

## Pantheon Report

Generated at 2018-06-29 12:47:03 (UTC).

Data path: AWS Korea Ethernet (*local*) → China ppp0 ppp0 (*remote*).

Repeated the test of 17 congestion control schemes 3 times.

Each test lasted for 30 seconds running 1 flow.

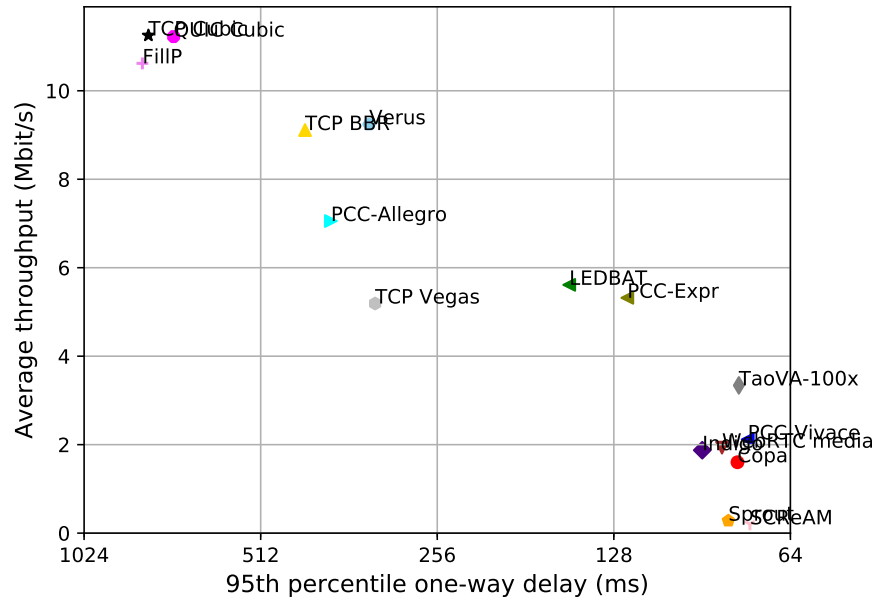
Increased UDP receive buffer to 16 MB (default) and 32 MB (max).

NTP offsets were measured against `ntp.nict.jp` and have been applied to correct the timestamps in logs.

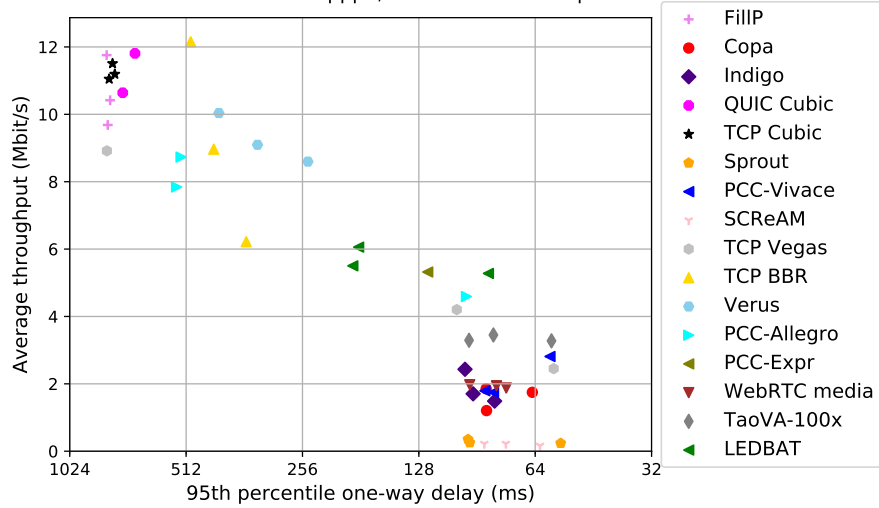
Git summary:

```
branch: master @ 715dc5f09d172e419699f6f17f1cb4c45064f212
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ 30060ab034deb3424347f5cc3db86198eac35d2a
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf5e58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ 6f038ed31259d366f9840f65b82cbe8f464b1b39
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
M receiver/src/buffer.h
M receiver/src/core.cpp
M sender/src/buffer.h
M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-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 Korea to China ppp0, 3 runs of 30s each per scheme  
(mean of all runs by scheme)



test from AWS Korea to China ppp0, 3 runs of 30s each per scheme



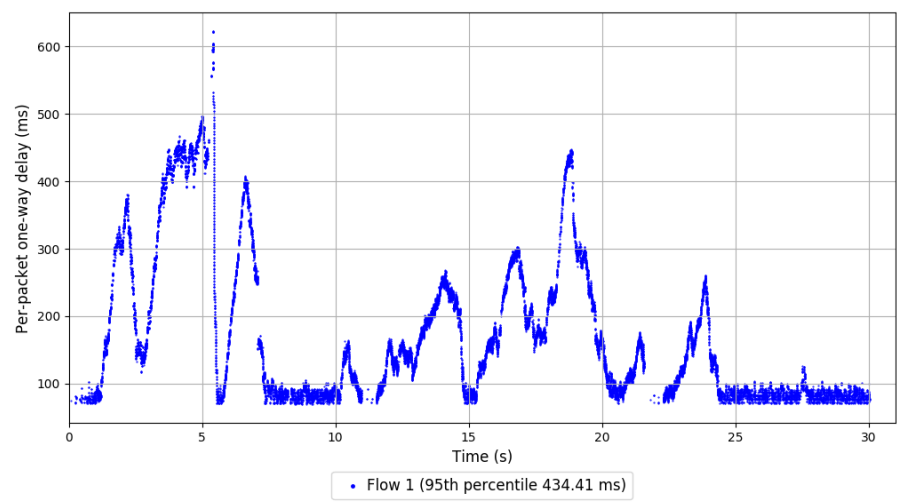
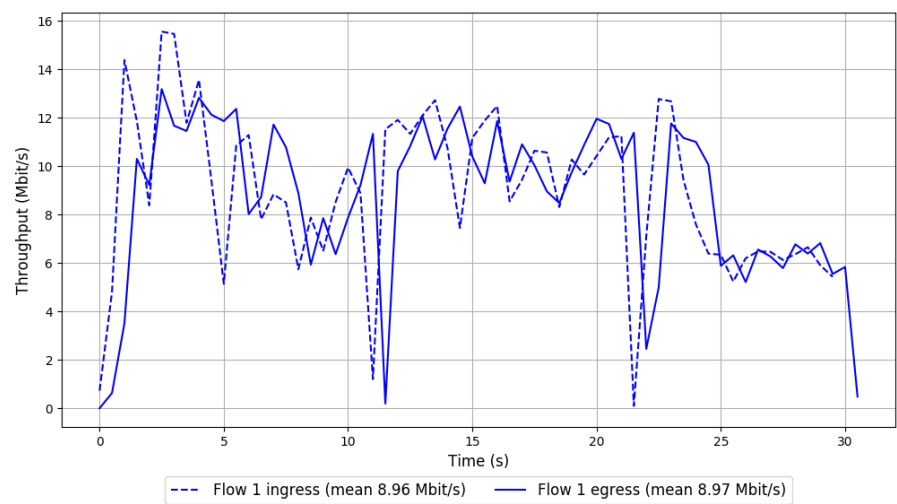
| scheme       | # runs | mean avg tput (Mbit/s)<br>flow 1 | mean 95th-%ile delay (ms)<br>flow 1 | mean loss rate (%)<br>flow 1 |
|--------------|--------|----------------------------------|-------------------------------------|------------------------------|
| TCP BBR      | 3      | 9.11                             | 430.19                              | 0.47                         |
| Copa         | 3      | 1.60                             | 78.79                               | 0.70                         |
| TCP Cubic    | 3      | 11.25                            | 795.53                              | 2.45                         |
| FillP        | 3      | 10.62                            | 814.50                              | 53.79                        |
| FillP-Sheep  | 0      | N/A                              | N/A                                 | N/A                          |
| Indigo       | 3      | 1.87                             | 90.46                               | 0.08                         |
| LEDBAT       | 3      | 5.61                             | 152.51                              | 0.30                         |
| PCC-Allegro  | 3      | 7.05                             | 388.66                              | 0.39                         |
| PCC-Expr     | 1      | 5.32                             | 121.42                              | 0.05                         |
| QUIC Cubic   | 2      | 11.23                            | 720.58                              | 2.30                         |
| SCReAM       | 3      | 0.20                             | 75.03                               | 0.12                         |
| Sprout       | 3      | 0.28                             | 81.66                               | 0.28                         |
| TaoVA-100x   | 3      | 3.34                             | 78.36                               | 0.25                         |
| TCP Vegas    | 3      | 5.19                             | 326.70                              | 2.76                         |
| Verus        | 3      | 9.24                             | 334.56                              | 0.27                         |
| PCC-Vivace   | 3      | 2.12                             | 75.68                               | 0.08                         |
| WebRTC media | 3      | 1.93                             | 83.72                               | 0.02                         |

Run 1: Statistics of TCP BBR

Start at: 2018-06-29 11:45:36  
End at: 2018-06-29 11:46:06  
Local clock offset: -1.994 ms  
Remote clock offset: -15.548 ms

# Below is generated by plot.py at 2018-06-29 12:46:16  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 8.97 Mbit/s  
95th percentile per-packet one-way delay: 434.414 ms  
Loss rate: 0.05%  
-- Flow 1:  
Average throughput: 8.97 Mbit/s  
95th percentile per-packet one-way delay: 434.414 ms  
Loss rate: 0.05%

Run 1: Report of TCP BBR — Data Link

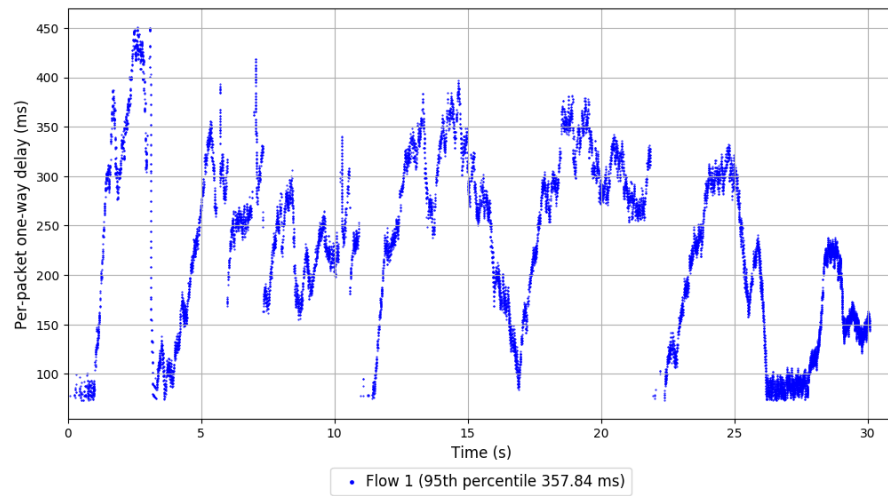
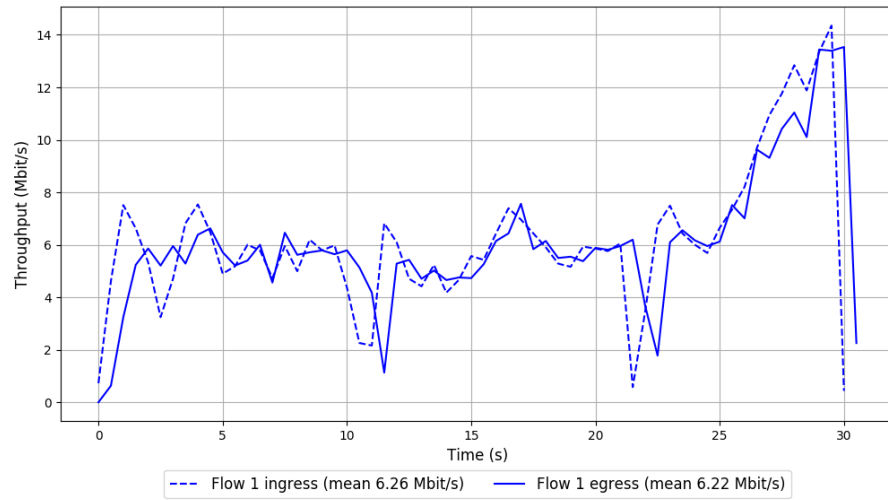


Run 2: Statistics of TCP BBR

Start at: 2018-06-29 12:10:57  
End at: 2018-06-29 12:11:27  
Local clock offset: -11.145 ms  
Remote clock offset: -10.772 ms

# Below is generated by plot.py at 2018-06-29 12:46:16  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 6.22 Mbit/s  
95th percentile per-packet one-way delay: 357.836 ms  
Loss rate: 0.82%  
-- Flow 1:  
Average throughput: 6.22 Mbit/s  
95th percentile per-packet one-way delay: 357.836 ms  
Loss rate: 0.82%

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



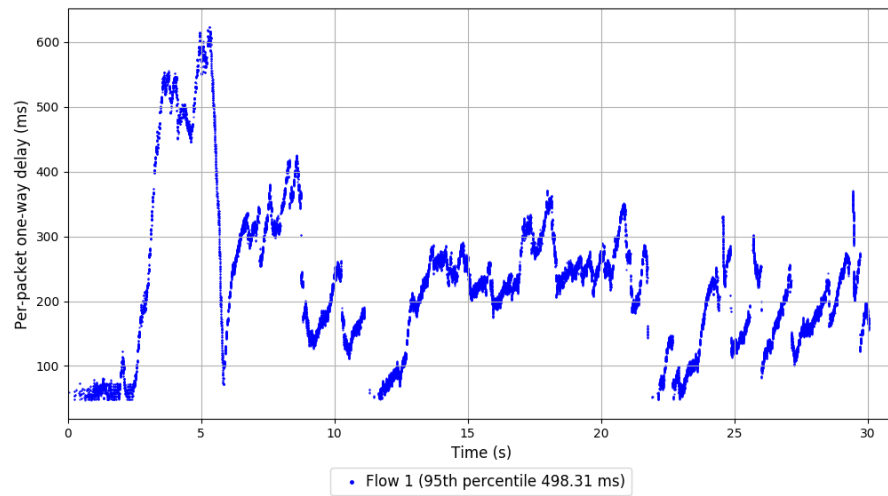
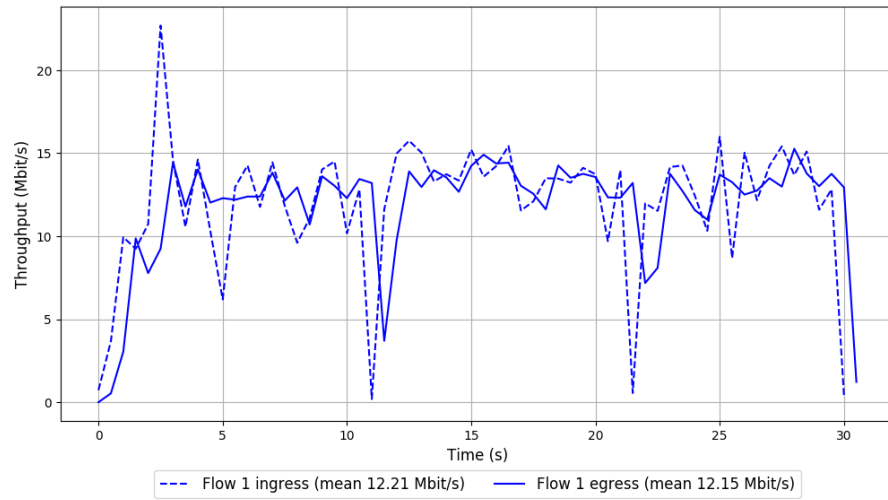
Run 3: Statistics of TCP BBR

Start at: 2018-06-29 12:36:04  
End at: 2018-06-29 12:36:34  
Local clock offset: -18.941 ms  
Remote clock offset: -36.929 ms

# Below is generated by plot.py at 2018-06-29 12:46:21  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 12.15 Mbit/s  
95th percentile per-packet one-way delay: 498.312 ms  
Loss rate: 0.54%  
-- Flow 1:  
Average throughput: 12.15 Mbit/s  
95th percentile per-packet one-way delay: 498.312 ms  
Loss rate: 0.54%



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

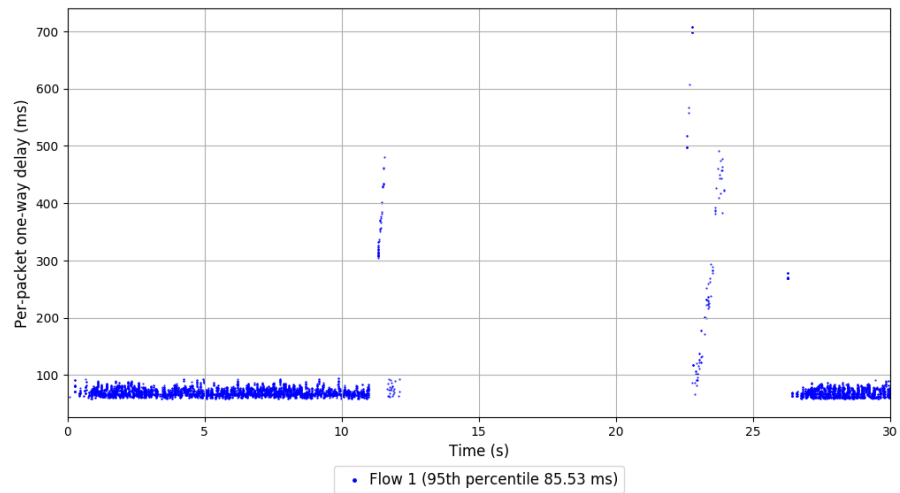
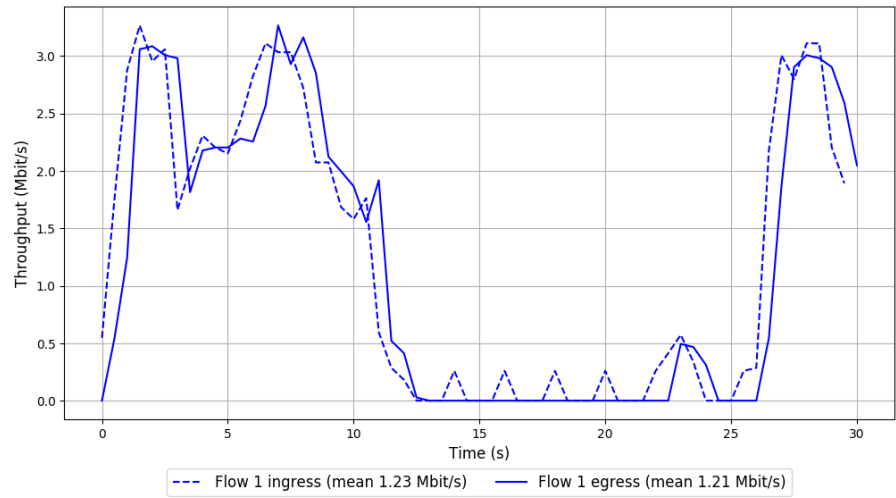


Run 1: Statistics of Copa

Start at: 2018-06-29 11:31:50  
End at: 2018-06-29 11:32:20  
Local clock offset: 2.17 ms  
Remote clock offset: -18.43 ms

# Below is generated by plot.py at 2018-06-29 12:46:21  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 1.21 Mbit/s  
95th percentile per-packet one-way delay: 85.531 ms  
Loss rate: 2.04%  
-- Flow 1:  
Average throughput: 1.21 Mbit/s  
95th percentile per-packet one-way delay: 85.531 ms  
Loss rate: 2.04%

## Run 1: Report of Copa — Data Link

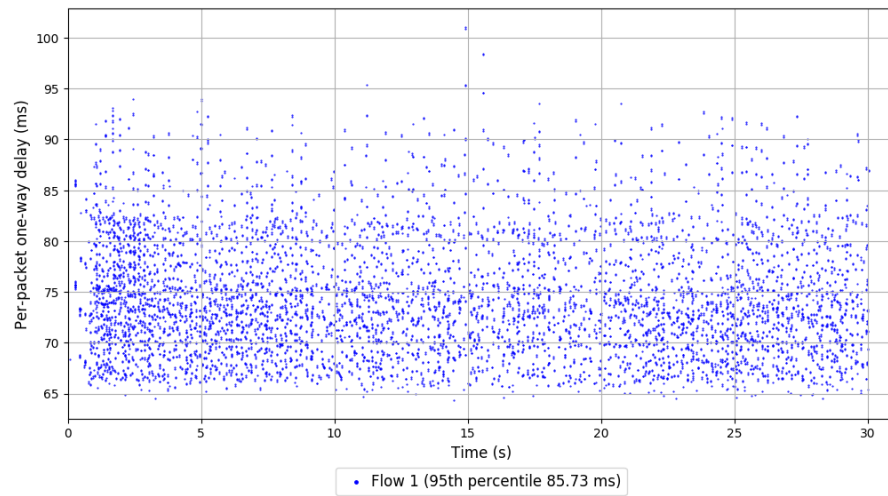
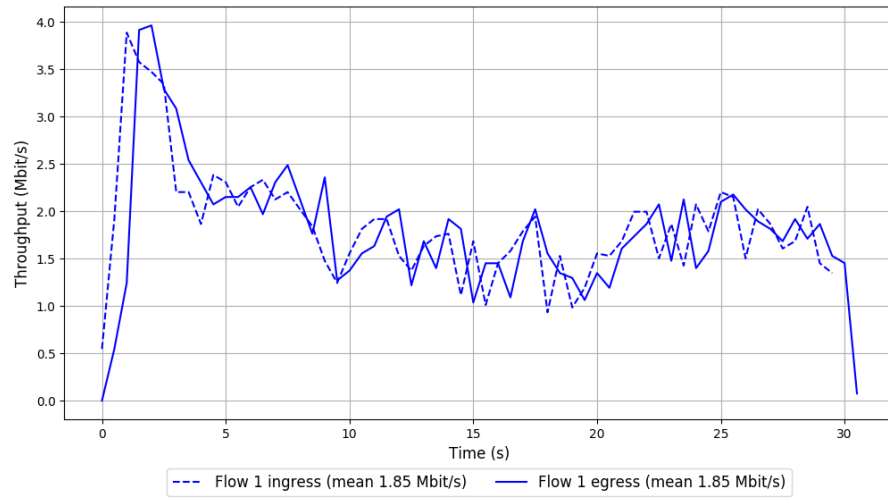


Run 2: Statistics of Copa

Start at: 2018-06-29 11:56:17  
End at: 2018-06-29 11:56:47  
Local clock offset: -6.264 ms  
Remote clock offset: -19.973 ms

# Below is generated by plot.py at 2018-06-29 12:46:21  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 1.85 Mbit/s  
95th percentile per-packet one-way delay: 85.727 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 1.85 Mbit/s  
95th percentile per-packet one-way delay: 85.727 ms  
Loss rate: 0.00%

## Run 2: Report of Copa — Data Link

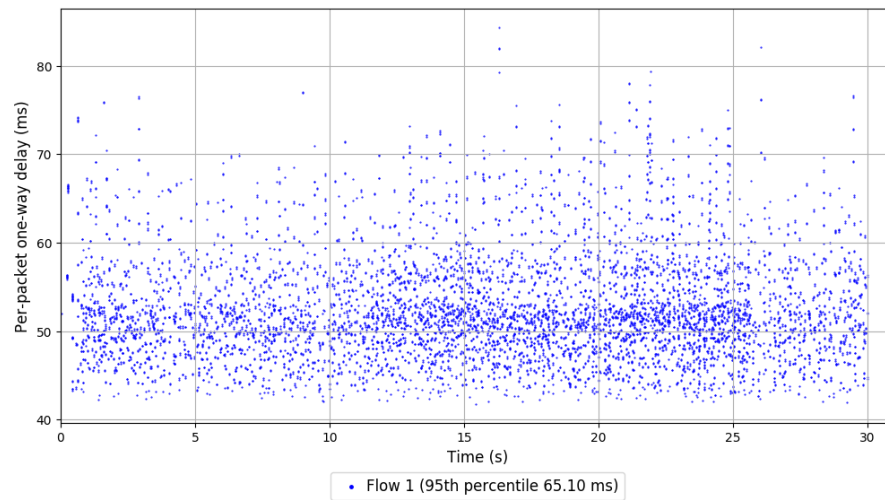
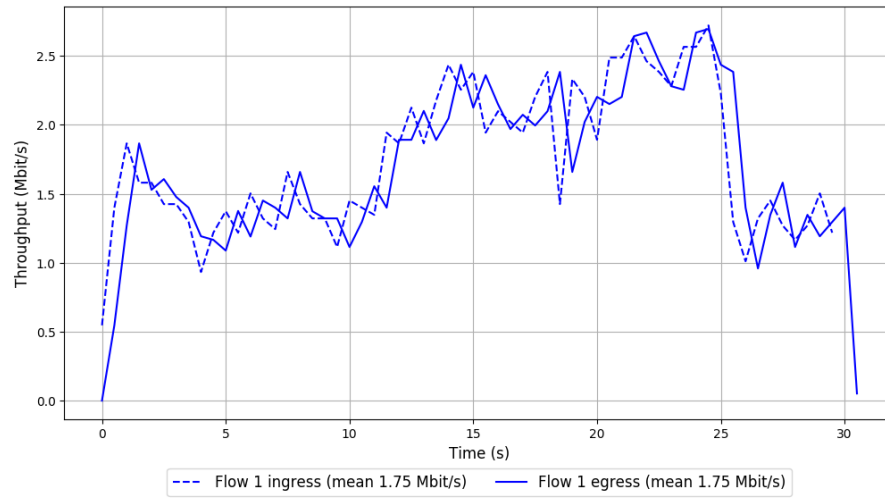


Run 3: Statistics of Copa

Start at: 2018-06-29 12:22:08  
End at: 2018-06-29 12:22:38  
Local clock offset: -14.711 ms  
Remote clock offset: -34.078 ms

# Below is generated by plot.py at 2018-06-29 12:46:21  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 1.75 Mbit/s  
95th percentile per-packet one-way delay: 65.102 ms  
Loss rate: 0.05%  
-- Flow 1:  
Average throughput: 1.75 Mbit/s  
95th percentile per-packet one-way delay: 65.102 ms  
Loss rate: 0.05%

### Run 3: Report of Copa — Data Link



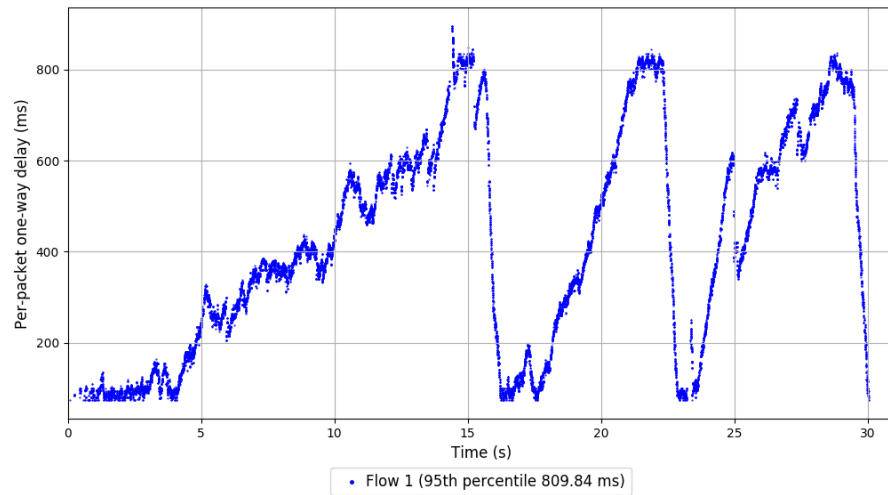
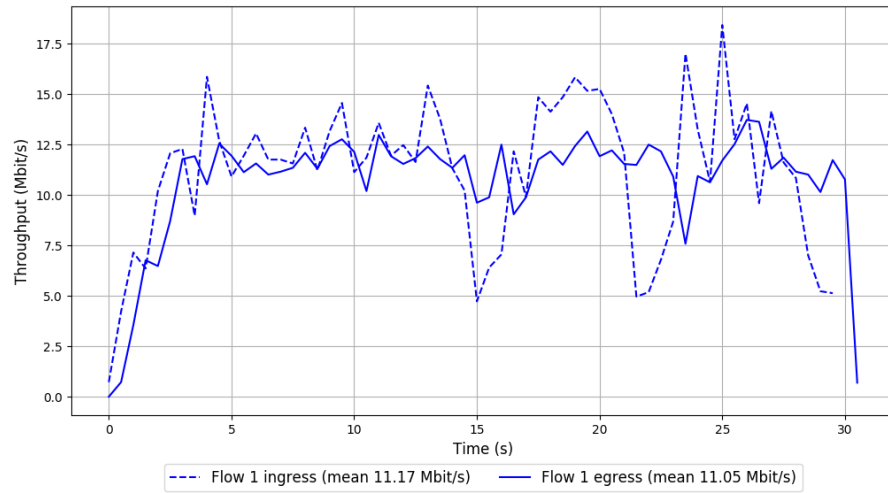
Run 1: Statistics of TCP Cubic

Start at: 2018-06-29 11:53:16  
End at: 2018-06-29 11:53:46  
Local clock offset: -5.161 ms  
Remote clock offset: -15.765 ms

# Below is generated by plot.py at 2018-06-29 12:46:21  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 11.05 Mbit/s  
95th percentile per-packet one-way delay: 809.844 ms  
Loss rate: 1.13%  
-- Flow 1:  
Average throughput: 11.05 Mbit/s  
95th percentile per-packet one-way delay: 809.844 ms  
Loss rate: 1.13%



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

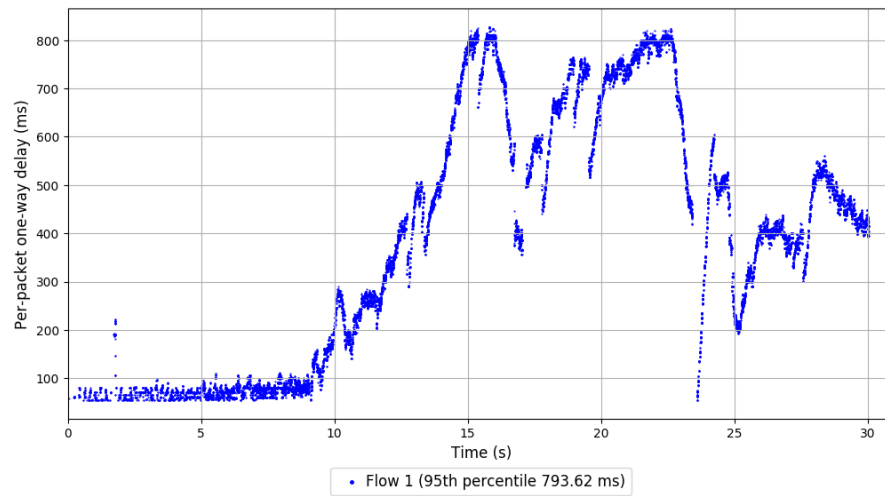
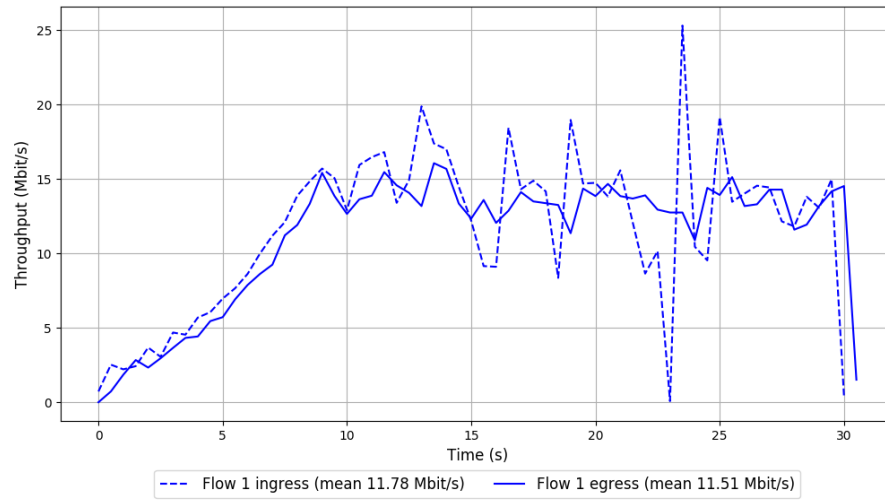


Run 2: Statistics of TCP Cubic

Start at: 2018-06-29 12:18:56  
End at: 2018-06-29 12:19:26  
Local clock offset: -13.57 ms  
Remote clock offset: -30.549 ms

# Below is generated by plot.py at 2018-06-29 12:46:21  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 11.51 Mbit/s  
95th percentile per-packet one-way delay: 793.619 ms  
Loss rate: 2.35%  
-- Flow 1:  
Average throughput: 11.51 Mbit/s  
95th percentile per-packet one-way delay: 793.619 ms  
Loss rate: 2.35%

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

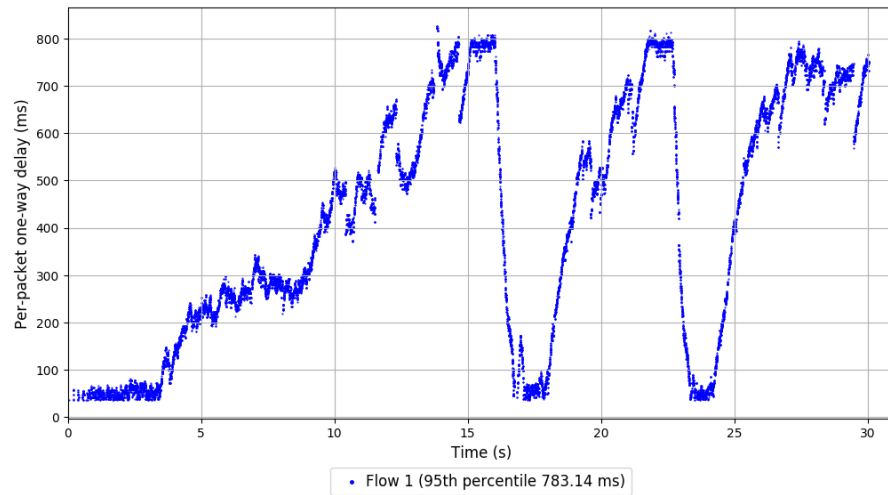
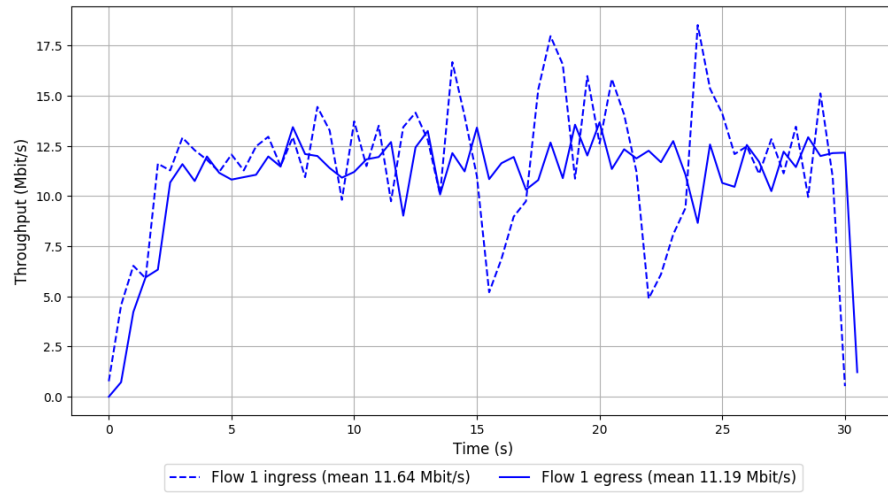


Run 3: Statistics of TCP Cubic

Start at: 2018-06-29 12:43:47  
End at: 2018-06-29 12:44:17  
Local clock offset: -21.566 ms  
Remote clock offset: -41.066 ms

# Below is generated by plot.py at 2018-06-29 12:46:24  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 11.19 Mbit/s  
95th percentile per-packet one-way delay: 783.137 ms  
Loss rate: 3.88%  
-- Flow 1:  
Average throughput: 11.19 Mbit/s  
95th percentile per-packet one-way delay: 783.137 ms  
Loss rate: 3.88%

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

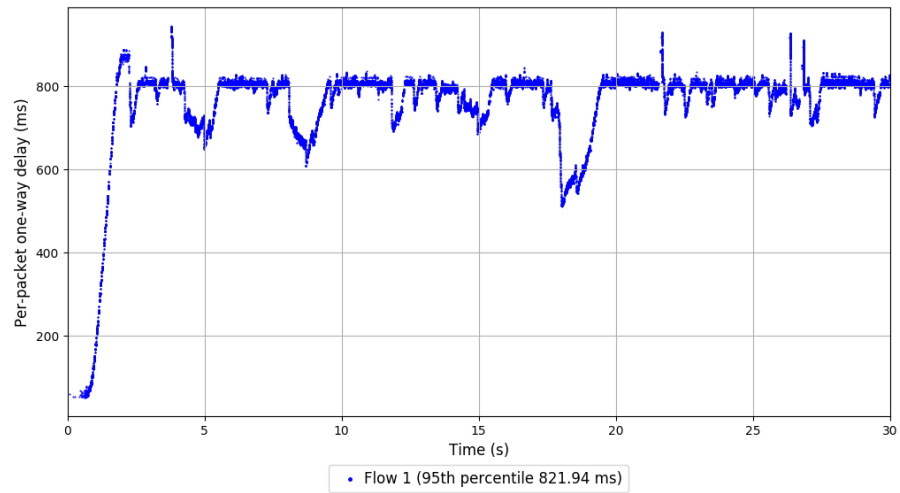
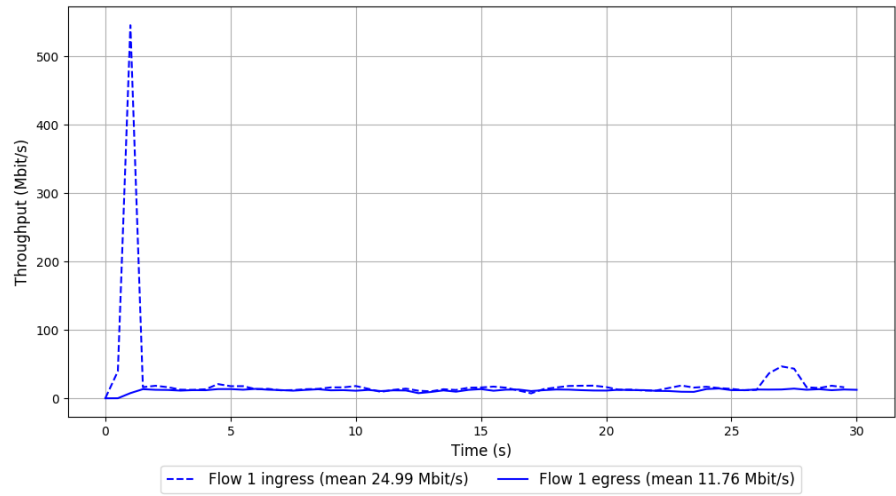


Run 1: Statistics of FillP

Start at: 2018-06-29 11:47:14  
End at: 2018-06-29 11:47:44  
Local clock offset: -2.567 ms  
Remote clock offset: -25.253 ms

# Below is generated by plot.py at 2018-06-29 12:46:34  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 11.76 Mbit/s  
95th percentile per-packet one-way delay: 821.939 ms  
Loss rate: 52.97%  
-- Flow 1:  
Average throughput: 11.76 Mbit/s  
95th percentile per-packet one-way delay: 821.939 ms  
Loss rate: 52.97%

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



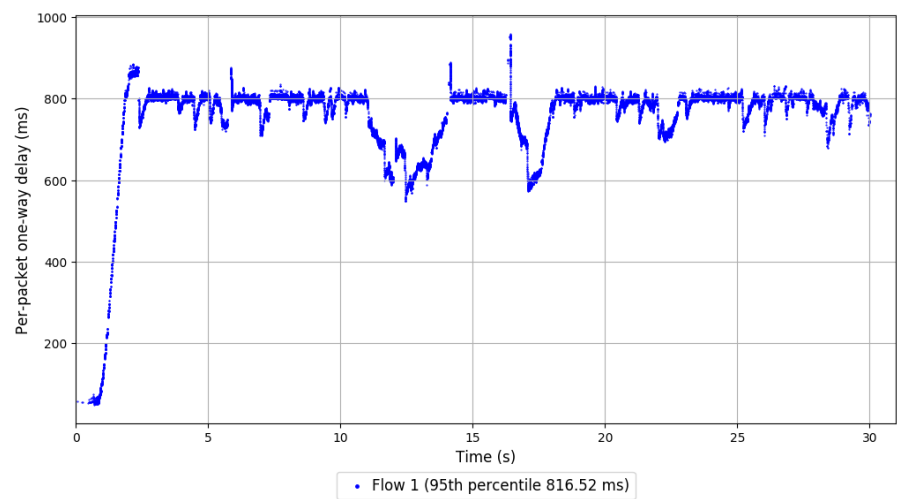
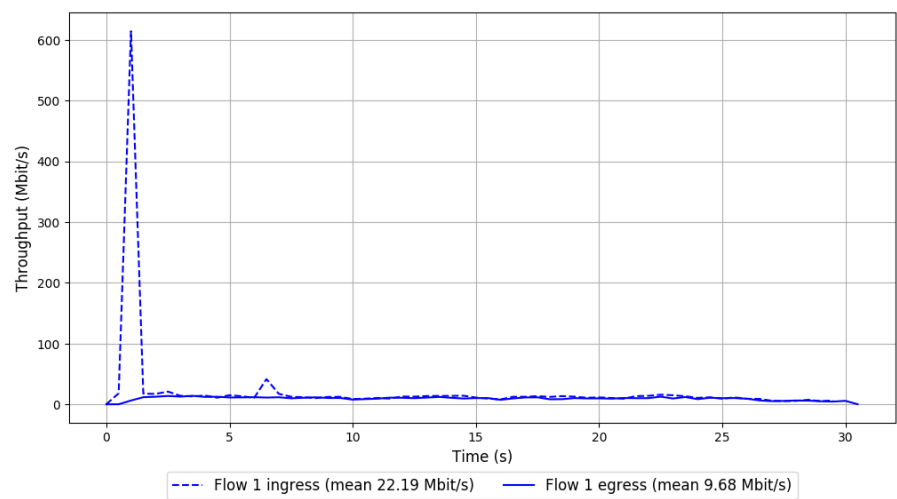
Run 2: Statistics of FillP

Start at: 2018-06-29 12:12:27  
End at: 2018-06-29 12:12:57  
Local clock offset: -11.667 ms  
Remote clock offset: -34.711 ms

# Below is generated by plot.py at 2018-06-29 12:46:34  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 9.68 Mbit/s  
95th percentile per-packet one-way delay: 816.519 ms  
Loss rate: 56.39%  
-- Flow 1:  
Average throughput: 9.68 Mbit/s  
95th percentile per-packet one-way delay: 816.519 ms  
Loss rate: 56.39%



Run 2: Report of FillP — Data Link

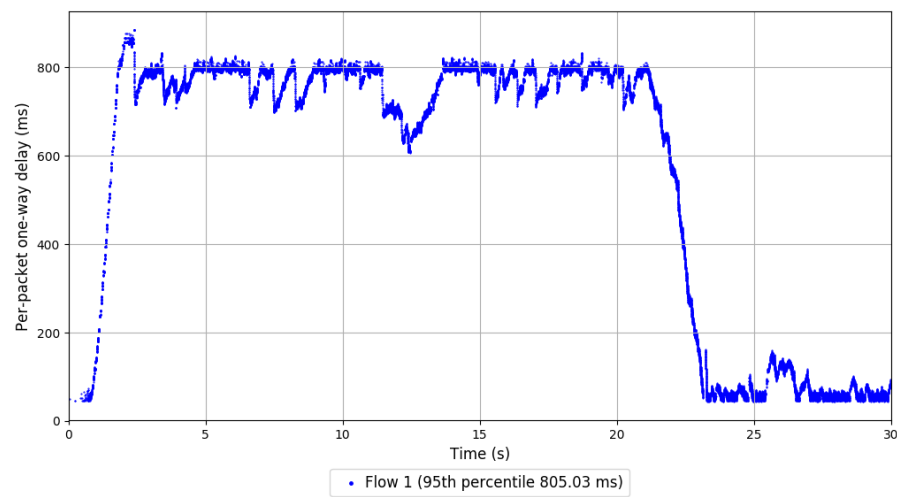
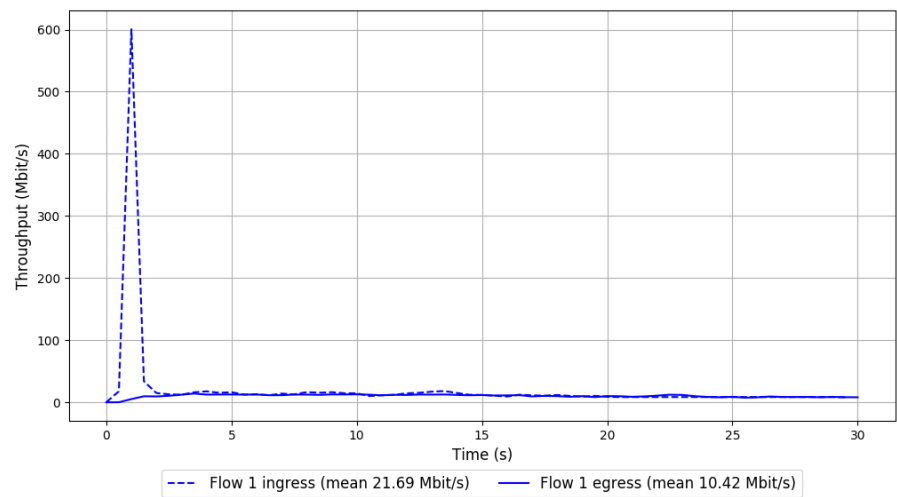


Run 3: Statistics of FillP

Start at: 2018-06-29 12:37:46  
End at: 2018-06-29 12:38:16  
Local clock offset: -19.503 ms  
Remote clock offset: -40.601 ms

# Below is generated by plot.py at 2018-06-29 12:46:37  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 10.42 Mbit/s  
95th percentile per-packet one-way delay: 805.033 ms  
Loss rate: 52.01%  
-- Flow 1:  
Average throughput: 10.42 Mbit/s  
95th percentile per-packet one-way delay: 805.033 ms  
Loss rate: 52.01%

Run 3: Report of FillP — Data Link



Run 1: Statistics of FillP-Sheep

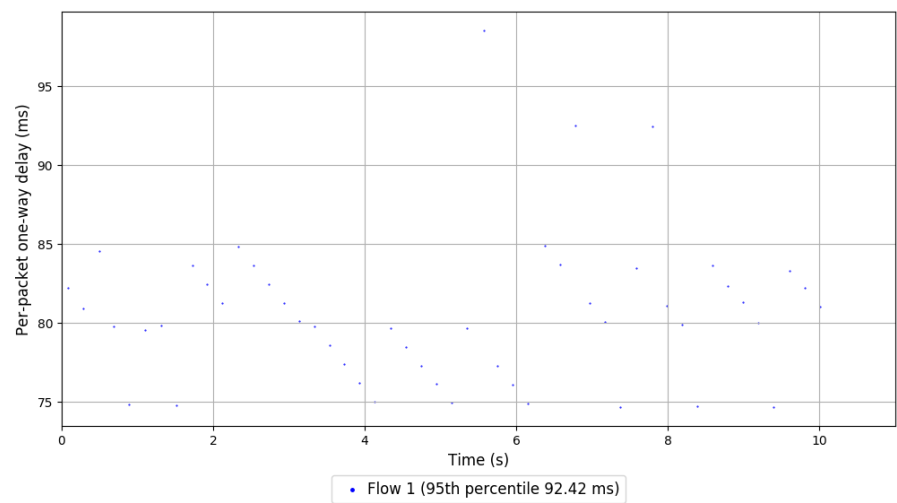
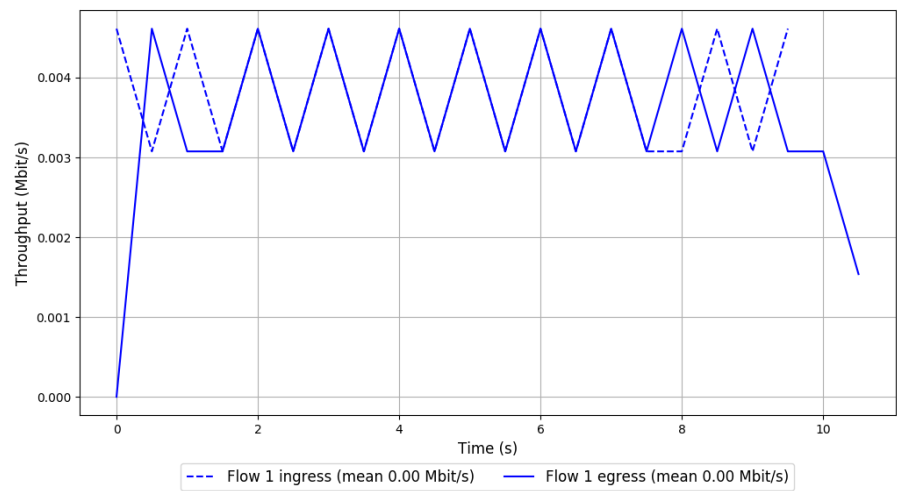
Start at: 2018-06-29 11:52:01

End at: 2018-06-29 11:52:31

Local clock offset: -4.718 ms

Remote clock offset: -10.716 ms

Run 1: Report of FillP-Sheep — Data Link



Run 2: Statistics of FillP-Sheep

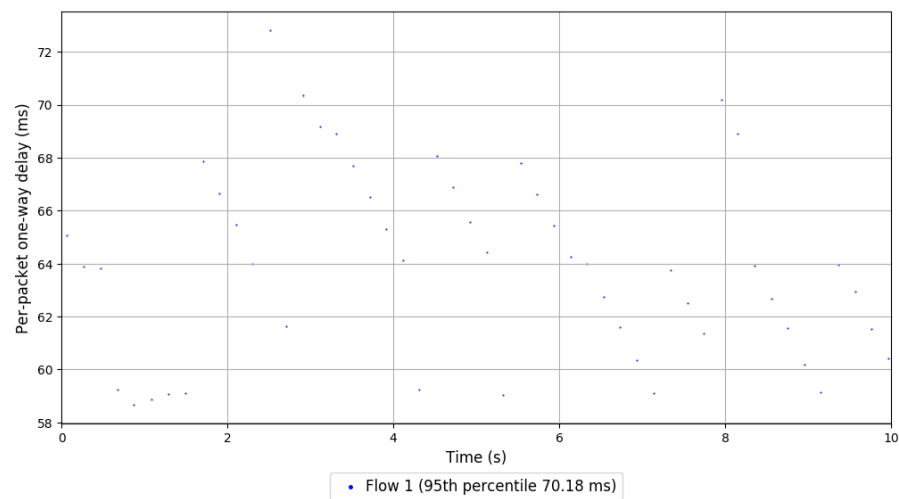
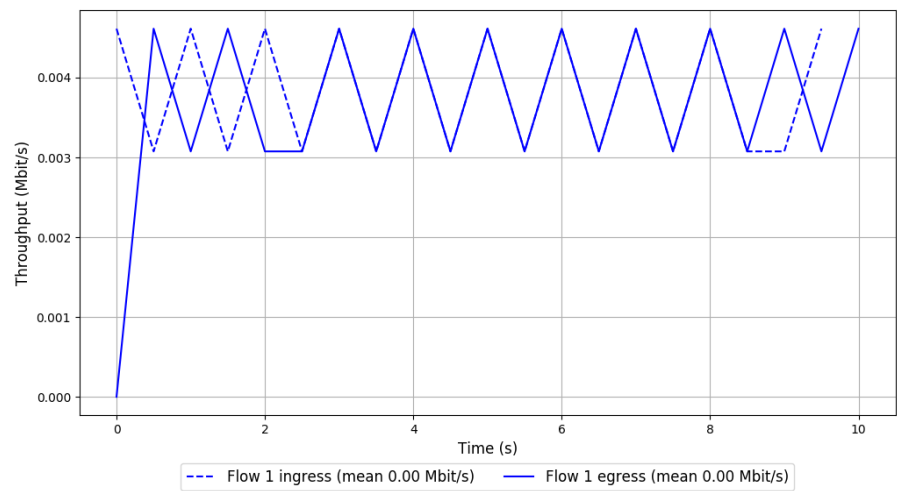
Start at: 2018-06-29 12:17:41

End at: 2018-06-29 12:18:11

Local clock offset: -13.469 ms

Remote clock offset: -25.902 ms

Run 2: Report of FillP-Sheep — Data Link



Run 3: Statistics of FillP-Sheep

Start at: 2018-06-29 12:42:32

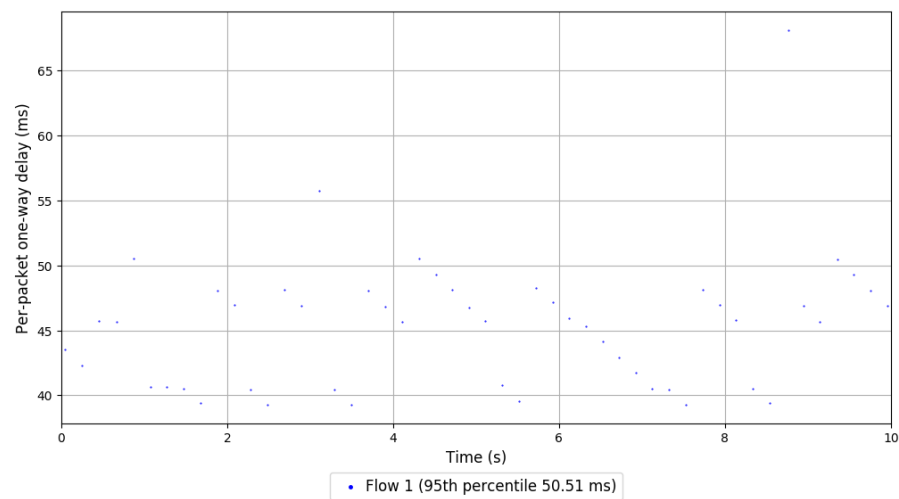
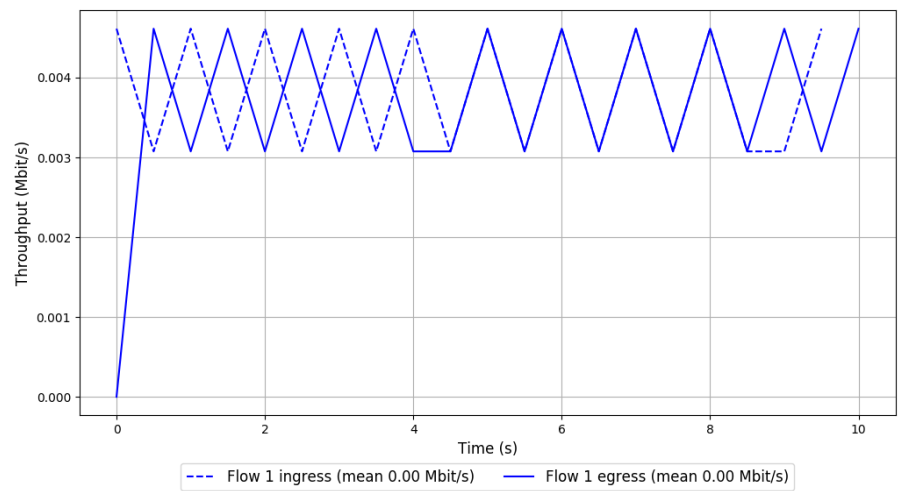
End at: 2018-06-29 12:43:02

Local clock offset: -21.259 ms

Remote clock offset: -36.948 ms



Run 3: Report of FillP-Sheep — Data Link

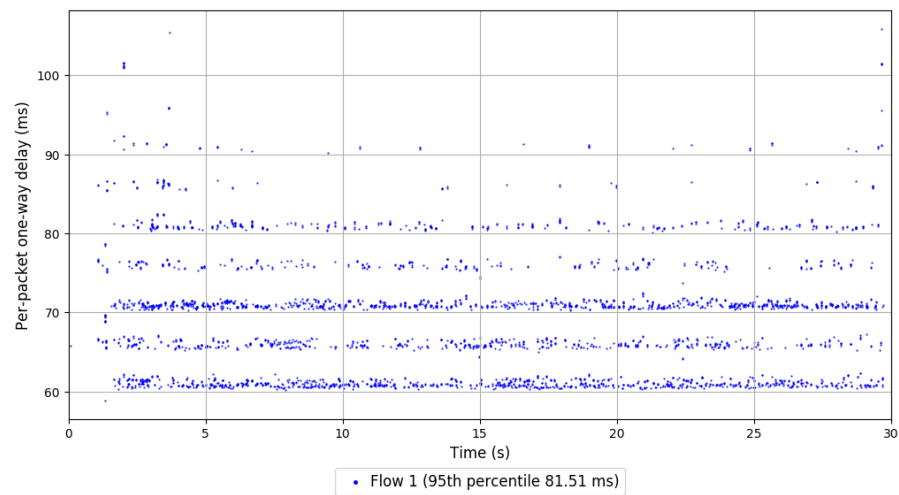
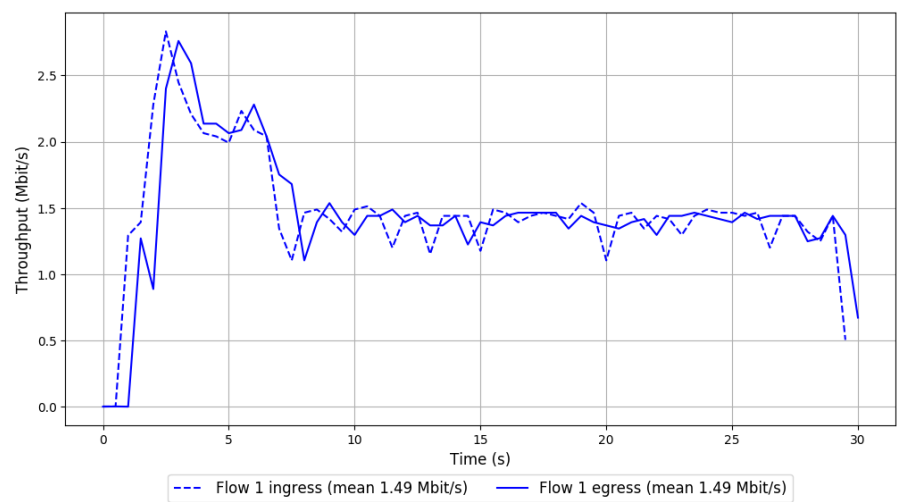


```
Run 1: Statistics of Indigo

Start at: 2018-06-29 11:33:10
End at: 2018-06-29 11:33:40
Local clock offset: 1.67 ms
Remote clock offset: -17.01 ms

# Below is generated by plot.py at 2018-06-29 12:46:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.49 Mbit/s
95th percentile per-packet one-way delay: 81.511 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 1.49 Mbit/s
95th percentile per-packet one-way delay: 81.511 ms
Loss rate: 0.03%
```

Run 1: Report of Indigo — Data Link

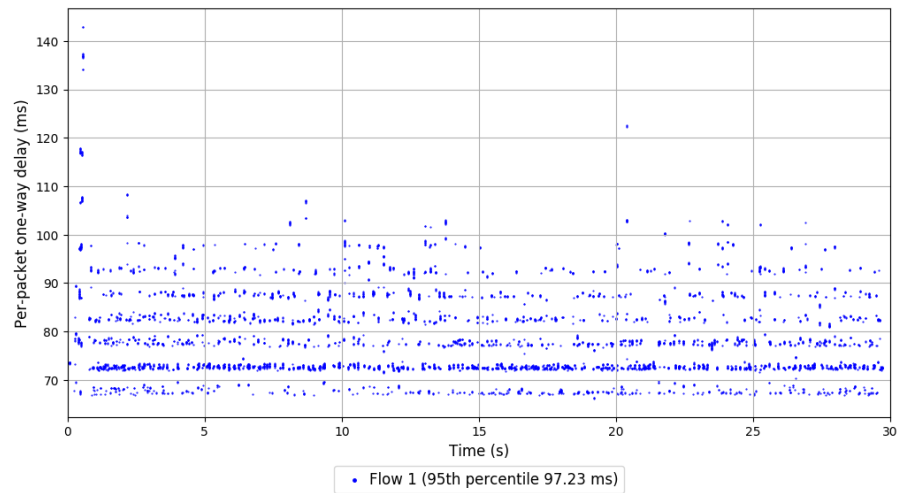
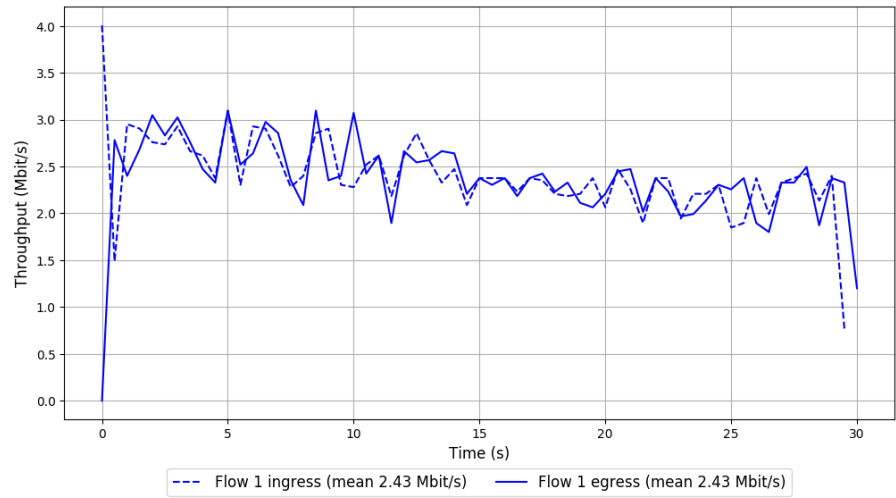


Run 2: Statistics of Indigo

Start at: 2018-06-29 11:57:40  
End at: 2018-06-29 11:58:10  
Local clock offset: -6.638 ms  
Remote clock offset: -13.156 ms

# Below is generated by plot.py at 2018-06-29 12:46:37  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 2.43 Mbit/s  
95th percentile per-packet one-way delay: 97.232 ms  
Loss rate: 0.05%  
-- Flow 1:  
Average throughput: 2.43 Mbit/s  
95th percentile per-packet one-way delay: 97.232 ms  
Loss rate: 0.05%

## Run 2: Report of Indigo — Data Link

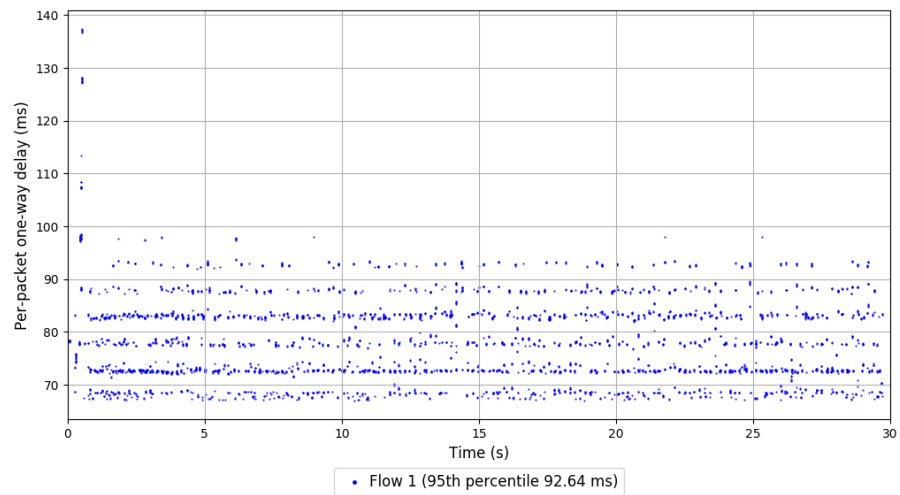
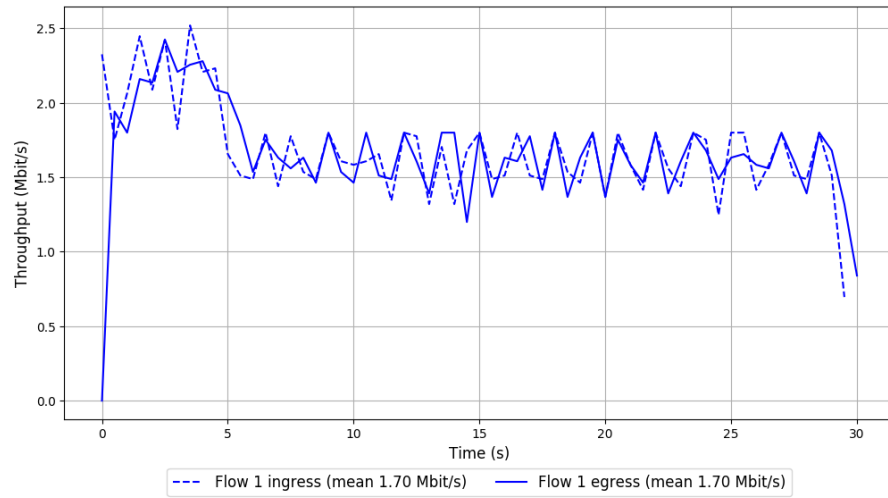


Run 3: Statistics of Indigo

Start at: 2018-06-29 12:23:30  
End at: 2018-06-29 12:24:00  
Local clock offset: -15.328 ms  
Remote clock offset: -18.65 ms

# Below is generated by plot.py at 2018-06-29 12:46:37  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 1.70 Mbit/s  
95th percentile per-packet one-way delay: 92.635 ms  
Loss rate: 0.17%  
-- Flow 1:  
Average throughput: 1.70 Mbit/s  
95th percentile per-packet one-way delay: 92.635 ms  
Loss rate: 0.17%

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



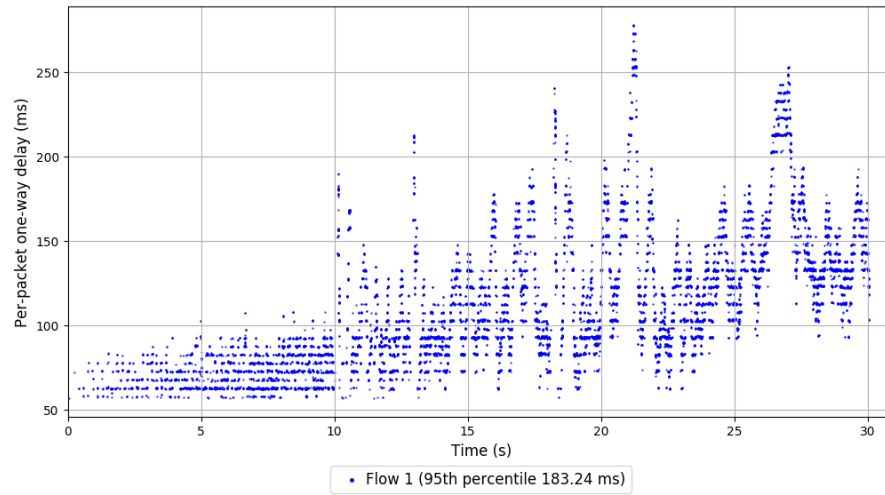
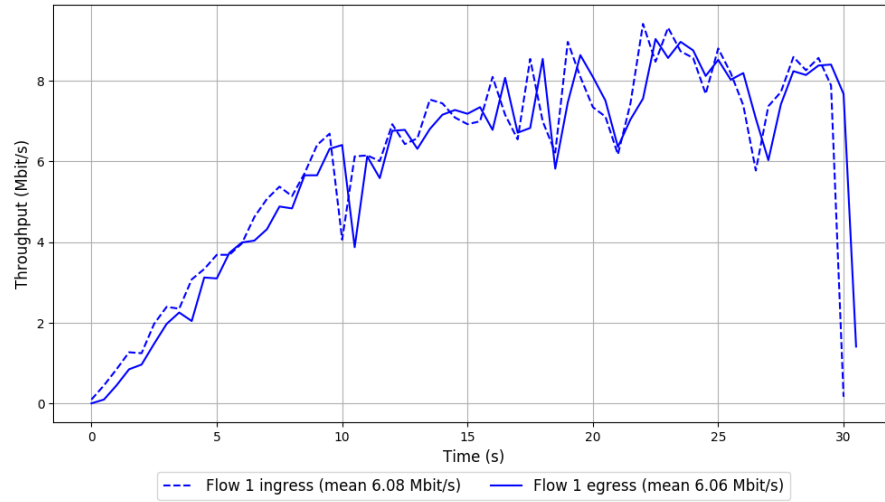
```
Run 1: Statistics of LEDBAT

Start at: 2018-06-29 11:37:06
End at: 2018-06-29 11:37:36
Local clock offset: 0.613 ms
Remote clock offset: -20.763 ms

# Below is generated by plot.py at 2018-06-29 12:46:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 6.06 Mbit/s
95th percentile per-packet one-way delay: 183.243 ms
Loss rate: 0.40%
-- Flow 1:
Average throughput: 6.06 Mbit/s
95th percentile per-packet one-way delay: 183.243 ms
Loss rate: 0.40%
```



# Run 1: Report of LEDBAT — Data Link

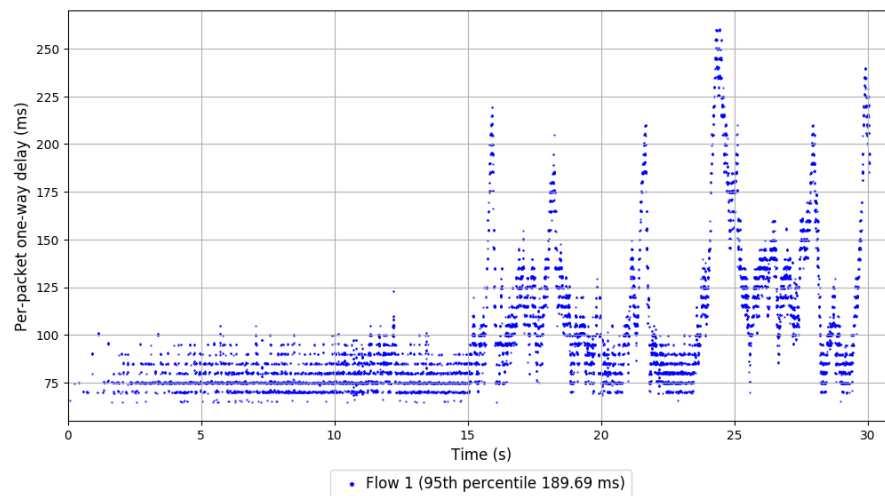
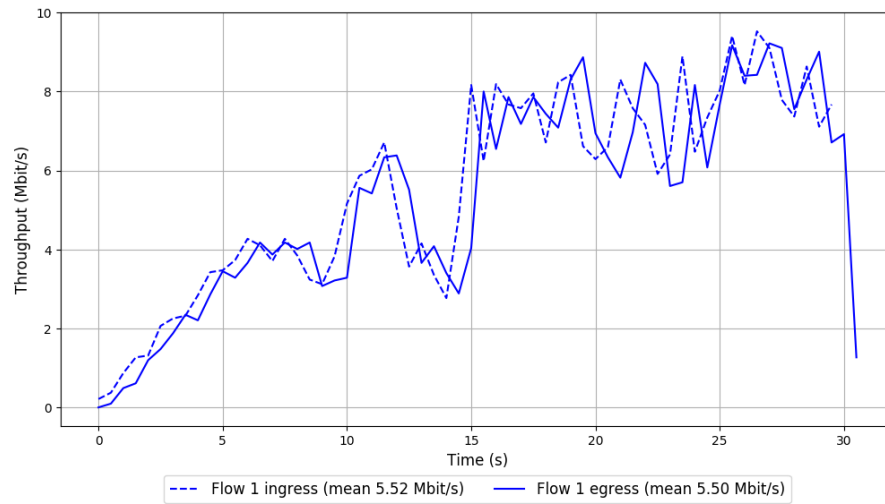


Run 2: Statistics of LEDBAT

Start at: 2018-06-29 12:02:24  
End at: 2018-06-29 12:02:54  
Local clock offset: -8.536 ms  
Remote clock offset: -14.214 ms

# Below is generated by plot.py at 2018-06-29 12:46:37  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 5.50 Mbit/s  
95th percentile per-packet one-way delay: 189.691 ms  
Loss rate: 0.39%  
-- Flow 1:  
Average throughput: 5.50 Mbit/s  
95th percentile per-packet one-way delay: 189.691 ms  
Loss rate: 0.39%

## Run 2: Report of LEDBAT — Data Link

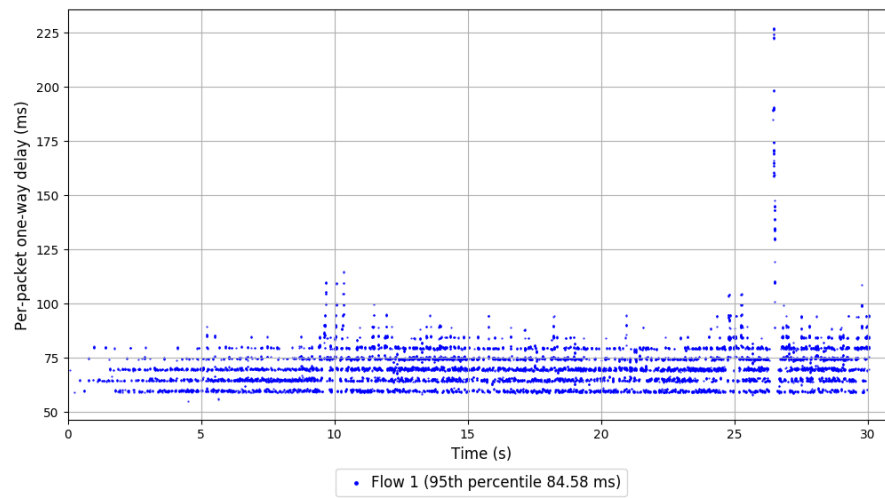
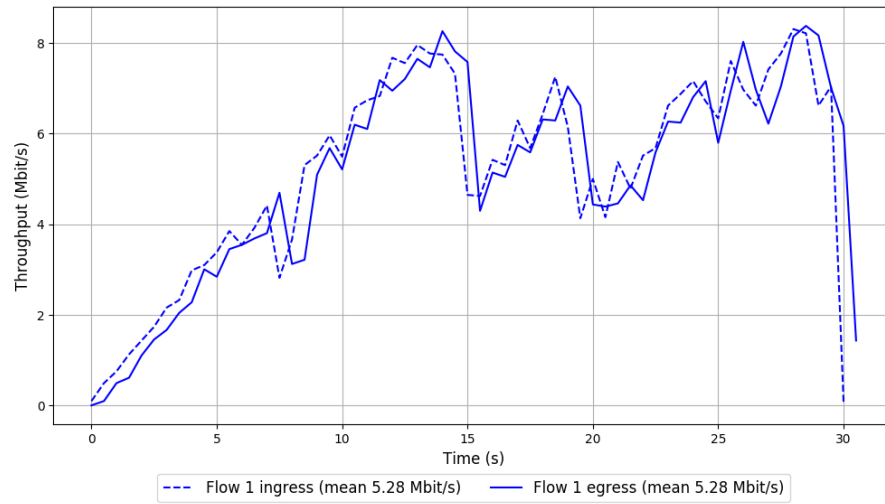


Run 3: Statistics of LEDBAT

Start at: 2018-06-29 12:27:50  
End at: 2018-06-29 12:28:20  
Local clock offset: -16.552 ms  
Remote clock offset: -28.844 ms

# Below is generated by plot.py at 2018-06-29 12:46:37  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 5.28 Mbit/s  
95th percentile per-packet one-way delay: 84.583 ms  
Loss rate: 0.12%  
-- Flow 1:  
Average throughput: 5.28 Mbit/s  
95th percentile per-packet one-way delay: 84.583 ms  
Loss rate: 0.12%

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

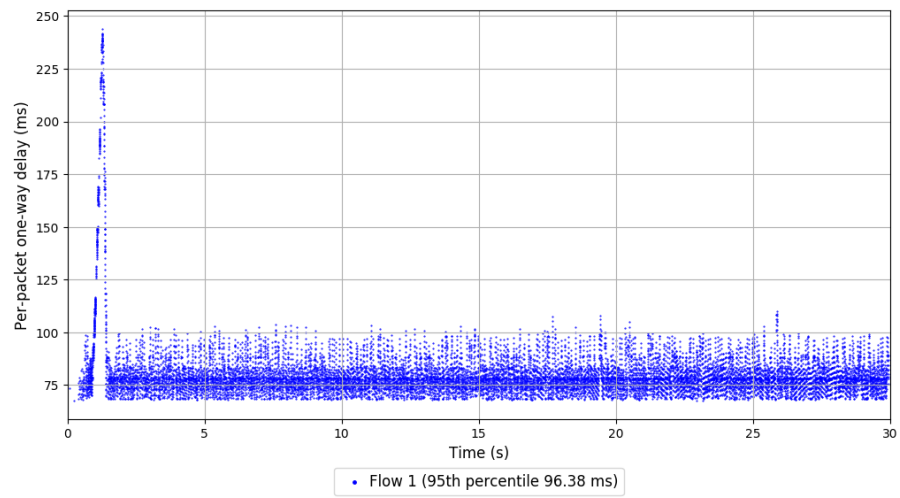
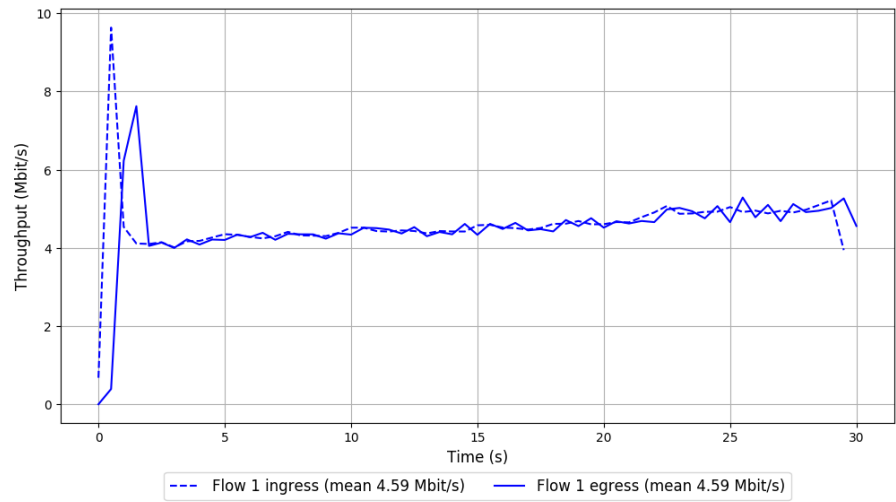


```
Run 1: Statistics of PCC-Allegro

Start at: 2018-06-29 11:48:55
End at: 2018-06-29 11:49:25
Local clock offset: -3.485 ms
Remote clock offset: -10.765 ms

# Below is generated by plot.py at 2018-06-29 12:46:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.59 Mbit/s
95th percentile per-packet one-way delay: 96.383 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 4.59 Mbit/s
95th percentile per-packet one-way delay: 96.383 ms
Loss rate: 0.06%
```

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



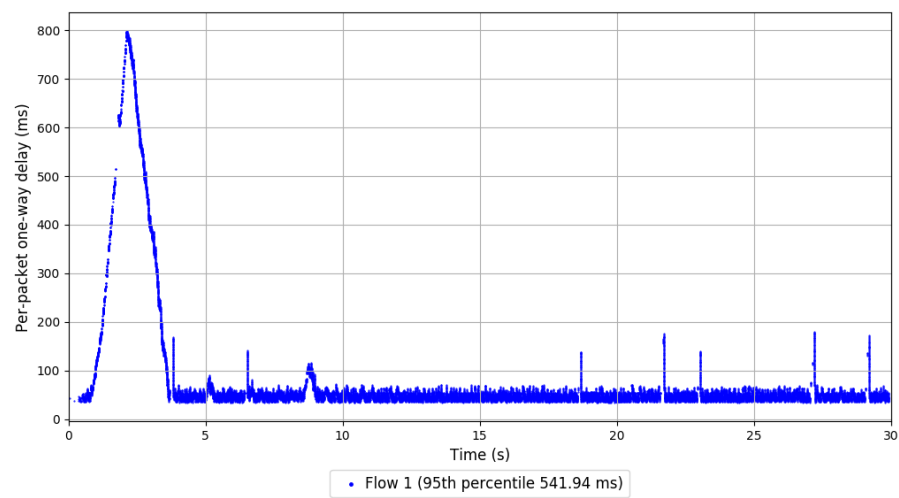
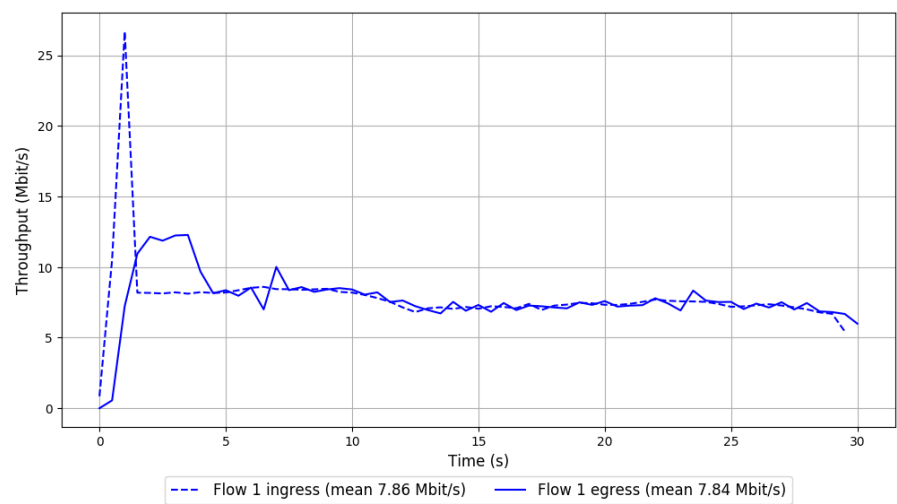
Run 2: Statistics of PCC-Allegro

Start at: 2018-06-29 12:14:23  
End at: 2018-06-29 12:14:53  
Local clock offset: -12.333 ms  
Remote clock offset: -41.471 ms

# Below is generated by plot.py at 2018-06-29 12:46:37  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 7.84 Mbit/s  
95th percentile per-packet one-way delay: 541.944 ms  
Loss rate: 0.28%  
-- Flow 1:  
Average throughput: 7.84 Mbit/s  
95th percentile per-packet one-way delay: 541.944 ms  
Loss rate: 0.28%



Run 2: Report of PCC-Allegro — Data Link

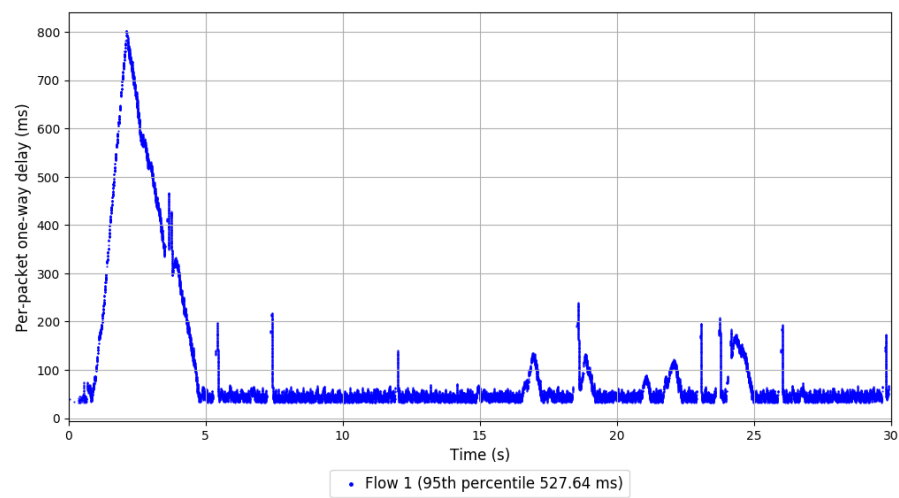
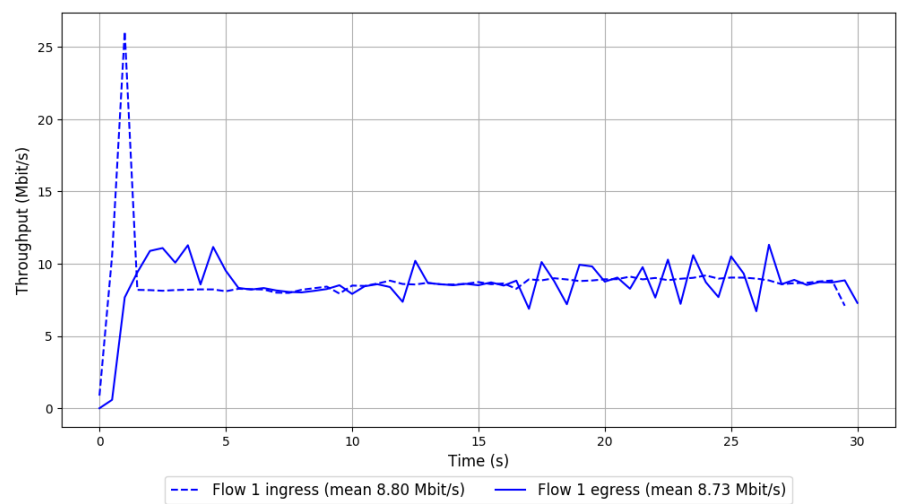


Run 3: Statistics of PCC-Allegro

Start at: 2018-06-29 12:39:18  
End at: 2018-06-29 12:39:48  
Local clock offset: -20.164 ms  
Remote clock offset: -42.674 ms

# Below is generated by plot.py at 2018-06-29 12:46:43  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 8.73 Mbit/s  
95th percentile per-packet one-way delay: 527.638 ms  
Loss rate: 0.82%  
-- Flow 1:  
Average throughput: 8.73 Mbit/s  
95th percentile per-packet one-way delay: 527.638 ms  
Loss rate: 0.82%

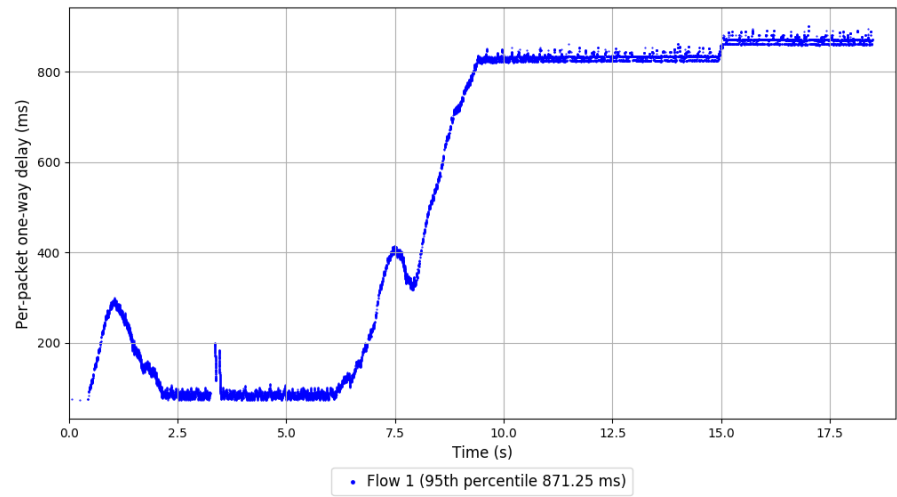
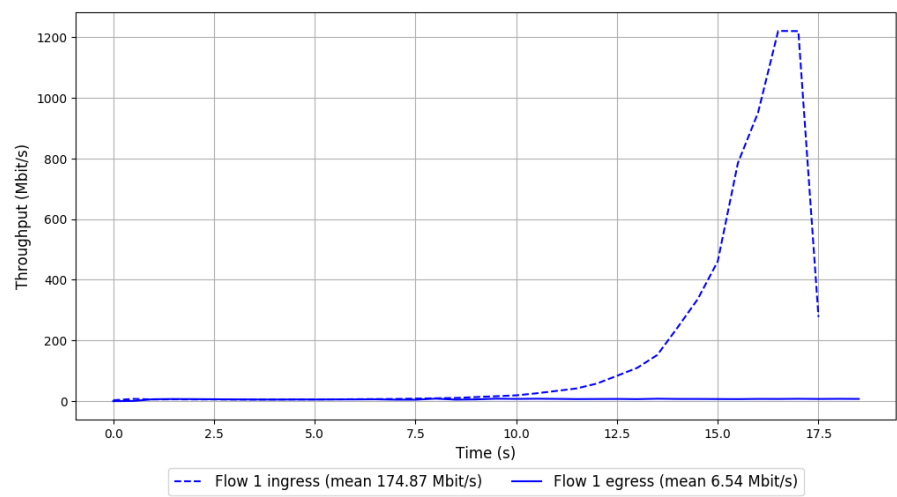
Run 3: Report of PCC-Allegro — Data Link



Run 1: Statistics of PCC-Expr

Start at: 2018-06-29 11:41:16  
End at: 2018-06-29 11:41:46  
Local clock offset: -0.66 ms  
Remote clock offset: -12.492 ms

Run 1: Report of PCC-Expr — Data Link

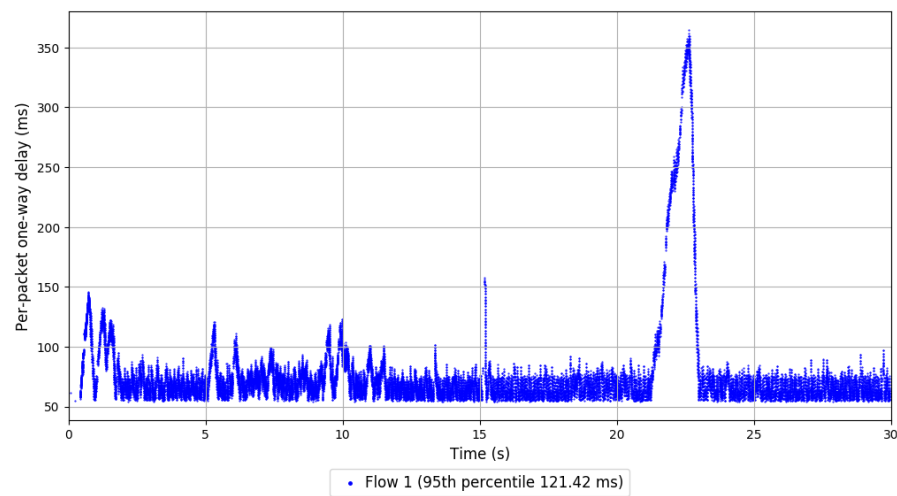
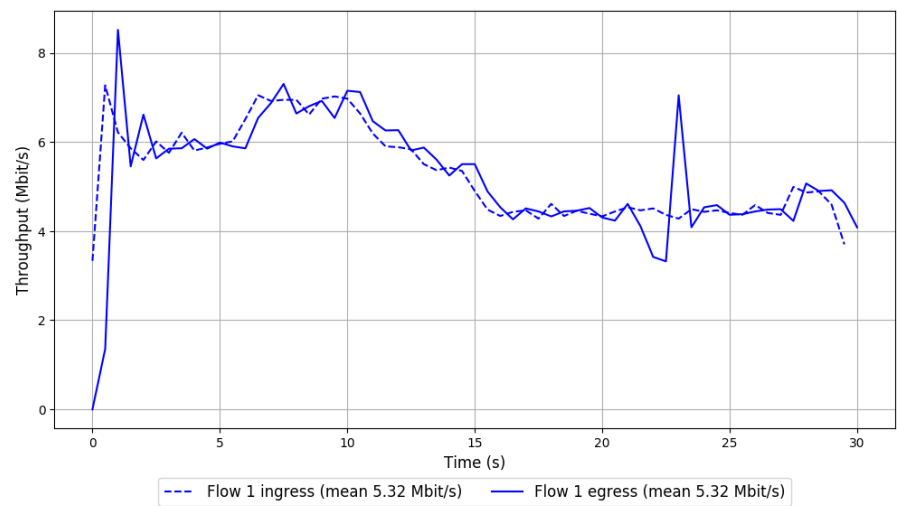


Run 2: Statistics of PCC-Expr

Start at: 2018-06-29 12:06:32  
End at: 2018-06-29 12:07:02  
Local clock offset: -9.873 ms  
Remote clock offset: -28.714 ms

# Below is generated by plot.py at 2018-06-29 12:47:01  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 5.32 Mbit/s  
95th percentile per-packet one-way delay: 121.417 ms  
Loss rate: 0.05%  
-- Flow 1:  
Average throughput: 5.32 Mbit/s  
95th percentile per-packet one-way delay: 121.417 ms  
Loss rate: 0.05%

Run 2: Report of PCC-Expr — Data Link



Run 3: Statistics of PCC-Expr

Start at: 2018-06-29 12:32:01

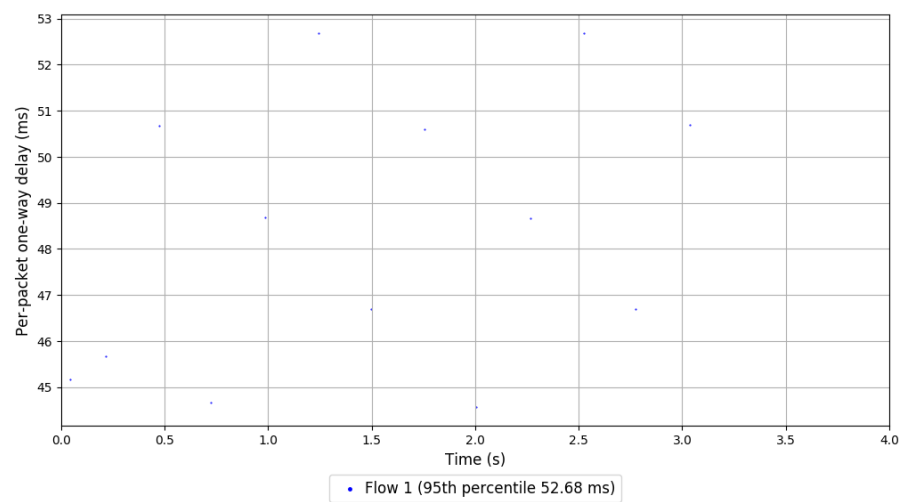
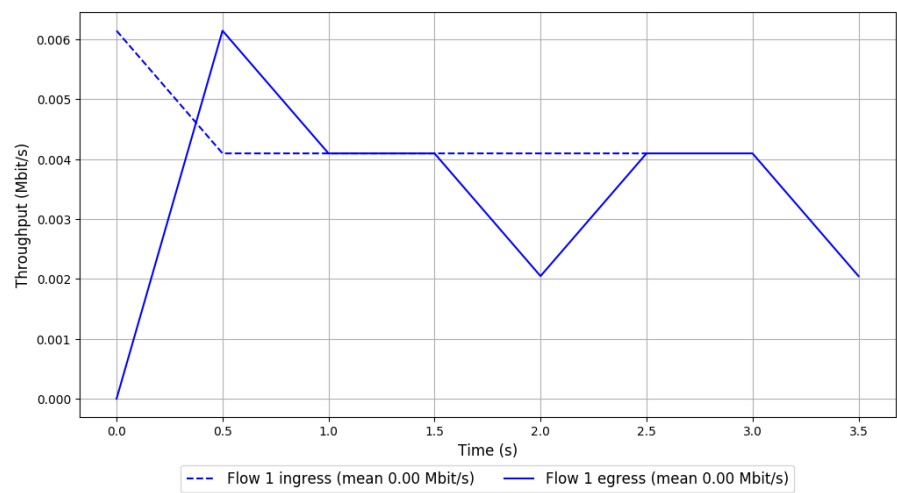
End at: 2018-06-29 12:32:31

Local clock offset: -17.906 ms

Remote clock offset: -33.37 ms



Run 3: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

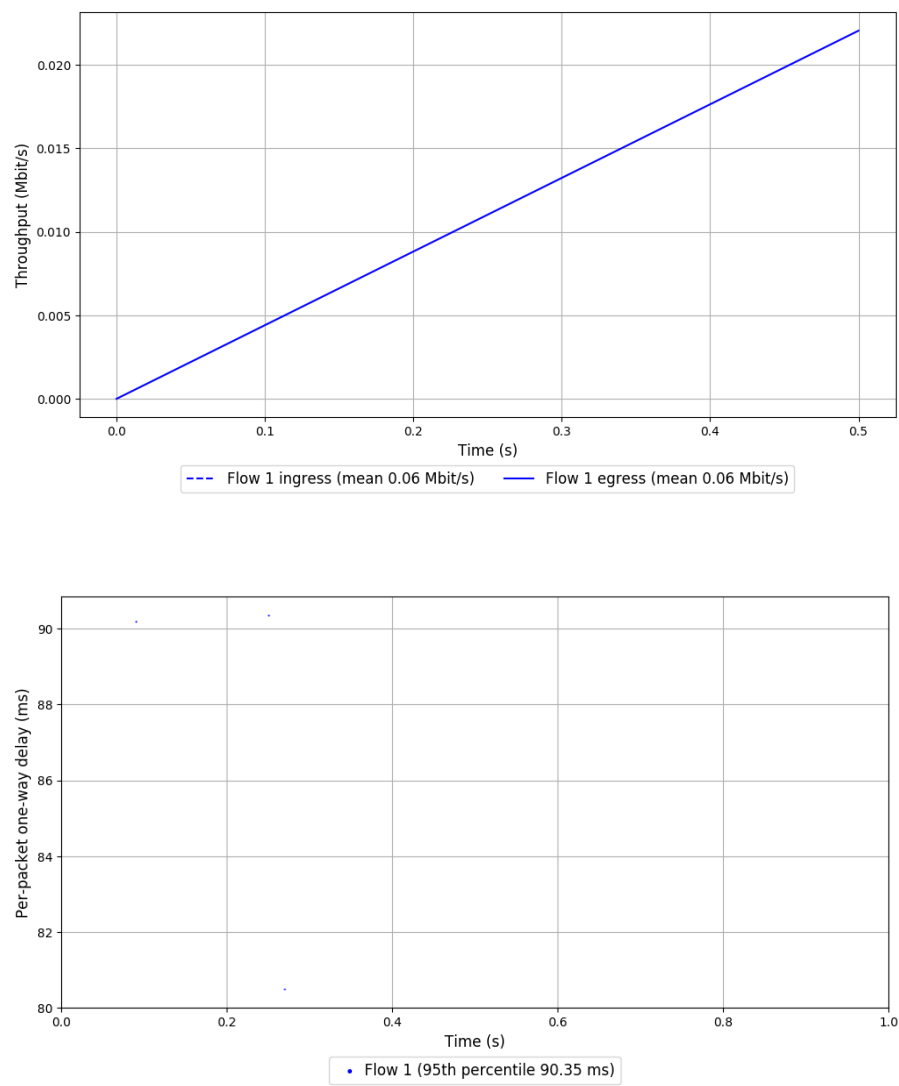
Start at: 2018-06-29 11:34:29

End at: 2018-06-29 11:34:59

Local clock offset: 1.365 ms

Remote clock offset: -11.957 ms

Run 1: Report of QUIC Cubic — Data Link

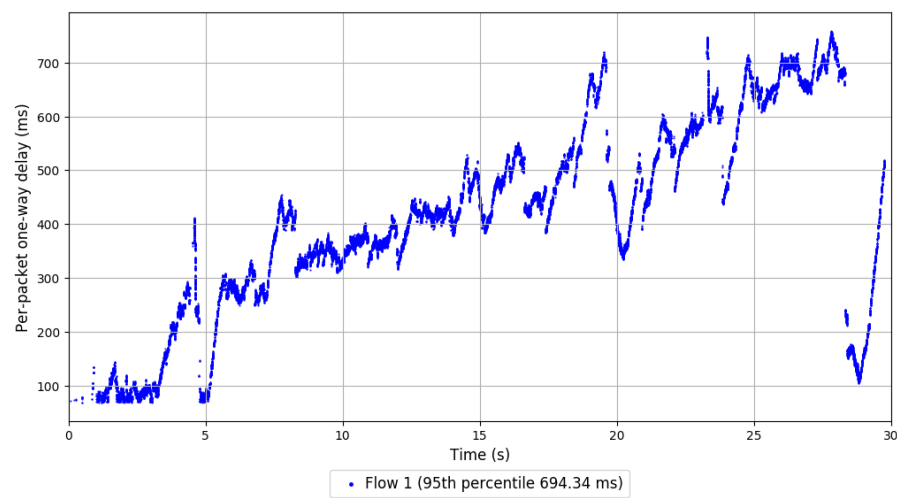
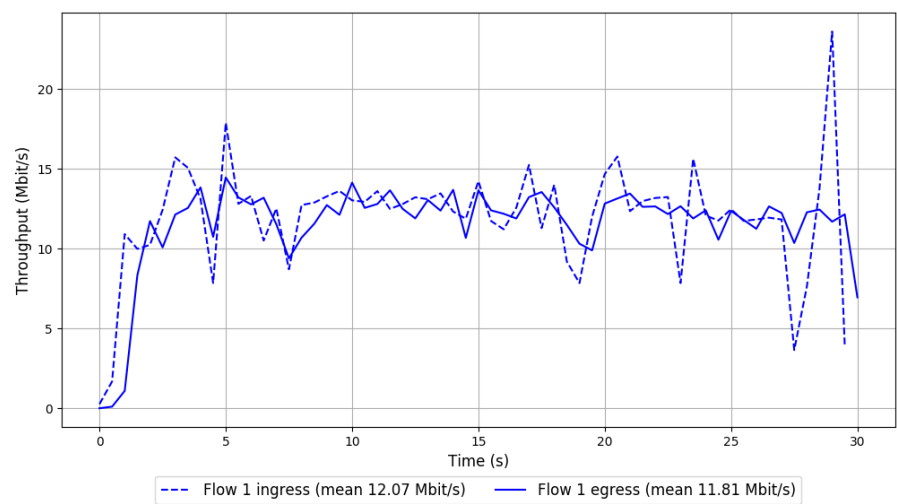


Run 2: Statistics of QUIC Cubic

Start at: 2018-06-29 11:59:01  
End at: 2018-06-29 11:59:31  
Local clock offset: -7.293 ms  
Remote clock offset: -12.405 ms

# Below is generated by plot.py at 2018-06-29 12:47:01  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 11.81 Mbit/s  
95th percentile per-packet one-way delay: 694.335 ms  
Loss rate: 1.98%  
-- Flow 1:  
Average throughput: 11.81 Mbit/s  
95th percentile per-packet one-way delay: 694.335 ms  
Loss rate: 1.98%

Run 2: Report of QUIC Cubic — Data Link

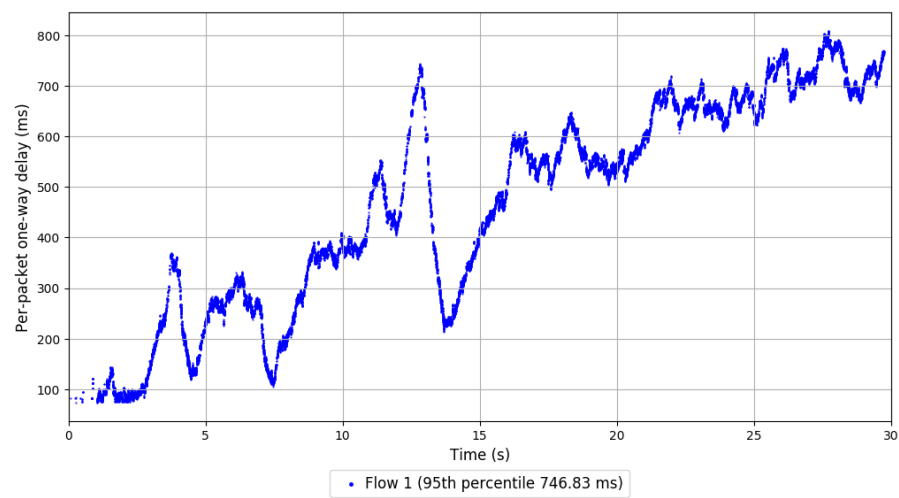
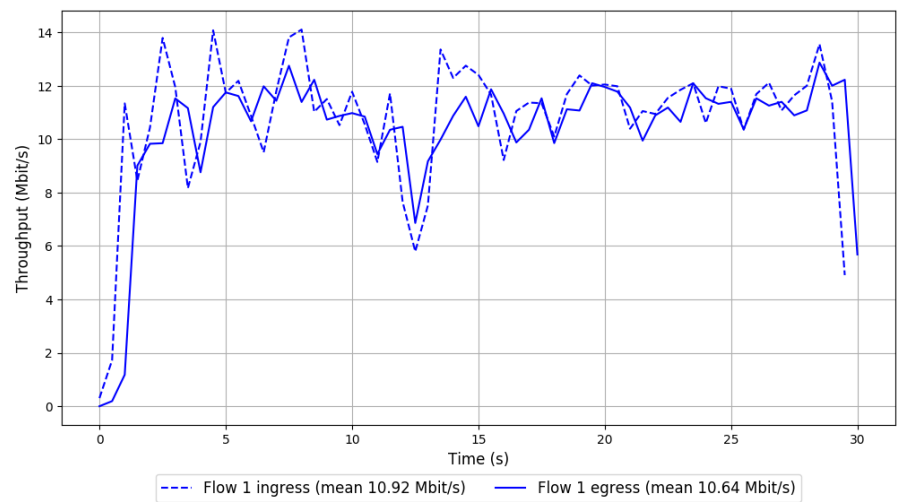


Run 3: Statistics of QUIC Cubic

Start at: 2018-06-29 12:24:48  
End at: 2018-06-29 12:25:18  
Local clock offset: -15.553 ms  
Remote clock offset: -9.238 ms

# Below is generated by plot.py at 2018-06-29 12:47:01  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 10.64 Mbit/s  
95th percentile per-packet one-way delay: 746.833 ms  
Loss rate: 2.63%  
-- Flow 1:  
Average throughput: 10.64 Mbit/s  
95th percentile per-packet one-way delay: 746.833 ms  
Loss rate: 2.63%

Run 3: Report of QUIC Cubic — Data Link



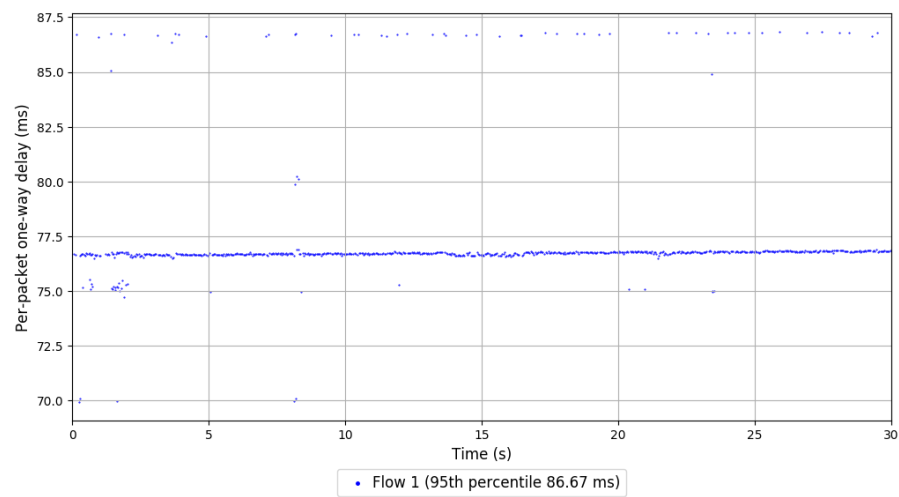
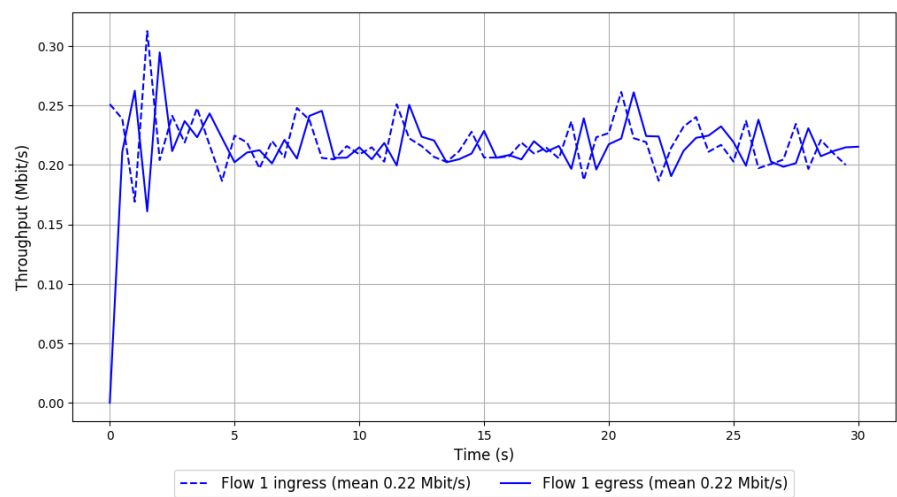
```
Run 1: Statistics of SCReAM

Start at: 2018-06-29 11:42:50
End at: 2018-06-29 11:43:20
Local clock offset: -1.038 ms
Remote clock offset: -11.211 ms

# Below is generated by plot.py at 2018-06-29 12:47:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.668 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.668 ms
Loss rate: 0.13%
```



Run 1: Report of SReAM — Data Link

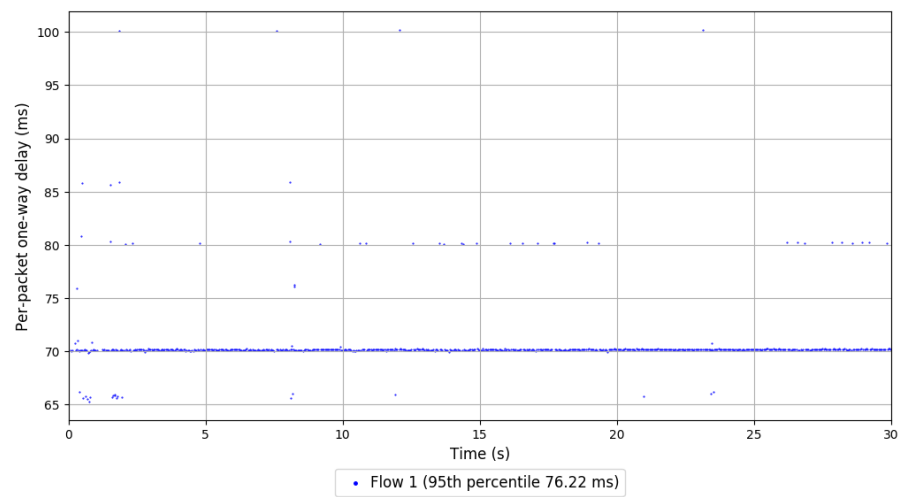
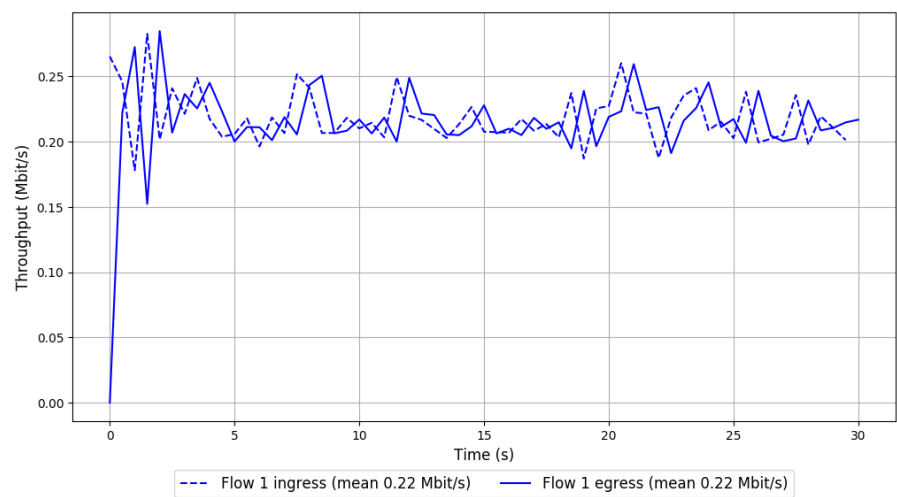


Run 2: Statistics of SCReAM

Start at: 2018-06-29 12:08:05  
End at: 2018-06-29 12:08:35  
Local clock offset: -10.268 ms  
Remote clock offset: -18.259 ms

# Below is generated by plot.py at 2018-06-29 12:47:01  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 76.216 ms  
Loss rate: 0.13%  
-- Flow 1:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 76.216 ms  
Loss rate: 0.13%

Run 2: Report of SReAM — Data Link

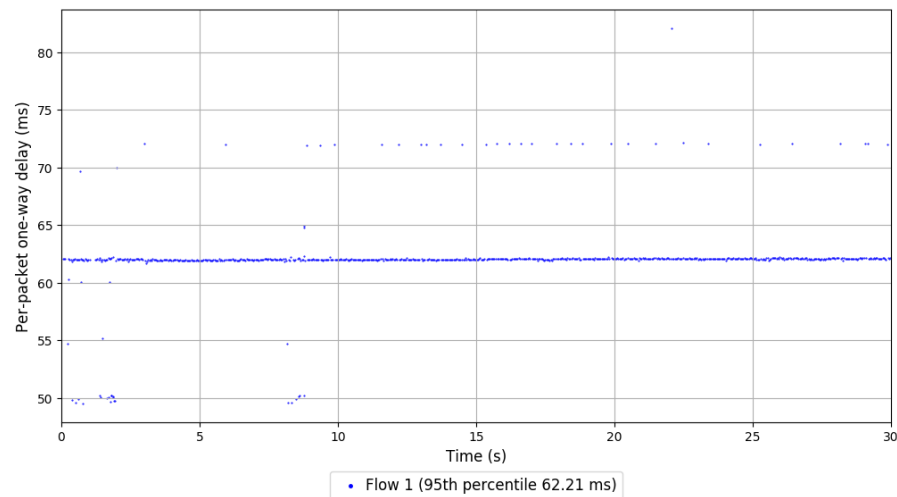
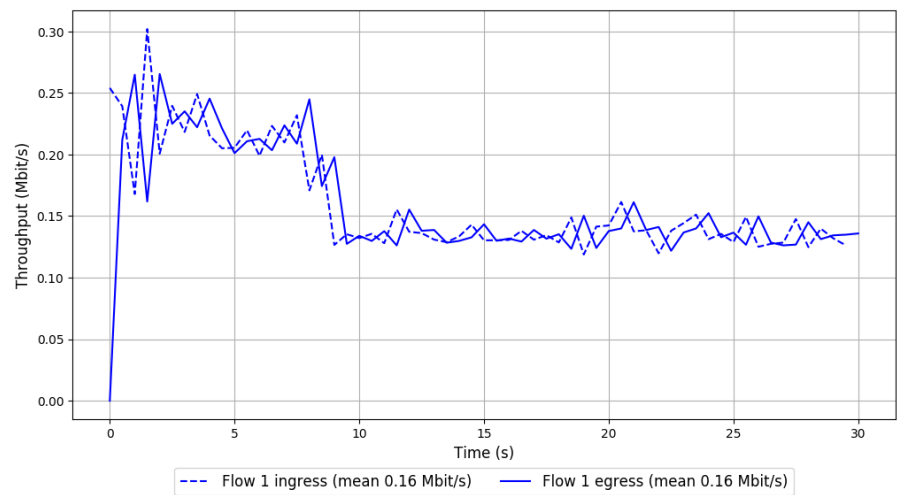


Run 3: Statistics of SCReAM

Start at: 2018-06-29 12:33:16  
End at: 2018-06-29 12:33:46  
Local clock offset: -18.37 ms  
Remote clock offset: -35.935 ms

# Below is generated by plot.py at 2018-06-29 12:47:01  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.16 Mbit/s  
95th percentile per-packet one-way delay: 62.210 ms  
Loss rate: 0.11%  
-- Flow 1:  
Average throughput: 0.16 Mbit/s  
95th percentile per-packet one-way delay: 62.210 ms  
Loss rate: 0.11%

Run 3: Report of SReAM — Data Link

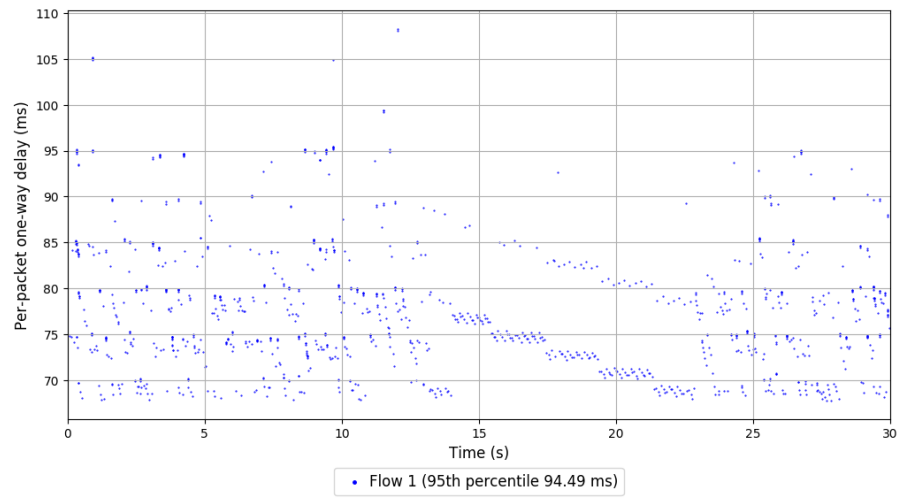
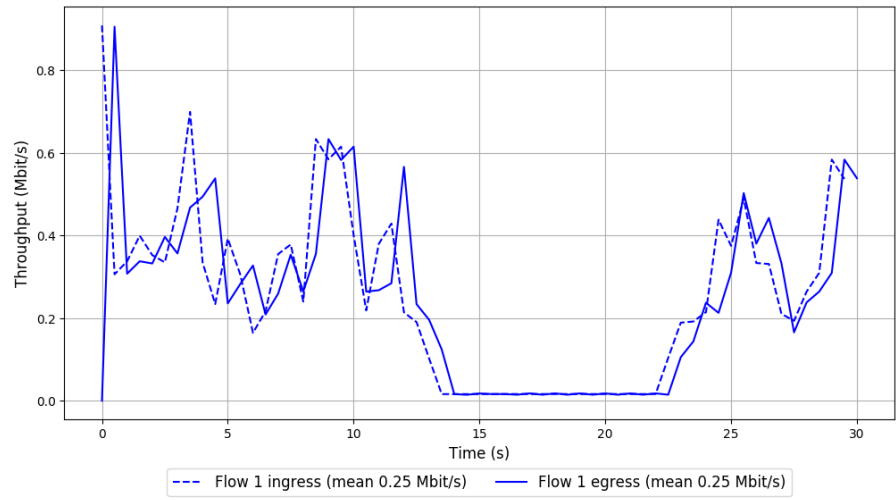


Run 1: Statistics of Sprout

Start at: 2018-06-29 11:38:38  
End at: 2018-06-29 11:39:08  
Local clock offset: 0.092 ms  
Remote clock offset: -15.974 ms

# Below is generated by plot.py at 2018-06-29 12:47:01  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.25 Mbit/s  
95th percentile per-packet one-way delay: 94.493 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 0.25 Mbit/s  
95th percentile per-packet one-way delay: 94.493 ms  
Loss rate: 0.00%

# Run 1: Report of Sprout — Data Link



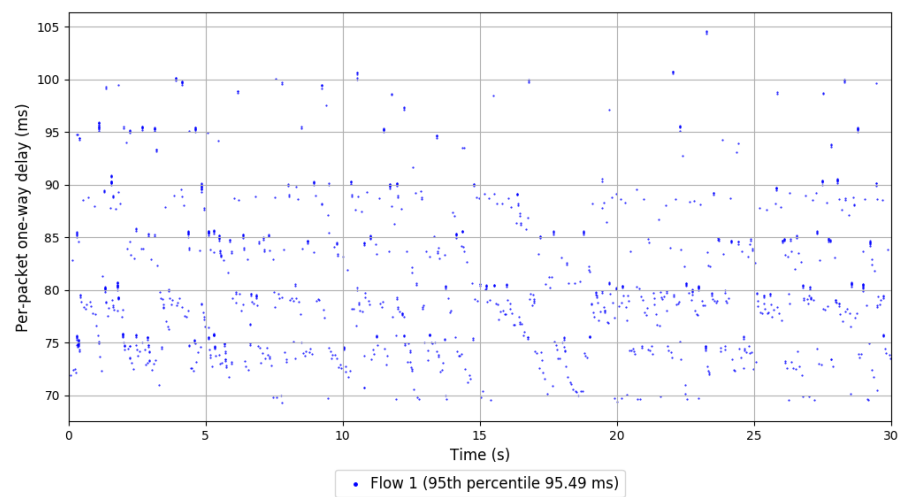
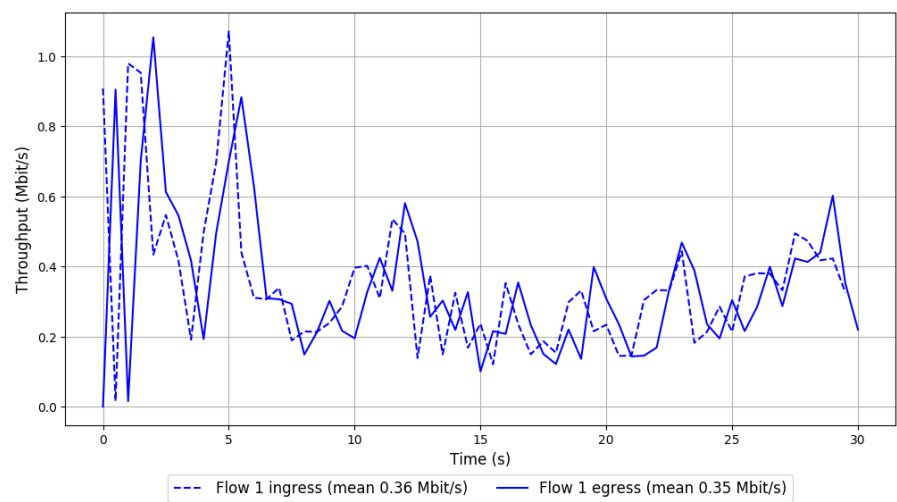
Run 2: Statistics of Sprout

Start at: 2018-06-29 12:03:53  
End at: 2018-06-29 12:04:23  
Local clock offset: -8.916 ms  
Remote clock offset: -12.985 ms

# Below is generated by plot.py at 2018-06-29 12:47:01  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.35 Mbit/s  
95th percentile per-packet one-way delay: 95.491 ms  
Loss rate: 0.84%  
-- Flow 1:  
Average throughput: 0.35 Mbit/s  
95th percentile per-packet one-way delay: 95.491 ms  
Loss rate: 0.84%



Run 2: Report of Sprout — Data Link

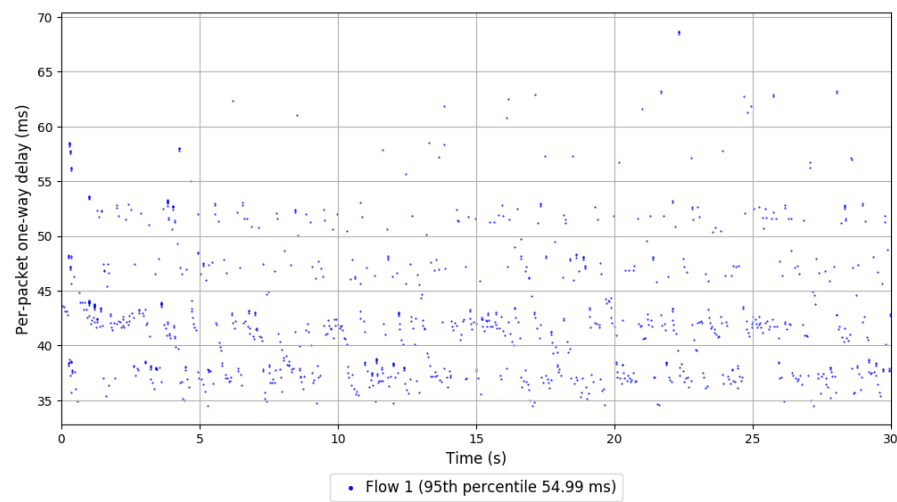
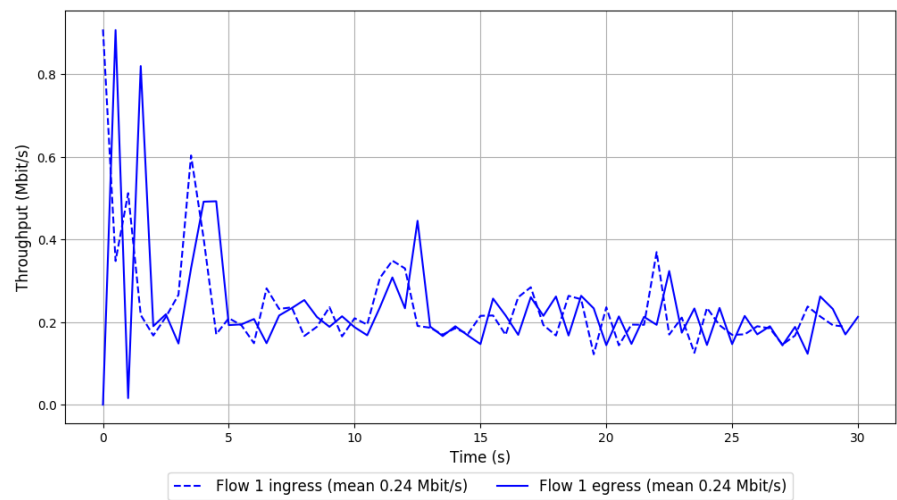


Run 3: Statistics of Sprout

Start at: 2018-06-29 12:29:20  
End at: 2018-06-29 12:29:50  
Local clock offset: -16.977 ms  
Remote clock offset: -40.585 ms

# Below is generated by plot.py at 2018-06-29 12:47:01  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.24 Mbit/s  
95th percentile per-packet one-way delay: 54.990 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 0.24 Mbit/s  
95th percentile per-packet one-way delay: 54.990 ms  
Loss rate: 0.00%

Run 3: Report of Sprout — Data Link

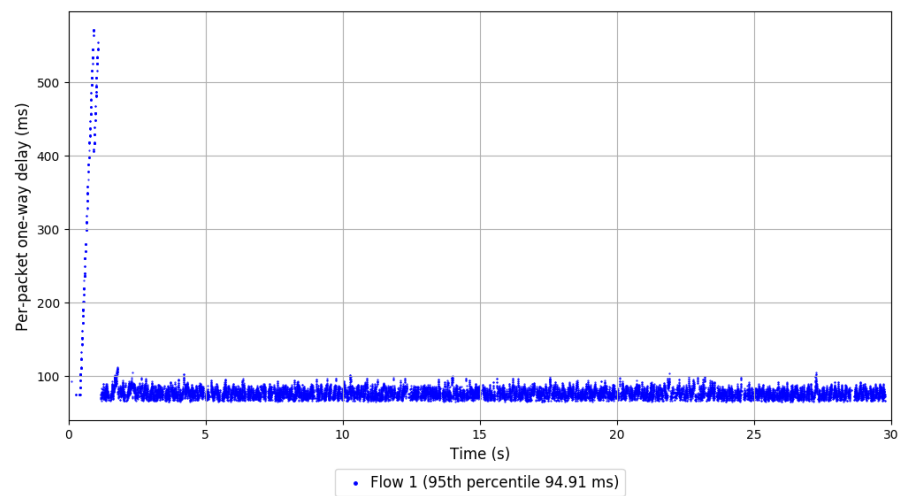
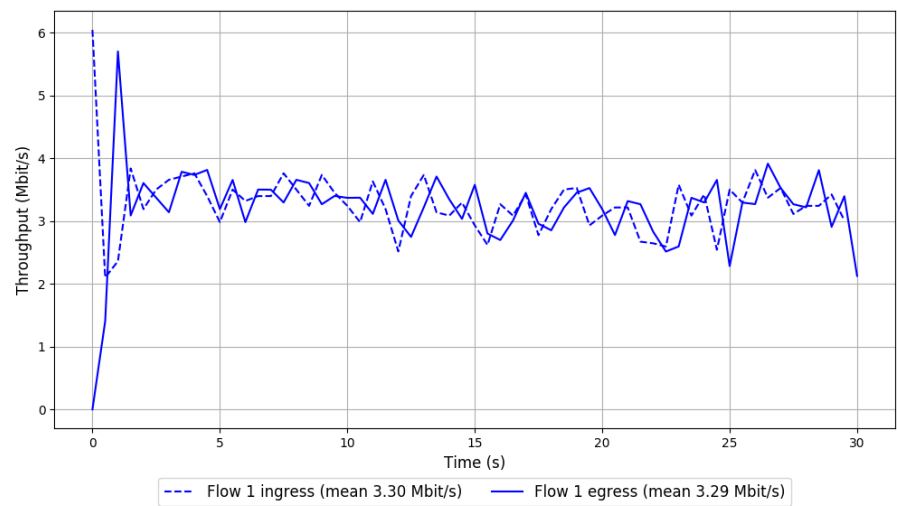


```
Run 1: Statistics of TaoVA-100x

Start at: 2018-06-29 11:44:06
End at: 2018-06-29 11:44:36
Local clock offset: -1.528 ms
Remote clock offset: -13.732 ms

# Below is generated by plot.py at 2018-06-29 12:47:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.29 Mbit/s
95th percentile per-packet one-way delay: 94.908 ms
Loss rate: 0.65%
-- Flow 1:
Average throughput: 3.29 Mbit/s
95th percentile per-packet one-way delay: 94.908 ms
Loss rate: 0.65%
```

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

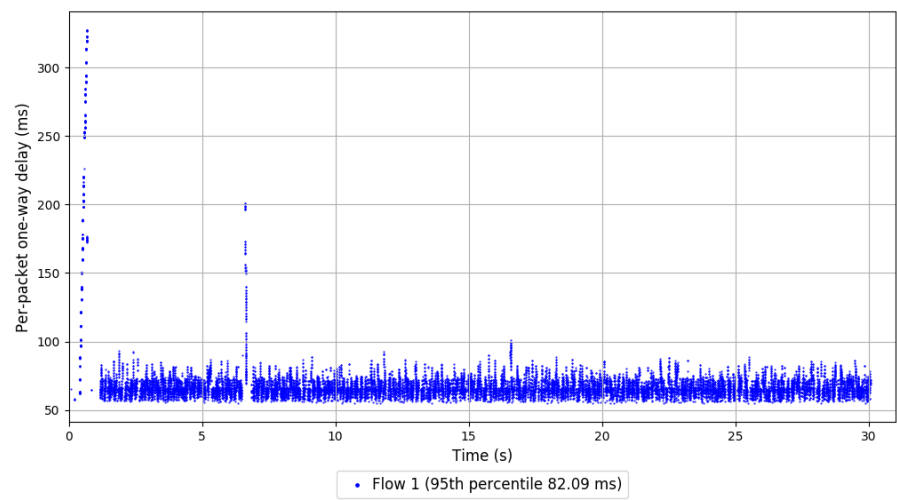
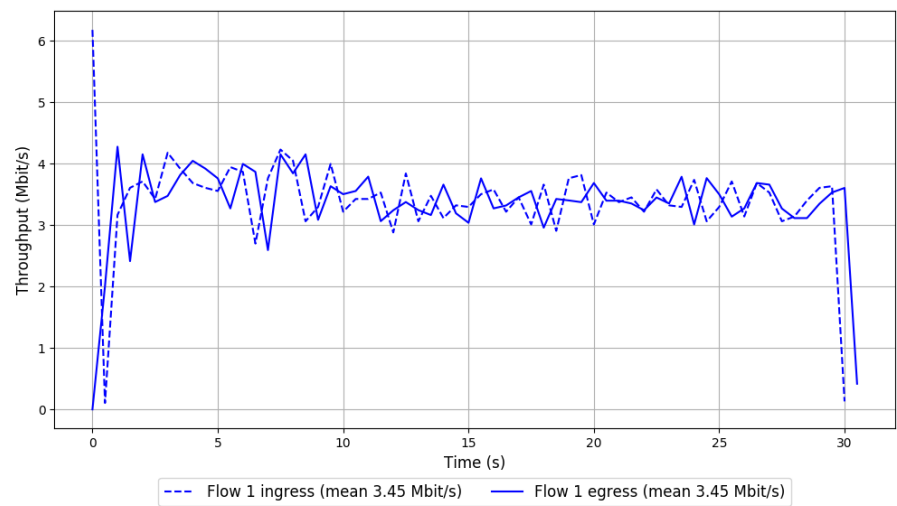


Run 2: Statistics of TaoVA-100x

Start at: 2018-06-29 12:09:25  
End at: 2018-06-29 12:09:55  
Local clock offset: -10.562 ms  
Remote clock offset: -21.018 ms

# Below is generated by plot.py at 2018-06-29 12:47:01  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 3.45 Mbit/s  
95th percentile per-packet one-way delay: 82.091 ms  
Loss rate: 0.09%  
-- Flow 1:  
Average throughput: 3.45 Mbit/s  
95th percentile per-packet one-way delay: 82.091 ms  
Loss rate: 0.09%

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



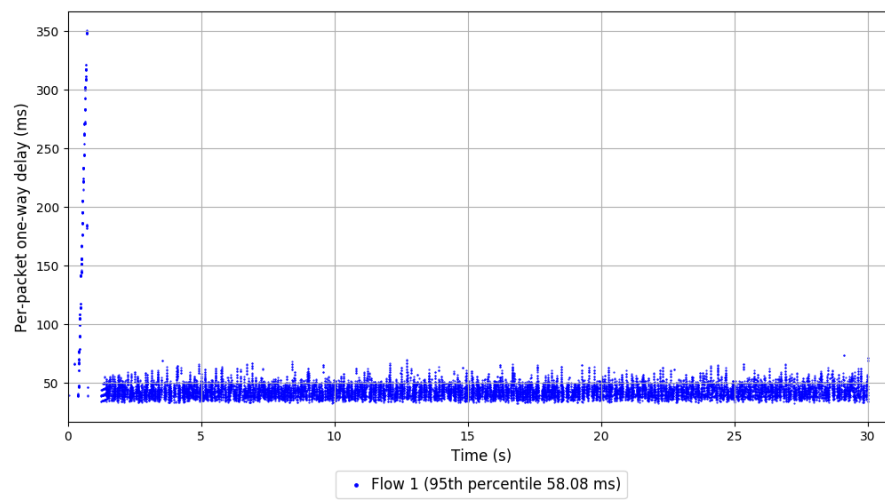
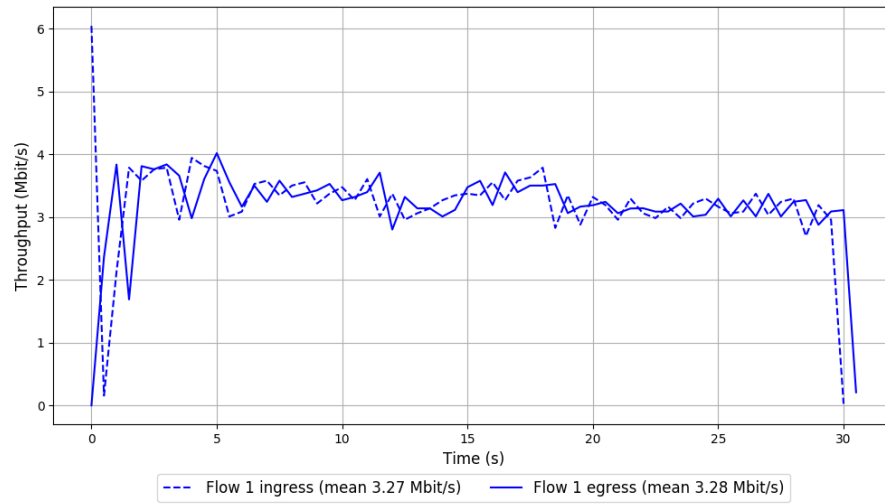
Run 3: Statistics of TaoVA-100x

Start at: 2018-06-29 12:34:31  
End at: 2018-06-29 12:35:01  
Local clock offset: -18.543 ms  
Remote clock offset: -45.344 ms

# Below is generated by plot.py at 2018-06-29 12:47:01  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 3.28 Mbit/s  
95th percentile per-packet one-way delay: 58.083 ms  
Loss rate: 0.01%  
-- Flow 1:  
Average throughput: 3.28 Mbit/s  
95th percentile per-packet one-way delay: 58.083 ms  
Loss rate: 0.01%



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

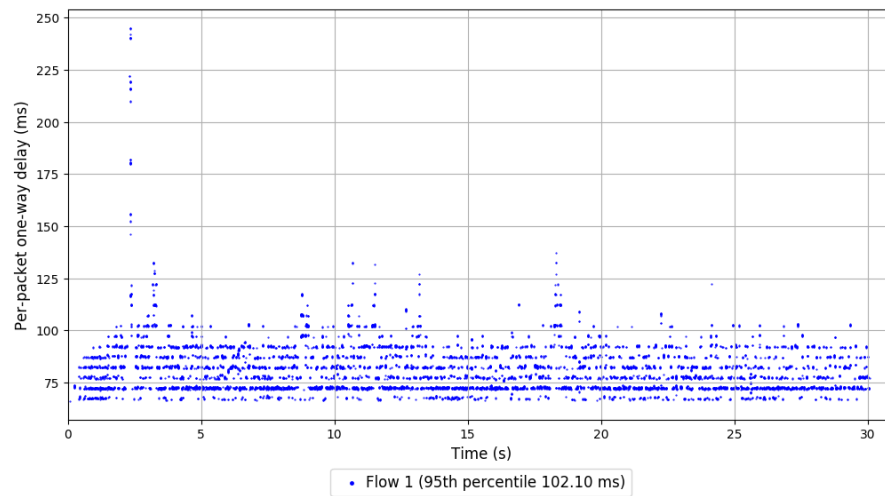
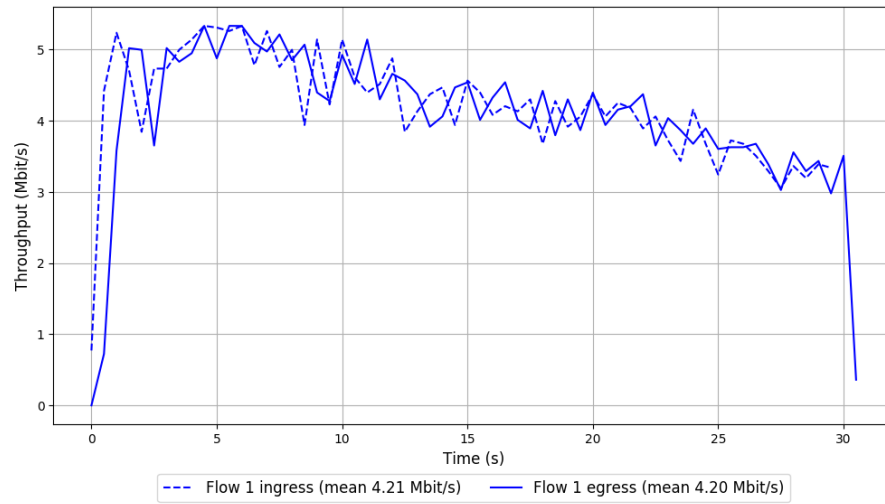


Run 1: Statistics of TCP Vegas

Start at: 2018-06-29 11:35:44  
End at: 2018-06-29 11:36:14  
Local clock offset: 0.967 ms  
Remote clock offset: -11.359 ms

# Below is generated by plot.py at 2018-06-29 12:47:01  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 4.20 Mbit/s  
95th percentile per-packet one-way delay: 102.097 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 4.20 Mbit/s  
95th percentile per-packet one-way delay: 102.097 ms  
Loss rate: 0.00%

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

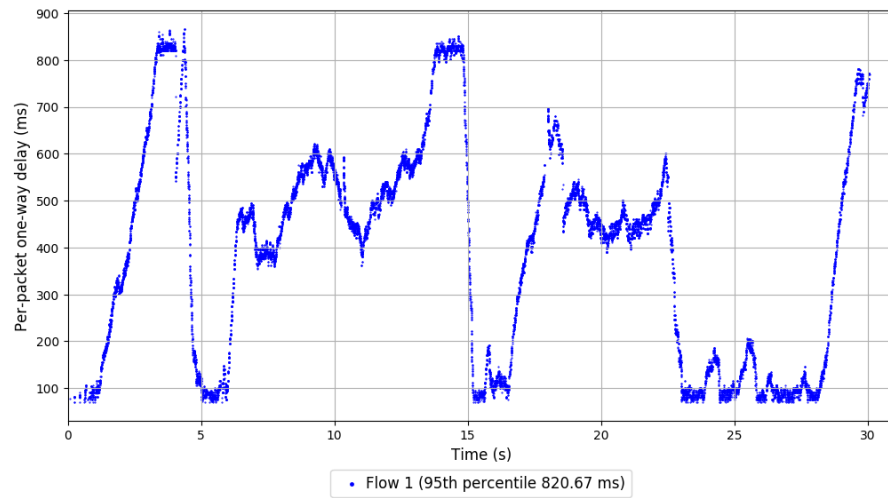
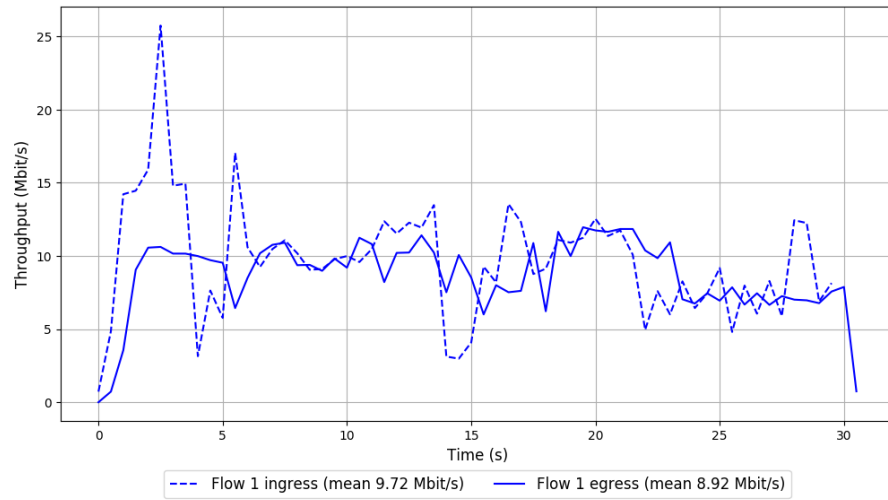


Run 2: Statistics of TCP Vegas

Start at: 2018-06-29 12:00:48  
End at: 2018-06-29 12:01:18  
Local clock offset: -7.884 ms  
Remote clock offset: -11.629 ms

# Below is generated by plot.py at 2018-06-29 12:47:01  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 8.92 Mbit/s  
95th percentile per-packet one-way delay: 820.669 ms  
Loss rate: 8.26%  
-- Flow 1:  
Average throughput: 8.92 Mbit/s  
95th percentile per-packet one-way delay: 820.669 ms  
Loss rate: 8.26%

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

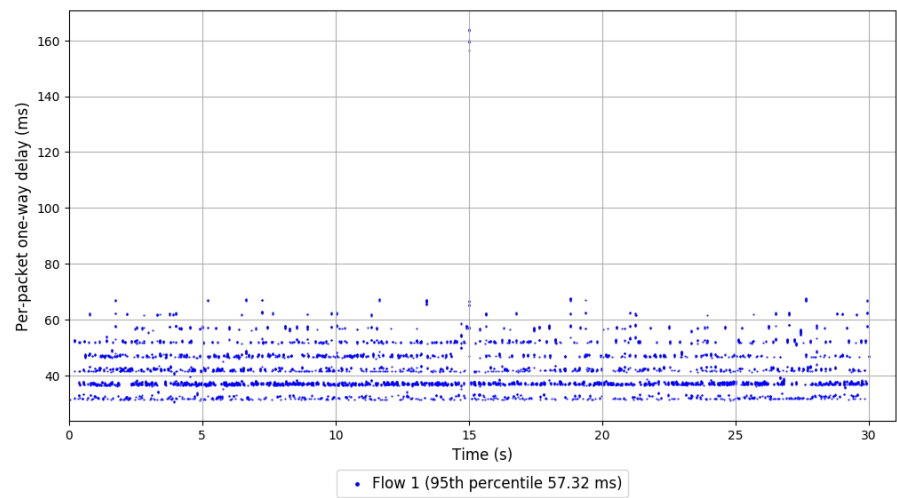
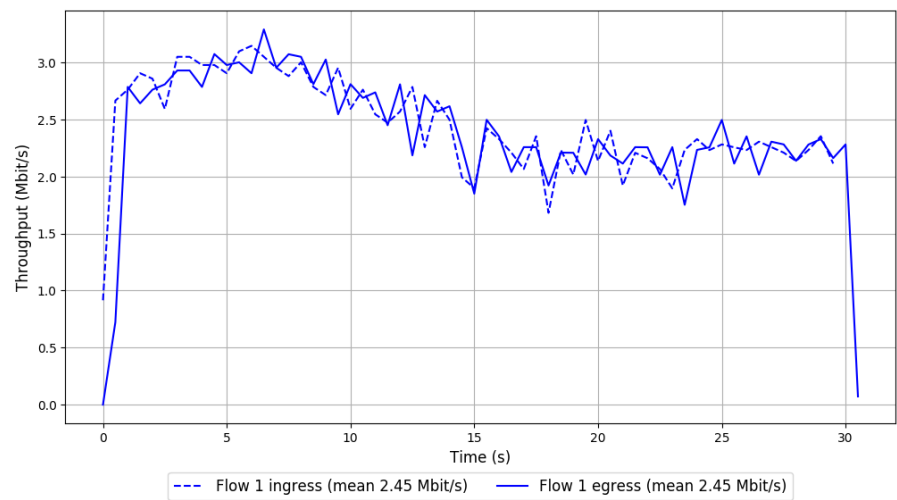


Run 3: Statistics of TCP Vegas

Start at: 2018-06-29 12:26:30  
End at: 2018-06-29 12:27:00  
Local clock offset: -16.031 ms  
Remote clock offset: -45.909 ms

# Below is generated by plot.py at 2018-06-29 12:47:01  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 2.45 Mbit/s  
95th percentile per-packet one-way delay: 57.324 ms  
Loss rate: 0.03%  
-- Flow 1:  
Average throughput: 2.45 Mbit/s  
95th percentile per-packet one-way delay: 57.324 ms  
Loss rate: 0.03%

Run 3: Report of TCP Vegas — Data Link



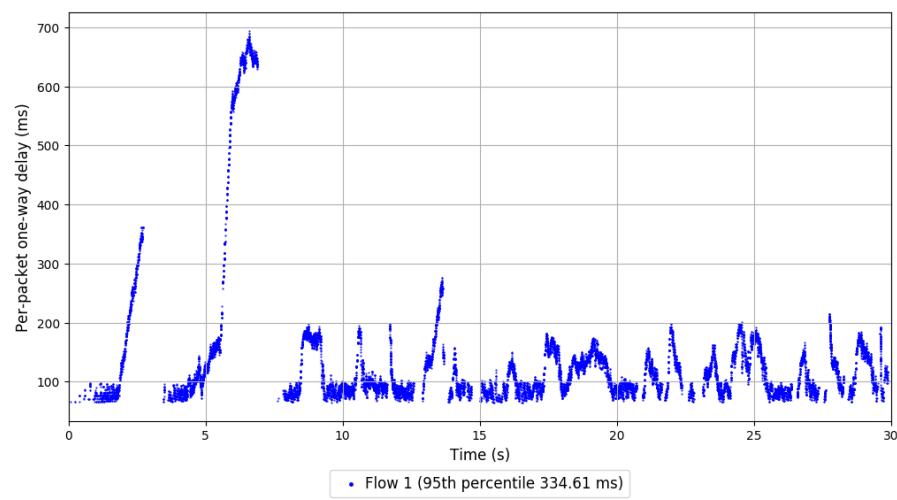
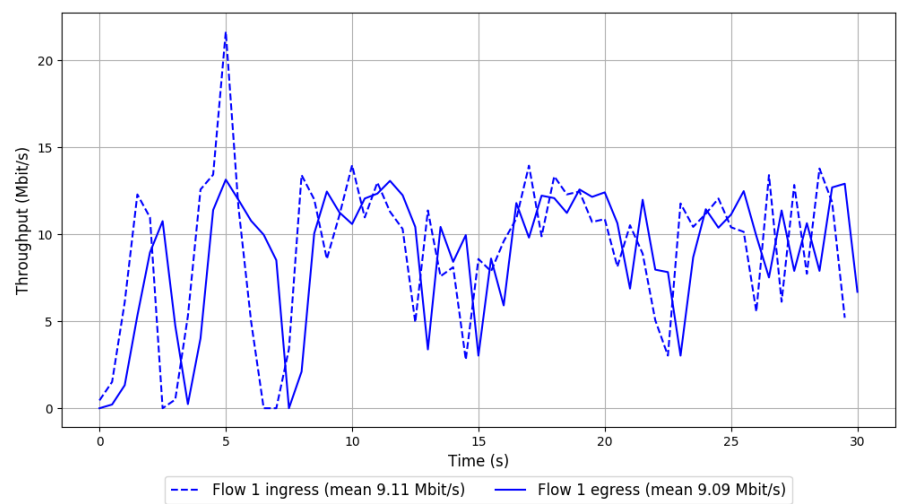
Run 1: Statistics of Verus

Start at: 2018-06-29 11:50:18  
End at: 2018-06-29 11:50:48  
Local clock offset: -3.845 ms  
Remote clock offset: -11.972 ms

# Below is generated by plot.py at 2018-06-29 12:47:01  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 9.09 Mbit/s  
95th percentile per-packet one-way delay: 334.614 ms  
Loss rate: 0.15%  
-- Flow 1:  
Average throughput: 9.09 Mbit/s  
95th percentile per-packet one-way delay: 334.614 ms  
Loss rate: 0.15%



Run 1: Report of Verus — Data Link

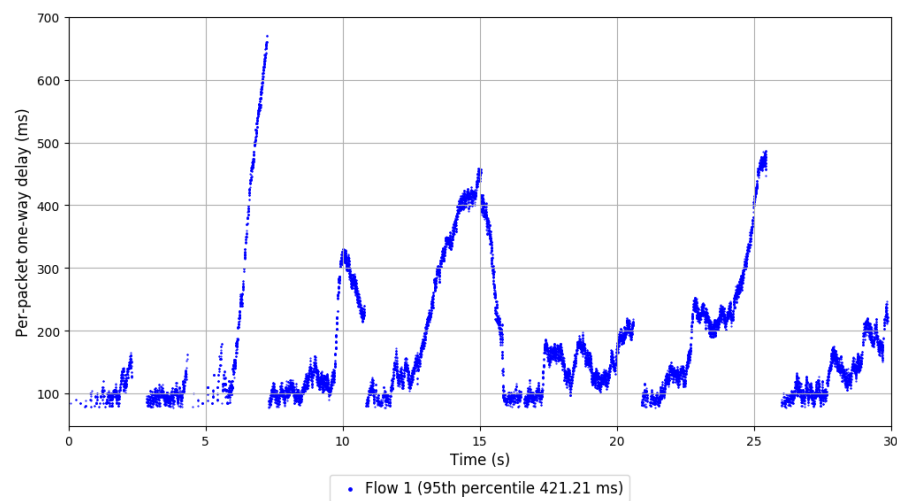
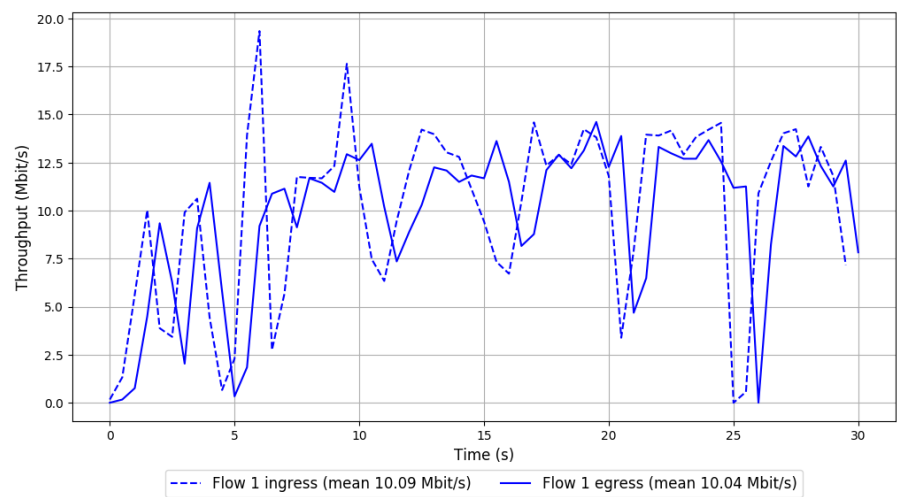


Run 2: Statistics of Verus

Start at: 2018-06-29 12:15:57  
End at: 2018-06-29 12:16:27  
Local clock offset: -28.088 ms  
Remote clock offset: -21.713 ms

# Below is generated by plot.py at 2018-06-29 12:47:01  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 10.04 Mbit/s  
95th percentile per-packet one-way delay: 421.211 ms  
Loss rate: 0.59%  
-- Flow 1:  
Average throughput: 10.04 Mbit/s  
95th percentile per-packet one-way delay: 421.211 ms  
Loss rate: 0.59%

Run 2: Report of Verus — Data Link

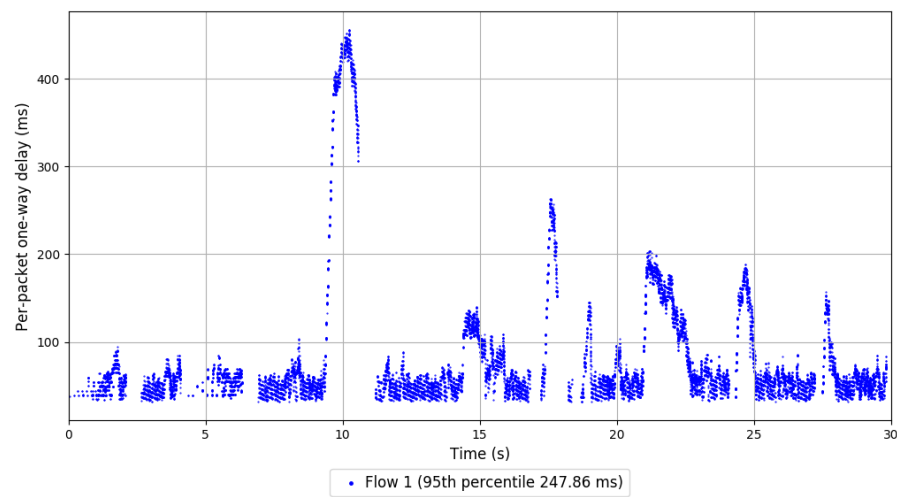
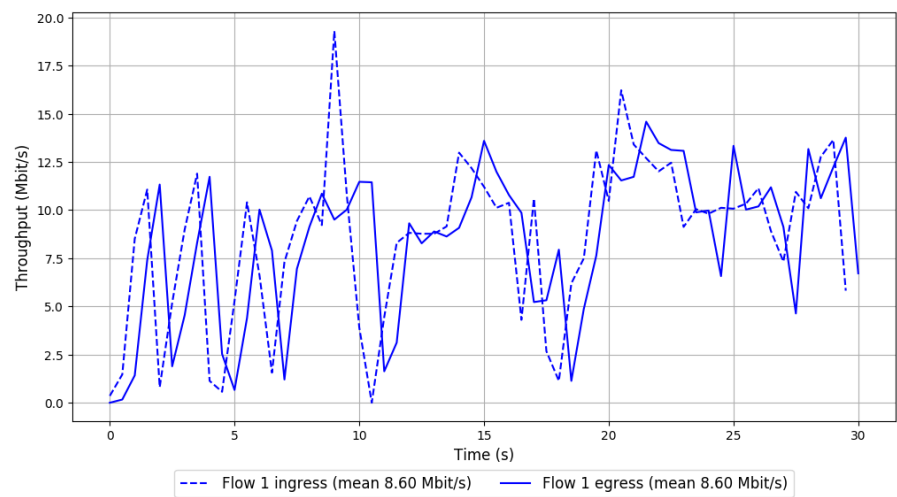


Run 3: Statistics of Verus

Start at: 2018-06-29 12:40:51  
End at: 2018-06-29 12:41:21  
Local clock offset: -20.578 ms  
Remote clock offset: -43.221 ms

# Below is generated by plot.py at 2018-06-29 12:47:01  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 8.60 Mbit/s  
95th percentile per-packet one-way delay: 247.857 ms  
Loss rate: 0.08%  
-- Flow 1:  
Average throughput: 8.60 Mbit/s  
95th percentile per-packet one-way delay: 247.857 ms  
Loss rate: 0.08%

Run 3: Report of Verus — Data Link



Run 1: Statistics of PCC-Vivace

Start at: 2018-06-29 11:39:54

End at: 2018-06-29 11:40:24

Local clock offset: -0.44 ms

Remote clock offset: -11.15 ms

# Below is generated by plot.py at 2018-06-29 12:47:01

# Datalink statistics

-- Total of 1 flow:

Average throughput: 1.79 Mbit/s

95th percentile per-packet one-way delay: 86.369 ms

Loss rate: 0.02%

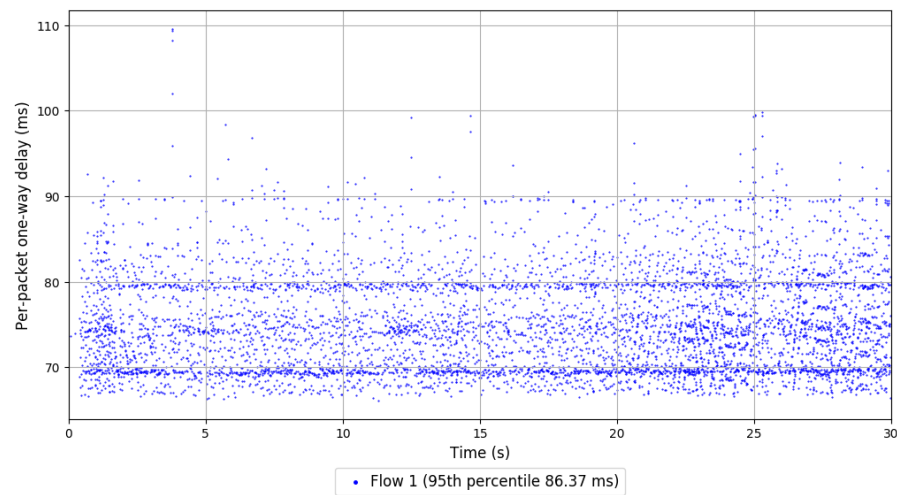
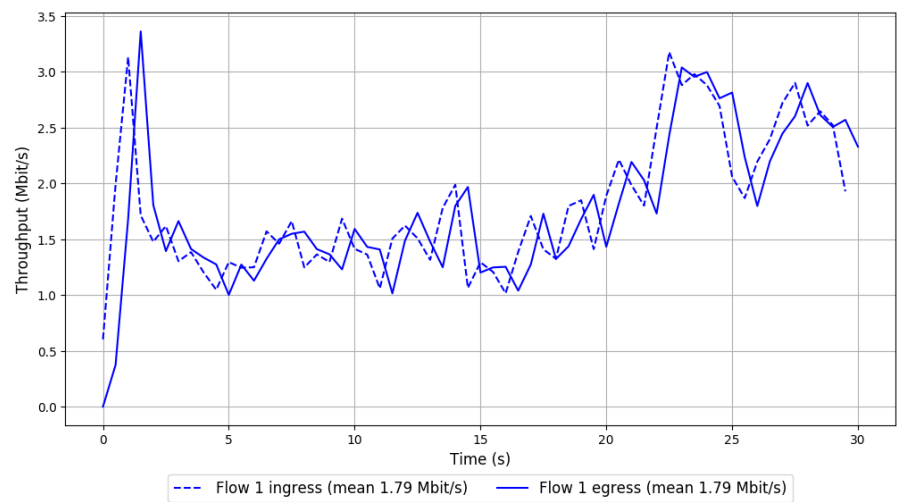
-- Flow 1:

Average throughput: 1.79 Mbit/s

95th percentile per-packet one-way delay: 86.369 ms

Loss rate: 0.02%

Run 1: Report of PCC-Vivace — Data Link



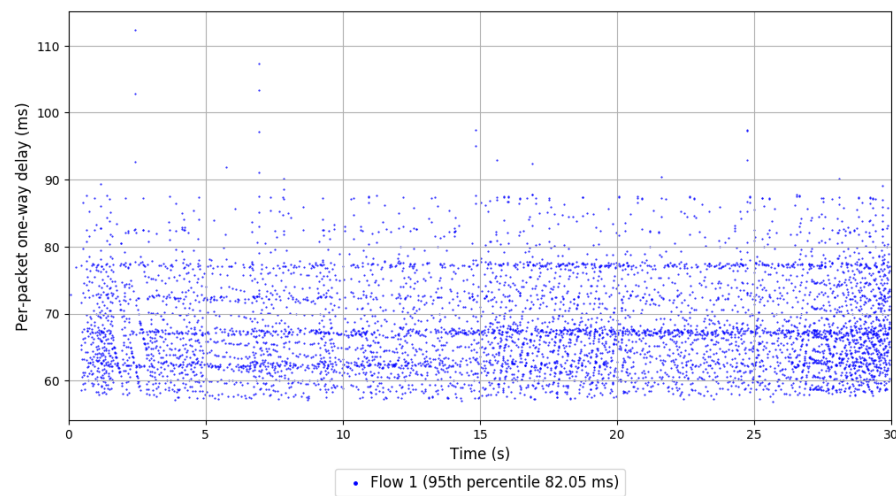
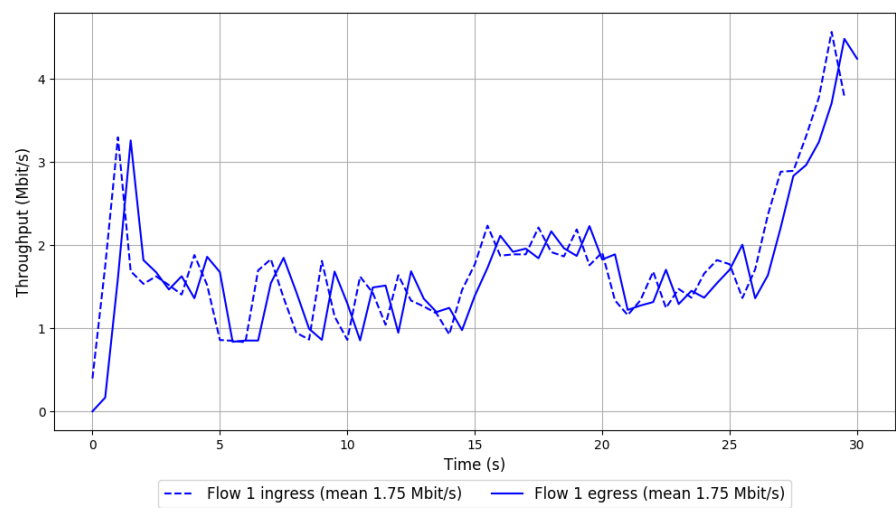
Run 2: Statistics of PCC-Vivace

Start at: 2018-06-29 12:05:10  
End at: 2018-06-29 12:05:40  
Local clock offset: -9.197 ms  
Remote clock offset: -26.621 ms

# Below is generated by plot.py at 2018-06-29 12:47:01  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 1.75 Mbit/s  
95th percentile per-packet one-way delay: 82.053 ms  
Loss rate: 0.13%  
-- Flow 1:  
Average throughput: 1.75 Mbit/s  
95th percentile per-packet one-way delay: 82.053 ms  
Loss rate: 0.13%



Run 2: Report of PCC-Vivace — Data Link

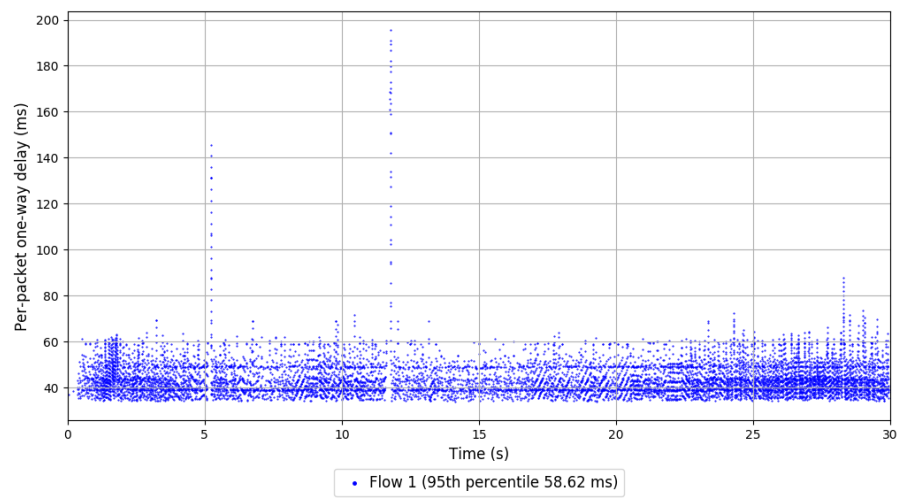
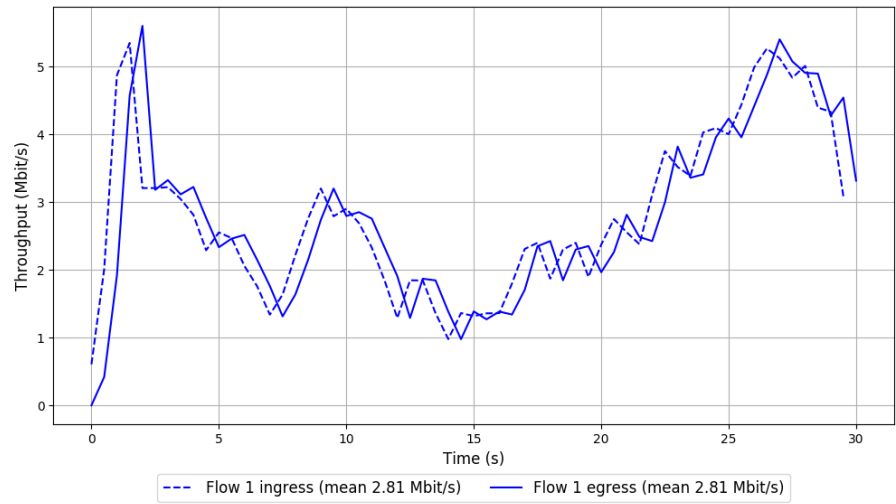


Run 3: Statistics of PCC-Vivace

Start at: 2018-06-29 12:30:36  
End at: 2018-06-29 12:31:06  
Local clock offset: -17.428 ms  
Remote clock offset: -41.222 ms

# Below is generated by plot.py at 2018-06-29 12:47:01  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 2.81 Mbit/s  
95th percentile per-packet one-way delay: 58.620 ms  
Loss rate: 0.08%  
-- Flow 1:  
Average throughput: 2.81 Mbit/s  
95th percentile per-packet one-way delay: 58.620 ms  
Loss rate: 0.08%

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

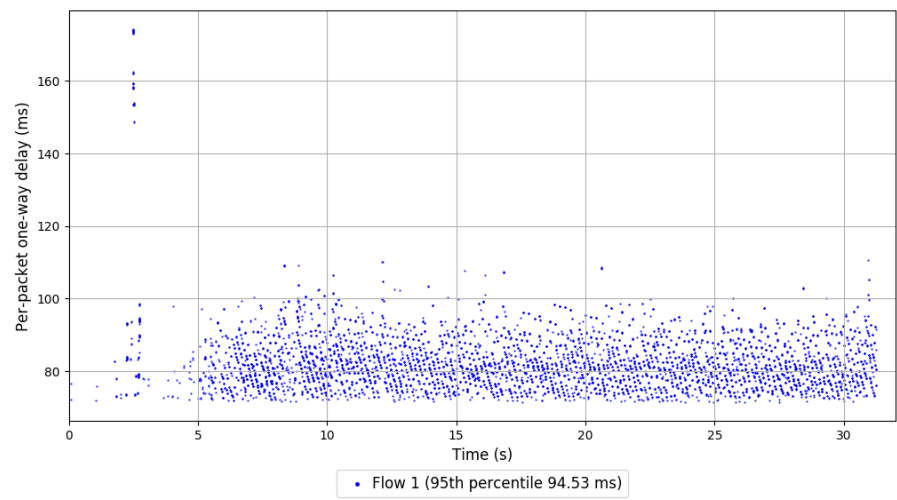
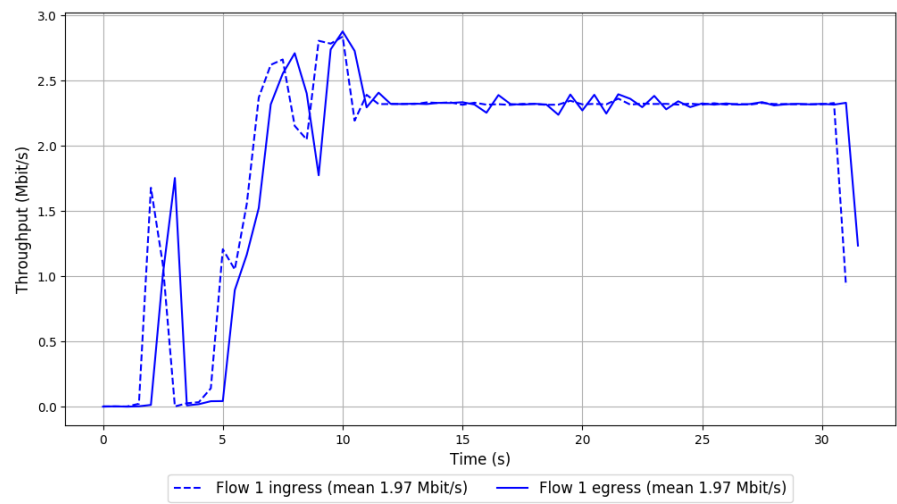


Run 1: Statistics of WebRTC media

Start at: 2018-06-29 11:54:58  
End at: 2018-06-29 11:55:28  
Local clock offset: -6.001 ms  
Remote clock offset: -13.593 ms

# Below is generated by plot.py at 2018-06-29 12:47:01  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 1.97 Mbit/s  
95th percentile per-packet one-way delay: 94.526 ms  
Loss rate: 0.06%  
-- Flow 1:  
Average throughput: 1.97 Mbit/s  
95th percentile per-packet one-way delay: 94.526 ms  
Loss rate: 0.06%

Run 1: Report of WebRTC media — Data Link

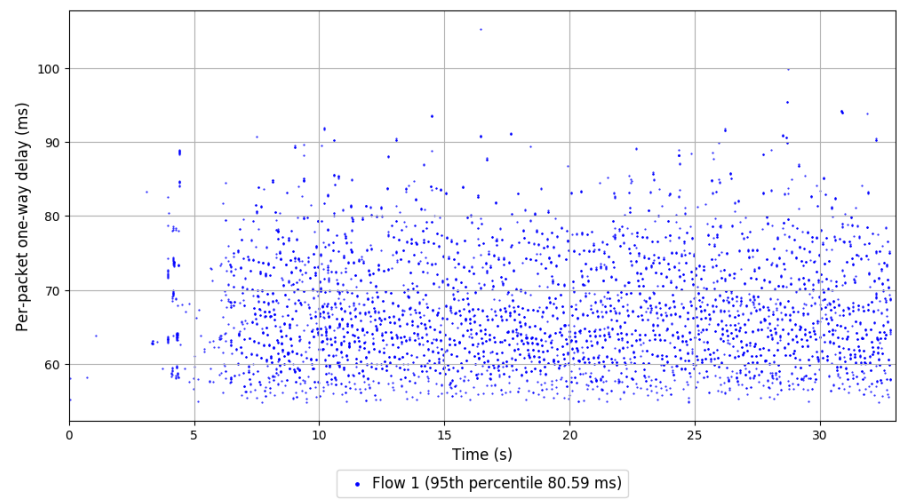
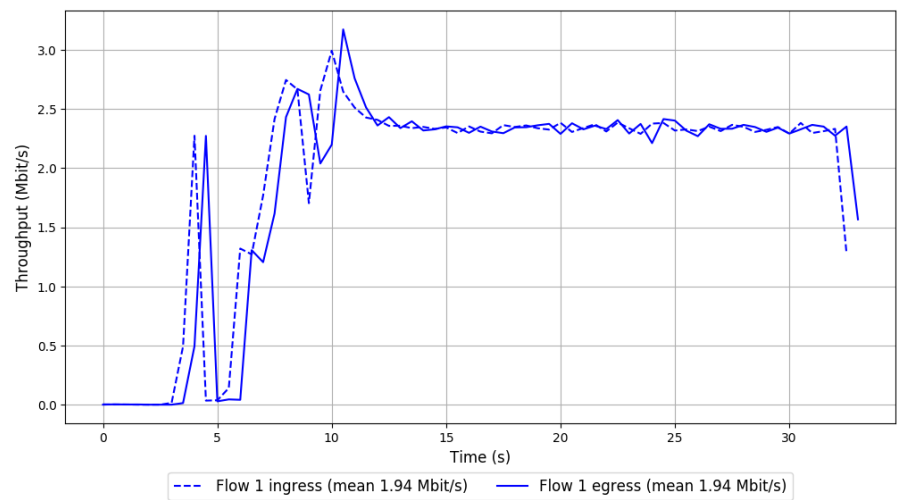


Run 2: Statistics of WebRTC media

Start at: 2018-06-29 12:20:44  
End at: 2018-06-29 12:21:14  
Local clock offset: -14.417 ms  
Remote clock offset: -19.117 ms

# Below is generated by plot.py at 2018-06-29 12:47:01  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 1.94 Mbit/s  
95th percentile per-packet one-way delay: 80.591 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 1.94 Mbit/s  
95th percentile per-packet one-way delay: 80.591 ms  
Loss rate: 0.00%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2018-06-29 12:45:25  
End at: 2018-06-29 12:45:55  
Local clock offset: -21.877 ms  
Remote clock offset: -33.142 ms

# Below is generated by plot.py at 2018-06-29 12:47:01  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 1.88 Mbit/s  
95th percentile per-packet one-way delay: 76.049 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 1.88 Mbit/s  
95th percentile per-packet one-way delay: 76.049 ms  
Loss rate: 0.00%



Run 3: Report of WebRTC media — Data Link

