**3GPP TSG- Meeting #**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** |  | **rev** |  | **Current version:** |  |  |
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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 | **X** | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | [iRTCW] Clarifications on consumption reporting | | | | | | | | | |
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| ***Source to WG:*** | , BBC | | | | | | | | | |
| ***Source to TSG:*** | S4 | | | | | | | | | |
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| ***Work item code:*** |  | | | | |  | ***Date:*** | | |  |
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| ***Category:*** |  |  | | | | | ***Release:*** | | |  |
|  | *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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
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| ***Reason for change:*** | | TS 26.510 describes the procedures for Dynamic Policy invocation, Network Assistance invocation, QoE metrics reporting and consumption reporting used by a Media Session Handler for a downlink media delivery session but does not yet specify the equivalant procedures used by a Media Session Handler and/or a Media AS for an RTC session, which is in scope for the indicated Work Item in this release. | | | | | | | | |
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| ***Summary of change:*** | | Describe the details of Dyanmic Policy invocation, Network Assistanceinvokcation, metrics reporting and consumption reporting procedure by a Media Session Handler and a Media AS for an RTC session. | | | | | | | | |
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| ***Consequences if not approved:*** | | The specification does not fully address the consumption reporting feature for an RTC session in this release. | | | | | | | | |
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| ***Clauses affected:*** | | 5.2.7.1, 5.2.11.1, 5.2.12.1, 5.3.3.1, 5.3.3.2, 5.3.3.3, 5.3.3.4, 5.3.3.5, 5.3.4.1, 5.3.4.2, 5.3.4.3, 5.3.4.4, 5.3.4.5, 5.3.4.6, 5.3.4.7, 5.3.5.1, 5.3.5.2, 5.3.6.1, 5.3.6.2, 9.2.1, 9.2.3.1, 9.3.1, 9.3.2, 9.3.3.1, 9.4.2, 9.4.3.1, 9.5.1, 9.5.2, 9.5.3, 9.6.1, 9.6.2, 9.6.3.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | |  | | |
| ***affected:*** | |  | **X** | Test specifications | | | |  | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
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| ***This CR's revision history:*** | |  | | | | | | | | |

Changes to 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 QosRange (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 QosRange 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.

Changes to Metrics Reporting Provisioning

#### 5.2.11.1 General

These operations are used by the Media Application Provider at reference point M1 to provision QoE metrics reporting functionality associated with downlink or uplink media delivery. The Media Application Provider may provision several Metrics Reporting Configurations within the scope of a Provisioning Session with different properties which determine whether and how often the Media Session Handler and/or Media AS (whichever is acting as metrics reporting entity) submits QoE metrics reports to the Media AF as well as the format and contents of these reports. To this end, each Metrics Reporting Configuration shall specify a *metrics scheme*, which may be specified by 3GPP or by another party. The chosen metrics scheme URI is indicated in the scheme property of the Metrics Reporting Configuration. This clause defines the basic operations; more details are provided in clause 8.11.

A given Metrics Reporting Configuration is uniquely identified within the scope of its parent Provisioning Session by the metricsReportingConfigurationId property of the corresponding Metrics Reporting Configuration resource, as specified in clause 8.11.3.1.

Where metrics reporting is not required for the entire duration of a media delivery session, reportingStartOffset and/or reportingDuration parameters may additionally be specified for a Metrics Reporting Configuration indicating the portion of each media delivery session for which metrics reports are to be submitted by the metrics reporting entity.

Where the reporting of a particular metric is required based on its value crossing specific thresholds:

- The positive‌Crossing‌Thresholds property may additionally be specified in a Metrics Reporting Configuration for one or more of the metrics present in the metrics property. When present, themetrics reporting entity shall report a metric once when its value exceeds one of the threshold values indicated in the positive‌Crossing‌Thresholds property and shall not be reported again until it falls below that threshold and subsequently exceeds it.

- The negative‌CrossingThresholds property may additionally be specified in a Metrics Reporting Configuration for one or more of the metrics present in the metrics property. When present, themetrics reporting entity shall report a metric once when its value falls below one of the threshold values indicated in the negative‌Crossing‌Thresholds property and shall not be reported again until it exceeds that threshold and subsequently exceeds it.

Where metrics are required to be collected only in certain geographic locations, the location‌Filterproperty may additionally be specified in a Metrics Reporting Configuration. When present, themetrics reporting entity shall collect the metrics described by the metrics reporting configuration only when the UE (or remote peer outside the Media Delivery System) is located in one or more geographic locations specified in the location‌Filterproperty and shall report the collected metrics. When not present, themetrics reporting entity shall collect and report the metrics regardless of the device’s geographic location.

NOTE: When the consumption reporting entity is a Media AS, it may be aware of the location of a remote peer outside the Media Delivery System.

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.

Changes to Consumption Reporting Provisioning

#### 5.2.12.1 General

These operations are used by the Media Application Provider at reference point M1 to activate and to configure consumption reporting functionality associated with media delivery for downlink media streaming sessions or RTC sessions. The Media Application Provider may provision a single Consumption Reporting Configuration within the scope of a Provisioning Session which determines whether and how often the Media Session Handler and/or the Media AS submits consumption reports to the Media AF. This clause defines the basic operations. More details are provided in clause 8.12.

NOTE: The Consumption Reporting feature is not applicable to uplink media streaming.

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.

Changes to Dynamic Policy invocation

#### 5.3.3.1 Procedures

To take advantage of the Dynamic Policy feature of the Media Delivery System, a Media Session Handler or Media AS (whichever is acting as Dynamic Policy invoker) instantiates a Policy Template that was previously provisioned within the scope of a Provisioning Session using the operations specified in clause 5.2.7. The parameters in the Policy Template are used by the Media AF in combination with a dynamic QoS specification supplied by the Dynamic Policy invoker to request specific QoS and/or charging policies from the PCF (either directly or via the NEF, as specified in clause 5.5.3) for that media delivery session.

The following procedures are followed by a Dynamic Policy invoker to manage Dynamic Policy Instance resources in the Media AF via reference point M5. Instantiating a Policy Template as a dynamic policy requires a Policy Template identifier (provided in Service Access Information that is either retrieved from the Media AF using the operation specified in clause 5.3.2.3 or else supplied via reference point M6), a set of Service Data Flow description(s), an optional dynamic QoS specification and potentially other parameters defined in clause 5.7 of TS 26.501 [4].

- The Policy Template identifier identifies the desired Policy Template (as previously provisioned per clause 5.2.7.3) to be applied to the specified application flow(s). A Policy Template includes properties such as specific QoS (e.g. background data) or different charging treatments.

- The Media AF combines the information from the Policy Template with dynamic QoS specification supplied by the Dynamic Policy invoker and uses this complete set of parameters to invoke the PCF according to clause 5.5.3.

- The set of Service Data Flow description(s) allow the identification and classification by the 5G System of the application traffic involved in a media delivery session. These take the form of an IP packet filter set (as defined in clause 5.7.6 of [2]) or the Fully-Qualified Domain Name (FQDN) of a Media AS at reference point M4.

- The Dynamic Policy Instance may specify a target network slice and Data Network Name.

NOTE: It is not defined in this release how a Media AF in an external Data Network selects a specific DNN or S‑NSSAI.

The application flow specifications for Dynamic Policy Instances relating to concurrent media delivery sessions at the same Media Client shall be non-overlapping. The Media AF is responsible for enforcing these constraints.

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.

#### 5.3.3.2 Create Dynamic Policy Instance resource operation

In order to instantiate a new dynamic policy, the Media Session Handler or Media AS (whichever is acting as Dynamic Policy invoker) shall first create a resource for the Dynamic Policy Instance in the Media AF. The Dynamic Policy invoker shall use the HTTP POST message for this purpose. The body of the HTTP POST message shall be a Dynamic Policy Instance resource representation that includes a Provisioning Session identifier, the resource identifier of the target Policy Template and a set of Service Data Flow descriptions identifying the application flow(s) to be policed.

1. The provisioningSessionId property associates the Dynamic Policy Instance resource with a Provisioning Session.

2. The policyTemplateId property uniquely identifies the Policy Template on which the Dynamic Policy Instance is based.

3. For each application flow to be managed by the Dynamic Policy Instance resource, an instance of the Application‌Flow‌Binding object shall be present in the appplication‌Flow‌Bindings array. The applicationFlow‌Description property of this object shall be populated by the Dynamic Policy invoker and shall declare a Service Data Flow template according to TS 23.503 [17] that describes application flow in question. Exactly one of the following filtering specifications shall be populated in the Application‌FlowDescription object to identify traffic belonging to a media delivery application flow:

- a packetFilter object (including 5-tuples, Type of Service, Security Parameter Index, etc.). A Media Client shall not attempt to instantiate more than one Dynamic Policy Instance at the same time that cites the same set of packet filters*.*

- a domainName populated with the fully-qualified Internet domain name of a Media AS at reference point M4*.* A Media Client shall not attempt to instantiate more than one Dynamic Policy Instance at the same time that cites the same domainName*.*

In addition, the top-level media type of the application flow may be declared in the mediaType property.

When the policy binding for the chosen Policy Template indicates that PDU Set marking is enabled (i.e., the pduSetMarking flag is set to true in Service Access Information), the Dynamic Policy invoker shall also populate the mediaTransportParameters property with the media transport protocol parameters to be used by the Media Access Function on the application flow in question to label uplink PDUs belonging to the same PDU Set and/or to indicate the last PDU in each PDU Set and/or to indicate the end of a data burst comprising one or more PDU Sets.

When the policy binding for the chosen Policy Template indicates that PDU Set marking is enabled (i.e., the pduSetMarking flag is set to true in Service Access Information), the Dynamic Policy invoker shall also populate the mediaTransportParameters property with the media transport protocol parameters to be used by the Media AS on the application flow in question to label downlink PDUs belonging to the same PDU Set and/or to indicate the last PDU in each PDU Set and/or to indicate the end of a data burst comprising one or more PDU Sets.

4. When the Dynamic Policy invoker attempts to activate a QoS-related Policy Template, the qosSpecification property shall also be present in the Application‌Flow‌Binding object containing the following properties specified in clause 7.3.3.6 to describe the QoS requirements of the media application flows described by the bound applicationFlowDescription property:

- downlinkBitRates shall indicate the maximum requested bit rate, minimum desired bit rate and minimum requested bit rate in the downlink direction.

- uplinkBitRates shall indicate the maximum requested bit rate, minimum desired bit rate and minimum requested bit rate in the uplink direction.

- desiredPacketLatency may indicate the desired packet latency in both the downlink and uplink directions.

- desiredPacketLossRate may indicate the desired packet loss rate in both the downlink and uplink directions.

- desiredDownlinkPduSetQosParameters may be populated to indicate the desired delay budget and error rate for PDU Sets in the downlink direction, as well as indicating whether the loss of a single PDU in a PDU Set is significant for the receiving application.

- desiredUplinkPduSetQosParameters may be populated to indicate the desired delay budget and error rate for PDU Sets in the uplink direction, as well as indicating whether the loss of a single PDU in a PDU Set is significant for the receiving application.

5. When the Dynamic Policy invoker instantiates a Policy Template that is provisioned with a Background Data Transfer (BDT) specification per clause 5.2.7.1, the bdtSpecification property shall be present and it shall contain the following properties:

- estimatedDataTransferVolume, indicating the data volume that the Media Client estimates it will use during the current Background Data Transfer time window.

- Each object (see clause 7.3.3.14) conveyed in the windows array indicates a time window over which Background Data Transfers are requested by the Dynamic Policy invoker from those offered in the dynamic policy configuration of the Service Access Information resource (see clause 5.3.2.1).

- Each such window may additionally indicate the maximum bit rate for Background Data Transfers in the downlink and uplink directions that the Dynamic Policy invoker is bidding for in (respectively) the maximimumDownlinkBitRate and maximimumUplinkBitRate properties. In response, the Media AF populates these properties with the maximum permitted bit rate for Background Data Transfers in the downlink and uplink directions respectively when the dynamic policy is in force.

6. When the 5G System employs a traffic enforcement function to ensure that traffic complies with the policy described by the qosSpecification property, the Media AF shall explicitly indicate this in the Dynamic Policy resource representation by setting the qosEnforcement property to true.

If the operation is successful, the Media AF shall create a new Dynamic Policy Instance resource. In this case, the Media AF shall return a 201 (Created) HTTP response message to the Dynamic Policy invoker, and the URL of the newly created Dynamic Policy Instance resource, including its resource identifier, shall be provided as the value of the Location HTTP header field. The response message body shall be a representation of the current state of the Dynamic Policy Instance resource (see clause 9.3.3.1), including any properties assigned by the Media AF.

Upon successful creation of the Dynamic Policy Instance resource, notifications of updates to the resource may be notified asynchronously to the Dynamic Policy invoker:

- If the notificationURL property is present in the Service Access Information, the Dynamic Policy invoker shall subscribe to the MQTT sub-topic corresponding to the resourceId of the Dynamic Policy Instance and shall expect to receive asynchronous notifications published by the Media AF on the MQTT notification channel of type NOTIFICATION\_‌DYNAMIC\_‌POLICY\_‌INSTANCE concerning changes to the Dynamic Policy Instance, including details about new Background Data Transfer opportunities.

- The Media AF shall use the MQTT notification channel signalled in the Service Access Information (if any, see clause 5.3.2.3) to notify the Dynamic Policy invoker subscriber about updates to the Dynamic Policy Instance resource. A notification message of type NOTIFICATION\_‌DYNAMIC\_‌POLICY\_‌INSTANCE shall be published to the MQTT sub-topic corresponding to the resourceId of the Dynamic Policy Instance.

The usage and message formats for the MQTT notification channel are specified in clause 10.2.

When the Dynamic Policy Instance is successfully instantiated, the Media AF triggers the creation of a corresponding PCC rule in the 5G System according to clause 5.5.3 to enforce the required QoS and/or charging policy on the specified application flow(s). Depending on the ApplicationFlowDescription objects in the received Dynamic Policy Instance resource representation and the filterMethod indicated by each one, the Media AF shall populate for each one a flowDescription object and/or provide an Application Identifier referring to a PFD (Packet Flow Description) object containing the domain name of a Media AS instance.

NOTE: When the Media AF is deployed in an external Data Network, it is the responsibility of the NEF to map any external Application Identifier supplied by the Media AF into an internal Application Identifier that is known to the PCF.

If the supplied Dynamic Policy Instance is not acceptable to the Media AF, the create operation shall fail with an HTTP response status code of 400 (Bad Request) and an error message body per clause 7.1.7. In this case, the Dynamic Policy Instance resource shall remain in an uncreated state in the Media AF.

If the request is acceptable but the Media AF forbids the instantiation of the referenced Policy Template, for example because the quota for Background Data Transfers has been exceeded or because the UE is not permitted in the charging specification, the create operation shall fail with an HTTP response status code of 403 (Forbidden) and an error message body per clause 7.1.7. In this case, the Dynamic Policy Instance resource shall remain in an uncreated state in the Media AF.

If the request is acceptable but the Media AF is unable to provision the resources required by the supplied Dynamic Policy Instance, the create operation shall fail with an HTTP response status code of 500 (Internal Server Error) and an error message body per clause 7.1.7. In this case, the Dynamic Policy Instance resource shall remain in an uncreated state in the Media AF.

If the Dynamic Policy invoker needs to instantiate several dynamic policies, it may invoke this operation as often as needed.

#### 5.3.3.3 Retrieve Dynamic Policy Instance resource operation

This operation is used by the Media Session Handler or Media AS (whichever is acting as Dynamic Policy invoker) to retrieve the current state of an existing Dynamic Policy Instance resource in the Media AF. HTTP GET method shall be used for this purpose, citing the resource identifier of the target Dynamic Policy Instance in the request URL.

If successful, the Media AF shall return a 200 (OK) HTTP response message that includes a representation of the target Dynamic Policy Instance resource (see clause 9.3.3.1) in the response message body.

#### 5.3.3.4 Update Dynamic Policy Instance resource operation

This operation is invoked by the Media Session Handler or Media AS (whichever is acting as Dynamic Policy invoker) to entirely replace or modify certain properties of an existing Dynamic Policy resource. All available properties may be updated. The HTTP PATCH or HTTP PUT methods shall be used for this purpose, citing the resource identifier of an existing Dynamic Policy Instance in the request URL. The replacement Dynamic Policy Instance resource representation shall be provided in the body of the HTTP request message.

If all required information is set in the replacement Dynamic Policy Instance, the Media AF shall trigger the appropriate actions towards other Network Functions in the 5G System according to clause 5.5.3 to update the associated PCC rule in line with the modified QoS and charging policy.

If the HTTP request is acceptable but the operation results in no change to the resource representation, a 204 (No Content) HTTP response message with an empty body should be returned.

If the operation is otherwise successful, the Media AF shall return a 200 (OK) HTTP response message that includes a representation of the current state of the target resource in the message body to confirm successful update.

If the supplied Dynamic Policy Instance is not acceptable to the Media AF, the update operation shall fail with an HTTP response status code of 400 (Bad Request) and an error message body per clause 7.1.7. In this case, the Dynamic Policy Instance resource shall remain in the state immediately prior to the update operation.

Attempts to modify read-only properties of the target Dynamic Policy Instance resource shall be rejected by the Media AF with a 403 (Forbidden) HTTP response that includes an error message body per clause 7.1.7.

If the request is acceptable but the Media AF forbids the instantiation of the referenced Policy Template, for example because the UE is not permitted in the charging specification, the update operation shall fail with an HTTP response status code of 403 (Forbidden) and an error message body per clause 7.1.7. In this case, the Dynamic Policy Instance resource shall remain in the state immediately prior to the update operation.

If the request is acceptable but the Media AF is unable to provision the resources required by the supplied Dynamic Policy Instance, the update operation shall fail with an HTTP response status code of 500 (Internal Server Error) and an error message body per clause 7.1.7. In this case, the Dynamic Policy Instance resource shall remain in the state immediately prior to the update operation.

#### 5.3.3.5 Destroy Dynamic Policy Instance resource operation

This operation is invoked by the Media Session Handler or Media AS (whichever is acting as Dynamic Policy invoker) to destroy an existing Dynamic Policy Instance resource. The HTTP DELETE method shall be used for this purpose, citing the resource identifier of the target Dynamic Policy Instance in the request URL. As a result, the Media AF shall trigger the appropriate actions towards other Network Functions in the 5G System according to clause 5.5.3 to remove the associated PCC rule and to revert the affected application flow(s) to a default QoS and charging policy.

If the operation is successful, the Media AF shall return a 204 (No Content) HTTP response message with an empty message body.

No further MQTT notification messages shall be published by the Media AF on the sub-topic corresponding to the resource identifier of the destroyed resource. The Dynamic Policy invoker shall unsubscribe from the sub-topic corresponding to this resource identifier.

Any subsequent operations citing the resource identifier of a destroyed Dynamic Policy Instance should result in a 410 (Gone) or else a 404 (Not Found) HTTP response message that includes an error message body per clause 7.1.7.

Changes to Network Assistance invocation

#### 5.3.4.1 Procedures

The following procedures are followed by the Media Session Handler or Media AS (whichever is acting as Network Assistance invoker) to request Network Assistance from one of the Media AF instances listed in the serverAddresses property of the Network Assistance Configuration which is part of the Service Access Information that is either retrieved from the Media AF using the operation specified in clause 5.3.2.3 or else supplied via reference point M6.

1. The Network Asisstance invoker first creates a Network Assistance Session with its chosen Media AF instance. It provides information that will later be used by the Media AF to request a particular network QoS to be applied by the PCF to one or more application data flows, and to recommend a bit rate to the Media Client. The Media AF assigns a resource identifier to the Network Assistance Session at the point of creation. This procedure is further specified in clause 5.3.4.2.

2. The Network Assistance Session resource may be retrieved by the Network Assistance invoker using the procedure specified in clause 5.3.4.3.

3. At any time after the Network Assistance Session resource is created, the Network Assistance invoker may use the Network Assistance Session resource identifier to explicitly request a bit rate recommendation by invoking a remote procedure call provided for this purpose by the Media AF. This procedure is further specified in clause 5.3.4.4.

4. Using the Network Assistance Session resource identifier, the Network Assistance invoker may also request a delivery boost to be provided by the 5G System at any time by invoking a remote procedure call provided for this purpose by the Media AF. This procedure is further specified in clause 5.3.4.5.

5. The information provided when first creating a Network Assistance Session may be modified subsequently by the Network Assistance invoker using the session modification operation specified in clause 5.3.4.6.

6. In order to terminate a Network Assistance Session, the Network Assistance invoker destroys the Network Assistance Session resource using the procedure specified in clause 5.3.4.7.

Details of the APIs supporting these procedures at reference point M5 are specified in clause 9.4.

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.

#### 5.3.4.2 Create Network Assistance Session resource operation

This operation is used by the Media Session Handler or Media AS (whichever is acting as Network Assistance invoker) to create a Network Assistance Session in the Media AF. The POST HTTP method shall be used for this purpose and the request message body shall be a Network Assistance Session resource representation as specified in clause 9.4.3.1.

1. The provisioningSessionId property associates the Network Assistance Session with a Provisioning Session.

2. The slice property associates the Network Assistance Session with a specific network slice.

3. The dataNetworkName property associates the Network Assistance Session with a specific named Data Network.

4. The Network Assistance invoker shall populate the Network Assistance Session resource representation in the request with service data flow information and optionally the Policy Template identifier of the network QoS policy currently in force on the media streaming session for which Network Assistance operations are to be performed. (The Media AF subsequently uses this information to execute Network Assistance operations in the 5G Core.)

The applicationFlowDescription property of the Network Assistance Session resource representation shall be populated by the Network Assistance invoker and shall declare a Service Data Flow template according to TS 23.503 [33] that describes the application flow for which network assistance is sought. Exactly one of the following filtering specifications shall be populated in the Application‌FlowDescription object to identify traffic belonging to a media delivery application flow:

- a packetFilter object (including 5-tuples, Type of Service, Security Parameter Index, etc.). A Media Session Handler shall not attempt to instantiate more than one Network Assistance Session at the same time that cites the same packet filter.

- a domainName populated with the fully-qualified Internet domain name of a Media AS at reference point M4. A Media Session Handler shall not attempt to instantiate more than one Network Assistance Session at the same time that cites the same domainName.

In addition, the top-level media type of the application flow may be declared in the mediaType property.

The mediaTransportParameters property shall be omitted.

5. The requestedQoS property may be provided in the Network Assistance Session resource representation to specify an initial network QoS the Network Assistance invoker wishes to use for the media streaming session. If the policyTemplateId property is also populated in the Network Assistance Session resource representation, the Media AF shall return a 400 (Bad Request) HTTP response message if the requested network QoS lies outside the limits specified in the referenced Policy Template.

- If the requestedQoS property is omitted from the Network Assistance Session resource representation but the policyTemplateId is populated, the Media AF shall use the network QoS currently provisioned in the referenced Policy Template as the floor/ceiling for bit rate recommendations and delivery boosts within the scope of the Network Assistance Session.

- If neither a policyTemplateId nor a requestedQoS are supplied when creating a Network Assistance Session, operations invoked on the Media AF within the scope of the Network Assistance Session are constrained only by the policies of the PCF. Upon successful creation, the Media AF shall return a 201 (Created) response message and the URL of the newly created resource, including its Network Assistance Session resource identifier, shall be provided as the value of the Location HTTP header field. The response message body shall be a representation of the current state of the Network Assistance Session resource (see clause 9.4.3.1), including any properties assigned by the Media AF.

If the operation is successful, the Media AF shall create a new Network Assistance Session resource. In this case, the Media AF shall return a 201 (Created) HTTP response message to the Network Assistance invoker, and the URL of the newly created Network Assistance Session resource, including its resource identifier, shall be provided as the value of the Location HTTP header field. The response message body shall be a representation of the current state of the Network Assistance Session resource (see clause 9.4.3.1), including any properties assigned by the Media AF.

Upon successful creation of the Network Assistance Session resource, notifications of updates to the resource may be notified asynchronously to the Network Assistance invoker:

- If the notificationURL property is present in the Service Access Information, the Network Assistance invoker shall subscribe to the MQTT sub-topic corresponding to the resourceId of the Network Assistance Session, and shall expect to receive asynchronous notifications published by the Media AF on the MQTT notification channel of type NOTIFICATION\_‌NETWORK\_‌ASSISTANCE\_‌SESSION concerning changes to the Network Assistance Session, including an up-to-date bit rate recommendation whenever this changes.

- The Media AF shall use MQTT the notification channel signalled in the Service Access Information (if any, see clause 5.3.2.3) to notify subscribers of updates to the Network Assistance Session resource. A notification message of type NOTIFICATION\_‌NETWORK\_‌ASSISTANCE\_‌SESSION shall be published to the MQTT sub-topic corresponding to the resourceId of the Network Assistance Session.

The usage and message formats for the MQTT notification channel are specified in clause 10.2.

When the Network Assistance Session is successfully instantiated, the Media AF triggers the creation of a corresponding PCC rule in the 5G System according to clause 5.5.4 to enforce the required QoS on the specified application flow(s). Depending on the ApplicationFlowDescripton objects in the received Network Assistance Session resource representation and the filterMethod indicated by each one, the Media AF shall populate for each one a flowDescription object and/or provide an Application Identifier referring to a PFD (Packet Flow Description) object containing the domain name of a Media AS instance.

NOTE: When the Media AF is deployed in an external Data Network, it is the responsibility of the NEF to map any external Application Identifier supplied by the Media AF into an internal Application Identifier that is known to the PCF.

If the supplied Network Assistance Session is not acceptable to the Media AF, the create operation shall fail with an HTTP response status code of 400 (Bad Request) and an error message body per clause 7.1.7. In this case, the Network Assistance Session resource shall remain in an uncreated state in the Media AF.

If the request is acceptable but the Media AF forbids the use of the referenced Policy Template in a Network Assistance Session, for example because the UE is not permitted in the charging specification, the create operation shall fail with an HTTP response status code of 403 (Forbidden) and an error message body per clause 7.1.7. In this case, the Network Assistance Session resource shall remain in an uncreated state in the Media AF.

If the request is acceptable but the Media AF is unable to provision the resources required by the supplied Network Assistance Session, the create operation shall fail with an HTTP response status code of 500 (Internal Server Error) and an error message body per clause 7.1.7. In this case, the Network Assistance Session resource shall remain in an uncreated state in the Media AF.

The Media Client uses the Network Assistance Session resource identifier (naSessionId) provided by the Media AF to refer all subsequent API calls to the Media AF instance responsible for that Network Assistance Session.

#### 5.3.4.3 Retrieve Network Assistance Session resource operation

This operation is used by the Media Session Handler or Media AS (whichever is acting as Network Assistance invoker) to retrieve the current state of a Network Assistance Session resource from the Media AF. The HTTP GET method shall be used for this purpose, citing the resource identifier of the target Network Assistance Session in the request URL.

If the operation is successful, the Media AF shall return 200 (OK) and shall provide a representation of the requested resource in the HTTP message response body.

#### 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 an ClientQosSpecification 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 ClientQosSpecification 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.

#### 5.3.4.5 Delivery boost request operation

This operation is used by the Media Session Handler or Media AS (whichever is acting as Network Assistance invoker) to request a delivery boost from the Media AF. the HTTP POST 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 indicating the delivery boost operation.

If the operation is successful, the Media AF shall return a 200 (OK) HTTP response message and shall provide an OperationSuccessResponse object (see clause 7.3.3.9) in the message body indicating whether or not the delivery boost was successfully applied by the Media AF to the application data flow(s) described in the target Network Assistance Session.

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

#### 5.3.4.6 Update Network Assistance Session resource operation

This operation is used by the Media Session Handler or Media AS (whichever is acting as Network Assistance invoker) to replace the steaming session parameters in an existing Network Assistance Session resource with new values. The HTTP PUT or PATCH methods shall be used for this purpose, citing the resource identifier of an existing Network Assistance Session in the request URL. Any change to the Policy Template currently in force resulting from instantiation of a Dynamic Policy (see clause 5.3.3) should also be notified to the Media AF using this operation if a Network Assistance session has been created for the media delivery session in question.

If the HTTP request is acceptable but the operation results in no change to the resource representation, a 204 (No Content) HTTP response message with an empty body should be returned.

If the operation is otherwise successful, the Media AF shall return a 200 (OK) HTTP response message and shall provide a representation of the current state of the resource in the message body to confirm successful update.

If the supplied Network Assistance Session is not acceptable to the Media AF, the update operation shall fail with an HTTP response status code of 400 (Bad Request) and an error message body per clause 7.1.7. In this case, the Network Assistance Session resource shall remain in the state immediately prior to the update operation.

Attempts to modify read-only properties of the target Network Assistance Session resource shall be rejected by the Media AF with a 403 (Forbidden) HTTP response that includes an error message body per clause 7.1.7.

If the request is acceptable but the Media AF forbids the use of the referenced Policy Template in a Network Assistance Session, for example because the UE is not permitted in the charging specification, the update operation shall fail with an HTTP response status code of 403 (Forbidden) and an error message body per clause 7.1.7. In this case, the Network Assistance Session resource shall remain in the state immediately prior to the update operation.

If the request is acceptable but the Media AF is unable to provision the resources required by the supplied Network Assistance Session, the update operation shall fail with an HTTP response status code of 500 (Internal Server Error) and an error message body per clause 7.1.7. In this case, the Network Assistance Session resource shall remain in the state immediately prior to the update operation.

#### 5.3.4.7 Destroy Network Assistance Session resource operation

This operation is used by the Media Session Handler or Media AS (whichever is acting as Network Assistance invoker) to terminate a Network Assistance Session. The HTTP DELETE method shall be used for this purpose, citing the resource identifier of the target Network Assistance Session in the request URL.

If the operation is successful, the Media AF shall return a 204 (No Content) HTTP response message with an empty message body.

No further MQTT notification messages shall be published by the Media AF to the sub-topic corresponding to the resource identifier of the destroyed resource. The Network Assistance invoker shall unsubscribe from the sub-topic corresponding to this resource identifier.

Any subsequent operations citing the resource identifier of a destroyed Network Assistance Session should result in a 410 (Gone) or else a 404 (Not Found) HTTP response message that includes an error message body per clause 7.1.7.

Changes to Metrics Reporting

#### 5.3.5.1 Procedures

These procedures are used by the Media AS at reference point M3 or else by the Metrics Reporting functions of the Media Client and subsequently by the Media Session Handler at reference point M5 to submit a metrics report to one of the Media AF instances listed in the client metrics reporting configuration of the Service Access Information resource previously retrieved using the procedure in clause 5.3.2.3.

- When the metrics collection and reporting feature is provisioned for media delivery sessions using the operations specified in clause 5.2.11, one or more client metrics reporting configurations, each associated with a provisioned Metrics Reporting Configuration, shall be provided to the Media Session Handler (acting in this case as metrics reporting entity) in the Service Access Information.

- When the metrics collection and reporting feature is provisioned for RTC sessions using the operations specified in clause 5.2.11, one or more client metrics reporting configurations, each associated with a provisioned Metrics Reporting Configuration, shall be provided to the Media Session Handler and the Media AS (both acting in this case as metrics reporting entity) in the Service Access Information.

A given client metrics reporting configuration contains information including:

1. The subset of metrics from the provisioned metrics scheme to be collected and reported by the metrics reporting entity;

2. The frequency at which these metrics are to be sampled by the metrics reporting entity;

2a. Thresholds for certain metrics, the crossing of which drives their reporting by the metrics reporting entity;

2b. The locations of the Media Client (or remote peer outside the Media Delivery System) where metrics collection is requested;

NOTE: When the metrics reporting entity is a Media AS, it may be aware of changes to the location of a remote peer outside the Media Delivery System.

3. The proportion of media delivery sessions for which metrics reports are to be sent by the metrics reporting entity;

4. The portion of the media session (represented by start offset and/or duration parameters) for which metrics reports are to be sent by the metrics reporting entity if reporting is enabled for that media delivery session;

5. The interval at which metrics reports are to be sent by the metrics reporting entity if reporting is enabled for a media delivery session; and

6. The Media AF address(es) to which metrics reports are to be sent.

Furthermore:

- Before a media delivery session is started, the metrics reporting entity shall check if the Service Access Information includes any Client Metrics Reporting Configurations. If any such configurations are present, the metrics reporting entity shall initiate the metrics reporting procedure for the media delivery session based on these configurations.

- During the course of the media delivery session, the metrics reporting entity shall periodically check if any Metrics Reporting Configurations have been added to or removed from the Service Access Information and shall activate or deactivate the metrics reporting procedure as appropriate for the media delivery session in question.

The data type of the Metrics Reporting Configuration signalled as part of the Service Access Information indicating at reference point M5 is specified in clause 9.2.3.

The metrics reporting entity shall decide whether to activate the metrics reporting procedure for a particular media delivery session at the start of that session and whenever any Client Metrics Reporting Configuration changes in the related Service Access Information.

- When the samplePercentage property in a Metrics Reporting Configuration has a value of 100 percent, the metrics reporting entity shall activate the metrics reporting procedure for that configuration.

- If the samplePercentage value in a Metrics Reporting Configuration is less than 100 percent, the metrics reporting entity shall generate a random number which is uniformly distributed in the range of 0 to 100, and the metrics reporting entity shall activate the metrics reporting procedure for the Metrics Reporting Configuration when the generated random number is of a lower value than the samplePercentage value.

If the metrics reporting procedure is activated for a particular Client Metrics Reporting Configuration, the metrics reporting entity shall produce and submit a metrics report to the Media AF using the procedure specified in clause 5.3.5.2 when any of the following conditions are met:

- On determining the need to report ongoing QoE metrics for a media delivery session at periodic intervals determined by the reportingInterval property in the Client Metrics Reporting Configuration, provided that both of the following hold:

- The time offset indicated in the reportingStartOffset property of the Client Metrics Reporting Configuration has passed since the start of the media delivery session; and

- The time offset indicated in the reportingDuration property of the Client Metrics Reporting Configuration has not yet passed since the time offset indicated in the reportingStartOffset property.

- At the end of the media delivery session.

Whenever a metrics report is produced for a given client metrics reporting configuration, the metrics reporting entity shall reset its reporting interval timer for that configuration to the value of the clientMetrics‌Reporting‌Configurations[].‌reportingInterval property and it shall begin countdown of the timer again. When the media delivery session comes to an end, the metrics reporting entity shall disable its reporting interval timer for all client metrics reporting configurations.

Details of the APIs supporting these procedures at reference points M3 and M5 are specified in clause 9.5.

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.

#### 5.3.5.2 Submit metrics report operation

This operation is used by the Media Session Handler or Media AS (whichever is acting as metrics reporting entity) to submit a metrics report to the Media AF. If several Media AF addresses are listed in the serverAddresses array of the client metrics reporting configuration (see table 9.2.3.1-1), the metrics reporting entity shall choose one at random and shall send the metrics report to the selected server endpoint. The HTTP POST method shall be used for this purpose, citing the address of the chosen Media AF in the request URL. The request body shall be formatted according to the metrics scheme indicated in scheme property of one of the Client Metrics Reporting Configurations (see clause 5.3.2.3 and table 9.2.3.1-1) and the Content-Type HTTP request header set accordingly. Details of individual metrics reporting schemes and their corresponding metrics report formats are beyond the scope of the present document.

A reporting client identifier should be included in the metrics report if the metrics scheme supports carriage of this data. Metrics schemes designed for use with this operation should specify a means to convey a reporting client identifier. If available to the metrics reporting entity, its value should be a GPSI value as defined by TS 23.003 [16]. Otherwise, the reporting client identifier should be represented by a stable and globally unique string.

If the HTTP request is acceptable but the Media AF has not yet fully processed the submitted metrics report, the Media AF may return a 202 (Accepted) HTTP response message with an empty body and process the report later.

If the operation is otherwise successful, the Media AF shall return a 200 (OK) HTTP response message with an empty body to acknowledge successful processing of the metrics report.

If metrics reporting is not provisioned for the Provisioning Session in question, the Media AF shall return a 403 (Forbidden) HTTP response message with an error message body per clause 7.1.7 and the Media AF shall not process the submitted report.

If the HTTP request message indicates a MIME content type in the Content-Type request header that is not consistent with one of the provisioned metrics reporting schemes, the Media AF shall return a 415 (Unsupported Media Type) HTTP response message with an error message body per clause 7.1.7 and shall not process the submitted metrics report.

If the target Media AF endpoint is temporarily unable to accept the submitted metrics report (e.g. because it is overloaded), it shall return a 503 (Service Unavailable) HTTP response message with an empty body. The optional HTTP response header Retry-After should be included in such a response, indicating when the Media AF expects to be able to accept new submissions. In this case, the metrics reporting entity should store outstanding metrics reports and reattempt submission when the endpoint later becomes available. Details are left to implementation.

Changes to Consumption Reporting

#### 5.3.6.1 Procedures

These procedures are used by the Media AS at reference point M3 or else by the Consumption Reporting functions of the Media Client and subsequently by the Media Session Handler at reference point M5 to submit a consumption report to one of the Media AF instances listed in the Client Consumption Reporting Configuration of the Service Access Information resource previously retrieved using the procedure in clause 5.3.2.3.

- When the Consumption Reporting feature is provisioned for downlink media delivery sessions using the operations specified in clause 5.2.12, a Client Consumption Reporting Configuration shall be provided to the Media Session Handler (acting in this case as consumption reporting entity) in the Service Access Information.

NOTE: The Consumption Reporting feature is not applicable to uplink media streaming.

- When the Consumption Reporting feature is provisioned for RTC sessions using the operations specified in clause 5.2.12, a Client Consumption Reporting Configuration shall be provided to the Media Session Handler and the Media AS (both acting in this case as consumption reporting entity) in the Service Access Information.

Furthermore:

- Before a media delivery session is started, the consumption reporting entity shall check if the Service Access Information includes a Client Consumption Reporting Configuration. If such a configuration is present, the consumption reporting entity shall initiate consumption reporting for the downlink media delivery session based on this configuration.

NOTE: The Client Consumption Reporting Configuration is absent in the case of uplink media streaming.

- During the course of the media delivery session, the consumption reporting entity shall periodically check if the Client Consumption Reporting Configuration has been added to or removed from the Service Access Information and shall activate or deactivate the consumption reporting procedure as appropriate for the media delivery session in question.

The data type of the Client Consumption Reporting Configuration signalled as part of the Service Access Information at reference point M5 is specified in clause 9.2.3.

The consumption reporting entity shall decide whether to activate the consumption reporting procedure for a particular media delivery session at the start of that session and whenever the Client Consumption Reporting Configuration changes in the related Service Access Information.

- When the samplePercentage property in the Client Consumption Reporting Configuration has a value of 100 percent, the consumption reporting entity shall activate the consumption reporting procedure.

- If the samplePercentage value in the Client Consumption Reporting Configuration is less than 100 percent, the consumption reporting entity shall generate a random number which is uniformly distributed in the range of 0 to 100, and the consumption reporting entity shall activate the consumption reporting procedure when the generated random number is of a lower value than the samplePercentage value.

If the consumption reporting procedure is activated, the consumption reporting entity shall produce and submit a consumption report to the Media AF using the procedure specified in clause 5.3.6.2 when any of the following conditions are met:

- At the start of consumption of a media item in a media delivery session.

- At the end of consumption of a media item in a media delivery session.

- On determining the need to report ongoing content consumption for a media delivery session at periodic intervals determined by the reportingInterval property in the Client Consumption Reporting Configuration.

- On detecting a location change during a media delivery session, if the locationReporting property in the Client Consumption Reporting Configuration is set to true.

NOTE: When the consumption reporting entity is a Media AS, it may be aware of changes to the location of a remote peer outside the Media Delivery System.

- On detecting a change of access network during a media delivery session, if the accessReporting property in the Client Consumption Reporting Configuration is set to true.

Whenever a consumption report is produced, the consumption reporting entity shall reset its consumption reporting interval timer to the value of the reportingInterval property of the Client Consumption Reporting Configuration and it shall begin countdown of the timer again. When the media delivery session comes to an end, the consumption reporting entity shall disable its consumption reporting interval timer.

Details of the APIs supporting these procedures at reference points M3 and M5 are specified in clause 9.6.

The consumption report shall comprise a time-ordered list of consumption reporting units. Each such unit shall describe the media selected for presentation during a continuous time period of a downlink media streaming session in terms of a start time and duration. The sequence of consumption reporting units shall be contiguous with no discontinuities in the reported timeline. When no media is being consumed (e.g., because the media streaming presentation is paused), the selected media shall still be indicated in the consumption reporting unit.

- A consumption reporting unit shall be included in exactly one consumption report, although delivery of this report may be attempted more than once by the consumption reporting entity.

- A new consumption reporting unit shall be created when the media consumed changes or (if provisioned in the consumption reporting configuration per clause 4.3.8) when the network used to access media at reference point M4d changes, including a change of network slice and/or Data Network.

- The last (or only) consumption reporting unit in every consumption report describes the media currently being consumed in the media streaming session and indicates in the duration property how long this media has been consumed so far.

- If there is no change in the media consumed when the next consumption report is sent to the Media AF, this consumption reporting unit shall be repeated as the first (and possibly only) consumption reporting unit in the next report with the same start time but with its duration updated to reflect the period of time that the media has been consumed up to the point of reporting.

- The last (or only) consumption reporting unit in the final consumption report sent to the Media AF at the end of the media streaming session therefore describes the last media consumed.

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.

#### 5.3.6.2 Submit consumption report operation

This operation is used by the Media Session Handler or Media AS (whichever is acting as metrics reporting entity) to submit a consumption report to the Media AF. If several Media AF addresses are listed in the serverAddresses array of the Client Consumption Reporting Configuration (see table 9.2.3.1-1), the consumption reporting entity shall choose one at random and shall send the consumption report to the selected server endpoint. The HTTP POST method shall be used for this purpose, citing the address of the chosen Media AF in the request URL. The request body shall be a ConsumptionReport structure, as specified in clause 9.6.3.1.

A reporting client identifier shall be included in the consumption report. If available to the consumption reporting entity, its value should be a GPSI value as defined by TS 23.003 [16]. Otherwise, the reporting client identifier should be represented by a stable and globally unique string.

The location(s) of the UE (or remote peer outside the Media Delivery System) when the media was consumed shall be included in every ConsumptionReportingUnit (see clause 9.6.3.2) if the locationReporting property in the Client Consumption Reporting Configuration is set to true.

If the HTTP request is acceptable but the Media AF has not yet fully processed the submitted consumption report, the Media AF may return a 202 (Accepted) HTTP response message with an empty body and process the report later.

If the operation is otherwise successful, the Media AF shall return a 200 (OK) HTTP response message with an empty body to acknowledge successful processing of the consumption report.

If consumption reporting is not provisioned for the Provisioning Session in question, the Media AF shall return a 403 (Forbidden) HTTP response message with an error message body per clause 7.1.7 and the Media AF shall not process the submitted consumption report.

If the target Media AF endpoint is temporarily unable to accept the submitted consumption report (e.g. because it is overloaded), it shall return a 503 (Service Unavailable) HTTP response message with an empty body. The optional HTTP response header Retry-After should be included in such a response, indicating when the Media AF expects to be able to accept new submissions. In this case, the consumption reporting entity should store outstanding consumption reports and reattempt submission when the endpoint subsequently becomes available. Details are left to implementation.

Changes to Service Access Information API

### 9.2.1 General

The Service Access Information API is used by the Media Session Handler or Media AS to obtain configuration information from the Media AF that enables it to use the other Media Session Handling APIs specified in clause 9.3 *et seq.*

#### 9.2.3.1 ServiceAccessInformation resource type

The data model for the ServiceAccessInformation resource is specified in table 9.2.3.1-1 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 9.2.3.1‑1: Definition of ServiceAccessInformation resource

| Property name | | | Type | Cardinality | Description | Applicability |
| --- | --- | --- | --- | --- | --- | --- |
| provisioningSessionId | | | ResourceId | 1..1 | Unique identification of the M1 Provisioning Session. | All types |
| provisioningSession‌Type | | | Provisioning‌Session‌Type | 1..1 | The type of Provisioning Session. | All types. |
| locationReporting | | | boolean | 1..1 | If true, the Media Session Handler or Media AS is required to provide UE location data in Dynamic Policy interactions (see clause 9.3.3.1), Network Assistance interactions (see clause 9.4.3.1), QoE metrics reporting interactions (see clause 9.5.3) and consumption reporting interactions (see clause 9.6.3.2).  Shall be set *false* if the locationReporting parameter is omitted from the ProvisioningSession, as specified in table 8.2.3.1‑1. | All types. |
| notificationURL | | | AbsoluteURL | 0..1 | A URL to the MQTT channel, nominated by the Media AF, over which notifications are to be sent by the Media AF (see clause 10.2). | All types. |
| streamingAccess | | | object | 0..1 | Present if Content Hosting or Content Publishing is provisioned in the parent Provisioning Session. | MS\_DOWNLINK*,* MS\_UPLINK |
|  | entryPoints | | array(Absolute‌Media‌Entry‌Point) | 0..1 | A list of alternative Media Entry Points for the Media Client to choose between. |
|  |  | locator | AbsoluteUrl | 1..1 | Populated from information in the Content Hosting Configuration or Content Publishing Configuration as specified in clause 8 of TS 26.512 [6].  - For downlink media streaming, either a pointer to a document at reference point M4 that defines a media presentation (e.g. a DASH MPD) whose resources are mapped to a content ingest configuration at reference point M2, or else the URL of a single media resource (e.g. an MP4 asset) available for download at reference point M4 that is mapped to reference point M2 by a Content Hosting Configuration. In both cases, the contentType property shall also be present.  - For uplink media streaming, either a pointer to a document at reference point M4 that defines a media presentation (e.g. a DASH MPD) whose resources are mapped to an egest configuration at reference point M2 (in which case the contentType property shall also be present), or else the URL of a path at reference point M4 the sub-resources of which are mapped to reference point M2 by a Content Publishing Configuration (in which case the protocol property shall also be present). |
|  |  | contentType | string | 1..1 | The MIME content type of resource at locator.  This property shall be mutually exclusive with protocol. |  |
|  |  | protocol | Uri | 1..1 | A fully-qualified term identifier URI that identifies the media delivery protocol at reference point M4 for this Media Entry Point.  This property shall be mutually exclusive with contentType.  The controlled vocabulary of media delivery protocols at this reference point is specified in clause 10 of TS 26.512 [6]. |  |
|  |  | profiles | array(Uri) | 0..1 | An optional list of conformance profile URIs with which this Media Entry Point is compliant.  If present, the array shall contain at least one item. |  |
|  | eMBMS‌Service‌Announcement‌Locator | | AbsoluteUrl | 0..1 | A pointer to an eMBMS User Service Announcement document. |  |
|  | mbs‌External‌Service‌Identifier | | string | 0..1 | The external service identifier of an MBS User Service. |  |
| rtcClientConfiguration | | | object | 0..1 | Present if real-time media communication (RTC) is provisioned. | RTC |
|  | stunEndpoints | | array(Client‌Service‌Endpoint‌Access‌Parameters) | 0..1 | An array of one or more trusted STUN service endpoints for use as ICE candidates. If present, the RTC Client shall use one of the listed servers for RTC-based media delivery sessions within the scope of provisioning‌SessionId.  If the credentials sub-property was not provisioned at reference point M1, the Media AF shall populate this with a set of credentials unique to the requesting Media Client. |
|  | turnEndpoints | | array(Client‌Service‌Endpoint‌Access‌Parameters) | 0..1 | An array of one or more trusted TURN service endpoints for use as ICE candidates. If present, the RTC Client shall use one of the listed servers for RTC-based media delivery sessions within the scope of provisioning‌SessionId.  If the credentials sub-property was not provisioned at reference point M1, the Media AF shall populate this with a set of credentials unique to the requesting Media Client. |
|  | swapEndpoints | | array(Client‌Service‌Endpoint‌Access‌Parameters) | 0..1 | An array of one or more trusted WebRTC Signalling Function service endpoints that support the SWAP protocol. If present, the RTC Client shall use one of the listed servers for RTC-based media delivery sessions within the scope of provisioning‌SessionId.  If the credentials sub-property was not provisioned at reference point M1, the Media AF shall populate this with a set of credentials unique to the requesting Media Client. |
| clientConsumptionReporting‌Configuration | | | object | 0..1 | Present if consumption reporting is activated for this Provisioning Session. | MS\_DOWNLINK*,* RTC |
|  |  | reportingInterval | DurationSec | 0..1 | The time interval, expressed in seconds, between consumption report messages being sent by the consumption reporting entity. 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(AbsoluteUrl) | 1..1 | A list of Media AF addresses (URLs) where the consumption reporting messages are sent by the consumption reporting entity. (See NOTE 1).  Each address shall be an opaque base URL, following the format specified in clause 7.1.3 up to and including the {apiVersion} path element. |  |
|  |  | accessReporting | boolean | 1..1 | Indicates whether the consumption reporting entity is required to supply consumption reporting units whenever the access network changes during a media delivery session.  Shall be set *false* if the accessReporting parameter is omitted from the Consumption‌Reporting‌Configuration, as specified in table 8.12.3.1‑1. |  |
|  |  | samplePercentage | Percentage | 1..1 | The percentage of media delivery sessions required to report consumption, expressed as a floating-point value between 0.0 and 100.0.  Shall be set to 100.0 if the samplePercentage parameter is omitted from the Consumption‌Reporting‌Configuration, as specified in table 8.12.3.1‑1. |  |
| dynamicPolicyInvocation‌Configuration | | | object | 0..1 | Present if Policy Templates have been provisioned in the parent Provisioning Session and at least one of them is in the READY state. | MS\_DOWNLINK*,* MS\_UPLINK*,* RTC |
|  | serverAddresses | | array(AbsoluteUrl) | 1..1 | A list of Media AF addresses (URLs) which offer the APIs for dynamic policy invocation. (See NOTE 1.)  Each address shall be an opaque base URL, following the format specified in clause 7.1.3 up to and including the {apiVersion} path element. |  |
|  | policyTemplateBindings | | array(object) | 1..1 | A list of duples, each one binding an external reference to a Policy Template resource identifier. |  |
|  |  | externalReference | string | 1..1 | 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". |  |
|  |  | policyTemplateId | ResourceId | 1..1 | The resource identifier of a Policy Template tagged with externalReference that is in the READY state. |  |
|  |  | pduSetMarking | boolean | 0..1 | If *true*, indicates that PDU Set marking applies to Dynamic Policy Instances based on policyTemplateId.  Default value false if omitted. |  |
|  |  | bdtWindows | array(BdtWindow) | 0..1 | A list of Background Data Transfer time windows during which the application may request the activation of a Background Data Transfer policy by instantiating the Policy Template identified by policyTemplateId. The actual usage quotas for data volume and bit rate are determined by the Media AF upon instantiation of the Policy Template.  BdtWindow is specified in clause 7.3.3.14. |  |
|  | sdfMethods | | array(SdfMethod) | 1..1 | A list of Service Data Flow description methods, e.g. 5-tuple, TOS, 2-tuple, etc., to be used to describe the application flows at reference point M2 or M12 for media delivery sessions. |  |
| clientMetricsReporting‌Configurations | | | array(object) | 0..1 | Present if QoE metrics reporting is provisioned in the parent Provisioning Session.  If present, contains one or more client metrics reporting configurations. | MS\_DOWNLINK*,* MS\_UPLINK*,* RTC |
|  | metricsReporting‌ConfigurationId | | ResourceId | 1..1 | The identifier of this metrics reporting configuration, unique within the scope of the parent Provisioning Session.  The value shall be the same as the corresponding identifier provisioned at reference point M1 (see clause 8.11.3.1). |
|  | serverAddresses | | array(AbsoluteUrl) | 1..1 | A list of Media AF addresses to which metrics reports shall be sent. (See NOTE 1).  Each address shall be an opaque base URL, following the format specified in clause 7.1.3 up to and including the {apiVersion} path element. |
|  | sliceScope | | array(Snssai) | 0..1 | The set of network slice(s) for which metrics collection and reporting shall be executed in connection with this metrics reporting configuration (see NOTE 2).  If present, the array shall identify at least one network slice.  If absent, metrics shall be collected and reported for media delivery sessions within the scope of the parent Provisioning Session regardless of network slice. |
|  | scheme | | Uri | 1..1 | A URI identifying the metrics scheme that metrics reports shall use (see clause 5.2.11).  The set of QoE metrics schemes valid for use in 5G Media Streaming along with their respective scheme identifiers is specified in clauses 4.7.5 and 7.8.1 of TS 26.512 [6].  The QoE metrics scheme valid for use in RTC along with its respective scheme identifier is specified in clause 15 of TS 26.113 [7]. |
|  | dataNetworkName | | Dnn | 0..1 | The name of the Data Network which shall be used to send metrics reports.  If not specified, the default Data Network shall be used. |
|  | reportingStartOffset | | DurationSec | 0..1 | The time offset (expressed in seconds) from the start of a media delivery session when the metrics reporting entity is required to begin submitting metrics reports.  If omitted, the value of this parameter is assumed to be zero, i.e., directing the Media Client to start reporting metrics from the start of the media delivery session. |
|  | reportingDuration | | DurationSec | 0..1 | The period of time (expressed in seconds) measured relative to the reporting start point, after which the metrics reporting entity is required to stop reporting metrics.  If omitted, reporting is required to continue until the end of the media delivery session. |
|  | reportingInterval | | DurationSec | 0..1 | The time interval, expressed in seconds, between metrics reports being sent by the metrics reporting entity. 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 | The percentage of media delivery sessions required to report QoE metrics, expressed as a floating-point value between 0.0 and 100.0. |
|  | positive‌Crossing‌Thresholds | | map(Uri -> array(Float)) | 0..1 | If present, a non-empty map of QoE metrics to their respective threshold values.  - The index of the associative array shall be the fully-qualified term identifier URI of a metric specified in annex E of TS 26.512 [6] or annex C of TS 26.113 [7].  - The value of each associative array member shall be an array of floating-point threshold values.  A metric in this associative array shall be reported once when its value exceeds one of the associated threshold values, and shall not be reported again until it falls below that threshold and subsequently exceeds it. |
|  | negative‌Crossing‌Thresholds | | map(Uri -> array(Float)) | 0..1 | If present, a non-empty map of QoE metrics to their respective threshold values.  - The index of the associative array shall be the fully-qualified term identifier URI of a metric specified in annex E of TS 26.512 [6] or annex C of TS 26.113 [7].  - The value of each associative array member shall be an array of floating-point threshold values.  A metric in this associative array shall be reported once when its value falls below one of the associated threshold values, and shall not be reported again until it exceeds that threshold and subsequently falls below it. |
|  | location‌Filter | | array(LocationArea5G) | 0..1 | A list of one or more locations (see NOTE 3) where QoE metrics collection is required. When present, a Media Client shall collect metrics only when it is located in these locations and shall report them according to the other properties of the enclosing client metrics reporting configuration.  If omitted, QoE metrics are to be collected and reported regardless of the UE location. |
|  | urlFilters | | array(string) | 0..1 | A non-empty list of Media Entry Point URL patterns for which QoE metrics shall be reported. The format of each pattern shall be a regular expression as specified in [36].  If not specified, reporting shall be done for all media delivery sessions. |
|  | samplingPeriod | | DurationSec | 1..1 | The time interval the Media Client is required to wait between sampling the QoE metrics specified by this metrics reporting configuration. |
|  | metrics | | array(Uri) | 0..1 | A list of one or more QoE metrics, each indicated by a fully-qualified term from a controlled vocabulary, which are to be reported.  If omitted, the complete (or default if applicable) set of metrics associated with the specified scheme shall be collected and reported. |
| networkAssistance‌Configuration | | | object | 0..1 | Present if Network Assistance is provisioned in the parent Provisioning Session. | MS\_DOWNLINK*,* MS\_UPLINK*,* RTC |
|  | serverAddresses | | array(AbsoluteUrl) | 1..1 | A list of Media AF addresses (URLs) that offer the APIs for AF-based Network Assistance at reference point M5. (See NOTE 1.)  Each address shall be an opaque URL, following the format specified in clause 7.1.3 up to and including the {apiVersion} path element. |
| client‌EdgeResources‌Configuration | | | object | 0..1 | Present only for Provisioning Sessions with client-driven edge computing management mode provisioned. | MS\_DOWNLINK*,* MS\_UPLINK*,* RTC |
|  | eligibilityCriteria | | Edge‌Processing‌Eligibility‌Criteria | 0..1 | Conditions for activating edge resources for media delivery sessions in the scope of the parent Provisioning Session. (See clause 7.3.3.10.) |
|  | easDiscoveryTemplate | | EAS‌Discovery‌Template | 1..1 | A template for the EAS discovery filter that shall be used by the EEC to discover and select a Media EAS instance to serve media delivery sessions at reference point M4 in the scope of the parent Provisioning Session. (See clause 9.2.3.3.) |
|  | easRelocation‌Requirements | | Client‌EAS‌Relocation‌Requirements | 0..1 | EAS relocation tolerance and requirements.  If absent, the EEC shall assume that relocation is tolerated by all Media EAS instances in the scope of the parent Provisioning Session. (See clause 9.2.3.4.) |
| NOTE 1: In deployments where multiple instances of the Media AF expose the Media Session Handling APIs at reference point M5, the 5G System may use a suitable mechanism (e.g., HTTP load balancing or DNS-based host name resolution) to direct requests to a suitable Media AF instance.  NOTE 2: The Snssai data type is specified in TS 29.571 [33].  NOTE 3: The LocationArea5G data type is specified in TS 24.558 [14]. | | | | | | |

Changes to Dynamic Policy API

### 9.3.1 Overview

The Dynamic Policy API allows the Media Session Handler or Media AS to request a specific policy and charging treatment to be applied to a particular application data flow of a downlink or uplink media delivery session by invoking RESTful operations on the Media AF at reference point M5. The API defines a set of data models, resources and the related operations for the creation and management of the dynamic policy request.

### 9.3.2 Resource structure

The Dynamic Policy API is accessible through the following URL base path:

{apiRoot}/3gpp-maf-session-handling/{apiVersion}/provisioning-sessions/{provisioningSessionId}/dynamic-policies/

where the first three path elements shall be substituted by the Dynamic Policy invoker with one of the URLs selected from the dynamicPolicy‌Invocation‌Configuration.serverAddresses array of the ServiceAccessInformation resource (see clause 9.2.3.1) and the fifth path element shall be substituted with the value of the relevant Provisioning Session identifier obtained from the same resource.

Table 9.3.2‑1 below specifies the operations and the corresponding HTTP methods that are supported by this API. The sub-resource path specified in the second column shall be appended to the URL base path.

Table 9.3.2-1: Operations supported by the Dynamic Policies API

|  |  |  |  |
| --- | --- | --- | --- |
| Operation name | Sub-resource path | Allowed HTTP methods | Description |
| Create Dynamic Policy resource |  | POST | Create a new Dynamic Policy resource. |
| Retrieve Dynamic Policy resource | {dynamicPolicyId} | GET | Retrieve an existing Dynamic Policy resource. |
| Update Dynamic Policy resource | PUT | Replace an existing Dynamic Policy resource. |
| PATCH | Modify an existing Dynamic Policy resource. |
| Destroy Dynamic Policy resource | DELETE | Remove an existing Dynamic Policy resource. |

#### 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. |
|  | componentIdentifier | 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 | Client‌Qos‌Specification | 0..1 | C: RW R: RO U: RW | The Dynamic Policy invoker'snetwork Quality of Service requirements of the application flow described by application‌Flow‌Description.  If omitted, the default provisioned network Quality of Service requirements of the Policy Template indicated in policyTemplateId 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 Quality of Service described in qosSpecification is being enforced by the 5G System.  Populated by the Media AF. |

Changes to Network Assistance API

### 9.4.2 Resource structure

The Network Assistance API is accessible via the following URL base path:

{apiRoot}/3gpp‑maf-session-handling/{apiVersion}/provisioning-sessions/{provisioningSessionId}/network-assistance-sessions/

where the first three path elements shall be substituted by the Network Assistance invoker with one of the URLs selected from the network‌Assistance‌Configuration.‌serverAddresses array of the ServiceAccessInformation resource (see clause 9.2.3.1) and the fifth path element shall be substituted with the relevant Provisioning Session identifier obtained from the same resource.

Table 9.4.2‑1 below specifies the operations and the corresponding HTTP methods that are supported by this API. In each case, the sub-resource path specified in the second column of the table shall be appended to the URL base path.

Table 9.4.2-1: Operations supported by the Network Assistance API

|  |  |  |  |
| --- | --- | --- | --- |
| Operation name | Sub‑resource path | Allowed HTTP method(s) | Description |
| Create Network Assistance Session resource |  | POST | Provision a new Network Assistance Session.  If the operation succeeds, the URL of the created Network Assistance Session resource shall be returned in the Location header of the response. |
| Retrieve Network Assistance Session resource | {naSessionId} | GET | Fetch the properties of an existing Network Assistance Session. |
| Bit rate recommendation request | {naSessionId}/recommendation | GET | Obtain a bit rate recommendation. |
| Delivery boost request | {naSessionId}/boost-request | POST | Request a delivery boost. |
| Update Network Assistance Session resource | {naSessionId} | PUT,  PATCH | Update the properties of an existing Network Assistance Session. |
| Destroy Network Assistance Session | {naSessionId} | DELETE | Terminate a Network Assistance session. |

#### 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 | Client‌Qos‌Specification | 0..1 | C: RW R: RO U: RW | The QoS parameters requested by the Network Assistance invoker. |
| recommendedQoS | Client‌Qos‌Specification | 0..1 | C: RO R: RO U: RO | The QoS parameters currently recommended by the Media AF. |

Changes to Metrics Reporting API

### 9.5.1 General

The Metrics Reporting API allows the Media Session Handler or Media AS (acting in the role of metrics reporting entity) to send QoE metrics reports to the Media AF. This procedure is configured by the ServiceAccessInformation resource, as defined in clause 9.2.3.1. Multiple metrics reporting configurations may be active at the same time, each identified by a unique metrics‌Reporting‌ConfigurationId.

### 9.5.2 Reporting procedure

Metrics reports related to a specific metricsReportingConfigurationId shall be submitted according to the following general format:

{apiRoot}/3gpp-maf-session-handling/{apiVersion}/provisioning-sessions/{provisioningSessionId}/metrics-reporting/‌{metricsReporting‌ConfigurationId}

where the first three path elements shall be substituted by the metrics reporting entity with one of the base URLs selected from the client‌Metrics‌Reporting‌Configurations.‌serverAddresses array of the ServiceAccessInformation resource (see clause 9.2.3.1), the fifth path element shall be substituted with the relevant Provisioning Session identifier obtained from the same resource and {metricsReportingConfigurationId} shall be substituted with the relevant Metrics Reporting Configuration identifier.

The only HTTP method supported by this endpoint is POST.

### 9.5.3 Report format

Metrics reports shall be submitted by the metrics reporting entity in a format specified by the metrics scheme in question. The Content-Type HTTP request header shall be set in accordance with the specification of the relevant metrics scheme.

Metrics schemes specified by 3GPP shall make provision to convey the media delivery session identifier in their metrics reports. For metrics reporting formats specified elsewhere, the 3GPP specification referencing the metrics scheme should specify a means to convey the media delivery session identifier in metrics reports where practicable.

Changes to Consumption Reporting API

### 9.6.1 General

The Consumption Reporting API allows the Media Session Handler or Media AS (acting in the role of consumption reporting entity) to report downlink media consumption to the Media AF. The API defines data models, resources and the related operations for the creation and management of the consumption reporting procedures. This feature is configured by the ServiceAccessInformation resource, as defined in clause 9.2.3.1.

### 9.6.2 Reporting procedure

Consumption reports shall be submitted to a Media AF endpoint according to the following general URL format:

{apiRoot}/3gpp-maf-session-handling/{apiVersion}/provisioning-sessions/{provisioningSessionId}/consumption-reporting/

Where the first three path elements shall be substituted by the consumption reporting entity with one of the base URLs selected from the client‌Consumption‌Reporting‌Configuration.‌serverAddresses array of the ServiceAccessInformation resource (see clause 9.2.3.1) and the fifth path element shall be substituted with the relevant Provisioning Session identifier obtained from the same resource.

The only HTTP method supported by this endpoint is POST.

#### 9.6.3.1 ConsumptionReport type

This data type specifies the root object of a consumption report instance document used by the Media Session Handler to report media consumption.

Table 9.6.3.1-1: Definition of ConsumptionReport format

|  |  |  |  |
| --- | --- | --- | --- |
| Property name | Data type | Cardinality | Description |
| reportingClientId | string | 1..1 | Identifier of the consumption reporting entity that consumed the streaming media service associated with this consumption report.  If available to the Media Session Handler, a GPSI value (see clause 28.8 of TS 23.003 [16]); otherwise, a stable and globally unique string. |
| session‌Id | MediaDelivery‌SessionId | 1..1 | Unique identifier of the reported media delivery session. |
| mediaPlayerEntry | AbsoluteUrl | 1..1 | Media Entry Point resource locator of the reported media delivery session.  The content of this property is not specified in the present document. |
| consumptionReportingUnits | array(Consumption‌Reporting‌Unit) | 1..1 | A list of consumption reporting units, ordered by start time.  The content of this property is not specified in the present document. |

End of changes