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S. Nandakumar
Cisco
C. Holmberg
Ericsson
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Payload specific parameters for specifying video resolution in SDP.
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Abstract

With the rise in realtime communication applications supporting video, there is a need for receivers of the video to setup appropriate expectations on their receive capacity for handling various video image resolutions. Setting up the maximum supported image resolution that could be handled by an Endpoint is important to successfully decode and render the received video streams. This document proposes SDP format specific parameters for specifying the maximum image width and height resolutions along with their behavior under the [[RFC3264](#)] Offer/Answer SDP usage.

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1. Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#).

2. Introduction

Off late, multimedia communication sessions are increasingly supporting video by default. This is further fueled with the advent of IETF technology standards such as RTCWeb, CLUE. In order to successfully decode an incoming video stream, the decoder at the Endpoint must be capable of handling the image resolution of the received video streams, amongst other things. This document defines SDP payload format specific parameters (a=fmtp) to setup an upper limit on the receiver's capability in successfully handling various image resolutions of the incoming video stream. It also describes [\[RFC3264\]](#) Offer/Answer procedures for the same.

Individual RTP Payload specifications that intend to specify limits on the decoder's image resolution handling MUST refer to the parameters defined in this document to achieve the functionality.

3. Payload Format Parameters

The media subtype parameters max-recv-width and max-recv-height specified below MAY be used to signal the capabilities of a receiver implementation. These parameters MUST NOT be used for any other purposes.

3.1. Media Type Registration

New Parameters

1. max-recv-width: The value of max-recv-width is an integer

indicating maximum horizontal image range in pixels. When max-recv-width is signaled, the sender MUST NOT send any media with horizontal image resolutions higher than the value requested by the receiver.

2. max-recv-height: The value of max-recv-height is an integer indicating maximum vertical image range in pixels. When max-recv-height is signaled, the sender MUST NOT send any media with vertical image resolutions higher than the value requested by the receiver.

[4.](#) SDP Parameters

[4.1.](#) Mapping of the parameters to SDP

The parameters max-recv-width, max-recv-height when present, MUST be included in the "a=fmtp" line of SDP. These parameters are expressed as a media type string, in the form of a semicolon separated list of parameter=value pairs.

When signaled, both the attributes MUST be included and they signal the capabilities of a media receiver's implementation. These parameters are implicitly downgradable from the media sender's perspective, i.e, they express the upper limit for a media sender's possible behavior. Thus a media sender MAY select to set its encoder using only lower/lesser or equal values of these parameters when sending media.

[4.2.](#) Usage with SDP offer/answer

The interpretation of the parameters max-recv-width and max-recv-height depends on the SDP direction attribute. When the direction is sendrecv or recvonly, the value of this parameter indicates the ranges of horizontal and vertical image resolutions the media receiver is capable of rendering successfully. When the direction is sendonly, these attributes have no interpretation and MUST be ignored by the receiving Endpoint, if present.

If the media sender is not capable of sending any resolution lower than or equal to the values requested by the media receiver, the

Offer/Answer procedure is considered as failed.

An SDP Answerer MUST NOT include these parameters in the SDP Answer unless they are specified in the associated SDP Offer.

If the SDP Answer doesn't contain these parameters, the Offerer MUST follow the procedures in the same way as if these parameters were never sent in the first place. This might happen if the Answerer doesn't support/understand these parameters.

[5.](#) SDP Examples

[5.1.](#) Successful Scenario

The example SDP below shows an Offer from an Endpoint that is capable of receiving up to [720,576] video image resolution for the VP8 codec with Payload Type 96.

```
m=video 62537 RTP/SAVPF 96
a=rtpmap:96 VP8/90000
a=fmtp:96 max-fr=30;max-recv-width=720;max-recv-height=576
a=sendrecv
```

SDP Offer

The example SDP below shows an Answer from an Endpoint that is capable of receiving only up to [640,480] video image resolutions.

```
m=video 62537 RTP/SAVPF 96
a=rtpmap:96 VP8/90000
a=fmtp:96 max-fr=30;max-recv-width=640;max-recv-height=480
a=sendrecv
```

SDP Answer

[5.2.](#) Failure Scenario

The example SDP below shows an Offer from an Endpoint that is capable of receiving up to [720,576] video image resolution for the H.264 codec with Payload Type 100.

```
m=video 62537 RTP/SAVPF 100
a=rtpmap:100 H264/90000
a=fmtp:100
  profile-level-id=42800d;max-mps=40500;max-recv-width=720;max-recv-height=576
a=sendrecv
```

SDP Offer

The example SDP below shows the Answer rejecting the above SDP Offer, since the receiver of the SDP is unable to support the Offerer's requested image resolutions for sending the media.

```
m=video 0 RTP/SAVPF 100
a=rtpmap:100 H264/90000
```

SDP Answer

[6.](#) IANA Considerations

The parameters specified in [Section 3](#) of this document will be registered with the IANA.

[7.](#) Acknowledgements

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[8.](#) Normative References

- [RFC3264] Rosenberg, J. and H. Schulzrinne, "An Offer/Answer Model with Session Description Protocol (SDP)", [RFC 3264](#), June 2002.
- [RFC4566] Handley, M., Jacobson, V., and C. Perkins, "SDP: Session Description Protocol", [RFC 4566](#), July 2006.

Authors' Addresses

Suhas Nandakumar
Cisco
170 West Tasman Drive
San Jose, CA 95134
USA

Email: snandaku@cisco.com

Christer Holmberg
Ericsson
Hirsalantie 11
Jorvas 02420
Finland

Email: christer.holmberg@ericsson.com