

## Pantheon Report

Generated at 2018-08-27 20:26:19 (UTC).

Data path: AWS India 1 ens5 (*local*) → India ppp0 ppp0 (*remote*).

Repeated the test of 17 congestion control schemes 3 times.

Each test lasted for 30 seconds running 1 flow.

NTP offsets were measured against **nets.org.sg** and have been applied to correct the timestamps in logs.

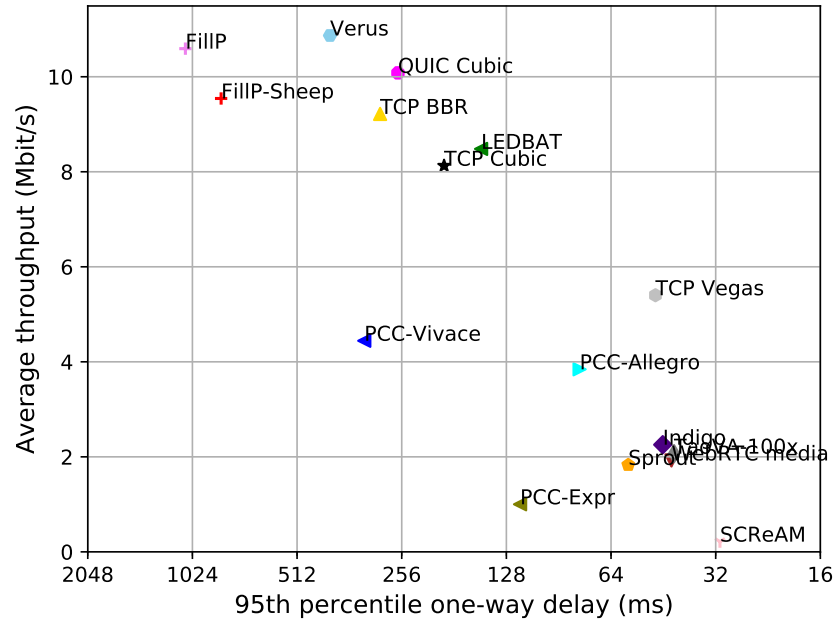
### System info:

```
Linux 4.15.0-1019-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
```

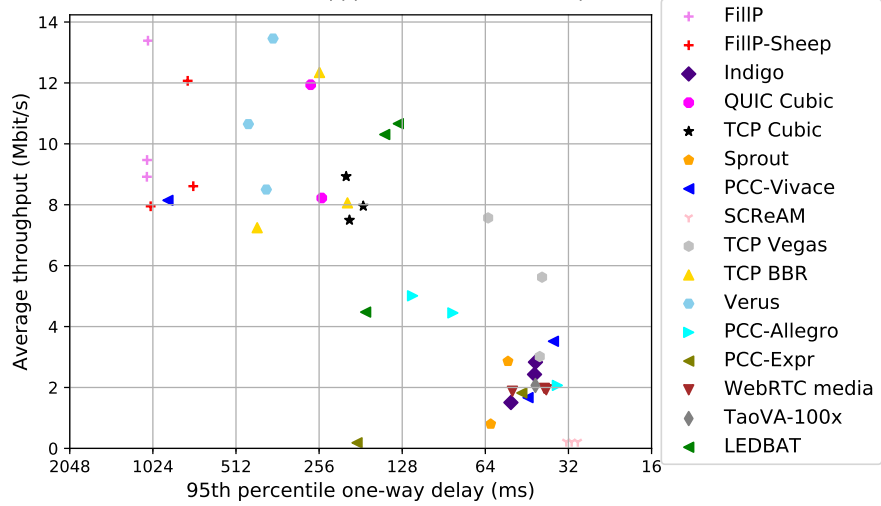
### Git summary:

```
branch: master @ 8f31687904b612ba36b45467ab20eda73108da68
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfef58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ 5386469677b75a7fdc5fe25d8daccce7950d8a69
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-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
M src/ScreamClient
M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
M src/verus.hpp
M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

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



test from AWS India 1 to India ppp0, 3 runs of 30s each per scheme



| scheme       | # runs | mean avg tput (Mbit/s)<br>flow 1 | mean 95th-%ile delay (ms)<br>flow 1 | mean loss rate (%)<br>flow 1 |
|--------------|--------|----------------------------------|-------------------------------------|------------------------------|
| TCP BBR      | 3      | 9.22                             | 295.42                              | 0.52                         |
| Copa         | 0      | N/A                              | N/A                                 | N/A                          |
| TCP Cubic    | 3      | 8.13                             | 193.37                              | 0.31                         |
| FillP        | 3      | 10.59                            | 1072.67                             | 46.08                        |
| FillP-Sheep  | 3      | 9.54                             | 846.70                              | 10.01                        |
| Indigo       | 3      | 2.26                             | 45.44                               | 0.08                         |
| LEDBAT       | 3      | 8.48                             | 151.34                              | 0.29                         |
| PCC-Allegro  | 3      | 3.84                             | 78.80                               | 0.06                         |
| PCC-Expr     | 2      | 1.00                             | 116.91                              | 78.58                        |
| QUIC Cubic   | 2      | 10.08                            | 262.50                              | 0.72                         |
| SCReAM       | 3      | 0.22                             | 31.11                               | 0.13                         |
| Sprout       | 2      | 1.83                             | 57.10                               | 0.16                         |
| TaoVA-100x   | 1      | 2.07                             | 42.17                               | 54.59                        |
| TCP Vegas    | 3      | 5.40                             | 47.69                               | 0.05                         |
| Verus        | 3      | 10.87                            | 411.69                              | 1.93                         |
| PCC-Vivace   | 3      | 4.44                             | 328.11                              | 0.09                         |
| WebRTC media | 3      | 1.92                             | 42.89                               | 0.05                         |

Run 1: Statistics of TCP BBR

Start at: 2018-08-27 19:35:45

End at: 2018-08-27 19:36:15

Local clock offset: 3.1 ms

Remote clock offset: -3.765 ms

# Below is generated by plot.py at 2018-08-27 20:25:37

# Datalink statistics

-- Total of 1 flow:

Average throughput: 12.34 Mbit/s

95th percentile per-packet one-way delay: 255.161 ms

Loss rate: 0.37%

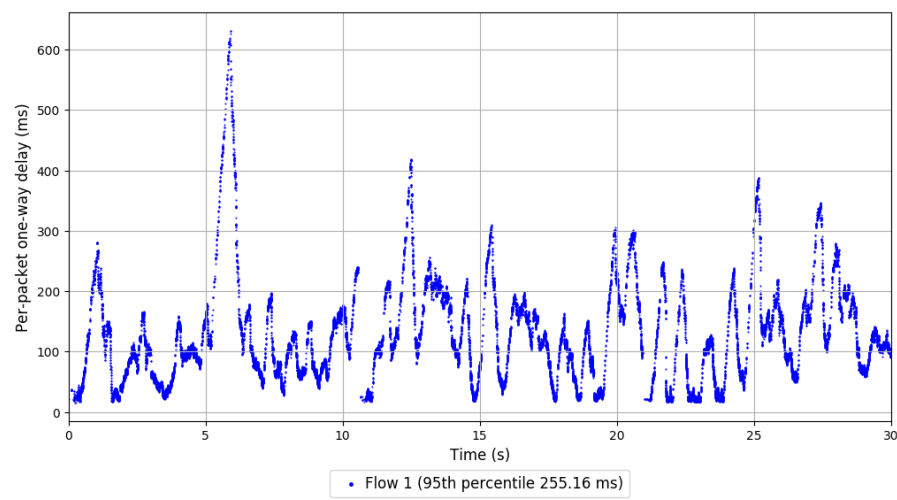
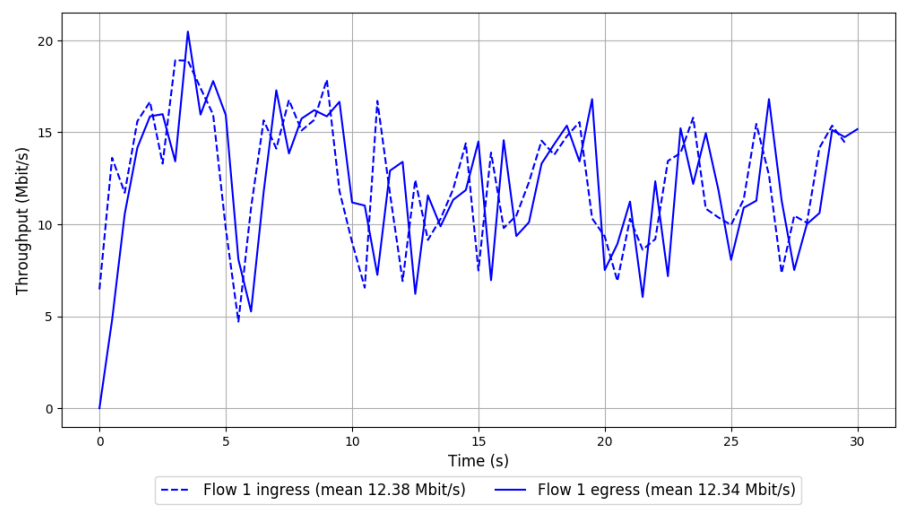
-- Flow 1:

Average throughput: 12.34 Mbit/s

95th percentile per-packet one-way delay: 255.161 ms

Loss rate: 0.37%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-08-27 19:54:20

End at: 2018-08-27 19:54:50

Local clock offset: 0.447 ms

Remote clock offset: -2.9 ms

# Below is generated by plot.py at 2018-08-27 20:25:37

# Datalink statistics

-- Total of 1 flow:

Average throughput: 8.06 Mbit/s

95th percentile per-packet one-way delay: 202.082 ms

Loss rate: 0.38%

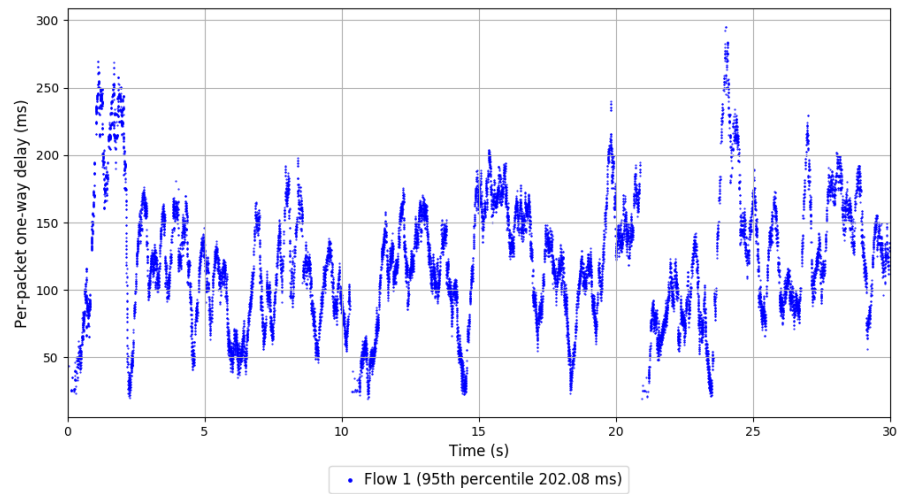
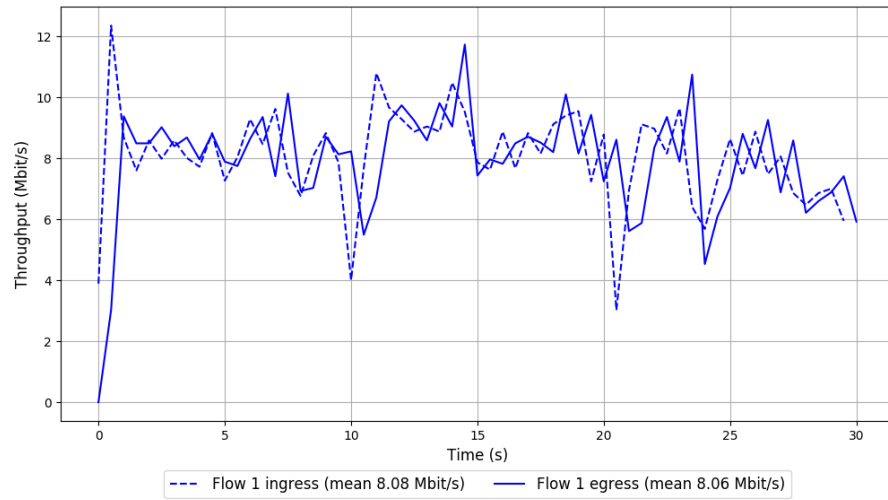
-- Flow 1:

Average throughput: 8.06 Mbit/s

95th percentile per-packet one-way delay: 202.082 ms

Loss rate: 0.38%

## Run 2: Report of TCP BBR — Data Link

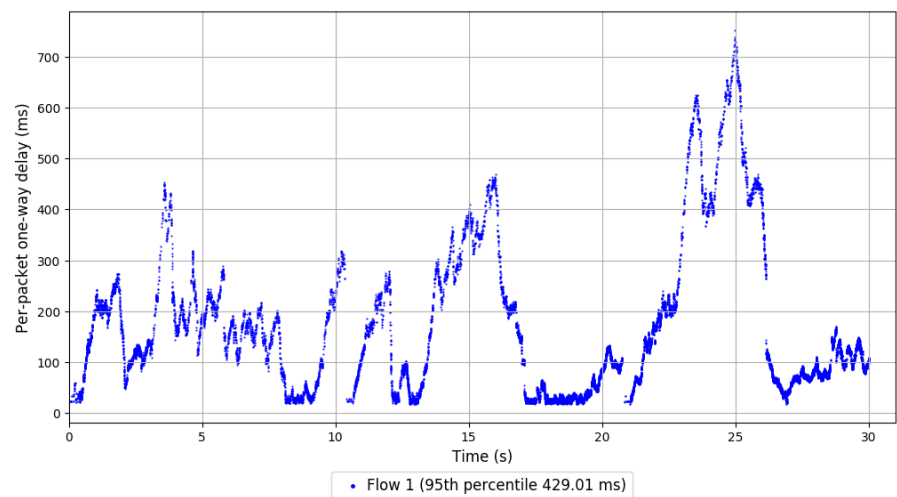
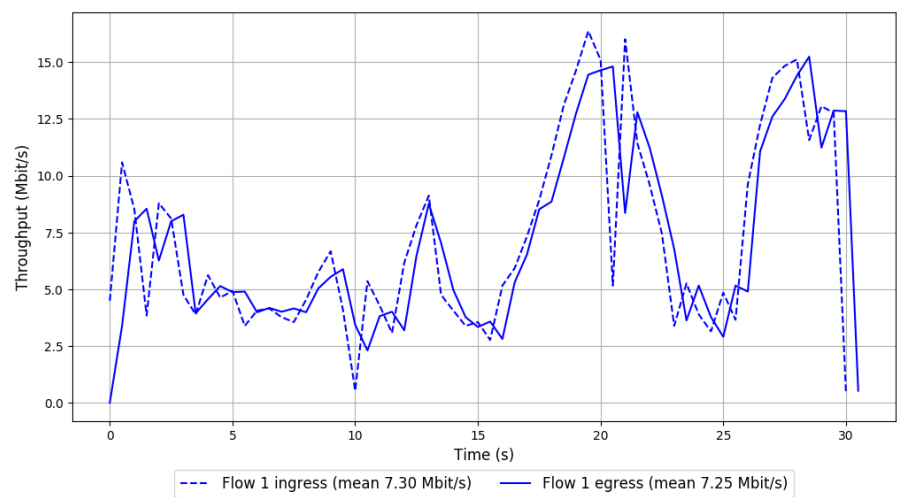


Run 3: Statistics of TCP BBR

Start at: 2018-08-27 20:12:48  
End at: 2018-08-27 20:13:18  
Local clock offset: 0.499 ms  
Remote clock offset: -3.119 ms

# Below is generated by plot.py at 2018-08-27 20:25:37  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 7.25 Mbit/s  
95th percentile per-packet one-way delay: 429.013 ms  
Loss rate: 0.80%  
-- Flow 1:  
Average throughput: 7.25 Mbit/s  
95th percentile per-packet one-way delay: 429.013 ms  
Loss rate: 0.80%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of Copa

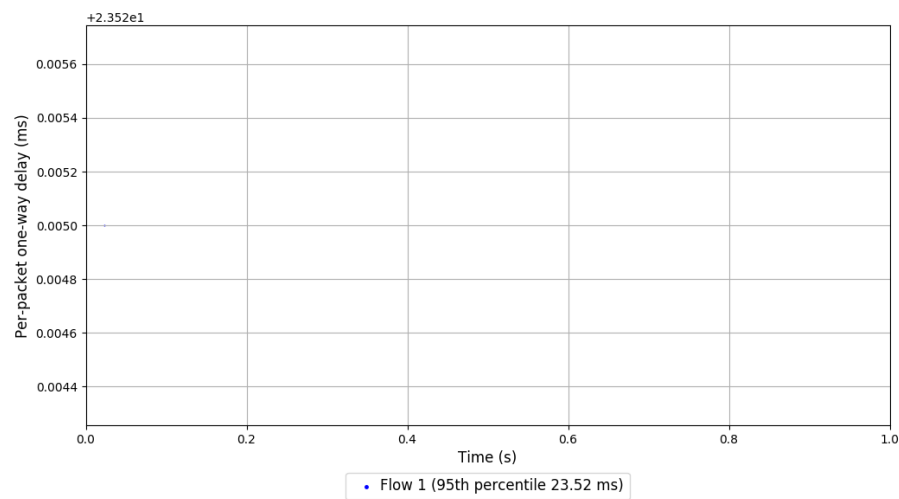
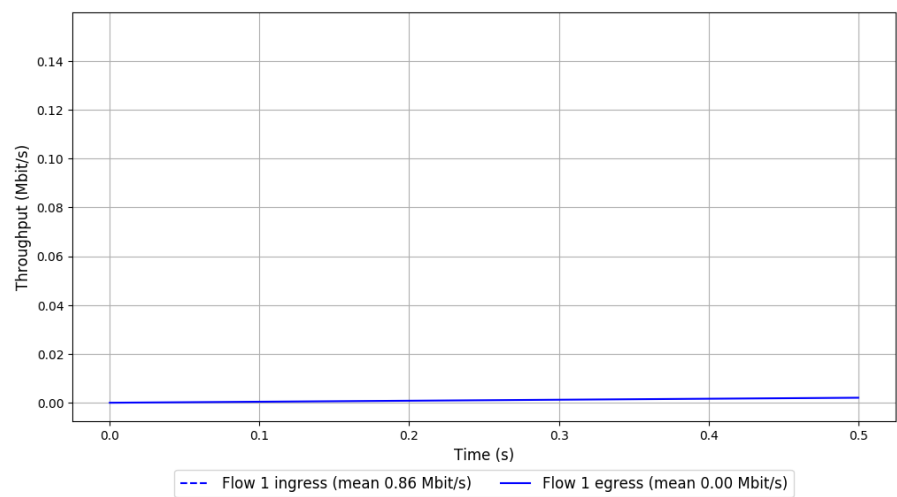
Start at: 2018-08-27 19:40:04

End at: 2018-08-27 19:40:34

Local clock offset: -0.194 ms

Remote clock offset: -2.457 ms

Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

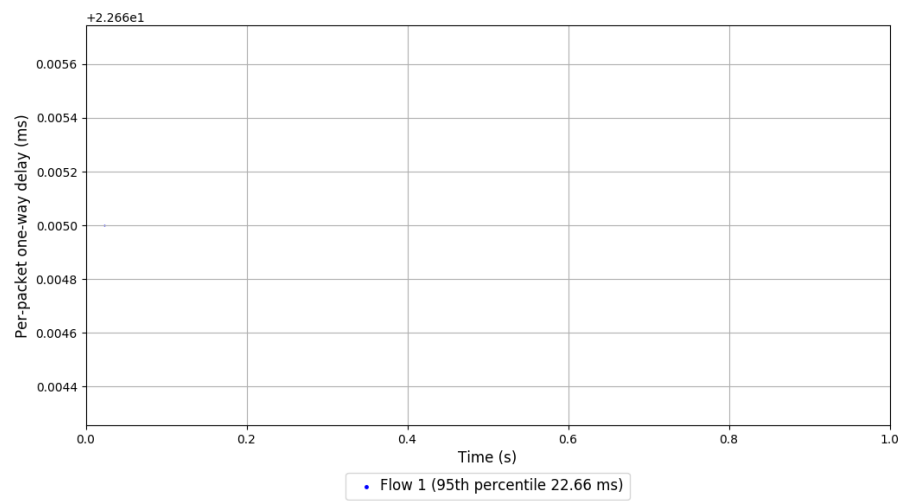
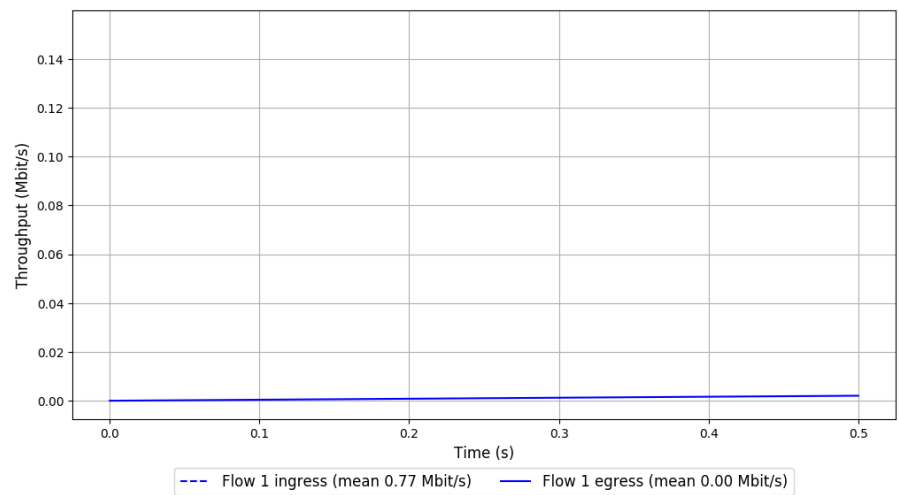
Start at: 2018-08-27 19:58:39

End at: 2018-08-27 19:59:10

Local clock offset: -0.423 ms

Remote clock offset: -2.71 ms

Run 2: Report of Copa — Data Link



Run 3: Statistics of Copa

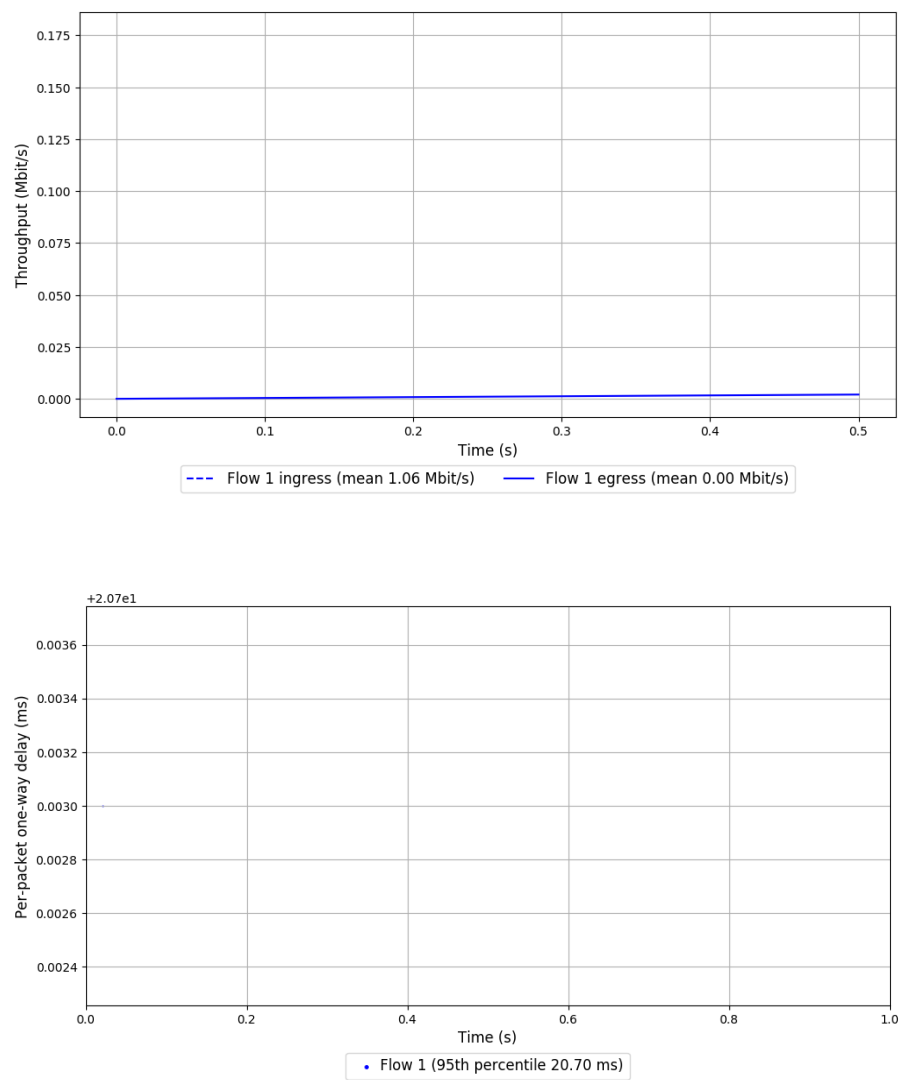
Start at: 2018-08-27 20:17:13

End at: 2018-08-27 20:17:43

Local clock offset: -0.196 ms

Remote clock offset: -3.308 ms

Run 3: Report of Copa — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-08-27 19:32:31

End at: 2018-08-27 19:33:01

Local clock offset: 6.204 ms

Remote clock offset: -3.7 ms

# Below is generated by plot.py at 2018-08-27 20:25:37

# Datalink statistics

-- Total of 1 flow:

Average throughput: 8.93 Mbit/s

95th percentile per-packet one-way delay: 204.264 ms

Loss rate: 0.25%

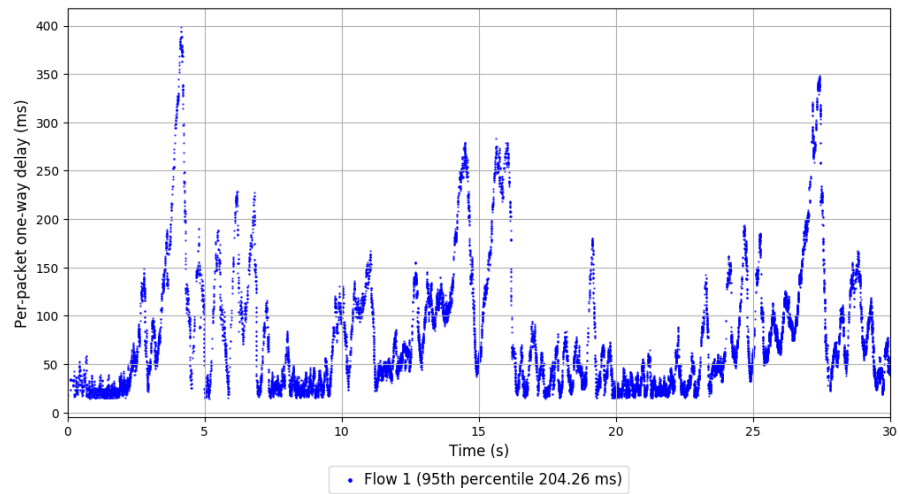
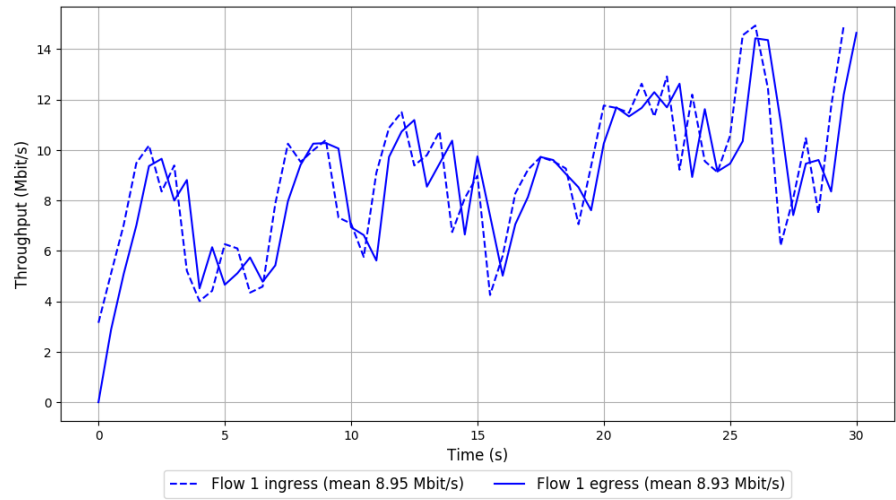
-- Flow 1:

Average throughput: 8.93 Mbit/s

95th percentile per-packet one-way delay: 204.264 ms

Loss rate: 0.25%

## Run 1: Report of TCP Cubic — Data Link

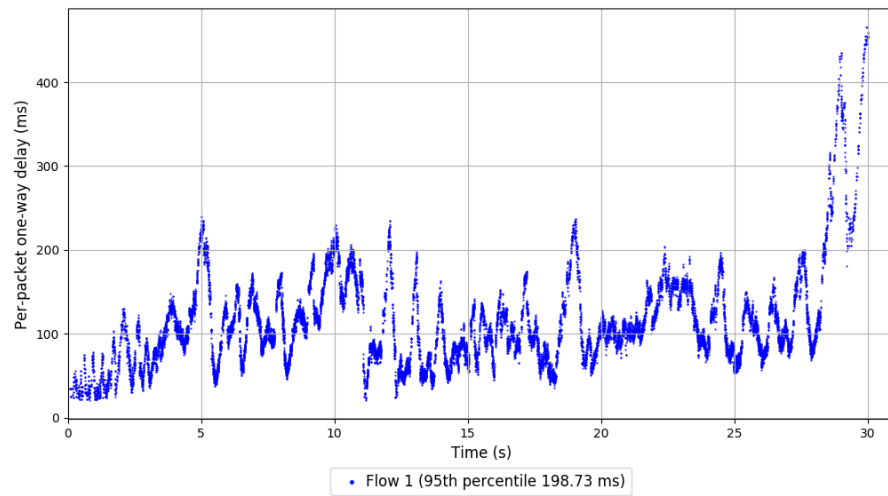
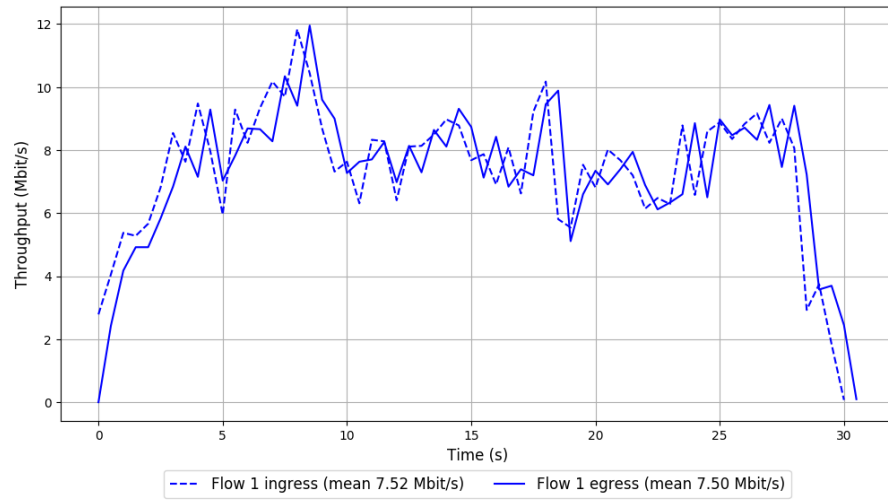


Run 2: Statistics of TCP Cubic

Start at: 2018-08-27 19:51:00  
End at: 2018-08-27 19:51:30  
Local clock offset: -0.905 ms  
Remote clock offset: -3.339 ms

# Below is generated by plot.py at 2018-08-27 20:25:37  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 7.50 Mbit/s  
95th percentile per-packet one-way delay: 198.730 ms  
Loss rate: 0.41%  
-- Flow 1:  
Average throughput: 7.50 Mbit/s  
95th percentile per-packet one-way delay: 198.730 ms  
Loss rate: 0.41%

## Run 2: Report of TCP Cubic — Data Link

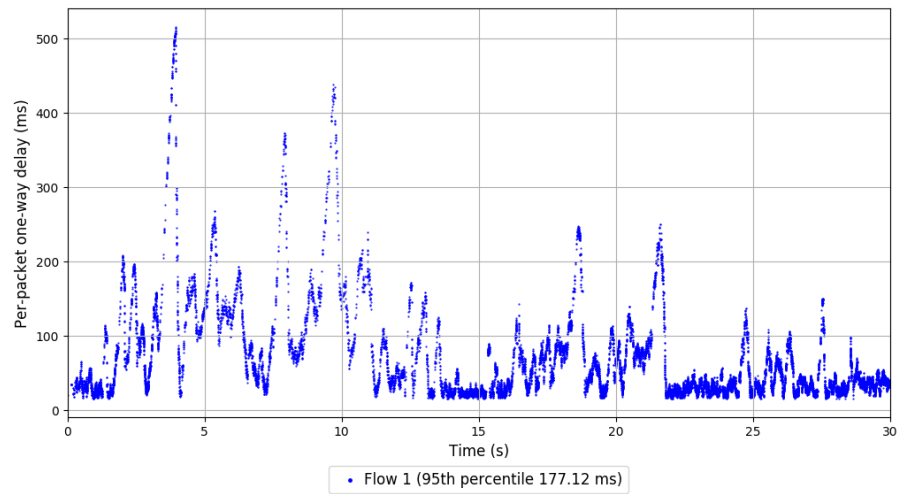
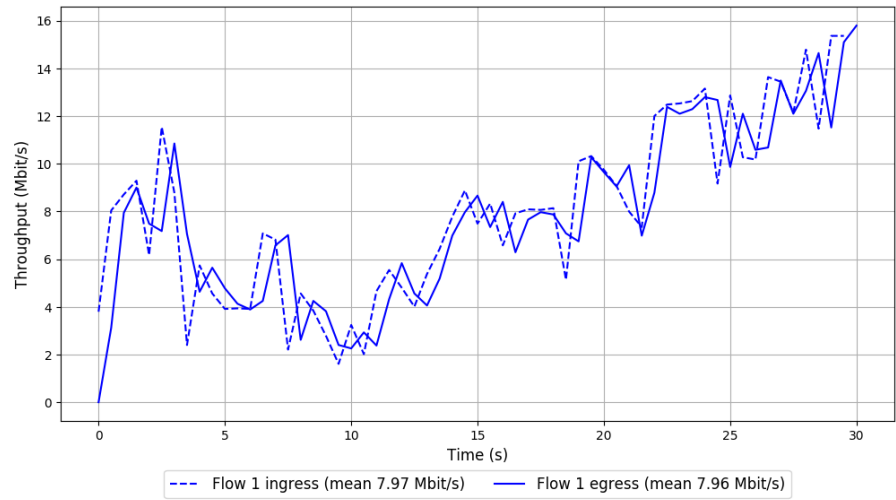


Run 3: Statistics of TCP Cubic

Start at: 2018-08-27 20:09:32  
End at: 2018-08-27 20:10:02  
Local clock offset: 2.857 ms  
Remote clock offset: -2.525 ms

# Below is generated by plot.py at 2018-08-27 20:25:37  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 7.96 Mbit/s  
95th percentile per-packet one-way delay: 177.125 ms  
Loss rate: 0.27%  
-- Flow 1:  
Average throughput: 7.96 Mbit/s  
95th percentile per-packet one-way delay: 177.125 ms  
Loss rate: 0.27%

### Run 3: Report of TCP Cubic — Data Link

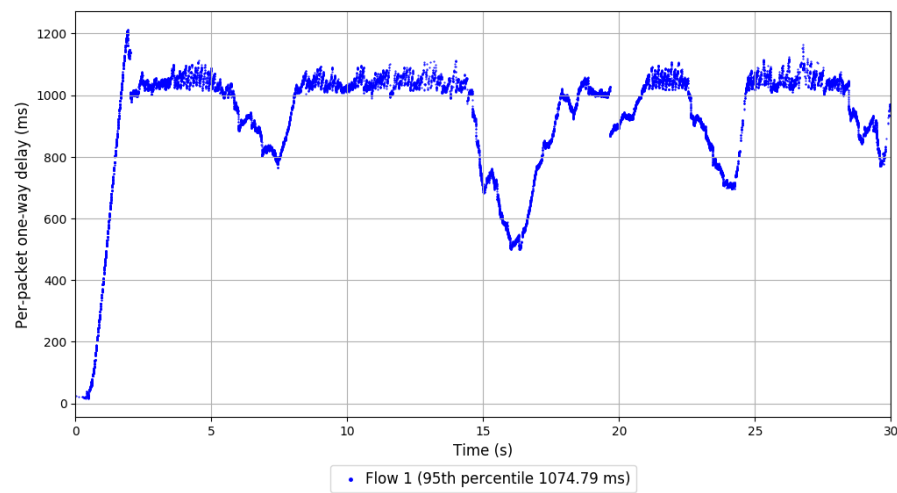
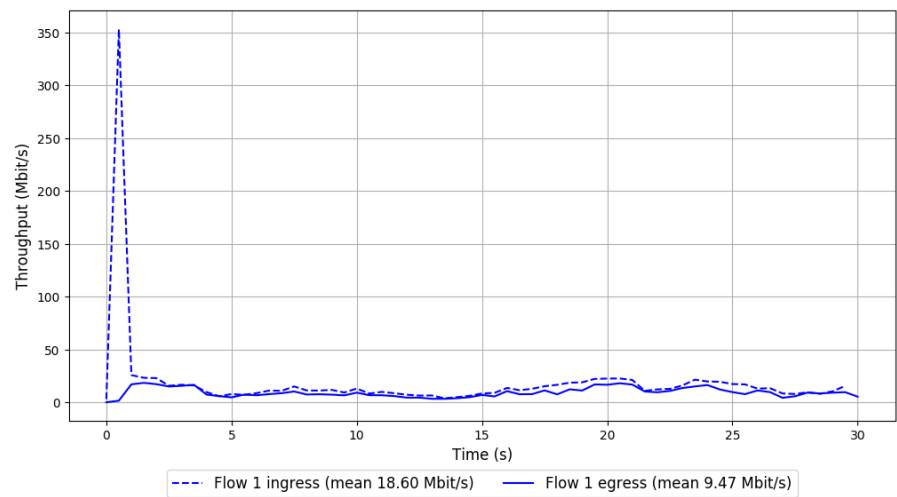


Run 1: Statistics of FillP

Start at: 2018-08-27 19:38:59  
End at: 2018-08-27 19:39:29  
Local clock offset: 4.975 ms  
Remote clock offset: -2.986 ms

# Below is generated by plot.py at 2018-08-27 20:25:42  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 9.47 Mbit/s  
95th percentile per-packet one-way delay: 1074.792 ms  
Loss rate: 49.13%  
-- Flow 1:  
Average throughput: 9.47 Mbit/s  
95th percentile per-packet one-way delay: 1074.792 ms  
Loss rate: 49.13%

Run 1: Report of FillP — Data Link

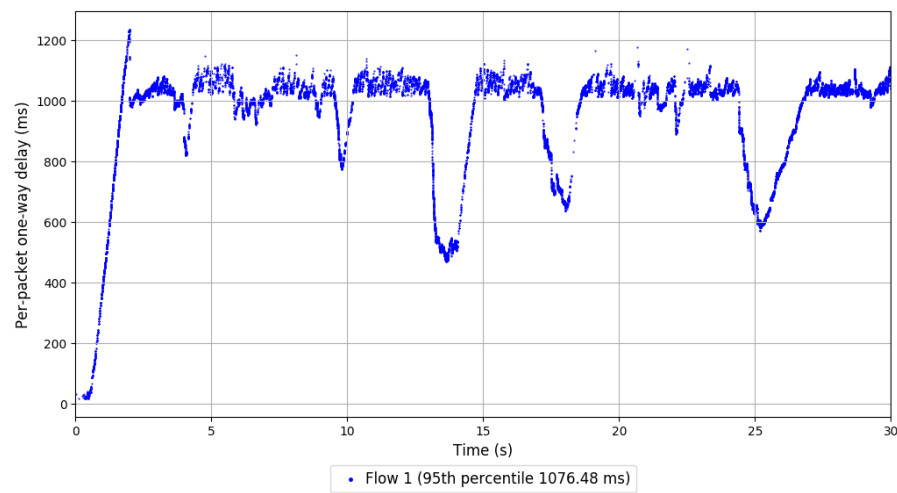
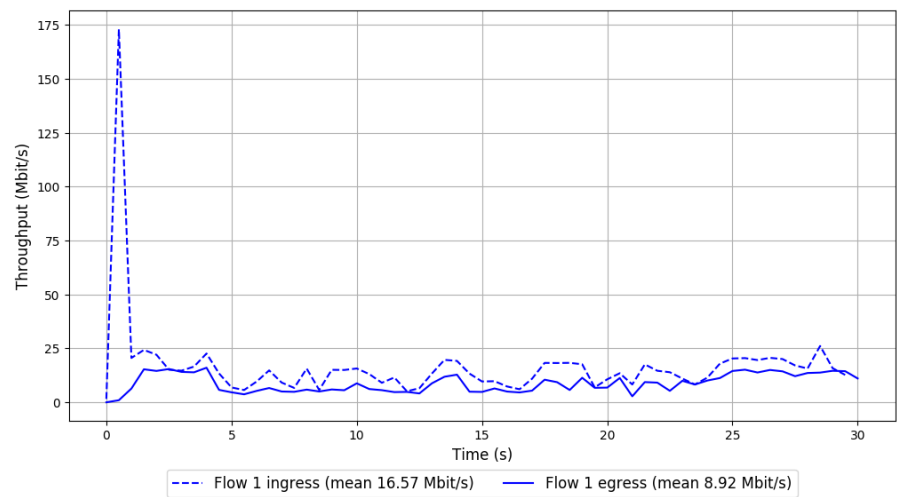


Run 2: Statistics of FillP

Start at: 2018-08-27 19:57:34  
End at: 2018-08-27 19:58:04  
Local clock offset: 1.564 ms  
Remote clock offset: -3.199 ms

# Below is generated by plot.py at 2018-08-27 20:25:42  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 8.92 Mbit/s  
95th percentile per-packet one-way delay: 1076.480 ms  
Loss rate: 46.23%  
-- Flow 1:  
Average throughput: 8.92 Mbit/s  
95th percentile per-packet one-way delay: 1076.480 ms  
Loss rate: 46.23%

Run 2: Report of FillP — Data Link

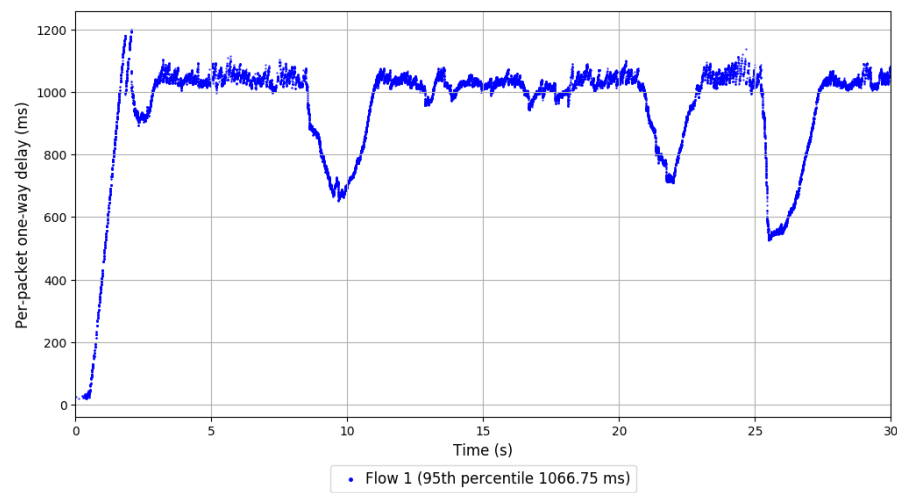
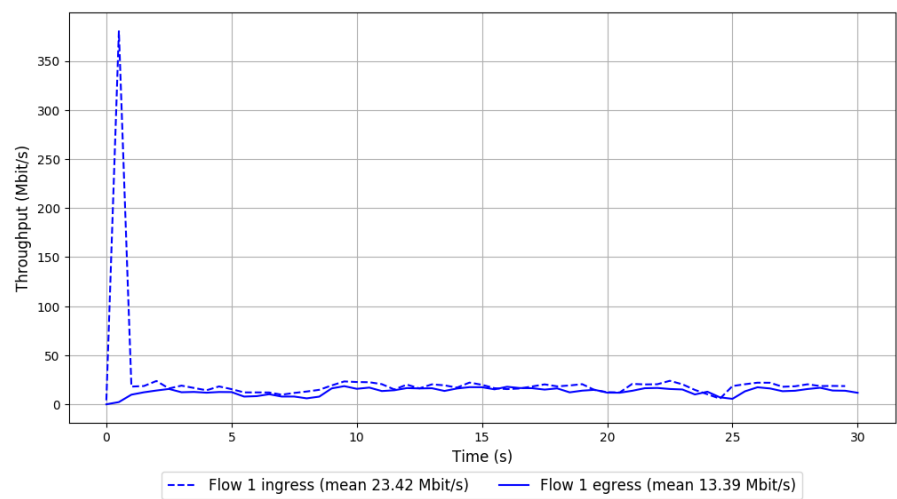


Run 3: Statistics of FillP

Start at: 2018-08-27 20:16:02  
End at: 2018-08-27 20:16:32  
Local clock offset: -0.474 ms  
Remote clock offset: -2.657 ms

# Below is generated by plot.py at 2018-08-27 20:26:00  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 13.39 Mbit/s  
95th percentile per-packet one-way delay: 1066.753 ms  
Loss rate: 42.87%  
-- Flow 1:  
Average throughput: 13.39 Mbit/s  
95th percentile per-packet one-way delay: 1066.753 ms  
Loss rate: 42.87%

Run 3: Report of FillP — Data Link

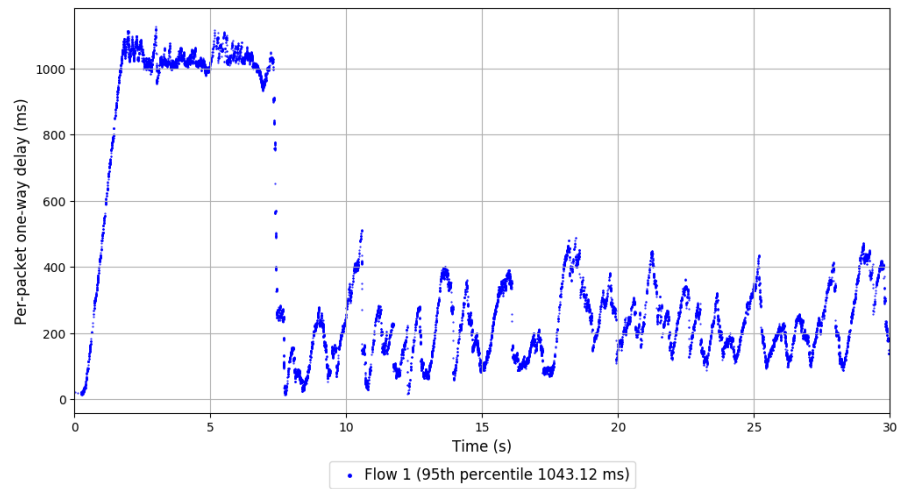
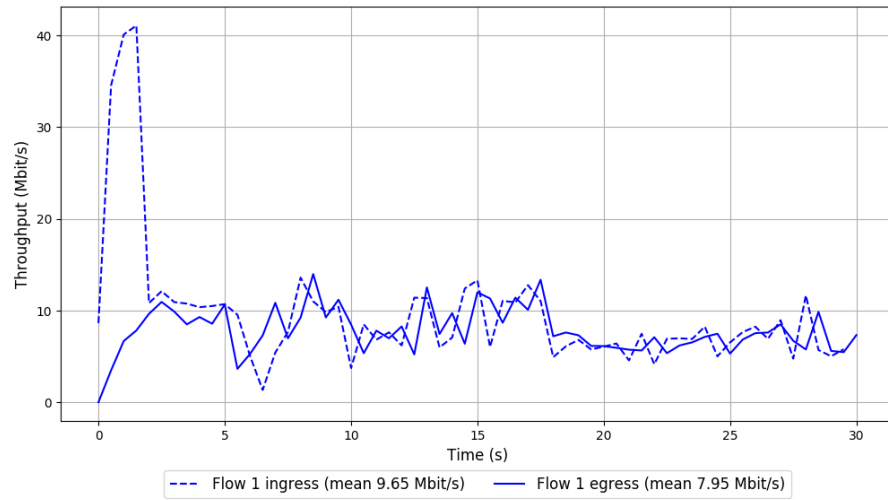


Run 1: Statistics of FillP-Sheep

Start at: 2018-08-27 19:33:36  
End at: 2018-08-27 19:34:06  
Local clock offset: 6.007 ms  
Remote clock offset: -3.169 ms

# Below is generated by plot.py at 2018-08-27 20:26:00  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 7.95 Mbit/s  
95th percentile per-packet one-way delay: 1043.124 ms  
Loss rate: 17.64%  
-- Flow 1:  
Average throughput: 7.95 Mbit/s  
95th percentile per-packet one-way delay: 1043.124 ms  
Loss rate: 17.64%

### Run 1: Report of FillP-Sheep — Data Link

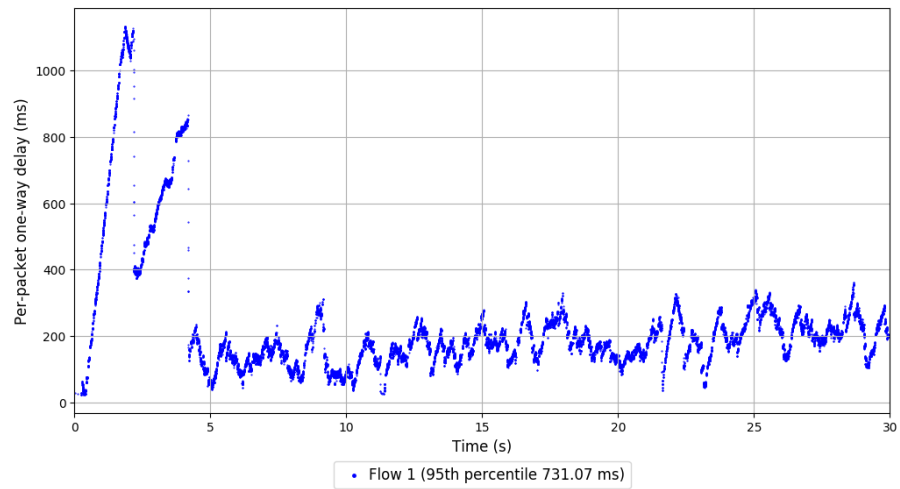
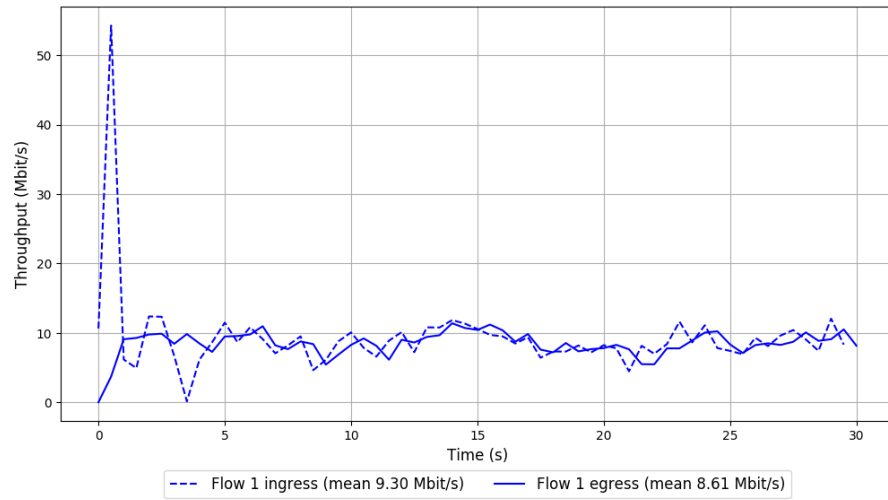


Run 2: Statistics of FillP-Sheep

Start at: 2018-08-27 19:52:10  
End at: 2018-08-27 19:52:40  
Local clock offset: -1.079 ms  
Remote clock offset: -2.786 ms

# Below is generated by plot.py at 2018-08-27 20:26:00  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 8.61 Mbit/s  
95th percentile per-packet one-way delay: 731.074 ms  
Loss rate: 7.62%  
-- Flow 1:  
Average throughput: 8.61 Mbit/s  
95th percentile per-packet one-way delay: 731.074 ms  
Loss rate: 7.62%

## Run 2: Report of FillP-Sheep — Data Link

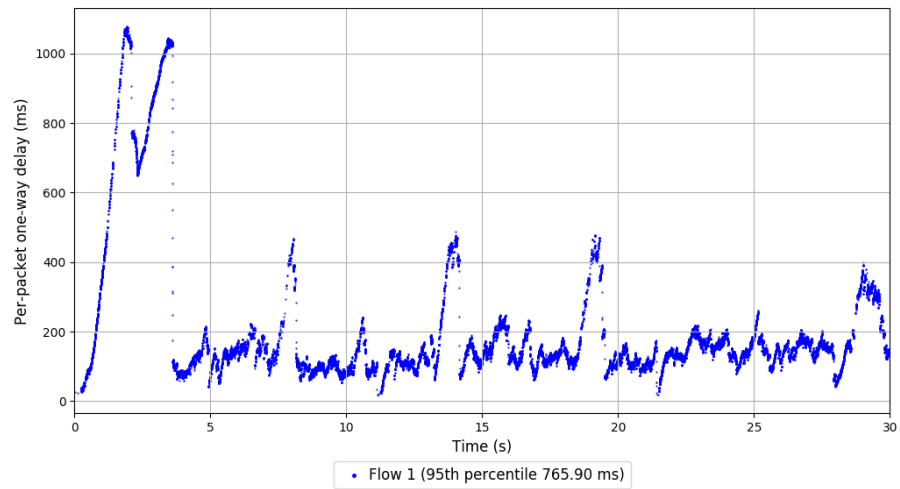
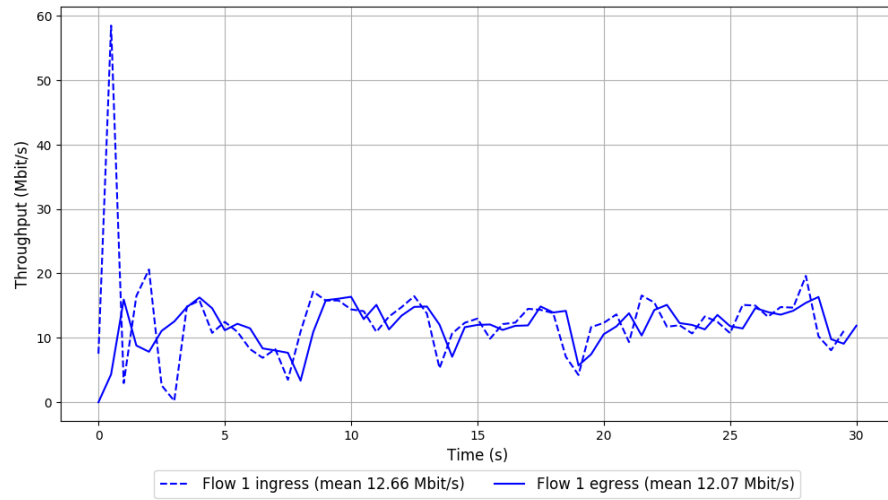


Run 3: Statistics of FillP-Sheep

Start at: 2018-08-27 20:10:37  
End at: 2018-08-27 20:11:07  
Local clock offset: 0.426 ms  
Remote clock offset: -2.706 ms

# Below is generated by plot.py at 2018-08-27 20:26:00  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 12.07 Mbit/s  
95th percentile per-packet one-way delay: 765.904 ms  
Loss rate: 4.76%  
-- Flow 1:  
Average throughput: 12.07 Mbit/s  
95th percentile per-packet one-way delay: 765.904 ms  
Loss rate: 4.76%

### Run 3: Report of FillP-Sheep — Data Link



Run 1: Statistics of Indigo

Start at: 2018-08-27 19:37:55

End at: 2018-08-27 19:38:25

Local clock offset: 3.423 ms

Remote clock offset: -2.465 ms

# Below is generated by plot.py at 2018-08-27 20:26:00

# Datalink statistics

-- Total of 1 flow:

Average throughput: 2.83 Mbit/s

95th percentile per-packet one-way delay: 42.138 ms

Loss rate: 0.01%

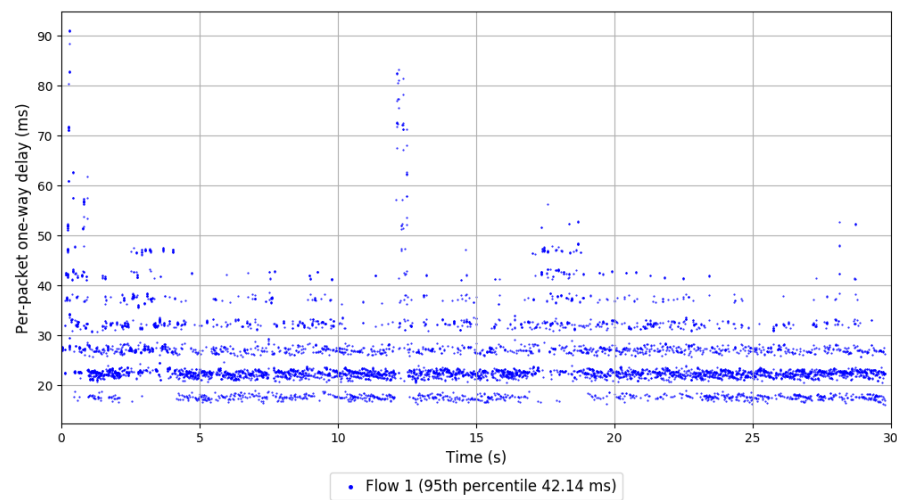
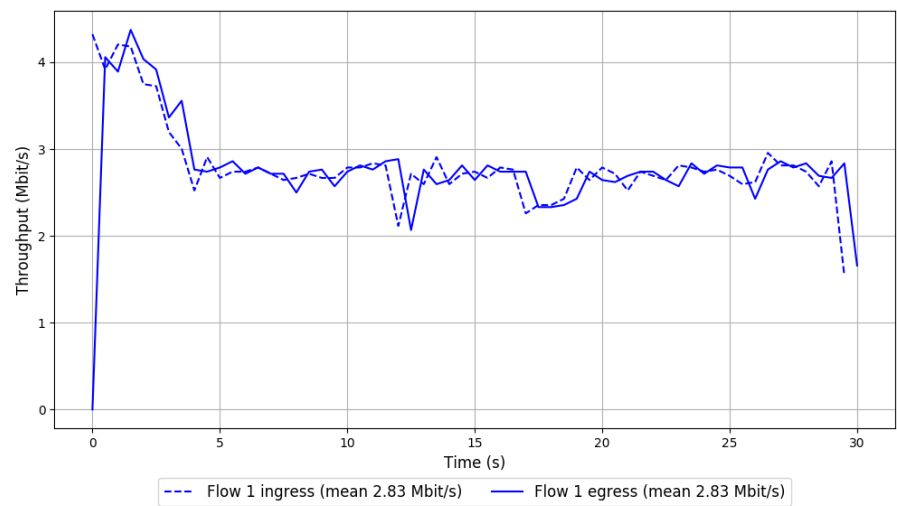
-- Flow 1:

Average throughput: 2.83 Mbit/s

95th percentile per-packet one-way delay: 42.138 ms

Loss rate: 0.01%

Run 1: Report of Indigo — Data Link

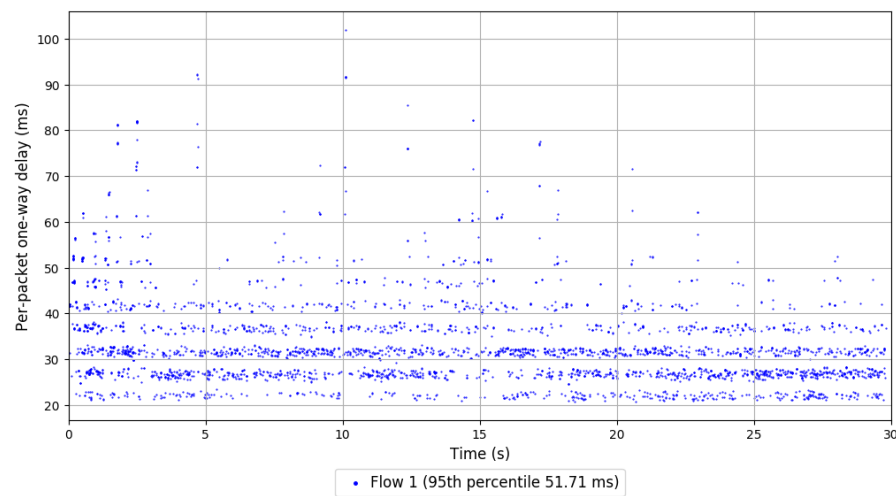
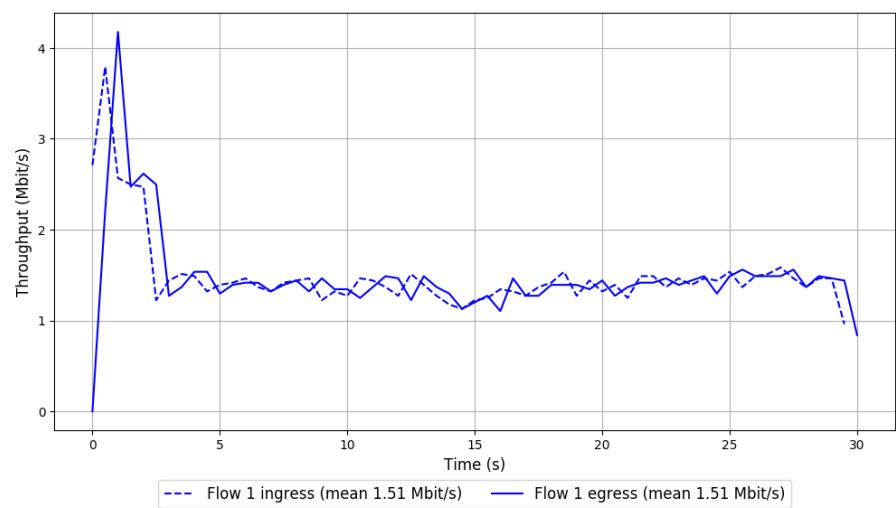


Run 2: Statistics of Indigo

Start at: 2018-08-27 19:56:30  
End at: 2018-08-27 19:57:00  
Local clock offset: -0.889 ms  
Remote clock offset: -2.515 ms

# Below is generated by plot.py at 2018-08-27 20:26:00  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 1.51 Mbit/s  
95th percentile per-packet one-way delay: 51.708 ms  
Loss rate: 0.21%  
-- Flow 1:  
Average throughput: 1.51 Mbit/s  
95th percentile per-packet one-way delay: 51.708 ms  
Loss rate: 0.21%

Run 2: Report of Indigo — Data Link

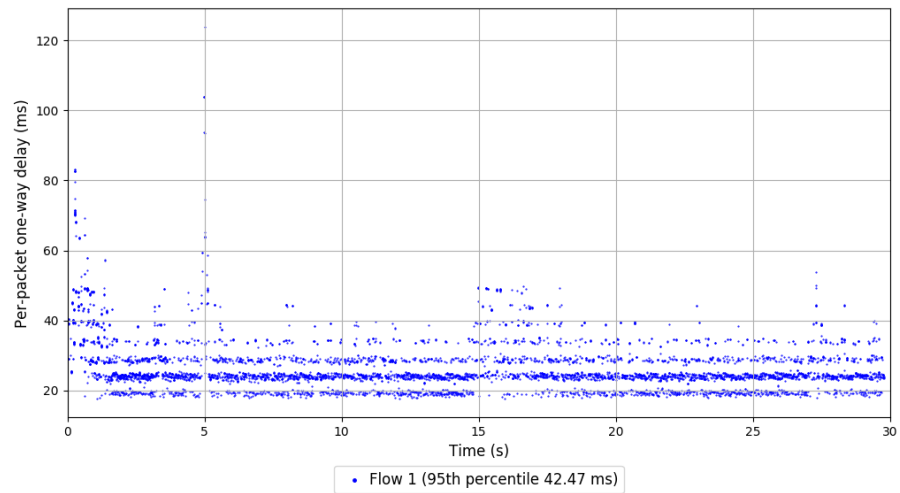
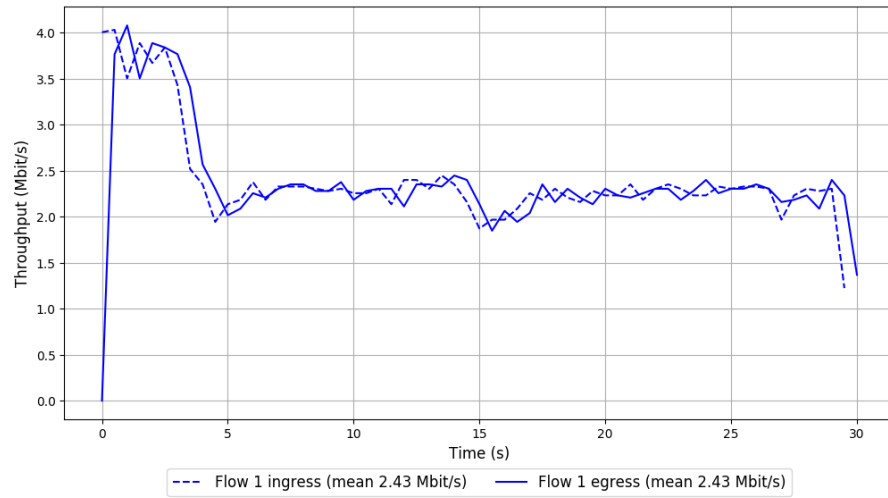


Run 3: Statistics of Indigo

Start at: 2018-08-27 20:14:57  
End at: 2018-08-27 20:15:27  
Local clock offset: 0.296 ms  
Remote clock offset: -2.981 ms

# Below is generated by plot.py at 2018-08-27 20:26:00  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 2.43 Mbit/s  
95th percentile per-packet one-way delay: 42.465 ms  
Loss rate: 0.02%  
-- Flow 1:  
Average throughput: 2.43 Mbit/s  
95th percentile per-packet one-way delay: 42.465 ms  
Loss rate: 0.02%

### Run 3: Report of Indigo — Data Link

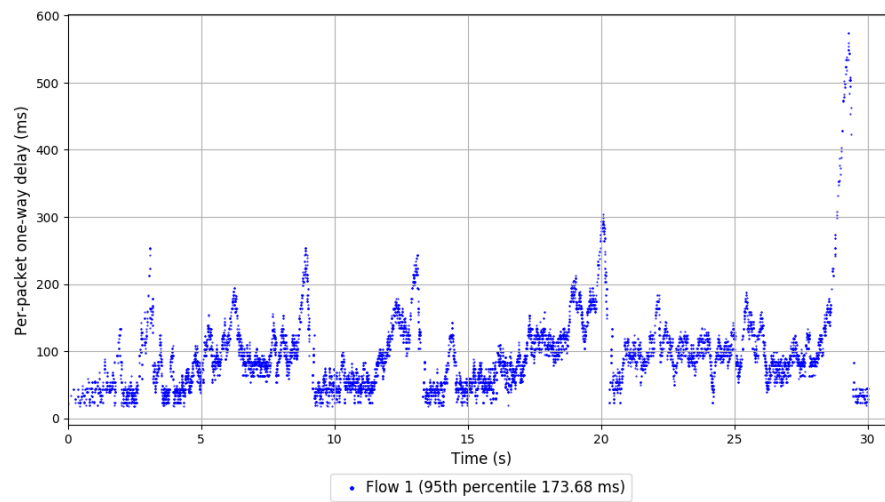
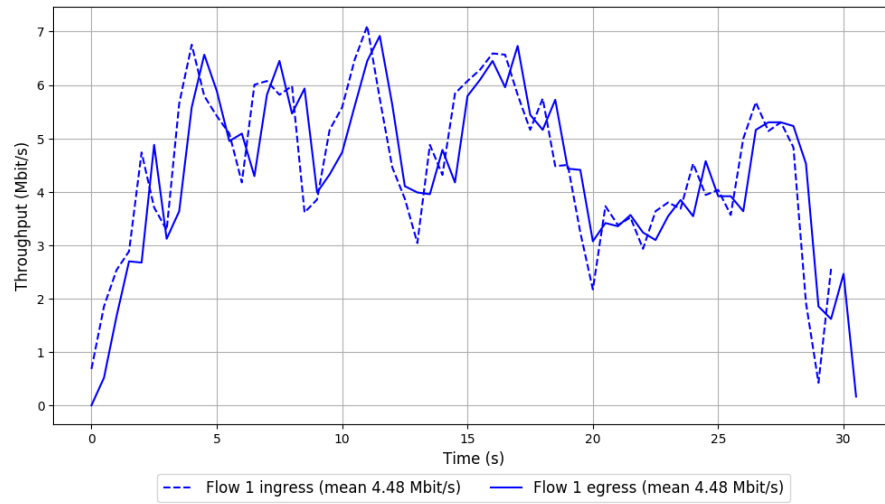


```
Run 1: Statistics of LEDBAT

Start at: 2018-08-27 19:45:30
End at: 2018-08-27 19:46:01
Local clock offset: 2.159 ms
Remote clock offset: -3.556 ms

# Below is generated by plot.py at 2018-08-27 20:26:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.48 Mbit/s
95th percentile per-packet one-way delay: 173.681 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 4.48 Mbit/s
95th percentile per-packet one-way delay: 173.681 ms
Loss rate: 0.07%
```

# Run 1: Report of LEDBAT — Data Link

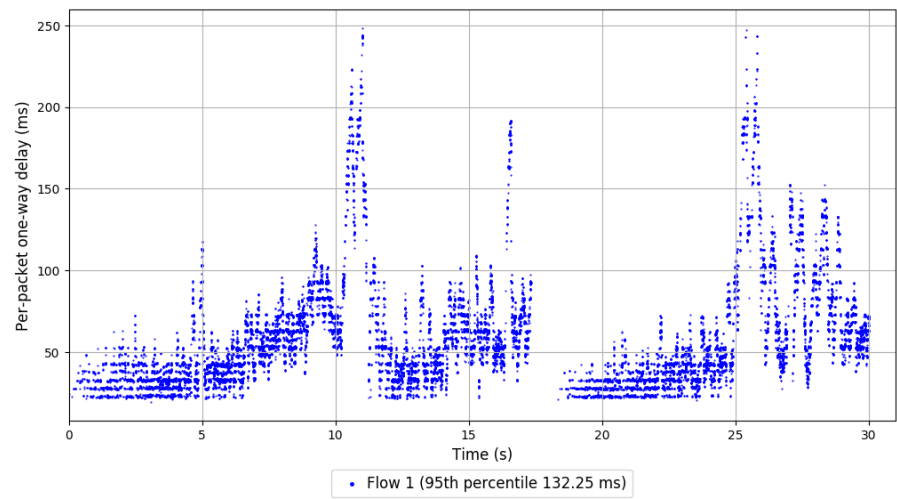
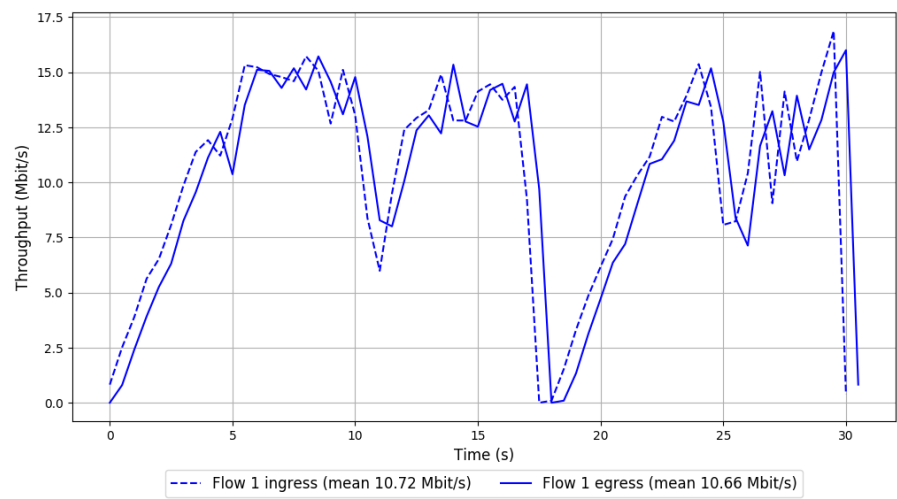


Run 2: Statistics of LEDBAT

Start at: 2018-08-27 20:04:07  
End at: 2018-08-27 20:04:37  
Local clock offset: -1.352 ms  
Remote clock offset: -3.569 ms

# Below is generated by plot.py at 2018-08-27 20:26:00  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 10.66 Mbit/s  
95th percentile per-packet one-way delay: 132.250 ms  
Loss rate: 0.62%  
-- Flow 1:  
Average throughput: 10.66 Mbit/s  
95th percentile per-packet one-way delay: 132.250 ms  
Loss rate: 0.62%

Run 2: Report of LEDBAT — Data Link

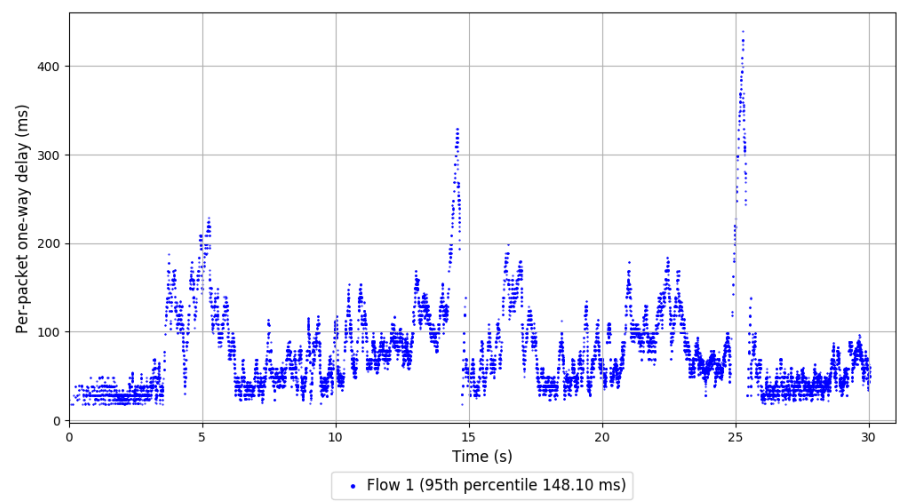
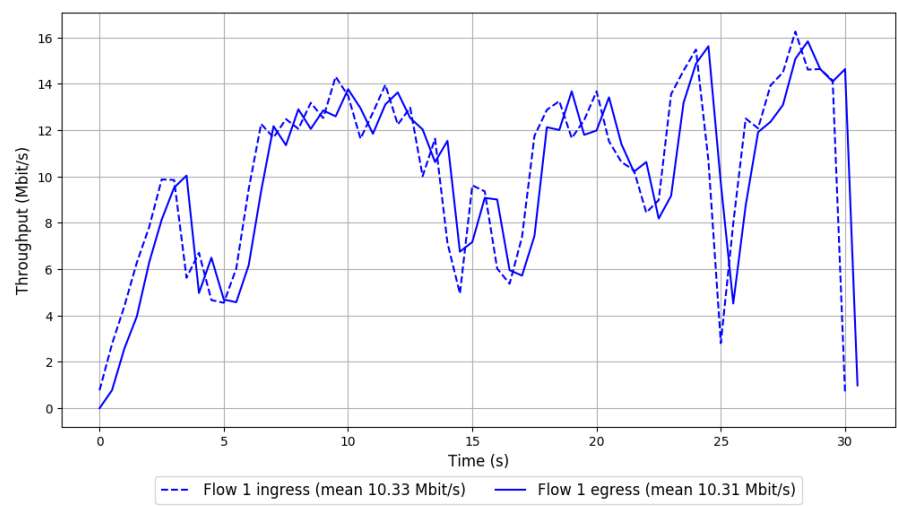


Run 3: Statistics of LEDBAT

Start at: 2018-08-27 20:22:36  
End at: 2018-08-27 20:23:06  
Local clock offset: -2.167 ms  
Remote clock offset: -3.332 ms

# Below is generated by plot.py at 2018-08-27 20:26:00  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 10.31 Mbit/s  
95th percentile per-packet one-way delay: 148.101 ms  
Loss rate: 0.19%  
-- Flow 1:  
Average throughput: 10.31 Mbit/s  
95th percentile per-packet one-way delay: 148.101 ms  
Loss rate: 0.19%

Run 3: Report of LEDBAT — Data Link

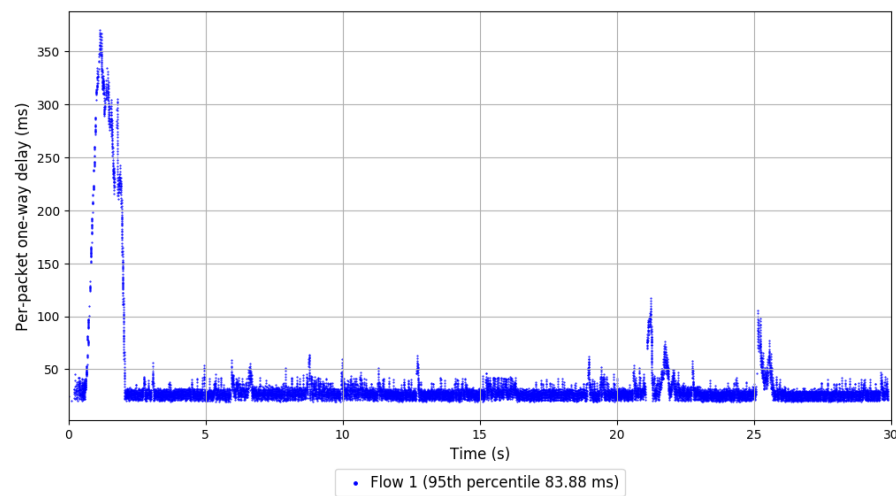
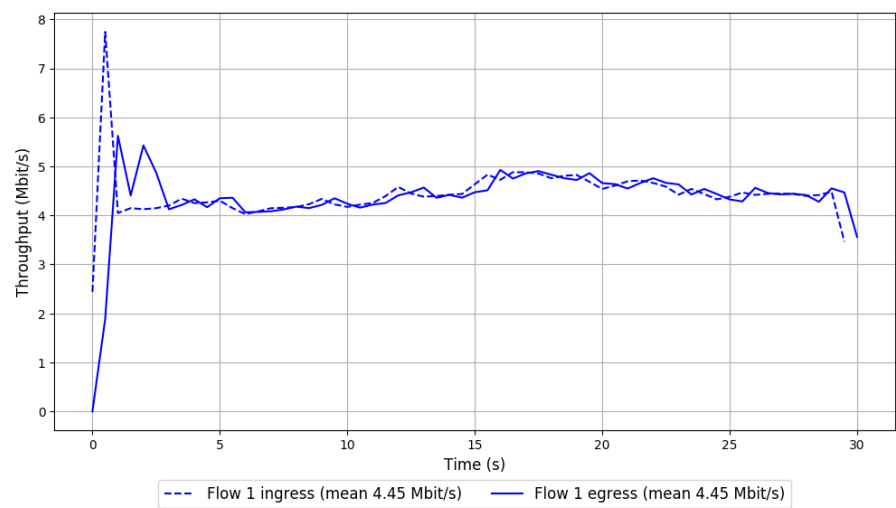


Run 1: Statistics of PCC-Allegro

Start at: 2018-08-27 19:44:21  
End at: 2018-08-27 19:44:51  
Local clock offset: -0.529 ms  
Remote clock offset: -2.841 ms

# Below is generated by plot.py at 2018-08-27 20:26:00  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 4.45 Mbit/s  
95th percentile per-packet one-way delay: 83.883 ms  
Loss rate: 0.08%  
-- Flow 1:  
Average throughput: 4.45 Mbit/s  
95th percentile per-packet one-way delay: 83.883 ms  
Loss rate: 0.08%

Run 1: Report of PCC-Allegro — Data Link



Run 2: Statistics of PCC-Allegro

Start at: 2018-08-27 20:03:02

End at: 2018-08-27 20:03:32

Local clock offset: -0.504 ms

Remote clock offset: -2.843 ms

# Below is generated by plot.py at 2018-08-27 20:26:00

# Datalink statistics

-- Total of 1 flow:

Average throughput: 5.01 Mbit/s

95th percentile per-packet one-way delay: 117.425 ms

Loss rate: 0.09%

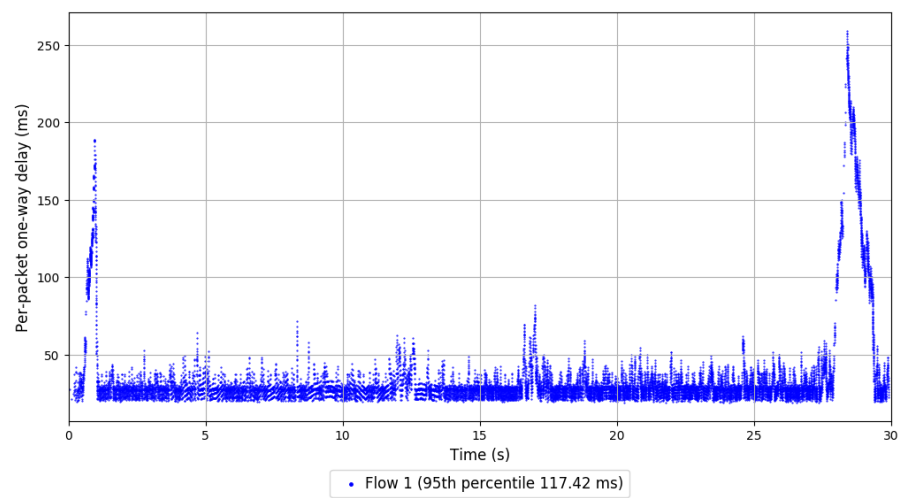
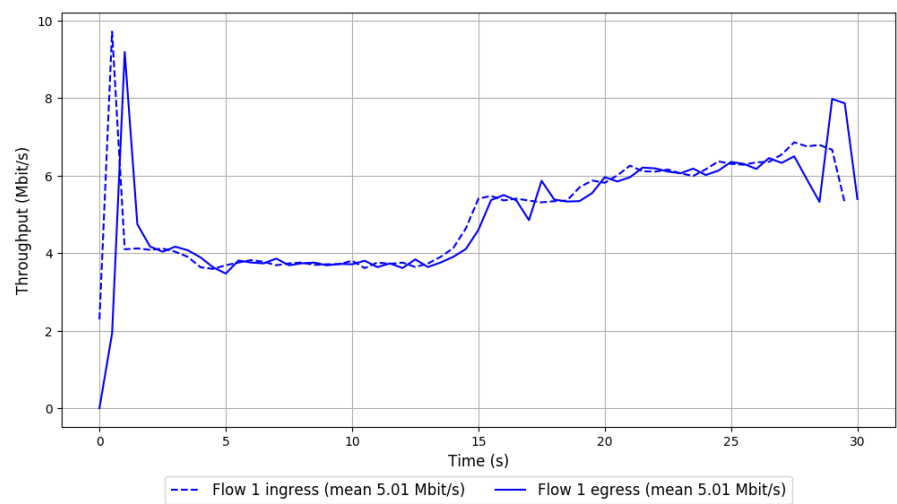
-- Flow 1:

Average throughput: 5.01 Mbit/s

95th percentile per-packet one-way delay: 117.425 ms

Loss rate: 0.09%

Run 2: Report of PCC-Allegro — Data Link



Run 3: Statistics of PCC-Allegro

Start at: 2018-08-27 20:21:32

End at: 2018-08-27 20:22:02

Local clock offset: -1.996 ms

Remote clock offset: -2.657 ms

# Below is generated by plot.py at 2018-08-27 20:26:00

# Datalink statistics

-- Total of 1 flow:

Average throughput: 2.07 Mbit/s

95th percentile per-packet one-way delay: 35.096 ms

Loss rate: 0.02%

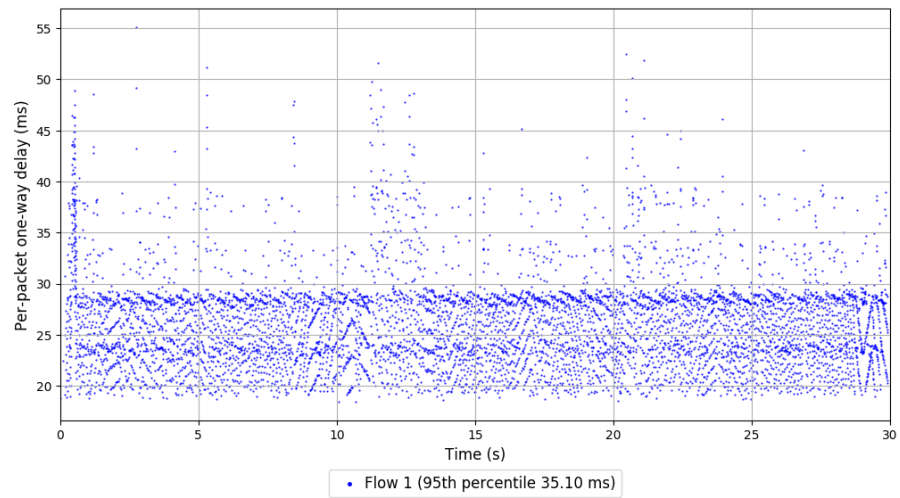
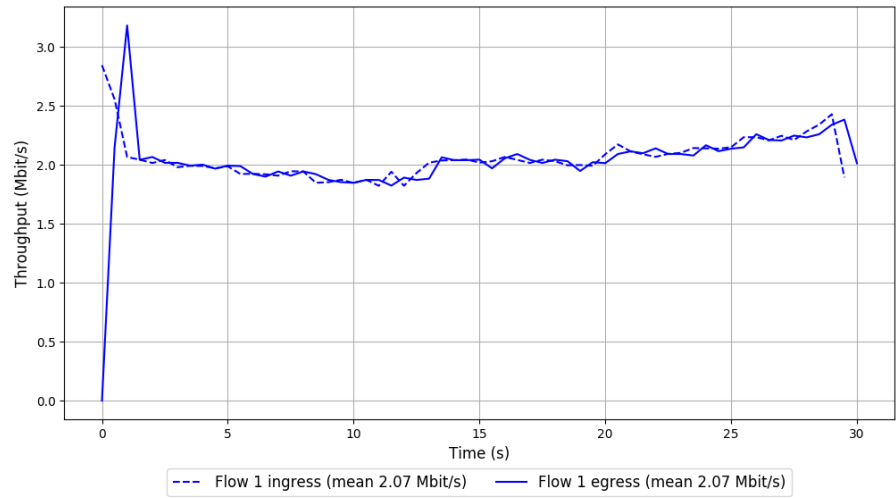
-- Flow 1:

Average throughput: 2.07 Mbit/s

95th percentile per-packet one-way delay: 35.096 ms

Loss rate: 0.02%

### Run 3: Report of PCC-Allegro — Data Link

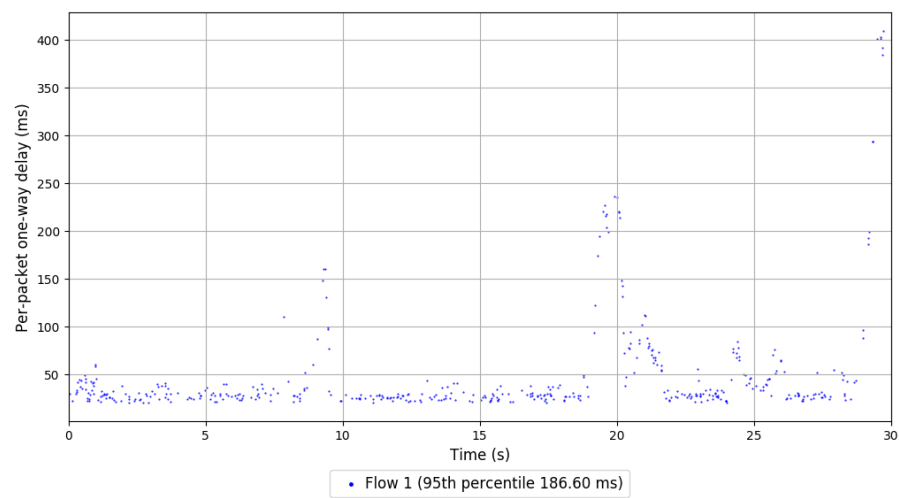
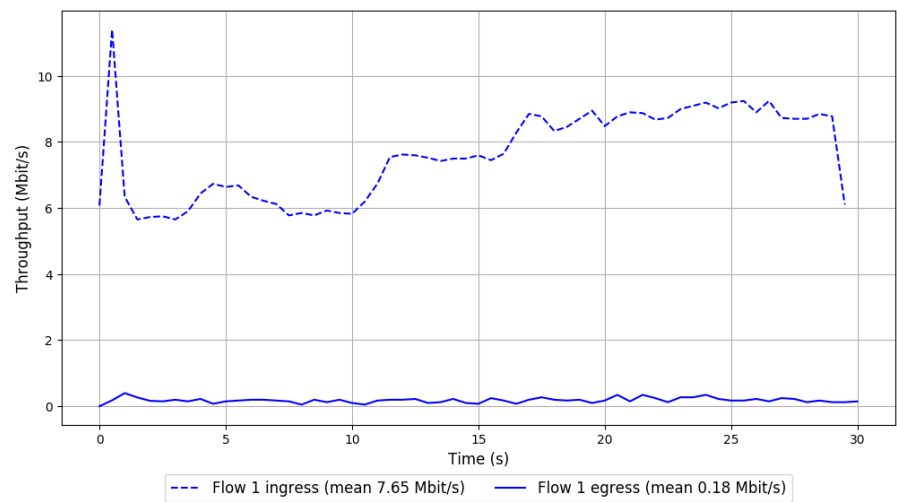


```
Run 1: Statistics of PCC-Expr

Start at: 2018-08-27 19:41:08
End at: 2018-08-27 19:41:38
Local clock offset: 0.243 ms
Remote clock offset: -3.399 ms

# Below is generated by plot.py at 2018-08-27 20:26:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 186.602 ms
Loss rate: 97.61%
-- Flow 1:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 186.602 ms
Loss rate: 97.61%
```

Run 1: Report of PCC-Expr — Data Link



Run 2: Statistics of PCC-Expr

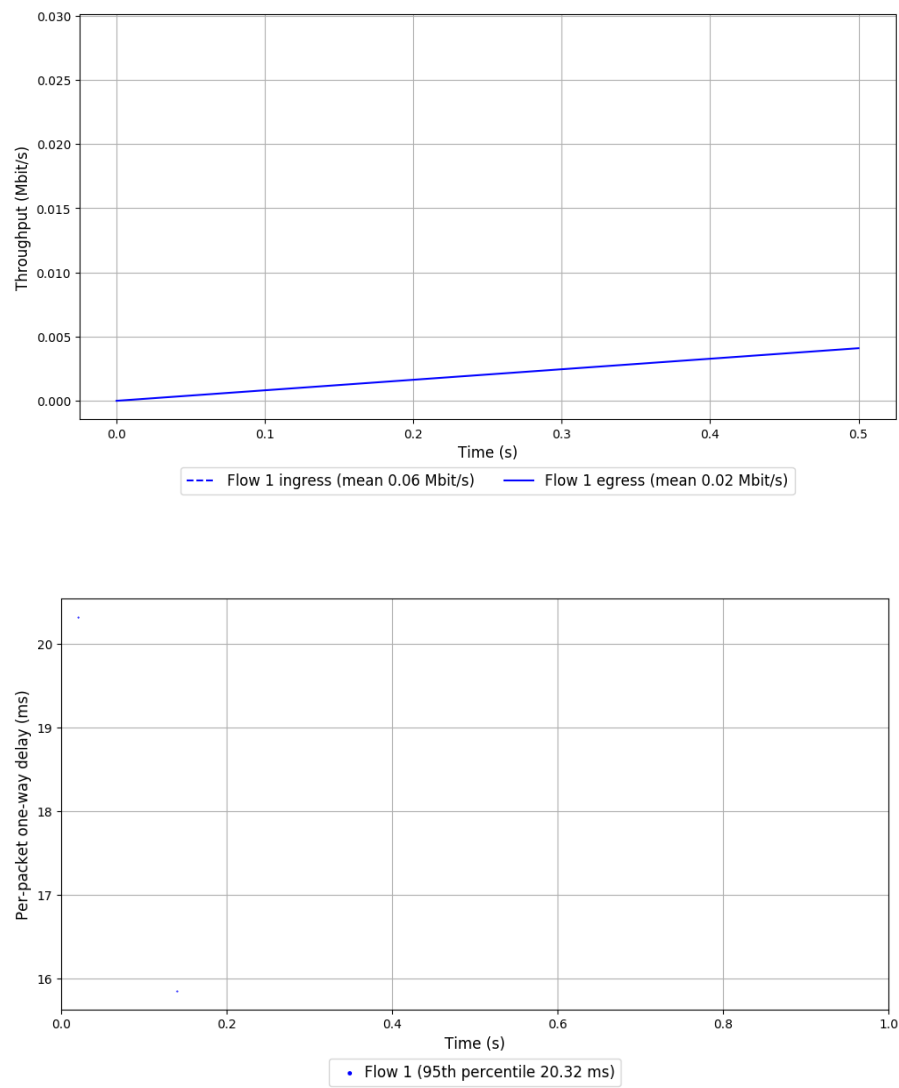
Start at: 2018-08-27 19:59:44

End at: 2018-08-27 20:00:14

Local clock offset: 4.153 ms

Remote clock offset: -3.289 ms

Run 2: Report of PCC-Expr — Data Link

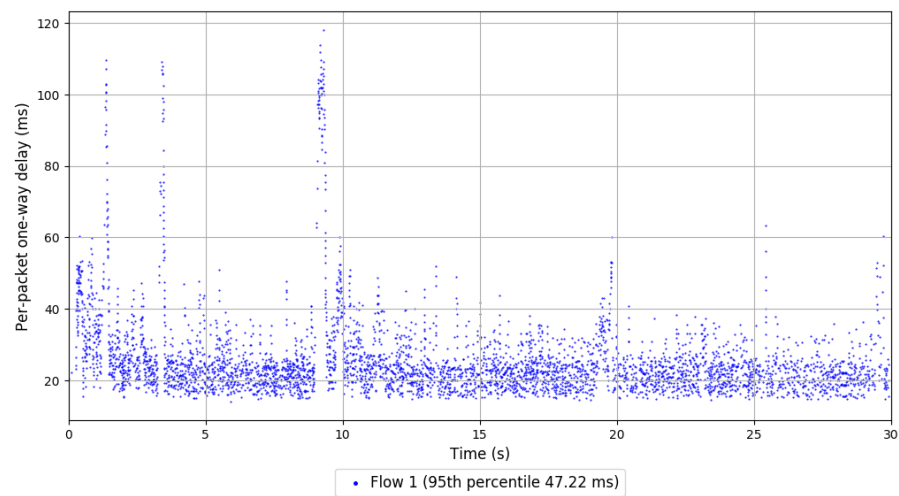
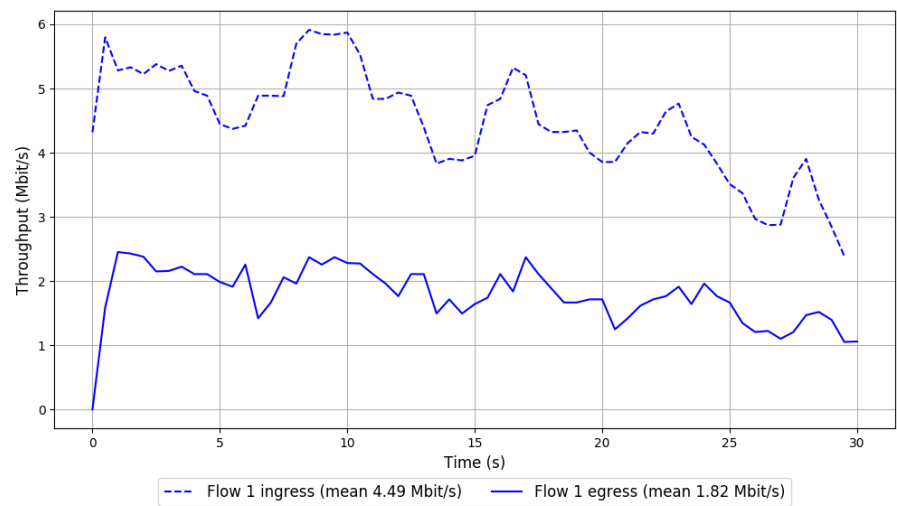


Run 3: Statistics of PCC-Expr

Start at: 2018-08-27 20:18:17  
End at: 2018-08-27 20:18:47  
Local clock offset: 2.785 ms  
Remote clock offset: -3.161 ms

# Below is generated by plot.py at 2018-08-27 20:26:00  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 1.82 Mbit/s  
95th percentile per-packet one-way delay: 47.221 ms  
Loss rate: 59.54%  
-- Flow 1:  
Average throughput: 1.82 Mbit/s  
95th percentile per-packet one-way delay: 47.221 ms  
Loss rate: 59.54%

Run 3: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

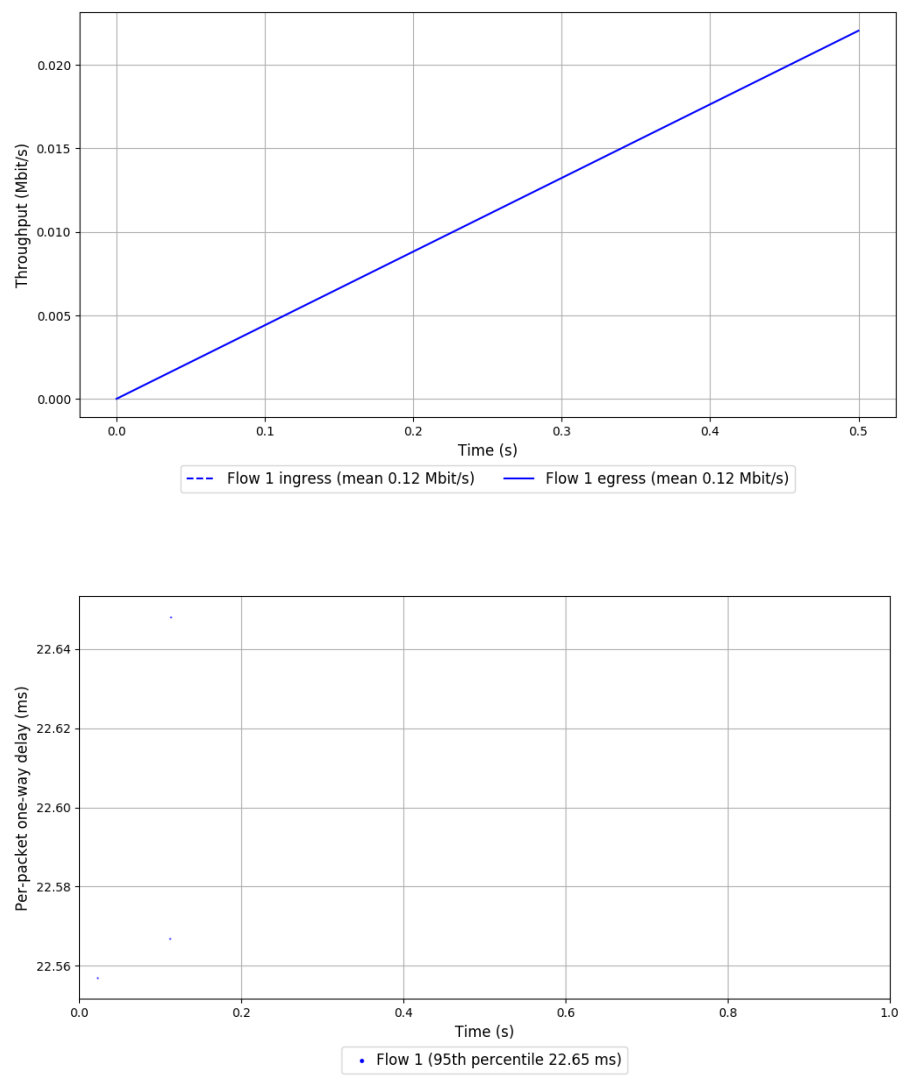
Start at: 2018-08-27 19:30:17

End at: 2018-08-27 19:30:47

Local clock offset: 1.905 ms

Remote clock offset: -3.906 ms

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2018-08-27 19:48:45

End at: 2018-08-27 19:49:15

Local clock offset: 2.152 ms

Remote clock offset: -2.415 ms

# Below is generated by plot.py at 2018-08-27 20:26:05

# Datalink statistics

-- Total of 1 flow:

Average throughput: 8.22 Mbit/s

95th percentile per-packet one-way delay: 250.387 ms

Loss rate: 0.75%

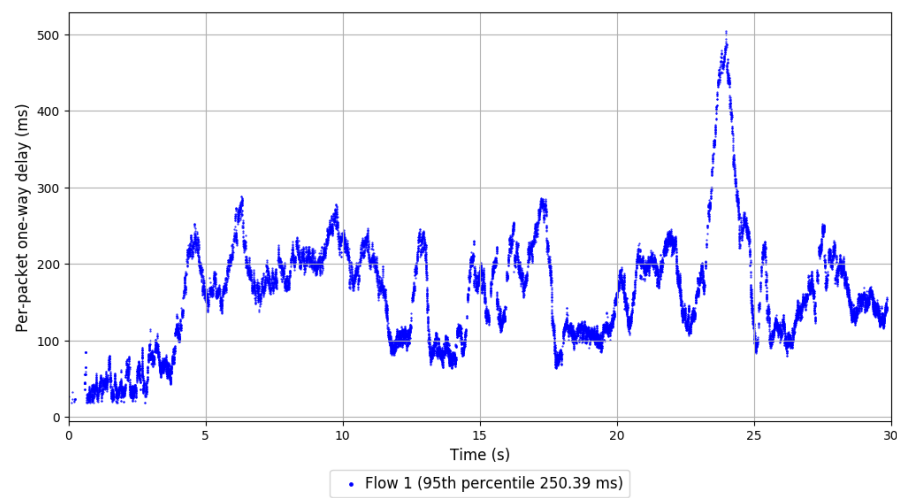
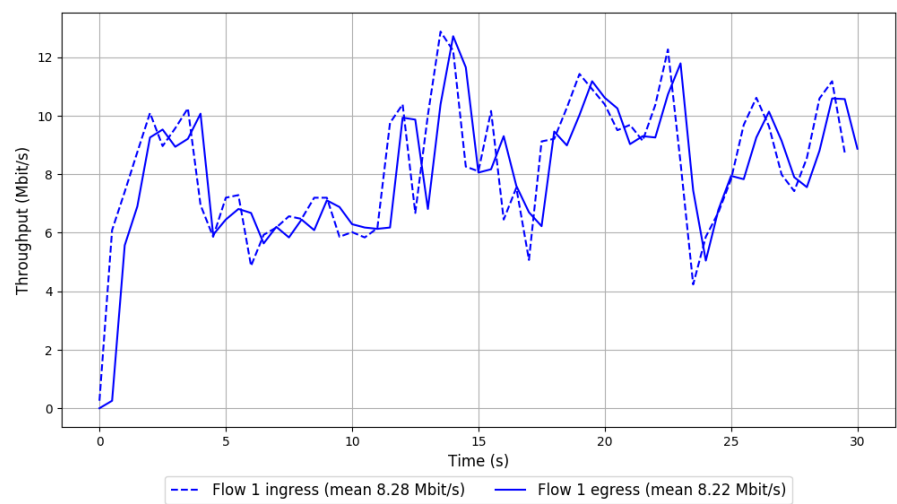
-- Flow 1:

Average throughput: 8.22 Mbit/s

95th percentile per-packet one-way delay: 250.387 ms

Loss rate: 0.75%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2018-08-27 20:07:22

End at: 2018-08-27 20:07:52

Local clock offset: 1.828 ms

Remote clock offset: -2.536 ms

# Below is generated by plot.py at 2018-08-27 20:26:11

# Datalink statistics

-- Total of 1 flow:

Average throughput: 11.94 Mbit/s

95th percentile per-packet one-way delay: 274.619 ms

Loss rate: 0.70%

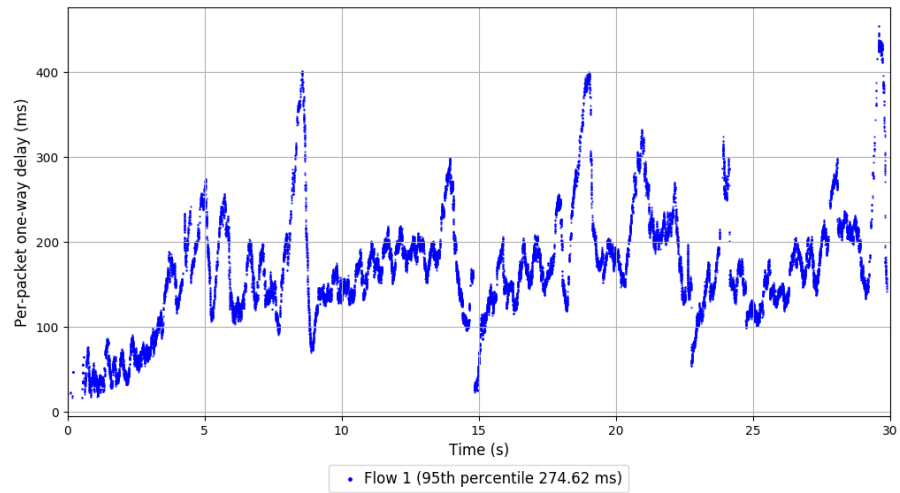
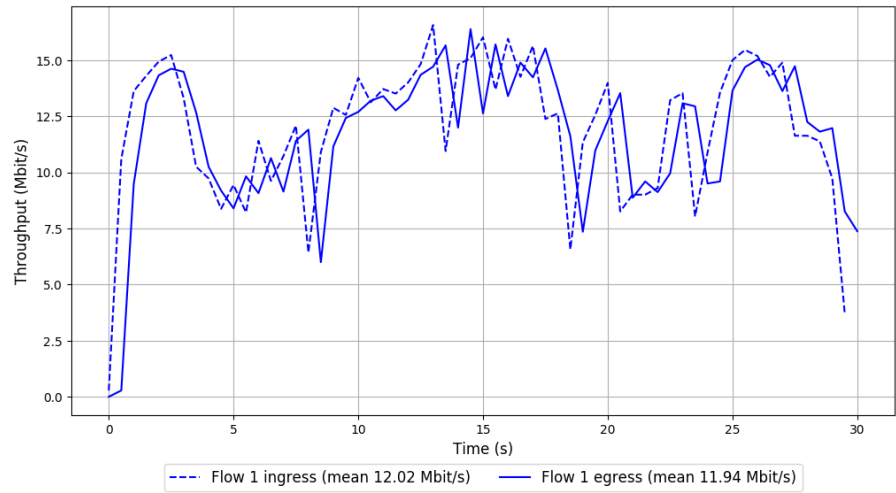
-- Flow 1:

Average throughput: 11.94 Mbit/s

95th percentile per-packet one-way delay: 274.619 ms

Loss rate: 0.70%

### Run 3: Report of QUIC Cubic — Data Link

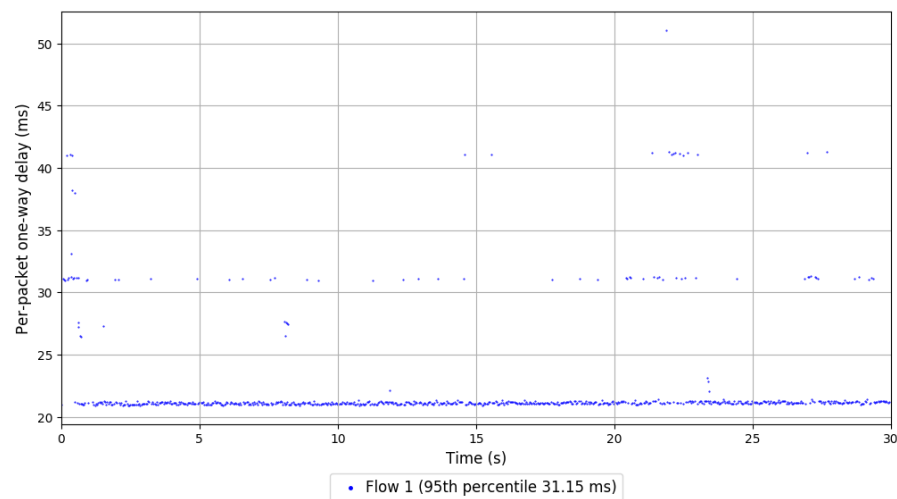
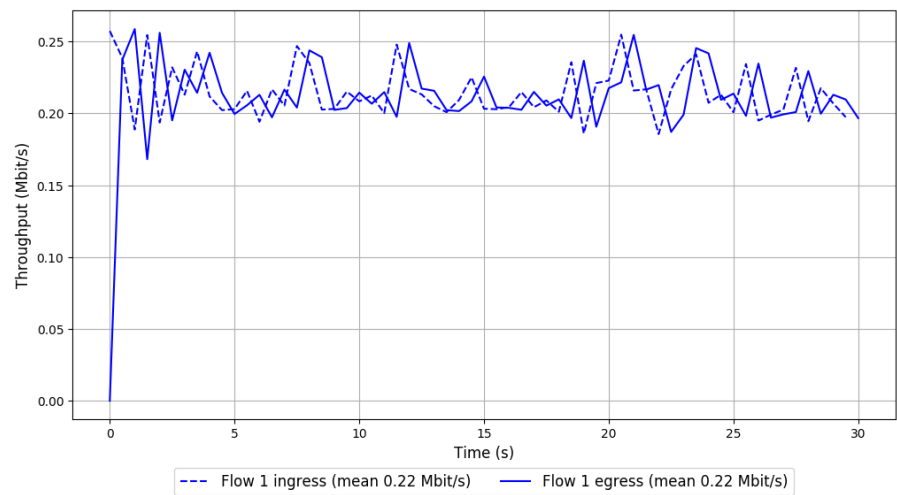


Run 1: Statistics of SCReAM

Start at: 2018-08-27 19:31:21  
End at: 2018-08-27 19:31:51  
Local clock offset: 3.173 ms  
Remote clock offset: -3.244 ms

# Below is generated by plot.py at 2018-08-27 20:26:11  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 31.151 ms  
Loss rate: 0.13%  
-- Flow 1:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 31.151 ms  
Loss rate: 0.13%

Run 1: Report of SReAM — Data Link

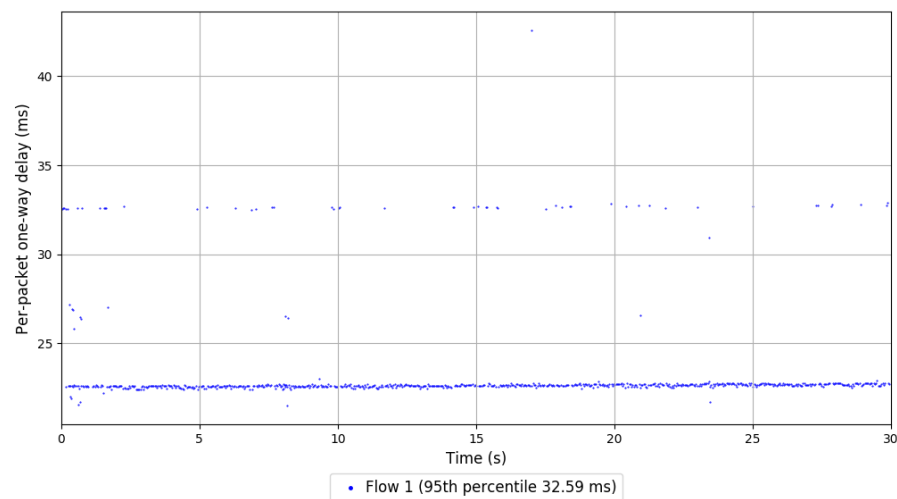
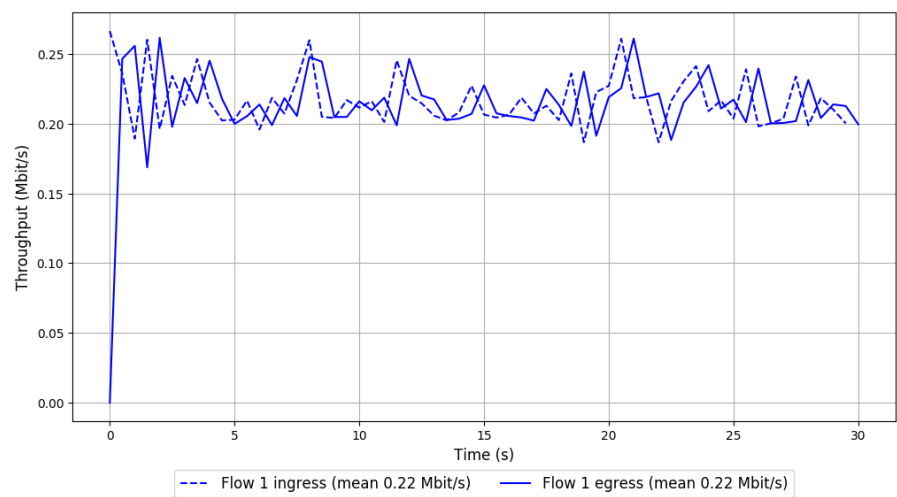


Run 2: Statistics of SCReAM

Start at: 2018-08-27 19:49:51  
End at: 2018-08-27 19:50:21  
Local clock offset: 1.231 ms  
Remote clock offset: -2.978 ms

# Below is generated by plot.py at 2018-08-27 20:26:11  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 32.587 ms  
Loss rate: 0.13%  
-- Flow 1:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 32.587 ms  
Loss rate: 0.13%

Run 2: Report of SReAM — Data Link



Run 3: Statistics of SCReAM

Start at: 2018-08-27 20:08:28

End at: 2018-08-27 20:08:58

Local clock offset: 3.571 ms

Remote clock offset: -2.56 ms

# Below is generated by plot.py at 2018-08-27 20:26:11

# Datalink statistics

-- Total of 1 flow:

Average throughput: 0.21 Mbit/s

95th percentile per-packet one-way delay: 29.592 ms

Loss rate: 0.13%

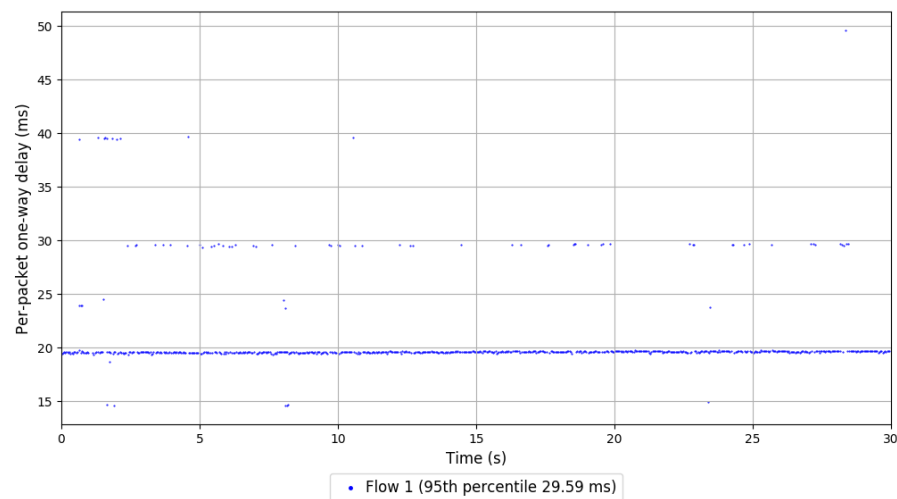
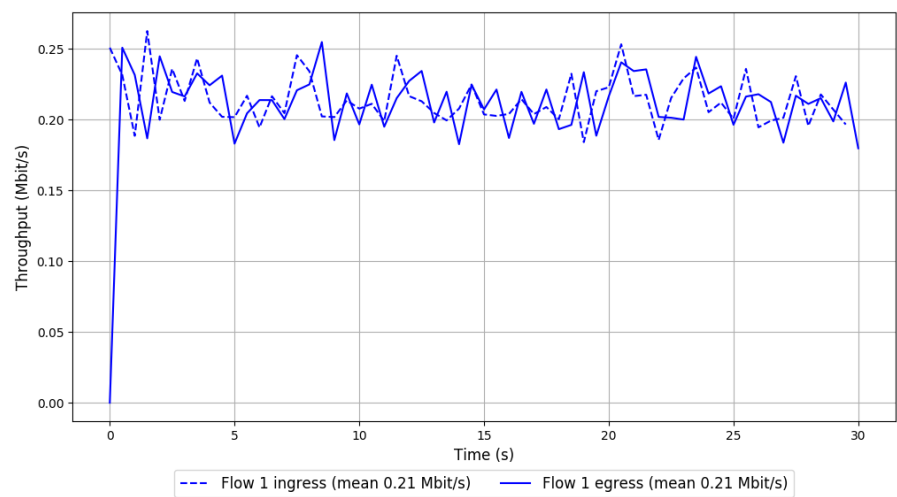
-- Flow 1:

Average throughput: 0.21 Mbit/s

95th percentile per-packet one-way delay: 29.592 ms

Loss rate: 0.13%

Run 3: Report of SReAM — Data Link



Run 1: Statistics of Sprout

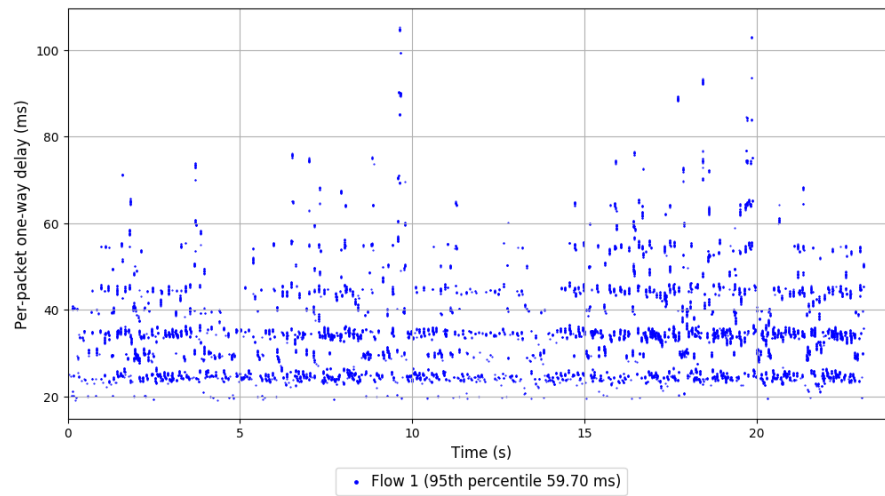
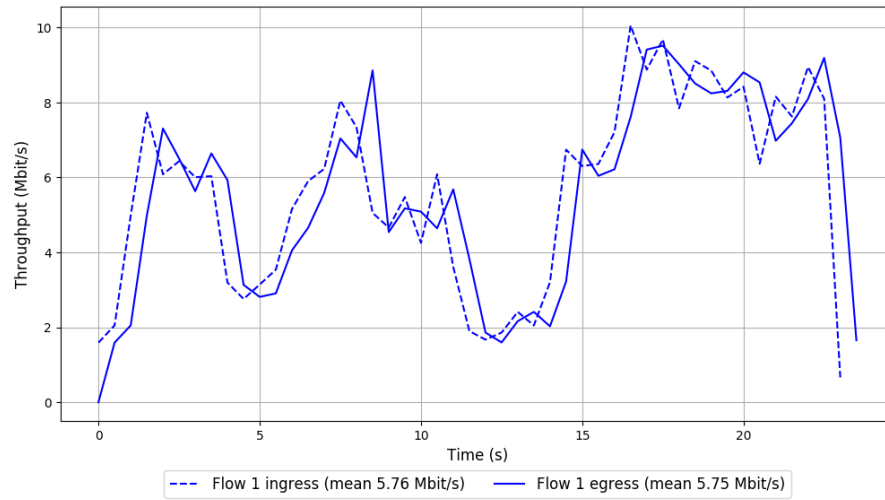
Start at: 2018-08-27 19:36:50

End at: 2018-08-27 19:37:20

Local clock offset: 0.041 ms

Remote clock offset: -3.374 ms

## Run 1: Report of Sprout — Data Link



Run 2: Statistics of Sprout

Start at: 2018-08-27 19:55:25

End at: 2018-08-27 19:55:55

Local clock offset: -0.921 ms

Remote clock offset: -2.65 ms

# Below is generated by plot.py at 2018-08-27 20:26:11

# Datalink statistics

-- Total of 1 flow:

Average throughput: 0.80 Mbit/s

95th percentile per-packet one-way delay: 61.212 ms

Loss rate: 0.29%

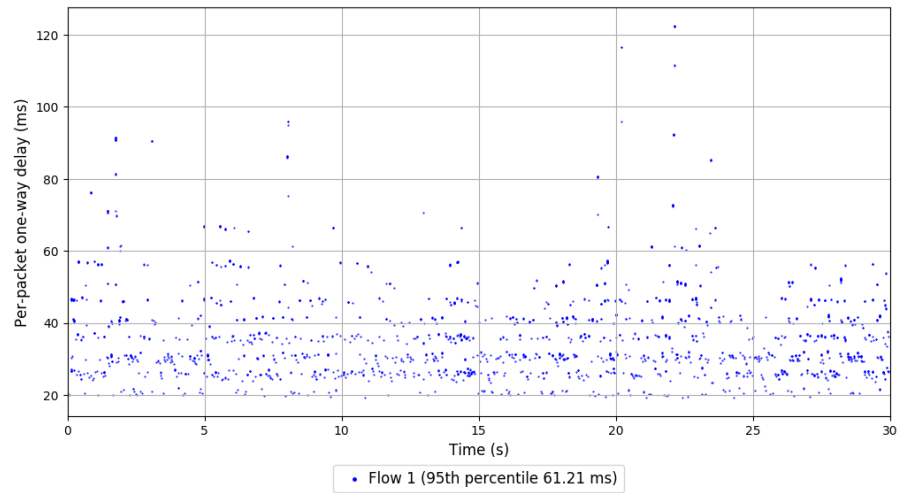
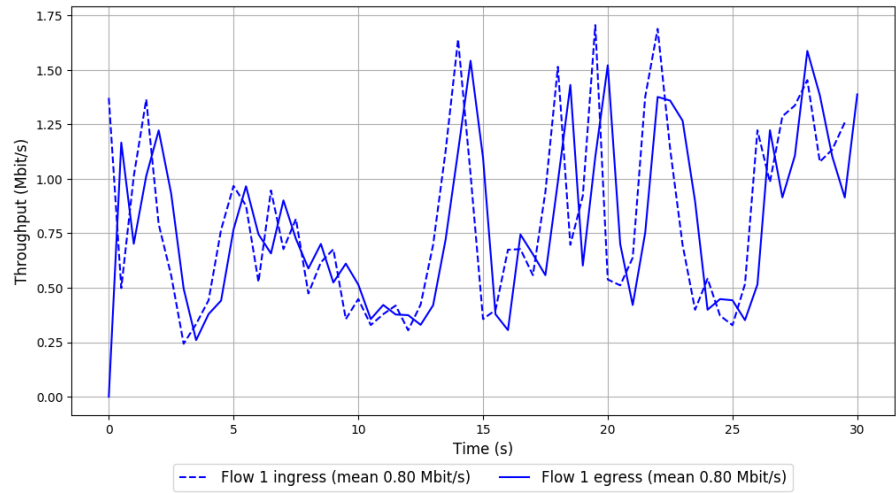
-- Flow 1:

Average throughput: 0.80 Mbit/s

95th percentile per-packet one-way delay: 61.212 ms

Loss rate: 0.29%

## Run 2: Report of Sprout — Data Link

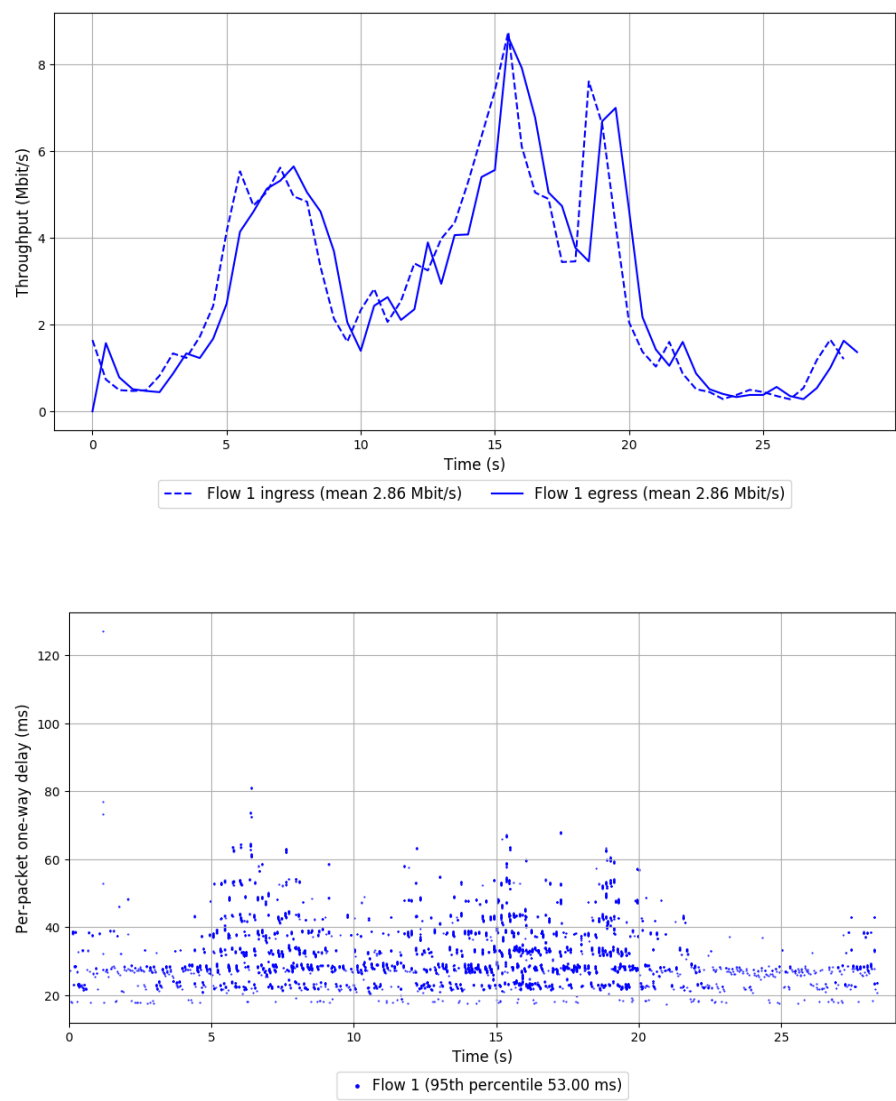


Run 3: Statistics of Sprout

Start at: 2018-08-27 20:13:53  
End at: 2018-08-27 20:14:23  
Local clock offset: 1.131 ms  
Remote clock offset: -2.509 ms

# Below is generated by plot.py at 2018-08-27 20:26:11  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 2.86 Mbit/s  
95th percentile per-packet one-way delay: 52.997 ms  
Loss rate: 0.03%  
-- Flow 1:  
Average throughput: 2.86 Mbit/s  
95th percentile per-packet one-way delay: 52.997 ms  
Loss rate: 0.03%

Run 3: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

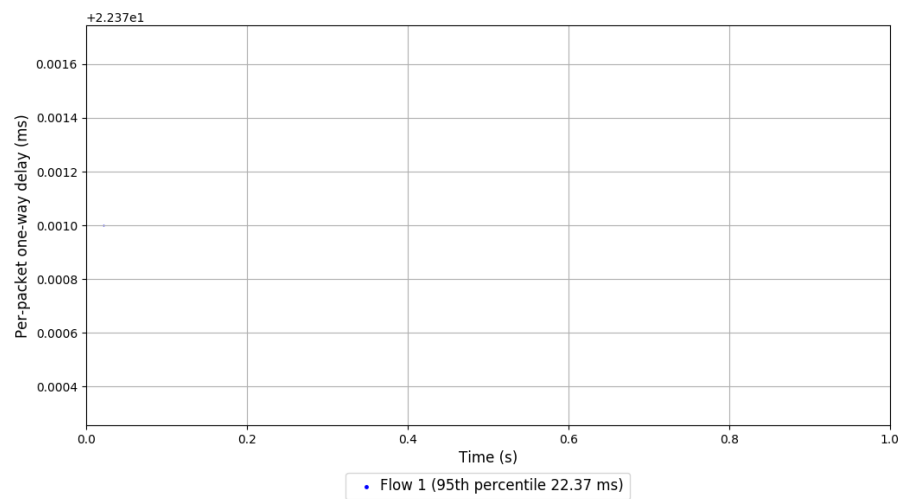
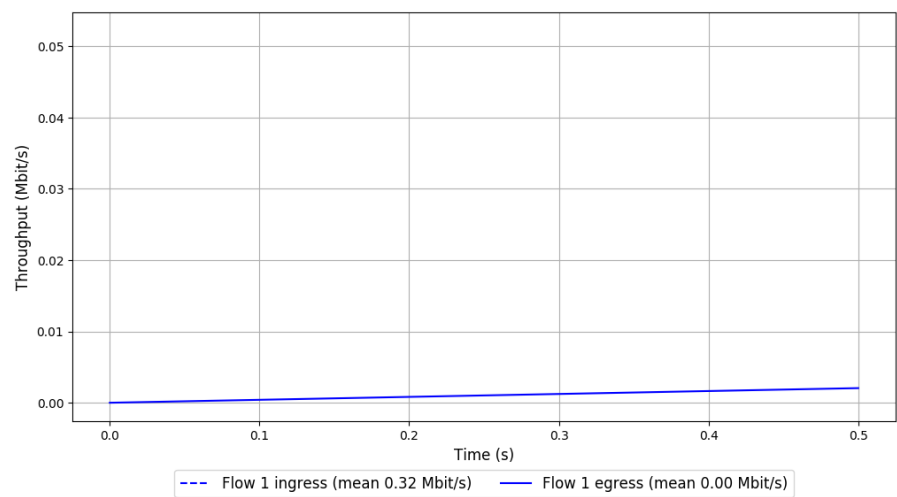
Start at: 2018-08-27 19:43:17

End at: 2018-08-27 19:43:47

Local clock offset: -0.943 ms

Remote clock offset: -2.632 ms

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



Run 2: Statistics of TaoVA-100x

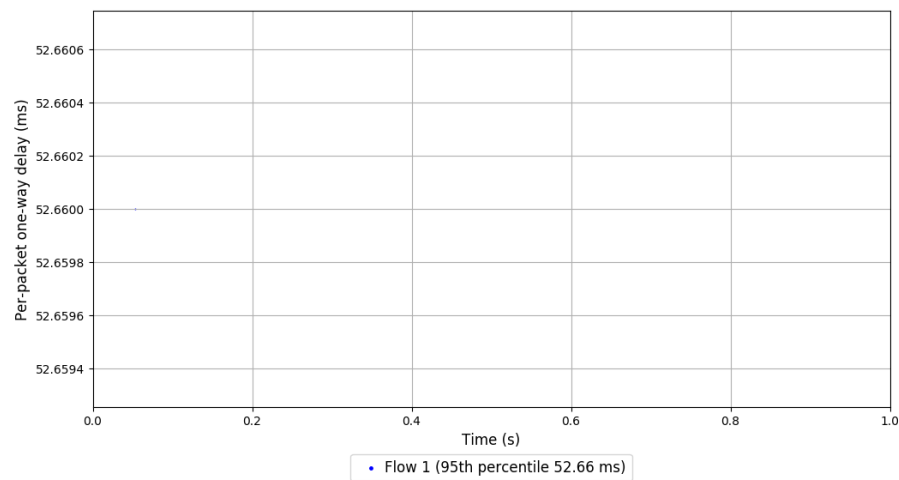
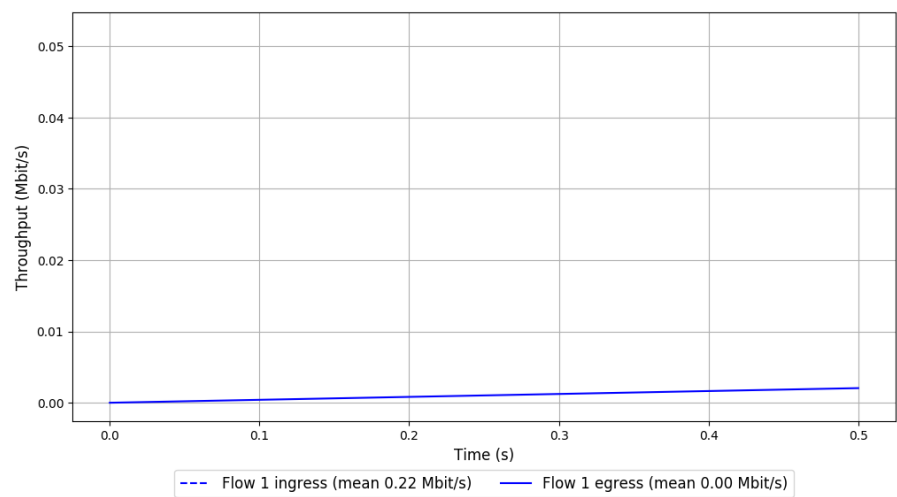
Start at: 2018-08-27 20:01:58

End at: 2018-08-27 20:02:28

Local clock offset: -1.165 ms

Remote clock offset: -3.035 ms

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

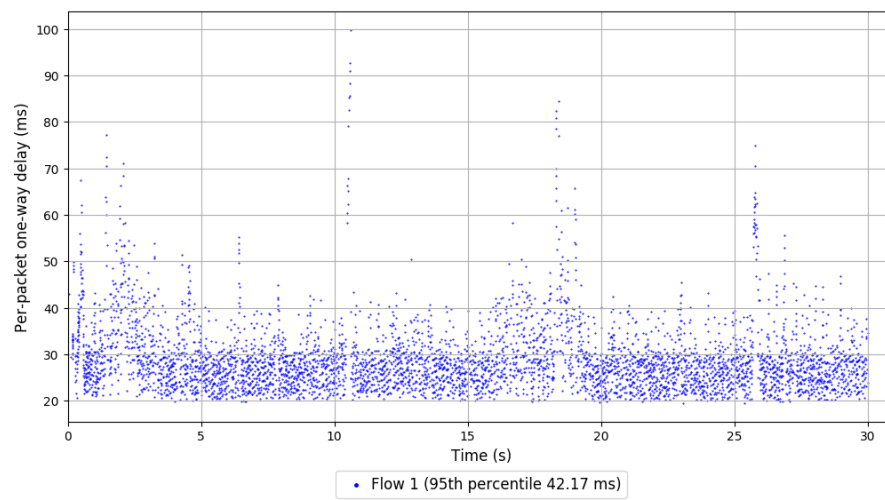
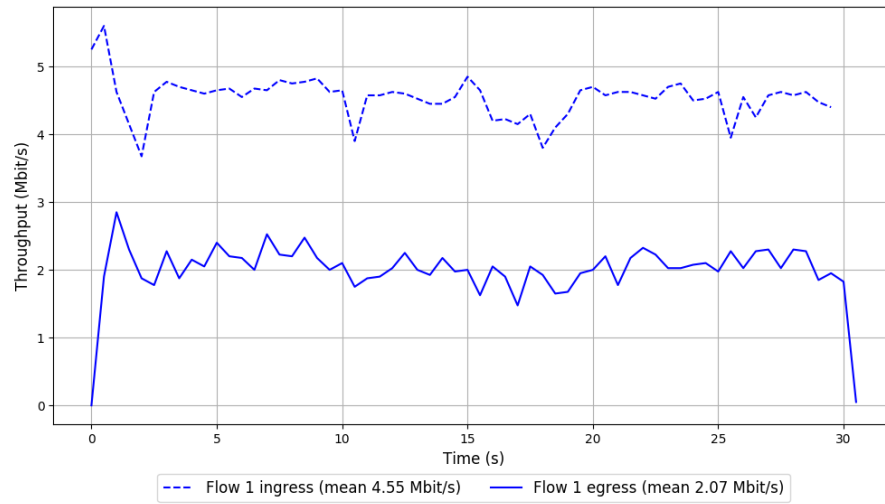


Run 3: Statistics of TaoVA-100x

Start at: 2018-08-27 20:20:27  
End at: 2018-08-27 20:20:57  
Local clock offset: -2.671 ms  
Remote clock offset: -2.823 ms

# Below is generated by plot.py at 2018-08-27 20:26:11  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 2.07 Mbit/s  
95th percentile per-packet one-way delay: 42.166 ms  
Loss rate: 54.59%  
-- Flow 1:  
Average throughput: 2.07 Mbit/s  
95th percentile per-packet one-way delay: 42.166 ms  
Loss rate: 54.59%

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

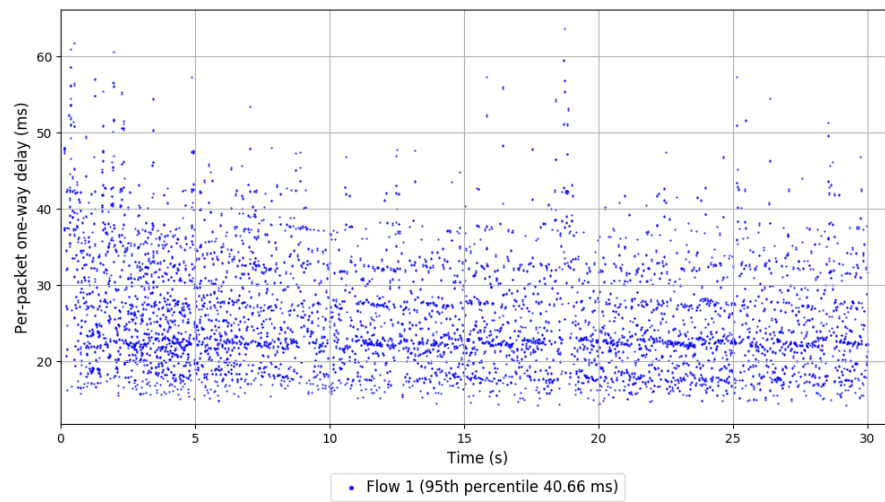
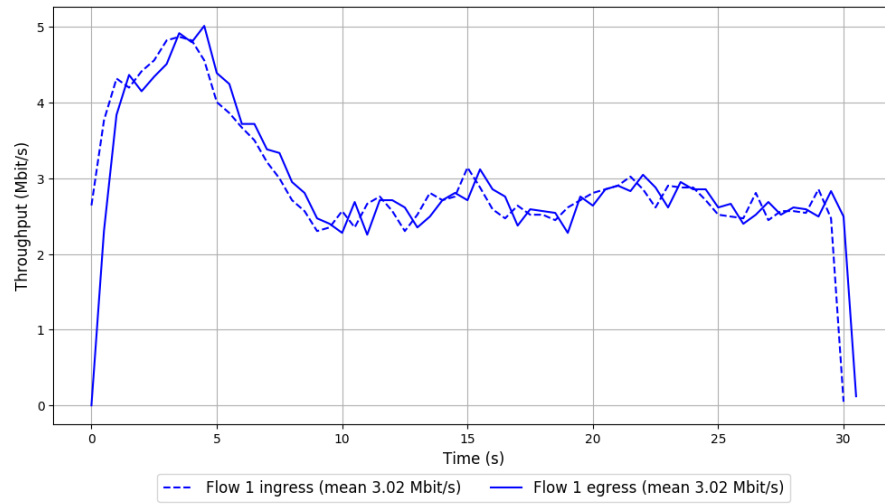


Run 1: Statistics of TCP Vegas

Start at: 2018-08-27 19:47:40  
End at: 2018-08-27 19:48:10  
Local clock offset: 3.771 ms  
Remote clock offset: -3.068 ms

# Below is generated by plot.py at 2018-08-27 20:26:11  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 3.02 Mbit/s  
95th percentile per-packet one-way delay: 40.661 ms  
Loss rate: 0.05%  
-- Flow 1:  
Average throughput: 3.02 Mbit/s  
95th percentile per-packet one-way delay: 40.661 ms  
Loss rate: 0.05%

### Run 1: Report of TCP Vegas — Data Link

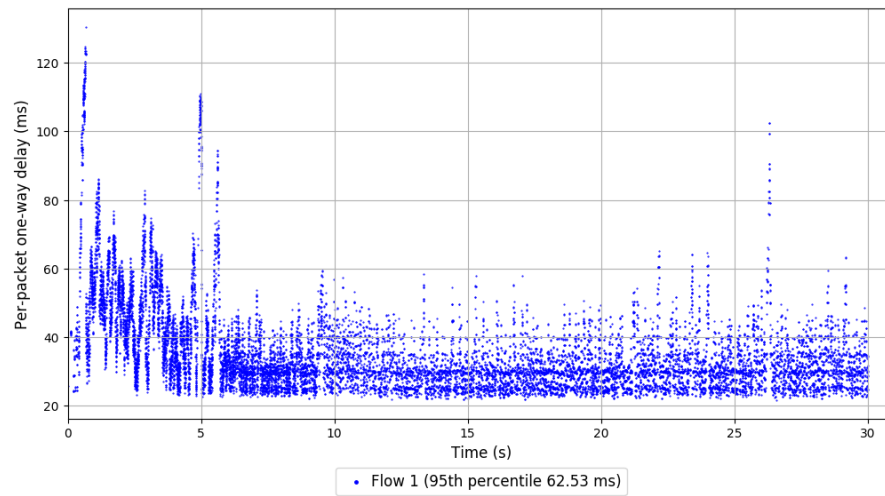
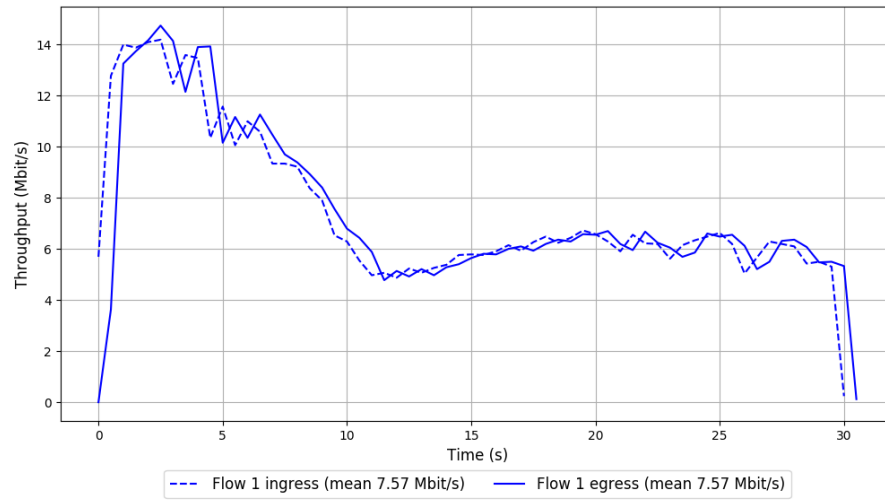


Run 2: Statistics of TCP Vegas

Start at: 2018-08-27 20:06:18  
End at: 2018-08-27 20:06:48  
Local clock offset: -2.259 ms  
Remote clock offset: -2.255 ms

# Below is generated by plot.py at 2018-08-27 20:26:11  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 7.57 Mbit/s  
95th percentile per-packet one-way delay: 62.528 ms  
Loss rate: 0.08%  
-- Flow 1:  
Average throughput: 7.57 Mbit/s  
95th percentile per-packet one-way delay: 62.528 ms  
Loss rate: 0.08%

## Run 2: Report of TCP Vegas — Data Link

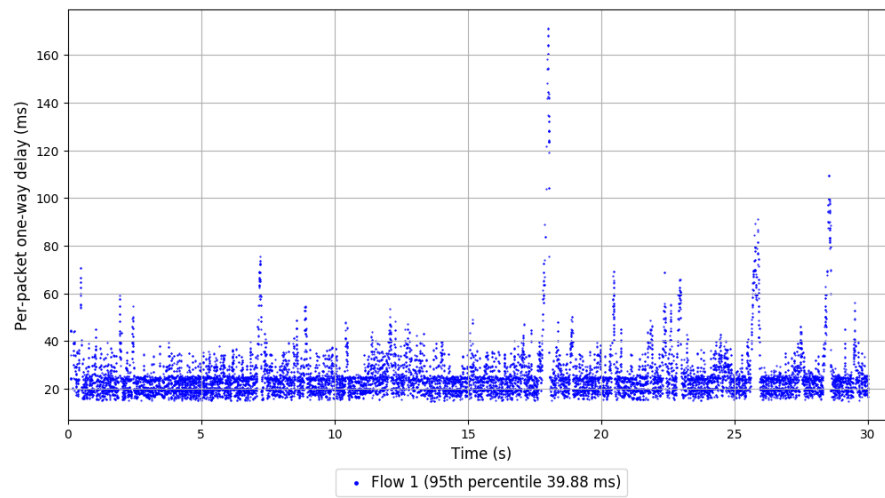
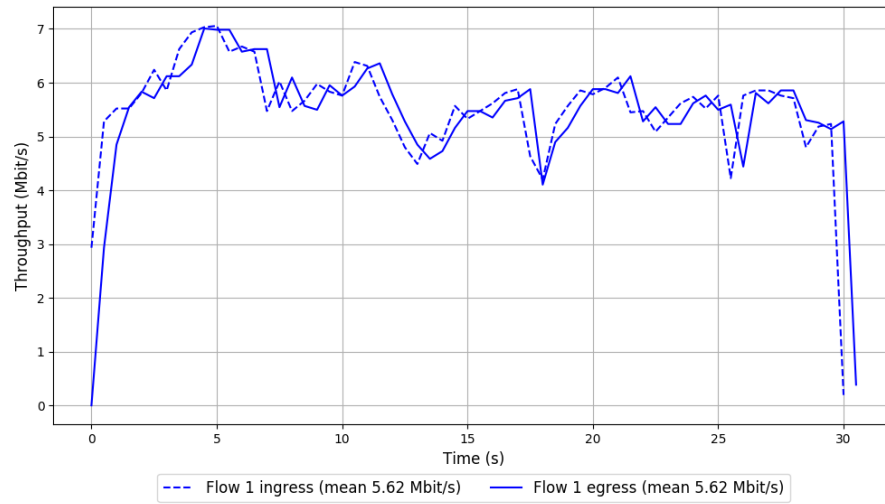


Run 3: Statistics of TCP Vegas

Start at: 2018-08-27 20:24:47  
End at: 2018-08-27 20:25:17  
Local clock offset: 2.37 ms  
Remote clock offset: -2.985 ms

# Below is generated by plot.py at 2018-08-27 20:26:11  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 5.62 Mbit/s  
95th percentile per-packet one-way delay: 39.883 ms  
Loss rate: 0.03%  
-- Flow 1:  
Average throughput: 5.62 Mbit/s  
95th percentile per-packet one-way delay: 39.883 ms  
Loss rate: 0.03%

### Run 3: Report of TCP Vegas — Data Link

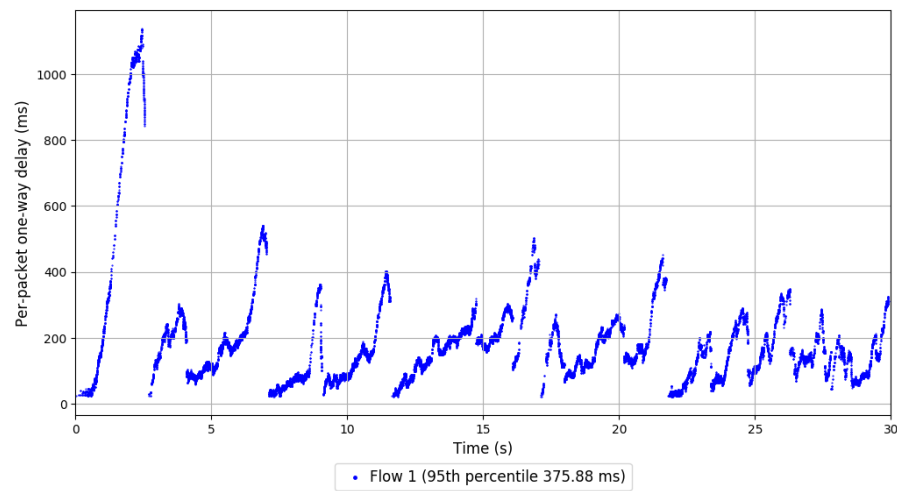
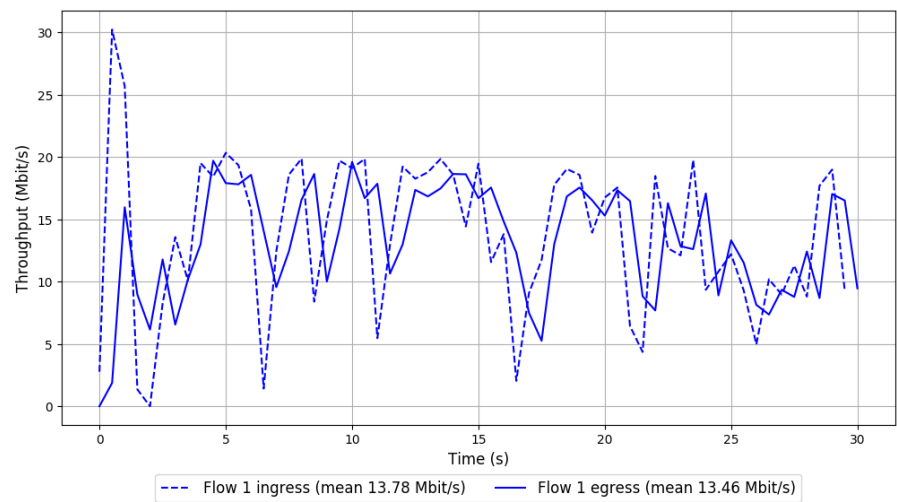


Run 1: Statistics of Verus

Start at: 2018-08-27 19:34:40  
End at: 2018-08-27 19:35:10  
Local clock offset: 0.491 ms  
Remote clock offset: -2.426 ms

# Below is generated by plot.py at 2018-08-27 20:26:17  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 13.46 Mbit/s  
95th percentile per-packet one-way delay: 375.883 ms  
Loss rate: 2.36%  
-- Flow 1:  
Average throughput: 13.46 Mbit/s  
95th percentile per-packet one-way delay: 375.883 ms  
Loss rate: 2.36%

Run 1: Report of Verus — Data Link

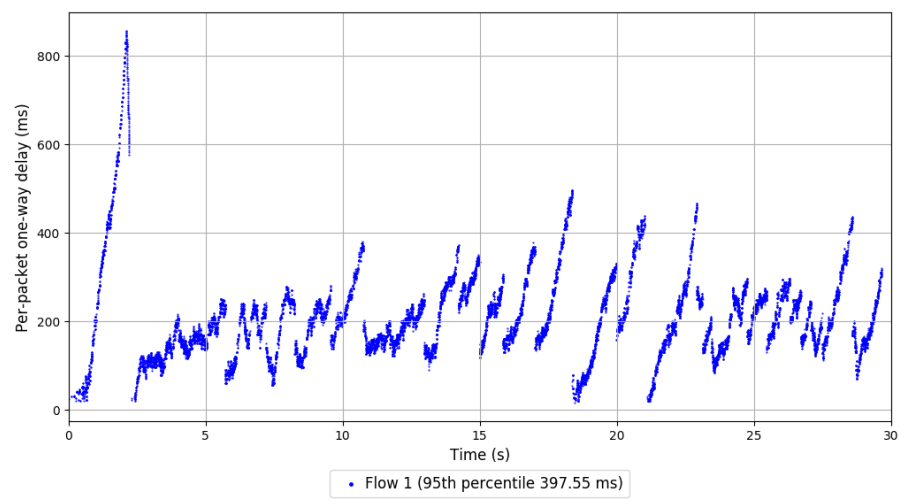
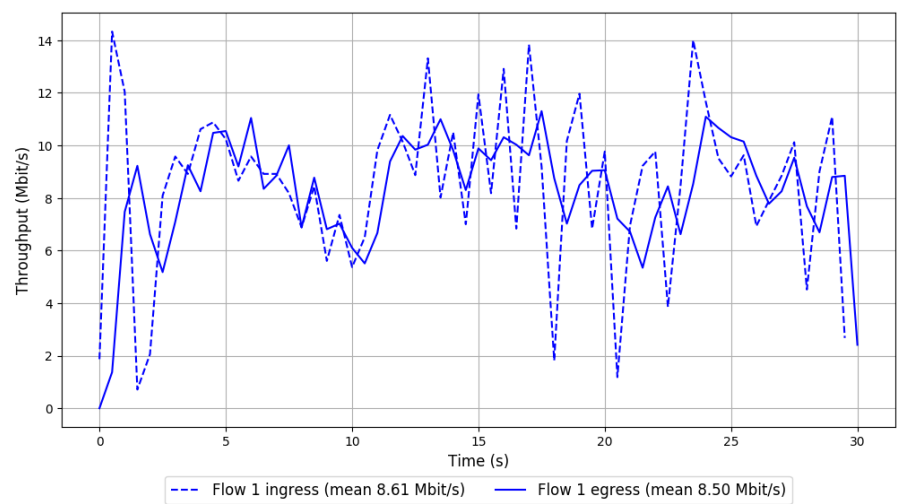


Run 2: Statistics of Verus

Start at: 2018-08-27 19:53:15  
End at: 2018-08-27 19:53:45  
Local clock offset: 1.911 ms  
Remote clock offset: -3.407 ms

# Below is generated by plot.py at 2018-08-27 20:26:17  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 8.50 Mbit/s  
95th percentile per-packet one-way delay: 397.551 ms  
Loss rate: 1.29%  
-- Flow 1:  
Average throughput: 8.50 Mbit/s  
95th percentile per-packet one-way delay: 397.551 ms  
Loss rate: 1.29%

Run 2: Report of Verus — Data Link

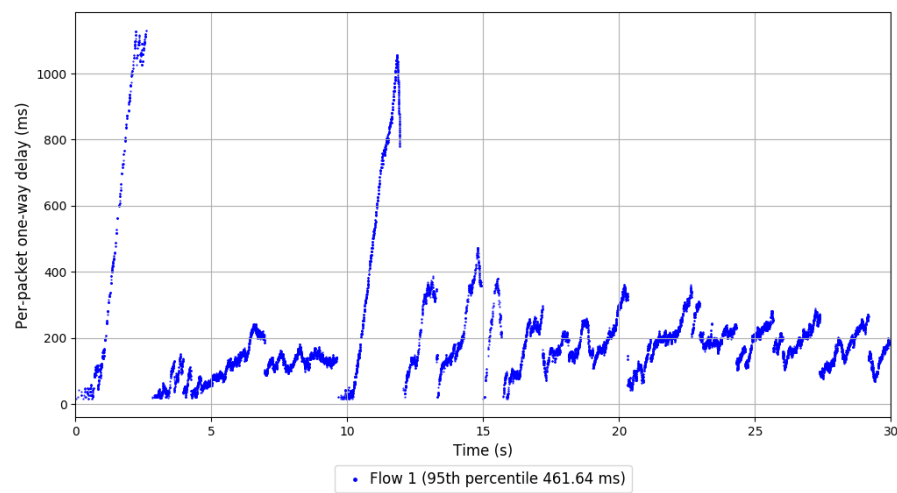
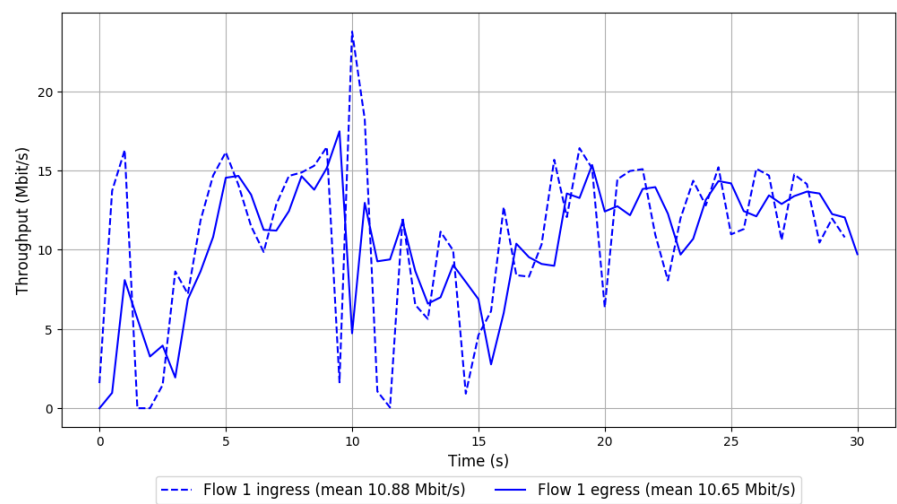


Run 3: Statistics of Verus

Start at: 2018-08-27 20:11:42  
End at: 2018-08-27 20:12:12  
Local clock offset: 1.895 ms  
Remote clock offset: -2.915 ms

# Below is generated by plot.py at 2018-08-27 20:26:17  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 10.65 Mbit/s  
95th percentile per-packet one-way delay: 461.641 ms  
Loss rate: 2.15%  
-- Flow 1:  
Average throughput: 10.65 Mbit/s  
95th percentile per-packet one-way delay: 461.641 ms  
Loss rate: 2.15%

Run 3: Report of Verus — Data Link



Run 1: Statistics of PCC-Vivace

Start at: 2018-08-27 19:46:35

End at: 2018-08-27 19:47:05

Local clock offset: 1.688 ms

Remote clock offset: -3.083 ms

# Below is generated by plot.py at 2018-08-27 20:26:17

# Datalink statistics

-- Total of 1 flow:

Average throughput: 1.67 Mbit/s

95th percentile per-packet one-way delay: 44.840 ms

Loss rate: 0.05%

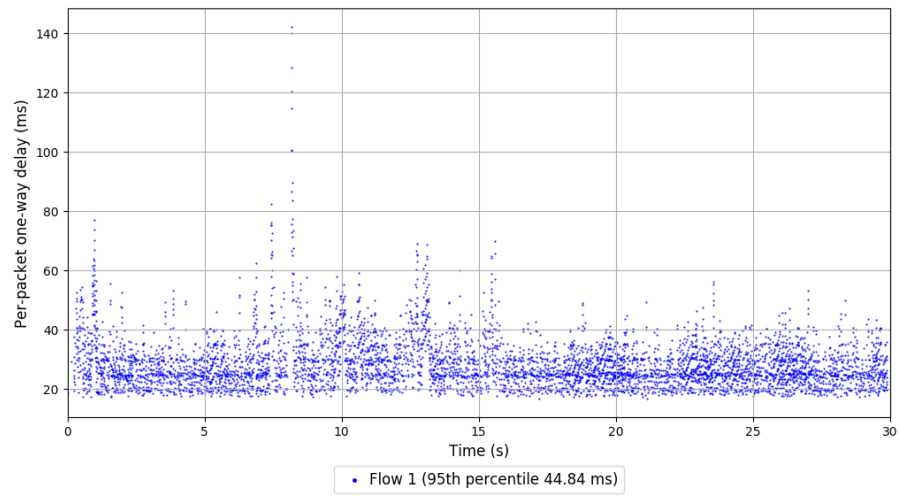
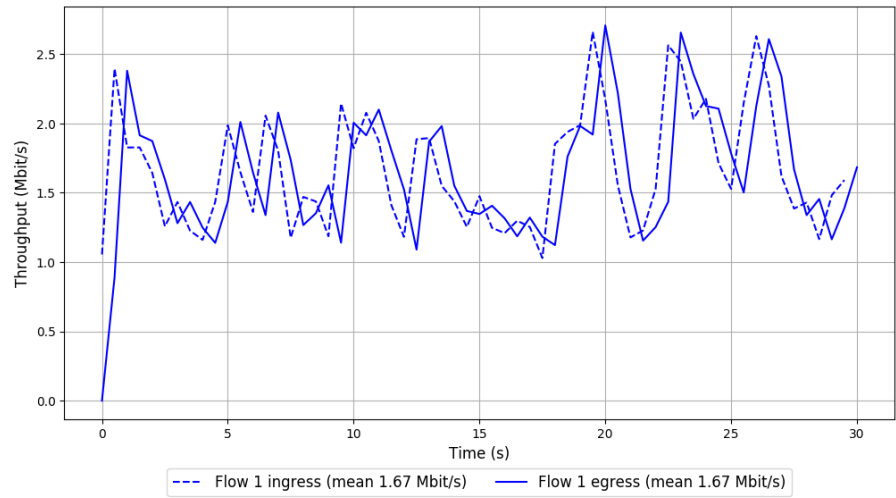
-- Flow 1:

Average throughput: 1.67 Mbit/s

95th percentile per-packet one-way delay: 44.840 ms

Loss rate: 0.05%

# Run 1: Report of PCC-Vivace — Data Link



Run 2: Statistics of PCC-Vivace

Start at: 2018-08-27 20:05:12

End at: 2018-08-27 20:05:42

Local clock offset: 0.971 ms

Remote clock offset: -2.11 ms

# Below is generated by plot.py at 2018-08-27 20:26:17

# Datalink statistics

-- Total of 1 flow:

Average throughput: 8.14 Mbit/s

95th percentile per-packet one-way delay: 903.204 ms

Loss rate: 0.21%

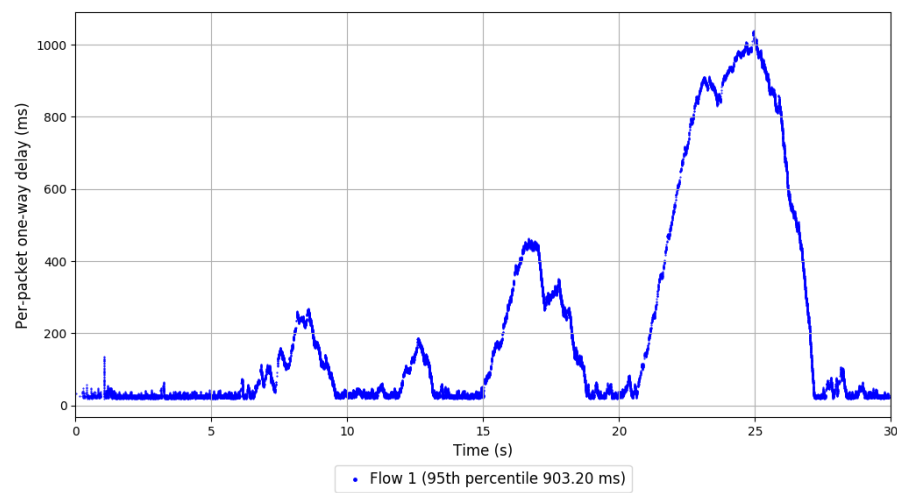
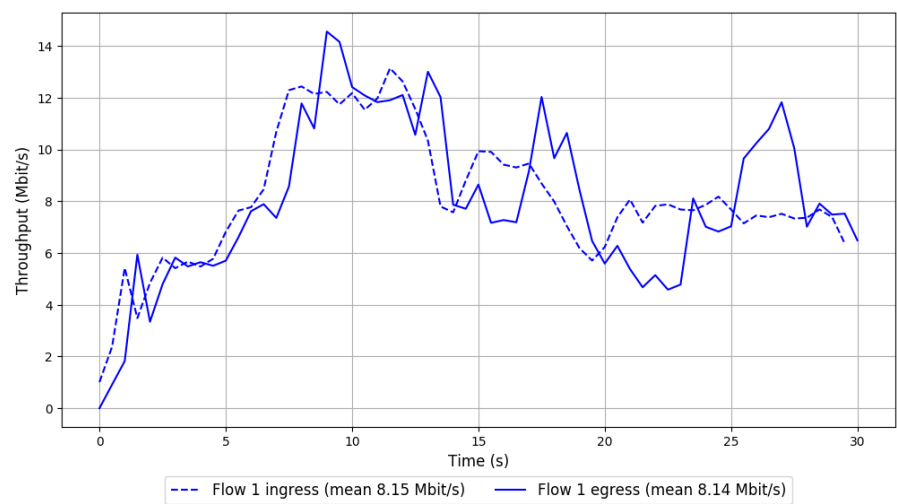
-- Flow 1:

Average throughput: 8.14 Mbit/s

95th percentile per-packet one-way delay: 903.204 ms

Loss rate: 0.21%

Run 2: Report of PCC-Vivace — Data Link

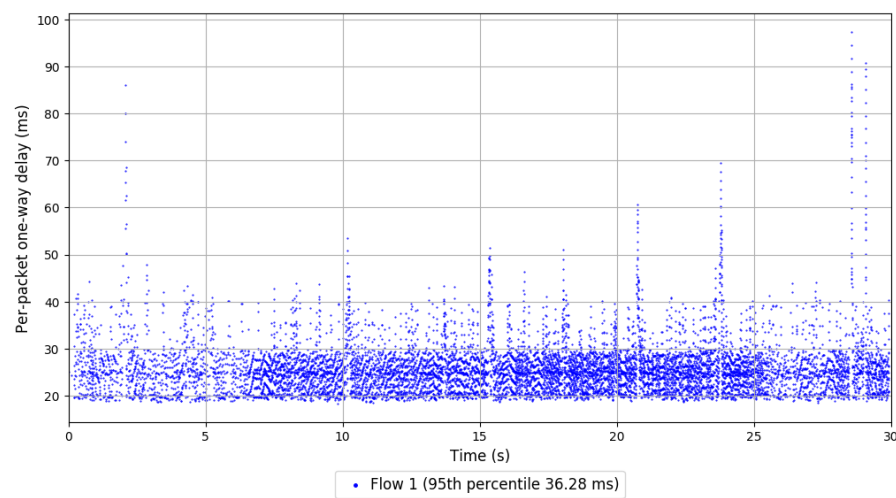
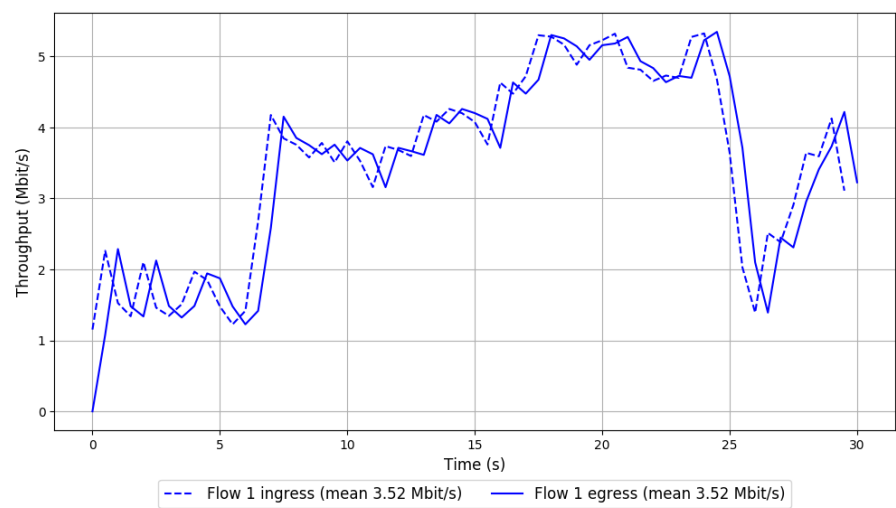


Run 3: Statistics of PCC-Vivace

Start at: 2018-08-27 20:23:42  
End at: 2018-08-27 20:24:12  
Local clock offset: -2.207 ms  
Remote clock offset: -2.562 ms

# Below is generated by plot.py at 2018-08-27 20:26:17  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 3.52 Mbit/s  
95th percentile per-packet one-way delay: 36.277 ms  
Loss rate: 0.02%  
-- Flow 1:  
Average throughput: 3.52 Mbit/s  
95th percentile per-packet one-way delay: 36.277 ms  
Loss rate: 0.02%

Run 3: Report of PCC-Vivace — Data Link

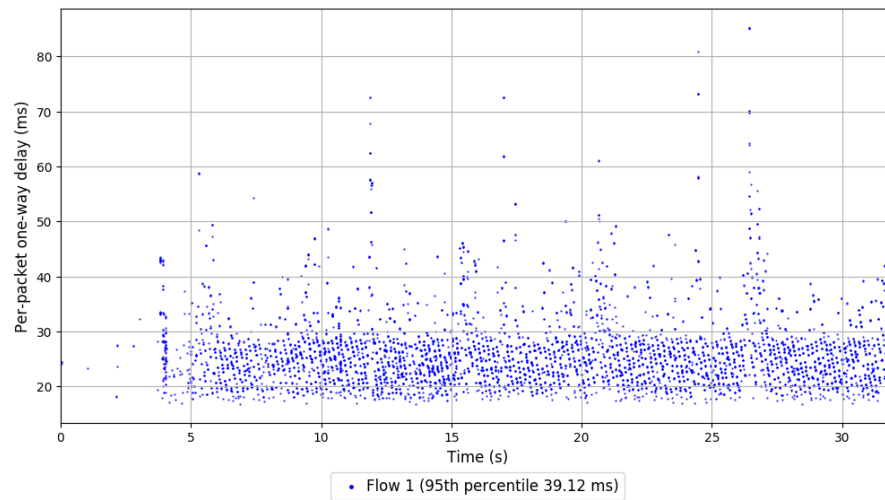
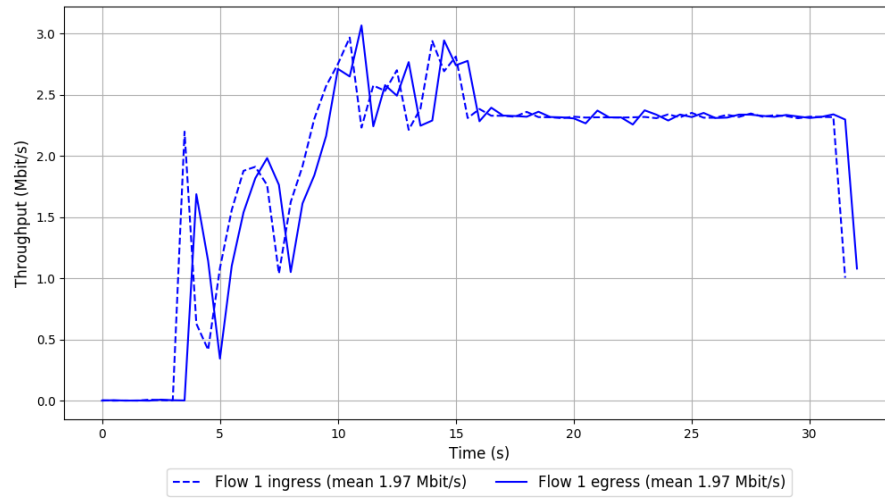


Run 1: Statistics of WebRTC media

Start at: 2018-08-27 19:42:12  
End at: 2018-08-27 19:42:42  
Local clock offset: 2.94 ms  
Remote clock offset: -2.525 ms

# Below is generated by plot.py at 2018-08-27 20:26:17  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 1.97 Mbit/s  
95th percentile per-packet one-way delay: 39.122 ms  
Loss rate: 0.06%  
-- Flow 1:  
Average throughput: 1.97 Mbit/s  
95th percentile per-packet one-way delay: 39.122 ms  
Loss rate: 0.06%

# Run 1: Report of WebRTC media — Data Link

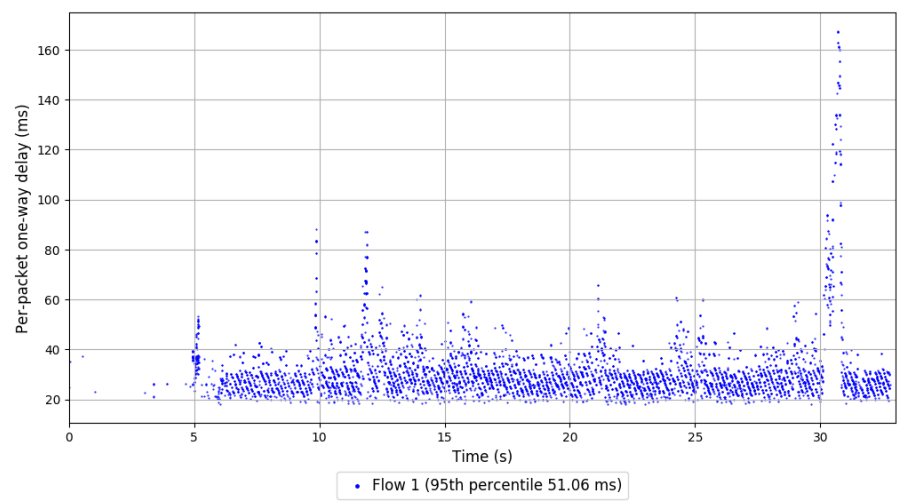
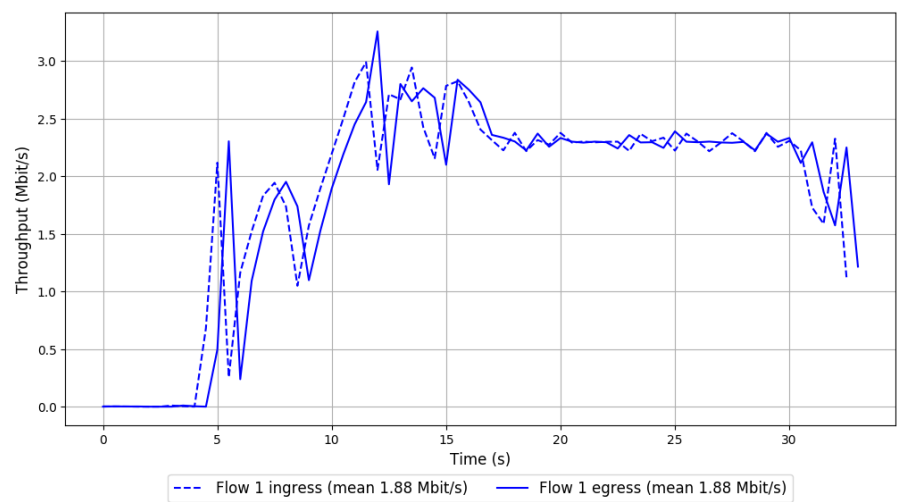


Run 2: Statistics of WebRTC media

Start at: 2018-08-27 20:00:48  
End at: 2018-08-27 20:01:18  
Local clock offset: 0.045 ms  
Remote clock offset: -2.666 ms

# Below is generated by plot.py at 2018-08-27 20:26:17  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 1.88 Mbit/s  
95th percentile per-packet one-way delay: 51.058 ms  
Loss rate: 0.05%  
-- Flow 1:  
Average throughput: 1.88 Mbit/s  
95th percentile per-packet one-way delay: 51.058 ms  
Loss rate: 0.05%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2018-08-27 20:19:22  
End at: 2018-08-27 20:19:52  
Local clock offset: -0.308 ms  
Remote clock offset: -2.987 ms

# Below is generated by plot.py at 2018-08-27 20:26:17  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 1.92 Mbit/s  
95th percentile per-packet one-way delay: 38.497 ms  
Loss rate: 0.05%  
-- Flow 1:  
Average throughput: 1.92 Mbit/s  
95th percentile per-packet one-way delay: 38.497 ms  
Loss rate: 0.05%

### Run 3: Report of WebRTC media — Data Link

