**Agenda item:** 9.7

**Source:** Huawei Technologies Co.,Ltd.

**Title:** Discussion on 5GMS AF context definition

**Document for** Discussion andAgreement

# Introduction

This document proposes to discuss the 5GMS AF context definition. Firstly, we hope to depict several scenarios where the 5GMS AF may be changed as a result. According to the sub-functionalities of 5GMS AF, an analysis about the possible 5GMS AF context is presented. Finally, the definition of 5GMS AF context is defined.

# Change of 5GMS(d) AF during the 5GMS Session

As we all know, in the 5GMS architecture, the original 5GMS AF can be found by the 5GMS Client by the DNS Query Message, which means the authorization DNS server may return the target IP address according the location of UE which can be reflected by the source IP address. When 5GMS AFs are geographically deployed, especially for Edge Computing scenario, UE in different places with different source IP address assigned by the 5GC will receive a different 5GMS AF instance IP address within the DNS Response Message.

*NOTE: For simplicity, we take downlink media streaming service as an example and the 5GMS AF/AS represent the 5GMS(d) AF/AS.*

# Possible context in the 5GMS AF instances

For simplicity, the context in the 5GMS AF can be analyzed for different sub-functionalities of 5GMS AF.

1. Network Assistance:

As defined in Clause 5.9.2 of TS 26.501 [1], 5GMS AF may use the *Npcf\_PolicyAuthorization* notification or Nnef Monitoring Event procedure to receive QoS changes. The 5GMS AF receives these policy change notifications asynchronously. Then the 5GMS AF may notify the 5GMS client about the QoS change.

So when the 5GMS AF change happens, the old 5GMS AF still receive the notification, but the UE now have the new 5GMS AF. The old 5GMS AF need to notify the new 5GMS AF about the re-subscription of QoS changes together with the 5GMS Client address. So the 5GMS AF context can be set according to the *NetworkAssistanceSession* resource as defined in Table 11.6.3.1-1 [2] and the required input parameters of Npcf\_PolicyAuthorization\_Subscribe service operation as defined in Clause 5.2.5.3.6 [3].

1. Dynamic policy:

As defined in Clause 5.7.4 of TS 26.501 [1], the MSH may send status query about the dynamic policy invocation. The response contains status information (policy accepted, rejected, etc.) and information on policy enforcement such as the enforcement method and enforcement bit rate.

When the 5GMS AF changes, the new 5GMS AF needs the status information and also the information on policy enforcement in case the MSH sends the status query about the dynamic policy invocation.

Based on the definition of Dynamic Policy resource in Clause 11.5.3.1 of TS 26.512, we can define the 5GMS AF context which need to be transferred in case of a 5GMS AF change.

Table 11.5.3.1-1: Definition of Dynamic Policy resource [2]

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Property name | Data type | Cardinality | Usage | Description |
| *dynamicPolicyId* | ResourceId | 1..1 | RO | Unique identifier for this Dynamic Policy. |
| *policyTemplateId* | ResourceId | 1..1 | C: RW R: RO U: RW | Identifies the Policy Template which should be applied to the application flow(s). |
| *serviceDataFlowDescriptions* | Array(ServiceDataFlowDescription) | 1..1 | C: RW R: RO U: RW | Describes the service data flows managed by this Dynamic Policy. |
| *provisioningSessionId* | ResourceId | 1..1 | C: RW R: RO U: RW | Uniquely identifies Provisioning Session, which is linked to the Application Service Provider. |
| *qosSpecification* | M5QoSSpecification | 0..1 | C: RW R: RO U: RW | Describes the network Quality of Service properties of this Dynamic Policy. |
| *enforcementMethod* | String | 0..1 | C: RO R: RO U: RO | Description of the Policy Enforcement Method. The parameter is set by the 5GMSd AF. |
| *enforcementBitRate* | Integer | 0..1 | C: RO R: RO U: RO | Description of the enforcement bit rate. |

# Definition of 5GSM AF context

The 5GMS AF Context that need to be transferred or recovered in case of 5GMS AF changes can be shown as below.

|  |  |
| --- | --- |
| **5GMS AF Context Definition** | |
| Dynamic Policy | *dynamicPolicyID, status information, policyEnforcementMethod/BitRate*. |
| Network Assistance | *NA Session ID, MSH endpoint address, Event ID, target PCF event reporting* |

*NOTE: The target of PCF event reporting the subscription for an individual AF session: An UE IP address (IPv4 address or IPv6 prefix) optionally together with a (DNN, S-NSSAI) or with a UE ID (SUPI or GPSI) [3].*

According to TS 23.558 [4], during the EES relocation, the edge-specific context is the EEC context that stored in the EES. Hence, the edge-specific 5GMS AF context can be defined as below accordingly.

Table 1: Edge-specific 5GMS AF context

|  |  |  |
| --- | --- | --- |
| **Information element** | **Status** | **Description** |
| EEC ID | M | Unique identifier of the EEC. |
| EEC Context ID | M | Identifier assigned to the EEC Context |
| Source EES Endpoint | M | The endpoint address (e.g., URI, IP address) of the EES that provided EEC context ID. |
| UE Identifier | O | The identifier of the hosting UE (i.e., GPSI or identity token) |
| List of EDGE-1 subscriptions | O | List of subscriptions IDs for capability exposure to the EEC ID |
| UE location | O | Latest UE location of the UE hosting the EEC which was available at the EES. |
| List of AC Profiles | O | Information about the ACs as described in Table 8.2.2-1 of TS 23.558 [X]. |
| List of Service Session Contexts | O | List of associated Service Session Context IEs. Each Service Session Context includes information maintained by the EES for the services (involving UE related resources) received from an EAS registered to the EES. |
| > Service Session Context | M | Service Session Context is described in Table 2. |

Table 8.2.8-2: Service Session Context

|  |  |  |
| --- | --- | --- |
| **Information element** | **Status** | **Description** |
| EAS ID | M | Identifier of the EAS providing the application services |
| EAS Endpoint | M | Endpoint information of the EAS. |
| AC ID | O | Identifier of the AC ID for which the service session is provided, if determined. |

Editor’s Note: whether to transfer the context among different 5GMS AF instances or recover context in the target 5GMS AF is for further study.

# Proposal

It is proposed to take the above into account and agree Clause 4 as the definition of 5GMS AF context in the “big” draft CR.

# Reference

[1]. 3GPP TS 26.501: "5G Media Streaming (5GMS); General description and architecture".

[2]. 3GPP TS 26.512: "5G Media Streaming (5GMS); Protocols".

[3]. 3GPP TS 23.502: "Procedures for the 5G System (5GS)".

[4]. 3GPP TS 23.558: "Architecture for enabling Edge Applications"