

Pantheon Report

Generated at 2017-11-30 06:51:49 (UTC).

Data path: AWS India 1 Ethernet (*local*) → India ppp0 (*remote*).

Repeated the test of 14 congestion control schemes 3 times.

Each test lasted for 30 seconds running 1 flow.

Increased UDP receive buffer to 16 MB (default) and 32 MB (max).

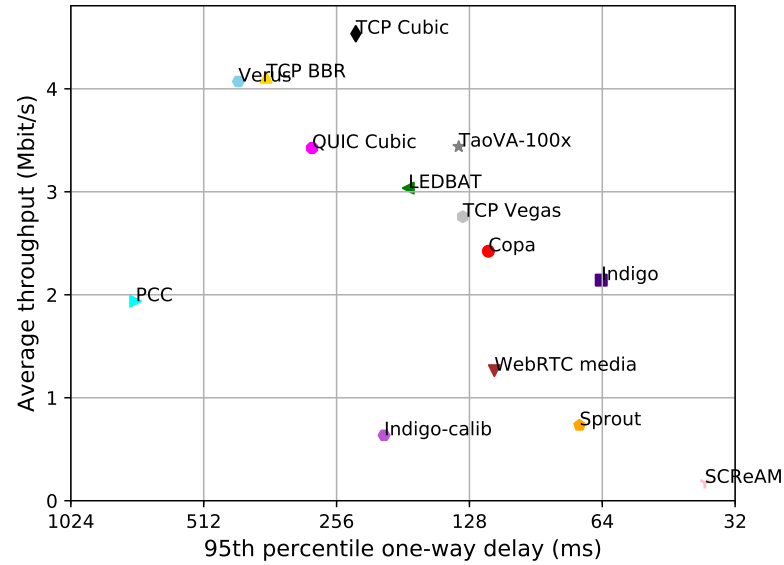
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo_fast**).

NTP offsets were measured against **nets.org.sg** and have been applied to correct the timestamps in logs.

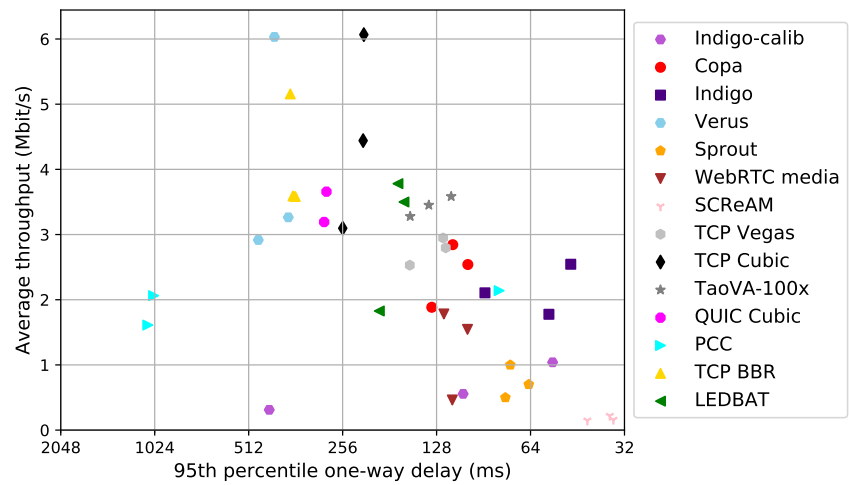
Git summary:

```
branch: indigos @ e3a57ad5ac5cfcaca0e3f983c8dd4cc3509e0262
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
  M datagrump/sender.cc
third_party/genericCC @ b5b7c38e8391001927dc41c6cfa2627d03dde737
third_party/indigo @ b19f3730105f9aa95452552af924e3719b03cc55
third_party/indigo-cellular @ aee99e8eb842cb053f8c9a80e28cd256a930bbc2
third_party/indigo-no-calib @ 7224f2202e8a044d8306fa0b983ad84360c53d89
third_party/indigo-no-cwnd @ 3e58442c04028a11d7b02456e137604633ba2d6c
third_party/indigo-no-delivery-rate @ 57caa40858b964906edff4876d5a7e5bfff666c5
third_party/indigo-no-queuing-delay @ 03455460fd1a8ffbdad86fabb936fdca204b80db
third_party/indigo-no-send-rate @ b39dfa6b2c5f19cb7cd89626cb4f5bb81f9fecda
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
  M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ baf443516dea3eeddeccaf9b916cc313273ca4f4
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 @ f1a14bffe749737437f61b1eaaeb30b267cde681
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 AWS India 1 Ethernet to India ppp0, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from AWS India 1 Ethernet to India ppp0, 3 runs of 30s each per scheme



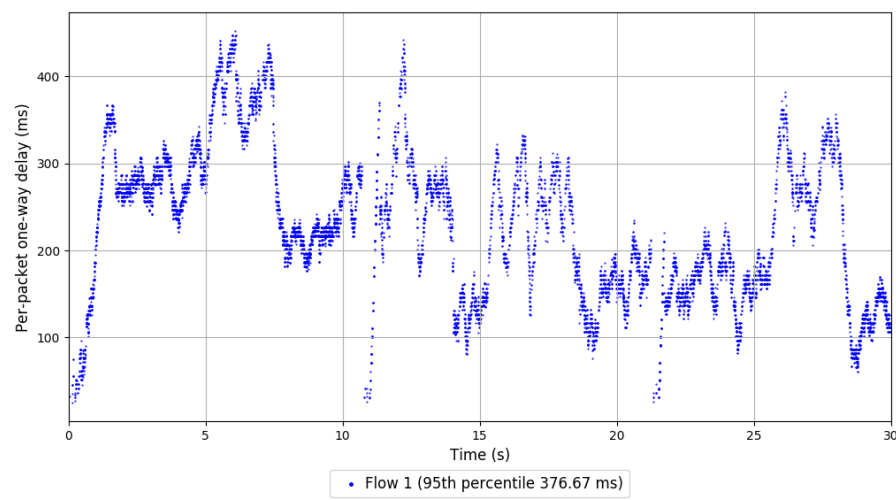
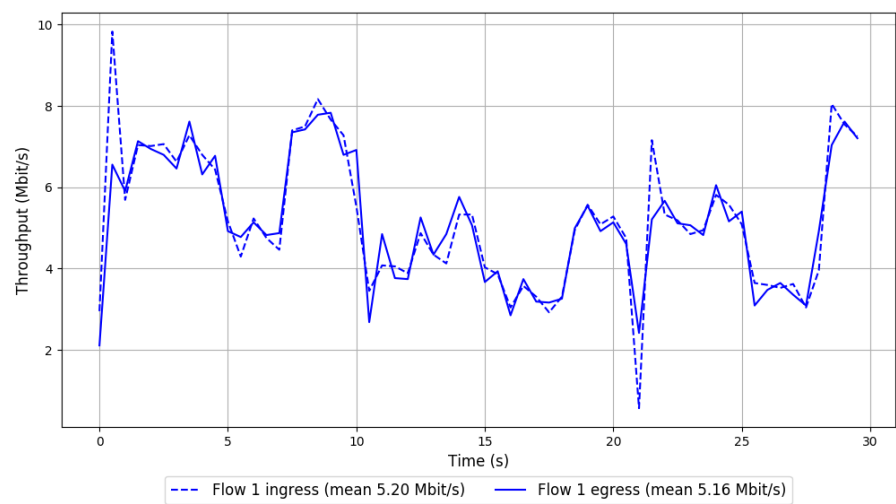
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	4.11	369.67	0.94
TCP Cubic	3	4.54	231.57	0.49
LEDBAT	3	3.04	176.12	0.30
PCC	3	1.94	730.22	12.78
QUIC Cubic	2	3.42	290.90	0.85
SCReAM	3	0.18	37.49	0.12
WebRTC media	3	1.26	112.38	0.18
Sprout	3	0.73	72.07	0.21
TaoVA-100x	3	3.44	135.34	0.32
TCP Vegas	3	2.76	132.52	0.30
Verus	3	4.07	427.49	1.05
Copa	3	2.42	115.95	0.17
Indigo	3	2.14	64.35	0.14
Indigo-calib	3	0.64	199.81	0.16

Run 1: Statistics of TCP BBR

Start at: 2017-11-30 06:04:45
End at: 2017-11-30 06:05:15
Local clock offset: -9.722 ms
Remote clock offset: -18.707 ms

Below is generated by plot.py at 2017-11-30 06:51:18
Datalink statistics
-- Total of 1 flow:
Average throughput: 5.16 Mbit/s
95th percentile per-packet one-way delay: 376.665 ms
Loss rate: 1.00%
-- Flow 1:
Average throughput: 5.16 Mbit/s
95th percentile per-packet one-way delay: 376.665 ms
Loss rate: 1.00%

Run 1: Report of TCP BBR — Data Link

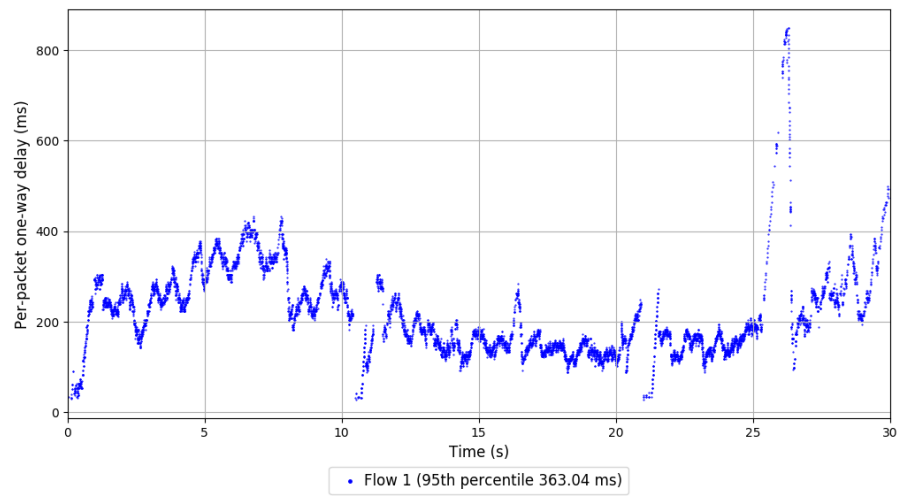
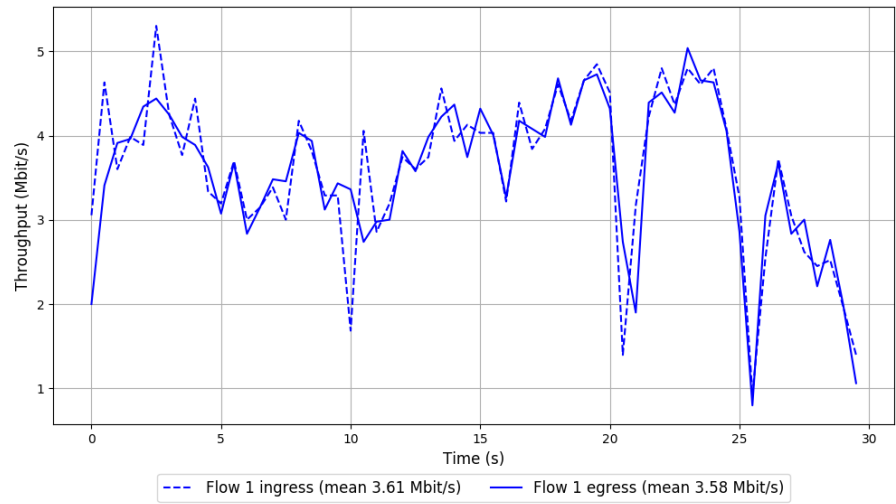


Run 2: Statistics of TCP BBR

Start at: 2017-11-30 06:20:41
End at: 2017-11-30 06:21:11
Local clock offset: -5.954 ms
Remote clock offset: -17.275 ms

Below is generated by plot.py at 2017-11-30 06:51:18
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.58 Mbit/s
95th percentile per-packet one-way delay: 363.039 ms
Loss rate: 1.05%
-- Flow 1:
Average throughput: 3.58 Mbit/s
95th percentile per-packet one-way delay: 363.039 ms
Loss rate: 1.05%

Run 2: Report of TCP BBR — Data Link

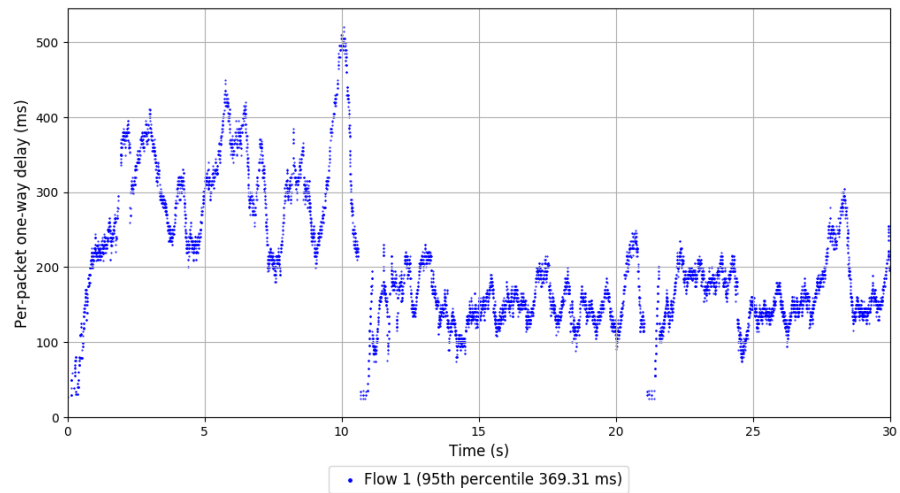
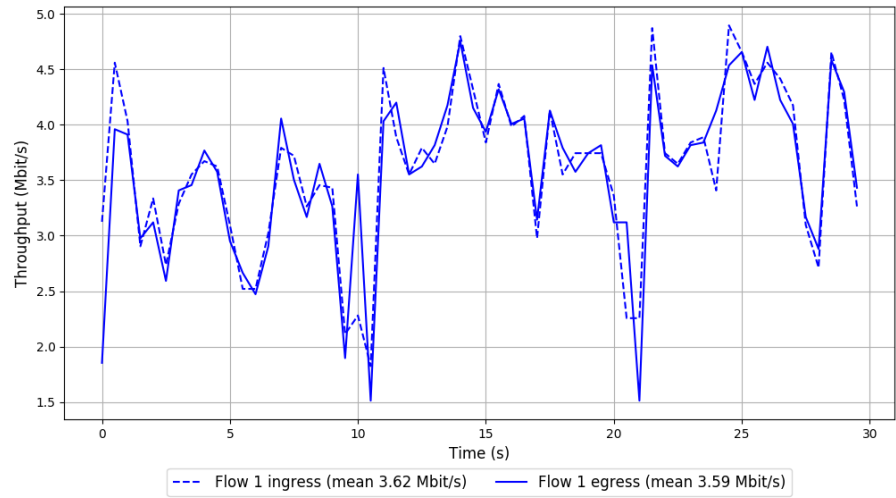


Run 3: Statistics of TCP BBR

Start at: 2017-11-30 06:36:21
End at: 2017-11-30 06:36:51
Local clock offset: -7.724 ms
Remote clock offset: -15.758 ms

Below is generated by plot.py at 2017-11-30 06:51:18
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.59 Mbit/s
95th percentile per-packet one-way delay: 369.315 ms
Loss rate: 0.76%
-- Flow 1:
Average throughput: 3.59 Mbit/s
95th percentile per-packet one-way delay: 369.315 ms
Loss rate: 0.76%

Run 3: Report of TCP BBR — Data Link

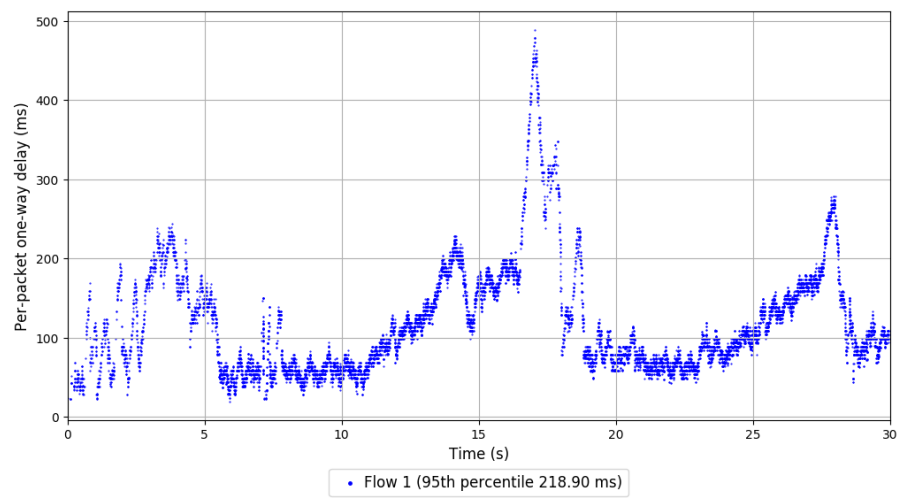
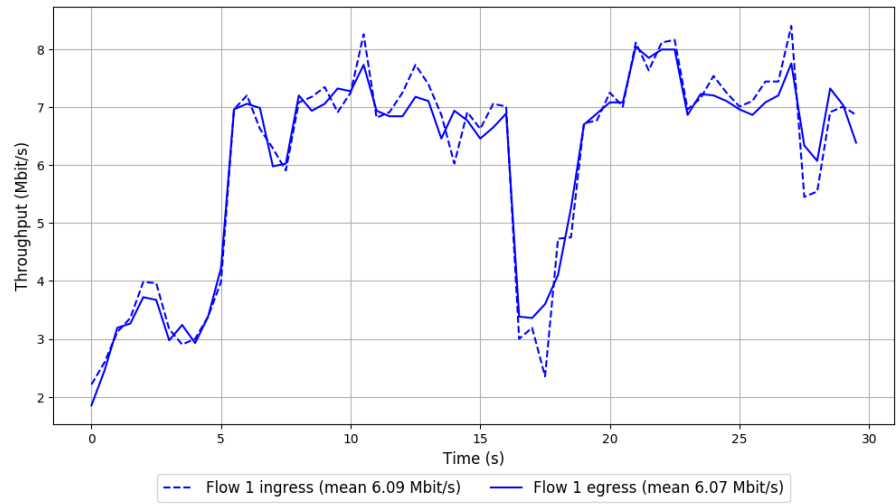


Run 1: Statistics of TCP Cubic

Start at: 2017-11-30 06:09:15
End at: 2017-11-30 06:09:45
Local clock offset: -10.303 ms
Remote clock offset: -17.772 ms

Below is generated by plot.py at 2017-11-30 06:51:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 6.07 Mbit/s
95th percentile per-packet one-way delay: 218.902 ms
Loss rate: 0.53%
-- Flow 1:
Average throughput: 6.07 Mbit/s
95th percentile per-packet one-way delay: 218.902 ms
Loss rate: 0.53%

Run 1: Report of TCP Cubic — Data Link

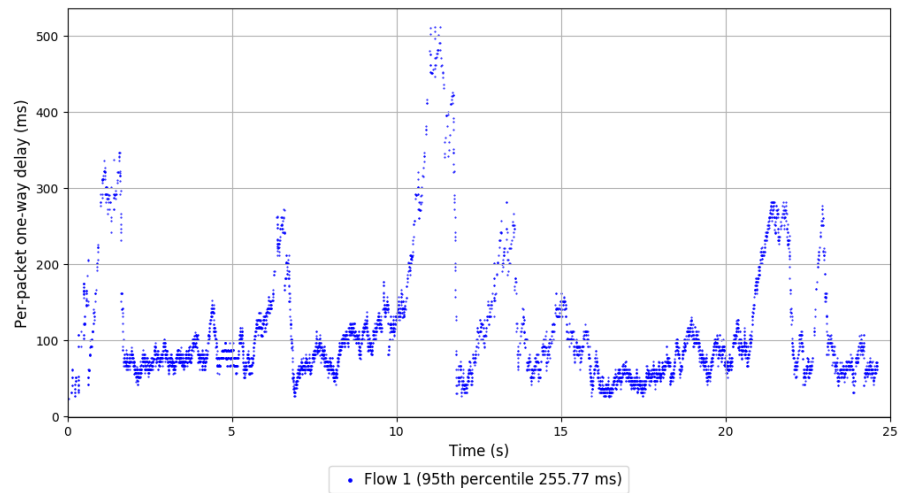
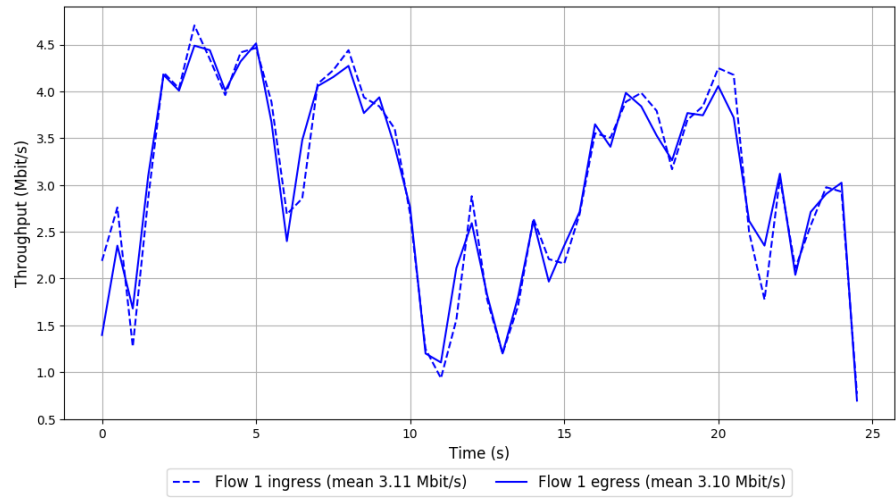


Run 2: Statistics of TCP Cubic

Start at: 2017-11-30 06:25:09
End at: 2017-11-30 06:25:39
Local clock offset: -6.599 ms
Remote clock offset: -17.113 ms

Below is generated by plot.py at 2017-11-30 06:51:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.10 Mbit/s
95th percentile per-packet one-way delay: 255.766 ms
Loss rate: 0.45%
-- Flow 1:
Average throughput: 3.10 Mbit/s
95th percentile per-packet one-way delay: 255.766 ms
Loss rate: 0.45%

Run 2: Report of TCP Cubic — Data Link

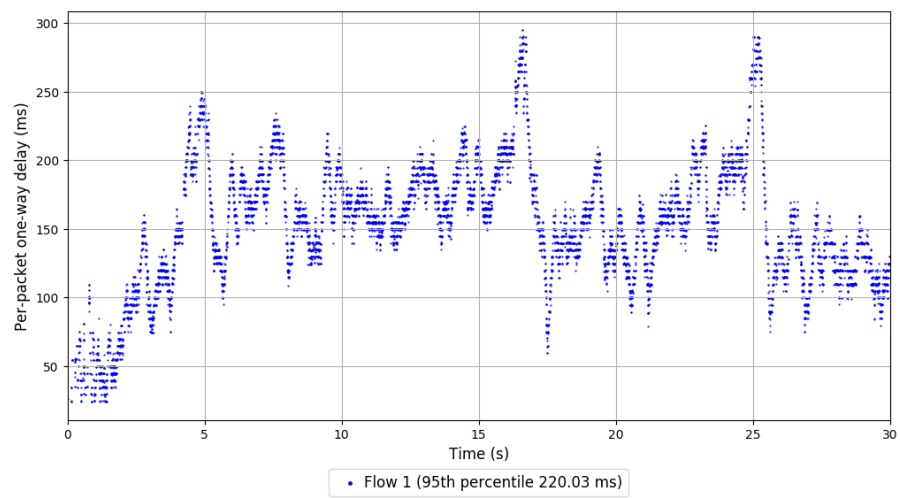
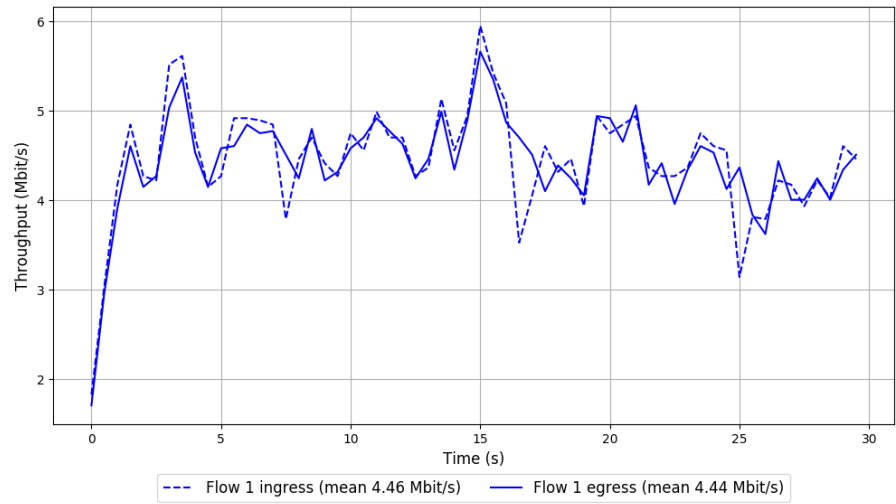


Run 3: Statistics of TCP Cubic

Start at: 2017-11-30 06:40:50
End at: 2017-11-30 06:41:20
Local clock offset: -8.896 ms
Remote clock offset: -16.975 ms

Below is generated by plot.py at 2017-11-30 06:51:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 4.44 Mbit/s
95th percentile per-packet one-way delay: 220.029 ms
Loss rate: 0.50%
-- Flow 1:
Average throughput: 4.44 Mbit/s
95th percentile per-packet one-way delay: 220.029 ms
Loss rate: 0.50%

Run 3: Report of TCP Cubic — Data Link

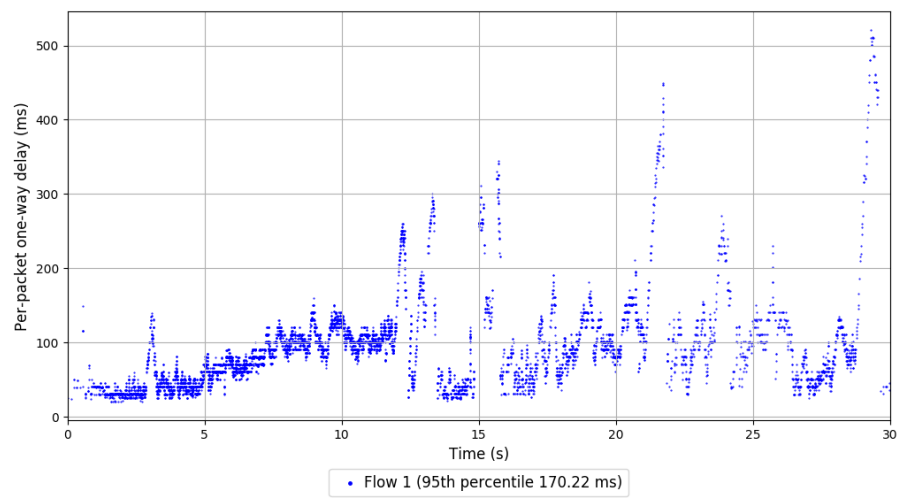
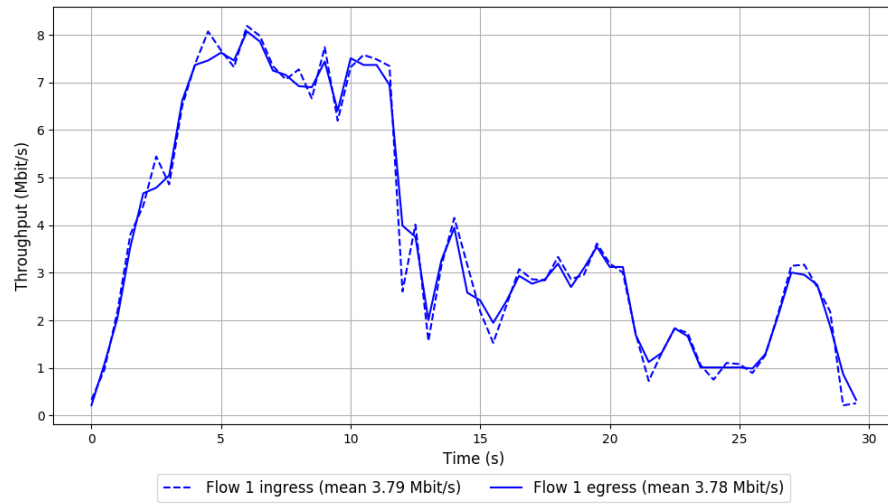


```
Run 1: Statistics of LEDBAT

Start at: 2017-11-30 06:11:39
End at: 2017-11-30 06:12:09
Local clock offset: -12.081 ms
Remote clock offset: -18.317 ms

# Below is generated by plot.py at 2017-11-30 06:51:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.78 Mbit/s
95th percentile per-packet one-way delay: 170.222 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 3.78 Mbit/s
95th percentile per-packet one-way delay: 170.222 ms
Loss rate: 0.10%
```


Run 1: Report of LEDBAT — Data Link

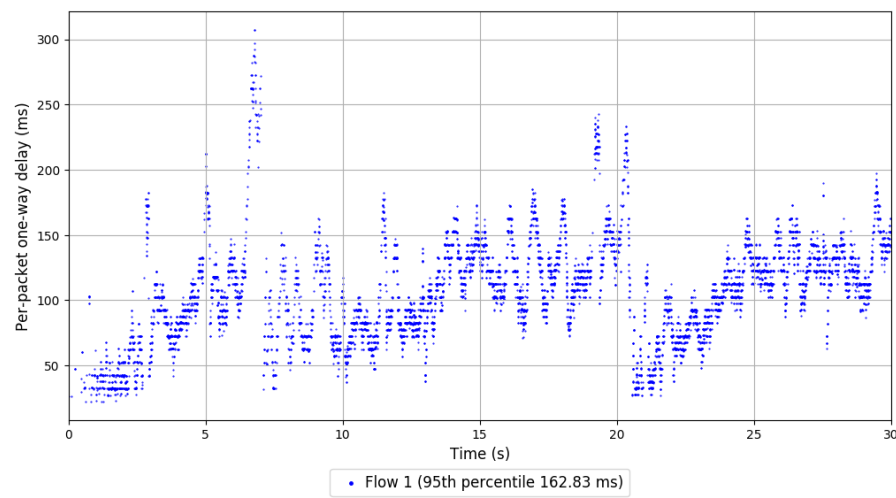
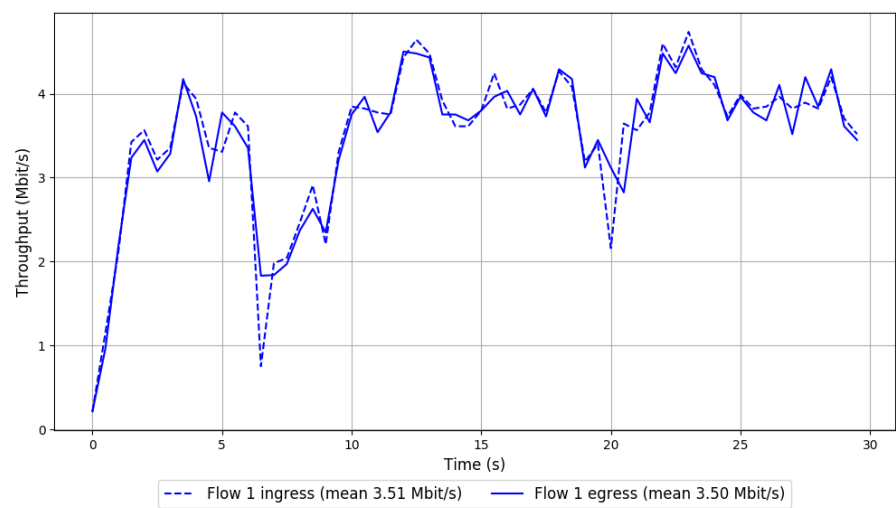


Run 2: Statistics of LEDBAT

Start at: 2017-11-30 06:27:24
End at: 2017-11-30 06:27:54
Local clock offset: -7.452 ms
Remote clock offset: -17.267 ms

Below is generated by plot.py at 2017-11-30 06:51:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.50 Mbit/s
95th percentile per-packet one-way delay: 162.831 ms
Loss rate: 0.52%
-- Flow 1:
Average throughput: 3.50 Mbit/s
95th percentile per-packet one-way delay: 162.831 ms
Loss rate: 0.52%

Run 2: Report of LEDBAT — Data Link

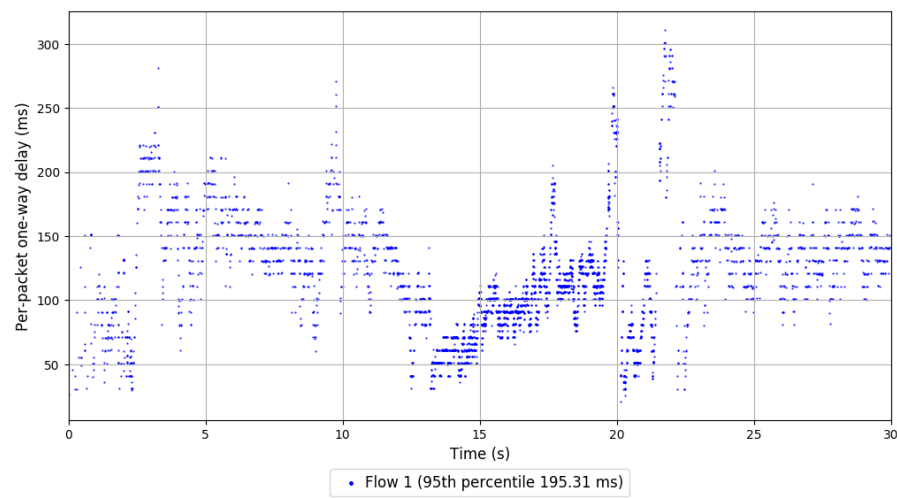
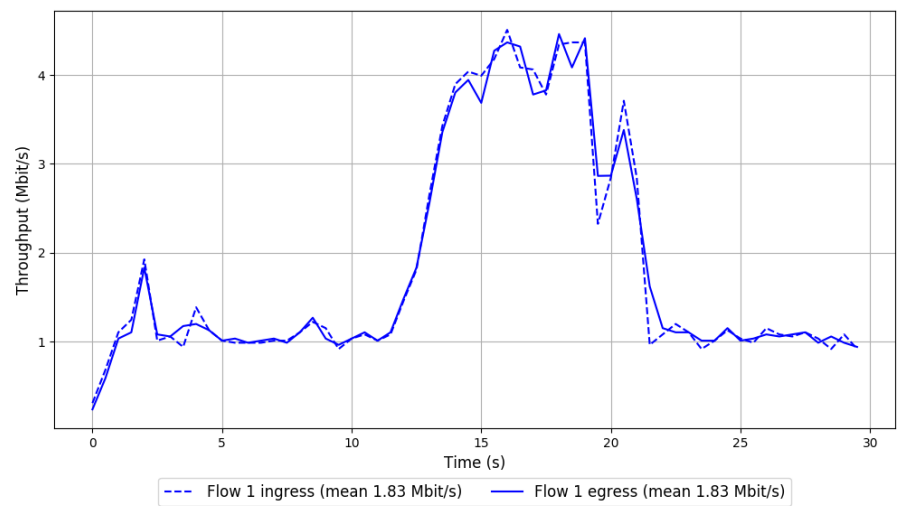


Run 3: Statistics of LEDBAT

Start at: 2017-11-30 06:43:04
End at: 2017-11-30 06:43:34
Local clock offset: -9.735 ms
Remote clock offset: -16.348 ms

Below is generated by plot.py at 2017-11-30 06:51:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.83 Mbit/s
95th percentile per-packet one-way delay: 195.310 ms
Loss rate: 0.28%
-- Flow 1:
Average throughput: 1.83 Mbit/s
95th percentile per-packet one-way delay: 195.310 ms
Loss rate: 0.28%

Run 3: Report of LEDBAT — Data Link

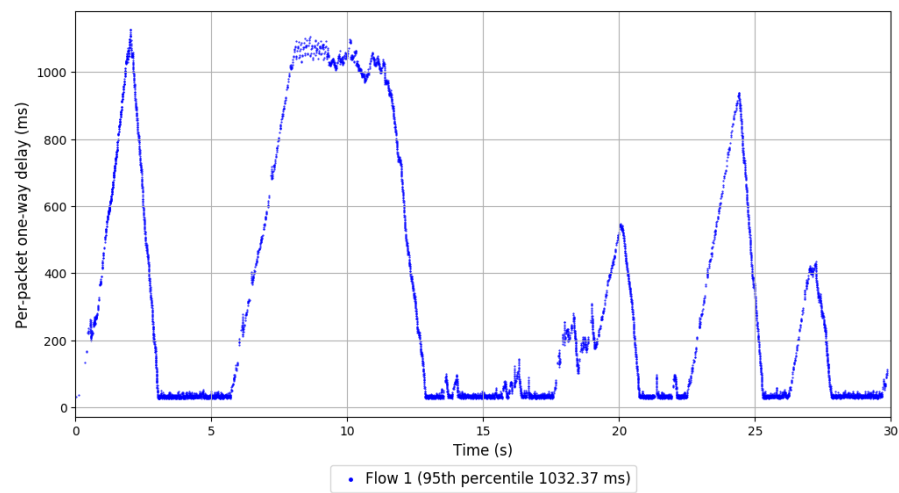
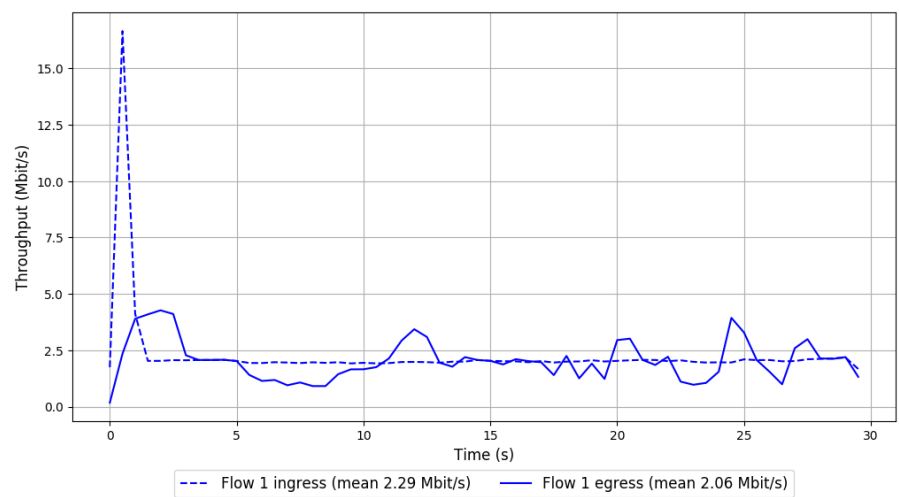


Run 1: Statistics of PCC

Start at: 2017-11-30 06:15:00
End at: 2017-11-30 06:15:30
Local clock offset: -9.559 ms
Remote clock offset: -17.058 ms

Below is generated by plot.py at 2017-11-30 06:51:23
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.06 Mbit/s
95th percentile per-packet one-way delay: 1032.365 ms
Loss rate: 10.11%
-- Flow 1:
Average throughput: 2.06 Mbit/s
95th percentile per-packet one-way delay: 1032.365 ms
Loss rate: 10.11%

Run 1: Report of PCC — Data Link

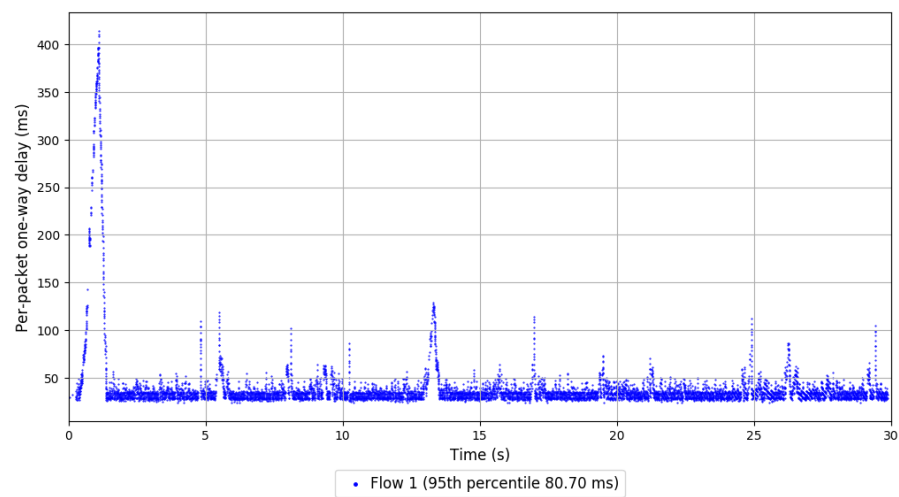
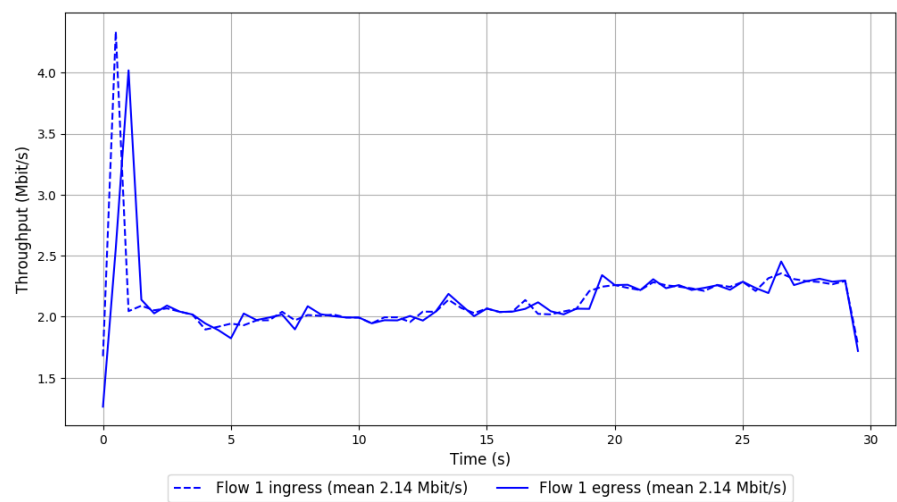


Run 2: Statistics of PCC

Start at: 2017-11-30 06:30:50
End at: 2017-11-30 06:31:20
Local clock offset: -4.051 ms
Remote clock offset: -17.628 ms

Below is generated by plot.py at 2017-11-30 06:51:25
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.14 Mbit/s
95th percentile per-packet one-way delay: 80.700 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 2.14 Mbit/s
95th percentile per-packet one-way delay: 80.700 ms
Loss rate: 0.19%

Run 2: Report of PCC — Data Link

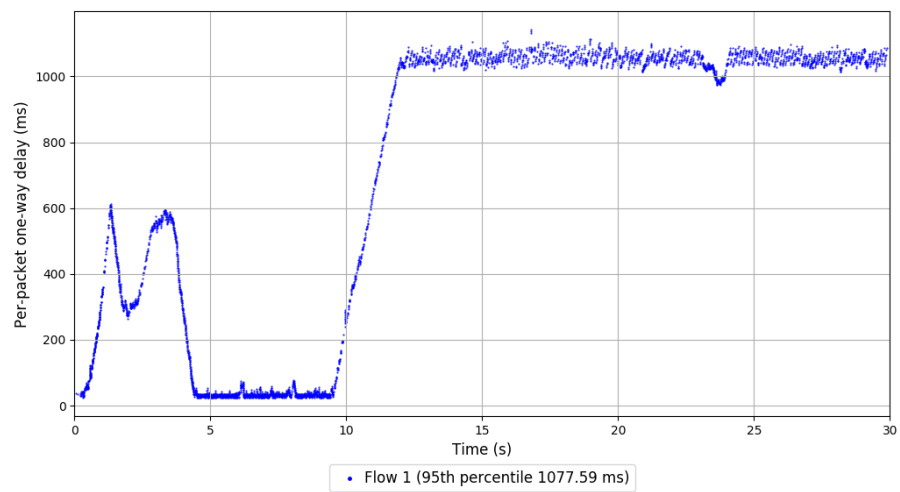
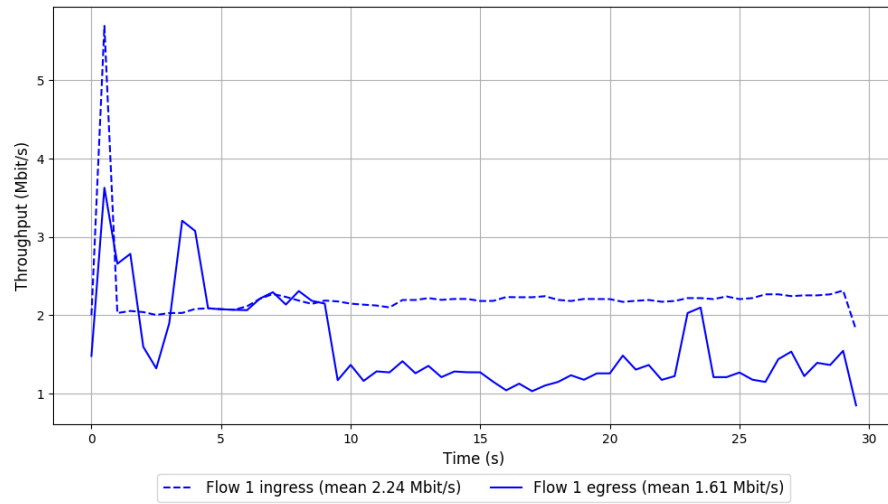


Run 3: Statistics of PCC

Start at: 2017-11-30 06:46:30
End at: 2017-11-30 06:47:00
Local clock offset: -9.529 ms
Remote clock offset: -14.065 ms

Below is generated by plot.py at 2017-11-30 06:51:25
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.61 Mbit/s
95th percentile per-packet one-way delay: 1077.592 ms
Loss rate: 28.05%
-- Flow 1:
Average throughput: 1.61 Mbit/s
95th percentile per-packet one-way delay: 1077.592 ms
Loss rate: 28.05%

Run 3: Report of PCC — Data Link



Run 1: Statistics of QUIC Cubic

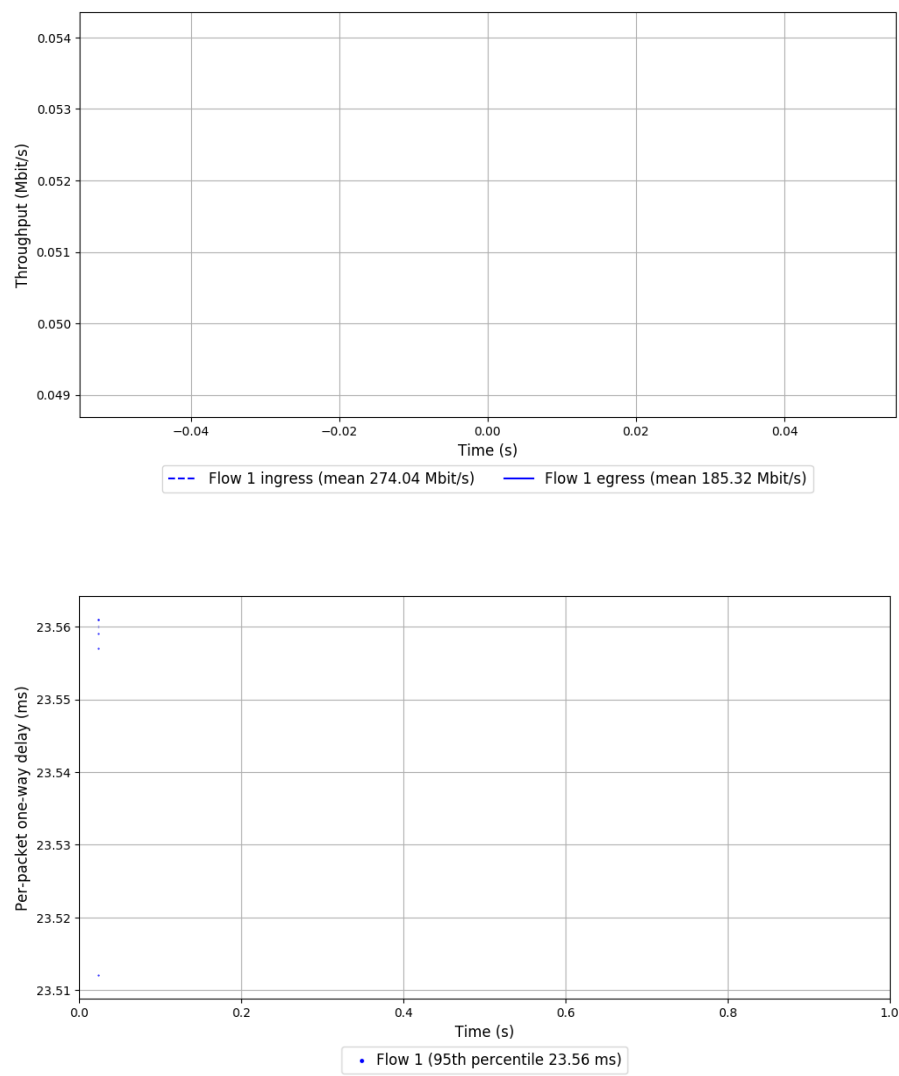
Start at: 2017-11-30 06:07:02

End at: 2017-11-30 06:07:32

Local clock offset: -10.312 ms

Remote clock offset: -18.525 ms

Run 1: Report of QUIC Cubic — Data Link

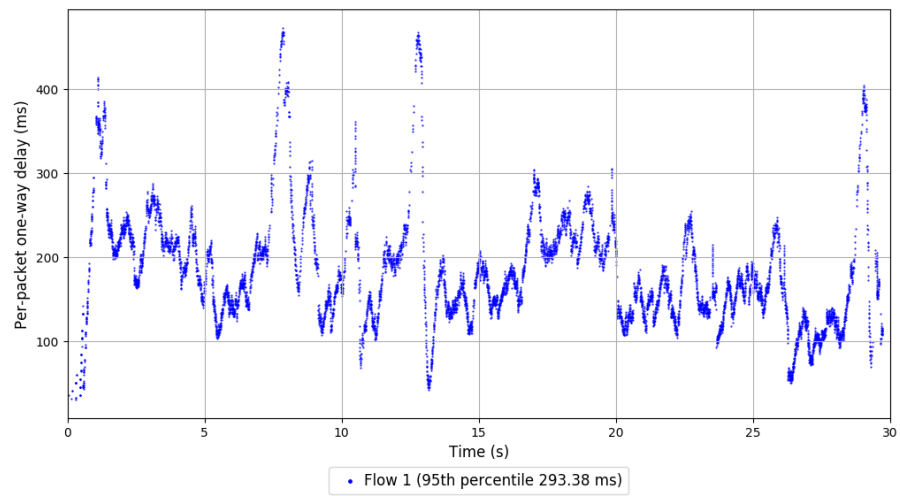
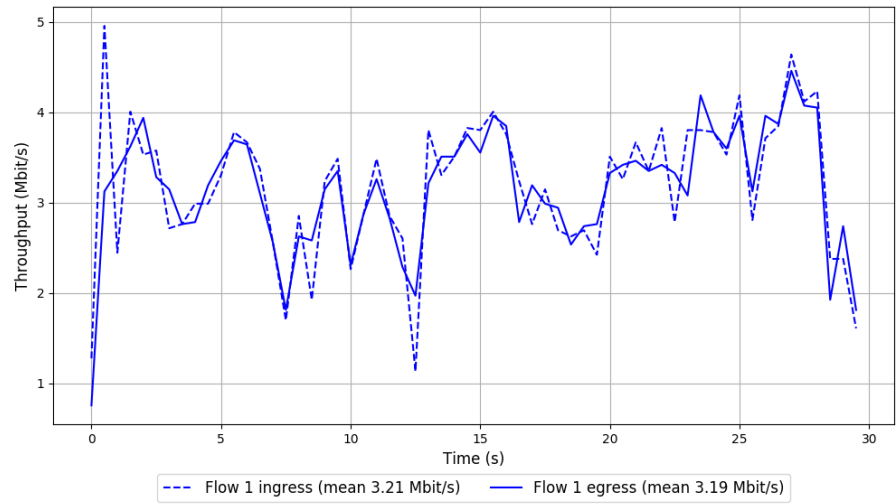


Run 2: Statistics of QUIC Cubic

Start at: 2017-11-30 06:22:54
End at: 2017-11-30 06:23:24
Local clock offset: -5.502 ms
Remote clock offset: -18.405 ms

Below is generated by plot.py at 2017-11-30 06:51:28
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.19 Mbit/s
95th percentile per-packet one-way delay: 293.384 ms
Loss rate: 0.77%
-- Flow 1:
Average throughput: 3.19 Mbit/s
95th percentile per-packet one-way delay: 293.384 ms
Loss rate: 0.77%

Run 2: Report of QUIC Cubic — Data Link

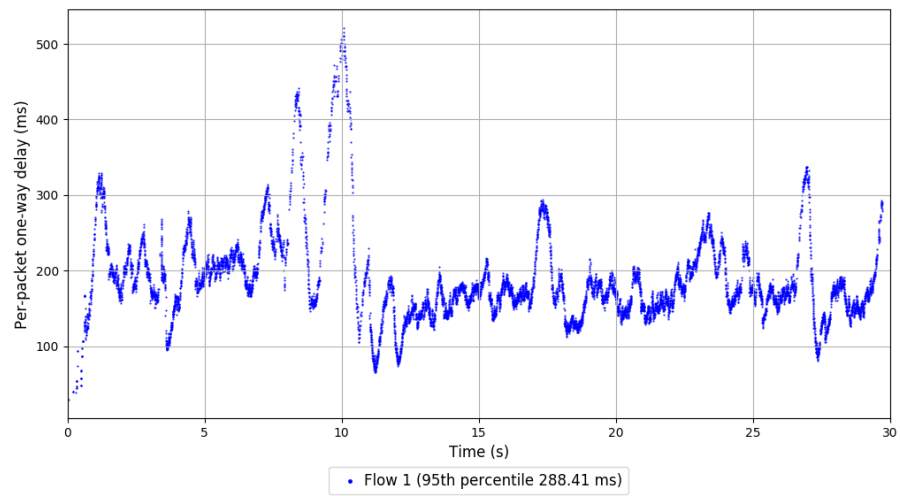
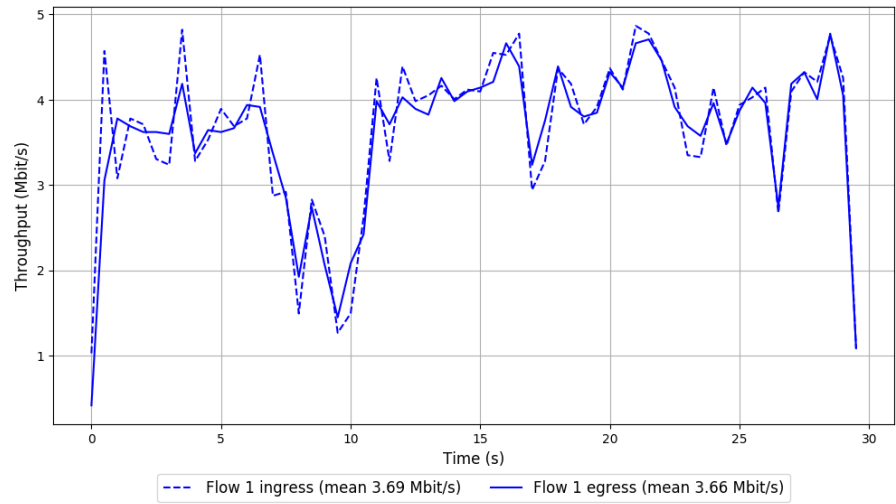


Run 3: Statistics of QUIC Cubic

Start at: 2017-11-30 06:38:39
End at: 2017-11-30 06:39:09
Local clock offset: -7.769 ms
Remote clock offset: -14.657 ms

Below is generated by plot.py at 2017-11-30 06:51:29
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.66 Mbit/s
95th percentile per-packet one-way delay: 288.414 ms
Loss rate: 0.93%
-- Flow 1:
Average throughput: 3.66 Mbit/s
95th percentile per-packet one-way delay: 288.414 ms
Loss rate: 0.93%

Run 3: Report of QUIC Cubic — Data Link

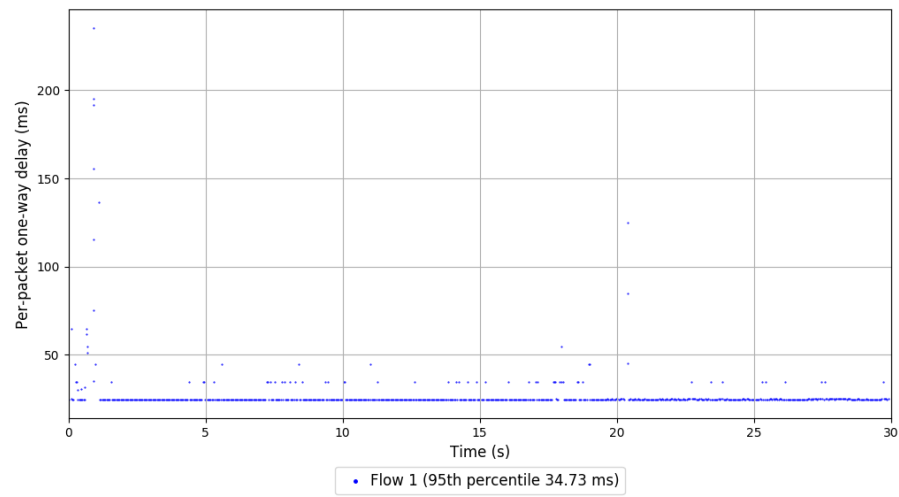
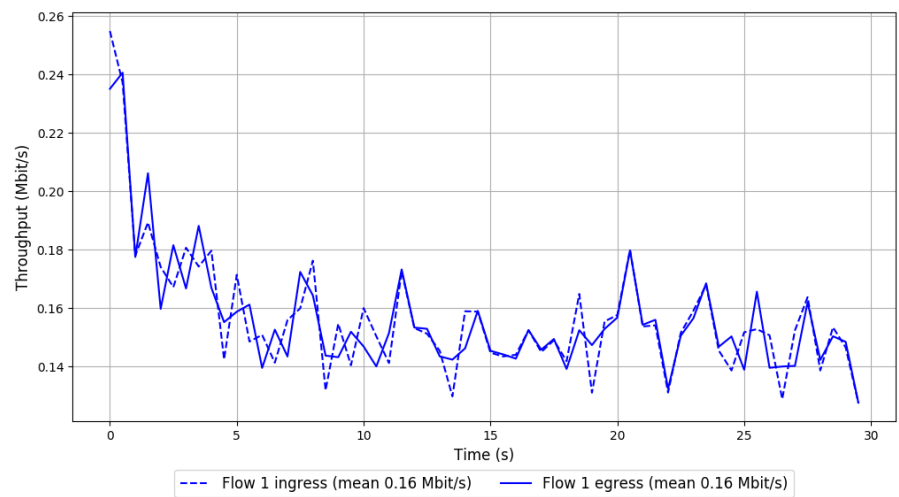


```
Run 1: Statistics of SCReAM

Start at: 2017-11-30 06:08:09
End at: 2017-11-30 06:08:39
Local clock offset: -13.501 ms
Remote clock offset: -18.016 ms

# Below is generated by plot.py at 2017-11-30 06:51:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 34.730 ms
Loss rate: 0.12%
-- Flow 1:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 34.730 ms
Loss rate: 0.12%
```

Run 1: Report of SReAM — Data Link

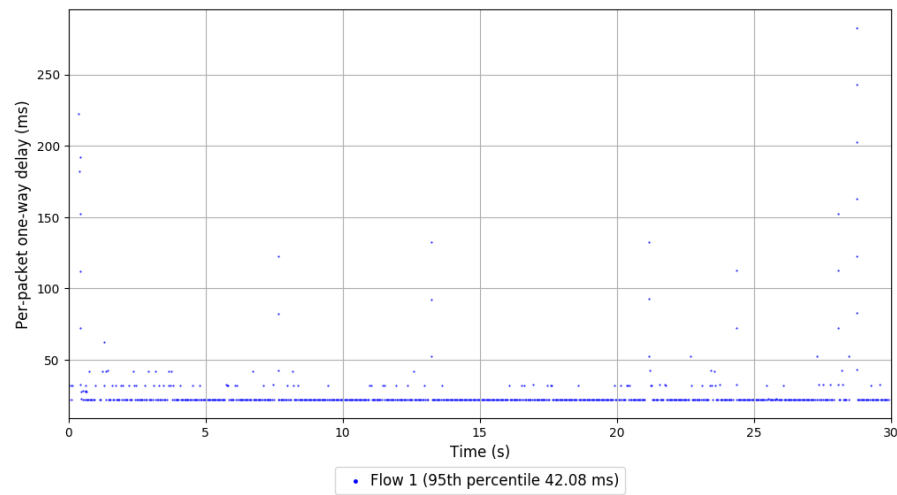
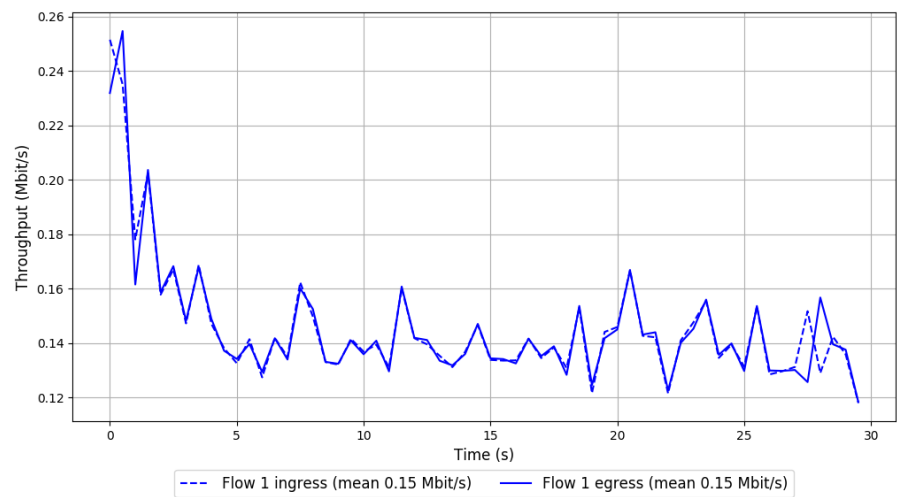


Run 2: Statistics of SCReAM

Start at: 2017-11-30 06:24:03
End at: 2017-11-30 06:24:33
Local clock offset: -3.98 ms
Remote clock offset: -17.745 ms

Below is generated by plot.py at 2017-11-30 06:51:29
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 42.080 ms
Loss rate: 0.12%
-- Flow 1:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 42.080 ms
Loss rate: 0.12%

Run 2: Report of SReAM — Data Link

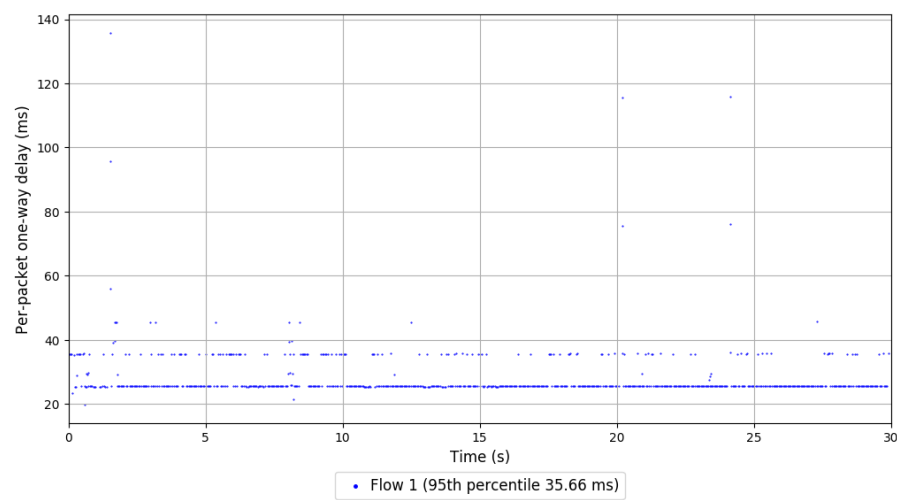
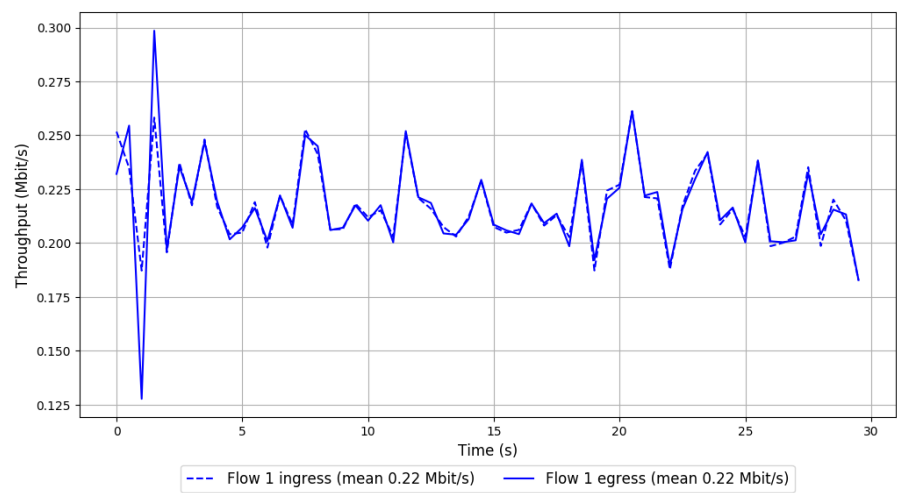


Run 3: Statistics of SCReAM

Start at: 2017-11-30 06:39:45
End at: 2017-11-30 06:40:15
Local clock offset: -8.437 ms
Remote clock offset: -16.664 ms

Below is generated by plot.py at 2017-11-30 06:51:29
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 35.658 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 35.658 ms
Loss rate: 0.13%

Run 3: Report of SReAM — Data Link

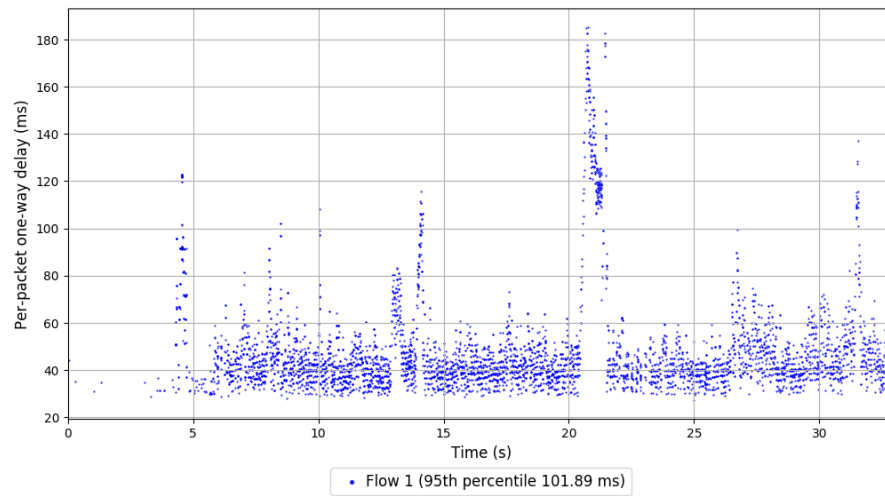
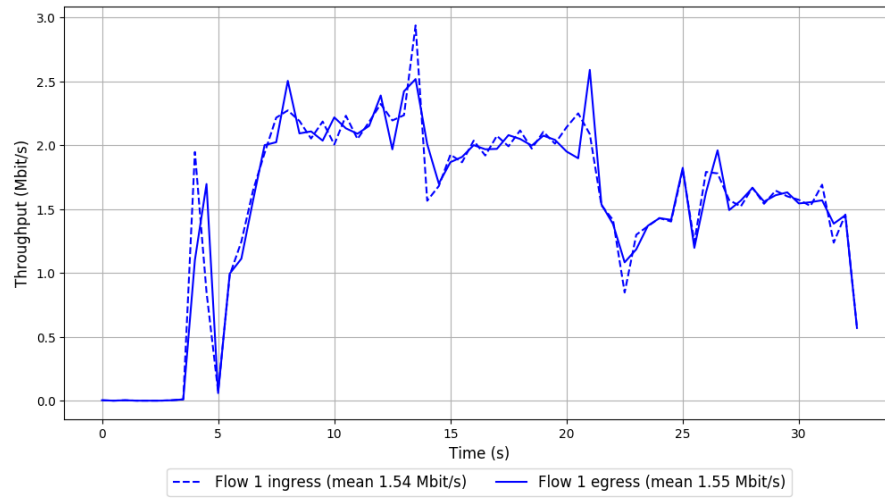


Run 1: Statistics of WebRTC media

Start at: 2017-11-30 06:13:54
End at: 2017-11-30 06:14:24
Local clock offset: -11.631 ms
Remote clock offset: -18.648 ms

Below is generated by plot.py at 2017-11-30 06:51:30
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.55 Mbit/s
95th percentile per-packet one-way delay: 101.887 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 1.55 Mbit/s
95th percentile per-packet one-way delay: 101.887 ms
Loss rate: 0.11%

Run 1: Report of WebRTC media — Data Link

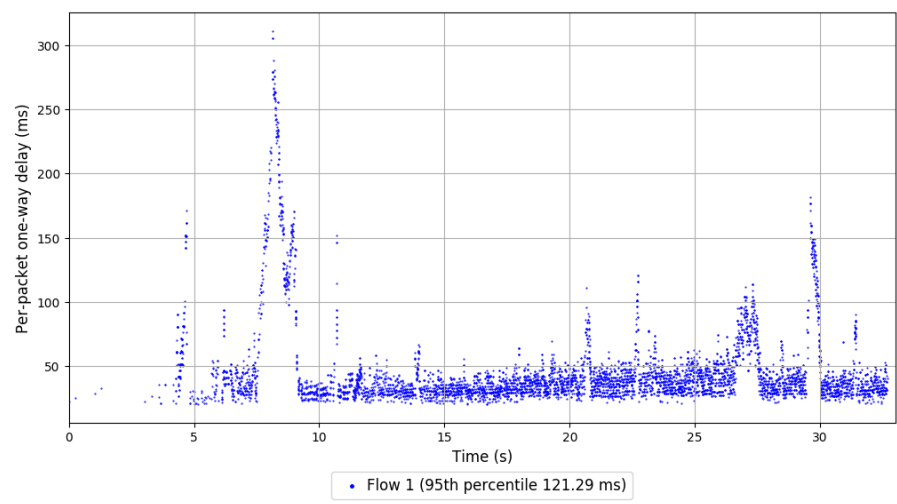
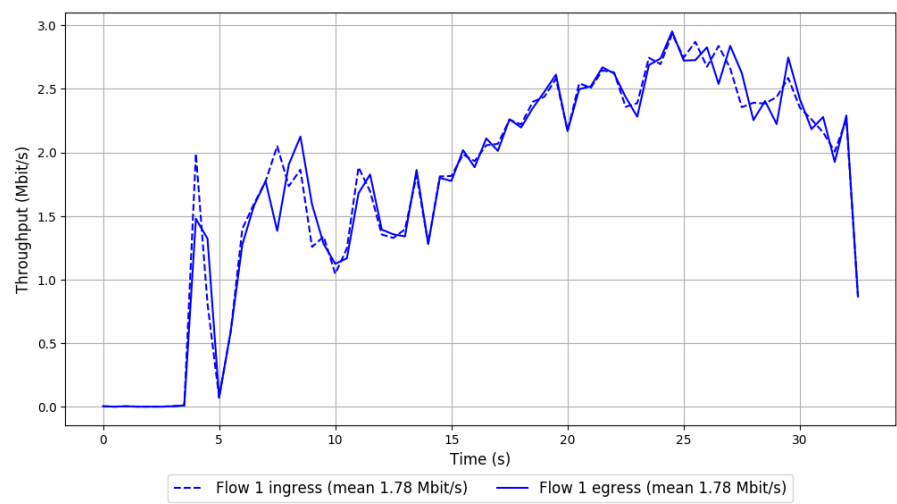


Run 2: Statistics of WebRTC media

Start at: 2017-11-30 06:29:43
End at: 2017-11-30 06:30:13
Local clock offset: -6.491 ms
Remote clock offset: -17.481 ms

Below is generated by plot.py at 2017-11-30 06:51:30
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.78 Mbit/s
95th percentile per-packet one-way delay: 121.293 ms
Loss rate: 0.17%
-- Flow 1:
Average throughput: 1.78 Mbit/s
95th percentile per-packet one-way delay: 121.293 ms
Loss rate: 0.17%

Run 2: Report of WebRTC media — Data Link

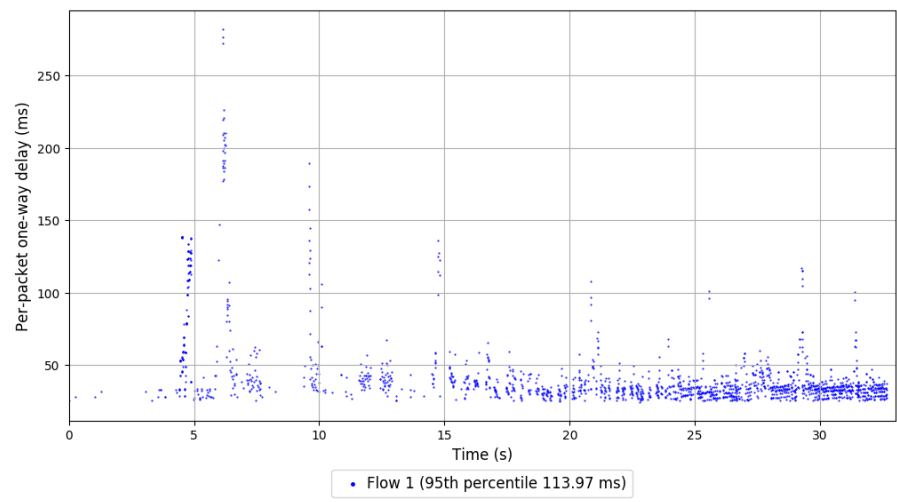
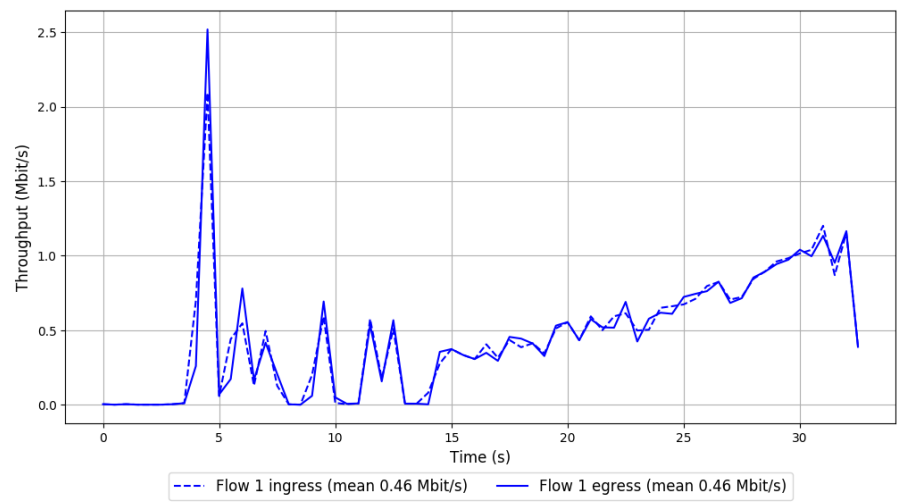


Run 3: Statistics of WebRTC media

Start at: 2017-11-30 06:45:23
End at: 2017-11-30 06:45:53
Local clock offset: -8.611 ms
Remote clock offset: -17.562 ms

Below is generated by plot.py at 2017-11-30 06:51:30
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 113.973 ms
Loss rate: 0.27%
-- Flow 1:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 113.973 ms
Loss rate: 0.27%

Run 3: Report of WebRTC media — Data Link

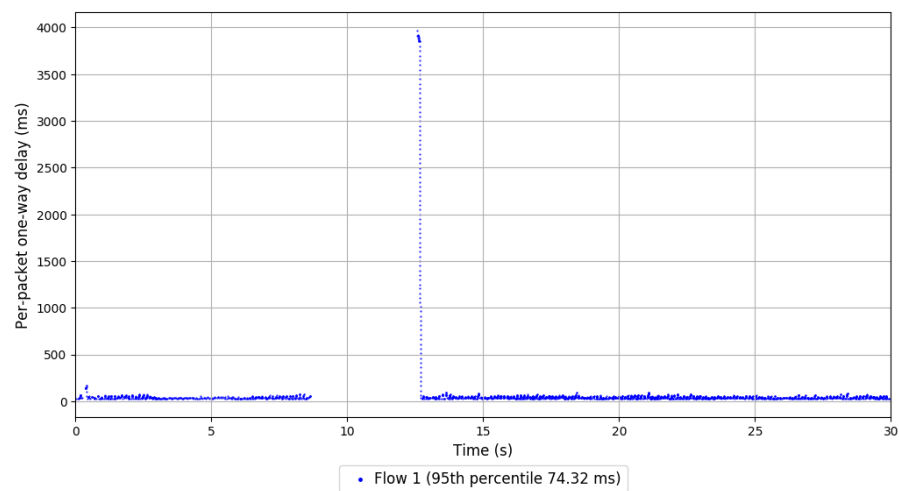
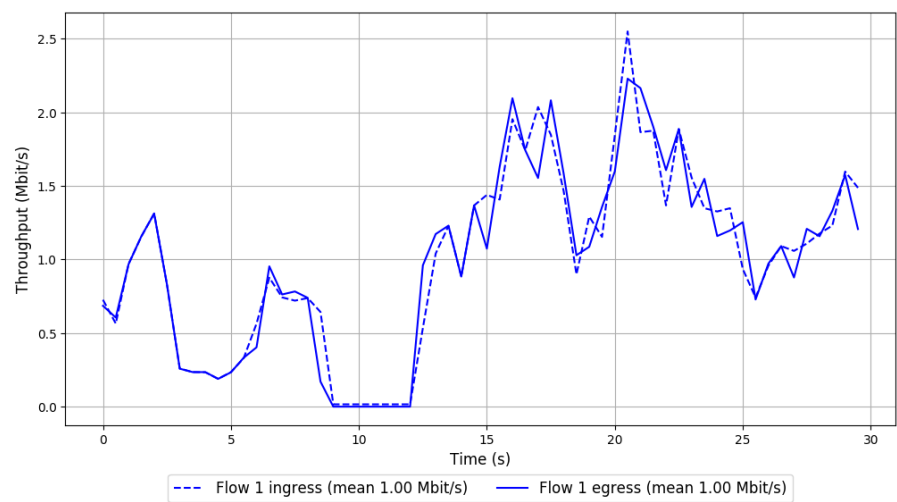


Run 1: Statistics of Sprout

Start at: 2017-11-30 06:03:37
End at: 2017-11-30 06:04:08
Local clock offset: -13.259 ms
Remote clock offset: -17.271 ms

Below is generated by plot.py at 2017-11-30 06:51:30
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.00 Mbit/s
95th percentile per-packet one-way delay: 74.319 ms
Loss rate: 0.55%
-- Flow 1:
Average throughput: 1.00 Mbit/s
95th percentile per-packet one-way delay: 74.319 ms
Loss rate: 0.55%

Run 1: Report of Sprout — Data Link

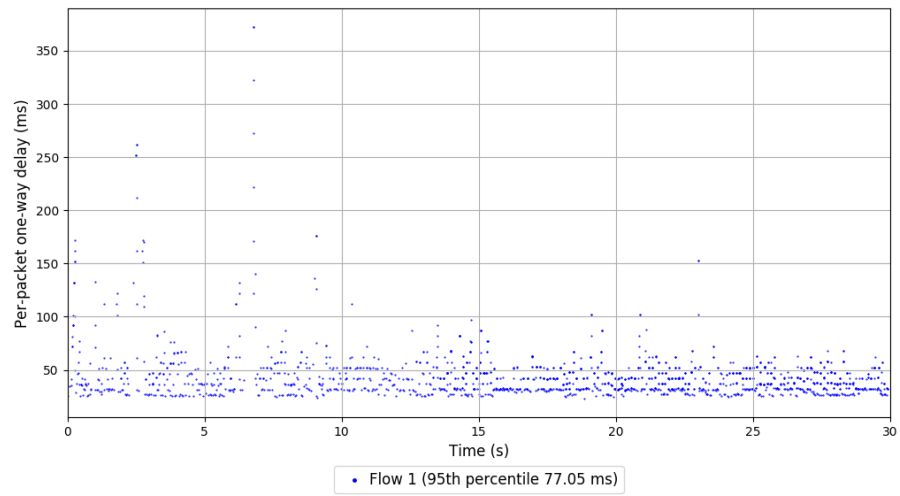
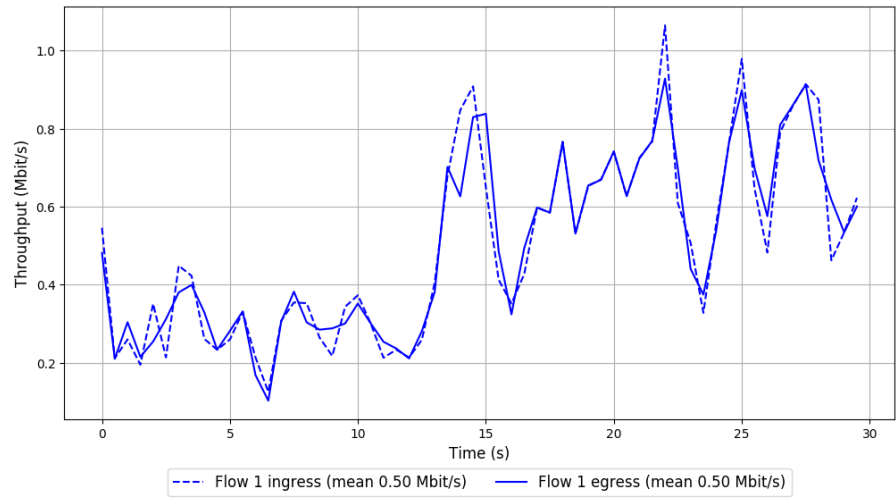


Run 2: Statistics of Sprout

Start at: 2017-11-30 06:19:34
End at: 2017-11-30 06:20:04
Local clock offset: -6.181 ms
Remote clock offset: -16.801 ms

Below is generated by plot.py at 2017-11-30 06:51:30
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 77.054 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 77.054 ms
Loss rate: 0.08%

Run 2: Report of Sprout — Data Link

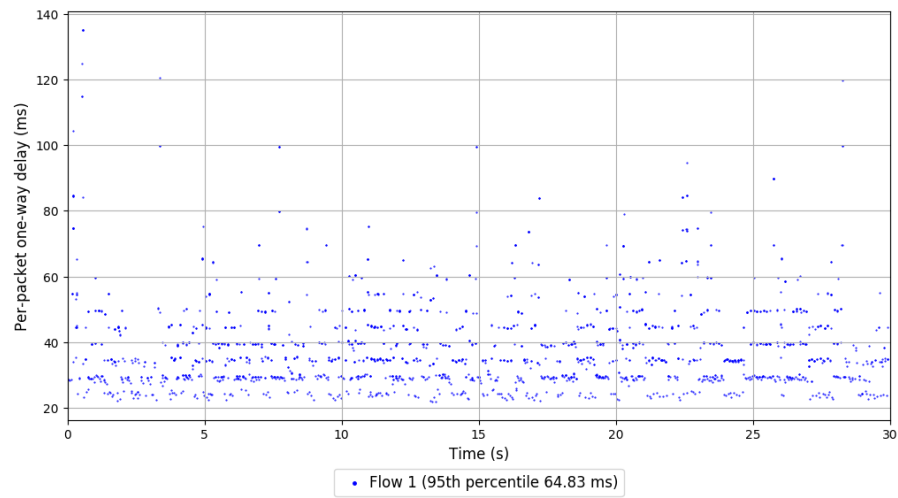
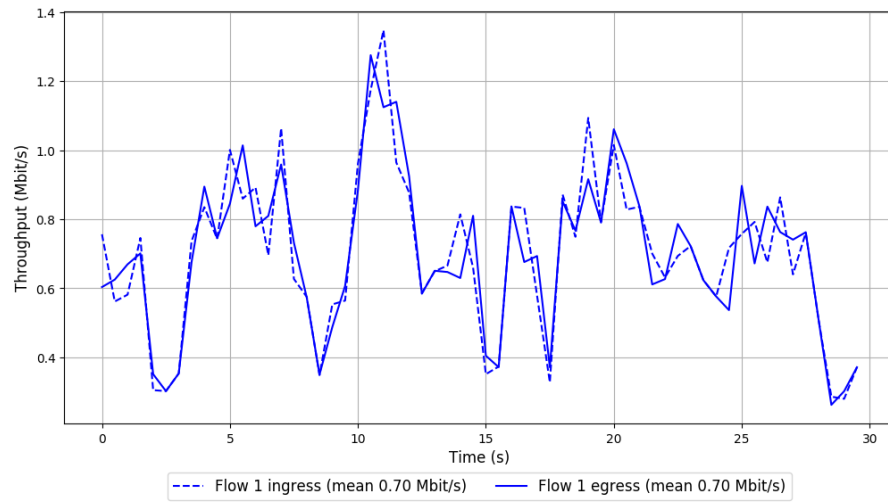


Run 3: Statistics of Sprout

Start at: 2017-11-30 06:35:14
End at: 2017-11-30 06:35:44
Local clock offset: -6.454 ms
Remote clock offset: -14.168 ms

Below is generated by plot.py at 2017-11-30 06:51:30
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.70 Mbit/s
95th percentile per-packet one-way delay: 64.831 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.70 Mbit/s
95th percentile per-packet one-way delay: 64.831 ms
Loss rate: 0.00%

Run 3: Report of Sprout — Data Link

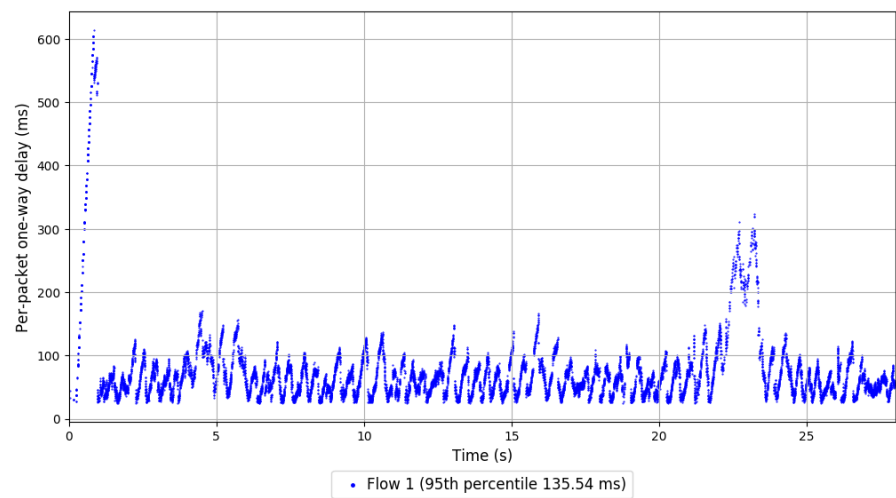
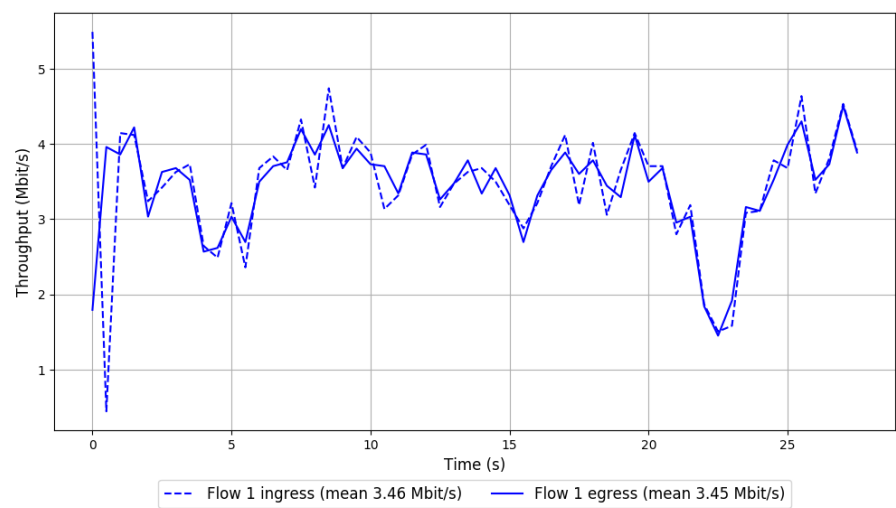


```
Run 1: Statistics of TaoVA-100x

Start at: 2017-11-30 06:12:47
End at: 2017-11-30 06:13:17
Local clock offset: -10.359 ms
Remote clock offset: -19.353 ms

# Below is generated by plot.py at 2017-11-30 06:51:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.45 Mbit/s
95th percentile per-packet one-way delay: 135.542 ms
Loss rate: 0.31%
-- Flow 1:
Average throughput: 3.45 Mbit/s
95th percentile per-packet one-way delay: 135.542 ms
Loss rate: 0.31%
```

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

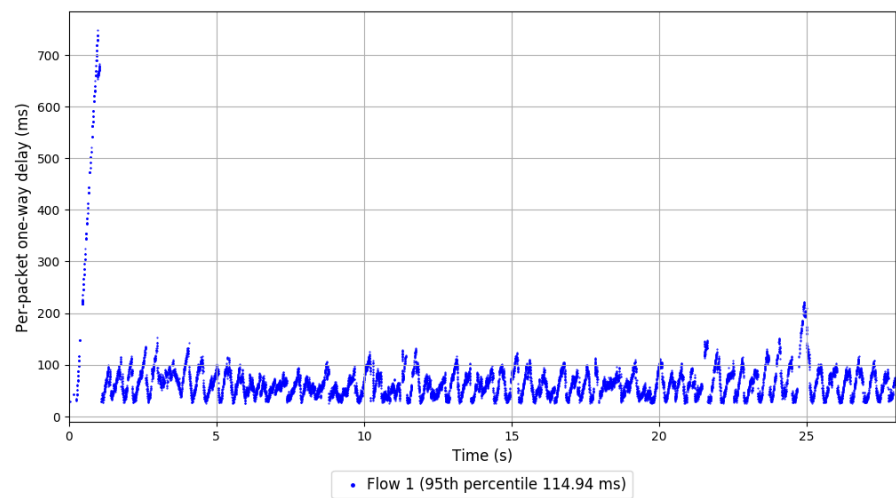
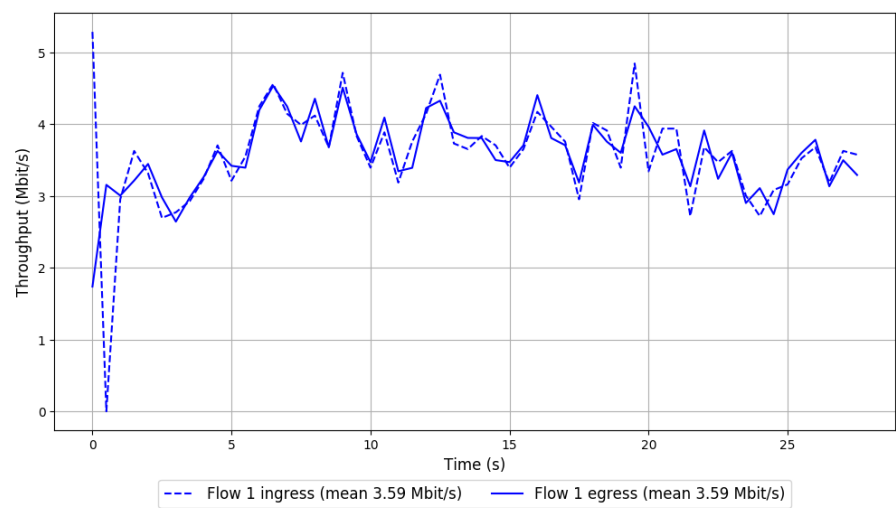


Run 2: Statistics of TaoVA-100x

Start at: 2017-11-30 06:28:32
End at: 2017-11-30 06:29:02
Local clock offset: -4.889 ms
Remote clock offset: -17.967 ms

Below is generated by plot.py at 2017-11-30 06:51:40
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.59 Mbit/s
95th percentile per-packet one-way delay: 114.942 ms
Loss rate: 0.32%
-- Flow 1:
Average throughput: 3.59 Mbit/s
95th percentile per-packet one-way delay: 114.942 ms
Loss rate: 0.32%

Run 2: Report of TaoVA-100x — Data Link

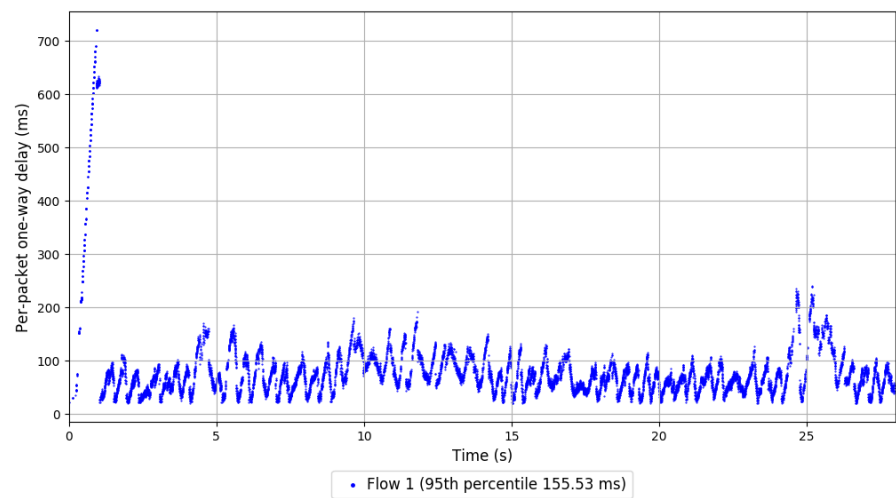
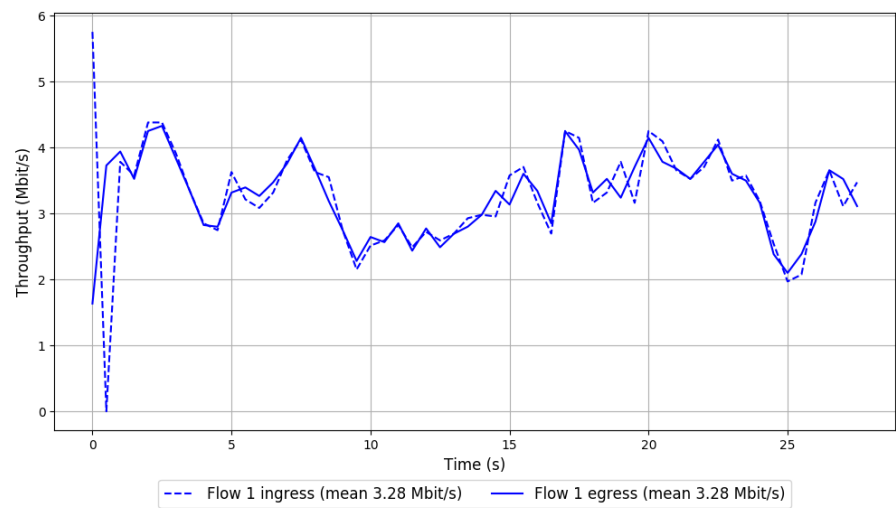


Run 3: Statistics of TaoVA-100x

Start at: 2017-11-30 06:44:11
End at: 2017-11-30 06:44:41
Local clock offset: -9.131 ms
Remote clock offset: -15.172 ms

Below is generated by plot.py at 2017-11-30 06:51:40
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.28 Mbit/s
95th percentile per-packet one-way delay: 155.525 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 3.28 Mbit/s
95th percentile per-packet one-way delay: 155.525 ms
Loss rate: 0.33%

Run 3: Report of TaoVA-100x — Data Link

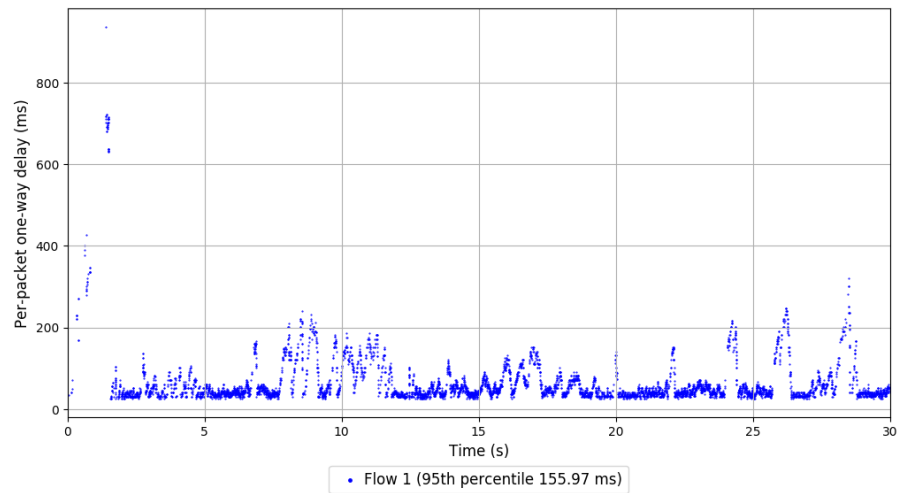
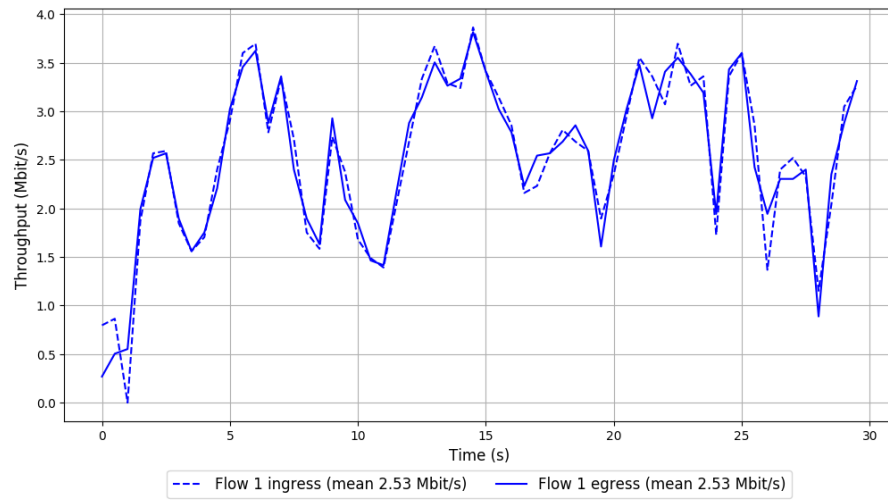


Run 1: Statistics of TCP Vegas

Start at: 2017-11-30 06:16:09
End at: 2017-11-30 06:16:39
Local clock offset: -9.088 ms
Remote clock offset: -18.654 ms

Below is generated by plot.py at 2017-11-30 06:51:40
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.53 Mbit/s
95th percentile per-packet one-way delay: 155.971 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 2.53 Mbit/s
95th percentile per-packet one-way delay: 155.971 ms
Loss rate: 0.33%

Run 1: Report of TCP Vegas — Data Link

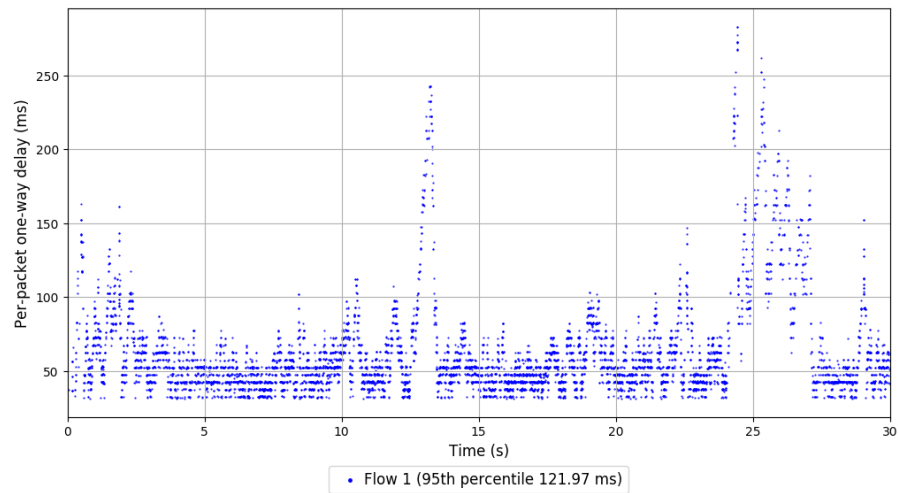
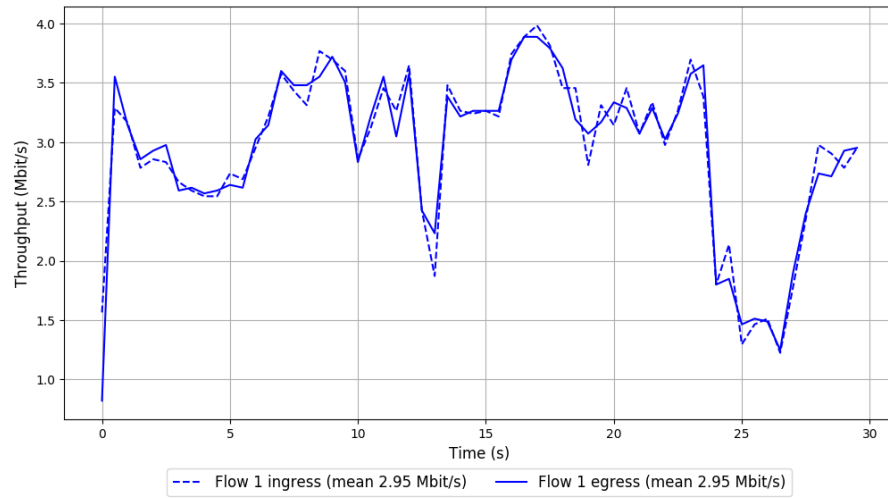


Run 2: Statistics of TCP Vegas

Start at: 2017-11-30 06:31:55
End at: 2017-11-30 06:32:25
Local clock offset: -6.215 ms
Remote clock offset: -16.443 ms

Below is generated by plot.py at 2017-11-30 06:51:40
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.95 Mbit/s
95th percentile per-packet one-way delay: 121.975 ms
Loss rate: 0.24%
-- Flow 1:
Average throughput: 2.95 Mbit/s
95th percentile per-packet one-way delay: 121.975 ms
Loss rate: 0.24%

Run 2: Report of TCP Vegas — Data Link

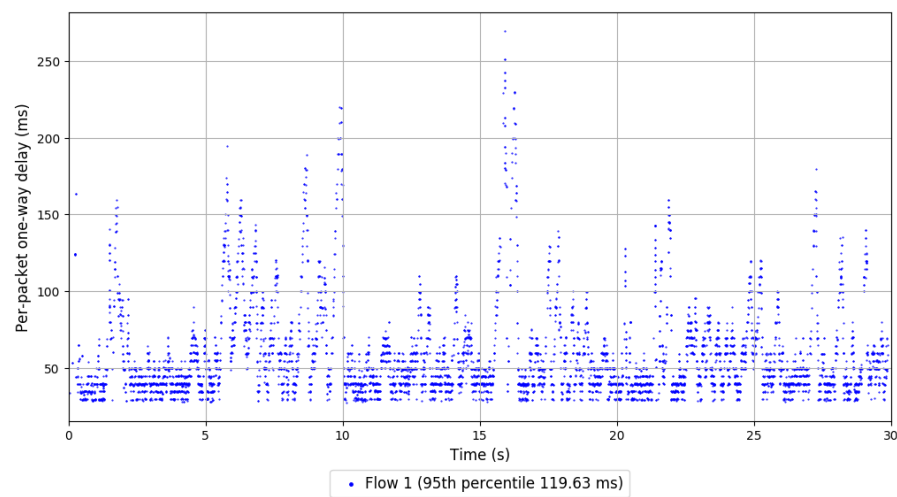
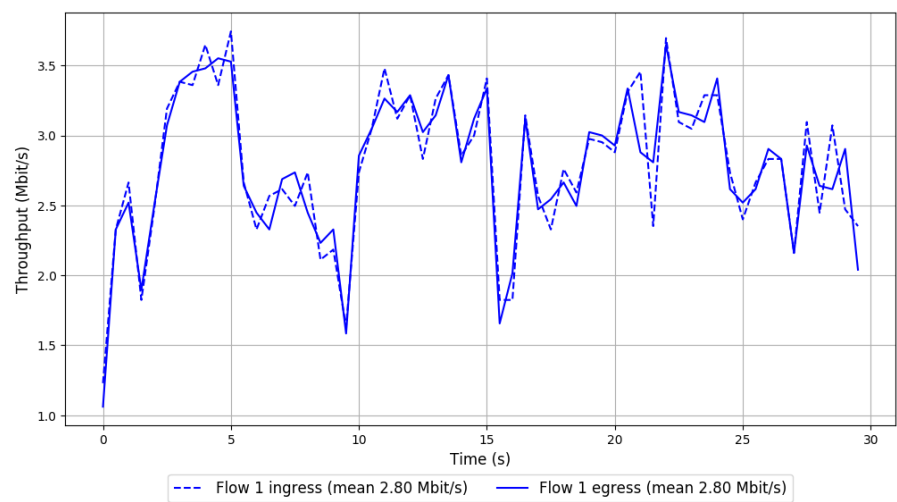


Run 3: Statistics of TCP Vegas

Start at: 2017-11-30 06:47:36
End at: 2017-11-30 06:48:06
Local clock offset: -8.201 ms
Remote clock offset: -16.38 ms

Below is generated by plot.py at 2017-11-30 06:51:40
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.80 Mbit/s
95th percentile per-packet one-way delay: 119.628 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 2.80 Mbit/s
95th percentile per-packet one-way delay: 119.628 ms
Loss rate: 0.34%

Run 3: Report of TCP Vegas — Data Link

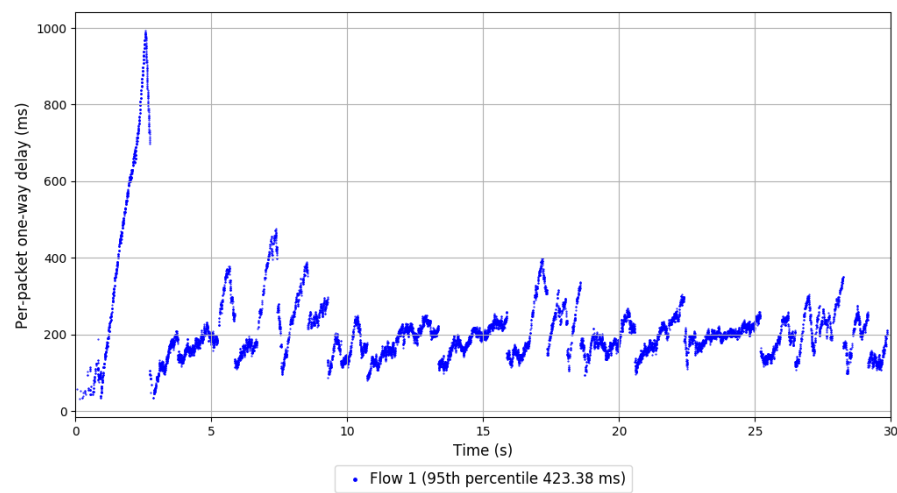
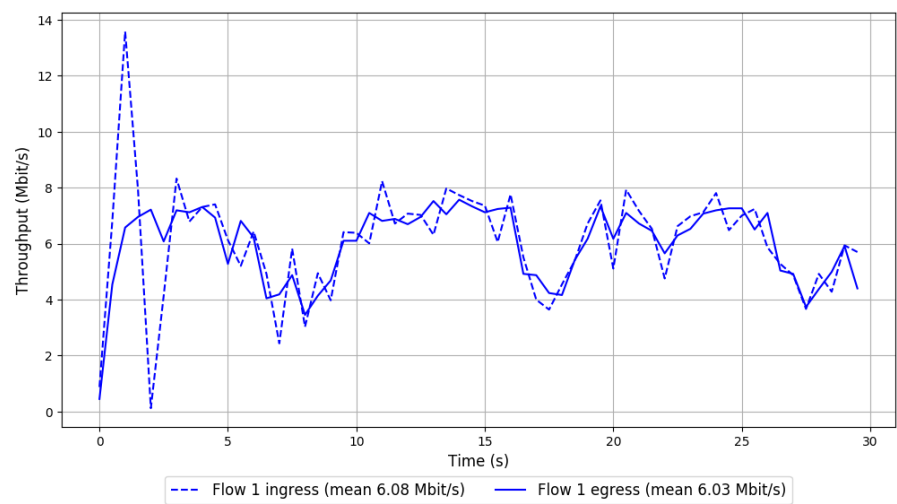


Run 1: Statistics of Verus

Start at: 2017-11-30 06:05:55
End at: 2017-11-30 06:06:25
Local clock offset: -11.606 ms
Remote clock offset: -17.818 ms

Below is generated by plot.py at 2017-11-30 06:51:41
Datalink statistics
-- Total of 1 flow:
Average throughput: 6.03 Mbit/s
95th percentile per-packet one-way delay: 423.381 ms
Loss rate: 1.02%
-- Flow 1:
Average throughput: 6.03 Mbit/s
95th percentile per-packet one-way delay: 423.381 ms
Loss rate: 1.02%

Run 1: Report of Verus — Data Link

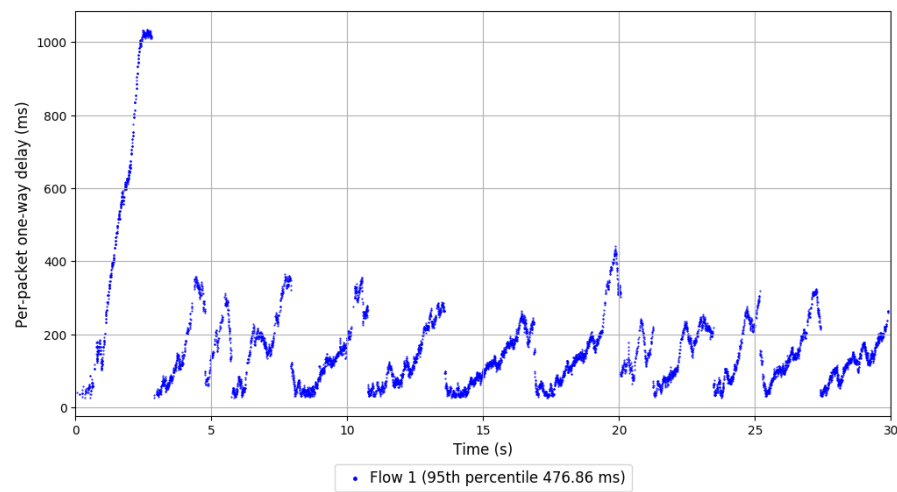
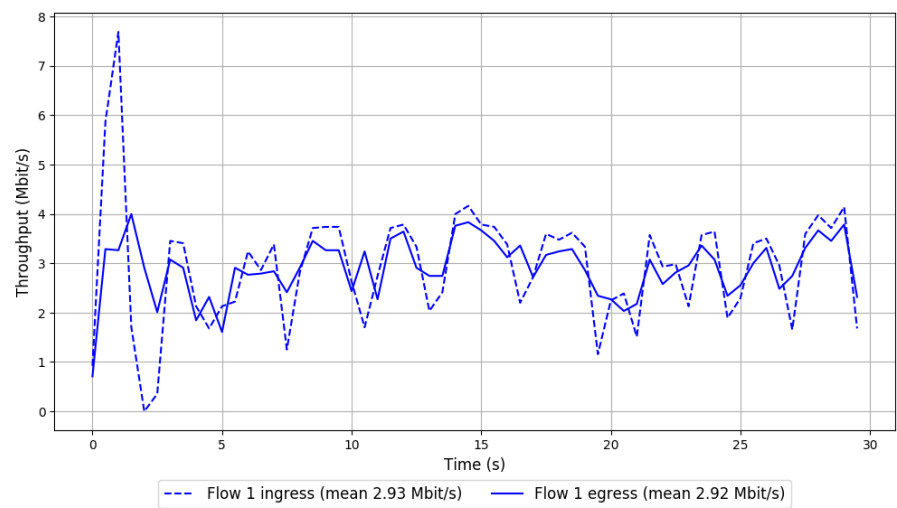


Run 2: Statistics of Verus

Start at: 2017-11-30 06:21:47
End at: 2017-11-30 06:22:17
Local clock offset: -5.424 ms
Remote clock offset: -18.613 ms

Below is generated by plot.py at 2017-11-30 06:51:41
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.92 Mbit/s
95th percentile per-packet one-way delay: 476.856 ms
Loss rate: 0.82%
-- Flow 1:
Average throughput: 2.92 Mbit/s
95th percentile per-packet one-way delay: 476.856 ms
Loss rate: 0.82%

Run 2: Report of Verus — Data Link

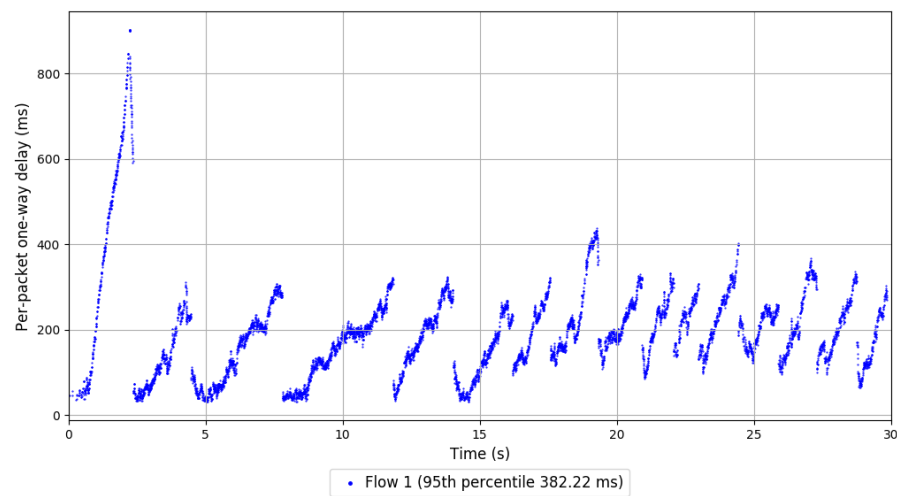
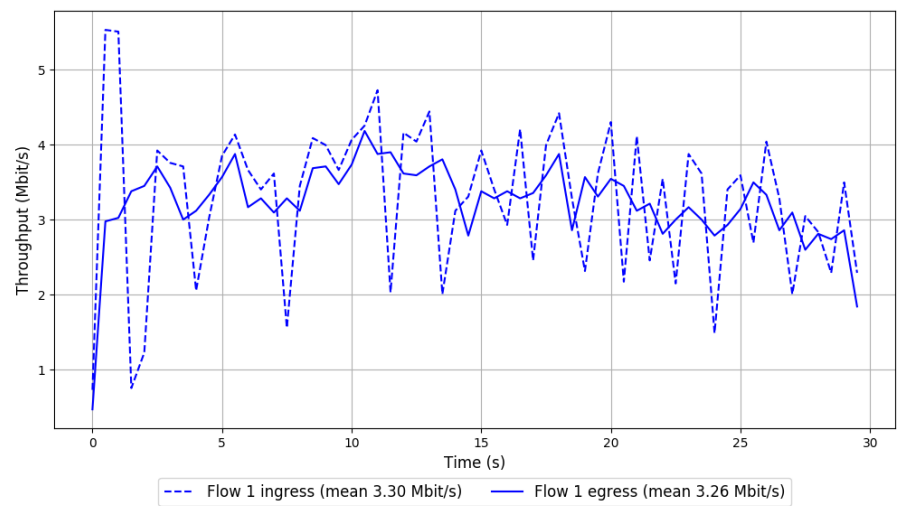


Run 3: Statistics of Verus

Start at: 2017-11-30 06:37:29
End at: 2017-11-30 06:37:59
Local clock offset: -9.386 ms
Remote clock offset: -14.809 ms

Below is generated by plot.py at 2017-11-30 06:51:41
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.26 Mbit/s
95th percentile per-packet one-way delay: 382.220 ms
Loss rate: 1.32%
-- Flow 1:
Average throughput: 3.26 Mbit/s
95th percentile per-packet one-way delay: 382.220 ms
Loss rate: 1.32%

Run 3: Report of Verus — Data Link

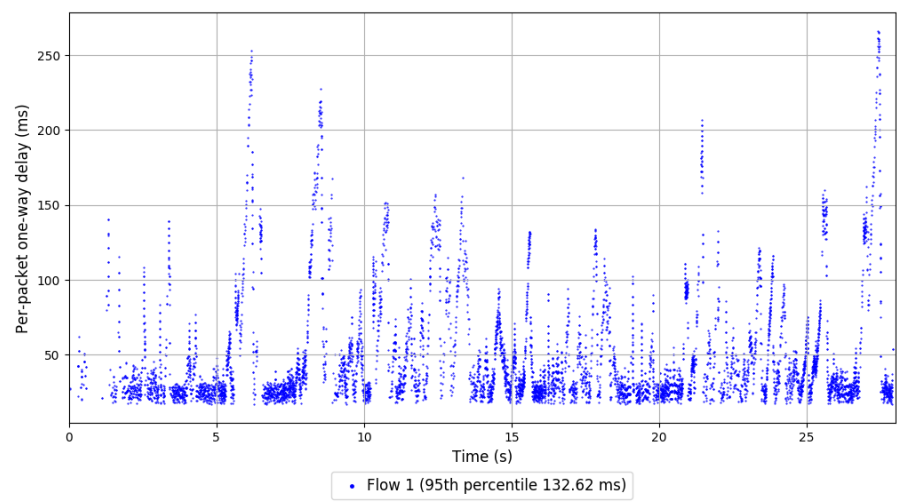
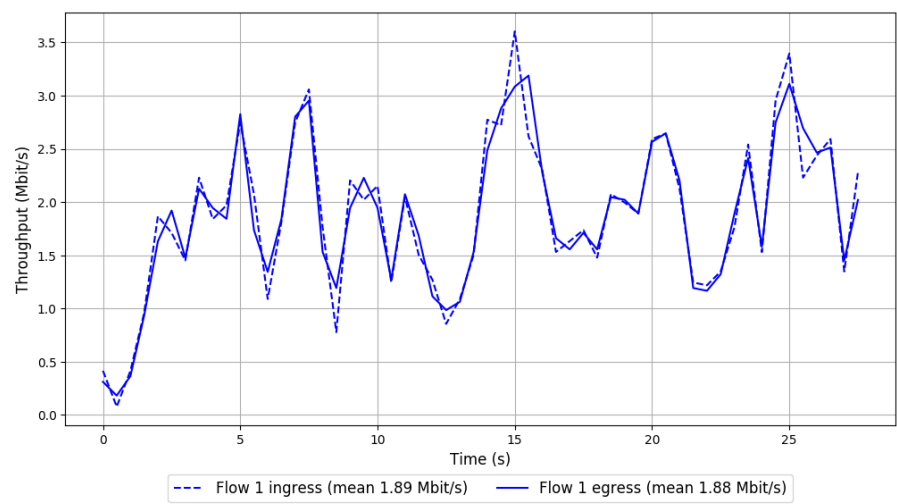


Run 1: Statistics of Copa

Start at: 2017-11-30 06:17:16
End at: 2017-11-30 06:17:46
Local clock offset: -8.024 ms
Remote clock offset: -19.357 ms

Below is generated by plot.py at 2017-11-30 06:51:43
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.88 Mbit/s
95th percentile per-packet one-way delay: 132.625 ms
Loss rate: 0.35%
-- Flow 1:
Average throughput: 1.88 Mbit/s
95th percentile per-packet one-way delay: 132.625 ms
Loss rate: 0.35%

Run 1: Report of Copa — Data Link

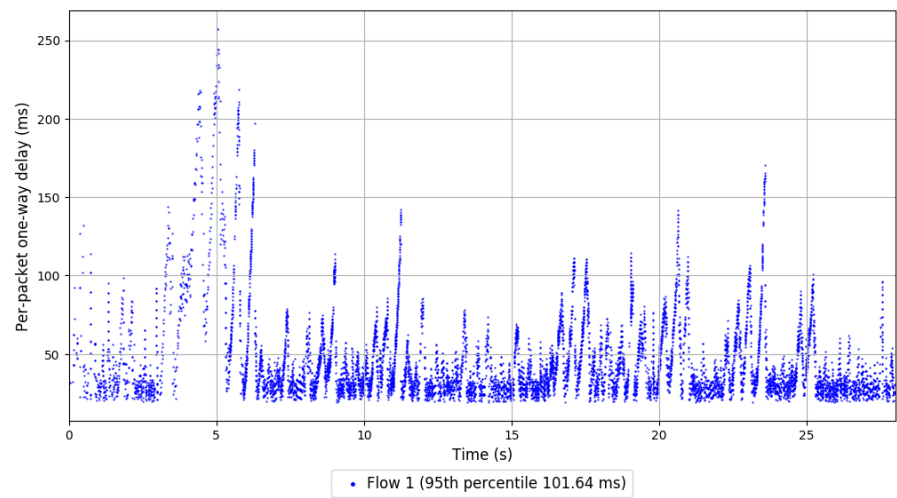
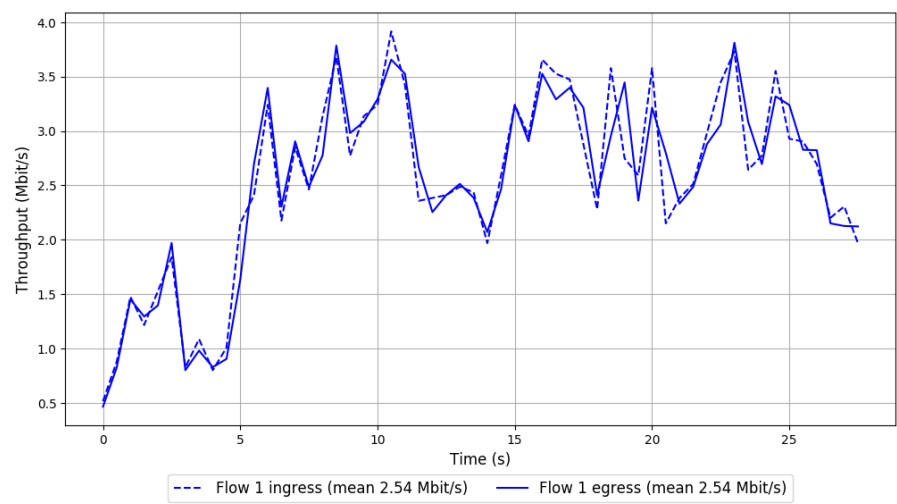


Run 2: Statistics of Copa

Start at: 2017-11-30 06:33:01
End at: 2017-11-30 06:33:31
Local clock offset: -7.826 ms
Remote clock offset: -18.334 ms

Below is generated by plot.py at 2017-11-30 06:51:46
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.54 Mbit/s
95th percentile per-packet one-way delay: 101.639 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 2.54 Mbit/s
95th percentile per-packet one-way delay: 101.639 ms
Loss rate: 0.13%

Run 2: Report of Copa — Data Link

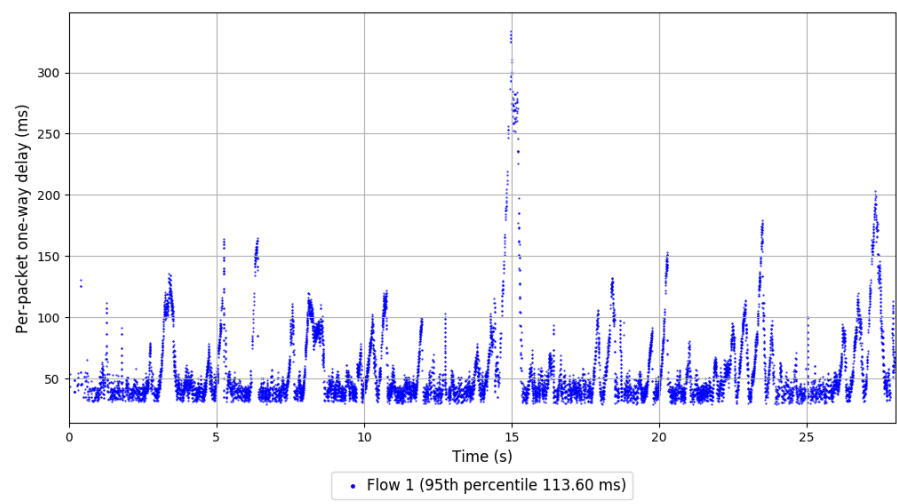
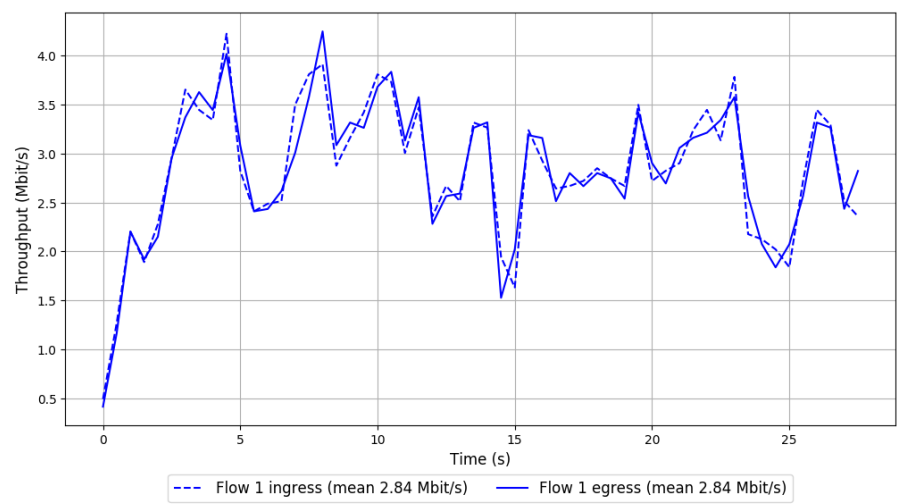


Run 3: Statistics of Copa

Start at: 2017-11-30 06:48:44
End at: 2017-11-30 06:49:14
Local clock offset: -12.877 ms
Remote clock offset: -15.462 ms

Below is generated by plot.py at 2017-11-30 06:51:47
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.84 Mbit/s
95th percentile per-packet one-way delay: 113.599 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 2.84 Mbit/s
95th percentile per-packet one-way delay: 113.599 ms
Loss rate: 0.03%

Run 3: Report of Copa — Data Link

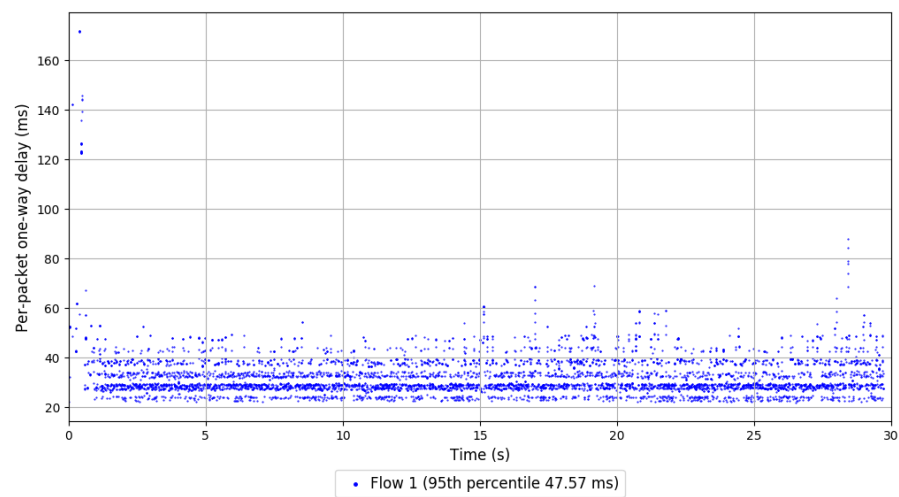
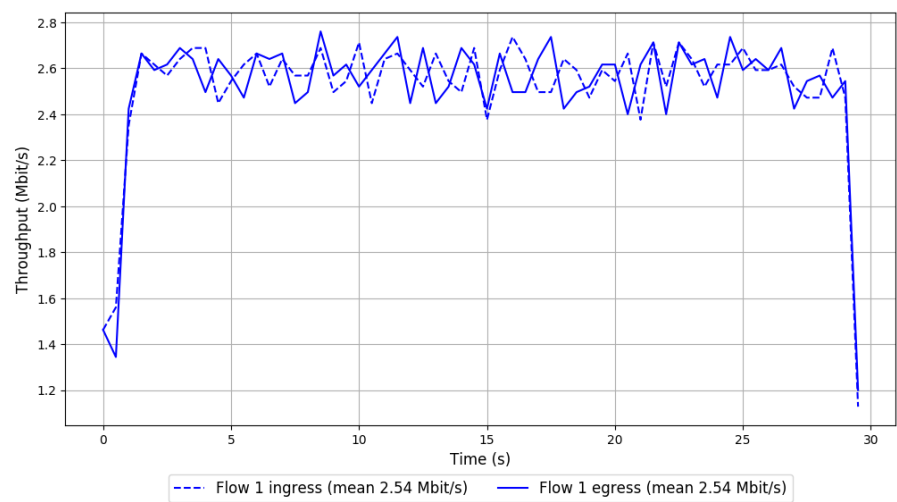


```
Run 1: Statistics of Indigo

Start at: 2017-11-30 06:10:31
End at: 2017-11-30 06:11:01
Local clock offset: -10.812 ms
Remote clock offset: -18.059 ms

# Below is generated by plot.py at 2017-11-30 06:51:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.54 Mbit/s
95th percentile per-packet one-way delay: 47.571 ms
Loss rate: 0.14%
-- Flow 1:
Average throughput: 2.54 Mbit/s
95th percentile per-packet one-way delay: 47.571 ms
Loss rate: 0.14%
```

Run 1: Report of Indigo — Data Link

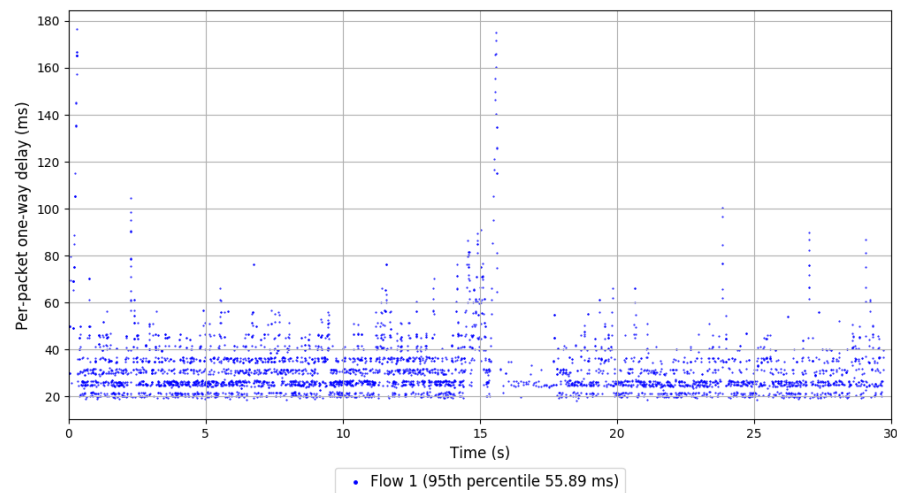
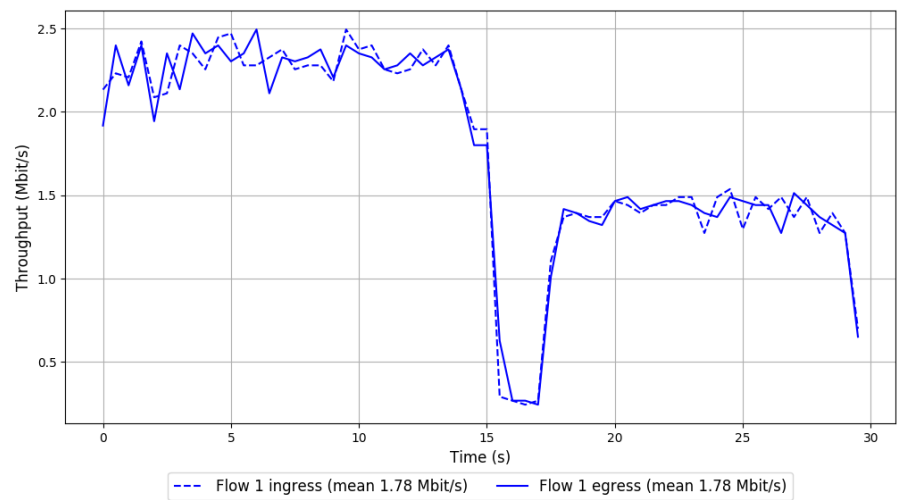


Run 2: Statistics of Indigo

Start at: 2017-11-30 06:26:17
End at: 2017-11-30 06:26:47
Local clock offset: -4.224 ms
Remote clock offset: -19.611 ms

Below is generated by plot.py at 2017-11-30 06:51:47
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.78 Mbit/s
95th percentile per-packet one-way delay: 55.889 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 1.78 Mbit/s
95th percentile per-packet one-way delay: 55.889 ms
Loss rate: 0.16%

Run 2: Report of Indigo — Data Link

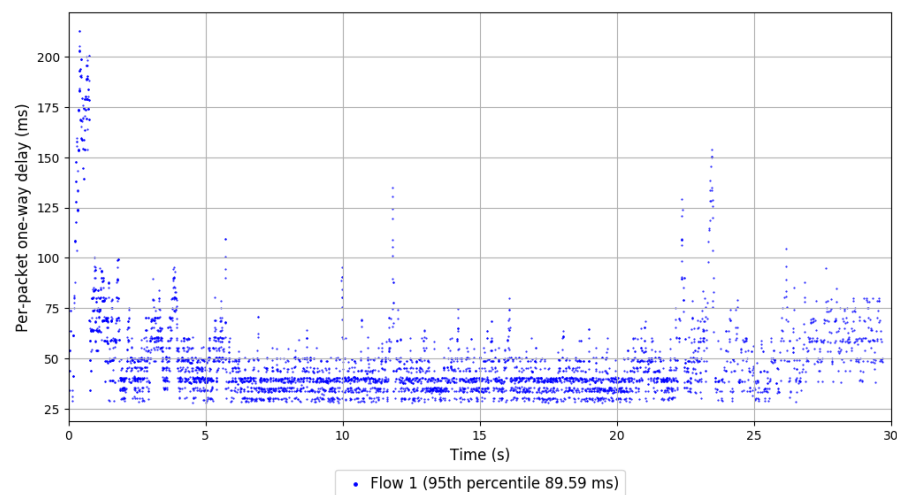
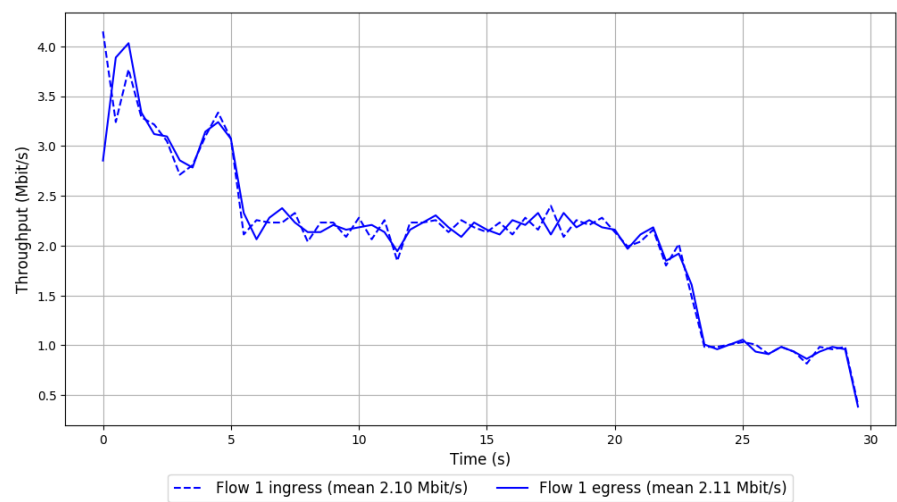


Run 3: Statistics of Indigo

Start at: 2017-11-30 06:41:57
End at: 2017-11-30 06:42:27
Local clock offset: -8.364 ms
Remote clock offset: -15.648 ms

Below is generated by plot.py at 2017-11-30 06:51:47
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.11 Mbit/s
95th percentile per-packet one-way delay: 89.588 ms
Loss rate: 0.12%
-- Flow 1:
Average throughput: 2.11 Mbit/s
95th percentile per-packet one-way delay: 89.588 ms
Loss rate: 0.12%

Run 3: Report of Indigo — Data Link

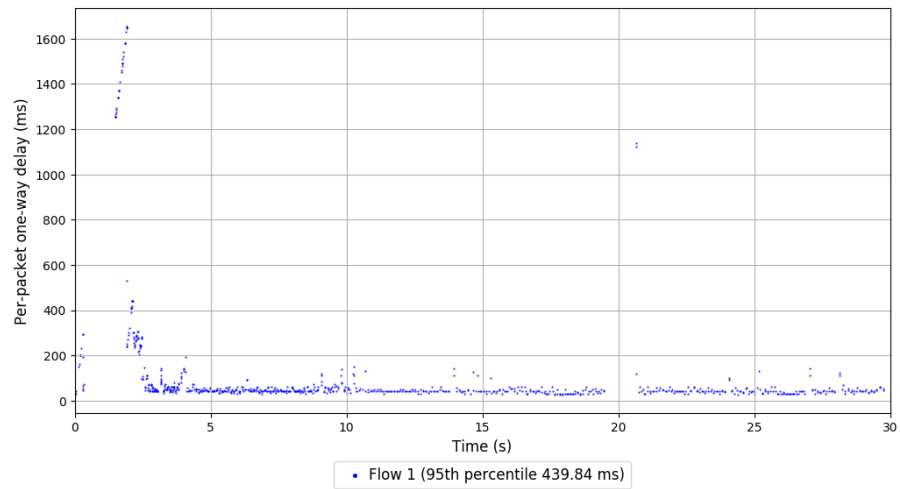
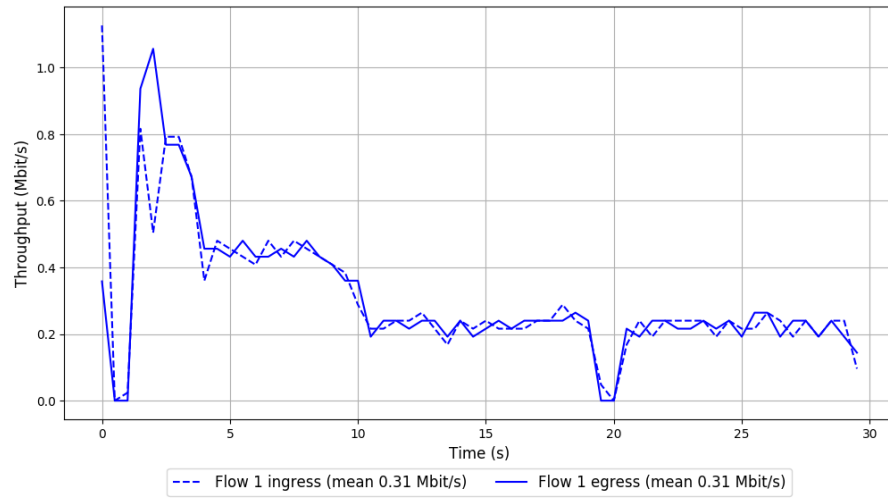


```
Run 1: Statistics of Indigo-calib

Start at: 2017-11-30 06:18:27
End at: 2017-11-30 06:18:57
Local clock offset: -7.728 ms
Remote clock offset: -17.306 ms

# Below is generated by plot.py at 2017-11-30 06:51:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 439.839 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 439.839 ms
Loss rate: 0.26%
```

Run 1: Report of Indigo-calib — Data Link

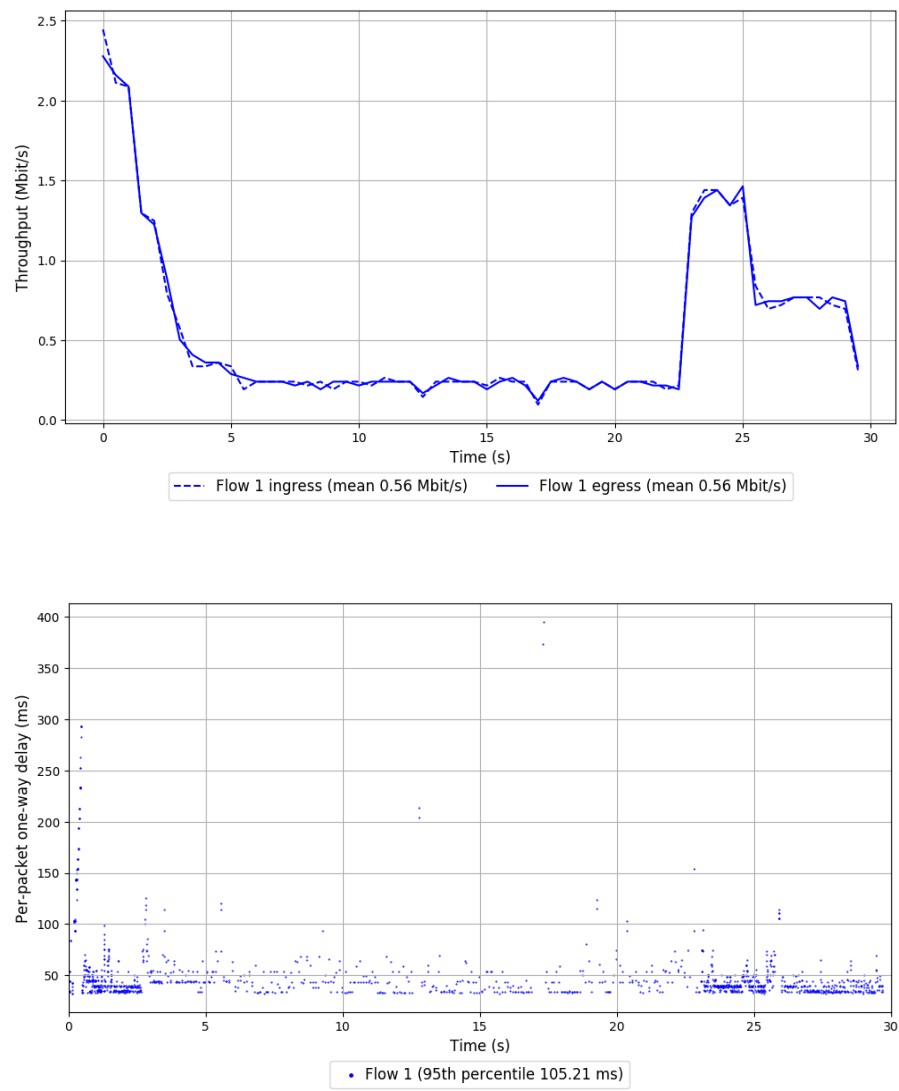


Run 2: Statistics of Indigo-calib

Start at: 2017-11-30 06:34:08
End at: 2017-11-30 06:34:38
Local clock offset: -8.824 ms
Remote clock offset: -16.482 ms

Below is generated by plot.py at 2017-11-30 06:51:47
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 105.212 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 105.212 ms
Loss rate: 0.07%

Run 2: Report of Indigo-calib — Data Link



Run 3: Statistics of Indigo-calib

Start at: 2017-11-30 06:49:51
End at: 2017-11-30 06:50:21
Local clock offset: -11.635 ms
Remote clock offset: -14.599 ms

Below is generated by plot.py at 2017-11-30 06:51:47
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.04 Mbit/s
95th percentile per-packet one-way delay: 54.381 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 1.04 Mbit/s
95th percentile per-packet one-way delay: 54.381 ms
Loss rate: 0.16%

Run 3: Report of Indigo-calib — Data Link

