RTCP Reporting Extensions

`draft-friedman-avt-rtcp-report-extns-02.txt`

Minneapolis, 20 March 2002

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Outline

- What are reporting extensions?
- What has changed?
- Request: advance to experimental RFC.

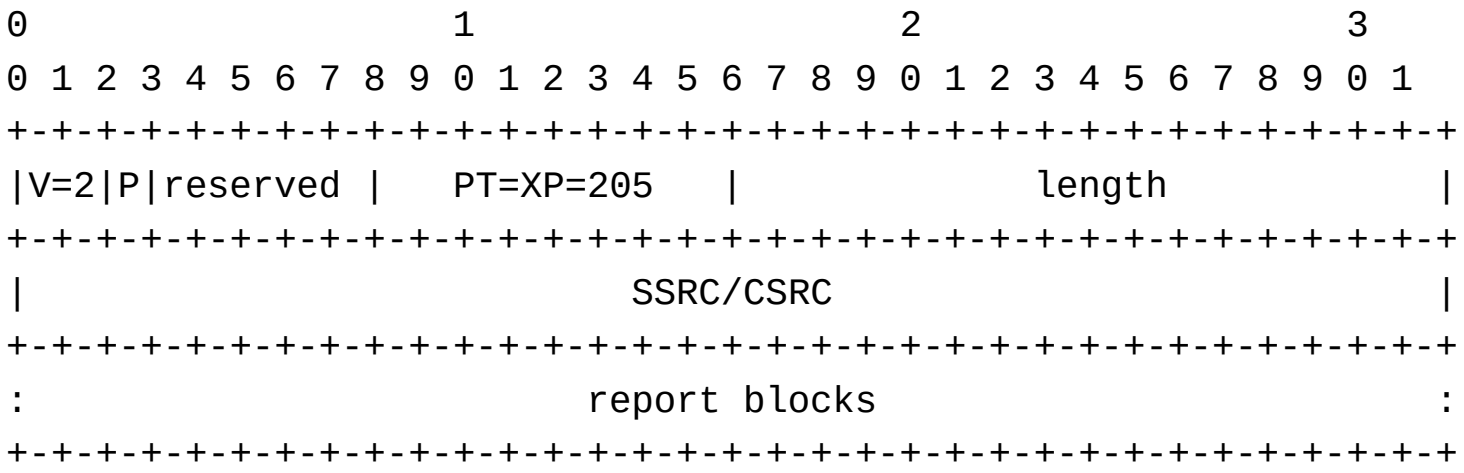
What are reporting extensions?

- Report more than SRs or RRs allow
- Some applications: MRM, MINC, MLDA
  - Fault isolation: detailed loss, jitter stats
  - Long term monitoring: loss and delay traces
  - Congestion control: receiver round-trip times
- Purpose: Uniform extension format

What has changed?

- New packet type
  - PT = XP = 205 (pending IANA approval)
  - instead of extended SR or RR packet
- Data thinning
  - Allows adherence to bandwidth constraints
- Experience using this packet type
  - IEEE Communications Magazine, May 2000
  - IEEE Infocom 2002

New Packet Type

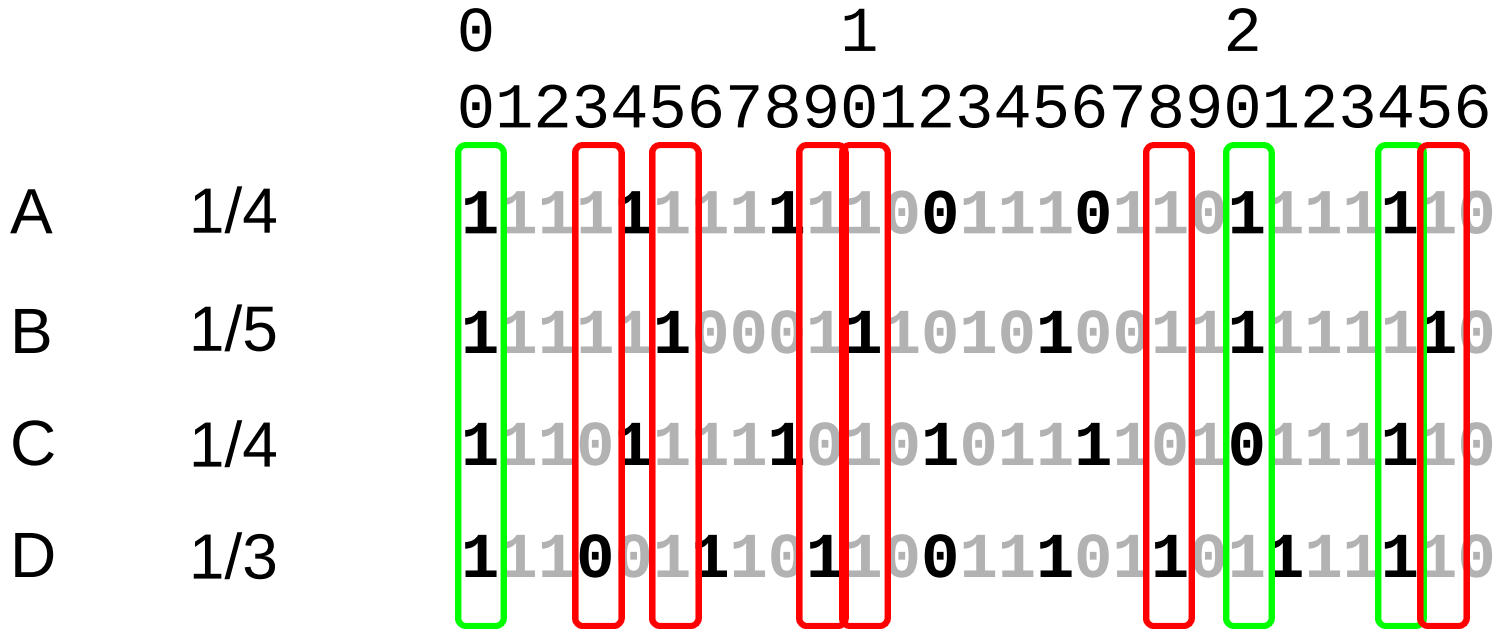


- Agreed at Pittsburgh (August 2000)
- Avoids conflict with application-specific extensions

Data Thinning

Example: four receivers' loss traces

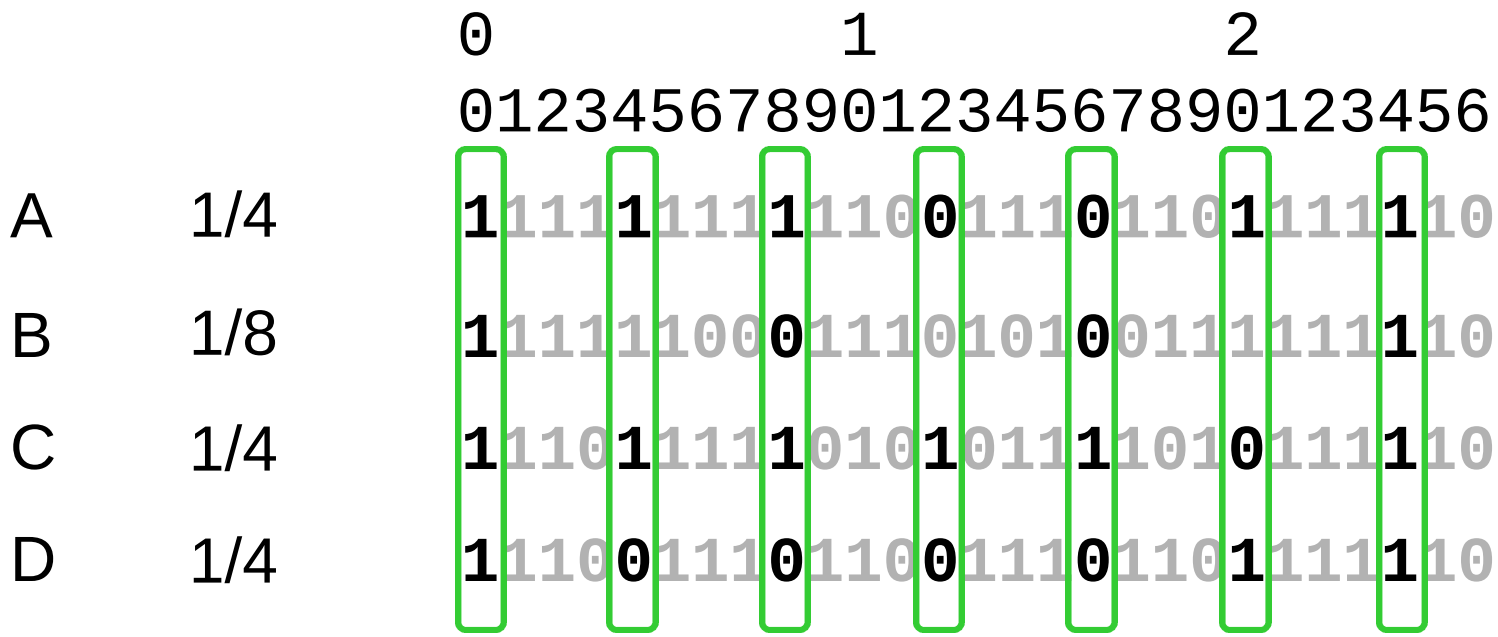
Each receiver thins its reports to save reporting b/w



Problem: Matching can be poor

Data Thinning (continued)

"Power of two thinning": Seq = 0 mod 2^k

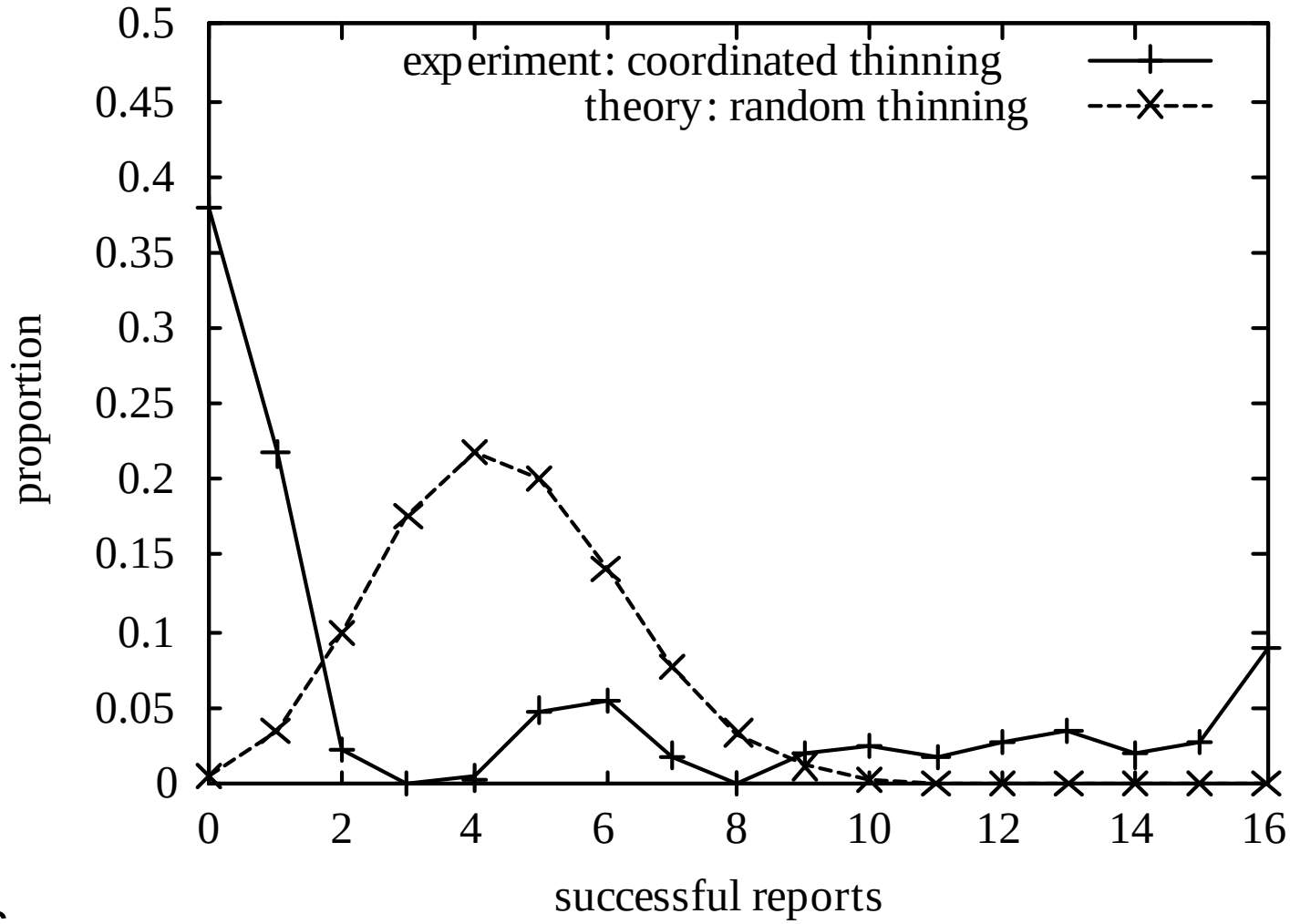


Better matching

Experience Using this Packet Type

- Deployed packets with power-of-two thinning
- Found that:
  - Could thin and maintain coordination
  - Useful for MINC inference

Results: Overlap and Thinning



graph courtesy Nick Duffield

45% of probes have reports for zero or all probes

Request to AVT Group

- Proceed to Experimental RFC status
  - suggested at Pittsburgh

End of presentation

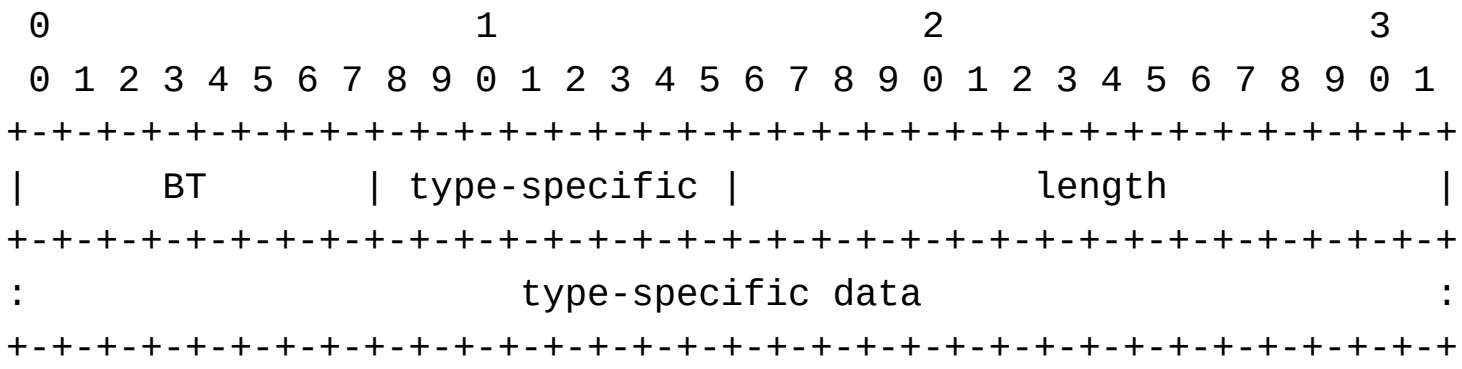
Supplementary slides follow

References

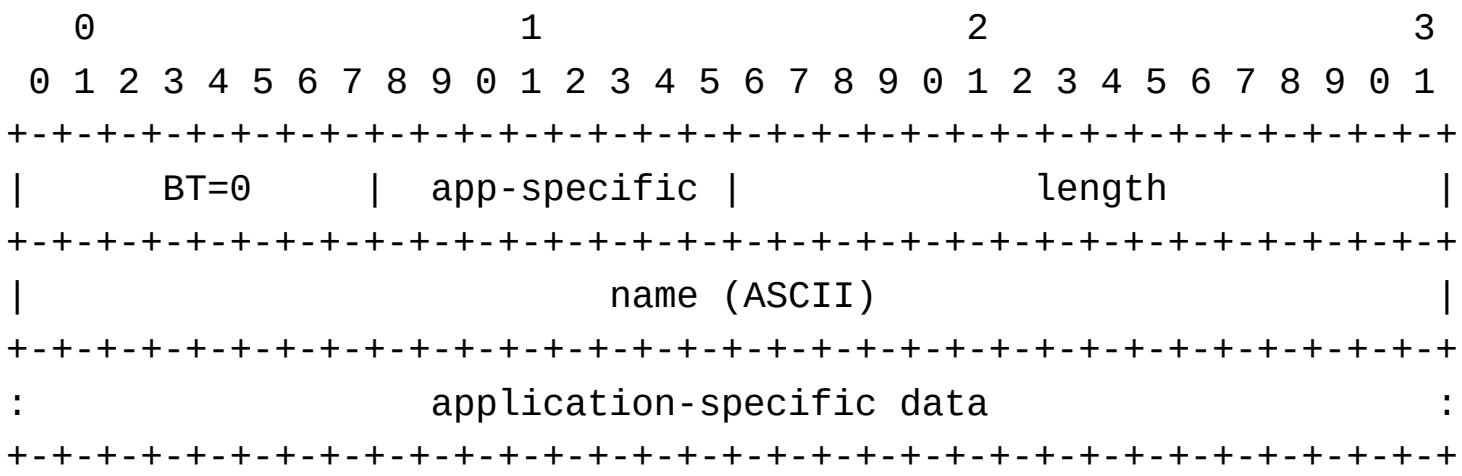
A. Adams, T. Bu, R. Cáceres, N.G. Duffield, T. Friedman, J. Horowitz, F. Lo Presti, S.B. Moon, V. Paxson, D. Towsley. “The Use of End-to-End Multicast Measurements for Characterizing Internal Network Behavior.” *IEEE Communications Magazine*, May 2000

R. Caceres, N.G. Duffield, T. Friedman. “Impromptu measurement infrastructures using RTP.” Proc. IEEE Infocom 2002, New York, June 23-27, 2002, to appear.

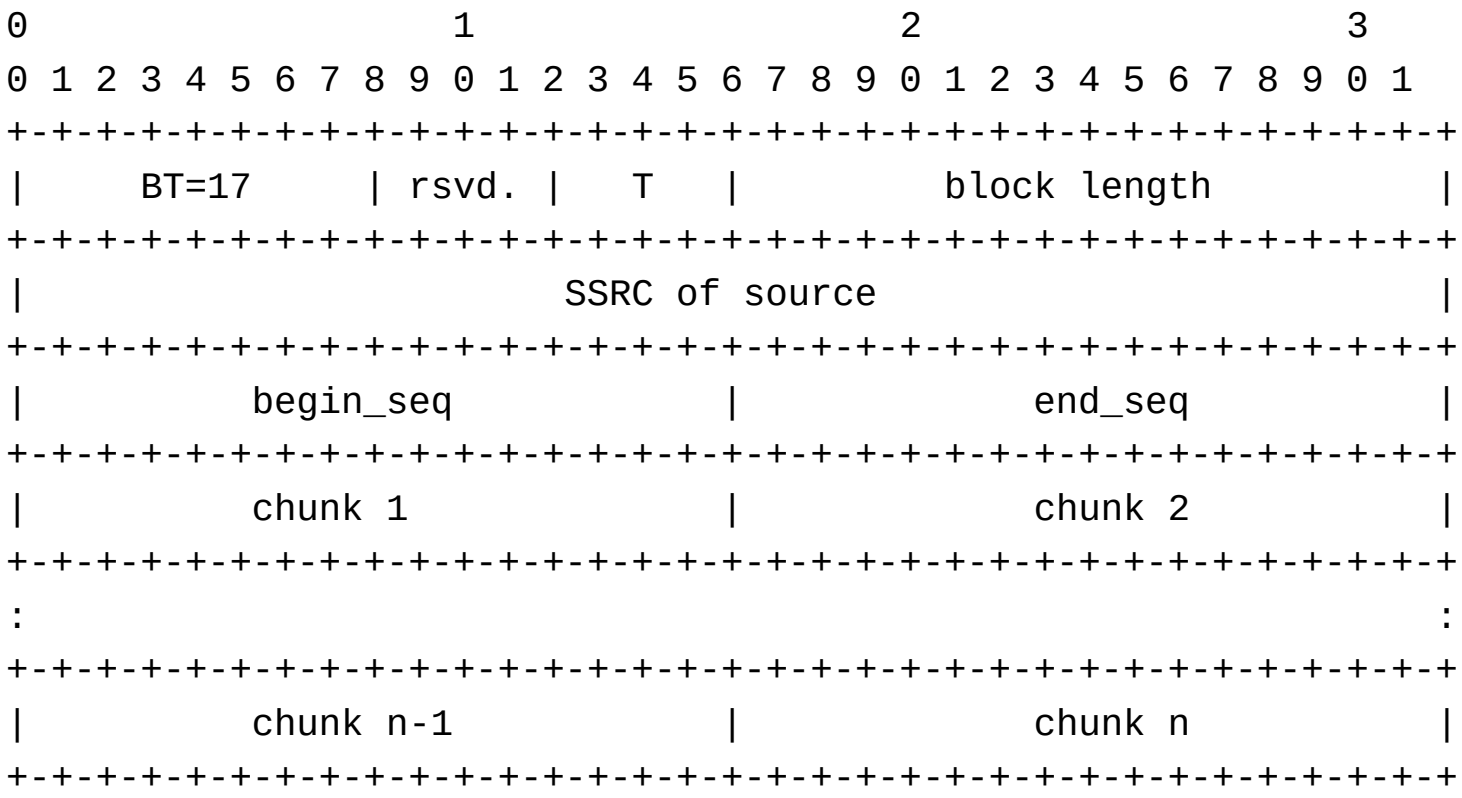
Block Framework



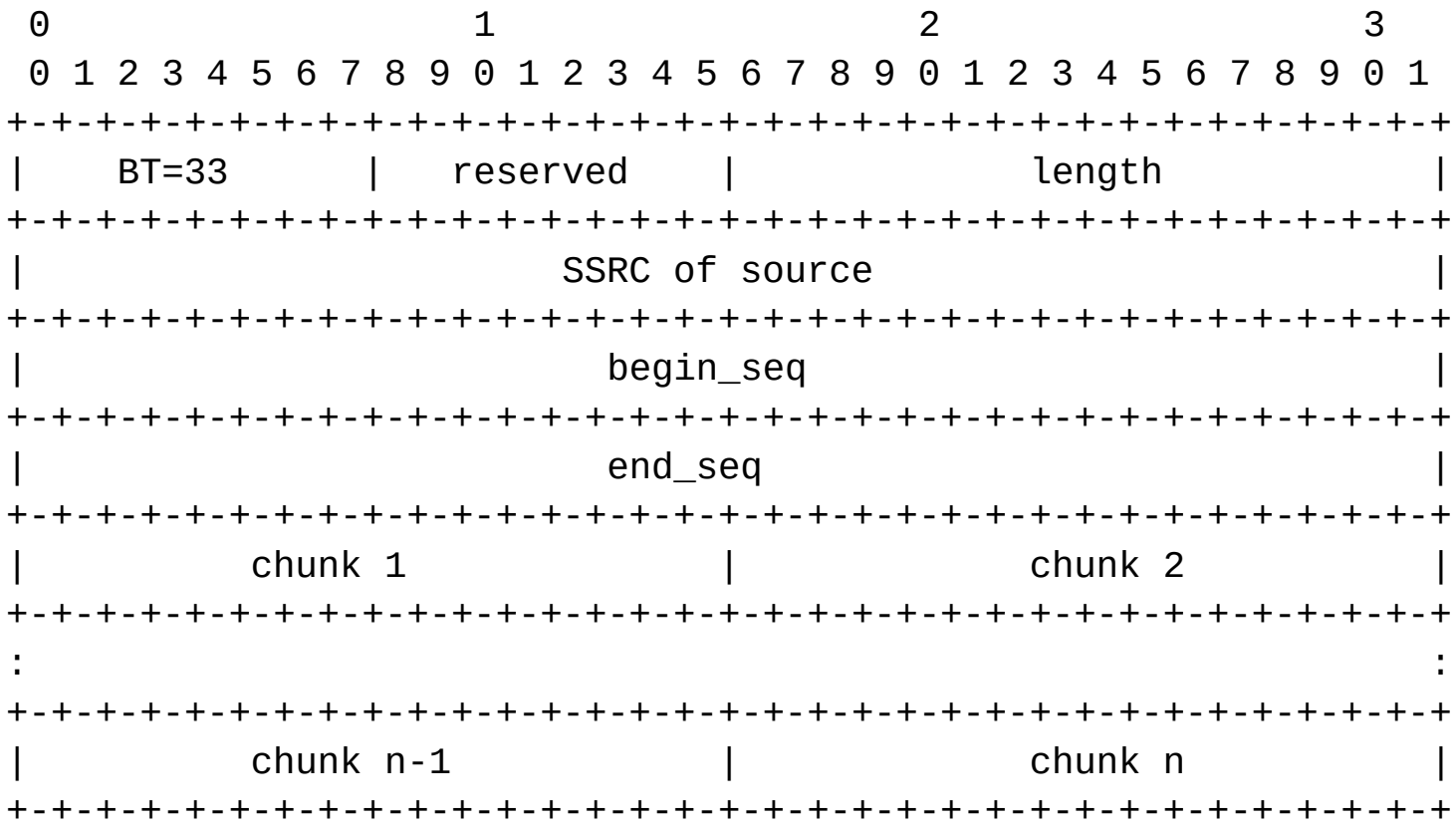
Experimental Block



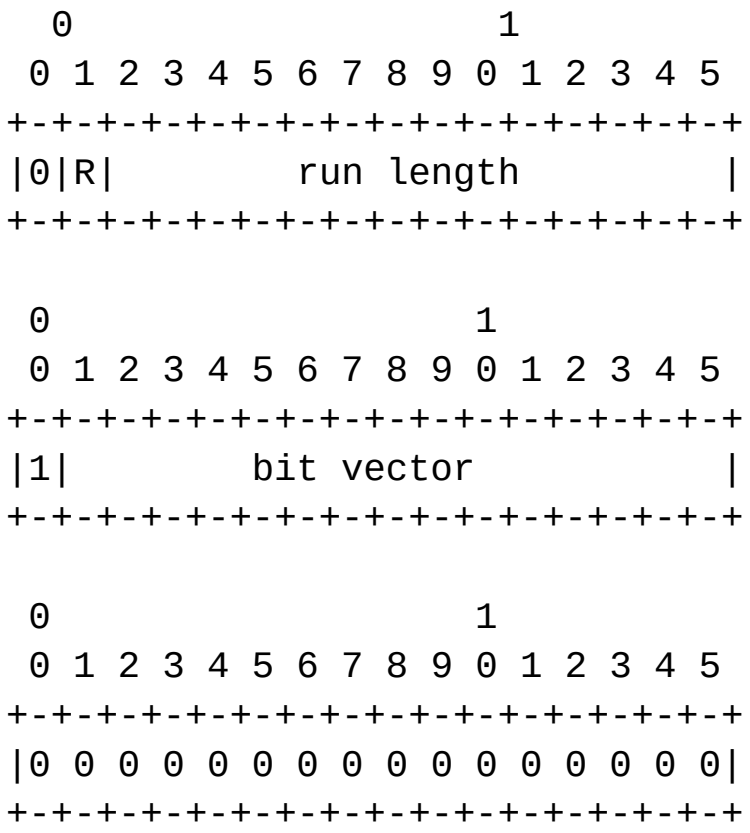
Loss RLE Block



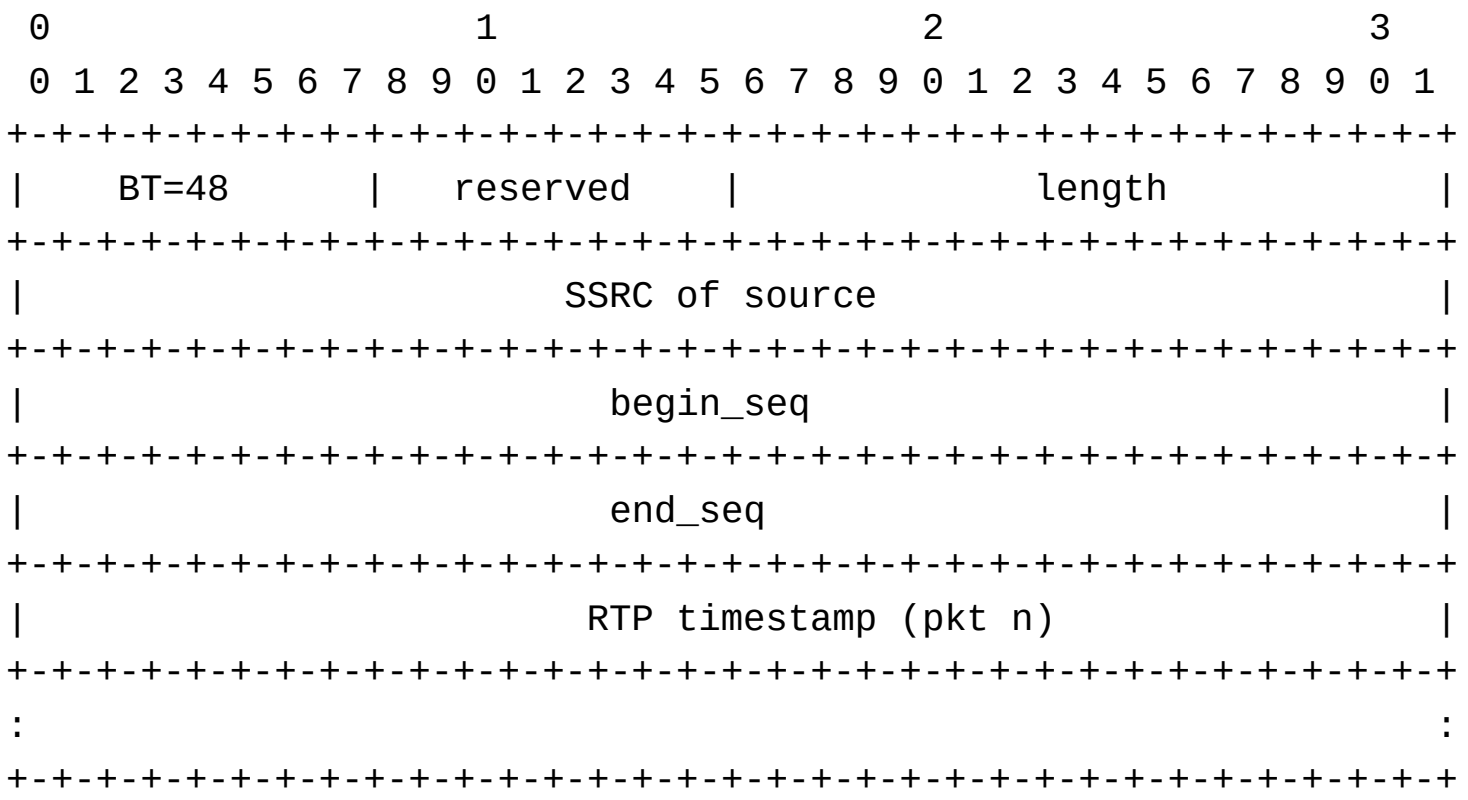
Duplicate RLE Block



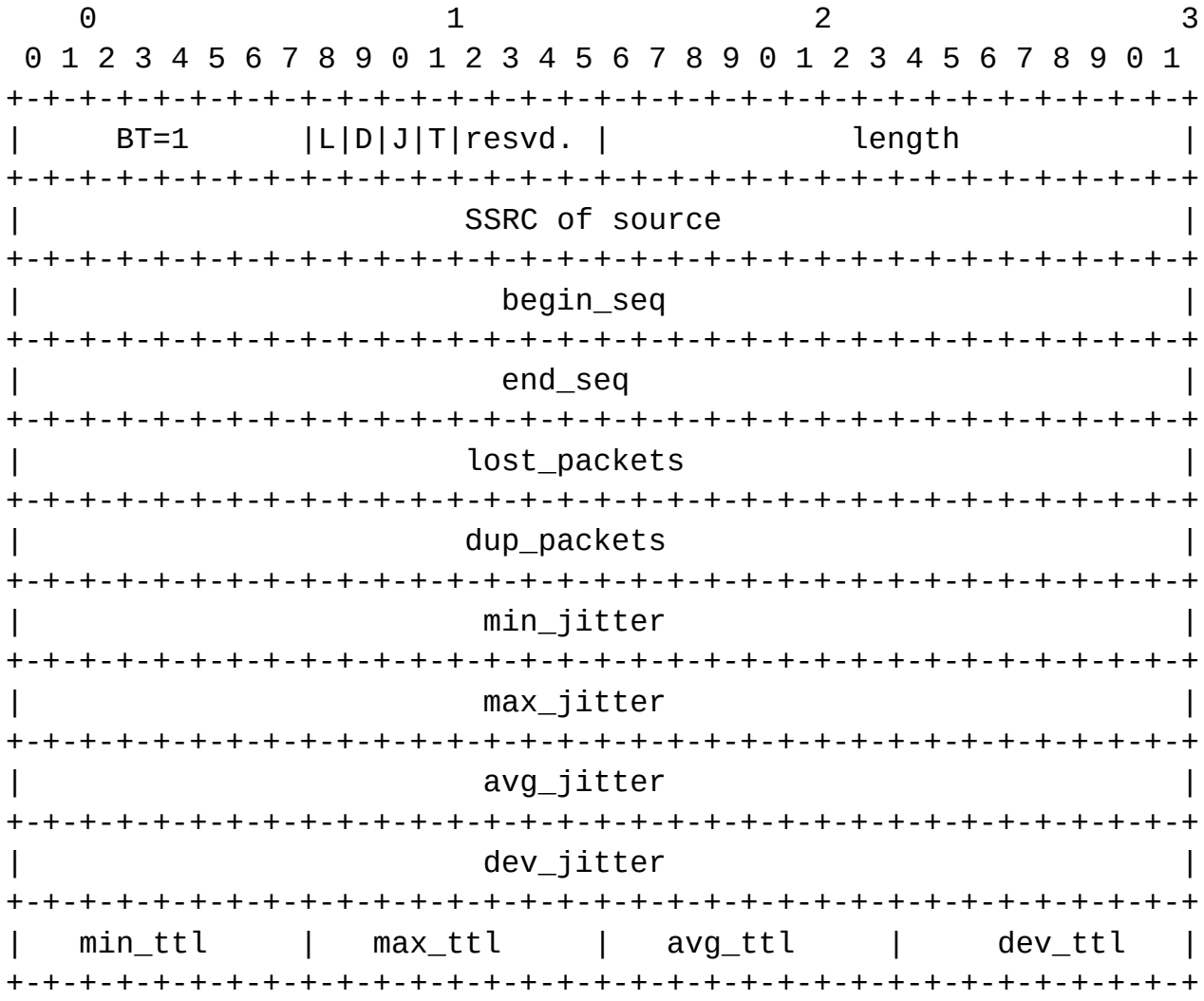
RLE Chunks


0 1
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5
|0|R| run length |
0 1
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5
|1| bit vector |
0 1
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5
|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0|

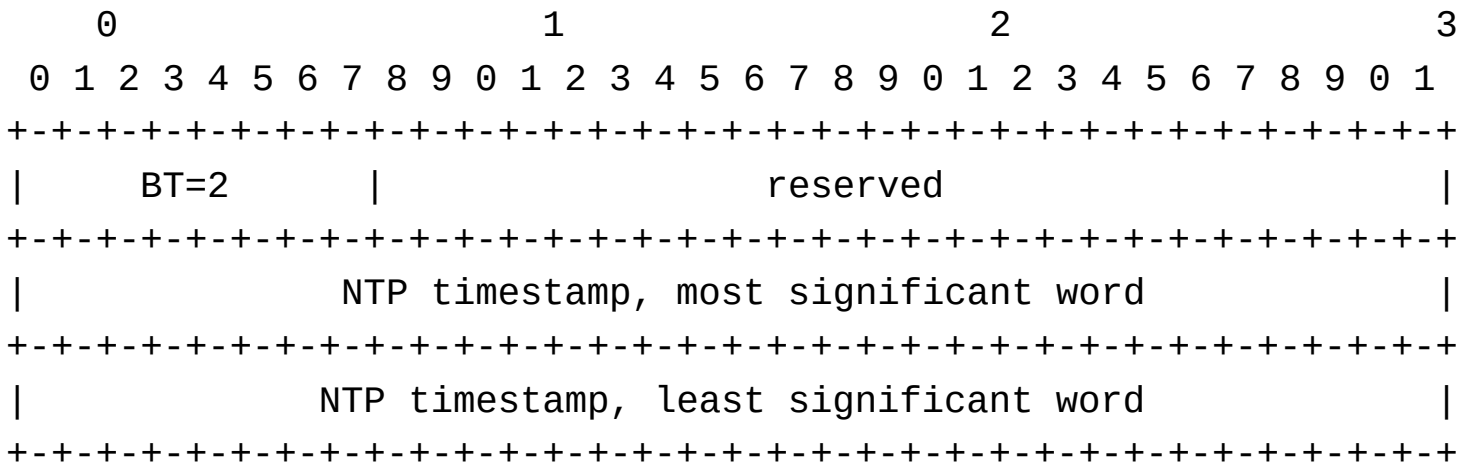
Timestamp Report Block



Statistics Summary Block



Receiver Timestamp Report Block



DLRR Report Block