

Pantheon Report

Generated at 2018-07-09 19:56:10 (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.

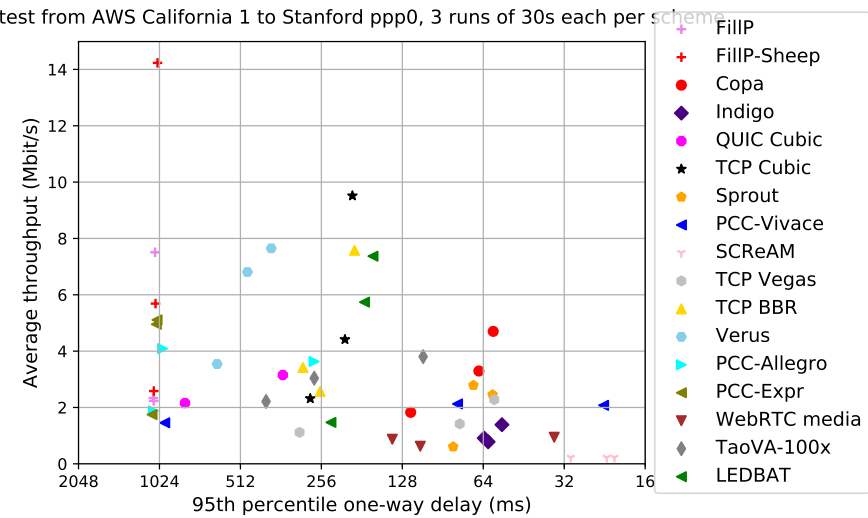
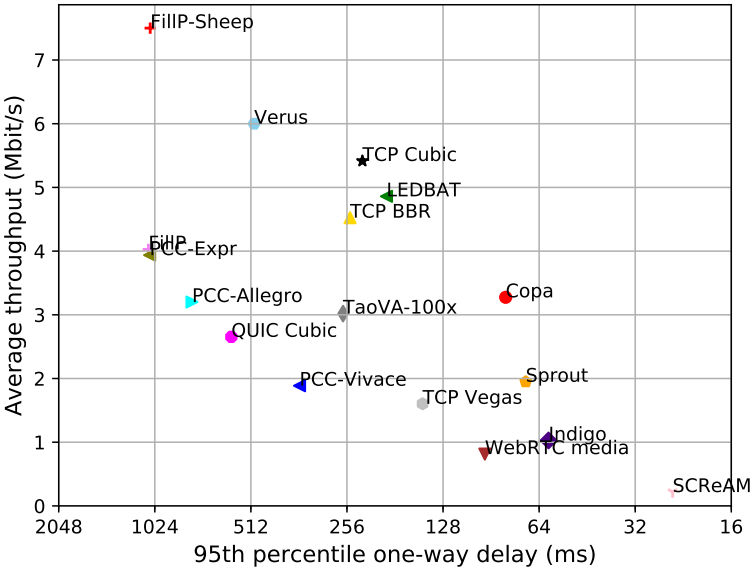
Increased UDP receive buffer to 16 MB (default) and 32 MB (max).

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

Git summary:

```
branch: master @ 9250dbeec7fb57193cdff1ba8c440b4e16ab30f0
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ 37162fe9af85249aeccac061c93e75640ef710b5
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
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)



scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	4.52	250.36	0.31
Copa	3	3.27	81.46	0.18
TCP Cubic	3	5.41	229.01	0.33
FillP	3	4.03	1072.65	72.91
FillP-Sheep	3	7.50	1058.51	37.10
Indigo	3	1.03	59.80	0.00
LEDBAT	3	4.86	192.54	0.20
PCC-Allegro	3	3.20	782.80	18.65
PCC-Expr	3	3.94	1063.09	36.69
QUIC Cubic	2	2.66	589.53	1.30
SCReAM	3	0.22	24.43	0.00
Sprout	3	1.95	70.51	0.03
TaoVA-100x	3	3.02	263.39	0.22
TCP Vegas	3	1.61	148.36	0.12
Verus	3	6.00	500.17	1.84
PCC-Vivace	3	1.89	360.53	1.11
WebRTC media	3	0.81	94.68	0.07

Run 1: Statistics of TCP BBR

Start at: 2018-07-09 19:01:26

End at: 2018-07-09 19:01:56

Local clock offset: 0.14 ms

Remote clock offset: -1.005 ms

Below is generated by plot.py at 2018-07-09 19:55:29

Datalink statistics

-- Total of 1 flow:

Average throughput: 7.58 Mbit/s

95th percentile per-packet one-way delay: 192.765 ms

Loss rate: 0.16%

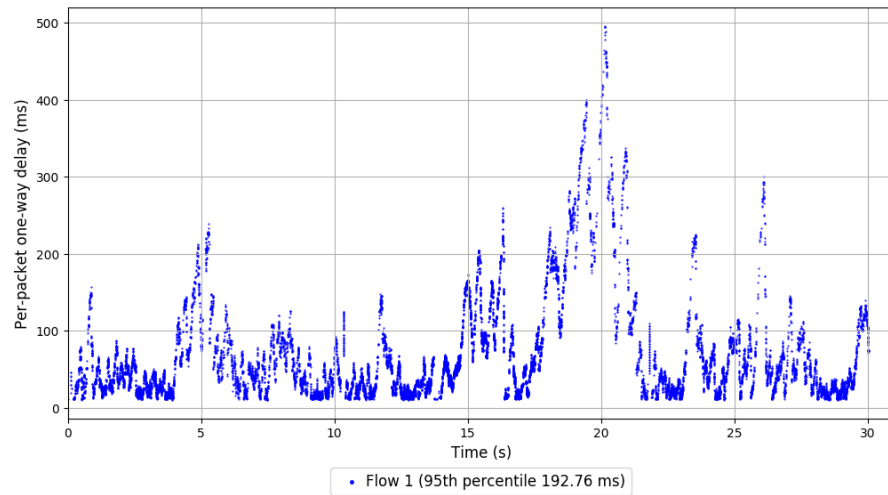
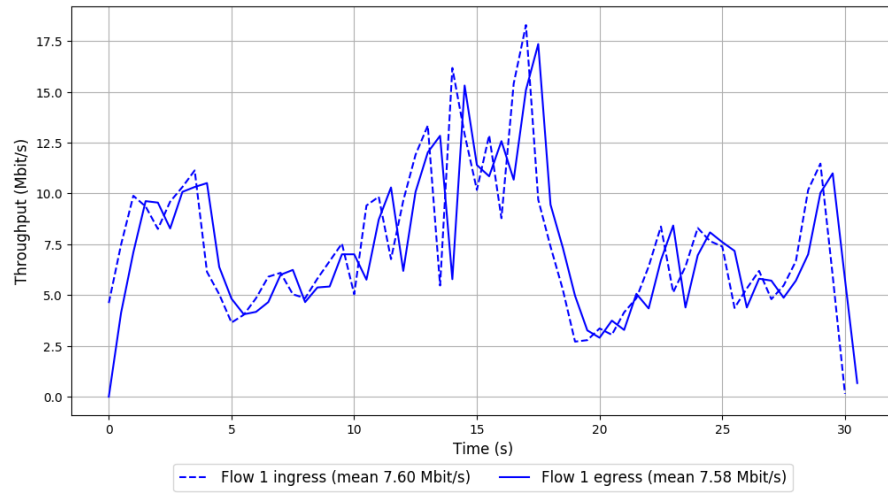
-- Flow 1:

Average throughput: 7.58 Mbit/s

95th percentile per-packet one-way delay: 192.765 ms

Loss rate: 0.16%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-07-09 19:23:33

End at: 2018-07-09 19:24:03

Local clock offset: 0.575 ms

Remote clock offset: 2.724 ms

Below is generated by plot.py at 2018-07-09 19:55:29

Datalink statistics

-- Total of 1 flow:

Average throughput: 3.42 Mbit/s

95th percentile per-packet one-way delay: 299.653 ms

Loss rate: 0.35%

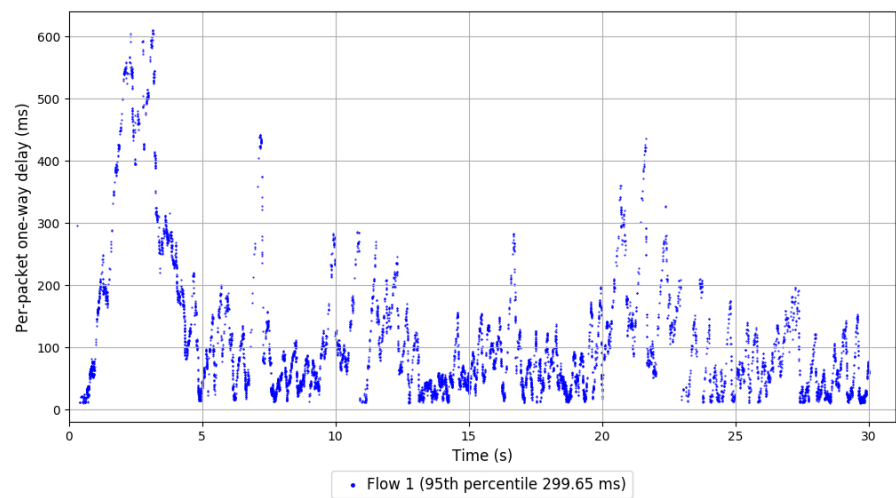
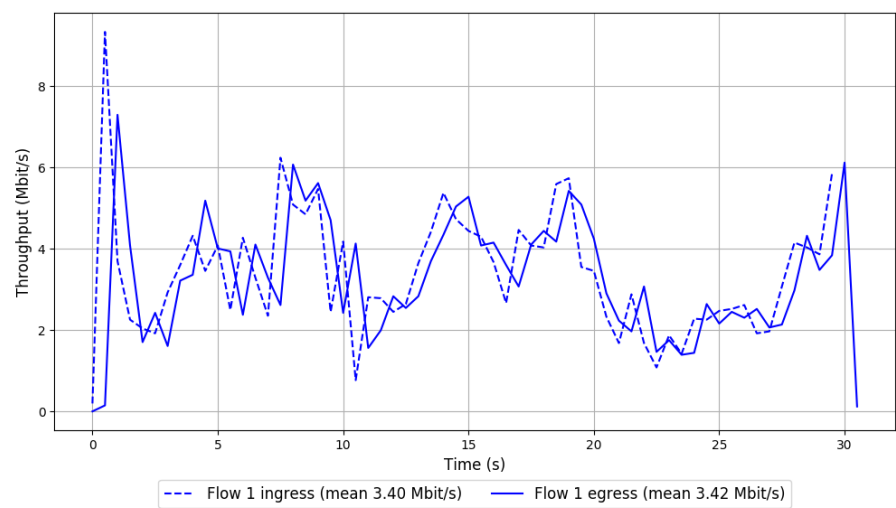
-- Flow 1:

Average throughput: 3.42 Mbit/s

95th percentile per-packet one-way delay: 299.653 ms

Loss rate: 0.35%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-07-09 19:45:34

End at: 2018-07-09 19:46:04

Local clock offset: 0.798 ms

Remote clock offset: 2.934 ms

Below is generated by plot.py at 2018-07-09 19:55:29

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.57 Mbit/s

95th percentile per-packet one-way delay: 258.650 ms

Loss rate: 0.42%

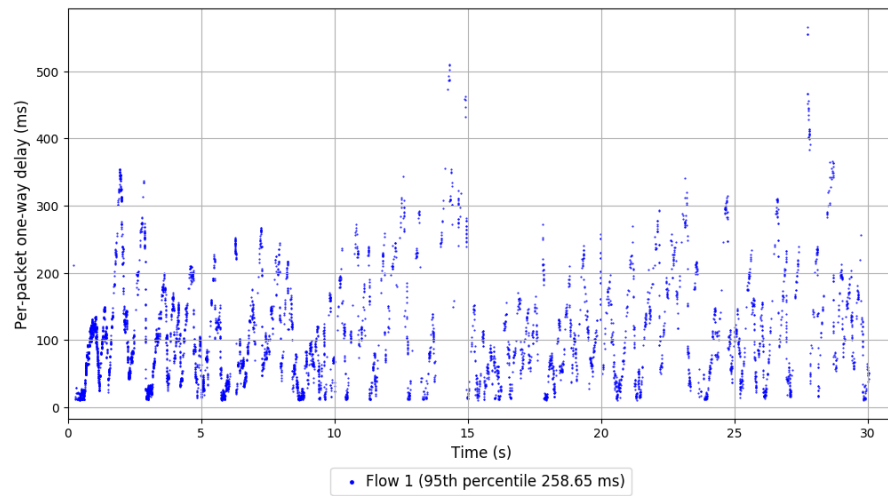
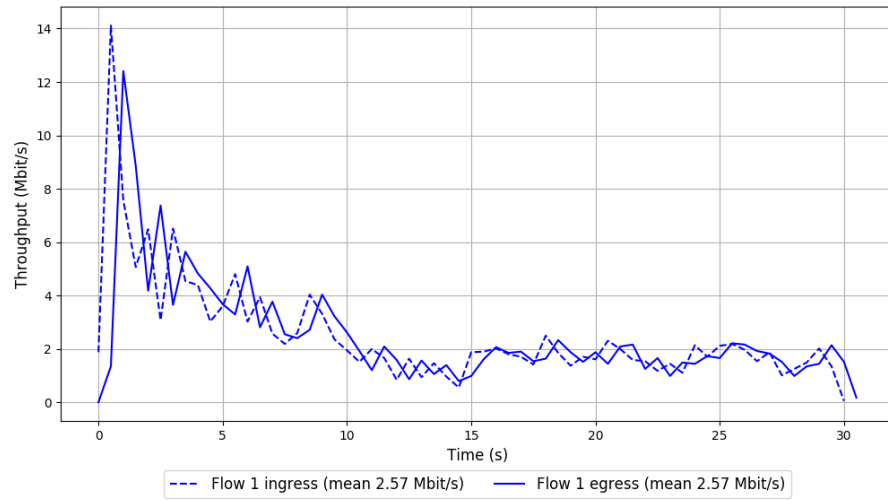
-- Flow 1:

Average throughput: 2.57 Mbit/s

95th percentile per-packet one-way delay: 258.650 ms

Loss rate: 0.42%

Run 3: Report of TCP BBR — Data Link

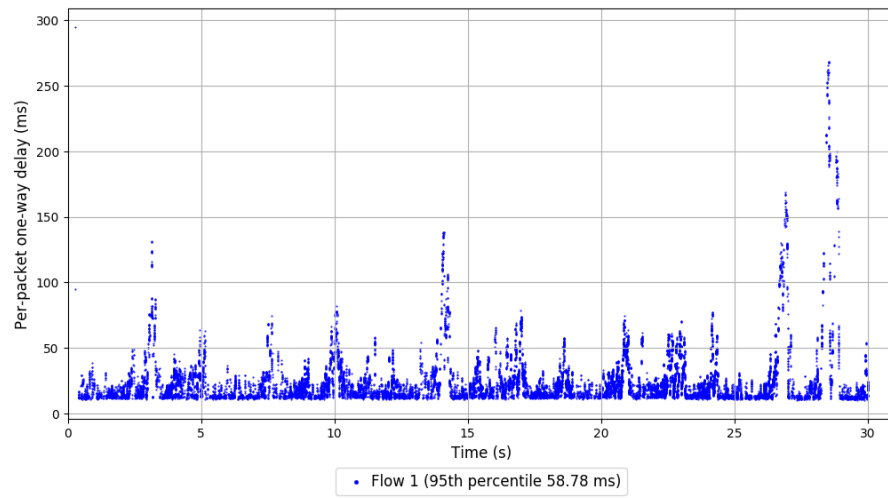
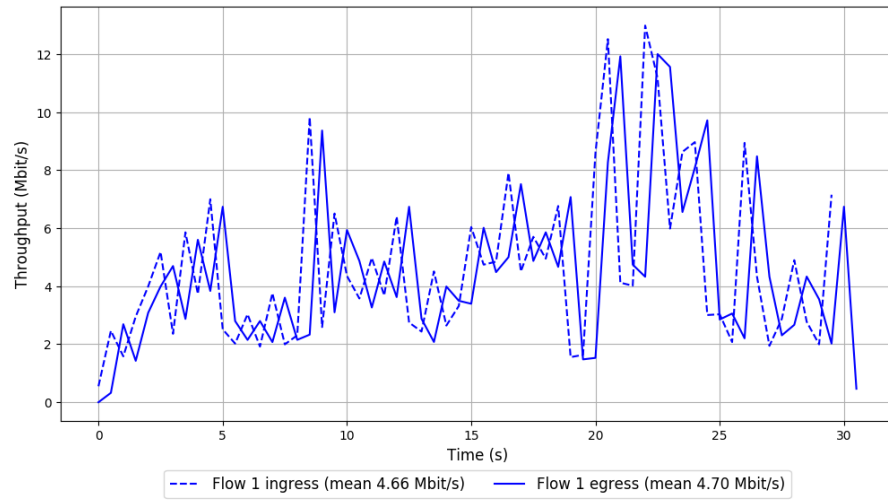


Run 1: Statistics of Copa

Start at: 2018-07-09 18:53:40
End at: 2018-07-09 18:54:10
Local clock offset: 4.039 ms
Remote clock offset: -0.806 ms

Below is generated by plot.py at 2018-07-09 19:55:30
Datalink statistics
-- Total of 1 flow:
Average throughput: 4.70 Mbit/s
95th percentile per-packet one-way delay: 58.781 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 4.70 Mbit/s
95th percentile per-packet one-way delay: 58.781 ms
Loss rate: 0.01%

Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

Start at: 2018-07-09 19:15:42

End at: 2018-07-09 19:16:12

Local clock offset: 0.516 ms

Remote clock offset: 1.733 ms

Below is generated by plot.py at 2018-07-09 19:55:30

Datalink statistics

-- Total of 1 flow:

Average throughput: 3.29 Mbit/s

95th percentile per-packet one-way delay: 66.451 ms

Loss rate: 0.16%

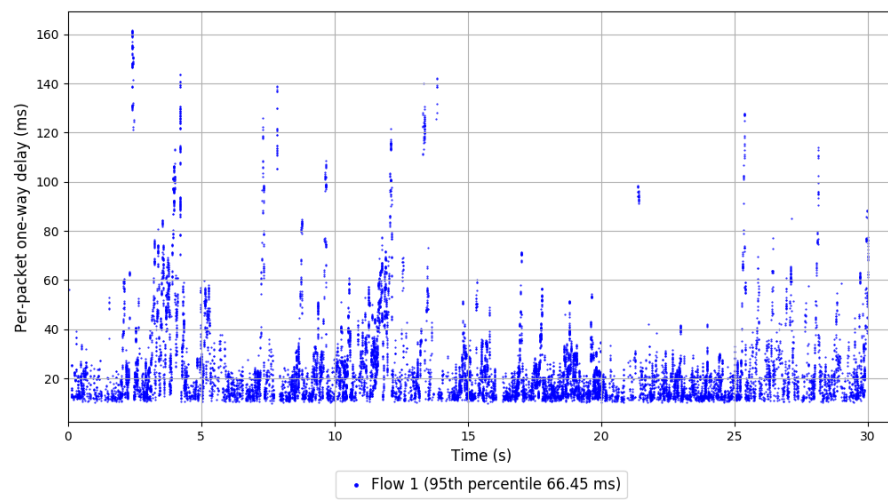
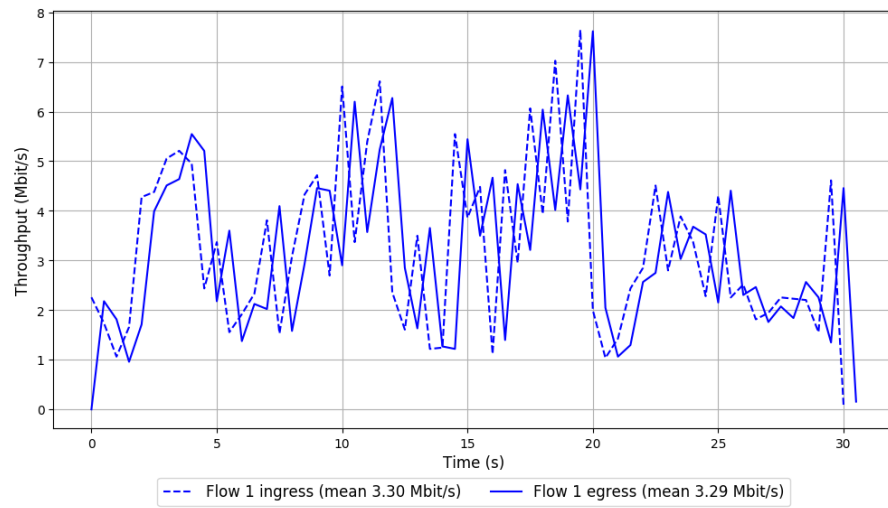
-- Flow 1:

Average throughput: 3.29 Mbit/s

95th percentile per-packet one-way delay: 66.451 ms

Loss rate: 0.16%

Run 2: Report of Copa — Data Link



Run 3: Statistics of Copa

Start at: 2018-07-09 19:37:47

End at: 2018-07-09 19:38:17

Local clock offset: 0.793 ms

Remote clock offset: 3.55 ms

Below is generated by plot.py at 2018-07-09 19:55:30

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.83 Mbit/s

95th percentile per-packet one-way delay: 119.154 ms

Loss rate: 0.36%

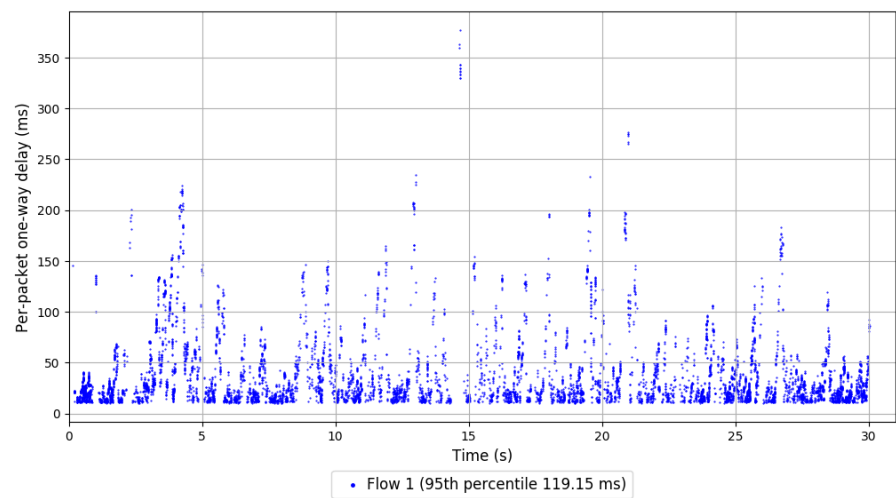
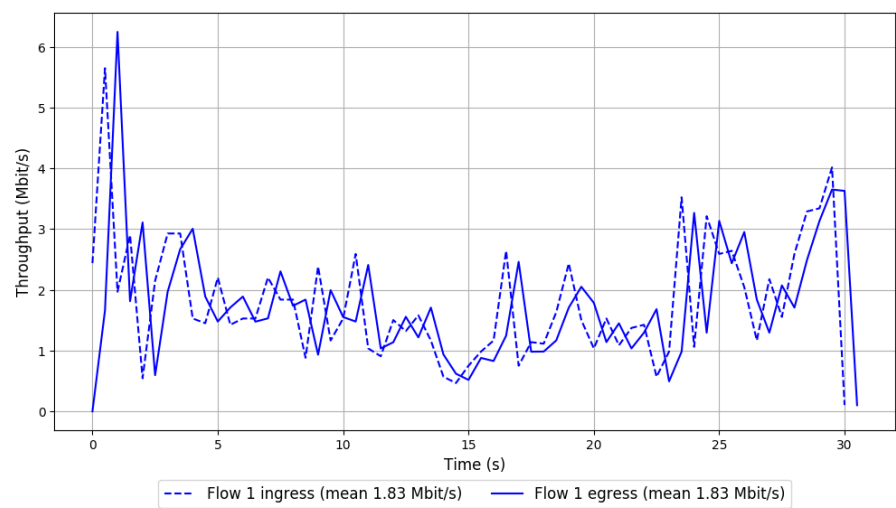
-- Flow 1:

Average throughput: 1.83 Mbit/s

95th percentile per-packet one-way delay: 119.154 ms

Loss rate: 0.36%

Run 3: Report of Copa — Data Link

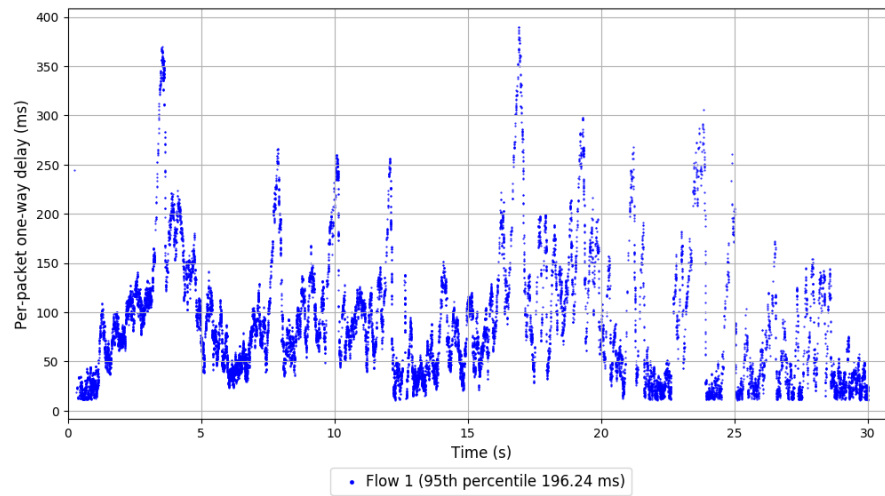
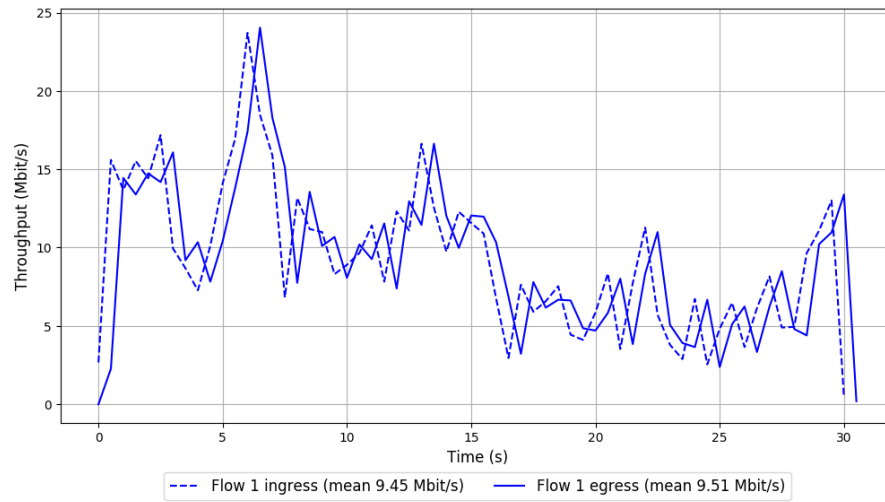


Run 1: Statistics of TCP Cubic

Start at: 2018-07-09 19:05:20
End at: 2018-07-09 19:05:50
Local clock offset: 0.243 ms
Remote clock offset: -1.095 ms

Below is generated by plot.py at 2018-07-09 19:55:31
Datalink statistics
-- Total of 1 flow:
Average throughput: 9.51 Mbit/s
95th percentile per-packet one-way delay: 196.238 ms
Loss rate: 0.12%
-- Flow 1:
Average throughput: 9.51 Mbit/s
95th percentile per-packet one-way delay: 196.238 ms
Loss rate: 0.12%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-07-09 19:27:26

End at: 2018-07-09 19:27:56

Local clock offset: 0.564 ms

Remote clock offset: 3.047 ms

Below is generated by plot.py at 2018-07-09 19:55:31

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.32 Mbit/s

95th percentile per-packet one-way delay: 281.565 ms

Loss rate: 0.53%

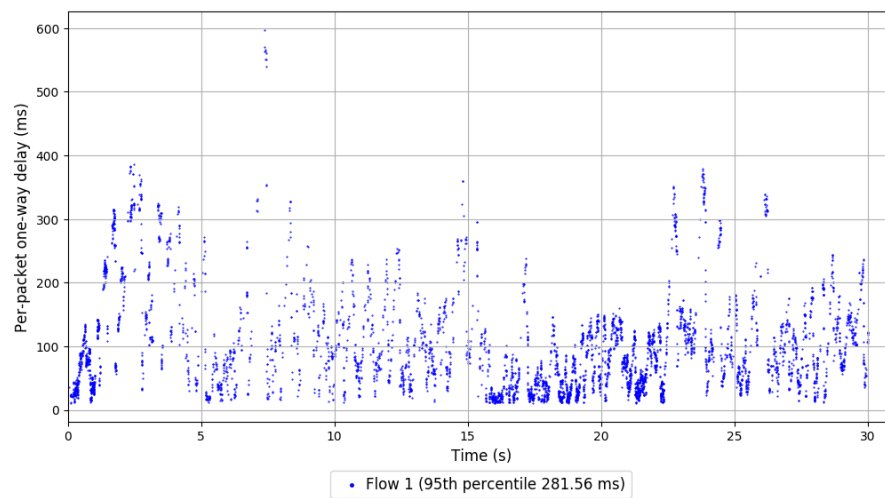
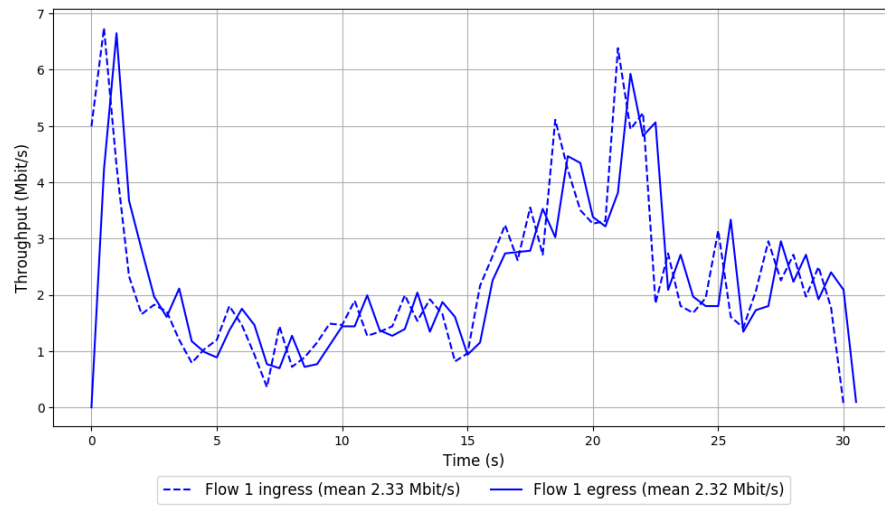
-- Flow 1:

Average throughput: 2.32 Mbit/s

95th percentile per-packet one-way delay: 281.565 ms

Loss rate: 0.53%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-07-09 19:49:27

End at: 2018-07-09 19:49:57

Local clock offset: 0.858 ms

Remote clock offset: 2.668 ms

Below is generated by plot.py at 2018-07-09 19:55:31

Datalink statistics

-- Total of 1 flow:

Average throughput: 4.41 Mbit/s

95th percentile per-packet one-way delay: 209.216 ms

Loss rate: 0.34%

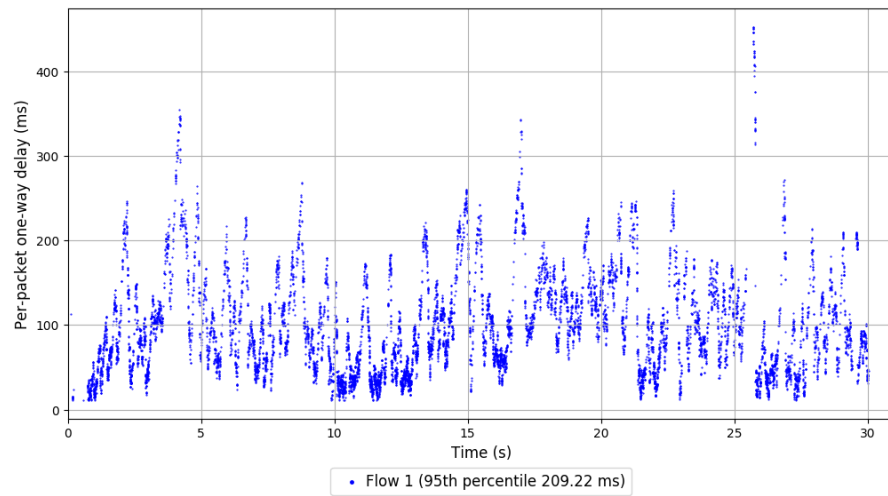
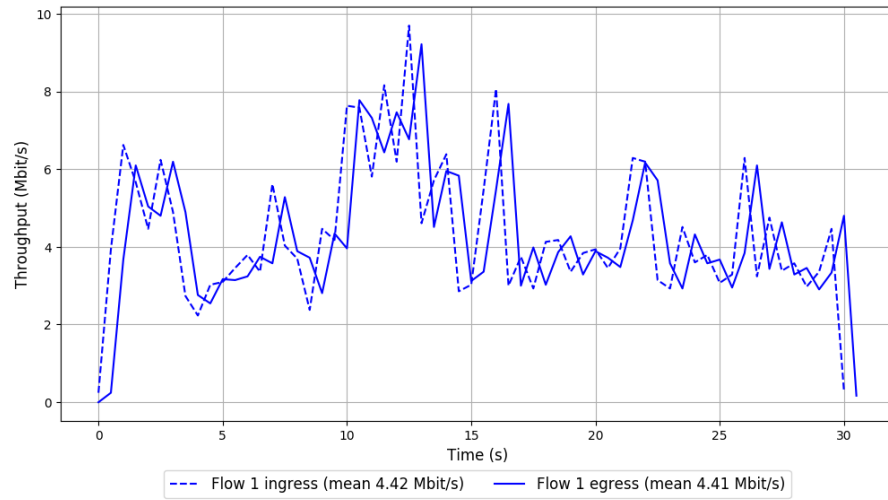
-- Flow 1:

Average throughput: 4.41 Mbit/s

95th percentile per-packet one-way delay: 209.216 ms

Loss rate: 0.34%

Run 3: Report of TCP Cubic — Data Link

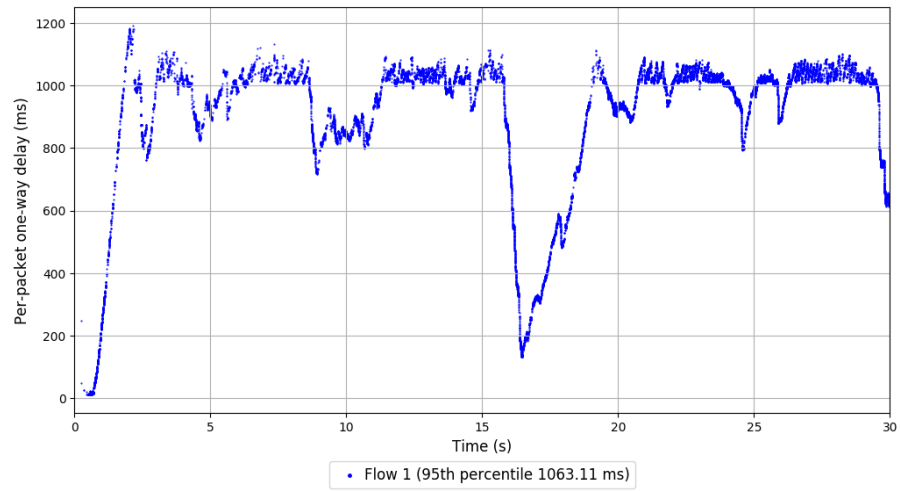
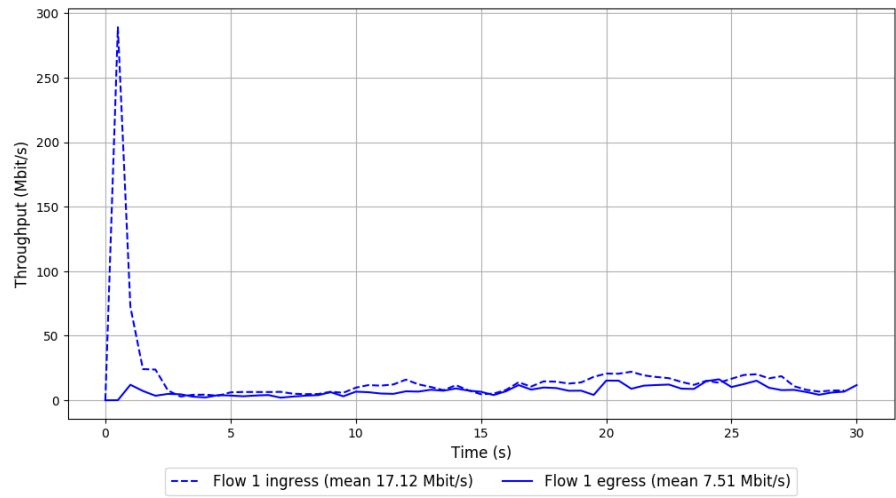


Run 1: Statistics of FillP

Start at: 2018-07-09 18:58:51
End at: 2018-07-09 18:59:21
Local clock offset: 0.07 ms
Remote clock offset: -0.855 ms

Below is generated by plot.py at 2018-07-09 19:55:41
Datalink statistics
-- Total of 1 flow:
Average throughput: 7.51 Mbit/s
95th percentile per-packet one-way delay: 1063.105 ms
Loss rate: 56.48%
-- Flow 1:
Average throughput: 7.51 Mbit/s
95th percentile per-packet one-way delay: 1063.105 ms
Loss rate: 56.48%

Run 1: Report of FillP — Data Link



Run 2: Statistics of FillP

Start at: 2018-07-09 19:20:58

End at: 2018-07-09 19:21:28

Local clock offset: 0.535 ms

Remote clock offset: 2.518 ms

Below is generated by plot.py at 2018-07-09 19:55:41

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.23 Mbit/s

95th percentile per-packet one-way delay: 1075.920 ms

Loss rate: 75.79%

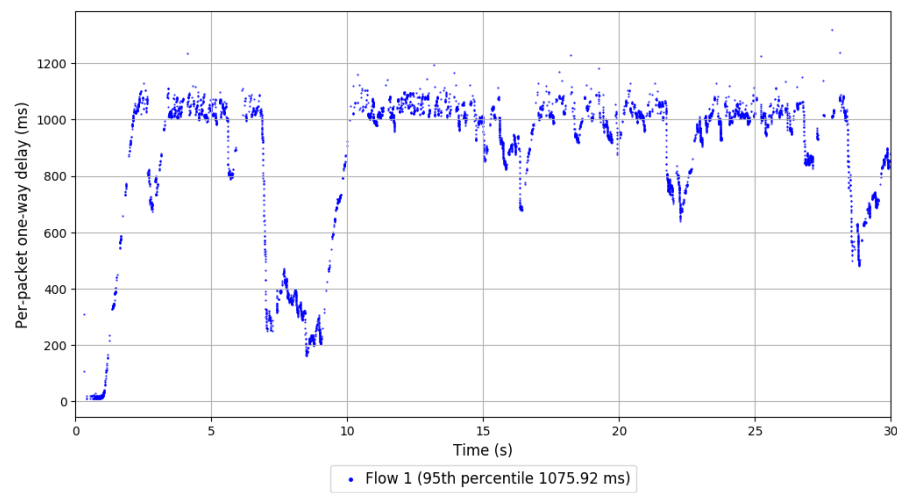
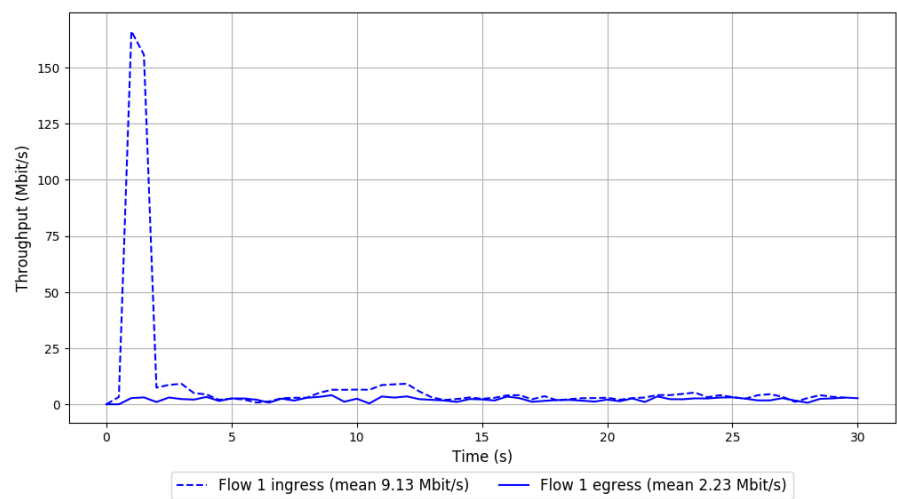
-- Flow 1:

Average throughput: 2.23 Mbit/s

95th percentile per-packet one-way delay: 1075.920 ms

Loss rate: 75.79%

Run 2: Report of FillP — Data Link



Run 3: Statistics of FillP

Start at: 2018-07-09 19:42:58

End at: 2018-07-09 19:43:28

Local clock offset: 0.873 ms

Remote clock offset: 3.214 ms

Below is generated by plot.py at 2018-07-09 19:55:41

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.34 Mbit/s

95th percentile per-packet one-way delay: 1078.931 ms

Loss rate: 86.47%

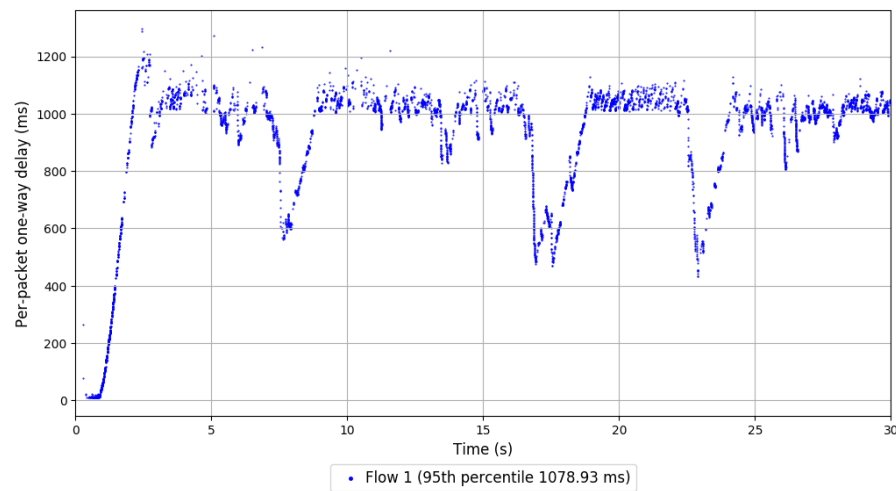
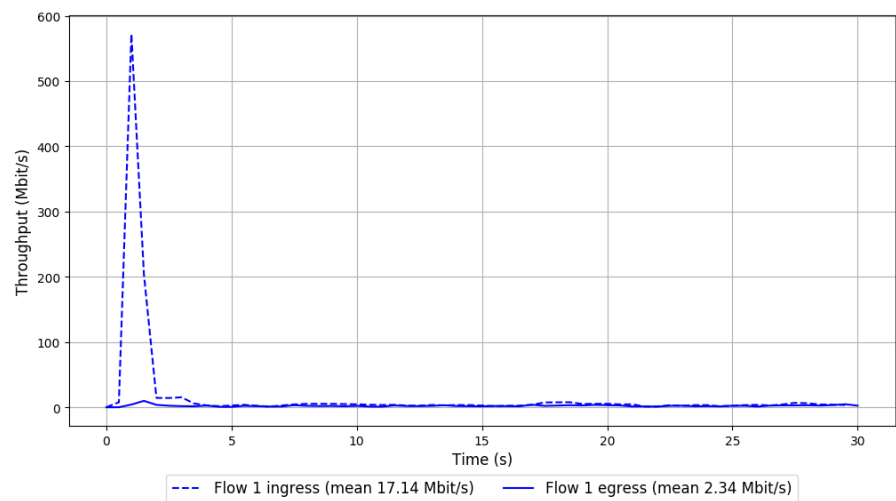
-- Flow 1:

Average throughput: 2.34 Mbit/s

95th percentile per-packet one-way delay: 1078.931 ms

Loss rate: 86.47%

Run 3: Report of FillP — Data Link



Run 1: Statistics of FillP-Sheep

Start at: 2018-07-09 18:54:57

End at: 2018-07-09 18:55:27

Local clock offset: 3.304 ms

Remote clock offset: -0.868 ms

Below is generated by plot.py at 2018-07-09 19:55:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 14.23 Mbit/s

95th percentile per-packet one-way delay: 1041.172 ms

Loss rate: 26.27%

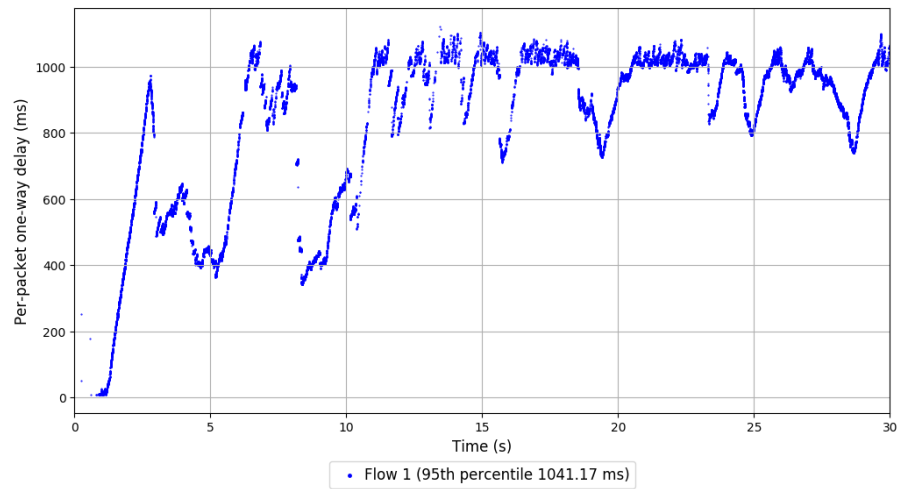
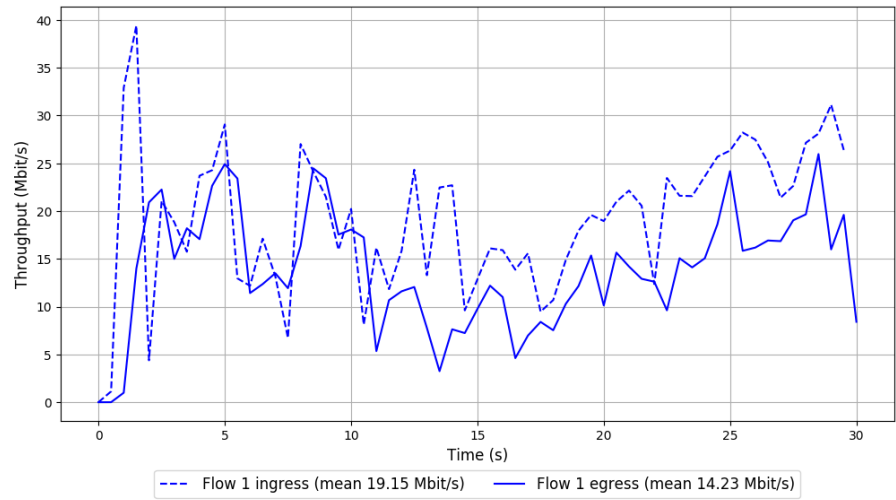
-- Flow 1:

Average throughput: 14.23 Mbit/s

95th percentile per-packet one-way delay: 1041.172 ms

Loss rate: 26.27%

Run 1: Report of FillP-Sheep — Data Link



Run 2: Statistics of FillP-Sheep

Start at: 2018-07-09 19:16:59

End at: 2018-07-09 19:17:30

Local clock offset: 0.603 ms

Remote clock offset: 2.039 ms

Below is generated by plot.py at 2018-07-09 19:55:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 5.69 Mbit/s

95th percentile per-packet one-way delay: 1059.313 ms

Loss rate: 36.12%

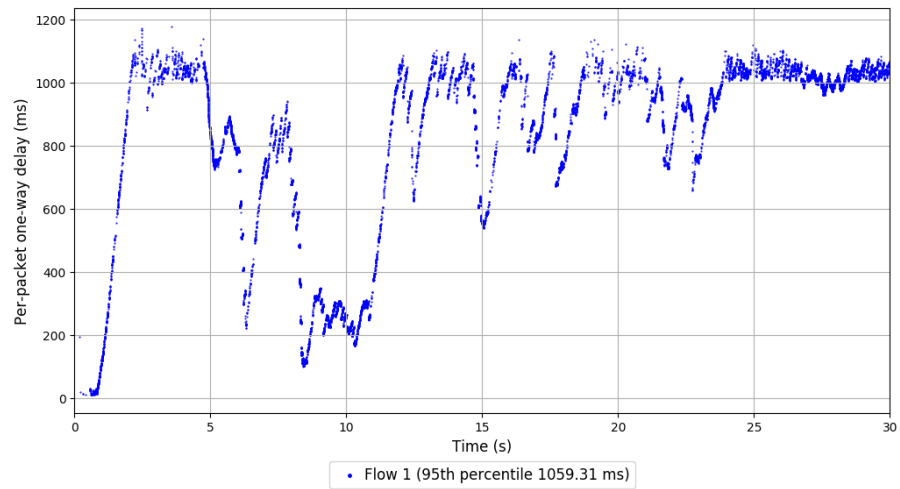
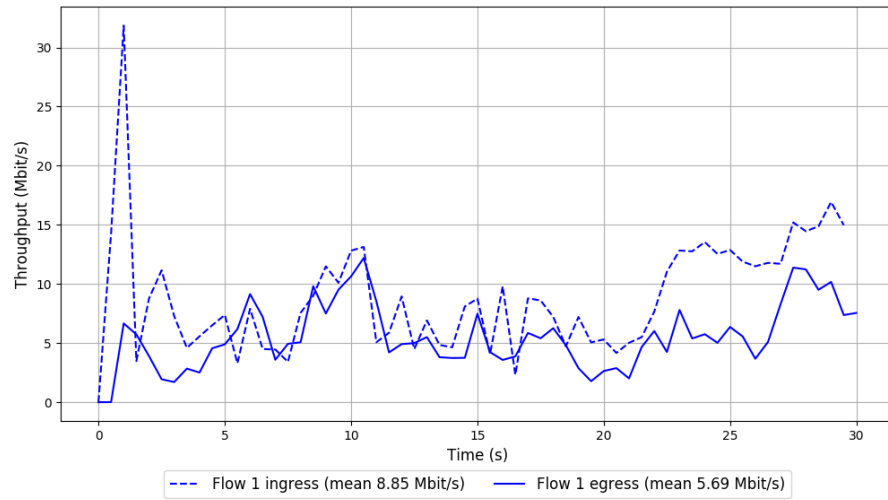
-- Flow 1:

Average throughput: 5.69 Mbit/s

95th percentile per-packet one-way delay: 1059.313 ms

Loss rate: 36.12%

Run 2: Report of FillP-Sheep — Data Link



Run 3: Statistics of FillP-Sheep

Start at: 2018-07-09 19:39:05

End at: 2018-07-09 19:39:35

Local clock offset: 0.797 ms

Remote clock offset: 3.625 ms

Below is generated by plot.py at 2018-07-09 19:55:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.58 Mbit/s

95th percentile per-packet one-way delay: 1075.040 ms

Loss rate: 48.90%

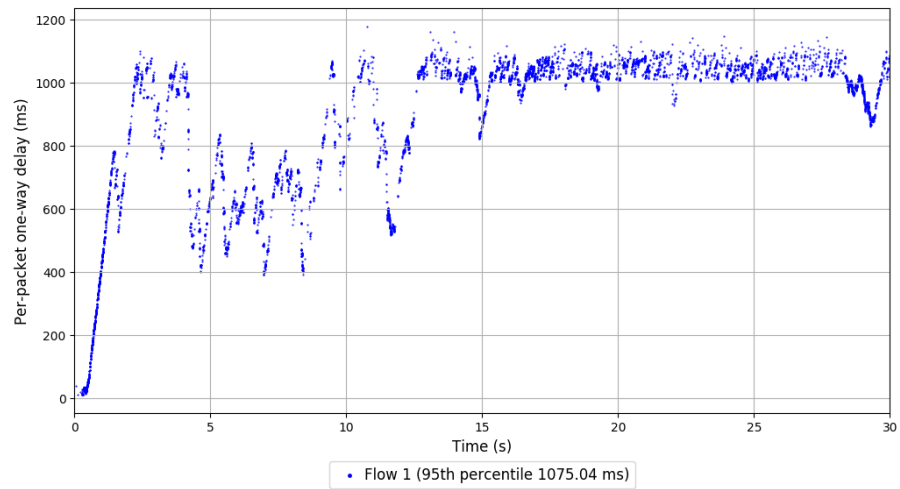
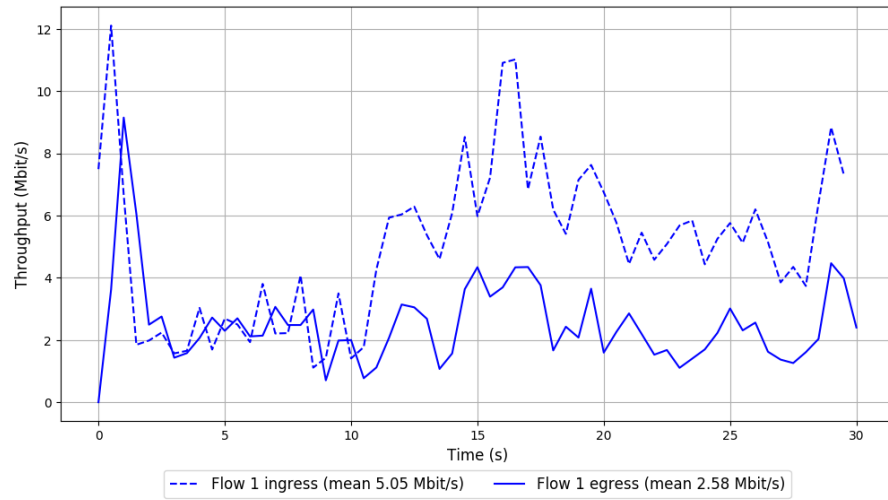
-- Flow 1:

Average throughput: 2.58 Mbit/s

95th percentile per-packet one-way delay: 1075.040 ms

Loss rate: 48.90%

Run 3: Report of FillP-Sheep — Data Link

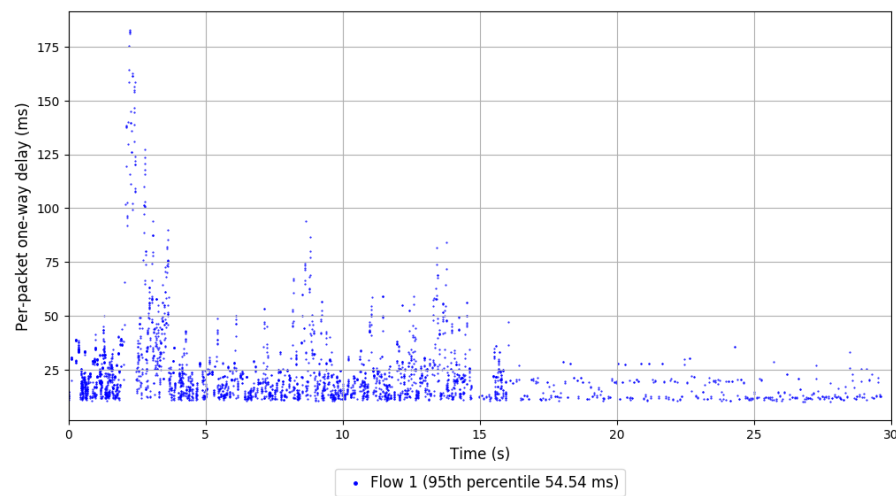
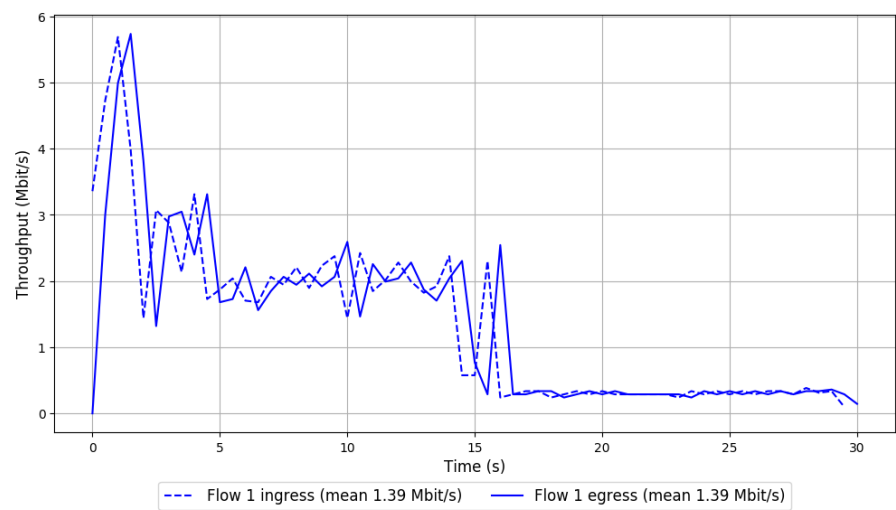


```
Run 1: Statistics of Indigo

Start at: 2018-07-09 19:06:38
End at: 2018-07-09 19:07:08
Local clock offset: 0.319 ms
Remote clock offset: -1.015 ms

# Below is generated by plot.py at 2018-07-09 19:55:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.39 Mbit/s
95th percentile per-packet one-way delay: 54.540 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.39 Mbit/s
95th percentile per-packet one-way delay: 54.540 ms
Loss rate: 0.00%
```

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-07-09 19:28:44

End at: 2018-07-09 19:29:14

Local clock offset: 0.589 ms

Remote clock offset: 3.098 ms

Below is generated by plot.py at 2018-07-09 19:55:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.91 Mbit/s

95th percentile per-packet one-way delay: 63.494 ms

Loss rate: 0.00%

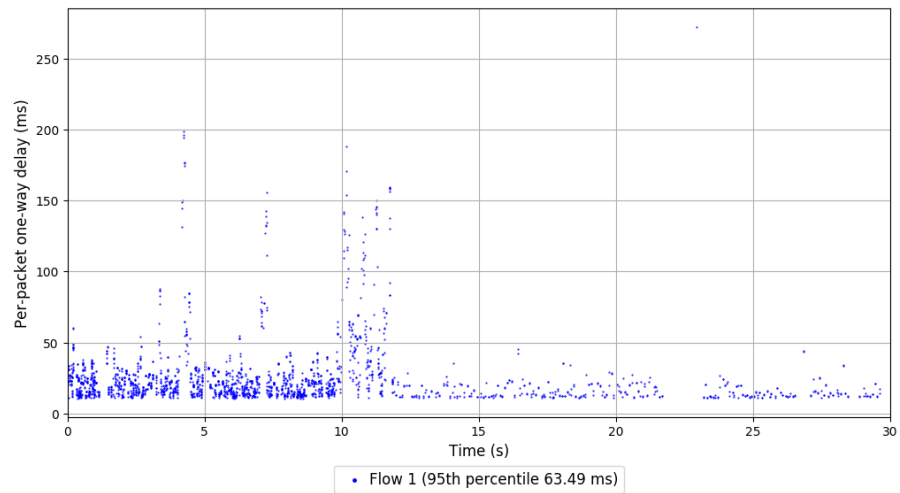
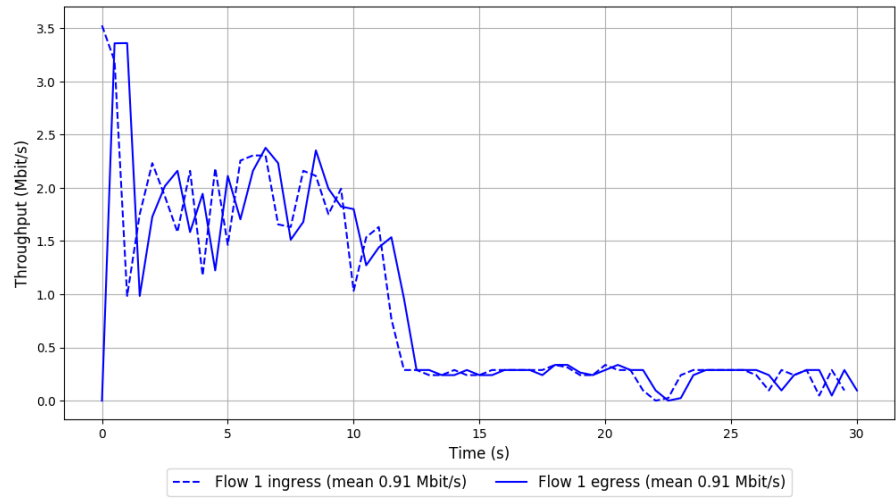
-- Flow 1:

Average throughput: 0.91 Mbit/s

95th percentile per-packet one-way delay: 63.494 ms

Loss rate: 0.00%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-07-09 19:50:50

End at: 2018-07-09 19:51:20

Local clock offset: 0.859 ms

Remote clock offset: 2.545 ms

Below is generated by plot.py at 2018-07-09 19:55:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.78 Mbit/s

95th percentile per-packet one-way delay: 61.381 ms

Loss rate: 0.00%

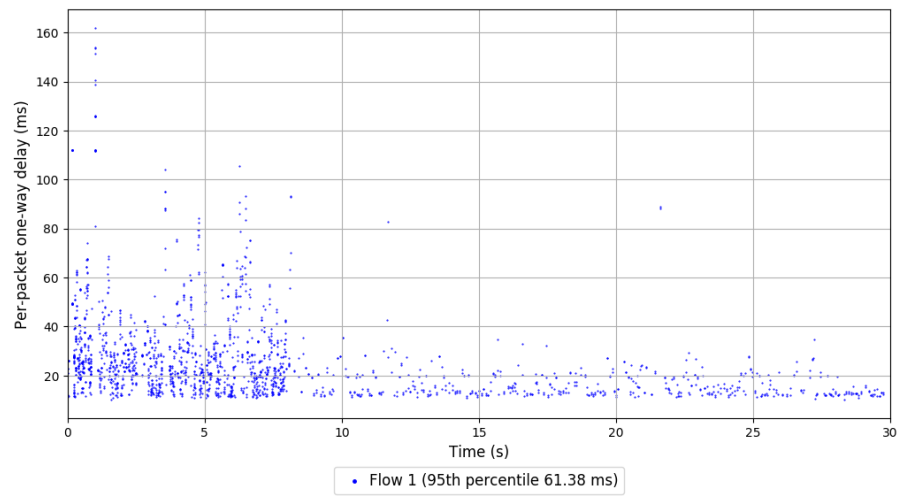
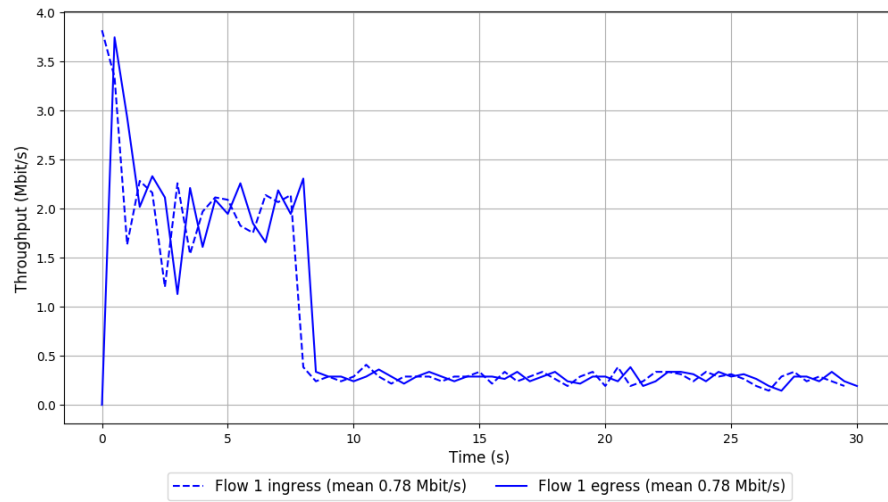
-- Flow 1:

Average throughput: 0.78 Mbit/s

95th percentile per-packet one-way delay: 61.381 ms

Loss rate: 0.00%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of LEDBAT

Start at: 2018-07-09 18:51:04

End at: 2018-07-09 18:51:34

Local clock offset: 2.016 ms

Remote clock offset: -0.743 ms

Below is generated by plot.py at 2018-07-09 19:55:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 5.74 Mbit/s

95th percentile per-packet one-way delay: 177.047 ms

Loss rate: 0.08%

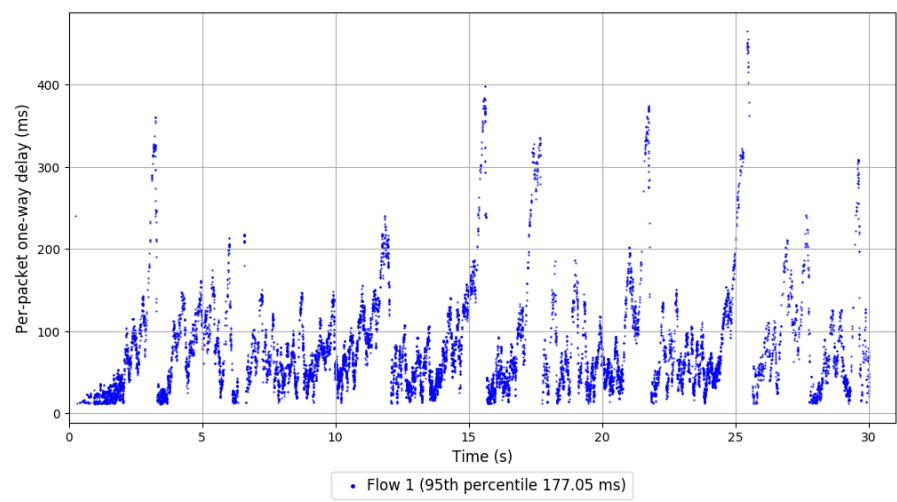
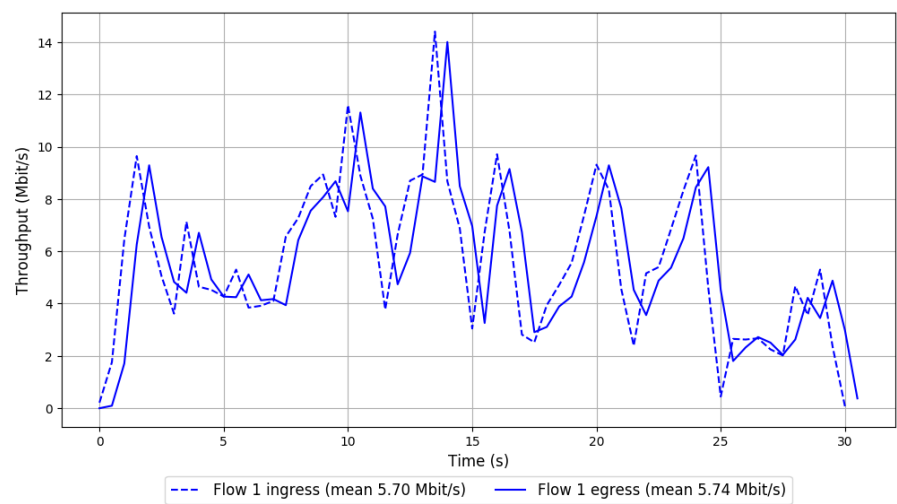
-- Flow 1:

Average throughput: 5.74 Mbit/s

95th percentile per-packet one-way delay: 177.047 ms

Loss rate: 0.08%

Run 1: Report of LEDBAT — Data Link



Run 2: Statistics of LEDBAT

Start at: 2018-07-09 19:13:06

End at: 2018-07-09 19:13:36

Local clock offset: 0.48 ms

Remote clock offset: 1.246 ms

Below is generated by plot.py at 2018-07-09 19:55:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 7.37 Mbit/s

95th percentile per-packet one-way delay: 164.608 ms

Loss rate: 0.26%

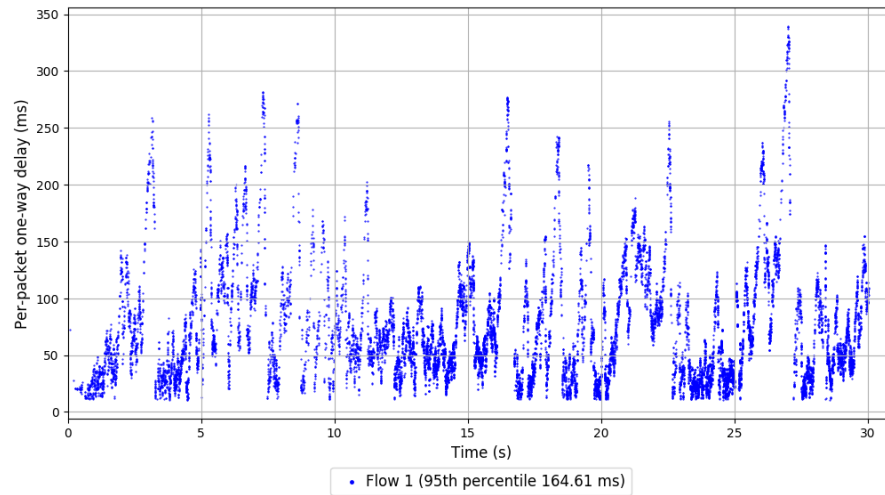
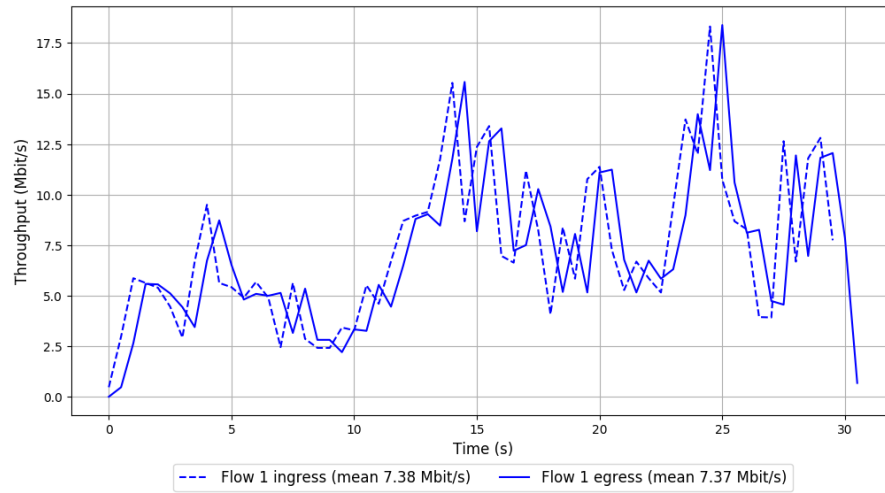
-- Flow 1:

Average throughput: 7.37 Mbit/s

95th percentile per-packet one-way delay: 164.608 ms

Loss rate: 0.26%

Run 2: Report of LEDBAT — Data Link



Run 3: Statistics of LEDBAT

Start at: 2018-07-09 19:35:12

End at: 2018-07-09 19:35:42

Local clock offset: 0.756 ms

Remote clock offset: 3.516 ms

Below is generated by plot.py at 2018-07-09 19:55:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.47 Mbit/s

95th percentile per-packet one-way delay: 235.955 ms

Loss rate: 0.27%

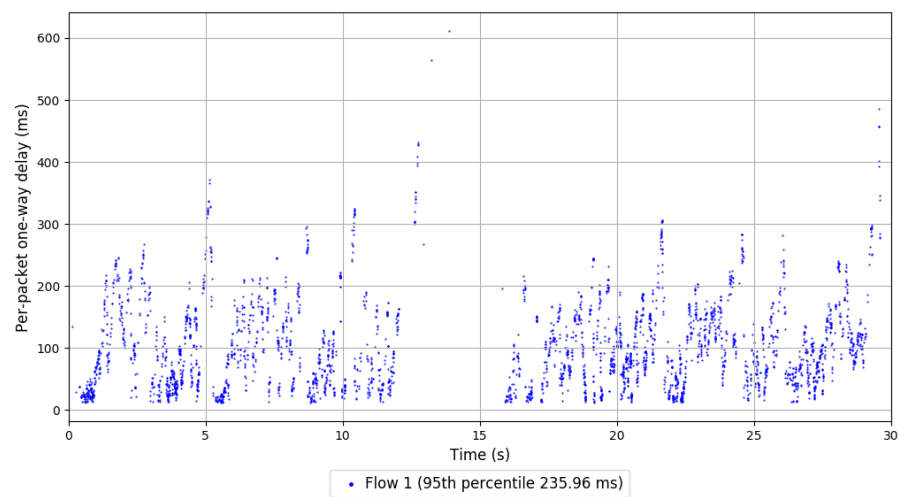
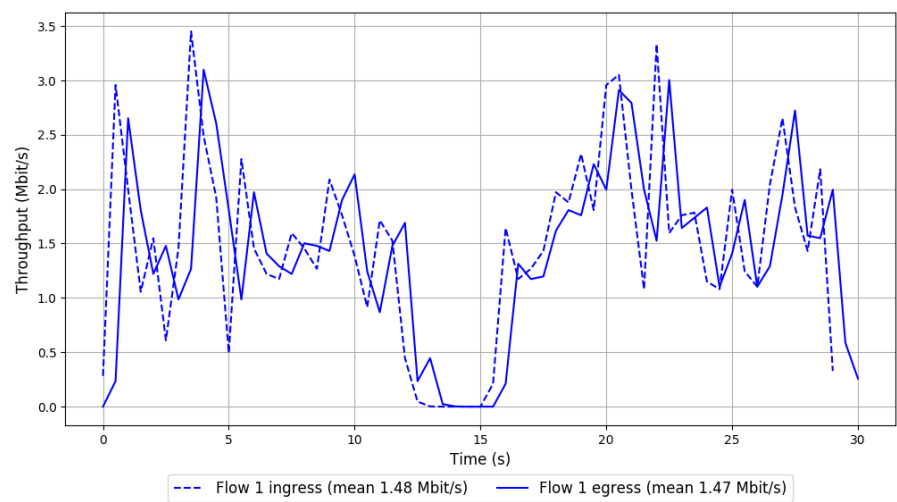
-- Flow 1:

Average throughput: 1.47 Mbit/s

95th percentile per-packet one-way delay: 235.955 ms

Loss rate: 0.27%

Run 3: Report of LEDBAT — Data Link



Run 1: Statistics of PCC-Allegro

Start at: 2018-07-09 19:04:02

End at: 2018-07-09 19:04:32

Local clock offset: 0.177 ms

Remote clock offset: -1.024 ms

Below is generated by plot.py at 2018-07-09 19:55:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 3.63 Mbit/s

95th percentile per-packet one-way delay: 272.498 ms

Loss rate: 0.09%

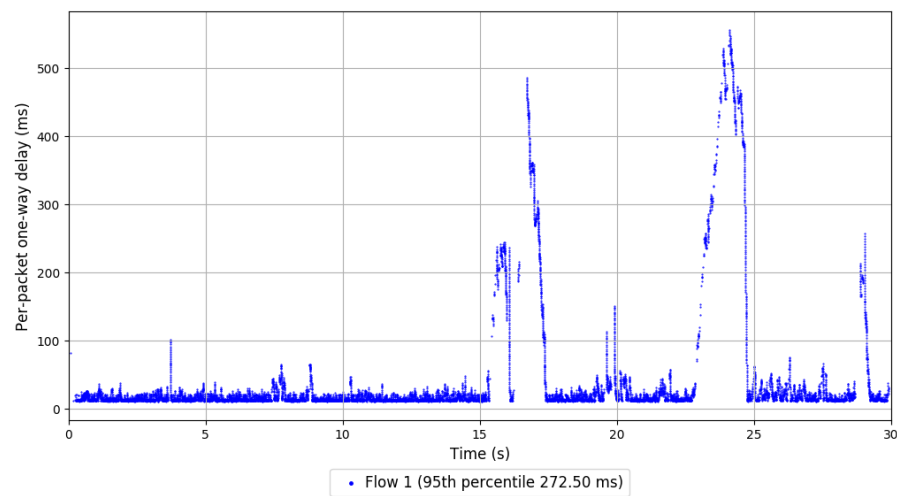
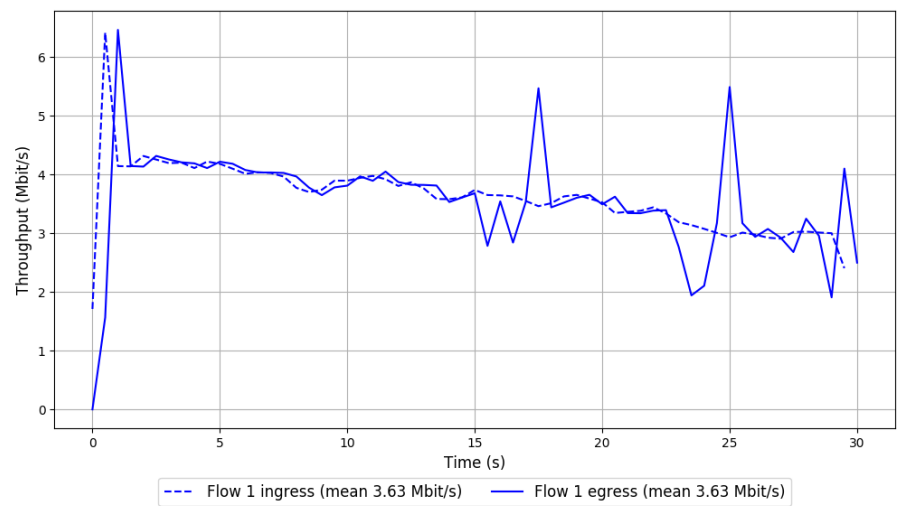
-- Flow 1:

Average throughput: 3.63 Mbit/s

95th percentile per-packet one-way delay: 272.498 ms

Loss rate: 0.09%

Run 1: Report of PCC-Allegro — Data Link



Run 2: Statistics of PCC-Allegro

Start at: 2018-07-09 19:26:09

End at: 2018-07-09 19:26:39

Local clock offset: 0.523 ms

Remote clock offset: 3.012 ms

Below is generated by plot.py at 2018-07-09 19:55:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.88 Mbit/s

95th percentile per-packet one-way delay: 1078.957 ms

Loss rate: 52.25%

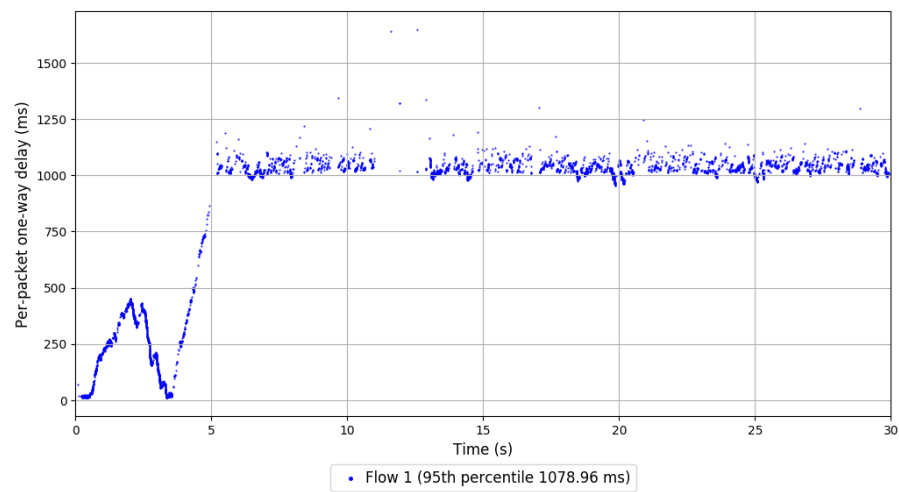
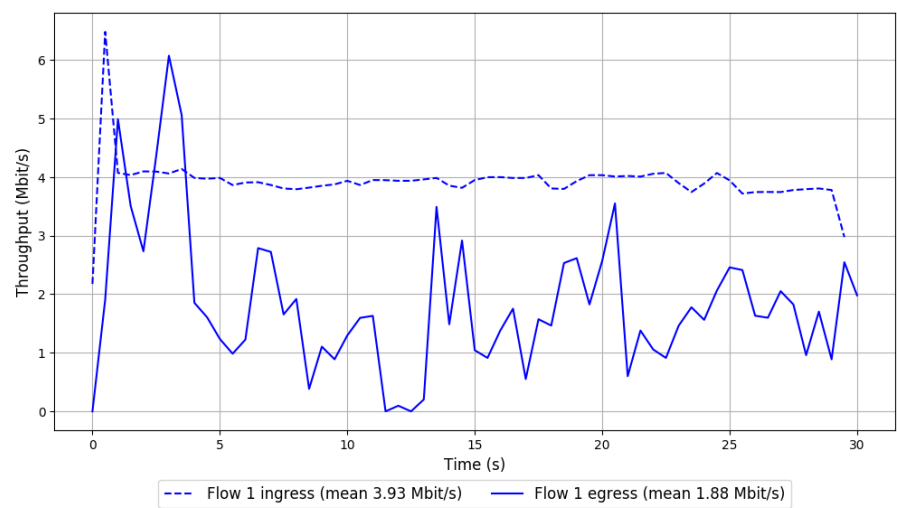
-- Flow 1:

Average throughput: 1.88 Mbit/s

95th percentile per-packet one-way delay: 1078.957 ms

Loss rate: 52.25%

Run 2: Report of PCC-Allegro — Data Link



Run 3: Statistics of PCC-Allegro

Start at: 2018-07-09 19:48:09

End at: 2018-07-09 19:48:39

Local clock offset: 0.883 ms

Remote clock offset: 2.778 ms

Below is generated by plot.py at 2018-07-09 19:55:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 4.09 Mbit/s

95th percentile per-packet one-way delay: 996.942 ms

Loss rate: 3.61%

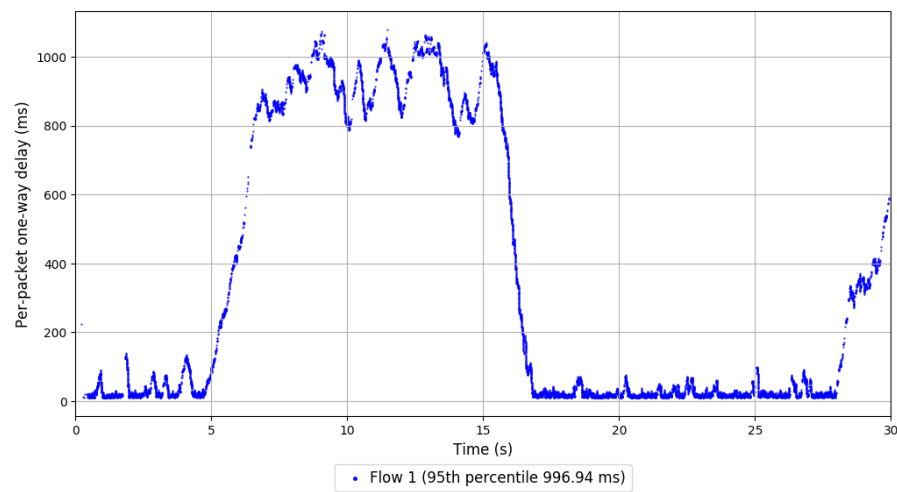
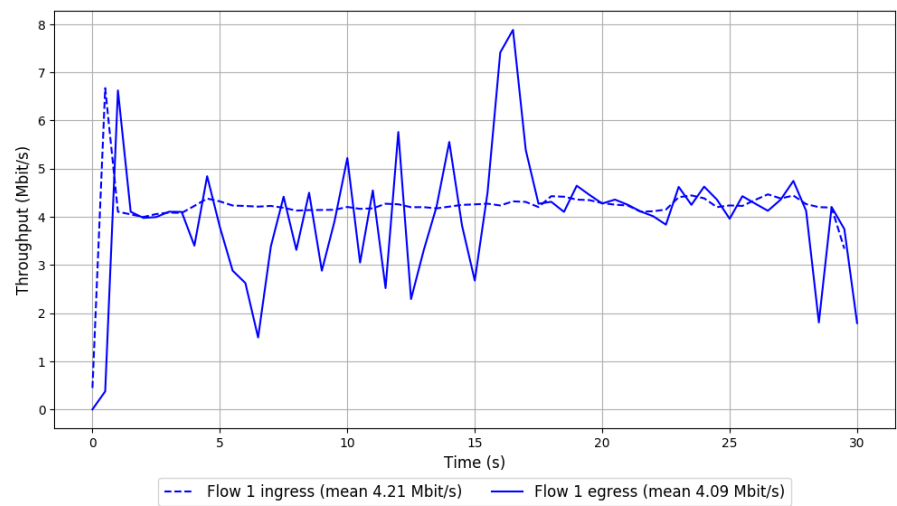
-- Flow 1:

Average throughput: 4.09 Mbit/s

95th percentile per-packet one-way delay: 996.942 ms

Loss rate: 3.61%

Run 3: Report of PCC-Allegro — Data Link

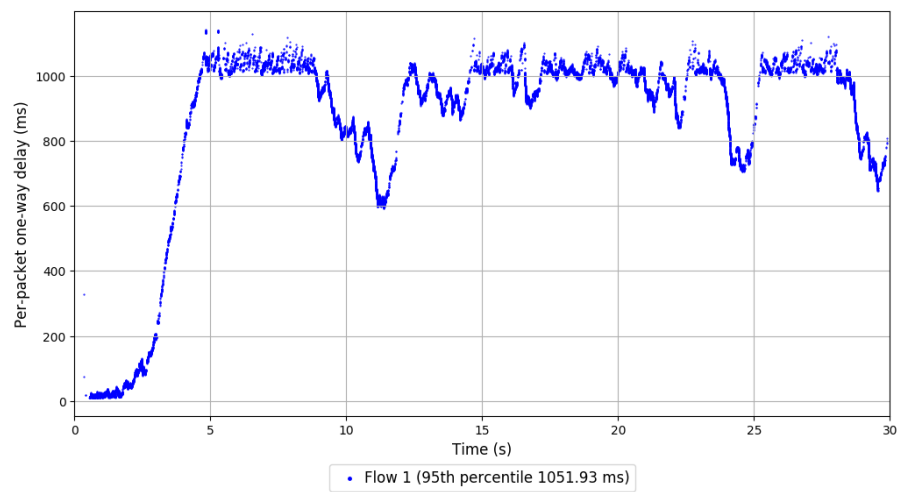
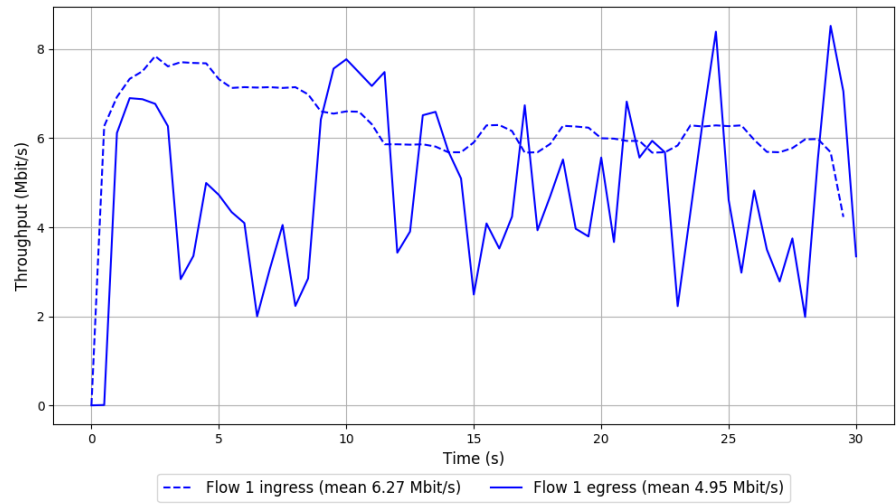


```
Run 1: Statistics of PCC-Expr

Start at: 2018-07-09 19:02:44
End at: 2018-07-09 19:03:14
Local clock offset: 0.162 ms
Remote clock offset: -1.058 ms

# Below is generated by plot.py at 2018-07-09 19:55:58
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.95 Mbit/s
95th percentile per-packet one-way delay: 1051.928 ms
Loss rate: 21.85%
-- Flow 1:
Average throughput: 4.95 Mbit/s
95th percentile per-packet one-way delay: 1051.928 ms
Loss rate: 21.85%
```

Run 1: Report of PCC-Expr — Data Link



Run 2: Statistics of PCC-Expr

Start at: 2018-07-09 19:24:51

End at: 2018-07-09 19:25:21

Local clock offset: 0.492 ms

Remote clock offset: 2.845 ms

Below is generated by plot.py at 2018-07-09 19:55:58

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.75 Mbit/s

95th percentile per-packet one-way delay: 1091.567 ms

Loss rate: 70.34%

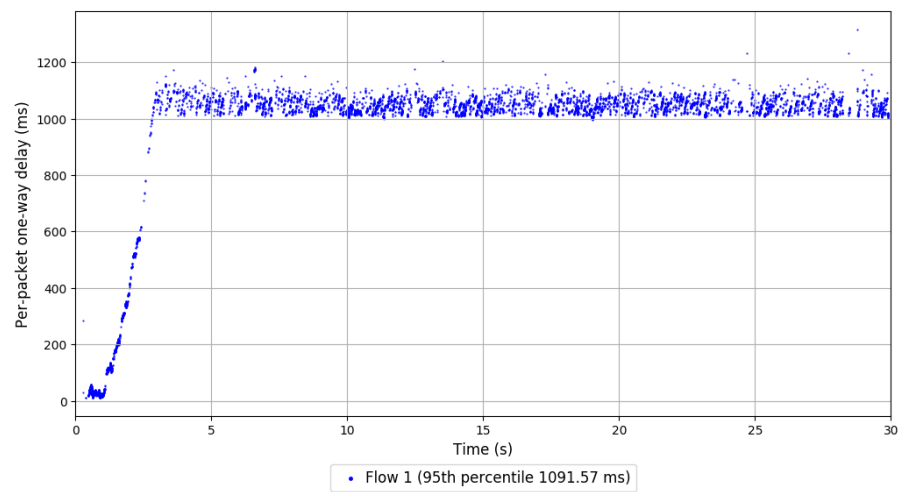
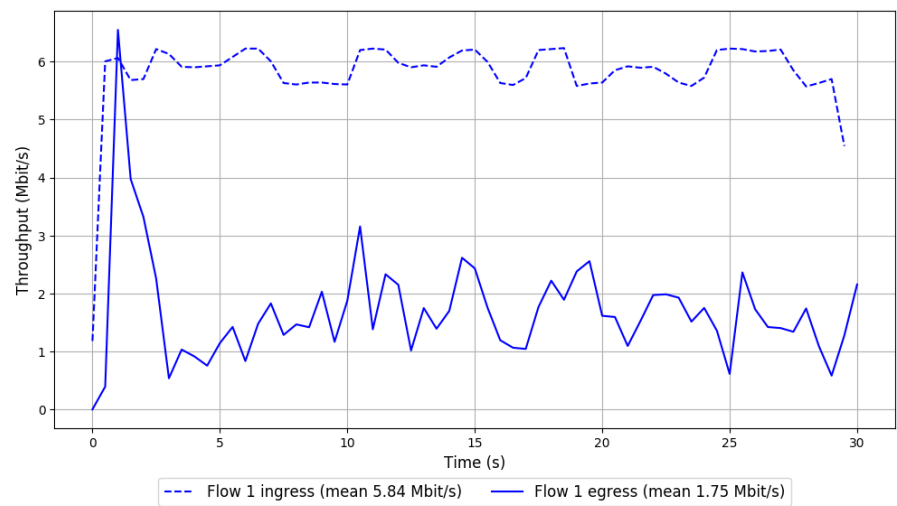
-- Flow 1:

Average throughput: 1.75 Mbit/s

95th percentile per-packet one-way delay: 1091.567 ms

Loss rate: 70.34%

Run 2: Report of PCC-Expr — Data Link



Run 3: Statistics of PCC-Expr

Start at: 2018-07-09 19:46:51

End at: 2018-07-09 19:47:21

Local clock offset: 0.88 ms

Remote clock offset: 2.906 ms

Below is generated by plot.py at 2018-07-09 19:55:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 5.11 Mbit/s

95th percentile per-packet one-way delay: 1045.767 ms

Loss rate: 17.88%

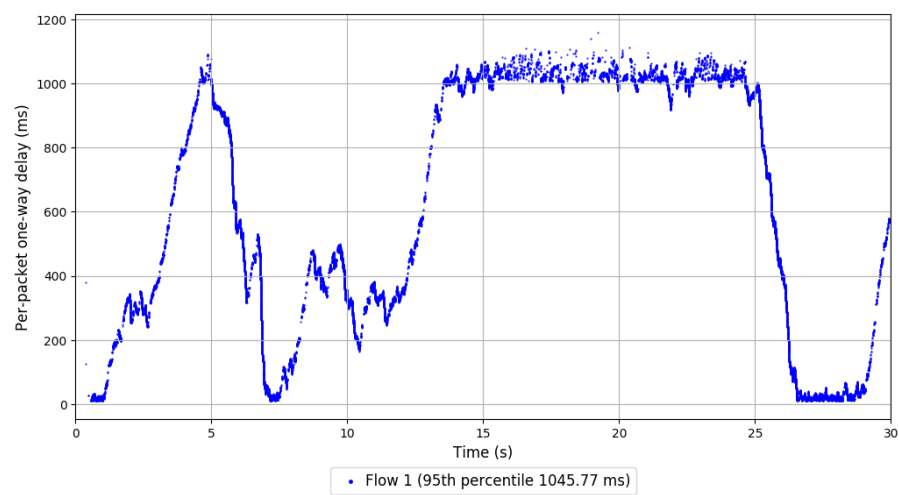
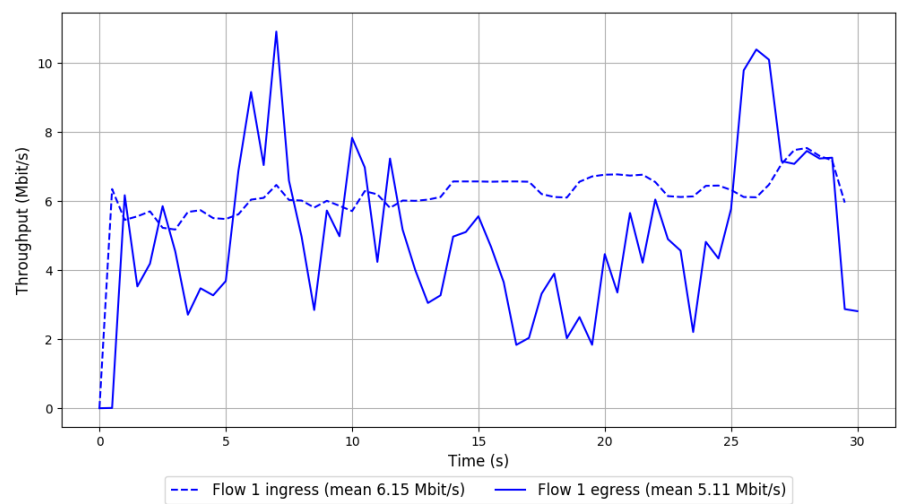
-- Flow 1:

Average throughput: 5.11 Mbit/s

95th percentile per-packet one-way delay: 1045.767 ms

Loss rate: 17.88%

Run 3: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

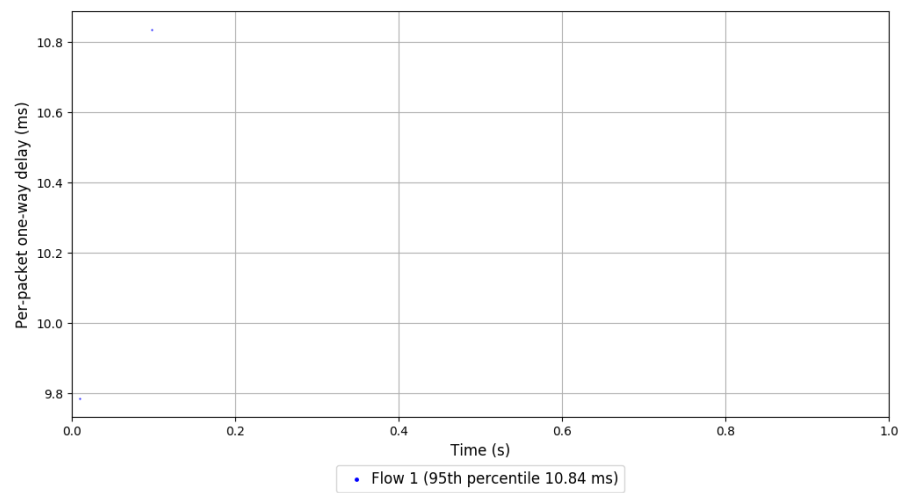
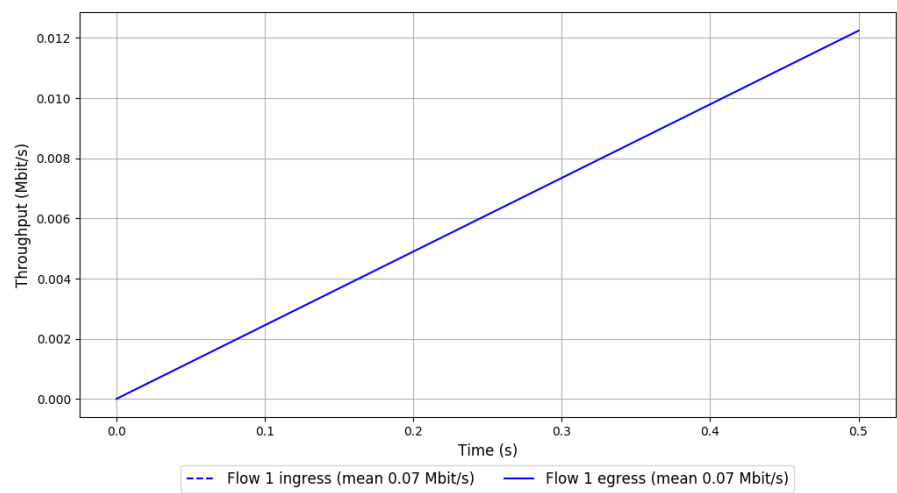
Start at: 2018-07-09 18:57:33

End at: 2018-07-09 18:58:03

Local clock offset: 0.016 ms

Remote clock offset: -0.914 ms

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2018-07-09 19:19:35

End at: 2018-07-09 19:20:05

Local clock offset: 0.635 ms

Remote clock offset: 2.386 ms

Below is generated by plot.py at 2018-07-09 19:55:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 3.15 Mbit/s

95th percentile per-packet one-way delay: 356.104 ms

Loss rate: 0.77%

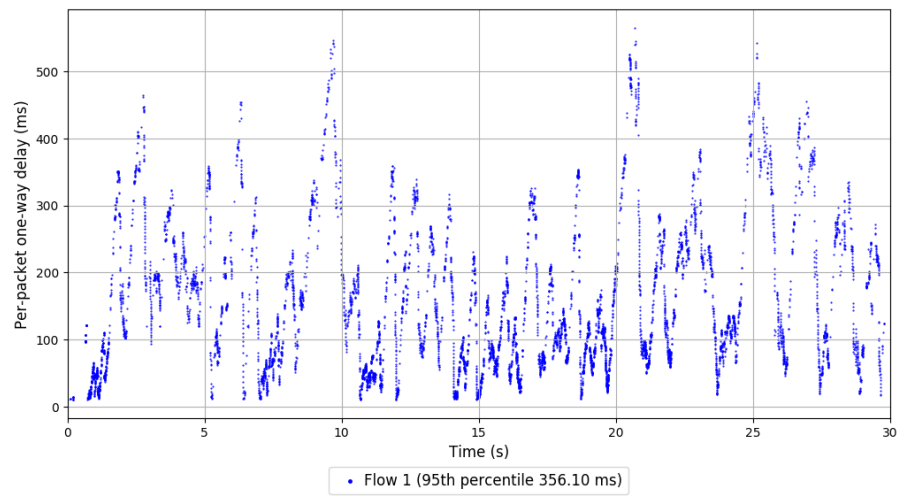
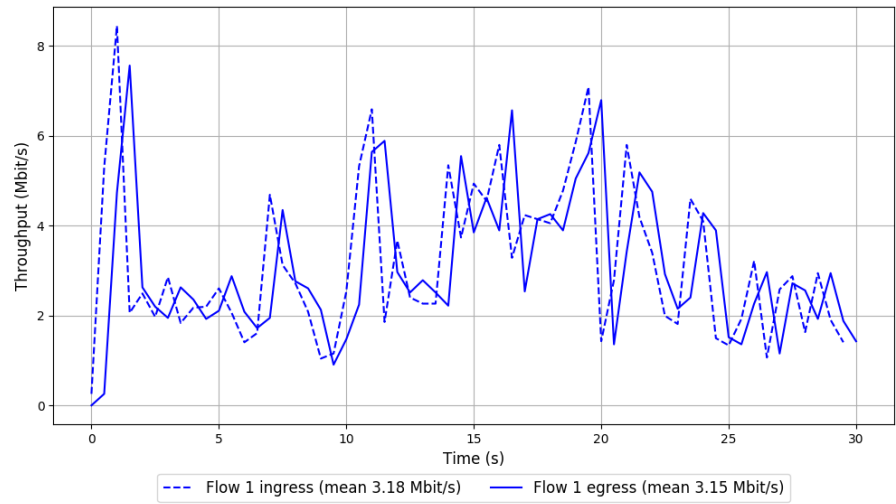
-- Flow 1:

Average throughput: 3.15 Mbit/s

95th percentile per-packet one-way delay: 356.104 ms

Loss rate: 0.77%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2018-07-09 19:41:40

End at: 2018-07-09 19:42:10

Local clock offset: 0.777 ms

Remote clock offset: 3.467 ms

Below is generated by plot.py at 2018-07-09 19:55:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.16 Mbit/s

95th percentile per-packet one-way delay: 822.957 ms

Loss rate: 1.83%

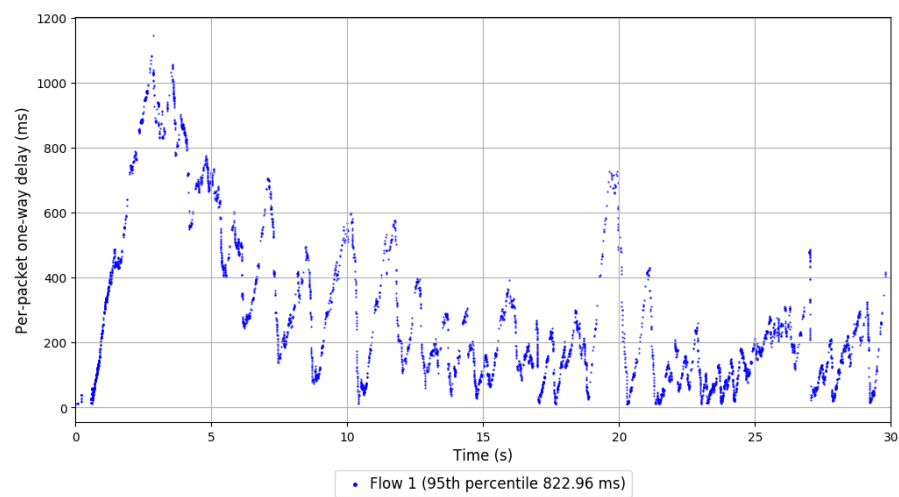
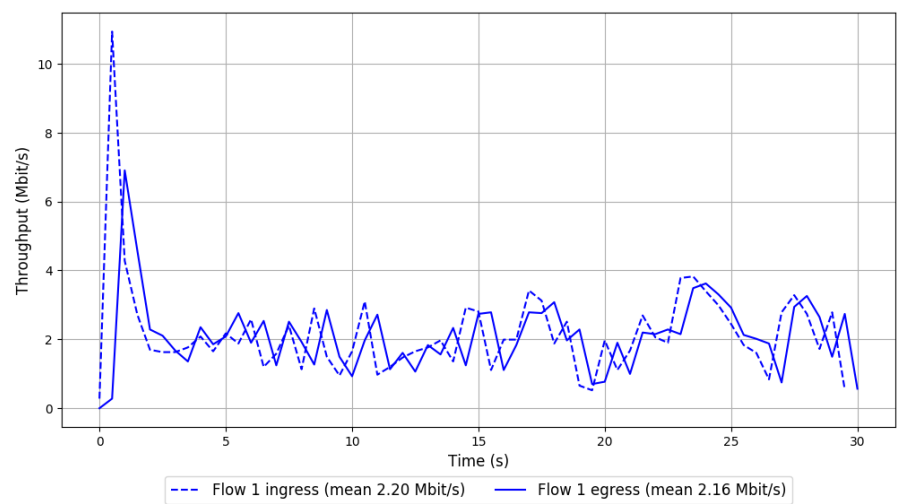
-- Flow 1:

Average throughput: 2.16 Mbit/s

95th percentile per-packet one-way delay: 822.957 ms

Loss rate: 1.83%

Run 3: Report of QUIC Cubic — Data Link

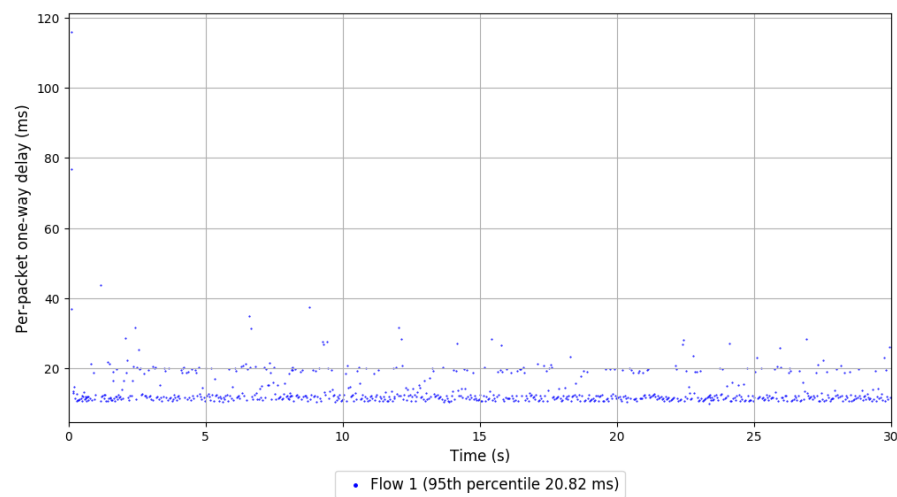
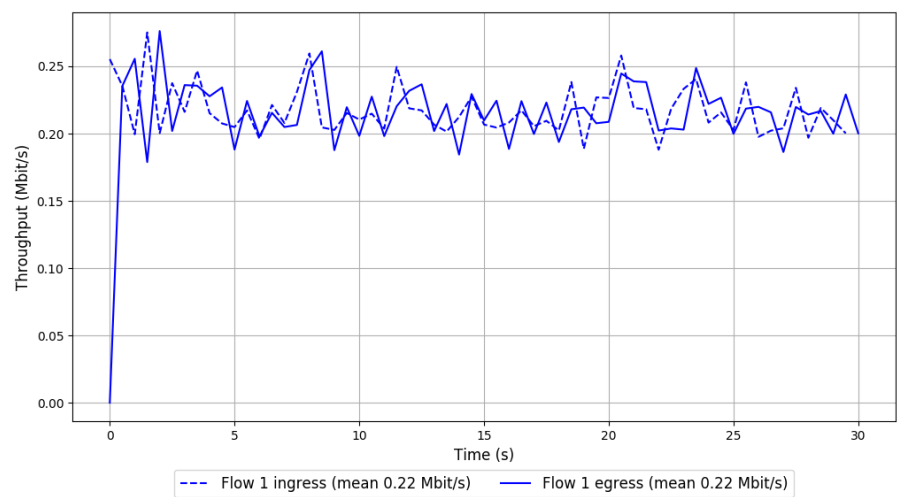


```
Run 1: Statistics of SCReAM

Start at: 2018-07-09 19:09:13
End at: 2018-07-09 19:09:43
Local clock offset: 0.36 ms
Remote clock offset: 0.053 ms

# Below is generated by plot.py at 2018-07-09 19:55:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 20.821 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 20.821 ms
Loss rate: 0.00%
```


Run 1: Report of SReAM — Data Link



Run 2: Statistics of SCReAM

Start at: 2018-07-09 19:31:19

End at: 2018-07-09 19:31:49

Local clock offset: 0.704 ms

Remote clock offset: 3.279 ms

Below is generated by plot.py at 2018-07-09 19:55:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 30.242 ms

Loss rate: 0.00%

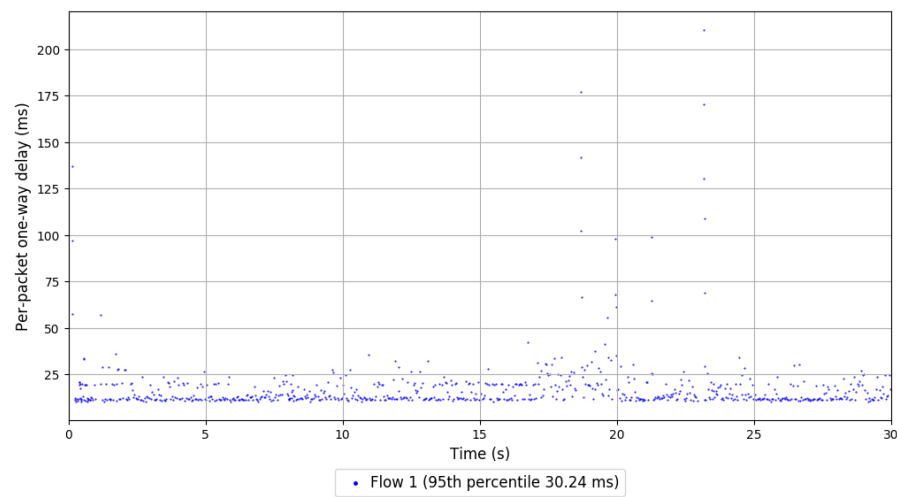
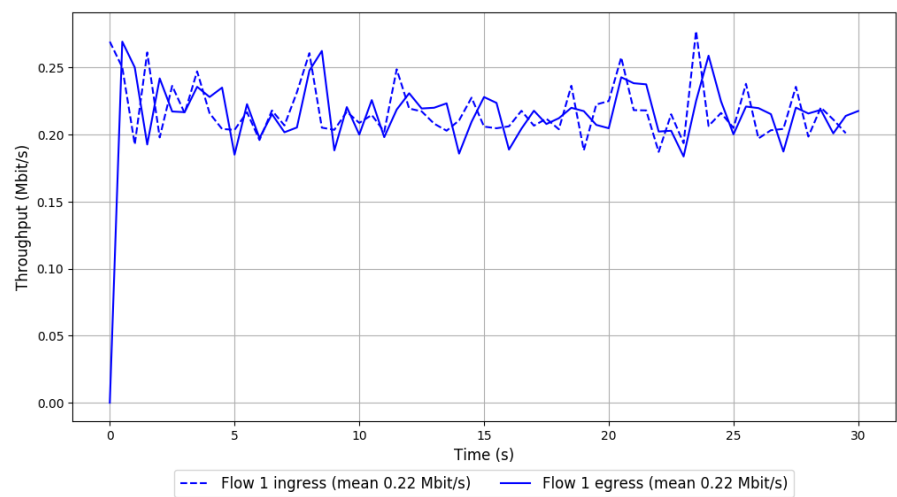
-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 30.242 ms

Loss rate: 0.00%

Run 2: Report of SReAM — Data Link



Run 3: Statistics of SCReAM

Start at: 2018-07-09 19:53:28

End at: 2018-07-09 19:53:58

Local clock offset: 0.791 ms

Remote clock offset: 2.48 ms

Below is generated by plot.py at 2018-07-09 19:55:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.21 Mbit/s

95th percentile per-packet one-way delay: 22.228 ms

Loss rate: 0.00%

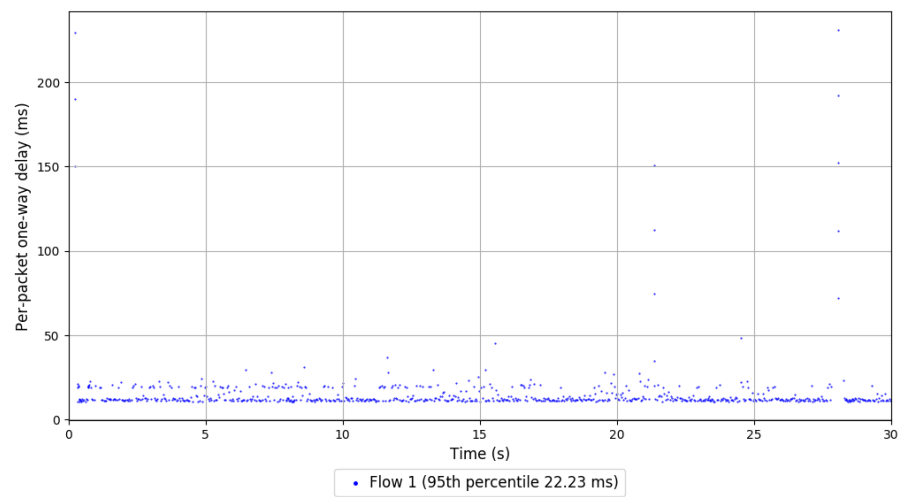
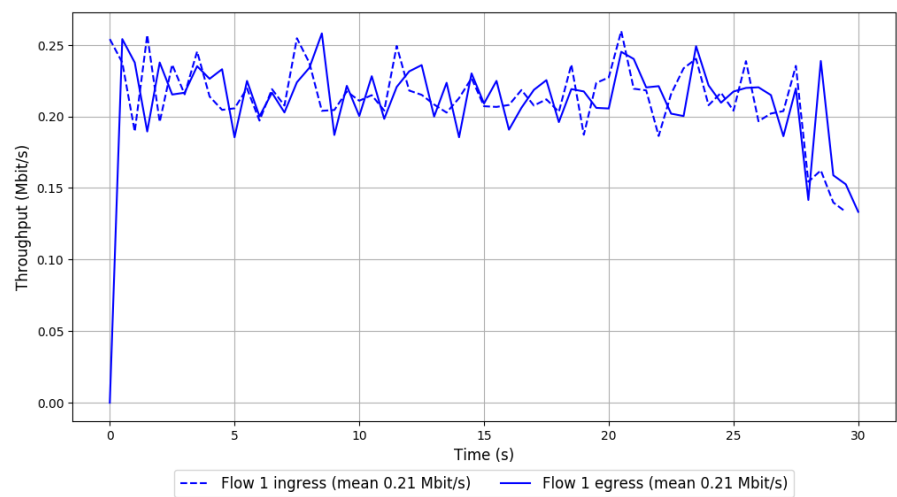
-- Flow 1:

Average throughput: 0.21 Mbit/s

95th percentile per-packet one-way delay: 22.228 ms

Loss rate: 0.00%

Run 3: Report of SReAM — Data Link

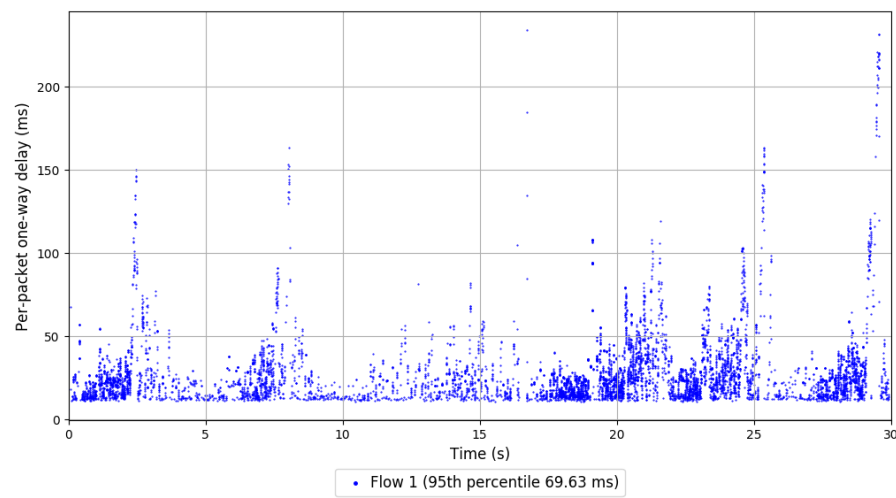
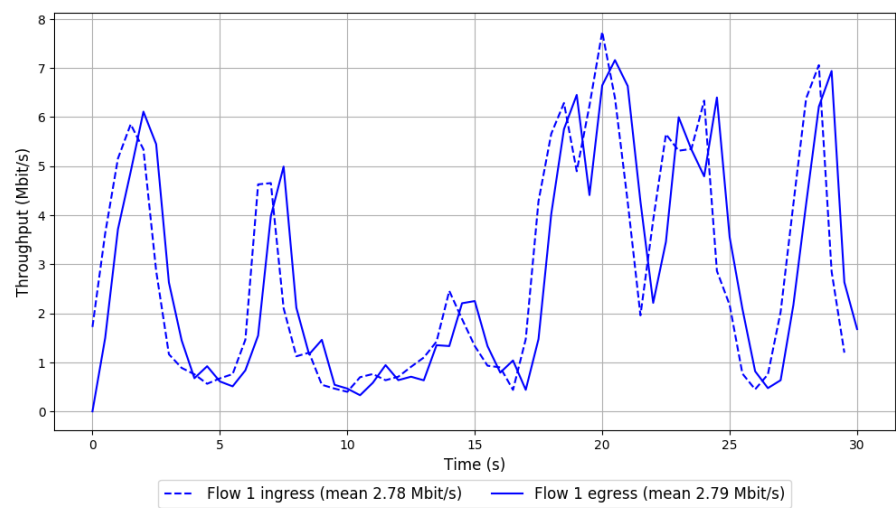


Run 1: Statistics of Sprout

Start at: 2018-07-09 18:52:22
End at: 2018-07-09 18:52:52
Local clock offset: 3.079 ms
Remote clock offset: -0.759 ms

Below is generated by plot.py at 2018-07-09 19:55:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.79 Mbit/s
95th percentile per-packet one-way delay: 69.627 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 2.79 Mbit/s
95th percentile per-packet one-way delay: 69.627 ms
Loss rate: 0.01%

Run 1: Report of Sprout — Data Link



Run 2: Statistics of Sprout

Start at: 2018-07-09 19:14:24

End at: 2018-07-09 19:14:54

Local clock offset: 0.587 ms

Remote clock offset: 1.489 ms

Below is generated by plot.py at 2018-07-09 19:55:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.45 Mbit/s

95th percentile per-packet one-way delay: 59.093 ms

Loss rate: 0.02%

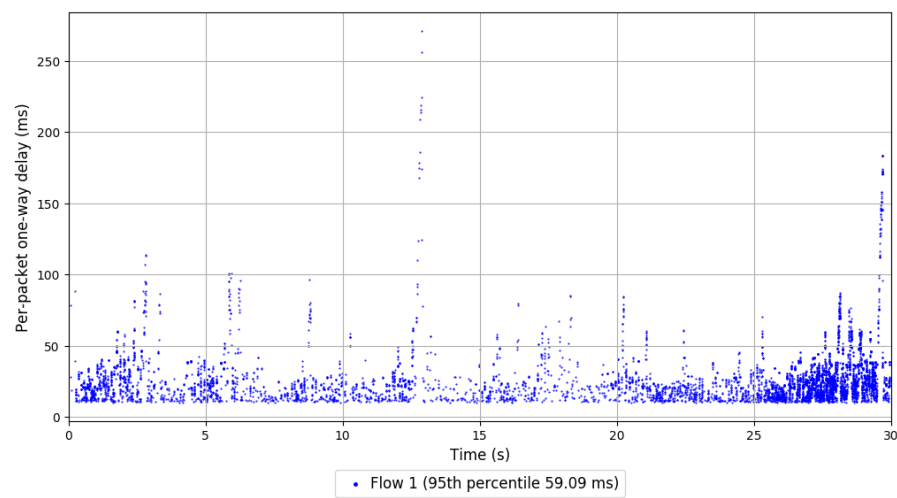
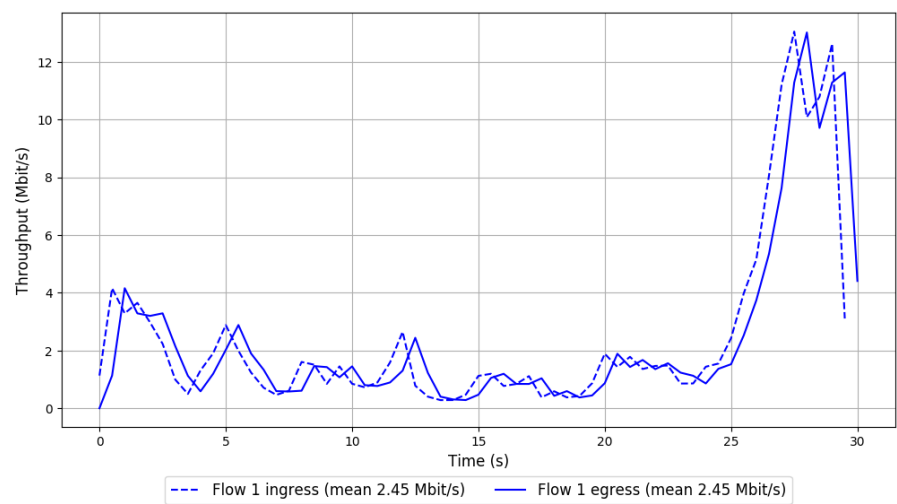
-- Flow 1:

Average throughput: 2.45 Mbit/s

95th percentile per-packet one-way delay: 59.093 ms

Loss rate: 0.02%

Run 2: Report of Sprout — Data Link



Run 3: Statistics of Sprout

Start at: 2018-07-09 19:36:30

End at: 2018-07-09 19:37:00

Local clock offset: 0.759 ms

Remote clock offset: 3.462 ms

Below is generated by plot.py at 2018-07-09 19:55:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.61 Mbit/s

95th percentile per-packet one-way delay: 82.805 ms

Loss rate: 0.07%

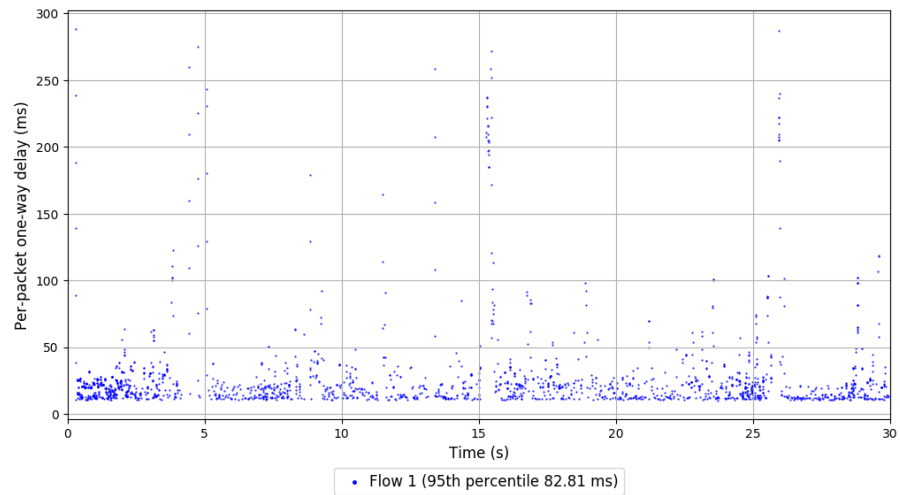
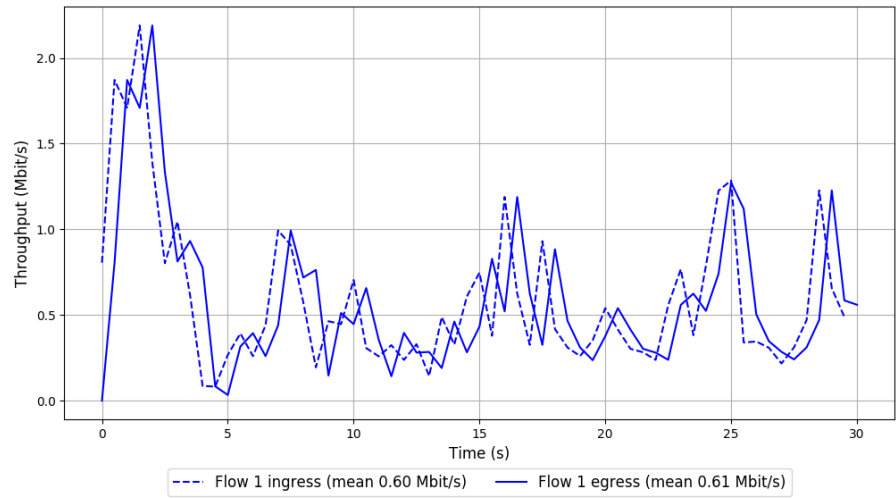
-- Flow 1:

Average throughput: 0.61 Mbit/s

95th percentile per-packet one-way delay: 82.805 ms

Loss rate: 0.07%

Run 3: Report of Sprout — Data Link

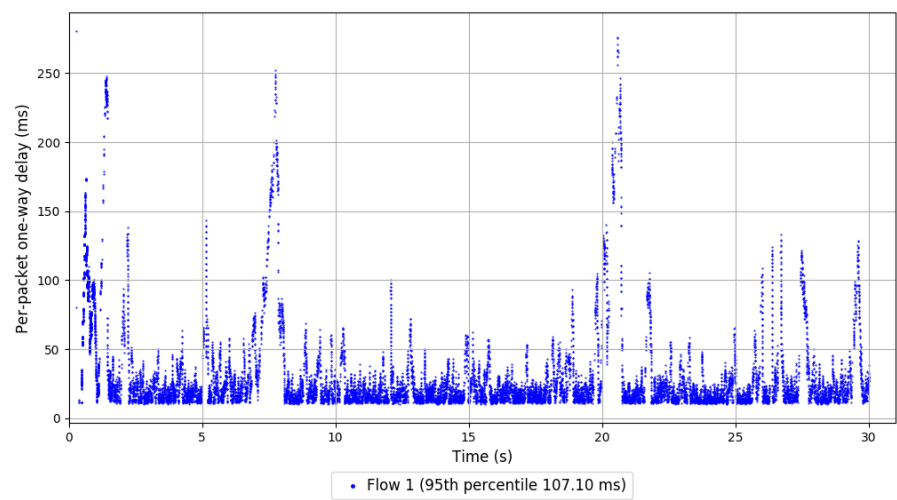
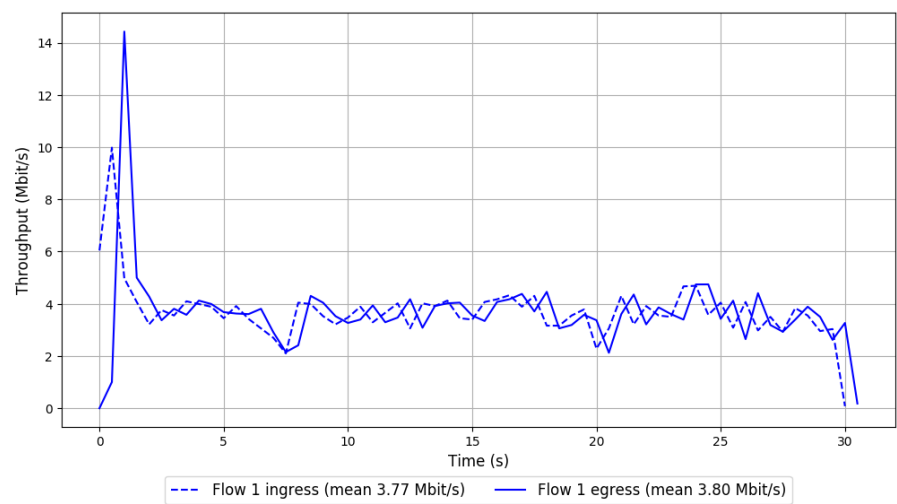


```
Run 1: Statistics of TaoVA-100x

Start at: 2018-07-09 19:00:09
End at: 2018-07-09 19:00:39
Local clock offset: 0.013 ms
Remote clock offset: -0.969 ms

# Below is generated by plot.py at 2018-07-09 19:56:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.80 Mbit/s
95th percentile per-packet one-way delay: 107.098 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 3.80 Mbit/s
95th percentile per-packet one-way delay: 107.098 ms
Loss rate: 0.08%
```

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



Run 2: Statistics of TaoVA-100x

Start at: 2018-07-09 19:22:16

End at: 2018-07-09 19:22:46

Local clock offset: 0.594 ms

Remote clock offset: 2.661 ms

Below is generated by plot.py at 2018-07-09 19:56:03

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.21 Mbit/s

95th percentile per-packet one-way delay: 410.973 ms

Loss rate: 0.55%

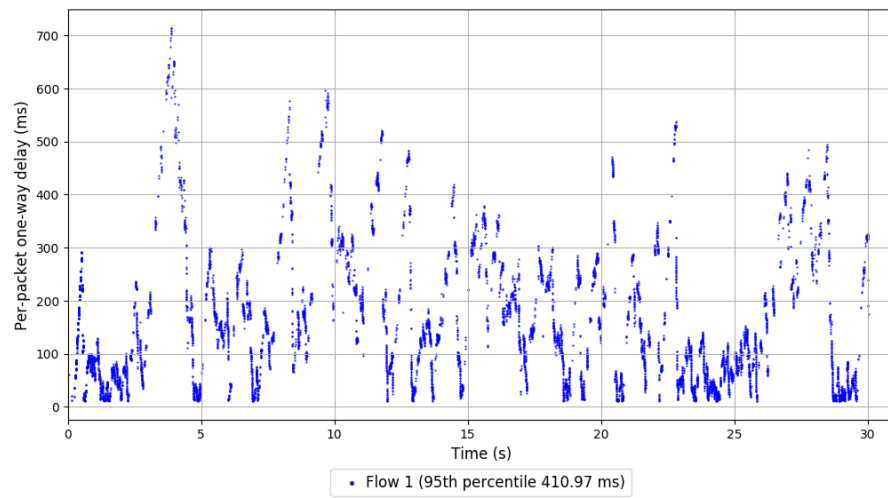
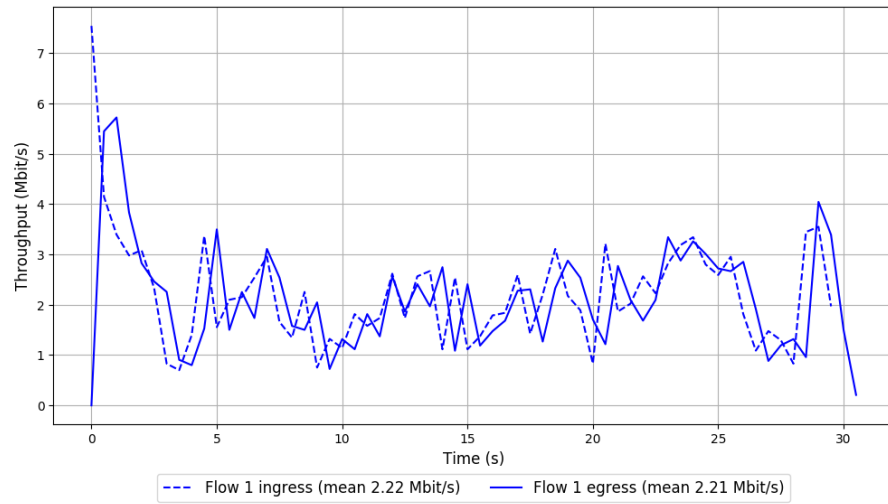
-- Flow 1:

Average throughput: 2.21 Mbit/s

95th percentile per-packet one-way delay: 410.973 ms

Loss rate: 0.55%

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



Run 3: Statistics of TaoVA-100x

Start at: 2018-07-09 19:44:16

End at: 2018-07-09 19:44:46

Local clock offset: 0.878 ms

Remote clock offset: 3.089 ms

Below is generated by plot.py at 2018-07-09 19:56:03

Datalink statistics

-- Total of 1 flow:

Average throughput: 3.04 Mbit/s

95th percentile per-packet one-way delay: 272.091 ms

Loss rate: 0.03%

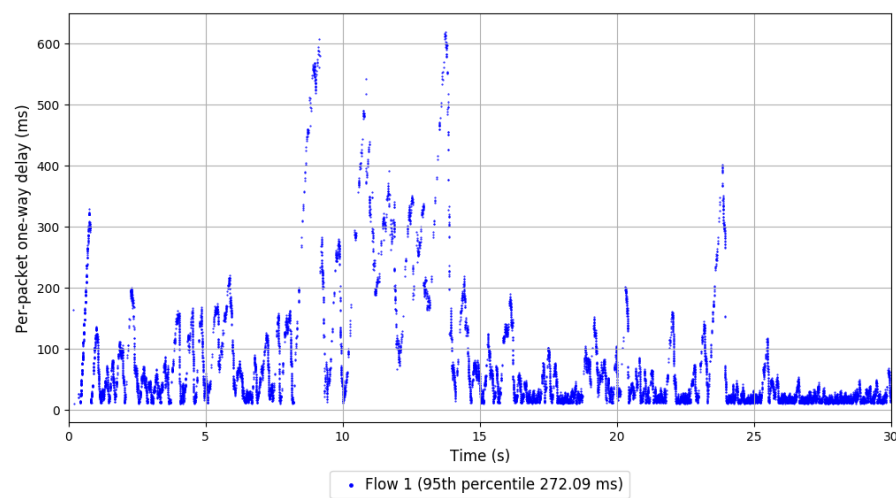
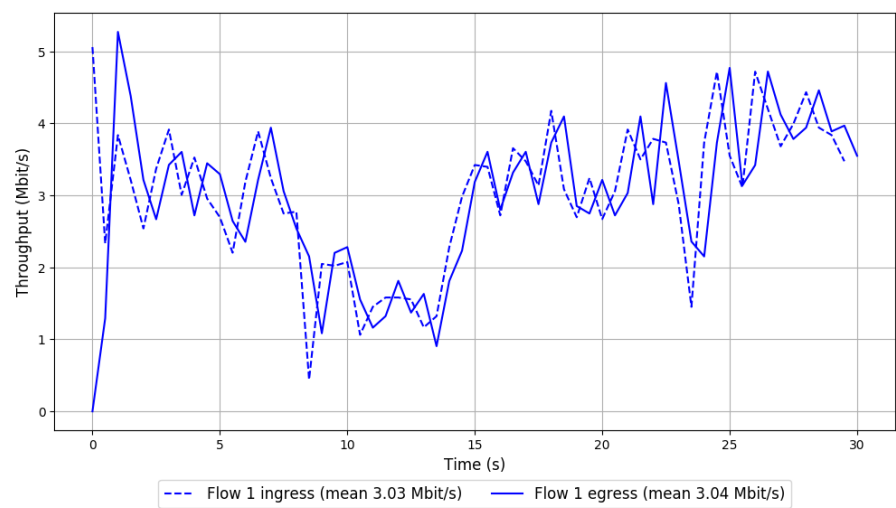
-- Flow 1:

Average throughput: 3.04 Mbit/s

95th percentile per-packet one-way delay: 272.091 ms

Loss rate: 0.03%

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

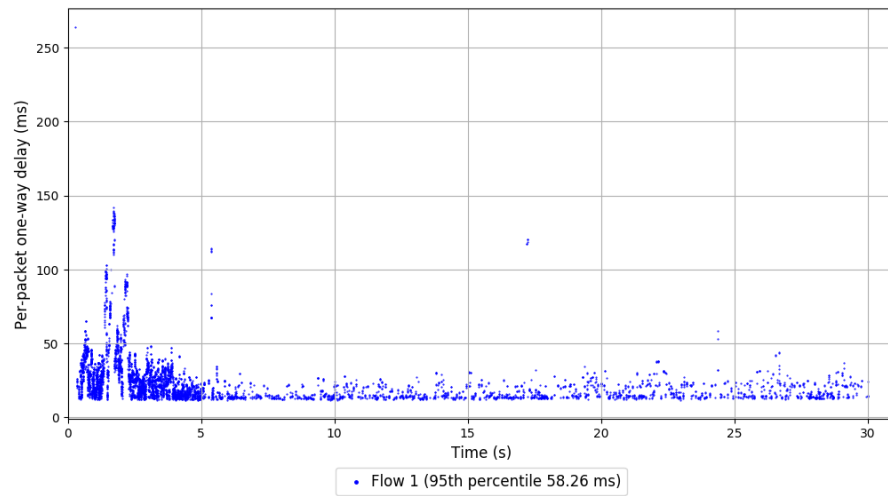
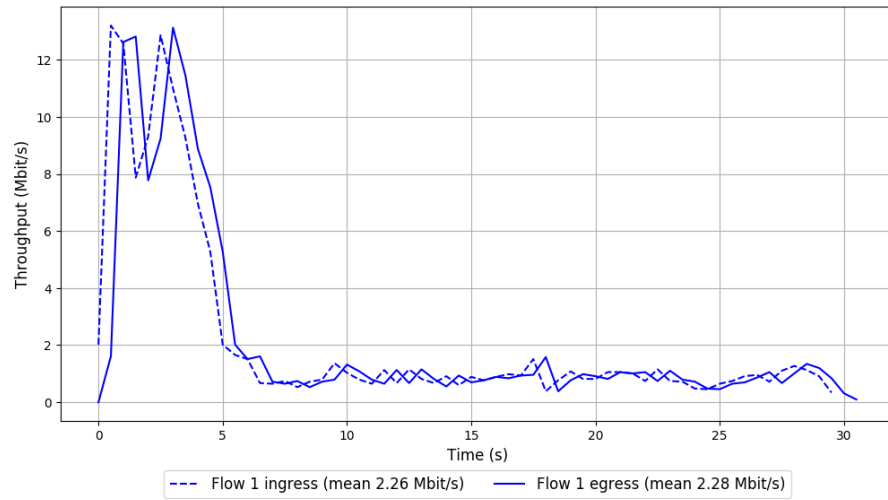


Run 1: Statistics of TCP Vegas

Start at: 2018-07-09 18:49:47
End at: 2018-07-09 18:50:17
Local clock offset: 0.518 ms
Remote clock offset: -0.789 ms

Below is generated by plot.py at 2018-07-09 19:56:03
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.28 Mbit/s
95th percentile per-packet one-way delay: 58.257 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.28 Mbit/s
95th percentile per-packet one-way delay: 58.257 ms
Loss rate: 0.00%

Run 1: Report of TCP Vegas — Data Link



Run 2: Statistics of TCP Vegas

Start at: 2018-07-09 19:11:48

End at: 2018-07-09 19:12:18

Local clock offset: 0.446 ms

Remote clock offset: 0.895 ms

Below is generated by plot.py at 2018-07-09 19:56:03

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.42 Mbit/s

95th percentile per-packet one-way delay: 78.283 ms

Loss rate: 0.23%

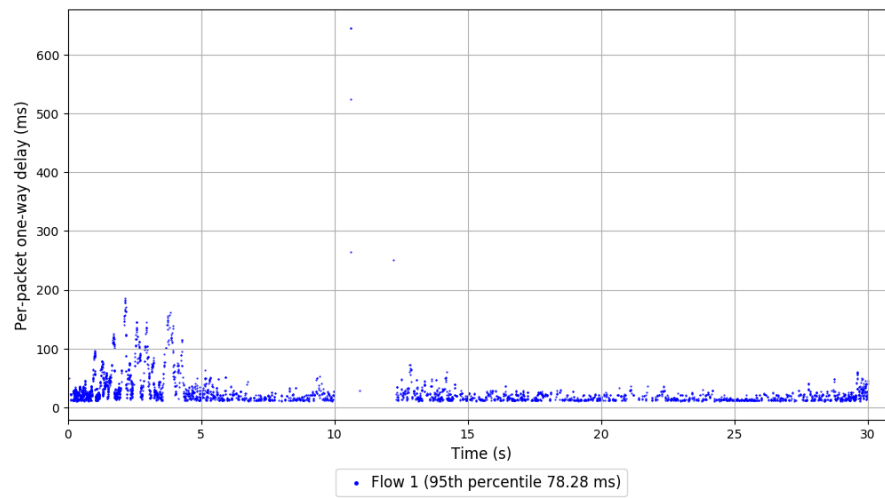
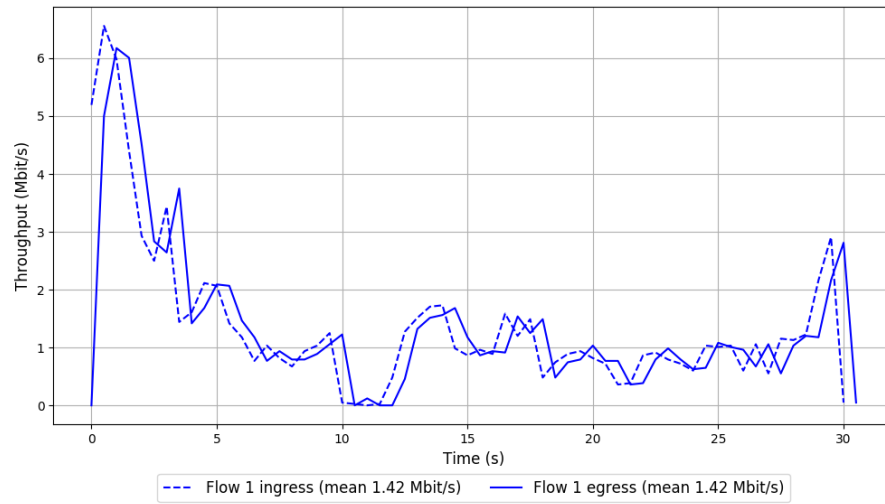
-- Flow 1:

Average throughput: 1.42 Mbit/s

95th percentile per-packet one-way delay: 78.283 ms

Loss rate: 0.23%

Run 2: Report of TCP Vegas — Data Link



Run 3: Statistics of TCP Vegas

Start at: 2018-07-09 19:33:55

End at: 2018-07-09 19:34:25

Local clock offset: 0.732 ms

Remote clock offset: 3.338 ms

Below is generated by plot.py at 2018-07-09 19:56:03

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.12 Mbit/s

95th percentile per-packet one-way delay: 308.529 ms

Loss rate: 0.14%

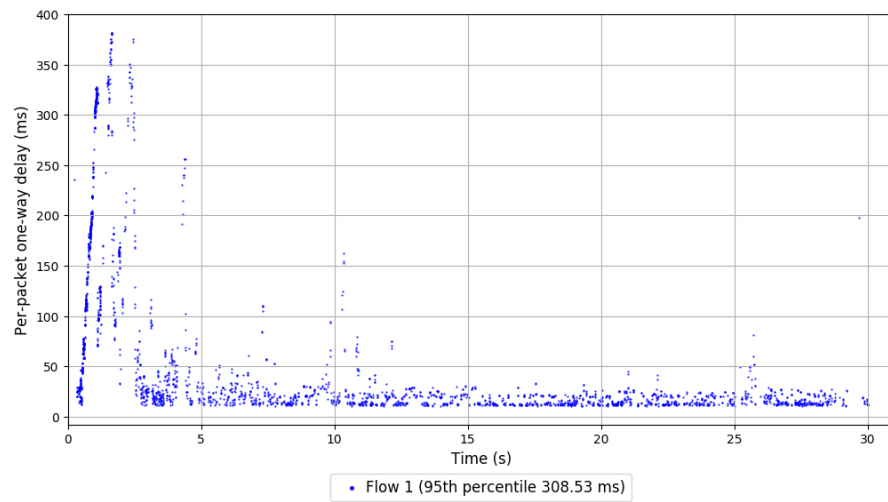
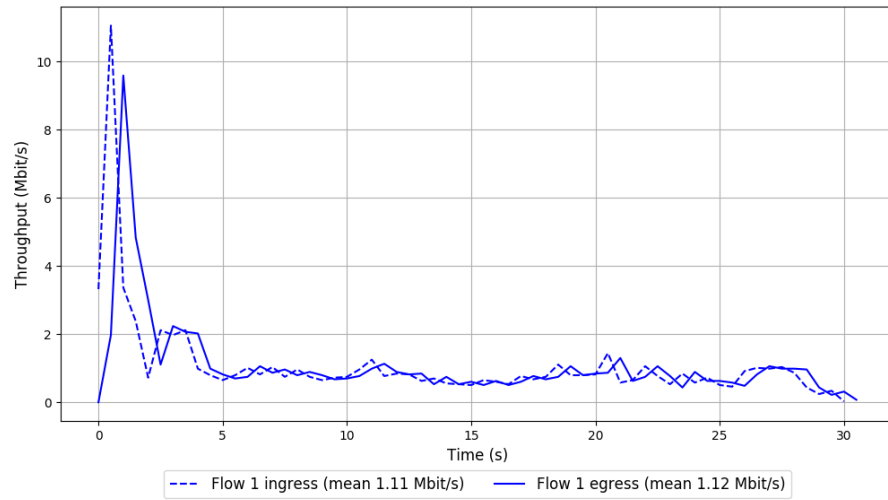
-- Flow 1:

Average throughput: 1.12 Mbit/s

95th percentile per-packet one-way delay: 308.529 ms

Loss rate: 0.14%

Run 3: Report of TCP Vegas — Data Link

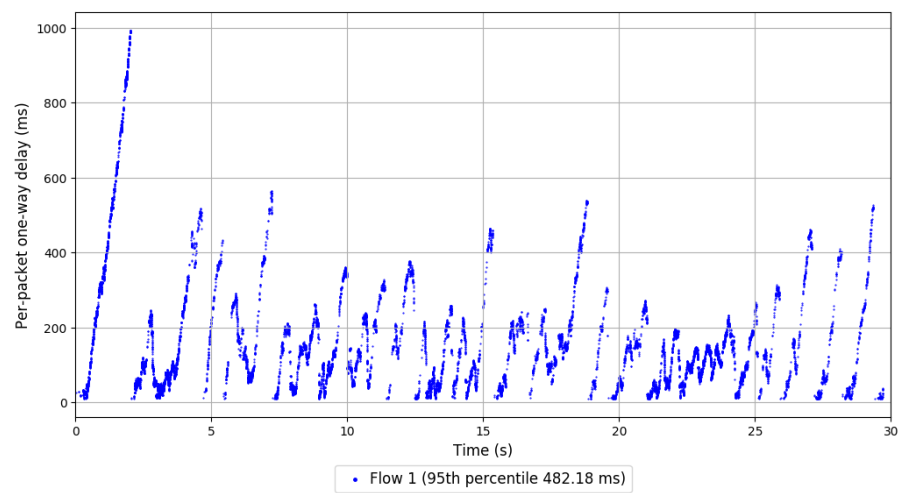
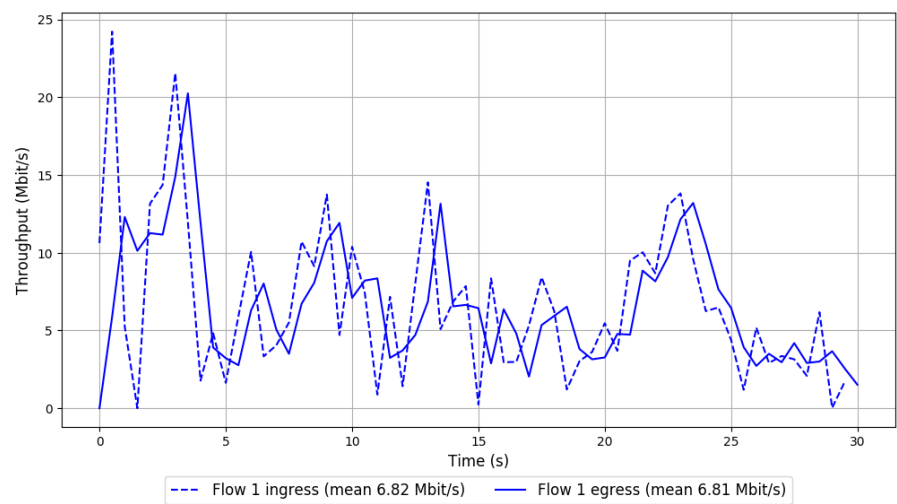


Run 1: Statistics of Verus

Start at: 2018-07-09 19:07:55
End at: 2018-07-09 19:08:25
Local clock offset: 0.409 ms
Remote clock offset: -0.441 ms

Below is generated by plot.py at 2018-07-09 19:56:08
Datalink statistics
-- Total of 1 flow:
Average throughput: 6.81 Mbit/s
95th percentile per-packet one-way delay: 482.179 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 6.81 Mbit/s
95th percentile per-packet one-way delay: 482.179 ms
Loss rate: 0.23%

Run 1: Report of Verus — Data Link



Run 2: Statistics of Verus

Start at: 2018-07-09 19:30:02

End at: 2018-07-09 19:30:32

Local clock offset: 0.695 ms

Remote clock offset: 3.181 ms

Below is generated by plot.py at 2018-07-09 19:56:08

Datalink statistics

-- Total of 1 flow:

Average throughput: 3.54 Mbit/s

95th percentile per-packet one-way delay: 624.986 ms

Loss rate: 3.52%

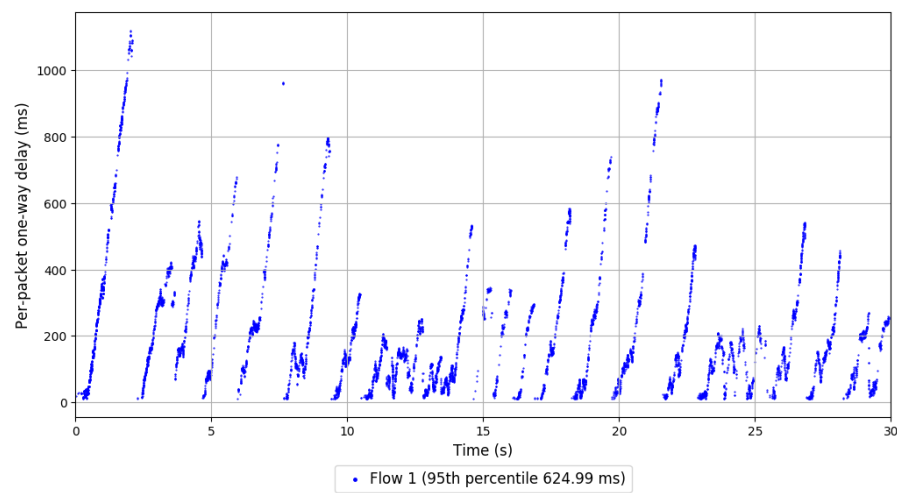
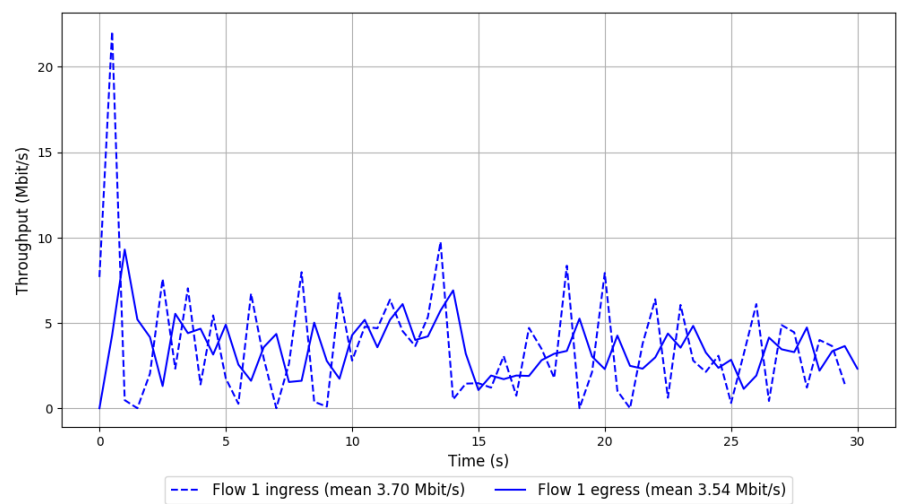
-- Flow 1:

Average throughput: 3.54 Mbit/s

95th percentile per-packet one-way delay: 624.986 ms

Loss rate: 3.52%

Run 2: Report of Verus — Data Link



Run 3: Statistics of Verus

Start at: 2018-07-09 19:52:10

End at: 2018-07-09 19:52:40

Local clock offset: 0.85 ms

Remote clock offset: 2.495 ms

Below is generated by plot.py at 2018-07-09 19:56:08

Datalink statistics

-- Total of 1 flow:

Average throughput: 7.65 Mbit/s

95th percentile per-packet one-way delay: 393.356 ms

Loss rate: 1.77%

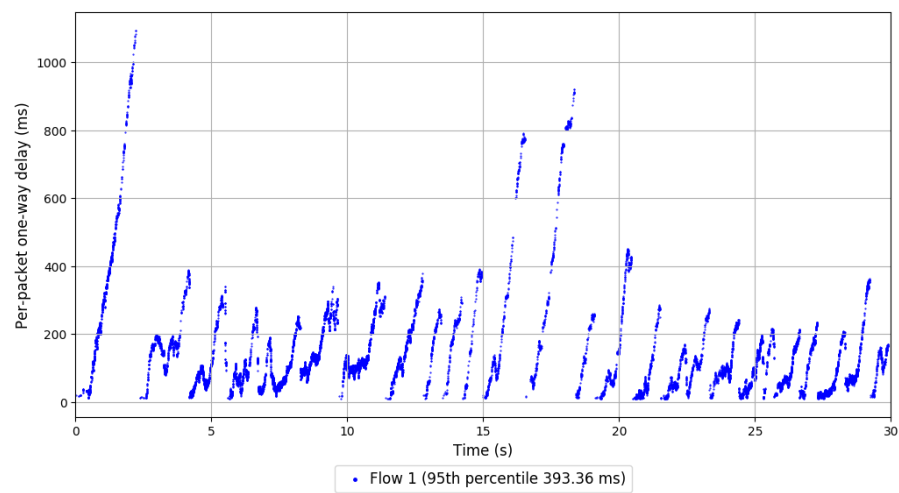
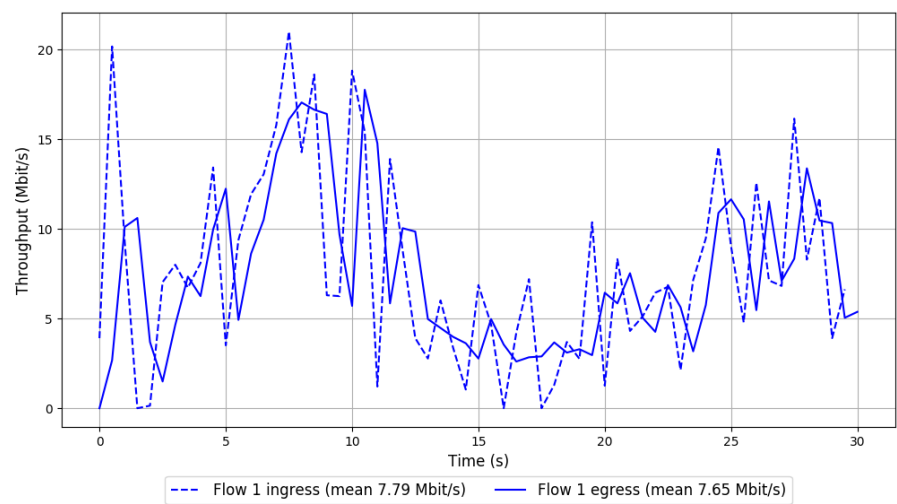
-- Flow 1:

Average throughput: 7.65 Mbit/s

95th percentile per-packet one-way delay: 393.356 ms

Loss rate: 1.77%

Run 3: Report of Verus — Data Link

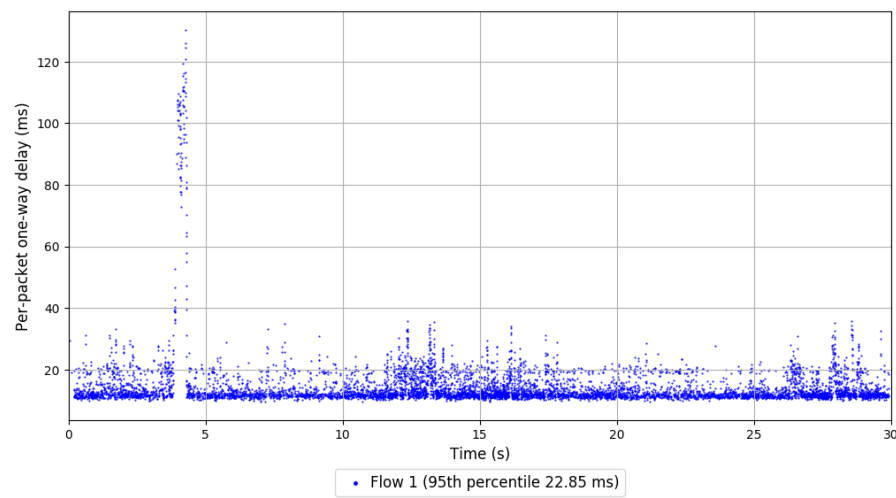
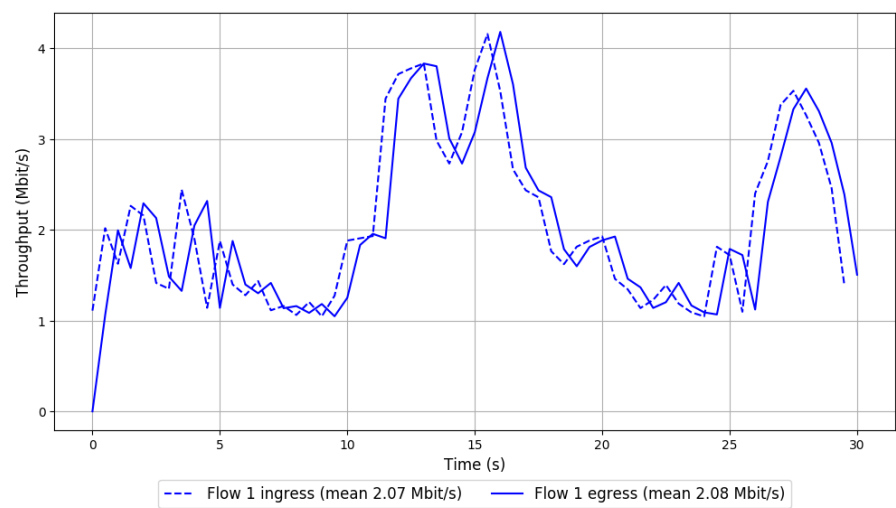


Run 1: Statistics of PCC-Vivace

Start at: 2018-07-09 18:56:15
End at: 2018-07-09 18:56:45
Local clock offset: 0.142 ms
Remote clock offset: -0.825 ms

Below is generated by plot.py at 2018-07-09 19:56:08
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.08 Mbit/s
95th percentile per-packet one-way delay: 22.846 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.08 Mbit/s
95th percentile per-packet one-way delay: 22.846 ms
Loss rate: 0.00%

Run 1: Report of PCC-Vivace — Data Link



Run 2: Statistics of PCC-Vivace

Start at: 2018-07-09 19:18:17

End at: 2018-07-09 19:18:47

Local clock offset: 0.539 ms

Remote clock offset: 2.194 ms

Below is generated by plot.py at 2018-07-09 19:56:08

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.13 Mbit/s

95th percentile per-packet one-way delay: 79.801 ms

Loss rate: 0.02%

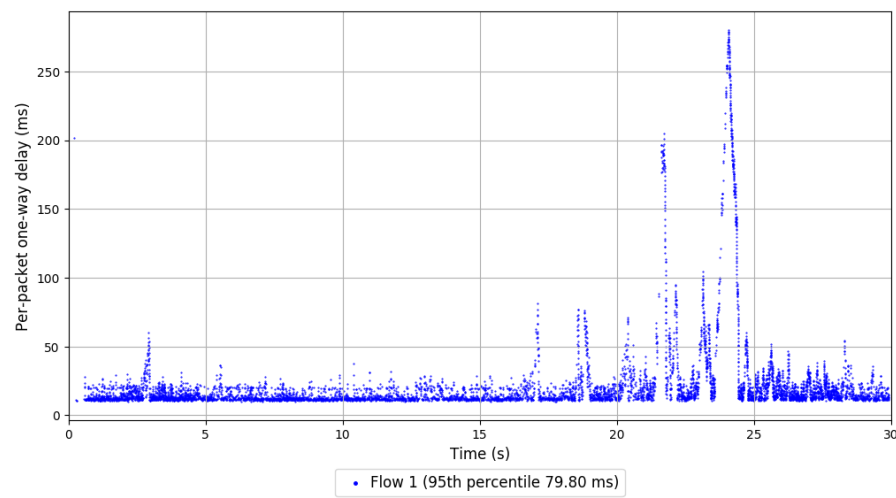
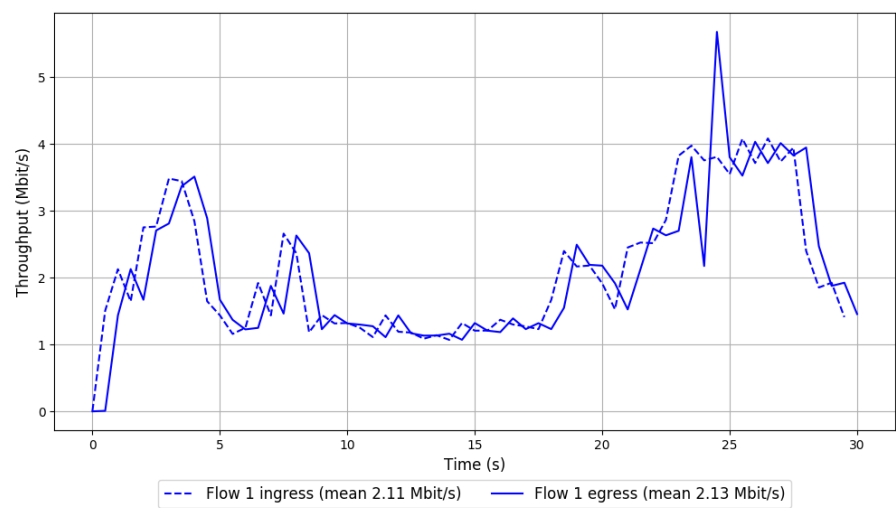
-- Flow 1:

Average throughput: 2.13 Mbit/s

95th percentile per-packet one-way delay: 79.801 ms

Loss rate: 0.02%

Run 2: Report of PCC-Vivace — Data Link



Run 3: Statistics of PCC-Vivace

Start at: 2018-07-09 19:40:23

End at: 2018-07-09 19:40:53

Local clock offset: 0.848 ms

Remote clock offset: 3.62 ms

Below is generated by plot.py at 2018-07-09 19:56:08

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.46 Mbit/s

95th percentile per-packet one-way delay: 978.954 ms

Loss rate: 3.30%

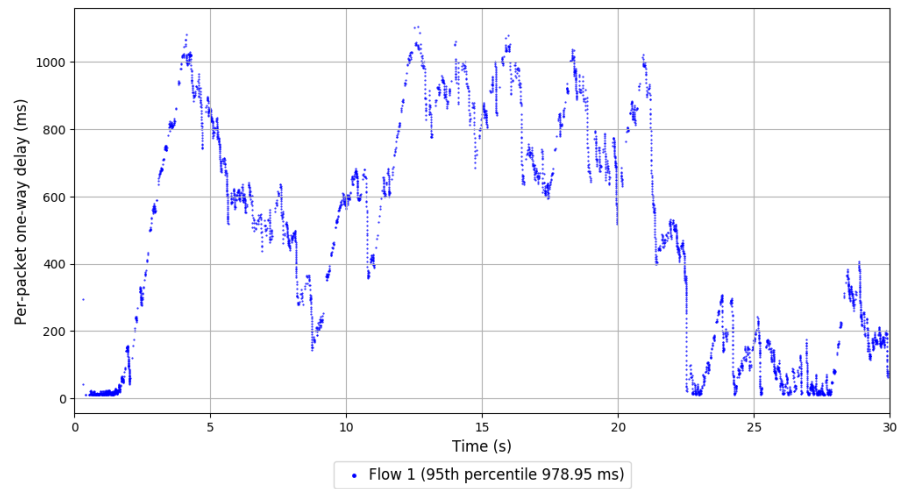
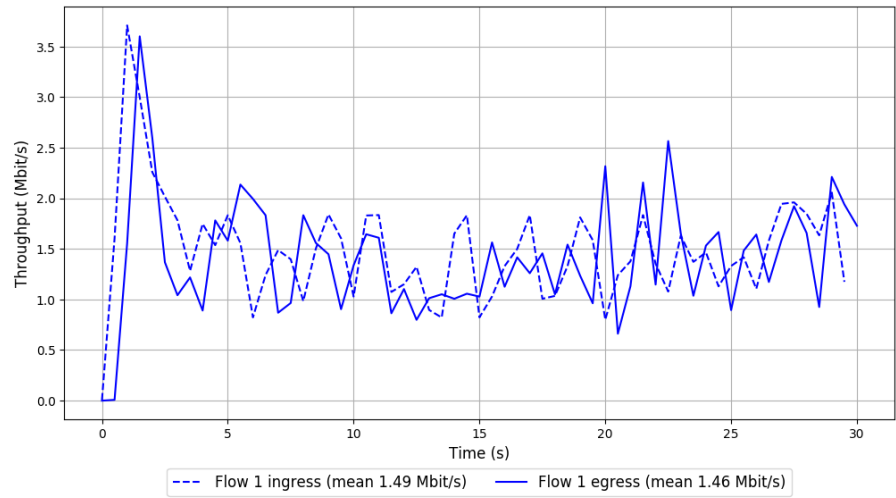
-- Flow 1:

Average throughput: 1.46 Mbit/s

95th percentile per-packet one-way delay: 978.954 ms

Loss rate: 3.30%

Run 3: Report of PCC-Vivace — Data Link

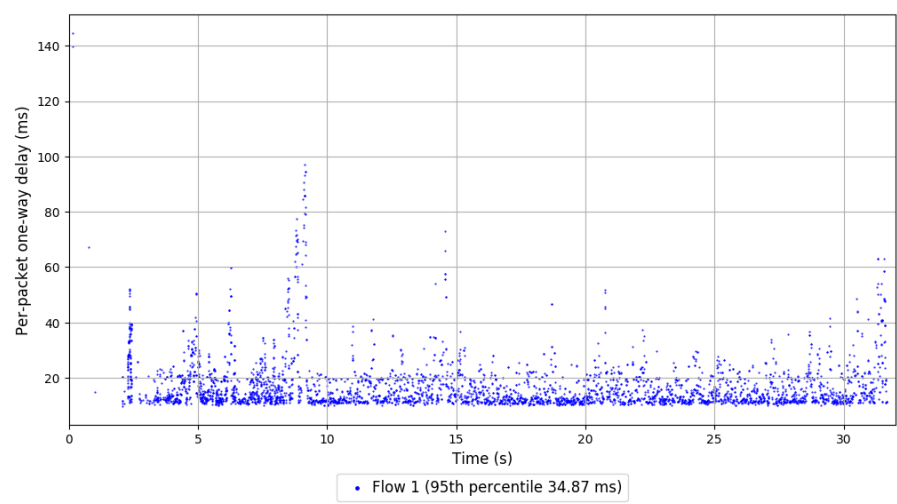
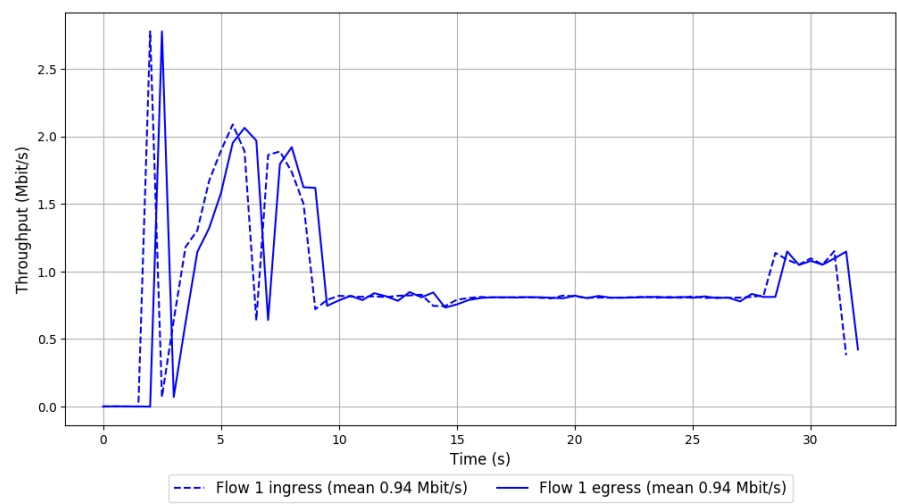


```
Run 1: Statistics of WebRTC media

Start at: 2018-07-09 19:10:31
End at: 2018-07-09 19:11:01
Local clock offset: 0.516 ms
Remote clock offset: 0.518 ms

# Below is generated by plot.py at 2018-07-09 19:56:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.94 Mbit/s
95th percentile per-packet one-way delay: 34.867 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.94 Mbit/s
95th percentile per-packet one-way delay: 34.867 ms
Loss rate: 0.00%
```

Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

Start at: 2018-07-09 19:32:37

End at: 2018-07-09 19:33:07

Local clock offset: 0.711 ms

Remote clock offset: 3.291 ms

Below is generated by plot.py at 2018-07-09 19:56:08

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.62 Mbit/s

95th percentile per-packet one-way delay: 109.737 ms

Loss rate: 0.03%

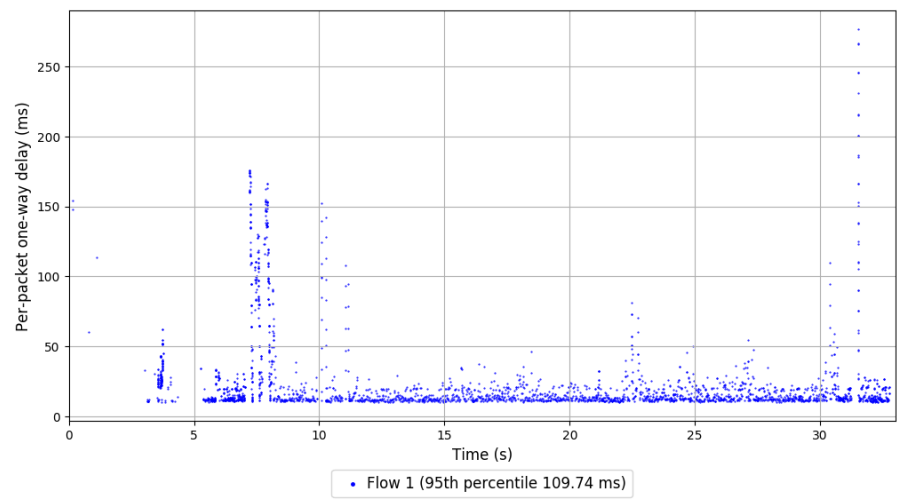
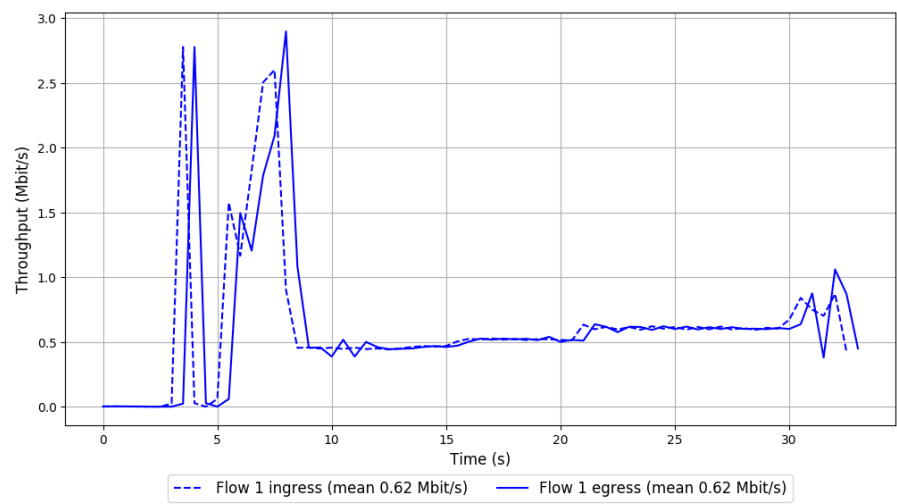
-- Flow 1:

Average throughput: 0.62 Mbit/s

95th percentile per-packet one-way delay: 109.737 ms

Loss rate: 0.03%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2018-07-09 19:54:45

End at: 2018-07-09 19:55:15

Local clock offset: 0.678 ms

Remote clock offset: 2.372 ms

Below is generated by plot.py at 2018-07-09 19:56:08

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.87 Mbit/s

95th percentile per-packet one-way delay: 139.451 ms

Loss rate: 0.17%

-- Flow 1:

Average throughput: 0.87 Mbit/s

95th percentile per-packet one-way delay: 139.451 ms

Loss rate: 0.17%

Run 3: Report of WebRTC media — Data Link

