

## Pantheon Report

Generated at 2017-09-22 11:14:31 (UTC).

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

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).

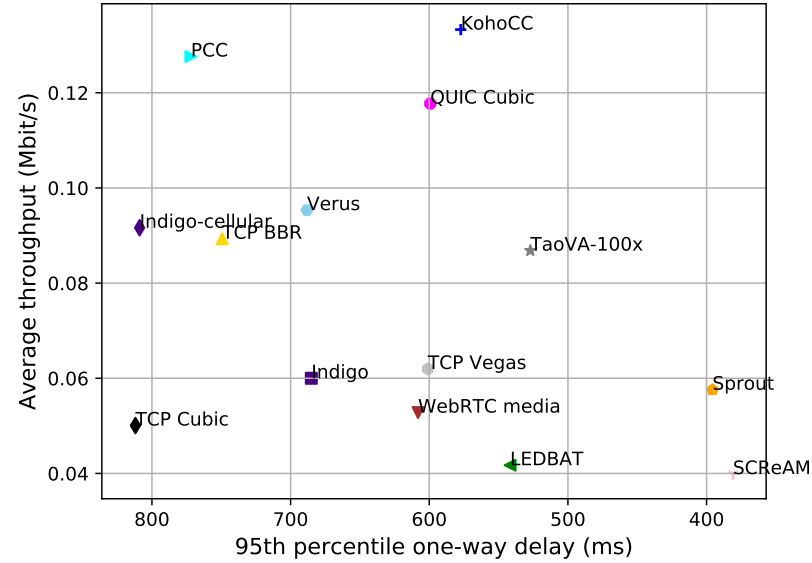
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo\_fast**).

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

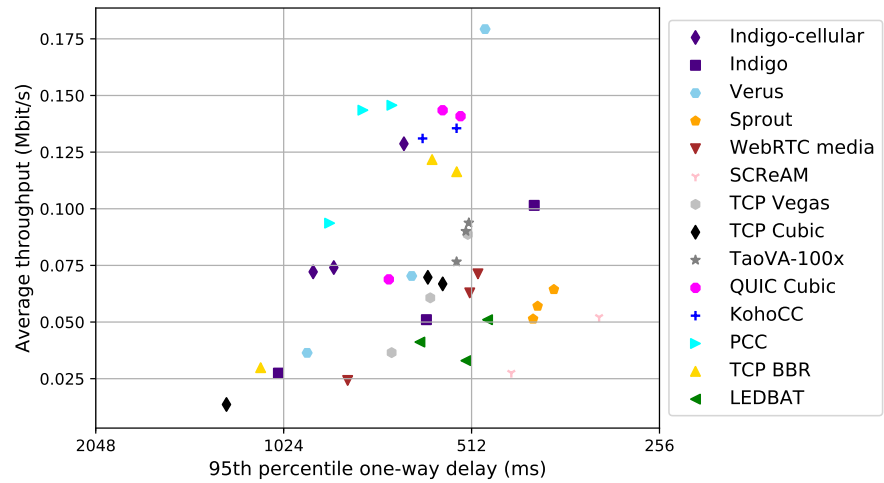
Git summary:

```
branch: indigos @ 46c7c812d4acb71eea4f5fb0b03b3657cea3062f
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
  M datagrump/sender.cc
third_party/genericCC @ f7ca42f251bf49b432bb71de6d13fa903515c366
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 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	0.09	749.33	37.37
TCP Cubic	3	0.05	811.91	32.43
LEDBAT	3	0.04	541.72	16.09
PCC	3	0.13	771.91	98.76
QUIC Cubic	3	0.12	599.27	44.52
SCReAM	2	0.04	381.02	7.31
WebRTC media	3	0.05	608.11	45.11
Sprout	3	0.06	395.79	18.03
TaoVA-100x	3	0.09	527.09	91.51
TCP Vegas	3	0.06	601.01	20.97
Verus	3	0.10	688.22	51.79
Indigo	3	0.06	685.05	66.77
Indigo-cellular	3	0.09	808.89	66.15
KohoCC	2	0.14	577.27	32.77

Run 1: Statistics of TCP BBR

Start at: 2017-09-22 09:44:22

End at: 2017-09-22 09:44:52

Local clock offset: 3.231 ms

Remote clock offset: -3.162 ms

# Below is generated by plot.py at 2017-09-22 11:14:08

# Datalink statistics

-- Total of 1 flow:

Average throughput: 0.03 Mbit/s

95th percentile per-packet one-way delay: 1114.766 ms

Loss rate: 42.12%

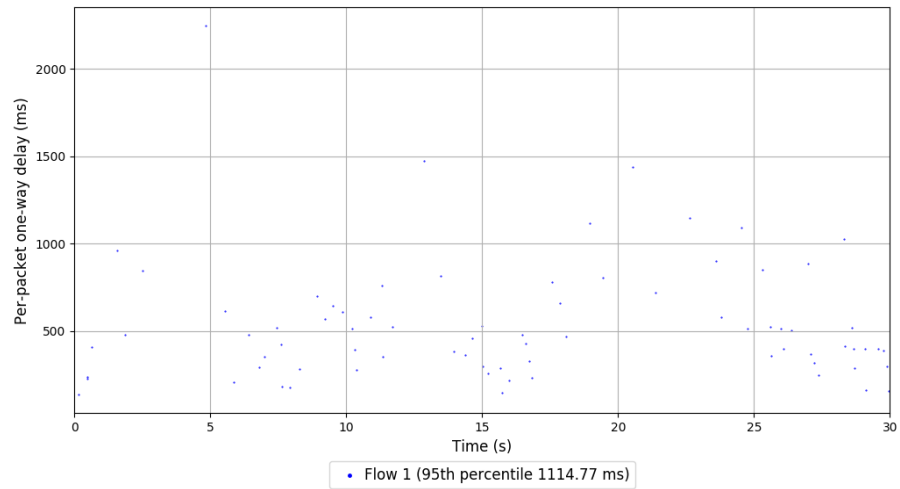
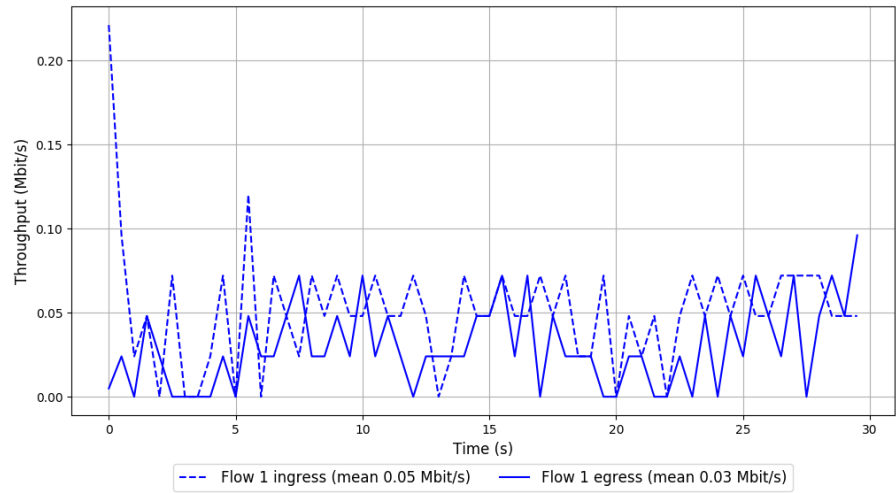
-- Flow 1:

Average throughput: 0.03 Mbit/s

95th percentile per-packet one-way delay: 1114.766 ms

Loss rate: 42.12%

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



Run 2: Statistics of TCP BBR

Start at: 2017-09-22 09:59:49

End at: 2017-09-22 10:00:19

Local clock offset: 1.939 ms

Remote clock offset: 2.944 ms

# Below is generated by plot.py at 2017-09-22 11:14:08

# Datalink statistics

-- Total of 1 flow:

Average throughput: 0.12 Mbit/s

95th percentile per-packet one-way delay: 540.934 ms

Loss rate: 31.01%

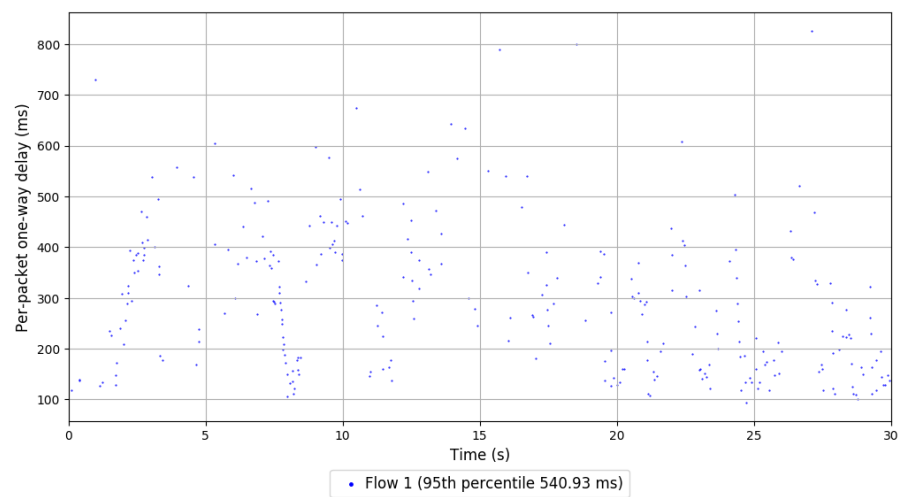
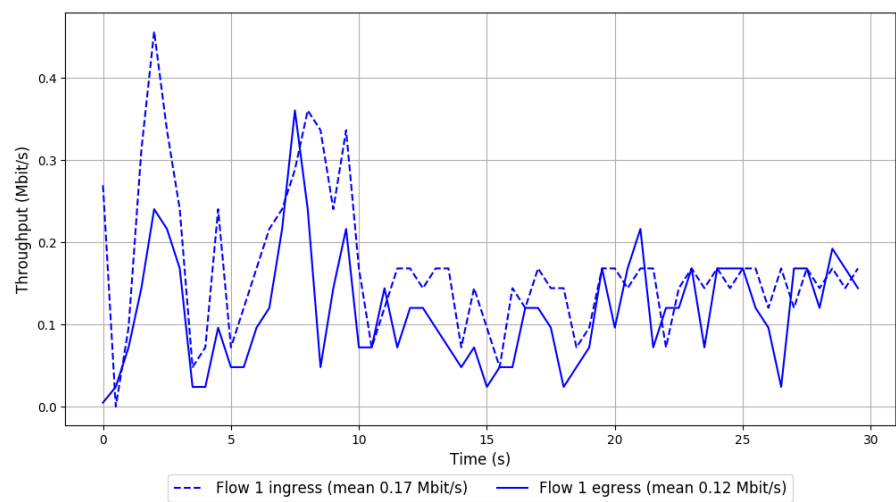
-- Flow 1:

Average throughput: 0.12 Mbit/s

95th percentile per-packet one-way delay: 540.934 ms

Loss rate: 31.01%

Run 2: Report of TCP BBR — Data Link



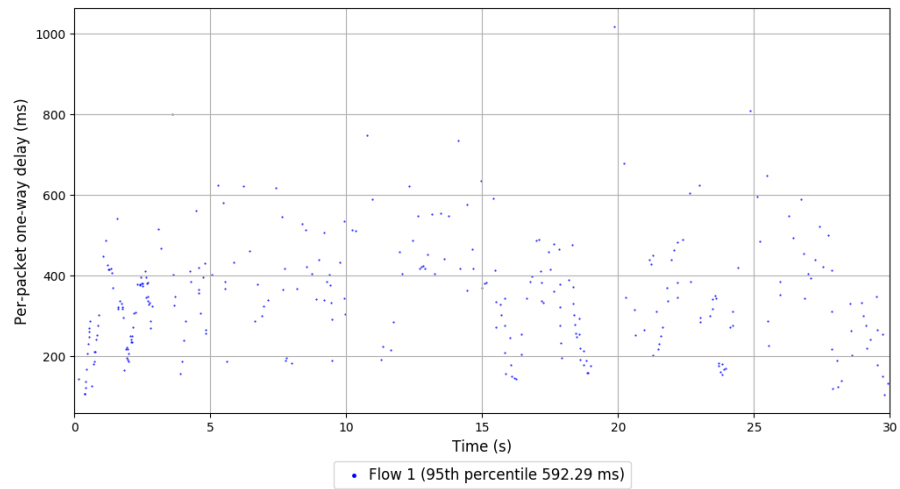
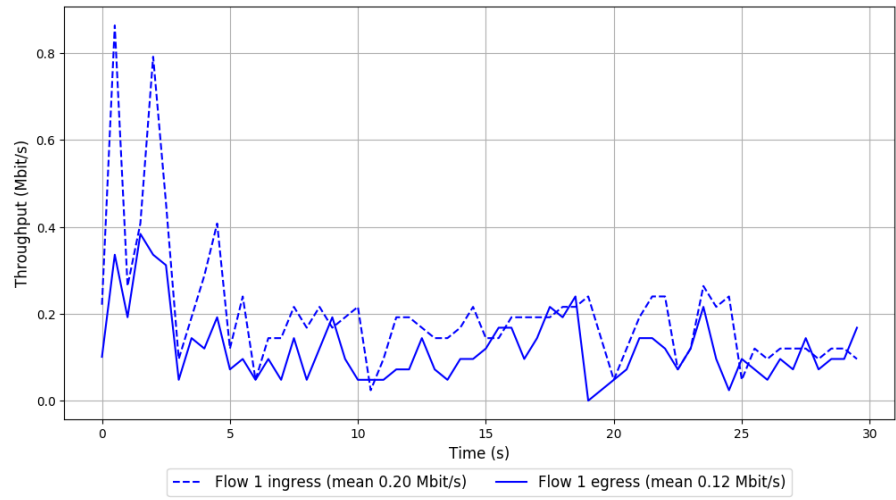
Run 3: Statistics of TCP BBR

Start at: 2017-09-22 10:15:10  
End at: 2017-09-22 10:15:40  
Local clock offset: 3.155 ms  
Remote clock offset: -6.182 ms

# Below is generated by plot.py at 2017-09-22 11:14:08  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.12 Mbit/s  
95th percentile per-packet one-way delay: 592.291 ms  
Loss rate: 38.97%  
-- Flow 1:  
Average throughput: 0.12 Mbit/s  
95th percentile per-packet one-way delay: 592.291 ms  
Loss rate: 38.97%



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

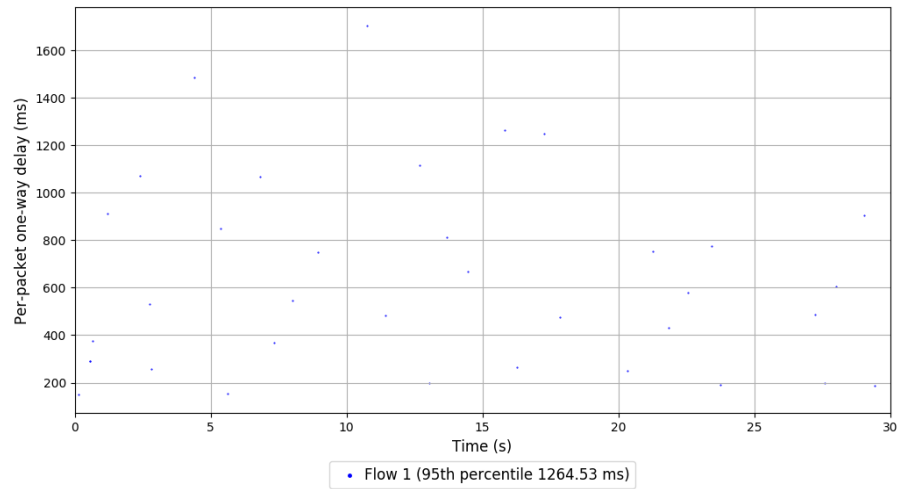
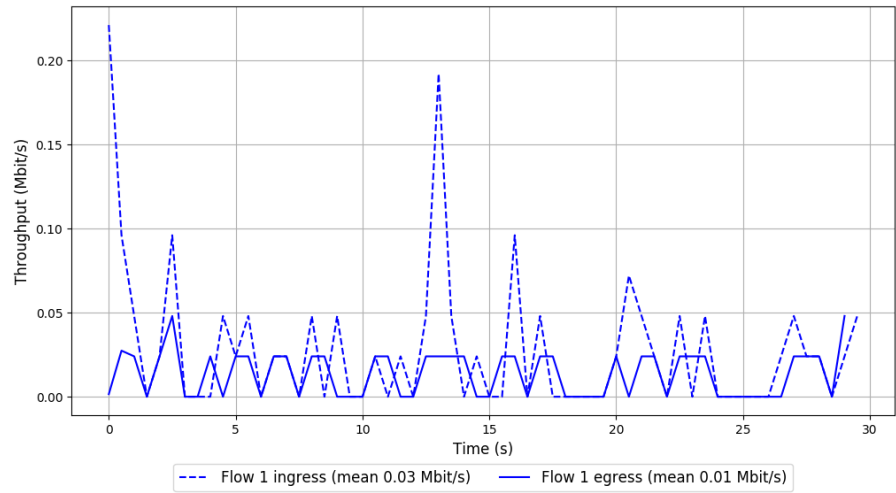


Run 1: Statistics of TCP Cubic

Start at: 2017-09-22 09:49:52  
End at: 2017-09-22 09:50:22  
Local clock offset: -0.046 ms  
Remote clock offset: -4.947 ms

# Below is generated by plot.py at 2017-09-22 11:14:08  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.01 Mbit/s  
95th percentile per-packet one-way delay: 1264.525 ms  
Loss rate: 53.37%  
-- Flow 1:  
Average throughput: 0.01 Mbit/s  
95th percentile per-packet one-way delay: 1264.525 ms  
Loss rate: 53.37%

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

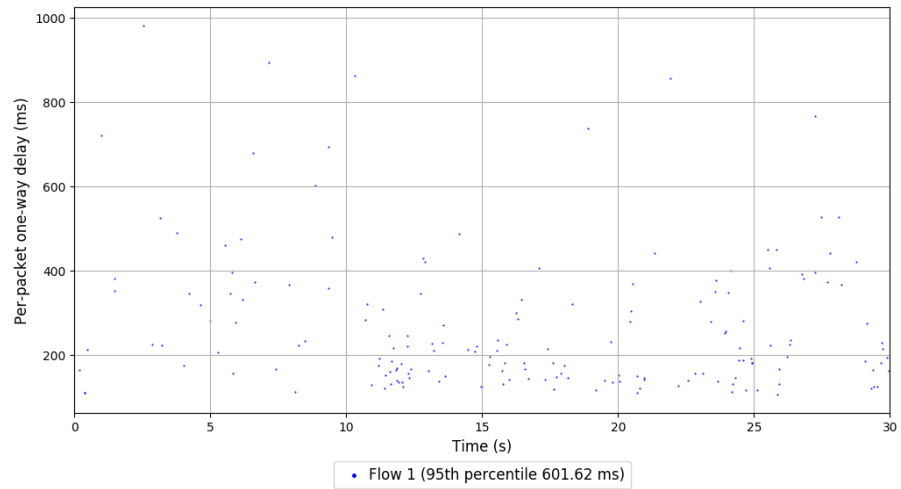
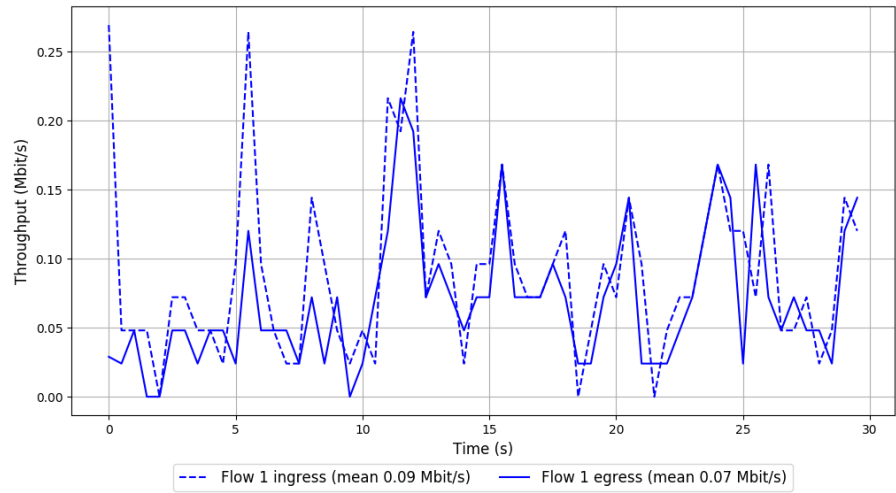


Run 2: Statistics of TCP Cubic

Start at: 2017-09-22 10:05:16  
End at: 2017-09-22 10:05:46  
Local clock offset: 0.067 ms  
Remote clock offset: -2.712 ms

# Below is generated by plot.py at 2017-09-22 11:14:08  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.07 Mbit/s  
95th percentile per-packet one-way delay: 601.620 ms  
Loss rate: 22.05%  
-- Flow 1:  
Average throughput: 0.07 Mbit/s  
95th percentile per-packet one-way delay: 601.620 ms  
Loss rate: 22.05%

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

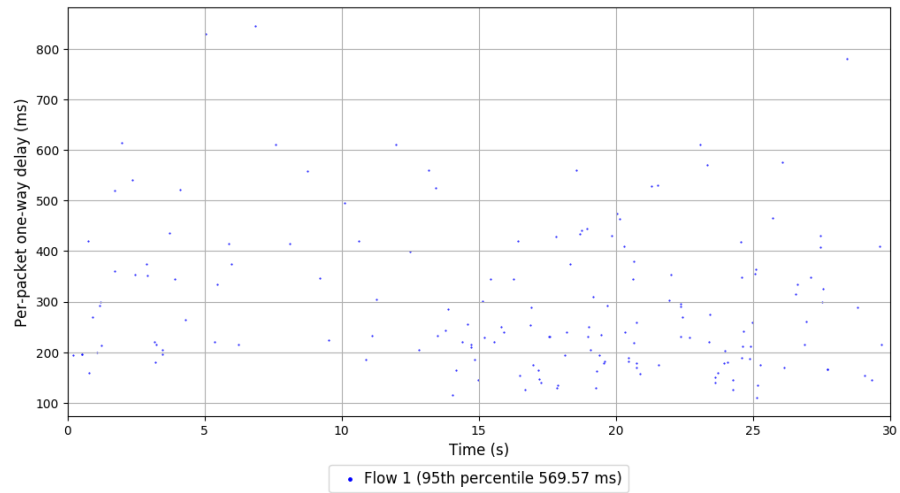
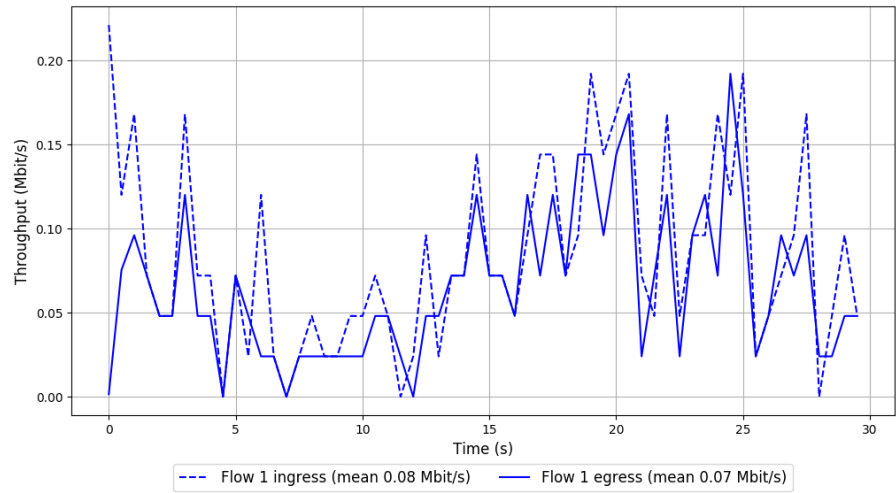


Run 3: Statistics of TCP Cubic

Start at: 2017-09-22 10:20:39  
End at: 2017-09-22 10:21:09  
Local clock offset: 2.922 ms  
Remote clock offset: -6.187 ms

# Below is generated by plot.py at 2017-09-22 11:14:08  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.07 Mbit/s  
95th percentile per-packet one-way delay: 569.571 ms  
Loss rate: 21.88%  
-- Flow 1:  
Average throughput: 0.07 Mbit/s  
95th percentile per-packet one-way delay: 569.571 ms  
Loss rate: 21.88%

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



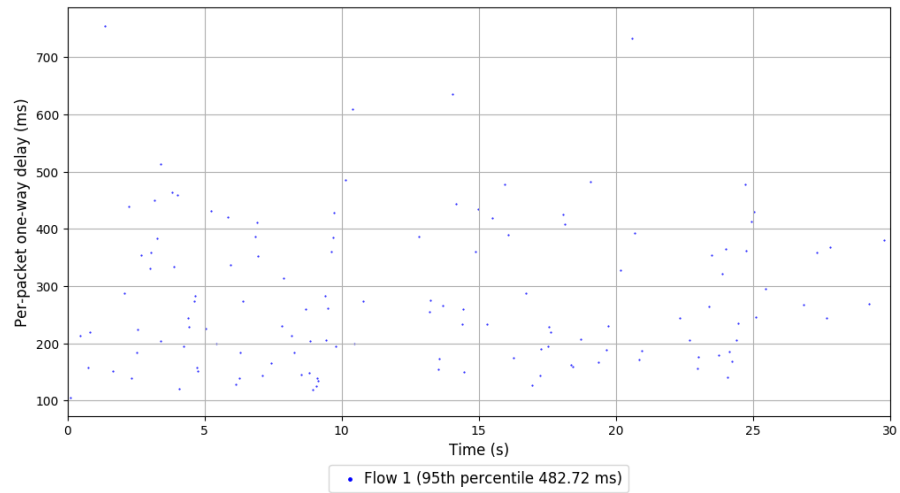
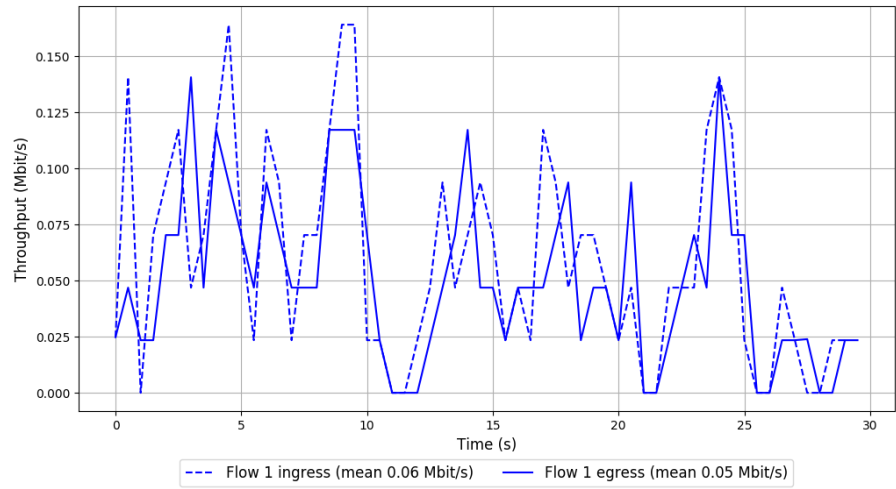
```
Run 1: Statistics of LEDBAT

Start at: 2017-09-22 09:53:12
End at: 2017-09-22 09:53:42
Local clock offset: 1.889 ms
Remote clock offset: -4.874 ms

# Below is generated by plot.py at 2017-09-22 11:14:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 482.722 ms
Loss rate: 13.99%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 482.722 ms
Loss rate: 13.99%
```



## Run 1: Report of LEDBAT — Data Link

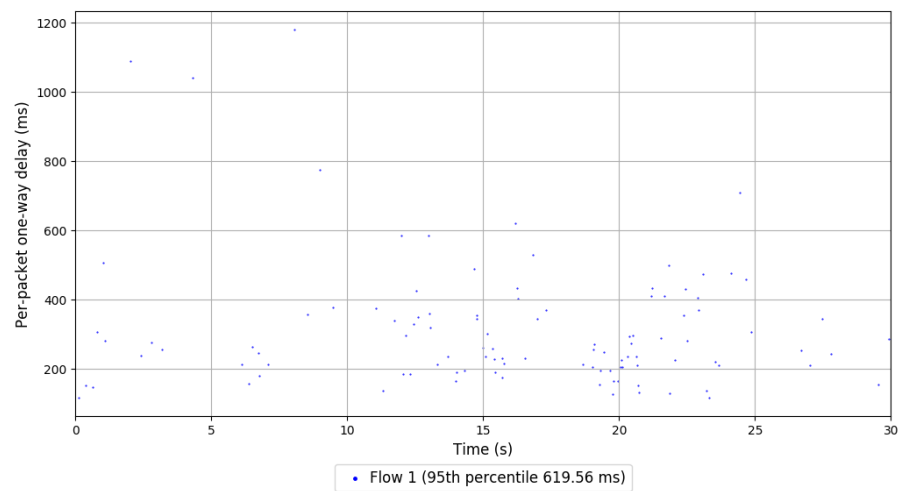
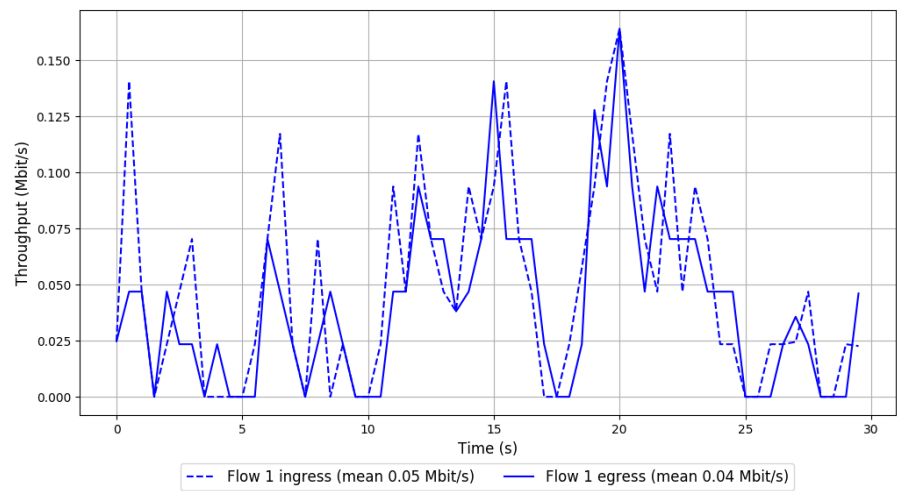


Run 2: Statistics of LEDBAT

Start at: 2017-09-22 10:08:35  
End at: 2017-09-22 10:09:05  
Local clock offset: 2.695 ms  
Remote clock offset: -4.801 ms

# Below is generated by plot.py at 2017-09-22 11:14:08  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.04 Mbit/s  
95th percentile per-packet one-way delay: 619.556 ms  
Loss rate: 15.04%  
-- Flow 1:  
Average throughput: 0.04 Mbit/s  
95th percentile per-packet one-way delay: 619.556 ms  
Loss rate: 15.04%

Run 2: Report of LEDBAT — Data Link

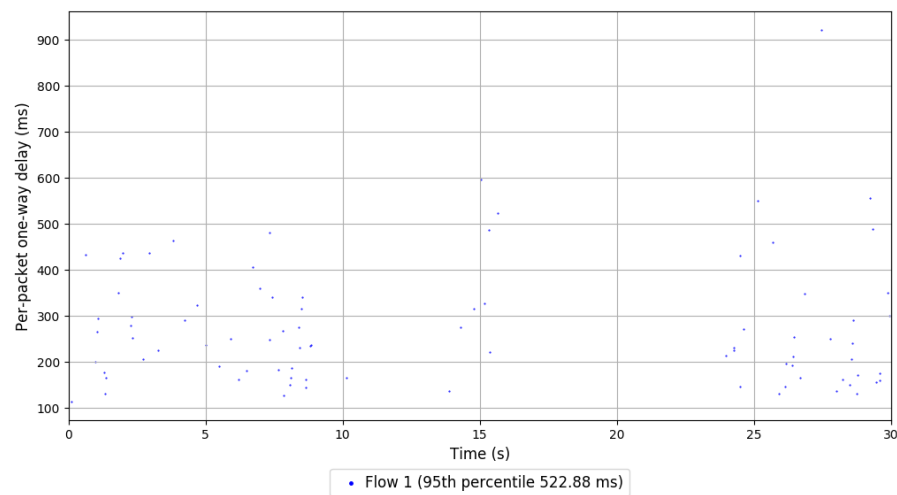
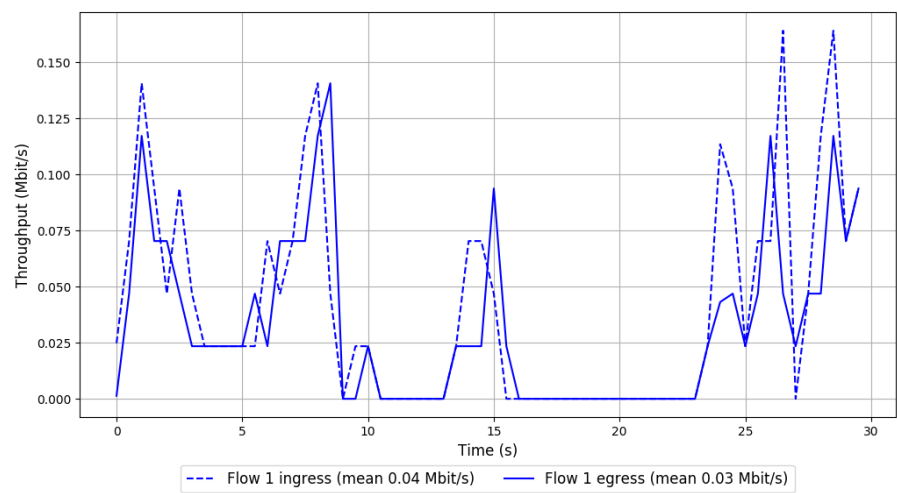


Run 3: Statistics of LEDBAT

Start at: 2017-09-22 10:24:01  
End at: 2017-09-22 10:24:31  
Local clock offset: 2.093 ms  
Remote clock offset: -5.711 ms

# Below is generated by plot.py at 2017-09-22 11:14:11  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.03 Mbit/s  
95th percentile per-packet one-way delay: 522.877 ms  
Loss rate: 19.25%  
-- Flow 1:  
Average throughput: 0.03 Mbit/s  
95th percentile per-packet one-way delay: 522.877 ms  
Loss rate: 19.25%

Run 3: Report of LEDBAT — Data Link

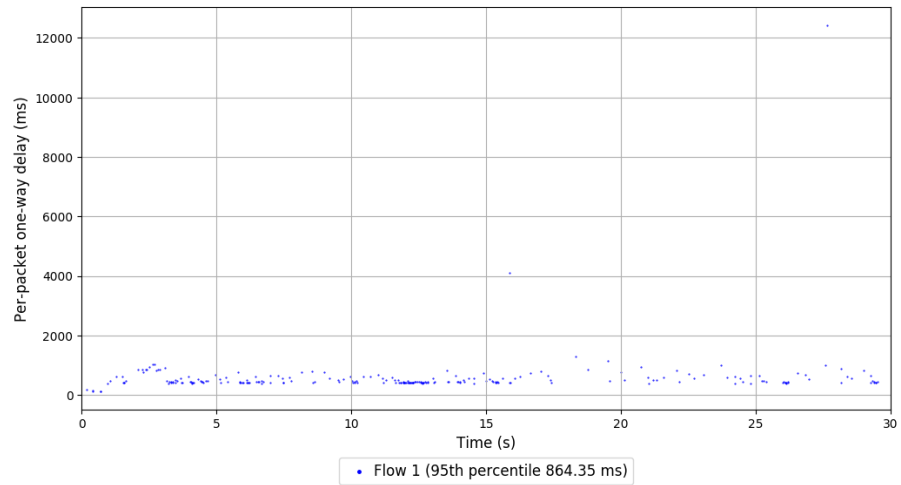
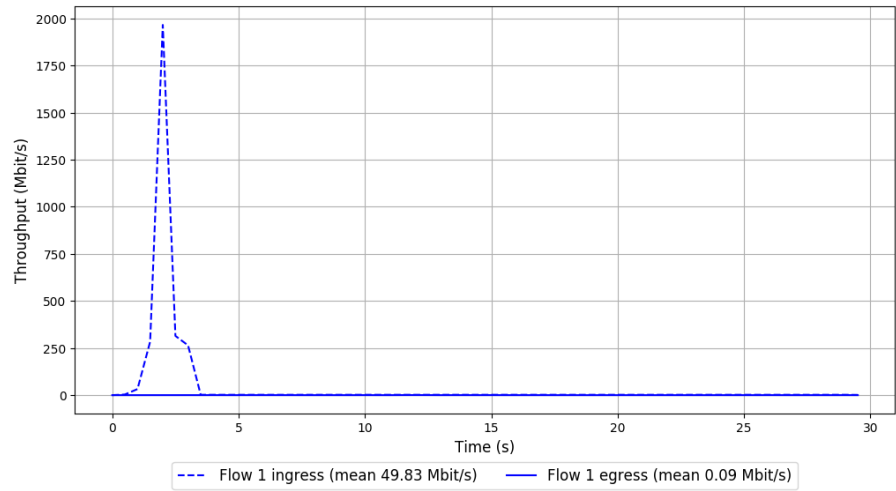


Run 1: Statistics of PCC

Start at: 2017-09-22 09:50:57  
End at: 2017-09-22 09:51:27  
Local clock offset: 2.522 ms  
Remote clock offset: -5.874 ms

# Below is generated by plot.py at 2017-09-22 11:14:30  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.09 Mbit/s  
95th percentile per-packet one-way delay: 864.350 ms  
Loss rate: 99.82%  
-- Flow 1:  
Average throughput: 0.09 Mbit/s  
95th percentile per-packet one-way delay: 864.350 ms  
Loss rate: 99.82%

## Run 1: Report of PCC — Data Link



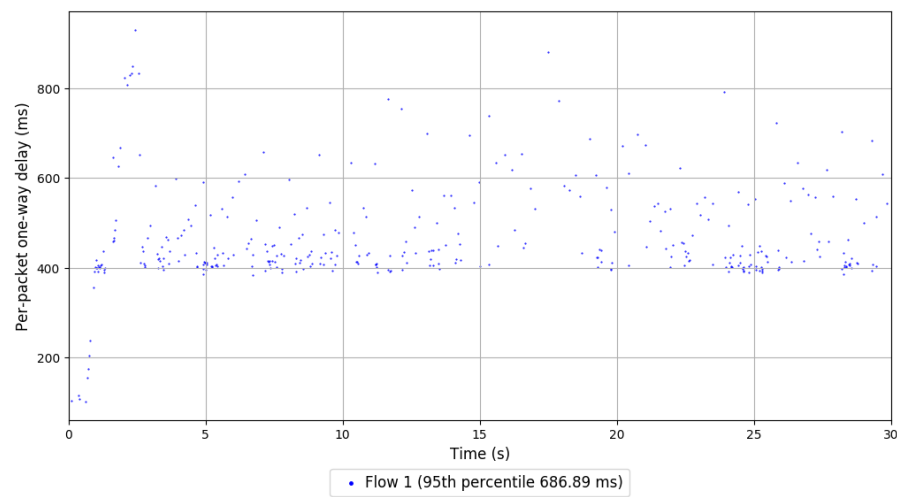
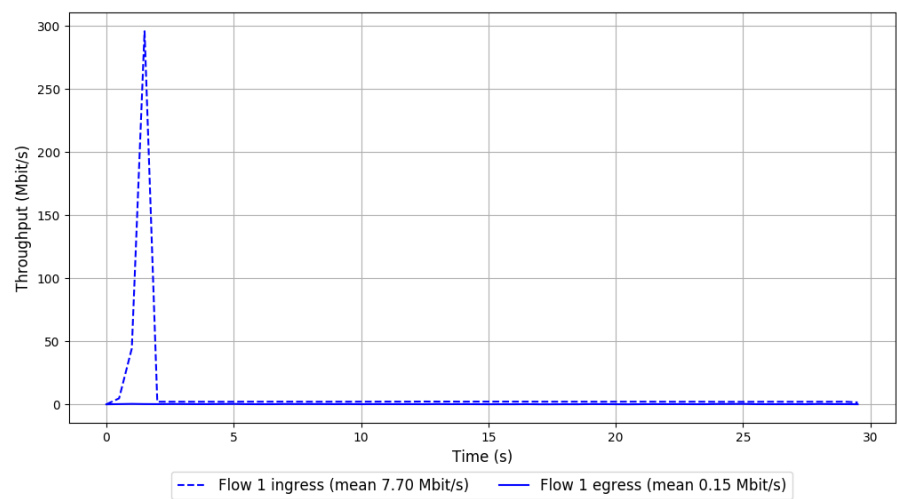
Run 2: Statistics of PCC

Start at: 2017-09-22 10:06:22  
End at: 2017-09-22 10:06:52  
Local clock offset: -0.213 ms  
Remote clock offset: -3.394 ms

# Below is generated by plot.py at 2017-09-22 11:14:30  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.15 Mbit/s  
95th percentile per-packet one-way delay: 686.887 ms  
Loss rate: 98.11%  
-- Flow 1:  
Average throughput: 0.15 Mbit/s  
95th percentile per-packet one-way delay: 686.887 ms  
Loss rate: 98.11%



Run 2: Report of PCC — Data Link

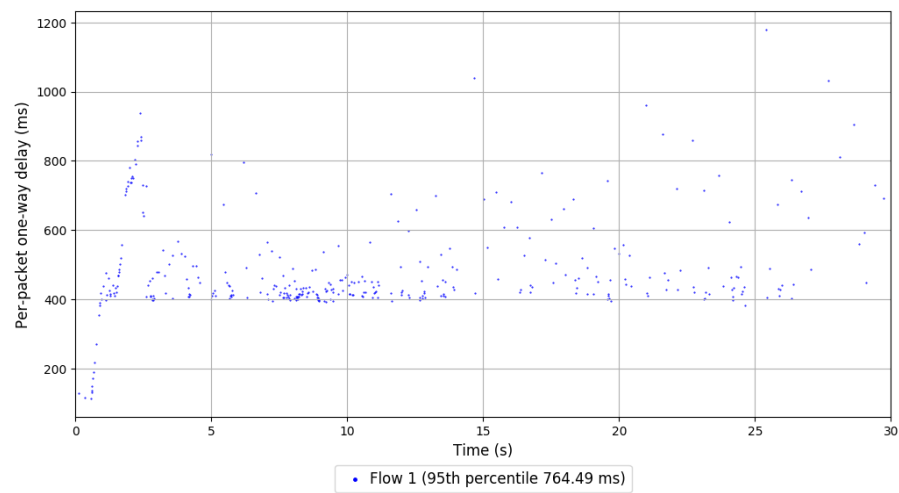
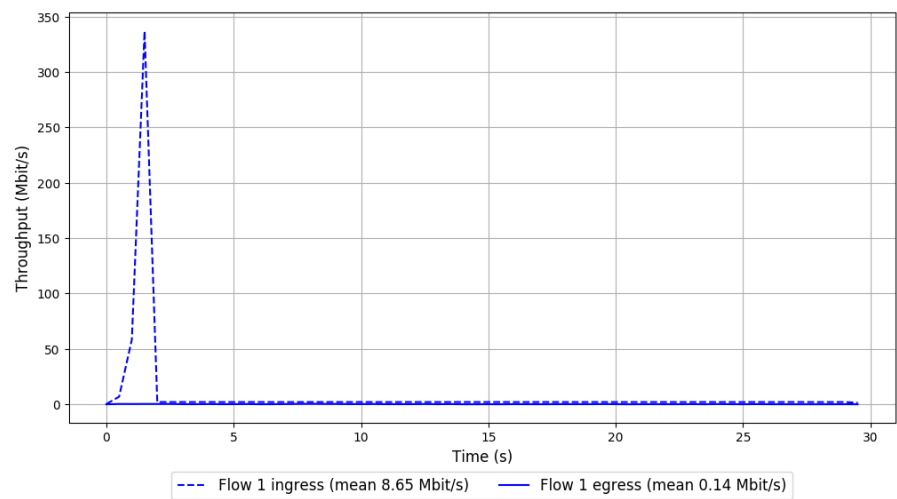


Run 3: Statistics of PCC

Start at: 2017-09-22 10:21:49  
End at: 2017-09-22 10:22:19  
Local clock offset: 0.228 ms  
Remote clock offset: -6.644 ms

# Below is generated by plot.py at 2017-09-22 11:14:30  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.14 Mbit/s  
95th percentile per-packet one-way delay: 764.493 ms  
Loss rate: 98.35%  
-- Flow 1:  
Average throughput: 0.14 Mbit/s  
95th percentile per-packet one-way delay: 764.493 ms  
Loss rate: 98.35%

Run 3: Report of PCC — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2017-09-22 09:54:18

End at: 2017-09-22 09:54:48

Local clock offset: 1.971 ms

Remote clock offset: -5.411 ms

# Below is generated by plot.py at 2017-09-22 11:14:30

# Datalink statistics

-- Total of 1 flow:

Average throughput: 0.14 Mbit/s

95th percentile per-packet one-way delay: 569.726 ms

Loss rate: 39.97%

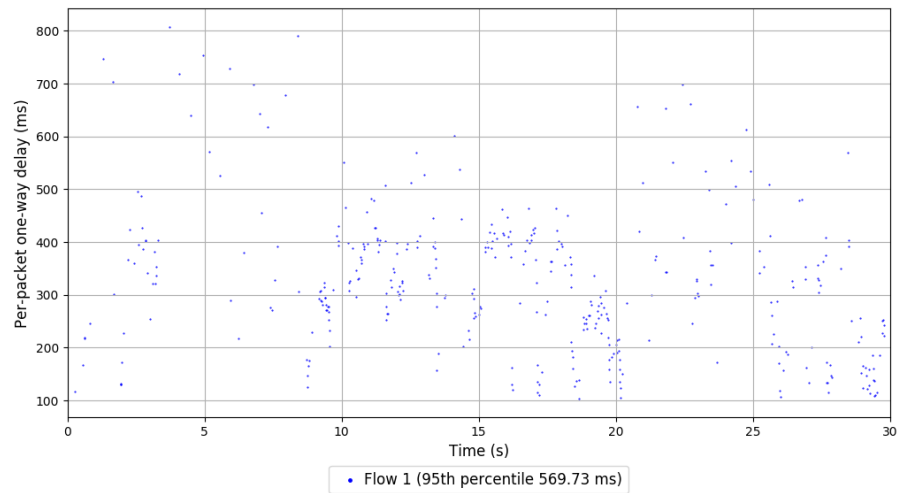
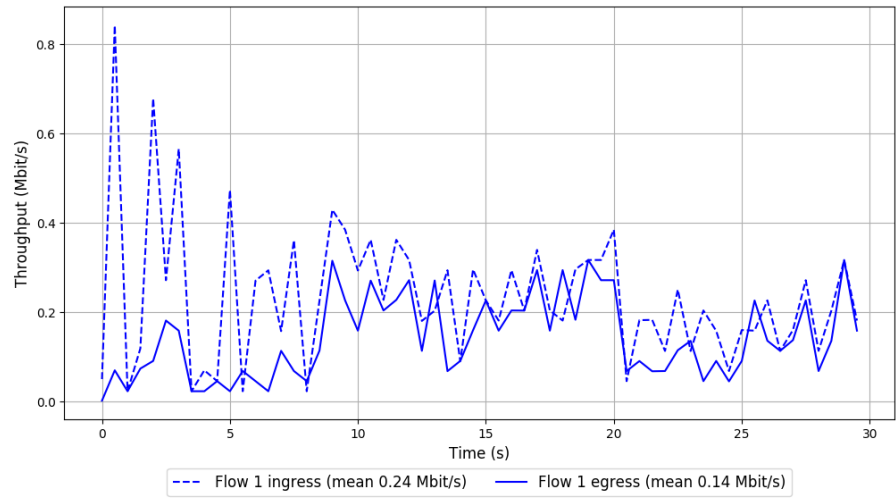
-- Flow 1:

Average throughput: 0.14 Mbit/s

95th percentile per-packet one-way delay: 569.726 ms

Loss rate: 39.97%

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



Run 2: Statistics of QUIC Cubic

Start at: 2017-09-22 10:09:41

End at: 2017-09-22 10:10:11

Local clock offset: 0.114 ms

Remote clock offset: 1.415 ms

# Below is generated by plot.py at 2017-09-22 11:14:30

# Datalink statistics

-- Total of 1 flow:

Average throughput: 0.07 Mbit/s

95th percentile per-packet one-way delay: 694.805 ms

Loss rate: 54.77%

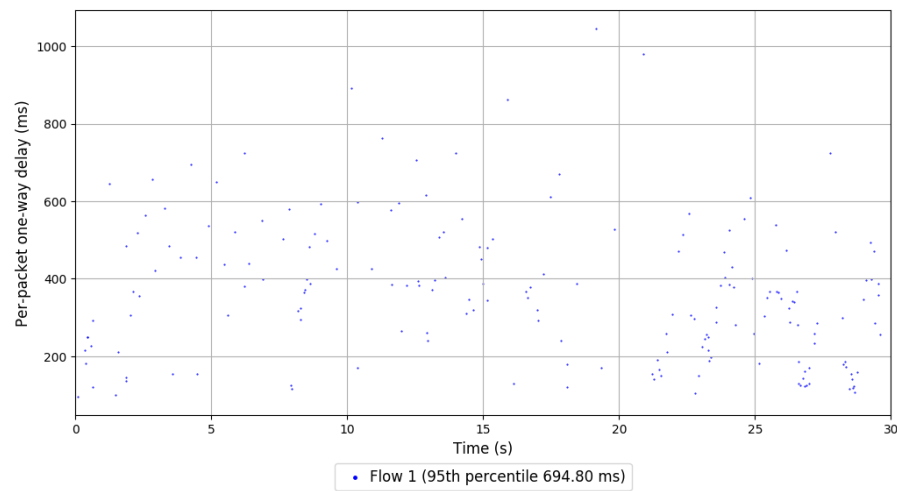
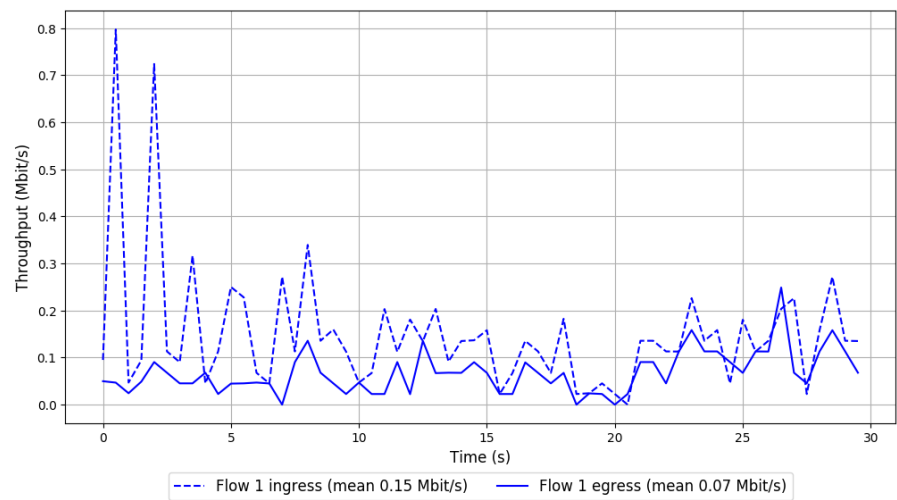
-- Flow 1:

Average throughput: 0.07 Mbit/s

95th percentile per-packet one-way delay: 694.805 ms

Loss rate: 54.77%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2017-09-22 10:25:07

End at: 2017-09-22 10:25:37

Local clock offset: 1.096 ms

Remote clock offset: -5.827 ms

# Below is generated by plot.py at 2017-09-22 11:14:30

# Datalink statistics

-- Total of 1 flow:

Average throughput: 0.14 Mbit/s

95th percentile per-packet one-way delay: 533.277 ms

Loss rate: 38.82%

-- Flow 1:

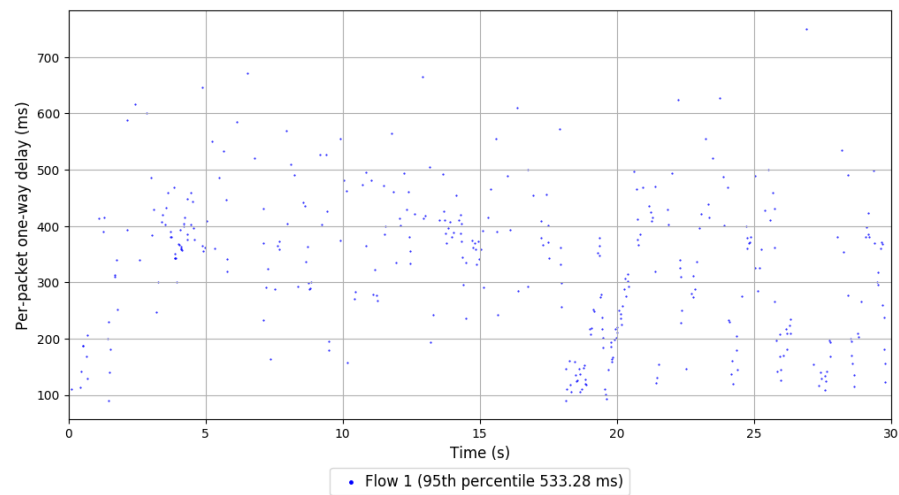
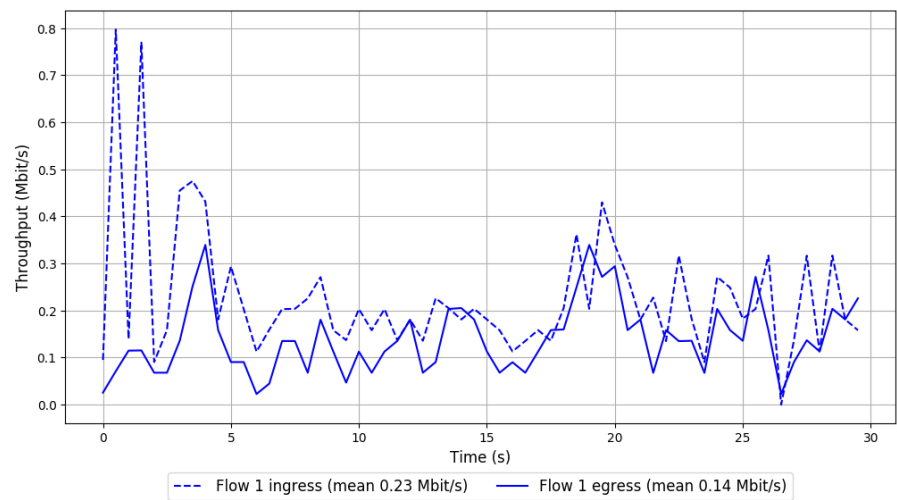
Average throughput: 0.14 Mbit/s

95th percentile per-packet one-way delay: 533.277 ms

Loss rate: 38.82%



Run 3: Report of QUIC Cubic — Data Link



Run 1: Statistics of SCReAM

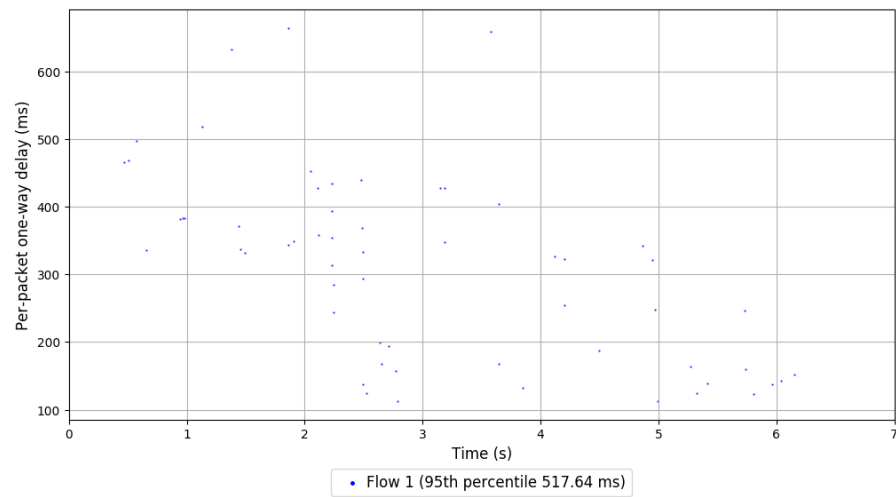
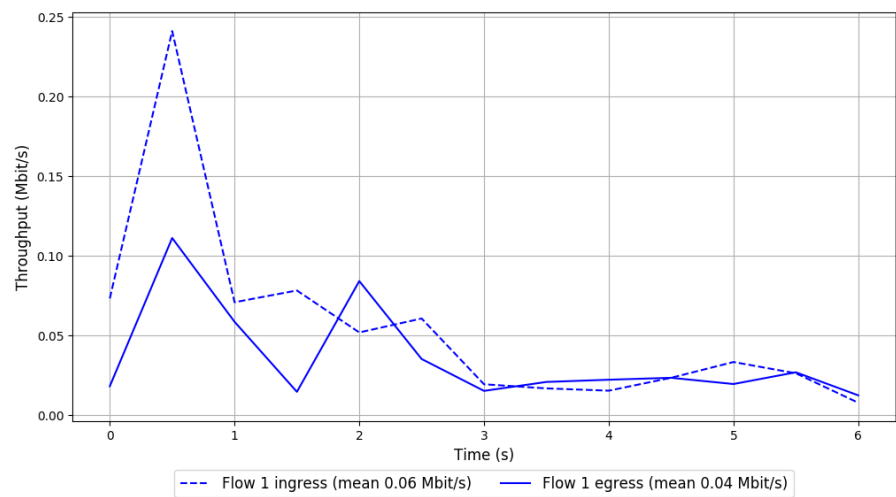
Start at: 2017-09-22 09:47:41

End at: 2017-09-22 09:48:11

Local clock offset: -0.208 ms

Remote clock offset: -5.745 ms

Run 1: Report of SReAM — Data Link

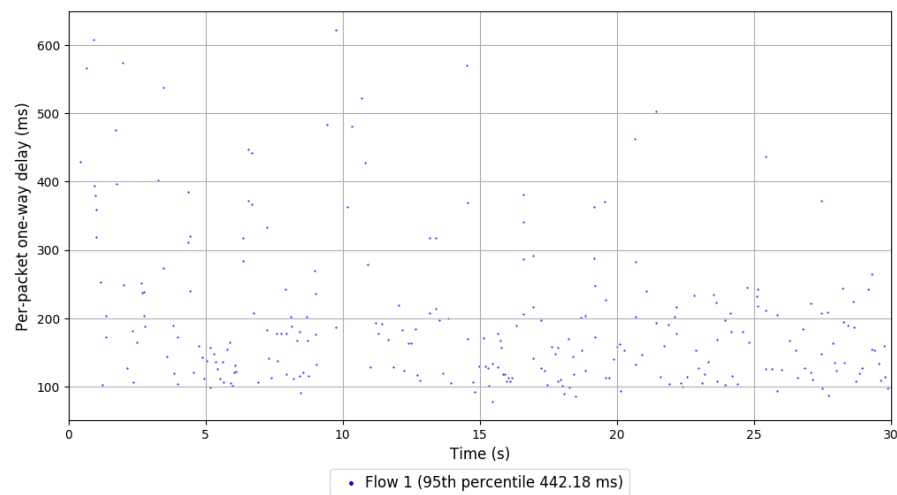
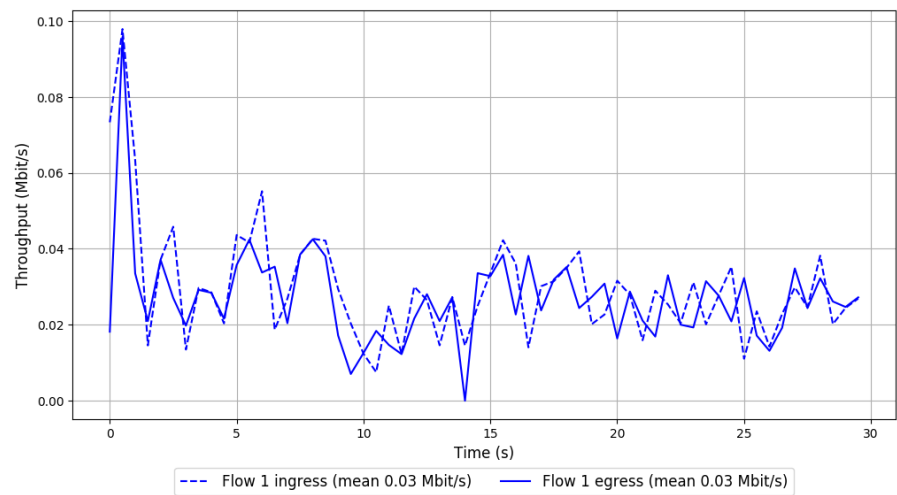


Run 2: Statistics of SCReAM

Start at: 2017-09-22 10:03:06  
End at: 2017-09-22 10:03:36  
Local clock offset: -0.309 ms  
Remote clock offset: -2.205 ms

# Below is generated by plot.py at 2017-09-22 11:14:30  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.03 Mbit/s  
95th percentile per-packet one-way delay: 442.179 ms  
Loss rate: 8.93%  
-- Flow 1:  
Average throughput: 0.03 Mbit/s  
95th percentile per-packet one-way delay: 442.179 ms  
Loss rate: 8.93%

Run 2: Report of SReAM — Data Link

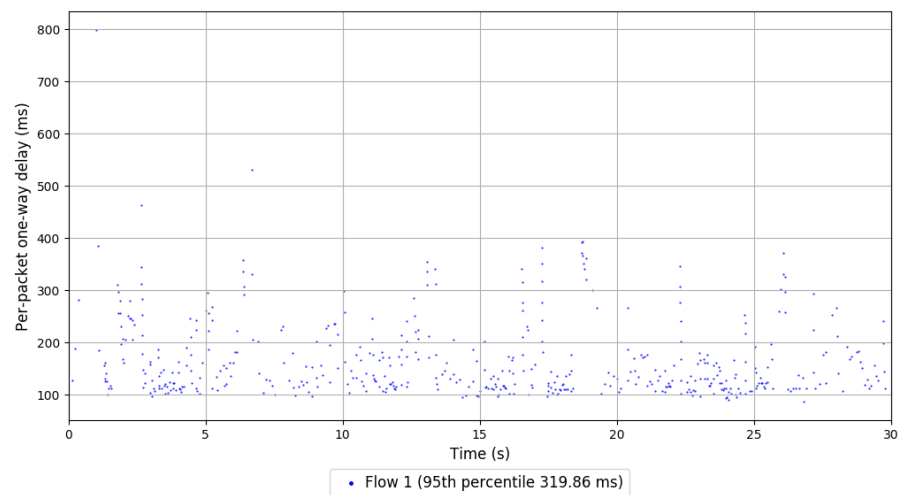
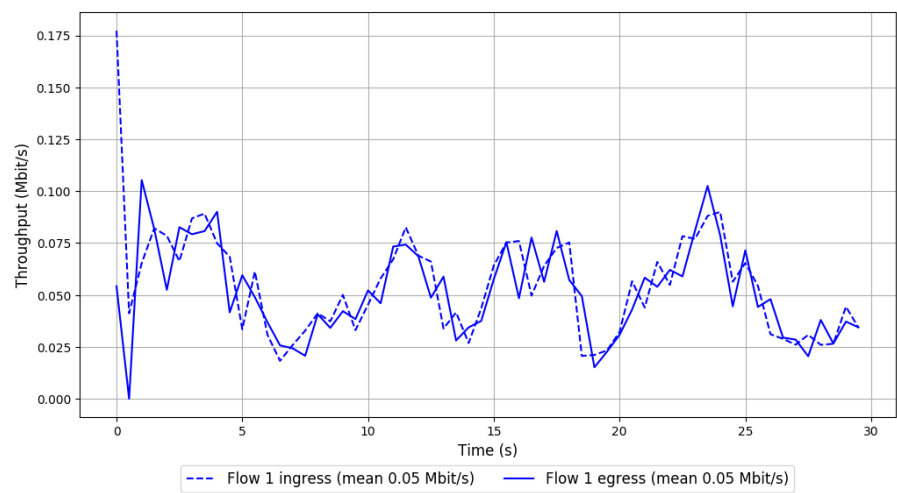


Run 3: Statistics of SCReAM

Start at: 2017-09-22 10:18:27  
End at: 2017-09-22 10:18:57  
Local clock offset: 3.262 ms  
Remote clock offset: -1.041 ms

# Below is generated by plot.py at 2017-09-22 11:14:30  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.05 Mbit/s  
95th percentile per-packet one-way delay: 319.863 ms  
Loss rate: 5.69%  
-- Flow 1:  
Average throughput: 0.05 Mbit/s  
95th percentile per-packet one-way delay: 319.863 ms  
Loss rate: 5.69%

Run 3: Report of SReAM — Data Link



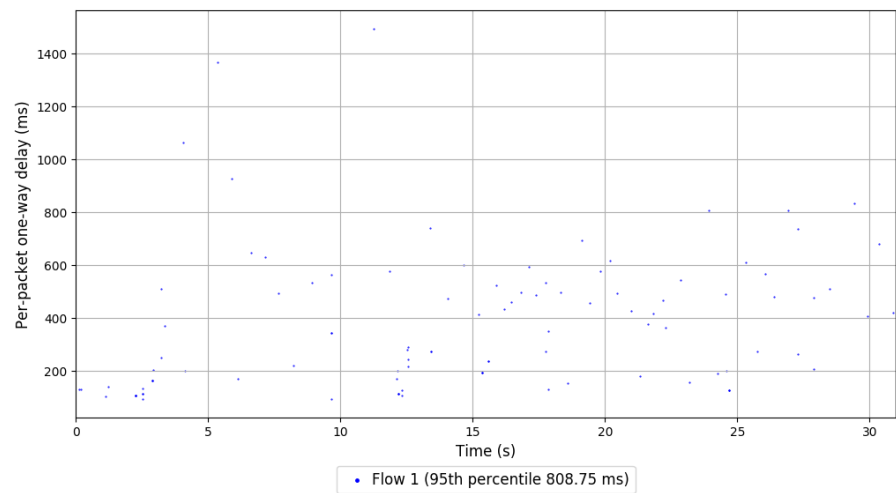
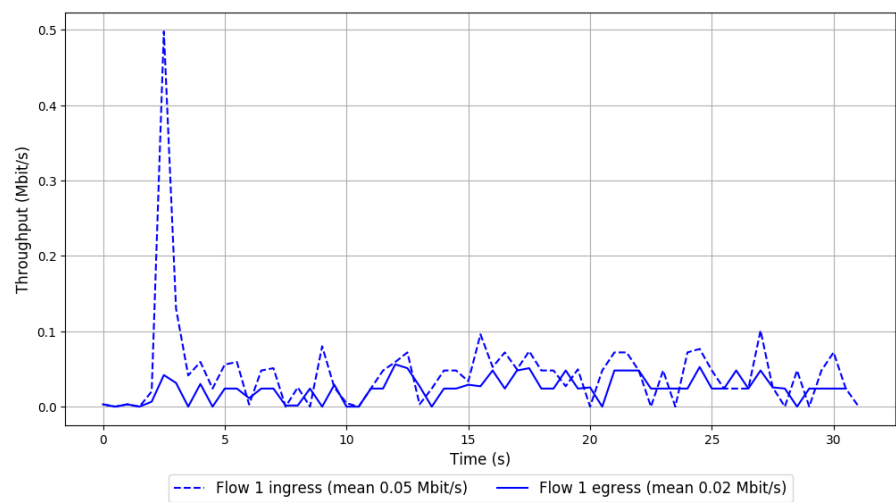
Run 1: Statistics of WebRTC media

Start at: 2017-09-22 09:48:46  
End at: 2017-09-22 09:49:16  
Local clock offset: 0.658 ms  
Remote clock offset: -5.952 ms

# Below is generated by plot.py at 2017-09-22 11:14:30  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.02 Mbit/s  
95th percentile per-packet one-way delay: 808.755 ms  
Loss rate: 48.39%  
-- Flow 1:  
Average throughput: 0.02 Mbit/s  
95th percentile per-packet one-way delay: 808.755 ms  
Loss rate: 48.39%



Run 1: Report of WebRTC media — Data Link

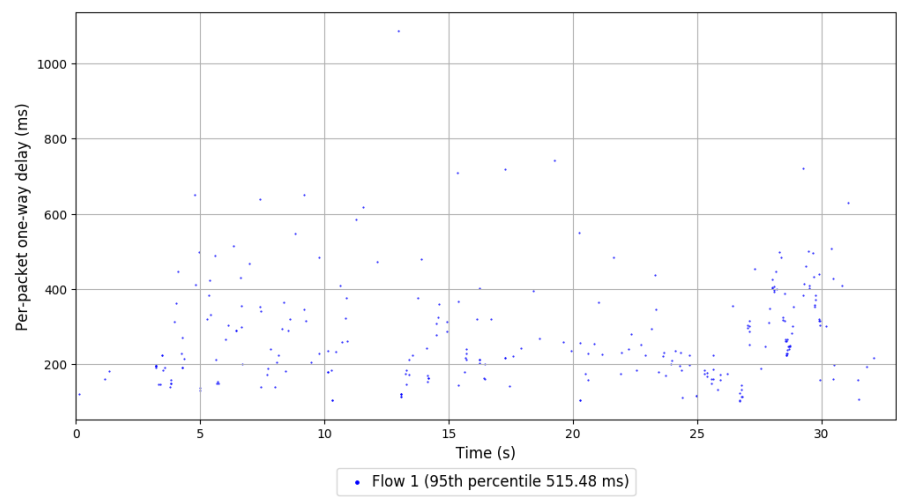
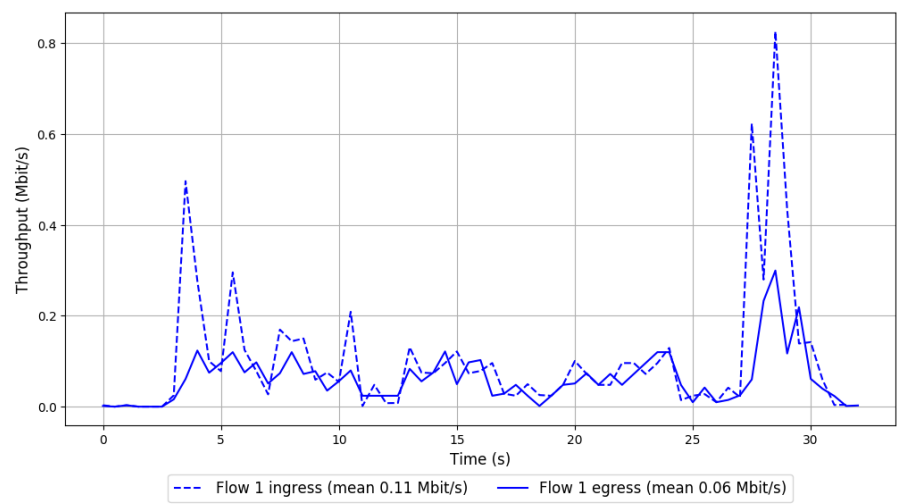


Run 2: Statistics of WebRTC media

Start at: 2017-09-22 10:04:11  
End at: 2017-09-22 10:04:41  
Local clock offset: 2.268 ms  
Remote clock offset: -6.308 ms

# Below is generated by plot.py at 2017-09-22 11:14:30  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.06 Mbit/s  
95th percentile per-packet one-way delay: 515.475 ms  
Loss rate: 40.77%  
-- Flow 1:  
Average throughput: 0.06 Mbit/s  
95th percentile per-packet one-way delay: 515.475 ms  
Loss rate: 40.77%

Run 2: Report of WebRTC media — Data Link

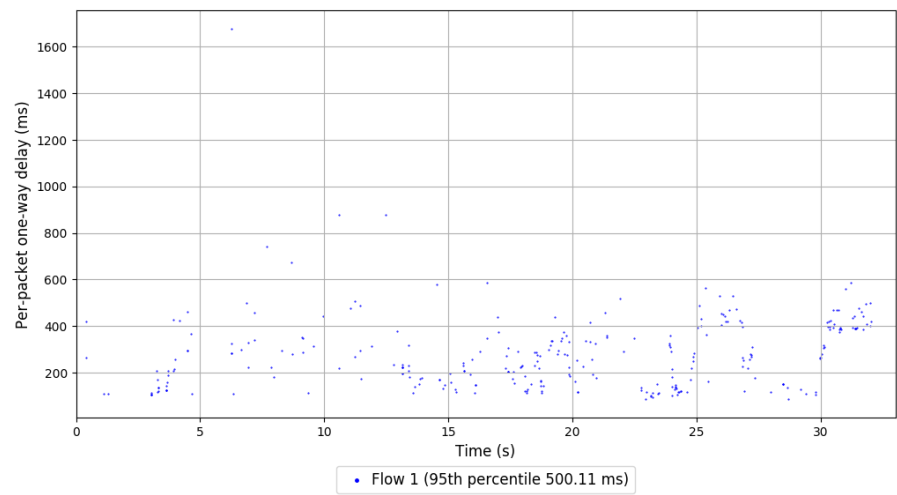
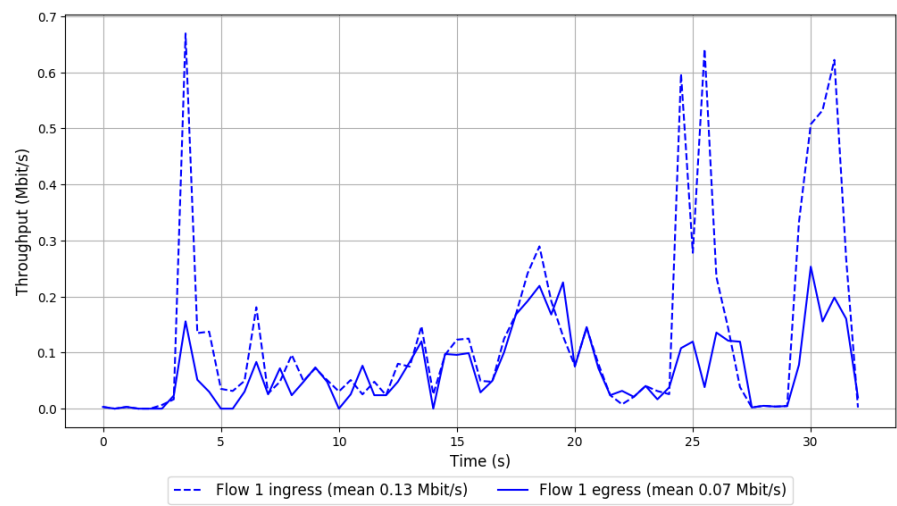


Run 3: Statistics of WebRTC media

Start at: 2017-09-22 10:19:32  
End at: 2017-09-22 10:20:03  
Local clock offset: 2.899 ms  
Remote clock offset: -4.701 ms

# Below is generated by plot.py at 2017-09-22 11:14:30  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.07 Mbit/s  
95th percentile per-packet one-way delay: 500.105 ms  
Loss rate: 46.17%  
-- Flow 1:  
Average throughput: 0.07 Mbit/s  
95th percentile per-packet one-way delay: 500.105 ms  
Loss rate: 46.17%

Run 3: Report of WebRTC media — Data Link

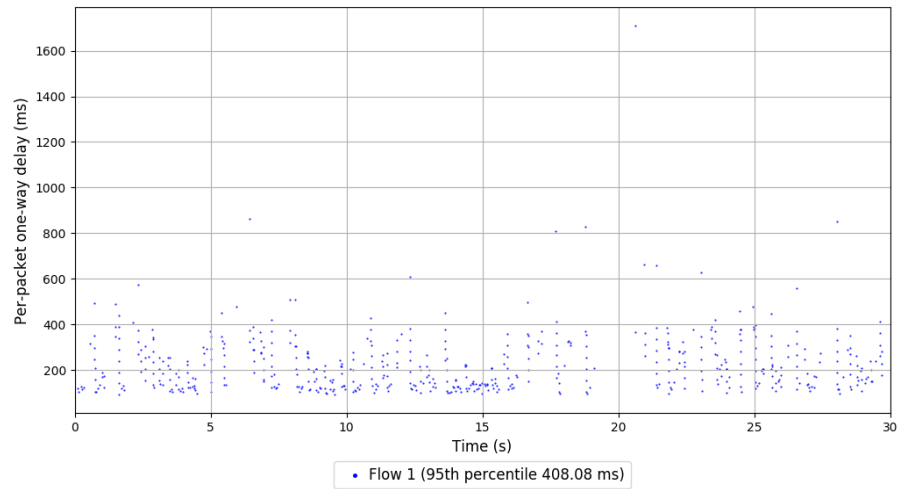
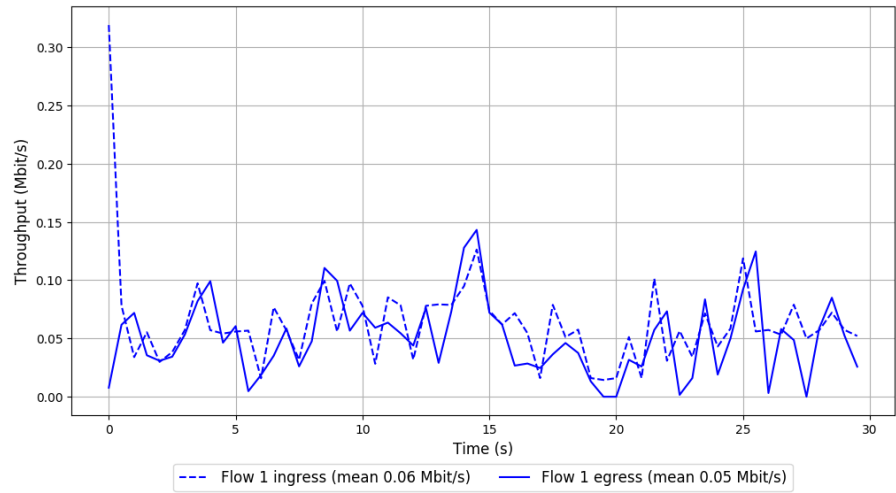


Run 1: Statistics of Sprout

Start at: 2017-09-22 09:43:16  
End at: 2017-09-22 09:43:46  
Local clock offset: 1.431 ms  
Remote clock offset: -10.304 ms

# Below is generated by plot.py at 2017-09-22 11:14:30  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.05 Mbit/s  
95th percentile per-packet one-way delay: 408.085 ms  
Loss rate: 20.78%  
-- Flow 1:  
Average throughput: 0.05 Mbit/s  
95th percentile per-packet one-way delay: 408.085 ms  
Loss rate: 20.78%

## Run 1: Report of Sprout — Data Link



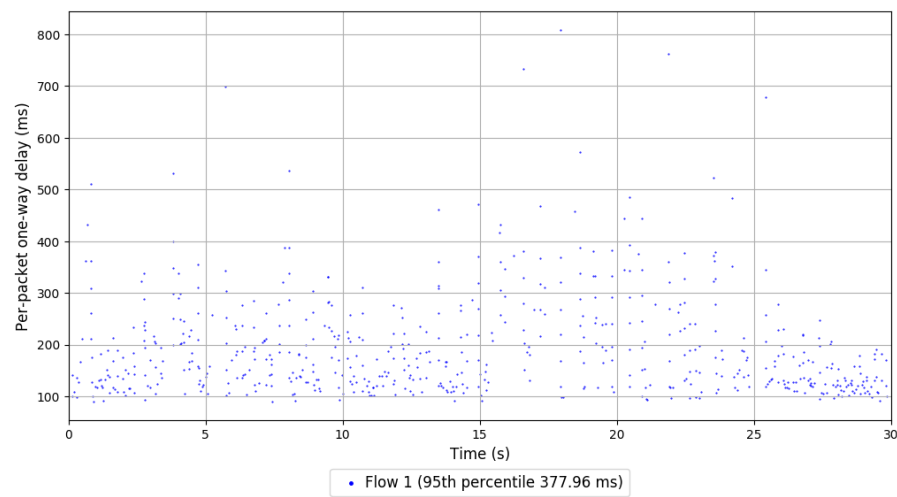
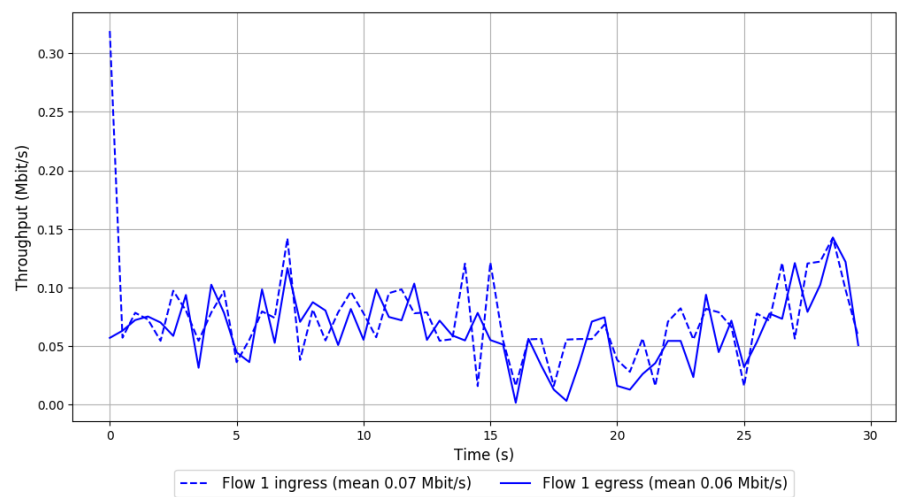
Run 2: Statistics of Sprout

Start at: 2017-09-22 09:58:42  
End at: 2017-09-22 09:59:12  
Local clock offset: 2.461 ms  
Remote clock offset: -3.965 ms

# Below is generated by plot.py at 2017-09-22 11:14:30  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.06 Mbit/s  
95th percentile per-packet one-way delay: 377.959 ms  
Loss rate: 14.47%  
-- Flow 1:  
Average throughput: 0.06 Mbit/s  
95th percentile per-packet one-way delay: 377.959 ms  
Loss rate: 14.47%



Run 2: Report of Sprout — Data Link

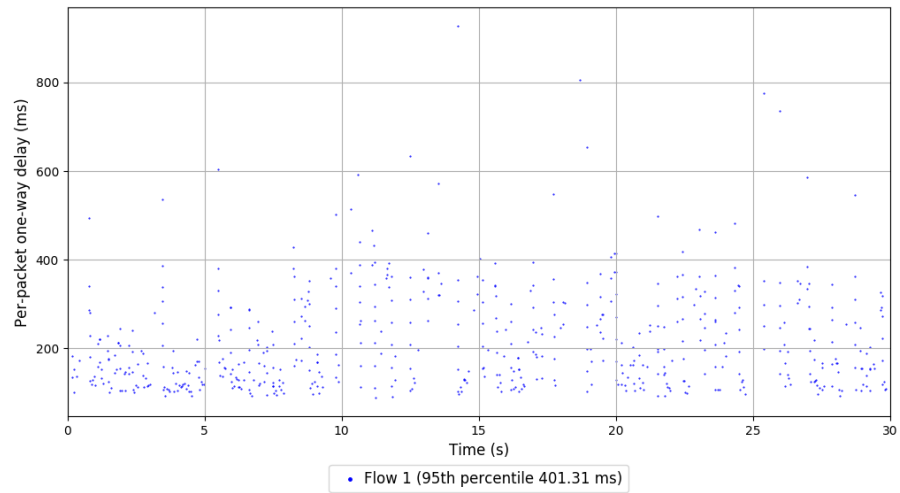
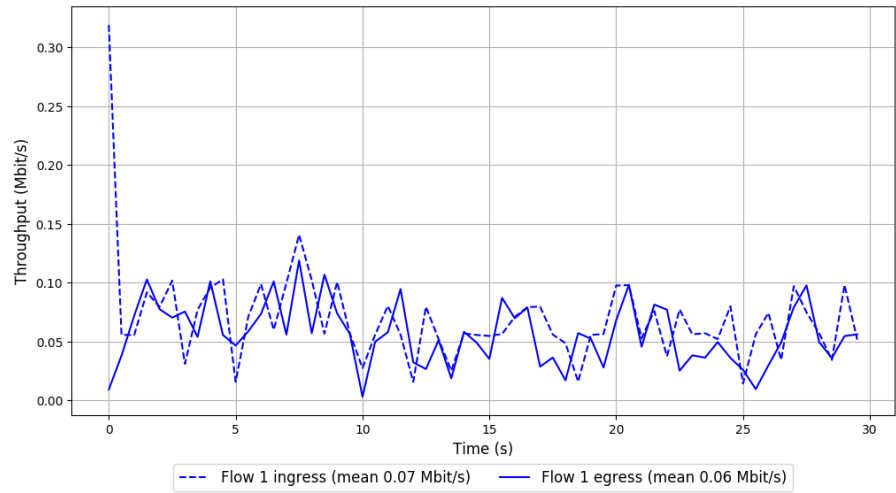


Run 3: Statistics of Sprout

Start at: 2017-09-22 10:14:04  
End at: 2017-09-22 10:14:34  
Local clock offset: 2.919 ms  
Remote clock offset: -7.322 ms

# Below is generated by plot.py at 2017-09-22 11:14:30  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.06 Mbit/s  
95th percentile per-packet one-way delay: 401.311 ms  
Loss rate: 18.85%  
-- Flow 1:  
Average throughput: 0.06 Mbit/s  
95th percentile per-packet one-way delay: 401.311 ms  
Loss rate: 18.85%

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



Run 1: Statistics of TaoVA-100x

Start at: 2017-09-22 09:56:30

End at: 2017-09-22 09:57:00

Local clock offset: 2.562 ms

Remote clock offset: -5.689 ms

# Below is generated by plot.py at 2017-09-22 11:14:30

# Datalink statistics

-- Total of 1 flow:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 541.144 ms

Loss rate: 92.56%

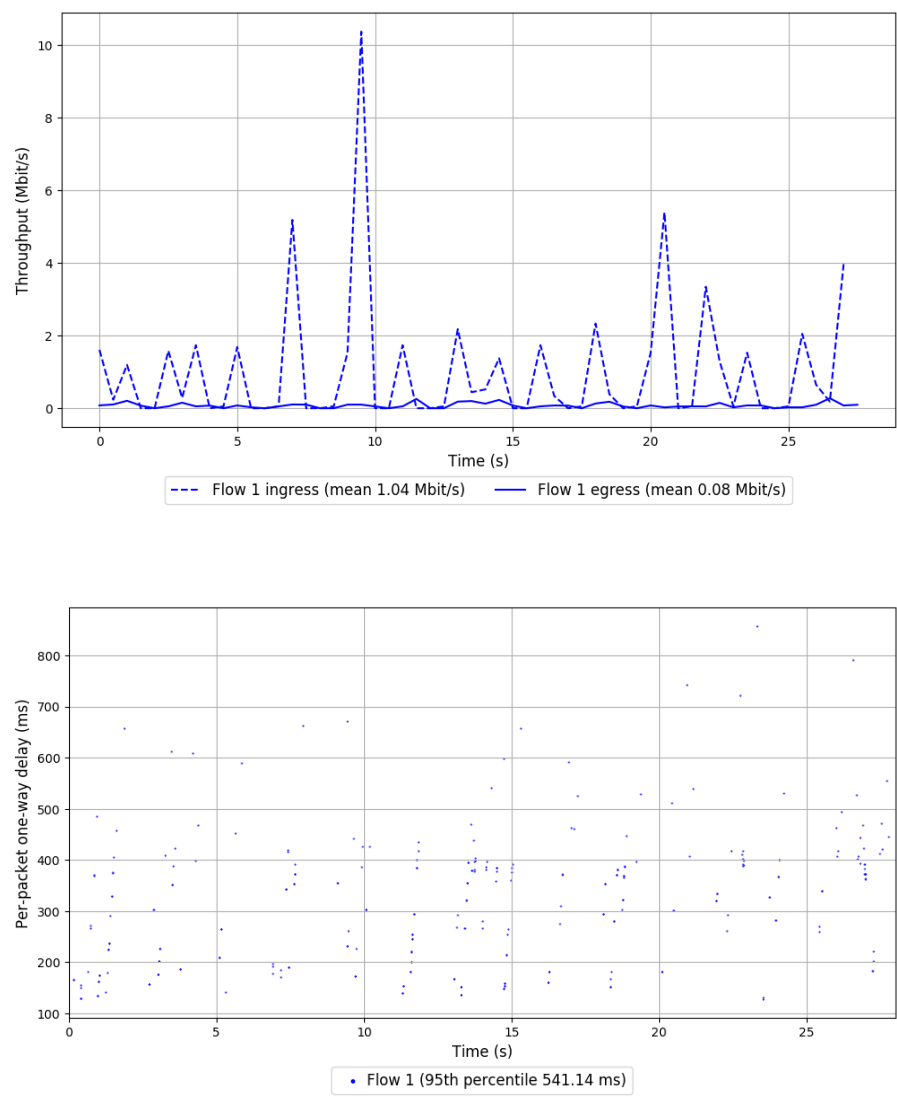
-- Flow 1:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 541.144 ms

Loss rate: 92.56%

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



Run 2: Statistics of TaoVA-100x

Start at: 2017-09-22 10:11:53

End at: 2017-09-22 10:12:23

Local clock offset: 1.547 ms

Remote clock offset: -6.373 ms

# Below is generated by plot.py at 2017-09-22 11:14:30

# Datalink statistics

-- Total of 1 flow:

Average throughput: 0.09 Mbit/s

95th percentile per-packet one-way delay: 517.256 ms

Loss rate: 90.85%

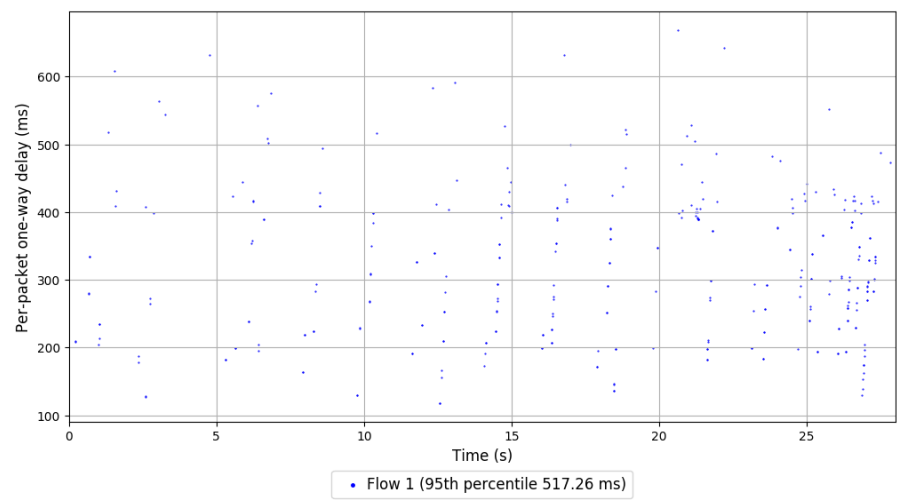
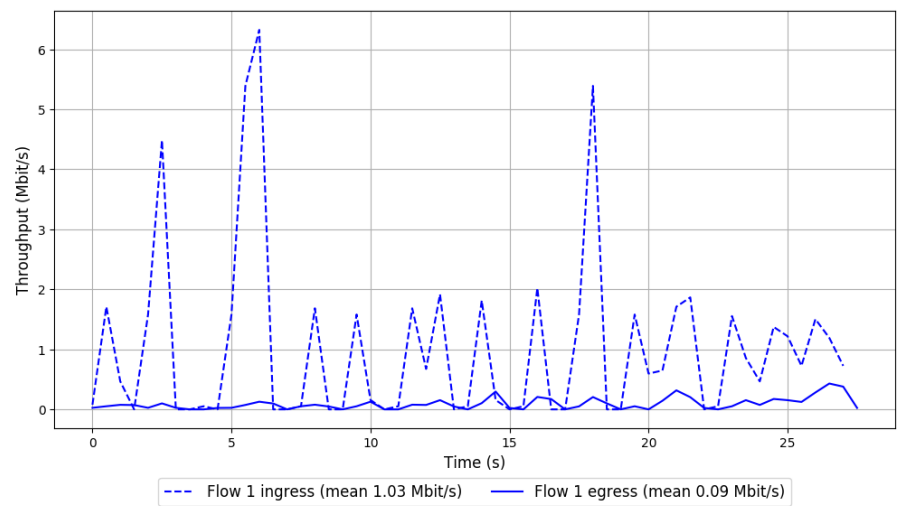
-- Flow 1:

Average throughput: 0.09 Mbit/s

95th percentile per-packet one-way delay: 517.256 ms

Loss rate: 90.85%

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



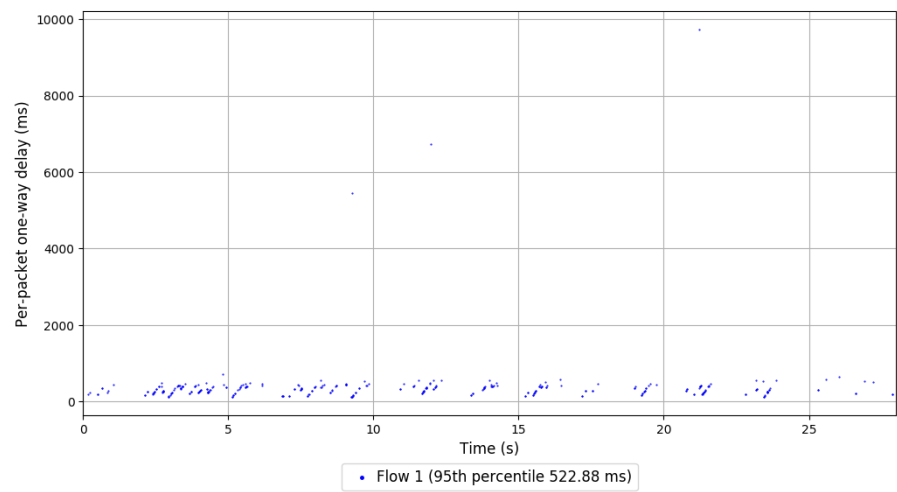
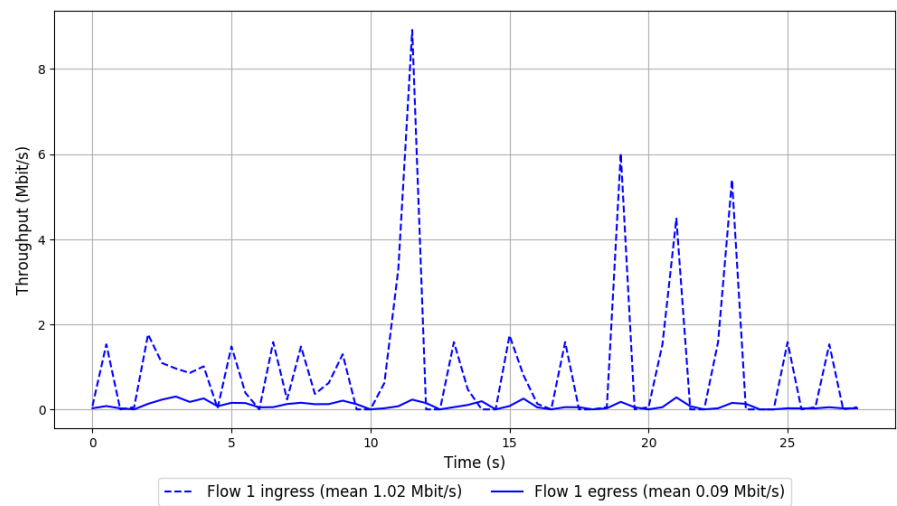
Run 3: Statistics of TaoVA-100x

Start at: 2017-09-22 10:27:17  
End at: 2017-09-22 10:27:47  
Local clock offset: 2.032 ms  
Remote clock offset: -5.351 ms

# Below is generated by plot.py at 2017-09-22 11:14:30  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.09 Mbit/s  
95th percentile per-packet one-way delay: 522.883 ms  
Loss rate: 91.13%  
-- Flow 1:  
Average throughput: 0.09 Mbit/s  
95th percentile per-packet one-way delay: 522.883 ms  
Loss rate: 91.13%



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

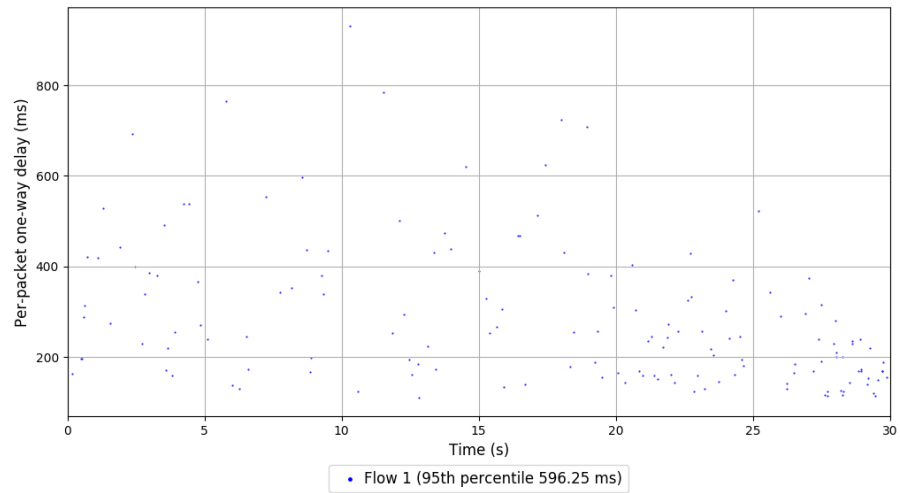
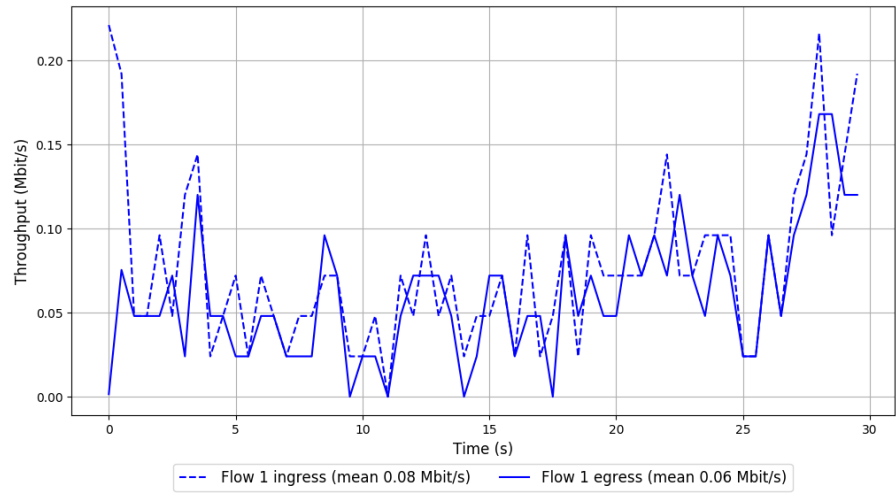


Run 1: Statistics of TCP Vegas

Start at: 2017-09-22 09:52:07  
End at: 2017-09-22 09:52:37  
Local clock offset: -0.435 ms  
Remote clock offset: -6.048 ms

# Below is generated by plot.py at 2017-09-22 11:14:30  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.06 Mbit/s  
95th percentile per-packet one-way delay: 596.250 ms  
Loss rate: 21.03%  
-- Flow 1:  
Average throughput: 0.06 Mbit/s  
95th percentile per-packet one-way delay: 596.250 ms  
Loss rate: 21.03%

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



Run 2: Statistics of TCP Vegas

Start at: 2017-09-22 10:07:30

End at: 2017-09-22 10:08:00

Local clock offset: 2.755 ms

Remote clock offset: -0.68 ms

# Below is generated by plot.py at 2017-09-22 11:14:30

# Datalink statistics

-- Total of 1 flow:

Average throughput: 0.09 Mbit/s

95th percentile per-packet one-way delay: 519.190 ms

Loss rate: 15.10%

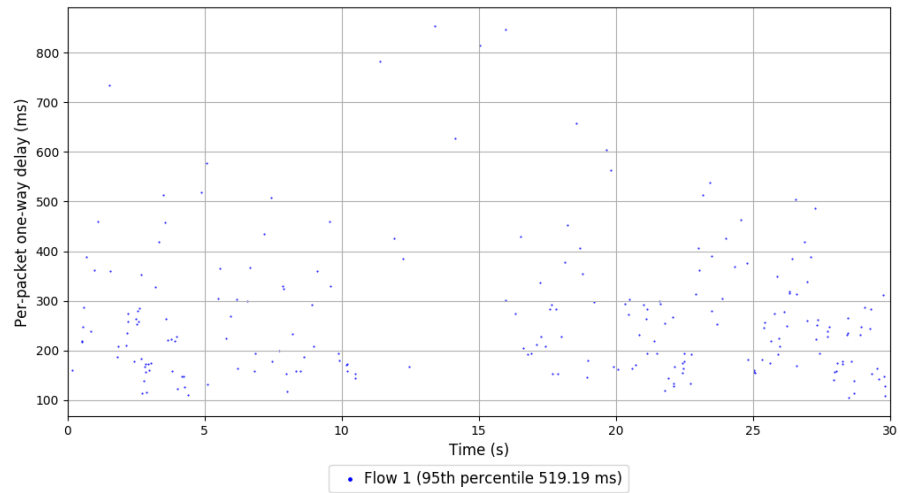
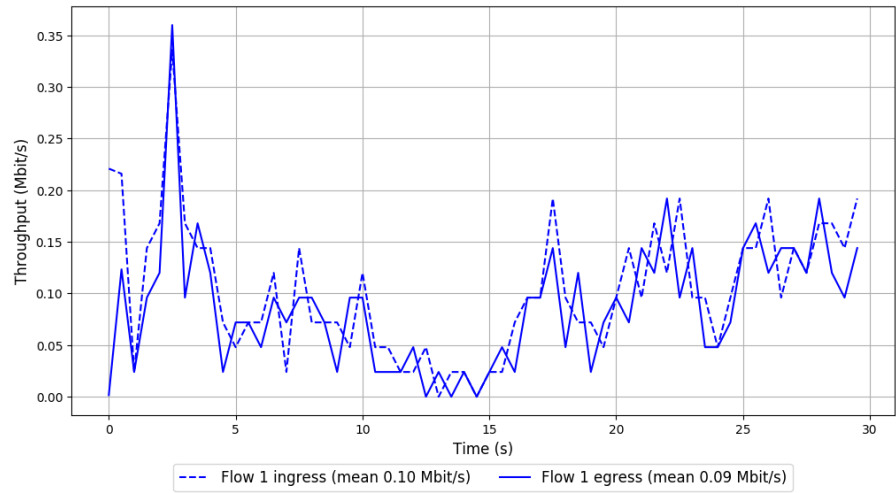
-- Flow 1:

Average throughput: 0.09 Mbit/s

95th percentile per-packet one-way delay: 519.190 ms

Loss rate: 15.10%

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

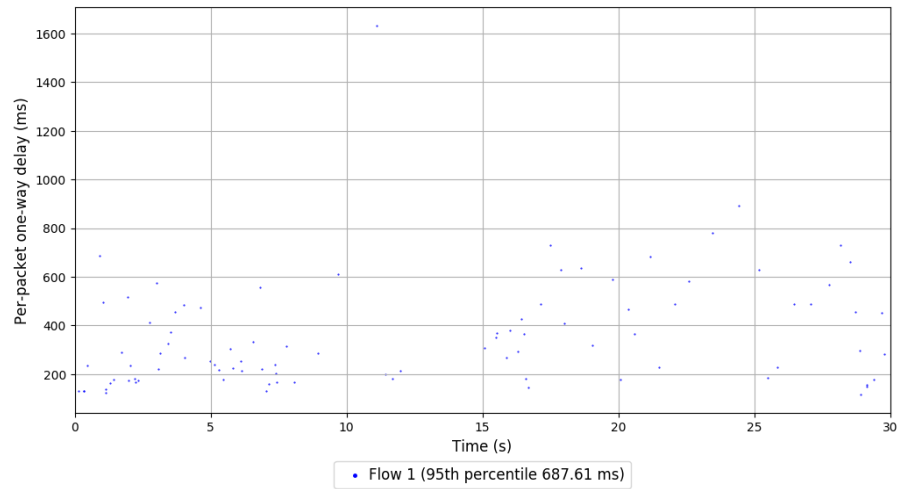
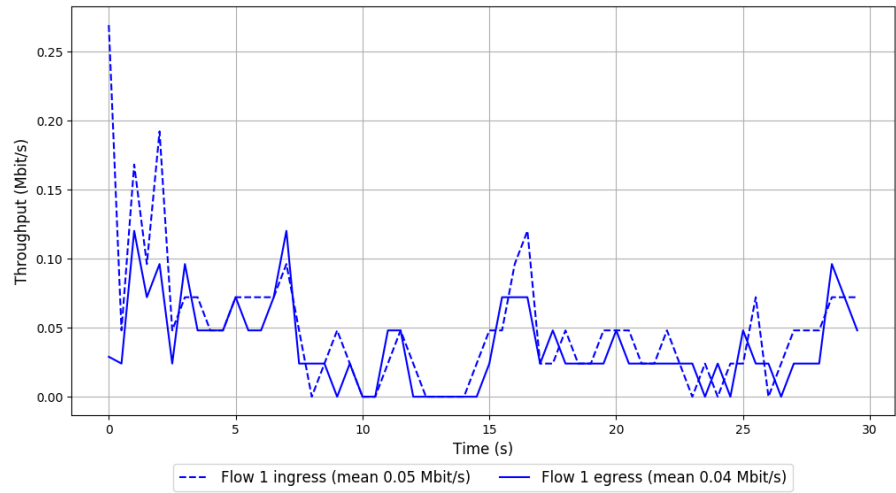


Run 3: Statistics of TCP Vegas

Start at: 2017-09-22 10:22:56  
End at: 2017-09-22 10:23:26  
Local clock offset: 0.192 ms  
Remote clock offset: -5.859 ms

# Below is generated by plot.py at 2017-09-22 11:14:30  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.04 Mbit/s  
95th percentile per-packet one-way delay: 687.605 ms  
Loss rate: 26.78%  
-- Flow 1:  
Average throughput: 0.04 Mbit/s  
95th percentile per-packet one-way delay: 687.605 ms  
Loss rate: 26.78%

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



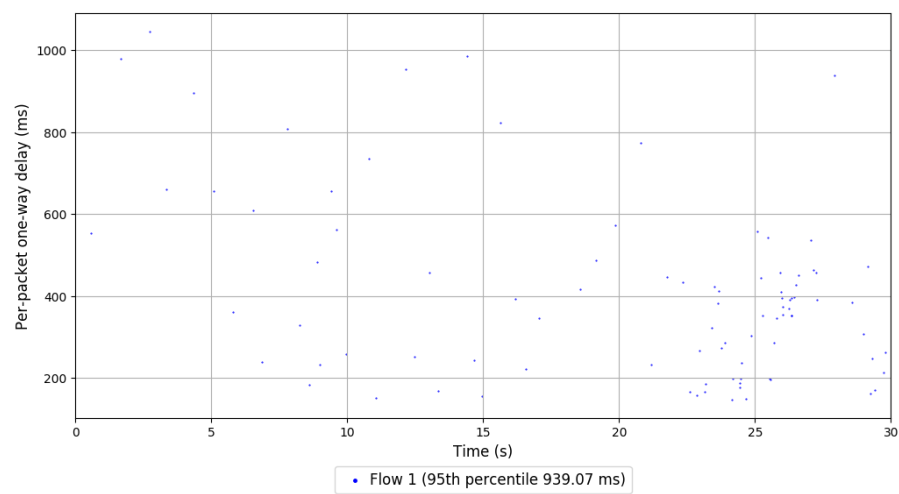
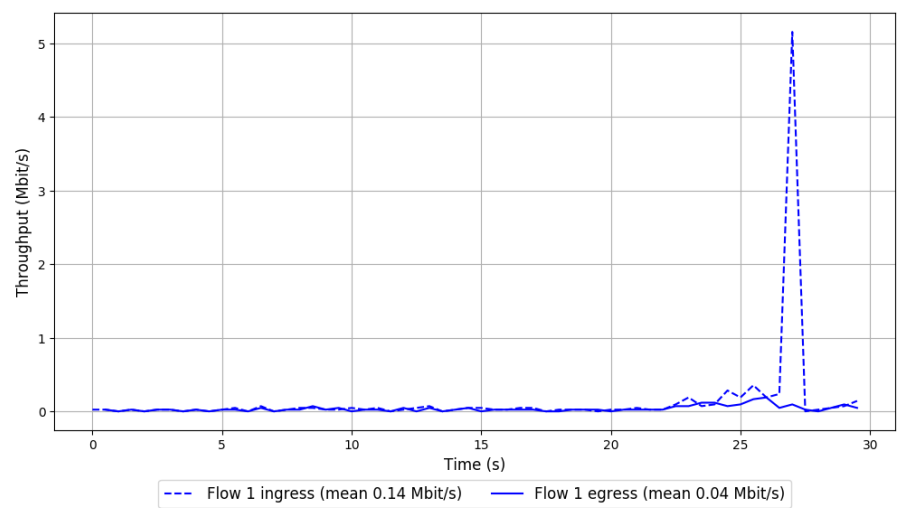
Run 1: Statistics of Verus

Start at: 2017-09-22 09:45:28  
End at: 2017-09-22 09:45:58  
Local clock offset: 0.123 ms  
Remote clock offset: -4.957 ms

# Below is generated by plot.py at 2017-09-22 11:14:30  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.04 Mbit/s  
95th percentile per-packet one-way delay: 939.067 ms  
Loss rate: 74.43%  
-- Flow 1:  
Average throughput: 0.04 Mbit/s  
95th percentile per-packet one-way delay: 939.067 ms  
Loss rate: 74.43%



Run 1: Report of Verus — Data Link



Run 2: Statistics of Verus

Start at: 2017-09-22 10:00:55

End at: 2017-09-22 10:01:25

Local clock offset: 2.645 ms

Remote clock offset: 3.14 ms

# Below is generated by plot.py at 2017-09-22 11:14:30

# Datalink statistics

-- Total of 1 flow:

Average throughput: 0.07 Mbit/s

95th percentile per-packet one-way delay: 638.500 ms

Loss rate: 41.91%

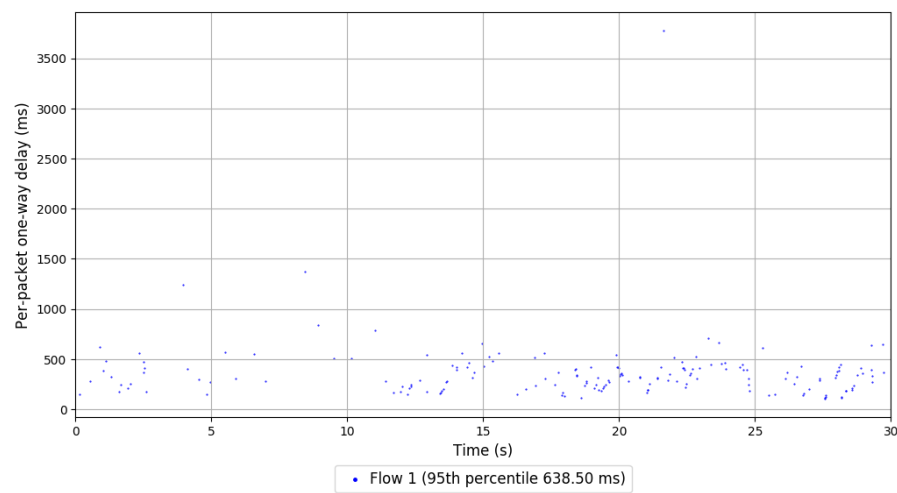
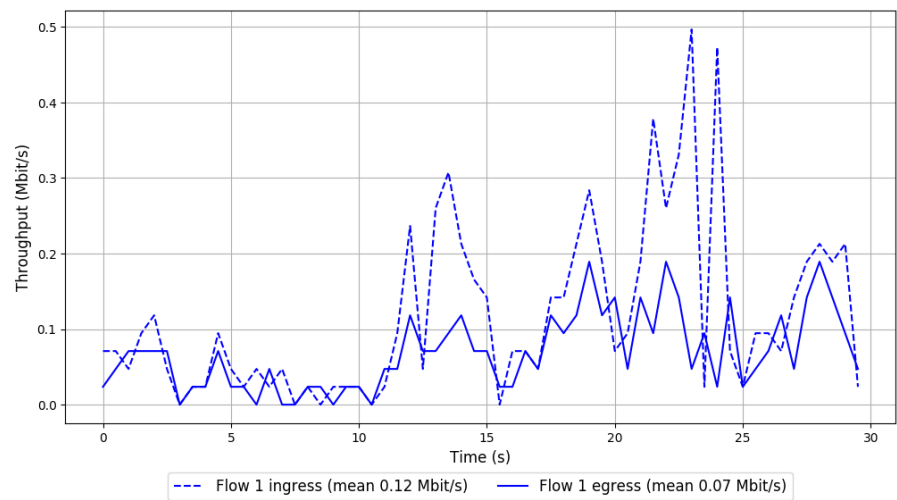
-- Flow 1:

Average throughput: 0.07 Mbit/s

95th percentile per-packet one-way delay: 638.500 ms

Loss rate: 41.91%

Run 2: Report of Verus — Data Link

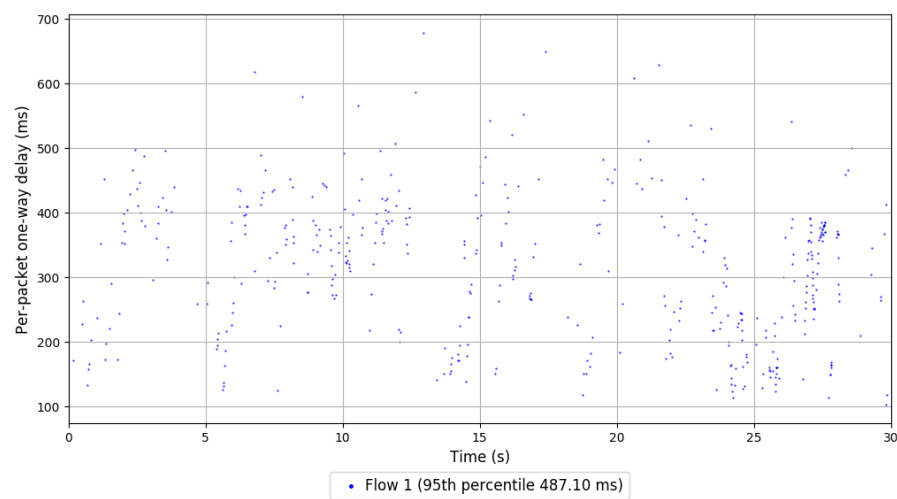
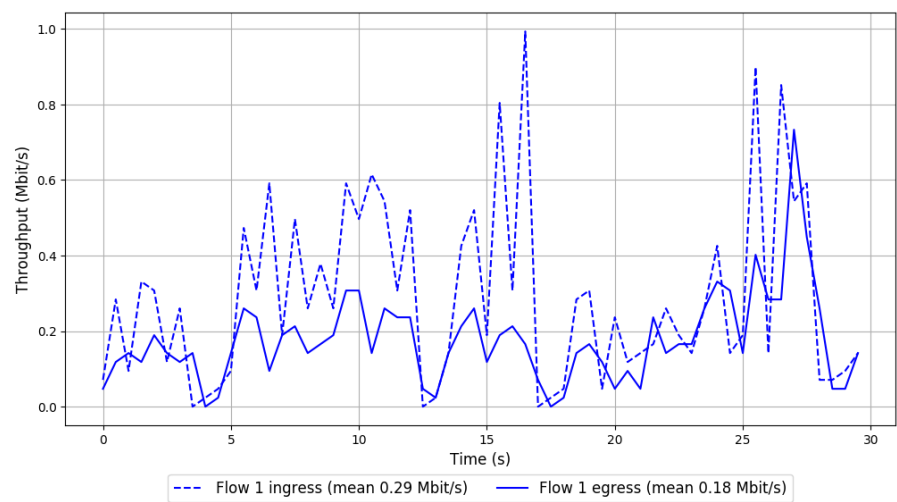


Run 3: Statistics of Verus

Start at: 2017-09-22 10:16:15  
End at: 2017-09-22 10:16:45  
Local clock offset: 0.734 ms  
Remote clock offset: -6.521 ms

# Below is generated by plot.py at 2017-09-22 11:14:30  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.18 Mbit/s  
95th percentile per-packet one-way delay: 487.102 ms  
Loss rate: 39.02%  
-- Flow 1:  
Average throughput: 0.18 Mbit/s  
95th percentile per-packet one-way delay: 487.102 ms  
Loss rate: 39.02%

Run 3: Report of Verus — Data Link



Run 1: Statistics of Indigo

Start at: 2017-09-22 09:46:34

End at: 2017-09-22 09:47:04

Local clock offset: 2.699 ms

Remote clock offset: -3.924 ms

# Below is generated by plot.py at 2017-09-22 11:14:30

# Datalink statistics

-- Total of 1 flow:

Average throughput: 0.03 Mbit/s

95th percentile per-packet one-way delay: 1043.969 ms

Loss rate: 98.31%

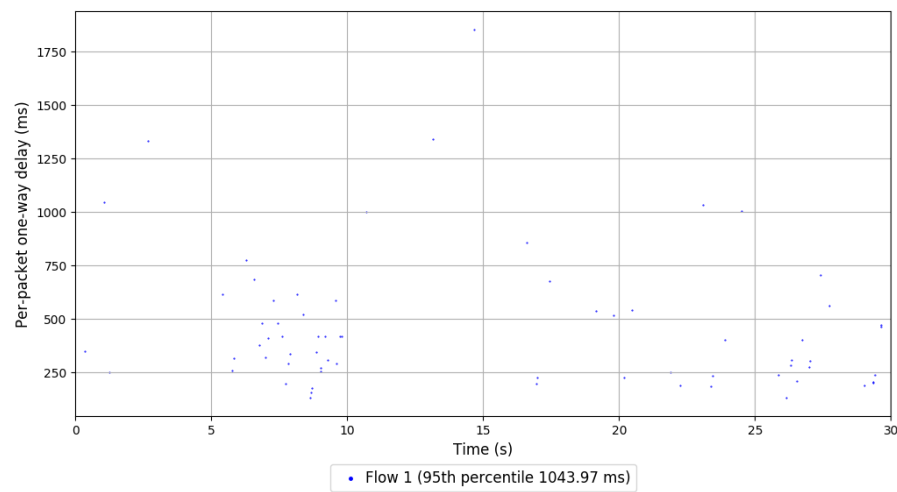
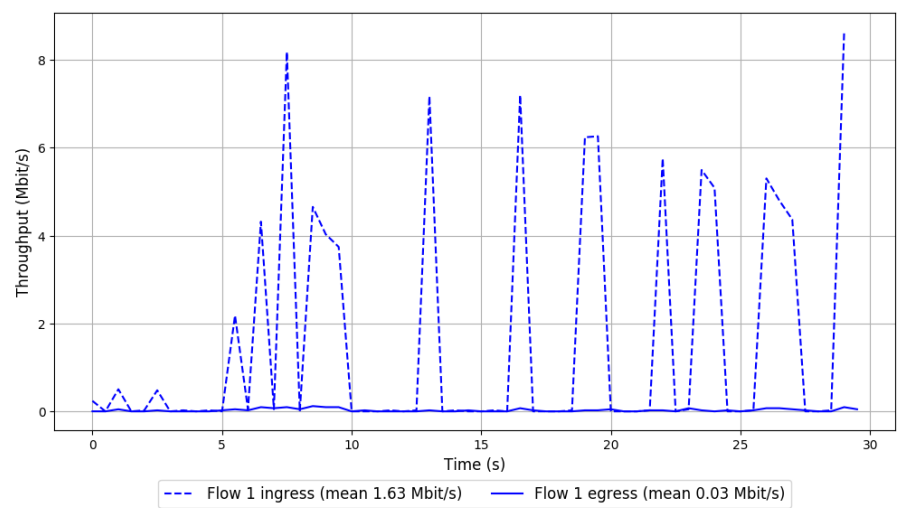
-- Flow 1:

Average throughput: 0.03 Mbit/s

95th percentile per-packet one-way delay: 1043.969 ms

Loss rate: 98.31%

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2017-09-22 10:02:00

End at: 2017-09-22 10:02:30

Local clock offset: 2.18 ms

Remote clock offset: 2.242 ms

# Below is generated by plot.py at 2017-09-22 11:14:30

# Datalink statistics

-- Total of 1 flow:

Average throughput: 0.05 Mbit/s

95th percentile per-packet one-way delay: 604.836 ms

Loss rate: 79.83%

-- Flow 1:

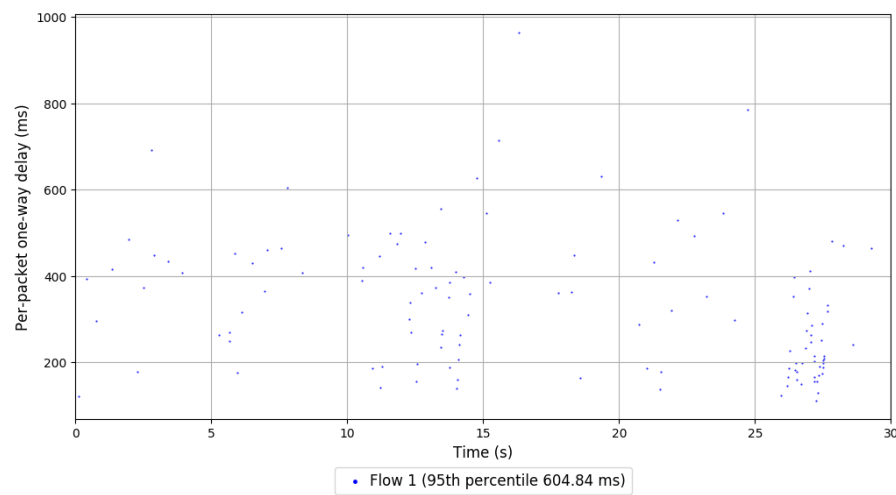
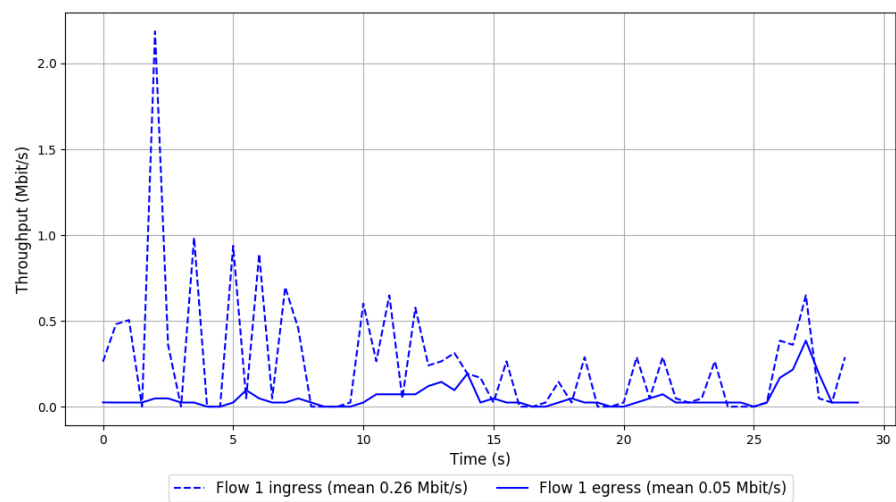
Average throughput: 0.05 Mbit/s

95th percentile per-packet one-way delay: 604.836 ms

Loss rate: 79.83%



Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

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

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

Local clock offset: -0.063 ms

Remote clock offset: -7.14 ms

# Below is generated by plot.py at 2017-09-22 11:14:30

# Datalink statistics

-- Total of 1 flow:

Average throughput: 0.10 Mbit/s

95th percentile per-packet one-way delay: 406.337 ms

Loss rate: 22.16%

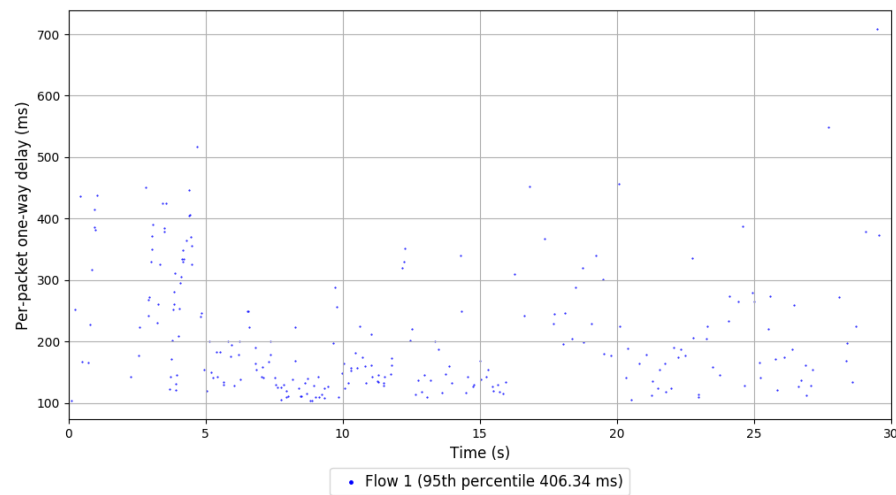
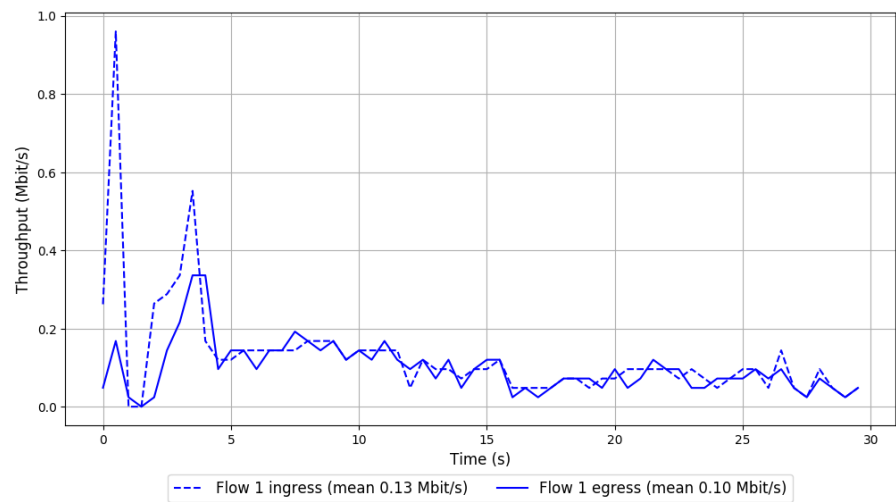
-- Flow 1:

Average throughput: 0.10 Mbit/s

95th percentile per-packet one-way delay: 406.337 ms

Loss rate: 22.16%

Run 3: Report of Indigo — Data Link

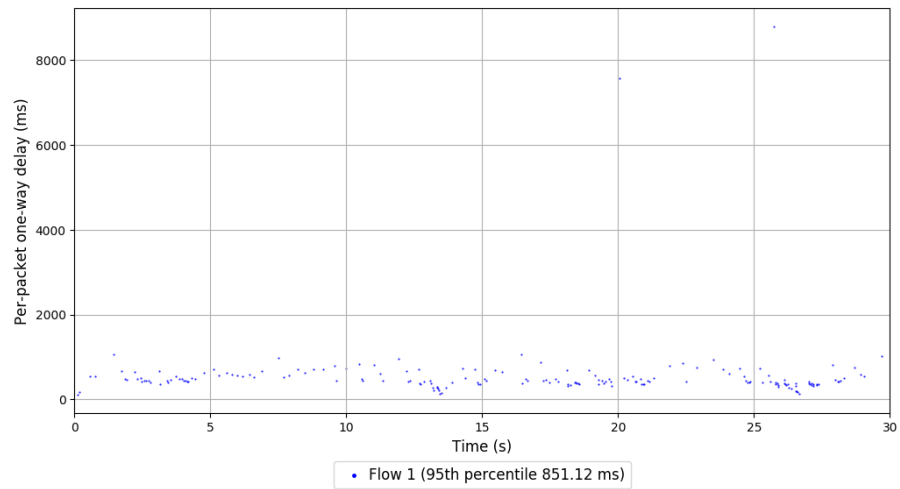
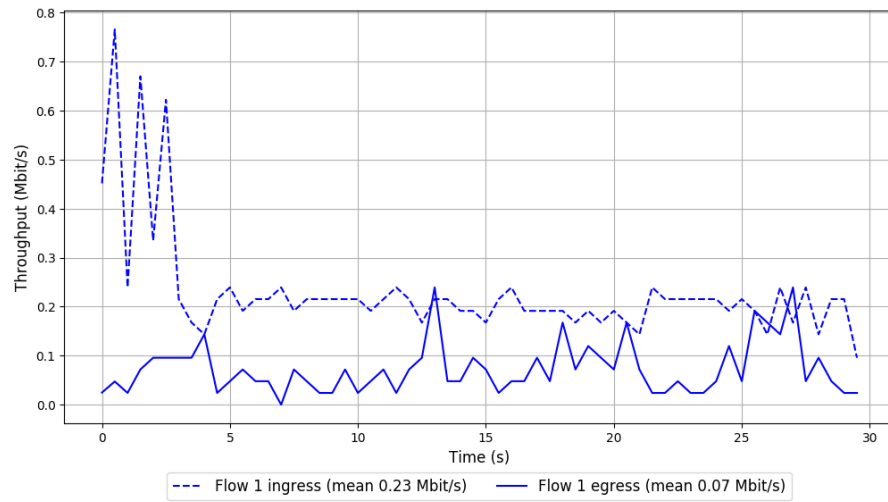


Run 1: Statistics of Indigo-cellular

Start at: 2017-09-22 09:42:10  
End at: 2017-09-22 09:42:40  
Local clock offset: 1.957 ms  
Remote clock offset: -5.471 ms

# Below is generated by plot.py at 2017-09-22 11:14:30  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.07 Mbit/s  
95th percentile per-packet one-way delay: 851.119 ms  
Loss rate: 68.33%  
-- Flow 1:  
Average throughput: 0.07 Mbit/s  
95th percentile per-packet one-way delay: 851.119 ms  
Loss rate: 68.33%

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

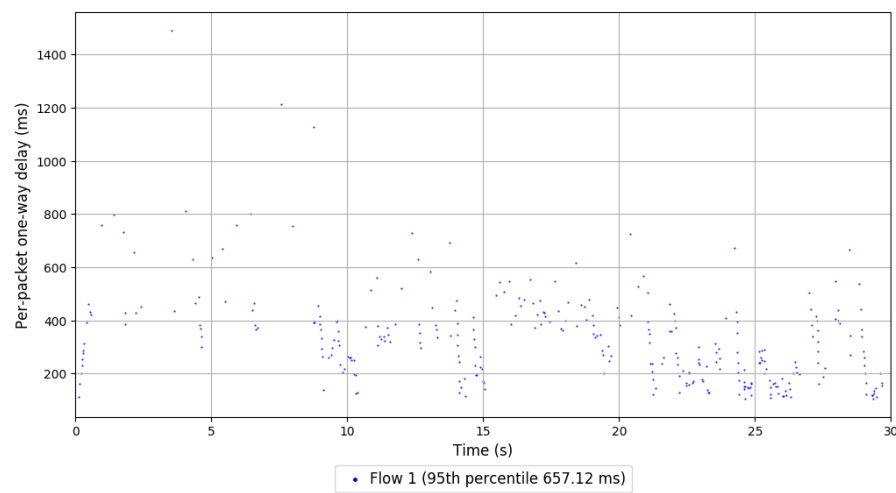
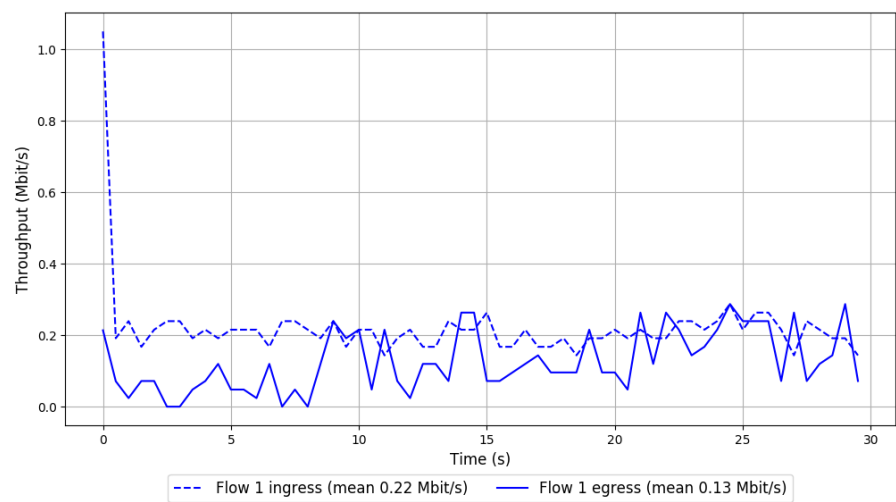


Run 2: Statistics of Indigo-cellular

Start at: 2017-09-22 09:57:37  
End at: 2017-09-22 09:58:07  
Local clock offset: 0.312 ms  
Remote clock offset: -5.569 ms

# Below is generated by plot.py at 2017-09-22 11:14:30  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.13 Mbit/s  
95th percentile per-packet one-way delay: 657.115 ms  
Loss rate: 42.40%  
-- Flow 1:  
Average throughput: 0.13 Mbit/s  
95th percentile per-packet one-way delay: 657.115 ms  
Loss rate: 42.40%

Run 2: Report of Indigo-cellular — Data Link



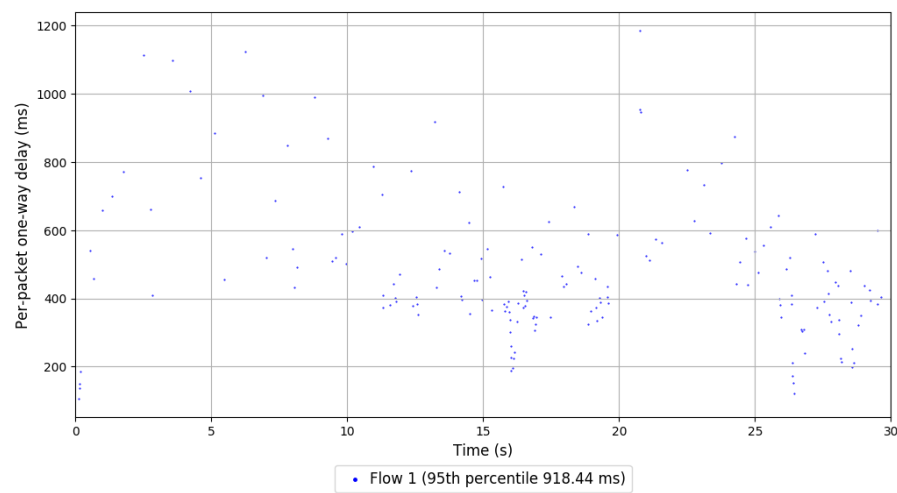
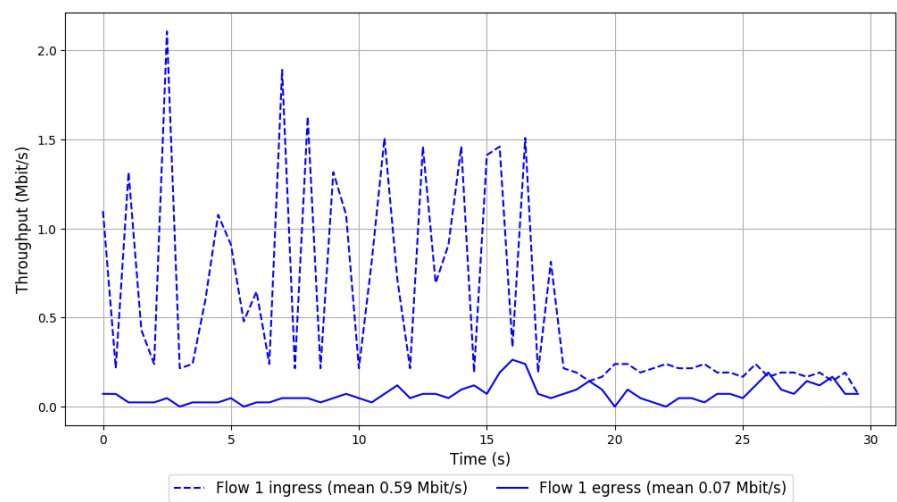
Run 3: Statistics of Indigo-cellular

Start at: 2017-09-22 10:12:59  
End at: 2017-09-22 10:13:29  
Local clock offset: -0.05 ms  
Remote clock offset: -6.515 ms

# Below is generated by plot.py at 2017-09-22 11:14:30  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.07 Mbit/s  
95th percentile per-packet one-way delay: 918.439 ms  
Loss rate: 87.72%  
-- Flow 1:  
Average throughput: 0.07 Mbit/s  
95th percentile per-packet one-way delay: 918.439 ms  
Loss rate: 87.72%



Run 3: Report of Indigo-cellular — Data Link



Run 1: Statistics of KohoCC

Start at: 2017-09-22 09:55:24

End at: 2017-09-22 09:55:54

Local clock offset: 0.262 ms

Remote clock offset: -5.737 ms

# Below is generated by plot.py at 2017-09-22 11:14:30

# Datalink statistics

-- Total of 1 flow:

Average throughput: 0.13 Mbit/s

95th percentile per-packet one-way delay: 613.404 ms

Loss rate: 35.53%

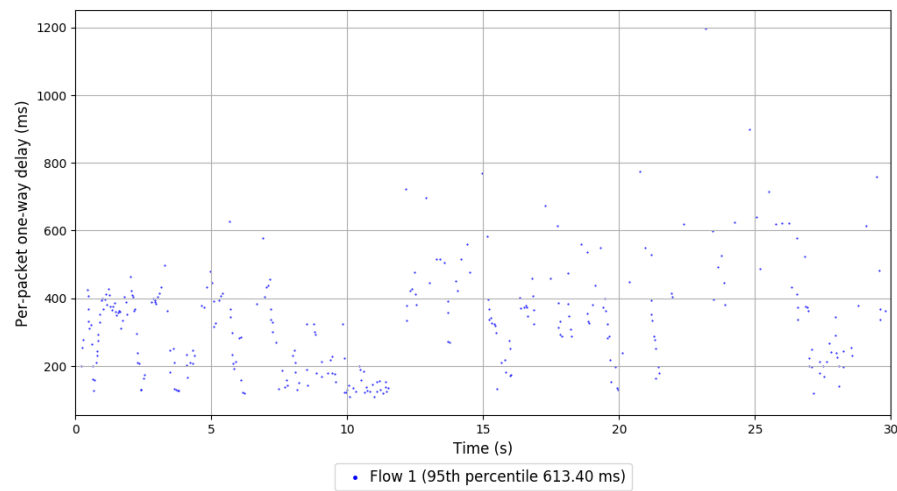
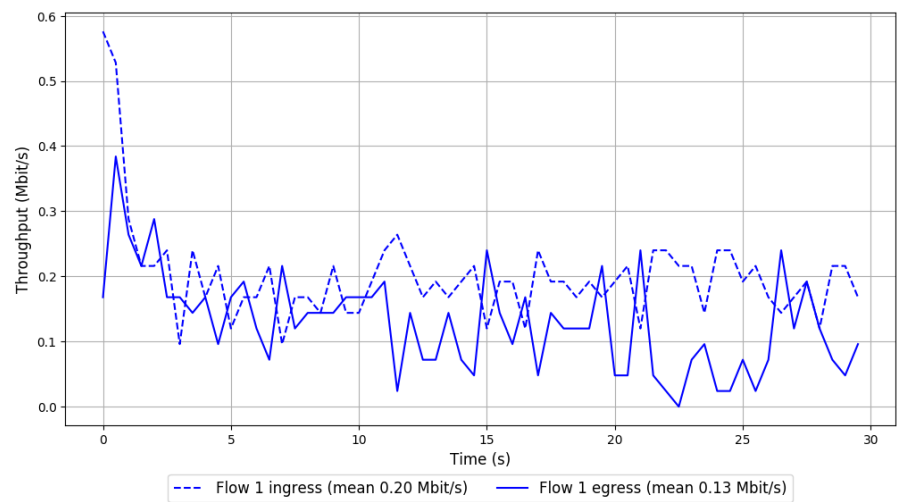
-- Flow 1:

Average throughput: 0.13 Mbit/s

95th percentile per-packet one-way delay: 613.404 ms

Loss rate: 35.53%

Run 1: Report of KohoCC — Data Link



Run 2: Statistics of KohoCC

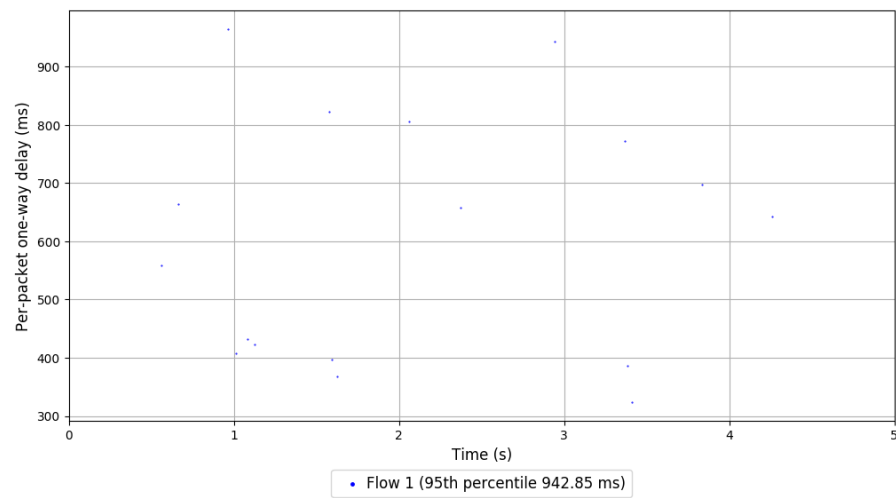
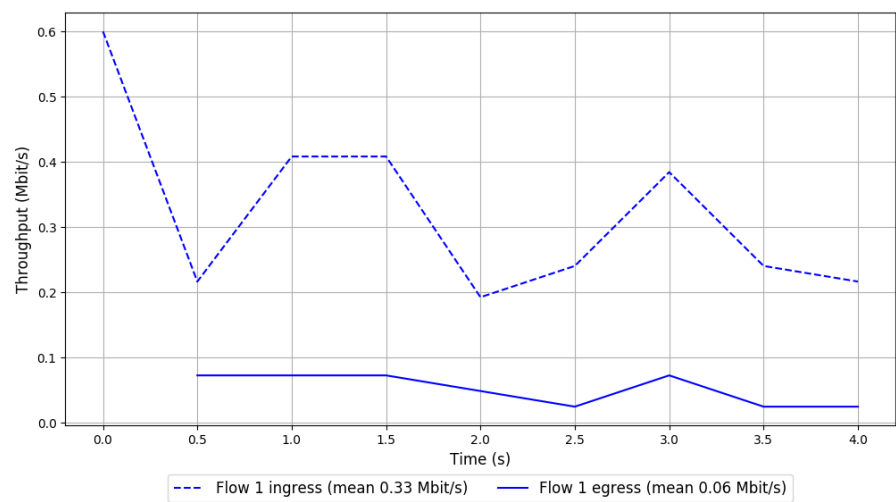
Start at: 2017-09-22 10:10:47

End at: 2017-09-22 10:11:17

Local clock offset: 0.554 ms

Remote clock offset: -3.283 ms

Run 2: Report of KohoCC — Data Link



Run 3: Statistics of KohoCC

Start at: 2017-09-22 10:26:12  
End at: 2017-09-22 10:26:42  
Local clock offset: -0.454 ms  
Remote clock offset: -5.802 ms

# Below is generated by plot.py at 2017-09-22 11:14:30  
# Datalink statistics  
-- Total of 1 flow:  
Average throughput: 0.14 Mbit/s  
95th percentile per-packet one-way delay: 541.141 ms  
Loss rate: 30.00%  
-- Flow 1:  
Average throughput: 0.14 Mbit/s  
95th percentile per-packet one-way delay: 541.141 ms  
Loss rate: 30.00%

Run 3: Report of KohoCC — Data Link

