

Pantheon Report

Generated at 2018-07-24 06:40:34 (UTC).

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

Repeated the test of 17 congestion control schemes 3 times.

Each test lasted for 30 seconds running 1 flow.

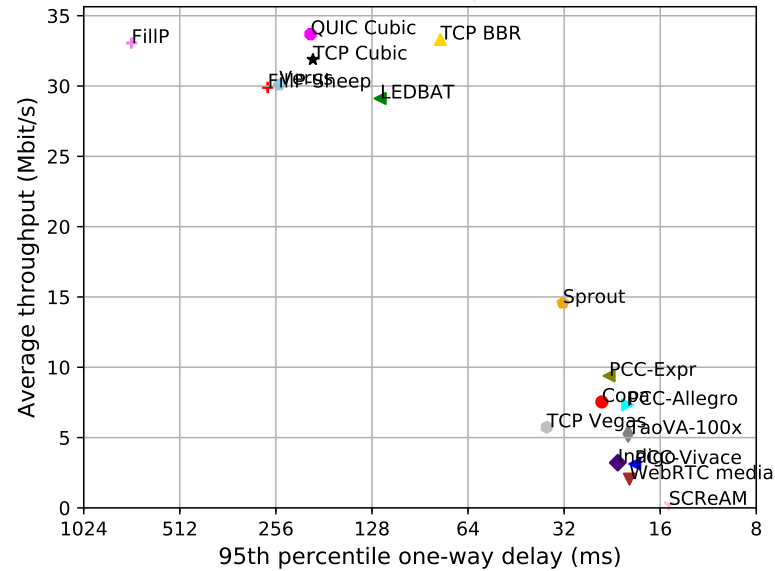
Increased UDP receive buffer to 16 MB (default) and 32 MB (max).

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

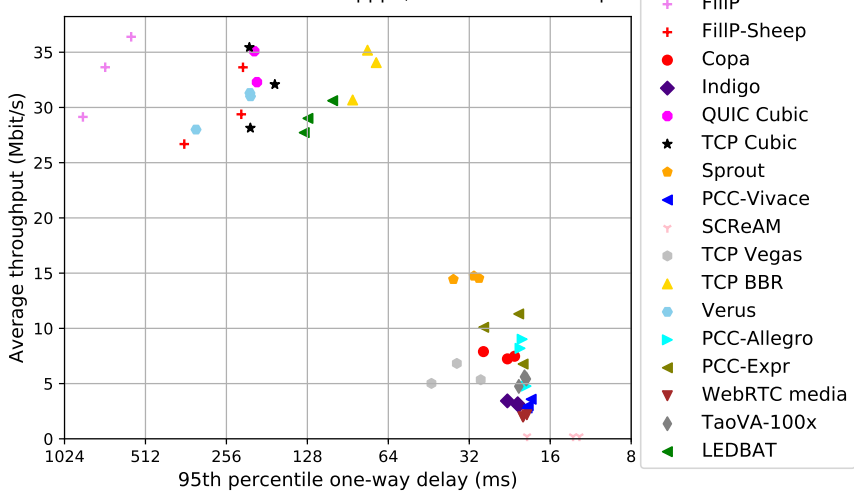
Git summary:

```
branch: master @ 640164b5b17c7c6561fff57729b3b5935d8596ce
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf90c077e64d
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ 6f038ed31259d366f9840f65b82cbe8f464b1b39
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/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quick @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
M src/ScreamClient
M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
M src/verus.hpp
M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webRTC @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

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



test from AWS California 1 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	33.31	78.10	0.10
Copa	3	7.54	24.38	0.02
TCP Cubic	3	31.89	195.96	0.47
FillP	3	33.06	725.37	33.41
FillP-Sheep	3	29.90	271.59	0.76
Indigo	3	3.21	21.74	0.00
LEDBAT	3	29.11	120.68	0.24
PCC-Allegro	3	7.33	20.25	0.00
PCC-Expr	3	9.39	23.15	0.00
QUIC Cubic	2	33.69	199.35	0.47
SCReAM	3	0.22	15.04	0.00
Sprout	3	14.57	32.28	0.00
TaoVA-100x	3	5.26	20.17	0.00
TCP Vegas	3	5.73	36.29	0.00
Verus	3	30.11	249.90	0.45
PCC-Vivace	3	3.13	19.23	0.00
WebRTC media	3	2.05	19.98	0.00

Run 1: Statistics of TCP BBR

Start at: 2018-07-24 05:49:40

End at: 2018-07-24 05:50:10

Local clock offset: 6.805 ms

Remote clock offset: 2.291 ms

Below is generated by plot.py at 2018-07-24 06:39:08

Datalink statistics

-- Total of 1 flow:

Average throughput: 30.68 Mbit/s

95th percentile per-packet one-way delay: 86.856 ms

Loss rate: 0.15%

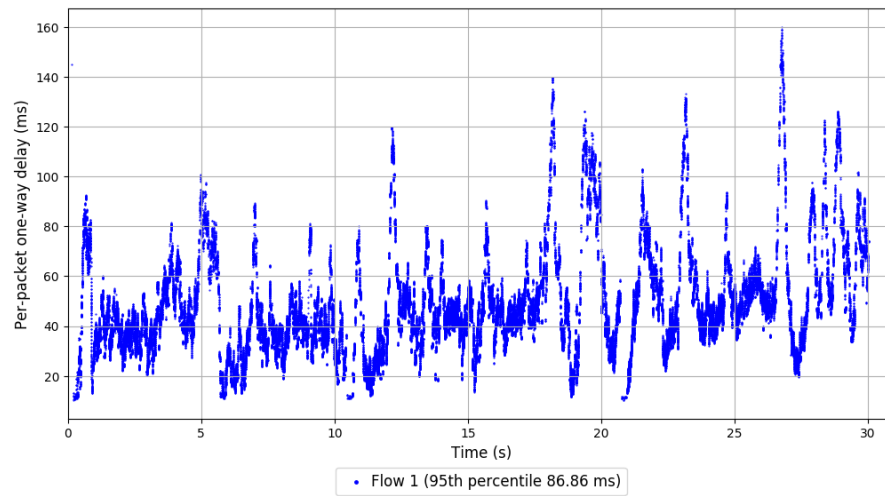
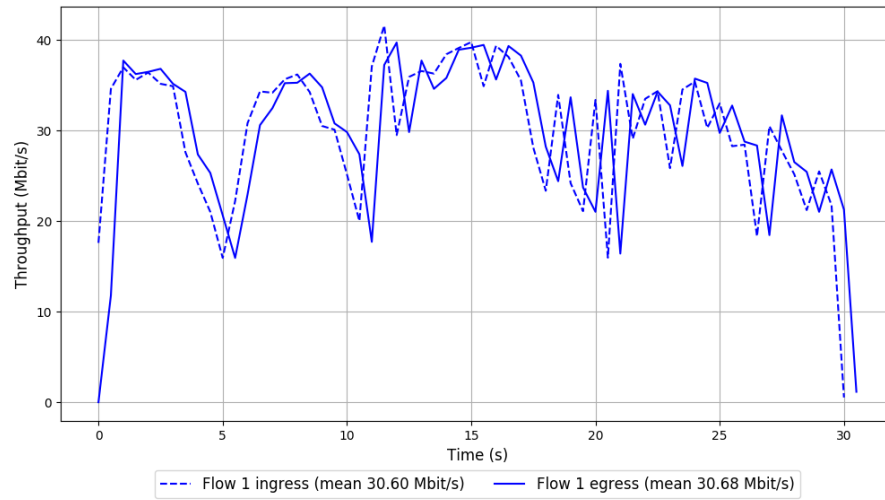
-- Flow 1:

Average throughput: 30.68 Mbit/s

95th percentile per-packet one-way delay: 86.856 ms

Loss rate: 0.15%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-07-24 06:11:58

End at: 2018-07-24 06:12:28

Local clock offset: 7.301 ms

Remote clock offset: 2.405 ms

Below is generated by plot.py at 2018-07-24 06:39:12

Datalink statistics

-- Total of 1 flow:

Average throughput: 35.19 Mbit/s

95th percentile per-packet one-way delay: 76.481 ms

Loss rate: 0.06%

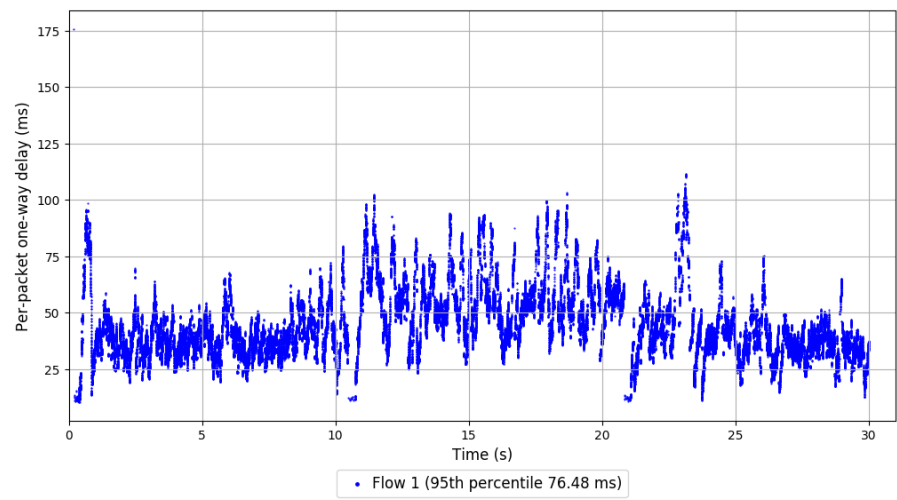
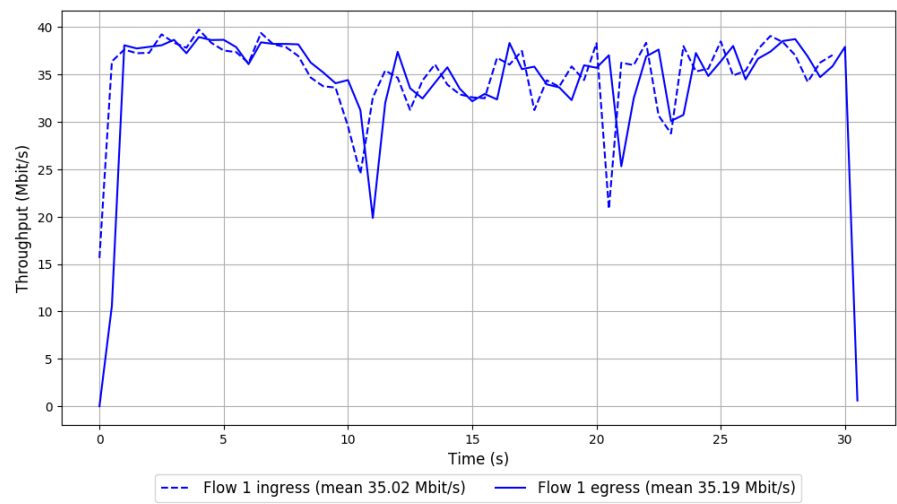
-- Flow 1:

Average throughput: 35.19 Mbit/s

95th percentile per-packet one-way delay: 76.481 ms

Loss rate: 0.06%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-07-24 06:34:06

End at: 2018-07-24 06:34:36

Local clock offset: 9.427 ms

Remote clock offset: 2.403 ms

Below is generated by plot.py at 2018-07-24 06:39:12

Datalink statistics

-- Total of 1 flow:

Average throughput: 34.06 Mbit/s

95th percentile per-packet one-way delay: 70.973 ms

Loss rate: 0.09%

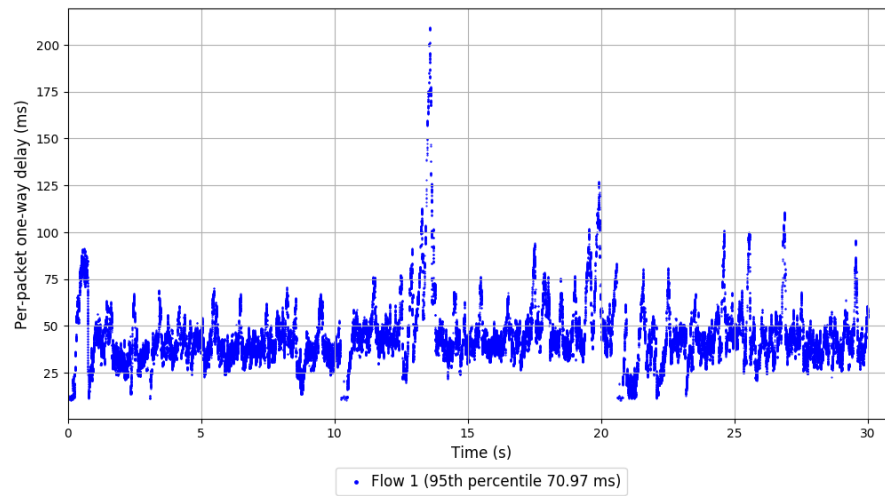
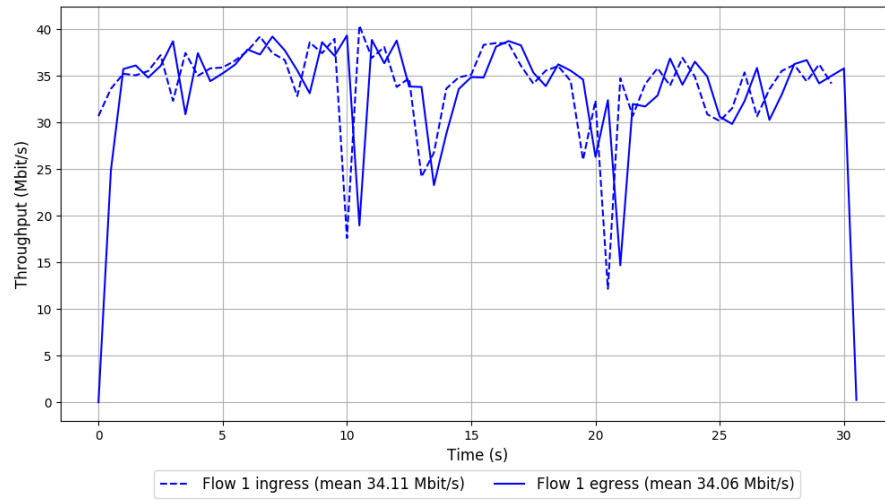
-- Flow 1:

Average throughput: 34.06 Mbit/s

95th percentile per-packet one-way delay: 70.973 ms

Loss rate: 0.09%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of Copa

Start at: 2018-07-24 05:45:48

End at: 2018-07-24 05:46:18

Local clock offset: 5.926 ms

Remote clock offset: 2.242 ms

Below is generated by plot.py at 2018-07-24 06:39:12

Datalink statistics

-- Total of 1 flow:

Average throughput: 7.24 Mbit/s

95th percentile per-packet one-way delay: 23.084 ms

Loss rate: 0.00%

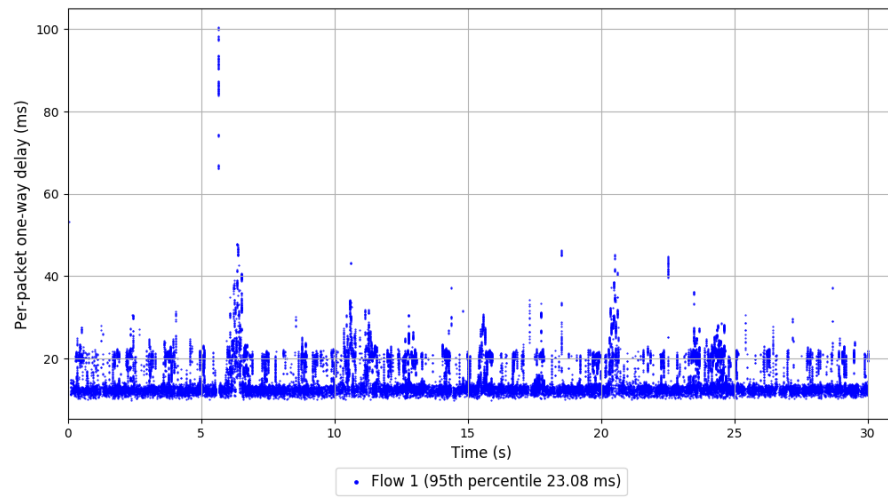
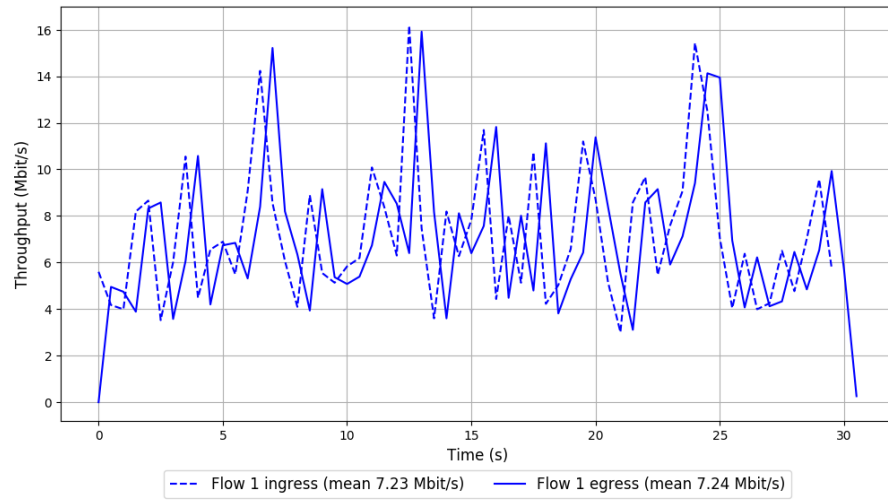
-- Flow 1:

Average throughput: 7.24 Mbit/s

95th percentile per-packet one-way delay: 23.084 ms

Loss rate: 0.00%

Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

Start at: 2018-07-24 06:07:58

End at: 2018-07-24 06:08:28

Local clock offset: 7.075 ms

Remote clock offset: 2.402 ms

Below is generated by plot.py at 2018-07-24 06:39:12

Datalink statistics

-- Total of 1 flow:

Average throughput: 7.47 Mbit/s

95th percentile per-packet one-way delay: 21.707 ms

Loss rate: 0.06%

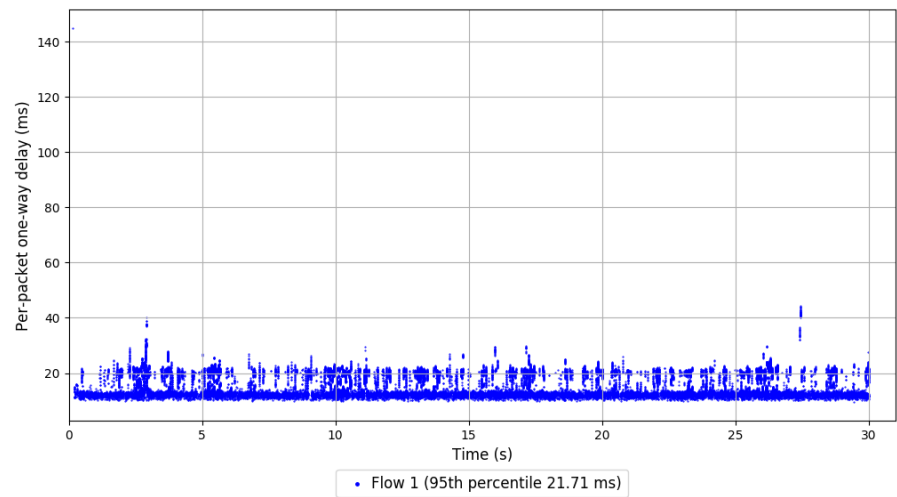
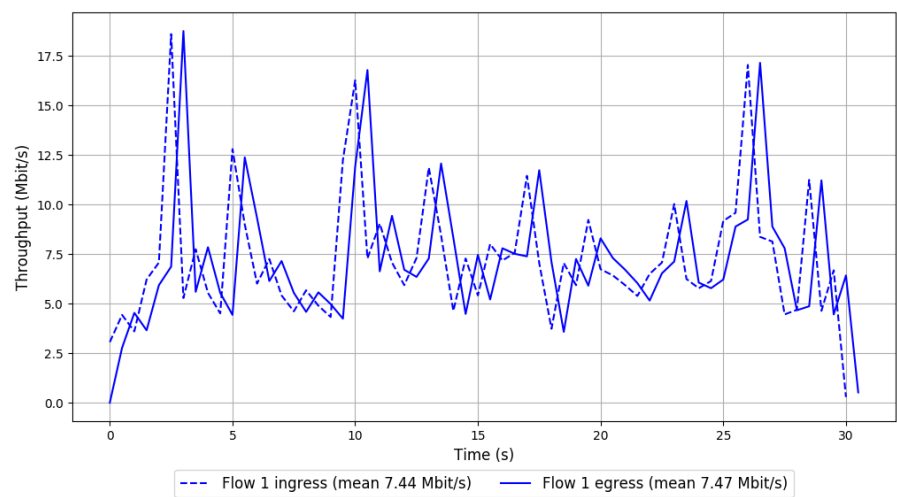
-- Flow 1:

Average throughput: 7.47 Mbit/s

95th percentile per-packet one-way delay: 21.707 ms

Loss rate: 0.06%

Run 2: Report of Copa — Data Link



Run 3: Statistics of Copa

Start at: 2018-07-24 06:30:11

End at: 2018-07-24 06:30:41

Local clock offset: 10.235 ms

Remote clock offset: 2.395 ms

Below is generated by plot.py at 2018-07-24 06:39:12

Datalink statistics

-- Total of 1 flow:

Average throughput: 7.90 Mbit/s

95th percentile per-packet one-way delay: 28.347 ms

Loss rate: 0.00%

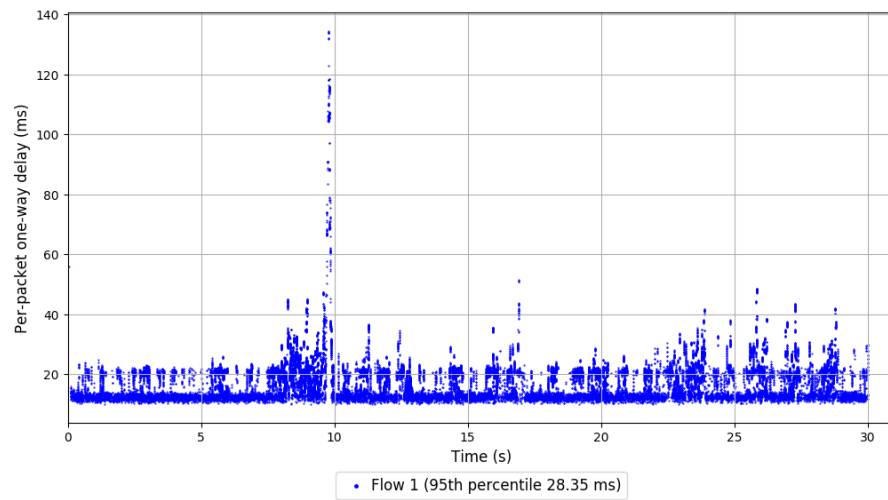
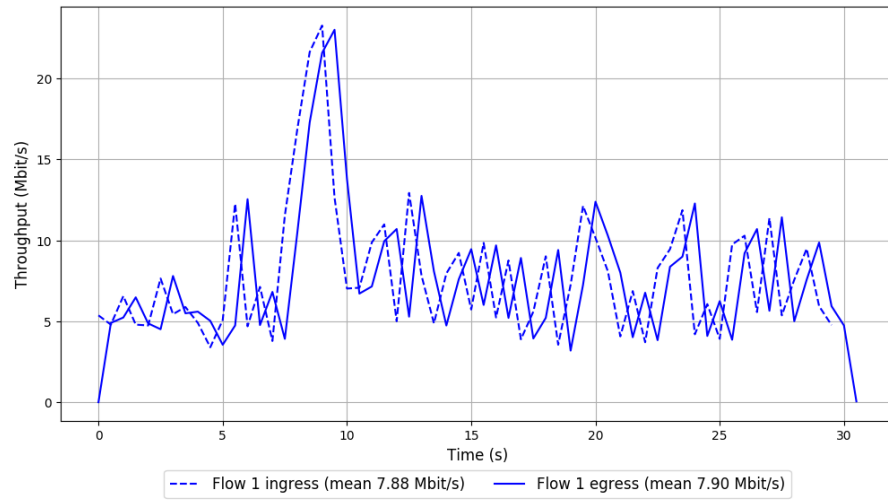
-- Flow 1:

Average throughput: 7.90 Mbit/s

95th percentile per-packet one-way delay: 28.347 ms

Loss rate: 0.00%

Run 3: Report of Copa — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-07-24 05:53:34

End at: 2018-07-24 05:54:04

Local clock offset: 6.234 ms

Remote clock offset: 2.309 ms

Below is generated by plot.py at 2018-07-24 06:39:12

Datalink statistics

-- Total of 1 flow:

Average throughput: 32.08 Mbit/s

95th percentile per-packet one-way delay: 169.102 ms

Loss rate: 0.53%

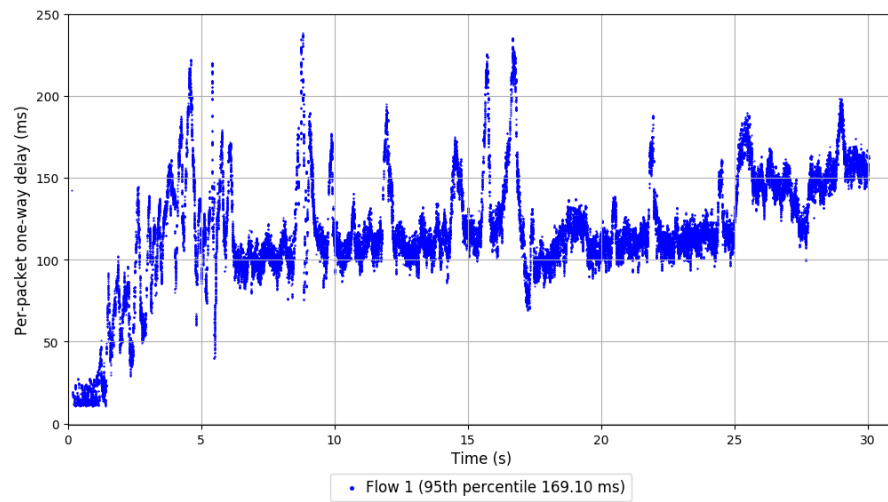
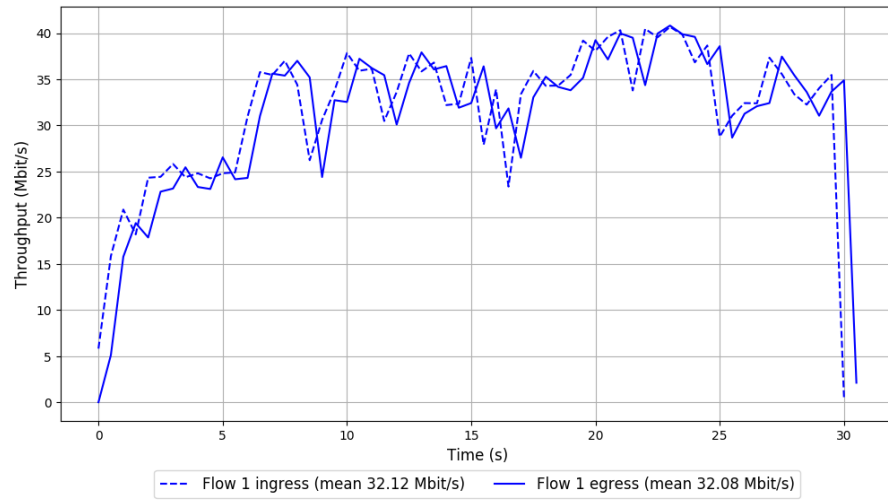
-- Flow 1:

Average throughput: 32.08 Mbit/s

95th percentile per-packet one-way delay: 169.102 ms

Loss rate: 0.53%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-07-24 06:15:51

End at: 2018-07-24 06:16:21

Local clock offset: 7.734 ms

Remote clock offset: 2.502 ms

Below is generated by plot.py at 2018-07-24 06:39:13

Datalink statistics

-- Total of 1 flow:

Average throughput: 35.44 Mbit/s

95th percentile per-packet one-way delay: 210.261 ms

Loss rate: 0.37%

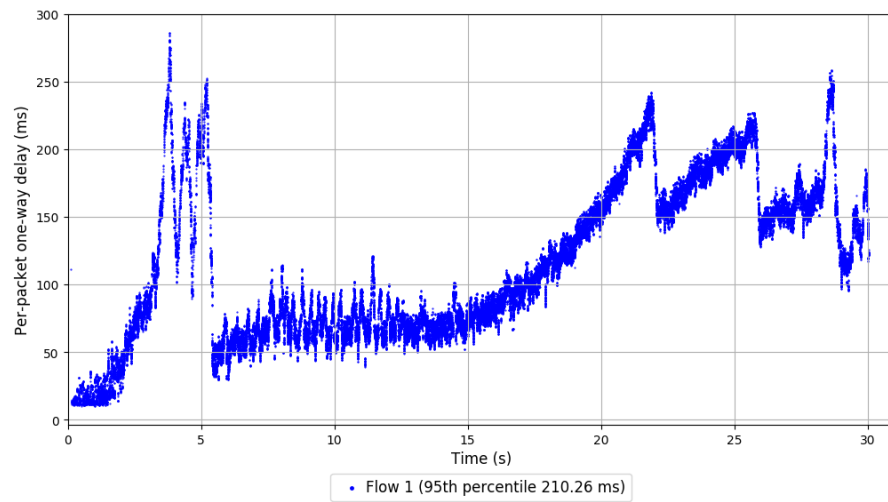
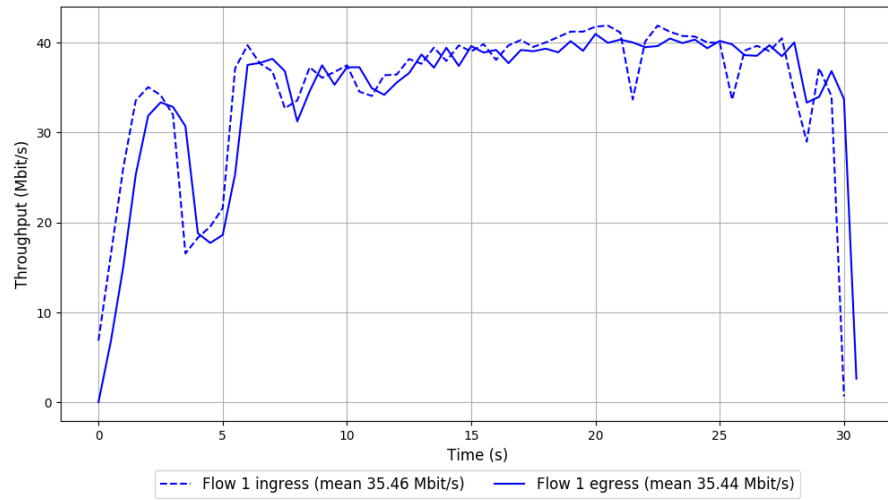
-- Flow 1:

Average throughput: 35.44 Mbit/s

95th percentile per-packet one-way delay: 210.261 ms

Loss rate: 0.37%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-07-24 06:38:00

End at: 2018-07-24 06:38:30

Local clock offset: 7.992 ms

Remote clock offset: 2.405 ms

Below is generated by plot.py at 2018-07-24 06:39:17

Datalink statistics

-- Total of 1 flow:

Average throughput: 28.14 Mbit/s

95th percentile per-packet one-way delay: 208.521 ms

Loss rate: 0.51%

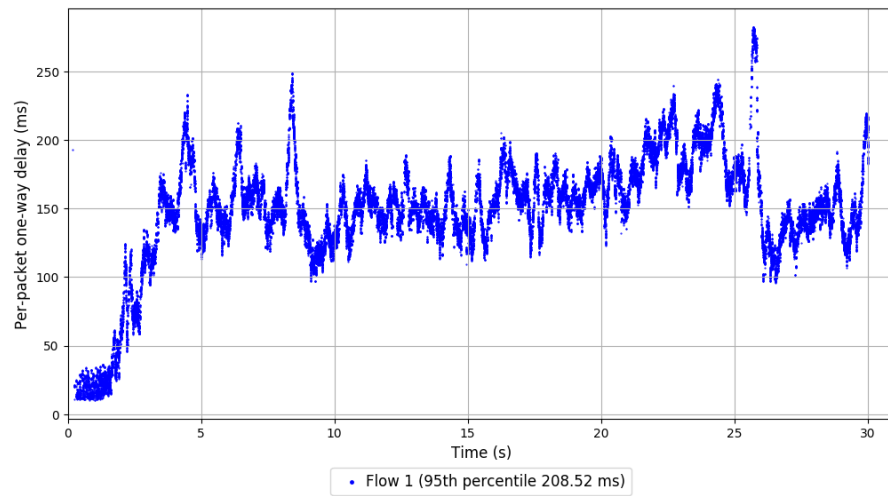
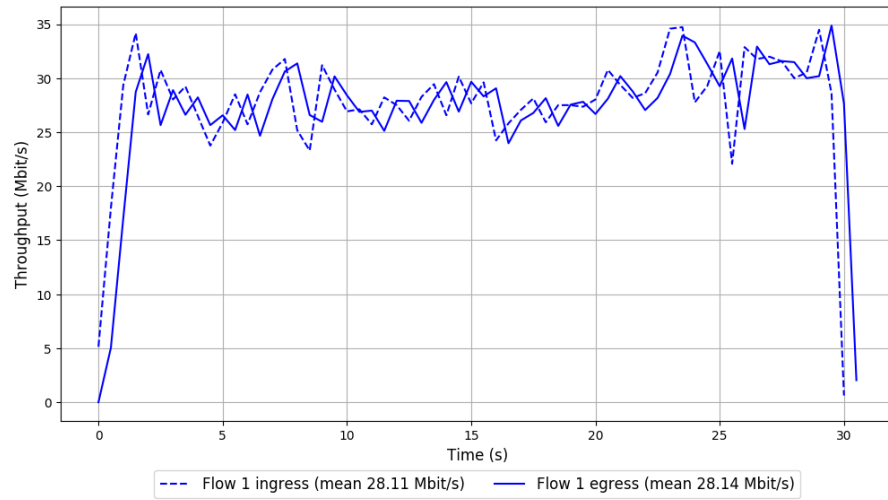
-- Flow 1:

Average throughput: 28.14 Mbit/s

95th percentile per-packet one-way delay: 208.521 ms

Loss rate: 0.51%

Run 3: Report of TCP Cubic — Data Link



Run 1: Statistics of FillP

Start at: 2018-07-24 05:35:23

End at: 2018-07-24 05:35:54

Local clock offset: 4.825 ms

Remote clock offset: 2.192 ms

Below is generated by plot.py at 2018-07-24 06:39:26

Datalink statistics

-- Total of 1 flow:

Average throughput: 29.14 Mbit/s

95th percentile per-packet one-way delay: 874.677 ms

Loss rate: 28.46%

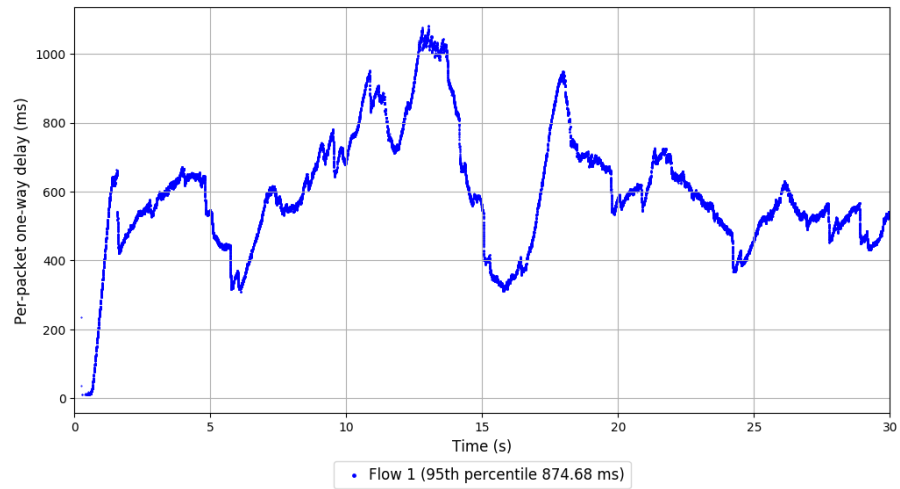
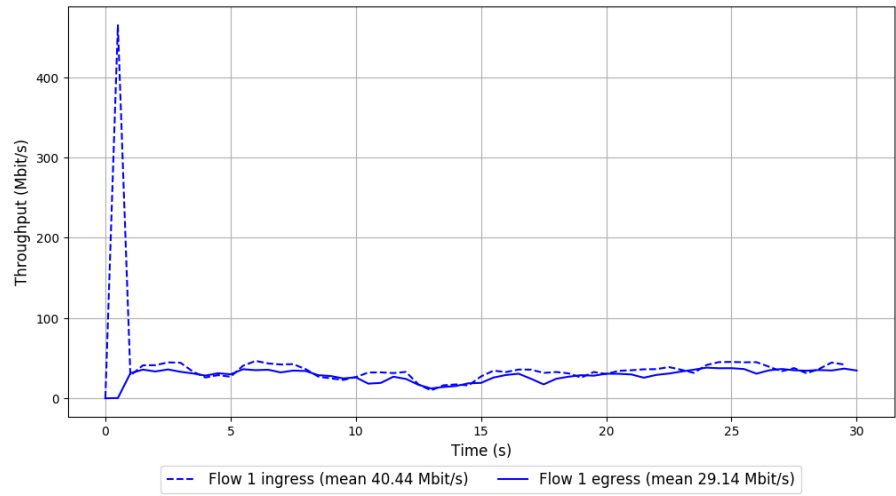
-- Flow 1:

Average throughput: 29.14 Mbit/s

95th percentile per-packet one-way delay: 874.677 ms

Loss rate: 28.46%

Run 1: Report of FillP — Data Link



Run 2: Statistics of FillP

Start at: 2018-07-24 05:57:34

End at: 2018-07-24 05:58:04

Local clock offset: 6.537 ms

Remote clock offset: 2.296 ms

Below is generated by plot.py at 2018-07-24 06:39:39

Datalink statistics

-- Total of 1 flow:

Average throughput: 36.40 Mbit/s

95th percentile per-packet one-way delay: 578.664 ms

Loss rate: 35.11%

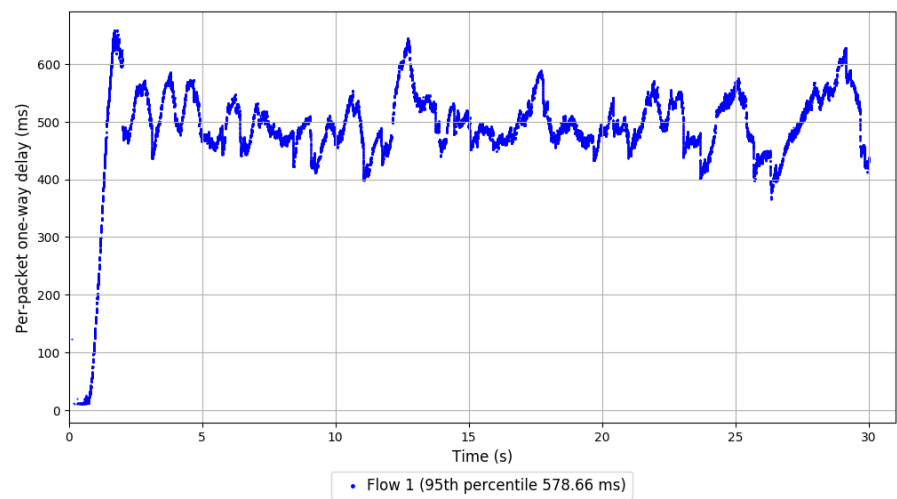
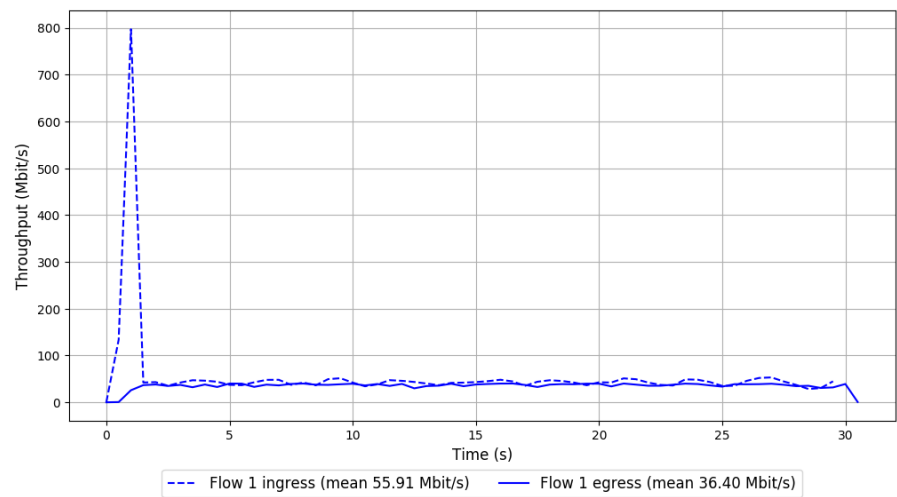
-- Flow 1:

Average throughput: 36.40 Mbit/s

95th percentile per-packet one-way delay: 578.664 ms

Loss rate: 35.11%

Run 2: Report of FillP — Data Link



Run 3: Statistics of FillP

Start at: 2018-07-24 06:19:46

End at: 2018-07-24 06:20:16

Local clock offset: 8.329 ms

Remote clock offset: 2.409 ms

Below is generated by plot.py at 2018-07-24 06:39:52

Datalink statistics

-- Total of 1 flow:

Average throughput: 33.64 Mbit/s

95th percentile per-packet one-way delay: 722.757 ms

Loss rate: 36.66%

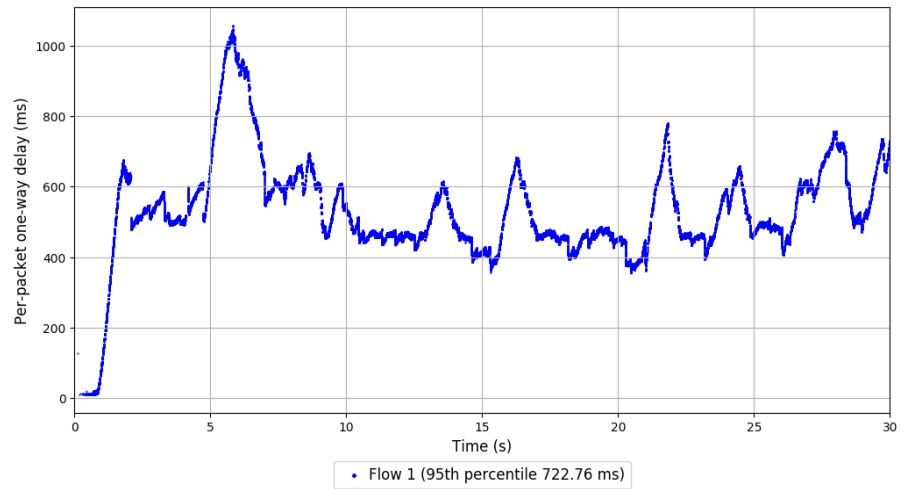
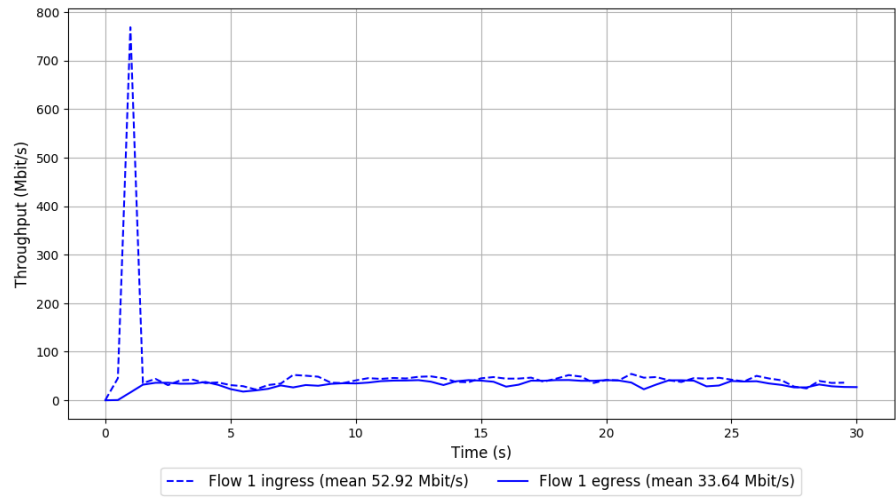
-- Flow 1:

Average throughput: 33.64 Mbit/s

95th percentile per-packet one-way delay: 722.757 ms

Loss rate: 36.66%

Run 3: Report of FillP — Data Link



Run 1: Statistics of FillP-Sheep

Start at: 2018-07-24 05:44:30

End at: 2018-07-24 05:45:00

Local clock offset: 5.662 ms

Remote clock offset: 2.212 ms

Below is generated by plot.py at 2018-07-24 06:39:52

Datalink statistics

-- Total of 1 flow:

Average throughput: 26.68 Mbit/s

95th percentile per-packet one-way delay: 367.224 ms

Loss rate: 1.32%

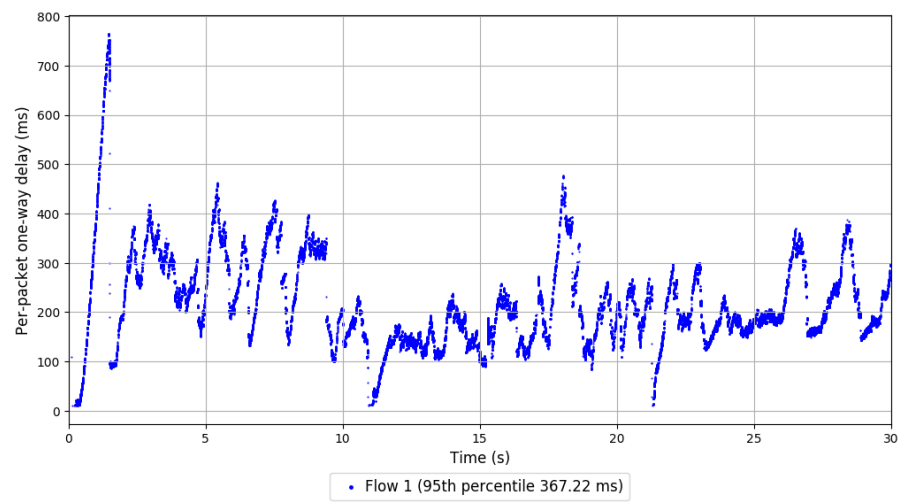
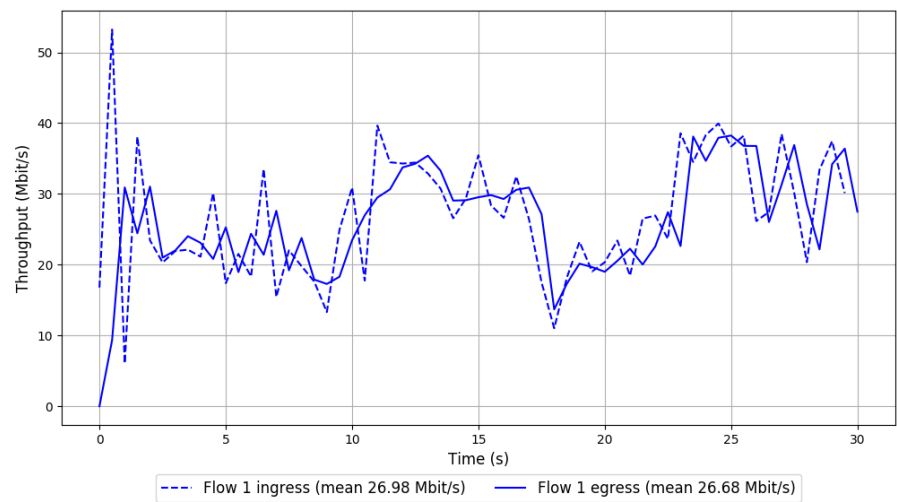
-- Flow 1:

Average throughput: 26.68 Mbit/s

95th percentile per-packet one-way delay: 367.224 ms

Loss rate: 1.32%

Run 1: Report of FillP-Sheep — Data Link



Run 2: Statistics of FillP-Sheep

Start at: 2018-07-24 06:06:40

End at: 2018-07-24 06:07:10

Local clock offset: 7.089 ms

Remote clock offset: 2.333 ms

Below is generated by plot.py at 2018-07-24 06:39:52

Datalink statistics

-- Total of 1 flow:

Average throughput: 33.63 Mbit/s

95th percentile per-packet one-way delay: 222.138 ms

Loss rate: 0.45%

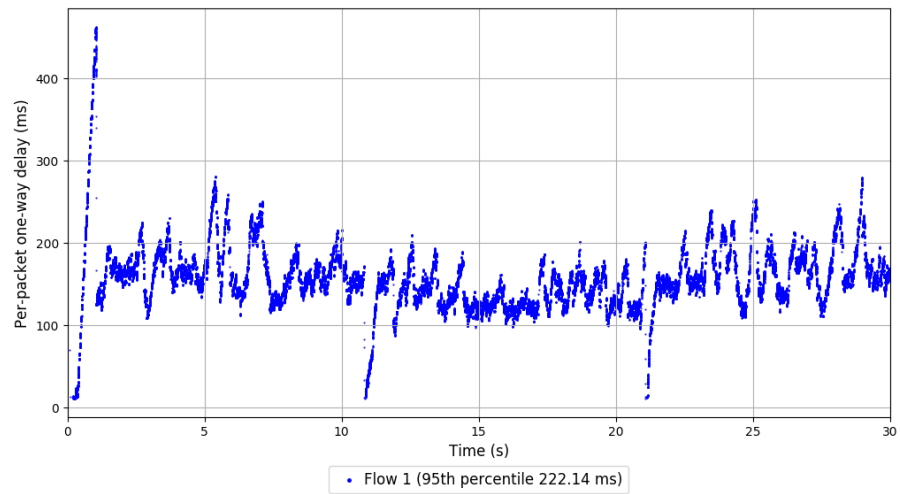
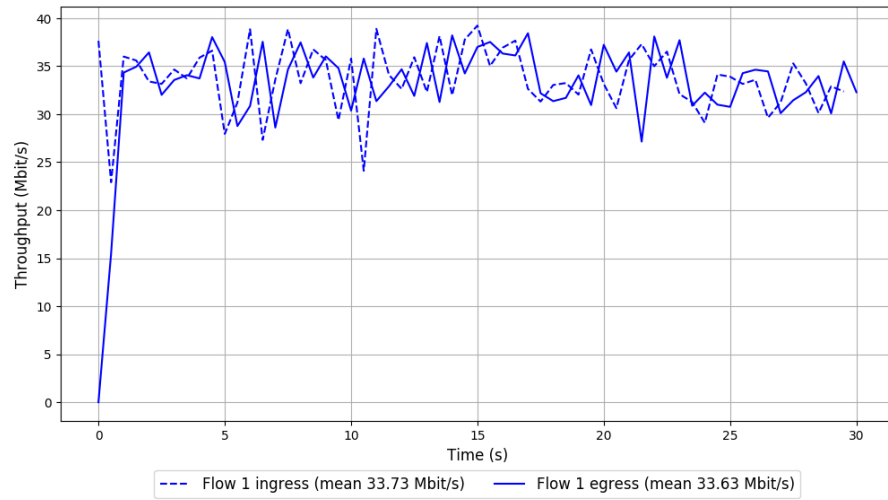
-- Flow 1:

Average throughput: 33.63 Mbit/s

95th percentile per-packet one-way delay: 222.138 ms

Loss rate: 0.45%

Run 2: Report of FillP-Sheep — Data Link



Run 3: Statistics of FillP-Sheep

Start at: 2018-07-24 06:28:53

End at: 2018-07-24 06:29:23

Local clock offset: 9.956 ms

Remote clock offset: 2.462 ms

Below is generated by plot.py at 2018-07-24 06:39:52

Datalink statistics

-- Total of 1 flow:

Average throughput: 29.38 Mbit/s

95th percentile per-packet one-way delay: 225.409 ms

Loss rate: 0.50%

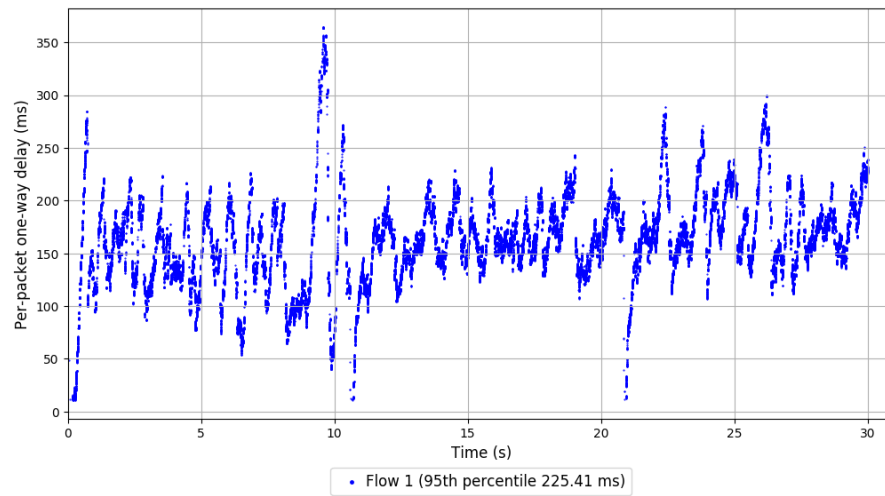
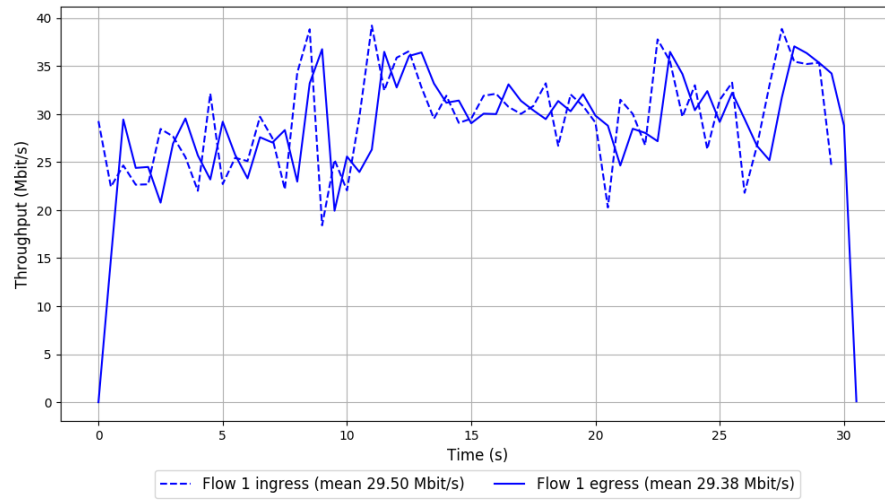
-- Flow 1:

Average throughput: 29.38 Mbit/s

95th percentile per-packet one-way delay: 225.409 ms

Loss rate: 0.50%

Run 3: Report of FillP-Sheep — Data Link

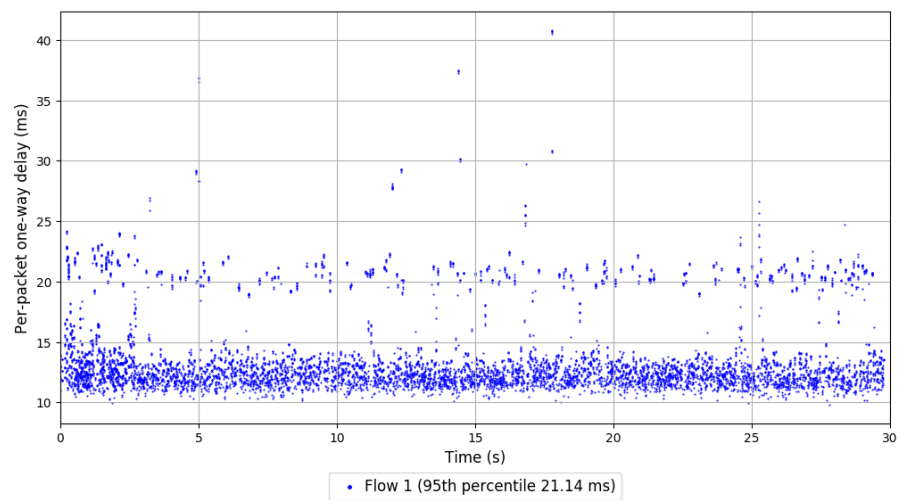
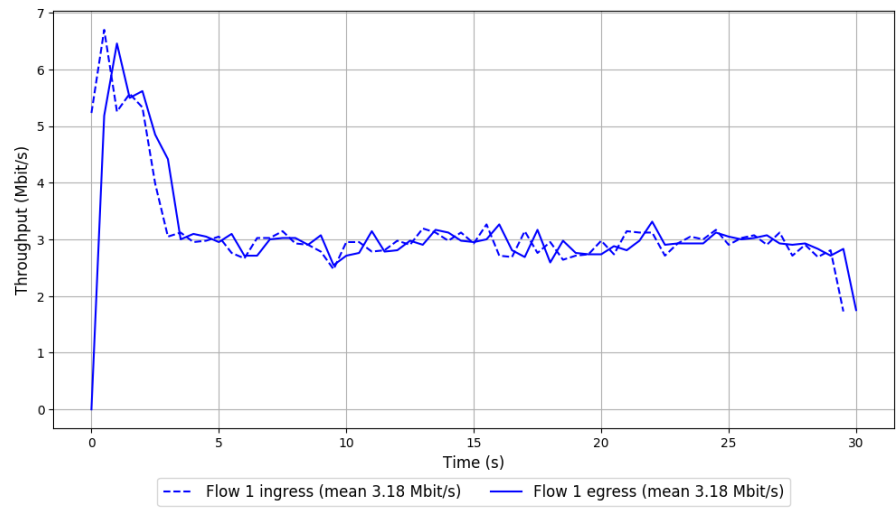


```
Run 1: Statistics of Indigo

Start at: 2018-07-24 05:52:16
End at: 2018-07-24 05:52:46
Local clock offset: 6.278 ms
Remote clock offset: 2.302 ms

# Below is generated by plot.py at 2018-07-24 06:39:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.18 Mbit/s
95th percentile per-packet one-way delay: 21.138 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 3.18 Mbit/s
95th percentile per-packet one-way delay: 21.138 ms
Loss rate: 0.00%
```

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-07-24 06:14:34

End at: 2018-07-24 06:15:04

Local clock offset: 7.483 ms

Remote clock offset: 2.48 ms

Below is generated by plot.py at 2018-07-24 06:39:52

Datalink statistics

-- Total of 1 flow:

Average throughput: 3.43 Mbit/s

95th percentile per-packet one-way delay: 23.091 ms

Loss rate: 0.00%

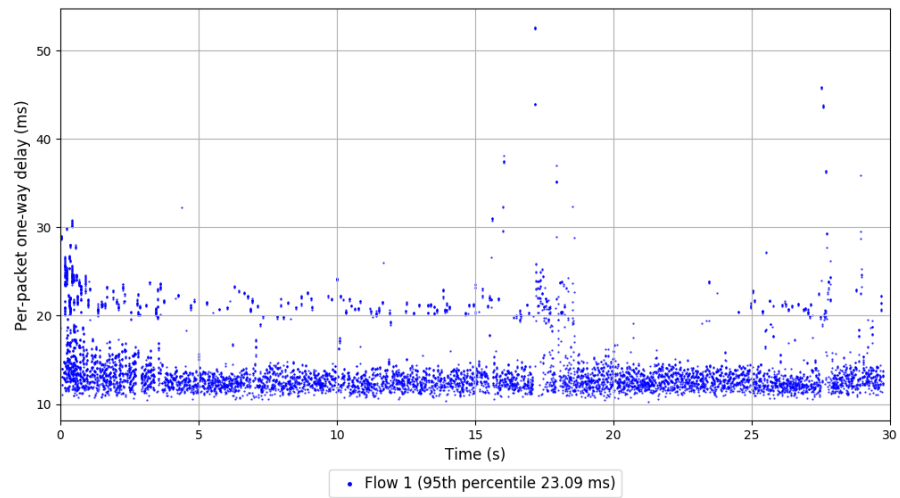
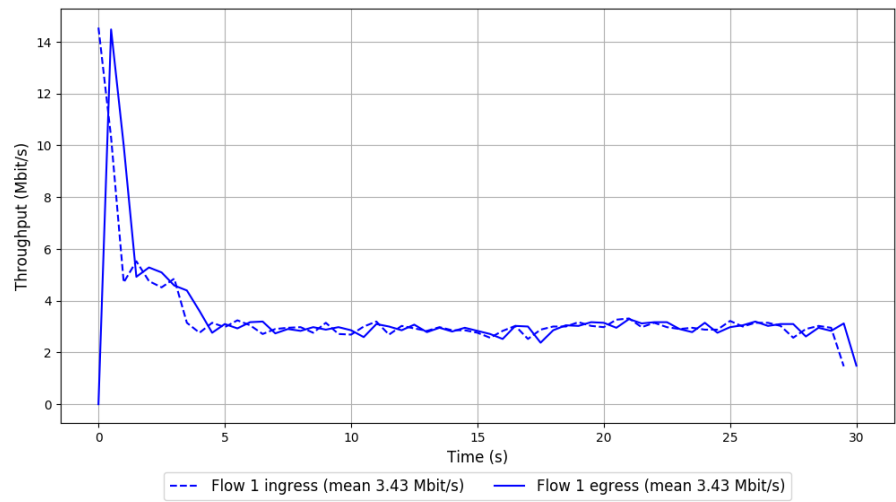
-- Flow 1:

Average throughput: 3.43 Mbit/s

95th percentile per-packet one-way delay: 23.091 ms

Loss rate: 0.00%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-07-24 06:36:42

End at: 2018-07-24 06:37:12

Local clock offset: 8.477 ms

Remote clock offset: 2.411 ms

Below is generated by plot.py at 2018-07-24 06:39:52

Datalink statistics

-- Total of 1 flow:

Average throughput: 3.03 Mbit/s

95th percentile per-packet one-way delay: 20.987 ms

Loss rate: 0.00%

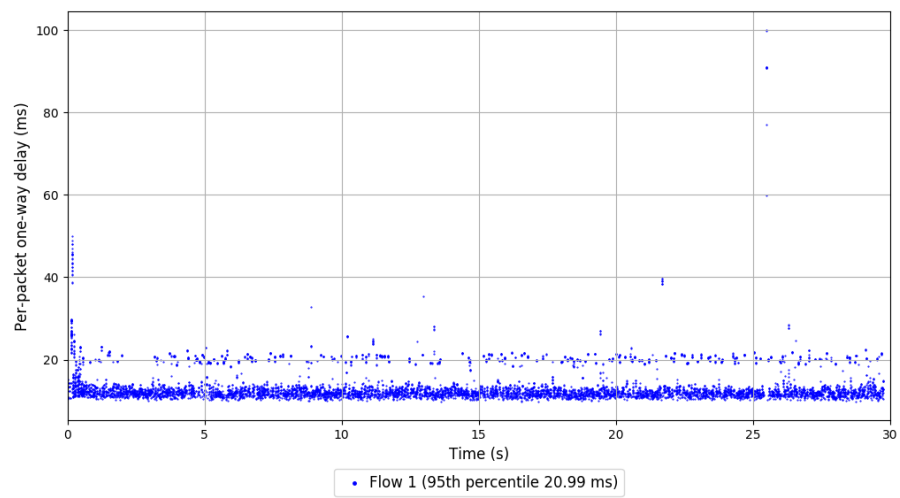
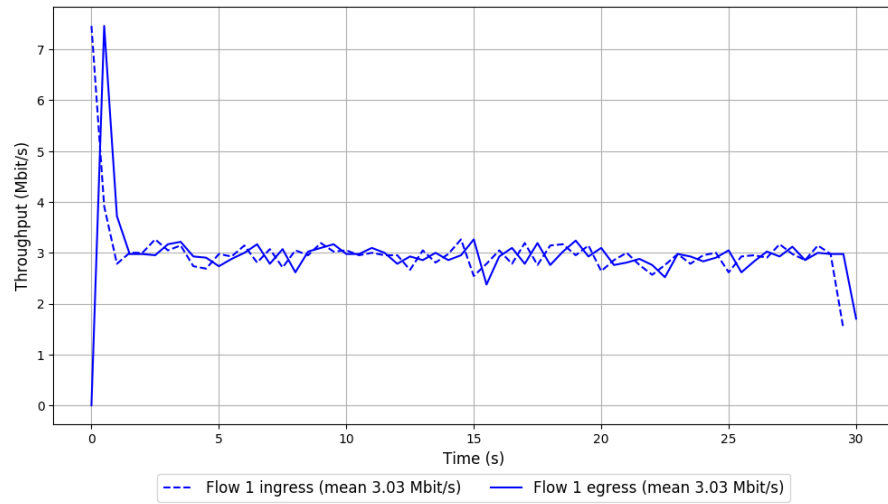
-- Flow 1:

Average throughput: 3.03 Mbit/s

95th percentile per-packet one-way delay: 20.987 ms

Loss rate: 0.00%

Run 3: Report of Indigo — Data Link

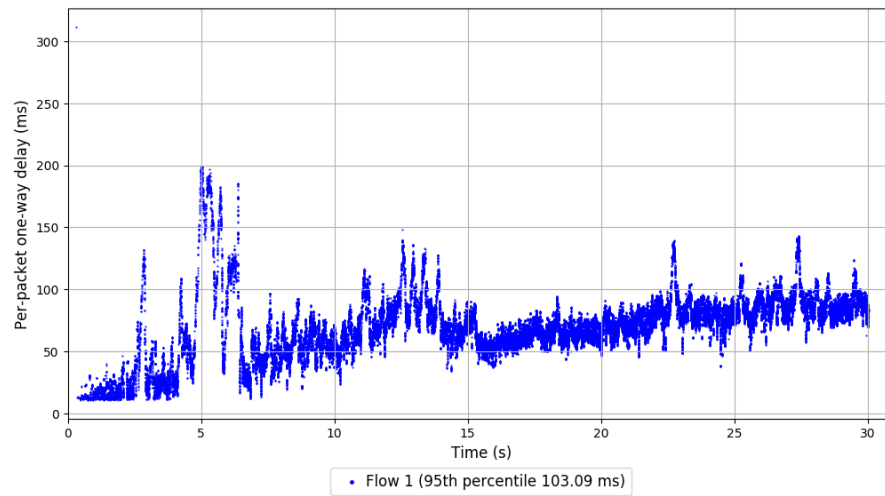
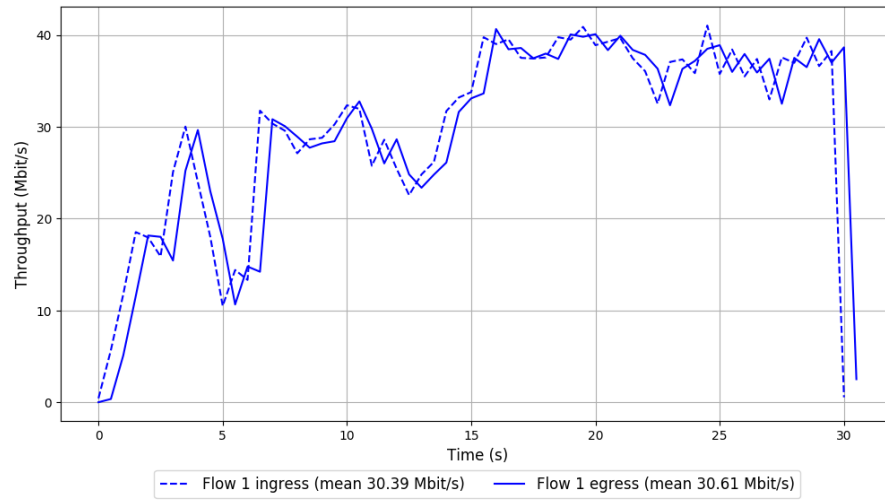


```
Run 1: Statistics of LEDBAT

Start at: 2018-07-24 05:39:17
End at: 2018-07-24 05:39:47
Local clock offset: 5.412 ms
Remote clock offset: 2.221 ms

# Below is generated by plot.py at 2018-07-24 06:39:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 30.61 Mbit/s
95th percentile per-packet one-way delay: 103.093 ms
Loss rate: 0.25%
-- Flow 1:
Average throughput: 30.61 Mbit/s
95th percentile per-packet one-way delay: 103.093 ms
Loss rate: 0.25%
```

Run 1: Report of LEDBAT — Data Link



Run 2: Statistics of LEDBAT

Start at: 2018-07-24 06:01:27

End at: 2018-07-24 06:01:57

Local clock offset: 7.423 ms

Remote clock offset: 2.282 ms

Below is generated by plot.py at 2018-07-24 06:39:52

Datalink statistics

-- Total of 1 flow:

Average throughput: 27.72 Mbit/s

95th percentile per-packet one-way delay: 131.540 ms

Loss rate: 0.20%

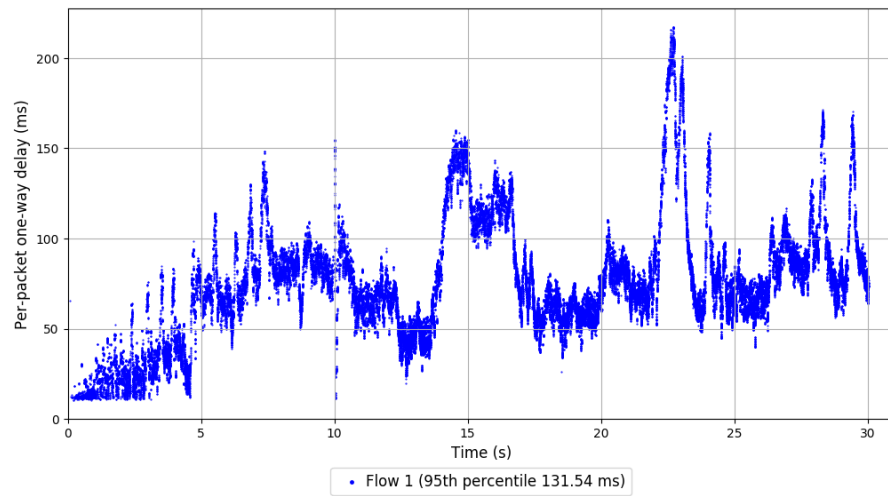
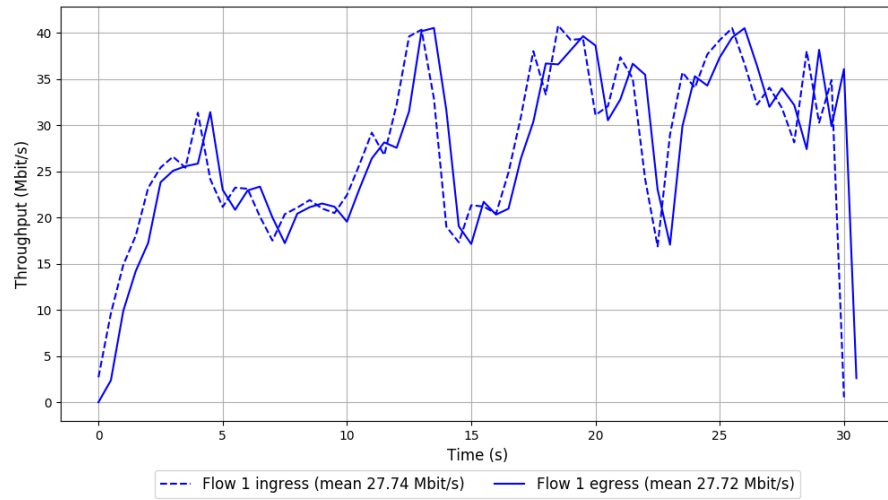
-- Flow 1:

Average throughput: 27.72 Mbit/s

95th percentile per-packet one-way delay: 131.540 ms

Loss rate: 0.20%

Run 2: Report of LEDBAT — Data Link



Run 3: Statistics of LEDBAT

Start at: 2018-07-24 06:23:40

End at: 2018-07-24 06:24:10

Local clock offset: 9.026 ms

Remote clock offset: 2.488 ms

Below is generated by plot.py at 2018-07-24 06:39:56

Datalink statistics

-- Total of 1 flow:

Average throughput: 29.01 Mbit/s

95th percentile per-packet one-way delay: 127.395 ms

Loss rate: 0.26%

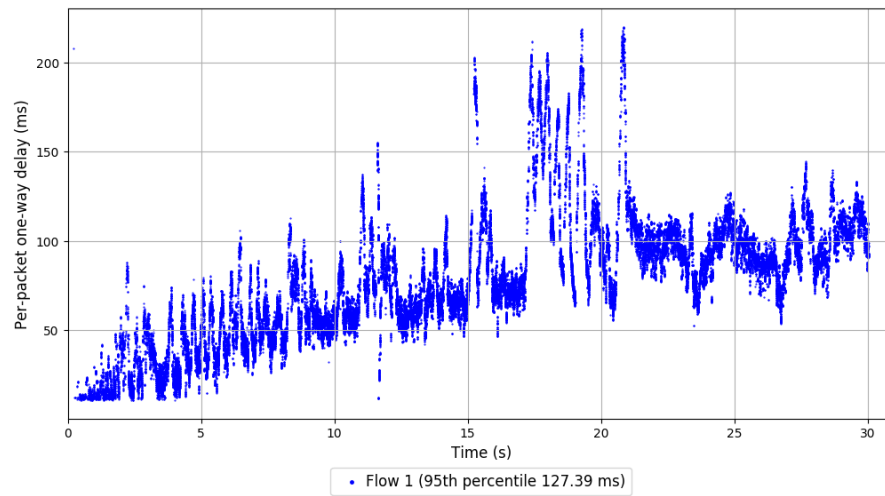
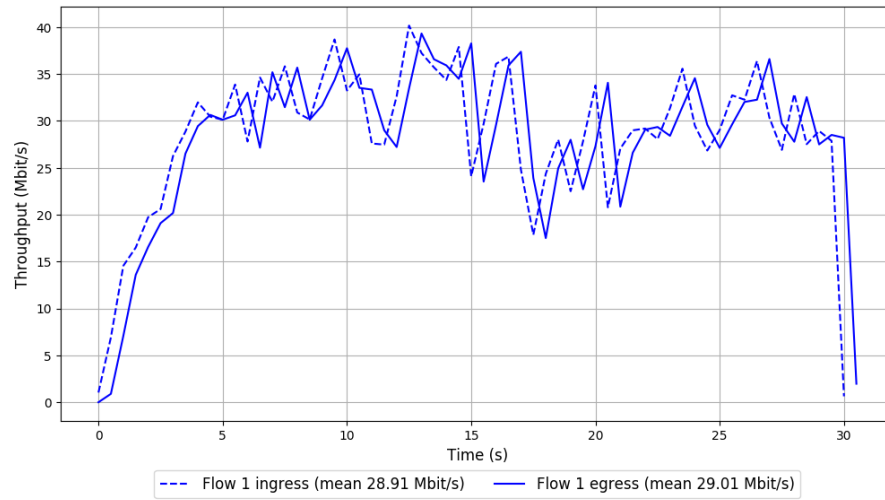
-- Flow 1:

Average throughput: 29.01 Mbit/s

95th percentile per-packet one-way delay: 127.395 ms

Loss rate: 0.26%

Run 3: Report of LEDBAT — Data Link



Run 1: Statistics of PCC-Allegro

Start at: 2018-07-24 05:36:42

End at: 2018-07-24 05:37:12

Local clock offset: 5.057 ms

Remote clock offset: 2.168 ms

Below is generated by plot.py at 2018-07-24 06:39:56

Datalink statistics

-- Total of 1 flow:

Average throughput: 8.19 Mbit/s

95th percentile per-packet one-way delay: 20.716 ms

Loss rate: 0.00%

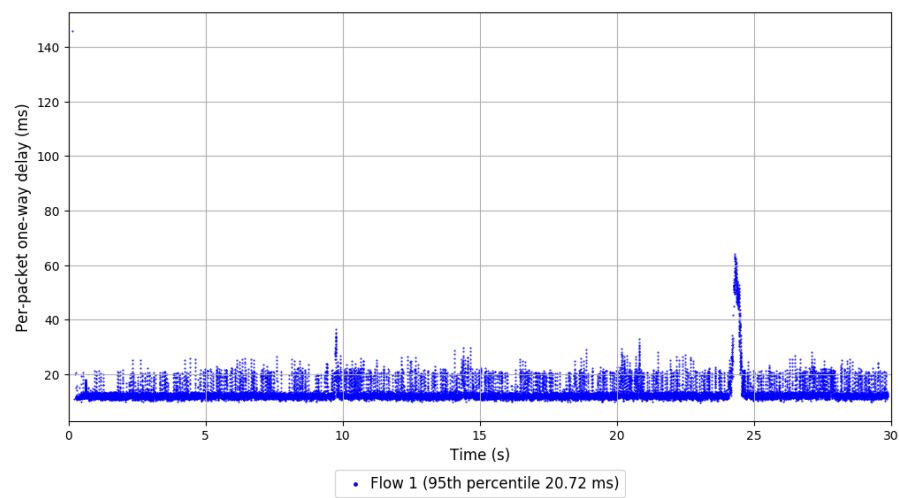
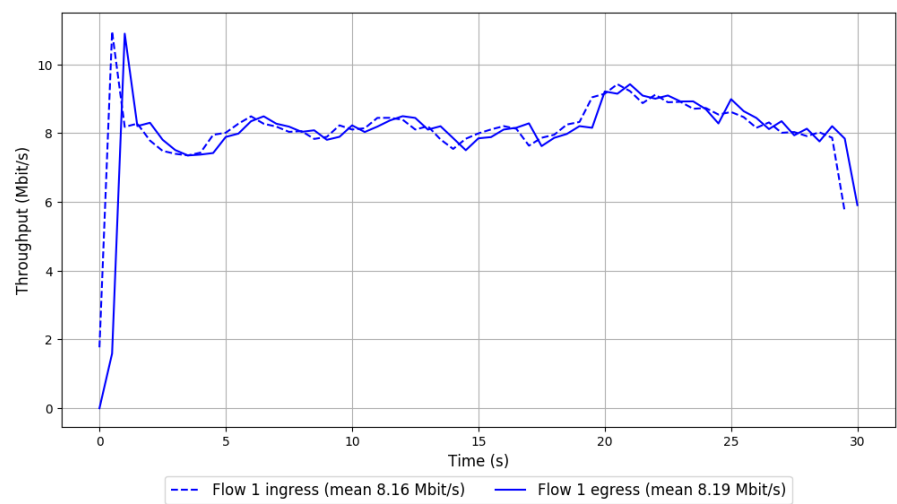
-- Flow 1:

Average throughput: 8.19 Mbit/s

95th percentile per-packet one-way delay: 20.716 ms

Loss rate: 0.00%

Run 1: Report of PCC-Allegro — Data Link



Run 2: Statistics of PCC-Allegro

Start at: 2018-07-24 05:58:52

End at: 2018-07-24 05:59:22

Local clock offset: 6.871 ms

Remote clock offset: 2.272 ms

Below is generated by plot.py at 2018-07-24 06:39:56

Datalink statistics

-- Total of 1 flow:

Average throughput: 9.02 Mbit/s

95th percentile per-packet one-way delay: 20.348 ms

Loss rate: 0.00%

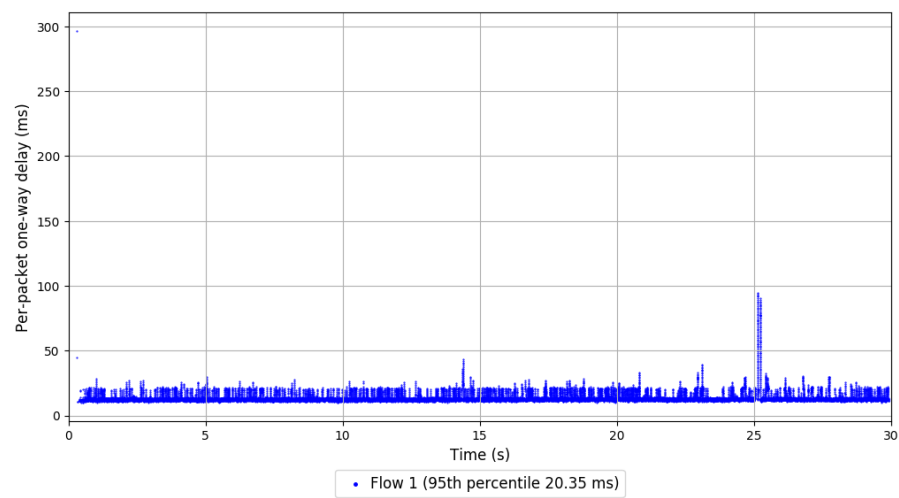
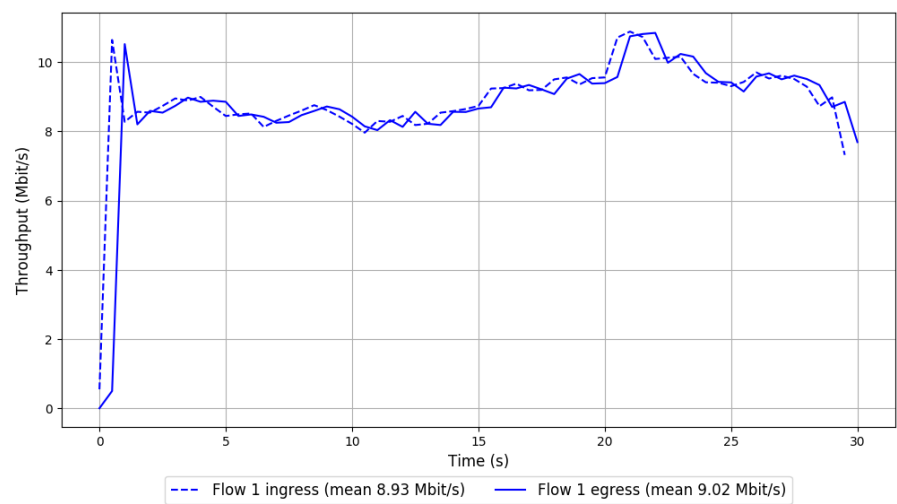
-- Flow 1:

Average throughput: 9.02 Mbit/s

95th percentile per-packet one-way delay: 20.348 ms

Loss rate: 0.00%

Run 2: Report of PCC-Allegro — Data Link



Run 3: Statistics of PCC-Allegro

Start at: 2018-07-24 06:21:05

End at: 2018-07-24 06:21:35

Local clock offset: 8.562 ms

Remote clock offset: 2.414 ms

Below is generated by plot.py at 2018-07-24 06:39:56

Datalink statistics

-- Total of 1 flow:

Average throughput: 4.77 Mbit/s

95th percentile per-packet one-way delay: 19.680 ms

Loss rate: 0.00%

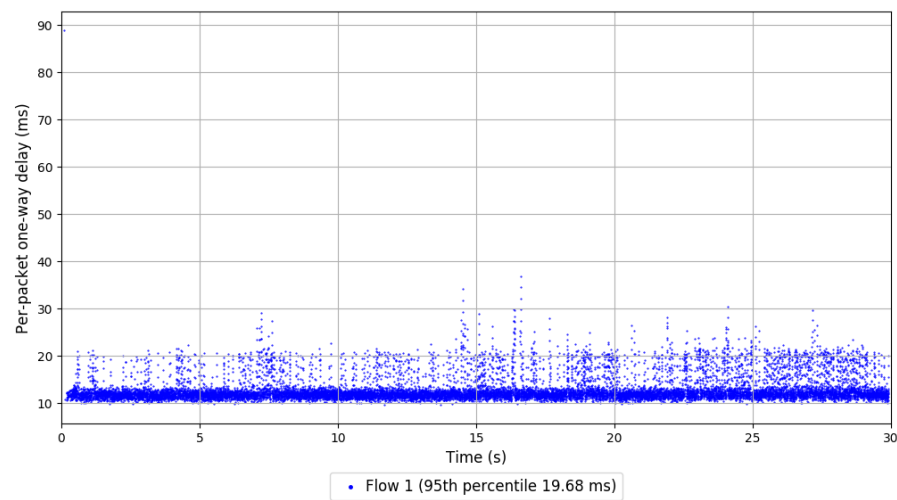
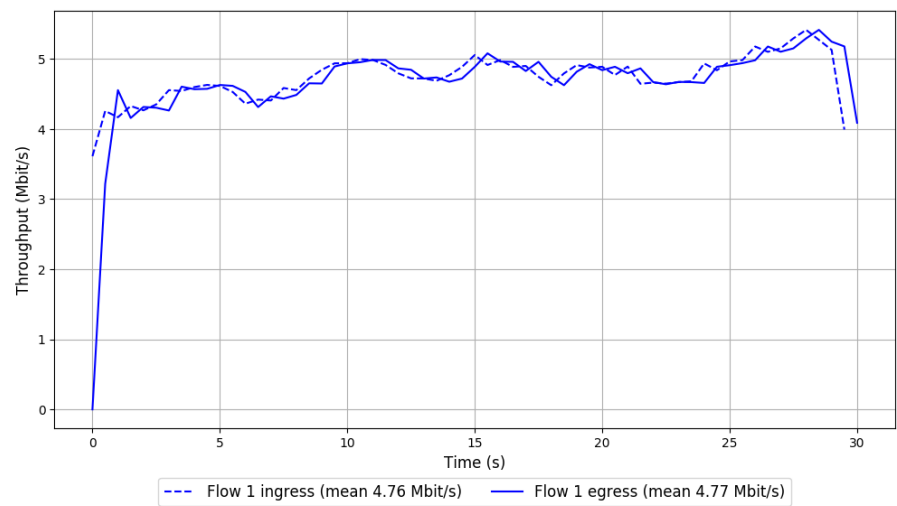
-- Flow 1:

Average throughput: 4.77 Mbit/s

95th percentile per-packet one-way delay: 19.680 ms

Loss rate: 0.00%

Run 3: Report of PCC-Allegro — Data Link

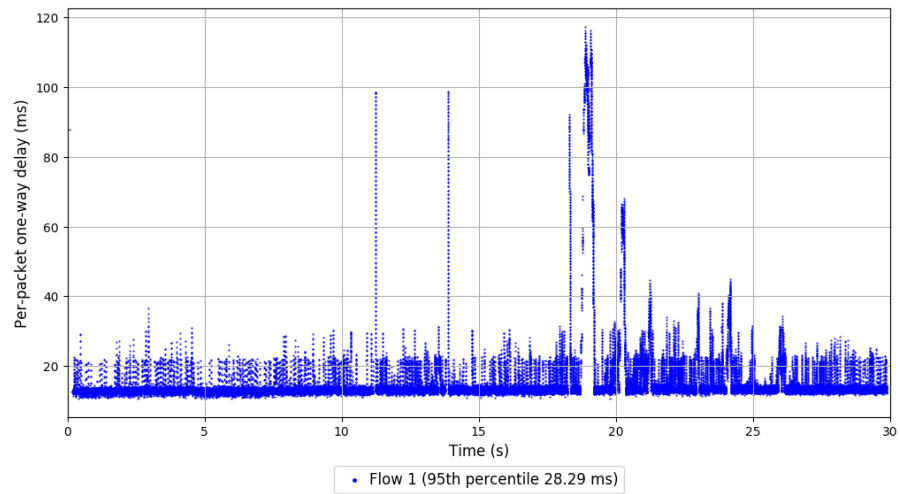
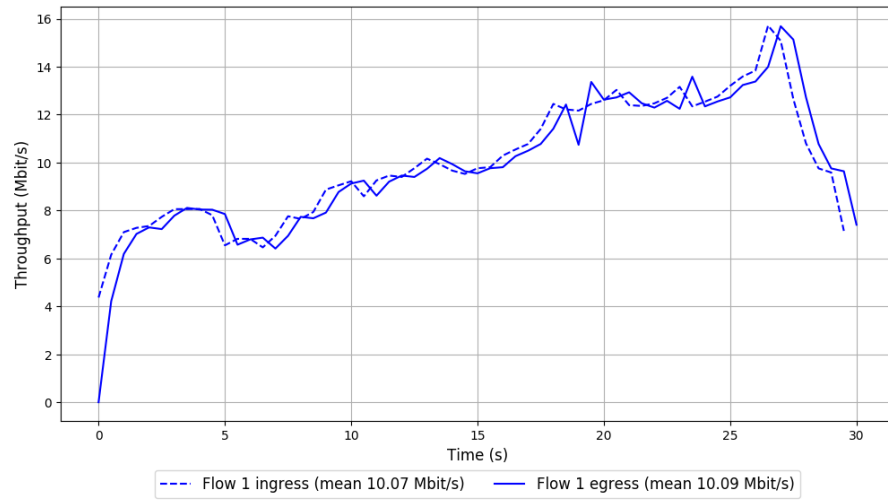


```
Run 1: Statistics of PCC-Expr

Start at: 2018-07-24 05:32:47
End at: 2018-07-24 05:33:17
Local clock offset: 4.111 ms
Remote clock offset: 2.128 ms

# Below is generated by plot.py at 2018-07-24 06:40:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.09 Mbit/s
95th percentile per-packet one-way delay: 28.289 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 10.09 Mbit/s
95th percentile per-packet one-way delay: 28.289 ms
Loss rate: 0.00%
```

Run 1: Report of PCC-Expr — Data Link



Run 2: Statistics of PCC-Expr

Start at: 2018-07-24 05:54:52

End at: 2018-07-24 05:55:22

Local clock offset: 6.286 ms

Remote clock offset: 2.287 ms

Below is generated by plot.py at 2018-07-24 06:40:03

Datalink statistics

-- Total of 1 flow:

Average throughput: 6.77 Mbit/s

95th percentile per-packet one-way delay: 20.187 ms

Loss rate: 0.00%

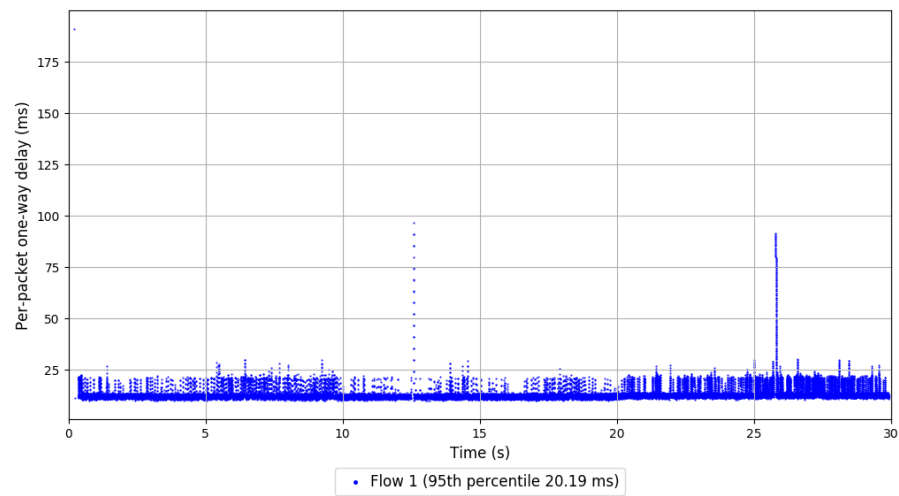
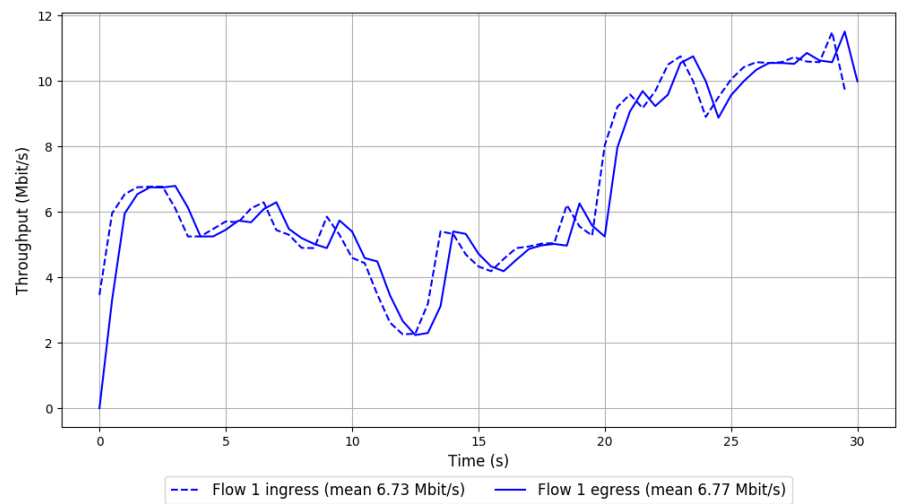
-- Flow 1:

Average throughput: 6.77 Mbit/s

95th percentile per-packet one-way delay: 20.187 ms

Loss rate: 0.00%

Run 2: Report of PCC-Expr — Data Link



Run 3: Statistics of PCC-Expr

Start at: 2018-07-24 06:17:10

End at: 2018-07-24 06:17:40

Local clock offset: 7.843 ms

Remote clock offset: 2.511 ms

Below is generated by plot.py at 2018-07-24 06:40:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 11.31 Mbit/s

95th percentile per-packet one-way delay: 20.960 ms

Loss rate: 0.00%

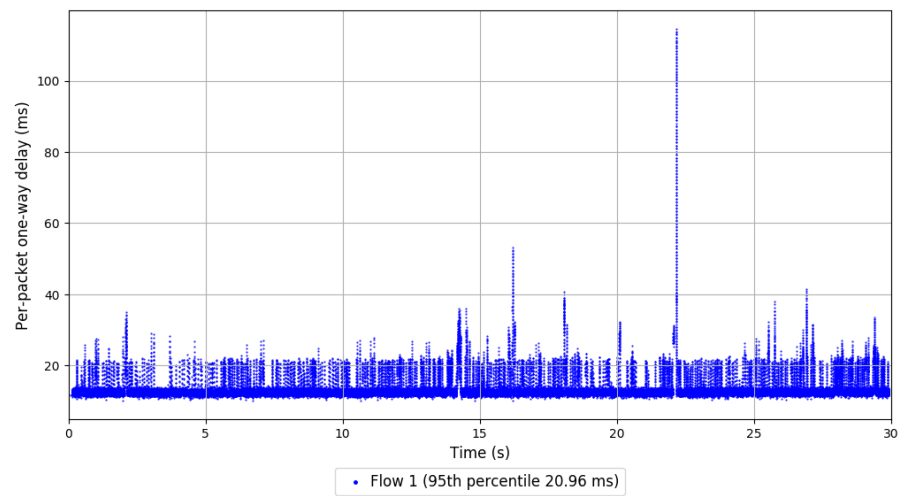
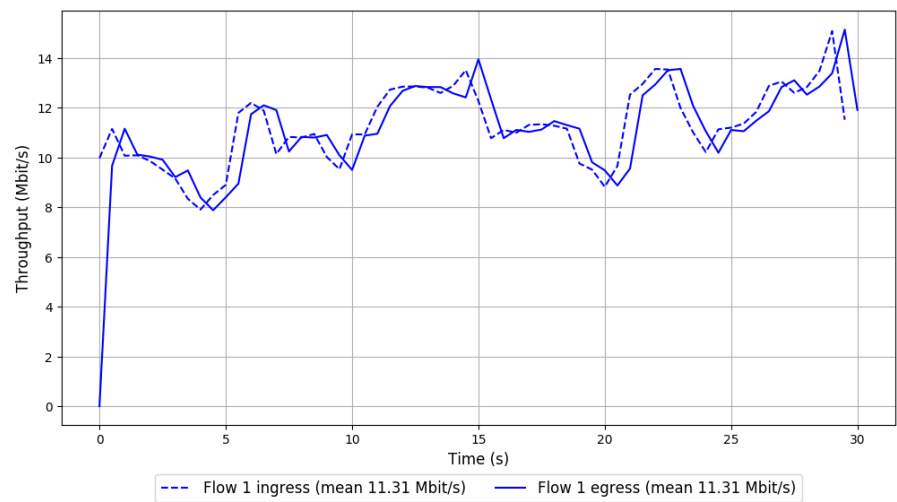
-- Flow 1:

Average throughput: 11.31 Mbit/s

95th percentile per-packet one-way delay: 20.960 ms

Loss rate: 0.00%

Run 3: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

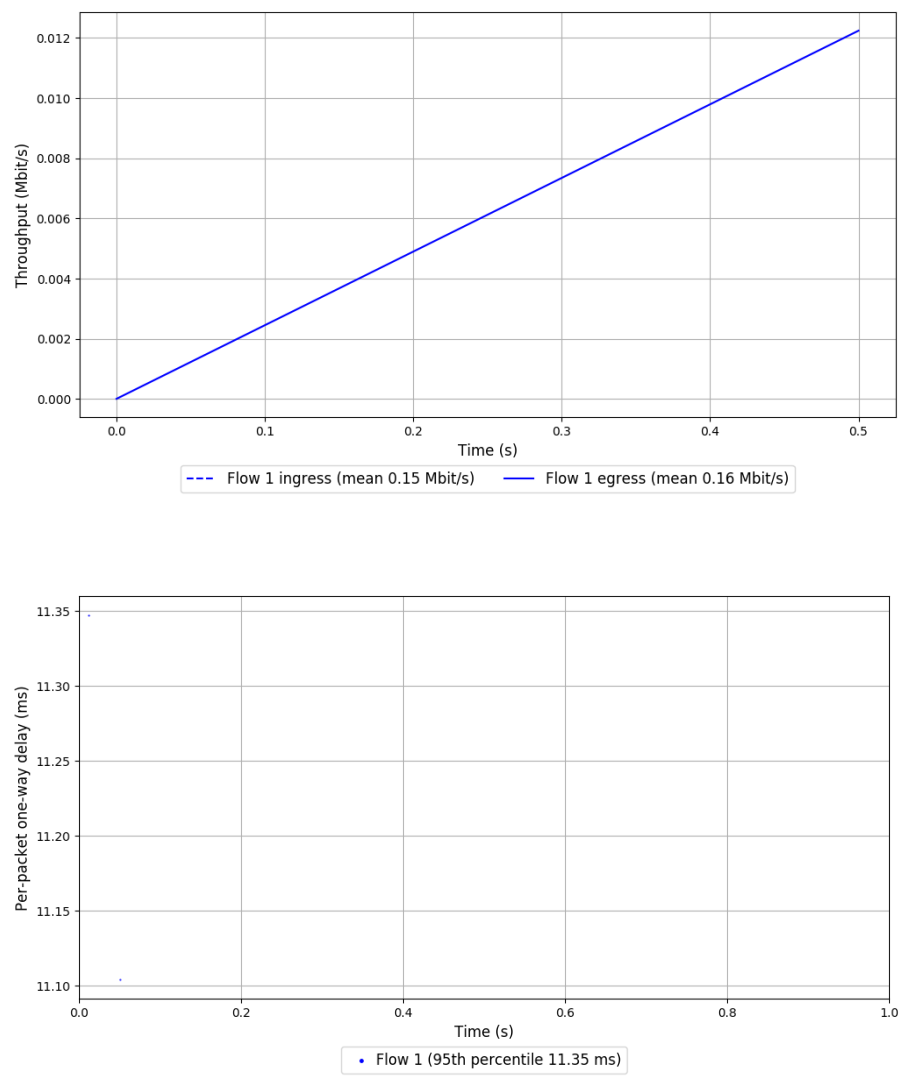
Start at: 2018-07-24 05:47:06

End at: 2018-07-24 05:47:36

Local clock offset: 6.394 ms

Remote clock offset: 2.229 ms

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2018-07-24 06:09:16

End at: 2018-07-24 06:09:46

Local clock offset: 7.12 ms

Remote clock offset: 2.319 ms

Below is generated by plot.py at 2018-07-24 06:40:26

Datalink statistics

-- Total of 1 flow:

Average throughput: 35.09 Mbit/s

95th percentile per-packet one-way delay: 201.617 ms

Loss rate: 0.38%

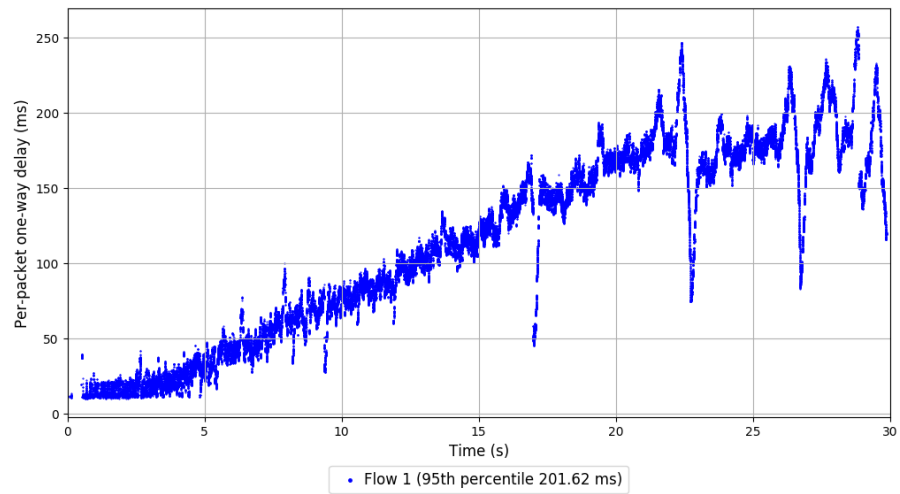
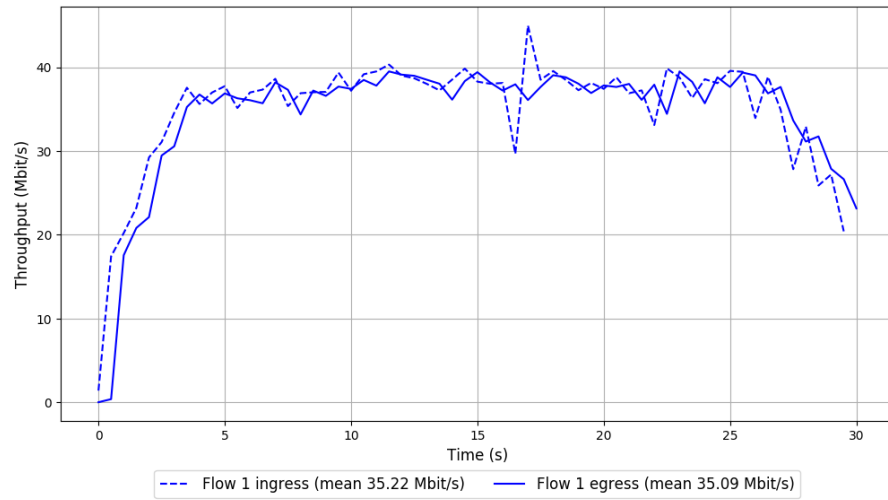
-- Flow 1:

Average throughput: 35.09 Mbit/s

95th percentile per-packet one-way delay: 201.617 ms

Loss rate: 0.38%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2018-07-24 06:31:29

End at: 2018-07-24 06:31:59

Local clock offset: 10.522 ms

Remote clock offset: 2.398 ms

Below is generated by plot.py at 2018-07-24 06:40:26

Datalink statistics

-- Total of 1 flow:

Average throughput: 32.29 Mbit/s

95th percentile per-packet one-way delay: 197.090 ms

Loss rate: 0.56%

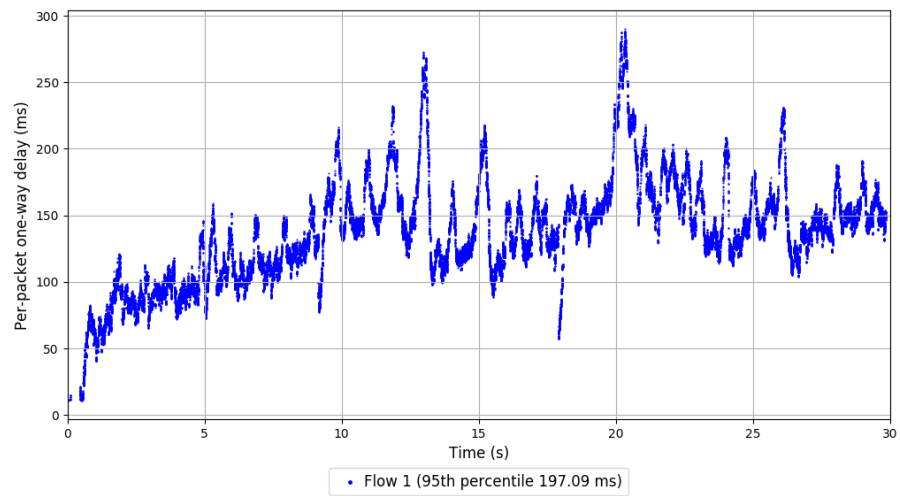
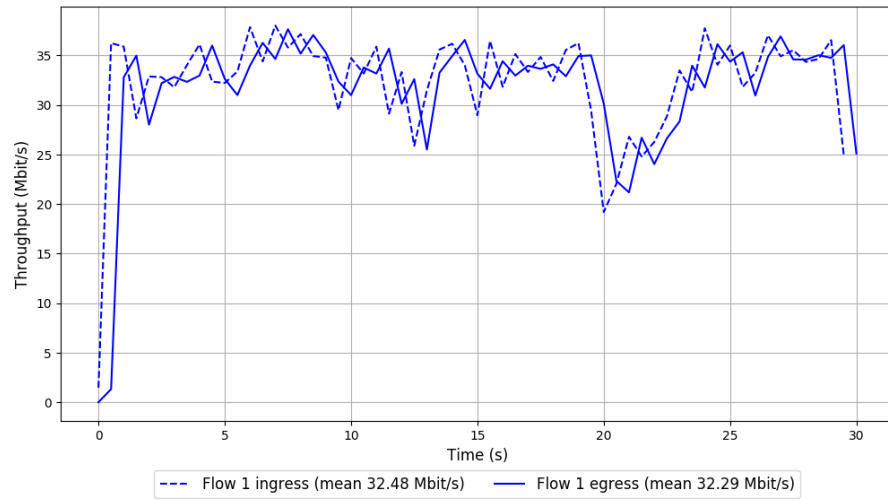
-- Flow 1:

Average throughput: 32.29 Mbit/s

95th percentile per-packet one-way delay: 197.090 ms

Loss rate: 0.56%

Run 3: Report of QUIC Cubic — Data Link

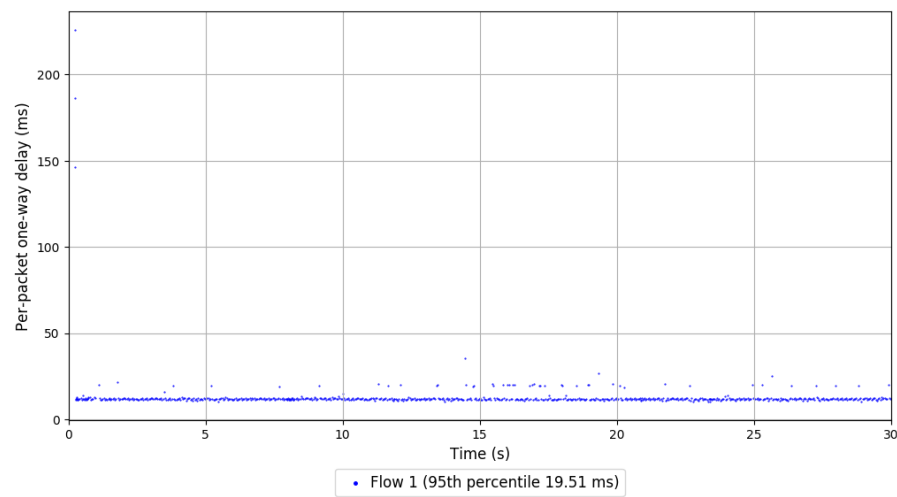
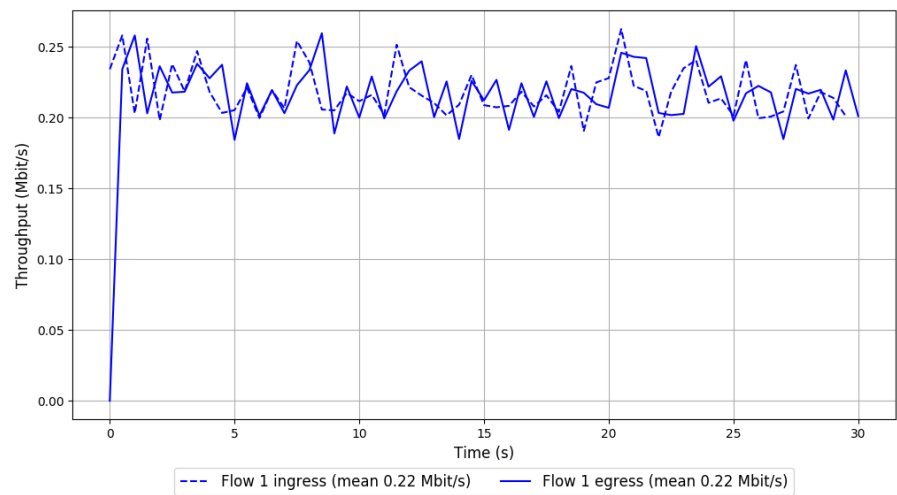


```
Run 1: Statistics of SCReAM

Start at: 2018-07-24 05:48:23
End at: 2018-07-24 05:48:53
Local clock offset: 6.69 ms
Remote clock offset: 2.291 ms

# Below is generated by plot.py at 2018-07-24 06:40:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 19.509 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 19.509 ms
Loss rate: 0.00%
```

Run 1: Report of SReAM — Data Link



Run 2: Statistics of SCReAM

Start at: 2018-07-24 06:10:35

End at: 2018-07-24 06:11:05

Local clock offset: 7.172 ms

Remote clock offset: 2.461 ms

Below is generated by plot.py at 2018-07-24 06:40:26

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 12.461 ms

Loss rate: 0.00%

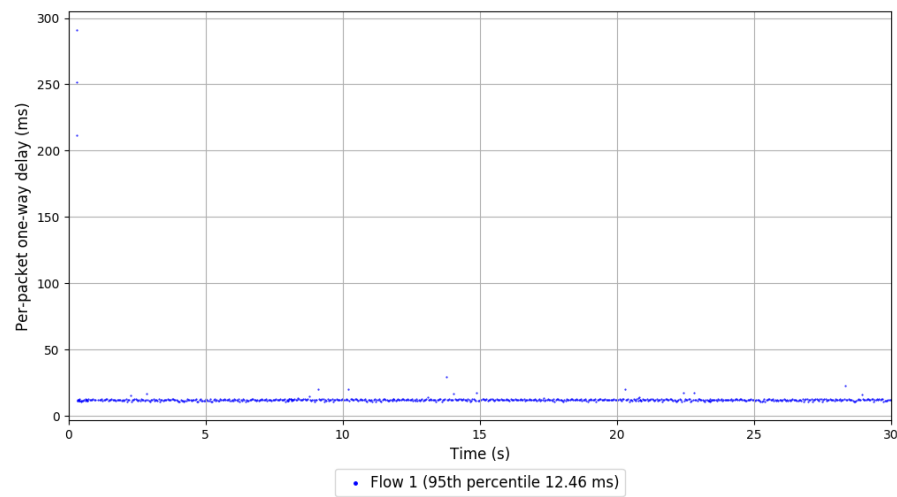
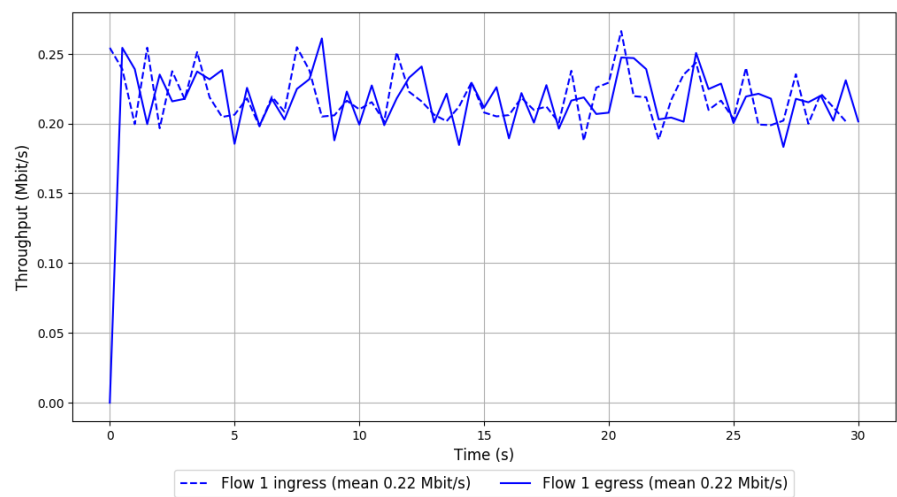
-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 12.461 ms

Loss rate: 0.00%

Run 2: Report of SReAM — Data Link



Run 3: Statistics of SCReAM

Start at: 2018-07-24 06:32:48

End at: 2018-07-24 06:33:18

Local clock offset: 10.188 ms

Remote clock offset: 2.415 ms

Below is generated by plot.py at 2018-07-24 06:40:26

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 13.161 ms

Loss rate: 0.00%

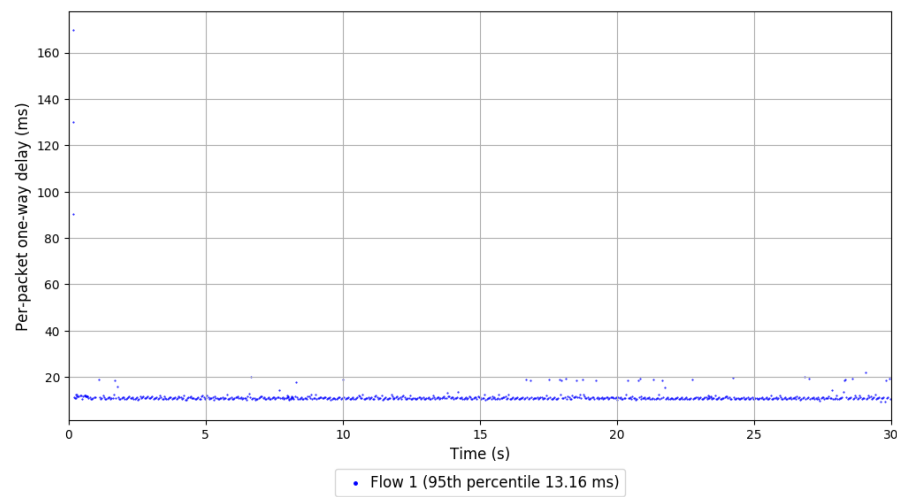
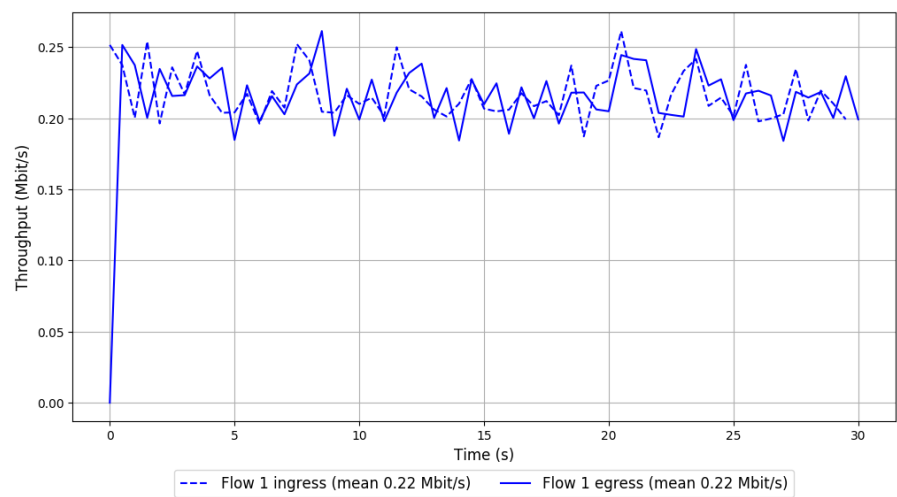
-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 13.161 ms

Loss rate: 0.00%

Run 3: Report of SReAM — Data Link



Run 1: Statistics of Sprout

Start at: 2018-07-24 05:34:05

End at: 2018-07-24 05:34:35

Local clock offset: 5.435 ms

Remote clock offset: 2.166 ms

Below is generated by plot.py at 2018-07-24 06:40:26

Datalink statistics

-- Total of 1 flow:

Average throughput: 14.44 Mbit/s

95th percentile per-packet one-way delay: 36.661 ms

Loss rate: 0.00%

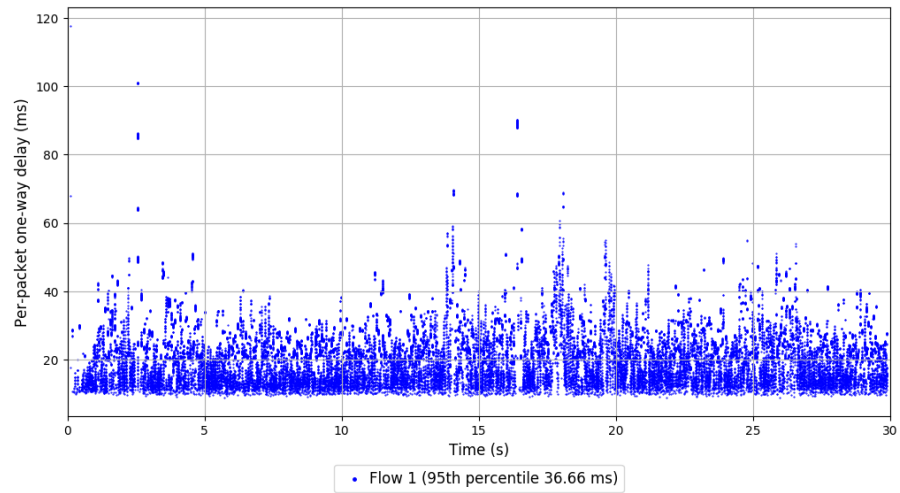
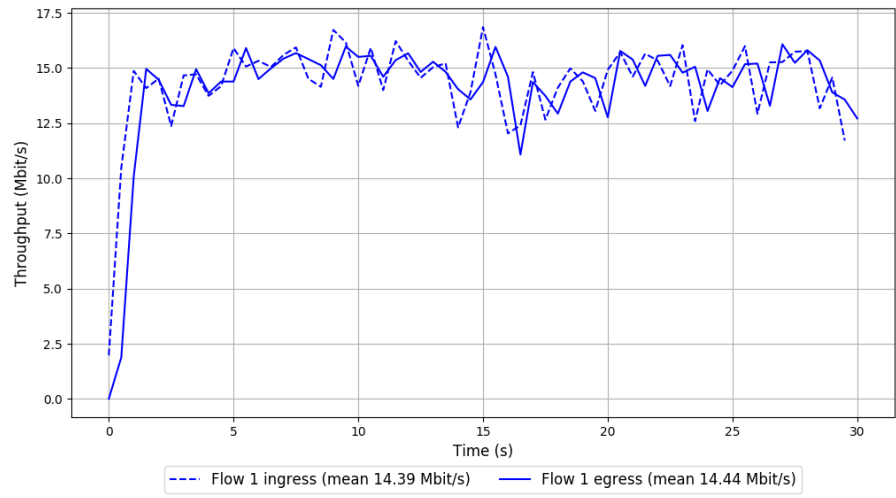
-- Flow 1:

Average throughput: 14.44 Mbit/s

95th percentile per-packet one-way delay: 36.661 ms

Loss rate: 0.00%

Run 1: Report of Sprout — Data Link



Run 2: Statistics of Sprout

Start at: 2018-07-24 05:56:10

End at: 2018-07-24 05:56:40

Local clock offset: 6.443 ms

Remote clock offset: 2.326 ms

Below is generated by plot.py at 2018-07-24 06:40:26

Datalink statistics

-- Total of 1 flow:

Average throughput: 14.74 Mbit/s

95th percentile per-packet one-way delay: 30.749 ms

Loss rate: 0.00%

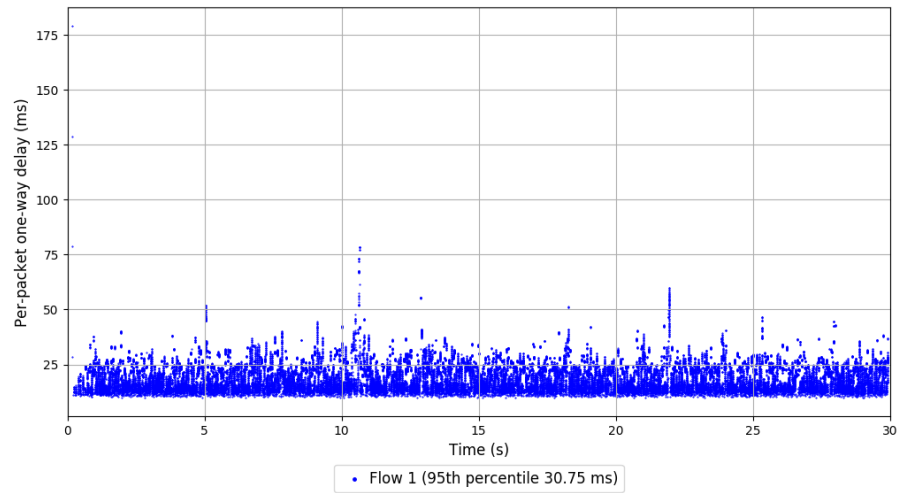
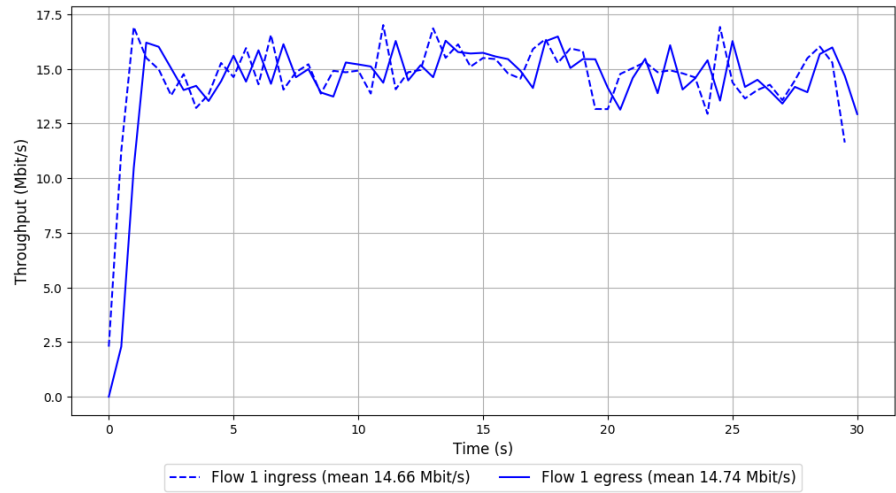
-- Flow 1:

Average throughput: 14.74 Mbit/s

95th percentile per-packet one-way delay: 30.749 ms

Loss rate: 0.00%

Run 2: Report of Sprout — Data Link



Run 3: Statistics of Sprout

Start at: 2018-07-24 06:18:28

End at: 2018-07-24 06:18:58

Local clock offset: 8.116 ms

Remote clock offset: 2.442 ms

Below is generated by plot.py at 2018-07-24 06:40:26

Datalink statistics

-- Total of 1 flow:

Average throughput: 14.54 Mbit/s

95th percentile per-packet one-way delay: 29.441 ms

Loss rate: 0.00%

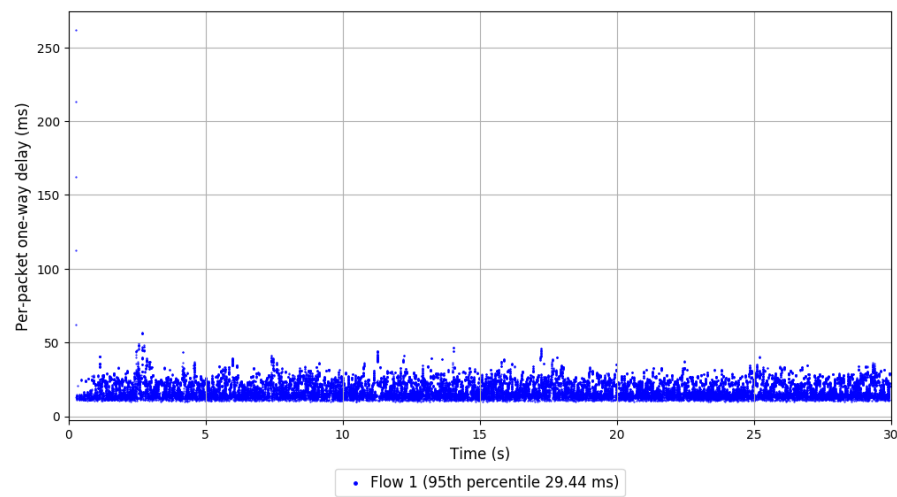
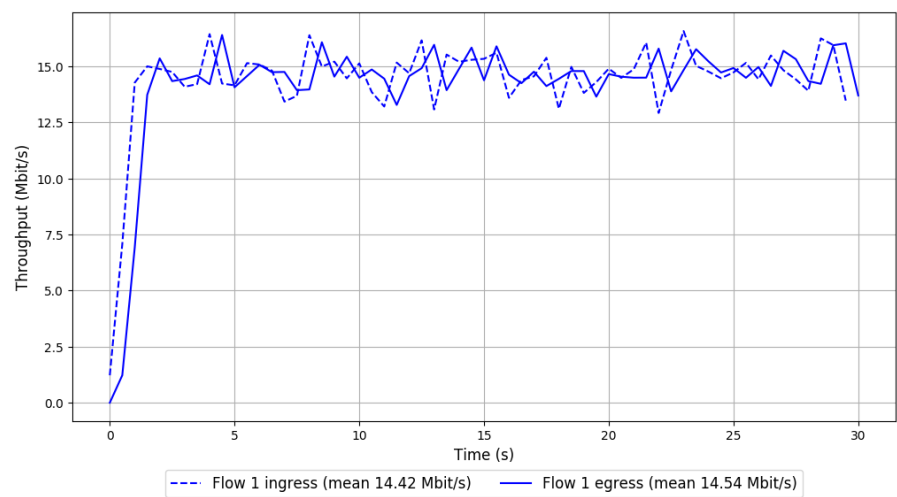
-- Flow 1:

Average throughput: 14.54 Mbit/s

95th percentile per-packet one-way delay: 29.441 ms

Loss rate: 0.00%

Run 3: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

Start at: 2018-07-24 05:43:12

End at: 2018-07-24 05:43:42

Local clock offset: 5.394 ms

Remote clock offset: 2.218 ms

Below is generated by plot.py at 2018-07-24 06:40:26

Datalink statistics

-- Total of 1 flow:

Average throughput: 5.61 Mbit/s

95th percentile per-packet one-way delay: 19.944 ms

Loss rate: 0.00%

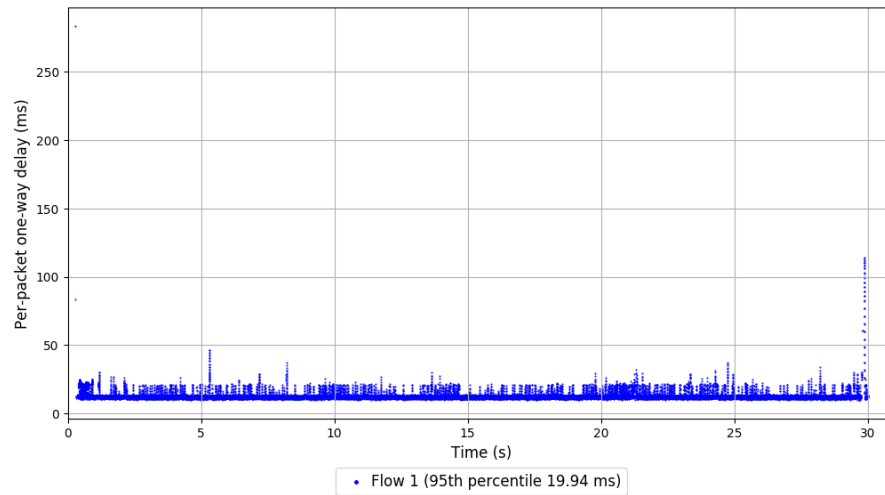
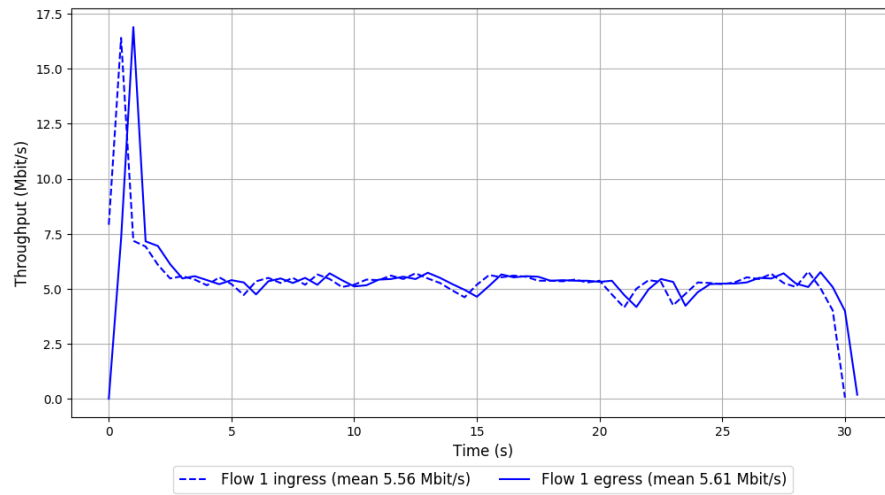
-- Flow 1:

Average throughput: 5.61 Mbit/s

95th percentile per-packet one-way delay: 19.944 ms

Loss rate: 0.00%

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



Run 2: Statistics of TaoVA-100x

Start at: 2018-07-24 06:05:22

End at: 2018-07-24 06:05:52

Local clock offset: 7.144 ms

Remote clock offset: 2.317 ms

Below is generated by plot.py at 2018-07-24 06:40:26

Datalink statistics

-- Total of 1 flow:

Average throughput: 5.42 Mbit/s

95th percentile per-packet one-way delay: 19.625 ms

Loss rate: 0.00%

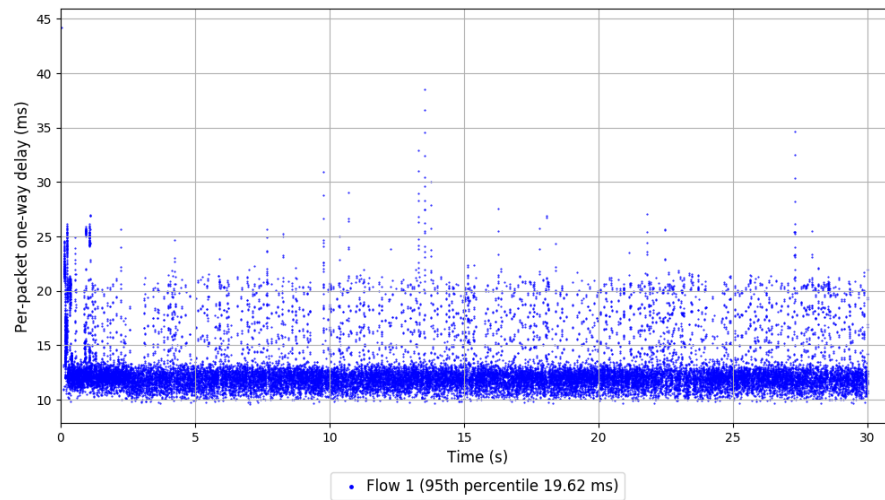
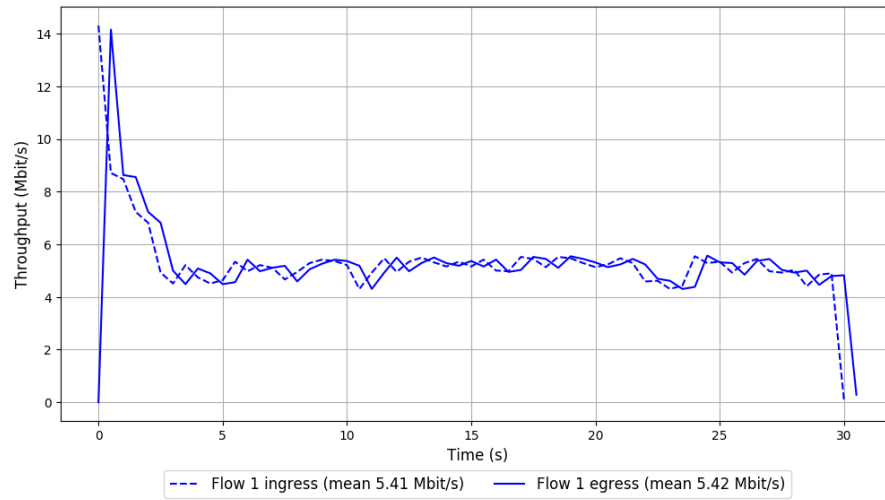
-- Flow 1:

Average throughput: 5.42 Mbit/s

95th percentile per-packet one-way delay: 19.625 ms

Loss rate: 0.00%

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



Run 3: Statistics of TaoVA-100x

Start at: 2018-07-24 06:27:35

End at: 2018-07-24 06:28:05

Local clock offset: 9.836 ms

Remote clock offset: 2.398 ms

Below is generated by plot.py at 2018-07-24 06:40:26

Datalink statistics

-- Total of 1 flow:

Average throughput: 4.75 Mbit/s

95th percentile per-packet one-way delay: 20.939 ms

Loss rate: 0.00%

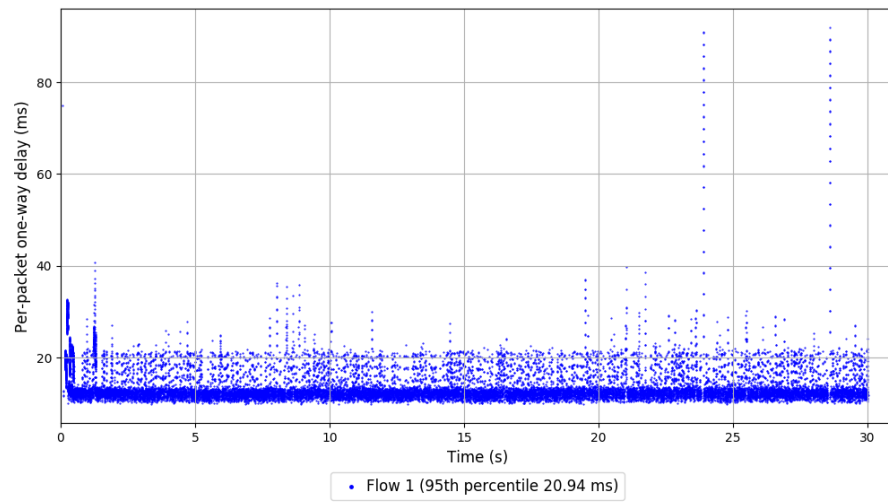
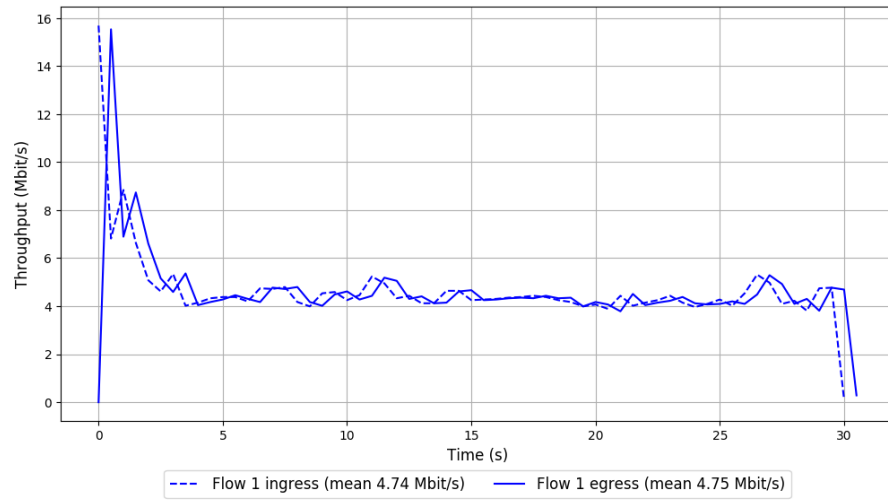
-- Flow 1:

Average throughput: 4.75 Mbit/s

95th percentile per-packet one-way delay: 20.939 ms

Loss rate: 0.00%

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



Run 1: Statistics of TCP Vegas

Start at: 2018-07-24 05:40:36

End at: 2018-07-24 05:41:06

Local clock offset: 5.966 ms

Remote clock offset: 2.217 ms

Below is generated by plot.py at 2018-07-24 06:40:26

Datalink statistics

-- Total of 1 flow:

Average throughput: 6.83 Mbit/s

95th percentile per-packet one-way delay: 35.598 ms

Loss rate: 0.00%

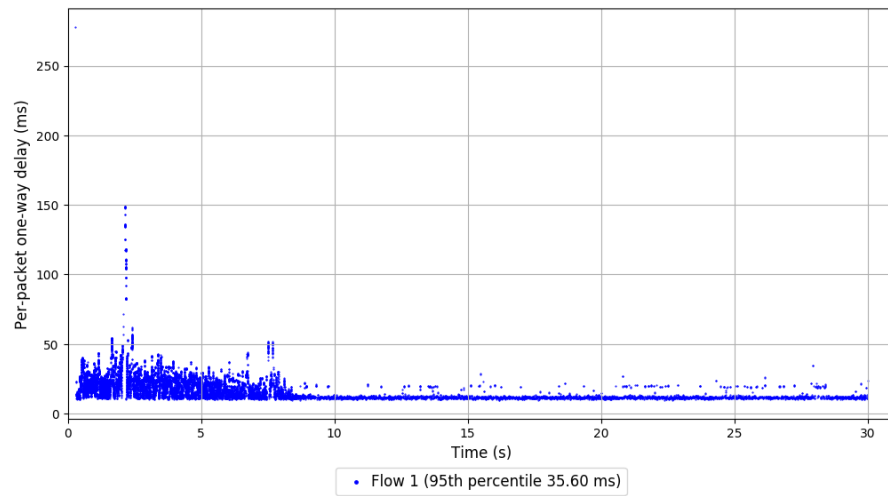
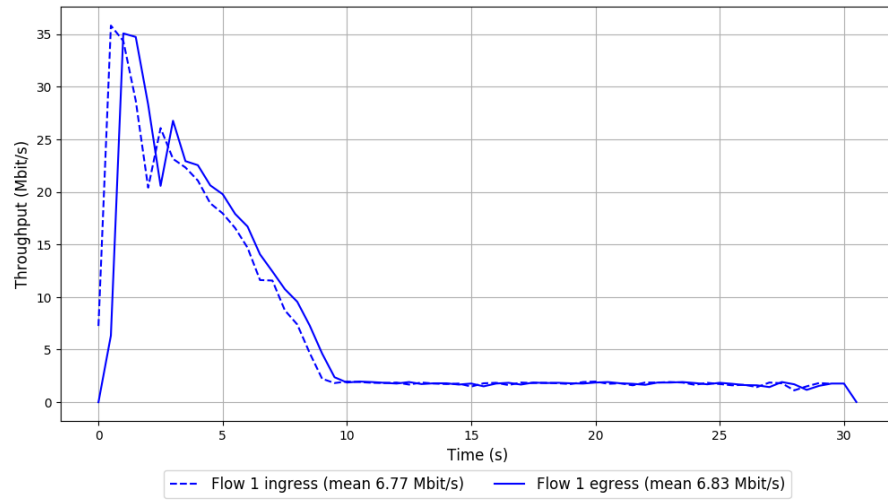
-- Flow 1:

Average throughput: 6.83 Mbit/s

95th percentile per-packet one-way delay: 35.598 ms

Loss rate: 0.00%

Run 1: Report of TCP Vegas — Data Link



Run 2: Statistics of TCP Vegas

Start at: 2018-07-24 06:02:46

End at: 2018-07-24 06:03:16

Local clock offset: 7.348 ms

Remote clock offset: 2.368 ms

Below is generated by plot.py at 2018-07-24 06:40:26

Datalink statistics

-- Total of 1 flow:

Average throughput: 5.35 Mbit/s

95th percentile per-packet one-way delay: 29.016 ms

Loss rate: 0.00%

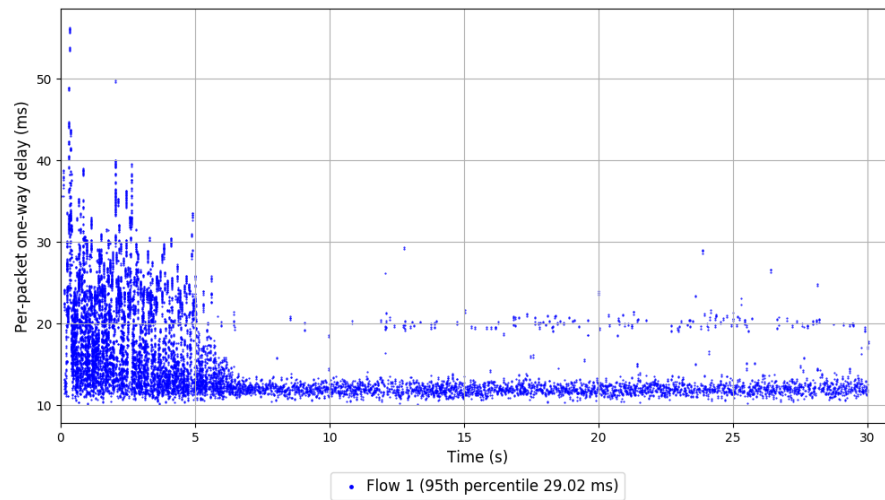
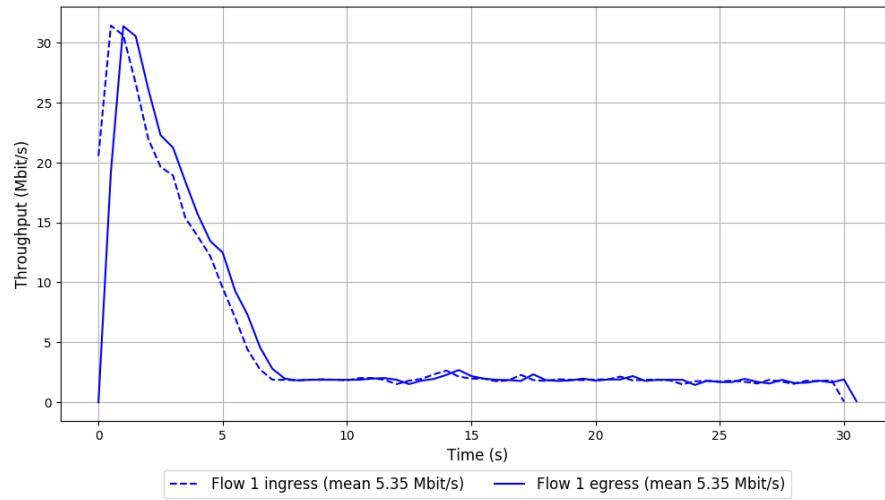
-- Flow 1:

Average throughput: 5.35 Mbit/s

95th percentile per-packet one-way delay: 29.016 ms

Loss rate: 0.00%

Run 2: Report of TCP Vegas — Data Link



Run 3: Statistics of TCP Vegas

Start at: 2018-07-24 06:24:58

End at: 2018-07-24 06:25:28

Local clock offset: 9.274 ms

Remote clock offset: 2.427 ms

Below is generated by plot.py at 2018-07-24 06:40:26

Datalink statistics

-- Total of 1 flow:

Average throughput: 5.02 Mbit/s

95th percentile per-packet one-way delay: 44.243 ms

Loss rate: 0.00%

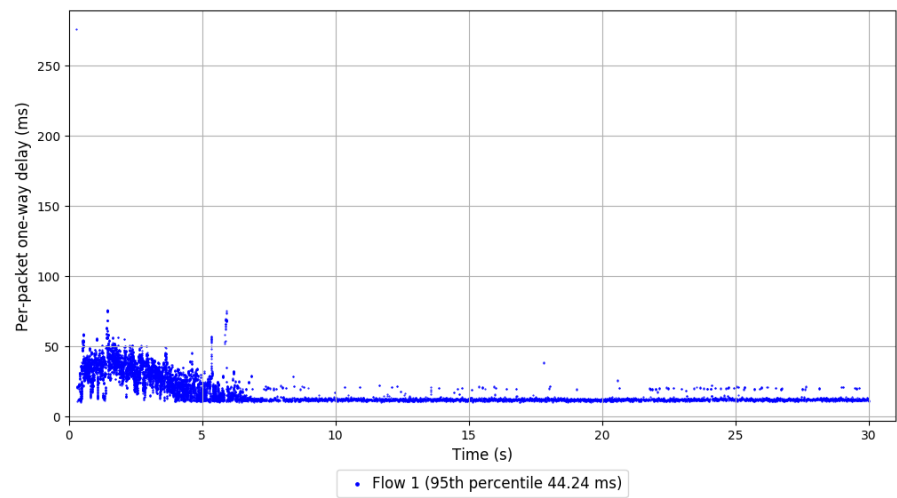
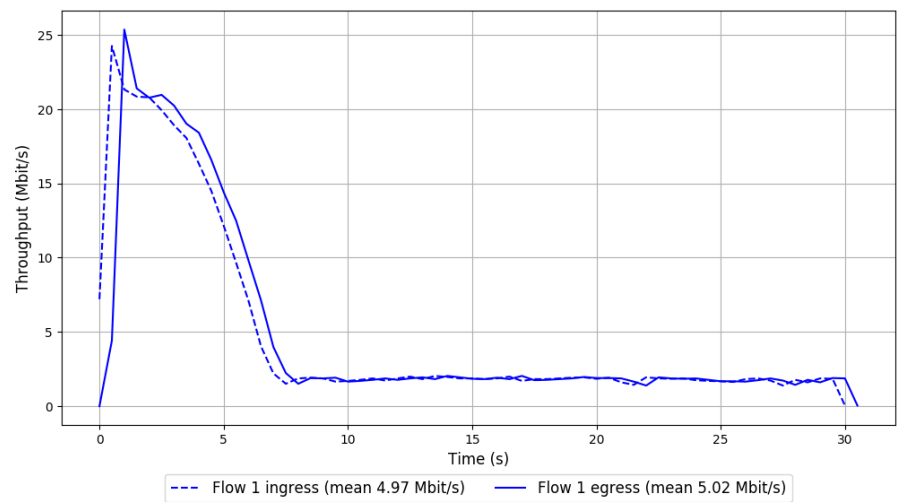
-- Flow 1:

Average throughput: 5.02 Mbit/s

95th percentile per-packet one-way delay: 44.243 ms

Loss rate: 0.00%

Run 3: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: 2018-07-24 05:41:53

End at: 2018-07-24 05:42:23

Local clock offset: 5.418 ms

Remote clock offset: 2.237 ms

Below is generated by plot.py at 2018-07-24 06:40:32

Datalink statistics

-- Total of 1 flow:

Average throughput: 31.01 Mbit/s

95th percentile per-packet one-way delay: 208.298 ms

Loss rate: 0.51%

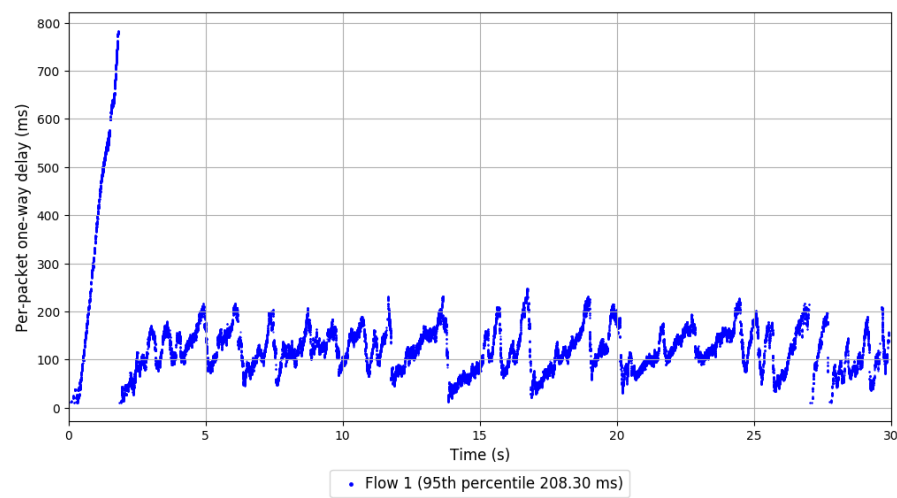
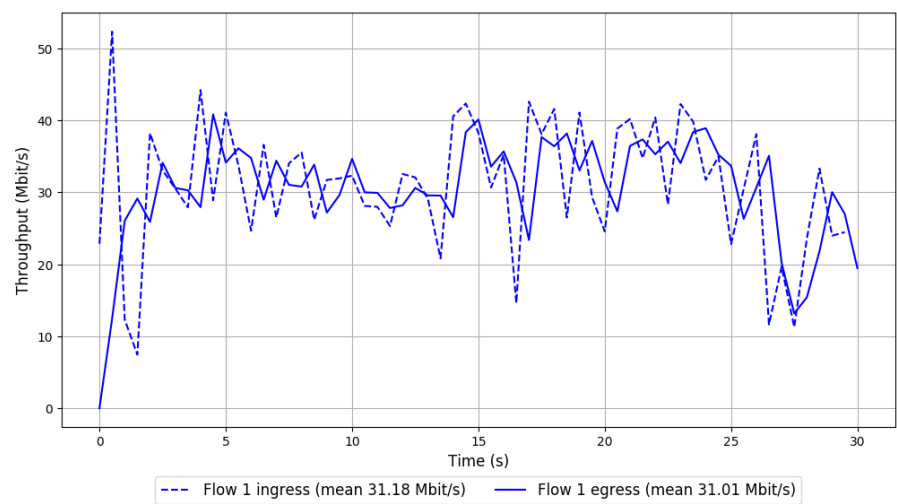
-- Flow 1:

Average throughput: 31.01 Mbit/s

95th percentile per-packet one-way delay: 208.298 ms

Loss rate: 0.51%

Run 1: Report of Verus — Data Link



Run 2: Statistics of Verus

Start at: 2018-07-24 06:04:04

End at: 2018-07-24 06:04:34

Local clock offset: 7.245 ms

Remote clock offset: 2.328 ms

Below is generated by plot.py at 2018-07-24 06:40:32

Datalink statistics

-- Total of 1 flow:

Average throughput: 28.00 Mbit/s

95th percentile per-packet one-way delay: 332.065 ms

Loss rate: 0.52%

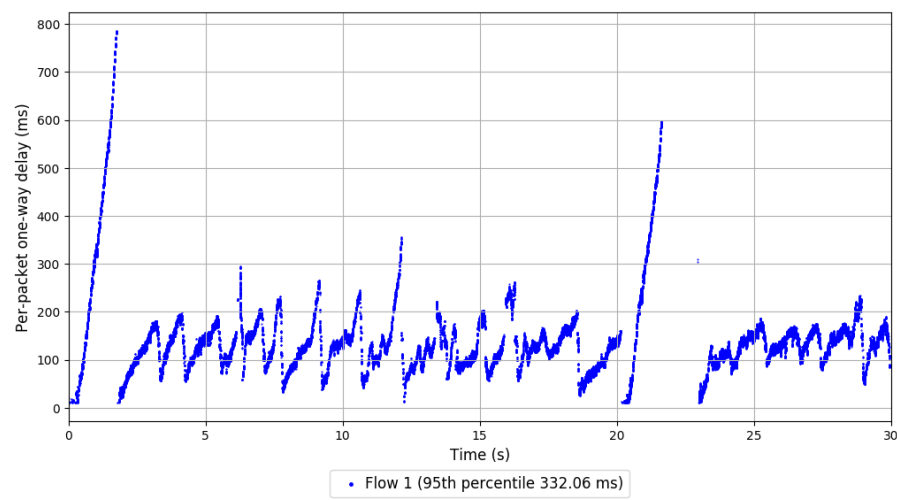
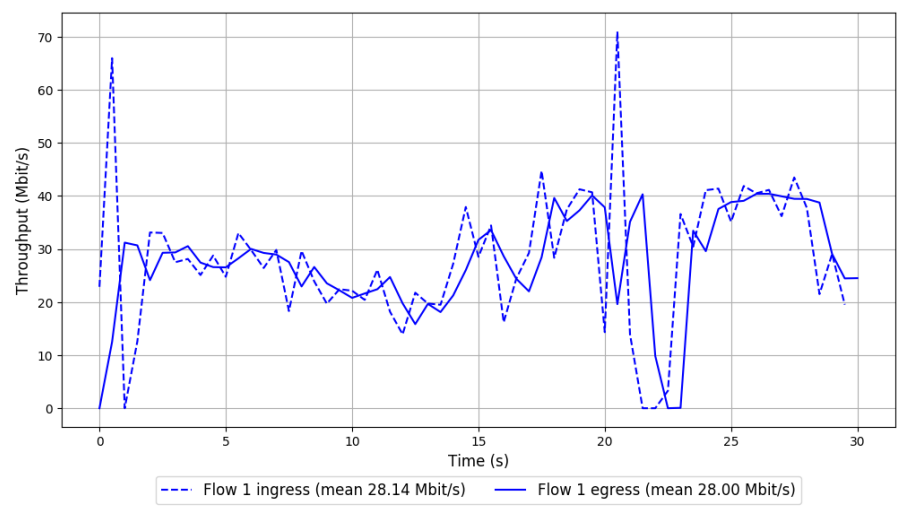
-- Flow 1:

Average throughput: 28.00 Mbit/s

95th percentile per-packet one-way delay: 332.065 ms

Loss rate: 0.52%

Run 2: Report of Verus — Data Link



Run 3: Statistics of Verus

Start at: 2018-07-24 06:26:16

End at: 2018-07-24 06:26:46

Local clock offset: 9.546 ms

Remote clock offset: 2.403 ms

Below is generated by plot.py at 2018-07-24 06:40:32

Datalink statistics

-- Total of 1 flow:

Average throughput: 31.31 Mbit/s

95th percentile per-packet one-way delay: 209.331 ms

Loss rate: 0.32%

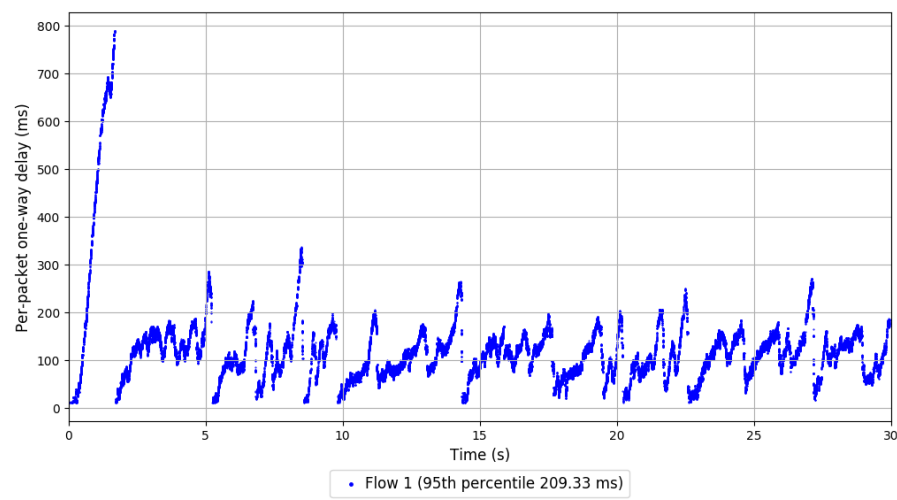
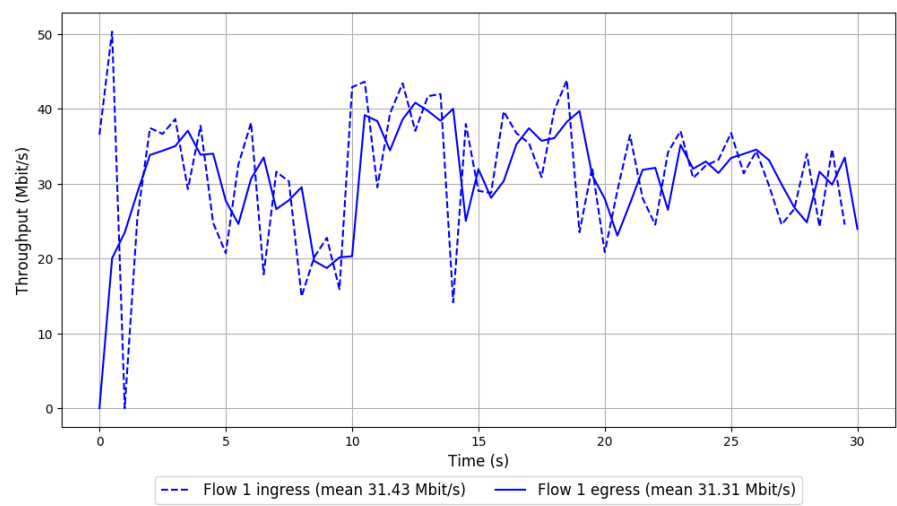
-- Flow 1:

Average throughput: 31.31 Mbit/s

95th percentile per-packet one-way delay: 209.331 ms

Loss rate: 0.32%

Run 3: Report of Verus — Data Link



Run 1: Statistics of PCC-Vivace

Start at: 2018-07-24 05:50:59

End at: 2018-07-24 05:51:29

Local clock offset: 6.338 ms

Remote clock offset: 2.34 ms

Below is generated by plot.py at 2018-07-24 06:40:32

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.80 Mbit/s

95th percentile per-packet one-way delay: 19.510 ms

Loss rate: 0.00%

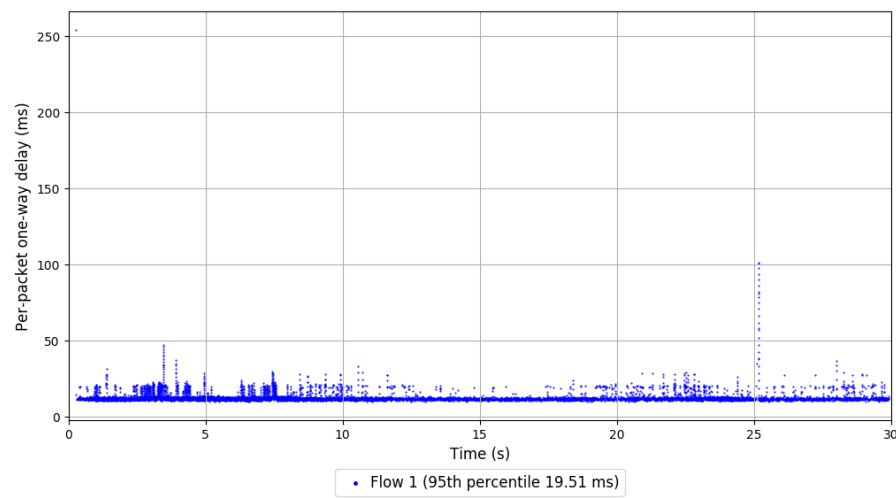
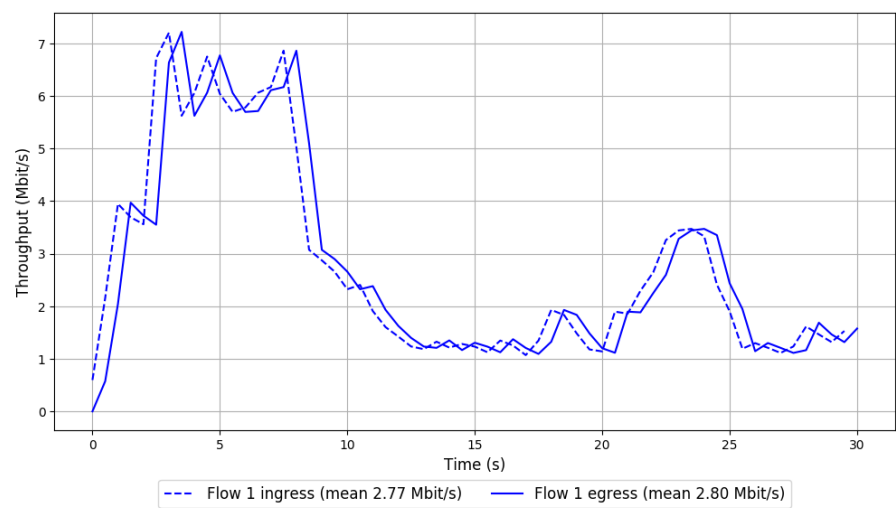
-- Flow 1:

Average throughput: 2.80 Mbit/s

95th percentile per-packet one-way delay: 19.510 ms

Loss rate: 0.00%

Run 1: Report of PCC-Vivace — Data Link



Run 2: Statistics of PCC-Vivace

Start at: 2018-07-24 06:13:16

End at: 2018-07-24 06:13:46

Local clock offset: 7.434 ms

Remote clock offset: 2.366 ms

Below is generated by plot.py at 2018-07-24 06:40:32

Datalink statistics

-- Total of 1 flow:

Average throughput: 3.00 Mbit/s

95th percentile per-packet one-way delay: 19.325 ms

Loss rate: 0.00%

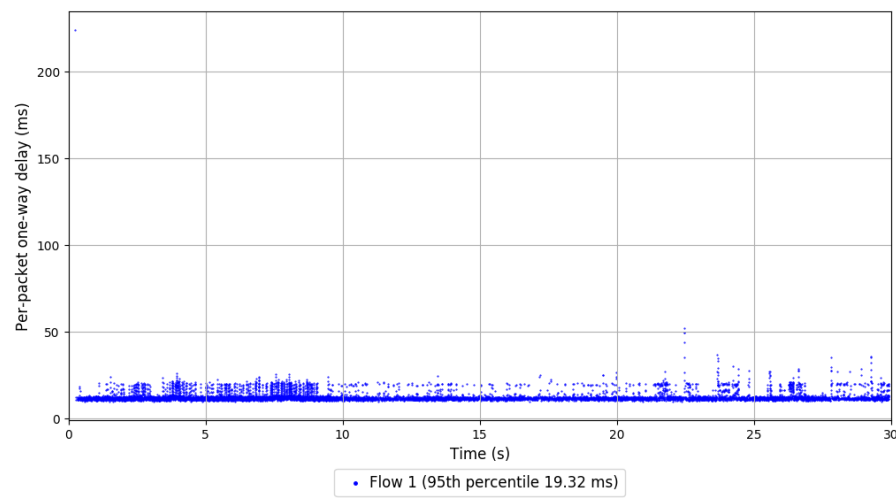
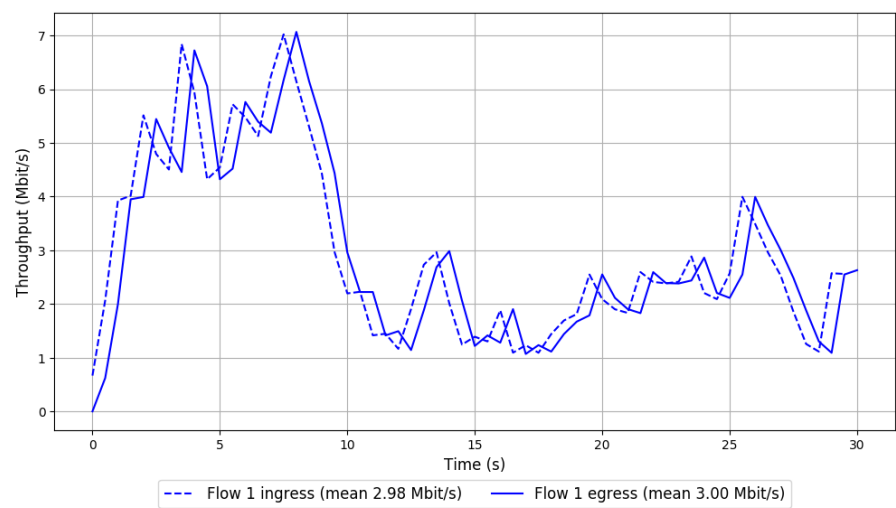
-- Flow 1:

Average throughput: 3.00 Mbit/s

95th percentile per-packet one-way delay: 19.325 ms

Loss rate: 0.00%

Run 2: Report of PCC-Vivace — Data Link



Run 3: Statistics of PCC-Vivace

Start at: 2018-07-24 06:35:24

End at: 2018-07-24 06:35:54

Local clock offset: 8.936 ms

Remote clock offset: 2.408 ms

Below is generated by plot.py at 2018-07-24 06:40:32

Datalink statistics

-- Total of 1 flow:

Average throughput: 3.58 Mbit/s

95th percentile per-packet one-way delay: 18.842 ms

Loss rate: 0.00%

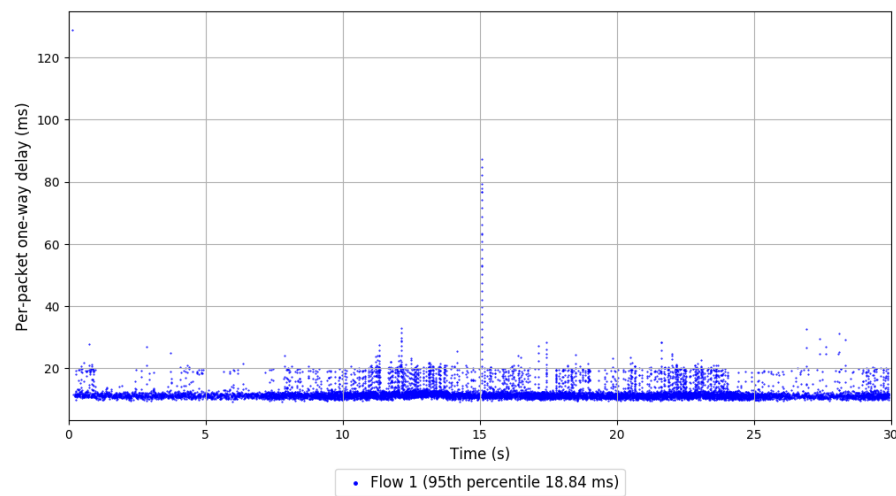
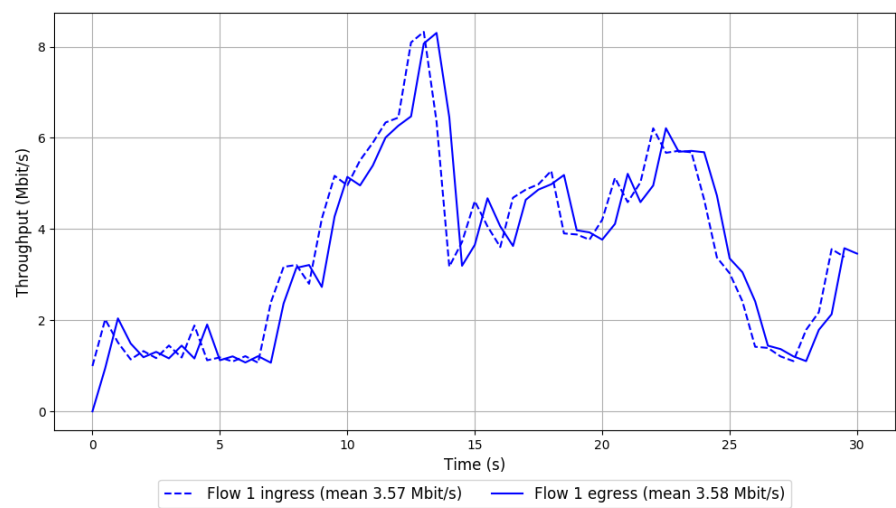
-- Flow 1:

Average throughput: 3.58 Mbit/s

95th percentile per-packet one-way delay: 18.842 ms

Loss rate: 0.00%

Run 3: Report of PCC-Vivace — Data Link



Run 1: Statistics of WebRTC media

Start at: 2018-07-24 05:37:59

End at: 2018-07-24 05:38:30

Local clock offset: 5.017 ms

Remote clock offset: 2.187 ms

Below is generated by plot.py at 2018-07-24 06:40:32

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.18 Mbit/s

95th percentile per-packet one-way delay: 19.552 ms

Loss rate: 0.00%

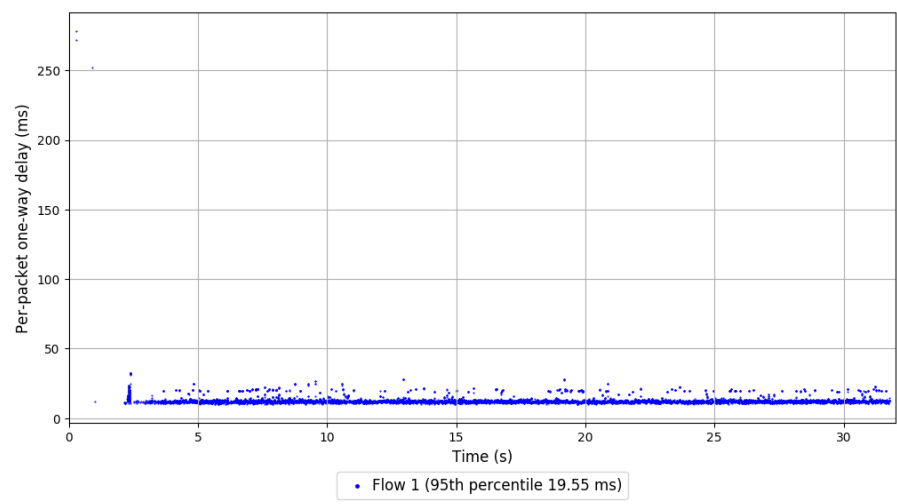
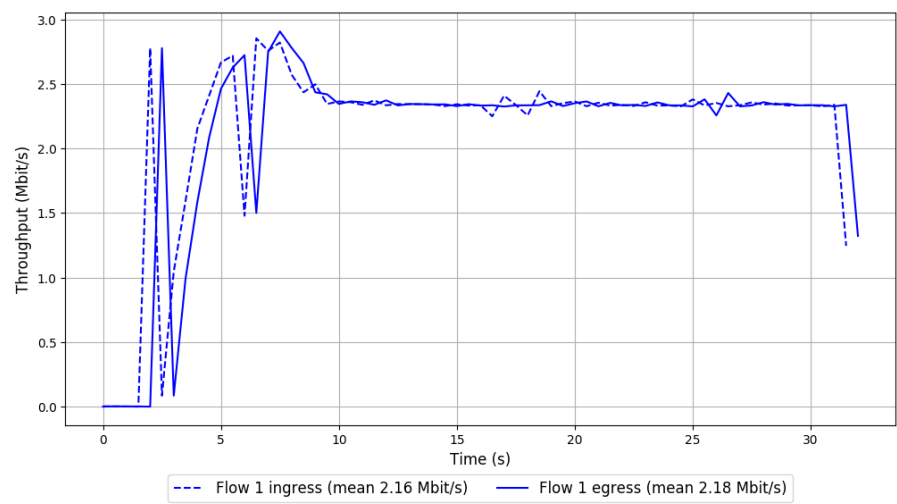
-- Flow 1:

Average throughput: 2.18 Mbit/s

95th percentile per-packet one-way delay: 19.552 ms

Loss rate: 0.00%

Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

Start at: 2018-07-24 06:00:10

End at: 2018-07-24 06:00:40

Local clock offset: 7.054 ms

Remote clock offset: 2.24 ms

Below is generated by plot.py at 2018-07-24 06:40:32

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.99 Mbit/s

95th percentile per-packet one-way delay: 20.159 ms

Loss rate: 0.00%

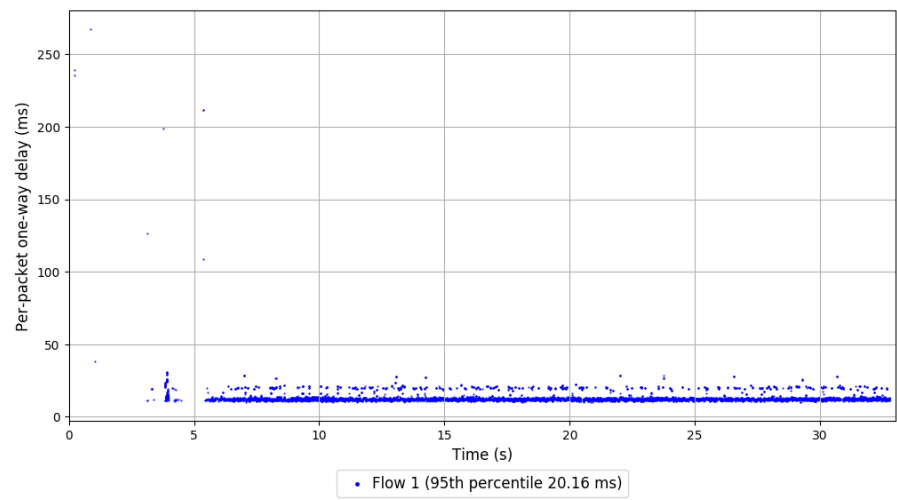
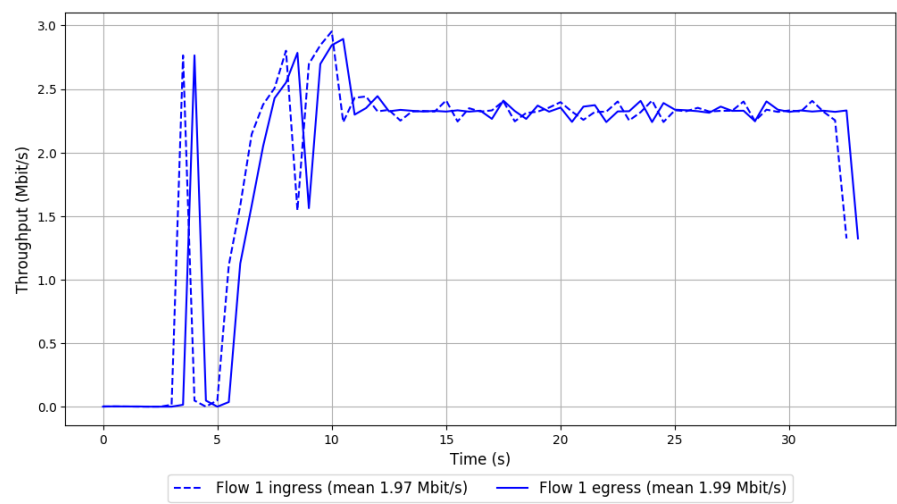
-- Flow 1:

Average throughput: 1.99 Mbit/s

95th percentile per-packet one-way delay: 20.159 ms

Loss rate: 0.00%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2018-07-24 06:22:22

End at: 2018-07-24 06:22:52

Local clock offset: 8.775 ms

Remote clock offset: 2.409 ms

Below is generated by plot.py at 2018-07-24 06:40:32

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.98 Mbit/s

95th percentile per-packet one-way delay: 20.222 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 1.98 Mbit/s

95th percentile per-packet one-way delay: 20.222 ms

Loss rate: 0.00%

Run 3: Report of WebRTC media — Data Link

