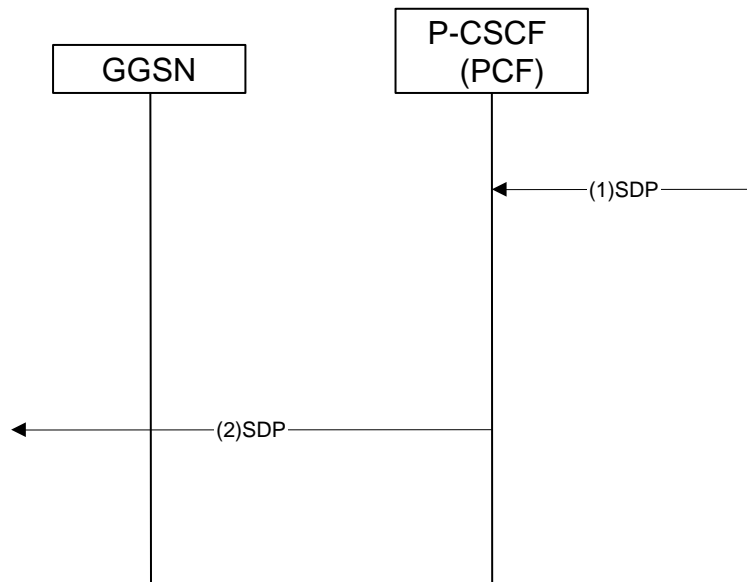

Figure 3: Authorize QoS Resources

1) The SIP "SDP" message is received by the P-CSCF. The PCF shall authorize the required QoS resources for the session and install the IP bearer level policy based on information from the P-CSCF.

2) Upon successful authorization of the session, the P-CSCF forwards the SDP message to the UE for the originating side. For the terminating side, the P-CSCF forwards the SDP message to the terminating S-CSCF.

CR-Form-v5

CHANGE REQUEST

| ⌘ | **23.207** CR **19** | ⌘**rev** | **-** | ⌘ | Current version: | **5.2.0** | ⌘ |

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network ☐ Core Network **X**

Title: ⌘	Number of media components per PDP Context	
Source: ⌘	Nokia, Siemens, Alcatel, Lucent, Rogers Wireless, Ericsson	
Work item code: ⌘	E2E QoS	***Date:*** ⌘ 18.02.2002
Category: ⌘ **B**		***Release:*** ⌘ REL-5

Use one of the following categories:
F (correction)
A (corresponds to a correction in an earlier release)
B (addition of feature),
C (functional modification of feature)
D (editorial modification)
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change: ⌘	The topic of number of media components allowed within one PDP context has been debated during S2#21 and SA2#22. Although realistically there may very well be a separate PDP context opened for each IMS media component due to e.g. charging reasons, this restriction shall not be explicitly stated in standards. Instead, a flexible mechanism should be developed for the network to control whether the UE is allowed to multiplex media components. Having such a mechanism for Rel5 would ensure having some standardized tools already for Rel5 that can be developed to a full-blown solution for later releases. This would allow for migrating out of a media component number / PDP context restriction in later releases in a backward compatible manner. As a great advantage, introducing such a mechanism would allow for future-proofness and forward compatibility, i.e. a Rel6 IMS network may allow a Rel5 UE to multiplex media components.
Summary of change: ⌘	A generic mechanism for an IMS-level indication on allowing the UE to have multiple IMS media components in a PDP context has been added.
Consequences if not approved: ⌘	

Clauses affected: ⌘	5.2.3 and 6.1.3

Other specs affected: ⌘	☐ Other core specifications	⌘	
	Test specifications		
	O&M Specifications		

Other comments: ⌘	Corresponding changes are implemented to TS 23.228 in CR#134

5.2.3   P-CSCF(PCF)

This clause provides functional descriptions of capabilities in P-CSCF(PCF). Determination of exactly which functions are required to support interoperator and multi-vendor aspects are not addressed in this clause.

Service-based Local Policy Decision Point

- Authorize QoS resources (bandwidth, etc.) for the session. The P-CSCF (PCF) shall use the SDP contained in the SIP signaling message to calculate the proper authorization. The authorization shall be expressed in terms of the IP resources to be authorized. The authorization shall include limits on IP packet flows and restrictions on IP destination address and port.

- The P-CSCF (PCF) shall be able to enforce the behaviour of the UE in respect to the assignment of IMS media components to the same PDP Context or to separate PDP Contexts. This enforcement is based on an indication received by the UE on IMS level. In case the UE violates the IMS level indication, and attempts to carry multiple IMS media components in a single PDP context despite of an indication that mandated separate PDP contexts, the P-CSCF/PCF shall enforce the rejection of this PDP context. To enforce the rejection of such a PDP Context, the P-CSCF/PCF uses the Go interface.

- The P-CSCF (PCF) shall be able to decide if new QoS authorization (bandwidth, etc.) is needed due to the mid-call media or codec change. A new authorization shall be required when the resources requested by the UE for a flow exceeds previous authorization, or a new flow is added, or when elements of the packet classifier(s) for authorized flows change.

- The PCF functions as a Policy Decision Point for the service-based local policy control.

- The PCF shall exchange the authorization information with the GGSN via the Go interface.

- PCF provides final policy decisions controlling the allocated QoS resources for the authorized media stream. The decision shall be transferred from the PCF to the GGSN.

- At IP multimedia session release, the PCF) shall revoke the QoS resource authorization for the session.

Binding Mechanism Handling

- The PCF generates an authorization token for each SIP session and send the authorization token to the UE in the SIP message. The authorization token may contain information that identifies its generator. The authorization token shall be unique across all PDP contexts associated with an APN. The authorization token conforms to the IETF specification on SIP Extensions for Media Authorization.

- The PCF shall generate a new authorization token when a new authorization is required.

-

6.1.3   Procedures in the P-CSCF(PCF)

The QoS procedures in P-CSCF(PCF) are related to service based local policy control.

The QoS resource authorization procedure is triggered by the P-CSCF receiving a SIP message with SDP. The SDP contains sufficient information about the session, such as the end-points, bandwidth requirements and the characteristics of the media exchange. The P-CSCF initiates a policy setup in PCF for the session. The PCF shall authorize the required QoS resources and install the IP bearer level policy for the session.

The Authorization-Token is generated by the PCF and sent to the UE. For the originating UE, the Authorization-Token shall be included in the SIP message (183) from P-CSCF to the UE. For the terminating UE, the Authorization-Token shall be included in the SIP Invite message from P-CSCF to the UE.

The P-CSCF also receives an indication from the S-CSCF and forwards the indication to the UE to assist the UE in deciding whether it can assign multiple media components to the same PDP Context, or separate PDP Contexts have to be used. This mechanism is described in Section 4.2.5.1 in [4].

Upon receiving the bearer authorization request from the GGSN, the PCF shall authorize the request according to the stored service based local policy for the session.

The PCF makes a final decision to enable the allocated QoS resource for the authorized media stream. This may be triggered by the receipt of the SIP 200 OK (Invite Response) message to the P-CSCF. Based on local policy, QoS resources may also be enabled at the time they are authorised by the PCF.

During the mid-call SIP signaling for media or codec change, the P-CSCF shall be able to decide if new QoS authorization is needed. A new authorization shall be required when the resources requested by the UE for a flow exceeds previous authorization, or a new flow is added, or when elements of the packet classifier(s) for authorized flow changed.

At session release, the PCF shall revoke the resource authorization.