Requirements for Transport of Video Control Commands

draft-basso-avt-videoconreq-00.txt

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Motivation

- A variety of video communication services such as video conferencing and video messaging rely on the capability of video encoders and decoders to exchange control commands.
- The list of commands and their transport are not currently standardized in IETF.

Use Cases

- RTP video mixer composing multiple encoded video sources into a single encoded video stream**. (reference frame request)**

- RTP video mixer receiving RTP video streams which dynamically selects one of the streams to be included in its output RTP stream. **(reference frame request)**

- Application that needs to signal to the remote encoder a request of change in the coding strategy**. (spatiotemporal tradeoff request)**

- Video mixer that switches its output stream to a new video source. **(freeze frame and reference frame request)**

- Video mixer that dynamically selects one of the received video streams to be sent out to participants and tries to provide the highest bit rate possible to all participants while minimizing stream transrating**. (max rate request, actual rate as response)**

Video Codec Control Commands

- **VideoFreezePicture**
  - Freeze release sent in-band
- **VideoFastUpdatePicture**
- **VideoFastUpdateGOB(firstGOB, numberOfGOBs)**
  - Desiderata: A single command as much as possible codec independent
- **VideoTemporalSpatialTradeOff(index)**
- **RateRequest(MaxBitrate)**

  a) Request new rate for rate matching (MCU): a new SDP in a RE-INVITE can be used

  b) Adapt to network conditions: out of scope

  c) As specific command to change the rate in mid call independently of network conditions
- **RateNotify(MaximumBitRate)**
  - Potentially applies only to c) and it may not be needed

General Requirements

- Reuse of existing protocols
- Maintain existing protocol integrity
- Avoid duplicating existing protocols
- Efficiency

Video Codec Control Requirements

- **Reliable versus unreliable delivery**
  - Discussion Deferred. It depends on the set of identified commands
- **Capability description**
  - Express this capability in session description
- **Relation with media**
  - Media stream and its control should be tight and uniquely identified.
- **Independence from signaling**
  - Video codec control independent from the signaling protocol
- **Bidirectional transport**
  - Discussion Deferred. It depends on the set of identified commands
- **Extensibility**
- **Unicast and multicast support**
  - Unicast, Specific Source Multicast
- **Interoperability with other protocols**
  - Discussion deferred till the set of commands is identified. Definition of “interoperable” is needed
- **Timely delivery**
  - Prompt delivery of the command. Response from the remote end ASAP.

Next Steps

- **Trimming of commands list**
  - Commands that need to be added to the list the ones that can be safely removed.
- **Trimming of requirements list**
  - requirements that need to be added to the list the ones that can be safely removed.
- **Home?**
  - Is AVT a good home for the follow-up draft that will describe the mechanisms of transport video codec control commands?