**3GPP TSG-SA5 Meeting #137-e *S5-213148rev3***

**Online, , 10th May 2021 - 19th May 2021**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **32.255** | **CR** | **0301** | **rev** | **-** | **Current version:** | **17.1.1** |  |
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| *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 |  | Radio Access Network |  | Core Network |  |

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| ***Title:***  | Support of GERAN/UTRAN access by SMF+PGW-C |
| ***、*** |  |
| ***Source to WG:*** | China Mobile Com. Corporation |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** | TEI17\_NIESGU |  | ***Date:*** | 2021-04-30 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***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)* |
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| ***Reason for change:*** | Definition of charging information is missing when SMF+PGW-C is selected for GERAN or UTRAN access. |
|  |  |
| ***Summary of change:*** | Add an annex for supporting of GERAN/UTRAN access by SMF+PGW-C. Add SGSN as one of Serving Network Function. |
|  |  |
| ***Consequences if not approved:*** | Not possible for operators to simplify the charging architecture when 5GS is deployed and 2G or 3G still exists in their network. |
|  |  |
| ***Clauses affected:*** | Annex X(New) |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  |  |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  |  |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  |  |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

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| --- |
| **First change** |

Annex X (normative):
Support of GERAN/UTRAN access

## X.1 General

This Annex specifies Nchf from SMF+PGW-C enhanced to support UE accessing the network via GERAN/UTRAN.

## X.2 5G data connectivity charging principles and scenarios

### X.2.1 5G data connectivity charging principles

The 5G data connectivity charging principles as described in clause 5,1 shall apply for fields applicable when SMF+PGW-C supports GERAN/UTRAN access.

For GERAN/UTRAN access access scenario, the Charging Identifier for the PDP Context will be generated by SMF+PGW-C.

### X.2.2 5G data connectivity converged online and offline charging scenarios

The 5G data connectivity converged online and offline charging scenarios as described in clause 5,2 shall apply for fields applicable when SMF+PGW-C supports GERAN/UTRAN access.

## X.3 Data description for 5G data connectivity charging

### X.3.1 Data description for supporting GERAN/UTRAN

#### X.3.1.1 Message contents

The Charging message as described in clause 6.1.1 shall apply to the SMF+PGW-C to support GERAN/UTRAN access.

When UE is connected to SMF+PGW-C via GERAN/UTRAN, the information included in clause 6.1.1 and TS 32.290[57] is supported.

#### X.3.1.2 Ga message contents

#### X.3.1.3 CDR description on the Bd interface

The CDR description defined in clause 6.1.3 shall apply for fields applicable when SMF+PGW-C supports GERAN/UTRAN access.

### X.3.2 5G data connectivity charging specific parameters

#### X.3.2.1 Definition of 5G data connectivity charging information

The charging information defined in clause 6.2.1 is used for the SMF+PGW-C to support GERAN/UTRAN access.

The specific PDU session charging information when UE is connected to SMF+P-GW-C via GERAN/UTRAN is provided as defined in clause 6.2.1.2, with the following difference:

Table X.3.2.1-1: Structure of PDU Session Charging Information

|  |  |  |
| --- | --- | --- |
| Information Element | Category | Description |
| Charging Id | OM | Refer table 6.2.1.2, but holds the Charging Id for PDP Context. |
| Home Provided Charging Id | - | This field is not applicable to GERAN/UTRAN access. |
| User Information | OM | Described in table 6.2.1.2. |
| User Identifier | OC | Refer table 6.2.1.2, but contains the identification of the user (i.e. MSISDN). |
| User Equipment Info  | OC | Refer table 6.2.1.2, but holds the identification of the terminal (i.e. IMEI, MAC Address) . |
| unauthenticatedFlag | OC | Refer table 6.2.1.2, but indicates the served IMSI is not authenticated. |
| Roamer In Out  | OC | Described in table 6.2.1.2. |
| User Location Info | OC | Described in table 6.2.1.2. |
| MA PDU Non 3GPP User Location info | - | This field is not applicable to GERAN/UTRAN access. |
| User Location Time | OC | Described in table 6.2.1.2. |
| MA PDU Non 3GPP User Location Time | - | This field is not applicable to GERAN/UTRAN access. |
| UE Time Zone | OC | Described in table 6.2.1.2. |
| Presence Reporting Area Information | OC | Described in table 6.2.1.2. |
| PDU Session Information | OC | Refer table 6.2.1.2,but of PDP Context information. |
| PDU Session ID | M | Refer table 6.2.1.2,but of PDP Context. |
| Network Slice Instance Identifier  | - | This field is not applicable to GERAN/UTRAN access. |
| PDU Type | OM | Refer table 6.2.1.2, but of PDP Context.  |
| PDU Address | OC | Described in table 6.2.1.2. |
| PDU Ipv4 Address | OC | Refer table 6.2.1.2, but of the served IMSI allocated for PDP Context. |
| PDU IPv6 Address with Prefix | OC | Refer table 6.2.1.2, but of the served IMSI allocated for PDP Context. |
| PDU Address prefix length | OC | Described in table 6.2.1.2. |
| IPv4 Dynamic Address Flag | OC | Described in table 6.2.1.2. |
| IPv6 Dynamic Address Flag | OC | Described in table 6.2.1.2. |
| SSC Mode | - | This field is not applicable to GERAN/UTRAN access. |
| MA PDU session information | - | This field is not applicable to GERAN/UTRAN access. |
| MA PDU session indicator | - | This field is not applicable to GERAN/UTRAN access. |
| ATSSS capability | - | This field is not applicable to GERAN/UTRAN access. |
| SUPI PLMN ID | OC- | Refer table 6.2.1.2 but of the IMSI. |
| Serving Network Function ID  | OC | Described in table 6.2.1.2. |
| Serving Network Function Functionality | M | Refer table 6.2.1.2, but ….This field holds the functionality of the Serving Network Function: i.e. SGSN.This field holds “SGSN” when SMF+PGW-C serves GERAN/UTRAN access. |
| Serving Network Function Name | - | This field is not applicable to GERAN/UTRAN access. |
| Serving Network Function Addresses | OC | Described in table 6.2.1.2. |
| Serving Network Function FQDN | OC | Described in table 6.2.1.2. |
| Serving Network Function PLMN ID | OC | Described in table 6.2.1.2. |
| AMF Identifier | - | This field is not applicable to GERAN/UTRAN access. |
| Serving CN PLMN ID | OC | Described in table 6.2.1.2. |
| RAT Type | OC | Described in table 6.2.1.2. |
| MA PDU Non 3GPP RAT Type | - | This field is not applicable to GERAN/UTRAN access. |
| Data Network Name Identifier | M | Refer table 6.2.1.2,with the identifier of the APN the user is connected to. |
| DNN Selection Mode | - | This field is not applicable to GERAN/UTRAN access. |
| Authorized QoS Information | OC | Refer table 6.2.1.2, but to PDP Context. QoS information mapped according interaction with PCC as specified in clause 4.11.0a.2 of TS 23.502 [201] |
| Subscribed QoS Information | OC | Refer table 6.2.1.2, but for the PDP Context. QoS information mapped according interaction with PCC as specified in clause 4.11.0a.2 of TS 23.502 [201]. |
| Authorized Session-AMBR | OC | Refer table 6.2.1.2, but for the PDP Context. |
| Subscribed Session-AMBR | OC | Refer table 6.2.1.2, but for the PDP Context. |
| PDU session start Time | OC | Refer table 6.2.1.2, but when PDP Context starts. |
| PDU session stop Time | OC | Refer table 6.2.1.2, but when PDP Context terminates. |
| Diagnostics | OC | Described in table 6.2.1.2, but of the PDP Context. |
| Enhanced Diagnostics | OC | Described in table 6.2.1.2, but of the PDP Context. |
| Charging Characteristics | OC | Refer table 6.2.1.2, but for this PDP Context. |
| Charging CharacteristicsSelection Mode | OC | Described in table 6.2.1.2. |
| 3GPP PS Data Off Status | OC | Described in table 6.2.1.2. |
| Session Stop Indicator | - | This field is not applicable to GERAN/UTRAN access. |
| Redundant TransmissionType | - | This field is not applicable to GERAN/UTRAN access. |
| RAN Secondary RAT Usage Report | - | This field is not applicable to GERAN/UTRAN access. |
| NG RAN Secondary RAT Type | - | This field is not applicable to GERAN/UTRAN access. |
| Qos Flows Usage Reports | - | This field is not applicable to GERAN/UTRAN access. |
| QoS Flow Id | - | This field is not applicable to GERAN/UTRAN access. |
| Start Timestamp | - | This field is not applicable to GERAN/UTRAN access. |
| End Timestamp | - | This field is not applicable to GERAN/UTRAN access. |
| Downlink Volume | - | This field is not applicable to GERAN/UTRAN access. |
| Uplink Volume | - | This field is not applicable to GERAN/UTRAN access. |

The specific PDU Container Information when UE is connected to SMF+P-GW-C via GERAN/UTRAN is provided as defined in clause 6.2.1.3, with the following difference:

Table X.3.2.1-2: Structure of PDU Container Information

| Information Element | Category | Description  |
| --- | --- | --- |
| Time of First Usage | OC | Described in table 6.2.1.3.1. |
| Time of Last Usage | OC | Described in table 6.2.1.3.1. |
| QoS Information | OC | Described in table 6.2.1.3.1. |
| QoS Characteristics | OC | Described in table 6.2.1.3.1. |
| AF Charging Identifier | - | This field is not applicable to GERAN/UTRAN access. |
| AF Charging Id String | - | This field is not applicable to GERAN/UTRAN access. |
| User Location Information | OC | Described in table 6.2.1.3.1. |
| UE Time Zone | OC | Described in table 6.2.1.3.1. |
| Presence Reporting Area Information | OC | Described in table 6.2.1.3.1. |
| Serving Network Function ID  | OC | Described in table 6.2.1.3.1. |
| RAT Type | OC | Described in table 6.2.1.3.1. |
| Sponsor Identity | OC | Described in table 6.2.1.3.1. |
| Application Service Provider Identity | OC | Described in table 6.2.1.3.1. |
| Charging Rule Base Name | OC | Described in table 6.2.1.3.1. |
| 3GPP PS Data Off Status | OC | Described in table 6.2.1.3.1. |
| MA PDU Steering functionality | - | This field is not applicable to GERAN/UTRAN access. |
| MA PDU Steering mode | - | This field is not applicable to GERAN/UTRAN access. |

Roaming QBC information when UE is connected to SMF+P-GW via GERAN/UTRAN is defined in table X.3.2.1-3:

Table X.3.2.1-3: Roaming QBC information

|  |  |  |
| --- | --- | --- |
| Information Element | Category | Description |
| MultipleQFIcontainer | OC | Refer table B.2.2.1.2-1, but for the PDP Context. |
| Triggers | OC | Described in table B.2.2.1.2-1. |
| Trigger Timestamp | OC | Described in table B.2.2.1.2-1. |
| Uplink Volume | OC | Described in table B.2.2.1.2-1. |
| Downlink Volume | OC | Described in table B.2.2.1.2-1. |
| Local Sequence Number | OC | Described in table B.2.2.1.2-1. |
| QFI Container information | OC | This field holds the data container information defined in clause X.3.2.1-4. |

Roaming QBC information when UE is connected to SMF+P-GW via GERAN/UTRAN is defined in table X.3.2.1-4:

Table X.3.2.1-4: QFI Container Information

| Information Element | Category | Description  |
| --- | --- | --- |
| QoS Information | OC  | Described in table B.2.2.1.3-1. |
| QoS Characteristics | OC  | Described in table B.2.2.1.3-1. |
| User Location Information | OC  | Described in table B.2.2.1.3-1. |
| Presence Reporting Area Information | OC  | Described in table B.2.2.1.3-1. |
| RAT Type | OC  | Described in table B.2.2.1.3-1. |
| Report Time | M  | Described in table B.2.2.1.3-1. |
| 3GPP PS Data Off Status | OC  | Described in table B.2.2.1.3-1. |
| EPS bearer Charging Id | OM | Refer table B.2.2.1.3-1, but for the PDP Context. |
| Diagnostics | OM | Refer table B.2.2.1.3-1, but for the PDP Context. |
| Enhanced Diagnostics | OC  | Refer table B.2.2.1.3-1, but for the PDP Context. |

#### X.3.2.2 Detailed message format for converged charging

The basic structure of supported fields in *Charging Data* Request/Response message defined in clause 6.2.2 shall apply for fields applicable when SMF+PGW-C supports GERAN/UTRAN access.

#### X.3.2.3 Formal 5G data connectivity charging parameter description

TheCHF CDR parameters and resources attributes defined in clause 6.2.3 shall apply for fields applicable when SMF+PGW-C supports GERAN/UTRAN access.

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| **End of change** |