

## Pantheon Report

Generated at 2017-09-17 23:19:12 (UTC).

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

Repeated the test of 15 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).

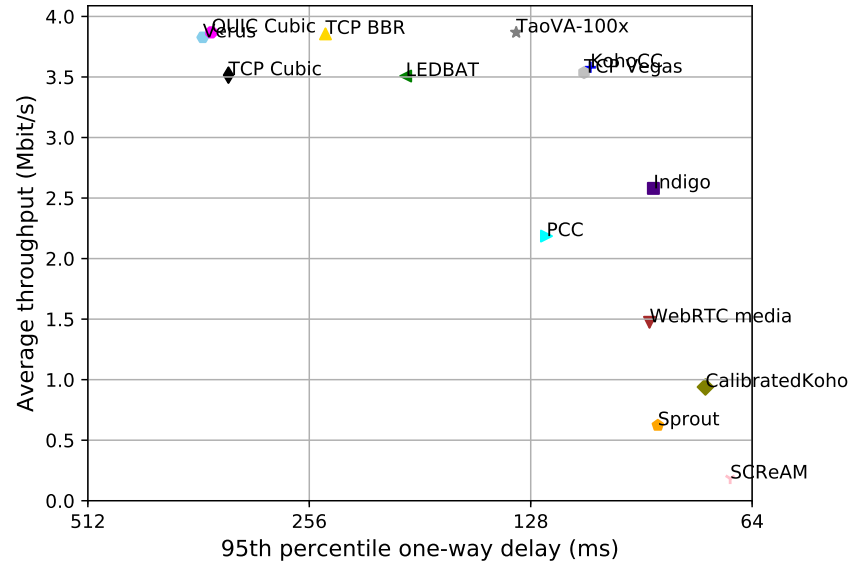
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo\_fast**).

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

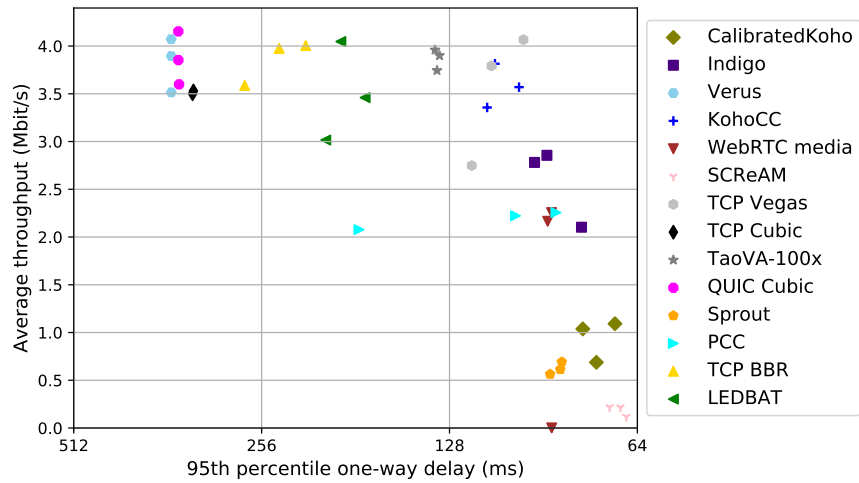
Git summary:

```
branch: master @ 57453dc11f8da93a2e03eea75289fea01b816298
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
  M datagrump/sender.cc
third_party/genericCC @ f7ca42f251bf49b432bb71de6d13fa903515c366
third_party/indigo @ b19f3730105f9aa95452552af924e3719b03cc55
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-quick @ 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 India ppp0 to AWS India 1 Ethernet, 3 runs of 30s each per scheme  
(mean of all runs by scheme)



test from India ppp0 to AWS India 1 Ethernet, 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	3.86	243.34	0.73
CalibratedKoho	3	0.94	74.08	0.27
Copa	0	N/A	N/A	N/A
TCP Cubic	2	3.51	329.73	1.56
Indigo	3	2.58	87.18	1.02
KohoCC	3	3.58	106.23	0.39
LEDBAT	3	3.51	189.33	0.88
PCC	3	2.19	121.83	5.25
QUIC Cubic	3	3.87	347.78	2.36
SCReAM	3	0.19	68.56	0.24
Sprout	3	0.62	85.98	0.40
TaoVA-100x	3	3.87	133.95	0.63
TCP Vegas	3	3.54	108.33	0.41
Verus	3	3.83	357.29	28.60
WebRTC media	3	1.47	88.25	0.21

Run 1: Statistics of TCP BBR

Start at: 2017-09-17 21:42:48

End at: 2017-09-17 21:43:18

Local clock offset: -1.669 ms

Remote clock offset: -2.633 ms

# Below is generated by plot.py at 2017-09-17 23:18:37

# Datalink statistics

-- Total of 1 flow:

Average throughput: 3.59 Mbit/s

95th percentile per-packet one-way delay: 272.566 ms

Loss rate: 0.75%

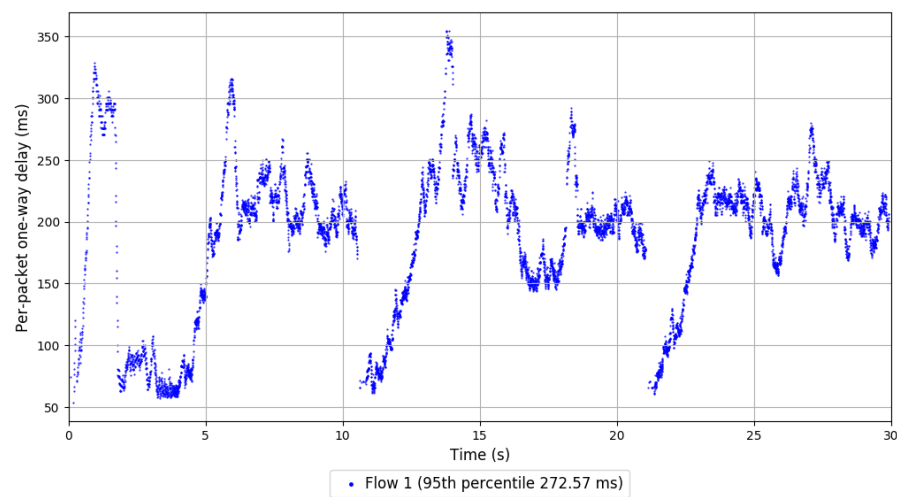
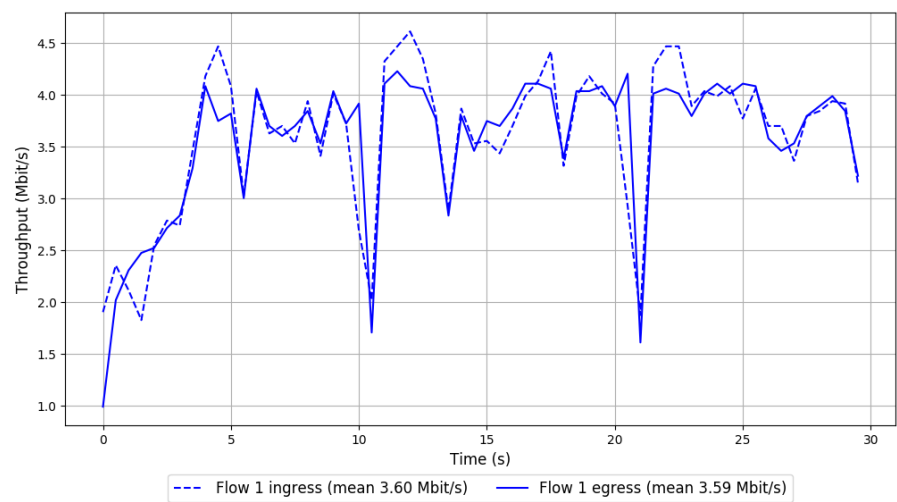
-- Flow 1:

Average throughput: 3.59 Mbit/s

95th percentile per-packet one-way delay: 272.566 ms

Loss rate: 0.75%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2017-09-17 21:59:41

End at: 2017-09-17 22:00:11

Local clock offset: -2.861 ms

Remote clock offset: -3.61 ms

# Below is generated by plot.py at 2017-09-17 23:18:38

# Datalink statistics

-- Total of 1 flow:

Average throughput: 4.01 Mbit/s

95th percentile per-packet one-way delay: 217.566 ms

Loss rate: 0.65%

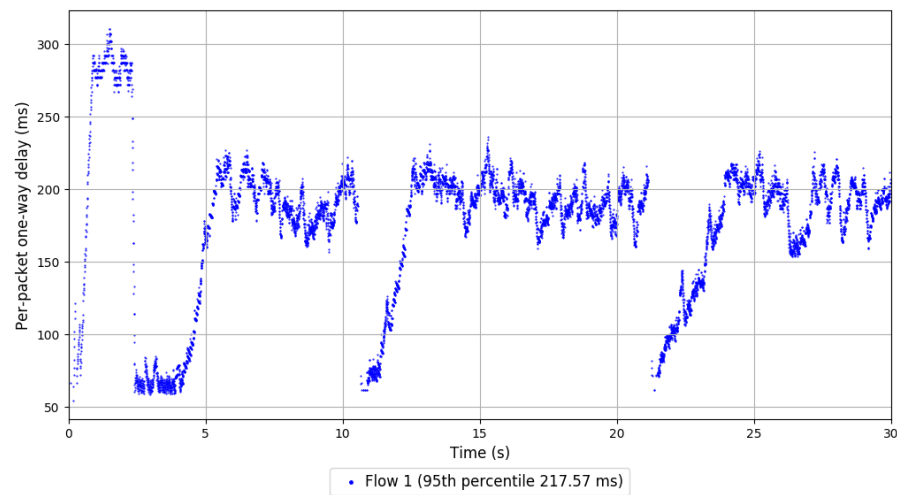
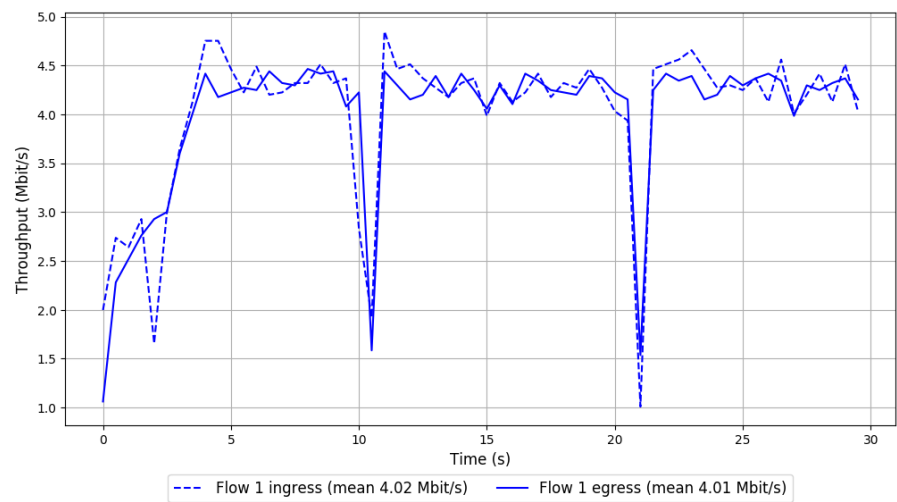
-- Flow 1:

Average throughput: 4.01 Mbit/s

95th percentile per-packet one-way delay: 217.566 ms

Loss rate: 0.65%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2017-09-17 22:16:22

End at: 2017-09-17 22:16:52

Local clock offset: 0.247 ms

Remote clock offset: -3.287 ms

# Below is generated by plot.py at 2017-09-17 23:18:38

# Datalink statistics

-- Total of 1 flow:

Average throughput: 3.98 Mbit/s

95th percentile per-packet one-way delay: 239.902 ms

Loss rate: 0.79%

-- Flow 1:

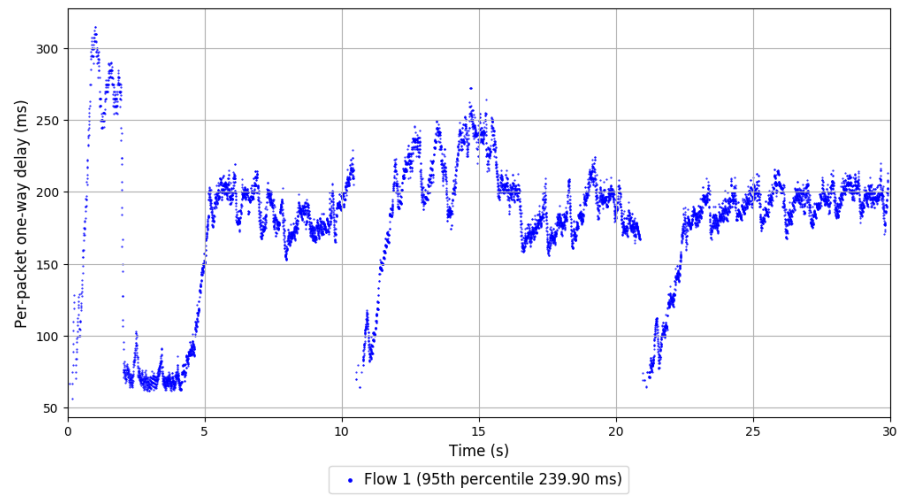
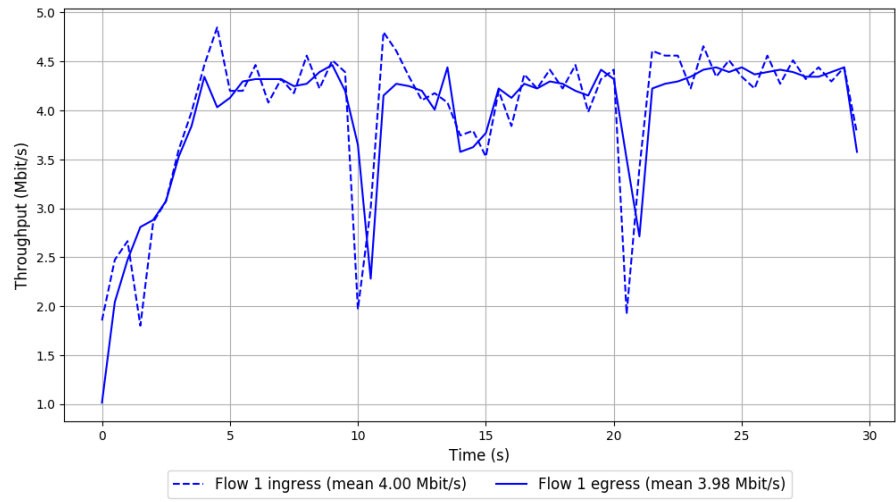
Average throughput: 3.98 Mbit/s

95th percentile per-packet one-way delay: 239.902 ms

Loss rate: 0.79%



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

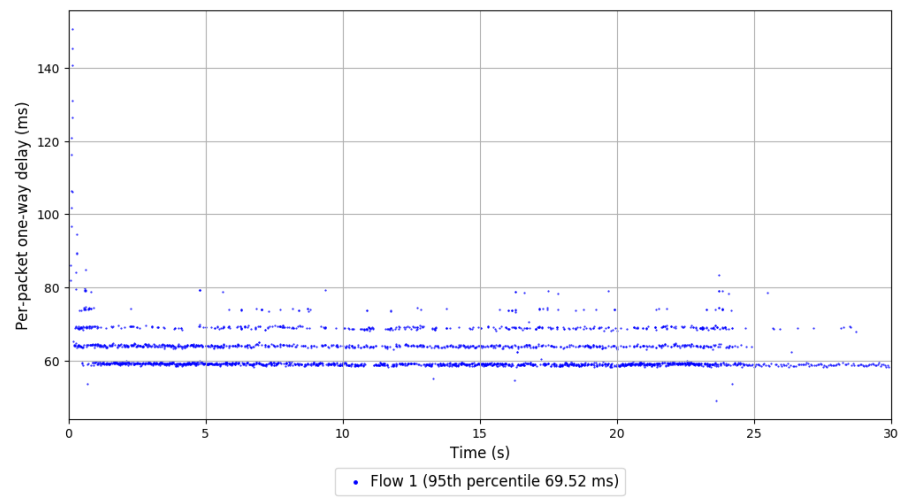
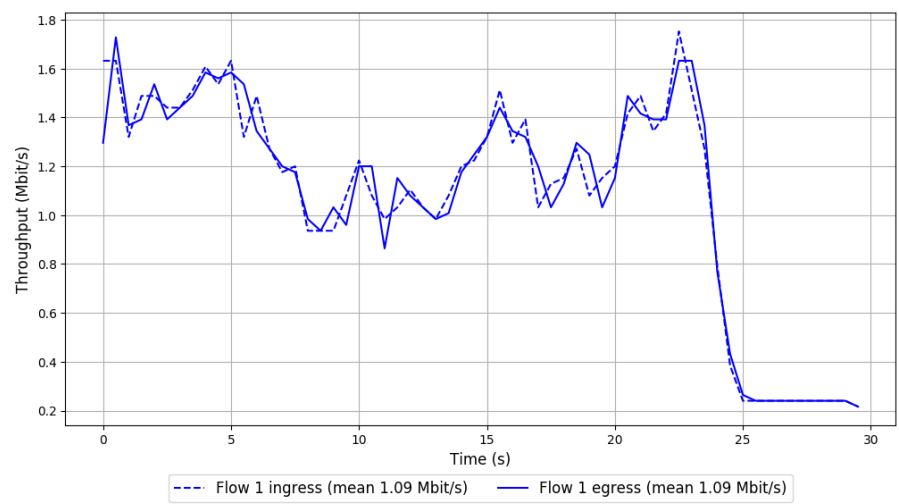


Run 1: Statistics of CalibratedKoho

Start at: 2017-09-17 21:48:24  
End at: 2017-09-17 21:48:54  
Local clock offset: -2.147 ms  
Remote clock offset: -3.163 ms

# Below is generated by plot.py at 2017-09-17 23:18:38  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 1.09 Mbit/s  
95th percentile per-packet one-way delay: 69.516 ms  
Loss rate: 0.18%  
-- Flow 1:  
Average throughput: 1.09 Mbit/s  
95th percentile per-packet one-way delay: 69.516 ms  
Loss rate: 0.18%

Run 1: Report of CalibratedKoho — Data Link

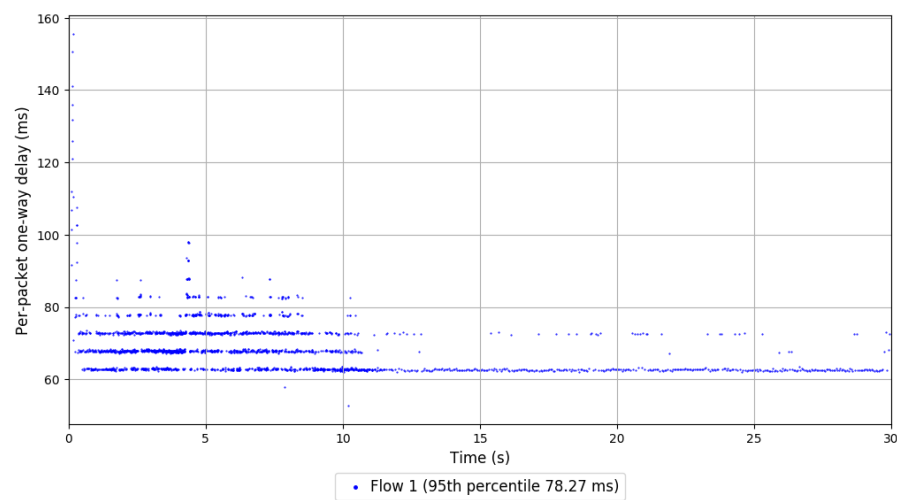
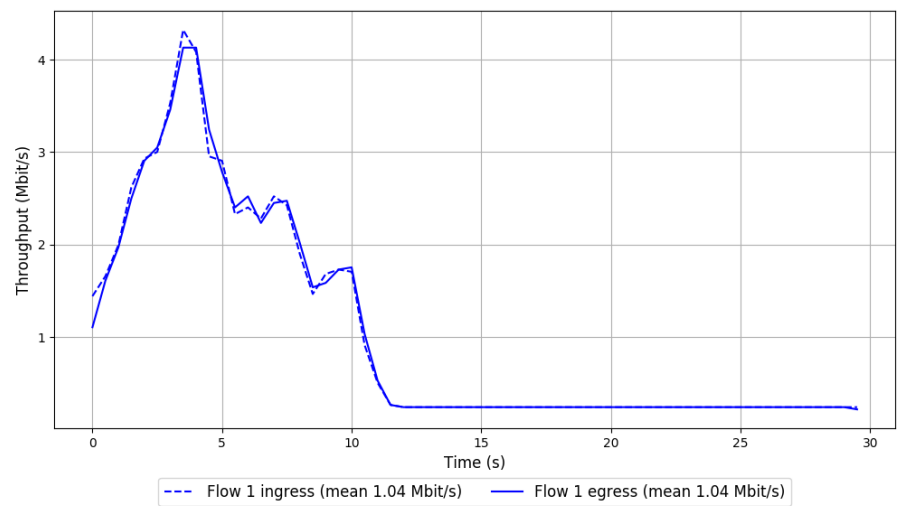


Run 2: Statistics of CalibratedKoho

Start at: 2017-09-17 22:05:18  
End at: 2017-09-17 22:05:48  
Local clock offset: -6.365 ms  
Remote clock offset: -9.331 ms

# Below is generated by plot.py at 2017-09-17 23:18:38  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 1.04 Mbit/s  
95th percentile per-packet one-way delay: 78.270 ms  
Loss rate: 0.27%  
-- Flow 1:  
Average throughput: 1.04 Mbit/s  
95th percentile per-packet one-way delay: 78.270 ms  
Loss rate: 0.27%

Run 2: Report of CalibratedKoho — Data Link

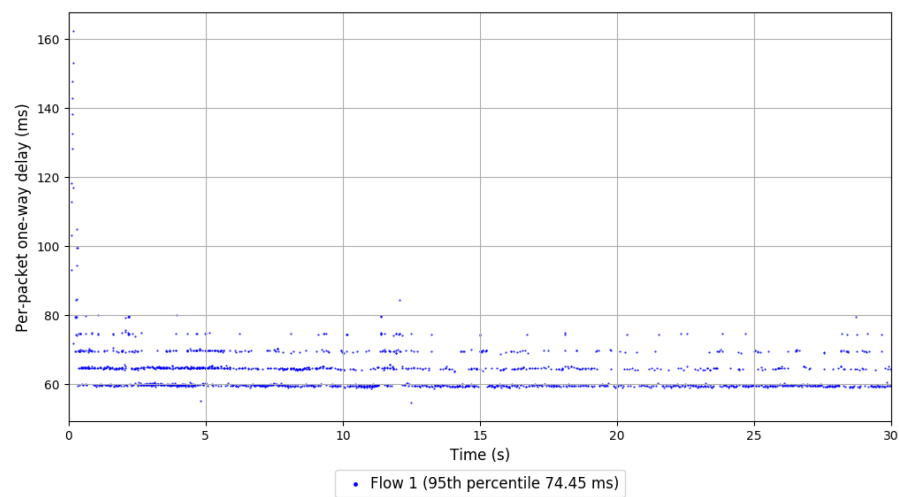
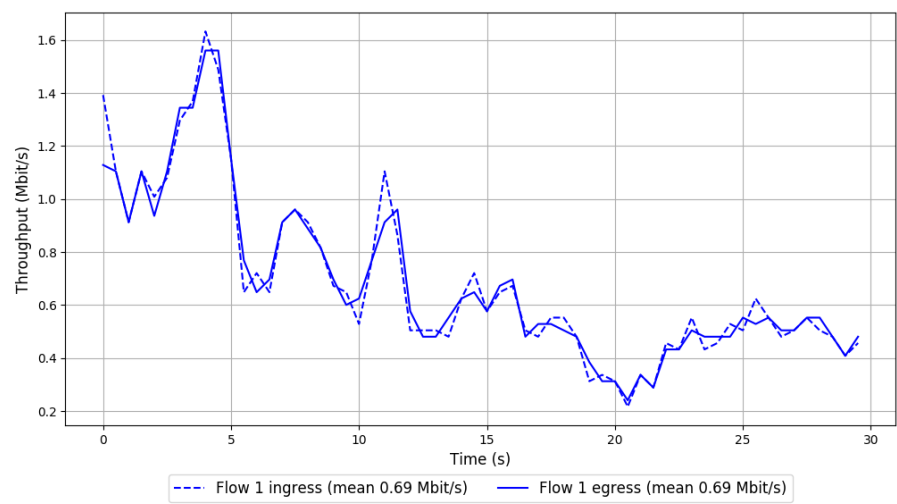


Run 3: Statistics of CalibratedKoho

Start at: 2017-09-17 22:21:58  
End at: 2017-09-17 22:22:28  
Local clock offset: -1.394 ms  
Remote clock offset: -2.381 ms

# Below is generated by plot.py at 2017-09-17 23:18:38  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.69 Mbit/s  
95th percentile per-packet one-way delay: 74.454 ms  
Loss rate: 0.35%  
-- Flow 1:  
Average throughput: 0.69 Mbit/s  
95th percentile per-packet one-way delay: 74.454 ms  
Loss rate: 0.35%

Run 3: Report of CalibratedKoho — Data Link



Run 1: Statistics of Copa

Start at: 2017-09-17 21:41:43

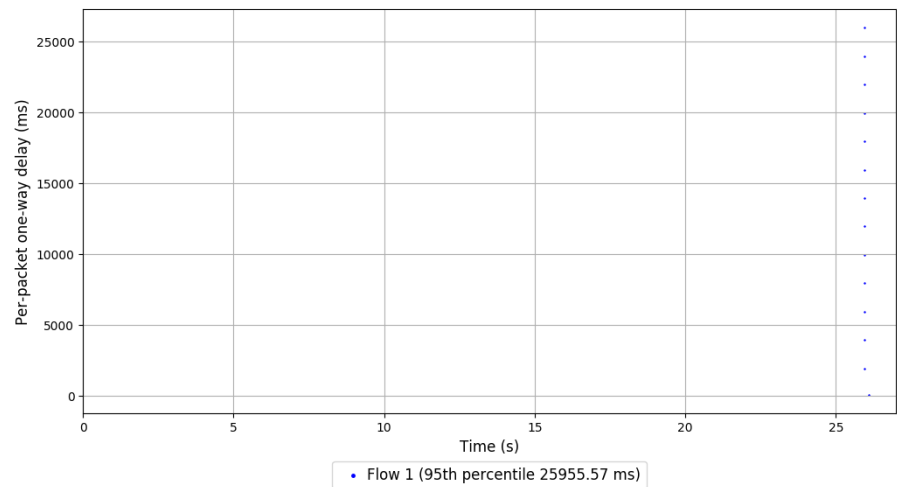
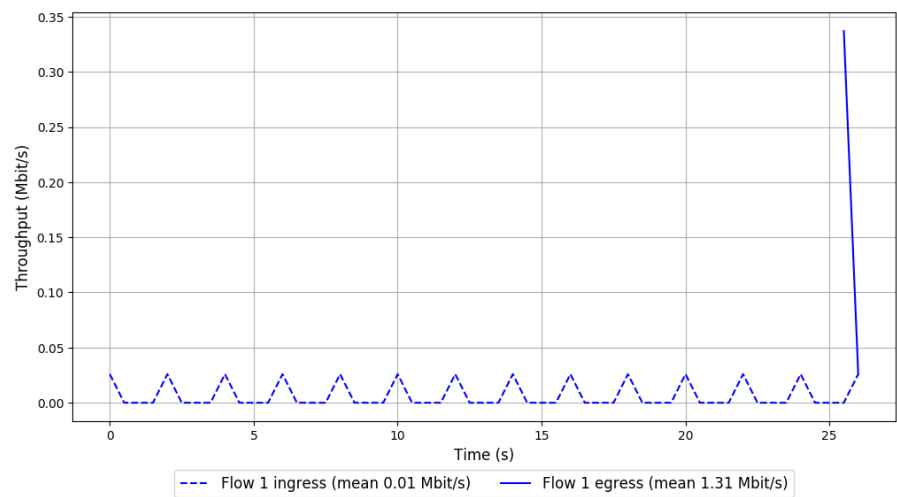
End at: 2017-09-17 21:42:13

Local clock offset: -1.224 ms

Remote clock offset: -2.979 ms



Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

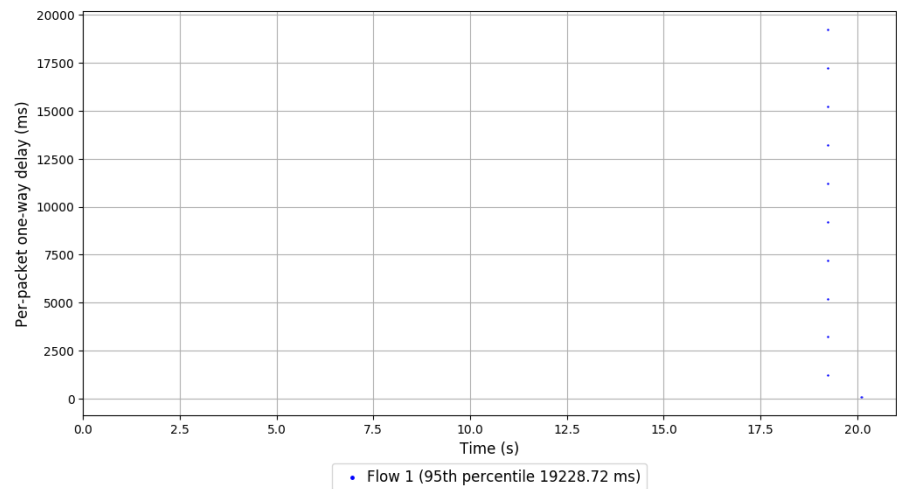
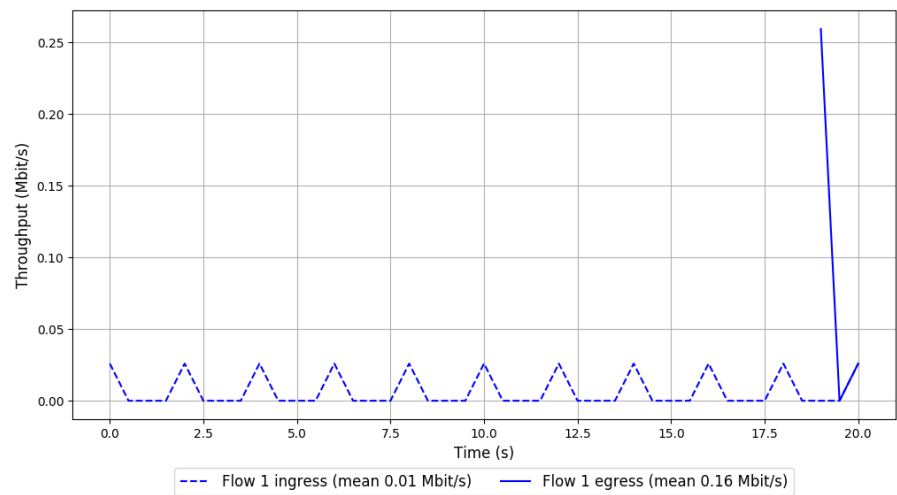
Start at: 2017-09-17 21:58:35

End at: 2017-09-17 21:59:05

Local clock offset: -1.882 ms

Remote clock offset: -2.613 ms

Run 2: Report of Copa — Data Link



Run 3: Statistics of Copa

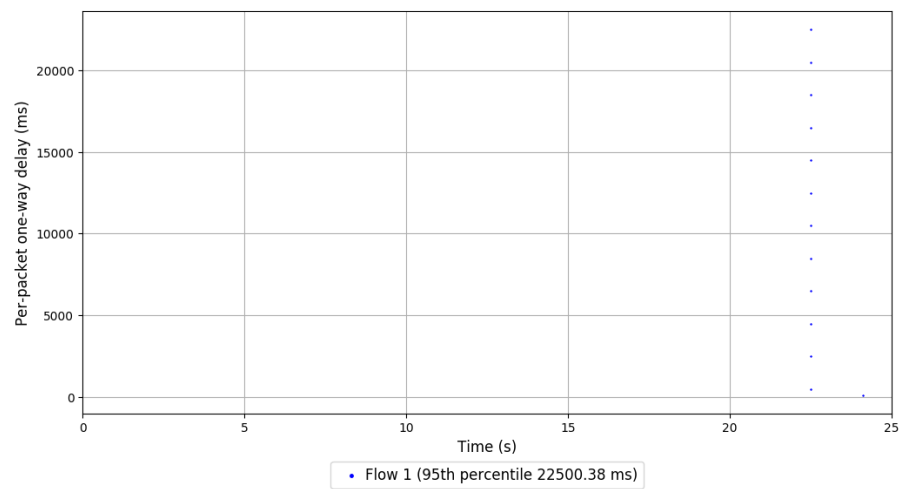
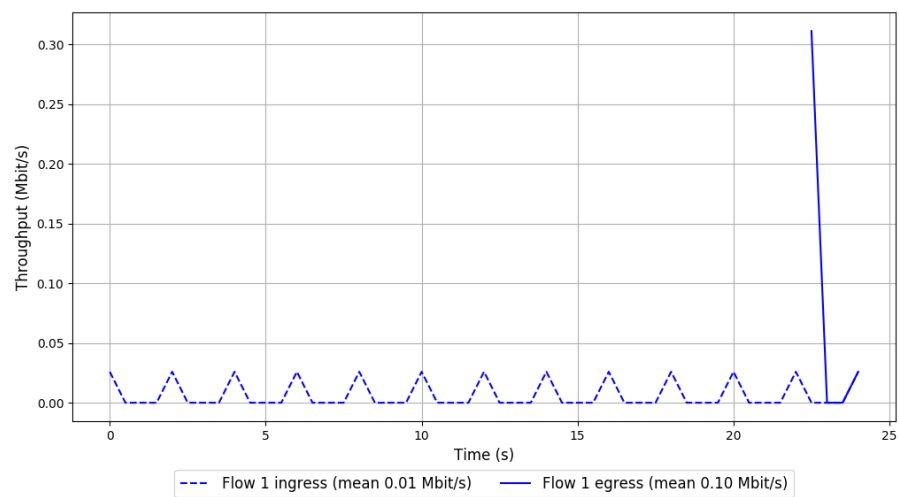
Start at: 2017-09-17 22:15:17

End at: 2017-09-17 22:15:47

Local clock offset: -2.945 ms

Remote clock offset: -2.56 ms

Run 3: Report of Copa — Data Link

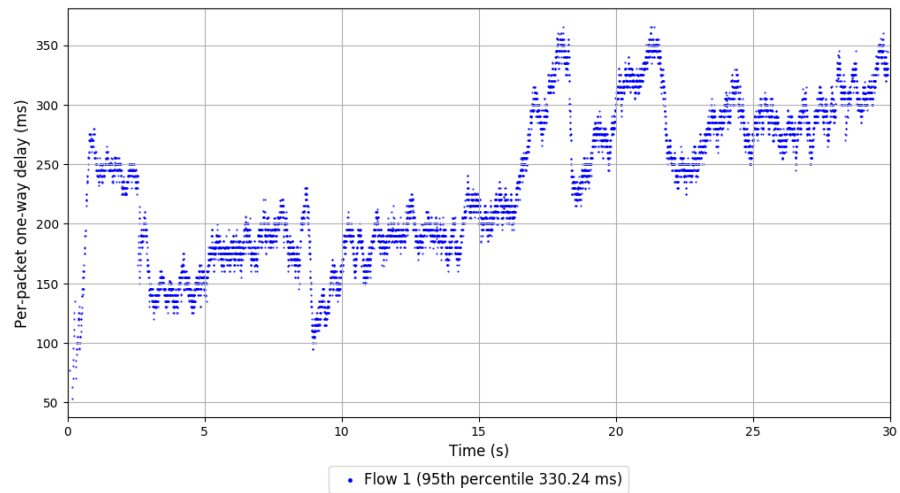
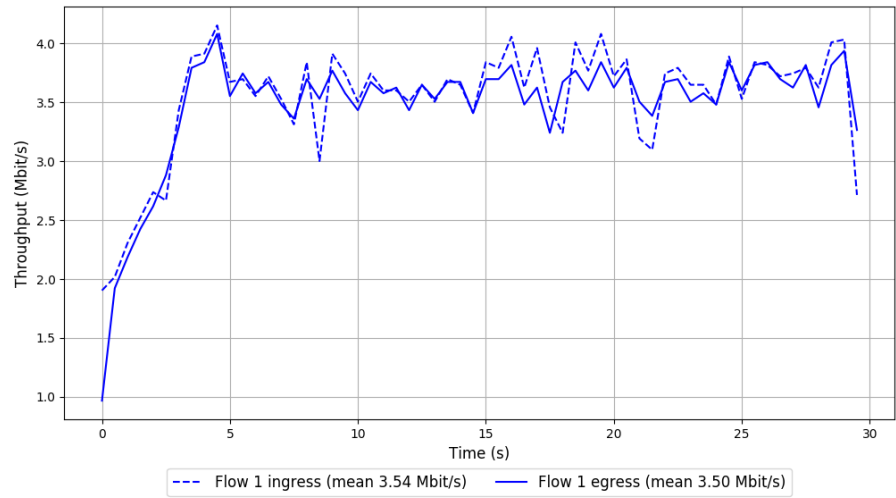


Run 1: Statistics of TCP Cubic

Start at: 2017-09-17 21:33:48  
End at: 2017-09-17 21:34:18  
Local clock offset: 0.02 ms  
Remote clock offset: -3.095 ms

# Below is generated by plot.py at 2017-09-17 23:18:41  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 3.50 Mbit/s  
95th percentile per-packet one-way delay: 330.237 ms  
Loss rate: 1.46%  
-- Flow 1:  
Average throughput: 3.50 Mbit/s  
95th percentile per-packet one-way delay: 330.237 ms  
Loss rate: 1.46%

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



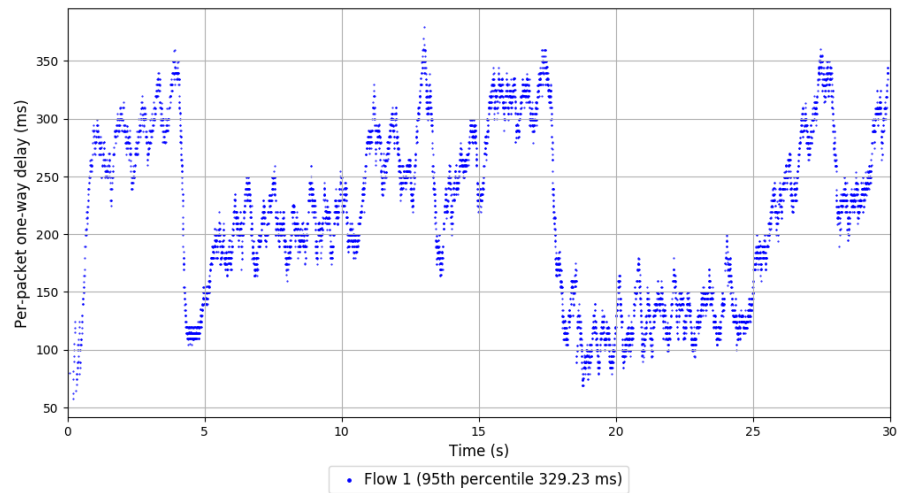
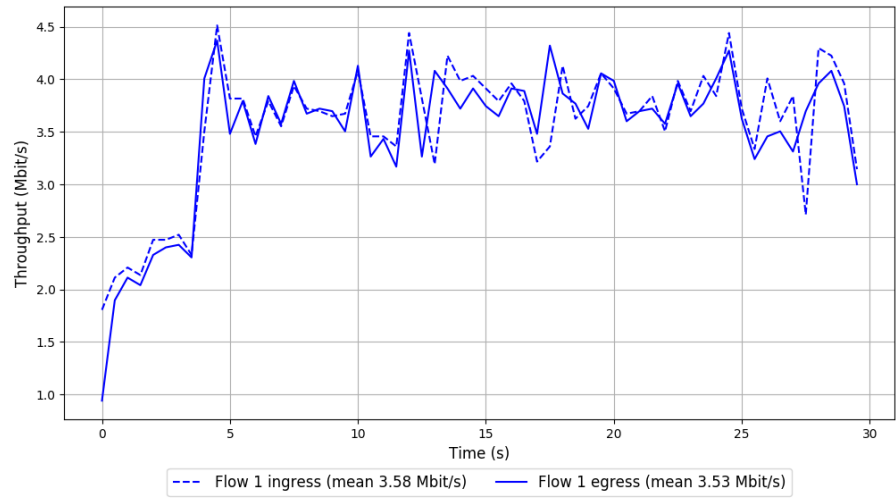
Run 2: Statistics of TCP Cubic

Start at: 2017-09-17 21:50:37  
End at: 2017-09-17 21:51:07  
Local clock offset: -1.084 ms  
Remote clock offset: -3.039 ms

# Below is generated by plot.py at 2017-09-17 23:18:42  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 3.53 Mbit/s  
95th percentile per-packet one-way delay: 329.230 ms  
Loss rate: 1.67%  
-- Flow 1:  
Average throughput: 3.53 Mbit/s  
95th percentile per-packet one-way delay: 329.230 ms  
Loss rate: 1.67%



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



Run 3: Statistics of TCP Cubic

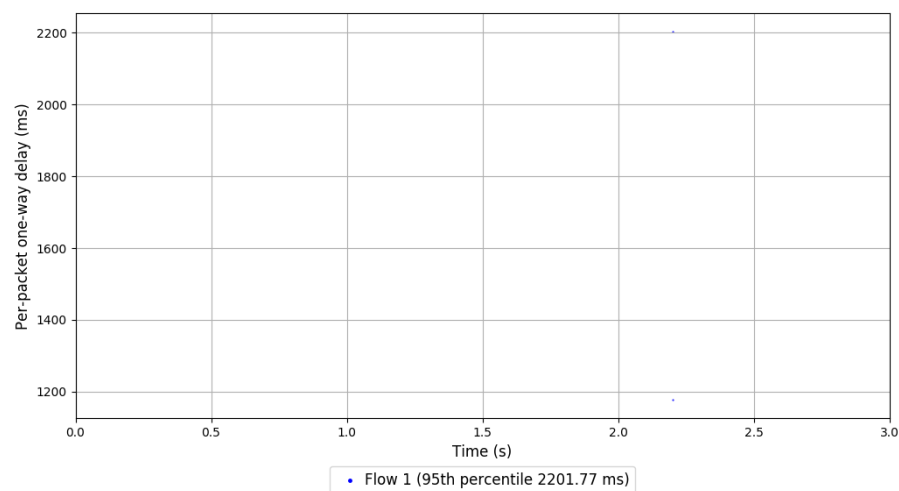
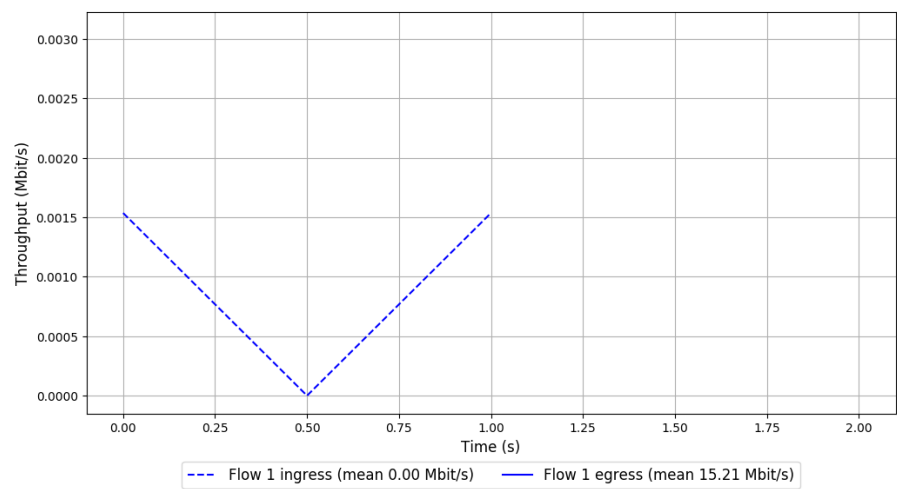
Start at: 2017-09-17 22:07:32

End at: 2017-09-17 22:08:02

Local clock offset: -1.566 ms

Remote clock offset: -3.011 ms

Run 3: Report of TCP Cubic — Data Link



Run 1: Statistics of Indigo

Start at: 2017-09-17 21:49:31

End at: 2017-09-17 21:50:01

Local clock offset: 0.518 ms

Remote clock offset: -2.007 ms

# Below is generated by plot.py at 2017-09-17 23:18:42

# Datalink statistics

-- Total of 1 flow:

Average throughput: 2.78 Mbit/s

95th percentile per-packet one-way delay: 93.537 ms

Loss rate: 1.60%

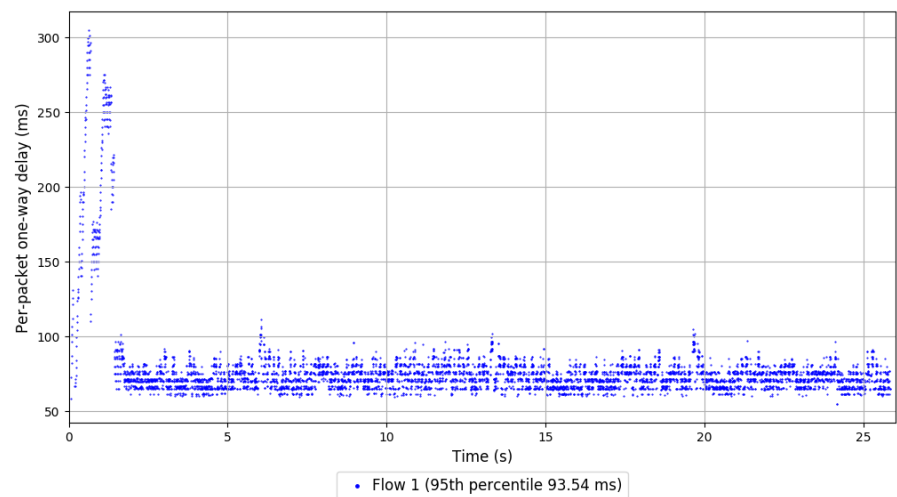
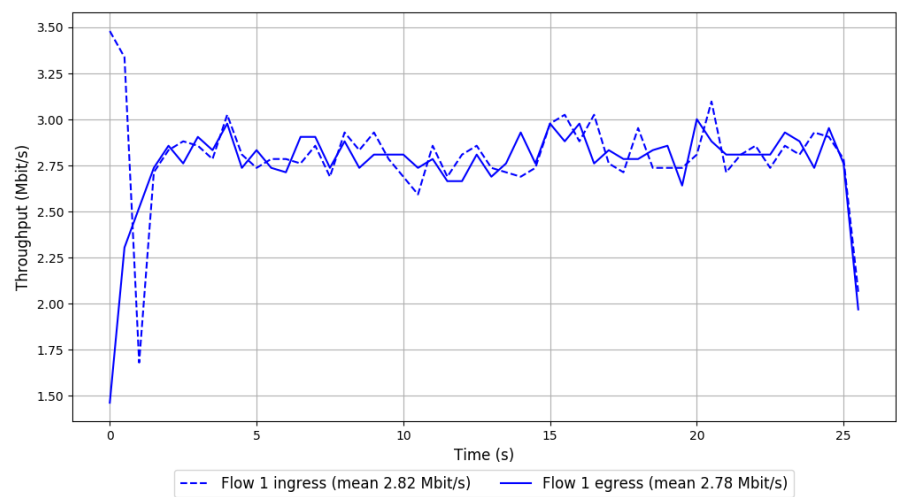
-- Flow 1:

Average throughput: 2.78 Mbit/s

95th percentile per-packet one-way delay: 93.537 ms

Loss rate: 1.60%

Run 1: Report of Indigo — Data Link

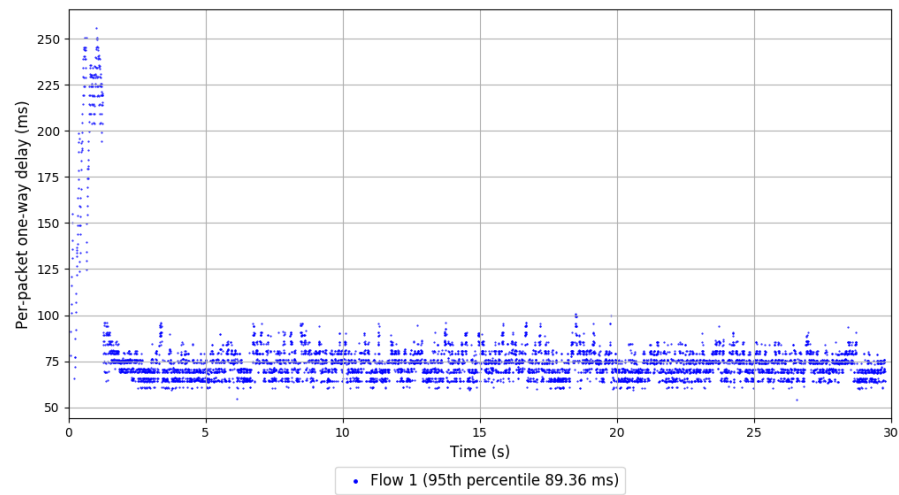
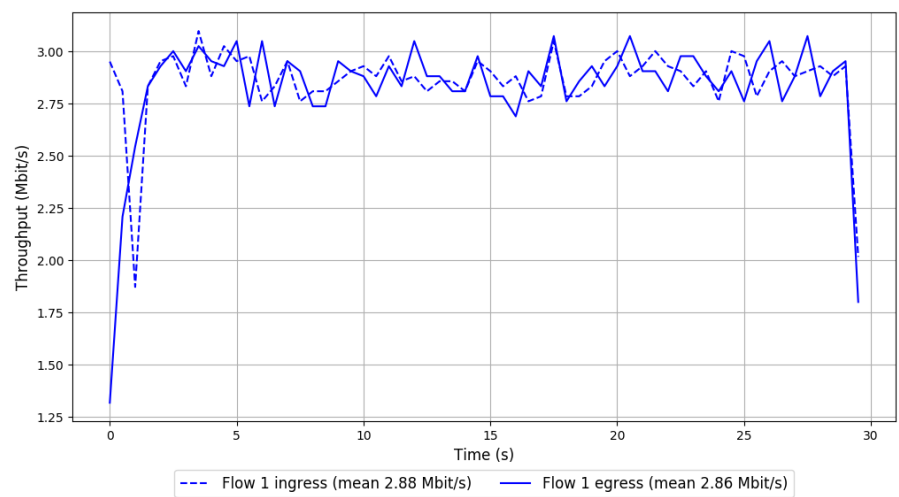


Run 2: Statistics of Indigo

Start at: 2017-09-17 22:06:26  
End at: 2017-09-17 22:06:56  
Local clock offset: -0.839 ms  
Remote clock offset: -2.572 ms

# Below is generated by plot.py at 2017-09-17 23:18:42  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 2.86 Mbit/s  
95th percentile per-packet one-way delay: 89.359 ms  
Loss rate: 1.02%  
-- Flow 1:  
Average throughput: 2.86 Mbit/s  
95th percentile per-packet one-way delay: 89.359 ms  
Loss rate: 1.02%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2017-09-17 22:23:04

End at: 2017-09-17 22:23:34

Local clock offset: -1.161 ms

Remote clock offset: -2.483 ms

# Below is generated by plot.py at 2017-09-17 23:18:42

# Datalink statistics

-- Total of 1 flow:

Average throughput: 2.10 Mbit/s

95th percentile per-packet one-way delay: 78.653 ms

Loss rate: 0.44%

-- Flow 1:

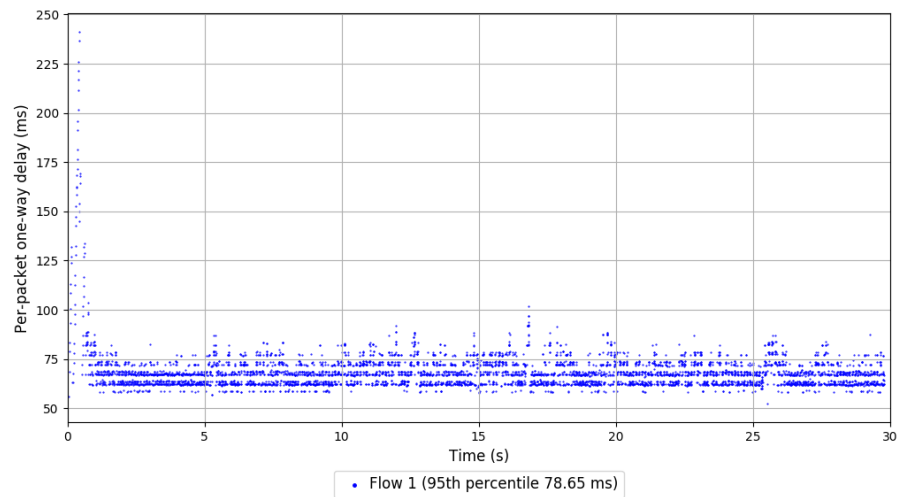
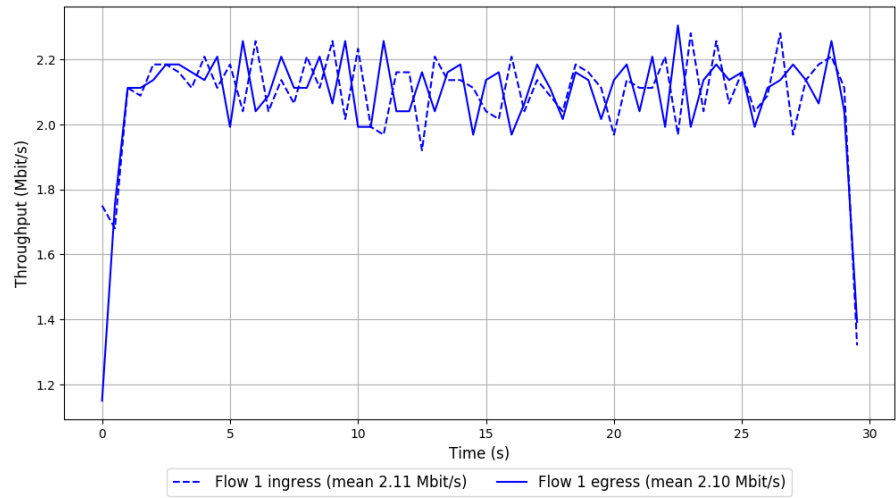
Average throughput: 2.10 Mbit/s

95th percentile per-packet one-way delay: 78.653 ms

Loss rate: 0.44%



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

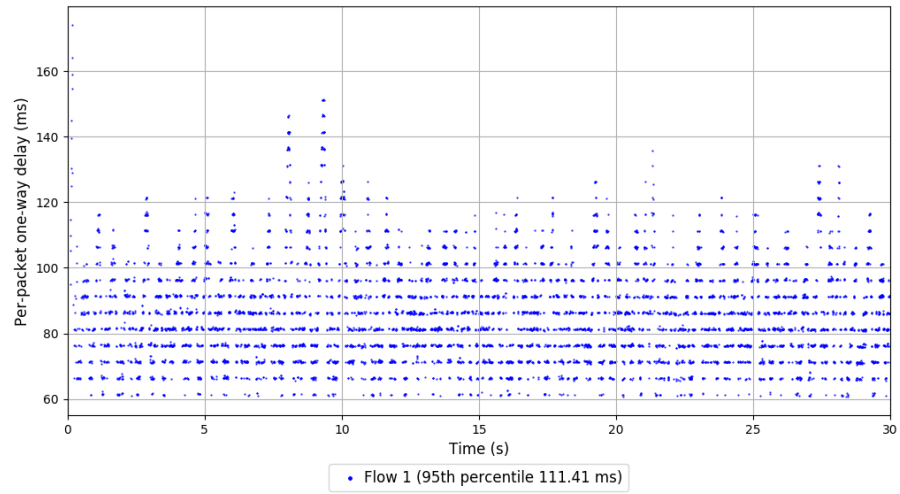
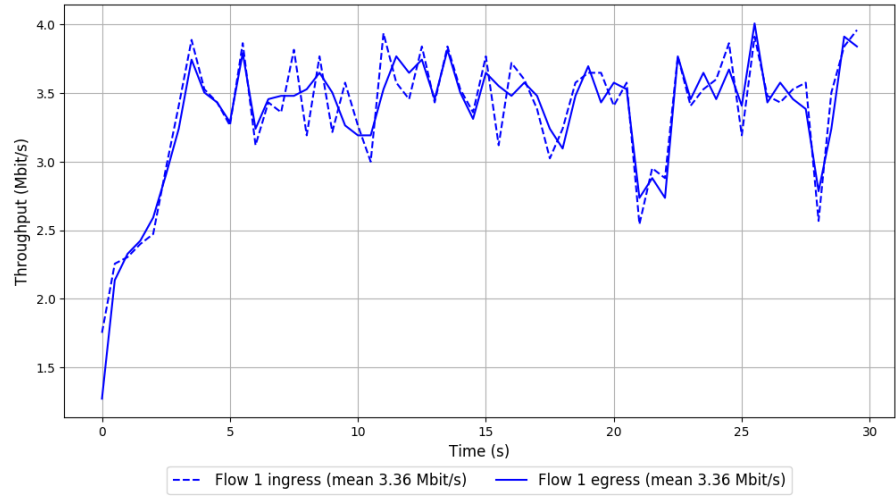


Run 1: Statistics of KohoCC

Start at: 2017-09-17 21:36:08  
End at: 2017-09-17 21:36:38  
Local clock offset: 0.451 ms  
Remote clock offset: -2.654 ms

# Below is generated by plot.py at 2017-09-17 23:18:44  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 3.36 Mbit/s  
95th percentile per-packet one-way delay: 111.406 ms  
Loss rate: 0.44%  
-- Flow 1:  
Average throughput: 3.36 Mbit/s  
95th percentile per-packet one-way delay: 111.406 ms  
Loss rate: 0.44%

# Run 1: Report of KohoCC — Data Link

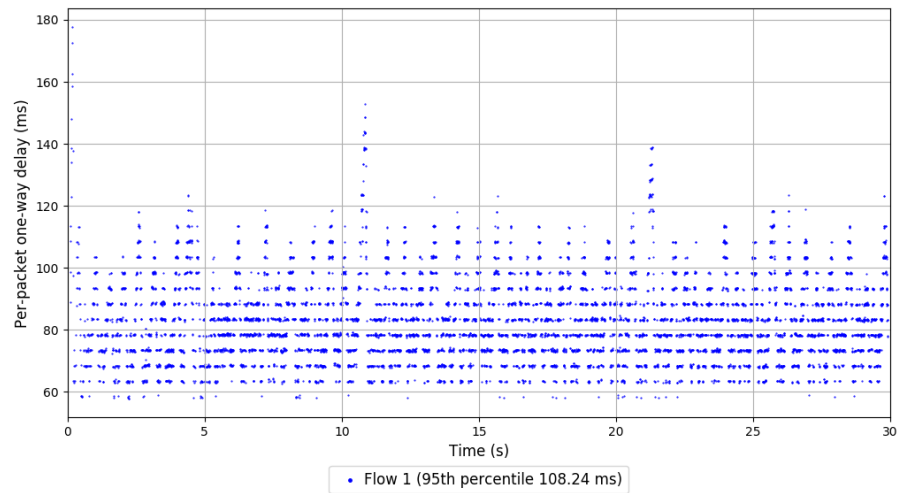
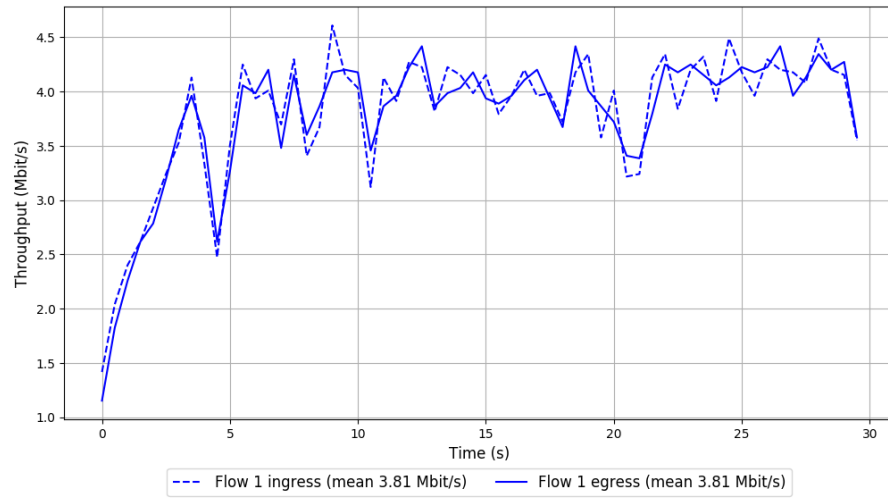


Run 2: Statistics of KohoCC

Start at: 2017-09-17 21:52:56  
End at: 2017-09-17 21:53:26  
Local clock offset: -0.232 ms  
Remote clock offset: -2.274 ms

# Below is generated by plot.py at 2017-09-17 23:18:47  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 3.81 Mbit/s  
95th percentile per-packet one-way delay: 108.240 ms  
Loss rate: 0.34%  
-- Flow 1:  
Average throughput: 3.81 Mbit/s  
95th percentile per-packet one-way delay: 108.240 ms  
Loss rate: 0.34%

## Run 2: Report of KohoCC — Data Link

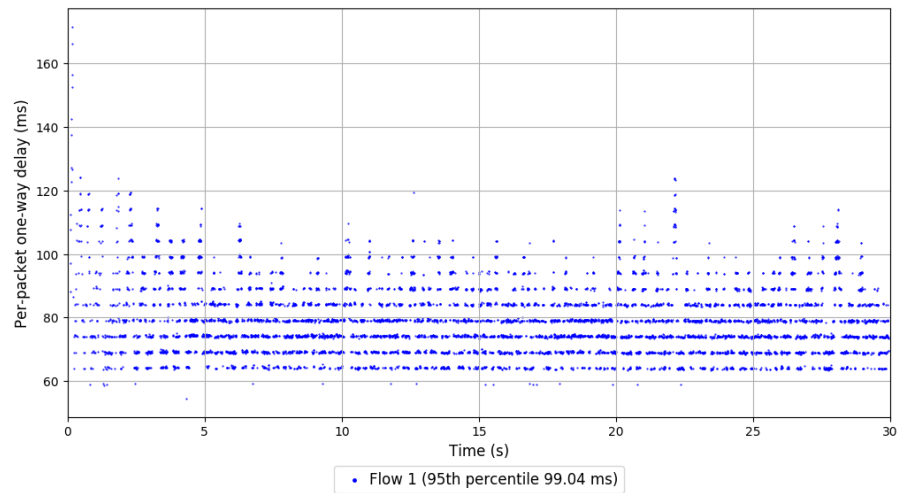
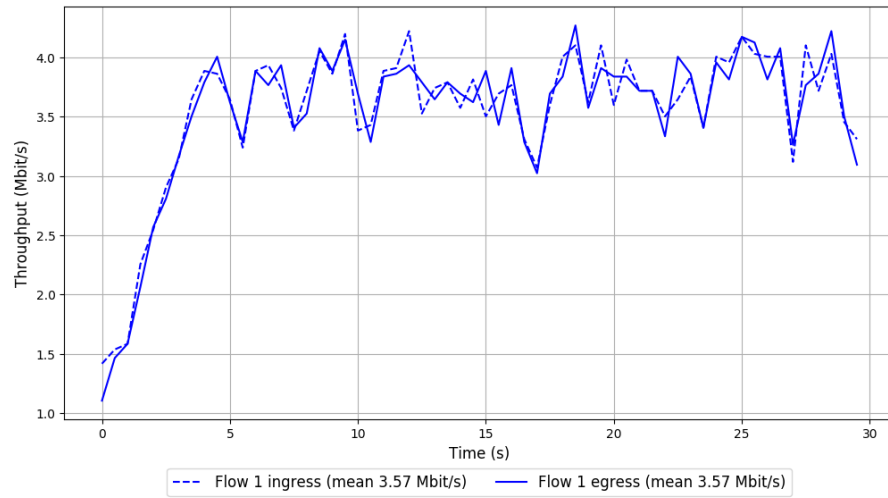


Run 3: Statistics of KohoCC

Start at: 2017-09-17 22:09:45  
End at: 2017-09-17 22:10:15  
Local clock offset: -0.001 ms  
Remote clock offset: -2.746 ms

# Below is generated by plot.py at 2017-09-17 23:18:47  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 3.57 Mbit/s  
95th percentile per-packet one-way delay: 99.037 ms  
Loss rate: 0.39%  
-- Flow 1:  
Average throughput: 3.57 Mbit/s  
95th percentile per-packet one-way delay: 99.037 ms  
Loss rate: 0.39%

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



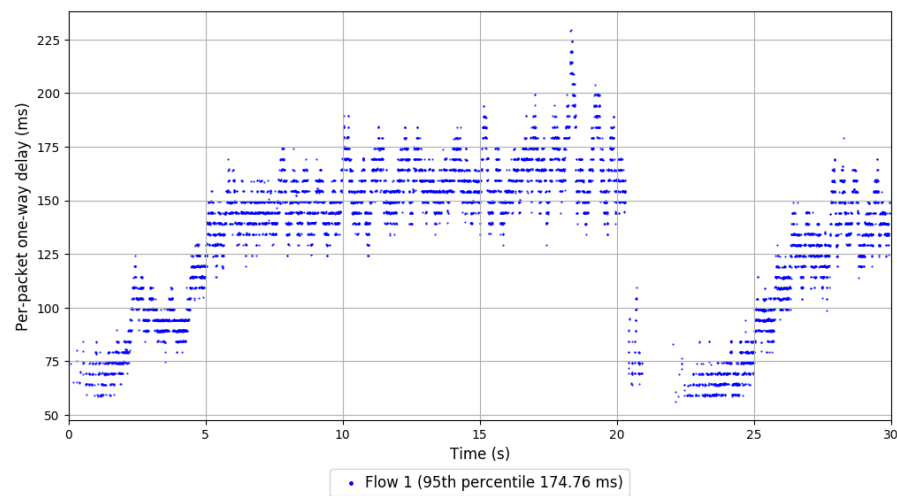
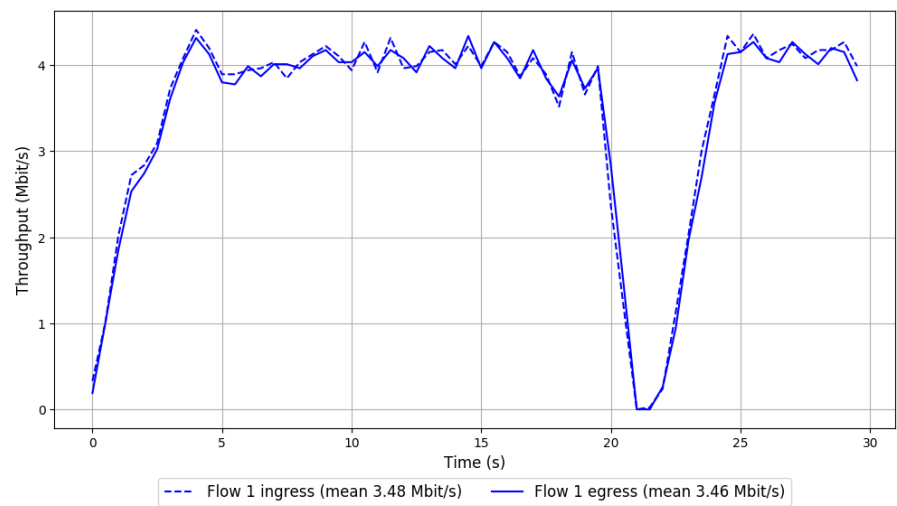
```
Run 1: Statistics of LEDBAT

Start at: 2017-09-17 21:46:12
End at: 2017-09-17 21:46:42
Local clock offset: -2.419 ms
Remote clock offset: -2.63 ms

# Below is generated by plot.py at 2017-09-17 23:18:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.46 Mbit/s
95th percentile per-packet one-way delay: 174.765 ms
Loss rate: 0.98%
-- Flow 1:
Average throughput: 3.46 Mbit/s
95th percentile per-packet one-way delay: 174.765 ms
Loss rate: 0.98%
```



Run 1: Report of LEDBAT — Data Link

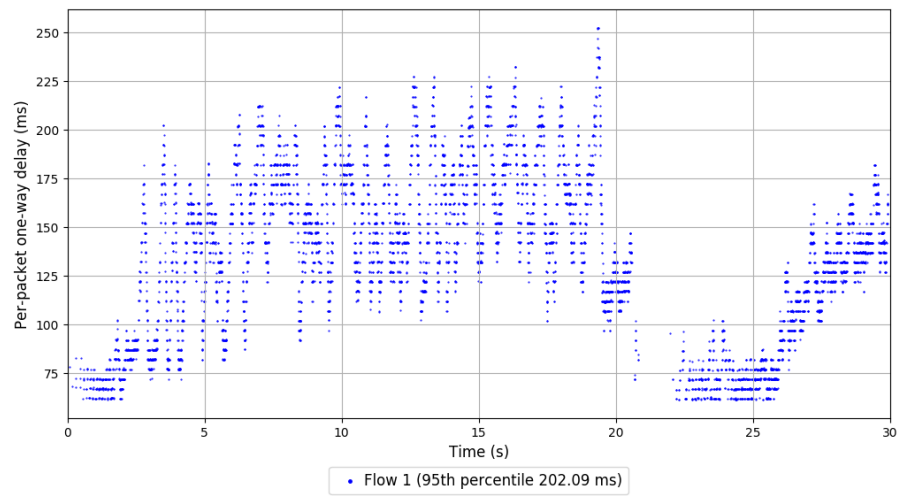
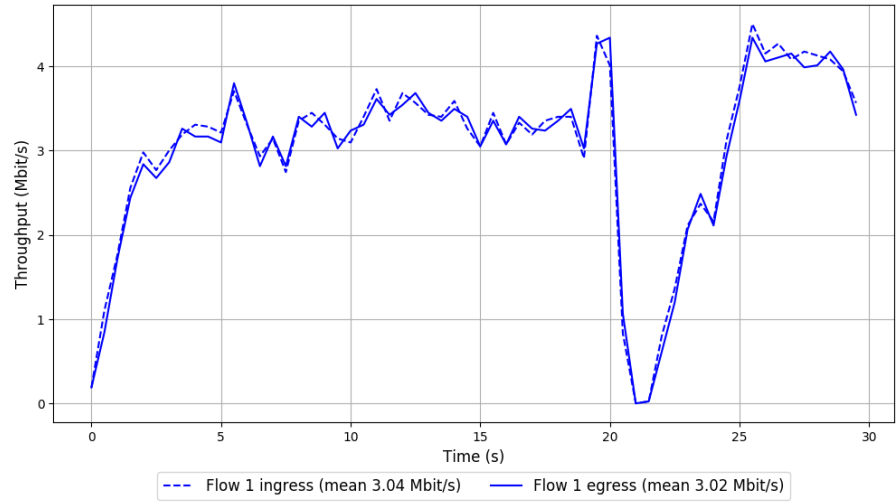


Run 2: Statistics of LEDBAT

Start at: 2017-09-17 22:03:05  
End at: 2017-09-17 22:03:36  
Local clock offset: -1.032 ms  
Remote clock offset: -2.803 ms

# Below is generated by plot.py at 2017-09-17 23:18:49  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 3.02 Mbit/s  
95th percentile per-packet one-way delay: 202.087 ms  
Loss rate: 1.04%  
-- Flow 1:  
Average throughput: 3.02 Mbit/s  
95th percentile per-packet one-way delay: 202.087 ms  
Loss rate: 1.04%

## Run 2: Report of LEDBAT — Data Link

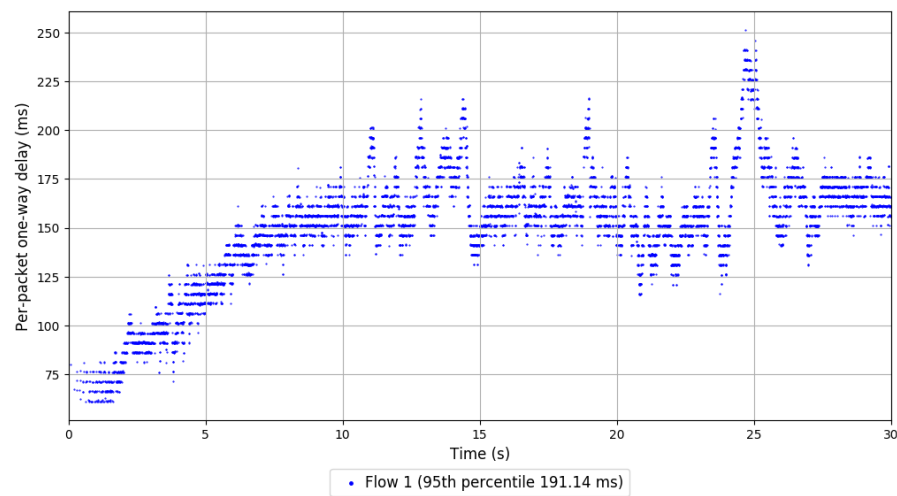
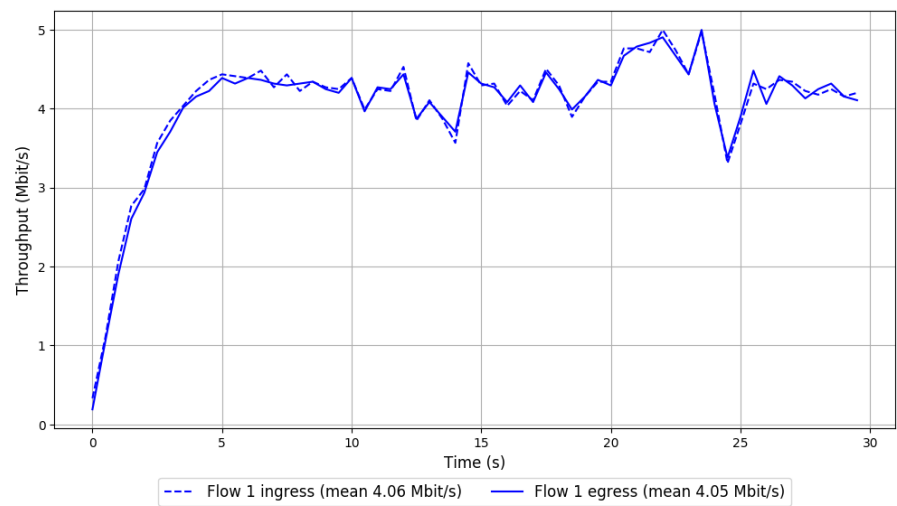


Run 3: Statistics of LEDBAT

Start at: 2017-09-17 22:19:43  
End at: 2017-09-17 22:20:13  
Local clock offset: 0.372 ms  
Remote clock offset: -2.618 ms

# Below is generated by plot.py at 2017-09-17 23:18:51  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 4.05 Mbit/s  
95th percentile per-packet one-way delay: 191.139 ms  
Loss rate: 0.61%  
-- Flow 1:  
Average throughput: 4.05 Mbit/s  
95th percentile per-packet one-way delay: 191.139 ms  
Loss rate: 0.61%

Run 3: Report of LEDBAT — Data Link

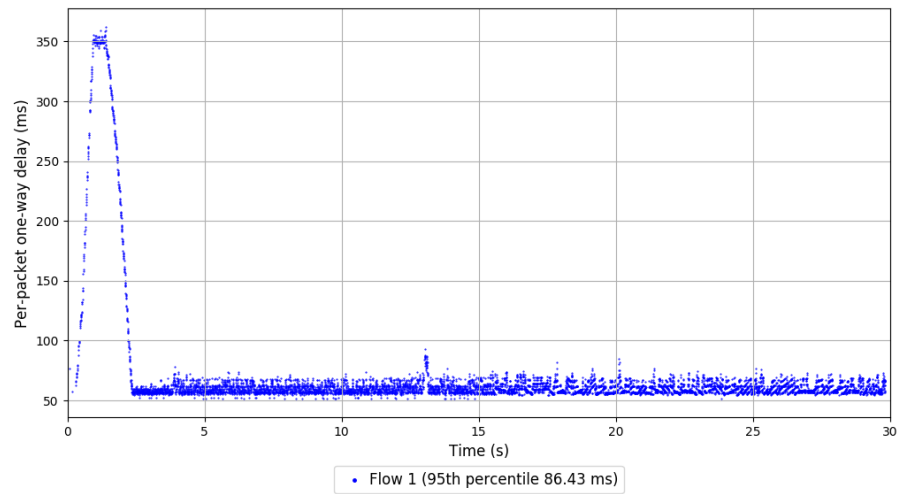
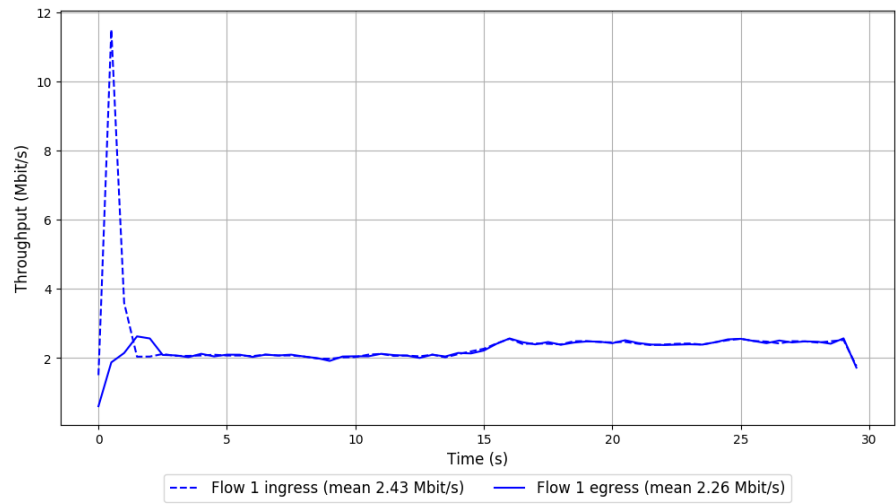


```
Run 1: Statistics of PCC

Start at: 2017-09-17 21:39:29
End at: 2017-09-17 21:39:59
Local clock offset: -2.868 ms
Remote clock offset: -1.497 ms

# Below is generated by plot.py at 2017-09-17 23:18:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.26 Mbit/s
95th percentile per-packet one-way delay: 86.430 ms
Loss rate: 7.56%
-- Flow 1:
Average throughput: 2.26 Mbit/s
95th percentile per-packet one-way delay: 86.430 ms
Loss rate: 7.56%
```

### Run 1: Report of PCC — Data Link



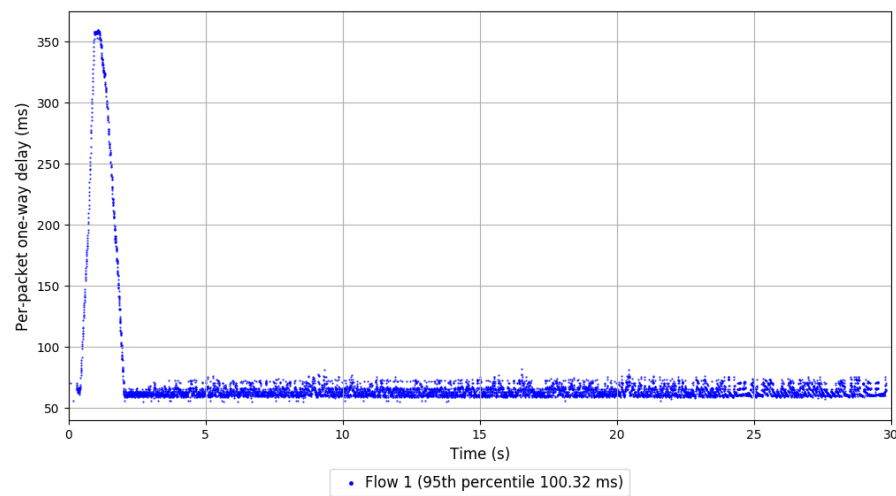
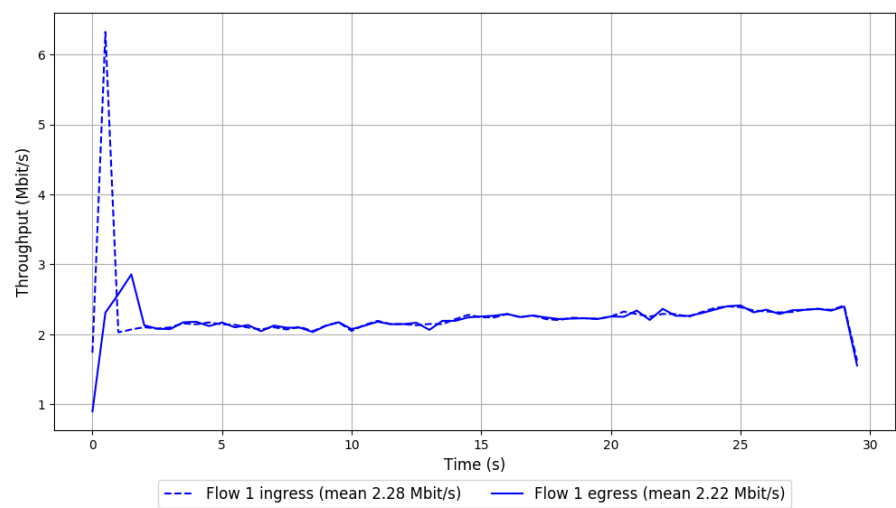
Run 2: Statistics of PCC

Start at: 2017-09-17 21:56:20  
End at: 2017-09-17 21:56:50  
Local clock offset: 0.825 ms  
Remote clock offset: -1.915 ms

# Below is generated by plot.py at 2017-09-17 23:18:51  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 2.22 Mbit/s  
95th percentile per-packet one-way delay: 100.323 ms  
Loss rate: 2.66%  
-- Flow 1:  
Average throughput: 2.22 Mbit/s  
95th percentile per-packet one-way delay: 100.323 ms  
Loss rate: 2.66%



Run 2: Report of PCC — Data Link

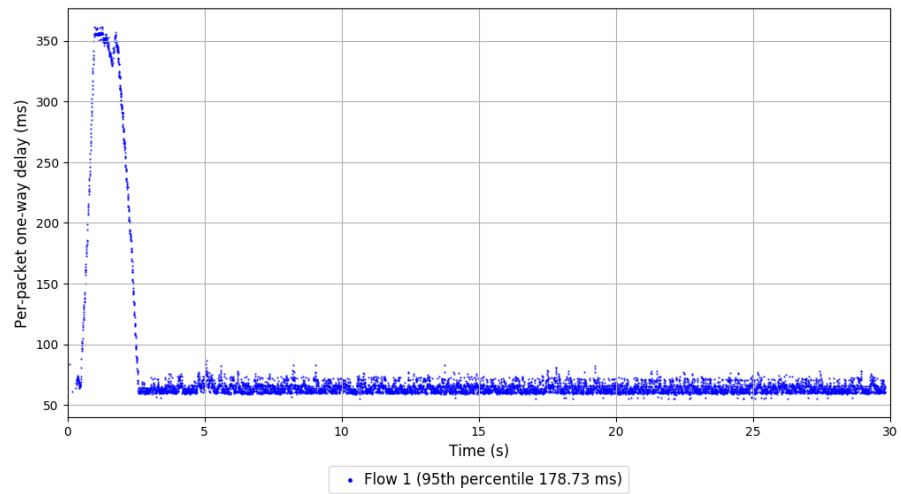
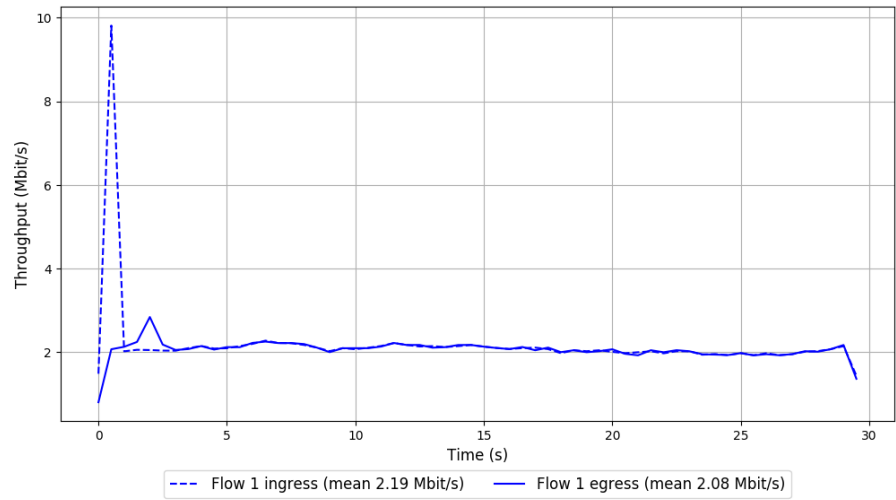


Run 3: Statistics of PCC

Start at: 2017-09-17 22:13:06  
End at: 2017-09-17 22:13:36  
Local clock offset: -0.8 ms  
Remote clock offset: -3.618 ms

# Below is generated by plot.py at 2017-09-17 23:18:53  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 2.08 Mbit/s  
95th percentile per-packet one-way delay: 178.732 ms  
Loss rate: 5.54%  
-- Flow 1:  
Average throughput: 2.08 Mbit/s  
95th percentile per-packet one-way delay: 178.732 ms  
Loss rate: 5.54%

### Run 3: Report of PCC — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2017-09-17 21:37:15

End at: 2017-09-17 21:37:45

Local clock offset: -2.559 ms

Remote clock offset: -1.721 ms

# Below is generated by plot.py at 2017-09-17 23:18:55

# Datalink statistics

-- Total of 1 flow:

Average throughput: 3.60 Mbit/s

95th percentile per-packet one-way delay: 347.134 ms

Loss rate: 2.65%

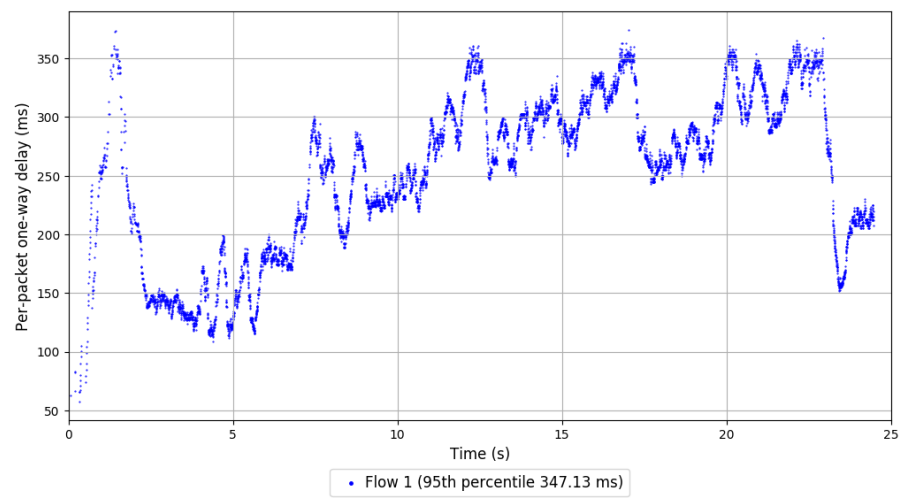
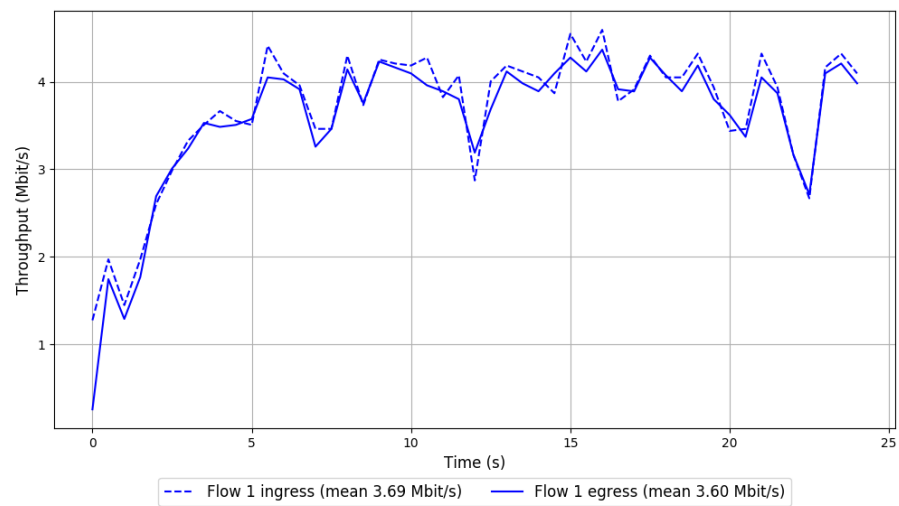
-- Flow 1:

Average throughput: 3.60 Mbit/s

95th percentile per-packet one-way delay: 347.134 ms

Loss rate: 2.65%

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2017-09-17 21:54:05

End at: 2017-09-17 21:54:35

Local clock offset: -2.85 ms

Remote clock offset: -2.538 ms

# Below is generated by plot.py at 2017-09-17 23:18:58

# Datalink statistics

-- Total of 1 flow:

Average throughput: 4.15 Mbit/s

95th percentile per-packet one-way delay: 348.135 ms

Loss rate: 2.15%

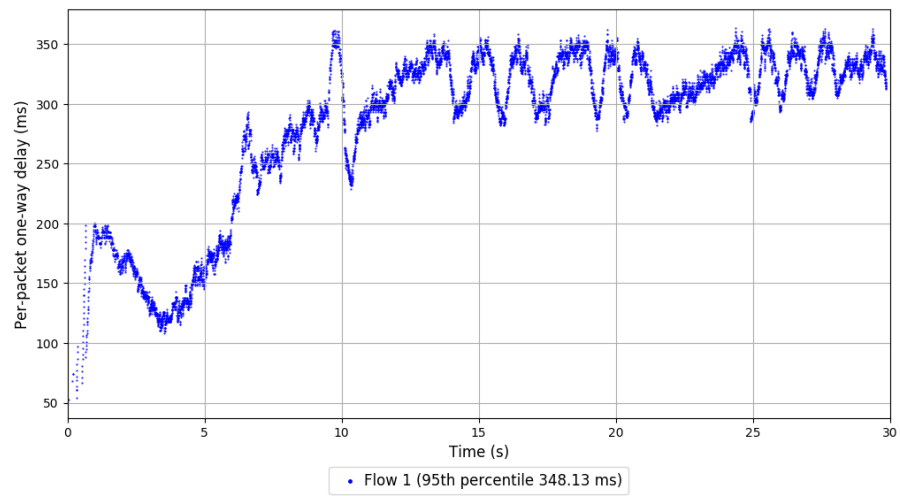
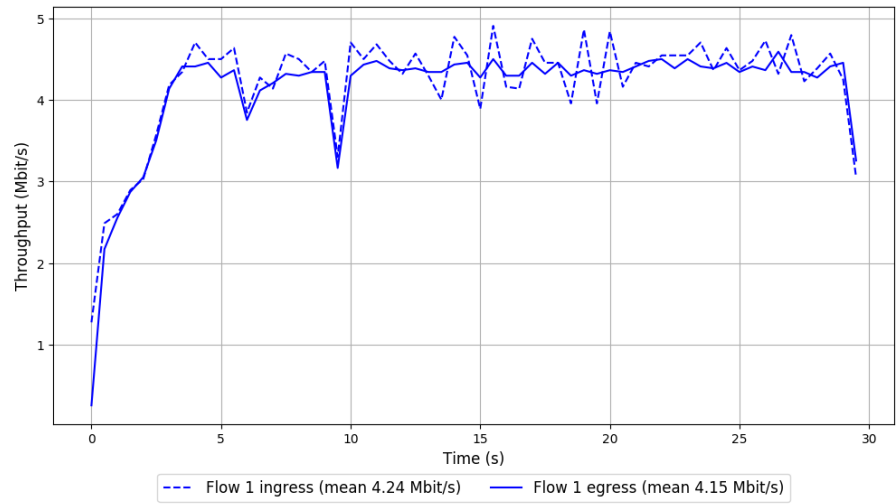
-- Flow 1:

Average throughput: 4.15 Mbit/s

95th percentile per-packet one-way delay: 348.135 ms

Loss rate: 2.15%

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



Run 3: Statistics of QUIC Cubic

Start at: 2017-09-17 22:10:52

End at: 2017-09-17 22:11:22

Local clock offset: -0.18 ms

Remote clock offset: -2.448 ms

# Below is generated by plot.py at 2017-09-17 23:18:58

# Datalink statistics

-- Total of 1 flow:

Average throughput: 3.85 Mbit/s

95th percentile per-packet one-way delay: 348.064 ms

Loss rate: 2.29%

-- Flow 1:

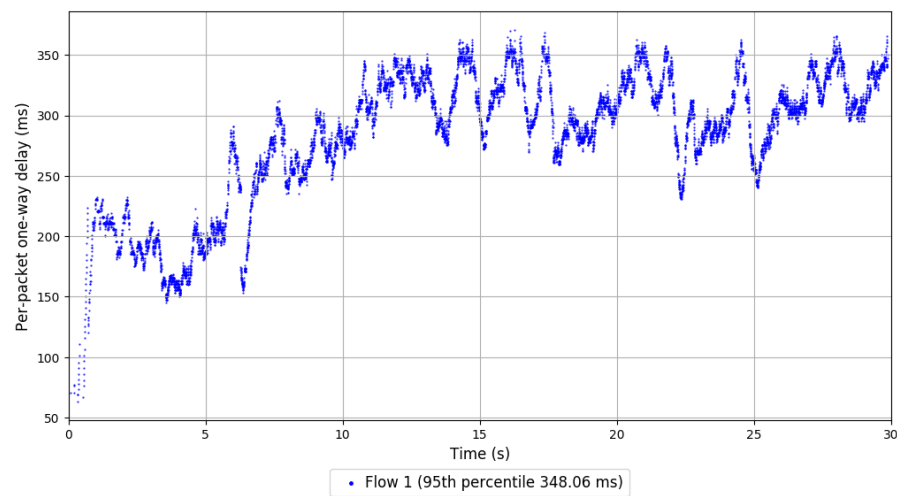
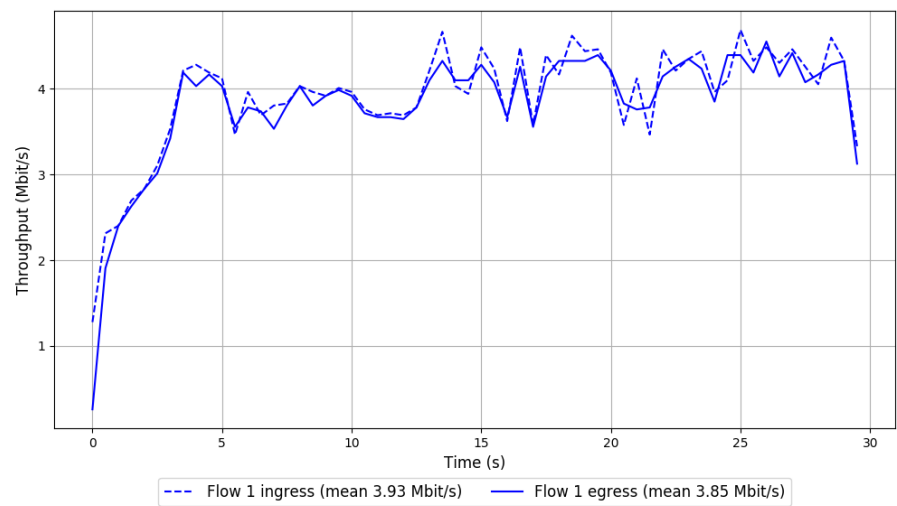
Average throughput: 3.85 Mbit/s

95th percentile per-packet one-way delay: 348.064 ms

Loss rate: 2.29%



Run 3: Report of QUIC Cubic — Data Link

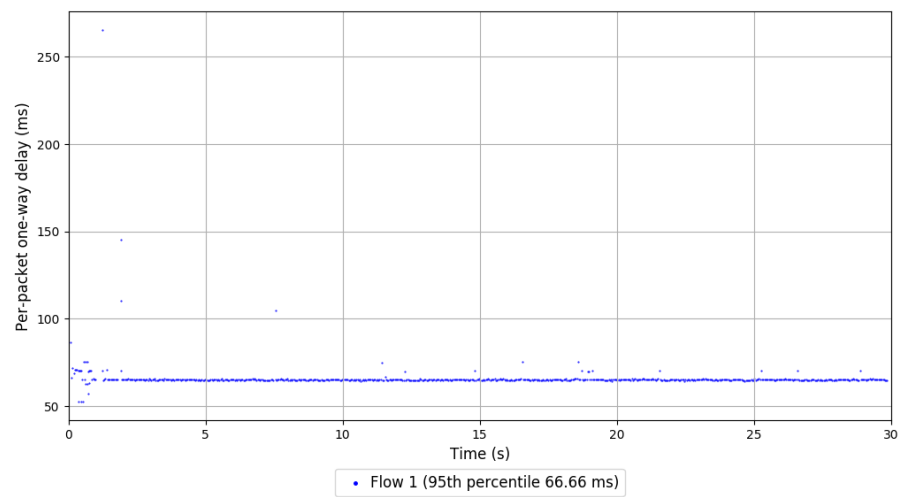
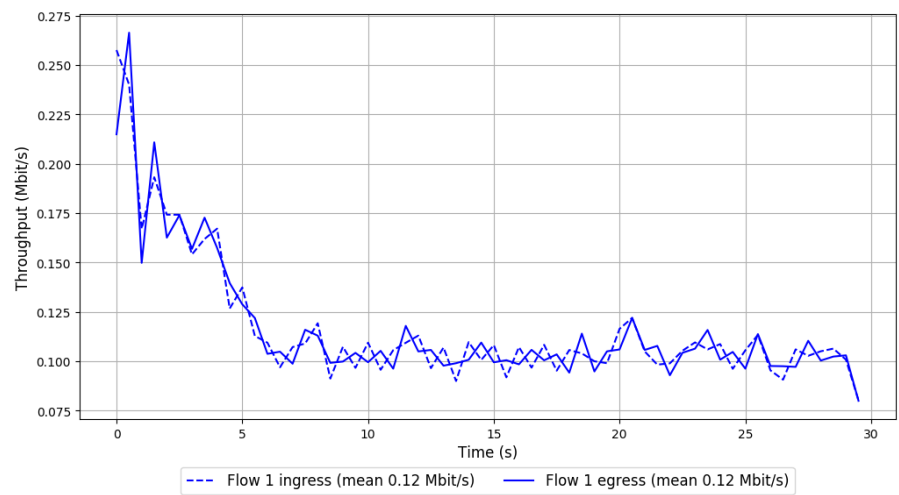


Run 1: Statistics of SCReAM

Start at: 2017-09-17 21:47:19  
End at: 2017-09-17 21:47:49  
Local clock offset: -0.352 ms  
Remote clock offset: -2.449 ms

# Below is generated by plot.py at 2017-09-17 23:18:58  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.12 Mbit/s  
95th percentile per-packet one-way delay: 66.662 ms  
Loss rate: 0.23%  
-- Flow 1:  
Average throughput: 0.12 Mbit/s  
95th percentile per-packet one-way delay: 66.662 ms  
Loss rate: 0.23%

Run 1: Report of SReAM — Data Link

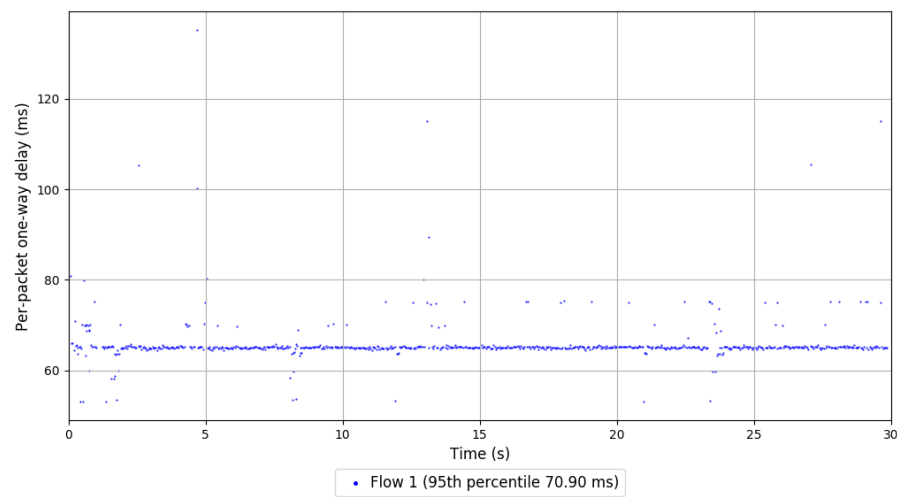
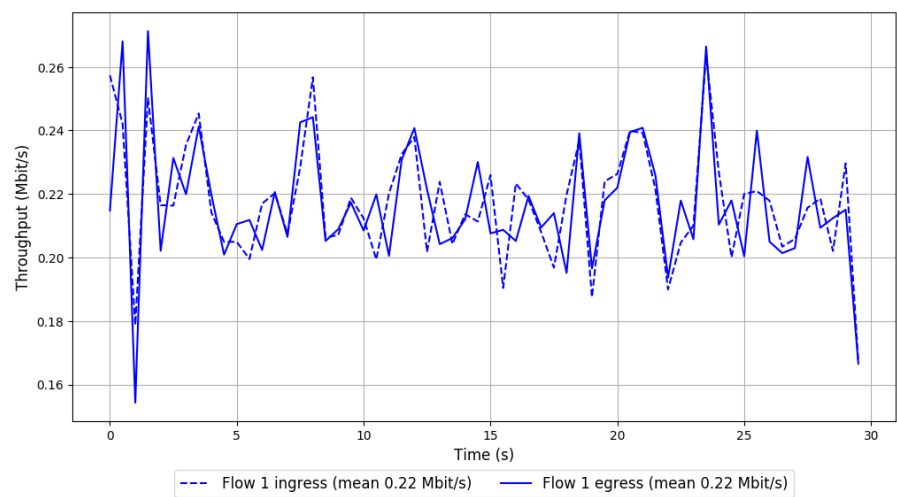


Run 2: Statistics of SCReAM

Start at: 2017-09-17 22:04:13  
End at: 2017-09-17 22:04:43  
Local clock offset: -0.266 ms  
Remote clock offset: -2.338 ms

# Below is generated by plot.py at 2017-09-17 23:18:58  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 70.898 ms  
Loss rate: 0.25%  
-- Flow 1:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 70.898 ms  
Loss rate: 0.25%

Run 2: Report of SReAM — Data Link



Run 3: Statistics of SCReAM

Start at: 2017-09-17 22:20:52

End at: 2017-09-17 22:21:22

Local clock offset: 0.254 ms

Remote clock offset: -2.17 ms

# Below is generated by plot.py at 2017-09-17 23:18:58

# Datalink statistics

-- Total of 1 flow:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 68.114 ms

Loss rate: 0.25%

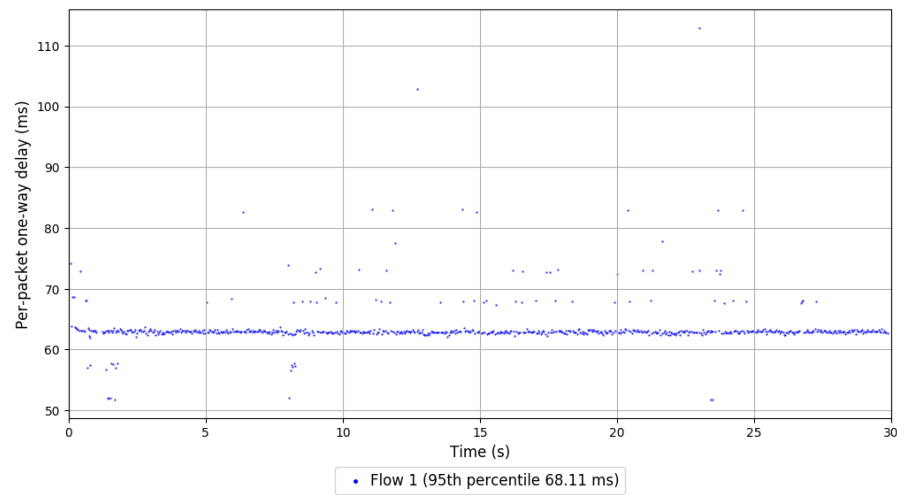
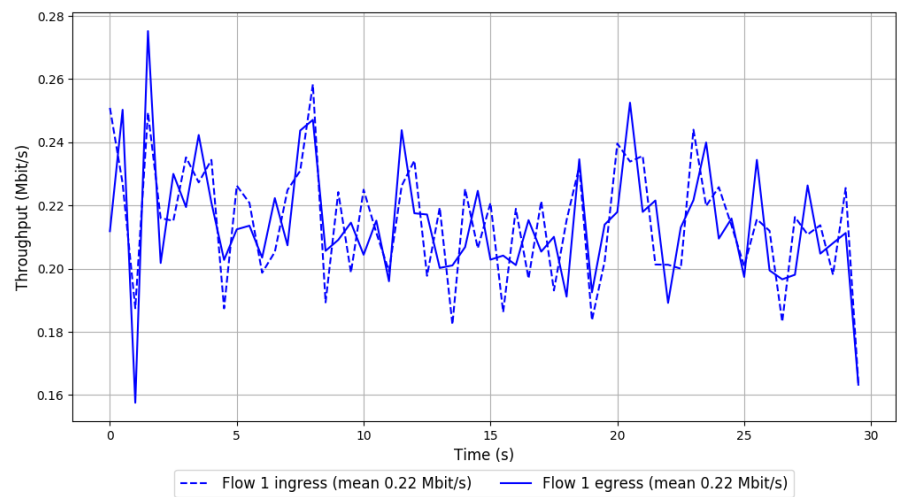
-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 68.114 ms

Loss rate: 0.25%

Run 3: Report of SReAM — Data Link



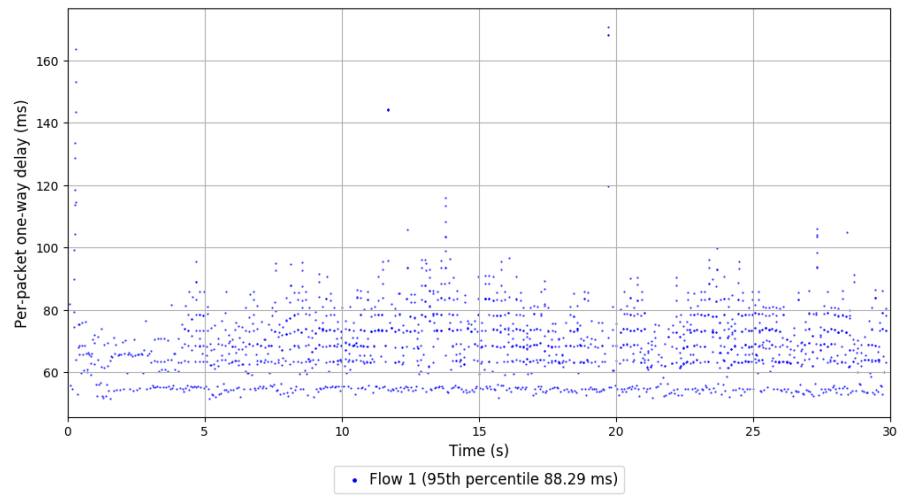
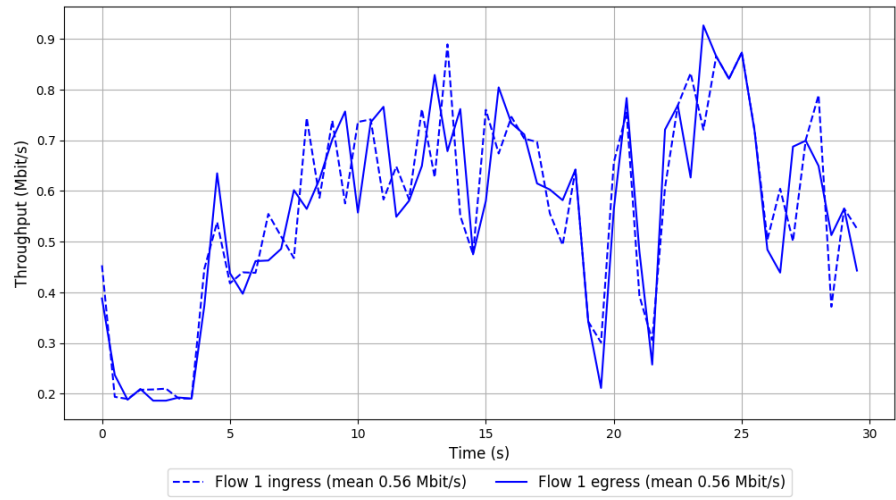
Run 1: Statistics of Sprout

Start at: 2017-09-17 21:40:37  
End at: 2017-09-17 21:41:07  
Local clock offset: 0.461 ms  
Remote clock offset: -3.347 ms

# Below is generated by plot.py at 2017-09-17 23:18:58  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.56 Mbit/s  
95th percentile per-packet one-way delay: 88.294 ms  
Loss rate: 0.35%  
-- Flow 1:  
Average throughput: 0.56 Mbit/s  
95th percentile per-packet one-way delay: 88.294 ms  
Loss rate: 0.35%



## Run 1: Report of Sprout — Data Link

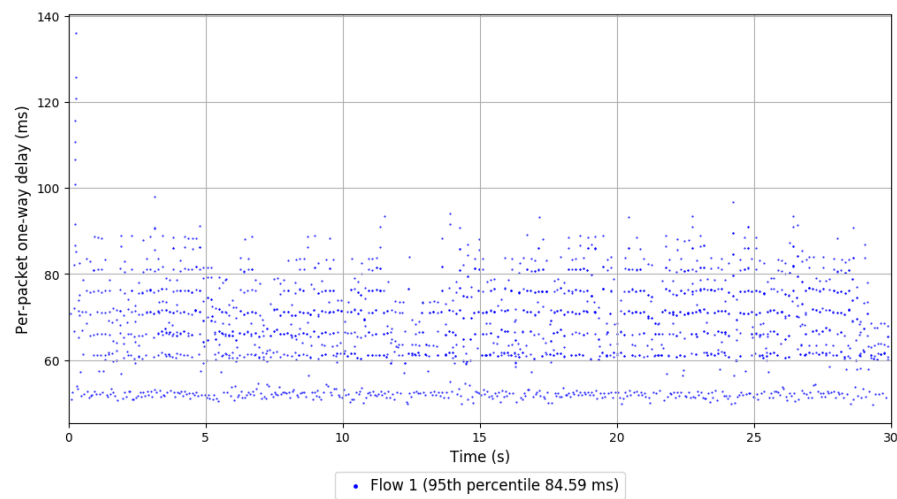
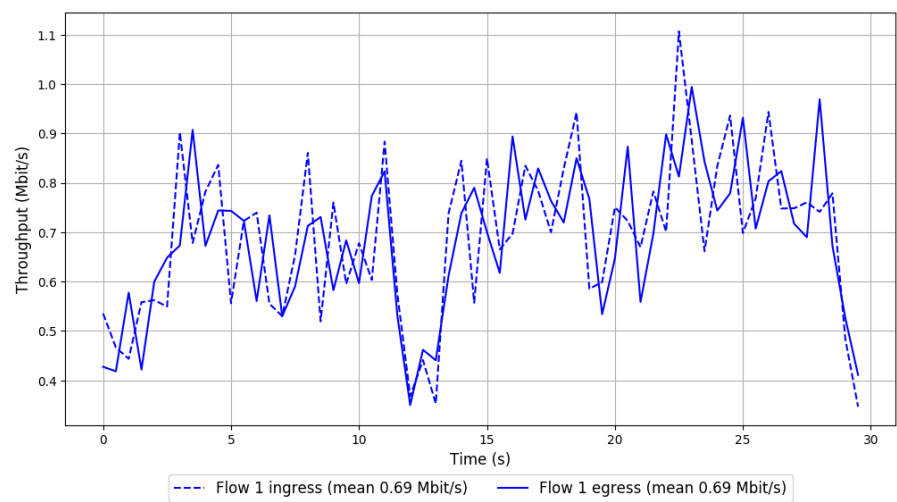


Run 2: Statistics of Sprout

Start at: 2017-09-17 21:57:26  
End at: 2017-09-17 21:57:56  
Local clock offset: -2.771 ms  
Remote clock offset: -2.641 ms

# Below is generated by plot.py at 2017-09-17 23:18:58  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.69 Mbit/s  
95th percentile per-packet one-way delay: 84.592 ms  
Loss rate: 0.26%  
-- Flow 1:  
Average throughput: 0.69 Mbit/s  
95th percentile per-packet one-way delay: 84.592 ms  
Loss rate: 0.26%

Run 2: Report of Sprout — Data Link

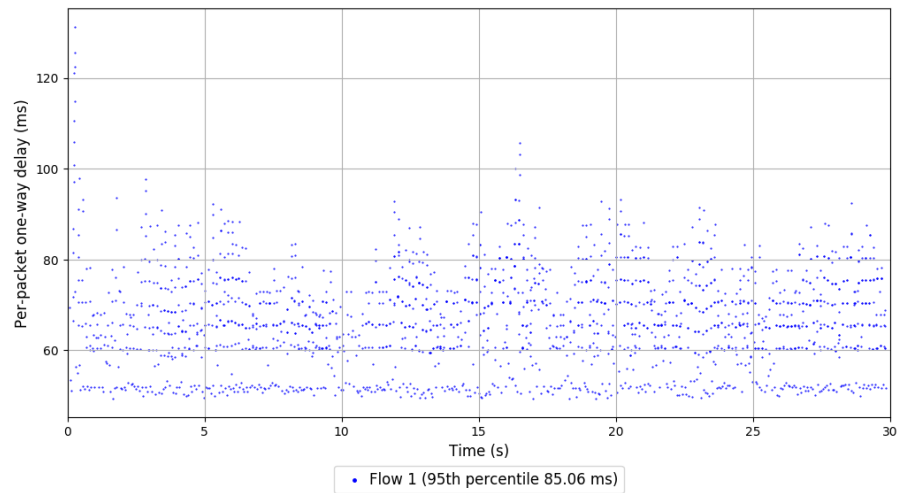
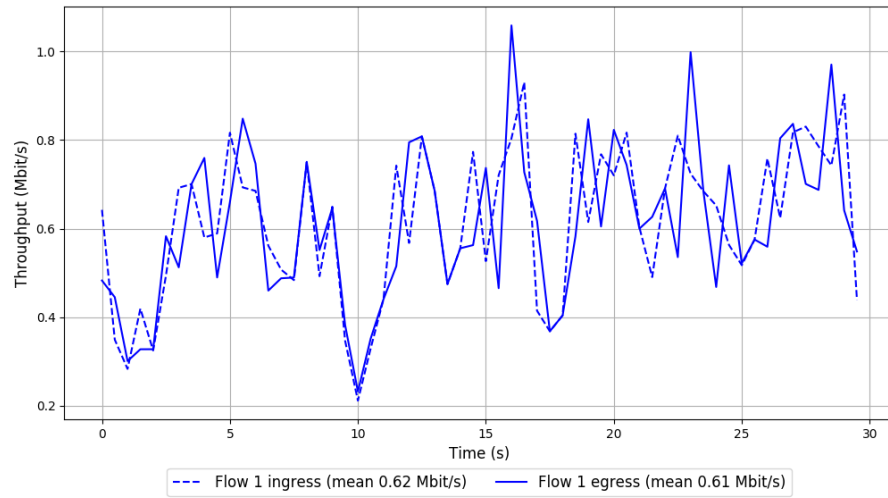


Run 3: Statistics of Sprout

Start at: 2017-09-17 22:14:12  
End at: 2017-09-17 22:14:42  
Local clock offset: -3.154 ms  
Remote clock offset: -3.157 ms

# Below is generated by plot.py at 2017-09-17 23:18:58  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.61 Mbit/s  
95th percentile per-packet one-way delay: 85.057 ms  
Loss rate: 0.59%  
-- Flow 1:  
Average throughput: 0.61 Mbit/s  
95th percentile per-packet one-way delay: 85.057 ms  
Loss rate: 0.59%

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



Run 1: Statistics of TaoVA-100x

Start at: 2017-09-17 21:43:55

End at: 2017-09-17 21:44:25

Local clock offset: 0.796 ms

Remote clock offset: -2.948 ms

# Below is generated by plot.py at 2017-09-17 23:19:06

# Datalink statistics

-- Total of 1 flow:

Average throughput: 3.90 Mbit/s

95th percentile per-packet one-way delay: 132.793 ms

Loss rate: 0.67%

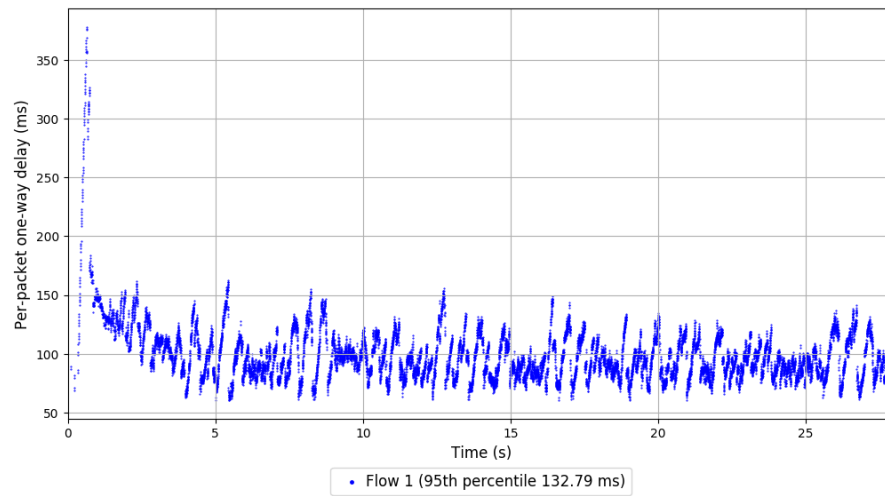
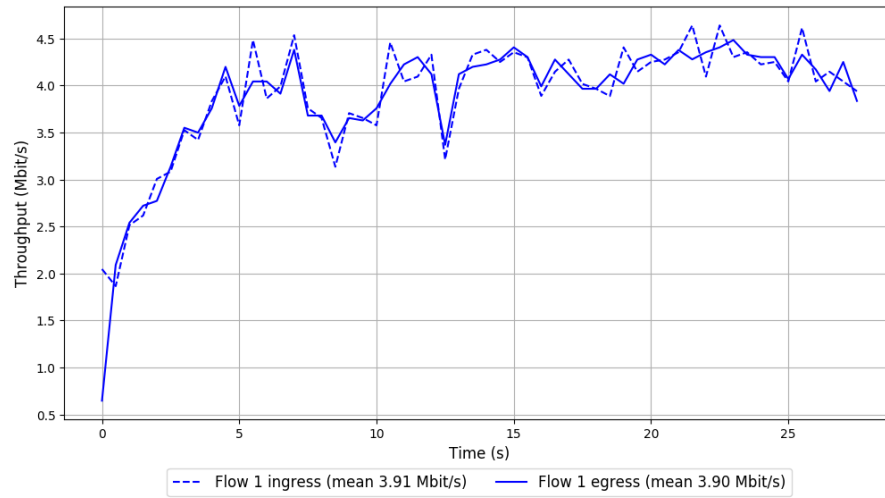
-- Flow 1:

Average throughput: 3.90 Mbit/s

95th percentile per-packet one-way delay: 132.793 ms

Loss rate: 0.67%

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



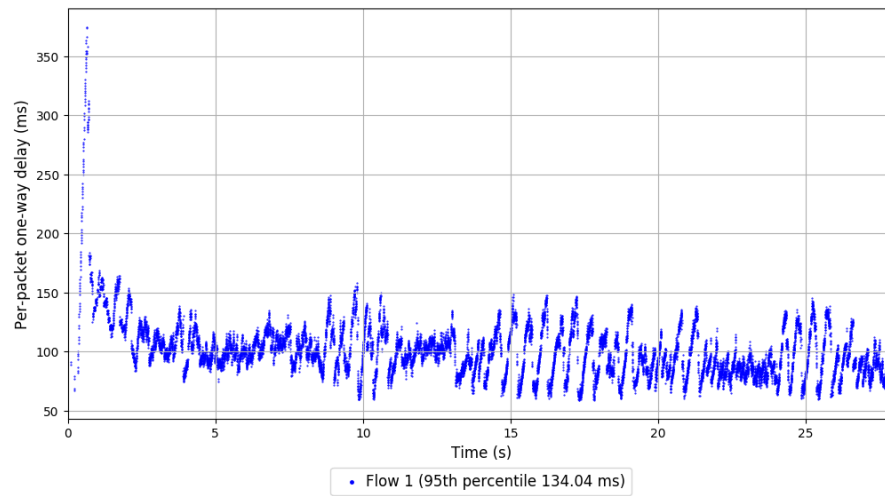
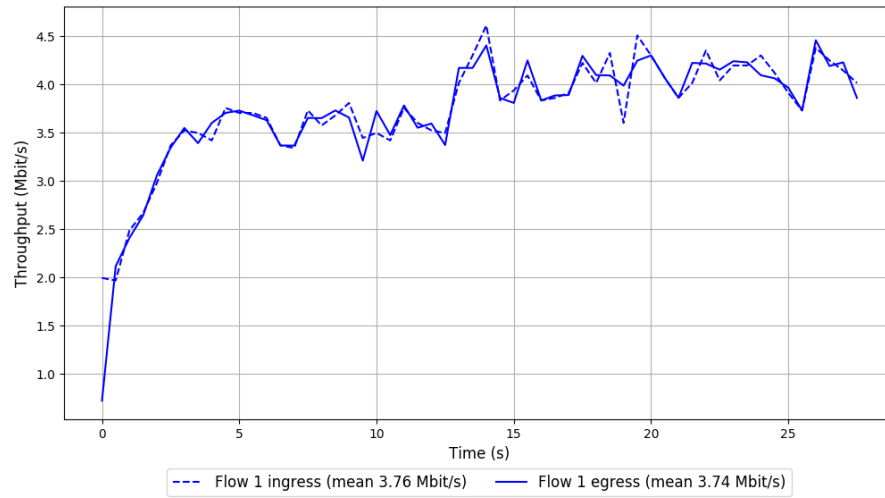
Run 2: Statistics of TaoVA-100x

Start at: 2017-09-17 22:00:49  
End at: 2017-09-17 22:01:19  
Local clock offset: -0.715 ms  
Remote clock offset: -3.083 ms

# Below is generated by plot.py at 2017-09-17 23:19:06  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 3.74 Mbit/s  
95th percentile per-packet one-way delay: 134.040 ms  
Loss rate: 0.63%  
-- Flow 1:  
Average throughput: 3.74 Mbit/s  
95th percentile per-packet one-way delay: 134.040 ms  
Loss rate: 0.63%



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



Run 3: Statistics of TaoVA-100x

Start at: 2017-09-17 22:17:28

End at: 2017-09-17 22:17:58

Local clock offset: 0.205 ms

Remote clock offset: -2.855 ms

# Below is generated by plot.py at 2017-09-17 23:19:08

# Datalink statistics

-- Total of 1 flow:

Average throughput: 3.96 Mbit/s

95th percentile per-packet one-way delay: 135.024 ms

Loss rate: 0.60%

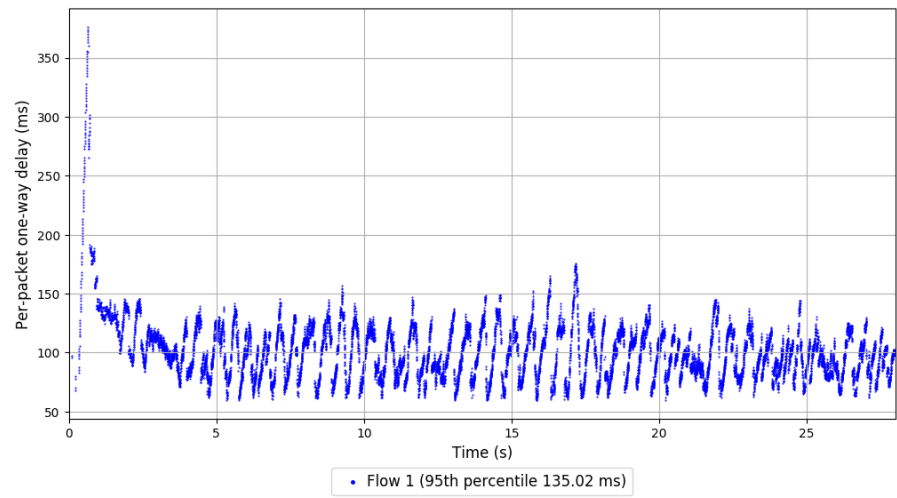
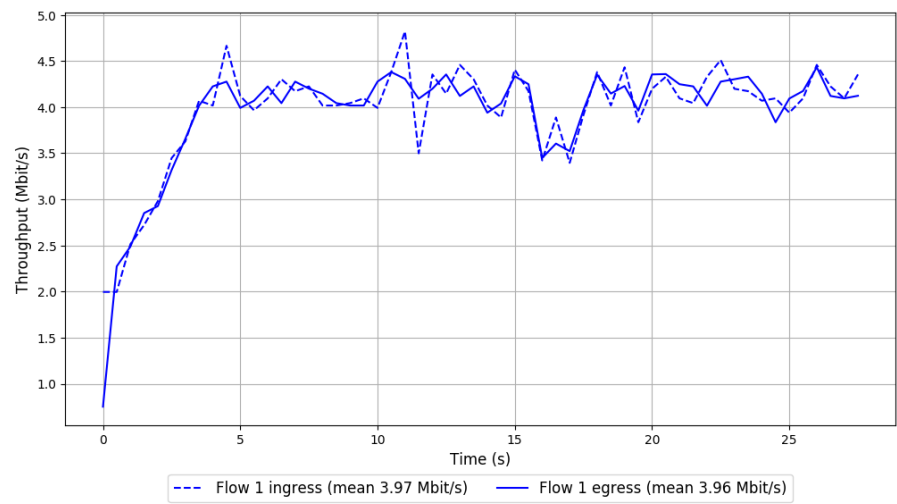
-- Flow 1:

Average throughput: 3.96 Mbit/s

95th percentile per-packet one-way delay: 135.024 ms

Loss rate: 0.60%

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



Run 1: Statistics of TCP Vegas

Start at: 2017-09-17 21:38:22

End at: 2017-09-17 21:38:52

Local clock offset: -1.368 ms

Remote clock offset: -3.21 ms

# Below is generated by plot.py at 2017-09-17 23:19:08

# Datalink statistics

-- Total of 1 flow:

Average throughput: 2.75 Mbit/s

95th percentile per-packet one-way delay: 117.914 ms

Loss rate: 0.46%

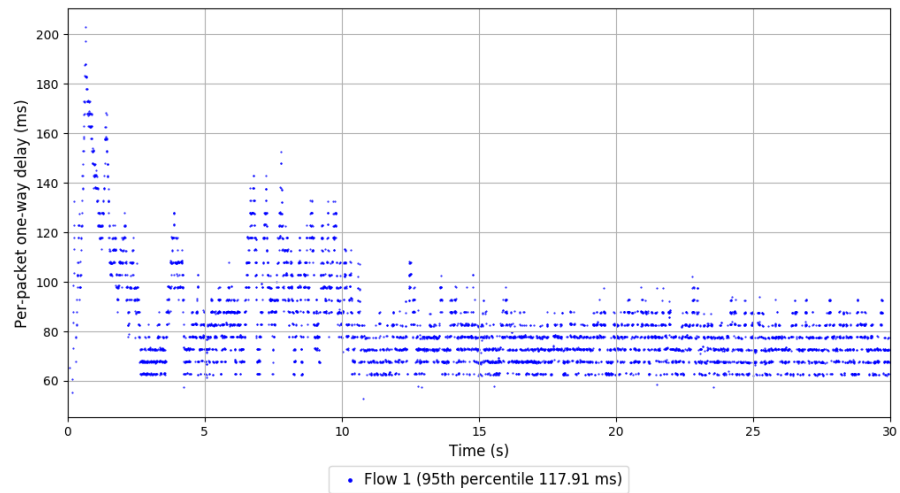
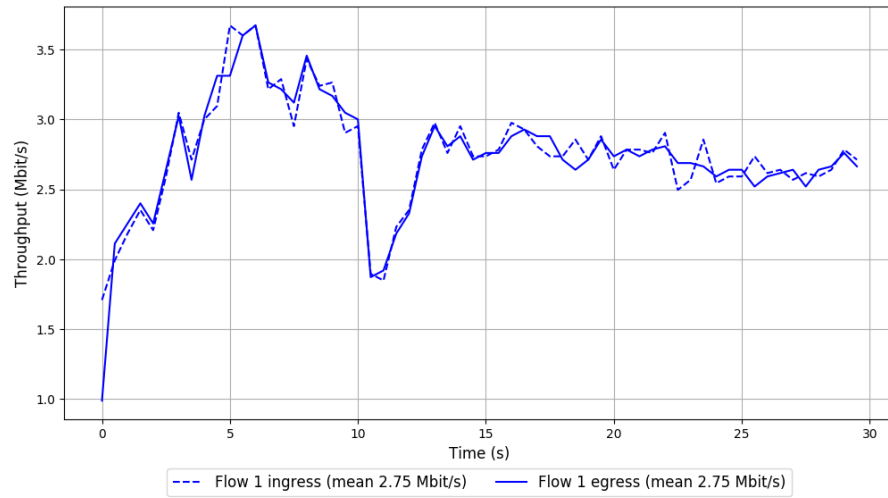
-- Flow 1:

Average throughput: 2.75 Mbit/s

95th percentile per-packet one-way delay: 117.914 ms

Loss rate: 0.46%

# Run 1: Report of TCP Vegas — Data Link

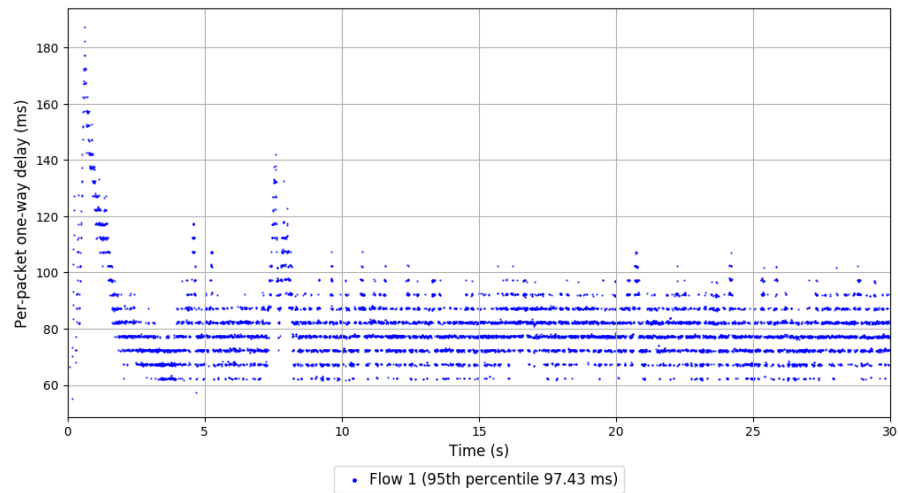
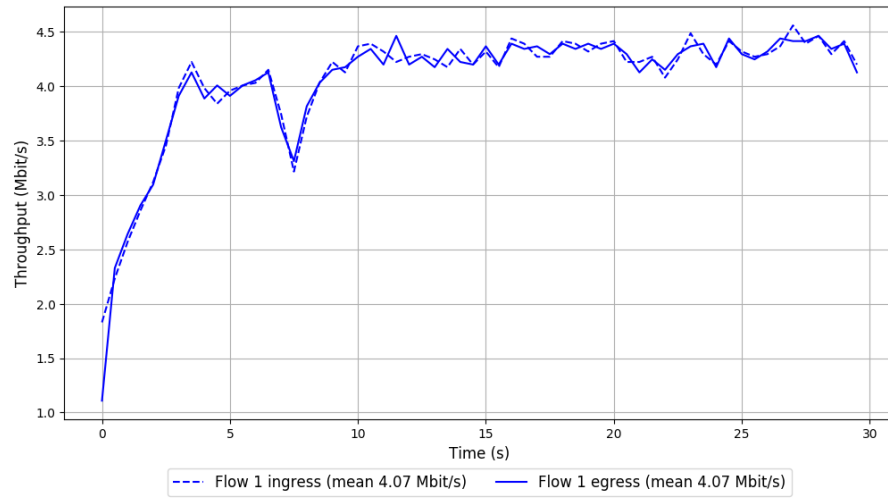


Run 2: Statistics of TCP Vegas

Start at: 2017-09-17 21:55:13  
End at: 2017-09-17 21:55:43  
Local clock offset: -0.482 ms  
Remote clock offset: -2.215 ms

# Below is generated by plot.py at 2017-09-17 23:19:08  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 4.07 Mbit/s  
95th percentile per-packet one-way delay: 97.428 ms  
Loss rate: 0.31%  
-- Flow 1:  
Average throughput: 4.07 Mbit/s  
95th percentile per-packet one-way delay: 97.428 ms  
Loss rate: 0.31%

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



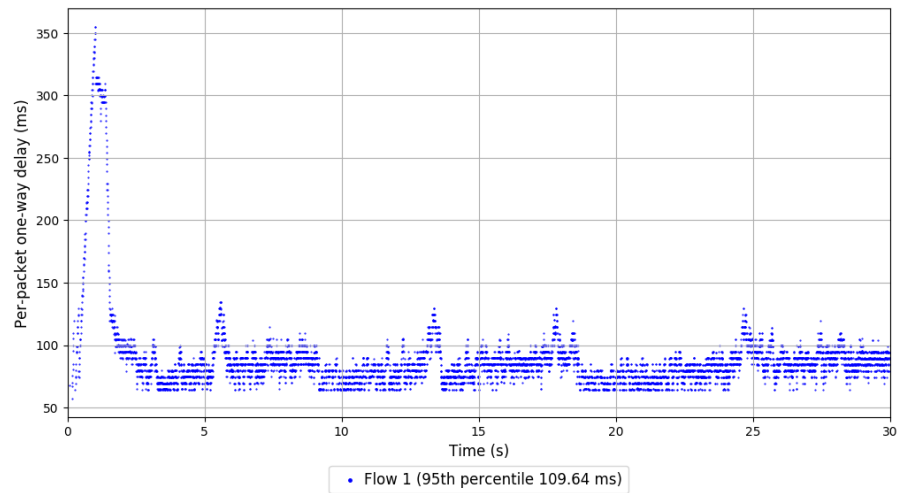
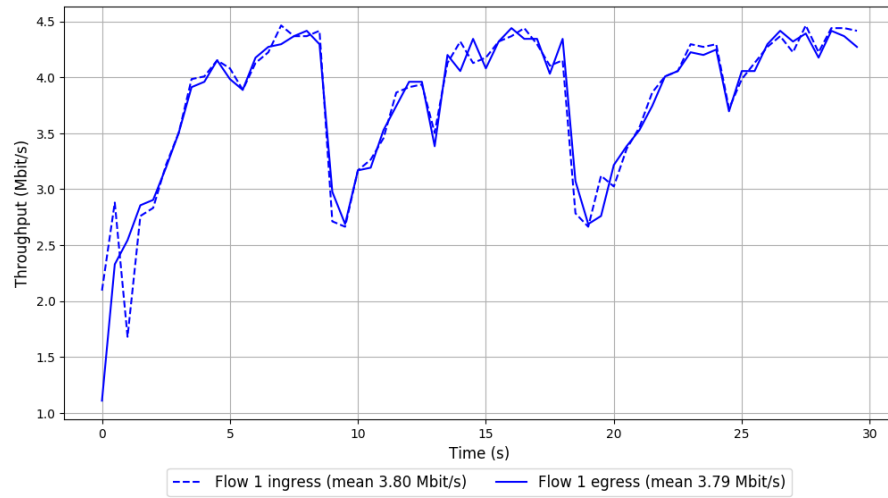
Run 3: Statistics of TCP Vegas

Start at: 2017-09-17 22:11:58  
End at: 2017-09-17 22:12:28  
Local clock offset: -0.921 ms  
Remote clock offset: -2.979 ms

# Below is generated by plot.py at 2017-09-17 23:19:08  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 3.79 Mbit/s  
95th percentile per-packet one-way delay: 109.640 ms  
Loss rate: 0.47%  
-- Flow 1:  
Average throughput: 3.79 Mbit/s  
95th percentile per-packet one-way delay: 109.640 ms  
Loss rate: 0.47%



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

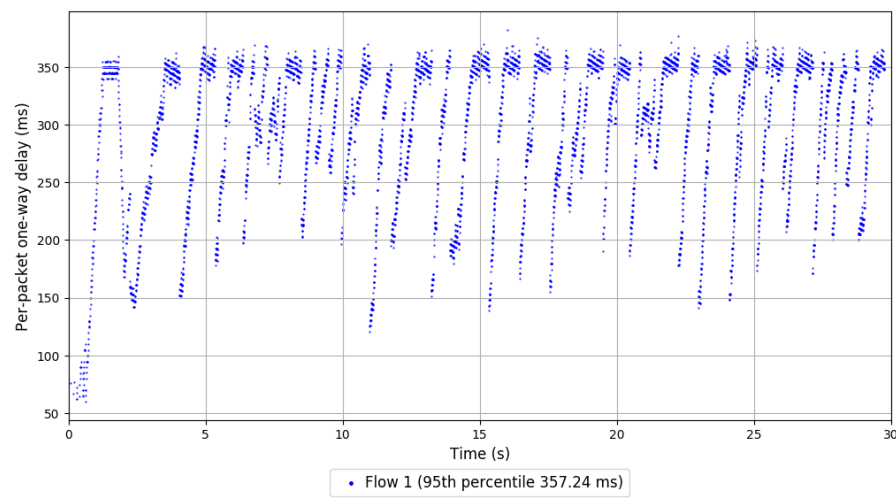
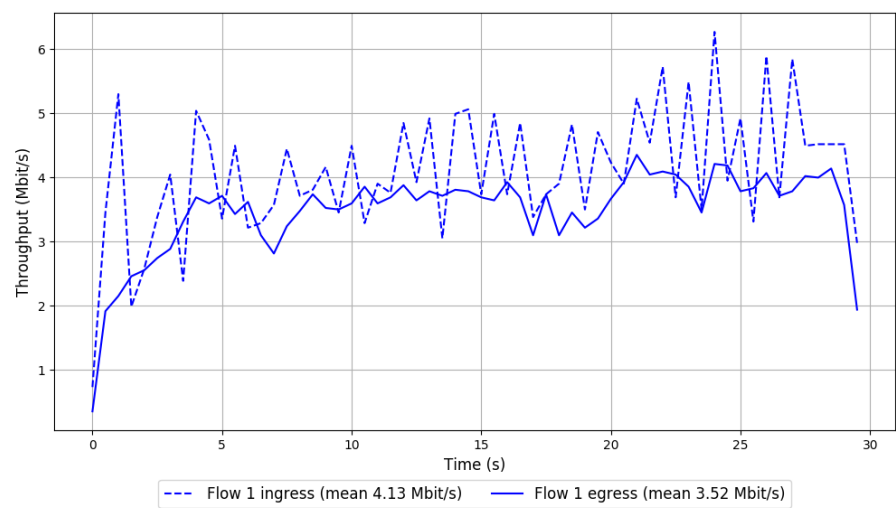


Run 1: Statistics of Verus

Start at: 2017-09-17 21:34:56  
End at: 2017-09-17 21:35:26  
Local clock offset: 0.225 ms  
Remote clock offset: -2.556 ms

# Below is generated by plot.py at 2017-09-17 23:19:08  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 3.52 Mbit/s  
95th percentile per-packet one-way delay: 357.241 ms  
Loss rate: 15.08%  
-- Flow 1:  
Average throughput: 3.52 Mbit/s  
95th percentile per-packet one-way delay: 357.241 ms  
Loss rate: 15.08%

Run 1: Report of Verus — Data Link

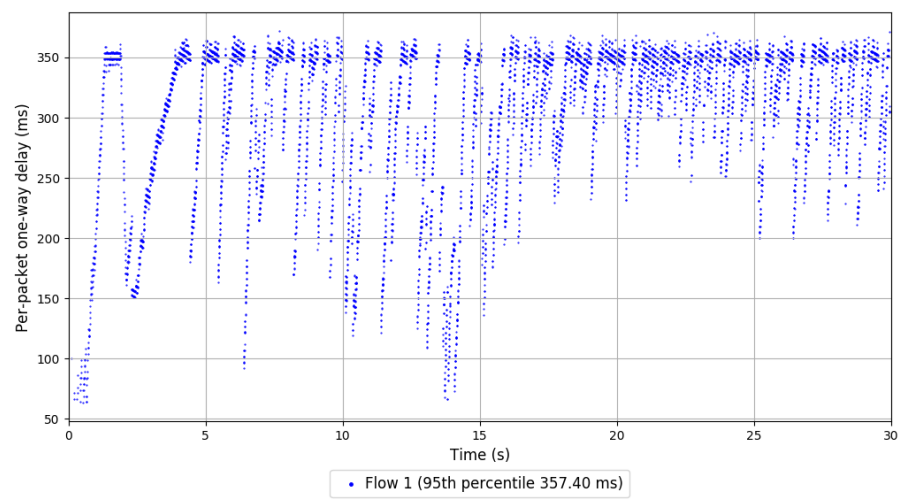
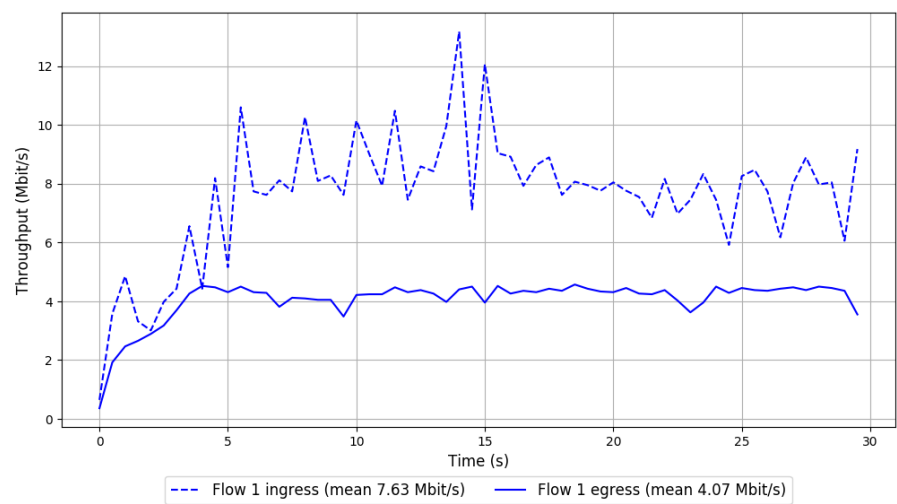


Run 2: Statistics of Verus

Start at: 2017-09-17 21:51:46  
End at: 2017-09-17 21:52:16  
Local clock offset: 0.013 ms  
Remote clock offset: -1.702 ms

# Below is generated by plot.py at 2017-09-17 23:19:08  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 4.07 Mbit/s  
95th percentile per-packet one-way delay: 357.398 ms  
Loss rate: 46.76%  
-- Flow 1:  
Average throughput: 4.07 Mbit/s  
95th percentile per-packet one-way delay: 357.398 ms  
Loss rate: 46.76%

Run 2: Report of Verus — Data Link

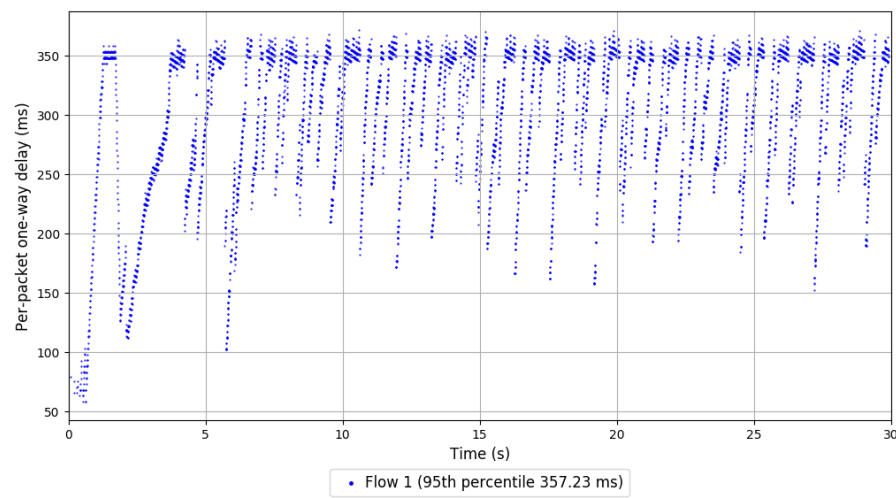
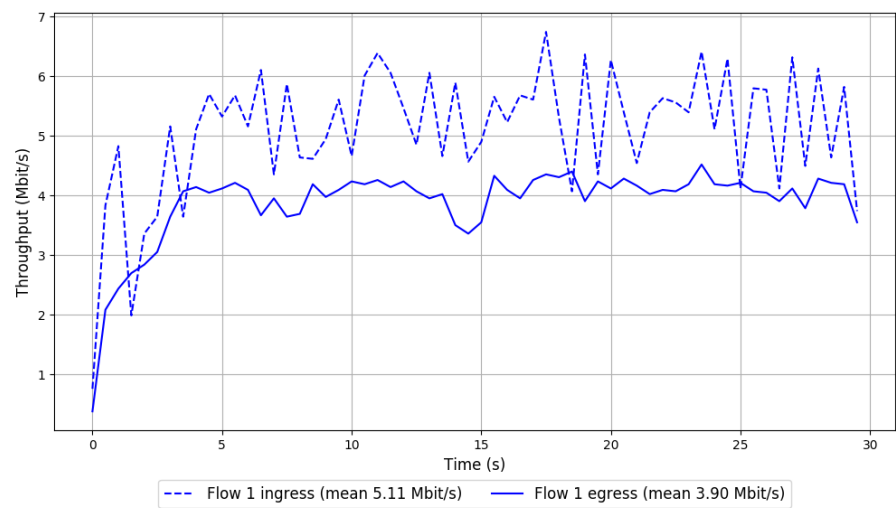


Run 3: Statistics of Verus

Start at: 2017-09-17 22:08:38  
End at: 2017-09-17 22:09:08  
Local clock offset: -1.492 ms  
Remote clock offset: -2.896 ms

# Below is generated by plot.py at 2017-09-17 23:19:09  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 3.90 Mbit/s  
95th percentile per-packet one-way delay: 357.233 ms  
Loss rate: 23.95%  
-- Flow 1:  
Average throughput: 3.90 Mbit/s  
95th percentile per-packet one-way delay: 357.233 ms  
Loss rate: 23.95%

Run 3: Report of Verus — Data Link



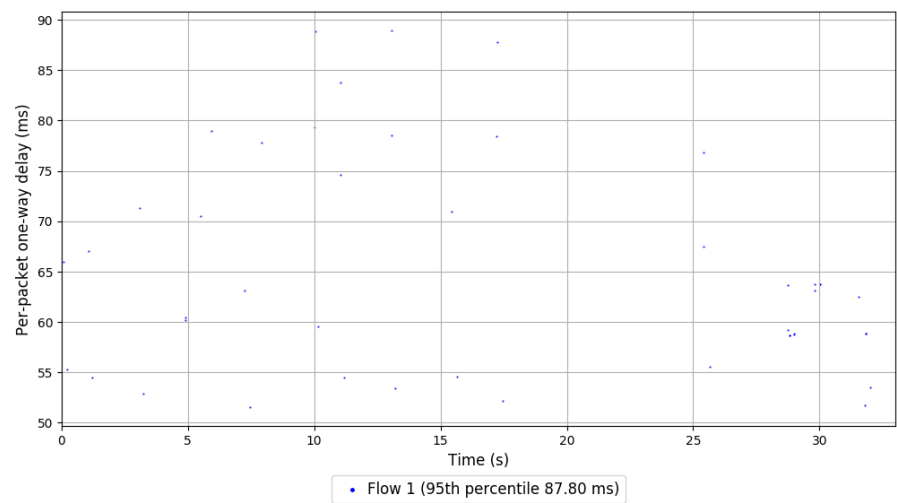
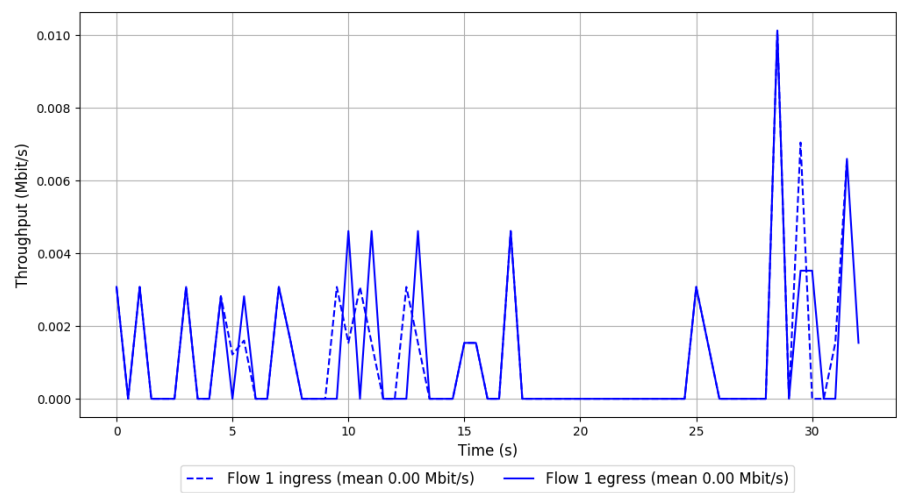
Run 1: Statistics of WebRTC media

Start at: 2017-09-17 21:45:05  
End at: 2017-09-17 21:45:35  
Local clock offset: -1.443 ms  
Remote clock offset: -2.805 ms

# Below is generated by plot.py at 2017-09-17 23:19:09  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.00 Mbit/s  
95th percentile per-packet one-way delay: 87.798 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 0.00 Mbit/s  
95th percentile per-packet one-way delay: 87.798 ms  
Loss rate: 0.00%



Run 1: Report of WebRTC media — Data Link

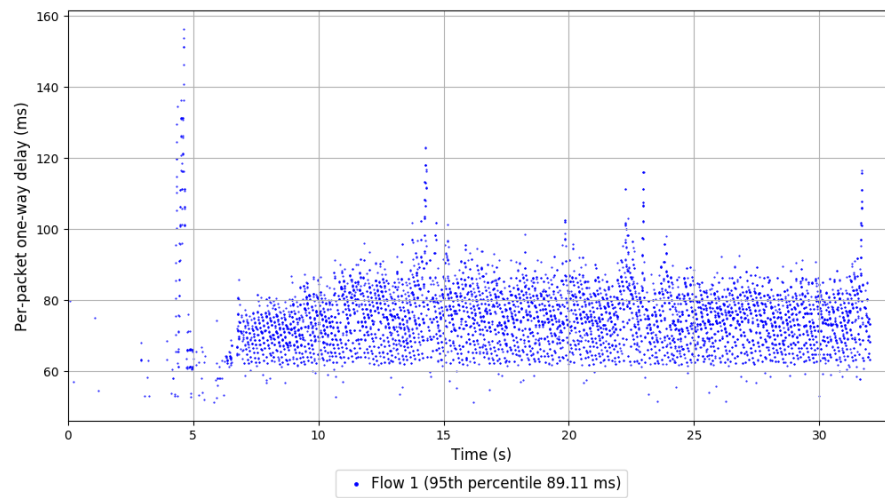
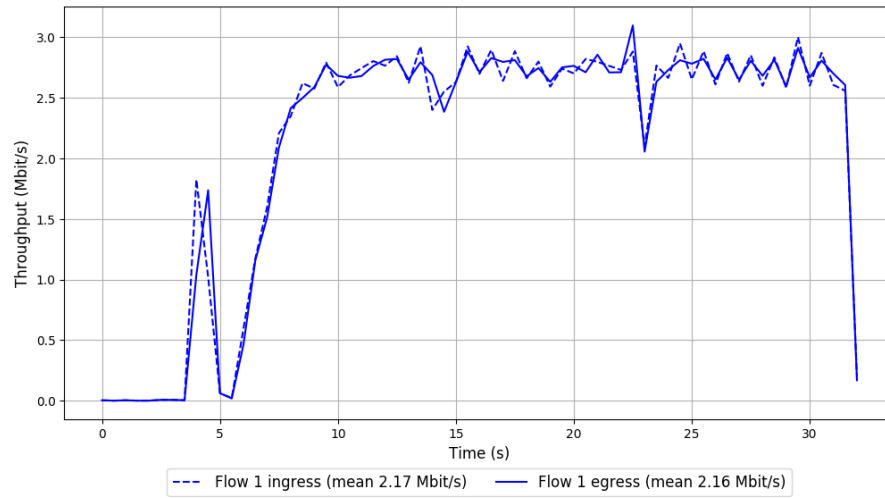


Run 2: Statistics of WebRTC media

Start at: 2017-09-17 22:01:59  
End at: 2017-09-17 22:02:29  
Local clock offset: -0.583 ms  
Remote clock offset: -3.111 ms

# Below is generated by plot.py at 2017-09-17 23:19:09  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 2.16 Mbit/s  
95th percentile per-packet one-way delay: 89.115 ms  
Loss rate: 0.31%  
-- Flow 1:  
Average throughput: 2.16 Mbit/s  
95th percentile per-packet one-way delay: 89.115 ms  
Loss rate: 0.31%

## Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2017-09-17 22:18:37

End at: 2017-09-17 22:19:07

Local clock offset: -2.434 ms

Remote clock offset: -2.68 ms

# Below is generated by plot.py at 2017-09-17 23:19:10

# Datalink statistics

-- Total of 1 flow:

Average throughput: 2.26 Mbit/s

95th percentile per-packet one-way delay: 87.838 ms

Loss rate: 0.32%

-- Flow 1:

Average throughput: 2.26 Mbit/s

95th percentile per-packet one-way delay: 87.838 ms

Loss rate: 0.32%

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

