1722a Raw Video Format for automotive applications

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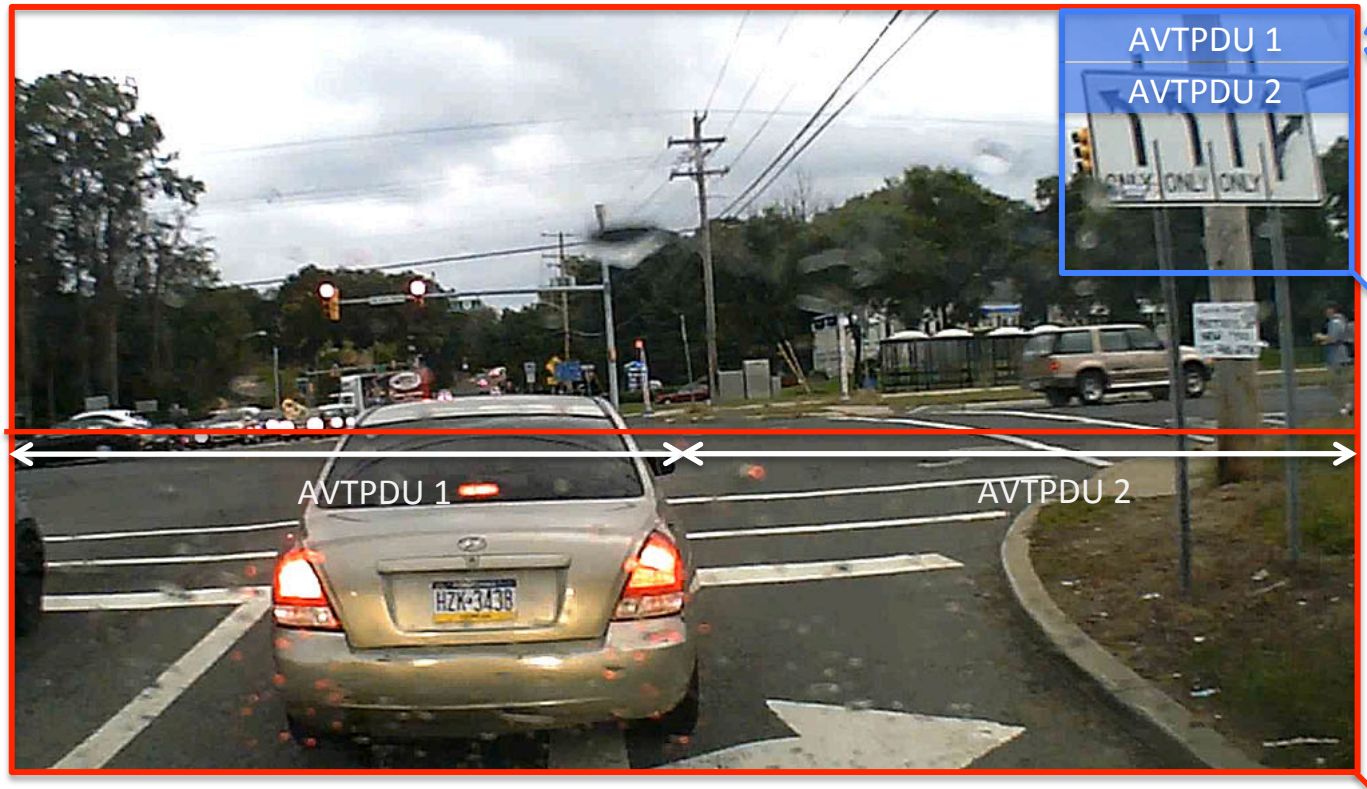
Use case

- Low latency, uncompressed video from an image sensor at high frame rate is valuable in applications where real-time processing is required (critical)
  - Tracking smaller regions of interest from many cameras on an car is possible today with 100 Mbit data rates
  - Perhaps some pre-processing on the camera to reduce bandwidth requirements on the wire
- Automotive today is limited to 100 Mbit data rate
  - Efficiency of packetisation is important
- There is near term potential for AVB video applications that require raw data at relatively low resolution, high frame rate

Example



Small number of lines

Local region of interest

Single line

Entire sensor area

RVF in Draft 8

- 13.2.17 currently enforces
  - "All media samples in the AVTPDU shall be from the same line"
- For example, WQVGA or QVGA resolutions are possible @ ~100 fps but only if this constraint is relaxed and 3 lines are packed into a single AVTPDU
- For this example, the current requirement to send 3 separate AVTPDUs per interval is prohibitive using 100 Mbit due to the 74 bytes overhead per payload

Possible changes

- Add a field num_lines to represent a number of lines >1 per AVTPDU
  - Using one of the currently reserved fields limits the range, but this is OK

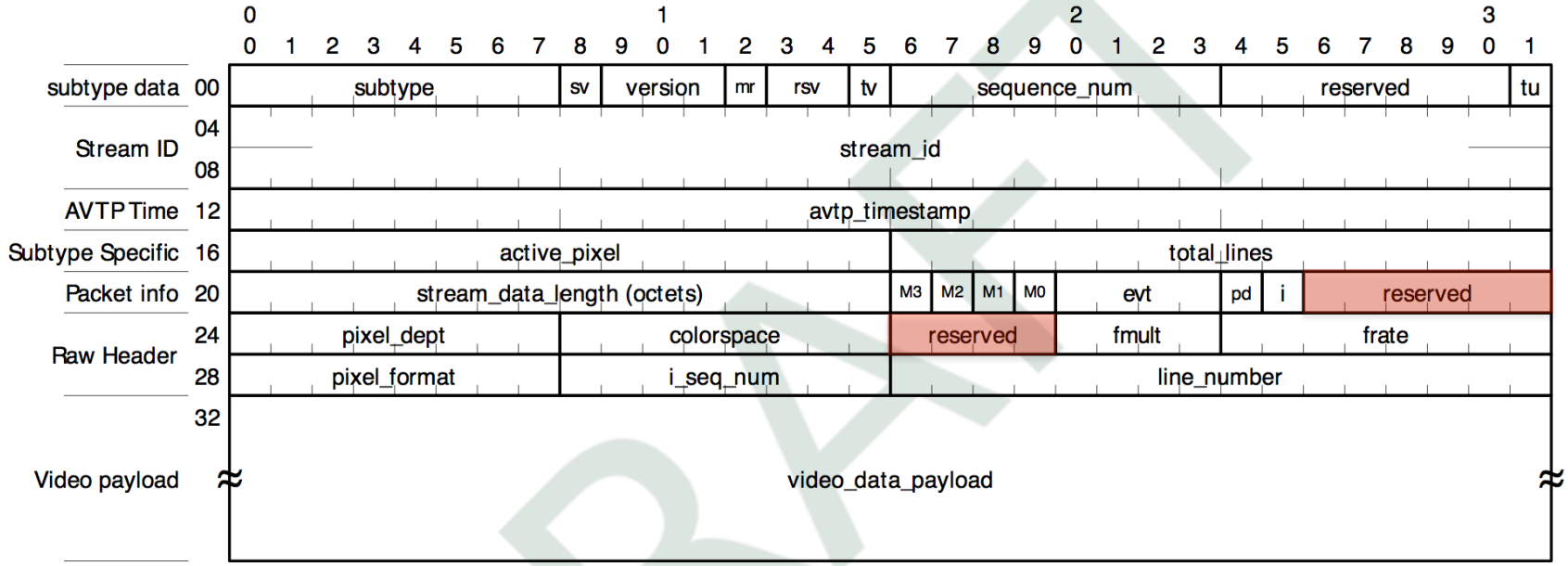


Figure 13.1. Raw Video PDU format

Possible changes

- No change to behaviour of currently defined format when num_lines = 1
- Handling of num_lines > 1 should be optional
  - Let AVnu and others define market specific requirements for professional video, automotive etc.
- To simplify things, suggest enforcing that the intra-line sequence number i_seq_num (13.2.16) is 0 when num_lines > 1
- In other words, lines cannot be split across multiple AVTPDUs when the number of lines per PDU > 1
- Also enforce that lines from different frames cannot be packed into the same AVTPDU