

Pantheon Report

Generated at 2017-12-11 09:01:10 (UTC).

Data path: AWS Brazil 2 Ethernet (*local*) → Colombia 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).

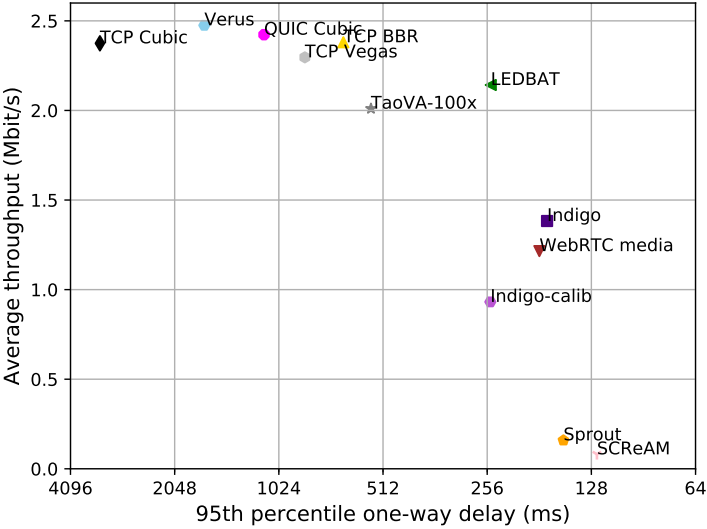
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo_fast**).

NTP offsets were measured against **gps.ntp.br** and have been applied to correct the timestamps in logs.

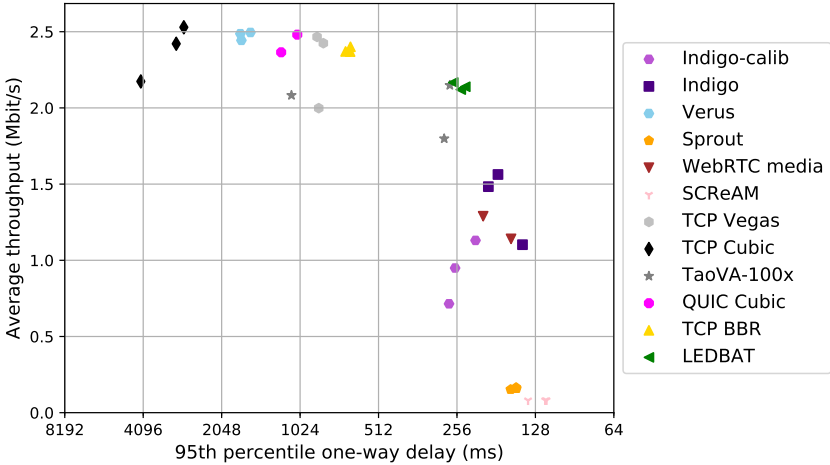
Git summary:

```
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 @ 03455460fd1a8ffbdad86fab936fdca204b80db
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 Brazil 2 Ethernet to Colombia ppp0, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from AWS Brazil 2 Ethernet to Colombia ppp0, 3 runs of 30s each per scheme



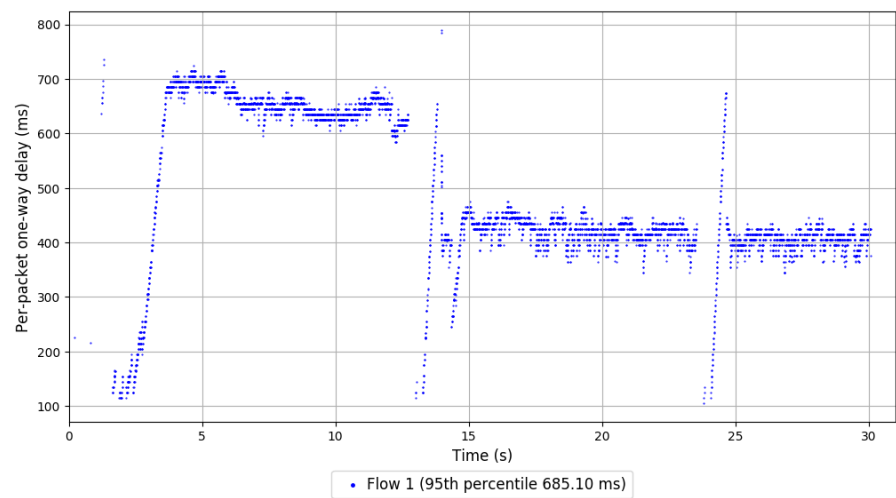
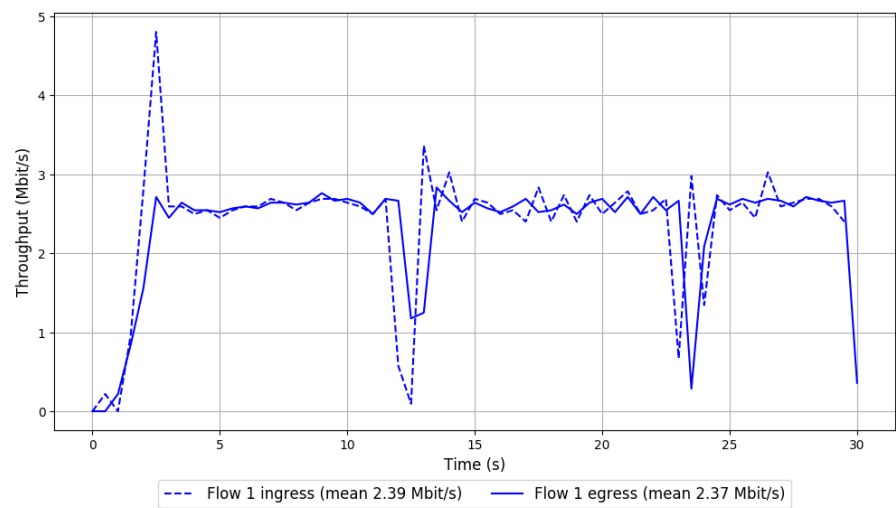
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	2.38	666.49	1.22
TCP Cubic	3	2.37	3367.66	13.94
LEDBAT	3	2.14	250.06	0.58
PCC	0	N/A	N/A	N/A
QUIC Cubic	2	2.42	1130.15	4.17
SCReAM	3	0.08	123.35	0.09
WebRTC media	2	1.21	180.92	0.47
Sprout	3	0.16	154.15	0.01
TaoVA-100x	3	2.01	554.80	0.43
TCP Vegas	3	2.30	861.20	1.80
Verus	3	2.48	1681.35	5.20
Copa	0	N/A	N/A	N/A
Indigo	3	1.38	171.89	0.14
Indigo-calib	3	0.93	250.71	0.06

Run 1: Statistics of TCP BBR

Start at: 2017-12-11 08:22:55
End at: 2017-12-11 08:23:25
Local clock offset: -4.669 ms
Remote clock offset: -4.117 ms

Below is generated by plot.py at 2017-12-11 09:00:43
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.37 Mbit/s
95th percentile per-packet one-way delay: 685.099 ms
Loss rate: 1.06%
-- Flow 1:
Average throughput: 2.37 Mbit/s
95th percentile per-packet one-way delay: 685.099 ms
Loss rate: 1.06%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2017-12-11 08:39:21

End at: 2017-12-11 08:39:51

Local clock offset: -4.644 ms

Remote clock offset: 0.794 ms

Below is generated by plot.py at 2017-12-11 09:00:43

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.37 Mbit/s

95th percentile per-packet one-way delay: 658.183 ms

Loss rate: 1.54%

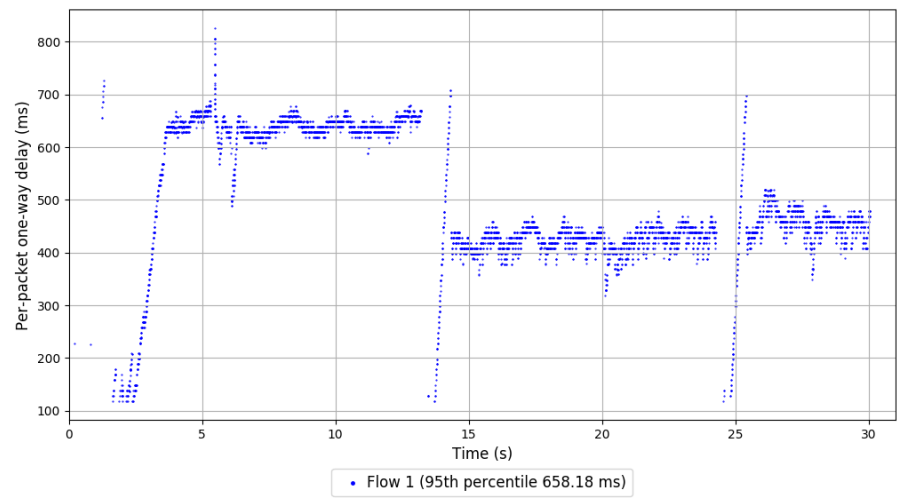
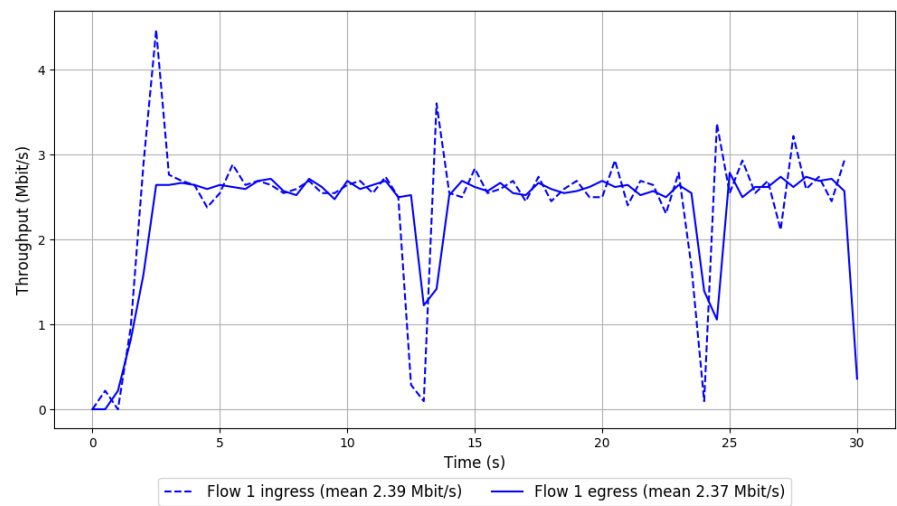
-- Flow 1:

Average throughput: 2.37 Mbit/s

95th percentile per-packet one-way delay: 658.183 ms

Loss rate: 1.54%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2017-12-11 08:55:46

End at: 2017-12-11 08:56:16

Local clock offset: -4.481 ms

Remote clock offset: 0.962 ms

Below is generated by plot.py at 2017-12-11 09:00:43

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.40 Mbit/s

95th percentile per-packet one-way delay: 656.176 ms

Loss rate: 1.06%

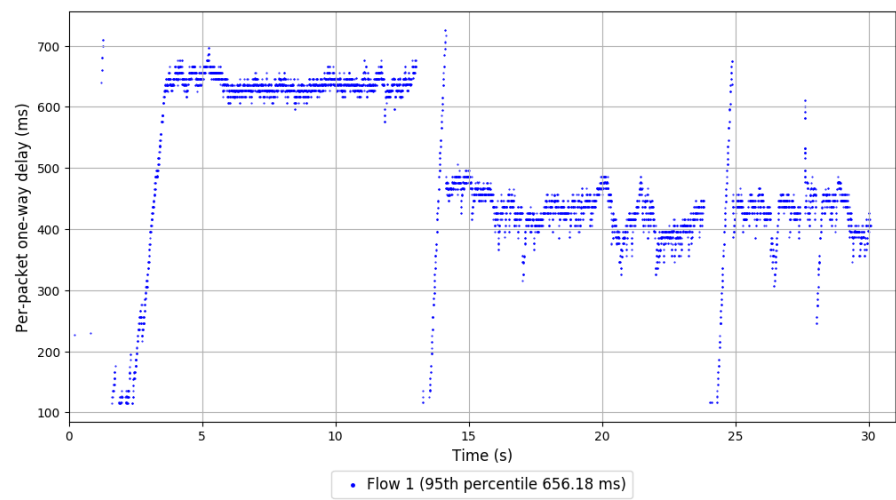
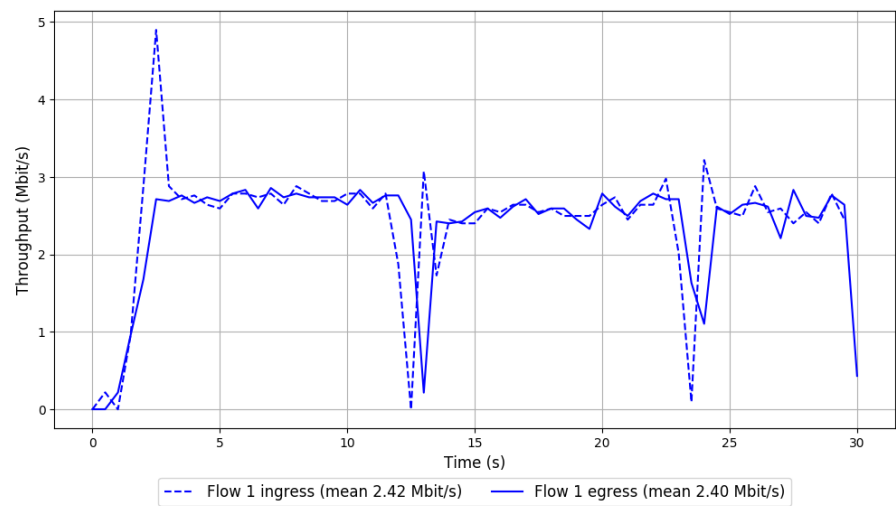
-- Flow 1:

Average throughput: 2.40 Mbit/s

95th percentile per-packet one-way delay: 656.176 ms

Loss rate: 1.06%

Run 3: Report of TCP BBR — Data Link

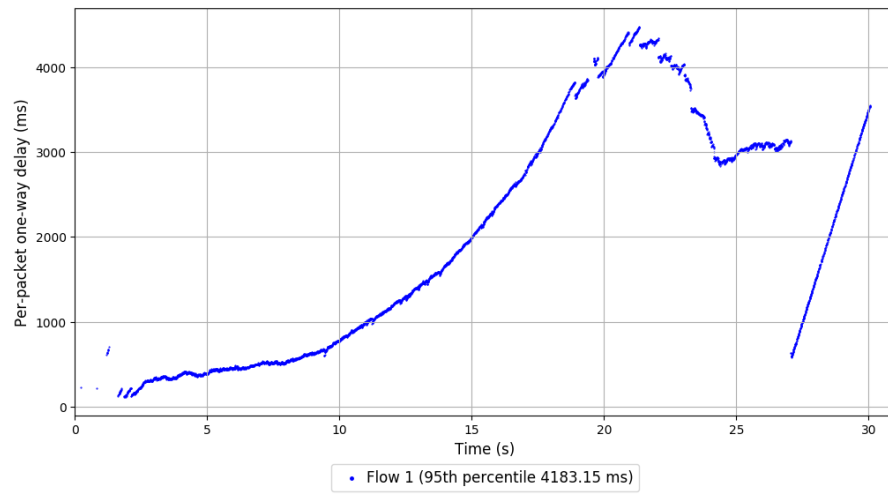
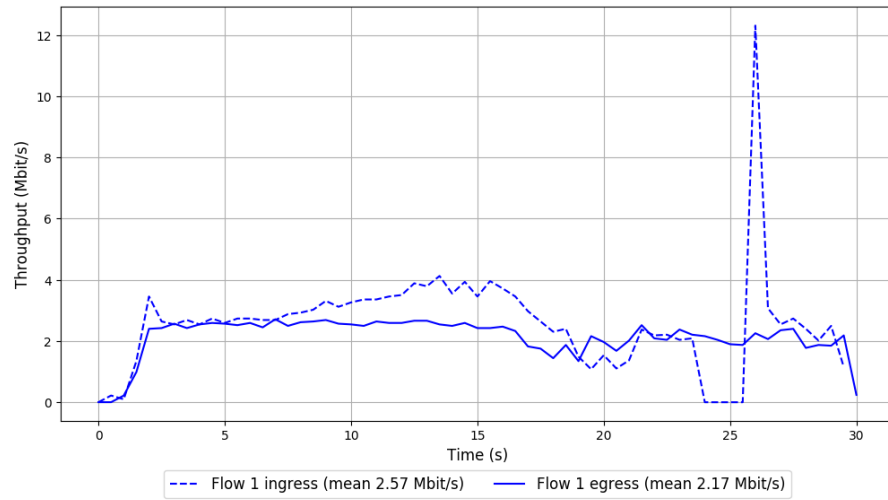


Run 1: Statistics of TCP Cubic

Start at: 2017-12-11 08:14:43
End at: 2017-12-11 08:15:13
Local clock offset: -5.699 ms
Remote clock offset: -0.253 ms

Below is generated by plot.py at 2017-12-11 09:00:43
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.17 Mbit/s
95th percentile per-packet one-way delay: 4183.148 ms
Loss rate: 15.94%
-- Flow 1:
Average throughput: 2.17 Mbit/s
95th percentile per-packet one-way delay: 4183.148 ms
Loss rate: 15.94%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2017-12-11 08:31:08

End at: 2017-12-11 08:31:38

Local clock offset: -4.002 ms

Remote clock offset: -4.06 ms

Below is generated by plot.py at 2017-12-11 09:00:43

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.53 Mbit/s

95th percentile per-packet one-way delay: 2860.583 ms

Loss rate: 13.40%

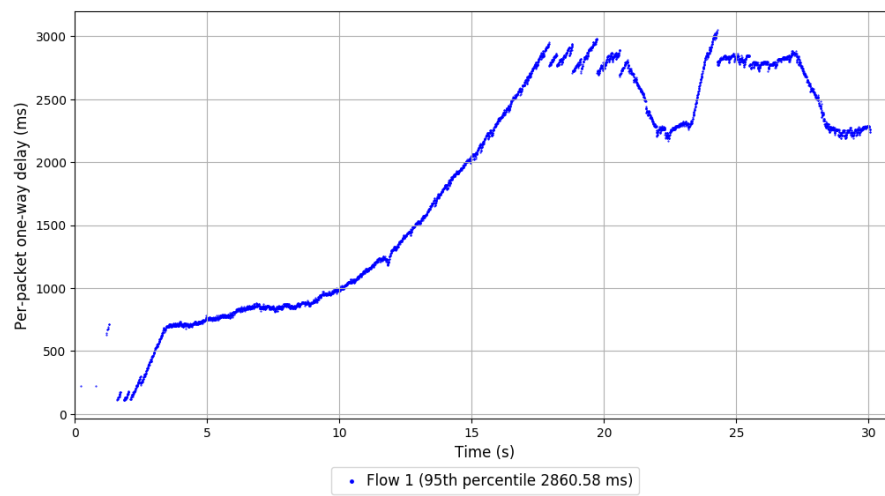
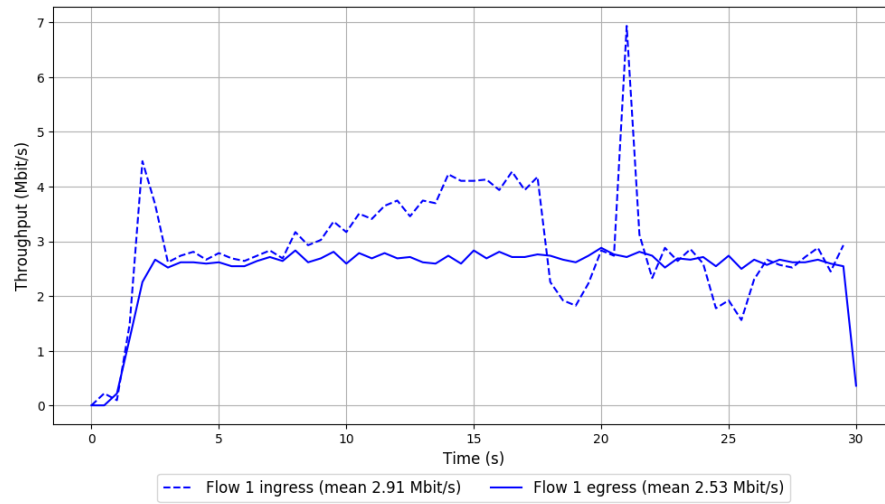
-- Flow 1:

Average throughput: 2.53 Mbit/s

95th percentile per-packet one-way delay: 2860.583 ms

Loss rate: 13.40%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2017-12-11 08:47:34

End at: 2017-12-11 08:48:04

Local clock offset: -4.25 ms

Remote clock offset: 0.973 ms

Below is generated by plot.py at 2017-12-11 09:00:43

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.42 Mbit/s

95th percentile per-packet one-way delay: 3059.252 ms

Loss rate: 12.48%

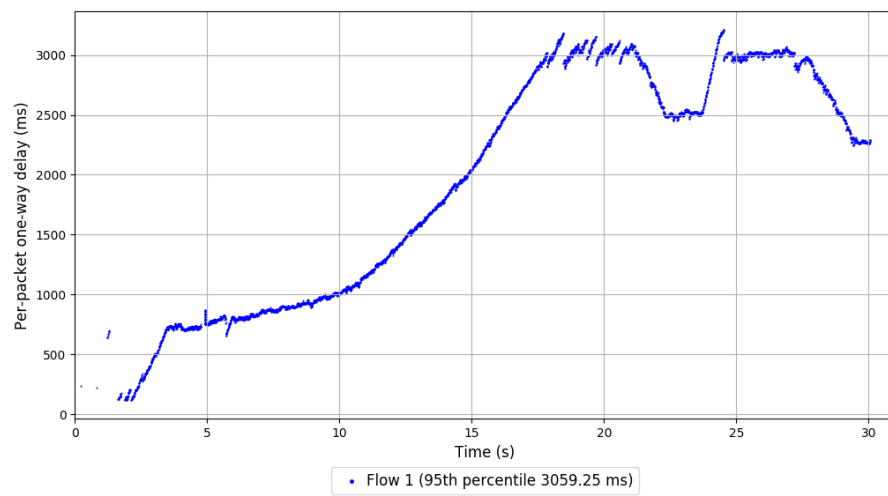
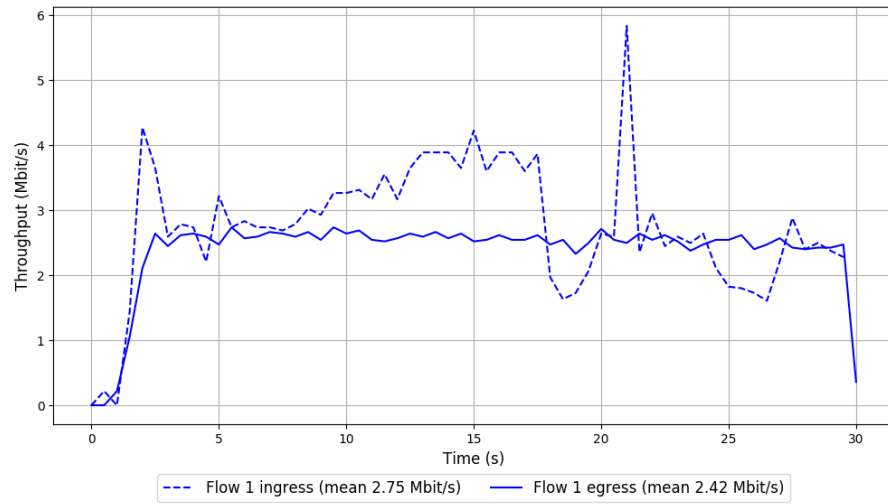
-- Flow 1:

Average throughput: 2.42 Mbit/s

95th percentile per-packet one-way delay: 3059.252 ms

Loss rate: 12.48%

Run 3: Report of TCP Cubic — Data Link

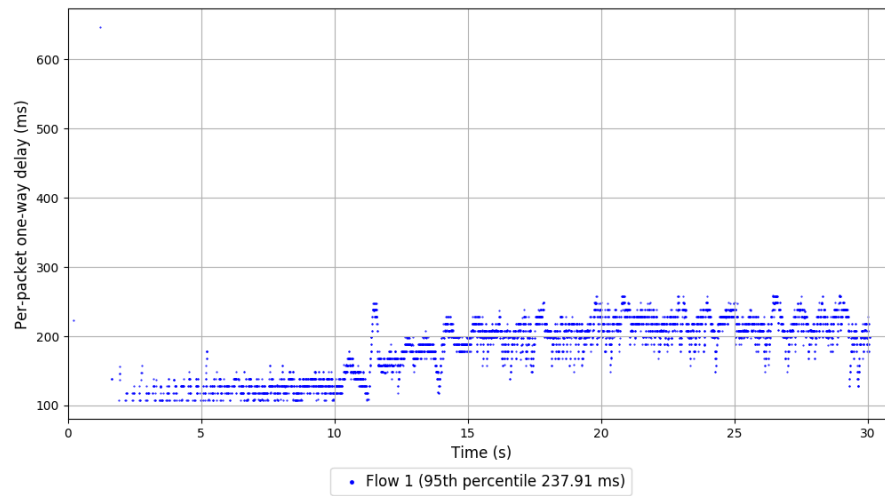
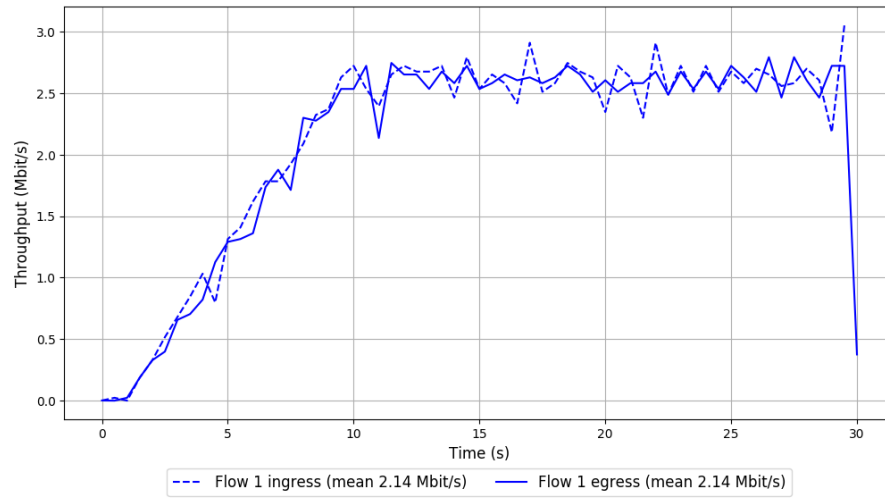


```
Run 1: Statistics of LEDBAT

Start at: 2017-12-11 08:19:23
End at: 2017-12-11 08:19:53
Local clock offset: -5.018 ms
Remote clock offset: -5.024 ms

# Below is generated by plot.py at 2017-12-11 09:00:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.14 Mbit/s
95th percentile per-packet one-way delay: 237.912 ms
Loss rate: 0.53%
-- Flow 1:
Average throughput: 2.14 Mbit/s
95th percentile per-packet one-way delay: 237.912 ms
Loss rate: 0.53%
```

Run 1: Report of LEDBAT — Data Link



Run 2: Statistics of LEDBAT

Start at: 2017-12-11 08:35:50

End at: 2017-12-11 08:36:20

Local clock offset: -4.201 ms

Remote clock offset: 1.632 ms

Below is generated by plot.py at 2017-12-11 09:00:43

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.12 Mbit/s

95th percentile per-packet one-way delay: 247.551 ms

Loss rate: 0.57%

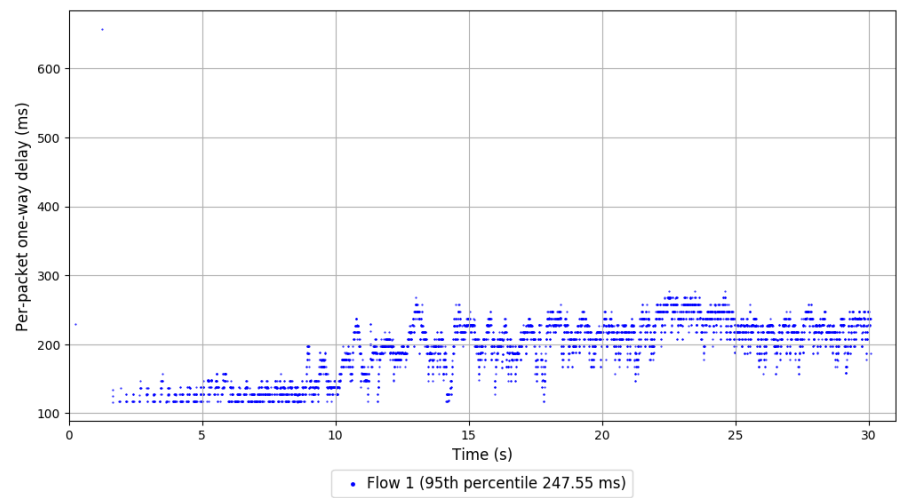
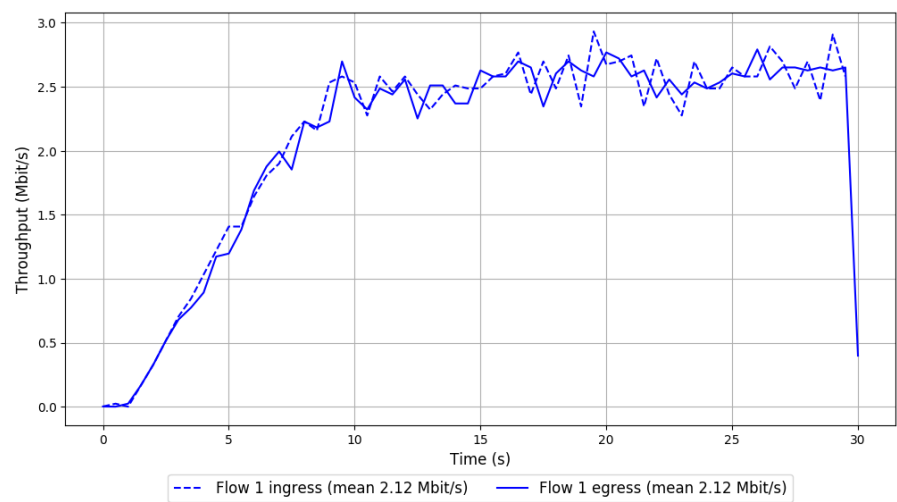
-- Flow 1:

Average throughput: 2.12 Mbit/s

95th percentile per-packet one-way delay: 247.551 ms

Loss rate: 0.57%

Run 2: Report of LEDBAT — Data Link

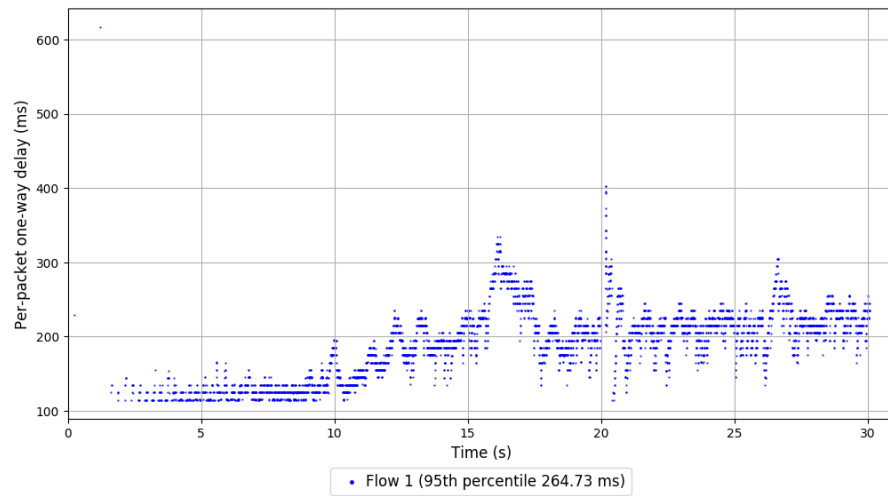
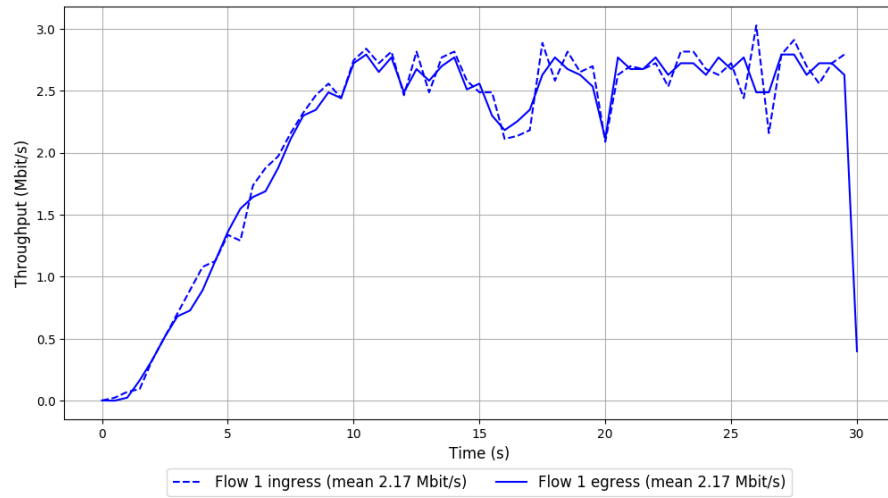


Run 3: Statistics of LEDBAT

Start at: 2017-12-11 08:52:15
End at: 2017-12-11 08:52:45
Local clock offset: -4.191 ms
Remote clock offset: -4.695 ms

Below is generated by plot.py at 2017-12-11 09:00:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.17 Mbit/s
95th percentile per-packet one-way delay: 264.726 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 2.17 Mbit/s
95th percentile per-packet one-way delay: 264.726 ms
Loss rate: 0.63%

Run 3: Report of LEDBAT — Data Link



Run 1: Statistics of PCC

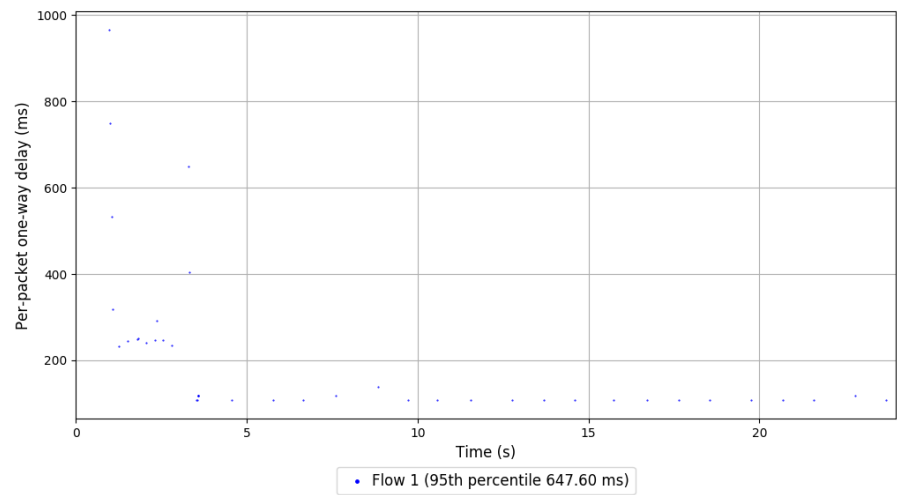
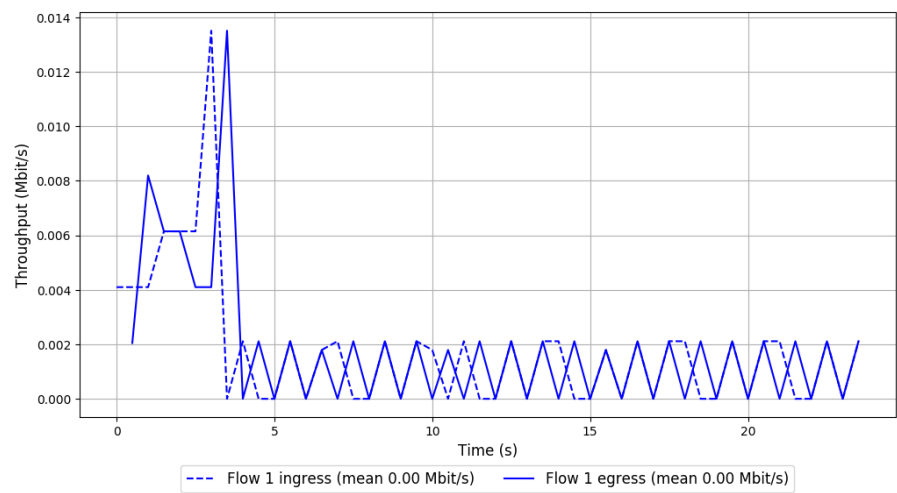
Start at: 2017-12-11 08:18:13

End at: 2017-12-11 08:18:43

Local clock offset: -5.136 ms

Remote clock offset: -0.126 ms

Run 1: Report of PCC — Data Link



Run 2: Statistics of PCC

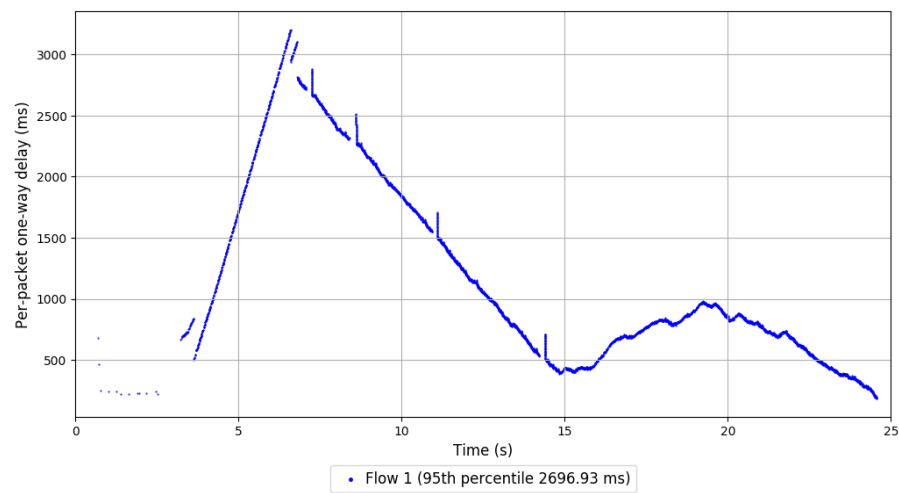
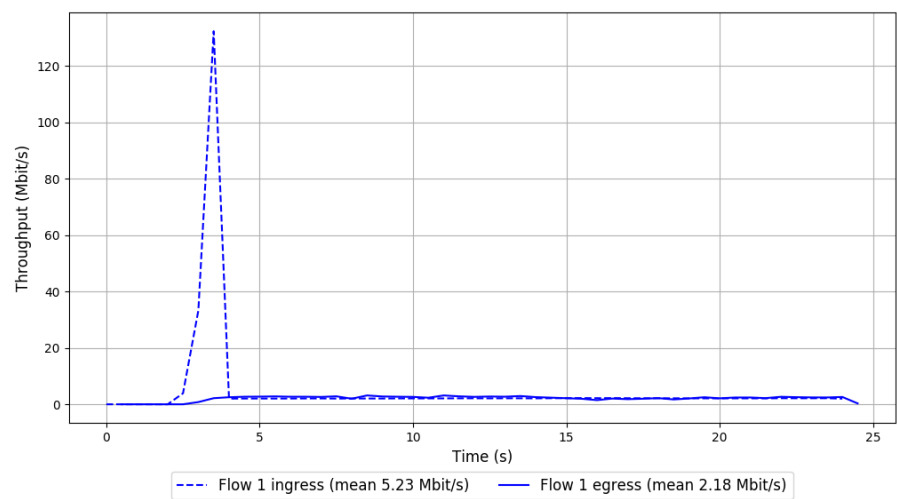
Start at: 2017-12-11 08:34:39

End at: 2017-12-11 08:35:09

Local clock offset: -4.064 ms

Remote clock offset: -3.987 ms

Run 2: Report of PCC — Data Link



Run 3: Statistics of PCC

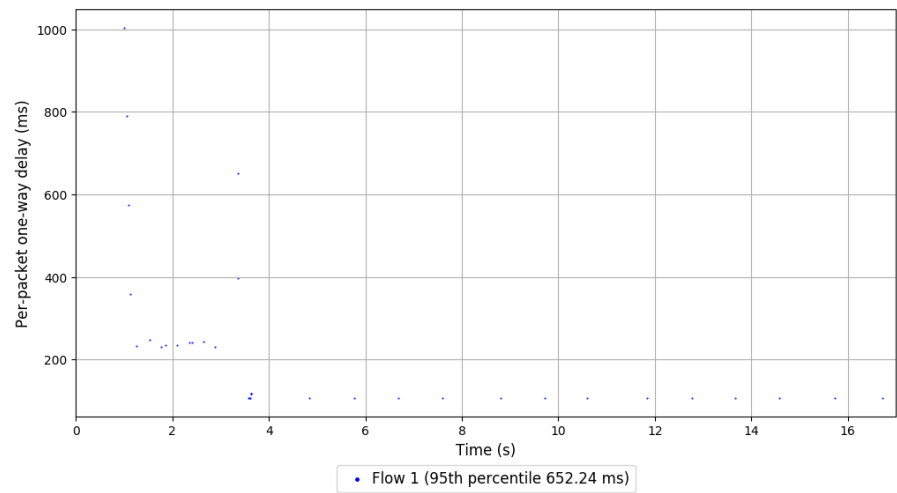
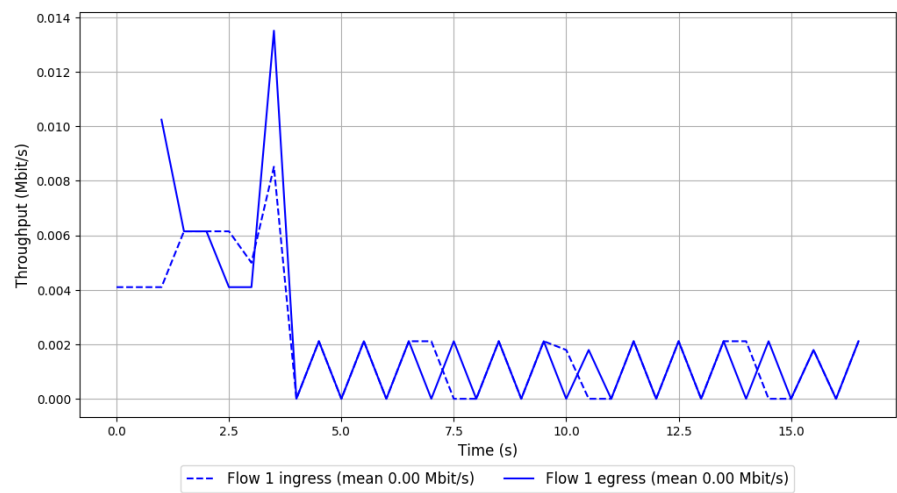
Start at: 2017-12-11 08:51:05

End at: 2017-12-11 08:51:35

Local clock offset: -4.267 ms

Remote clock offset: 0.956 ms

Run 3: Report of PCC — Data Link



Run 1: Statistics of QUIC Cubic

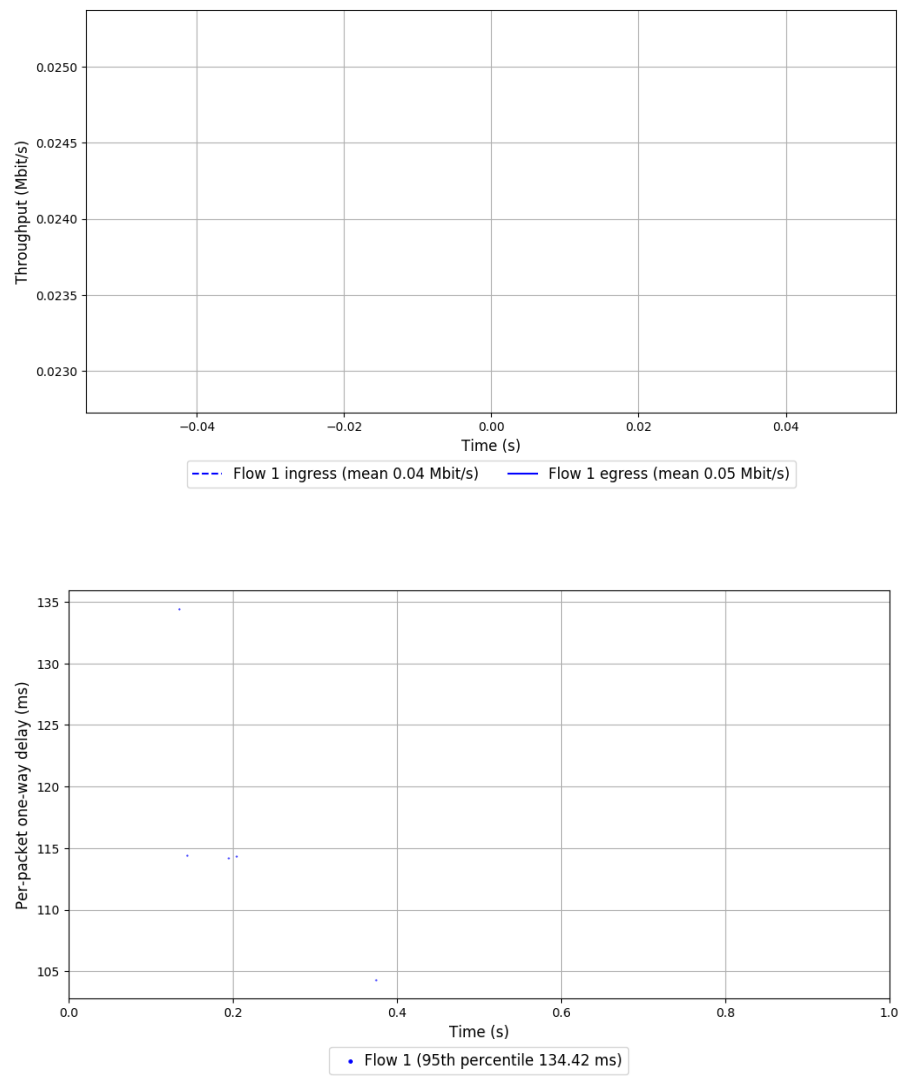
Start at: 2017-12-11 08:17:03

End at: 2017-12-11 08:17:33

Local clock offset: -5.436 ms

Remote clock offset: -4.082 ms

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2017-12-11 08:33:29

End at: 2017-12-11 08:33:59

Local clock offset: -3.999 ms

Remote clock offset: -4.048 ms

Below is generated by plot.py at 2017-12-11 09:00:52

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.48 Mbit/s

95th percentile per-packet one-way delay: 1049.814 ms

Loss rate: 3.68%

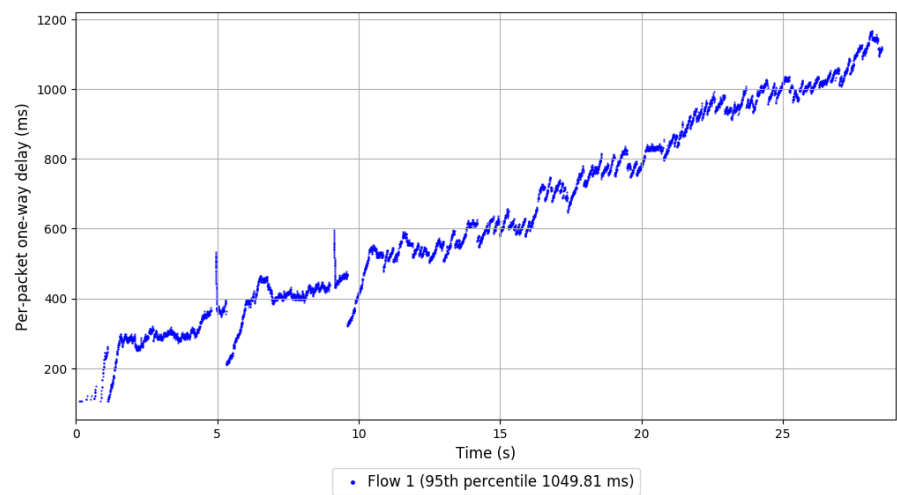
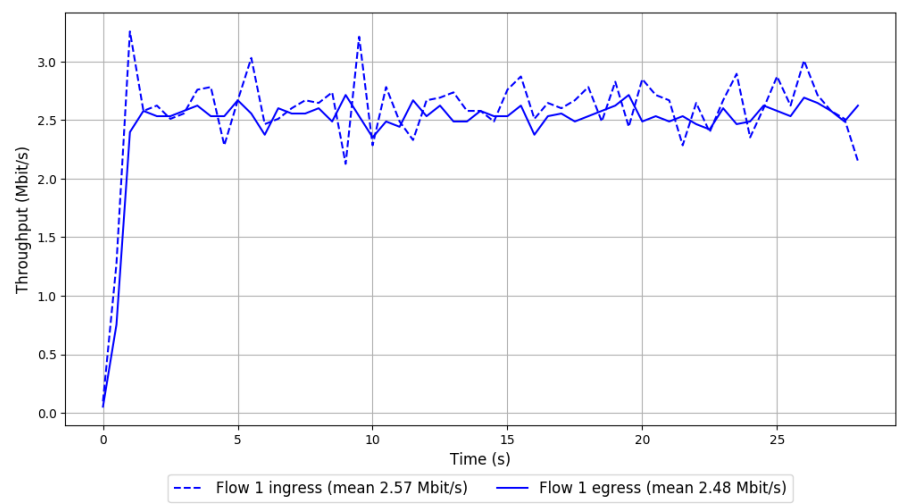
-- Flow 1:

Average throughput: 2.48 Mbit/s

95th percentile per-packet one-way delay: 1049.814 ms

Loss rate: 3.68%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2017-12-11 08:49:55

End at: 2017-12-11 08:50:25

Local clock offset: -4.257 ms

Remote clock offset: 0.196 ms

Below is generated by plot.py at 2017-12-11 09:00:52

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.37 Mbit/s

95th percentile per-packet one-way delay: 1210.477 ms

Loss rate: 4.67%

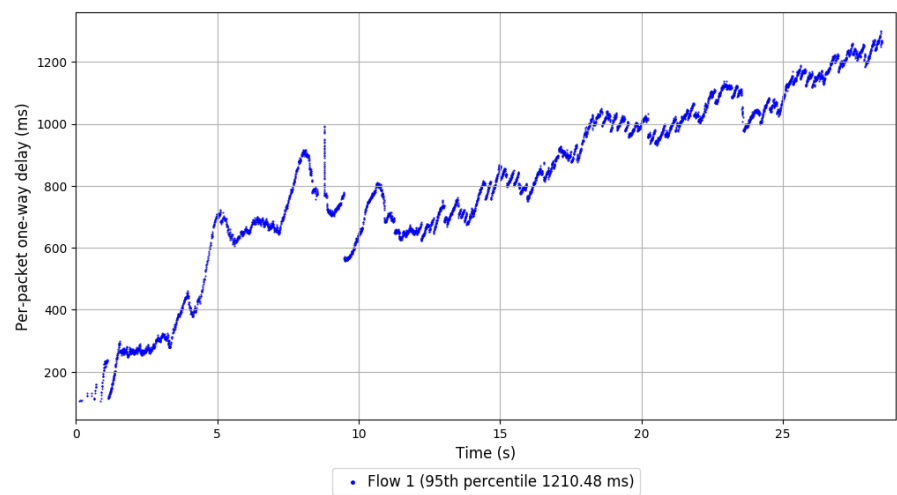
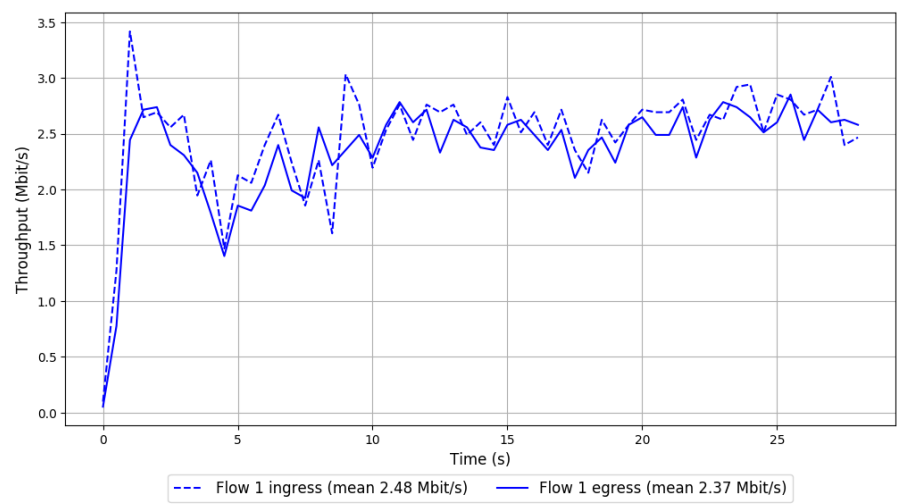
-- Flow 1:

Average throughput: 2.37 Mbit/s

95th percentile per-packet one-way delay: 1210.477 ms

Loss rate: 4.67%

Run 3: Report of QUIC Cubic — Data Link

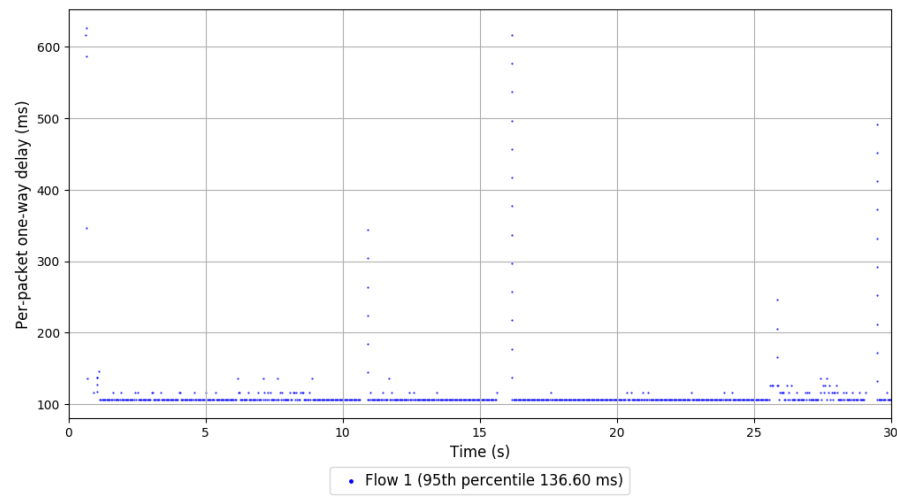
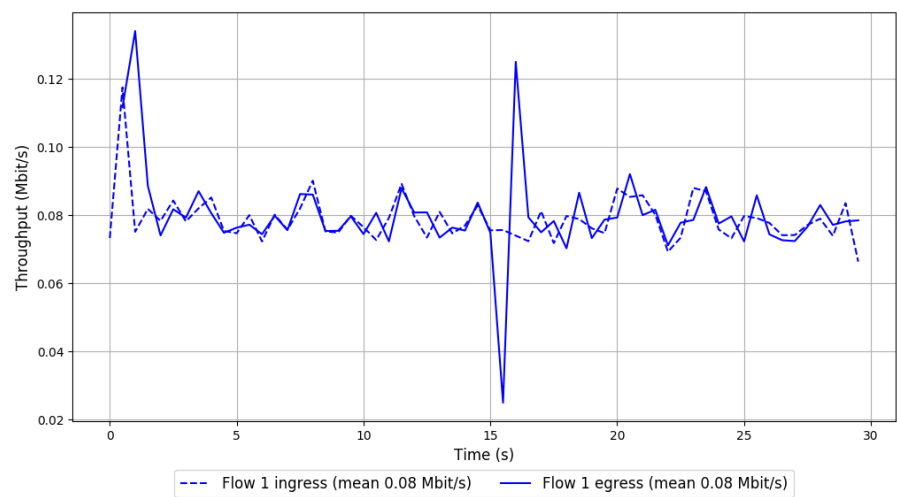


Run 1: Statistics of SCReAM

Start at: 2017-12-11 08:15:53
End at: 2017-12-11 08:16:23
Local clock offset: -5.665 ms
Remote clock offset: -5.009 ms

Below is generated by plot.py at 2017-12-11 09:00:52
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 136.604 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 136.604 ms
Loss rate: 0.13%

Run 1: Report of SReAM — Data Link

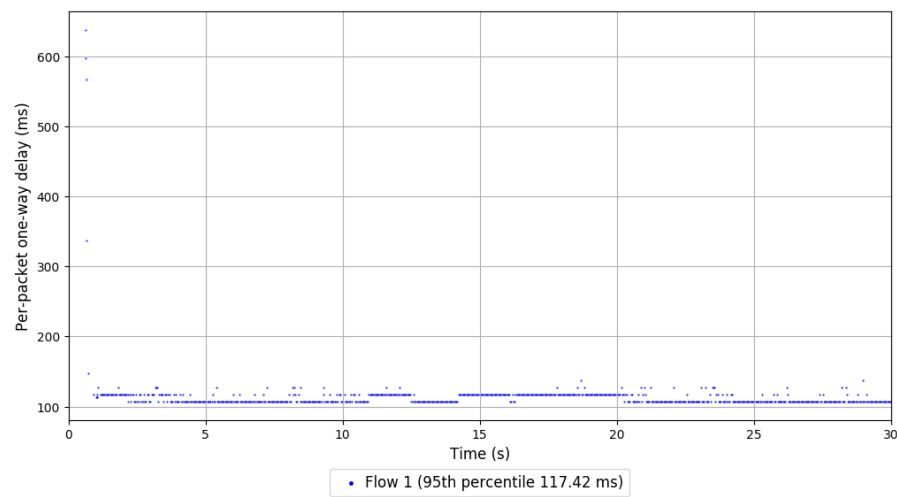
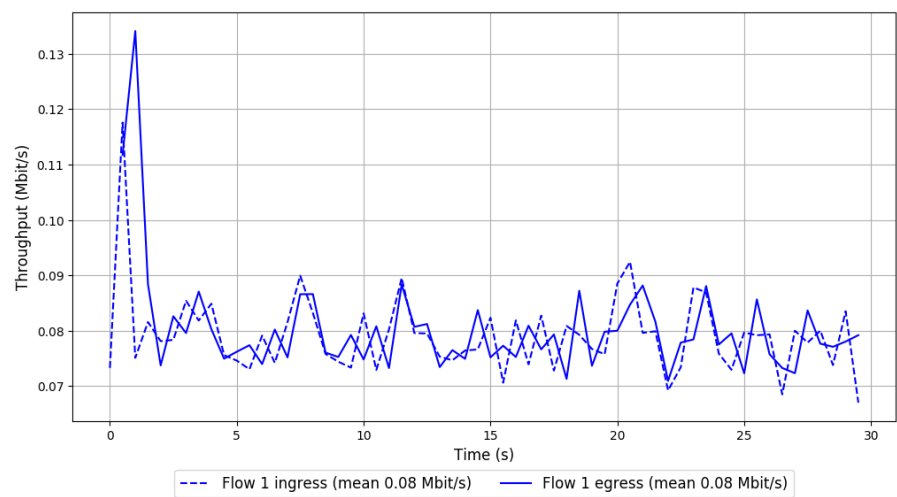


Run 2: Statistics of SCReAM

Start at: 2017-12-11 08:32:18
End at: 2017-12-11 08:32:48
Local clock offset: -3.949 ms
Remote clock offset: 0.807 ms

Below is generated by plot.py at 2017-12-11 09:00:52
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 117.415 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 117.415 ms
Loss rate: 0.13%

Run 2: Report of SReAM — Data Link

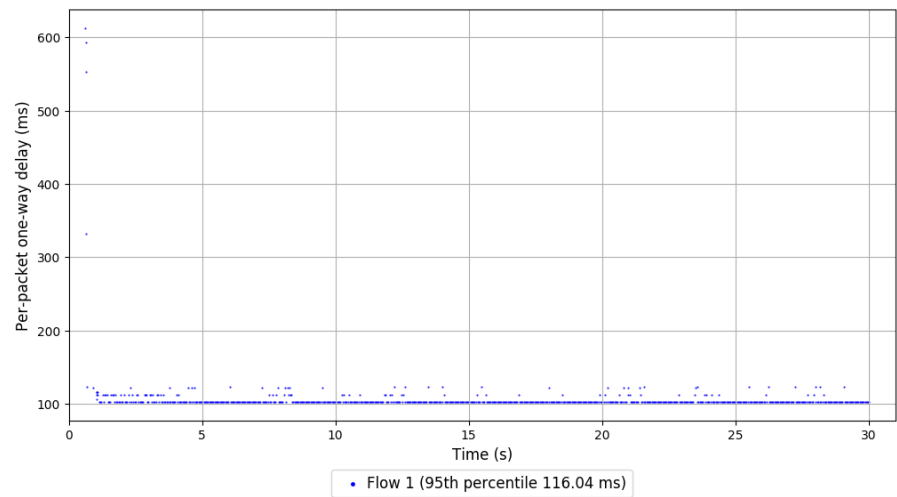
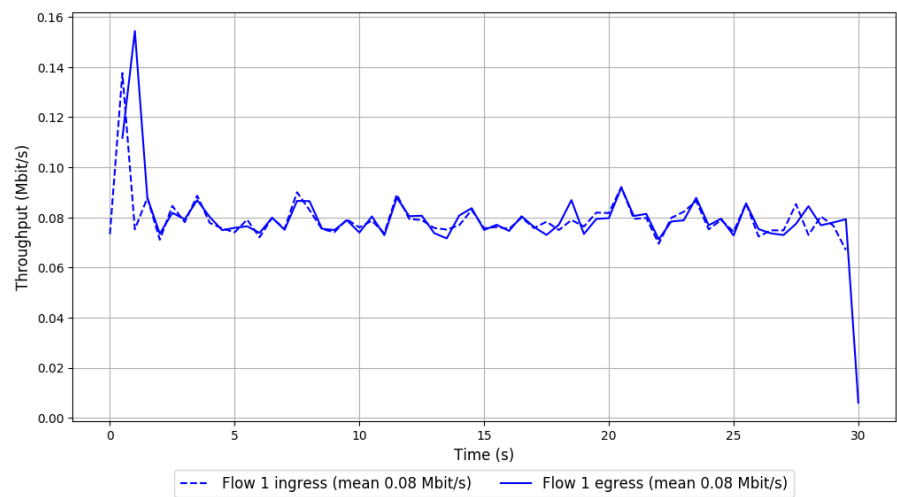


Run 3: Statistics of SCReAM

Start at: 2017-12-11 08:48:44
End at: 2017-12-11 08:49:15
Local clock offset: -4.235 ms
Remote clock offset: -3.927 ms

Below is generated by plot.py at 2017-12-11 09:00:52
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 116.040 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 116.040 ms
Loss rate: 0.00%

Run 3: Report of SReAM — Data Link

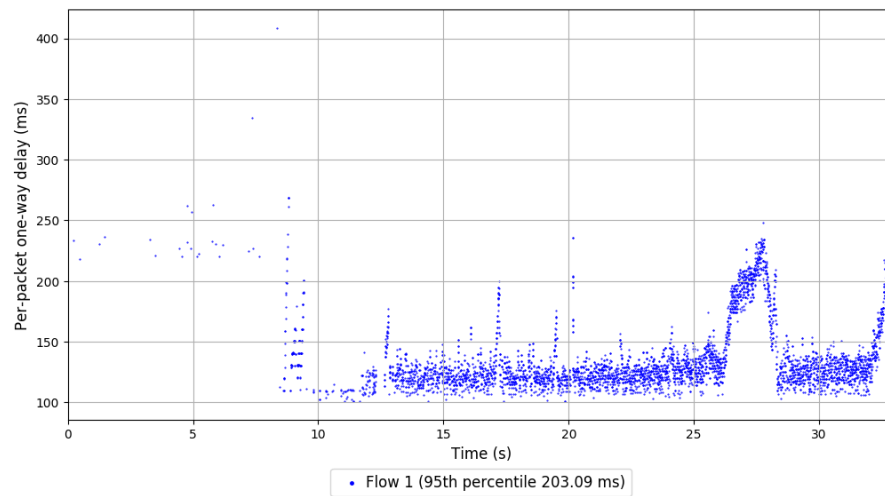
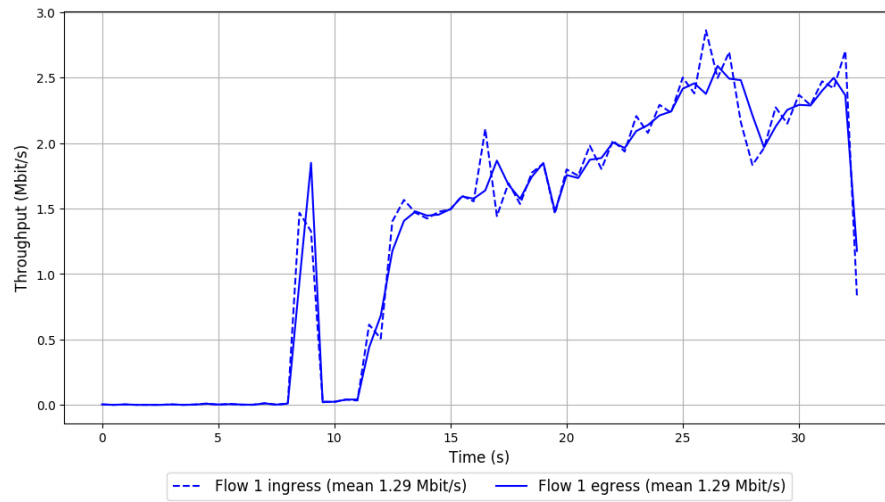


```
Run 1: Statistics of WebRTC media

Start at: 2017-12-11 08:25:15
End at: 2017-12-11 08:25:45
Local clock offset: -4.593 ms
Remote clock offset: -4.083 ms

# Below is generated by plot.py at 2017-12-11 09:00:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.29 Mbit/s
95th percentile per-packet one-way delay: 203.089 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 1.29 Mbit/s
95th percentile per-packet one-way delay: 203.089 ms
Loss rate: 0.70%
```

Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

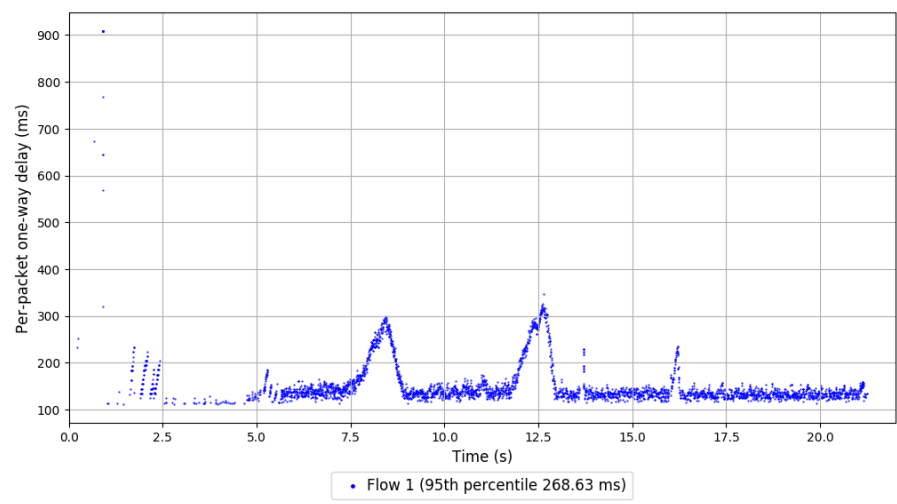
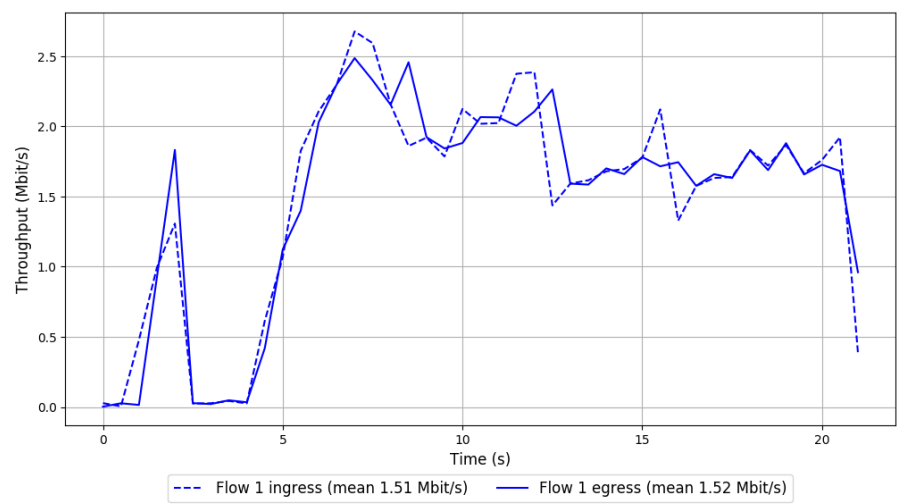
Start at: 2017-12-11 08:41:42

End at: 2017-12-11 08:42:12

Local clock offset: -5.013 ms

Remote clock offset: 0.895 ms

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2017-12-11 08:58:07

End at: 2017-12-11 08:58:37

Local clock offset: -4.628 ms

Remote clock offset: 1.297 ms

Below is generated by plot.py at 2017-12-11 09:00:54

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.14 Mbit/s

95th percentile per-packet one-way delay: 158.757 ms

Loss rate: 0.25%

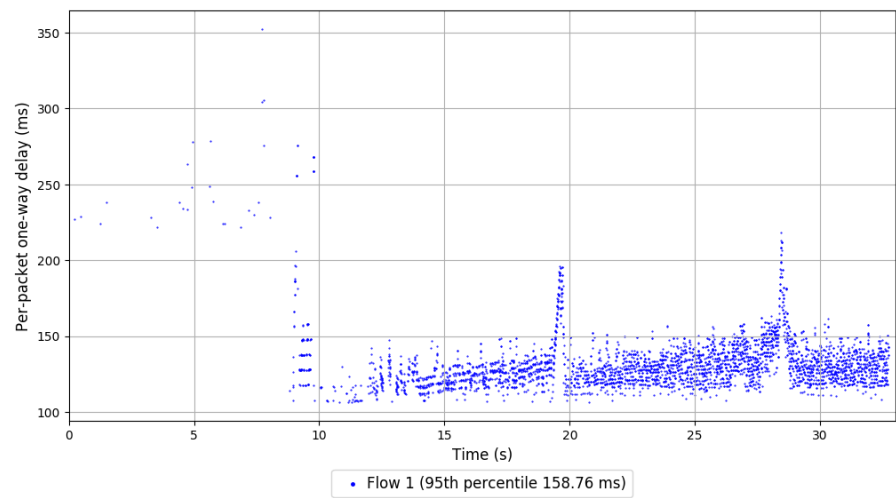
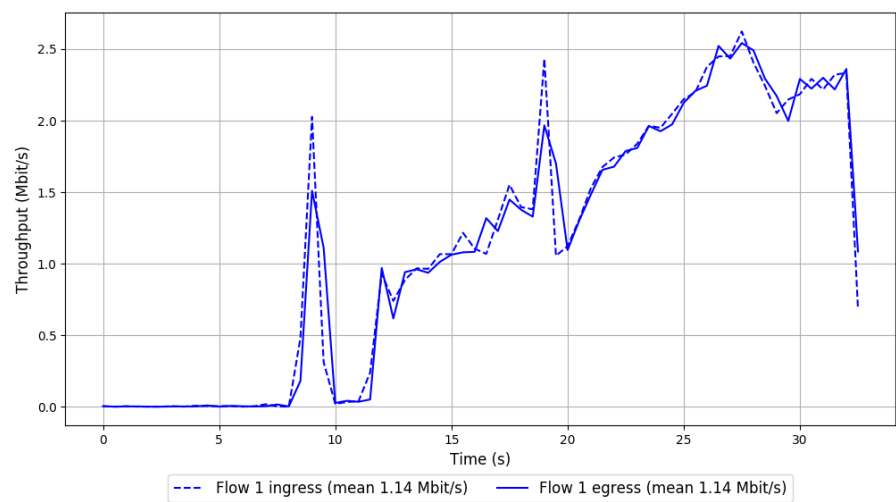
-- Flow 1:

Average throughput: 1.14 Mbit/s

95th percentile per-packet one-way delay: 158.757 ms

Loss rate: 0.25%

Run 3: Report of WebRTC media — Data Link

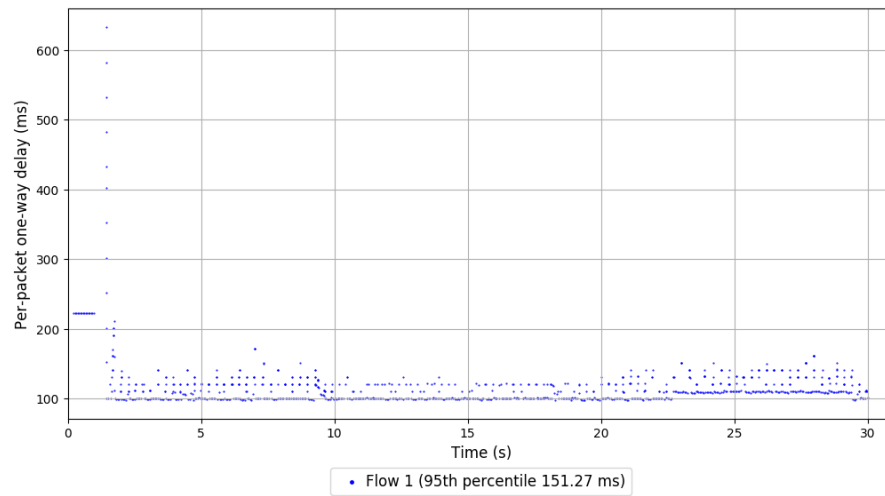
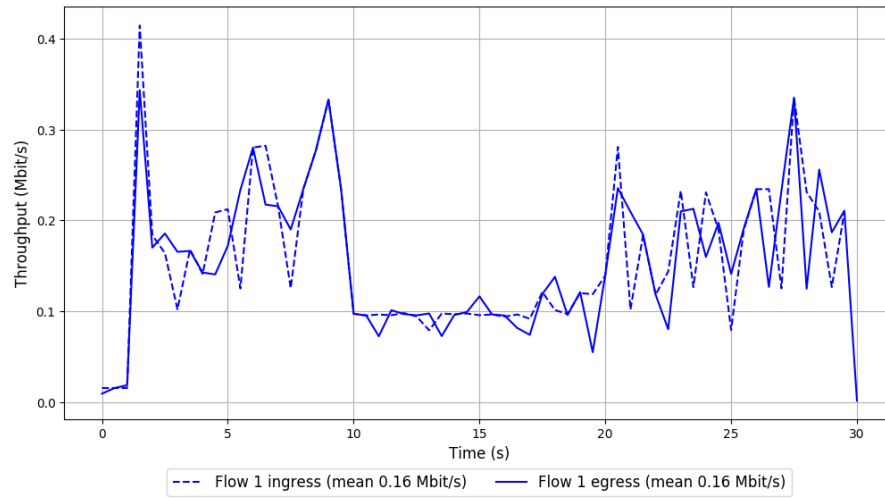


Run 1: Statistics of Sprout

Start at: 2017-12-11 08:21:44
End at: 2017-12-11 08:22:14
Local clock offset: -4.627 ms
Remote clock offset: -4.171 ms

Below is generated by plot.py at 2017-12-11 09:00:54
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 151.272 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 151.272 ms
Loss rate: 0.00%

Run 1: Report of Sprout — Data Link



Run 2: Statistics of Sprout

Start at: 2017-12-11 08:38:10

End at: 2017-12-11 08:38:40

Local clock offset: -4.5 ms

Remote clock offset: 1.233 ms

Below is generated by plot.py at 2017-12-11 09:00:54

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.15 Mbit/s

95th percentile per-packet one-way delay: 159.359 ms

Loss rate: 0.00%

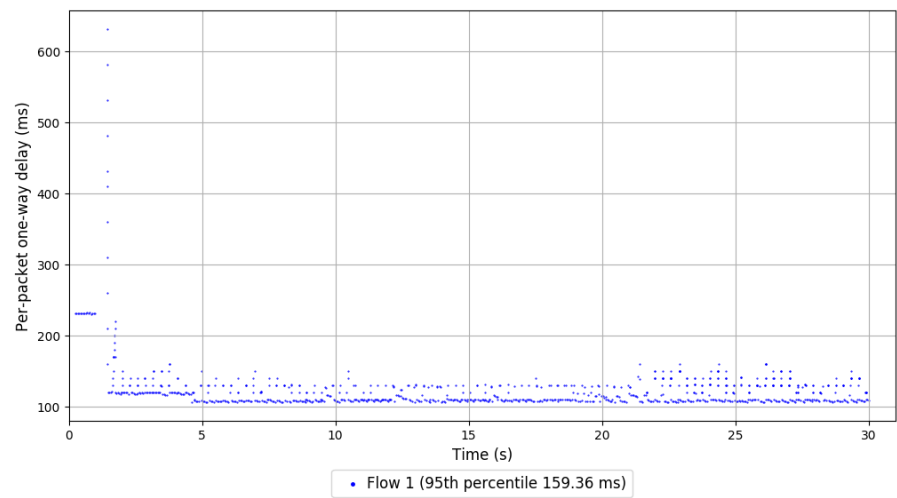
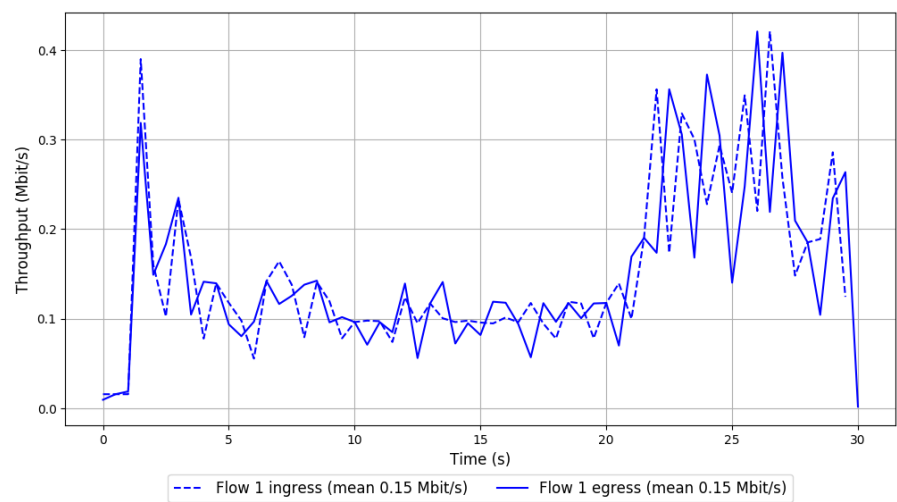
-- Flow 1:

Average throughput: 0.15 Mbit/s

95th percentile per-packet one-way delay: 159.359 ms

Loss rate: 0.00%

Run 2: Report of Sprout — Data Link

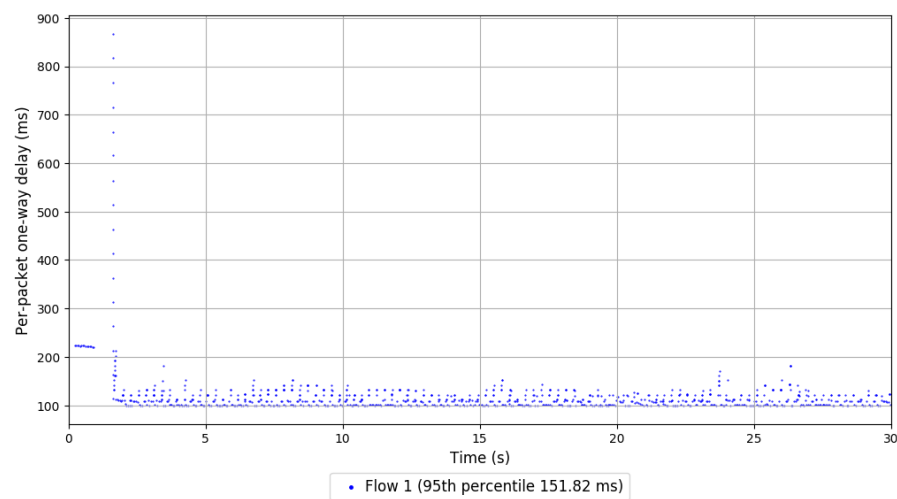
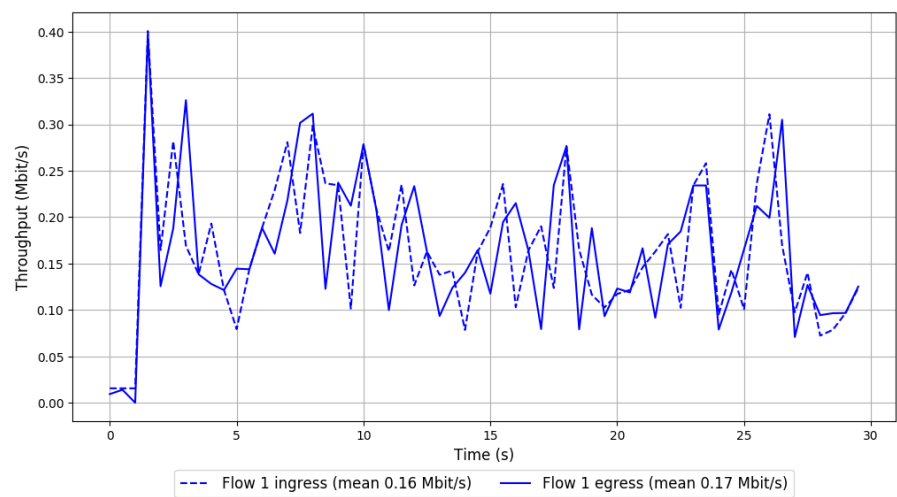


Run 3: Statistics of Sprout

Start at: 2017-12-11 08:54:36
End at: 2017-12-11 08:55:06
Local clock offset: -4.316 ms
Remote clock offset: -3.834 ms

Below is generated by plot.py at 2017-12-11 09:00:54
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 151.817 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 151.817 ms
Loss rate: 0.02%

Run 3: Report of Sprout — Data Link

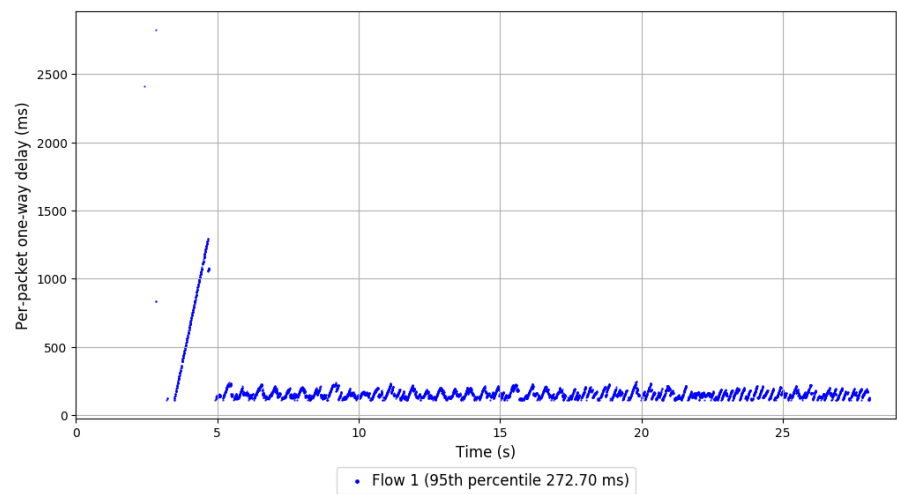
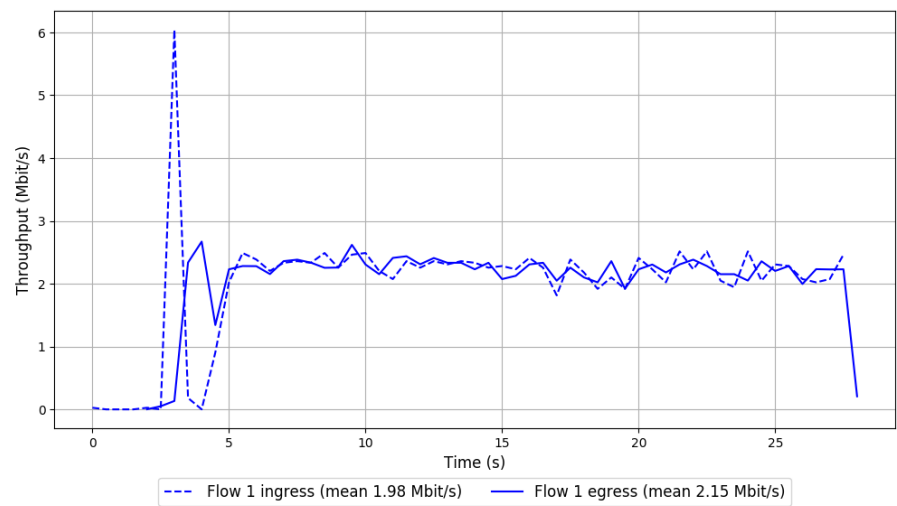


```
Run 1: Statistics of TaoVA-100x

Start at: 2017-12-11 08:12:21
End at: 2017-12-11 08:12:52
Local clock offset: -5.94 ms
Remote clock offset: 1.408 ms

# Below is generated by plot.py at 2017-12-11 09:01:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.15 Mbit/s
95th percentile per-packet one-way delay: 272.696 ms
Loss rate: 0.40%
-- Flow 1:
Average throughput: 2.15 Mbit/s
95th percentile per-packet one-way delay: 272.696 ms
Loss rate: 0.40%
```

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



Run 2: Statistics of TaoVA-100x

Start at: 2017-12-11 08:28:47

End at: 2017-12-11 08:29:17

Local clock offset: -3.976 ms

Remote clock offset: 0.71 ms

Below is generated by plot.py at 2017-12-11 09:01:02

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.08 Mbit/s

95th percentile per-packet one-way delay: 1105.126 ms

Loss rate: 0.34%

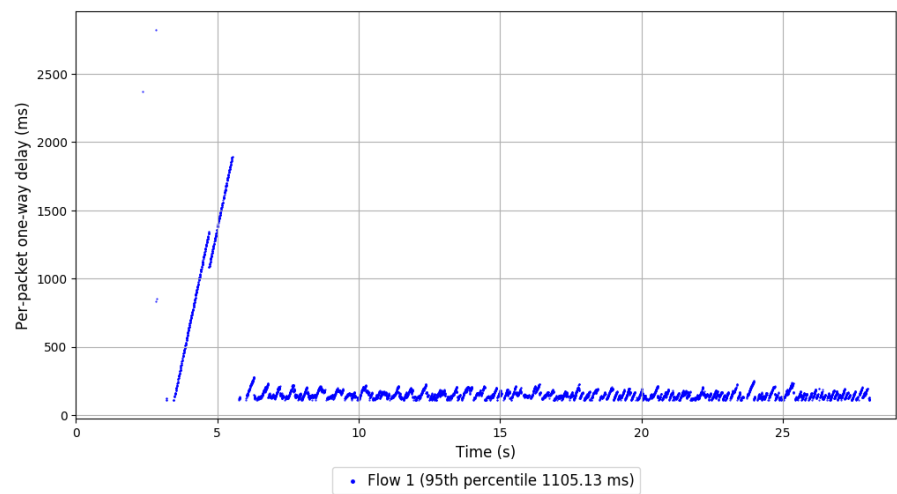
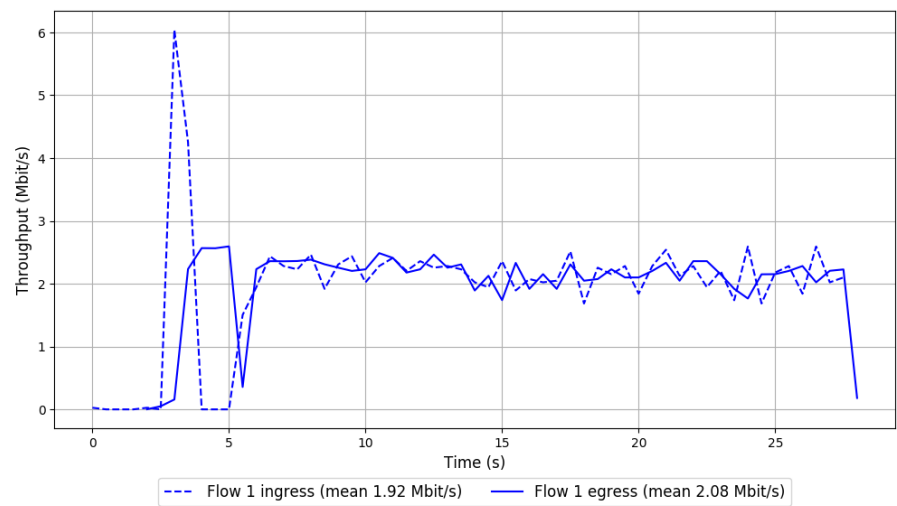
-- Flow 1:

Average throughput: 2.08 Mbit/s

95th percentile per-packet one-way delay: 1105.126 ms

Loss rate: 0.34%

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

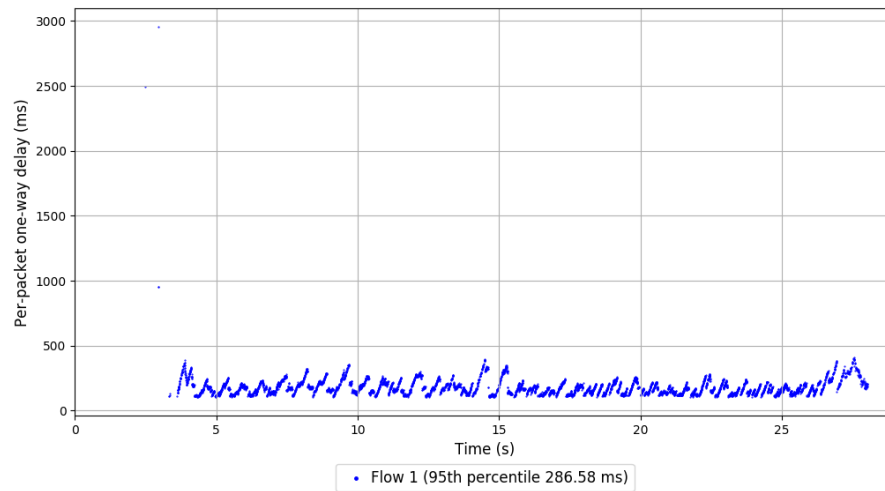
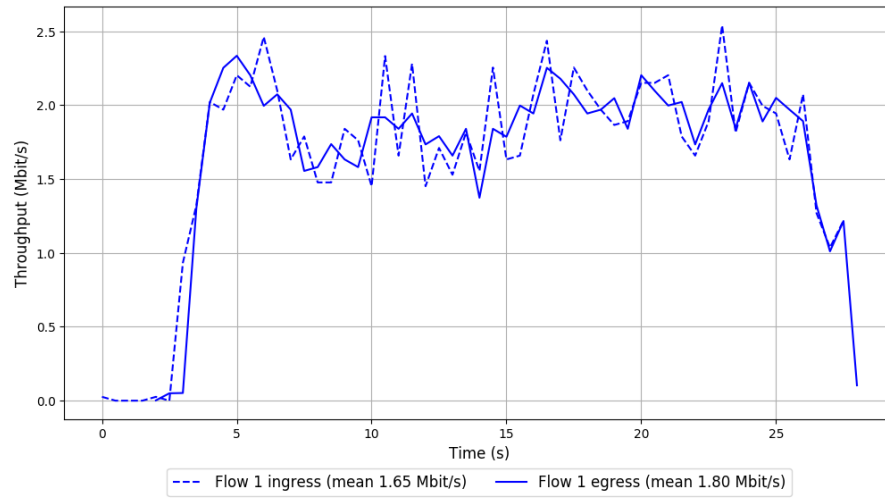


Run 3: Statistics of TaoVA-100x

Start at: 2017-12-11 08:45:13
End at: 2017-12-11 08:45:43
Local clock offset: -4.629 ms
Remote clock offset: -4.802 ms

Below is generated by plot.py at 2017-12-11 09:01:02
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.80 Mbit/s
95th percentile per-packet one-way delay: 286.585 ms
Loss rate: 0.56%
-- Flow 1:
Average throughput: 1.80 Mbit/s
95th percentile per-packet one-way delay: 286.585 ms
Loss rate: 0.56%

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

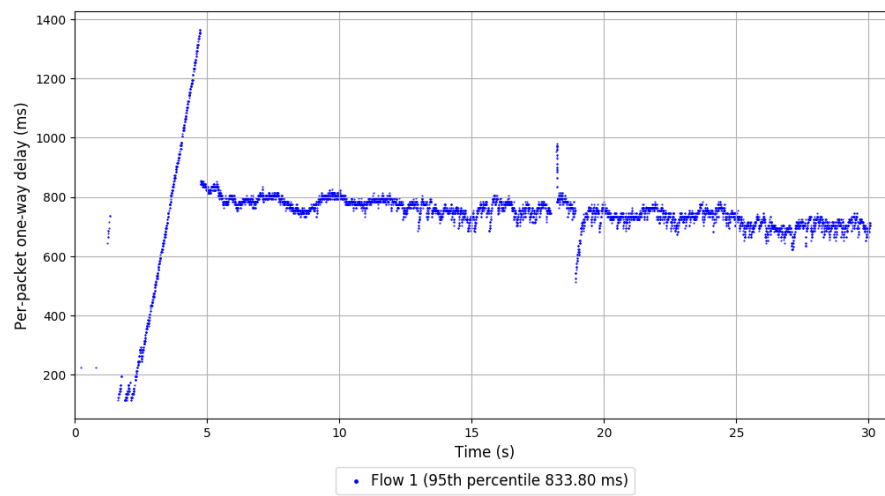
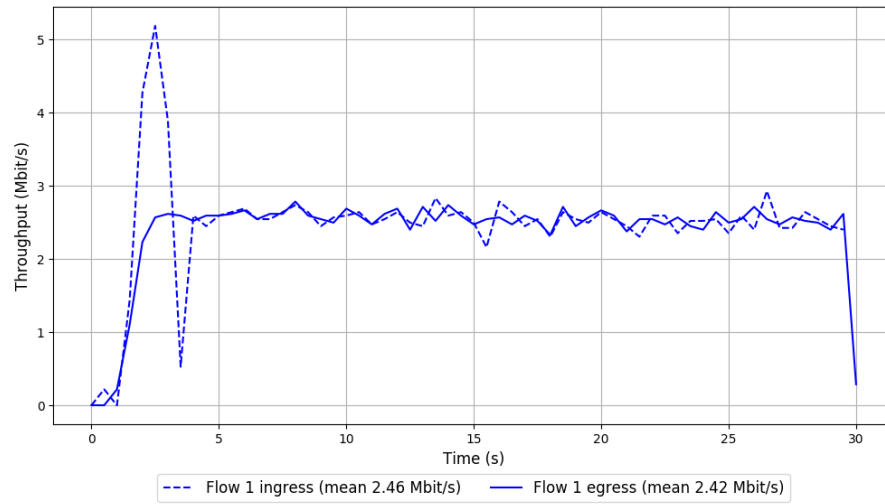


Run 1: Statistics of TCP Vegas

Start at: 2017-12-11 08:13:32
End at: 2017-12-11 08:14:02
Local clock offset: -5.748 ms
Remote clock offset: -4.161 ms

Below is generated by plot.py at 2017-12-11 09:01:02
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.42 Mbit/s
95th percentile per-packet one-way delay: 833.804 ms
Loss rate: 2.11%
-- Flow 1:
Average throughput: 2.42 Mbit/s
95th percentile per-packet one-way delay: 833.804 ms
Loss rate: 2.11%

Run 1: Report of TCP Vegas — Data Link



Run 2: Statistics of TCP Vegas

Start at: 2017-12-11 08:29:57

End at: 2017-12-11 08:30:27

Local clock offset: -3.951 ms

Remote clock offset: 0.832 ms

Below is generated by plot.py at 2017-12-11 09:01:02

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.00 Mbit/s

95th percentile per-packet one-way delay: 868.497 ms

Loss rate: 1.17%

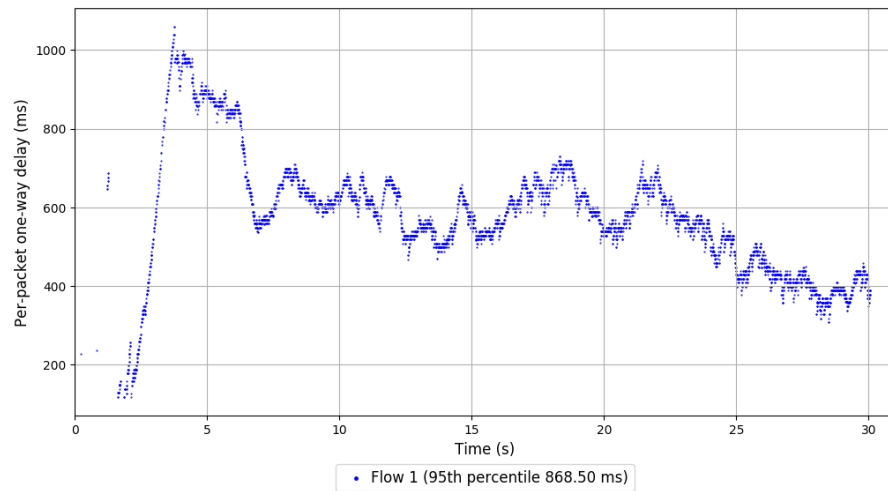
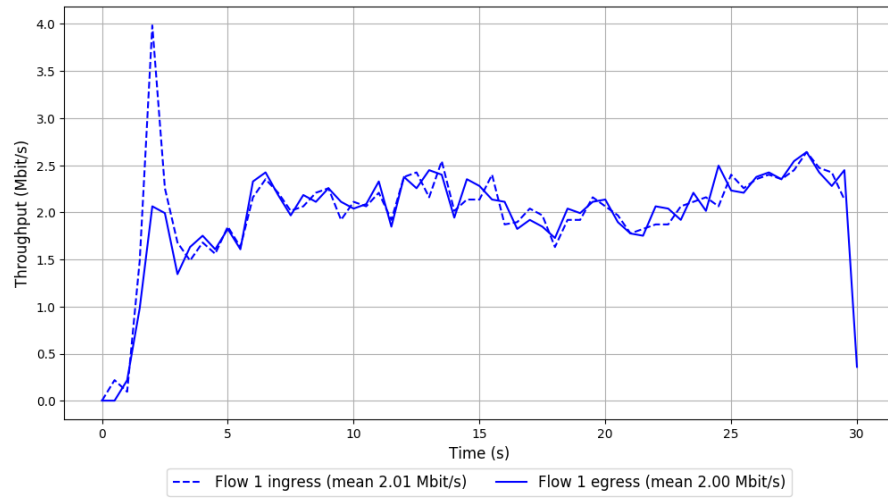
-- Flow 1:

Average throughput: 2.00 Mbit/s

95th percentile per-packet one-way delay: 868.497 ms

Loss rate: 1.17%

Run 2: Report of TCP Vegas — Data Link



Run 3: Statistics of TCP Vegas

Start at: 2017-12-11 08:46:24

End at: 2017-12-11 08:46:54

Local clock offset: -4.519 ms

Remote clock offset: 0.47 ms

Below is generated by plot.py at 2017-12-11 09:01:02

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.47 Mbit/s

95th percentile per-packet one-way delay: 881.311 ms

Loss rate: 2.12%

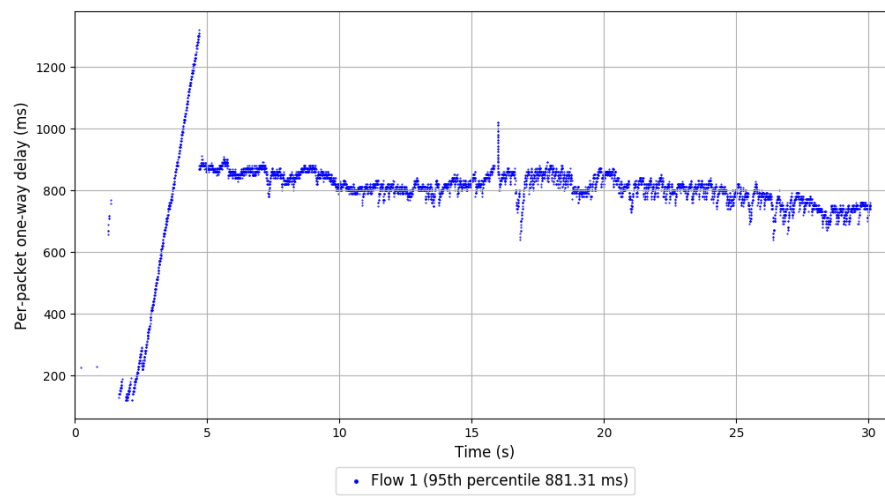
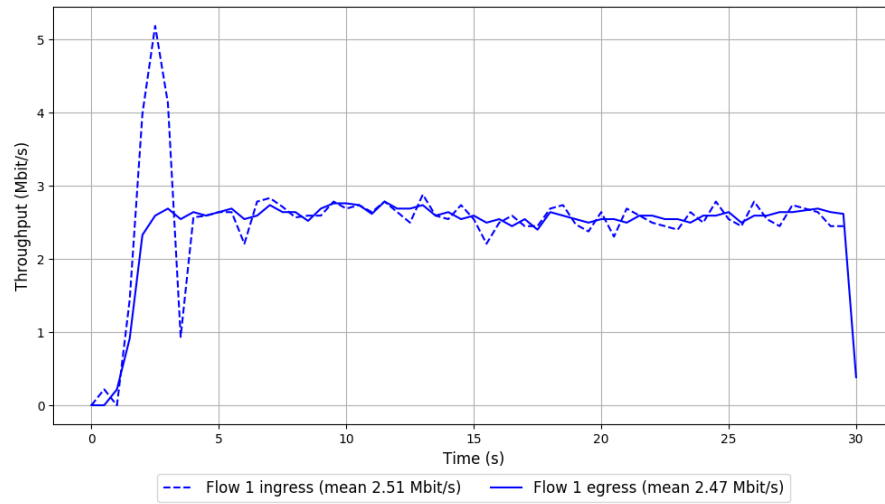
-- Flow 1:

Average throughput: 2.47 Mbit/s

95th percentile per-packet one-way delay: 881.311 ms

Loss rate: 2.12%

Run 3: Report of TCP Vegas — Data Link

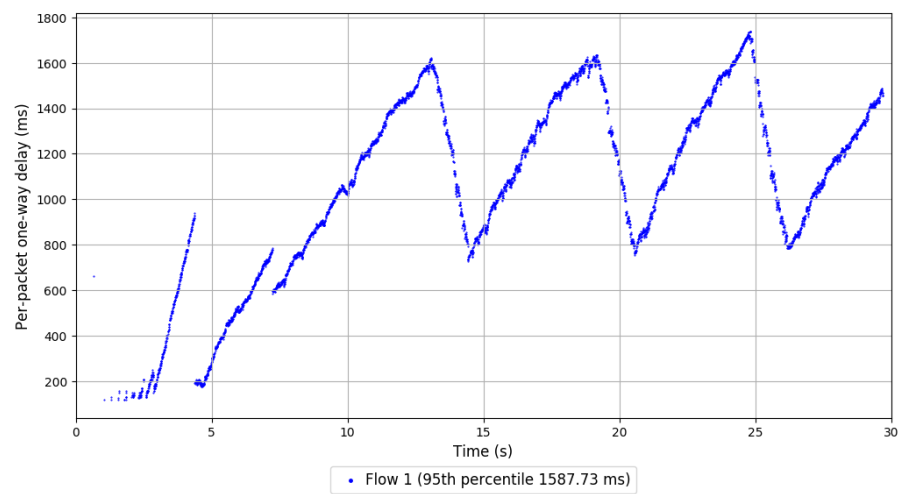
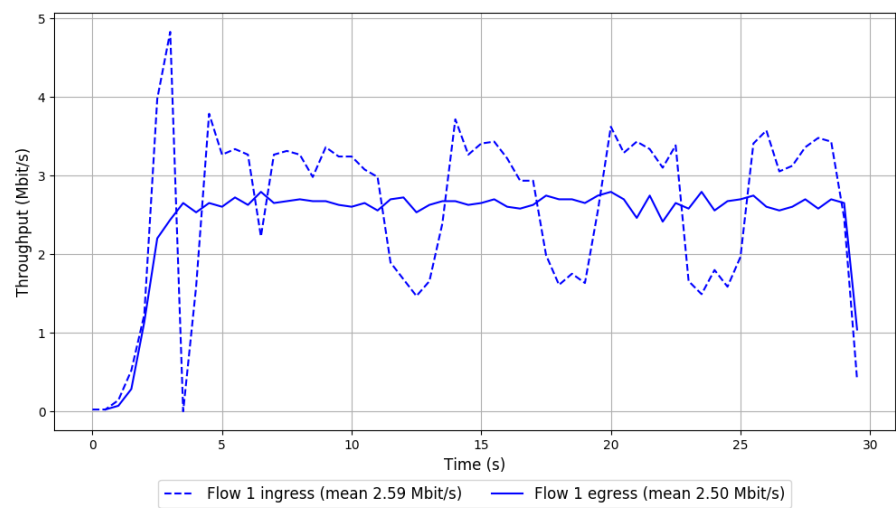


Run 1: Statistics of Verus

Start at: 2017-12-11 08:26:26
End at: 2017-12-11 08:26:56
Local clock offset: -4.418 ms
Remote clock offset: -4.103 ms

Below is generated by plot.py at 2017-12-11 09:01:02
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.50 Mbit/s
95th percentile per-packet one-way delay: 1587.732 ms
Loss rate: 5.48%
-- Flow 1:
Average throughput: 2.50 Mbit/s
95th percentile per-packet one-way delay: 1587.732 ms
Loss rate: 5.48%

Run 1: Report of Verus — Data Link



Run 2: Statistics of Verus

Start at: 2017-12-11 08:42:52

End at: 2017-12-11 08:43:22

Local clock offset: -5.125 ms

Remote clock offset: -3.91 ms

Below is generated by plot.py at 2017-12-11 09:01:02

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.49 Mbit/s

95th percentile per-packet one-way delay: 1736.438 ms

Loss rate: 4.67%

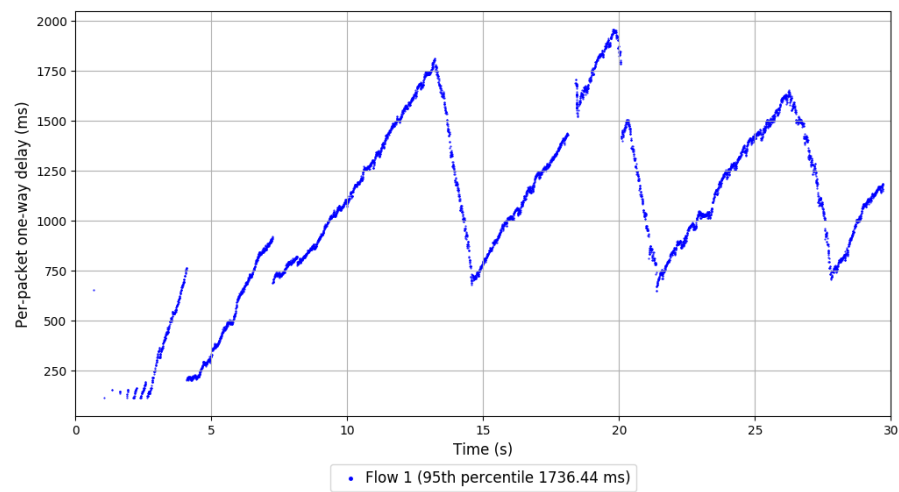
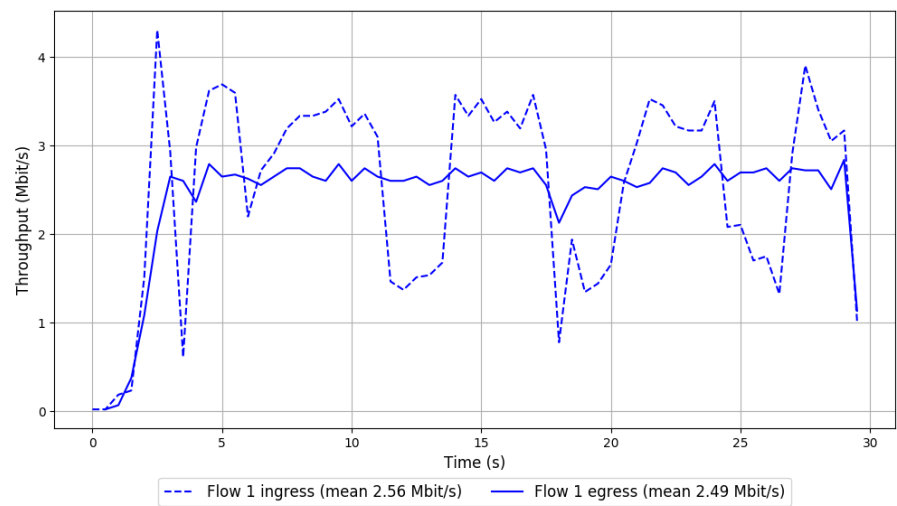
-- Flow 1:

Average throughput: 2.49 Mbit/s

95th percentile per-packet one-way delay: 1736.438 ms

Loss rate: 4.67%

Run 2: Report of Verus — Data Link

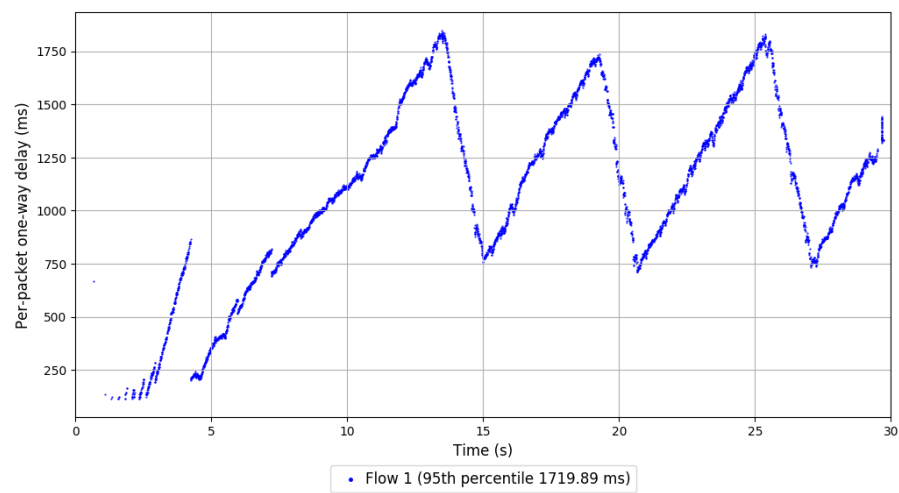
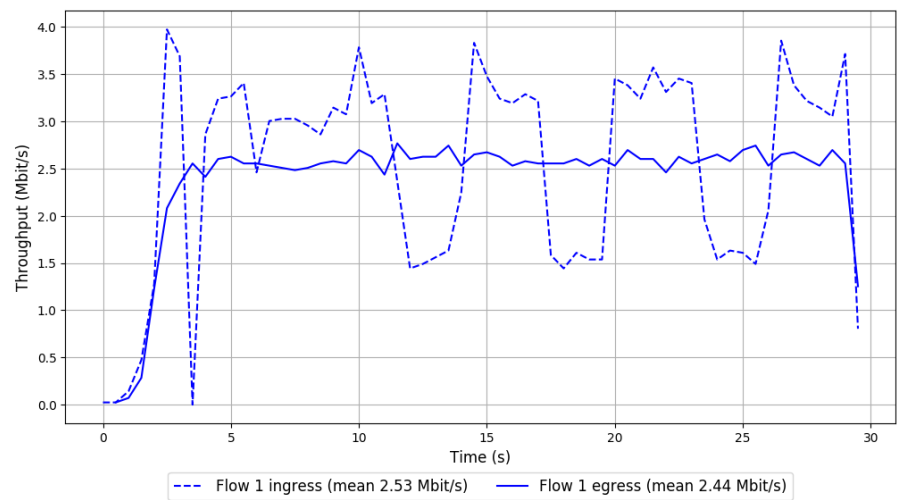


Run 3: Statistics of Verus

Start at: 2017-12-11 08:59:17
End at: 2017-12-11 08:59:47
Local clock offset: -4.788 ms
Remote clock offset: -3.914 ms

Below is generated by plot.py at 2017-12-11 09:01:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.44 Mbit/s
95th percentile per-packet one-way delay: 1719.888 ms
Loss rate: 5.45%
-- Flow 1:
Average throughput: 2.44 Mbit/s
95th percentile per-packet one-way delay: 1719.888 ms
Loss rate: 5.45%

Run 3: Report of Verus — Data Link



Run 1: Statistics of Copa

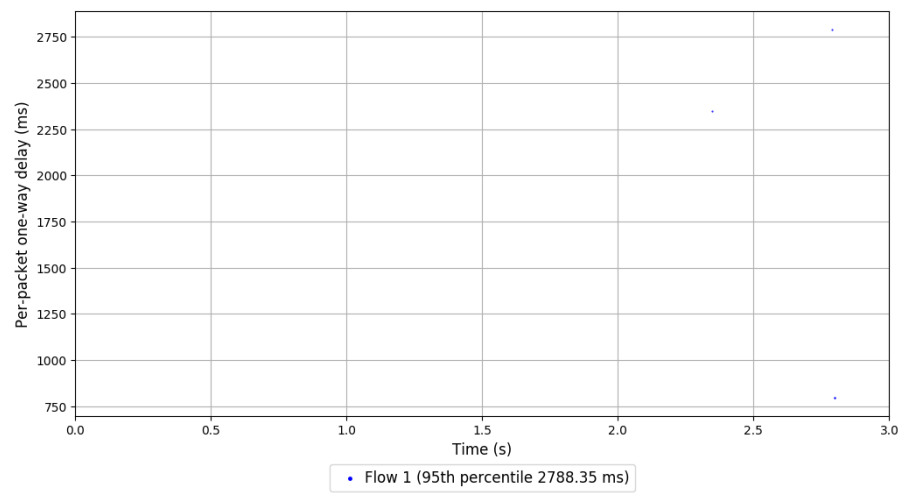
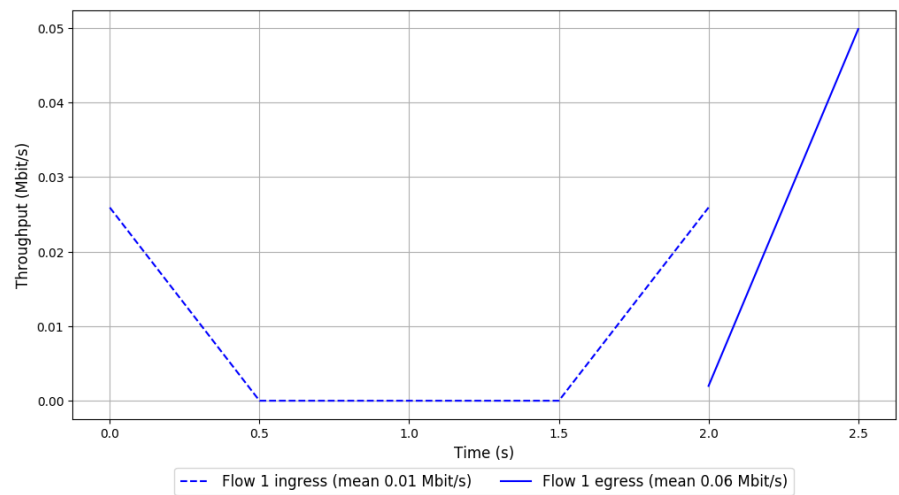
Start at: 2017-12-11 08:11:12

End at: 2017-12-11 08:11:42

Local clock offset: -6.125 ms

Remote clock offset: 0.656 ms

Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

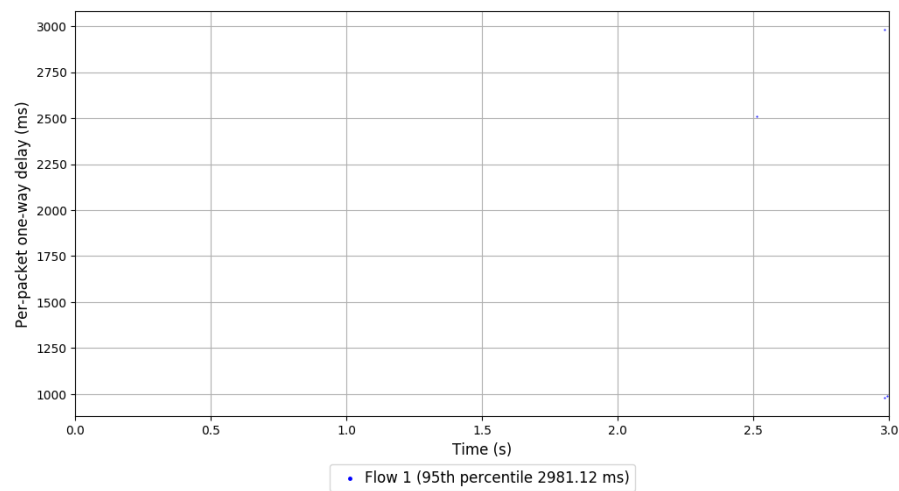
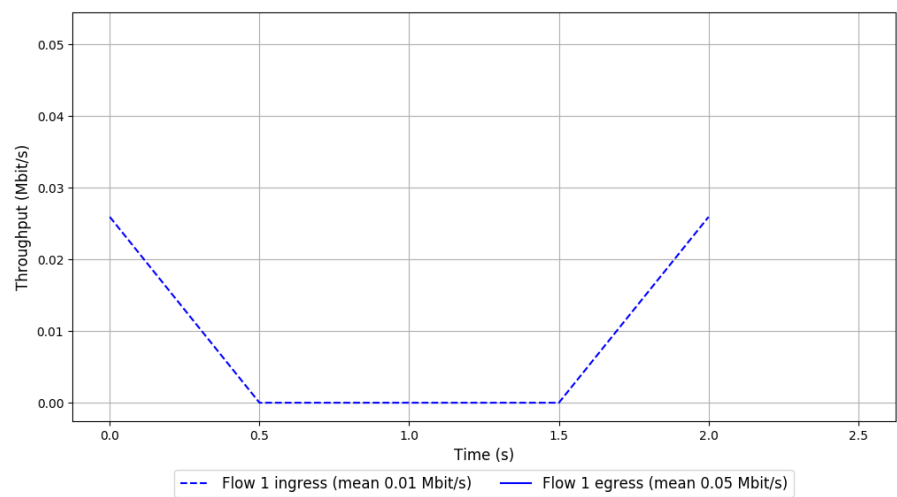
Start at: 2017-12-11 08:27:37

End at: 2017-12-11 08:28:07

Local clock offset: -4.206 ms

Remote clock offset: -4.12 ms

Run 2: Report of Copa — Data Link



Run 3: Statistics of Copa

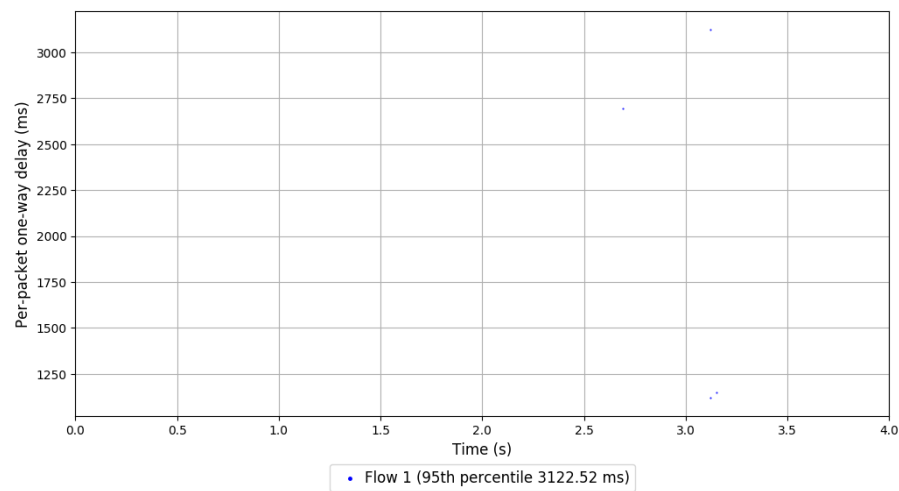
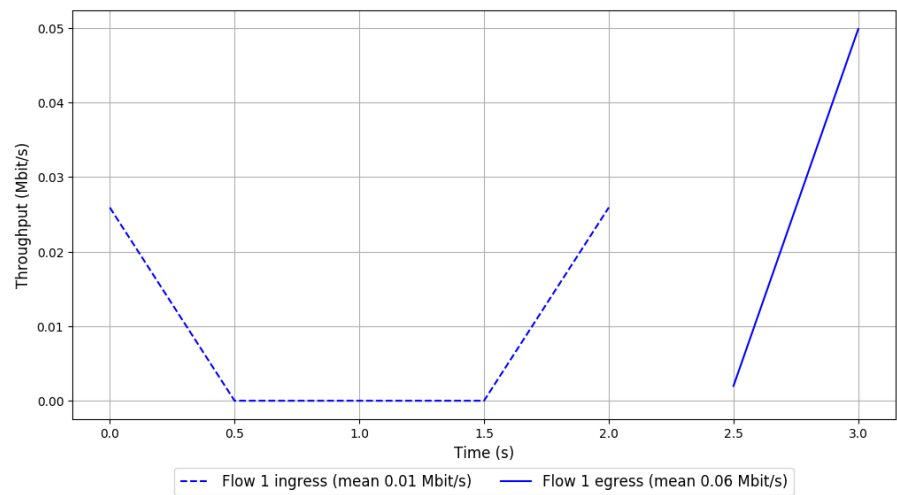
Start at: 2017-12-11 08:44:03

End at: 2017-12-11 08:44:33

Local clock offset: -4.795 ms

Remote clock offset: 0.154 ms

Run 3: Report of Copa — Data Link

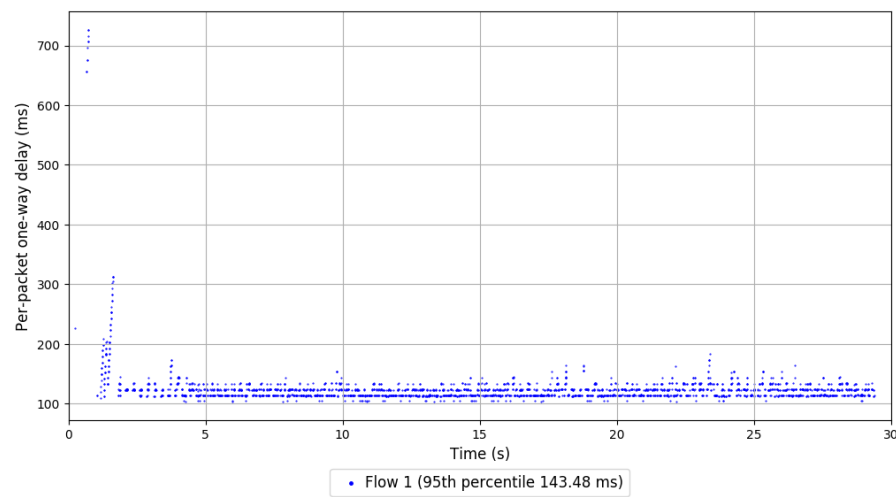
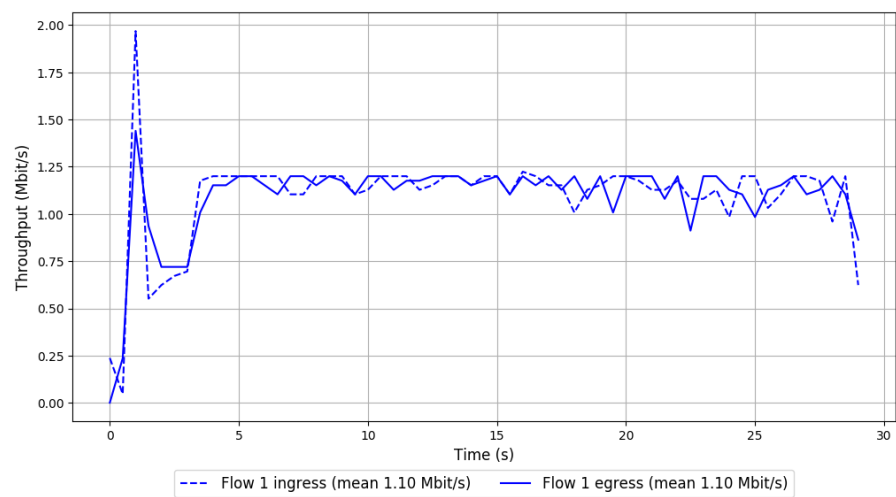


```
Run 1: Statistics of Indigo

Start at: 2017-12-11 08:20:34
End at: 2017-12-11 08:21:04
Local clock offset: -4.717 ms
Remote clock offset: -4.199 ms

# Below is generated by plot.py at 2017-12-11 09:01:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.10 Mbit/s
95th percentile per-packet one-way delay: 143.482 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.10 Mbit/s
95th percentile per-packet one-way delay: 143.482 ms
Loss rate: 0.00%
```

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2017-12-11 08:37:00

End at: 2017-12-11 08:37:30

Local clock offset: -4.311 ms

Remote clock offset: -3.9 ms

Below is generated by plot.py at 2017-12-11 09:01:08

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.56 Mbit/s

95th percentile per-packet one-way delay: 178.196 ms

Loss rate: 0.37%

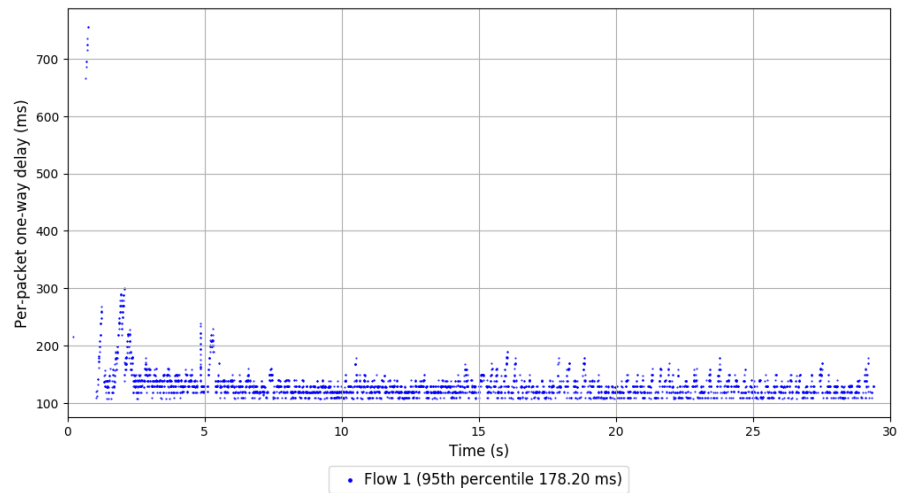
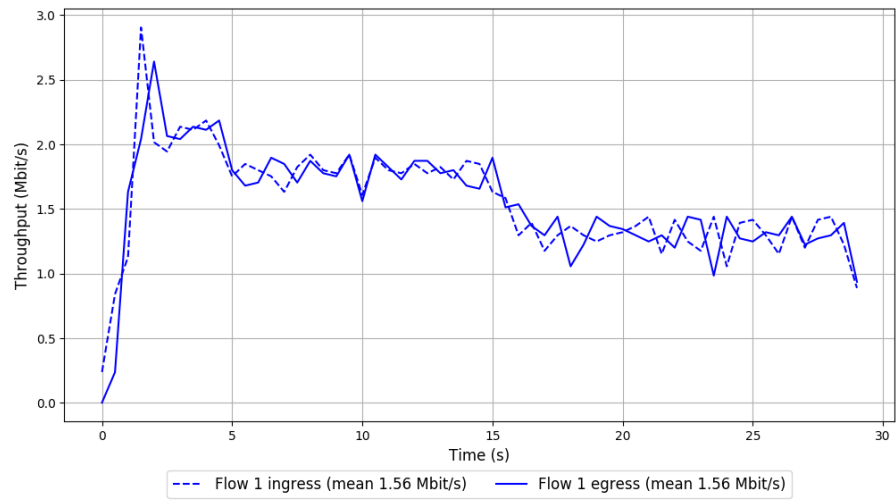
-- Flow 1:

Average throughput: 1.56 Mbit/s

95th percentile per-packet one-way delay: 178.196 ms

Loss rate: 0.37%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2017-12-11 08:53:25

End at: 2017-12-11 08:53:55

Local clock offset: -4.275 ms

Remote clock offset: 1.763 ms

Below is generated by plot.py at 2017-12-11 09:01:08

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.48 Mbit/s

95th percentile per-packet one-way delay: 193.985 ms

Loss rate: 0.06%

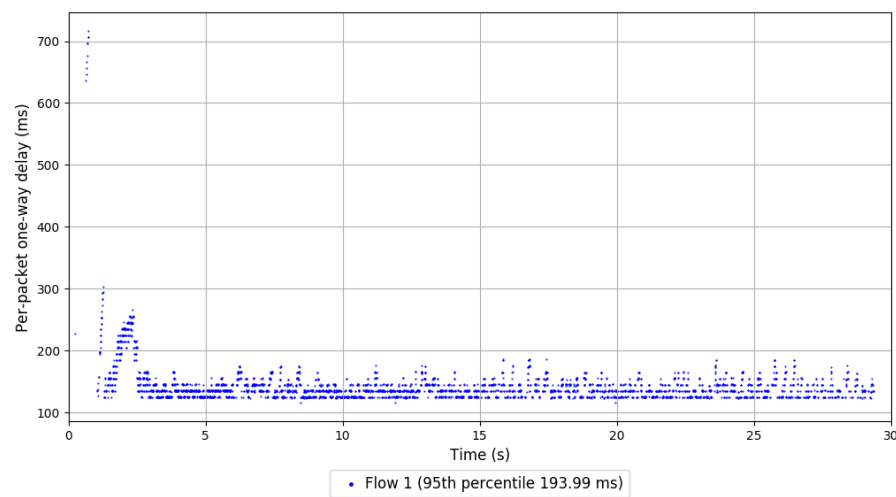
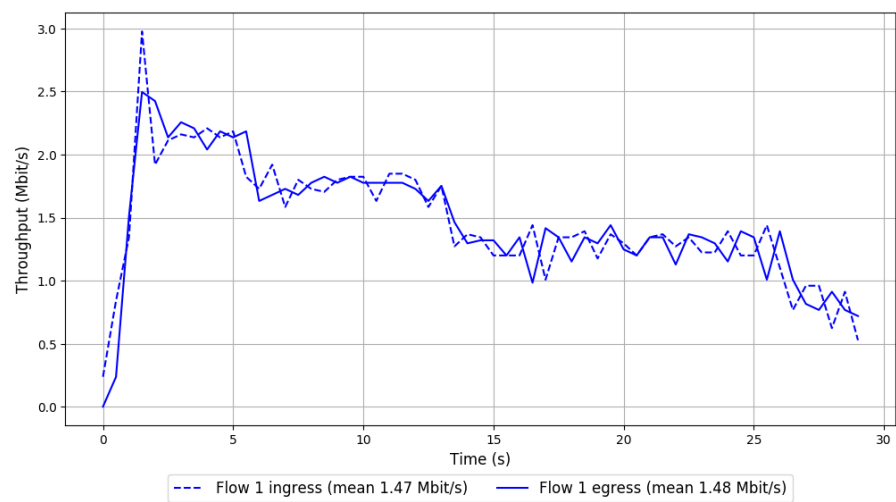
-- Flow 1:

Average throughput: 1.48 Mbit/s

95th percentile per-packet one-way delay: 193.985 ms

Loss rate: 0.06%

Run 3: Report of Indigo — Data Link

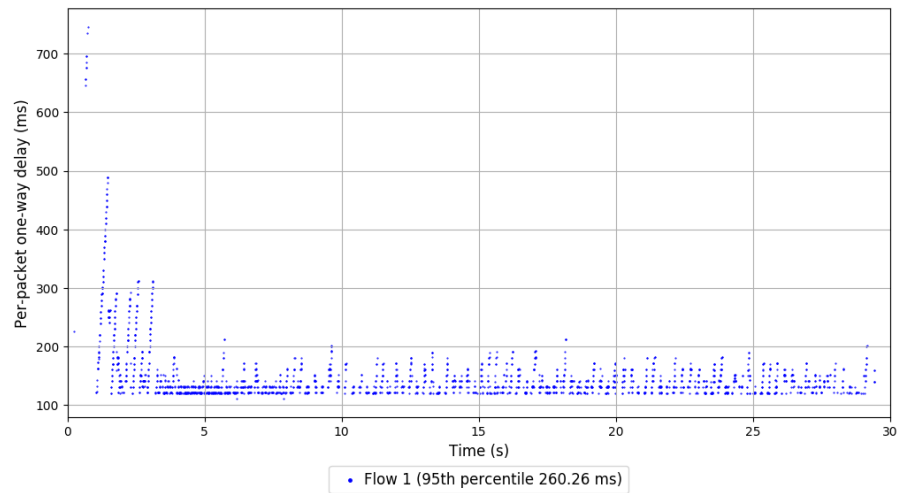
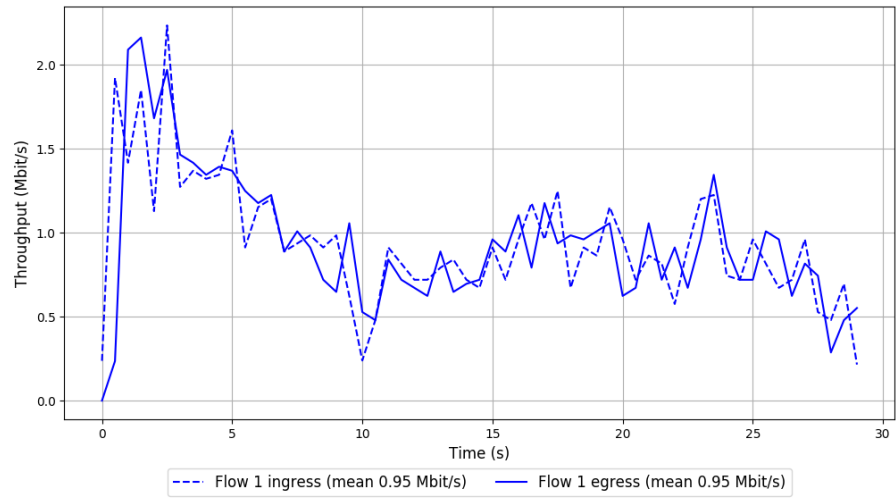


```
Run 1: Statistics of Indigo-calib

Start at: 2017-12-11 08:24:05
End at: 2017-12-11 08:24:35
Local clock offset: -4.702 ms
Remote clock offset: 1.572 ms

# Below is generated by plot.py at 2017-12-11 09:01:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.95 Mbit/s
95th percentile per-packet one-way delay: 260.263 ms
Loss rate: 0.17%
-- Flow 1:
Average throughput: 0.95 Mbit/s
95th percentile per-packet one-way delay: 260.263 ms
Loss rate: 0.17%
```

Run 1: Report of Indigo-calib — Data Link



Run 2: Statistics of Indigo-calib

Start at: 2017-12-11 08:40:32

End at: 2017-12-11 08:41:02

Local clock offset: -4.885 ms

Remote clock offset: 0.845 ms

Below is generated by plot.py at 2017-12-11 09:01:08

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.71 Mbit/s

95th percentile per-packet one-way delay: 274.598 ms

Loss rate: 0.00%

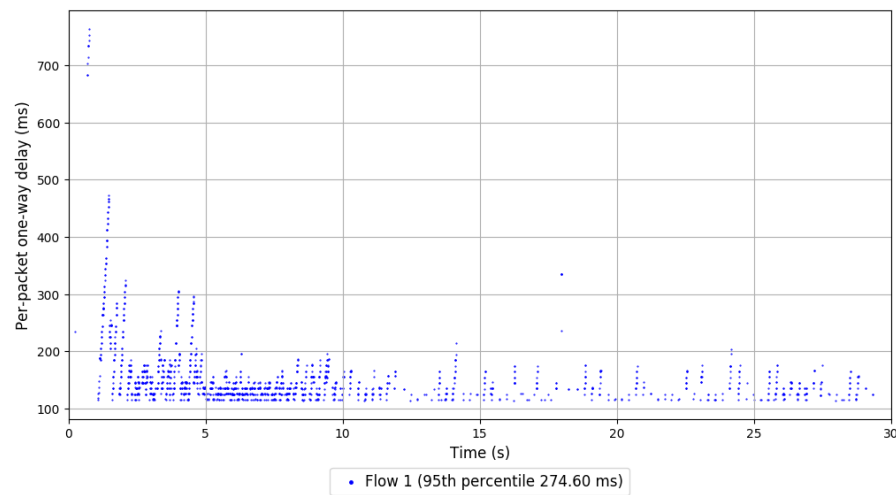
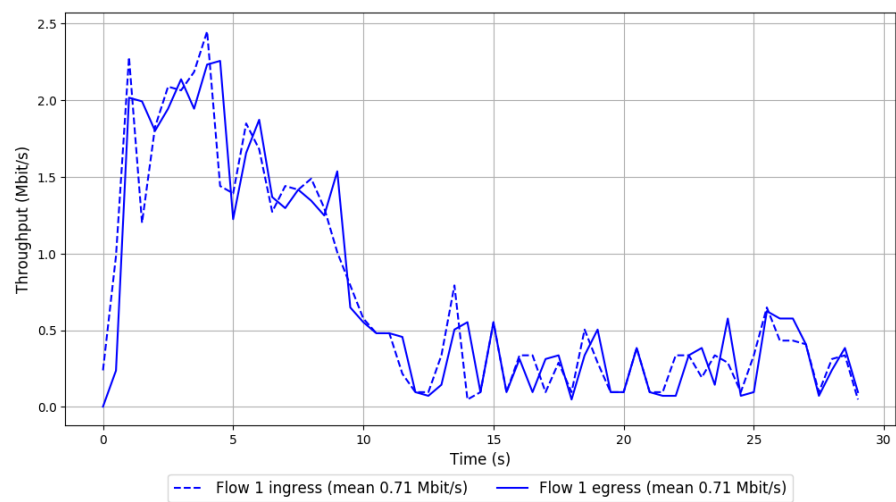
-- Flow 1:

Average throughput: 0.71 Mbit/s

95th percentile per-packet one-way delay: 274.598 ms

Loss rate: 0.00%

Run 2: Report of Indigo-calib — Data Link



```
Run 3: Statistics of Indigo-calib

Start at: 2017-12-11 08:56:57
End at: 2017-12-11 08:57:27
Local clock offset: -4.532 ms
Remote clock offset: 1.318 ms

# Below is generated by plot.py at 2017-12-11 09:01:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.13 Mbit/s
95th percentile per-packet one-way delay: 217.279 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.13 Mbit/s
95th percentile per-packet one-way delay: 217.279 ms
Loss rate: 0.00%
```

Run 3: Report of Indigo-calib — Data Link

