**3GPP TSG-CT WG4 Meeting #98eC4-203415\_v2**

**E-Meeting, 02nd – 12th June 2020 was C4-203371**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.518** | **CR** | **0369** | **rev** | **1** | **Current version:** |  |  |
|  | | | | | | | | |
| *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:*** | AMF event exposure for any UE | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Orange, Huawei | | | | | | | | | |
| ***Source to TSG:*** | C4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** |  | | | | |  | ***Date:*** | | | 2020-05-27 |
|  |  | | | |  | |  | | |  |
| ***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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | TS°23.502 clause 4.15.1 specifies "any UE" as Target of Event Reporting for all NFs and TS°23.288 CR#0118R3 specifies the use by the NWDAF of this target in AMF and SMF event reporting. TS°29.508 already specifies "any UE" as target for the SMF but this is missing for the AMF. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add "any UE" as Target of Event Reporting.  Add also group of UE for more consistency. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Issue for NWDAF analytics | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.3.1, 6.2.6.2.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | |  | | |
| ***affected:*** | |  | **X** | Test specifications | | | |  | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | This CR introduces backward compatible corrections to Namf\_EventExposure API (Annex A.3 unchanged) | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Rev1: Revert some unnecessary modifications and add Huawei as a co-signing company.  Rev 2: Various minor corrections mainly to the cover sheet, in addition to removing the support for “Any UE” for some events. | | | | | | | | |

\* \* \* Start of changes \* \* \* \*

## 5.3 Namf\_EventExposure Service

### 5.3.1 Service Description

The AMF may offer this service as a Service Producer to enable an NF to subscribe to event notifications on its own or on behalf of another NF and get notified about an event. The known Service Consumers are NEF, SMF, UDM and NWDAF. See also clause 5.34.7 of 3GPP TS 23.501 [2] and clauses 4.15.1, 4.15.3.2, 4.15.4.2 and 5.2.2.3.1 of 3GPP TS 23.502 [3] , clause 6.2.2 in 3GPP TS 23.288 [38].

The following events are provided by Namf\_EventExposure Service:

Event: Location-Report

A NF subscribes to this event to receive the Last Known Location of a UE or a group of UEs or any UE, and Updated Location of any of these UEs. when AMF becomes aware of a location change of any of these UEs with the granularity as requested.

This event implements the "Location Reporting" event in table 4.15.3.1-1 of 3GPP TS 23.502 [3].

UE Type: One UE, Group of UEs, any UE

Report Type: One-Time Report (See NOTE 1), Continuous Report (See NOTE 2)

Input: UE-ID(s), "ANY\_UE", optional filters: TAI, Cell-ID, N3IWF, UE-IP, UDP-PORT, TNAP ID, Global Line Id

Notification; UE-ID, filtered updated location (TAI, Cell-ID for 3GPP access, most recent N3IWF node, UE local IP address and UDP source port number for non-3GPP access, TNAP ID, Global Line Id).

NOTE 1: Support of Continuous Report should be controlled by operator policy.

Event: Presence-In-AOI-Report

A NF subscribe to this event to receive the current present state of a UE or a group of UEs or any UE in a specific Area of Interest (AOI), and notification when a specified UE enters or leaves the specified area. The area could be identified by a TA list, an area ID or specific interested area name like "LADN".

UE Type: One UE, Group of UEs, any UE

Report Type: One-Time Report, Continuously Report

Input: UE ID(s), "ANY\_UE", Area identifier (a TA list, an area Id or "LADN")

Notification: UE-ID, Area identifier, Presence Status (IN/OUT/UNKNOWN)

Event: Time-Zone-Report

A NF subscribes to this event to receive the current time zone of a UE or a group of UEs, and updated time zone of the UE or any UE in the group when AMF becomes aware of a time zone change of the UE.

UE Type: One UE, Group of UEs

Report Type: One-Time Report, Continuous Report

Input: UE ID(s)

Notification; UE-ID, most recent time-zone

Event: Access-Type-Report

A NF subscribes to this event to receive the current access type(s) of a UE or a group of UEs or any UE, and updated access type(s) of any of the UEs when AMF becomes aware of the access type change of any of these UEs. The area could be identified by a TA list, an area ID or specific interested area name like "LADN".

UE Type: One UE, Group of UEs, any UE

Report Type: One-Time Report, Continuous Report

Input: UE ID(s), "ANY\_UE", optionally filters: Area identifier (a TA list, an area Id or "LADN")

Notification; UE ID, most recent access-types (3GPP, Non-3GPP)

Event: Registration-State-Report

A NF subscribes to this event to receive the current registration state of a UE or a group of UEs or any UE, and report for updated registration state of any of these UEs when AMF becomes aware of a registration state change of any of these UEs. The area could be identified by a TA list, an area ID or specific interested area name like "LADN".

UE Type: One UE, Group of UEs, any UE

Report Type: One-Time Report, Continuous Report

Input: UE ID(s), "ANY\_UE", optionally filters: Area identifier (a TA list, an area Id or "LADN")

Notification; UE ID, most recent registration state (REGISTERED/DEREGISTERED) with access type

Event: Connectivity-State-Report

A NF subscribes to this event to receive the current connection management state of a UE or a group of UEsor any UE, and report for updated connection management state of any of the UEs when AMF becomes aware of a connection management state change of any of these UEs.

UE Type: One UE, Group of UEs, any UE

Report Type: One-Time Report, Continuous Report

Input: UE ID(s), "ANY\_UE", optionally filters: Area identifier (a TA list, an area Id or "LADN")

Notification; UE ID, most recent connection management state (IDLE/CONNECTED) with access type

Event: Reachability-Report

A NF subscribes to this event to receive the current reachability of a UE or a group of UEs, and report for updated reachability of a UE or any UE in the group when AMF becomes aware of a reachability change of the UEs.

UE Type: One UE, Group of UEs

Report Type: One-Time Report, Continuous Report

Input: UE ID(s)

Notification; UE ID, AMF Id, most recent reachability state (REACHABLE/UNRACHABLE/REGULATORY-ONLY).

Event: Communication-Failure-Report

A NF subscribes to this event to receive the Communication failure report of a UE or group of UEs or any UE, when the AMF becomes aware of a RAN or NAS failure event.

This event implements the "Communication failure" event in table 4.15.3.1-1 of 3GPP TS 23.502 [3].

UE Type: One UE, Group of UEs, any UE

Report Type: One-Time Report, Continuous Report

Input: UE ID(s), "ANY\_UE", optionally filters: Area identifier (a TA list, an area Id or "LADN")

Notification; UE ID, RAN/NAS release code.

Event: UEs-In-Area-Report

A NF subscribes to this event to receive the number of UEs in a specific area. A NF may ask AMF for the UEs within the area based on Last Known Location or it may request AMF to actively look for the UEs within the area based on Current Location.

This event implements the "Number of UEs present in a geographical area" event in table 4.15.3.1-1 of 3GPP TS 23.502 [3].

UE Type: any UE

Report Type: One-Time Report (See NOTE 3), Continuous Report (See NOTE 4)

Input: Area identified in a TA List

Notification: Number of UEs in the area

NOTE 2: For an Immediate Report, UE Last Known Location is used to count the UEs within the area.

NOTE 3: Support of Continuous Report should be controlled by operator.

Event: Loss-of-Connectivity

An NF subscribes to this event to receive the event report of a UE or group of UEs when AMF detects that a target UE is no longer reachable for either signalling or user plane communication. Such condition is identified when Mobile Reachable timer expires in the AMF (see 3GPP TS 23.501 [2]), when the UE detaches and when AMF deregisters from UDM for an active UE. If the UE is already not reachable for either signalling or user plane communication when the event is subscribed, the AMF reports the event directly.

This event implements the "Loss of Connectivity" event in table 4.15.3.1-1 of 3GPP TS 23.502 [3].

UE Type: One UE, Group of UEs

Report Type: One-Time Report, Continuous Report

Input: UE ID(s)

Notification; UE ID.

Event: 5GS-User-State-Report

A NF subscribes to this event to receive the 5GS User State of a UE

UE Type: One UE

Report Type: One-Time Report

Input: UE ID(s)

Notification; UE ID, 5GS User State

Event: Availability-after-DDN-failure

A NF subscribes to this event to be notified about the Availability of a UE or a group of UEs after a DDN failure.

UE Type: One UE, Group of UEs

Report Type: One-Time Report, Continuous Report

Input: UE ID(s)

Notification: UE ID(s)

Event: Type-Allocation-Code-Report

A NF subscribes to this event to receive the TAC of a UE or a group of UEs or any UE.

UE Type: One UE, Group of UEs, any UE

Report Type: One-Time Report, Continuous Report

Input: UE ID(s),"ANY\_UE", optionally filters: TAI, Area identifier (a TA list, an area Id or "LADN")

Notification: UE ID(s), TAC(s)

Event: Frequent-Mobility-Registration-Report

A NF subscribes to this event to receive the number of mobility registration during a period for a UE or a group of UEs or any UE.

UE Type: One UE, Group of UEs, any UE

Report Type: One-Time Report, Continuous Report

Input: UE ID(s), expiry time, “ANY\_UE", optionally filters: Area identifier (a TA list, an area Id or "LADN")

Notification: UE ID(s), Frequent Registration

\* \* \* Next 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 |
| 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). 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. |
| refId | ReferenceId | O | 0..1 | Indicates the Reference Id associated with the event. |
| trafficDescriptorList | array(TrafficDescriptor) | O | 1..N | Indicates the filters to be applied for AVAILABILITY\_AFTER\_DDN\_FAILURE event type. |
| NOTE: 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. | | | | |

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