CLUE DATA CHANNEL
Episode II: Opening Of The Data Channel

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(2) REFERENCES

- SCTP
  - RFC 4960
- DTLS (v.1.2)
  - RFC 6347
- SCTP Stream Reconfiguration
  - RFC 6525
- DTLS Encapsulation of SCTP Packets
  - draft-ietf-tsvwg-sctp-dtls-encaps
- WebRTC DATA CHANNEL
  - draft-ietf-rtcweb-data-channel
- WebRTC Data Channel Establishment Protocol
  - draft-ietf-rtcweb-data-protocol
- SCTP-Based Media Transport in SDP
  - draft-ietf-mmusic-sctp-sdp
- SDP-based "SCTP over DTLS" data channel negotiation
  - draft-ejzak-mmusic-data-channel-sdpneg

(3) WebRTC DATA CHANNEL OVERVIEW

(4) PROTOCOL STACK

DCEP	SUB-PROTOCOL (CLUE)
WebRTC DATA CHANNEL	
SCTP/DTLS/UDP(ICE)	
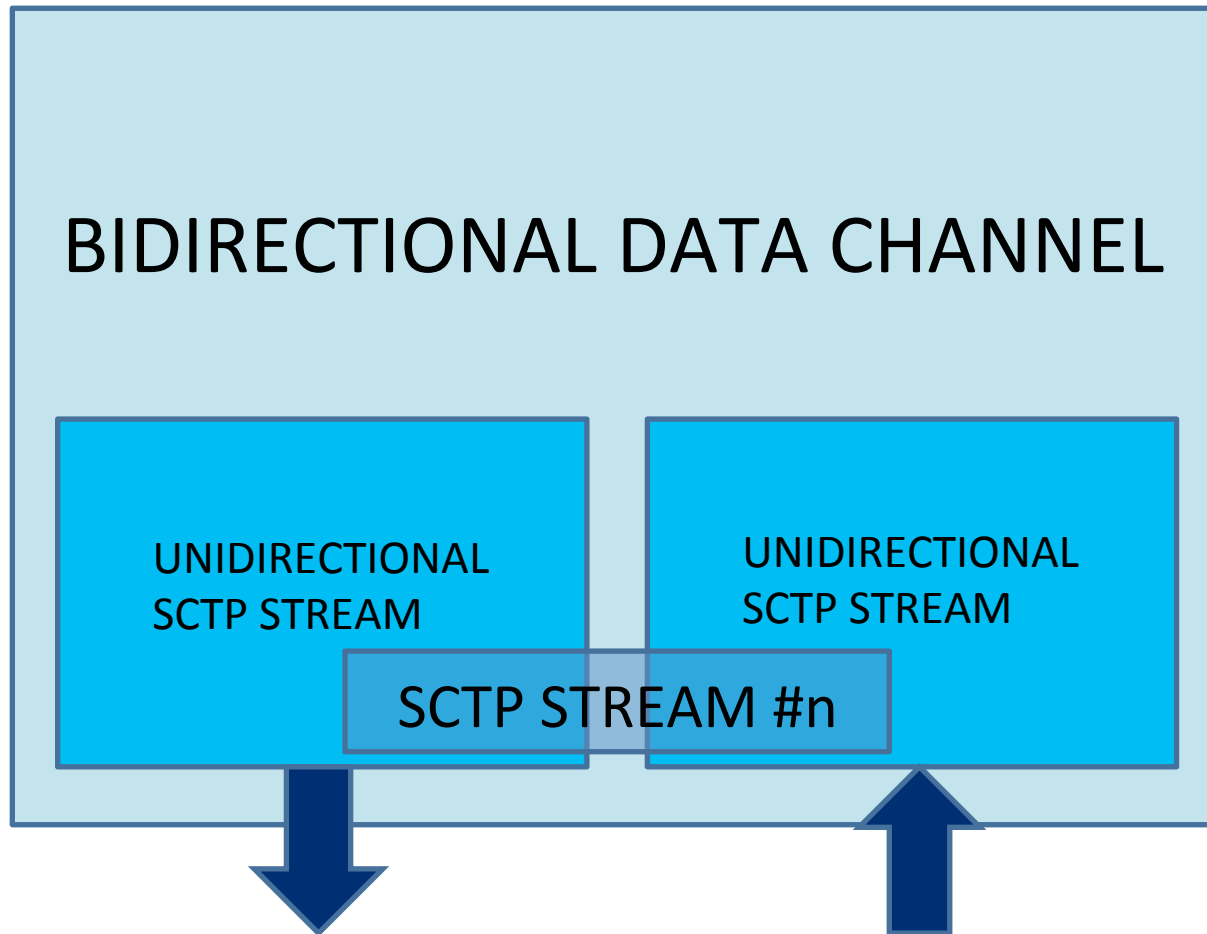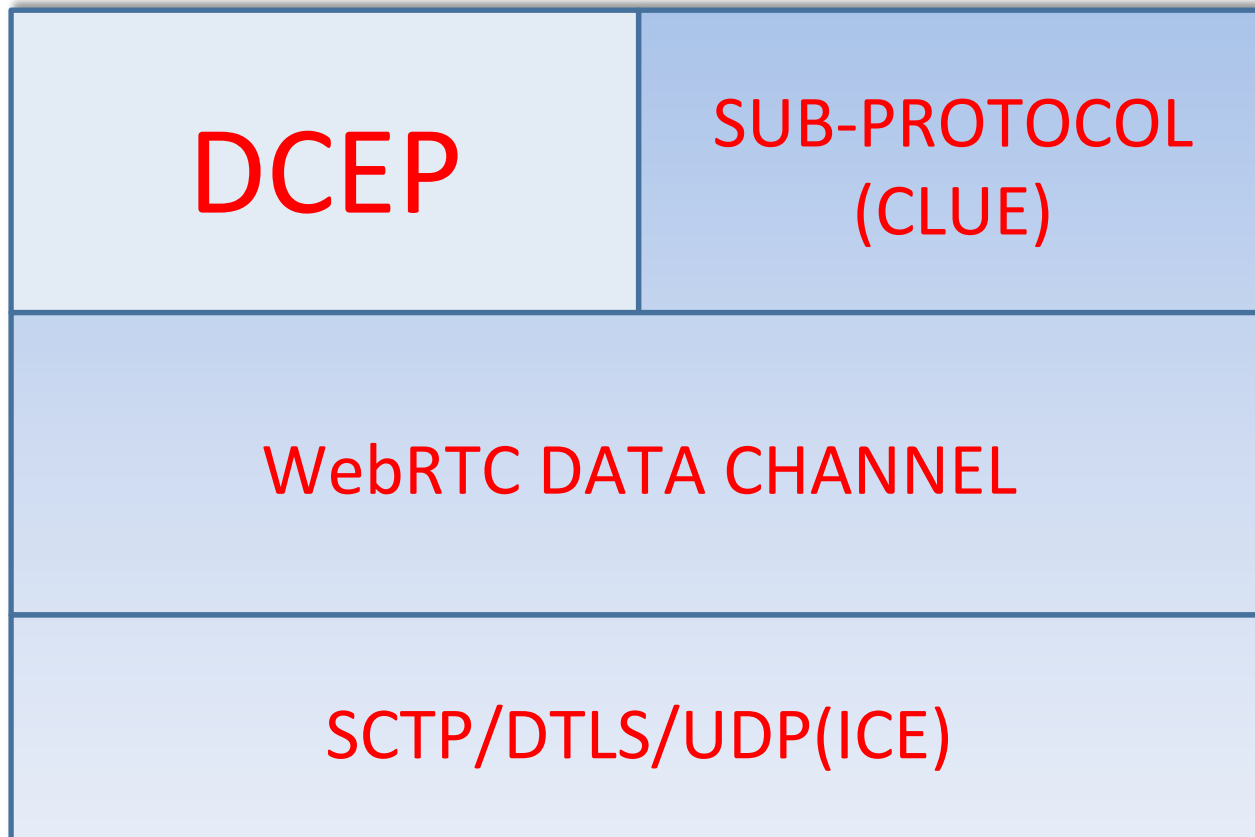
(5) DATA CHANNEL ESTABLISHMENT

- **Step 1**: NEGOTIATE/CREATE SCTP ASSOCIATION
  - SDP Offer/Answer

- **Step 2**: OPEN DATA CHANNEL
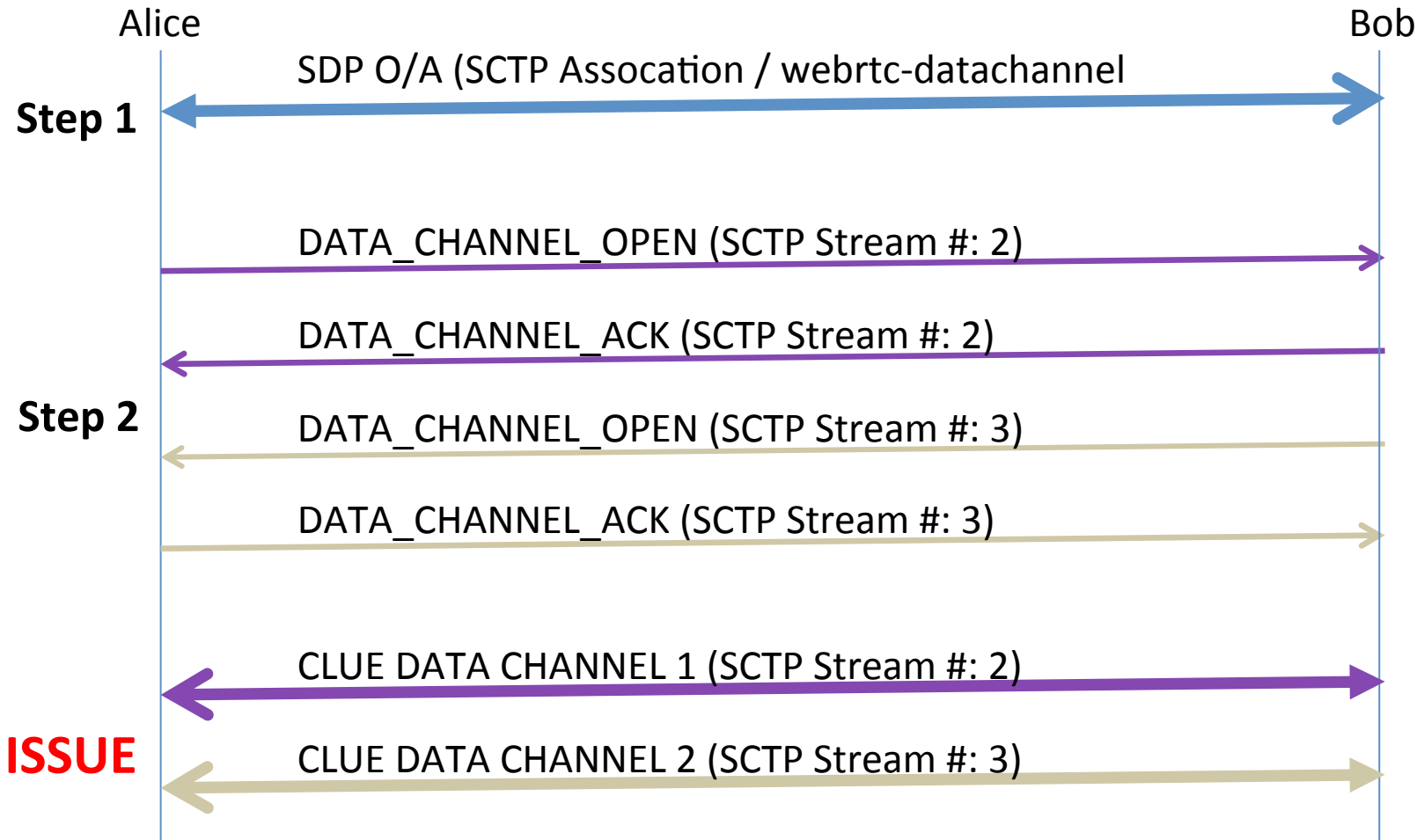 - DCEP DATA_CHANNEL_OPEN

(6) ISSUE: DUAL DATA CHANNEL

- **THE FACTS**
  - Once the SDP O/A transaction, negotiating the data channel, has been finished, both endpoints can send DCEP DATA_CHANNEL_OPEN
  - Each endpoint chooses a different SCTP stream ID for the data channel

- **THE RESULT**
  - Two data channels established for the same sub-protocol.
  - Sub-protocol needs to handle this situation in SOME way

(7) ISSUE: DUAL DATA CHANNEL

Alice   Bob

Step 1   SDP O/A (SCTP Assocation / webrtc-datachannel

DATA_CHANNEL_OPEN (SCTP Stream #: 2)

DATA_CHANNEL_ACK (SCTP Stream #: 2)

Step 2   DATA_CHANNEL_OPEN (SCTP Stream #: 3)

DATA_CHANNEL_ACK (SCTP Stream #: 3)

CLUE DATA CHANNEL 1 (SCTP Stream #: 2)

ISSUE   CLUE DATA CHANNEL 2 (SCTP Stream #: 3)

(8) ISSUE: DUAL DATA CHANNEL

- **THE HIGH-LEVEL SOLUTION ALTERNATIVES**
  - **Alt 1**: Specify how the sub-protocol uses two data channels
    - Use both data channels, reset one data channel, etc…
  - **Alt 2**: Specify which endpoint is responsible for sending DATA_CHANNEL_OPEN

- **THE HIGH-LEVEL SOLUTION PROPOSAL**
  - Alt 2

(9) ISSUE: DUAL DATA CHANNEL

- **THE LOW-LEVEL SOLUTION ALTERNATIVES (Alt 2)**
  - **Alt 1**: SDP Offerer sends DATA_CHANNEL_OPEN
  - **Alt 2**: SDP Answerer sends DATA_CHANNEL_OPEN
  - **Alt 3**: DTLS Client sends DATA_CHANNEL_OPEN
  - **Alt 4**: DTLS Server sends DATA_CHANNEL_OPEN

- **THE LOW-LEVEL SOLUTION PROPOSAL**
  - **Alt <insert-WG-decision>**

THE END

THANK YOU FOR LISTENING!