Frame Control Bit Consolidation
“Brave Proposal”

Frame Adhoc Group

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Draft 2.0 Frame Format

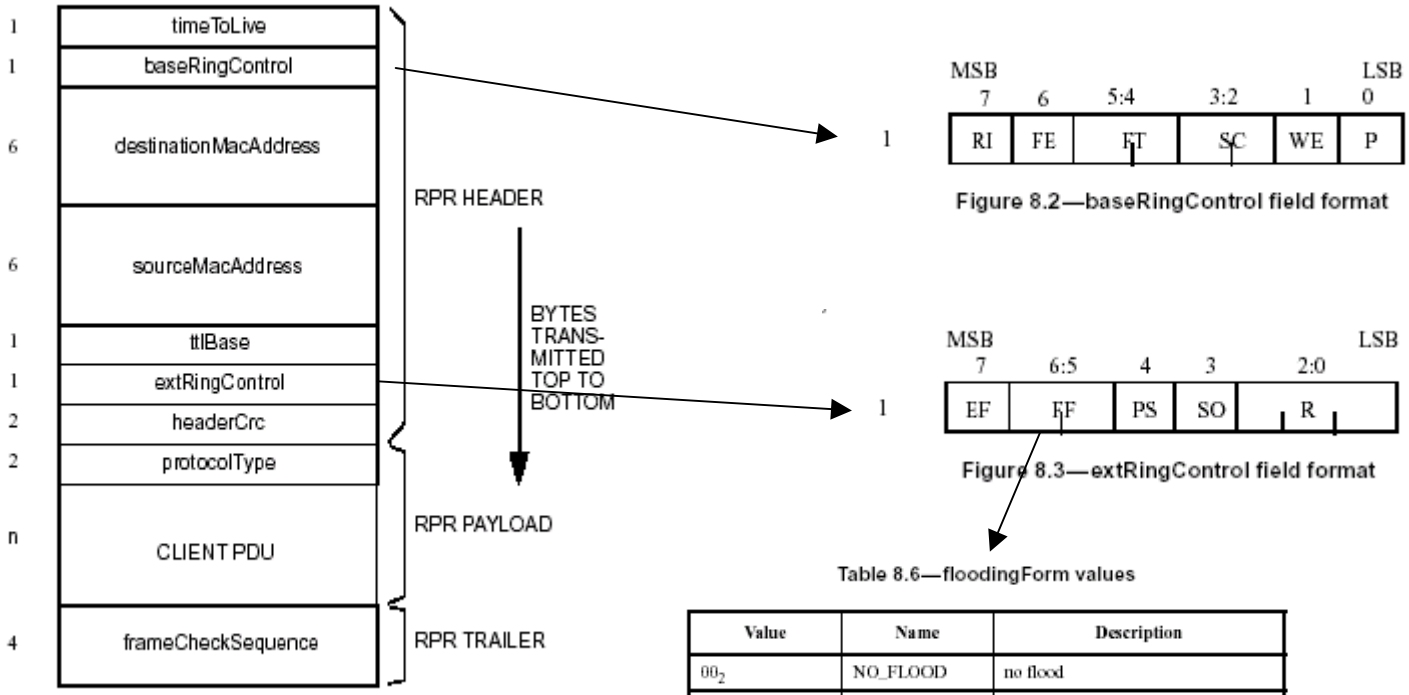


Figure 8.1—RPR data frame format

Figure 8.2—baseRingControl field format

Figure 8.3—extRingControl field format

Table 8.6—floodingForm values

Value	Name	Description
00_2	NO_FLOOD	no flood
01_2	UNI_FLOOD	unidirectional flood
10_2	BI_FLOOD	bidirectional flood
11_2	—	reserved

Review of extRing control functions /1

- SO – Strict Ordering
  - Identifies whether a frame receives strict ordering frame consistency check.
  - Recommend encoding (strict, relaxed) states in baseRingControl header

- FF – Flooding Form (2-bit)
  - No_flood, Uni_flood, Bi_flood
  - Do not need to distinguish between Uni/Bi flood. The current RX algorithms or consistency checks do not distinguish between a Uni and Bi flood.
  - A 2-state frame type to indicate (flood, no_flood) is all that is required
  - Recommend encoding (flood, no_flood) states in baseRingControl header

Review of extRing control functions /2

- PS – Passed Source
  - Intended to discard wrapped frames that are wrapped back onto primary ringlet prior to passing the source.
  - A wrapped frame that is wrapped back onto the primary ringlet will be discarded by the source consistency check.
  - This check and associated bit is redundant.

- EF – Extended Frame Format
  - Intended to identify that payload format following the HEC is an extended MAC frame (DA, SA, PT, payload)
  - EF is used by bridges to transmit strict_mode frames on the ring. This is done in order to perform frame consistency checks based on the transmitting bridge's station address (frame.SSID in frame header).
  - EF also used to support enhanced bridging. Enhanced bridging required EF frame format to encapsulate client addresses in the bridge frame in order to use local addresses for unicast stripping.
  - Encoding of frame.SSID in the extRing control field eliminates the need for extended frame format.

Proposed Frame Format (Brave Proposal, Option 1)

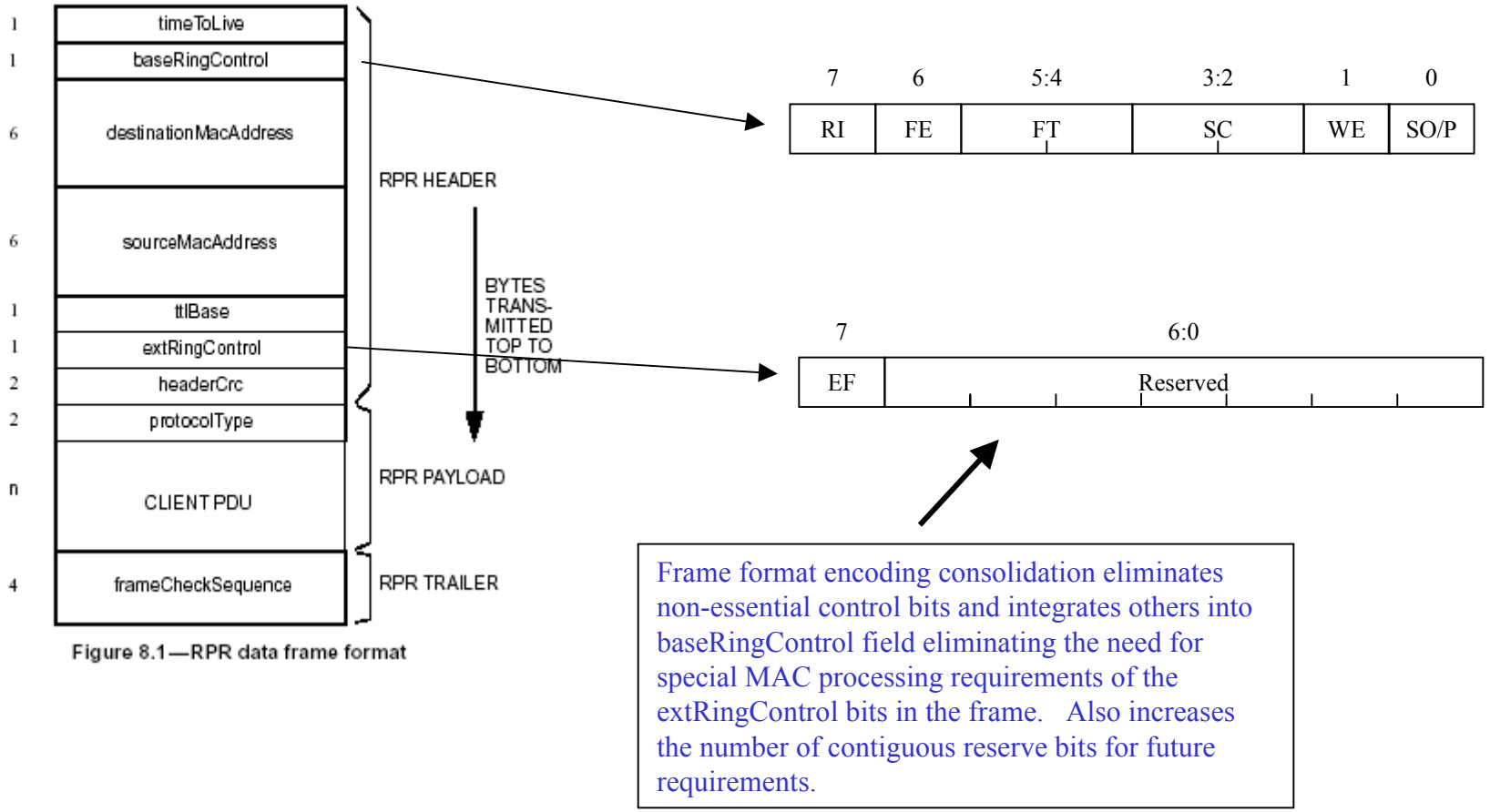
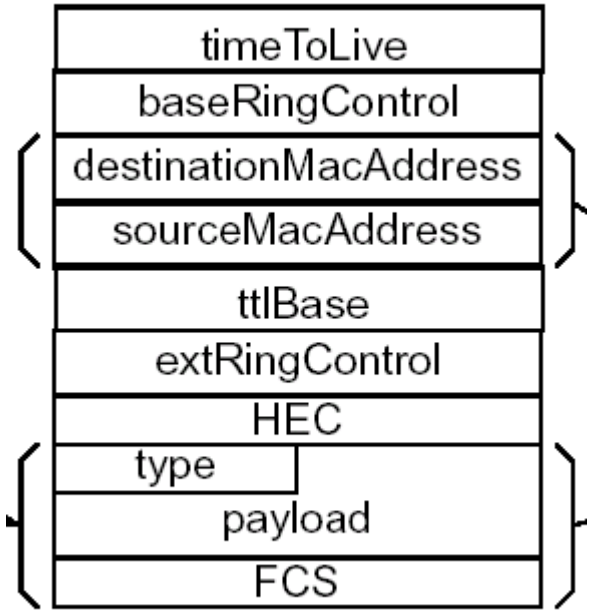
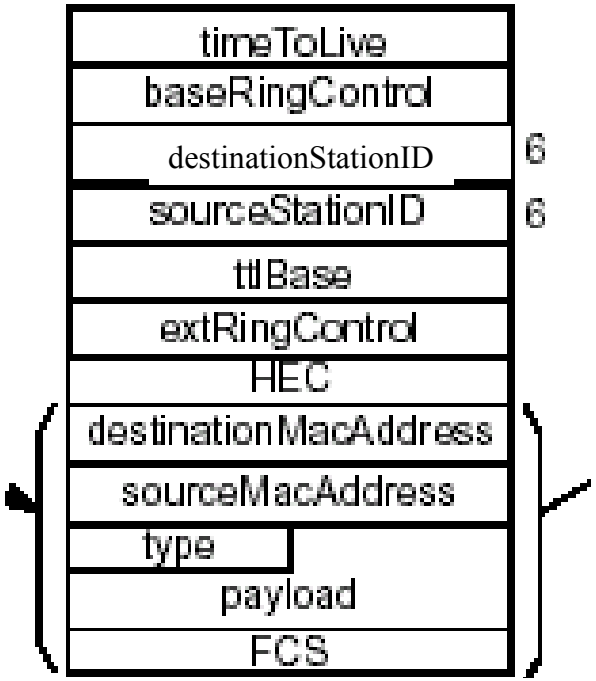


Figure 8.1—RPR data frame format

D2.0 Local / extended frame formats



Local Frame Format



Extended Frame Format

Proposed Frame Format (Brave Proposal, Option 2)

- Redefining the 8 bit extRingControl field as SSID, eliminates the need for extended frame format.
  - Multiple MAC data frame formats are not needed.
  - Client MAC addresses ALWAYS reside in DA/SA fields of the RPR frame header, regardless whether frame is a local, basic bridged, or enhanced bridged frame.
  - Frame TTL consistency checks are performed using TTL, TTL_base, SSID. Check is simpler (8bit vs. 48bit), and cleaner from a standard perspective. SSID is only used to do strict mode source consistency check.
  - SSID field in the frame is a static value for all frames transmitted by that station. Stations determine their SSID on startup from topology discovery, and is revalidated during topology changes.
  - Having redundant SSIDs during ring merge is not an issue, because strict traffic is being purged during this time due to context containment anyway until the new topology converges.
  - Also covers enhanced bridging needs in future. Enhanced bridges use a relative addressing based on TTL / TTL_base for learning and stripping.

Enhanced Bridging Example

Enhanced Bridging is Out of Scope

(If you really want to know,
see the backup slide)

Proposed Frame Format (Brave Proposal, Option 2)

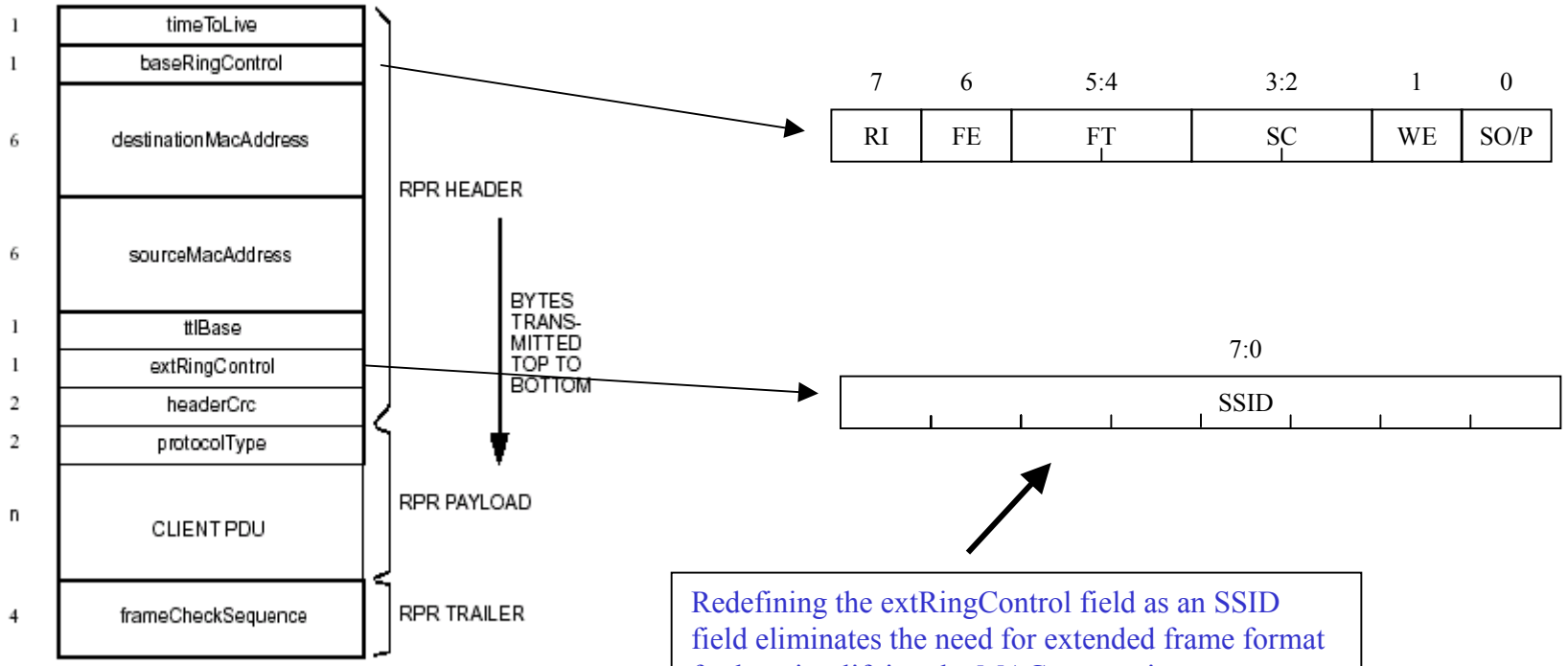


Figure 8.1—RPR data frame format

Redefining the extRingControl field as an SSID field eliminates the need for extended frame format further simplifying the MAC processing requirements

SSID Encoding
0 – Null SSID
1 – Null SSID extended frame format
2 –255 – SSID value

Proposed FT / P sub-field modifications

D2.0

FT sub-field

- 0 idle
- 1 control
- 2 fairness
- 3 data

P sub-field
FT = 2, P – parity
FT != 2, P – **reserved**
possible data encoding

Brave Proposal

FT/SOPI sub-field

- 0/0 data flood / relaxed
- 0/1 data flood / strict
- 1/0 control
- 1/1 reserved
- 2/P fairness/idle w/parity
- 3/0 data no_flood / relaxed
- 3/1 data no_flood / strict

P bit redefined as:
SOP bit
Data – Strict/relaxed
Fairness – Parity

Brave Proposal Summary

- Uses D2.0 header format
  - Minor changes in basicRingControl field decoding
  - Consolidates Flooding, and Strict Ordering, control bits into basicRingControl field in logical manner
  - Passed Source function is redundant and not required

- Frees contiguous block of bits in extRingControl field
  - Option 1 - Having 7 contiguous bits provides much more flexibility for defining new control functions in future
  - Option 2 - Defining the extRingControl field as a contiguous frame.SSID field eliminates the need for extended frame format. It also simplifies the strict mode check from a 48-bit to 8-bit check.

Recommendation

- Recommend Option 2
  - Eliminates extended frame format requirement

Thank You

Enhanced Bridging Example

Unicast Frame Transmitted from C1 to C2
Frame directed to intended destination
Frames Stripped at Station 3 based on TTL = 0
Station 3 learns distance to C1 based on (TTL_base – TTL)