**3GPP TSG- Meeting # *rev2***

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** |  | **rev** | **1** | **Current version:** |  |  |
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| *For* ***[HE](http://www.3gpp.org/3G_Specs/CRs.htm" \l "_blank)******[LP](http://www.3gpp.org/3G_Specs/CRs.htm" \l "_blank)*** *on using this form: comprehensive instructions can be found at  <http://www.3gpp.org/Change-Requests>.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | Clarify Charging information 5GC interworking with EPC | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** |  | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5GIEPC\_CH | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***Category:*** |  |  | | | | | ***Release:*** | | |  |
|  | *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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
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| ***Reason for change:*** | | In 5GC interworking with EPC, the Multiple QFI Container information over Nchf from PGW-C+SMF is also applicable in non-roaming scenario for matching with the SGW per bearer charging, and the current description only addresses the roaming home routed case.  Error on Table title number in 6.2.1.5 | | | | | | | | |
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| ***Summary of change:*** | | Clarify Multiple QFI Container is also applicable in non-roaming for 5GC interworking with EPC:   * Update the Roaming QBC information field description in the Charging Data Request. * Improve the Annex description by introduction of tables reflecting the full description for interworking   Correct the Table title number in 6.2.1.5 | | | | | | | | |
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| ***Consequences if not approved:*** | | Settlement between Operators is not possible | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.2.1.5, B.1, B.2.1.3, B.2.2.1, B.2.2.2 | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | |  | | |
| ***affected:*** | |  | **X** | Test specifications | | | |  | | |
| ***(show related CRs)*** | | **X** |  | O&M Specifications | | | | TS 32.291 CR #0245. | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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| **First change** |

#### 6.2.1.5 Definition of QFI Container information

QFI Container information, defined in table 6.2.1.4.1, specific charging information used for 5G data connectivity QBC charging is provided within the QFI Container Information described in table 6.2.1.5.1.

Table 6.2.1.5.1: Structure of QFI Container Information

| Information Element | Category | Description |
| --- | --- | --- |
| QoS Flow Id | M | This field holds the QoS flow Identifier (QFI) |
| Time of First Usage | OC | This field holds the Timestamp when the first transmitted IP packet of the service data flow matching the current QFI data container |
| Time of Last Usage | OC | This field holds the Timestamp when the last transmitted IP packet of the service data flow matching the current QFI data container |
| QoS Information | OC | This field holds the QoS applied during the QFI data container interval |
| QoS Characteristics | OC | This field holds the QoS characteristics applied for QoS information. It is only be used when the non-standardized 5QI is present in QoS information. |
| User Location Information | OC | This field holds the user location during the QFI data container interval |
| UE Time Zone | OC | This field holds the Time Zone of where the UE is located, during the QFI data container interval |
| Presence Reporting Area Information | OC | This field holds the Presence Reporting Area Information of UE during the QFI data container interval. |
| RAT Type | OC | This field holds the RAT type during the QFI data container interval |
| Report Time | M | This field holds the Timestamp when the QFI data container was closed |
| Serving Network Function ID | OC | Group of serving Network Function identifier. |
| 3GPP PS Data Off Status | OC | This field holds the 3GPP Data off Status during the QFI data container interval |

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| **Next change** |

## B.1 General

This clause specifies the EPS and 5GS interworking.

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| **Next change** |

#### B.2.1.3 CDR description on the Bd interface

The CDR description defined in clause 6.1.3.2 with Roaming QBC information per clause B.2.2.1.1 is used for interworking with EPC scenario.

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| **Next change** |

#### B.2.2.1 Definition of Interworking charging information

##### B.2.2.1.1 Message content

The charging information defined in clause 6.2.1 is used for interworking with EPC scenario.

The specific information used for PS charging when UE is connected to P-GW+SMF via EPC is provided within the Charging Data Request message, as defined in clause 6.1.1.2, with the following difference:

Table B.2.2.1.1-1: Charging Data Request message contents

|  |  |  |
| --- | --- | --- |
| Information Element | Category | Description |
| Roaming QBC information | OC | This field holds the QBC information specific to 5GC interworking with EPC as defined in clause B.2.2.1.2.  This field is applicable in both non-roaming and roaming Home Routed scenario. |

##### B.2.2.1.2 Roaming QBC information

Roaming QBC information specific to 5GC interworking with EPC when UE is connected to P-GW+SMF via EPC is defined in table B.2.2.1.2-1:

Table B.2.2.1.2-1: Roaming QBC information

| Information Element | Category | Description |
| --- | --- | --- |
| Multiple QFI container | OC | This field holds the containers associated to a charging condition change on an IP-CAN bearer. This is included when triggers conditions are met (Qos change, tariff time change ...).  It may have multiple occurences.  This field is applicable for both non-roaming and roaming Home Routed scenario |
| Triggers | OC | Described in table 6.2.1.4.1 |
| Trigger Timestamp | OC | Described in table 6.2.1.4.1 |
| Time | OC | This field is not applicable |
| Total Volume | OC | This field is not applicable |
| Uplink Volume | OC | Described in table 6.2.1.4.1 |
| Downlink Volume | OC | Described in table 6.2.1.4.1 |
| Local Sequence Number | OC | Described in table 6.2.1.4.1 |
| QFI Container information | OC | This field holds the data container information defined in clause B.2.2.1.3 |

##### B.2.2.1.3 QFI Container Information

QFI Container Information specific to 5GC interworking with EPC when UE is connected to P-GW+SMF via EPC is defined in table B.2.2.1.3-1:

Table B.2.2.1.3-1: QFI Container Information

| Information Element | Category | Description |
| --- | --- | --- |
| QoS Flow Id | OM | This field is not applicable |
| Time of First Usage | OC | This field is not applicable |
| Time of Last Usage | OC | This field is not applicable |
| QoS Information | OC | Described in table 6.2.1.5.1 |
| QoS Characteristics | OC | Described in table 6.2.1.5.1 |
| User Location Information | OC | Described in table 6.2.1.5.1 |
| UE Time Zone | OC | This field is not applicable |
| Presence Reporting Area Information | OC | Described in table 6.2.1.5.1 |
| RAT Type | OC | Described in table 6.2.1.5.1 |
| Report Time | M | Described in table 6.2.1.5.1 |
| Serving Network Function ID | OC | This field is not applicable |
| 3GPP PS Data Off Status | OC | Described in table 6.2.1.5.1 |
| EPS bearer Charging Id | OM | This field holds the Charging Id associated to the bearer the QoS flow is mapped to. |
| Diagnostics | OM | This field holds a more detailed reason for the release of the IP-CAN bearer, when a single cause is applicable. |
| Enhanced Diagnostics | OC | This field holds a more detailed reason for the release of the IP-CAN bearer, when a set of causes is applicable. |

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| **Next change** |

#### B.2.2.2 Detailed message format for Interworking charging

The message format defined in clause 6.2.2 is used for interworking with EPC scenario.

The supported fields in table 6.2.2.1 for the converged charging message shall apply to the P-GW+SMF for the applicable fields, with the difference that SMF is replaced by P-GW+SMF.

The table B.2.2.2-1 describes the mapping between the Multiple QFI Container Information Elements defined for interworking and Traffic data volumes CDR parameters defined in 32.298 [51] for EPC.

Table B.2.2.2-1: Multiple QFI Container for Interworking mapping to EPC Traffic data volumes

|  |  |  |
| --- | --- | --- |
| Information Element for 5G Data connectivity | Information Element for Interworking | Corresponding to 32.298 [51] |
| Multiple QFI Container | Yes | Traffic data volumes |
| Triggers | Yes | Change condition |
| Trigger Timestamp | Yes | Change Time |
| Time | No | - |
| Total Volume | No | - |
| Uplink Volume | Yes | Data Volume Uplink |
| Downlink Volume | Yes | Data Volume Downlink |
| Local Sequence Number | yes | - |
| QFI Container Information | Yes | - |
| QFI | No | - |
| Time of First Usage | No | - |
| Time of Last Usage | No | - |
| QoS Information | Yes | EPC QoS Information |
| User Location Information | Yes | User Location Information |
| UE Time Zone | No | - |
| Presence Reporting Area Information | Yes | Presence Reporting Area Status |
| RAT Type | Yes | RAT Type |
| Serving Network Function ID | No | - |
| 3GPP PS Data Off Status | Yes | 3GPP PS Data Off Status |
| - | 3GPP Charging Id | Charging Id |
| - | Enhanced Diagnostics | Enhanced Diagnostics |
| - | Diagnostics | Diagnostics |
| - | No | UWAN User Location Information |
| - | No | User CSG information |
| - | No | Access Availability Change Reason |
| - | No | Related Change of Charging Condition |
| - | No | CP CIoT EPS optimisation indicator |
| - | No | Serving PLMN Rate Control |

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| **End of changes** |