**3GPP TSG-CT WG4 Meeting #101eC4-205abc**

**E-Meeting, 03rd – 13th November 2020 *was* C4-205088**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.503** | **CR** | **0496** | **rev** | **1** | **Current version:** | **16.5.0** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **x** |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Config DNN for PDU session status event | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei | | | | | | | | | |
| ***Source to TSG:*** | CT4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eNAPIs | | | | |  | ***Date:*** | | | 2020-10-23 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | 1. In stage 2 specification TS23.682 clause 5.6.1.10 (Specific Parameters for Monitoring Event: PDN Connectivity Status), it mentions:   *3. The SCEF executes step 3 of clause 5.6.1.1. SCEF includes the APN for which the PDN Connectivity Status is to be monitored in the Monitoring Request to HSS. SCEF may also request PDN Connectivity Status for all PDN Connections regardless of APN (e.g. if APN is unknown in SCEF).*  *NOTE 2: The SCEF uses the SCS/AS Identifier and External Group Identifier, External Identifier or MSISDN that was obtained in step 1 to determine what APN will be used to enable PDN Connectivity between the UE and the SCS/AS. This determination is based on local policies.*  According to the statement above, the SCEF can indicate the APN for which the event PDN Connectivity Status is monitored, but the indication of APN is missing in exsiting definition.   1. Format error in clause 6.4.1, {apiRoot}/{apiName}/<apiVersion>/ should be {apiRoot}/<apiName>/<apiVersion>/ | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Added the DNN for which the event PDN Connectivity Status in Monitoring Configuration data of subscribe service operation of EE service.   1. Added attribute pduSessionStatusCfg in data model MonitoringConfiguration. 2. Defined PduSessionStatusCfg data modle which includes DNN information which is used to include DNN for which the event PDN Connectivity Status is monitored 3. Correct the description of "PDN\_CONNECTIVITY\_STATUS" in data model EventType   Corrected the format error in clause 6.4.1 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | If the DNN for which the event PDN Connectivity Status is monitored is not configured, the stage 2 feature indicated in highlighted part of "***Reason for change:***" won't be implemented. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.4.1, 6.4.6.1, 6.4.6.2.3, 6.4.6.2.xx, 6.4.6.3.3, A.5 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 will introduce backward compatible corrections in the OpenAPI specification file of TS29503\_Nudm\_EE OpenAPI, TS29504\_ Nudr\_DR OpenAPI. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Rev1:   1. Correct the TS29505\_Subscription\_Data OpenAPI to TS29504\_ Nudr\_DR OpenAPI in ***Other comments:*** on cover sheet. | | | | | | | | |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*The start of changes\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### 6.4.1 API URI

URIs of this API shall have the following root:

{apiRoot}/<apiName>/<apiVersion>/

The request URI used in HTTP request from the NF service consumer towards the NF service producer shall have the structure defined in clause 4.4.1 of 3GPP TS 29.501 [5], i.e.:

**{apiRoot}/<apiName>/<apiVersion>/<apiSpecificResourceUriPart>**

with the following components:

- The {apiRoot} shall be set as described in 3GPP TS 29.501 [5].

- The <apiName>shall be "nudm-ee".

- The <apiVersion> shall be "v1".

- The <apiSpecificResourceUriPart> shall be set as described in clause 6.4.3.

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

#### 6.4.6.1 General

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

Table 6.4.6.1-1 specifies the data types defined for the Nudm\_EE service API.

Table 6.4.6.1-1: Nudm\_EE specific Data Types

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Data type | | Clause defined | | Description | |
| EeSubscription | | 6.4.6.2.2 | | A subscription to Notifications | |
| MonitoringConfiguration | | 6.4.6.2.3 | | Monitoring Configuration | |
| MonitoringReport | | 6.4.6.2.4 | | Monitoring Report | |
| Report | | 6.4.6.2.5 | |  | |
| ReportingOptions | | 6.4.6.2.6 | |  | |
| ChangeOfSupiPeiAssociationReport | | 6.4.6.2.7 | |  | |
| RoamingStatusReport | | 6.4.6.2.8 | |  | |
| CreatedEeSubscription | | 6.4.6.2.9 | |  | |
| LocationReportingConfiguration | | 6.4.6.2.10 | |  | |
| CnTypeChangeReport | | 6.4.6.2.11 | |  | |
| ReachabilityForSmsReport | | 6.4.6.2.12 | |  | |
| DatalinkReportingConfiguration | | 6.4.6.2.13 | | Reporting configuration for events related to data link | |
| CmInfoReport | | 6.4.6.2.14 | | Reporting UE's Connection Management State information per access type | |
| LossConnectivityCfg | | 6.4.6.2.15 | | Configuration for loss of connectivity event | |
| PduSessionStatusCfg | | 6.4.6.2.xx | | Reporting configuration for events related to PDU session Status | |
| MaxNumOfReports | | 6.4.6.3.2 | | Maximum number of reports | |
| ReferenceId | | 6.4.6.3.2 | | Reference Identity | |
| EventType | | 6.4.6.3.3 | | Event type of UDM Event Exposure service | |
| LocationAccuracy | | 6.4.6.3.4 | | Location Accuracy definition | |
| CnType | | 6.4.6.3.5 | | Core Network Type | |
| AssociationType | | 6.4.6.3.6 | |  | |
| EventReportMode | | 6.4.6.3.7 | |  | |

Table 6.4.6.1-2 specifies data types re-used by the Nudm\_EE service API from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Nudm\_EE service API.

Table 6.4.6.1-2: Nudm\_EE re-used Data Types

|  |  |  |
| --- | --- | --- |
| Data type | Reference | Comments |
| Uri | 3GPP TS 29.571 [7] | Uniform Resource Identifier |
| SupportedFeatures | 3GPP TS 29.571 [7] | see 3GPP TS 29.500 [4] clause 6.6 |
| DateTime | 3GPP TS 29.571 [7] |  |
| Pei | 3GPP TS 29.571 [7] |  |
| PlmnId | 3GPP TS 29.571 [7] |  |
| Gpsi | 3GPP TS 29.571 [7] |  |
| AccessType | 3GPP TS 29.571 [7] |  |
| PatchResult | 3GPP TS 29.571 [7] |  |
| DddTrafficDescriptor | 3GPP TS 29.571 [7] |  |
| SamplingRatio | 3GPP TS 29.571 [7] |  |
| DurationSec | 3GPP TS 29.571 [7] |  |
| DlDataDeliveryStatus | 3GPP TS 29.571 [7] | Downlink data delivery status |
| Dnn | 3GPP TS 29.571 [7] | Data Network Name with Network Identifier only. |
| Snssai | 3GPP TS 29.571 [7] | Single NSSAI |
| CmInfo | 3GPP TS 29.518 [36] | Describe the Connection Management state information for an access type |

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

##### 6.4.6.2.3 Type: MonitoringConfiguration

Table 6.4.6.2.3-1: Definition of type MonitoringConfiguration

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | | Data type | P | Cardinality | Description |
| eventType | | EventType | M | 1 | String; see clause 6.4.6.3.3 |
| immediateFlag | | boolean | O | 0..1 | Indicates if an immediate event report in the subscription response indicating current value / status of the event is required or not. If the flag is not present then immediate reporting shall not be done. |
| locationReportingConfiguration | | LocationReportingConfiguration | C | 0..1 | shall be present if eventType is "LOCATION\_REPORTING" |
| associationType | | AssociationType | O | 0..1 | If the eventType indicates CHANGE\_OF\_SUPI\_PEI\_ASSOCIATION, this parameter may be included to identify whether the IMSI-IMEI or IMSI-IMEISV association shall be detected.  If the flag is not present, then a value of IMEISV shall be used |
| datalinkReportCfg | | DatalinkReportingConfiguration | C | 0..1 | shall be present if eventType is "DL\_DATA\_DELIVERY\_STATUS"  "AVAILABILITY\_AFTER\_DDN\_FAILURE". |
| lossConnectivityCfg | | LossConnectivityCfg | O | 0..1 | May be present if eventType is "LOSS\_OF\_CONNECTIVITY".  (NOTE) |
| maximumLatency | | DurationSec | O | 0..1 | May be present if eventType is "UE\_REACHABILITY\_FOR\_DATA"  When present, it indicates the configured Maximum Latency.  (NOTE) |
| maximumResponseTime | | DurationSec | O | 0..1 | May be present if eventType is "UE\_REACHABILITY\_FOR\_DATA"  When present, it indicates the configured Maximum Response Time.  (NOTE) |
| suggestedPacketNumDl | | integer | O | 0..1 | May be present if eventType is "UE\_REACHABILITY\_FOR\_DATA"  When present, it indicates the configured Suggested number of downlink packets.  (NOTE) |
| pduSessionStatusCfg | | PduSessionStatusCfg | O | 0..1 | may be present if eventType is "PDN\_CONNECTIVITY\_STATUS" |
| NOTE: Parameters maximumLatency, maximumResponseTime, suggestedPacketNumDl and lossConnectivityCfg are not recommendated to be used for the AFs that support to set them by Parameter Provision service operation via NEF. | | | | | |

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

##### 6.4.6.2.xx Type: PduSessionStatusCfg

Table 6.4.6.2.xx-1: Definition of type PduSessionStatusCfg

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description |
| dnn | Dnn | O | 0..1 | When present, it indicates the DNN for which the event is monitored. |

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

##### 6.4.6.3.3 Enumeration: EventType

Table 6.4.6.3.3-1: Enumeration EventType

|  |  |
| --- | --- |
| Enumeration value | Description |
| "LOSS\_OF\_CONNECTIVITY" | Loss of connectivity |
| "UE\_REACHABILITY\_FOR\_DATA" | UE reachability for data, implements the "UE Reachability" monitoring event as specified in clause 4.15.3.1 in 3GPP TS 23.502 [3].  When this event is subscribed by an NF service consumer, the UDM subscribes to "ReachabilityReport" event for "UE Reachability for DL Traffic" on the AMF without URRP-AMF.  When this event is subscribed by an NF service consumer, the UDM shall request the AMF to directly send notification to NF. |
| "UE\_REACHABILITY\_FOR\_SMS" | UE reachability for SMS, implements the "UE Reachability for SMS Delivery" event as specified in clause 4.15.3.1 of 3GPP TS 23.502 [3].  This Event is reported when an SMSF is being registered in UDM for the UE, or when a UE Activity notification is received from AMF and there is an SMSF already registered for the UE.  This event only supports One-Time reporting. |
| "LOCATION\_REPORTING" | Location Reporting |
| "CHANGE\_OF\_SUPI\_PEI\_ASSOCIATION" | Change of SUPI-PEI association |
| "ROAMING\_STATUS" | Roaming Status |
| "COMMUNICATION\_FAILURE" | Communication Failure |
| "AVAILABILITY\_AFTER\_DDN\_FAILURE" | Availability after DDN failure |
| "CN\_TYPE\_CHANGE" | CN type change |
| "DL\_DATA\_DELIVERY\_STATUS" | Downlink Data Delivery Status |
| "PDN\_CONNECTIVITY\_STATUS" | PDU Session Status |
| "UE\_CONNECTION\_MANAGEMENT\_STATE" | UE state of Connection Management |

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

## A.5 Nudm\_EE API

openapi: 3.0.0

info:

version: '1.1.0'

title: 'Nudm\_EE'

description: |

Nudm Event Exposure Service.

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***(… text not shown for clarity …)***

MonitoringConfiguration:

type: object

required:

- eventType

properties:

eventType:

$ref: '#/components/schemas/EventType'

immediateFlag:

type: boolean

locationReportingConfiguration:

$ref: '#/components/schemas/LocationReportingConfiguration'

associationType:

$ref: '#/components/schemas/AssociationType'

datalinkReportCfg:

$ref: '#/components/schemas/DatalinkReportingConfiguration'

lossConnectivityCfg:

$ref: '#/components/schemas/LossConnectivityCfg'

maximumLatency:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSec'

maximumResponseTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSec'

suggestedPacketNumDl:

type: integer

minimum: 1

pduSessionStatusCfg:

$ref: '#/components/schemas/PduSessionStatusCfg'

***(… text not shown for clarity …)***

CmInfoReport:

type: object

properties:

oldCmInfoList:

type: array

items:

$ref: 'TS29518\_Namf\_EventExposure.yaml#/components/schemas/CmInfo'

minItems: 1

maxItems: 2

newCmInfoList:

type: array

items:

$ref: 'TS29518\_Namf\_EventExposure.yaml#/components/schemas/CmInfo'

minItems: 1

maxItems: 2

required:

- newCmInfoList

PduSessionStatusCfg:

type: object

properties:

dnn:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Dnn'

# SIMPLE TYPES:

ReferenceId:

type: integer

MaxNumOfReports:

type: integer

***(… text not shown for clarity …)***

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*The end of changes\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*