**3GPP TSG SA WG4 #113e *S4-210501***

**E-meeting, 6th – 14th April 2021**

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| *CR-Form-v12.0* | | | | | | | | |
| **Pseudo CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **26.804** | **CR** | **<CR#>** | **rev** | **1** | **Current version:** | **0.1.1** |  |
|  | | | | | | | | |
| *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 | **X** | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | [FS\_5GMS-EXT] Update on the Traffic Identification for 5-tuple identified streaming | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei Technologies Co.,Ltd. | | | | | | | | | |
| ***Source to TSG:*** | SA4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | FS\_5GMS-EXT | | | | |  | ***Date:*** | | | 2021-3-31 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Current “Traffic Identification” work for the 5-tuple streaming identification is missing. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Adds more current detailed traffic identification work on this topic in 3GPP about the 5-tuple streaming identification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Key topic not addressed | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |
| ***56*** | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**===== 1st CHANGE =====**

## 5.3 Traffic Identification

### 5.3.1 Description

Besides the PFD related traffic identification method which identifies the 3-tuple and/or the domain name, the application detection filters required in the UPF can also be configured in the SMF and provided to UPF, which can be used to detect a specific 5-tuples streaming within one specific application, e.g. subtitles, video, audio and bullet screen comments. The 5GMS AF is able to provision, update and remove a dynamic PCC rule which contains flow description parameters for traffic handling and application/flow detection in the UPF.

The application detection filter can be configured in the SMF and the SMF shall provide it in the service data flow filter to the UPF, as well as flow description parameters for traffic handling in the UPF received from the dynamic PCC rule.

The flow description defines a packet filter for an IP flow with the following information as defined in the clause 5.3.8 of TS 29.214 [XX]:

* Source/destination IP address or IPv6 prefix.
* Source / destination port number.
* Protocol ID of the protocol above IP/Next header type.
* Packet Filter direction.

As shown in the figure below, the 5GMSd AF in the extrenal DN can send a request using Nnef\_AFsessionWithQos API to provision, update or remove a request to reserve resources for a specific application/flow with specific flow descriptions. After the AF request authorization, NEF interacts with the PCF, providing the flow description together with the QoS reference, the optional other parameters like Alternative Service Requirements, period of time or traffic volume, etc.

The PCF determines to derive the required QoS parameters based on the information provided by NEF/AF if this request is atuhorized. After AF Session With Required QoS Creatation Procedure, a transaction id is allocated by NEF to identify this AF Session. Then 5GMSd AF can invoke the Nnef\_AFSessionWithQoS\_Update API with this transaction ID to update the flow descrption.

Alternatively, the 5GMSd AF in the trusted/internal DN can directly send a request using Npcf\_PolicyControl API to provision, update and remove a request to reserve resources for a specific application/flow with specific flow descriptions.

Then the PCF initiates the PDU Session modification procedure to provide the updated PCC rule to the SMF and SMF will also update the PDRs in UPF for the application/traffic identification and policy handling.

However, when a first TCP connection is closed and a second one is opened, then the 5-Tuple in the Flow Description should be changed. This may be caused from factors like load balancing, multiple concurrent requests for different types of resources, shared TCP pool, etc. The 5GMSd AF can invoke the NEF/PCF related APIs with new flow description to update the PDRs installed in UPF to follow the application layer 5-tuples change for application/flow identification.



Figure 1 Traditional application/flow identification method

**===== 2nd CHANGE =====**

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] Akamai Blog, "A QUICk Introduction to HTTP/3", April 2020, <https://developer.akamai.com/blog/2020/04/14/quick-introduction-http3>

[3] Fielding, R., Nottingham, M., and J. Reschke, "HTTP/1.1", Work in Progress, Internet-Draft, draft-ietf-httpbis-messaging-13, 14 December 2020, http://www.ietf.org/internet-drafts/draft-ietf-httpbis-messaging-13.txt

[4] Belshe, M., Peon, R., and M. Thomson, Ed., "Hypertext Transfer Protocol Version 2 (HTTP/2)", RFC 7540, May 2015, https://www.rfc-editor.org/info/rfc7540

[5] draft-ietf-quic-http-33, "Hypertext Transfer Protocol Version 3 (HTTP/3)", 15 December 2020

[6] D. Bhat, A. Rizk, and M. Zink, "Not so QUIC: A Performance Study of DASH over QUIC," NOSSDAV'17: Proceedings of the 27th Workshop on Network and Operating Systems Support for Digital Audio and VideoJune 2017 Pages 13–18 https://doi.org/10.1145/3083165.3083175

[7] AWS, "Achieving Great Video Quality Without Breaking the Bank", Streaming Media June 2019, [[https://pages.awscloud.com/rs/112-TZM-766/images/GEN elemental-wp-achieving-great-video-quality-without-breaking-the-bank.pdf](https://pages.awscloud.com/rs/112-TZM-766/images/GEN%20elemental-wp-achieving-great-video-quality-without-breaking-the-bank.pdf)](https://pages.awscloud.com/rs/112-TZM-766/images/GEN%20elemental-wp-achieving-great-video-quality-without-breaking-the-bank.pdf)

[8] Netflix, "Optimized shot-based encodes: Now Streaming!", Netflix Blog, May 2018, https://netflixtechblog.com/optimized-shot-based-encodes-now-streaming-4b9464204830

[9] DASH-IF/DVB Report on Low-Latency Live Service with DASH, July 2017, available here: <https://dash-industry-forum.github.io/docs/Report%20on%20Low%20Latency%20DASH.pdf>

[10] DASH-IF IOP Guidelines v5, Low-latency Modes for DASH, available here: <https://dash-industry-forum.github.io/docs/CR-Low-Latency-Live-r8.pdf>

[11] ISO/IEC 23009-1, "Information technology — Dynamic adaptive streaming over HTTP (DASH) — Part 1: Media presentation description and segment formats"

[12] IETF RFC 8673, "HTTP Random Access and Live Content".

[13] 3GPP TR 26.939: "Guidelines on the Framework for Live Uplink Streaming (FLUS)".

[14] 3GPP TS 26.238: "Uplink Streaming".

[15] 3GPP TS 26.501

[16] 3GPP TS 26.512

[17] ISO/IEC 13818-1:2019 Information technology — Generic coding of moving pictures and associated audio information — Part 1: Systems

[18] SCTE STANDARD SCTE 35 2020 Digital Program Insertion Cueing Message <https://www.scte.org/pdf-redirect/?url=https://scte-cms-resource-storage.s3.amazonaws.com/SCTE-35-2020_notice-1609861286512.pdf>

[19] ISO/IEC 23000-19:2020 Information technology — Multimedia application format (MPEG-A) —Part 19: Common media application format (CMAF) for segmented media

[20] ISO/IEC 23009-1:2019/DAMD1 Information technology — Dynamic adaptive streaming over HTTP (DASH) — Part 1: Media presentation description and segment formats — Amendment 1: CMAF support, events processing model and other extensions [21] VSF TR-06-01, RIST Simple Profile, <https://www.videoservicesforum.org/download/technical_recommendations/VSF_TR-06-1_2018_10_17.pdf>

[22] VSF TR-06-02, RIST Main Profile, <https://www.videoservicesforum.org/download/technical_recommendations/VSF_TR-06-2_2020_03_24.pdf>

[23] 3GPP TS 23.501, System architecture for the 5G System (5GS)

[24] 3GPP TS 23.502, Procedures for the 5G System (5GS)

[25] 3GPP TS 29.517, 5G System; Application Function Event Exposure Service; Stage 3

[XX] 3GPP TS 29.214, Policy and Charging Control over Rx reference point; Stage 3