**3GPP TSG-SA WG6 Meeting #44 S6-211594**

**e-meeting, 12th – 20th July 2021 (revision of S6-21xxxx)**

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| --- |
| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  |  | **CR** | **0073** | **rev** |  | **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:***  | Unicast QoS monitoring data retrieval |
|  |  |
| ***Source to WG:*** |  |
| ***Source to TSG:*** | S6 |
|  |  |
| ***Work item code:*** |  |  | ***Date:*** |  |
|  |  |  |  |  |
| ***Category:*** |  |  | ***Release:*** |  |
|  | *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 canbe 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 network resource management currently provides support for QoS monitoring of unicast resources by means of the subscribe/notify mechanism. This CR provides the request/response mechanism to enable the VAL application to retrieve unicast QoS monitoring data pertaining to unicast resources in active use or used in the past. |
|  |  |
| ***Summary of change:*** | This CR defines a new procedure for the VAL server to retrieve QoS monitoring data from the NRM server. |
|  |  |
| ***Consequences if not approved:*** | Impossible for VAL application to simply retrieve unicast QoS monitoring data without the need for costly subscription, and impossible to retrieve historical QoS monitoring data. |
|  |  |
| ***Clauses affected:*** | 14.3.2.20, 14.3.2.X (new), 14.3.2.Y (new), 14.3.3.4.2.2, 14.3.3.4.X (new), 14.4.1, 14.4.X (new) |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  |  |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  |  |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  |  |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

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

#### 14.3.2.20 Unicast QoS monitoring subscription request

Table 14.3.2.20-1 describes the information flow from the VAL server to the network resource management server for unicast QoS monitoring subscription request.

Table 14.3.2.20-1: Unicast QoS monitoring subscription request

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| Requester Identity  | M | The identity of the VAL server performing the request. |
| List of VAL UE IDs | M (see NOTE) | List of VAL UEs whose QoS monitoring data is requested. |
| VAL group ID | M (see NOTE) | The group ID used for the VAL group for which QoS monitoring data is requested. |
| List of VAL stream IDs | M (see NOTE) | List of VAL streams for which QoS monitoring data is requested. |
| Measurement data requirements | O | It describes the requirements on the QoS measurement data to be provided, such as the type of data (e.g. latency, packet error rate, etc.), measurement time period, aggregation granularity, etc. The measurement time period may indicate a current or past time period. If absent, default values will be used. |
| Frequency of reporting | O | It indicates the requested frequency of reporting. The reporting frequency may be periodic or event triggered. If absent in the request, default event triggered reporting is used. |
| Termination of reporting | O | It indicates when the reporting of QoS monitoring shall stop. It can be event triggered, when certain time duration expires or when explicit termination is requested. If absent in the request, it defaults to event triggered reporting. |
| NOTE: Only one of these information elements shall be present |

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

14.3.2.X Unicast QoS monitoring data request

Table 14.3.2.X-1 describes the information flow from the VAL server to the network resource management server for unicast QoS monitoring data request.

Table 14.3.2.X-1: Unicast QoS monitoring data request

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| Requester Identity  | M | The identity of the VAL server performing the request. |
| List of VAL UE IDs | M (see NOTE) | List of VAL UEs whose QoS monitoring data is requested. |
| VAL group ID | M (see NOTE) | The group ID used for the VAL group for which QoS monitoring data is requested. |
| List of VAL stream IDs | M (see NOTE) | List of VAL streams for which QoS monitoring data is requested. |
| Measurement data requirements | O | It describes the requirements on the QoS measurement data to be provided, such as the type of data (e.g. latency, packet error rate, etc.), measurement time period, aggregation granularity, etc. The measurement time period may indicate a current or past time period. If absent, default values will be used. |
| NOTE: Only one of these information elements shall be present |

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

14.3.2.Y Unicast QoS monitoring data response

Table 14.3.2.Y-1 describes the information flow from the VAL server to the network resource management server for unicast QoS monitoring data response.

Table 14.3.2.Y-1: Unicast QoS monitoring data response

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| List of VAL UE IDs | M(see NOTE 1) | List of VAL UEs whose QoS monitoring data is provided. This list is either the list provided in the request or a subset of that list. It can contain a single UE. |
| VAL group ID | M(see NOTE 1) | The group ID used for the VAL group for which QoS monitoring data is provided. This group ID shall be the same VAL group ID as the VAL group ID provided in the request. |
| List of VAL stream IDs | M(see NOTE 1) | List of VAL stream IDs whose QoS monitoring data is provided. This list is either the list provided in the request or a subset of that list. It can contain a single stream ID. |
| Result | M | Indicates the success or failure for the operation |
| QoS monitoring data | M(see NOTE 2) | QoS monitoring data is an aggregate of QoS measurements data obtained from the 5GS. |
| Cause | O | Provides reason for the failure (e.g. when data for the requested time period is not available). |
| NOTE 1: Only one of these information elements shall be present.NOTE 2: If the Result information element indicates failure then the value of the QoS monitoring data information element has no meaning. |

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

###### 14.3.3.4.2.2 Procedure

Figure 14.3.3.4.2.2-1 illustrates the high level procedure of unicast QoS monitoring notification event.

Pre-conditions:

- The VAL server has an active unicast QoS monitoring subscription with the NRM server



Figure 14.3.3.4.2.2-1: Unicast QoS monitoring notification procedure

1. The NRM server receives QoS monitoring data by means of notifications provided by the NEF. The NRM server coordinates and combines the information from the NEF notifications and determines whether to send a notification to the VAL server based on the VAL server subscription’s frequency of reporting. For a VAL group, the NRM server aggregates QoS monitoring data for the UEs belonging to the group. For a VAL stream, the NRM server aggregates the QoS monitoring data for the UEs belonging to the stream. The NRM server stores the QoS monitoring data as needed for later retrival.

2. The NRM server sends a unicast QoS monitoring notification including the measured QoS data to the VAL server.

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

##### 14.3.3.4.X Unicast QoS monitoring data retrieval procedure

###### 14.3.3.4.X.1 General

This subclause describes the high level procedure for unicast QoS monitoring data retrieval.

###### 14.3.3.4.X.2 Procedure

Figure 14.3.3.4.X.2-1 illustrates the high level procedure of unicast QoS monitoring data retrieval.



Figure 14.3.3.4.X.2-1: Retrieval of unicast QoS monitoring data

1. The VAL server sends a unicast QoS monitoring data request to the NRM server specifying the details of the requested data and the time period of interest. The NRM server checks if the VAL server is authorized to initiate the unicast QoS monitoring data request for the requested target VAL UEs, VAL group ID, or VAL stream IDs.

2. The NRM server determines if it has the requested data stored internally or whether it needs to interact with the NEF to fetch the data using the AnalyticsExposure described in clause 5.2.6.16 of 3GPP TS 23.502 [11] and in particular the UE Communication Analytics described in clause 6.7.3 of 3GPP TS 23.288 [34]. The NRM server collects and processes the collected data to match the measurement data requirement provided in the VAL server request.

3. The NRM server responds with a unicast QoS monitoring data response with the requested data or with a failure indication, and optionally the cause of the failure, in case the requested data is not available.

\* \* \* 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 |
| SS\_NetworkResourceMonitoringEvent | Subscribe\_Unicast\_QoS\_Monitoring | VAL server | Subscribe/Notify |
| Notify\_Unicast\_QoS\_Monitoring | VAL server |
| Unsubscribe\_Unicast\_QoS\_Monitoring | VAL server |
| SS\_MonitorigDataRetrieval | Obtain\_Unicast\_QoS\_Monitoring\_Data | VAL server | Request /Response |

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

### 14.4.X SS\_MonitorigDataRetrieval API

#### 14.4.X.1 General

**API description:** This API enables the VAL server to obtain monitoring data from the network resource management server over NRM-S.

#### 14.4.X.2 Obtain\_Unicast\_QoS\_Monitoring\_Data operation

**API operation name:** Obtain\_Unicast\_QoS\_Monitoring\_Data

**Description:** Request QoS monitoring data of a unicast resource.

**Known Consumers:** VAL server.

**Inputs:** See subclause 14.3.2.X

**Outputs:** See subclause 14.3.2.Y

See subclause 14.3.3.4.X for the details of usage of this API operation.

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