

Pantheon Report

Generated at 2018-12-11 13:14:11 (UTC).

Data path: GCE Sydney on `ens4` (*local*) → GCE Iowa on `ens4` (*remote*).

Repeated the test of 19 congestion control schemes 5 times.

Each test lasted for 30 seconds running 1 flow.

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

System info:

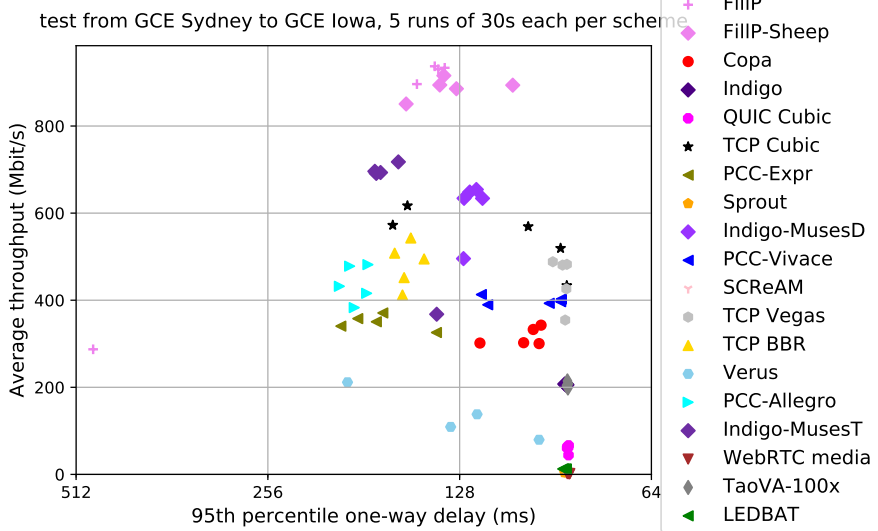
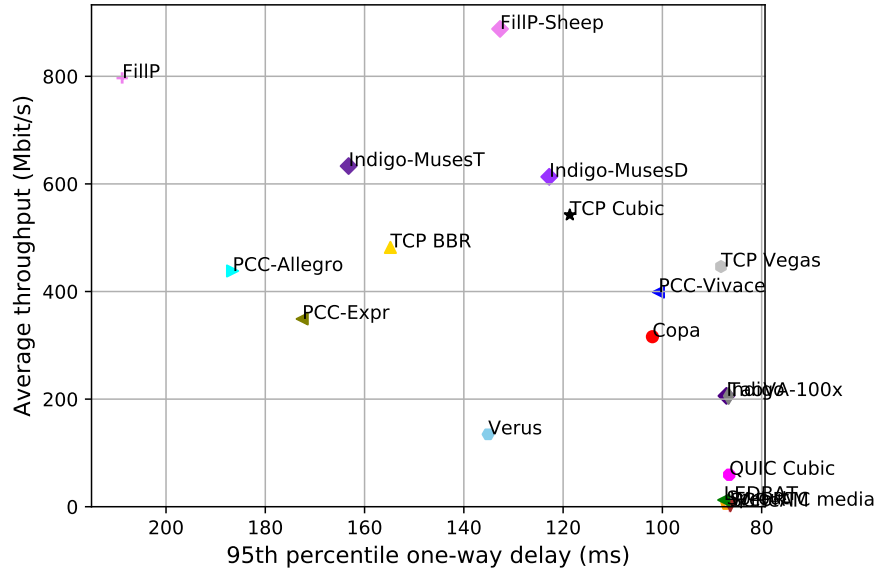
```
Linux 4.15.0-1024-gcp
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
```

Git summary:

```
branch: muses @ c654af0b7d59d4ef4b914cfac404e1fc2e96dc68
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
third_party/muses-refactored @ 31f8f0ba8ef8b1da76c2bc0cd0a7850c33ff64fb
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
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
M src/examples/cellsim.cc
M src/examples/sproutbt2.cc
M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
M src/verus.hpp
M tools/plot.py
```

third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851

test from GCE Sydney to GCE Iowa, 5 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 | 5 | 481.96 | 154.80 | 0.27 |
| Copa | 5 | 315.99 | 102.01 | 0.00 |
| TCP Cubic | 5 | 542.26 | 118.66 | 0.06 |
| FillP | 5 | 796.97 | 208.84 | 0.87 |
| FillP-Sheep | 5 | 888.03 | 132.71 | 0.96 |
| Indigo | 5 | 206.03 | 87.10 | 0.00 |
| Indigo-MusesD | 5 | 613.23 | 122.80 | 0.10 |
| Indigo-MusesT | 5 | 633.19 | 163.22 | 0.88 |
| LEDBAT | 5 | 12.51 | 87.65 | 0.00 |
| PCC-Allegro | 5 | 438.16 | 186.59 | 1.70 |
| PCC-Expr | 5 | 349.06 | 172.57 | 2.69 |
| QUIC Cubic | 5 | 59.42 | 86.54 | 0.00 |
| SCReAM | 5 | 0.22 | 86.40 | 0.00 |
| Sprout | 5 | 4.41 | 87.07 | 0.00 |
| TaoVA-100x | 5 | 205.75 | 86.67 | 0.00 |
| TCP Vegas | 5 | 446.38 | 88.19 | 0.00 |
| Verus | 4 | 134.57 | 135.11 | 0.09 |
| PCC-Vivace | 5 | 398.97 | 100.81 | 0.00 |
| WebRTC media | 5 | 1.90 | 86.31 | 0.00 |

Run 1: Statistics of TCP BBR

Start at: 2018-12-11 08:59:47

End at: 2018-12-11 09:00:17

Local clock offset: -0.102 ms

Remote clock offset: 0.114 ms

Below is generated by plot.py at 2018-12-11 11:42:45

Datalink statistics

-- Total of 1 flow:

Average throughput: 508.11 Mbit/s

95th percentile per-packet one-way delay: 161.891 ms

Loss rate: 0.29%

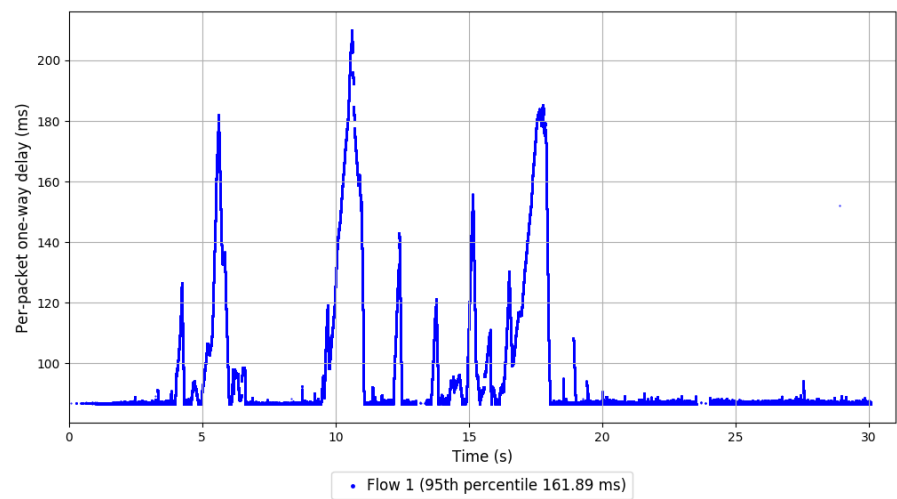
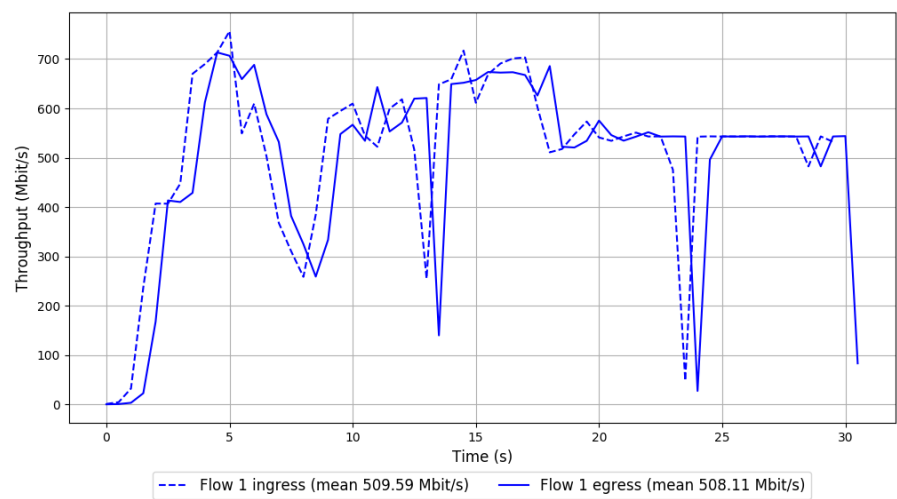
-- Flow 1:

Average throughput: 508.11 Mbit/s

95th percentile per-packet one-way delay: 161.891 ms

Loss rate: 0.29%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-12-11 09:28:15

End at: 2018-12-11 09:28:45

Local clock offset: -0.446 ms

Remote clock offset: 0.244 ms

Below is generated by plot.py at 2018-12-11 11:43:17

Datalink statistics

-- Total of 1 flow:

Average throughput: 542.90 Mbit/s

95th percentile per-packet one-way delay: 152.714 ms

Loss rate: 0.24%

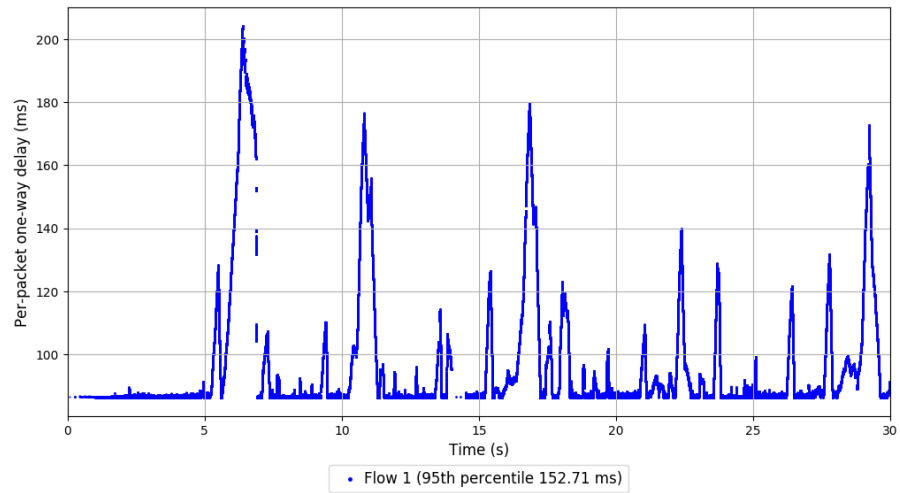
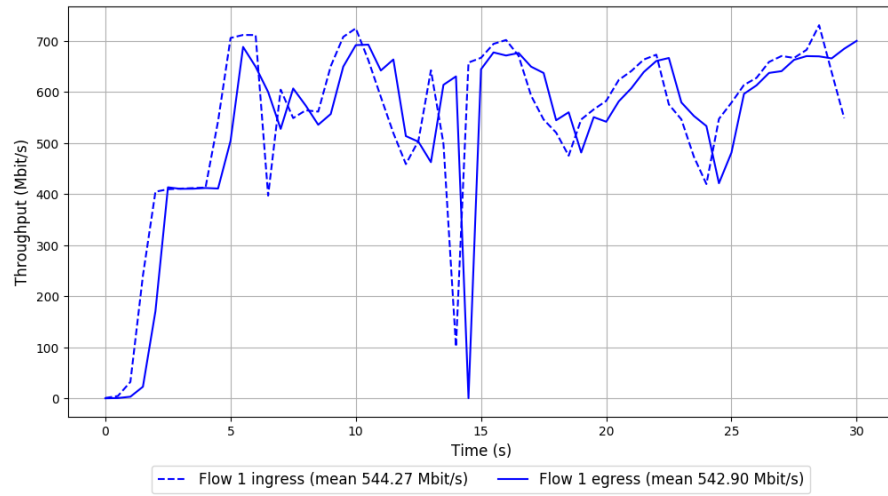
-- Flow 1:

Average throughput: 542.90 Mbit/s

95th percentile per-packet one-way delay: 152.714 ms

Loss rate: 0.24%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-12-11 09:56:53

End at: 2018-12-11 09:57:23

Local clock offset: -0.403 ms

Remote clock offset: 0.296 ms

Below is generated by plot.py at 2018-12-11 11:43:17

Datalink statistics

-- Total of 1 flow:

Average throughput: 494.80 Mbit/s

95th percentile per-packet one-way delay: 145.548 ms

Loss rate: 0.22%

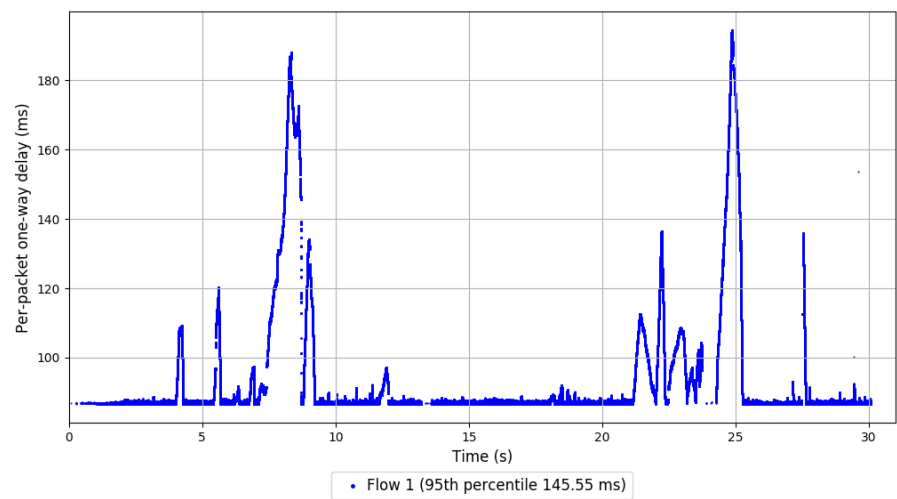
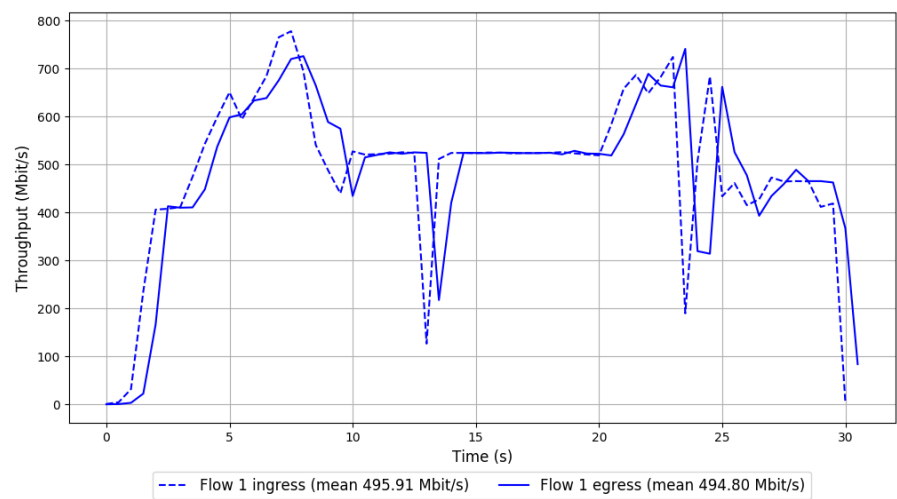
-- Flow 1:

Average throughput: 494.80 Mbit/s

95th percentile per-packet one-way delay: 145.548 ms

Loss rate: 0.22%

Run 3: Report of TCP BBR — Data Link



Run 4: Statistics of TCP BBR

Start at: 2018-12-11 10:25:37

End at: 2018-12-11 10:26:07

Local clock offset: 0.29 ms

Remote clock offset: 0.404 ms

Below is generated by plot.py at 2018-12-11 11:43:17

Datalink statistics

-- Total of 1 flow:

Average throughput: 451.96 Mbit/s

95th percentile per-packet one-way delay: 156.454 ms

Loss rate: 0.23%

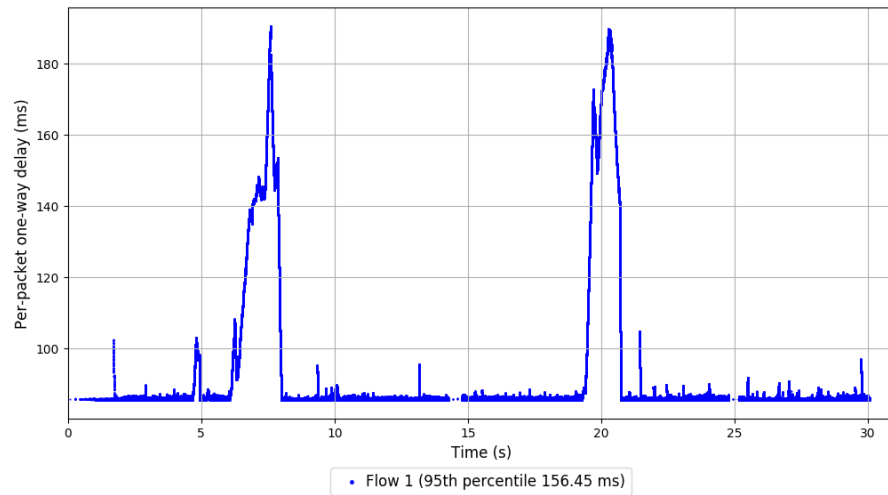
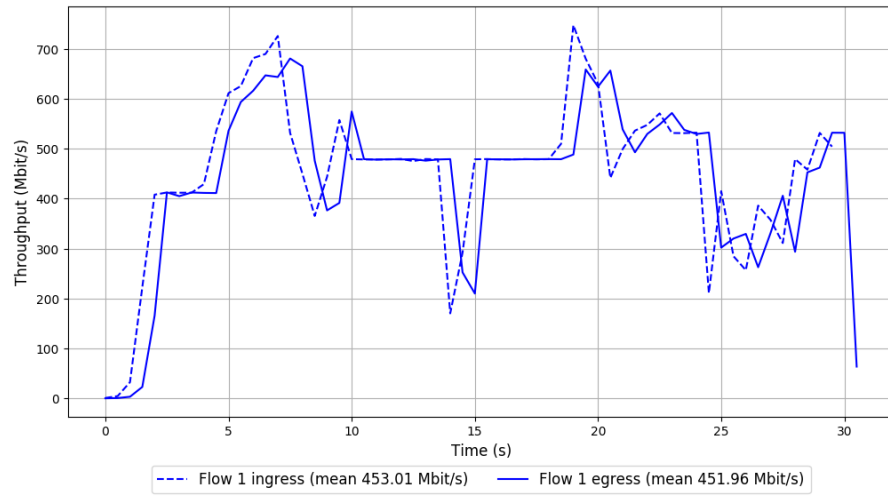
-- Flow 1:

Average throughput: 451.96 Mbit/s

95th percentile per-packet one-way delay: 156.454 ms

Loss rate: 0.23%

Run 4: Report of TCP BBR — Data Link



Run 5: Statistics of TCP BBR

Start at: 2018-12-11 10:54:01

End at: 2018-12-11 10:54:31

Local clock offset: -0.284 ms

Remote clock offset: 0.47 ms

Below is generated by plot.py at 2018-12-11 11:43:17

Datalink statistics

-- Total of 1 flow:

Average throughput: 412.05 Mbit/s

95th percentile per-packet one-way delay: 157.375 ms

Loss rate: 0.39%

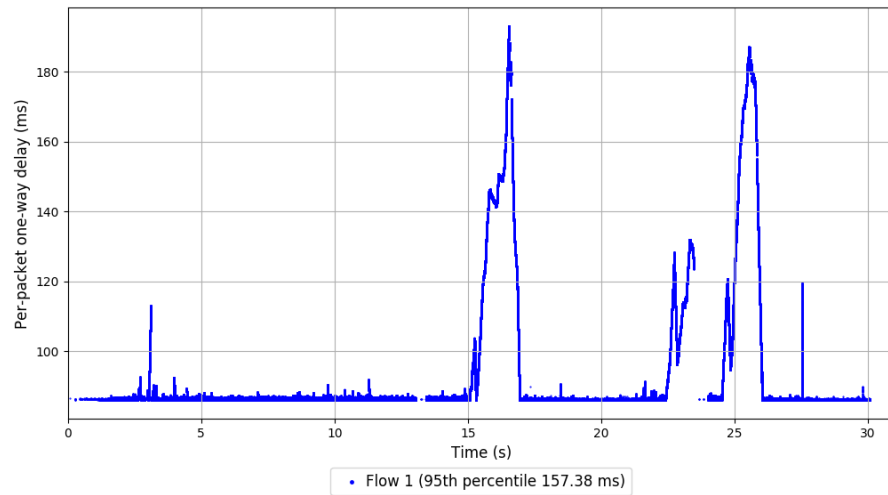
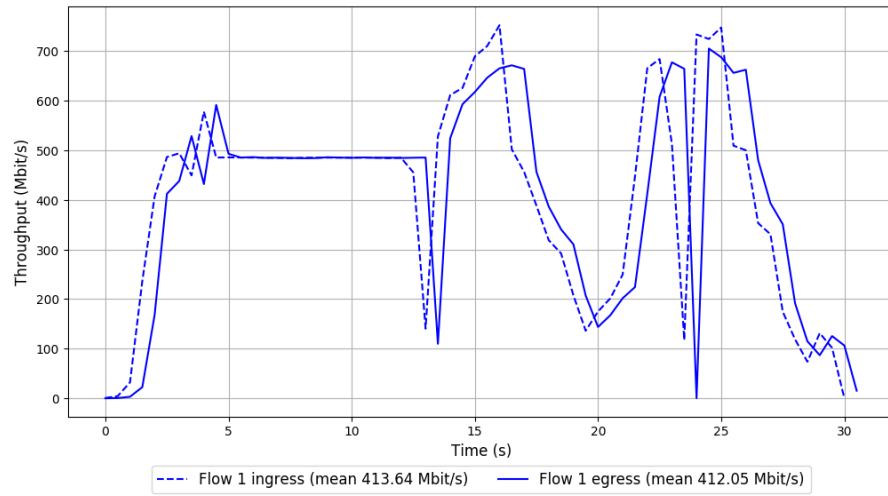
-- Flow 1:

Average throughput: 412.05 Mbit/s

95th percentile per-packet one-way delay: 157.375 ms

Loss rate: 0.39%

Run 5: Report of TCP BBR — Data Link



Run 1: Statistics of Copa

Start at: 2018-12-11 09:09:39

End at: 2018-12-11 09:10:09

Local clock offset: 0.014 ms

Remote clock offset: 0.134 ms

Below is generated by plot.py at 2018-12-11 11:44:32

Datalink statistics

-- Total of 1 flow:

Average throughput: 342.69 Mbit/s

95th percentile per-packet one-way delay: 95.367 ms

Loss rate: 0.00%

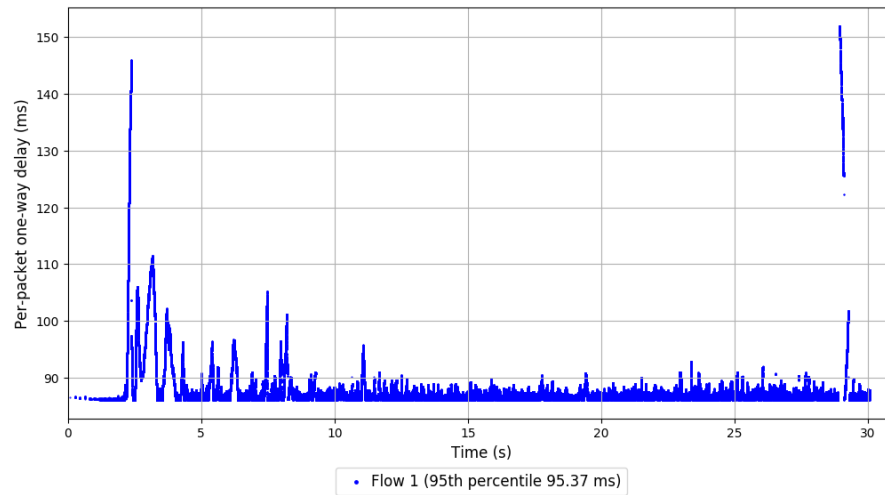
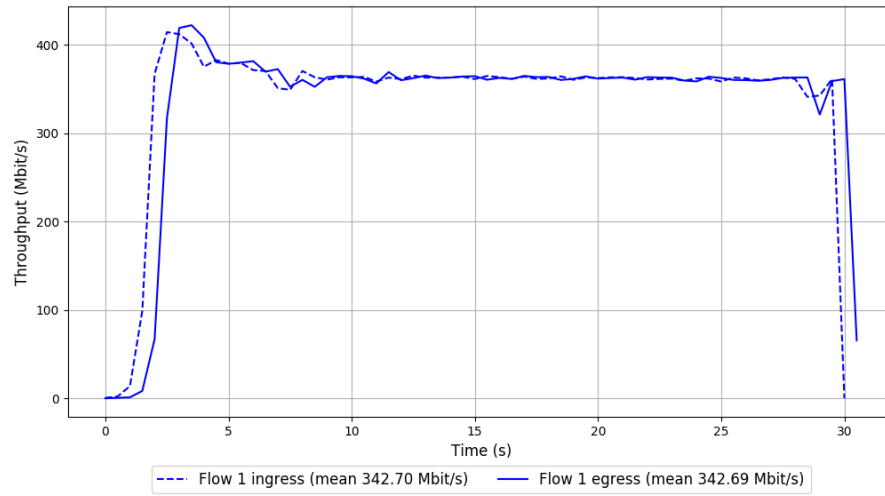
-- Flow 1:

Average throughput: 342.69 Mbit/s

95th percentile per-packet one-way delay: 95.367 ms

Loss rate: 0.00%

Run 1: Report of Copa — Data Link

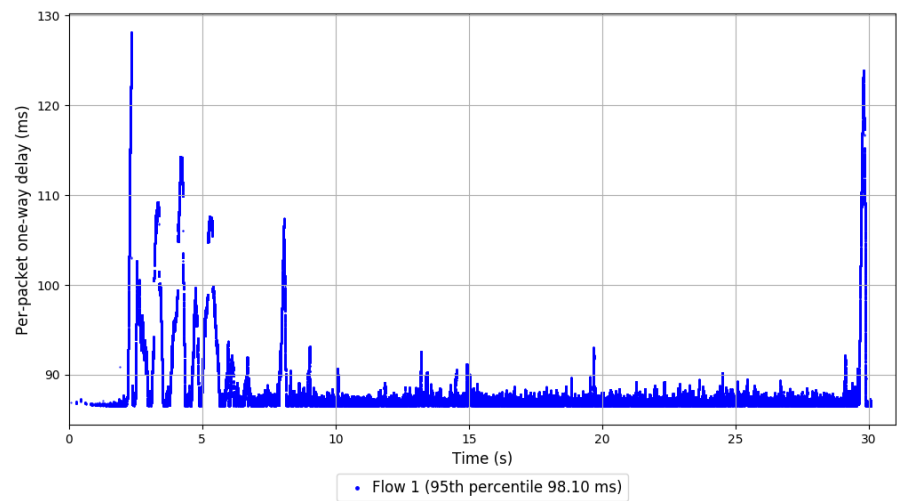
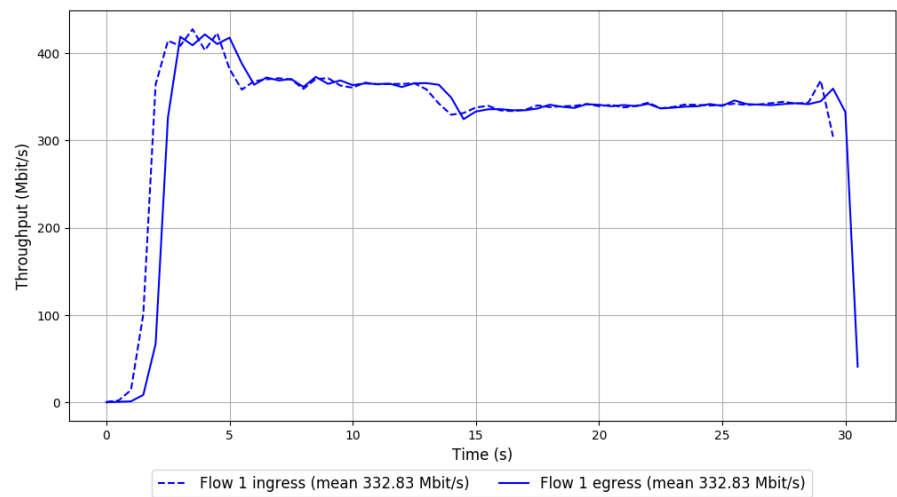


Run 2: Statistics of Copa

Start at: 2018-12-11 09:38:10
End at: 2018-12-11 09:38:40
Local clock offset: -0.387 ms
Remote clock offset: 0.249 ms

Below is generated by plot.py at 2018-12-11 11:44:32
Datalink statistics
-- Total of 1 flow:
Average throughput: 332.83 Mbit/s
95th percentile per-packet one-way delay: 98.098 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 332.83 Mbit/s
95th percentile per-packet one-way delay: 98.098 ms
Loss rate: 0.00%

Run 2: Report of Copa — Data Link



Run 3: Statistics of Copa

Start at: 2018-12-11 10:06:57

End at: 2018-12-11 10:07:27

Local clock offset: -0.186 ms

Remote clock offset: 0.334 ms

Below is generated by plot.py at 2018-12-11 11:44:32

Datalink statistics

-- Total of 1 flow:

Average throughput: 301.63 Mbit/s

95th percentile per-packet one-way delay: 118.952 ms

Loss rate: 0.00%

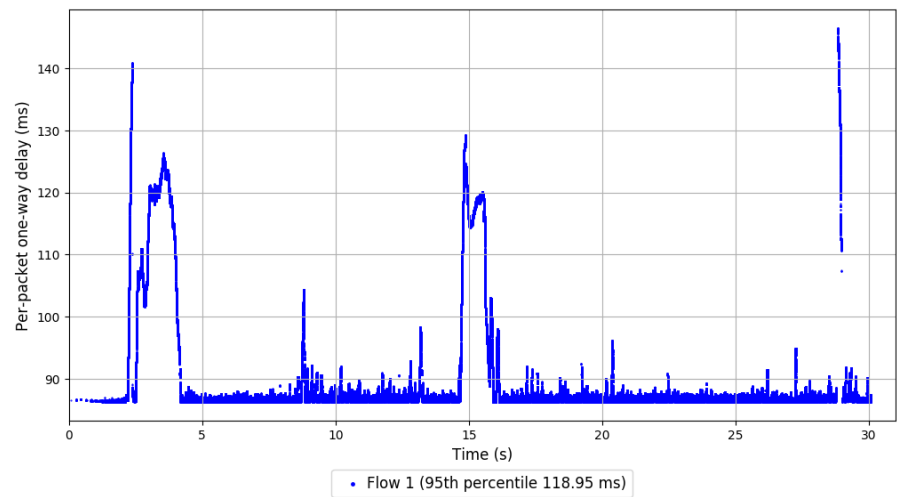
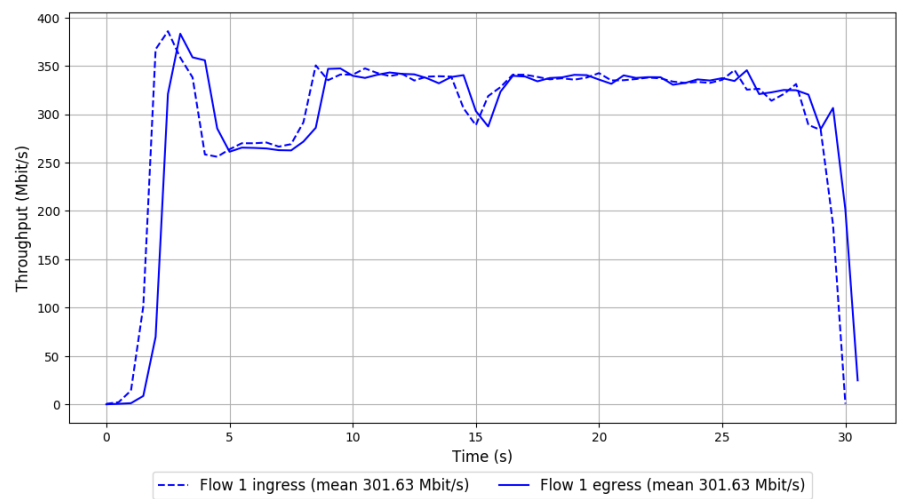
-- Flow 1:

Average throughput: 301.63 Mbit/s

95th percentile per-packet one-way delay: 118.952 ms

Loss rate: 0.00%

Run 3: Report of Copa — Data Link



Run 4: Statistics of Copa

Start at: 2018-12-11 10:35:20

End at: 2018-12-11 10:35:50

Local clock offset: -0.007 ms

Remote clock offset: 0.432 ms

Below is generated by plot.py at 2018-12-11 11:51:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 302.43 Mbit/s

95th percentile per-packet one-way delay: 101.565 ms

Loss rate: 0.00%

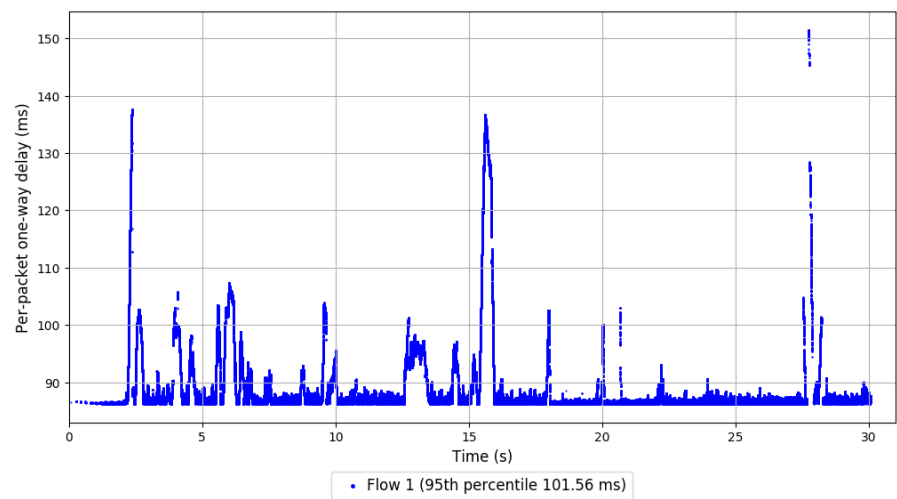
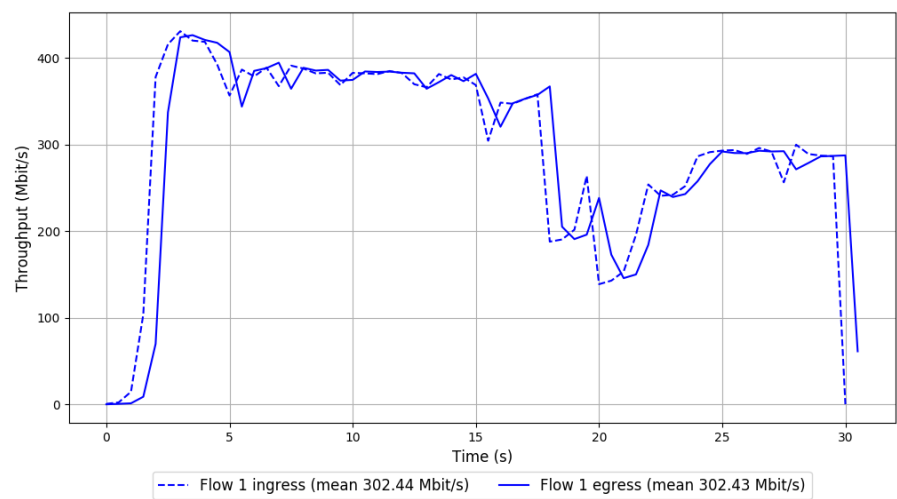
-- Flow 1:

Average throughput: 302.43 Mbit/s

95th percentile per-packet one-way delay: 101.565 ms

Loss rate: 0.00%

Run 4: Report of Copa — Data Link



Run 5: Statistics of Copa

Start at: 2018-12-11 11:03:53

End at: 2018-12-11 11:04:23

Local clock offset: -0.127 ms

Remote clock offset: 0.543 ms

Below is generated by plot.py at 2018-12-11 11:52:04

Datalink statistics

-- Total of 1 flow:

Average throughput: 300.38 Mbit/s

95th percentile per-packet one-way delay: 96.050 ms

Loss rate: 0.00%

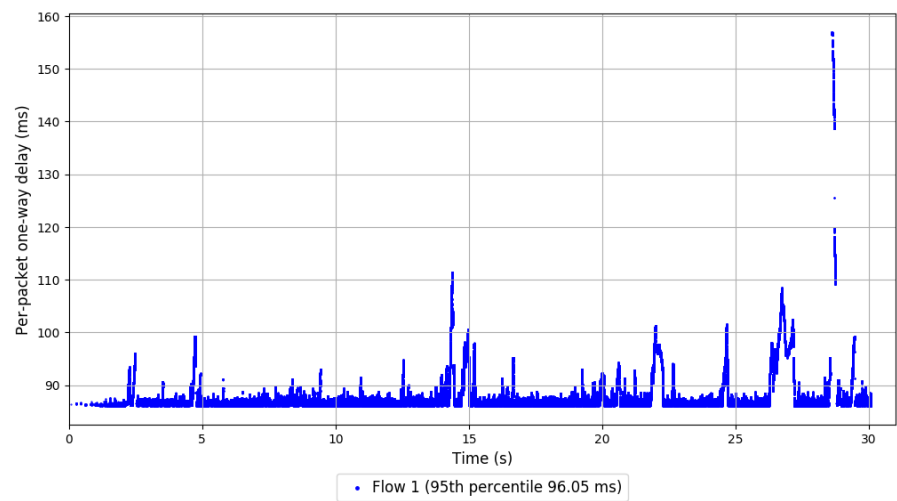
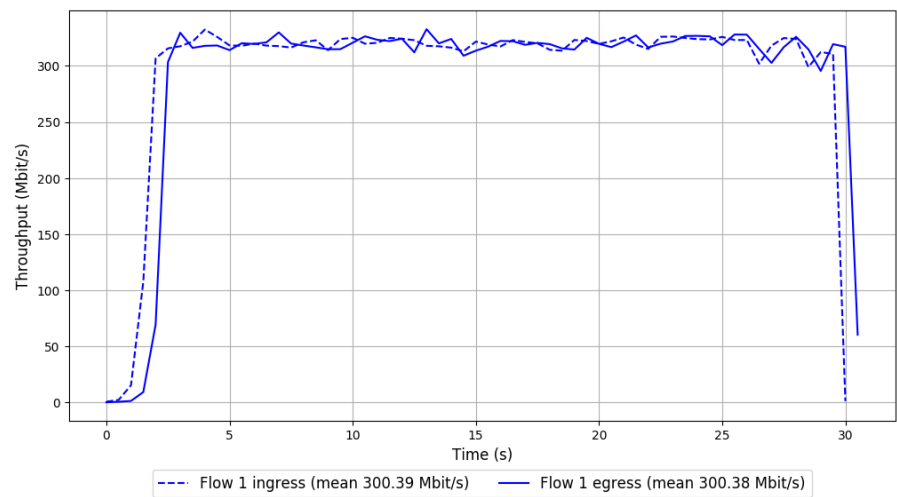
-- Flow 1:

Average throughput: 300.38 Mbit/s

95th percentile per-packet one-way delay: 96.050 ms

Loss rate: 0.00%

Run 5: Report of Copa — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-12-11 09:06:49

End at: 2018-12-11 09:07:19

Local clock offset: 0.159 ms

Remote clock offset: 0.096 ms

Below is generated by plot.py at 2018-12-11 11:53:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 569.05 Mbit/s

95th percentile per-packet one-way delay: 99.908 ms

Loss rate: 0.00%

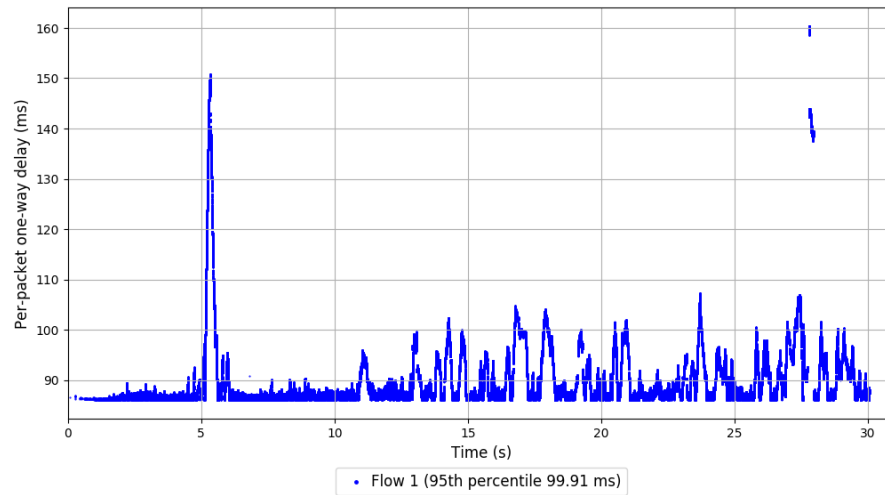
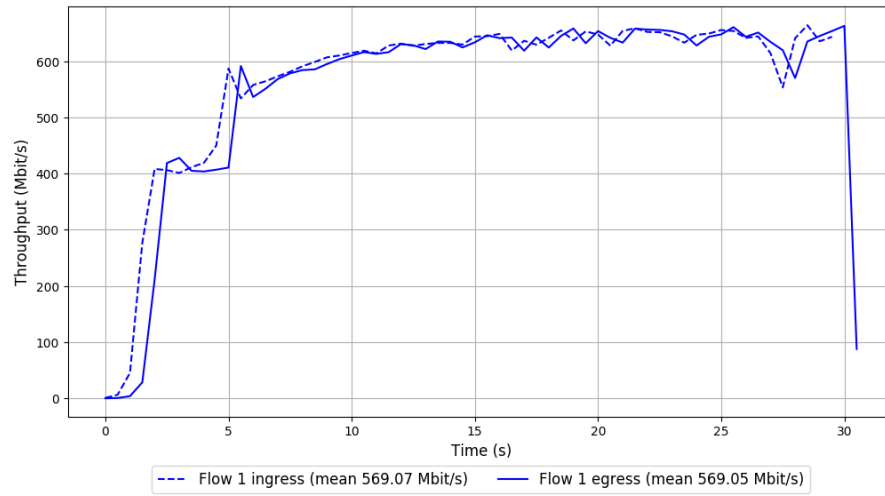
-- Flow 1:

Average throughput: 569.05 Mbit/s

95th percentile per-packet one-way delay: 99.908 ms

Loss rate: 0.00%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-12-11 09:35:22

End at: 2018-12-11 09:35:52

Local clock offset: -0.529 ms

Remote clock offset: 0.253 ms

Below is generated by plot.py at 2018-12-11 11:53:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 519.27 Mbit/s

95th percentile per-packet one-way delay: 88.877 ms

Loss rate: 0.00%

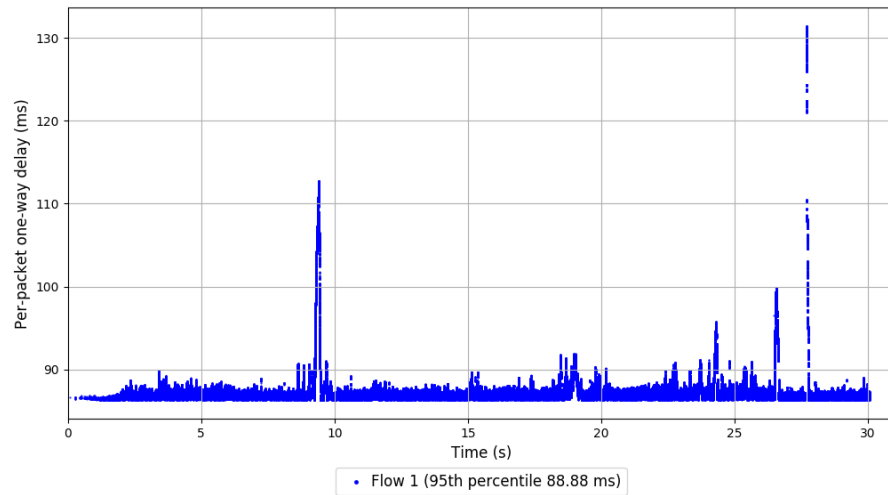
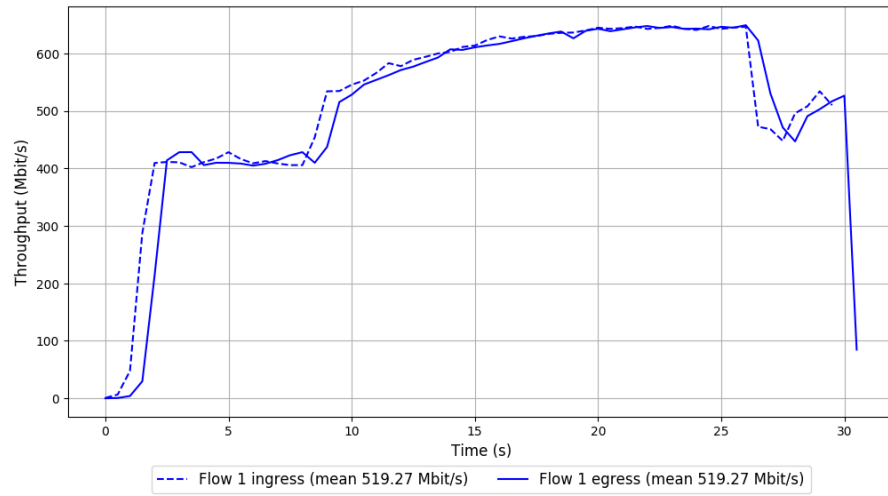
-- Flow 1:

Average throughput: 519.27 Mbit/s

95th percentile per-packet one-way delay: 88.877 ms

Loss rate: 0.00%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-12-11 10:04:05

End at: 2018-12-11 10:04:35

Local clock offset: -0.173 ms

Remote clock offset: 0.321 ms

Below is generated by plot.py at 2018-12-11 11:54:36

Datalink statistics

-- Total of 1 flow:

Average throughput: 616.97 Mbit/s

95th percentile per-packet one-way delay: 154.576 ms

Loss rate: 0.03%

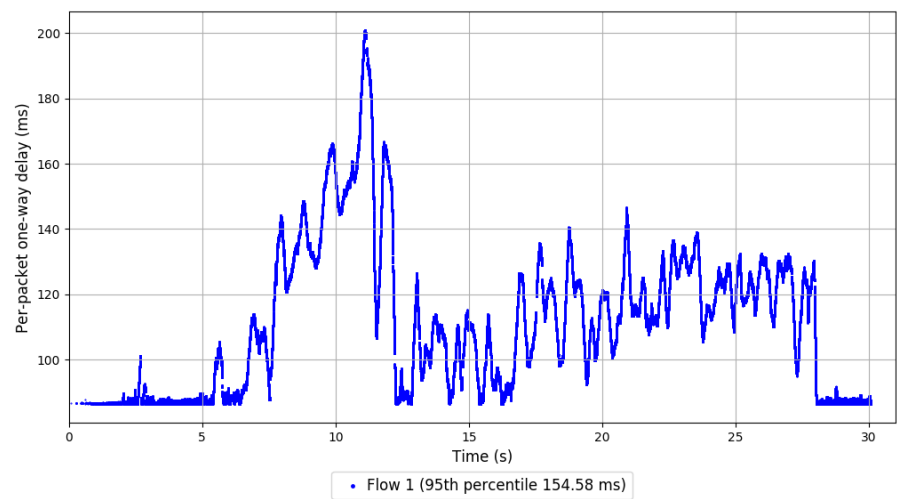
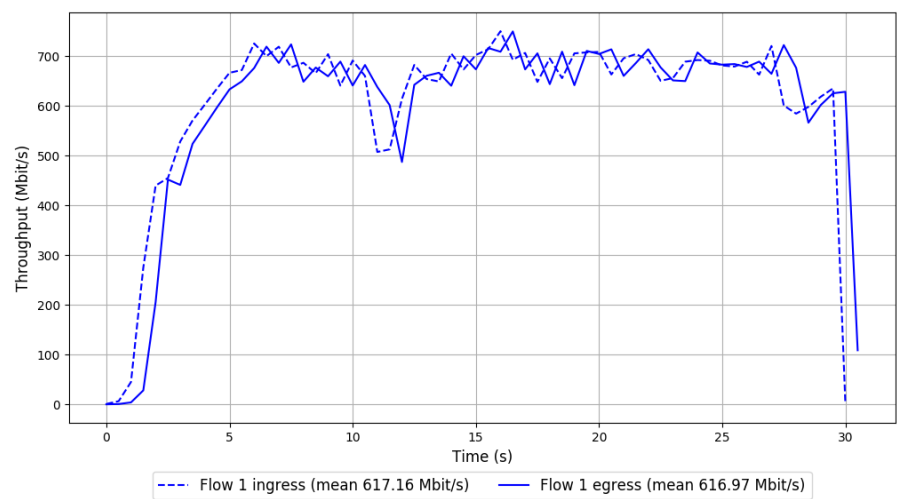
-- Flow 1:

Average throughput: 616.97 Mbit/s

95th percentile per-packet one-way delay: 154.576 ms

Loss rate: 0.03%

Run 3: Report of TCP Cubic — Data Link



Run 4: Statistics of TCP Cubic

Start at: 2018-12-11 10:32:38

End at: 2018-12-11 10:33:08

Local clock offset: 0.346 ms

Remote clock offset: 0.479 ms

Below is generated by plot.py at 2018-12-11 11:54:36

Datalink statistics

-- Total of 1 flow:

Average throughput: 433.64 Mbit/s

95th percentile per-packet one-way delay: 86.907 ms

Loss rate: 0.00%

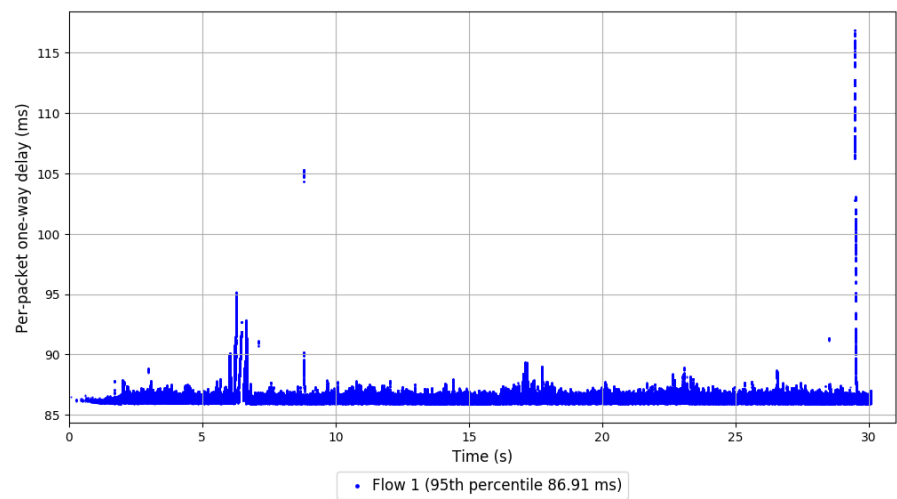
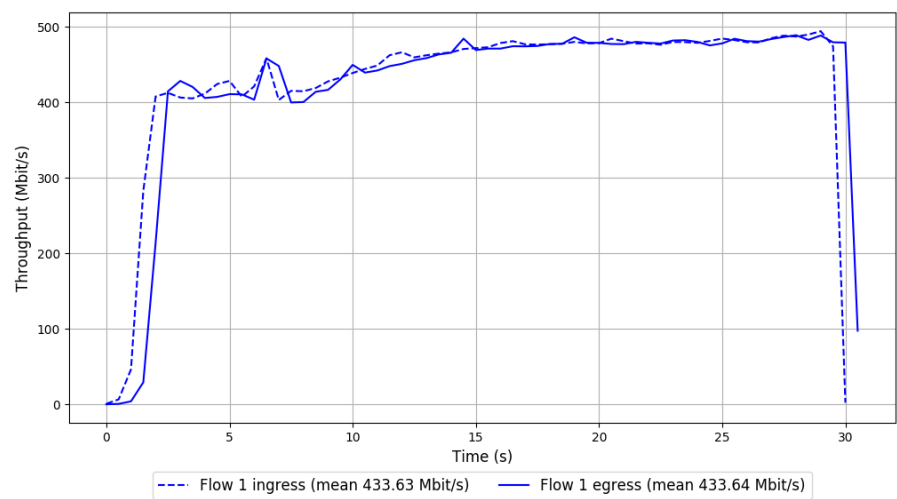
-- Flow 1:

Average throughput: 433.64 Mbit/s

95th percentile per-packet one-way delay: 86.907 ms

Loss rate: 0.00%

Run 4: Report of TCP Cubic — Data Link



Run 5: Statistics of TCP Cubic

Start at: 2018-12-11 11:01:03

End at: 2018-12-11 11:01:33

Local clock offset: 0.012 ms

Remote clock offset: 0.512 ms

Below is generated by plot.py at 2018-12-11 11:55:02

Datalink statistics

-- Total of 1 flow:

Average throughput: 572.37 Mbit/s

95th percentile per-packet one-way delay: 163.021 ms

Loss rate: 0.27%

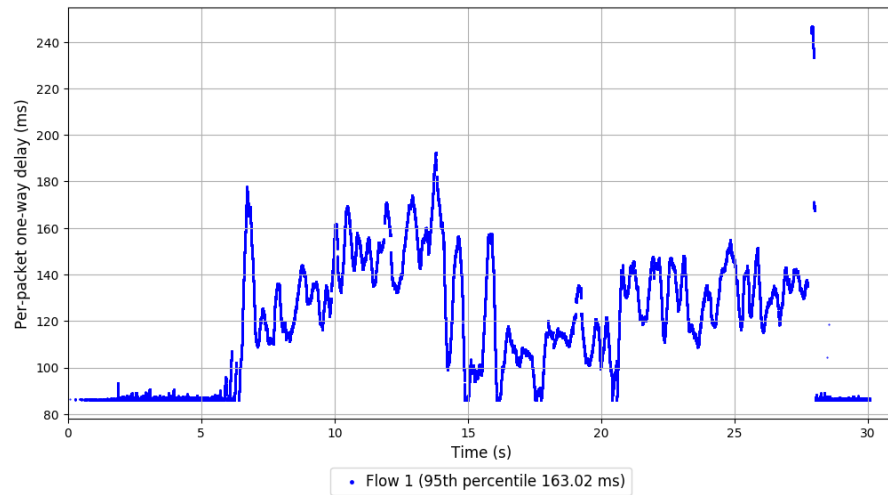
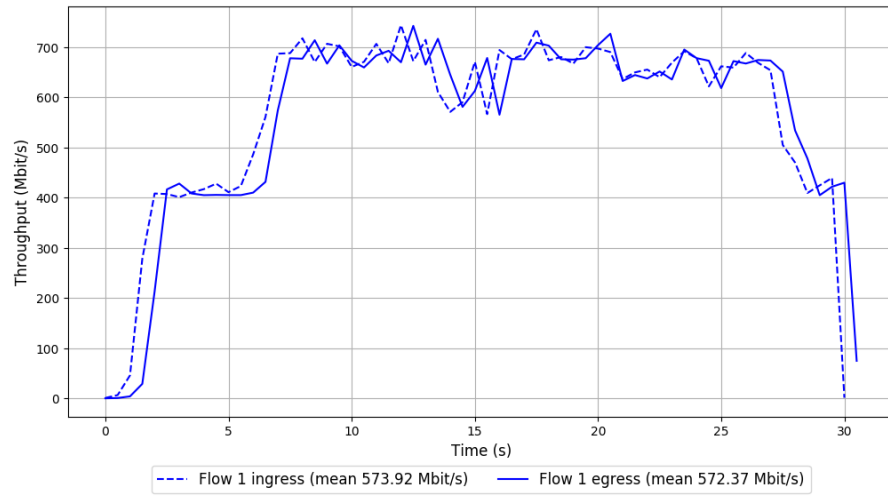
-- Flow 1:

Average throughput: 572.37 Mbit/s

95th percentile per-packet one-way delay: 163.021 ms

Loss rate: 0.27%

Run 5: Report of TCP Cubic — Data Link



Run 1: Statistics of FillP

Start at: 2018-12-11 09:11:21

End at: 2018-12-11 09:11:51

Local clock offset: -0.095 ms

Remote clock offset: 0.171 ms

Below is generated by plot.py at 2018-12-11 12:03:09

Datalink statistics

-- Total of 1 flow:

Average throughput: 896.27 Mbit/s

95th percentile per-packet one-way delay: 149.368 ms

Loss rate: 1.57%

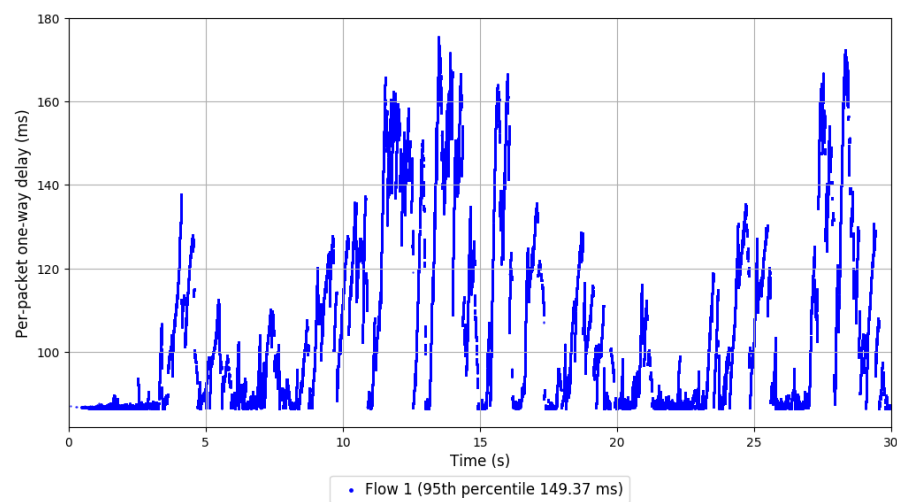
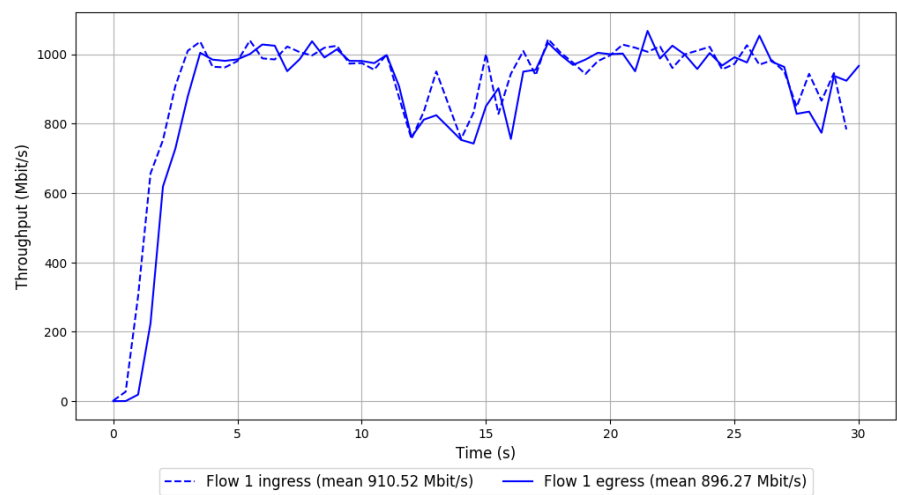
-- Flow 1:

Average throughput: 896.27 Mbit/s

95th percentile per-packet one-way delay: 149.368 ms

Loss rate: 1.57%

Run 1: Report of FillP — Data Link



Run 2: Statistics of FillP

Start at: 2018-12-11 09:39:52

End at: 2018-12-11 09:40:22

Local clock offset: 0.106 ms

Remote clock offset: 0.243 ms

Below is generated by plot.py at 2018-12-11 12:03:09

Datalink statistics

-- Total of 1 flow:

Average throughput: 287.27 Mbit/s

95th percentile per-packet one-way delay: 481.405 ms

Loss rate: 0.11%

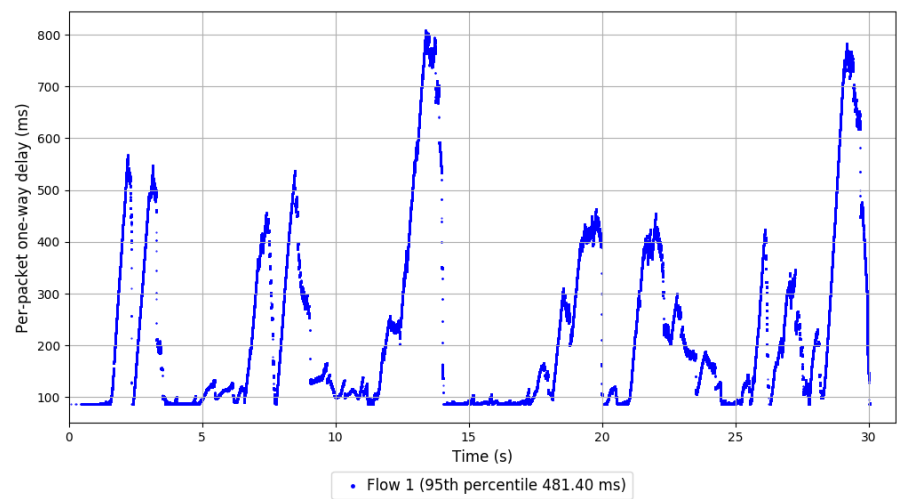
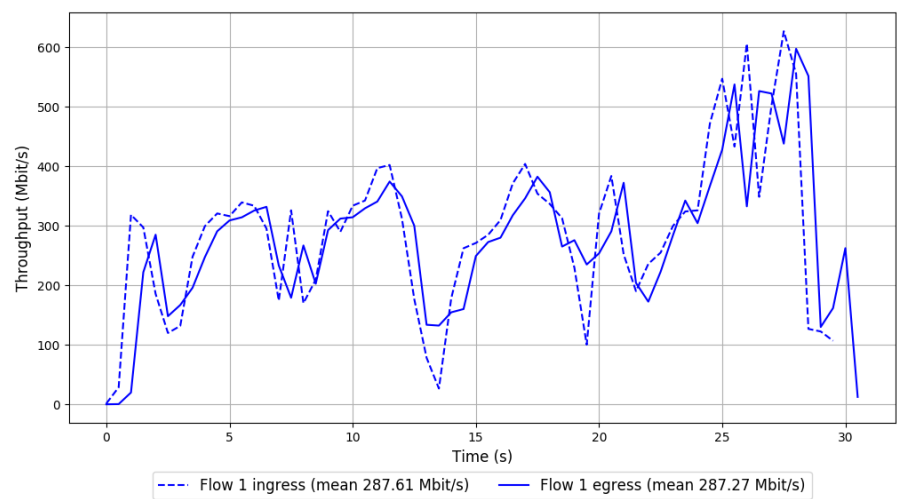
-- Flow 1:

Average throughput: 287.27 Mbit/s

95th percentile per-packet one-way delay: 481.405 ms

Loss rate: 0.11%

Run 2: Report of FillP — Data Link



Run 3: Statistics of FillP

Start at: 2018-12-11 10:08:40

End at: 2018-12-11 10:09:10

Local clock offset: 0.077 ms

Remote clock offset: 0.318 ms

Below is generated by plot.py at 2018-12-11 12:14:25

Datalink statistics

-- Total of 1 flow:

Average throughput: 930.44 Mbit/s

95th percentile per-packet one-way delay: 138.262 ms

Loss rate: 1.00%

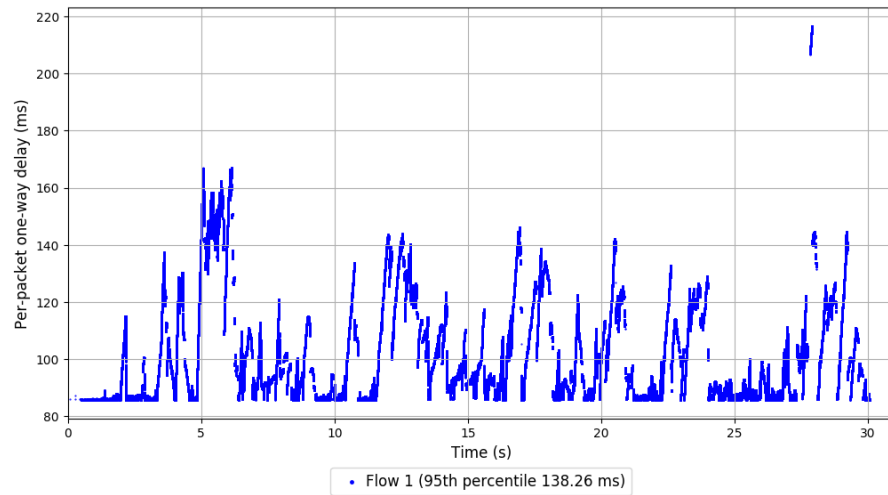
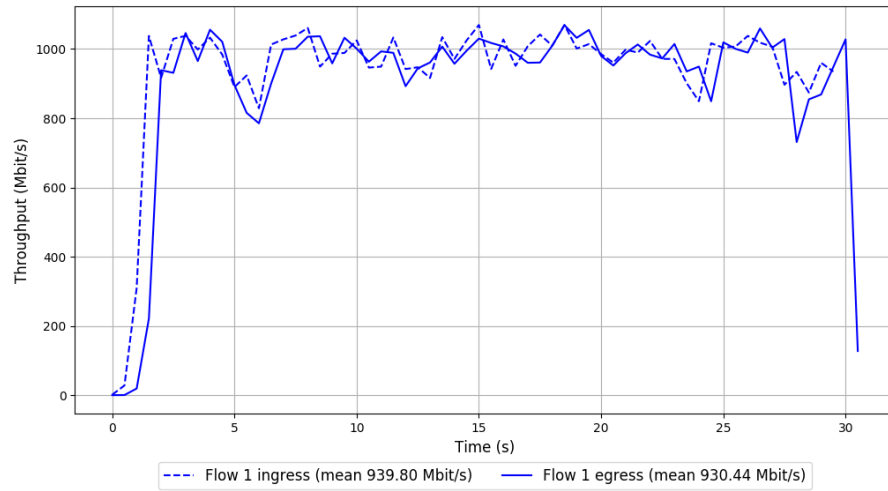
-- Flow 1:

Average throughput: 930.44 Mbit/s

95th percentile per-packet one-way delay: 138.262 ms

Loss rate: 1.00%

Run 3: Report of FillP — Data Link



Run 4: Statistics of FillP

Start at: 2018-12-11 10:36:58

End at: 2018-12-11 10:37:28

Local clock offset: 0.356 ms

Remote clock offset: 0.431 ms

Below is generated by plot.py at 2018-12-11 12:14:50

Datalink statistics

-- Total of 1 flow:

Average throughput: 937.22 Mbit/s

95th percentile per-packet one-way delay: 140.051 ms

Loss rate: 0.72%

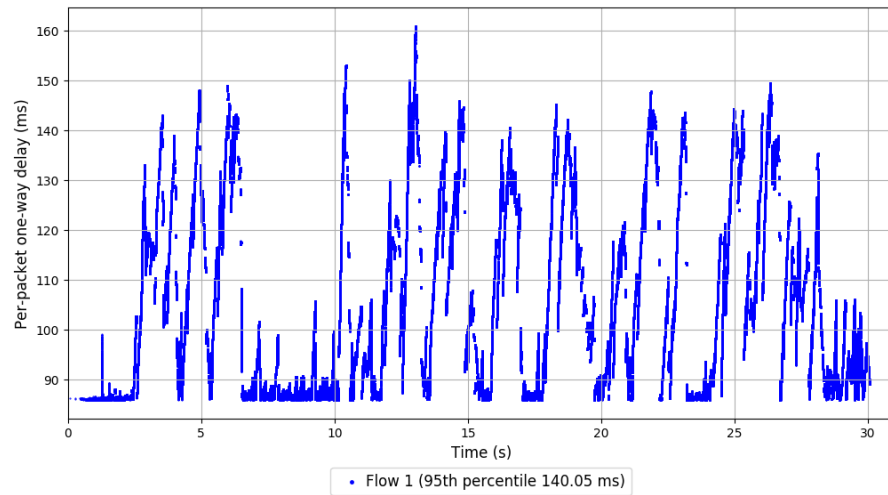
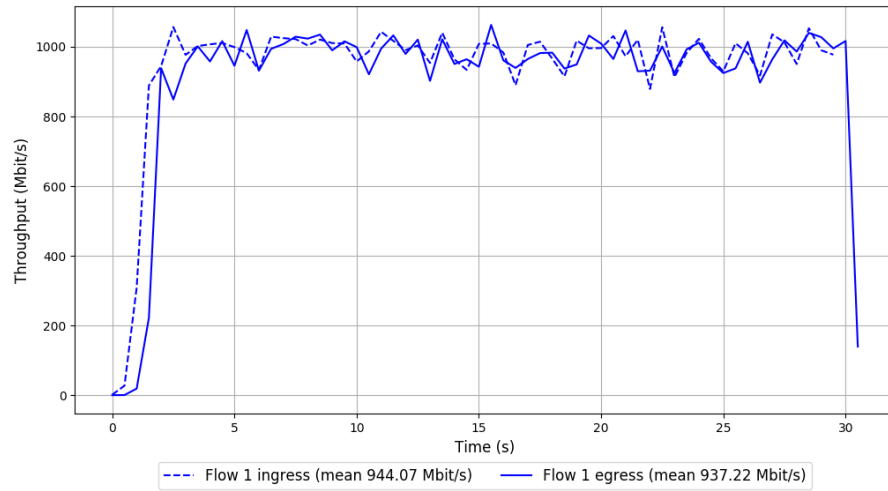
-- Flow 1:

Average throughput: 937.22 Mbit/s

95th percentile per-packet one-way delay: 140.051 ms

Loss rate: 0.72%

Run 4: Report of FillP — Data Link



Run 5: Statistics of FillP

Start at: 2018-12-11 11:05:32

End at: 2018-12-11 11:06:02

Local clock offset: 0.298 ms

Remote clock offset: 0.557 ms

Below is generated by plot.py at 2018-12-11 12:14:55

Datalink statistics

-- Total of 1 flow:

Average throughput: 933.67 Mbit/s

95th percentile per-packet one-way delay: 135.092 ms

Loss rate: 0.97%

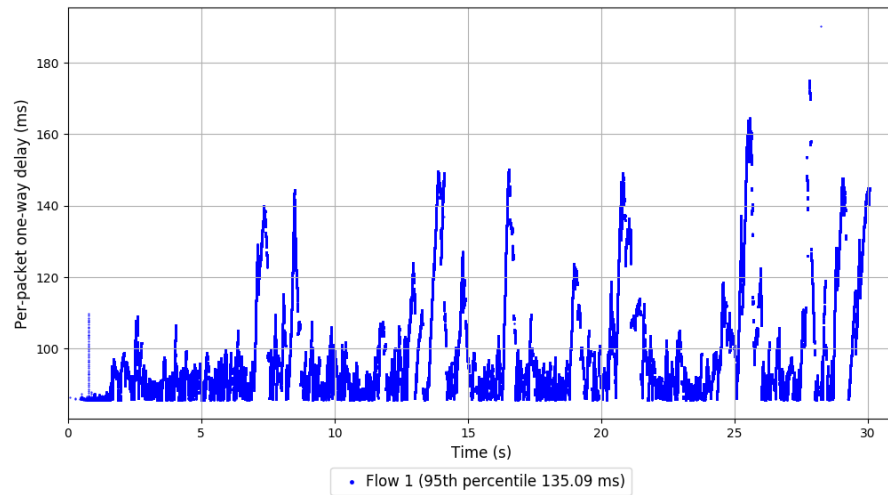
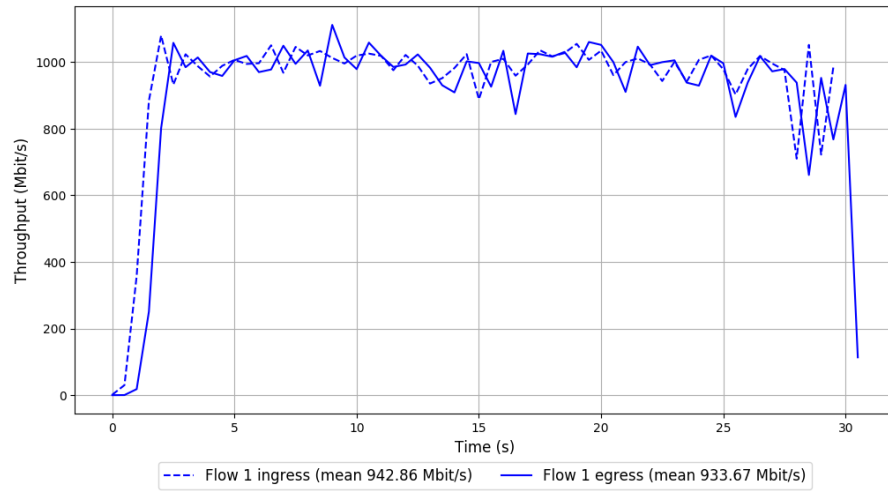
-- Flow 1:

Average throughput: 933.67 Mbit/s

95th percentile per-packet one-way delay: 135.092 ms

Loss rate: 0.97%

Run 5: Report of FillP — Data Link



Run 1: Statistics of FillP-Sheep

Start at: 2018-12-11 09:26:28

End at: 2018-12-11 09:26:58

Local clock offset: -0.506 ms

Remote clock offset: 0.215 ms

Below is generated by plot.py at 2018-12-11 12:15:02

Datalink statistics

-- Total of 1 flow:

Average throughput: 915.81 Mbit/s

95th percentile per-packet one-way delay: 135.524 ms

Loss rate: 0.76%

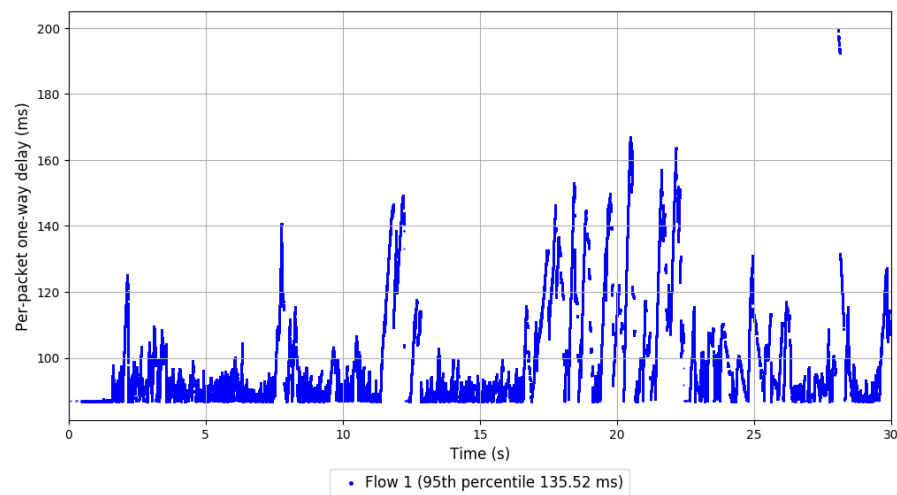
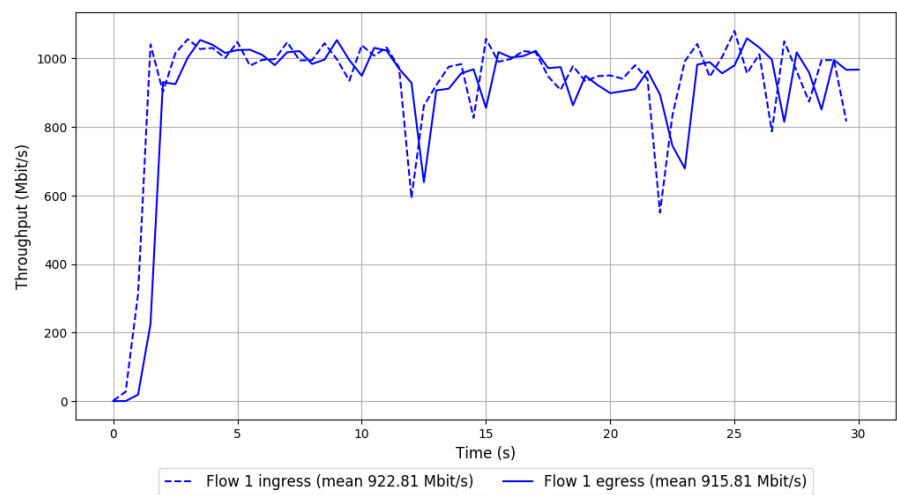
-- Flow 1:

Average throughput: 915.81 Mbit/s

95th percentile per-packet one-way delay: 135.524 ms

Loss rate: 0.76%

Run 1: Report of FillP-Sheep — Data Link



Run 2: Statistics of FillP-Sheep

Start at: 2018-12-11 09:55:05

End at: 2018-12-11 09:55:35

Local clock offset: 0.264 ms

Remote clock offset: 0.269 ms

Below is generated by plot.py at 2018-12-11 12:15:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 885.69 Mbit/s

95th percentile per-packet one-way delay: 129.518 ms

Loss rate: 0.31%

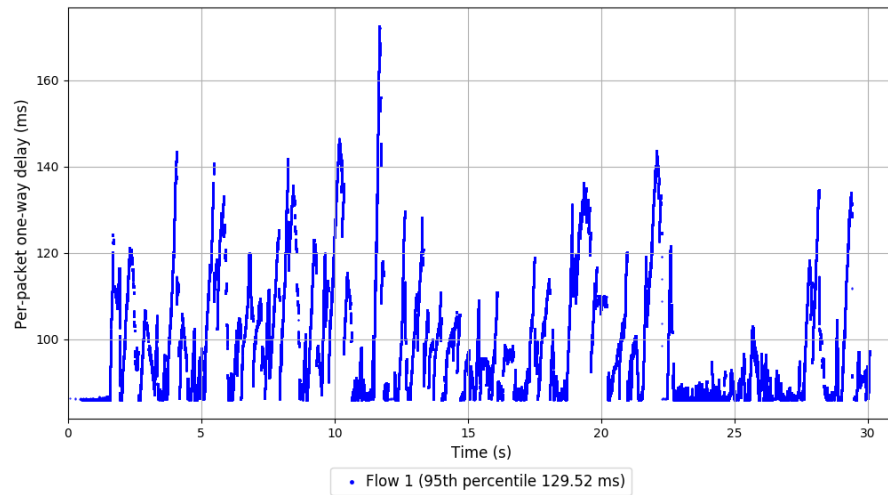
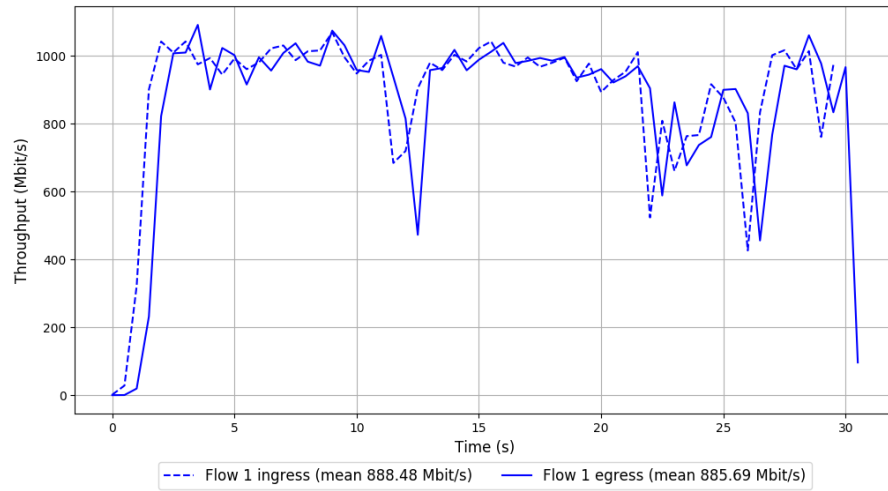
-- Flow 1:

Average throughput: 885.69 Mbit/s

95th percentile per-packet one-way delay: 129.518 ms

Loss rate: 0.31%

Run 2: Report of FillP-Sheep — Data Link



Run 3: Statistics of FillP-Sheep

Start at: 2018-12-11 10:23:51

End at: 2018-12-11 10:24:21

Local clock offset: 0.232 ms

Remote clock offset: 0.379 ms

Below is generated by plot.py at 2018-12-11 12:16:32

Datalink statistics

-- Total of 1 flow:

Average throughput: 894.18 Mbit/s

95th percentile per-packet one-way delay: 137.528 ms

Loss rate: 0.96%

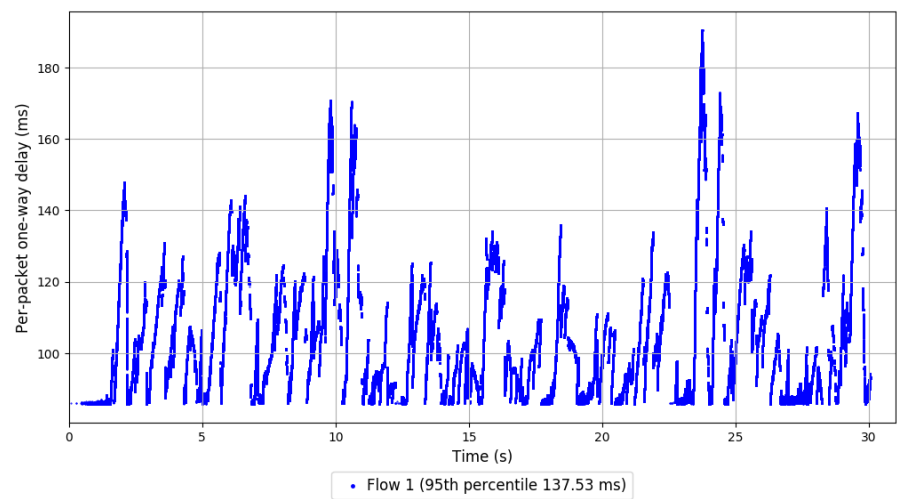
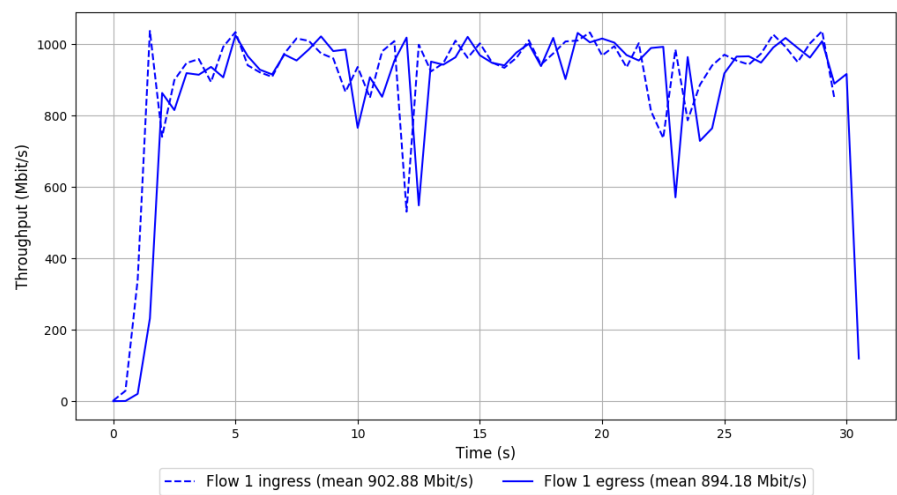
-- Flow 1:

Average throughput: 894.18 Mbit/s

95th percentile per-packet one-way delay: 137.528 ms

Loss rate: 0.96%

Run 3: Report of FillP-Sheep — Data Link



Run 4: Statistics of FillP-Sheep

Start at: 2018-12-11 10:52:16

End at: 2018-12-11 10:52:46

Local clock offset: 0.252 ms

Remote clock offset: 0.477 ms

Below is generated by plot.py at 2018-12-11 12:17:43

Datalink statistics

-- Total of 1 flow:

Average throughput: 850.65 Mbit/s

95th percentile per-packet one-way delay: 155.307 ms

Loss rate: 2.36%

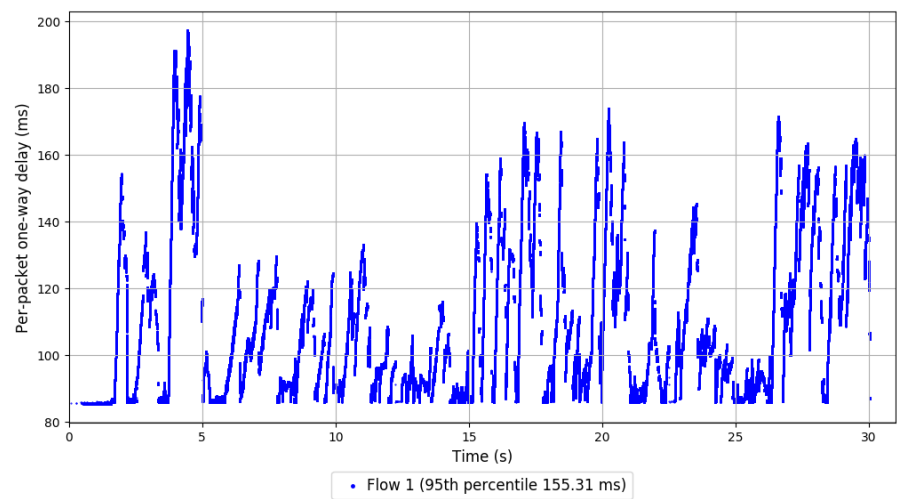
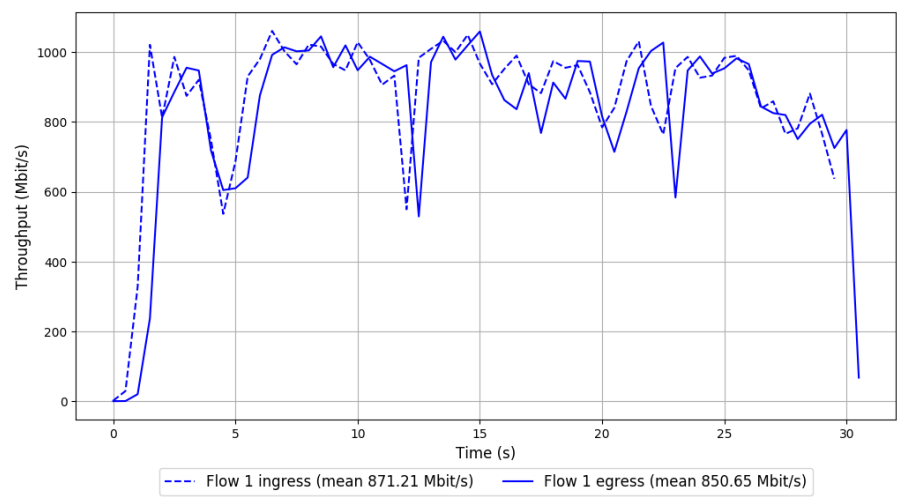
-- Flow 1:

Average throughput: 850.65 Mbit/s

95th percentile per-packet one-way delay: 155.307 ms

Loss rate: 2.36%

Run 4: Report of FillP-Sheep — Data Link



Run 5: Statistics of FillP-Sheep

Start at: 2018-12-11 11:20:54

End at: 2018-12-11 11:21:24

Local clock offset: -0.637 ms

Remote clock offset: 0.609 ms

Below is generated by plot.py at 2018-12-11 12:26:26

Datalink statistics

-- Total of 1 flow:

Average throughput: 893.81 Mbit/s

95th percentile per-packet one-way delay: 105.649 ms

Loss rate: 0.42%

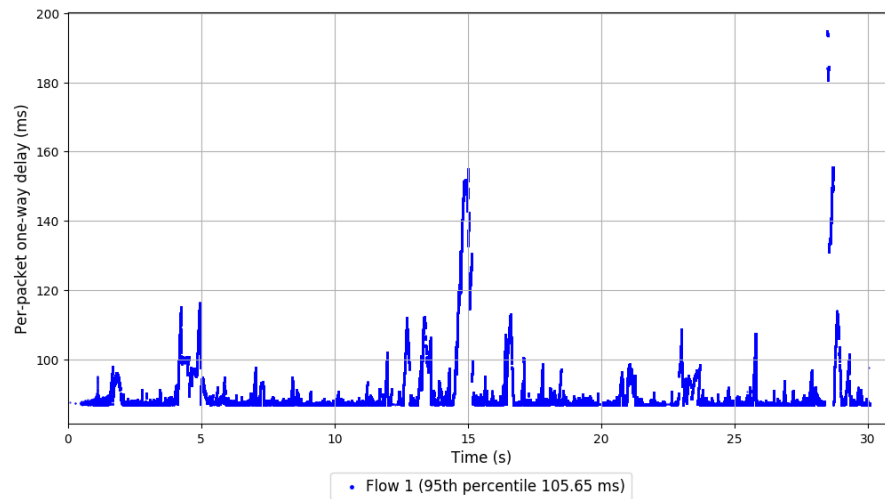
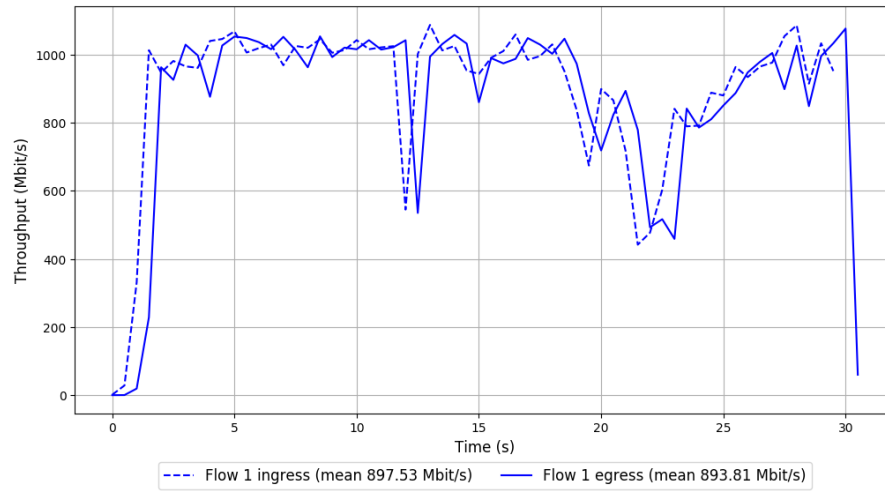
-- Flow 1:

Average throughput: 893.81 Mbit/s

95th percentile per-packet one-way delay: 105.649 ms

Loss rate: 0.42%

Run 5: Report of FillP-Sheep — Data Link

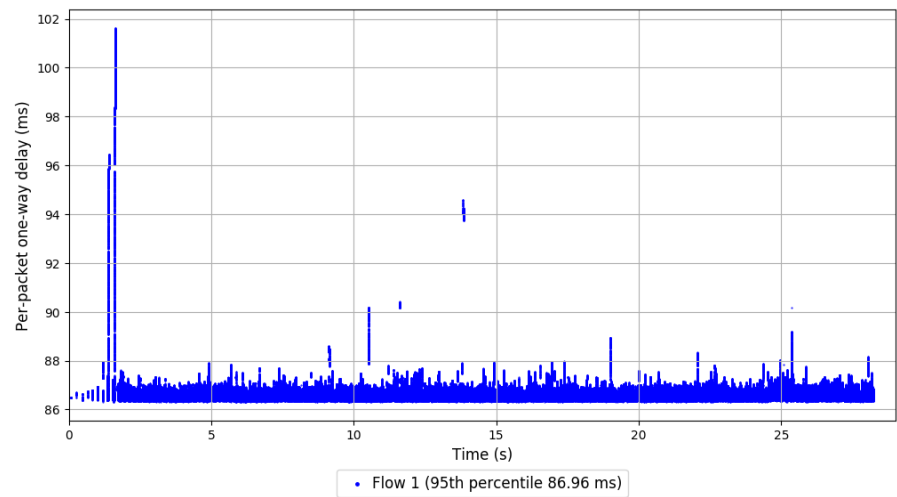
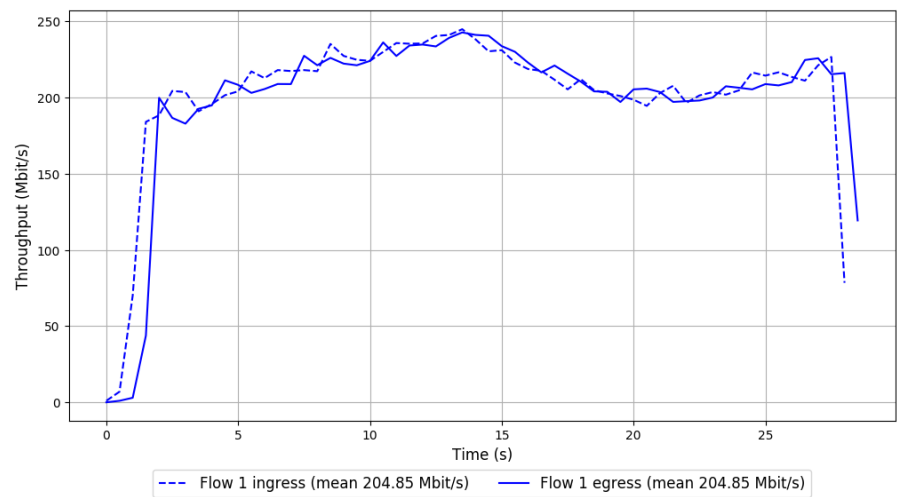


```
Run 1: Statistics of Indigo

Start at: 2018-12-11 09:17:37
End at: 2018-12-11 09:18:07
Local clock offset: -0.119 ms
Remote clock offset: 0.129 ms

# Below is generated by plot.py at 2018-12-11 12:26:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 204.85 Mbit/s
95th percentile per-packet one-way delay: 86.962 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 204.85 Mbit/s
95th percentile per-packet one-way delay: 86.962 ms
Loss rate: 0.00%
```

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-12-11 09:46:05

End at: 2018-12-11 09:46:35

Local clock offset: -0.113 ms

Remote clock offset: 0.258 ms

Below is generated by plot.py at 2018-12-11 12:26:26

Datalink statistics

-- Total of 1 flow:

Average throughput: 205.83 Mbit/s

95th percentile per-packet one-way delay: 86.871 ms

Loss rate: 0.00%

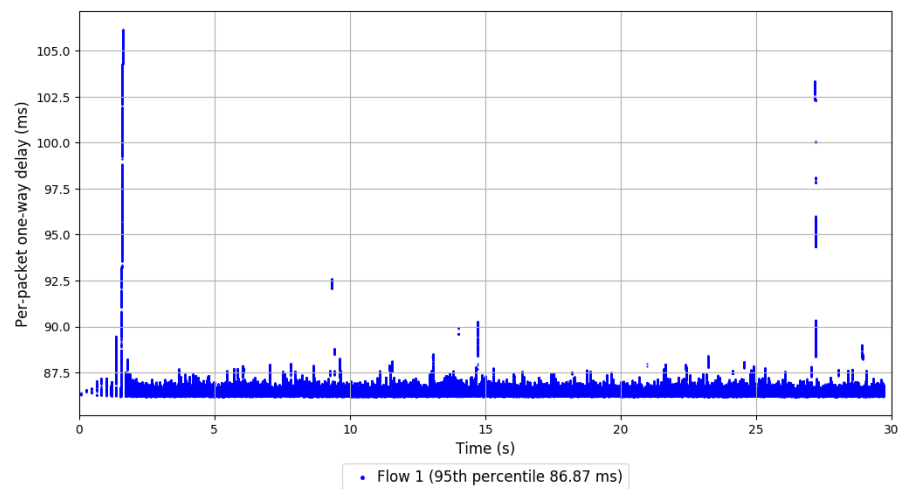
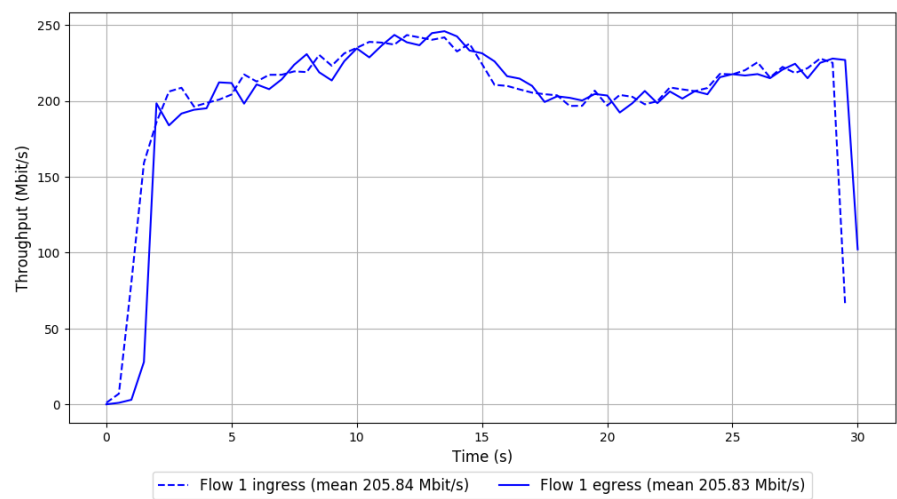
-- Flow 1:

Average throughput: 205.83 Mbit/s

95th percentile per-packet one-way delay: 86.871 ms

Loss rate: 0.00%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-12-11 10:15:10

End at: 2018-12-11 10:15:40

Local clock offset: -0.17 ms

Remote clock offset: 0.376 ms

Below is generated by plot.py at 2018-12-11 12:26:26

Datalink statistics

-- Total of 1 flow:

Average throughput: 206.78 Mbit/s

95th percentile per-packet one-way delay: 86.970 ms

Loss rate: 0.00%

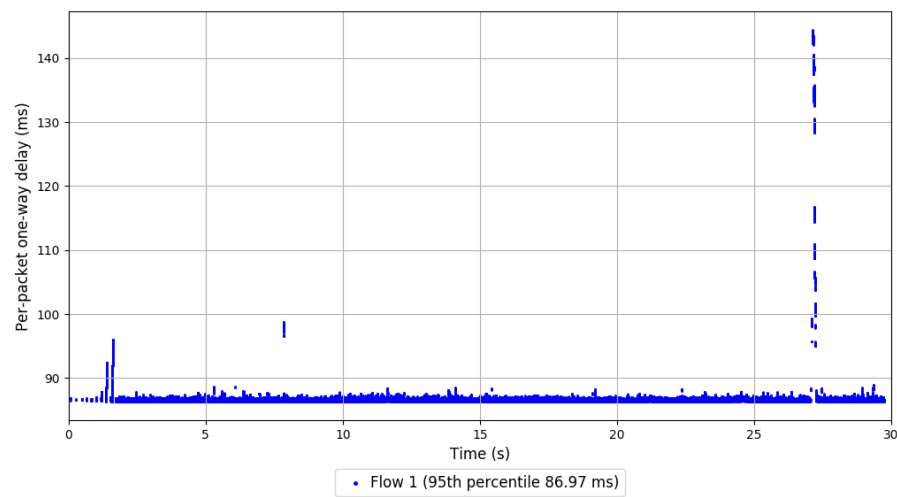
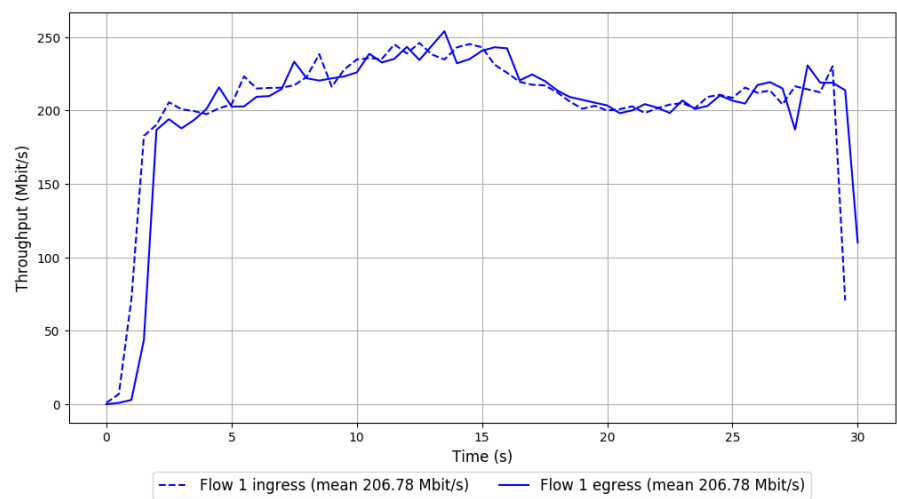
-- Flow 1:

Average throughput: 206.78 Mbit/s

95th percentile per-packet one-way delay: 86.970 ms

Loss rate: 0.00%

Run 3: Report of Indigo — Data Link



Run 4: Statistics of Indigo

Start at: 2018-12-11 10:43:28

End at: 2018-12-11 10:43:59

Local clock offset: -0.232 ms

Remote clock offset: 0.442 ms

Below is generated by plot.py at 2018-12-11 12:26:26

Datalink statistics

-- Total of 1 flow:

Average throughput: 205.12 Mbit/s

95th percentile per-packet one-way delay: 87.139 ms

Loss rate: 0.00%

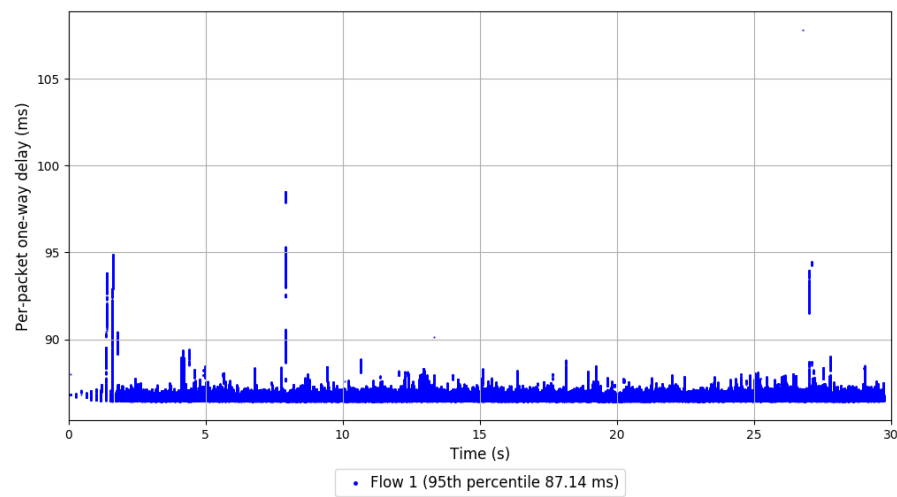
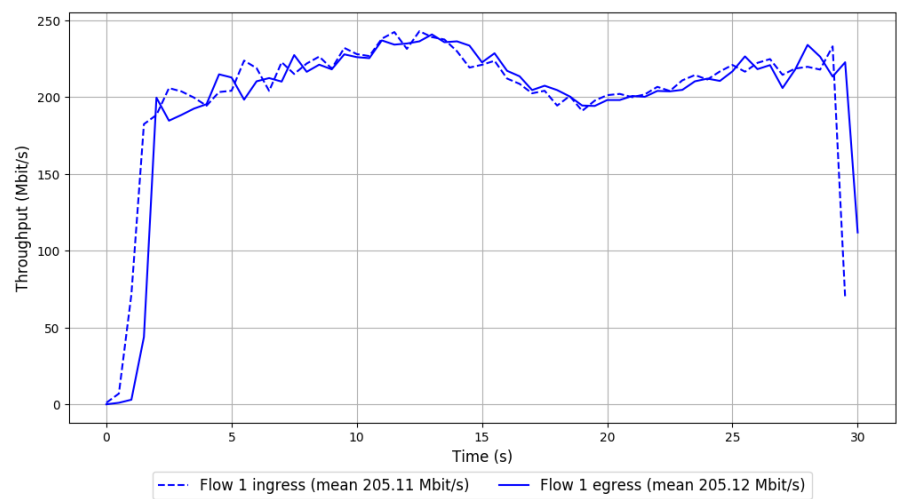
-- Flow 1:

Average throughput: 205.12 Mbit/s

95th percentile per-packet one-way delay: 87.139 ms

Loss rate: 0.00%

Run 4: Report of Indigo — Data Link



Run 5: Statistics of Indigo

Start at: 2018-12-11 11:11:55

End at: 2018-12-11 11:12:25

Local clock offset: -0.429 ms

Remote clock offset: 0.54 ms

Below is generated by plot.py at 2018-12-11 12:26:26

Datalink statistics

-- Total of 1 flow:

Average throughput: 207.59 Mbit/s

95th percentile per-packet one-way delay: 87.547 ms

Loss rate: 0.00%

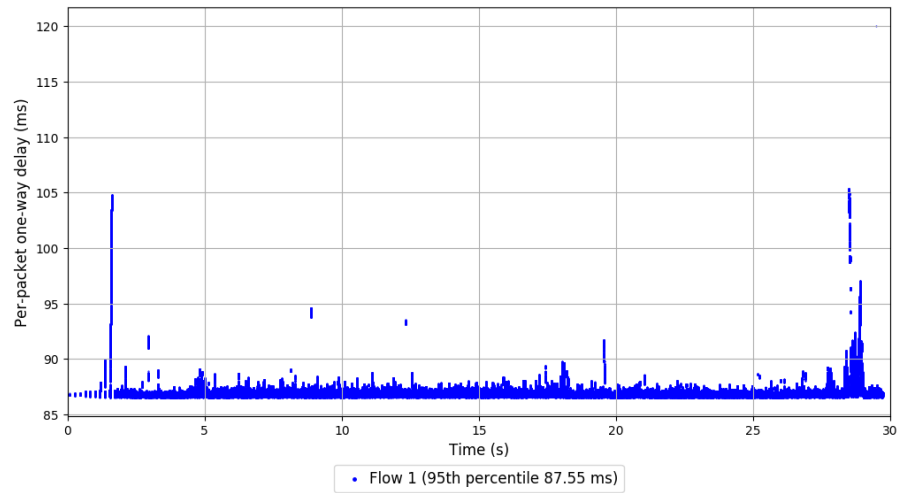
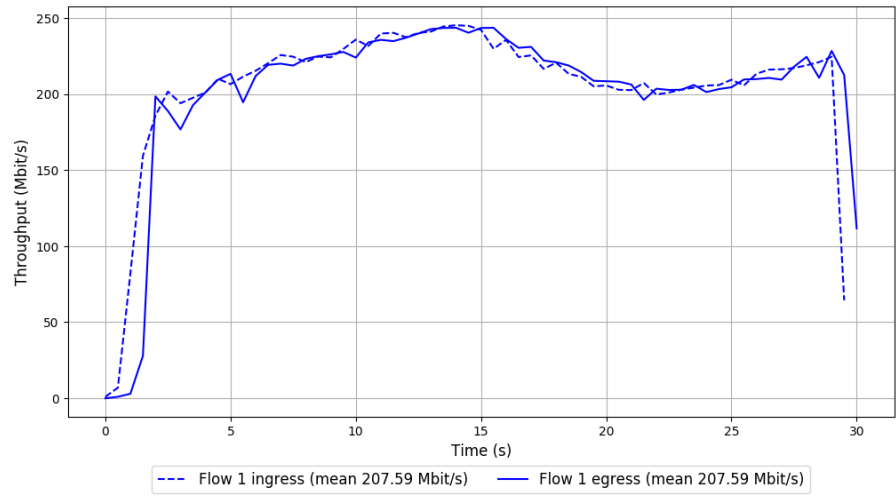
-- Flow 1:

Average throughput: 207.59 Mbit/s

95th percentile per-packet one-way delay: 87.547 ms

Loss rate: 0.00%

Run 5: Report of Indigo — Data Link



Run 1: Statistics of Indigo-MusesD

Start at: 2018-12-11 09:16:03

End at: 2018-12-11 09:16:33

Local clock offset: -0.36 ms

Remote clock offset: 0.128 ms

Below is generated by plot.py at 2018-12-11 12:26:26

Datalink statistics

-- Total of 1 flow:

Average throughput: 495.56 Mbit/s

95th percentile per-packet one-way delay: 126.236 ms

Loss rate: 0.08%

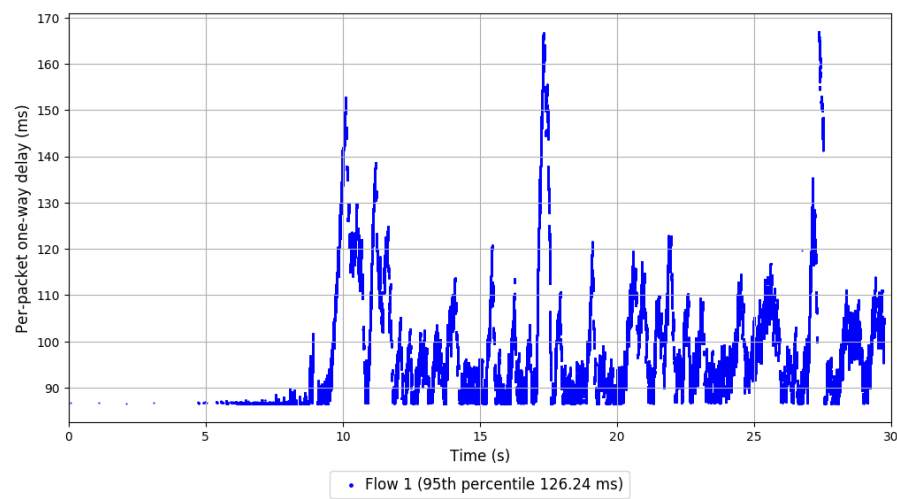
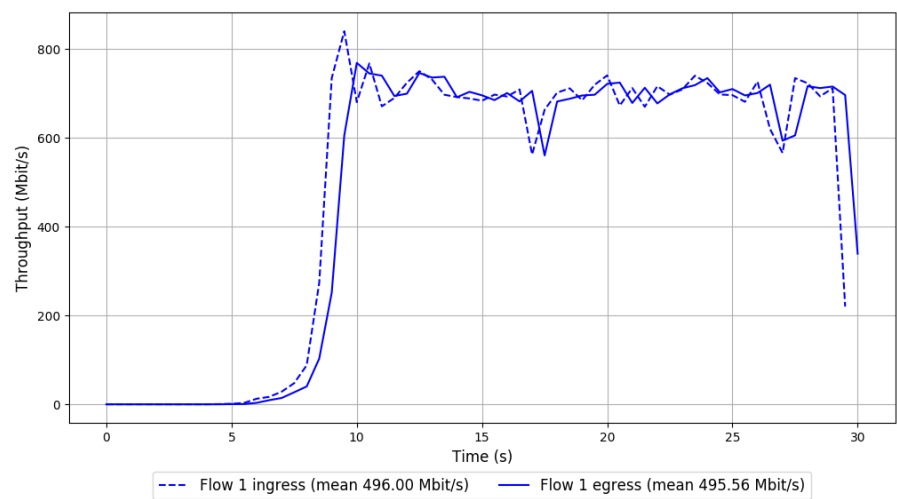
-- Flow 1:

Average throughput: 495.56 Mbit/s

95th percentile per-packet one-way delay: 126.236 ms

Loss rate: 0.08%

Run 1: Report of Indigo-MusesD — Data Link



Run 2: Statistics of Indigo-MusesD

Start at: 2018-12-11 09:44:19

End at: 2018-12-11 09:44:49

Local clock offset: -0.157 ms

Remote clock offset: 0.241 ms

Below is generated by plot.py at 2018-12-11 12:31:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 648.44 Mbit/s

95th percentile per-packet one-way delay: 123.419 ms

Loss rate: 0.14%

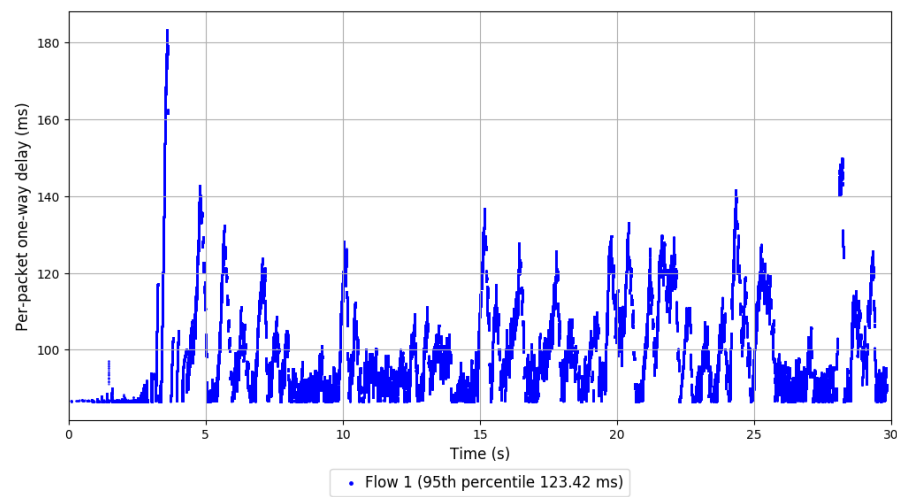
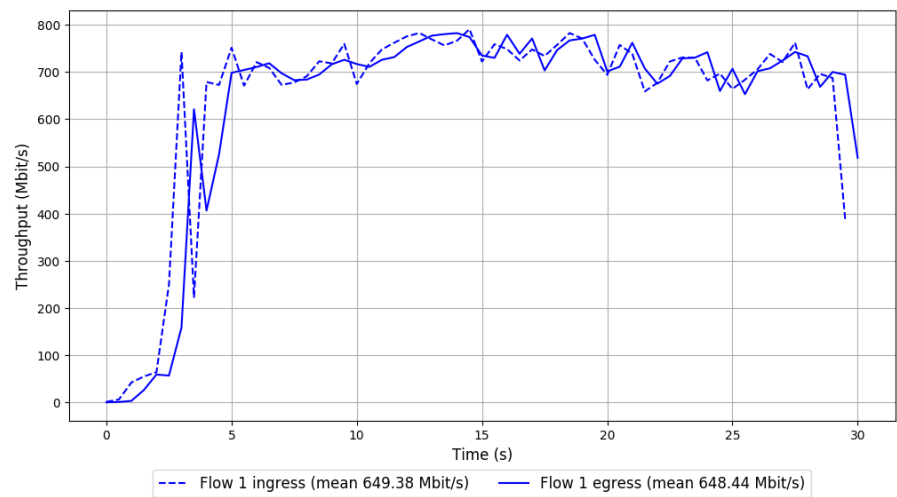
-- Flow 1:

Average throughput: 648.44 Mbit/s

95th percentile per-packet one-way delay: 123.419 ms

Loss rate: 0.14%

Run 2: Report of Indigo-MusesD — Data Link



Run 3: Statistics of Indigo-MusesD

Start at: 2018-12-11 10:13:27

End at: 2018-12-11 10:13:57

Local clock offset: -0.112 ms

Remote clock offset: 0.376 ms

Below is generated by plot.py at 2018-12-11 12:34:09

Datalink statistics

-- Total of 1 flow:

Average throughput: 654.26 Mbit/s

95th percentile per-packet one-way delay: 120.495 ms

Loss rate: 0.20%

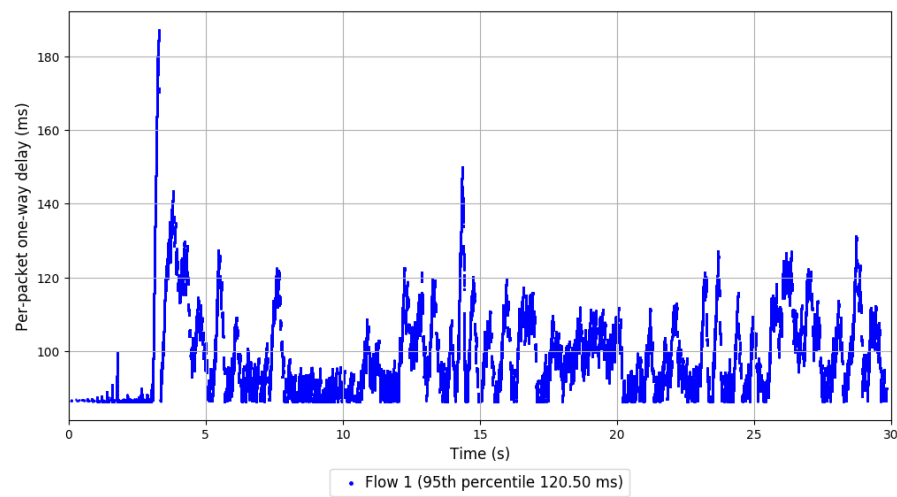
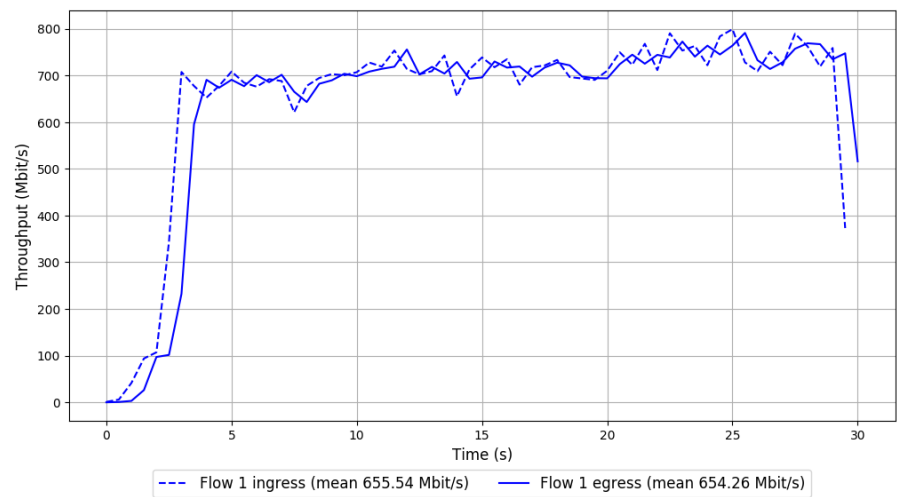
-- Flow 1:

Average throughput: 654.26 Mbit/s

95th percentile per-packet one-way delay: 120.495 ms

Loss rate: 0.20%

Run 3: Report of Indigo-MusesD — Data Link



Run 4: Statistics of Indigo-MusesD

Start at: 2018-12-11 10:41:46

End at: 2018-12-11 10:42:17

Local clock offset: 0.023 ms

Remote clock offset: 0.435 ms

Below is generated by plot.py at 2018-12-11 12:34:40

Datalink statistics

-- Total of 1 flow:

Average throughput: 633.89 Mbit/s

95th percentile per-packet one-way delay: 117.849 ms

Loss rate: 0.03%

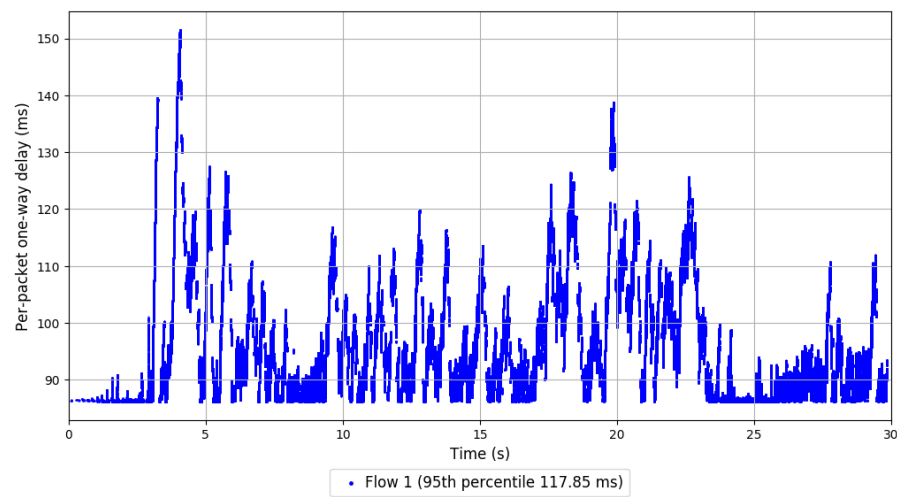
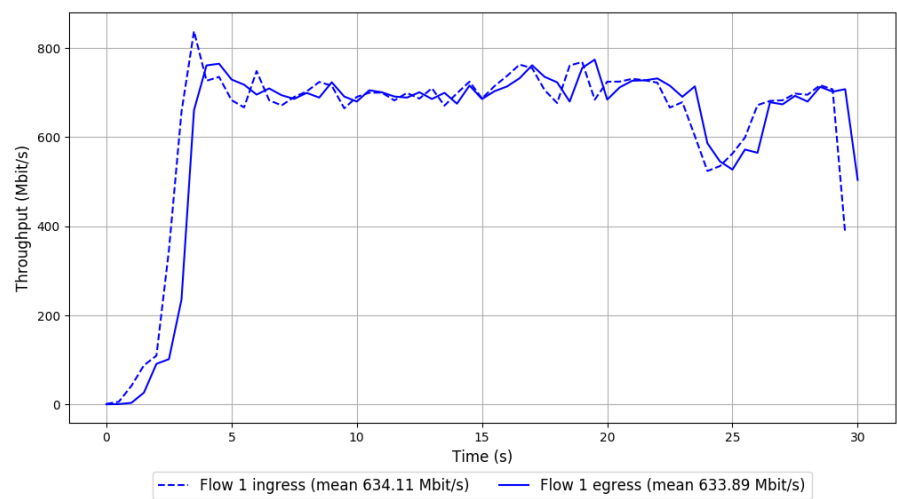
-- Flow 1:

Average throughput: 633.89 Mbit/s

95th percentile per-packet one-way delay: 117.849 ms

Loss rate: 0.03%

Run 4: Report of Indigo-MusesD — Data Link



Run 5: Statistics of Indigo-MusesD

Start at: 2018-12-11 11:10:14

End at: 2018-12-11 11:10:44

Local clock offset: -0.199 ms

Remote clock offset: 0.539 ms

Below is generated by plot.py at 2018-12-11 12:34:45

Datalink statistics

-- Total of 1 flow:

Average throughput: 633.98 Mbit/s

95th percentile per-packet one-way delay: 125.994 ms

Loss rate: 0.06%

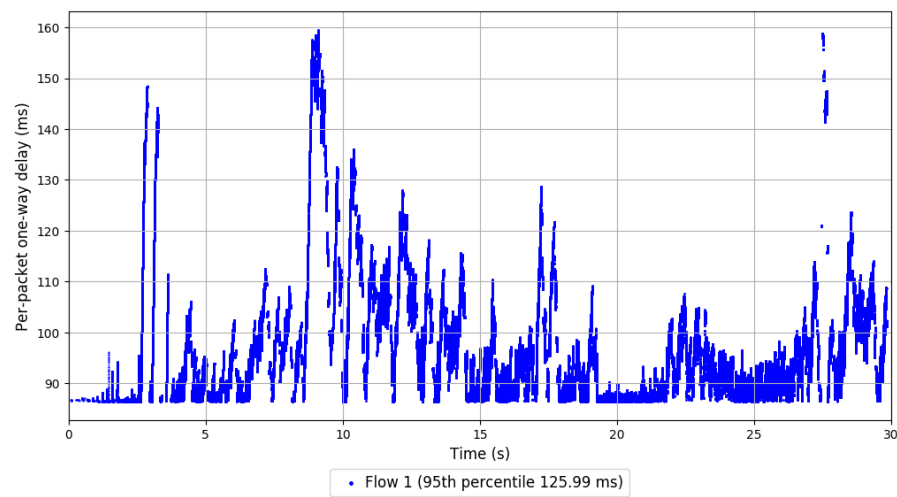
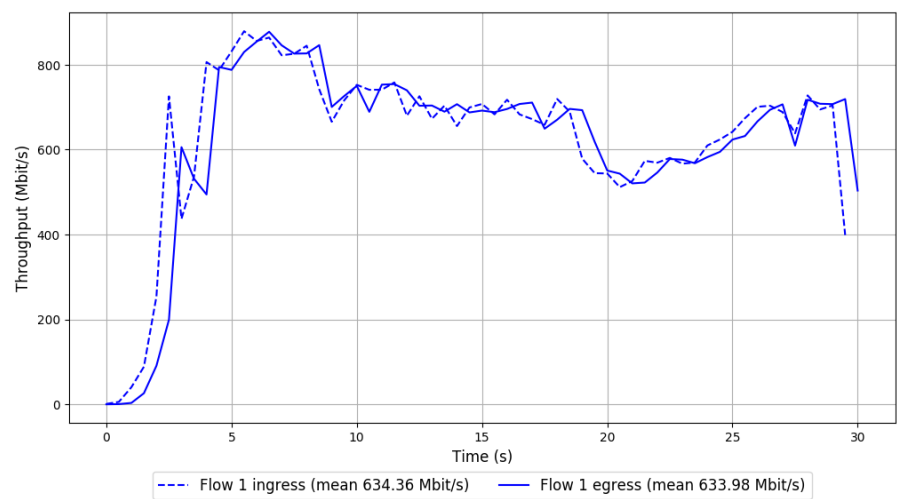
-- Flow 1:

Average throughput: 633.98 Mbit/s

95th percentile per-packet one-way delay: 125.994 ms

Loss rate: 0.06%

Run 5: Report of Indigo-MusesD — Data Link

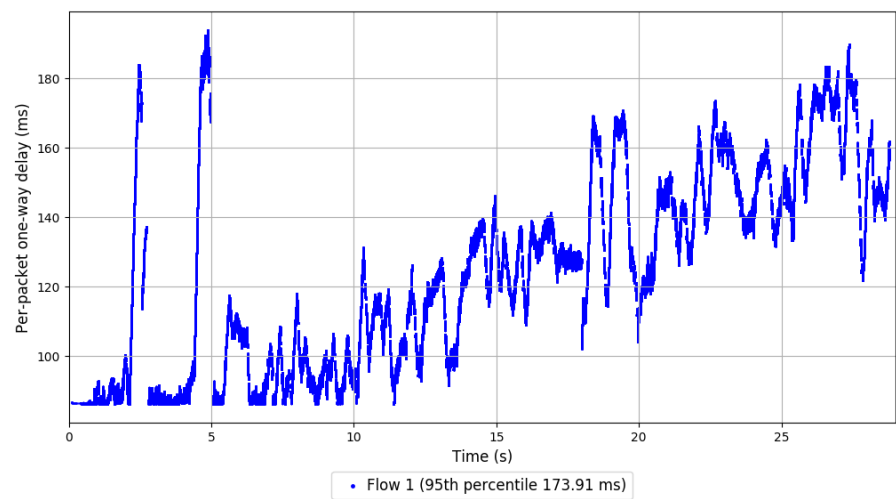
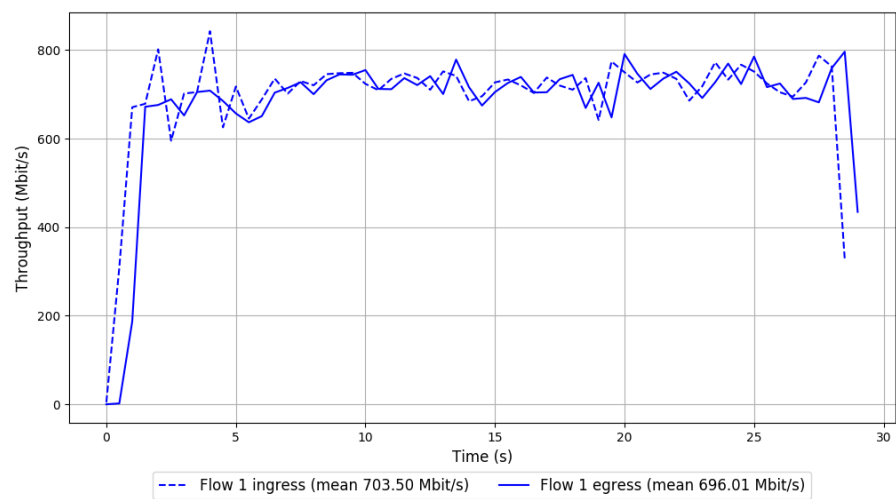


```
Run 1: Statistics of Indigo-MusesT

Start at: 2018-12-11 09:19:05
End at: 2018-12-11 09:19:35
Local clock offset: 0.095 ms
Remote clock offset: 0.149 ms

# Below is generated by plot.py at 2018-12-11 12:35:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 696.01 Mbit/s
95th percentile per-packet one-way delay: 173.905 ms
Loss rate: 1.06%
-- Flow 1:
Average throughput: 696.01 Mbit/s
95th percentile per-packet one-way delay: 173.905 ms
Loss rate: 1.06%
```

Run 1: Report of Indigo-MusesT — Data Link



Run 2: Statistics of Indigo-MusesT

Start at: 2018-12-11 09:47:35

End at: 2018-12-11 09:48:05

Local clock offset: 0.31 ms

Remote clock offset: 0.264 ms

Below is generated by plot.py at 2018-12-11 12:36:58

Datalink statistics

-- Total of 1 flow:

Average throughput: 693.26 Mbit/s

95th percentile per-packet one-way delay: 170.356 ms

Loss rate: 0.97%

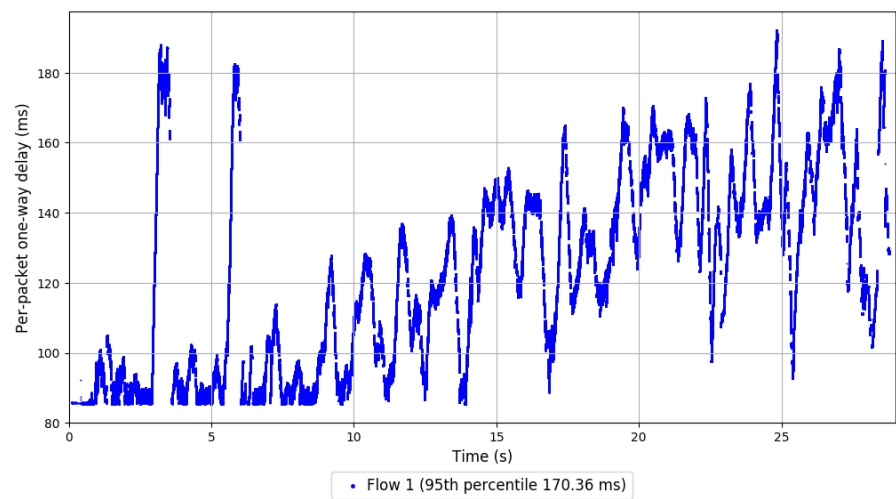
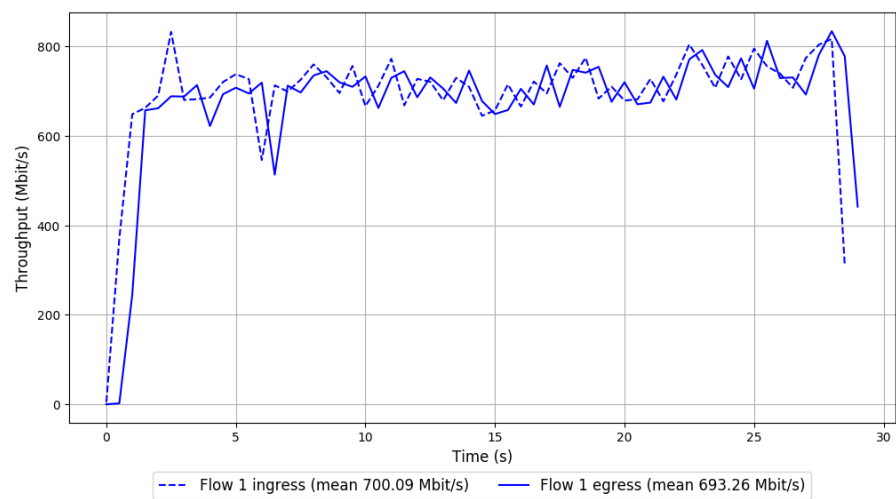
-- Flow 1:

Average throughput: 693.26 Mbit/s

95th percentile per-packet one-way delay: 170.356 ms

Loss rate: 0.97%

Run 2: Report of Indigo-MusesT — Data Link



Run 3: Statistics of Indigo-MusesT

Start at: 2018-12-11 10:16:39

End at: 2018-12-11 10:17:09

Local clock offset: -0.278 ms

Remote clock offset: 0.349 ms

Below is generated by plot.py at 2018-12-11 12:38:53

Datalink statistics

-- Total of 1 flow:

Average throughput: 691.21 Mbit/s

95th percentile per-packet one-way delay: 173.021 ms

Loss rate: 1.30%

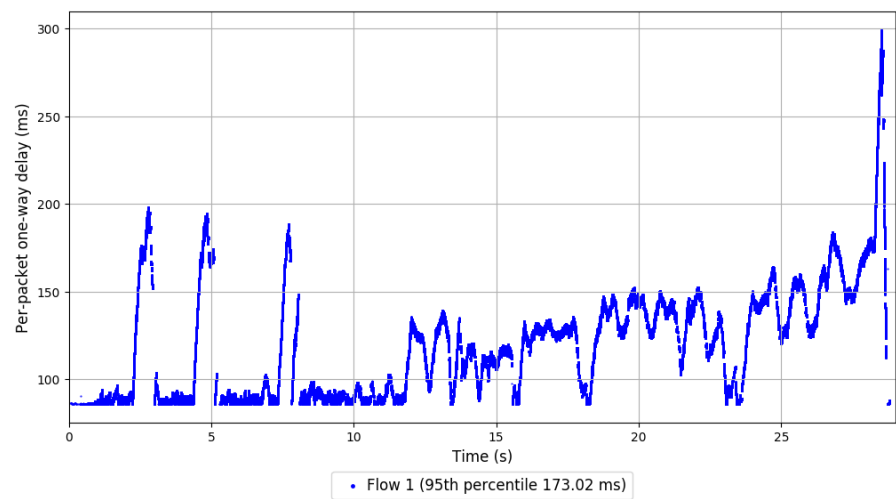
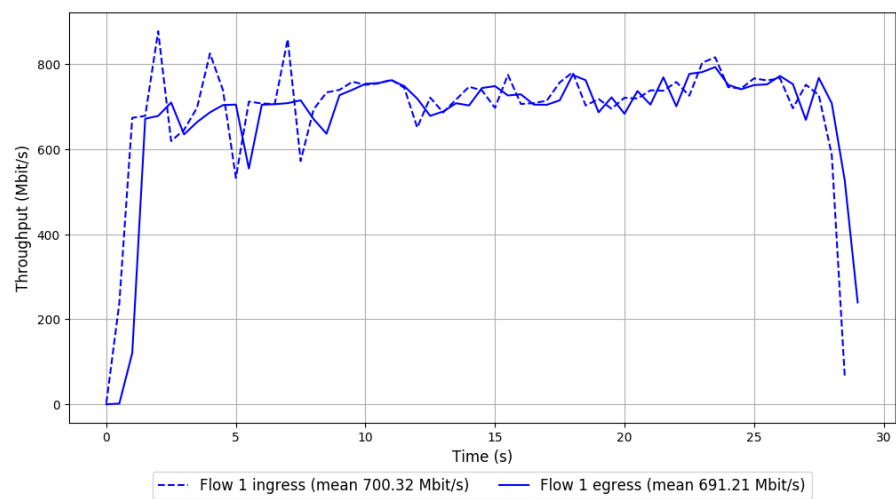
-- Flow 1:

Average throughput: 691.21 Mbit/s

95th percentile per-packet one-way delay: 173.021 ms

Loss rate: 1.30%

Run 3: Report of Indigo-MusesT — Data Link



Run 4: Statistics of Indigo-MusesT

Start at: 2018-12-11 10:44:58

End at: 2018-12-11 10:45:28

Local clock offset: -0.009 ms

Remote clock offset: 0.447 ms

Below is generated by plot.py at 2018-12-11 12:38:53

Datalink statistics

-- Total of 1 flow:

Average throughput: 367.82 Mbit/s

95th percentile per-packet one-way delay: 139.075 ms

Loss rate: 0.75%

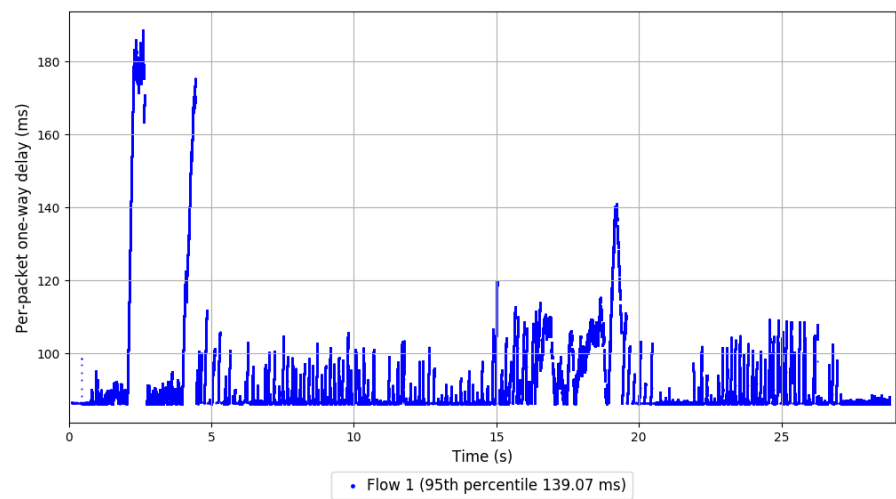
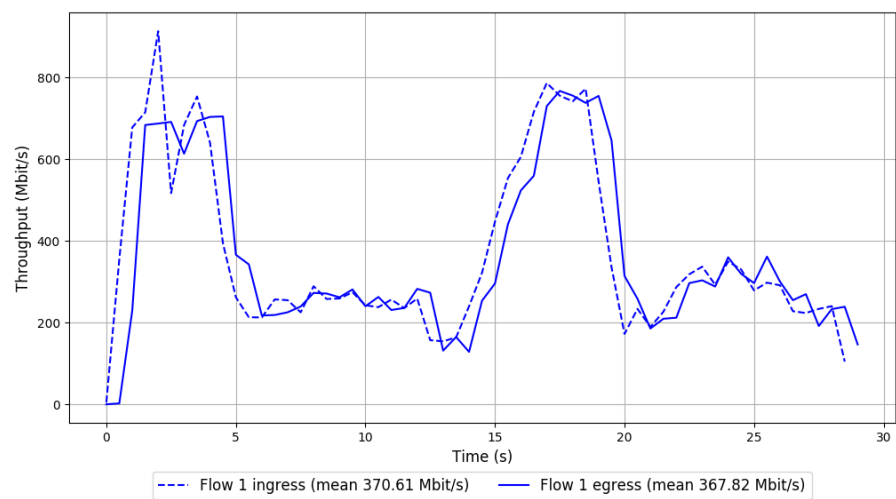
-- Flow 1:

Average throughput: 367.82 Mbit/s

95th percentile per-packet one-way delay: 139.075 ms

Loss rate: 0.75%

Run 4: Report of Indigo-MusesT — Data Link



Run 5: Statistics of Indigo-MusesT

Start at: 2018-12-11 11:13:24

End at: 2018-12-11 11:13:54

Local clock offset: 0.061 ms

Remote clock offset: 0.541 ms

Below is generated by plot.py at 2018-12-11 12:42:51

Datalink statistics

-- Total of 1 flow:

Average throughput: 717.64 Mbit/s

95th percentile per-packet one-way delay: 159.734 ms

Loss rate: 0.33%

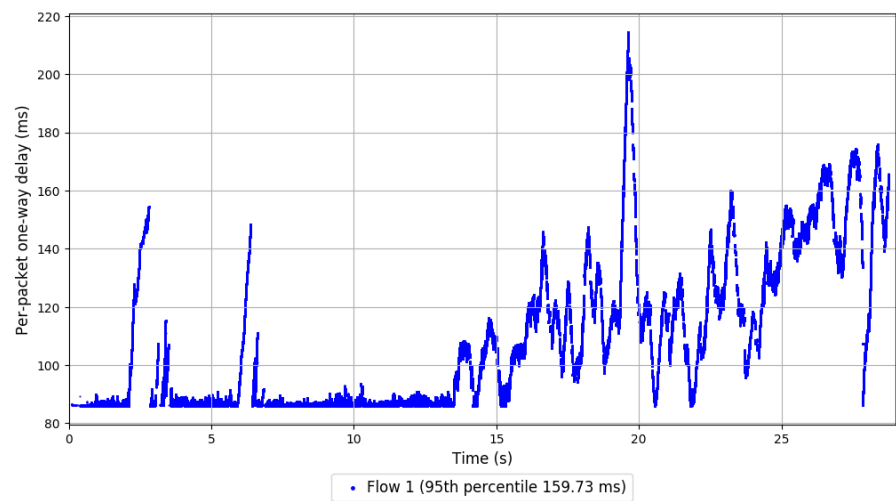
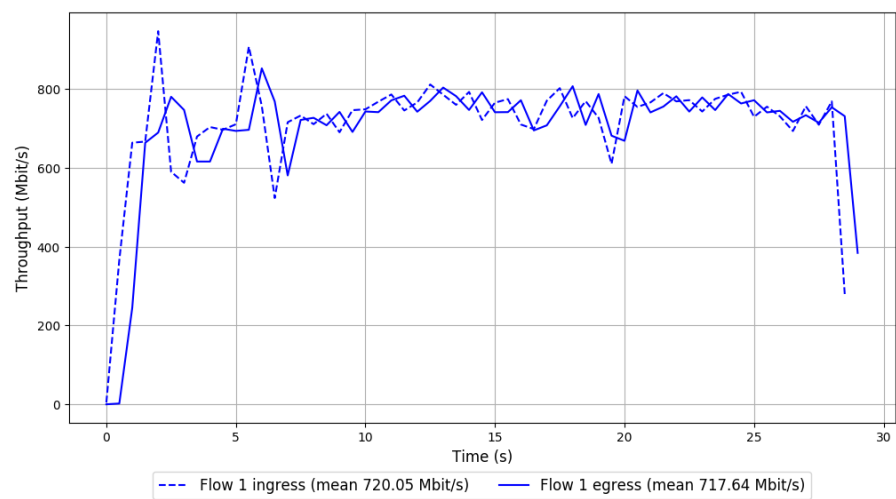
-- Flow 1:

Average throughput: 717.64 Mbit/s

95th percentile per-packet one-way delay: 159.734 ms

Loss rate: 0.33%

Run 5: Report of Indigo-MusesT — Data Link

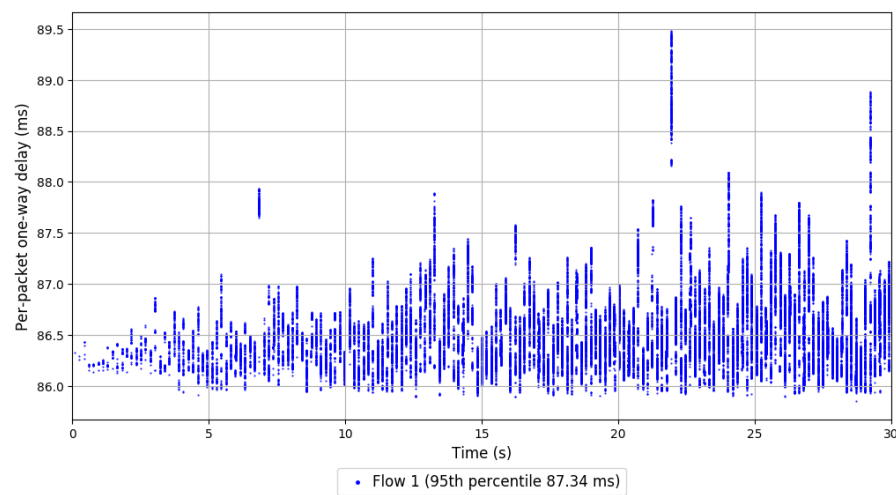
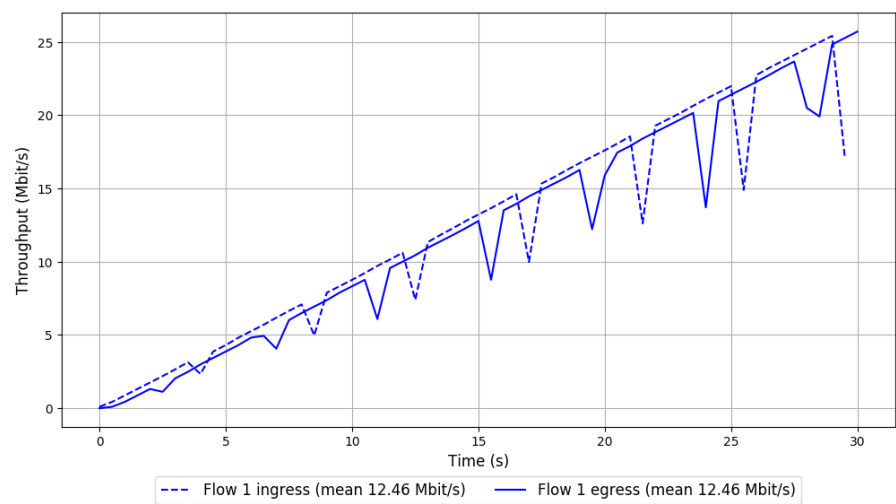


```
Run 1: Statistics of LEDBAT

Start at: 2018-12-11 09:08:28
End at: 2018-12-11 09:08:58
Local clock offset: 0.355 ms
Remote clock offset: 0.137 ms

# Below is generated by plot.py at 2018-12-11 12:42:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.46 Mbit/s
95th percentile per-packet one-way delay: 87.337 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 12.46 Mbit/s
95th percentile per-packet one-way delay: 87.337 ms
Loss rate: 0.00%
```

Run 1: Report of LEDBAT — Data Link



Run 2: Statistics of LEDBAT

Start at: 2018-12-11 09:36:59

End at: 2018-12-11 09:37:29

Local clock offset: -0.105 ms

Remote clock offset: 0.239 ms

Below is generated by plot.py at 2018-12-11 12:42:51

Datalink statistics

-- Total of 1 flow:

Average throughput: 12.49 Mbit/s

95th percentile per-packet one-way delay: 88.207 ms

Loss rate: 0.00%

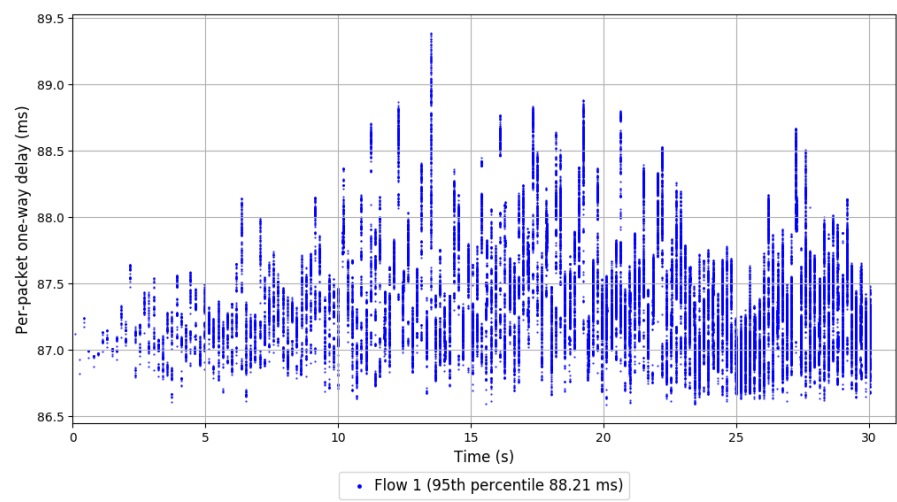
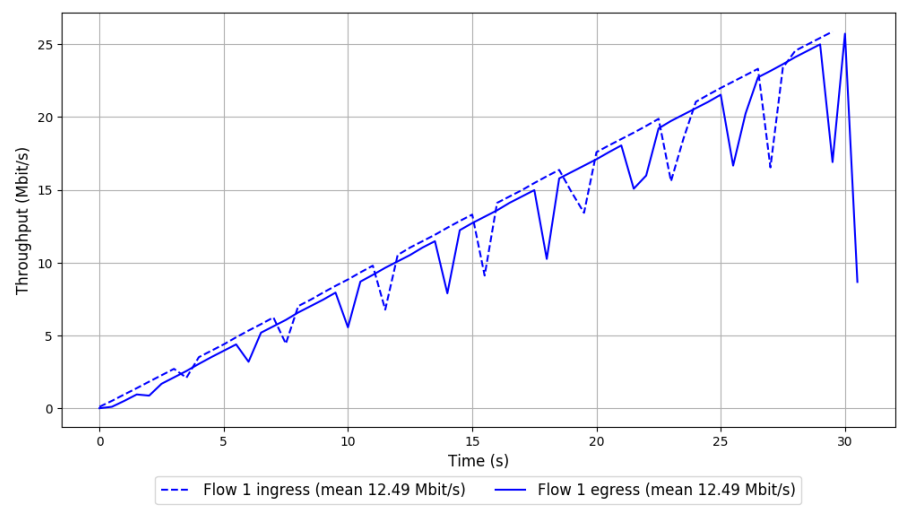
-- Flow 1:

Average throughput: 12.49 Mbit/s

95th percentile per-packet one-way delay: 88.207 ms

Loss rate: 0.00%

Run 2: Report of LEDBAT — Data Link



Run 3: Statistics of LEDBAT

Start at: 2018-12-11 10:05:46

End at: 2018-12-11 10:06:16

Local clock offset: -0.334 ms

Remote clock offset: 0.355 ms

Below is generated by plot.py at 2018-12-11 12:42:51

Datalink statistics

-- Total of 1 flow:

Average throughput: 12.61 Mbit/s

95th percentile per-packet one-way delay: 87.716 ms

Loss rate: 0.00%

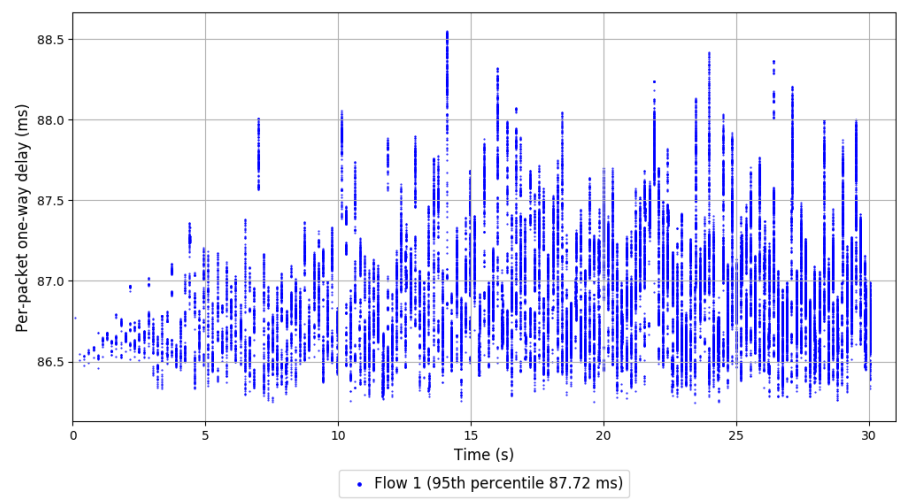
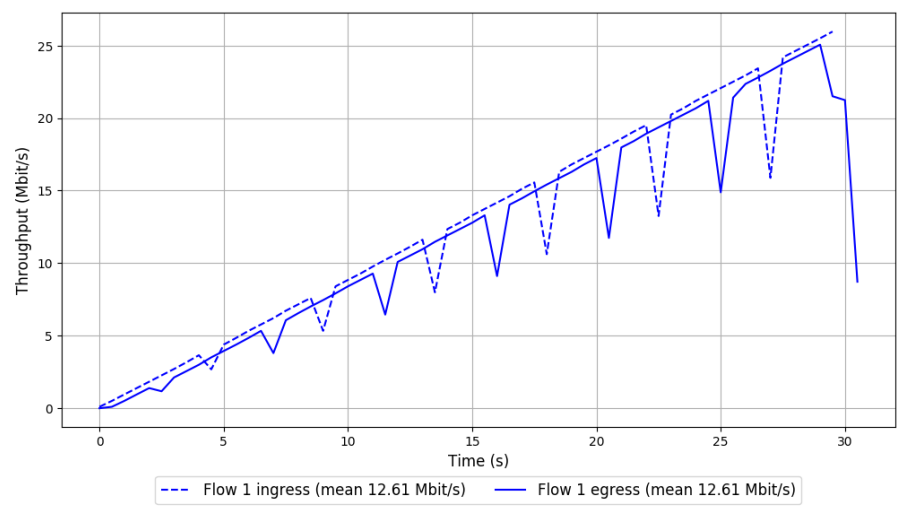
-- Flow 1:

Average throughput: 12.61 Mbit/s

95th percentile per-packet one-way delay: 87.716 ms

Loss rate: 0.00%

Run 3: Report of LEDBAT — Data Link



Run 4: Statistics of LEDBAT

Start at: 2018-12-11 10:34:09

End at: 2018-12-11 10:34:39

Local clock offset: 0.362 ms

Remote clock offset: 0.413 ms

Below is generated by plot.py at 2018-12-11 12:42:51

Datalink statistics

-- Total of 1 flow:

Average throughput: 12.49 Mbit/s

95th percentile per-packet one-way delay: 87.046 ms

Loss rate: 0.00%

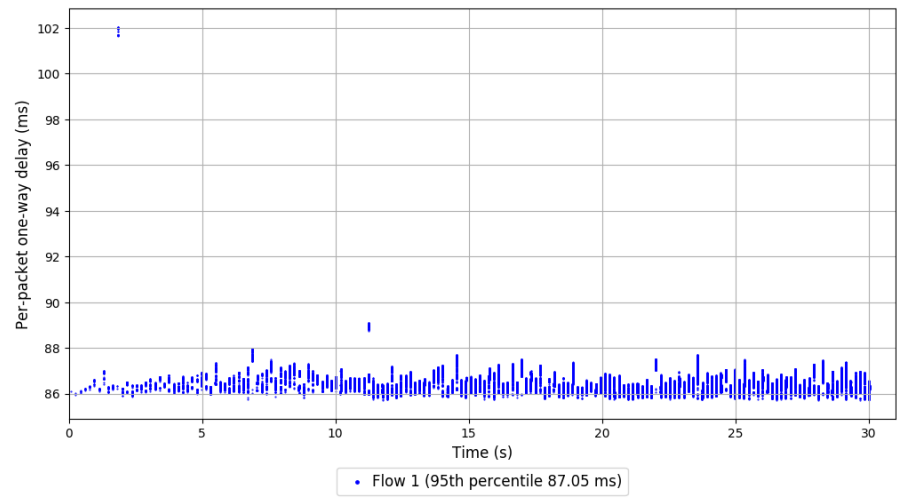
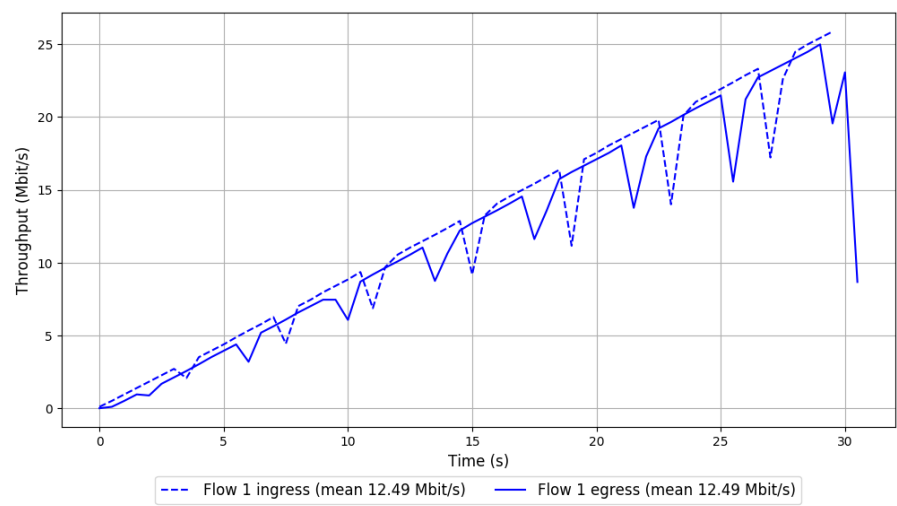
-- Flow 1:

Average throughput: 12.49 Mbit/s

95th percentile per-packet one-way delay: 87.046 ms

Loss rate: 0.00%

Run 4: Report of LEDBAT — Data Link



Run 5: Statistics of LEDBAT

Start at: 2018-12-11 11:02:42

End at: 2018-12-11 11:03:12

Local clock offset: -0.572 ms

Remote clock offset: 0.498 ms

Below is generated by plot.py at 2018-12-11 12:42:51

Datalink statistics

-- Total of 1 flow:

Average throughput: 12.50 Mbit/s

95th percentile per-packet one-way delay: 87.928 ms

Loss rate: 0.00%

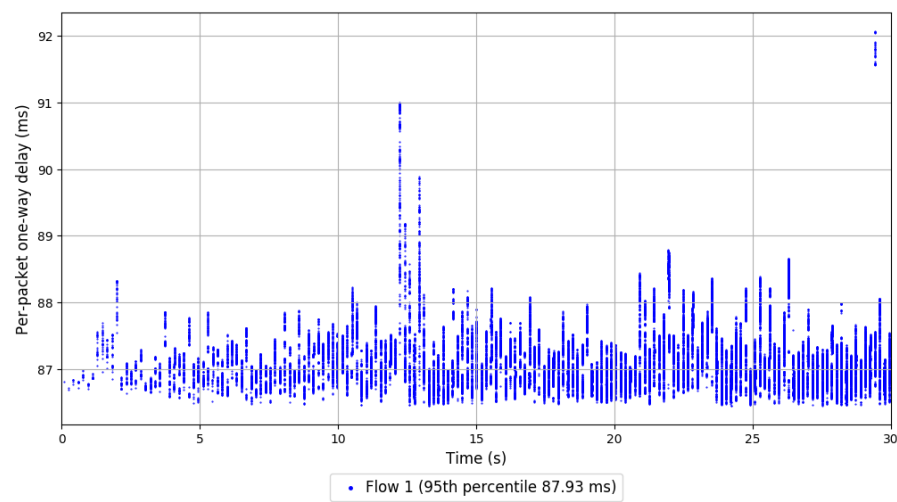
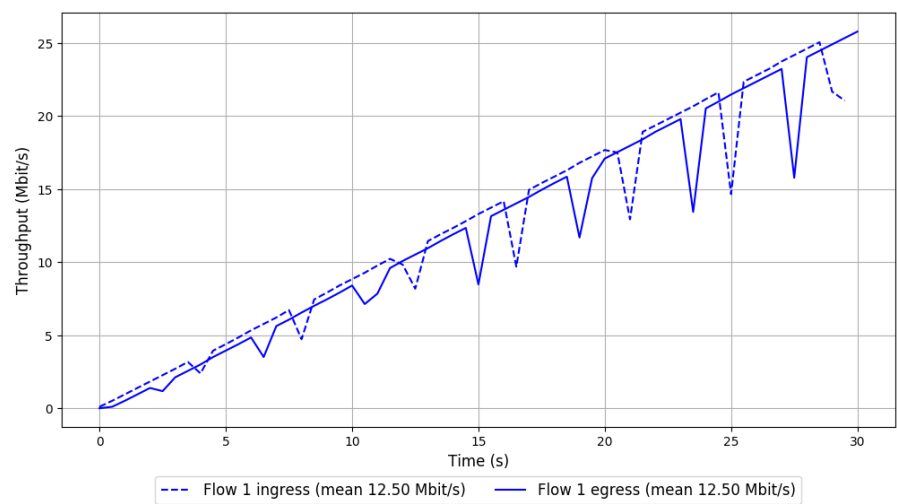
-- Flow 1:

Average throughput: 12.50 Mbit/s

95th percentile per-packet one-way delay: 87.928 ms

Loss rate: 0.00%

Run 5: Report of LEDBAT — Data Link



Run 1: Statistics of PCC-Allegro

Start at: 2018-12-11 09:03:44

End at: 2018-12-11 09:04:14

Local clock offset: -0.529 ms

Remote clock offset: 0.109 ms

Below is generated by plot.py at 2018-12-11 12:50:47

Datalink statistics

-- Total of 1 flow:

Average throughput: 415.84 Mbit/s

95th percentile per-packet one-way delay: 179.135 ms

Loss rate: 0.51%

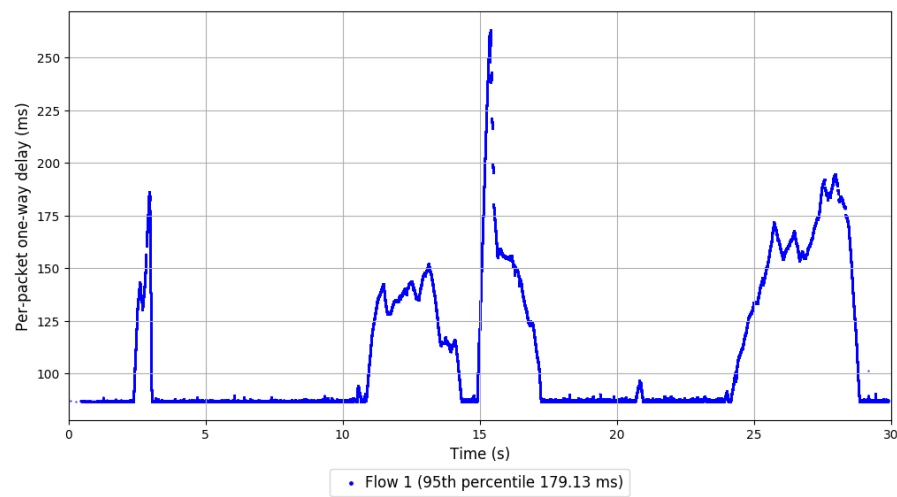
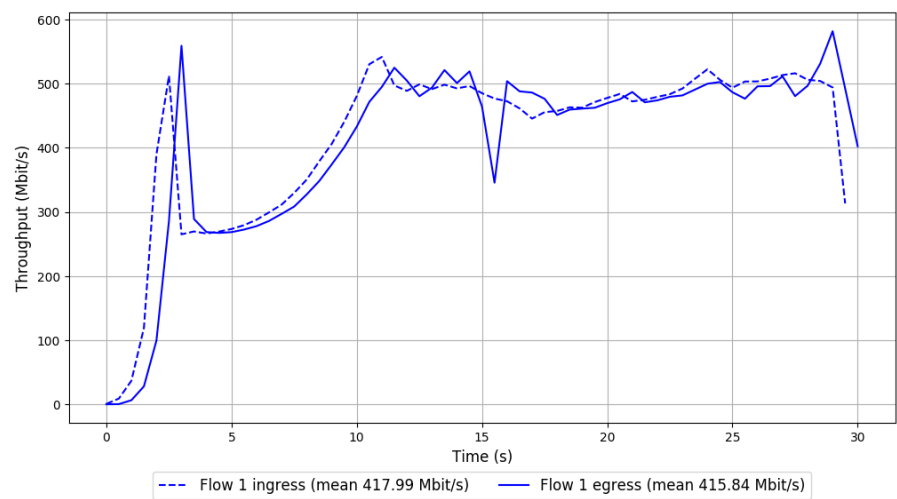
-- Flow 1:

Average throughput: 415.84 Mbit/s

95th percentile per-packet one-way delay: 179.135 ms

Loss rate: 0.51%

Run 1: Report of PCC-Allegro — Data Link



Run 2: Statistics of PCC-Allegro

Start at: 2018-12-11 09:32:13

End at: 2018-12-11 09:32:43

Local clock offset: -0.386 ms

Remote clock offset: 0.226 ms

Below is generated by plot.py at 2018-12-11 12:51:21

Datalink statistics

-- Total of 1 flow:

Average throughput: 432.00 Mbit/s

95th percentile per-packet one-way delay: 197.696 ms

Loss rate: 3.69%

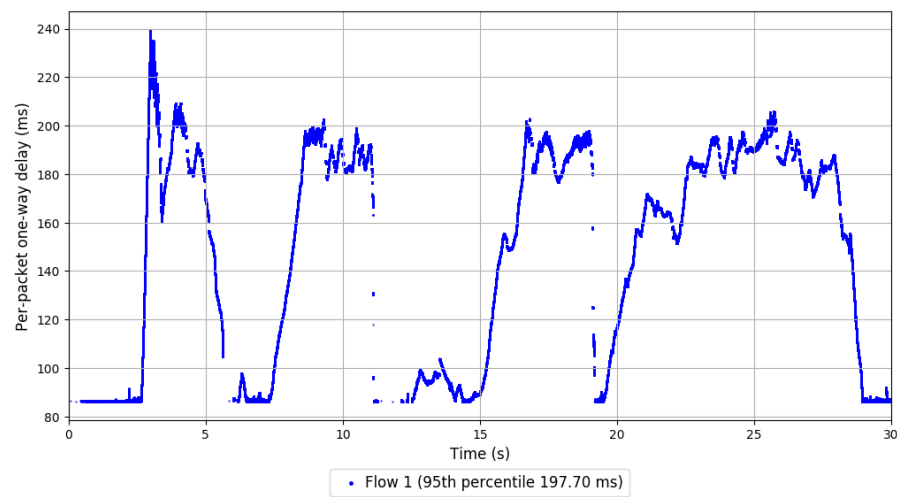
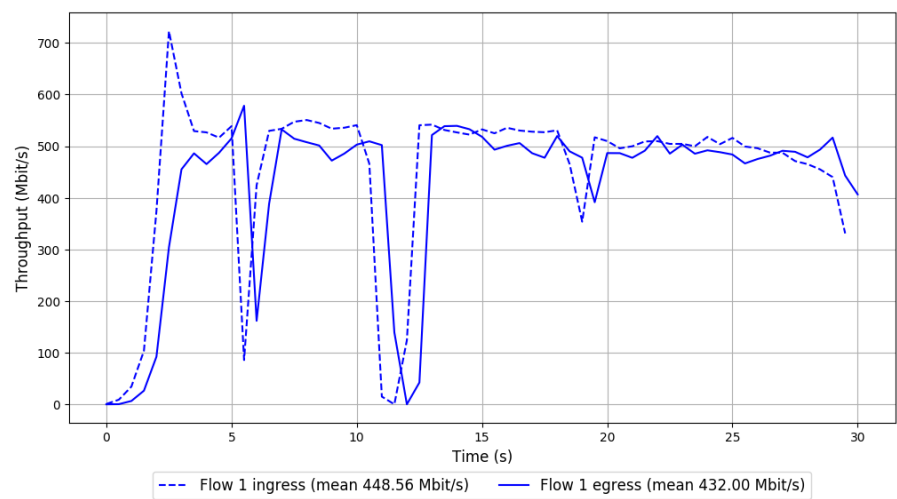
-- Flow 1:

Average throughput: 432.00 Mbit/s

95th percentile per-packet one-way delay: 197.696 ms

Loss rate: 3.69%

Run 2: Report of PCC-Allegro — Data Link



Run 3: Statistics of PCC-Allegro

Start at: 2018-12-11 10:00:52

End at: 2018-12-11 10:01:22

Local clock offset: -0.173 ms

Remote clock offset: 0.314 ms

Below is generated by plot.py at 2018-12-11 12:52:45

Datalink statistics

-- Total of 1 flow:

Average throughput: 481.74 Mbit/s

95th percentile per-packet one-way delay: 178.291 ms

Loss rate: 0.90%

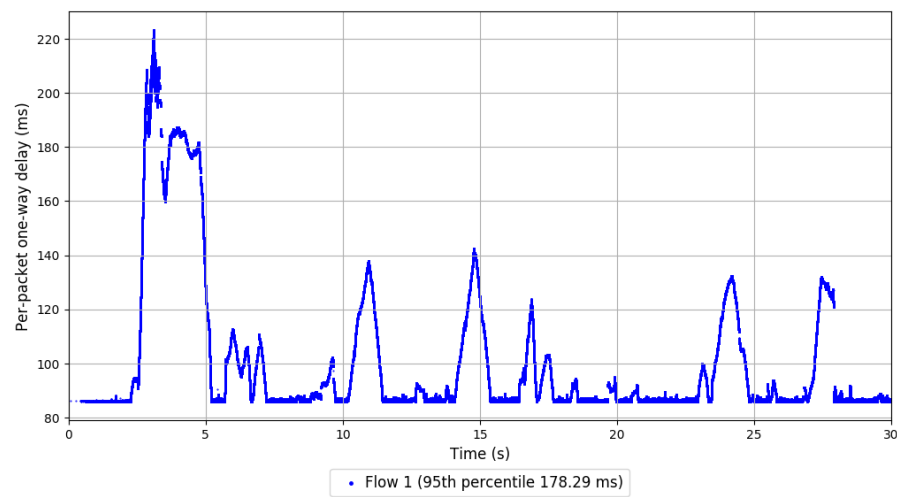
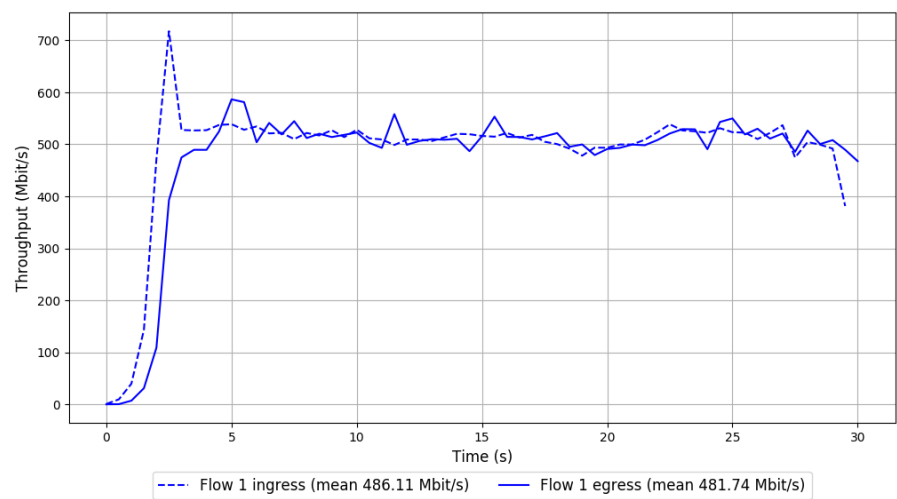
-- Flow 1:

Average throughput: 481.74 Mbit/s

95th percentile per-packet one-way delay: 178.291 ms

Loss rate: 0.90%

Run 3: Report of PCC-Allegro — Data Link



Run 4: Statistics of PCC-Allegro

Start at: 2018-12-11 10:29:32

End at: 2018-12-11 10:30:02

Local clock offset: -0.242 ms

Remote clock offset: 0.396 ms

Below is generated by plot.py at 2018-12-11 12:52:45

Datalink statistics

-- Total of 1 flow:

Average throughput: 383.04 Mbit/s

95th percentile per-packet one-way delay: 187.344 ms

Loss rate: 1.77%

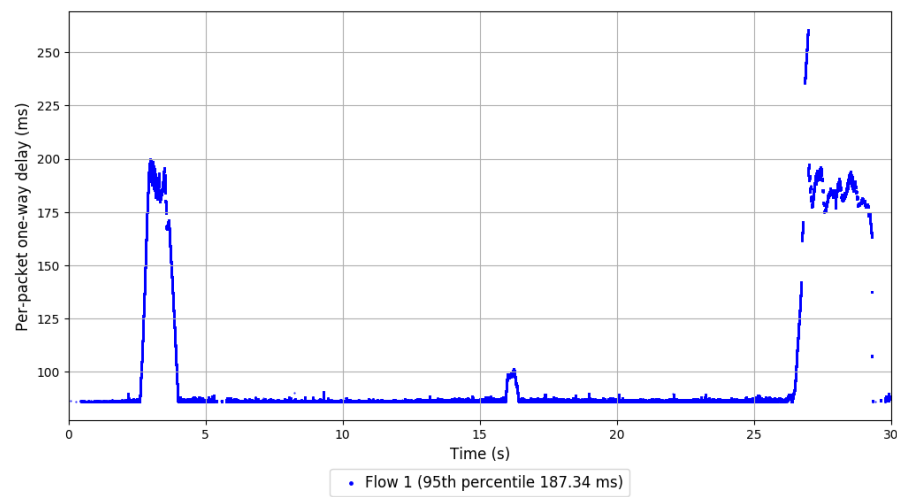
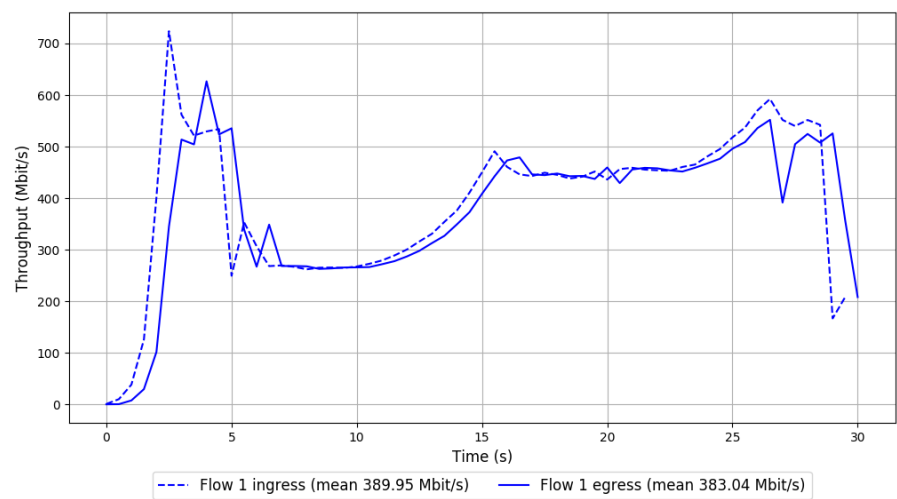
-- Flow 1:

Average throughput: 383.04 Mbit/s

95th percentile per-packet one-way delay: 187.344 ms

Loss rate: 1.77%

Run 4: Report of PCC-Allegro — Data Link



Run 5: Statistics of PCC-Allegro

Start at: 2018-12-11 10:57:53

End at: 2018-12-11 10:58:23

Local clock offset: 0.094 ms

Remote clock offset: 0.523 ms

Below is generated by plot.py at 2018-12-11 12:53:22

Datalink statistics

-- Total of 1 flow:

Average throughput: 478.17 Mbit/s

95th percentile per-packet one-way delay: 190.499 ms

Loss rate: 1.64%

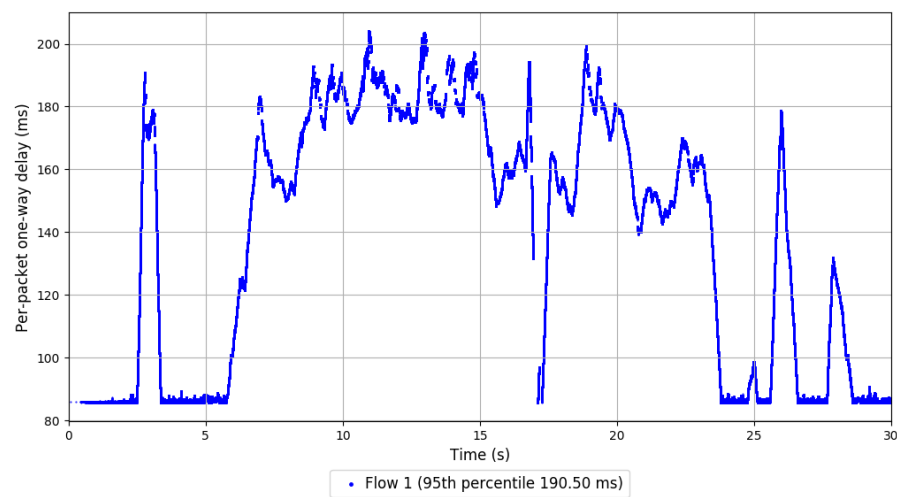
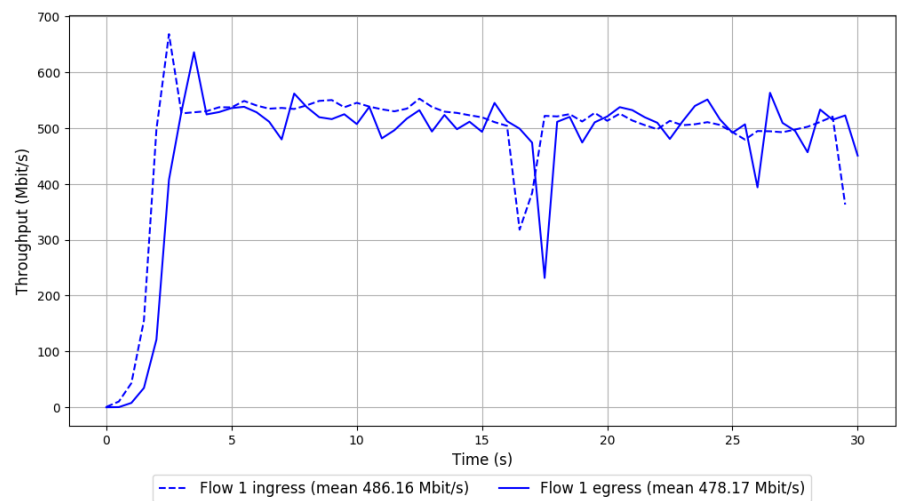
-- Flow 1:

Average throughput: 478.17 Mbit/s

95th percentile per-packet one-way delay: 190.499 ms

Loss rate: 1.64%

Run 5: Report of PCC-Allegro — Data Link

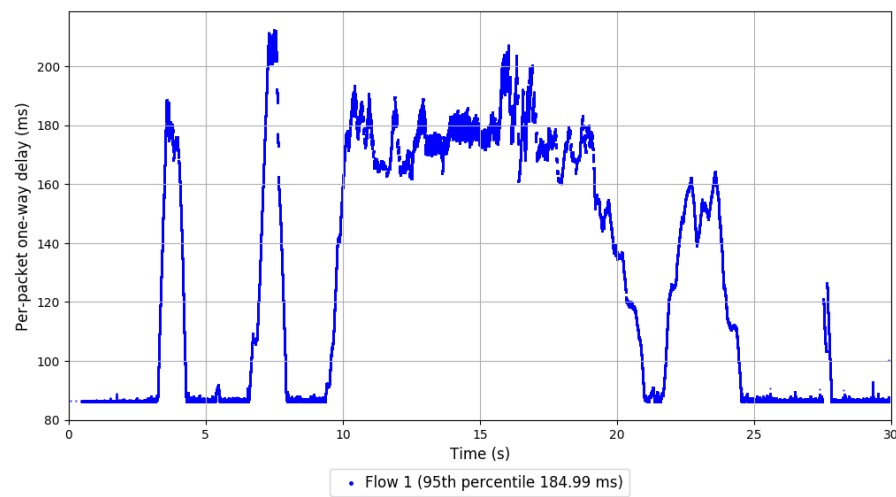
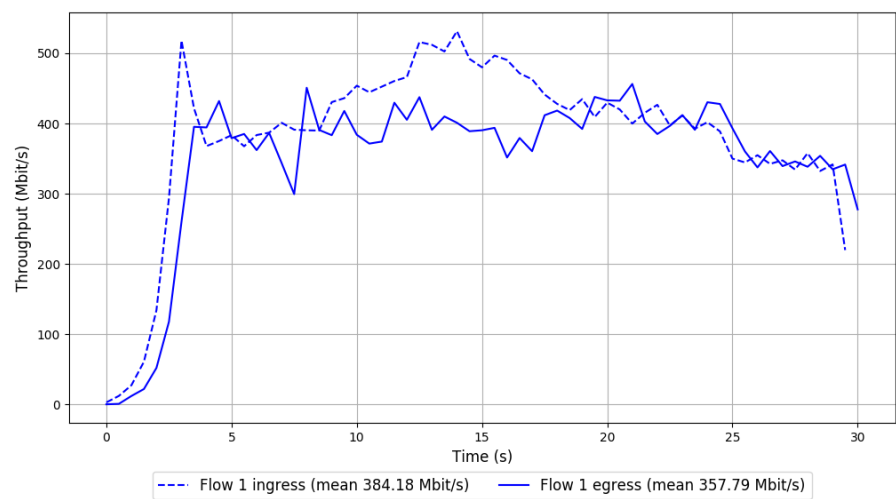



```
Run 1: Statistics of PCC-Expr

Start at: 2018-12-11 09:14:20
End at: 2018-12-11 09:14:50
Local clock offset: 0.032 ms
Remote clock offset: 0.144 ms

# Below is generated by plot.py at 2018-12-11 12:53:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 357.79 Mbit/s
95th percentile per-packet one-way delay: 184.991 ms
Loss rate: 6.87%
-- Flow 1:
Average throughput: 357.79 Mbit/s
95th percentile per-packet one-way delay: 184.991 ms
Loss rate: 6.87%
```

Run 1: Report of PCC-Expr — Data Link



Run 2: Statistics of PCC-Expr

Start at: 2018-12-11 09:42:27

End at: 2018-12-11 09:42:57

Local clock offset: -0.159 ms

Remote clock offset: 0.267 ms

Below is generated by plot.py at 2018-12-11 12:53:22

Datalink statistics

-- Total of 1 flow:

Average throughput: 370.73 Mbit/s

95th percentile per-packet one-way delay: 168.982 ms

Loss rate: 0.71%

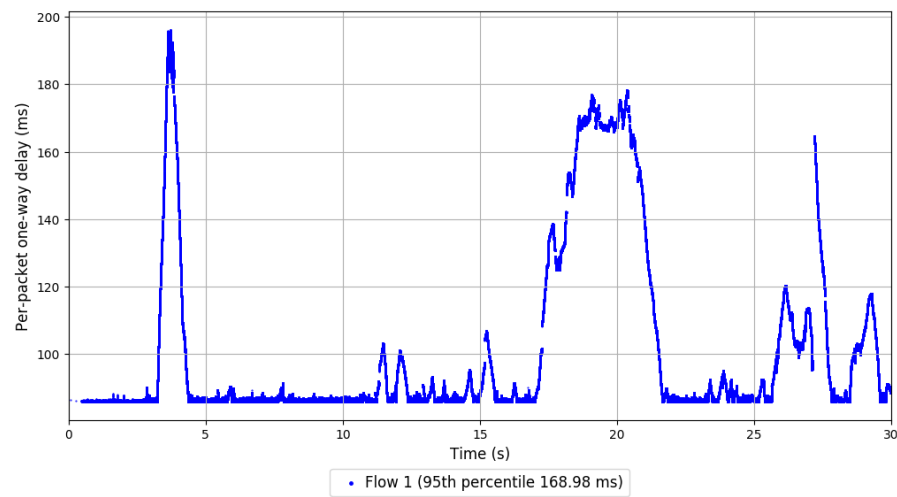
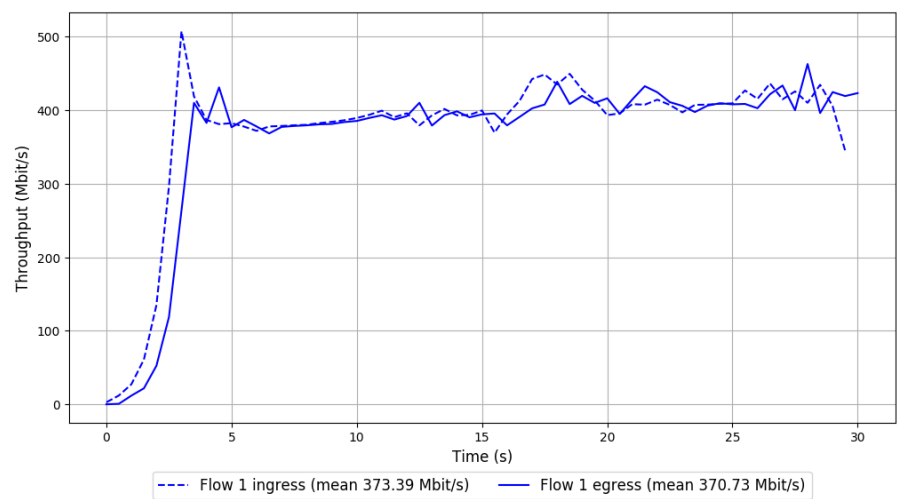
-- Flow 1:

Average throughput: 370.73 Mbit/s

95th percentile per-packet one-way delay: 168.982 ms

Loss rate: 0.71%

Run 2: Report of PCC-Expr — Data Link



Run 3: Statistics of PCC-Expr

Start at: 2018-12-11 10:11:45

End at: 2018-12-11 10:12:15

Local clock offset: -0.139 ms

Remote clock offset: 0.345 ms

Below is generated by plot.py at 2018-12-11 12:56:27

Datalink statistics

-- Total of 1 flow:

Average throughput: 340.44 Mbit/s

95th percentile per-packet one-way delay: 196.659 ms

Loss rate: 3.76%

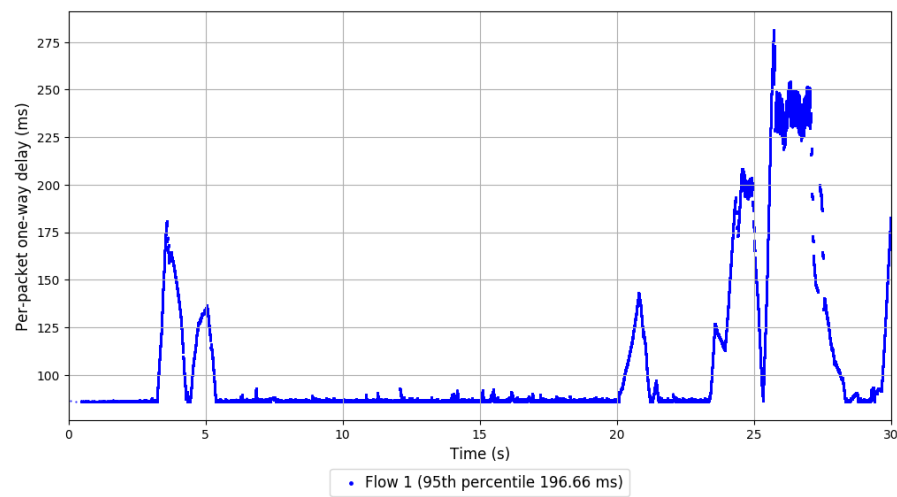
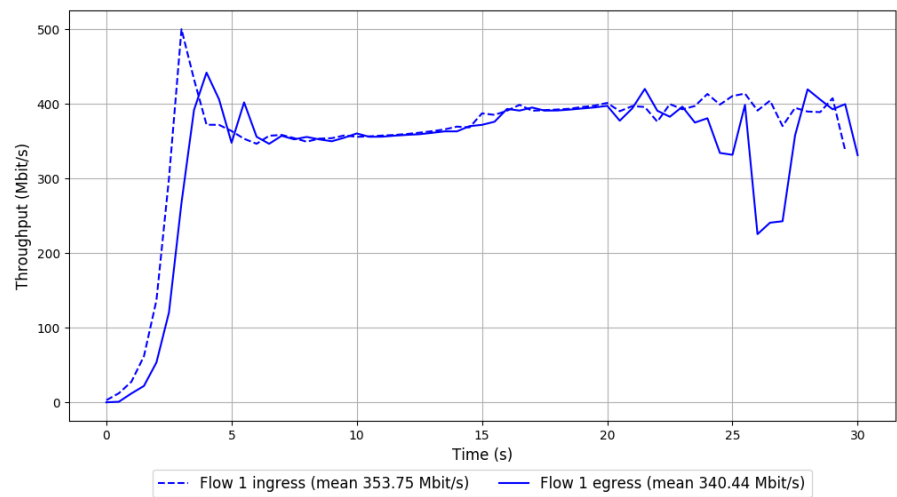
-- Flow 1:

Average throughput: 340.44 Mbit/s

95th percentile per-packet one-way delay: 196.659 ms

Loss rate: 3.76%

Run 3: Report of PCC-Expr — Data Link



Run 4: Statistics of PCC-Expr

Start at: 2018-12-11 10:40:03

End at: 2018-12-11 10:40:33

Local clock offset: -0.073 ms

Remote clock offset: 0.456 ms

Below is generated by plot.py at 2018-12-11 13:02:14

Datalink statistics

-- Total of 1 flow:

Average throughput: 350.52 Mbit/s

95th percentile per-packet one-way delay: 172.996 ms

Loss rate: 2.11%

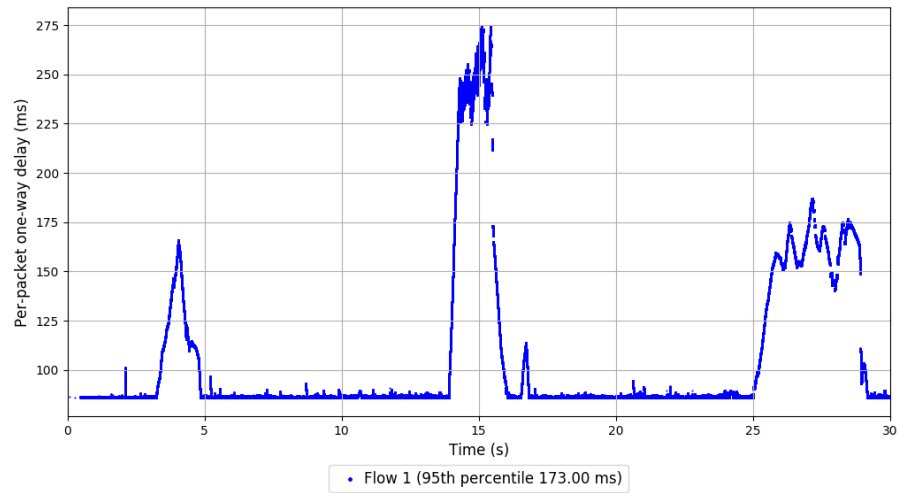
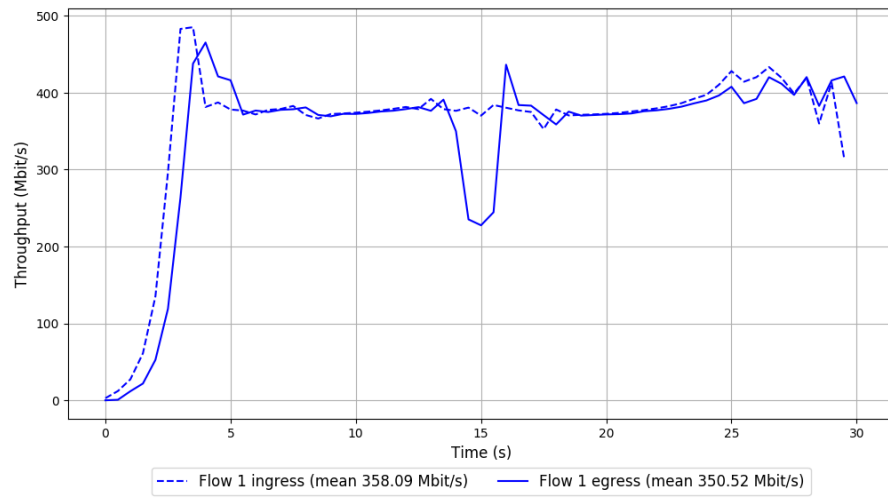
-- Flow 1:

Average throughput: 350.52 Mbit/s

95th percentile per-packet one-way delay: 172.996 ms

Loss rate: 2.11%

Run 4: Report of PCC-Expr — Data Link



Run 5: Statistics of PCC-Expr

Start at: 2018-12-11 11:08:34

End at: 2018-12-11 11:09:04

Local clock offset: -0.181 ms

Remote clock offset: 0.629 ms

Below is generated by plot.py at 2018-12-11 13:02:14

Datalink statistics

-- Total of 1 flow:

Average throughput: 325.82 Mbit/s

95th percentile per-packet one-way delay: 139.214 ms

Loss rate: 0.01%

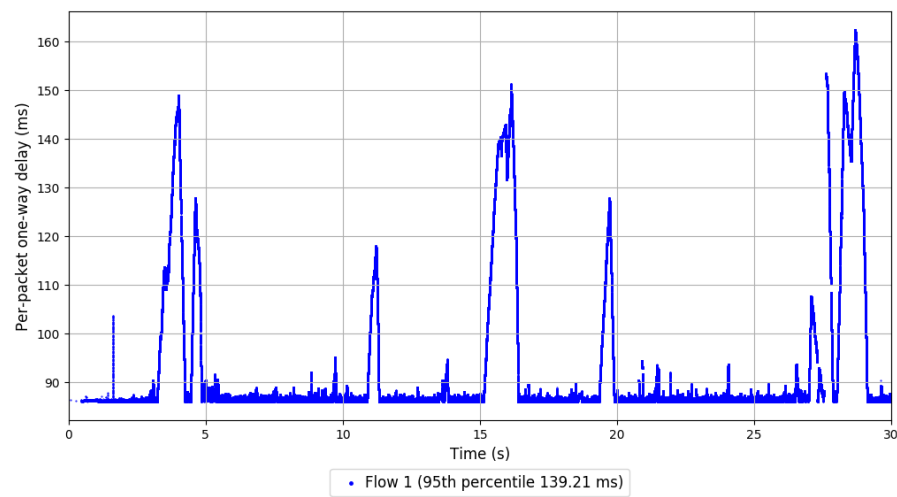
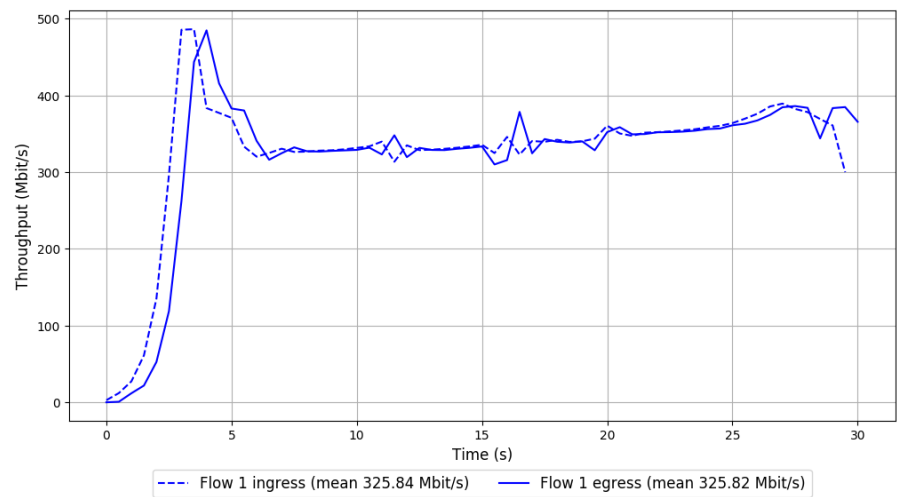
-- Flow 1:

Average throughput: 325.82 Mbit/s

95th percentile per-packet one-way delay: 139.214 ms

Loss rate: 0.01%

Run 5: Report of PCC-Expr — Data Link

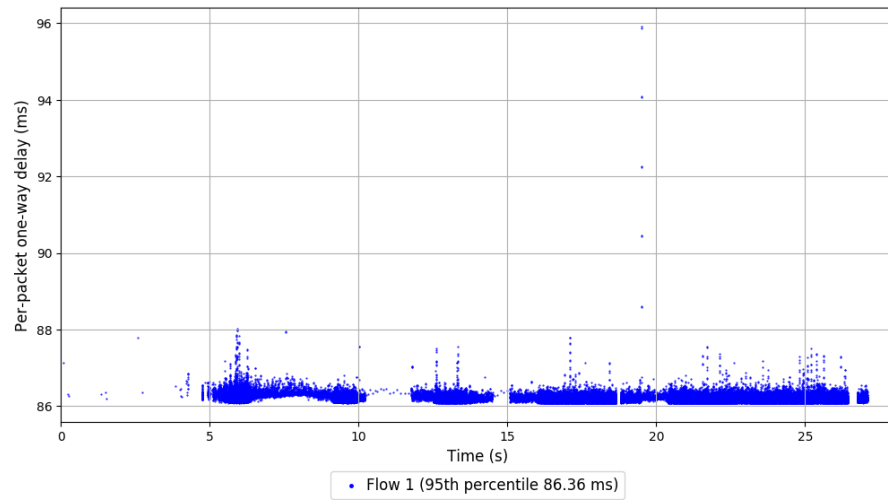
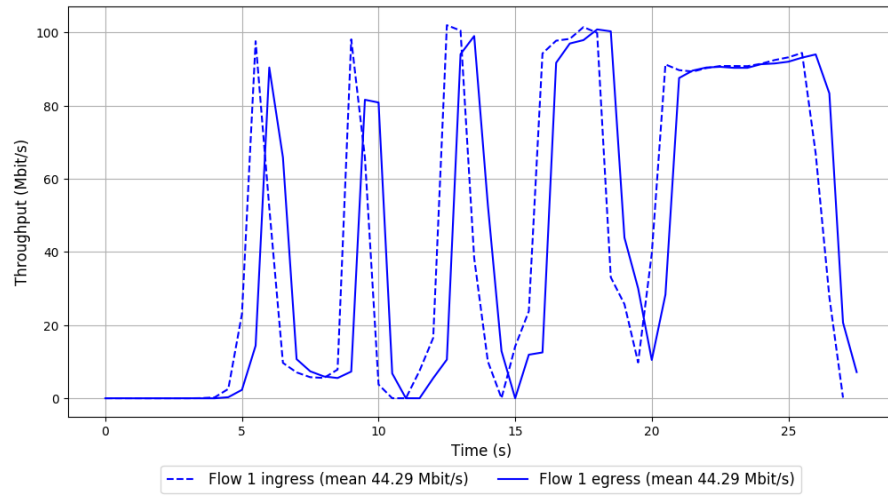


```
Run 1: Statistics of QUIC Cubic

Start at: 2018-12-11 09:13:07
End at: 2018-12-11 09:13:37
Local clock offset: 0.163 ms
Remote clock offset: 0.185 ms

# Below is generated by plot.py at 2018-12-11 13:02:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 44.29 Mbit/s
95th percentile per-packet one-way delay: 86.357 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 44.29 Mbit/s
95th percentile per-packet one-way delay: 86.357 ms
Loss rate: 0.00%
```

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2018-12-11 09:41:14

End at: 2018-12-11 09:41:44

Local clock offset: -0.156 ms

Remote clock offset: 0.243 ms

Below is generated by plot.py at 2018-12-11 13:02:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 66.56 Mbit/s

95th percentile per-packet one-way delay: 86.325 ms

Loss rate: 0.00%

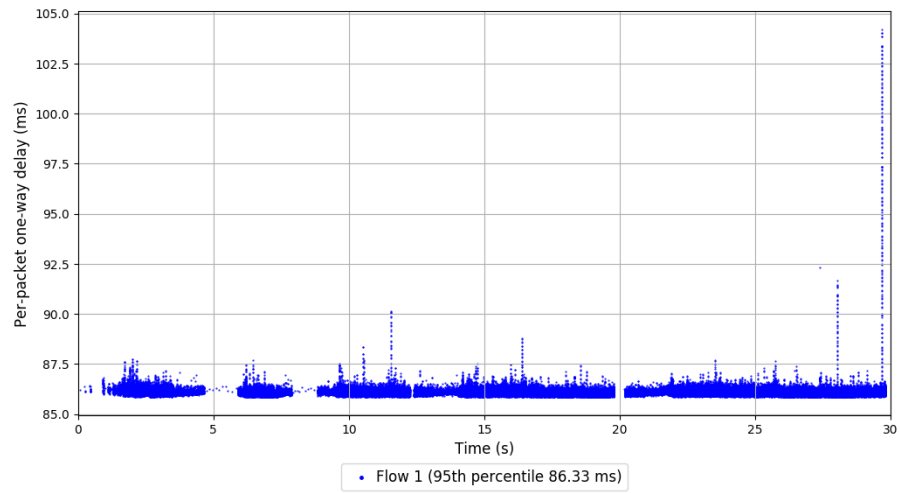
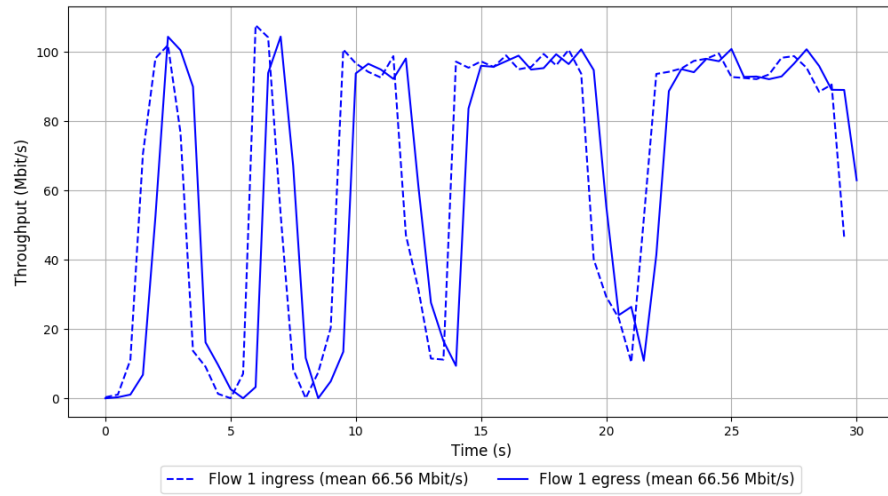
-- Flow 1:

Average throughput: 66.56 Mbit/s

95th percentile per-packet one-way delay: 86.325 ms

Loss rate: 0.00%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2018-12-11 10:10:32

End at: 2018-12-11 10:11:02

Local clock offset: -0.14 ms

Remote clock offset: 0.327 ms

Below is generated by plot.py at 2018-12-11 13:02:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 61.92 Mbit/s

95th percentile per-packet one-way delay: 86.480 ms

Loss rate: 0.00%

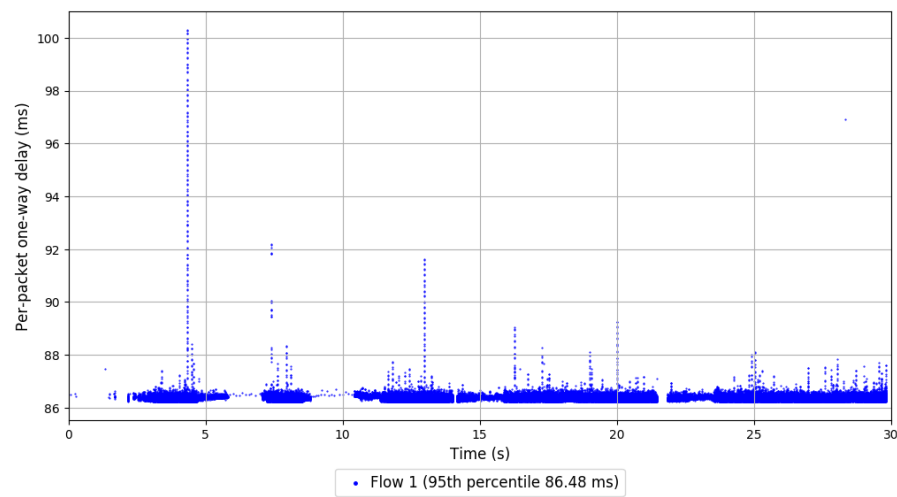
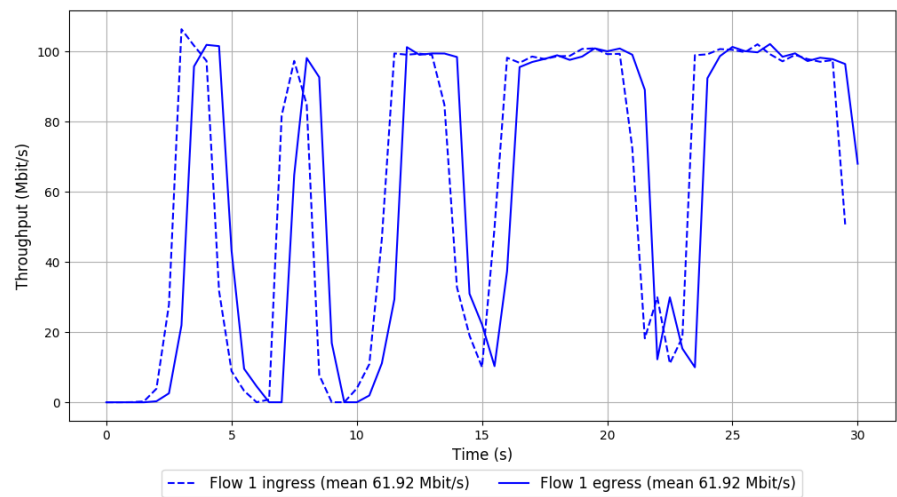
-- Flow 1:

Average throughput: 61.92 Mbit/s

95th percentile per-packet one-way delay: 86.480 ms

Loss rate: 0.00%

Run 3: Report of QUIC Cubic — Data Link



Run 4: Statistics of QUIC Cubic

Start at: 2018-12-11 10:38:49

End at: 2018-12-11 10:39:19

Local clock offset: -0.272 ms

Remote clock offset: 0.482 ms

Below is generated by plot.py at 2018-12-11 13:02:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 63.82 Mbit/s

95th percentile per-packet one-way delay: 86.712 ms

Loss rate: 0.00%

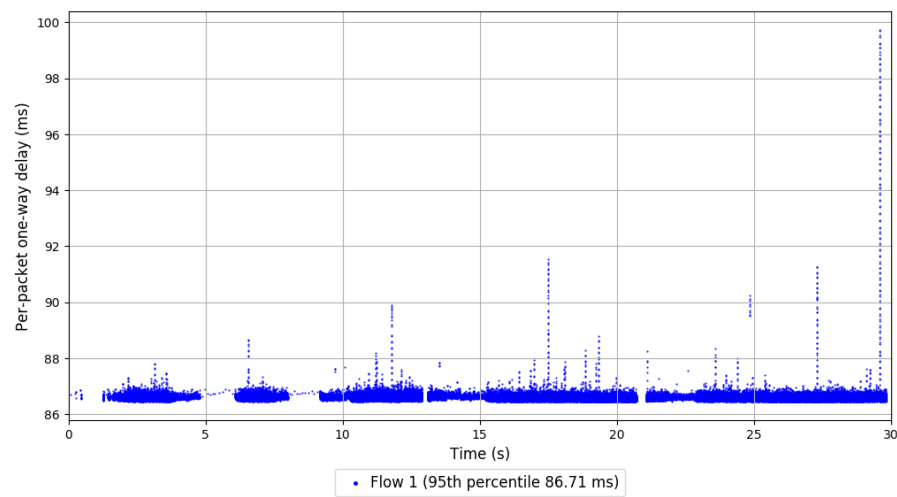
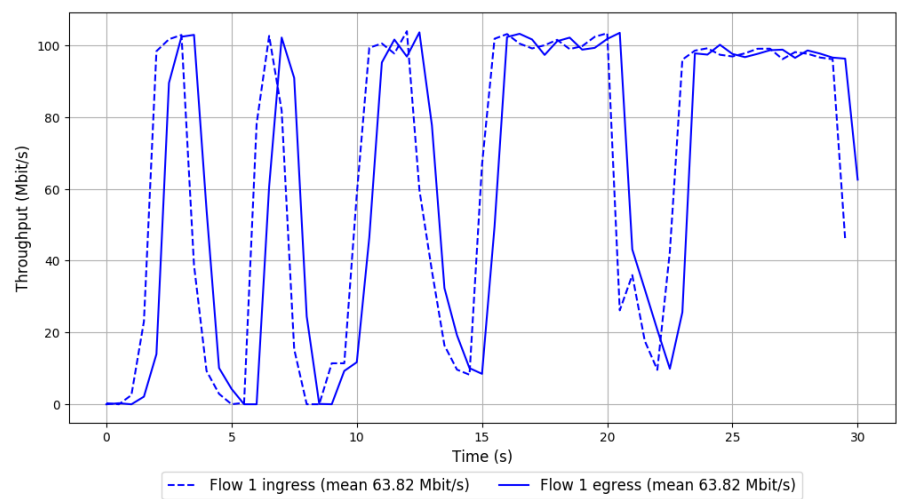
-- Flow 1:

Average throughput: 63.82 Mbit/s

95th percentile per-packet one-way delay: 86.712 ms

Loss rate: 0.00%

Run 4: Report of QUIC Cubic — Data Link



Run 5: Statistics of QUIC Cubic

Start at: 2018-12-11 11:07:22

End at: 2018-12-11 11:07:52

Local clock offset: -0.198 ms

Remote clock offset: 0.505 ms

Below is generated by plot.py at 2018-12-11 13:02:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 60.53 Mbit/s

95th percentile per-packet one-way delay: 86.803 ms

Loss rate: 0.00%

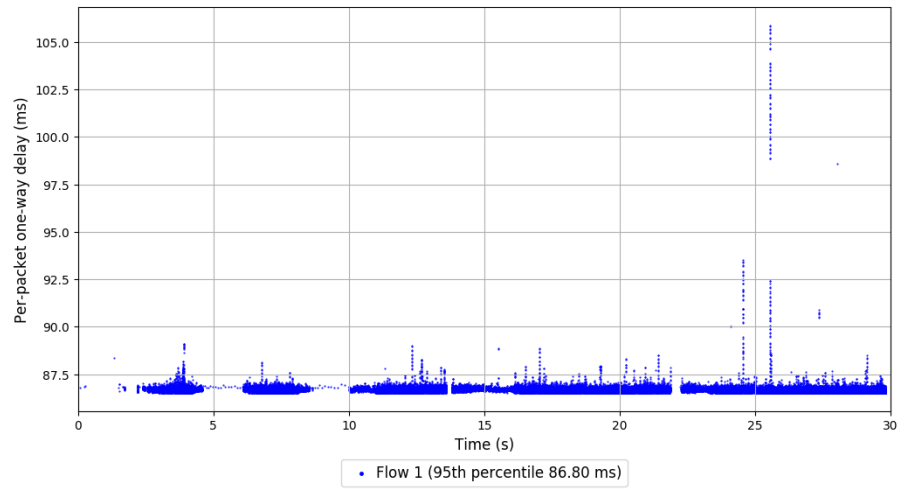
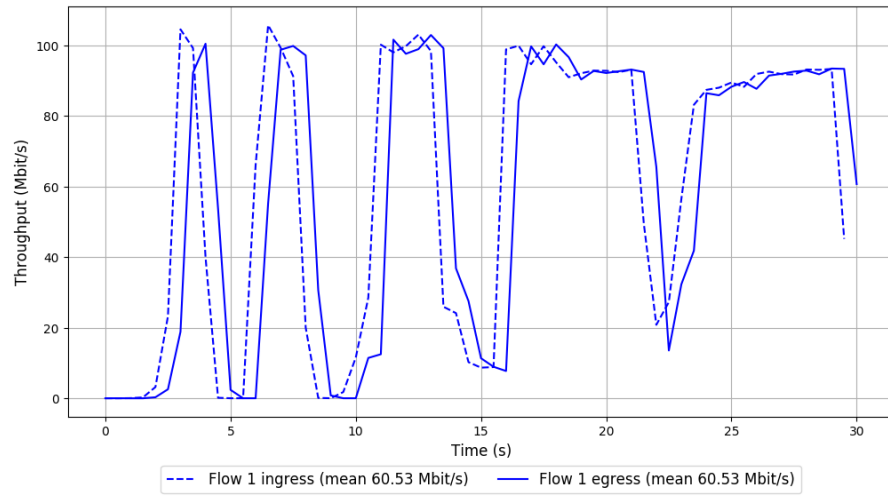
-- Flow 1:

Average throughput: 60.53 Mbit/s

95th percentile per-packet one-way delay: 86.803 ms

Loss rate: 0.00%

Run 5: Report of QUIC Cubic — Data Link

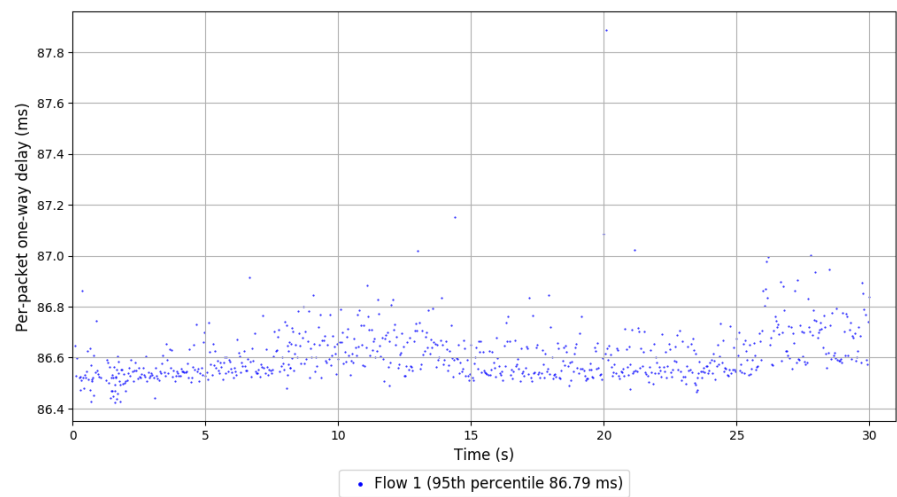
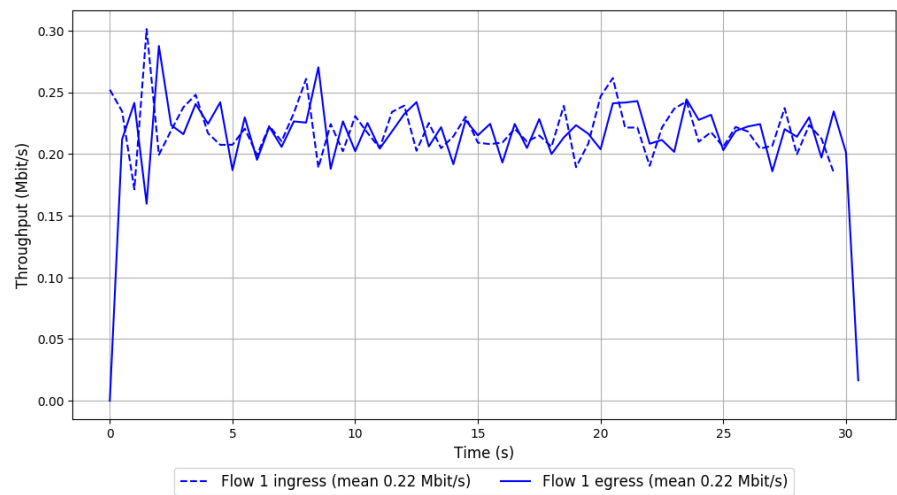


```
Run 1: Statistics of SCReAM

Start at: 2018-12-11 09:02:35
End at: 2018-12-11 09:03:05
Local clock offset: -0.135 ms
Remote clock offset: 0.114 ms

# Below is generated by plot.py at 2018-12-11 13:02:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.786 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.786 ms
Loss rate: 0.00%
```

Run 1: Report of SReAM — Data Link



Run 2: Statistics of SCReAM

Start at: 2018-12-11 09:31:04

End at: 2018-12-11 09:31:34

Local clock offset: -0.506 ms

Remote clock offset: 0.188 ms

Below is generated by plot.py at 2018-12-11 13:02:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 86.542 ms

Loss rate: 0.00%

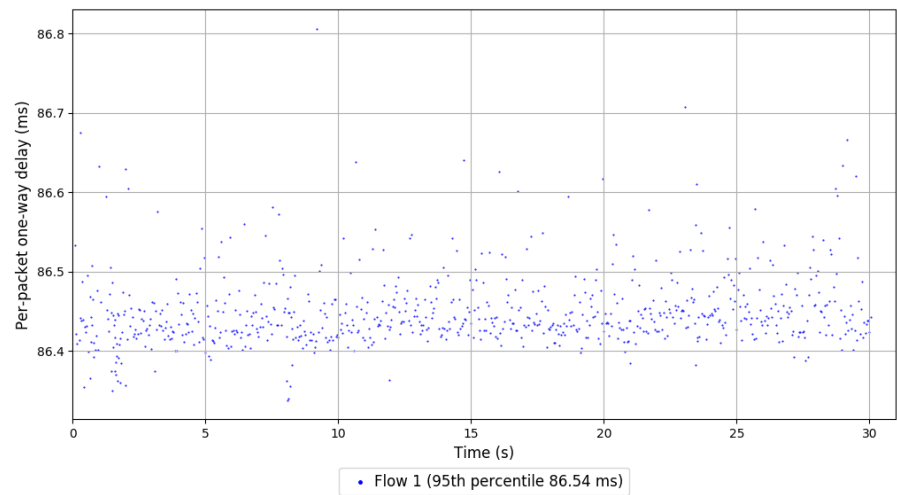
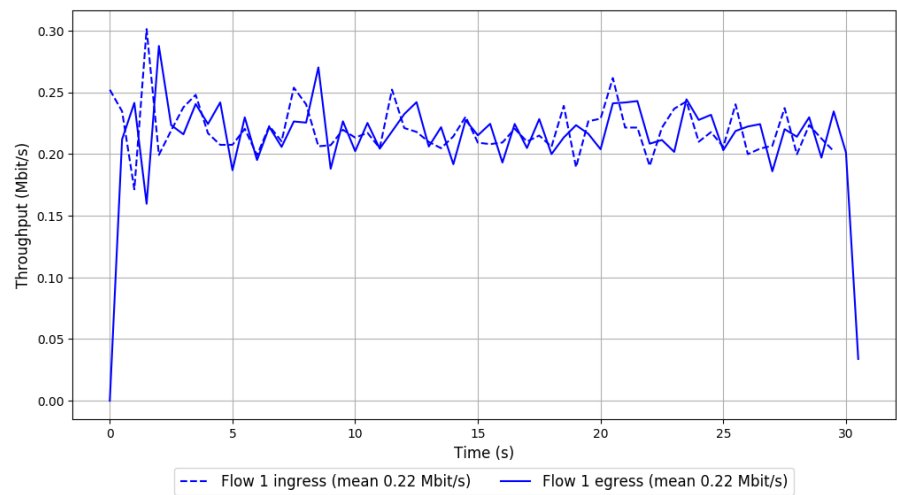
-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 86.542 ms

Loss rate: 0.00%

Run 2: Report of SReAM — Data Link



Run 3: Statistics of SCReAM

Start at: 2018-12-11 09:59:43

End at: 2018-12-11 10:00:13

Local clock offset: -0.141 ms

Remote clock offset: 0.274 ms

Below is generated by plot.py at 2018-12-11 13:02:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 86.262 ms

Loss rate: 0.00%

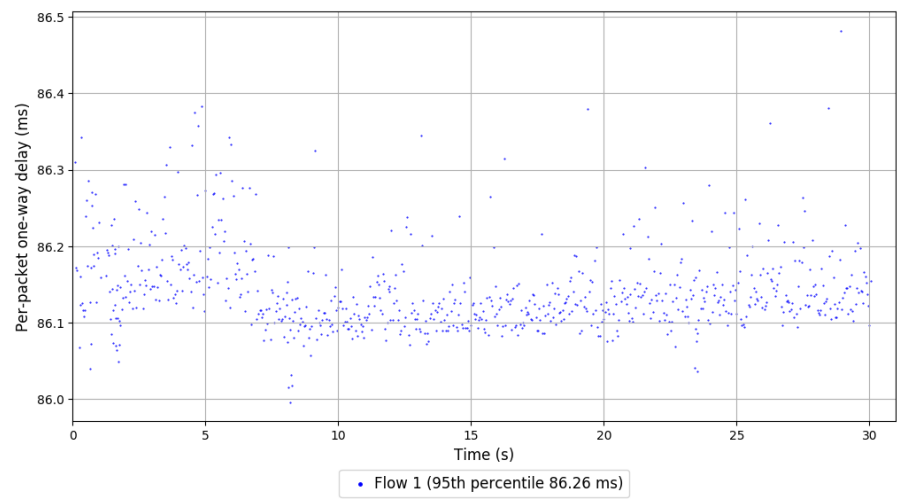
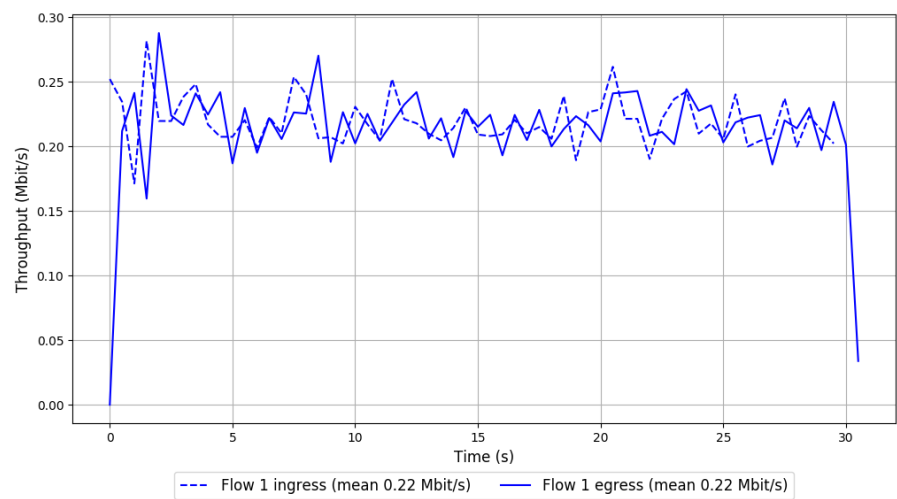
-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 86.262 ms

Loss rate: 0.00%

Run 3: Report of SReAM — Data Link



Run 4: Statistics of SCReAM

Start at: 2018-12-11 10:28:23

End at: 2018-12-11 10:28:53

Local clock offset: 0.168 ms

Remote clock offset: 0.448 ms

Below is generated by plot.py at 2018-12-11 13:02:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 86.163 ms

Loss rate: 0.00%

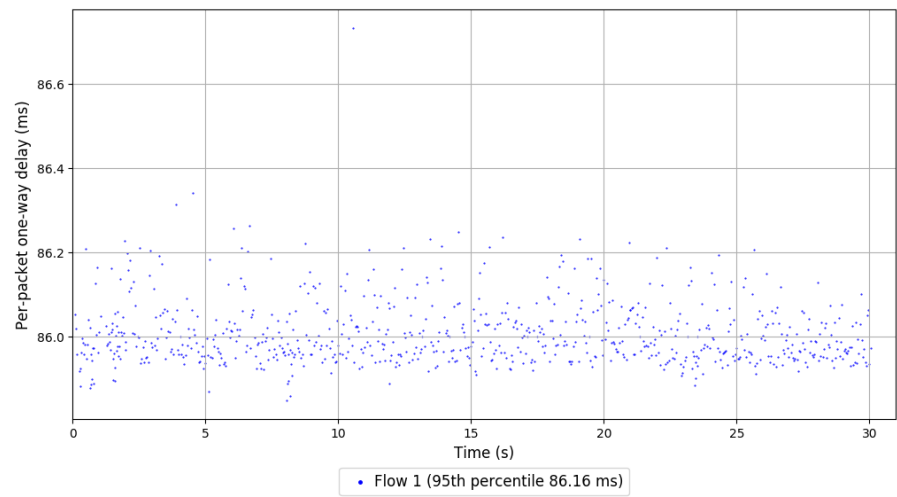
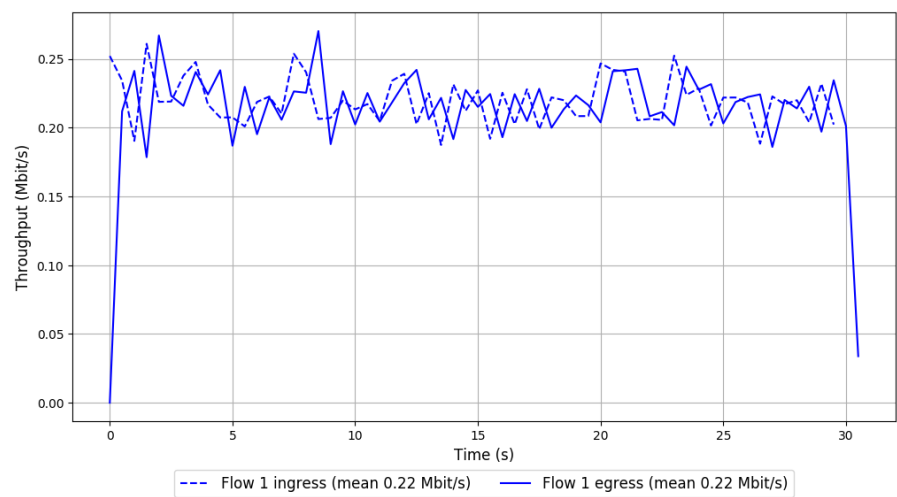
-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 86.163 ms

Loss rate: 0.00%

Run 4: Report of SReAM — Data Link



Run 5: Statistics of SCReAM

Start at: 2018-12-11 10:56:44

End at: 2018-12-11 10:57:14

Local clock offset: -0.148 ms

Remote clock offset: 0.498 ms

Below is generated by plot.py at 2018-12-11 13:02:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 86.265 ms

Loss rate: 0.00%

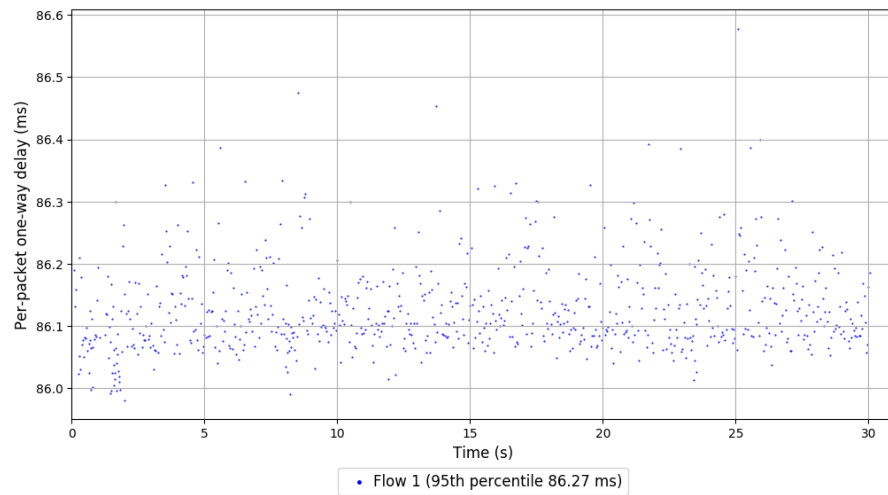
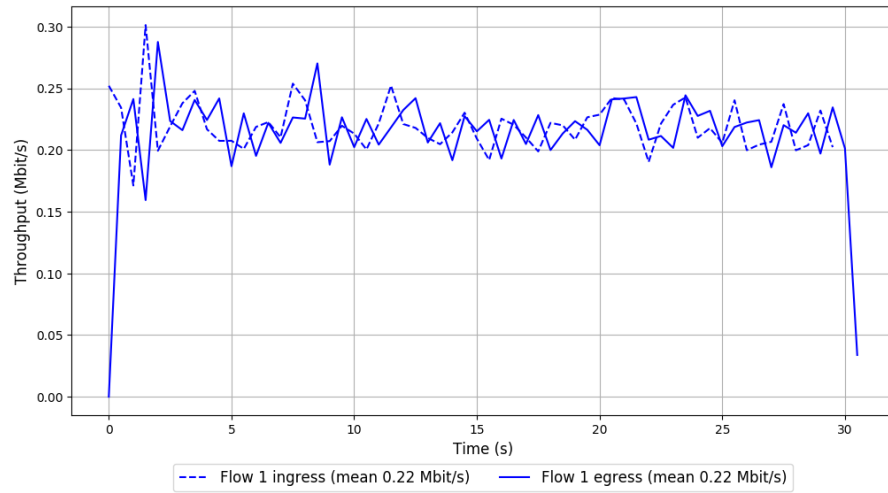
-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 86.265 ms

Loss rate: 0.00%

Run 5: Report of SReAM — Data Link



Run 1: Statistics of Sprout

Start at: 2018-12-11 09:01:25

End at: 2018-12-11 09:01:55

Local clock offset: -0.294 ms

Remote clock offset: 0.151 ms

Below is generated by plot.py at 2018-12-11 13:02:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 4.39 Mbit/s

95th percentile per-packet one-way delay: 87.067 ms

Loss rate: 0.00%

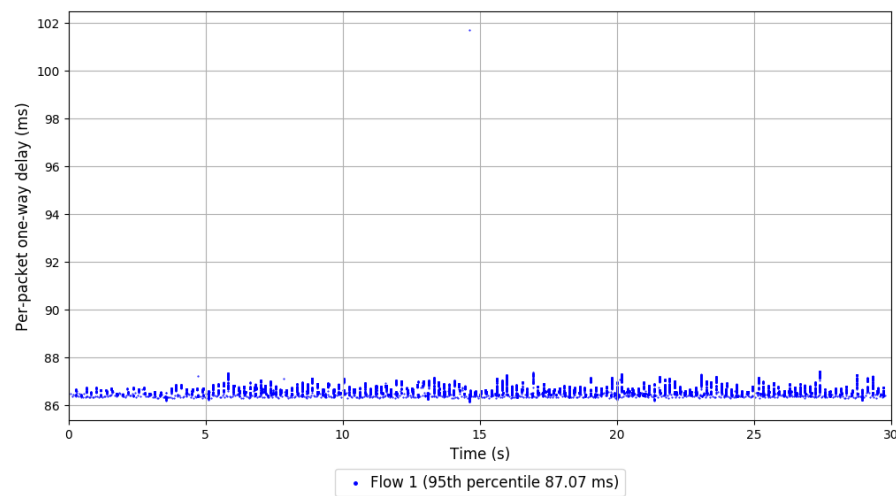
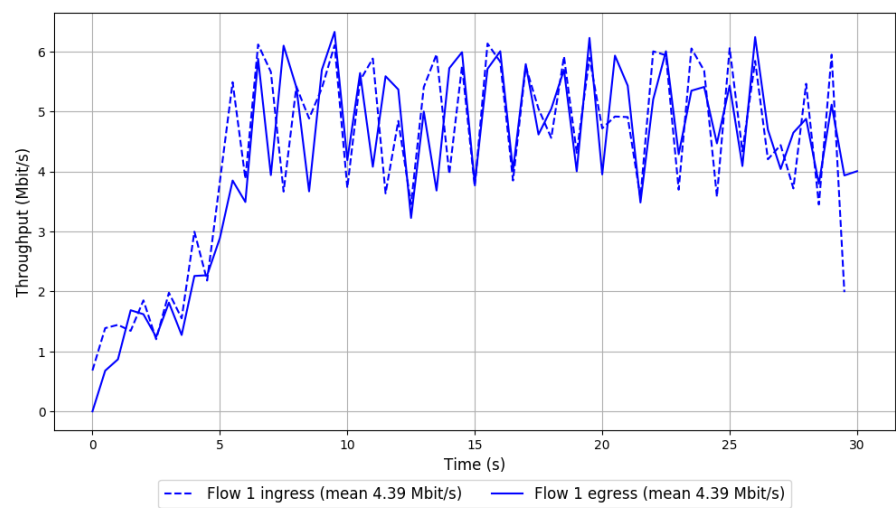
-- Flow 1:

Average throughput: 4.39 Mbit/s

95th percentile per-packet one-way delay: 87.067 ms

Loss rate: 0.00%

Run 1: Report of Sprout — Data Link



Run 2: Statistics of Sprout

Start at: 2018-12-11 09:29:54

End at: 2018-12-11 09:30:24

Local clock offset: -0.515 ms

Remote clock offset: 0.194 ms

Below is generated by plot.py at 2018-12-11 13:02:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 4.27 Mbit/s

95th percentile per-packet one-way delay: 87.618 ms

Loss rate: 0.00%

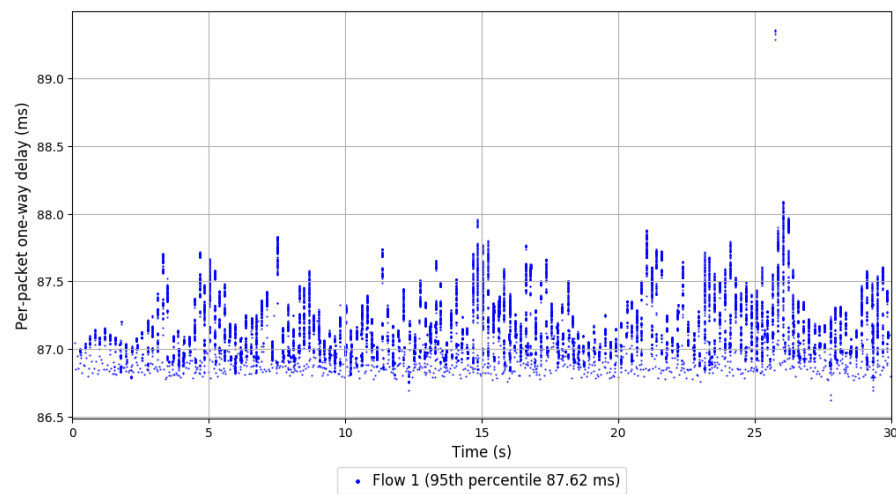
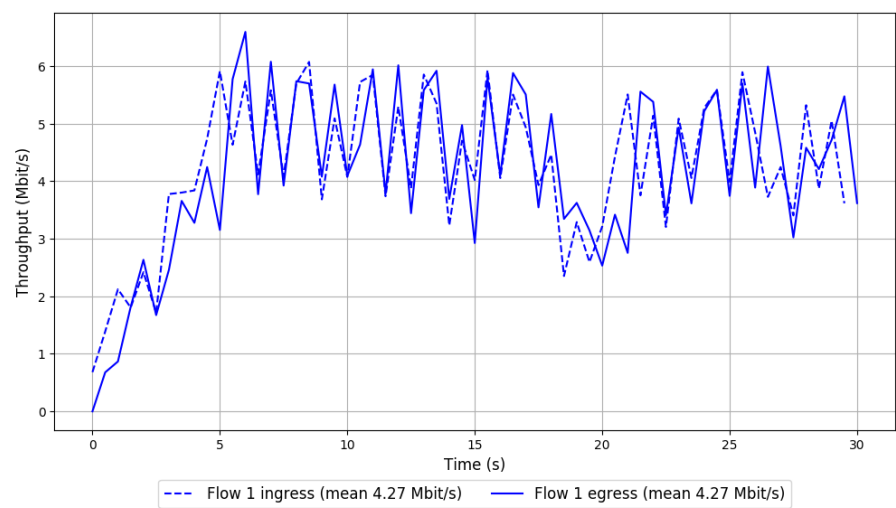
-- Flow 1:

Average throughput: 4.27 Mbit/s

95th percentile per-packet one-way delay: 87.618 ms

Loss rate: 0.00%

Run 2: Report of Sprout — Data Link



Run 3: Statistics of Sprout

Start at: 2018-12-11 09:58:33

End at: 2018-12-11 09:59:03

Local clock offset: 0.075 ms

Remote clock offset: 0.316 ms

Below is generated by plot.py at 2018-12-11 13:02:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 4.54 Mbit/s

95th percentile per-packet one-way delay: 87.004 ms

Loss rate: 0.00%

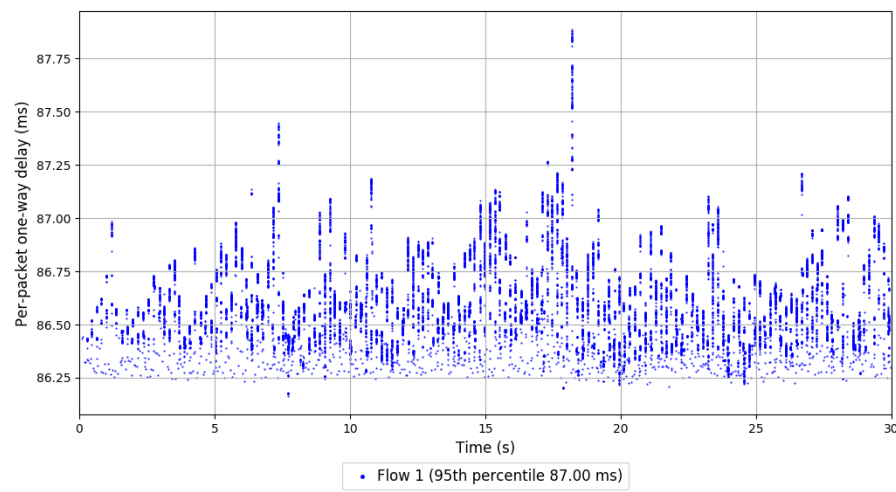
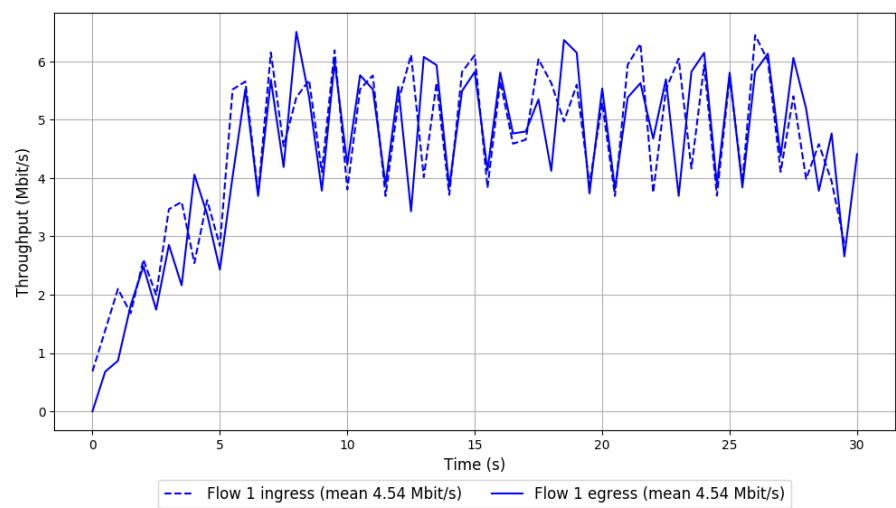
-- Flow 1:

Average throughput: 4.54 Mbit/s

95th percentile per-packet one-way delay: 87.004 ms

Loss rate: 0.00%

Run 3: Report of Sprout — Data Link



Run 4: Statistics of Sprout

Start at: 2018-12-11 10:27:13

End at: 2018-12-11 10:27:43

Local clock offset: -0.085 ms

Remote clock offset: 0.373 ms

Below is generated by plot.py at 2018-12-11 13:02:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 4.44 Mbit/s

95th percentile per-packet one-way delay: 86.898 ms

Loss rate: 0.00%

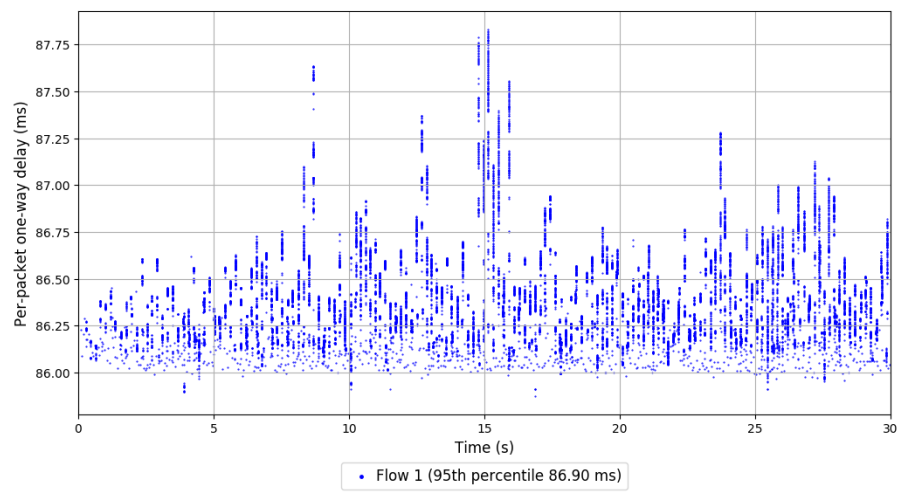
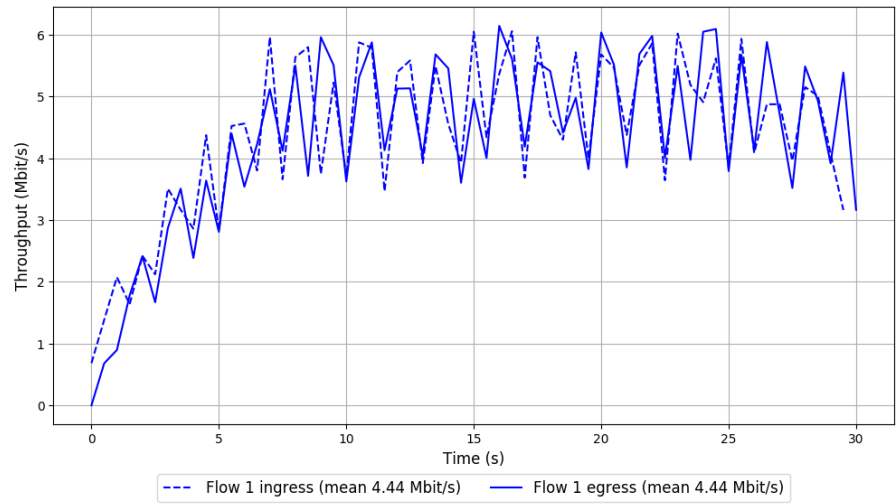
-- Flow 1:

Average throughput: 4.44 Mbit/s

95th percentile per-packet one-way delay: 86.898 ms

Loss rate: 0.00%

Run 4: Report of Sprout — Data Link



Run 5: Statistics of Sprout

Start at: 2018-12-11 10:55:34

End at: 2018-12-11 10:56:04

Local clock offset: -0.128 ms

Remote clock offset: 0.49 ms

Below is generated by plot.py at 2018-12-11 13:02:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 4.40 Mbit/s

95th percentile per-packet one-way delay: 86.757 ms

Loss rate: 0.00%

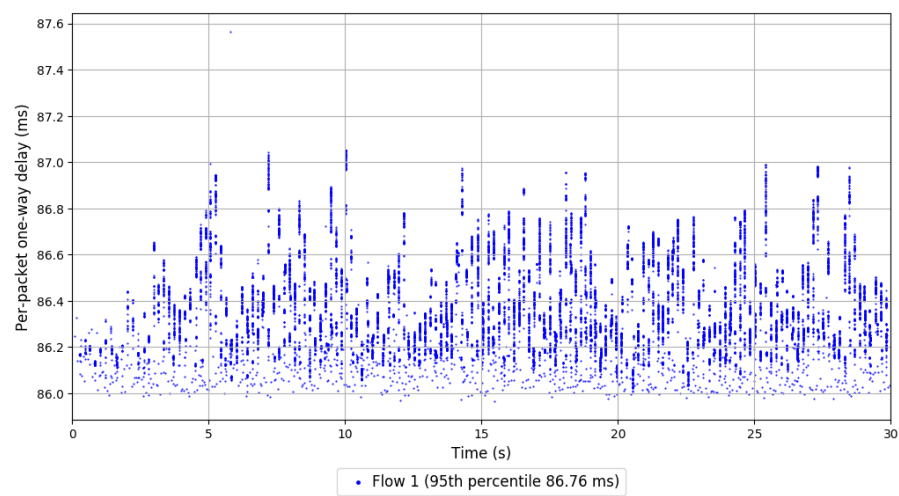
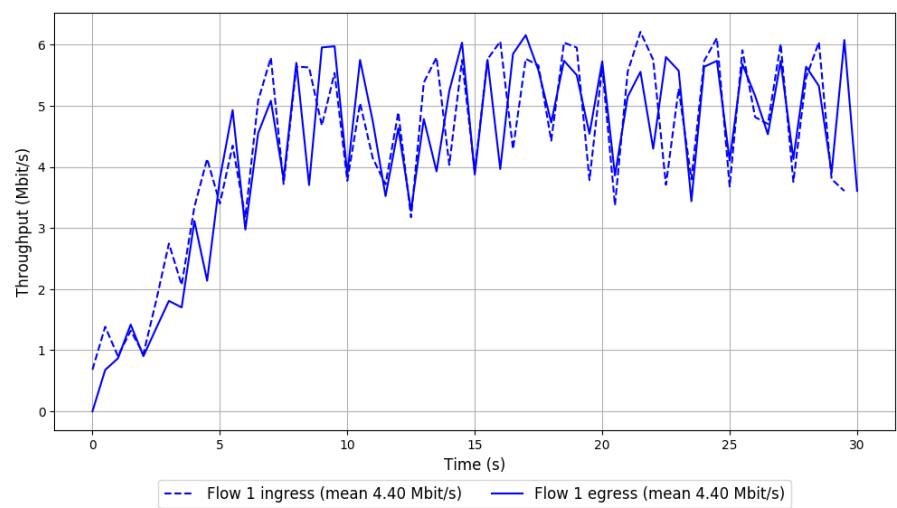
-- Flow 1:

Average throughput: 4.40 Mbit/s

95th percentile per-packet one-way delay: 86.757 ms

Loss rate: 0.00%

Run 5: Report of Sprout — Data Link

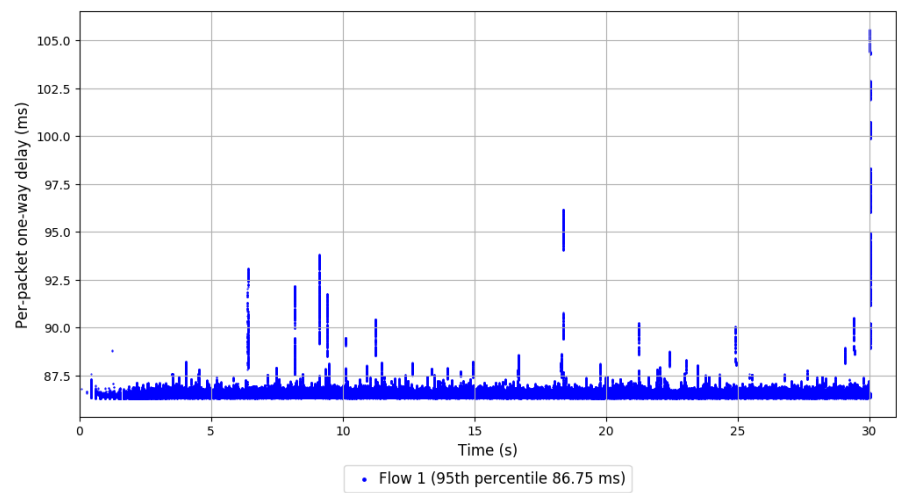
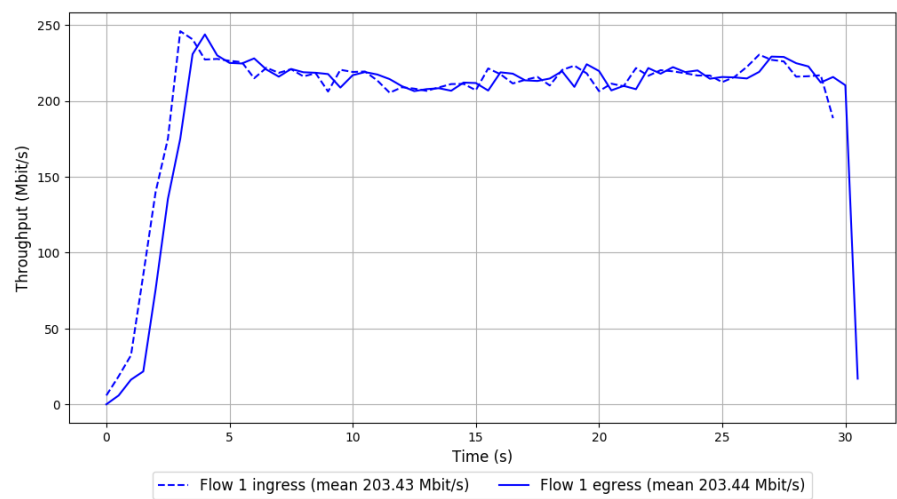



```
Run 1: Statistics of TaoVA-100x

Start at: 2018-12-11 09:05:21
End at: 2018-12-11 09:05:51
Local clock offset: -0.247 ms
Remote clock offset: 0.091 ms

# Below is generated by plot.py at 2018-12-11 13:02:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 203.44 Mbit/s
95th percentile per-packet one-way delay: 86.755 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 203.44 Mbit/s
95th percentile per-packet one-way delay: 86.755 ms
Loss rate: 0.00%
```

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



Run 2: Statistics of TaoVA-100x

Start at: 2018-12-11 09:33:52

End at: 2018-12-11 09:34:22

Local clock offset: -0.141 ms

Remote clock offset: 0.211 ms

Below is generated by plot.py at 2018-12-11 13:02:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 214.71 Mbit/s

95th percentile per-packet one-way delay: 86.699 ms

Loss rate: 0.00%

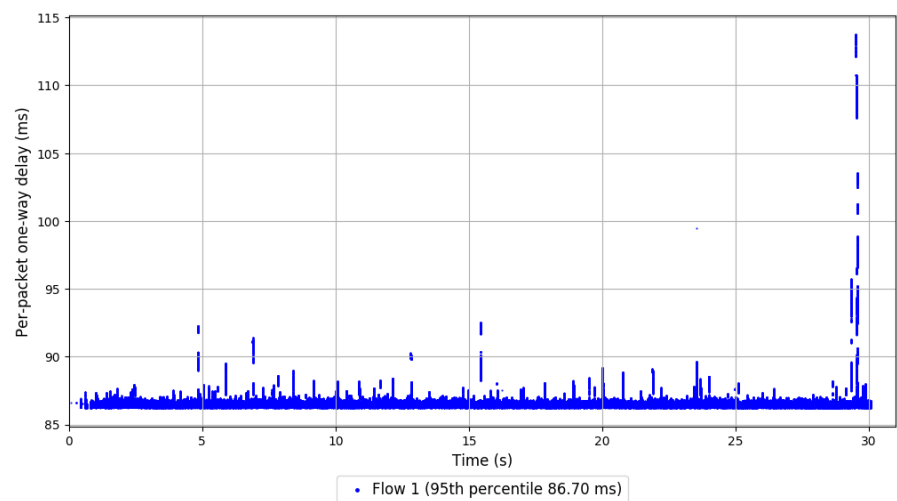
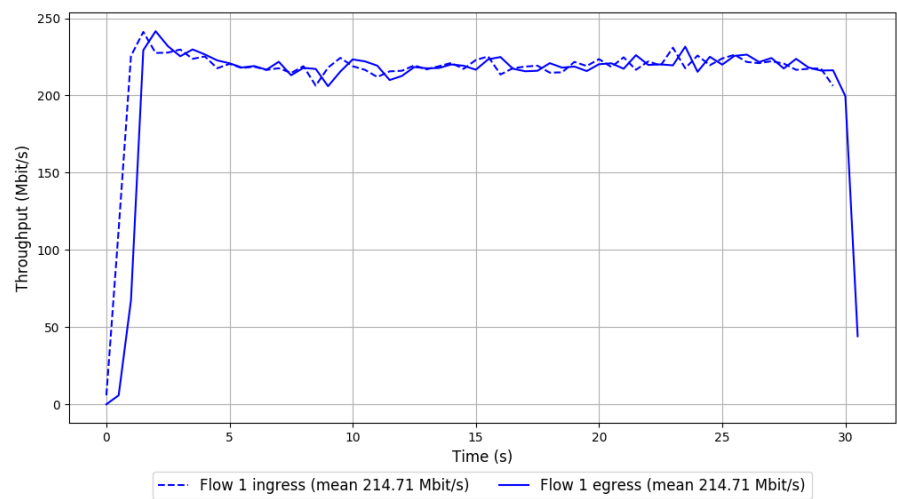
-- Flow 1:

Average throughput: 214.71 Mbit/s

95th percentile per-packet one-way delay: 86.699 ms

Loss rate: 0.00%

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



Run 3: Statistics of TaoVA-100x

Start at: 2018-12-11 10:02:36

End at: 2018-12-11 10:03:06

Local clock offset: -0.177 ms

Remote clock offset: 0.317 ms

Below is generated by plot.py at 2018-12-11 13:02:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 207.90 Mbit/s

95th percentile per-packet one-way delay: 86.350 ms

Loss rate: 0.00%

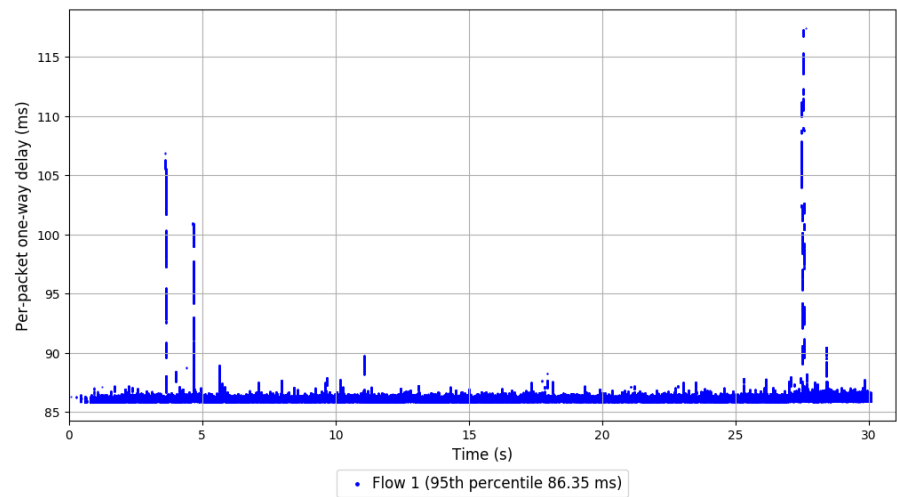
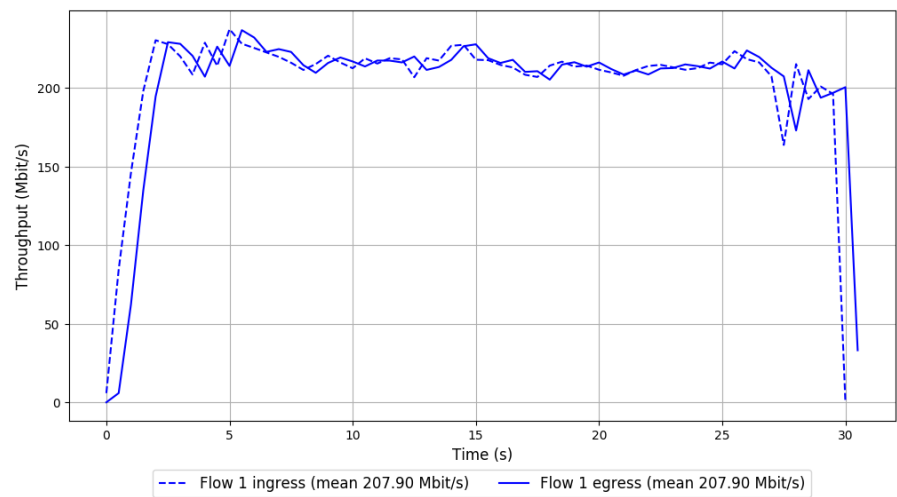
-- Flow 1:

Average throughput: 207.90 Mbit/s

95th percentile per-packet one-way delay: 86.350 ms

Loss rate: 0.00%

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



Run 4: Statistics of TaoVA-100x

Start at: 2018-12-11 10:31:09

End at: 2018-12-11 10:31:39

Local clock offset: -0.046 ms

Remote clock offset: 0.428 ms

Below is generated by plot.py at 2018-12-11 13:02:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 198.38 Mbit/s

95th percentile per-packet one-way delay: 86.554 ms

Loss rate: 0.00%

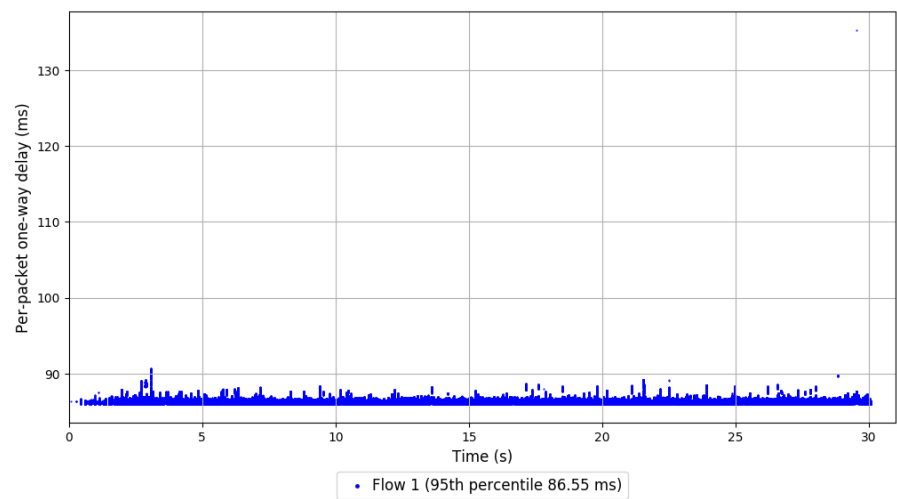
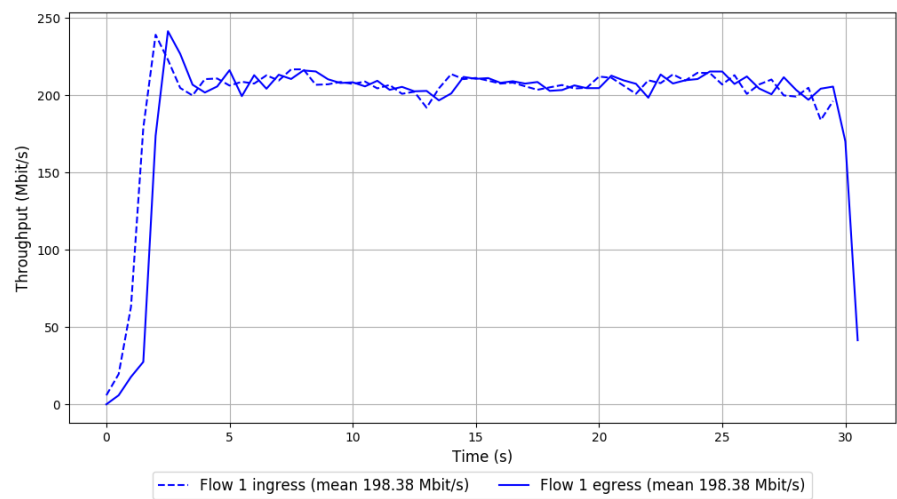
-- Flow 1:

Average throughput: 198.38 Mbit/s

95th percentile per-packet one-way delay: 86.554 ms

Loss rate: 0.00%

Run 4: Report of TaoVA-100x — Data Link



Run 5: Statistics of TaoVA-100x

Start at: 2018-12-11 10:59:34

End at: 2018-12-11 11:00:04

Local clock offset: -0.162 ms

Remote clock offset: 0.547 ms

Below is generated by plot.py at 2018-12-11 13:02:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 204.33 Mbit/s

95th percentile per-packet one-way delay: 86.980 ms

Loss rate: 0.00%

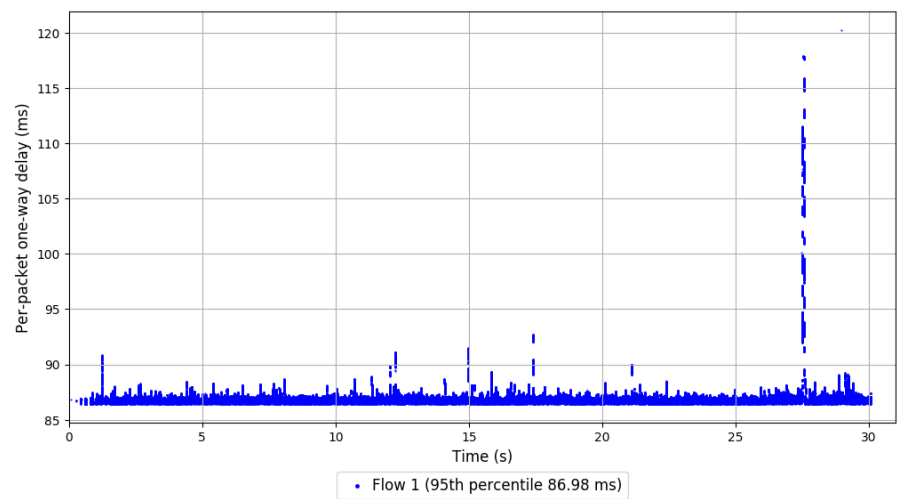
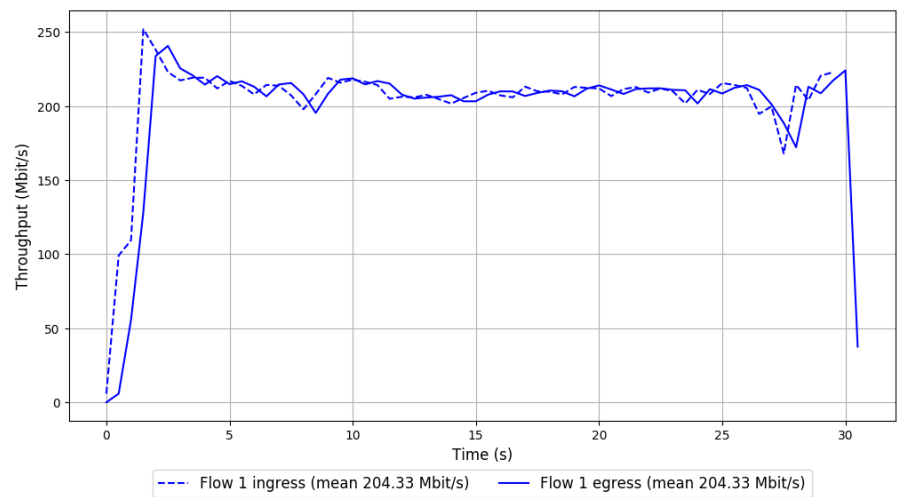
-- Flow 1:

Average throughput: 204.33 Mbit/s

95th percentile per-packet one-way delay: 86.980 ms

Loss rate: 0.00%

Run 5: Report of TaoVA-100x — Data Link



Run 1: Statistics of TCP Vegas

Start at: 2018-12-11 09:23:37

End at: 2018-12-11 09:24:07

Local clock offset: -0.098 ms

Remote clock offset: 0.145 ms

Below is generated by plot.py at 2018-12-11 13:06:37

Datalink statistics

-- Total of 1 flow:

Average throughput: 488.30 Mbit/s

95th percentile per-packet one-way delay: 91.402 ms

Loss rate: 0.00%

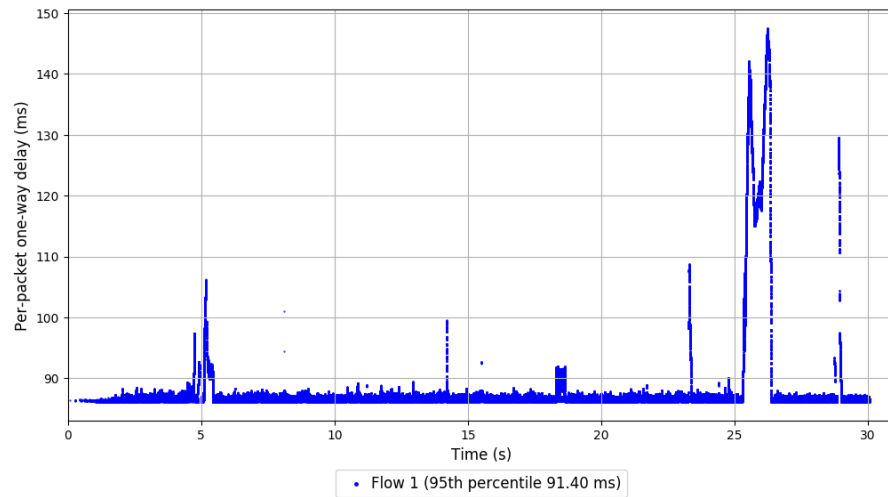
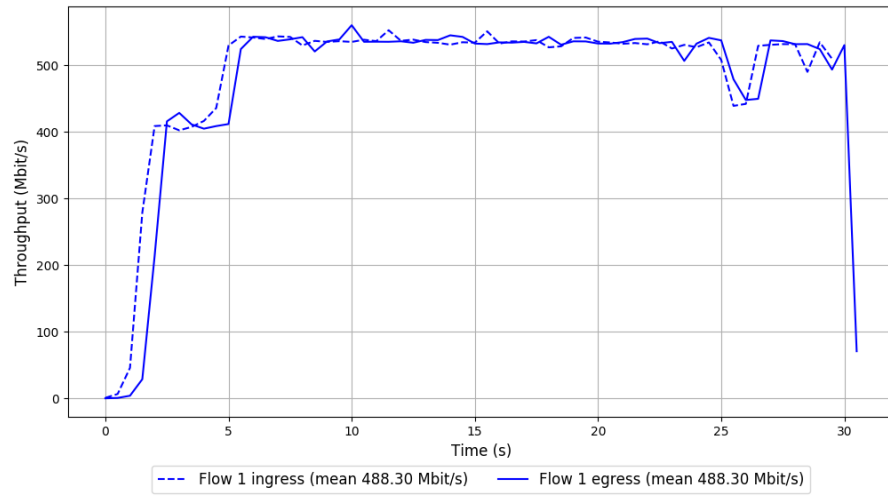
-- Flow 1:

Average throughput: 488.30 Mbit/s

95th percentile per-packet one-way delay: 91.402 ms

Loss rate: 0.00%

Run 1: Report of TCP Vegas — Data Link



Run 2: Statistics of TCP Vegas

Start at: 2018-12-11 09:52:11

End at: 2018-12-11 09:52:41

Local clock offset: 0.279 ms

Remote clock offset: 0.27 ms

Below is generated by plot.py at 2018-12-11 13:09:31

Datalink statistics

-- Total of 1 flow:

Average throughput: 426.12 Mbit/s

95th percentile per-packet one-way delay: 87.038 ms

Loss rate: 0.00%

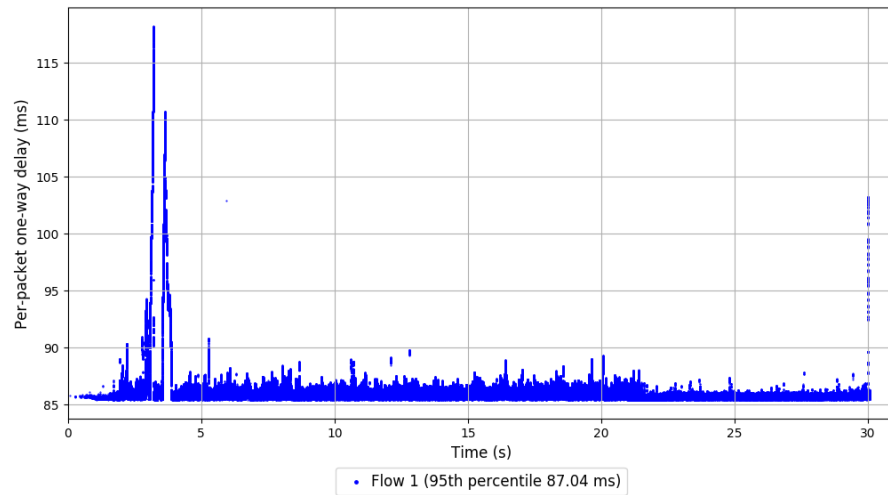
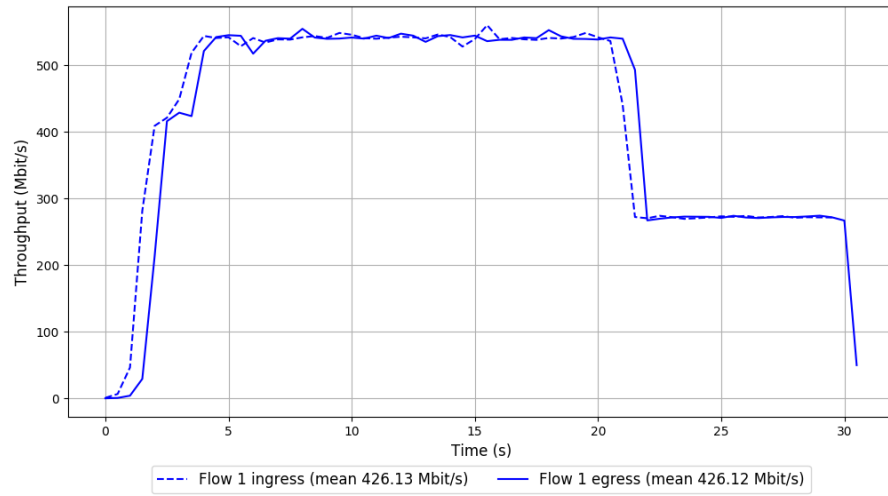
-- Flow 1:

Average throughput: 426.12 Mbit/s

95th percentile per-packet one-way delay: 87.038 ms

Loss rate: 0.00%

Run 2: Report of TCP Vegas — Data Link

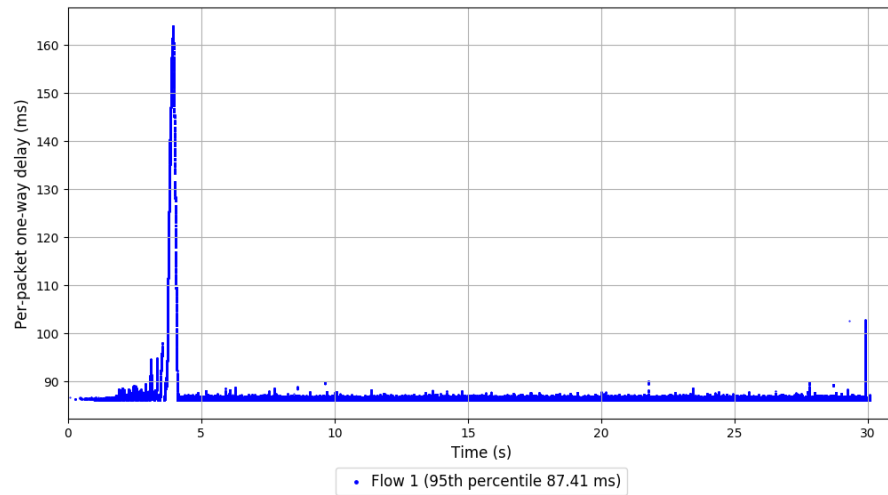
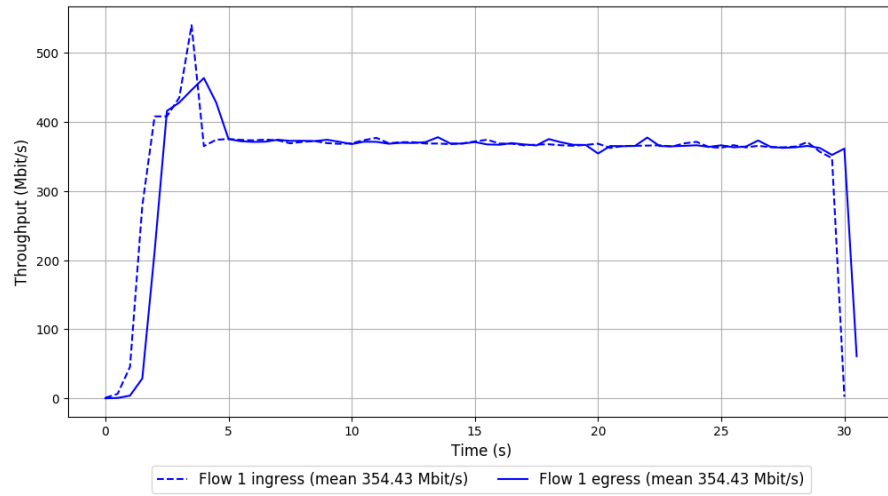


Run 3: Statistics of TCP Vegas

Start at: 2018-12-11 10:21:10
End at: 2018-12-11 10:21:40
Local clock offset: -0.313 ms
Remote clock offset: 0.381 ms

Below is generated by plot.py at 2018-12-11 13:09:31
Datalink statistics
-- Total of 1 flow:
Average throughput: 354.43 Mbit/s
95th percentile per-packet one-way delay: 87.405 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 354.43 Mbit/s
95th percentile per-packet one-way delay: 87.405 ms
Loss rate: 0.00%

Run 3: Report of TCP Vegas — Data Link



Run 4: Statistics of TCP Vegas

Start at: 2018-12-11 10:49:12

End at: 2018-12-11 10:49:42

Local clock offset: -0.082 ms

Remote clock offset: 0.464 ms

Below is generated by plot.py at 2018-12-11 13:10:44

Datalink statistics

-- Total of 1 flow:

Average throughput: 482.40 Mbit/s

95th percentile per-packet one-way delay: 86.879 ms

Loss rate: 0.00%

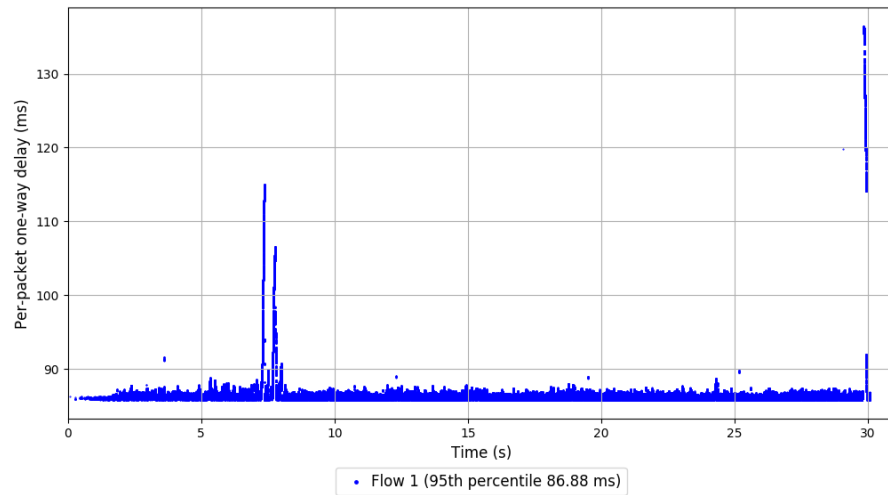
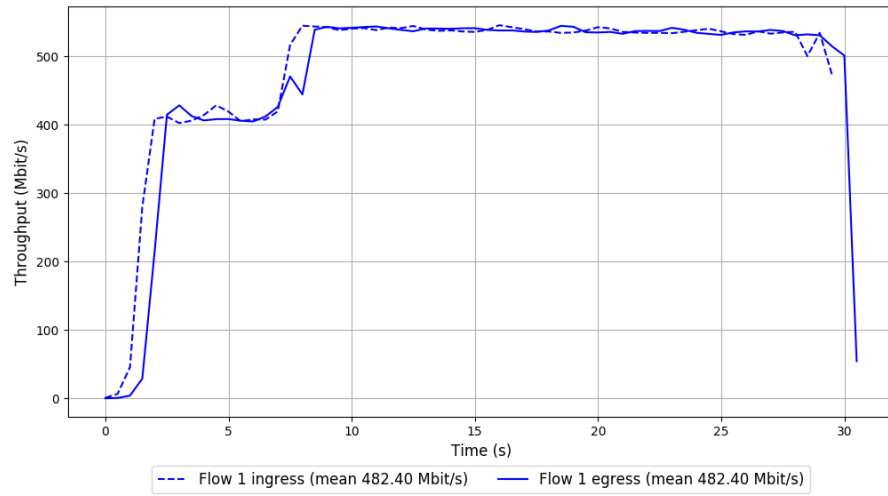
-- Flow 1:

Average throughput: 482.40 Mbit/s

95th percentile per-packet one-way delay: 86.879 ms

Loss rate: 0.00%

Run 4: Report of TCP Vegas — Data Link



Run 5: Statistics of TCP Vegas

Start at: 2018-12-11 11:17:56

End at: 2018-12-11 11:18:26

Local clock offset: 0.186 ms

Remote clock offset: 0.568 ms

Below is generated by plot.py at 2018-12-11 13:10:47

Datalink statistics

-- Total of 1 flow:

Average throughput: 480.65 Mbit/s

95th percentile per-packet one-way delay: 88.245 ms

Loss rate: 0.00%

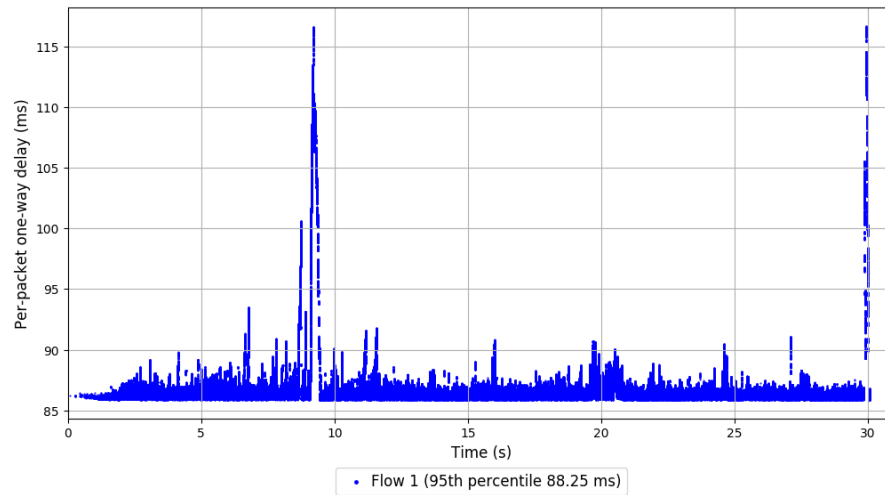
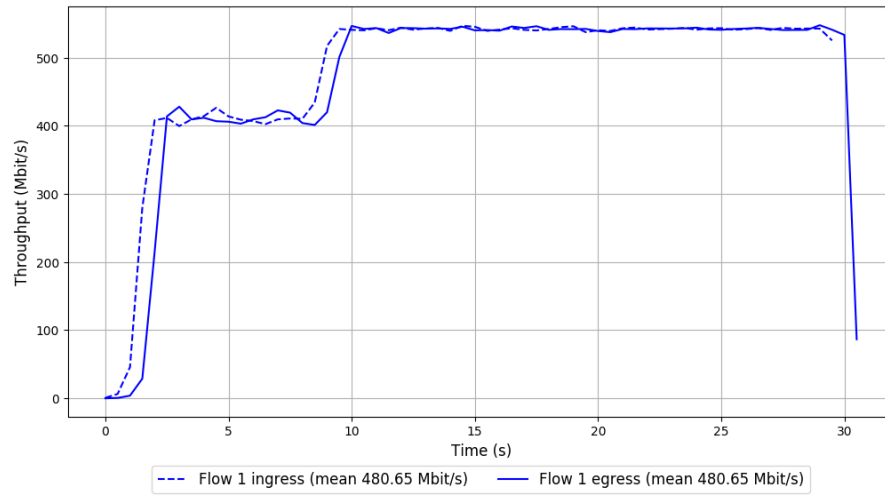
-- Flow 1:

Average throughput: 480.65 Mbit/s

95th percentile per-packet one-way delay: 88.245 ms

Loss rate: 0.00%

Run 5: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: 2018-12-11 09:25:11

End at: 2018-12-11 09:25:41

Local clock offset: -0.387 ms

Remote clock offset: 0.174 ms

Below is generated by plot.py at 2018-12-11 13:10:47

Datalink statistics

-- Total of 1 flow:

Average throughput: 79.57 Mbit/s

95th percentile per-packet one-way delay: 96.061 ms

Loss rate: 0.00%

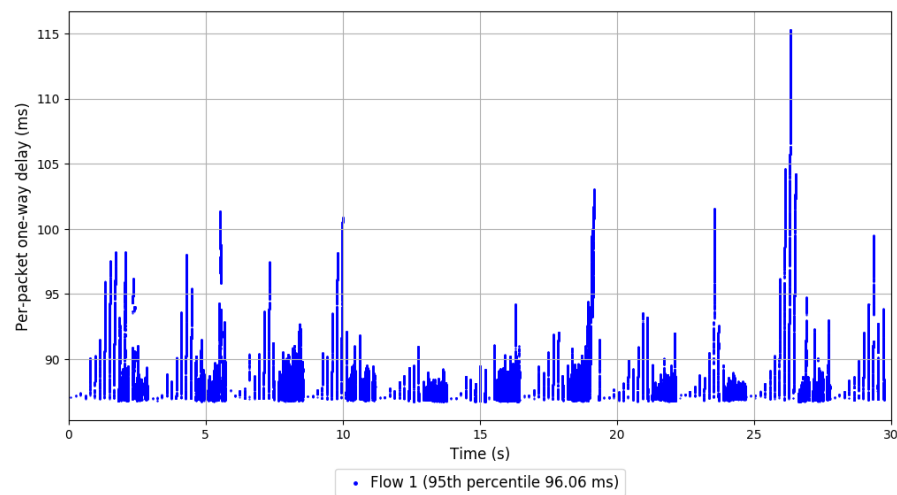
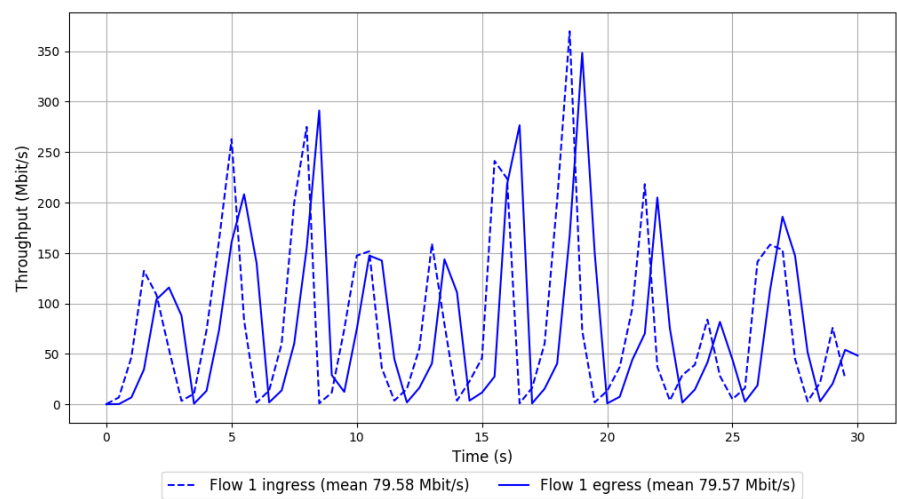
-- Flow 1:

Average throughput: 79.57 Mbit/s

95th percentile per-packet one-way delay: 96.061 ms

Loss rate: 0.00%

Run 1: Report of Verus — Data Link



Run 2: Statistics of Verus

Start at: 2018-12-11 09:53:44

End at: 2018-12-11 09:54:14

Local clock offset: -0.134 ms

Remote clock offset: 0.28 ms

Below is generated by plot.py at 2018-12-11 13:10:47

Datalink statistics

-- Total of 1 flow:

Average throughput: 109.10 Mbit/s

95th percentile per-packet one-way delay: 132.220 ms

Loss rate: 0.00%

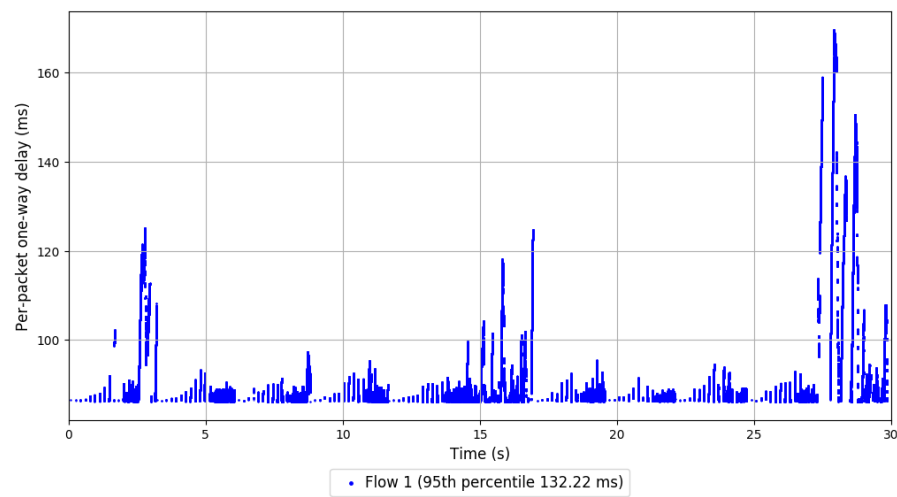
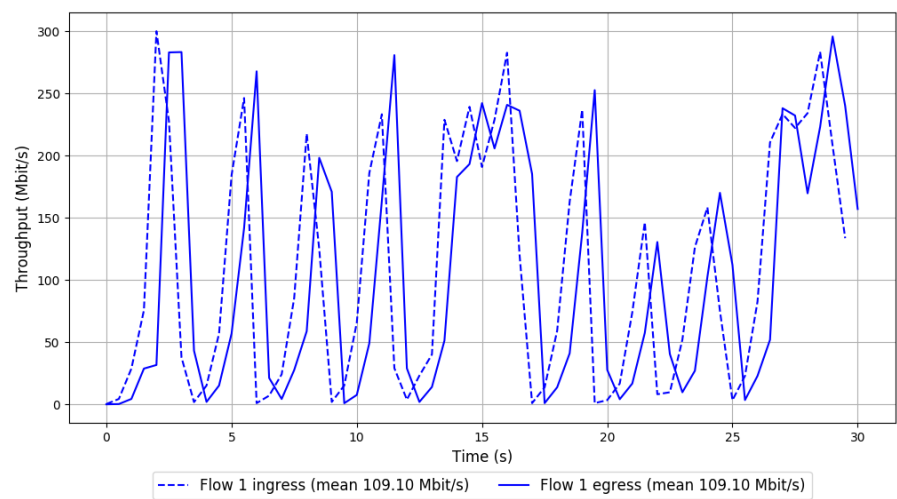
-- Flow 1:

Average throughput: 109.10 Mbit/s

95th percentile per-packet one-way delay: 132.220 ms

Loss rate: 0.00%

Run 2: Report of Verus — Data Link



Run 3: Statistics of Verus

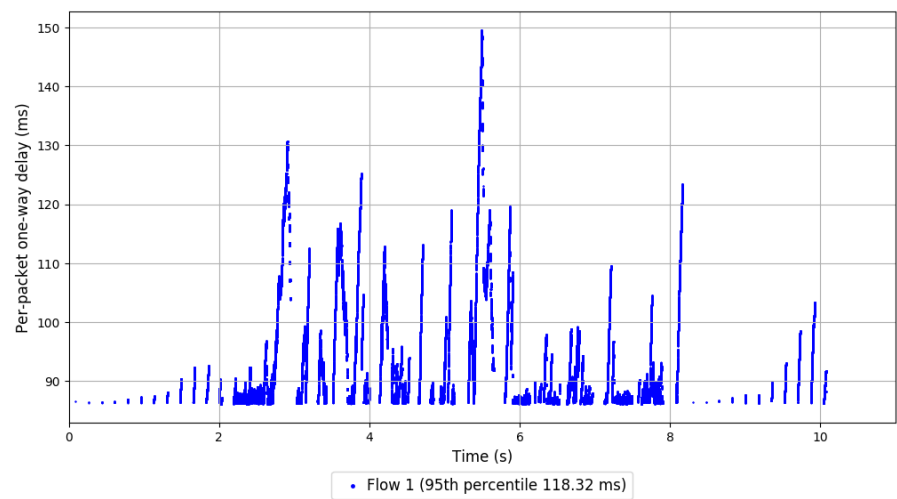
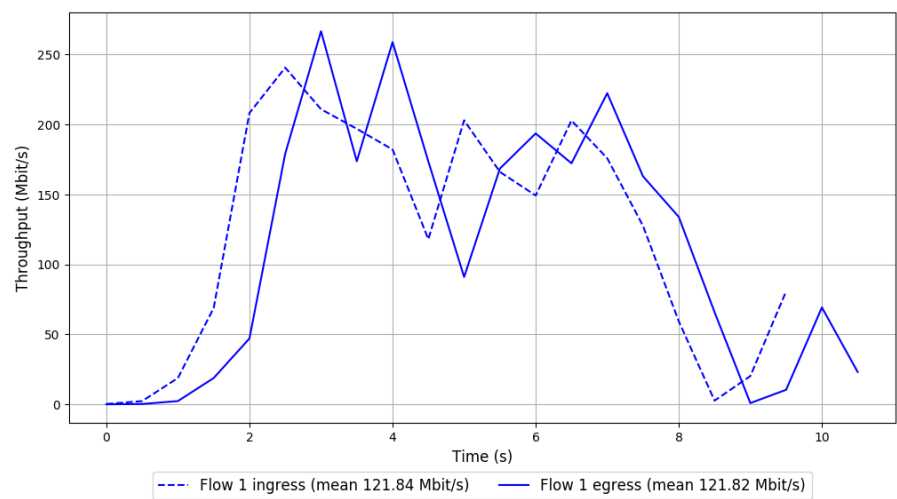
Start at: 2018-12-11 10:22:37

End at: 2018-12-11 10:23:07

Local clock offset: 0.192 ms

Remote clock offset: 0.417 ms

Run 3: Report of Verus — Data Link



Run 4: Statistics of Verus

Start at: 2018-12-11 10:50:45

End at: 2018-12-11 10:51:15

Local clock offset: -0.09 ms

Remote clock offset: 0.483 ms

Below is generated by plot.py at 2018-12-11 13:11:19

Datalink statistics

-- Total of 1 flow:

Average throughput: 211.58 Mbit/s

95th percentile per-packet one-way delay: 191.968 ms

Loss rate: 0.36%

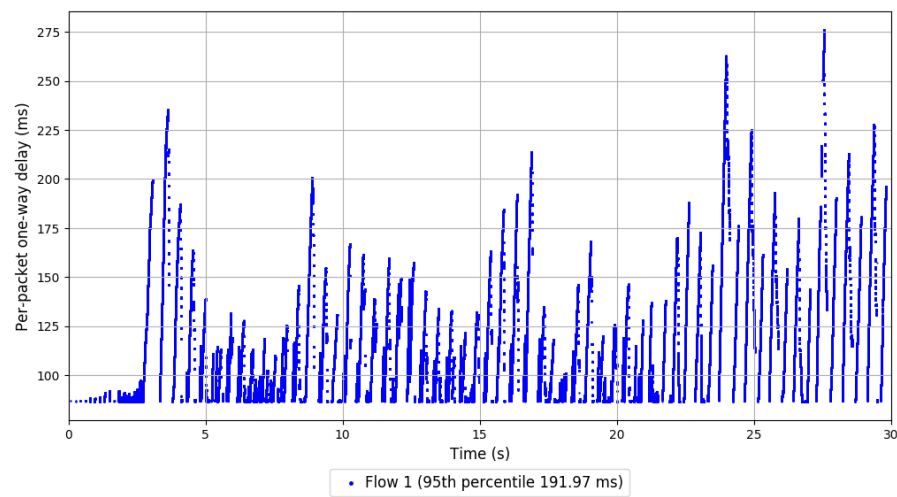
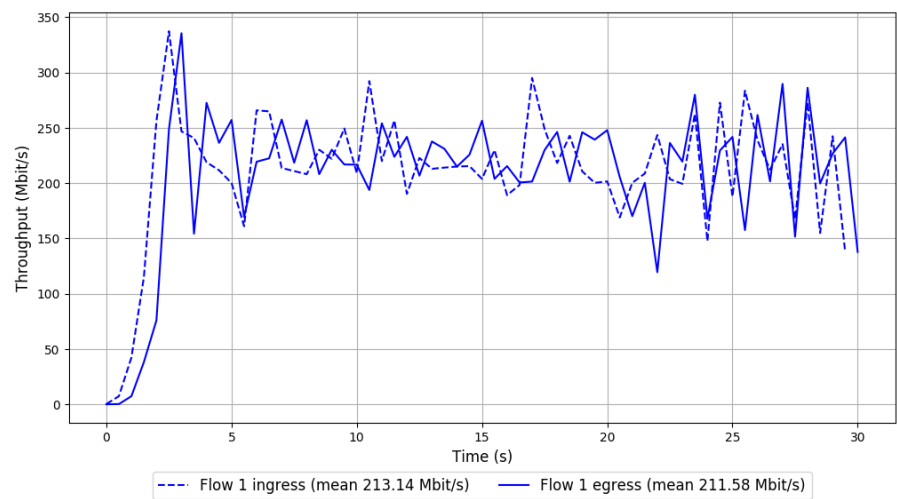
-- Flow 1:

Average throughput: 211.58 Mbit/s

95th percentile per-packet one-way delay: 191.968 ms

Loss rate: 0.36%

Run 4: Report of Verus — Data Link



Run 5: Statistics of Verus

Start at: 2018-12-11 11:19:31

End at: 2018-12-11 11:20:01

Local clock offset: -0.596 ms

Remote clock offset: 0.561 ms

Below is generated by plot.py at 2018-12-11 13:11:19

Datalink statistics

-- Total of 1 flow:

Average throughput: 138.02 Mbit/s

95th percentile per-packet one-way delay: 120.181 ms

Loss rate: 0.00%

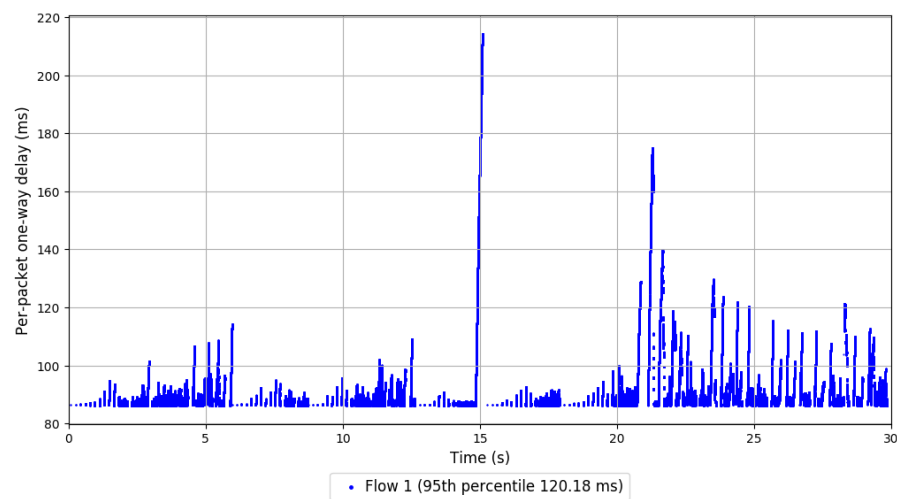
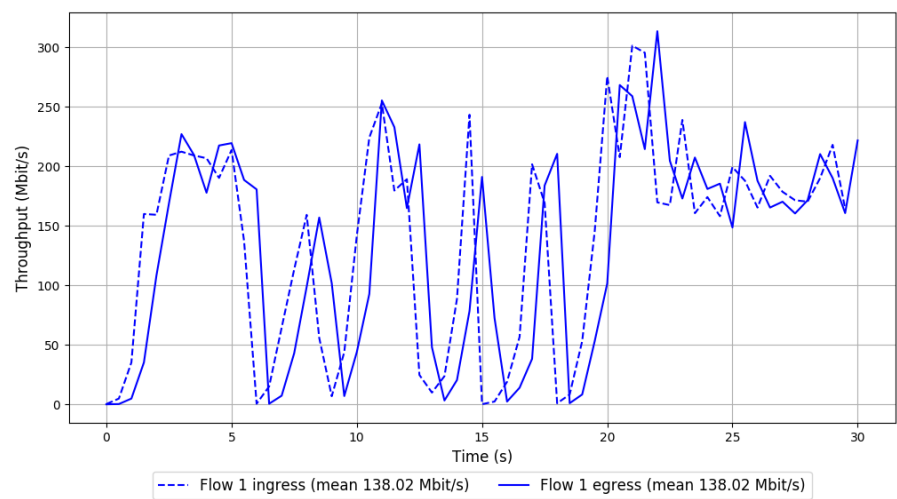
-- Flow 1:

Average throughput: 138.02 Mbit/s

95th percentile per-packet one-way delay: 120.181 ms

Loss rate: 0.00%

Run 5: Report of Verus — Data Link



Run 1: Statistics of PCC-Vivace

Start at: 2018-12-11 09:20:49

End at: 2018-12-11 09:21:19

Local clock offset: -0.514 ms

Remote clock offset: 0.16 ms

Below is generated by plot.py at 2018-12-11 13:13:04

Datalink statistics

-- Total of 1 flow:

Average throughput: 402.78 Mbit/s

95th percentile per-packet one-way delay: 88.624 ms

Loss rate: 0.00%

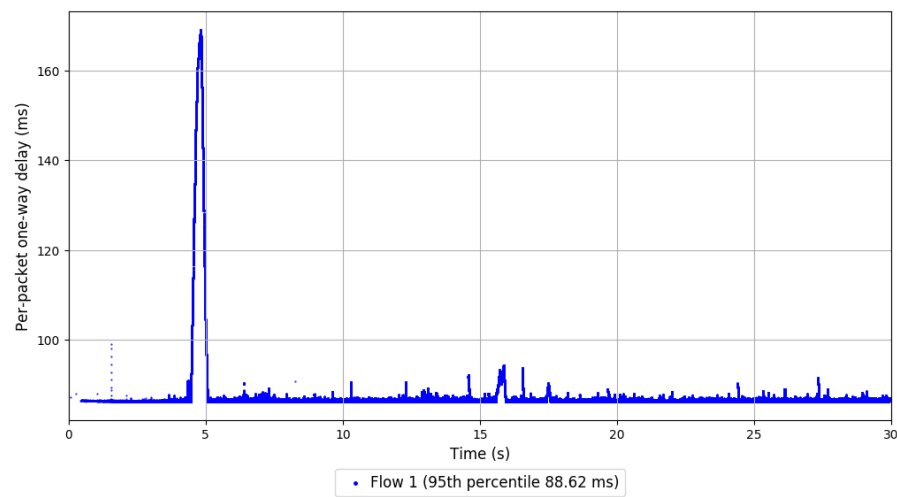
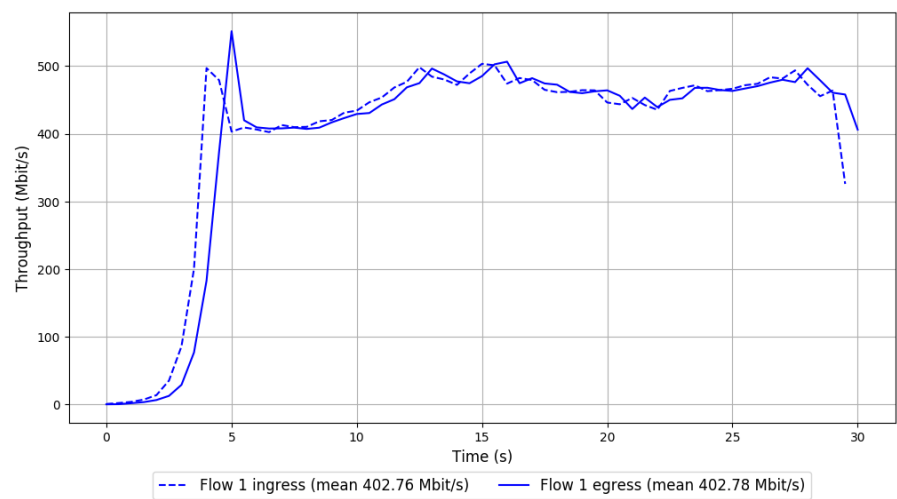
-- Flow 1:

Average throughput: 402.78 Mbit/s

95th percentile per-packet one-way delay: 88.624 ms

Loss rate: 0.00%

Run 1: Report of PCC-Vivace — Data Link



Run 2: Statistics of PCC-Vivace

Start at: 2018-12-11 09:49:22

End at: 2018-12-11 09:49:52

Local clock offset: -0.139 ms

Remote clock offset: 0.255 ms

Below is generated by plot.py at 2018-12-11 13:13:21

Datalink statistics

-- Total of 1 flow:

Average throughput: 396.64 Mbit/s

95th percentile per-packet one-way delay: 88.843 ms

Loss rate: 0.00%

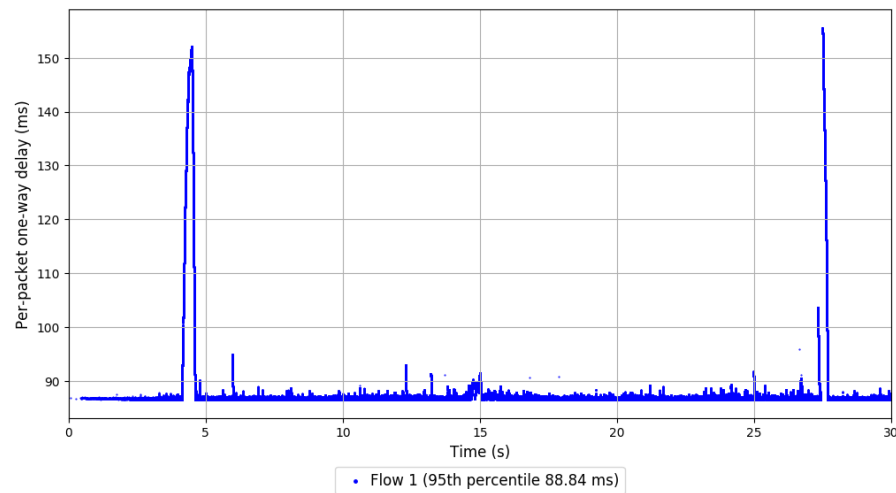
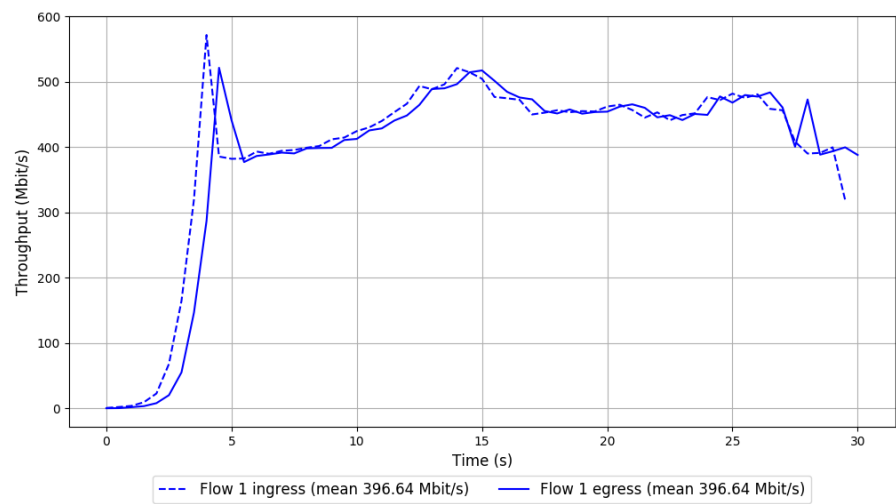
-- Flow 1:

Average throughput: 396.64 Mbit/s

95th percentile per-packet one-way delay: 88.843 ms

Loss rate: 0.00%

Run 2: Report of PCC-Vivace — Data Link



Run 3: Statistics of PCC-Vivace

Start at: 2018-12-11 10:18:23

End at: 2018-12-11 10:18:53

Local clock offset: 0.354 ms

Remote clock offset: 0.355 ms

Below is generated by plot.py at 2018-12-11 13:14:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 392.89 Mbit/s

95th percentile per-packet one-way delay: 92.605 ms

Loss rate: 0.00%

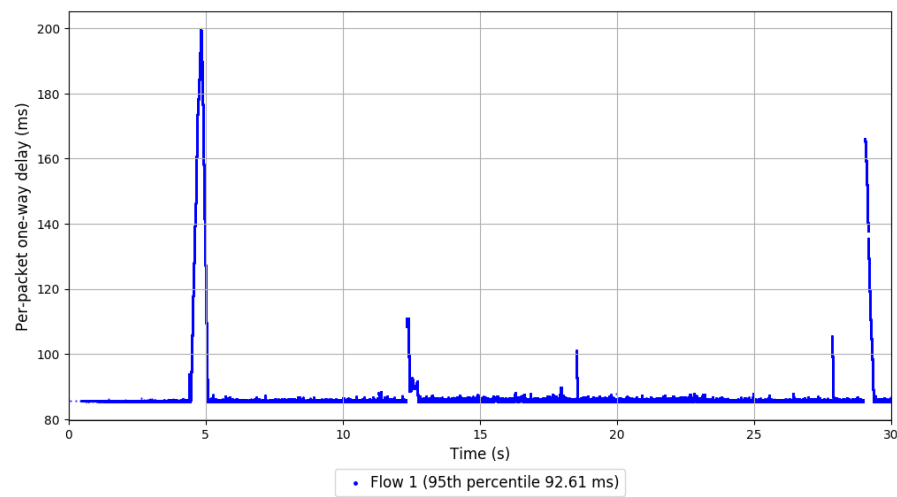
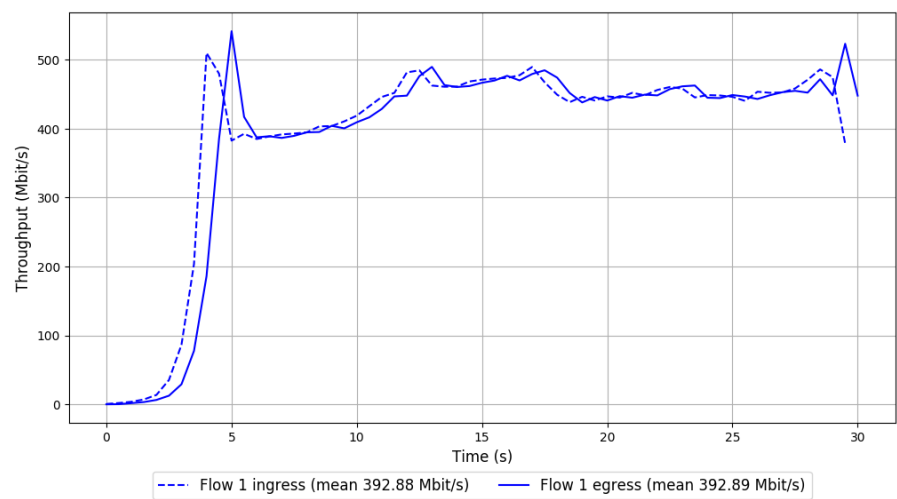
-- Flow 1:

Average throughput: 392.89 Mbit/s

95th percentile per-packet one-way delay: 92.605 ms

Loss rate: 0.00%

Run 3: Report of PCC-Vivace — Data Link



Run 4: Statistics of PCC-Vivace

Start at: 2018-12-11 10:46:26

End at: 2018-12-11 10:46:56

Local clock offset: -0.283 ms

Remote clock offset: 0.485 ms

Below is generated by plot.py at 2018-12-11 13:14:06

Datalink statistics

-- Total of 1 flow:

Average throughput: 389.54 Mbit/s

95th percentile per-packet one-way delay: 115.657 ms

Loss rate: 0.00%

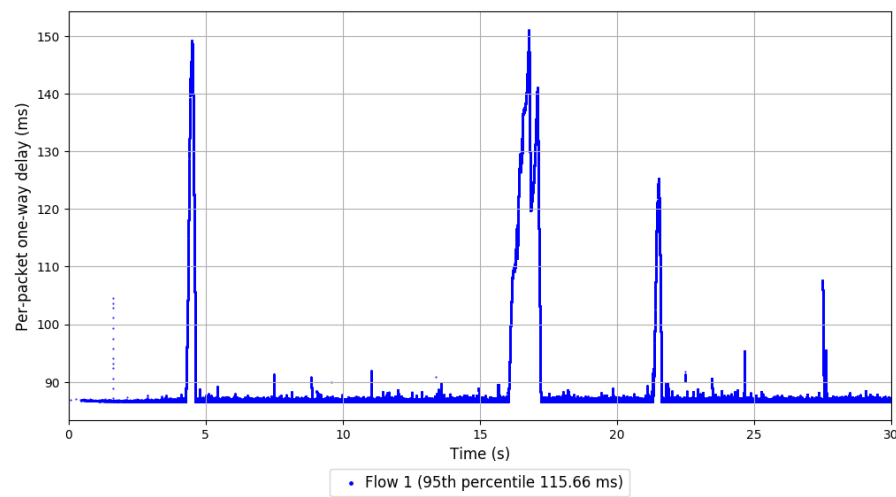
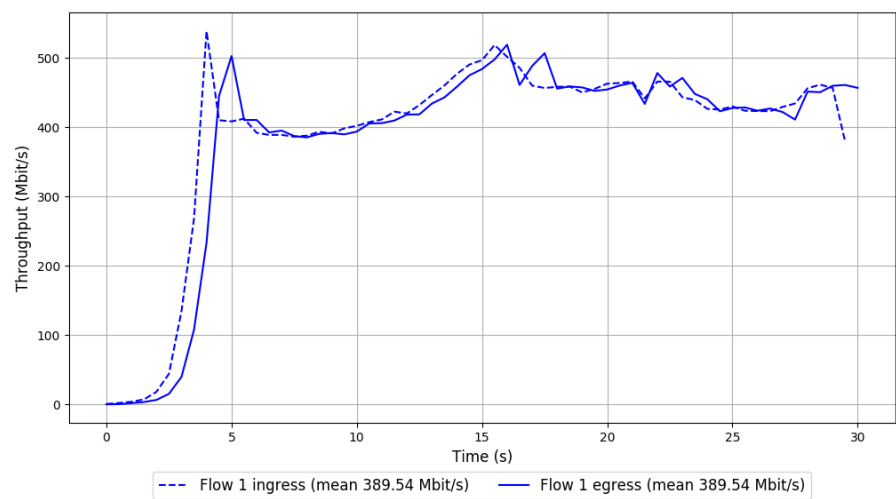
-- Flow 1:

Average throughput: 389.54 Mbit/s

95th percentile per-packet one-way delay: 115.657 ms

Loss rate: 0.00%

Run 4: Report of PCC-Vivace — Data Link



Run 5: Statistics of PCC-Vivace

Start at: 2018-12-11 11:15:09

End at: 2018-12-11 11:15:39

Local clock offset: -0.033 ms

Remote clock offset: 0.554 ms

Below is generated by plot.py at 2018-12-11 13:14:08

Datalink statistics

-- Total of 1 flow:

Average throughput: 412.99 Mbit/s

95th percentile per-packet one-way delay: 118.342 ms

Loss rate: 0.00%

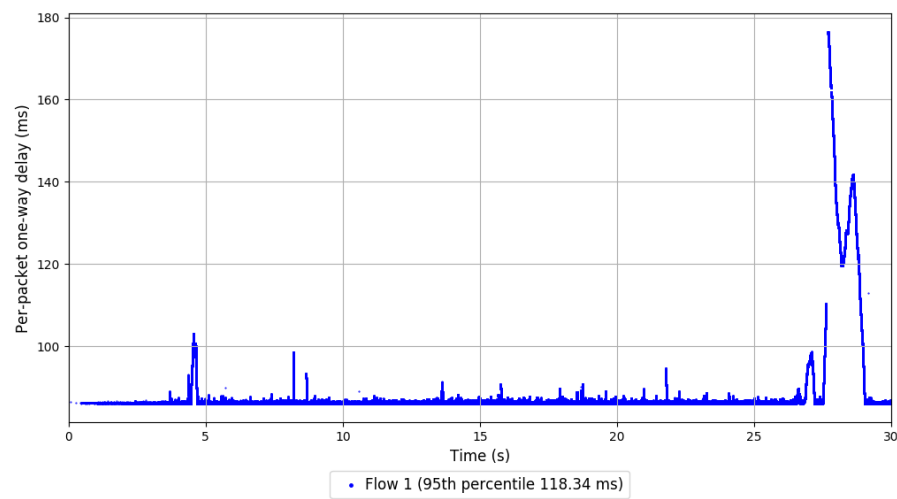
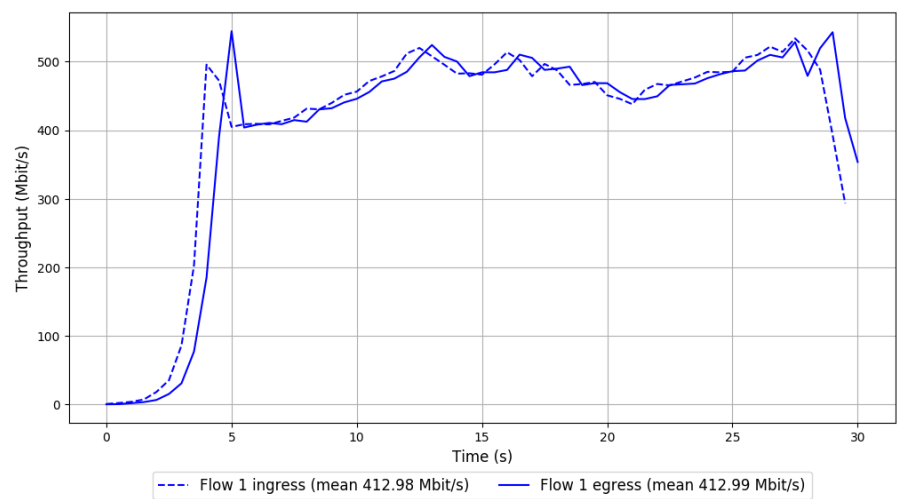
-- Flow 1:

Average throughput: 412.99 Mbit/s

95th percentile per-packet one-way delay: 118.342 ms

Loss rate: 0.00%

Run 5: Report of PCC-Vivace — Data Link



Run 1: Statistics of WebRTC media

Start at: 2018-12-11 09:22:28

End at: 2018-12-11 09:22:58

Local clock offset: 0.128 ms

Remote clock offset: 0.171 ms

Below is generated by plot.py at 2018-12-11 13:14:08

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.34 Mbit/s

95th percentile per-packet one-way delay: 86.091 ms

Loss rate: 0.00%

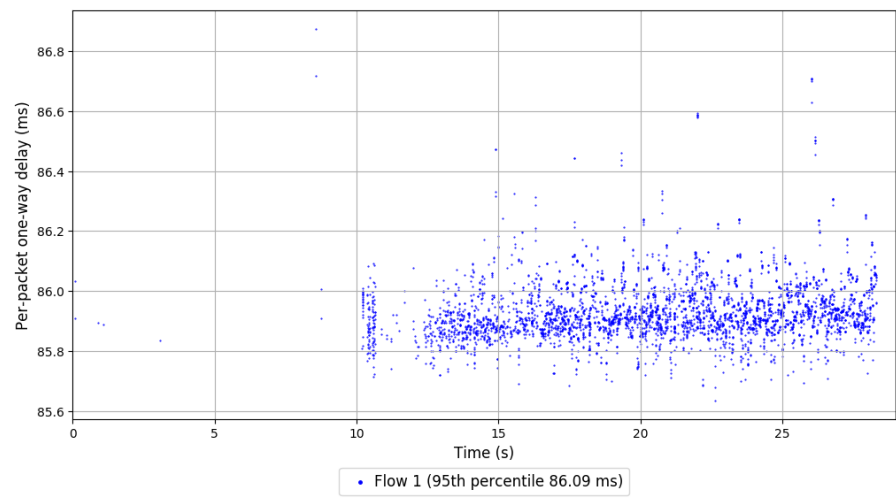
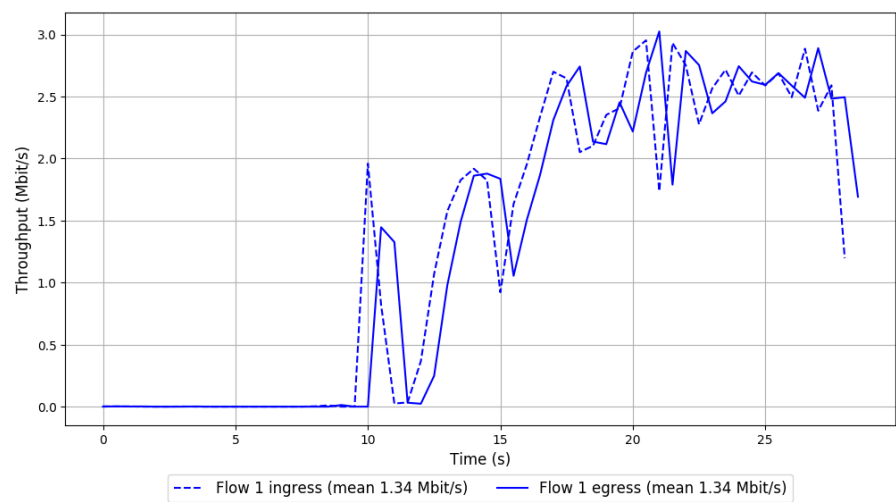
-- Flow 1:

Average throughput: 1.34 Mbit/s

95th percentile per-packet one-way delay: 86.091 ms

Loss rate: 0.00%

Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

Start at: 2018-12-11 09:51:02

End at: 2018-12-11 09:51:32

Local clock offset: -0.171 ms

Remote clock offset: 0.287 ms

Below is generated by plot.py at 2018-12-11 13:14:08

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.09 Mbit/s

95th percentile per-packet one-way delay: 86.731 ms

Loss rate: 0.00%

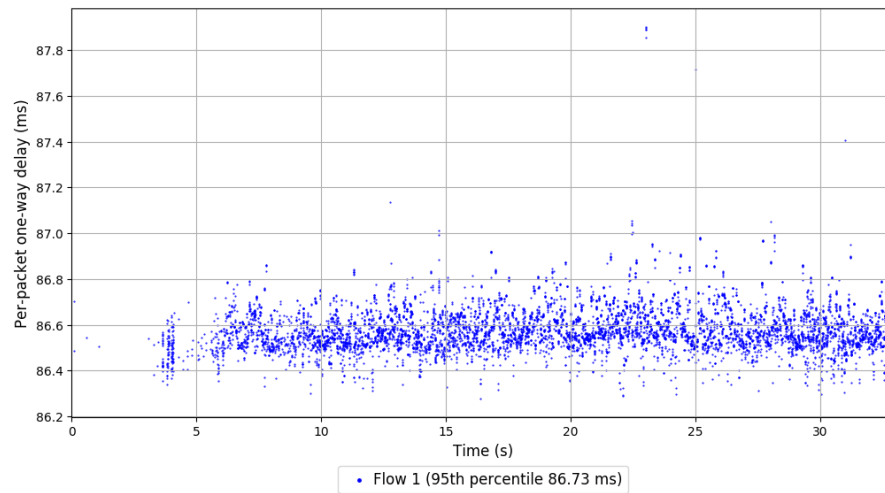
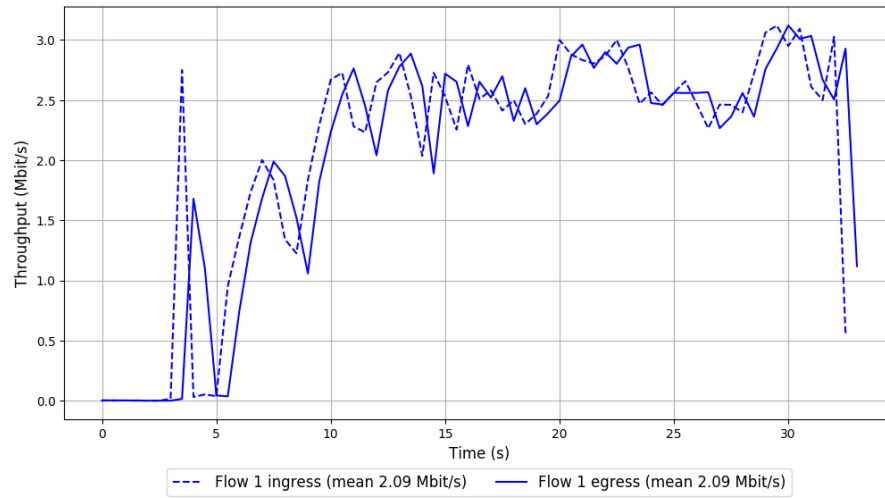
-- Flow 1:

Average throughput: 2.09 Mbit/s

95th percentile per-packet one-way delay: 86.731 ms

Loss rate: 0.00%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2018-12-11 10:20:01

End at: 2018-12-11 10:20:31

Local clock offset: -0.237 ms

Remote clock offset: 0.363 ms

Below is generated by plot.py at 2018-12-11 13:14:08

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.06 Mbit/s

95th percentile per-packet one-way delay: 86.530 ms

Loss rate: 0.00%

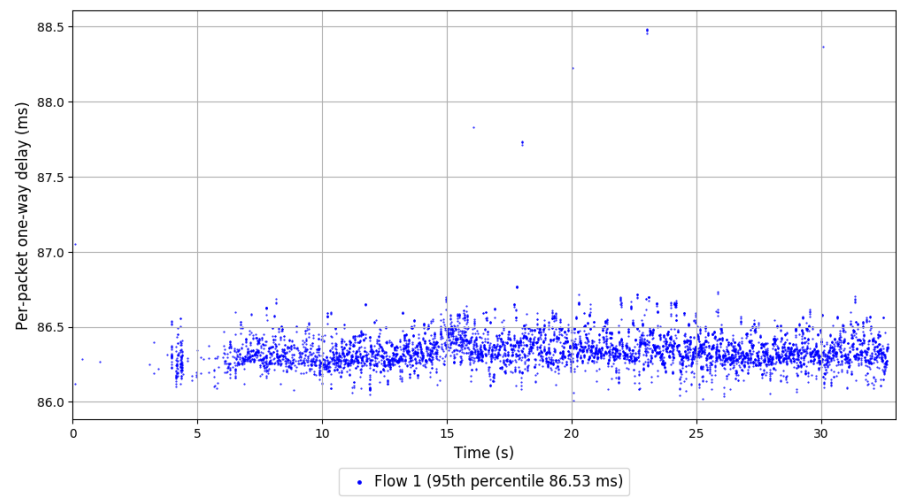
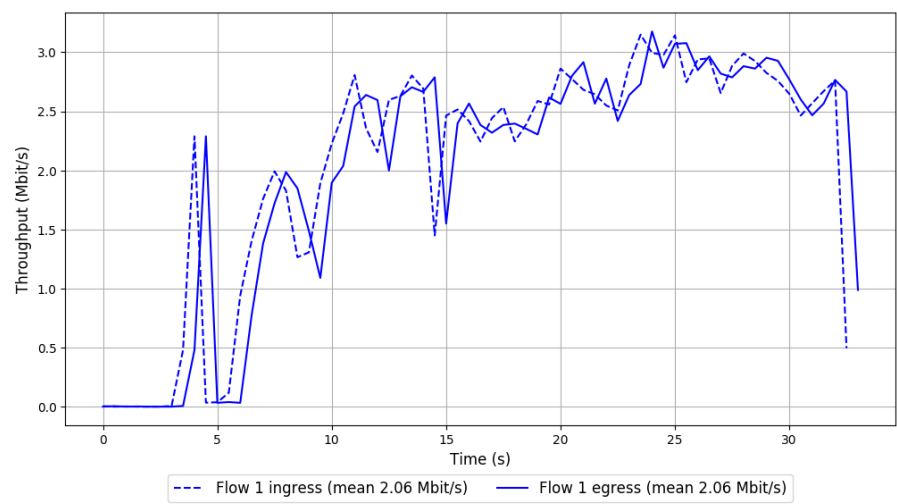
-- Flow 1:

Average throughput: 2.06 Mbit/s

95th percentile per-packet one-way delay: 86.530 ms

Loss rate: 0.00%

Run 3: Report of WebRTC media — Data Link



Run 4: Statistics of WebRTC media

Start at: 2018-12-11 10:48:03

End at: 2018-12-11 10:48:33

Local clock offset: 0.312 ms

Remote clock offset: 0.473 ms

Below is generated by plot.py at 2018-12-11 13:14:08

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.03 Mbit/s

95th percentile per-packet one-way delay: 85.957 ms

Loss rate: 0.00%

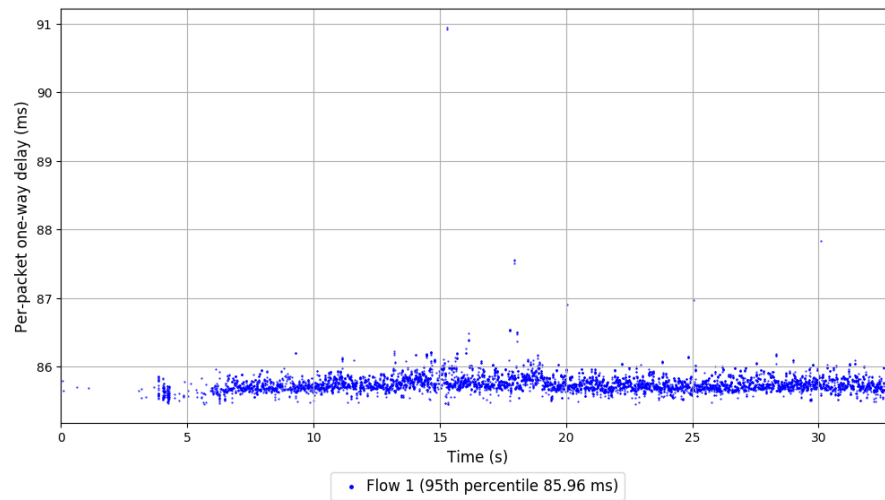
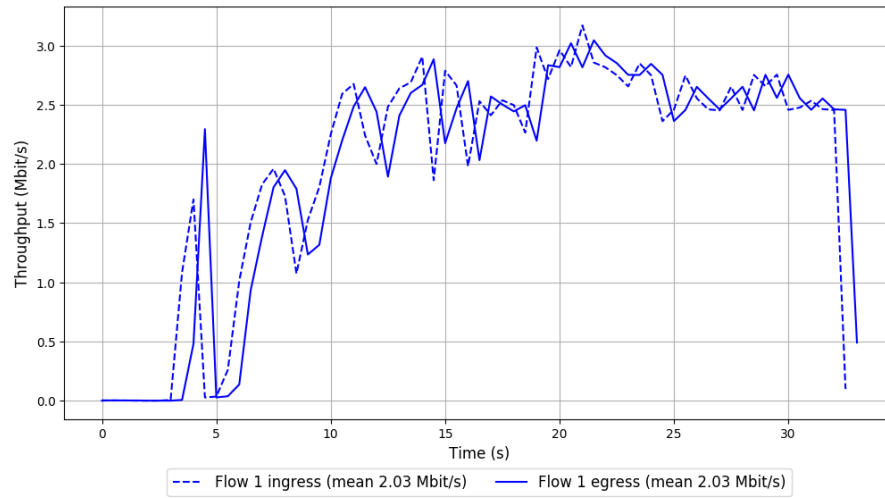
-- Flow 1:

Average throughput: 2.03 Mbit/s

95th percentile per-packet one-way delay: 85.957 ms

Loss rate: 0.00%

Run 4: Report of WebRTC media — Data Link



Run 5: Statistics of WebRTC media

Start at: 2018-12-11 11:16:47

End at: 2018-12-11 11:17:17

Local clock offset: -0.004 ms

Remote clock offset: 0.556 ms

Below is generated by plot.py at 2018-12-11 13:14:08

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.96 Mbit/s

95th percentile per-packet one-way delay: 86.231 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 1.96 Mbit/s

95th percentile per-packet one-way delay: 86.231 ms

Loss rate: 0.00%

Run 5: Report of WebRTC media — Data Link

