

# SDP negotiation of DataChannel sub-protocols

draft-ietf-mmusic-data-channel-sdpneg-01

draft-ejzak-dispatch-msrp-usage-data-channel-01

IETF 92

Dallas

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# History

- Adoption as MMUSIC WG item of both drafts at Honolulu meeting confirmed on MMUSIC list.
- Approval of milestone in late January 2015.
- Working group versions submitted to list in late January 2015.
- New versions submitted early March 2015.

# Changes against 'draft-ejzak-mmusic-data-channel-sdpneg-02'

- Removal of note "[ACTION ITEM]" from section "subprotocol parameter". As [I-D.ietf-rtcweb-data-protocol] this document should refer to IANA's WebSocket Subprotocol Name Registry defined in [RFC6455].
- In whole document, replacement of "unreliable" with "partially reliable", which is used in [I-D.ietf-rtcweb-data-channel] and in [I-D.ietf-rtcweb-data-protocol] in most places.
- Clarification of the semantic if the "max-retr" parameter is not present in an a=dcmmap attribute line.
- Clarification of the semantic if the "max-time" parameter is not present in an a=dcmmap attribute line.
- In section "label parameter" the sentence "Label is a mandatory parameter." was removed and following new sentences (including the note) were added.
- "Subprotocol is a mandatory parameter." was replaced with "'Subprotocol' is an optional parameter. If the 'subprotocol' parameter is not present, then its value defaults to the empty string."
- In the "Examples" section, in the first two SDP offer examples in the a=dcmmap attribute lines 'label="BGCP"' was replaced with 'label="BFCP"'.  
In the second example, the 'a=dcmap' attribute line was replaced with 'a=dcmap:1'.
- In all examples, the "m" line proto value "DTLS/SCTP" was replaced with "UDP/DTLS/SCTP" and the "a=fmtp" attribute lines were replaced with "a=max-message-size" attribute lines.

# Changes against 'draft-ietf-mmusic-data-channel-sdpneg-00' (1)

- In Section 3 "WebRTC data channel" was defined as "A bidirectional channel consisting of paired SCTP outbound and inbound streams." Replacement of this definition with "Data channel: A WebRTC data channel as specified in [I-D.ietf-rtcweb-data-channel]", and consistent usage of "data channel" throughout.
- In Section 4 removal of following note: "OPEN ISSUE: The syntax in [I-D.ietf-mmusic-sctp-sdp] may change as that document progresses. In particular we expect "webrtc-datachannel" to become a more general term."
- Consistent usage of "'m' line' in whole document as per [RFC4566].
- In Section 5.1.1 removal of the example dcmmap attribute line 'a=dcmmap:2 subprotocol="BFCP";label="channel 2' and corresponding removal of following related material.
- In Section 5.1.1 removal of following note: "Note: This attribute is derived from attribute "webrtc-DataChannel"
- Insertion of new sentence "dcmmap is a media level attribute having following ABNF syntax
- Insertion of new Section 5.1.1.2 containing the dcmmap-stream-id specifying sentence, which previously was placed right before the formal ABNF rules. Removal of the sentence 'Stream is a mandatory parameter and is noted directly after the "a=dcmmap:" attribute's colon'.
- In Section 5.1.1.1 modification of the 'ordering-value' values from "0" or "1" to "true" or "false". Corresponding text modifications in Section 5.1.1.7. o In Section 5.1.1.1 the ABNF definition of "quoted-string" referred to rule name "escaped-char", which was not defined. Instead a rule with name "escaped" was defined. Renamed that rule's name to "escaped-char".

# Changes against 'draft-ietf-mmusic-data-channel-sdpneg-00' (2)

- Insertion of a dedicated note right after the "a=dcmap:4" attribute example in Section 5.1.1.1 regarding the non-printable "escaped-char" character within the "label" value.
- In Section 5.1.2's second paragraph replacement of "sctp stream identifier" with "SCTP stream identifier".
- In first paragraph of Section 5.2.1 replacement of existing text with with 'If an SDP offer / answer exchange (could be the initial or a subsequent one) results in a UDP/DTLS/SCTP or TCP/DTLS/SCTP based media description being accepted, and if this SDP offer / answer exchange results in the establishment of a new SCTP association, then the SDP offerer owns the even SCTP stream ids of this new SCTP association and the answerer owns the odd SCTP stream identifiers. If this "m" line is removed from the signaling session (its port number set to zero), and if usage of this or of a new UDP/DTLS/SCTP or TCP/DTLS/SCTP based "m" line is renegotiated later on, then the even and odd SCTP stream identifier ownership is redetermined as well as described above.'
- In Section 5.2.3, replacement of these two sentences with "Parses and applies the SDP offer. Note that the typical parser normally ignores unknown SDP attributes, which includes data channel related attributes."
- In Section 5.2.3, replacement of existing text with "Note that the agent is asked to create data channels with SCTP stream identifiers contained in the SDP offer if the SDP offer is accepted."
- In Section 5.2.4 the third paragraph replacement of existing text with new text on closing of datachannels.
- In Section 5.2.4 the existing text replaced with "This delayed closure is RECOMMENDED in order to handle cases where a successful SDP answer is not received, in which case the state of the session SHOULD be kept per the last successful SDP offer/answer."
- Although dedicated to "a=dcmap" and "a=dcsa" SDP syntax aspects Section 5.1.1 contained already procedural descriptions related to data channel reliability negotiation. Creation of new Section 5.2.2 and moval of reliability negotiation related text to this new section.

# Problem Statement

- How to negotiate use of well-defined sub-protocols over DataChannels
  - For sub-protocols that usually use SDP for negotiation, e.g., MSRP, BFCP, T140, T38
  - To support e2e signaling between different endpoint types via protocols that depend on SDP for media negotiation (e.g., SIP)
  - To allow interworking through gateways to endpoints that do not support DataChannels
  - To also support non-WebRTC endpoints
  - To support e2e negotiation of new protocols using DataChannel transport such as clue control
- The proposal of this draft is that negotiation gets bolted on top of the rtcweb data channel to configure particular channels that are established using the rtcweb data channel protocol.
- Uses SDP
- Two new attributes:
  - New attribute a=dcmmap (Attribute for data channel negotiation)
  - New attribute a=dcsa (Attribute for data channel sub-protocol)

# Applicability Statement

- proposes to have one in the text similar to draft-ietf-mmusic-sdp-bundle-negotiation-18's section 4:

- **Applicability Statement**

The mechanism in this specification only applies to the Session Description Protocol (SDP) [RFC4566], when used together with the SDP offer/answer mechanism [RFC3264]. Declarative usage of SDP is out of scope of this document, and is thus undefined.

- Intent indicated on MMUSIC:

<http://www.ietf.org/mail-archive/web/mmusic/current/msg14433.html>

- As no one disagreed so far, could we insert new section (could also be section 4) as above?

# ABNF Rule “attribute”

- ABNF Rule “attribute” in 5.1.2. Sub-Protocol Specific Attribute
  - Current ABNF rule in -01 is:
    - attribute = <from-RFC4566>
  - We already agreed to propose extending this:
    - attribute = <from [RFC4566] or any other specification defining SDP attributes>
  - Still needs to be proposed on the MMUSIC list – can we agree here



# IANA considerations

- Section 8 IANA Considerations

- MMUSIC list discussion already, and Christer and Christian did reply:

- <http://www.ietf.org/mail-archive/web/mmusic/current/msg14371.html>

- <http://www.ietf.org/mail-archive/web/mmusic/current/msg14372.html>

- <http://www.ietf.org/mail-archive/web/mmusic/current/msg14373.html>

- Proposes reuse of the existing table relating to websockets

- No distinction in table as to whether websockets or datachannel usage except by reference used, i.e. a later usage would not necessarily update this

- Still to draft “IANA Considerations” text

# Paul's three comments to -01 on 9<sup>th</sup> of March (1)

- <http://www.ietf.org/mail-archive/web/mmusic/current/msg14530.html>
  - Agreed on MMUSIC to his comments
  - Text in -02 still needs to be updated
  - Paul's comments:
    - #1 *Section 5.2.2 says:*  
*... If an SDP offer contains both of these parameters then such an SDP offer will be rejected.*  
*The use of "will" is confusing - it isn't normative. IMO it should either use "MUST" or else it should say such usage is undefined.*
      - Agreed, should be changed to "... such an SDP offer MUST be rejected".
      - **Keith proposed on 12<sup>th</sup> of March:**
        - » **"... If an SDP offer contains both of these parameters then the receiver of such an SDP offer MUST reject the SDP offer."**
    - #2 *The SDP answer shall echo the same subprotocol, max-retr, max-time, ordered parameters, if those were present in the offer, and may*  
*Again, "shall" is non-normative. IMO this should be SHALL or MUST.*
      - Agreed, should be changed to "The SDP answerer SHALL echo the same ..."

# Paul's three comments to -01 on 9<sup>th</sup> of March (2)

- #3 *Data channel types defined in [I-D.ietf-rtcweb-data-protocol] are mapped to SDP in the following manner:*

```
DATA_CHANNEL_RELIABLE  
a=dcmap:2 subprotocol="BFCP";label="channel 2"
```

...

*"This is a bit unclear because these are \*examples\* using BFCP. (It also uses 'ordered=0' rather than 'ordered=false'. I think it would be clearer as:*

*Data channel types defined in [I-D.ietf-rtcweb-data-protocol] are mapped to SDP a=dcmap parameters in the following manner:*

```
DATA_CHANNEL_RELIABLE  
ordered=true
```

...

*('ordered=true' is default and may be omitted.)"*

–Agreed.

# Christian's comments to -01 on 10<sup>th</sup> of March

- Christian's comments to -01 on 10<sup>th</sup> of March  
<http://www.ietf.org/mail-archive/web/mmusic/current/msg14536.html>
  - Replied to Christian on MMUSIC and agreed with proposed text as below.
  - Potential text changes in -02 still to be done
  - Christian's detailed comment:
    - *It looks pretty good. In addition to Paul's comments, a minor comment on 5.2.5 "SDP offer has no a=dcmmap attribute". Perhaps for clarity in the "Initial SDP offer" step it should indicate that the DTLS/SCTP is requested to be setup but with no data channel requested yet? The step "Subsequent SDP offer" indicates that the "established DTLS/SCTP association" remains. The other steps also indicate the relation to the DTLS association.*
  - Current Section 5.2.5's "SDP offer has no a=dcmmap attributes - Initial SDP offer" description is:
    - Initial SDP offer: No data channel negotiated yet.
  - Extended text as propose to Christian on MMUSIC:
    - Initial SDP offer: No data channel is negotiated yet. The DTLS connection and SCTP association is negotiated and, if agreed, established as per [draft-ietf-mmusic-sctp-sdp].

# Changes against 'draft-ejzak-mmusic-msrp-usage-data-channel-01'

- Removed empty spaces after ";" in the examples' "a=dcmmap" attribute lines.
- In all examples, the "m" line proto value "DTLS/SCTP" was replaced with "UDP/DTLS/SCTP" and the "a=fmtp" attribute lines were replaced with "a=max-message-size" attribute lines, as per draft-ietf-mmusic-sctp-sdp-12.

# Changes against 'draft-ietf-mmusic-msrp-usage-data-channel-00'

- Additional reference to [I-D.ietf-mmusic-data-channel-sdpneg] in list of normative references.
- Replacement of previous document title "MSRP over SCTP/DTLS data channels" with "MSRP over Data Channels" in order to align with the terminology used in [I-D.ietf-mmusic-data-channel-sdpneg].
- In Section 3 "WebRTC data channel" was defined as "A bidirectional channel consisting of paired SCTP outbound and inbound streams." Replacement of this definition with "Data channel: A WebRTC data channel as specified in [I-D.ietf-rtcweb-data-channel]", and consistent usage of either "data channel" or "MSRP data channel" in the remainder of the document."
- In the introduction replacement of references to [I-D.ietf-rtcweb-data-protocol] with a reference to [I-D.ietf-rtcweb-data-channel].
- Consistent usage of "'m' line" in whole document as per [RFC4566].
- In the gateway configuration section (Section 6) replacement of the first sentence "This section describes the network configuration where one endpoint runs MSRP over a WebRTC SCTP/DTLS connection, the other MSRP endpoint runs MSRP over one or more TLS/TCP connections, and the two endpoints interwork via an MSRP gateway" with "This section describes the network configuration where one MSRP endpoint uses data channels as MSRP transport, the other MSRP endpoint uses TLS/TCP connections as MSRP transport, and the two MSRP endpoints interwork via an MSRP gateway".

# draft-ietf-mmusic-msrp-usage- data-channel

## Open Points for -02

- Applicability Statement

- Do we need an applicability statement in msrp-usage similar as in sdpneg?

# CLUE

- draft-ietf-clue-datachannel-09 uses the mechanisms defined in this draft.
- draft-ietf-clue-datachannel-09 defines usage of the dcmmap attribute. Does not define any usage of the dcsa attribute.
- CLUE are proposing to complete their work in July 2015.



# Proposed work plan

- Generate new version with some accumulated changes at end of this meeting. This will close the remaining open issues and missing text (e.g. IANA considerations)
- Find two new independent reviewers (a significant number of people have reviewed already) and address any changes they identify in a new version
- WGLC (needs to be aligned with dependent drafts (ietf-rtcweb-jsep, ietf-rtcweb-data-channel, ietf-mmusic-sctp-sdp))