**3GPP TSG-S4 Meeting #133-e*****S4-251462r01***

**Electronic, Online, 18th–25th July 2025** revision of S4-251285

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **26.510** | **CR** | **0030** | **rev** | **3** | **Current version:** | **18.4.0** |  |
|  | | | | | | | | |
| *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:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | BBC, Nokia, Lenovo | | | | | | | | | |
| ***Source to TSG:*** | S4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5GMS\_Pro\_Ph2 | | | | |  | ***Date:*** | | | 2024-07-21 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The scope of the *QosRange* data type has expanded in Release 18 to include provisioning requirements for PDU Set handling in addition to the bounds of QoS parameters. The current data name is therefore no longer intention-revealing.  The scope of the *ClientQosSpecification* data type has expanded in Release 18 to include runtime client requirements for PDU Set handling in addition to the bounds of QoS parameters. The current data name is therefore no longer intention-revealing.  The rules for populating the Dynamic Policy Bindings in Service Access Information are currently unspecified.  The mapping of PDU Set QoS parameters to the *AsSessionMediaComponent* object in the NEF is currently unspecified. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | * Rename *QosRange* to *PolicyConstraints* throughout. * Rename *ClientQosSpecification* to *ClientPolicySpecification* throughout.   The names of properties using these data types are not changed.   * In clause 5.3.2.1, specify how the Dynamic Policy Bindings in Service Access Information are populated. * In clause 5.5.3.3.2, define mapping of PDU Set QoS parameters to the *AsSessionMediaComponent* object when the Media AF invokes the *Nnef\_AFsessionWithQoS* service at reference point N33. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | * Data type names are no longer intention-revealing, and this will get worse in Release 19. * Population of Dynamic Policy Bindings in Service Access Information remains unspecified. * Mapping of PDU Set QoS parameters to the *AsSession‌Media‌Component* object in the NEF remains unspecified. | | | | | | | | |
| ***Q*** | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.2.7.1, 5.3.2.1, 5.3.4.4, 5.5.3.3.1, 5.5.3.3.2, 7.3.3.4, 7.3.3.6, 8.7.3.1, 9.3.3.1, 9.3.3.2, 9.4.3.1, A.1, D.1.1, D.1.2, D.1.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 26.512 CR0096 | | |
| ***affected:*** | |  | **X** | Test specifications | | | |  | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | Changing the name of an OpenAPI YAML data type does not have any backwards compatibility issues (unlike changing the name of a property). | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | CR0030 [S4aI250093]: Submitted for SWG agreement.  CR0030r1 [S4-251224]: Resubmitted SWG-agreed content for WG agreement.   * Added record of OpenAPI YAML changes. * Added reference point M12 into scope of PDU Set QoS parameter mappings in clause 5.5.3.3.1.   CR0030r2 [S4-251285]: Resubmitted for WG agreement.   * Added missing mappings for PDU Set QoS parameters at reference point N33 from Nokia in clause 5.5.3.3.2.   CR0030r3 [S4-251462]: Resubmitted for WG agreement.   * Added improvements to cover page descriptions suggested by Nokia.   CR0030r4 [S4-25xxxx]: Resubmitted for WG agreement.   * Added rules for populating Policy Template Bindings in Service Access Information, adopted from Rel-19 26510-**CR0020** [S4-251268]. | | | | | | | | |

# Code changes

The code changes associated with this Change Request are available for review at the following URL on 3GPP Forge:

<https://forge.3gpp.org/rep/sa4/5gms_pro_ph2/-/compare/TSG%23108...S4-251461r01;S4-251461r01>

The proposed changes are reproduced below for posterity.

## [TS26510\_CommonData.yaml](https://forge.3gpp.org/rep/sa4/5gms_pro_ph2/-/compare/TSG%23108...S4-251461r01;S4-251461r01?from_project_id=78#06aca8760095e253a9de0ef2cdf9a726c20f4efd)

|  |  |  |
| --- | --- | --- |
|  |  | openapi: 3.0.0 |
|  |  | info: |
|  |  | title: 'Media Delivery: Common Data Types' |
|  |  | version: 1.0.2 |
|  |  | version: 1.0.3 |
|  |  | description: | |
|  |  | Media Delivery: Common Data Types |
|  |  | © 2025, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC). |
| @@ -12,7 +12,7 @@ tags: | | |
|  |  | description: 'Media Delivery: Common Data Types' |
|  |  |  |
|  |  | externalDocs: |
|  |  | description: 'TS 26.510 V18.4.0; Media Delivery; Interactions and APIs for media session handling' |
|  |  | description: 'TS 26.510 V18.5.0; Media Delivery; Interactions and APIs for media session handling' |
|  |  | url: 'https://www.3gpp.org/ftp/Specs/archive/26\_series/26.510/' |
|  |  |  |
|  |  | paths: {} |
| @@ -130,7 +130,7 @@ components: | | |
|  |  | pduSetQosLimits: |
|  |  | $ref: 'TS29571\_CommonData.yaml#/components/schemas/PduSetQosPara' |
|  |  |  |
|  |  | QosRange: |
|  |  | PolicyConstraints: |
|  |  | type: object |
|  |  | required: |
|  |  | - componentReference |
| @@ -166,7 +166,7 @@ components: | | |
|  |  | minimumRequestedBitRate: |
|  |  | $ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRate' |
|  |  |  |
|  |  | ClientQosSpecification: |
|  |  | ClientPolicySpecification: |
|  |  | type: object |
|  |  | required: |
|  |  | - downlinkBitRates |

## [TS26510\_Maf\_Provisioning\_PolicyTemplates.yaml](https://forge.3gpp.org/rep/sa4/5gms_pro_ph2/-/compare/TSG%23108...S4-251461r01;S4-251461r01?from_project_id=78#9f766c9b9d3e2796cb231ad7c6fe150919315853)

|  |  |  |
| --- | --- | --- |
|  |  | openapi: 3.0.0 |
|  |  | info: |
|  |  | title: Maf\_Provisioning\_PolicyTemplates |
|  |  | version: 1.0.2 |
|  |  | version: 1.0.3 |
|  |  | description: | |
|  |  | Media Delivery: Policy Templates Provisioning API |
|  |  | © 2025, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC). |
| @@ -12,7 +12,7 @@ tags: | | |
|  |  | description: 'Media Delivery: Policy Templates Provisioning API' |
|  |  |  |
|  |  | externalDocs: |
|  |  | description: 'TS 26.510 V18.4.0; Media Delivery; Interactions and APIs for media session handling' |
|  |  | description: 'TS 26.510 V18.5.0; Media Delivery; Interactions and APIs for media session handling' |
|  |  | url: 'https://www.3gpp.org/ftp/Specs/archive/26\_series/26.510/' |
|  |  |  |
|  |  | servers: |
| @@ -318,7 +318,7 @@ components: | | |
|  |  | type: array |
|  |  | minItems: 1 |
|  |  | items: |
|  |  | $ref: 'TS26510\_CommonData.yaml#/components/schemas/QosRange' |
|  |  | $ref: 'TS26510\_CommonData.yaml#/components/schemas/PolicyConstraints' |
|  |  | chargingSpecification: |
|  |  | $ref: 'TS26510\_CommonData.yaml#/components/schemas/ChargingSpecification' |
|  |  | bdtPolicyId: |

## [TS26510\_Maf\_SessionHandling\_DynamicPolicy.yaml](https://forge.3gpp.org/rep/sa4/5gms_pro_ph2/-/compare/TSG%23108...S4-251461r01;S4-251461r01?from_project_id=78#dee6cadc6c52288ff24f60218fac68cf52262793)

|  |  |  |
| --- | --- | --- |
|  |  | openapi: 3.0.0 |
|  |  | info: |
|  |  | title: Maf\_SessionHandling\_DynamicPolicy |
|  |  | version: 1.0.2 |
|  |  | version: 1.0.3 |
|  |  | description: | |
|  |  | Media Delivery: Dynamic Policy API |
|  |  | © 2025, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC). |
| @@ -12,7 +12,7 @@ tags: | | |
|  |  | description: 'Media Delivery: Dynamic Policy API' |
|  |  |  |
|  |  | externalDocs: |
|  |  | description: 'TS 26.510 V18.4.0; Media Delivery; Interactions and APIs for media session handling' |
|  |  | description: 'TS 26.510 V18.5.0; Media Delivery; Interactions and APIs for media session handling' |
|  |  | url: 'https://www.3gpp.org/ftp/Specs/archive/26\_series/26.510/' |
|  |  |  |
|  |  | servers: |
| @@ -325,7 +325,7 @@ components: | | |
|  |  | applicationFlowDescription: |
|  |  | $ref: 'TS26510\_CommonData.yaml#/components/schemas/ApplicationFlowDescription' |
|  |  | qosSpecification: |
|  |  | $ref: 'TS26510\_CommonData.yaml#/components/schemas/ClientQosSpecification' |
|  |  | $ref: 'TS26510\_CommonData.yaml#/components/schemas/ClientPolicySpecification' |
|  |  |  |
|  |  | ClientBdtSpecification: |
|  |  | description: "A client-facing set of Background Data Transfer bids/grants." |

## [TS26510\_Maf\_SessionHandling\_NetworkAssistance.yaml](https://forge.3gpp.org/rep/sa4/5gms_pro_ph2/-/compare/TSG%23108...S4-251461r01;S4-251461r01?from_project_id=78#35cd722dfb6c4666bb22ef06a35633925b748d0e)

|  |  |  |
| --- | --- | --- |
|  |  | openapi: 3.0.0 |
|  |  | info: |
|  |  | title: Maf\_SessionHandling\_NetworkAssistance |
|  |  | version: 1.0.2 |
|  |  | version: 1.0.3 |
|  |  | description: | |
|  |  | Media Delivery: Network Assistance API |
|  |  | © 2025, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC). |
| @@ -12,7 +12,7 @@ tags: | | |
|  |  | description: 'Media Delivery: Network Assistance API' |
|  |  |  |
|  |  | externalDocs: |
|  |  | description: 'TS 26.510 V18.4.0; Media Delivery; Interactions and APIs for media session handling' |
|  |  | description: 'TS 26.510 V18.5.0; Media Delivery; Interactions and APIs for media session handling' |
|  |  | url: 'https://www.3gpp.org/ftp/Specs/archive/26\_series/26.510/' |
|  |  |  |
|  |  | servers: |
| @@ -276,7 +276,7 @@ paths: | | |
|  |  | content: |
|  |  | application/json: |
|  |  | schema: |
|  |  | $ref: 'TS26510\_CommonData.yaml#/components/schemas/ClientQosSpecification' |
|  |  | $ref: 'TS26510\_CommonData.yaml#/components/schemas/ClientPolicySpecification' |
|  |  | '400': *# Bad Request: The syntax of the HTTP request is malformed in a way not covered by one of the following more specific client errors* |
|  |  | $ref: 'TS29571\_CommonData.yaml#/components/responses/400' |
|  |  | '401': *# Unauthorized* |
| @@ -406,8 +406,8 @@ components: | | |
|  |  | applicationFlowDescription: |
|  |  | $ref: 'TS26510\_CommonData.yaml#/components/schemas/ApplicationFlowDescription' |
|  |  | requestedQoS: |
|  |  | $ref: 'TS26510\_CommonData.yaml#/components/schemas/ClientQosSpecification' |
|  |  | $ref: 'TS26510\_CommonData.yaml#/components/schemas/ClientPolicySpecification' |
|  |  | recommendedQoS: |
|  |  | readOnly: **true** |
|  |  | allOf: |
|  |  | - $ref: 'TS26510\_CommonData.yaml#/components/schemas/ClientQosSpecification' |
|  |  | - $ref: 'TS26510\_CommonData.yaml#/components/schemas/ClientPolicySpecification' |

Dynamic Policy provisioning

#### 5.2.7.1 General

These operations are used by the Media Application Provider to configure Policy Templates for the media delivery sessions of a particular Provisioning Session.

A Policy Template, identified by its policyTemplateId, represents a set of PCF/NEF API parameters which defines the service quality and/or associated charging for the corresponding media delivery session(s). The Policy Template is configured as part of the provisioning procedures with the Media AF using the API specified in clause 8.7 and is subsequently instantiated by a Media Session Handler or Media AS (whichever is acting as Dynamic Policy invoker) using the interactions specified in clause 5.3.3.

When a Policy Template requires media to be delivered in a specific Data Network and/or network slice at reference point M4, the applicationSessionContext array shall be present with at least one of the following properties populated:

- The dnn property contains the name of the Data Network in which the Media AS is hosted.

- When Network Slicing is used, the sliceInfo property contains information about the network slice which is serving the UE.

When a Policy Template is intended to influence the network QoS of Service Data Flows used for media delivery, the qoSSpecifications array shall be populated with objects of type Policy‌Constraints (see clause 7.3.3.4). Each member of the array describes the QoS limits of an application service component that a Media Client is permitted request when instantiating the Policy Template:

- The componentReference property is a string used by the Dynamic Policy invoker to reference this Policy‌Constraints object when instantiating the Policy Template. It shall be unique for all members of the same qoSSpecifications array.

- The qosReference value, as specified in clause 5.6.2.7 of TS 29.514 [18], is obtained with the Service Level Agreement. See TS 23.502 [3] for detailed usage.

- The maximumBitRate properties of the downlinkQosSpecification and uplinkQosSpecification objects define the maximal bit rates which are permitted to be requested by a Dynamic Policy invoker on (respectively) downlink and uplink Service Data Flows. These values are defined by configuration of the 5G System and are therefore populated by the Media AF rather than by the Media Application Provider.

- The maximumAuthorisedBitRate properties of the downlinkQosSpecification and uplinkQosSpecification objects define the maximal bit rates which a Dynamic Policy invoker is authorised to request on (respectively) downlink and uplink Service Data Flows. Higher bit rates are not authorised by the Media Application Provider when the Policy Template is instantiated.

- The minimumPacketLossRate properties of the downlinkQosSpecification and uplinkQosSpecification objects define the minimal packet loss rates which are permitted to be requested by a Dynamic Policy invoker on (respectively) downlink and uplink Service Data Flows. Lower packet loss rates are not permitted by the Media Application Provider when the Policy Template is instantiated.

- The pduSetQosLimits properties of the downlinkQosSpecification and uplinkQosSpecification objects define the minimal delay budget and minimal error rates for PDU Sets which are permitted to be requested by a Dynamic Policy invoker on (respectively) downlink and uplink Service Data Flows. Lower delay and error rates are not permitted by the Media Application Provider when the Policy Template is instantiated.

- The pduSetMarking flag is used to specify whether Media Clients instantiating this Policy Template for uplink media delivery, or Media AS instances for downlink media delivery, are required to apply PDU Set marking to media transport protocol PDUs falling within the scope of a Dynamic Policy Instance based on this Policy Template.

NOTE 1: PDU Set marking is used by the 5G System to satisfy the QoS requirements of application flows.

When a Policy Template is intended to be used for differential charging, the chargingSpecification property shall be present.

When a Policy Template is intended to be used for Background Data Transfer, the properties of a new Background Data Transfer policy are specified by the Media Application Provider in the bdtSpecification property (of type Bdt‌Policy‌Schedule).

- The startDate and endDate indicate the time period for which the Background Data Transfer specification is valid. A Background Data Transfer specification may be removed from its parent Policy Template by the Media AF when it expires.

- The windows property indicates the time windows over which the Background Data Transfer may occur.

- Each such time window is characterised by a start time (startTime), a duration (duration) and the days of the week on which the time window is scheduled (daysOfWeek).

- The numberOfUes property indicates the maximum number of UEs permitted to instantiate the Policy Template and make use of Background Data Transfers during a single time window instance.

- The estimatedDataVolumePerUe that reflects the average data volume that each UE is expected to transfer during a single time window instance.

NOTE 2: The product of the numberOfUes and estimatedDataVolumePerUe properties represents an estimate of the maximum data volume that may be transferred during any given time window instance.

- The aggregate‌Uplink‌BitRate‌Limit and aggregate‌DownlinkBitRate‌Limit properties specify limits on the total aggregate bit rate of all currently instantiated Policy Templates to be enforced by the Media AF's admission control function. If omitted, the Media AF may instantiate a Policy Template with a Background Data Transfer specification regardless of additional costs that may be incurred by the Media Application Provider as a result.

HTTP responses for successful and operation-specific failure cases are specified in the following clauses. For all other failure cases, an HTTP response indicating a response code in accordance with clause 7.1.6 shall be returned to the API client. In all failure cases a message body in accordance with clause 7.1.7 shall be included in the response message.

Service Access Information acquisition

5.3.2.1 General

Service Access Information is the set of parameters and addresses needed by the Media Client to activate reception of a downlink media delivery session, to activate an uplink media delivery session for content contribution or to obtain configuration parameters to initiate real-time media communication (RTC).

The Media Session Handler may obtain Service Access Information in one of two ways:

1. From the Media-aware Application via reference point M6. In this case, the Service Access Information is initially acquired by the Media-aware Application from the Media Application Provider via reference point M8 and the Media-aware Application shall pass the parameters to the Media Session Handler using one of the session launch mechanisms specified in clauses 11.2.2.1 and 6.

2. From the Media AF via reference point M5. In this case, the Service Access Information is derived by the Media AF from a Provisioning Session established at reference point M1 and the Media AF exposes this to the Media Session Handler using the operations specified in this clause. At the start of a media delivery session, a minimal set of baseline Service Access Information parameters is passed to the Media Session Handling using one of the session launch mechanisms specified in clauses 11.2.2.1 and 6 and this causes it to fetch the full Service Access Information from the Media AF using the procedure specified in clause 5.3.2.3.

The data model of the Service Access Information resource acquired by the Media Session Handler of the Media Client is specified in clause 9.2.3. The Service Access Information typically includes:

- For downlink media streaming according to TS 26.512 [6], a set of Media Entry Points that can be consumed by the Media Access Function. One of these is selected by the Media Session Handler or by the Media-aware Application and is handed to the Media Access Function via reference point M11 or M7 respectively.

- For uplink media according to TS 26.512 [6], a description of an entry point for the publishing of the uplink streaming content.

- For RTC according to TS 26.113 [7] specifies a configuration for the Media Client to assist in establishing interactive connectivity with other RTC session participants.

Service Access Information additionally includes configuration information to allow the Media Session Handler to invoke procedures for dynamic policy (see clause 5.3.3), network assistance (clause 5.3.4), QoE metrics reporting (clause 5.3.5) and consumption reporting (clause 5.3.6).

To support dynamic policy instantiation, Service Access Information shall include a Policy Template Binding for each Policy Template provisioned in the applicable Provisioning Session (see clause 5.2.7.1) populated as follows:

- The externalReference property shall be populated from the externalReference property of the corresponding Policy Template.

- The policyTemplateId property shall be populated from the policyTemplateId property of the corresponding Policy Template.

- The pduSetMarking property shall be present and set true if any member of the qoSSpecifictions array of the corresponding Policy Template has a pduSetMarking property set true.

- The bdtWindows property shall be populated with a forward schedule of Background Data Transfer windows based on the bdtSpecification property of the corresponding Policy Template (if provisioned) and/or based on interactions between the Media AF and the PCF/NEF as specified in clause 5.5.3.

If an Edge Resources Configuration with client-driven management (*EM\_CLIENT\_DRIVEN*) is provisioned in the applicable Provisioning Session (see clause 5.2.6), the Media AF shall convey a Client Edge Resources Configuration to the Media Session Handler as part of the Service Access Information it provides at reference point M5.

HTTP responses for successful and operation-specific failure cases are specified in the following clauses. For all other failure cases, an HTTP response indicating a response code in accordance with clause 7.1.6 shall be returned to the API client. In all failure cases a message body in accordance with clause 7.1.7 shall be included in the response message.

Network Assistance invocation

#### 5.3.4.4 Bit rate recommendation request operation

This operation is used by the Media Session Handler or Media AS (whichever is acting as Network Assistance invoker) to request a bit rate recommendation from the Media AF. the HTTP GET method shall be used for this purpose, citing the resource identifier of an existing Network Assistance Session in the request URL along with a sub-resource path indicting the bit rate recommendation operation.

If the operation is successful, the Media AF shall return a 200 (OK) HTTP response message and shall provide the recommended bit rate(s) in an HTTP response message body containing a ClientPolicySpecification object that is populated as follows:

- For a downlink media delivery session, the recommended minimum and maximum downlink bit rates shall be indicated in the properties minimumRequestedBitRate and maximumBitRate respectively of the downlinkBitRates object. If a unique downlink bit rate is recommended by the Media AF, then this value shall be set identically in both of these properties. The Network Assistance invoker shall in this case ignore the mandatory properties related to uplink media delivery, i.e., uplinkBitRates.

- For an uplink media delivery session, the recommended minimum and maximum uplink bit rates shall be indicated in the properties minimumRequestedBitRate and maximumRequestedBitRate respectively of the uplinkBitRates object. If a unique uplink bit rate is recommended by the Media AF, then this value shall be set identically in both of theseproperties. The Network Assistance invoker shall in this case ignore the mandatory properties related to downlink media delivery, i.e., downlinkBitRates.

The optional properties minimumDesiredBitRate, desiredPacketLatency and desiredPacketLoss shall not be included in the returned ClientPolicySpecification object.

If the Media AF refuses to provide a bit rate recommendation, for example because the Provisioning Session in question currently lacks the rights required to receive this information, the operation shall fail with an HTTP response status code of 403 (Forbidden) and an error message body per clause 7.1.7.

Policy control interactions for Dynamic Policies

##### 5.5.3.3.1 Mapping of media transport parameters to Protocol Description

When the Media AF directly invokes the Npcf\_PolicyAuthorization service at reference point N5 according to TS 29.514 [18] and the Application‌Flow‌Description.‌media‌Transport‌Parameters property of an Application‌Flow‌Binding object is populated, then the *Media*‌*Component* object in the PCF at reference point N5 associated with the Application‌Flow‌Binding shall be populated as follows by the Media AF to enable traffic detection by the 5G Core for application-specific PDU handling based on parameters present in the media transport at reference point M4 or M12:

- The MediaComponent.‌protoDescDl property shall be set to the values of the Application‌Flow‌Description.‌media‌Transport‌Parameters object if the Client‌Qos‌Specification.‌desired‌Downlink‌Pdu‌Set‌Qos‌Parameters property is present in the corresponding Application‌Flow‌Binding.

- The MediaComponent.‌protoDescUlproperty shall be set to the values of the Application‌Flow‌Description.‌media‌Transport‌Parameters object if the Client‌Qos‌Specification.‌desired‌Uplink‌Pdu‌Set‌Qos‌Parameters property is present in the corresponding Application‌Flow‌Binding.

When the Media AF invokes the Nnef\_AFsessionWithQoS service at reference point N33 according to TS 29.522 [19] and TS 29.122 [20] and the Application‌Flow‌Description.‌media‌Transport‌Parameters property of an Application‌Flow‌Binding object is populated, then the AsSession‌Media‌Component object in the NEF at reference point N33 associated with the Application‌Flow‌Binding shall be populated as follows by the Media AF to enable traffic detection by the 5G Core for application-specific PDU handling based on parameters present in the media transport at reference point M4 or M12:

- The AsSessionMediaComponent.‌protoDescDl property shall be set to the values of the Application‌Flow‌Description.‌media‌Transport‌Parameters object if the Client‌Qos‌Specification.‌desired‌Downlink‌Pdu‌Set‌Qos‌Parameters property is present in the corresponding Application‌Flow‌Binding.

- The AsSessionMediaComponent.‌protoDescUl property shall be set to the values of the Application‌Flow‌Description.‌media‌Transport‌Parameters object if the Client‌Qos‌Specification.‌desired‌Uplink‌Pdu‌Set‌Qos‌Parameters property is present in the corresponding Application‌Flow‌Binding.

5.5.3.3.2 Mapping of PDU Set QoS parameters

When the Media AF directly invokes the Npcf\_PolicyAuthorization service at reference point N5 according to TS 29.514 [18], the following conditions apply:

- If the pduSetQoSLimits property is populated in Policy‌Constraints.‌downlink‌QoS‌Specification, then the Media‌Component.‌pduSetQosDl object shall be populated as follows by the Media AF:

- The pduSetDelayBudget property shall be set to the larger value of pduSetQoSLimits.‌pduSetDelayBudget and desiredDownlink‌PduSet‌QosParameters.‌pduSetDelayBudget.

- The pduSetErrorRate property shall be set to the larger value of pduSetQoSLimits.pduSetErrorRate and desiredDownlink‌PduSet‌QosParameters.‌pduSetErrorRate.

- The pduSetHandlingInfo property shall be set to the value of pduSetQoSLimits.pduSetHandlingInfo, ignoring the value of desiredDownlink‌PduSet‌QosParameters.‌pduSetHandlingInfo, if any.

- Otherwise, the Media‌Component.‌pduSetQosDl object shall be populated directly from the desiredDownlink‌PduSet‌QosParameters object.

- If the pduSetQoSLimits property is populated in Policy‌Constraints.‌uplink‌QoS‌Specification, then the Media‌Component.‌pduSetQosUl object shall be populated as follows by the Media AF:

- The pduSetDelayBudget property shall be set to the larger value of pduSetQoSLimits.‌pduSetDelayBudget and desiredUplink‌PduSet‌QosParameters.‌pduSetDelayBudget.

- The pduSetErrorRate property shall be set to the larger value of pduSetQoSLimits.‌pduSetErrorRate and desiredUplink‌PduSet‌QosParameters.‌pduSetErrorRate.

- The pduSetHandlingInfo property shall be set to the value of pduSetQoSLimits.‌pduSetHandlingInfo, ignoring the value of desiredUplink‌PduSet‌QosParameters.‌pduSetHandlingInfo, if any.

- Otherwise, the Media‌Component.‌pduSetQosUl object shall be populated directly from the desiredUplink‌PduSet‌QosParameters object.

When the Media AF invokes the *Nnef\_AFsessionWithQoS* service at reference point N33 according to TS 29.522 [19] and TS 29.122 [20], the following conditions apply:

- If the *pduSetQoSLimits* property is populated in Policy‌Constraints*.‌downlink‌QoS‌Specification*, then the *AsSessionMediaComponent.‌pduSetQosDl* object shall be populated as follows by the Media AF:

- The *pduSetDelayBudget* property shall be set to the larger value of *pduSetQoSLimits.‌pduSetDelayBudget* and *desiredDownlink‌PduSet‌QosParameters.‌pduSetDelayBudget*.

- The *pduSetErrorRate* property shall be set to the larger value of *pduSetQoSLimits.pduSetErrorRate* and *desiredDownlink‌PduSet‌QosParameters.‌pduSetErrorRate*.

- The *pduSetHandlingInfo* property shall be set to the value of *pduSetQoSLimits.pduSetHandlingInfo*, ignoring the value of *desiredDownlink‌PduSet‌QosParameters.‌pduSetHandlingInfo*, if any.

- Otherwise, the *AsSessionMediaComponent.‌pduSetQosDl* object shall be populated directly from the *desiredDownlink‌PduSet‌QosParameters* object.

- If the *pduSetQoSLimits* property is populated in Policy‌Constraints*.‌uplink‌QoS‌Specification*, then the *AsSessionMediaComponent.‌pduSetQosUl* object shall be populated as follows by the Media AF:

- The *pduSetDelayBudget* property shall be set to the larger value of *pduSetQoSLimits.‌pduSetDelayBudget* and *desiredUplink‌PduSet‌QosParameters.‌pduSetDelayBudget*.

- The *pduSetErrorRate* property shall be set to the larger value of *pduSetQoSLimits.‌pduSetErrorRate* and *desiredUplink‌PduSet‌QosParameters.‌pduSetErrorRate*.

- The *pduSetHandlingInfo* property shall be set to the value of *pduSetQoSLimits.‌pduSetHandlingInfo*, ignoring the value of *desiredUplink‌PduSet‌QosParameters.‌pduSetHandlingInfo*, if any.

- Otherwise, the *AsSessionMediaComponent.‌pduSetQosUl* object shall be populated directly from the *desiredUplink‌PduSet‌QosParameters* object.

Next change

#### 7.3.3.4 PolicyConstraints type

This data type is used to specify permitted ranges of QoS parameters and/or to mandate the use of certain QoS features of the 5G System.

Table 7.3.3.4-1: Definition of type PolicyConstraints

|  |  |  |  |
| --- | --- | --- | --- |
| Property name | Data type | Cardinality | Description |
| component‌Reference | string | 1..1 | A unique string identifying this QoS specification within the scope of its parent. |
| qosReference | string | 0..1 | As specified in clause 5.6.2.7 of TS 29.514 [18]. |
| downlink‌Qos‌Specification | Unidirectional‌Qos‌Specification | 0..1 | QoS specification in the downlink direction (see below and clause 7.3.3.3). |
| uplink‌Qos‌Specification | Unidirectional‌Qos‌Specification | 0..1 | QoS specification in the uplink direction (see below and clause 7.3.3.3). |
| pdu‌Set‌Marking | boolean | 0..1 | Indicates that packets at reference point M4 are required to include PDU Set marking if the media transport protocol supports this.  Default value false if omitted. |

At least one of the following properties shall be populated: qosReference, downlink‌Qos‌Specification, uplink‌Qos‌Specification.

Next change

#### 7.3.3.6 ClientPolicySpecification type

Table 7.3.3.6-1: Definition of type ClientPolicySpecification

|  |  |  |  |
| --- | --- | --- | --- |
| Property name | Data type | Cardinality | Description |
| downlinkBitRates | Unidirectional‌Bit‌Rate‌Specification | 1..1 | Bit rate specification for the downlink direction (see clause 7.3.3.5). |
| uplinkBitRates | Unidirectional‌Bit‌Rate‌Specification | 1..1 | Bit rate specification for the uplink direction (see clause 7.3.3.5). |
| desiredPacketLatency | number | 0..1 | Desired packet latency in milliseconds, expressed as a positive floating-point value (see NOTE 1). |
| desiredPacketLossRate | Packet‌Loss‌Rate | 0..1 | Desired packet loss rate expressed in tenths of a percent (see NOTE 1). |
| desiredDownlinkPduSetQosParameters | PDUSet‌Qos‌Para | 0..1 | Desired PDU Set QoS parameters for the downlink direction (see NOTE 2). |
| desiredUplinkPduSetQosParameters | PDUSet‌Qos‌Para | 0..1 | Desired PDU Set QoS parameters for the uplink direction (see NOTE 2). |
| NOTE 1: Clause 5.6.2.7 of TS 29.514 [18] restricts packet latency and packet loss to be the same in the downlink and uplink directions for a given MediaComponent when the CHEM feature is not supported by the PCF.  NOTE 2: Data type PDUSetQosPara is specified in clause 5.5.4.11 of TS 29.571 [33]. | | | |

Next change

#### 8.7.3.1 PolicyTemplate resource

Table 8.7.3.1-1: Definition of PolicyTemplate resource

| Property | | Type | Cardinality | Usage | Description |
| --- | --- | --- | --- | --- | --- |
| policyTemplateId | | ResourceId | 1..1 | C: RO R: RO U: RO | Resource identifier of this Policy Template assigned by the Media AF that is unique within the scope of the Provisioning Session. |
| state | | string enum | 1..1 | C: RO R: RO U: RO | Current state of this Policy Template (see clause 5.2.7.2) exposed to the 5GMS Application Provider by the Media AF.  Only a Policy Template in the READY state may be instantiated as a Dynamic Policy Instance and applied to media streaming sessions. |
| stateReason | | Problem‌Details | 1..1 | C: RO R: RO U: RO | Additional details about the current state of this Policy Template exposed to the Media Application Provider by the Media AF.  The instance sub-property shall be present and shall indicate the URL of this Policy Template resource at reference point M1.  The title sub-property shall be present and shall indicate a human-readable representation of the *state* property specified above, e.g., "Policy Template ready for use" or "Policy Template invalid".  The detail sub-property shall be present and shall indicate a human-readable status/error message.  All other properties shall be omitted. |
| externalReference | | string | 1..1 | C: RW R: RW U: RW | Additional identifier for this Policy Template, unique within the scope of its Provisioning Session, that may be cross-referenced with external metadata about a media delivery session.  Example: "HD\_Premium". |
| application‌Session‌Contexts | | array(object) | 0..1 | C: RW R: RW U: RW | Exactly one application session context at reference point M4 to which this Policy Template may be applied.  Each object in the array shall specify at least one property. If more than one property is specified, instantiation of the Policy Template is restricted to the conjunction of all the object's properties. |
|  | sliceInfo | Snssai | 0..1 | C: RW R: RW U: RW | A Network Slice on which this Policy Template may be instantiated. (See clause 5.4.4.2 of TS 29.571 [33].) |
|  | dnn | Dnn | 0..1 | C: RW R: RW U: RW | A Data Network on which this Policy Template may be instantiated. (See clause 7.3.2.) |
| qoSSpecifications | | array(Policy‌Constraints) | 0..1 | C: RW R: RW U: RW | The network Quality of Service policy limits and other constraints to be applied to the application service component(s) of media delivery sessions that instantiate this Policy Template (see clause 7.3.3.4).  Each member of the array is identified by a component reference that is unique in this array.  If present, the array shall contain at least one object. |
| charging‌Specification | | Charging‌Specification | 0..1 | C: RW R: RW U: RW | The charging policy to be applied to media delivery sessions that instantiate this Policy Template is instantiated (see clause 7.3.3.7). |
| bdtPolicyId | | BdtReferenceId | 0..1 | C: RW R: RO U: RW | A reference to an existing Background Data Transfer policy in the PCF (see NOTE).  Mutually exclusive with bdtSpecification. |
| bdtSpecification | | Bdt‌Policy‌Schedule | 0..1 | C: RW R: RO U: RW | The Background Data Transfer policy specification to be associated with media delivery sessions that instantiate this Policy Template (see clause 8.7.3.2).  Mutually exclusive with bdtPolicyId property. |
| NOTE: Data type BdtReferenceId is specified in TS 29.122 [20]. | | | | | |

At least one of the following properties shall be present: qosSpecification, chargingSpecification, bdtPolicyId, bdtSpecification.

Next change

#### 9.3.3.1 DynamicPolicy resource

Table 9.3.3.1-1: Definition of Dynamic Policy Instance resource

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Property name | | Data type | Cardinality | Usage | Description |
| dynamicPolicyId | | ResourceId | 1..1 | RO | Unique identifier for this Dynamic Policy Instance assigned by the Media AF when the resource is created. |
| provisioningSessionId | | ResourceId | 1..1 | C: RO R: RO U: RO | Uniquely identifies the parent Provisioning Session, which is linked to the Application Service Provider. |
| session‌Id | | MediaDelivery‌SessionId | 1..1 | C: RW R:RO U: RO | Unique identifier of the current media delivery session. |
| policyTemplateId | | ResourceId | 1..1 | C: RW R: RO U: RW | Identifies the Policy Template to be applied to the application flow(s) that fall within the scope of this Dynamic Policy Instance. |
| sliceInfo | | Snssai | 0..1 | C: RW R: RO U: RW | Identifying the target slice in which the Policy Template is instantiated. |
| dataNetworkName | | Dnn | 0..1 | C: RW R: RO U: RW | The name of the target Data Network in which the Policy Template is instantiated. |
| location | | TypedLocation | 0..1 | C: RW R: RO U: RW | The location of the UE when the Dynamic Policy was created or last updated. |
| applicationFlowBindings | | array(Application‌FlowBinding) | 1..1 | C: RW R: RO U: RW | The bindings between application flows at reference point M4 managed within the scope of this Dynamic Policy Instance and their network Quality of Service requirements (see clause 9.3.3.2).  The array shall contain at least one member. |
|  | componentReference | string | 1..1 | C: RW R: RO U: RW | References a particular service component in the Policy Template. |
|  | application‌Flow‌Description | Application‌Flow‌Description | 1..1 | C: RW R: RO U: RW | The Dynamic Policy invoker's specification of an application flow managed by this Dynamic Policy to be used for application traffic identification purposes in the 5G Core (see clause 7.3.3.2).  When PDU Set handling is enabled for the Policy Template identified by policyTemplateId, this property shall also specify the media transport protocol parameters to be used by the Media Access Function for PDU Set signalling purposes. |
|  | qos‌Specification | Client‌Policy‌Specification | 0..1 | C: RW R: RO U: RW | The Dynamic Policy invoker's network policy requirements of the application flow described by application‌Flow‌Description.  If omitted, the default provisioned network policy constraints of the Policy Template indicated in policyTemplateId and the component indicated by component‌Reference shall apply to application‌Flow‌Description. |
| bdtSpecification | | Client‌Bdt‌Specification | 0..1 | C: RW R: RO  U: RW | The Background Data Transfer time windows and traffic limits that apply to this Dynamic Policy (see clause 9.3.3.3). |
| qosEnforcement | | boolean | 1..1 | C: RO R: RO U: RO | Indication that the network policy described in qosSpecification is being enforced by the 5G System.  Populated by the Media AF. |

Next change

#### 9.3.3.2 ApplicationFlowBinding

Table 9.3.3.2‑1: ApplicationFlowBinding type

|  |  |  |  |
| --- | --- | --- | --- |
| Property name | Data type | Cardinality | Description |
| component‌Reference | string | 1..1 | References a particular service component in the Policy Template. |
| application‌Flow‌Description | Application‌Flow‌Description | 1..1 | The specification of an application flow to be used by the 5G Core for application traffic identification purposes (see clause 7.3.3.2). |
| qos‌Specification | Client‌Policy‌Specification | 0..1 | The network policy requirements of the application flow(s) described by application‌Flow‌Description. |

Next change

#### 9.4.3.1 NetworkAssistanceSession resource

Table 9.4.3.1-1: Definition of NetworkAssistanceSession resource

| Property name | Type | Cardinality | Usage | Description |
| --- | --- | --- | --- | --- |
| naSessionId | ResourceId | 1..1 | C: RO R: RO U: RO | Unique identifier for this Network Assistance Session assigned by the Media AF when the resource is created. |
| provisioningSessionId | ResourceId | 1..1 | C: RO R: RO U: RO | Uniquely identifies the parent Provisioning Session, which is linked to the Application Service Provider. |
| session‌Id | MediaDelivery‌SessionId | 1..1 | C: RW R:RO U: RO | Unique identifier of the current media delivery session. |
| sliceInfo | Snssai | 0..1 | C: RW R: RO U: RW | Identifying the target network slice in which Network Assistance is sought. |
| dataNetworkName | Dnn | 0..1 | C: RW R: RO U: RW | The name of the target Data Network in which Network Assistance is sought. |
| location | TypedLocation | 0..1 | C: RW R: RO U: RW | The location of the UE when the Network Assistance Session was created or last updated. |
| policyTemplateId | ResourceId | 0..1 | C: RW R: RO U: RW | Identification of the policy (if any) that is currently in force for the media delivery session. |
| componentReference | string | 0..1 | C: RW R: RO U: RW | References a particular service component in the Policy Template.  This property shall be present if policyTemplate is present. |
| application‌Flow‌Description | Application‌Flow‌Description | 1..1 | C: RW R: RO U: RW | Identifying the application flow for which Network Assistance is sought, e.g. 2‑tuple (IP address pair) or 5-tuple (IP address pair, port pair and protocol). |
| requestedQoS | Client‌Policy‌Specification | 0..1 | C: RW R: RO U: RW | The network policy requested by the Network Assistance invoker. |
| recommendedQoS | Client‌Policy‌Specification | 0..1 | C: RO R: RO U: RO | The network policy currently recommended by the Media AF. |

3GPP Forge Tag bump

# A.1 General

The normative code specifying the APIs defined in clauses 7.3, 8, 9 and 10 of the present document, including JSON Schema [38] representations of HTTP message bodies to be used with these APIs, is published on 3GPP Forge according to the OpenAPI 3.0.0 specification [32]. The YAML files corresponding to this version of the present document shall be published to the following location:

https://forge.3gpp.org/rep/all/5G\_APIs/-/tags/TSG109-Rel18

Informative copies of these YAML files shall be distributed with the present document for convenience only. Where any discrepancy exists, the version on 3GPP Forge shall be considered definitive.

QoS mappings at reference point N5/N33

## D.1.1 General

This clause presents mappings between the DynamicPolicy resource specified in clause 9.3.3.1 of the present document and the ApplicationSessionContext resource specified at reference point N5 in TS 29.514 [18] (see clause D.1.2 below), as well as with the equivalent AsSessionWithQosSubscription resource specified for use with the NEF at reference point N33 in TS 29.522 [19] and TS 29.122 [20] (see clause D.1.3 below).

The following common aspect apply to all the mappings described in this clause:

1. Each abstract *Application Service* is realised by a *Provisioning Session* in the Media Delivery System when a ProvisioningSession resource is created by the Media Application Provider in the Media AF at reference point M1. The Application Service is uniquely identified in the Media Delivery System by an *external service identifier* which is realised by the externalServiceId property of the ProvisioningSession resource.

2. Each abstract *Service Operation Point* of an Application Service is realised in the Media Delivery System by a *Policy Template* when a PolicyTemplate resource created by the Media Application Provider in the Media AF at reference point M1. The Service Operation Point is uniquely identified in the scope of its parent Provisioning Session by an *external reference* which is realised by the externalReference property of the PolicyTemplate resource.

3. Each abstract *Service Component* of a parent Service Operation Point is realised by a Policy‌Constraints object in the DynamicPolicy resource. The Service Component is uniquely identified in the scope of its parent Service Operation Point by a *component reference* that is realised by the component‌Reference property of the Policy‌Constraints object.

The Service Component may reference an existing QoS policy in the PCF by populating the qosReference property of the Policy‌Constraints resource with the identifier of the existing QoS policy. Alternatively, QoS ranges for the downlink and uplink directions may instead be specified explicitly using the downlink‌Qos‌Specification and/or uplink‌Qos‌Specification properties.

4. A Policy Template is instantiated when the Media Session Handler creates a DynamicPolicy resource at reference point M5. The Policy Template is identified in the dynamicPolicyId property of the DynamicPolicy resource.

Any number of Dynamic Policy Instances may be associated at the same time with an abstract media delivery session. Each media delivery session is uniquely identified in the Media Delivery System by a *media delivery session identifier* which is cited in the sessionId property of the DynamicPolicy resource.

Each Service Component in the Dynamic Policy Instance is described by an Application‌Flow‌Binding object in the application‌Flow‌Bindings array of the Dynamic‌Policy resource:

a. The applicationFlowDescription property describes the traffic belonging to the Service Component, either in terms of specific protocol header values (e.g. IP 3-tuple, 5-tuple), or else in terms of a domain name.

b. The qosSpecification property specifies the Media Session Handler's QoS requirements for the Service Component in the downlink and/or uplink direction. The QoS requirements are expressed in terms of bit rates as well as targets for packet latency and packet loss.

c. The componentReference property identifies which provisioned Policy‌Constraints of the Policy Template (see 3 above) is applicable. This is used by the Media AF to constrain the Media Session Handler's QoS requirements for the Service Component.

The Application Flow Description is used by the 5G Core to construct a downlink Packet Detection Rule (PDR) in the UPF for the Service Component in question and to signal an uplink rule to the UE modem via the control plane.

The Media Session Handler's QoS requirements, as constrained by the QoS range of the referenced Policy Template and Service Component, are used by the 5G Core to construct a corresponding QoS Enforcement Rule (QER) in the UPF for the Service Component in question.

## D.1.2 QoS mapping for Dynamic Policy at reference point N5

When the Media AF directly invokes the Npcf\_PolicyAuthorization service at reference point N5 according to TS 29.514 [18], each DynamicPolicy resource is mapped by the Media AF to an Application‌Session‌Context resource in the PCF.

Two alternative implementation options exist for the mapping of the ApplicationFlowBinding object by the Media AF:

1. Each Application‌Flow‌Binding object of the Dynamic Policy Instance (each one representing a distinct Service Component) is associated with a different Media‌Component object in the PCF, as shown in figure D.1.2‑1. A single Media‌SubComponent is created to describe the downlink and/or uplink aspects of that Service Component.

2. In the limited case where all Service Components share the same minimum desired bit rate, minimum requested bit rate and PDU Set QoS requirements and none of the Policy‌Constraints objects cites a qosReference, each Application‌Flow‌Binding object of the Dynamic Policy Instance (each one representing a distinct Service Component) is associated with a different Media‌Sub‌Component object in the PCF, and these all share a common parent Media‌Component object, as shown in figure D.1.2-2.

In both options, the descriptions of the downlink and/or uplink application flow are populated in the fDescs array of the MediaSubComponent unless a qosReference is cited in the corresponding Policy‌Constraints.



Figure D.1.2‑1: General case mapping of ApplicationFlowBinding to PCF MediaComponent at reference point N5



Figure D.1.2‑2: Limited case mapping of ApplicationFlowBinding to PCF MediaSubComponent at reference point N5

## D.1.3 QoS mapping for Dynamic Policy at reference point N33

When the Media AF invokes the Nnef\_AFsessionWithQoS service at reference point N33 according to TS 29.522 [19] and TS 29.122 [20], each DynamicPolicy resource is mapped by the Media AF to an AsSession‌WithQoS‌Subscription resource in the NEF. The qosReference, protoDescDl, protoDescUl, pduSetQosDl and pduSetQosUl properties are not populated in this resource; the QoS requirements of the Service Component are instead populated in the AsSession‌Media‌Component object.

Each Application‌Flow‌Binding object of the Dynamic Policy Instance (each one representing a distinct Service Component) is associated with a different AsSession‌Media‌Component object in the NEF, as shown in figure D.1.3‑1.

The QoS requirements of the Service Component are instead populated in the AsSession‌Media‌Component.

The descriptions of the downlink and/or uplink directions of the application flow corresponding to the Service Component are populated in the flowInfos array of the AsSession‌Media‌Component unless a qosReference is cited in the corresponding Policy‌Constraints object.



Figure D.1.3‑1: Mapping of ApplicationFlowBinding to NEF AsSessionMediaComponent at reference point N33

End of changes