MALICE
Metadata Attribute signaling with ICE

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Bandwidth is Limited

• Give media stream better treatment in the network.
• Improve ICE path selection
• Enable application to react to changing network conditions
Why Existing Solutions Fall Short

• RSVP
  – Have a hard time crossing the Internet (IP router alert option)
  – NAT traversal difficult
  – Poor OS support, requires root

• DSCP
  – Poor OS support to set/read DSCP bits
  – DSCP bits often changed when crossing administrative domains
  – Values might already have specific meanings in some networks
Why Existing Solutions Fall Short (cont)

- **ECN**
  - Poor OS support to set/read bits in the header
  - TCP only. No “real” UDP or RTP support in the wild
  - Only congestion feedback

- **RTCP feedback**
  - Treats network as black box
  - Only reacts when packet is dropped or other problems occur
  - Session needs to be established
Solution Proposal

• Feedback between ICE and network
  – Extension to the ICE state machine and new STUN attributes
  – Routers modify STUN messages (Connectivity cheeks or keepalives) to provide feedback

• Drive this effort from an application/SDP perspective.
Technical Overview

STUN Binding Request (Connectivity Check)

(1)

STUN Binding Response (Connectivity Check)

(2) Copy any information learned from network

(3) Insert new empty attribute to learn about return path

(4)

STUN
Attr
...
MALICE
Integrity
MALICE

(1)

Information to remote agent

Empty attribute network nodes can add information

Happy agent can now take better path decisions and start sending media using reasonable starting values
Questions from the Authors

• Focus on what?
  – Generic Transport for Metadata?
    (Separate drafts to describe actual attributes and how to handle them)
  – Extend ICE to allow for better network understanding?

• Acceptable STUN packet size for connectivity checks?