**3GPP TSG-CT3 Meeting #120-e *C3-221200***

**E-Meeting, 17th – 25th February 2022 (Revision of C3-22xxxx)**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.513** | **CR** | 0333 | **rev** | **-** | **Current version:** | **17.5.0** |  |
|  | | | | | | | | |
| *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:*** | Signalling flows for interworking scenario | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | en5GPccSer17 | | | | |  | ***Date:*** | | | 2022-02-25 |
|  |  | | | |  | |  | | |  |
| ***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)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The signalling flows for interworking scenario is not defined yet. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Indicate that the signalling flows described in clause 5 apply to this scenario by replacing SMF by the SMF+PGW-C and with the differences applicable to EPC as described in Annex B.3 of 3GPP TS 29.512 [9]. | | | | | | | | |
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| ***Consequences if not approved:*** | | Incompleted specification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 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/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**Additional discussion(if needed):**

**Proposed changes:**

\*\*\* 1st Change \*\*\*

# 4 Reference architecture

The policy framework functionality in 5G is comprised of the functions of the Policy Control Function (PCF), the policy and charging enforcement functionality supported by the SMF and UPF, the access and mobility policy enforcement functionality supported by the AMF, the Network Data Analytics Function (NWDAF), the Network Exposure Function (NEF), the Charing Function (CHF), the Unified Data Repository (UDR), the Time Sensitive Communication and Time Synchronization Function (TSCTSF), the Application Function (AF) and the 5G Direct Discovery Name Management Function (5G DDNMF). For the roaming scenario, the Security Edge Protection Proxy (SEPP) is deployed between the V-PCF and H-PCF. 3GPP TS 23.503 [4] specifies the 5G policy framework stage 2 functionality.



Figure 4.1-1a: Overall non-roaming 5G Policy framework architecture (service based representation)



Figure 4.1-1b: Overall non-roaming 5G Policy framework architecture (reference point representation)

NOTE 1: The N4 interface is not part of the Policy Framework architecture but shown in the figures for completeness.

NOTE 2: If an SCP is deployed it can be used for indirect communication between NFs and NF services as described in Annex E of 3GPP TS 23.501 [2].

The Nchf service for online and offline charging consumed by the SMF is defined in 3GPP TS 32.240 [28].

The Nchf service for Spending Limit Control consumed by the PCF is defined in 3GPP TS 29.594 [23].

The PCF providing session management policy control for a UE (i.e. PCF for the PDU Session) and the PCF providing non-session management policy control for that UE (i.e. PCF for the UE) may be different PCF instances and the communication between the PCF for the UE and the PCF for the PDU Session is performed over the N43 reference point.

NOTE 3: The roaming scenarios for SNPNs are not supported in this Release.



Figure 4.1-2a: Overall roaming policy framework architecture - LBO (service based representation)



Figure 4.1-2b: Overall roaming policy framework architecture - LBO (reference point representation)

NOTE 4: In the LBO scenario, the PCF in the VPLMN may interact with the AF in order to generate PCC rules for services delivered via the VPLMN. The PCF in the VPLMN uses locally configured policies according to the roaming agreement with the HPLMN operator as input for PCC rule generation. The PCF in VPLMN has no access to subscriber policy information from the HPLMN nor to session management policy data for the UE in the VPLMN to retrieve input for PCC Rule generation. The interactions between the PCF in the VPLMN and the PCF in the HPLMN through the Npcf service based interface enables the PCF in the HPLMN to provision UE policies to the PCF in the VPLMN, as described in 3GPP TS 23.503 [4] subclause 5.2.5.

NOTE 5: In the LBO scenario, AF requests targeting a DNN (and slice) and / or a group of UEs are stored in the UDR by the NEF. The PCF in the VPLMN subscribes to and get notification from the UDR in the VPLMN for those AF requests. Details are defined in subclause 5.6.7 of 3GPP TS 23.501 [2].

NOTE 6: For the sake of clarity, SEPPs are not depicted in the roaming reference point architecture figures.

NOTE 7: N4 and N32 are not service based interfaces.

NOTE 8: The Home Routed PDU sessions are not supported for TSC networks in this Release.



Figure 4.1-3a: Overall roaming policy framework architecture - home routed scenario (service based representation)



Figure 4.1-3b: Overall roaming policy framework architecture - home routed scenario (reference point representation)

NOTE 9: For the sake of clarity, SEPPs are not depicted in the roaming reference point architecture figures.

NOTE 10: N4 and N32 are not service based interfaces.

NOTE 11: An SCP can be used for indirect communication between NFs and NF services within the VPLMN, within the HPLMN, or in within both VPLMN and HPLMN. For simplicity, the SCP is not shown in the roaming architecture.

NOTE 12: Non-roaming architecture, local breakout roaming architecture and home-routed roaming architecture for interworking between 5GS and EPS are defined in 3GPP TS 23.501 [2]. The signalling flows described in clause 5 apply to this scenario by replacing SMF by the SMF+PGW-C and with the differences applicable to EPC as described in Annex B.3 of 3GPP TS 29.512 [9].

To allow the 5G system to interwork with AFs related to existing services, e.g. IMS based services, Mission Critical Push To Talk services, the PCF shall support the corresponding Rx procedures and requirements defined in 3GPP TS 29.214 [18]. This facilitates the migration from EPC to 5GC without requiring these AFs to upgrade to support the N5 interface.



Figure 4.1-4: Interworking between 5G Policy framework and AFs supporting Rx interface

\*\*\* End of Changes \*\*\*