

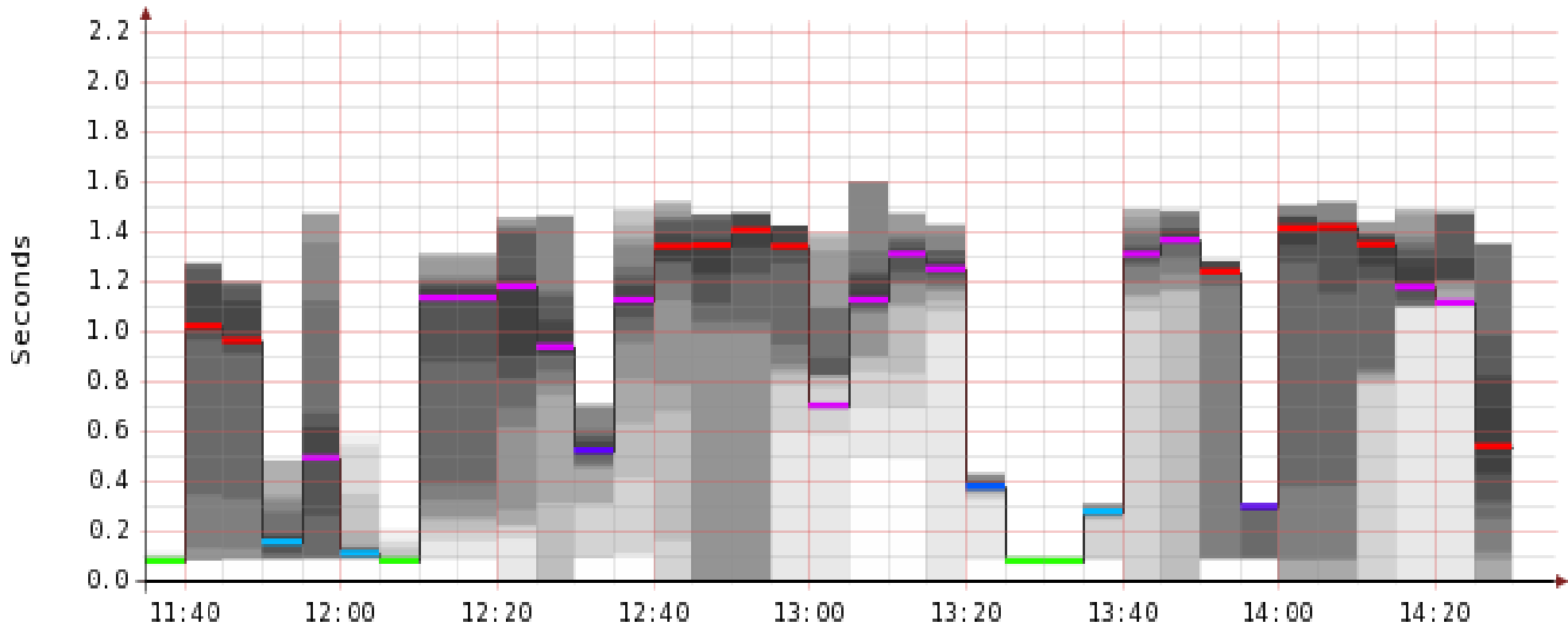
Conclusion:

[Http://bufferbloat.net](http://bufferbloat.net)

Hard work of Jim Gettys

This happens a lot . . .

Last 3 Hours



Median Ping RTT (855.5 ms avg) 0 1/20 2/20 3/20 4/20 10/20 19/20

Packet Loss: 33.34 % average 83.91 % maximum 62.05 % current

Probe: 20 ICMP Echo Pings (1024 Bytes) every 300 seconds created on Fri Jul 16 14:34:50 2010

In any multihop path . . .

- There is one hop that is the bottleneck where the buffer fills
- Other buffers are dark – don't cause trouble – they are empty
- Not a lot of guidance to mfgs from stds on sizing buffers

Problem shows up . . .

- Home routers (dsl, cable, fiber)
- Home wi-fi devices
- Device drivers
- Switches
- Other places, too

Giaganto buffers . .

- If the bottleneck is saturated, big buffers don't change thruput
- More packet RAM increases delay and jitter
- This ruins the net for time-critical applications