3GPP TSG-WG SA2 Meeting #165 S2-240xxxx

14 - 18 October, 2024, Hyderabad, India (revision of S2-2409660)

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **23.502** | **CR** | **5004** | **rev** | **1** | **Current version:** | **19.1.0** |  |
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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:*** | Correction on subscription to UPF event exposure service via SMF during UPF relocation | | | | | | | | | |
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| ***Source to WG:*** | China Mobile | | | | | | | | | |
| ***Source to TSG:*** | SA2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | UPEAS\_ph2 | | | | |  | ***Date:*** | | | 2024-09-25 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***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:*** | | During UPF relocation procedure, whether the UPF event consumers should subscribe the new UPF data to new UPF or whether the old UPF sends the data that has been collected but not sent to the consumer yet is based on the relocation reporting indication from consumer is FFS.  **Whether new subscription or not:**  If the UPF event consumer indicates the certain UPF id in subscription request or trigger direct subscription to certain UPF that UPF id indicates, after UPF relocation, the UPF event consumer may not trigger new subscription request to new UPF.  If the UPF event consumer indicates the certain DNAI in subscription request, and after UPF relocation the DNAI is changes, for example relocates from one DNAI to another DNAI, the UPF event consumer doesn’t not trigger new subscription request to new UPF in new DNAI.  **Whether the old UPF sends the data that has been collected but not sent to the consumer:**  If the UPF relocation performs, the collected data in old UPF doesn’t have any information for the UPF event consumer. For example, if the old UPF has the higher congestion level, but in the new UPF is not, so the old information of UPF may cause the wrong guidance to consumer and may not have any benefits. | | | | | | | | |
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| ***Summary of change:*** | | Set the UPF event consumers to subscribe the new UPF as optional, and add clarification about why not subscribe any more.  Remove the ENs, and the collected data in old UPF doesn’t need to be sent to consumer any more. | | | | | | | | |
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| ***Consequences if not approved:*** | | Whether the UPF event consumers should subscribe the new UPF data to new UPF or whether the old UPF sends the data that has been collected but not sent to the consumer yet is based on the relocation reporting indication from consumer is FFS. | | | | | | | | |
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| ***Clauses affected:*** | | 4.15.4.5.6, 4.15.4.5.7 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

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

##### 4.15.4.5.6 Information flow for subscription to UPF event exposure service via SMF during UPF relocation

Figure 4.15.4.5.6-1: Subscription to UPF event exposure service via SMF during UPF relocation

This information flow is used in the scenario of UPF relocation, e.g. the source UPF is I-UPF which is relocated in SSC mode 1, or the source UPF is PSA UPF which is relocated in SSC mode 3, or the source UPF is local PSA UPF which is relocated due to UE mobility.

1. The UPF event consumer (e.g. NWDAF) subscribes to the UPF data via SMF by invoking Nsmf\_EventExposure\_Subscribe service operation, and the Target of Event Reporting indicates a specific UE. The consumer may include a relocation reporting indication, which indicates how to handle the data collected by the source UPF when UPF relocation occurs, e.g. discard the collected data or send the collected data to the consumer.

2. The SMF selects the source UPF and subscribes to the source UPF by invoking Nupf\_EventExposure\_Subscribe service operation.

3. The source UPF sends the locally collected UPF data by invoking Nupf\_EventExposure\_Notify service operation to the UPF event consumer.

4. The SMF determines that the UPF needs to be relocated.

5. The SMF unsubscribes to the source UPF by invoking Nupf\_EventExposure\_Unsubscribe service operation. The SMF may include the relocation reporting indication from the UPF event consumer.

6-7. (Optional) To continue the subscription of the UPF event consumer, the SMF may select a target UPF, and re-subscribe to the target UPF based on the subscription from UPF event consumer in step 1. The target UPF will send the locally collected UPF data by invoking Nupf\_EventExposure\_Notify service operation to the UPF event consumer.

If the UPF event consumer indicates the certain UPF ID in subscription request, after UPF relocation, the SMF doesn’t not trigger new subscription request to new UPF.

If the UPF event consumer indicates the certain DNAI in subscription request, and after UPF relocation the DNAI is changes, for example relocates from one DNAI to another DNAI, the SMF doesn’t not trigger new subscription request to new UPF in new DNAI.

\* \* \* Start of Change 2 \* \* \*

##### 4.15.4.5.7 Information flow for subscription directly to UPF event exposure service during UPF relocation



Figure 4.15.4.5.7-1: Subscription directly to UPF event exposure service during UPF relocation

1. (For the case when the UPF event consumer is NWDAF) The analytics consumer (e.g. AF/NEF) sends a request to the NWDAF for analytics, and indicates a single UE (e.g. UE IP address) in the Target of Analytics Reporting. Analytics Filter Information optionally contains DNN, S-NSSAI, Area of Interest, Application server IP address/FQDN, Application ID, DNAI, etc.

2. The UPF event consumer triggers the UPF discovery to NRF by Nnrf\_NFDiscovery\_Request providing the UE IP address, and optional DNN, S-NSSAI, DNAI, etc.

3. The NRF provides Nnrf\_NFDiscovery\_Response that may refer to an UPF.

4. If the subscribed UPF events allows to directly subscribe to UPF (as defined in clause 5.8.2.17 of TS 23.501 [2]), the UPF event consumer (e.g. NWDAF) triggers the Nupf\_EventExposure\_Subscribe to the discovered UPF, and the Target of Event Reporting contains a single UE. The consumer may include a relocation reporting indication, which indicates how to handle the data collected by the source UPF when UPF changes. The consumer may include an indication to receive subscription termination indication.

5. The UPF invokes Nupf\_EventExposure\_Notify service operation directly to the UPF event consumer (e.g. NWDAF).

6. When the PFCP session corresponding to the UE is released, e.g. due to UPF relocation, the UPF determines that the subscription to the UPF event has been terminated.

7. If step 6 took place, the UPF sends the notification to the UPF event consumer by invoking Nupf\_EventExposure\_Notify service operation, which includes a subscription termination indication to indicate that the subscription to the UPF event has been terminated, and may also include a cause code indicating the reason for subscription termination, e.g. PFCP session release.

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