**3GPP TSG-CT WG1 Meeting #131-eC1-214247**

**E-meeting, 19-27 August 2021**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **27.007** | **CR** | **0738** | **rev** | **-** | **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)*.* |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

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|  |
| ***Title:***  | PFI numbering in 27.007 and in 24.008 |
|  |  |
| ***Source to WG:*** | OPPO, Apple |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | TEI16 |  | ***Date:*** | 2021-08-11 |
|  |  |  |  |  |
| ***Category:*** | **A** |  | ***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 canbe 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:*** | 27.007 CR0715 (C1-210972), agreed at CT1#128e (Feb 2021), has introduced an inconsistency in the numbering of packet filter identifiers (PFI) and a backward incompatibility with TE-ME interfaces using earlier versions of 27.007.27.007 CR0715 (C1-210972) changed the numbering of the <**NW** packet filter identifier> parameter for the AT command +CGTFTRDP from 1 to 16 to 0 to 15. But **since Rel-8,** the packet filter identifiers in several AT Commands (see +CGTFT, +CGTFTRDP, +CGLNKPF, +CGDELPF) in 27.007 have been numbered from 1 to 16, regardless whether the packet filter and its identifier value is requested by the TE or by the network. So by this change an inconsistency has been created between the range of identifiers for packet filters requested by the TE and the range of identifiers for packet filters requested by the network.Note that according to TS 23.060, subclause 15.3.0, "a TFT consists of one or more packet filters, each identified by a unique packet filter identifier", and for bearer control mode "MS/NW" the TFT can include both packet filters requested by the TE and packet filters requested by the network. So defining inconsistent value ranges for the 2 sorts of packet filters at an interface will result in an unnecessarily complex implementation.Furthermore, this change was introduced to Rel-16, but < NW packet filter identifier> already existed in Rel-15 and before. Thus, this change creates a backward compatible issue if a TE using an AT Command interface according to a pre-Rel-16 version of 27.007 needs to interoperate with a Rel-16 MT (or vice versa).However, it is understandable that implementers can be confused by the fact that the range of PFI in 27.007 is running from 1 to 16 while the PFI range in 24.008 and in the NAS protocols runs from 0 to 15.. Thus this CR, apart from reverting the change of 27.007 CR0715 (C1-210972), proposes a note in the relevant subclauses of 27.007 where PFI is specified to clarify that the MT is expected to perform a mapping between the value ranges used at the TE/MT interface and at the radio interface.**Backward compatibility notes:**This CR is backwards compatible with 27.007 v17.0.0 (2020-12), but is not backwards compatible with 27.007 v17.1.0 (2021-04) and not backwards compatible with 27.007 v17.2.0 (2021-07).Note: 27.007 v17.1.0 and 27.007 v17.2.0 are not backwards compatible to 27.007 v17.0.0 due to 27..07 CR0715 which this 27.007 CR0738 is reversing. |
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| ***Summary of change:*** | NW packet filter identifier range of values is reverted to 1 to 16.A Note is added to relevant subclauses indicating that the MT is expected to perform a mapping between the value ranges used in 27.007 and in 24.008 |
|  |  |
| ***Consequences if not approved:*** | Inconsistency remains between TE requested PFI values and NW requested PFI values over the TE-ME interface. There will be backwards incompatibility when different version of 27.007 is used by TE and by ME |
|  |  |
| ***Clauses affected:*** | 10.1.3, 10.1.25, 10.1.66, 10.1.67 |
|  |  |
|  | **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 \* \* \* \*

### 10.1.3 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.

NOTE: While the numbering of packet filter identifier in this specification ranges from 1 to 16, the numbering of packet filter identifier in 3GPP TS 24.008 [8] ranges from 0 to 15. It is up to MT implementation to perform a mapping between the two value ranges.

<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 \* \* \* \*

### 10.1.25 Traffic flow template read dynamic parameters +CGTFTRDP

Table 10.1.25-1: +CGTFTRDP action command syntax

| Command | Possible Response(s) |
| --- | --- |
| +CGTFTRDP[=<cid>] | [+CGTFTRDP: <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>,<NW packet filter Identifier>,<local address and subnet mask>,<QRI>][<CR><LF>+CGTFTRDP: <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>,<NW packet filter Identifier>,<local address and subnetmask>,<QRI>[...]] |
| +CGTFTRDP=? | +CGTFTRDP: (list of <cid>s associated with active contexts) |
| NOTE: The syntax of the AT Set Command is corrected to be according to ITU‑T Recommendation V.250 [14]. Older versions of the specification specify incorrect syntax +CGTFTRDP=[<cid>] |

**Description**

The execution command returns the relevant information about Traffic Flow Template for an active secondary or non secondary PDP context specified by <cid> together with the additional network assigned values when established by the network. If the parameter <cid> is omitted, the Traffic Flow Templates for all active secondary and non secondary PDP contexts are returned.

Parameters of both network and MT/TA initiated PDP contexts will be returned.

The test command returns a list of <cid>s associated with active secondary and non secondary contexts.

**Defined values**

<cid>: integer type; Specifies a particular secondary or non secondary PDP context definition or Traffic Flows definition (see +CGDCONT and +CGDSCONT commands).

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. The value range is from 1 to 16.

NOTE 1: While the numbering of packet filter identifier in this specification ranges from 1 to 16, the numbering of packet filter identifier in 3GPP TS 24.008 [8] ranges from 0 to 15. It is up to MT implementation to perform a mapping between the two value ranges.

<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 execute form of +CGTFTRDP.

<protocol number (ipv4) / next header (ipv6)>: integer type. The 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 (Used for Uplink and Downlink)

<NW packet filter Identifier> integer type. The value range is from 1 to 16. In EPS the value is assigned by the network when established

NOTE 2: While the numbering of packet filter identifier in this specification ranges from 1 to 16, the numbering of packet filter identifier in 3GPP TS 24.008 [8] ranges from 0 to 15. It is up to MT implementation to perform a mapping between the two value ranges.

<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 +CGTFTRDP.

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

NOTE 3: Some of the above listed attributes can 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 \* \* \* \*

### 10.1.66 Link packet filters +CGLNKPF

Table 10.1.66-1: +CGLNKPF parameter command syntax

| Command | Possible Response(s) |
| --- | --- |
| +CGLNKPF=[<cid>[,<packet filter identifier>]] | *+CME ERROR: <err>* |
| +CGLNKPF? | [+CGLNKPF: <cid>,<packet filter identifier>][<CR><LF>+CGLNKPF: <cid>,<packet filter identifier>[...]] |
| +CGLNKPF=? | +CGLNKPF: (range of supported <cid>s),(list of supported <packet filter identifier>s) |

**Description**

The set command allows the TE to specify the existing packet filter identified by the packet filter identifier <packet filter identifier> of the TFT

- which is linked to the new packet filter(s) to be are added; or

- for which a change of the GBR is to be requested

(i.e. the packet filter identifier(s) indicated in the Parameters list of the Traffic flow aggregate IE, see 3GPP TS 24.301 [83] subclause 6.5.4.2). Refer subclause 9.2 for possible <err> values.

A special form of the set command, +CGLNKPF=<cid> causes the packet filter identifier for context number <cid> to become undefined. A special form of the set command, +CGLNKPF= causes the linked packet filter identifiers for all the contexts to become undefined.

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

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).

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

NOTE: While the numbering of packet filter identifier in this specification ranges from 1 to 16, the numbering of packet filter identifier in 3GPP TS 24.008 [8] ranges from 0 to 15. It is up to MT implementation to perform a mapping between the two value ranges.

**Implementation**

Optional.

\* \* \* Next Change \* \* \* \*

### 10.1.67 Delete packet filters +CGDELPF

Table 10.1.67-1: +CGDELPF parameter command syntax

| Command | Possible Response(s) |
| --- | --- |
| +CGDELPF=[<cid>[,<packet filter identifier>[,<QRI>]]] | *+CME ERROR: <err>* |
| +CGDELPF? | [+CGDELPF: <cid>,<packet filter identifier>[,<QRI>]][<CR><LF>+CGDELPF: <cid>,<packet filter identifier>[,<QRI>][...]] |
| +CGDELPF=? | +CGDELPF: (range of supported <cid>s),(list of supported <packet filter identifier>s), (range of supported <QRI>s) |

**Description**

The set command allows the TE to specify the packet filter identified by the packet filter identifier <packet filter identifier> to be deleted, or the QoS rule identified by the QoS rule identifier <QRI> to be deleted. To delete a packet filter in 5GS, both the filter identifier <packet filter identifier> and the corresponding QoS rule identifier <QRI> are required. Refer subclause 9.2 for possible <err> values.

A special form of the set command, +CGDELPF=<cid> causes the values for context number <cid> to become undefined. A special form of the set command, +CGDELPF= causes the current settings for each packet filter and QoS rule to become undefined.

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

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).

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

NOTE: While the numbering of packet filter identifier in this specification ranges from 1 to 16, the numbering of packet filter identifier in 3GPP TS 24.008 [8] ranges from 0 to 15. It is up to MT implementation to perform a mapping between the two value ranges.

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

**Implementation**

Optional.

\* \* \* End of Changes \* \* \* \*