

Pantheon Report

Generated at 2018-09-06 04:39:17 (UTC).

Data path: AWS California 1 on *ens5 (local)* → Stanford cellular on *ppp0 (remote)*.

Repeated the test of 18 congestion control schemes 3 times.

Each test lasted for 30 seconds running 1 flow.

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

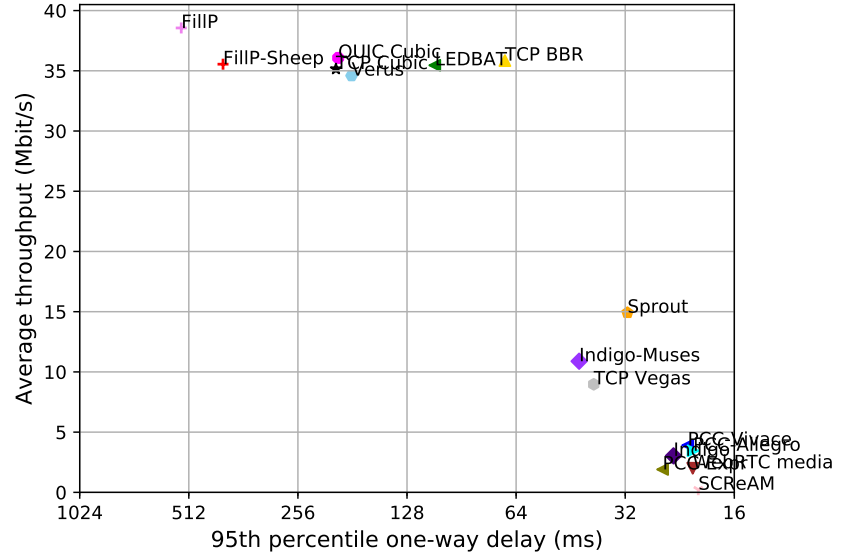
System info:

```
Linux 4.15.0-1020-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
net.ipv4.tcp_mem = 536870912 536870912 536870912
```

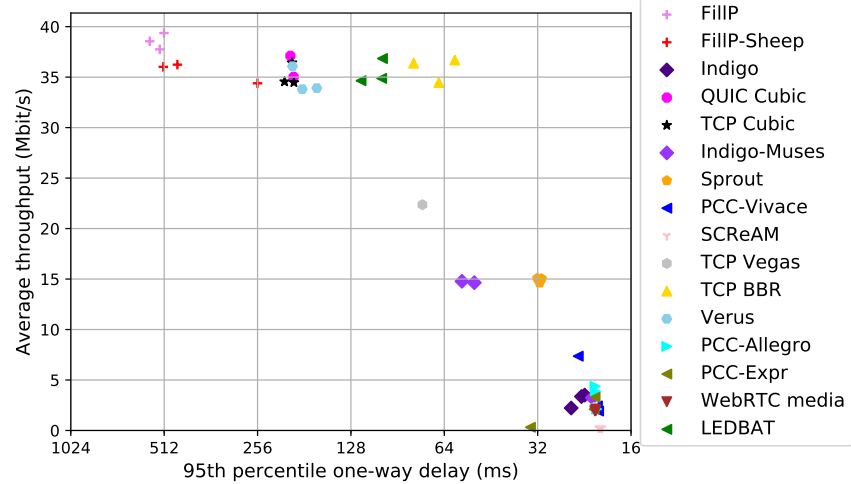
Git summary:

```
branch: muses @ f392ce15d580343f4432c3d7e068b3290f03eb4a
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ a28d20fb82a95a965a3da65fd1eb71b8994e9b84
third_party/pantheon-tunnel @ cbfce6db5ff5740dafa1771f813cd646339e1952
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 cellular, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from AWS California 1 to Stanford cellular, 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	35.85	68.72	0.10
Copa	0	N/A	N/A	N/A
TCP Cubic	3	35.15	201.06	0.27
FillP	3	38.56	537.20	24.36
FillP-Sheep	3	35.55	411.97	5.53
Indigo	3	3.03	23.55	0.00
LEDBAT	3	35.45	107.31	0.27
Indigo-Muses	3	10.89	42.89	0.00
PCC-Allegro	3	3.45	20.79	0.00
PCC-Expr	3	1.90	25.24	54.66
QUIC Cubic	2	36.07	198.25	0.54
SCReAM	3	0.22	20.12	0.00
Sprout	3	14.92	31.55	0.45
TaoVA-100x	0	N/A	N/A	N/A
TCP Vegas	3	8.97	39.09	0.00
Verus	3	34.60	182.03	1.15
PCC-Vivace	3	3.90	21.53	0.00
WebRTC media	3	2.00	20.84	0.00

Run 1: Statistics of TCP BBR

Start at: 2018-09-06 03:38:32

End at: 2018-09-06 03:39:02

Local clock offset: 3.828 ms

Remote clock offset: 3.065 ms

Below is generated by plot.py at 2018-09-06 04:37:54

Datalink statistics

-- Total of 1 flow:

Average throughput: 36.38 Mbit/s

95th percentile per-packet one-way delay: 80.331 ms

Loss rate: 0.11%

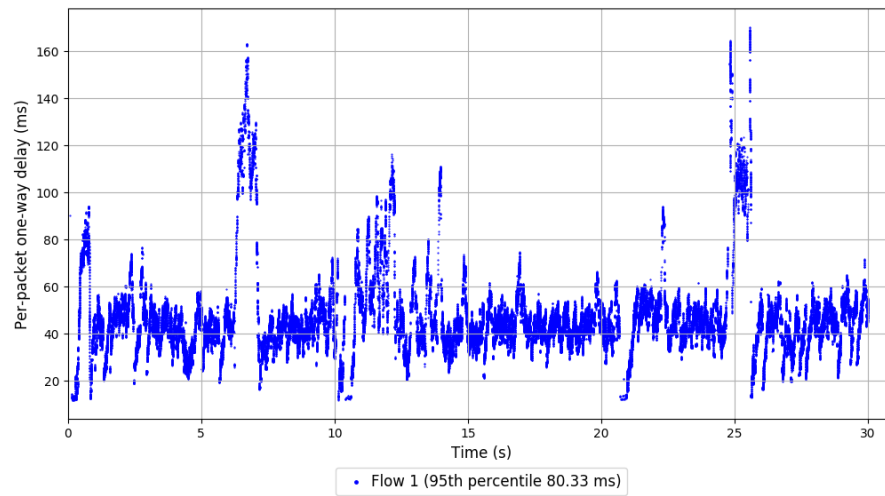
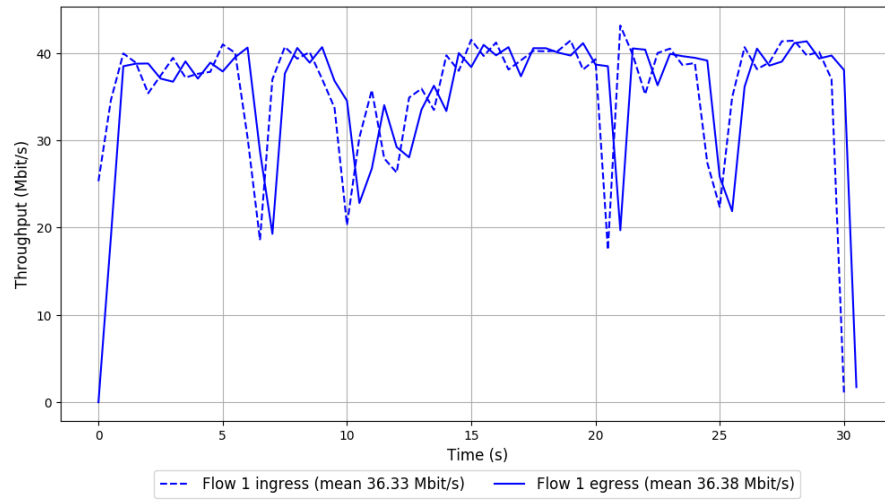
-- Flow 1:

Average throughput: 36.38 Mbit/s

95th percentile per-packet one-way delay: 80.331 ms

Loss rate: 0.11%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-09-06 04:02:22

End at: 2018-09-06 04:02:52

Local clock offset: 4.144 ms

Remote clock offset: -0.146 ms

Below is generated by plot.py at 2018-09-06 04:37:54

Datalink statistics

-- Total of 1 flow:

Average throughput: 36.70 Mbit/s

95th percentile per-packet one-way delay: 59.200 ms

Loss rate: 0.10%

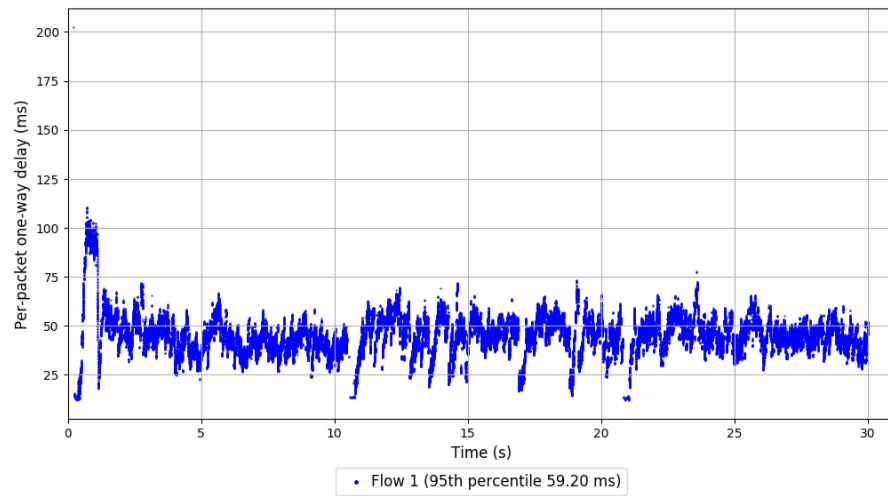
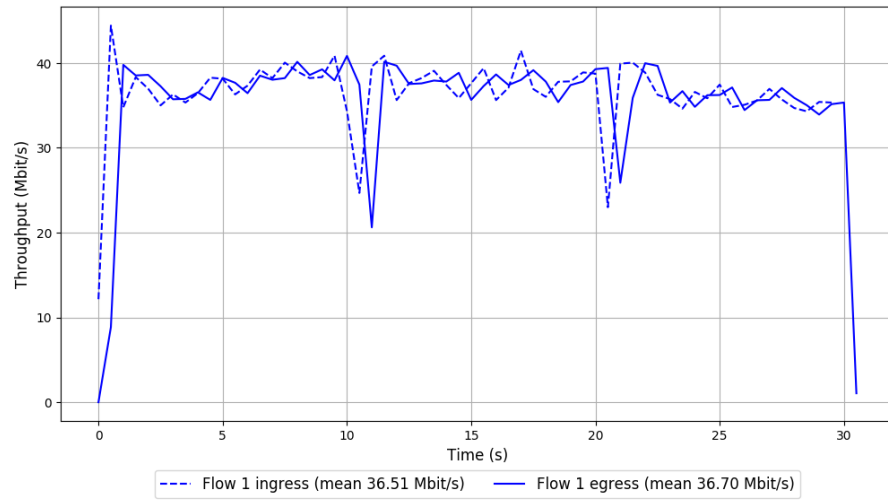
-- Flow 1:

Average throughput: 36.70 Mbit/s

95th percentile per-packet one-way delay: 59.200 ms

Loss rate: 0.10%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-09-06 04:26:10

End at: 2018-09-06 04:26:40

Local clock offset: 4.27 ms

Remote clock offset: -0.341 ms

Below is generated by plot.py at 2018-09-06 04:37:54

Datalink statistics

-- Total of 1 flow:

Average throughput: 34.46 Mbit/s

95th percentile per-packet one-way delay: 66.630 ms

Loss rate: 0.09%

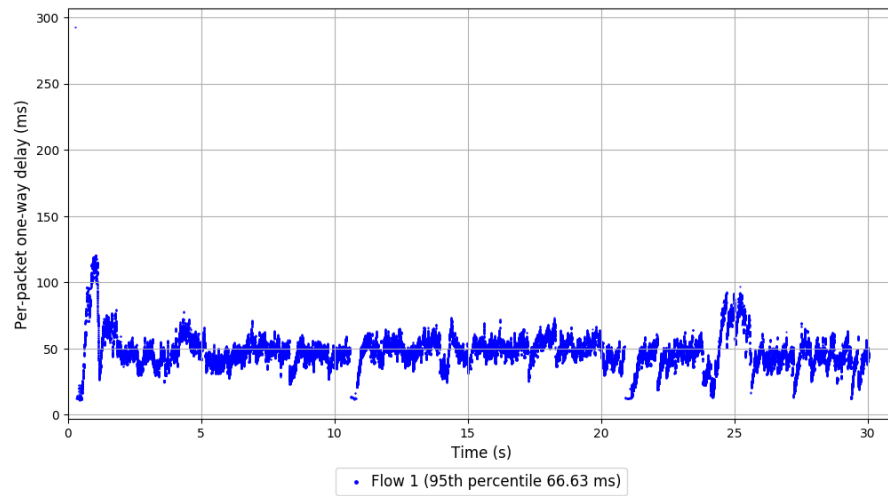
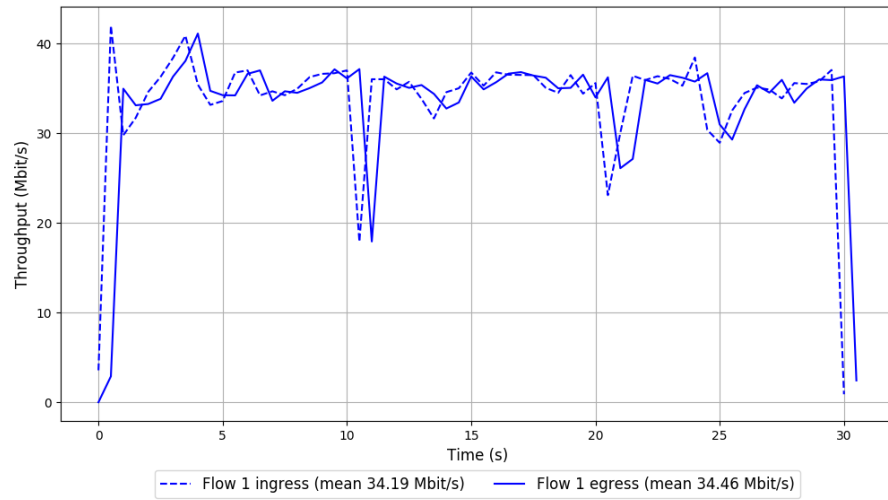
-- Flow 1:

Average throughput: 34.46 Mbit/s

95th percentile per-packet one-way delay: 66.630 ms

Loss rate: 0.09%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of Copa

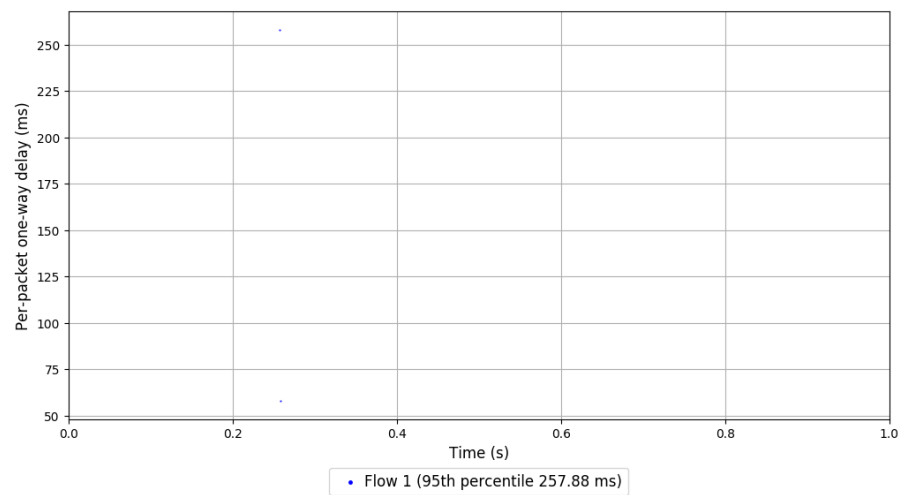
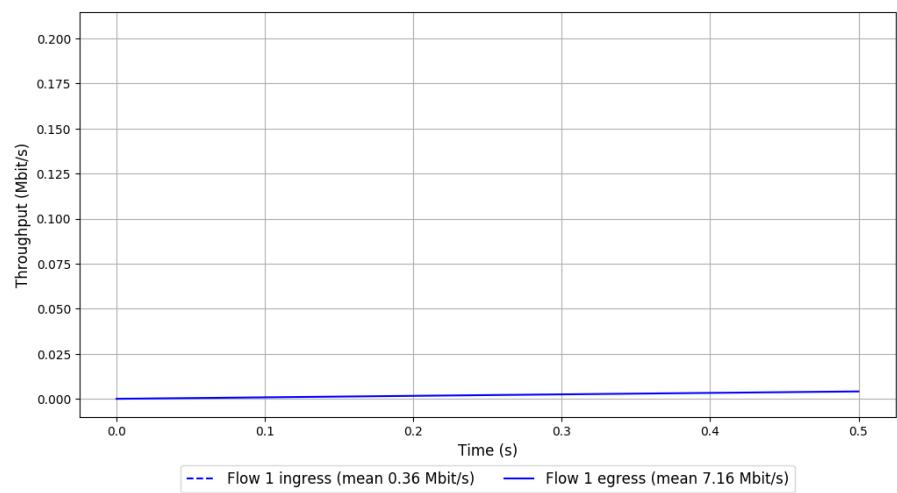
Start at: 2018-09-06 03:37:14

End at: 2018-09-06 03:37:44

Local clock offset: 3.817 ms

Remote clock offset: 3.004 ms

Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

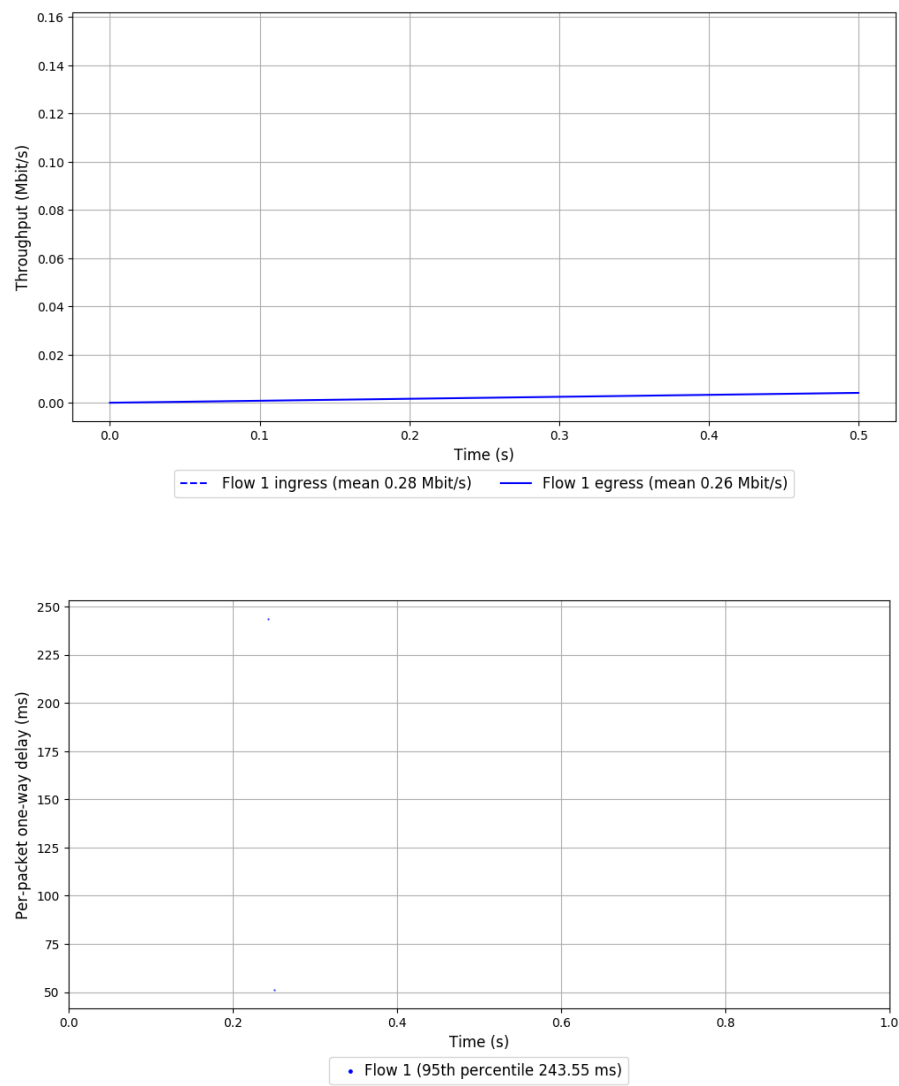
Start at: 2018-09-06 04:01:03

End at: 2018-09-06 04:01:33

Local clock offset: 4.21 ms

Remote clock offset: -0.128 ms

Run 2: Report of Copa — Data Link



Run 3: Statistics of Copa

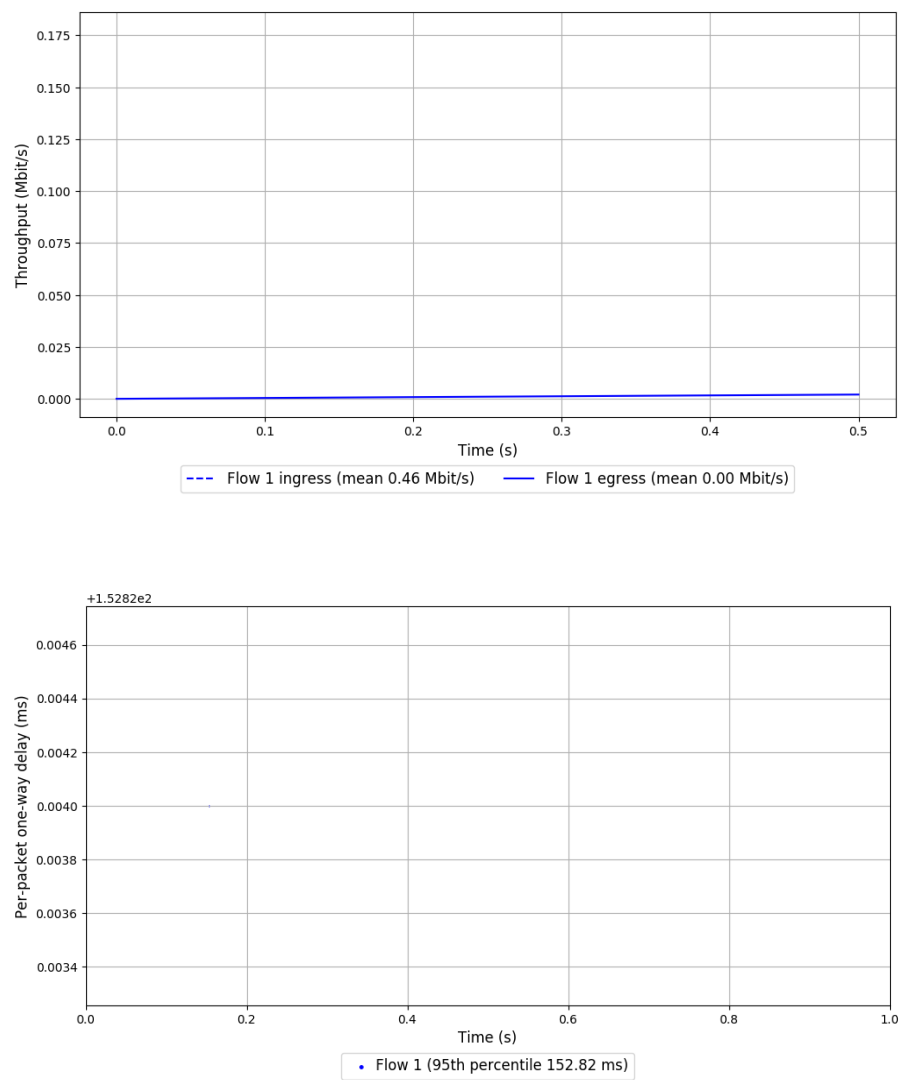
Start at: 2018-09-06 04:24:52

End at: 2018-09-06 04:25:22

Local clock offset: 4.254 ms

Remote clock offset: -0.348 ms

Run 3: Report of Copa — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-09-06 03:31:58

End at: 2018-09-06 03:32:28

Local clock offset: 3.76 ms

Remote clock offset: 2.751 ms

Below is generated by plot.py at 2018-09-06 04:37:54

Datalink statistics

-- Total of 1 flow:

Average throughput: 34.55 Mbit/s

95th percentile per-packet one-way delay: 209.527 ms

Loss rate: 0.17%

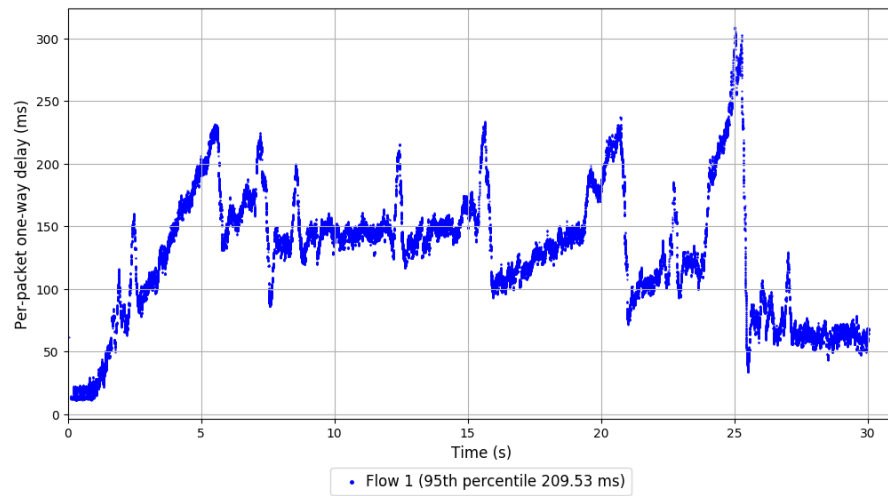
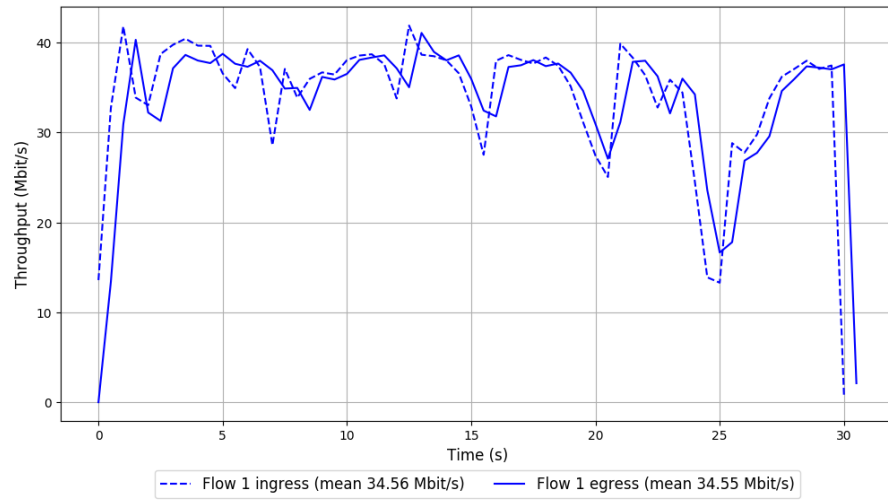
-- Flow 1:

Average throughput: 34.55 Mbit/s

95th percentile per-packet one-way delay: 209.527 ms

Loss rate: 0.17%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-09-06 03:55:46

End at: 2018-09-06 03:56:16

Local clock offset: 4.072 ms

Remote clock offset: 0.258 ms

Below is generated by plot.py at 2018-09-06 04:37:54

Datalink statistics

-- Total of 1 flow:

Average throughput: 36.43 Mbit/s

95th percentile per-packet one-way delay: 198.184 ms

Loss rate: 0.37%

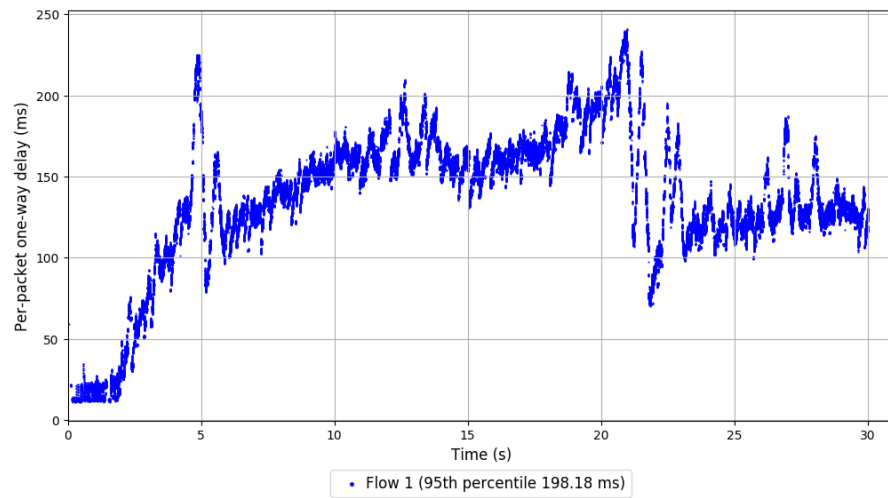
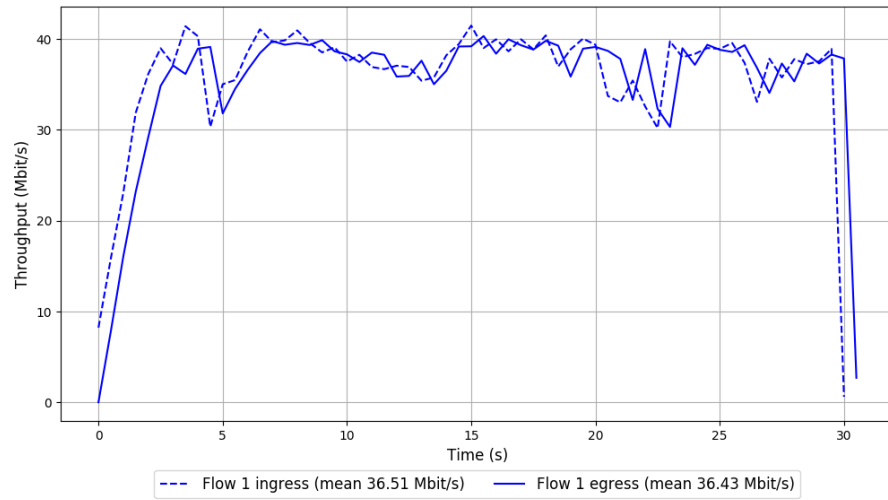
-- Flow 1:

Average throughput: 36.43 Mbit/s

95th percentile per-packet one-way delay: 198.184 ms

Loss rate: 0.37%

Run 2: Report of TCP Cubic — Data Link

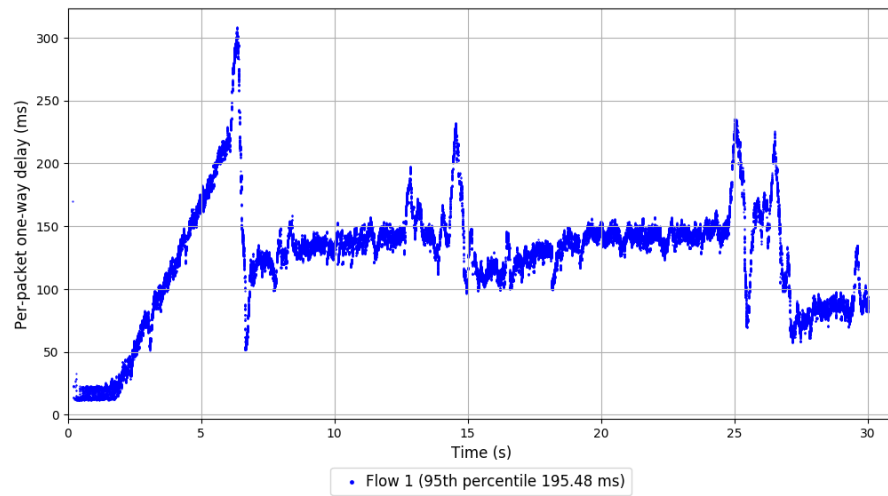
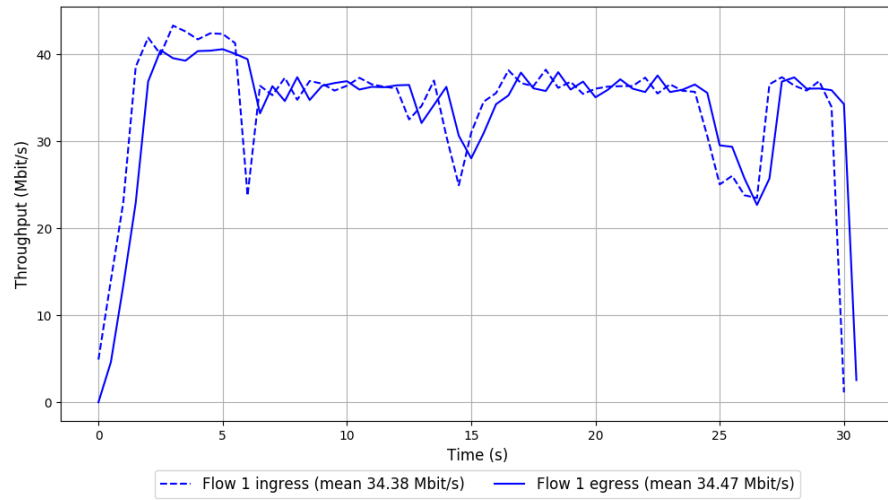


Run 3: Statistics of TCP Cubic

Start at: 2018-09-06 04:19:32
End at: 2018-09-06 04:20:02
Local clock offset: 4.297 ms
Remote clock offset: -0.503 ms

Below is generated by plot.py at 2018-09-06 04:37:54
Datalink statistics
-- Total of 1 flow:
Average throughput: 34.47 Mbit/s
95th percentile per-packet one-way delay: 195.481 ms
Loss rate: 0.27%
-- Flow 1:
Average throughput: 34.47 Mbit/s
95th percentile per-packet one-way delay: 195.481 ms
Loss rate: 0.27%

Run 3: Report of TCP Cubic — Data Link



Run 1: Statistics of FillP

Start at: 2018-09-06 03:26:42

End at: 2018-09-06 03:27:12

Local clock offset: 3.578 ms

Remote clock offset: 2.38 ms

Below is generated by plot.py at 2018-09-06 04:38:09

Datalink statistics

-- Total of 1 flow:

Average throughput: 38.55 Mbit/s

95th percentile per-packet one-way delay: 569.986 ms

Loss rate: 34.28%

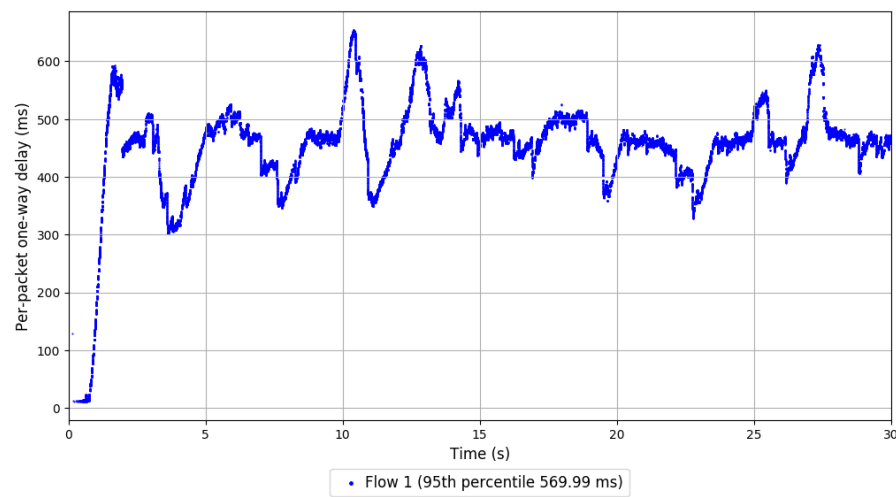
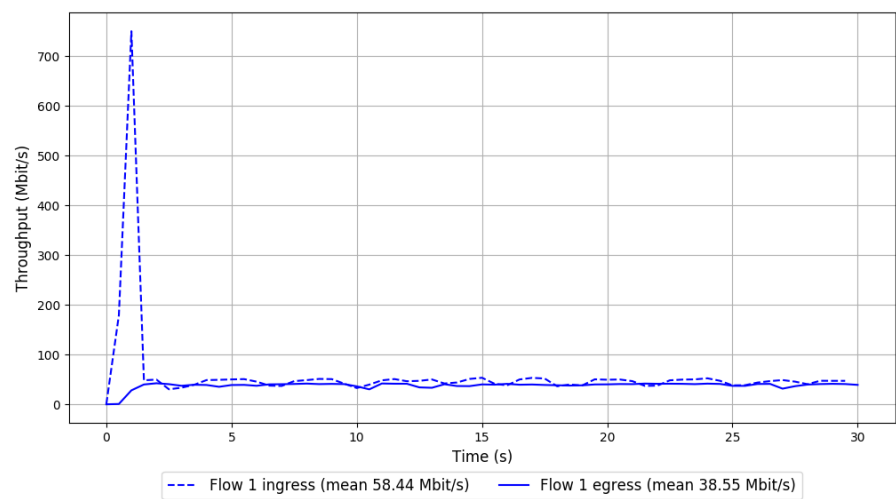
-- Flow 1:

Average throughput: 38.55 Mbit/s

95th percentile per-packet one-way delay: 569.986 ms

Loss rate: 34.28%

Run 1: Report of FillP — Data Link



Run 2: Statistics of FillP

Start at: 2018-09-06 03:50:31

End at: 2018-09-06 03:51:01

Local clock offset: 3.915 ms

Remote clock offset: 1.045 ms

Below is generated by plot.py at 2018-09-06 04:38:09

Datalink statistics

-- Total of 1 flow:

Average throughput: 39.37 Mbit/s

95th percentile per-packet one-way delay: 512.767 ms

Loss rate: 26.65%

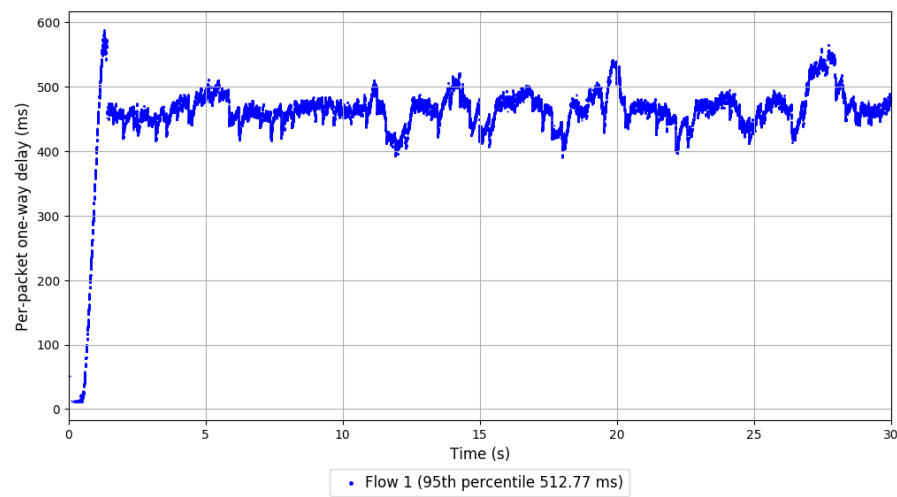
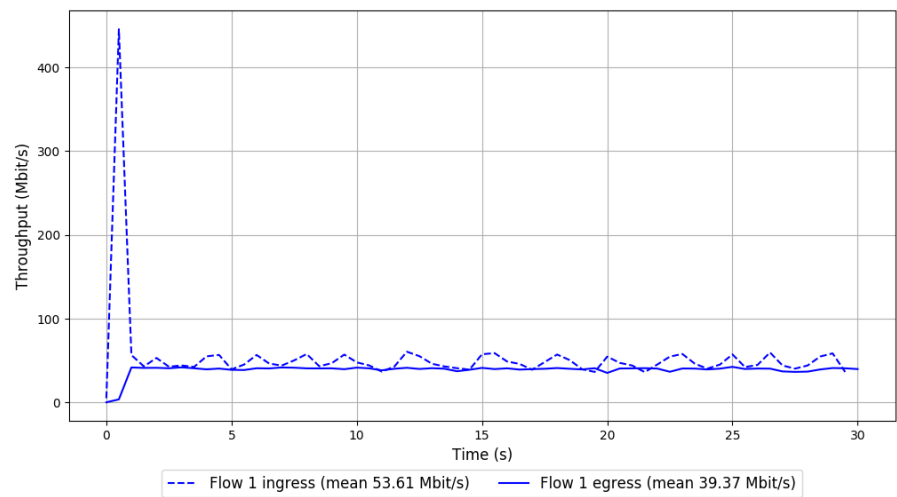
-- Flow 1:

Average throughput: 39.37 Mbit/s

95th percentile per-packet one-way delay: 512.767 ms

Loss rate: 26.65%

Run 2: Report of FillP — Data Link

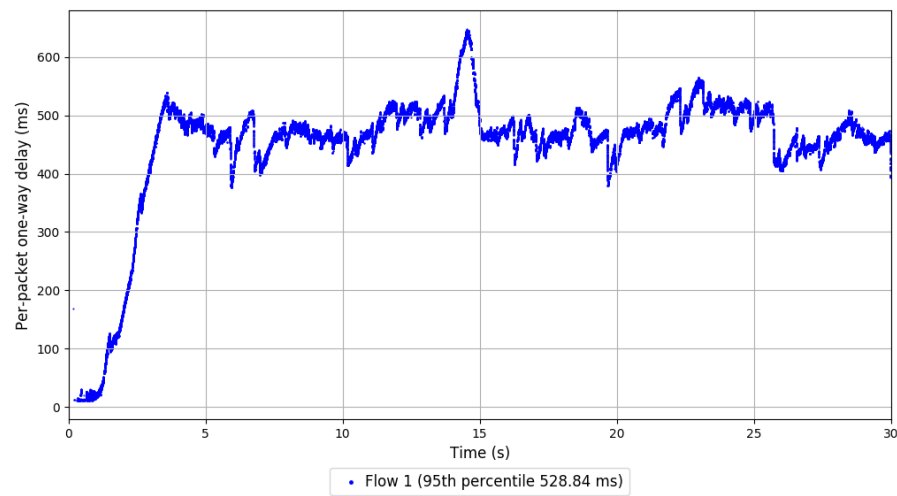
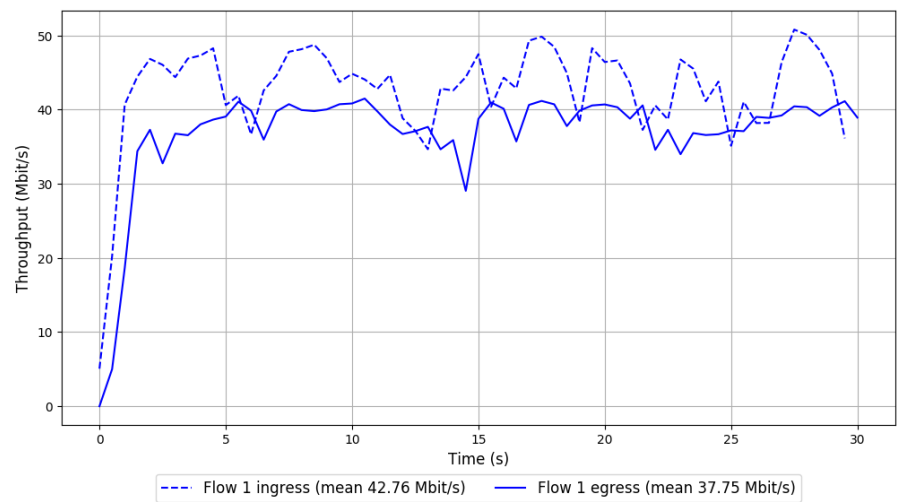


Run 3: Statistics of FillP

Start at: 2018-09-06 04:14:15
End at: 2018-09-06 04:14:45
Local clock offset: 4.549 ms
Remote clock offset: -0.632 ms

Below is generated by plot.py at 2018-09-06 04:38:33
Datalink statistics
-- Total of 1 flow:
Average throughput: 37.75 Mbit/s
95th percentile per-packet one-way delay: 528.842 ms
Loss rate: 12.16%
-- Flow 1:
Average throughput: 37.75 Mbit/s
95th percentile per-packet one-way delay: 528.842 ms
Loss rate: 12.16%

Run 3: Report of FillP — Data Link



Run 1: Statistics of FillP-Sheep

Start at: 2018-09-06 03:46:28

End at: 2018-09-06 03:46:58

Local clock offset: 4.013 ms

Remote clock offset: 2.025 ms

Below is generated by plot.py at 2018-09-06 04:38:33

Datalink statistics

-- Total of 1 flow:

Average throughput: 36.02 Mbit/s

95th percentile per-packet one-way delay: 515.464 ms

Loss rate: 7.15%

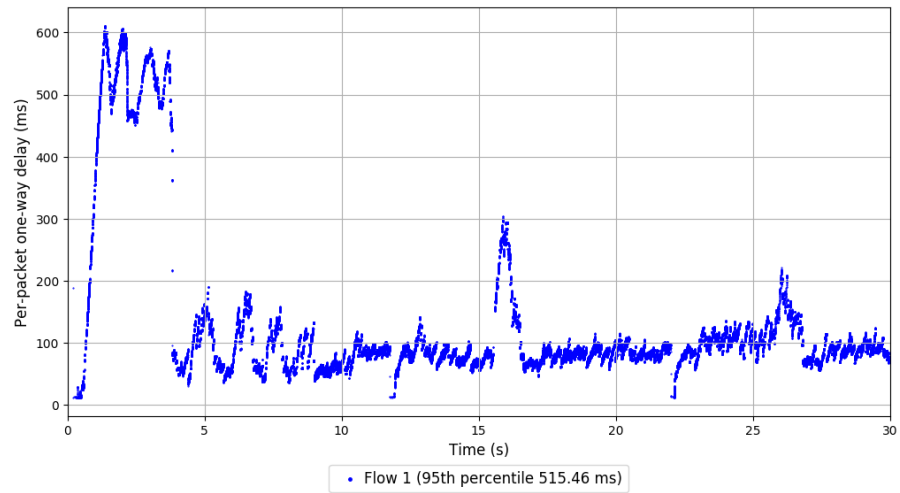
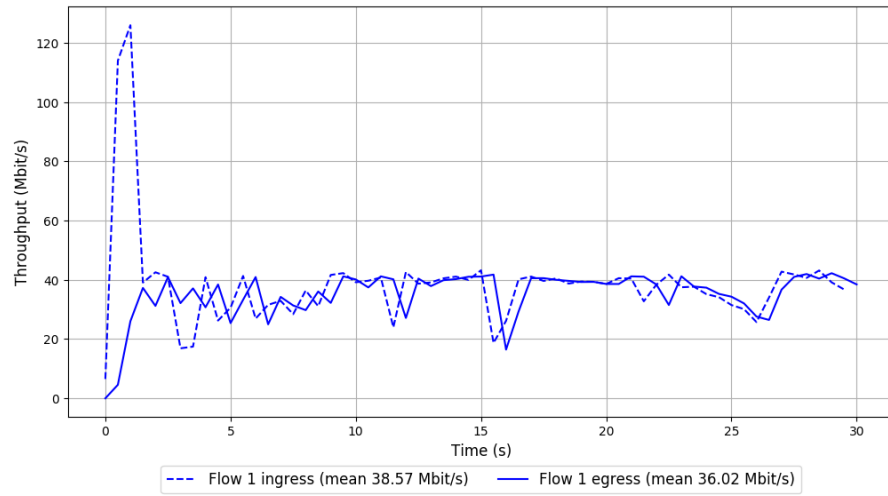
-- Flow 1:

Average throughput: 36.02 Mbit/s

95th percentile per-packet one-way delay: 515.464 ms

Loss rate: 7.15%

Run 1: Report of FillP-Sheep — Data Link

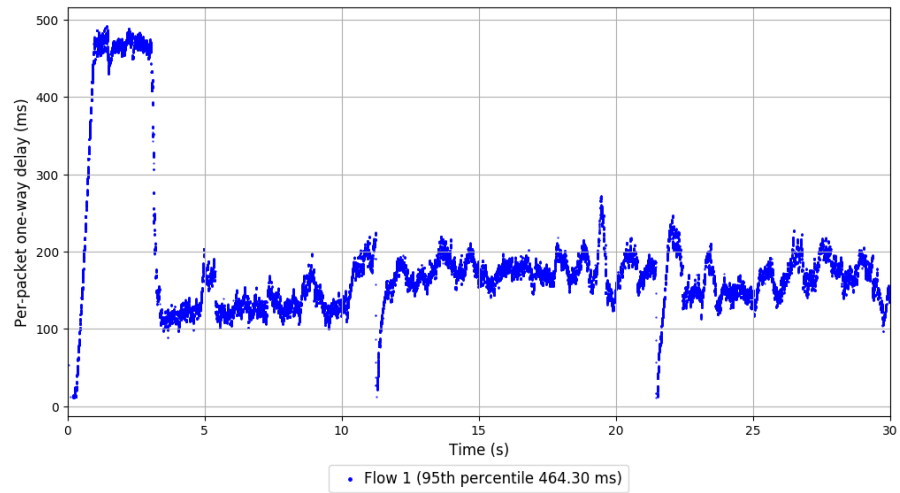
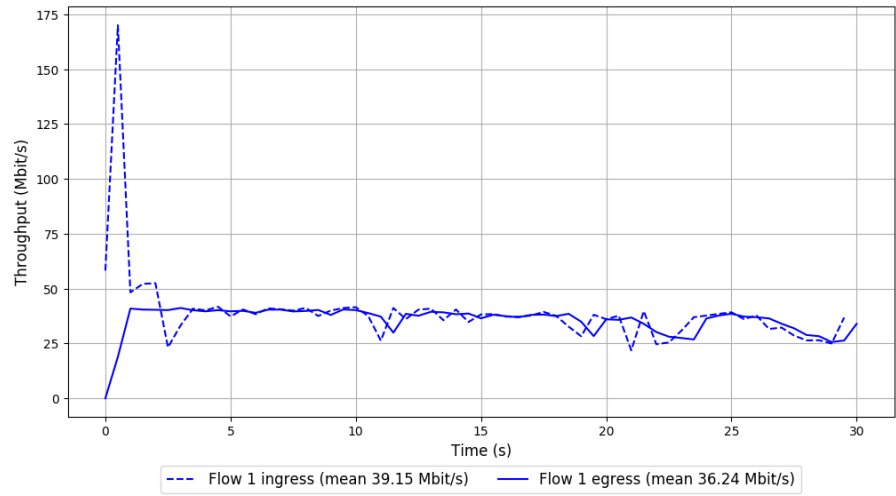


Run 2: Statistics of FillP-Sheep

Start at: 2018-09-06 04:10:17
End at: 2018-09-06 04:10:47
Local clock offset: 4.461 ms
Remote clock offset: -0.503 ms

Below is generated by plot.py at 2018-09-06 04:38:33
Datalink statistics
-- Total of 1 flow:
Average throughput: 36.24 Mbit/s
95th percentile per-packet one-way delay: 464.296 ms
Loss rate: 7.57%
-- Flow 1:
Average throughput: 36.24 Mbit/s
95th percentile per-packet one-way delay: 464.296 ms
Loss rate: 7.57%

Run 2: Report of FillP-Sheep — Data Link

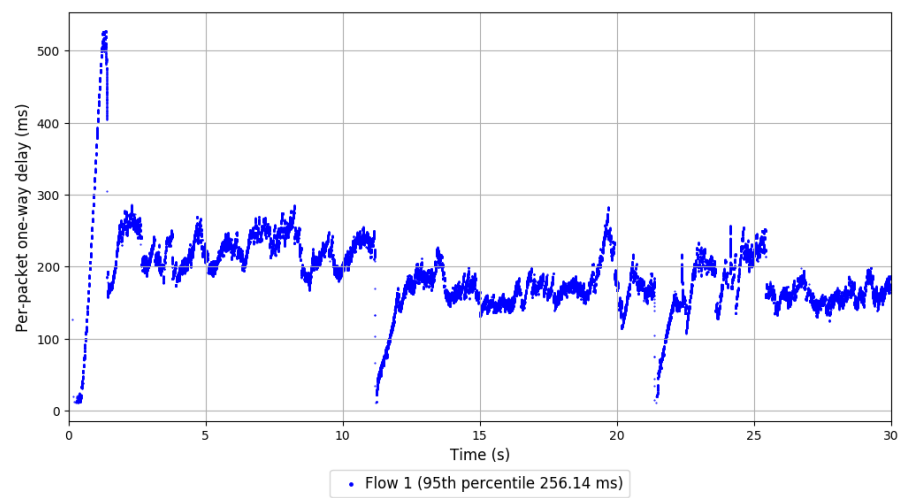
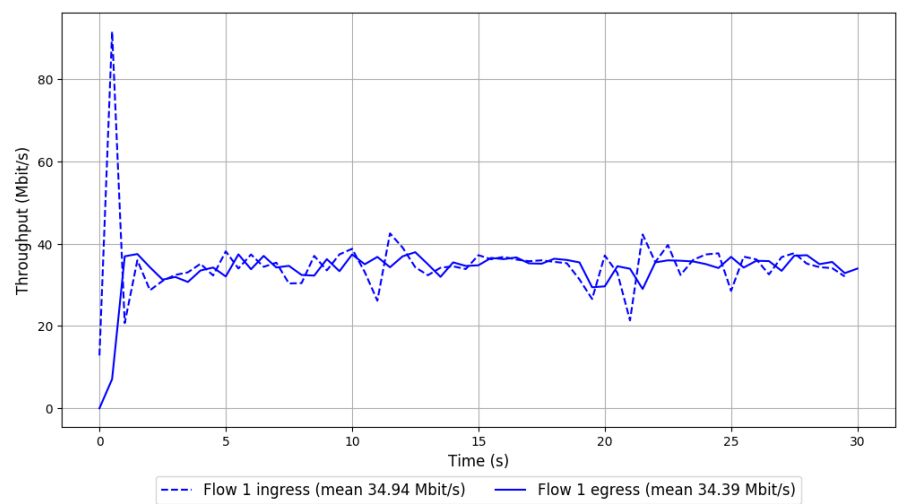


Run 3: Statistics of FillP-Sheep

Start at: 2018-09-06 04:34:03
End at: 2018-09-06 04:34:33
Local clock offset: 4.304 ms
Remote clock offset: -0.109 ms

Below is generated by plot.py at 2018-09-06 04:38:33
Datalink statistics
-- Total of 1 flow:
Average throughput: 34.39 Mbit/s
95th percentile per-packet one-way delay: 256.140 ms
Loss rate: 1.86%
-- Flow 1:
Average throughput: 34.39 Mbit/s
95th percentile per-packet one-way delay: 256.140 ms
Loss rate: 1.86%

Run 3: Report of FillP-Sheep — Data Link

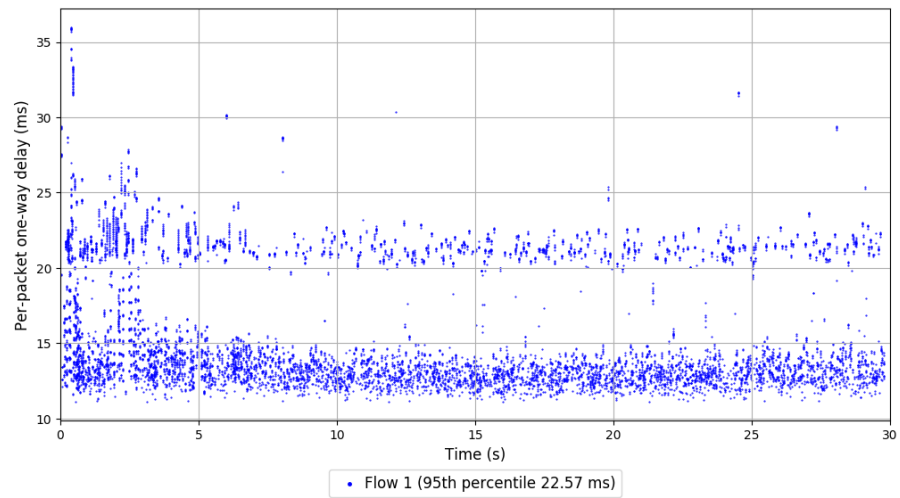
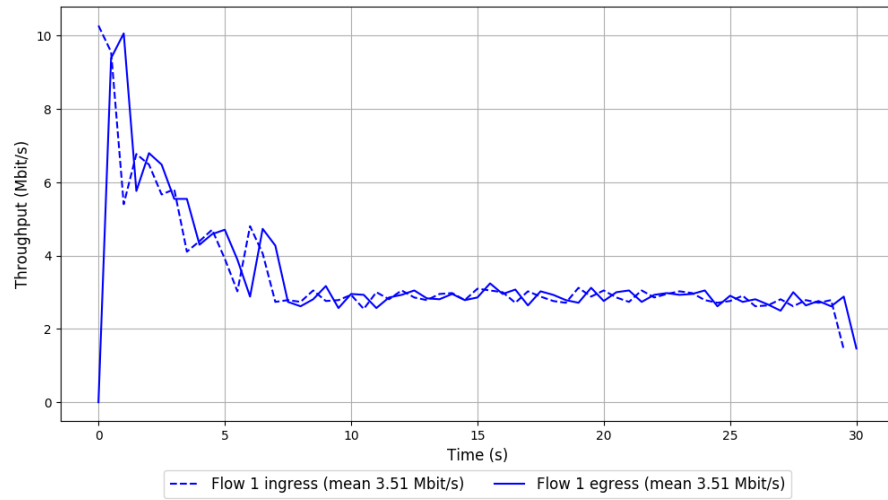


```
Run 1: Statistics of Indigo

Start at: 2018-09-06 03:35:55
End at: 2018-09-06 03:36:25
Local clock offset: 3.701 ms
Remote clock offset: 2.949 ms

# Below is generated by plot.py at 2018-09-06 04:38:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.51 Mbit/s
95th percentile per-packet one-way delay: 22.574 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 3.51 Mbit/s
95th percentile per-packet one-way delay: 22.574 ms
Loss rate: 0.00%
```

Run 1: Report of Indigo — Data Link

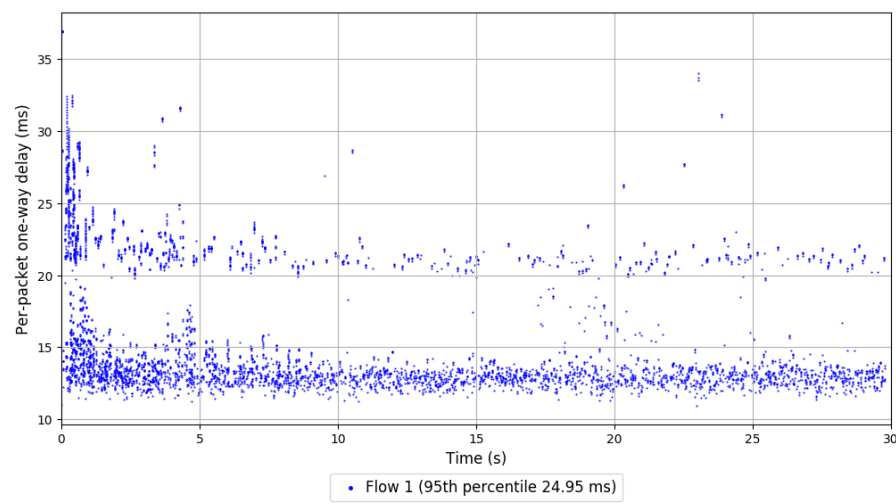
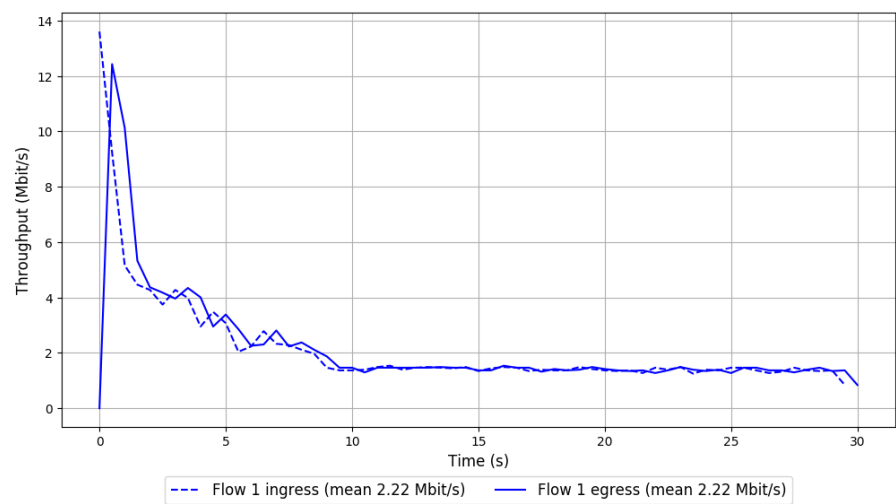


Run 2: Statistics of Indigo

Start at: 2018-09-06 03:59:45
End at: 2018-09-06 04:00:15
Local clock offset: 4.078 ms
Remote clock offset: -0.049 ms

Below is generated by plot.py at 2018-09-06 04:38:33
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.22 Mbit/s
95th percentile per-packet one-way delay: 24.954 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.22 Mbit/s
95th percentile per-packet one-way delay: 24.954 ms
Loss rate: 0.00%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-09-06 04:23:34

End at: 2018-09-06 04:24:04

Local clock offset: 4.206 ms

Remote clock offset: -0.373 ms

Below is generated by plot.py at 2018-09-06 04:38:33

Datalink statistics

-- Total of 1 flow:

Average throughput: 3.36 Mbit/s

95th percentile per-packet one-way delay: 23.119 ms

Loss rate: 0.00%

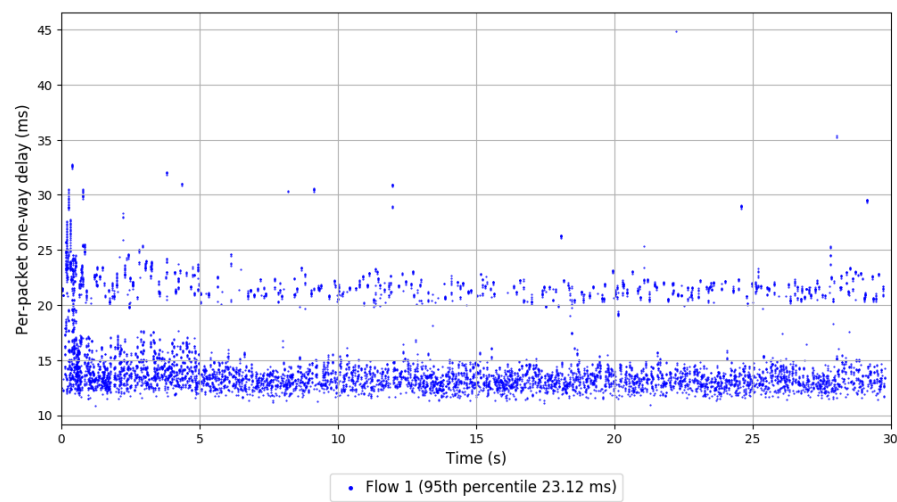
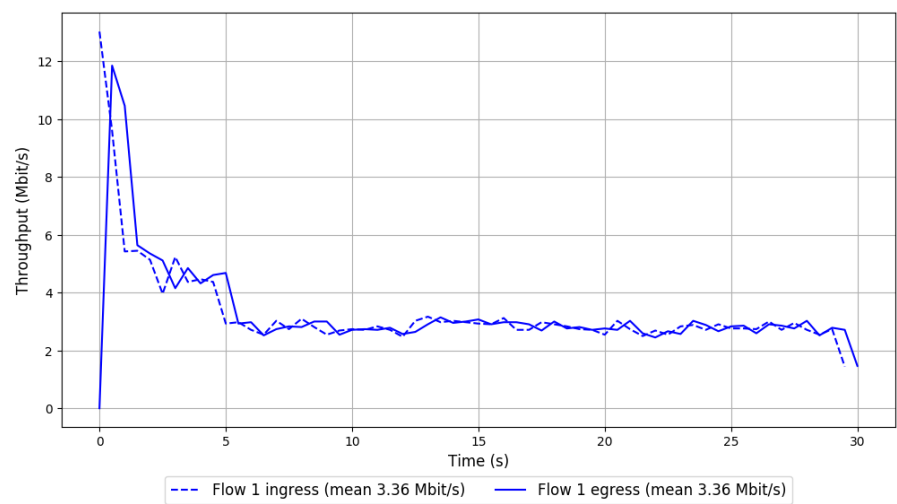
-- Flow 1:

Average throughput: 3.36 Mbit/s

95th percentile per-packet one-way delay: 23.119 ms

Loss rate: 0.00%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of LEDBAT

Start at: 2018-09-06 03:39:52

End at: 2018-09-06 03:40:22

Local clock offset: 3.77 ms

Remote clock offset: 3.134 ms

Below is generated by plot.py at 2018-09-06 04:38:33

Datalink statistics

-- Total of 1 flow:

Average throughput: 36.84 Mbit/s

95th percentile per-packet one-way delay: 101.318 ms

Loss rate: 0.27%

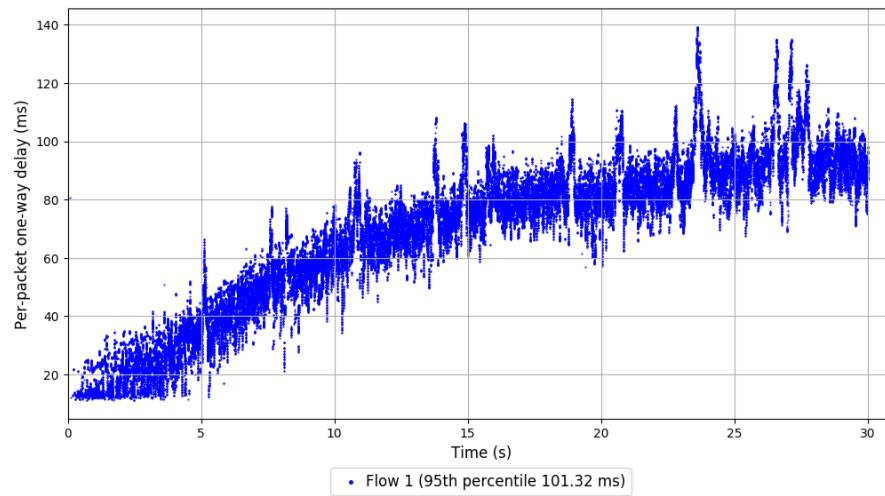
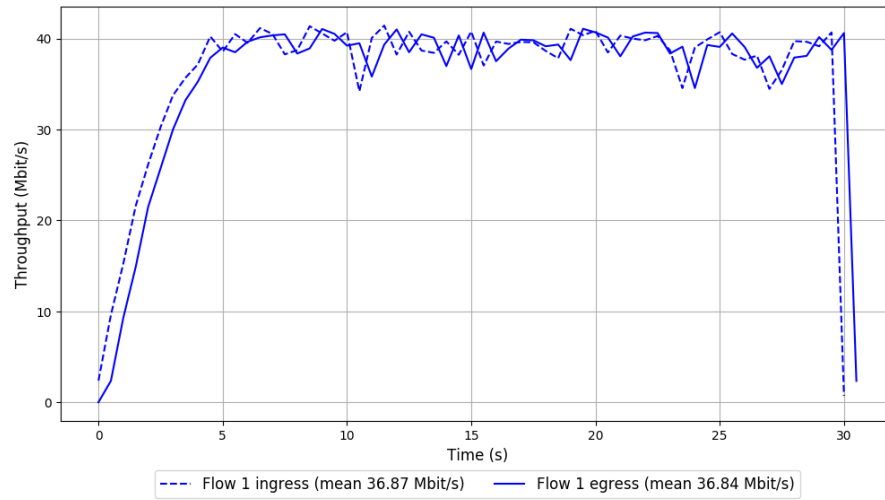
-- Flow 1:

Average throughput: 36.84 Mbit/s

95th percentile per-packet one-way delay: 101.318 ms

Loss rate: 0.27%

Run 1: Report of LEDBAT — Data Link

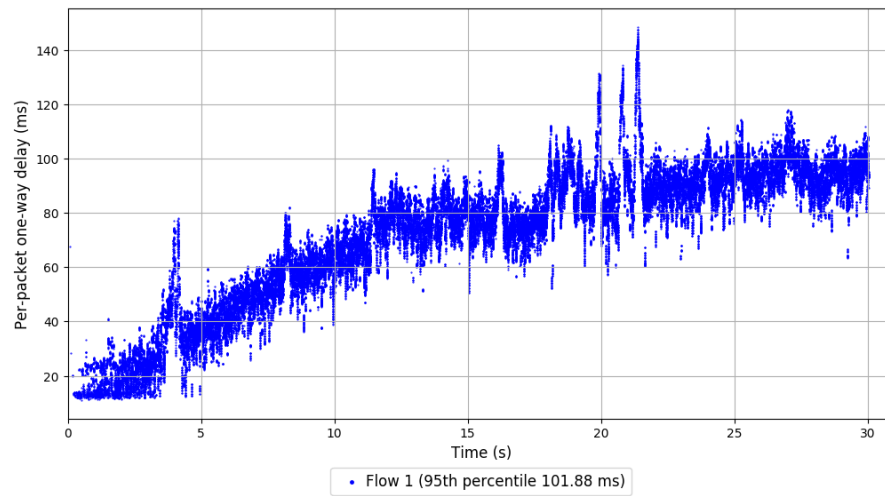
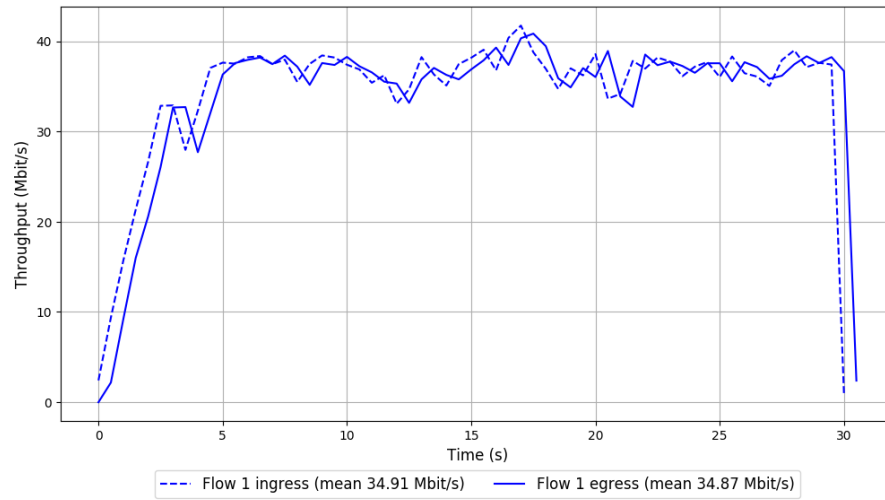


Run 2: Statistics of LEDBAT

Start at: 2018-09-06 04:03:41
End at: 2018-09-06 04:04:11
Local clock offset: 4.27 ms
Remote clock offset: -0.282 ms

Below is generated by plot.py at 2018-09-06 04:38:33
Datalink statistics
-- Total of 1 flow:
Average throughput: 34.87 Mbit/s
95th percentile per-packet one-way delay: 101.881 ms
Loss rate: 0.27%
-- Flow 1:
Average throughput: 34.87 Mbit/s
95th percentile per-packet one-way delay: 101.881 ms
Loss rate: 0.27%

Run 2: Report of LEDBAT — Data Link

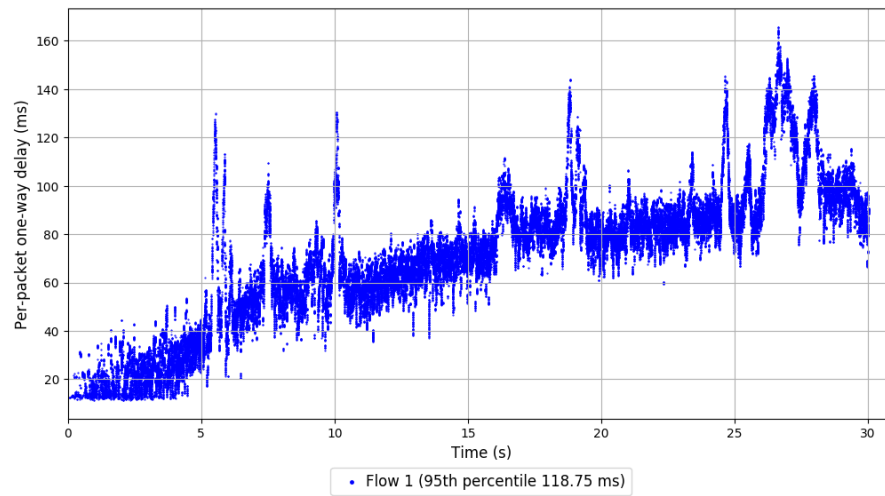
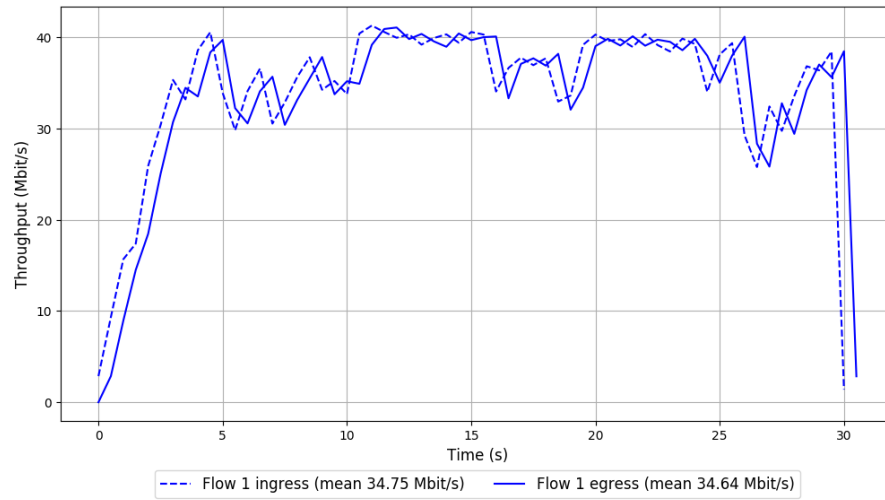


Run 3: Statistics of LEDBAT

Start at: 2018-09-06 04:27:30
End at: 2018-09-06 04:28:00
Local clock offset: 4.253 ms
Remote clock offset: -0.242 ms

Below is generated by plot.py at 2018-09-06 04:38:46
Datalink statistics
-- Total of 1 flow:
Average throughput: 34.64 Mbit/s
95th percentile per-packet one-way delay: 118.746 ms
Loss rate: 0.28%
-- Flow 1:
Average throughput: 34.64 Mbit/s
95th percentile per-packet one-way delay: 118.746 ms
Loss rate: 0.28%

Run 3: Report of LEDBAT — Data Link

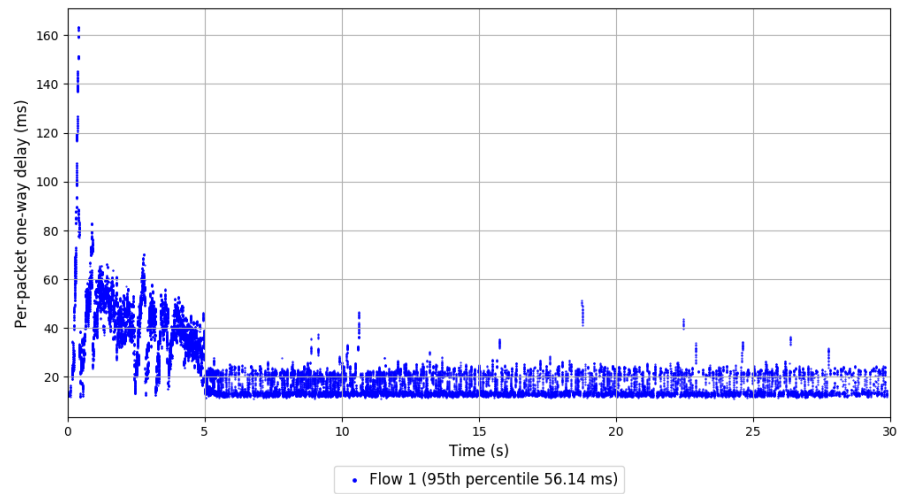
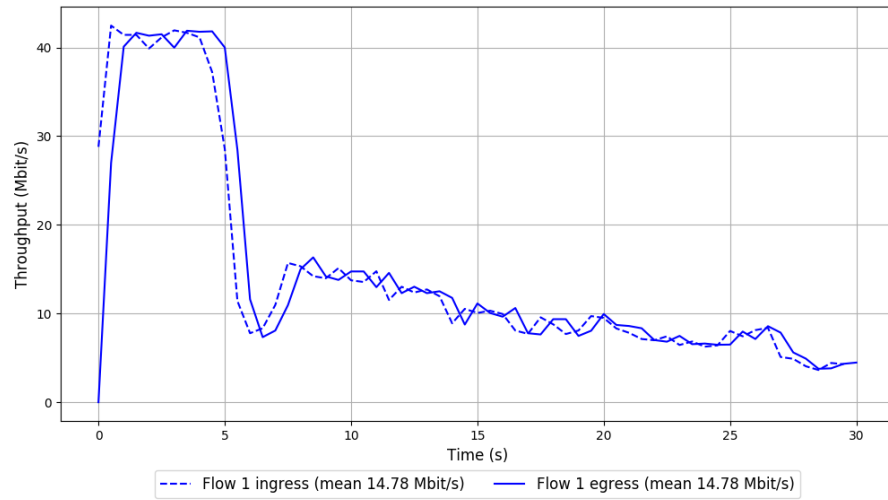


```
Run 1: Statistics of Indigo-Muses

Start at: 2018-09-06 03:45:09
End at: 2018-09-06 03:45:39
Local clock offset: 3.907 ms
Remote clock offset: 2.387 ms

# Below is generated by plot.py at 2018-09-06 04:38:46
# Datalink statistics
-- Total of 1 flow:
Average throughput: 14.78 Mbit/s
95th percentile per-packet one-way delay: 56.137 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 14.78 Mbit/s
95th percentile per-packet one-way delay: 56.137 ms
Loss rate: 0.00%
```

Run 1: Report of Indigo-Muses — Data Link

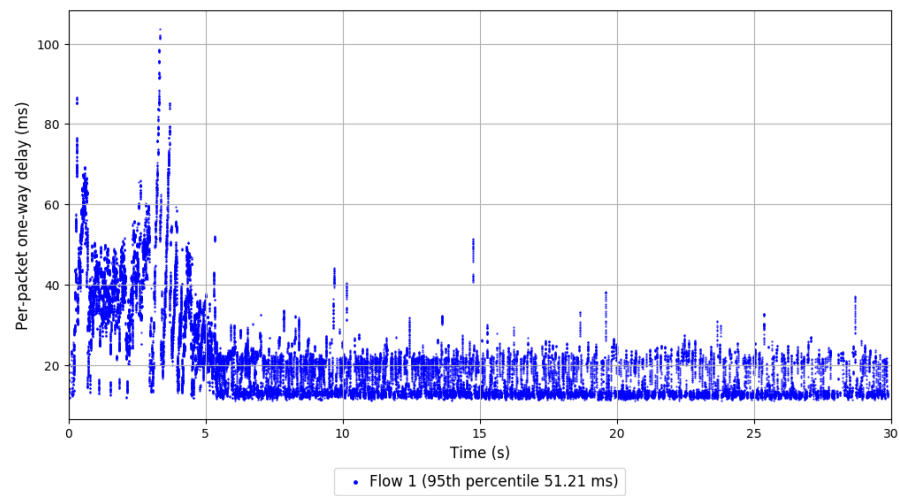
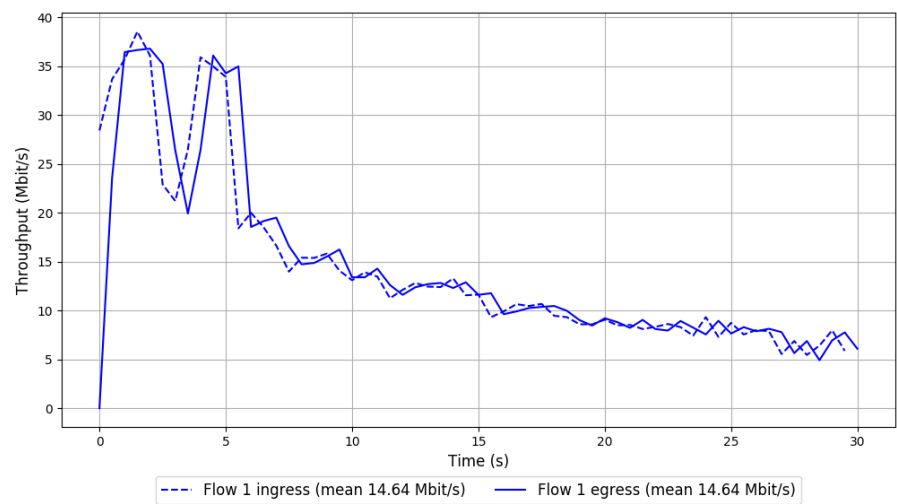


Run 2: Statistics of Indigo-Muses

Start at: 2018-09-06 04:08:58
End at: 2018-09-06 04:09:28
Local clock offset: 4.351 ms
Remote clock offset: -0.459 ms

Below is generated by plot.py at 2018-09-06 04:38:46
Datalink statistics
-- Total of 1 flow:
Average throughput: 14.64 Mbit/s
95th percentile per-packet one-way delay: 51.209 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 14.64 Mbit/s
95th percentile per-packet one-way delay: 51.209 ms
Loss rate: 0.00%

Run 2: Report of Indigo-Muses — Data Link



Run 3: Statistics of Indigo-Muses

Start at: 2018-09-06 04:32:45

End at: 2018-09-06 04:33:15

Local clock offset: 4.3 ms

Remote clock offset: -0.245 ms

Below is generated by plot.py at 2018-09-06 04:38:46

Datalink statistics

-- Total of 1 flow:

Average throughput: 3.24 Mbit/s

95th percentile per-packet one-way delay: 21.314 ms

Loss rate: 0.00%

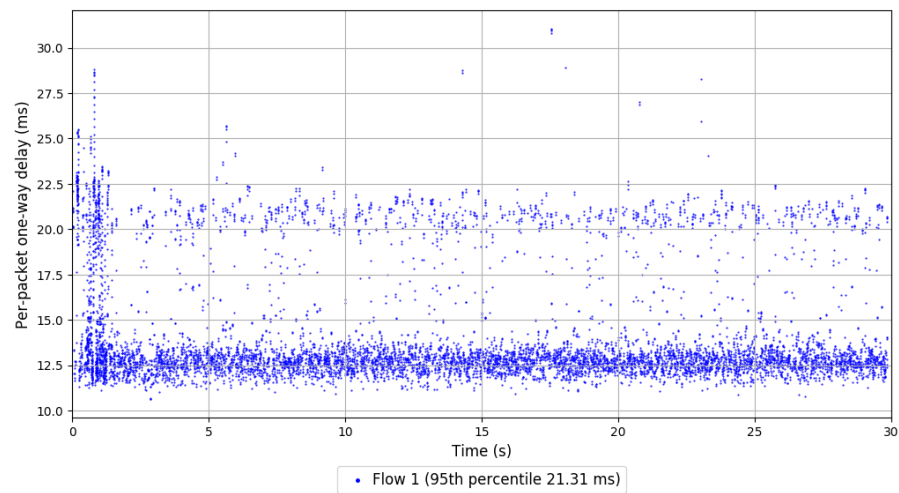
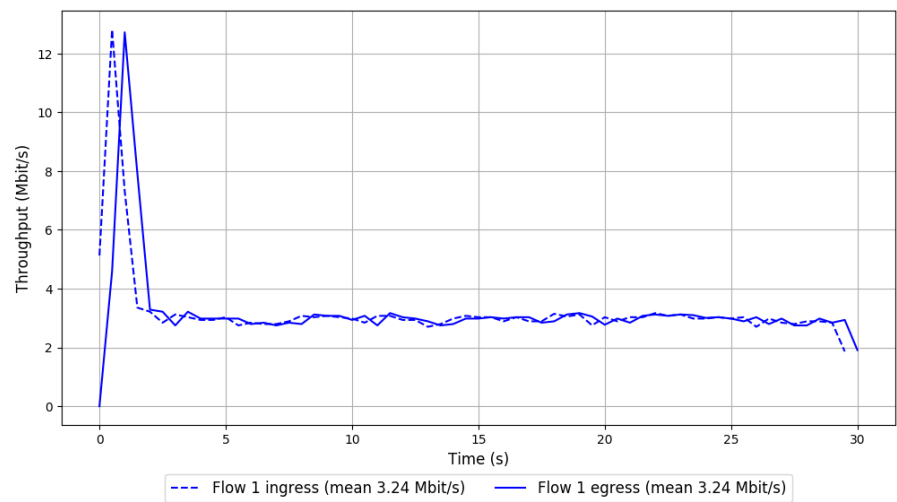
-- Flow 1:

Average throughput: 3.24 Mbit/s

95th percentile per-packet one-way delay: 21.314 ms

Loss rate: 0.00%

Run 3: Report of Indigo-Muses — Data Link



Run 1: Statistics of PCC-Allegro

Start at: 2018-09-06 03:42:31

End at: 2018-09-06 03:43:01

Local clock offset: 3.929 ms

Remote clock offset: 3.279 ms

Below is generated by plot.py at 2018-09-06 04:38:46

Datalink statistics

-- Total of 1 flow:

Average throughput: 4.37 Mbit/s

95th percentile per-packet one-way delay: 20.905 ms

Loss rate: 0.00%

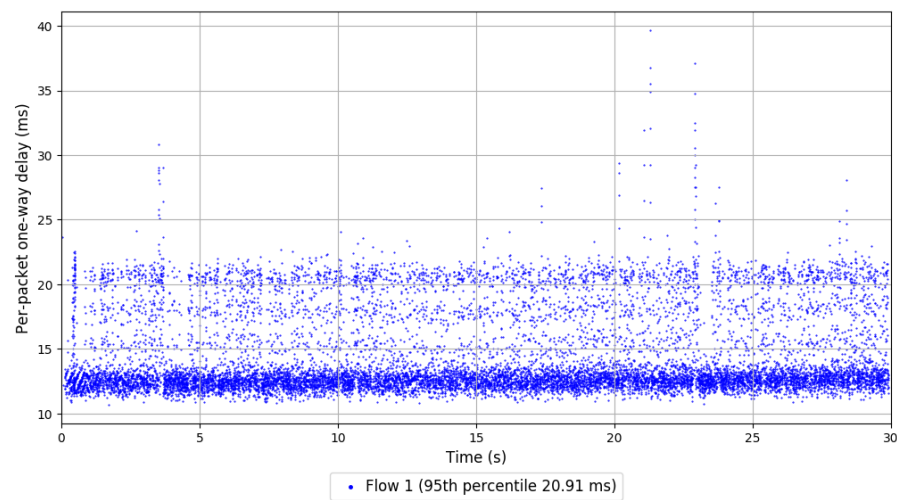
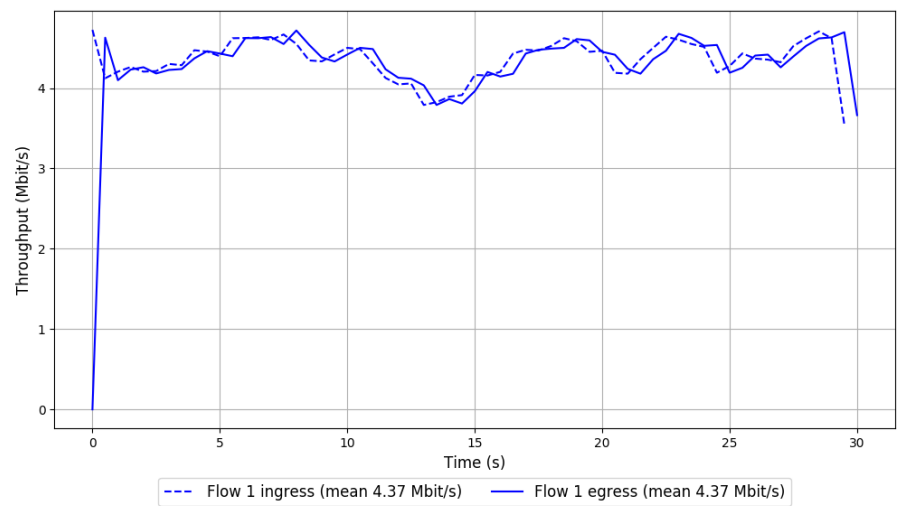
-- Flow 1:

Average throughput: 4.37 Mbit/s

95th percentile per-packet one-way delay: 20.905 ms

Loss rate: 0.00%

Run 1: Report of PCC-Allegro — Data Link



Run 2: Statistics of PCC-Allegro

Start at: 2018-09-06 04:06:20

End at: 2018-09-06 04:06:50

Local clock offset: 4.365 ms

Remote clock offset: -0.399 ms

Below is generated by plot.py at 2018-09-06 04:38:46

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.12 Mbit/s

95th percentile per-packet one-way delay: 20.652 ms

Loss rate: 0.00%

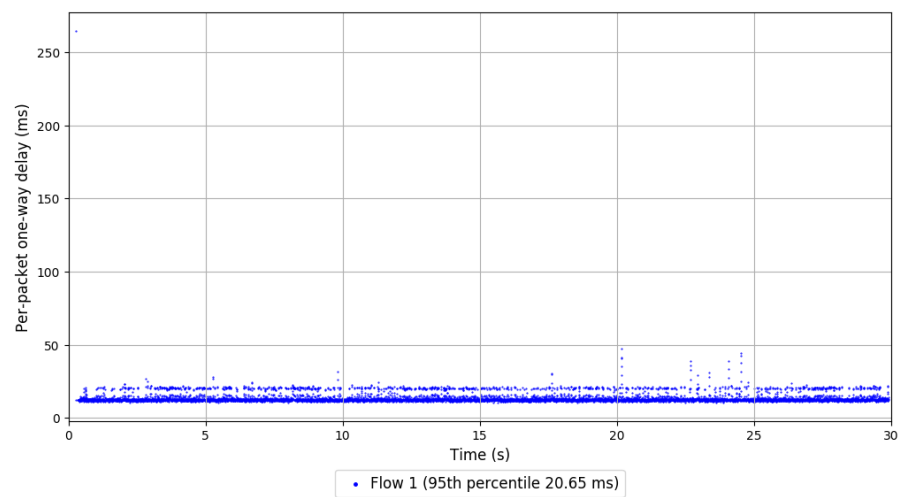
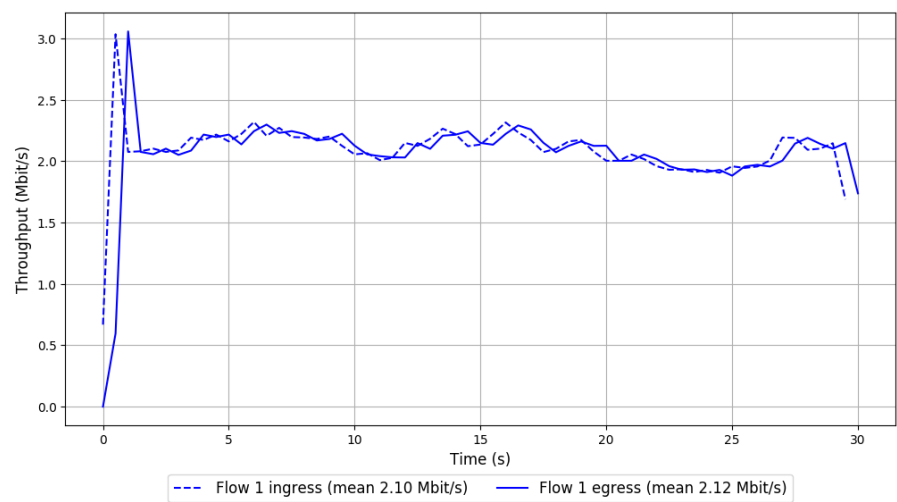
-- Flow 1:

Average throughput: 2.12 Mbit/s

95th percentile per-packet one-way delay: 20.652 ms

Loss rate: 0.00%

Run 2: Report of PCC-Allegro — Data Link



Run 3: Statistics of PCC-Allegro

Start at: 2018-09-06 04:30:08

End at: 2018-09-06 04:30:38

Local clock offset: 4.181 ms

Remote clock offset: -0.263 ms

Below is generated by plot.py at 2018-09-06 04:38:46

Datalink statistics

-- Total of 1 flow:

Average throughput: 3.86 Mbit/s

95th percentile per-packet one-way delay: 20.815 ms

Loss rate: 0.00%

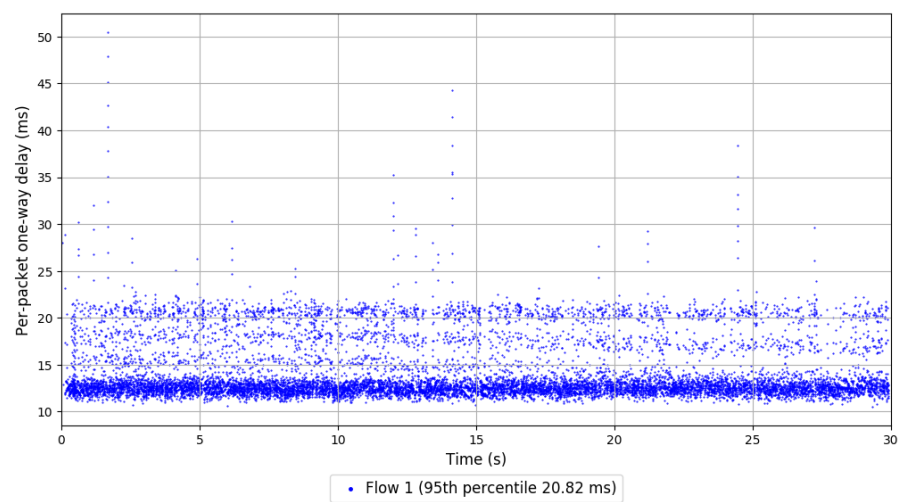
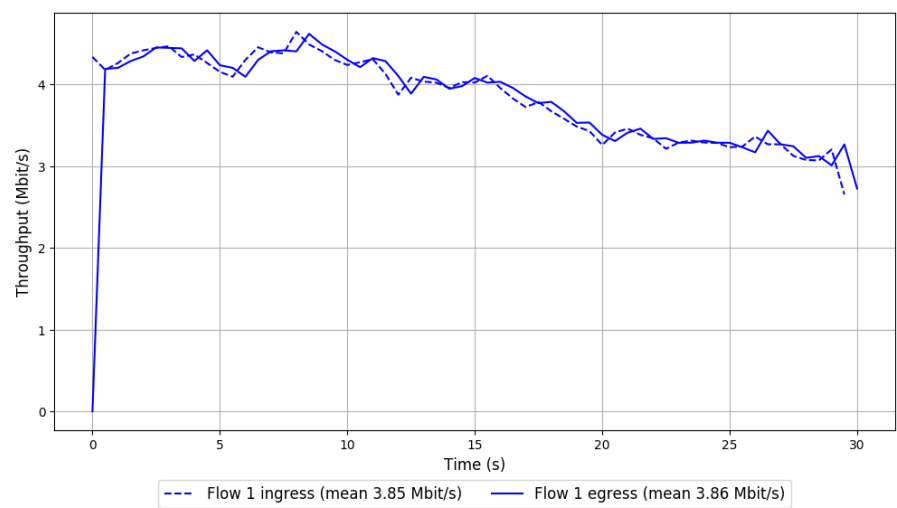
-- Flow 1:

Average throughput: 3.86 Mbit/s

95th percentile per-packet one-way delay: 20.815 ms

Loss rate: 0.00%

Run 3: Report of PCC-Allegro — Data Link

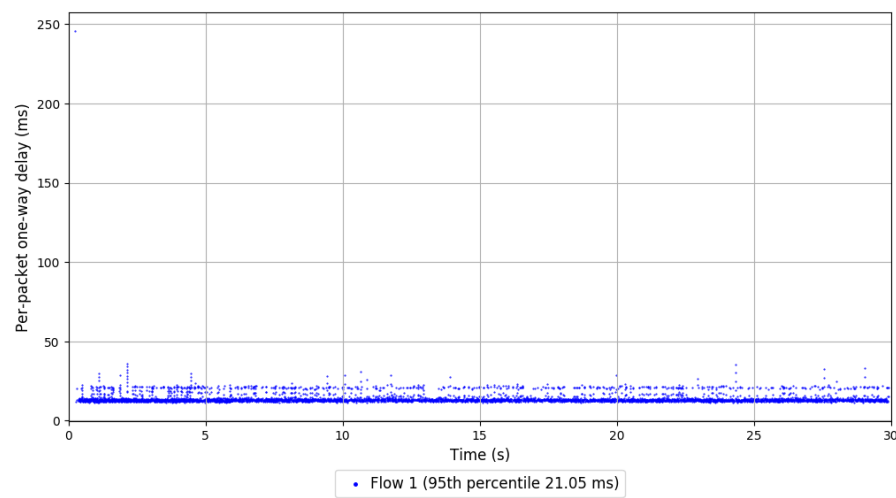
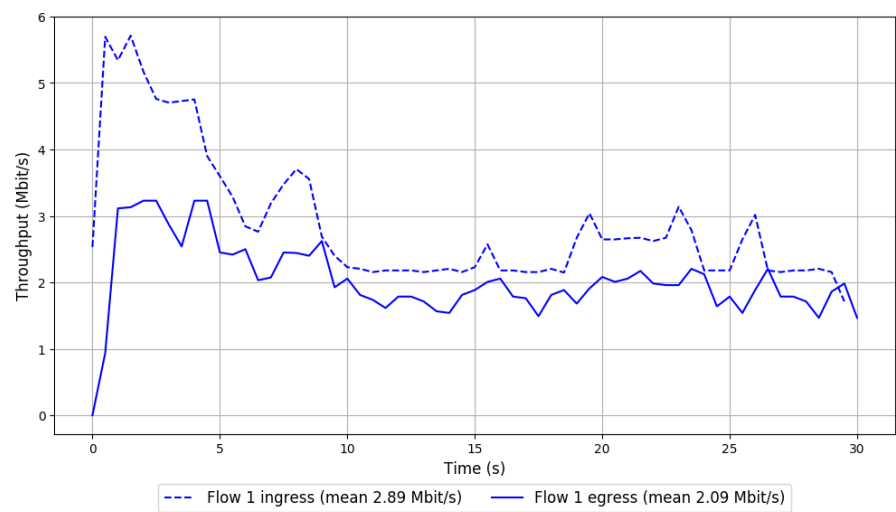


```
Run 1: Statistics of PCC-Expr

Start at: 2018-09-06 03:41:12
End at: 2018-09-06 03:41:42
Local clock offset: 3.801 ms
Remote clock offset: 3.263 ms

# Below is generated by plot.py at 2018-09-06 04:38:46
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.09 Mbit/s
95th percentile per-packet one-way delay: 21.046 ms
Loss rate: 28.20%
-- Flow 1:
Average throughput: 2.09 Mbit/s
95th percentile per-packet one-way delay: 21.046 ms
Loss rate: 28.20%
```

Run 1: Report of PCC-Expr — Data Link



Run 2: Statistics of PCC-Expr

Start at: 2018-09-06 04:05:01

End at: 2018-09-06 04:05:32

Local clock offset: 4.325 ms

Remote clock offset: -0.3 ms

Below is generated by plot.py at 2018-09-06 04:38:46

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.32 Mbit/s

95th percentile per-packet one-way delay: 33.771 ms

Loss rate: 98.42%

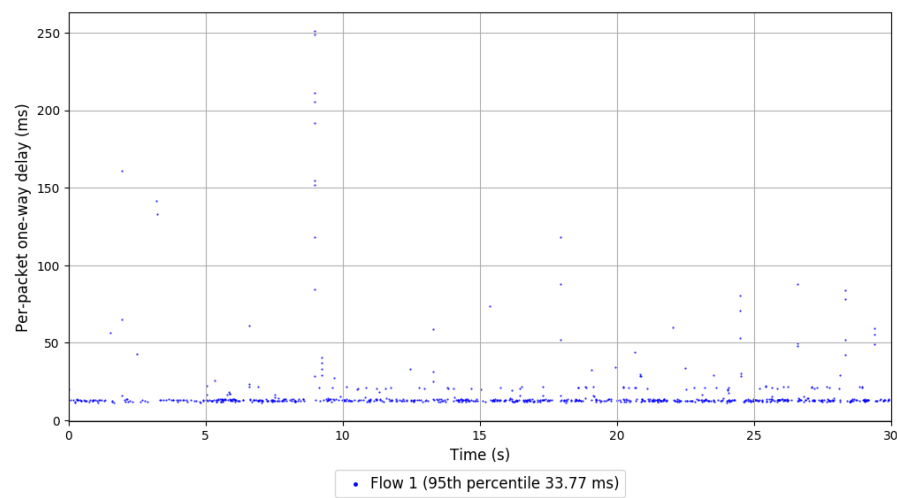
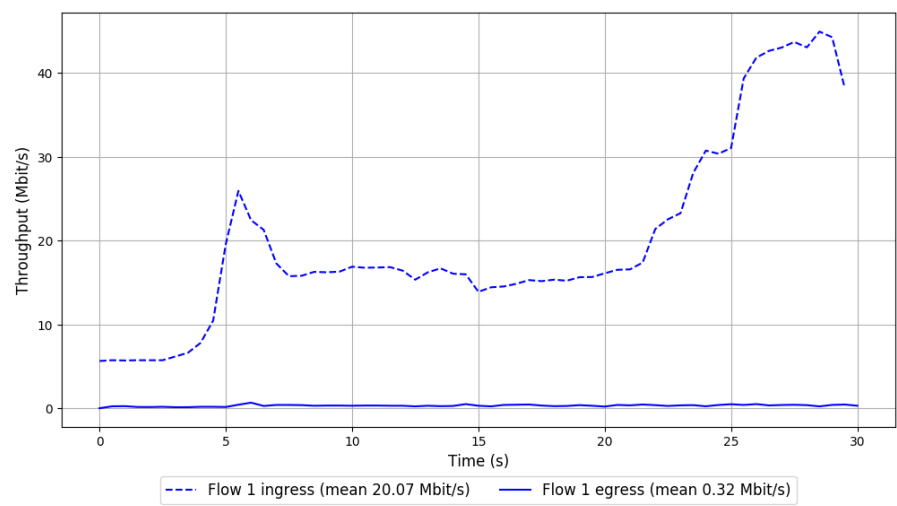
-- Flow 1:

Average throughput: 0.32 Mbit/s

95th percentile per-packet one-way delay: 33.771 ms

Loss rate: 98.42%

Run 2: Report of PCC-Expr — Data Link

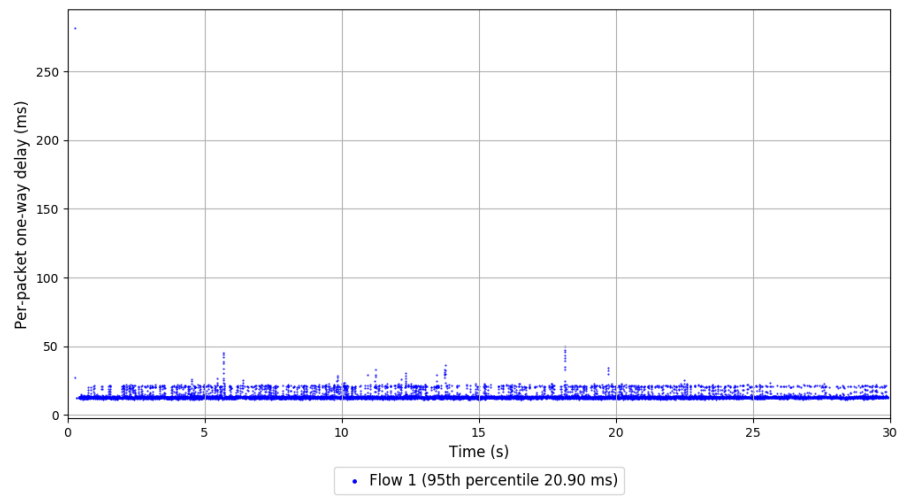
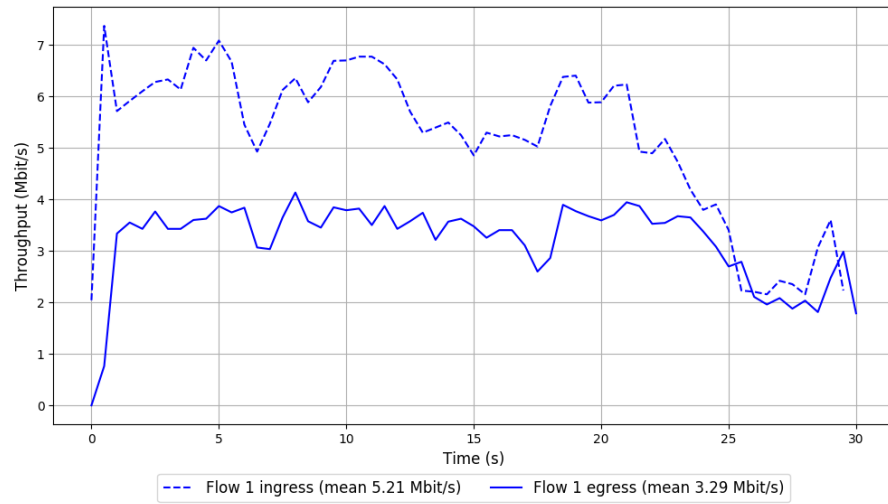


Run 3: Statistics of PCC-Expr

Start at: 2018-09-06 04:28:49
End at: 2018-09-06 04:29:19
Local clock offset: 4.255 ms
Remote clock offset: -0.276 ms

Below is generated by plot.py at 2018-09-06 04:38:46
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.29 Mbit/s
95th percentile per-packet one-way delay: 20.897 ms
Loss rate: 37.36%
-- Flow 1:
Average throughput: 3.29 Mbit/s
95th percentile per-packet one-way delay: 20.897 ms
Loss rate: 37.36%

Run 3: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

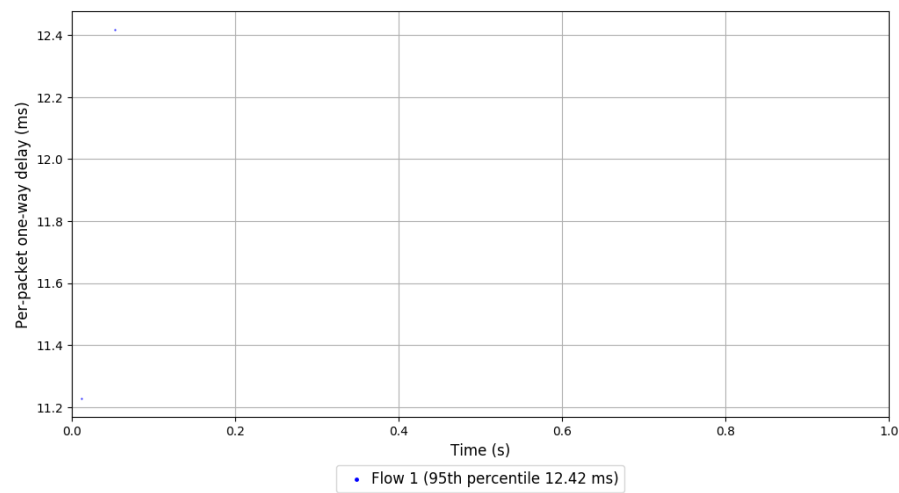
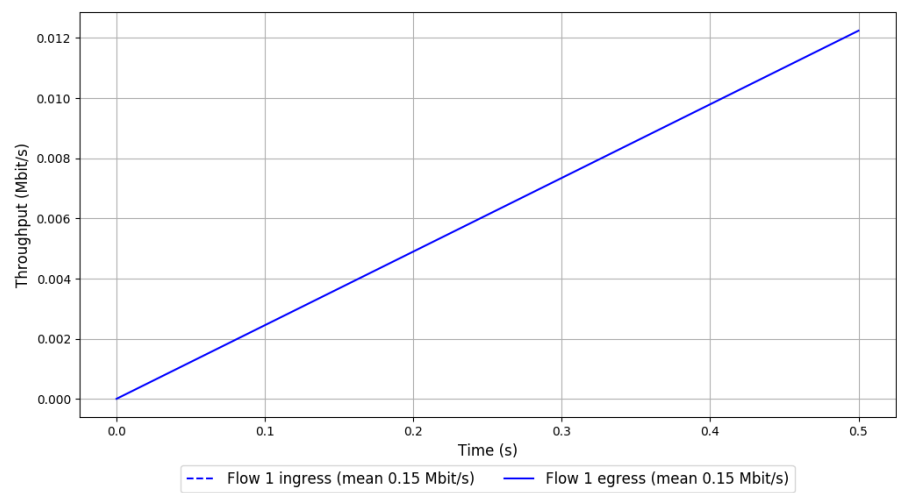
Start at: 2018-09-06 03:34:36

End at: 2018-09-06 03:35:06

Local clock offset: 3.69 ms

Remote clock offset: 2.963 ms

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2018-09-06 03:58:25

End at: 2018-09-06 03:58:55

Local clock offset: 4.064 ms

Remote clock offset: 0.03 ms

Below is generated by plot.py at 2018-09-06 04:39:12

Datalink statistics

-- Total of 1 flow:

Average throughput: 37.11 Mbit/s

95th percentile per-packet one-way delay: 200.609 ms

Loss rate: 0.52%

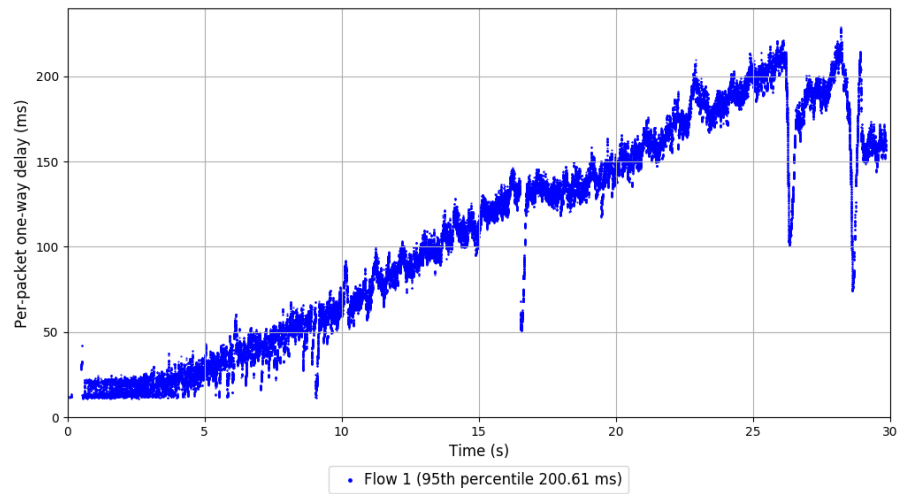
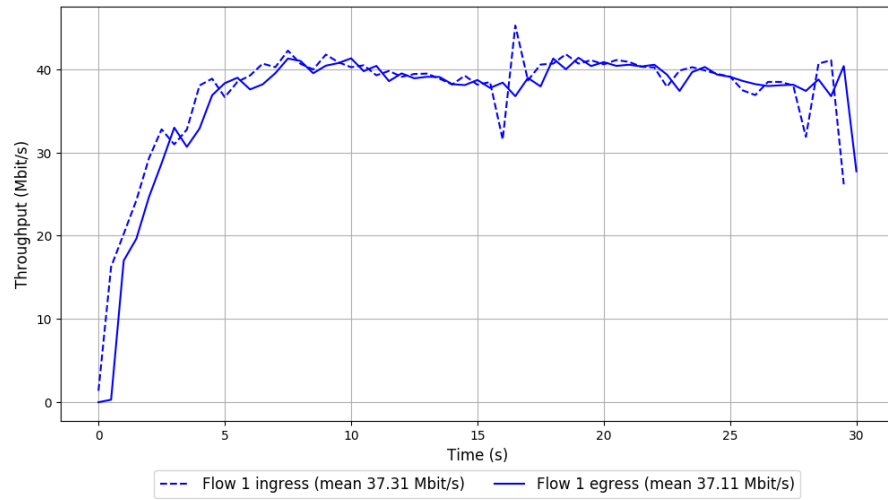
-- Flow 1:

Average throughput: 37.11 Mbit/s

95th percentile per-packet one-way delay: 200.609 ms

Loss rate: 0.52%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2018-09-06 04:22:15

End at: 2018-09-06 04:22:45

Local clock offset: 4.325 ms

Remote clock offset: -0.413 ms

Below is generated by plot.py at 2018-09-06 04:39:12

Datalink statistics

-- Total of 1 flow:

Average throughput: 35.03 Mbit/s

95th percentile per-packet one-way delay: 195.895 ms

Loss rate: 0.55%

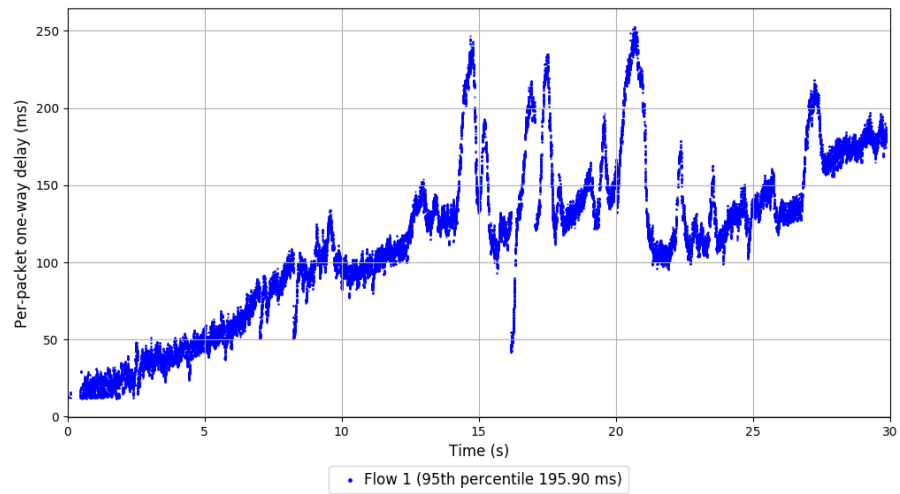
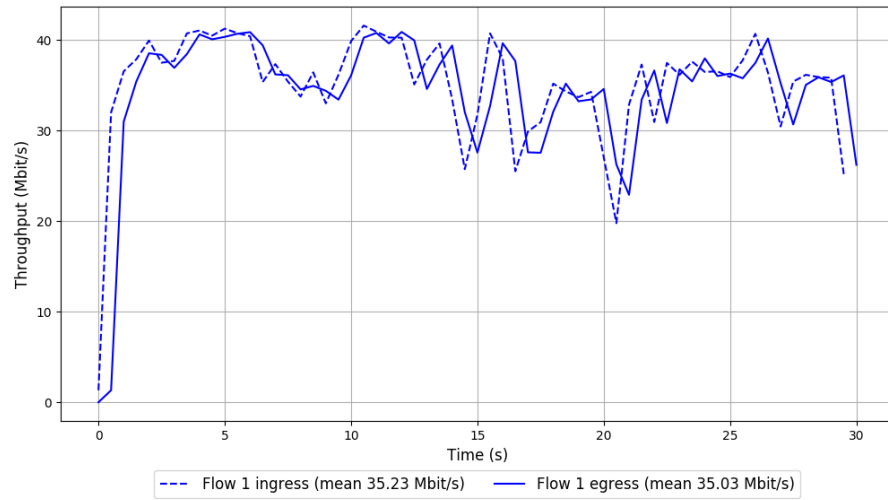
-- Flow 1:

Average throughput: 35.03 Mbit/s

95th percentile per-packet one-way delay: 195.895 ms

Loss rate: 0.55%

Run 3: Report of QUIC Cubic — Data Link

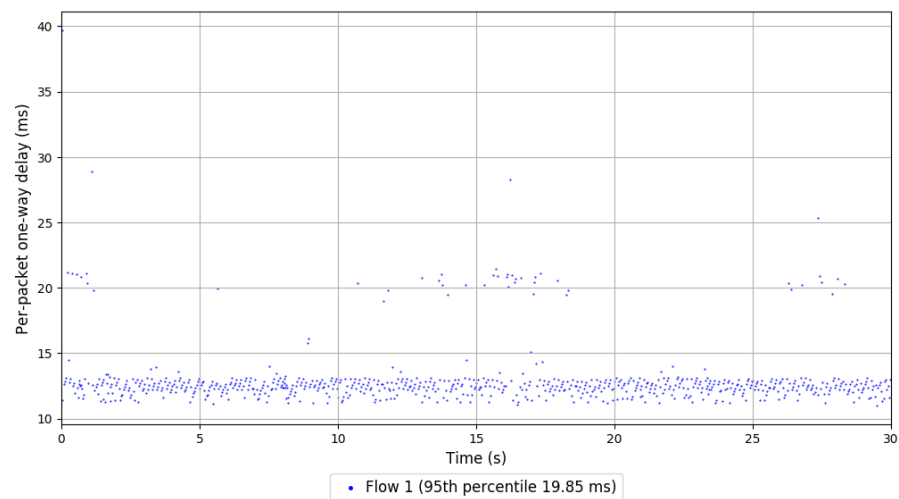
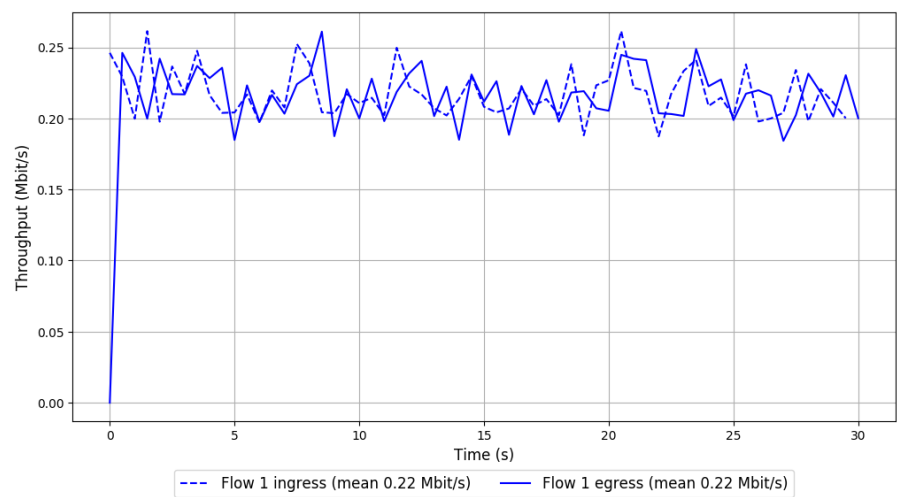


```
Run 1: Statistics of SCReAM

Start at: 2018-09-06 03:30:39
End at: 2018-09-06 03:31:10
Local clock offset: 3.718 ms
Remote clock offset: 2.765 ms

# Below is generated by plot.py at 2018-09-06 04:39:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 19.849 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 19.849 ms
Loss rate: 0.00%
```

Run 1: Report of SReAM — Data Link



Run 2: Statistics of SCReAM

Start at: 2018-09-06 03:54:28

End at: 2018-09-06 03:54:58

Local clock offset: 4.076 ms

Remote clock offset: 0.461 ms

Below is generated by plot.py at 2018-09-06 04:39:12

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 20.157 ms

Loss rate: 0.00%

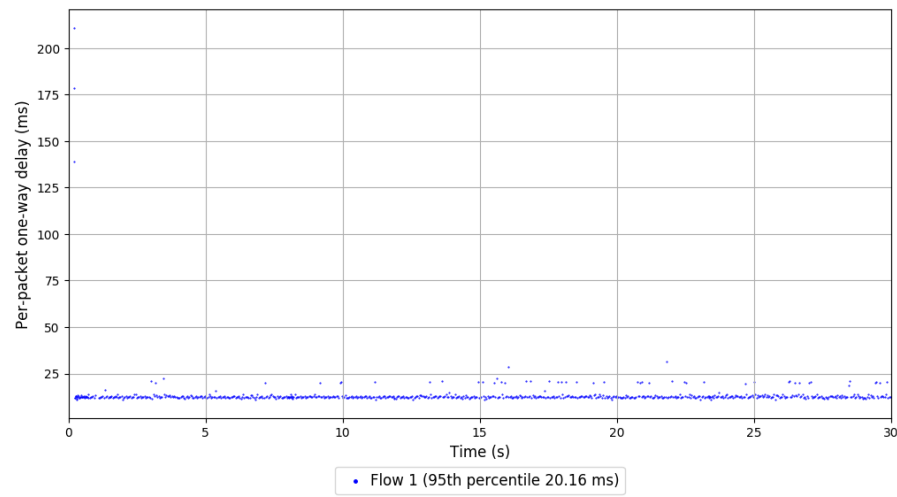
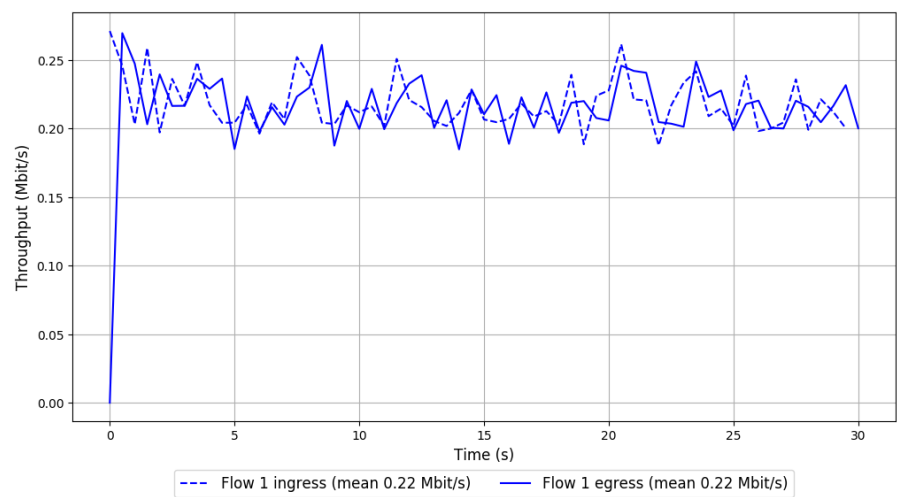
-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 20.157 ms

Loss rate: 0.00%

Run 2: Report of SReAM — Data Link

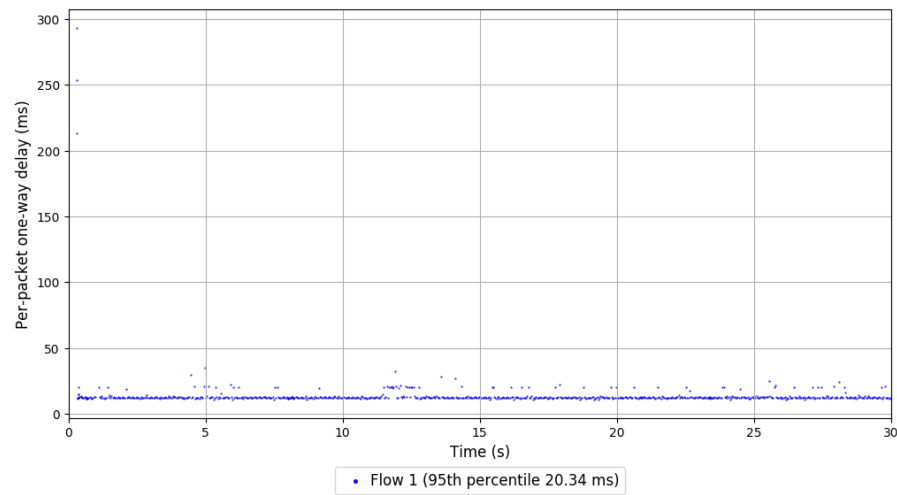
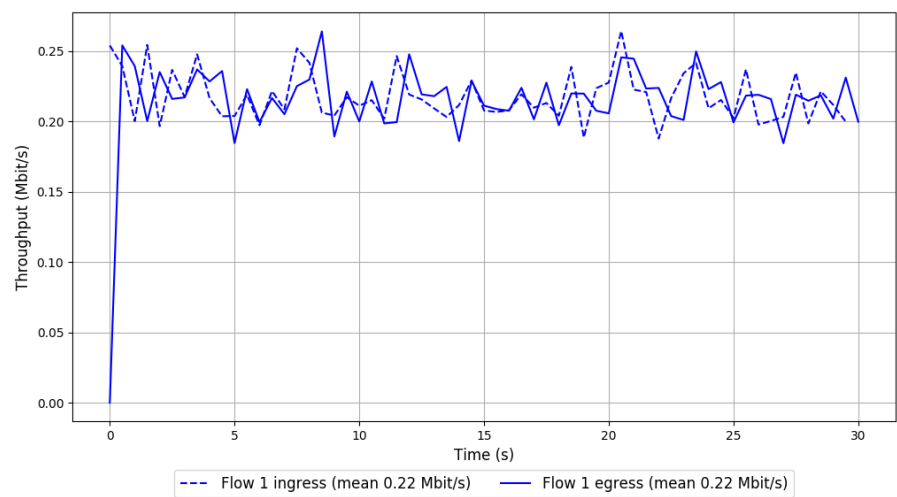


Run 3: Statistics of SCReAM

Start at: 2018-09-06 04:18:13
End at: 2018-09-06 04:18:43
Local clock offset: 4.45 ms
Remote clock offset: -0.634 ms

Below is generated by plot.py at 2018-09-06 04:39:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 20.343 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 20.343 ms
Loss rate: 0.00%

Run 3: Report of SReAM — Data Link



Run 1: Statistics of Sprout

Start at: 2018-09-06 03:43:49

End at: 2018-09-06 03:44:19

Local clock offset: 3.861 ms

Remote clock offset: 2.805 ms

Below is generated by plot.py at 2018-09-06 04:39:12

Datalink statistics

-- Total of 1 flow:

Average throughput: 15.09 Mbit/s

95th percentile per-packet one-way delay: 32.076 ms

Loss rate: 0.52%

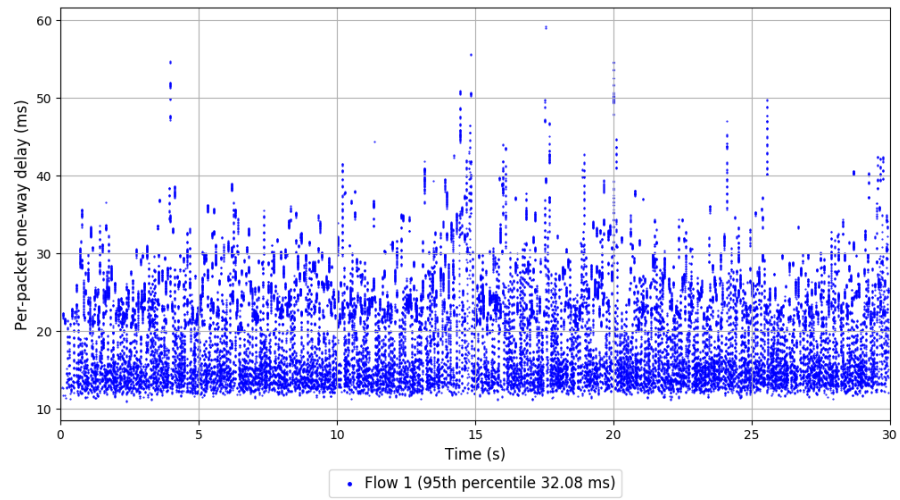
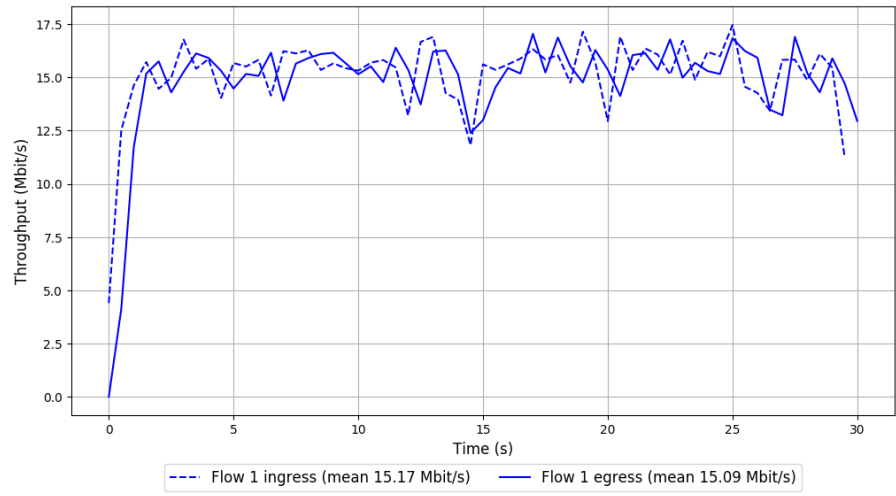
-- Flow 1:

Average throughput: 15.09 Mbit/s

95th percentile per-packet one-way delay: 32.076 ms

Loss rate: 0.52%

Run 1: Report of Sprout — Data Link

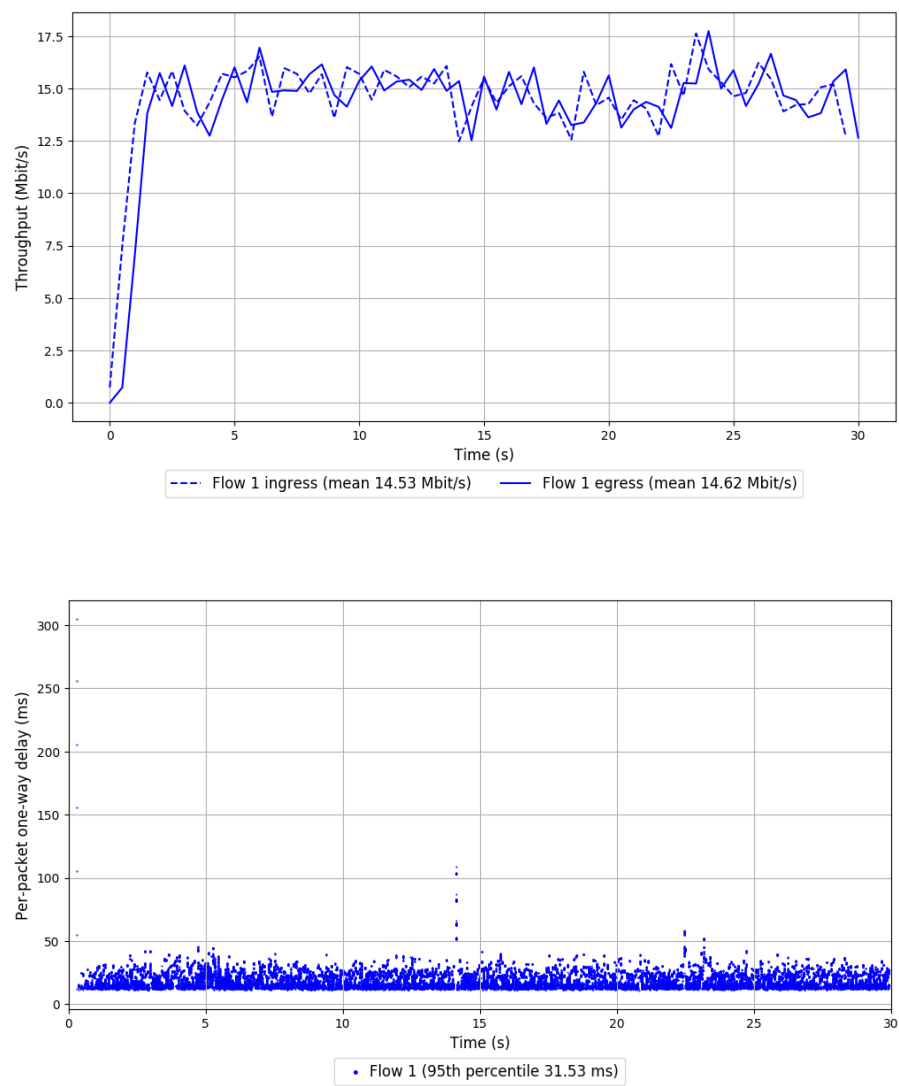


Run 2: Statistics of Sprout

Start at: 2018-09-06 04:07:39
End at: 2018-09-06 04:08:09
Local clock offset: 4.383 ms
Remote clock offset: -0.338 ms

Below is generated by plot.py at 2018-09-06 04:39:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 14.62 Mbit/s
95th percentile per-packet one-way delay: 31.527 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 14.62 Mbit/s
95th percentile per-packet one-way delay: 31.527 ms
Loss rate: 0.26%

Run 2: Report of Sprout — Data Link

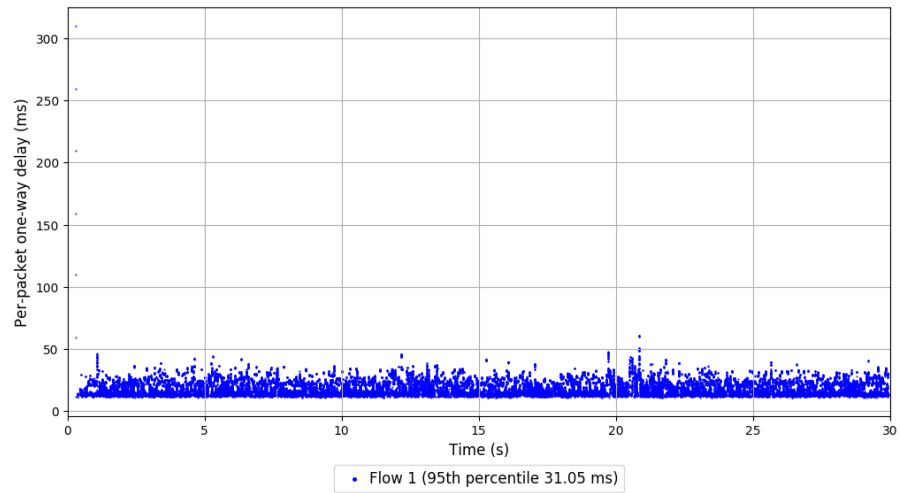
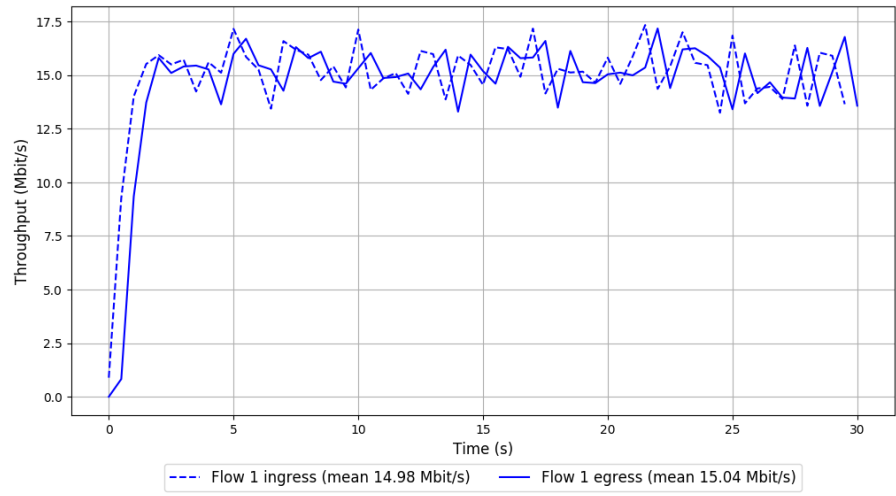


Run 3: Statistics of Sprout

Start at: 2018-09-06 04:31:26
End at: 2018-09-06 04:31:56
Local clock offset: 4.287 ms
Remote clock offset: -0.229 ms

Below is generated by plot.py at 2018-09-06 04:39:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 15.04 Mbit/s
95th percentile per-packet one-way delay: 31.054 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 15.04 Mbit/s
95th percentile per-packet one-way delay: 31.054 ms
Loss rate: 0.58%

Run 3: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

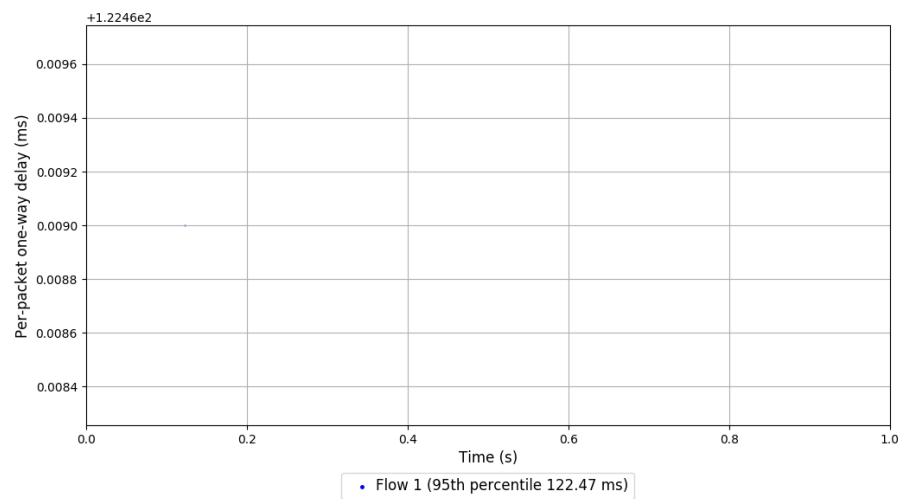
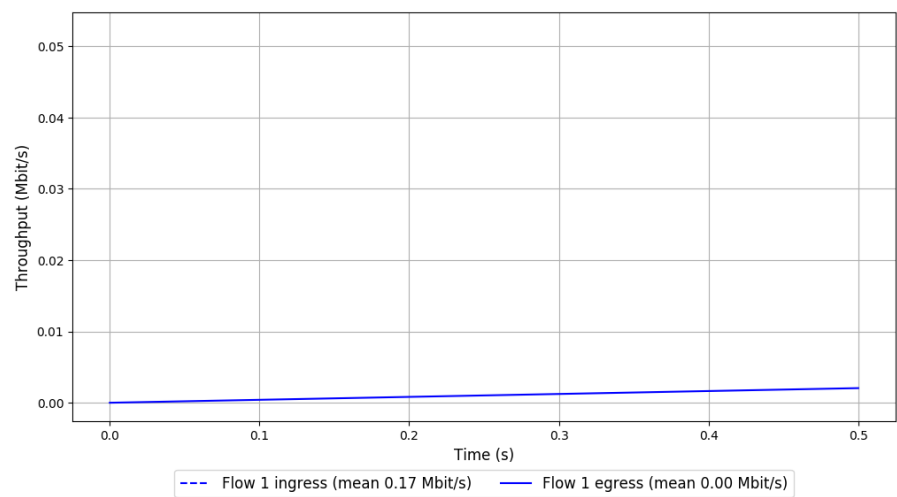
Start at: 2018-09-06 03:49:07

End at: 2018-09-06 03:49:37

Local clock offset: 4.005 ms

Remote clock offset: 1.268 ms

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



Run 2: Statistics of TaoVA-100x

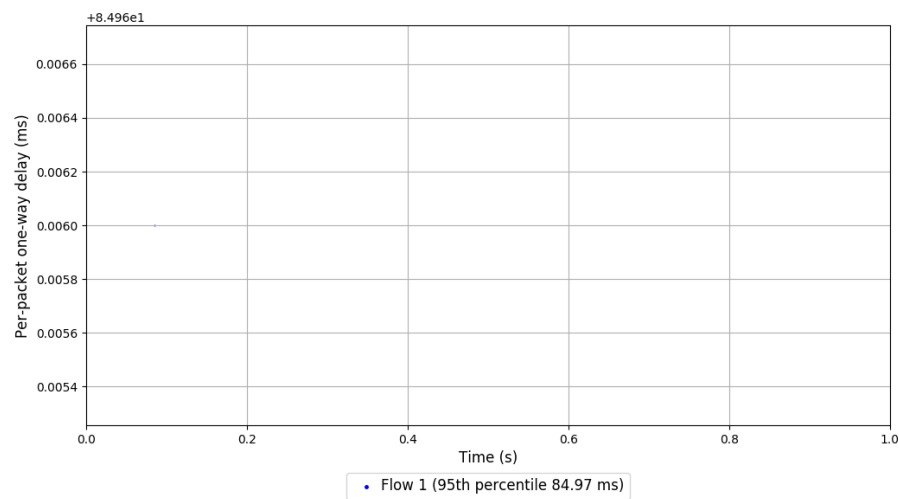
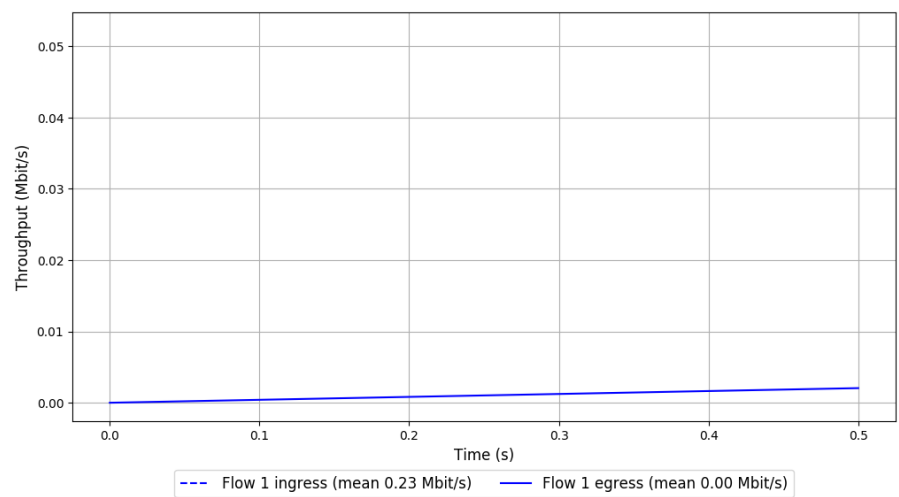
Start at: 2018-09-06 04:12:57

End at: 2018-09-06 04:13:27

Local clock offset: 4.436 ms

Remote clock offset: -0.623 ms

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



Run 3: Statistics of TaoVA-100x

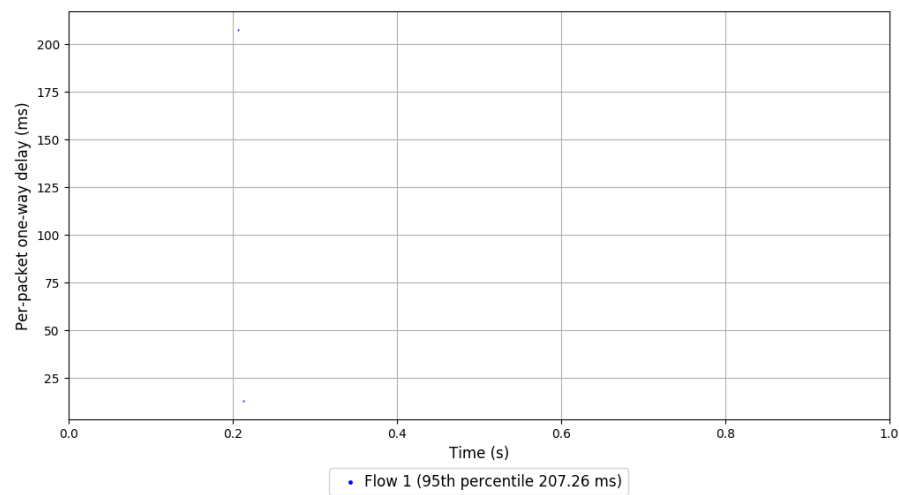
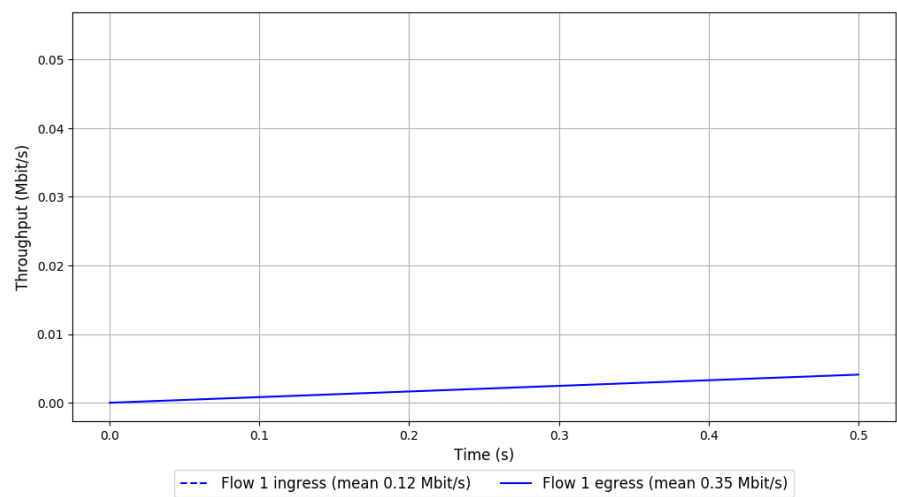
Start at: 2018-09-06 04:36:42

End at: 2018-09-06 04:37:12

Local clock offset: 4.339 ms

Remote clock offset: -0.177 ms

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



Run 1: Statistics of TCP Vegas

Start at: 2018-09-06 03:29:21

End at: 2018-09-06 03:29:51

Local clock offset: 3.588 ms

Remote clock offset: 2.611 ms

Below is generated by plot.py at 2018-09-06 04:39:12

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.25 Mbit/s

95th percentile per-packet one-way delay: 20.951 ms

Loss rate: 0.00%

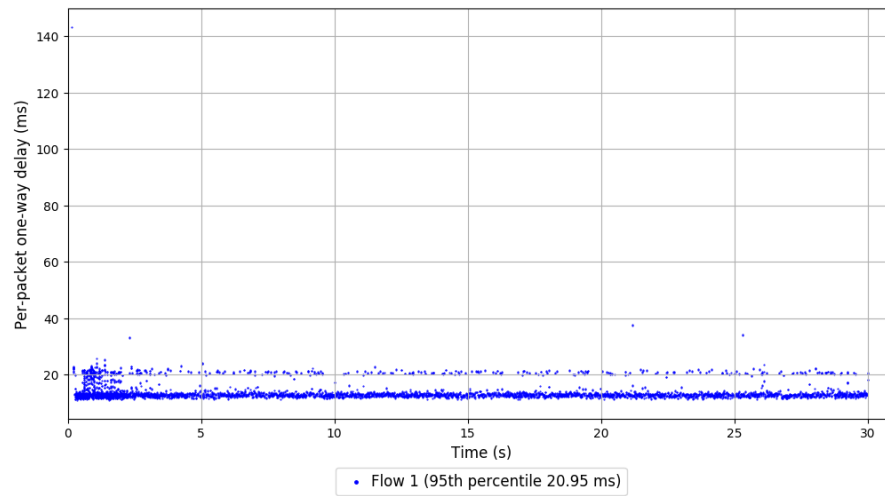
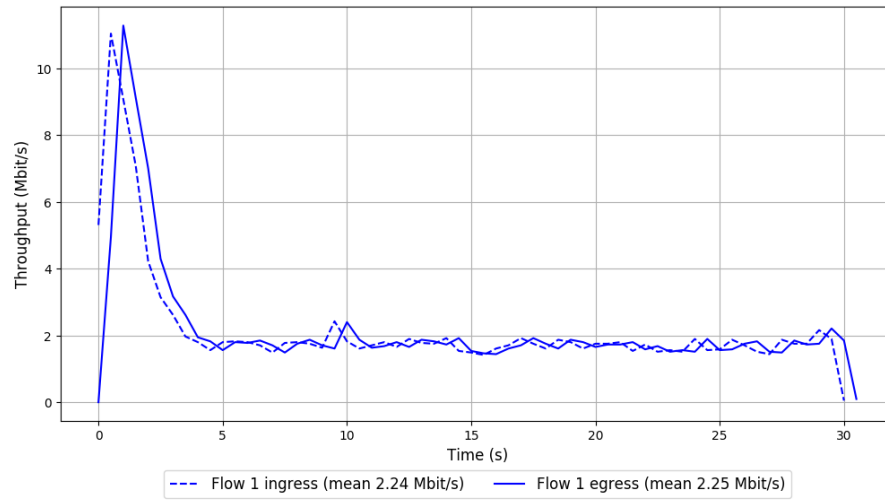
-- Flow 1:

Average throughput: 2.25 Mbit/s

95th percentile per-packet one-way delay: 20.951 ms

Loss rate: 0.00%

Run 1: Report of TCP Vegas — Data Link



Run 2: Statistics of TCP Vegas

Start at: 2018-09-06 03:53:09

End at: 2018-09-06 03:53:39

Local clock offset: 3.964 ms

Remote clock offset: 0.571 ms

Below is generated by plot.py at 2018-09-06 04:39:12

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.30 Mbit/s

95th percentile per-packet one-way delay: 21.009 ms

Loss rate: 0.00%

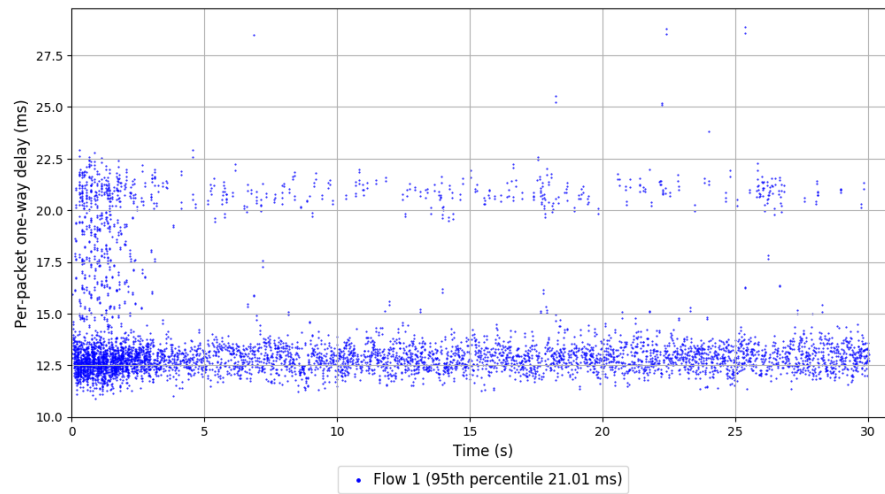
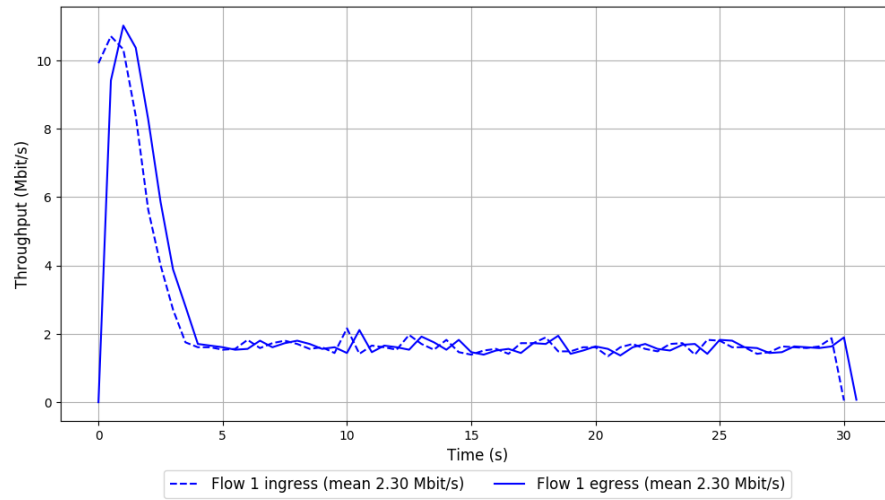
-- Flow 1:

Average throughput: 2.30 Mbit/s

95th percentile per-packet one-way delay: 21.009 ms

Loss rate: 0.00%

Run 2: Report of TCP Vegas — Data Link

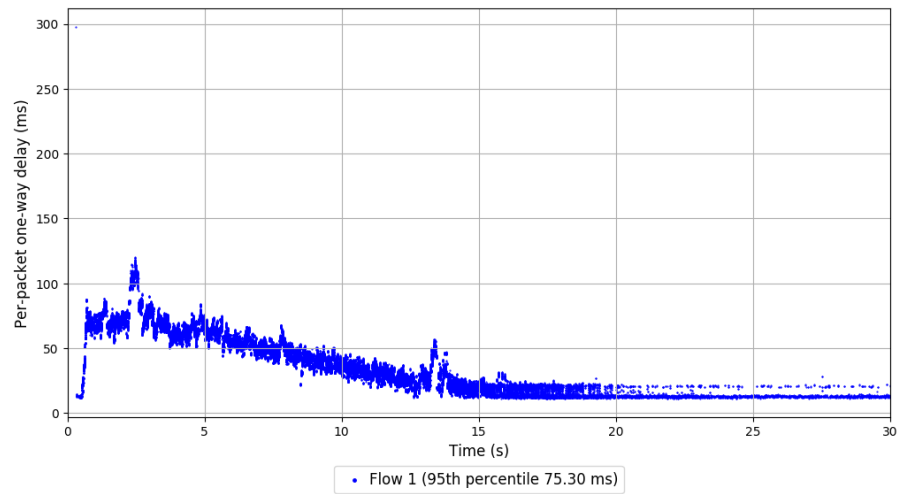
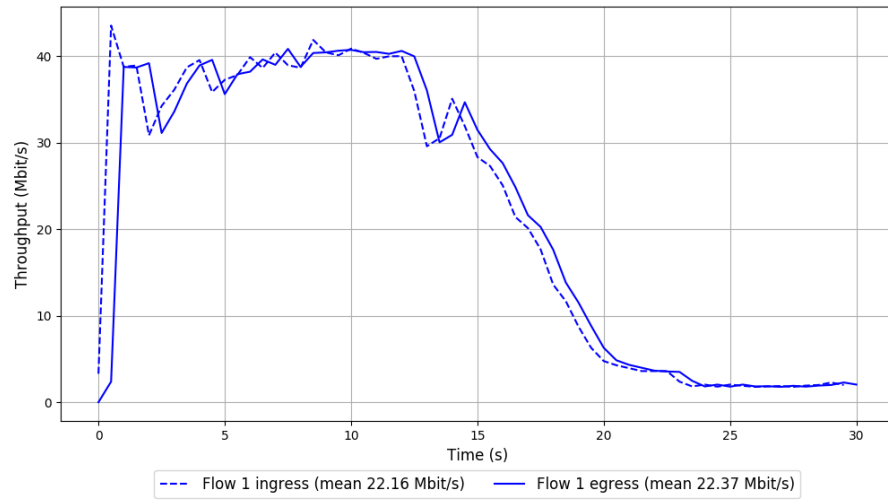


Run 3: Statistics of TCP Vegas

Start at: 2018-09-06 04:16:54
End at: 2018-09-06 04:17:24
Local clock offset: 4.436 ms
Remote clock offset: -0.686 ms

Below is generated by plot.py at 2018-09-06 04:39:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 22.37 Mbit/s
95th percentile per-packet one-way delay: 75.298 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 22.37 Mbit/s
95th percentile per-packet one-way delay: 75.298 ms
Loss rate: 0.00%

Run 3: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: 2018-09-06 03:47:47

End at: 2018-09-06 03:48:17

Local clock offset: 3.917 ms

Remote clock offset: 1.638 ms

Below is generated by plot.py at 2018-09-06 04:39:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 36.08 Mbit/s

95th percentile per-packet one-way delay: 197.486 ms

Loss rate: 1.36%

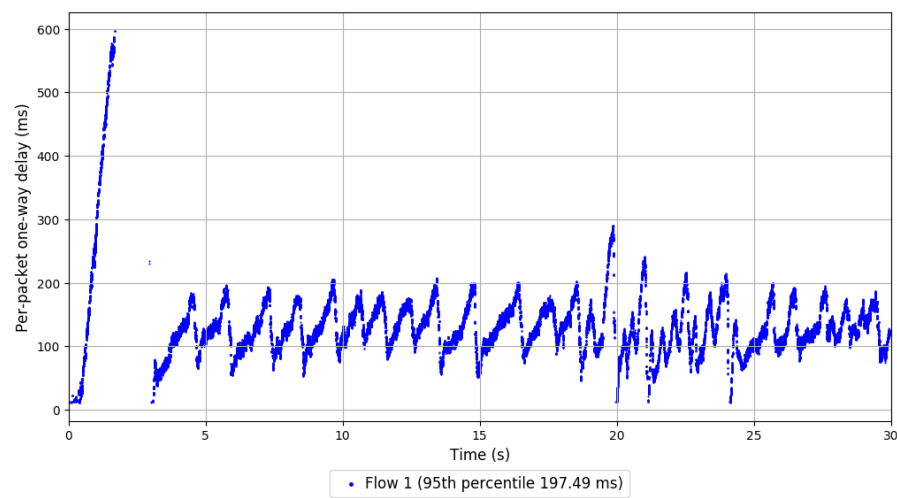
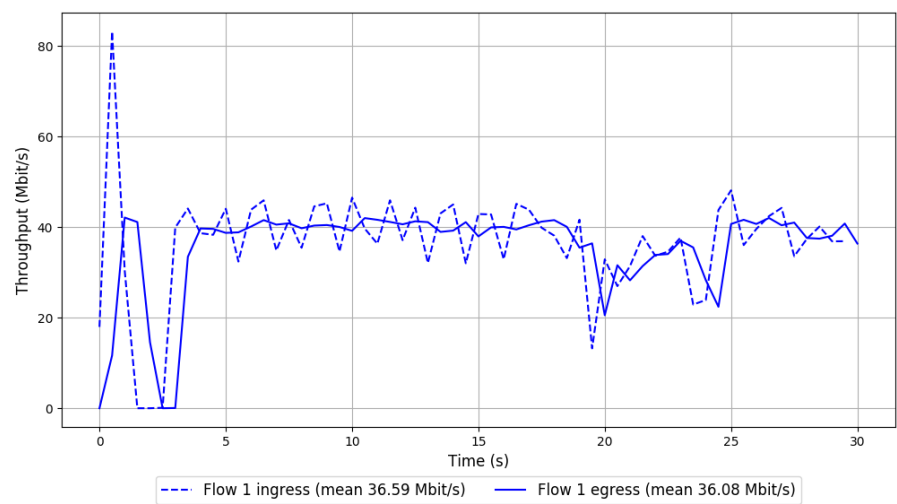
-- Flow 1:

Average throughput: 36.08 Mbit/s

95th percentile per-packet one-way delay: 197.486 ms

Loss rate: 1.36%

Run 1: Report of Verus — Data Link

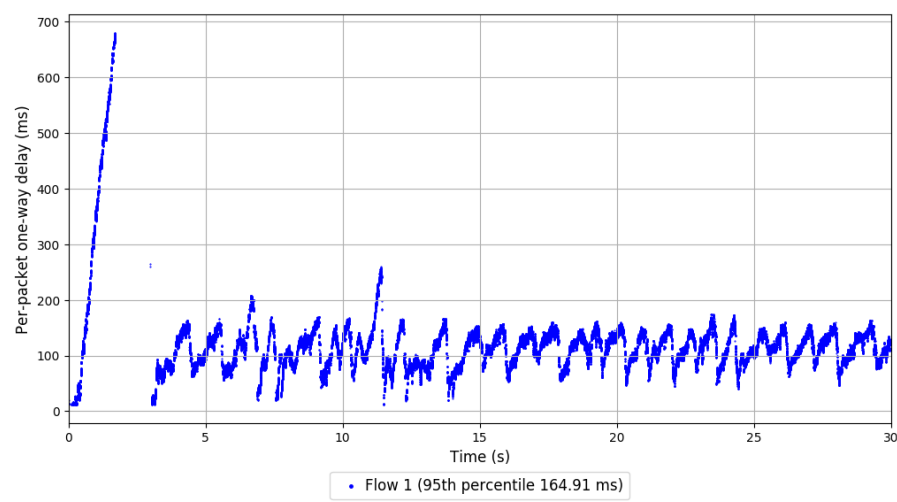
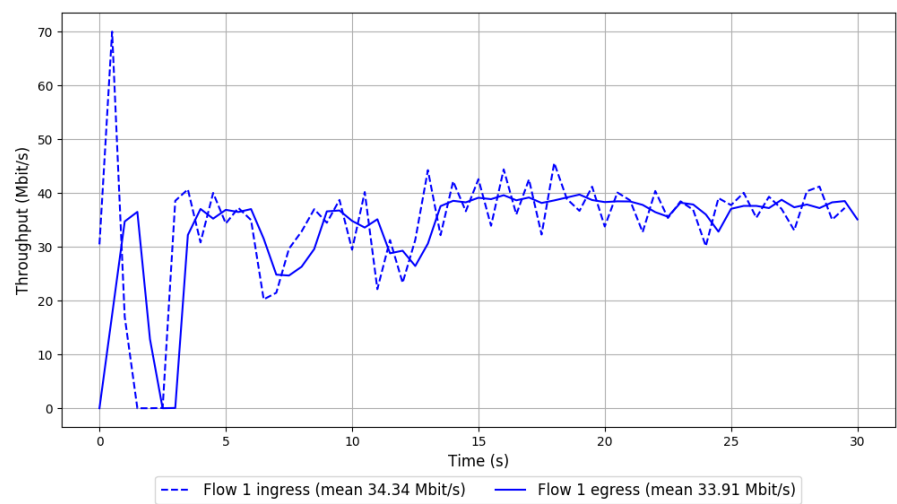


Run 2: Statistics of Verus

Start at: 2018-09-06 04:11:37
End at: 2018-09-06 04:12:07
Local clock offset: 4.488 ms
Remote clock offset: -0.596 ms

Below is generated by plot.py at 2018-09-06 04:39:15
Datalink statistics
-- Total of 1 flow:
Average throughput: 33.91 Mbit/s
95th percentile per-packet one-way delay: 164.912 ms
Loss rate: 1.24%
-- Flow 1:
Average throughput: 33.91 Mbit/s
95th percentile per-packet one-way delay: 164.912 ms
Loss rate: 1.24%

Run 2: Report of Verus — Data Link



Run 3: Statistics of Verus

Start at: 2018-09-06 04:35:22

End at: 2018-09-06 04:35:52

Local clock offset: 4.243 ms

Remote clock offset: -0.22 ms

Below is generated by plot.py at 2018-09-06 04:39:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 33.81 Mbit/s

95th percentile per-packet one-way delay: 183.705 ms

Loss rate: 0.84%

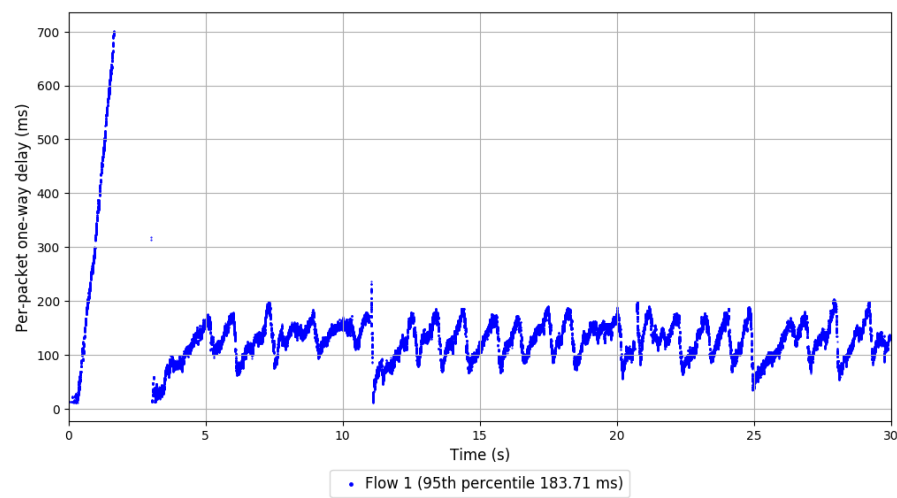
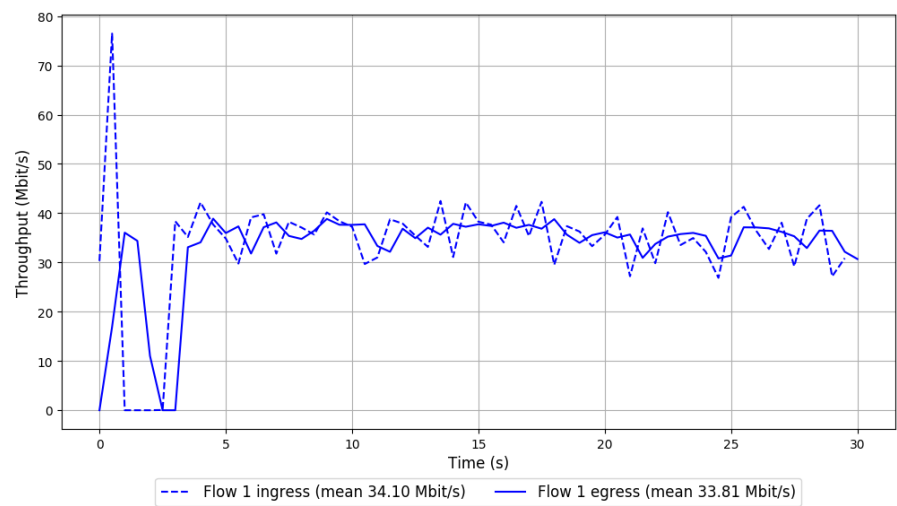
-- Flow 1:

Average throughput: 33.81 Mbit/s

95th percentile per-packet one-way delay: 183.705 ms

Loss rate: 0.84%

Run 3: Report of Verus — Data Link



Run 1: Statistics of PCC-Vivace

Start at: 2018-09-06 03:28:02

End at: 2018-09-06 03:28:32

Local clock offset: 3.62 ms

Remote clock offset: 2.497 ms

Below is generated by plot.py at 2018-09-06 04:39:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 7.36 Mbit/s

95th percentile per-packet one-way delay: 23.678 ms

Loss rate: 0.00%

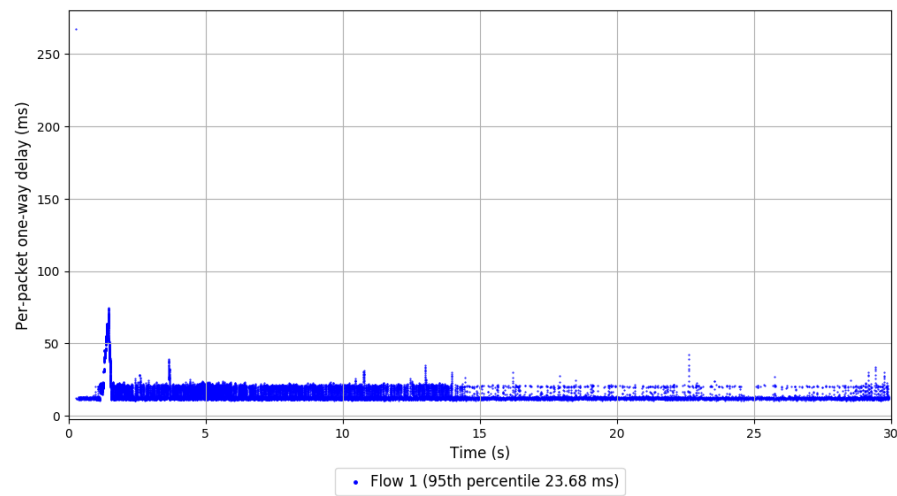
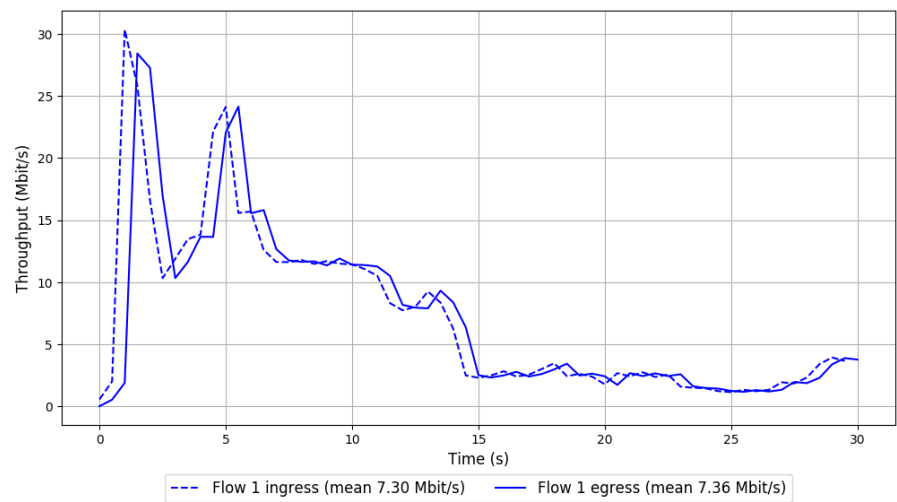
-- Flow 1:

Average throughput: 7.36 Mbit/s

95th percentile per-packet one-way delay: 23.678 ms

Loss rate: 0.00%

Run 1: Report of PCC-Vivace — Data Link



Run 2: Statistics of PCC-Vivace

Start at: 2018-09-06 03:51:50

End at: 2018-09-06 03:52:20

Local clock offset: 4.022 ms

Remote clock offset: 0.797 ms

Below is generated by plot.py at 2018-09-06 04:39:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.92 Mbit/s

95th percentile per-packet one-way delay: 20.357 ms

Loss rate: 0.00%

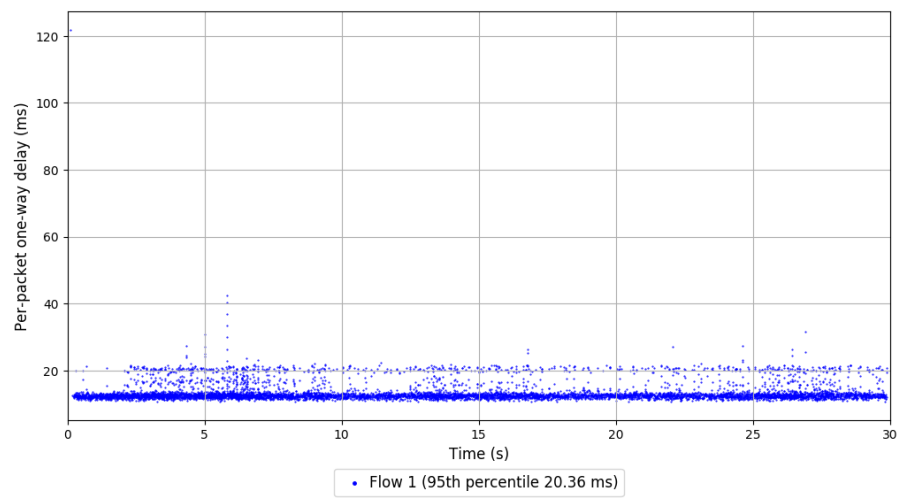
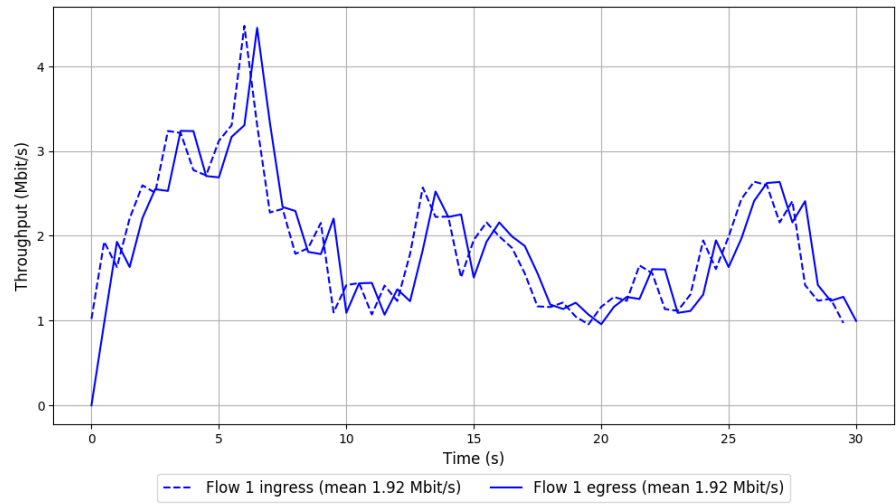
-- Flow 1:

Average throughput: 1.92 Mbit/s

95th percentile per-packet one-way delay: 20.357 ms

Loss rate: 0.00%

Run 2: Report of PCC-Vivace — Data Link

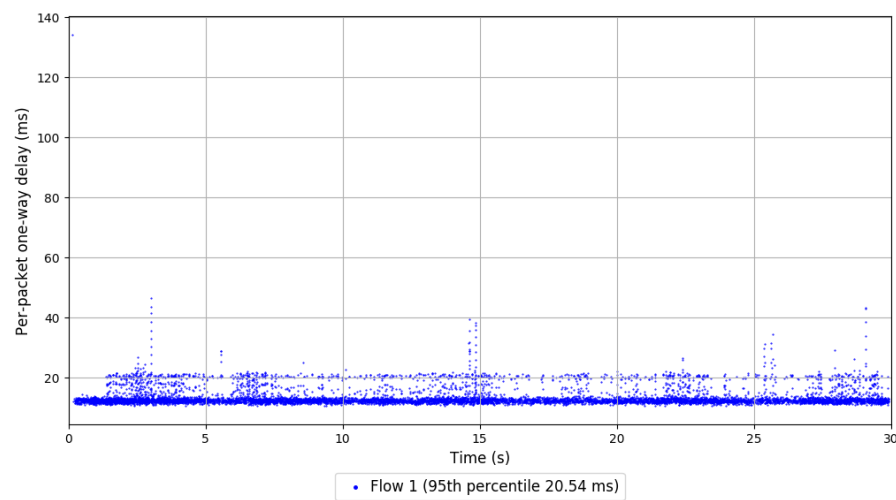
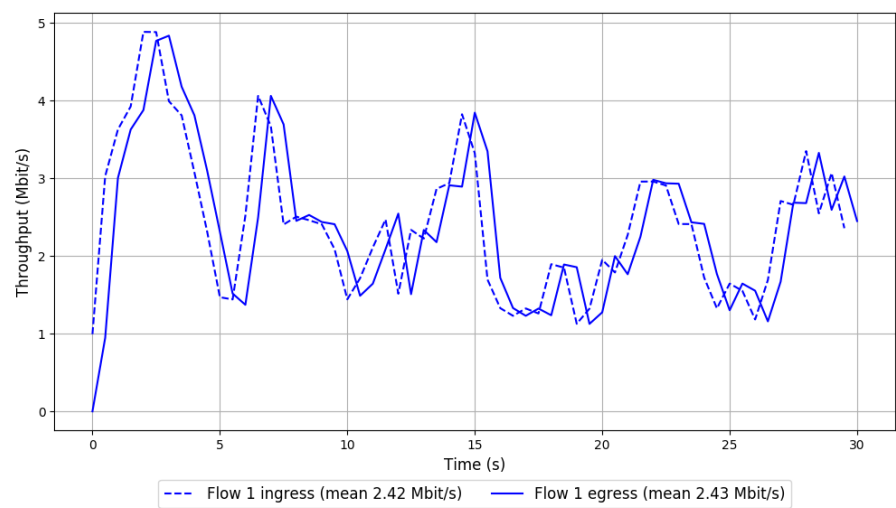


Run 3: Statistics of PCC-Vivace

Start at: 2018-09-06 04:15:35
End at: 2018-09-06 04:16:05
Local clock offset: 4.508 ms
Remote clock offset: -0.698 ms

Below is generated by plot.py at 2018-09-06 04:39:15
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.43 Mbit/s
95th percentile per-packet one-way delay: 20.542 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.43 Mbit/s
95th percentile per-packet one-way delay: 20.542 ms
Loss rate: 0.00%

Run 3: Report of PCC-Vivace — Data Link

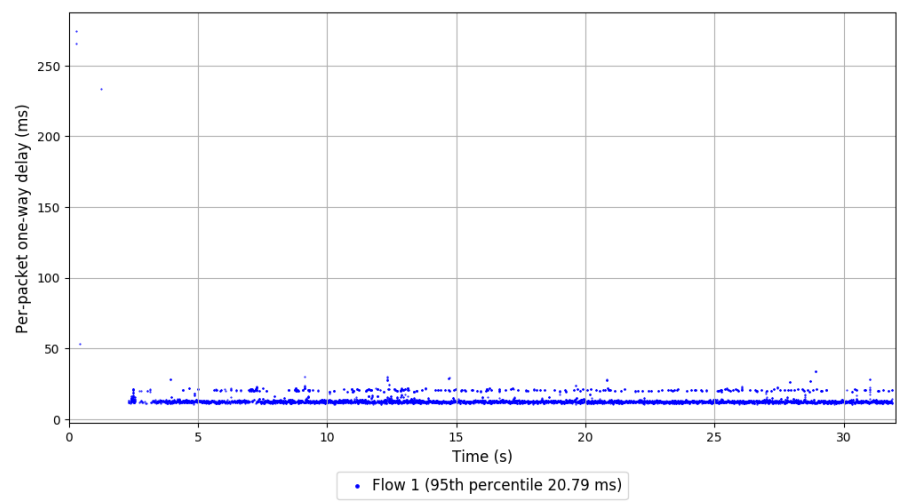
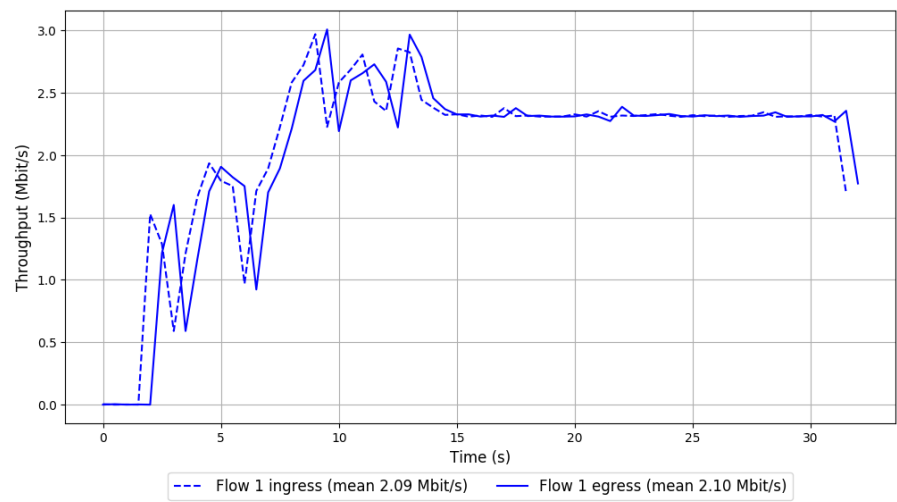


```
Run 1: Statistics of WebRTC media

Start at: 2018-09-06 03:33:18
End at: 2018-09-06 03:33:48
Local clock offset: 3.705 ms
Remote clock offset: 2.821 ms

# Below is generated by plot.py at 2018-09-06 04:39:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.10 Mbit/s
95th percentile per-packet one-way delay: 20.785 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.10 Mbit/s
95th percentile per-packet one-way delay: 20.785 ms
Loss rate: 0.00%
```

Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

Start at: 2018-09-06 03:57:06

End at: 2018-09-06 03:57:36

Local clock offset: 4.034 ms

Remote clock offset: 0.23 ms

Below is generated by plot.py at 2018-09-06 04:39:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.95 Mbit/s

95th percentile per-packet one-way delay: 20.920 ms

Loss rate: 0.00%

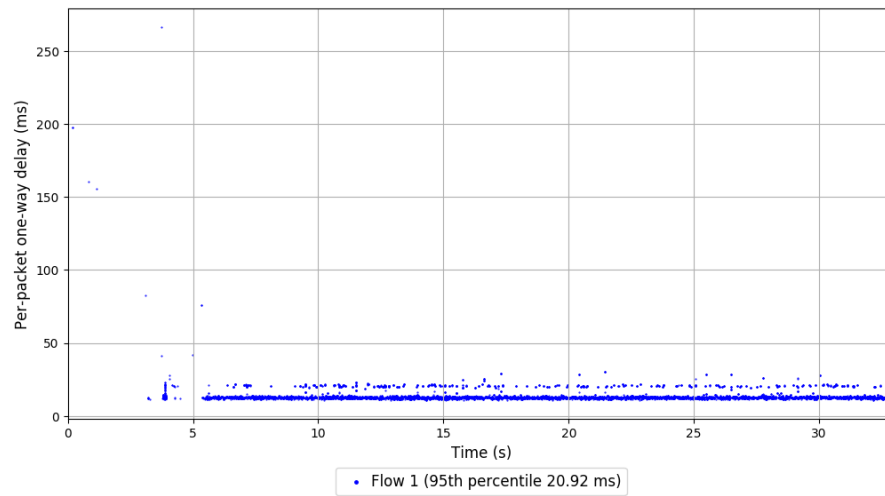
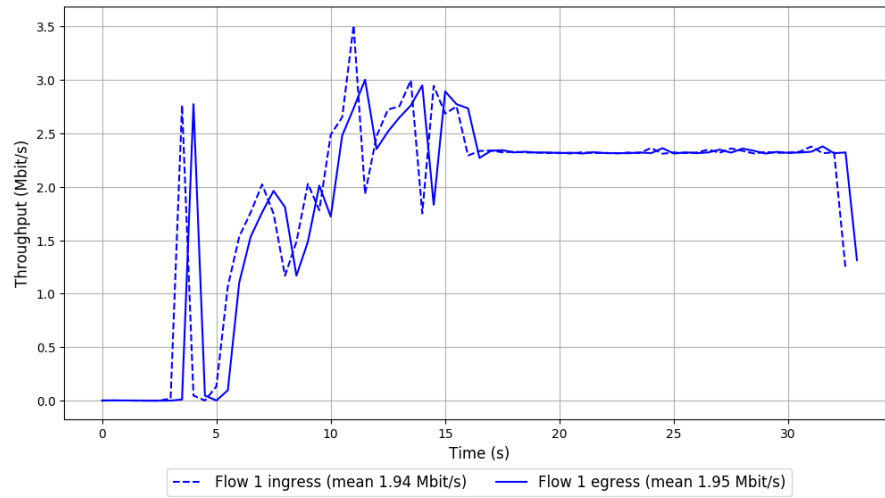
-- Flow 1:

Average throughput: 1.95 Mbit/s

95th percentile per-packet one-way delay: 20.920 ms

Loss rate: 0.00%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2018-09-06 04:20:56

End at: 2018-09-06 04:21:26

Local clock offset: 4.265 ms

Remote clock offset: -0.42 ms

Below is generated by plot.py at 2018-09-06 04:39:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.94 Mbit/s

95th percentile per-packet one-way delay: 20.813 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 1.94 Mbit/s

95th percentile per-packet one-way delay: 20.813 ms

Loss rate: 0.00%

Run 3: Report of WebRTC media — Data Link

