RPR Frame Format Proposal

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Proposed Draft Text

- RPR_hdr_fields_jl.pdf

Goals

- Make frame formats consistent
- Simplify MAC design
- Remove unneeded fields
- Add needed fields

2 Key Changes

- All frames use the same header
- Clean up beginning bytes of header

Consistency

- Current proposal uses different frame format for fairness frames
  - Inconsistent
  - Confusing
  - Harder to implement
  - Savings of 0.03%* is not worth it
- All frames should use same header

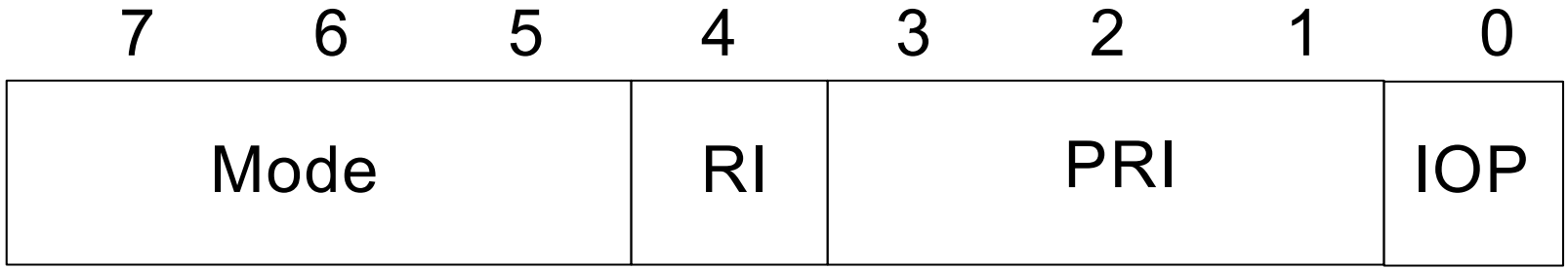
* Assuming 10 byte savings per message, OC-48 ring rate, and frequency of 100 usec

Terminology

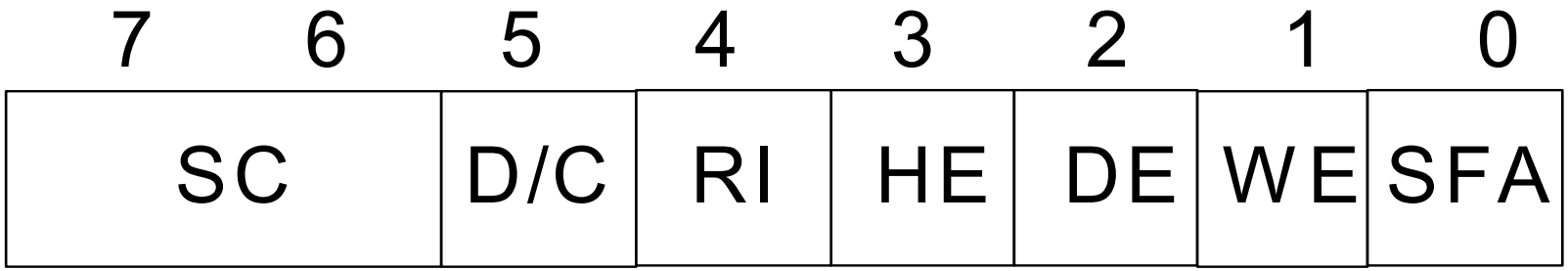
- Current reference to first 2 bytes of RPR header as RPR Header is wrong
  - RPR Header is entire header before payload
  - First byte of header called TTL
  - Second byte of header called Header Controls

Header Control Changes

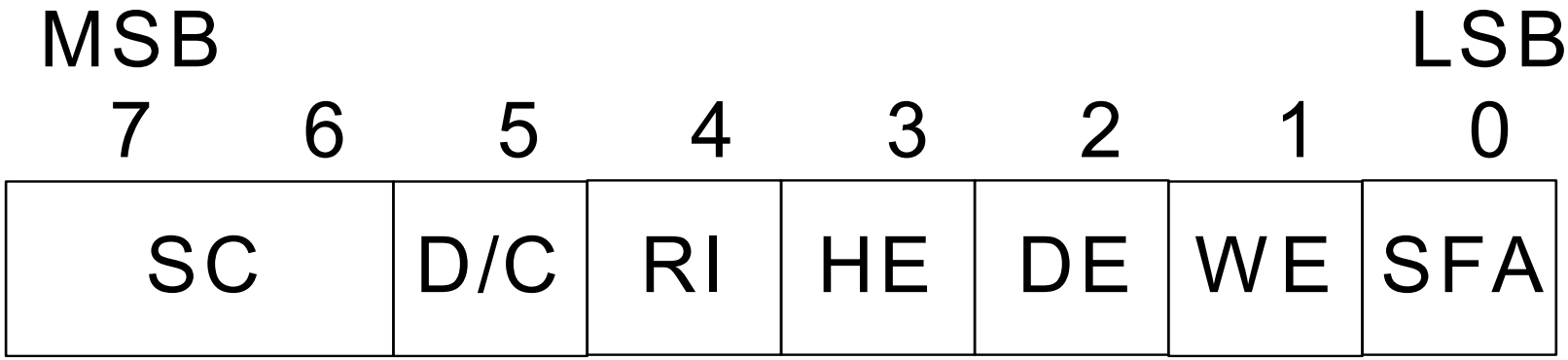
Current proposal



New proposal



Proposed RPR Header Controls



- SC: Service class
- D/C: Data/Control
- RI: Ringlet Indicator
- HE: HEC Extension
- DE: Discard on Error
- WE: Wrap Eligible
- SFA: Subject to Fairness Algorithm

Service Class (SC)

- Codes for Service Class (A, B, or C) as defined in clause 6
- Used by receive logic to place into appropriate queue for dual-queue designs
- Carries class information end to end
- Fits data path model better than proposed PRI field
- 3-bit PRI is better carried in Q-tag

Data/Control (D/C)

- Codes for Data frame or Control frame
- Used by receive logic to determine whether to send to client or control sublayer
- Fits data path model better than proposed TYPE/MODE field
- Single use instead of multiple uses of proposed TYPE/MODE field

Ringlet Indicator (RI)

- Same as existing proposed RI field
- Codes for which ringlet
- Used by receive logic to detect wrapped frames
- Used by client and control sublayer to determine ringlet source of frame

HEC Extension (HE)

- Codes for possible extension of HEC beyond "standard" RPR header
- Allows HEC to stay in fixed position while covering variable sized header
- Used for header extensions such as Q-tag or CID-tag
- Allows for HEC protection of entire header as opposed to proposed HEC protected fields
- Meaning TBD (e.g. additional following byte gives number of additional bytes)

Discard on Error (DE)

- Codes for discard or delivery of packets with FCS errors
- Would not effect packets with HEC errors
- Used by receive logic (in destination station) and transit logic to determine what to do with packets with FCS errors
- Useful for services such as TDM voice
- Needed to support Draft 0.2 requirements

Wrap Eligible (WE)

- Codes for frames that can be wrapped
- Used by receive logic to wrap or steer frames at wrapping point on wrapped ring
- Could not be set on steering ring
- Fits data path model better than proposed TYPE/MODE field
- Single use instead of multiple uses of proposed TYPE/MODE field
- Allows application to both data and control frames

Subject to Fairness Algorithm (SFA)

- Similar to existing proposed IOP field
- Used by transmit logic to mark excess class-B packets and all class-C packets
- Used by transit logic to determine whether to include frame in fairness calculations
- Available to client and control sublayer
- Simpler, more consistent model than proposed IOP field