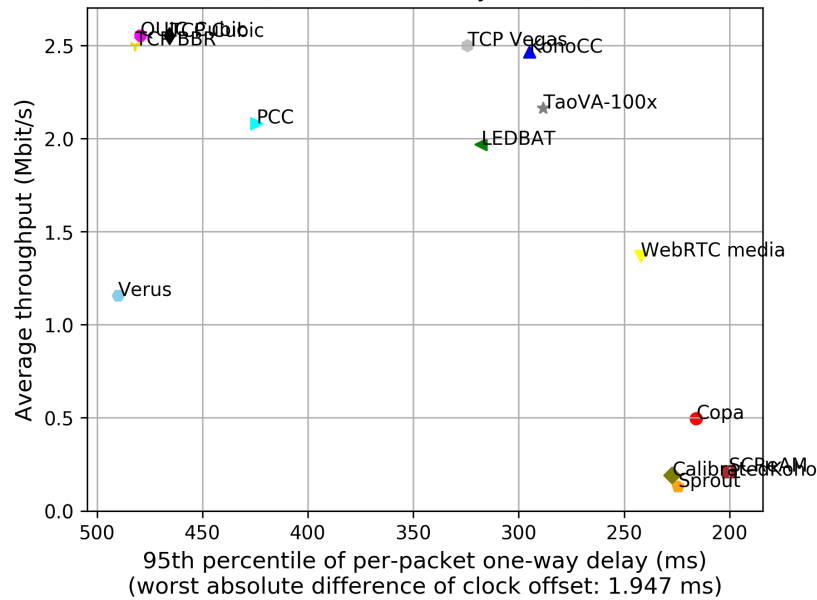


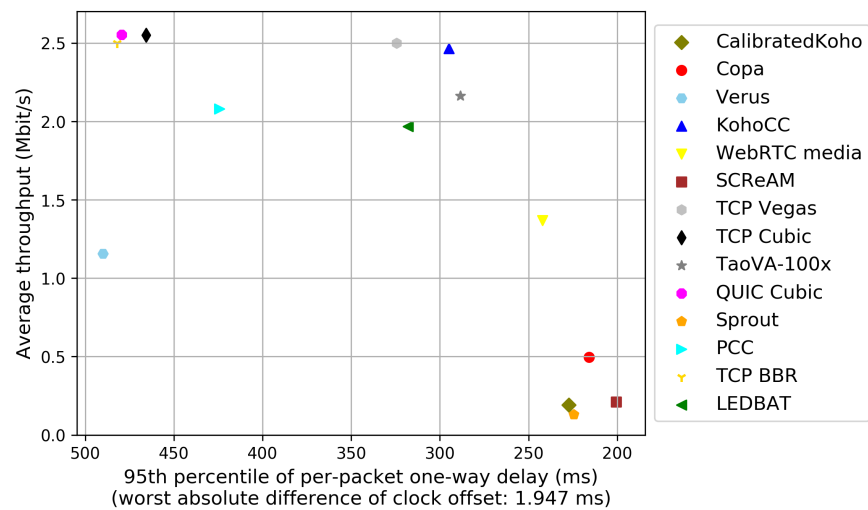
Pantheon Summary (Generated at Mon, 10 Jul 2017 22:09:51 +0000 with
pantheon version c3610718e2bbac84102e8ac47b889a75d4392d79)
Repeated the test of 15 congestion control schemes once.
Each test lasted for 30 seconds running 1 flow.
Data path **from** China ppp0 **to** AWS Korea Ethernet.
NTP offset measured against ntp.nict.jp.

```
git branch: master @ c3610718e2bbac84102e8ac47b889a75d4392d79
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
  M datagrump/sender.cc
third_party/genericCC @ dae96123232f1bcb37725348fa2378691ce26725
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
  M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-stimuli @ fc73a85ca16c34366d1888dc8a0d0d88d4ebf2a7
third_party/pantheon-tunnel @ c792f8e8e0704b1646a0e024766675d8e9a835f1
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
  M receiver/src/buffer.h
  M receiver/src/core.cpp
  M sender/src/buffer.h
  M sender/src/core.cpp
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream @ c3370fd7bd17265a79aeb34e4016ad23f5965885
third_party/sourdough @ f1a14bffe749737437f61b1eaeab30b267cde681
third_party/sprout @ 6f2efe6e088d91066a9f023df375eee2665089ce
  M src/examples/cellsim.cc
  M src/examples/sproutbt2.cc
  M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
  M src/verus.hpp
  M tools/plot.py
third_party/webrtc @ a488197ddd041ace68a42849b2540ad834825f42
```

test from China ppp0 to AWS Korea Ethernet, 1 run of 30s each per scheme
(mean of all runs by scheme)



test from China ppp0 to AWS Korea Ethernet, 1 run of 30s each per scheme



scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	1	2.50	482.04	6.50
CalibratedKoho	1	0.19	227.25	1.45
Copa	1	0.50	215.81	0.70
TCP Cubic	1	2.55	465.67	2.18
KohoCC	1	2.47	294.89	1.02
LEDBAT	1	1.97	317.88	0.80
PCC	1	2.08	424.35	32.99
QUIC Cubic	1	2.55	479.50	5.92
Saturator	1	nan	nan	nan
SCReAM	1	0.21	200.65	0.89
Sprout	1	0.13	224.55	0.61
TaoVA-100x	1	2.16	288.50	2.35
TCP Vegas	1	2.50	324.33	1.86
Verus	1	1.16	490.00	22.56
WebRTC media	1	1.37	242.13	1.11

Run 1: Statistics of TCP BBR

Start at: Mon, 10 Jul 2017 21:58:07 +0000

End at: Mon, 10 Jul 2017 21:58:37 +0000

Local clock offset: -1.715 ms

Remote clock offset: -2.013 ms

Below is generated by plot.py at Mon, 10 Jul 2017 22:09:42 +0000

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.50 Mbit/s

95th percentile per-packet one-way delay: 482.037 ms

Loss rate: 6.50%

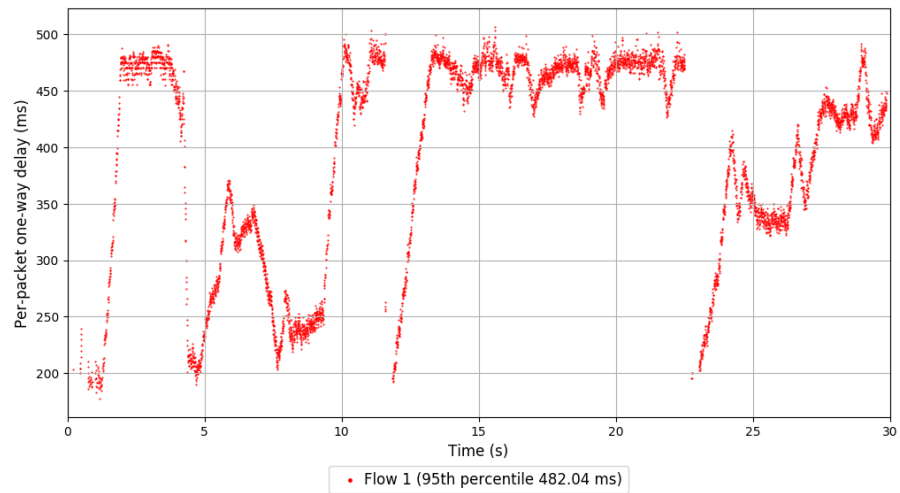
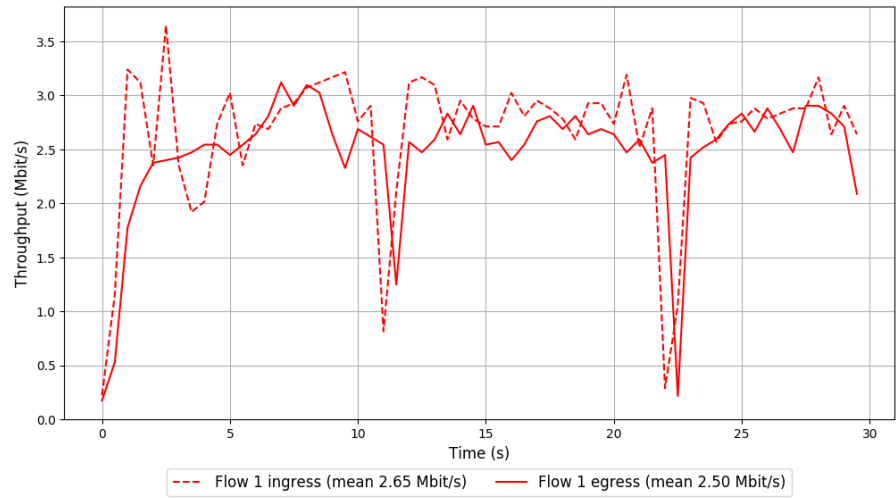
-- Flow 1:

Average throughput: 2.50 Mbit/s

95th percentile per-packet one-way delay: 482.037 ms

Loss rate: 6.50%

Run 1: Report of TCP BBR — Data Link



Run 1: Statistics of CalibratedKoho

Start at: Mon, 10 Jul 2017 21:53:26 +0000

End at: Mon, 10 Jul 2017 21:53:56 +0000

Local clock offset: -0.706 ms

Remote clock offset: -1.913 ms

Below is generated by plot.py at Mon, 10 Jul 2017 22:09:42 +0000

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.19 Mbit/s

95th percentile per-packet one-way delay: 227.254 ms

Loss rate: 1.45%

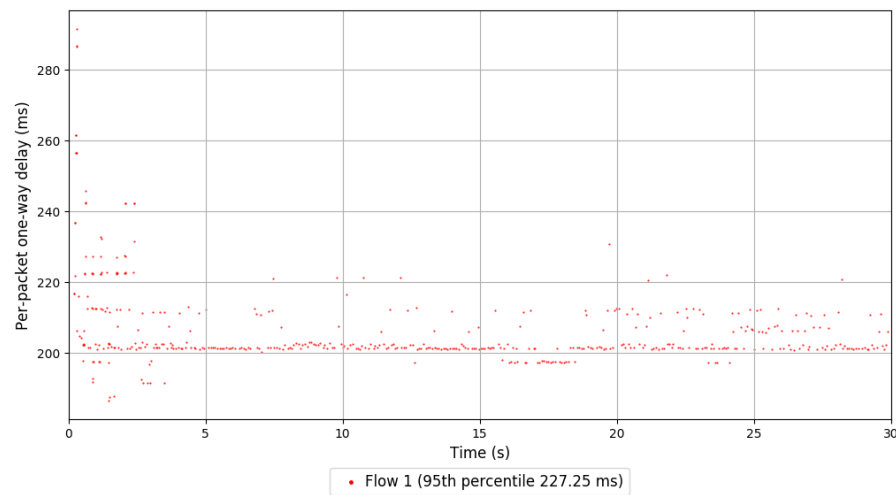
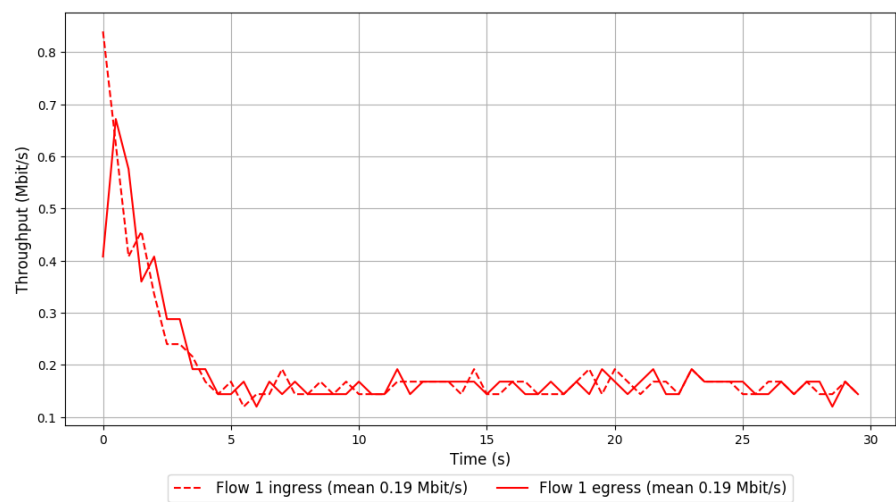
-- Flow 1:

Average throughput: 0.19 Mbit/s

95th percentile per-packet one-way delay: 227.254 ms

Loss rate: 1.45%

Run 1: Report of CalibratedKoho — Data Link



Run 1: Statistics of Copa

Start at: Mon, 10 Jul 2017 22:05:09 +0000

End at: Mon, 10 Jul 2017 22:05:39 +0000

Local clock offset: -1.665 ms

Remote clock offset: -2.206 ms

Below is generated by plot.py at Mon, 10 Jul 2017 22:09:42 +0000

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.50 Mbit/s

95th percentile per-packet one-way delay: 215.814 ms

Loss rate: 0.70%

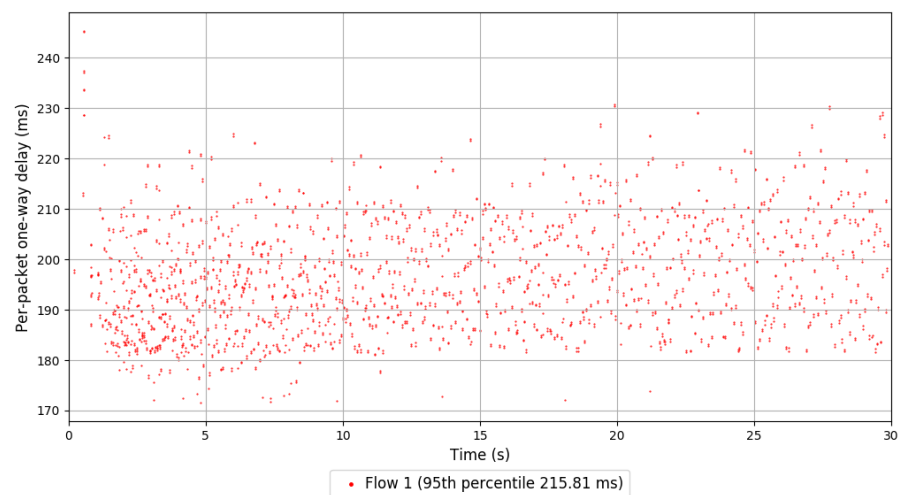
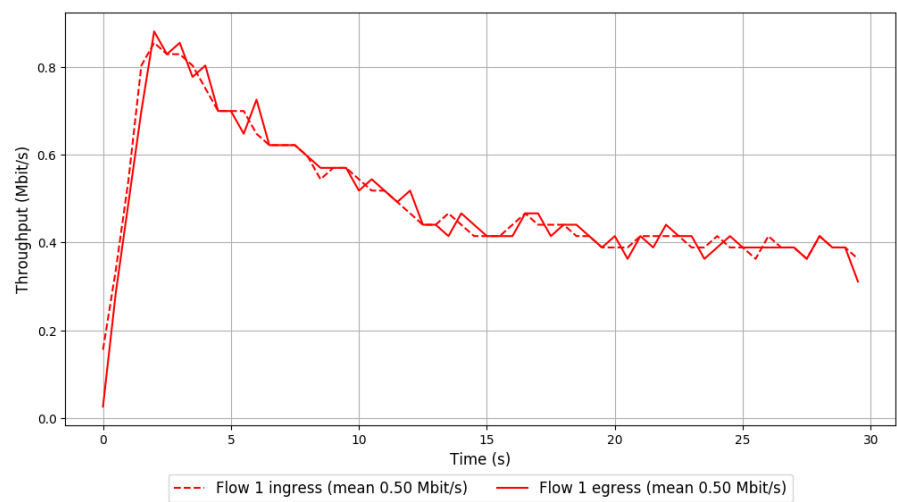
-- Flow 1:

Average throughput: 0.50 Mbit/s

95th percentile per-packet one-way delay: 215.814 ms

Loss rate: 0.70%

Run 1: Report of Copa — Data Link



Run 1: Statistics of TCP Cubic

Start at: Mon, 10 Jul 2017 21:56:56 +0000

End at: Mon, 10 Jul 2017 21:57:26 +0000

Local clock offset: -1.827 ms

Remote clock offset: -1.973 ms

Below is generated by plot.py at Mon, 10 Jul 2017 22:09:42 +0000

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.55 Mbit/s

95th percentile per-packet one-way delay: 465.671 ms

Loss rate: 2.18%

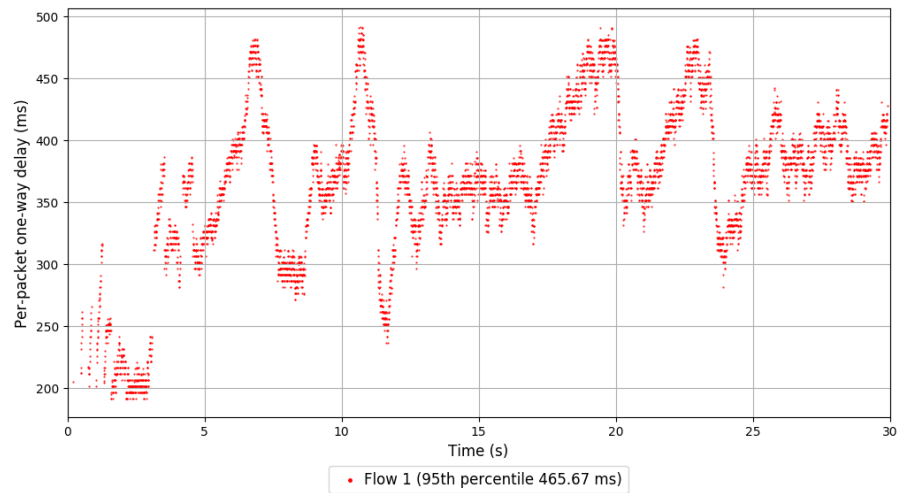
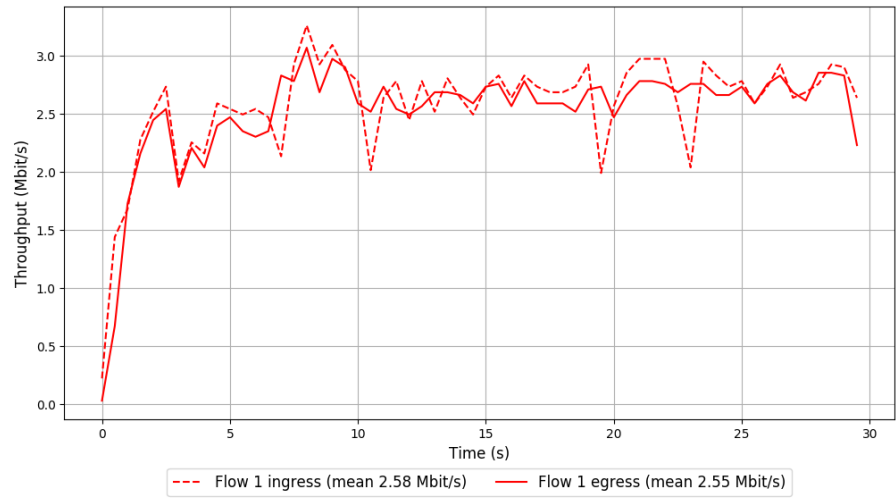
-- Flow 1:

Average throughput: 2.55 Mbit/s

95th percentile per-packet one-way delay: 465.671 ms

Loss rate: 2.18%

Run 1: Report of TCP Cubic — Data Link



Run 1: Statistics of KohoCC

Start at: Mon, 10 Jul 2017 22:08:40 +0000

End at: Mon, 10 Jul 2017 22:09:10 +0000

Local clock offset: -1.897 ms

Remote clock offset: -2.292 ms

Below is generated by plot.py at Mon, 10 Jul 2017 22:09:43 +0000

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.47 Mbit/s

95th percentile per-packet one-way delay: 294.893 ms

Loss rate: 1.02%

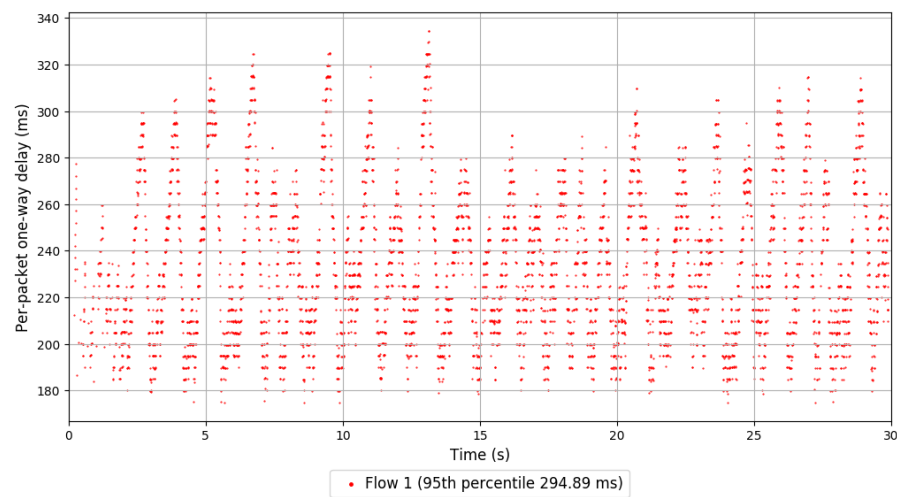
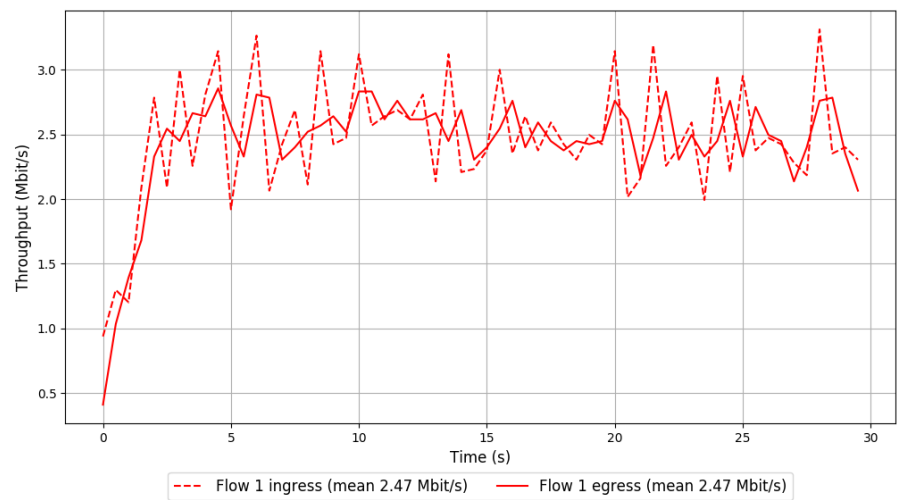
-- Flow 1:

Average throughput: 2.47 Mbit/s

95th percentile per-packet one-way delay: 294.893 ms

Loss rate: 1.02%

Run 1: Report of KohoCC — Data Link



Run 1: Statistics of LEDBAT

Start at: Mon, 10 Jul 2017 21:59:18 +0000

End at: Mon, 10 Jul 2017 21:59:48 +0000

Local clock offset: -1.931 ms

Remote clock offset: -2.074 ms

Below is generated by plot.py at Mon, 10 Jul 2017 22:09:44 +0000

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.97 Mbit/s

95th percentile per-packet one-way delay: 317.877 ms

Loss rate: 0.80%

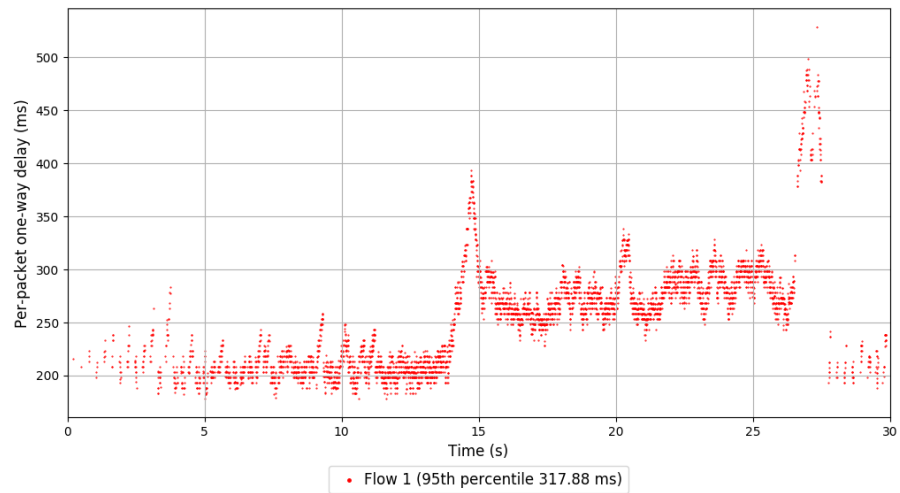
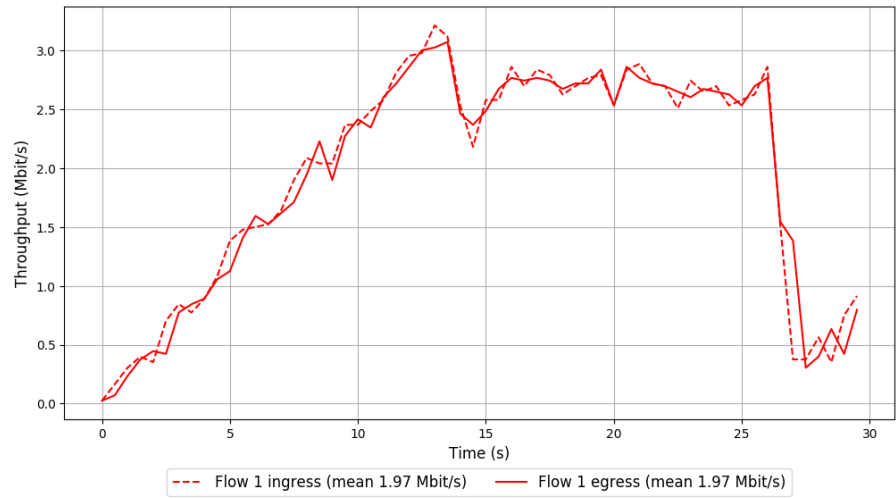
-- Flow 1:

Average throughput: 1.97 Mbit/s

95th percentile per-packet one-way delay: 317.877 ms

Loss rate: 0.80%

Run 1: Report of LEDBAT — Data Link



Run 1: Statistics of PCC

Start at: Mon, 10 Jul 2017 22:06:19 +0000

End at: Mon, 10 Jul 2017 22:06:49 +0000

Local clock offset: -0.255 ms

Remote clock offset: -2.202 ms

Below is generated by plot.py at Mon, 10 Jul 2017 22:09:44 +0000

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.08 Mbit/s

95th percentile per-packet one-way delay: 424.350 ms

Loss rate: 32.99%

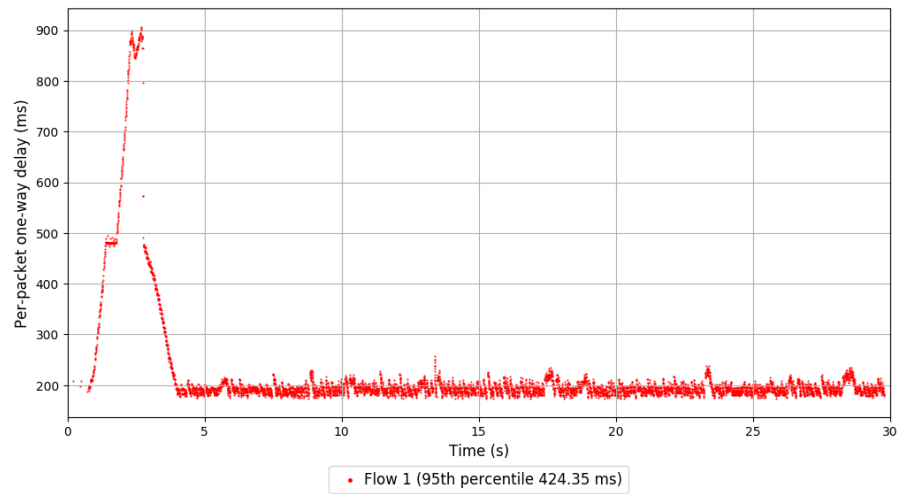
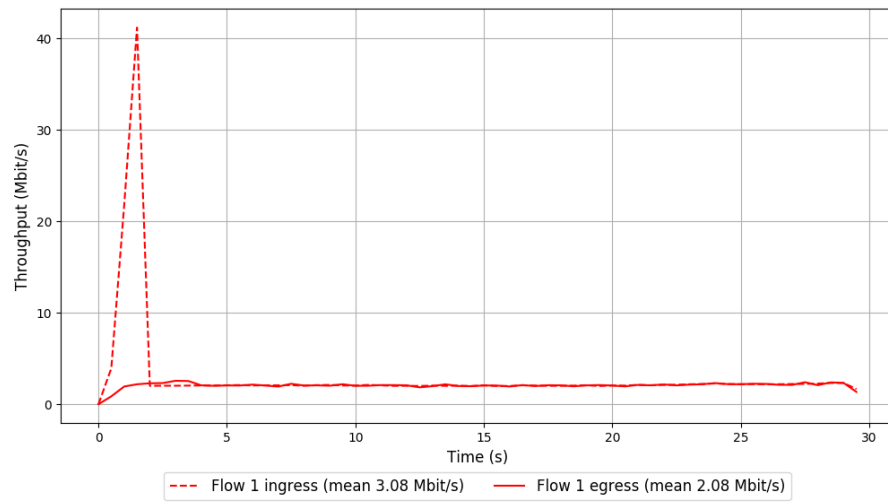
-- Flow 1:

Average throughput: 2.08 Mbit/s

95th percentile per-packet one-way delay: 424.350 ms

Loss rate: 32.99%

Run 1: Report of PCC — Data Link



Run 1: Statistics of QUIC Cubic

Start at: Mon, 10 Jul 2017 21:55:46 +0000

End at: Mon, 10 Jul 2017 21:56:16 +0000

Local clock offset: -1.775 ms

Remote clock offset: -1.91 ms

Below is generated by plot.py at Mon, 10 Jul 2017 22:09:46 +0000

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.55 Mbit/s

95th percentile per-packet one-way delay: 479.498 ms

Loss rate: 5.92%

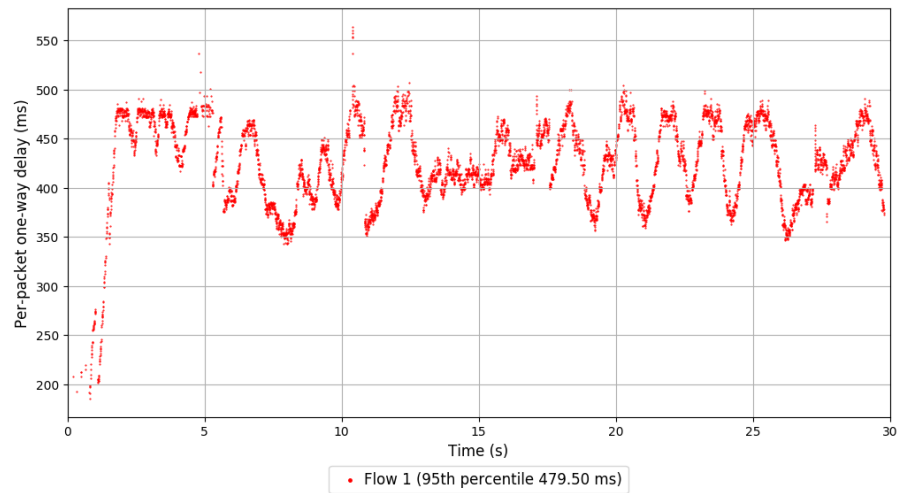
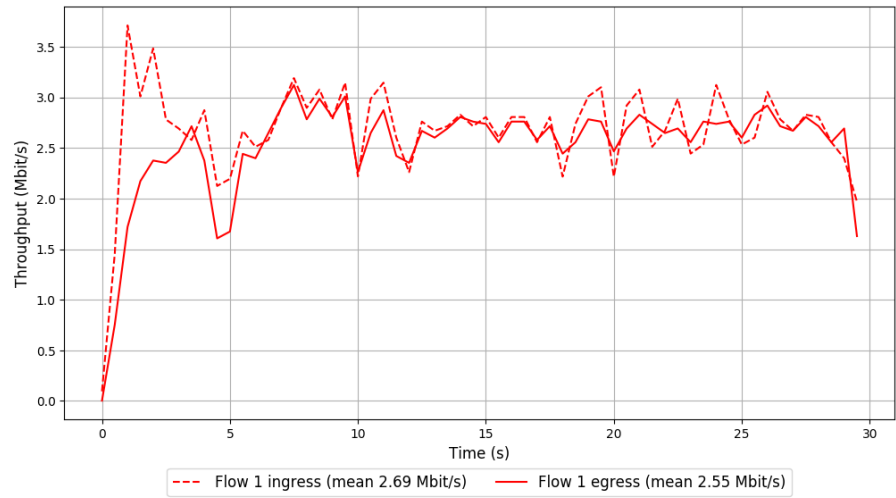
-- Flow 1:

Average throughput: 2.55 Mbit/s

95th percentile per-packet one-way delay: 479.498 ms

Loss rate: 5.92%

Run 1: Report of QUIC Cubic — Data Link



Run 1: Statistics of Saturator

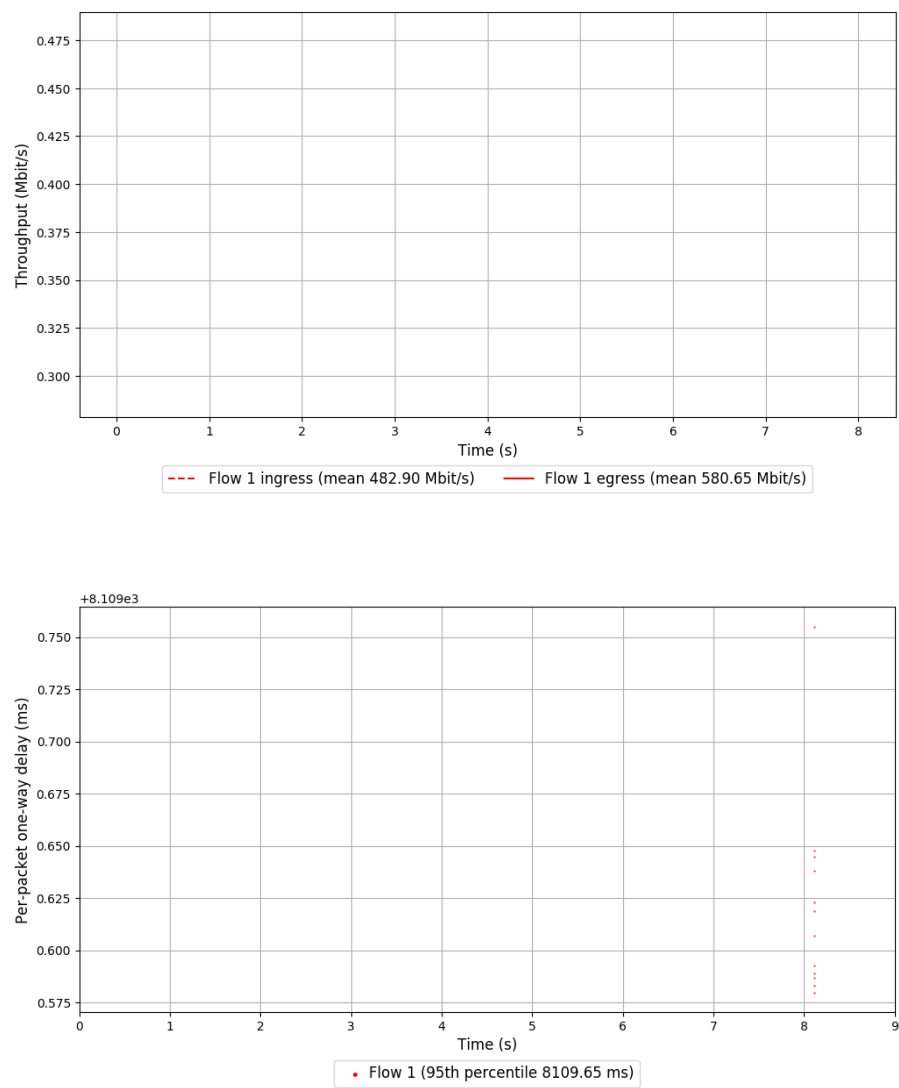
Start at: Mon, 10 Jul 2017 22:03:59 +0000

End at: Mon, 10 Jul 2017 22:04:29 +0000

Local clock offset: -0.631 ms

Remote clock offset: -2.128 ms

Run 1: Report of Saturator — Data Link



Run 1: Statistics of SReAM

Start at: Mon, 10 Jul 2017 22:02:50 +0000

End at: Mon, 10 Jul 2017 22:03:20 +0000

Local clock offset: -0.642 ms

Remote clock offset: -2.093 ms

Below is generated by plot.py at Mon, 10 Jul 2017 22:09:46 +0000

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.21 Mbit/s

95th percentile per-packet one-way delay: 200.649 ms

Loss rate: 0.89%

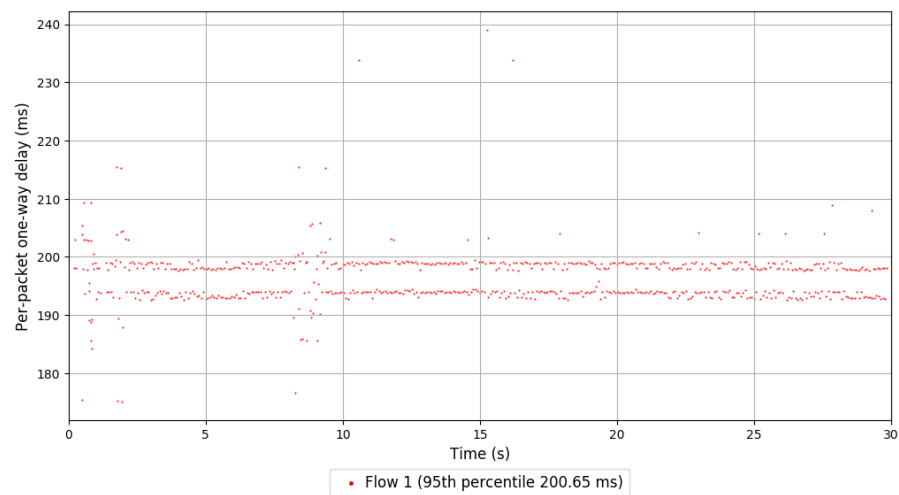
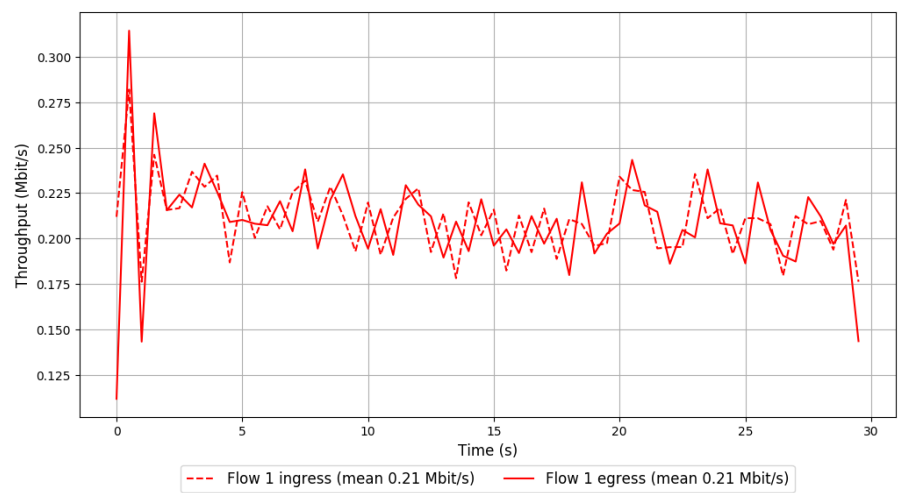
-- Flow 1:

Average throughput: 0.21 Mbit/s

95th percentile per-packet one-way delay: 200.649 ms

Loss rate: 0.89%

Run 1: Report of SReAM — Data Link



Run 1: Statistics of Sprout

Start at: Mon, 10 Jul 2017 21:52:16 +0000

End at: Mon, 10 Jul 2017 21:52:46 +0000

Local clock offset: -1.78 ms

Remote clock offset: -1.836 ms

Below is generated by plot.py at Mon, 10 Jul 2017 22:09:47 +0000

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.13 Mbit/s

95th percentile per-packet one-way delay: 224.553 ms

Loss rate: 0.61%

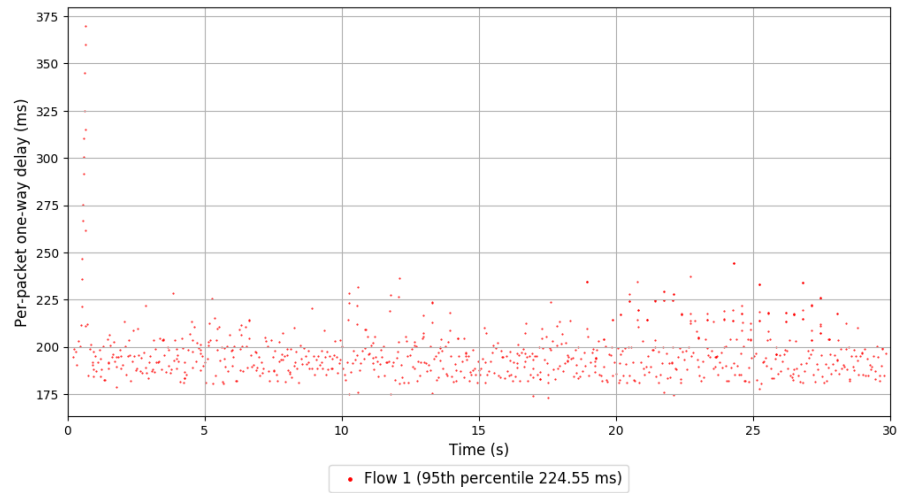
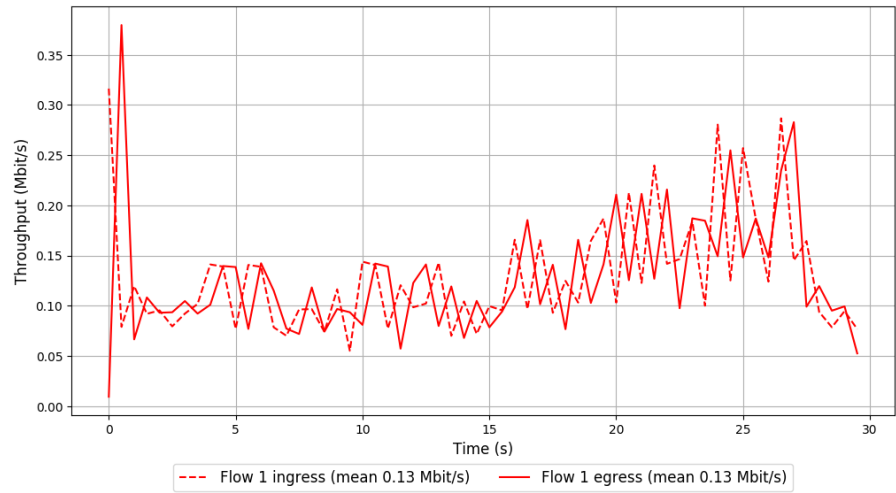
-- Flow 1:

Average throughput: 0.13 Mbit/s

95th percentile per-packet one-way delay: 224.553 ms

Loss rate: 0.61%

Run 1: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

Start at: Mon, 10 Jul 2017 22:00:28 +0000

End at: Mon, 10 Jul 2017 22:00:58 +0000

Local clock offset: -0.333 ms

Remote clock offset: -2.066 ms

Below is generated by plot.py at Mon, 10 Jul 2017 22:09:47 +0000

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.16 Mbit/s

95th percentile per-packet one-way delay: 288.498 ms

Loss rate: 2.35%

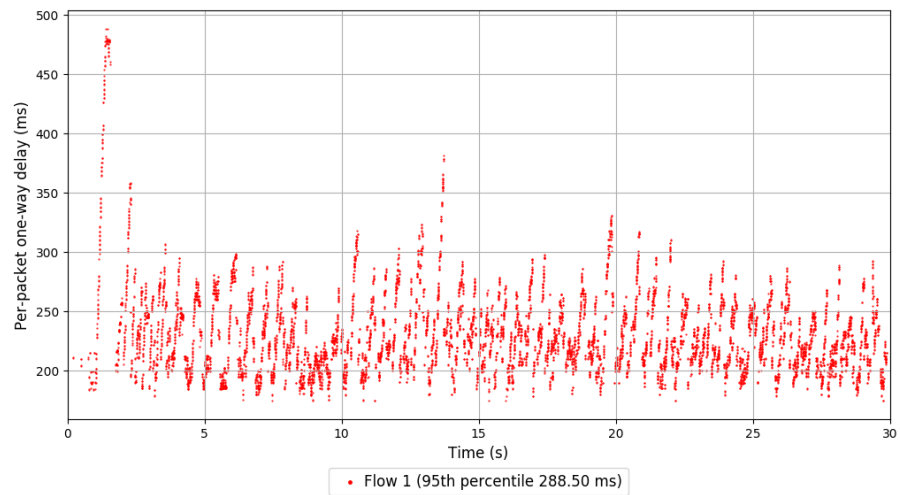
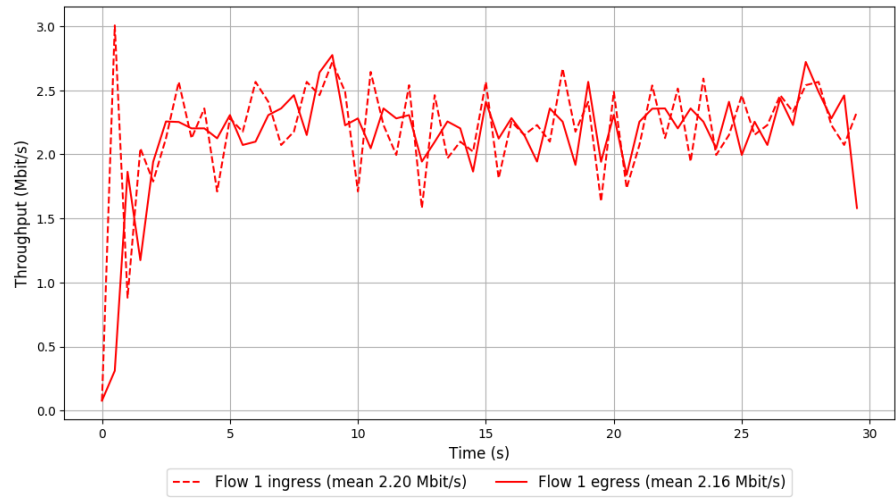
-- Flow 1:

Average throughput: 2.16 Mbit/s

95th percentile per-packet one-way delay: 288.498 ms

Loss rate: 2.35%

Run 1: Report of TaoVA-100x — Data Link



Run 1: Statistics of TCP Vegas

Start at: Mon, 10 Jul 2017 22:01:39 +0000

End at: Mon, 10 Jul 2017 22:02:09 +0000

Local clock offset: -1.897 ms

Remote clock offset: -2.032 ms

Below is generated by plot.py at Mon, 10 Jul 2017 22:09:49 +0000

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.50 Mbit/s

95th percentile per-packet one-way delay: 324.333 ms

Loss rate: 1.86%

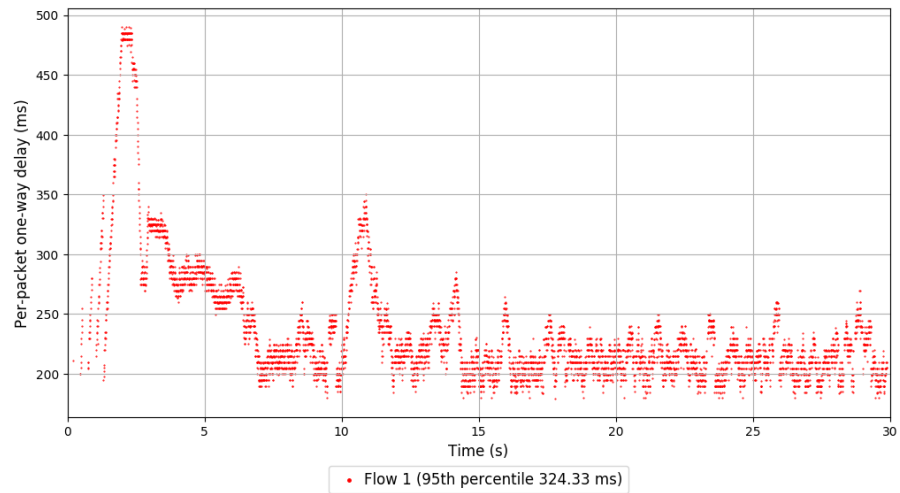
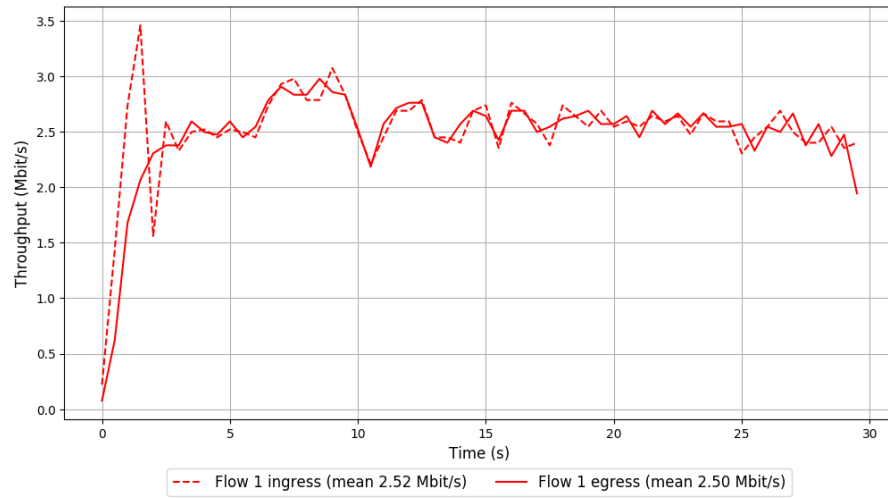
-- Flow 1:

Average throughput: 2.50 Mbit/s

95th percentile per-packet one-way delay: 324.333 ms

Loss rate: 1.86%

Run 1: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: Mon, 10 Jul 2017 21:54:36 +0000

End at: Mon, 10 Jul 2017 21:55:06 +0000

Local clock offset: -0.704 ms

Remote clock offset: -1.935 ms

Below is generated by plot.py at Mon, 10 Jul 2017 22:09:49 +0000

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.16 Mbit/s

95th percentile per-packet one-way delay: 490.001 ms

Loss rate: 22.56%

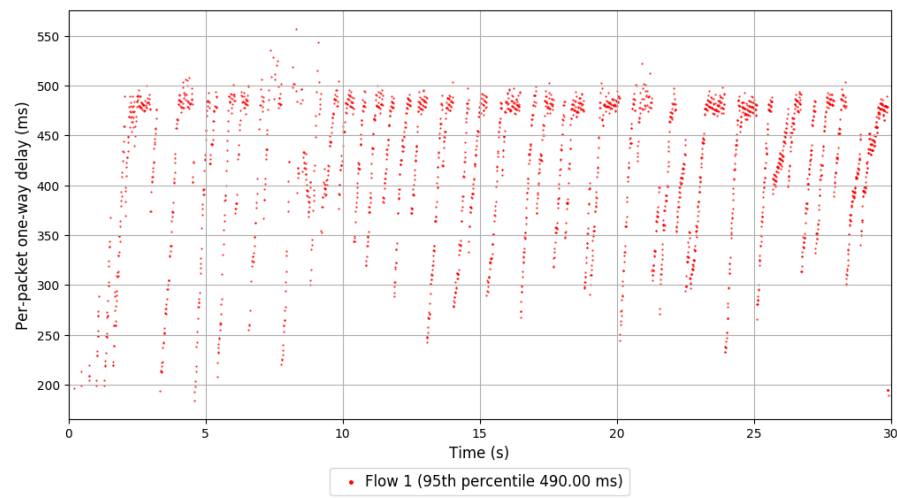
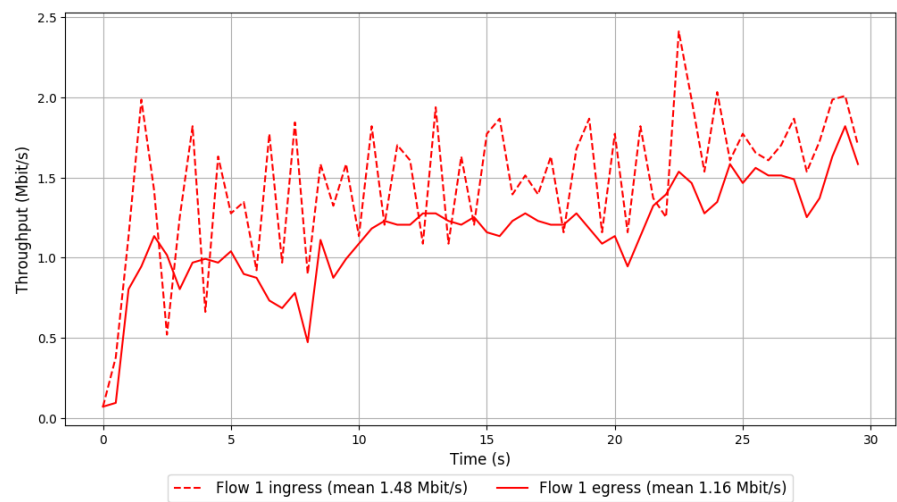
-- Flow 1:

Average throughput: 1.16 Mbit/s

95th percentile per-packet one-way delay: 490.001 ms

Loss rate: 22.56%

Run 1: Report of Verus — Data Link



Run 1: Statistics of WebRTC media

Start at: Mon, 10 Jul 2017 22:07:29 +0000

End at: Mon, 10 Jul 2017 22:07:59 +0000

Local clock offset: -1.779 ms

Remote clock offset: -2.253 ms

Below is generated by plot.py at Mon, 10 Jul 2017 22:09:49 +0000

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.37 Mbit/s

95th percentile per-packet one-way delay: 242.133 ms

Loss rate: 1.11%

-- Flow 1:

Average throughput: 1.37 Mbit/s

95th percentile per-packet one-way delay: 242.133 ms

Loss rate: 1.11%

Run 1: Report of WebRTC media — Data Link

