**3GPP TSG-CT WG4 Meeting #111-eC4-224abc**

**E-Meeting, 18th – 26th August 2022 *was C4-224260***

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.518** | **CR** | **0772** | **rev** | **1** | **Current version:** | **17.6.0** |  |
|  | | | | | | | | |
| *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:*** | Timestamp for Periodic Event Reporting during Mobility | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | CT4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5G\_CIoT | | | | |  | ***Date:*** | | | 2022-08-24 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **A** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *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:*** | | During inter-AMF mobility, existing event subscriptions of the UE will be passed by old AMF to new AMF. The new AMF will generate event reports for the received subscriptions.  When the NF consumer has required for periodic reporting Mode, the AMF should generate event reports per fix interval, i.e. when the AMF generate the event report, the AMF shall record the timestamp to identify when the next report to be generated. However, when the event subscriptions are passed between AMFs, the new AMF doesn't known when the old AMF has reported thus cannot accurately generate next periodic report.  This CR propose the old AMF pass the next periodic report timestamp in subscription in UE context to the new AMF. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1/ New IE added in AmfEvent to indicate the timestamp of next report to be generated.  2/ Update OpenAPI accordingly. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | During inter-AMF mobility, the new AMF cannot known when to generate the next periodic report as required by stage 2. | | | | | | | | |
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| ***Clauses affected:*** | | 6.2.6.2.3, A.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 introduce backward compatible corrections on Namf\_Communication and Namf\_EventExposure APIs. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Rev1:  Change new IE to indicate the timestamp of next periodic report to be generated, to avoid the scenairo when the UE context is transferred before the first periodic report being sent. | | | | | | | | |

\* \* \* First Change \* \* \* \*

##### 6.2.6.2.3 Type: AmfEvent

Table 6.2.6.2.3-1: Definition of type AmfEvent

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| type | AmfEventType | M | 1 | Describes the AMF event type to be reported |  |
| immediateFlag | boolean | O | 0..1 | Indicates if an immediate event report in the subscription response is requested. The report contains the current value / status of the event stored at the time of the subscription in the AMF (NOTE 1). If the flag is not present then immediate reporting shall not be done. |  |
| areaList | array(AmfEventArea) | O | 1..N | Identifies the area to be applied.  More than one instance of AmfEventArea IE shall be used only when the AmfEventArea is provided during event subscription for Presence Reporting Area subscription. |  |
| locationFilterList | array(LocationFilter) | O | 1..N | Describes the filters to be applied for LOCATION\_REPORT event type.  If this attribute is not present in the request, it indicates the change of the TA used by the UE should be reported. |  |
| refId | ReferenceId | O | 0..1 | Indicates the Reference Id associated with the event.  (NOTE 3) |  |
| trafficDescriptorList | array(TrafficDescriptor) | O | 1..N | Indicates the filters to be applied for AVAILABILITY\_AFTER\_DDN\_FAILURE event type. |  |
| reportUeReachable | boolean | C | 0..1 | This IE shall be present and set to value "true" by the source AMF to request the target AMF to notify the subscriber when UE becomes reachable, during inter-AMF mobility procedures.  When present, this IE shall be set as following:  - true: target AMF shall notify the subscriber when UE becomes reachable  - false (default): target AMF shall not notify the subscriber when UE becomes reachable, until next reporting trigger is detected, i.e. DDN failure detected (for AVAILABILITY\_AFTER\_DDN\_FAILURE event) or UE becomes unreachable for downlink traffic (for "UE Reachable for DL Traffic" of REACHABILITY\_REPORT event)  This IE only applies to following Event Types:  - AVAILABILITY\_AFTER\_DDN\_FAILURE  - REACHABILITY\_REPORT (for "UE Reachable for DL Traffic") |  |
| reachabilityFilter | ReachabilityFilter | O | 0..1 | When present, this IE shall indicate the filter to be applied for the REACHABILITY\_REPORT event type.  If the subscription of REACHABILITY\_REPORT is for "UE Reachability Status Change", the AMF shall report current reachability state and subsequent updated reachability state of the UE, when AMF becomes aware of a UE reachability state change between REACHABLE, UNREACHABLE and REGULATORY\_ONLY.  If the subscription of REACHABILITY\_REPORT is for "UE Reachable for DL Traffic", the AMF shall report the "REACHABLE" state, when the UE transitions to CM-CONNECTED mode or when the UE will become reachable for paging, as specified in table 4.15.3.1-1, clauses 4.2.5 and 4.3.3 of 3GPP TS 23.502 [3].  If this IE is absent, the subscription of REACHABILITY\_REPORT is for "UE Reachability Status Change". |  |
| udmDetectInd | boolean | O | 0..1 | The IE may be present for subscription for "UE Reachable for DL Traffic".  When present, this IE shall indicate whether the UE Reachability Event will be detected at UDM (i.e. with Nudm\_UECM\_Registration) or not:  - true: UE Reachability will be detected at UDM  - false (default) UE Reachability will not be detected at UDM |  |
| maxReports | integer | O | 0..1 | This IE may be present if the trigger is set to "CONTINUOUS" or "PERIODIC". When present, this IE describes the maximum number of reports that can be generated by the subscribed event.  If the AMF event subscription is for a group of UEs, this parameter shall be applied to each individual member UE of the group.  If the event subscription is transferred from source AMF to a target AMF, this IE shall contain:  - the remaining number of reports for the event subscription, in the case of individual UE event subscription; or  - the remaining number of reports for the event subscription for this specific UE, in the case of a group event subscription. If the group subscription has not expired and all reports have been sent already for this event, the remaining number of reports shall be set to "0".  (NOTE 2) |  |
| presenceInfoList | map(PresenceInfo) | O | 1..N | Map of PRA Information, the "praId" attribute within the PresenceInfo data type shall also be the key of the map. The "presenceState" attribute within the PresenceInfo data type shall not be supplied.  When present, the areaList shall be absent. | MPRA |
| maxResponseTime | DurationSec | C | 0..1 | This IE shall be present, when the UDM subscribes to "REACHABILITY\_REPORT" event for "UE Reachable for DL Traffic" on behalf of the AF and the AF sets the Maximum Response Time in the Monitoring Configuration.  When present, this IE shall indicate the Maximum Response Time configured by the AF. |  |
| targetArea | TargetArea | C | 0..1 | The IE shall be present for subscription for SNSSAI\_TA\_MAPPING\_REPORT event type.  When present, this IE shall indicate the TAI list to be applied. |  |
| snssaiFilter | array(ExtSnssai) | O | 1..N | The IE may be present for subscription for SNSSAI\_TA\_MAPPING\_REPORT event type.  This IE shall be present for subscription of UE\_MM\_TRANSACTION\_REPORT event to receive the UE Mobility Management Transaction numbers based on slices.  When present, this IE shall indicate the S-NSSAI list to be applied.  (NOTE 4) |  |
| ueInAreaFilter | UeInAreaFilter | O | 0..1 | Indicates the filter to be applied for UES\_IN\_AREA\_REPORT event type related to UAVs.  When present, this IE shall indicate the list of items to be applied together as filter. | UARF |
| minInterval | DurationSec | O | 0..1 | This IE may be present when the NF consumer subscribes to "REACHABILITY\_REPORT" event for "UE Reachable for DL Traffic".  When present, this IE indicates the minimal interval to report the event, i.e. when an event is reported, a subsequent event report shall not be sent during the interval. |  |
| nextReport | DateTime | O | 0..1 | This IE may be present when the event subscription is transferred from source AMF to a target AMF and minInterval is configured for this event.  When present, this IE shall indicate the time point before when a subsequent event report shall be throttled. |  |
| idleStatusInd | boolean | O | 0..1 | Idle Status Indication request.  May be present if type is REACHABILITY\_REPORT or AVAILABILITY\_AFTER\_DDN\_FAILURE  true: Idle status indication is requested  false (default): Idle status indication is not requested |  |
| dispersionArea | DispersionArea | C | 0..1 | This IE shall be present for subscription to the UE\_MM\_TRANSACTION\_REPORT event to receive the UE Mobility Management Transaction numbers based on location, or for subscription to the UE\_LOCATION\_TRENDS event.  When present, this IE indicates the target area where the related events to be reported for dispersion analytics.  (NOTE x) |  |
| nextPeriodicReportTime | DateTime | C | 0..1 | This IE should be present when the event subscription is transferred from source AMF to a target AMF and there are periodic report(s) to be generated for the event.  When present, this IE shall indicate the timestamp when the next periodic report for the event to be generated and notified to the NF consumer. |  |
| NOTE 1: The current value of the location is the last known location if the immediate report filter request to provide the 3GPP location information down to the Cell-ID or the TAI. An NF Service Consumer willing to only receive the current location shall not set the immediateFlag to true when subscribing to a location event report.  NOTE 2: When creating an AMF event subscription with multiple events, the same maximum number of reports shall apply to each event. Accordingly, maxReports in this attribute should not be present when creating an AMF event subscription; if it is present, it shall contain the same value for all events and maxReports in the AmfEventMode shall have precedence over the maxReports in this attribute. maxReports in this attribute and maxReports in the AmfEventMode have different semantics when transferring the event subscription from a source AMF to a target AMF.  NOTE 3: Each Monitoring Configuration subscribed via UDM Event Exposure service uses a Reference Id as the key. This IE shall carry the Reference Id when UDM subscribes to the AMF event for the corresponding Monitoring Configuration.  NOTE 4: For a subscription to the UE\_MM\_TRANSACTION\_REPORT event, either the snssaiFilter IE or the dispersionArea shall be present. The AMF shall report the UE MM Transaction numbers based on slices or location according to the presence of the IE. | | | | | |

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

# A.3 Namf\_EventExposure API

openapi: 3.0.0

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Text Skipped for Clarity \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

AmfEvent:

description: Describes an event to be subscribed

type: object

properties:

type:

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

immediateFlag:

type: boolean

default: false

areaList:

type: array

items:

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

minItems: 1

locationFilterList:

type: array

items:

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

minItems: 1

refId:

$ref: 'TS29503\_Nudm\_EE.yaml#/components/schemas/ReferenceId'

trafficDescriptorList:

type: array

items:

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

minItems: 1

reportUeReachable:

type: boolean

default: false

reachabilityFilter:

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

udmDetectInd:

type: boolean

default: false

maxReports:

type: integer

presenceInfoList:

type: object

additionalProperties:

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

minProperties: 1

description: A map(list of key-value pairs) where praId serves as key.

maxResponseTime:

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

targetArea:

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

snssaiFilter:

type: array

items:

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

minItems: 1

ueInAreaFilter:

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

minInterval:

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

nextReport:

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

idleStatusInd:

type: boolean

default: false

dispersionArea:

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

nextPeriodicReportTime:

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

required:

- type

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Text Skipped for Clarity \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

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