

SDP Connectivity Capability (CCAP) Attribute

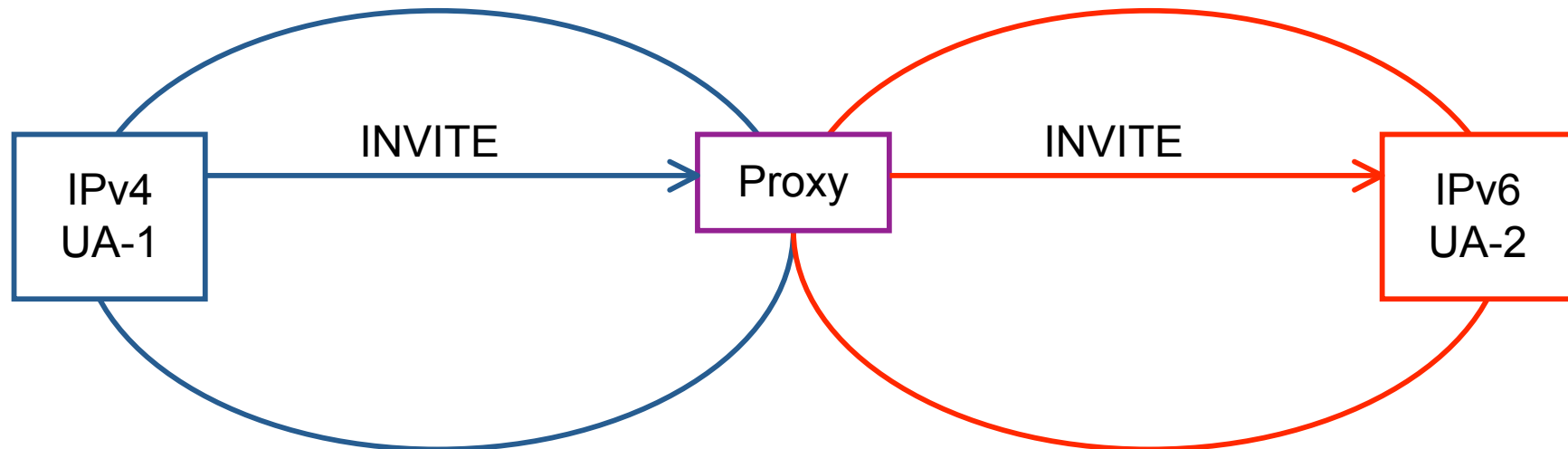
IETF 75, Stockholm

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The Problem

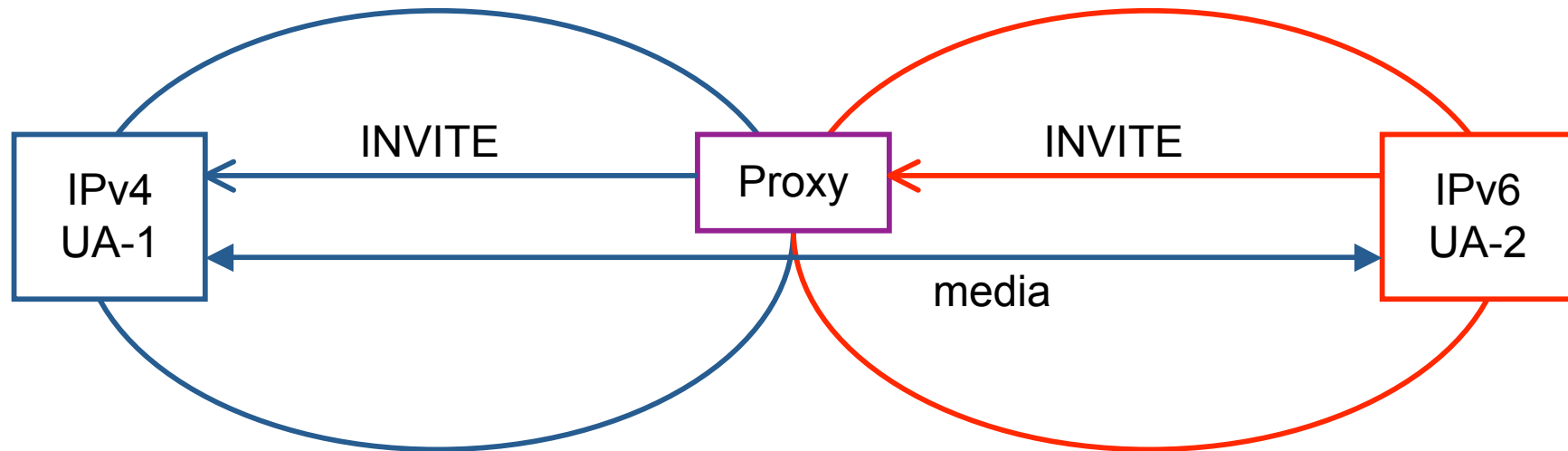
- ANAT is broken
 - Doesn't work with legacy IPv4 hosts
- ICE is heavy, rare, and there won't be a flag day to make all hosts speak ICE
- There are millions of legacy IPv4 SIP UA's
- IPv4 addresses are running out...

The SIPv6 Transition Problem



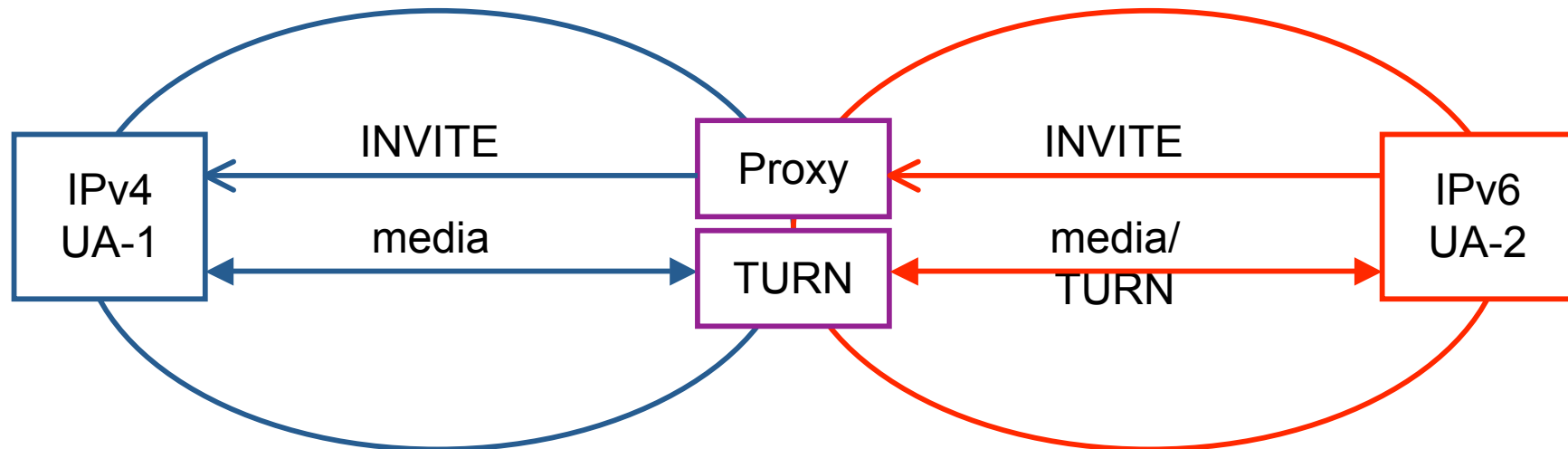
- The setup: UA-1 is a *legacy* IPv4 SIP UA, UA-2 is a new IPv6-only UA
- The problem: How does UA-1 talk to UA-2?

The SIPv6 Transition Solution-1



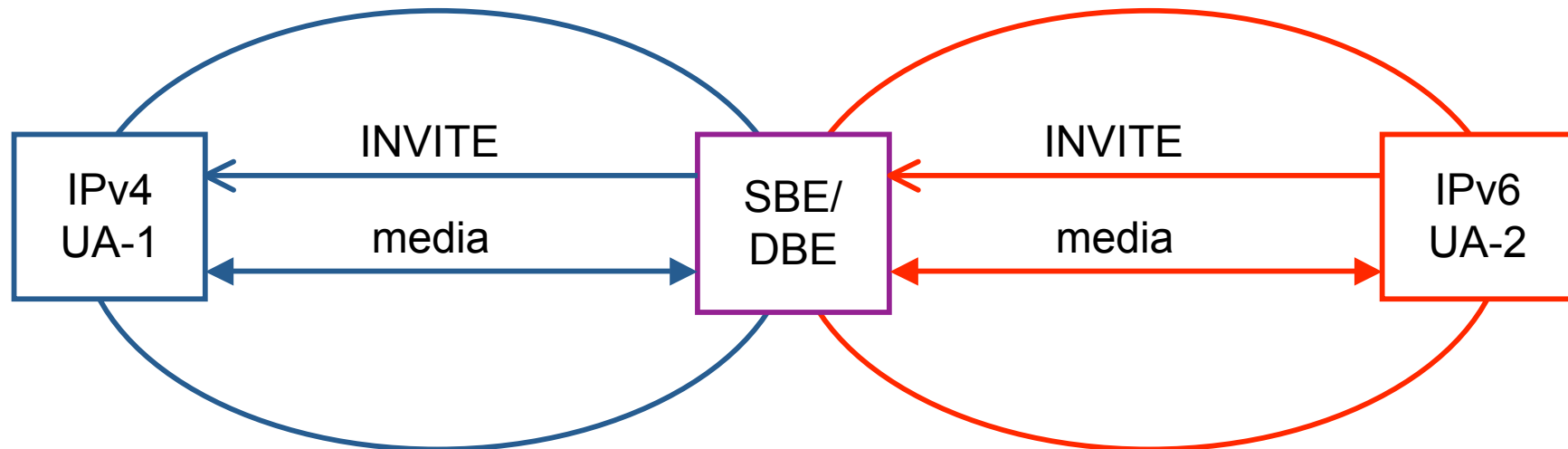
- Possible answer 1: UA-2 is dual-stack, ICE capable
 - Not *really* dual-stack, but possibly borrows a addr:port set
 - If it were really dual-stack, we wouldn't need IPv6
- So UA-2 does ICE using dual-address sets
 - Except, of course, UA-1 doesn't *do* ICE

The SIPv6 Transition Solution-2



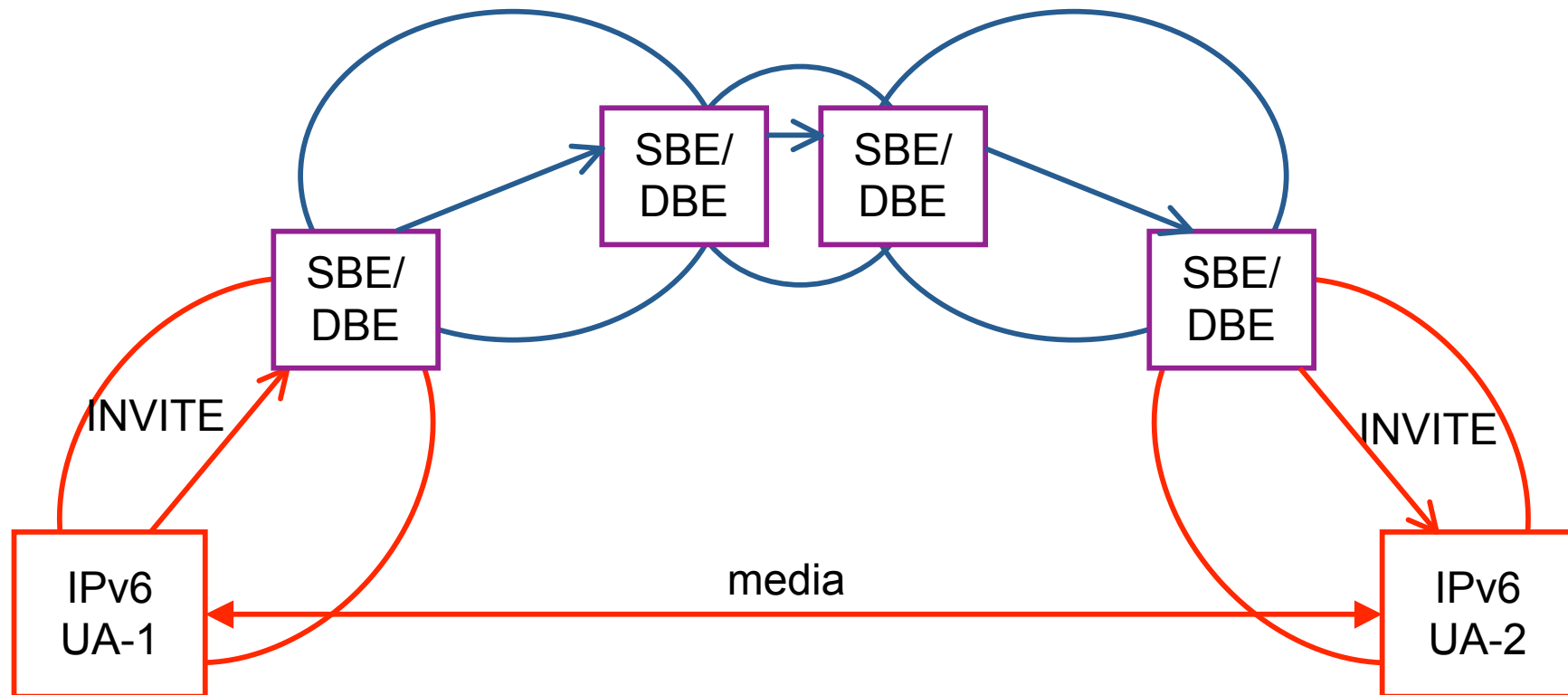
- Possible answer 2: UA-2 uses a TURN relay, no ICE
 - Similar to borrowing an IPv4 addr:port set
- So UA-2 can offer both addresses with TURN
 - How does it offer both v4/v6 addresses in SDP?
 - Since it doesn't know the call is going to IPv4, does it have to allocate TURN v4 relays *forever*?

The SIPv6 Transition Solution-3



- Possible answer 3: an SBE/DBE exists
 - SBC, P-CSCF/BGF, IBCF/BGF, “ALG”
- How it works
 - UA-2 offers IPv6
 - SBE/DBE changes it based on destination
 - UA-1 sees IPv4
 - DBE does v4-v6 interworking

(one) Real World Example



- How can we make this work/happen?

Problem Re-visited

- An SBE/DBE selecting media transport based on signaling transport works, but...
 - Media is always relayed, can never be end-to-end
- Help us help you...
 - SBE/DBE would like to offer both addresses
 - Leave the “common” one alone, add the other one

The Proposed Solution: ccap

- UA (or SBE/DBE) adds SDP ccap attributes of alternate address:port for media
 - Sets c/m lines to be the “Default” ones, in case far-end doesn’t do ccap
- Example:

```
o=- 25678 753849 IN IP4 192.0.2.1
c=IN IP4 192.0.2.1
m=audio 12340 RTP/AVP 0 8
a=ccap:1 IP6 2001:db8::1 45678
a=ccap:2 IP4 192.0.2.1 12340
```
- Base/default c/m addr:port also put into ccap
- Prioritized, based on preference
- SDP answer does *NOT* have ccap attributes
 - c/m-lines in answer are definitive

Interaction with other mechanisms

- Ccap does not depend on sdp-cap-neg
 - Sdp-cap-neg does not have c-line support
 - It *does* have m-line port number support
 - Proposed resolution: If conflict, sdp-cap-neg wins
- Ccap is orthogonal to ICE
 - UA can offer both
 - If both received in offer, ICE wins (if supported)

Related Work

- draft-garcia-mmusic-sdp-misc-cap-00
- Very similar concept (and same attribute name!)
- But, Boucadair-draft:
 - Does not tie ccap to sdp-cap-neg
 - Assumes different address also means different port
 - Ccap only at media level
 - Only for ccap, not other capabilities

ICE Attributes?

- Question: could we use “candidate” lines, without using ICE
- Our position: mixes oil and water
 - This isn’t even ICE-Lite, but even if it were: two ICE-Lite ends currently ignore ICE attributes
 - Legacy ICE UA’s receiving offer won’t know about this non-ICE thing, will assume ICE support
 - Will get messy, as middleboxes currently either ignore or remove ICE attributes

Benefits

- Simple
- Lightweight
- Backwards-compatible (“best-effort”)
- Submissive to ICE and sdp-cap-neg
- Enables IPv6 transition, where the starting point is legacy IPv4 UA’s without ICE
- Works with evil middleboxes

Connectivity Checks

- What if IPv6 doesn't work?
 - What if it fails during the session?
- Our view: that's a general problem for SDP-provided addresses, and this draft is not dependent on it
 - Solve generically elsewhere
- Ways to solve it: RTCP keepalives (which would be used during the entire session)

Open Issues

- Draft only offers 2 ccap's per media session
 - One for v4, one for v6
- Port number is bound to IP
 - Should it be left alone in m-line? (assumes it can always be the same port – not realistic)
- Doesn't discuss subsequent offers mid-session
 - Say anything?
- SDP answer does *NOT* include ccap (c/m-lines are definitive)
 - OK?

Discussion

Tag, you're it

- Currently, draft defines an option tag for Supported header
 - Probably not necessary, and we plan to remove
- Draft-boucadair-atypes defines a media-feature-tag, of which media IP families the UA supports
 - Lets UA Register that it can do v4/v6/both
 - Plan to move that into this draft in place of option-tag