**3GPP TSG-SA4 Meeting #117-e**S4aI221282

**13 January 2022**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | 26.512 | **CR** |  | **rev** |  | **Current version:** |  |  |
|  | | | | | | | | |
| *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:*** | dCR on Edge Provisioning for Media Services | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Qualcomm Incoroporated | | | | | | | | | |
| ***Source to TSG:*** | S4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5GMS\_EDGE\_3 | | | | |  | ***Date:*** | | | 11th January 2022 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
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| ***Reason for change:*** | | This dCR introduces extensions to the 5GMS provisioning procedures to add support for provisioning edge resources for media services. | | | | | | | | |
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| ***Summary of change:*** | |  | | | | | | | | |
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| ***Consequences if not approved:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | |  | | | | | | | | |
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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:*** | |  | | | | | | | | |

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| First Change |

## 4.2 APIs relevant to Downlink Media Streaming

Table 4.2‑1 summarises the APIs used to provision and use the various downlink media streaming features specified in TS 26.501 [2].

Table 4.2‑1: Summary of APIs relevant to downlink media streaming features

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 5GMSd feature | Abstract | Relevant APIs | | |
| Interface | API name | Clause |
| Content protocols discovery | Used by the 5GMSd Application Provider to interrogate which content ingest protocols are supported by 5GMSd AS(s). | M1d | Content Protocols Discovery API | 7.5 |
| Content hosting | Content is ingested, hosted and distributed by the 5GMSd AS according to a Content Hosting Configuration associated with a Provisioning Session. | M1d | Provisioning Sessions API | 7.2 |
| Server Certificates Provisioning API | 7.3 |
| Content Preparation Templates Provisioning API | 7.4 |
| Content Hosting Provisioning API | 7.6 |
| M2d | HTTP-pull based content ingest protocol | 8.2 |
| DASH-IF push based content ingest protocol | 8.3 |
| M4d | DASH [4] or 3GP [37] | 10 |
| M5d | Service Access Information API | 11.2 |
| Metrics reporting | The 5GMSd Client uploads metrics reports to the 5GMSd AF according to a provisioned Metrics Reporting Configuration it obtains from the Service Access Information for its Provisioning Session. | M1d | Provisioning Sessions API | 7.2 |
| Metrics Reporting Provisioning API | 7.8 |
| M5d | Service Access Information API | 11.2 |
| Metrics Reporting API | 11.4 |
| Consumption reporting | The 5GMSd Client provides feedback reports on currently consumed content according to a provisioned Consumption Reporting Configuration it obtains from the Service Access Information for its Provisioning Session. | M1d | Provisioning Sessions API | 7.2 |
| Consumption Reporting Provisioning API | 7.7 |
| M5d | Service Access Information API | 11.2 |
| Consumption Reporting API | 11.3 |
| Dynamic Policy invocation | The 5GMSd Client activates different traffic treatment policies selected from a set of Policy Templates configured in its Provisioning Session. | M1d | Provisioning Sessions API | 7.2 |
| Policy Templates Provisioning API | 7.9 |
| M5d | Service Access Information API | 11.2 |
| Dynamic Policies API | 11.5 |
| Network Assistance | The 5GMSd Client requests bit rate recommendations and delivery boosts from the 5GMSd AF. | M5d | Service Access Information API | 11.2 |
| Network Assistance API | 11.6 |
| Edge  resources | Edge resources are provisioned for 5GMS media sessionsand the 5GMSd Client may activate them using its EEC. | M1d | Edge Resource Provisioning API | 7.10 |
| M5d | Service Access Information API | 11.2 |

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| 2nd Change |

## 7.10 Edge Resources API

### 7.10.1 General

The Edge Resources API is used by the Application Provider to provision the edge resource usage for media sessions associated with the parent Provisioning Session. The information serves as a template to select or instantiate the proper EAS that will serve the media session on the UE.

### 7.10.2 Resource structure

The Edge Resources API is accessible through the following URL base path:

{apiRoot}/3gpp-m1/v1.1/provisioning-sessions/{provisioningSessionId}/

Table 7.10.2-1 specifies the operations and the corresponding HTTP methods that are supported by the Edge Resources API. In each case, the Provisioning Session identifier shall be substituted into {provisioningSessionId} in the above URL template and the sub-resource path indicated by the second column of the table shall be appended to the resulting URL base path.

Table 7.10.2-1: Operations supported by the Edge Resources API

|  |  |  |  |
| --- | --- | --- | --- |
| Operation | Sub‑resource path | Allowed HTTP method(s) | Description |
| Configure Edge Resources | edge-resources-configuration | POST | Invoked on an Edge Resources collection to create a new Edge Resources Configuration.  If the operation succeeds, the URL of the newly created Edge Resources Configuration resource shall be returned in the Location header of the response. |
| Retrieve Edge Resources Configuration | edge-resources-configuration/‌{edgeResourcesConfigurationId} | GET | Used to retrieve a specific Edge Resources Configuration resource. |
| PUT, PATCH | Used to modify or replace an existing Edge Resources Configuration resource. |
| DELETE | Used to destroy an existing Edge Resources Configuration resource. |

### 7.10.3 Data model

The data model for the Edge Resources Configuration resource is specified in table 7.10.3-1:

Table 7.10.3-1: Definition of EdgeResourcesConfiguration resource

| Property name | Type | Cardinality | Description |
| --- | --- | --- | --- |
| *edgeResourcesConfigurationId* | ResourceId | 1..1 | An identifier for this Metrics Reporting Configuration that is unique within the scope of the enclosing Provisioning Session. |
| edgeManagementMode | EdgeManagmentType | 1..1 | Indicates if the management of the edge resource session is client-driven or application provider-driven. |
| activationTrigger | Activation‌Trigger‌Type | 0..1 | Condition to activate edge resources for this ProvisioningSession. |
| profile | EASProfile | 1..1 | The EAS profile used by the 5GMS AF or by the EEC to discover and select one or more EAS instances to serve media streaming sessions.  The format of the EASProfile is defined in table 8.1.5.2.3-1 of TS 29.558 [?]. |
| application‌Context‌Relocation‌Requirements | ACR‌Requirements‌Type | 0..1 | Application Context Relocation tolerance and requirements. |

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| 3rd Change |

#### 11.2.3.1 ServiceAccessInformation resource type

The data model for the ServiceAccessInformtion resource is specified in table 11.2.3.1-1 below. Different properties are present in the resource depending on the type of Provisioning Session from which the Service Access Information is derived (as indicated in the provisioningSessionType property) and this is specified in the Applicability column.

Table 11.2.3.1‑1: Definition of ServiceAccessInformation resource

| Property name | Type | Cardinality | Usage | Description | Applicability |
| --- | --- | --- | --- | --- | --- |
| provisioningSessionId | ResourceId | 1..1 | RO | Unique identification of the M1 Provisioning Session. | All types |
| provisioningSession‌Type | Provisioning‌Session‌Type | 1..1 | RO | The type of Provisioning Session. | All types. |
| StreamingAccess | Object | 0..1 | RO |  | downlink |
| mediaPlayerEntry | Url | 0..1 | RO | A document or a pointer to a document that defines a media presentation e.g. MPD for DASH content or URL to a video clip file. |
| ClientConsumptionReporting‌Configuration | Object | 0..1 | RO |  | downlink |
| reportingInterval | DurationSec | 0..1 | RO | The time interval, expressed in seconds, between consumption report messages being sent by the Media Session Handler. The value shall be greater than zero.  When this property is omitted, a single final report shall be sent immediately after the media streaming session has ended. |
| serverAddresses | Array(Url) | 1..1 | RO | A list of 5GMSd AF addresses (URLs) where the consumption reporting messages are sent by the Media Session Handler. See NOTE.  (Opaque URL, following the 5GMS URL format.) |
| locationReporting | Boolean | 1..1 | RO | Stipulates whether the Media Session Handler is required to provide location data to the 5GMSd AF in consumption reporting messages (in case of MNO or trusted third parties). |
| samplePercentage | Percentage | 1..1 | RO | The percentage of media streaming sessions that shall send consumption reports, expressed as a floating point value between 0.0 and 100.0. |
| DynamicPolicyInvocation‌Configuration | Object | 0..1 | RO |  | downlink,  uplink |
| serverAddresses | Array(Url) | 1..1 | RO | A list of 5GMSd AF addresses (URLs) which offer the APIs for dynamic policy invocation sent by the Media Session Handler. See NOTE.  (Opaque URL, following the 5GMS URL format.) |
| validPolicyTemplateIds | Array(ResourceId) | 1..1 | RO | A list of Policy Template identifiers which the 5GMS Client is authorized to use. |
| sdfMethods | Array(SdfMethod) | 1..1 | RO | A list of recommended service data flow description methods (descriptors), e.g. 5-Tuple, ToS, 2-Tuple, etc., which should be used by the Media Session Handler to describe the service data flows for the traffic to be policed. |
| externalReferences | Array(String) | 0..1 | RO | Additional identifier for this Policy Template, unique within the scope of its Provisioning Session, that can be cross-referenced with external metadata about the media streaming session.  Example: "HD\_Premium". |
| ClientMetricsReporting‌Configurations | Array(Object) | 0..1 | RO |  | downlink,  uplink |
| serverAddresses | Array(Url) | 1..1 | RO | A list of 5GMS AF addresses to which metrics reports shall be sent. See NOTE.  (Opaque URL, following the 5GMS URL format.) |
| dataNetworkName | Dnn | 0..1 | RO | The DNN which shall be used when sending metrics reports. If not specified, the name of the default DN shall be used. |
| reportingInterval | DurationSec | 0..1 | RO | The time interval, expressed in seconds, between metrics reports being sent by the Media Session Handler. The value shall be greater than zero.  When this property is omitted, a single final report shall be sent immediately after the media streaming session has ended. |
| samplePercentage | Percentage | 1..1 | RO | The percentage of media streaming sessions that shall report metrics, expressed as a floating point value between 0.0 and 100.0. |
| urlFilters | Array(String) | 0..1 | RO | A non-empty list of URL patterns for which metrics reporting shall be done. The format of each pattern shall be a regular expression as specified in [5].  If not specified, reporting shall be done for all sessions. |
| metrics | Array(String) | 1..1 | RO | A list of metrics which shall be reported. |
| NetworkAssistanceConfiguration | Object | 0..1 | RO |  | downlink,  uplink |
| serverAddress | Url | 1..1 | RO | Address of the 5GMS AF that offers the APIs for 5GMS AF-based Network Assistance, for access by the 5GMSd Media Session Handler. See NOTE.  This address shall be an opaque URL, following the 5GMS URL format. |
| ClientEdgeResourcesConfiguration | Object | 0..1 | RO | Present only for client-driven edge computing management mode. | downlink,  uplink |
| activationTrigger | Activation‌Trigger‌Type | 0..1 | RO | Condition to activate the edge resources for media streaming sessions. |
|  |  |  |  |  |
| profile | EASProfile | 1..1 | RO | The EAS profile used by the EEC to discover and select the EAS to serve media streaming sessions.  The format of the EASProfile is defined in Table 8.1.5.2.3-1 of TS 29.558. |
| application‌Context‌Relocation‌Requirements | ACR‌Requirements‌Type | 0..1 | RO | Application Context Relocation tolerance and requirements. |
| NOTE: In deployments where multiple instances of the 5GMSd AF expose the Media Session Handling APIs at M5, the 5G System may use a suitable mechanism (e.g. HTTP load balancing or DNS resolution) to direct requests to a suitable AF instance. | | | | | |