**3GPP TSG-CT WG1 Meeting #131-eC1-21xxxx**

**E-meeting, 19-27 August 2021 (was C1-214350)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **27.007** | **CR** | **0739** | **rev** | **1** | **Current version:** | **17.2.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | AT commands with semantical mandatory parameter CID | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Apple | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI17 | | | | |  | ***Date:*** | | | 2021-08-24 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change 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](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) ... Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | In the AT commands from the sections 10.1.1, 10.1.2, 10.1.3, 10.1.4, 10.1.5, 10.1.6, 10.1.7, 10.1.26, 10.1.49, the parameter <cid> is optional in the syntax, however if the cid is not provided the AT command is meaningless.  But a UE which is following the current syntax would not indicate this error to the user. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | It is proposed to make the parameter <cid> mandatory in order to ensure that an error is returned. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The user could not detect the error of an incomplete AT command. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 10.1.1, 10.1.2, 10.1.3, 10.1.4, 10.1.5, 10.1.6, 10.1.7, 10.1.26, 10.1.49 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

*\*\*\* first change \*\*\**

### 10.1.1 Define PDP context +CGDCONT

Table 111: +CGDCONT parameter command syntax

|  |  |
| --- | --- |
| Command | Possible response(s) |
| +CGDCONT=<cid>[,<PDP\_type>[,<APN>[,<PDP\_addr>[,<d\_comp>[,<h\_comp>[,<IPv4AddrAlloc>[,<request\_type>[,<P-CSCF\_discovery>[,<IM\_CN\_Signalling\_Flag\_Ind>[,<NSLPI>[,<securePCO>[,<IPv4\_MTU\_discovery>[,<Local\_Addr\_Ind>[,<Non-IP\_MTU\_discovery>[,<Reliable\_Data\_Service>[,<SSC\_mode>[,<S-NSSAI>[,<Pref\_access\_type>[,<RQoS\_ind>[,<MH6-PDU>[,<Always-on\_req>[,<old-cid>[,<ATSSS-ST>][,<LADN-DNN\_ind>][,<MA-PDU-session-information>]]]]]]]]]]]]]]]]]]]]]]] |  |
| +CGDCONT? | [+CGDCONT: <cid>,<PDP\_type>,<APN>,<PDP\_addr>,<d\_comp>,<h\_comp>[,<IPv4AddrAlloc>[,<request\_type>[,<P-CSCF\_discovery>[,<IM\_CN\_Signalling\_Flag\_Ind>[,<NSLPI>[,<securePCO>[,<IPv4\_MTU\_discovery>[,<Local\_Addr\_Ind>[,<Non-IP\_MTU\_discovery>[,<Reliable\_Data\_Service>[,<SSC\_mode>[,<S-NSSAI>[,<Pref\_access\_type>[,<RQoS\_ind>[,<MH6-PDU>[,<Always-on\_req>[,<old-cid>[,<ATSSS-ST>][,<LADN-DNN\_ind>][,<MA-PDU-session-information>]]]]]]]]]]]]]]]]]]]  [<CR><LF>+CGDCONT: <cid>,<PDP\_type>,<APN>,<PDP\_addr>,<d\_comp>,<h\_comp>[,<IPv4AddrAlloc>[,<request\_type>[,<P-CSCF\_discovery>[,<IM\_CN\_Signalling\_Flag\_Ind>[,<NSLPI>[,<securePCO>[,<IPv4\_MTU\_discovery>[,<Local\_Addr\_Ind>[,<Non-IP\_MTU\_discovery>[,<Reliable\_Data\_Service>[,<SSC\_mode>[,<S-NSSAI>[,<Pref\_access\_type>[,<RQoS\_ind>[,<MH6-PDU>[,<Always-on\_req>[,<old-cid>[,<ATSSS-ST>][,<LADN-DNN\_ind>][,<MA-PDU-session-information>]]]]]]]]]]]]]]]]]]  [...]] |
| +CGDCONT=? | +CGDCONT: (range of supported <cid>s),<PDP\_type>,,,(list of supported <d\_comp>s),(list of supported <h\_comp>s),(list of supported <IPv4AddrAlloc>s),(list of supported <request\_type>s),(list of supported <P-CSCF\_discovery>s),(list of supported <IM\_CN\_Signalling\_Flag\_Ind>s),(list of supported <NSLPI>s),(list of supported <securePCO>s),(list of supported <IPv4\_MTU\_discovery>s),(list of supported <Local\_Addr\_Ind>s),(list of supported <Non-IP\_MTU\_discovery>s),(list of supported <Reliable\_Data\_Service>s),(list of supported <SSC\_mode>s),,(list of supported <Pref\_access\_type>s),(list of supported <RQoS\_ind>s),(list of supported <MH6-PDU>s),(list of supported <Always-on\_req>s),(range of supported <old-cid>s),(list of supported <ATSSS-ST>s),(list of supported <LADN-DNN\_ind>s),(list of supported <MA-PDU-session-information>s)  [<CR><LF>+CGDCONT: (range of supported <cid>s),<PDP\_type>,,,(list of supported <d\_comp>s),(list of supported <h\_comp>s),(list of supported <IPv4AddrAlloc>s),(list of supported <request\_type>s),(list of supported <P-CSCF\_discovery>s),(list of supported <IM\_CN\_Signalling\_Flag\_Ind>s),(list of supported <NSLPI>s),(list of supported <securePCO>s),(list of supported <IPv4\_MTU\_discovery>s),(list of supported <Local\_Addr\_Ind>s),(list of supported <Non-IP\_MTU\_discovery>s),(list of supported <Reliable\_Data\_Service>s),(list of supported <SSC\_mode>s),,(list of supported <Pref\_access\_type>s),(list of supported <RQoS\_ind>s),(list of supported <MH6-PDU>s),(list of supported <Always-on\_req>s),(range of supported <old-cid>s),(list of supported <ATSSS-ST>s),(list of supported <LADN-DNN\_ind>s),(list of supported <MA-PDU-session-information>s)  [...]] |

**Description**

The set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter, <cid> and also allows the TE to specify whether security protected transmission of ESM information is requested, because the PCO can include information that requires ciphering. There can be other reasons for the UE to use security protected transmission of ESM information, e.g. if the UE needs to transfer an APN. The number of PDP contexts that may be in a defined state at the same time is given by the range returned by the test command.

For EPS the PDN connection and its associated EPS default bearer is identified herewith.

For 5GS the PDU session and its associated QoS flow of the default QoS rule is identified herewith.

A special form of the set command, +CGDCONT=<cid> causes the values for context number <cid> to become undefined.

If the initial PDP context is supported, the context with <cid>=0 is automatically defined at startup, see subclause 10.1.0. As all other contexts, the parameters for <cid>=0 can be modified with +CGDCONT. If the initial PDP context is supported, +CGDCONT=0 resets context number 0 to its particular default settings.

The read command returns the current settings for each defined context.

The test command returns values supported as compound values. If the MT supports several PDP types, <PDP\_type>, the parameter value ranges for each <PDP\_type> are returned on a separate line.

**Defined values**

<cid>: integer type; specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value = 1 or if the initial PDP context is supported (see subclause 10.1.0), minimum value = 0) is returned by the test form of the command.

NOTE 1: The <cid>s for network-initiated PDP contexts will have values outside the ranges indicated for the <cid> in the test form of the commands +CGDCONT and +CGDSCONT.

<PDP\_type>: string type; specifies the type of packet data protocol. The default value is manufacturer specific.

X.25 ITU-T/CCITT X.25 layer 3 (Obsolete)

IP Internet Protocol (IETF STD 5 [103])

IPV6 Internet Protocol, version 6 (see RFC 2460 [106])

IPV4V6 Virtual <PDP\_type> introduced to handle dual IP stack UE capability. (See 3GPP TS 24.301 [83])

OSPIH Internet Hosted Octect Stream Protocol (Obsolete)

PPP Point to Point Protocol (IETF STD 51 [104])

Non-IP Transfer of Non-IP data to external packet data network (see 3GPP TS 23.401 [82])

Ethernet Ethernet protocol (IEEE  802.3)

Unstructured Transfer of Unstructured data to the Data Network via N6 (see 3GPP TS 23.501 [165])

NOTE 2: Only IP, IPV6, IPV4V6, Non-IP and Ethernet values are supported for EPS services. Only IP, IPV6, IPV4V6, Ethernet and Unstructured values are supported for 5GS service.

<APN>: string type; a logical name that is used to select the GGSN or the external packet data network.

If the value is null or omitted, then the subscription value will be requested.

<PDP\_addr>: string type; identifies the MT in the address space applicable to the PDP.

When +CGPIAF is supported, its settings can influence the format of this parameter returned with the read form of +CGDCONT.

NOTE 3: The value of this parameter is ignored with the set command. The parameter is included in the set command for backwards compatibility reasons only.

<d\_comp>: integer type; controls PDP data compression (applicable for SNDCP only) (refer 3GPP TS 44.065 [61]).

0 off

1 on (manufacturer preferred compression)

2 V.42bis

3 V.44

<h\_comp>: integer type; controls PDP header compression (refer 3GPP TS 44.065 [61] and 3GPP TS 25.323 [62]).

0 off

1 on (manufacturer preferred compression)

2 RFC 1144 [105] (applicable for SNDCP only)

3 RFC 2507 [107]

4 RFC 3095 [108] (applicable for PDCP only)

<IPv4AddrAlloc>: integer type; controls how the MT/TA requests to get the IPv4 address information.

0 IPv4 address allocation through NAS signalling

1 IPv4 address allocated through DHCP

<request\_type>: integer type; indicates the type of PDP context activation request for the PDP context, see 3GPP TS 24.501 [161] (subclause 6.4.1), 3GPP TS 24.301 [83] (subclause 6.5.1.2) and 3GPP TS 24.008 [8] (subclause 10.5.6.17). If the initial PDP context is supported (see subclause 10.1.0) it is not allowed to assign <cid>=0 for emergency (bearer) services. According to 3GPP TS 24.008 [8] (subclause 4.2.4.2.2 and subclause 4.2.5.1.4) and 3GPP TS 24.301 [83] (subclause 5.2.2.3.3 and subclause 5.2.3.2.2), a separate PDP context must be established for emergency (bearer) services.

NOTE 4: If the PDP context for emergency (bearer) services is the only activated context, only emergency calls are allowed, see 3GPP TS 23.401 [82] subclause 4.3.12.9.

0 PDP context is for new PDP context establishment or for handover from a non-3GPP access network (how the MT decides whether the PDP context is for new PDP context establishment or for handover is implementation specific)

1 PDP context is for emergency (bearer) services

2 PDP context is for new PDP context establishment

3 PDP context is for handover from a non-3GPP access network

4 PDP context is for handover of emergency (bearer) services from a non-3GPP access network

5 context is for MA PDU session establishment

NOTE 5: A PDP context established for handover of emergency (bearer) services from a non-3GPP access network has the same status as a PDP context for emergency (bearer) services.

<P-CSCF\_discovery>: integer type; influences how the MT/TA requests to get the P-CSCF address, see 3GPP TS 24.229 [89] annex B and annex L.

0 Preference of P-CSCF address discovery not influenced by +CGDCONT

1 Preference of P-CSCF address discovery through NAS signalling

2 Preference of P-CSCF address discovery through DHCP

<IM\_CN\_Signalling\_Flag\_Ind>: integer type; indicates to the network whether the PDP context is for IM CN subsystem-related signalling only or not.

0 UE indicates that the PDP context is not for IM CN subsystem-related signalling only

1 UE indicates that the PDP context is for IM CN subsystem-related signalling only

<NSLPI>: integer type; indicates the NAS signalling priority requested for this PDP context:

0 indicates that this PDP context is to be activated with the value for the low priority indicator configured in the MT.

1 indicates that this PDP context is to be activated with the value for the low priority indicator set to "MS is not configured for NAS signalling low priority".

NOTE 6: The MT utilises the provide NSLPI information as specified in 3GPP TS 24.301 [83] and 3GPP TS 24.008 [8].

<securePCO>: integer type. Specifies if security protected transmission of PCO is requested or not (applicable for EPS only, see 3GPP TS 23.401 [82] subclause 6.5.1.2).

0 Security protected transmission of PCO is not requested

1 Security protected transmission of PCO is requested

<IPv4\_MTU\_discovery>: integer type; influences how the MT/TA requests to get the IPv4 MTU size, see 3GPP TS 24.008 [8] subclause 10.5.6.3.

0 Preference of IPv4 MTU size discovery not influenced by +CGDCONT

1 Preference of IPv4 MTU size discovery through NAS signalling

<Local\_Addr\_Ind>: integer type; indicates to the network whether or not the MS supports local IP address in TFTs (see 3GPP TS 24.301 [83] and 3GPP TS 24.008 [8] subclause 10.5.6.3).

0 indicates that the MS does not support local IP address in TFTs

1 indicates that the MS supports local IP address in TFTs

<Non-IP\_MTU\_discovery>: integer type; influences how the MT/TA requests to get the Non-IP MTU size, see 3GPP TS 24.008 [8] subclause 10.5.6.3.

0 Preference of Non-IP MTU size discovery not influenced by +CGDCONT

1 Preference of Non-IP MTU size discovery through NAS signalling

<Reliable\_Data\_Service>: integer type; indicates whether the UE is using Reliable Data Service for a PDN connection or not, see 3GPP TS 24.301 [83] and 3GPP TS 24.008 [8] subclause 10.5.6.3.

0 Reliable Data Service is not being used for the PDN connection

1 Reliable Data Service is being used for the PDN connection

<SSC\_mode>: integer type; indicates the session and service continuity (SSC) mode for the PDU session in 5GS, see 3GPP TS 23.501 [165].

0 indicates that the PDU session is associated with SSC mode 1

1 indicates that the PDU session is associated with SSC mode 2

2 indicates that the PDU session is associated with SSC mode 3

<S-NSSAI>: string type in hexadecimal character format. Dependent of the form, the string can be separated by dot(s) and semicolon(s). The S-NSSAI is associated with the PDU session for identifying a network slice in 5GS, see 3GPP TS 23.501 [165] and 3GPP TS 24.501 [161]. For the format and the encoding of S-NSSAI, see also 3GPP TS 23.003 [7]. This parameter shall not be subject to conventional character conversion as per +CSCS. The <S-NSSAI> has one of the forms:

sst only slice/service type (SST) is present  
sst;mapped\_sst SST and mapped configured SST are present  
sst.sd SST and slice differentiator (SD) are present  
sst.sd;mapped\_sst SST, SD and mapped configured SST are present  
sst.sd;mapped\_sst.mapped\_sd SST, SD, mapped configured SST and mapped configured SD are present

<Pref\_access\_type>: integer type; indicates the preferred access type for the PDU session in 5GS, see 3GPP TS 23.501 [165] and 3GPP TS 24.501 [161].

0 indicates that the preferred access type is 3GPP access

1 indicates that the preferred access type is non-3GPP access

<RQoS\_ind>: integer type; indicates whether the UE supports reflective QoS for the PDU session, see 3GPP TS 23.501 [165] and 3GPP TS 24.501 [161].

0 indicates that reflective QoS is not supported for the PDU session

1 indicates that reflective QoS is supported for the PDU session

<MH6-PDU>: integer type; indicates whether the UE supports IPv6 multi-homing for the PDU session, see 3GPP TS 23.501 [165] and 3GPP TS 24.501 [161].

0 indicates that IPv6 multi-homing is not supported for the PDU session

1 indicates that IPv6 multi-homing is supported for the PDU session

<Always-on\_req>: integer type; indicates whether the UE requests to establish the PDU session as an always-on PDU session, see 3GPP TS 24.501 [161].

0 always-on PDU session is not requested

1 always-on PDU session is requested

<old-cid>: integer type; indicates the context identifier of the QoS flow of the default QoS rule of the SSC mode 2 or SSC mode 3 PDU session where the network requests relocation of the PDU session anchor.

<ATSSS-ST>: integer type; indicates the "Supported ATSSS steering functionalities and steering modes (ATSSS-ST)" for the PDU session in 5GS, see 3GPP TS 24.501 [161].

0 ATSSS not supported

1 ATSSS Low-Layer functionality with any steering mode supported

2 MPTCP functionality with any steering mode and ATSSS-LL functionality with only active-standby steering mode supported

3 MPTCP functionality with any steering mode and ATSSS-LL functionality with any steering mode supported

<LADN-DNN\_ind>: integer type; indicates whether the PDP context is for a LADN DNN, see 3GPP TS 23.501 [165] and 3GPP TS 24.501 [161].

0 indicates that the PDP context is not for a LADN DNN

1 indicates that the PDP context is for a LADN DNN

<MA-PDU-session-information>: integer type; indicates the value of MA PDU session information, see 3GPP TS 24.501 [161].

1 MA PDU session network upgrade is allowed

**Implementation**

Mandatory unless only a single subscribed context is supported.

*\*\*\* next change \*\*\**

### 10.1.2 Define secondary PDP context +CGDSCONT

Table 112: +CGDSCONT parameter command syntax

|  |  |
| --- | --- |
| Command | Possible response(s) |
| +CGDSCONT=<cid>,<p\_cid>[,<d\_comp>[,<h\_comp>[,<IM\_CN\_Signalling\_Flag\_Ind>]]] |  |
| +CGDSCONT? | [+CGDSCONT: <cid>,<p\_cid>,<d\_comp>,<h\_comp>,<IM\_CN\_Signalling\_Flag\_Ind>]  [<CR><LF>+CGDSCONT: <cid>,<p\_cid>,<d\_comp>,<h\_comp>,<IM\_CN\_Signalling\_Flag\_Ind>  [...]] |
| +CGDSCONT=? | +CGDSCONT: (range of supported <cid>s),(list of <p\_cid>s for active primary contexts),(list of supported <d\_comp>s),(list of supported <h\_comp>s),(list of supported <IM\_CN\_Signalling\_Flag\_Ind>s) |

**Description**

The set command specifies PDP context parameter values for a Secondary PDP context identified by the (local) context identification parameter, <cid>. The number of PDP contexts that may be in a defined state at the same time is given by the range returned by the test command.

In EPS the command is used to define traffic flows.

In 5GS the command is used to define QoS flows of non-default QoS rule.

A special form of the set command, +CGDSCONT=<cid> causes the values for context number <cid> to become undefined.

NOTE: If the initial PDP context is supported, the context with <cid>=0 is automatically defined at startup, see subclause 10.1.0.

The read command returns the current settings for each defined context.

The test command returns values supported as compound values.

**Defined values**

<cid>: integer type; which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value = 1) is returned by the test form of the command.

NOTE: The <cid>s for network-initiated PDP contexts will have values outside the ranges indicated for the <cid> in the test form of the commands +CGDCONT and +CGDSCONT.

<p\_cid>: integer type; specifies a particular PDP context definition which has been specified by use of the +CGDCONT command. The parameter is local to the TE-MT interface. The list of permitted values is returned by the test form of the command.

<d\_comp>: integer type; controls PDP data compression (applicable for SNDCP only) (refer 3GPP TS 44.065 [61]).

0 off

1 on (manufacturer preferred compression)

2 V.42bis

3 V.44

<h\_comp>: integer type; controls PDP header compression (refer 3GPP TS 44.065 [61] and 3GPP TS 25.323 [62]).

0 off

1 on (manufacturer preferred compression)

2 RFC 1144 [105] (applicable for SNDCP only)

3 RFC 2507 [107]

4 RFC 3095 [108] (applicable for PDCP only)

<IM\_CN\_Signalling\_Flag\_Ind>: integer type; indicates to the network whether the PDP context is for IM CN subsystem-related signalling only or not.

0 UE indicates that the PDP context is not for IM CN subsystem-related signalling only

1 UE indicates that the PDP context is for IM CN subsystem-related signalling only

**Implementation**

Optional.

*\*\*\* next change \*\*\**

### 10.1.3 Traffic flow template +CGTFT

Table 113: +CGTFT parameter command syntax

| Command | Possible Response(s) |
| --- | --- |
| +CGTFT=<cid>[,<packet filter identifier>,<evaluation precedence index>[,<remote address and subnet mask>[,<protocol number (ipv4) / next header (ipv6)>[,<local port range>[,<remote port range>[,<ipsec security parameter index (spi)>[,<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>[,<flow label (ipv6)>[,<direction>[,<local address and subnet mask>[,<QRI>[,<traffic\_segregation>]]]]]]]]]]]] | *+CME ERROR: <err>* |
| +CGTFT? | [+CGTFT: <cid>,<packet filter identifier>,<evaluation precedence index>,<remote address and subnet mask>,<protocol number (ipv4) / next header (ipv6)>,<local port range>,<remote port range>,<ipsec security parameter index (spi)>,<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>,<flow label (ipv6)>,<direction>,<local address and subnet mask>,<QRI>,<traffic\_segregation>]  [<CR><LF>+CGTFT: <cid>,<packet filter identifier>,<evaluation precedence index>,<remote address and subnet mask>,<protocol number (ipv4) / next header (ipv6)>,<local port range>, <remote port range>,<ipsec security parameter index (spi)>,<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>,<flow label (ipv6)>,<direction>,<local address and subnet mask>,<QRI>,<traffic\_segregation>  [...]] |
| +CGTFT=? | +CGTFT: <PDP\_type>,(list of supported <packet filter identifier>s),(list of supported <evaluation precedence index>s),(list of supported <remote address and subnet mask>s),(list of supported <protocol number (ipv4) / next header (ipv6)>s),(list of supported <local port range>s),(list of supported <remote port range>s),(list of supported <ipsec security parameter index (spi)>s),(list of supported <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>s),(list of supported <flow label (ipv6)>s),(list of supported <direction>s),(list of supported <local address and subnet mask>s),(range of supported <QRI>s),(list of supported <traffic\_segregation>s)  [<CR><LF>+CGTFT: <PDP\_type>,(list of supported <packet filter identifier>s),(list of supported <evaluation precedence index>s),(list of supported <remote address and subnet mask>s),(list of supported <protocol number (ipv4) / next header (ipv6)>s),(list of supported <local port range>s),(list of supported <remote port range>s),(list of supported <ipsec security parameter index (spi)>s),(list of supported <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>s),(list of supported <flow label (ipv6)>s),(list of supported <direction>s),(list of supported <local address and subnet mask>s),(range of supported <QRI>s),(list of supported <traffic\_segregation>s)  [...]] |

**Description**

This command allows the TE to specify a Packet Filter - PF for a Traffic Flow Template - TFT that is used in the GGSN and in the Packet GW for routing of packets onto different QoS flows towards the TE. The concept is further described in the 3GPP TS 23.060 [47], 3GPP TS 23.501 [165] and 3GPP TS 24.501 [161]. A TFT consists of from one and up to 16 Packet Filters, each identified by a unique <packet filter identifier>. A Packet Filter also has an <evaluation precedence index> that is unique within all TFTs associated with all PDP contexts that are associated with the same PDP address.

The set command specifies a Packet Filter that is to be added to the TFT stored in the MT and used for the context identified by the (local) context identification parameter, <cid>. The specified TFT will be stored in the GGSN, the Packet GW and UPF only at activation or MS-initiated modification of the related context. Since this is the same parameter that is used in the +CGDCONT and +CGDSCONT commands, the +CGTFT command is effectively an extension to these commands. The Packet Filters consist of a number of parameters, each of which may be set to a separate value.

A special form of the set command, +CGTFT=<cid> causes all of the Packet Filters in the TFT for context number <cid> to become undefined. At any time there may exist only one PDP context with no associated TFT amongst all PDP contexts associated to one PDP address. At an attempt to delete a TFT, which would violate this rule, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command. Refer subclause 9.2 for possible <err> values.

The read command returns the current settings for all Packet Filters for each defined context.

The test command returns values supported as compound values. If the MT supports several PDP types, the parameter value ranges for each PDP type are returned on a separate line. TFTs shall be used for PDP-type IP and PPP only. For PDP-type PPP a TFT is applicable only when IP traffic is carried over PPP. If PPP carries header-compressed IP packets, then a TFT cannot be used.

**Defined values**

<cid>: integer type. Specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands).

<PDP\_type>: string type. Specifies the type of packet data protocol (see the +CGDCONT command).

For the following parameters, see also 3GPP TS 23.060 [47], 3GPP TS 23.501 [165] and 3GPP TS 24.501 [161]:

<packet filter identifier>: integer type. Value range is from 1 to 16.

<evaluation precedence index>: integer type. The value range is from 0 to 255.

<remote address and subnet mask>: string type. The string is given as dot-separated numeric (0-255) parameters on the form:  
"a1.a2.a3.a4.m1.m2.m3.m4" for IPv4 or  
"a1.a2.a3.a4.a5.a6.a7.a8.a9.a10.a11.a12.a13.a14.a15.a16.m1.m2.m3.m4.m5.m6.m7.m8.m9.m10.m11.m12.m13.m14.m15.m16", for IPv6.

When +CGPIAF is supported, its settings can influence the format of this parameter returned with the read form of +CGTFT.

<protocol number (ipv4) / next header (ipv6)>: integer type. Value range is from 0 to 255.

<local port range>: string type. The string is given as dot-separated numeric (0-65535) parameters on the form "f.t".

<remote port range>: string type. The string is given as dot-separated numeric (0-65535) parameters on the form "f.t".

<ipsec security parameter index (spi)>: numeric value in hexadecimal format. The value range is from 00000000 to FFFFFFFF.

<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>:   
string type. The string is given as dot-separated numeric (0-255) parameters on the form "t.m".

<flow label (ipv6)>: numeric value in hexadecimal format. The value range is from 00000 to FFFFF. Valid for IPv6 only.

<direction>: integer type. Specifies the transmission direction in which the packet filter shall be applied.

0 Pre-Release 7 TFT filter (see 3GPP TS 24.008 [8], table 10.5.162)

1 Uplink

2 Downlink

3 Bidirectional (Up & Downlink)

<local address and subnet mask>: string type. The string is given as dot-separated numeric (0-255) parameters on the form:  
"a1.a2.a3.a4.m1.m2.m3.m4" for IPv4 or  
"a1.a2.a3.a4.a5.a6.a7.a8.a9.a10.a11.a12.a13.a14.a15.a16.m1.m2.m3.m4.m5.m6.m7.m8.m9.m10.m11.m12.m13.m14.m15.m16", for IPv6.

When +CGPIAF is supported, its settings can influence the format of this parameter returned with the read form of +CGTFT.

<QRI>: integer type. Identifies the QoS rule, see 3GPP TS 23.501 [165] and 3GPP TS 24.501 [161].

<traffic\_segregation>: integer type; indicates to the network whether traffic segregation is requested or not, see 3GPP TS 24.501 [161].

0 traffic segregation is not requested

1 traffic segregation is requested

Some of the above listed attributes may coexist in a Packet Filter while others mutually exclude each other, the possible combinations are shown in 3GPP TS 23.060 [47], 3GPP TS 23.501 [165] and 3GPP TS 24.501 [161].

**Implementation**

Optional.

*\*\*\* next change \*\*\**

### 10.1.4 Quality of service profile (requested) +CGQREQ

Table 114: +CGQREQ parameter command syntax

|  |  |
| --- | --- |
| Command | Possible Response(s) |
| +CGQREQ=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]] |  |
| +CGQREQ? | [+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>]  [<CR><LF>+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>  [...]] |
| +CGQREQ=? | +CGQREQ: <PDP\_type>,(list of supported <precedence>s),(list of supported <delay>s),(list of supported <reliability>s),(list of supported <peak>s),(list of supported <mean>s)  [<CR><LF>+CGQREQ: <PDP\_type>,(list of supported <precedence>s),(list of supported <delay>s),(list of supported <reliability>s),(list of supported <peak>s),(list of supported <mean>s)  [...]] |

**Description**

This command allows the TE to specify a Quality of Service Profile that is used when the MT activates a PDP context.

The set command specifies a profile for the context identified by the (local) context identification parameter, <cid>. Since this is the same parameter that is used in the +CGDCONT and +CGDSCONT commands, the +CGQREQ command is effectively an extension to these commands. The QoS profile consists of a number of parameters, each of which may be set to a separate value.

A special form of the set command, +CGQREQ=<cid> causes the requested profile for context number <cid> to become undefined.

The read command returns the current settings for each defined context.

The test command returns values supported as compound values. If the MT supports several PDP types, the parameter value ranges for each PDP type are returned on a separate line.

**Defined values**

<cid>: integer type; specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands).

<PDP\_type>: string type; specifies the type of packet data protocol (see the +CGDCONT command).

The following parameters are defined in 3GPP TS 23.107 [46]:

<precedence>: integer type; specifies the precedence class

<delay>: integer type; specifies the delay class

<reliability>: integer type; specifies the reliability class

<peak>: integer type; specifies the peak throughput class

<mean>: integer type; specifies the mean throughput class

If a value is omitted for a particular class then the value is considered to be unspecified.

**Implementation**

Optional. If the command is not implemented then all the values are considered to be unspecified.

*\*\*\* next change \*\*\**

### 10.1.5 Quality of service profile (minimum acceptable) +CGQMIN

Table 115: +CGQMIN parameter command syntax

|  |  |
| --- | --- |
| Command | Possible Response(s) |
| +CGQMIN=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]] |  |
| +CGQMIN? | [+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>]  [<CR><LF>+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>  [...]] |
| +CGQMIN=? | +CGQMIN: <PDP\_type>,(list of supported <precedence>s),(list of supported <delay>s),(list of supported <reliability>s),(list of supported <peak>s),(list of supported <mean>s)  [<CR><LF>+CGQMIN: <PDP\_type>,(list of supported <precedence>s),(list of supported <delay>s),(list of supported <reliability>s),(list of supported <peak>s),(list of supported <mean>s)  [...]] |

**Description**

This command allows the TE to specify a minimum acceptable profile which is checked by the MT against the negotiated profile when the PDP context is activated.

The set command specifies a profile for the context identified by the (local) context identification parameter, <cid>. Since this is the same parameter that is used in the +CGDCONT and +CGDSCONT commands, the +CGQMIN command is effectively an extension to these commands. The QoS profile consists of a number of parameters, each of which may be set to a separate value.

A special form of the set command, +CGQMIN=<cid> causes the minimum acceptable profile for context number <cid> to become undefined. In this case no check is made against the negotiated profile.

The read command returns the current settings for each defined context.

The test command returns values supported as compound values. If the MT supports several PDP types, the parameter value ranges for each PDP type are returned on a separate line.

**Defined values**

<cid>: integer type; specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands).

<PDP\_type>: string type; specifies the type of packet data protocol (see the +CGDCONT command).

The following parameters are defined in 3GPP TS 23.107 [46]:

<precedence>: integer type; specifies the precedence class

<delay>: integer type; specifies the delay class

<reliability>: integer type; specifies the reliability class

<peak>: integer type; specifies the peak throughput class

<mean>: integer type; specifies the mean throughput class

If a value is omitted for a particular class then this class is not checked.

**Implementation**

Optional. If the command is not implemented then no check is made against the negotiated profile.

*\*\*\* next change \*\*\**

### 10.1.6 3G quality of service profile (requested) +CGEQREQ

Table 116: +CGEQREQ parameter command syntax

| Command | Possible Response(s) |
| --- | --- |
| +CGEQREQ=<cid>[,<Traffic class>[,<Maximum bitrate UL>[,<Maximum bitrate DL>[,<Guaranteed bitrate UL>[,<Guaranteed bitrate DL>[,<Delivery order>[,<Maximum SDU size>[,<SDU error ratio>[,<Residual bit error ratio>[,<Delivery of erroneous SDUs>[,<Transfer delay>[,<Traffic handling priority>[,<Source statistics descriptor>[,<Signalling indication>]]]]]]]]]]]]]] |  |
| +CGEQREQ? | [+CGEQREQ: <cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>, <Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Delivery order>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer delay>,<Traffic handling priority>,<Source statistics descriptor>,<Signalling indication>]  [<CR><LF>+CGEQREQ: <cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>,<Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Delivery order>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer delay>,<Traffic handling priority>,<Source Statistics Descriptor>,<Signalling Indication>  [...]] |
| +CGEQREQ=? | +CGEQREQ: <PDP\_type>,(list of supported <Traffic class>s),(list of supported <Maximum bitrate UL>s),(list of supported <Maximum bitrate DL>s),(list of supported <Guaranteed bitrate UL>s),(list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s),(list of supported <Maximum SDU size>s),(list of supported <SDU error ratio>s),(list of supported <Residual bit error ratio>s),(list of supported <Delivery of erroneous SDUs>s),(list of supported <Transfer delay>s),(list of supported <Traffic handling priority>s),(list of supported <Source statistics descriptor>s),(list of supported <Signalling indication>s)  [<CR><LF>+CGEQREQ: <PDP\_type>,(list of supported <Traffic class>s),(list of supported <Maximum bitrate UL>s),(list of supported <Maximum bitrate DL>s),(list of supported <Guaranteed bitrate UL>s),(list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s),(list of supported <Maximum SDU size>s),(list of supported <SDU error ratio>s),(list of supported <Residual bit error ratio>s),(list of supported <Delivery of erroneous SDUs>s),(list of supported <Transfer delay>s),(list of supported <Traffic handling priority>s),(list of supported <Source statistics descriptor>s),(list of supported <Signalling indication>s)  [...]] |

**Description**

This command allows the TE to specify a UMTS Quality of Service Profile that is used when the MT activates a PDP context.

The set command specifies a profile for the context identified by the (local) context identification parameter, <cid>. The specified profile will be stored in the MT and sent to the network only at activation or MS-initiated modification of the related context. Since this is the same parameter that is used in the +CGDCONT and +CGDSCONT commands, the +CGEQREQ command is effectively an extension to these commands. The QoS profile consists of a number of parameters, each of which may be set to a separate value.

A special form of the set command, +CGEQREQ=<cid> causes the requested profile for context number <cid> to become undefined.

The read command returns the current settings for each defined context.

The test command returns values supported as compound values. If the MT supports several PDP types, the parameter value ranges for each PDP type are returned on a separate line.

**Defined values**

<cid>: integer type; specifies a particular PDP context definition (see +CGDCONT and +CGDSCONT commands).

<PDP\_type>: string type; specifies the type of packet data protocol (see the +CGDCONT command).

For the following parameters, see also 3GPP TS 23.107 [46].

<Traffic class>: integer type; indicates the type of application for which the UMTS bearer service is optimised (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

0 conversational

1 streaming

2 interactive

3 background

4 subscribed value

If the Traffic class is specified as conversational or streaming, then the Guaranteed and Maximum bitrate parameters should also be provided.

<Maximum bitrate UL>: integer type; indicates the maximum number of kbits/s delivered to UMTS (up-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=…,32, …). This parameter should be provided if the Traffic class is specified as conversational or streaming (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Maximum bitrate DL>: integer type; indicates the maximum number of kbits/s delivered by UMTS (down-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=…,32, …). If the parameter is set to '0' the subscribed value will be requested. This parameter should be provided if the Traffic class is specified as conversational or streaming (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Guaranteed bitrate UL>: integer type; indicates the guaranteed number of kbits/s delivered to UMTS (up-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=…,32, …). If the parameter is set to '0' the subscribed value will be requested. This parameter should be provided if the Traffic class is specified as conversational or streaming (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Guaranteed bitrate DL>: integer type; indicates the guaranteed number of kbits/s delivered by UMTS (down-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=…,32, …). If the parameter is set to '0' the subscribed value will be requested. This parameter should be provided if the Traffic class is specified as conversational or streaming (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Delivery order>: integer type; indicates whether the UMTS bearer shall provide in-sequence SDU delivery or not (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

0 no

1 yes

2 subscribed value

<Maximum SDU size>: integer type; (1,2,3,…) indicates the maximum allowed SDU size in octets. If the parameter is set to '0' the subscribed value will be requested (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<SDU error ratio>: string type; indicates the target value for the fraction of SDUs lost or detected as erroneous. SDU error ratio is defined only for conforming traffic. The value is specified as 'mEe'. As an example a target SDU error ratio of 5•10-3 would be specified as "5E3" (e.g. AT+CGEQREQ=…,"5E3",…). "0E0" means subscribed value (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Residual bit error ratio>: string type; indicates the target value for the undetected bit error ratio in the delivered SDUs. If no error detection is requested, Residual bit error ratio indicates the bit error ratio in the delivered SDUs. The value is specified as "mEe". As an example a target residual bit error ratio of 5•10-3 would be specified as "5E3" (e.g. AT+CGEQREQ=…,"5E3",…). "0E0" means subscribed value (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Delivery of erroneous SDUs>: integer type; indicates whether SDUs detected as erroneous shall be delivered or not (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

0 no

1 yes

2 no detect

3 subscribed value

<Transfer delay>: integer type; (0,1,2,…) indicates the targeted time between request to transfer an SDU at one SAP to its delivery at the other SAP, in milliseconds. If the parameter is set to '0' the subscribed value will be requested (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Traffic handling priority>: integer type; (1,2,3,…) specifies the relative importance for handling of all SDUs belonging to the UMTS bearer compared to the SDUs of other bearers. If the parameter is set to '0' the subscribed value will be requested (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Source Statistics Descriptor>: integer type; specifies characteristics of the source of the submitted SDUs for a PDP context. This parameter should be provided if the Traffic class is specified as conversational or streaming (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

0 Characteristics of SDUs is unknown

1 Characteristics of SDUs corresponds to a speech source

<Signalling Indication>: integer type; indicates signalling content of submitted SDUs for a PDP context. This parameter should be provided if the Traffic class is specified as interactive (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

0 PDP context is not optimized for signalling

1 PDP context is optimized for signalling<PDP\_type> (see +CGDCONT and +CGDSCONT commands).

If a value is omitted for a particular class then the value is considered to be unspecified.

NOTE: When in dual mode with EPS the MT provides a mapping function to EPS Quality of Service parameter used for an EPS bearer resource activation request.

**Implementation**

Optional. If the command is not implemented then all the values are considered to be unspecified.

*\*\*\* next change \*\*\**

### 10.1.7 3G quality of service profile (minimum acceptable) +CGEQMIN

Table 117: +CGEQMIN parameter command syntax

| Command | Possible Response(s) |
| --- | --- |
| +CGEQMIN=<cid>[,<Traffic class>[,<Maximum bitrate UL>[,<Maximum bitrate DL>[,<Guaranteed bitrate UL>[,<Guaranteed bitrate DL>[,<Delivery order>[,<Maximum SDU size>[,<SDU error ratio>[,<Residual bit error ratio>[,<Delivery of erroneous SDUs> [,<Transfer delay>[,<Traffic handling priority>[,<Source statistics descriptor>[,<Signalling indication>]]]]]]]]]]]]]] |  |
| +CGEQMIN? | [+CGEQMIN: <cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>,<Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Delivery order>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer delay>,<Traffic handling priority>,<Source statistics descriptor>,<Signalling indication>]  [<CR><LF>+CGEQMIN: <cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>,<Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Delivery order>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer delay>,<Traffic handling priority>,<Source statistics descriptor>,<Signalling indication>  [...]] |
| +CGEQMIN=? | +CGEQMIN: <PDP\_type>,(list of supported <Traffic class>s),(list of supported <Maximum bitrate UL>s),(list of supported <Maximum bitrate DL>s),(list of supported <Guaranteed bitrate UL>s),(list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s),(list of supported <Maximum SDU size>s),(list of supported <SDU error ratio>s),(list of supported <Residual bit error ratio>s),(list of supported <Delivery of erroneous SDUs>s),(list of supported <Transfer delay>s),(list of supported <Traffic handling priority>s),(list of supported <Source statistics descriptor>s),(list of supported <Signalling indication>s)  [<CR><LF>+CGEQMIN: <PDP\_type>,(list of supported <Traffic class>s),(list of supported <Maximum bitrate UL>s),(list of supported <Maximum bitrate DL>s),(list of supported <Guaranteed bitrate UL>s),(list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s),(list of supported <Maximum SDU size>s),(list of supported <SDU error ratio>s),(list of supported <Residual bit error ratio>s),(list of supported <Delivery of erroneous SDUs>s),(list of supported <Transfer delay>s),(list of supported <Traffic handling priority>s),(list of supported <Source statistics descriptor>s),(list of supported <Signalling indication>s)  [...]] |

**Description**

This command allows the TE to specify a minimum acceptable profile, which is checked by the MT against the negotiated profile returned in the PDP context establishment and PDP contect modification procedures.

The set command specifies a profile for the context identified by the (local) context identification parameter, <cid>. The specified profile will be stored in the MT and checked against the negotiated profile only at activation or MS-initiated modification of the related context. Since this is the same parameter that is used in the +CGDCONT and +CGDSCONT commands, the +CGEQMIN command is effectively an extension to these commands. The QoS profile consists of a number of parameters, each of which may be set to a separate value.

A special form of the set command, +CGEQMIN=<cid> causes the minimum acceptable profile for context number <cid> to become undefined. In this case no check is made against the negotiated profile.

The read command returns the current settings for each defined context.

The test command returns values supported as compound values. If the MT supports several PDP types, the parameter value ranges for each PDP type are returned on a separate line.

**Defined values**

<cid>: integer type; specifies a particular PDP context definition (see +CGDCONT and +CGDSCONT commands).

<PDP\_type>: string type; specifies the type of packet data protocol (see the +CGDCONT command).

For the following parameters, see also 3GPP TS 23.107 [46].

<Traffic class>: integer type; indicates the type of application for which the UMTS bearer service is optimised (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

0 conversational

1 streaming

2 interactive

3 background

<Maximum bitrate UL>: integer type; indicates the maximum number of kbits/s delivered to UMTS (up-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQMIN=…,32, …) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Maximum bitrate DL>: integer type; indicates the maximum number of kbits/s delivered by UMTS (down-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQMIN=…,32, …) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Guaranteed bitrate UL>: integer type; indicates the guaranteed number of kbits/s delivered to UMTS (up-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQMIN=…,32, …) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Guaranteed bitrate DL>: integer type; indicates the guaranteed number of kbits/s delivered by UMTS (down-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQMIN=…,32, …) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Delivery order>: integer type; indicates whether the UMTS bearer shall provide in-sequence SDU delivery or not (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

0 no

1 yes

<Maximum SDU size>: integer type; (1,2,3,…) indicates the maximum allowed SDU size in octets (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<SDU error ratio>: string type; indicates the target value for the fraction of SDUs lost or detected as erroneous. SDU error ratio is defined only for conforming traffic. The value is specified as "mEe". As an example a target SDU error ratio of 5•10-3 would be specified as "5E3" (e.g. AT+CGEQMIN=…,"5E3",…) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Residual bit error ratio>: string type; indicates the target value for the undetected bit error ratio in the delivered SDUs. If no error detection is requested, Residual bit error ratio indicates the bit error ratio in the delivered SDUs. The value is specified as "mEe". As an example a target residual bit error ratio of 5•10-3 would be specified as "5E3" (e.g. AT+CGEQMIN=…,"5E3",…) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Delivery of erroneous SDUs>: integer type; indicates whether SDUs detected as erroneous shall be delivered or not (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

0 no

1 yes

2 no detect

<Transfer delay>: integer type; (0,1,2,…) indicates the targeted time between request to transfer an SDU at one SAP to its delivery at the other SAP, in milliseconds (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Traffic handling priority>: integer type; (1,2,3,…) specifies the relative importance for handling of all SDUs belonging to the UMTS bearer compared to the SDUs of other bearers (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Source Statistics Descriptor>: integer type; specifies characteristics of the source of the submitted SDUs for a PDP context. This parameter should be provided if the Traffic class is specified as conversational or streaming (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

0 Characteristics of SDUs is unknown

1 Characteristics of SDUs corresponds to a speech source

<Signalling Indication>: integer type; indicates signalling content of submitted SDUs for a PDP context. This parameter should be provided if the Traffic class is specified as interactive (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

0 PDP context is not optimized for signalling

1 PDP context is optimized for signalling

If a value is omitted for a particular class then the value is considered to be unspecified.

**Implementation**

Optional. If the command is not implemented then no check is made against the negotiated profile.

*\*\*\* next change \*\*\**

### 10.1.26 Define EPS quality of service +CGEQOS

Table 10.1.26-1: +CGEQOS parameter command syntax

| Command | Possible Response(s) |
| --- | --- |
| +CGEQOS=<cid>[,<QCI>[,<DL\_GBR>,<UL\_GBR>[,<DL\_MBR>,<UL\_MBR>]]] | *+CME ERROR: <err>* |
| +CGEQOS? | [+CGEQOS: <cid>,<QCI>,[<DL\_GBR>,<UL\_GBR>],[<DL\_MBR>,<UL\_MBR>]]  [<CR><LF>+CGEQOS: <cid>,<QCI>,[<DL\_GBR>,<UL\_GBR>],[<DL\_MBR>,<UL\_MBR>]  [...]] |
| +CGEQOS=? | +CGEQOS: (range of supported <cid>s),(list of supported <QCI>s),(list of supported <DL\_GBR>s),(list of supported <UL\_GBR>s),(list of supported <DL\_MBR>s),(list of supported <UL\_MBR>s) |

**Description**

The set command allows the TE to specify the EPS Quality of Service parameters <cid>, <QCI>, [<DL\_GBR> and <UL\_GBR>] and [<DL\_MBR> and <UL\_MBR>] for a PDP context or Traffic Flows (see 3GPP TS 24.301 [83] and 3GPP TS 23.203 [85]). When in UMTS/GPRS the MT applies a mapping function to UTMS/GPRS Quality of Service. Refer subclause 9.2 for possible <err> values.

A special form of the set command, +CGEQOS= <cid> causes the values for context number <cid> to become undefined.

The read command returns the current settings for each defined QoS.

The test command returns the ranges of the supported parameters as compound values.

**Defined values**

<cid>: integer type; specifies a particular EPS Traffic Flows definition and a PDP Context definition (see the +CGDCONT and +CGDSCONT commands).

<QCI>: integer type; specifies a class of EPS QoS (see 3GPP TS 23.203 [85] and 3GPP TS 24.301 [83]).

0 QCI is selected by network

[1 – 4] value range for guaranteed bit rate Traffic Flows

[71 – 76] value range for guaranteed bit rate Traffic Flows

[82 – 85] value range for guaranteed bit rate Traffic Flows

[5 – 9] value range for non-guaranteed bit rate Traffic Flows

79 value for non-guaranteed bit rate Traffic Flows

[128 – 254] value range for Operator-specific QCIs

The QCI values 65, 66, 67, 69 and 70 are not allowed to be requested by the UE. If the TE requests a QCI parameter 65, 66, 67, 69 or 70, the MT responds with result code +CME ERROR: 181 (unsupported QCI value).

<DL\_GBR>: integer type; indicates DL GBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI (see 3GPP TS 24.301 [83]).

<UL\_GBR>: integer type; indicates UL GBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI (see 3GPP TS 24.301 [83]).

<DL\_MBR>: integer type; indicates DL MBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI (see 3GPP TS 24.301 [83]).

<UL\_MBR>: integer type; indicates UL MBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI (see 3GPP TS 24.301 [83]).

**Implementation**

Optional.

*\*\*\* next change \*\*\**

### 10.1.49 Define 5GS quality of service +C5GQOS

Table 10.1.49-1: +C5GQOS parameter command syntax

| Command | Possible Response(s) |
| --- | --- |
| +C5GQOS=<cid>[,<5QI>[,[<DL\_GFBR>],[<UL\_GFBR>][,[<DL\_MFBR>],[<UL\_MFBR>]]]] | *+CME ERROR: <err>* |
| +C5GQOS? | [+C5GQOS: <cid>,<5QI>[,<DL\_GFBR>,<UL\_GFBR>[,<DL\_MFBR>,<UL\_MFBR>]]]  [<CR><LF>+C5GQOS: <cid>,<5QI>,[<DL\_GFBR>,<UL\_GFBR>[,<DL\_MFBR>,<UL\_MFBR>]]  [...]] |
| +C5GQOS=? | +C5GQOS: (range of supported <cid>s),(list of supported <5QI>s),(list of supported <DL\_GFBR>s),(list of supported <UL\_GFBR>s),(list of supported <DL\_MFBR>s),(list of supported <UL\_MFBR>s) |

**Description**

The set command allows the TE to specify the 5GS Quality of Service parameters <cid>, <5QI>, [<DL\_GFBR> and <UL\_GFBR>] and [<DL\_MFBR> and <UL\_MFBR>] for a QoS flow (see 3GPP TS 23.501 [165] and 3GPP TS 24.501 [161]). Refer subclause 9.2 for possible <err> values.

A special form of the set command, +C5GQOS= <cid> causes the values for context number <cid> to become undefined.

The read command returns the current settings for each defined QoS.

The test command returns the ranges of the supported parameters as compound values.

**Defined values**

<cid>: integer type; specifies a particular QoS flow definition, EPS Traffic Flows definition and a PDP Context definition (see the +CGDCONT and +CGDSCONT commands).

<5QI>: integer type; specifies a class of 5GS QoS (see 3GPP TS 23.501 [165] and 3GPP TS 24.501 [161]).

0 5QI is selected by network

[1 – 4] value range for guaranteed bit rate QoS flows

[71 – 76] value range for guaranteed bit rate QoS flows

[5 – 10] value range for non-guaranteed bit rate QoS flows

79, 80 values for non-guaranteed bit rate QoS flows

[82 – 85] value range for delay critical guaranteed bit rate QoS flows

[128 – 254] value range for Operator-specific 5QIs

The 5QI values 65, 66, 67, 69 and 70 are not allowed to be requested by the UE. If the TE requests a 5QI value 65, 66, 67, 69 or 70, the MT responds with result code +CME ERROR: 181 (unsupported 5QI value).

The 5QI value of 10 can be requested by the UE only over NR satellite access. If the TE requests a 5QI value 10 over another access, the MT responds with result code +CME ERROR: 181 (unsupported 5QI value).

<DL\_GFBR>: integer type; indicates DL GFBR in case of GBR 5QI. The value is in kbit/s. This parameter is omitted for a non-GBR 5QI (see 3GPP TS 24.501 [161]). For a GBR 5QI, this parameter can be omitted to indicate subscribed DL GFBR.

<UL\_GFBR>: integer type; indicates UL GFBR in case of GBR 5QI. The value is in kbit/s. This parameter is omitted for a non-GBR 5QI (see 3GPP TS 24.501 [161]). For a GBR 5QI, this parameter can be omitted to indicate subscribed UL GFBR.

<DL\_MFBR>: integer type; indicates DL MFBR in case of GBR 5QI. The value is in kbit/s. This parameter is omitted for a non-GBR 5QI (see 3GPP TS 24.501 [161]). For a GBR 5QI, this parameter can be omitted to indicate subscribed DL MFBR.

<UL\_MFBR>: integer type; indicates UL MFBR in case of GBR 5QI. The value is in kbit/s. This parameter is omitted for a non-GBR 5QI (see 3GPP TS 24.501 [161]). For a GBR 5QI, this parameter can be omitted to indicate subscribed UL MFBR.

**Implementation**

Optional.

*\*\*\* last change \*\*\**