

## Pantheon Report

Generated at 2017-12-05 07:50:41 (UTC).

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

Repeated the test of 14 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).

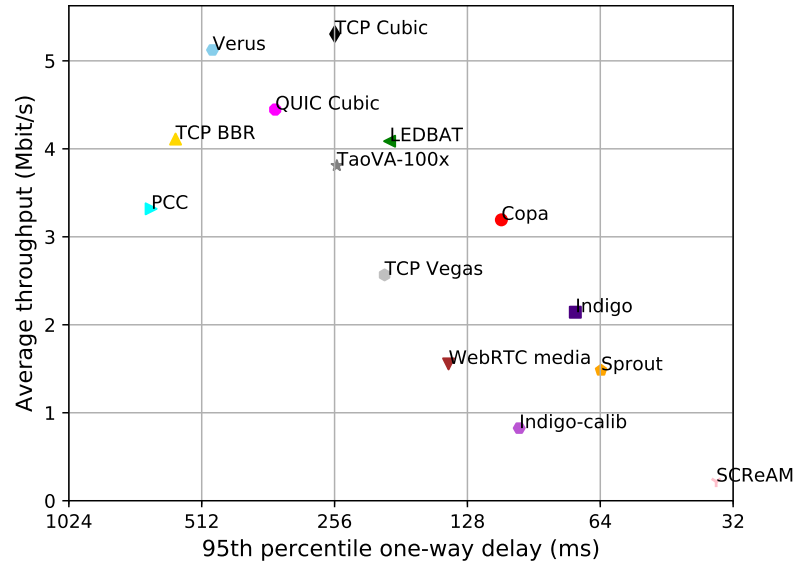
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo\_fast**).

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

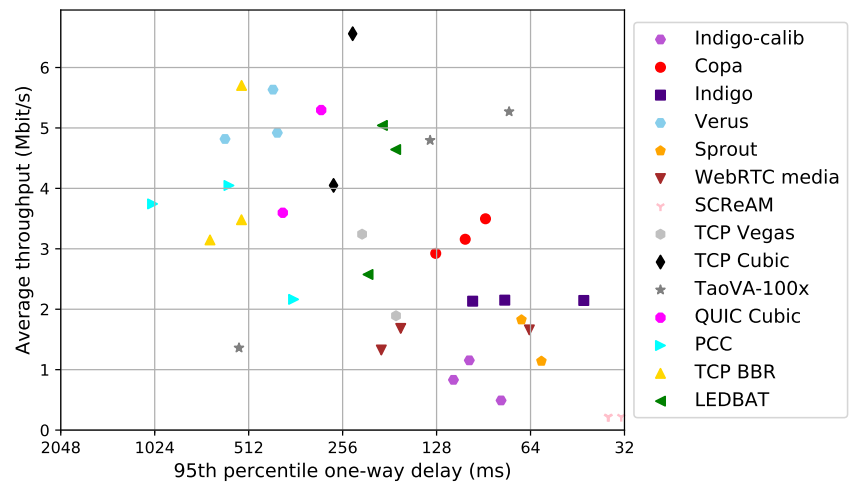
Git summary:

```
branch: indigos @ e3a57ad5ac5cfcaca0e3f983c8dd4cc3509e0262
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
  M datagrump/sender.cc
third_party/genericCC @ b5b7c38e8391001927dc41c6cfa2627d03dde737
third_party/indigo @ b19f3730105f9aa95452552af924e3719b03cc55
third_party/indigo-cellular @ aee99e8eb842cb053f8c9a80e28cd256a930bbc2
third_party/indigo-no-calib @ 7224f2202e8a044d8306fa0b983ad84360c53d89
third_party/indigo-no-cwnd @ 3e58442c04028a11d7b02456e137604633ba2d6c
third_party/indigo-no-delivery-rate @ 57caa40858b964906edff4876d5a7e5bfff666c5
third_party/indigo-no-queuing-delay @ 03455460fd1a8ffbdad86fabb936fdca204b80db
third_party/indigo-no-send-rate @ b39dfa6b2c5f19cb7cd89626cb4f5bb81f9fecda
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
  M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ baf443516dea3eeddeccaf9b916cc313273ca4f4
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/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream @ c3370fd7bd17265a79aeb34e4016ad23f5965885
third_party/sourdough @ f1a14bffe749737437f61b1eaaeb30b267cde681
third_party/sprout @ 6f2efe6e088d91066a9f023df375eee2665089ce
  M src/examples/cellsim.cc
  M src/examples/sproutbt2.cc
  M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
  M src/verus.hpp
  M tools/plot.py
third_party/webrtc @ a488197ddd041ace68a42849b2540ad834825f42
```

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



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



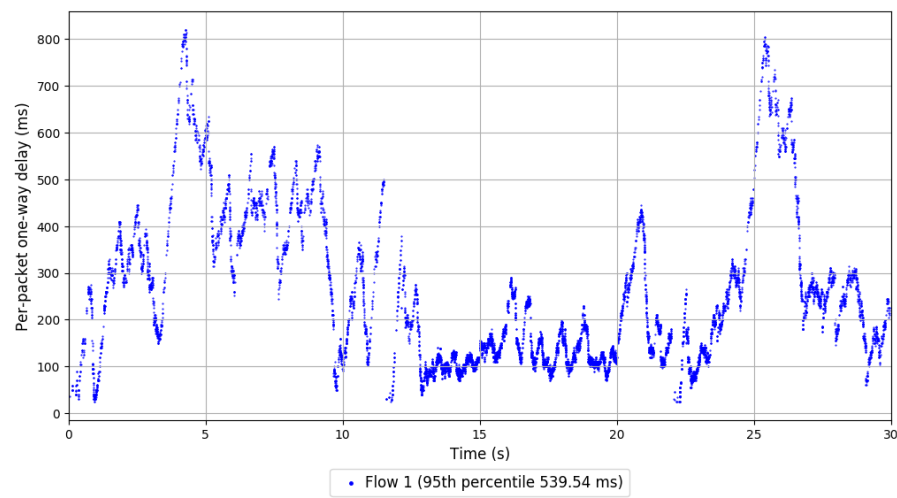
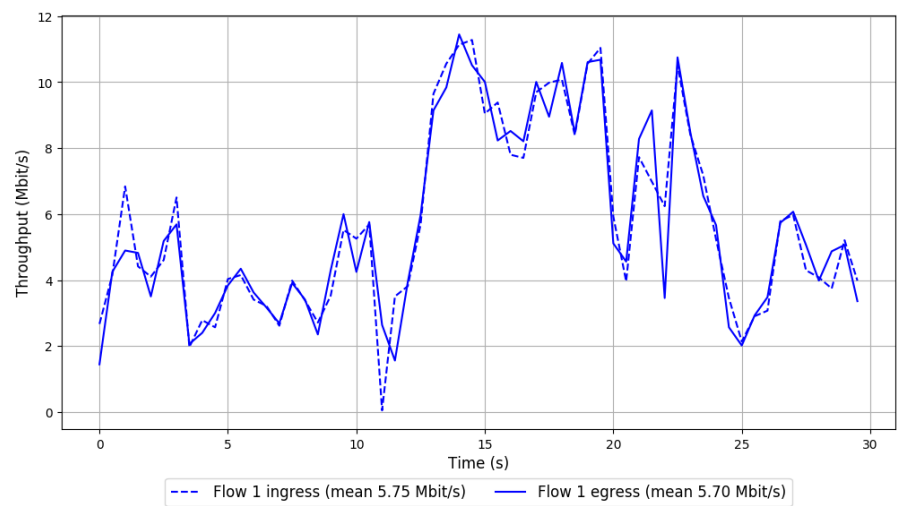
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	4.11	586.85	1.56
TCP Cubic	2	5.30	255.72	0.52
LEDBAT	3	4.09	192.11	0.40
PCC	3	3.32	666.63	3.88
QUIC Cubic	2	4.45	348.95	0.66
SCReAM	3	0.22	34.97	0.13
WebRTC media	3	1.56	141.25	0.17
Sprout	2	1.48	63.75	0.09
TaoVA-100x	3	3.81	253.01	1.71
TCP Vegas	2	2.56	197.21	0.21
Verus	3	5.12	483.96	1.99
Copa	3	3.19	107.22	0.28
Indigo	3	2.14	72.90	0.08
Indigo-calib	3	0.82	97.69	0.06

Run 1: Statistics of TCP BBR

Start at: 2017-12-05 07:18:06  
End at: 2017-12-05 07:18:36  
Local clock offset: 3.884 ms  
Remote clock offset: -19.144 ms

# Below is generated by plot.py at 2017-12-05 07:50:12  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 5.70 Mbit/s  
95th percentile per-packet one-way delay: 539.544 ms  
Loss rate: 0.86%  
-- Flow 1:  
Average throughput: 5.70 Mbit/s  
95th percentile per-packet one-way delay: 539.544 ms  
Loss rate: 0.86%

Run 1: Report of TCP BBR — Data Link

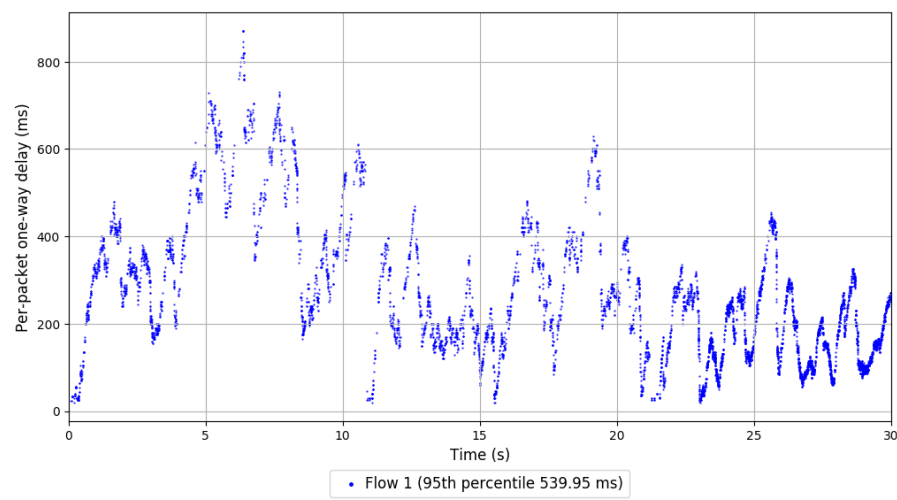
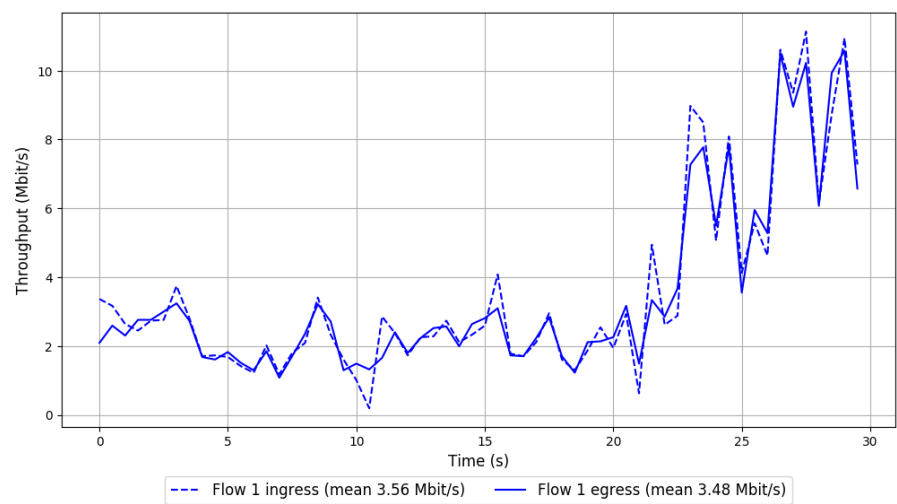


Run 2: Statistics of TCP BBR

Start at: 2017-12-05 07:33:26  
End at: 2017-12-05 07:33:56  
Local clock offset: 2.351 ms  
Remote clock offset: -19.865 ms

# Below is generated by plot.py at 2017-12-05 07:50:12  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 3.48 Mbit/s  
95th percentile per-packet one-way delay: 539.949 ms  
Loss rate: 2.25%  
-- Flow 1:  
Average throughput: 3.48 Mbit/s  
95th percentile per-packet one-way delay: 539.949 ms  
Loss rate: 2.25%

Run 2: Report of TCP BBR — Data Link

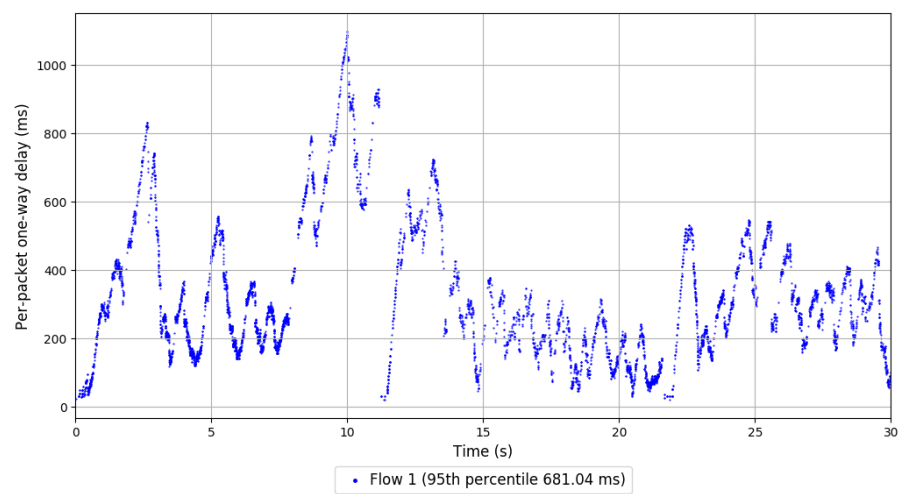
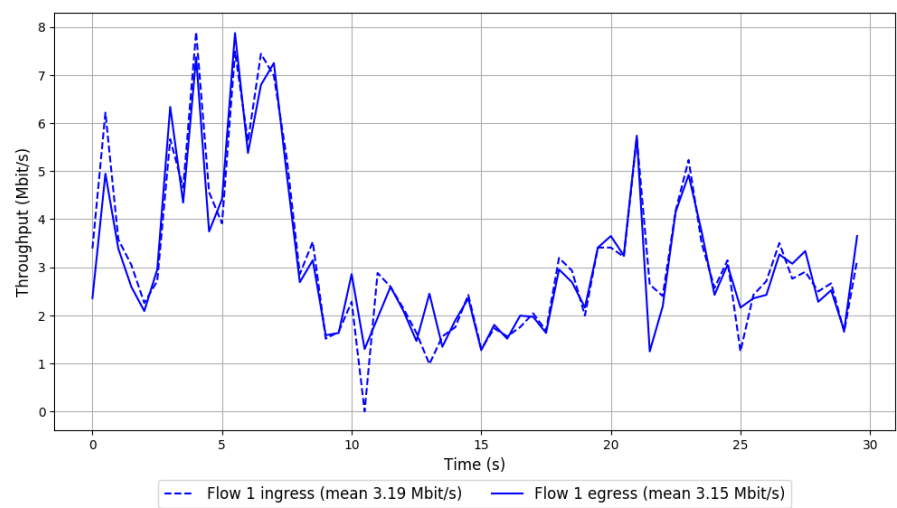


Run 3: Statistics of TCP BBR

Start at: 2017-12-05 07:48:43  
End at: 2017-12-05 07:49:13  
Local clock offset: 1.78 ms  
Remote clock offset: -17.698 ms

# Below is generated by plot.py at 2017-12-05 07:50:12  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 3.15 Mbit/s  
95th percentile per-packet one-way delay: 681.044 ms  
Loss rate: 1.57%  
-- Flow 1:  
Average throughput: 3.15 Mbit/s  
95th percentile per-packet one-way delay: 681.044 ms  
Loss rate: 1.57%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of TCP Cubic

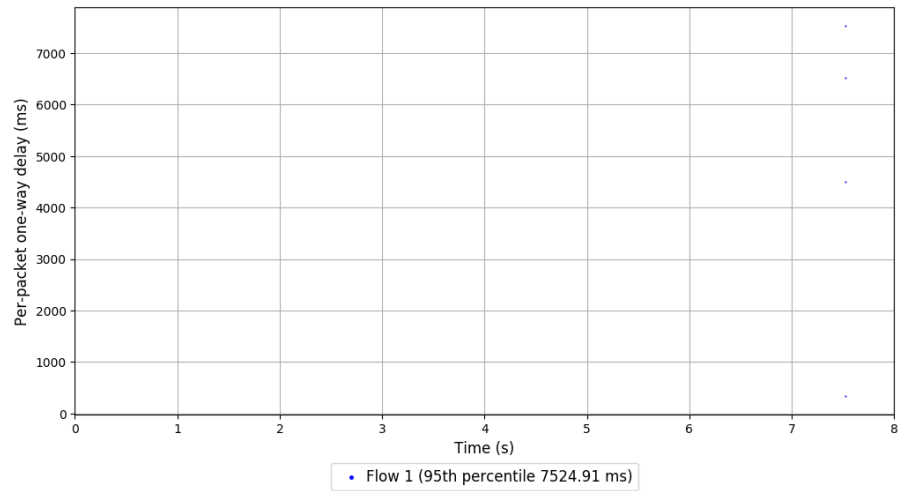
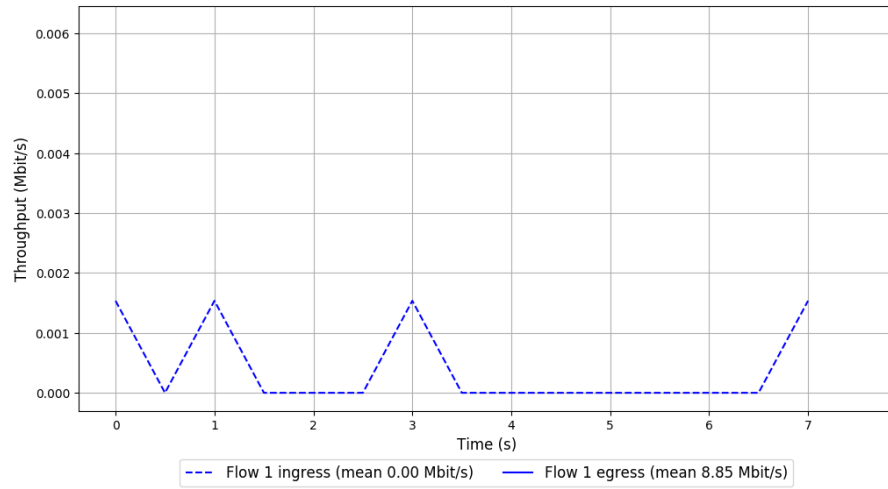
Start at: 2017-12-05 07:05:01

End at: 2017-12-05 07:05:31

Local clock offset: 3.639 ms

Remote clock offset: -19.0 ms

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

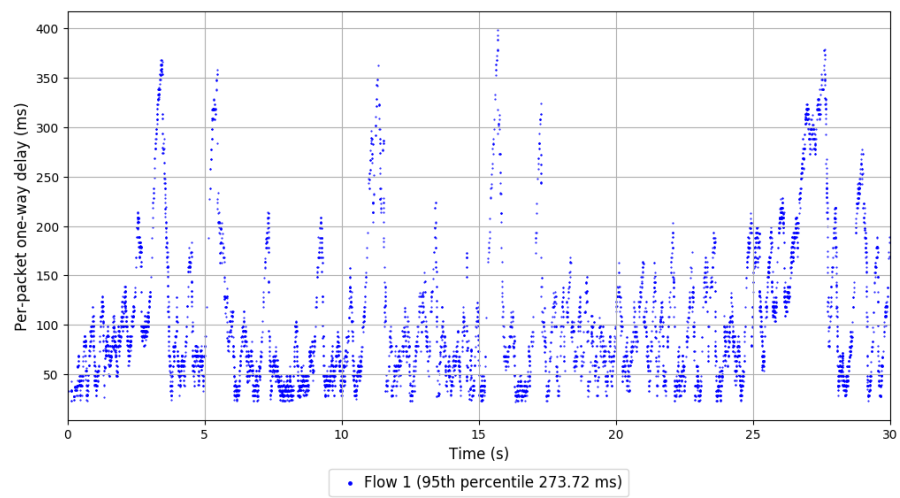
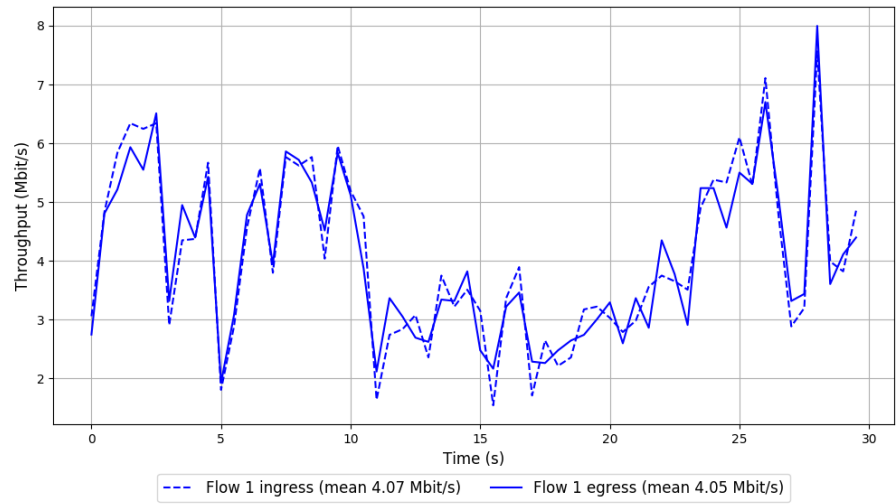


Run 2: Statistics of TCP Cubic

Start at: 2017-12-05 07:20:19  
End at: 2017-12-05 07:20:49  
Local clock offset: 4.462 ms  
Remote clock offset: -18.892 ms

# Below is generated by plot.py at 2017-12-05 07:50:12  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 4.05 Mbit/s  
95th percentile per-packet one-way delay: 273.716 ms  
Loss rate: 0.70%  
-- Flow 1:  
Average throughput: 4.05 Mbit/s  
95th percentile per-packet one-way delay: 273.716 ms  
Loss rate: 0.70%

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

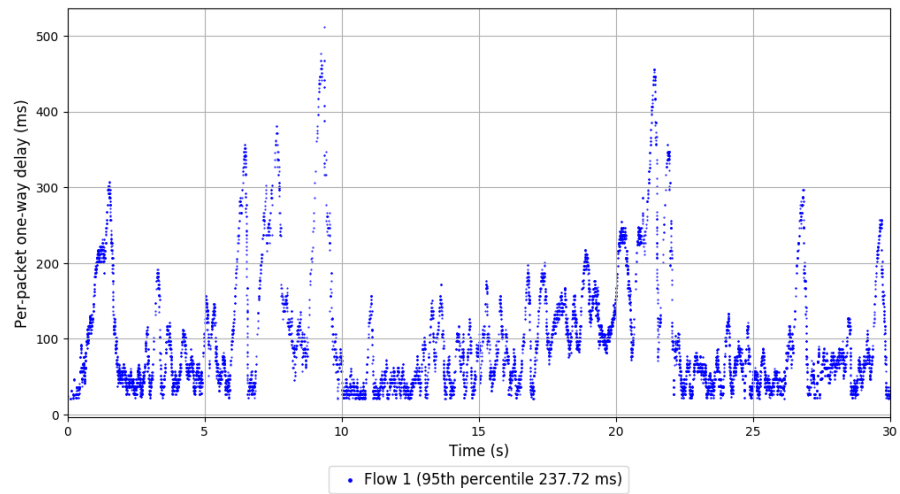
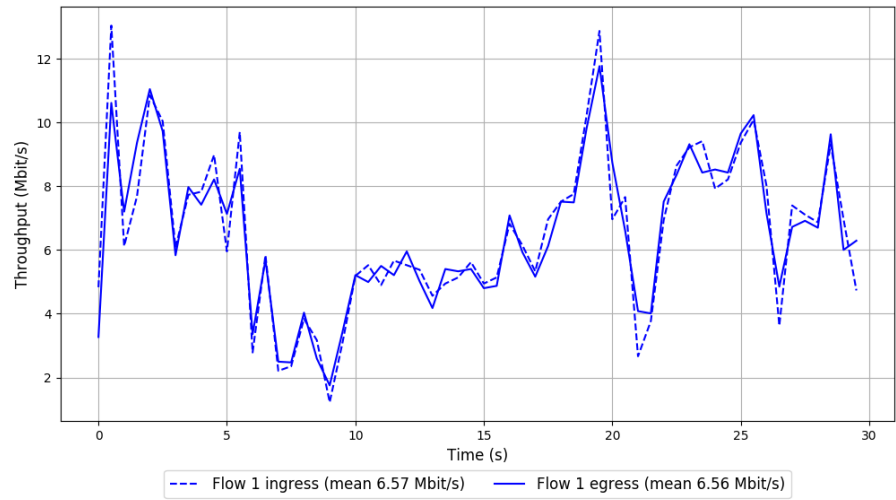


Run 3: Statistics of TCP Cubic

Start at: 2017-12-05 07:35:37  
End at: 2017-12-05 07:36:07  
Local clock offset: 2.396 ms  
Remote clock offset: -18.631 ms

# Below is generated by plot.py at 2017-12-05 07:50:14  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 6.56 Mbit/s  
95th percentile per-packet one-way delay: 237.723 ms  
Loss rate: 0.33%  
-- Flow 1:  
Average throughput: 6.56 Mbit/s  
95th percentile per-packet one-way delay: 237.723 ms  
Loss rate: 0.33%

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

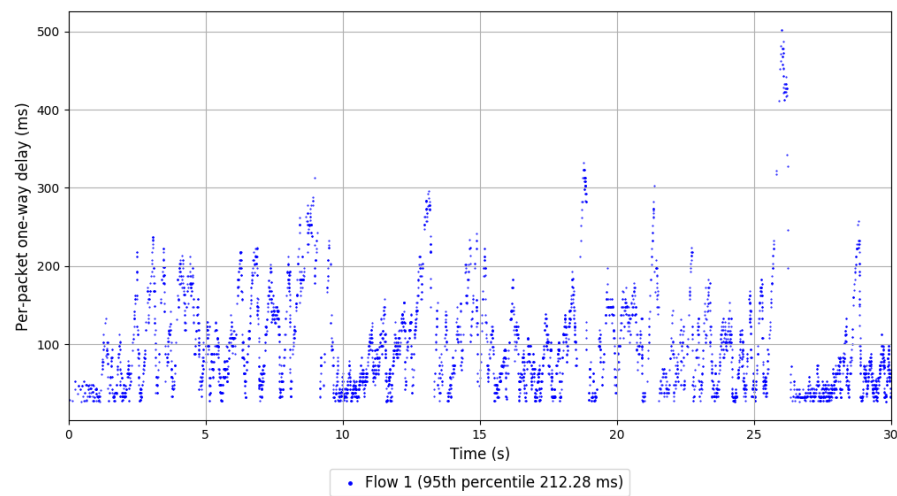
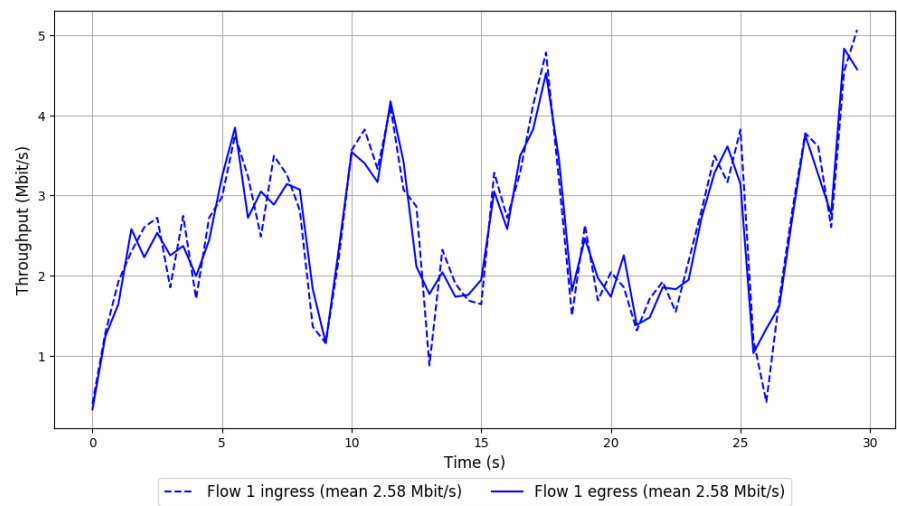


```
Run 1: Statistics of LEDBAT

Start at: 2017-12-05 07:13:45
End at: 2017-12-05 07:14:15
Local clock offset: 4.377 ms
Remote clock offset: -18.346 ms

# Below is generated by plot.py at 2017-12-05 07:50:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.58 Mbit/s
95th percentile per-packet one-way delay: 212.281 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 2.58 Mbit/s
95th percentile per-packet one-way delay: 212.281 ms
Loss rate: 0.51%
```

Run 1: Report of LEDBAT — Data Link

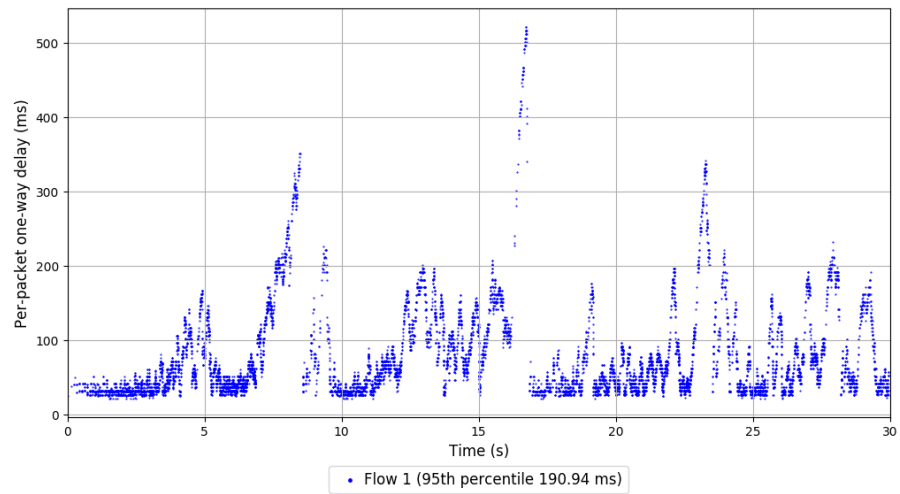
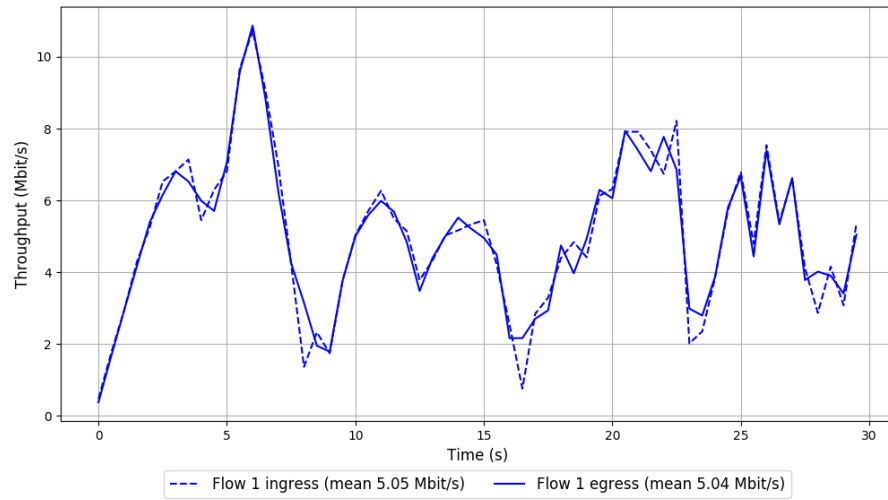


Run 2: Statistics of LEDBAT

Start at: 2017-12-05 07:29:03  
End at: 2017-12-05 07:29:33  
Local clock offset: 3.059 ms  
Remote clock offset: -19.078 ms

# Below is generated by plot.py at 2017-12-05 07:50:14  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 5.04 Mbit/s  
95th percentile per-packet one-way delay: 190.941 ms  
Loss rate: 0.22%  
-- Flow 1:  
Average throughput: 5.04 Mbit/s  
95th percentile per-packet one-way delay: 190.941 ms  
Loss rate: 0.22%

## Run 2: Report of LEDBAT — Data Link

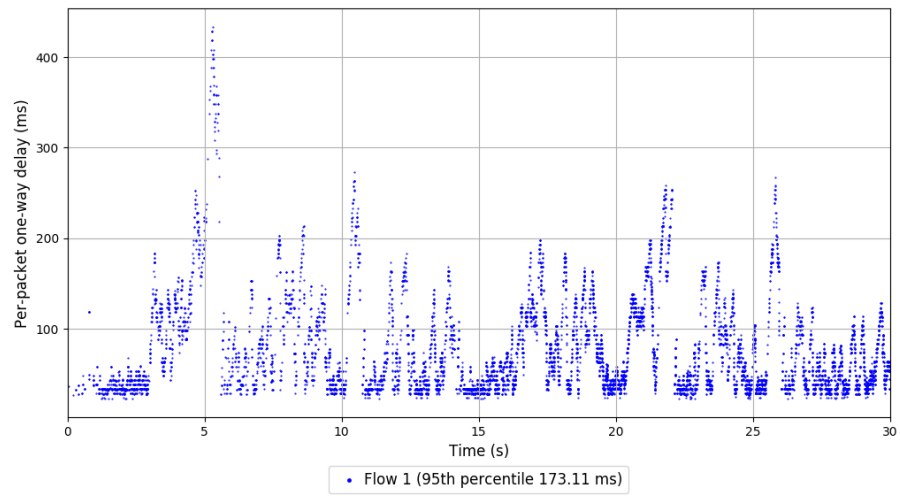
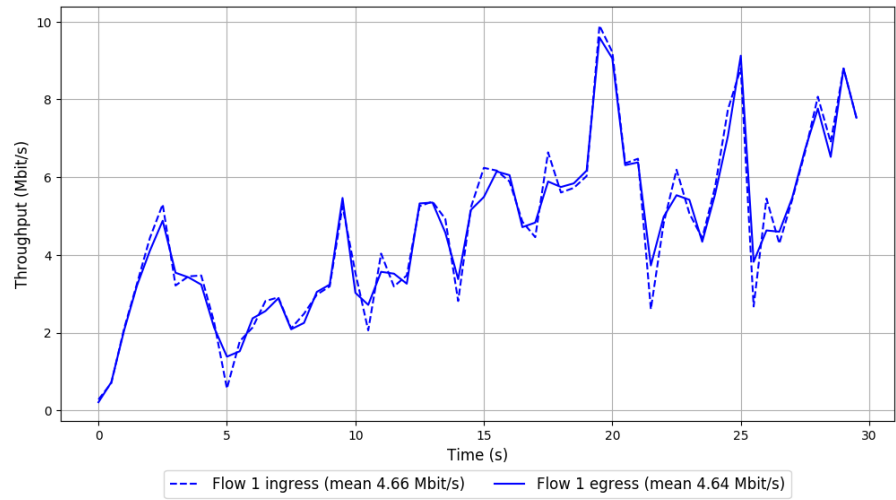


Run 3: Statistics of LEDBAT

Start at: 2017-12-05 07:44:22  
End at: 2017-12-05 07:44:52  
Local clock offset: -0.434 ms  
Remote clock offset: -18.452 ms

# Below is generated by plot.py at 2017-12-05 07:50:14  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 4.64 Mbit/s  
95th percentile per-packet one-way delay: 173.109 ms  
Loss rate: 0.47%  
-- Flow 1:  
Average throughput: 4.64 Mbit/s  
95th percentile per-packet one-way delay: 173.109 ms  
Loss rate: 0.47%

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

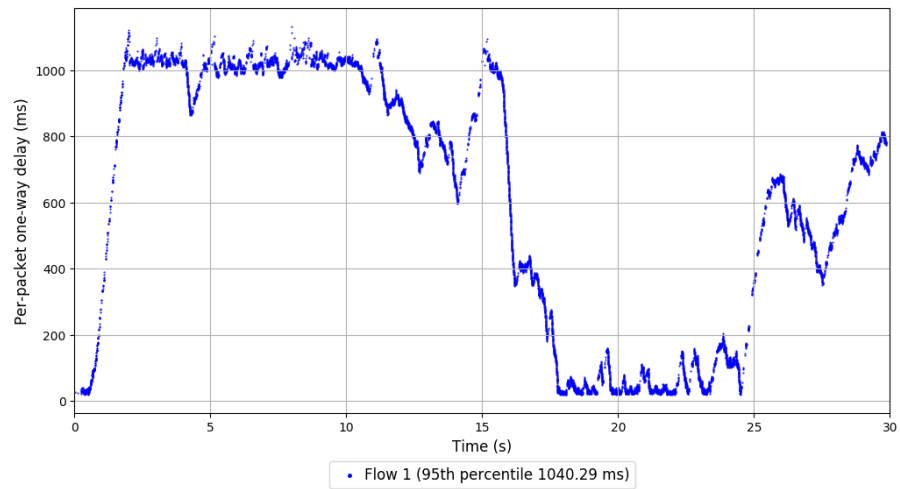
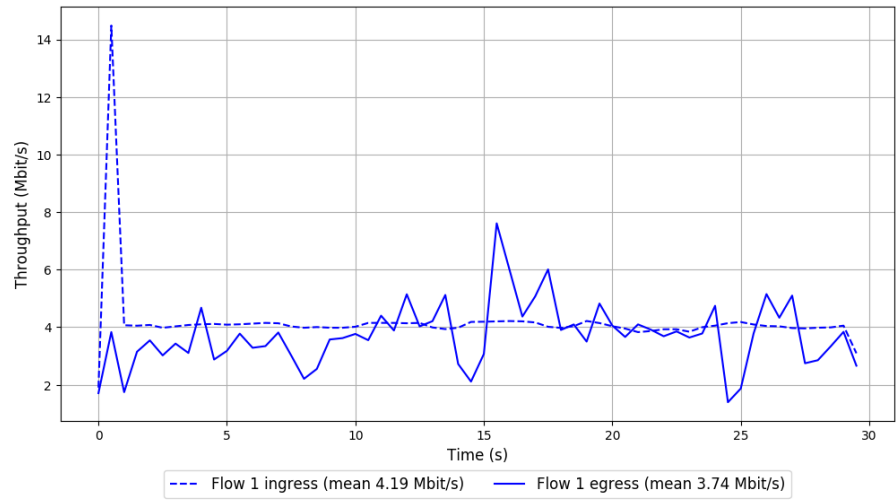


```
Run 1: Statistics of PCC

Start at: 2017-12-05 07:17:00
End at: 2017-12-05 07:17:30
Local clock offset: 6.155 ms
Remote clock offset: -19.776 ms

# Below is generated by plot.py at 2017-12-05 07:50:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.74 Mbit/s
95th percentile per-packet one-way delay: 1040.291 ms
Loss rate: 10.89%
-- Flow 1:
Average throughput: 3.74 Mbit/s
95th percentile per-packet one-way delay: 1040.291 ms
Loss rate: 10.89%
```

## Run 1: Report of PCC — Data Link

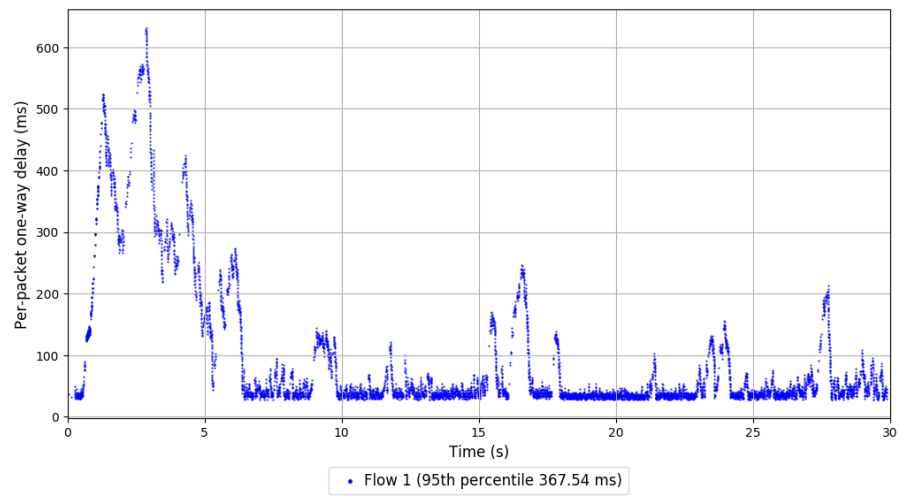
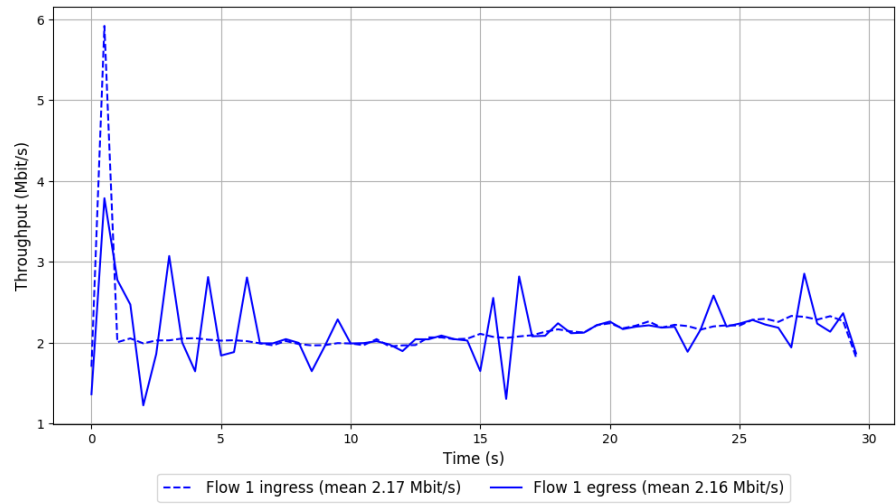


Run 2: Statistics of PCC

Start at: 2017-12-05 07:32:20  
End at: 2017-12-05 07:32:50  
Local clock offset: 0.943 ms  
Remote clock offset: -17.704 ms

# Below is generated by plot.py at 2017-12-05 07:50:16  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 2.16 Mbit/s  
95th percentile per-packet one-way delay: 367.542 ms  
Loss rate: 0.36%  
-- Flow 1:  
Average throughput: 2.16 Mbit/s  
95th percentile per-packet one-way delay: 367.542 ms  
Loss rate: 0.36%

## Run 2: Report of PCC — Data Link

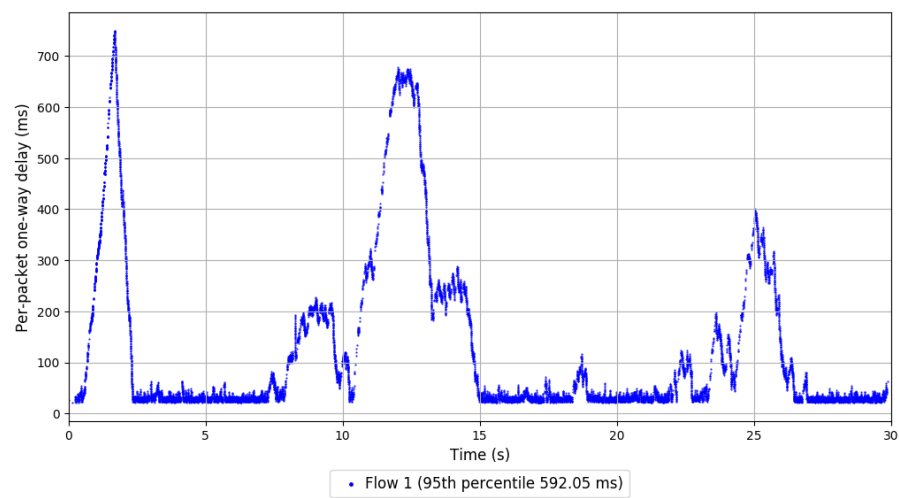
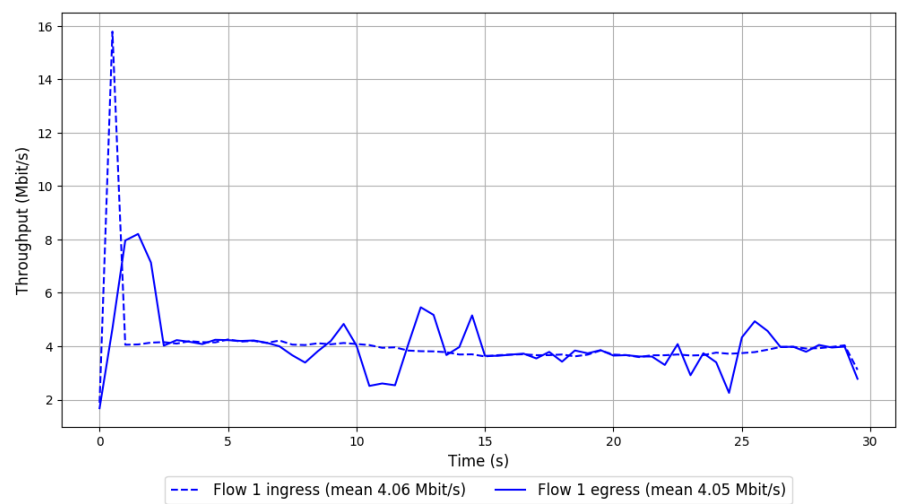


Run 3: Statistics of PCC

Start at: 2017-12-05 07:47:38  
End at: 2017-12-05 07:48:08  
Local clock offset: 0.824 ms  
Remote clock offset: -17.151 ms

# Below is generated by plot.py at 2017-12-05 07:50:19  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 4.05 Mbit/s  
95th percentile per-packet one-way delay: 592.047 ms  
Loss rate: 0.40%  
-- Flow 1:  
Average throughput: 4.05 Mbit/s  
95th percentile per-packet one-way delay: 592.047 ms  
Loss rate: 0.40%

Run 3: Report of PCC — Data Link



Run 1: Statistics of QUIC Cubic

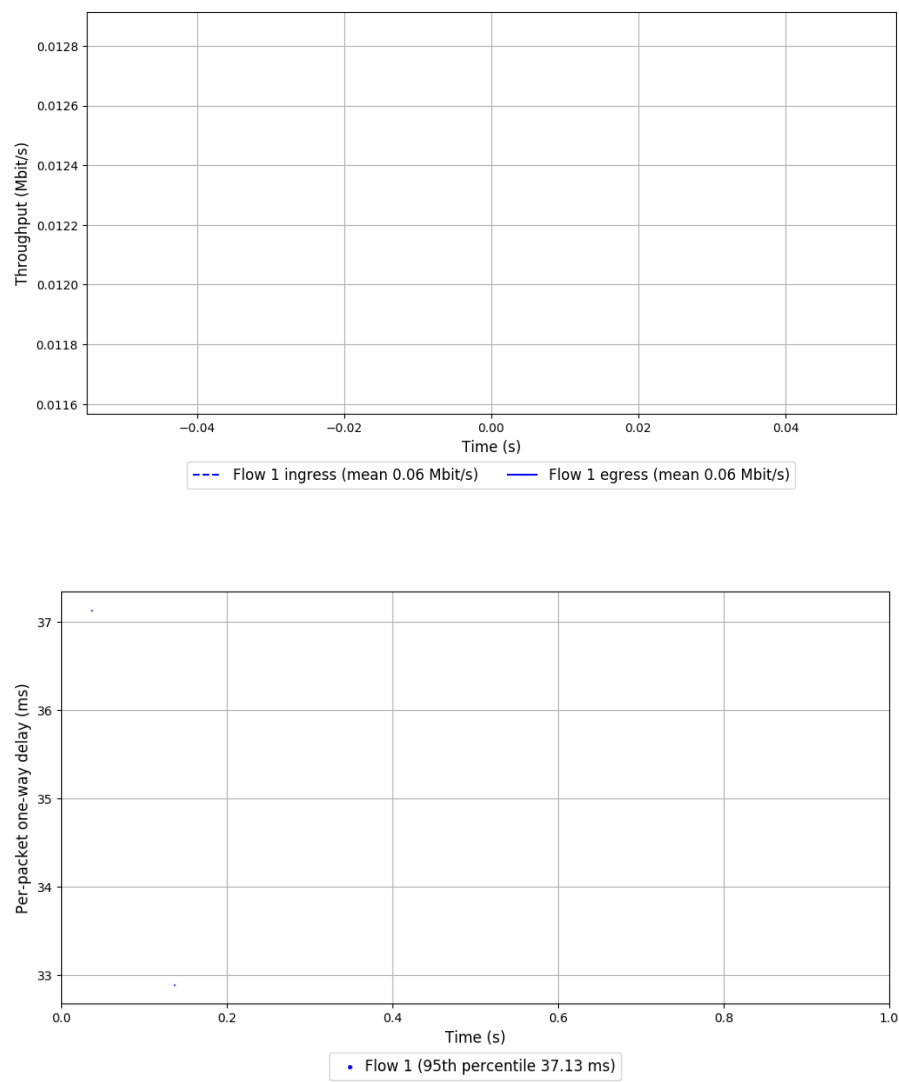
Start at: 2017-12-05 07:07:11

End at: 2017-12-05 07:07:41

Local clock offset: 3.905 ms

Remote clock offset: -19.595 ms

Run 1: Report of QUIC Cubic — Data Link

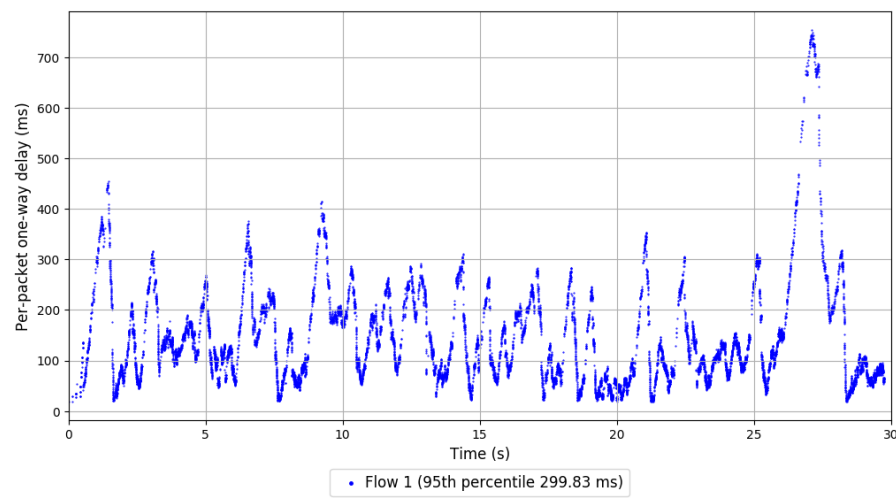
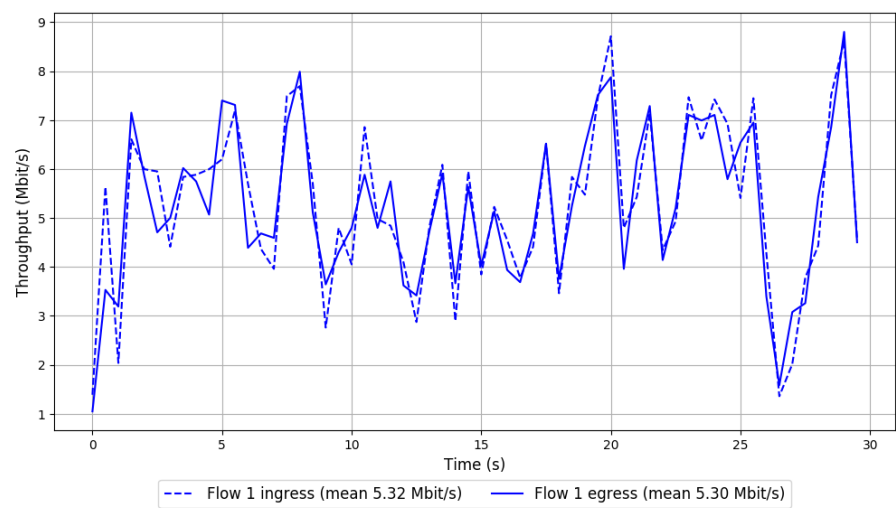


Run 2: Statistics of QUIC Cubic

Start at: 2017-12-05 07:22:30  
End at: 2017-12-05 07:23:00  
Local clock offset: 4.925 ms  
Remote clock offset: -19.897 ms

# Below is generated by plot.py at 2017-12-05 07:50:24  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 5.30 Mbit/s  
95th percentile per-packet one-way delay: 299.833 ms  
Loss rate: 0.61%  
-- Flow 1:  
Average throughput: 5.30 Mbit/s  
95th percentile per-packet one-way delay: 299.833 ms  
Loss rate: 0.61%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2017-12-05 07:37:48

End at: 2017-12-05 07:38:18

Local clock offset: 0.953 ms

Remote clock offset: -17.1 ms

# Below is generated by plot.py at 2017-12-05 07:50:24

# Datalink statistics

-- Total of 1 flow:

Average throughput: 3.60 Mbit/s

95th percentile per-packet one-way delay: 398.070 ms

Loss rate: 0.71%

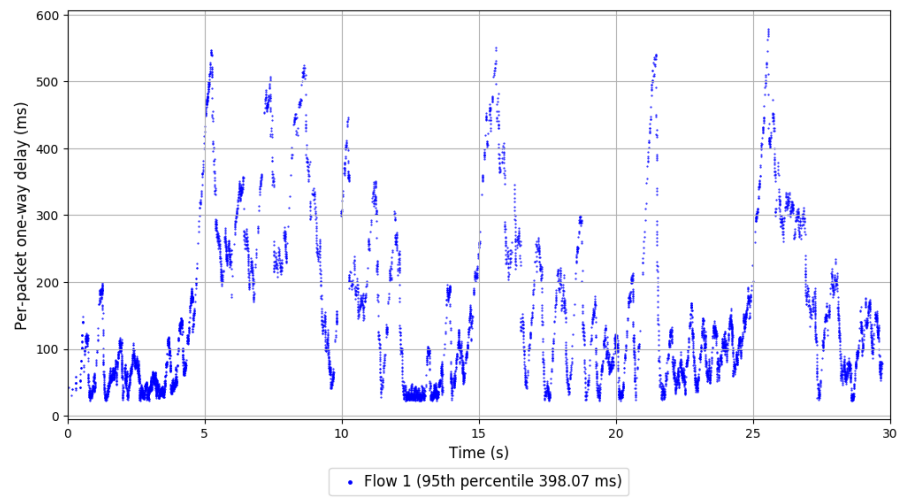
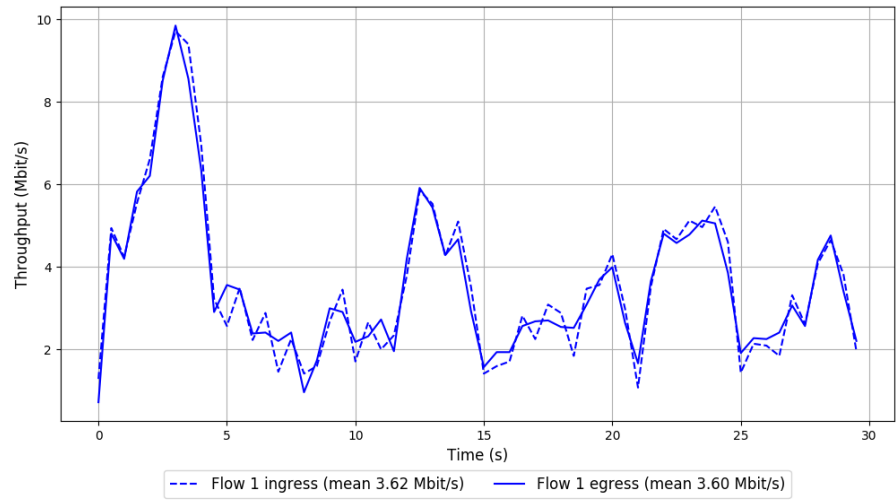
-- Flow 1:

Average throughput: 3.60 Mbit/s

95th percentile per-packet one-way delay: 398.070 ms

Loss rate: 0.71%

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

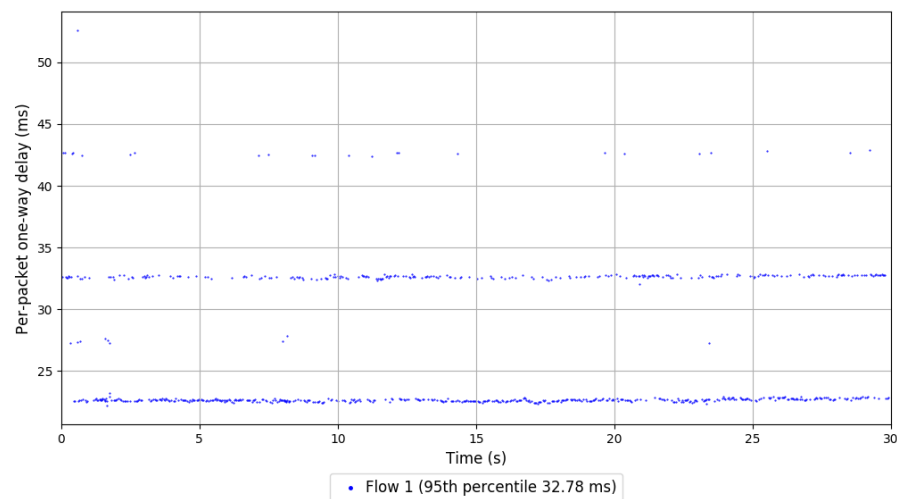
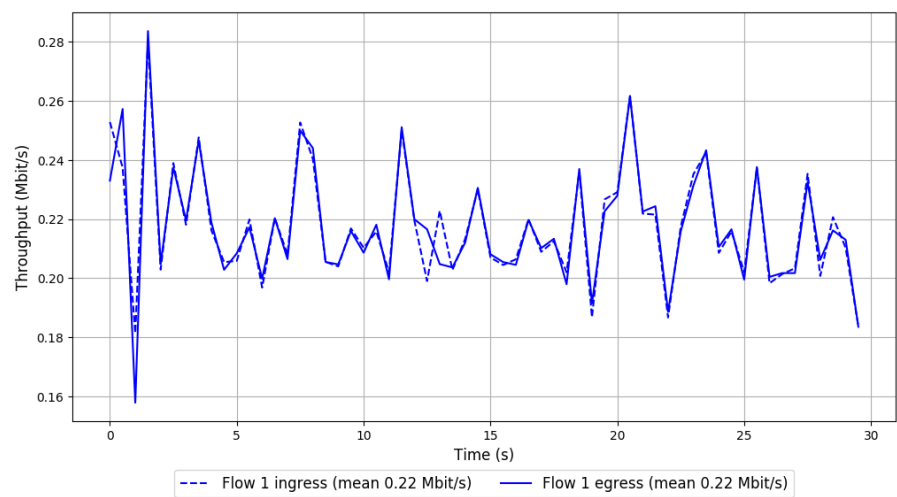


Run 1: Statistics of SCReAM

Start at: 2017-12-05 07:15:55  
End at: 2017-12-05 07:16:25  
Local clock offset: 5.318 ms  
Remote clock offset: -19.02 ms

# Below is generated by plot.py at 2017-12-05 07:50:24  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 32.782 ms  
Loss rate: 0.13%  
-- Flow 1:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 32.782 ms  
Loss rate: 0.13%

Run 1: Report of SReAM — Data Link

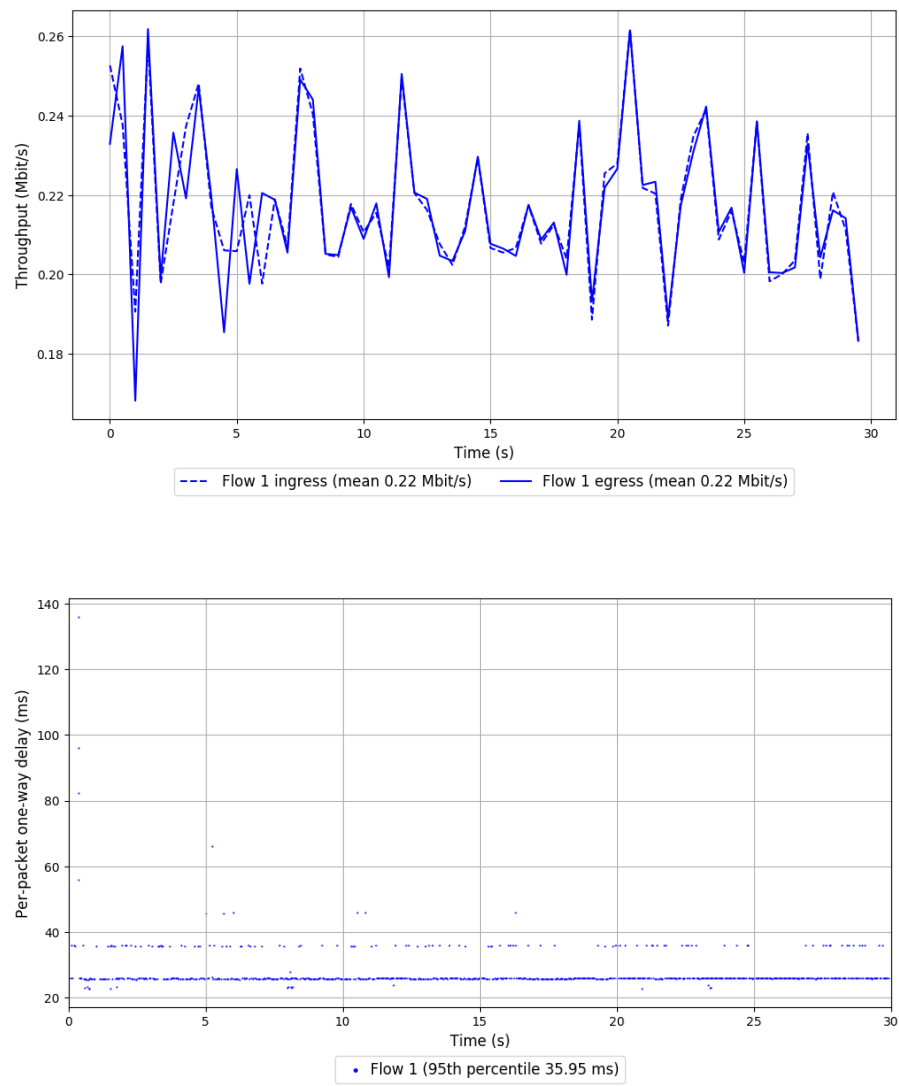


Run 2: Statistics of SCReAM

Start at: 2017-12-05 07:31:15  
End at: 2017-12-05 07:31:45  
Local clock offset: 2.05 ms  
Remote clock offset: -18.401 ms

# Below is generated by plot.py at 2017-12-05 07:50:24  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 35.955 ms  
Loss rate: 0.13%  
-- Flow 1:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 35.955 ms  
Loss rate: 0.13%

Run 2: Report of SReAM — Data Link

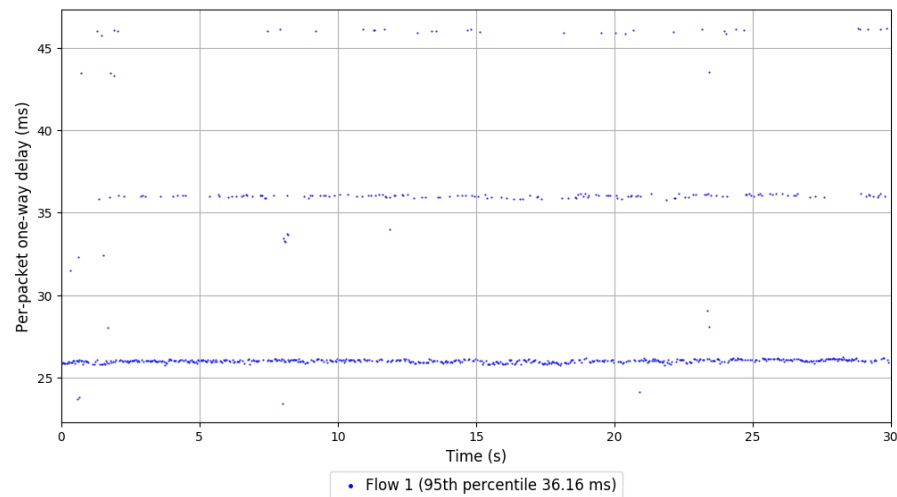
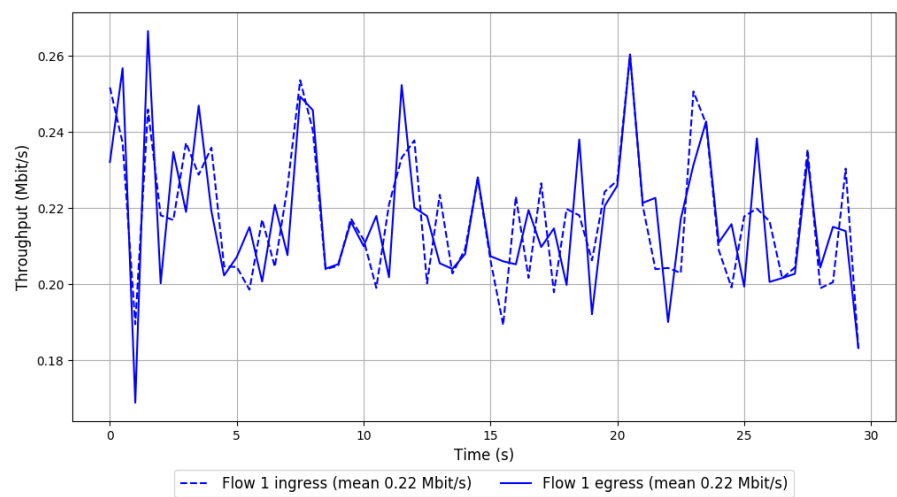


Run 3: Statistics of SCReAM

Start at: 2017-12-05 07:46:33  
End at: 2017-12-05 07:47:03  
Local clock offset: 0.686 ms  
Remote clock offset: -17.397 ms

# Below is generated by plot.py at 2017-12-05 07:50:24  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 36.160 ms  
Loss rate: 0.13%  
-- Flow 1:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 36.160 ms  
Loss rate: 0.13%

Run 3: Report of SReAM — Data Link

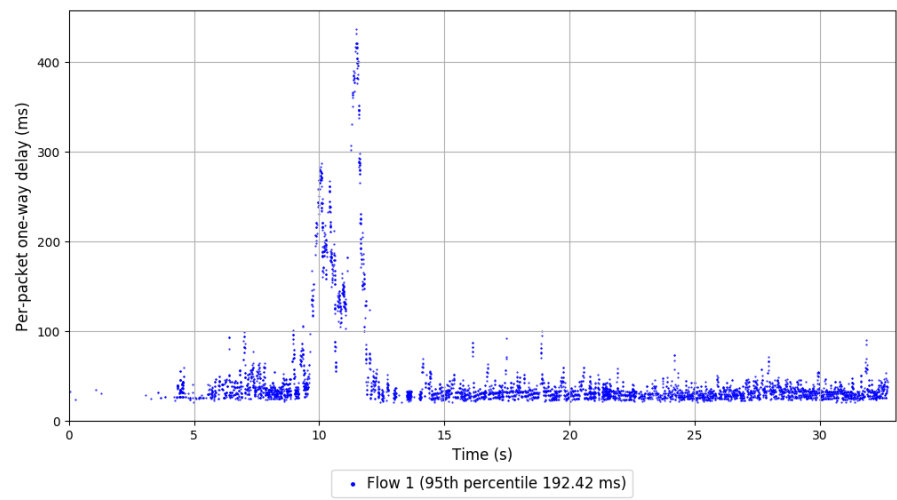
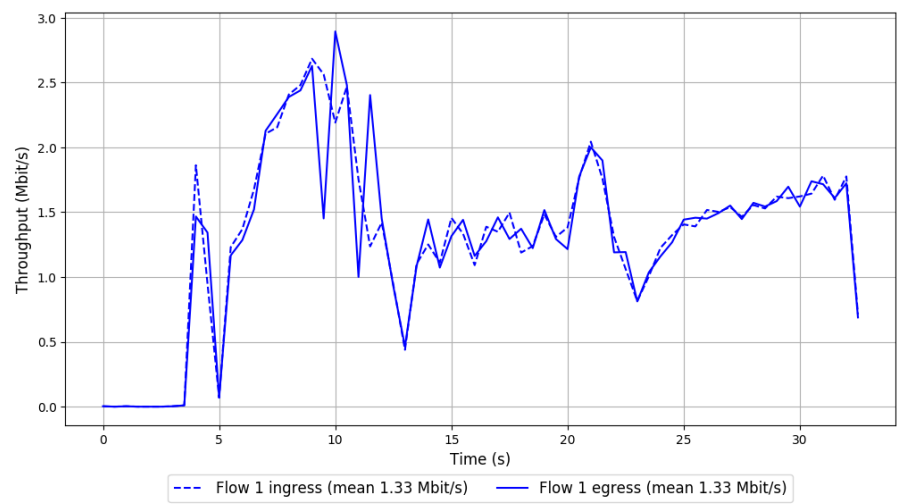


```
Run 1: Statistics of WebRTC media

Start at: 2017-12-05 07:14:50
End at: 2017-12-05 07:15:20
Local clock offset: 3.887 ms
Remote clock offset: -19.427 ms

# Below is generated by plot.py at 2017-12-05 07:50:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.33 Mbit/s
95th percentile per-packet one-way delay: 192.416 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 1.33 Mbit/s
95th percentile per-packet one-way delay: 192.416 ms
Loss rate: 0.26%
```

Run 1: Report of WebRTC media — Data Link

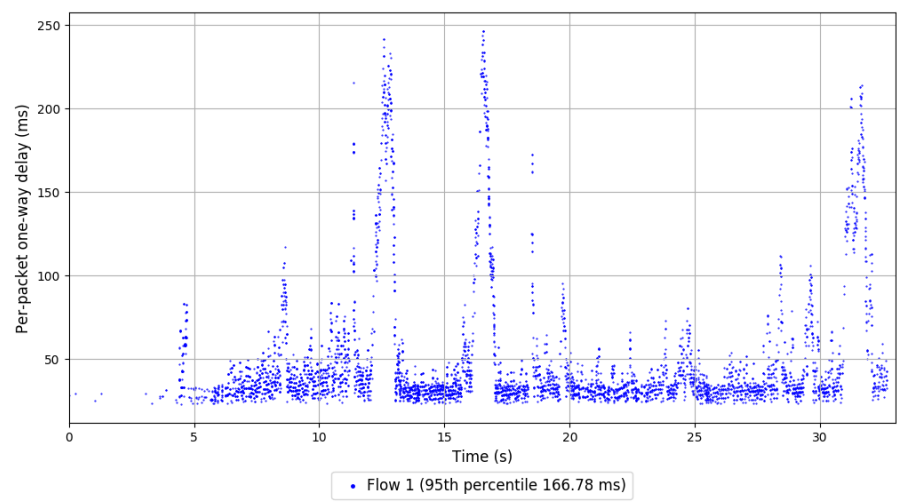
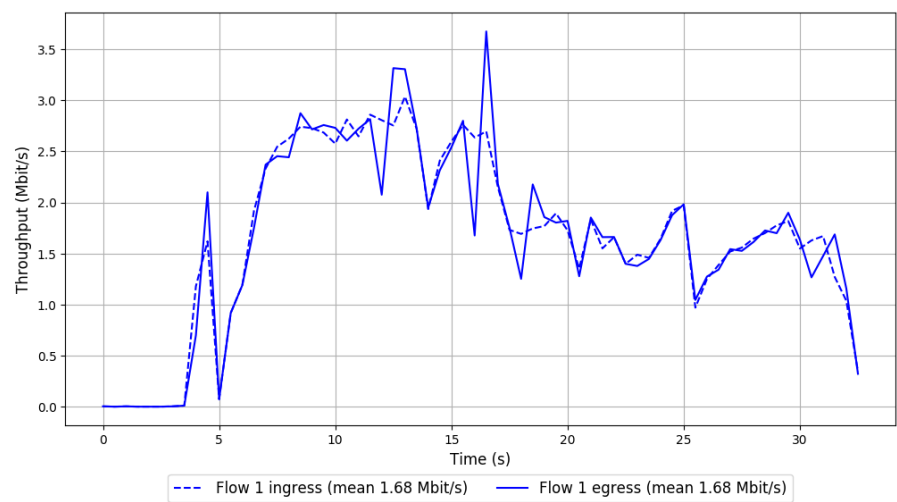


Run 2: Statistics of WebRTC media

Start at: 2017-12-05 07:30:10  
End at: 2017-12-05 07:30:40  
Local clock offset: 0.75 ms  
Remote clock offset: -18.718 ms

# Below is generated by plot.py at 2017-12-05 07:50:24  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 1.68 Mbit/s  
95th percentile per-packet one-way delay: 166.779 ms  
Loss rate: 0.09%  
-- Flow 1:  
Average throughput: 1.68 Mbit/s  
95th percentile per-packet one-way delay: 166.779 ms  
Loss rate: 0.09%

Run 2: Report of WebRTC media — Data Link

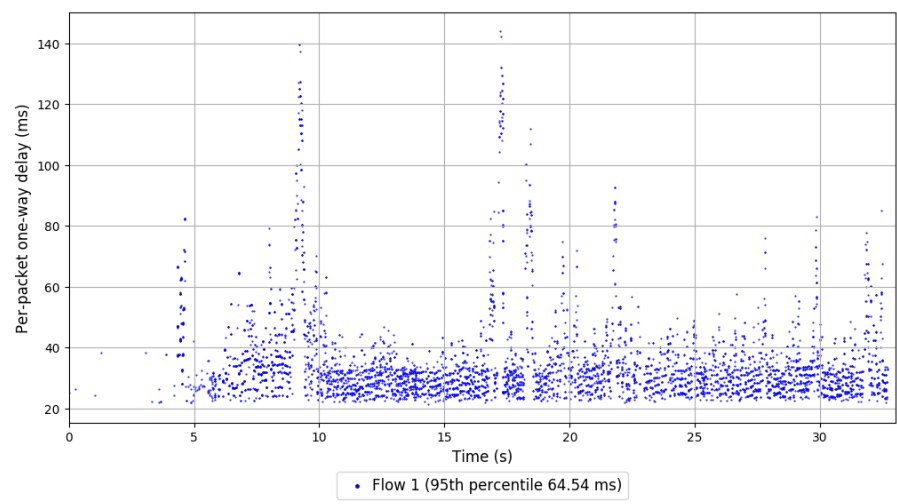
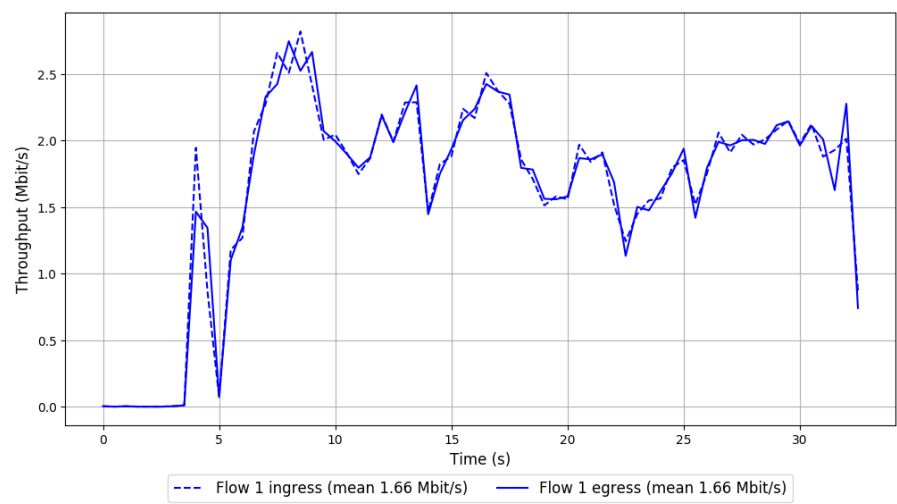


Run 3: Statistics of WebRTC media

Start at: 2017-12-05 07:45:28  
End at: 2017-12-05 07:45:58  
Local clock offset: 1.215 ms  
Remote clock offset: -17.279 ms

# Below is generated by plot.py at 2017-12-05 07:50:24  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 1.66 Mbit/s  
95th percentile per-packet one-way delay: 64.544 ms  
Loss rate: 0.17%  
-- Flow 1:  
Average throughput: 1.66 Mbit/s  
95th percentile per-packet one-way delay: 64.544 ms  
Loss rate: 0.17%

Run 3: Report of WebRTC media — Data Link

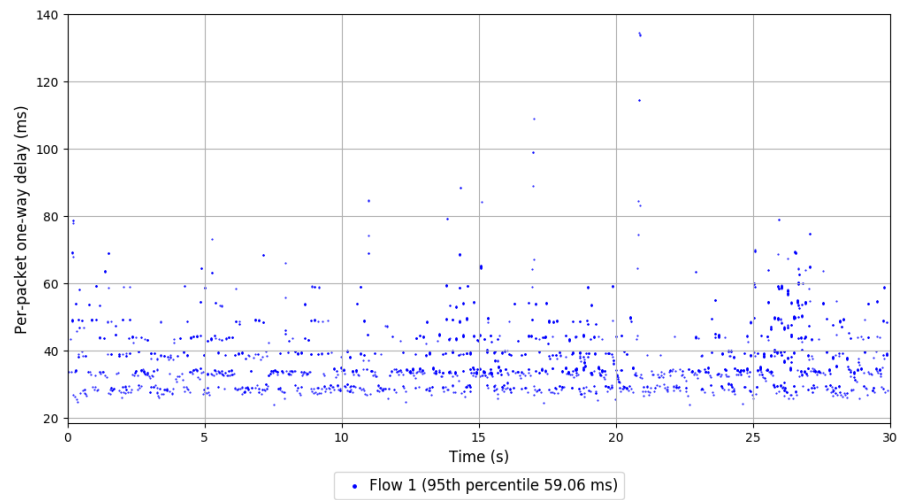
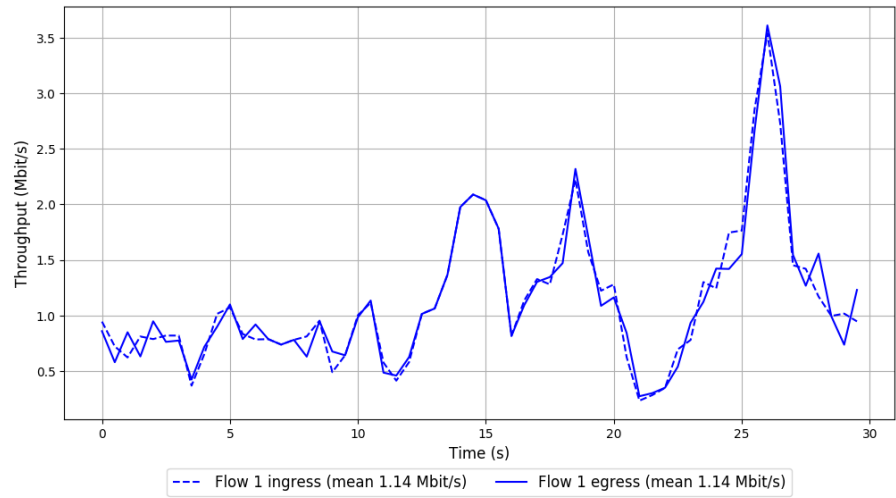


Run 1: Statistics of Sprout

Start at: 2017-12-05 07:08:19  
End at: 2017-12-05 07:08:49  
Local clock offset: 5.772 ms  
Remote clock offset: -19.422 ms

# Below is generated by plot.py at 2017-12-05 07:50:24  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 1.14 Mbit/s  
95th percentile per-packet one-way delay: 59.064 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 1.14 Mbit/s  
95th percentile per-packet one-way delay: 59.064 ms  
Loss rate: 0.00%

## Run 1: Report of Sprout — Data Link

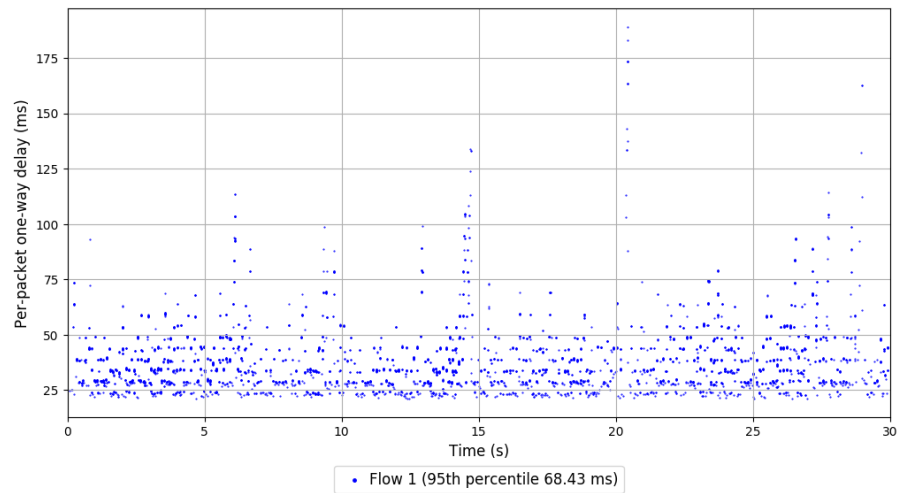
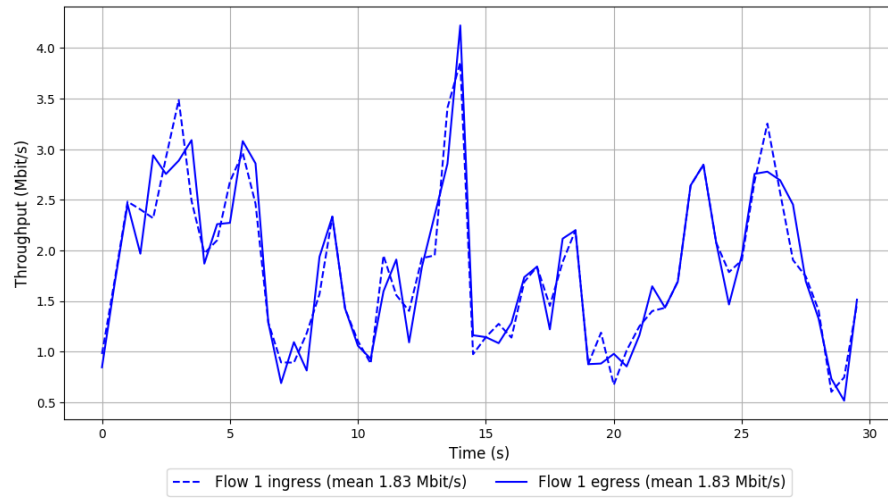


Run 2: Statistics of Sprout

Start at: 2017-12-05 07:23:35  
End at: 2017-12-05 07:24:05  
Local clock offset: 1.985 ms  
Remote clock offset: -20.001 ms

# Below is generated by plot.py at 2017-12-05 07:50:24  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 1.83 Mbit/s  
95th percentile per-packet one-way delay: 68.429 ms  
Loss rate: 0.17%  
-- Flow 1:  
Average throughput: 1.83 Mbit/s  
95th percentile per-packet one-way delay: 68.429 ms  
Loss rate: 0.17%

## Run 2: Report of Sprout — Data Link



Run 3: Statistics of Sprout

Start at: 2017-12-05 07:38:54

End at: 2017-12-05 07:39:24

Local clock offset: 0.359 ms

Remote clock offset: -19.224 ms

Run 3: Report of Sprout — Data Link

Figure is missing

Figure is missing

Run 1: Statistics of TaoVA-100x

Start at: 2017-12-05 07:12:40

End at: 2017-12-05 07:13:10

Local clock offset: 6.965 ms

Remote clock offset: -20.03 ms

# Below is generated by plot.py at 2017-12-05 07:50:25

# Datalink statistics

-- Total of 1 flow:

Average throughput: 1.36 Mbit/s

95th percentile per-packet one-way delay: 549.830 ms

Loss rate: 4.81%

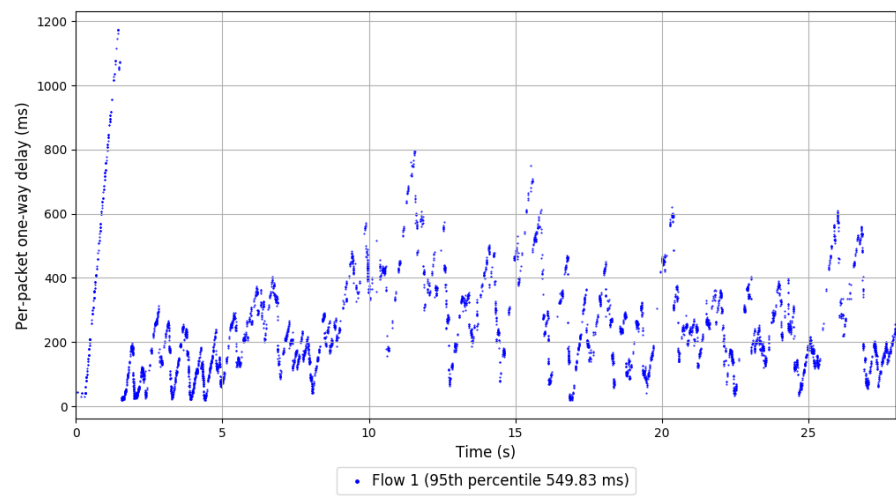
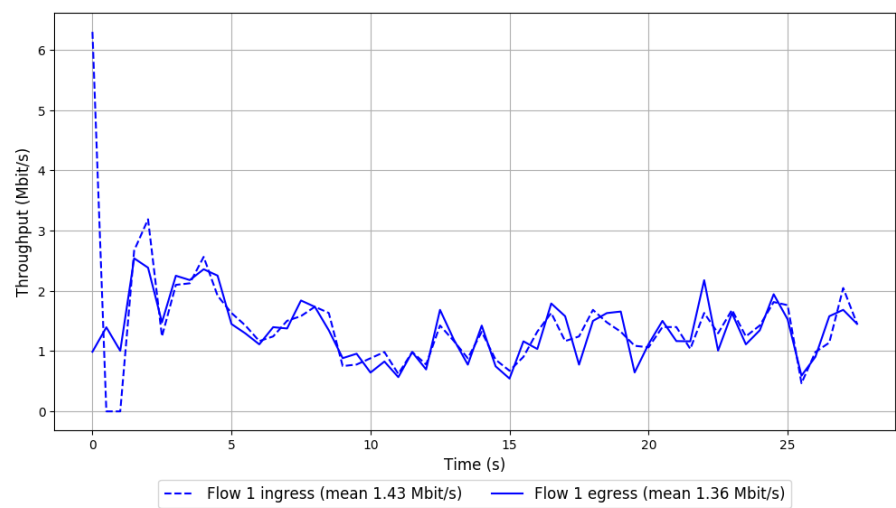
-- Flow 1:

Average throughput: 1.36 Mbit/s

95th percentile per-packet one-way delay: 549.830 ms

Loss rate: 4.81%

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

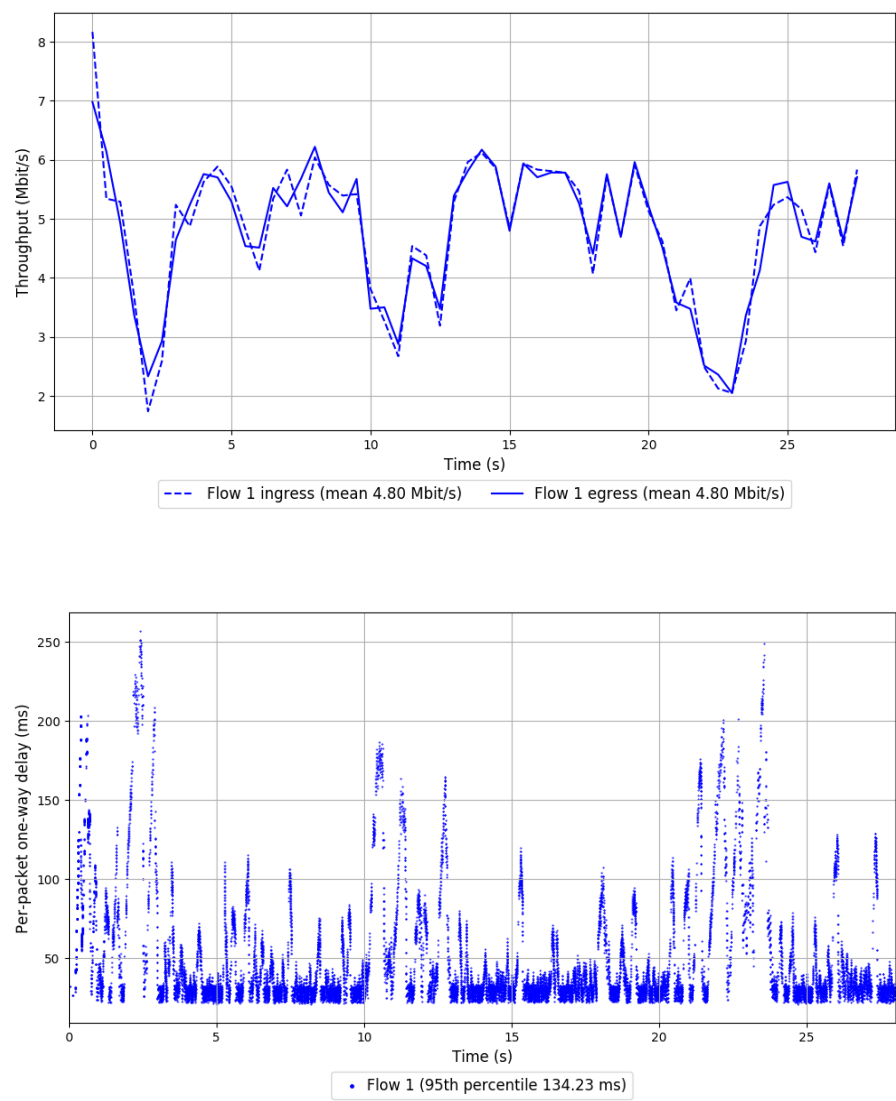


Run 2: Statistics of TaoVA-100x

Start at: 2017-12-05 07:27:57  
End at: 2017-12-05 07:28:27  
Local clock offset: 2.355 ms  
Remote clock offset: -18.712 ms

# Below is generated by plot.py at 2017-12-05 07:50:35  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 4.80 Mbit/s  
95th percentile per-packet one-way delay: 134.233 ms  
Loss rate: 0.18%  
-- Flow 1:  
Average throughput: 4.80 Mbit/s  
95th percentile per-packet one-way delay: 134.233 ms  
Loss rate: 0.18%

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

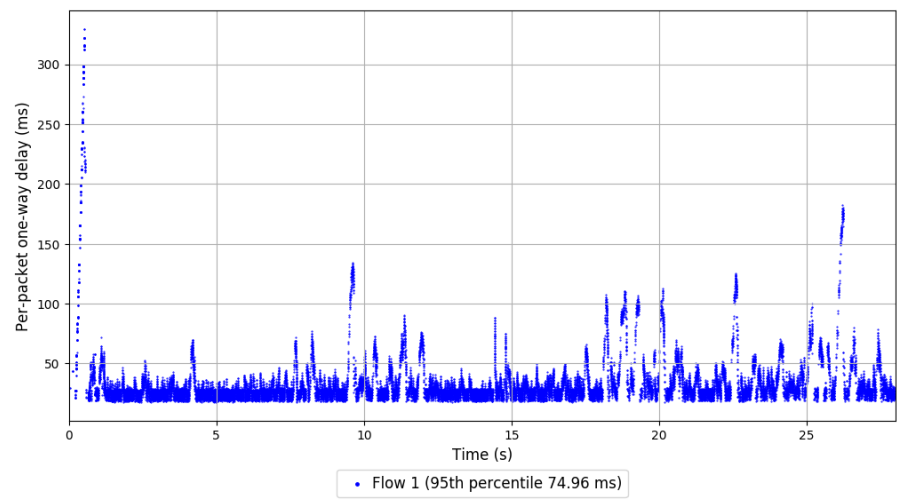
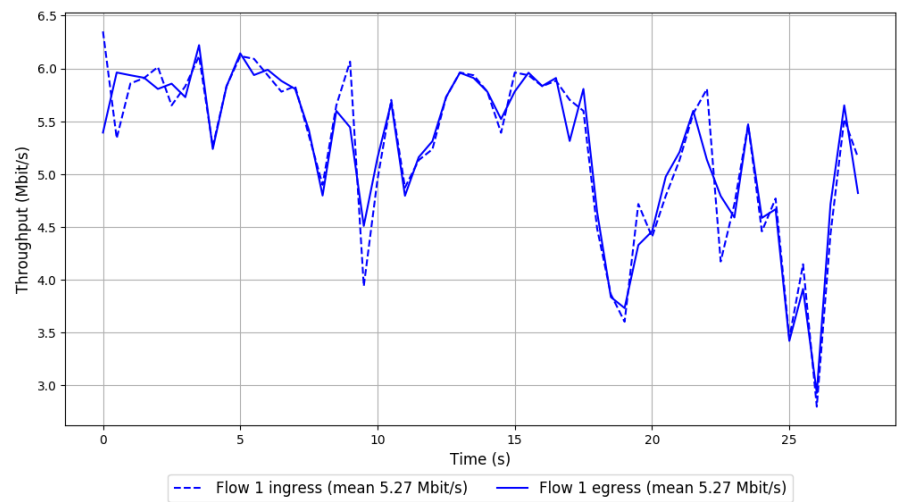


Run 3: Statistics of TaoVA-100x

Start at: 2017-12-05 07:43:17  
End at: 2017-12-05 07:43:47  
Local clock offset: 1.247 ms  
Remote clock offset: -19.888 ms

# Below is generated by plot.py at 2017-12-05 07:50:38  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 5.27 Mbit/s  
95th percentile per-packet one-way delay: 74.957 ms  
Loss rate: 0.15%  
-- Flow 1:  
Average throughput: 5.27 Mbit/s  
95th percentile per-packet one-way delay: 74.957 ms  
Loss rate: 0.15%

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

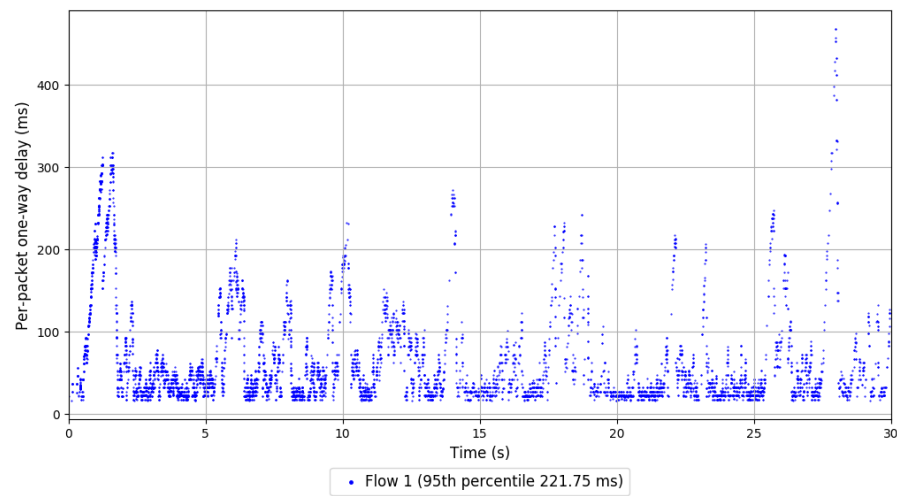
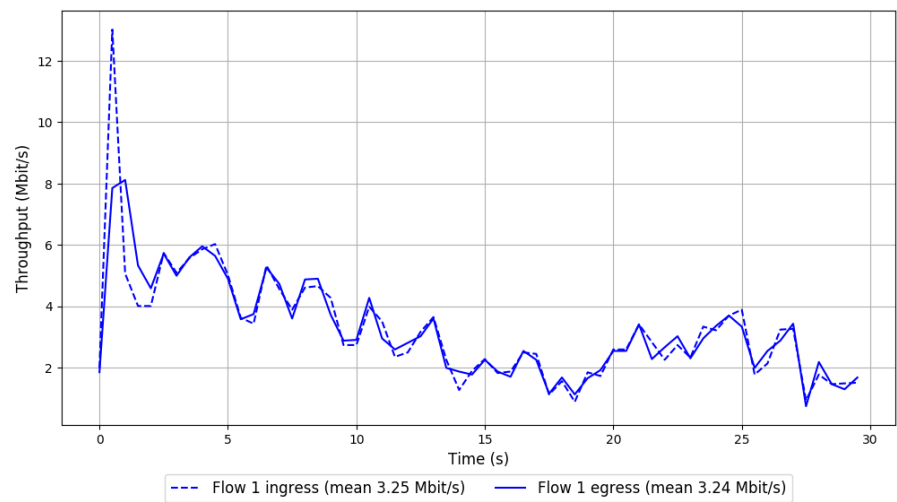


Run 1: Statistics of TCP Vegas

Start at: 2017-12-05 07:06:06  
End at: 2017-12-05 07:06:36  
Local clock offset: 5.733 ms  
Remote clock offset: -21.346 ms

# Below is generated by plot.py at 2017-12-05 07:50:38  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 3.24 Mbit/s  
95th percentile per-packet one-way delay: 221.752 ms  
Loss rate: 0.14%  
-- Flow 1:  
Average throughput: 3.24 Mbit/s  
95th percentile per-packet one-way delay: 221.752 ms  
Loss rate: 0.14%

Run 1: Report of TCP Vegas — Data Link

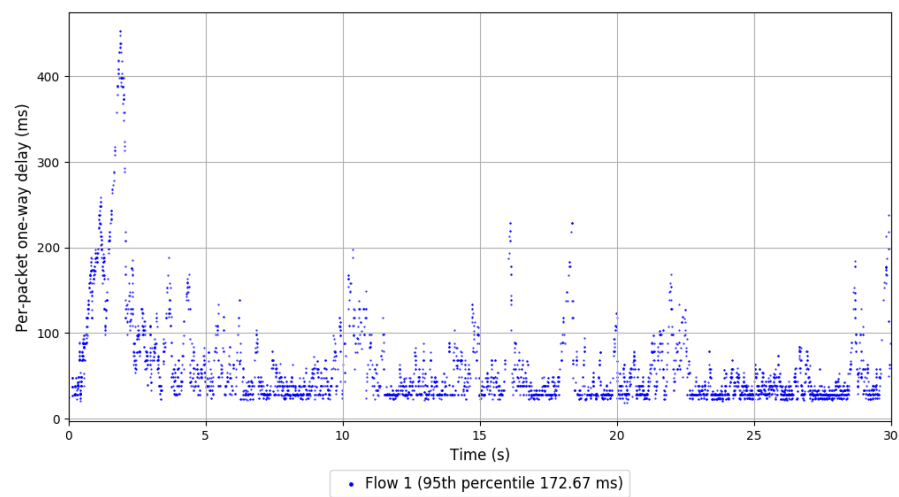
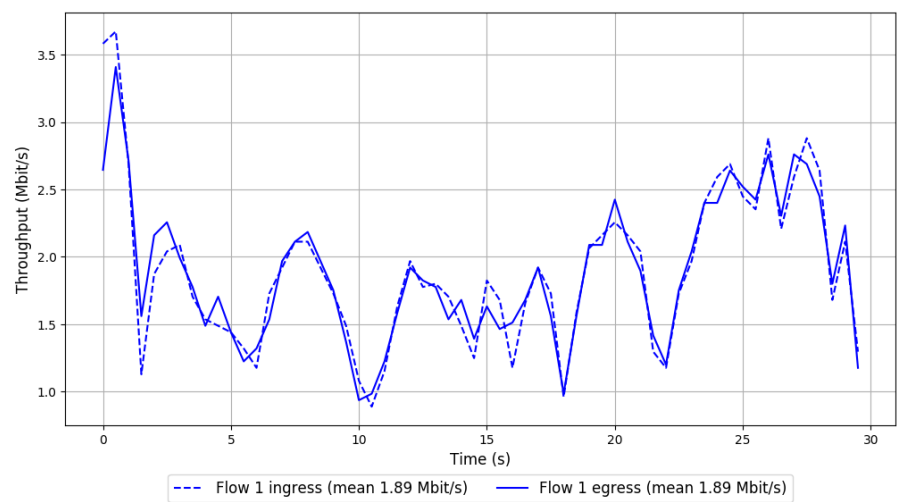


Run 2: Statistics of TCP Vegas

Start at: 2017-12-05 07:21:24  
End at: 2017-12-05 07:21:54  
Local clock offset: 6.162 ms  
Remote clock offset: -18.787 ms

# Below is generated by plot.py at 2017-12-05 07:50:38  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 1.89 Mbit/s  
95th percentile per-packet one-way delay: 172.667 ms  
Loss rate: 0.27%  
-- Flow 1:  
Average throughput: 1.89 Mbit/s  
95th percentile per-packet one-way delay: 172.667 ms  
Loss rate: 0.27%

Run 2: Report of TCP Vegas — Data Link



Run 3: Statistics of TCP Vegas

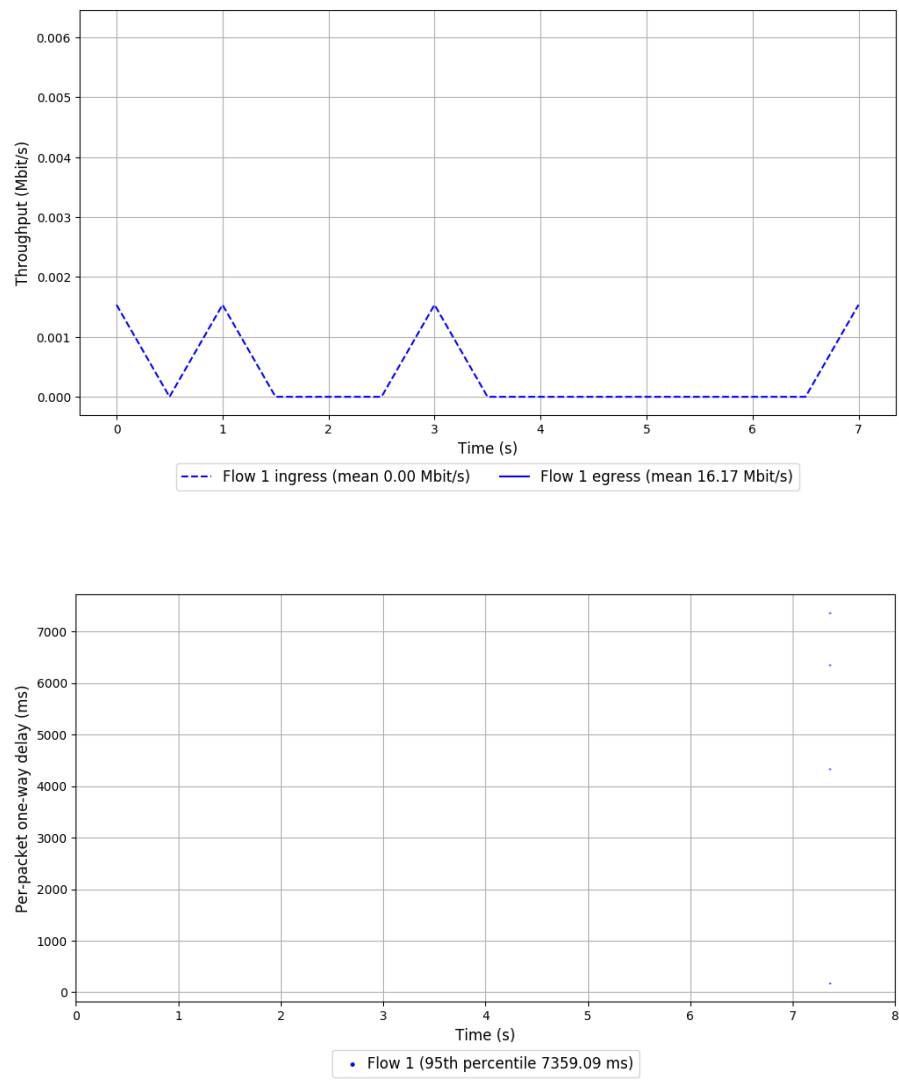
Start at: 2017-12-05 07:36:43

End at: 2017-12-05 07:37:13

Local clock offset: 0.603 ms

Remote clock offset: -18.829 ms

Run 3: Report of TCP Vegas — Data Link

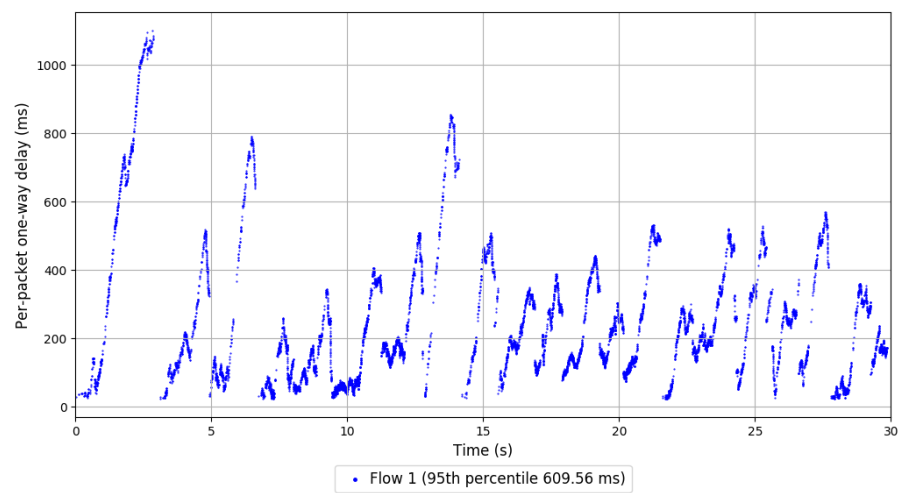
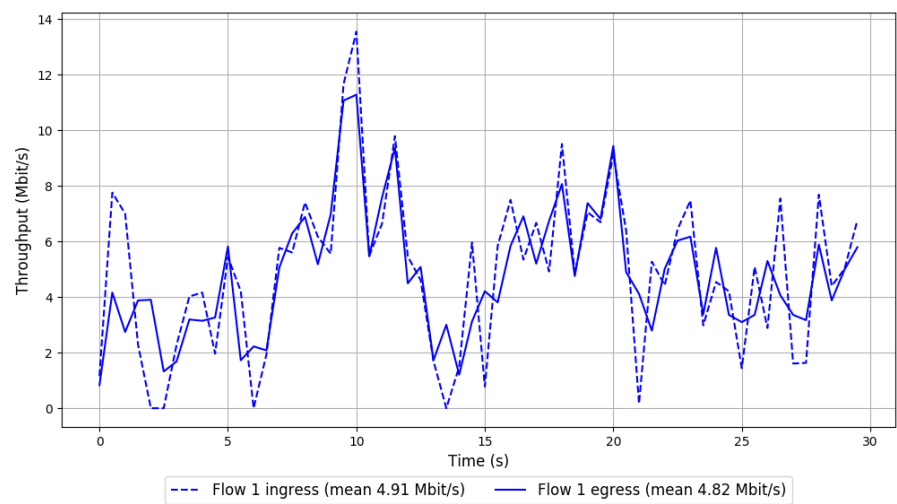


Run 1: Statistics of Verus

Start at: 2017-12-05 07:11:34  
End at: 2017-12-05 07:12:04  
Local clock offset: 5.436 ms  
Remote clock offset: -19.791 ms

# Below is generated by plot.py at 2017-12-05 07:50:38  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 4.82 Mbit/s  
95th percentile per-packet one-way delay: 609.561 ms  
Loss rate: 2.03%  
-- Flow 1:  
Average throughput: 4.82 Mbit/s  
95th percentile per-packet one-way delay: 609.561 ms  
Loss rate: 2.03%

Run 1: Report of Verus — Data Link

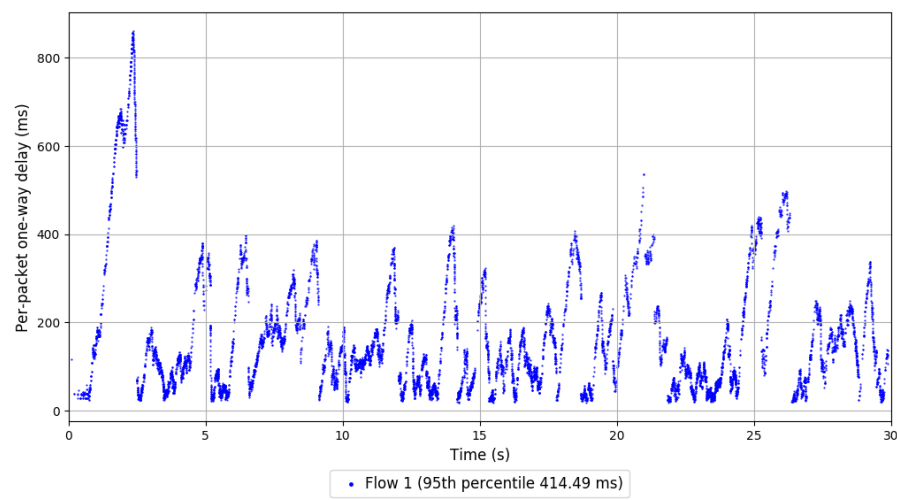
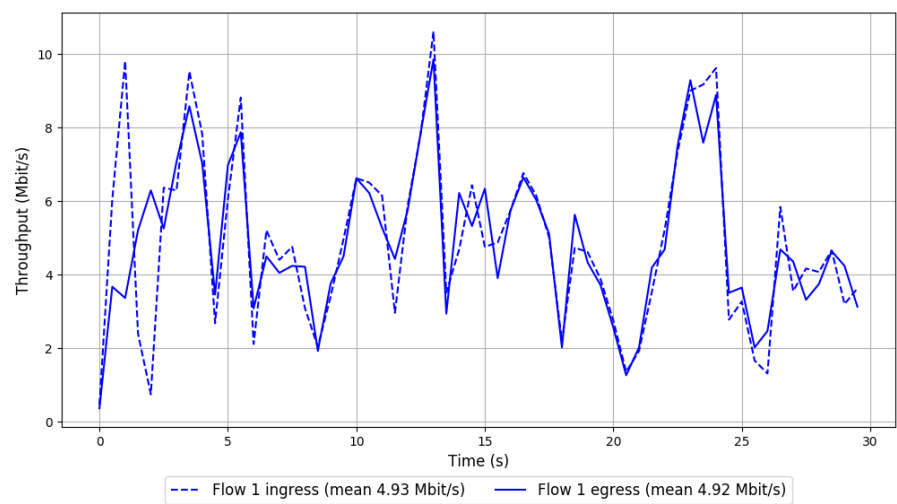


Run 2: Statistics of Verus

Start at: 2017-12-05 07:26:51  
End at: 2017-12-05 07:27:21  
Local clock offset: 4.791 ms  
Remote clock offset: -18.416 ms

# Below is generated by plot.py at 2017-12-05 07:50:38  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 4.92 Mbit/s  
95th percentile per-packet one-way delay: 414.488 ms  
Loss rate: 0.63%  
-- Flow 1:  
Average throughput: 4.92 Mbit/s  
95th percentile per-packet one-way delay: 414.488 ms  
Loss rate: 0.63%

Run 2: Report of Verus — Data Link

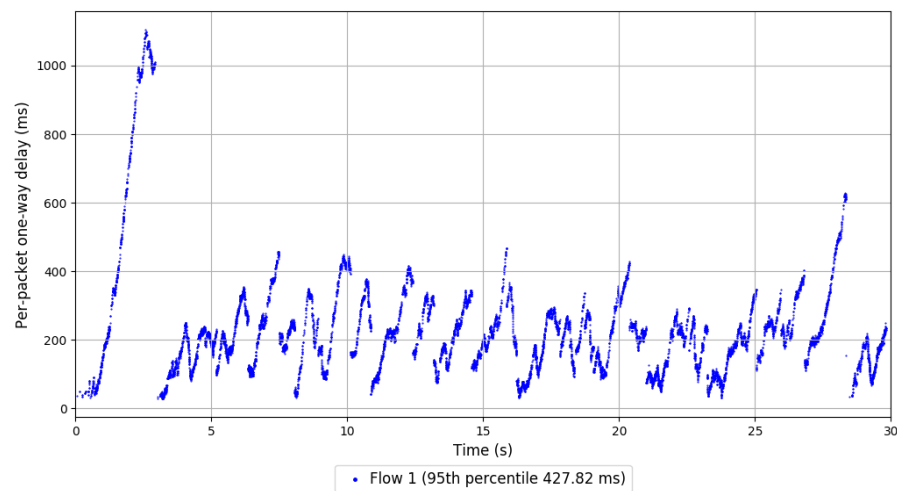
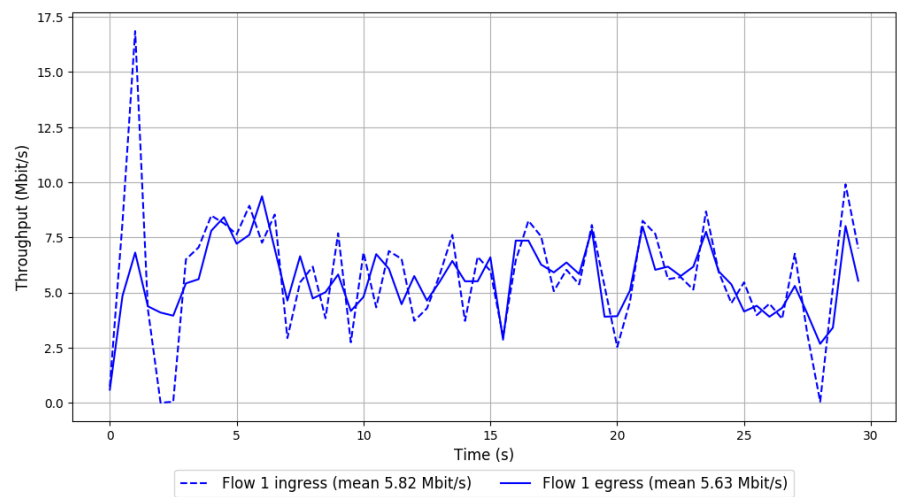


Run 3: Statistics of Verus

Start at: 2017-12-05 07:42:10  
End at: 2017-12-05 07:42:40  
Local clock offset: 0.94 ms  
Remote clock offset: -18.689 ms

# Below is generated by plot.py at 2017-12-05 07:50:38  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 5.63 Mbit/s  
95th percentile per-packet one-way delay: 427.818 ms  
Loss rate: 3.30%  
-- Flow 1:  
Average throughput: 5.63 Mbit/s  
95th percentile per-packet one-way delay: 427.818 ms  
Loss rate: 3.30%

Run 3: Report of Verus — Data Link

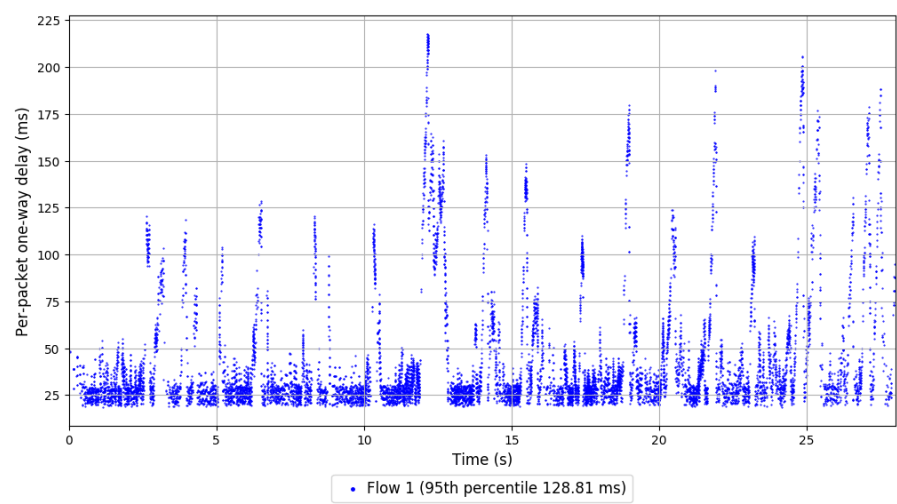
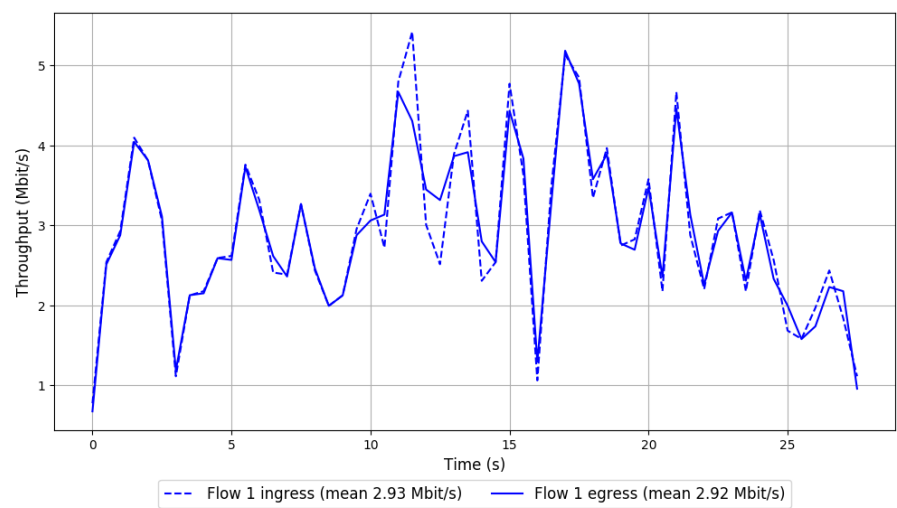


Run 1: Statistics of Copa

Start at: 2017-12-05 07:10:29  
End at: 2017-12-05 07:10:59  
Local clock offset: 6.105 ms  
Remote clock offset: -19.028 ms

# Below is generated by plot.py at 2017-12-05 07:50:38  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 2.92 Mbit/s  
95th percentile per-packet one-way delay: 128.811 ms  
Loss rate: 0.20%  
-- Flow 1:  
Average throughput: 2.92 Mbit/s  
95th percentile per-packet one-way delay: 128.811 ms  
Loss rate: 0.20%

Run 1: Report of Copa — Data Link

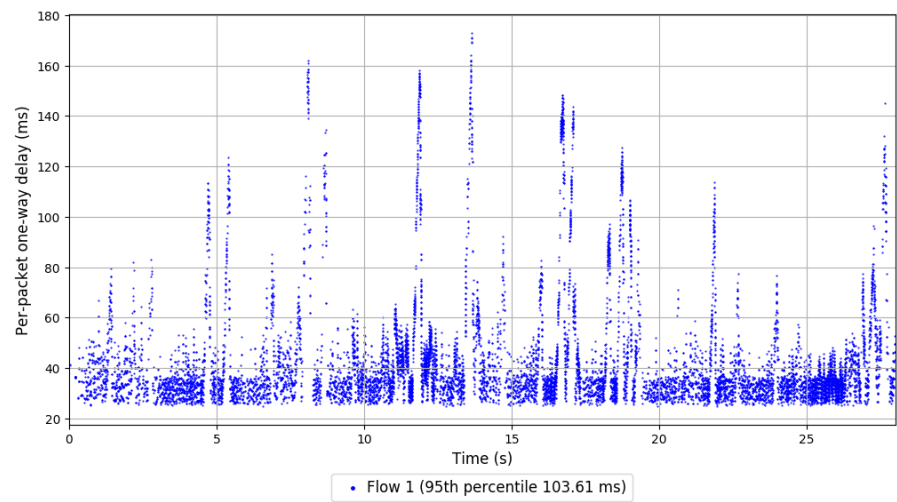
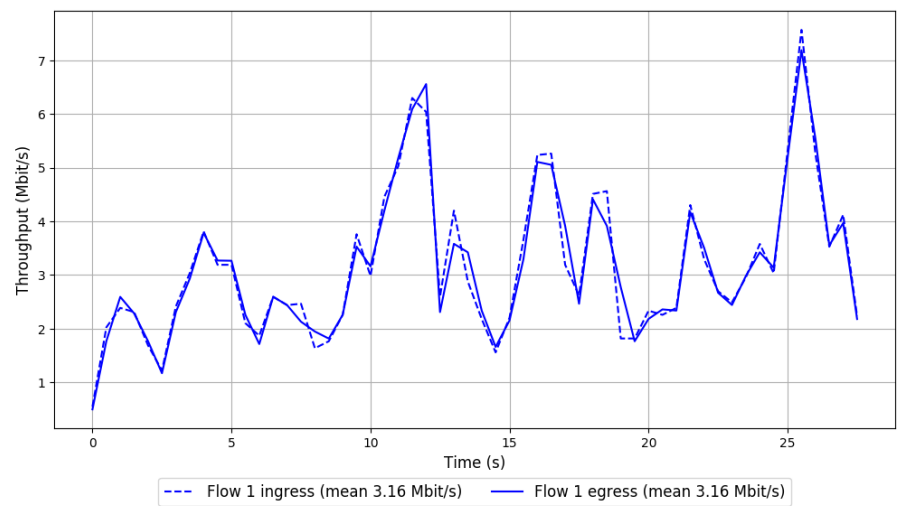


Run 2: Statistics of Copa

Start at: 2017-12-05 07:25:45  
End at: 2017-12-05 07:26:15  
Local clock offset: 2.525 ms  
Remote clock offset: -19.48 ms

# Below is generated by plot.py at 2017-12-05 07:50:38  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 3.16 Mbit/s  
95th percentile per-packet one-way delay: 103.611 ms  
Loss rate: 0.38%  
-- Flow 1:  
Average throughput: 3.16 Mbit/s  
95th percentile per-packet one-way delay: 103.611 ms  
Loss rate: 0.38%

Run 2: Report of Copa — Data Link

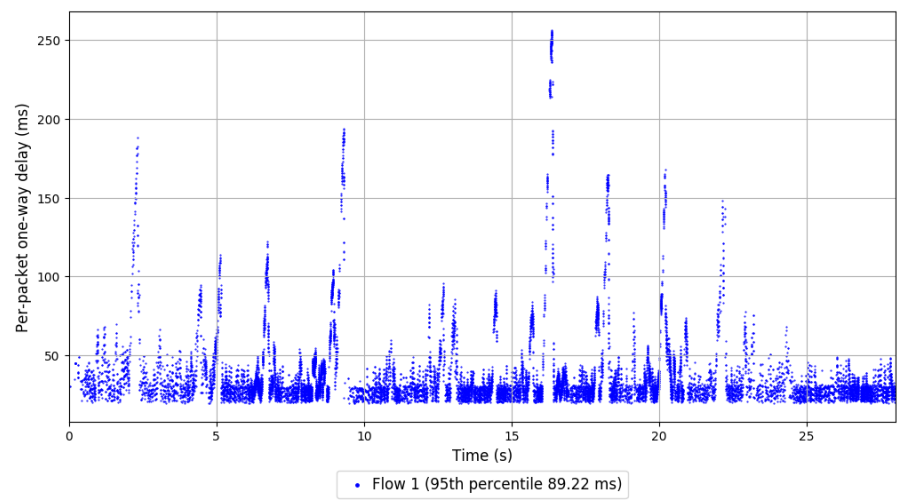
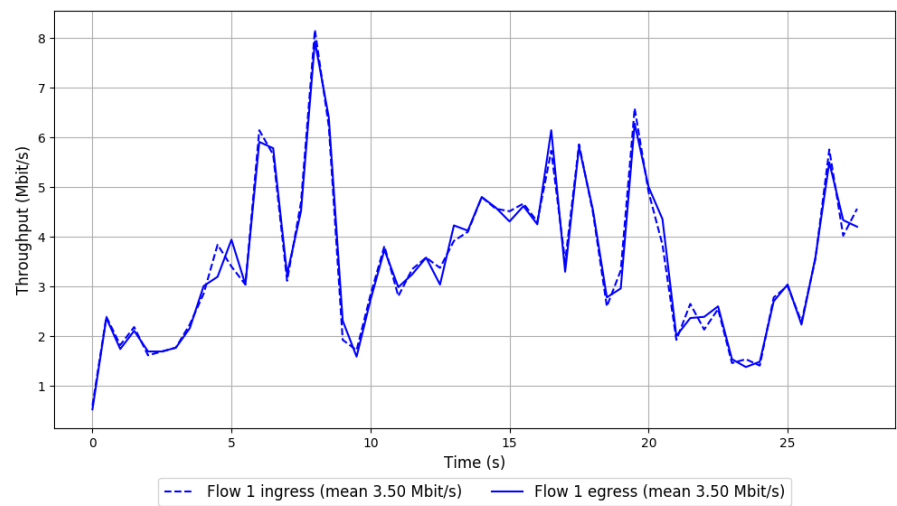


Run 3: Statistics of Copa

Start at: 2017-12-05 07:41:04  
End at: 2017-12-05 07:41:34  
Local clock offset: 2.205 ms  
Remote clock offset: -17.122 ms

# Below is generated by plot.py at 2017-12-05 07:50:39  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 3.50 Mbit/s  
95th percentile per-packet one-way delay: 89.225 ms  
Loss rate: 0.25%  
-- Flow 1:  
Average throughput: 3.50 Mbit/s  
95th percentile per-packet one-way delay: 89.225 ms  
Loss rate: 0.25%

Run 3: Report of Copa — Data Link

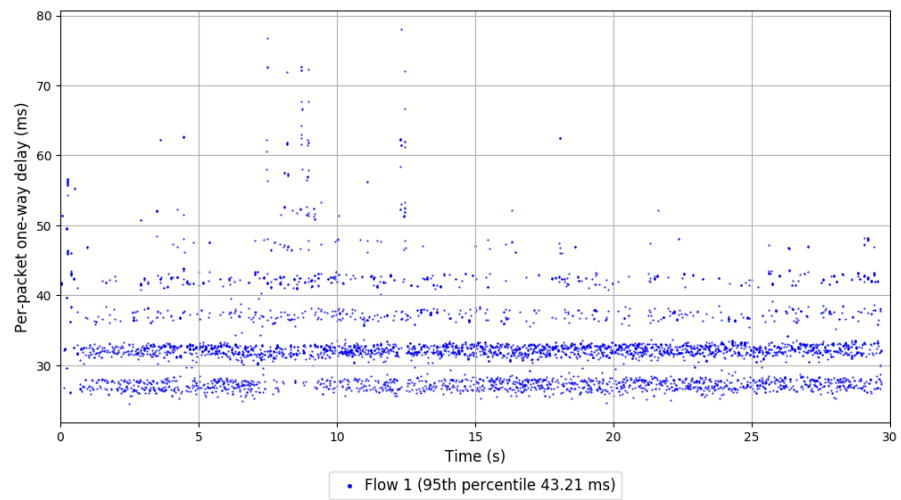
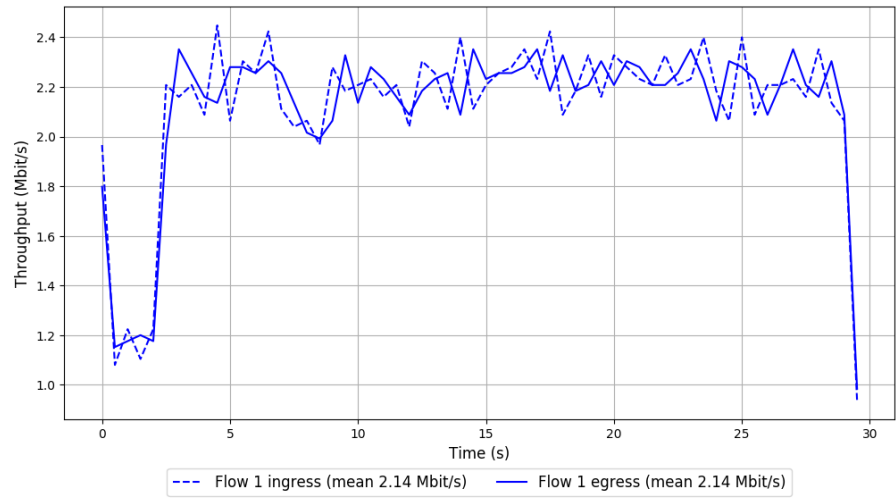


```
Run 1: Statistics of Indigo

Start at: 2017-12-05 07:03:55
End at: 2017-12-05 07:04:25
Local clock offset: 5.134 ms
Remote clock offset: -19.284 ms

# Below is generated by plot.py at 2017-12-05 07:50:39
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.14 Mbit/s
95th percentile per-packet one-way delay: 43.209 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.14 Mbit/s
95th percentile per-packet one-way delay: 43.209 ms
Loss rate: 0.00%
```

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

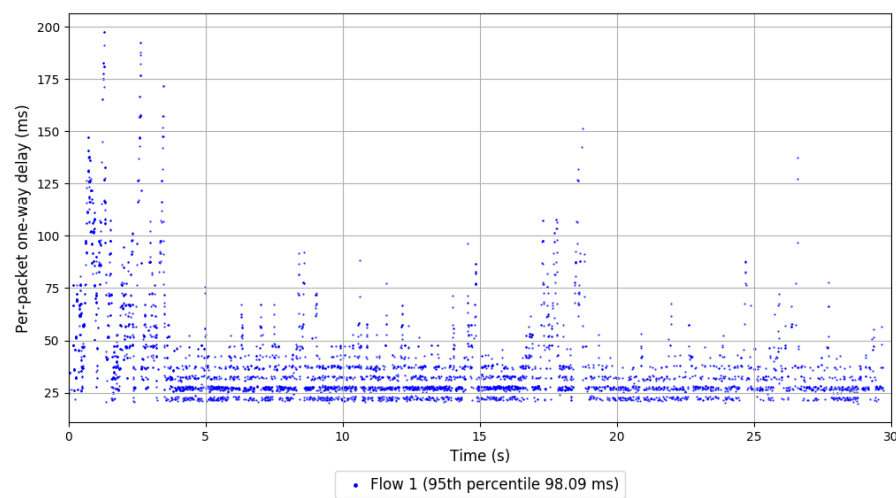
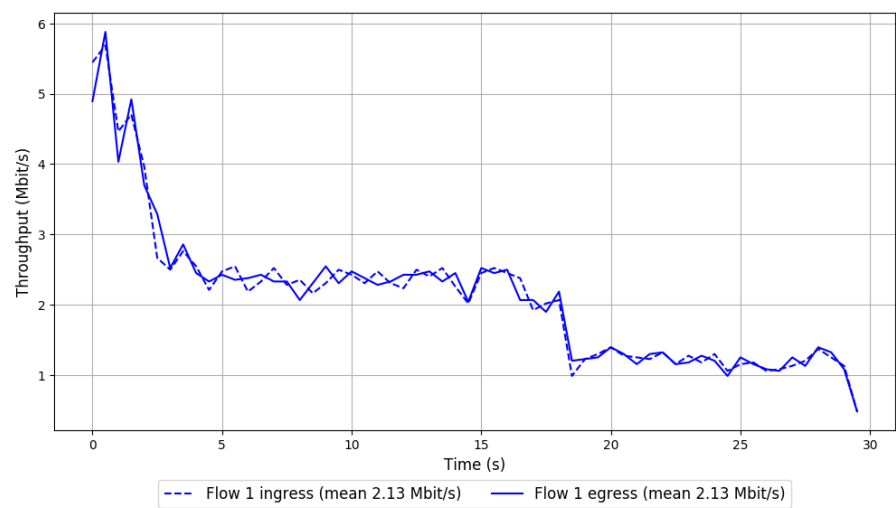


Run 2: Statistics of Indigo

Start at: 2017-12-05 07:19:12  
End at: 2017-12-05 07:19:42  
Local clock offset: 4.938 ms  
Remote clock offset: -19.08 ms

# Below is generated by plot.py at 2017-12-05 07:50:39  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 2.13 Mbit/s  
95th percentile per-packet one-way delay: 98.093 ms  
Loss rate: 0.04%  
-- Flow 1:  
Average throughput: 2.13 Mbit/s  
95th percentile per-packet one-way delay: 98.093 ms  
Loss rate: 0.04%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2017-12-05 07:34:31

End at: 2017-12-05 07:35:01

Local clock offset: 0.429 ms

Remote clock offset: -19.801 ms

# Below is generated by plot.py at 2017-12-05 07:50:39

# Datalink statistics

-- Total of 1 flow:

Average throughput: 2.15 Mbit/s

95th percentile per-packet one-way delay: 77.404 ms

Loss rate: 0.19%

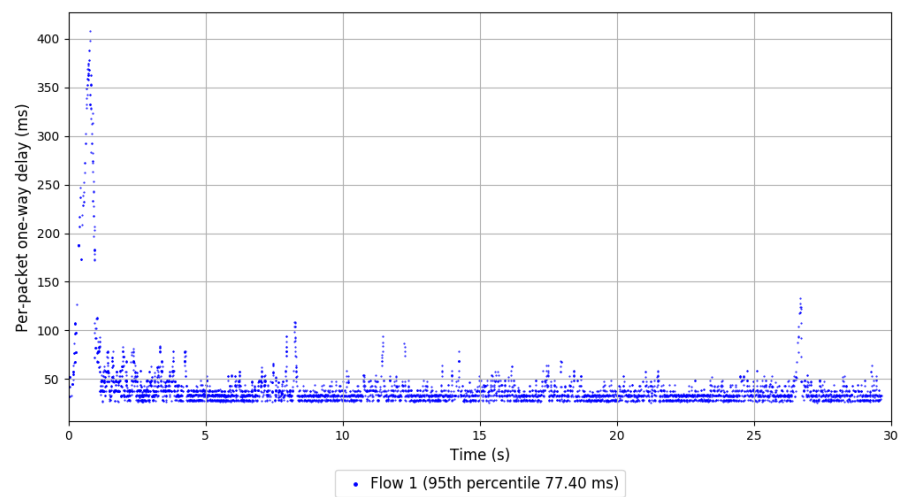
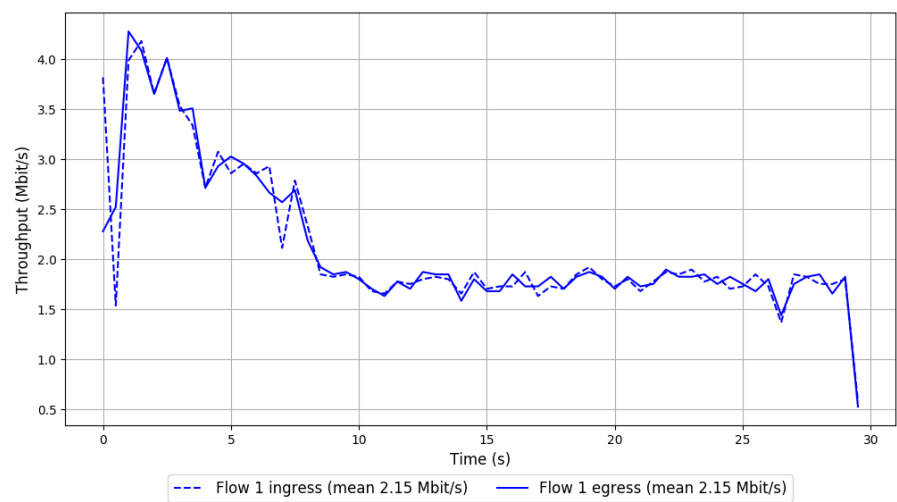
-- Flow 1:

Average throughput: 2.15 Mbit/s

95th percentile per-packet one-way delay: 77.404 ms

Loss rate: 0.19%

Run 3: Report of Indigo — Data Link

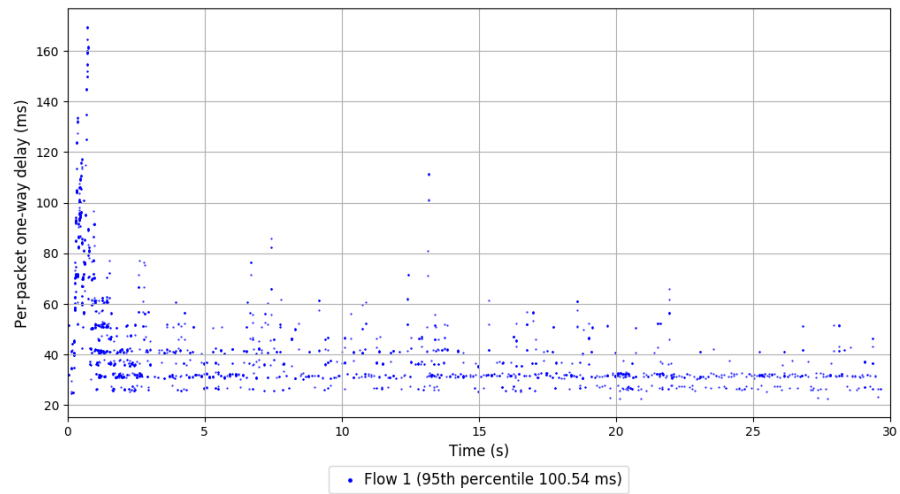
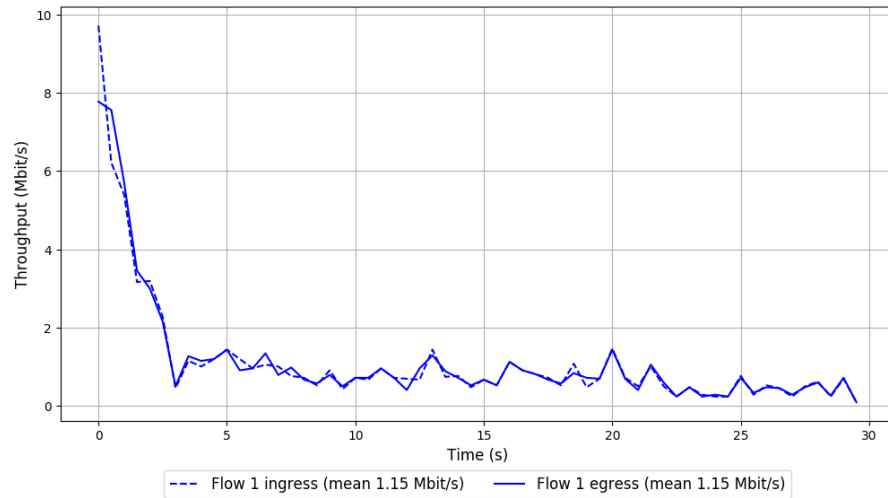


```
Run 1: Statistics of Indigo-calib

Start at: 2017-12-05 07:09:24
End at: 2017-12-05 07:09:54
Local clock offset: 4.241 ms
Remote clock offset: -17.542 ms

# Below is generated by plot.py at 2017-12-05 07:50:39
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.15 Mbit/s
95th percentile per-packet one-way delay: 100.540 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.15 Mbit/s
95th percentile per-packet one-way delay: 100.540 ms
Loss rate: 0.00%
```

## Run 1: Report of Indigo-calib — Data Link



Run 2: Statistics of Indigo-calib

Start at: 2017-12-05 07:24:41

End at: 2017-12-05 07:25:11

Local clock offset: 3.924 ms

Remote clock offset: -19.084 ms

# Below is generated by plot.py at 2017-12-05 07:50:39

# Datalink statistics

-- Total of 1 flow:

Average throughput: 0.83 Mbit/s

95th percentile per-packet one-way delay: 113.007 ms

Loss rate: 0.10%

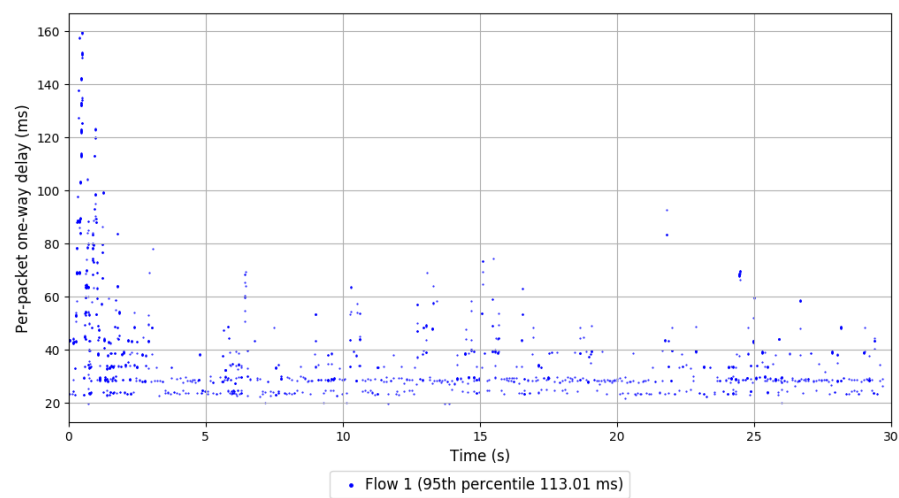
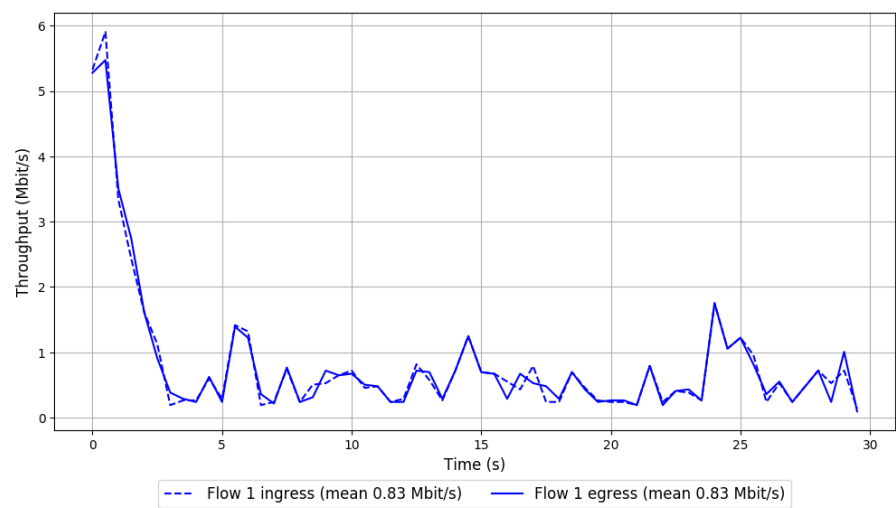
-- Flow 1:

Average throughput: 0.83 Mbit/s

95th percentile per-packet one-way delay: 113.007 ms

Loss rate: 0.10%

Run 2: Report of Indigo-calib — Data Link



Run 3: Statistics of Indigo-calib

Start at: 2017-12-05 07:39:59  
End at: 2017-12-05 07:40:29  
Local clock offset: -0.933 ms  
Remote clock offset: -18.797 ms

# Below is generated by plot.py at 2017-12-05 07:50:39  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.49 Mbit/s  
95th percentile per-packet one-way delay: 79.533 ms  
Loss rate: 0.08%  
-- Flow 1:  
Average throughput: 0.49 Mbit/s  
95th percentile per-packet one-way delay: 79.533 ms  
Loss rate: 0.08%

Run 3: Report of Indigo-calib — Data Link

