**3GPP TSG-CT WG3 Meeting #130C3-234076**

**Xiamen, China, 9 - 13 October, 2023 (revision of C3-234abc)**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **29.514** | **CR** | **0548** | **rev** | **-** | **Current version:** | **18.3.0** |  |
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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 |  | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | Introduction of new features for PDU set handle and RT latency | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | XRM | | | | |  | ***Date:*** | | | 2023-09-21 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | According to the conclusion of the offline discussion, a new independent feature needs to be defined for the PDU set handle and RT latency. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | * Define new features for PDU set handle and RT latency. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Open issues in the specification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.2.2.2, 4.2.2.38, 4.2.2.39, 4.2.3.2, 4.2.3.37, 4.2.3.38, 5.6.1, 5.6.2.7, 5.6.2.26, 5.6.3.2, 5.8 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | The CR does not impact the OpenAPI file. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**Additional discussion(if needed):**

**Proposed changes:**

\*\*\* 1st Change \*\*\*

#### 4.2.2.2 Initial provisioning of service information

This procedure is used to set up an AF application session context for the service as defined in 3GPP TS 23.501 [2], 3GPP TS 23.502 [3] and 3GPP TS 23.503 [4].

Figure 4.2.2.2-1 illustrates the initial provisioning of service information.



Figure 4.2.2.2-1: Initial provisioning of service information

When a new AF application session context is being established and media information for this application session context is available at the NF service consumer and the related media requires PCC control, the NF service consumer shall invoke the Npcf\_PolicyAuthorization\_Create service operation by sending the HTTP POST request to the resource URI representing the "Application Sessions" collection resource of the PCF, as shown in figure 4.2.2.2-1, step 1.

The NF service consumer shall include in the "AppSessionContext" data type in the payload body of the HTTP POST request a partial representation of the "Individual Application Session Context" resource by providing the "AppSessionContextReqData" data type. The "Individual Application Session Context" resource and the "Events Subscription" sub-resource are created as described below.

The NF service consumer shall provide in the body of the HTTP POST request:

- for IP type PDU sessions, the IP address (IPv4 or IPv6) of the UE in the "ueIpv4" or "ueIpv6" attribute; and

- for Ethernet type PDU sessions, the MAC address of the UE in the "ueMac" attribute.

For Ethernet type PDU sessions, if the "TimeSensitiveNetworking" or "TimeSensitiveCommunication" feature is supported, the "ueMac" attribute containing the MAC address of the DS-TT port as received from the PCF during the reporting of TSC user plane node information as defined in clause 4.2.5.16.

NOTE 1: The determination of the DS-TT port MAC address is specified in clause 5.28.2 of 3GPP TS 23.501 [2]. The DS-TT port MAC address is used as identifier of the PDU session related to the reported TSC user plane node information.

For IP type PDU sessions, if the "TimeSensitiveCommunication" feature is supported, the "ueIpv4" or "ueIpv6" attribute containing the IPv4 or IPv6 address of the UE as received from the PCF during the reporting of user plane node information as defined in clause 4.2.5.16.

NOTE 2: The IP address of the PDU session is used as identifier of the PDU session related to the reported TSC user plane node information.

The NF service consumer shall provide the corresponding service information in the "medComponents" attribute, if available. The NF service consumer shall indicate to the PCF for each media component included within the "medComponents" attribute whether the media component service data flow(s) (IP or Ethernet) should be enabled or disabled with the "fStatus" attribute. The service data flow filters (IP or Ethernet) that identify the traffic of the media component, if available, shall be provided within the media subcomponent(s) elements included in the "medSubComps" attribute (one uplink and/or downlink service data flow filter per media subcomponent).

An IP flow description is based on the definition of the packet filter for an IP flow (direction, IP source and destination address, protocol, and source and destination port) as defined by "FlowDescription" data type, the type of service or traffic class as defined in the "tosTrCl" attribute and, when the feature "DetNet" is supported, the flow label and the IPsec SPI as defined in the "flowLabel" and "spi" attributes respectively.

An Ethernet flow description is based on the definition of the packet filter for an Ethernet flow (direction, Ethertype, source and destination MAC address, vlan tags, IP flow description (when Ethertype is IP) and source and destination MAC address range) as specified by "EthFlowDescription" data type.

If the "AuthorizationWithRequiredQoS" feature as defined in clause 5.8 is supported, the AF may provide within the MediaComponent data structure required QoS information as specified in clause 4.2.2.32.

The AF may include the AF application identifier in the "afAppId" attribute into the body of the HTTP POST request in order to indicate the particular service that the AF session belongs to.

The AF application identifier may be provided at both "AppSessionContextReqData" data type level, and "MediaComponent" data type level. When provided at both levels, the AF application identifier provided at "MediaComponent" data type level shall have precedence.

The AF application identifier at the "AppSessionContextReqData" data type level may be used to trigger the PCF to indicate to the SMF/UPF to perform the application detection based on the operator's policy as defined in 3GPP TS 29.512 [8].

If the "IMS\_SBI" feature is supported, the NF service consumer may include the AF charging identifier in the "afChargId" attribute for charging correlation purposes.

If the "TimeSensitiveNetworking" or "TimeSensitiveCommunication" feature is supported the NF service consumer may provide TSC information as specified in clauses 4.2.2.24 and 4.2.2.25.

If the "XRM\_5G" feature is supported, the NF service consumer may provide the multi-modal service identifier in the "multiModalId" attribute for multi-modal communication purpose in clause 4.2.2.37.

If the "PDUSetHandling" feature is supported, the NF service consumer may provide PDU set related QoS information as specified in clauses 4.2.2.39.

The NF service consumer may also include the "evSubsc" attribute of "EventsSubscReqData" data type to request the notification of certain user plane events. The NF service consumer shall include the events to subscribe to in the "events" attribute, and the notification URI where to address the Npcf\_PolicyAuthorization\_Notify service operation in the "notifUri" attribute. The events subscription is provisioned in the "Events Subscription" sub-resource.

The AF shall also include the "notifUri" attribute in the "AppSessionContextReqData" data type to indicate the URI where the PCF can request to the AF the deletion of the "Individual Application Session Context" resource.

If the PCF cannot successfully fulfil the received HTTP POST request due to the internal PCF error or due to the error in the HTTP POST request, the PCF shall send the HTTP error response as specified in clause 5.7.

Otherwise, when the PCF receives the HTTP POST request from the NF service consumer, the PCF shall apply session binding as described in 3GPP TS 29.513 [7]. To allow the PCF to identify the PDU session for which the HTTP POST request applies, the NF service consumer shall provide in the body of the HTTP POST request:

- for IP type PDU session, either the "ueIpv4" attribute or "ueIpv6" attribute containing the IPv4 or the IPv6 address applicable to an IP flow or IP flows towards the UE; and

- for Ethernet type PDU session, the "ueMac" attribute containing the UE MAC address applicable to an Ethernet flow or Ethernet flows towards the UE.

The NF service consumer may provide DNN in the "dnn" attribute, SUPI in the "supi" attribute, GPSI in the "gpsi" attribute, the S-NSSAI in the "sliceInfo" attribute if available for session binding. The NF service consumer may also provide the domain identity in the "ipDomain" attribute.

NOTE 3: The "ipDomain" attribute is helpful in the following scenario: Within a network slice, there are several separate IP address domains, with SMF/UPF(s) that allocate Ipv4 IP addresses out of the same private address range to UE PDU sessions. The same IP address can thus be allocated to UE PDU sessions served by SMF/UPF(s) in different address domains. If one PCF controls several SMF/UPF(s) in different IP address domains, the UE IP address is thus not sufficient for the session binding. A NF service consumer can serve UEs in different IP address domains, either by having direct IP interfaces to those domains, or by having interconnections via NATs in the user plane between the UPF and the NF service consumer. If a NAT is used, the NF service consumer obtains the IP address allocated to the UE PDU session via application level signalling and supplies it for the session binding to the PCF in the "ueIpv4" attribute. The NF service consumer supplies an "ipDomain" attribute denoting the IP address domain behind the NAT in addition. The NF service consumer can derive the appropriate value from the source address (allocated by the NAT) of incoming user plane packets. The value provided in the "ipDomain" attribute is operator configurable.

NOTE 4: The "sliceInfo" attribute is helpful in the scenario where multiple network slices are deployed in the same DNN, and the same IPv4 address may be allocated to UE PDU sessions in different network slices. If one PCF controls several network slices, the UE IP address is not sufficient for the session binding. The NF service consumer supplies "sliceInfo" attribute denoting the network slice that allocated the IPv4 address of the UE PDU session. How the NF service consumer derives S-NSSAI is out of the scope of this specification.

NOTE 5: When the scenario described in NOTE 3 applies and the NF service consumer is a P-CSCF it is assumed that the P-CSCF has direct IP interfaces to the different IP address domains and that no NAT is located between the UPF and P-CSCF. How a non-IMS NF service consumer obtains the UE private IP address to be provided to the PCF is out of scope of the present release; it is unspecified how to support applications that use a protocol that does not retain the original UE's private IP address.

NOTE 6: As described in 3GPP TS 29.513 [7], in order to have a successful session binding, all attributes must match, if provided.

If the PCF fails in executing session binding, the PCF shall reject the Npcf\_PolicyAuthorization\_Create service operation with an HTTP "500 Internal Server Error" response including the "cause" attribute set to "PDU\_SESSION\_NOT\_AVAILABLE".

If the request contains the "medComponents" attribute the PCF shall store the received service information. The PCF shall process the received service information according to the operator policy and may decide whether the request is accepted or not. The PCF may take the priority information within the "resPrio" attribute into account when making this decision.

If the service information provided in the body of the HTTP POST request is rejected (e.g. the subscribed guaranteed bandwidth for a particular user is exceeded or the authorized data rate in that slice for a UE is exceeded), the PCF shall indicate in an HTTP "403 Forbidden" response message the cause for the rejection including the "cause" attribute set to "REQUESTED\_SERVICE\_NOT\_AUTHORIZED".

If the PCF detects that a temporary network failure has occurred (e.g. the SGW has failed as defined in clause B.3.3.3 or B.3.4.9 of 3GPP TS 29.512 [8]) and the AF initiates an Npcf\_PolicyAuthorization\_Create service operation, the PCF shall reject the request with an HTTP "403 Forbidden" response including the "cause" attribute set to "TEMPORARY\_NETWORK\_FAILURE".

If the service information provided in the HTTP POST request is rejected due to a temporary condition in the network (e.g. the NWDAF reported the network slice selected for the PDU session is congested), the PCF may include in the "403 Forbidden" response the "cause" attribute set to "REQUESTED\_SERVICE\_TEMPORARILY\_NOT\_AUTHORIZED". The PCF may also provide a retry interval within the "Retry-After" HTTP header field. When the NF service consumer receives the retry interval within the "Retry-After" HTTP header field, the NF service consumer shall not send the same service information to the PCF again (for the same application session context) until the retry interval has elapsed. The "Retry-After" HTTP header is described in 3GPP TS 29.500 [5] clause 5.2.2.2.

If the service information is invalid or in sufficient for the PCF to perform the requested action, e.g. invalid media type or invalid QoS reference, the PCF shall indicate an HTTP "Bad Request" response including the "cause" attribute set to "INVALID\_SERVICE\_INFORMATION".

If the IP flow descriptions cannot be handled by the PCF because the restrictions defined in clause 5.3.8 of 3GPP TS 29.214 [20] are not observed, the PCF shall indicate an HTTP "Bad Request" response including the "cause" attribute set to "FILTER\_RESTRICTIONS".

If the AF provided the same AF charging identifier for a new Individual Application Session Context that is already in use for the other ongoing Individual Application Session, the PCF shall indicate an HTTP "Bad Request" response including the "cause" attribute set to "DUPLICATED\_AF\_SESSION".

NOTE 7: When the PCF supports data rate control per network slice and/or data rate control per network slice for a UE as specified in 3GPP TS 29.512 [8] and the authorized data rate for any of those cases in a slice is exceeded due to the bandwidth demands of the new service information, it is also possible to accept the request based on operator policies. In this case the derived PCC rule(s) belonging to the authorized GBR service data flows can include a different MBR and/or have a different charging than the one applicable if the data rate is not exceeded as specified in 3GPP TS 29.512 [8].

The PCF may additionally provide the acceptable bandwidth within the attribute "acceptableServInfo" included in the "ExtendedProblemDetails" data structure returned in the rejection response message.

If the "SignalingPathValidation" feature is supported, and the "User-Agent" HTTP header field indicates that the NF type of the NF that originated the request is "NEF" or "AF", and the PCF detects that the TSCTSF is the NF type required for the request (e.g., the PCF triggered a notification about TSC user plane node information towards the TSCTSF as described in clause 4.2.15.16), the PCF shall reject the request with an HTTP "403 Forbidden" response including the "cause" attribute set to "INVALID\_SIGNALING\_PATH". When the NEF/AF receives this error from the PCF, the NEF/AF selects the TSCTSF for this request, as specified in 3GPP TS 29.522 [54].

To allow the PCF and SMF/UPF to perform PCC rule authorization and QoS flow binding for the described service data flows, the NF service consumer shall supply:

- for IP type PDU session, both source and destination IP addresses and port numbers in the "fDescs" attribute within the "medSubComps" attribute, if such information is available; and

- for Ethernet type PDU session, the Ethernet Packet filters in the "ethfDescs" attribute within the "medSubComps" attribute, if such information is available.

The NF service consumer may specify the ToS traffic class (i.e. ToS (IPv4) or TC (IPv6) value) within the "tosTrCl" attribute for the described service data flows together with the "fDescs" attribute.

NOTE 8: : A ToS/TC value can be useful when another packet filter attribute is needed to differentiate between packet flows. For example, packet flows encapsulated and encrypted by a tunnelling protocol can be differentiated by the ToS/TC value of the outer header if appropriately set by the application. To use ToS/TC for service data flow detection, network configuration needs to ensure there is no ToS/TC re-marking applied along the path from the application to the PSA UPF and the specific ToS/TC values are managed properly to avoid potential collision with other usage (e.g., paging policy differentiation).

The NF service consumer may include the "resPrio" attribute at the "AppSessionContextReqData" data type level to assign a priority to the AF Session as well as include the "resPrio" attribute at the "MediaComponent" data type level to assign a priority to the service data flow. The presence of the "resPrio" attribute in both levels does not constitute a conflict as they each represent different types of priority. The reservation priority at the "AppSessionContextReqData" data type level provides the relative priority for an AF session while the reservation priority at the "MediaComponent" data type level provides the relative priority for a service data flow within a session. If the "resPrio" attribute is not specified, the requested priority is PRIO\_1.

The PCF shall check whether the received service information requires PCC rules to be created and provisioned as specified in 3GPP TS 29.513 [7]. Provisioning of PCC rules to the SMF shall be carried out as specified at 3GPP TS 29.512 [8].

Based on the received subscription information from the NF service consumer, the PCF may create a subscription to event notifications for a related PDU session from the SMF, as described in 3GPP TS 29.512 [8].

If the PCF created an "Individual Application Session Context" resource, the PCF shall send to the NF service consumer a "201 Created" response to the HTTP POST request, as shown in figure 4.2.2.2-1, step 2. The PCF shall include in the "201 Created" response:

- a Location header field; and

- an "AppSessionContext" data type in the payload body.

The Location header field shall contain the URI of the created individual application session context resource i.e. "{apiRoot}/npcf-policyauthorization/v1/app-sessions/{appSessionId}".

When "Events Subscription" sub-resource is created in this procedure, the NF service consumer shall build the sub-resource URI by adding the path segment "/events-subscription" at the end of the URI path received in the Location header field.

The "AppSessionContext" data type payload body shall contain the representation of the created "Individual Application Session Context" resource and may include the "Events Subscription" sub-resource.

The PCF shall include in the "evsNotif" attribute:

- if the NF service consumer subscribed to the event "PLMN\_CHG" in the HTTP POST request, the "event" attribute set to "PLMN\_CHG" and the "plmnId" attribute including the PLMN Identifier or the SNPN Identifier if the PCF has previously requested to be updated with this information in the SMF;

NOTE 9: The SNPN Identifier consists of the PLMN Identifier and the NID.

NOTE 10: Handover between non-equivalent SNPNs, and between SNPN and PLMN is not supported. When the UE is operating in SNPN access mode, the trigger reports changes of equivalent SNPNs.

- if the NF service consumer subscribed to the event "ACCESS\_TYPE\_CHANGE" in the HTTP POST request, the "event" attribute set to "ACCESS\_TYPE\_CHANGE" and:

i. the "accessType" attribute including the access type, and the "ratType" attribute including the RAT type when applicable for the notified access type; and

ii. if the "ATSSS" feature is supported, the "addAccessInfo" attribute with the additional access type information if available, where the access type is encoded in the "accessType" attribute, and the RAT type is encoded in the "ratType" attribute when applicable for the notified access type; and

NOTE 11: For a MA PDU session, if the "ATSSS" feature is not supported by the NF service consumer the PCF includes the "accessType" attribute and the "ratType" attribute with a currently active combination of access type and RAT type (if applicable for the notifed access type). When both 3GPP and non-3GPP accesses are available, the PCF includes the information corresponding to the 3GPP access.

iii. the "anGwAddr" attribute including access network gateway address when available,

if the PCF has previously requested to be updated with this information in the SMF; and

- if the "IMS\_SBI" feature is supported and if the NF service consumer subscribed to the "CHARGING\_CORRELATION" event in the HTTP POST request, the "event" attribute set to "CHARGING\_CORRELATION" and may include the "anChargIds" attribute containing the access network charging identifier(s) and the "anChargAddr" attribute containing the access network charging address.

The NF service consumer subscription to other specific events using the Npcf\_PolicyAuthorization\_Create request is described in the related clauses. Notification of events when the applicable information is not available in the PCF when receiving the Npcf\_PolicyAuthorization\_Create request is described in clause 4.2.5.

The acknowledgement towards the NF service consumer should take place before or in parallel with any required PCC rule provisioning towards the SMF.

NOTE 12: The behaviour when the NF service consumer does not receive the HTTP response message, or when it arrives after the internal timer waiting for it has expired, or when it arrives with an indication different than a success indication, are outside the scope of this specification and based on operator policy.

\*\*\* Next Change \*\*\*

#### 4.2.2.38 Initial provisioning of Round-Trip latency requirements

When the "RTLatency" feature is supported, this procedure is used by a NF service consumer to request Round-Trip (RT) latency requirement for an XR or other interactive media services with an RT latency indication via the AF session with required QoS procedure.The AF may provide the "rTLatencyInd" attribute contained in MediaComponent data type to indicate that the service data flow needs to meet the RT latency requirement of the service, which is the twice of the single direction delay requirement between the UE and the PSA UPF derived from the "qosReference" attribute or included in the "tscPackDelay" attribute.

Due to the received Round-Trip latency requirements, the PCF may need to provision or modify the related PCC rules as specified in 3GPP TS 29.513 [7] and provide the related information towards the SMF following the corresponding procedures specified in clause 4.2.6.21.2 of 3GPP TS 29.512 [8].

\*\*\* Next Change \*\*\*

#### 4.2.2.39 Provisioning of PDU Set QoS related data

If the "PDUSetHandling" feature is supported, to indicate the PDU Set QoS related information for the PDU Set, the NF service consumer may include in the "pduSetQos" attribute included in a media component entry of the "medComponents" attribute;

- the upper bound for the delay that a PDU Set may experience for the transfer between the UE and the N6 termination point at the UPF encoded in the "pduSetDelayBudget" attribute as described in 3GPP TS 29.571 [12];

- upper bound for the rate of PDU Sets that have been processed by the sender of a link layer protocol encoded in the "pduSetErrRate" attribute as described in 3GPP TS 29.571 [12].

- PDU Set Integrated Handling information (PSIHI) info set into "pduSetHandlingInfo" attribute as described in 3GPP TS 29.571 [12]. The PCF shall reply to the NF service consumer as described in clause 4.2.2.2.

Editor’s Note: The PCF shall check whether the received PDU Set QoS related data require to create PCC rules to provide the SMF with derived QoS characteristics. Provisioning of PCC rule(s) to the SMF as specified in 3GPP TS 29.512 [8] is FFS.

\*\*\* Next Change \*\*\*

#### 4.2.3.2 Modification of service information

This procedure is used to modify an existing application session context as defined in 3GPP TS 23.501 [2], 3GPP TS 23.502 [3] and 3GPP TS 23.503 [4] when the feature "PatchCorrection" is supported.

Figure 4.2.3.2-1 illustrates the modification of service information using HTTP PATCH method.



Figure 4.2.3.2-1: Modification of service information using HTTP PATCH

The NF service consumer may modify the application session context information at any time (e.g. due to an AF session modification or internal NF service consumer trigger) and invoke the Npcf\_PolicyAuthorization\_Update service operation by sending the HTTP PATCH request message to the resource URI representing the "Individual Application Session Context" resource, as shown in figure 4.2.3.2-1, step 1, with the modifications to apply.

The JSON body within the PATCH request shall include the "AppSessionContextUpdateDataPatch" data type and shall be encoded according to "JSON Merge Patch", as defined in IETF RFC 7396 [21]. The modifications to apply are encoded within the attributes of the "ascReqData" attribute, as described below and in subsequent clauses.

The NF service consumer may include the updated service information in the "medComponents" attribute of the "ascReqData" attribute. The NF service consumer may update the service data flow filter(s) (IP or Ethernet) that identify the traffic of the media component by replacing, within the concerned media subcomponent(s), the previously provided value(s) with the updated one(s).

If the "AuthorizationWithRequiredQoS" feature as defined in clause 5.8 is supported, the NF service consumer may provide within the MediaComponentRm data structure an update of the required QoS information as specified in clause 4.2.3.30.

The NF service consumer may include in the "ascReqData" attribute an AF application identifier in the "afAppId" attribute to trigger the PCF to indicate to the SMF/UPF to perform the application detection based on the operator's policy as defined in 3GPP TS 29.512 [8].

If the "TimeSensitiveNetworking" or "TimeSensitiveCommunication" feature is supported, the NF service consumer may provide TSC user plane node related information as specified in clauses 4.2.3.24 and 4.2.3.25.

If the "PDUSetHandling" feature is supported, the NF service consumer may update PDU set related QoS information as specified in clauses 4.2.3.36.

The NF service consumer may also create, modify or remove events subscription information by sending the HTTP PATCH request message to the resource URI representing the "Individual Application Session Context" resource.

The NF service consumer shall create event subscription information by including in the "ascReqData" attribute the "evSubsc" attribute of "EventsSubscReqDataRm" data type with the corresponding list of events to subscribe to; and the "notifUri" attribute with the notification URI where the PCF shall send the notifications.

The NF service consumer shall update existing event subscription information by including in the "ascReqData" attribute an updated value of the "evSubsc" attribute of the "EventsSubscReqDataRm" data type as follows:

- The "events" attribute shall include the new complete list of subscribed events.

- When the NF service consumer requests to update the additional information related to an event (e.g. the NF service consumer needs to provide new thresholds to the PCF in the "usgThres" attribute related to the "USAGE\_REPORT" event) the NF service consumer shall include the additional information, which shall completely replace the previously provided one.

NOTE 1: Note that when the NF service consumer requests to remove an event, this event is not included in the "events" attribute.

NOTE 2: When an event is included in the "events" attribute and its related additional information is set to null, the PCF considers the subscription to this event is active, but the related procedures stop applying.

NOTE 3: When an event is removed from the "events" attribute but its related information is not set to null, the PCF considers the subscription to this event is terminated, the related additional information is removed, and the related procedures stop applying.

The NF service consumer shall remove existing event subscription information by setting to null the "evSubsc" attribute included in the "ascReqData" attribute.

Events with "notifMethod" set to "ONE\_TIME" shall only apply at the time the NF service consumer requests their subscription. Once the event report is performed, the subscription to this event is automatically terminated in the PCF and the related information is removed. The presence of a one-time event, together with its related additional information when applicable, during an update procedure shall represent the recreation of the subscription to this event in the PCF.

NOTE 4: The "notifUri" attribute within the EventsSubscReqData data structure can be modified to request that subsequent notifications are sent to a new NF service consumer.

If the PCF cannot successfully fulfil the received HTTP PATCH request due to the internal PCF error or due to the error in the HTTP PATCH request, the PCF shall send the HTTP error response as specified in clause 5.7.

If the feature "ES3XX" is supported, and the PCF determines the received HTTP PATCH request needs to be redirected, the PCF shall send an HTTP redirect response as specified in clause 6.10.9 of 3GPP TS 29.500 [5].

Otherwise, the PCF shall process the received service information according the operator policy and may decide whether the HTTP request message is accepted or not.

If the updated service information is not acceptable (e.g. the subscribed guaranteed bandwidth for a particular user is exceeded or the authorized data rate in that slice for the UE is exceeded), the PCF shall include in an HTTP "403 Forbidden" response message the "cause" attribute set to "REQUESTED\_SERVICE\_NOT\_AUTHORIZED".

If the PCF detects that a temporary network failure has occurred (e.g. the SGW has failed as defined in clause B.3.3.3 or B.3.4.9 of 3GPP TS 29.512 [8]) and the AF initiates an Npcf\_PolicyAuthorization\_Update service operation, the PCF shall reject the request with an HTTP "403 Forbidden" response including the "cause" attribute set to "TEMPORARY\_NETWORK\_FAILURE".

If the service information provided in the HTTP PATCH request is rejected due to a temporary condition in the network (e.g. the NWDAF reported the network slice selected for the PDU session is congested), the PCF may include in the "403 Forbidden" response the "cause" attribute set to "REQUESTED\_SERVICE\_TEMPORARILY\_NOT\_AUTHORIZED". The PCF may also provide a retry interval within the "Retry-After" HTTP header field. When the NF service consumer receives the retry interval within the "Retry-After" HTTP header field, the NF service consumer shall not send the same service information to the PCF again (for the same application session context) until the retry interval has elapsed. The "Retry-After" HTTP header is described in 3GPP TS 29.500 [5] clause 5.2.2.2.

If the service information is invalid or in sufficient for the PCF to perform the requested action, e.g. invalid media type or invalid QoS reference, the PCF shall indicate an HTTP "Bad Request" response including the "cause" attribute set to "INVALID\_SERVICE\_INFORMATION".

If the IP flow descriptions cannot be handled by the PCF because the restrictions defined in clause 5.3.8 of 3GPP TS 29.214 [20] are not observed, the PCF shall indicate an HTTP "Bad Request" response including the "cause" attribute set to "FILTER\_RESTRICTIONS".

If the AF provided the same AF charging identifier for a new Individual Application Session Context that is already in use for the other ongoing Individual Application Session, the PCF shall indicate an HTTP "Bad Request" response including the "cause" attribute set to "DUPLICATED\_AF\_SESSION".

NOTE 5: When the PCF supports data rate control per network slice and/or data rate control per network slice for a UE as specified in 3GPP TS 29.512 [8] and the authorized data rate in a slice is exceeded due to the bandwidth demands of the modified service information, it is also possible to accept the request based on operator policies. In this case the derived PCC rule(s) belonging to the authorized GBR service data flows can include a different MBR and/or have a different charging than the one applicable if the data rate is not exceeded as specified in 3GPP TS 29.512 [8].

The PCF may additionally provide the acceptable bandwidth within the attribute "acceptableServInfo" included in the "ExtendedProblemDetails" data structure returned in the rejection response message.

If the request is accepted, the PCF shall update the service information with the new information received. Due to the updated service information, the PCF may need to create, modify or delete the related PCC rules as specified in 3GPP TS 29.513 [7] and provide the updated information towards the SMF following the corresponding procedures specified in 3GPP TS 29.512 [8].

Based on the received subscription information from the NF service consumer, the PCF may create a subscription to event notifications or may modify the existing subscription to event notifications, for a related PDU session from the SMF, as described in 3GPP TS 29.512 [8].

The PCF shall reply with the HTTP response message to the NF service consumer and may include the "AppSessionContext" data type payload body with the representation of the modified "Individual Application Session Context" resource and may include the "Events Subscription" sub-resource.

The PCF shall include in the "evsNotif" attribute:

- if the NF service consumer subscribed to the "PLMN\_CHG" event in the HTTP PATCH request, the "event" attribute set to "PLMN\_CHG" and the "plmnId" attribute including the PLMN Identifier or the SNPN Identifier if the PCF has previously requested to be updated with this information in the SMF;

NOTE 6: The SNPN Identifier consists of the PLMN Identifier and the NID.

NOTE 7: Handover between non-equivalent SNPNs, and between SNPN and PLMN is not supported. When the UE is operating in SNPN access mode, the trigger reports changes of equivalent SNPNs.

- if the NF service consumer subscribed to the event "ACCESS\_TYPE\_CHANGE" event in the HTTP PATCH request, the "event" attribute set to "ACCESS\_TYPE\_CHANGE" and:

i. the "accessType" attribute including the access type, and the "ratType" attribute including the RAT type when applicable for the notified access type; and

ii. if the "ATSSS" feature is supported, the "addAccessInfo" attribute with the additional access type information if available, where the access type is encoded in the "accessType" attribute, and the RAT type is encoded in the "ratType" attribute when applicable for the notified access type; and

NOTE 8: For a MA PDU session, if the "ATSSS" feature is not supported by the NF service consumer, the PCF includes the "accessType" attribute and the "ratType" attribute with a currently active combination of access type and RAT type (if applicable for the notifed access type). When both 3GPP and non-3GPP accesses are available, the PCF includes the information corresponding to the 3GPP access.

iii. the "anGwAddr" attribute including access network gateway address when available,

if the PCF has previously requested to be updated with this information in the SMF; and

- if the "IMS\_SBI" feature is supported and if the NF service consumer subscribed to the "CHARGING\_CORRELATION" event in the HTTP PATCH request, the "event" attribute set to "CHARGING\_CORRELATION" and may include the "anChargIds" attribute containing the access network charging identifier(s) and the "anChargAddr" attribute containing the access network charging address.

The NF service consumer subscription to other specific events using the Npcf\_PolicyAuthorization\_Update request is described in the related clauses. Notification of events when the applicable information is not available in the PCF when receiving the Npcf\_PolicyAuthorization\_Update request is described in clause 4.2.5.

The HTTP response message towards the NF service consumer should take place before or in parallel with any required PCC rule provisioning towards the SMF.

If the PCF does not have an existing application session context for the application session context being modified (such as after a PCF failure), the PCF shall reject the HTTP request message with the HTTP response message with the applicable rejection cause.

\*\*\* Next Change \*\*\*

#### 4.2.3.37 Modification of Round-Trip latency requirements

If the "RTLatency" feature is supported, the NF service consumer may update the RT latency requirement using the HTTP PATCH method as described in clause 4.2.3.2 by invoking the Npcf\_PolicyAuthorization\_Update service operation.

Due to the change of Round-Trip latency requirements, the PCF may need to provision or modify the related PCC rules as specified in 3GPP TS 29.513 [7] and provide the related information towards the SMF following the corresponding procedures specified in clause 4.2.6.21.2 of 3GPP TS 29.512 [8].

\*\*\* Next Change \*\*\*

#### 4.2.3.38 Update of PDU Set QoS related data

If the "PDUSetHandling" feature is supported, the NF service consumer may update the PDU Set QoS related data held in an "Individual Application Session Context" resource using the Npcf\_PolicyAuthorization\_Update service operation to modify the PDU Set QoS characteristics delivered to the SMF for use in the 5G System.

The NF service consumer may indicate PDU Set QoS related information for new PDUs by adding, in the "ascReqData" attribute, one or more media component entries within the "medComponents" attribute including the "pduSetQos" attribute, as described in clause 4.2.2.39.

The NF service consumer may delete the PDU Set QoS related information of removed PDU Set traffic by removing the corresponding media component entries within the "medComponents" attribute included in the "ascReqData" attribute.

The PCF shall reply to the NF service consumer as described in clause 4.2.3.2.

Editor’s Note: The PCF shall check whether the received PDU Set QoS related data require to modify or to remove PCC rules to provide the SMF with derived QoS characteristics. Provisioning of PCC rule(s) to the SMF as specified in 3GPP TS 29.512 [8] is FFS.

\*\*\* Next Change \*\*\*

### 5.6.1 General

This clause specifies the application data model supported by the API.

Table 5.6.1-1 specifies the data types defined for the Npcf\_PolicyAuthorization service based interface protocol.

Table 5.6.1-1: Npcf\_PolicyAuthorization specific Data Types

| Data type | Section defined | Description | Applicability |
| --- | --- | --- | --- |
| AcceptableServiceInfo | 5.6.2.30 | Acceptable maximum requested bandwidth. |  |
| AccessNetChargingIdentifier | 5.6.2.32 | Contains the access network charging identifier. | IMS\_SBI |
| AddFlowDescriptionInfo | 5.6.2.55 | Contains additional flow description information, as the flow label and the IPsec SPI. | AddFlowDescriptionInformation |
| AfAppId | 5.6.3.2 | Contains an AF application identifier. |  |
| AfEvent | 5.6.3.7 | Represents an event to notify to the NF service consumer. |  |
| AfEventNotification | 5.6.2.11 | Represents the notification of an event. |  |
| AfEventSubscription | 5.6.2.10 | Represents the subscription to events. |  |
| AfNotifMethod | 5.6.3.8 | Represents the notification methods that can be subscribed for an event. |  |
| AfRequestedData | 5.6.3.18 | Represents the information the NF service consumer requested to be exposed. | IMS\_SBI |
| AfRoutingRequirement | 5.6.2.13 | Describes the routing requirements for the application traffic flows. | InfluenceOnTrafficRouting |
| AfRoutingRequirementRm | 5.6.2.24 | This data type is defined in the same way as the "AfRoutingRequirement" data type, but with the OpenAPI "nullable: true" property. | InfluenceOnTrafficRouting |
| AfSfcRequirement | 5.6.2.49 | Describes the requirements to steer the traffic to a pre-configured chain of service functions on N6-LAN. | SFC |
| AlternativeServiceRequirementsData | 5.6.2.47 | Contains alternative QoS related parameter sets. | AltSerReqsWithIndQoS |
| AnGwAddress | 5.6.2.20 | Carries the control plane address of the access network gateway. |  |
| AppDetectionReport | 5.6.2.44 | Indicates the start or stop of the detected application traffic and the detected AF application identifier. | ApplicationDetectionEvents |
| AppDetectionNotifType | 5.6.3.23 | Represents the types of reports bound to the notification of application detection information. | ApplicationDetectionEvents |
| AppSessionContext | 5.6.2.2 | Represents an Individual Application Session Context resource. |  |
| AppSessionContextReqData | 5.6.2.3 | Represents the Individual Application Session Context resource data received in an HTTP POST request message. |  |
| AppSessionContextRespData | 5.6.2.4 | Represents the Individual Application Session Context resource data produced by the server and returned in an HTTP response message. |  |
| AppSessionContextUpdateData | 5.6.2.5 | Describes the modifications to the "ascReqData" property of an Individual Application Session Context resource. |  |
| AppSessionContextUpdateDataPatch | 5.6.2.43 | Describes the modifications to an Individual Application Session Context resource | PatchCorrection |
| AspId | 5.6.3.2 | Contains an identity of an application service provider. | SponsoredConnectivity |
| BatOffsetInfo | 5.6.2.50 | Contains the offset of the BAT and the optionally adjusted periodicity. | EnTSCAC |
| CodecData | 5.6.3.2 | Contains a codec related information. |  |
| ContentVersion | 5.6.3.2 | Represents the version of a media component. | MediaComponentVersioning |
| EthFlowDescription | 5.6.2.17 | Defines a packet filter for an Ethernet flow. |  |
| EventsNotification | 5.6.2.9 | Describes the notification about the events occurred within an Individual Application Session Context resource. |  |
| EventsSubscPutData | 5.6.2.42 | Identifies the events the application subscribes to within an Events Subscription sub-resource data. It may also include the attributes of the notification about the events already met at the time of subscription.  It is represented as a non-exclusive list of two data types: EventsSubscReqData and EventsNotification. |  |
| EventsSubscReqData | 5.6.2.6 | Identifies the events the application subscribes to within an Individual Application Session Context resource. |  |
| EventsSubscReqDataRm | 5.6.2. 25 | This data type is defined in the same way as the "EventsSubscReqData" data type, but with the OpenAPI "nullable: true" property. |  |
| ExtendedProblemDetails | 5.6.2.29 | Data type that extends ProblemDetails. |  |
| FlowDescription | 5.6.3.2 | Defines a packet filter for an IP flow. |  |
| Flows | 5.6.2.21 | Identifies the flows related to a media component. |  |
| FlowStatus | 5.6.3.12 | Describes whether the IP flow(s) are enabled or disabled. |  |
| FlowUsage | 5.6.3.14 | Describes the flow usage of the flows described by a media subcomponent. |  |
| L4sNotifType | 5.6.3.25 | Indicates whether the ECN marking for L4S support for the indicated SDFs is "NOT\_AVAILABLE" or "AVAILABLE" again. | XRM\_5G |
| L4sSupport | 5.6.2.56 | Indicates whether the ECN marking for L4S is available in 5GS for the indicated service data flows. | XRM\_5G |
| MediaComponent | 5.6.2.7 | Contains service information for a media component of an AF session. |  |
| MediaComponentRm | 5.6.2.26 | This data type is defined in the same way as the "MediaComponent" data type, but with the OpenAPI "nullable: true" property. |  |
| MediaProtocol | 5.6.3.2 | Represents the different media protocol applicable for XRM muti modality session. | XRM\_5G |
| MediaComponentResourcesStatus | 5.6.3.13 | Indicates whether the media component is active or inactive. |  |
| MediaSubComponent | 5.6.2.8 | Contains the requested bitrate and filters for the set of IP flows identified by their common flow identifier. |  |
| MediaSubComponentRm | 5.6.2.27 | This data type is defined in the same way as the "MediaSubComponent" data type, but with the OpenAPI "nullable: true" property. |  |
| MediaType | 5.6.3.3 | Indicates the media type of a media component. |  |
| MpsAction | 5.6.3.22 | Indicates whethe it is an invocation, a revocation or an invocation with authorization of the MPS for DTS service. | MPSforDTS |
| MultiModalId | 5.6.3.2 | Contains a multi-modal service identifier. | XRM\_5G |
| OutOfCreditInformation | 5.6.2.33 | Indicates the service data flows without available credit and the corresponding termination action. | IMS\_SBI |
| PayloadType | 5.6.3.2 | Represents the different payload type. | XRM\_5G |
| PcfAddressingInfo | 5.6.2.46 | Contains PCF address information. |  |
| PcscfRestorationRequestData | 5.6.2.36 | Indicates P-CSCF restoration. | PCSCF-Restoration-Enhancement |
| PduSessionEventNotification | 5.6.2.45 | Indicates PDU session information for the established/terminated PDU session. |  |
| PduSessionStatus | 5.6.3.24 | Indicates whether the PDU session is established or terminated. |  |
| PduSessionTsnBridge | 5.6.2.40 | Contains the TSC user plane node Information and DS-TT port and/or NW-TT ports management information of a new detected TSC user plane node in the context of a new PDU session. | TimeSensitiveNetworking |
| PdvMonitoringReport | 5.6.2.53 | Packet Delay Variation reporting information. | XRM\_5G |
| PeriodicityInfo | 5.6.2.54 | Indicates the time period between the start of the two data bursts in Uplink and/or Downlink direction. | XRM\_5G |
| PeriodicityRange | 5.6.2.48 | Contains the acceptable range (which is formulated as lower bound and upper bound of the periodicity of the start two bursts in reference to the external GM) or acceptable periodicity value(s) (which is formulated as a list of values for the periodicity). | EnTSCAC |
| PreemptionControlInformation | 5.6.3.19 | Pre-emption control information. | MCPTT-Preemption |
| PreemptionControlInformationRm | 5.6.3.21 | This data type is defined in the same way as the "PreemptionControlInformation" data type, but with the OpenAPI "nullable: true" property. | MCPTT-Preemption |
| PrioritySharingIndicator | 5.6.3.20 | Priority sharing indicator. | PrioritySharing |
|  |  |  | PDUSetHandling |
|  |  |  | PDUSetHandling |
| QosMonitoringInformation | 5.6.2.34 | QoS monitoring information (e.g. UL, DL or round trip packet delay). | QoSMonitoring |
| QosMonitoringInformationRm | 5.6.2.41 | This data type is defined in the same way as the "QosMonitoringInformation" data type, but with the OpenAPI "nullable: true" property. | QoSMonitoring |
| QosMonitoringReport | 5.6.2.37 | Contains QoS monitoring reporting information. | QoSMonitoring |
| QosNotificationControlInfo | 5.6.2.15 | Indicates whether the QoS targets related to certain media component are not guaranteed or are guaranteed again. |  |
| QosNotifType | 5.6.3.9 | Indicates type of notification for QoS Notification Control. |  |
| RequiredAccessInfo | 5.6.3.15 | Indicates the access network information required for an AF session. | NetLoc |
| ReservPriority | 5.6.3.4 | Indicates the reservation priority. |  |
| ResourcesAllocationInfo | 5.6.2.14 | Indicates the status of the PCC rule(s) related to certain media component. |  |
| ServAuthInfo | 5.6.3.5 | Indicates the result of the Policy Authorization service request from the NF service consumer. |  |
| ServiceInfoStatus | 5.6.3.16 | Preliminary or final service information status. | IMS\_SBI |
| ServiceUrn | 5.6.3.2 | Service URN. | IMS\_SBI |
| SipForkingIndication | 5.6.3.17 | Describes if several SIP dialogues are related to an "Individual Application Session Context" resource. | IMS\_SBI |
| SpatialValidity | 5.6.2.16 | Describes the spatial validity of an NF service consumer request for influencing traffic routing. | InfluenceOnTrafficRouting |
| SpatialValidityRm | 5.6.2.28 | This data type is defined in the same way as the "SpatialValidity" data type, but with the OpenAPI "nullable: true" property. | InfluenceOnTrafficRouting |
| SponId | 5.6.3.2 | Contains an Identity of a sponsor. | SponsoredConnectivity |
| SponsoringStatus | 5.6.3.6 | Represents whether sponsored data connectivity is enabled or disabled/not enabled. | SponsoredConnectivity |
| TemporalValidity | 5.6.2.22 | Indicates the time interval during which the NF service consumer request is to be applied. | InfluenceOnTrafficRouting |
| TerminationCause | 5.6.3.10 | Indicates the cause for requesting the deletion of the Individual Application Session Context resource. |  |
| TerminationInfo | 5.6.2.12 | Includes information related to the termination of the Individual Application Session Context resource. |  |
| TosTrafficClass | 5.6.3.2 | Contains the IPv4 Type-of-Service or the IPv6 Traffic-Class field and the ToS/Traffic Class mask field. |  |
| TosTrafficClassRm | 5.6.3.2 | This data type is defined in the same way as the "TosTrafficClass" data type, but with the OpenAPI "nullable: true" property. |  |
| TscPriorityLevel | 5.6.3.2 | Priority of TSC Flows | TimeSensitiveNetworking |
| TscPriorityLevelRm | 5.6.3.2 | This data type is defined in the same way as the "TscPriorityLevel" data type, but with the OpenAPI "nullable: true" property | TimeSensitiveNetworking |
| TscaiInputContainer | 5.6.2.39 | TSCAI Input information container. | TimeSensitiveNetworking |
| TsnQosContainer | 5.6.2.35 | TSC traffic QoS parameters. | TimeSensitiveNetworking  XRM\_5G |
| TsnQosContainerRm | 5.6.2.38 | This data type is defined in the same way as the "TsnQosContainer" data type, but with the OpenAPI "nullable: true" property. | TimeSensitiveNetworking  XRM\_5G |
| UeIdentityInfo | 5.6.2.31 | Represents 5GS-Level UE Identities. | IMS\_SBI |
| UrspEnforcementReport | 5.6.2.53 | Indicates the UE reporting Connection Capabilities from associated URSP rule(s). | URSPEnforcement |
| UplinkDownlinkSupport | 5.6.3.25 | Represents whether a capability is supported for the UL, the DL or both UL and DL service data flows | XRM\_5G |
|  |  |  |  |
|  |  |  |  |

Table 5.6.1-2 specifies data types re-used by the Npcf\_PolicyAuthorization service based interface protocol from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Npcf\_PolicyAuthorization service based interface.

Table 5.6.1-2: Npcf\_PolicyAuthorization re-used Data Types

| Data type | Reference | Comments | Applicability |
| --- | --- | --- | --- |
| AccNetChargingAddress | 3GPP TS 29.512 [8] | Indicates the IP address of the network entity within the access network performing charging. | IMS\_SBI |
| AccessType | 3GPP TS 29.571 [12] | The identification of the type of access network. |  |
| AccumulatedUsage | 3GPP TS 29.122 [15] | Accumulated Usage. | SponsoredConnectivity |
| AdditionalAccessInfo | 3GPP TS 29.512 [8] | Indicates the combination of additional Access Type and RAT Type for MA PDU session | ATSSS |
| AfSigProtocol | 3GPP TS 29.512 [8] | Represents the protocol used for signalling between the UE and the NF service consumer. | ProvAFsignalFlow |
| ApplicationChargingId | 3GPP TS 29.571 [12] | Application provided charging identifier allowing correlation of charging information. | IMS\_SBI |
| AverWindow | 3GPP TS 29.571 [12] | Averaging Window. | XRM\_5G |
| AverWindowRm | 3GPP TS 29.571 [12] | This data type is defined in the same way as the "AverWindow" data type, but with the OpenAPI "nullable: true" property. | XRM\_5G |
| BdtReferenceId | 3GPP TS 29.122 [15] | Identifies transfer policies. |  |
| BitRate | 3GPP TS 29.571 [12] | Specifies bitrate in kbits per second. |  |
| BitRateRm | 3GPP TS 29.571 [12] | This data type is defined in the same way as the "BitRate" data type, but with the OpenAPI "nullable: true" property. |  |
| BridgeManagementContainer | 3GPP TS 29.512 [8] | Contains TSC user plane node management information. | TimeSensitiveNetworking |
| Bytes | 3GPP TS 29.571 [12] | String with format "byte". |  |
| ChargingId | 3GPP TS 29.571 [12] | Charging identifier allowing correlation of charging information. | IMS\_SBI |
| DateTime | 3GPP TS 29.571 [12] | String with format "date-time" as defined in OpenAPI Specification [11]. | InfluenceOnTrafficRouting, TimeSensitiveNetworking |
| Dnn | 3GPP TS 29.571 [12] | Data Network Name. |  |
| DurationSec | 3GPP TS 29.571 [12] | Identifies a period of time in units of seconds. | TimeSensitiveNetworking, EnhancedSubscriptionToNotification,  SimultConnectivity |
| DurationSecRm | 3GPP TS 29.571 [12] | This data type is defined in the same way as the "DurationSec" data type, but with the OpenAPI "nullable: true" property. | SimultConnectivity |
| EasIpReplacementInfo | 3GPP TS 29.571 [12] | Contains EAS IP replacement information for a Source and a Target EAS. | EASIPreplacement |
| FinalUnitAction | 3GPP TS 32.291 [22] | Indicates the action to be taken when the user's account cannot cover the service cost. |  |
| Float | 3GPP TS 29.571 [12] | Number with format "float" as defined in OpenAPI Specification [11]. | FLUS |
| FloatRm | 3GPP TS 29.571 [12] | This data type is defined in the same way as the "Float" data type, but with the OpenAPI "nullable: true" property. | FLUS |
| FlowDirection | 3GPP TS 29.512 [8] | Flow Direction. |  |
| Fqdn | 3GPP TS 29.571 [12] | Contains a FQDN |  |
| ExtMaxDataBurstVol | 3GPP TS 29.571 [12] | Maximum Burst Size. | TimeSensitiveNetworking |
| ExtMaxDataBurstVolRm | 3GPP TS 29.571 [12] | This data type is defined in the same way as the "ExtMaxDataBurstVol" data type, but with the OpenAPI "nullable: true" property | TimeSensitiveNetworking |
| Gpsi | 3GPP TS 29.571 [12] | Identifies the GPSI. |  |
| Ipv4Addr | 3GPP TS 29.571 [12] | Identifies an IPv4 address. |  |
| Ipv4AddrMask | 3GPP TS 29.571 [12] | IPv4 address mask | ExtraUEaddrReport |
| Ipv6Addr | 3GPP TS 29.571 [12] | Identifies an IPv6 address. |  |
| IpEndPoint | 3GPP TS 29.510 [27] | Contains a NF IPv4 and/or IPv6 end points. |  |
| MacAddr48 | 3GPP TS 29.571 [12] | MAC Address. |  |
| Metadata | 3GPP TS 29.571 [12] | This datatype contains opaque information for the service functions in the N6-LAN that is provided by AF and transparently sent to UPF. | SFC |
| NetLocAccessSupport | 3GPP TS 29.512 [8] | Indicates the access network does not support the report of the requested access network information. | NetLoc |
| NullValue | 3GPP TS 29.571 [12] | JSON's null value, used as an explicit value of an enumeration. | MCPTT-Preemption |
| PacketDelBudget | 3GPP TS 29.571 [12] | Packet Delay Budget. | TimeSensitiveNetworking |
| PacketDelBudgetRm | 3GPP TS 29.571 [12] | This data type is defined in the same way as the "PacketDelBudget" data type, but with the OpenAPI "nullable: true" property | TimeSensitiveNetworking |
| PacketErrRate | 3GPP TS 29.571 [12] | String representing Packet Error Rate (see clauses 5.7.3.5 and 5.7.4 of 3GPP TS 23.501 [8]), expressed as a "*scalar* x 10-k" where the scalar and the *exponent k are each encoded as one decimal digit*.  Pattern: '^([0-9]E-[0-9])$'  Examples:  Packer Error Rate 4x10-6 shall be encoded as "4E-6".  Packer Error Rate 10-2 shall be encoded as "1E-2". | ExtQoS |
| PacketErrRateRm | 3GPP TS 29.571 [12] | This data type is defined in the same way as the "PacketErrRate" data type, but with the OpenAPI "nullable: true" property. | ExtQoS |
| PacketLossRateRm | 3GPP TS 29.571 [12] | This data type is defined in the same way as the "PacketLossRate" data type, but with the OpenAPI "nullable: true" property. | CHEM |
| PduSessionId | 3GPP TS 29.571 [12] | The identification of the PDU session. | URSPEnforcement |
| PduSetQosPara | 3GPP TS 29.571 [12] | PDU Set related QoS parameters. | PDUSetHandling |
| PduSetQosParaRm | 3GPP TS 29.571 [12] | This data type is defined in the same way as the "PduSetQosPara" data type, but with the OpenAPI "nullable: true" property. | PDUSetHandling |
| Pei | 3GPP TS 29.571 [12] | Identifies the PEI. | IMS\_SBI |
| PlmnIdNid | 3GPP TS 29.571 [12] | Identifies the network: the PLMN Identifier (the mobile country code and the mobile network code) or the SNPN Identifier (the PLMN Identifier and the NID). |  |
| PreemptionCapability | 3GPP TS 29.571 [12] | Pre-emption capability. | MCPTT-Preemption |
| PreemptionVulnerability | 3GPP TS 29.571 [12] | Pre-emption vulnerability. | MCPTT-Preemption |
| PreemptionCapabilityRm | 3GPP TS 29.571 [12] | It is defined in the same way as the "PreemptionCapability" data type, but with the OpenAPI "nullable: true" property. | MCPTT-Preemption |
| PreemptionVulnerabilityRm | 3GPP TS 29.571 [12] | It is defined in the same way as the "PreemptionVulnerability" data type, but with the OpenAPI "nullable: true" property. | MCPTT-Preemption |
| PresenceInfo | 3GPP TS 29.571 [12] | Represents an area of interest, e.g. a Presence Reporting Area. | InfluenceOnTrafficRouting |
| PortManagementContainer | 3GPP TS 29.512 [8] | Contains port management information for a related port. | TimeSensitiveNetworking |
| ProblemDetails | 3GPP TS 29.571 [12] | Contains a detailed information about an error. |  |
| RanNasRelCause | 3GPP TS 29.512 [8] | Indicates RAN and/or NAS release cause code information. | RAN-NAS-Cause |
| RatType | 3GPP TS 29.571 [12] | RAT Type. |  |
| RedirectResponse | 3GPP TS 29.571 [12] | Contains redirection related information. | ES3XX |
| RedundantPduSessionInformation | 3GPP TS 29.502 [57] | Contains the Redundant PDU session information, i.e, the RSN and the PDU Session Pair ID. | URSPEnforcement |
| RequestedQosMonitoringParameter | 3GPP TS 29.512 [8] | Indicate the QoS information to be monitored, e.g. UL packet delay, DL packet delay or round trip packet delay between the UE and the UPF is to be monitored when the QoS Monitoring for packet delay is enabled for the service data flow. | QoSMonitoring |
| RouteToLocation | 3GPP TS 29.571 [12] | Identifies routes to locations of applications. | InfluenceOnTrafficRouting |
| SatelliteBackhaulCategory | 3GPP TS 29.571 [12] | Indicates the satellite or non-satellite backhaul category | SatelliteBackhaul |
| Snssai | 3GPP TS 29.571 [12] | Identifies the S-NSSAI. |  |
| SscMode | 3GPP TS 29.571 [12] | Service and session continuity mode. | URSPEnforcement |
| Supi | 3GPP TS 29.571 [12] | Identifies the SUPI. |  |
| SupportedFeatures | 3GPP TS 29.571 [12] | Used to negotiate the applicability of the optional features defined in table 5.8-1. |  |
| TimeWindow | 3GPP TS 29.122 [15] | Time window identified by a start time and a stop time. | EnTSCAC |
| TrafficCorrelationInfo | 3GPP TS 29.519 [53] | Contains the information for traffic correlation. | CommonEASDNAI |
| TimeZone | 3GPP TS 29.571 [12] | Time Zone. | NetLoc |
| TsnBridgeInfo | 3GPP TS 29.512 [8] | TSC user plane node information. | TimeSensitiveNetworking |
| Uint32 | 3GPP TS 29.571 [12] | Unsigned 32-bit integers, i.e. only value 0 and 32-bit integers above 0 are permissible. | ResourceSharing |
| Uint32Rm | 3GPP TS 29.571 [12] | This data type is defined in the same way as the "Uint32" data type, but with the OpenAPI "nullable: true" property. | ResourceSharing |
| Uinteger | 3GPP TS 29.571 [12] | Unsigned Integer, i.e. only value 0 and integers above 0 are permissible.  Minimum = 0. | TimeSensitiveNetworking |
| UpPathChgEvent | 3GPP TS 29.512 [8] | Contains the subscription information to be delivered to SMF for the UP path management events. | InfluenceOnTrafficRouting |
| Uri | 3GPP TS 29.571 [12] | String providing an URI. |  |
| UsageThreshold | 3GPP TS 29.122 [15] | Usage Thresholds. | SponsoredConnectivity |
| UsageThresholdRm | 3GPP TS 29.122 [15] | This data type is defined in the same way as the "UsageThreshold" data type, but with the OpenAPI "nullable: true" property. | SponsoredConnectivity |
| UserLocation | 3GPP TS 29.571 [12] | User Location(s). | NetLoc |

\*\*\* Next Change \*\*\*

#### 5.6.2.7 Type MediaComponent

Table 5.6.2.7-1: Definition of type MediaComponent

| Attribute name | Data type | P | Cardinality | Description | Applicability |
| --- | --- | --- | --- | --- | --- |
| afAppId | AfAppId | O | 0..1 | Contains information that identifies the particular service the AF session belongs to. |  |
| afRoutReq | AfRoutingRequirement | O | 0..1 | Indicates the AF traffic routing requirements. | InfluenceOnTrafficRouting |
| afSfcReq | AfSfcRequirement | O | 0..1 | Indicates the AF requirements on steering traffic to a pre-configured chain of service functions on N6-LAN. | SFC |
| qosReference | string | O | 0..1 | Identifies a pre-defined QoS information. | AuthorizationWithRequiredQoS |
| altSerReqs | array(string) | O | 1..N | Ordered list of alternative service requirements that include a set of QoS references. The lower the index of the array for a given entry, the higher the priority.(NOTE 1) | AuthorizationWithRequiredQoS |
| altSerReqsData | array(AlternativeServiceRequirementsData) | O | 1..N | Ordered list of alternative service requirements that include individual QoS parameter sets. The lower the index of the array for a given entry, the higher the priority. (NOTE 1) | AltSerReqsWithIndQoS |
| disUeNotif | boolean | O | 0..1 | Indicates to disable QoS flow parameters signalling to the UE when the SMF is notified by the NG-RAN of changes in the fulfilled QoS situation when it is included and set to "true". The fulfilled situation is either the QoS profile or an Alternative QoS Profile. The default value "false" shall apply, if the attribute is not present and has not been supplied previously. | DisableUENotification |
| contVer | ContentVersion | O | 0..1 | Represents the content version of a media component. | MediaComponentVersioning |
| desMaxLatency | Float | O | 0..1 | Indicates a maximum desirable transport level packet latency in milliseconds. | FLUS, QoSHint |
| desMaxLoss | Float | O | 0..1 | Indicates the maximum desirable transport level packet loss rate in percent (without "%" sign). | FLUS, QoSHint |
| flusId | string | O | 0..1 | Indicates that the media component is used for FLUS media.  It is derived from the media level attribute "a=label:" (see IETF RFC 4574 [50]) obtained from the SDP body. It contains the string after "a=label:" starting with "flus" and may be followed by more characters as described in 3GPP TS 26.238 [51]. | FLUS |
| medCompN | integer | M | 1 | Identifies the media component number, and it contains the ordinal number of the media component. |  |
| medSubComps | map(MediaSubComponent) | O | 1..N | Contains the requested bitrate and filters for the set of service data flows identified by their common flow identifier. The key of the map is the attribute "fNum". |  |
| medType | MediaType | O | 0..1 | Indicates the media type of the service. |  |
| marBwUl | BitRate | O | 0..1 | Maximum requested bandwidth for the Uplink. |  |
| marBwDl | BitRate | O | 0..1 | Maximum requested bandwidth for the Downlink. |  |
| maxPacketLossRateDl | PacketLossRateRm | O | 0..1 | Indicates the downlink maximum rate for lost packets that can be tolerated for the service data flow. | CHEM |
| maxPacketLossRateUl | PacketLossRateRm | O | 0..1 | Indicates the uplink maximum rate for lost packets that can be tolerated for the service data flow. | CHEM |
| maxSuppBwDl | BitRate | O | 0..1 | Maximum supported bandwidth for the Downlink. | IMS\_SBI |
| maxSuppBwUl | BitRate | O | 0..1 | Maximum supported bandwidth for the Uplink. | IMS\_SBI |
| minDesBwDl | BitRate | O | 0..1 | Minimum desired bandwidth for the Downlink. | IMS\_SBI |
| minDesBwUl | BitRate | O | 0..1 | Minimum desired bandwidth for the Uplink. | IMS\_SBI |
| mirBwUl | BitRate | O | 0..1 | Minimum requested bandwidth for the Uplink. |  |
| mirBwDl | BitRate | O | 0..1 | Minimum requested bandwidth for the Downlink. |  |
| fStatus | FlowStatus | O | 0..1 | Indicates whether the status of the service data flows is enabled, or disabled. |  |
| preemptCap | PreemptionCapability | O | 0..1 | Defines whether the media flow may get resources that were already assigned to another media flow with a lower priority level. It may be included together with "prioSharingInd" for ARP decision. | MCPTT-Preemption |
| preemptVuln | PreemptionVulnerability | O | 0..1 | Defines whether the media flow may lose the resources assigned to it in order to admit a media flow with higher priority level. It may be included together with "prioSharingInd" for ARP decision. | MCPTT-Preemption |
| prioSharingInd | PrioritySharingIndicator | O | 0..1 | Indicates that the media flow is allowed to use the same ARP as media flows belonging to other "Individual Application Session Context" resources bound to the same PDU session. | PrioritySharing |
| resPrio | ReservPriority | O | 0..1 | Indicates the reservation priority. |  |
| rrBw | BitRate | O | 0..1 | Indicates the maximum required bandwidth in bits per second for RTCP receiver reports within the session component as specified in IETF RFC 3556 [37]. The bandwidth contains all the overhead coming from the IP-layer and the layers above, i.e. IP, UDP and RTCP. | IMS\_SBI |
| rsBw | BitRate | O | 0..1 | Indicates the maximum required bandwidth in bits per second for RTCP sender reports within the session component as specified in IETF RFC 3556 [37]. The bandwidth contains all the overhead coming from the IP-layer and the layers above, i.e. IP, UDP and RTCP. | IMS\_SBI |
| sharingKeyDl | Uint32 | O | 0..1 | Identifies which media components share resources in the downlink direction.  If resource sharing applies between media components across "Individual Application Session Context" resources for the same PDU session, the same value of the "sharingKeyDl" attribute shall be used. If resource sharing does not apply among media components across "Individual Application Session Context" resources for the same PDU session, a different value for the "sharingKeyDl" attribute shall be used. | ResourceSharing |
| sharingKeyUl | Uint32 | O | 0..1 | Identifies which media components share resources in the uplink direction.  If resource sharing applies between media components across "Individual Application Session Context" resources for the same PDU session, the same value of the "sharingKeyUl" attribute shall be used. If resource sharing does not apply among media components across "Individual Application Session Context" resources for the same PDU session, a different value for the "sharingKeyUl" attribute shall be used. | ResourceSharing |
| codecs | array(CodecData) | O | 1..2 | Indicates the codec data. |  |
| tsnQos | TsnQoSContainer | O | 0..1 | Transports QoS parameters for TSC traffic. | TimeSensitiveNetworking  XRM\_5G |
| tscaiInputUl | TscaiInputContainer | O | 0..1 | Transports TSCAI input parameters for TSC traffic at the ingress interface of the DS-TT/UE (uplink flow direction). (NOTE 2) | TimeSensitiveNetworking |
| tscaiInputDl | TscaiInputContainer | O | 0..1 | Transports TSCAI input parameters for TSC traffic at the ingress of the NW-TT (downlink flow direction). (NOTE 2) | TimeSensitiveNetworking |
| tscaiTimeDom | Uinteger | O | 0..1 | Indicates the (g)PTP domain that the (TSN)AF is located in. | TimeSensitiveCommunication |
| capBatAdaptation | boolean | O | 0..1 | Indicates the capability for AF to adjust the burst sending time, when it is supported and set to "true".  The default value is "false" if omitted.  (NOTE 2) | EnTSCAC |
| rTLatencyInd | boolean | O | 0..1 | Indicates the service data flow needs to meet the Round-Trip (RT) latency requirement of the service, when it is included and set to "true".  The default value is "false" if omitted. | RTLatency |
| pduSetQos | PduSetQosPara | O | 0..1 | PDU Set QoS parameters for XRM traffic. | PDUSetHandling |
| pduSetProtDesc | ProtoDesc | O | 0..1 | Protocol description for PDU Set identification and/or dectection of the end of data burst in UPF. | PDUSetHandling |
| periodInfo | PeriodicityInfo | O | 0..1 | Indicates the time period between the start of the two data bursts in Uplink and/or Downlink direction. | XRM\_5G |
| l4sInd | UplinkDownlinkSupport | O | 0..1 | Indicates whether ECN marking for L4S support is supported for the UL, the DL or both, UL and DL. | XRM\_5G |
| NOTE 1: The attributes "altSerReqs" and "altSerReqsData" are mutually exclusive. Of the two, only the attribute "altSerReqs" may be provided if the attribute "qosReference" is provided, while only the attribute "altSerReqsData" may be provided if the attribute "qosReference" is not provided.  NOTE 2: The "burstArrivalTimeWnd" attribute, within the "tscaiInputUl" and/or "tscaiInputDl" attributes, and the "capBatAdaptation attribute are mutually exclusive. | | | | | |

Editor's Note: Whether the AF can provide an indication fo detection of last PDU of the data burst is FFS based on stage 2 discussion.

All IP flows within a "MediaSubComponent" data type are permanently disabled by supplying "FlowStatus" data type with a deletion indication.

Bandwidth information and the "fStatus" attribute provided within the MediaComponent applies to all those IP flows within the media component, for which no corresponding information is being provided within the "medSubComps" attribute. As defined in 3GPP TS 29.513 [7], the bandwidth information within the media component level "marBwUl" and "marBwDl" attributes applies separately to each media subcomponent except for media subcomponents with a "flowUsage" attribute with the value "RTCP". The mapping of bandwidth information for RTCP media subcomponent is defined in 3GPP TS 29.513 [7] clause 7.3.3.

Editor’s note: It is FFS whether other IEs within the "tsnQos" attribute than "tscPackDelay" attribute can apply for multi-modal communication services.

\*\*\* Next Change \*\*\*

#### 5.6.2.26 Type MediaComponentRm

This data type is defined in the same way as the "MediaComponent" data type, but:

- with the OpenAPI "nullable: true" property; and

- the removable attributes "afRoutReq" is defined with the removable data type "AfRoutingRequirementRm"; "maxPacketLossRateDl" and "maxPacketLossRateUl" are defined with the removable data type "PacketLossRateRm"; "medSubComps" is defined with the removable data type "MediaSubComponentRm"; "preemptCap" is defined with the removable data type "PreemptionCapabilityRm"; "preemptVuln" is defined with the removable data type "PreemptionVulnerabilityRm"; "marBwDl", "marBwUl", "minDesBwDl", "minDesBwUl", "mirBwDl", "mirBwUl", "maxSuppBwDl", "maxSuppBwUl", "rrBw", "rsBw" are defined with the removable data type "BitRateRm"; "sharingKeyDl", "sharingKeyUl", "tsnQos", and "pduSetQos" are defined with the removable data types "Uint32Rm", "TsnQosContainerRm" and "pduSetQosParaRm"; the removable attributes "desMaxLatency" and "desMaxLoss" are defined with the removable data type "FloatRm"; "pduSetprotDesc" is defined with the removable data type "ProtoDescRm", the removable attribute "flusId" is defined as nullable in the OpenAPI.

- the removable attributes "qosReference", "altSerReqs" and "afSfcReq" are defined as nullable.

Table 5.6.2.26-1: Definition of type MediaComponentRm

| Attribute name | Data type | P | Cardinality | Description | Applicability |
| --- | --- | --- | --- | --- | --- |
| afAppId | AfAppId | O | 0..1 | Contains information that identifies the particular service the AF session belongs to. |  |
| afRoutReq | AfRoutingRequirementRm | O | 0..1 | Indicates the AF traffic routing requirements. | InfluenceOnTrafficRouting |
| afSfcReq | AfSfcRequirement | O | 0..1 | Indicates the AF requirements on steering traffic to a pre-configured chain of service functions on N6-LAN. | SFC |
| qosReference | string | O | 0..1 | Identifies a pre-defined QoS information. | AuthorizationWithRequiredQoS |
| altSerReqs | array(string) | O | 1..N | Ordered list of alternative service requirements that include a set of QoS references. The lower the index of the array for a given entry, the higher the priority. (NOTE 1) | AuthorizationWithRequiredQoS |
| altSerReqsData | array(AlternativeServiceRequirementsData) | O | 1..N | Ordered list of alternative service requirements that include individual QoS parameter sets. The lower the index of the array for a given entry, the higher the priority. (NOTE 1) | AltSerReqsWithIndQoS |
| disUeNotif | boolean | O | 0..1 | Indicates to disable QoS flow parameters signalling to the UE when the SMF is notified by the NG-RAN of changes in the fulfilled QoS situation when it is included and set to "true". The fulfilled situation is either the QoS profile or an Alternative QoS Profile. The default value "false" shall apply, if the attribute is not present and has not been supplied previously. | DisableUENotification |
| contVer | ContentVersion | O | 0..1 | Represents the content version of a media component. | MediaComponentVersioning |
| desMaxLatency | FloatRm | O | 0..1 | Indicates a maximum desirable transport level packet latency in milliseconds. | FLUS, QoSHint |
| desMaxLoss | FloatRm | O | 0..1 | Indicates the maximum desirable transport level packet loss rate in percent (without "%" sign). | FLUS, QoSHint |
| flusId | string | O | 0..1 | Indicates that the media component is used for FLUS media.  It is derived from the media level attribute "a=label:" (see IETF RFC 4574 [50]) obtained from the SDP body. It contains the string after "a=label:" starting with "flus" and may be followed by more characters as described in 3GPP TS 26.238 [51]. | FLUS |
| maxPacketLossRateDl | PacketLossRateRm | O | 0..1 | Indicates the downlink maximum rate for lost packets that can be tolerated for the service data flow. | CHEM |
| maxPacketLossRateUl | PacketLossRateRm | O | 0..1 | Indicates the uplink maximum rate for lost packets that can be tolerated for the service data flow. | CHEM |
| medCompN | integer | M | 1 | Identifies the media component number, and it contains the ordinal number of the media component. |  |
| medSubComps | map(MediaSubComponentRm) | O | 1..N | Contains the requested bitrate and filters for the set of service data flows identified by their common flow identifier. The key of the map is the attribute "fNum". |  |
| medType | MediaType | O | 0..1 | Indicates the media type of the service. |  |
| marBwUl | BitRateRm | O | 0..1 | Maximum requested bandwidth for the Uplink. |  |
| marBwDl | BitRateRm | O | 0..1 | Maximum requested bandwidth for the Downlink. |  |
| maxSuppBwDl | BitRateRm | O | 0..1 | Maximum supported bandwidth for the Downlink. | IMS\_SBI |
| maxSuppBwUl | BitRateRm | O | 0..1 | Maximum supported bandwidth for the Uplink. | IMS\_SBI |
| minDesBwDl | BitRateRm | O | 0..1 | Minimum desired bandwidth for the Downlink. | IMS\_SBI |
| minDesBwUl | BitRateRm | O | 0..1 | Minimum desired bandwidth for the Uplink. | IMS\_SBI |
| mirBwUl | BitRateRm | O | 0..1 | Minimum requested bandwidth for the Uplink. |  |
| mirBwDl | BitRateRm | O | 0..1 | Minimum requested bandwidth for the Downlink. |  |
| fStatus | FlowStatus | O | 0..1 | Indicates whether the status of the service data flows is enabled, or disabled. |  |
| preemptCap | PreemptionCapabilityRm | O | 0..1 | Defines whether the media flow may get resources that were already assigned to another media flow with a lower priority level. | MCPTT-Preemption |
| preemptVuln | PreemptionVulnerabilityRm | O | 0..1 | Defines whether the media flow may lose the resources assigned to it in order to admit a media flow with higher priority level. | MCPTT-Preemption |
| prioSharingInd | PrioritySharingIndicator | O | 0..1 | Indicates that the media flow is allowed to use the same ARP as media flows belonging to other "Individual Application Session Context" resources bound to the same PDU session. | PrioritySharing |
| resPrio | ReservPriority | O | 0..1 | Indicates the reservation priority. |  |
| rrBw | BitRateRm | O | 0..1 | Indicates the maximum required bandwidth in bits per second for RTCP receiver reports within the session component as specified in IETF RFC 3556 [37]. The bandwidth contains all the overhead coming from the IP-layer and the layers above, i.e. IP, UDP and RTCP. | IMS\_SBI |
| rsBw | BitRateRm | O | 0..1 | Indicates the maximum required bandwidth in bits per second for RTCP sender reports within the session component as specified in IETF RFC 3556 [37]. The bandwidth contains all the overhead coming from the IP-layer and the layers above, i.e. IP, UDP and RTCP. | IMS\_SBI |
| codecs | array(CodecData) | O | 1..2 | Indicates the codec data. |  |
| sharingKeyDl | Uint32Rm | O | 0..1 | Identifies which media components share resources in the downlink direction.  If resource sharing applies between media components across "Individual Application Session Context" resources for the same PDU session, the same value of the "sharingKeyDl" attribute shall be used. If resource sharing does not apply among media components across "Individual Application Session Context" resources for the same PDU session, a different value for the "sharingKeyDl" attribute shall be used.  If resource sharing does no longer apply for this media component, the "sharingKeyDl" attribute shall be set to "null". | ResourceSharing |
| sharingKeyUl | Uint32Rm | O | 0..1 | Identifies which media components share resources in the uplink direction.  If resource sharing applies between media components across "Individual Application Session Context" resources for the same PDU session, the same value of the "sharingKeyUl" attribute shall be used. If resource sharing does not apply among media components across "Individual Application Session Context" resources for the same PDU session, a different value for the "sharingKeyUl" attribute shall be used.  If resource sharing does no longer apply for this media component, the "sharingKeyUl" attribute shall be set to "null". | ResourceSharing |
| tsnQos | TsnQoSContainerRm | O | 0..1 | Transports QoS parameters for TSC traffic. | TimeSensitiveNetworking  XRM\_5G |
| tscaiInputUl | TscaiInputContainer | O | 0..1 | Transports TSCAI input parameters for TSC traffic at the ingress interface of the DS-TT/UE (uplink flow direction). | TimeSensitiveNetworking |
| tscaiInputDl | TscaiInputContainer | O | 0..1 | Transports TSCAI input parameters for TSC traffic at the ingress of the NW-TT (downlink flow direction). | TimeSensitiveNetworking |
| tscaiTimeDom | Uinteger | O | 0..1 | Indicates the (g)PTP domain that the (TSN)AF is located in. | TimeSensitiveCommunication |
| capBatAdaptation | boolean | O | 0..1 | Indicates the capability for AF to adjust the burst sending time, when it is supported and set to "true".  The default value is "false" if omitted.  (NOTE 2) | EnTSCAC |
| rTLatencyInd | boolean | O | 0..1 | Indicates the service data flow needs to meet the Round-Trip (RT) latency requirement of the service, when it is included and set to "true".  The default value is "false" if omitted. | RTLatency |
| pduSetQos | PduSetQosParaRm | O | 0..1 | PDU Set QoS parameters for XRM traffic. | PDUSetHandling |
| pduSetProtDesc | ProtoDescRm | O | 0..1 | Protocol description for PDU Set identification in UPF | PDUSetHandling |
| periodInfo | PeriodicityInfo | O | 0..1 | Indicates the time period between the start of the two data bursts in Uplink and/or Downlink direction. XRM\_5G | XRM\_5G |
| l4sInd | UplinkDownlinkSupport | O | 0..1 | When provided, it represents an explicit indication of whether ECN marking for L4S support is supported for the UL, the DL or both, UL and DL.  It may be present when the media component is initially provided. | XRM\_5G |
| NOTE 1: The attributes "altSerReqs" and "altSerReqsData" are mutually exclusive.  NOTE 2: The "burstArrivalTimeWnd" attribute, within the "tscaiInputUl" and/or "tscaiInputDl" attributes, and the "capBatAdaptation" attribute are mutually exclusive. | | | | | |

Editor’s note: It is FFS whether other IEs within the "tsnQos" attribute than "tscPackDelay" attribute can apply for multi-modal communication services.

\*\*\* Next Change \*\*\*

#### 5.6.3.2 Simple data types

The simple data types defined in table 5.6.3.2-1 shall be supported.

Table 5.6.3.2-1: Simple data types

| Type Name | Type Definition | Description | Applicability |
| --- | --- | --- | --- |
| AfAppId | string | Contains an AF application identifier. |  |
| AspId | string | Contains an identity of an application service provider. | SponsoredConnectivity |
| CodecData | string | Contains codec related information.  Refer to clause 5.3.7 of 3GPP TS 29.214 [20] for encoding. |  |
| ContentVersion | integer | Unsigned 64-bit integer that indicates the version of some content, as e.g. the content of a media component. The content version shall be unique for the content and for the lifetime of that content. (NOTE) | MediaComponentVersioning |
| FlowDescription | string | Defines a packet filter for an IP flow. It contains an IPFilterRule according to clause 4.3 of IETF RFC 6733 [52].  Refer to clause 5.3.8 of 3GPP TS 29.214 [20] for encoding. |  |
| MultiModalId | string | Contains a multi-modal service identifier. | XRM\_5G |
| SponId | string | Contains an identity of a sponsor. | SponsoredConnectivity |
| ServiceUrn | string | Indicates that an AF session is used for Emergency traffic.  It contains values of the service URN and it may include subservices, as defined in IETF RFC 5031 [34] or registered at IANA.  The string "urn:service:" in the beginning of the URN shall be omitted and all subsequent text shall be included. Examples of valid values of the ServiceUrn data structure are "sos", "sos.fire", "sos.police" and "sos.ambulance". | IMS\_SBI |
| TosTrafficClass | string | 2-octet string, where each octet is encoded in hexadecimal representation. The first octet contains the IPv4 Type-of-Service or the IPv6 Traffic-Class field and the second octet contains the ToS/Traffic Class mask field. Each character in the string shall take a value of "0" to "9" or "A" to "F" and shall represent 4 bits. One example is that of a TFT packet filter as defined in 3GPP TS 24.008 [36]. |  |
| TosTrafficClassRm | string | This data type is defined in the same way as the "TosTrafficClass" data type, but with the OpenAPI "nullable: true" property. |  |
| TscPriorityLevel | integer | Indicates the TSC traffic Priority Level, within the range 1 to 8.  Values are ordered in decreasing order of priority, i.e. with 1 as the highest priority and 8 as the lowest priority. | TimeSensitiveNetworking |
| TscPriorityLevelRm | integer | This data type is defined in the same way as the "TscPriorityLevel" data type, but with the OpenAPI "nullable: true" property. | TimeSensitiveNetworking |
| PayloadType | string | Represents the media protocol applicable for PDU set identification. | PDUSetHandling |
| MediaProtocol | string | Indicates the protocol used by the service data flow for PDU set identification. | PDUSetHandling |
| NOTE: The method of assigning content versions is implementation specific. | | | |

\*\*\* Next Change \*\*\*

## 5.8 Feature negotiation

The optional features in table 5.8-1 are defined for the Npcf\_PolicyAuthorization API. They shall be negotiated using the extensibility mechanism defined in clause 6.6.2 of 3GPP TS 29.500 [5].

When requesting the PCF to create an Individual Application Session Context resource the NF service consumer shall indicate the optional features the NF service consumer supports for the Npcf\_PolicyAuthorization service by including the "suppFeat" attribute in the "AppSessionContextReqData" data type of the HTTP POST request.

The PCF shall determine the supported features for the created Individual Application Session Context resource as specified in clause 6.6.2 of 3GPP TS 29.500 [5]. The PCF shall indicate the supported features in the HTTP response confirming the creation of the Individual Application Session Context resource by including the "suppFeat" attribute in the "AppSessionContextRespData" data type.

Table 5.8-1: Supported Features

| Feature number | Feature Name | Description |
| --- | --- | --- |
| 1 | InfluenceOnTrafficRouting | Indicates support of Application Function influence on traffic routing. If the PCF supports this feature, the NF service consumer may influence SMF routing to applications or subscribe to notifications of UP path management for the traffic flows of an active PDU session. |
| 2 | SponsoredConnectivity | Indicates support of sponsored data connectivity. If the PCF supports this feature, the NF service consumer may provide sponsored data connectivity to the SUPI. |
| 3 | MediaComponentVersioning | Indicates the support of the media component versioning. |
| 4 | URLLC | Indicates support of Ultra-Reliable Low-Latency Communication (URLLC) requirements, i.e. AF application relocation acknowledgement and UE address(es) preservation. The InfluenceOnTrafficRouting feature shall be supported in order to support this feature. |
| 5 | IMS\_SBI | Indicates support of the communication with the 5GC IMS NF service consumer via Service Based Interfaces. |
| 6 | NetLoc | Indicates the support of access network information reporting. |
| 7 | ProvAFsignalFlow | This indicates support for the feature of provisioning of AF signalling flow information as described in clauses 4.2.2.16 and 4.2.3.17. If the PCF supports this feature the NF service consumer may provision AF signalling flow information.  NOTE: This feature is used by the IMS Restoration Procedures to provide to the SMF the address of the P-CSCF selected by the UE, refer to 3GPP TS 23.380 [39].  The IMS\_SBI feature shall be supported in order to support this feature. |
| 8 | ResourceSharing | This feature indicates the support of resource sharing across several "Individual Application Session Context" resources. The IMS\_SBI feature shall be supported in order to support this feature. |
| 9 | MCPTT | This feature indicates the support of Mission Critical Push To Talk services as described in 3GPP TS 24.379 [41]. |
| 10 | MCVideo | This feature indicates the support of Mission Critical Video services as described in 3GPP TS 24.281 [43]. |
| 11 | PrioritySharing | This feature indicates that Priority Sharing is supported as described in 3GPP TS 23.503 [4], clause 6.1.3.15. |
| 12 | MCPTT-Preemption | This feature indicates the support of service pre-emption based on the information provided by the NF service consumer. It requires that both PrioritySharing and MCPTT features are also supported. |
| 13 | MacAddressRange | Indicates the support of a set of MAC addresses with a specific range in the traffic filter. |
| 14 | RAN-NAS-Cause | This feature indicates the support for the release cause code information from the access network. |
| 15 | EnhancedSubscriptionToNotification | Indicates the support of:  - Subscription to periodic notifications.  - Definition of a waiting time between the reporting of two event triggered events.  - Indication of whether the event has to be reported at PDU Session termination.  - Notification Correlation Id for a subscription to an event. |
| 16 | QoSMonitoring | Indicates the support of QoS monitoring functionality and the report of packet delay monitoring. This feature requires the support of the EnhancedSubscriptionToNotification feature. |
| 17 | AuthorizationWithRequiredQoS | Indicates support of policy authorization for the AF session with required QoS. |
| 18 | TimeSensitiveNetworking | Indicates that the 5G System is integrated within the external network as a TSN bridge. |
| 19 | PCSCF-Restoration-Enhancement | This feature indicates support of P-CSCF Restoration Enhancement. It is used for the PCF and the P-CSCF to indicate if they support P-CSCF Restoration Enhancement. |
| 20 | CHEM | This feature indicates the support of Coverage and Handover Enhancements for Media (CHEM). |
| 21 | FLUS | This feature indicates the support of FLUS functionality as described in 3GPP TS 26.238 [51]. |
| 22 | EPSFallbackReport | This feature indicates the support of the report of EPS Fallback as defined in clauses 4.2.2.30, 4.2.3.29 and 4.2.5.15. |
| 23 | ATSSS | Indicates the support of the report of the multiple access types of a MA PDU session. |
| 24 | QoSHint | This feature indicates the support of specific QoS hint parameters as described in 3GPP TS 26.114 [30], clause 6.2.10. |
| 25 | ReallocationOfCredit | This feature indicates the support of notifications of reallocation of credits events. It requires the support of IMS\_SBI feature. |
| 26 | ES3XX | Extended Support for 3xx redirections. This feature indicates the support of redirection for any service operation, according to Stateless NF procedures as specified in clauses 6.5.3.2 and 6.5.3.3 of 3GPP TS 29.500 [5] and according to HTTP redirection principles for indirect communication, as specified in clause 6.10.9 of 3GPP TS 29.500 [5]. |
| 27 | DisableUENotification | Indicates the support of disabling QoS flow parameters signalling to the UE when the SMF is notified by the NG-RAN of changes in the fulfilled QoS situation. This feature requires that the AuthorizationWithRequiredQoS featute is also supported. |
| 28 | PatchCorrection | Indicates support of the correction to the PATCH method:  When this feature is not supported, the interoperability between a NF service consumer and the PCF can only be ensured when it is not required the update of the Individual Application Session Context resource. |
| 29 | MPSforDTS | Indicates support for MPS for DTS as described in clauses 4.2.2.12.2 and 4.2.3.12. |
| 30 | ApplicationDetectionEvents | This feature indicates the support of the subscription to notifications of the detection of the start and stop of an application's traffic. |
| 31 | TimeSensitiveCommunication | Indicates that the 5G System is integrated within the external network as a TSC user plane node to enable Time Sensitive Communication, Time Synchronization and Deterministic Networking. This feature requires that the TimeSensitiveNetworking feature is also supported. |
| 32 | ExposureToEAS | This feature indicates the support of the indication of direct event notification of QoS monitoring events from the UPF to the Local NEF or AF in 5GC. This indication requires that the QoSMonitoring feature is supported. |
| 33 | SatelliteBackhaul | Indicates the support of the report of the satellite or non-satellite backhaul category of the PDU session. |
| 34 | RoutingReqOutcome | Indicates the support of:  - the report of UP path change failures; and  - the indication of whether AF routing requirements are applied.  It requires the support of InfluenceOnTrafficRouting feature. |
| 35 | EASDiscovery | This feature indicates the support of EAS (re)discovery. |
| 36 | AltSerReqsWithIndQoS | Indicates the support of provisioning Alternative Service Requirements with individual QoS parameters. This feature requires that the AuthorizationWithRequiredQoS feature is also supported. |
| 37 | SimultConnectivity | This feature indicates the support of the indication of temporary simultaneous connectivity over source and target PSA at edge relocation. This indication requires that the InfluenceOnTrafficRouting feature is supported. |
| 38 | EASIPreplacement | This feature indicates the support of provisioning of EAS IP replacement info. This support requires that InfluenceOnTrafficRouting feature is also supported |
| 39 | AccNetChargId\_String | This feature indicates the support of long character strings as access network charging identifier. |
| 40 | WLAN\_Location | This feature indicates the support of the report of the WLAN location information received from the ePDG/EPC, if available. It is only applicable to EPS interworking scenarios as described in 3GPP TS 29.512 [8], Annex B. |
| 41 | AF\_latency | This feature indicates support for edge relocation considering user plane latency. |
| 42 | UEUnreachable | This feature indicates the support for the reporting of UE temporary unavailable. |
| 43 | AltQoSProfilesSupportReport | This feature indicates the support of the report of whether Alternative QoS parameters are supported by NG-RAN. This feature requires that AuthorizationWithRequiredQoS feature is also supported. |
| 44 | PacketDelayFailureReport | Indicates the support of packet delay failure report as part of QoS Monitoring procedures. This feature requires that QoSMonitoring feature is supported. |
| 45 | EnTSCAC | Indicates the support of extensions to TSCAC and the RAN feedback for BAT offset and adjusted periodicity.  This feature requires that the TimeSensitiveCommunication feature is also supported. |
| 46 | SignalingPathValidation | This feature indicates the support of the validation of the NF type that originates the Npcf\_PolicyAuthorization\_Create request. |
| 47 | ExtQoS | This feature indicates the support for the extensions to the QoS mechanisms. |
| 48 | CommonEASDNAI | This feature controls the support of the common EAS/DNAI selection. This feature requires that the InfluenceOnTrafficRouting feature is alos supported. |
| 49 | SFC | This feature indicates support of Service Function Chaining functionality. |
| 50 | XRM\_5G | This feature indicates the support of multi-modal communication service for extended reality (XR) and interactive media services. |
| 51 | EnSatBackhaulCatChg | This feature indicates the support also of the report of the dynamic  satellite backhaul category of the PDU session. This feature requires the support of SatelliteBackhaul feature. |
| 52 | MTU\_Size | This feature indicates the support of the report of the MTU size of the device side port. This feature requires that the TimeSensitiveCommunication feature is also supported. |
| 53 | ExtraUEaddrReport | This feature indicates the support of the report of additional IP addresses or address ranges allocated for the given PDU session resulting from framed routes or IPv6 prefix delegation. |
| 54 | AuthorizationForMpsSignalling | This feature indicates support for use of the "mpsAction" attribute to signal that the UE's MPS subscription shall be checked by the PCF prior to enabling MPS for AF signalling. |
| 55 | ExposureToTSC | This feature indicates the support of the direct event notification of TSC management information from the UPF to the TSCTSF or TSN AF in 5GC. This feature requires that the TimeSensitiveCommunication feature is also supported. |
| 56 | URSPEnforcement | This feature indicates the support of awareness of URSP rule enforcement |
| 57 | AddFlowDescriptionInformation | This feature indicates support for use e.g. of additional flow description parameters, as the flow label and the IPSec SPI. |
| 58 | QoSTiming\_5G | This feature indicates the support of QoS timing information for the transfer and support of data transmission (e.g., AI/ML traffic transmission). |
| 59 | PDUSetHandling | This feature indicates the support of PDU Set handling. This feature may be supported for eXtended Reality (XR) and interactive media services. |
| 60 | RTLatency | This feature indicates the support of Round-Trip latency. This feature may be supported for eXtended Reality (XR) and interactive media services. |

Editor's Note: It is FFS the name and the granularity for the XRM\_5G feature.

\*\*\* End of Changes \*\*\*