3GPP TSG SA WG5 Meeting 137-e TDoc S5-213274

electronic meeting, online, 10 - 19 May 2021

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** |  | **rev** | **-** | **Current version:** | **17.1.0** |  |
|  | | | | | | | | |
| *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:*** | Introduction of IMS converged charging architecture in Reference Points | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5GSIMSCH | | | | |  | ***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 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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
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| ***Reason for change:*** | | Reference point representation for IMS Converged charging architecture is missing | | | | | | | | |
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| ***Summary of change:*** | | Introduce reference point representation for IMS Converged charging architecture | | | | | | | | |
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| ***Consequences if not approved:*** | | Partial view of charging architecture could lead to wrong interpretation on which IMS architecture IMS converged charging is supported. | | | | | | | | |
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| ***Clauses affected:*** | | 3.2, 4.4 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 32.240 CR#0426. | | |
|  | |  | | | | | | | | |
| ***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:

Bi Reference point for the CDR file transfer from the IMS CGF to the BD.

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

Nchf Service based interface exhibited by CHF

N45 Reference point between IMS Node and the CHF Rf Offline Charging Reference Point between an IMS Network Entity or an AS and CDF

Ro Online Charging Reference Point between an AS or MRFC and IMS-GWF and the OCS

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| **Next change** |

## 4.4 IMS converged charging architecture

The architectural options for IMS converged charging are depicted in figure 4.4.1 in service-based representation for CHF:



Figure 4.4.1: IMS converged charging architecture

In this architecture, IMS nodes, CHF, CGF and corresponding Billing domain are located in the same PLMN.

The IMS Nodes for which this architecture applies are the MRFC, IMS-GWF (connected to S-CSCF using ISC) and SIP AS, the architecture for MMTel AS is described in TS 32.275 [35]. In addition, the MRFC and SIP AS may support offline only charging via Nchf interface.

Editor’note: whether other IMS Nodes use the Nchf interface is FFS.

The general architecture components can be found in TS 32.240 [2].

Ga is described in clause 5.4.5 and Bi in clause 5.4.6 of the present document, and Nchf is described in TS 32.290 [45].

Figure 4.4.2 depicts the IMS converged charging architecture in reference point representation:



**Figure 4.4.2: IMS converged charging architecture in reference point representation**

The architectural options of figure 4.4.1 apply to figure 4.4.2 with IMS node, CHF and corresponding Billing domain/CGF located in the same PLMN.

The different IMS architectures for the support of IMS services for roaming users are specified in TS 23.228 [201], and can be considered under two categories:

- without IMS-level roaming interfaces as per clause 4.15b, Annex M.2, Annex W and Annex Y.9.2 of TS 23.228 [201], with the P-CSCF located in HPLMN. All IMS Nodes are located in HPLMN and figure 4.4.1 and figure 4.4.2 apply.

- with IMS-level roaming interfaces as per clause 4.15a, Annex M.1 and Annex Y.9.3 of TS 23.228 [201], with the P-CSCF located in VPLMN. Figure 4.4.3 and figure 4.4.4 are applicable.

Figure 4.4.3 depicts the IMS converged charging architecture in service-based representation for CHF, in IMS with IMS-level roaming interfaces:



**Figure 4.4.3: IMS converged charging architecture IMS-level roaming interfaces service based representation**

Editor’note: whether P-CSCF use the Nchf interface is FFS.

The architectural options of figure 4.4.1 apply to figure 4.4.3 with IMS node, CHF and corresponding Billing domain/CGF located in the HPLMN.

Figure 4.4.4 depicts the IMS converged charging architecture in reference point representation for CHF, in IMS with IMS-level roaming interfaces:



Figure 4.4.4: IMS converged charging architecture IMS-level roaming interfaces in reference point representationEditor’note: whether P-CSCF use the Nchf interface, therefore N45 is FFS.

The architectural options of figure 4.4.1 apply to figure 4.4.4 with IMS node, CHF and corresponding Billing domain/CGF located in the HPLMN.

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| **End of changes** |