**Source: Qualcomm Incorporated, Intel**

**Title: Introduction of pause/resume functionality**

## Document for: Agreement

## Agenda Item: 11.5

# **1. Introduction**

In this contribution, the capability for controlling media streams by pausing and resuming them by the receiver is discussed and proposed.

# **2. RTP Pause/Resume**

**6.9 Potential solutions for pausing and resuming RTP media streams**

To save bandwidth when media streams are not rendered at the media receiver, the transmission of particular media streams can be paused at the media sender and later resumed when the media is to be rendered. Codec Control Messages (CCM) for the support of this pause and resume functionality have been defined in RFC 7728 [2]. This capability has already been introduced in 3GPP TS 26.114 for MSMTSI clients.

The usage of pause/resume messages for the control of media flows is described below:

1. The sender and receiver use SDP[[1]](#footnote-2) to negotiate the different media streams of the session.
2. Using the a=rtcp-fb ccm pause attribute and parameter values as specified in [2] and [3], the sender indicates the capability to support receiving and acting on PAUSE and RESUME requests targeted for RTP streams it sends. The optional parameter setting of a=rtcp-fb ccm pause config=3 could be used by the overlay sender to indicate that it will only receive and react to PAUSE and RESUME requests but will not send these requests.
3. Using the a=rtcp-fb ccm pause attribute and parameter values as specified in [1] and [2], the overlay receiver indicates the capability to support sending PAUSE and RESUME requests targeted for RTP streams it receives. The optional parameter setting of a=rtcp-fb ccm pause config=2 could be used by the overlay receiver to indicate that it will only send PAUSE and RESUME requests and but does not support receiving these requests.
4. Once the ITT4RT session begins, the receiver may request pausing or resuming a particular media stream based on user interaction or a set of rules, e.g. the receiver determines that the region of interest of an overlay media stream overlaps with the current viewport. Using the procedures specified in clause 8 of [2], the receiver sends the appropriate PAUSE or RESUME request for that media stream to the sender.
5. Upon receiving the PAUSE or RESUME request, the media sender can pause or resume transmitting the media stream as requested.

The pause/resume solution has the following advantages:

1. RTP Stream Pause and Resume functionality has been specified in RFC 7728.
2. Support of RTP Stream Pause and Resume functionality has been mandated in 3GPP TS 26.114 for MSMTSI terminals.
3. Having the RTP receiver pause the stream by a request avoids ambiguous operation at the RTP receiver when the RTP sender autonomously pauses the RTP stream based on some rules.
4. This provides a simple transport-level solution that avoids having to define and specify application-level functionality and signalling.

# **3. Proposal**

Incorporate the text in clause 2 into clause 6.9 of the Permanent Document.

# **4. References**

[1] RFC 5104 Codec Control Messages in the RTP Audio-Visual Profile with Feedback (AVPF)

[2] RFC 7728 RTP Stream Pause and Resume

1. [↑](#footnote-ref-2)