The -avt-rtcp-xr-* drafts

draft-ietf-avt-rtcp-xr-burst-gap-discard-00, draft-ietf-avt-rtcp-xr-burst-gap-loss-00,
draft-ietf-avt-rtcp-xr-concsec-00, draft-ietf-avt-rtcp-xr-delay-00,
draft-ietf-avt-rtcp-xr-discard-00, draft-ietf-avt-rtcp-xr-jb-00,
draft-ietf-avt-rtcp-xr-loss-conceal-00, draft-ietf-avt-rtcp-xr-meas-identity-00,
draft-ietf-avt-rtcp-xr-pdv-00, draft-ietf-avt-rtcp-xr-postrepair-loss-00,
draft-ietf-avt-rtcp-xr-qoe-00, draft-ietf-avt-rtcp-xr-siglevel-00

IETF73, Minneapolis 16-21 Nov 2008
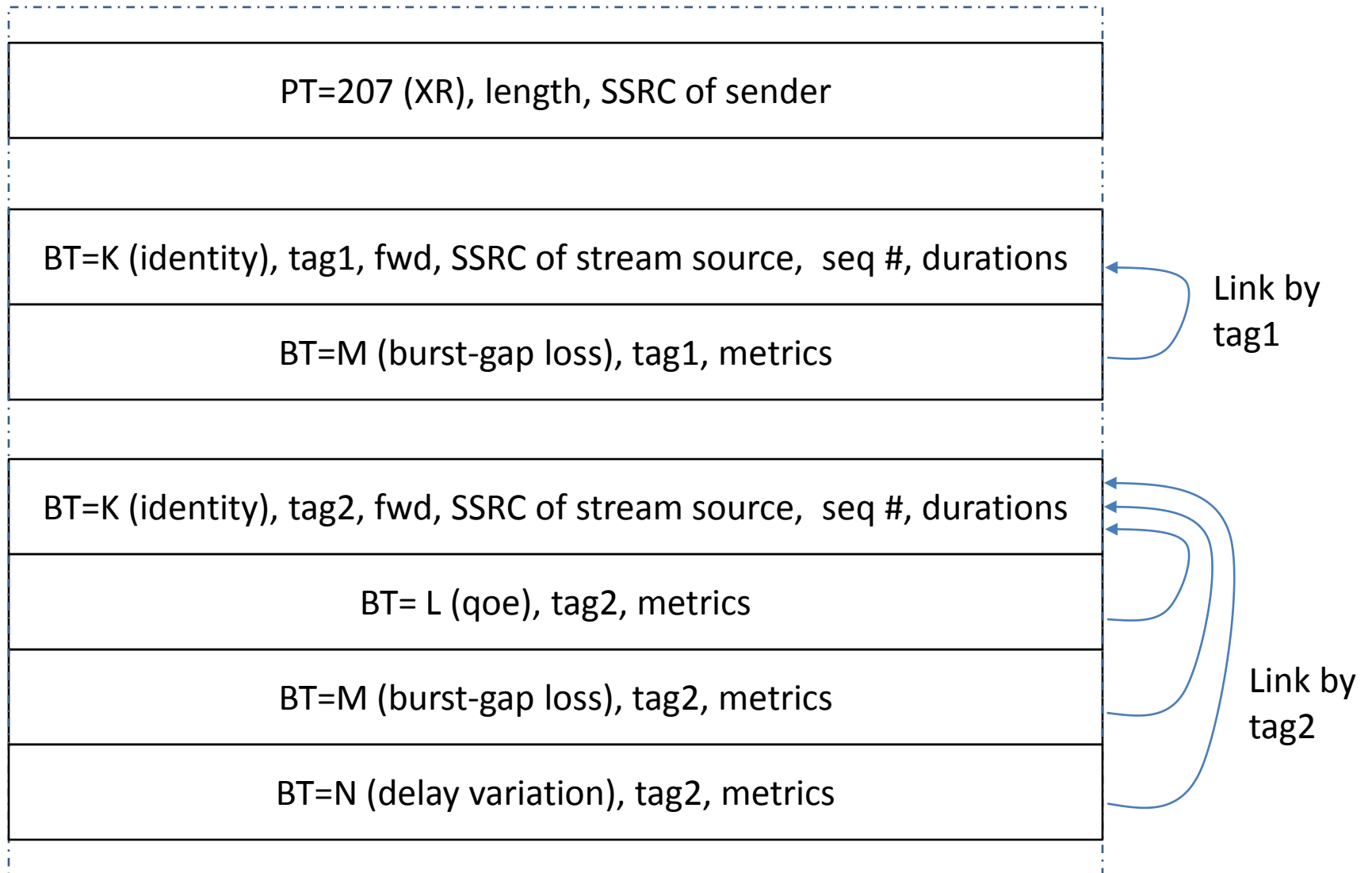
Alan Clark

Geoff Hunt

Why are there _twelve_ drafts?

- The result of "re-architecting" RTCP-HR
  - Metrics are largely the same as those in RTCP-HR
- A single block per draft
- A very few closely-related metrics per block
- Designed for re-use across applications
- Blocks for
  - Transport (loss, delay variation)
  - Terminal behaviour (de-jitter buffer)
  - Quality of user experience (VoIP, and starting on video)
- Applications are _not_ expected to implement all metrics
- Blocks can report _cumulative_ or _interval_ metrics

The measurement identity block (1)

- It must be possible to record the stream segment to which a metrics block refers
- For multiple small blocks of metrics this could be a large overhead
- Solution is to have a mandatory block with identifier information, to which metrics blocks must refer
- Might need >1 identifier block for compound packets
  - e.g. where translator sends its own metrics and forwards metrics
- Defined in draft-ietf-avt-rtcp-xr-meas-identity-00
- Use case analysis:
  - Is fwd (count of times forwarded) useful?
    - Some translators won't unpack the RTCP so can't increment
    - Ref to RFC5117 needed
  - Could QoE metrics be forwarded across certain RTP mixers?

The measurement identity block (2)

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 0 1 2 3 4 5 6 7 0 1 2 3 4 5 6 7 0 1 2 3 4 5 6 7
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|     BT=NMI     |0| tag |  fwd  |        block length = 7       |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                     SSRC of stream source                     |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                       sub-identifier                          |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|         extended first sequence number (cumulative)           |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|         extended first sequence number of interval            |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|             extended last sequence number                     |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|         Measurement Duration (Cumulative) (ms)                |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|          Measurement Duration (Interval) (ms)                 |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

Use of the measurement identity block (3)

PT=207 (XR), length, SSRC of sender

BT=K (identity), tag1, fwd, SSRC of stream source, seq #, durations

BT=M (burst-gap loss), tag1, metrics

Link by tag1

BT=K (identity), tag2, fwd, SSRC of stream source, seq #, durations

BT= L (qoe), tag2, metrics

BT=M (burst-gap loss), tag2, metrics

BT=N (delay variation), tag2, metrics

Link by tag2

The metrics blocks

- Three broad classes of metrics in the eleven blocks:
  - Transport metrics
    - Loss, delay variation
    - Relevant to all RTP applications
  - Transport-related mixer or end system metrics
    - Concealment, de-jitter buffer performance
    - Relevant to RTP applications with a de-jitter buffer
  - Quality of experience
    - Opinion scores, signal levels
    - Opinion scores relevant for applications which define them
    - Signal levels block applicable to audio, voice and video

Transport metrics (1)

- draft-ietf-avt-rtcp-xr-burst-gap-loss-00
  - When used with the RFC3550 cumulative loss metric, allows determination of
    - Mean and standard deviation of burst length
    - Number of bursts
    - Total burst duration
    - Mean packet loss rate in-burst
  - Question: Is assumption of RFC3550 justified?
  - Question: Will RTP stacks baulk at a 3550 RR block from a translator
    - If so, should define XR basic loss block
  - And draft refers to PCM and VAD
    - Need to clarify these relate only to the VoIP application

Transport metrics (2)

- draft-ietf-avt-rtcp-xr-pdv-00
  - PDV percentiles or ranges for one of the specified PDV algorithms, as RTCP HR
  - Need to add text on choice of algorithm
  - Need IANA policy for additional (13/16) algorithms
    - Probably "specification required"
- draft-ietf-avt-rtcp-xr-delay-00
  - Mean, minimum and maximum values of network RTD
  - Also reports end system delay if available
    - Could argue this is a terminal metric.

Transport-related terminal metrics (1)

- draft-ietf-avt-rtcp-xr-postrepair-loss-00
  - A simple count of packets still missing after repair procedures have been applied
  - Complements draft-ietf-avt-post-repair-rtcp-xr which gives a more detailed (RLE) view
  - RFC3550 provides metric for pre-repair loss
- draft-ietf-avt-rtcp-xr-discard-00
  - A simple count of packets discarded because they arrive too late or too early to be played out
- draft-ietf-avt-rtcp-xr-burst-gap-discard-00
  - When used with the simple discard block, allows determination of
    - Mean and standard deviation of burst length
    - Number of bursts
    - Total burst duration
    - Mean packet loss rate in-burst

Transport-related terminal metrics (2)

- draft-ietf-avt-rtcp-xr-loss-conceal-00
  - Duration of "concealment" due to packet loss
  - Same for packet discard
  - Count of concealment episodes
- draft-ietf-avt-rtcp-xr-concsec-00
  - Reports seconds suffering *any* concealment
  - And seconds suffering "severe" concealment
- draft-ietf-avt-rtcp-xr-jb-00
  - De-jitter buffer type
  - De-jitter buffer current nominal delay
  - High- and low-water-marks

Signal & QoE Metric Blocks

- ## draft-ietf-avt-rtcp-xr-siglevel-00
  - Signal level being reported (signal, noise, echo, luminance, …)
  - Channel number (e.g. stereo) within single RTP session
  - Measured or default value
  - Direction (Tx, Rx, internal, external), Scaling (dB, dBm, …)
  - Value

- ## draft-ietf-avt-rtcp-xr-qoe-00
  - Channel number
  - Direction, Type (MOS-LQ, MOS-CQ, …)
  - Calculation algorithm
  - Value
  - Needs IANA policy for additional (9/16) types and (252/256) algorithms
    - Probably "specification required"

Request…

- Please review
  - Against your use cases
  - For clarity
  - For usefulness of metrics
  - For ease and economy of implementation