**3GPP TSG- Meeting # *rev1***

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
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|  |  | **CR** |  | **rev** |  | **Current version:** |  |  |
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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:***  |  |
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| ***Source to WG:*** |  |
| ***Source to TSG:*** | S5 |
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| ***Work item code:*** |  |  | ***Date:*** |  |
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| ***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 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. |
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| ***Summary of change:*** | Add an annex for supporting of GERAN/UTRAN access by SMF+PGW-C. Add SGSN as one of Serving Network Function. |
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| ***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. |
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| ***Clauses affected:*** | Annex X(New) |
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|  | **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 ...  |
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| ***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 with the differences that SMF is replaced by SMF+PGW-C supporting GERAN/UTRAN access, and only following clauses are applicable:

- Clauses 5.1.1 to 5.1.9 except 5.1.6;

- Clauses 5.1.11 to 5.1.12.

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

### 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 with the differences that SMF is replaced by SMF+PGW-C supporting GERAN/UTRAN access, and only following clauses are applicable:

- Clauses 5.2.1.1 to 5.2.1.9 except 5.2.1.5;

- Clauses 5.2.2.1 to 5.2.2.2.In Table 5.2.1.4.1 and Table 5.2.1.6.1, only trigger conditions related to GERAN/UTRAN access scenarios are applicable.

### X.2.2 CDR generation and transfer

Clause 5.2.3 shall apply, with the difference in trigger tables where only triggers related to GERAN/UTRAN access scenarios are applicable.

Clauses 5.2.4 and 5.2.5 are applicable.

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

### X.3.1 Data description for support of GERAN/UTRAN access

#### 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 with the differences that SMF is replaced by SMF+PGW-C supporting GERAN/UTRAN access, and following fields are not applicable:

### - xxxX.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 table 6.2.1.2.1, with the differences described under following table:

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

|  |  |  |
| --- | --- | --- |
| Information Element | Category | Description |
| Charging Id | OM | Described in table 6.2.1.2, with PDU session replaced by PDP Context. |
| Home Provided Charging Id | - | This field is not applicable. |
| 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. |
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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. |

Comment: the rev3 re-introduced the tables, it is correct they are needed: we need a statement to refer the interworking Annex to introduce the tables, like with differences described by following tables

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#### 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

The CHF 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** |