RTCP Guidelines

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Why RTCP Guidelines...?

- RTP/RTCP provides a powerful toolbox for realizing adaptive applications
- Tailored to the nature of Internet communications

But: RTCP gets implemented only slowly

Yet: RTCP extensions invented for many purposes

And: Extensions sometimes appear redundant or are architecturally not in line with RTP

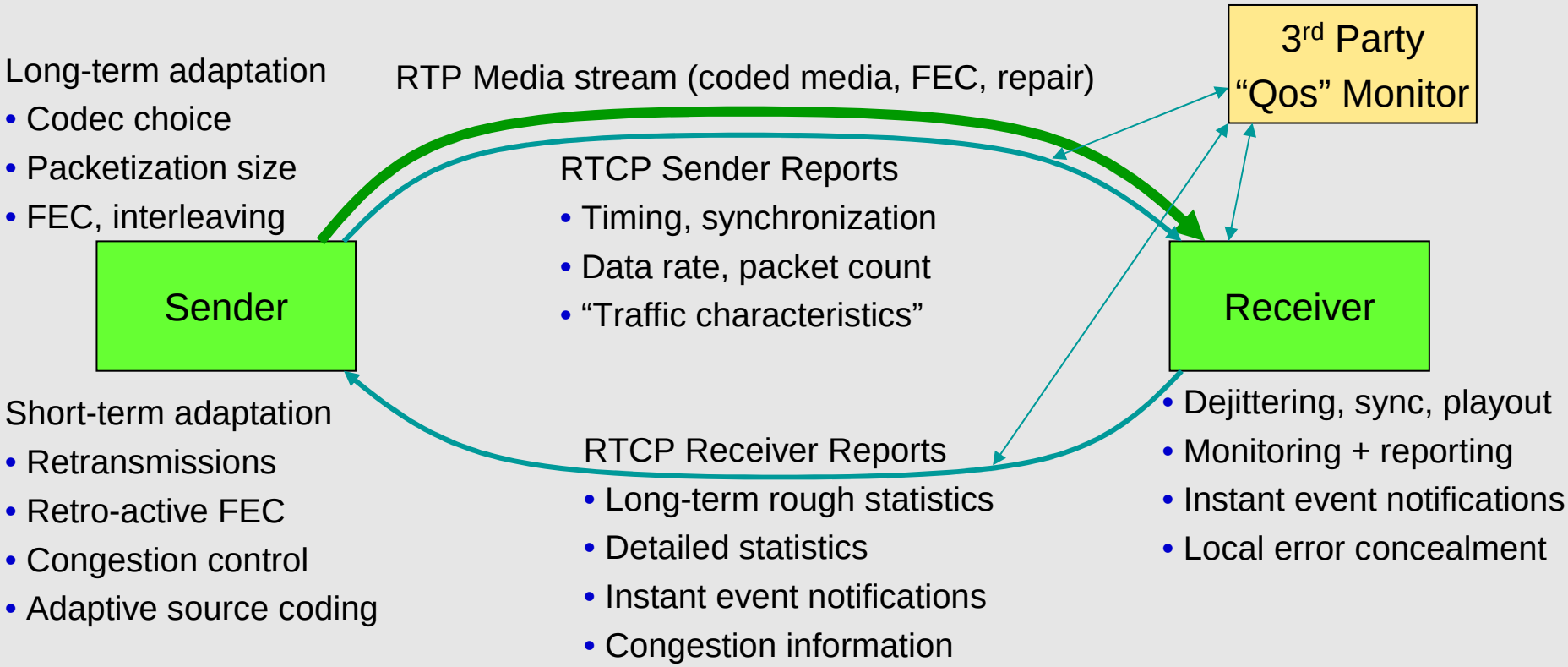
- Recap what RTP and RTCP can already do
- Discuss the fundamental limitations
- Give guidance on extending RTCP

RTCP Capabilities

- Sender and receiver reports [RFC3550]
  - (in “regular” intervals, typically ≥ 5s)
  - Reception statistics (cumulative, sliding mean)
  - Sender RTT
  - Receiver RTT with XR [RFC 3611]
- More timely feedback [RFC 4585]
- More frequent feedback
  - Adapt the RTCP bit rate [RFC 3556]
  - Reduce the mean message size [non-compound]
- Unicast, multicast (SSM, ASM)

RTP and RTCP Feedback Loop

- Adaptive real-time applications
  - Tunable feedback loop for individual and group communications
  - From reporting per 5s and more to event-driven to once per RTT



Fundamental RTCP Limitations

- RTCP provides only occasional feedback. There is no per-packet feedback.
- Feedback not truly instant: O(RTT) $\rightarrow$ O(seconds)
- RTCP is inherently unreliable

RTCP Extensions: Basic Checks

- How much of this can existing RTCP already do?
  - Think hard!
  - Avoid functional redundancy
- Is the extension really of general use for entities in the Internet?
  - Or is it just link-specific?
- …

Questions to ask and answer

- How will this new building block work with others?
- Will this work with all profiles?
- Is this in line with AVP or should this a new profile?
- Interoperability with non-extended nodes?
  - This includes mixed multicast groups
- Scalability across different networking conditions
  - Degradation with increased packet loss, latency, …
  - Group sizes, group dynamics – RTP is *fundamentally* a group communication protocol
- …

General Guidelines

- Think IP! Think groups! (and think semantics)
  - It’s a different network
  - Don’t re-create your favorite PSTN operation here
- Target re-usability
- Be precise and unambiguous and complete for all definitions
- Think about complexity
- Implicit local derivation vs. explicit signaling
- Soft vs. hard reliability
- …

Now, where to go with this…?

- This is a rough first draft.
- Is this document useful?
- Should a future version make it into a WG item?

- Please read and comment