

RTP Congestion Control

ICCRG subtopic

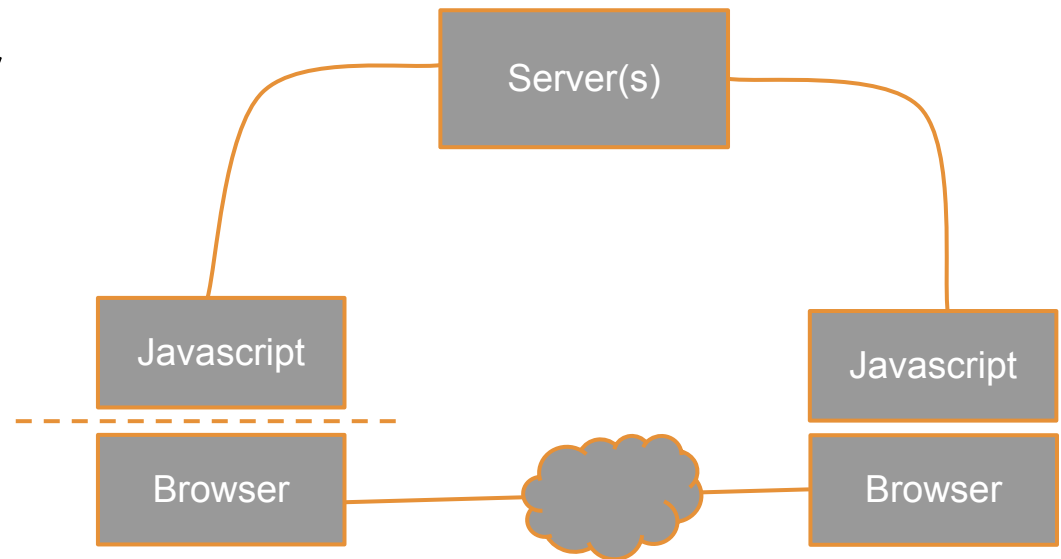
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Agenda

- Introduction: The RTCWEB effort, and the traffic we expect to generate (10 min)
- Nice behaviour for RTP-based services - Varun Singh, Colin Perkins (10 min)
- A delay based congestion control candidate - Stefan Holmer (15 min)
- Feedback mechanisms that might be useful (5 min)
- A possible WG charter: RMCAT (15 min)
- Summary, conclusions, next steps (5 min)

RTCWEB: The Context

- Browser to Browser Media
- <200 ms RTT
- Any network
- Media over SRTP over UDP
- Data over SCTP over UDP
- Deploys in 2012



We want to make generally applicable mechanisms if at all possible - CLUE and others see the same need

Desirable properties of RTCWEB

- Should not break the Internet
 - May result in significant traffic
 - Deployment will be "in the wild"
- Allow low delay, high quality communication
 - Multisecond delays are not acceptable
 - Use the bandwidth if it exists
- Degrade well under congestion
 - Consider the application as a whole
 - Application-level prioritization necessary
- Play nicely with others
 - Not crowd out TCP
 - Not get crowded out by TCP

Not a new area

- Has been investigated since Day One
 - Poster child for network reservation schemes
- Commercial deployments exist
 - Vendor-specific algorithms
- TFRC has been specified, but not deployed
 - Some variants have been deployed
 - Not that much experience shared

<Other presentations>

- Circuit-breakers
- Delay-based congestion control

A Feedback Mechanism

Approaches to compute nexus in CC:

- **Compute at Sender**
 - Requires all observations to be relayed back
 - Algorithm and sender decisions at same node
- **Compute at Receiver**
 - Allows feedback only when change is needed
 - Sender must obey instructions
 - Application can adapt within requirements
 - Sender must react appropriately to lost feedback
 - Needs a communication format

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REMB - Receiver Estimated Max Bitrate

```

0                               1                               2                               3
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|V=2|P| FMT=15  |   PT=206   |                               length   |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|                               SSRC of packet sender                    |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|                               SSRC of media source                      |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| Unique identifier 'R' 'E' 'M' 'B'                                     |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| Num SSRC   | BR Exp   | BR Mantissa                                   |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|   SSRC feedback                                                                    |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|   ...                                                                              |

```

- Reports on a set of SSRCs that make sense to report together
- Gives a total bitrate constraint across all the SSRCs
- Pre-standard format - useful for experimentation

REMB comments?

RMCAT charter

Problem area

- UDP media traffic with RTCP feedback
- Delay sensitive traffic
- Sharing congestion info across flows

Working method

- Requirements documentation
- Experimental mechanism publication
- Result evaluation
- Standards publication

Desire to have requirements and experiments by end of 2012 (may be optimistic by now)

Interested in working in this area?