**3GPP TSG-SA WG4 Meeting #126 S4-231996**

**Chicago, 13–17 November 2023 revision of S4-231656**

Title: Discussion on session id scopes and Lifetimes

Source: Tencent Cloud

Agenda Item: (5GMS\_Pro\_Ph2)

Document for: Discussion and agreement

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# Introduction

During the previous MBS ad-hoc, several contributions provided new ideas on extending and fixing the session identifiers as well as extending the functionalities to new interfaces, such as M3.

This contribution tries to pose a general question about the scope and lifetime of the various 5G delivery systems. We believe without having a complete understanding of the session IDs and their scope, it is hard to design interfaces that are consistent and applicable to relevant use cases.

# Background

In R16/R17 the provisioning is identified with the provisioning session. All provisioning services are provisioning under that specific identifier through M1.

The service access information is also accessed through M5 using that provisioning session ID:

{apiRoot}/3gpp-m5/{apiVersion}/service-access-information/{provisioningSessionId}

Recently, the following has been proposed:

1. Use of globally unique external service identifier for provisioning
2. Use of globally unique media delivery session identifier for each media session.
3. Use of system-unique resource identifier for service access information (sessionId)

We need to define the scope and lifetime of each of the above parameters.

# Discussion

It seems the following can be deducted from the recent discussions. It should be discussed which of the following statements are true and to what extent.

1. The external service identifier (ESI) is globally unique and is assigned by the service provider. The lifetime of this ID is the lifetime of the service defined by the ASP.
2. The provisioning session id (PSI) is assigned by the AF, as the one-to-one correspondence to ESI. In R16/R17, it is used for discovery and reaching the services.
3. The AF may provision one or more services on the AS for a PSI, or wait for the first request by an MSH to provision these services. The AF may destroy a service on AS during the “quiet time” and start a new instance of the service on AS again. Therefore an AS service may need to have its own Service Session Identifier (SSI), which currently is not defined.
4. The application service provides multiple UEs and possibly multiple applications on a UE with a single ESI.
5. An application on a UE may request the MSH to start a session. Currently, we do not have a session ID for this purpose. The MSH needs to identify itself with a unique ID for application on the device. This is called media delivery ID (MDI) by previous contributions. We should decide whether MDI is static (same for application on UE) or dynamic, i.e. it gets assigned, and whether the uniqueness of it is a requirement or a recommendation.
6. Having a unique delivery session ID (DSI) is beneficial for reporting purposes among other benefits. An MDI can request a session, use it, end it, and start another session. Therefore there might be multiple DSI in a lifetime of MDI.
7. The AF receiving a request from an MSH with ESI, checks if the required services on AS are running, It may need to start a new AS (edge server), and/or run one or more new SSI on the AS.
8. The ASP can request to destroy a service. The AF needs to destroy the corresponding SSIs on AS and inform the MSH that such service is no longer available.

The following figure captures the general idea of the above statements. The vertical lines show the lifespan of each id. The arrows show the possible instantiation of each ID.



Figure 1: High-level arrangement for dynamic policies

The following questions are raised:

1. Is ESI unique for the service or unique for instance of a service? For instance, if a service is called *metube*, is the ESI created for metube, or for each instance of metube, e.g. metube-20231017, the metube service requested on 2023-10-17?
2. Why do we need to provision session ID if the ESI is unique?
	* Recommendation: Keep PSI for the purpose of backward compatibility services with R16/R17.
3. Is the Media Delivery ID (MDI) needed?
	* Recommendation: It seems MDI is used to identify the UE/Application instance during a provisioning session. ESI is adequate to request a session Id. Therefore, not required MDI for requesting the Delivery Session ID (DSI), but as used an identifer of the UE/App. The uniqueness of it is left to the application or ASP.
4. Does the UE needs to report MDI?
	* Recommendation: Probably it is recommended but not required. The MDI can identify the UE/Application. If the device/application is already identified with another parameter, do we need MDI, or should MDI be the same value?
5. Who should assign the delivery session id? MSH or AF?
	* Recommendation: AF by using ESI. The ESI shows the relationship between various DSI, i.e. one or more DSI belongs to an ESI session. The value of MDI to be provided to AF is that the AF can group the DSIs that belong to the same device/app.
6. Are the following statements correct?
	* {sessionId} = DSI
	* {afResourceId} = SSI
7. Which of the following IDs are needed in each entity, i.e. the entity be aware of the ID?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | External Service id(ESI) | ProvisioningSession id(PSI) | ServiceSession id(SSI) | Media Delivery ID (MDI) | Delivery Session ID (DSI) |
| ASP | **X** | X |  |  |  |
| AF | X | **X** | **X** | X | **X** |
| AS | X? |  | X |  |  |
| Application | X |  |  | **X**? |  |
| MSH | X? |  |  | X | X |
| MAF | X? |  |  |  | X |

 **X:** The entity that creates the id.

# Summary of the offline discussion

1. The external service identifier (ESI) is globally unique and is assigned by the service provider. The lifetime of this ID is the lifetime of the service defined by the ASP.
2. The Provisioning Session id (PSI) is assigned by the Media AF of a particular Media Delivery System.
	* The Provisioning Session identifier is different each time the Media Application Provider creates a Provisioning Session in the Media AF.
3. On a given Media Delivery System, at most one Provisioning Session is tagged with a given external service identifier.
	* The same external identifier may exist on Provisioning Sessions in different Media Delivery Systems, however. This allows the external service identifier to be used universally to launch media session handling on all Media Delivery Systems that have been provisioned with it.
4. The Media AF may configure one or more service features (e.g. content hosting or content publishing, with or without content preparation) on Media AS instances by invoking M3 configuration procedures immediately after they are provisioned in the Media AF, or it may wait for the first request from an Media Session Handler.
	* We are considering the concept of Media AS resources being in “standby’/“active” states.
5. The Media Application Provider provides multiple UEs and possibly multiple applications on a UE with a single external service identifier.
6. An application on a UE request the Media Session Handler to launch a new media delivery session (e.g. using a 3GPP Service URL handled by the Media Session Handler at reference point M6).The external service identifier is provided as an input parameter.
7. The Media Session Handler requests Service Access Information from the Media AF and provides the external service identifier.
8. The Media AF receiving a request for Service Access Information looks up the Provisioning Session for the requested external service identifier in order to determine which Service Access Information to return to the Media Session Handler.
9. The Media AF may also need to start service functions (e.g. content hosting or content publishing, with or without content preparation) required by the identified Provisioning Session by invoking M3 configuration procedures if the are not already running on a suitable Media AS instance.
10. The device receives Service Access Information and it may cache it for for the period of time indicated in the HTTP cache control headers. The same Service Access Information can be used for starting one or more media delivery sessions at any time during the lifetime of the Service Access Information.
11. The Media Application Provider can destroy a Provisioning Session in the Media AF at reference point M1, quoting the Provisioning Sesison identifier. As a consequence, the Media AF deconfigures the corresponding service features in all affected Media AS instances.
	* Once a Provisioning Session has been destroyed in the Media AF, the corresponding Service Access Information is not available anymore via reference point M5.
	* The Provisioning Session identifier is never reused by the Media AF.

# Proposal

We propose:

1. Including clause 4 of this document in the PD.