3GPP TSG CN Plenary Meeting #18 **NP-020623**
4th - 6th December 2002. New Orleans, USA.

Source: TSG CN WG3

Title: CRs on Rel5 Work Item e2eQoS (CR Pack 4)

Agenda item: 8.5

Document for: APPROVAL

Introduction:

This document contains **6** CRs on **Rel-5 WI e2eQoS**.

These CRs have been agreed by TSG CN WG3 and are forwarded to TSG CN Plenary meeting #18 for approval.

WG_tdoc	Title	Spec	CR	Rev	Cat	Rel	Version
N3-020935	Handling of binding information by GGSN	29.061	067	3	F	Rel-5	5.3.0
N3-020983	Handling of binding information by GGSN	29.207	039	4	F	Rel-5	5.1.0
N3-020980	Connection failure between PCF and GGSN	29.207	040	4	F	Rel-5	5.1.0
N3-021004	GTP cause code for Go related errors	29.207	063	1	F	Rel-5	5.1.0
N3-020995	Go FailDecReason mapping to PCO error codes	29.207	069	1	F	Rel-5	5.1.0
N3-020988	Coding for Go related error codes	29.207	072		F	Rel-5	5.1.0

3GPP TSG-CN WG3 Meeting #25
Miami, USA, 23rd - 27th September 2002.

Tdoc ⌘N3-020935

CR-Form-v7

CHANGE REQUEST

⌘ **29.061** **CR** **067** ⌘ **rev** **3** ⌘ Current version: **5.3.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Handling of binding information by GGSN
Source:	⌘	TSG_CN WG3
Work item code:	⌘	E2EQoS
Date:	⌘	31/10/2002
Category:	⌘	**F**
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)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Go interface related error handling belongs to other specification.
Summary of change:	⌘	a) The text stating that when the Go interface is disabled for the APN, the GGSN rejects the PDP context request due to unexpected binding information, is moved to TS 29.207. Replaced by a reference. b) A specifying sentence is turned to a declaratory sentence.
Consequences if not approved:	⌘	a) The same issue is standardized in two specifications.

Clauses affected:	⌘	13a.2.1				
Other specs affected:	⌘	**Y**	**N**		⌘	
		X		Other core specifications		29.207 (CR039)
			X	Test specifications		
			X	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.

13a.2.1 IMS Specific Configuration in the GGSN

The GGSN shall have a list of preconfigured addresses of signalling servers (P-CSCF servers). This list shall be provided to MSs on request. The list shall be possible to preconfigure per APN.

The GGSN shall have preconfigured static packet filters, to be applied on dedicated signalling PDP contexts. The static packet filters shall filter up-link and down-link packets and only allow traffic to/from the preconfigured signalling servers and to DNS and DHCP servers. The static packet filters shall be possible to pre-configure per APN.

It shall be possible to enable/disable the use of the Go interface per APN. ~~If disabled, t~~The GGSN ~~may reject~~shall handle Create PDP Context Requests that include binding information as specified in TS 29.207 [53]. ~~based on operator policy~~.

The GGSN shall support IPv6 addresses and protocol for IMS signalling and IMS bearers.

The GGSN shall provide support for P-CSCF discovery in two different ways (see TS 23.228):

- GPRS procedure for P-CSCF discovery, i.e. request and provision of P-CSCF address(es) within the PCO IE in GPRS Session Management procedures (see TS 24.008).

- Via DHCPv6 servers i.e. the GGSN shall provide the functionality of a DHCPv6 relay agent

On APNs providing IMS services, the information advertised in Router Advertisements from GGSN to MSs shall be configured in the same manner as for other APNs prviding IPv6 services (see subclause 11.2.1.3.4), except that the “O-flag” shall be set even when the “M-flag” is cleared.

Note: When the “M-flag” is cleared, the “O- flag” shall be set in IPv6 Router Advertisement messages sent by the GGSN for APNs used for IMS services. This will trigger a DHCP capable MS to start a DHCPv6 session to retrieve server addresses and other configuration parameters. An MS which doesn’t support DHCP will simply ignore the “O-flag”. An MS may simultaneously use stateless address autoconfiguration for configuring its IPv6 address and stateful autoconfiguration for configuring IMS specific parameters. An MS which doesn’t support DHCP, shall request IMS specific configuration (e.g. P-CSCF address) in the PCO IE in the Create PDP Context message.

The GGSN shall support a DHCPv6 relay agent.

3GPP TSG-CN WG3 Meeting #26 ***Tdoc ⌘N3-020980***
Bangkok, Thailand, 11th - 15th November 2002.

CR-Form-v7

CHANGE REQUEST

⌘ **29.207** **CR** **040** ⌘ **rev** **4** ⌘ Current version: **5.1.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Connection failure between PCF and GGSN
Source:	⌘	TSG_CN WG3
Work item code:	⌘	E2EQoS
Date:	⌘	31/10/2002
Category:	⌘	**F**
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)*
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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)
Rel-6 (Release 6)

Reason for change:	⌘	It is not specified in TS 29.207, what the GGSN is shall do, if the connection between the GGSN and the PCF fails and the GGSN is not allowed to make a local authorization decision.
Summary of change:	⌘	If the connection between the GGSN and the PCF fails and the GGSN is not allowed to make a local authorization decision, the GGSN rejects the PDP context activation or modification. The PCO policy control rejection code "Authorizing entity temporarily unavailable" is returned to the UE. The PCO policy control rejection code added in annex D.
Consequences if not approved:	⌘	Unspecified operation in the network.

Clauses affected:	⌘	5.1.1, 5.1.2 and annex D

	Y	N		
Other specs affected: ⌘		X	Other core specifications	⌘
		X	Test specifications	
		X	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.

Next modified section

5.1.1 Initial authorization at PDP context activation

The GGSN receives binding information during the activation of a PDP context by the UE. To perform initial authorization at the PDP context activation the GGSN shall send an authorisation request to the PCF including the binding information received from the UE.

The GGSN identifies the required PCF from the binding information. The binding information is formatted according to the structure of the policy element defined in [11] and shall include the AUTH_ENT_ID and the SESSION_ID attributes. The GGSN checks for a Policy Element of type AUTH_SESSION ([11]) and retrieves the AUTH_ENT_ID attribute from this. If this is in the form of a Fully Qualified Domain Name, then this is used to identify the correct PCF.

The GGSN authorisation request message to the PCF shall allow the GGSN to request policy information for authorisation of the media components carried by a PDP context identified by binding information.

When the GGSN receives the PCF decision regarding authorisation of the media components, the GGSN shall enforce the policy decision. To enforce the policy decision, the GGSN shall install the packet filters received from the PCF, and ignore the UE supplied TFT.

If the PCF decision information indicates that the binding information provided by the GGSN is authorised, the GGSN shall proceed with activation of the PDP context. The GGSN shall map the authorized QoS resources into authorized resources for the bearer admission control.

To ensure charging correlation, the GGSN shall send the GCID and GGSN address information to the PCF after the successful establishment of the PDP context, i.e. with the report following the initial authorization decision.

When the PCF detects that the binding information provided by the GGSN is not associated with an ongoing SIP session at application layer, or is otherwise unable to authorise the binding information, the GGSN will receive a COPS decision message from the PCF carrying both an INSTALL and REMOVE decision. The GGSN shall reject the PDP context activation with the error code value 'Authorization failure of the request'. The error code is transferred to the UE in the Protocol Configuration Options information element as defined in 3GPP TS 24.008 [12]. The GGSN shall subsequently remove this state according to the REMOVE decision. For an initial authorisation request, the GGSN shall then send a COPS Delete Request State (DRQ) message to the PCF to remove the state in the GGSN and the PCF.

When the GGSN sends an authorization request to the PCF but the PCF does not respond with the decision message or the communication between the GGSN and the PCF fails, the ~~GGSN's~~authorization action is according to the local policy in the GGSN. The local policy may be configured by the operator. If the local policy in the GGSN does not allow the GGSN to make local policy decisions in the absence of the PCF, the GGSN shall reject the PDP context activation with the error code "Authorizing entity temporarily unavailable" (see annex D).

If the GGSN supports a local policy decision point (LPDP) configuration it may make local policy decisions in the absence of the PCF. The local policy decisions may be used to accept new PDP context activations while the connection to the PCF is lost. The synchronization behaviour between the GGSN and the PCF is based on the local policy configured by operators.

5.1.2 Modification of previously authorized PDP context

The GGSN is responsible for notifying the PCF when a procedure of PDP context modification of a previously authorized PDP context is performed. To authorise the PDP context modification the GGSN shall send an authorisation request to the PCF including the binding information received from the UE in the following cases:

- Requested QoS exceeds "Authorised QoS";
- New binding information is received.

The GGSN on receiving the PDP context modification request from the UE will verify the authorisation. If the GGSN does not have sufficient information to authorize the PDP context modification request then the GGSN shall interrogate the PCF for modification request authorisation.

If the requested QoS is within the already "Authorized QoS" and the binding information is not changed, the GGSN need not send an authorization request to the PCF.

If the PCF does not respond with a decision message to an authorization request sent by the GGSN or the communication between the GGSN and the PCF fails, and if the local policy in the GGSN does not allow the GGSN to make local policy decisions in the absence of the PCF, the GGSN shall reject the PDP context modification with the error code "Authorizing entity temporarily unavailable" (see annex D).

The GGSN is responsible for notifying to the PCF when the procedure of the PDP context modification is performed in the following cases:

- Requested QoS maximum bit rate is 0 kbit/s;
- Requested QoS maximum bit rate changes from 0 kbit/s.

Next modified section

Annex D (normative): Go interface related error code values for the PDP context handling

The following error codes are used to indicate Go interface related errors from the GGSN to the UE. The error codes are transferred to the UE in the Protocol Configuration Options information element as defined in 3GPP TS 24.008 [12]:

Error code No. 1 "Authorization failure of the request"
This error code indicates that the PDP context activation/modification request is rejected because the authorizing entity is unable to provide an authorization decision for the binding information.

Error code No. 2 "Missing binding information"

This error code indicates that the PDP context activation/modification request is rejected because the binding information was not included in the request although required.

Error code No. 3 "Invalid binding information"

This error code indicates that the PDP context activation/modification request is rejected because the authorizing entity could not be resolved from the binding information.

Error code No.X "Authorizing entity temporarily unavailable"

This error code indicates that the PDP context activation/modification request is rejected because the authorizing entity indicated by the binding information is temporarily unavailable.

3GPP TSG-CN WG3 Meeting #26 **Tdoc ⌘N3-020983**
Bangkok, Thailand, 11th - 15th November 2002.

CR-Form-v7

CHANGE REQUEST

⌘ **29.207** **CR** **039** ⌘ **rev** **4** ⌘ Current version: **5.1.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Handling of binding information by GGSN
Source:	⌘	TSG_CN WG3
Work item code:	⌘	E2EQoS
Date:	⌘	31/10/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
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R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	The specification does not define, what the GGSN shall do, when it receives a PDP context request with binding information even though the Go interface is disabled.
Summary of change:	⌘	When the use of the Go interface is disabled for the APN, the GGSN rejects any request with binding information included. The PCO policy control rejection code "Binding information not allowed" is returned to the UE. The PCO policy control rejection code added in annex D.
Consequences if not approved:	⌘	Unclear error handling

Clauses affected:	⌘	4.3.1.5, Annex D

Other specs affected:	⌘	Y	N		⌘	
		X		Other core specifications		20.061 (CR67)
			X	Test specifications		
			X	O&M Specifications		

Other comments:	⌘	

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Next amended section

4.3.1.5 Binding mechanism handling

The binding information is used by the GGSN to identify the correct PCF and subsequently request service-based local policy information from the PCF. The binding information associates a PDP context with one or more media components of an IMS session. The GGSN may receive one or more sets of the binding information during an activation or modification of a PDP context. Each binding information consists of an authorisation token and the flow identifier(s) related to the IP flows of the actual media component. If there is more than one media component to be transported within the PDP context the binding information includes the flow identifier(s) for the IP flows of each of the media components.

The GGSN shall store the binding information and apply it to correlate events and actions between the PDP context and the service-based local policy.

The GGSN shall determine the IP address of the PCF from the PCF identifier received as part of the Authorization Token. This identifier shall be in the format of a fully qualified domain name.

The GGSN shall forward the binding information received from the UE to the PCF. If multiple binding information are received by the GGSN, it shall forward them to the PCF. If none of the tokens included in the binding information are of type AUTH_SESSION, or they do not contain an AUTH_ENT_ID attribute to resolve the PCF address, then the GGSN shall reject the PDP context activation request. The reason for the rejection is indicated to the UE with the error code value "Invalid binding information". The error code is transferred to the UE in the Protocol Configuration Options information element as defined in 3GPP TS 24.008 [12].

When the GGSN receives a PDP context activation/modification to an APN for which binding information is required, the GGSN shall reject the PDP context activation/modification request if binding information is not received. The reason for the rejection is indicated to the UE with the error code value "Missing binding information". The error code is transferred to the UE in the Protocol Configuration Options information element as defined in 3GPP TS 24.008 [12].

When binding information is received, the GGSN shall ignore any UE supplied TFT, and filters in that TFT shall not be installed in the packet processing table.

If the Go interface is disabled and the GGSN receives a Create PDP Context Request or Update PDP Context Request message that includes binding information, the GGSN shall reject the request with the error code "Binding information not allowed" (see annex D).

Next modified section

Annex D (normative): Go interface related error code values for the PDP context handling

The following error codes are used to indicate Go interface related errors from the GGSN to the UE. The error codes are transferred to the UE in the Protocol Configuration Options information element as defined in 3GPP TS 24.008:

Error code No. 1 "Authorization failure of the request"
This error code indicates that the PDP context activation/modification request is rejected because the authorizing entity is unable to provide an authorization decision for the binding information.

Error code No. 2 "Missing binding information"

This error code indicates that the PDP context activation/modification request is rejected because the binding information was not included in the request although required.

Error code No. 3 "Invalid binding information"

This error code indicates that the PDP context activation/modification request is rejected because the authorizing entity could not be resolved from the binding information.

Error code No. X "Binding information not allowed"

This error code indicates that the PDP context activation/modification request is rejected because the Go interface is disabled or not supported in the GGSN and hence binding information is not allowed.

3GPP TSG-CN WG3 Meeting #26
Bangkok, Thailand, 11th - 15th November 2002.

Tdoc ⌘N3-020988

CR-Form-v7

CHANGE REQUEST

⌘ **29.207** **CR** **072** ⌘ **rev** **-** ⌘ Current version: **5.1.0** ⌘

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

Proposed change affects: UICC apps⌘ [ ] ME [X] Radio Access Network [ ] Core Network [X]

Title:	⌘	Coding of Go related error codes
Source:	⌘	TSG_CN WG3
Work item code:	⌘	E2EQoS
Date:	⌘	31/10/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

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C *(functional modification of feature)*
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R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	The coding scheme of the go related error codes is missing.
Summary of change:	⌘	The coding of the go related error codes is defined.
Consequences if not approved:	⌘	Compatibility problems between implementations.

Clauses affected:	⌘	Annex D			
Other specs affected:	⌘	**Y**	**N**		
			X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

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Annex D (normative): Go interface related error code values for the PDP context handling

The following error codes are used to indicate Go interface related errors from the GGSN to the UE. The error codes are transferred to the UE in the Protocol Configuration Options information element as defined in 3GPP TS 24.008.~~:~~ The error code values transported in the container contents field shall be the binary representations of the error code numbers below.

Error code No. 1 "Authorization failure of the request"
This error code indicates that the PDP context activation/modification request is rejected because the authorizing entity is unable to provide an authorization decision for the binding information.

Error code No. 2 "Missing binding information"

This error code indicates that the PDP context activation/modification request is rejected because the binding information was not included in the request although required.

Error code No. 3 "Invalid binding information"

This error code indicates that the PDP context activation/modification request is rejected because the authorizing entity could not be resolved from the binding information.

3GPP TSG-CN WG3 #26 ***N3-020995***
Bangkok, 11.Nov – 15.Nov 2002

CR-Form-v7

CHANGE REQUEST

⌘ **29.207** **CR** **069** ⌘ **rev** **1** ⌘ Current version: **5.1.0** ⌘

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

Proposed change affects: UICC apps⌘ [ ] ME [X] Radio Access Network [ ] Core Network [X]

Title:	⌘	Go FailDecReason mapping to PCO error codes
Source:	⌘	TSG_CN WG3
Work item code:	⌘	E2EQoS
Date:	⌘	15.11.2002
Category:	⌘	**F**
Release:	⌘	Rel-5

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F *(correction)*
A *(corresponds to a correction in an earlier release)*
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C *(functional modification of feature)*
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Use one of the following releases:
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R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change: ⌘ There are two Failure Decision Reason codes in Go PIB, but the corresponding error codes are not defined to be transferred to UE. It would be valuable for the UE to know what the actual reason for PDP context rejection is, if the PCF has rejected the authorisation. This would enable the optimization of the UE behaviour in different kinds of failure situations.

The usage of and the mapping between FailDecReason codes and corresponding PCO error code(s) are currently not specified.

The described usage of FailDecReason codes doesn't cover all error cases. Therefore the description of 'invalidBundling' FailDecReason should be extended and a new generic FailDecReason code is required for cases, which cannot be covered with two existing codes.

Summary of change: ⌘
- Go FailDecReason mapping to PCO error code in GGSN,
- New generic Go FailDecReason code for non-specified error cases,
- Usage of FailDecReason codes,
- Minor editorial changes.

Consequences if not approved: ⌘ Not possible to optimize UE behaviour according to actual reason for the PDP context rejection when PCF doesn't give authorisation for the PDP context activation.

Clauses affected: ⌘ 5.1.1, 5.2.1.1, Annex B, Annex D

Other specs Affected: ⌘

Y	N	
	X	Other core specifications
	X	Test specifications
	X	O&M Specifications

⌘

Other comments: ⌘

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< First modified section>

5.1.1 Initial authorization at PDP context activation

The GGSN receives binding information during the activation of a PDP context by the UE. To perform initial authorization at the PDP context activation the GGSN shall send an authorisation request to the PCF including the binding information received from the UE.
The GGSN identifies the required PCF from the binding information. The binding information is formatted according to the structure of the policy element defined in [11] and shall include the AUTH_ENT_ID and the SESSION_ID attributes. The GGSN checks for a Policy Element of type AUTH_SESSION ([11]) and retrieves the AUTH_ENT_ID attribute from this. If this is in the form of a Fully Qualified Domain Name, then this is used to identify the correct PCF.
The GGSN authorisation request message to the PCF shall allow the GGSN to request policy information for authorisation of the media components carried by a PDP context identified by binding information.
When the GGSN receives the PCF decision regarding authorisation of the media components, the GGSN shall enforce the policy decision. To enforce the policy decision, the GGSN shall install the packet filters received from the PCF, and ignore the UE supplied TFT.
If the PCF decision information indicates that the binding information provided by the GGSN is authorised, the GGSN shall proceed with activation of the PDP context. The GGSN shall map the authorized QoS resources into authorized resources for the bearer admission control.
To ensure charging correlation, the GGSN shall send the GCID and GGSN address information to the PCF after the successful establishment of the PDP context, i.e. with the report following the initial authorization decision.
When the PCF detects that the binding information provided by the GGSN is not associated with an ongoing SIP session at application layer, or is otherwise unable to authorise the binding information, the GGSN will receive a COPS decision message from the PCF carrying both an INSTALL and REMOVE decision. The reason for the rejection is indicated by the INSTALL decision with an appropriate authorisation request failure reason. The GGSN shall reject the PDP context activation with a corresponding error code, see annex D.~~the error code value 'Authorization failure of the request'~~. The error code is transferred to the UE in the Protocol Configuration Options information element as defined in 3GPP TS 24.008 [12]. The GGSN shall subsequently remove this state according to the REMOVE decision. For an initial authorisation request, the GGSN shall then send a COPS Delete Request State (DRQ) message to the PCF to remove the state in the GGSN and the PCF.
When the GGSN sends an authorization request to the PCF but the PCF does not respond with the decision message, the GGSN's action is according to the local policy in the GGSN. The local policy may be configured by the operator.
If the GGSN supports a local policy decision point (LPDP) configuration it may make local policy decisions in the absence of the PCF. The local policy decisions may be used to accept new PDP context activations while the connection to the PCF is lost. The synchronization behaviour between the GGSN and the PCF is based on the local policy configured by operators.

< Next modified section>

5.2.1.1 SBLP authorisation decision

The information needed for the PCF to perform media authorization is passed by the P-CSCF upon receiving a SIP message that contains SDP. The SDP contains sufficient information about the session, such as the end-points' IP address and port numbers and bandwidth requirements.
All media components in the SDP are authorised. The media components contain one or more IP flows each represented by a flow identifier. Cf. the definition of flow identifier in clause 3.1. The P-CSCF shall send policy setup information to the PCF upon every SIP message that includes an SDP payload. This ensures that the PCF passes proper information to perform media authorization for all possible IMS session setup scenarios. The policy setup information provided by the P-CSCF to the PCF for each media component shall contain the following:

- Destination IP address;
- Destination port number;
- Transport Protocol id;
- Media direction information;
- Direction of the source (originating or terminating side);
- Indication of the group that the media component belongs to;

Editor's note: The format of this group indication in SIP/SDP is subject to CN1's decision.

- Media type information;
- Bandwidth parameter;

- Indication of forking/non-forking.

Additionally, upon the P-CSCF receives the ICID in SIP signalling, it shall send the ICID to the PCF.
The PCF stores the authorised policy information, and generates an Authorisation Token to identify this decision. The Authorisation Token is passed back to the P-CSCF for inclusion in the SIP signalling back to the UE.
The Authorisation Token is in the form of a Session Authorisation Data Policy Element as described in [11]. The PCF shall include an AUTH_ENT_ID attribute containing the Fully Qualified Domain Name of the PCF and the SESSION_ID attribute.
Upon receiving the bearer authorization request from the GGSN, the PCF shall authorize the request according to the stored service based local policy information for the session identified by the binding information in the request.

- Decision on the binding information:
  The authorisation shall contain the decision on verifying the binding information. The PCF shall identify whether the binding information indeed corresponds to an initiated SIP session. If the corresponding SIP session cannot be found, the PCF shall enforce the rejection of this PDP context request by sending an INSTALL and REMOVE decision to the GGSN. The reason for the rejection is indicated by the INSTALL decision with the "noCorrespondingSession" reason in the Authorisation Request Failure Decision. If the PCF is otherwise unable to authorise the binding information, the INSTALL decision shall identify a general authorisation failure with the "authorisationFailure" of the request reason in the Authorisation Request Failure Decision.
  The authorization shall also contain decision on the list of flow_IDs contained in the bearer authorisation request sent by the GGSN representing the list of media components intended to be carried in the same PDP Context. This decision shall verify that these media components are indeed allowed to be carried in the same PDP Context. The PCF shall make this decision by comparing the list of flow_IDs contained in the bearer authorization request received from the GGSN to the media component grouping indication information received from the P-CSCF.
  In case the UE violates the IMS level indication, and attempts to set up multiple IMS media components in a single PDP context despite of an indication that mandated separate PDP contexts, the PCF shall enforce the rejection of this PDP context request by sending an INSTALL and REMOVE decision to the GGSN. The reason for the rejection is indicated by the INSTALL decision with the "invalidBundling" reason in the Authorisation Request Failure Decision.
  If the binding information and the list of flow_IDs are successfully authorised (verified) as per the means described above, the PCF shall also communicate the authorisation details for each media component to the GGSN.
  The authorisation details contain the "Authorised QoS" and the packet classifier(s) of the associated IP flows. In case of an aggregation of multiple media components within one PDP context, the combination of the "Authorised QoS" information of the individual media components is provided as the "Authorised QoS".
  Based on the media direction information and the direction of the source provided by the P-CSCF, the PCF shall define the direction (upstream or downstream) of the "Authorised QoS" and the packet classifier(s).
- Packet classifier(s):
  The PCF shall use the destination IP address(s), destination port number(s) and transport protocol id(s) to formulate a packet classifier(s).
  - If the source IP address, which is part of the standard 5-tuple for packet classifying, is provided by the P-CSCF in the SDP, then this shall be used. Based on operator policy the source IP address for bi-directional flows may be identified from the 64 bit prefix of the destination IP address. If the source IP address is not identified by the SDP information and not identified by the 64 bit prefix of the destination IP address then the source IP address shall be wildcarded by the PCF.
  - If the source port number, which is part of the standard 5-tuple for packet classifying, is not provided by the P-CSCF in the SDP then the source port number shall be wildcarded by the PCF in the packet classifier.
  - The PCF shall send the destination address and the destination port number for each IP flow associated with the media component.
- "Authorized QoS":
  The "Authorised QoS" information (consisting of maximum DiffServ Class and Data Rate) for a media component is extracted from the media type information and bandwidth parameter of the SDP. The PCF shall map the media type information into a DiffServ Class which is the highest class that can be used for the media. As an example, the audio media type shall be mapped into Expedited Forwarding PHB.
  The PCF shall extract the Data Rate value from the "b=AS" SDP parameter. The "b=AS" parameter in the SDP shall contain all the overhead coming from the IP-layer and the layers above, e.g. UDP, RTP. The Data Rate includes the overhead coming from the possible usage of RTCP. The PCF shall use this value when determining the data rate value applicable for the media component.
  For non-real-time bearers the Data rate value shall be considered as the maximum value of the 'Maximum bitrate' parameter.
  In case of an aggregation of multiple media components within one PDP context, the PCF shall provide the "Authorised QoS" for the bearer as the combination of the "Authorised QoS" information of the individual media components. The DiffServ Class in the "Authorised QoS" for the bearer shall contain the highest PHB amongst

the ones applied for the individual media components and indicates the highest UMTS traffic class that can be applied to the PDP context.

Editor's note: It shall be possible the group identifiers to restrict the individual media components carried by the same PDP context to have the same PHBs.

The Data Rate of the "Authorised QoS" for the bearer shall be the sum of the Data Rate values of the individual media components/IP flows and it is used as the maximum Data Rate value for the PDP context.

The PCF may include the gate enabling command as part of the authorisation decision. Alternatively, the PCF may provide a separate decision for opening the gate.

The PCF shall send the IMS charging identifier provided by the P-CSCF as part of the authorisation decision to the GGSN.

Upon receiving the modified SDP information from the P-CSCF, the PCF shall update the media authorization information for the session. The PCF may push this updated authorisation information to the GGSN. Under certain condition e.g. revoke of authorization, the PCF shall push the updated policy decision to the GGSN.

< Next modified section>

Annex B (normative): 3GPP Go PIB

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```
   -- ---------------------------------------------------------------
   --
   -- 3GPP Go Authorization Request Decisions
   --
   -- PRCs for carrying the Event Decision send from PCF to PEP,
   -- carried by the COPS DEC message.
   -- These PRCs include support for Gates/Filters, QoS, ICIDs.
   --


   -- We can define Failure Decisions can be defined by use of COPS-PR DEC message
   -- containing first an install decision (with objects indicating
   -- what failed and some indication to the GGSN how to react to this
   -- Error Decision), and second a remove decision (for cleanup of
   -- the installed Error Decision Object).
   --

-- Failures indicated by PCF to GGSN
--   Authorization Failure
--
   --
   -- Authorization Request Failure Decision Table
   --
   go3gppAuthReqFailDecTable OBJECT-TYPE
       SYNTAX         SEQUENCE OF Go3gppAuthReqFailDecEntry
       PIB-ACCESS     install
       STATUS         current
       DESCRIPTION
           "The Authorization failure Table. Indicates failures decisions to the PEP."
       ::= { go3gppDecInfoClasses 1 }


   go3gppAuthReqFailDecEntry OBJECT-TYPE
       SYNTAX         Go3gppAuthReqFailDecEntry
       STATUS         current
       DESCRIPTION
           "Each go3gppAuthReqFailDecEntry is per request."
       PIB-INDEX { go3gppAuthReqFailDecPrid }
       UNIQUENESS { }
       ::= { go3gppAuthReqFailDecTable 1 }
```

```
Go3gppAuthReqFailDecEntry ::= SEQUENCE {
        go3gppAuthReqFailDecPrid        InstanceId,

        go3gppAuthReqFailDecReason      INTEGER
}

go3gppAuthReqFailDecPrid OBJECT-TYPE
    SYNTAX         InstanceId
    STATUS         current
    DESCRIPTION
        "An arbitrary integer index that uniquely identifies an
        instance of the go3gppAuthReqFailDec class."
    ::= { go3gppAuthReqFailDecEntry 1 }


go3gppAuthReqFailDecReason OBJECT-TYPE
    SYNTAX         INTEGER {
                                        noCorresponding~~Ims~~Session (1),
                                        invalidBundling (2),
                                        authorisationFailure (3)
                                }
    STATUS         current
    DESCRIPTION
        "Reason for Auth Request Failure Decision given by PCF:

         noCorresponding~~Ims~~Session:    No corresponding ~~IMS~~ ~~S~~session was found
                                        by the PCF

         invalidBundling:               In case the UE violates the IMS level indication,
                                        and attempts to set up multiple IMS media components
                                        in a single PDP context despite of an indication
                                        that mandated separate PDP contexts~~.~~ or if the list
                                        of flow_IDs contained in the bearer authorization
                                        request doesn't match with the grouping indication
                                        information the PCF has received from the P-CSCF.

         authorisationFailure:          The PCF is unable to authorise the binding information.
                                        This is a generic failure indication that can be used
                                        if the actual reason is not any of the other specified
                                        reasons."
    ::= { go3gppAuthReqFailDecEntry 2 }
```

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< Next modified section>

Annex D (normative): Go interface related error code values for the PDP context handling

The following error codes are used to indicate Go interface related errors from the GGSN to the UE. The error codes are transferred to the UE in the Protocol Configuration Options information element as defined in 3GPP TS 24.008:

Error code No. 1 "Authorization failure of the request"
This error code indicates that the PDP context activation/modification request is rejected because the authorizing entity is unable to provide an authorization decision for the binding information.

Error code No. 2 "Missing binding information"
This error code indicates that the PDP context activation/modification request is rejected because the binding information was not included in the request although required.

Error code No. 3 "Invalid binding information"
This error code indicates that the PDP context activation/modification request is rejected because the authorizing entity could not be resolved from the binding information.

Error code No. x "No corresponding session"
This error code indicates that the PDP context activation request is rejected because the authorizing entity cannot associate the binding information with any ongoing session.

Error code No. x "Invalid bundling"
This error code indicates that the PDP context activation request is rejected because the authorizing entity doesn't allow the grouping of the flow IDs contained in the PDP context activation request to be carried in the requested PDP Context.

3GPP TSG-CN WG3 Meeting #26 **Tdoc ⌘N3-021004**
Bangkok, Thailand, 11th - 15th November 2002.

CR-Form-v7

CHANGE REQUEST

⌘ **29.207** **CR** **063** ⌘ **rev** **1** ⌘ Current version: **5.1.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	GTP cause code for Go related errors
Source:	⌘	TSG_CN WG3
Work item code:	⌘	E2EQoS
Date:	⌘	31/10/2002
Category:	⌘	**F**
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)
Rel-6 (Release 6)

Reason for change:	⌘	The specification does not define, which GPRS Tunnelling Protocol (GTP) cause code to use in the cases when a PDP context request is rejected due to a Go related error.
Summary of change:	⌘	For all Go related errors a common GTP cause code, 'User authentication failed', is returned in the response. This cause code corresponds one-to-one with the cause code "User authentication failed" on the Uu (UE-SGSN) interface, ref. 24.008. Hence a straightforward and backward compatible mapping can be done. The applicability of this cause code is specified in 29.060 as: 'User authentication failed' indicates that the external packet network has rejected the service requested by the user.
Consequences if not approved:	⌘	Unspecified error handling

Clauses affected:	⌘	2, Annex D

Other specs affected: ⌘	Y	N	
		X	Other core specifications
		X	Test specifications
		X	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/specs/CR.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.

2 References

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

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

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 23.002: "Network architecture".

[3] 3GPP TS 23.207: "End to end quality of service concept and architecture".

[4] 3GPP TS 23.228: "IP Multimedia Subsystem (IMS); Stage 2".

[5] IETF RFC 2475: "An Architecture for Differentiated Services".

[6] IETF RFC 2753: "A Framework for Policy-based Admission Control".

[7] IETF RFC 2748: "The COPS (Common Open Policy Service) Protocol".

[8] IETF RFC 3084: "COPS Usage for Policy Provisioning (COPS-PR)".

[9] IETF RFC 3159: "Structure of Policy Provisioning Information (SPPI)".

[10] IETF RFC 2205: "Resource ReSerVation Protocol (RSVP) – Version 1 Functional Specification".

[11] IETF RFC tbd: "Session Authorisation for RSVP" (draft-ietf-rap-rsvp-authsession-03.txt).

[12] 3GPP TS 24.008: "Mobile Radio Interface Layer 3 specification; Core network protocols; Stage 3".

[13] 3GPP TS 27.060: "Mobile Station (MS) supporting Packet Switched Services".

[14] 3GPP TS 24.229: ” IP Multimedia Call Control Protocol based on SIP and SDP”

[15] IETF RFC 3318: "Framework Policy Information Base".

[16] IETF RFC 3289: "Management Information Base for the Differentiated Services Architecture"

[17] IETF RFC 2327: "SDP: Session Description Protocol".

[xx] 3GPP TS 29.060: “GPRS Tunnelling Protocol (GTP) across the Gn and Gp interface”.

Amended section

Annex D (normative): Go interface related error code values for the PDP context handling

The following error codes are used to indicate Go interface related errors from the GGSN to the UE. The error codes listed below are transferred to the UE in the Protocol Configuration Options information element as defined in 3GPP TS 24.008 [12].~~:~~

In all the cases below a common GTP cause code, "User authentication failed", see 3GPP TS 29 060 [xx], shall be used in the response message.

Error code No. 1 "Authorization failure of the request"
This error code indicates that the PDP context activation/modification request is rejected because the authorizing entity is unable to provide an authorization decision for the binding information.

Error code No. 2 "Missing binding information"

This error code indicates that the PDP context activation/modification request is rejected because the binding information was not included in the request although required.

Error code No. 3 "Invalid binding information"

This error code indicates that the PDP context activation/modification request is rejected because the authorizing entity could not be resolved from the binding information.