**3GPP TSG-SA4 Meeting #120-e *S4-221004***

**Online, 17th – 26th Aug 2022**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
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|  | **26.501** | **CR** | **0040** | **rev** | **-** | **Current version:** | **17.2.0** |  |
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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:***  | CR on subscription filters for 5GMS event  |
|  |  |
| ***Source to WG:*** | S4 |
| ***Source to TSG:*** | Huawei, HiSilicon |
|  |  |
| ***Work item code:*** | EVEX |  | ***Date:*** | 8 August 2022 |
|  |  |  |  |  |
| ***Category:*** | F |  | ***Release:*** | 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 canbe 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:*** | Based on offline discussion with CT3 colleagues, when the event consumer subscribes the 5GMS events to 5GMS AF, event filters may also be needed, e.g. UE IDs, app ids, DNN/S-NSSAI, in order to subsribe the 5GMS event for specific UEs, applications at a specific location area. Therefore, this contribution intends to add subscription filters in the stage 2 descriptions for the 5GMS events. |
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| ***Summary of change:*** |

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| Add event filters in the stage 2 Subscribe Request descriptions |
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| ***Consequences if not approved:*** | The event consumer cannot subscribe to the events with specific filters. |
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| ***Clauses affected:*** | Annex D |
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|  | **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:*** |  |

\* \* \* \* First change \* \* \* \*

Annex D (informative)
Use Cases for 5GMS event exposure

# D.1 Introduction

This annex describes Use Cases related to the exposure of events relating to 5G Media Streaming by the Data Collection AF instantiated in the 5GMS AF.

# D.2 Controlling Event exposure

### D.2.1 Data exposure restrictions

The 5GMS Application Provider wishes to limit the level of access that different classes of Event consumer subscribers have to UE data reported to and subsequently exposed by the Data Collection AF. These restrictions are expressed in the form of data processing instructions that it provisions in the Data Collection AF instantiated in the 5GMS AF along the dimensions described below. Each set of data processing instructions applies to a particular Event ID and Event consumer type:

* Time-based restriction determines the granularity of access along the time axis, ranging from the finest granularity which permits Event consumer access to individual events as they occur, to the coarsest granularity which combines all event data into a single aggregated value.
* User-based restriction controls access based on end-user grouping. Such restriction ranges from the fine granularity which permits Event consumer access to individual events related to individual end users, through medium granularity which aggregates collected event data at the level of user groups, to coarse granularity which bundles the data across all users.
* Location-based restriction defines access based on the geographical location of the data collection client at which the UE data was collected. Fine-grained control allows the Event consumer to access individual events, irrespective of the location. Medium-grained control aggregates collected event data for a defined geographical area. Coarse-grained control aggregates all event data to produce a single aggregated value for all locations.

For example, the 5GMS Application Provider decides that its own Event Consumer AF is granted the finest-grained access to event data by all of the above dimensions. On the other hand, according to the “silver” business agreement it has established with the Mobile Network Operator, the NWDAF is granted medium-grained access to event data, while based under a “bronze” business agreement it has established with another Application Service Provider, the Event Consumer AF of that third-party ASP is granted only coarse-grained access to event data.

### D.2.2 Event subscription filters

A certain Event consumer is only interested in receiving Events for a specific user or group(s) of users, or a specific application or UEs at a certain location. It expresses these preferences in the form of filters when subscribing to the Event at the Data Collection AF.

# D.3 QoE metrics for downlink media streaming

The Use Case for exposing QoE metrics for downlink media streaming as an event is in clause 6.4 of TS 23.288 [23].

# D.4 Consumption of downlink media streaming

The 5GMSd Client collates feedback reports on currently consumed downlink media streaming content according to a provisioned Consumption Reporting Configuration it obtains from the Service Access Information for its Provisioning Session. The consumption reports include the media player entry point URL, the start time, duration and UE locations. The Media Session Handler sends the consumption reports to 5GMSd AF for subsequent event exposure to subscibed Event consumers.

The 5GMSd Application Provider subscribes to downlink media streaming consumption events from the Data Collection AF, specifying an appropriate application filter in its subscription request. To drill down into downlink media streaming consumption at a finer geographical granularity, a location filter is also specified as part of the subscription. To analyse use of a new application feature in isolation as part of a beta testing programme, a UE group filter corresponding to the test population is also specified. With the exposed event, the 5GMSd Applcation Provider performs data analytics to determine, for example, which media content is most popular in the 5GMS System, which media content is most popular at a specific location, or which portions of the media content are consumed. This helps the 5GMSd Application Provider to optimise distribution of the most popular media content in the 5GMS System.

Alternatively, the NWDAF subscribes to this event for data analytics, exposing the results to the 5GMSd Application Provider.

# D.5 Invocation of dynamic policies

The Media Session Handler invokes the Dynamic Policy API on the 5GMS AF via M5 to request a specific policy and charging treatment to be applied to a particular media streaming application data flow. As a result, the 5GMS AF invokes appropriate service operations on Network Functions in the 5G Core, e.g. Npcf\_Policy‌AuthorizationorNnef\_AFSession‌With‌QoS, to effect the requested network QoS policy change. The 5GMS AF obtains status information (policy accepted, rejected, etc) about these service operation invocations, and policy enforcement information , such as the enforcement method selected and the enforcement bit rate. After recording the invocation of the dynamic policies, the 5GMS AF reports these records to its subordinate Data Collection for exposure to subscribed Event consumers.

The event for invocation of dynamic polices may include the timestamp when the Media Session Handler invokes the dynamic function in 5GMS AF, the requested policy template identifier, the status information, etc.

The Event Consumer AF within the 5GMS Application Provider or the NWDAF subscribes to events of this type from the Data Collection AF, specifying the relevant application filter and any relevant location and/or user filters in its subscription request. Using the details about the invocations for dynamic policies, the 5GMS Application Provider or the NWDAF analyses the network quality provided by the 5G System and the dynamic network requirements for this media streaming service.

Alternatively, the NWDAF subscribes to the Event, specifying any relevant filters, and exposes analytics results to the 5GMS Application Provider, enabling the 5GMS Application Provider to optimise the media streaming service, e.g. by provisioning more appropriate policy templates or by negotiating more suitable Service Level Agreement (SLA) with the MNO.

# D.6 Invocation of AF-based Network Assistance

The Network Assistance feature enables a UE to receive a bit rate recommendation from a 5GMS AF providing the Network Assistance server function.

The 5GMS AF uses the Npcf\_PolicyAuthorization notification or Nnef\_MonitoringEvent procedure to receive notifications of network QoS changes, e.g. estimation of throughput, recommendation of a bit rate. The 5GMS AF receives these policy change notifications asynchronously.

The 5GMS AF reports the invocation of AF-based network assistance to its subordinate Data Collection AF, including information about requested QoS and recommended QoS. The Data Collection AF subsequently exposes this UE data to the Event Consumer AF within the 5GMS Application Provider. Using this information, the 5GMS Application Provider is able to optimise the use of the 5GMS System, e.g. by performing dynamic congestion window adjustment.

The NWDAF subscribes to events of this type at the Data Collection AF, specifying the relevant application filter and any relevant location and/or user filters. Based on the requested QoS and recommended QoS in the exposed events, the NWDAF analyses whether the current network deployment or status can support the currently provisioned media streaming services, and exposes these results to the OAM for better network optimization.

# D.7 Media streaming access activity

## D.7.1 Downlink media streaming access activity

In downlink 5G Media Streaming, the 5GMSd AS acts as a CDN (e.g., edge server) in the hosting and delivery of streaming media content that it has ingested. The corresponding media streaming access activity (i.e., CDN access logs) available at the 5GMSd AS are reported to the Data Collection AF instantiated in the 5GMSd AF for subsequent event exposure to the Event Consumer AF in the 5GMSd Application Provider.

The 5GMSd Application Provider uses information in the exposed events (e.g. the number of unique users and the access history for different media content items) to improve its CDN content distribution. It specifies the relevant application filter and any relevant location and/or user filters in its subscription request to the Data Collection AF.

Alternatively, the NWDAF subscribes to events of this type, specifying the relevant application filter and any relevant location and/or user filters, and analyses the total volume of data delivered by the 5GMSd AS or the average response time for downlink media requests in order to optimise the 5GMS System deployment or to demonstrate to the 5GMSd Application Provider that the SLA for downlink media streaming has been satisfied.

\* \* \* \* End of changes \* \* \* \*