

6. Media access control data path

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Contribution to IEEE Draft P802.17-D2.0

Time-to-live return path updates

The current RPR 2.0 draft has potential deadlock problems associated with respect to return-path timeToLive updates. This contribution fixes that potential concern.

6.8.1.3 Aged nonwrapped frames

Editors' Notes (DVJ): To be removed prior to final publication.

This discussion on *timeToLive* aging is orthogonal to the other frame-format discussions. These changes apply to all forms of wrapped frames. These *timeToLive* changes avoid potential deadlock scenarios.

For data frames, the *timeToLive* field is set to *hops* when the frame is first transmitted, where hops represents the number of links between the source and destination stations (some control frames are exceptions to this rule). The value of *timeToLive* is (a) decremented when passing through each station, as illustrated in Figure F.1. When the *timeToLive*=0 value is reached on the originating run, the frame is copied to the client and stripped.

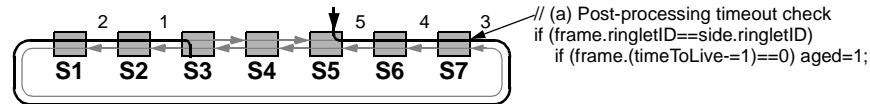


Figure F.1—Nonwrapped *timeToLive* aging

6.8.1.3 Aged wrapped frames

On a wrapped ring, only *wrapEligible*=1 frames (a) are wrapped, as illustrated in Figure F.2. The *timeToLive* value is supplemented and the *wrapEligible* bit is cleared (b) when reaching the timeout or rewrap station.

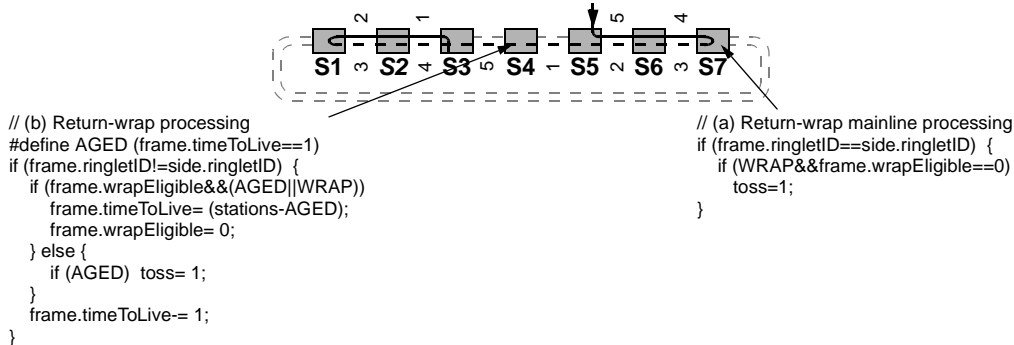


Figure F.2—Wrapped *timeToLive* aging

The *timeToLive* supplement is based on the estimated number of wrap-back stations, with the following assumptions:

- Edges. Edge stations decrement *timeToLive* by one (not two), even for edge-wrap configurations.
- Postprocess. The *timeToLive* decrement occurs always, including after *timeToLive* compensation.

NOTE—If the edge station is unknown (the edge-wrap information has not yet reached the destination), the revised *timeToLive* is estimated based on the apparent number of loop-back stations. This estimate is correct if all stations are present but one link is absent, but is erroneous if one or more stations is absent. Some strict-ordered frames may therefore be lost, but these losses cease once the new topology becomes known.