New Revision of the Interactive Connectivity Establishment (ICE)

draft-keranen-mmusic-rfc5245bis-01

IETF 86, Orlando
March 12th, 2013
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Where are we now

- 5245bis-00: same as RFC5245 with editorial fixes
- SIP/SDP specifics split from the main spec
  - 5245bis-01
  - draft-petithuguenin-mmusic-ice-sip-sdp-01
  - RFC 6336 (ICE option registry) merged to ice-sip-sdp-01
- Updated IPv6 address selection rules
  - RFC6724 obsoleted RFC3484

Open Issues

- SDP split - the right thing to do?
- Media level ICE options
- (IPv6) address selection update
- ice-option: willing and/or able?
- Connectivity check pacing
- Updated offer

SDP split

- Pros
  - ICE is used a lot in non-SIP environments
  - Easier read for non-SIP implementers (no need to wonder what is not needed)
  - Shorter doc (bis-01 < 90 pages)
- Cons
  - SIP/SDP implementers need to read two docs
  - Still talks about "offer and answer"; refers (informatively) to the SDP o/a RFC3264
    - should re-define terminology?

SDP split

- Seems like a good idea
- Proposal: go forward with this approach
  - Replace offer/answer with "ICE request" and "ICE response" to mean exchanging of ICE session parameters & candidates
- Need for separate RTP usage document?

Media level ice-options SDP attribute

- Currently: ice-options only at session level
- Proposal: allow both session and media level ice-options

(IPv6) Address Selection

- Currently
  - IPv6 link-local & Unique Local Addresses (ULAs) paired with all IPv6 candidates
  - No text about loopback candidates
  - Relayed candidates are paired with private IPv4 address space (e.g., 10.x.x.x) candidates and IPv6 ULAs and and link-locals

(IPv6) Address Selection

- Proposal
  - MUST NOT use loopback or deprecated candidates
  - MUST pair link-locals only with link-locals
  - Use OS API (if available) for priorities
  - Pair ULAs only with ULAs and globals
    - Option #2: ULA-globals as low-priority
  - Don't pair relayed with IPv4 private address space or IPv6 link-local addresses or ULAs

  (from draft-keranen-mmusic-ice-address-selection-01)

ice-option: willing and/or able?

- Currently: unclear if option tag in the offer/answer means that one **can** or **will** do that
  - Relevant for Trickle ICE
- Proposal: clarify that it's "can **and** will"
  - rtp+ecn already does this
- Option #2: additionally separate tag for "can do" (will do only if the peer wants)

Check Pacing (Background)

- For non-RTP traffic, current min 500ms
  - (Overly) "safe choice"
  - Poor performance (slow to start checks)
  - Implementations seem to ignore the MUST
- Concerns
  - Creating new NAT bindings too fast
  - Port consumption
  - Congestion control

Check Pacing Concerns

- Creating new NAT bindings too fast
  - faster than 20ms often fails
- Port consumption
  - NAT (esp. CGN) may run out of ports
  - Need to (further) limit candidate count?
    - Currently RECOMMENDED max 100 candidates
- Congestion control
  - Don't use more bandwidth than the data?

Check Pacing Proposal

- MUST NOT set lower than 20ms
- RECOMMEND 100ms if no better info
  - Or 50ms as with browsers?
- MAY use external information if available or RTP-like formula
  - Appendix on this topic?
- Signal pacing value in offer/answer: pick higher of the two

Updated Offer

- When ICE is finished, send new SDP offer/answer with the selected candidates?
- Currently: only if different from default
- Pros for always
  - More consistent behavior for middle boxes
- Pros for never
  - Issues with 3rd Party Call Control and fax (draft-elwell-ice-updated-offer)

Updated Offer Proposals

- Proposal #1: always
- Proposal #2: never
- (#3 need more work?)

To-Do

- SDP-split still work-in-progress
- General extensibility considerations
- Backward compatibility signaling?
- Other issues
  - looking forward to your comments
- WG adoption