3GPP TSG SA WG5 Meeting 137-e TDoc S5-213276

electronic meeting, online, 10 - 19 May 2021

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **32.255** | **CR** | **0310** | **rev** |  | **Current version:** |  |  |
|  |
| *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:***  | Correction on Reference Points for 5GS  |
|  |  |
| ***Source to WG:*** |  |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** | TEI17  |  | ***Date:*** |  |
|  |  |  |  |  |
| ***Category:*** | **C** |  | ***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:*** | The set of Reference points defined in TS 23.501 clause 4.2.7 includes N40 reference Point from SMF to CHF, and N40 is not defined in SA5 charging specifications.The reference point representation for 5G data connectivity domain charging architecture is missing  |
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| ***Summary of change:*** | Introduce reference point representation for 5G data connectivity domain charging architecture  |
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| ***Consequences if not approved:*** | Partial view of charging architecture for 5G data connectivity domain could lead to incorrect interpretation which scenario is supported especially for roaming   |
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| ***Clauses affected:*** |  3.2, 4.2 |
|  |  |
|  | **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 ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

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| **First change** |

## 3.2 Symbols

For the purposes of the present document, the following symbols apply:

Bd Reference point for the CDR file transfer from the 5G Data connectivity CGF to the BD.

Ga Reference point for CDR transfer between a CDF and the CGF.

Nchf Service based interface exhibited by CHF.

N40 Reference point between SMF and the CHF.

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| **Next change** |

## 4.2 5G data connectivity domain converged charging architecture

The SMF embedding the CTF, generates charging events towards the CHF for PDU connectivity converged charging or offline only charging.

As described in TS 32.240 [1], the CTF generates charging events towards to the CHF for converged online and offline charging processing. The CDRs generation is performed by the CHF acting as a CDF, which transfers them to the CGF.
Finally, the CGF creates CDR files and forwards them to the BD.

If the CGF is external, the CHF acting as a CDF, forwards the CDRs to the CGF across the Ga interface.
If the CGF is integrated, there is only one internal interface between the CHF and the CGF. In this case, the relationship between CHF and CGF is 1:1. An integrated CGF may support the Ga interface from other CDFs.

When an external CGF is used, this CGF may also be used by other, i.e. non-5GCS, network elements, according to network design and operator decision. It should be noted that the CGF may also be an integrated component of the BD – in this case, the Bd interface does not exist and is replaced by a proprietary solution internal to the BD.

Figure 4.2.1 depicts the architectural options for converged charging in service-based representation for CHF.



**Figure 4.2.1: 5G data connectivity converged charging architecture**

Architectural options of figure 4.2.1 apply to any 5G data connectivity converged charging architectures in this clause.

Ga is described in clause 5.2.4 and Bd in clause 5.2.5. of the present document and Nchf is described in TS 32.290 [57].

Figure 4.2.2 depicts the 5G data connectivity converged charging architecture in reference point representation for non-roaming:



**Figure 4.2.2: 5G data connectivity converged charging architecture non-roaming reference point representation**

Figure 4.2.3 depicts the 5G data connectivity converged charging architecture service-based representation for roaming Home Routed:



**Figure 4.2.3: 5G data connectivity converged charging architecture roaming Home Routed service based representation**

Figure 4.2.4 depicts the 5G data connectivity converged charging architecture for roaming Home Routed in reference point representation:



Figure 4.2.4: 5G connection and mobility converged charging architecture in roaming Home routed reference point representation

The N40 reference point is defined for the interactions between H-SMF and H-CHF and between V-SMF and V-CHF in the reference point representation.

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| **End of changes** |