**3GPP TSG-SA WG6 Meeting #42-bis-e S6-211068**

**e-meeting, 12th – 20th April 2021 (revision of S6-210863 merging S6-210752)**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **23.434** | **CR** | **0057** | **rev** | **1** | **Current version:** | **17.1.0** |  |
|  | | | | | | | | |
| *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:*** | SEAL Event Monitoring Service | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Samsung | | | | | | | | | |
| ***Source to TSG:*** | S6 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | UASAPP | | | | |  | ***Date:*** | | | 2021-04-08 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | As per conclusions in TR 23.755, for the KI#11 (Support to reporting of UAV real-time monitoring status information), it is concluded that solution #17 (Support for reporting of UAV events to USS/UTM) as the way forward for the normative phase and SEAL should be enhanced with this new solution. This CR proposes Events Monitoring procedure as new SEAL NRM service. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Events Monitoring procedure is defined as new SEAL NRM service. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Events Moniotiring procedure as concluded in UASAPP work, will be unspecified. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 2, 14.1, 14.2.4.3, 14.3.2.X (new), 14.3.2.Y (new), 14.3.2.Z (new), 14.3.X (new), 14.3.X.1 (new), 14.3.X.2 (new), 14.3.X.2.1 (new), 14.3.X.2.2 (new), 14.3.X.3 (new), 14.3.X.3.1 (new), 14.3.X.3.2 (new), 14.4.1, 14.4.2.1, 14.4.X (new), 14.4.X.1 (new), 14.4.X.2 (new). | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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's revision history:*** | |  | | | | | | | | |

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

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 22.104: "Service requirements for cyber-physical control applications in vertical domains".

[3] 3GPP TS 23.379: "Functional architecture and information flows to support Mission Critical Push To Talk (MCPTT); Stage 2".

[4] 3GPP TS 23.280: "Common functional architecture to support mission critical services; Stage 2".

[5] 3GPP TS 23.281: "Functional architecture and information flows to support Mission Critical Video (MCVideo); Stage 2".

[6] 3GPP TS 23.282: "Functional architecture and information flows to support Mission Critical Data (MCData); Stage 2".

[7] 3GPP TS 23.286: "Application layer support for V2X services; Functional architecture and information flows".

[8] 3GPP TS 23.222: "Functional architecture and information flows to support Common API Framework for 3GPP Northbound APIs; Stage 2".

[9] 3GPP TS 23.401: "General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access".

[10] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".

[11] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".

[12] 3GPP TS 23.303: "Proximity-based services (ProSe); Stage 2".

[13] 3GPP TS 23.682: "Architecture enhancements to facilitate communications with packet data networks and applications".

[14] 3GPP TS 23.002: "Network Architecture".

[15] 3GPP TS 23.228: "IP Multimedia Subsystem (IMS); Stage 2".

[16] 3GPP TS 23.468: "Group Communication System Enablers for LTE (GCSE\_LTE); Stage 2".

[17] 3GPP TS 23.246: "Multimedia Broadcast/Multicast Service (MBMS); Architecture and functional description".

[18] 3GPP TS 23.203: "Policy and charging control architecture".

[19] 3GPP TS 23.503: "Policy and Charging Control Framework for the 5G System; Stage 2".

[20] 3GPP TS 26.348: "Northbound Application Programming Interface (API) for Multimedia Broadcast/Multicast Service (MBMS) at the xMB reference point".

[21] 3GPP TS 29.214: "Policy and charging control over Rx reference point".

[22] 3GPP TS 29.468: "Group Communication System Enablers for LTE (GCSE\_LTE); MB2 Reference Point; Stage 3".

[23] 3GPP TS 36.300: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2".

[24] IETF RFC 6733 (October 2012): "Diameter Base Protocol".

[25] ETSI TS 102 894-2 (V1.2.1): "Intelligent Transport Systems (ITS); Users and applications requirements; Part 2: Applications and facilities layer common data dictionaryMultimedia Broadcast/Multicast Service (MBMS); Protocols and codecs".

[26] ETSI TS 102 965 (V1.4.1): "Intelligent Transport Systems (ITS); Application Object Identifier (ITS-AID); Registration".

[27] ISO TS 17419: "Intelligent Transport Systems - Cooperative systems - Classification and management of ITS applications in a global context".

[28] 3GPP TS 26.346: "Multimedia Broadcast/Multicast Service (MBMS); Protocols and codecs".

[29] 3GPP TS 33.434: "Service Enabler Architecture Layer (SEAL); Security aspects for Verticals".

[30] 3GPP TS 29.549: "Service Enabler Architecture Layer for Verticals (SEAL); Application Programming Interface (API) specification; Stage3".

[31] 3GPP TS 23.285: "Architecture enhancements for V2X services".

[r23288] 3GPP TS 23.288: "Architecture enhancements for 5G System (5GS) to support network data analytics services".

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

## 14.1 General

The network resource management is a SEAL service that offers the network resource management (e.g. unicast and multicast network resources) and monitoring related capabilities to one or more vertical applications.

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

#### 14.2.4.3 Network resource management server

The network resource management server functional entity provides for management of 3GPP system network resources (e.g. unicast, multicast) and monitoring events to support the VAL applications. The network resource management server acts as CAPIF's API exposing function as specified in 3GPP TS 23.222 [8]. The network resource management server also supports interactions with the corresponding network resource management server in distributed SEAL deployments. The NRM server's role may be assumed by the VAL server in some deployments, in which case, the VAL server performs the procedures for network resource management of the NRM server.

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

#### 14.3.2.X Monitoring Events Subscription Request

Table 14.3.2.X-1 describes the information flow from the VAL server to the NRM server for monitoring events subscription request.

Table 14.3.2.X-1: Monitoring Events Subscription request

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| Identities list | M | List of VAL users or VAL UEs whose events monitoring is requested. |
| Event Details | O | List of monitoring and analytics events that the VAL server is interested in. |
| Timeout | O | A timeout period when subscription response is not received. |

#### 14.3.2.Y Monitoring Events Subscription Response

Table 14.3.2.Y-1 describes the information flow from the NRM server to the VAL server for Monitoring Events Subscription response.

Table 14.3.2.Y-1: Monitoring Events Subscription response

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| Subscription status | M | It indicates the subscription result |

#### 14.3.2.Z Monitoring Events Notification message

Table 14.3.2.Z-1 describes the information flow from the NRM server to the VAL server on notification of monitoring events.

Table 14.3.2.Z-1: Monitoring Events Notification

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| EventDetails |  | List of events related to VAL UE(s). |
| > identity | M | VAL UE for which the events are related to. |
| > events | M | List of Monitoring and Analytics events related to the VAL UE. |
| Timestamp | O | The timestamp for the monitoring and analytics events |

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

### 14.3.X Event Monitoring

#### 14.3.X.1 General

The VAL server utilizes the NRM server for monitoring the events related to its VAL UEs and receive the event reports. The NRM server shall subscribe to multiple core network services to fetch all the required events related to the multiple VAL UEs served by the VAL server and report the same to the VAL server with the event details.

To monitor and report the events related to the VAL UE from the 3GPP core network, the NRM server shall use the Monitoring Events procedures as specified in 3GPP TS 23.502 [11].

To monitor and report the analytics events related to the VAL UE, the NRM server shall use the procedures specified in 3GPP TS 23.288 [r23288].

#### 14.3.X.2 Monitoring Events Subscription Procedure

##### 14.3.X.2.1 General

The VAL server subscribes to the NRM server to monitor the events related to VAL UE(s). Based on the VAL server request, the NRM server consumes the relevant core network services to receive the events related to the VAL UE(s). The related procedure is illustrated in the next clause.

##### 14.3.X.2.2 Procedure

The procedure for VAL server subscribing to the NRM server, to monitor the VAL UE(s) related events is described in figure 14.3.X.2.2-1.

Pre-conditions:

- The NRM server is authorized to consume the core network services (Monitoring events as specified in 3GPP TS 23.502 [11] and Analytics services as specified in 3GPP TS 23.288 [r23288]);



Figure 14.3.X.2.2-1: Monitoring Events Subscription Procedure

1. The VAL server sends Monitoring Events Subscription request to the NRM server, requesting the NRM server to monitor the events related to the VAL UE(s) as per the subscription request, and shall include the information related to the events that the VAL server is interested in.

2. The NRM server shall check if the VAL server is authorized to initiate the Monitoring Events Subscription request and if authorized, shall respond with Monitoring Events Subscription Response message, indicating the successful subscription status along with subscription information to the VAL server.

3. Based on the events of interest information in the subscription request message, the NRM server shall subscribe to the UE monitoring events (like, LOSS\_OF\_CONNECTIVITY, COMMUNICATION\_FAILURE etc.) for the set of UEs (VAL UEs) in the subscription request, as specified in 3GPP TS 23.502[11].

4. Based on the events of interest information in the subscription request message, the NRM server shall subscribe to the UE analytics events (like ABNORMAL\_BEHAVIOUR etc.) for the set of UEs (VAL UEs) in the subscription request, as specified in 3GPP TS 23.288 [r23288].

#### 14.3.X.3 Monitoring Events Notification Procedure

##### 14.3.X.3.1 General

The NRM server receives the events related to VAL UE(s) from the 3GPP core network. The NRM server reports the monitoring events information to the VAL server.

##### 14.3.X.3.2 Procedure

The procedure for NRM server notifying the VAL server with VAL UE(s) related events is described in figure 14.3.X.3.2-1.

Pre-conditions:

- The VAL server has subscribed with NRM server using Monitoring Events Subscription Procedure as specified in clause 14.3.X.2;



Figure 14.3.X.3.2-1: Monitoring Events Notification Procedure

1. The NRM server receives the VAL UE related monitoring event notifications from the 3GPP core network as specified in 3GPP TS 23.502[11].

2. The NRM server receives the VAL UE related Analytics event notifications from the 3GPP core network as specified in 3GPP TS 23.288 [r23288].

3. The NRM server notifies the VAL server about the events related to the VAL UE in Notify Monitorng Events message. If multiple events are to be notified, then the NRM server may aggregate the notifications and send to the VAL server.

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

### 14.4.1 General

Table 14.4.1-1 illustrates the SEAL APIs for configuration management.

Table 14.4.1-1: List of SEAL APIs for network resource management

|  |  |  |  |
| --- | --- | --- | --- |
| API Name | API Operations | Known Consumer(s) | Communication Type |
| SS\_NetworkResourceAdaptation | Reserve\_Network\_Resource | VAL server | Request /Response |
| Request\_Unicast\_Resource | VAL server | Request /Response |
| Update\_Unicast\_Resource | VAL server | Request /Response |
| Request\_Multicast\_Resource | VAL server | Request /Response |
| Notify\_UP\_Delivery\_Mode | VAL server | Subscribe/Notify |
| SS\_EventsMonitoring | Subscribe\_Monitoring\_Events | VAL server | Subcribe/Notify |
| Notify\_Monitoring\_Events | VAL server |

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

#### 14.4.2.1 General

**API description:** This API enables the VAL server to communicate with the network resource management server for network resource adaptation and VAL UE monitoring over NRM-S.

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

### 14.4.X SS\_EventsMonitoring API

#### 14.4.X.1 Subscribe\_Monitoring\_Events

**API operation name:** Subscribe\_Monitoring\_Events

**Description:** Subscription to monitoring events.

**Known Consumers:** VAL server.

**Inputs:** See subclause 14.3.2.X

**Outputs:** 14.3.2.Y.

See subclause 14.3.X.2 for the details of usage of this API operation.

#### 14.4.X.2 Notify\_Monitoring\_Events

**API operation name:** Notify\_Monitoring\_Events

**Description:** Notifying the VAL server with monitoring events related to VAL UE(s).

**Known Consumers:** VAL server.

**Inputs:** See subclause 14.3.2.Z

**Outputs:** None.

See subclause 14.3.X.3 for the details of usage of this API operation.

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