

Pantheon Report

Generated at 2018-03-20 07:54:09 (UTC).

Data path: Colombia ppp0 (*remote*) → AWS Brazil 2 Ethernet (*local*).

Repeated the test of 17 congestion control schemes 3 times.

Each test lasted for 30 seconds running 1 flow.

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

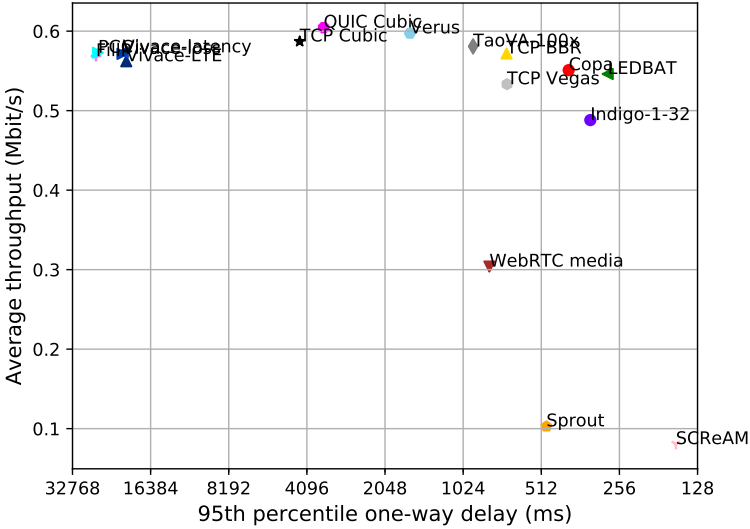
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo_fast**).

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

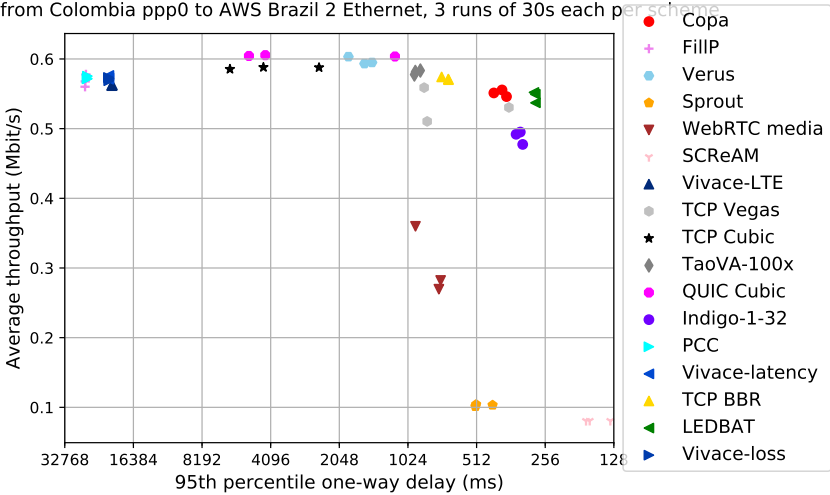
Git summary:

```
branch: master @ f12c42a2c63fdd9a862eefa0468859bf379b6623
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
  M datagrump/sender.cc
third_party/fillp @ 828bbf95fd4941149b5cec90f281d1c69ae1a5c6
third_party/genericCC @ 9249eea3238475c4d8cca1443d28df70bff6c4a2
third_party/indigo @ a9b2060d39e4da2e8987e893e3eca2a6c7cd0ab9
third_party/indigo-1-layer-128-unit @ 3ae9e4ef4230db7484501f82ce8b377695f2f66d
third_party/indigo-1-layer-32-unit @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/indigo-1-layer-32-unit-no-calib @ 1f3a7f75b41135ed5b540c0fd3505939528e2a5f
third_party/indigo-no-calib @ 7224f2202e8a044d8306fa0b983ad84360c53d89
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
  M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ fb1053193c2861da659ba9013db26744ccfcf993
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-quir @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream @ c3370fd7bd17265a79aeb34e4016ad23f5965885
third_party/sourdough @ f1a14bffe749737437f61b1eaeab30b267cde681
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/vivace @ 7a4ba531e75b4a6f66f5c4580192120401784ce3
third_party/webrtc @ a488197ddd041ace68a42849b2540ad834825f42
```

test from Colombia ppp0 to AWS Brazil 2 Ethernet, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from Colombia ppp0 to AWS Brazil 2 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	0.57	696.64	2.31
TCP Cubic	3	0.59	4366.72	11.51
LEDBAT	3	0.55	284.14	1.55
PCC	3	0.57	26118.97	98.39
QUIC Cubic	3	0.60	3531.00	13.80
SCReAM	3	0.08	155.18	0.79
WebRTC media	3	0.30	811.50	2.05
Sprout	3	0.10	489.33	1.51
TaoVA-100x	3	0.58	937.59	2.83
TCP Vegas	3	0.53	694.11	1.60
Verus	3	0.59	1642.43	5.04
Copa	3	0.55	401.50	3.24
FillP	3	0.57	26603.31	98.68
Indigo-1-32	3	0.49	331.39	2.08
Vivace-latency	3	0.57	20992.25	70.16
Vivace-loss	3	0.57	21024.52	89.26
Vivace-LTE	3	0.56	20337.63	70.60

Run 1: Statistics of TCP BBR

Start at: 2018-03-20 06:06:42

End at: 2018-03-20 06:07:12

Local clock offset: -9.408 ms

Remote clock offset: 5.805 ms

Below is generated by plot.py at 2018-03-20 07:53:32

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 681.202 ms

Loss rate: 2.29%

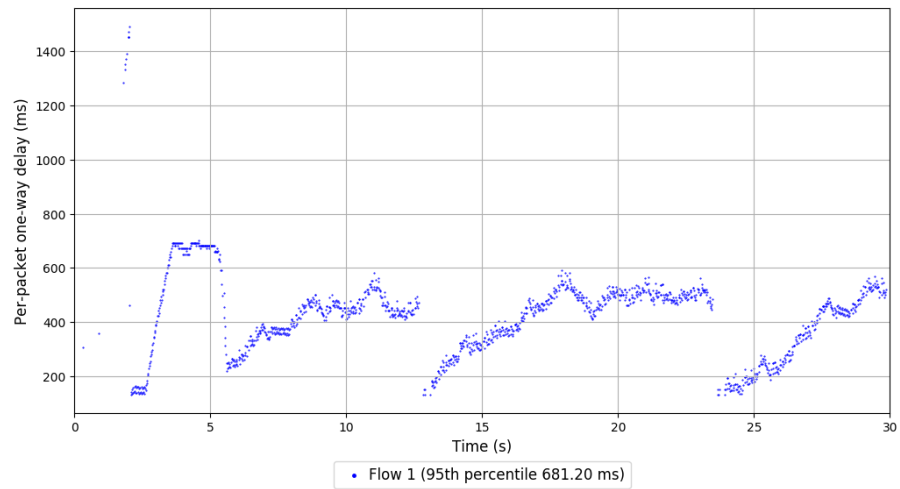
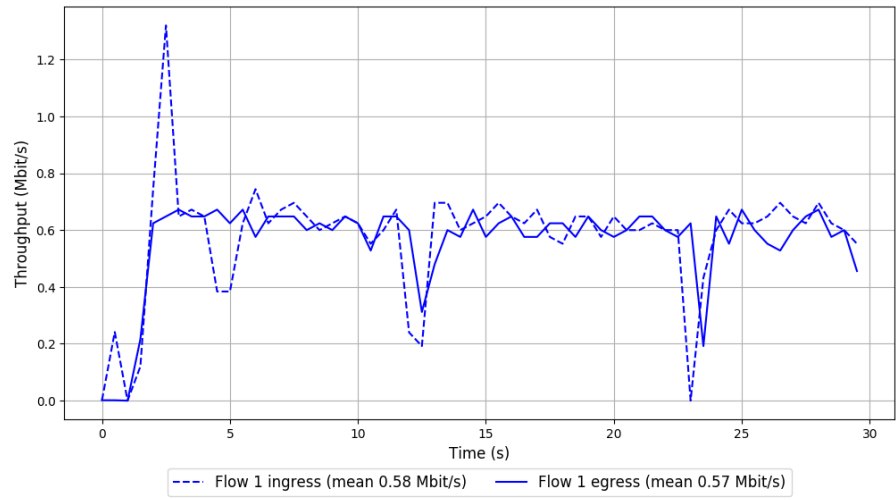
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 681.202 ms

Loss rate: 2.29%

Run 1: Report of TCP BBR — Data Link

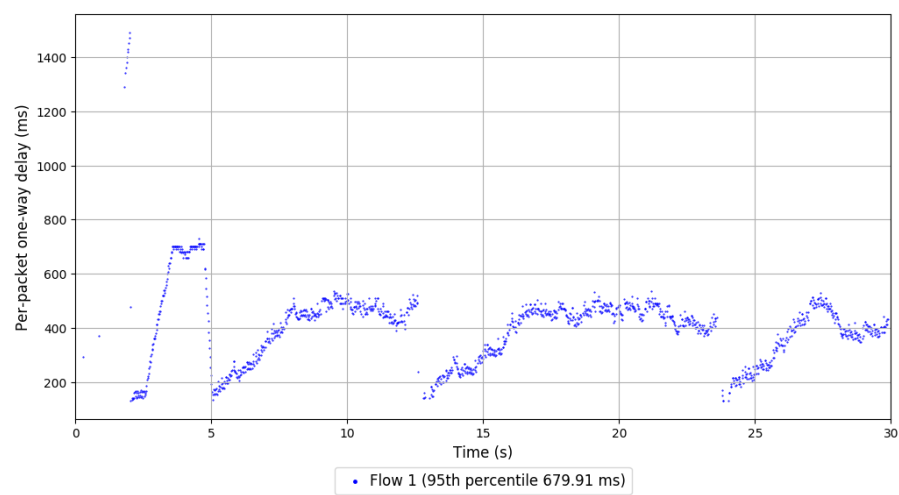
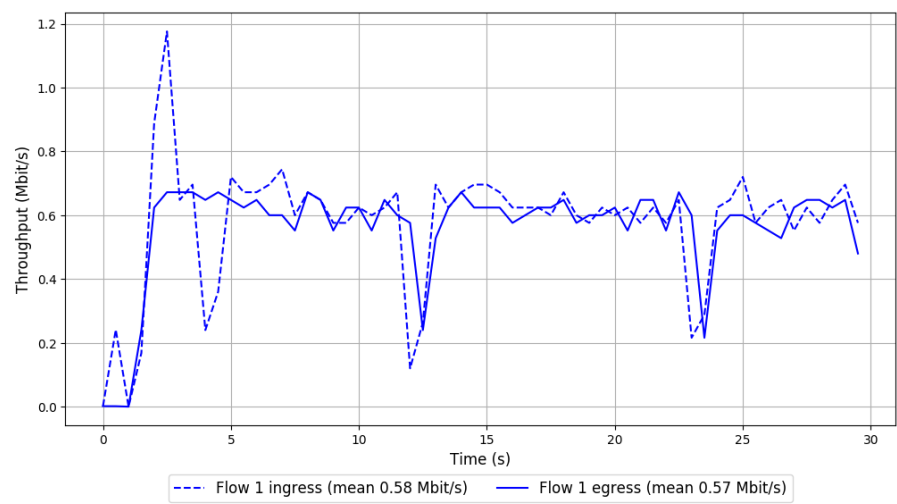


Run 2: Statistics of TCP BBR

Start at: 2018-03-20 06:27:54
End at: 2018-03-20 06:28:24
Local clock offset: -10.804 ms
Remote clock offset: 5.765 ms

Below is generated by plot.py at 2018-03-20 07:53:33
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 679.908 ms
Loss rate: 2.36%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 679.908 ms
Loss rate: 2.36%

Run 2: Report of TCP BBR — Data Link

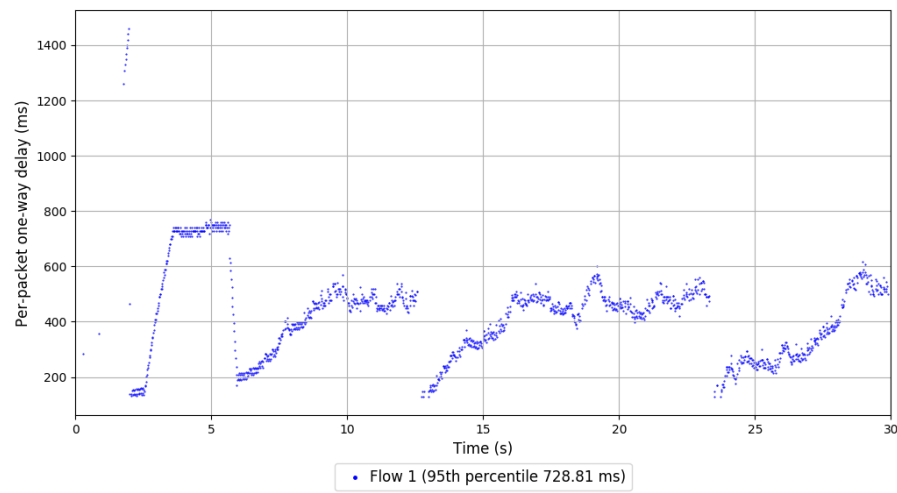
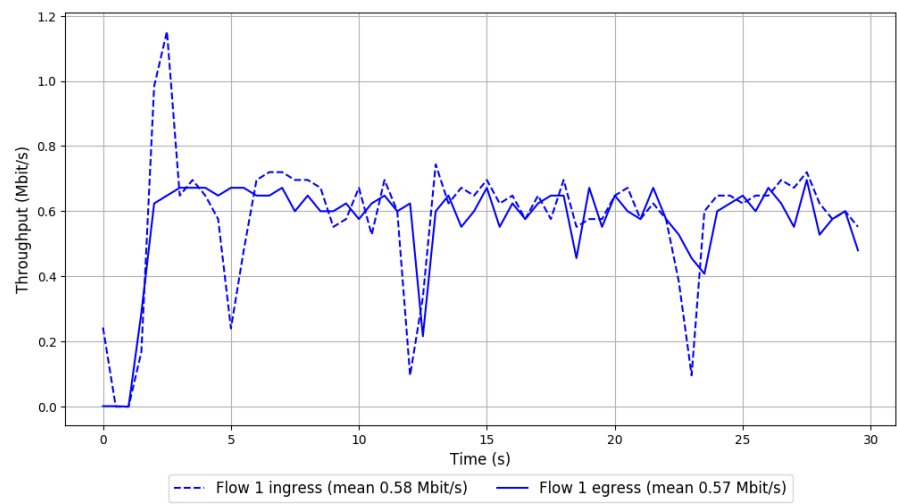


Run 3: Statistics of TCP BBR

Start at: 2018-03-20 06:49:07
End at: 2018-03-20 06:49:37
Local clock offset: -14.644 ms
Remote clock offset: 9.721 ms

Below is generated by plot.py at 2018-03-20 07:53:33
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 728.806 ms
Loss rate: 2.28%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 728.806 ms
Loss rate: 2.28%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-03-20 05:46:41

End at: 2018-03-20 05:47:11

Local clock offset: -6.824 ms

Remote clock offset: 8.878 ms

Below is generated by plot.py at 2018-03-20 07:53:33

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 4407.487 ms

Loss rate: 10.95%

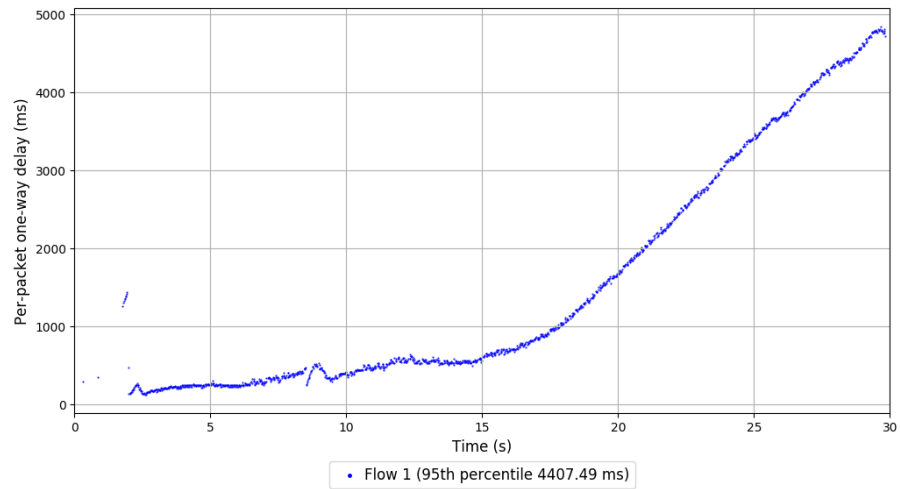
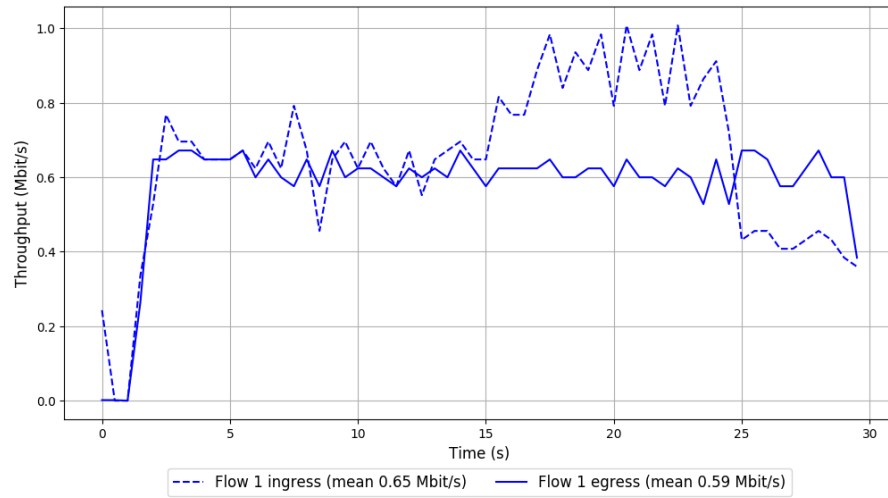
-- Flow 1:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 4407.487 ms

Loss rate: 10.95%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-03-20 06:07:53

End at: 2018-03-20 06:08:23

Local clock offset: -9.546 ms

Remote clock offset: 9.656 ms

Below is generated by plot.py at 2018-03-20 07:53:33

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 2513.038 ms

Loss rate: 9.44%

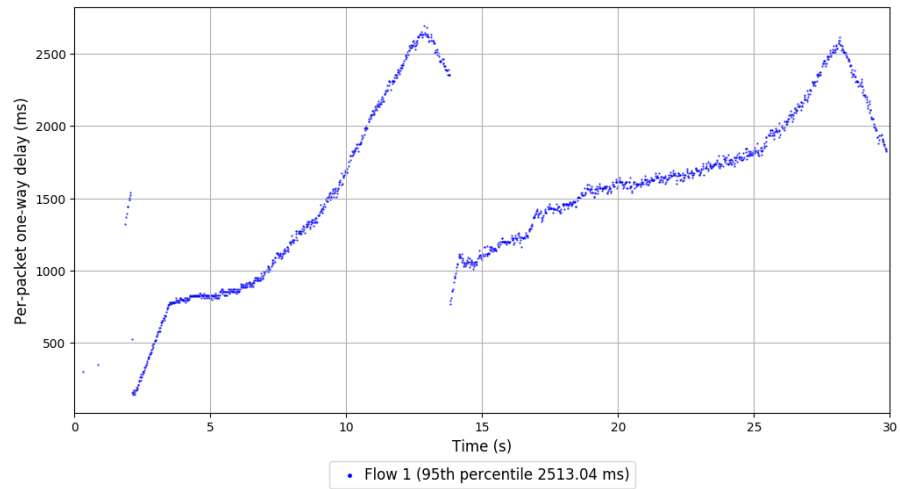
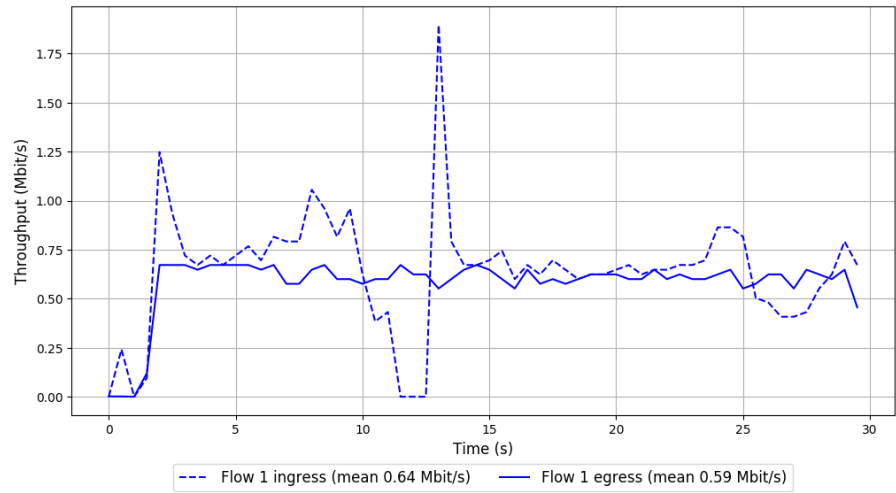
-- Flow 1:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 2513.038 ms

Loss rate: 9.44%

Run 2: Report of TCP Cubic — Data Link

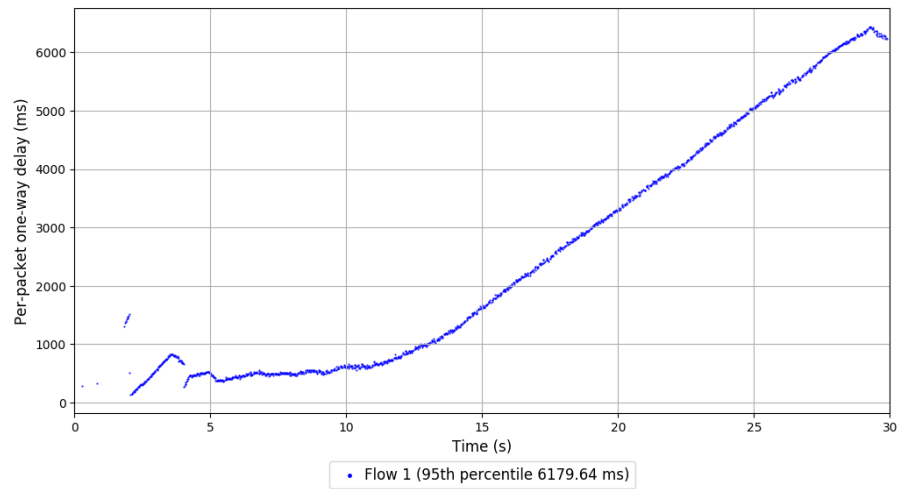
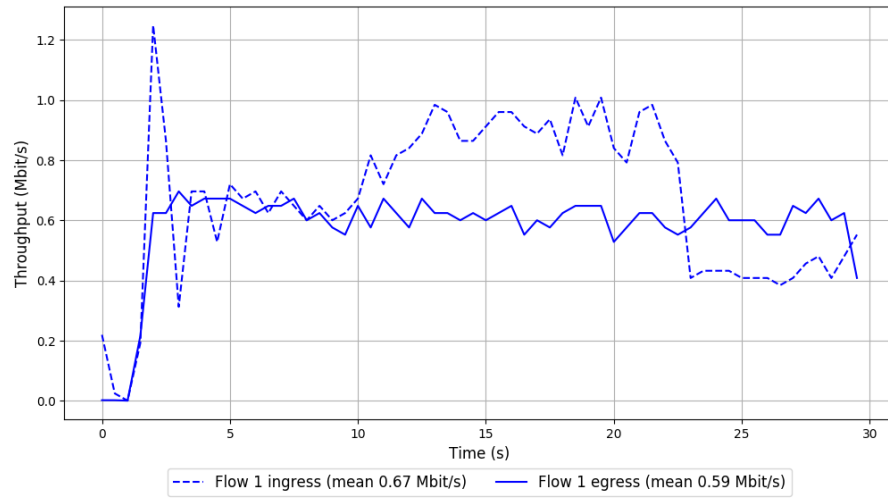


Run 3: Statistics of TCP Cubic

Start at: 2018-03-20 06:29:05
End at: 2018-03-20 06:29:35
Local clock offset: -10.876 ms
Remote clock offset: 9.718 ms

Below is generated by plot.py at 2018-03-20 07:53:33
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 6179.637 ms
Loss rate: 14.15%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 6179.637 ms
Loss rate: 14.15%

Run 3: Report of TCP Cubic — Data Link

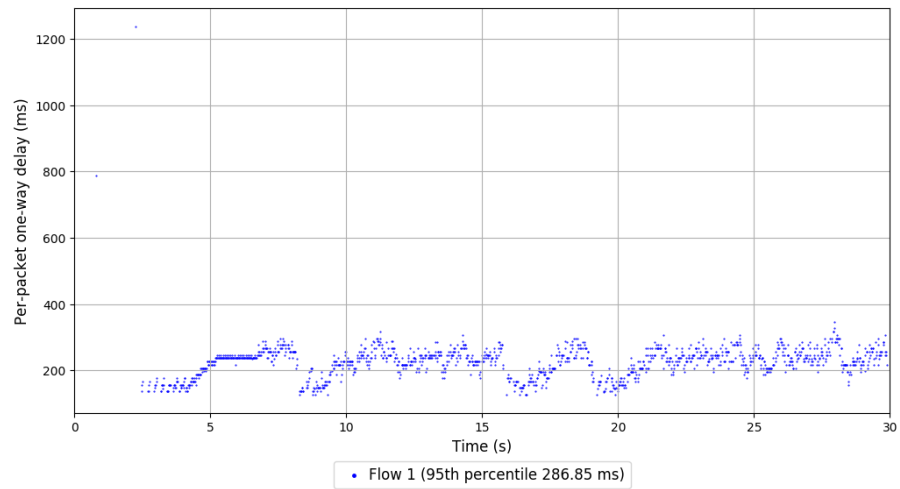
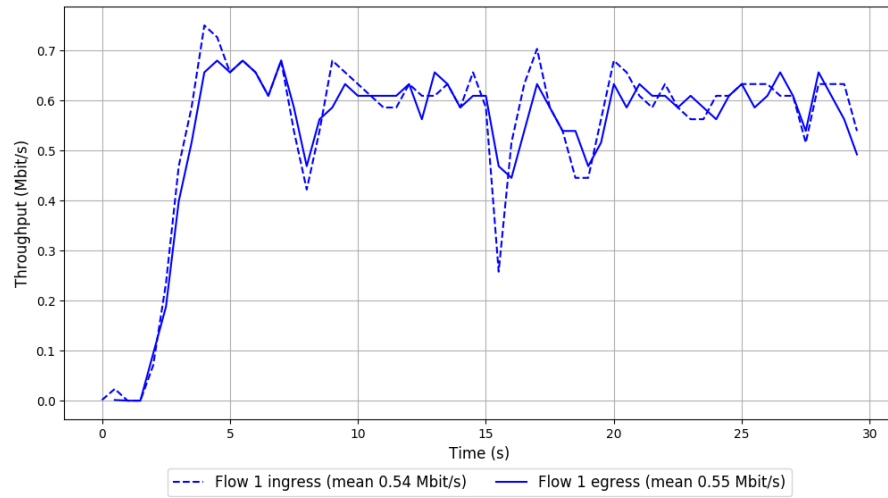


```
Run 1: Statistics of LEDBAT

Start at: 2018-03-20 06:01:59
End at: 2018-03-20 06:02:29
Local clock offset: -9.669 ms
Remote clock offset: 5.757 ms

# Below is generated by plot.py at 2018-03-20 07:53:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 286.849 ms
Loss rate: 1.44%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 286.849 ms
Loss rate: 1.44%
```

Run 1: Report of LEDBAT — Data Link

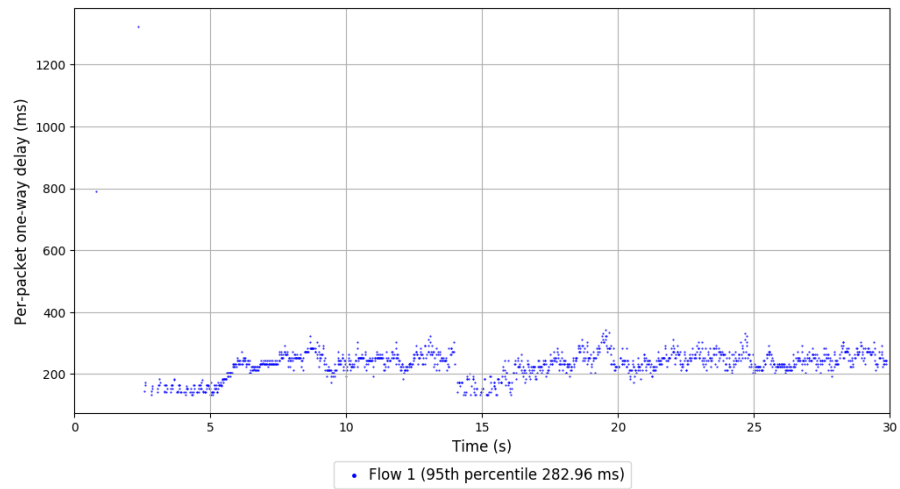
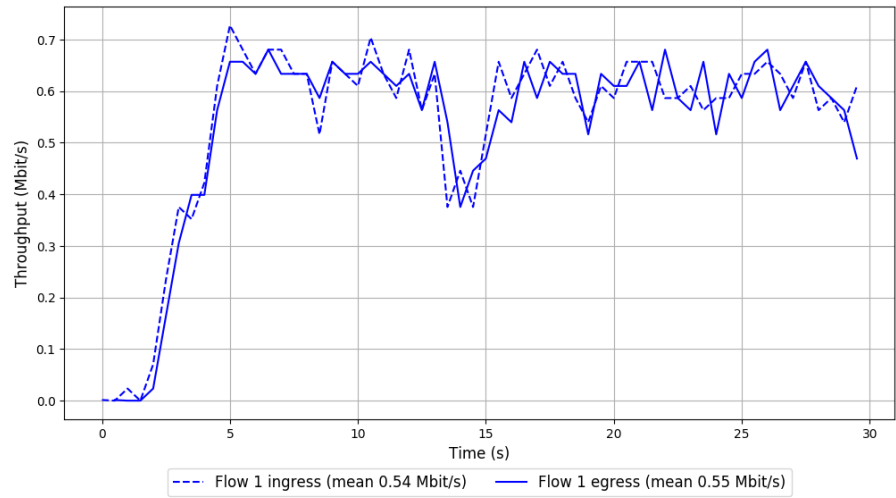


Run 2: Statistics of LEDBAT

Start at: 2018-03-20 06:23:11
End at: 2018-03-20 06:23:41
Local clock offset: -10.874 ms
Remote clock offset: 8.855 ms

Below is generated by plot.py at 2018-03-20 07:53:33
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 282.957 ms
Loss rate: 1.45%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 282.957 ms
Loss rate: 1.45%

Run 2: Report of LEDBAT — Data Link

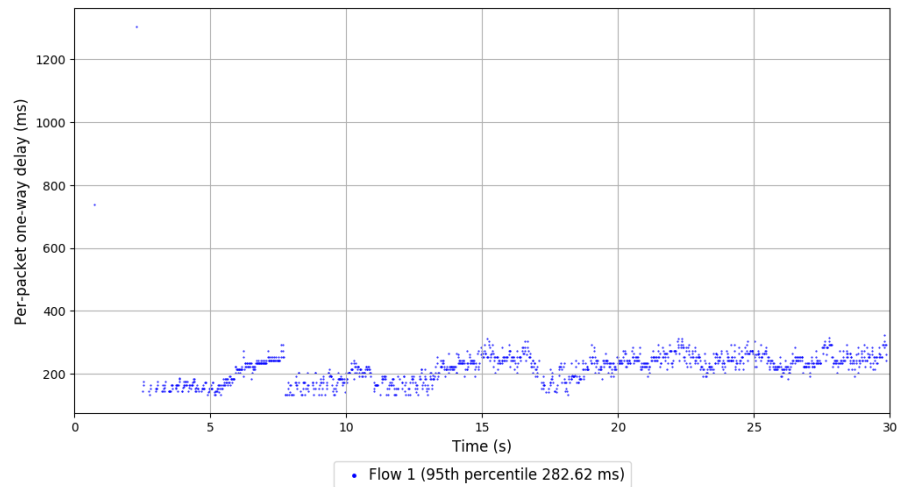
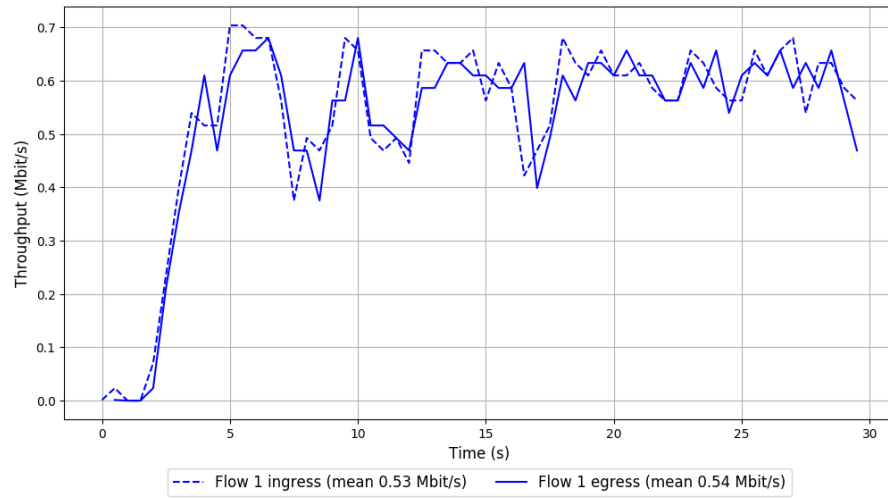


Run 3: Statistics of LEDBAT

Start at: 2018-03-20 06:44:23
End at: 2018-03-20 06:44:53
Local clock offset: -13.599 ms
Remote clock offset: 5.918 ms

Below is generated by plot.py at 2018-03-20 07:53:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 282.615 ms
Loss rate: 1.77%
-- Flow 1:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 282.615 ms
Loss rate: 1.77%

Run 3: Report of LEDBAT — Data Link



Run 1: Statistics of PCC

Start at: 2018-03-20 06:03:09

End at: 2018-03-20 06:03:39

Local clock offset: -9.434 ms

Remote clock offset: 8.854 ms

Below is generated by plot.py at 2018-03-20 07:53:53

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 26183.767 ms

Loss rate: 98.11%

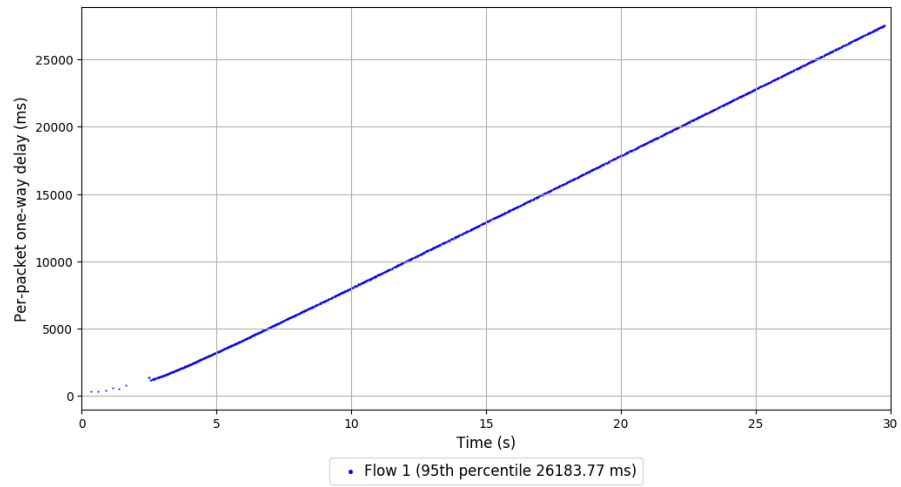
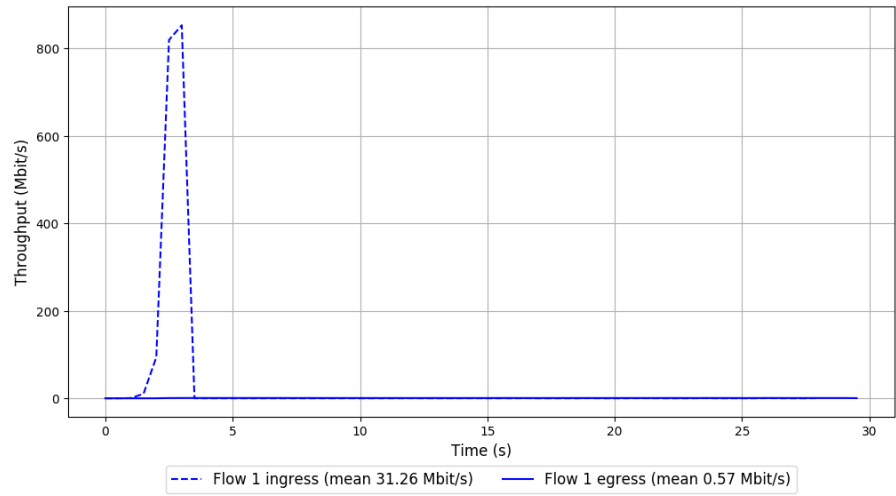
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 26183.767 ms

Loss rate: 98.11%

Run 1: Report of PCC — Data Link

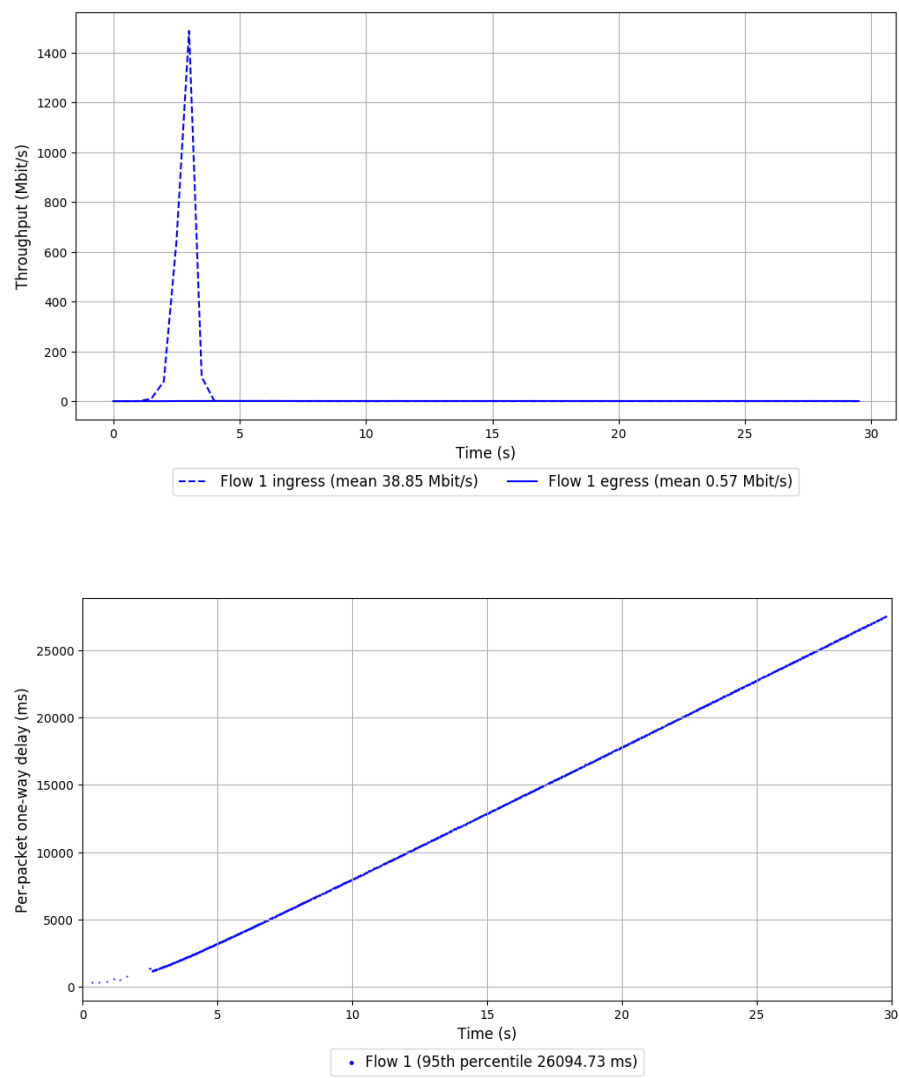


Run 2: Statistics of PCC

Start at: 2018-03-20 06:24:21
End at: 2018-03-20 06:24:51
Local clock offset: -10.843 ms
Remote clock offset: 8.829 ms

Below is generated by plot.py at 2018-03-20 07:53:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26094.734 ms
Loss rate: 98.55%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26094.734 ms
Loss rate: 98.55%

Run 2: Report of PCC — Data Link

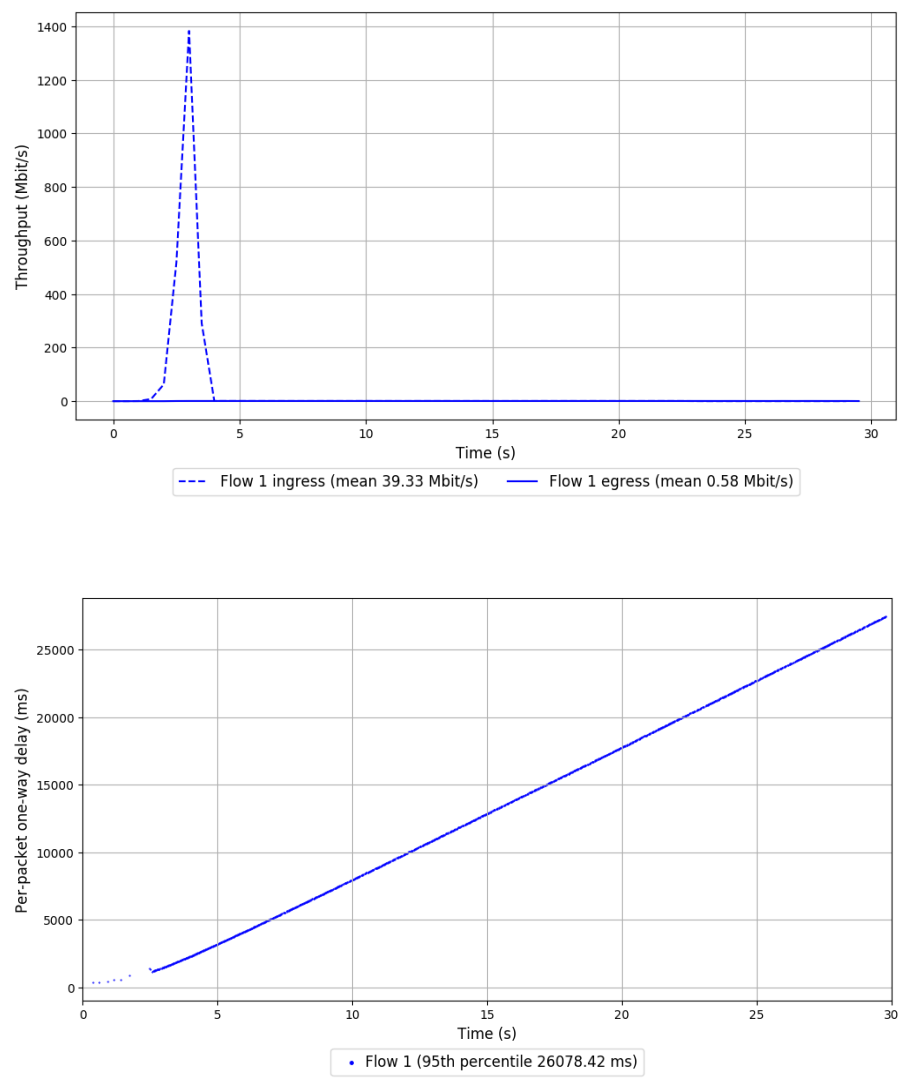


Run 3: Statistics of PCC

Start at: 2018-03-20 06:45:34
End at: 2018-03-20 06:46:04
Local clock offset: -13.745 ms
Remote clock offset: 5.023 ms

Below is generated by plot.py at 2018-03-20 07:53:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 26078.422 ms
Loss rate: 98.52%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 26078.422 ms
Loss rate: 98.52%

Run 3: Report of PCC — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2018-03-20 05:47:51

End at: 2018-03-20 05:48:21

Local clock offset: -7.323 ms

Remote clock offset: 5.747 ms

Below is generated by plot.py at 2018-03-20 07:53:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 1167.693 ms

Loss rate: 9.09%

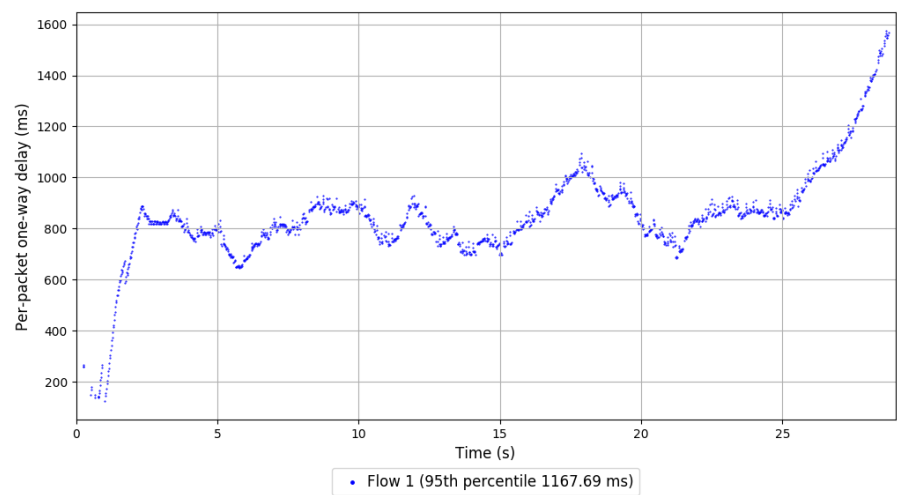
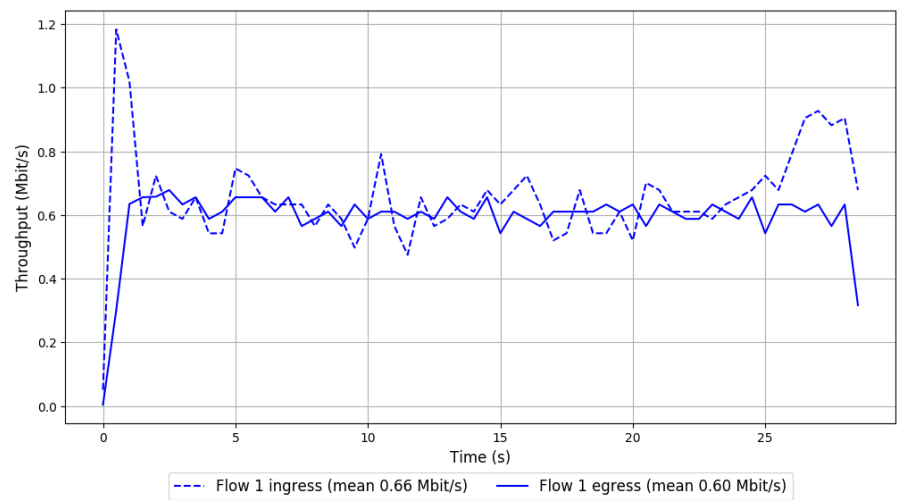
-- Flow 1:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 1167.693 ms

Loss rate: 9.09%

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2018-03-20 06:09:03

End at: 2018-03-20 06:09:33

Local clock offset: -9.777 ms

Remote clock offset: 9.666 ms

Below is generated by plot.py at 2018-03-20 07:53:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.61 Mbit/s

95th percentile per-packet one-way delay: 4323.947 ms

Loss rate: 11.01%

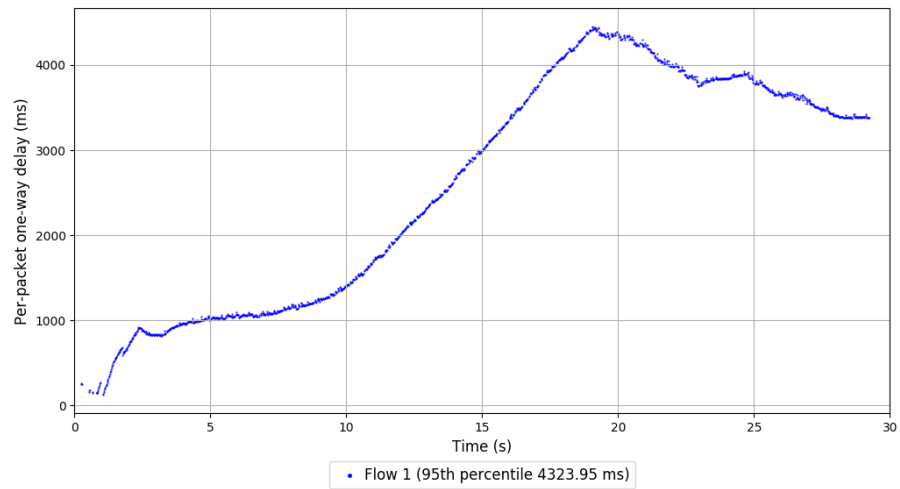
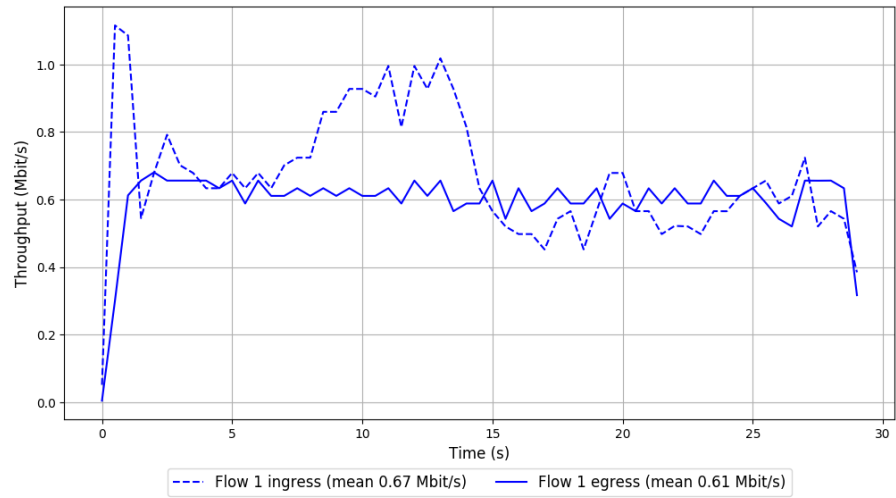
-- Flow 1:

Average throughput: 0.61 Mbit/s

95th percentile per-packet one-way delay: 4323.947 ms

Loss rate: 11.01%

Run 2: Report of QUIC Cubic — Data Link

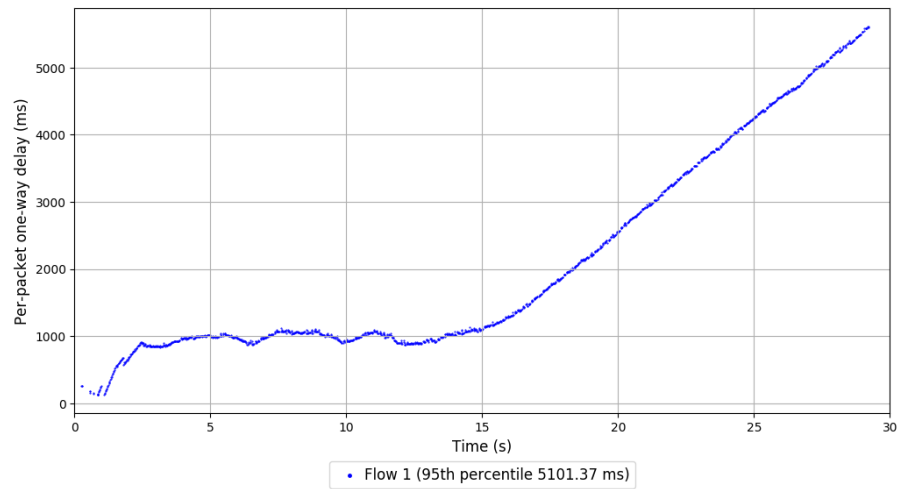
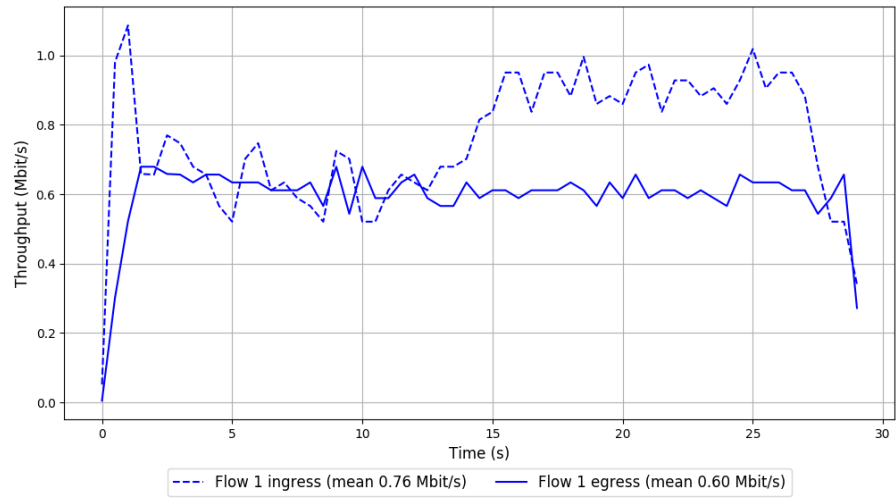


Run 3: Statistics of QUIC Cubic

Start at: 2018-03-20 06:30:16
End at: 2018-03-20 06:30:46
Local clock offset: -10.987 ms
Remote clock offset: 9.68 ms

Below is generated by plot.py at 2018-03-20 07:53:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 5101.372 ms
Loss rate: 21.31%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 5101.372 ms
Loss rate: 21.31%

Run 3: Report of QUIC Cubic — Data Link



Run 1: Statistics of SCReAM

Start at: 2018-03-20 06:05:31

End at: 2018-03-20 06:06:01

Local clock offset: -9.274 ms

Remote clock offset: 4.967 ms

Below is generated by plot.py at 2018-03-20 07:53:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 132.653 ms

Loss rate: 0.92%

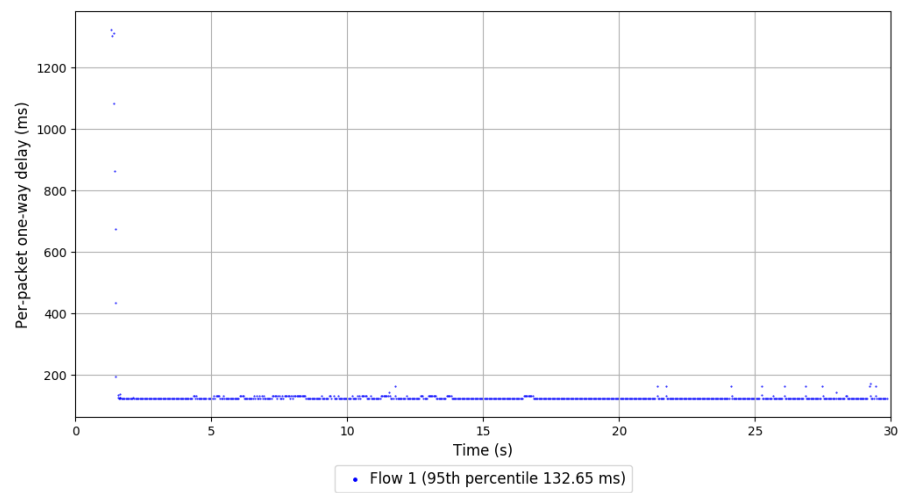
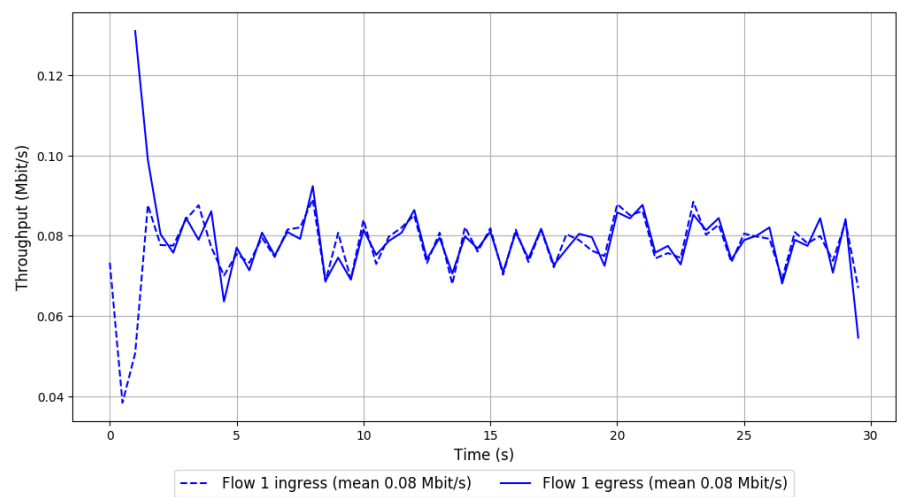
-- Flow 1:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 132.653 ms

Loss rate: 0.92%

Run 1: Report of SReAM — Data Link

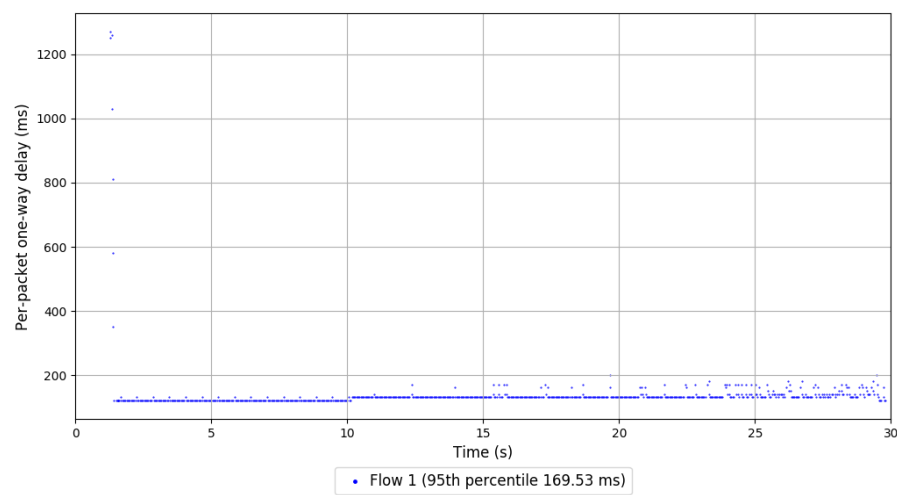
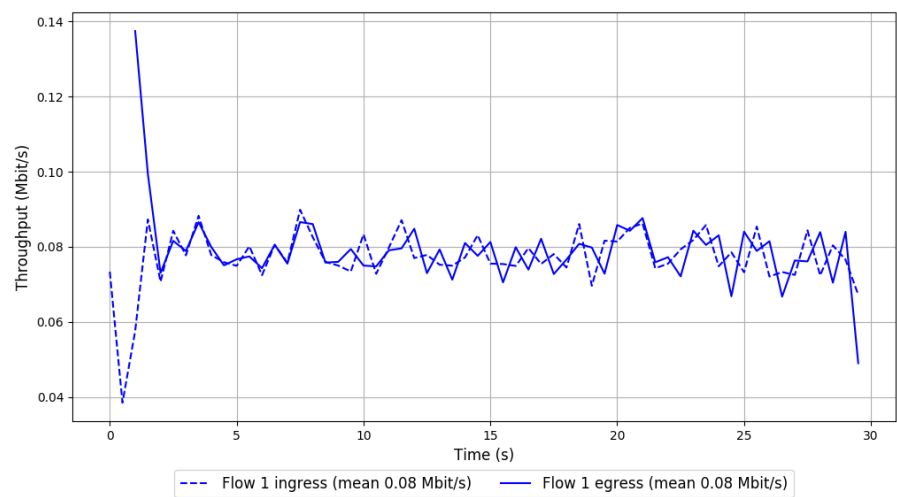


Run 2: Statistics of SCReAM

Start at: 2018-03-20 06:26:44
End at: 2018-03-20 06:27:14
Local clock offset: -10.798 ms
Remote clock offset: 4.915 ms

Below is generated by plot.py at 2018-03-20 07:53:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 169.530 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 169.530 ms
Loss rate: 0.79%

Run 2: Report of SReAM — Data Link

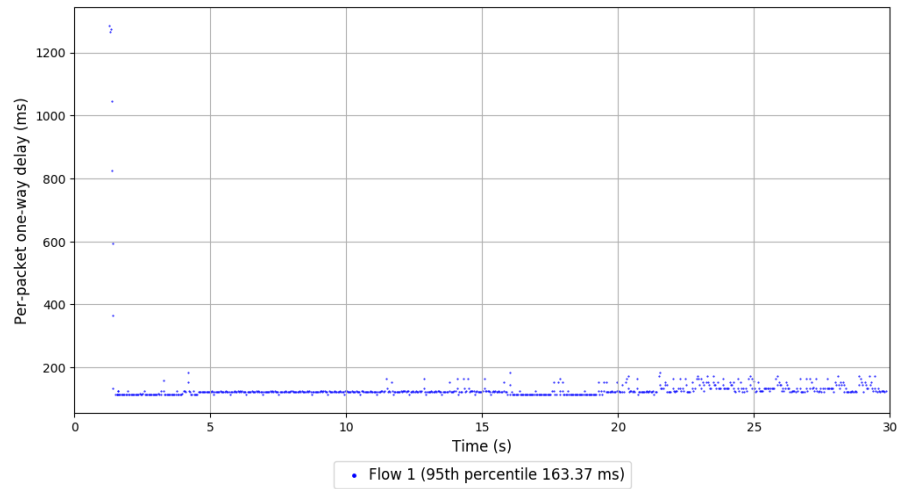
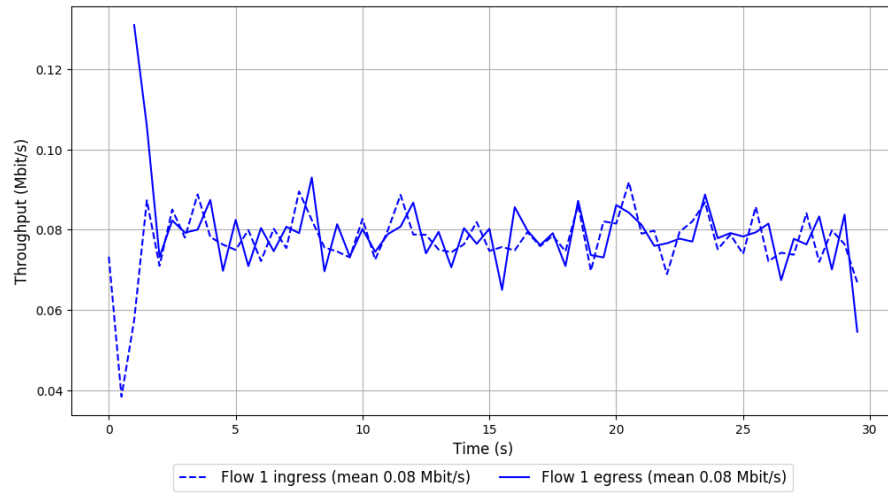


Run 3: Statistics of SCReAM

Start at: 2018-03-20 06:47:56
End at: 2018-03-20 06:48:26
Local clock offset: -14.308 ms
Remote clock offset: 8.846 ms

Below is generated by plot.py at 2018-03-20 07:53:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 163.371 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 163.371 ms
Loss rate: 0.66%

Run 3: Report of SReAM — Data Link



Run 1: Statistics of WebRTC media

Start at: 2018-03-20 05:57:17

End at: 2018-03-20 05:57:47

Local clock offset: -9.038 ms

Remote clock offset: 4.942 ms

Below is generated by plot.py at 2018-03-20 07:53:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.27 Mbit/s

95th percentile per-packet one-way delay: 749.338 ms

Loss rate: 3.41%

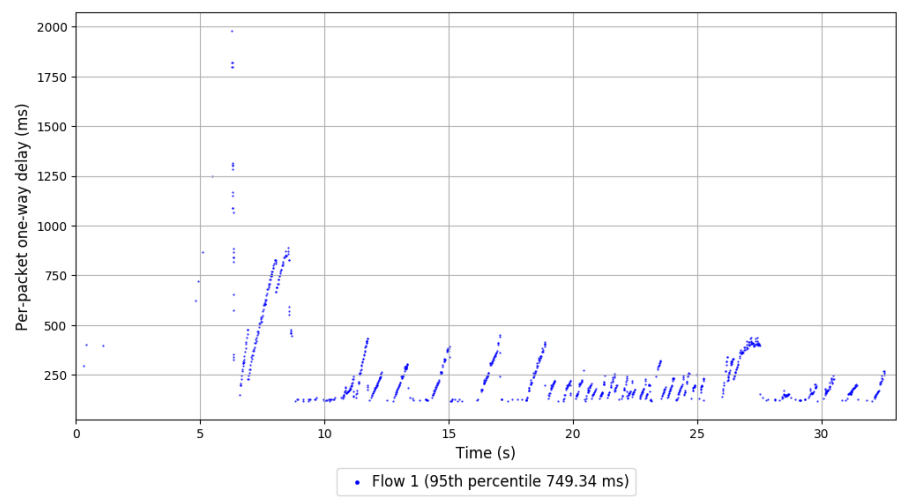
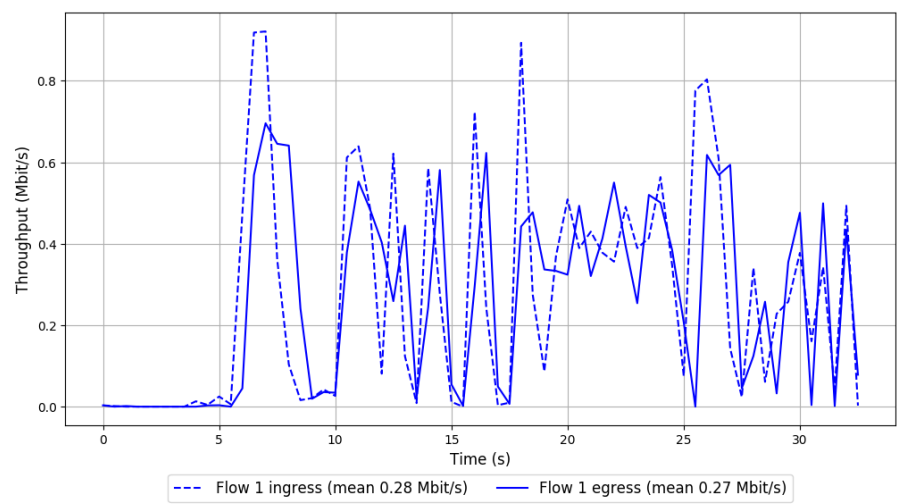
-- Flow 1:

Average throughput: 0.27 Mbit/s

95th percentile per-packet one-way delay: 749.338 ms

Loss rate: 3.41%

Run 1: Report of WebRTC media — Data Link

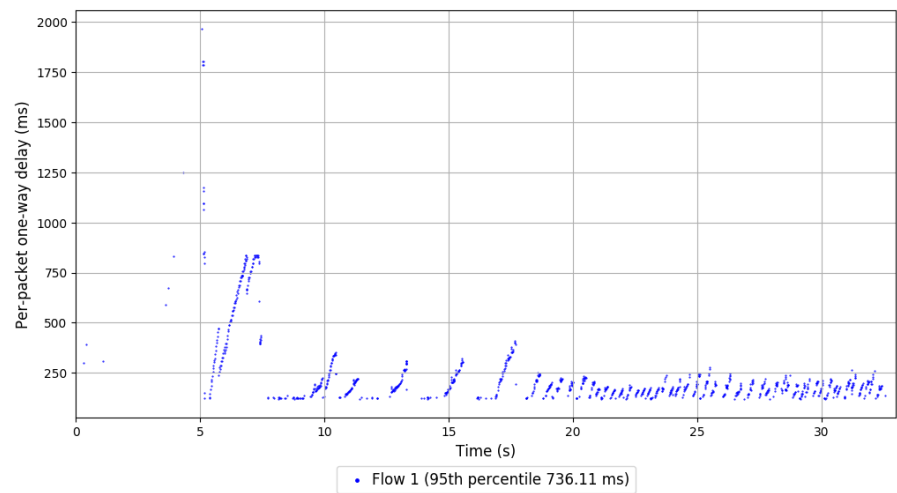
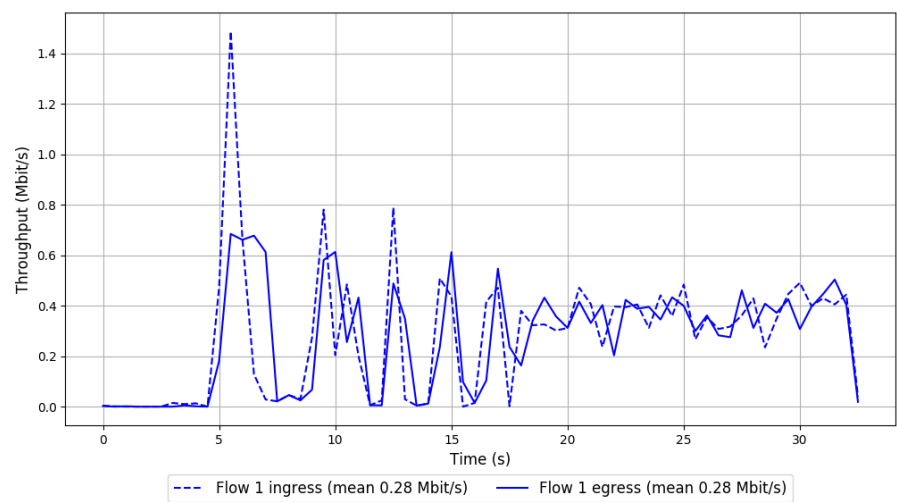


Run 2: Statistics of WebRTC media

Start at: 2018-03-20 06:18:29
End at: 2018-03-20 06:18:59
Local clock offset: -11.885 ms
Remote clock offset: 5.766 ms

Below is generated by plot.py at 2018-03-20 07:53:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 736.108 ms
Loss rate: 1.14%
-- Flow 1:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 736.108 ms
Loss rate: 1.14%

Run 2: Report of WebRTC media — Data Link

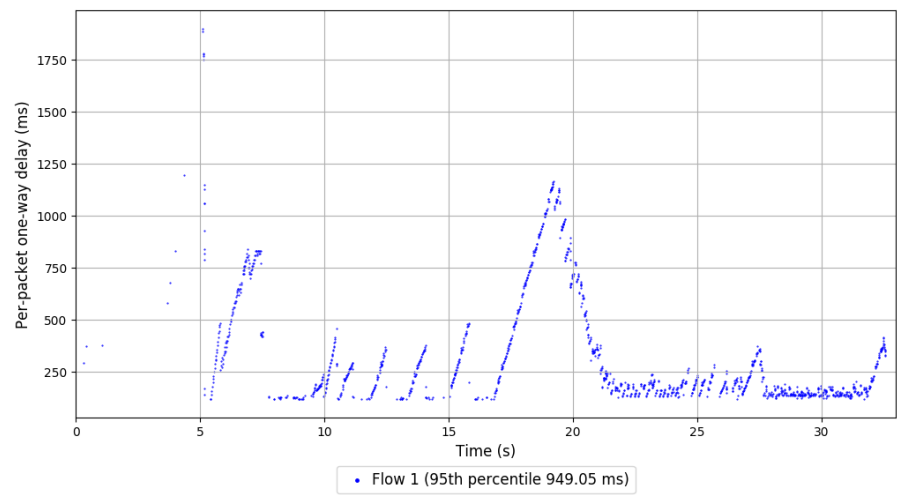
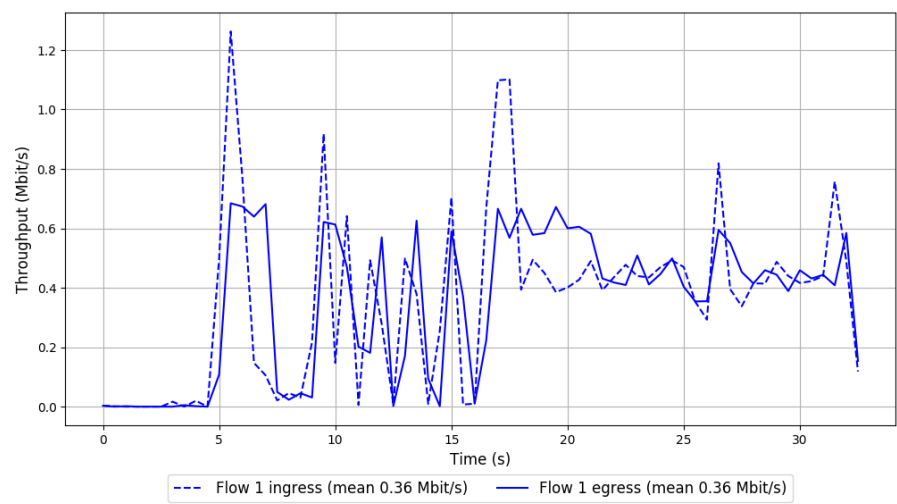


Run 3: Statistics of WebRTC media

Start at: 2018-03-20 06:39:42
End at: 2018-03-20 06:40:12
Local clock offset: -12.503 ms
Remote clock offset: 5.031 ms

Below is generated by plot.py at 2018-03-20 07:53:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 949.048 ms
Loss rate: 1.59%
-- Flow 1:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 949.048 ms
Loss rate: 1.59%

Run 3: Report of WebRTC media — Data Link



Run 1: Statistics of Sprout

Start at: 2018-03-20 05:56:06

End at: 2018-03-20 05:56:36

Local clock offset: -8.745 ms

Remote clock offset: 4.916 ms

Below is generated by plot.py at 2018-03-20 07:53:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.10 Mbit/s

95th percentile per-packet one-way delay: 517.961 ms

Loss rate: 1.00%

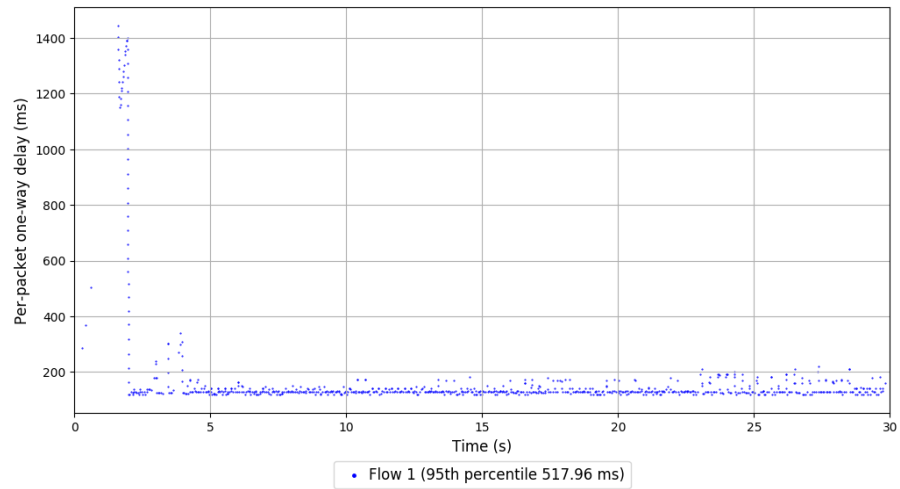
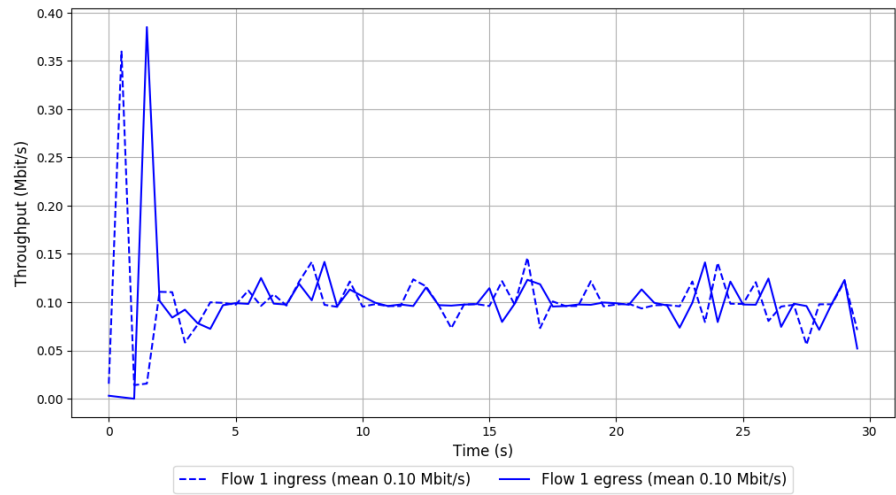
-- Flow 1:

Average throughput: 0.10 Mbit/s

95th percentile per-packet one-way delay: 517.961 ms

Loss rate: 1.00%

Run 1: Report of Sprout — Data Link

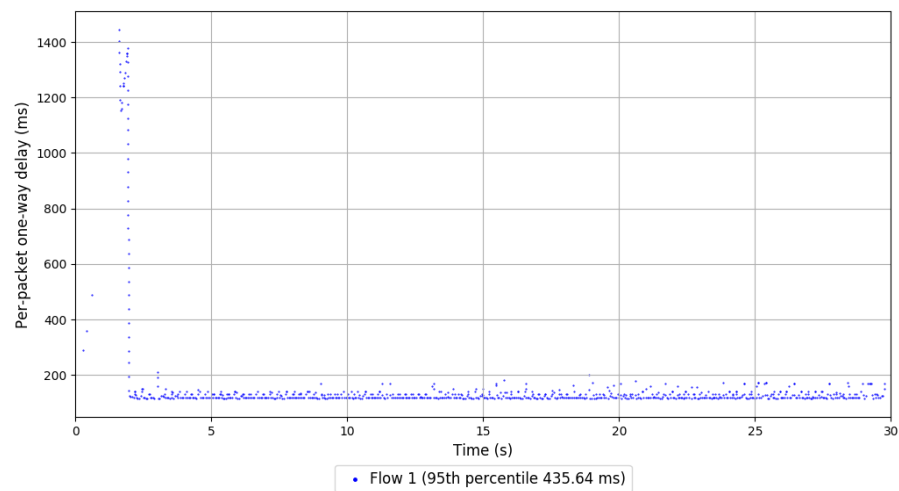
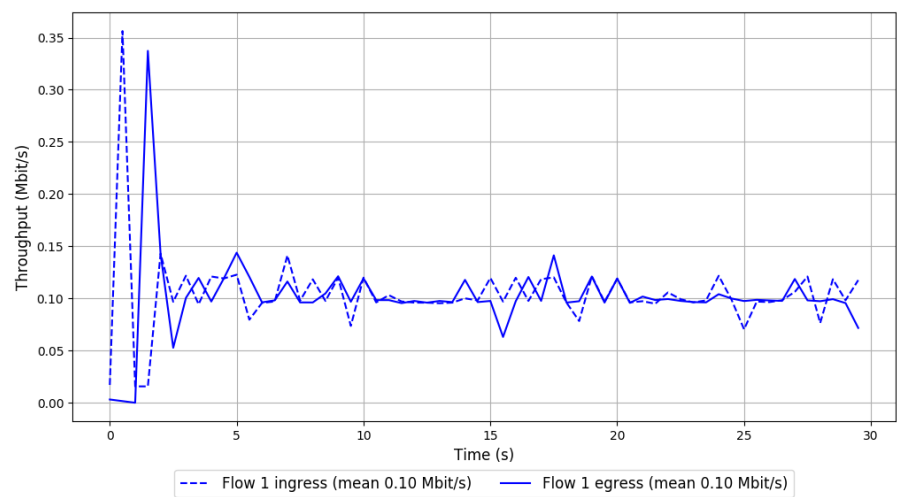


Run 2: Statistics of Sprout

Start at: 2018-03-20 06:17:18
End at: 2018-03-20 06:17:48
Local clock offset: -12.068 ms
Remote clock offset: 8.85 ms

Below is generated by plot.py at 2018-03-20 07:53:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 435.645 ms
Loss rate: 2.37%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 435.645 ms
Loss rate: 2.37%

Run 2: Report of Sprout — Data Link

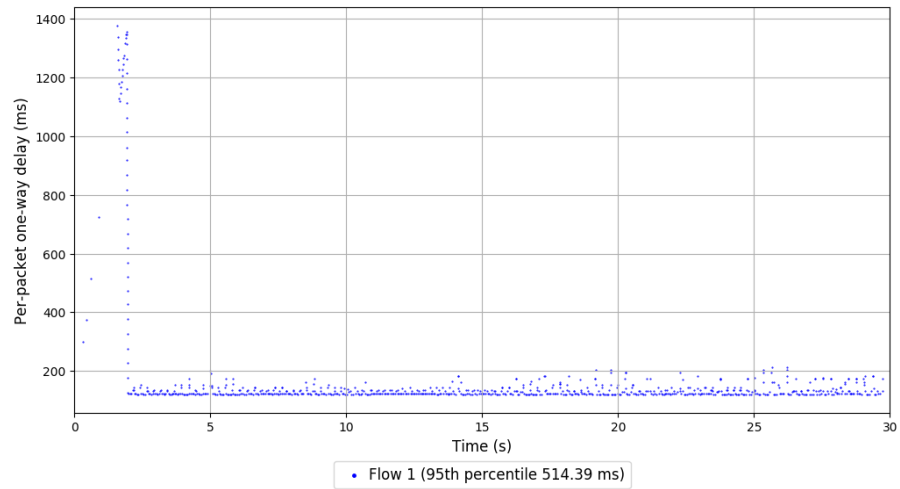
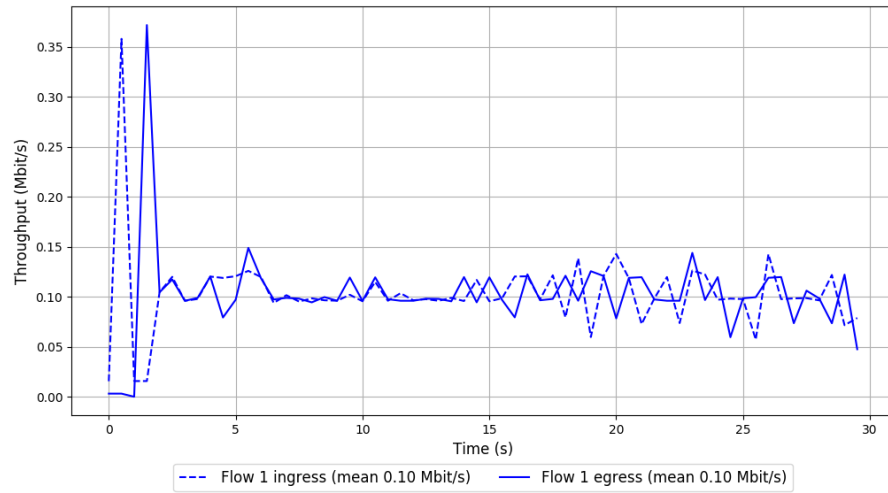


Run 3: Statistics of Sprout

Start at: 2018-03-20 06:38:31
End at: 2018-03-20 06:39:01
Local clock offset: -12.302 ms
Remote clock offset: 4.988 ms

Below is generated by plot.py at 2018-03-20 07:53:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 514.386 ms
Loss rate: 1.17%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 514.386 ms
Loss rate: 1.17%

Run 3: Report of Sprout — Data Link

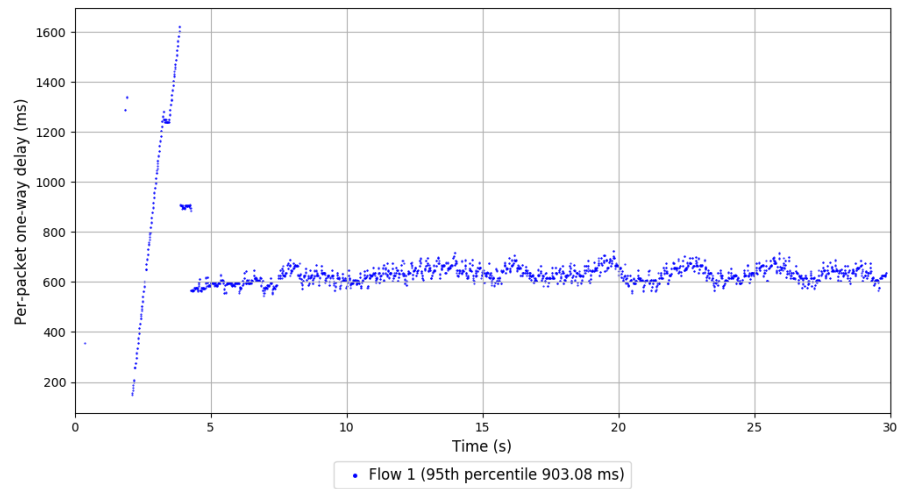
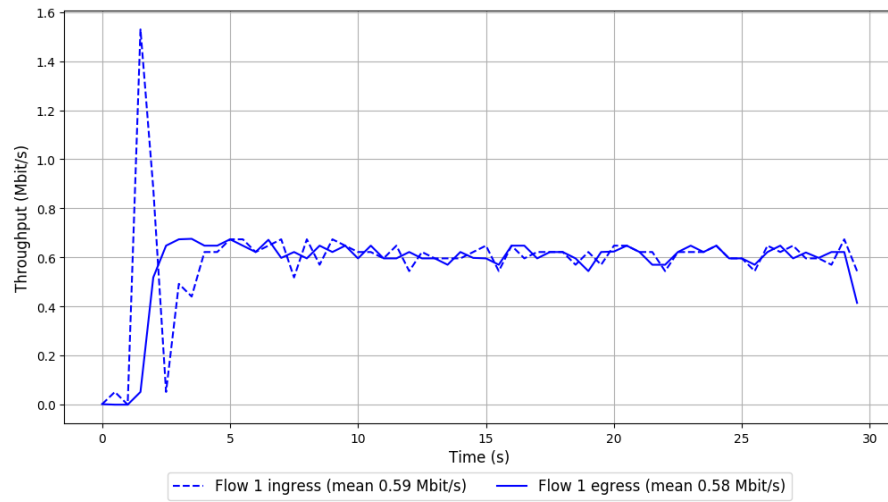


```
Run 1: Statistics of TaoVA-100x

Start at: 2018-03-20 05:58:27
End at: 2018-03-20 05:58:57
Local clock offset: -9.518 ms
Remote clock offset: 4.964 ms

# Below is generated by plot.py at 2018-03-20 07:53:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 903.084 ms
Loss rate: 2.91%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 903.084 ms
Loss rate: 2.91%
```

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

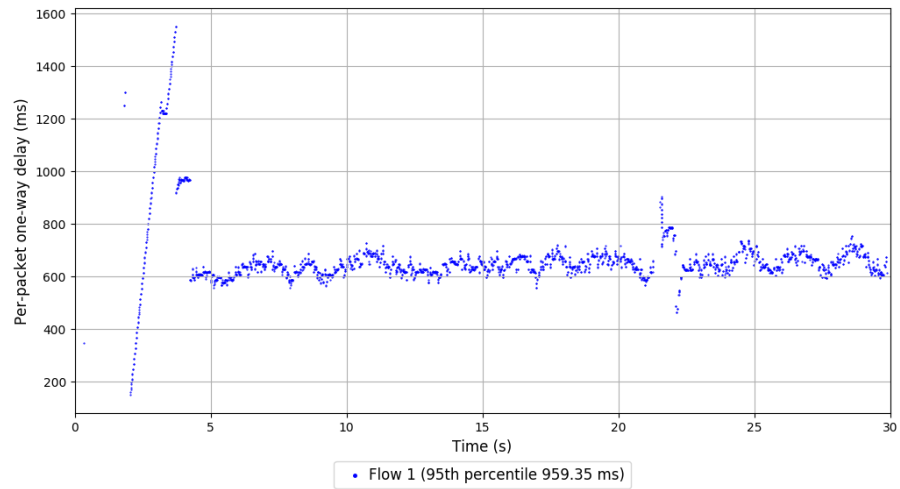
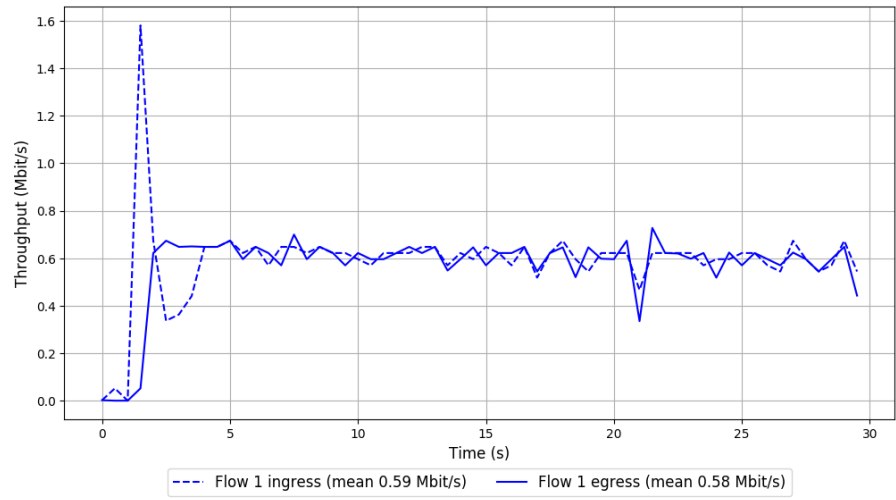


Run 2: Statistics of TaoVA-100x

Start at: 2018-03-20 06:19:39
End at: 2018-03-20 06:20:09
Local clock offset: -11.574 ms
Remote clock offset: 4.972 ms

Below is generated by plot.py at 2018-03-20 07:53:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 959.348 ms
Loss rate: 2.99%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 959.348 ms
Loss rate: 2.99%

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

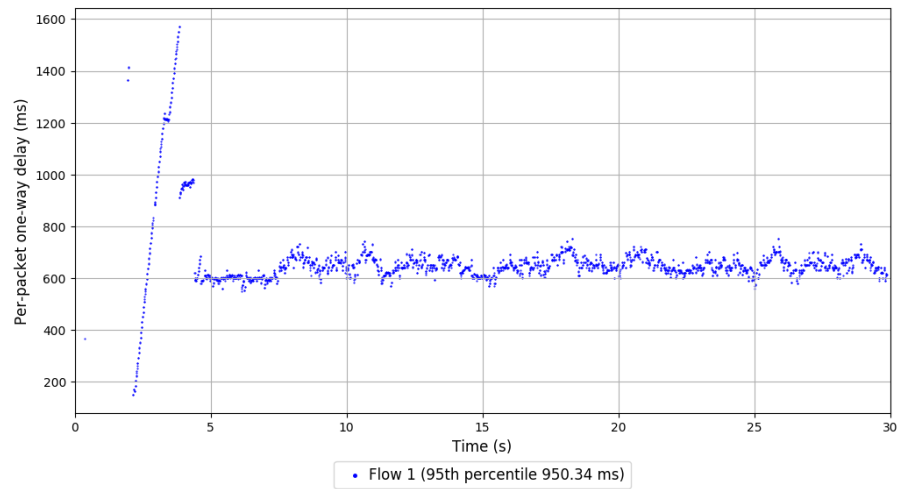
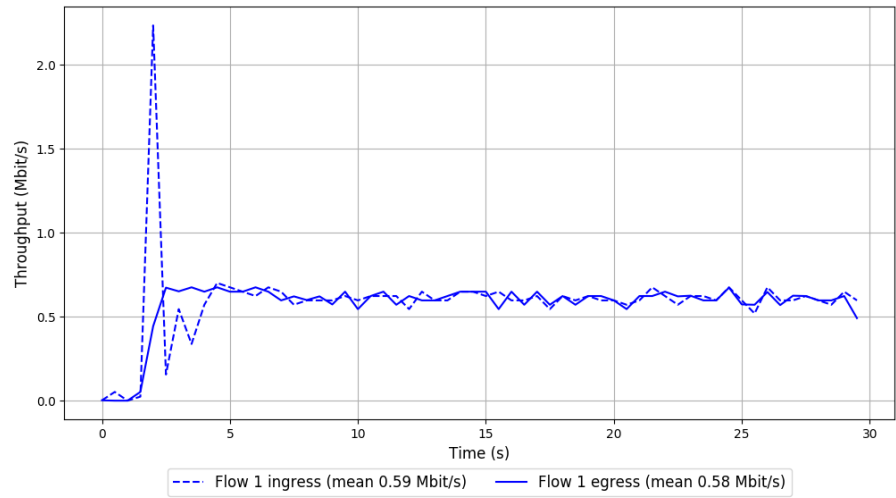


Run 3: Statistics of TaoVA-100x

Start at: 2018-03-20 06:40:52
End at: 2018-03-20 06:41:22
Local clock offset: -12.754 ms
Remote clock offset: 4.955 ms

Below is generated by plot.py at 2018-03-20 07:53:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 950.337 ms
Loss rate: 2.58%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 950.337 ms
Loss rate: 2.58%

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



Run 1: Statistics of TCP Vegas

Start at: 2018-03-20 06:04:21

End at: 2018-03-20 06:04:51

Local clock offset: -9.296 ms

Remote clock offset: 4.89 ms

Below is generated by plot.py at 2018-03-20 07:53:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.51 Mbit/s

95th percentile per-packet one-way delay: 843.304 ms

Loss rate: 1.64%

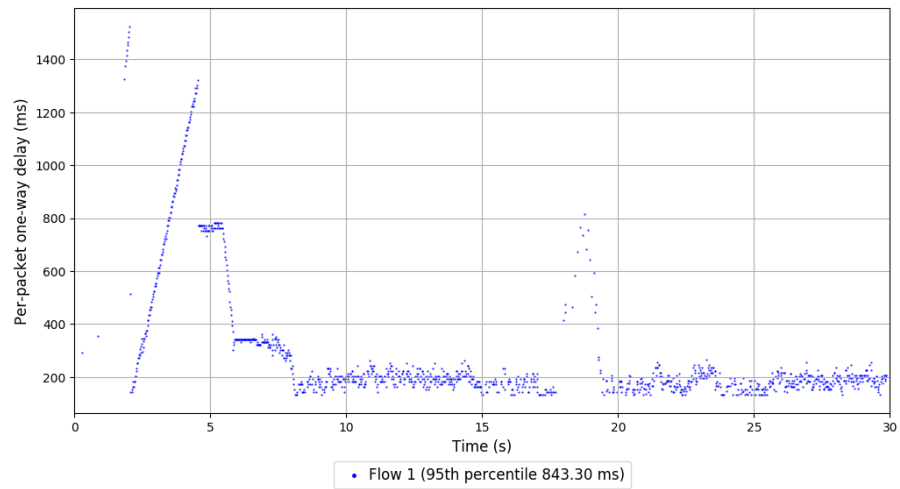
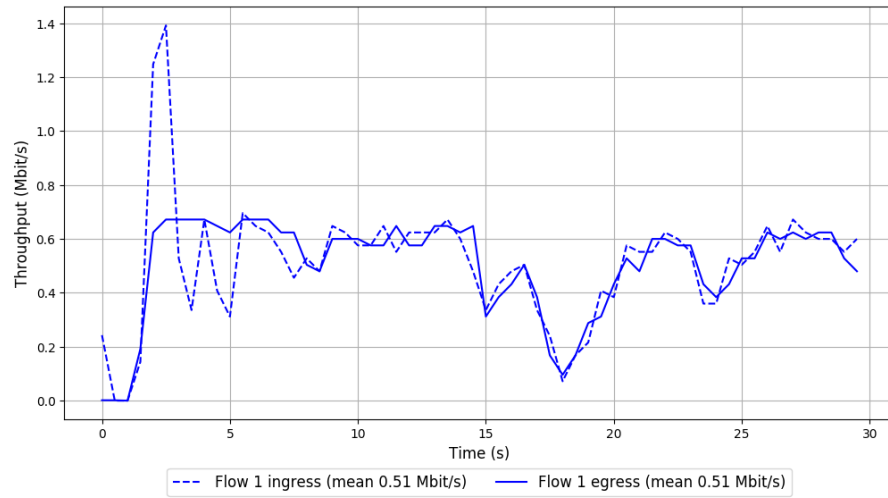
-- Flow 1:

Average throughput: 0.51 Mbit/s

95th percentile per-packet one-way delay: 843.304 ms

Loss rate: 1.64%

Run 1: Report of TCP Vegas — Data Link

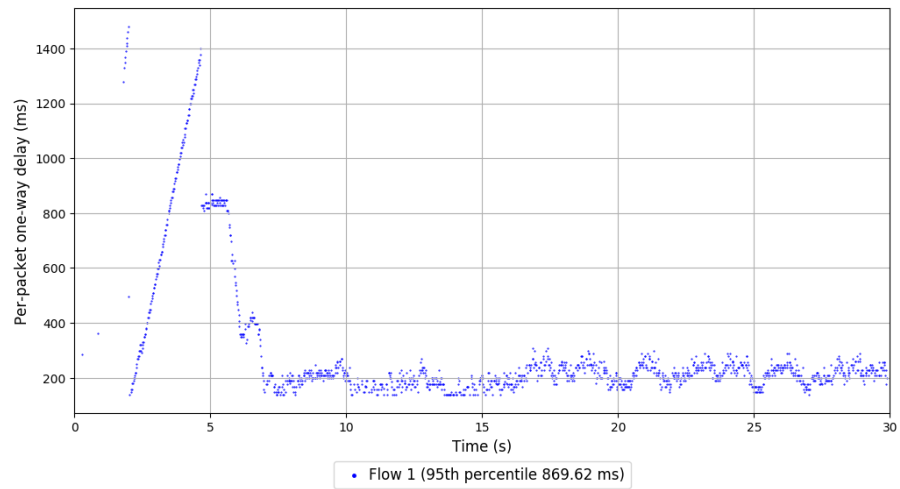
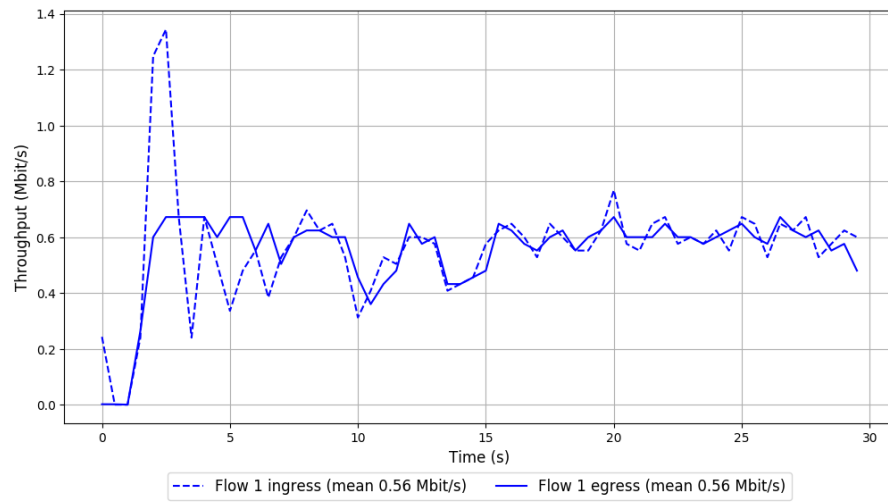


Run 2: Statistics of TCP Vegas

Start at: 2018-03-20 06:25:33
End at: 2018-03-20 06:26:03
Local clock offset: -10.738 ms
Remote clock offset: 4.95 ms

Below is generated by plot.py at 2018-03-20 07:53:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 869.617 ms
Loss rate: 1.50%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 869.617 ms
Loss rate: 1.50%

Run 2: Report of TCP Vegas — Data Link

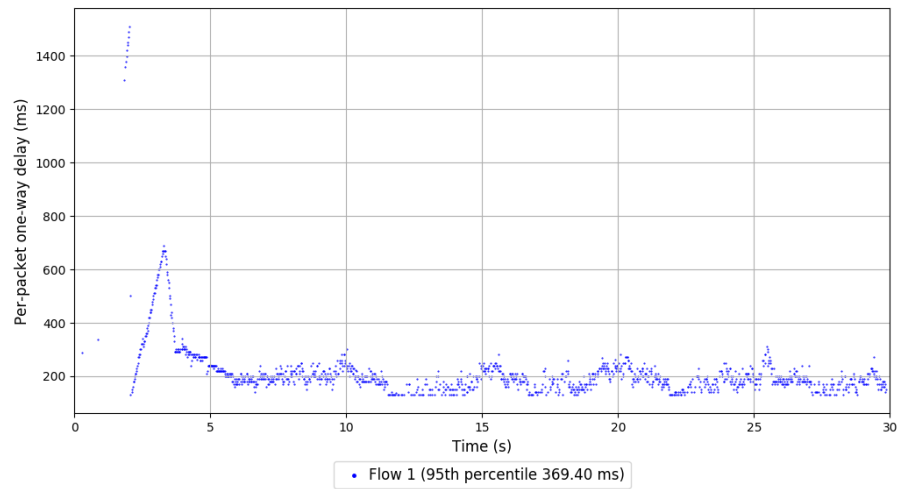
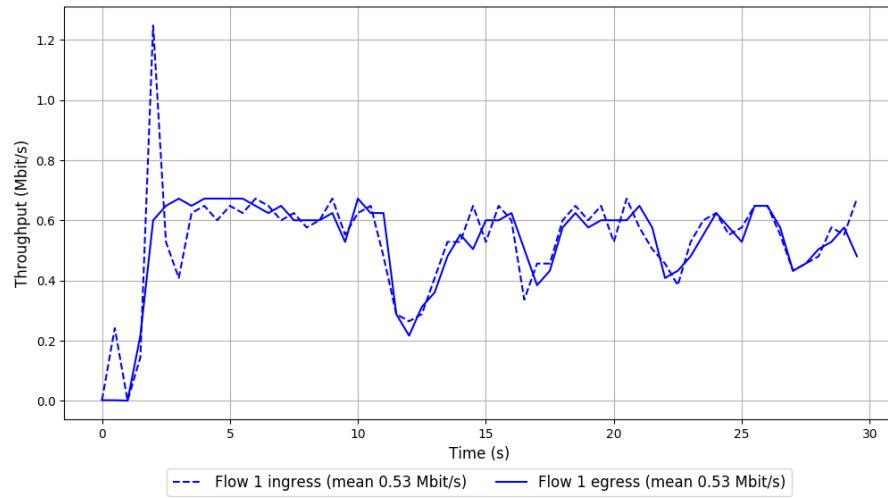


Run 3: Statistics of TCP Vegas

Start at: 2018-03-20 06:46:46
End at: 2018-03-20 06:47:16
Local clock offset: -14.022 ms
Remote clock offset: 10.596 ms

Below is generated by plot.py at 2018-03-20 07:53:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 369.401 ms
Loss rate: 1.66%
-- Flow 1:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 369.401 ms
Loss rate: 1.66%

Run 3: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: 2018-03-20 05:50:14

End at: 2018-03-20 05:50:44

Local clock offset: -7.974 ms

Remote clock offset: 8.889 ms

Below is generated by plot.py at 2018-03-20 07:53:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 1471.654 ms

Loss rate: 5.17%

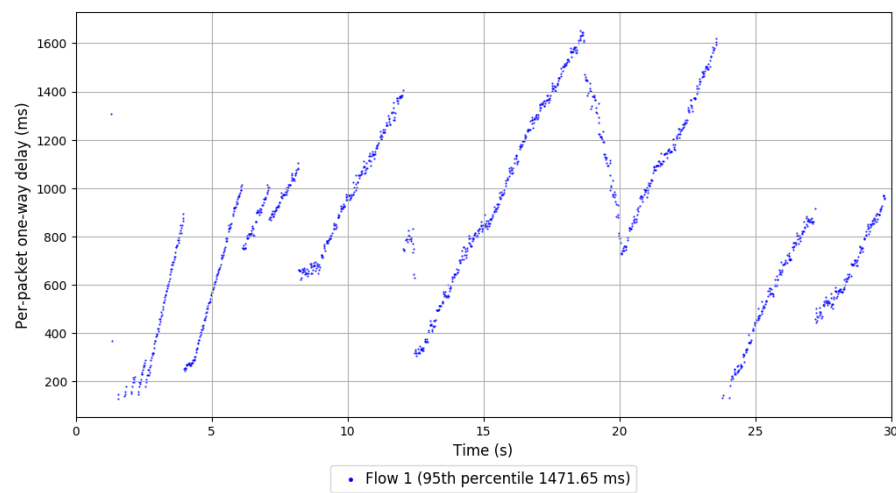
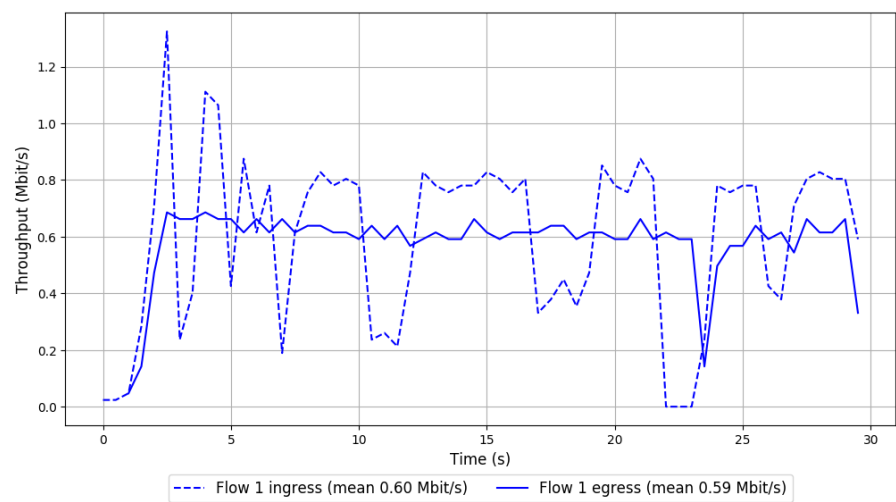
-- Flow 1:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 1471.654 ms

Loss rate: 5.17%

Run 1: Report of Verus — Data Link

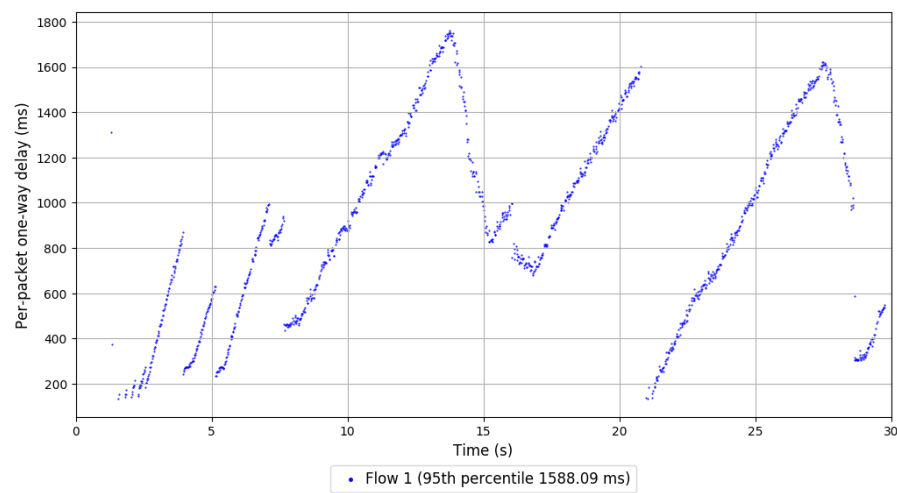
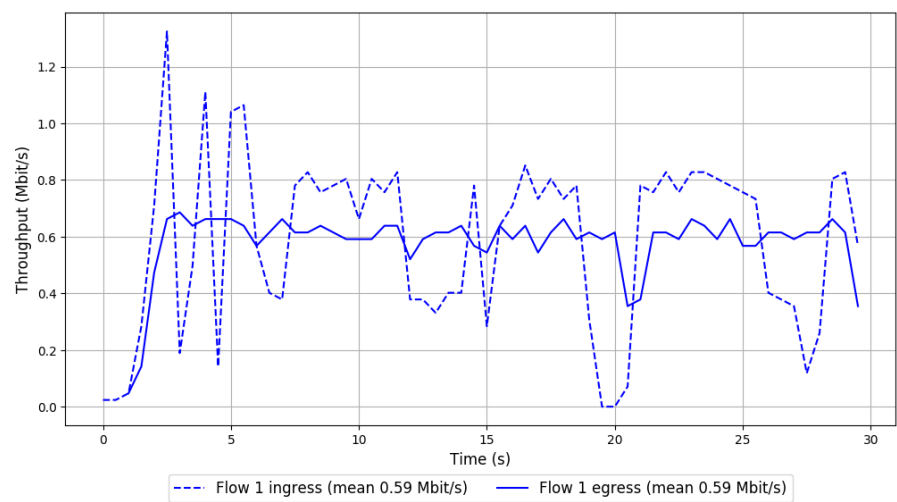


Run 2: Statistics of Verus

Start at: 2018-03-20 06:11:26
End at: 2018-03-20 06:11:56
Local clock offset: -10.353 ms
Remote clock offset: 4.869 ms

Below is generated by plot.py at 2018-03-20 07:53:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 1588.088 ms
Loss rate: 3.38%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 1588.088 ms
Loss rate: 3.38%

Run 2: Report of Verus — Data Link



Run 3: Statistics of Verus

Start at: 2018-03-20 06:32:39

End at: 2018-03-20 06:33:09

Local clock offset: -11.26 ms

Remote clock offset: 9.689 ms

Below is generated by plot.py at 2018-03-20 07:53:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 1867.556 ms

Loss rate: 6.57%

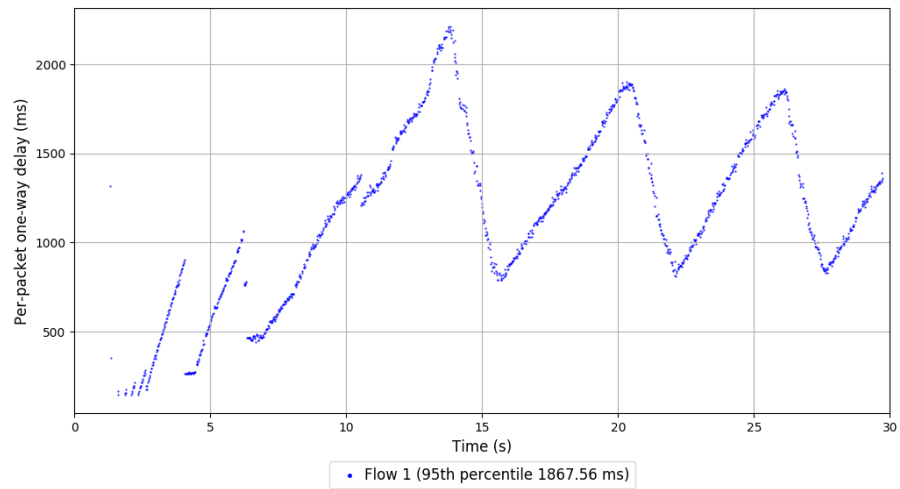
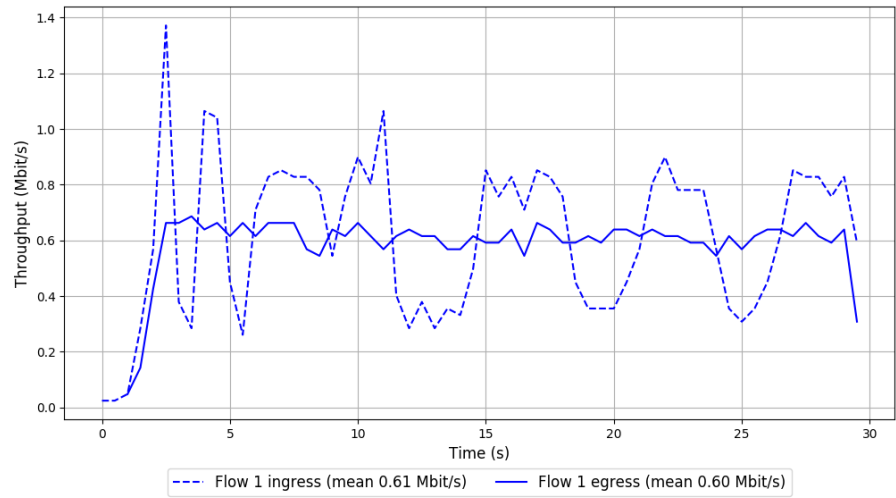
-- Flow 1:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 1867.556 ms

Loss rate: 6.57%

Run 3: Report of Verus — Data Link



Run 1: Statistics of Copa

Start at: 2018-03-20 05:59:38

End at: 2018-03-20 06:00:08

Local clock offset: -9.994 ms

Remote clock offset: 9.693 ms

Below is generated by plot.py at 2018-03-20 07:53:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 395.966 ms

Loss rate: 3.62%

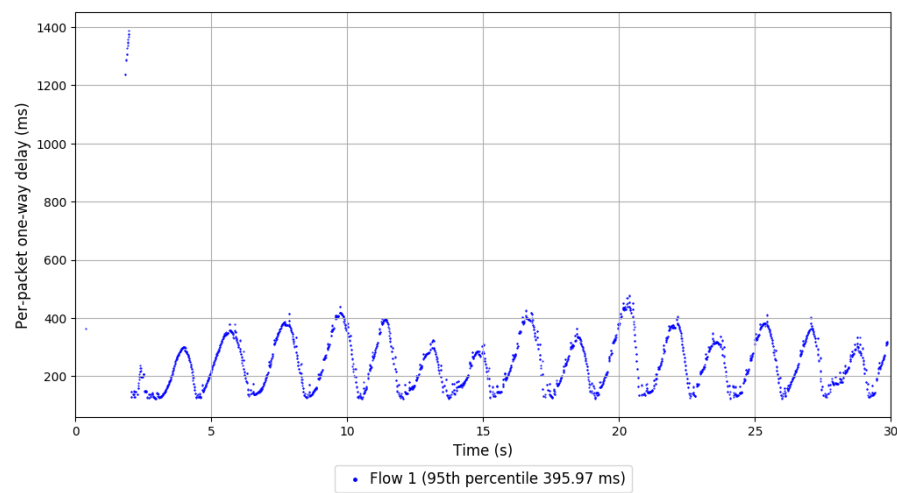
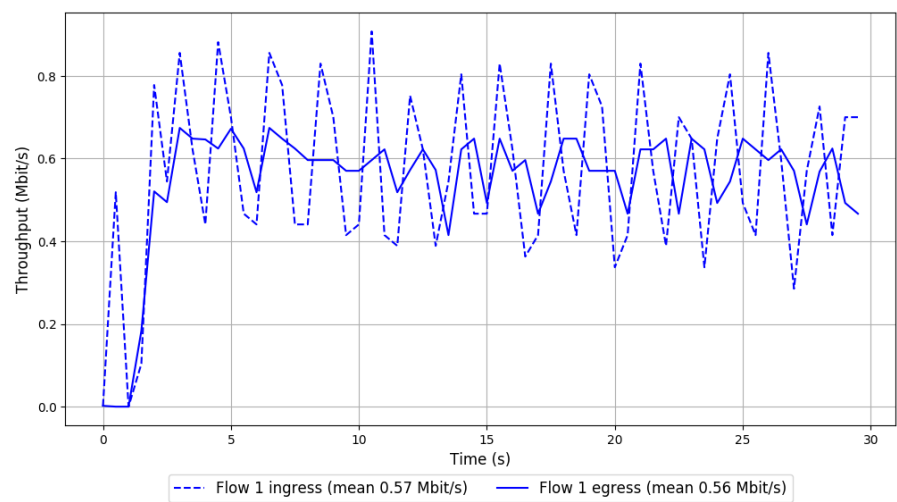
-- Flow 1:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 395.966 ms

Loss rate: 3.62%

Run 1: Report of Copa — Data Link

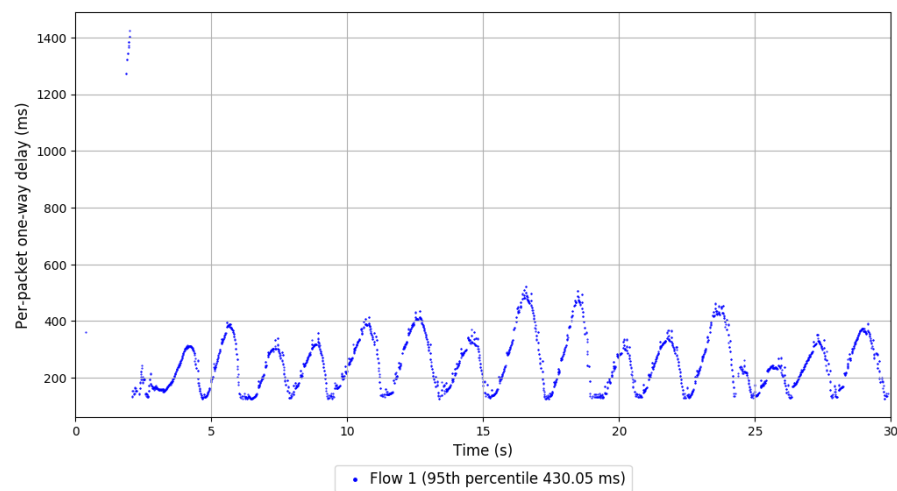
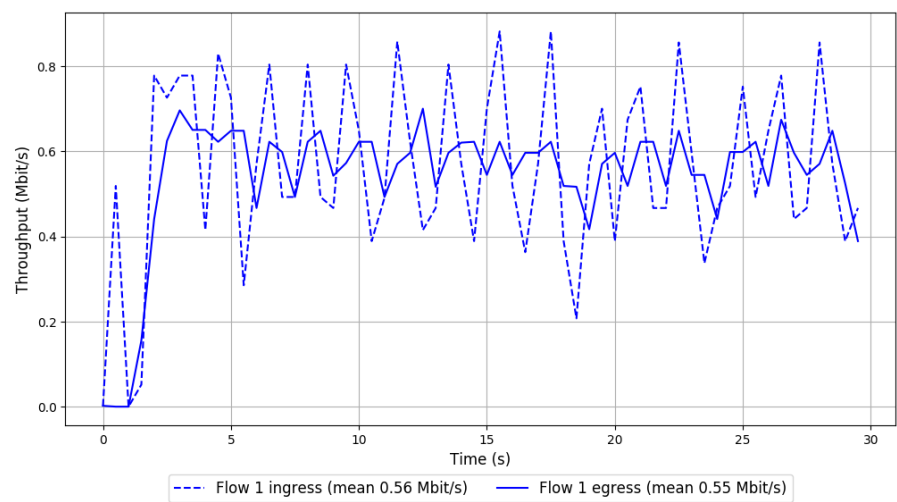


Run 2: Statistics of Copa

Start at: 2018-03-20 06:20:50
End at: 2018-03-20 06:21:20
Local clock offset: -11.231 ms
Remote clock offset: 5.812 ms

Below is generated by plot.py at 2018-03-20 07:53:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 430.049 ms
Loss rate: 3.21%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 430.049 ms
Loss rate: 3.21%

Run 2: Report of Copa — Data Link

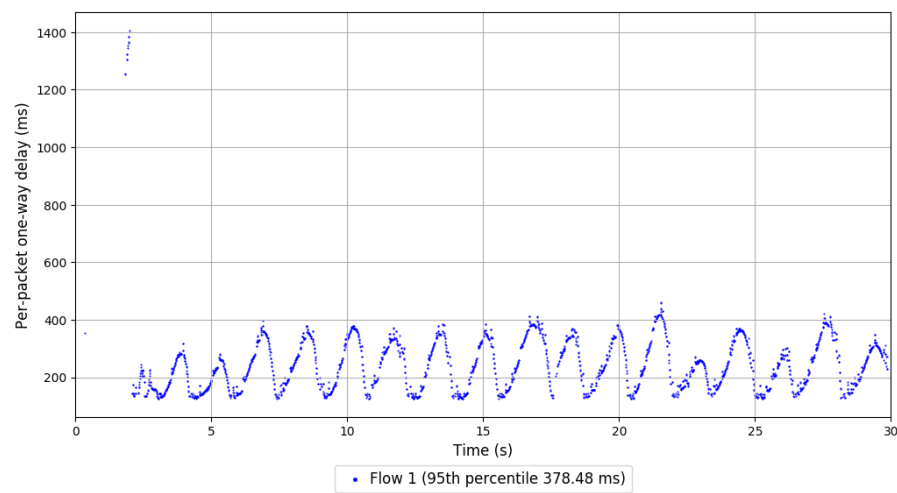
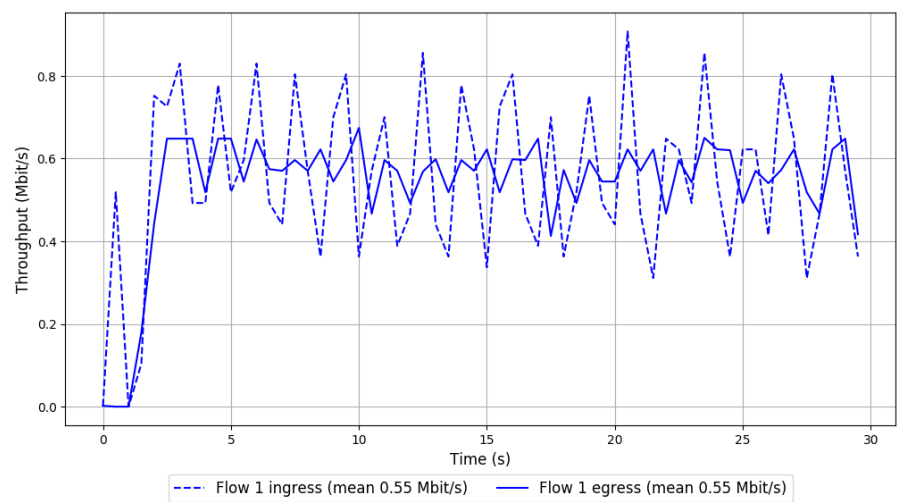


Run 3: Statistics of Copa

Start at: 2018-03-20 06:42:03
End at: 2018-03-20 06:42:33
Local clock offset: -12.967 ms
Remote clock offset: 9.692 ms

Below is generated by plot.py at 2018-03-20 07:53:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 378.481 ms
Loss rate: 2.88%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 378.481 ms
Loss rate: 2.88%

Run 3: Report of Copa — Data Link



Run 1: Statistics of FillP

Start at: 2018-03-20 05:49:02

End at: 2018-03-20 05:49:32

Local clock offset: -7.391 ms

Remote clock offset: 9.722 ms

Below is generated by plot.py at 2018-03-20 07:54:06

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 26458.679 ms

Loss rate: 98.26%

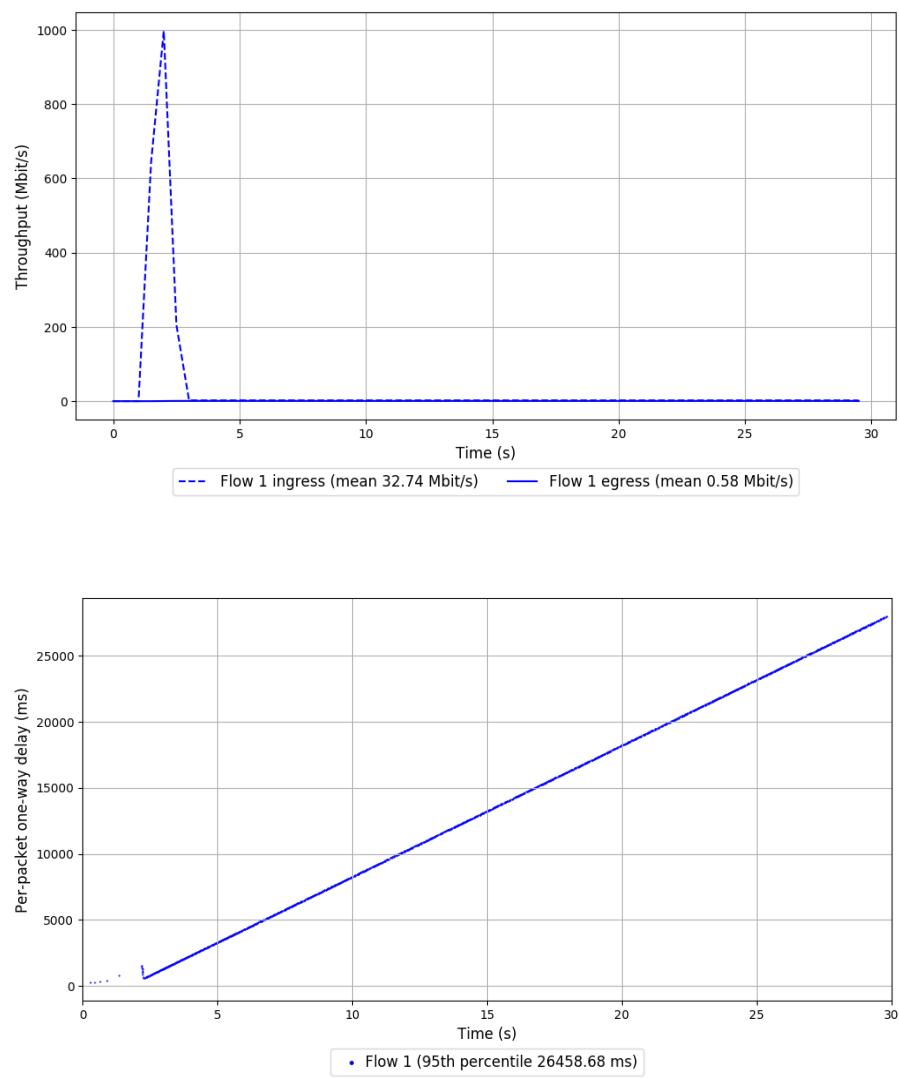
-- Flow 1:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 26458.679 ms

Loss rate: 98.26%

Run 1: Report of FillP — Data Link

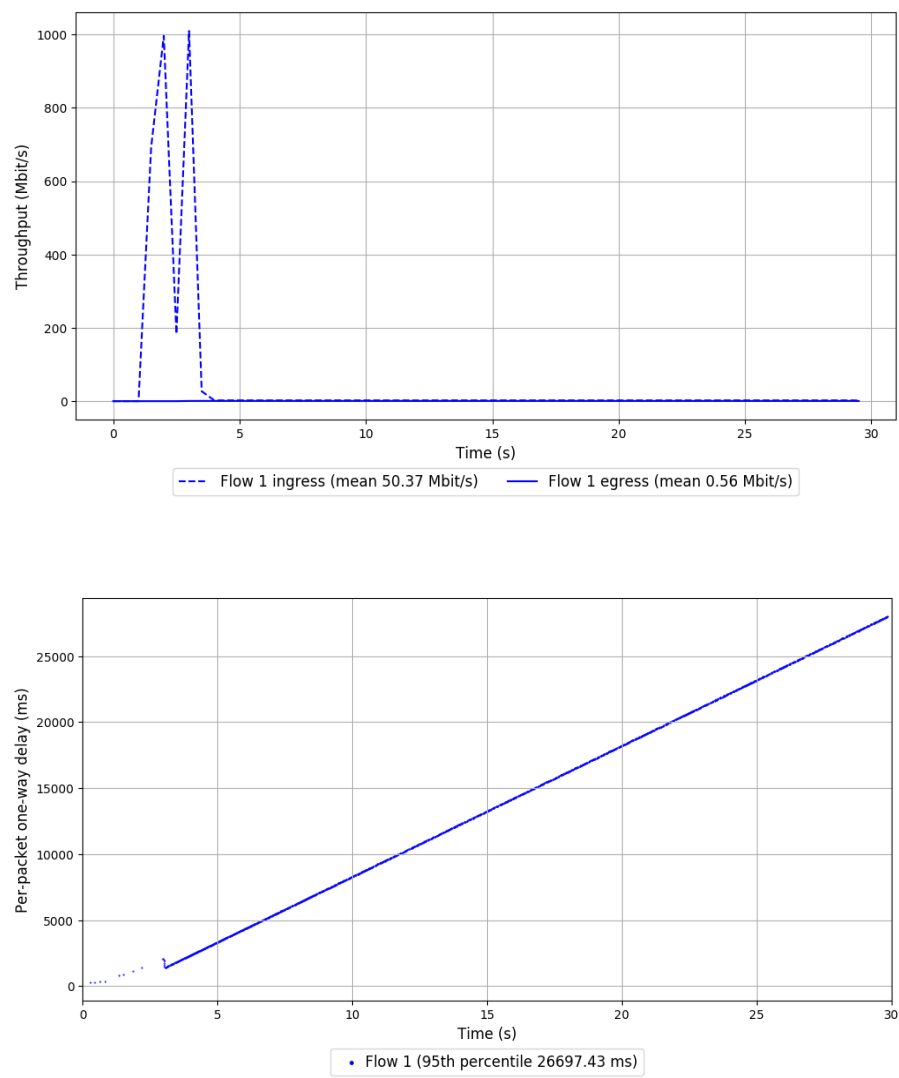


Run 2: Statistics of FillP

Start at: 2018-03-20 06:10:14
End at: 2018-03-20 06:10:44
Local clock offset: -10.092 ms
Remote clock offset: 9.648 ms

Below is generated by plot.py at 2018-03-20 07:54:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 26697.432 ms
Loss rate: 98.90%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 26697.432 ms
Loss rate: 98.90%

Run 2: Report of FillP — Data Link

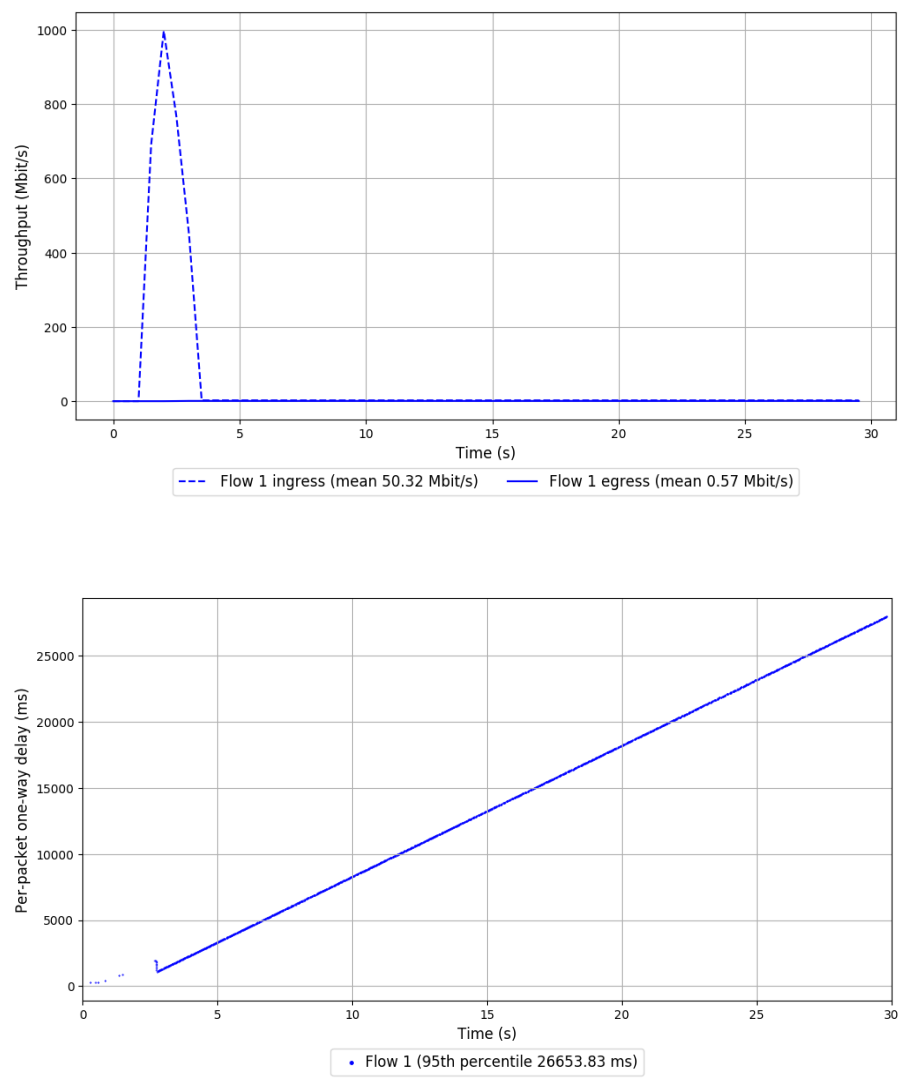


Run 3: Statistics of FillP

Start at: 2018-03-20 06:31:26
End at: 2018-03-20 06:31:56
Local clock offset: -11.099 ms
Remote clock offset: 4.886 ms

Below is generated by plot.py at 2018-03-20 07:54:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26653.827 ms
Loss rate: 98.89%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26653.827 ms
Loss rate: 98.89%

Run 3: Report of FillP — Data Link



Run 1: Statistics of Indigo-1-32

Start at: 2018-03-20 05:54:56

End at: 2018-03-20 05:55:26

Local clock offset: -8.464 ms

Remote clock offset: 5.049 ms

Below is generated by plot.py at 2018-03-20 07:54:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.50 Mbit/s

95th percentile per-packet one-way delay: 329.308 ms

Loss rate: 2.18%

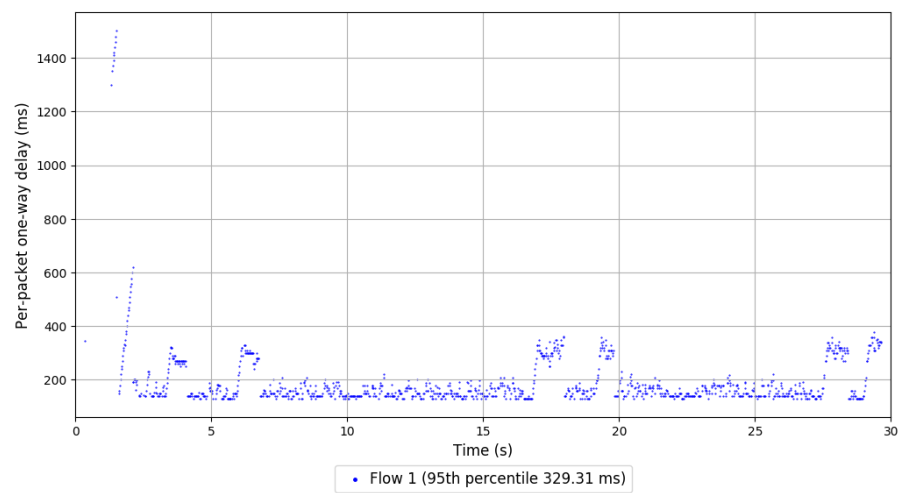
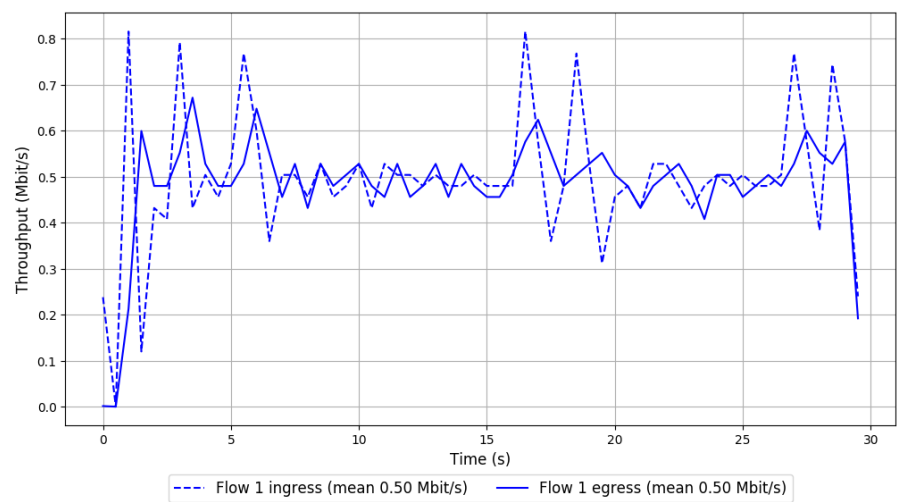
-- Flow 1:

Average throughput: 0.50 Mbit/s

95th percentile per-packet one-way delay: 329.308 ms

Loss rate: 2.18%

Run 1: Report of Indigo-1-32 — Data Link

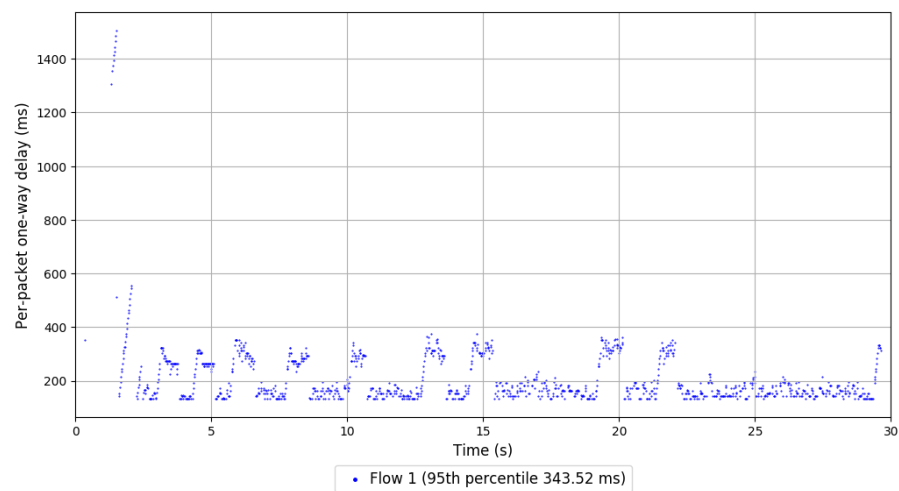
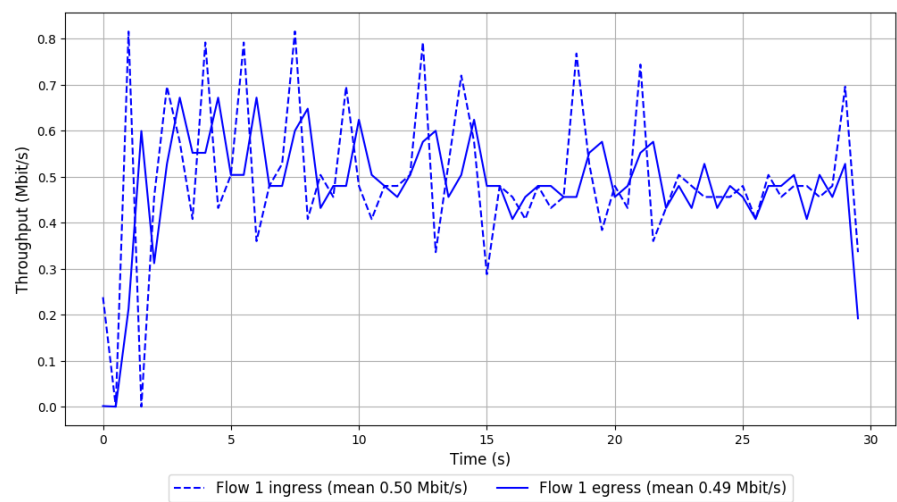


Run 2: Statistics of Indigo-1-32

Start at: 2018-03-20 06:16:08
End at: 2018-03-20 06:16:38
Local clock offset: -11.862 ms
Remote clock offset: 4.978 ms

Below is generated by plot.py at 2018-03-20 07:54:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 343.519 ms
Loss rate: 2.44%
-- Flow 1:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 343.519 ms
Loss rate: 2.44%

Run 2: Report of Indigo-1-32 — Data Link

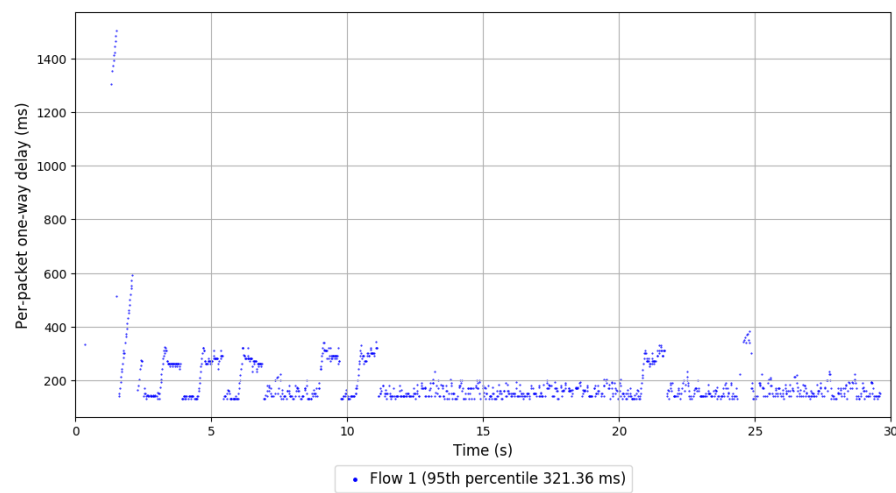
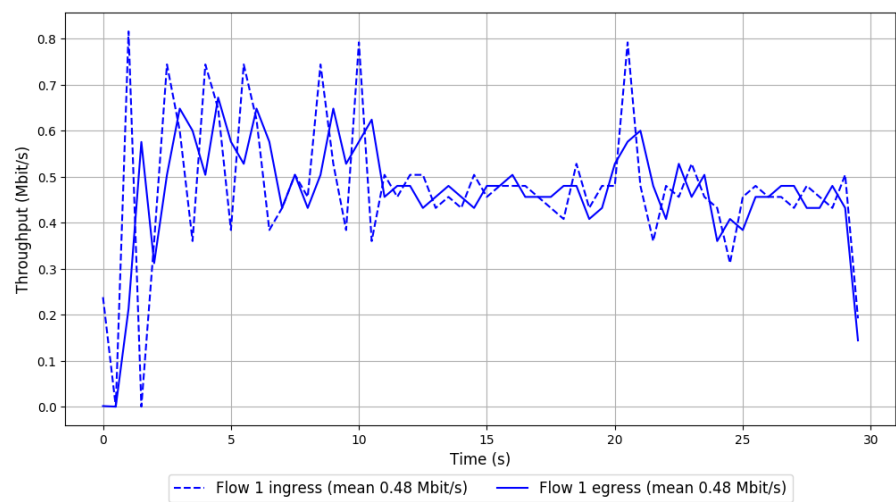


Run 3: Statistics of Indigo-1-32

Start at: 2018-03-20 06:37:20
End at: 2018-03-20 06:37:50
Local clock offset: -12.011 ms
Remote clock offset: 9.695 ms

Below is generated by plot.py at 2018-03-20 07:54:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 321.355 ms
Loss rate: 1.61%
-- Flow 1:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 321.355 ms
Loss rate: 1.61%

Run 3: Report of Indigo-1-32 — Data Link

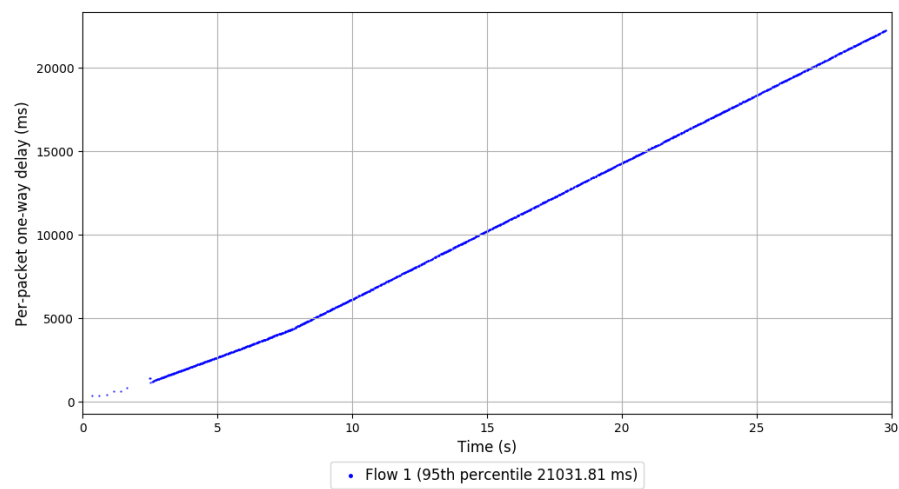
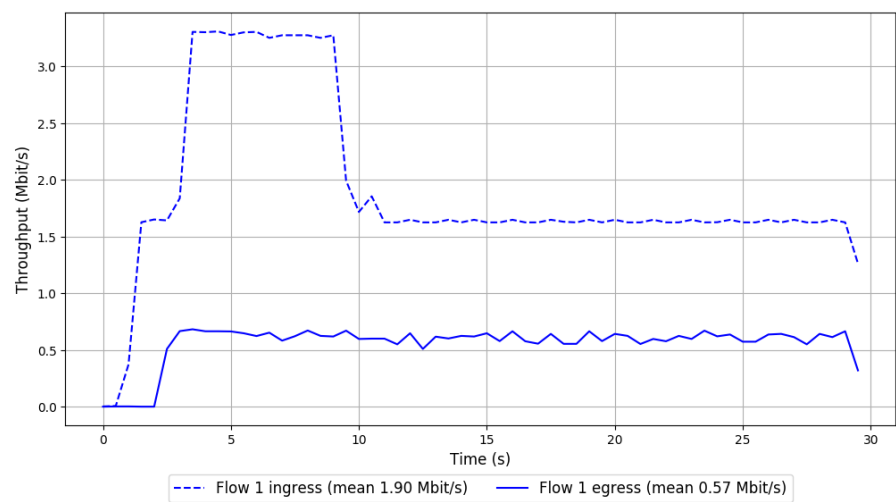


Run 1: Statistics of Vivace-latency

Start at: 2018-03-20 06:00:48
End at: 2018-03-20 06:01:18
Local clock offset: -10.145 ms
Remote clock offset: 10.512 ms

Below is generated by plot.py at 2018-03-20 07:54:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 21031.813 ms
Loss rate: 70.48%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 21031.813 ms
Loss rate: 70.48%

Run 1: Report of Vivace-latency — Data Link

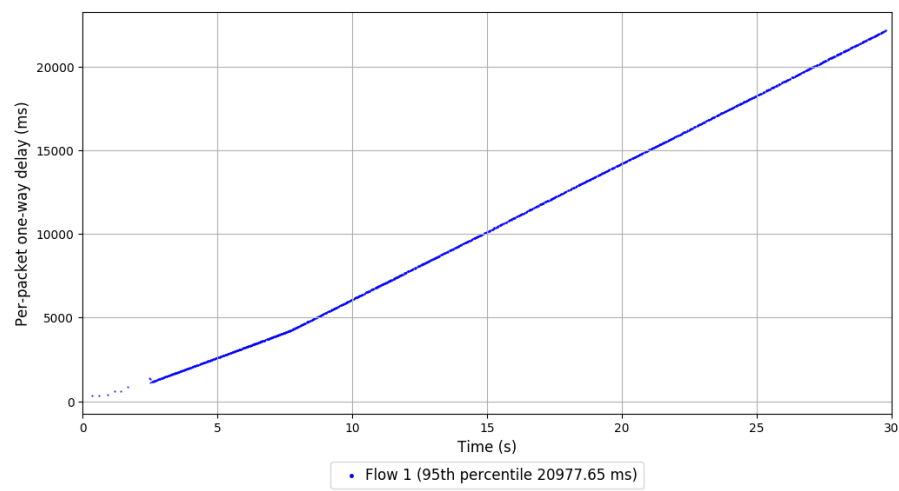
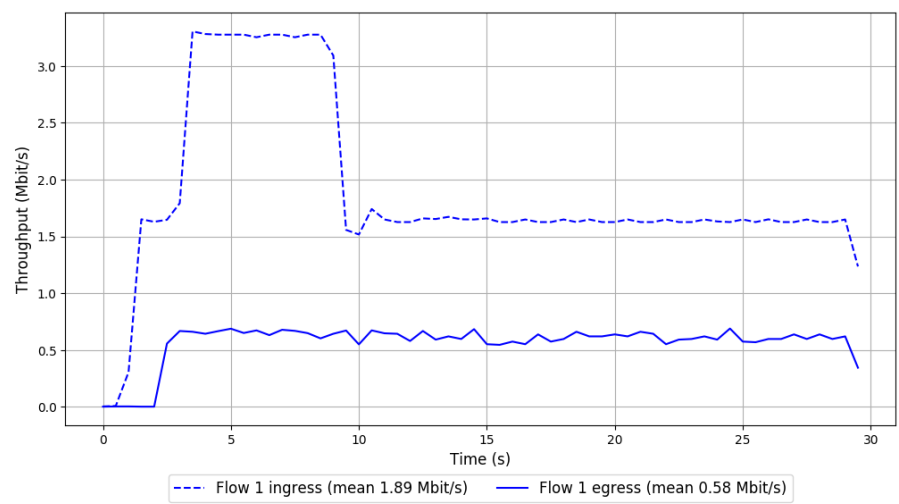


Run 2: Statistics of Vivace-latency

Start at: 2018-03-20 06:22:00
End at: 2018-03-20 06:22:30
Local clock offset: -10.999 ms
Remote clock offset: 8.904 ms

Below is generated by plot.py at 2018-03-20 07:54:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 20977.655 ms
Loss rate: 69.91%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 20977.655 ms
Loss rate: 69.91%

Run 2: Report of Vivace-latency — Data Link

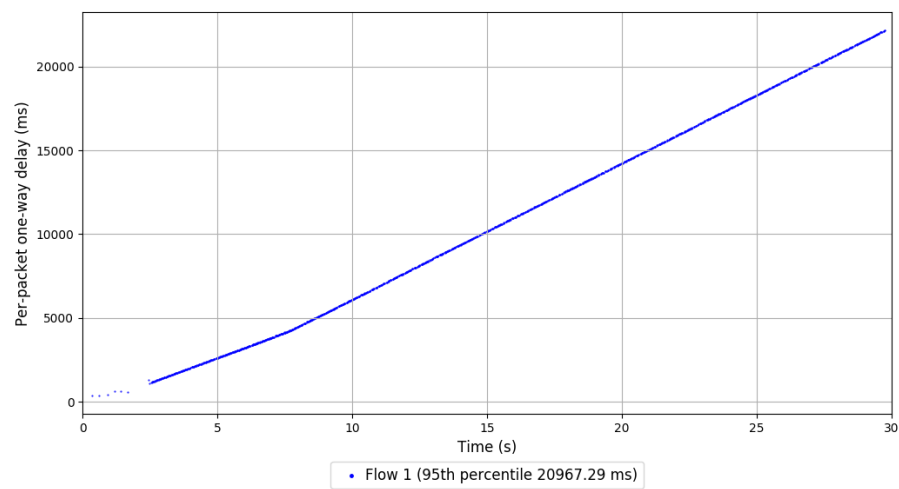
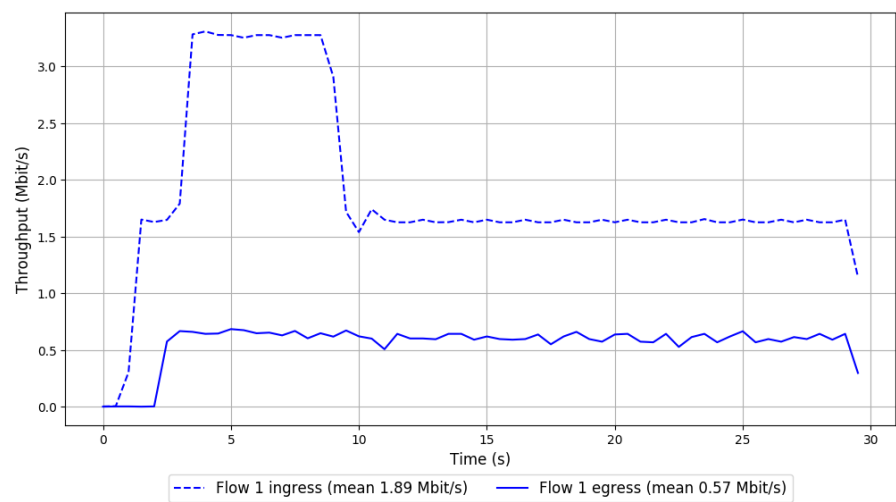


Run 3: Statistics of Vivace-latency

Start at: 2018-03-20 06:43:13
End at: 2018-03-20 06:43:43
Local clock offset: -13.247 ms
Remote clock offset: 5.817 ms

Below is generated by plot.py at 2018-03-20 07:54:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20967.292 ms
Loss rate: 70.10%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20967.292 ms
Loss rate: 70.10%

Run 3: Report of Vivace-latency — Data Link



Run 1: Statistics of Vivace-loss

Start at: 2018-03-20 05:51:25

End at: 2018-03-20 05:51:55

Local clock offset: -8.602 ms

Remote clock offset: 5.9 ms

Below is generated by plot.py at 2018-03-20 07:54:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 21020.157 ms

Loss rate: 89.26%

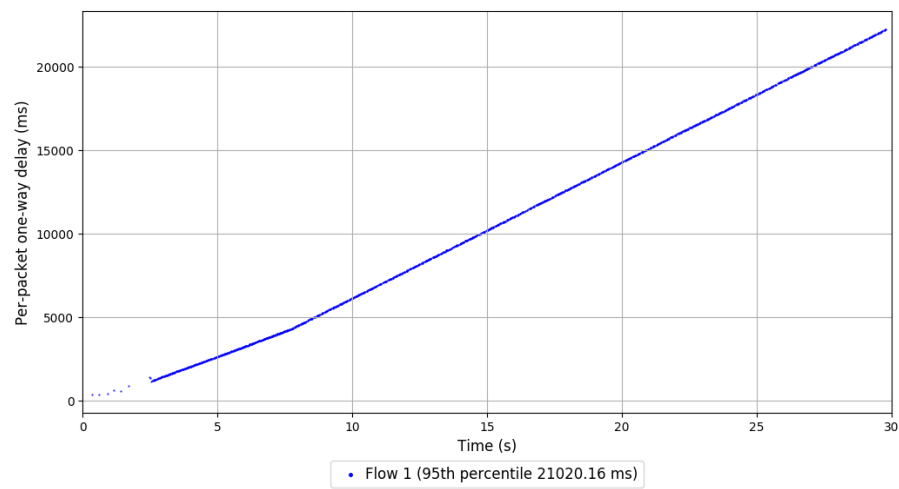
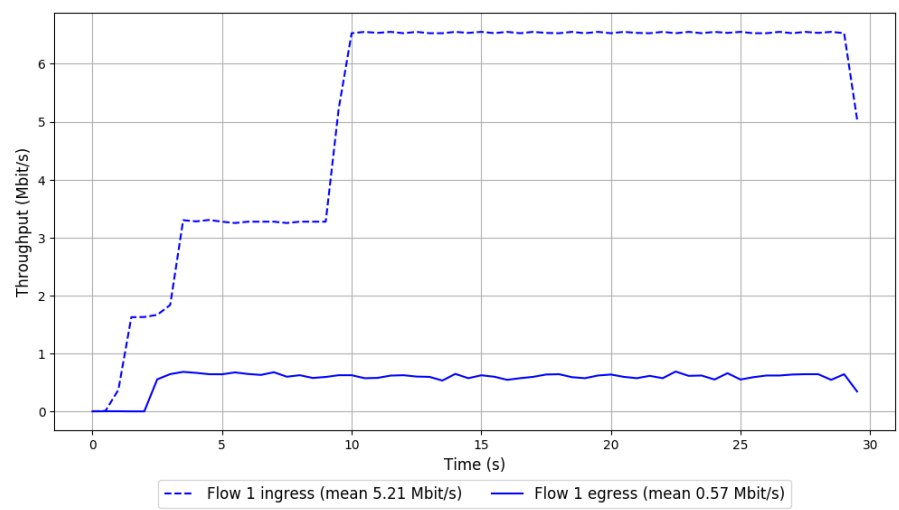
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 21020.157 ms

Loss rate: 89.26%

Run 1: Report of Vivace-loss — Data Link

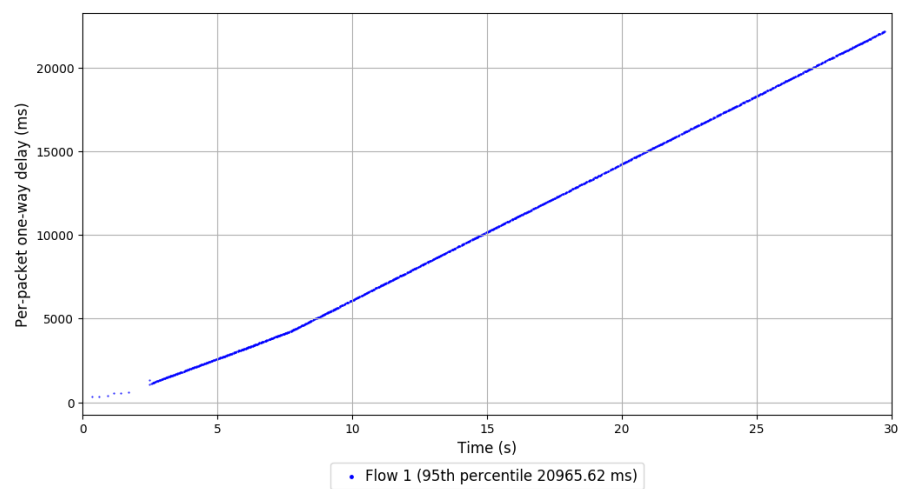
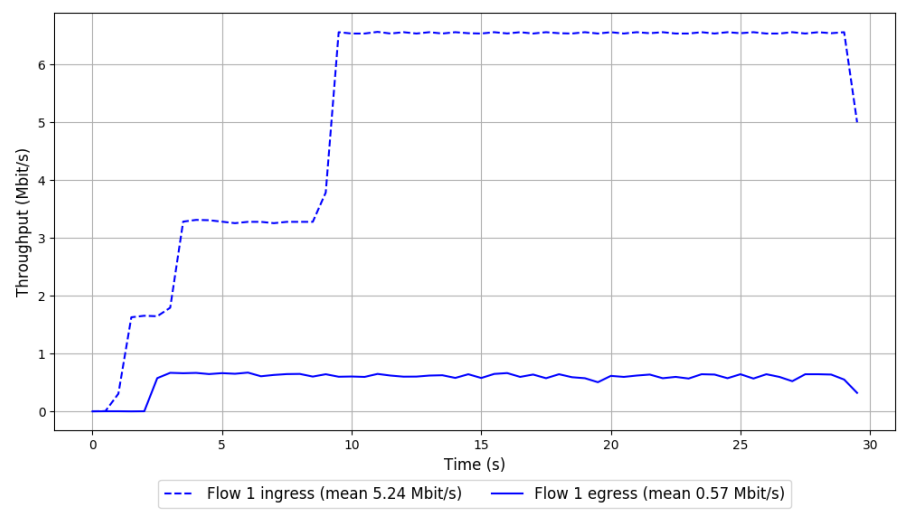


Run 2: Statistics of Vivace-loss

Start at: 2018-03-20 06:12:37
End at: 2018-03-20 06:13:07
Local clock offset: -10.722 ms
Remote clock offset: 9.584 ms

Below is generated by plot.py at 2018-03-20 07:54:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20965.620 ms
Loss rate: 89.28%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20965.620 ms
Loss rate: 89.28%

Run 2: Report of Vivace-loss — Data Link

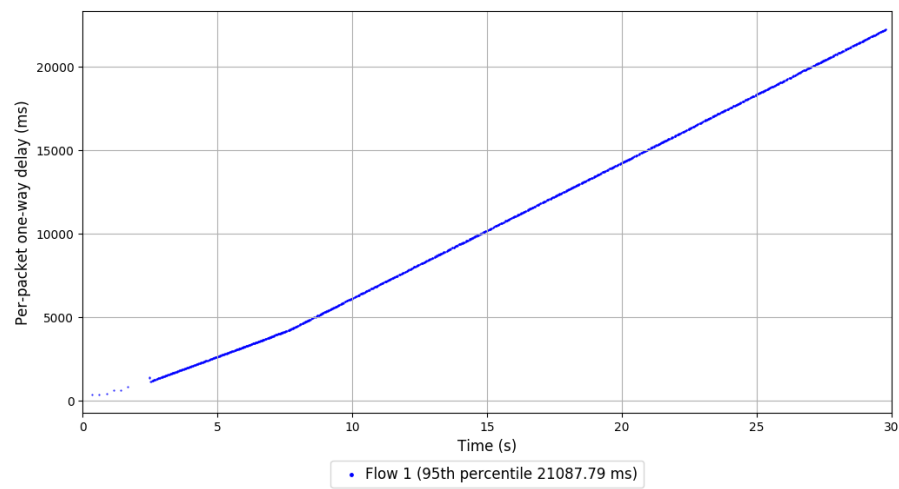
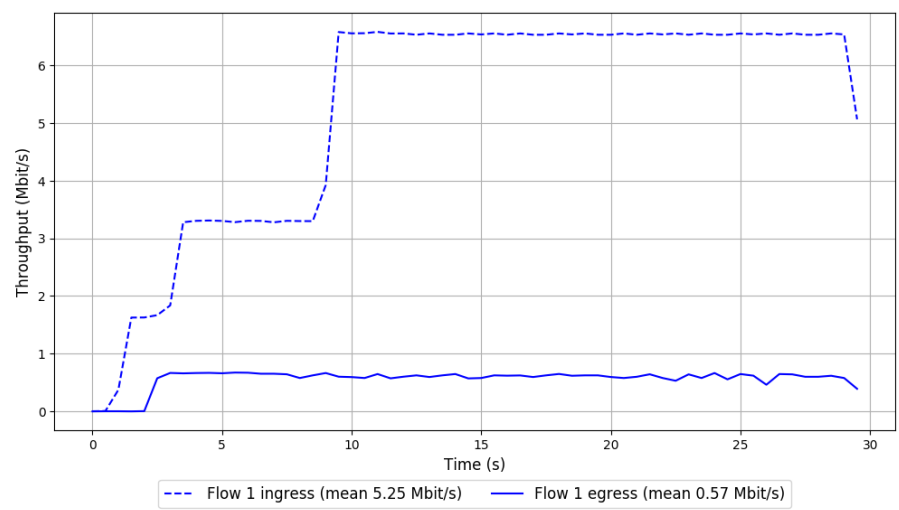


Run 3: Statistics of Vivace-loss

Start at: 2018-03-20 06:33:49
End at: 2018-03-20 06:34:19
Local clock offset: -11.431 ms
Remote clock offset: 5.827 ms

Below is generated by plot.py at 2018-03-20 07:54:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 21087.790 ms
Loss rate: 89.25%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 21087.790 ms
Loss rate: 89.25%

Run 3: Report of Vivace-loss — Data Link

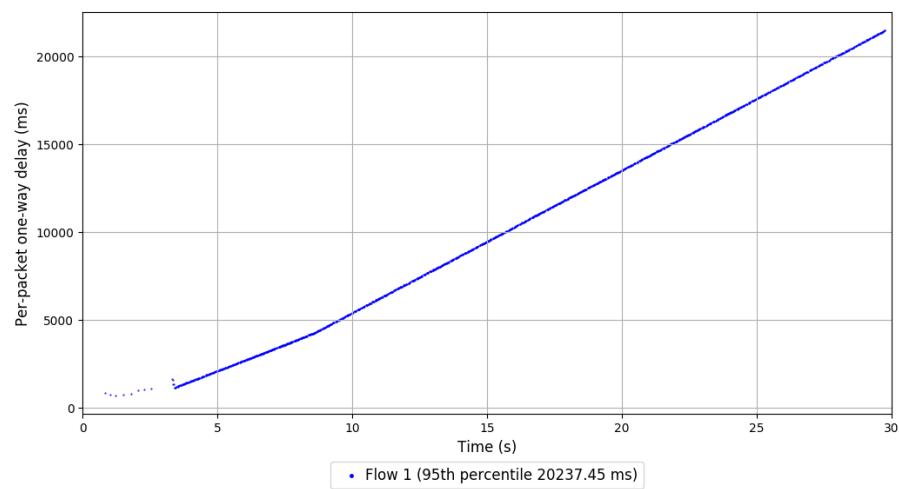
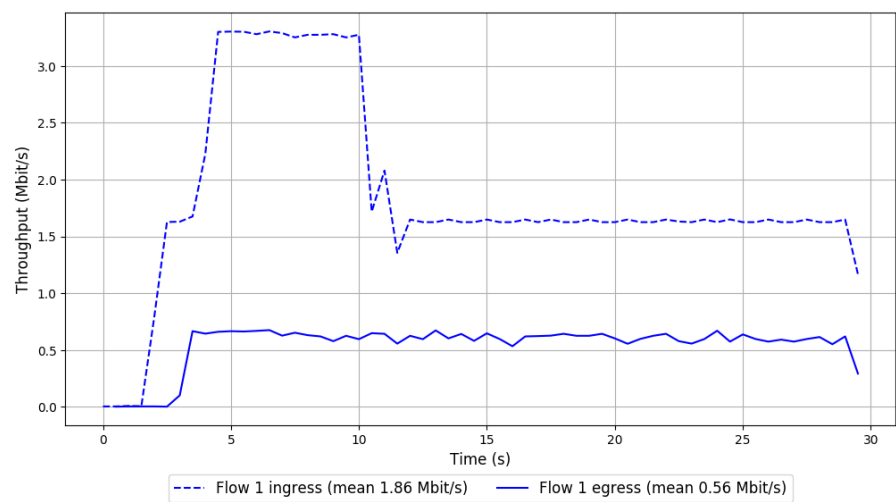


Run 1: Statistics of Vivace-LTE

Start at: 2018-03-20 05:52:35
End at: 2018-03-20 05:53:05
Local clock offset: -8.652 ms
Remote clock offset: 10.572 ms

Below is generated by plot.py at 2018-03-20 07:54:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 20237.454 ms
Loss rate: 70.68%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 20237.454 ms
Loss rate: 70.68%

Run 1: Report of Vivace-LTE — Data Link

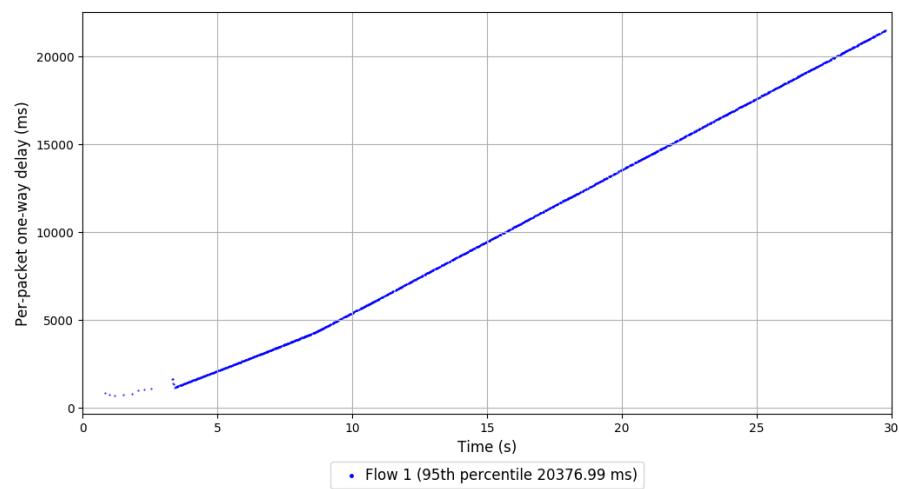
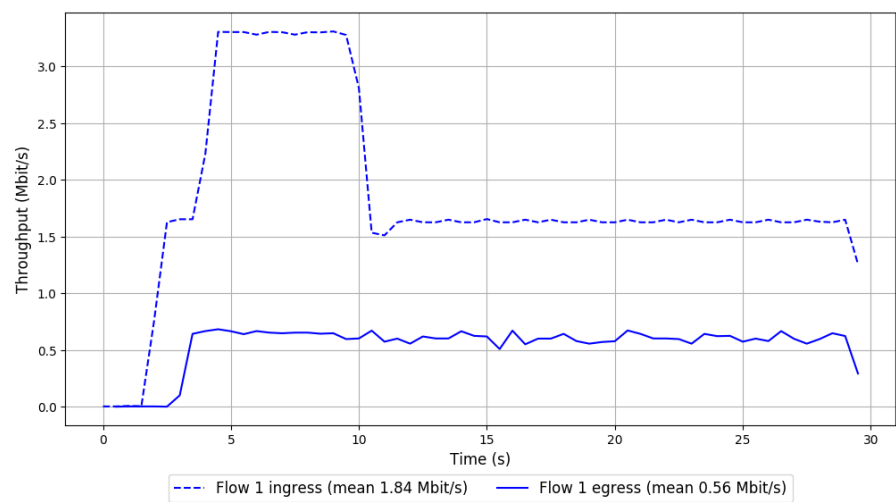


Run 2: Statistics of Vivace-LTE

Start at: 2018-03-20 06:13:47
End at: 2018-03-20 06:14:17
Local clock offset: -11.016 ms
Remote clock offset: 8.889 ms

Below is generated by plot.py at 2018-03-20 07:54:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 20376.986 ms
Loss rate: 70.48%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 20376.986 ms
Loss rate: 70.48%

Run 2: Report of Vivace-LTE — Data Link



Run 3: Statistics of Vivace-LTE

Start at: 2018-03-20 06:35:00
End at: 2018-03-20 06:35:30
Local clock offset: -11.685 ms
Remote clock offset: 9.621 ms

Below is generated by plot.py at 2018-03-20 07:54:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 20398.442 ms
Loss rate: 70.63%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 20398.442 ms
Loss rate: 70.63%

Run 3: Report of Vivace-LTE — Data Link

