**TSG-WG SA2 Meeting #163 S2-2406728**

**27 - 31 May 2024, Jeju, Korea (revision of S2-240xxxx)**

**Source: ZTE, Vodafone**

**Title: WID on UPF enhancement for Exposure and SBA Phase 2**

**Document for: Approval**

**Agenda Item: 30.1**

**Work Item / Release: UPEAS\_Ph2 / Rel-19**

*Abstract of the contribution: This contribution proposes the WID based on conclusion of TR 23.700-63(FS\_UPEAS\_Ph2)*

3GPP™ Work Item Description

Information on Work Items can be found at <http://www.3gpp.org/Work-Items>   
See also the [3GPP Working Procedures](http://www.3gpp.org/specifications-groups/working-procedures), article 39 and the TSG Working Methods in [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm)

Title: UPF enhancement for Exposure And SBA Phase 2

Acronym: UPEAS\_Ph2

Unique identifier: xxxxxx

Potential target Release: Rel-19

# 1 Impacts

{For Normative work, identify the anticipated impacts. For a Study, identify the scope of the study}

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Affects: | UICC apps | ME | AN | CN | Others (specify) |
| Yes |  |  |  | X |  |
| No | X | X | X |  | X |
| Don't know |  |  |  |  |  |

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

### This work item is a …

{Tick one box. "**Feature** / **Building Block** / Work Task" form a hierarchical structure. E.g. no Building Block can be proposed without a corresponding parent Feature. The full structure of all existing Work Items is shown in the 3GPP Work Plan in <ftp://ftp.3gpp.org/Information/WORK_PLAN>}

|  |  |
| --- | --- |
| X | Feature |
|  | Building Block |
|  | Work Task |
|  | Study Item |

## 2.2 Parent Work Item

|  |  |  |  |
| --- | --- | --- | --- |
| Parent Work / Study Items | | | |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
|  |  |  | N/A |

### 2.3 Other related Work Items and dependencies

{List here other Work Items which relate to the proposed one, such as a Work Item in an earlier Release if further enhancing the feature from the previous Release)}

|  |  |  |
| --- | --- | --- |
| Other related Work /Study Items (if any) | | |
| Unique ID | Title | Nature of relationship |
| 1020003 | Study on UPF enhancement for Exposure And SBA Ph2 | *Corresponding study of UPF enhancement for Exposure And SBA Ph2 (SA2)* |

# 3 Justification

This work item aims at specifying system enhancements on UPF event exposure as concluded within TR 23.700-63.

# 4 Objective

The objective is to specify the following enhancements to 5GS as per conclusions reached within TR 23.700-63 for the following aspects:

For key issue #1

- Adding the following UPF functionalities in the N4 capabilities and UPF NF profile stored in NRF:

- The functionality of NAT information exposure;

- Packet Inspection functionality (to differentiate between IP or MAC filter based packet detection, and the packet detection based on other means, e.g. layer 7 DPI)

- Define operator configurable parameter in the N4 capabilities and UPF NF profile which can be used for non-standard or partially supported features and configured by operator to extend the baseline UPF capabilities.

- Define a subscription information in UDM/UDR, that can be used for UPF discovery and selection, indicating functionalities that are required and/or preferred for the PDU session.

For key issue #2

- Enhance UPF exposure service 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. Whether to define a new SMF service needs be determined.

- The remote end IP address is mandatory input for the above to avoid exposing the full NAT mapping for a UE;

- Update the specifications to allow the NEF/NWDAF to use IP address to discover the PSA UPF and subscribe directly to PSA UPF for data collection.

NOTE 1: IP address cannot be used to discover the local PSA UPF.

NOTE 2: Restriction of subscribing particular Event ID(s) (like QoS Monitoring Event) indirectly via SMF remains as defined in Rel-18.

- For periodic reporting type of the UPF event exposure service with direct notifications, when the UPF changes, the source UPF may report to the consumer any data collected between the time instance of the last notification to the consumer and the time instance of the UPF change.

- Determine whether when the PDU session is released, the SMF should be enhanced to send notification to the consumer, including the subscription termination indication.

For key issue #3, the objective is to incorporate the principles from Solution#1 in TR 23.700-63, as follows:

- Enhance Nnef\_TrafficInfluence service to accommodate requests from AFs for handling of Headers/Tags according to Table 6.1.2.1-1 from TR 23.700-63.

- Enhance the procedure in clause 4.3.6.2 of TS 23.502 to provision the handling rules to the SMF/UPF

- A new data subset in the Application data set is provisioned in the UDR.

- NEF, PCF, SMF and UPF are enhanced to support the handling of Headers/Tags

- UPF profile in NRF is enhanced with the new UPF capability to support the corresponding UPF selection and discovery

- Enhancing N4 PFCP rules to instruct reporting of headers/tags handling upon AF request according to option 2 in TR 23.700-63. The impacts on N4 need to be determined.

## TU estimates and dependencies

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Work Task ID | TU Estimate  (Study) | TU Estimate  (Normative) | RAN Dependency  (Yes/No/Maybe) | Inter Work Tasks Dependency |
| KI#1 |  | 0.75 | No |  |
| KI#2 |  | 1 | No |  |
| KI#3 |  | 0.75 | No |  |
|  |  |  |  |  |

Total TU estimates for the normative phase: 2.5

Total TU estimates: 2.5

# 5 Expected Output and Time scale

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| New specifications {One line per specification. Create/delete lines as needed} | | | | | |
| Type | TS/TR number | Title | For info  at TSG# | For approval at TSG# | Rapporteur |
|  |  |  |  |  |  |

{Note 1: Only TSs may contain normative provisions. Study Items shall create or impact only TRs.  
"Internal TR" is intended for 3GPP internal use only whereas "External TR" may be transposed by OPs.}

{Note 2: The first listed Rapporteur is the specification primary Rapporteur. Secondary Rapporteur(s) are possible for particular aspect(s) of the TS/TR. In this case, their responsibility has to be provided as "Remarks".}

|  |  |  |  |
| --- | --- | --- | --- |
| Impacted existing TS/TR {One line per specification. Create/delete lines as needed} | | | |
| TS/TR No. | Description of change | Target completion plenary# | Remarks |
| 23.501 | Architectural enhancements to support the stated objectives | SA#106(Dec 2024) |  |
| 23.502 | Procedure enhancements to support the stated objectives | SA#106(Dec 2024) |  |
| 23.503 | Procedure enhancements to support the stated objectives | SA#106(Dec 2024) |  |

# 6 Work item Rapporteur(s)

TBC

# 7 Work item leadership

SA2

# 8 Aspects that involve other WGs

Security aspects, if any, will be addressed by SA3.

Charging aspects, will be addressed by SA5.

# 9 Supporting Individual Members

|  |
| --- |
| Supporting IM name |
| AT&T ? |
| China Mobile ? |
| Deutsche Telekom? |
| DISH Network? |
| Ericsson |
| ETRI |
| MATRIXX Software? |
| Nokia |
| SK Telecom? |
| Samsung? |
| Rakuten Mobile? |
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