**3GPP TSG-CT3 Meeting #118e C3-215240**

**E-Meeting, 11th – 15th October 2021**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.549** | **CR** | 0035 | **rev** | 1 | **Current version:** | **17.2.0** |  |
|  | | | | | | | | |
| *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 |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | SEAL Events Monitoring service | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Samsung | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eSEAL | | | | |  | ***Date:*** | | | 2021-09-30 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | SEAL Events monitoring service is agreed in 3GPP TS 23.434 as a NRM service to monitor the events related to a given VAL UE. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | New NRM service SS\_EventsMonitoring service description and data model is proposed | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Stage 2 feature of supporting monitoring the events related to VAL UEs is no speciffied | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 2, 5.1, 5.5.x (new), 7.5.1.4.1, 7.5.1.4.2.4, 7.5.1.4.2.5, 7.5.1.4.2.z (new), 7.5.1.4.2.y (new), 7.5.1.4.2.x (new), 7.5.1.4.3.3, 7.5.1.6 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 doesn’t propose the related updates needed to to SS\_Events API. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\*\*\* 1st 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 23.434: "Service Enabler Architecture Layer for Verticals (SEAL); Functional architecture and information flows".

[3] 3GPP TS 29.122: "T8 reference point for Northbound Application Programming Interfaces (APIs)".

[4] IETF RFC 6455: "The Websocket Protocol".

[5] IETF RFC 7230: "Hypertext Transfer Protocol (HTTP/1.1): Message Syntax and Routing".

[6] IETF RFC 7231: "Hypertext Transfer Protocol (HTTP/1.1): Semantics and Content".

[7] IETF RFC 7232: "Hypertext Transfer Protocol (HTTP/1.1): Conditional Requests".

[8] IETF RFC 7233: "Hypertext Transfer Protocol (HTTP/1.1): Range Requests".

[9] IETF RFC 7234: "Hypertext Transfer Protocol (HTTP/1.1): Caching".

[10] IETF RFC 7235: "Hypertext Transfer Protocol (HTTP/1.1): Authentication".

[11] IETF RFC 5246: "The Transport Layer Security (TLS) Protocol Version 1.2".

[12] IETF RFC 7540: "Hypertext Transfer Protocol Version 2 (HTTP/2)".

[13] IETF RFC 8259: "The JavaScript Object Notation (JSON) Data Interchange Format".

[14] 3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".

[15] Open API: "OpenAPI Specification Version 3.0.0", <https://spec.openapis.org/oas/v3.0.0>.

[16] 3GPP TS 29.222: "Common API Framework for 3GPP Northbound APIs; Stage 3”.

[17] 3GPP TS 23.222: "Common API Framework for 3GPP Northbound APIs; Stage 2”.

[18] 3GPP TS 33.122: "Security Aspects of Common API Framework for 3GPP Northbound APIs".

[19] IETF RFC 6749: "The OAuth 2.0 Authorization Framework".

[20] 3GPP TS 29.523: "5G System; Policy Control Event Exposure Service; Stage 3".

[21] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".

[22] 3GPP TS 29.500: "5G System; Technical Realization of Service Based Architecture; Stage 3".

[23] 3GPP TS 29.468: "Group Communication System Enablers for LTE (GCSE\_LTE); MB2 reference point; Stage 3".

[24] 3GPP TR 21.900: "Technical Specification Group working methods".

[25] 3GPP TS 33.210: "3G security; Network Domain Security (NDS); IP network layer security".

[26] 3GPP TS 33.434: "Service Enabler Architecture Layer for Verticals (SEAL); Security Aspects".

[r29522] 3GPP TS 29.522: "5G System; Network Exposure Function Northbound APIs; Stage 3".

[r29520] 3GPP TS 29.520: "5G System; Network Data Analytics Services; Stage 3".

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

## 5.1 Introduction of SEAL services

The table 5.1-1 lists the SEAL server APIs below the service name. A service description clause for each API gives a general description of the related API.

Table 5.1-1: List of SEAL Service APIs

|  |  |  |  |
| --- | --- | --- | --- |
| Service Name | Service Operations | Operation Semantics | Consumer(s) |
| SS\_LocationReporting | Create\_Trigger\_Location\_Reporting | Request/ Response | VAL server |
| Fetch\_Location\_Report\_Trigger | Request/Response | VAL server |
| Update\_Trigger\_Location\_Reporting | Request/ Response | VAL server |
| Cancel\_Trigger\_Location\_Reporting | Request/ Response | VAL server |
| SS\_LocationInfoEvent | Subscribe\_Location\_Info | Subscribe/Notify | VAL server |
| Notify\_Location\_Info | VAL server |
| SS\_LocationInfoRetrieval | Obtain\_Location\_Info | Request/ Response | VAL server |
| SS\_GroupManagement | Query\_Group\_Info | Request/ Response | VAL server |
| Update\_Group\_Info | Request/ Response | VAL server |
| Create\_Group | Request/ Response | VAL server |
| Delete\_Group | Request/Response | VAL server |
| SS\_GroupManagementEvent | Subscribe\_Group\_Info\_Modification | Subscribe/Notify | VAL server |
| Notify\_Group\_Info\_Modification | VAL server |
| Notify\_Group\_Creation | VAL server |
| SS\_UserProfileRetrieval | Obtain\_User\_Profile | Request/ Response | VAL server |
| SS\_UserProfileEvent | Subscribe\_User\_Profile\_Update | Subscribe/Notify | VAL server |
| Notify\_User\_Profile\_Update | VAL server |
| SS\_NetworkResourceAdaptation | Reserve\_Network\_Resource | Request/Response | VAL server |
| Request\_Unicast\_Resource | Request/Response | VAL server |
| Update\_Unicast\_Resource | Request/Response | VAL server |
| Request\_Multicast\_Resource | Request/Response | VAL server |
| Notify\_UP\_Delivery\_Mode | Subscribe/Notify | VAL server |
| SS\_EventsMonitoring | Subscribe\_Monitoring\_Events | Subscribe/Notify | VAL server |
| Notify\_Monitoring\_Events |
| SS\_Events | Subscribe\_Event | Subscribe/Notify | VAL server |
| Notify\_Event | VAL server |
| Unsubscribe\_Event | VAL server |
| SS\_KeyInfoRetrieval | Obtain\_Key\_Info | Request/Response | VAL server |
| NOTE: The service operations of SS\_Events API are reused by the SS\_LocationInfoEvent, SS\_GroupManagementEvent, SS\_UserProfileEvent and SS\_EventsMonitoring for events related services. | | | |

Table 5.1-2 summarizes the corresponding APIs defined in this specification.

Table 5.1-2: API Descriptions

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Service Name** | **Clause** | **Description** | **OpenAPI Specification File** | **apiName** | **Annex** |
| SS\_LocationReporting | 7.1 | Report Location Information Service. | TS29549\_SS\_LocationReporting.yaml | ss-lr | A.2 |
| SS\_GroupManagement | 7.2 | Group Management Service | TS29549\_SS\_GroupManagement.yaml | ss-gm | A.3 |
| SS\_UserProfileRetrieval | 7.3 | User Profile Retrieval Service | TS29549\_SS\_UserProfileRetrieval.yaml | ss-upr | A.4 |
| SS\_Network\_Resource\_Adaptation | 7.4 | Network Resource Adaptation Service | TS29549\_SS\_NetworkResourceAdaptation.yaml | ss-nra | A.5 |
| SS\_Events | 7.5 | Events Notify Service | TS29549\_SS\_Events.yaml | ss-events | A.6 |
| SS\_KeyInfoRetrieval | 7.6 | Key Information Retrieval Service | TS29549\_SS\_KeyInfoRetrieval.yaml | ss-kir | A.7 |

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

### 5.5.x SS\_EventsMonitoring API

The SS\_EventsMonitoring API, as defined in 3GPP TS 23.434 [2], allows a VAL server via NRM-S reference point to subscribe for and receive notifications from the Network Resource Management server about events related to VAL UE(s). The SS\_EventsMonitoring API supports this via the "NRM\_MONITOR\_UE\_USER\_EVENTS" event in SS\_Events API as specified in clause 7.5. Based on the events of interest information related to the VAL UE(s), the NRM server shall subscribe to UE monitoring and analytics events as specified in 3GPP TS 29.522 [r29522] and 3GPP TS 29.520 [r29520].

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

##### 7.5.1.4.1 General

This clause specifies the application data model supported by the API. Data types listed in clause 6.2 apply to this API.

Table 7.5.1.4.1-1 specifies the data types defined specifically for the SS\_Events API service.

Table 7.5.1.4.1-1: SS\_Events API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| SEALEventSubscription | 7.5.1.4.2.2 | Represents an individual SEAL Event Subscription resource |  |
| SEALEventNotification | 7.5.1.4.2.3 | Represents an individual SEAL Event Subscription Notification |  |
| EventSubscription | 7.5.1.4.2.4 | Represents the subscription to a single SEAL event. |  |
| SEALEventDetail | 7.5.1.4.2.5 | Represents the SEAL event detail |  |
| VALGroupFilter | 7.5.1.4.2.6 | Represents a filter of VAL group identifiers belonging to a VAL service. |  |
| IdentityFilter | 7.5.1.4.2.7 | Represents a filter of VAL User / UE identities belonging to a VAL service. |  |
| SEALEvent | 7.5.1.4.3.3 | Represents the type of SEAL events that can be subscribed. |  |
| LMInformation | 7.5.1.4.2.8 | The location information for a VAL User ID or a VAL UE ID. |  |
| MessageFilter | 7.5.1.4.2.9 | The message filter information applicable to member VAL UEs or Users of the VAL group in the group change notification. |  |
| MonitorFilter | 7.5.1.4.2.z | Represents the filter information VAL User or UEs and the related events to be monitored. |  |
| MonitorEvents | 7.5.1.4.2.y | Represents the details of the monitoring and analytics events. |  |
| MonitorEventsReport | 7.5.1.4.2.x | Represents the monitoring and analytics events information related to VAL UE or User. |  |

Table 7.5.1.4.1-2 specifies data types re-used by the SS\_Events API service:

Table 7.5.1.4.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| ReportingInformation | 3GPP TS 29.523 [20] | Used to indicate the reporting requirement, only the following information are applicable for SEAL:  - immRep  - notifMethod  - maxReportNbr  - monDur  - repPeriod |  |
| SupportedFeatures | 3GPP TS 29.571 [21] | Used to negotiate the applicability of optional features defined in table 7.5.1.6-1. |  |
| TestNotification | 3GPP TS 29.122 [3] | Following differences apply:  - The SCEF is the SEAL server; and  - The SCS/AS is the subscribing VAL server. |  |
| Uri | 3GPP TS 29.122 [3] |  |  |
| WebsockNotifConfig | 3GPP TS 29.122 [3] | Following differences apply:  - The SCEF is the CAPIF core function; and  - The SCS/AS is the Subscribing functional entity. |  |
| VALGroupDocument | Clause 7.2.1.4.2.2 | Used to send VAL group document as part of event detail in the event notification. |  |
| ProfileDoc | Clause 7.3.1.4.2.2 | Used to send VAL User or VAL UE profile information as part of event detail in the event notification. |  |
| LocationInfo | 3GPP TS 29.122 [3] | Location information |  |
| ValTargetUe | 7.3.1.4.2.3 | Used to identify a VAL user ID or a VAL UE ID. |  |
| ScheduledCommunicationTime | 3GPP TS 29.122 [3] | Used to define the time frame for message filters. |  |
| Uinteger | 3GPP TS 29.571 [21] | Used to represent maximum number of messages in MesageFilter data type. |  |

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

###### 7.5.1.4.2.4 EventSubscription

Table 7.5.1.4.2.4-1: Definition of type EventSubscription

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| eventId | SEALEvent | M | 1 | Subscribed event |  |
| valGroups | array(VALGroupFilter) | C | 1..N | Each element of the array represents the VAL group identifier(s) of a VAL service that the subscriber wants to know in the interested event.  This parameter shall be present only if the event subscribed is “GM\_GROUP\_INFO\_CHANGE”. | GM\_GroupInfoChange |
| Identities | array(IdentityFilter) | C | 1..N | Each element of the array represents the VAL User / UE IDs of a VAL service that the event subscriber wants to know in the interested event.  This parameter shall be present only if the event subscribed is “CM\_USER\_PROFILE\_CHANGE” or “LM\_LOCATION\_INFO\_CHANGE”. (NOTE) | CM\_UserProfileChange, LM\_LocationInfoChange |
| monFltr | array(MonitorFilter) | C | 1..N | Each element of the array represents the event monitoring request details that the subscriber wishes to monitor the events related to a set of VAL UEs, VAL group and/or VAL service.  This parameter shall be present only if the event subscribed is “NRM\_MONITOR\_UE\_USER\_EVENTS” | NRM\_EventMonitor |
| NOTE:      The "valSvcId" attribute within IdentityFilter is not applicable for the event “LM\_LOCATION\_INFO\_CHANGE”. | | | | | |

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

###### 7.5.1.4.2.5 SEALEventDetail

Table 7.5.1.4.2.5-1: Definition of type SEALEventDetail

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| eventId | SEALEvent | M | 1 | Event that is notified |  |
| lmInfos | array(LMInformation) | C | 1..N | The location information for the interested VAL User IDs or VAL UE IDs.  This parameter shall be present only if the event in event notification is “LM\_LOCATION\_INFO\_CHANGE”. | LM\_LocationInfoChange |
| valGroupDocuments | array(VALGroupDocument) | C | 1..N | Newly created VAL group documents or the VAL groups documents with modified membership and configuration information. This parameter shall be present only if the event in event notification is “GM\_GROUP\_INFO\_CHANGE” or “GM\_GROUP\_CREATE”. | GM\_GroupInfoChange, GM\_GroupCreate |
| profileDocs | array(ProfileDoc) | C | 1..N | Updated profile information associated with VAL Users or VAL UEs.  This parameter shall be present only if the event in event notification is “CM\_USER\_PROFILE\_CHANGE”. | CM\_UserProfileChange |
| msgFltrs | array(MessageFilter) | C | 1..N | The message filters applicable to various member VAL User or UEs of the VAL group. This parameter may be present only if the event in the even notification is “GM\_GROUP\_INFO\_CHANGE” | GM\_MessageFilter |
| monRep | array(MonitorEventsReport) | C | 1..N | The events report with details of the events related to VAL UE(s). This parameter shall be present only if the event in the event notification is “NRM\_MONITOR\_UE\_USER\_EVENTS” | NRM\_EventMonitor |

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

###### 7.5.1.4.2.z MonitorFilter

Table 7.5.1.4.2.z-1: Definition of type MonitorFilter

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| idnts | array(ValTargetUe) | O | 1..N | Identities of the VAL Users or UEs whose events monitoring is requested. (NOTE 1) |  |
| valSvcId | string | O | 0..1 | Identity of the VAL service. |  |
| valGrpId | string | O | 0..1 | Identity of the VAL group of the target UEs whose events monitoring is requested. (NOTE 1) |  |
| profId | string | O | 0..1 | The monitoring profile ID identifying a list of monitoring and/or analytics events. (NOTE 2) |  |
| valCnd | array(string) | O | 1..N | The temporal and/or spatial conditions applied for the events to be considered as valid. |  |
| evntDets | array(MonitorEvents) | O | 1..N | List of monitoring and/or analytics events that the VAL server is interested in. (NOTE 2) |  |
| NOTE 1: Either VAL users/UEs or a VAL group identifying VAL UEs shall be present.  NOTE 2: Either event details or monitoring profile ID shall be present. | | | | | |

Editor’s Note: The details of valCnd attribute is FFS.

###### 7.5.1.4.2.y MonitorEvents

Table 7.5.1.4.2.y-1: Definition of type MonitorEvents

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| cnEvnts | array(string) | O | 1..N | List of monitoring events related to VAL UE. |  |
| anlEvnts | array(string) | O | 0..1 | List of analytics events related to VAL UE. |  |

Editor’s Note: The details of cnEvnts and anlEvnts attributes is FFS.

###### 7.5.1.4.2.x MonitorEventsReport

Table 7.5.1.4.2.x-1: Definition of type MonitorEventsReport

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| tgtUe | ValTargetUe | M | 1..N | VAL UE for which the events are related. |  |
| evnts | array(MonitorEvents) | M | 1..N | List of monitoring and analytics events related to VAL UE. |  |

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

###### 7.5.1.4.3.3 Enumeration: SEALEvent

Table 7.5.1.4.3.3-1: Enumeration SEALEvent

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| LM\_LOCATION\_INFO\_CHANGE | Events related to the location information of VAL Users or VAL UEs from the Location Management Server. | LM\_LocationInfoChange |
| GM\_GROUP\_INFO\_CHANGE | Events related to the modification of VAL group membership and configuration information from the Group Management Server. | GM\_GroupInfoChange |
| CM\_USER\_PROFILE\_CHANGE | Events related to update of user profile information from the Configuration Management Server. | CM\_UserProfileChange |
| GM\_GROUP\_CREATE | Events related to creation of new VAL groups from the Group Management Server. | GM\_GroupCreate |
| NRM\_MONITOR\_UE\_USER\_EVENTS | Monitoring and analytic events related to VAL UEs, users or VAL group from the Network Resource Management Server. | NRM\_EventMonitor |

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

#### 7.5.1.6 Feature Negotiation

General feature negotiation procedures are defined in clause 6.8. Table 7.5.1.6-1 lists the supported features for SS\_Events API.

Table 7.5.1.6-1: Supported Features

|  |  |  |
| --- | --- | --- |
| **Feature number** | **Feature Name** | **Description** |
| 1 | Notification\_test\_event | Testing of notification connection is supported according to clause 6.6. |
| 2 | Notification\_websocket | The delivery of notifications over Websocket is supported according to clause 6.6. This feature requires that the Notification\_test\_event feature is also supported. |
| 3 | LM\_LocationInfoChange | This feature supports the location information change event. |
| 4 | GM\_GroupInfoChange | This feature supports the group information change event. |
| 5 | CM\_UserProfileChange | This feature supports the user profile change event. |
| 6 | GM\_GroupCreate | This feature supports the group creation event. |
| 7 | GM\_MessageFilter | This feature supports the message filter information in group information change event. |
| 8 | NRM\_EventMonitor | This feature supports the monitoring of events related to VAL UEs or Users. |

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