**3GPP TSG- Meeting # *rev4***

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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 | **X** |

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| ***Title:***  |  |
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| ***Source to WG:*** | , Matrixx, Nokia |
| ***Source to TSG:*** | S5 |
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| ***Work item code:*** |  |  | ***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 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 ...  |
|  |  |
| ***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.2.3 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.

#### 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 the following fields in Table 6.1.3.2.1 are not applicable:

- UPF ID;

- Multi-homed PDU address.

### 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 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 | Described in table 6.2.1.2. |
| User Equipment Info  | OC | Described in table 6.2.1.2. |
| unauthenticatedFlag | OC | Described in table 6.2.1.2. |
| 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. |
| User Location Time | OC | Described in table 6.2.1.2. |
| MA PDU Non 3GPP User Location Time | - | This field is not applicable. |
| 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 | Described in table 6.2.1.2, with PDU session replaced by PDP Context. |
| PDU Session ID | M | Described in table 6.2.1.2, with PDU session replaced by PDP Context. |
| Network Slice Instance Identifier  | - | This field is not applicable. |
| PDU Type | OM | Described in table 6.2.1.2, with PDU session replaced by PDP Context. |
| PDU Address | OC | Described in table 6.2.1.2. |
| PDU Ipv4 Address | OC | Described in table 6.2.1.2, with PDU session replaced by PDP Context. |
| PDU IPv6 Address with Prefix | OC | Described in table 6.2.1.2, with PDU session replaced by 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. |
| MA PDU session information | - | This field is not applicable. |
| MA PDU session indicator | - | This field is not applicable. |
| ATSSS capability | - | This field is not applicable. |
| SUPI PLMN ID | OC- | Described in table 6.2.1.2. |
| Serving Network Function ID  | OC | Described in table 6.2.1.2. |
| Serving Network Function Functionality | M | Described in table 6.2.1.2.This field holds “SGSN” when SMF+PGW-C serves GERAN/UTRAN access. |
| Serving Network Function Name | - | Described in table 6.2.1.2. |
| 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. |
| 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. |
| Data Network Name Identifier | M | Described in table 6.2.1.2, with DNN replaced by APN. |
| DNN Selection Mode | - | This field is not applicable. |
| Authorized QoS Information | OC | Described in table 6.2.1.2 QoS information mapped according interaction with PCC as specified in clause 4.11.0a.2 of TS 23.502 [201] |
| Subscribed QoS Information | OC | Described in table 6.2.1.2 QoS information mapped according interaction with PCC as specified in clause 4.11.0a.2 of TS 23.502 [201]. |
| Authorized Session-AMBR | OC | Described in table 6.2.1.2, with PDU session replaced by PDP Context. |
| Subscribed Session-AMBR | OC | Described in table 6.2.1.2, with PDU session replaced by PDP Context. |
| PDU session start Time | OC | Described in table 6.2.1.2, with PDU session replaced by PDP Context. |
| PDU session stop Time | OC | Described in table 6.2.1.2, with PDU session replaced by PDP Context. |
| Diagnostics | OC | Described in table 6.2.1.2, with PDU session replaced by PDP Context. |
| Enhanced Diagnostics | OC | Described in table 6.2.1.2, with PDU session replaced by PDP Context. |
| Charging Characteristics | OC | Described in table 6.2.1.2, with PDU session replaced by 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. |
| Redundant TransmissionType | - | This field is not applicable. |
| RAN Secondary RAT Usage Report | - | This field is not applicable. |

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 differences described under following table:

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. |
| AF Charging Id String | - | This field is not applicable. |
| 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. |
| MA PDU Steering mode | - | This field is not applicable. |

Roaming QBC information described in table B.2.2.1.2-1 and QFI Container Information described in table B.2.2.1.3-1 are provided for the PDP context when UE is connected to SMF+P-GW via GERAN/UTRAN.

#### 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** |