Rate Limiter Installation

Balaji Prabakar and Rong Pan
Current Situation

• A new L2 flow, for which an RL has not been installed, currently gets an RL the first time it gets an Fb < 0 message from the network

• As pointed out by Guenter Roeck and Mitch Gusat, this can cause unnecessary rate limiter installations
  – Because Fb<0 can happen even when Qlen < Qeq (equivalently when Qoff < 0)

• Suggested change: install RL only if Qoff > 0 and Fb < 0

• We show the exact change in the p-code
QCN - Congestion Point

calculate $F_b = (Q_{eq} - qlen) - w \cdot (qlen - qlen_{old})$

time to mark a packet?

n

nop

y

if $F_b < 0$, send a congestion message back with the quantized $F_b$ value
QCN - Reaction Point

RL is active?

y

Receive a Fb != 0 signal

Install a new rate limiter if there is one available

Reaction Point Operations

n

RL is active?

y

Receive a Fb != 0 && Qoff>0 signal

Install a new rate limiter if there is one available

Reaction Point Operations

n
Proposed Pseudo Code Modification

```c
if (RL[rlidx].state == INACTIVE) then
    if (FBFrame.fb != 0) then
        //initialize new rate limiter
        RL[rlidx].state = ACTIVE;
        RL[rlidx].flowid = FBFrame.flowid;
        RL[rlidx].crate = C;
        RL[rlidx].trate = C;
        RL[*].tx_bcount = BC_LIMIT;
        RL[rlidx].si_count = 0;
    else
        //ignore FBFrame
        return;
    endif
endif
endif
```

```c
if (RL[rlidx].state == INACTIVE) then
    if (FBFrame.fb != 0 && Q_off>0) then
        //initialize new rate limiter
        RL[rlidx].state = ACTIVE;
        RL[rlidx].flowid = FBFrame.flowid;
        RL[rlidx].crate = C;
        RL[rlidx].trate = C;
        RL[*].tx_bcount = BC_LIMIT;
        RL[rlidx].si_count = 0;
    else
        //ignore FBFrame
        return;
    endif
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```