**3GPP TSG-SA WG4 Meeting #131-bis-eS4-250543**

**Online, 11 – 17 April 2025**

**Source: Nokia**

**Title: [SR\_IMS] pCR Split Adaptation Configuration Format**

**Spec: 3GPP TR 26.567 v1.0.0**

**Agenda item: 10.5**

**Document for: Discussion and agreement**

1. **Introduction**

Adaptive split rendering is specified in clause 7.3.1 of the draft TS 26.567 v1.0.0. The metadata message format to enable adaptation in a split rendering session is specified in A.2.3. However, the corresponding configuration format is not specified in the current draft TS. Further, state synchronization metadata format, which is essential to enable split adaptation is listed in a separate sub-clause, when logically it should be part of metadata format for split adaptation.

1. **Reason for Change**

To add configuration format for adaptive split rendering.

1. **Proposal**

It is proposed to agree the following changes to TR 26.567 v.1.0.0.

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

A.1.1 Overview of Metadata Formats and Message Types

This annex defines the metadata and metadata message types supported by this specification. Metadata formats and meta data channel message types and formats supported in this specification re-use or modify formats and message types defined in other 3GPP specifications as defined in Table A.1.1-1.

**Table A.1.1-1 Formats and relationship with 3GPP specifications**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Format** | **Source specification** | **Clause in source specification** | **Modified for this specification** | **Clause in this specification** | **urn** |
| Split Rendering Configuration | TS 26.565[5] | 8.4.2 | Yes | A.1.3 | urn:3gpp:split-rendering:v2:sr-configuration |
| Pose | TS 26.119[6] | 12.2 | No | 5.4.2.2 | urn:3gpp:split-rendering:v1:pose |
| Action | TS 26.119[6] | 12.3 | No | 5.4.2.3 | urn:3gpp:split-rendering:v1:action |
| Metadata Data Channel Message | TS 26.565[5] | 8.3.3 | No | 5.4.3 | N/A |
| Split Adaptation Configuration | TS 26.565[5] | C.2.3.1 | Yes | A.2.3.1 | N/A |
| Split Adaptation Message | TS 26.565[5] | C.2.3.2 | Yes | A.2.3.2 | urn:3gpp:split-rendering:v2:asrp:sr-split |
| State Synchronization Message | TS 26.565[5] | C.2.3.3 | Yes | A.2.3.3 | urn:3gpp:split-rendering:v2:sr-state |
| Seamless Adaptive Split | TS 26.565[5] | C.2.3.2 | Yes | A.2.4 | urn:3gpp:split-rendering:v1:asrp:sr-split-seamless |
|  |  |  |  |  |  |
| Processing Delay Adaptation  Configuration | N/A | N/A | N/A | A.2.5 | urn:3gpp:split-rendering:v1:daqoe:configuration |
| Processing Delay Adaptation Information | N/A | N/A | N/A | A.2.5 | urn:3gpp:split-rendering:v1:daqoe:information |

*Editor’s Note: The clause may contain all message types for XR and other services. The suitable message types from TS 26.565 need to be referred or modified and imported to this spec as appropriate. If there is a need to further define profiles with support for specific messages as mandatory/optional is FFS*

NOTE: The metadata formats specified in Table A.1.1-1, if modified from the source specification for this specification may not be interoperable with the source specification.

\* \* \* Second Change \* \* \* \*

A.2.3 Split Adaptation

A.2.3.1 Configuration format

The configuration format defined in Annex A.1.3 with the additional fields defined below in Table A.2.3.1-A shall be used for split rendering configuration exchange for adaptive split rendering.

Table A.2.3.1-1 Adaptive Split Rendering Configuration Format

|  |  |  |  |
| --- | --- | --- | --- |
| renderingSplit | Object | 1..1 | An object identifying objects to be rendered and where they are to be rendered (MF or UE). The message shall be a dictionary object. with keys “MF” and “UE”, and values corresponding to a key shall be a list of named nodes from the scene description being rendered in the SR session. The keys shall indicate where the objects named in the corresponding value list are rendered. |
| synchronizedStatesInit | Object | 1..1 | An object identifying states to be synchronized between the MF and UE and their initial state |
| states | Object | 1..1 | A list of state identifiers, their current values |
| state | String/number | 1..n | Identifier of a state |
| initVal | String | 1..n | Initial value of the state |
| stateVals | Array | 1..1 | An array of values possible for the state |

The synchronizedStatesInit object is used during split rendering session establishment to configure which states are to be synchronized between the MF and the UE. In a scene being split rendered, there may be multiple state machines and for adaptive split rendering only a subset of the states may be affected by the split operations.

A.2.3.2 Split Adaptation Message Format

An SR-DCMTSI client that supports adaptive split rendering shall support the split adaptation message as defined in table A.2.3-1 below based on the split adaptation message defined clause C.2.3.2 of TS 26.565.

**Table A.2.3-1 Message format for split adaptation messages**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Cardinality** | **Description** |
| id | string | 1..1 | A unique identifier of the message in the scope of the data channel session. |
| type | string | 1..1 | urn:3gpp:split-rendering:v2:asrp:sr-split |
| message | Object | 1..1 | Message content |
| subtype | string | 1..1 | An identifier of the subtype of the message, it may be a request (REQ) for new split or acknowledgement (ACK), acceptance (OK) or rejection of a request (NOK). |
| renderingSplitId | string | 1..1 | An identifier of the rendering split unique within the scope of the SR session |
| renderingSplit | Object | 0..1 | A object identifying objects to be rendered and where they are to be rendered (MF or UE). The message shall be a dictionary object. with keys “MF” and “UE”, and values corresponding to a key shall be a list of named nodes from the scene description being rendered in the SR session. The keys shall indicate where the objects named in the corresponding value list are rendered. |

Split adaptation messages indicating acceptance, acknowledgment or rejection of a split adaptation request may not include the renderingSplit Object.

A.2.3.3 State Synchronization Message Format

During a split rendering session, various states associated with the scene being rendered may transition. Depending on the nature of the application being executed, a transition may occur at the UE, at the MF or at both the UE and MF. For the application execution to be consistent, some state transitions need to be synchronized between the MF and UE. The UE and MF may agree on which states to synchronize during session setup. To synchronize state transitions during a split rendering session the MF and UE shall exchange messages of the type “urn:3gpp:split-rendering:v2:asrp:sr-state” . The same message type shall be used to send a state synchronization update, acknowledge a state synchronization update or simultaneously send and acknowledge a state synchronization update. The state synchronization update messages shall be conformant with the meta-data message format defined in A.1.1 and the message content shall be formatted as shown in Table A.2.8-1.

Table A.2.8-1 Message format for state synchronization messages

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Cardinality | Description |
| id | string | 1..1 | A unique identifier of the message in the scope of the data channel session. |
| type | string | 1..1 | urn:3gpp:split-rendering:v2:sr-state |
| message | Object | 1..1 | Message content |
| subtype | string | 1..n | An identifier of the subtype of the message, it may be a state synchronization update (SYNC), acknowledgment (ACK) or both (SYNC\_ACK) |
| syncUpdateId | string | 1..1 | An identifier of the synchronization update unique within the scope of the SR session |
| synchronizedStates | Object | 1..1 | An object identifying states that are synchronized between the MF and UE and their current state. Only states that have transitioned may be exchanged |
| states | Object | 1..1 | A list of state identifiers, their current values and last change time |
| identifier | String/number | 1..n | Identifier of a state |
| val | Object/String/number | 1..n | Value of the state |
| lastChangeTime | number | 1..1 | The timestamp of the last change in state |

Split adaptation messages indicating an acknowledgment of a state update may not include the synchronizedStates Object.

\* \* \* Third Change \* \* \* \*



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