

Pantheon Report

Generated at 2019-04-23 19:04:21 (UTC).

Data path: AWS California 1 on `ens5 (local)` →Stanford cellular on `ppp0 (remote)`.

Repeated the test of 21 congestion control schemes 3 times.

Each test lasted for 30 seconds running 1 flow.

NTP offsets were measured against `time.stanford.edu` and have been applied to correct the timestamps in logs.

System info:

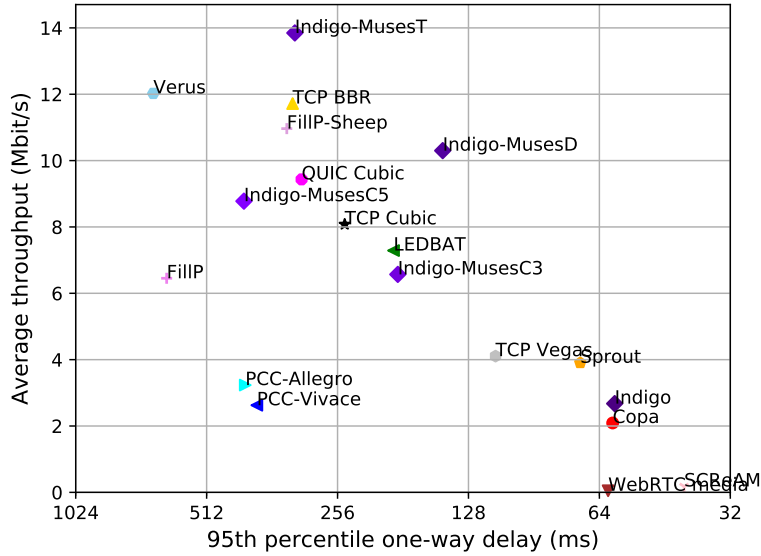
```
Linux 4.15.0-1034-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
```

Git summary:

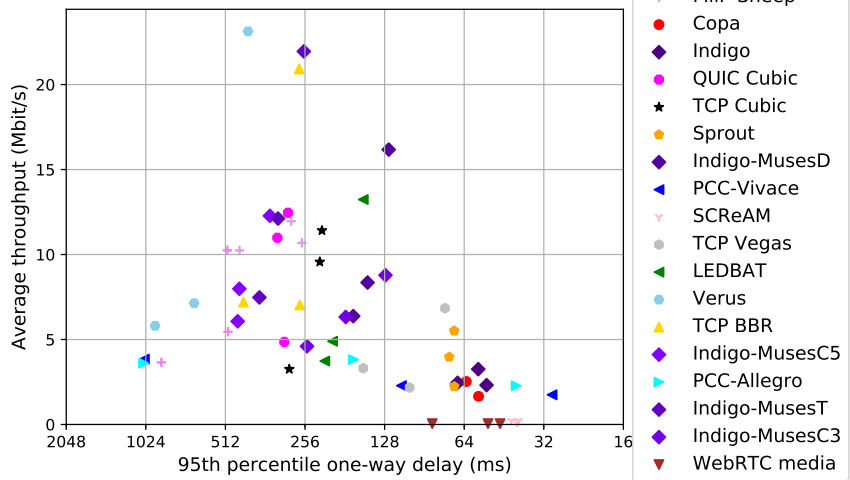
```
branch: muses @ 7a686f7c2ed0a333082c0bab1fa5c921ab47e6ee
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 5ce721187ad823da20955337730c746486ca4966
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
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/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quick @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
M src/ScreamClient
M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
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 @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851

test from AWS California 1 to Stanford cellular, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from AWS California 1 to Stanford cellular, 3 runs of 30s each per scheme



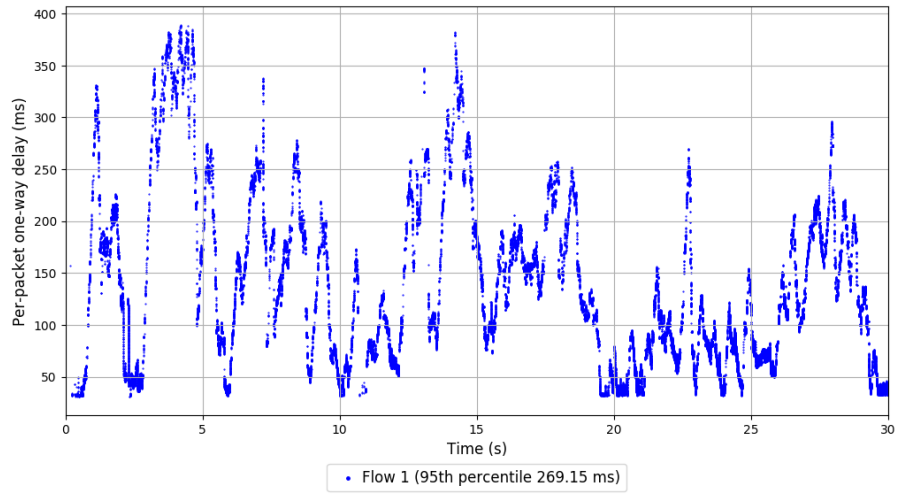
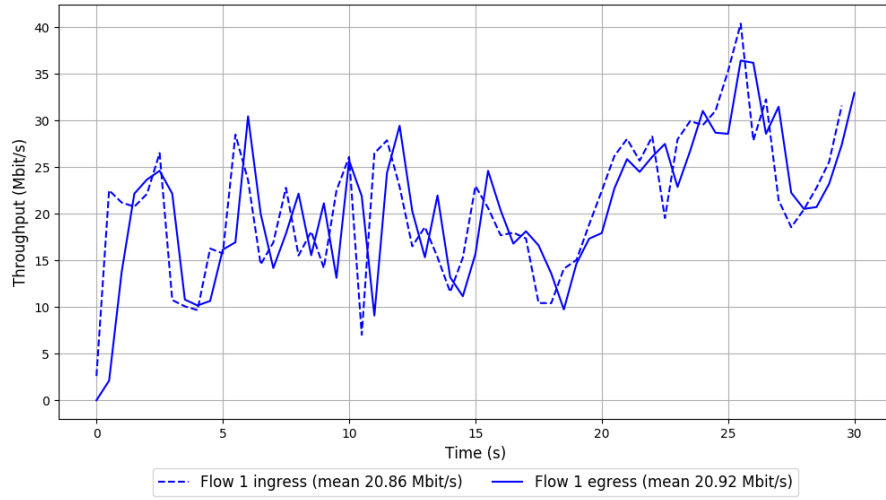
scheme	# runs	mean avg tput (Mbit/s)	mean 95th-%ile delay (ms)	mean loss rate (%)
		flow 1	flow 1	flow 1
TCP BBR	3	11.72	324.79	0.42
Copa	2	2.09	59.66	17.70
TCP Cubic	3	8.08	246.50	0.37
FillP	3	6.45	632.65	3.33
FillP-Sheep	3	10.96	334.93	0.22
Indigo	3	2.68	59.03	0.07
Indigo-MusesC3	3	6.57	186.09	0.31
Indigo-MusesC5	3	8.78	420.28	0.87
Indigo-MusesD	3	10.30	146.71	0.36
Indigo-MusesT	3	13.85	320.97	0.57
LEDBAT	3	7.29	190.38	0.39
PCC-Allegro	3	3.24	417.26	2.61
PCC-Expr	0	N/A	N/A	N/A
QUIC Cubic	3	9.44	309.73	0.56
SReAM	3	0.18	40.87	0.12
Sprout	3	3.91	70.83	0.16
TaoVA-100x	0	N/A	N/A	N/A
TCP Vegas	3	4.11	110.91	0.06
Verus	3	12.02	679.02	3.79
PCC-Vivace	3	2.63	392.54	3.78
WebRTC media	3	0.05	61.11	0.00

Run 1: Statistics of TCP BBR

Start at: 2019-04-23 18:02:26
End at: 2019-04-23 18:02:56
Local clock offset: -18.798 ms
Remote clock offset: 3.684 ms

Below is generated by plot.py at 2019-04-23 19:03:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 20.92 Mbit/s
95th percentile per-packet one-way delay: 269.148 ms
Loss rate: 0.24%
-- Flow 1:
Average throughput: 20.92 Mbit/s
95th percentile per-packet one-way delay: 269.148 ms
Loss rate: 0.24%

Run 1: Report of TCP BBR — Data Link

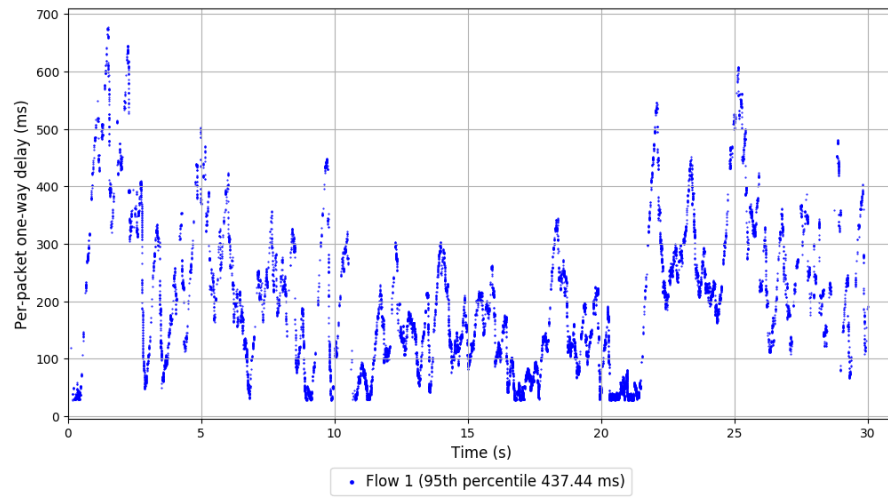
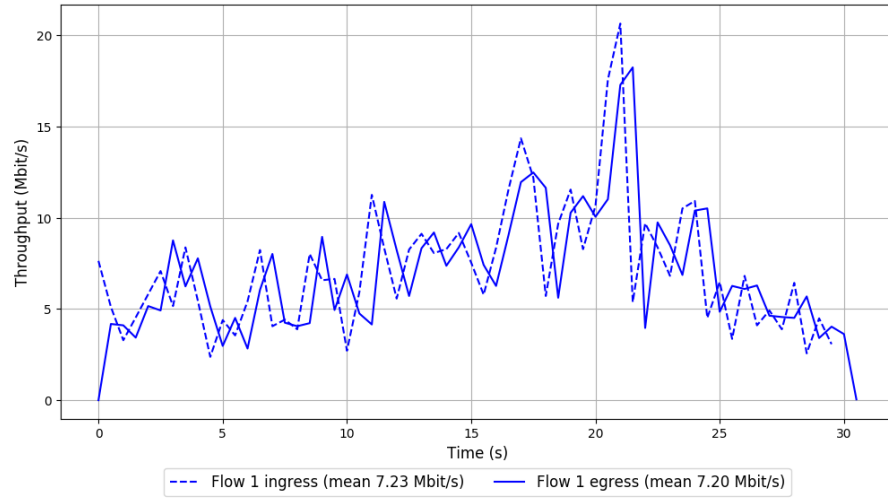


Run 2: Statistics of TCP BBR

Start at: 2019-04-23 18:28:14
End at: 2019-04-23 18:28:44
Local clock offset: -18.291 ms
Remote clock offset: 1.604 ms

Below is generated by plot.py at 2019-04-23 19:03:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 7.20 Mbit/s
95th percentile per-packet one-way delay: 437.436 ms
Loss rate: 0.55%
-- Flow 1:
Average throughput: 7.20 Mbit/s
95th percentile per-packet one-way delay: 437.436 ms
Loss rate: 0.55%

Run 2: Report of TCP BBR — Data Link

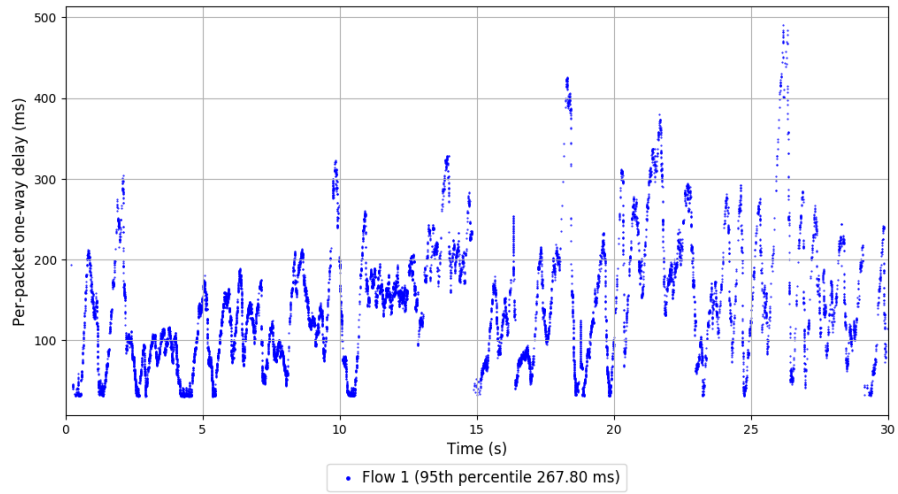
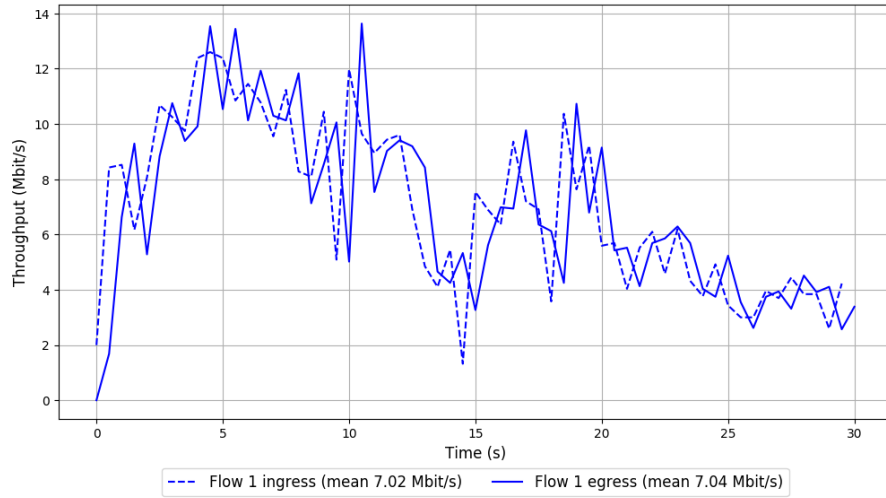


Run 3: Statistics of TCP BBR

Start at: 2019-04-23 18:54:01
End at: 2019-04-23 18:54:31
Local clock offset: -17.586 ms
Remote clock offset: 1.605 ms

Below is generated by plot.py at 2019-04-23 19:03:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 7.04 Mbit/s
95th percentile per-packet one-way delay: 267.796 ms
Loss rate: 0.48%
-- Flow 1:
Average throughput: 7.04 Mbit/s
95th percentile per-packet one-way delay: 267.796 ms
Loss rate: 0.48%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of Copa

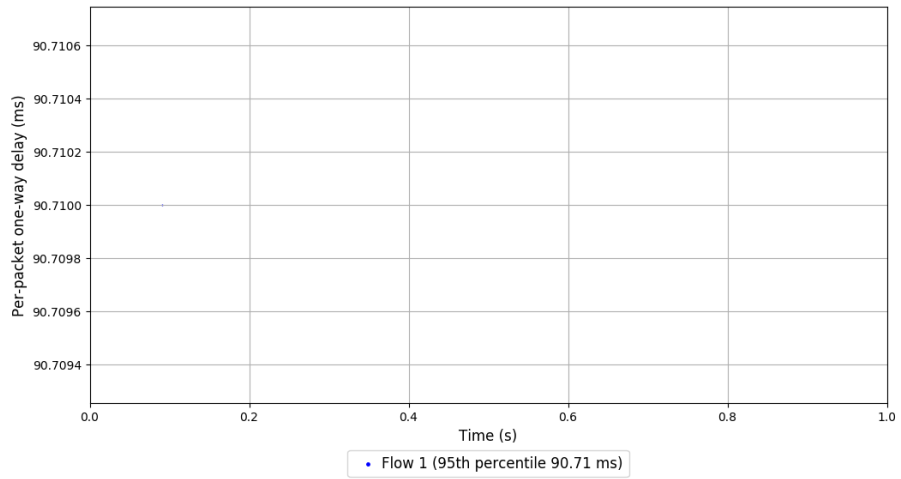
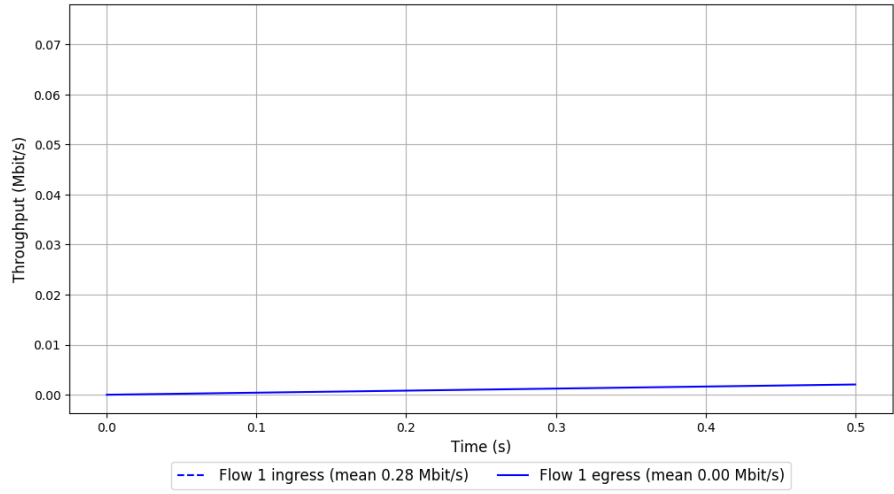
Start at: 2019-04-23 17:52:38

End at: 2019-04-23 17:53:08

Local clock offset: -6.432 ms

Remote clock offset: 6.349 ms

Run 1: Report of Copa — Data Link

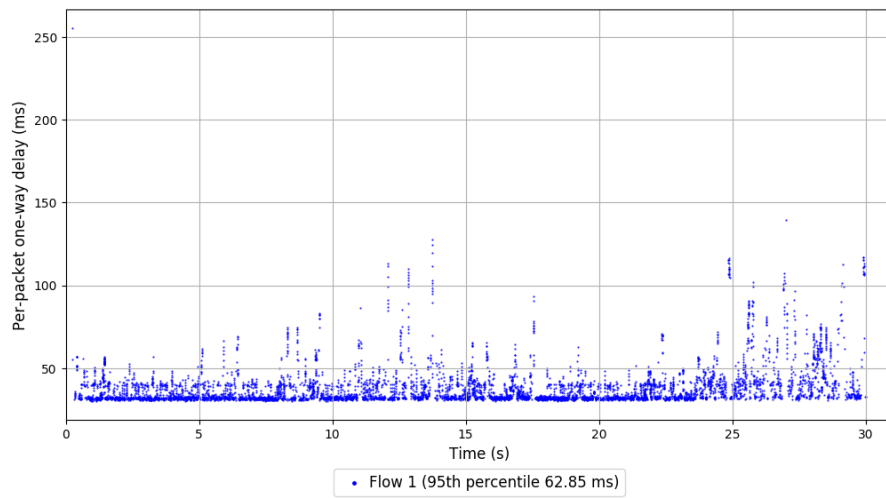
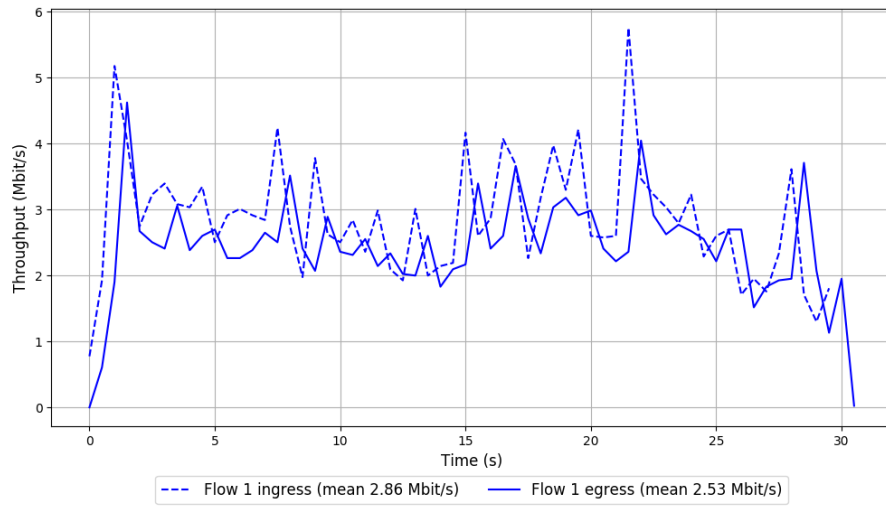


Run 2: Statistics of Copa

Start at: 2019-04-23 18:18:27
End at: 2019-04-23 18:18:57
Local clock offset: -15.928 ms
Remote clock offset: 1.789 ms

Below is generated by plot.py at 2019-04-23 19:03:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.53 Mbit/s
95th percentile per-packet one-way delay: 62.848 ms
Loss rate: 12.37%
-- Flow 1:
Average throughput: 2.53 Mbit/s
95th percentile per-packet one-way delay: 62.848 ms
Loss rate: 12.37%

Run 2: Report of Copa — Data Link

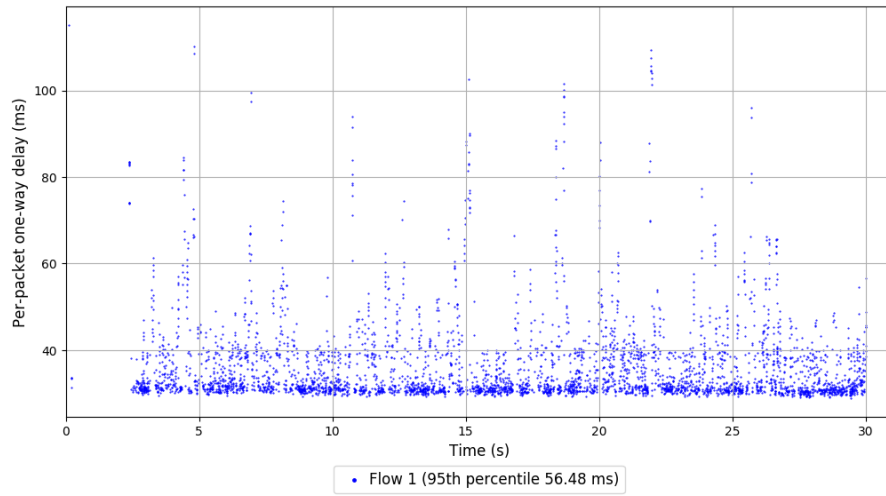
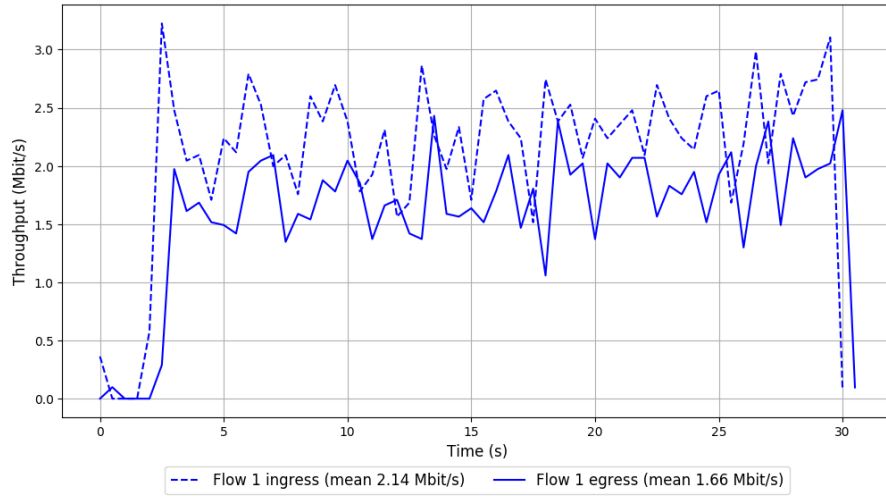


Run 3: Statistics of Copa

Start at: 2019-04-23 18:44:08
End at: 2019-04-23 18:44:38
Local clock offset: -32.819 ms
Remote clock offset: 1.592 ms

```
# Below is generated by plot.py at 2019-04-23 19:03:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.66 Mbit/s
95th percentile per-packet one-way delay: 56.477 ms
Loss rate: 23.03%
-- Flow 1:
Average throughput: 1.66 Mbit/s
95th percentile per-packet one-way delay: 56.477 ms
Loss rate: 23.03%
```

Run 3: Report of Copa — Data Link

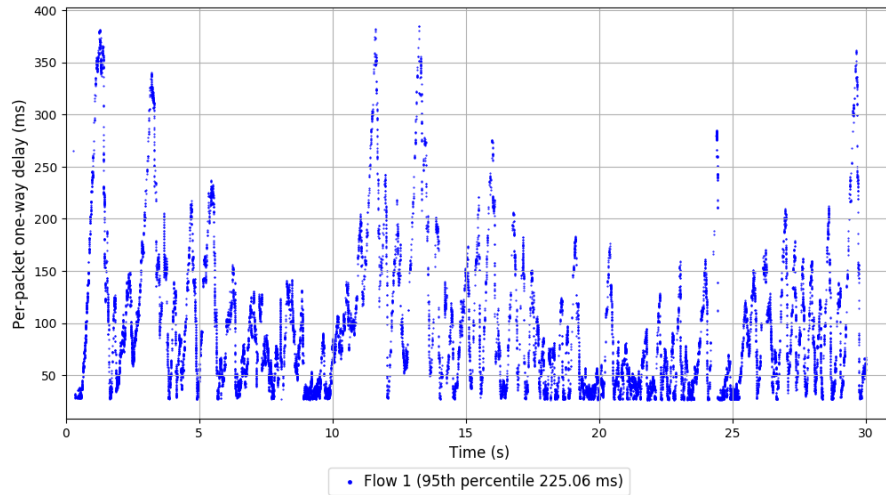
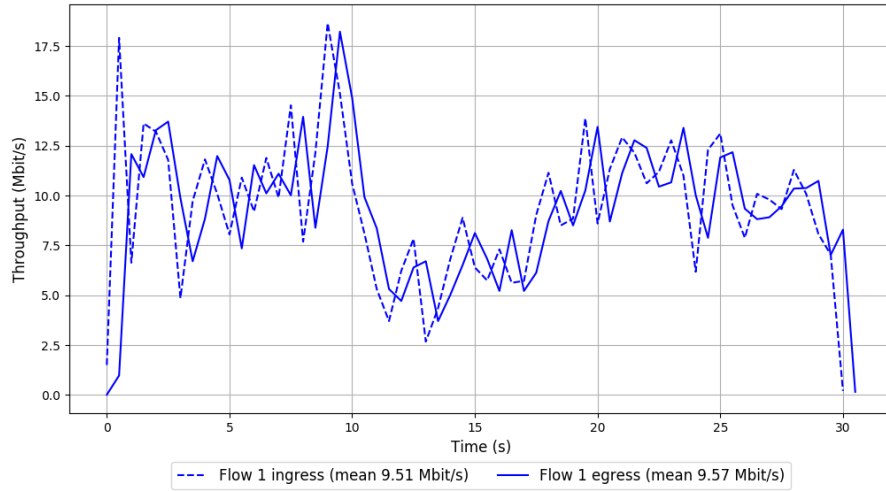


Run 1: Statistics of TCP Cubic

Start at: 2019-04-23 18:01:13
End at: 2019-04-23 18:01:43
Local clock offset: -16.274 ms
Remote clock offset: 3.945 ms

Below is generated by plot.py at 2019-04-23 19:03:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 9.57 Mbit/s
95th percentile per-packet one-way delay: 225.056 ms
Loss rate: 0.30%
-- Flow 1:
Average throughput: 9.57 Mbit/s
95th percentile per-packet one-way delay: 225.056 ms
Loss rate: 0.30%

Run 1: Report of TCP Cubic — Data Link

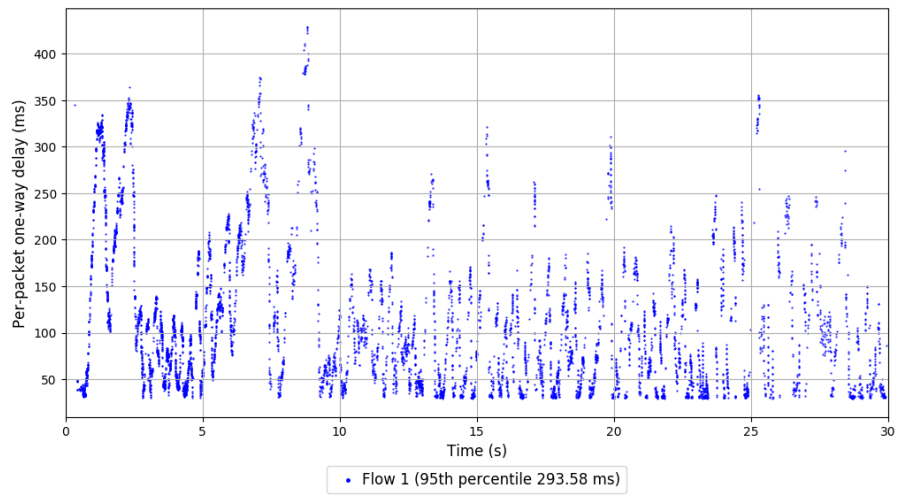
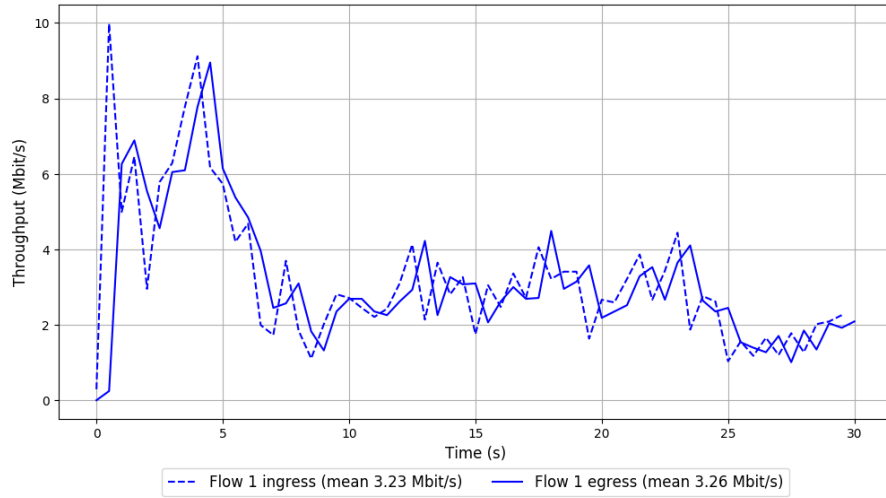


Run 2: Statistics of TCP Cubic

Start at: 2019-04-23 18:27:01
End at: 2019-04-23 18:27:31
Local clock offset: -17.598 ms
Remote clock offset: 1.477 ms

Below is generated by plot.py at 2019-04-23 19:03:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.26 Mbit/s
95th percentile per-packet one-way delay: 293.579 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 3.26 Mbit/s
95th percentile per-packet one-way delay: 293.579 ms
Loss rate: 0.43%

Run 2: Report of TCP Cubic — Data Link

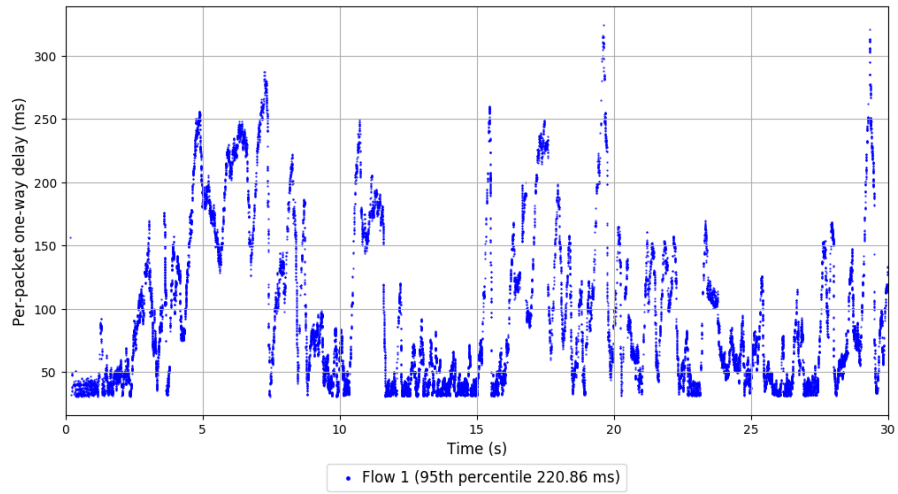
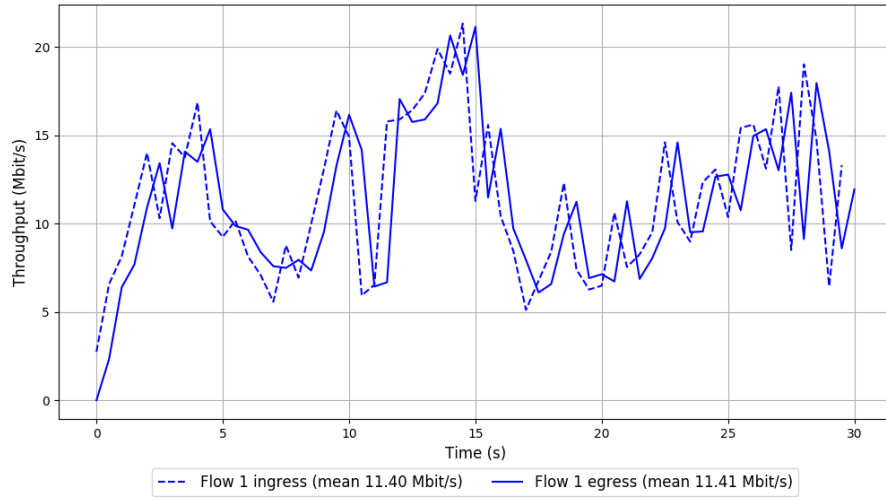


Run 3: Statistics of TCP Cubic

Start at: 2019-04-23 18:52:47
End at: 2019-04-23 18:53:17
Local clock offset: -18.662 ms
Remote clock offset: 1.578 ms

```
# Below is generated by plot.py at 2019-04-23 19:03:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.41 Mbit/s
95th percentile per-packet one-way delay: 220.858 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 11.41 Mbit/s
95th percentile per-packet one-way delay: 220.858 ms
Loss rate: 0.38%
```

Run 3: Report of TCP Cubic — Data Link

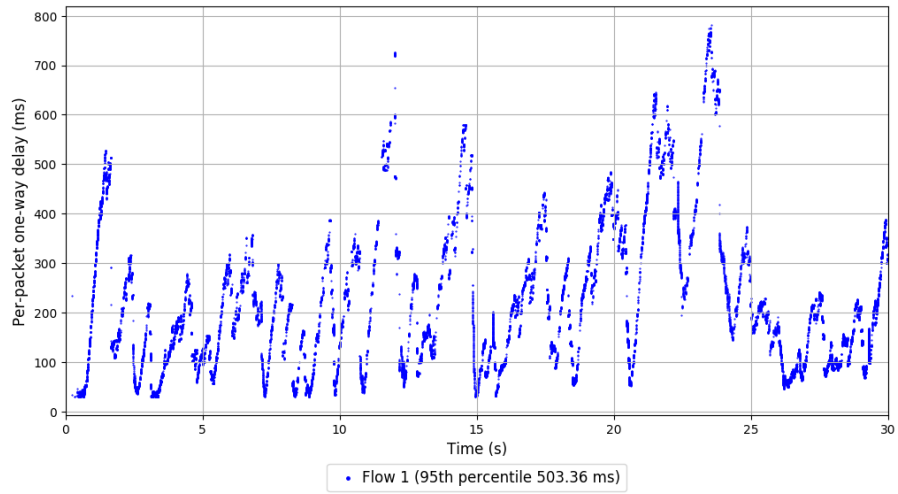
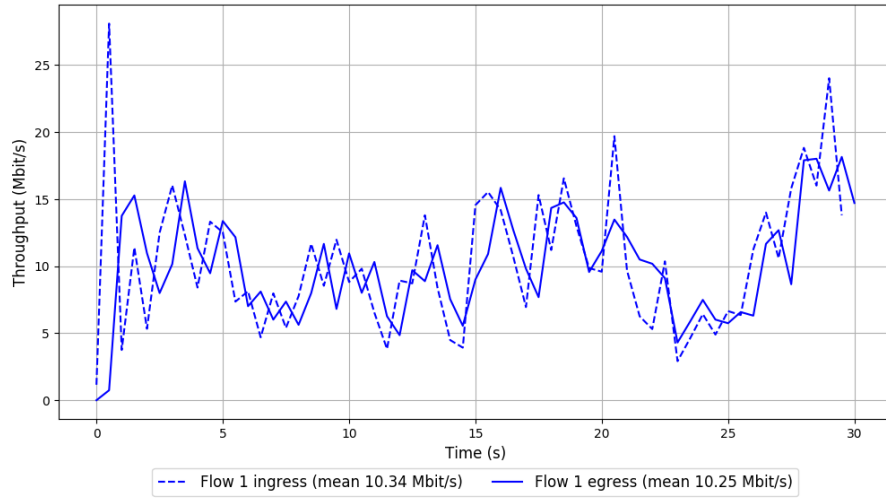


Run 1: Statistics of FillP

Start at: 2019-04-23 18:07:21
End at: 2019-04-23 18:07:51
Local clock offset: -12.295 ms
Remote clock offset: 2.662 ms

Below is generated by plot.py at 2019-04-23 19:03:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 10.25 Mbit/s
95th percentile per-packet one-way delay: 503.361 ms
Loss rate: 1.63%
-- Flow 1:
Average throughput: 10.25 Mbit/s
95th percentile per-packet one-way delay: 503.361 ms
Loss rate: 1.63%

Run 1: Report of FillP — Data Link

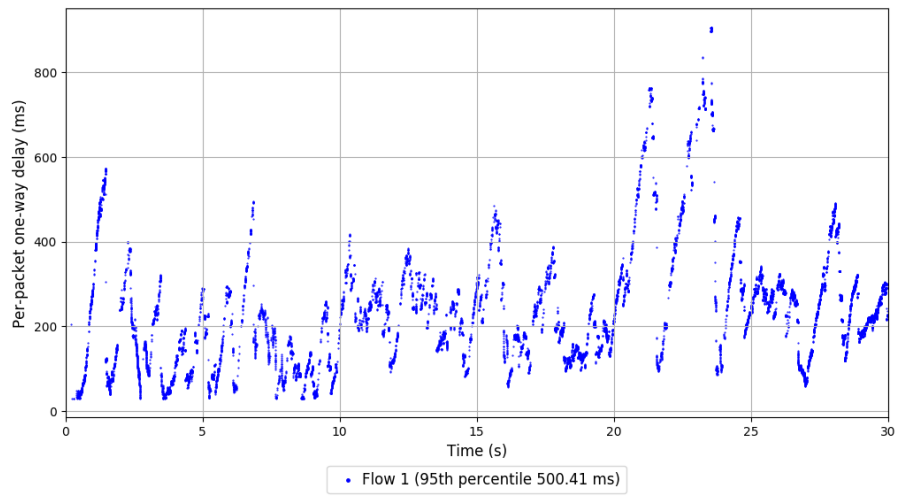
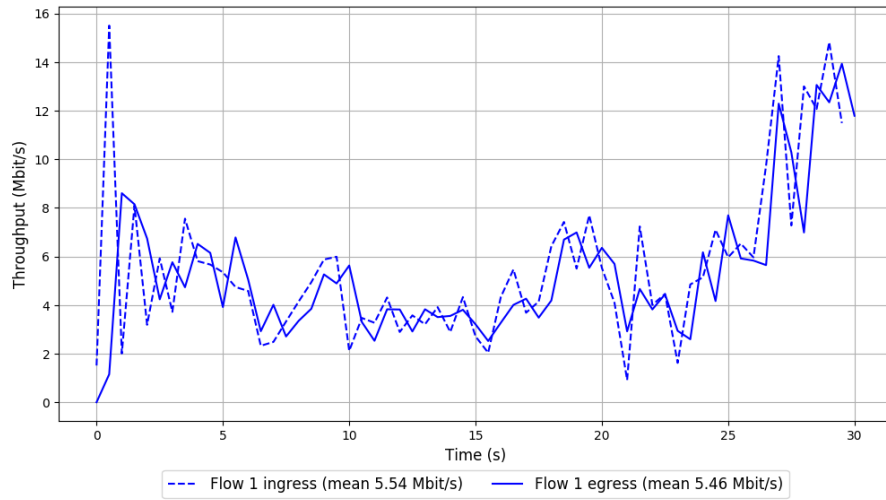


Run 2: Statistics of FillP

Start at: 2019-04-23 18:33:07
End at: 2019-04-23 18:33:38
Local clock offset: -21.914 ms
Remote clock offset: 1.566 ms

Below is generated by plot.py at 2019-04-23 19:03:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 5.46 Mbit/s
95th percentile per-packet one-way delay: 500.407 ms
Loss rate: 2.11%
-- Flow 1:
Average throughput: 5.46 Mbit/s
95th percentile per-packet one-way delay: 500.407 ms
Loss rate: 2.11%

Run 2: Report of FillP — Data Link

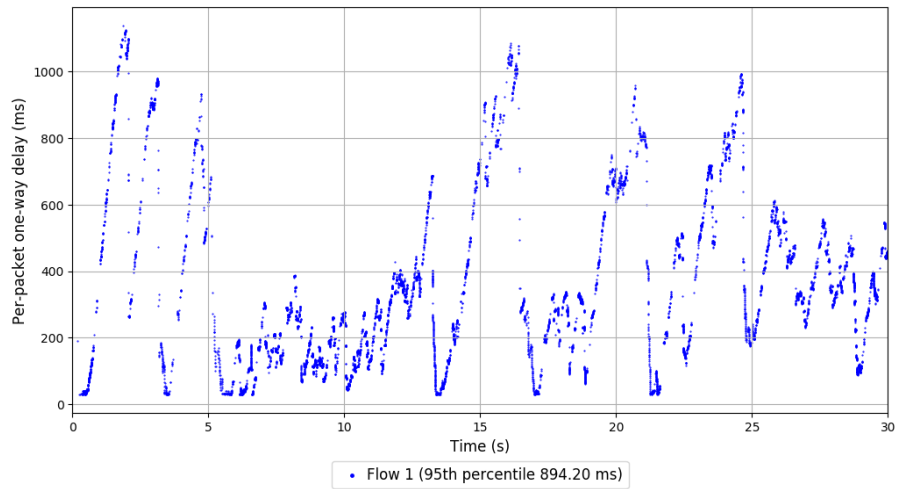
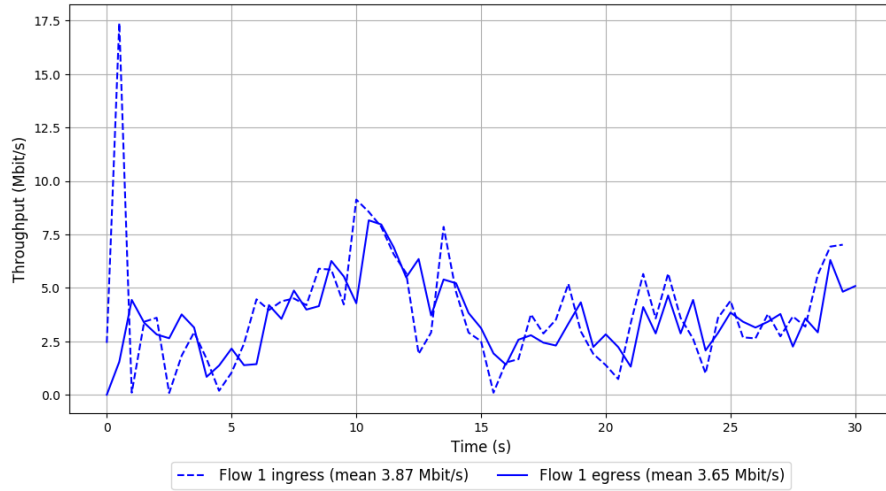


Run 3: Statistics of FillP

Start at: 2019-04-23 18:58:54
End at: 2019-04-23 18:59:24
Local clock offset: -15.066 ms
Remote clock offset: 1.607 ms

```
# Below is generated by plot.py at 2019-04-23 19:03:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.65 Mbit/s
95th percentile per-packet one-way delay: 894.196 ms
Loss rate: 6.25%
-- Flow 1:
Average throughput: 3.65 Mbit/s
95th percentile per-packet one-way delay: 894.196 ms
Loss rate: 6.25%
```

Run 3: Report of FillP — Data Link

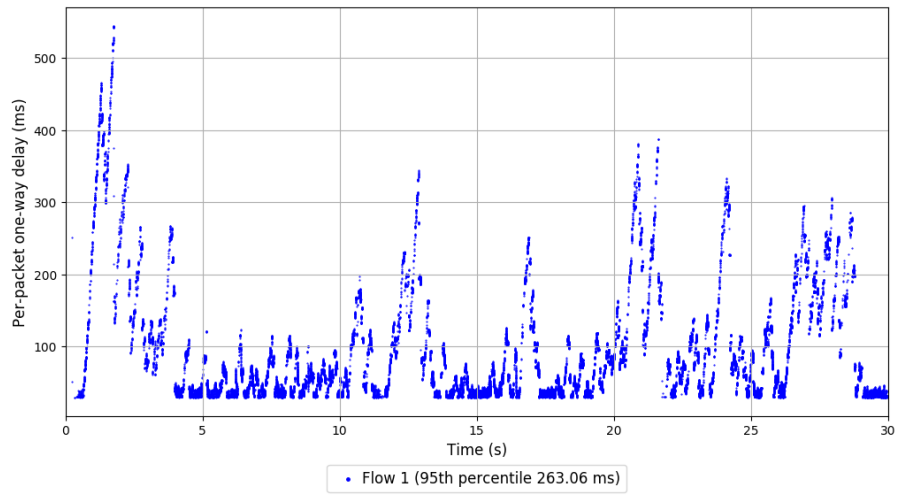
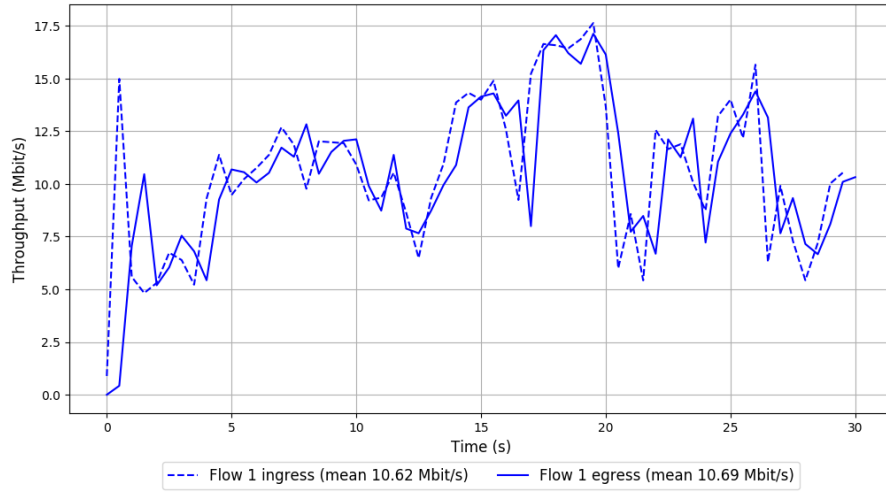


Run 1: Statistics of FillP-Sheep

Start at: 2019-04-23 18:08:34
End at: 2019-04-23 18:09:04
Local clock offset: -12.432 ms
Remote clock offset: 2.516 ms

Below is generated by plot.py at 2019-04-23 19:03:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 10.69 Mbit/s
95th percentile per-packet one-way delay: 263.057 ms
Loss rate: 0.18%
-- Flow 1:
Average throughput: 10.69 Mbit/s
95th percentile per-packet one-way delay: 263.057 ms
Loss rate: 0.18%

Run 1: Report of FillP-Sheep — Data Link

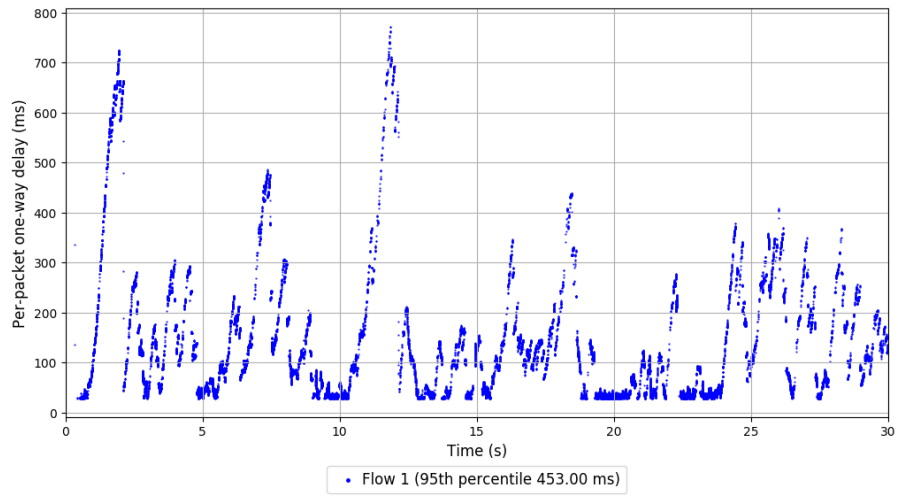
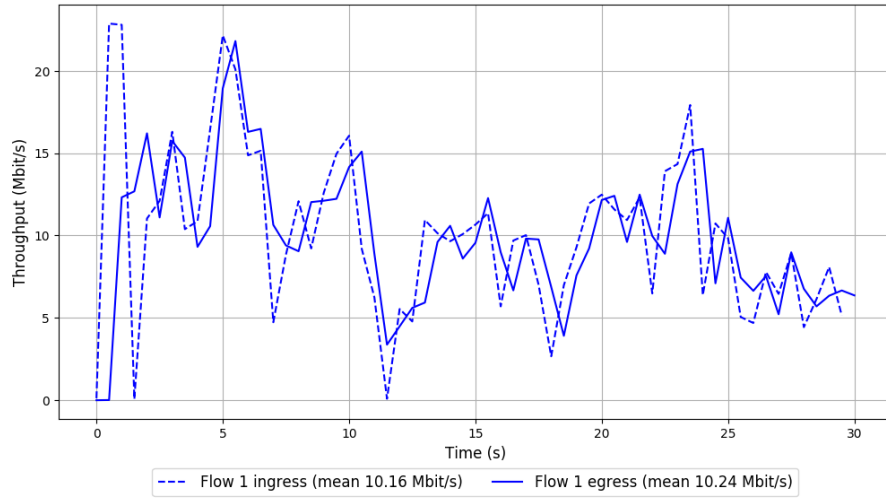


Run 2: Statistics of FillP-Sheep

Start at: 2019-04-23 18:34:21
End at: 2019-04-23 18:34:51
Local clock offset: -23.188 ms
Remote clock offset: 1.464 ms

Below is generated by plot.py at 2019-04-23 19:03:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 10.24 Mbit/s
95th percentile per-packet one-way delay: 453.002 ms
Loss rate: 0.32%
-- Flow 1:
Average throughput: 10.24 Mbit/s
95th percentile per-packet one-way delay: 453.002 ms
Loss rate: 0.32%

Run 2: Report of FillP-Sheep — Data Link



Run 3: Statistics of FillP-Sheep

Start at: 2019-04-23 19:00:08

End at: 2019-04-23 19:00:38

Local clock offset: -14.84 ms

Remote clock offset: 1.553 ms

Below is generated by plot.py at 2019-04-23 19:03:38

Datalink statistics

-- Total of 1 flow:

Average throughput: 11.96 Mbit/s

95th percentile per-packet one-way delay: 288.727 ms

Loss rate: 0.16%

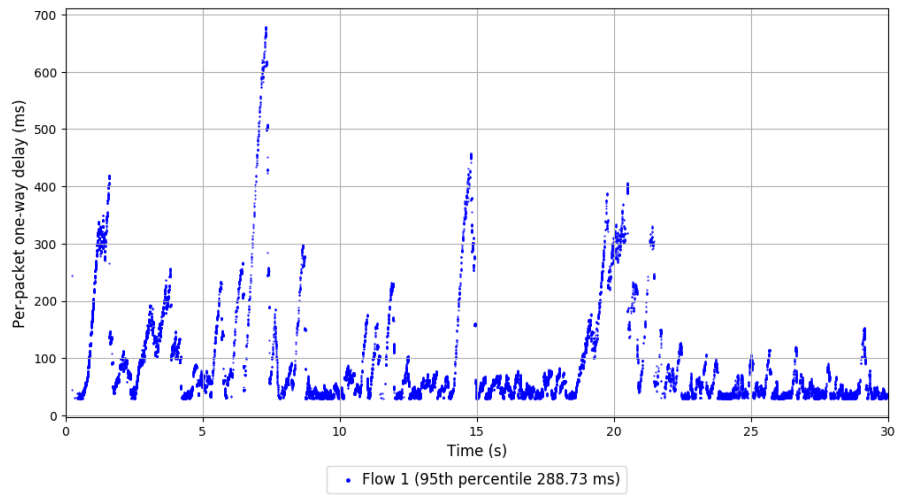
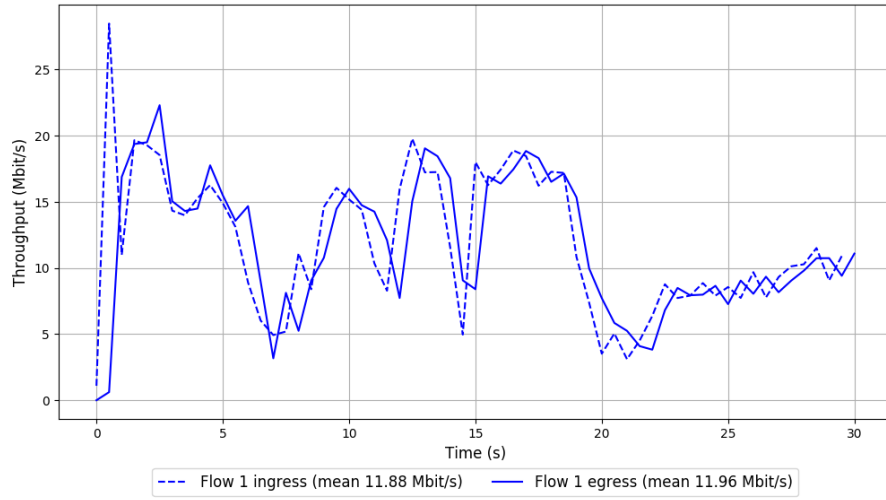
-- Flow 1:

Average throughput: 11.96 Mbit/s

95th percentile per-packet one-way delay: 288.727 ms

Loss rate: 0.16%

Run 3: Report of FillP-Sheep — Data Link



Run 1: Statistics of Indigo

Start at: 2019-04-23 17:47:43

End at: 2019-04-23 17:48:13

Local clock offset: -2.98 ms

Remote clock offset: 6.041 ms

Below is generated by plot.py at 2019-04-23 19:03:38

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.32 Mbit/s

95th percentile per-packet one-way delay: 52.660 ms

Loss rate: 0.03%

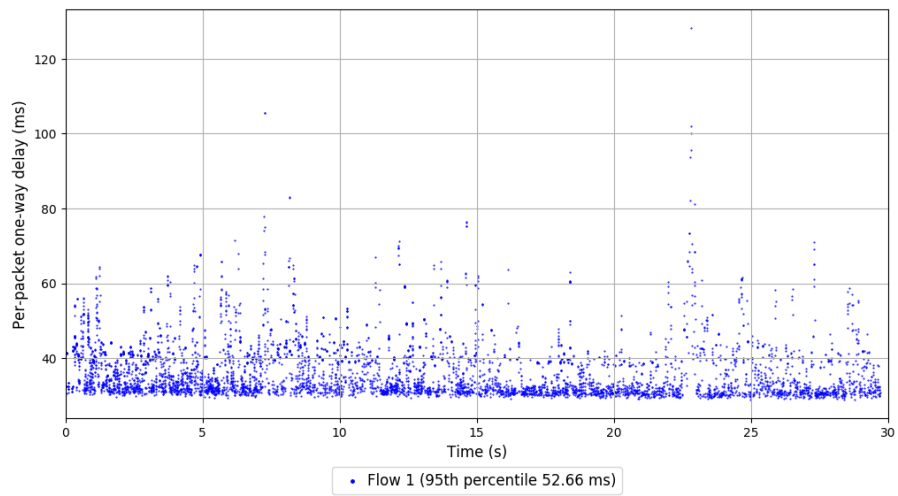
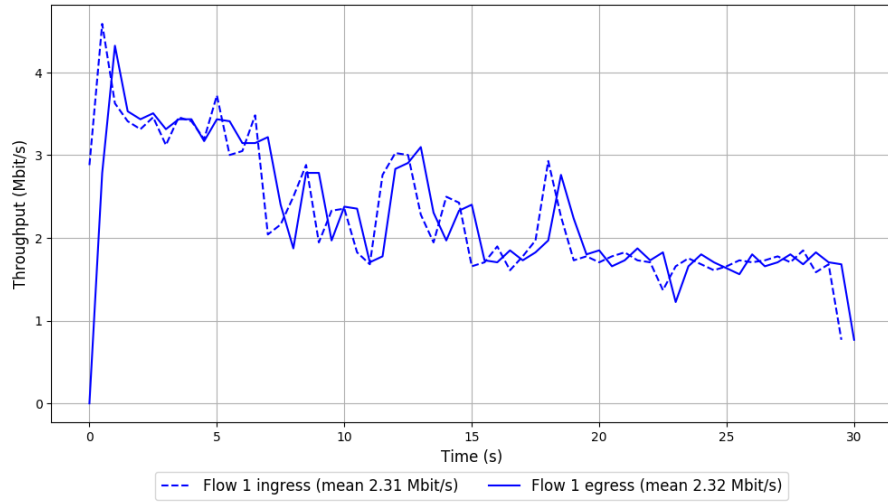
-- Flow 1:

Average throughput: 2.32 Mbit/s

95th percentile per-packet one-way delay: 52.660 ms

Loss rate: 0.03%

Run 1: Report of Indigo — Data Link

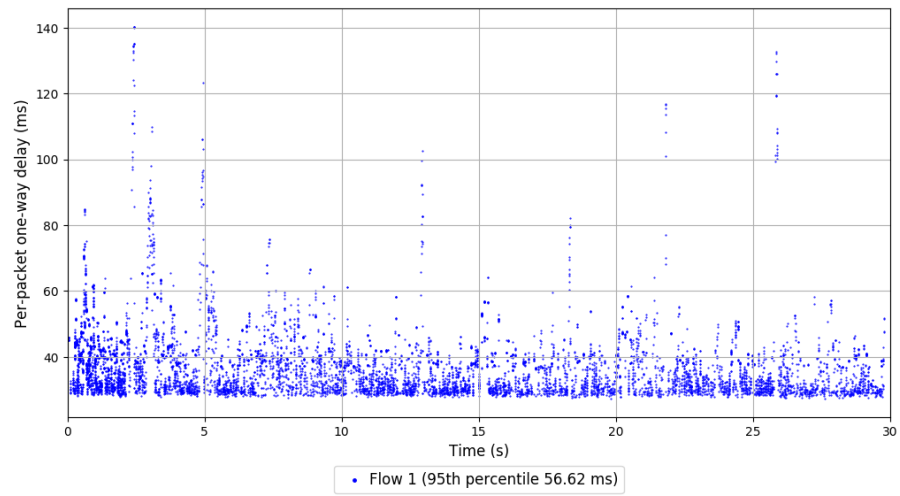
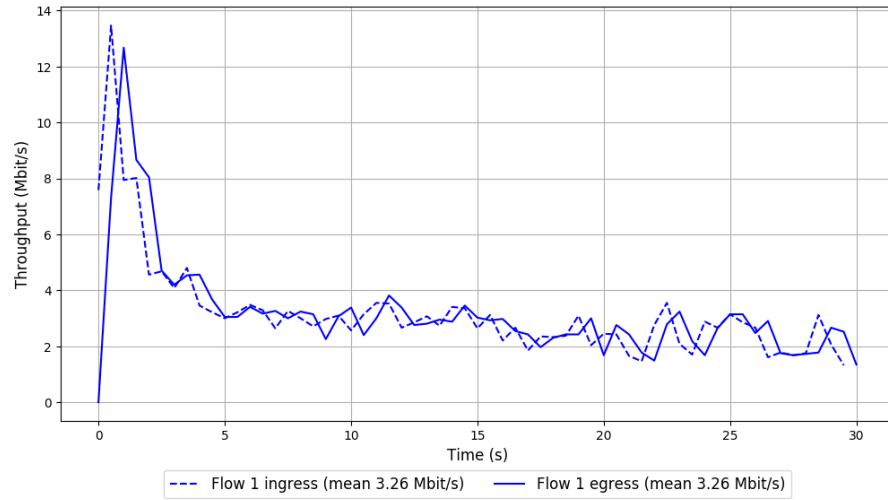


Run 2: Statistics of Indigo

Start at: 2019-04-23 18:13:28
End at: 2019-04-23 18:13:58
Local clock offset: -15.913 ms
Remote clock offset: 1.923 ms

Below is generated by plot.py at 2019-04-23 19:03:38
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.26 Mbit/s
95th percentile per-packet one-way delay: 56.621 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 3.26 Mbit/s
95th percentile per-packet one-way delay: 56.621 ms
Loss rate: 0.00%

Run 2: Report of Indigo — Data Link

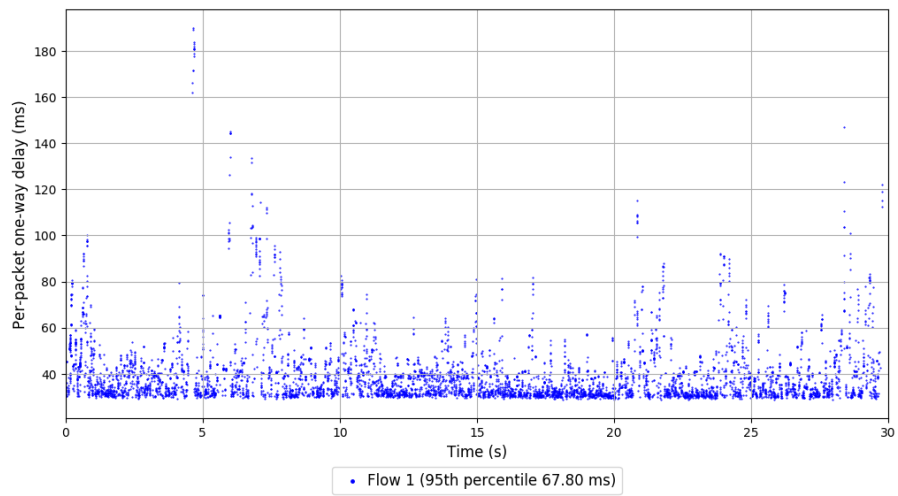
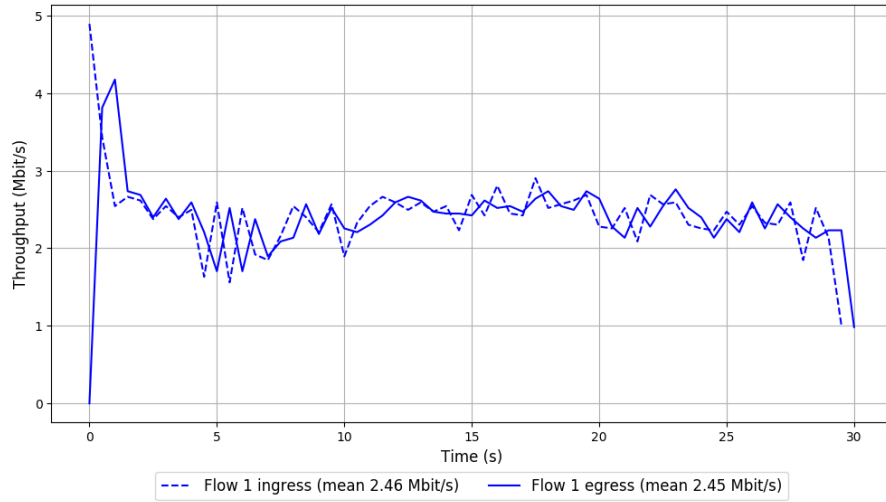


Run 3: Statistics of Indigo

Start at: 2019-04-23 18:39:15
End at: 2019-04-23 18:39:45
Local clock offset: -27.701 ms
Remote clock offset: 1.59 ms

```
# Below is generated by plot.py at 2019-04-23 19:03:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.45 Mbit/s
95th percentile per-packet one-way delay: 67.804 ms
Loss rate: 0.18%
-- Flow 1:
Average throughput: 2.45 Mbit/s
95th percentile per-packet one-way delay: 67.804 ms
Loss rate: 0.18%
```

Run 3: Report of Indigo — Data Link

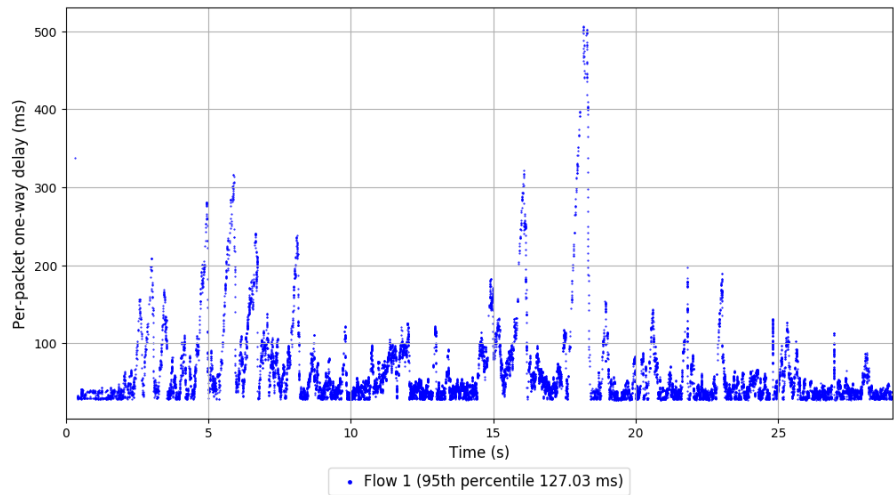
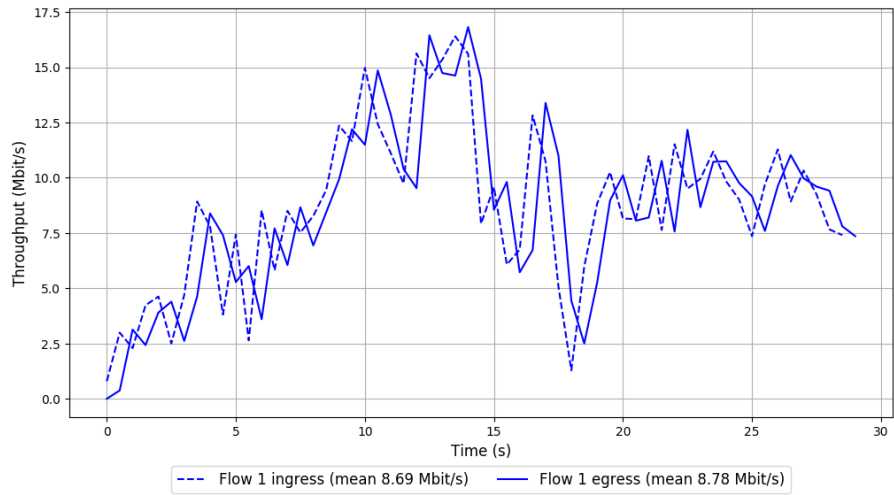


Run 1: Statistics of Indigo-MusesC3

Start at: 2019-04-23 17:58:46
End at: 2019-04-23 17:59:16
Local clock offset: -12.131 ms
Remote clock offset: 4.928 ms

```
# Below is generated by plot.py at 2019-04-23 19:03:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 8.78 Mbit/s
95th percentile per-packet one-way delay: 127.035 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 8.78 Mbit/s
95th percentile per-packet one-way delay: 127.035 ms
Loss rate: 0.13%
```

Run 1: Report of Indigo-MusesC3 — Data Link

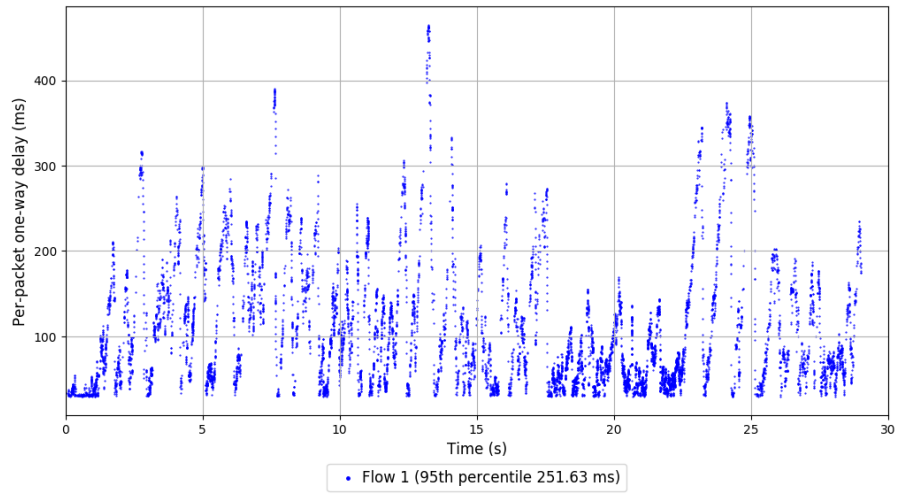
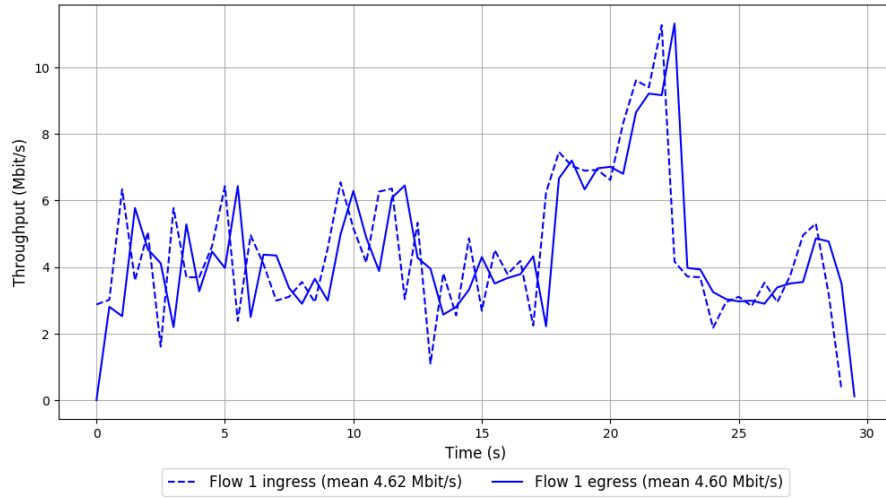


Run 2: Statistics of Indigo-MusesC3

Start at: 2019-04-23 18:24:34
End at: 2019-04-23 18:25:04
Local clock offset: -16.303 ms
Remote clock offset: 1.519 ms

Below is generated by plot.py at 2019-04-23 19:03:38
Datalink statistics
-- Total of 1 flow:
Average throughput: 4.60 Mbit/s
95th percentile per-packet one-way delay: 251.628 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 4.60 Mbit/s
95th percentile per-packet one-way delay: 251.628 ms
Loss rate: 0.51%

Run 2: Report of Indigo-MusesC3 — Data Link



Run 3: Statistics of Indigo-MusesC3

Start at: 2019-04-23 18:50:20

End at: 2019-04-23 18:50:50

Local clock offset: -21.98 ms

Remote clock offset: 1.616 ms

Below is generated by plot.py at 2019-04-23 19:03:38

Datalink statistics

-- Total of 1 flow:

Average throughput: 6.33 Mbit/s

95th percentile per-packet one-way delay: 179.593 ms

Loss rate: 0.29%

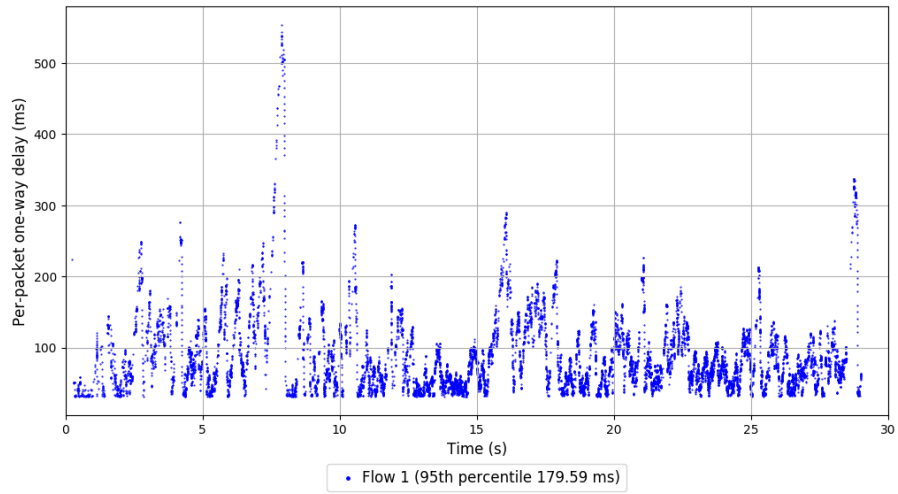
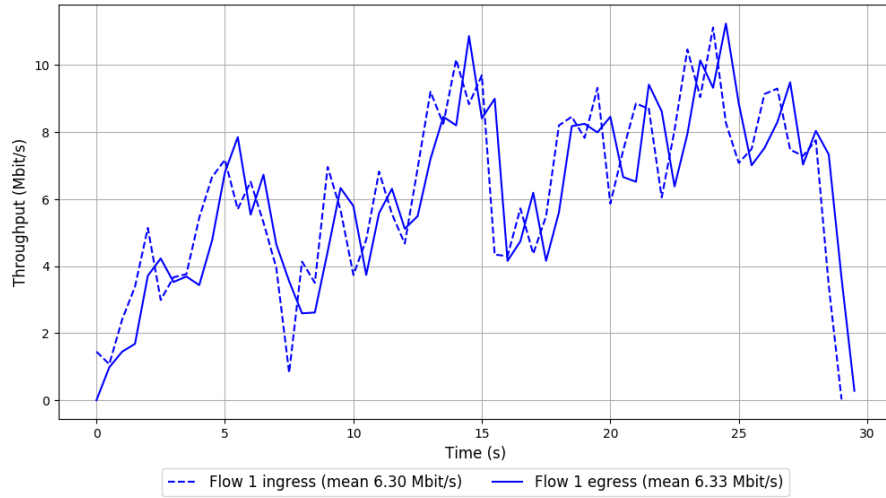
-- Flow 1:

Average throughput: 6.33 Mbit/s

95th percentile per-packet one-way delay: 179.593 ms

Loss rate: 0.29%

Run 3: Report of Indigo-MusesC3 — Data Link

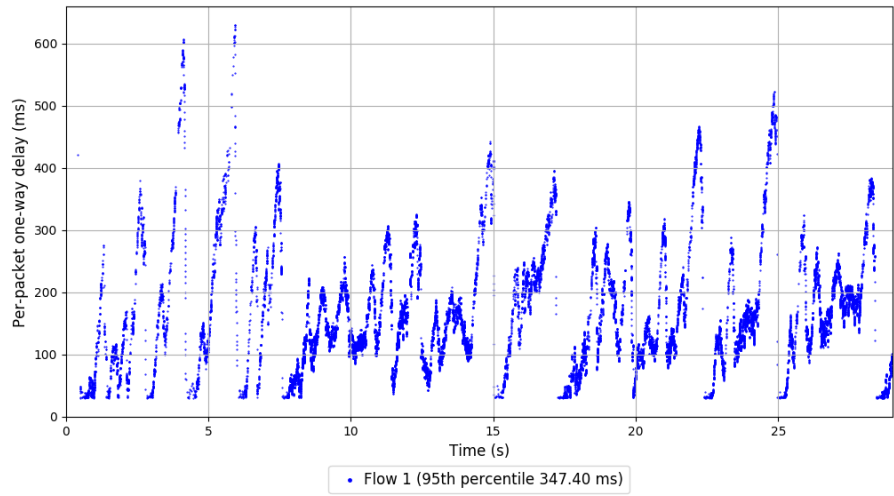
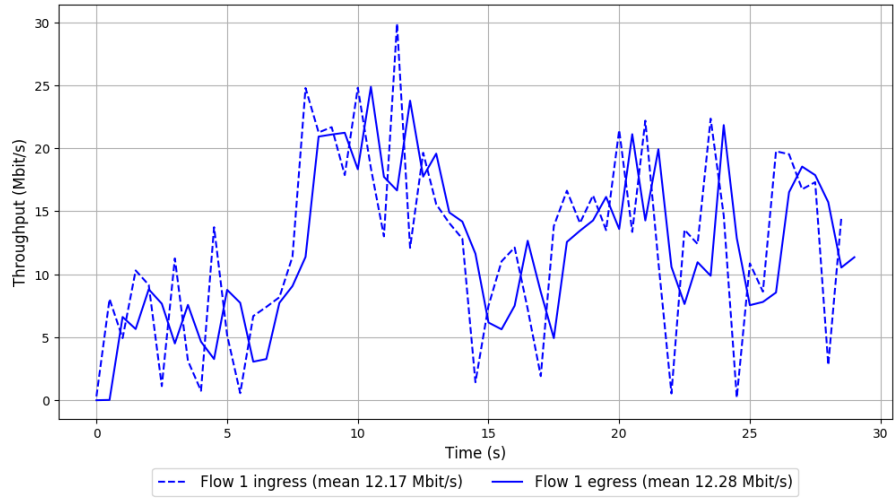


Run 1: Statistics of Indigo-MusesC5

Start at: 2019-04-23 18:11:01
End at: 2019-04-23 18:11:31
Local clock offset: -13.616 ms
Remote clock offset: 2.192 ms

Below is generated by plot.py at 2019-04-23 19:03:44
Datalink statistics
-- Total of 1 flow:
Average throughput: 12.28 Mbit/s
95th percentile per-packet one-way delay: 347.402 ms
Loss rate: 0.55%
-- Flow 1:
Average throughput: 12.28 Mbit/s
95th percentile per-packet one-way delay: 347.402 ms
Loss rate: 0.55%

Run 1: Report of Indigo-MusesC5 — Data Link



Run 2: Statistics of Indigo-MusesC5

Start at: 2019-04-23 18:36:48

End at: 2019-04-23 18:37:18

Local clock offset: -25.355 ms

Remote clock offset: 1.538 ms

Below is generated by plot.py at 2019-04-23 19:03:44

Datalink statistics

-- Total of 1 flow:

Average throughput: 6.07 Mbit/s

95th percentile per-packet one-way delay: 460.078 ms

Loss rate: 0.75%

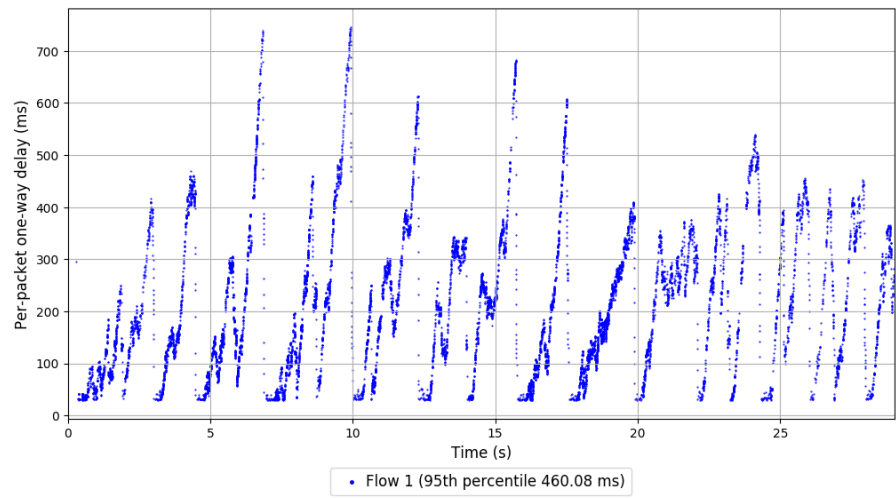
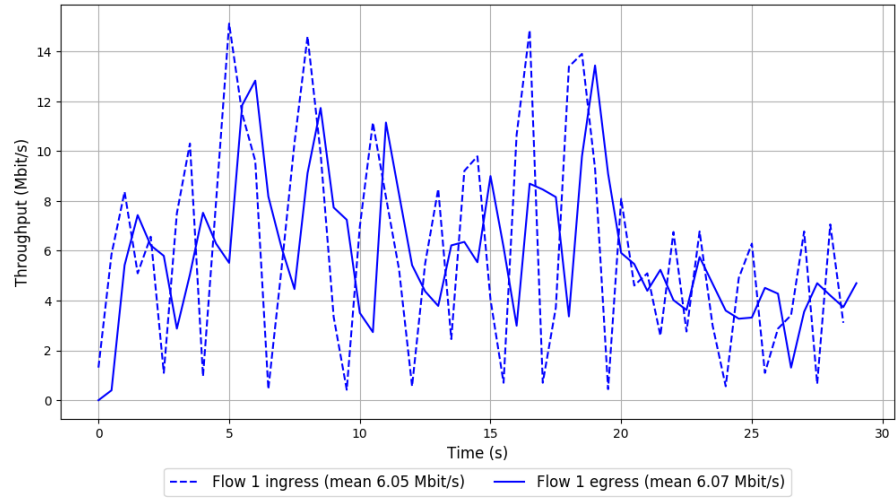
-- Flow 1:

Average throughput: 6.07 Mbit/s

95th percentile per-packet one-way delay: 460.078 ms

Loss rate: 0.75%

Run 2: Report of Indigo-MusesC5 — Data Link

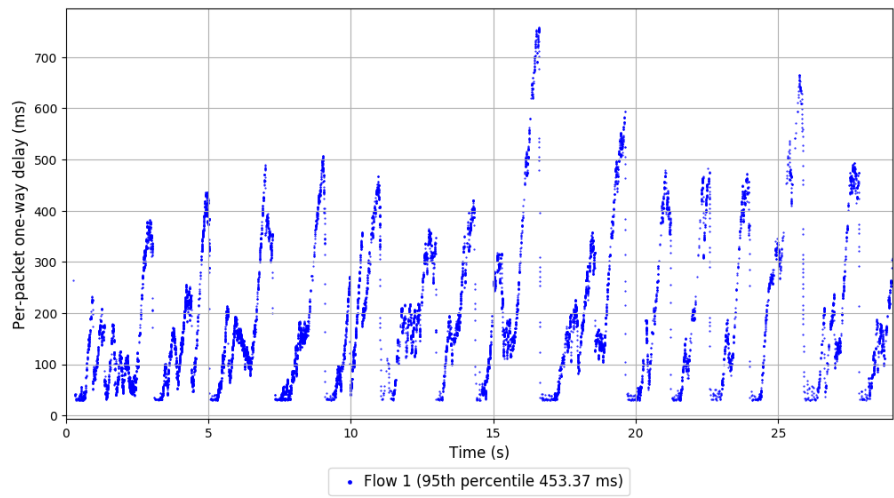
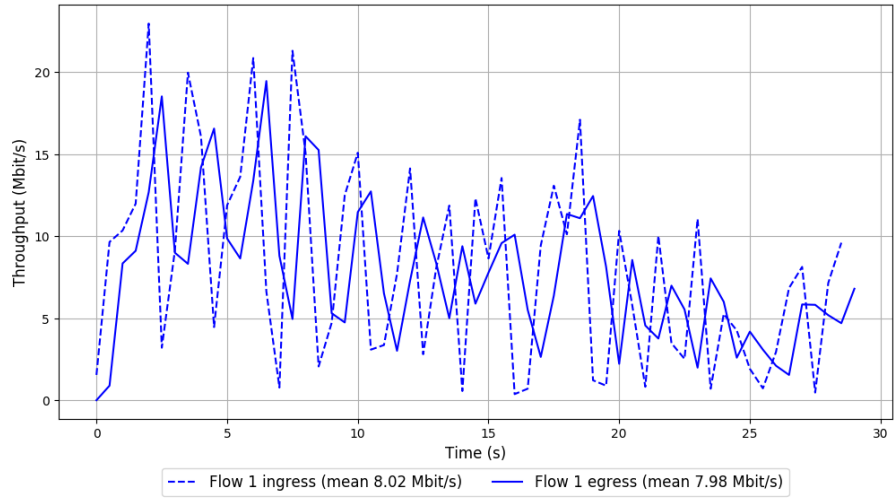


Run 3: Statistics of Indigo-MusesC5

Start at: 2019-04-23 19:02:34
End at: 2019-04-23 19:03:04
Local clock offset: -14.842 ms
Remote clock offset: 1.577 ms

```
# Below is generated by plot.py at 2019-04-23 19:03:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.98 Mbit/s
95th percentile per-packet one-way delay: 453.367 ms
Loss rate: 1.30%
-- Flow 1:
Average throughput: 7.98 Mbit/s
95th percentile per-packet one-way delay: 453.367 ms
Loss rate: 1.30%
```

Run 3: Report of Indigo-MusesC5 — Data Link



Run 1: Statistics of Indigo-MusesD

Start at: 2019-04-23 17:48:57

End at: 2019-04-23 17:49:27

Local clock offset: -4.451 ms

Remote clock offset: 6.171 ms

Below is generated by plot.py at 2019-04-23 19:03:55

Datalink statistics

-- Total of 1 flow:

Average throughput: 16.17 Mbit/s

95th percentile per-packet one-way delay: 123.481 ms

Loss rate: 0.33%

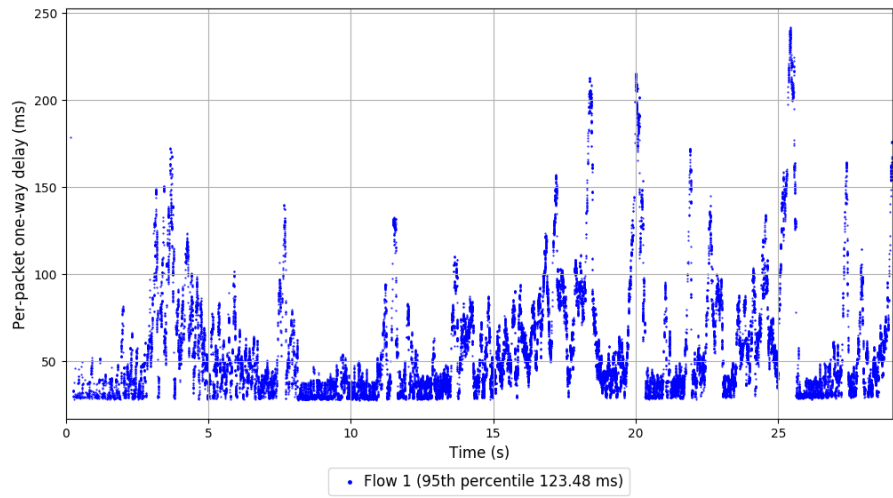
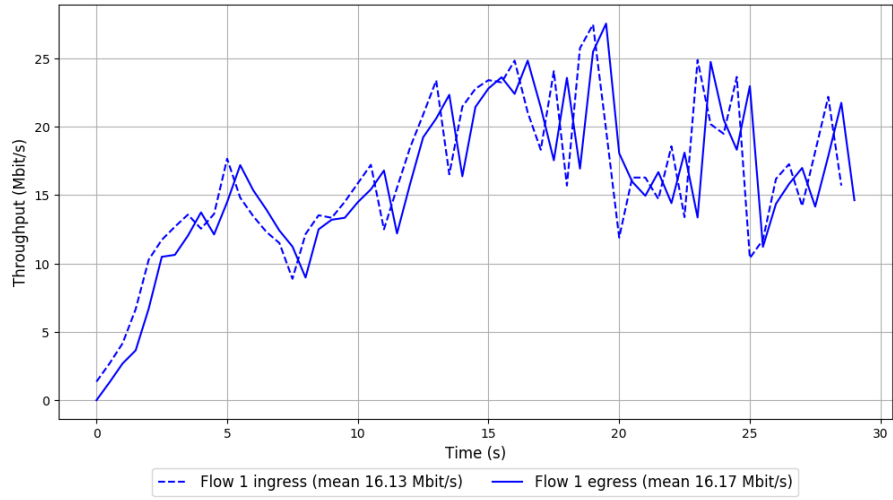
-- Flow 1:

Average throughput: 16.17 Mbit/s

95th percentile per-packet one-way delay: 123.481 ms

Loss rate: 0.33%

Run 1: Report of Indigo-MusesD — Data Link

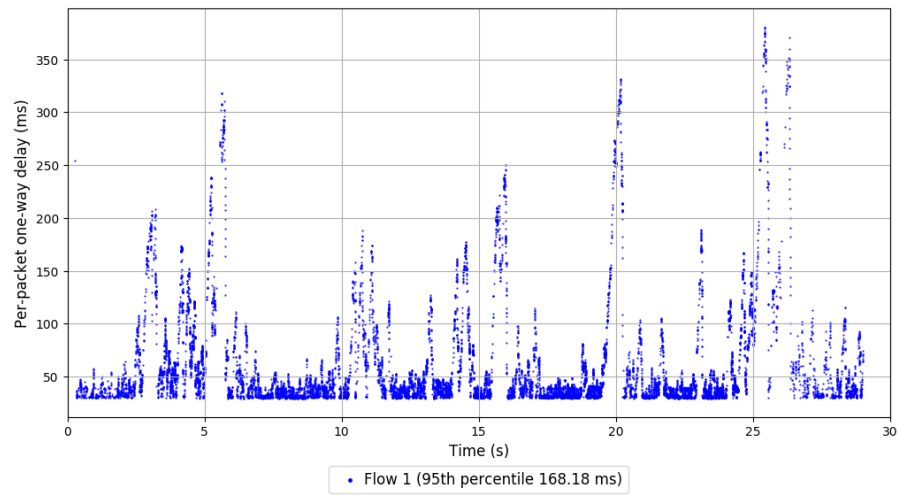
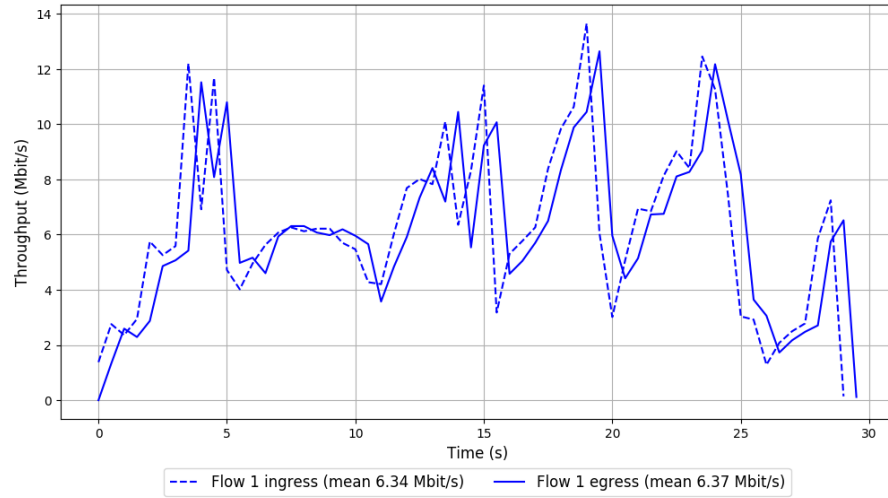


Run 2: Statistics of Indigo-MusesD

Start at: 2019-04-23 18:14:41
End at: 2019-04-23 18:15:11
Local clock offset: -17.145 ms
Remote clock offset: 1.968 ms

Below is generated by plot.py at 2019-04-23 19:03:55
Datalink statistics
-- Total of 1 flow:
Average throughput: 6.37 Mbit/s
95th percentile per-packet one-way delay: 168.182 ms
Loss rate: 0.32%
-- Flow 1:
Average throughput: 6.37 Mbit/s
95th percentile per-packet one-way delay: 168.182 ms
Loss rate: 0.32%

Run 2: Report of Indigo-MusesD — Data Link

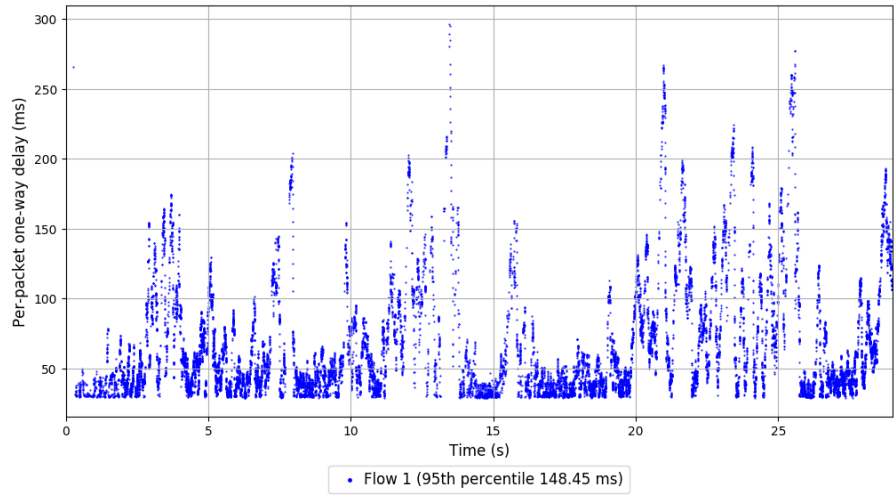
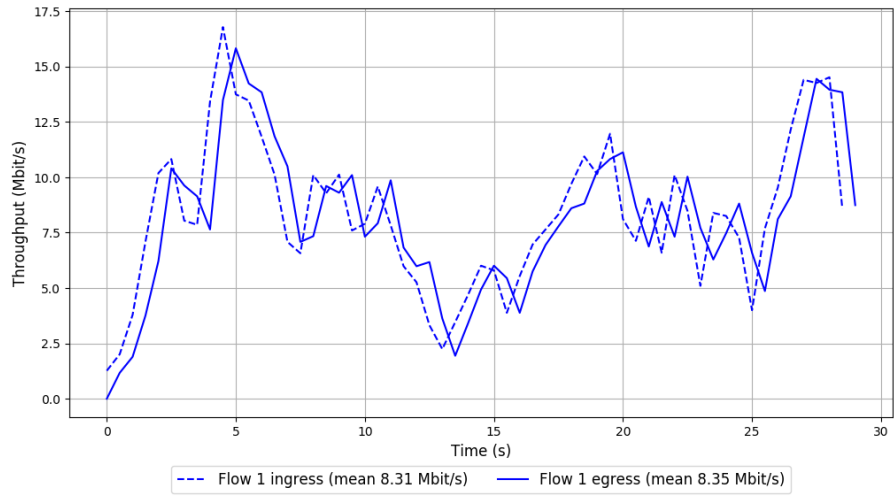


Run 3: Statistics of Indigo-MusesD

Start at: 2019-04-23 18:40:28
End at: 2019-04-23 18:40:58
Local clock offset: -28.891 ms
Remote clock offset: 1.484 ms

Below is generated by plot.py at 2019-04-23 19:03:55
Datalink statistics
-- Total of 1 flow:
Average throughput: 8.35 Mbit/s
95th percentile per-packet one-way delay: 148.453 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 8.35 Mbit/s
95th percentile per-packet one-way delay: 148.453 ms
Loss rate: 0.42%

Run 3: Report of Indigo-MusesD — Data Link



Run 1: Statistics of Indigo-MuseST

Start at: 2019-04-23 17:56:18

End at: 2019-04-23 17:56:48

Local clock offset: -9.024 ms

Remote clock offset: 6.201 ms

Below is generated by plot.py at 2019-04-23 19:04:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 21.95 Mbit/s

95th percentile per-packet one-way delay: 258.569 ms

Loss rate: 0.39%

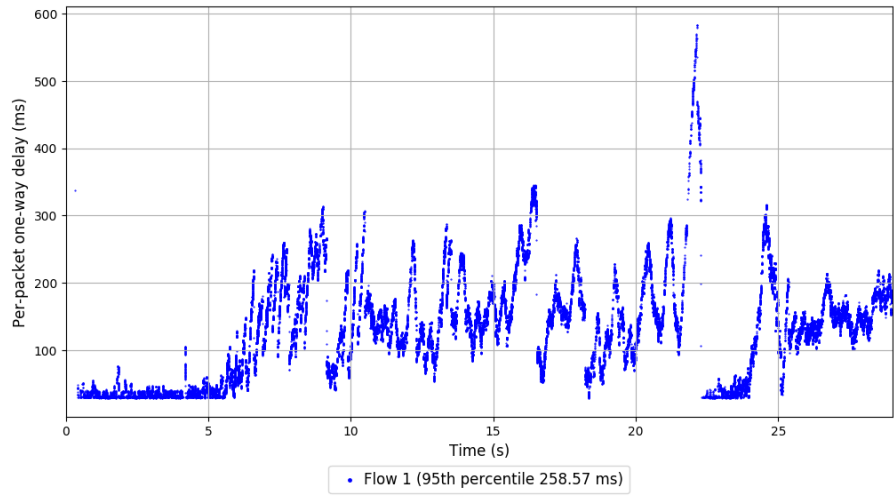
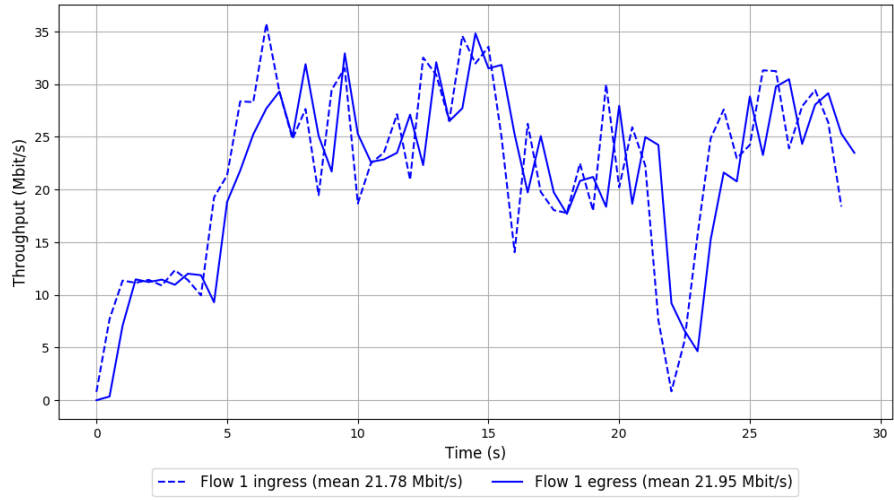
-- Flow 1:

Average throughput: 21.95 Mbit/s

95th percentile per-packet one-way delay: 258.569 ms

Loss rate: 0.39%

Run 1: Report of Indigo-MusesT — Data Link



Run 2: Statistics of Indigo-MuseST

Start at: 2019-04-23 18:22:07

End at: 2019-04-23 18:22:37

Local clock offset: -15.56 ms

Remote clock offset: 1.674 ms

Below is generated by plot.py at 2019-04-23 19:04:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 7.48 Mbit/s

95th percentile per-packet one-way delay: 380.689 ms

Loss rate: 0.66%

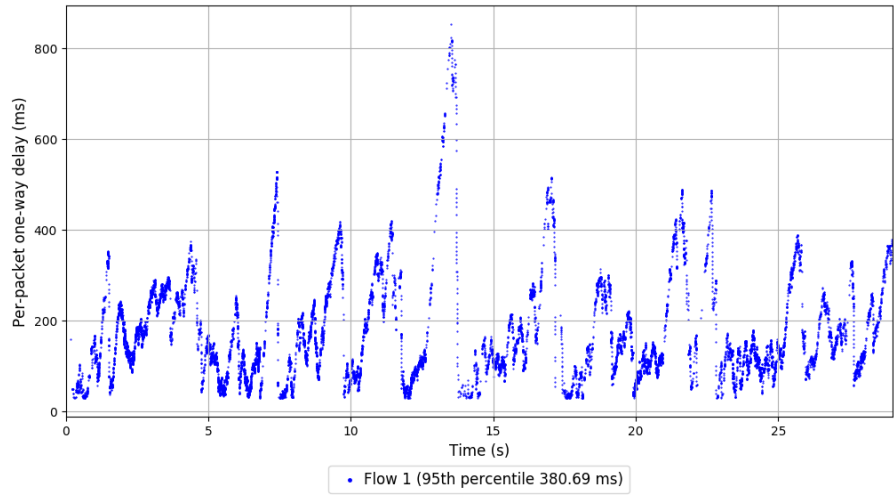
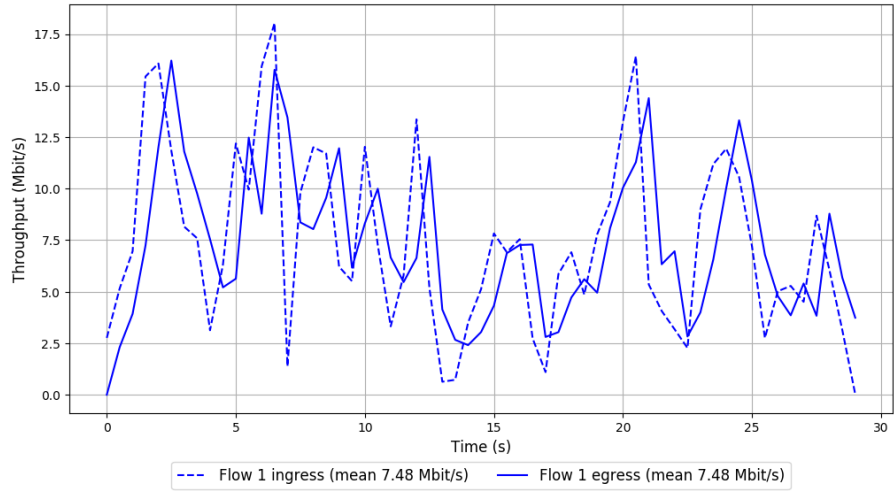
-- Flow 1:

Average throughput: 7.48 Mbit/s

95th percentile per-packet one-way delay: 380.689 ms

Loss rate: 0.66%

Run 2: Report of Indigo-MusesT — Data Link

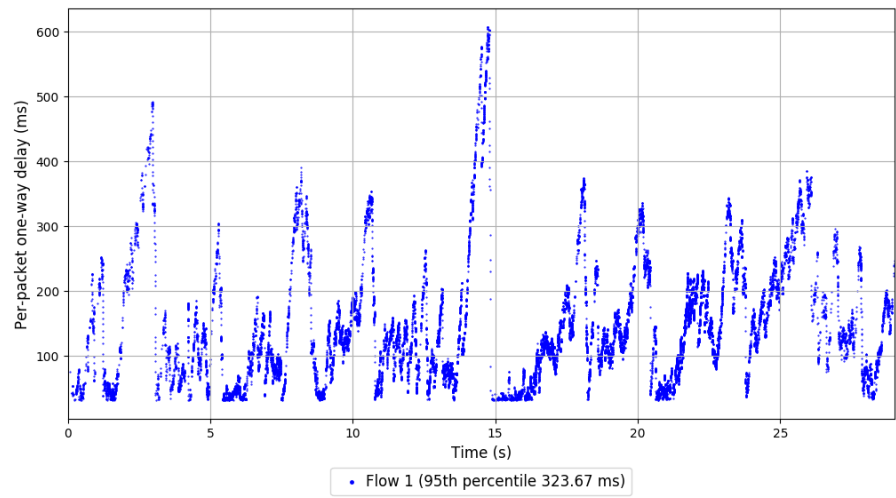
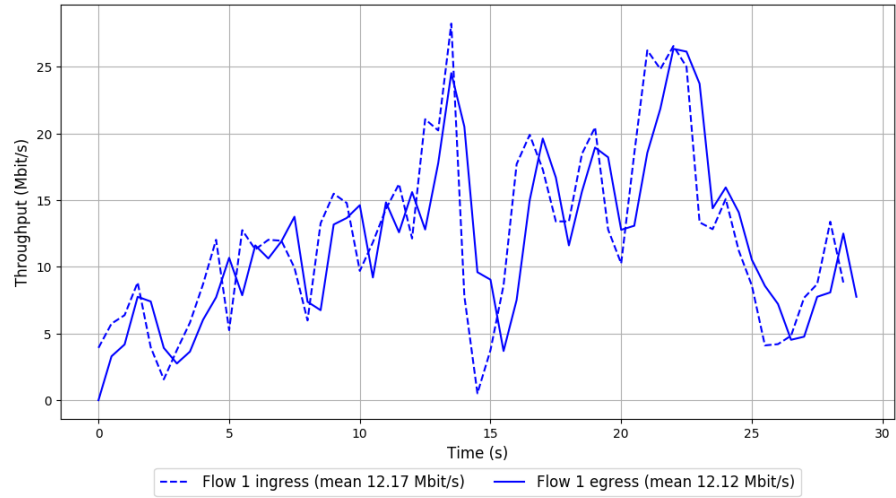


Run 3: Statistics of Indigo-MuseST

Start at: 2019-04-23 18:47:53
End at: 2019-04-23 18:48:23
Local clock offset: -27.081 ms
Remote clock offset: 1.612 ms

```
# Below is generated by plot.py at 2019-04-23 19:04:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.12 Mbit/s
95th percentile per-packet one-way delay: 323.666 ms
Loss rate: 0.67%
-- Flow 1:
Average throughput: 12.12 Mbit/s
95th percentile per-packet one-way delay: 323.666 ms
Loss rate: 0.67%
```

Run 3: Report of Indigo-MusesT — Data Link

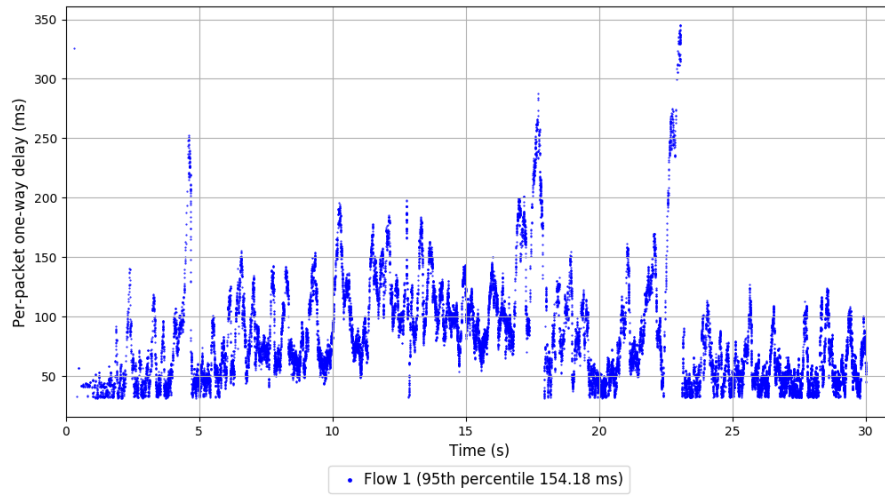
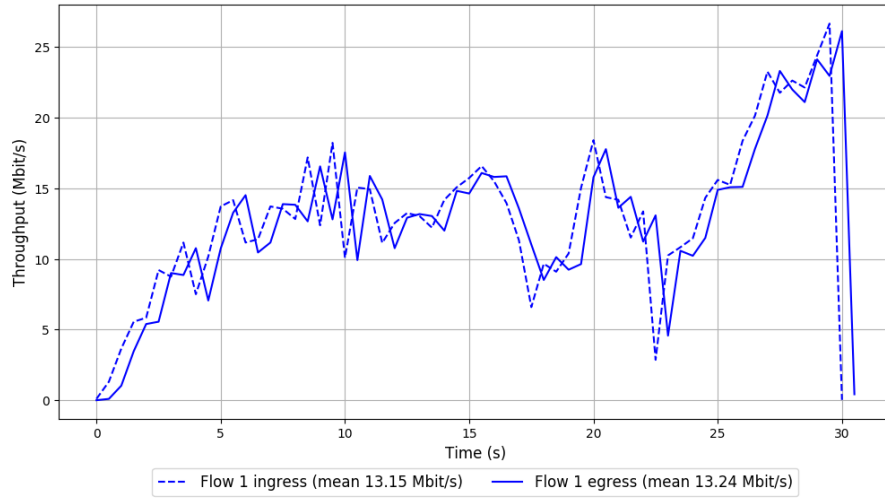


Run 1: Statistics of LEDBAT

Start at: 2019-04-23 18:04:53
End at: 2019-04-23 18:05:23
Local clock offset: -14.017 ms
Remote clock offset: 3.161 ms

Below is generated by plot.py at 2019-04-23 19:04:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 13.24 Mbit/s
95th percentile per-packet one-way delay: 154.178 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 13.24 Mbit/s
95th percentile per-packet one-way delay: 154.178 ms
Loss rate: 0.39%

Run 1: Report of LEDBAT — Data Link

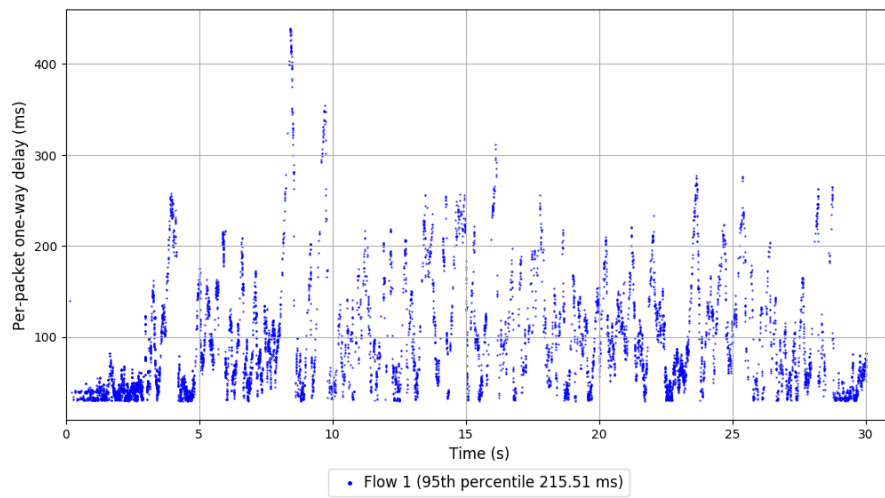
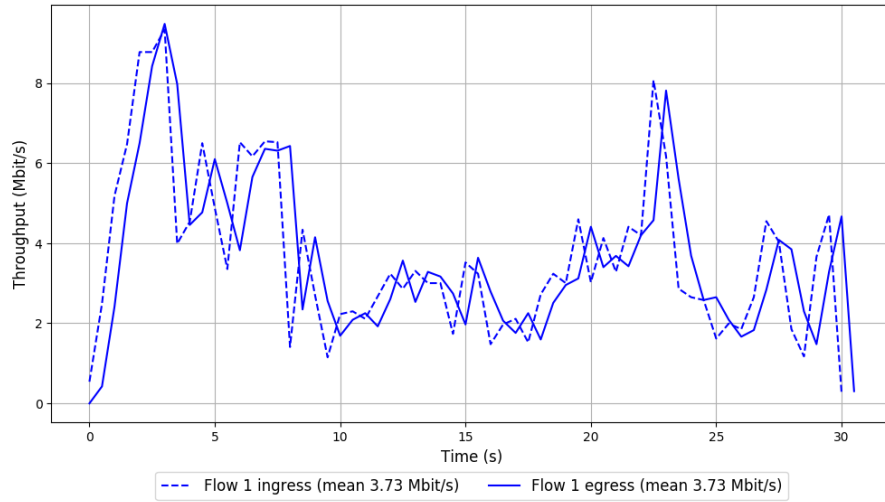


Run 2: Statistics of LEDBAT

Start at: 2019-04-23 18:30:41
End at: 2019-04-23 18:31:11
Local clock offset: -19.988 ms
Remote clock offset: 1.549 ms

Below is generated by plot.py at 2019-04-23 19:04:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.73 Mbit/s
95th percentile per-packet one-way delay: 215.513 ms
Loss rate: 0.31%
-- Flow 1:
Average throughput: 3.73 Mbit/s
95th percentile per-packet one-way delay: 215.513 ms
Loss rate: 0.31%

Run 2: Report of LEDBAT — Data Link

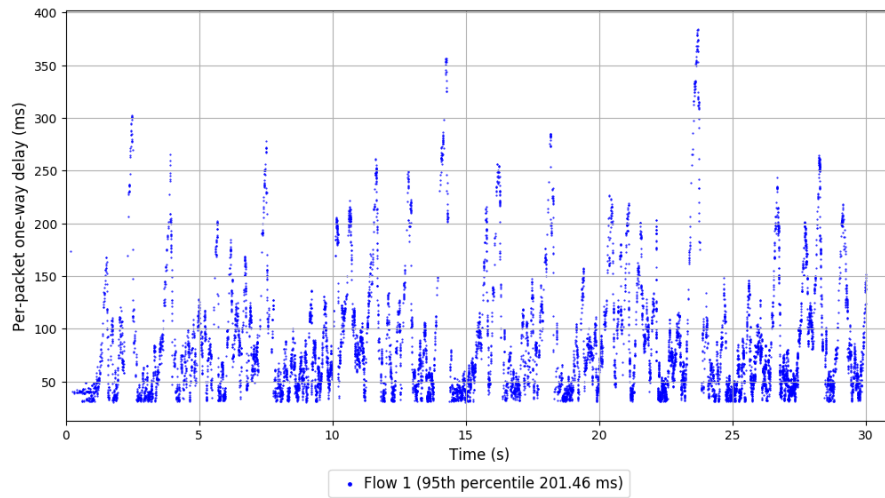
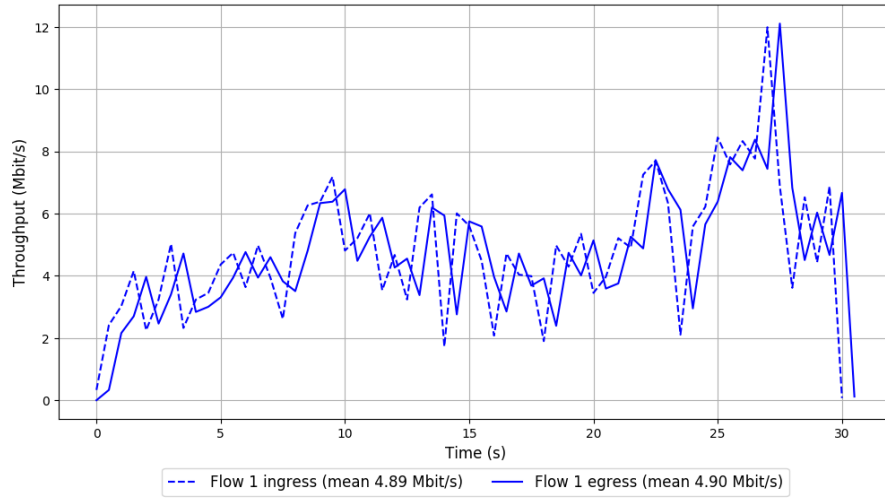


Run 3: Statistics of LEDBAT

Start at: 2019-04-23 18:56:27
End at: 2019-04-23 18:56:57
Local clock offset: -15.925 ms
Remote clock offset: 1.593 ms

Below is generated by plot.py at 2019-04-23 19:04:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 4.90 Mbit/s
95th percentile per-packet one-way delay: 201.460 ms
Loss rate: 0.46%
-- Flow 1:
Average throughput: 4.90 Mbit/s
95th percentile per-packet one-way delay: 201.460 ms
Loss rate: 0.46%

Run 3: Report of LEDBAT — Data Link



Run 1: Statistics of PCC-Allegro

Start at: 2019-04-23 17:50:11

End at: 2019-04-23 17:50:41

Local clock offset: -5.3 ms

Remote clock offset: 6.157 ms

Below is generated by plot.py at 2019-04-23 19:04:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.28 Mbit/s

95th percentile per-packet one-way delay: 40.700 ms

Loss rate: 0.09%

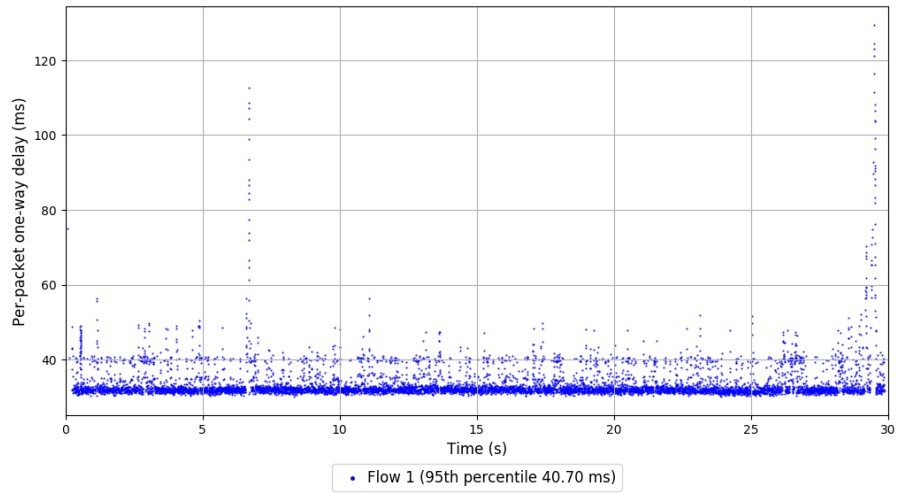
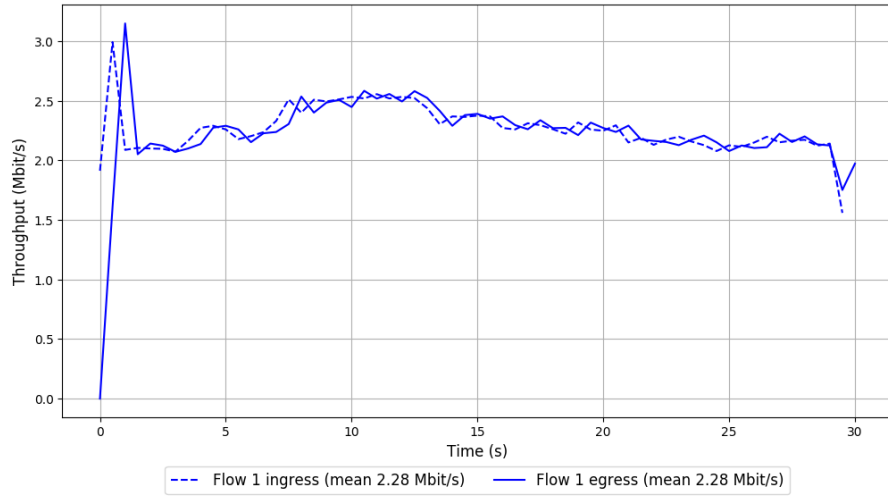
-- Flow 1:

Average throughput: 2.28 Mbit/s

95th percentile per-packet one-way delay: 40.700 ms

Loss rate: 0.09%

Run 1: Report of PCC-Allegro — Data Link

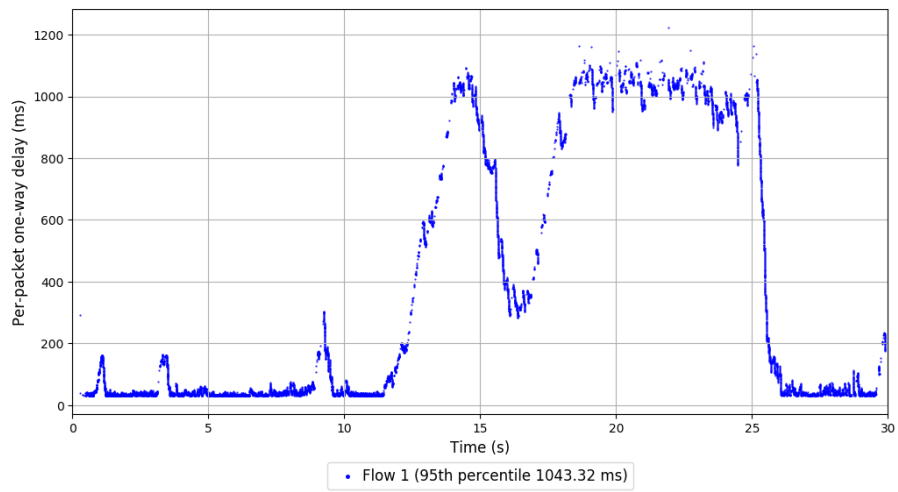
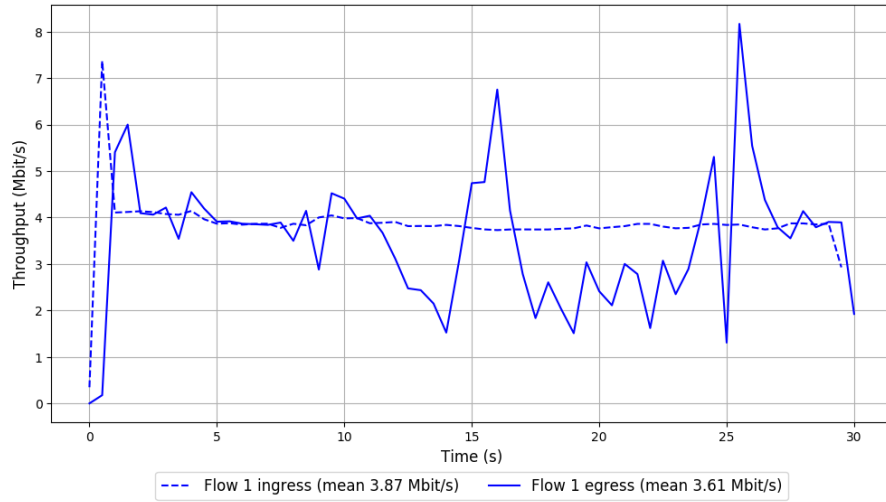


Run 2: Statistics of PCC-Allegro

Start at: 2019-04-23 18:15:55
End at: 2019-04-23 18:16:25
Local clock offset: -17.375 ms
Remote clock offset: 1.908 ms

Below is generated by plot.py at 2019-04-23 19:04:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.61 Mbit/s
95th percentile per-packet one-way delay: 1043.323 ms
Loss rate: 7.62%
-- Flow 1:
Average throughput: 3.61 Mbit/s
95th percentile per-packet one-way delay: 1043.323 ms
Loss rate: 7.62%

Run 2: Report of PCC-Allegro — Data Link

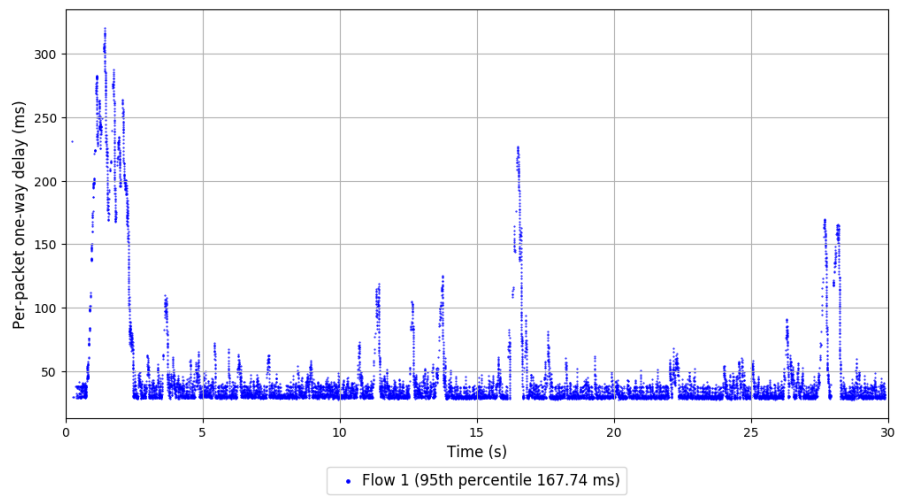
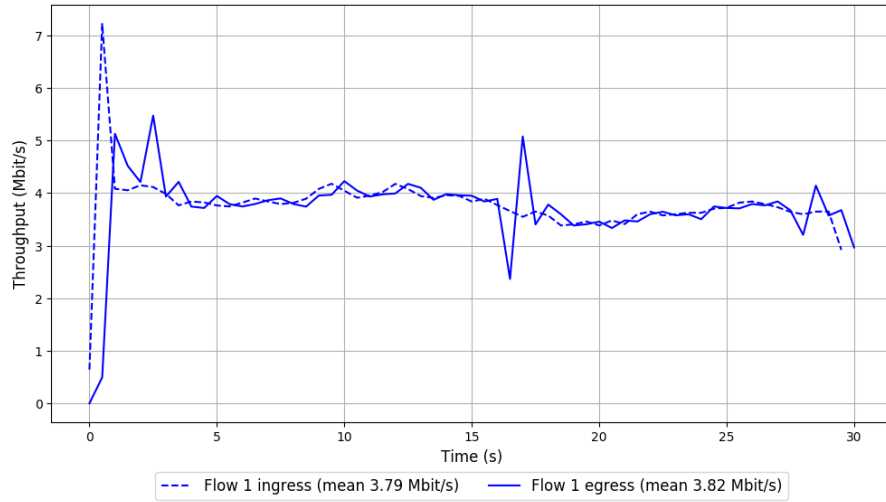


Run 3: Statistics of PCC-Allegro

Start at: 2019-04-23 18:41:41
End at: 2019-04-23 18:42:11
Local clock offset: -30.277 ms
Remote clock offset: 1.513 ms

Below is generated by plot.py at 2019-04-23 19:04:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.82 Mbit/s
95th percentile per-packet one-way delay: 167.743 ms
Loss rate: 0.12%
-- Flow 1:
Average throughput: 3.82 Mbit/s
95th percentile per-packet one-way delay: 167.743 ms
Loss rate: 0.12%

Run 3: Report of PCC-Allegro — Data Link



Run 1: Statistics of PCC-Expr

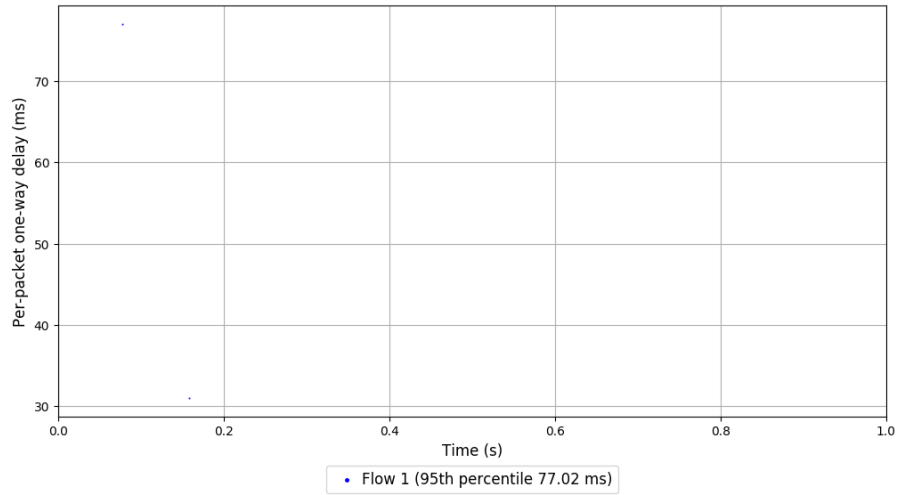
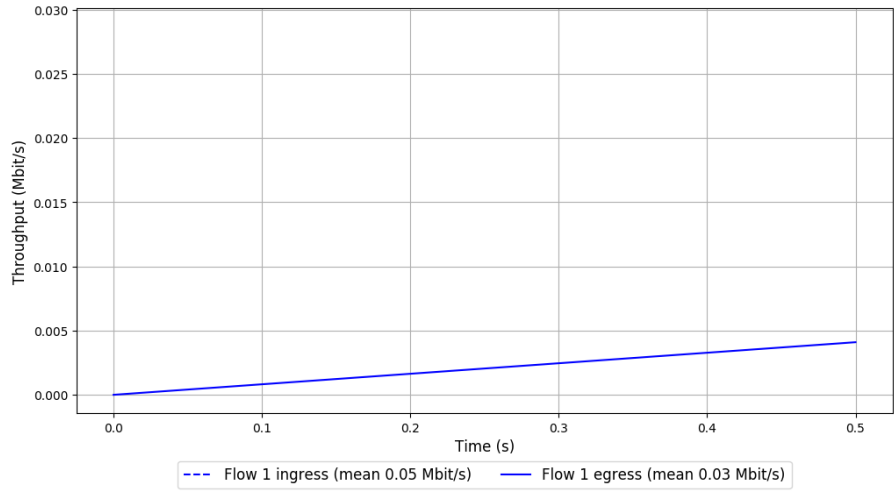
Start at: 2019-04-23 18:09:48

End at: 2019-04-23 18:10:18

Local clock offset: -12.842 ms

Remote clock offset: 2.359 ms

Run 1: Report of PCC-Expr — Data Link



Run 2: Statistics of PCC-Expr

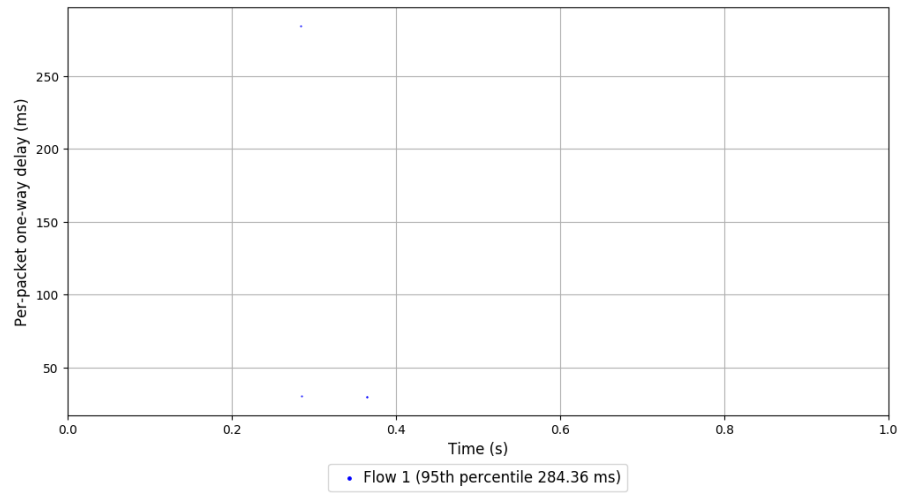
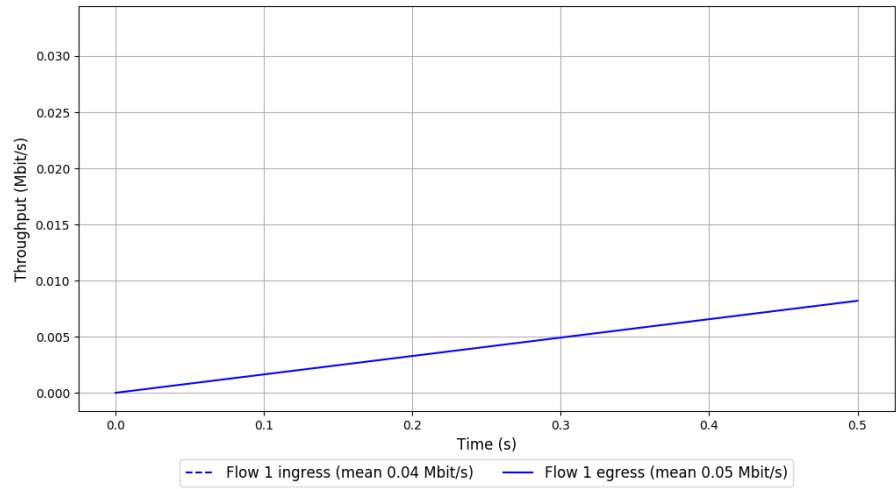
Start at: 2019-04-23 18:35:34

End at: 2019-04-23 18:36:04

Local clock offset: -24.182 ms

Remote clock offset: 1.572 ms

Run 2: Report of PCC-Expr — Data Link



Run 3: Statistics of PCC-Expr

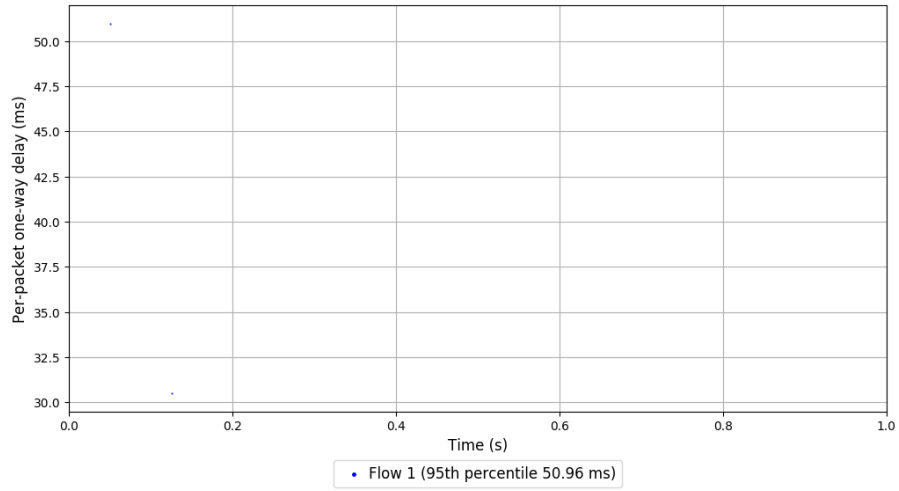
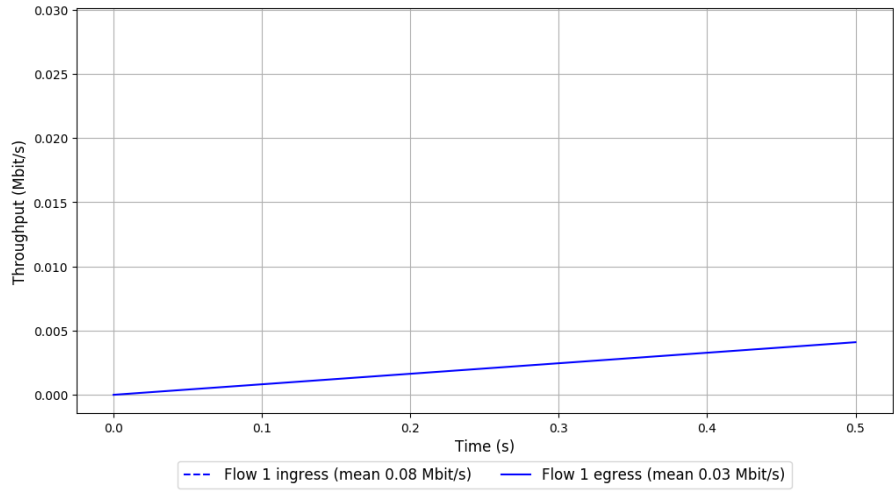
Start at: 2019-04-23 19:01:21

End at: 2019-04-23 19:01:51

Local clock offset: -14.792 ms

Remote clock offset: 1.592 ms

Run 3: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2019-04-23 17:51:24

End at: 2019-04-23 17:51:54

Local clock offset: -4.399 ms

Remote clock offset: 6.353 ms

Below is generated by plot.py at 2019-04-23 19:04:11

Datalink statistics

-- Total of 1 flow:

Average throughput: 10.99 Mbit/s

95th percentile per-packet one-way delay: 325.691 ms

Loss rate: 0.38%

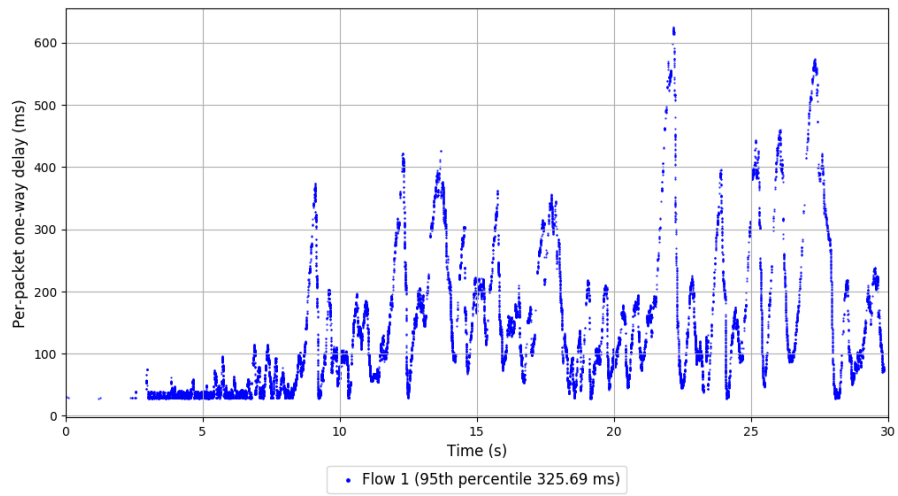
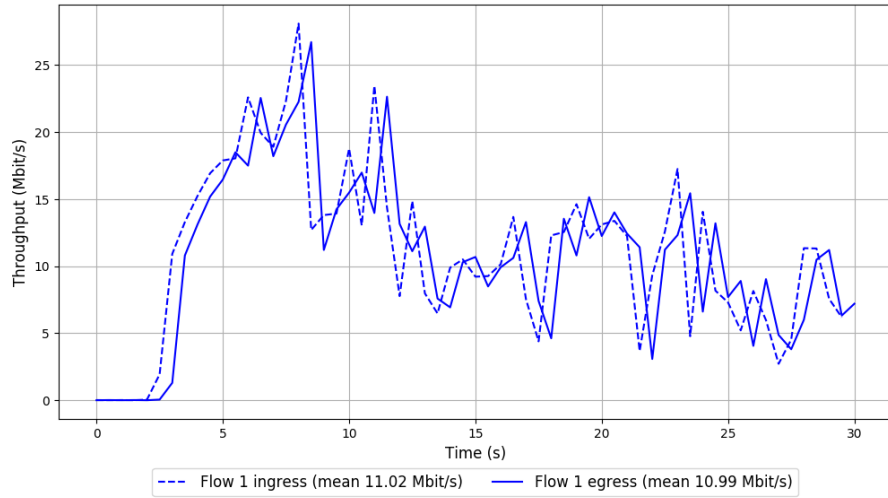
-- Flow 1:

Average throughput: 10.99 Mbit/s

95th percentile per-packet one-way delay: 325.691 ms

Loss rate: 0.38%

Run 1: Report of QUIC Cubic — Data Link

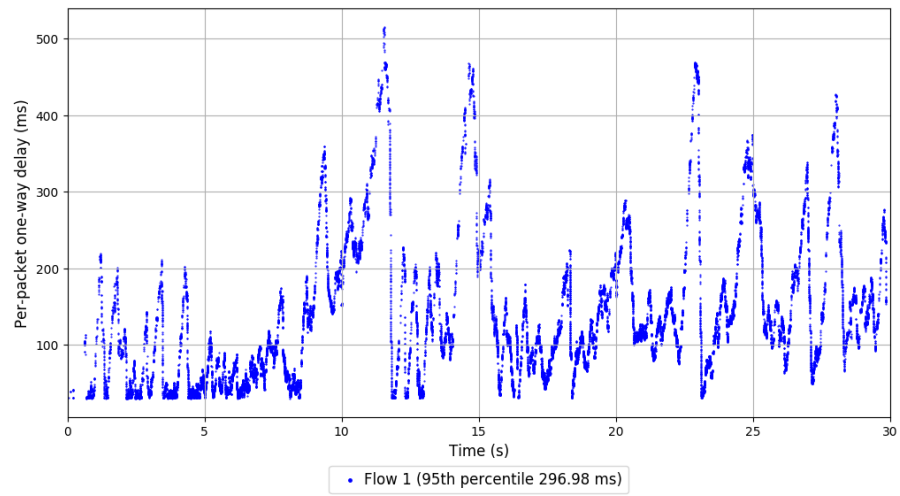
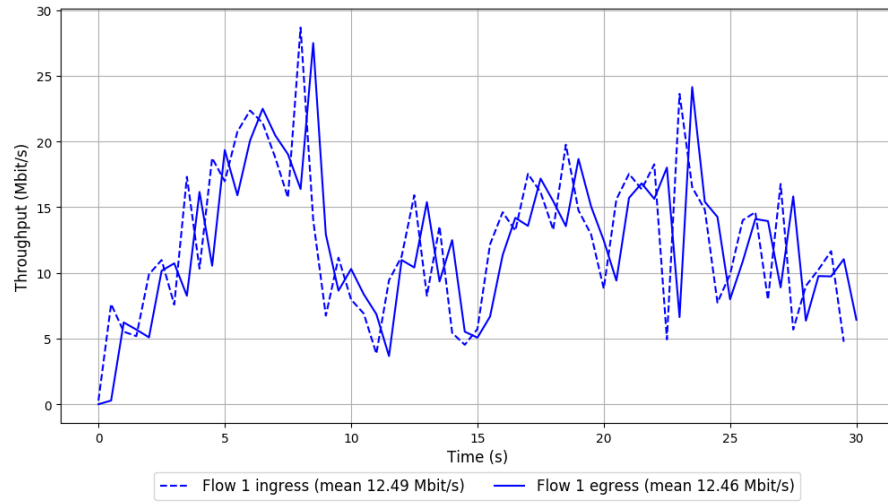


Run 2: Statistics of QUIC Cubic

Start at: 2019-04-23 18:17:13
End at: 2019-04-23 18:17:43
Local clock offset: -16.399 ms
Remote clock offset: 1.856 ms

Below is generated by plot.py at 2019-04-23 19:04:14
Datalink statistics
-- Total of 1 flow:
Average throughput: 12.46 Mbit/s
95th percentile per-packet one-way delay: 296.980 ms
Loss rate: 0.35%
-- Flow 1:
Average throughput: 12.46 Mbit/s
95th percentile per-packet one-way delay: 296.980 ms
Loss rate: 0.35%

Run 2: Report of QUIC Cubic — Data Link

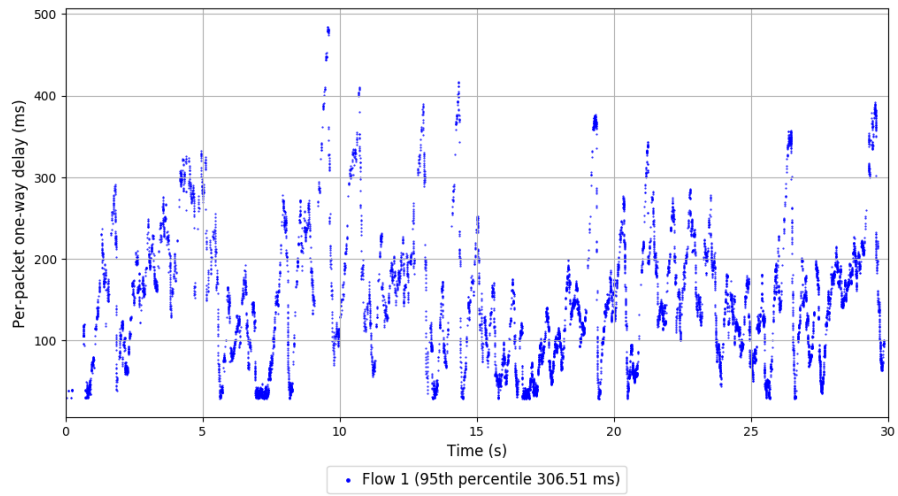
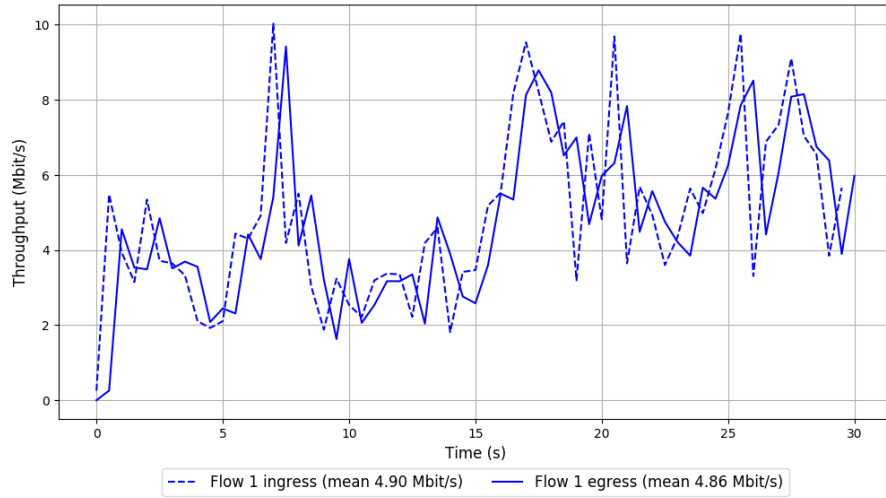


Run 3: Statistics of QUIC Cubic

Start at: 2019-04-23 18:42:55
End at: 2019-04-23 18:43:25
Local clock offset: -31.641 ms
Remote clock offset: 1.53 ms

Below is generated by plot.py at 2019-04-23 19:04:14
Datalink statistics
-- Total of 1 flow:
Average throughput: 4.86 Mbit/s
95th percentile per-packet one-way delay: 306.510 ms
Loss rate: 0.94%
-- Flow 1:
Average throughput: 4.86 Mbit/s
95th percentile per-packet one-way delay: 306.510 ms
Loss rate: 0.94%

Run 3: Report of QUIC Cubic — Data Link



Run 1: Statistics of SCReAM

Start at: 2019-04-23 17:53:51

End at: 2019-04-23 17:54:21

Local clock offset: -8.392 ms

Remote clock offset: 6.437 ms

Below is generated by plot.py at 2019-04-23 19:04:14

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 39.739 ms

Loss rate: 0.13%

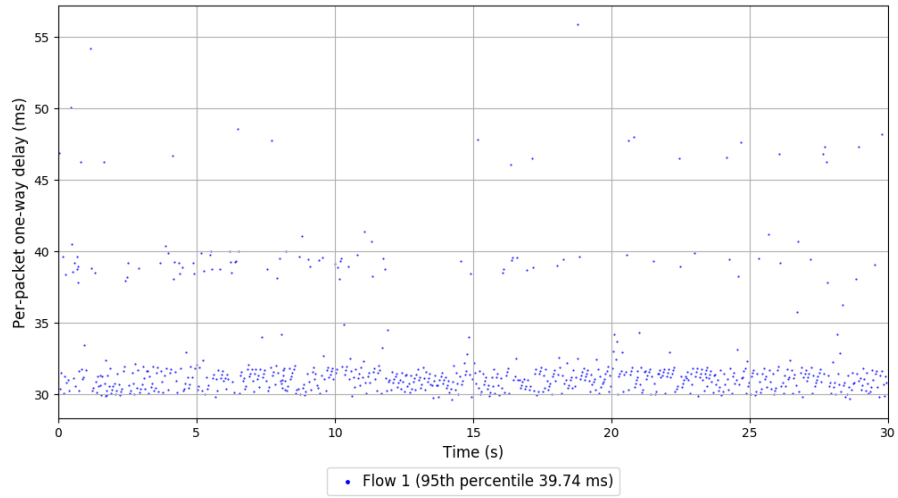
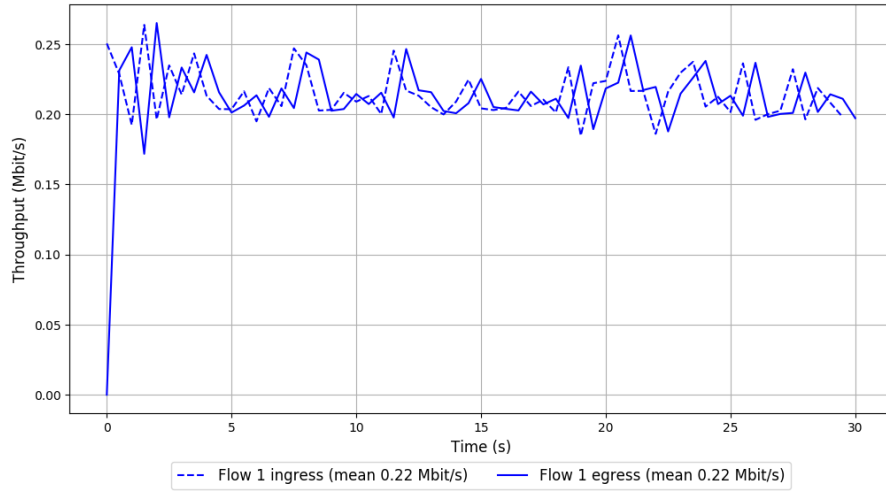
-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 39.739 ms

Loss rate: 0.13%

Run 1: Report of SCReAM — Data Link

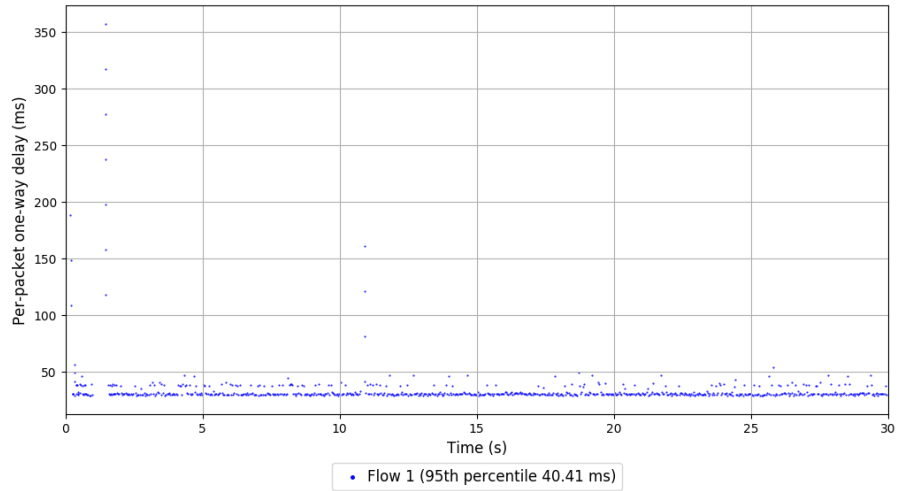
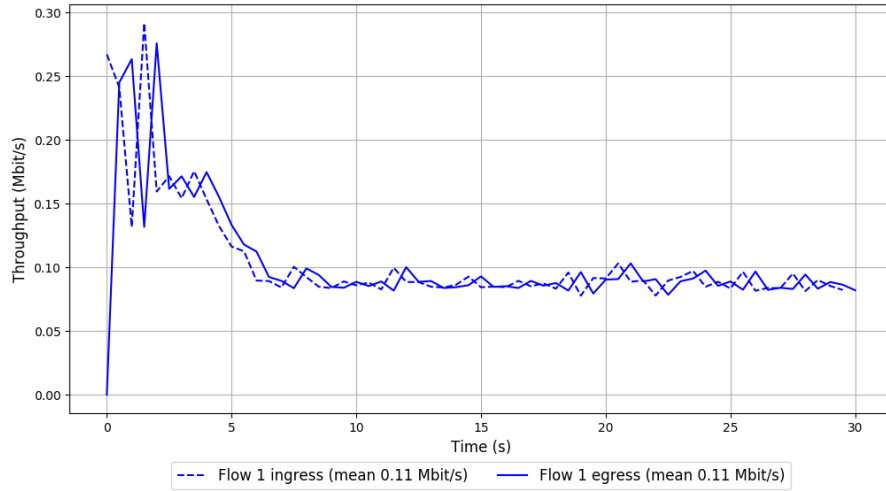


Run 2: Statistics of SCReAM

Start at: 2019-04-23 18:19:40
End at: 2019-04-23 18:20:10
Local clock offset: -15.593 ms
Remote clock offset: 1.694 ms

Below is generated by plot.py at 2019-04-23 19:04:14
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 40.412 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 40.412 ms
Loss rate: 0.11%

Run 2: Report of SCReAM — Data Link



Run 3: Statistics of SCReAM

Start at: 2019-04-23 18:45:22

End at: 2019-04-23 18:45:52

Local clock offset: -34.07 ms

Remote clock offset: 1.547 ms

Below is generated by plot.py at 2019-04-23 19:04:14

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.21 Mbit/s

95th percentile per-packet one-way delay: 42.451 ms

Loss rate: 0.13%

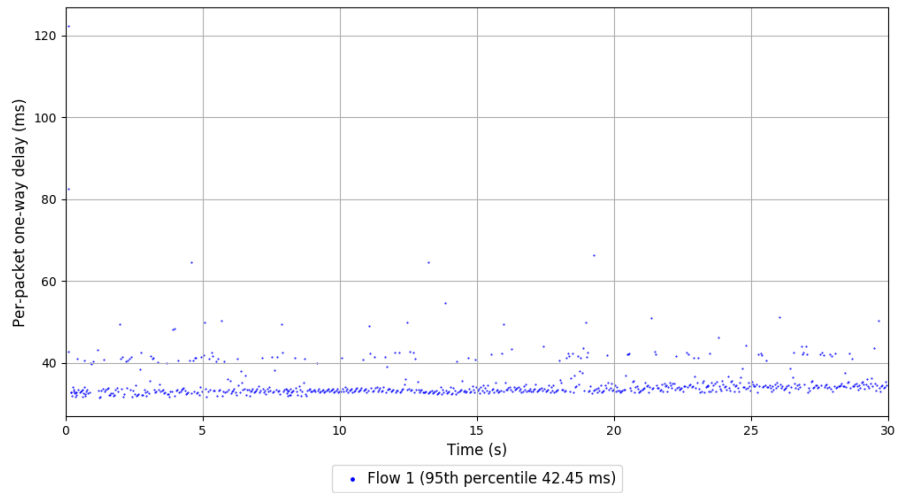
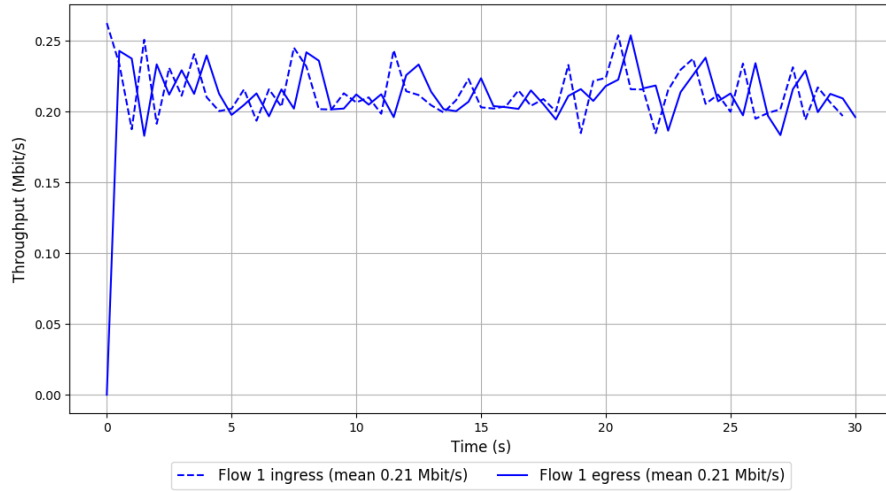
-- Flow 1:

Average throughput: 0.21 Mbit/s

95th percentile per-packet one-way delay: 42.451 ms

Loss rate: 0.13%

Run 3: Report of SCReAM — Data Link

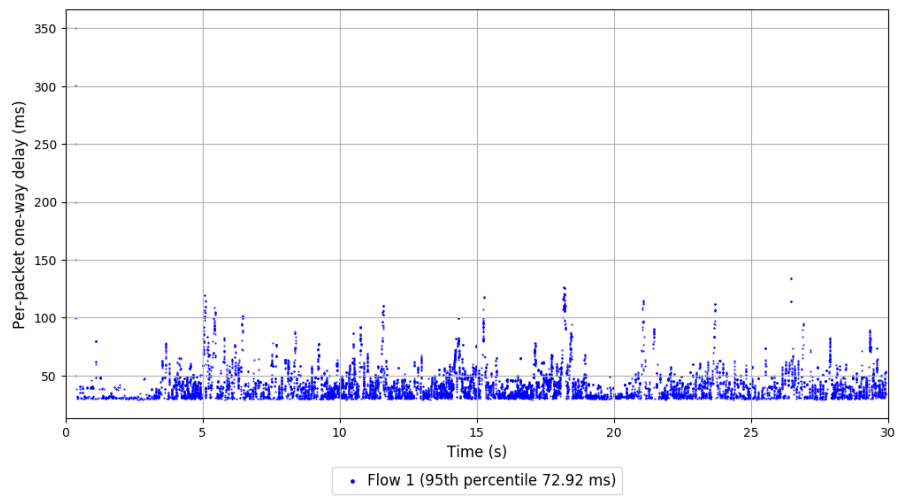
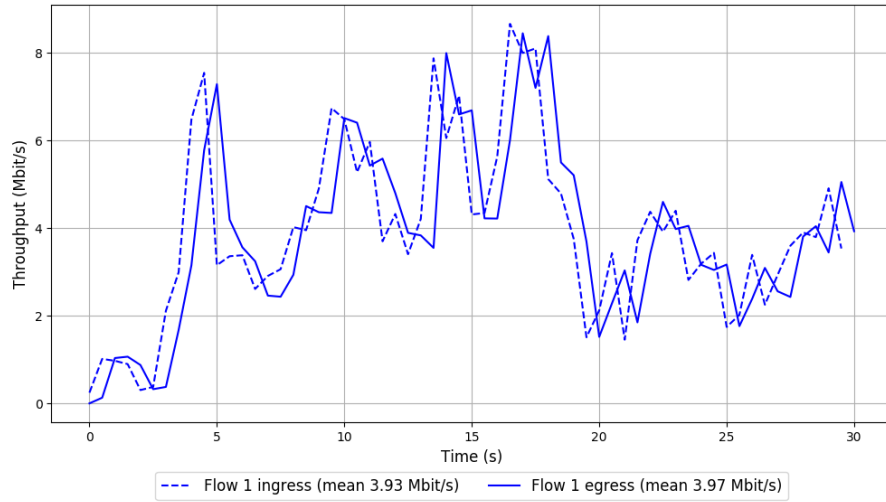


Run 1: Statistics of Sprout

Start at: 2019-04-23 18:06:07
End at: 2019-04-23 18:06:37
Local clock offset: -12.712 ms
Remote clock offset: 2.817 ms

Below is generated by plot.py at 2019-04-23 19:04:14
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.97 Mbit/s
95th percentile per-packet one-way delay: 72.918 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 3.97 Mbit/s
95th percentile per-packet one-way delay: 72.918 ms
Loss rate: 0.00%

Run 1: Report of Sprout — Data Link

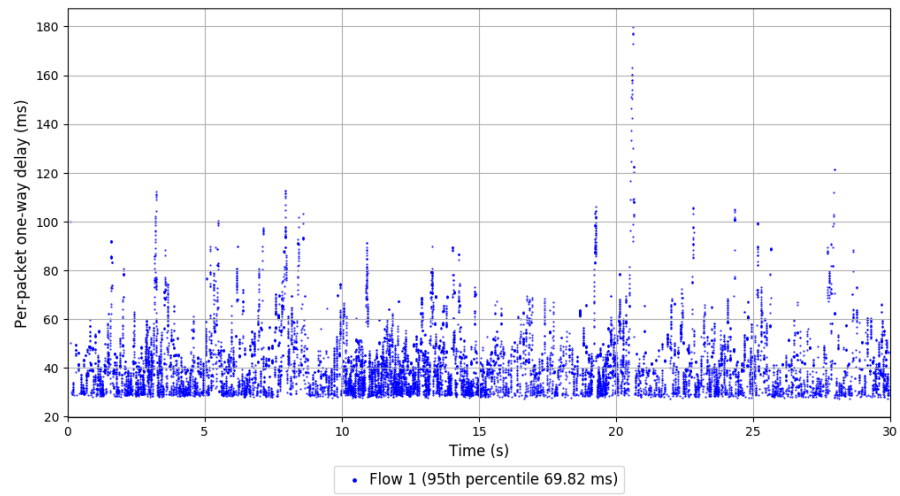
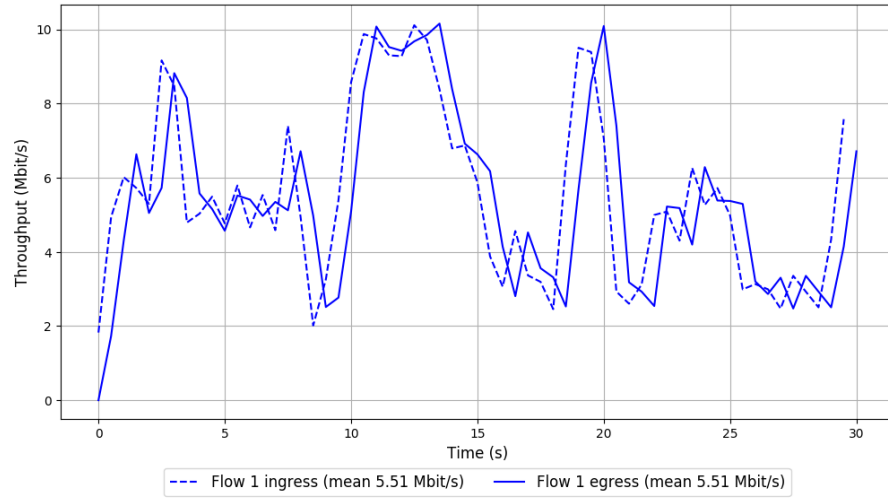


Run 2: Statistics of Sprout

Start at: 2019-04-23 18:31:54
End at: 2019-04-23 18:32:24
Local clock offset: -21.093 ms
Remote clock offset: 1.572 ms

Below is generated by plot.py at 2019-04-23 19:04:14
Datalink statistics
-- Total of 1 flow:
Average throughput: 5.51 Mbit/s
95th percentile per-packet one-way delay: 69.821 ms
Loss rate: 0.32%
-- Flow 1:
Average throughput: 5.51 Mbit/s
95th percentile per-packet one-way delay: 69.821 ms
Loss rate: 0.32%

Run 2: Report of Sprout — Data Link

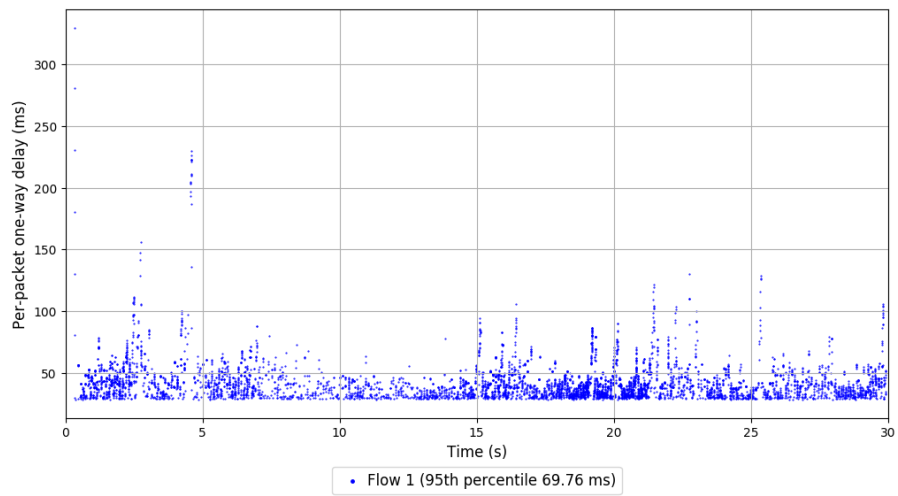
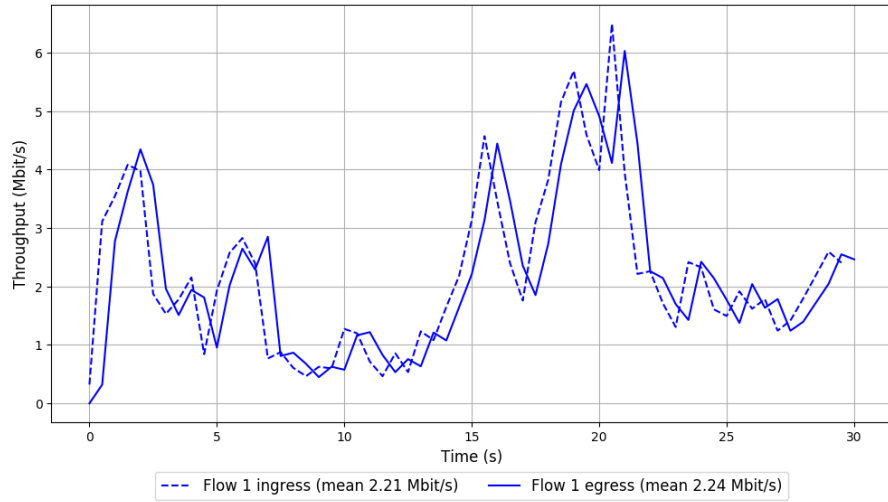


Run 3: Statistics of Sprout

Start at: 2019-04-23 18:57:41
End at: 2019-04-23 18:58:11
Local clock offset: -15.353 ms
Remote clock offset: 1.552 ms

Below is generated by plot.py at 2019-04-23 19:04:14
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.24 Mbit/s
95th percentile per-packet one-way delay: 69.759 ms
Loss rate: 0.17%
-- Flow 1:
Average throughput: 2.24 Mbit/s
95th percentile per-packet one-way delay: 69.759 ms
Loss rate: 0.17%

Run 3: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

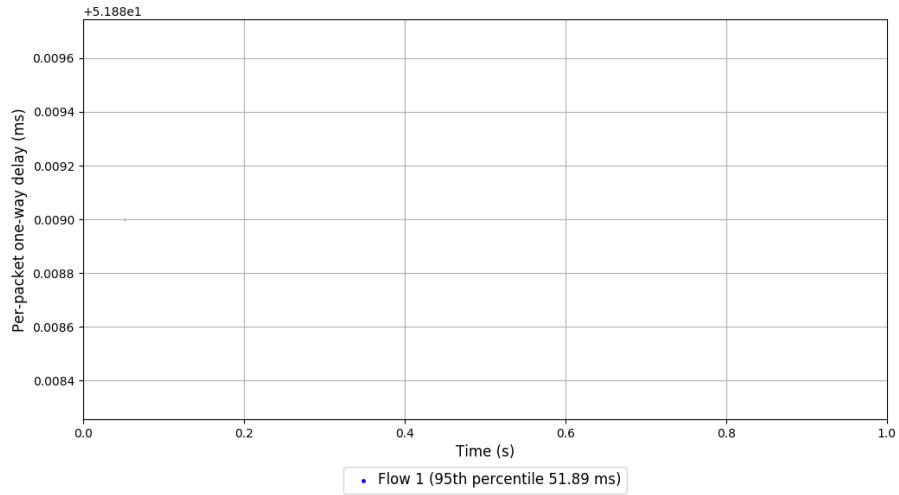
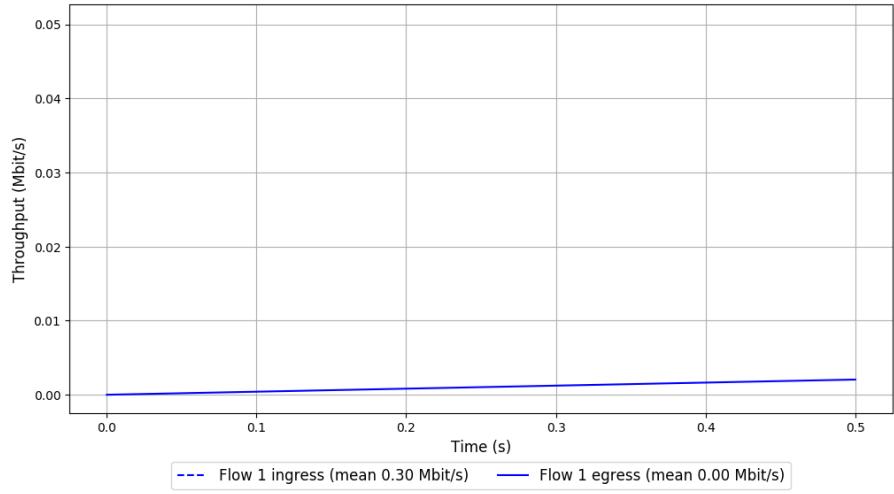
Start at: 2019-04-23 17:57:32

End at: 2019-04-23 17:58:02

Local clock offset: -10.713 ms

Remote clock offset: 5.519 ms

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



Run 2: Statistics of TaoVA-100x

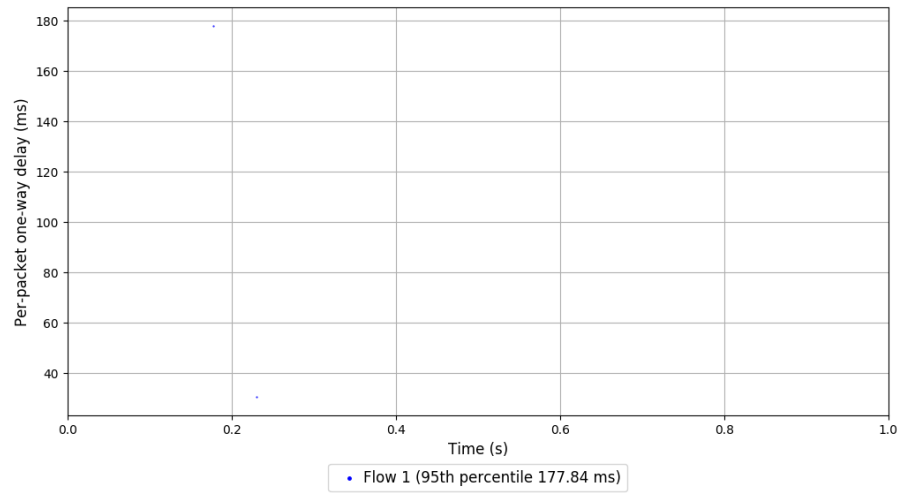
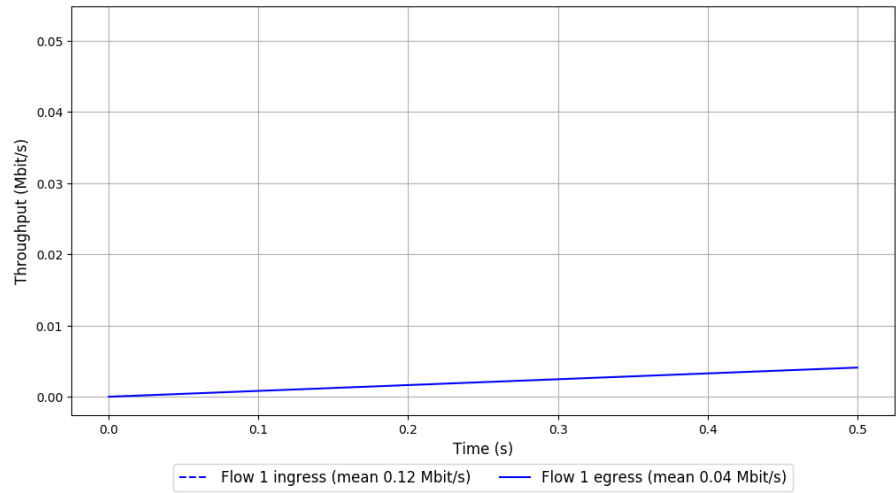
Start at: 2019-04-23 18:23:21

End at: 2019-04-23 18:23:51

Local clock offset: -15.847 ms

Remote clock offset: 1.661 ms

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



Run 3: Statistics of TaoVA-100x

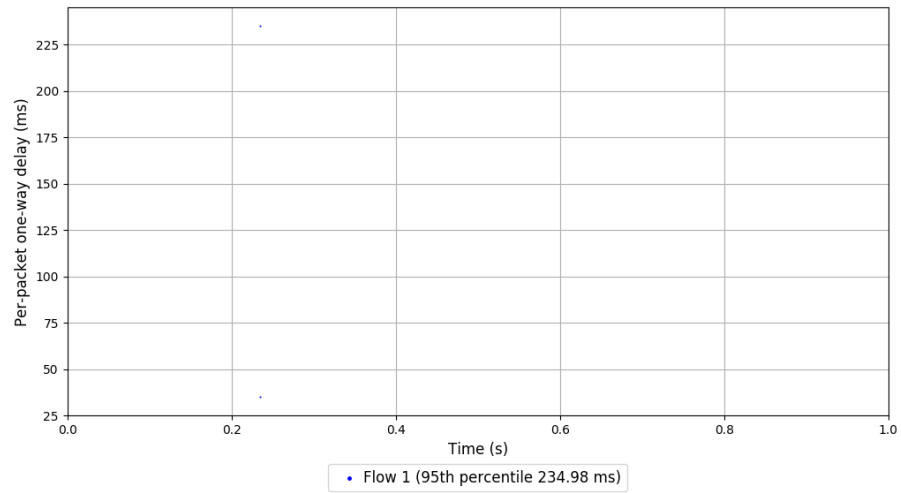
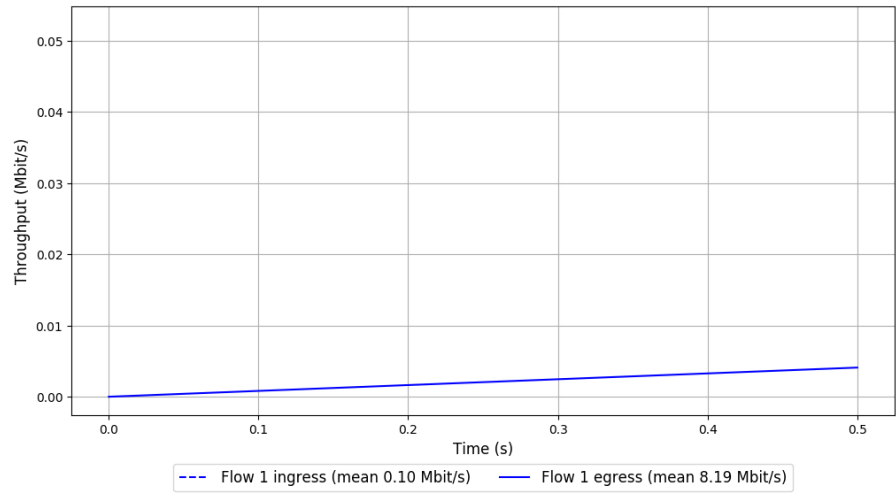
Start at: 2019-04-23 18:49:07

End at: 2019-04-23 18:49:37

Local clock offset: -24.349 ms

Remote clock offset: 1.545 ms

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



Run 1: Statistics of TCP Vegas

Start at: 2019-04-23 17:59:59
End at: 2019-04-23 18:00:29
Local clock offset: -14.563 ms
Remote clock offset: 4.341 ms

Below is generated by plot.py at 2019-04-23 19:04:16

Datalink statistics

-- Total of 1 flow:

Average throughput: 6.84 Mbit/s

95th percentile per-packet one-way delay: 75.654 ms

Loss rate: 0.05%

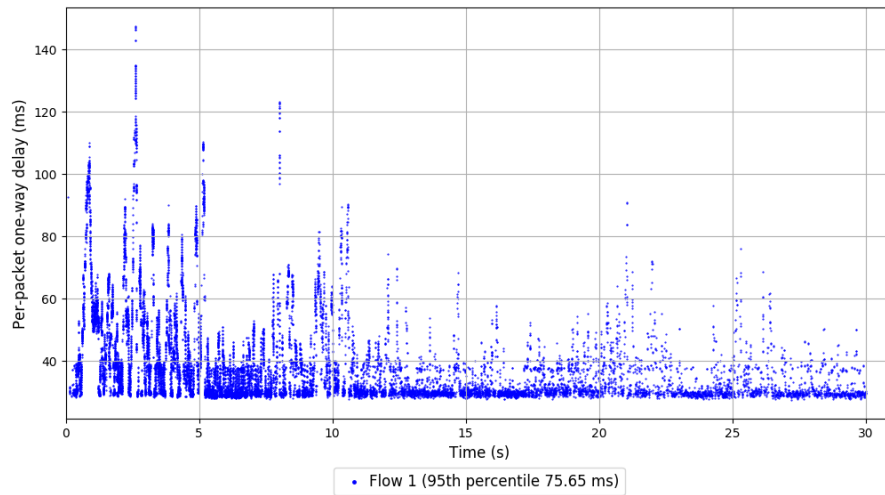
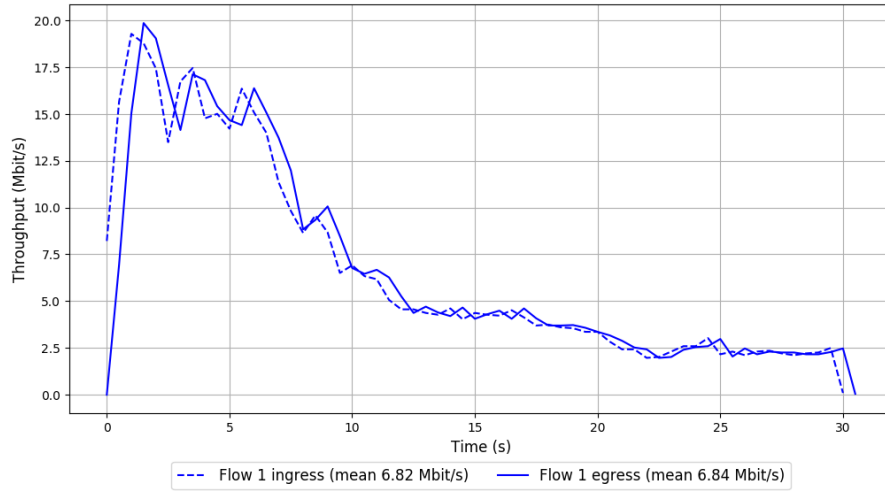
-- Flow 1:

Average throughput: 6.84 Mbit/s

95th percentile per-packet one-way delay: 75.654 ms

Loss rate: 0.05%

Run 1: Report of TCP Vegas — Data Link



Run 2: Statistics of TCP Vegas

Start at: 2019-04-23 18:25:47

End at: 2019-04-23 18:26:17

Local clock offset: -16.84 ms

Remote clock offset: 1.565 ms

Below is generated by plot.py at 2019-04-23 19:04:16

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.17 Mbit/s

95th percentile per-packet one-way delay: 102.962 ms

Loss rate: 0.04%

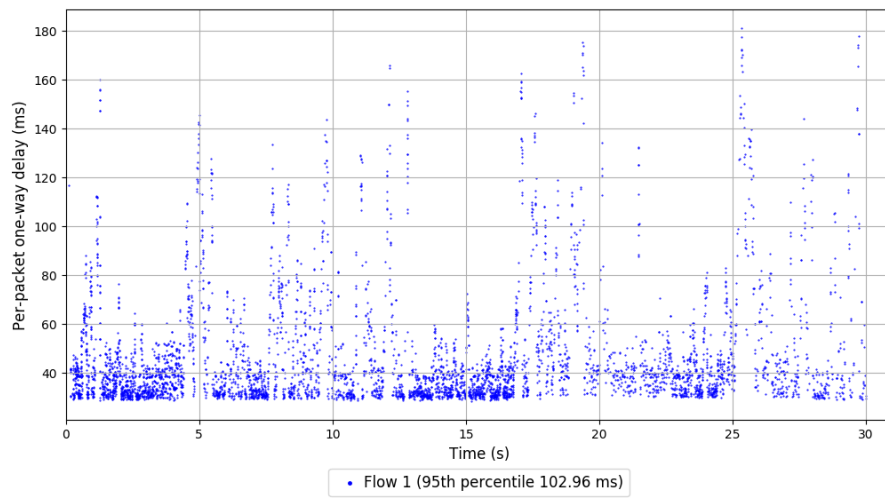
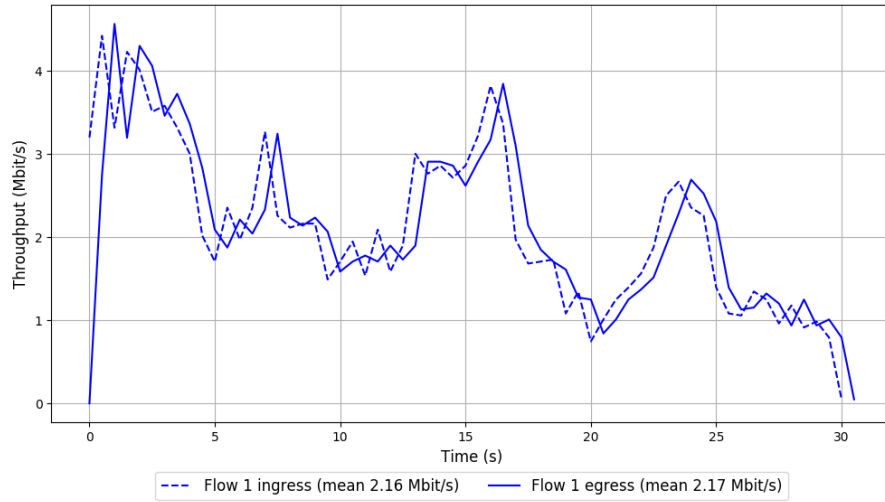
-- Flow 1:

Average throughput: 2.17 Mbit/s

95th percentile per-packet one-way delay: 102.962 ms

Loss rate: 0.04%

Run 2: Report of TCP Vegas — Data Link

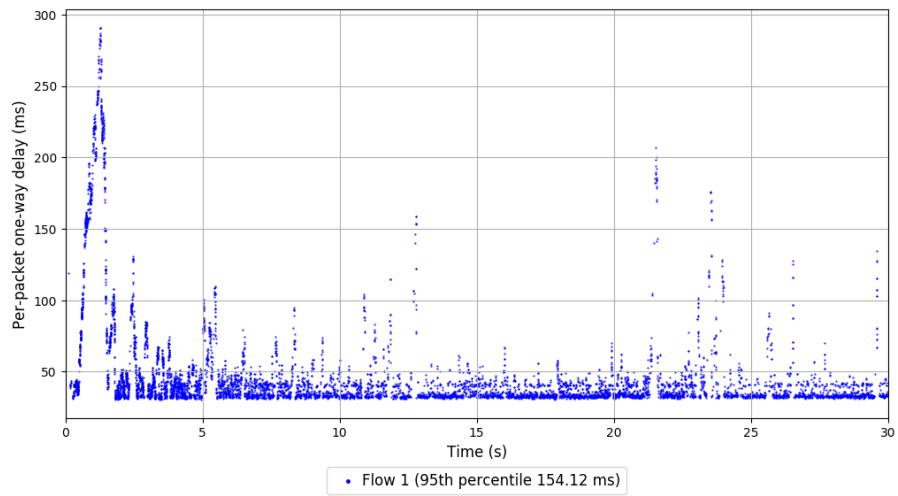
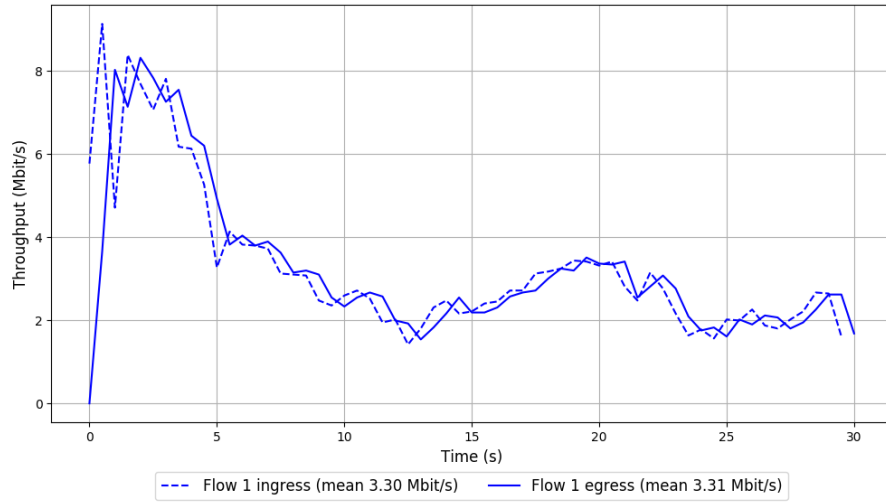


Run 3: Statistics of TCP Vegas

Start at: 2019-04-23 18:51:34
End at: 2019-04-23 18:52:04
Local clock offset: -20.019 ms
Remote clock offset: 1.503 ms

Below is generated by plot.py at 2019-04-23 19:04:16
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.31 Mbit/s
95th percentile per-packet one-way delay: 154.119 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 3.31 Mbit/s
95th percentile per-packet one-way delay: 154.119 ms
Loss rate: 0.10%

Run 3: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: 2019-04-23 17:55:04

End at: 2019-04-23 17:55:34

Local clock offset: -8.468 ms

Remote clock offset: 6.559 ms

Below is generated by plot.py at 2019-04-23 19:04:19

Datalink statistics

-- Total of 1 flow:

Average throughput: 23.13 Mbit/s

95th percentile per-packet one-way delay: 420.357 ms

Loss rate: 1.45%

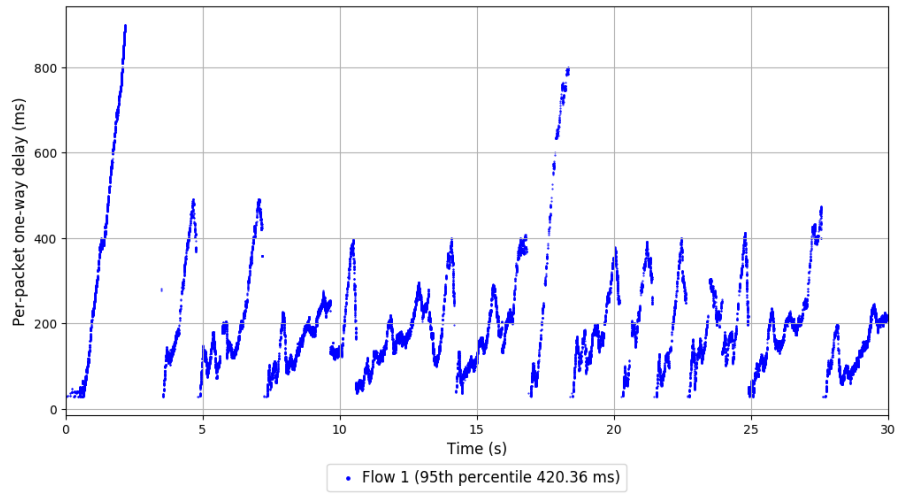
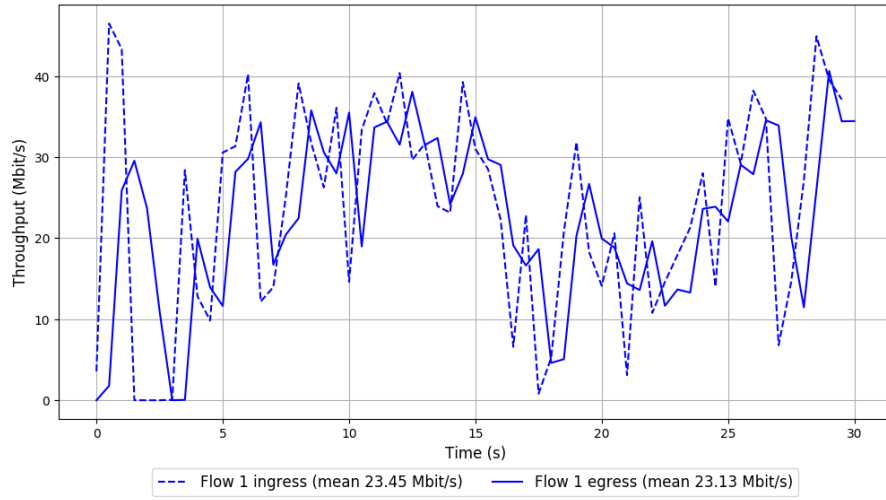
-- Flow 1:

Average throughput: 23.13 Mbit/s

95th percentile per-packet one-way delay: 420.357 ms

Loss rate: 1.45%

Run 1: Report of Verus — Data Link

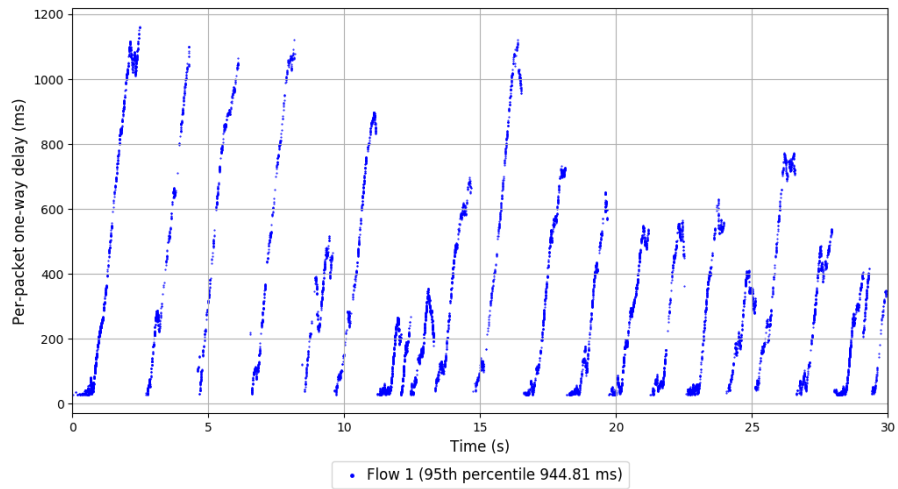
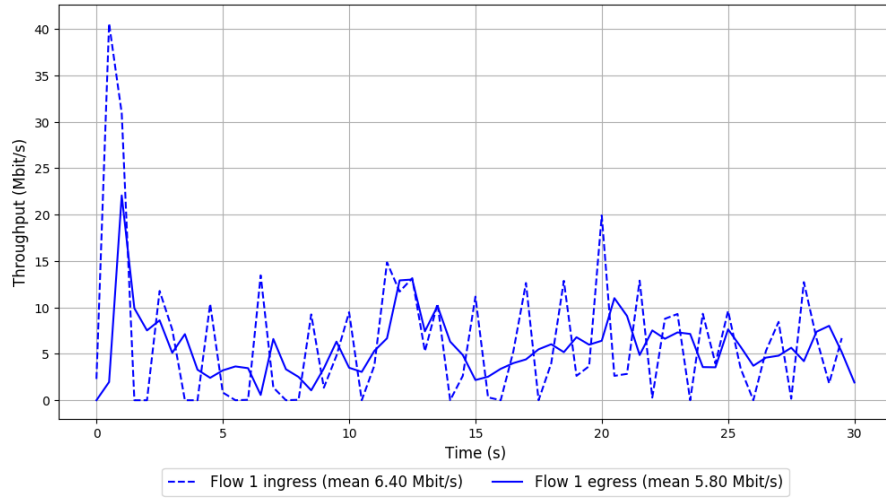


Run 2: Statistics of Verus

Start at: 2019-04-23 18:20:54
End at: 2019-04-23 18:21:24
Local clock offset: -15.474 ms
Remote clock offset: 1.719 ms

Below is generated by plot.py at 2019-04-23 19:04:19
Datalink statistics
-- Total of 1 flow:
Average throughput: 5.80 Mbit/s
95th percentile per-packet one-way delay: 944.811 ms
Loss rate: 9.39%
-- Flow 1:
Average throughput: 5.80 Mbit/s
95th percentile per-packet one-way delay: 944.811 ms
Loss rate: 9.39%

Run 2: Report of Verus — Data Link

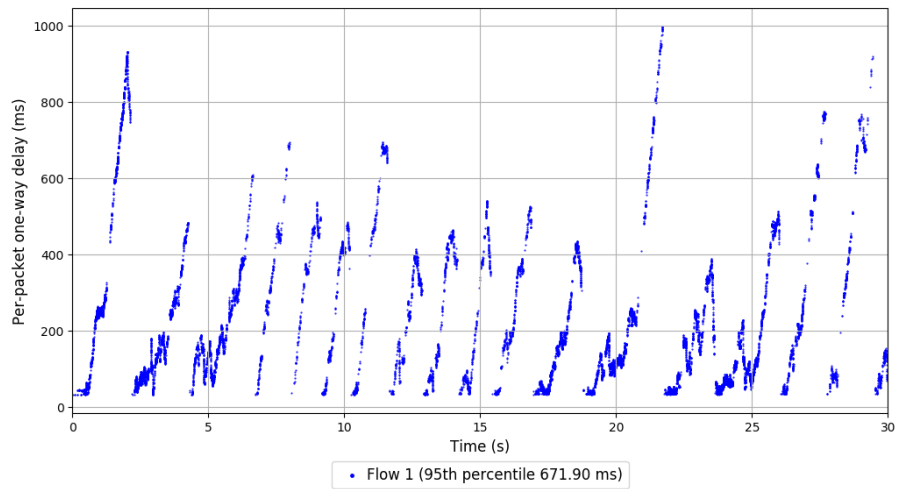
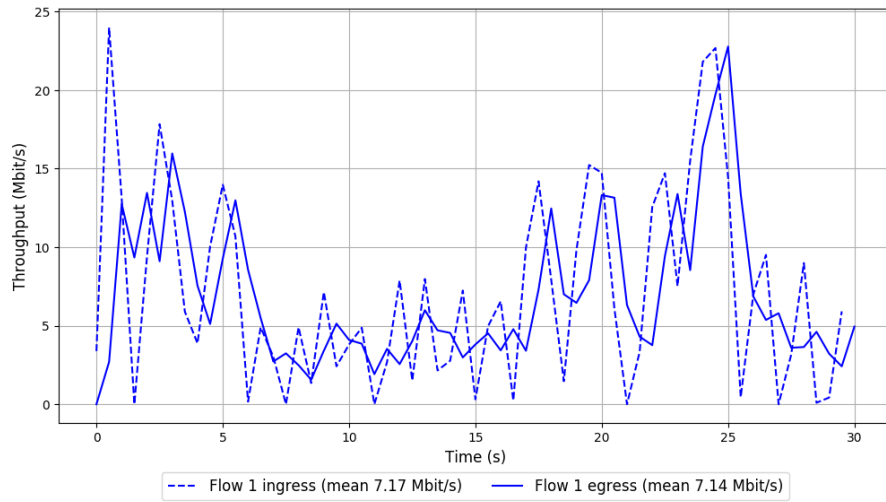


Run 3: Statistics of Verus

Start at: 2019-04-23 18:46:35
End at: 2019-04-23 18:47:05
Local clock offset: -30.843 ms
Remote clock offset: 1.598 ms

```
# Below is generated by plot.py at 2019-04-23 19:04:19
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.14 Mbit/s
95th percentile per-packet one-way delay: 671.904 ms
Loss rate: 0.53%
-- Flow 1:
Average throughput: 7.14 Mbit/s
95th percentile per-packet one-way delay: 671.904 ms
Loss rate: 0.53%
```

Run 3: Report of Verus — Data Link



Run 1: Statistics of PCC-Vivace

Start at: 2019-04-23 17:46:30

End at: 2019-04-23 17:47:00

Local clock offset: 8.081 ms

Remote clock offset: 5.926 ms

Below is generated by plot.py at 2019-04-23 19:04:19

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.75 Mbit/s

95th percentile per-packet one-way delay: 29.786 ms

Loss rate: 0.09%

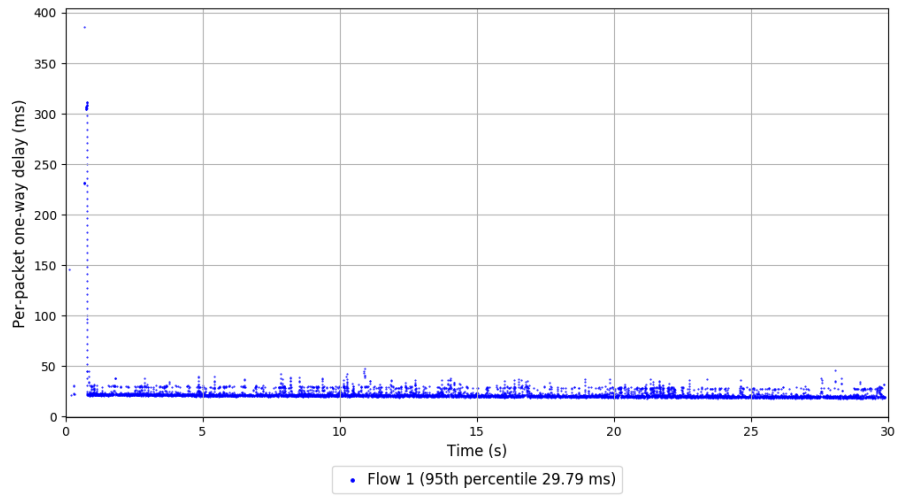
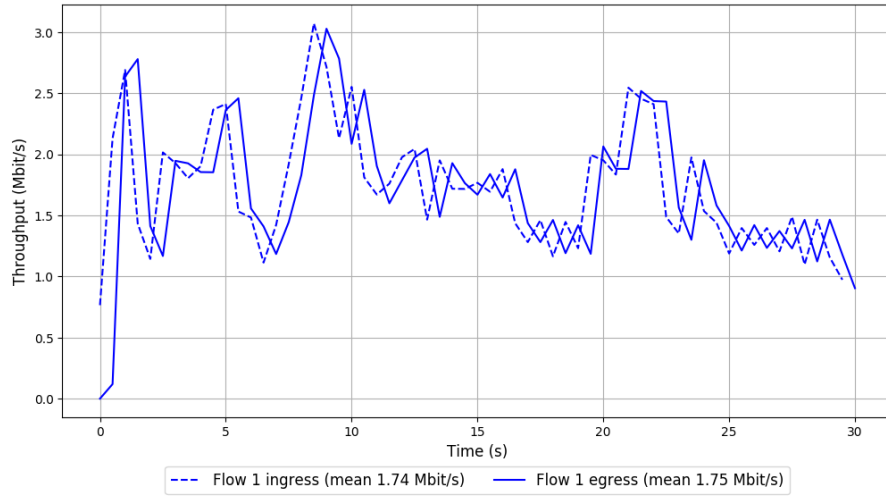
-- Flow 1:

Average throughput: 1.75 Mbit/s

95th percentile per-packet one-way delay: 29.786 ms

Loss rate: 0.09%

Run 1: Report of PCC-Vivace — Data Link

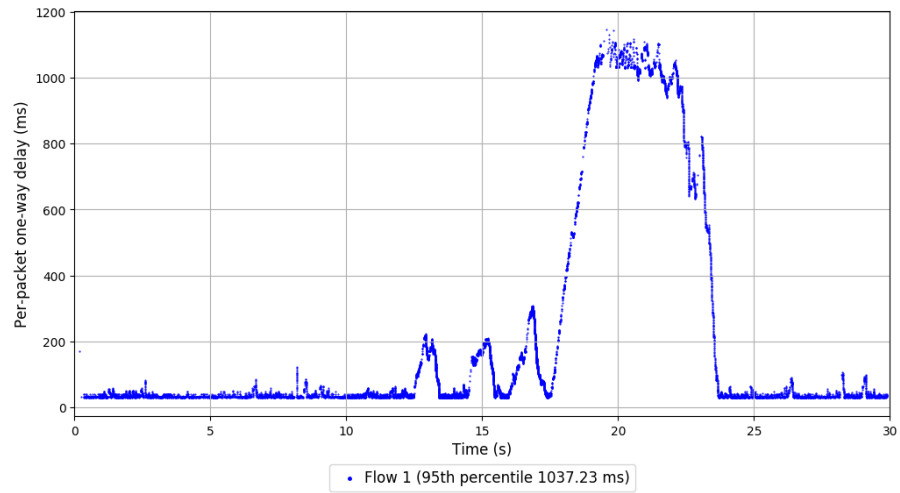
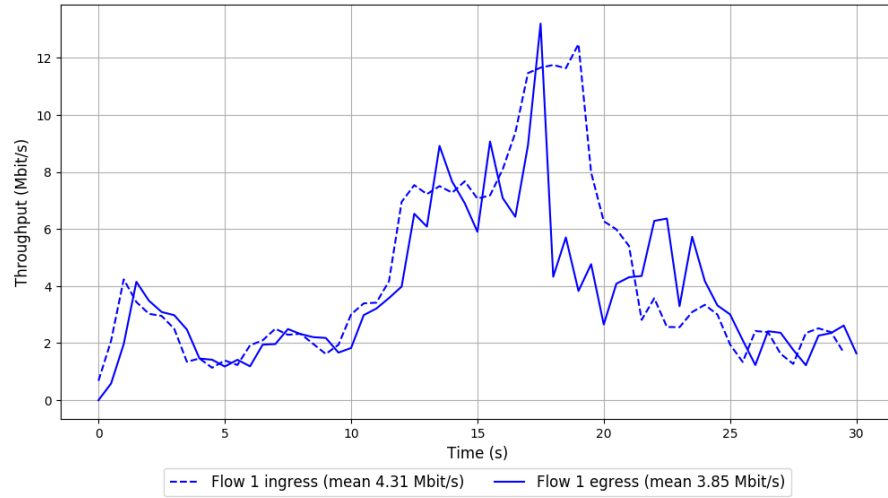


Run 2: Statistics of PCC-Vivace

Start at: 2019-04-23 18:12:14
End at: 2019-04-23 18:12:44
Local clock offset: -14.661 ms
Remote clock offset: 2.131 ms

Below is generated by plot.py at 2019-04-23 19:04:19
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.85 Mbit/s
95th percentile per-packet one-way delay: 1037.230 ms
Loss rate: 11.20%
-- Flow 1:
Average throughput: 3.85 Mbit/s
95th percentile per-packet one-way delay: 1037.230 ms
Loss rate: 11.20%

Run 2: Report of PCC-Vivace — Data Link

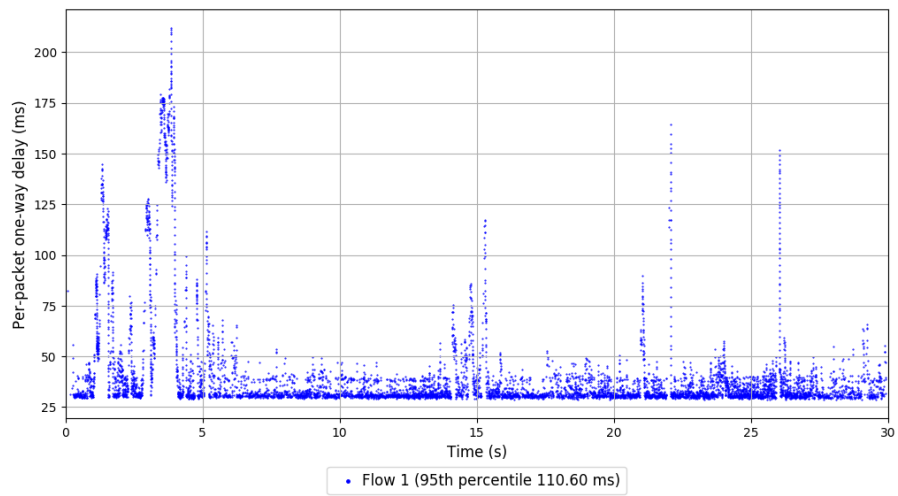
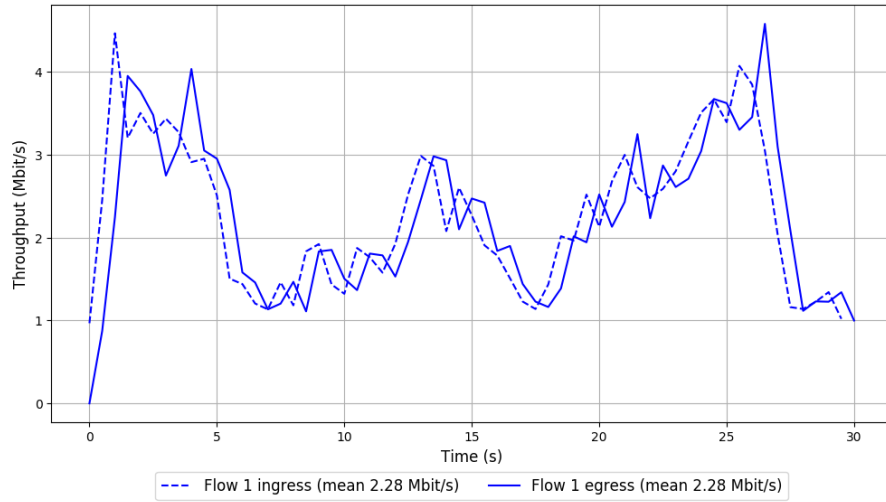


Run 3: Statistics of PCC-Vivace

Start at: 2019-04-23 18:38:01
End at: 2019-04-23 18:38:31
Local clock offset: -26.651 ms
Remote clock offset: 1.542 ms

Below is generated by plot.py at 2019-04-23 19:04:19
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.28 Mbit/s
95th percentile per-packet one-way delay: 110.598 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 2.28 Mbit/s
95th percentile per-packet one-way delay: 110.598 ms
Loss rate: 0.05%

Run 3: Report of PCC-Vivace — Data Link

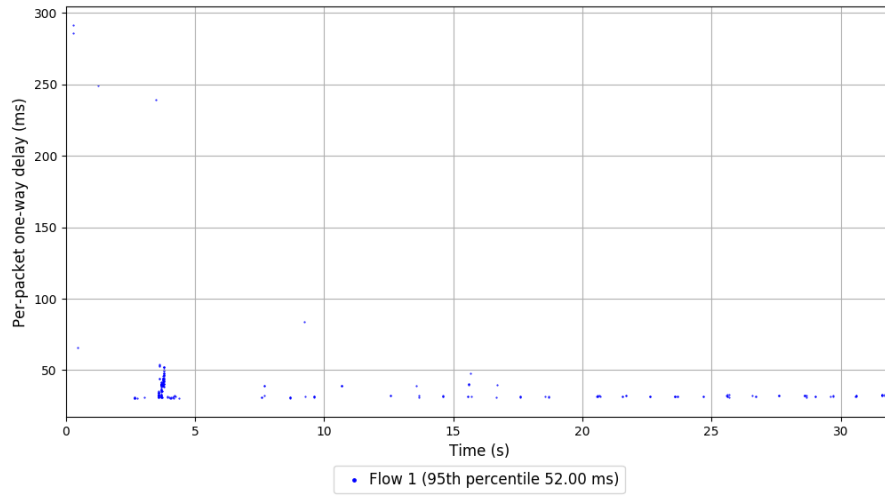
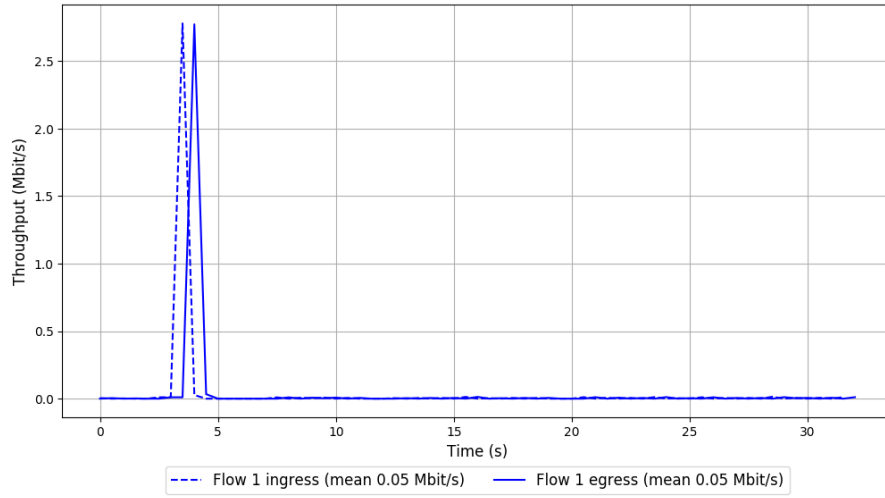


Run 1: Statistics of WebRTC media

Start at: 2019-04-23 18:03:40
End at: 2019-04-23 18:04:10
Local clock offset: -15.953 ms
Remote clock offset: 3.297 ms

Below is generated by plot.py at 2019-04-23 19:04:19
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 52.003 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 52.003 ms
Loss rate: 0.00%

Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

Start at: 2019-04-23 18:29:27

End at: 2019-04-23 18:29:57

Local clock offset: -19.16 ms

Remote clock offset: 1.622 ms

Below is generated by plot.py at 2019-04-23 19:04:19

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.05 Mbit/s

95th percentile per-packet one-way delay: 46.817 ms

Loss rate: 0.00%

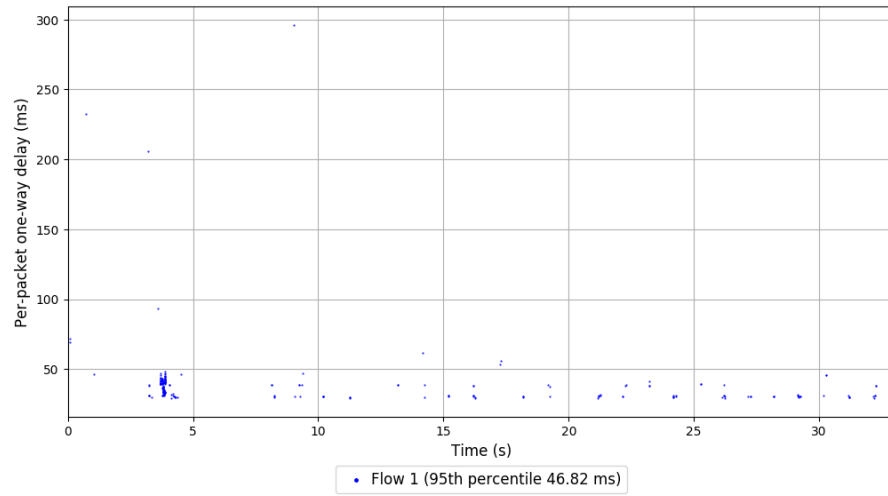
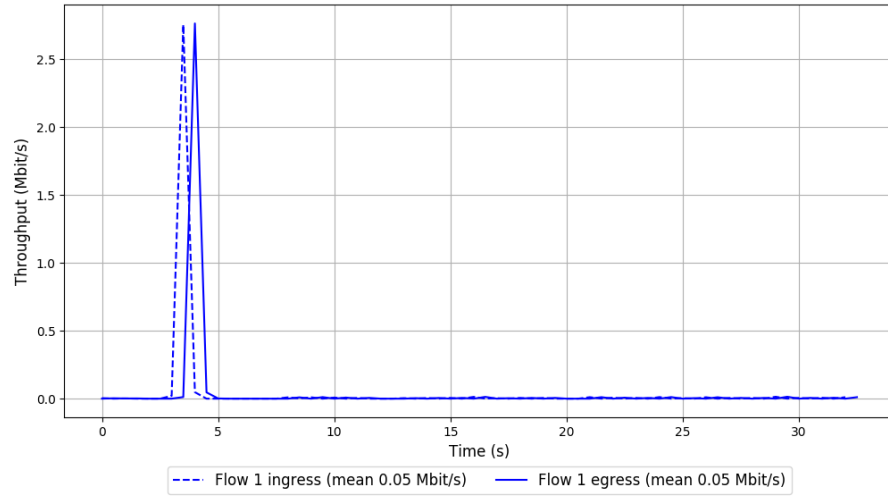
-- Flow 1:

Average throughput: 0.05 Mbit/s

95th percentile per-packet one-way delay: 46.817 ms

Loss rate: 0.00%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2019-04-23 18:55:14
End at: 2019-04-23 18:55:44
Local clock offset: -16.671 ms
Remote clock offset: 1.62 ms

Below is generated by plot.py at 2019-04-23 19:04:19
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 84.507 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 84.507 ms
Loss rate: 0.00%

Run 3: Report of WebRTC media — Data Link

