SDP Capability Negotiation

draft-ietf-mmusic-sdp-capability-negotiation-12.txt

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Progress and Current Status

- WGLC completed on -08 (end of 2007)
- Chair review resulted in -09 (mid 2008)
- General Area and Security Directorate review led to -10 (mid 2009)
- IESG review led to -11 and -12 (early 2010)
Quick Recap

• Problem:
  – SDP and Offer/Answer model provides only limited capability negotiation
  – Offer contains actual configuration and cannot specify alternative (potential) configurations
    • For example: RTP versus SRTP

• Solution:
  – Define backwards compatible SDP and Offer/Answer extensions for capabilities and capability negotiation
  – Base framework document (this one) defines basic capability negotiation framework including attribute and transport capabilities
  – Extensions allow for further capabilities and associated procedures (e.g. media capabilities)
Conceptual Model

SDP Offer (o1)
(actual configuration)

Capability 1
Capability 2
...

Potential config 1 (o2)
Potential config 2 (o3)
...

SDP Answer
(actual configuration, o2)
Example

Offerer

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/SAVPF RTP/SAVP RTP/AVPF
a=acap:1 crypto:1 AES_CM_128_HMAC_SHA1_80
   inline:WVNfX19zZWljdGwgKCGgew...
   a=acap:2 rtcp-fb:0 nack
   a=pcfg:1 t=1 a=1,[2]
   a=pcfg:2 t=2 a=1
   a=pcfg:3 t=3 a=[2]

Answerer

v=0
o=- 24351 621814 IN IP4 192.0.2.2
s=
c=IN IP4 192.0.2.2
t=0 0
m=audio 54568 RTP/AVPF 0 18
a=rtcp-fb:0 nack
a=acfg:1 t=3 a=[2]
Attributes Defined

- Version and Extension Indication Attributes
  - Supported Capability Negotiation Extensions Attribute (a=csup)
  - Required Capability Negotiation Extensions Attribute (a=creq)

- Capability Attributes
  - Attribute Capability Attribute (a=acap)
  - Transport Protocol Capability Attribute (a=tcap)
  - Extension Capability Attributes

- Configuration Attributes
  - Potential Configuration Attribute (a=pcfg)
  - Actual Configuration Attribute (a=acfg)
Important Changes from IESG Review

• Disallowed base framework only implementations from generating media-level attribute capabilities at the session-level
  – Also added explicit processing rules for how to process them if received (invalid potential configuration).

• Disallowed attribute capabilities from embedding capability negotiation parameters and discouraged extension capabilities from similar behavior
  – Illegal example: a=acap:1 acap:2 foo:a
  – Also specified non-recursive processing of capabilities on the receive side as a safeguard

• ICE (pending RFC 5245) reference changed to Normative status
  – Doesn’t mean you have to implement ICE to implement SDP Capability Negotiation
Important Changes from IESG Review

- ABNF changes to disallow more than 10-digit capability numbers
  - Syntax consistent with existing semantic restrictions
- Changed definition (and ABNF) for attribute-config-list (part of “a=pcf”) to allow for delete-attributes only
  - i.e., may not reference any attribute capabilities in “a=pcf”
- Removed recommendation to use the TIAS bandwidth type [RFC3890] and added note explaining why it should not be used
  - Currently no good way of specifying bandwidth for different potential configurations with different transport protocols
  - Worst-case bandwidth can be specified in actual configuration
  - Extensions can be defined to remedy this
Open Issues or Comments

• One suggestion to define a new “a=scap” attribute for session-level attributes instead of the current use of “a=acap” (Bob Gilman)
  – Base framework only implementations MUST NOT provide media-level attributes in session-level “a=acap”
  – Concern around SDP Capability Negotiation needing to understand whether attributes are session-level or media-level
    • Inherent SDP issue that does not go away merely by changing the syntax
    • SDP offerer would still need to ensure no media-level attributes in “a=scap”
    • SDP answerer would still need to validate that session-level attribute capabilities contain session-level attributes (valid potential configuration)
  – Concern about understanding whether invocation of session-level attribute applies to all media streams or not
    • Inherent issue with the attribute in question (e.g. “a=key-mgmt” with MIKEY)
    • Resulting potential configuration SDP looks exactly the same, whether it came from “a=acap” or “a=scap”.
  – Proposed resolution: No clear benefit, so no change
Open Issues or Comments

• One request for editorial clarification on transport capabilities provided at the session-level (Kevin Fleming)
  – Proposed resolution: Clarify text as suggested (“transport protocol” versus “transport protocol capability”)