Multiparty Multimedia Session Control Working Group

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  – You MUST disclose any IPR you know of relating to the technology under discussion

• References:
  – RFC 3978 (updated by RFC 4748), and RFC 3979
  – “Note Well” text
## Agenda

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Introduction and Progress Report

Ott/Perkins/Mulé
Working Group Status

- Published
  - draft-ietf-mmusic-sdp-bfcp-03.txt → RFC 4583
  - draft-ietf-mmusic-fec-grouping-05.txt → RFC 4756
  - draft-ietf-mmusic-sdp-media-content-06.txt → RFC 4796

- With RFC Editor:
  - draft-ietf-mmusic-sdpng-trans-04.txt
    (Revised ID Needed?)

- With IESG:
  - draft-ietf-mmusic-securityprecondition-03.txt
    (Revised ID Needed per ID Tracker)
Working Group Status

• Done:
  – draft-ietf-mmusic-connectivity-precon-02.txt
    • Waiting for ICE
  – draft-ietf-mmusic-ice-14.txt?
  – draft-ietf-mmusic-sdp-capability-negotiation-reqts-01.txt?
  – draft-ietf-mmusic-sdp-capability-negotiation-05.txt?

• Dead:
  – IMG related drafts
  – RTSP/2.0?
    • Need help to finish this!
    • Three individuals expressed interest in reviewing and helping resolve open issues; review team will be formed in April 2007 with regular calls
Future Directions

• Finish ICE, ICE-lite, and ICE-TCP!

• Finish media capability negotiation
  – Requirements considered done
  – Base specification close to done
    • Tie in to best effort SRTP and RTPSEC BOF
  – Media negotiation draft proposes significant extensions
    • How much flexibility/complexity do we want?

• Advance other documents in wg charter
• Re-charter to consider future directions
ICE

Rosenberg

draft-ietf-mmusic-ice-14.txt
draft-ietf-mmusic-ice-tcp-03.txt
Changes since -13

• Countless organizational and wording changes to improve readability (thanks Ekr, Dan)
• Spec was inconsistent on when you include candidates
  – All but port=0?
  – All but a=inactive?
  – Now clear that its all but port=0
• Included note saying the first m-line should be most important – its checked first
• For STUN servers – if you learn them through DNS, use the same one for all queries for this session
  – Makes sure the foundations are identical – otherwise frozen algorithm is suboptimal
Changes since -13

• Added error case: if TURN query fails during gathering, revert to regular STUN
• Changed a=inactive vs. 0.0.0.0 from SHOULD to MUST
  – ICE really doesn’t work with 0.0.0.0
• Not requiring subsequent offers to contain peer-reflexive candidates that you have learned
  – Will slow down ICE if you include them and don’t otherwise want to
  – Only reason to include is some really corner topology cases identified by Philip
Changes since -13

• When you send an updated offer in Completed state, now you MUST only include your selected candidate pairs
  – Used to be SHOULD – but there is never a reason to send anything but

• Fixed race condition:
  – Controller sends USE-CANDIDATE, and is using the aggressive mode
  – Controlled party stops retransmitting all checks
  – Packet loss causes inconsistent view on whether a higher priority check (that had USE-CANDIDATE) succeeded
  – Fix is: only cease retransmits on lower priority pairs
Changes since -13

- If a controller uses an aggressive algorithm, once one is selected, it waits 1 second before updated offer
  - Might be transient selected pairs, gives it time to stabilize
  - Updated offer is not needed to send media, just fixup for intermediaries, so waiting as long as 1 second is fine

- Biggest change: delayed answer in remote-candidates race case
This arrives with an a=remote-candidates. If there is a symmetric NAT between offerer and answerer, the value in there may not yet be known to the answerer, so it cannot include a candidate attribute in the answer. This used to not matter – omit it – but now we require a match of candidates and m/c-line to deal with SBC. So answerer needs to delay answer till check completes. Note this has no impact on media delays.
Changes since -13

• Added text hinting how RTP/RTCP mux would work
• Documented how ICE and ANAT work together
Recent Bug not Addressed in -14

• ICE assumes you always have one agent as controller, one as controlled
• This is true for ‘normal’ cases and for the four 3pcc flows in RFC 3725
• However, there are 3pcc and application flows that end up with:
  – Both ends thinking they are controller
  – Both ends thinking they are controlled
• ICE will currently fail badly in both cases
  – In the former, disagreement on selected candidates and glared invites
  – In the latter, non-conclusion on ICE
Fortunately, fix is easy

• For both agents as controller
  – If a controlling agent gets a USE-CANDIDATE in a STUN request it receives, we’ve detected this
  – Solution is: reject request and make controller/controlled decision based on tie-breaker (largest ufrag wins controller role). Proceed.

• For both agents as controlled
  – Checks will complete and there is never a USE-CANDIDATE
  – Solution is: 500ms after completion of all checks, if you don’t get a use-candidate, make a tie-breaker decision as above. Proceed.
ANAT

• There is definite overlap between ICE and ANAT, and also SDP capability negotiation

• ICE Alone
  – For each media stream include v4 and v6 candidates
  – Prioritize them as needed (v6 first, then v4)
  – Can include multiple v6 candidates
  – Selection will be based on priority and connectivity
  – In cases where v6 path is broken, will fall back to v4
  – Requires a re-invite to ‘fix-up’ SDP if v6 is selected and v4 was in m/c-line
  – Can use custom selection algorithms to take delay into consideration also

• ANAT Alone
  – Include two m-lines and a Require header in INVITE
  – Select v6 if other side is v6-capable, else v4
  – Reinvite needed if remote side doesn’t support ANAT
ANAT

• ICE+ANAT
  – Include two m-lines, one for v4, one for v6
  – V4 m-line includes v4 candidates
  – V6 m-line includes v6 candidates
  – Choose highest priority v6 candidate if one works, else highest priority v4 candidate
  – Re-invite required if remote side doesn’t support ANAT, and also if selected candidate doesn’t match m/c lines

• SDP Cap negotiation
  – Include v6 IP address as a high priority capability
  – Will be similar to ANAT but better in that it allows for graceful fallback without a Require header field

• SDP Cap Negotiation + ICE?
  – Could use ICE to drive connectivity-based selection of potential configs
  – But this is really complicated – no clear need
ANAT

• Question:
  – What is our recommendation for dual-stack hosts to do v4/v6 selection?
    • ANAT alone
    • ICE alone, deprecate ANAT
    • ICE+ANAT
    • SDP Caps, deprecate ANAT
  – Where is this recommendation documented?

• Proposal
  – Transport address selection is always better dynamically than statically
  – Have ICE obsolete ANAT, remove section on ANAT interaction
    • Note that no other changes are required – ICE always allowed for multi-address candidates
  – Document v4/v6 application in the SIPPING transition document
ICE-lite

- Need to make sure we are happy with the way ICE and ICE-lite relate
- My view is:
  - All normative text for supporting ICE-lite is in ICE, it cannot be separate
  - ICE-lite spec serves as an informational document to assist ICE-lite implementors find what parts of ICE they need to read by explaining things and pointing into ICE
ICE-TCP

• Major changes in this draft
• Removed TLS entirely
  – ICE is about transport connections
  – Whether a TCP connection is used for TLS or not is signaled in m-line
  – If you want to negotiate TCP or TLS use our new capability negotiation draft, not ICE
• ICE-TCP requires a full implementation of ICE, not lite
• If default is UDP, and a TCP candidate is meant as a TLS alternate, include fingerprint attribute
• If a TCP candidate is for TLS, the fingerprint attribute is present in the initial offer
  – This allows you to verify fingerprints immediately
  – Previous spec only did this in re-invite – introducing clipping for TLS. No longer
ICE-TCP

• Previously, from each simultaneous-open and passive local candidate, you’d obtain a relayed candidate
  – Unclear whether relayed candidates were s-o or passive
  – And unnecessary to obtain relayed from BOTH s-o and passive local – both have same bases
  – So, fixed this

• Relationship to comedia now clear
  – Comedia attributes included only when default candidate is tcp, to allow backwards compatibility with non-ICE peers
  – Comedia is not used in any way with ICE itself

• Regular selection (not aggressive) is required for TCP candidates
ICE-TCP

• ICE restart interaction with connection management is clarified
  – Keep selected connection open
  – Redo checks
  – If previous connection is re-selected, continue using, else close

• Connection management overall clarified
  – Can close a connection at any time – just reopen and reuse without ICE checks
    • Bug in the spec, I think – what if connection creates new IP/ports. Perhaps we need STUN?
  – If connection cannot be reopened, do a manual restart of ICE
ICE-TCP Issues

• Issue #1: If S-O TCP is used with TLS, who sends ClientHello?

• Choices
  – Define new tls-act/pass/actpass attribute like comedia’s
    • But applies only to TLS
  – Controlling agent always sends
    • Won’t work in cases where one end is a gateway or other device that has a cert, and other side doesn’t
  – Reuse comedias attributes
    • Semantics are subtly different though

• Proposal
  – Define new attributes and add to ice-tcp
ICE-tcp Issues

• Issue #2: Can we use session resumption with TLS when connections close, and if so, how to signal?
• Answer:
  – Apparently yes, without any documentation
  – Proposal: just remove open issue text, add a comment that resumption will get used
Plan of Action

• Issue ICE-15 with
  – List comments on -14 (all minor)
  – Bug fix for controller/controlling mismatches
  – ANAT resolution
• ICE-15 gets issued this week or some dire punishment gets laid on me by the group
  – Removal as editor
  – Banned from submitting new drafts
  – Owe Colin/Joerg/J-F an expensive bottle of wine
  – Etc.
• ICE-tcp update shortly. Are we ready for WGLC?
• Issue WGLC on ICE-15 immediately upon issuance
  – And a request to group: Please do not nitpick this draft to death with WGLC comments
  – It has had an amazing amount of review and revision already, it needs to be finished more than anything else
ICE-lite

Rescorla

draft-rescorla-mmusic-ice-lite-00.txt
In San Diego we agreed we would do an “ice for gateways”

Assumptions:
- You have a public IP address
- You don’t want to bother with timers, check lists, etc.
- But you do want to do ICE

You also don’t want to bother reading the entire ICE spec

This document attempts to fill that need
Overall strategy

• Provide an overview of how ICE-lite works

• For each feature:
  – Provide an overview of the ICE-lite behaviors
  – Reference the specific ICE sections you need to implement
    • This means the document does not stand alone

• Open issues
  – Should we provide complete descriptions so you don’t have to read ICE at all?
  – Should this be the normative description of ICE-lite or is that in ICE?
SDP Capability Negotiation

Andreasen

draft-ietf-mmusic-sdp-capability-negotiation-05.txt
draft-ietf-mmusic-sdp-capability-negotiation-reqts-01
IPR Statement

• Cisco is the owner of one or more pending unpublished patent applications relating to the subject matter of "SDP Capability Negotiation" <draft-ietf-mmusic-sdp-capability-negotiation-05.txt>.
  – See https://datatracker.ietf.org/public/ipr_detail_show.cgi?ipr_id=761

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Since Last IETF

• Formed Design Team consisting of
  – Roni Even, Robert Gilman, Matt Lepinski, Joerg Ott, Colin Perkins, Thomas Stach, and Flemming Andreasen

• Additional input and feedback from
  – Francois Audet, John Elwell, Cullen Jennings, and Dan Wing

• Weekly conference calls from 12/12/06 to 2/27/07
  – Adopted <draft-andreasen-mmusic-sdp-capability-negotiation-01.txt> as starting point
  – Split document in two
    • Requirements: Initial design team focus
    • Solution document: Based on requirements document
**Documents**

- **Requirements**
  - draft-ietf-mmusic-sdp-capability-negotiation-reqts-01.txt
  - Main guiding principles
    - Provide a general purpose capability negotiation mechanism
    - Avoid undue complexity or scope creep for people that need only negotiation of transport protocols and associated attributes
  - Stabilized pretty quickly; divided requirements into
    - Core: All implementations must support
    - Extensions: Optional to implement
  - Ended up moving media requirements to “extensions” in order to have a small and focused “core”
    - More rapid progress towards mature solution
- **Ended up with two solution documents per the above**
  - SDP Capability Negotiation
    - draft-ietf-mmusic-sdp-capability-negotiation-05.txt
    - This is the “core” document
  - SDP Media Capabilities Negotiation:
    - draft-ietf-mmusic-sdp-media-capabilities-01.txt
    - An “extension” document
SDP Capability Negotiation (Core)

- Provides capabilities for the following
  - Attributes
  - Transport protocols
- Allows for those capabilities to be used in SDP Capability Negotiation
  - Potential Configurations provided in offer SDP
    - Each potential configuration references one or more capabilities
  - Answerer may pick one of the potential configurations from the offer and negotiate use of it as the actual configuration
    - Actual configuration chosen indicated in answer SDP
- Extensions supported via option-tags that can be required or just listed as supported
Open Issues in Core

• There aren’t any known open issues in the spec per-se, but the following is worth discussing
  – Add, replace, delete semantics for attributes
  – Inconsistent media-level selection of session-level capabilities
Background Information

• Conceptually, potential configurations are formed by purely syntactical operations on an offer SDP:
  – For each potential configuration, create a “potential configuration SDP” consisting of
    1. The original SDP
    2. For transport protocol capabilities included, replace the transport protocol (e.g. “RTP/SAVP”) in the “m=” lines
    3. For attribute capabilities included, add the attributes to the original SDP
  • Use this potential configuration SDP as the potential offer

Actual Configuration SDP

```
v=0
o=- 25678 753849 IN IP4 192.0.2.1
s=
c=IN IP4 192.0.2.1
t=0 0
m=audio 53456 RTP/AVP 0 18
a=tcap:1 RTP/SAVP RTP/AVP
a=acap:1 a=crypto:1 AES_CM ...
a=pcfg:1 t=1 a=1
```

Potential Configuration SDP

```
v=0
o=- 25678 753849 IN IP4 192.0.2.1
s=
c=IN IP4 192.0.2.1
t=0 0
m=audio 53456 RTP/SAVP 0 18
a=crypto:1 AES_CM ...
```
To Add, Replace or Delete Attributes

- Problem with just adding attributes
  - There may be attributes in the potential configuration SDP that redefine an existing attribute value
    - Example: An “a=rtpmap” that assigns a different codec to a given payload type
  - There may be attributes in the potential configuration SDP that contradict the added ones
    - Example: Direction attributes (“sendonly” and “sendrecv”)
  - There may be attributes in the potential configuration SDP that overlap the added ones
    - Example: key-mgmt and crypto attributes (use only one)
  - There may be attributes in the actual configuration SDP that you don’t want in a particular potential configuration SDP
    - Example: ICE candidates when you select a transport protocol that you do not want to run over UDP or TCP (e.g. T.38 over TCP versus PCMU over RTP)

- We do not want the SDP Capability Negotiation layer to try and sort these out
  - SDP Capability Negotiation would need to be aware of all SDP attribute, etc. semantics
  - Extensibility (e.g. new attributes) would be problematic
To Add, Replace, or Delete Attributes

v=0
o=- 25678 753849 IN IP4 192.0.2.1
s=
t=0 0
c=IN IP4 192.0.2.1
a=key-mgmt:mikey AQAFgM0XflA...
a=acap:1 a=key-mgmt
a=tcap:1 RTP/SAVP RTP/AVP RTP/AVPF
m=audio 59000 RTP/SAVP 98
a=rtpmap:98 AMR/8000
a=candidate:1 1 UDP 2130706178
a=candidate:2 1 UDP 1694498562
a=candidate:3 1 tcp-act 1706178213
a=acap:2 a=crypto:1 AES_CM_128_...
a=pcfg:1 t=1 a=-1,2
a=pcfg:2 t=2 a=-1
a=...
To Add, Replace or Delete Attributes

• Solution 1
  – Keep existing attributes and establish rules for how to deal with attributes added. For example:
    • Add all attributes at the beginning
    • For existing well-known attributes, specify rules that say to ignore subsequent attributes that redefine or contradict an existing value (e.g. rtpmap, fmtpl, sendonly/recvonly)
    • Keep your fingers crossed for the rest
  – Pros:
    • Little text in spec (i.e. it looks simple)
    • Appealing if all you care about is a limited well-known problem
  – Cons:
    • Fuzzy semantics once we get into extensions (interoperability problem)
    • Does not address all well-known problems (e.g. key-mgmt versus crypto)
To Add, Replace or Delete Attributes

• Solution 2
  – Delete all attributes from the actual configuration SDP
  – Require the potential configuration SDP to add all necessary attributes
  – Pros
    • Clean semantics
    • Easy to understand and implement
  – Cons
    • All actual configuration attributes of relevance to a potential configuration will have to be duplicated as attribute capabilities
      – Message size concern, e.g. consider keying material, ICE candidates, etc.
      – Not clear we can always reconstruct the SDP we actually want
        » Consider grouping framework which spans both the session and media-level
      – Magnus’ 10k SDP ("How big can SDP get", MMUSIC, 5/17/06)
To Add, Replace or Delete Attributes

• Solution 3
  – Keep existing attributes
  – Provide mechanisms to remove one or more of the existing attributes
    • This is what is specified in the current solution
      – Allows all attributes at session and/or media level to be removed
      – Allows attributes with a particular name to be removed
  – Pros
    • Clean semantics
    • Provides decent message size efficiency
    • Addresses well-known problems and provides for extensibility
  – Cons
    • Probably not that simple to understand and use
      – Implementer has to know what he is doing
      – Currently specified mechanism effectively allows fallback to solution 2 though
To Add, Replace or Delete Attributes

• Recommendation
  – Solution 3
    • Is current specification for this adequate?
    • Should we extend DELETE/REPLACE to
      – Have specific rules for rtpmap and fmp parameters (include payload type or media format?)
        » Would allow for more efficient replacement of those values
      – Allow for string-based matching of attribute name and value as opposed to just attribute name
        » Would allow for more targeted deletion and/or replacement of attributes
Inconsistent media-level selection of session-level capabilities

- Attribute capabilities can be present for the session-level and media-level
- Potential configurations are present at the media-level
  - The potential configuration applies to that media description
  - Can select media-level attribute capabilities
  - Can select session-level attribute capabilities
    - In case of two different media descriptions, each media description may select different session-level attributes.
    - It is possible, that inconsistent (or conflicting) session-level attributes could be selected as a result of that
Inconsistent media-level selection of session-level capabilities

• Possible solutions
  1. Disallow use of session-level attribute capabilities
     – Significant restriction
     – Would not enable session-level key-mgmt, diffie-hellman, etc.
  2. Add warning text in draft and encourage use of media-level attribute capabilities only, whenever possible
     – Clearly, there will still be room for errors here
  3. Add a mechanism to be able to specify attribute capabilities that are mutually exclusive (constraints)
     – More complexity
     – Still seems to address only a subset of the general problem
       – Constraints on combinations of multiple attributes and/or possibly related to other capabilities (e.g. transport)
       – Constraints between media descriptions
SDP Capability Negotiation

• Next Steps
  – We have a solution that satisfies the requirements at this point
  – Issue update addressing the comments raised on the list
    • Are we then ready for WGLC?
SDP Media Capability Negotiation

Even

draft-ietf-mmusic-sdp-media-capabilities-01.txt
Media Capabilities

• Extends the base capabilities negotiation for RTP based media

• Codec definition can be very complicated
  – Simple media codec
  – Redundancy codecs (like FEC)
  – Composite like layered codecs

• Work is trying not to cover every combination (not H.245)
Solution model

- Unique codec numbers at session level
- Configuration parameters for rtpmap and fmtip associated with one or more codec numbers
- Map on the media level the codec numbers to RTP payload types assigning parameters from the configuration parameters.
Extends capability negotiation - example

- Adds media negotiation attributes
  
  a=creq:v1
  a=cmed:1 audio AMR AMR PCMU AMR
  a=cmed:5 video H263
  a=cenc:1,2 8000/1
  a=cenc:4 16000/1
  a=cfmt:1,4 max-red=220
  a=cfmt:2,4 octet-align=1
  a=lcfg:1 m=5
  m=audio 3456 RTP/AVP 0 97
  a=rtpmap:97 AMR/16000/1
  a=fmtp:97 mode-change-capability=2; max-red=220
  a=pcfg:1 m=1|2 pt=1:100,2:101
  a=pcfg:2 m=3|4 pt=3:102,4:103
Open issues

- The work extends the basic capability negotiation whose full scope is not finalized.
- Address RTP based media – is this enough
- Final format is still open to suggestion – please review
Media Decoding Dependency

Schierl
draft-schierl-mmusic-layered-codec-03.txt
draft version 01, 02: Changes

- Extended and more precise definition and use-case sect.
- Extended section on Offer/Answer, declarative usage
- Removed SSRC mux in -02, also removed from (related) draft on RTP Payload for SVC – draft-ietf-avt-rtp-svc-01
- Original SSRC mux use-case for SVC: Adaptation of encrypted and authenticated content without being in the security context.
- Found out: Is not possible, since RTCP feedback is also authenticated within SRTP
- That means: Not possible to cover full SRTP functionality
- Remaining use-case: Adaptation of media stream without parsing Payload header in strongly restricted use-cases
Open issues/TBD:

• Should we re-think the SSRC discussion? See next presentation: draft-lennox-mmusic-sdp-source-attributes-00
• TBD: Capability Negotiation interaction/issues
• Planned: Integration of mechanism proposed in draft-schmidt-mmusic-media-dependency-00 indicating relations between medias of different types, e.g. subtitling text stream for a video stream

• I like to ask for working group status, since basic mechanism (SDP dependency grouping + dependency attrib.) seems to be stable
Source-Specific Media Attributes

Lennox

draft-lennonx-mmusic-sdp-source-attributes-00.txt
Source-Specific Attributes: Review

- RTP allows multiple sources in an RTP session, but SDP has no way to signal this.
- Solution: define an SDP attribute for characteristics of a source.

```
m=video 49170 RTP/AVP 96
a=rtpmap:96 H264/90000
a=ssrc:12345 cname:user@example.com
a=ssrc:12345 information:Main camera
a=ssrc:67890 cname:user@example.com
a=ssrc:67890 information:Alternate camera
```

- Map SDP “source-specific” attributes into the `ssrc` attribute.
- This generalizes material that was previously in the RTP Single-Source Multicast draft.
Motivation

- Avoid clashes with the SSRC id of a single media sender.
  - This is needed for Single-Source Multicast.
- Make SSRC multiplexing explicit.
  - Describe, and differentiate between, multiple SSRCs from the same participant in the same RTP session.
  - Examples:
    - Multiple cameras
    - FEC
    - Retransmission
    - Layered codecs
Open Issues

• What does this mean for RTP collision detection?
  – Discussed in AVT.

• What source-specific attributes should be defined?
  – Define as needed: don’t inherit blindly from media level

• Should it be possible to select individual sources with offer/answer?

• IANA registration issues
  – Some media-level parameters (group semantics, bwtypes) are re-used at the source level.
  – Do they need a separate IANA registry?
Open Issues 2

- MIKEY (RFC 3830, signaled in SDP with RFC 4567) also specifies SSRCs in SDP.
  - Proposal: if you use both, they MUST be consistent.
  - Does more need to be said?
- Needs to work with capability negotiation.
  - Negotiate capabilities of a source, or negotiate sources?
- Backward compatibility.
- Need to clarify this isn’t for combining different media types.
  - Don’t multiplex audio and video.
  - One payload type number space.
Next Steps

• How much of this do we need?
  – declaration/identification of an SSRC vs. further qualification/negotiation.

• Need to move quickly on the base spec (RTCP-SSM dependency).

• Should this be a working group item of MMUSIC?
The MSR Bandwidth Modifier

Dondeti

draft-hdesinen-mmusic-oa-send-bw-attr-02.txt
Offer/answer for optimized asymmetric reservation

- Offer from A
  m=video 34234 RTP/AVP 96
  a=AS:70 (Kbps) (A ← B)
  a=TIAS:64000 (bps) (A←B)
  a=maxprate:20 (A ←B)
  b= MSR:64000 (A→B)

- Answer from B
  m=video <->
  a=AS:70 (A → B)
  a=TIAS:64000 (A → B)
  a=maxprate:20 (A ←B)
  b= MSR:48000 (B→A)

[Note: Text in the parenthesis is for information purpose only. It is not part of the actual signaling]
We need a bandwidth modifier in ‘send’ direction to signal the asymmetric bitrates of a bi-directional (‘sendrecv’) stream. This is also useful to signal the max bitrate of a ‘sendonly’ stream.

Is it sensible to use MSR bandwidth modifier for the above?
Media Description for IKE in SDP

Saito

draft-saito-mmusic-sdp-ike-00.txt
Purpose

- Setting up IPsec (IKE) Using SIP
  - VPN to a home router (or NAT device), etc.

(1) INVITE Transaction → SIP Proxy
(2) IKE (Media Session) → Home Router
(3) Tunnel Mode IPsec

Remote Client → Home Network
Proposals

• Exchanging Fingerprint of Self-Signed Certificate for IKE Authentication
  – Same Concept as Comedia-tls (RFC4572)

• New Media Format Description “IKE”
  – m=application 500 UDP IKE

• New Attribute “udp-setup”
  – Similar to Comedia (RFC4145)
    a=udp-setup:active (IKE Initiator)
    a=udp-setup:passive (IKE Responder)
Configuring DiffServ using SDP

Polk

draft-polk-mmusic-dscp-attribute-01.txt
Summary

• Media Level Attribute
• For granularity of each stream within an offer/answer
• To be set by offerer or server in signaling path (in offer and in answer)
• Example:

```plaintext
v=0
o=alice 2890844526 2890844526 IN IP4 atlanta.com
c=IN IP4 10.1.3.33
t=0 0
m=audio 49172 RTP/AVP 0
a=rtpmap:0 PCMU/8000
a=dscp 46
m=video 51172 RTP/AVP 31 34
a=rtpmap:31 H.261/90000
a=rtpmap:34 H.263/90000
a=dscp 41
```
Changes in -01

1. Allow offerer to include “a=" line per stream without a value to indicate support for extension
2. Allow offerer to include dscp value to indicate which dscp of a multi-dscp plan a user happens to want for each stream (a gold/silver/bronze service)
3. Added a “/dscp-value” to the attribute per stream to be able to set RTCP dscp value too
   ‘a=dscp 46/11’ or ‘a=dscp 46 11’
4. Added TSVWG item ‘EF DSCP for Capacity Admitted Traffic’ ID as requirement here
5. Cleaned up some text
Remaining Open Issue

• Should there be a direction indication (send, recv, sendrecv)?
  – Will need use cases if wanted

• Is there sufficient interest in this to make it a WG item?
General observations...

- This is some kind of middle-to-end signaling
  - The local SBC signals to the endpoint
    - The rest of the SDP is more of less e2e though
    - Breaks end-to-end security
    - If we want to get something e2e at some point, will every have to implement both?
    - Feature interaction between multiple SBCs (who is the last hop)?

- Is this the first out of many things to come?
- What is the appropriate mechanism?
  - SDP signaling path? Media path? Some other signaling?