**3GPP TSG-CT3 Meeting #134 *C3-243xxx***

**, , - *(Revision of C3-243069 was C3-242548)***

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| --- |
| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **29.565** | **CR** | **0124** | **rev** | **2** | **Current version:** | **18.5.0** |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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|  |
| ***Title:***  | Correction of the presence condition for qosReference |
|  |  |
| ***Source to WG:*** | Nokia, Huawei |
| ***Source to TSG:*** | CT3 |
|  |  |
| ***Work item code:*** | IIoT |  | ***Date:*** | 2024-05-29 |
|  |  |  |  |  |
| ***Category:*** | **A** |  | ***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 canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | 1. In this rel-18 TS 29.565, the parameter "qosReference" defined in the "required" field in the Ntsctsf\_QoSandTSCAssistance API schema definition of "TscAppSessionContextData" is incorrect as it is not a mandatory parameter to be present always in this data structure as described in the respective data model in clause 6.2.6.2.2.
2. Data type "AlternativeServiceRequirementsData" missing from the re-used Data types in Table 6.2.6.1-2.
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|  |  |
| ***Summary of change:*** | To resolve the above issues, this CR proposes to:1. change the presence condition of the "qosReference" attribute in the data model of "TscAppSessionContextData" from C to M to align with the definition present in the corresnponding Ntsctsf\_QoSandTSCAssistance API.
2. update the NOTE 2 and NOTE 3 in the clause 6.2.6.2.2 to clarify that the "qosReference" attribute is not a mandatory parameter in a way if either the attributes within "tscQosReq" or the "altQosReqs" attribute is provided.
3. add missing data type in the "Ntsctsf\_QoSandTSCAssistance re-used Data Types" definition in clause 6.6.1
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|  |  |
| ***Consequences if not approved:*** | Misalignment of the OpenAPI definition with the respective data model. |
|  |  |
| ***Clauses affected:*** | 5.3.2.2.2, 6.2.6.1, 6.2.6.2.2 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** | This CR does not impact the OpenAPI descriptions of the APIs defined in this specification. |
|  |  |
| ***This CR's revision history:*** | **Rev 2 provides additional update:*** Update the presence condition of "tscQosReq" and "qosReference" attributes in clause 5.3.2.2.2 to align with the OpenAPI.
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\* \* \* \* Start of changes \* \* \* \*

##### 5.3.2.2.2 Initial provisioning of TSC related service information

This procedure is used to set up a TSC 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 [19].

Figure 5.3.2.2.2-1 illustrates the initial provisioning of TSC related service information.



Figure 5.3.2.2.2-1: Initial provisioning of TSC related service information

When a new TSC AF application session context needs to be established, the NF service consumer shall invoke the Ntsctsf\_QoSandTSCAssistance\_Create service operation by sending the HTTP POST request to the resource URI representing the "TSC Application Sessions" collection resource of the TSCTSF, as shown in figure 5.3.2.2.2-1, step 1.

The NF service consumer shall include the "TscAppSessionContextData" data type in the content of the HTTP POST request in order to request the creation of the "Individual TSC Application Session Context" resource. The "Individual TSC Application Session Context" resource and the "Events Subscription" sub-resource are created as described below.

The NF service consumer shall include in the "TscAppSessionContextData" data structure:

- the AF identifier within the "afId" attribute;

- when the "GMEC" feature is not supported, either the IP address (IPv4 or IPv6) of the PDU session within the "ueIpAddr" attribute for IP type PDU session or the MAC address of the DS-TT port within the "ueMac" attribute for Ethernet type PDU sessions;

- when the "GMEC" feature is supported, either the targeted UE within the "ueId" attribute or the targeted group of UE(s) within the "externalGroupId" attribute as defined in clause 5.3.2.2.8;

- either the Application Id within the "appId" attribute or the flow information within:

a. for IP flows, the "flowInfo" attribute; or

b. for Ethernet flows, either the "ethFlowInfo" attribute or, if the Ethernet\_UL/DL\_Flows feature is supported, the "enEthFlowInfo" attribute;

- the QoS reference within the "qosReference" attribute or the individual QoS parameter set (i.e. requested GBR, requested MBR, requested maximum burst size, requested priority if received and requested 5GS delay if received, and requested packet error rate if received) within the "tscQosReq" attribute. If the individual QoS parameter set within the "tscQosReq" attribute is provided, then the QoS reference within the "qosReference" attribute shall be ignored;

- the input information to construct the TSC Assistance Container within the "tscaiInputUl" attribute and/or "tscaiInputDl" attribute of the "tscQosReq" attribute and the (g)PTP domain that the AF is located in within the "tscaiTimeDom" attribute of the "tscQosReq" attribute, if available; and

- the URI where the TSCTSF can request to the NF service consumer to delete the "Individual TSC Application Session Context" resource within the "notifUri" attribute;

and may include:

- the DNN within the "dnn" attribute;

- the S-NSSAI within the "snssai" attribute;

- the domain identity in the "ipDomain" attribute;

- the individual QoS parameter set within the "tscQosReq" attribute;

- if the "EnTSCAC" feature is supported, the capability for BAT adaptation in the "capBatAdaptation" attribute;

- an ordered list of alternative QoS references within the "altQosReferences" attribute if the QoS reference is provided or an ordered list of requested alternative QoS parameters set(s) within the "altQosReqs" attribute if the individual QoS parameter set is provided. When the NF service consumer provides the "altQosReferences" attribute or the "altQosReqs" attribute, the NF service consumer shall also subscribe to receive notifications from the TSCTSF when the resources associated to the corresponding service information have been allocated as described in clause 5.3.2.2.5 and when the GBR QoS targets for one or more service data flows can no longer (or can again) be guaranteed, as described in clause 5.3.2.2.3;

and

- the request of the notification of certain user plane events within the "evSubsc" attribute. Within the EventsSubscReqData data structure, the NF service consumer shall include:

a) the URI where the TSCTSF sends the event notification to the NF service consumer within the "notifUri" attribute;

b) a Notification Correlation Identifier for the requested notifications within the "notifCorreId" attribute;

c) the subscribed events within the "events" attribute;

d) the usage threshold within the "usgThres" attribute if the "USAGE\_REPORT" event is subscribed; and

e) QoS monitoring information within the "qosMon" attribute if the "QOS\_MONITORING" event is subscribed.

Upon the reception of this HTTP POST request, the TSCTSF shall:

- construct the TSC Assistance Container based on information provided by the NF service consumer;

- if the Requested 5GS delay including the requested 5GS delay within the individual QoS parameter set or within the requested alternative QoS parameters set(s) is received from NF service consumer, calculate a Requested PDB by subtracting the UE-DS-TT residence time either provided by the PCF or pre-configured at TSCTSF from the Requested 5GS delay;

- if the time domain information is not received with the Burst Arrival Time or Periodicity within the "tscQosReq" attribute from the NF service consumer, the TSCTSF may indicate Time Domain = "5GS" within the "tscaiTimeDom" attribute within the "tscQosReq" attribute to indicate that the NF service consumer does not provide the time domain information;

NOTE 2: The Time Domain value corresponding to "5GS" is locally configured in the SMF and in the TSCTSF, and indicates that the AF does not provide a Time Domain and the provided TSCAI input information will be used without adjustments.

- if the feature EnTSCAC is supported and if the NF service consumer includes the capability for BAT adaptation within the "capBatAdaptation" attribute or a BAT window within the "burstArrivalTimeWnd" attribute within the "tscaiInputUl" attribute and/or "tscaiInputDl" attribute of the "tscQosReq" attribute or the periodicity range in the "periodicityRange" attribute in the request, then the TSCTSF shall subscribe to the notification on BAT offset by using the "EventsSubscReqData" data type including an event within the "events" attribute with the "event" attribute set to "BAT\_OFFSET\_INFO;

- interact with the PCF for the received UE address:

a) if the TSCTSF has an AF-session with the PCF for the received UE address, the TSCTSF shall interact with the PCF by triggering a Npcf\_PolicyAuthorization\_Update request to provision the related parameters to the PCF as defined in 3GPP TS 29.514 [20]; or

b) if the TSCTSF does not have an AF-Session with the PCF for the received UE address, the TSCTSF shall discover the PCF for the PDU session as specified in 3GPP TS 29.521 [23], and shall interact with the PCF by triggering a Npcf\_PolicyAuthorization\_Create to provision the related parameters to the PCF as defined in 3GPP TS 29.514 [20]; and

NOTE 3: If the PCF determines an existing PDU Session is related with TSC traffic (based on local configuration or SM Policy Association), the PCF invokes Npcf\_PolicyAuthorization\_Notify service operation to the TSCTSF as defined in clause 4.2.5.16 of 3GPP TS 29.514 [20] to send the received TSC User Plane Node information. At that time, the TSCTSF retrieves from the BSF the PCF binding information, as specified in 3GPP TS 29.521 [23], and can create the AF-session by sending to the PCF the Npcf\_PolicyAuthorization\_Create service operation, if TSC related information, as e.g. QoS requirements, and/or subscription to PMIC(s)/UMIC updates need to be provided to the PCF.

NOTE 4: After the TSCTSF retrieves from the BSF the PCF binding information (including the UE Identities for the notified PDU session), as specified in 3GPP TS 29.521 [23], the TSCTSF can store internally the received information and delay the Npcf\_PolicyAuthorization\_Create service operation (the creation of the AF-session). In this case, when the TSCTSF receives the QoS request, the TSCTSF interacts with the PCF by triggering a Npcf\_PolicyAuthorization\_Create request to provision the related parameters to the PCF as defined in 3GPP TS 29.514 [20].

- if receiving a successful response from the PCF, the TSCSTF shall create an "Individual TSC Application Session Context" resource and send to the NF service consumer a "201 Created" response to the HTTP POST request, as shown in figure 5.3.2.2.2-1, step 2. If the "evSubsc" attribute is received, the "Events Subscription" sub-resource shall be created within the "Individual TSC Application Session Context" resource. The TSCTSF shall include in the "201 Created" response:

a) a Location header field; and

b) a "TscAppSessionContextData" data type in the content.

The Location header field shall contain the URI of the created "Individual TSC Application Session Context" i.e. "{apiRoot}/ntsctsf-qos-tscai/<apiVersion>/tsc-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.

If the TSCTSF cannot successfully fulfil the received HTTP POST request due to the internal TSCTSF error or due to the error in the HTTP POST request, the TSCTSF shall send the HTTP error response as specified in clause 6.2.7.

The TSCTSF may send the following error responses based on failed AF-session creation/update request responses received from the PCF as specified in 3GPP TS 29.514 [20]:

a. If the TSCSTSF receives the indication that the PCF failed in executing session binding, the TSCTSF shall reject the HTTP POST request with an HTTP "500 Internal Server Error" response including the "cause" attribute set to "PDU\_SESSION\_NOT\_AVAILABLE".

b. If the service information provided in the body of the HTTP POST request is rejected by the PCF (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 TSCTSF shall indicate in an HTTP "403 Forbidden" response message the cause for the rejection including the "cause" attribute set to "REQUESTED\_SERVICE\_NOT\_AUTHORIZED", as received.

c. If the service information provided in the body of the HTTP POST request is rejected due to a temporary condition in the network, the TSCTSF may include in the "403 Forbidden" response the "cause" attribute set to "REQUESTED\_SERVICE\_TEMPORARILY\_NOT\_AUTHORIZED". The TSCTSF may also provide a received 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 TSCTSF 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 [4] clause 5.2.2.2.

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

\* \* \* \* Next change \* \* \* \*

#### 6.2.6.1 General

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

Table 6.2.6.1-1 specifies the data types defined for the Ntsctsf\_QoSandTSCAssistance service based interface protocol.

Table 6.2.6.1-1: Ntsctsf\_QoSandTSCAssistance specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Clause defined | Description | Applicability |
| AdditionalInfoTsctsfQosTscac | 6.2.6.2.8 | Describes additional error information specific for this API. |  |
| EventsNotification | 6.2.6.2.6 | Describes the notification(s) about the event(s) occurred within an Individual TSC Application Session Context resource. |  |
| EventNotification | 6.2.6.2.7 | Describes the notification for an Event. |  |
| EventsSubscReqData | 6.2.6.2.3 | Identifies the events the application subscribes to within an Individual TSC Application Session Context resource |  |
| EventsSubscReqDataRm | 6.2.6.2.5 | This data type is defined in the same way as the "EventsSubscReqData" data type, but with the OpenAPI "nullable: true" property. |  |
| ProblemDetailsTsctsfQosTscac | 6.2.6.4.1 | Problem details as defined in 3GPP TS 29.571 [15] extended with specific error information for this API, as described in AdditionalInfoTsctsfQosTscac data type. |  |
| TemporalInValidity | 6.2.6.2.9 | Indicates the time interval during which the NF service consumer request shall not to be applied. | GMEC |
| TscAppSessionContextData | 6.2.6.2.2 | Represents the Individual TSC Application Session Context resource data. |  |
| TscAppSessionContextUpdateData | 6.2.6.2.4 | Describes the modifications to an Individual TSC Application Session Context resource. |  |
| TscEvent | 6.2.6.3.3 | Indicates the subscribed event(s). |  |

Table 6.2.6.1-2 specifies data types re-used by the Ntsctsf\_QoSandTSCAssistance 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 Ntsctsf\_QoSandTSCAssistance service based interface.

Table 6.2.6.1-2: Ntsctsf\_QoSandTSCAssistance re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| AcceptableServiceInfo | 3GPP TS 29.514 [20] | Acceptable maximum requested bandwidth. |  |
| AccumulatedUsage | 3GPP TS 29.122 [21] | Accumulated Usage. |  |
| AlternativeServiceRequirementsData | 3GPP TS 29.514 [20] | Contains alternative QoS related parameter sets. |  |
| AspId | 3GPP TS 29.514 [20] | Contains an identity of an application service provider. |  |
| BatOffsetInfo | 3GPP TS 29.514 [20] | Contains the offset of the BAT and the optionally adjusted periodicity. | EnTSCAC |
| DateTime | 3GPP TS 29.571 [15] | Represents a date and a time. | GMEC |
| Dnn | 3GPP TS 29.571 [15] | The DNN the user is connected to. |  |
| ExternalGroupId | 3GPP TS 29.571 [15] | Identifies an External Group. | GMEC |
| EthFlowDescription | 3GPP TS 29.514 [20] | Defines a packet filter for an Ethernet flow. |  |
| EthFlowInfo | 3GPP TS 29.122 [21] | Contains an UL and/or DL Flow information. | Ethernet\_UL/DL\_Flows |
| FlowInfo | 3GPP TS 29.122 [21] | Contains the IP data flow information. |  |
| Gpsi | 3GPP TS 29.571 [15] | Represents a GPSI. | GMEC |
| IpAddr | 3GPP TS 29.571 [15] | Contains the IP address. |  |
| MacAddr48 | 3GPP TS 29.571 [15] | MAC Address. |  |
| ProblemDetails | 3GPP TS 29.571 [15] | Problem Details when returning an error response. |  |
| QosMonitoringInformation | 3GPP TS 29.122 [21] | Contains Qos Monitoring information. |  |
| QosMonitoringInformationRm | 3GPP TS 29.122 [21] | This data type is defined in the same way as the "QosMonitoringInformation" data type, but with the OpenAPI "nullable: true" property. |  |
| QosMonitoringReport | 3GPP TS 29.122 [21] | Contains Qos Monitoring Report information. |  |
| RedirectResponse | 3GPP TS 29.571 [15] | Contains redirection related information. |  |
| Snssai | 3GPP TS 29.571 [15] | Identifies the S-NSSAI. |  |
| SponId | 3GPP TS 29.514 [20] | Contains an Identity of a sponsor. |  |
| SponsoringStatus | 3GPP TS 29.514 [20] | Represents whether sponsored data connectivity is enabled or disabled/not enabled. |  |
| SubscribedEvent | 3GPP TS 29.522 [17] | Indicates the subscribed event. |  |
| SupportedFeatures | 3GPP TS 29.571 [15] | Used to negotiate the applicability of the optional features defined in table 5.8-1. |  |
| TerminationInfo | 3GPP TS 29.514 [20] | Includes information related to the termination of the Individual TSC Application Session Context resource. |  |
| TscQosRequirement | 3GPP TS 29.122 [21] | Contains the QoS requirements for time sensitive communication. |  |
| TscQosRequirementRm | 3GPP TS 29.122 [21] | This data type is defined in the same way as the "TscQosRequirement" data type, but with removable attributes. |  |
| UsageThreshold | 3GPP TS 29.122 [21] | Time period and/or traffic volume in which the QoS is to be applied. |  |
| UsageThresholdRm | 3GPP TS 29.122 [21] | This data type is defined in the same way as the "UsageThreshold" data type, but with the OpenAPI "nullable: true" property. |  |
| Uri | 3GPP TS 29.571 [15] | Identifies a referenced resource. |  |

\* \* \* \* Next change \* \* \* \*

##### 6.2.6.2.2 Type TscAppSessionContextData

Table 6.2.6.2.2-1: Definition of type TscAppSessionContextData

| Attribute name | Data type | P | Cardinality | Description | Applicability |
| --- | --- | --- | --- | --- | --- |
| ueIpAddr | IpAddr | C | 0..1 | The address of the UE.(NOTE 1) (NOTE 5) |  |
| ipDomain | string | C | 0..1 | The IPv4 address domain identifier.The attribute may only be provided if the ueIpAddr attribute is present and contains an IPv4 address. |  |
| ueMac | MacAddr48 | C | 0..1 | Identifies the MAC address.(NOTE 1) (NOTE 5) |  |
| ueId | Gpsi | C | 0..1 | The identity of the targeted UE.(NOTE 5) | GMEC |
| externalGroupId | ExternalGroupId | C | 0..1 | Identifies the targeted group of UE(s).(NOTE 5) | GMEC |
| dnn | Dnn | O | 0..1 | Data Network Name, a full DNN with both the Network Identifier and Operator Identifier, or a DNN with the Network Identifier only. |  |
| snssai | Snssai | O | 0..1 | Identifies the S-NSSAI. |  |
| notifUri | Uri | M | 1 | Notification URI for Individual TSC Application Session Context termination requests. |  |
| appId | string | C | 0..1 | Contains the Application Identifier. (NOTE 1) |  |
| flowInfo | array(FlowInfo) | C | 1..N | Describe the IP data flow which requires QoS.(NOTE 1) (NOTE 4) |  |
| enEthFlowInfo | array(EthFlowInfo) | C | 1..N | Identifies the Ethernet flows which require QoS. Each Ethernet flow consists of a flow identifier and the corresponding UL and/or DL flows.(NOTE 1) (NOTE 4) | Ethernet\_UL/DL\_Flows |
| ethFlowInfo | array(EthFlowDescription) | C | 1..N | Identifies Ethernet packet flows.(NOTE 1) |  |
| afId | string | M | 1 | Identifies the AF identifier. |  |
| tscQosReq | TscQosRequirement | C | 0..1 | Contains the QoS requirements for time sensitive communication. (NOTE 2) |  |
| qosReference | string | M | 0..1 | Identifies a pre-defined QoS information. (NOTE 2) (NOTE 3) |  |
| altQosReferences | array(string) | C | 1..N | Identifies an ordered list of pre-defined QoS information. The lower the index of the array for a given entry, the higher the priority. (NOTE 3) |  |
| altQosReqs | array(AlternativeServiceRequirementsData) | C | 1..N | Identifies an ordered list of alternative service requirements that include individual QoS parameter set(s). The lower the index of the array for a given entry, the higher the priority. (NOTE 3) |  |
| sponId | SponId | O | 0..1 | Sponsor identity.  |  |
| aspId | AspId | O | 0..1 | Contains the Application service provider identity. It shall be included if sponsored connectivity is applicable. |  |
| sponStatus | SponsoringStatus | O | 0..1 | Indication of whether sponsored connectivity is enabled or disabled/not enabled.The absence of the attribute indicates that the sponsored connectivity is enabled. |  |
| evSubsc | EventsSubscReqData | O | 0..1 | Identifies the events the application subscribes to at creation of an Individual TSC Application Session Context resource. |  |
| tempInValidity | TemporalInValidity | O | 0..1 | Indicates the time interval during which the AF request is not to be applied. | GMEC |
| suppFeat | SupportedFeatures | C | 0..1 | This IE represents a list of Supported features used as described in clause 6.2.8.It shall be supplied by the NF service consumer in the POST request and response of requests a creation of an Individual TSC Application Session Context resource. |  |
| NOTE 1: When the "GMEC" feature is not supported, eirther the "ueIpAddr" attribute or the "ueMac" attribute shall be included. If IP address is provided, IP flow information shall be provided. If ipv4, the domain identifier may be provided. If mac address is provided, Ethernet flow information shall be provided. One of IP flow information, Ethernet flow information or Application Identifier shall be provided.NOTE 2: When the attributes "reqGbrDl", "reqGbrUl", "reqMbrDl", "reqMbrUl", "maxTscBurstSize", "req5Gsdelay", "reqPer" (if the ExtQoS feature is supported), and "priority" within the "tscQosReq" attribute are provided then the "qosReference" attribute is ignored.NOTE 3: The attributes "altQoSReferences" and "altQosReqs" are mutually exclusive. If the attribute "altQosReqs" is provided, then the attribute "qosReference shall be ignored.NOTE 4: When the Ethernet flow information is provided and the Ethernet\_UL/DL\_Flows feature is supported, either the "ethFlowInfo" or the "enEthFlowInfo" shall be provided, but not both simultaneously.NOTE 5: When the "GMEC" feature is supported, the "ueId" attribute and the "externalGroupId" attribute are mutually exclusive. If either the "ueId" attribute or the "externalGroupId" attribute are present, then neither the "ueIpAddr" attribute nor the "ueMac" attribute shall be present. |

\* \* \* \* End of changes \* \* \* \*