

Pantheon Report

Generated at 2018-01-16 00:22:24 (UTC).

Data path: AWS California 1 Ethernet (*local*) → Stanford 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).

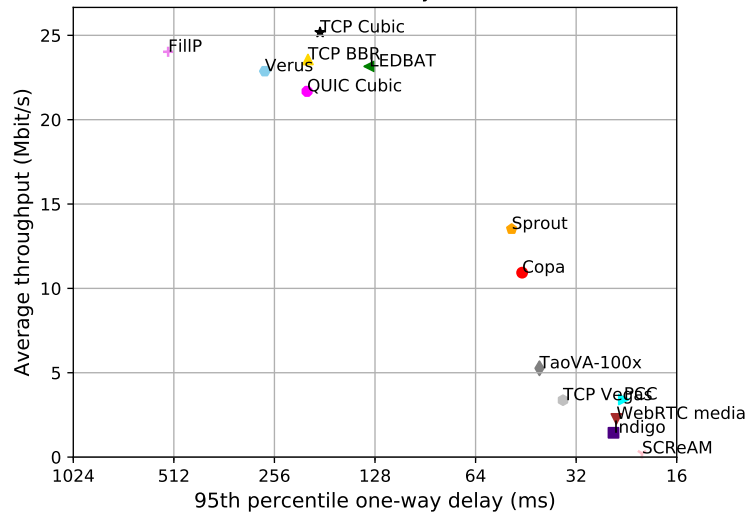
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo_fast**).

NTP offsets were measured against `time.stanford.edu` and have been applied to correct the timestamps in logs.

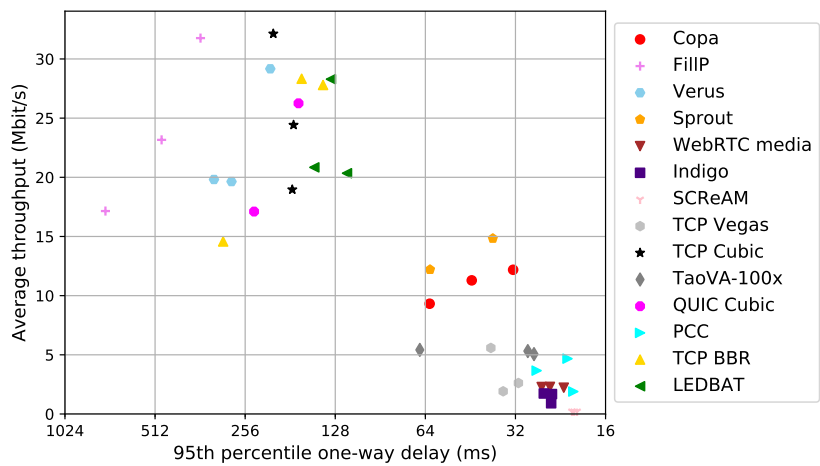
Git summary:

```
branch: master @ af8abdfba95588b0c5f2aeca9e856a1656b0c598
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
  M datagrump/sender.cc
third_party/fixp @ ec9585325218d5048c4d4152fa42240af54c6e67
third_party/genericCC @ 80b516c448f795fd6e9675f7177b69c622f07da8
third_party/indigo @ b19f3730105f9aa95452552af924e3719b03cc55
third_party/indigo-no-calib @ 7224f2202e8a044d8306fa0b983ad84360c53d89
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
  M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ fb1053193c2861da659ba9013db26744ccfcf993
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-quick @ 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/vivace @ 423cbca3e8ea1d599e7b5cf725835e8a2b6bfac6
third_party/webRTC @ a488197ddd041ace68a42849b2540ad834825f42
```

test from AWS California 1 Ethernet to Stanford ppp0, 3 runs of 30s each per scheme
(mean of all runs by scheme)



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



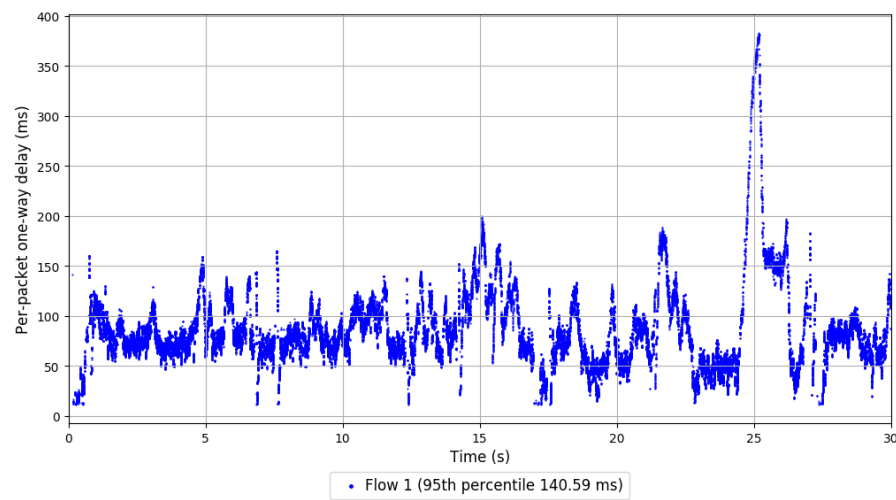
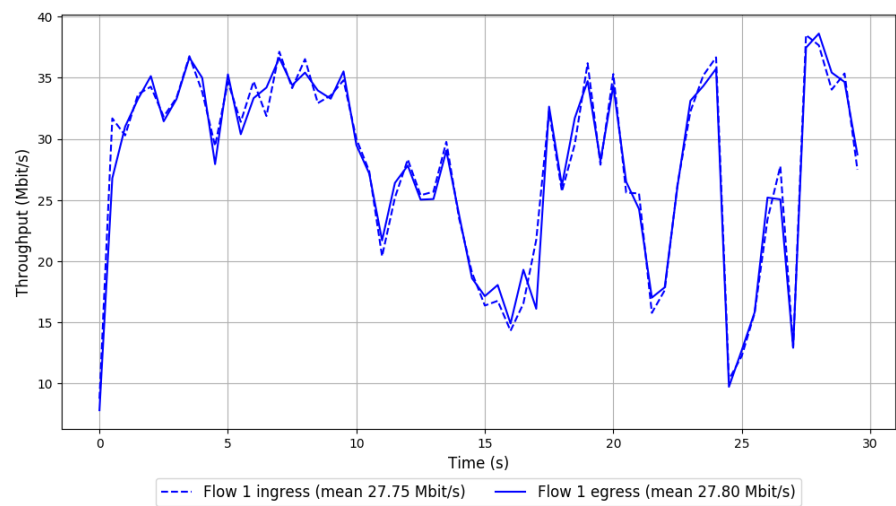
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	23.57	203.20	0.22
TCP Cubic	3	25.17	186.92	0.43
LEDBAT	3	23.16	133.22	0.26
PCC	3	3.41	23.04	0.01
QUIC Cubic	2	21.68	204.41	0.37
SCReAM	3	0.22	20.33	0.00
WebRTC media	3	2.26	24.26	0.00
Sprout	2	13.53	49.91	0.01
TaoVA-100x	3	5.27	41.21	0.13
TCP Vegas	3	3.37	35.04	0.05
Verus	3	22.88	273.56	3.25
Copa	3	10.93	46.44	0.02
FillP	3	24.02	532.63	55.77
Indigo	3	1.44	24.74	0.00

Run 1: Statistics of TCP BBR

Start at: 2018-01-15 23:35:38
End at: 2018-01-15 23:36:08
Local clock offset: -2.036 ms
Remote clock offset: -2.509 ms

Below is generated by plot.py at 2018-01-16 00:21:28
Datalink statistics
-- Total of 1 flow:
Average throughput: 27.80 Mbit/s
95th percentile per-packet one-way delay: 140.590 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 27.80 Mbit/s
95th percentile per-packet one-way delay: 140.590 ms
Loss rate: 0.23%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-01-15 23:53:20

End at: 2018-01-15 23:53:50

Local clock offset: 0.593 ms

Remote clock offset: -2.595 ms

Below is generated by plot.py at 2018-01-16 00:21:28

Datalink statistics

-- Total of 1 flow:

Average throughput: 14.58 Mbit/s

95th percentile per-packet one-way delay: 303.226 ms

Loss rate: 0.31%

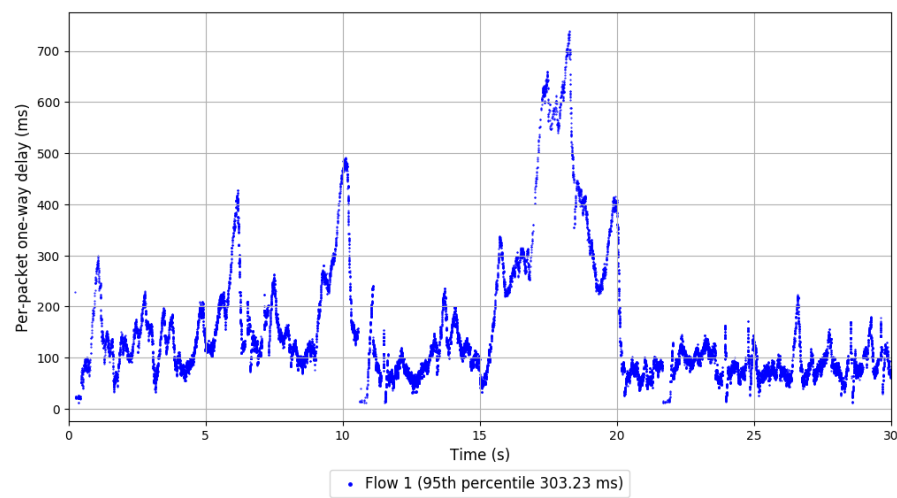
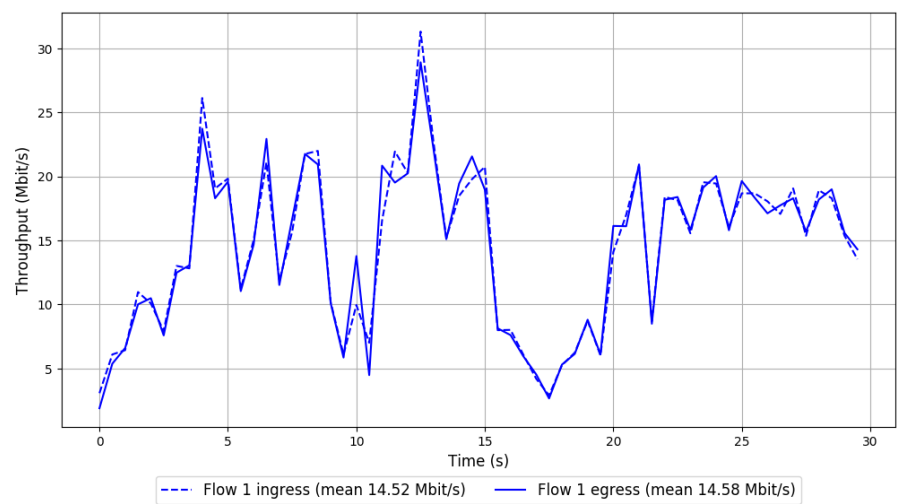
-- Flow 1:

Average throughput: 14.58 Mbit/s

95th percentile per-packet one-way delay: 303.226 ms

Loss rate: 0.31%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-01-16 00:11:01

End at: 2018-01-16 00:11:31

Local clock offset: 4.626 ms

Remote clock offset: -2.496 ms

Below is generated by plot.py at 2018-01-16 00:21:29

Datalink statistics

-- Total of 1 flow:

Average throughput: 28.33 Mbit/s

95th percentile per-packet one-way delay: 165.794 ms

Loss rate: 0.12%

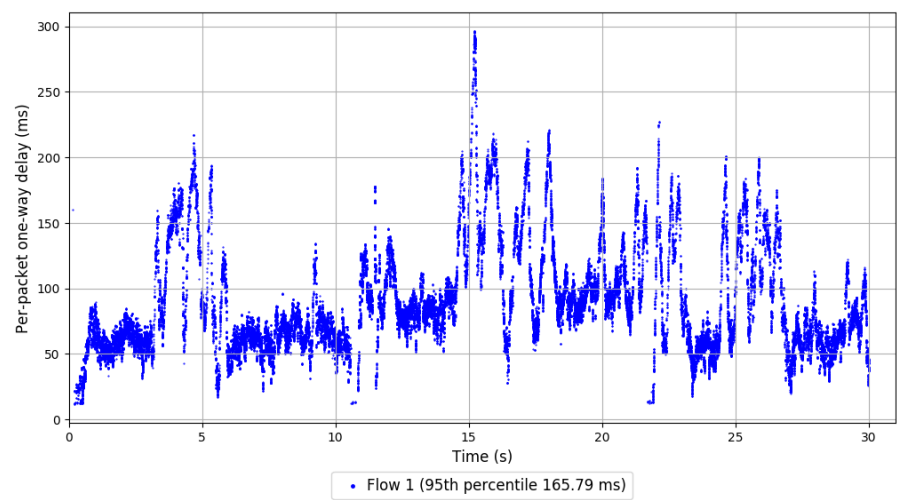
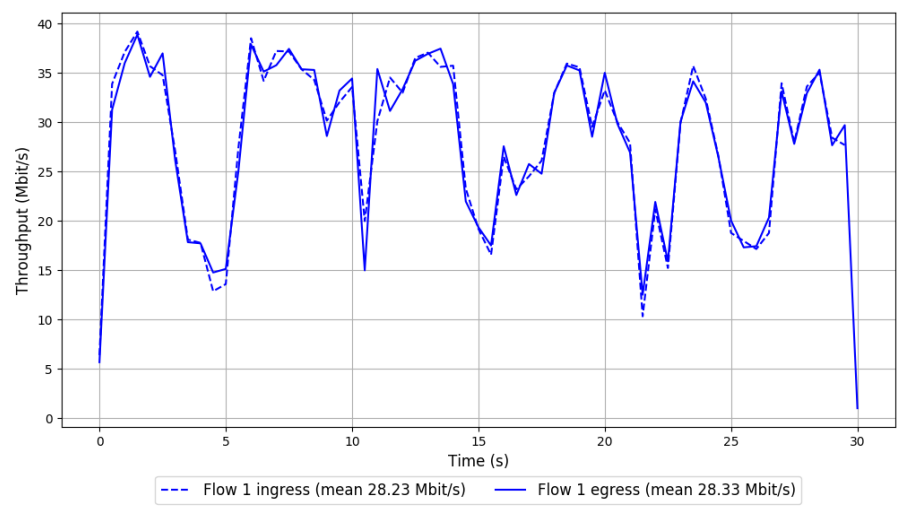
-- Flow 1:

Average throughput: 28.33 Mbit/s

95th percentile per-packet one-way delay: 165.794 ms

Loss rate: 0.12%

Run 3: Report of TCP BBR — Data Link

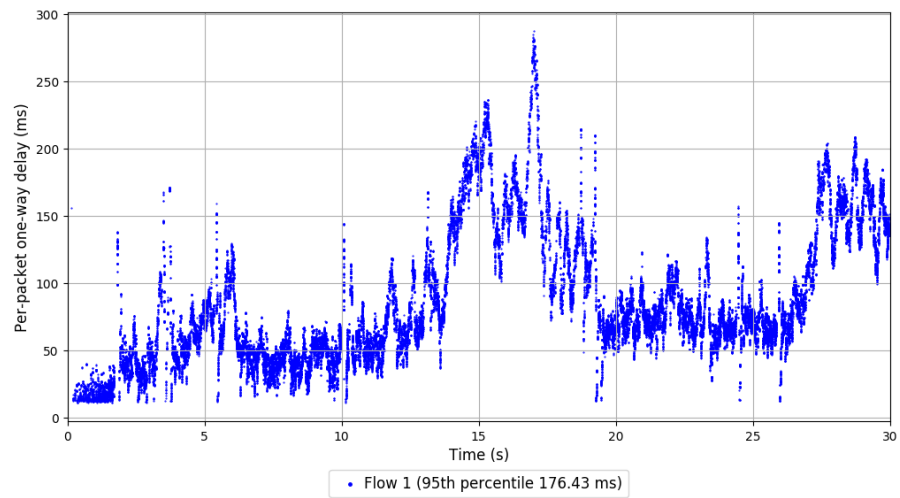
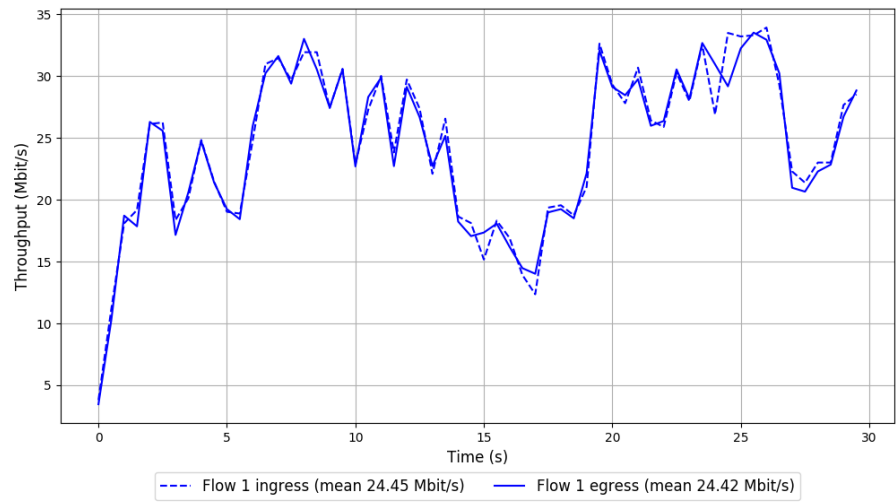


Run 1: Statistics of TCP Cubic

Start at: 2018-01-15 23:38:01
End at: 2018-01-15 23:38:31
Local clock offset: -2.108 ms
Remote clock offset: -2.504 ms

Below is generated by plot.py at 2018-01-16 00:21:29
Datalink statistics
-- Total of 1 flow:
Average throughput: 24.42 Mbit/s
95th percentile per-packet one-way delay: 176.429 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 24.42 Mbit/s
95th percentile per-packet one-way delay: 176.429 ms
Loss rate: 0.60%

Run 1: Report of TCP Cubic — Data Link

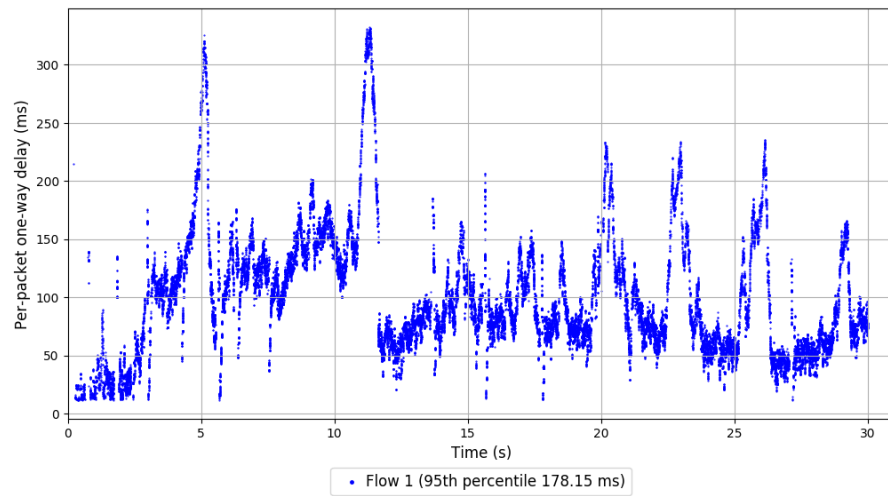
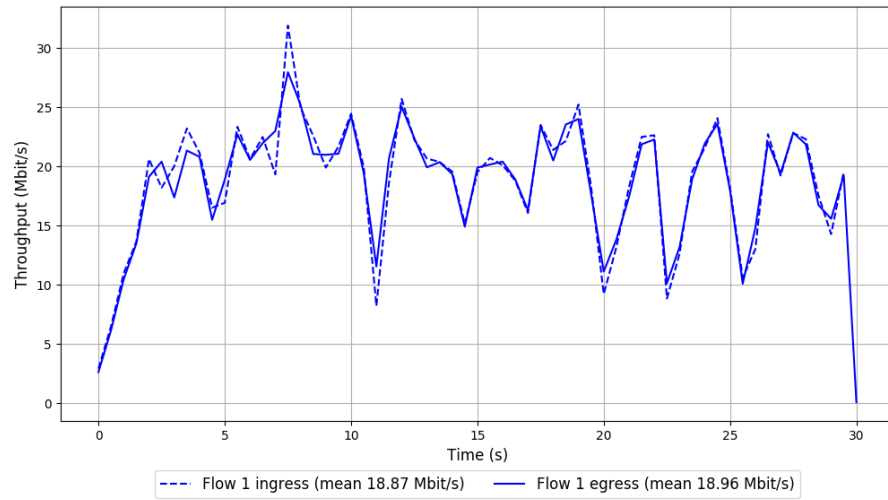


Run 2: Statistics of TCP Cubic

Start at: 2018-01-15 23:55:42
End at: 2018-01-15 23:56:12
Local clock offset: 1.213 ms
Remote clock offset: -2.598 ms

Below is generated by plot.py at 2018-01-16 00:21:29
Datalink statistics
-- Total of 1 flow:
Average throughput: 18.96 Mbit/s
95th percentile per-packet one-way delay: 178.154 ms
Loss rate: 0.22%
-- Flow 1:
Average throughput: 18.96 Mbit/s
95th percentile per-packet one-way delay: 178.154 ms
Loss rate: 0.22%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-01-16 00:13:23

End at: 2018-01-16 00:13:53

Local clock offset: 4.992 ms

Remote clock offset: -2.55 ms

Below is generated by plot.py at 2018-01-16 00:21:35

Datalink statistics

-- Total of 1 flow:

Average throughput: 32.13 Mbit/s

95th percentile per-packet one-way delay: 206.179 ms

Loss rate: 0.46%

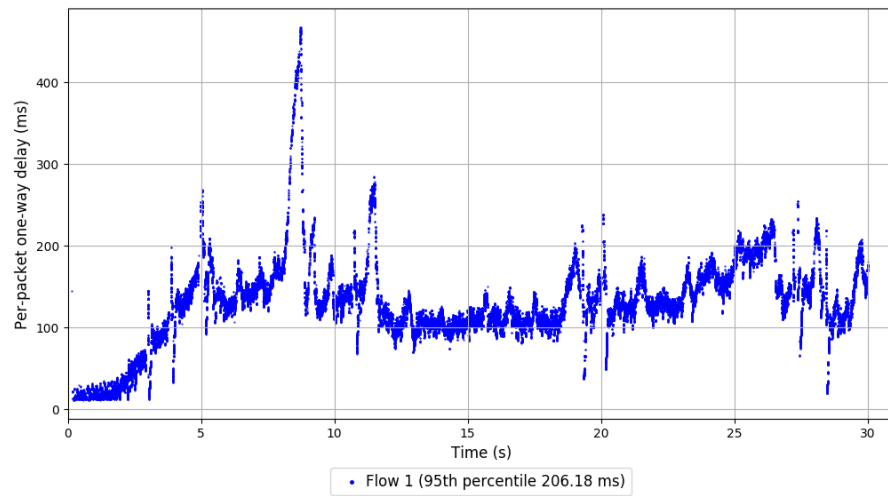
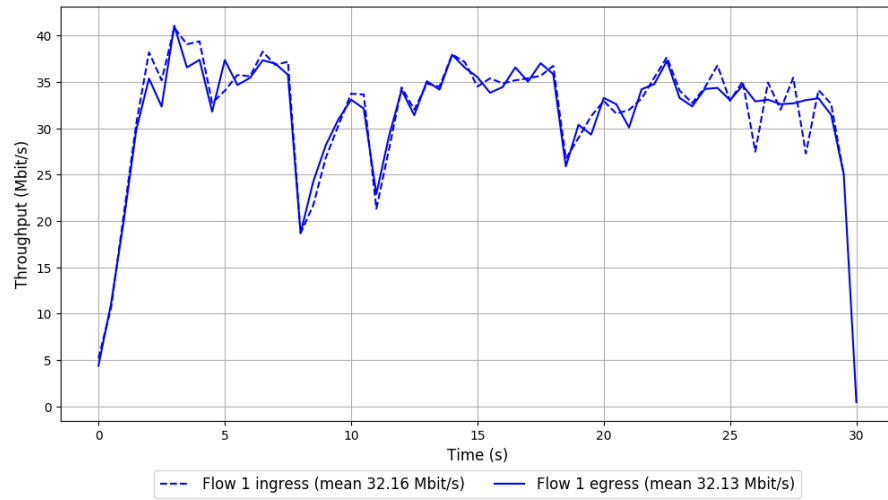
-- Flow 1:

Average throughput: 32.13 Mbit/s

95th percentile per-packet one-way delay: 206.179 ms

Loss rate: 0.46%

Run 3: Report of TCP Cubic — Data Link

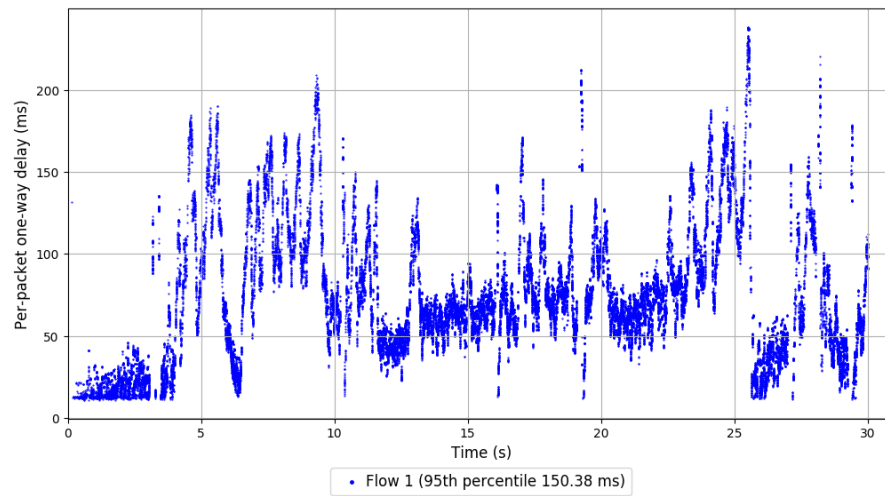
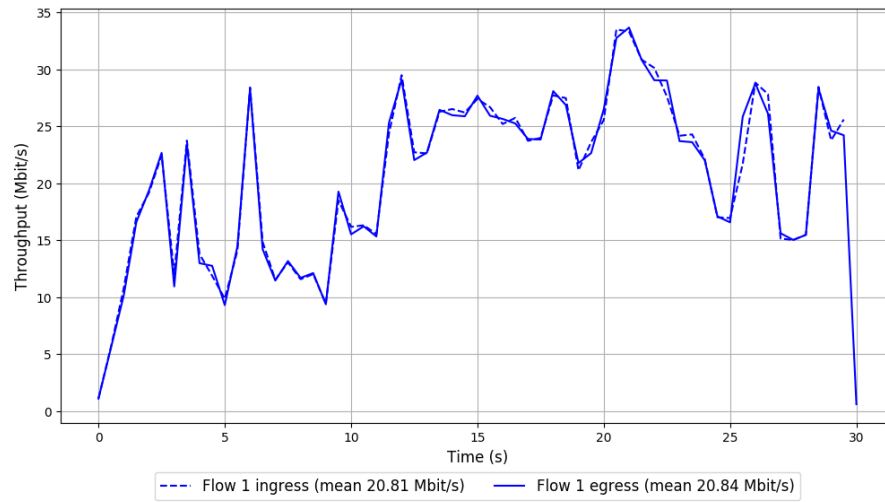


Run 1: Statistics of LEDBAT

Start at: 2018-01-15 23:29:43
End at: 2018-01-15 23:30:13
Local clock offset: -1.484 ms
Remote clock offset: -2.556 ms

Below is generated by plot.py at 2018-01-16 00:21:35
Datalink statistics
-- Total of 1 flow:
Average throughput: 20.84 Mbit/s
95th percentile per-packet one-way delay: 150.378 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 20.84 Mbit/s
95th percentile per-packet one-way delay: 150.378 ms
Loss rate: 0.23%

Run 1: Report of LEDBAT — Data Link

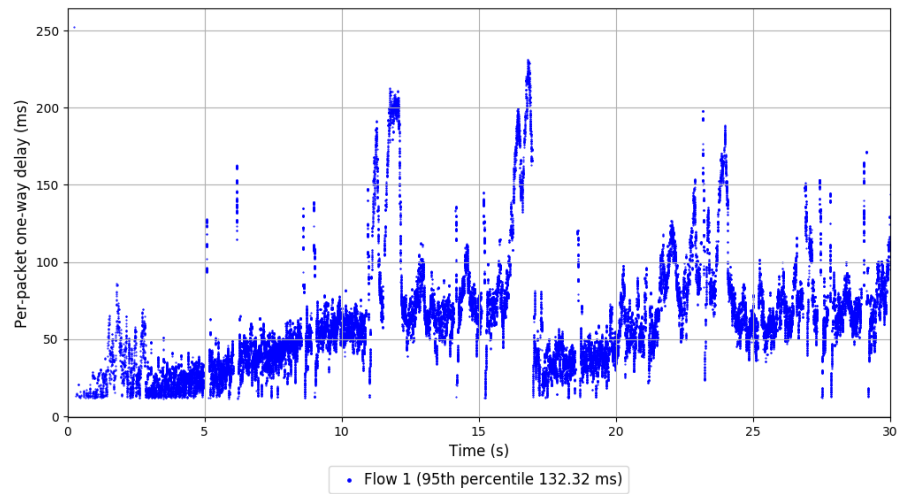
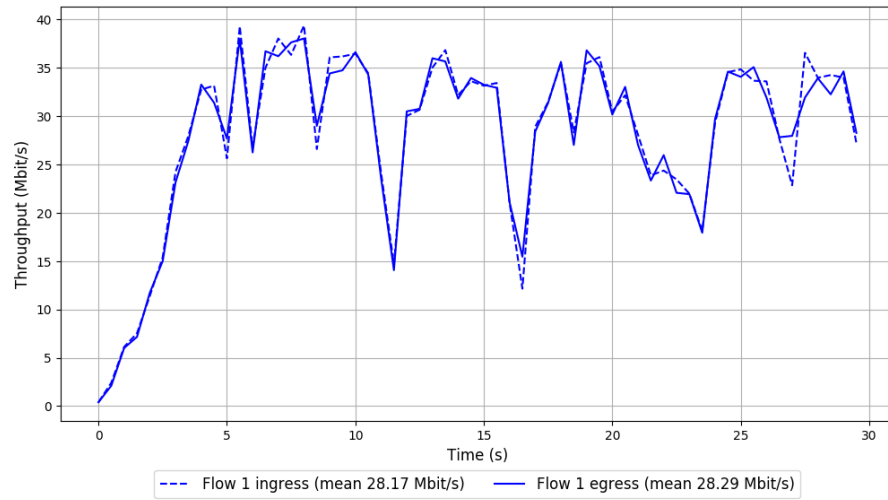


Run 2: Statistics of LEDBAT

Start at: 2018-01-15 23:47:25
End at: 2018-01-15 23:47:55
Local clock offset: -0.864 ms
Remote clock offset: -2.675 ms

Below is generated by plot.py at 2018-01-16 00:21:35
Datalink statistics
-- Total of 1 flow:
Average throughput: 28.29 Mbit/s
95th percentile per-packet one-way delay: 132.324 ms
Loss rate: 0.30%
-- Flow 1:
Average throughput: 28.29 Mbit/s
95th percentile per-packet one-way delay: 132.324 ms
Loss rate: 0.30%

Run 2: Report of LEDBAT — Data Link

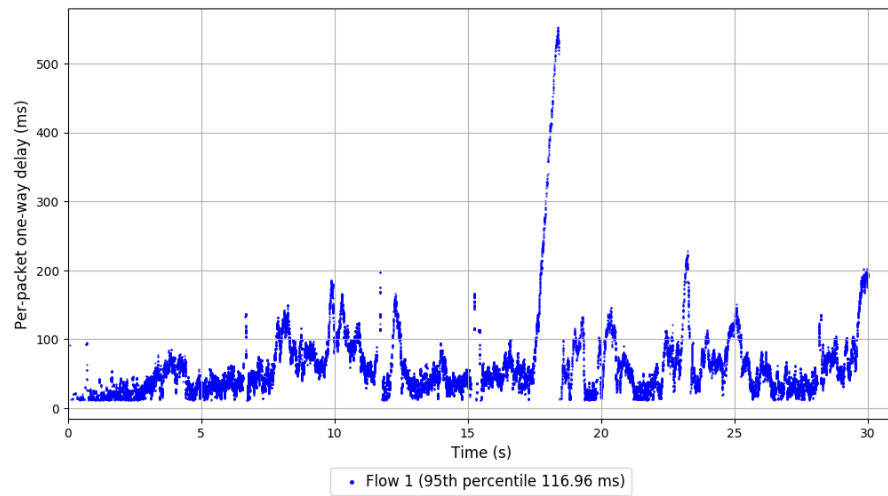
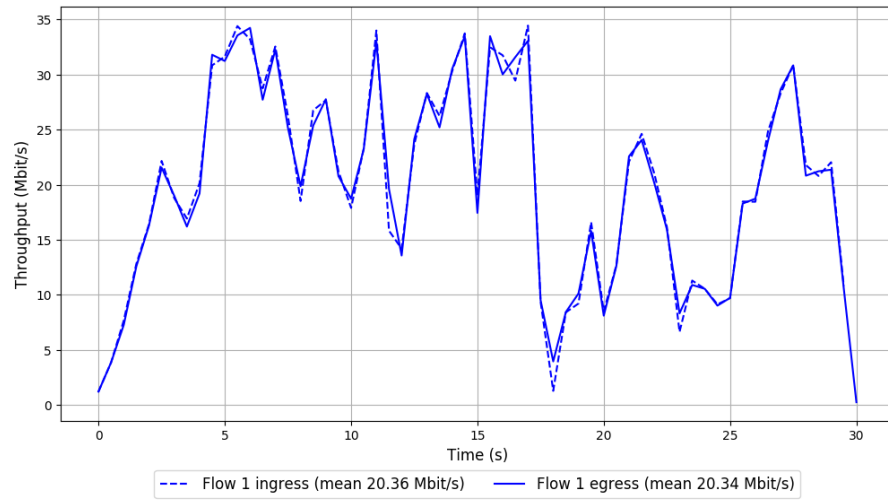


Run 3: Statistics of LEDBAT

Start at: 2018-01-16 00:05:06
End at: 2018-01-16 00:05:37
Local clock offset: 3.706 ms
Remote clock offset: -2.562 ms

Below is generated by plot.py at 2018-01-16 00:21:38
Datalink statistics
-- Total of 1 flow:
Average throughput: 20.34 Mbit/s
95th percentile per-packet one-way delay: 116.963 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 20.34 Mbit/s
95th percentile per-packet one-way delay: 116.963 ms
Loss rate: 0.26%

Run 3: Report of LEDBAT — Data Link

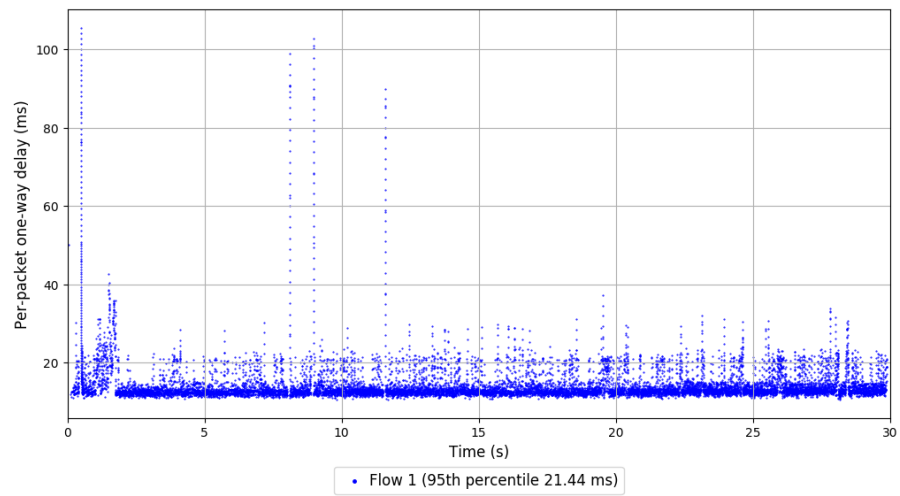
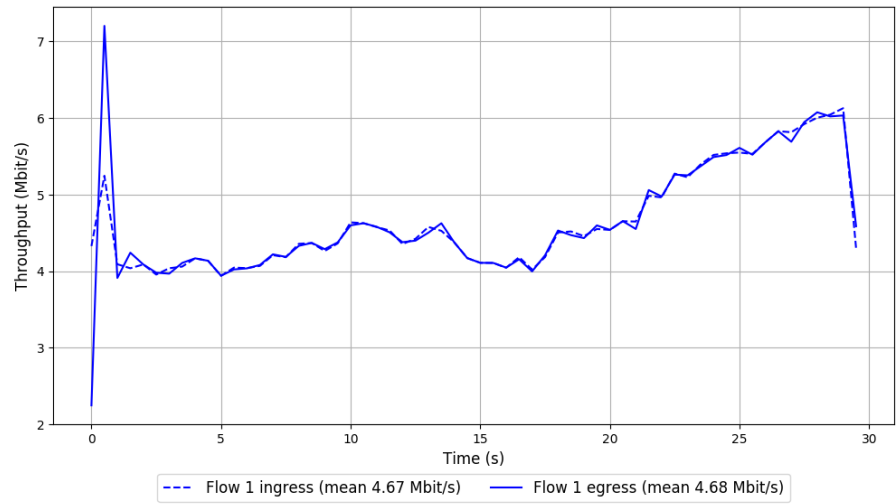


```
Run 1: Statistics of PCC

Start at: 2018-01-15 23:43:54
End at: 2018-01-15 23:44:24
Local clock offset: -1.475 ms
Remote clock offset: -2.613 ms

# Below is generated by plot.py at 2018-01-16 00:21:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.68 Mbit/s
95th percentile per-packet one-way delay: 21.437 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 4.68 Mbit/s
95th percentile per-packet one-way delay: 21.437 ms
Loss rate: 0.01%
```

Run 1: Report of PCC — Data Link

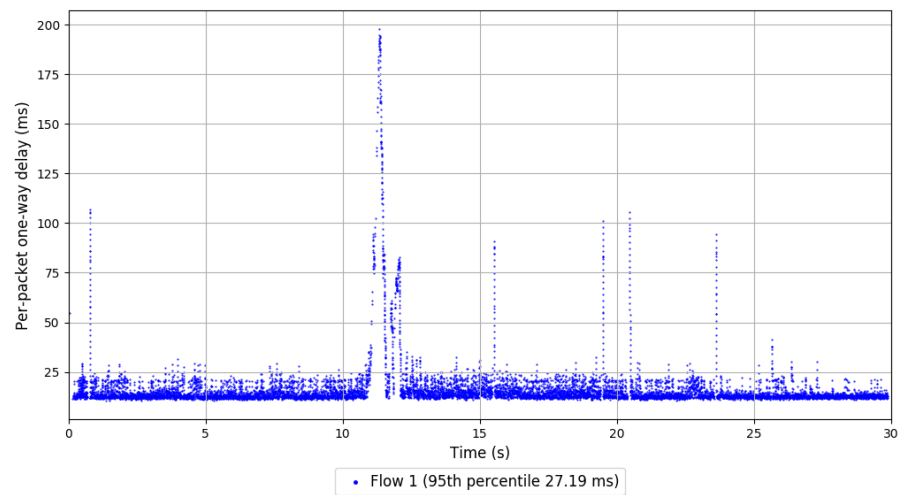
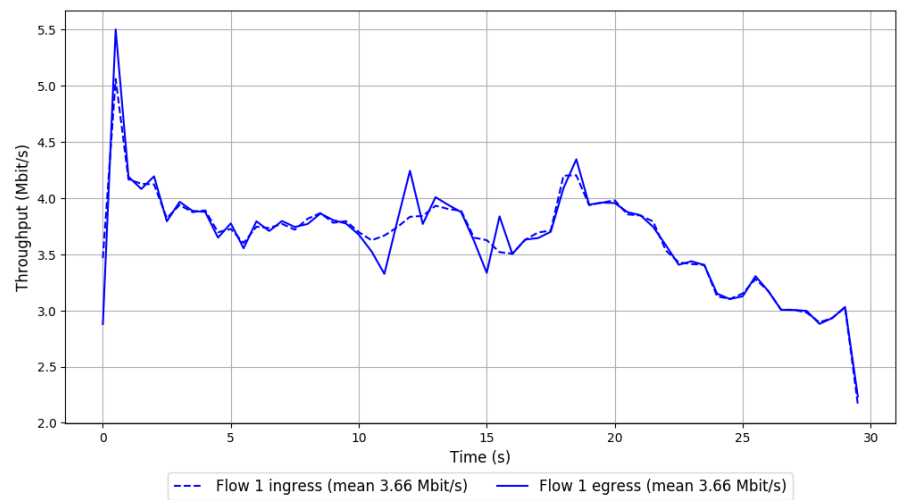


Run 2: Statistics of PCC

Start at: 2018-01-16 00:01:35
End at: 2018-01-16 00:02:05
Local clock offset: 2.848 ms
Remote clock offset: -2.517 ms

Below is generated by plot.py at 2018-01-16 00:21:38
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.66 Mbit/s
95th percentile per-packet one-way delay: 27.187 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 3.66 Mbit/s
95th percentile per-packet one-way delay: 27.187 ms
Loss rate: 0.01%

Run 2: Report of PCC — Data Link

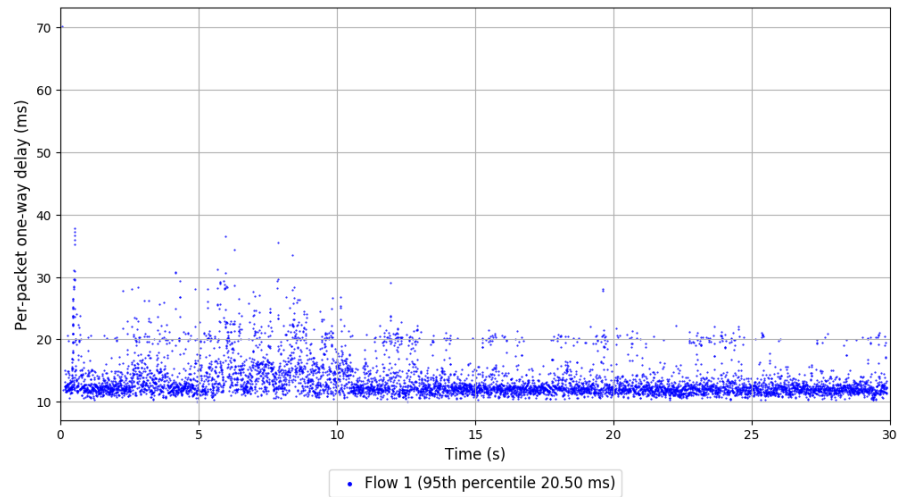
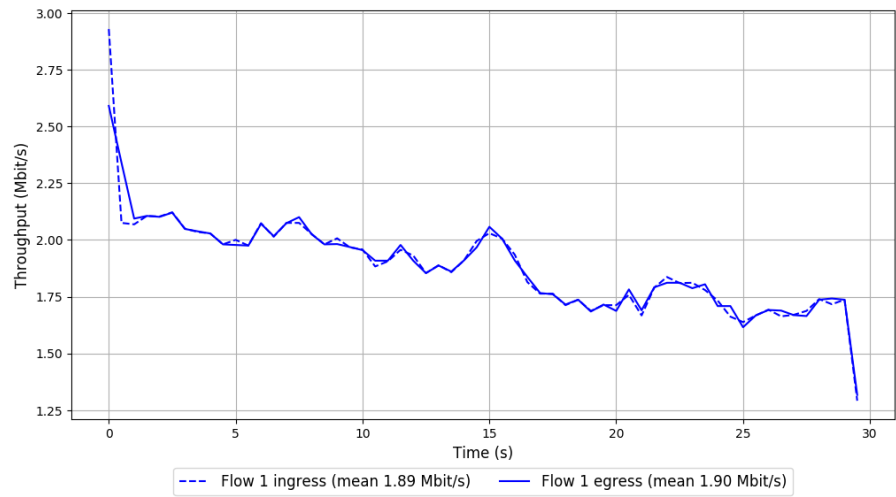


Run 3: Statistics of PCC

Start at: 2018-01-16 00:19:17
End at: 2018-01-16 00:19:47
Local clock offset: 5.858 ms
Remote clock offset: -2.619 ms

Below is generated by plot.py at 2018-01-16 00:21:38
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.90 Mbit/s
95th percentile per-packet one-way delay: 20.501 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.90 Mbit/s
95th percentile per-packet one-way delay: 20.501 ms
Loss rate: 0.00%

Run 3: Report of PCC — Data Link



Run 1: Statistics of QUIC Cubic

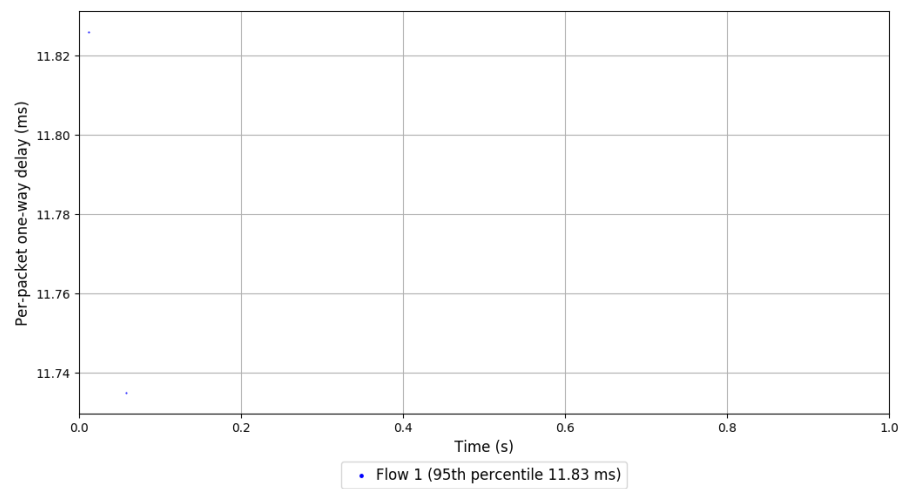
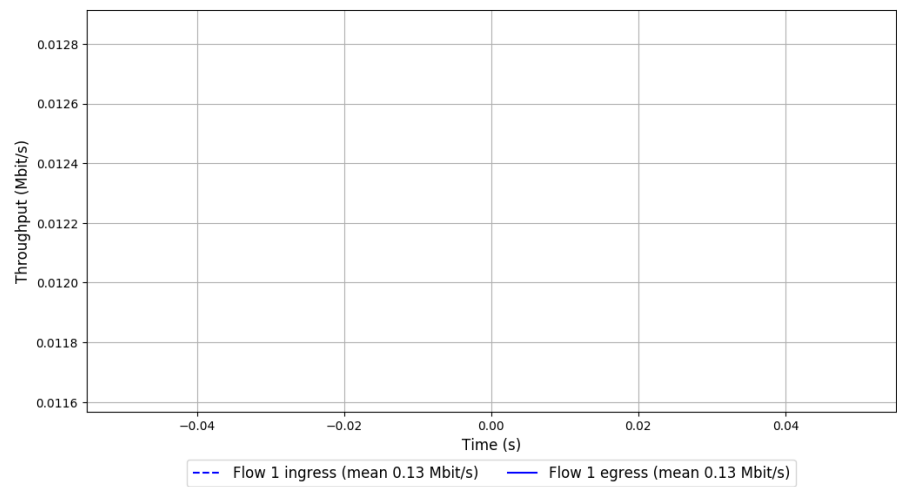
Start at: 2018-01-15 23:42:43

End at: 2018-01-15 23:43:13

Local clock offset: -1.589 ms

Remote clock offset: -2.578 ms

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2018-01-16 00:00:24

End at: 2018-01-16 00:00:54

Local clock offset: 2.493 ms

Remote clock offset: -2.496 ms

Below is generated by plot.py at 2018-01-16 00:21:58

Datalink statistics

-- Total of 1 flow:

Average throughput: 26.25 Mbit/s

95th percentile per-packet one-way delay: 169.814 ms

Loss rate: 0.40%

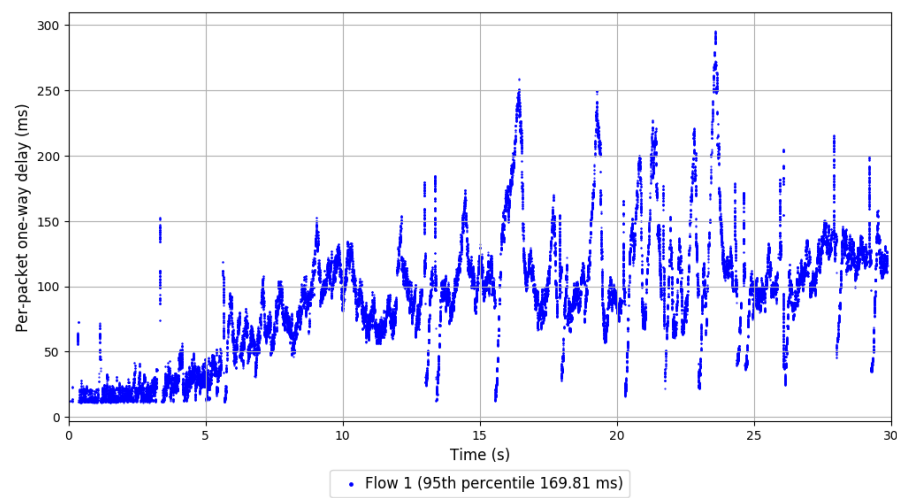
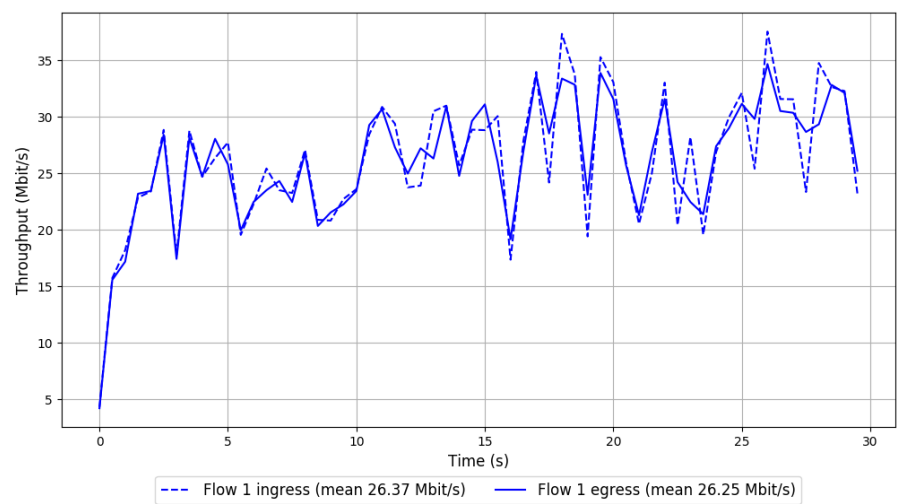
-- Flow 1:

Average throughput: 26.25 Mbit/s

95th percentile per-packet one-way delay: 169.814 ms

Loss rate: 0.40%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2018-01-16 00:18:06

End at: 2018-01-16 00:18:36

Local clock offset: 5.684 ms

Remote clock offset: -2.505 ms

Below is generated by plot.py at 2018-01-16 00:21:58

Datalink statistics

-- Total of 1 flow:

Average throughput: 17.11 Mbit/s

95th percentile per-packet one-way delay: 239.010 ms

Loss rate: 0.34%

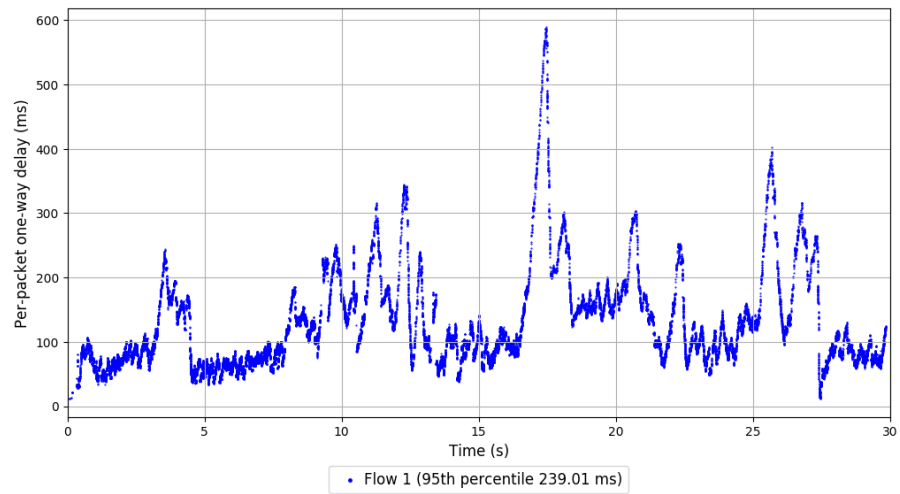
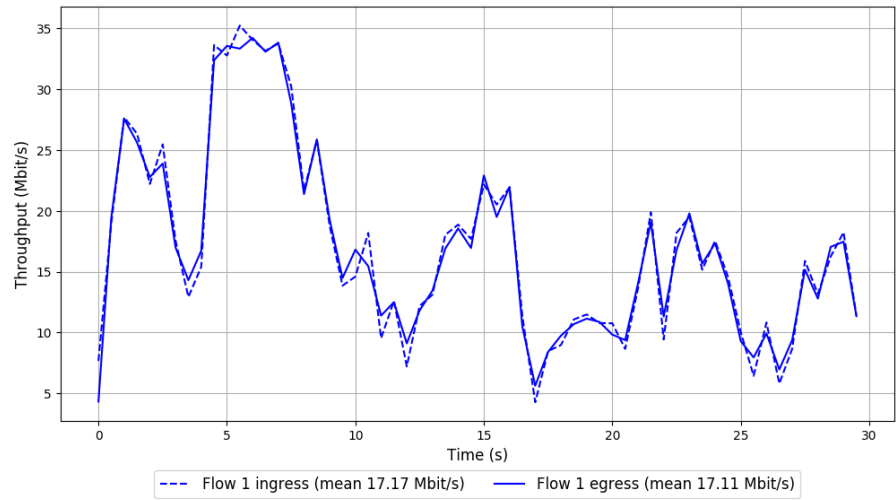
-- Flow 1:

Average throughput: 17.11 Mbit/s

95th percentile per-packet one-way delay: 239.010 ms

Loss rate: 0.34%

Run 3: Report of QUIC Cubic — Data Link

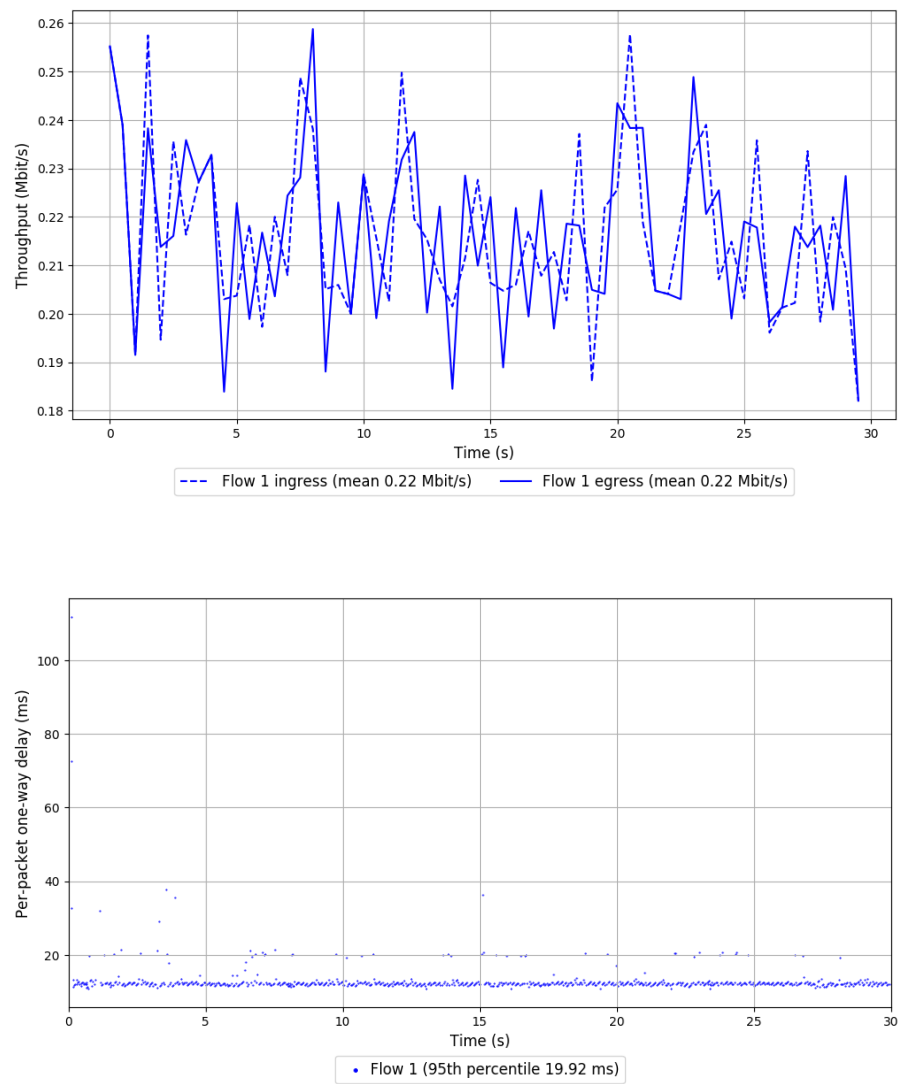


Run 1: Statistics of SCReAM

Start at: 2018-01-15 23:32:05
End at: 2018-01-15 23:32:35
Local clock offset: -1.552 ms
Remote clock offset: -2.567 ms

Below is generated by plot.py at 2018-01-16 00:21:58
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 19.924 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 19.924 ms
Loss rate: 0.00%

Run 1: Report of SReAM — Data Link

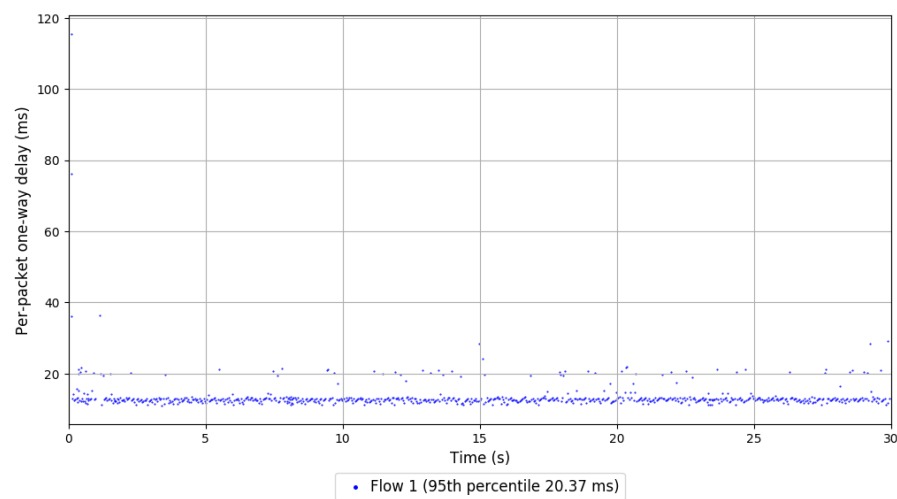
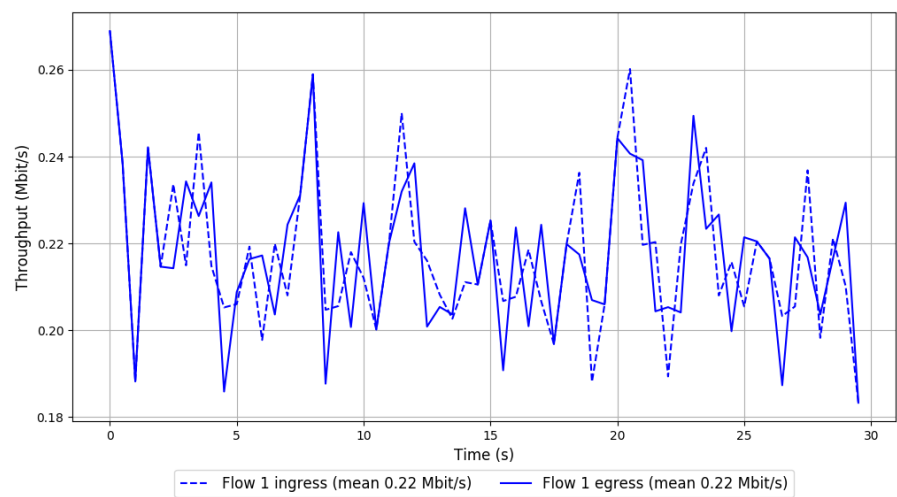


Run 2: Statistics of SCReAM

Start at: 2018-01-15 23:49:47
End at: 2018-01-15 23:50:17
Local clock offset: -0.263 ms
Remote clock offset: -2.585 ms

Below is generated by plot.py at 2018-01-16 00:21:58
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 20.366 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 20.366 ms
Loss rate: 0.00%

Run 2: Report of SReAM — Data Link

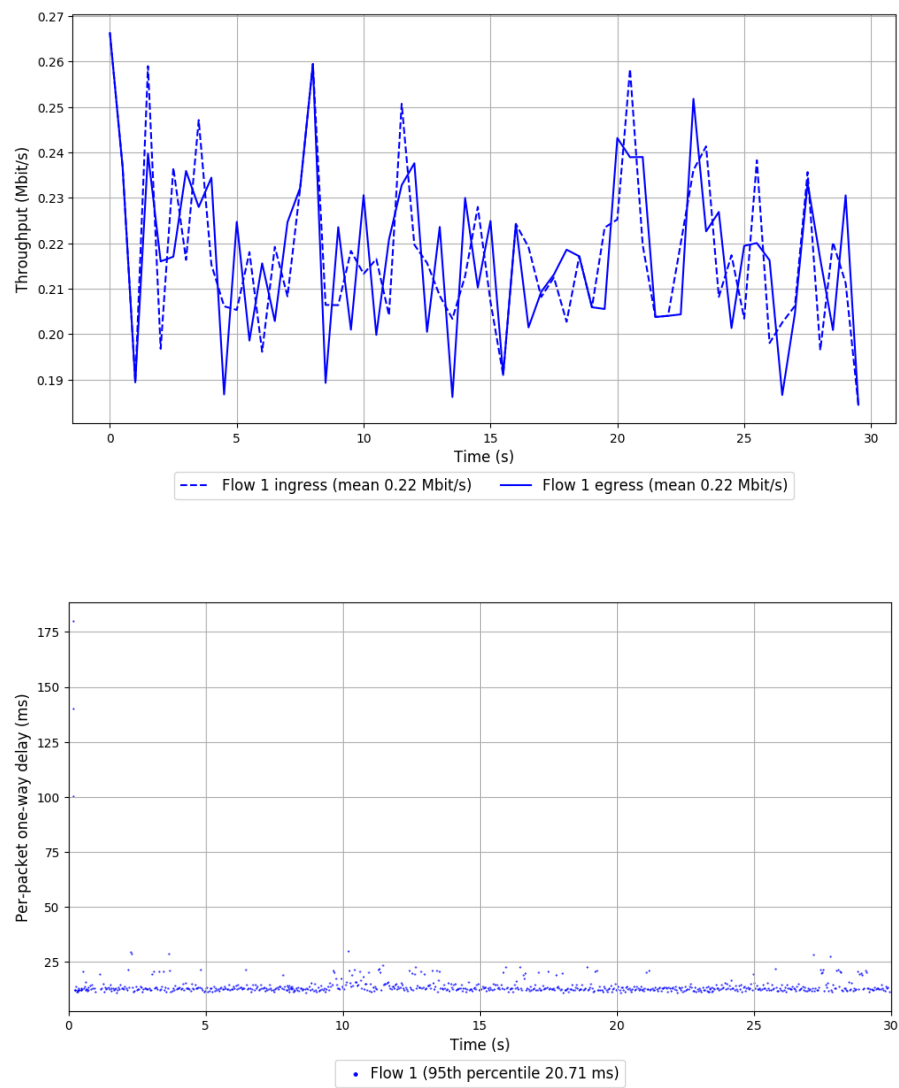


Run 3: Statistics of SCReAM

Start at: 2018-01-16 00:07:28
End at: 2018-01-16 00:07:58
Local clock offset: 4.11 ms
Remote clock offset: -2.529 ms

Below is generated by plot.py at 2018-01-16 00:21:58
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 20.714 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 20.714 ms
Loss rate: 0.00%

Run 3: Report of SReAM — Data Link

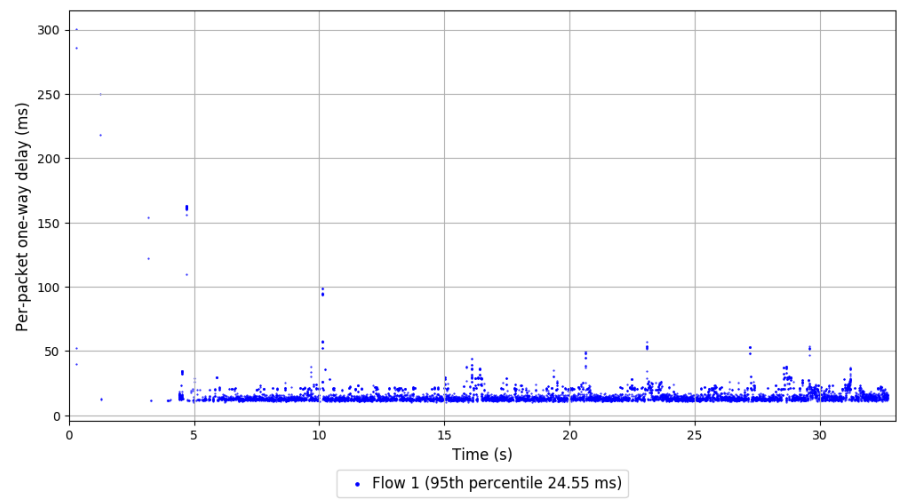
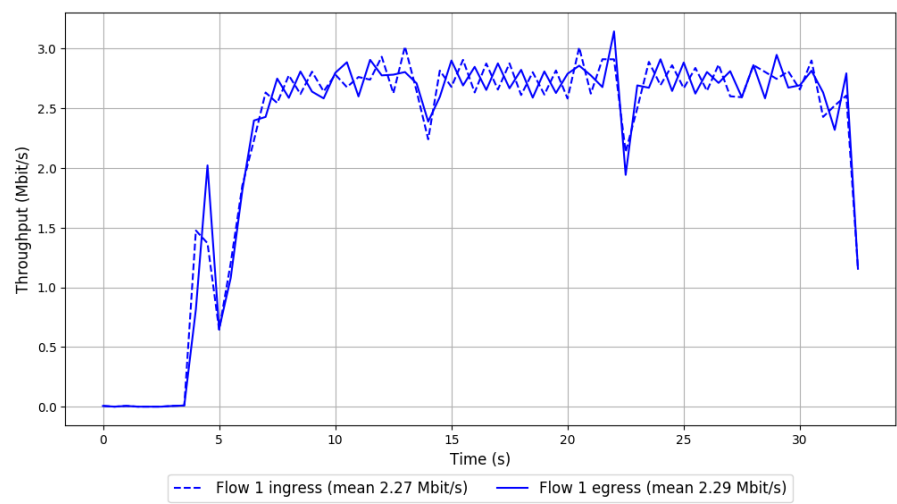


```
Run 1: Statistics of WebRTC media

Start at: 2018-01-15 23:39:12
End at: 2018-01-15 23:39:42
Local clock offset: -1.952 ms
Remote clock offset: -2.621 ms

# Below is generated by plot.py at 2018-01-16 00:21:58
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.29 Mbit/s
95th percentile per-packet one-way delay: 24.548 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 2.29 Mbit/s
95th percentile per-packet one-way delay: 24.548 ms
Loss rate: 0.01%
```


Run 1: Report of WebRTC media — Data Link

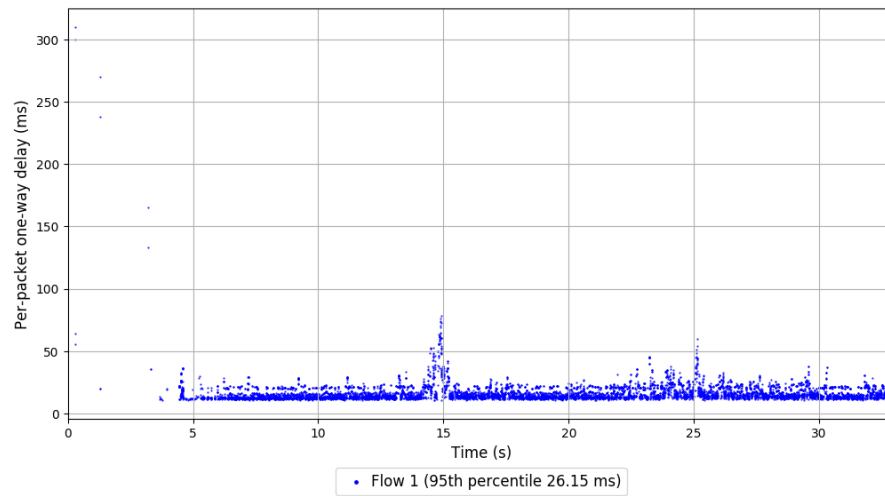
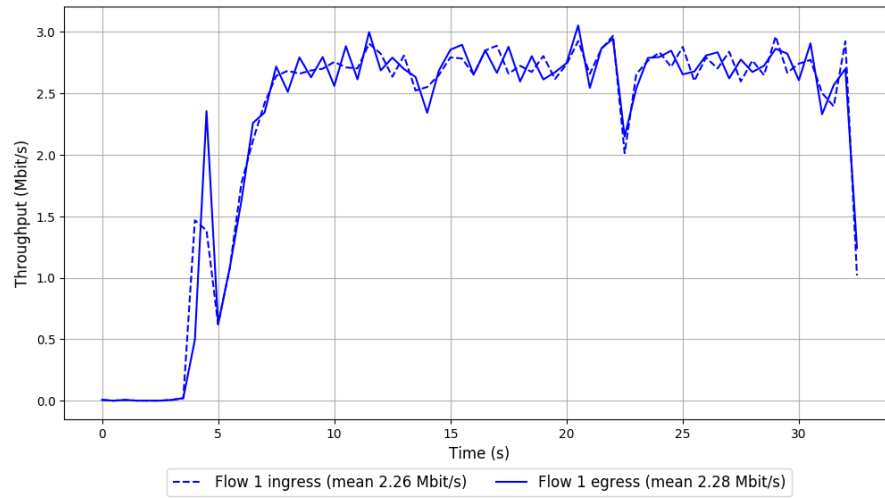


Run 2: Statistics of WebRTC media

Start at: 2018-01-15 23:56:53
End at: 2018-01-15 23:57:23
Local clock offset: 1.561 ms
Remote clock offset: -2.509 ms

Below is generated by plot.py at 2018-01-16 00:21:58
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.28 Mbit/s
95th percentile per-packet one-way delay: 26.154 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.28 Mbit/s
95th percentile per-packet one-way delay: 26.154 ms
Loss rate: 0.00%

Run 2: Report of WebRTC media — Data Link

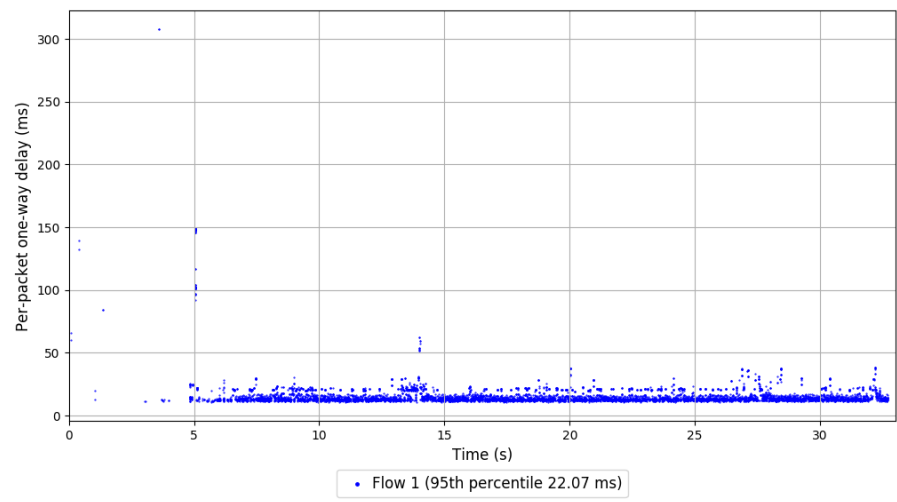
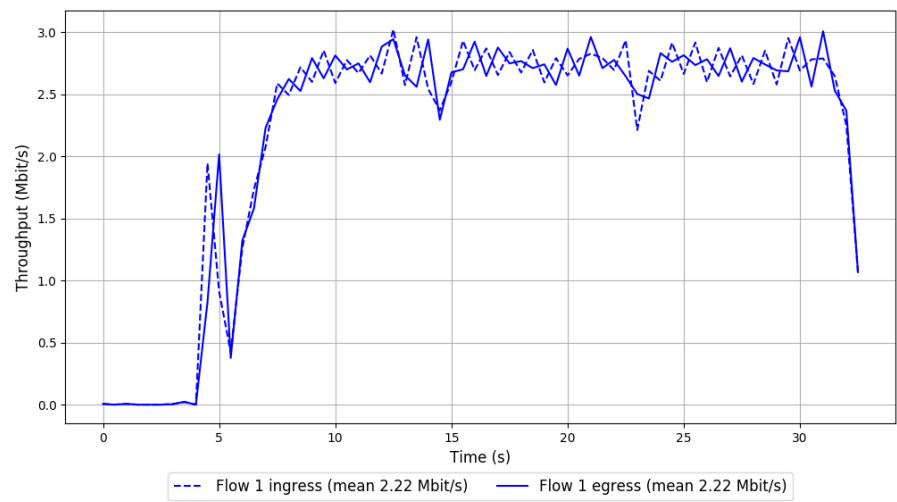


Run 3: Statistics of WebRTC media

Start at: 2018-01-16 00:14:35
End at: 2018-01-16 00:15:05
Local clock offset: 5.174 ms
Remote clock offset: -2.523 ms

Below is generated by plot.py at 2018-01-16 00:21:58
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.22 Mbit/s
95th percentile per-packet one-way delay: 22.068 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.22 Mbit/s
95th percentile per-packet one-way delay: 22.068 ms
Loss rate: 0.00%

Run 3: Report of WebRTC media — Data Link

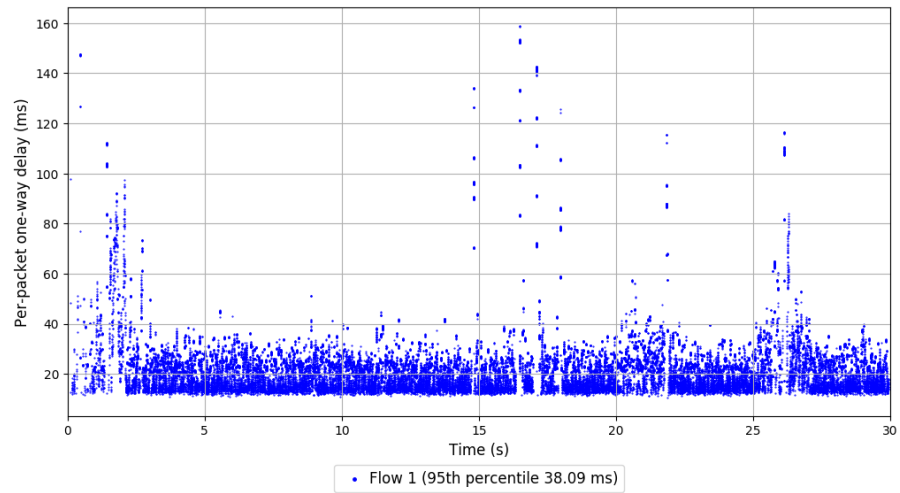
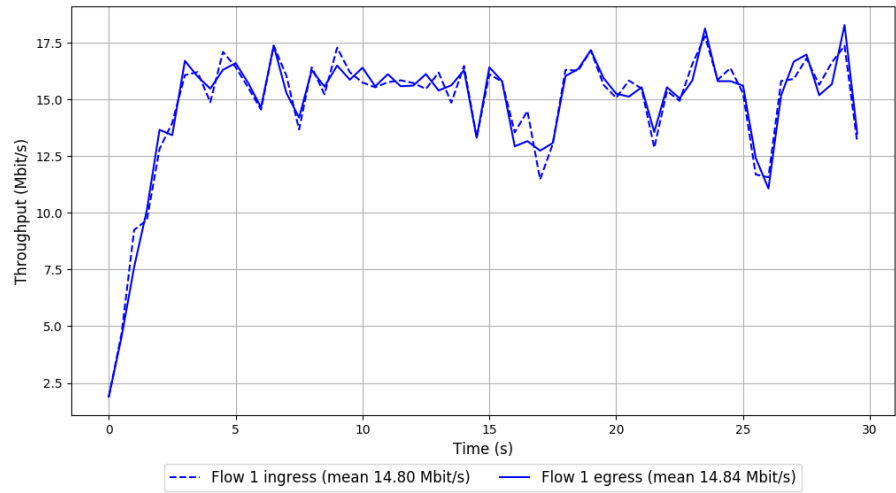


Run 1: Statistics of Sprout

Start at: 2018-01-15 23:41:33
End at: 2018-01-15 23:42:03
Local clock offset: -1.736 ms
Remote clock offset: -2.551 ms

Below is generated by plot.py at 2018-01-16 00:21:58
Datalink statistics
-- Total of 1 flow:
Average throughput: 14.84 Mbit/s
95th percentile per-packet one-way delay: 38.085 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 14.84 Mbit/s
95th percentile per-packet one-way delay: 38.085 ms
Loss rate: 0.03%

Run 1: Report of Sprout — Data Link



Run 2: Statistics of Sprout

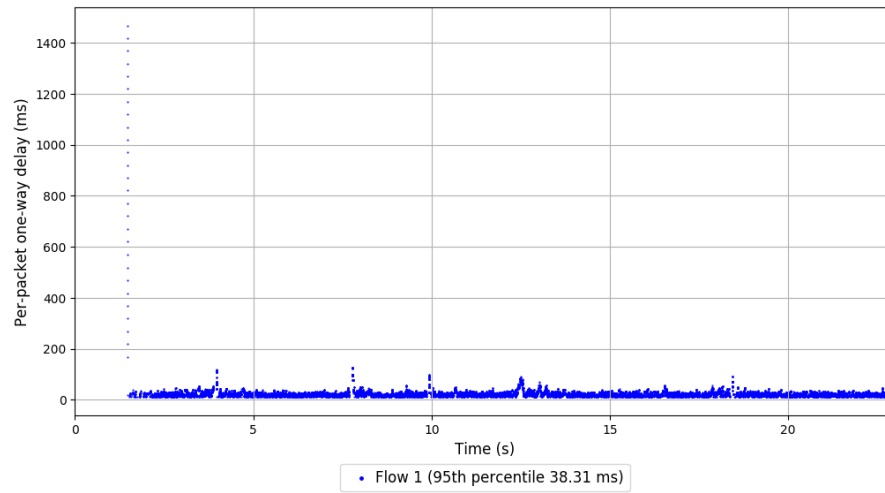
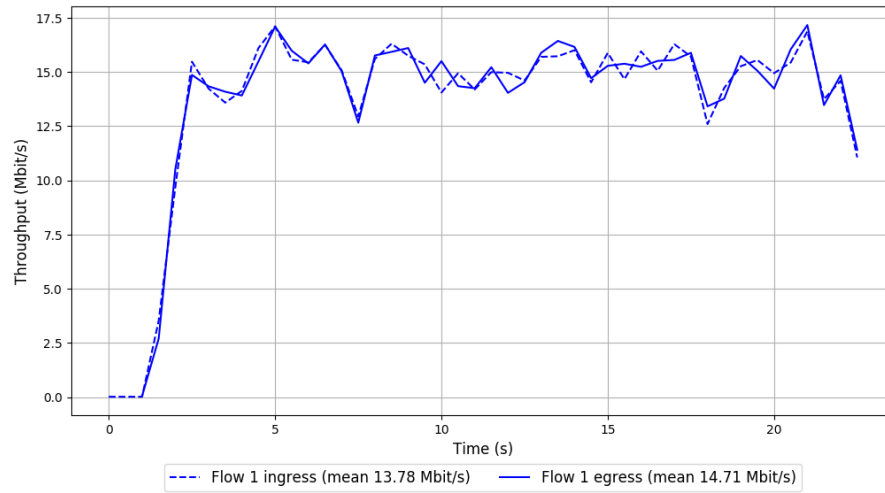
Start at: 2018-01-15 23:59:13

End at: 2018-01-15 23:59:43

Local clock offset: 2.073 ms

Remote clock offset: -2.541 ms

Run 2: Report of Sprout — Data Link

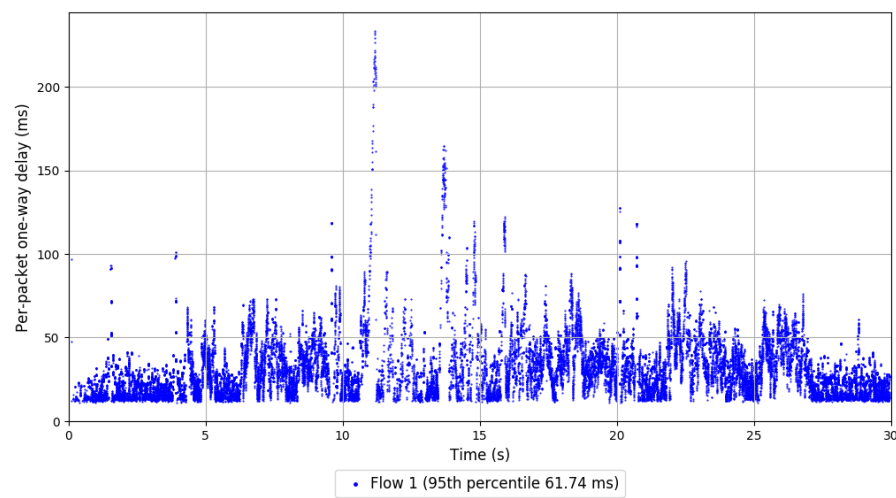
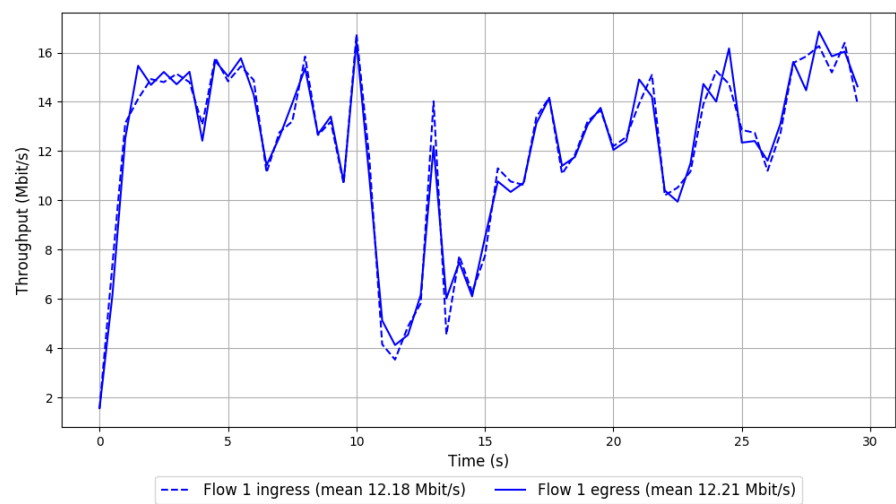


Run 3: Statistics of Sprout

Start at: 2018-01-16 00:16:55
End at: 2018-01-16 00:17:26
Local clock offset: 5.56 ms
Remote clock offset: -2.532 ms

Below is generated by plot.py at 2018-01-16 00:21:58
Datalink statistics
-- Total of 1 flow:
Average throughput: 12.21 Mbit/s
95th percentile per-packet one-way delay: 61.741 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 12.21 Mbit/s
95th percentile per-packet one-way delay: 61.741 ms
Loss rate: 0.00%

Run 3: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

Start at: 2018-01-15 23:27:22

End at: 2018-01-15 23:27:52

Local clock offset: -1.308 ms

Remote clock offset: -2.448 ms

Below is generated by plot.py at 2018-01-16 00:21:58

Datalink statistics

-- Total of 1 flow:

Average throughput: 5.42 Mbit/s

95th percentile per-packet one-way delay: 66.793 ms

Loss rate: 0.39%

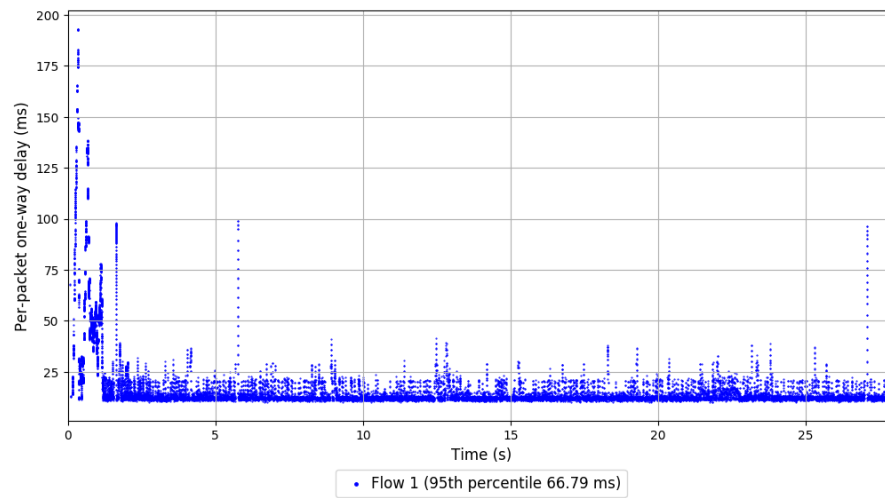
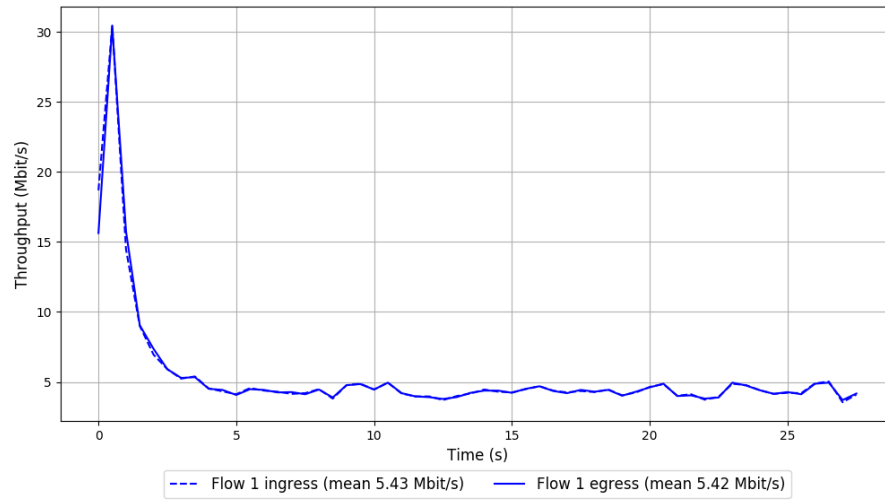
-- Flow 1:

Average throughput: 5.42 Mbit/s

95th percentile per-packet one-way delay: 66.793 ms

Loss rate: 0.39%

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



Run 2: Statistics of TaoVA-100x

Start at: 2018-01-15 23:45:04

End at: 2018-01-15 23:45:34

Local clock offset: -1.219 ms

Remote clock offset: -2.671 ms

Below is generated by plot.py at 2018-01-16 00:21:58

Datalink statistics

-- Total of 1 flow:

Average throughput: 5.06 Mbit/s

95th percentile per-packet one-way delay: 27.745 ms

Loss rate: 0.00%

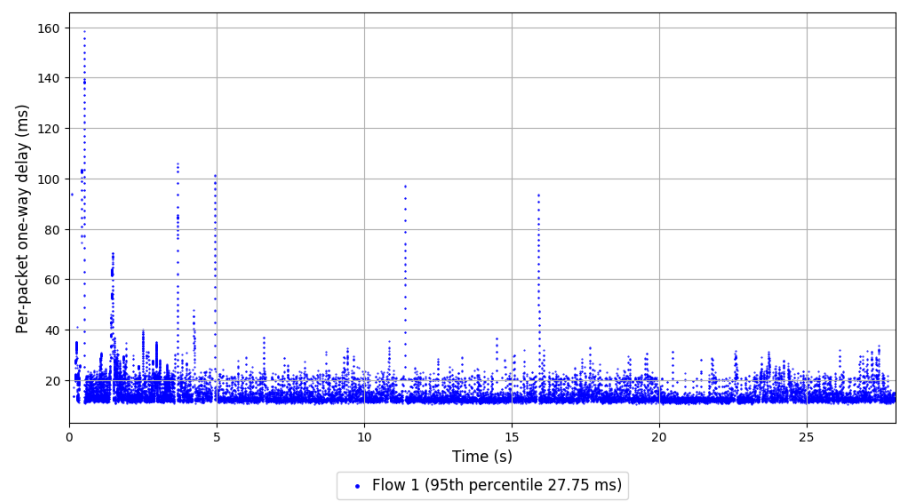
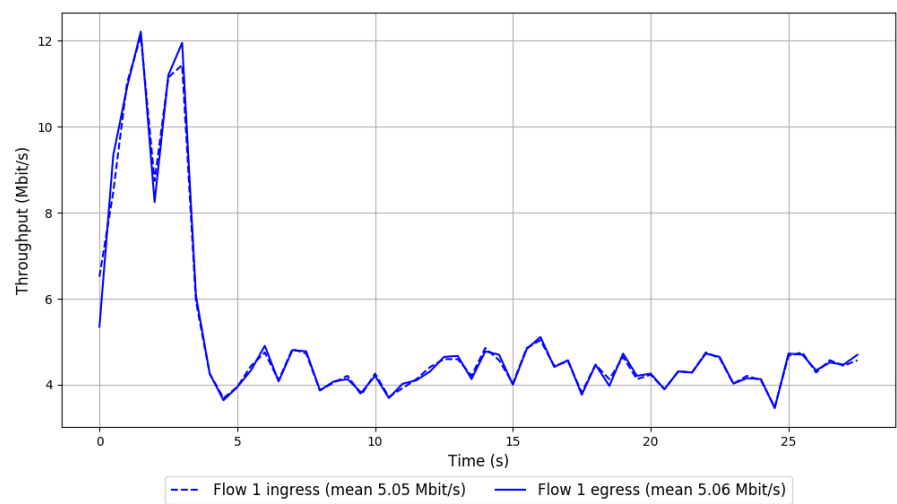
-- Flow 1:

Average throughput: 5.06 Mbit/s

95th percentile per-packet one-way delay: 27.745 ms

Loss rate: 0.00%

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



Run 3: Statistics of TaoVA-100x

Start at: 2018-01-16 00:02:46

End at: 2018-01-16 00:03:16

Local clock offset: 3.035 ms

Remote clock offset: -2.479 ms

Below is generated by plot.py at 2018-01-16 00:21:58

Datalink statistics

-- Total of 1 flow:

Average throughput: 5.32 Mbit/s

95th percentile per-packet one-way delay: 29.099 ms

Loss rate: 0.00%

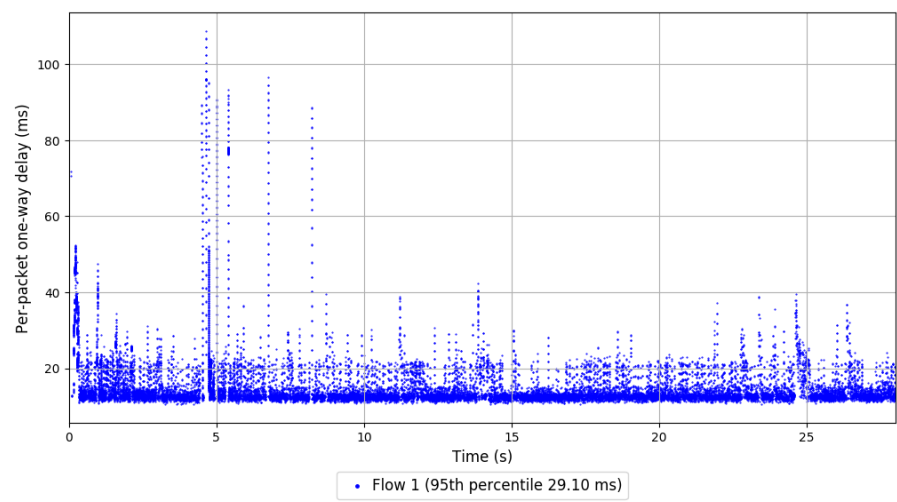
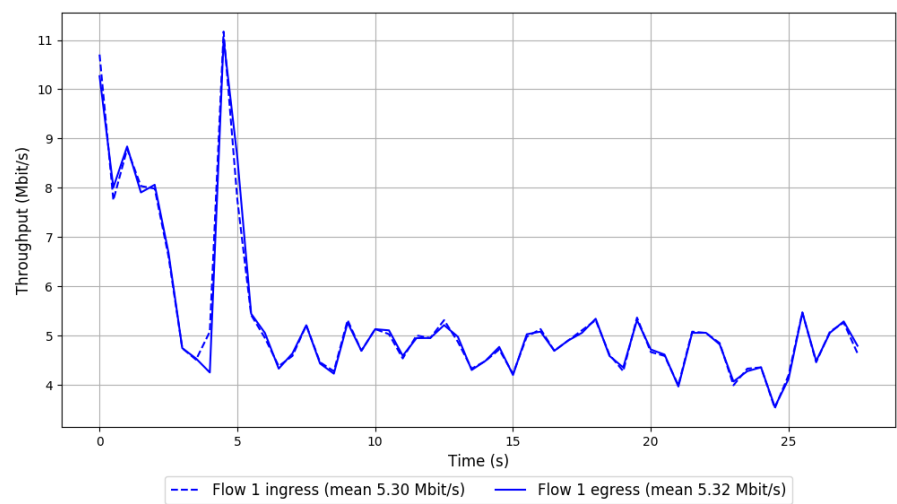
-- Flow 1:

Average throughput: 5.32 Mbit/s

95th percentile per-packet one-way delay: 29.099 ms

Loss rate: 0.00%

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

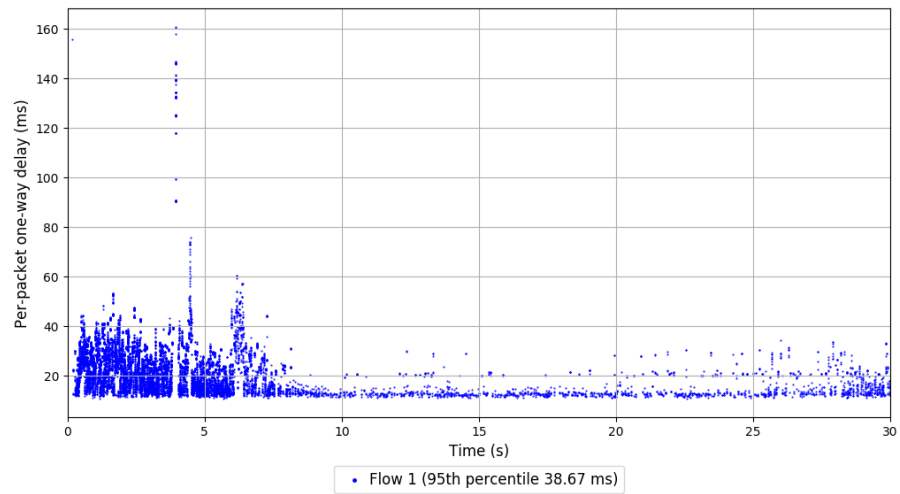
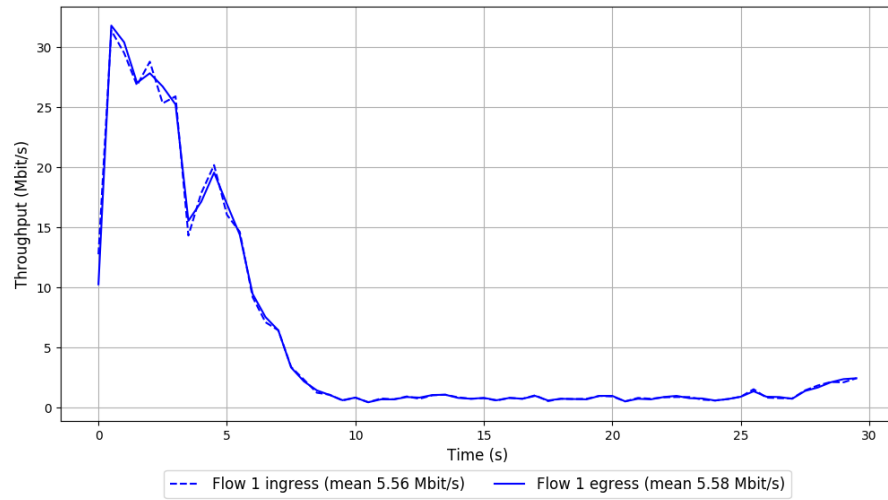


Run 1: Statistics of TCP Vegas

Start at: 2018-01-15 23:28:33
End at: 2018-01-15 23:29:03
Local clock offset: -1.497 ms
Remote clock offset: -2.554 ms

Below is generated by plot.py at 2018-01-16 00:21:58
Datalink statistics
-- Total of 1 flow:
Average throughput: 5.58 Mbit/s
95th percentile per-packet one-way delay: 38.669 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 5.58 Mbit/s
95th percentile per-packet one-way delay: 38.669 ms
Loss rate: 0.00%

Run 1: Report of TCP Vegas — Data Link

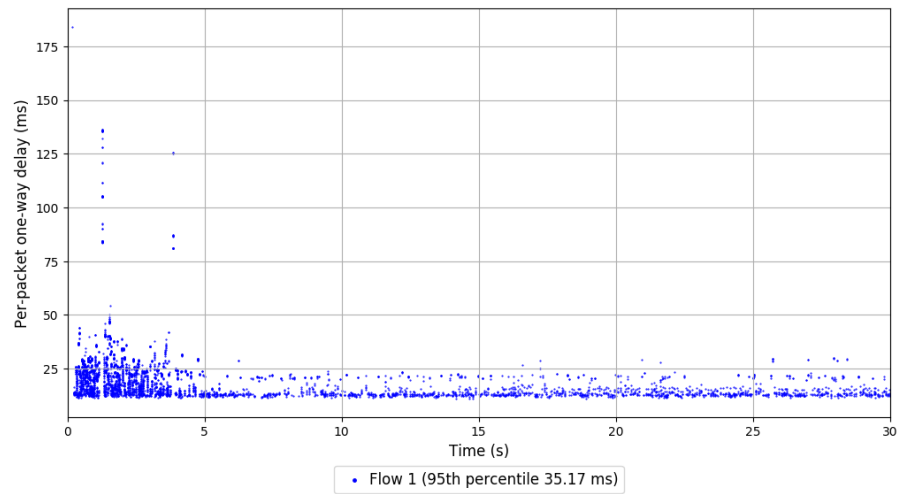
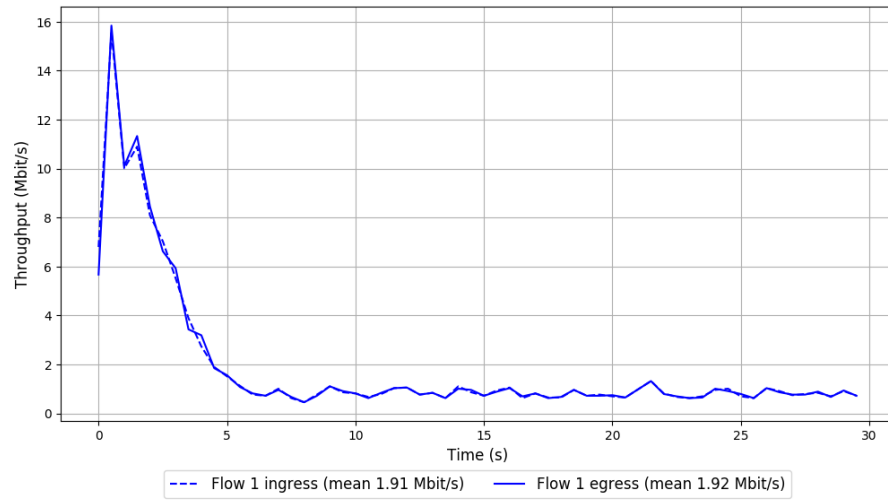


Run 2: Statistics of TCP Vegas

Start at: 2018-01-15 23:46:15
End at: 2018-01-15 23:46:45
Local clock offset: -1.103 ms
Remote clock offset: -2.672 ms

Below is generated by plot.py at 2018-01-16 00:21:58
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 35.173 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 35.173 ms
Loss rate: 0.00%

Run 2: Report of TCP Vegas — Data Link

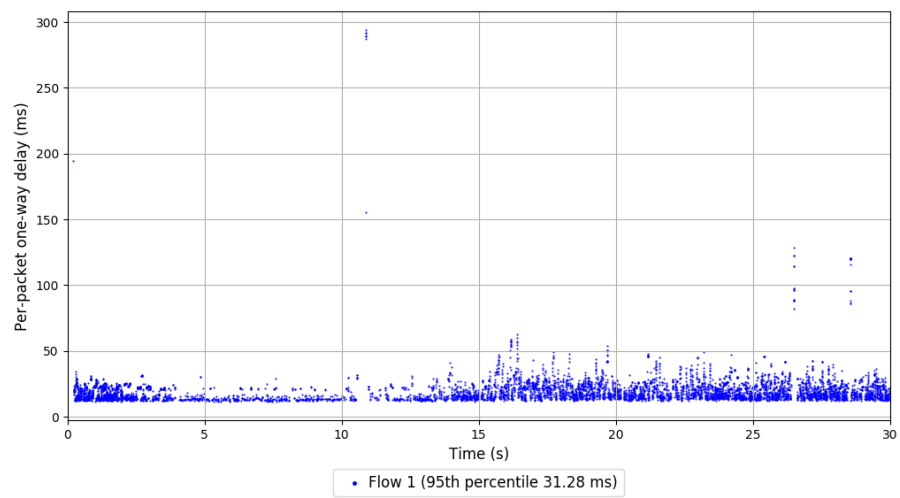
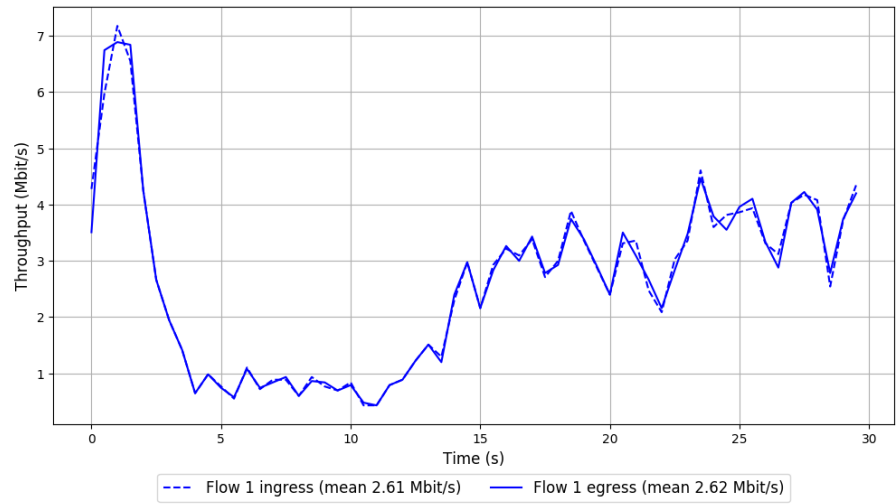


Run 3: Statistics of TCP Vegas

Start at: 2018-01-16 00:03:56
End at: 2018-01-16 00:04:26
Local clock offset: 3.401 ms
Remote clock offset: -2.475 ms

Below is generated by plot.py at 2018-01-16 00:21:58
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.62 Mbit/s
95th percentile per-packet one-way delay: 31.280 ms
Loss rate: 0.15%
-- Flow 1:
Average throughput: 2.62 Mbit/s
95th percentile per-packet one-way delay: 31.280 ms
Loss rate: 0.15%

Run 3: Report of TCP Vegas — Data Link

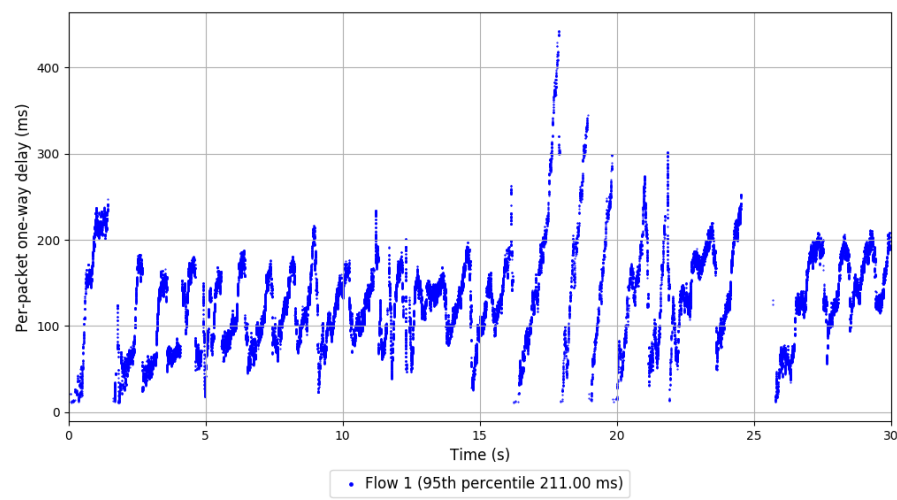
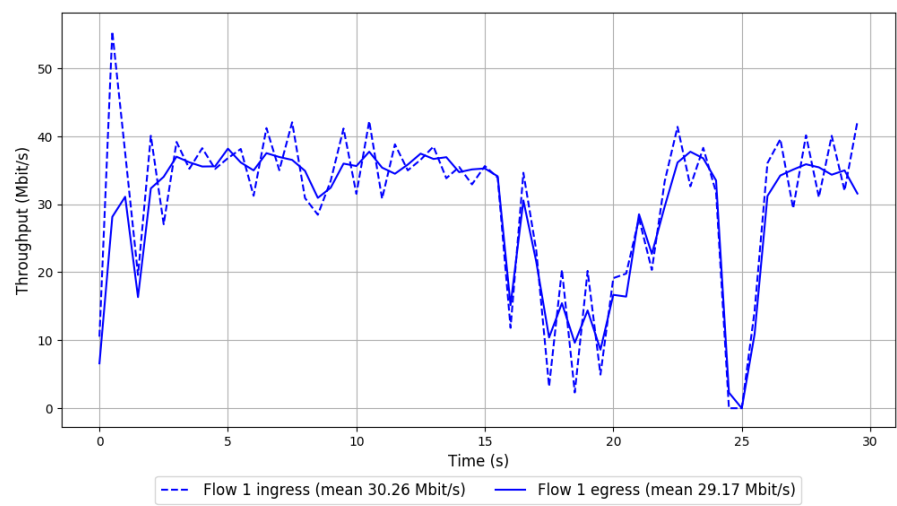


Run 1: Statistics of Verus

Start at: 2018-01-15 23:34:27
End at: 2018-01-15 23:34:57
Local clock offset: -1.838 ms
Remote clock offset: -2.523 ms

Below is generated by plot.py at 2018-01-16 00:22:17
Datalink statistics
-- Total of 1 flow:
Average throughput: 29.17 Mbit/s
95th percentile per-packet one-way delay: 211.005 ms
Loss rate: 3.59%
-- Flow 1:
Average throughput: 29.17 Mbit/s
95th percentile per-packet one-way delay: 211.005 ms
Loss rate: 3.59%

Run 1: Report of Verus — Data Link

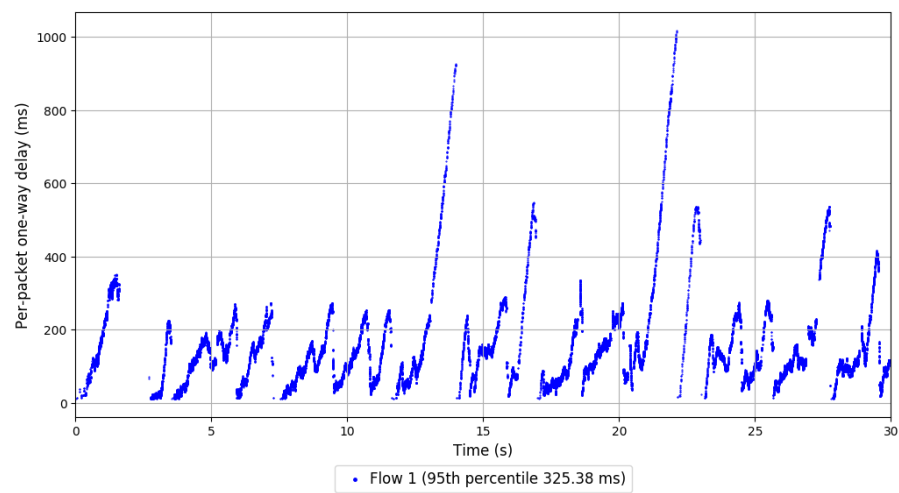
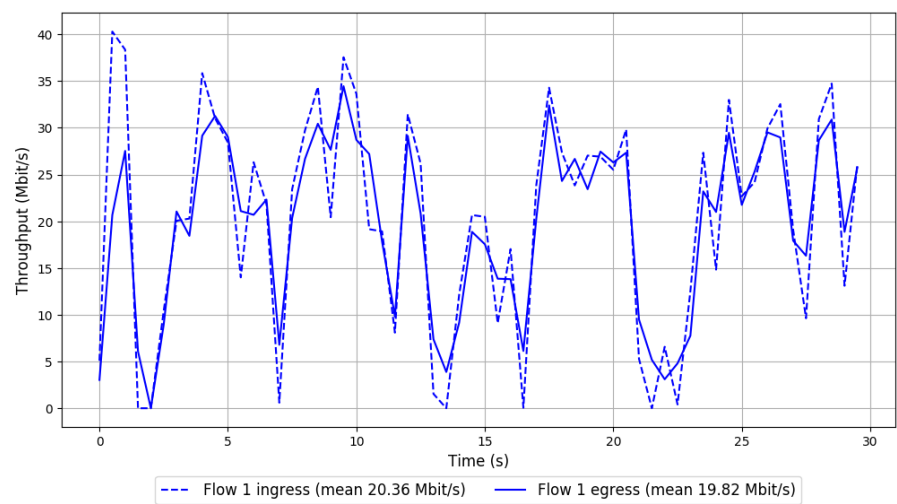


Run 2: Statistics of Verus

Start at: 2018-01-15 23:52:09
End at: 2018-01-15 23:52:39
Local clock offset: 0.3 ms
Remote clock offset: -2.635 ms

Below is generated by plot.py at 2018-01-16 00:22:17
Datalink statistics
-- Total of 1 flow:
Average throughput: 19.82 Mbit/s
95th percentile per-packet one-way delay: 325.383 ms
Loss rate: 2.64%
-- Flow 1:
Average throughput: 19.82 Mbit/s
95th percentile per-packet one-way delay: 325.383 ms
Loss rate: 2.64%

Run 2: Report of Verus — Data Link

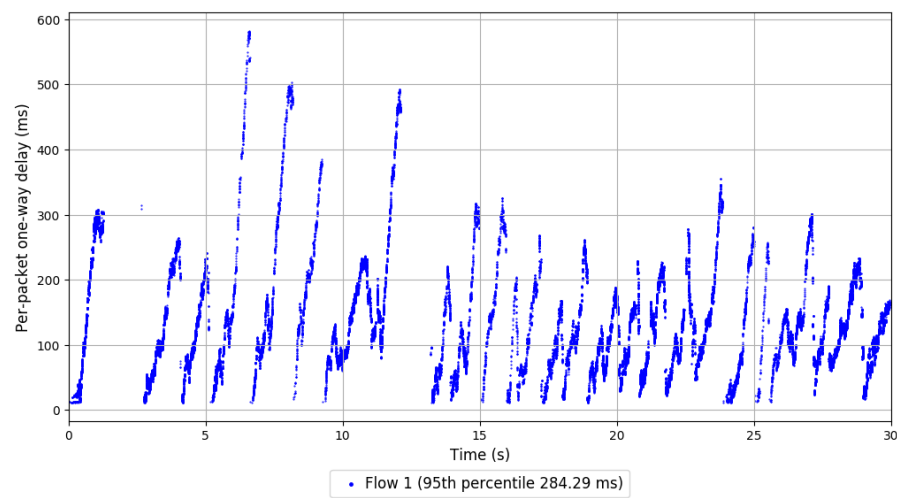
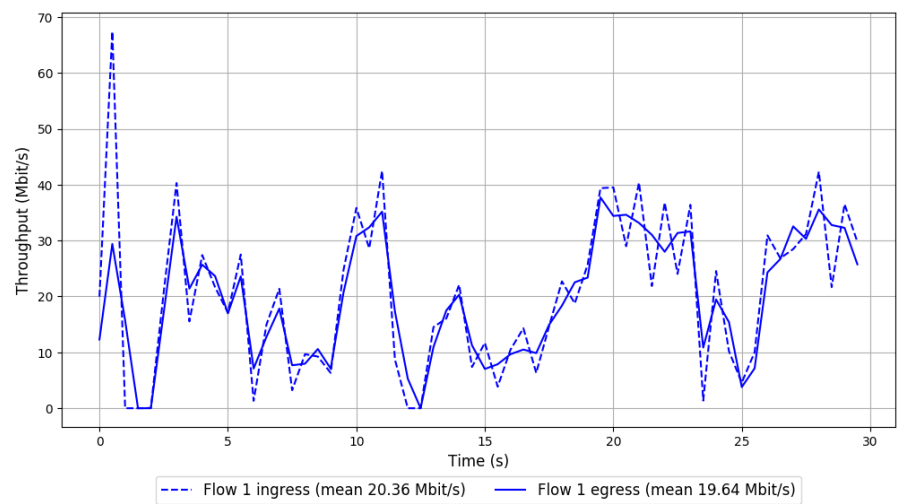


Run 3: Statistics of Verus

Start at: 2018-01-16 00:09:50
End at: 2018-01-16 00:10:20
Local clock offset: 4.474 ms
Remote clock offset: -2.581 ms

Below is generated by plot.py at 2018-01-16 00:22:17
Datalink statistics
-- Total of 1 flow:
Average throughput: 19.64 Mbit/s
95th percentile per-packet one-way delay: 284.288 ms
Loss rate: 3.51%
-- Flow 1:
Average throughput: 19.64 Mbit/s
95th percentile per-packet one-way delay: 284.288 ms
Loss rate: 3.51%

Run 3: Report of Verus — Data Link

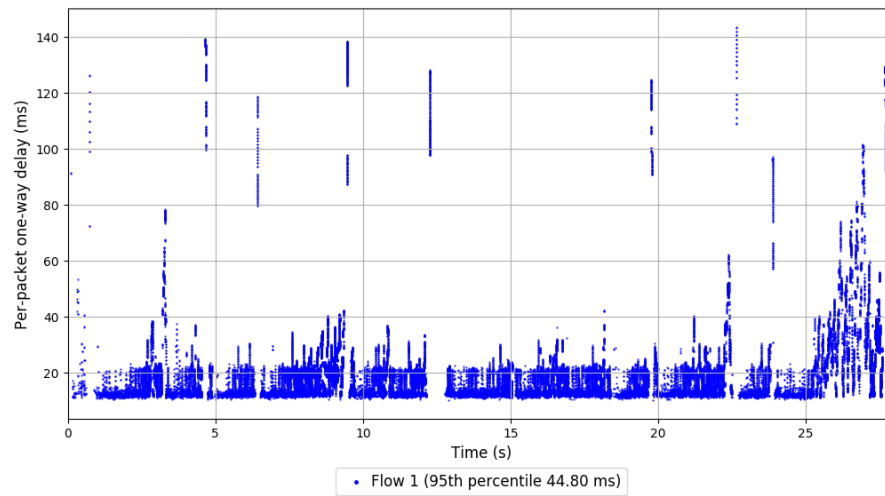
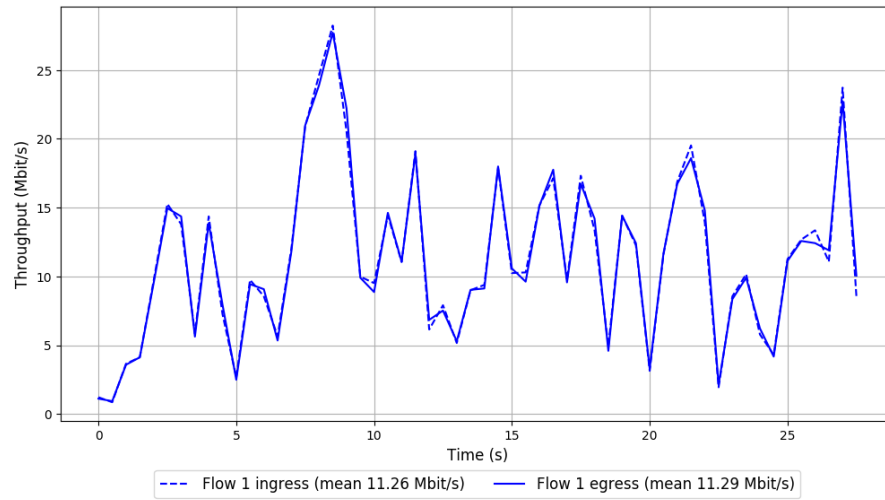


Run 1: Statistics of Copa

Start at: 2018-01-15 23:36:50
End at: 2018-01-15 23:37:20
Local clock offset: -2.101 ms
Remote clock offset: -2.619 ms

Below is generated by plot.py at 2018-01-16 00:22:17
Datalink statistics
-- Total of 1 flow:
Average throughput: 11.29 Mbit/s
95th percentile per-packet one-way delay: 44.798 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 11.29 Mbit/s
95th percentile per-packet one-way delay: 44.798 ms
Loss rate: 0.00%

Run 1: Report of Copa — Data Link

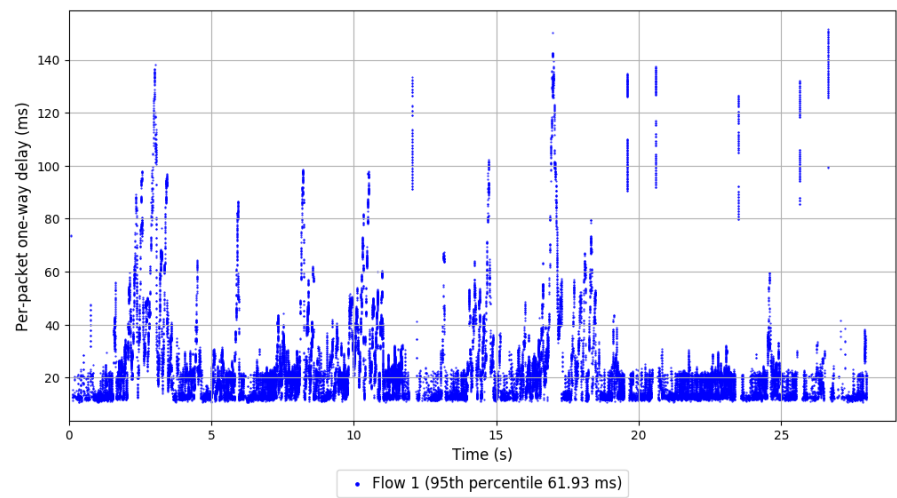
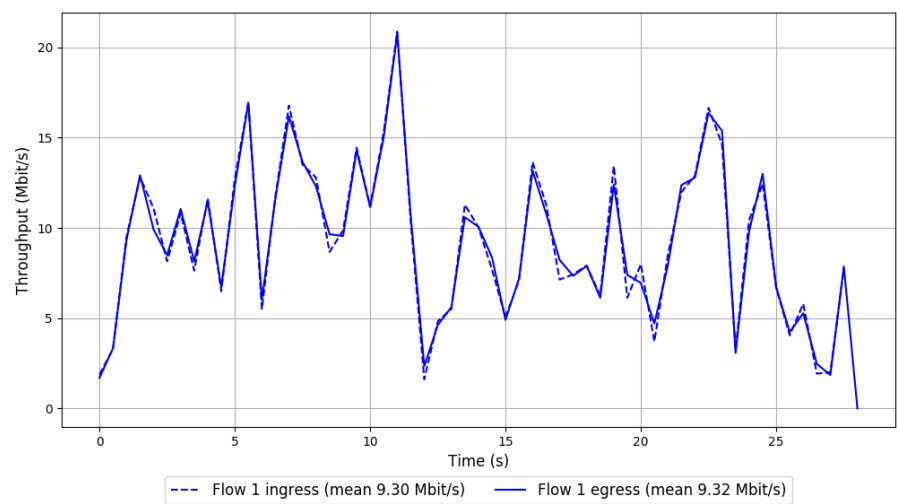


Run 2: Statistics of Copa

Start at: 2018-01-15 23:54:31
End at: 2018-01-15 23:55:01
Local clock offset: 0.932 ms
Remote clock offset: -2.487 ms

Below is generated by plot.py at 2018-01-16 00:22:17
Datalink statistics
-- Total of 1 flow:
Average throughput: 9.32 Mbit/s
95th percentile per-packet one-way delay: 61.929 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 9.32 Mbit/s
95th percentile per-packet one-way delay: 61.929 ms
Loss rate: 0.01%

Run 2: Report of Copa — Data Link

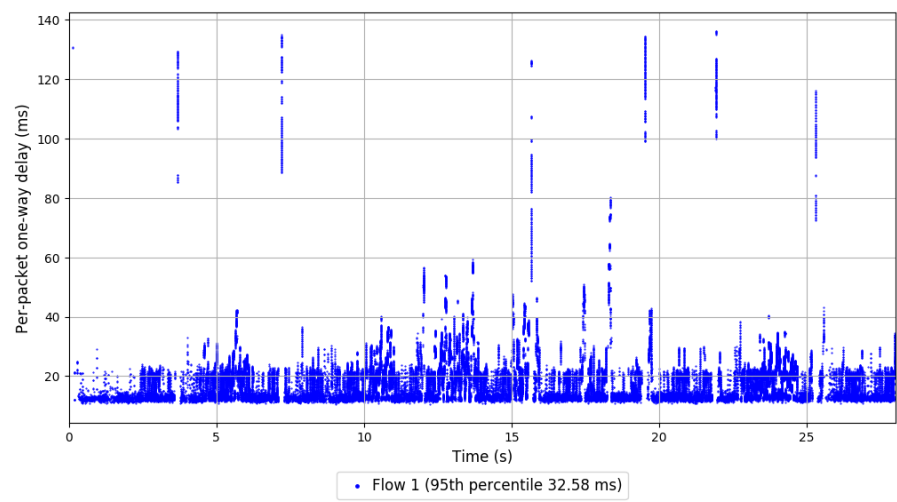
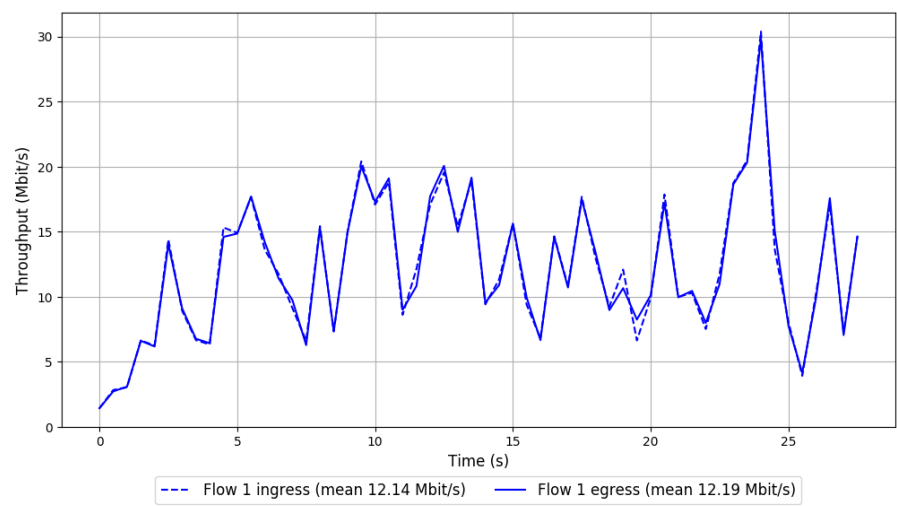


Run 3: Statistics of Copa

Start at: 2018-01-16 00:12:13
End at: 2018-01-16 00:12:43
Local clock offset: 4.69 ms
Remote clock offset: -2.506 ms

Below is generated by plot.py at 2018-01-16 00:22:17
Datalink statistics
-- Total of 1 flow:
Average throughput: 12.19 Mbit/s
95th percentile per-packet one-way delay: 32.578 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 12.19 Mbit/s
95th percentile per-packet one-way delay: 32.578 ms
Loss rate: 0.05%

Run 3: Report of Copa — Data Link

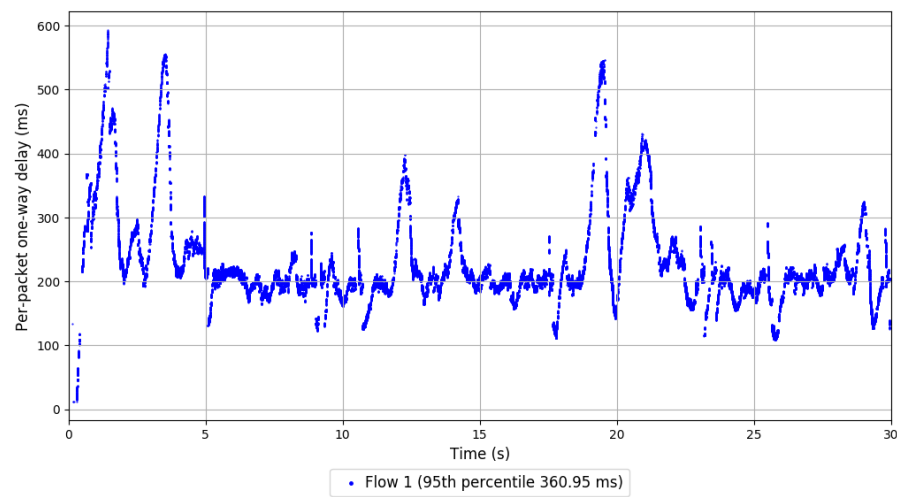
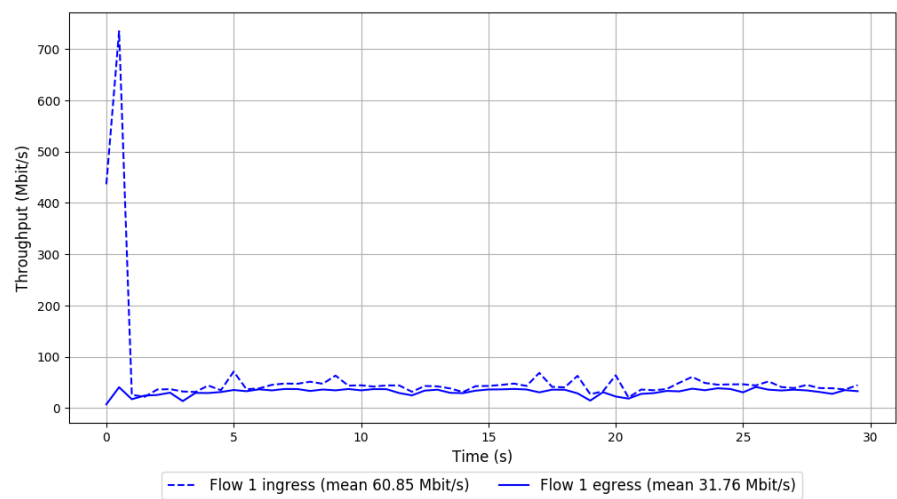


Run 1: Statistics of FillP

Start at: 2018-01-15 23:33:15
End at: 2018-01-15 23:33:45
Local clock offset: -1.705 ms
Remote clock offset: -2.517 ms

Below is generated by plot.py at 2018-01-16 00:22:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 31.76 Mbit/s
95th percentile per-packet one-way delay: 360.951 ms
Loss rate: 48.01%
-- Flow 1:
Average throughput: 31.76 Mbit/s
95th percentile per-packet one-way delay: 360.951 ms
Loss rate: 48.01%

Run 1: Report of FillP — Data Link

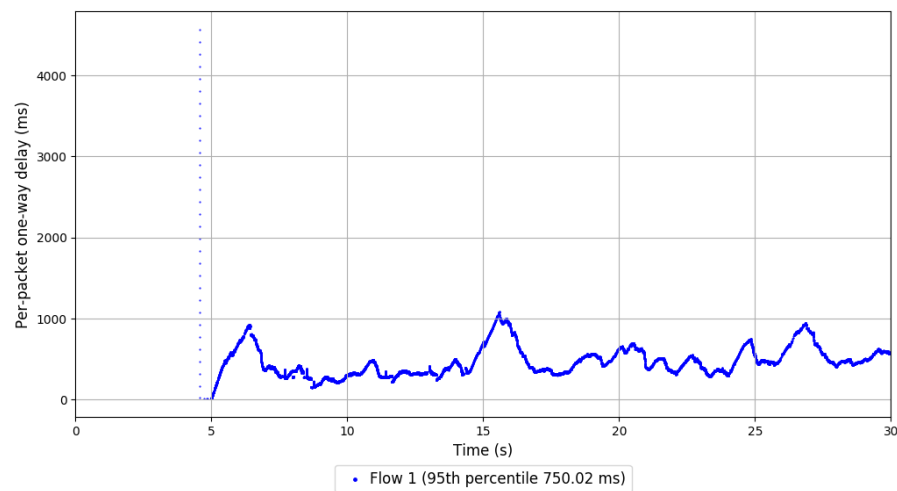
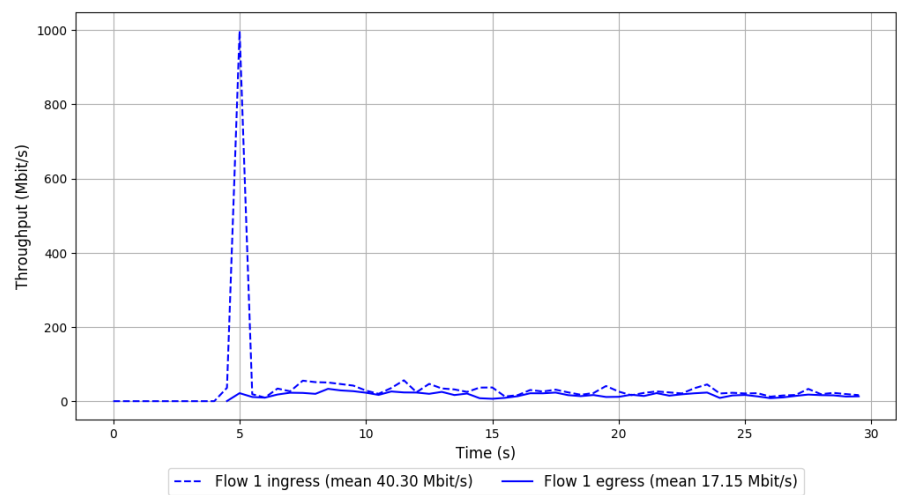


Run 2: Statistics of FillP

Start at: 2018-01-15 23:50:57
End at: 2018-01-15 23:51:27
Local clock offset: 0.019 ms
Remote clock offset: -2.634 ms

Below is generated by plot.py at 2018-01-16 00:22:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 17.15 Mbit/s
95th percentile per-packet one-way delay: 750.024 ms
Loss rate: 63.90%
-- Flow 1:
Average throughput: 17.15 Mbit/s
95th percentile per-packet one-way delay: 750.024 ms
Loss rate: 63.90%

Run 2: Report of FillP — Data Link

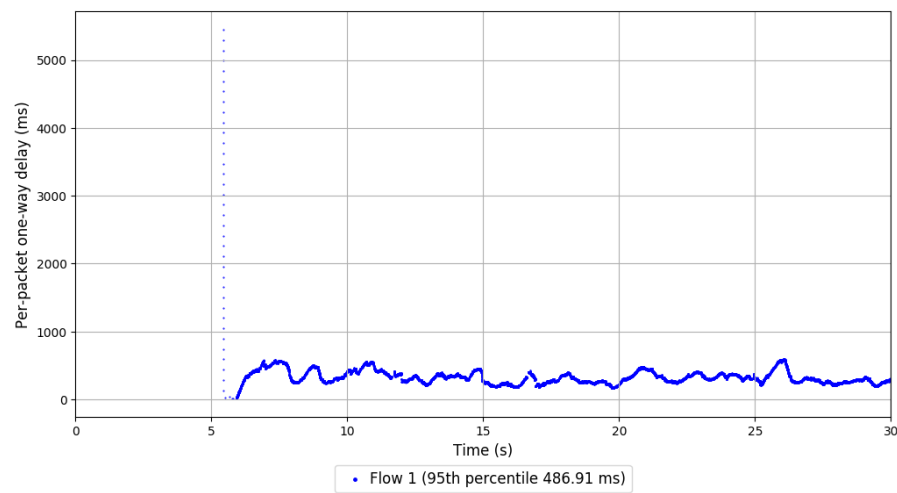
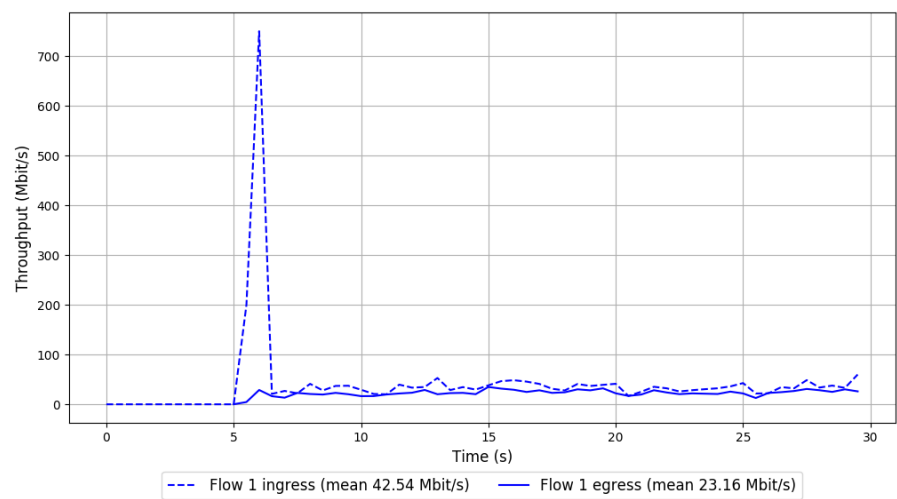


Run 3: Statistics of FillP

Start at: 2018-01-16 00:08:39
End at: 2018-01-16 00:09:09
Local clock offset: 4.229 ms
Remote clock offset: -2.595 ms

Below is generated by plot.py at 2018-01-16 00:22:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 23.16 Mbit/s
95th percentile per-packet one-way delay: 486.907 ms
Loss rate: 55.41%
-- Flow 1:
Average throughput: 23.16 Mbit/s
95th percentile per-packet one-way delay: 486.907 ms
Loss rate: 55.41%

Run 3: Report of FillP — Data Link

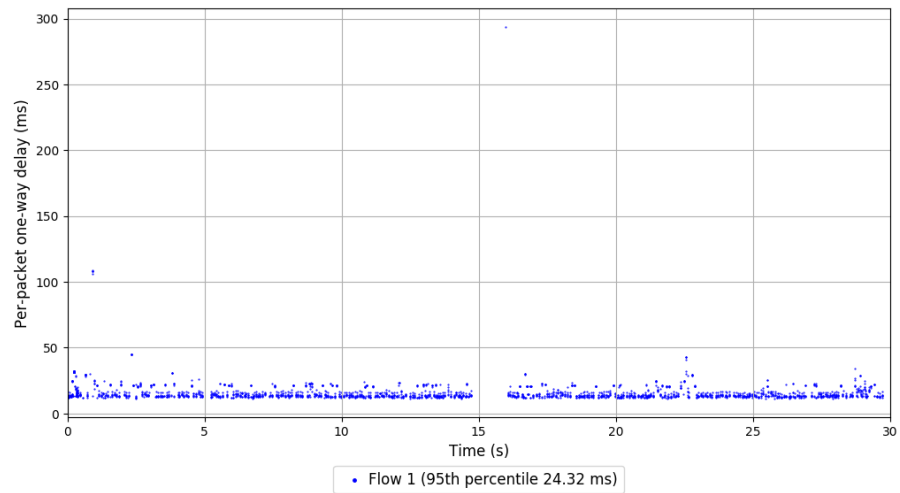
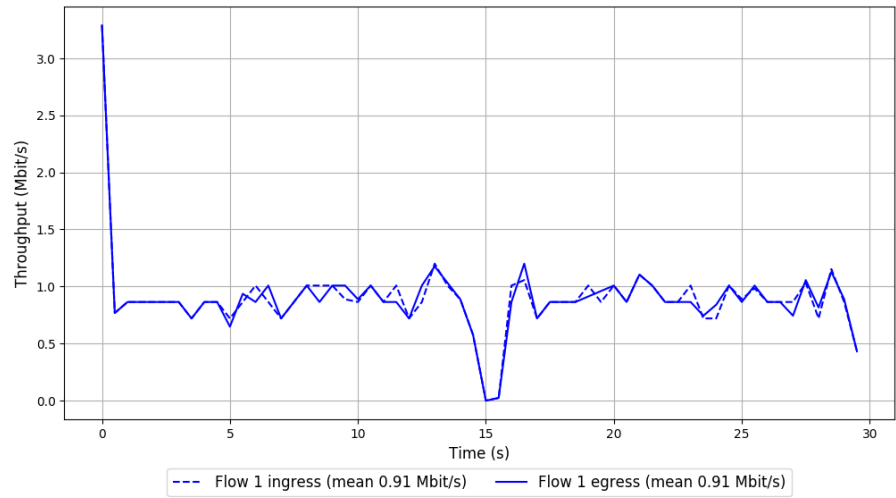


```
Run 1: Statistics of Indigo

Start at: 2018-01-15 23:30:54
End at: 2018-01-15 23:31:24
Local clock offset: -1.559 ms
Remote clock offset: -2.5 ms

# Below is generated by plot.py at 2018-01-16 00:22:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.91 Mbit/s
95th percentile per-packet one-way delay: 24.317 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.91 Mbit/s
95th percentile per-packet one-way delay: 24.317 ms
Loss rate: 0.00%
```

Run 1: Report of Indigo — Data Link

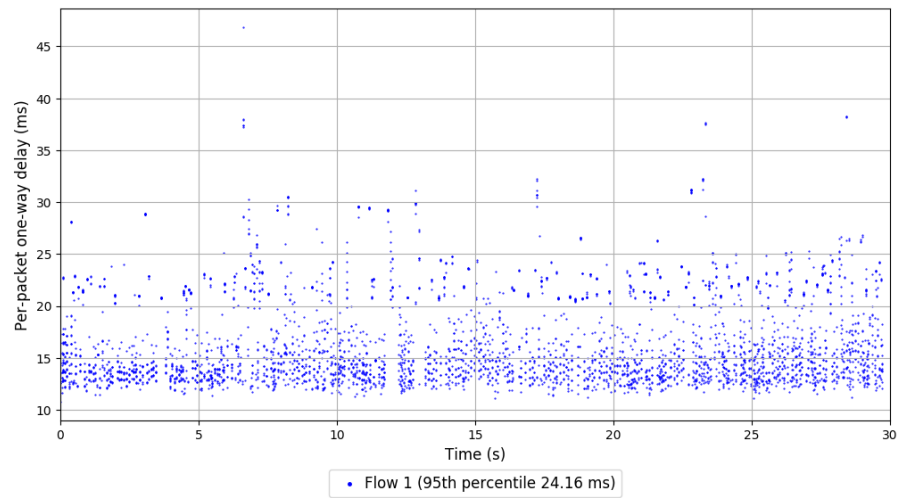
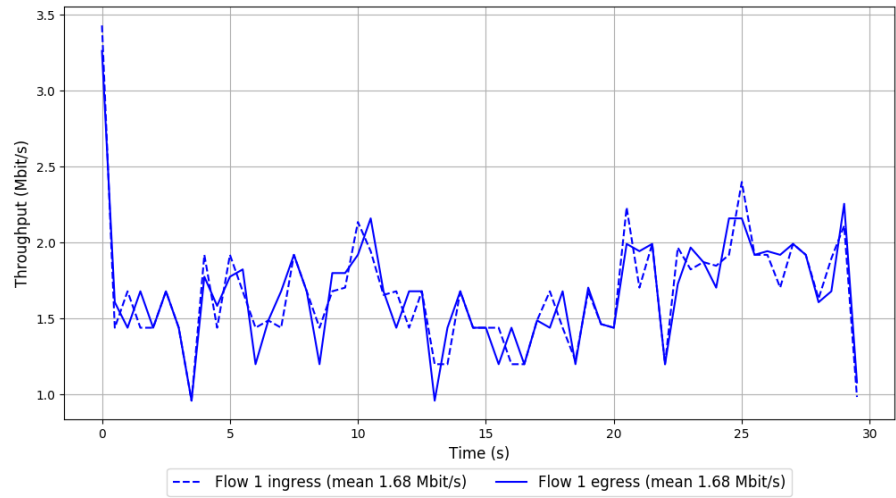


Run 2: Statistics of Indigo

Start at: 2018-01-15 23:48:37
End at: 2018-01-15 23:49:07
Local clock offset: -0.515 ms
Remote clock offset: -2.655 ms

Below is generated by plot.py at 2018-01-16 00:22:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.68 Mbit/s
95th percentile per-packet one-way delay: 24.164 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.68 Mbit/s
95th percentile per-packet one-way delay: 24.164 ms
Loss rate: 0.00%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-01-16 00:06:18
End at: 2018-01-16 00:06:48
Local clock offset: 4.085 ms
Remote clock offset: -2.534 ms

Below is generated by plot.py at 2018-01-16 00:22:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.73 Mbit/s
95th percentile per-packet one-way delay: 25.733 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.73 Mbit/s
95th percentile per-packet one-way delay: 25.733 ms
Loss rate: 0.00%

Run 3: Report of Indigo — Data Link

