**3GPP TSG-WG SA4 Meeting #130  *S4-241934***

**Orlando, USA, November 18 – 22, 2024 (revision of S4-240xxx)**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **26.501** | **CR** | **0100** | **rev** | **-** | **Current version:** | **18.7.0** |  |
|  | | | | | | | | |
| *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 | **X** | Radio Access Network |  | Core Network | **X** |

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|  | | | | | | | | | | |
| ***Title:*** | Support of QMC over MBS Communication Service Type | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | SA4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_QoE\_enh-Core | | | | |  | ***Date:*** | | | 2024-11-12 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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 indicated in the LS R3-244789, the MBS Communication Service Type shall be included into the QMC measurement configuration and the UE can understand whether to conduct the QMC in MBS broadcast mode or in MBS multicast mode. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Introduce the MBS Communication Service Type within the QMC configuration to indicate the UE whether to conduct the QMC in MBS broadcast mode or in MBS multicast mode. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | QMC over MBS Communication cannot be supported. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.2.3, 5.5.2, 5.5.4, 5.12.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 \* \* \* \*

### 4.2.3 Service Access Information for downlink media streaming

The Service Access Information is the set of parameters and addresses which are needed by the 5GMSd Client to activate and control the reception of a downlink streaming session, and to report service/content consumption and/or QoE metrics.

The Service Access Information may be provided together with other service announcement information using M8d. Alternatively, the 5GMSd Client fetches the Service Access Information from the 5GMSd AF. The Service Access Information may be provided as, or may be accessed via, a 3GPP-defined Service URL that provides a unique resolvable identifier to the 5GMSd Provisioning Session and that may also include a reference to the Media Player Entry. Regardless of how it is provided, the Service Access Information contains different information, depending on the collaboration model between the 5GMS System and the 5GMSd Application Provider, and also depending on offered features. Baseline parameters are listed in Table 4.2.3‑1 below:

Table 4.2.3-1: Parameters of baseline Service Access Information

|  |  |
| --- | --- |
| Parameters | Description |
| Provisioning Session identifier | Unique identification of the M1d Provisioning Session. |

When the content hosting feature is activated for a downlink streaming session, the parameters from Table 4.2.3-1a below can additionally be present.

Table 4.2.3-1a: Streaming Access parameters

|  |  |
| --- | --- |
| Parameters | Description |
| Media Player Entries | A set of pointers to documents that each define an equivalent media presentation (see NOTE), e.g. MPD for DASH content or URL to a video clip file.  Each member of the set may specify additional details to aid selection by the 5GMS Client, including content type, profile indicators and precedence.  A Media Player Entry document may additionally include Service Descriptions, each one identified by an *External reference* that enables it to be matched with a Policy Template, and each describing the set of media streaming parameters (e.g., bit rate, target latency) that realise a Service Operation Point.  A Media Player Entry URL may be embedded in a 3GPP Service URL. |
| NOTE: An equivalent media presentation is one which has the same content but may result in a different Quality of Experience. | |

When the consumption reporting feature is activated for a downlink streaming session, the parameters from Table 4.2.3‑2 below are additionally present.

Table 4.2.3-2: Parameters for consumption reporting configuration

|  |  |
| --- | --- |
| Parameters | Description |
| Reporting interval | Identifies the interval between consumption reports being sent by the Media Session Handler. |
| Server address | A list of 5GMSd AF addresses where the consumption reports are sent by the Media Session Handler. |
| Sample percentage | The proportion of clients that shall report media consumption.  If not specified, all clients shall send reports. |
| Location reporting | Identify whether the Media Session Handler provides location data to the 5GMSd AF (in case of MNO or trusted third parties) |

When the dynamic policy invocation feature is activated for a downlink streaming session the parameters from Table 4.2.3‑3 below are additionally present.

Table 4.2.3-3: Parameters for dynamic policy invocation configuration

|  |  |
| --- | --- |
| Parameters | Description |
| Server address | A list of 5GMSd AF addresses (in the form of opaque URLs) which offer the APIs for dynamic policy invocation sent by the 5GMS Media Session Handler. |
| Valid Policy Template Ids | A list of Policy Template identifiers which the 5GMSd Client is authorized to use. |
| Service Data Flow Methods | A list of recommended Service Data Flow description methods (descriptors), e.g. 5-Tuple, ToS, 2-Tuple, etc, which should be used by the Media Session Handler to describe the Service Data Flows for the traffic to be policed. |
| External reference | Additional identifier for this Policy Template, unique within the scope of its Provisioning Session, that can be cross-referenced with external metadata about the streaming session. |

When the metrics collection and reporting feature is activated for a downlink streaming session, one or more parameter sets for metrics configuration, according to Table 4.2.3‑4, are additionally present. Each metrics configuration set contains specific settings valid for that configuration, which is typically metric scheme dependent, and collection and reporting shall be done separately for each set.

Table 4.2.3-4: Parameters for each metrics configuration set

|  |  |
| --- | --- |
| Parameters | Description |
| Scheme | The scheme associated with this metrics configuration set. A scheme may be associated with 3GPP or with a non-3GPP entity. If not specified, a default 3GPP metrics scheme shall apply.  Metrics schemes shall be uniquely identified by URIs. |
| Server address | A list of 5GMSd AF addresses to which metric reports shall be sent for this metrics configuration set. |
| DNN | The Data Network Name (DNN) which shall be used when sending metrics report for this metrics configuration set.  If not specified, the default DNN shall be used. |
| Slice scope | A list of network slice(s) for which metrics collection and reporting shall be executed for this metrics configuration set.  If not specified, the metrics collection and reporting shall be done for all network slices. |
| Reporting interval | The sending interval between metrics reports for this metrics configuration set.  If not specified, a single final report shall be sent after the streaming session has ended. |
| Sample percentage | The proportion of streaming sessions that shall report metrics for this metrics configuration set.  If not specified, reports shall be sent for all sessions. |
| Streaming source filter | A list of content URL patterns for which metrics reporting shall be done for this metrics configuration set.  If not specified, reporting shall be done for all URLs. |
| Communication Service type | The type of Communication Service (Unicast and/or MBS broadcast and/or MBS multicast) for which metrics collection and reporting is requested.  If not specified, metrics collection and reporting shall be performed for all communication service types. |
| Metrics | A list of metrics which shall be collected and reported for this metrics configuration set.  For progressive download and DASH streaming services, the listed metrics are associated with the 3GPP metrics scheme and shall correspond to one or more of the metrics as specified in clauses 10.3 and 10.4, respectively, of TS 26.247 [7].  In addition, for the 3GPP metrics scheme as applied to DASH streaming, the quality reporting scheme and quality reporting protocol as defined in clauses 10.5 and 10.6, respectively, of [7] shall be used.  If not specified, a complete (or default if applicable) set of metrics will be collected and reported. |

When 5GMSd AF-based Network Assistance is activated for a downlink streaming session the parameters from Table 4.2.3‑5 below shall be additionally present.

Table 4.2.3-5: Parameters for 5GMSd AF-based Network Assistance configuration

|  |  |
| --- | --- |
| Parameters | Description |
| Server address | 5GMSd AF address that offers the APIs for 5GMSd AF-based Network Assistance, accessed by the 5GMSd Media Session Handler. The server address shall be an opaque URL, following the 5GMS URL format. |

\* \* \* \* Second change \* \* \* \*

### 5.5.2 RAN-based reporting procedure

In the first use-case, shown in Figure 5.5.2-1 below, the 5GMS System operator controls the metrics collection and reporting using the RAN-based configuration method. In this case the metrics are configured via the RAN and the control plane, independent of 5GMS functional support.



Figure 5.5.2-1: Metrics collection and reporting via RAN-based configuration

The different steps are explained below:

1: Overall metrics configuration is done on the network level, for instance defining which geographical areas that shall have metrics collection active, which metrics to collect, and how metrics shall be reported. If per-slice metrics collection and reporting is supported, a slice scope may be present in the metrics configuration, indicating the specific slice instance(s) for metrics collection and reporting.

2: The metrics configuration(s) is/are sent from the OAM to the RAN, which does not forward that information to the UE at this stage.

3: Time passes, and it is assumed that the UE moves around during that period.

4: The UE enters an area (cell, location area, etc.,) which is inside the geographical constraint. This is discovered by the RAN, and it now needs to activate metrics collection and reporting for the UE.

5: The actual metrics configuration is sent from the RAN to the Media Session Handler, via the control plane.

6: Additional time passes, and the UE has a metrics configuration, but no streaming session has started.

7: A streaming session is started.

8: The session setup is done in conjunction with signalling transactions (not shown here).

8a: When the *Communication Service type* parameter is included in the metrics configuration set (see table 4.2.3-4), the Media Session Handler shall collect and report metrics depending on whether the current media streaming session is running over unicast, MBS multicast or MBS broadcast.

If a *slice scope* is included in the metrics configuration set, the Media Session Handler shall check the running slice which is carrying the current media streaming (e.g. via the AT Command +CGDCONT [24] or the specific traffic mapping with URSP [4]). If the running slice is within the slice scope, the metrics collection and reporting shall be executed. Additionally, the running slice shall also be included into the metrics reports.

9: A new metrics collection job is created in the Media Player.

10: A reference to the new metrics collection job is returned.

11: The configuration for the metrics collection job is sent to the Media Player (i.e. which metrics should be measured) along with the measurement resolution interval). The metrics reporting interval timer is activated in the Media Session Handler.

12: Media is delivered and rendered, and...

13: ...more media is delivered...

14: The configured metrics reporting interval has elapsed, and the Media Session Handler now requests the collected metrics from the Media Player.

15: The Media Player returns the collected metrics.

16: The metrics are reported via the control plane.

17: The session continues...

18: more media is delivered, and then the session is finished.

19: The Media Session Handler requests the final metrics collected.

20: The Media Player returns the final collected metrics.

21: The metrics are reported to the OAM via the control plane.

21a: The OAM may determine the per-slice QoE metrics based on the metrics reports and the slice scope.

22: The metrics collection job is deleted.

23: Time passes, the UE moves around.

24: The UE leaves the geographical area specified by the metrics configuration.

25: The RAN sends metrics (de)configuration to the UE, to stop future metrics collection.

\* \* \* \* Third change \* \* \* \*

### 5.5.4 Metrics reporting configuration parameters

Table 4.2.3-4 in clause 4.2.3 describes the metrics reporting configuration parameters used in step 5 of Figure 5.5.2-1 and step 3a of Figure 5.5.3-1. Note that some of the parameters are only relevant for a specific reporting option, as shown in Table 5.5.4-1 below.

Table 5.5.4-1: Metrics reporting configuration parameters and options

|  |  |  |
| --- | --- | --- |
| **Parameters** | **Relevance in RAN-based reporting?** | **Relevance in 5GMSd AF-based reporting?** |
| Server address | No | Yes |
| Scheme | No (default 3GPP) | Yes |
| DNN | No | Yes |
| Reporting interval | Yes | Yes |
| Sample percentage | Yes | Yes |
| Streaming source filter | Yes | Yes |
| Slice scope | Yes | No |
| Communication Service type | Yes | No |
| Metrics | Yes (3GPP-defined) | Yes (3GPP-defined or non-3GPP defined) |

\* \* \* \* Fourth change \* \* \* \*

### 5.12.1 General

This clause defines procedures for different use cases and scenarios when 5GMS uses MBS for delivery as introduced in clause 4.9. In all scenarios, the 5GMSd Client acts as an MBS-Aware Application.

The scenarios presented are not considered to be comprehensive and complete for all possible functionalities. For example, while MBS defines its own metrics reporting, the MBS Client may also provide information to the Media Session Handler that integrates relevant data in 5GMS metrics reporting. MBS and 5GMS metrics reporting may run in parallel. Based on the *Communication Service type* metrics configuration parameter defined in table 4.2.3-4, the Media Session Handler determines whether to collect metrics and report them via the RAN-based reporting mechanism as described in step 8a of clause 5.5.2.

The MBSTF terminates the MBS Distribution Session and includes a proxy Media Server that it is assumed can be accessed by the Media Player using common methods, typically HTTP GET requests.

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