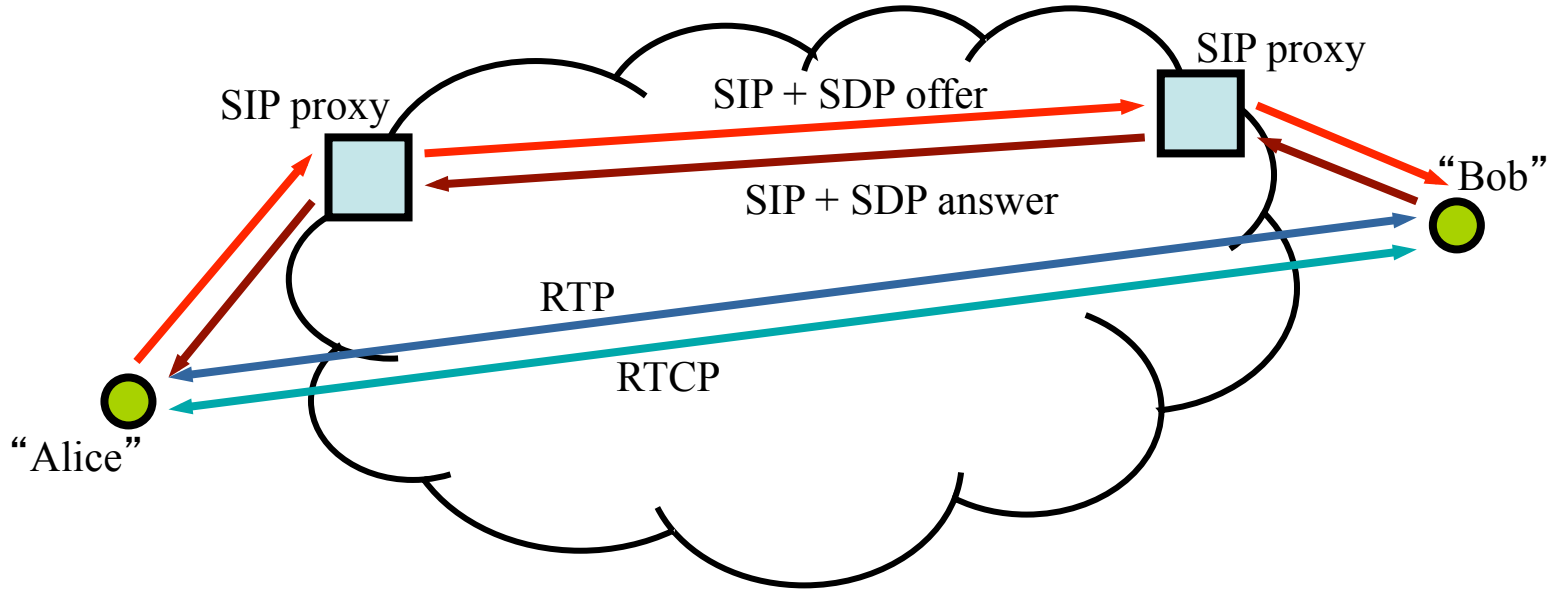
RTP over DCCP

Colin Perkins

draft-perkins-dccp-rtp-00.txt

UNIVERSITY
of
GLASGOW

RTP, SIP and SDP



- Initial application level signalling using SIP + SDP
  - Negotiate transport addresses, port, media formats, etc.
- Followed by RTP data
  - RTP media flows
  - RTP Control Protocol (RTCP)
    - Low rate reception quality statistics and lip-sync information

SDP Signalling

- Application-level connection establishment & feature negotiation in conjunction with SIP using offer/answer model

Offer

```
v=0
o=alice 1129377363 1 IN IP4 10.0.0.47
s=-
c=IN IP4 10.0.0.47
t=0 0
m=video 51372 DCCP/RTP/AVP 99
a=rtpmap:99 h261/90000
a=dccp-service-code:52545020
a=setup:passive
a=connection:new
```

SDP Signalling

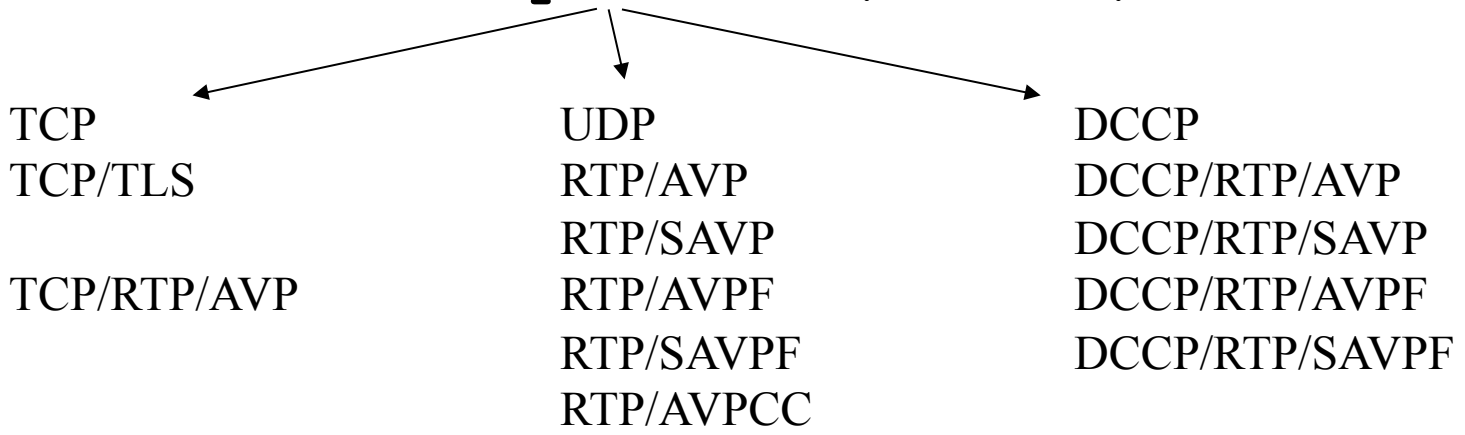
- Application-level connection establishment & feature negotiation in conjunction with SIP using offer/answer model

Answer

```
v=0
o=bob 1129377364 1 IN IP4 10.2.5.128
s=-
c=IN IP4 10.2.5.128
t=0 0
m=video 9 DCCP/RTP/AVP 99
a=rtpmap:99 h261/90000
a=dccp-service-code:52545020
a=setup:active
```

Protocol Identification

```
media-field = "m=" media SP port ["/" integer]
                    SP proto 1*(SP fmt) CRLF
```



- Proliferation of **`proto`** values unfortunate, but unavoidable
  - SIP folks will hate this, SDP limitation

- The **`fmt`** is either a MIME type or an RTP payload type

Service Codes

```
dccp-service-attr =
                    "a=dccp-service-code:" 1x8HEXDIG
```

- Conveys numeric value of DCCP service code in network byte order
- How to assign service codes?
  - Per RTP profile?
  - Per application?
- Propose: per-application, since application requirements vary
  - Allows use of common DCCP port for all RTP applications

Connection Management

```
setup-attr = "a=setup:" role
role = "active"/"passive"/"actpass"/"holdconn"

connection-attr = "a=connection:" conn-value
conn-value = "new"/"existing"
```

- Usual SDP connection management; nothing DCCP specific
- When using **`a=setup:active`** SHOULD specify port 9 (the "discard" port)
  - Not currently registered for DCCP
  - No IANA considerations for assigning DCCP ports
    - Need a new draft?

Framing RTP

- One RTP packet ⇒ one DCCP packet

- Keep DCCP connection open for duration of RTP session
- Send periodic zero-length DCCP-Data packet as NAT keep-alive
  - Removes need for RTP No-op
  - Do we need define NAT traversal for DCCP?
    - Might need a STUN for DCCP draft

- Partial checksums MAY be used

- MUST use congestion control
  - Note impact on applications
  - No explicit guidance

Framing RTCP

- RTCP SHOULD be used in usual manner
- One compound RTCP packet ⇒ one DCCP packet

- RTCP timing rules apply, but congestion control takes precedence
  - Unlikely to be an issue, since RTCP typically one packet every 5 seconds
  - RTP/AVPF may affect this

- Is RTP "session bandwidth" affected by congestion control?
  - How does this affect RTCP reporting interval?
  - Potential for inconsistent intervals?

- No real overlap between RTCP and DCCP feedback
  - Except RTCP XR loss RLE

Multiplexing Data and Control

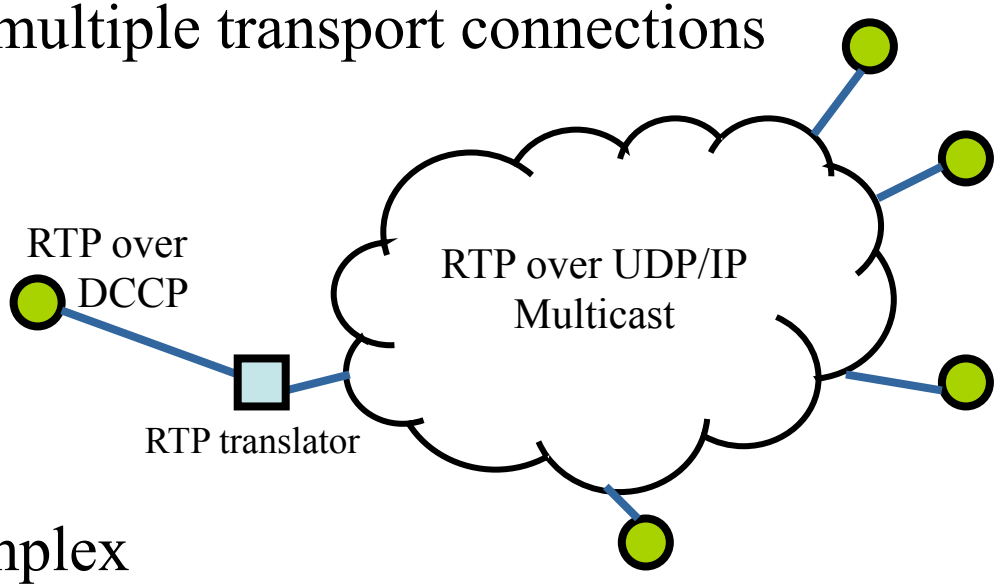
- Obvious mapping: two DCCP connections; one RTP, one RTCP
- But:
  - Large gateways frequently run out of UDP ports
  - Multiple ports complicates firewall/NAT traversal

- Multiplex RTP and RTCP onto a single DCCP connection?
  - Can use RTP Payload Type field to de-multiplex, with careful assignment

- Propose: require multiplexing
  - Give guidance on payload type assignment; translators to RTP over UDP

RTP Sessions and DCCP Connections

- An RTP session can span multiple transport connections
  - Translators
  - Mixers



- Mixers and translators complex
  - Different congestion control policies in each domain
  - Will likely need transcoding; layered coding

- Propose: document the issues, but don't give explicit guidance
  - Don't have the experience to give guidance

Other Questions or Comments?

Accept as DCCP work item?