**3GPP SA WG Meeting #105 SP-241305**

**10 - 13 September 2024, Melbourne, Australia**

**SA WG2 Meeting #164 S2-2409313**

**Maastricht, Netherlands, 19 August – 23 August, 2024 (revision of S2-2407706)**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **23.501** | **CR** | **5445** | **rev** | **4** | **Current version:** | **19.0.0** |  |
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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:*** | Enhancement of getting public UE IP address and port number | | | | | | | | | |
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| ***Source to WG:*** | China Mobile, Ericsson, Nokia, ZTE, Huawei, Samsung | | | | | | | | | |
| ***Source to TSG:*** | ZTE, China Mobile, Ericsson, Nokia, Huawei, Samsung | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | UPEAS\_Ph2 | | | | |  | ***Date:*** | | | 2024-07-16 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-19 |
|  | *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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
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| ***Reason for change:*** | | According to the R19 UPEAS\_ph2 conclusion, the following aspects are concluded as principles for normative work:  - UPF event exposure service is enhanced to allow NF consumer to obtain one NATed UE public IP address and Port for a particular PDU Session from the SMF and UPF, based on the private UE IP address allocated by 5GC.  - The remote end IP address is mandatory input for the above to avoid exposing the full NAT mapping for a UE.  This paper proposes to enhance the function of UPF to support to obtain the public UE IP address and port number | | | | | | | | |
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| ***Summary of change:*** | | In section 5.8.2.17, adding the description of UPF event exposure that supporting to get UE IP address and port number. | | | | | | | | |
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| ***Consequences if not approved:*** | | If NAT deployed in network, there exists the mapping table between internal private UE IP address (used in 5GC internally) and public UE IP address used in application server. | | | | | | | | |
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| ***Clauses affected:*** | | 5.8.2.17 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | |  | | |
| ***affected:*** | |  | **X** | Test specifications | | | |  | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Rev4:  Remove duplicated description and add reference to 23.502 and 23.288.  Remove the Editor’s NOTE: Whether port number of the remote end is needed is FFS | | | | | | | | |

\* \* \* Start of Change 1 \* \* \*

#### 5.8.2.17 Data exposure via Service Based interface

The UPF may expose information by means of UPF Event Exposure service as described in TS 23.502 [3] clause 5.2.26.2, via a service-based interface directly. The NF consumers, which may receive UPF event notifications, are AF/NEF, TSNAF/TSCTSF and NWDAF/DCCF/MFAF.

When the UPF supports the data exposure via the service based interface, it may register its NF profile to the NRF including the UPF Event Exposure services and the related Event ID(s).

For data collection from UPF (see clause 4.15.4.5 of TS 23.502 [3]), NF consumers can do the subscription to the UPF either directly or indirectly via SMF. An NF consumer may subscribe to the UPF Event Exposure service directly only for data collected for "any UE", e.g. to collect user data usage information for NWDAF NF Load analytics (see clause 6.5 of TS 23.288 [86]) and if the subscription is not including any of the following parameters: AoI, BSSID/SSID and DNAI. Otherwise the NF consumer shall subscribe indirectly via SMF.

To alleviate the load of UPF due to frequent event notification for data collection related events, the event subscription may include Reporting suggestion information. The Reporting suggestion information includes Report urgency and Reporting window information. Reporting urgency information represents whether this event report can be delay tolerant, i.e. the event report can be delayed. If the Reporting urgency information indicates "delay tolerant", the Reporting window is also provided, which defines the last valid reporting time, and UPF shall report the event before that time. If the Reporting suggestion information allows this, the UPF can concatenate several event reports (of the same event) to the same notification endpoint into one notification message.

The UPF may also expose UE information by means of the Nupf\_GetUEPrivateIPaddrAndIdentifiers service as described in TS 23.502 [3] clause 5.2.26.3. An UPF which is deployed with NAPT (Network Address Port Translation) functionality may support to provide the 5GC UE IP address to NEF based on NEF request containing public IP address and port number using the Nupf\_GetUEPrivateIPaddrAndIdentifiers service as described in clause 4.15.10 of TS 23.502 [3] for AF specific UE ID retrieval.

The UPF event exposure service may allow NF consumer to obtain one NATed UE public IP address and Port for a particular PDU Session, based on the private UE IP address allocated by 5GC. An UPF which is deployed with NAT functionality may support to provide the public UE IP address and port number to consumer based on Nupf\_EventExposure\_Subscription request as defined in clause 5.2.6.36.3 of TS 23.502 [3].For information flow for getting public UE IP address and port number, see clause 6.2.8.2.4 of TS 23.288 [5].

\* \* \* End of Change \* \* \*