

Pantheon Report

Generated at 2019-06-27 19:04:57 (UTC).

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

Repeated the test of 22 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:

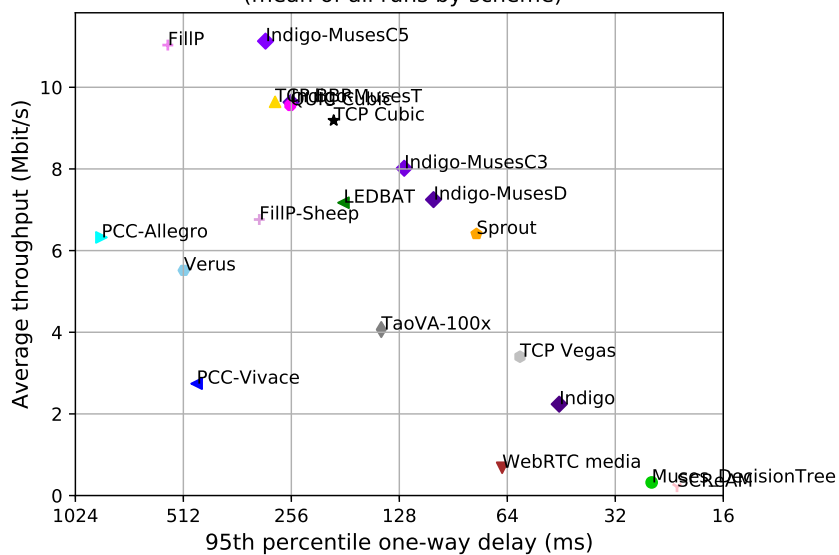
```
Linux 4.15.0-1039-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
```

Git summary:

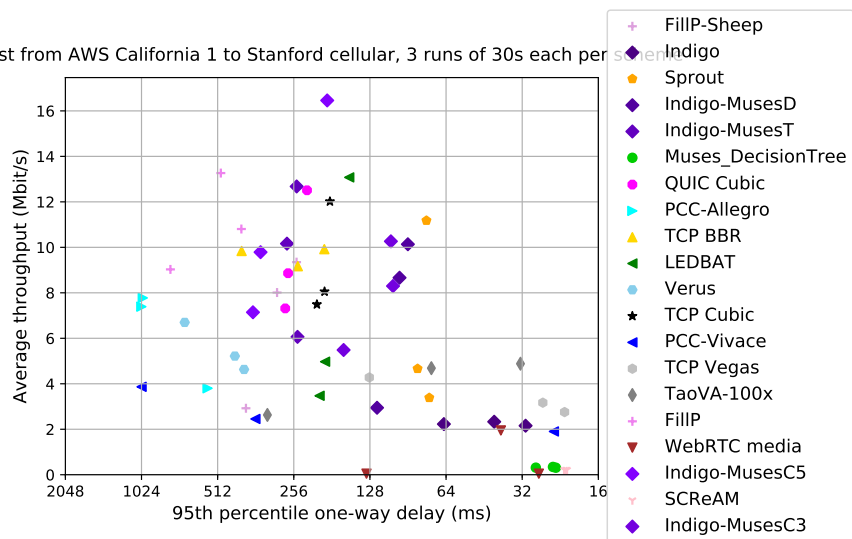
```
branch: muses @ c3953d08f32ec7ebbdede2d2f0cbdeed262571ef
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf5e58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 5ce721187ad823da20955337730c746486ca4966
third_party/muses_dtree @ 11c9498ecb1596b02ccd896791a02d03172af7ed
M helpers/__init__.pyc
M helpers/context.pyc
M helpers/utils.pyc
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  Indigo



scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	9.64	284.12	0.58
Copa	0	N/A	N/A	N/A
TCP Cubic	3	9.19	195.05	0.28
FillP	3	11.04	565.68	2.40
FillP-Sheep	3	6.76	314.47	0.16
Indigo	3	2.24	45.87	0.09
Indigo-MusesC3	3	8.02	124.05	0.21
Indigo-MusesC5	3	11.13	302.17	0.71
Indigo-MusesD	3	7.25	102.77	0.25
Indigo-MusesT	3	9.63	256.42	0.66
LEDBAT	3	7.17	183.19	0.44
Muses_DecisionTree	3	0.32	25.34	0.16
PCC-Allegro	3	6.32	866.11	6.41
PCC-Expr	0	N/A	N/A	N/A
QUIC Cubic	3	9.56	257.79	0.50
SCReAM	3	0.22	21.53	0.04
Sprout	3	6.41	78.01	0.25
TaoVA-100x	3	4.07	143.72	0.99
TCP Vegas	3	3.40	59.00	0.04
Verus	3	5.52	510.46	2.27
PCC-Vivace	3	2.74	470.26	2.42
WebRTC media	3	0.68	66.14	0.01

Run 1: Statistics of TCP BBR

Start at: 2019-06-27 17:51:40

End at: 2019-06-27 17:52:10

Local clock offset: 1.193 ms

Remote clock offset: 0.339 ms

Below is generated by plot.py at 2019-06-27 19:03:55

Datalink statistics

-- Total of 1 flow:

Average throughput: 9.92 Mbit/s

95th percentile per-packet one-way delay: 193.840 ms

Loss rate: 0.29%

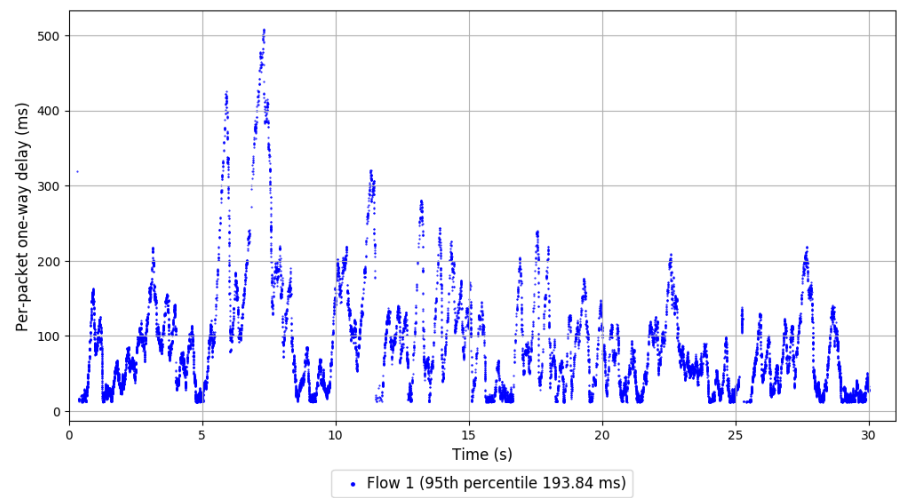
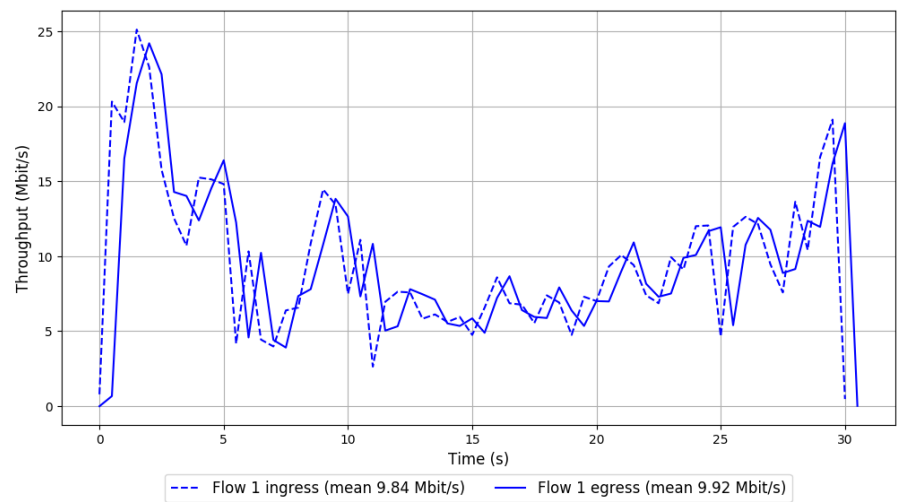
-- Flow 1:

Average throughput: 9.92 Mbit/s

95th percentile per-packet one-way delay: 193.840 ms

Loss rate: 0.29%

Run 1: Report of TCP BBR — Data Link

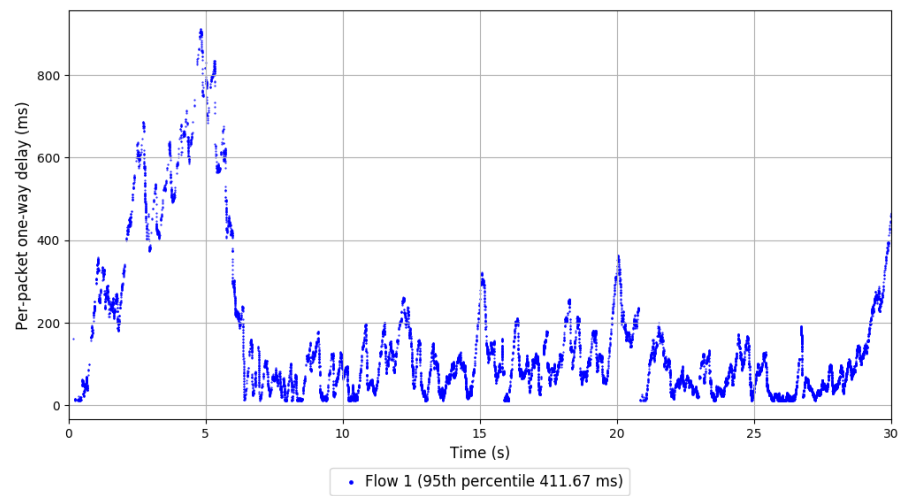
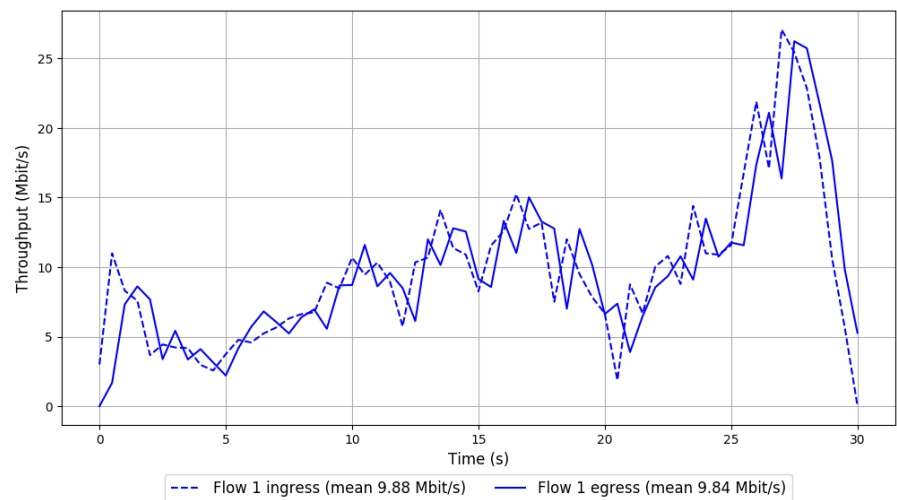


Run 2: Statistics of TCP BBR

Start at: 2019-06-27 18:18:46
End at: 2019-06-27 18:19:16
Local clock offset: 3.905 ms
Remote clock offset: -3.013 ms

Below is generated by plot.py at 2019-06-27 19:03:55
Datalink statistics
-- Total of 1 flow:
Average throughput: 9.84 Mbit/s
95th percentile per-packet one-way delay: 411.673 ms
Loss rate: 0.93%
-- Flow 1:
Average throughput: 9.84 Mbit/s
95th percentile per-packet one-way delay: 411.673 ms
Loss rate: 0.93%

Run 2: Report of TCP BBR — Data Link

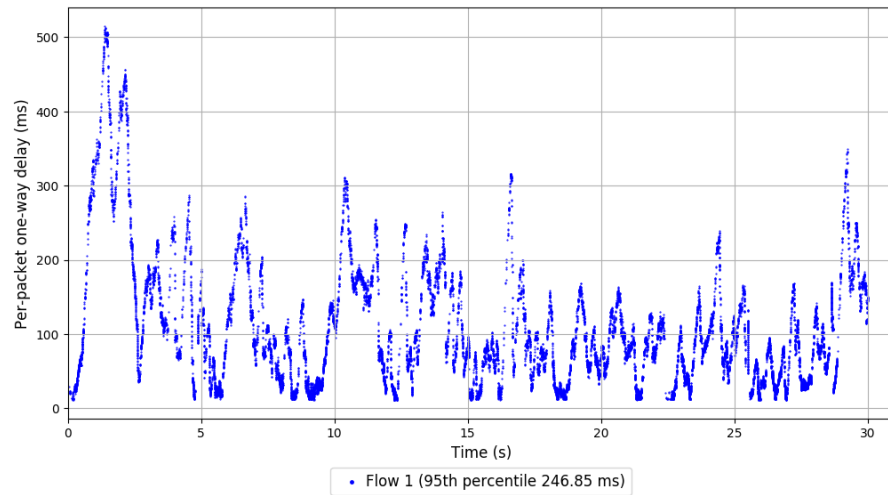
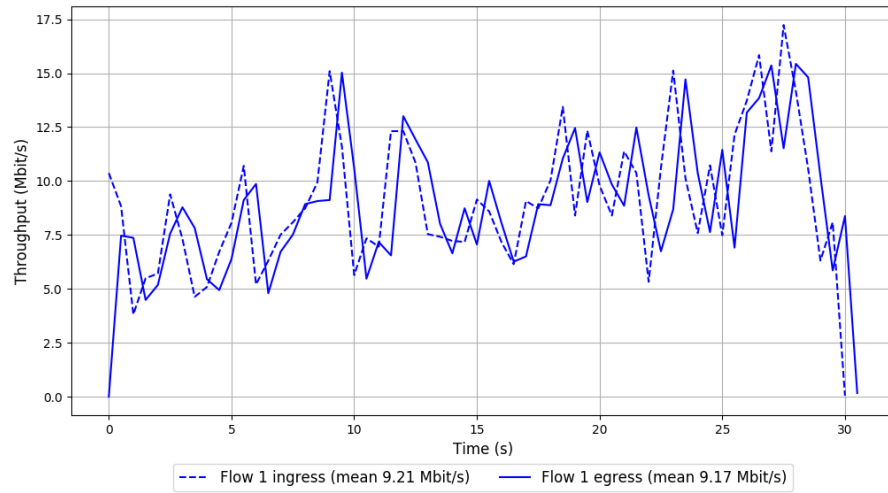


Run 3: Statistics of TCP BBR

Start at: 2019-06-27 18:45:52
End at: 2019-06-27 18:46:22
Local clock offset: -0.046 ms
Remote clock offset: -1.821 ms

Below is generated by plot.py at 2019-06-27 19:03:55
Datalink statistics
-- Total of 1 flow:
Average throughput: 9.17 Mbit/s
95th percentile per-packet one-way delay: 246.846 ms
Loss rate: 0.53%
-- Flow 1:
Average throughput: 9.17 Mbit/s
95th percentile per-packet one-way delay: 246.846 ms
Loss rate: 0.53%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of Copa

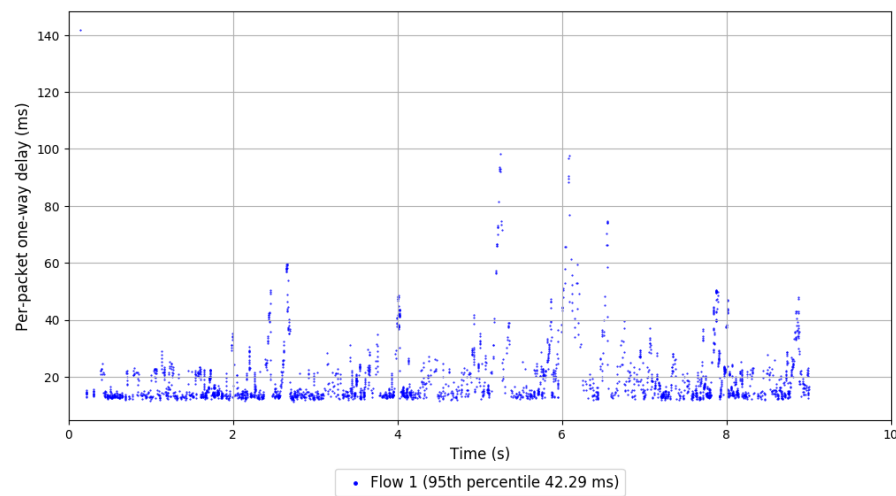
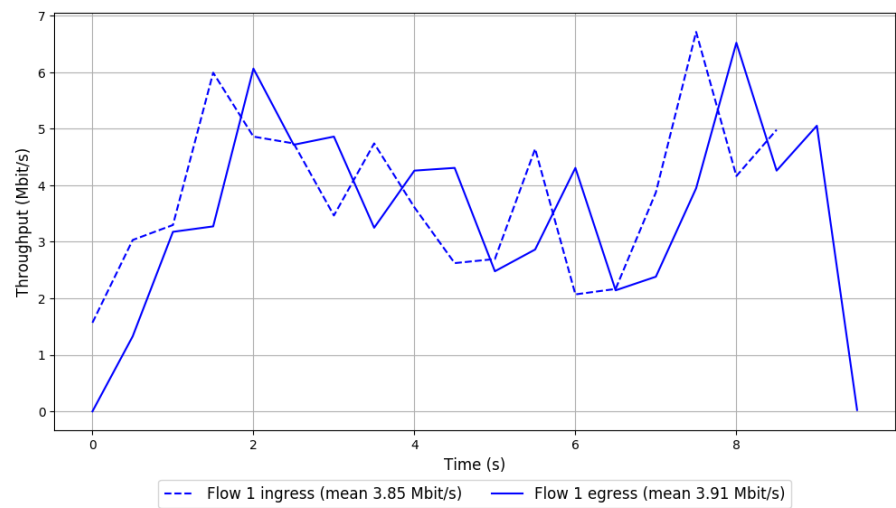
Start at: 2019-06-27 17:57:50

End at: 2019-06-27 17:58:20

Local clock offset: 2.408 ms

Remote clock offset: 0.447 ms

Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

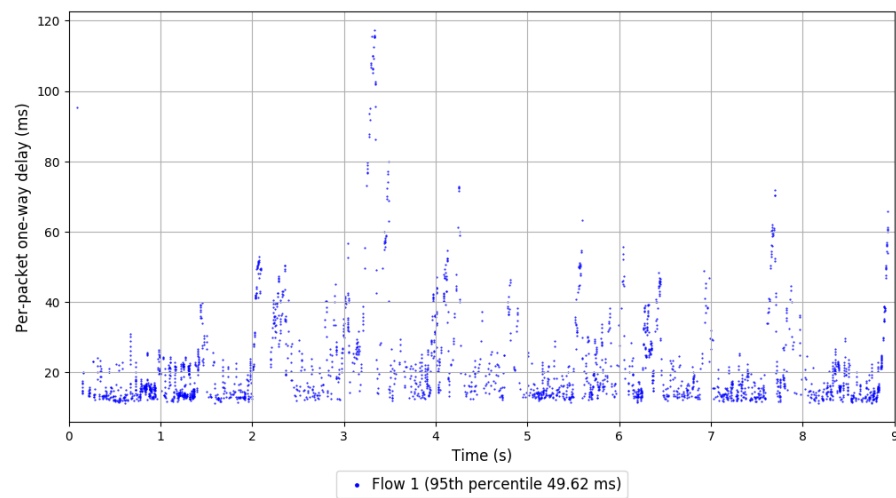
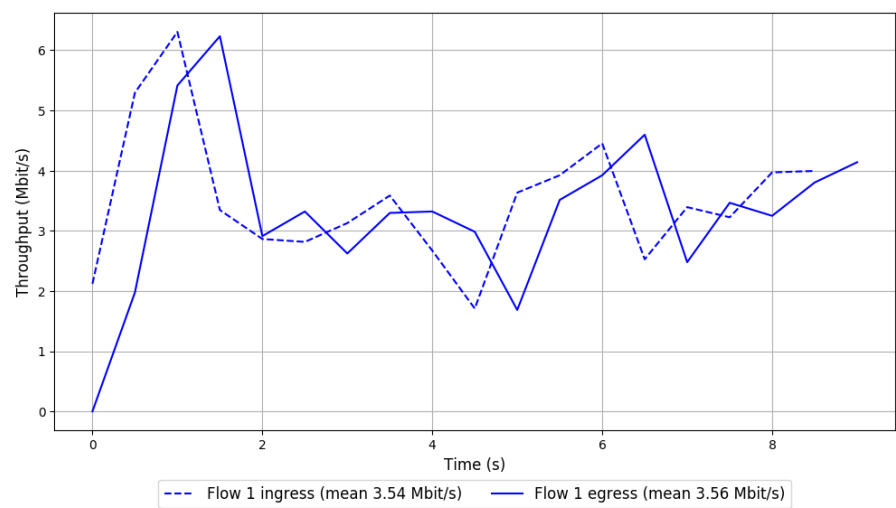
Start at: 2019-06-27 18:24:56

End at: 2019-06-27 18:25:26

Local clock offset: 1.932 ms

Remote clock offset: -3.606 ms

Run 2: Report of Copa — Data Link



Run 3: Statistics of Copa

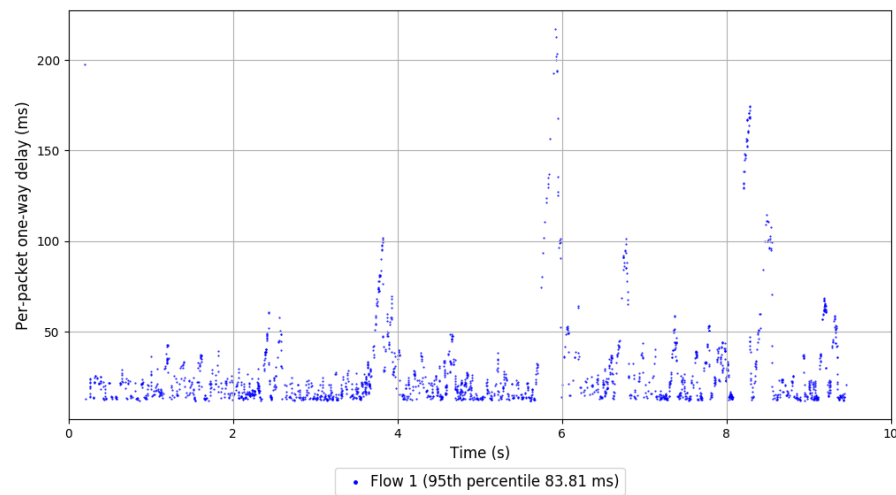
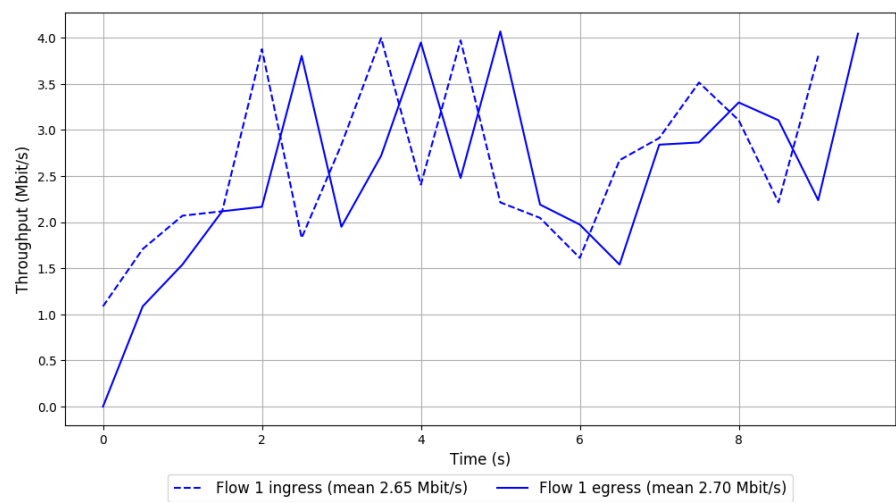
Start at: 2019-06-27 18:52:02

End at: 2019-06-27 18:52:32

Local clock offset: 1.052 ms

Remote clock offset: -0.813 ms

Run 3: Report of Copa — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2019-06-27 17:56:36

End at: 2019-06-27 17:57:06

Local clock offset: 2.163 ms

Remote clock offset: 0.422 ms

Below is generated by plot.py at 2019-06-27 19:03:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 12.02 Mbit/s

95th percentile per-packet one-way delay: 184.227 ms

Loss rate: 0.29%

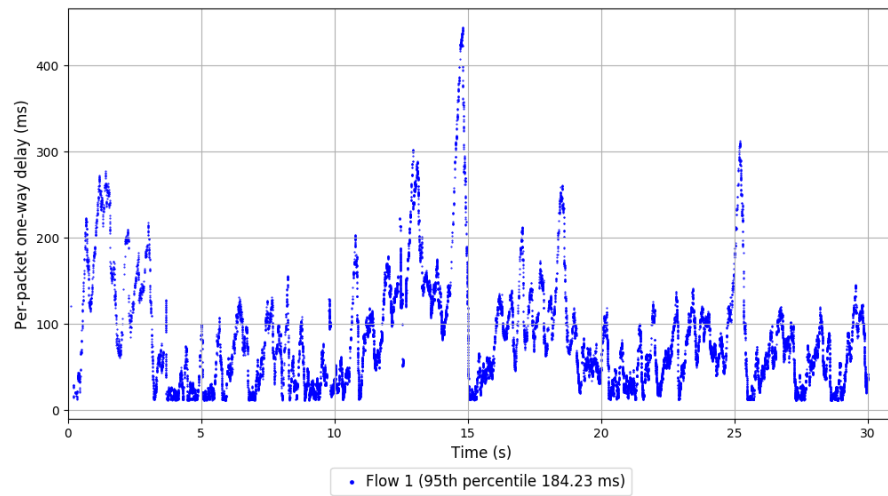
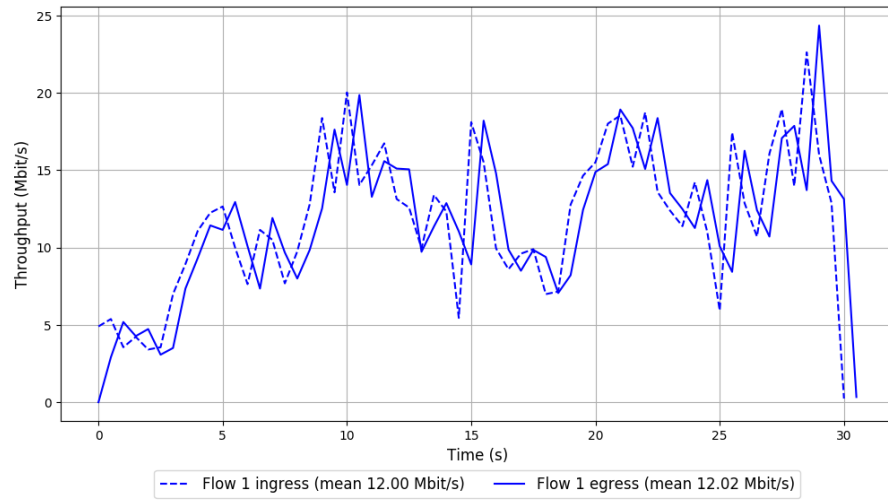
-- Flow 1:

Average throughput: 12.02 Mbit/s

95th percentile per-packet one-way delay: 184.227 ms

Loss rate: 0.29%

Run 1: Report of TCP Cubic — Data Link

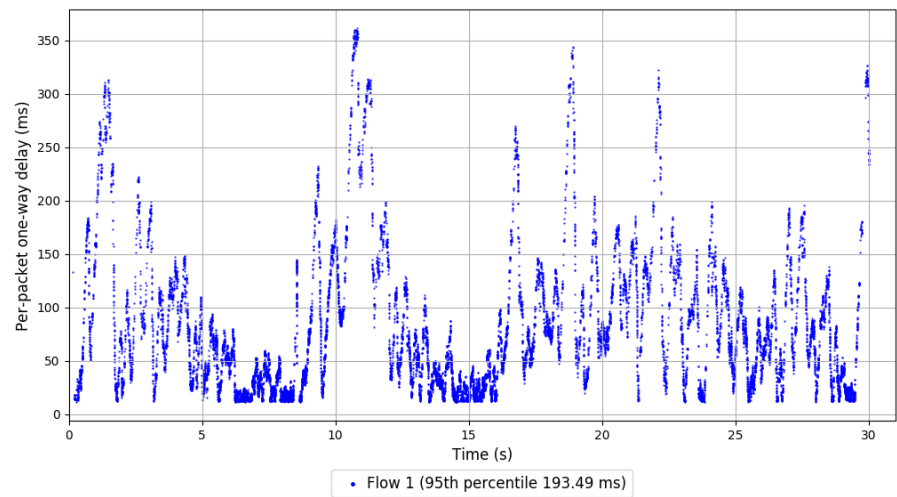
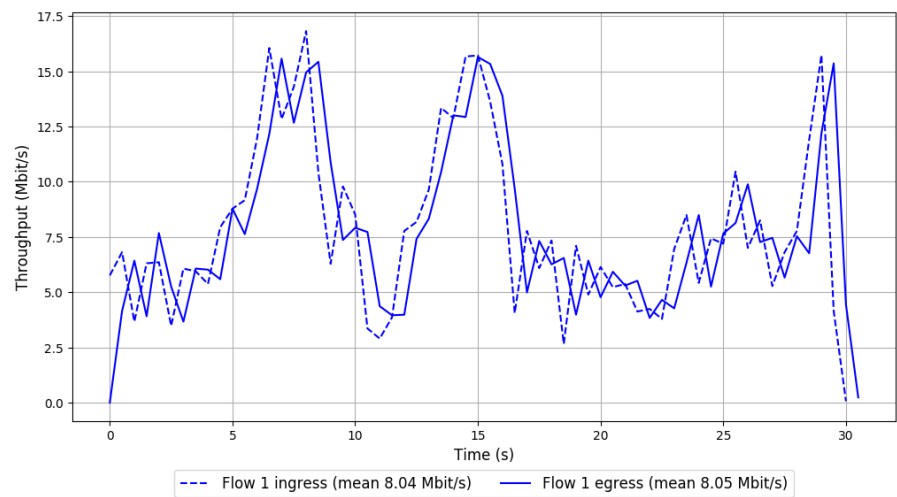


Run 2: Statistics of TCP Cubic

Start at: 2019-06-27 18:23:42
End at: 2019-06-27 18:24:12
Local clock offset: 2.191 ms
Remote clock offset: -3.425 ms

Below is generated by plot.py at 2019-06-27 19:03:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 8.05 Mbit/s
95th percentile per-packet one-way delay: 193.485 ms
Loss rate: 0.25%
-- Flow 1:
Average throughput: 8.05 Mbit/s
95th percentile per-packet one-way delay: 193.485 ms
Loss rate: 0.25%

Run 2: Report of TCP Cubic — Data Link

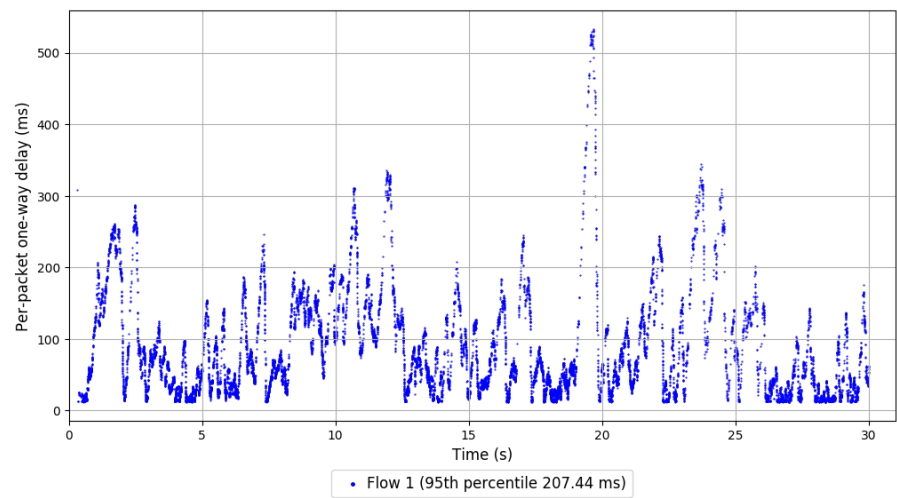
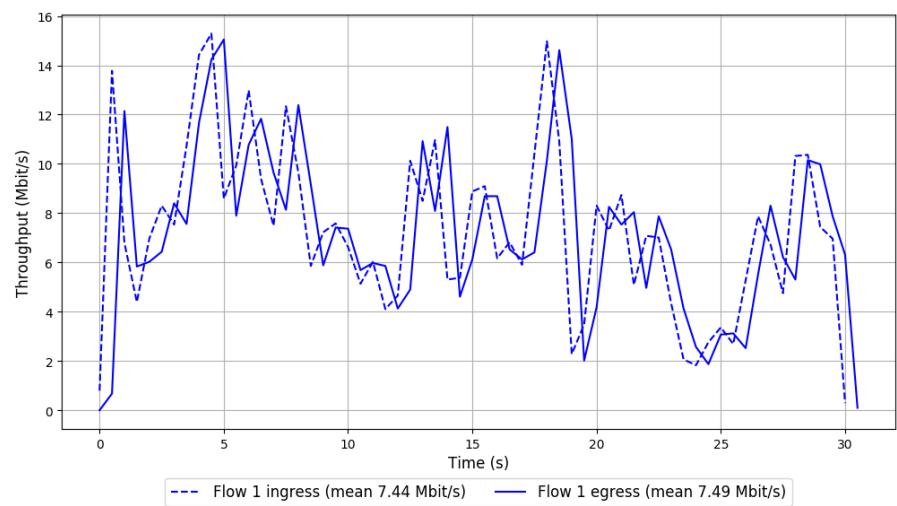


Run 3: Statistics of TCP Cubic

Start at: 2019-06-27 18:50:48
End at: 2019-06-27 18:51:18
Local clock offset: 0.615 ms
Remote clock offset: -0.892 ms

Below is generated by plot.py at 2019-06-27 19:03:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 7.49 Mbit/s
95th percentile per-packet one-way delay: 207.435 ms
Loss rate: 0.31%
-- Flow 1:
Average throughput: 7.49 Mbit/s
95th percentile per-packet one-way delay: 207.435 ms
Loss rate: 0.31%

Run 3: Report of TCP Cubic — Data Link



Run 1: Statistics of FillP

Start at: 2019-06-27 18:05:13

End at: 2019-06-27 18:05:43

Local clock offset: 3.166 ms

Remote clock offset: 0.064 ms

Below is generated by plot.py at 2019-06-27 19:04:05

Datalink statistics

-- Total of 1 flow:

Average throughput: 13.27 Mbit/s

95th percentile per-packet one-way delay: 497.422 ms

Loss rate: 1.35%

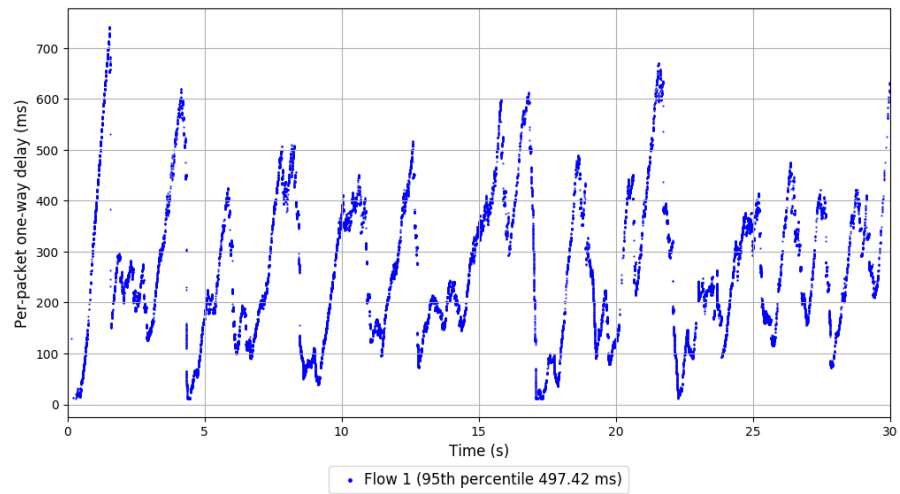
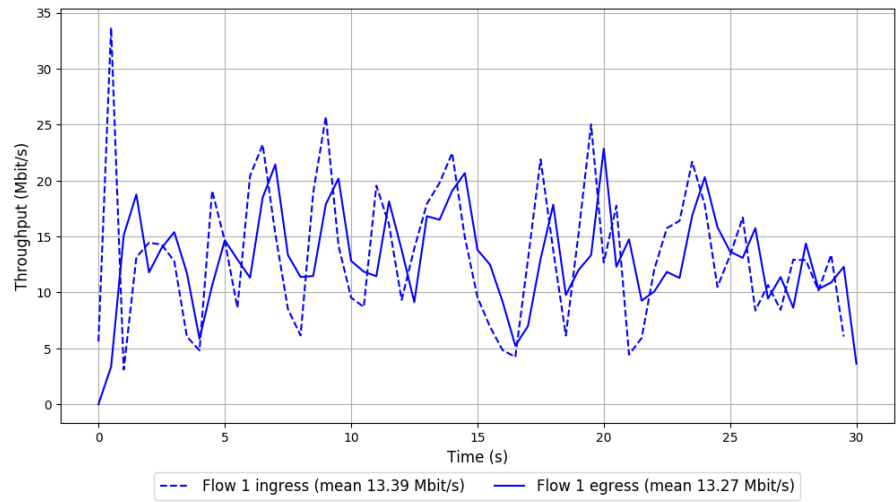
-- Flow 1:

Average throughput: 13.27 Mbit/s

95th percentile per-packet one-way delay: 497.422 ms

Loss rate: 1.35%

Run 1: Report of FillP — Data Link

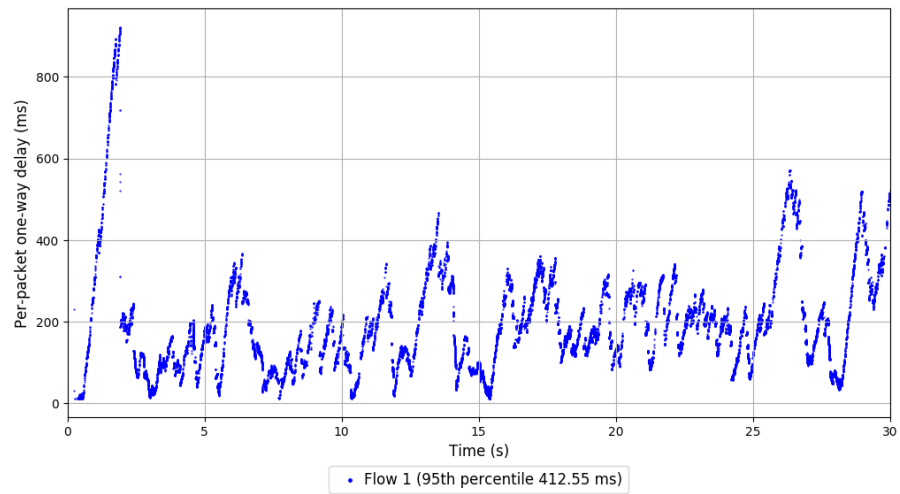
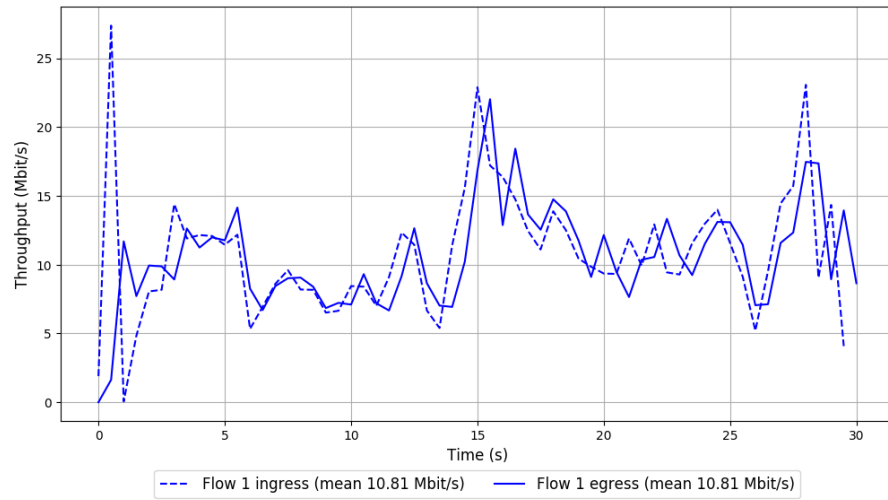


Run 2: Statistics of FillP

Start at: 2019-06-27 18:32:20
End at: 2019-06-27 18:32:50
Local clock offset: 0.804 ms
Remote clock offset: -4.054 ms

Below is generated by plot.py at 2019-06-27 19:04:05
Datalink statistics
-- Total of 1 flow:
Average throughput: 10.81 Mbit/s
95th percentile per-packet one-way delay: 412.552 ms
Loss rate: 0.82%
-- Flow 1:
Average throughput: 10.81 Mbit/s
95th percentile per-packet one-way delay: 412.552 ms
Loss rate: 0.82%

Run 2: Report of FillP — Data Link

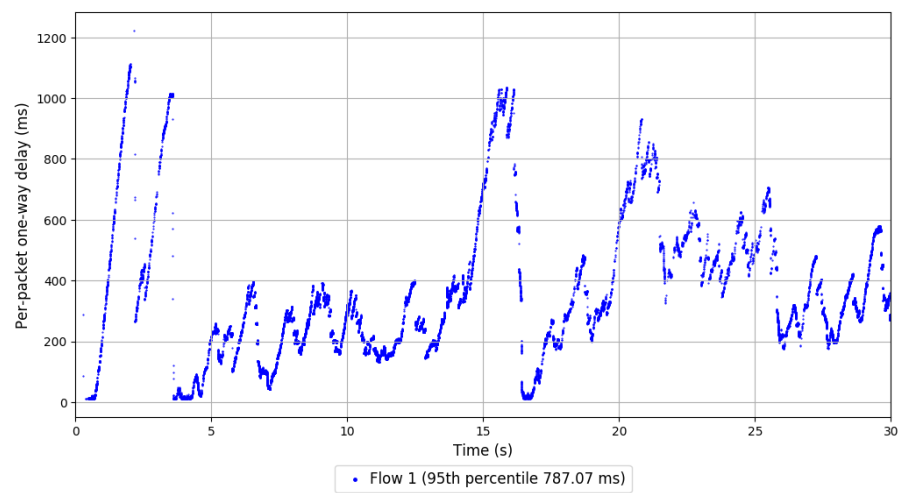
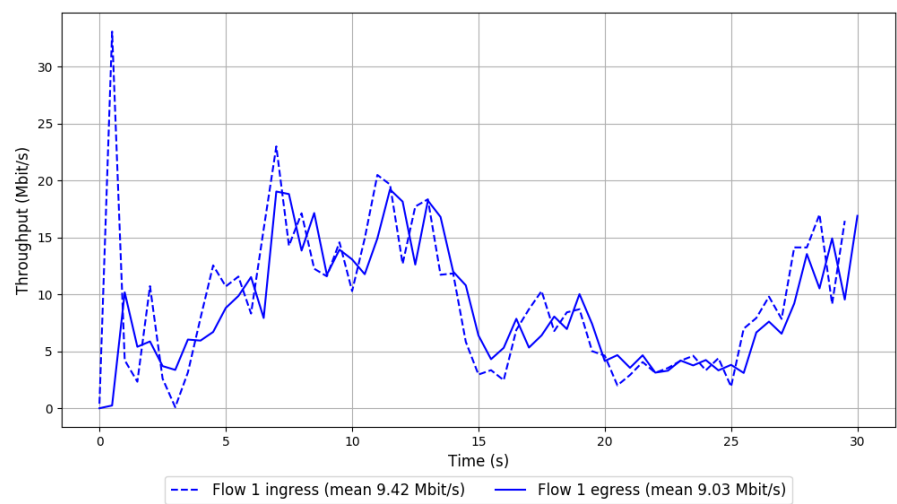


Run 3: Statistics of FillP

Start at: 2019-06-27 18:59:25
End at: 2019-06-27 18:59:55
Local clock offset: 2.389 ms
Remote clock offset: -0.196 ms

Below is generated by plot.py at 2019-06-27 19:04:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 9.03 Mbit/s
95th percentile per-packet one-way delay: 787.065 ms
Loss rate: 5.02%
-- Flow 1:
Average throughput: 9.03 Mbit/s
95th percentile per-packet one-way delay: 787.065 ms
Loss rate: 5.02%

Run 3: Report of FillP — Data Link



Run 1: Statistics of FillP-Sheep

Start at: 2019-06-27 17:52:54

End at: 2019-06-27 17:53:24

Local clock offset: 1.426 ms

Remote clock offset: 0.373 ms

Below is generated by plot.py at 2019-06-27 19:04:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 9.35 Mbit/s

95th percentile per-packet one-way delay: 249.609 ms

Loss rate: 0.23%

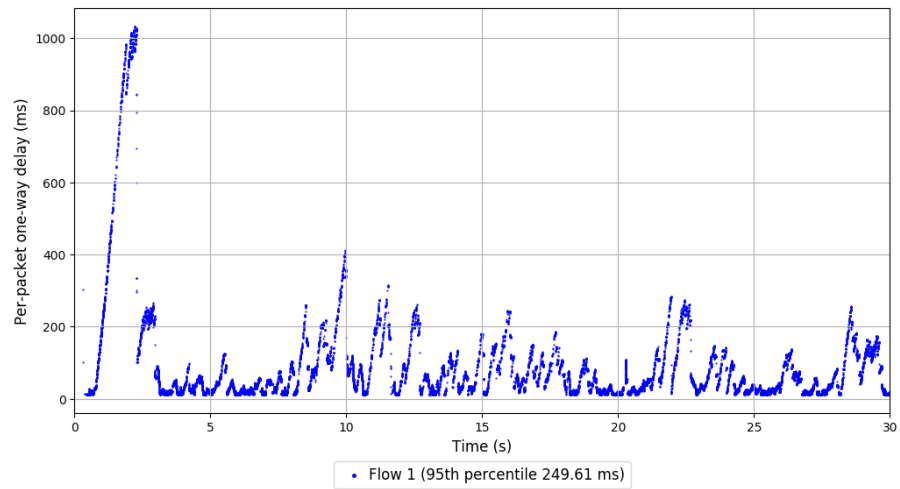
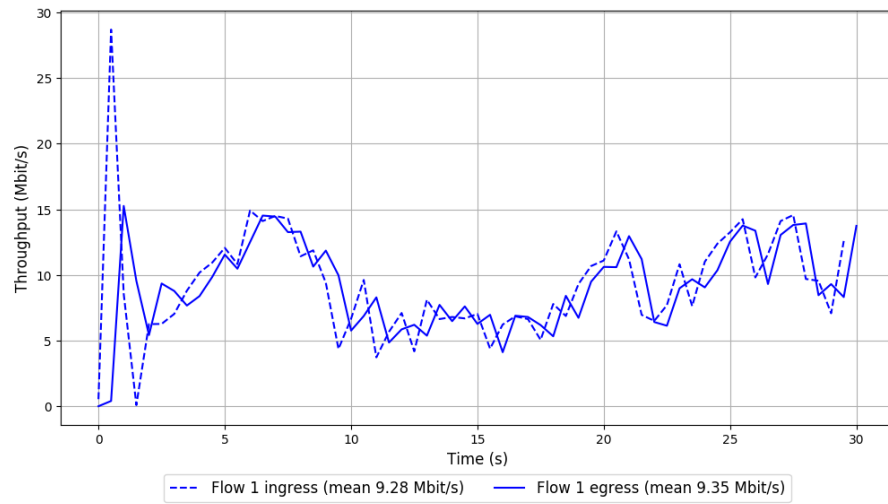
-- Flow 1:

Average throughput: 9.35 Mbit/s

95th percentile per-packet one-way delay: 249.609 ms

Loss rate: 0.23%

Run 1: Report of FillP-Sheep — Data Link

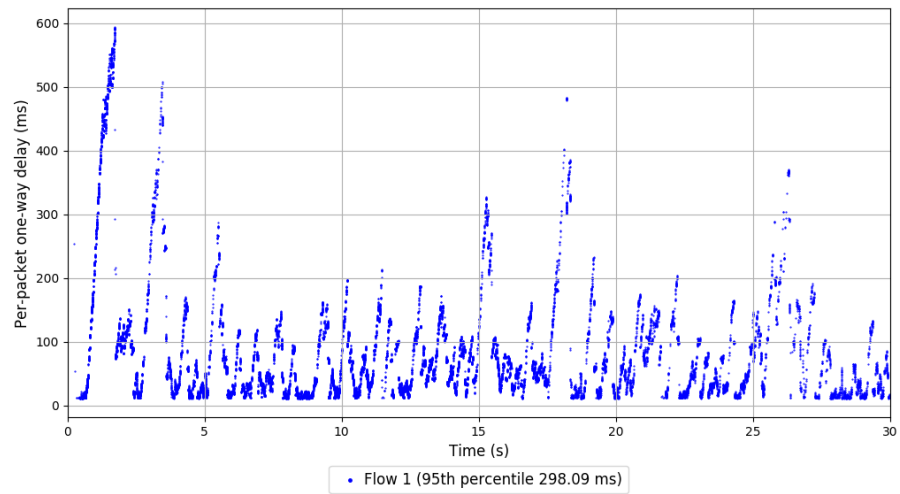
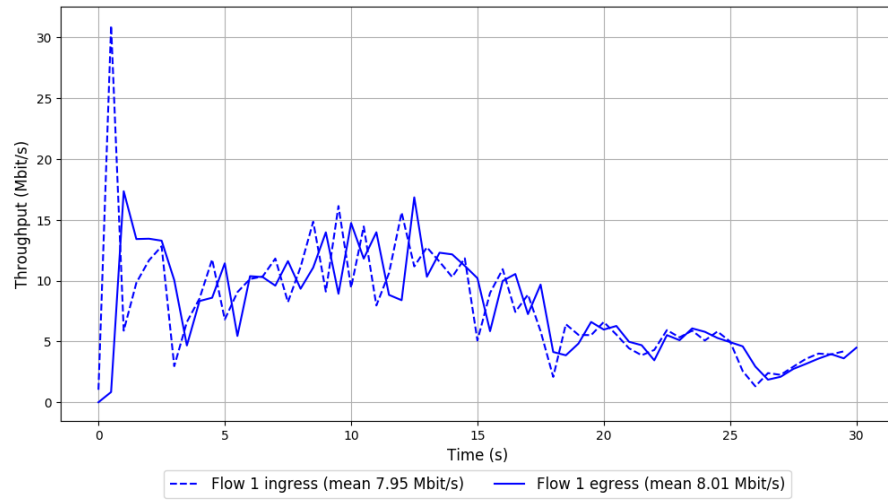


Run 2: Statistics of FillP-Sheep

Start at: 2019-06-27 18:20:00
End at: 2019-06-27 18:20:30
Local clock offset: 3.36 ms
Remote clock offset: -3.152 ms

Below is generated by plot.py at 2019-06-27 19:04:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 8.01 Mbit/s
95th percentile per-packet one-way delay: 298.092 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 8.01 Mbit/s
95th percentile per-packet one-way delay: 298.092 ms
Loss rate: 0.07%

Run 2: Report of FillP-Sheep — Data Link

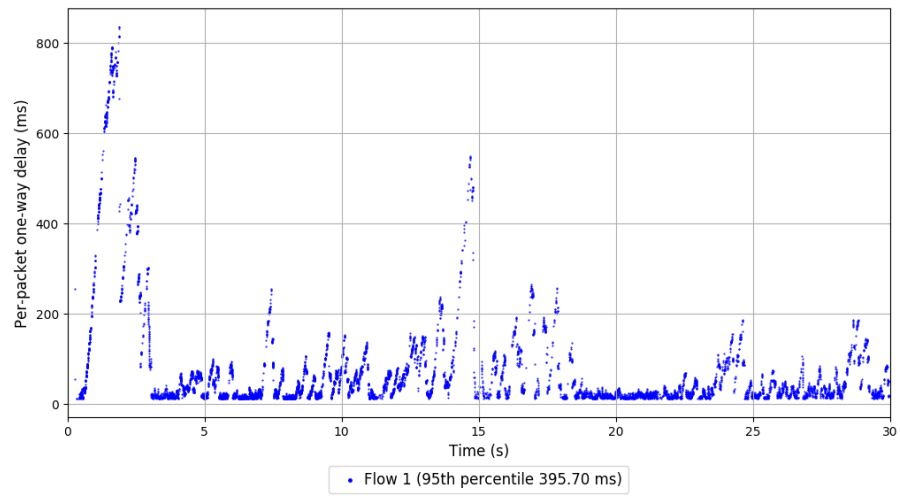
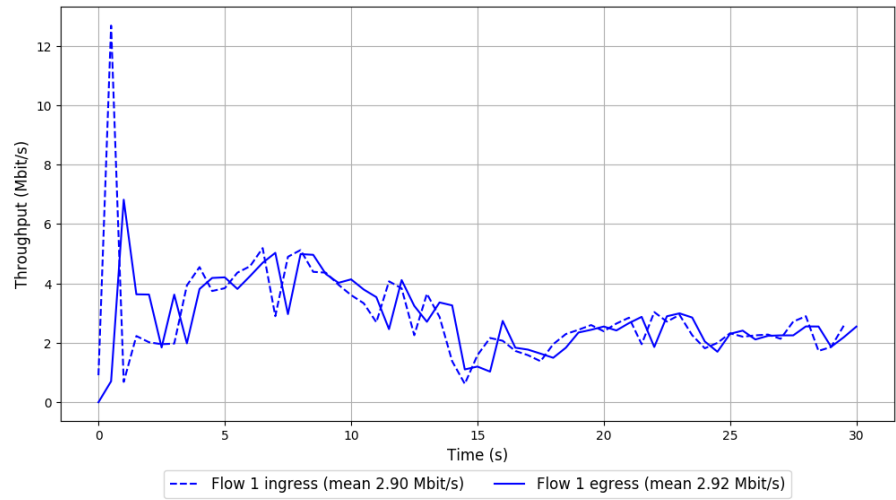


Run 3: Statistics of FillP-Sheep

Start at: 2019-06-27 18:47:06
End at: 2019-06-27 18:47:36
Local clock offset: -0.091 ms
Remote clock offset: -1.522 ms

Below is generated by plot.py at 2019-06-27 19:04:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.92 Mbit/s
95th percentile per-packet one-way delay: 395.698 ms
Loss rate: 0.18%
-- Flow 1:
Average throughput: 2.92 Mbit/s
95th percentile per-packet one-way delay: 395.698 ms
Loss rate: 0.18%

Run 3: Report of FillP-Sheep — Data Link

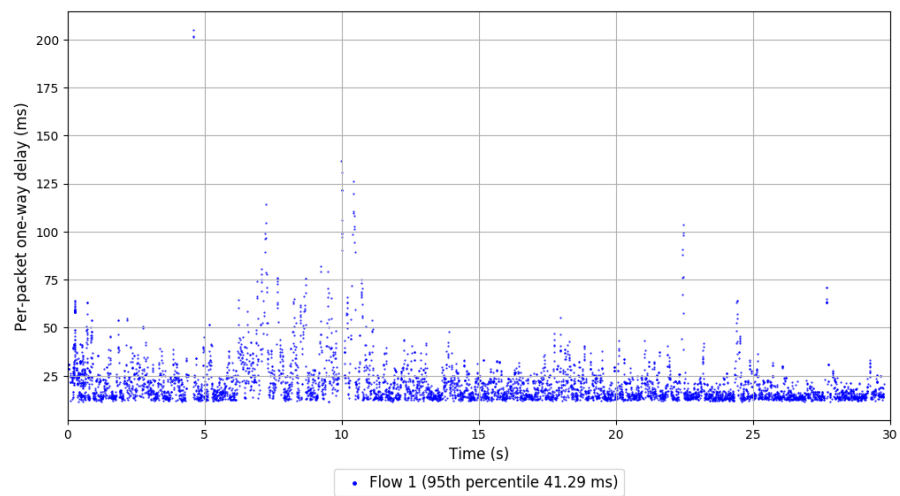
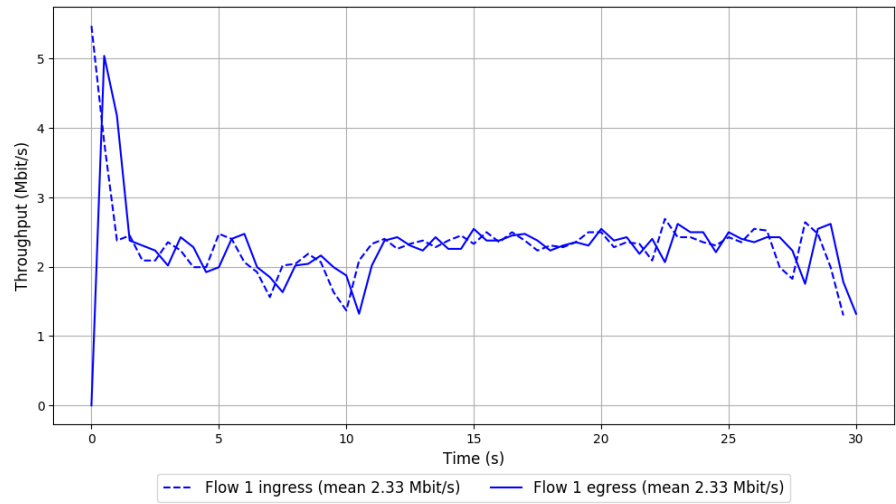


```
Run 1: Statistics of Indigo

Start at: 2019-06-27 17:50:26
End at: 2019-06-27 17:50:56
Local clock offset: 0.799 ms
Remote clock offset: 0.36 ms

# Below is generated by plot.py at 2019-06-27 19:04:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.33 Mbit/s
95th percentile per-packet one-way delay: 41.289 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 2.33 Mbit/s
95th percentile per-packet one-way delay: 41.289 ms
Loss rate: 0.16%
```

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2019-06-27 18:17:32

End at: 2019-06-27 18:18:02

Local clock offset: 3.972 ms

Remote clock offset: -2.775 ms

Below is generated by plot.py at 2019-06-27 19:04:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.23 Mbit/s

95th percentile per-packet one-way delay: 65.278 ms

Loss rate: 0.04%

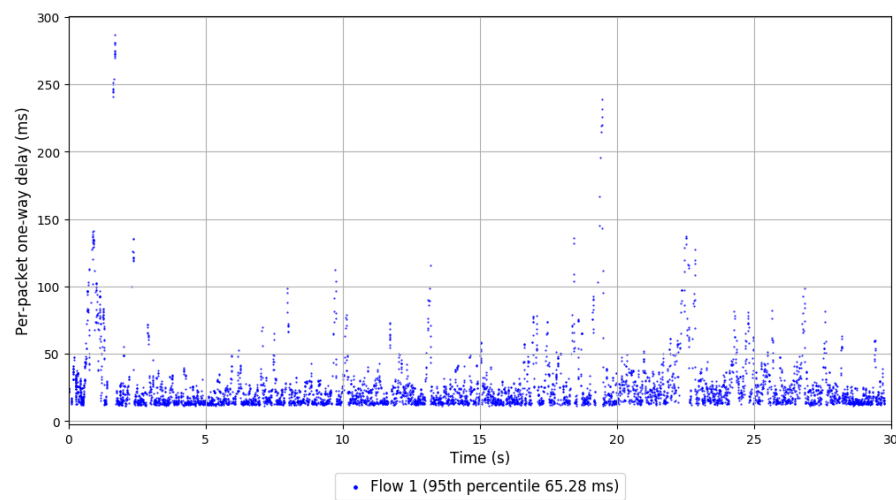
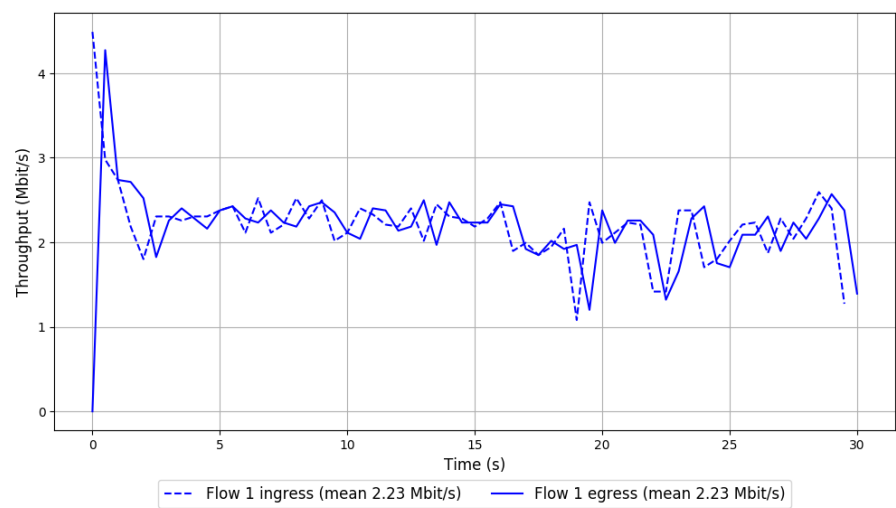
-- Flow 1:

Average throughput: 2.23 Mbit/s

95th percentile per-packet one-way delay: 65.278 ms

Loss rate: 0.04%

Run 2: Report of Indigo — Data Link

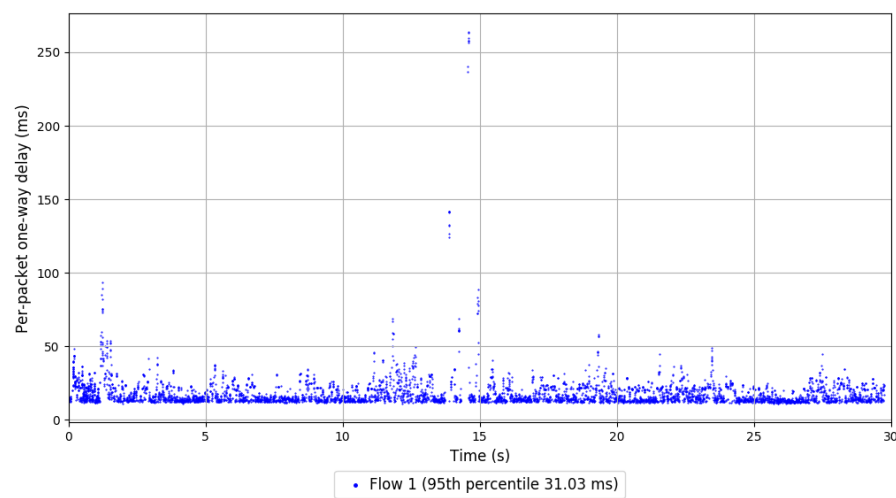
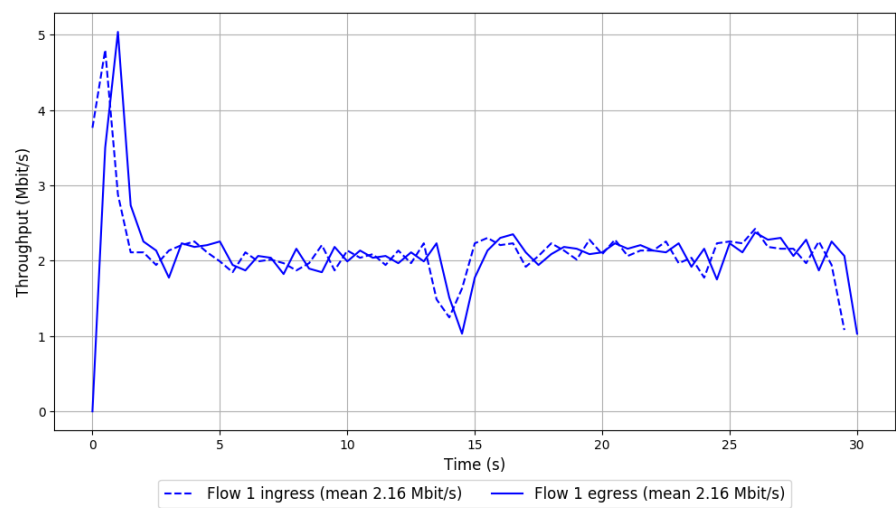


Run 3: Statistics of Indigo

Start at: 2019-06-27 18:44:38
End at: 2019-06-27 18:45:08
Local clock offset: -0.01 ms
Remote clock offset: -2.023 ms

Below is generated by plot.py at 2019-06-27 19:04:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.16 Mbit/s
95th percentile per-packet one-way delay: 31.032 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 2.16 Mbit/s
95th percentile per-packet one-way delay: 31.032 ms
Loss rate: 0.06%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of Indigo-MusesC3

Start at: 2019-06-27 18:00:18

End at: 2019-06-27 18:00:48

Local clock offset: 2.712 ms

Remote clock offset: 0.451 ms

Below is generated by plot.py at 2019-06-27 19:04:13

Datalink statistics

-- Total of 1 flow:

Average throughput: 10.26 Mbit/s

95th percentile per-packet one-way delay: 105.756 ms

Loss rate: 0.17%

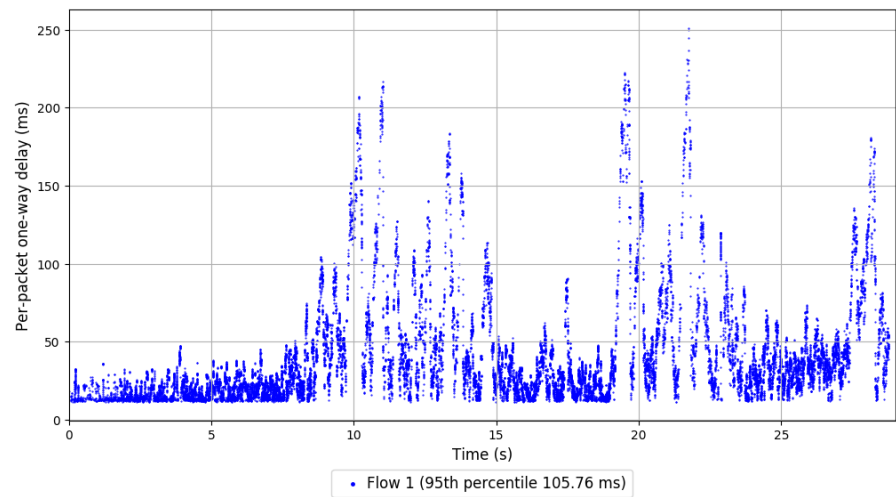
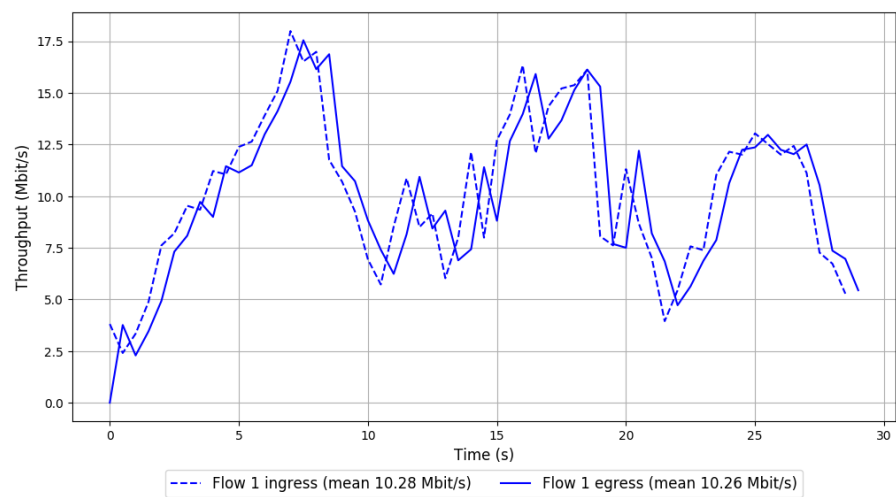
-- Flow 1:

Average throughput: 10.26 Mbit/s

95th percentile per-packet one-way delay: 105.756 ms

Loss rate: 0.17%

Run 1: Report of Indigo-MusesC3 — Data Link



Run 2: Statistics of Indigo-MusesC3

Start at: 2019-06-27 18:27:24

End at: 2019-06-27 18:27:54

Local clock offset: 1.433 ms

Remote clock offset: -3.741 ms

Below is generated by plot.py at 2019-06-27 19:04:13

Datalink statistics

-- Total of 1 flow:

Average throughput: 8.30 Mbit/s

95th percentile per-packet one-way delay: 103.727 ms

Loss rate: 0.22%

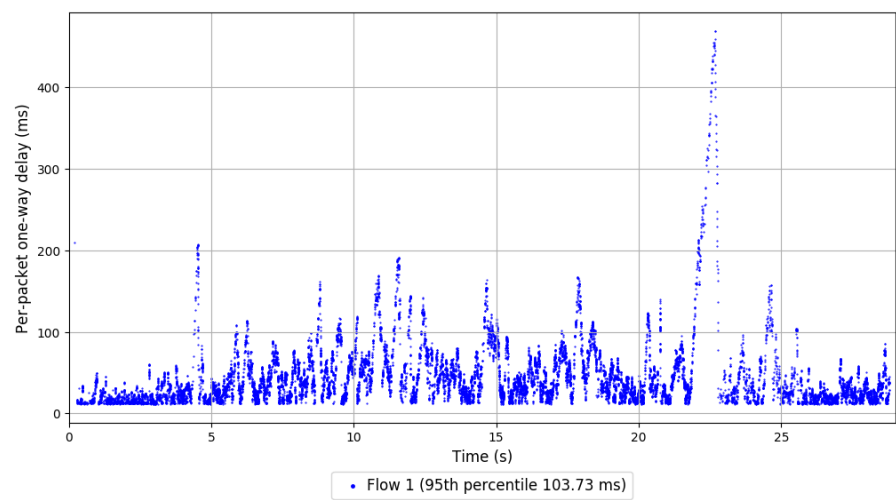
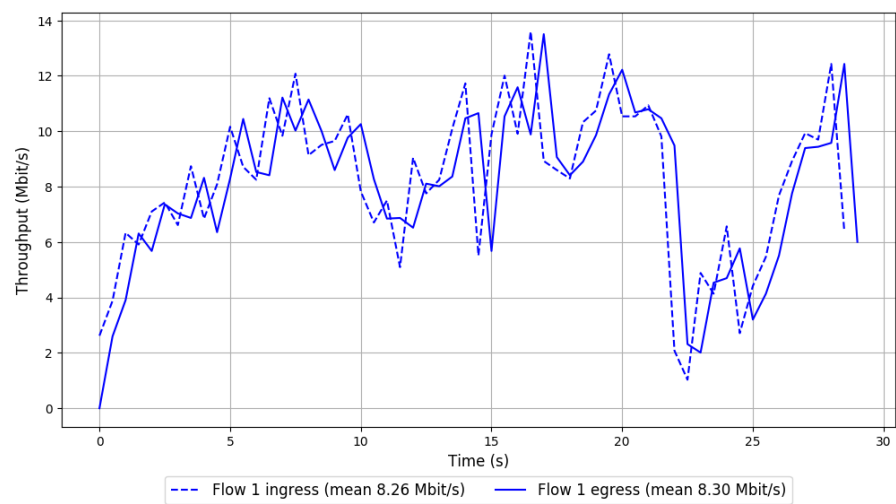
-- Flow 1:

Average throughput: 8.30 Mbit/s

95th percentile per-packet one-way delay: 103.727 ms

Loss rate: 0.22%

Run 2: Report of Indigo-MusesC3 — Data Link

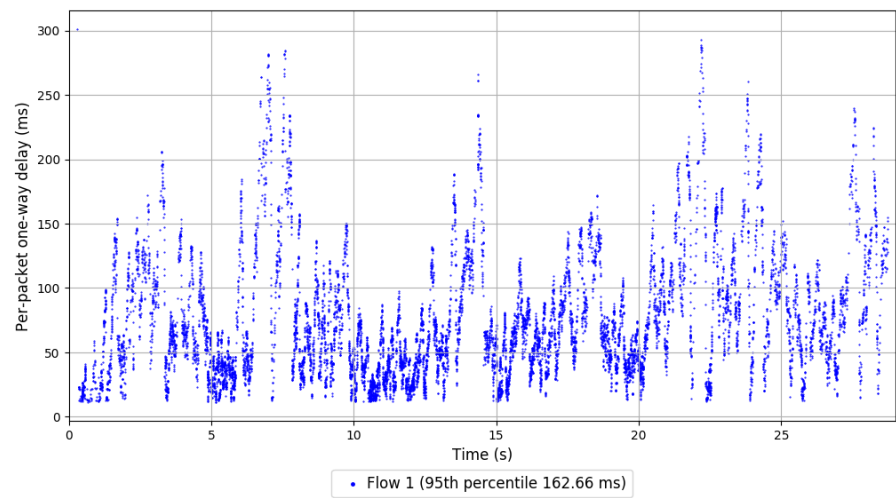
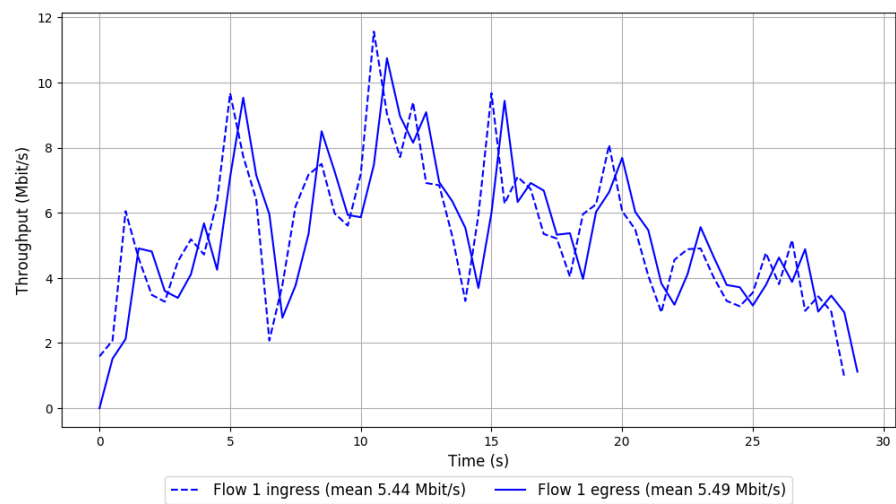


Run 3: Statistics of Indigo-MusesC3

Start at: 2019-06-27 18:54:29
End at: 2019-06-27 18:54:59
Local clock offset: 1.59 ms
Remote clock offset: -0.507 ms

Below is generated by plot.py at 2019-06-27 19:04:13
Datalink statistics
-- Total of 1 flow:
Average throughput: 5.49 Mbit/s
95th percentile per-packet one-way delay: 162.657 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 5.49 Mbit/s
95th percentile per-packet one-way delay: 162.657 ms
Loss rate: 0.23%

Run 3: Report of Indigo-MusesC3 — Data Link



Run 1: Statistics of Indigo-MusesC5

Start at: 2019-06-27 18:03:59

End at: 2019-06-27 18:04:29

Local clock offset: 3.039 ms

Remote clock offset: 0.528 ms

Below is generated by plot.py at 2019-06-27 19:04:14

Datalink statistics

-- Total of 1 flow:

Average throughput: 9.79 Mbit/s

95th percentile per-packet one-way delay: 346.418 ms

Loss rate: 0.90%

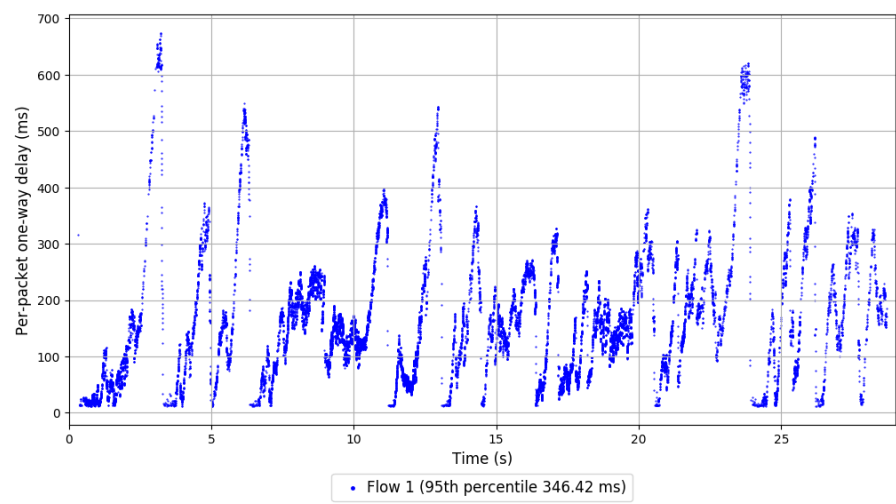
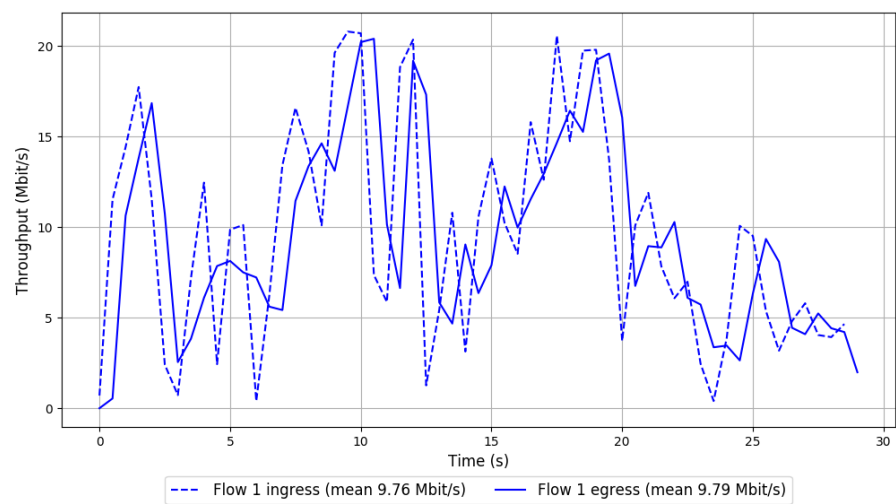
-- Flow 1:

Average throughput: 9.79 Mbit/s

95th percentile per-packet one-way delay: 346.418 ms

Loss rate: 0.90%

Run 1: Report of Indigo-MusesC5 — Data Link



Run 2: Statistics of Indigo-MusesC5

Start at: 2019-06-27 18:31:05

End at: 2019-06-27 18:31:35

Local clock offset: 0.902 ms

Remote clock offset: -4.01 ms

Below is generated by plot.py at 2019-06-27 19:04:27

Datalink statistics

-- Total of 1 flow:

Average throughput: 16.46 Mbit/s

95th percentile per-packet one-way delay: 188.843 ms

Loss rate: 0.07%

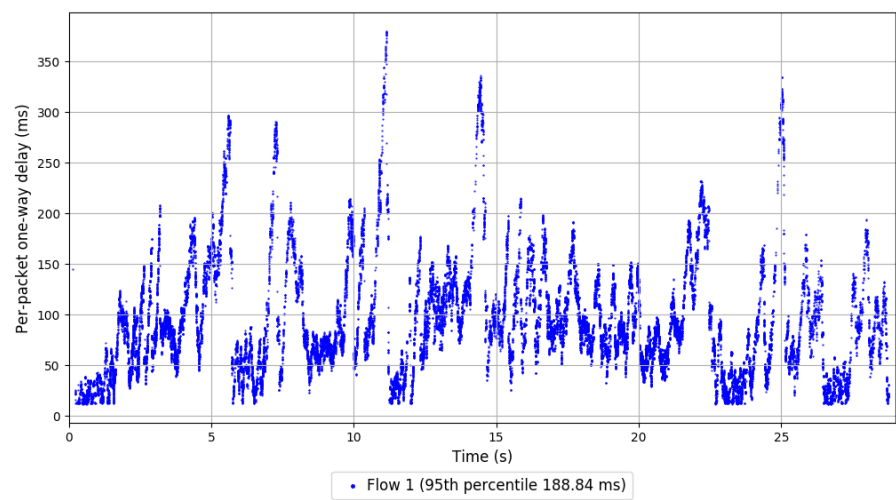
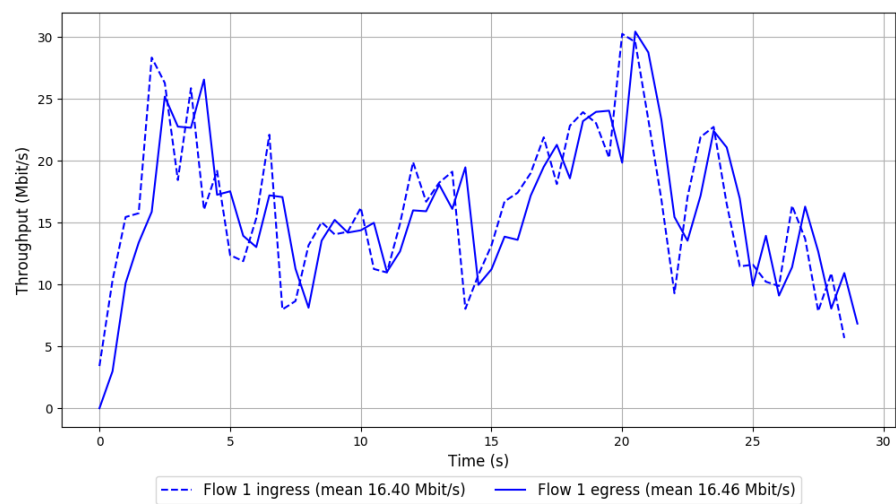
-- Flow 1:

Average throughput: 16.46 Mbit/s

95th percentile per-packet one-way delay: 188.843 ms

Loss rate: 0.07%

Run 2: Report of Indigo-MusesC5 — Data Link

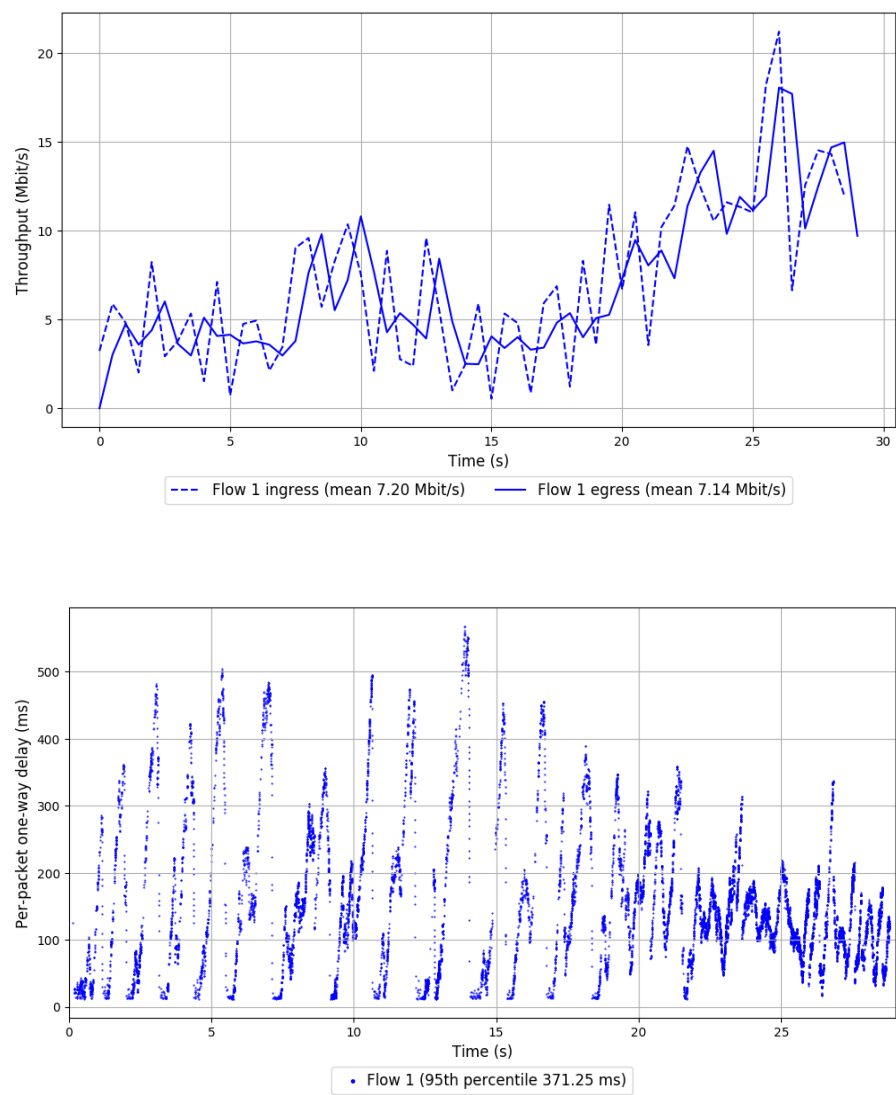


Run 3: Statistics of Indigo-MusesC5

Start at: 2019-06-27 18:58:11
End at: 2019-06-27 18:58:41
Local clock offset: 2.221 ms
Remote clock offset: -0.258 ms

Below is generated by plot.py at 2019-06-27 19:04:27
Datalink statistics
-- Total of 1 flow:
Average throughput: 7.14 Mbit/s
95th percentile per-packet one-way delay: 371.250 ms
Loss rate: 1.15%
-- Flow 1:
Average throughput: 7.14 Mbit/s
95th percentile per-packet one-way delay: 371.250 ms
Loss rate: 1.15%

Run 3: Report of Indigo-MusesC5 — Data Link



Run 1: Statistics of Indigo-MusesD

Start at: 2019-06-27 18:02:45

End at: 2019-06-27 18:03:15

Local clock offset: 2.946 ms

Remote clock offset: 0.498 ms

Below is generated by plot.py at 2019-06-27 19:04:27

Datalink statistics

-- Total of 1 flow:

Average throughput: 8.66 Mbit/s

95th percentile per-packet one-way delay: 97.746 ms

Loss rate: 0.35%

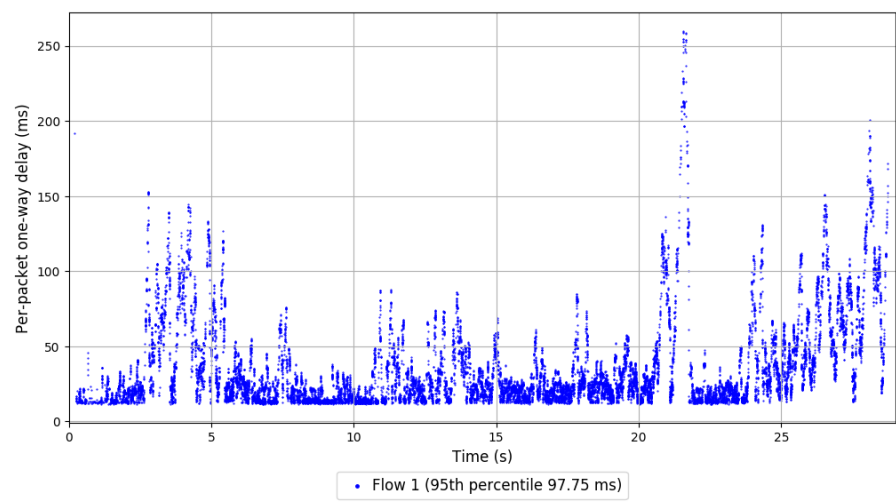
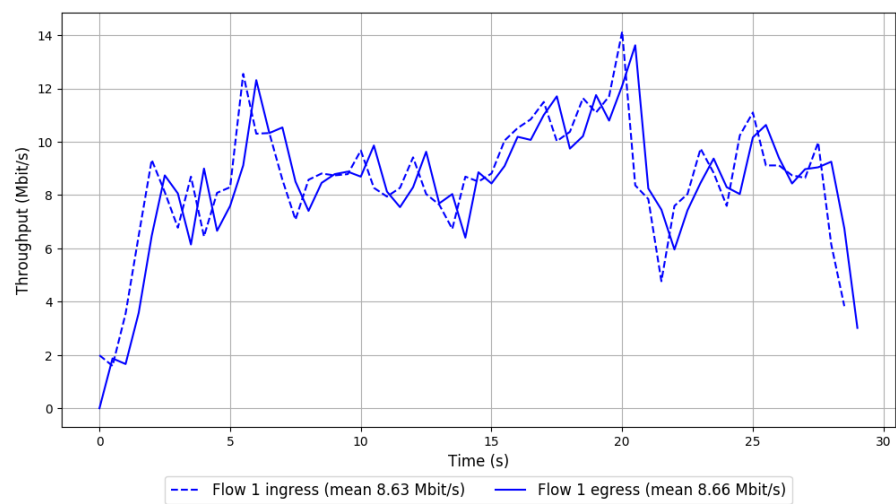
-- Flow 1:

Average throughput: 8.66 Mbit/s

95th percentile per-packet one-way delay: 97.746 ms

Loss rate: 0.35%

Run 1: Report of Indigo-MusesD — Data Link



Run 2: Statistics of Indigo-MusesD

Start at: 2019-06-27 18:29:51

End at: 2019-06-27 18:30:21

Local clock offset: 1.1 ms

Remote clock offset: -3.983 ms

Below is generated by plot.py at 2019-06-27 19:04:27

Datalink statistics

-- Total of 1 flow:

Average throughput: 10.14 Mbit/s

95th percentile per-packet one-way delay: 90.611 ms

Loss rate: 0.37%

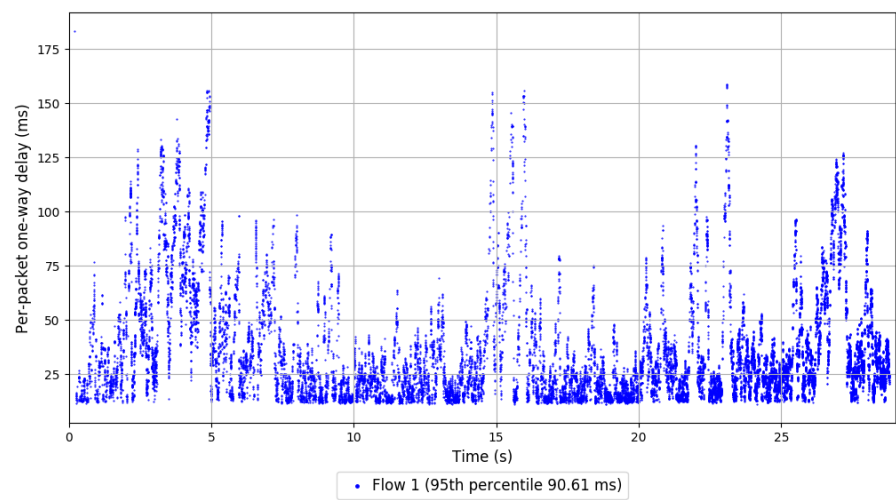
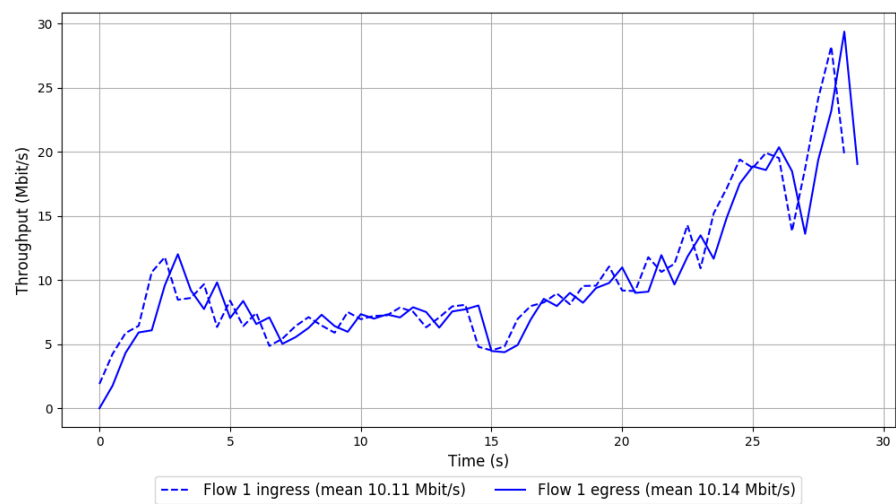
-- Flow 1:

Average throughput: 10.14 Mbit/s

95th percentile per-packet one-way delay: 90.611 ms

Loss rate: 0.37%

Run 2: Report of Indigo-MusesD — Data Link

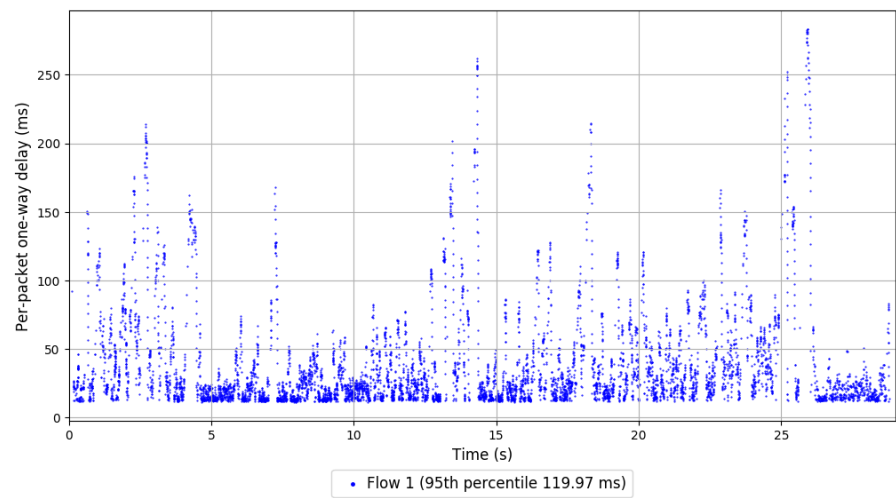
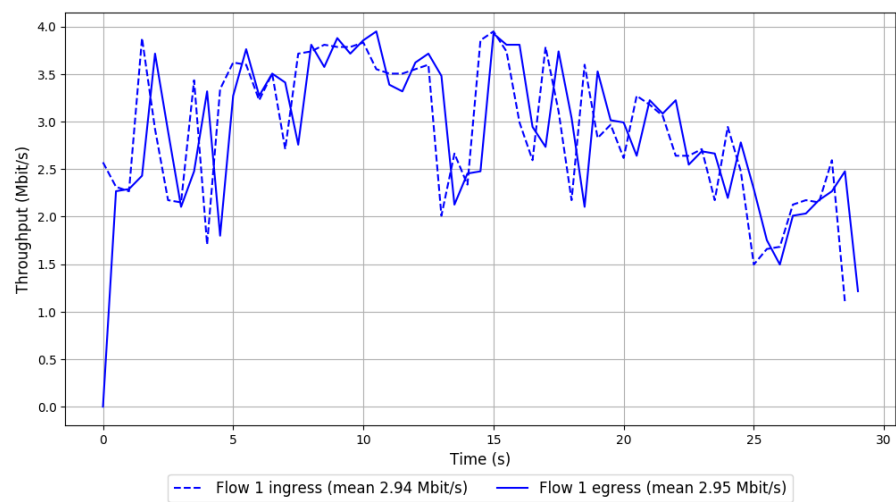


Run 3: Statistics of Indigo-MusesD

Start at: 2019-06-27 18:56:57
End at: 2019-06-27 18:57:27
Local clock offset: 2.027 ms
Remote clock offset: -0.347 ms

Below is generated by plot.py at 2019-06-27 19:04:27
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.95 Mbit/s
95th percentile per-packet one-way delay: 119.965 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 2.95 Mbit/s
95th percentile per-packet one-way delay: 119.965 ms
Loss rate: 0.03%

Run 3: Report of Indigo-MusesD — Data Link



Run 1: Statistics of Indigo-MusesT

Start at: 2019-06-27 17:43:03

End at: 2019-06-27 17:43:33

Local clock offset: 0.102 ms

Remote clock offset: 0.294 ms

Below is generated by plot.py at 2019-06-27 19:04:27

Datalink statistics

-- Total of 1 flow:

Average throughput: 6.06 Mbit/s

95th percentile per-packet one-way delay: 247.436 ms

Loss rate: 0.98%

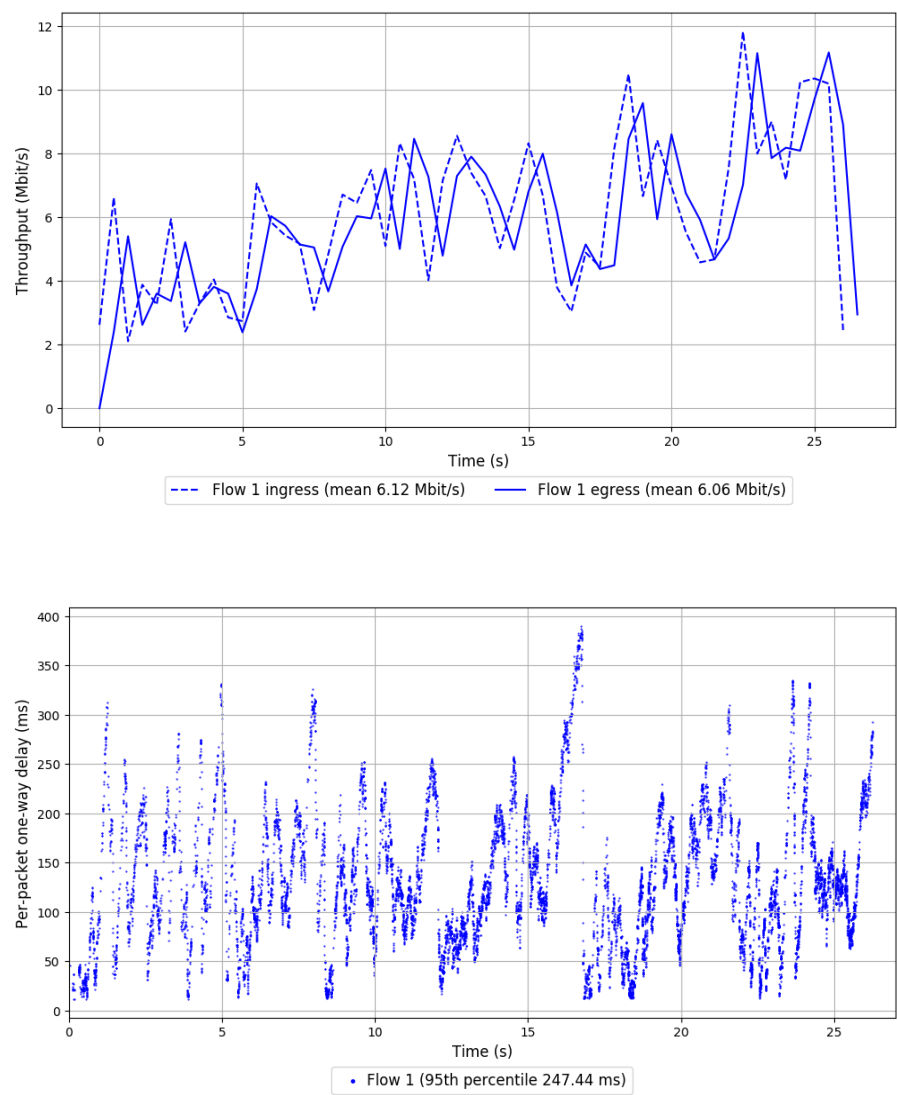
-- Flow 1:

Average throughput: 6.06 Mbit/s

95th percentile per-packet one-way delay: 247.436 ms

Loss rate: 0.98%

Run 1: Report of Indigo-MusesT — Data Link



Run 2: Statistics of Indigo-MusesT

Start at: 2019-06-27 18:10:09

End at: 2019-06-27 18:10:39

Local clock offset: 3.527 ms

Remote clock offset: -1.427 ms

Below is generated by plot.py at 2019-06-27 19:04:28

Datalink statistics

-- Total of 1 flow:

Average throughput: 10.16 Mbit/s

95th percentile per-packet one-way delay: 272.418 ms

Loss rate: 0.77%

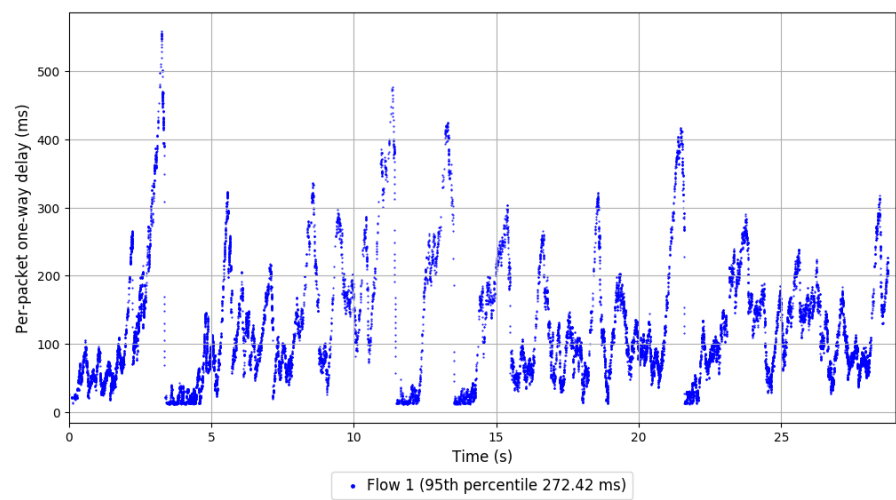
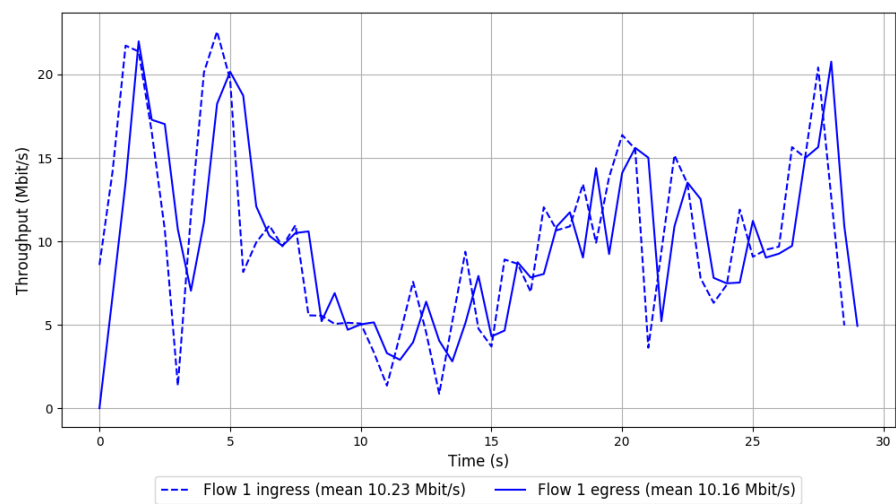
-- Flow 1:

Average throughput: 10.16 Mbit/s

95th percentile per-packet one-way delay: 272.418 ms

Loss rate: 0.77%

Run 2: Report of Indigo-MusesT — Data Link



Run 3: Statistics of Indigo-MusesT

Start at: 2019-06-27 18:37:15

End at: 2019-06-27 18:37:45

Local clock offset: 0.435 ms

Remote clock offset: -4.451 ms

Below is generated by plot.py at 2019-06-27 19:04:31

Datalink statistics

-- Total of 1 flow:

Average throughput: 12.68 Mbit/s

95th percentile per-packet one-way delay: 249.395 ms

Loss rate: 0.22%

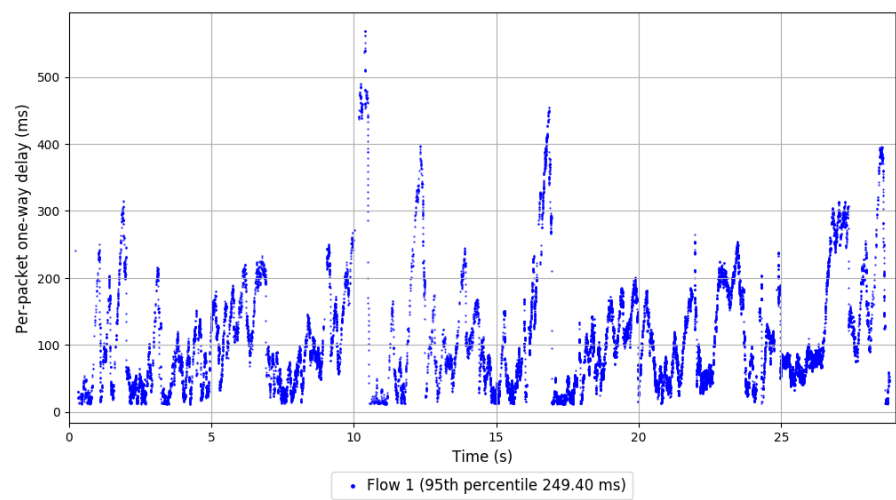
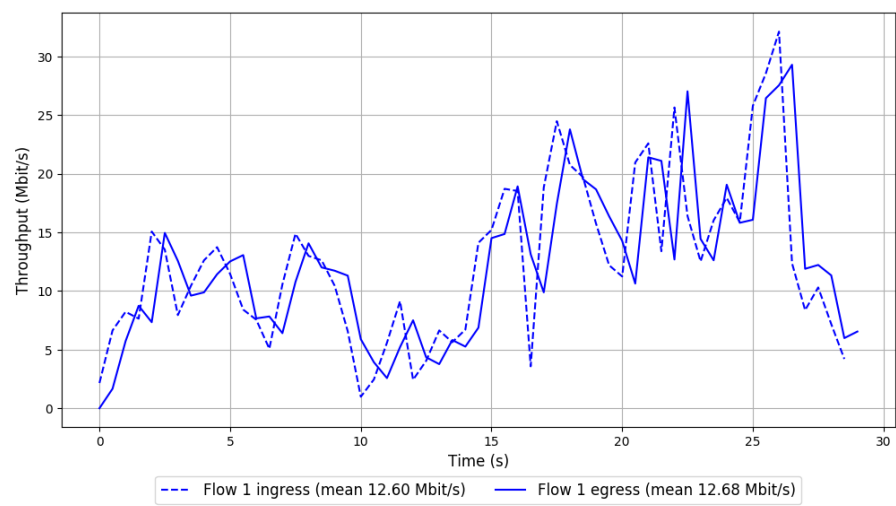
-- Flow 1:

Average throughput: 12.68 Mbit/s

95th percentile per-packet one-way delay: 249.395 ms

Loss rate: 0.22%

Run 3: Report of Indigo-MusesT — Data Link



Run 1: Statistics of LEDBAT

Start at: 2019-06-27 17:59:03

End at: 2019-06-27 17:59:33

Local clock offset: 2.58 ms

Remote clock offset: 0.485 ms

Below is generated by plot.py at 2019-06-27 19:04:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 13.08 Mbit/s

95th percentile per-packet one-way delay: 154.568 ms

Loss rate: 0.36%

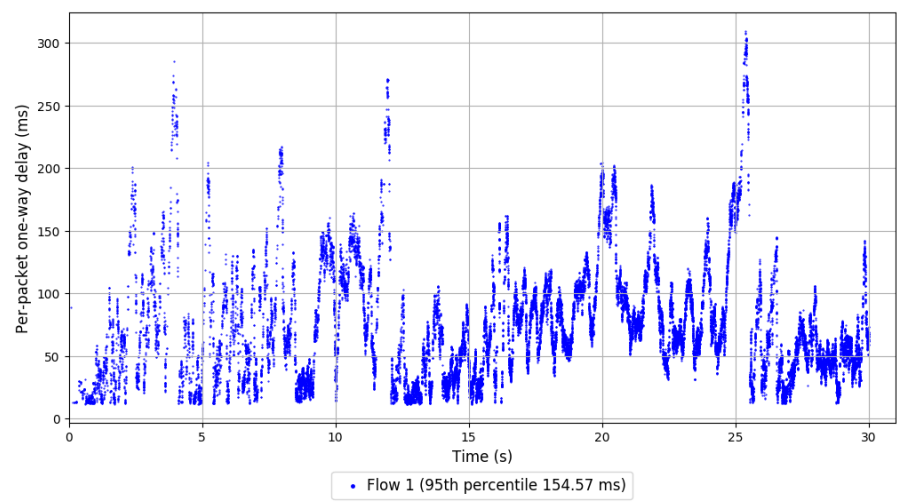
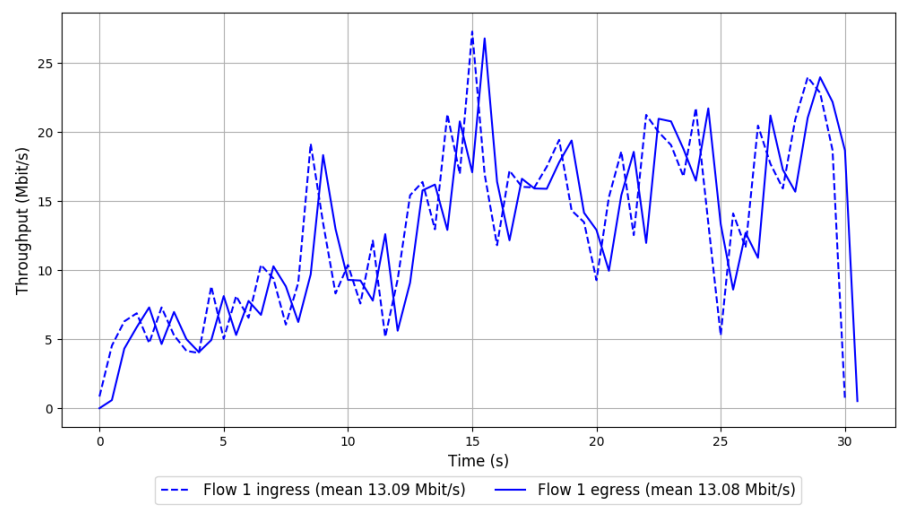
-- Flow 1:

Average throughput: 13.08 Mbit/s

95th percentile per-packet one-way delay: 154.568 ms

Loss rate: 0.36%

Run 1: Report of LEDBAT — Data Link

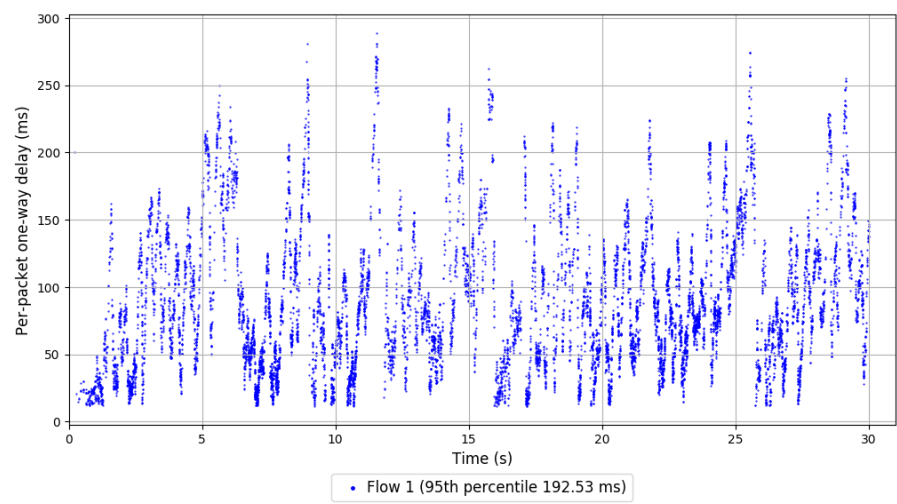
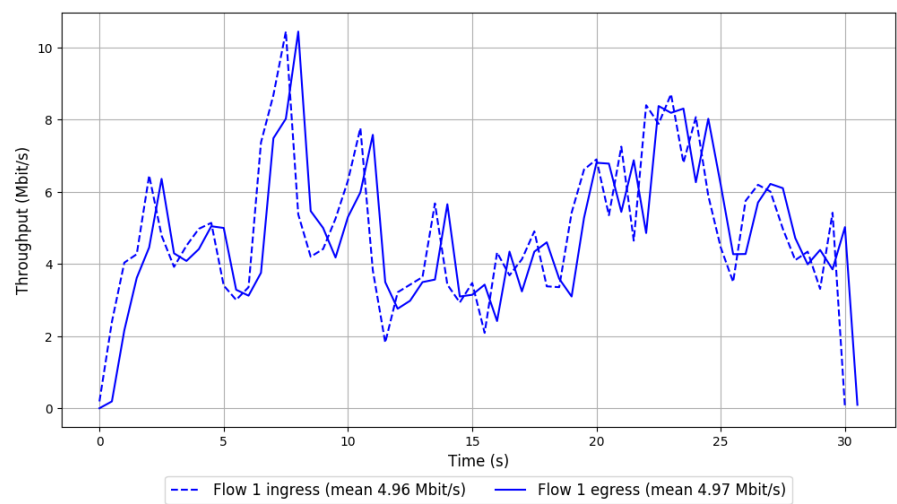


Run 2: Statistics of LEDBAT

Start at: 2019-06-27 18:26:10
End at: 2019-06-27 18:26:40
Local clock offset: 1.666 ms
Remote clock offset: -3.607 ms

Below is generated by plot.py at 2019-06-27 19:04:34
Datalink statistics
-- Total of 1 flow:
Average throughput: 4.97 Mbit/s
95th percentile per-packet one-way delay: 192.534 ms
Loss rate: 0.35%
-- Flow 1:
Average throughput: 4.97 Mbit/s
95th percentile per-packet one-way delay: 192.534 ms
Loss rate: 0.35%

Run 2: Report of LEDBAT — Data Link

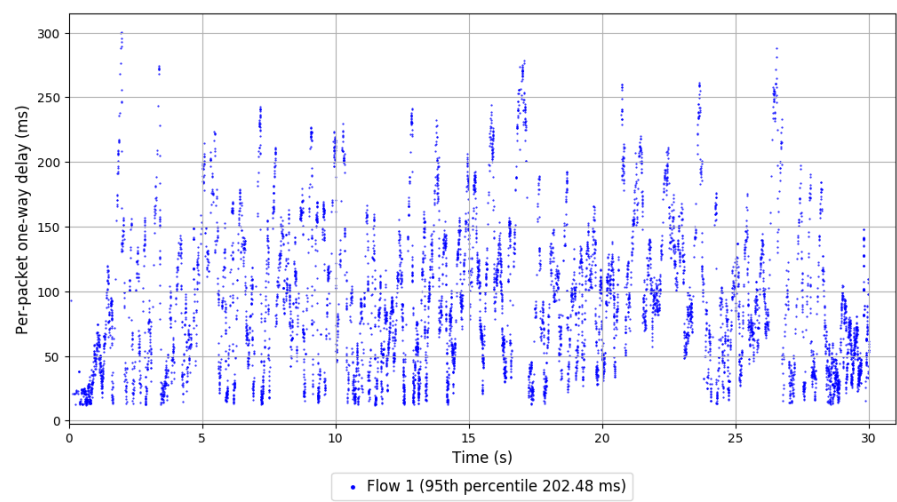
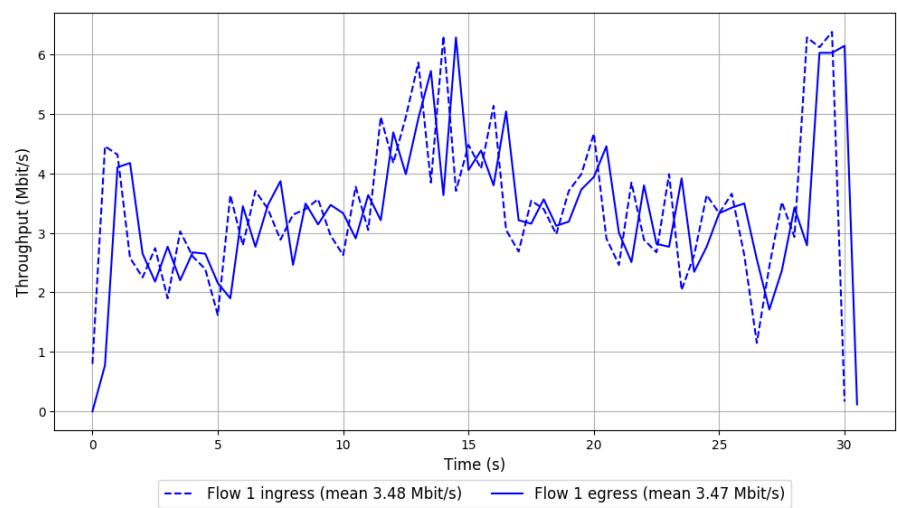


Run 3: Statistics of LEDBAT

Start at: 2019-06-27 18:53:15
End at: 2019-06-27 18:53:46
Local clock offset: 1.316 ms
Remote clock offset: -0.659 ms

Below is generated by plot.py at 2019-06-27 19:04:34
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.47 Mbit/s
95th percentile per-packet one-way delay: 202.482 ms
Loss rate: 0.61%
-- Flow 1:
Average throughput: 3.47 Mbit/s
95th percentile per-packet one-way delay: 202.482 ms
Loss rate: 0.61%

Run 3: Report of LEDBAT — Data Link

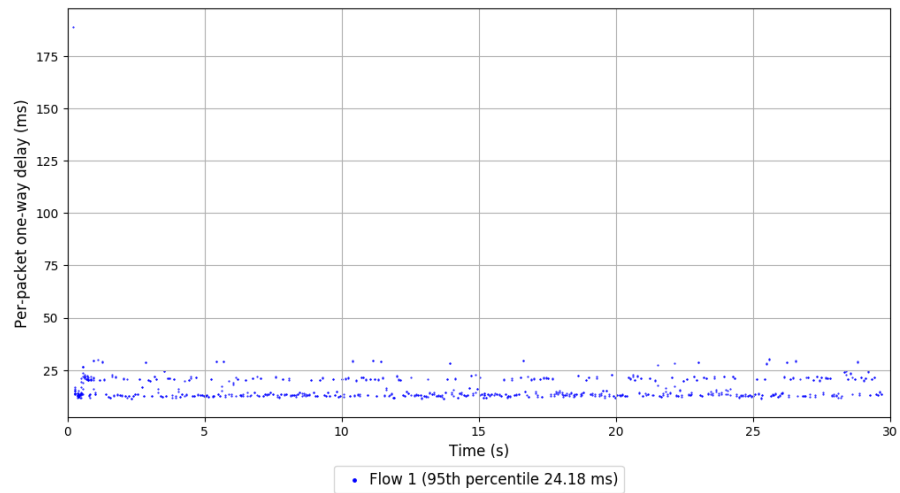
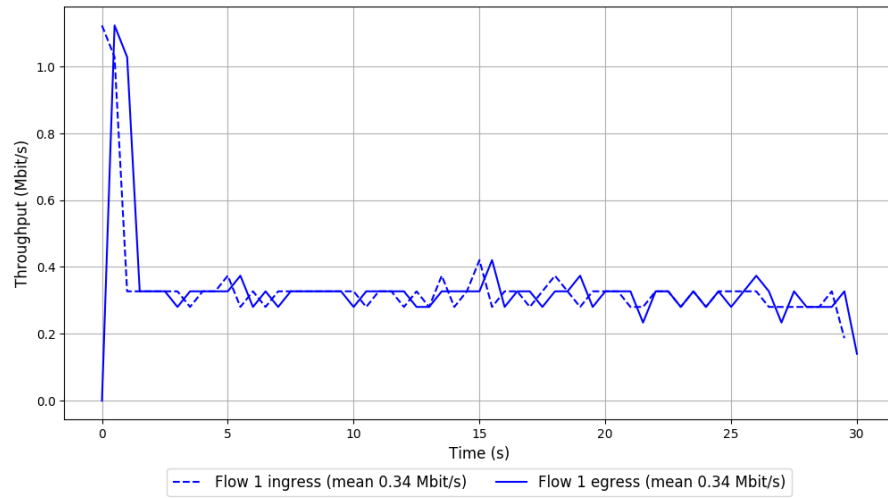


```
Run 1: Statistics of Muses\_DecisionTree

Start at: 2019-06-27 18:01:32
End at: 2019-06-27 18:02:02
Local clock offset: 2.829 ms
Remote clock offset: 0.479 ms

# Below is generated by plot.py at 2019-06-27 19:04:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 24.184 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 24.184 ms
Loss rate: 0.23%
```

Run 1: Report of Muses_DecisionTree — Data Link



Run 2: Statistics of Muses_DecisionTree

Start at: 2019-06-27 18:28:38

End at: 2019-06-27 18:29:08

Local clock offset: 1.261 ms

Remote clock offset: -3.84 ms

Below is generated by plot.py at 2019-06-27 19:04:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.31 Mbit/s

95th percentile per-packet one-way delay: 23.560 ms

Loss rate: 0.26%

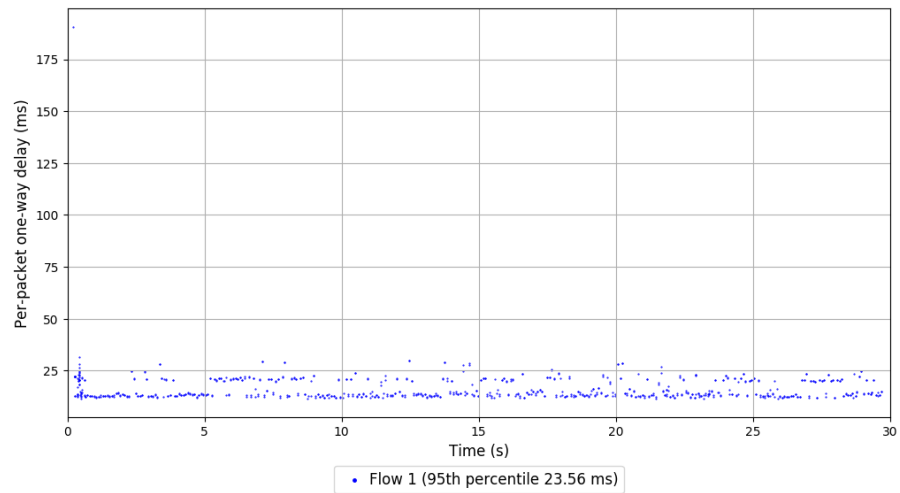
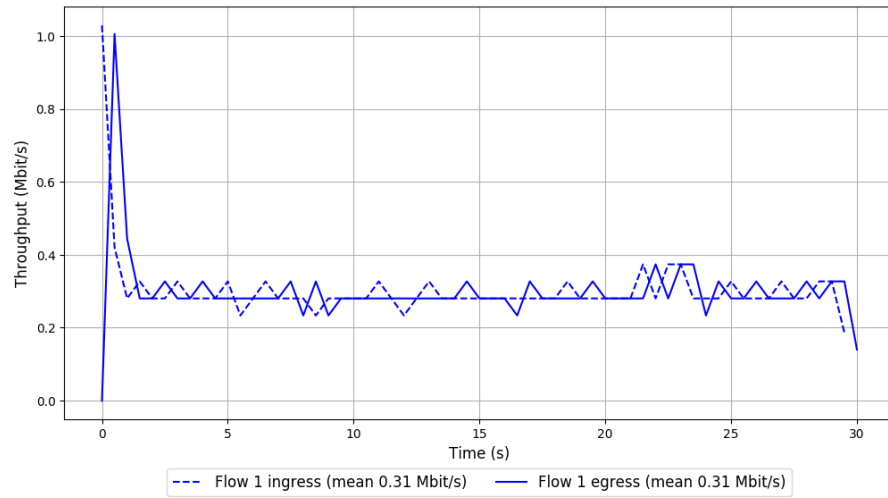
-- Flow 1:

Average throughput: 0.31 Mbit/s

95th percentile per-packet one-way delay: 23.560 ms

Loss rate: 0.26%

Run 2: Report of Muses_DecisionTree — Data Link

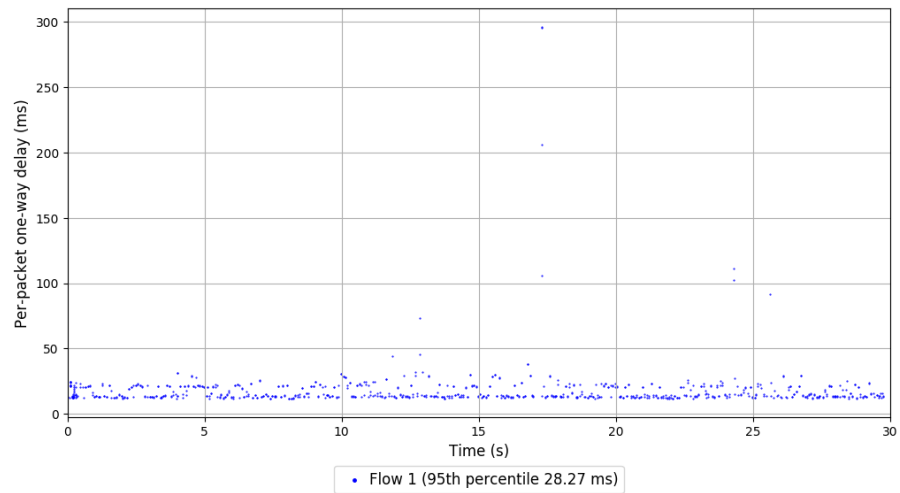
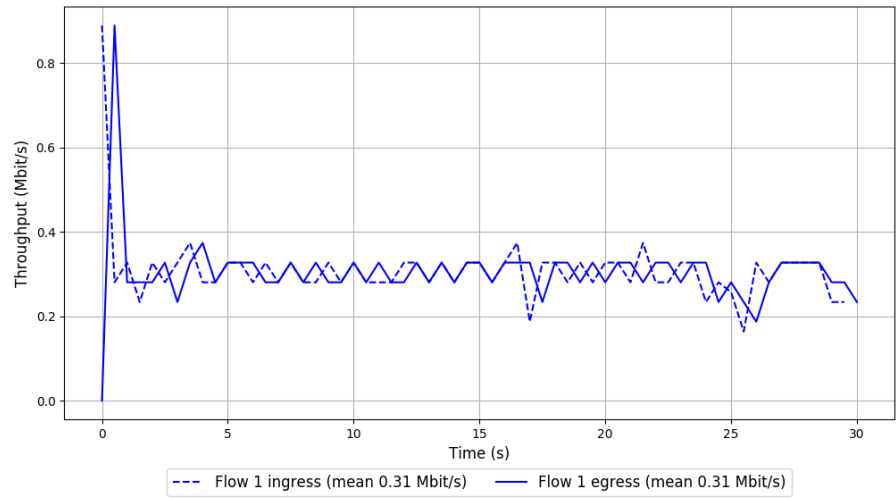


Run 3: Statistics of Muses_DecisionTree

Start at: 2019-06-27 18:55:43
End at: 2019-06-27 18:56:13
Local clock offset: 1.776 ms
Remote clock offset: -0.411 ms

Below is generated by plot.py at 2019-06-27 19:04:34
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 28.266 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 28.266 ms
Loss rate: 0.00%

Run 3: Report of Muses_DecisionTree — Data Link



Run 1: Statistics of PCC-Allegro

Start at: 2019-06-27 18:08:55

End at: 2019-06-27 18:09:25

Local clock offset: 3.433 ms

Remote clock offset: -1.137 ms

Below is generated by plot.py at 2019-06-27 19:04:35

Datalink statistics

-- Total of 1 flow:

Average throughput: 7.39 Mbit/s

95th percentile per-packet one-way delay: 1025.256 ms

Loss rate: 9.75%

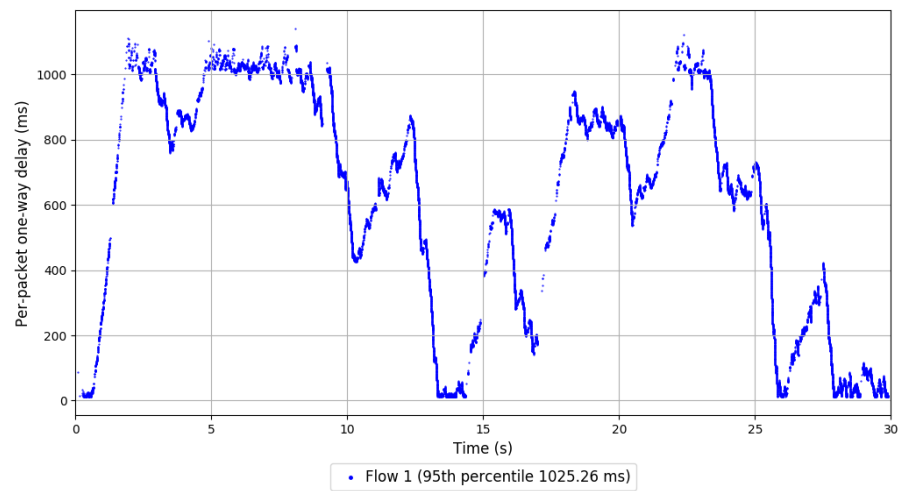
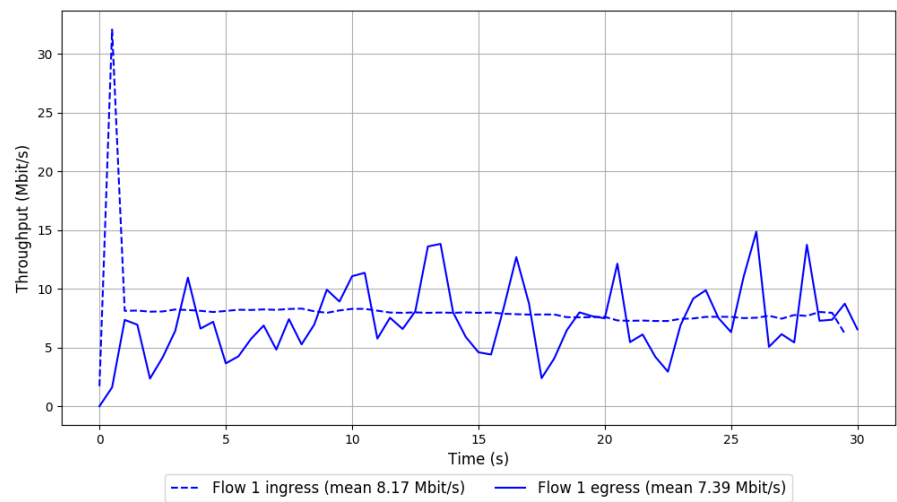
-- Flow 1:

Average throughput: 7.39 Mbit/s

95th percentile per-packet one-way delay: 1025.256 ms

Loss rate: 9.75%

Run 1: Report of PCC-Allegro — Data Link

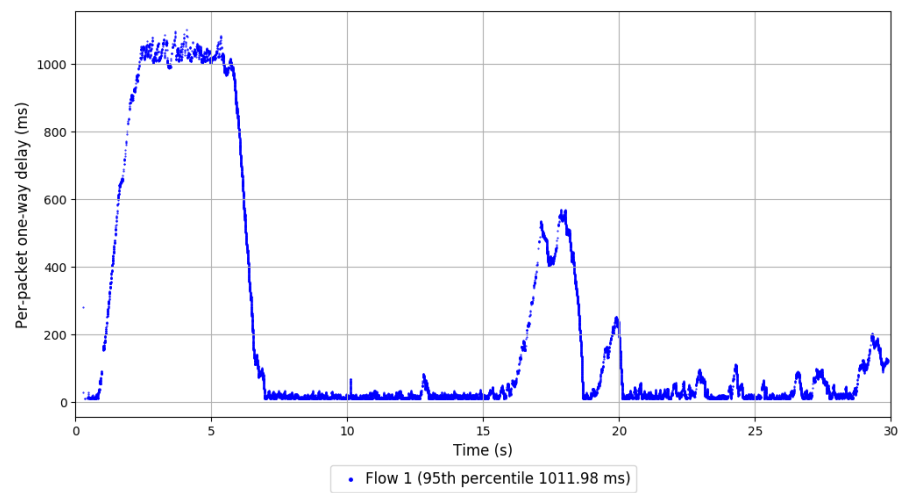
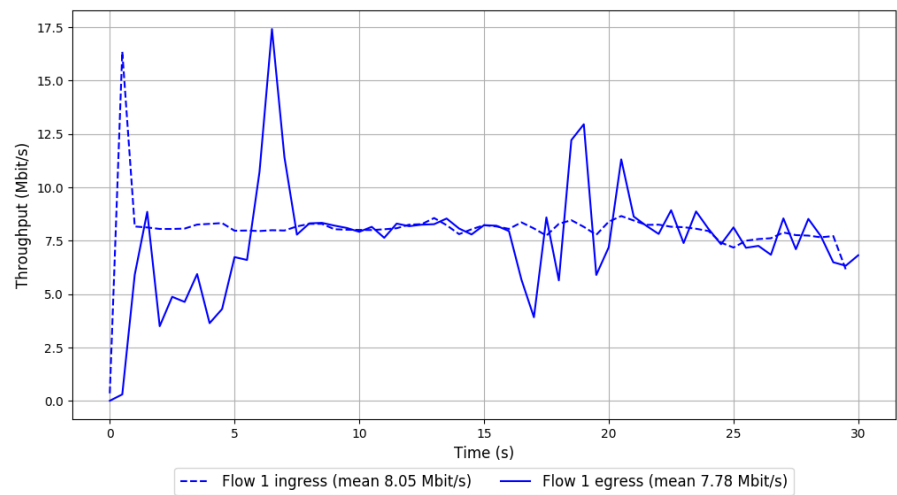


Run 2: Statistics of PCC-Allegro

Start at: 2019-06-27 18:36:01
End at: 2019-06-27 18:36:31
Local clock offset: 0.486 ms
Remote clock offset: -4.398 ms

Below is generated by plot.py at 2019-06-27 19:04:37
Datalink statistics
-- Total of 1 flow:
Average throughput: 7.78 Mbit/s
95th percentile per-packet one-way delay: 1011.984 ms
Loss rate: 4.40%
-- Flow 1:
Average throughput: 7.78 Mbit/s
95th percentile per-packet one-way delay: 1011.984 ms
Loss rate: 4.40%

Run 2: Report of PCC-Allegro — Data Link



Run 3: Statistics of PCC-Allegro

Start at: 2019-06-27 19:03:06

End at: 2019-06-27 19:03:36

Local clock offset: 2.78 ms

Remote clock offset: -0.11 ms

Below is generated by plot.py at 2019-06-27 19:04:37

Datalink statistics

-- Total of 1 flow:

Average throughput: 3.80 Mbit/s

95th percentile per-packet one-way delay: 561.100 ms

Loss rate: 5.09%

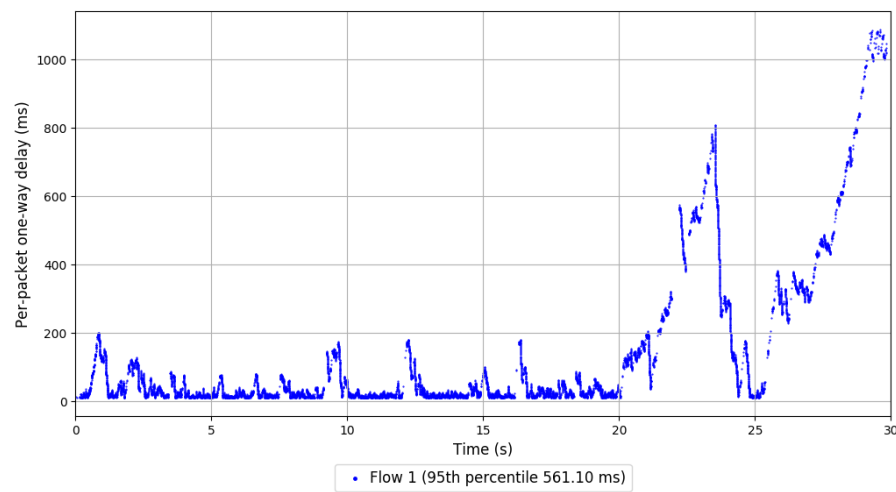
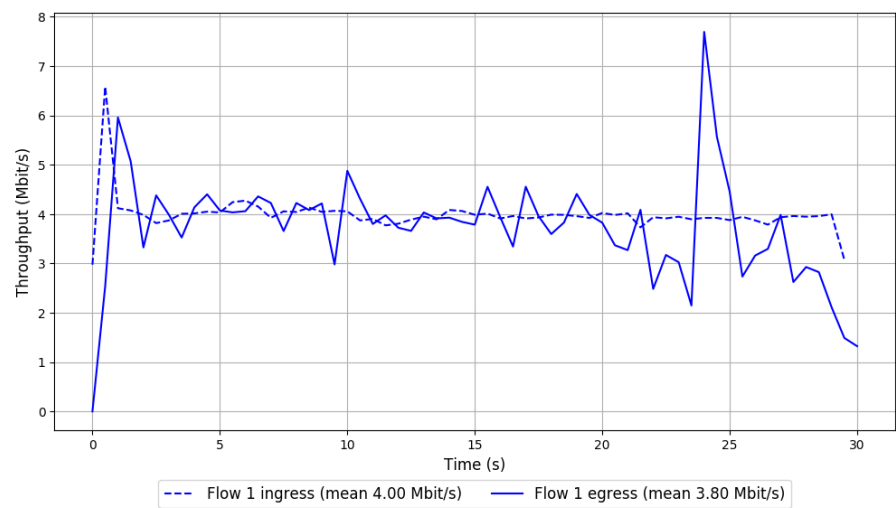
-- Flow 1:

Average throughput: 3.80 Mbit/s

95th percentile per-packet one-way delay: 561.100 ms

Loss rate: 5.09%

Run 3: Report of PCC-Allegro — Data Link



Run 1: Statistics of PCC-Expr

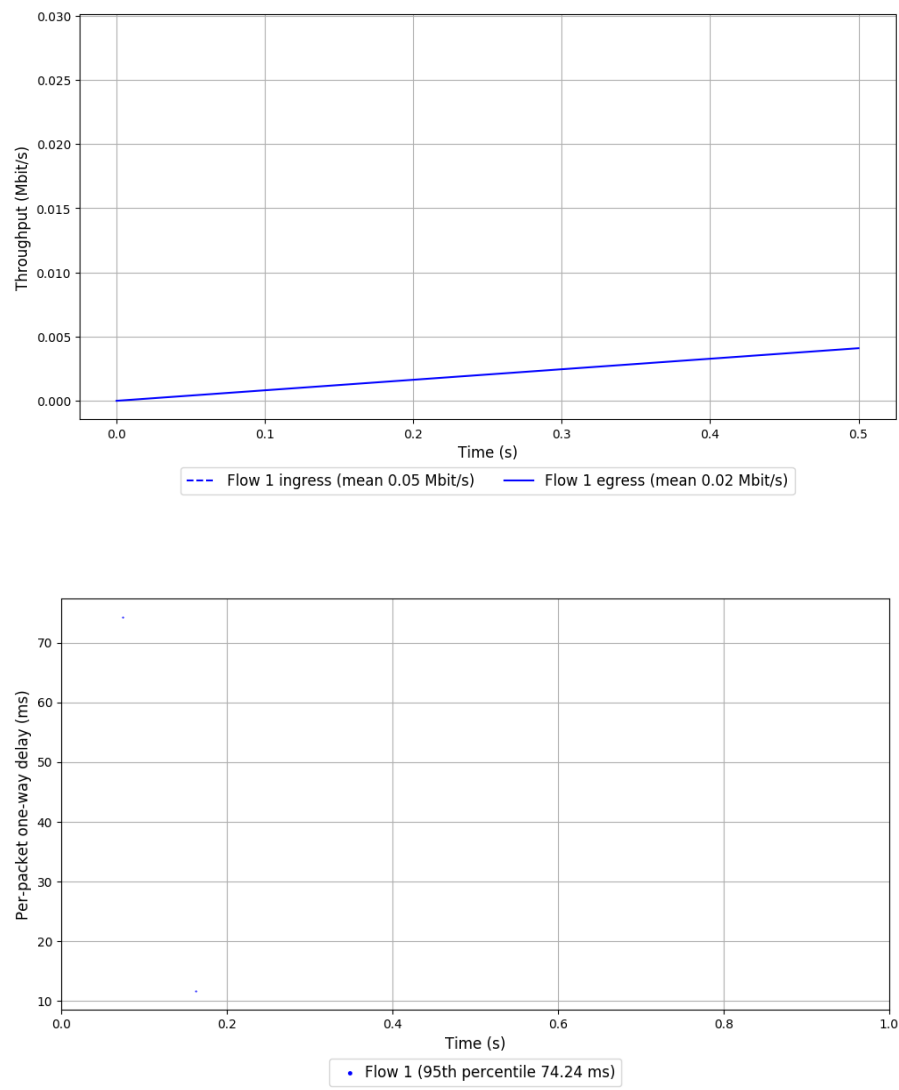
Start at: 2019-06-27 17:47:58

End at: 2019-06-27 17:48:28

Local clock offset: 0.131 ms

Remote clock offset: 0.295 ms

Run 1: Report of PCC-Expr — Data Link



Run 2: Statistics of PCC-Expr

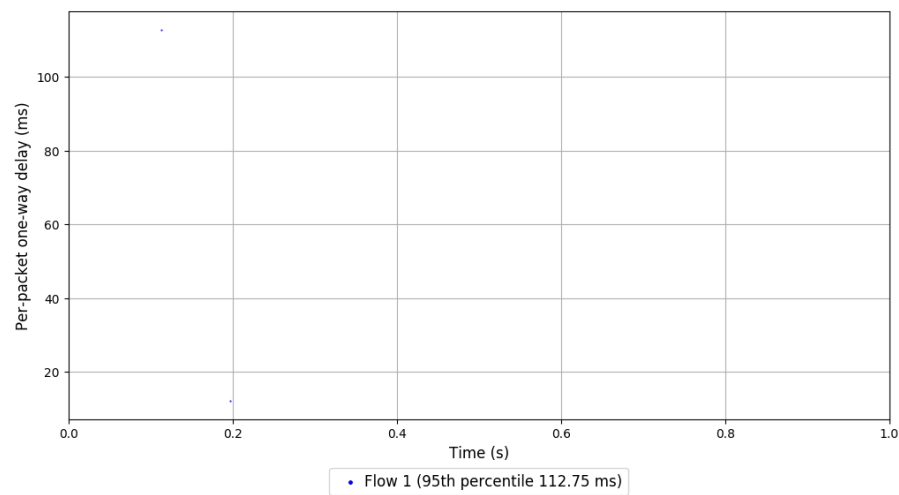
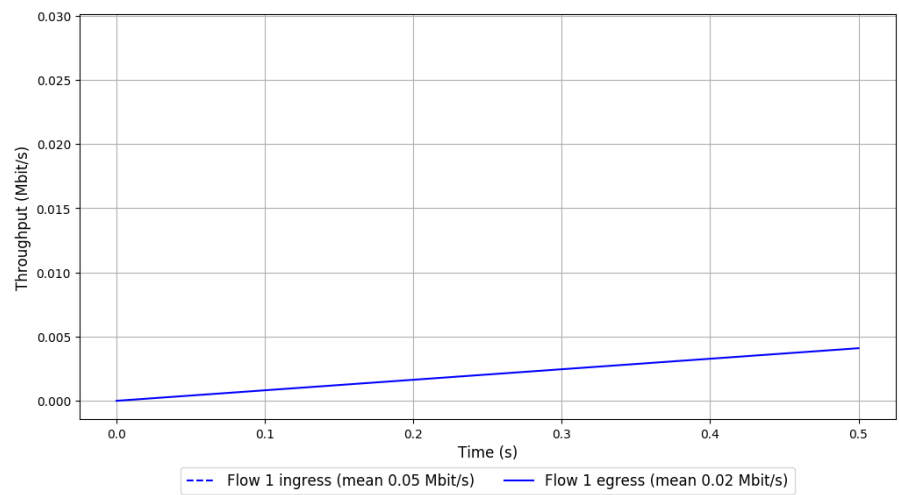
Start at: 2019-06-27 18:15:04

End at: 2019-06-27 18:15:34

Local clock offset: 3.828 ms

Remote clock offset: -2.394 ms

Run 2: Report of PCC-Expr — Data Link



Run 3: Statistics of PCC-Expr

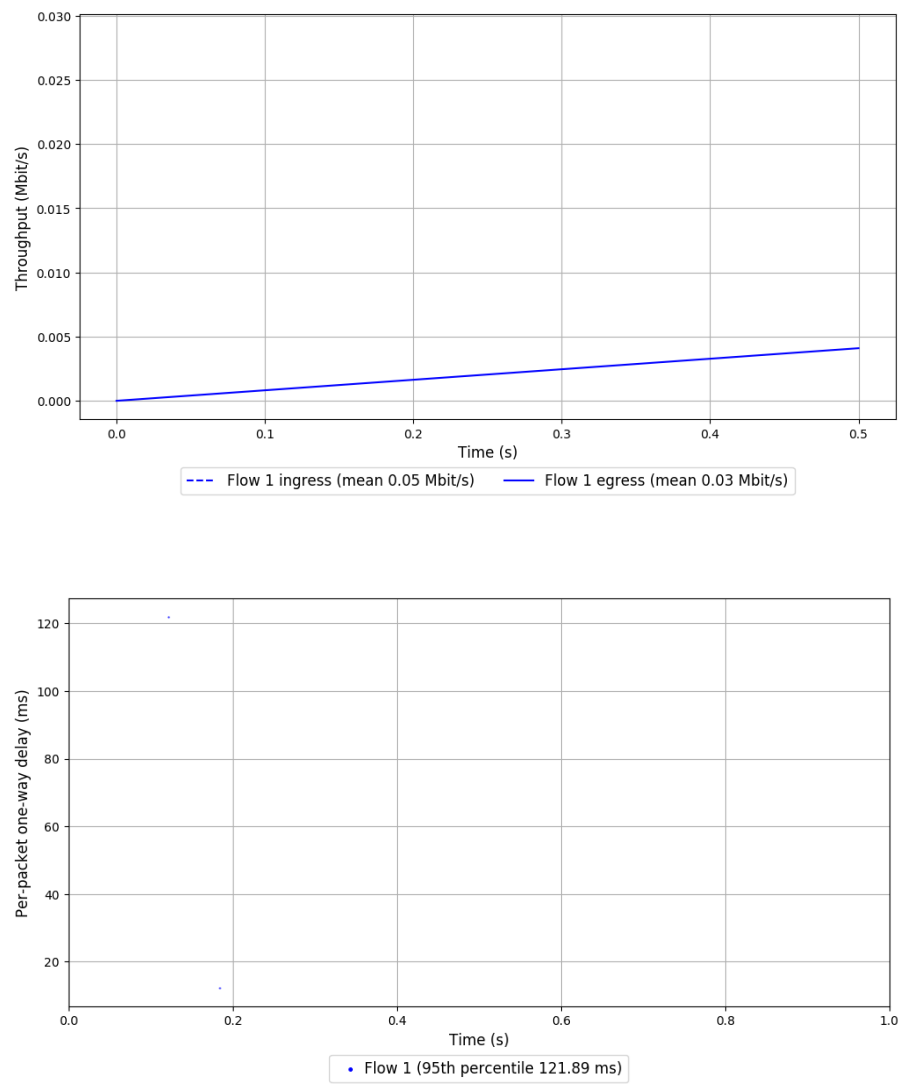
Start at: 2019-06-27 18:42:11

End at: 2019-06-27 18:42:41

Local clock offset: 0.138 ms

Remote clock offset: -2.799 ms

Run 3: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2019-06-27 17:55:21

End at: 2019-06-27 17:55:51

Local clock offset: 1.959 ms

Remote clock offset: 0.326 ms

Below is generated by plot.py at 2019-06-27 19:04:47

Datalink statistics

-- Total of 1 flow:

Average throughput: 12.51 Mbit/s

95th percentile per-packet one-way delay: 226.962 ms

Loss rate: 0.70%

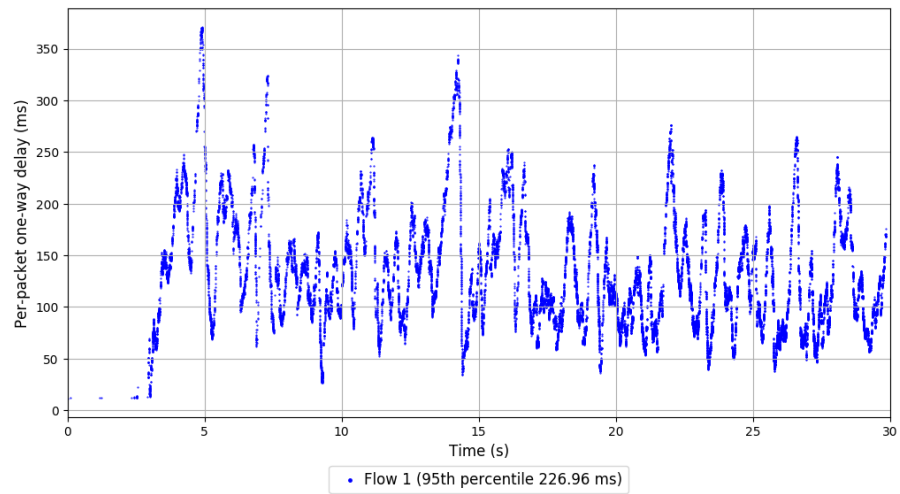
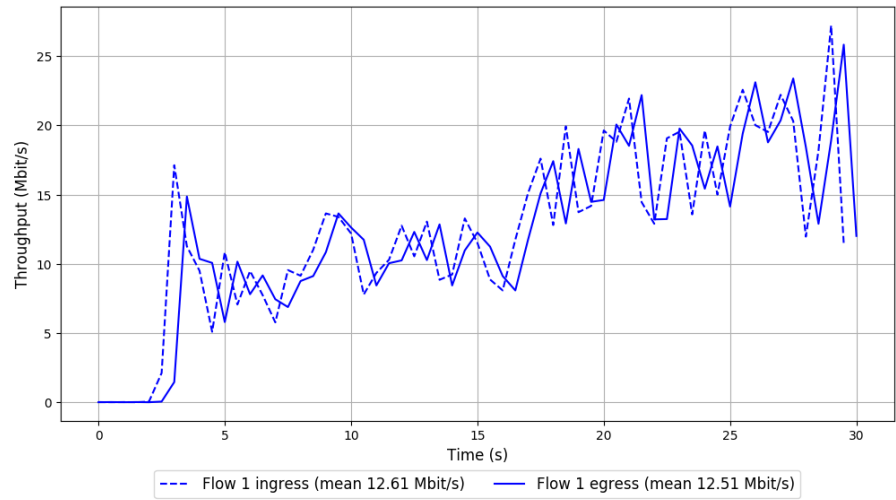
-- Flow 1:

Average throughput: 12.51 Mbit/s

95th percentile per-packet one-way delay: 226.962 ms

Loss rate: 0.70%

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2019-06-27 18:22:28

End at: 2019-06-27 18:22:58

Local clock offset: 2.524 ms

Remote clock offset: -3.292 ms

Below is generated by plot.py at 2019-06-27 19:04:47

Datalink statistics

-- Total of 1 flow:

Average throughput: 8.86 Mbit/s

95th percentile per-packet one-way delay: 269.664 ms

Loss rate: 0.23%

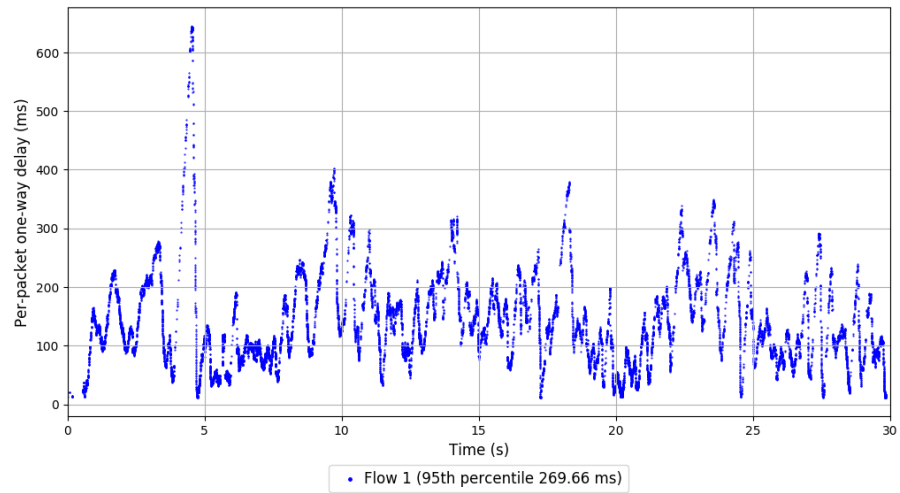
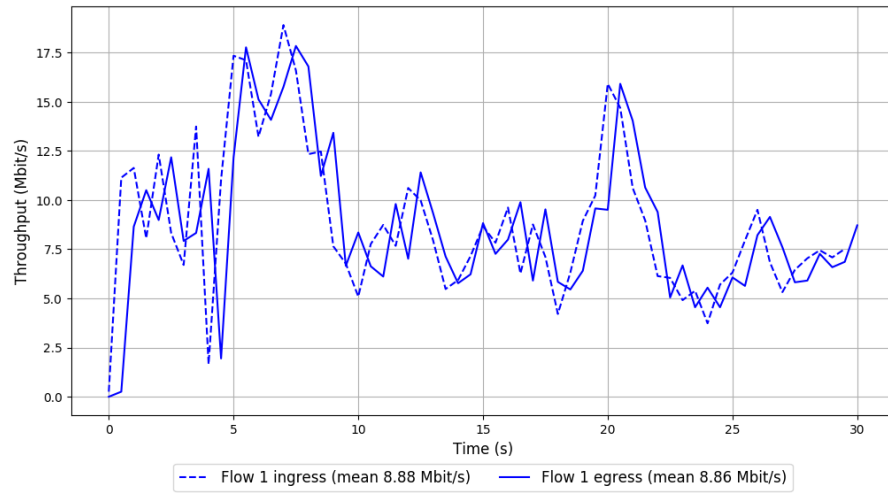
-- Flow 1:

Average throughput: 8.86 Mbit/s

95th percentile per-packet one-way delay: 269.664 ms

Loss rate: 0.23%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2019-06-27 18:49:34

End at: 2019-06-27 18:50:04

Local clock offset: 0.273 ms

Remote clock offset: -1.118 ms

Below is generated by plot.py at 2019-06-27 19:04:47

Datalink statistics

-- Total of 1 flow:

Average throughput: 7.31 Mbit/s

95th percentile per-packet one-way delay: 276.738 ms

Loss rate: 0.57%

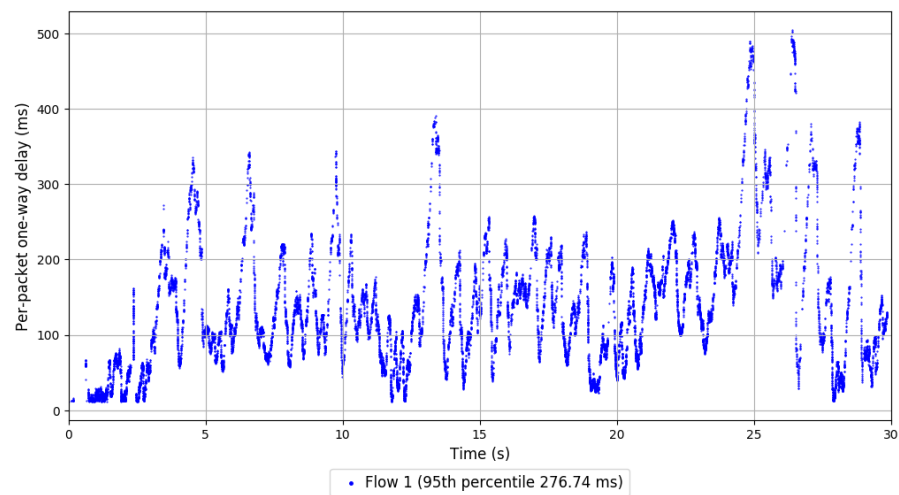
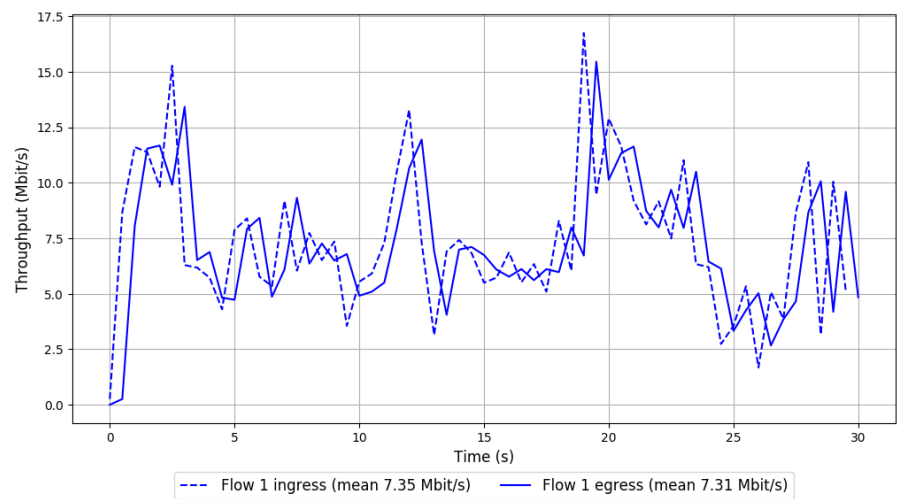
-- Flow 1:

Average throughput: 7.31 Mbit/s

95th percentile per-packet one-way delay: 276.738 ms

Loss rate: 0.57%

Run 3: Report of QUIC Cubic — Data Link



Run 1: Statistics of SCReAM

Start at: 2019-06-27 17:46:45

End at: 2019-06-27 17:47:15

Local clock offset: 0.117 ms

Remote clock offset: 0.37 ms

Below is generated by plot.py at 2019-06-27 19:04:47

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 21.853 ms

Loss rate: 0.13%

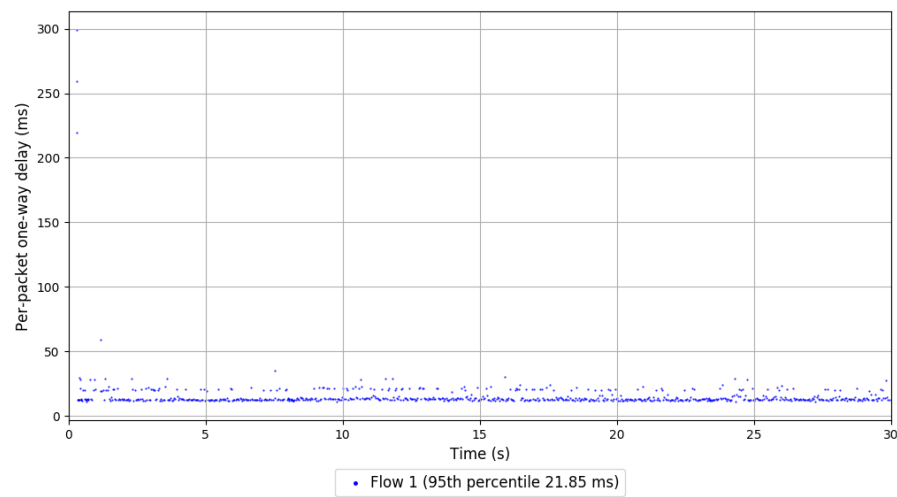
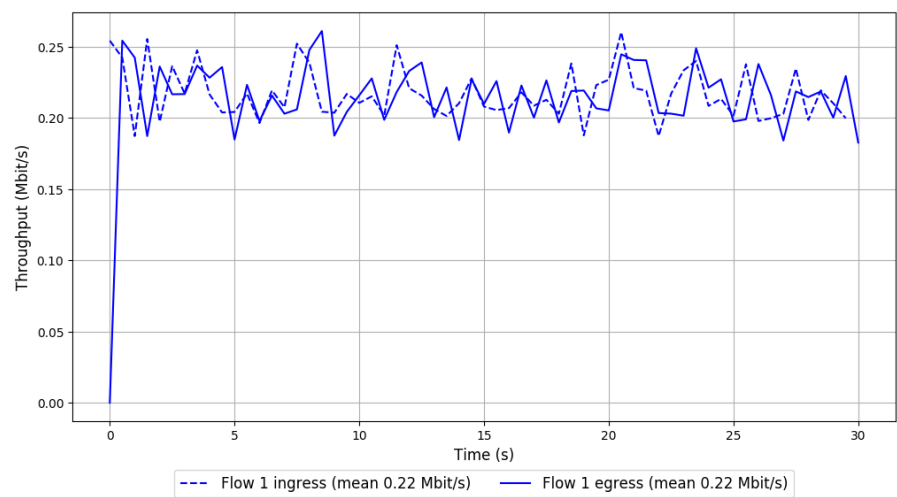
-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 21.853 ms

Loss rate: 0.13%

Run 1: Report of SReAM — Data Link

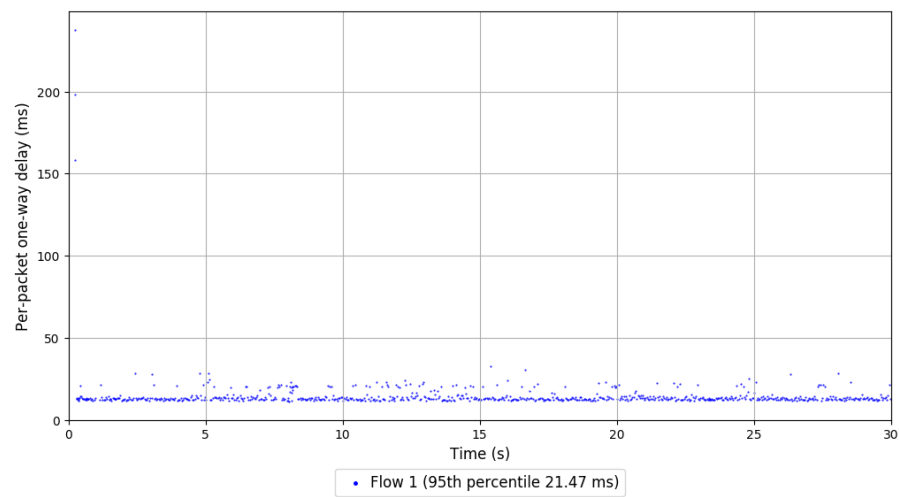
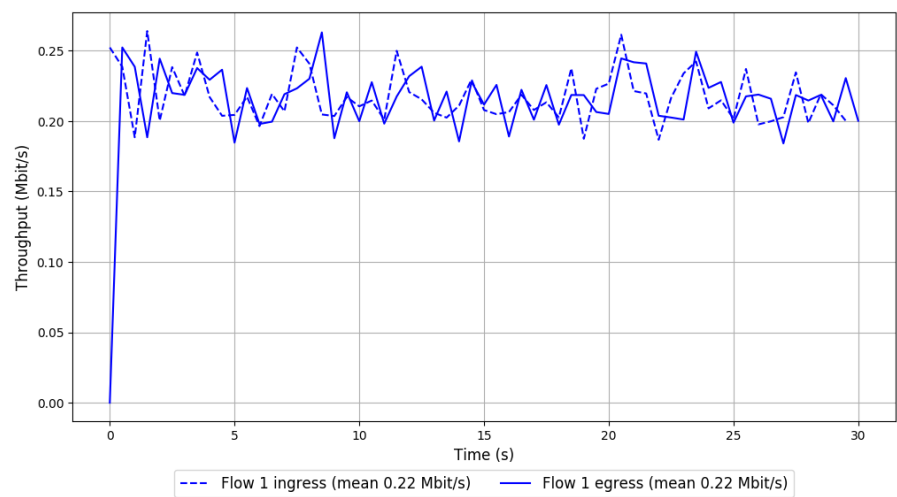


Run 2: Statistics of SCReAM

Start at: 2019-06-27 18:13:51
End at: 2019-06-27 18:14:21
Local clock offset: 3.729 ms
Remote clock offset: -2.139 ms

Below is generated by plot.py at 2019-06-27 19:04:47
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 21.466 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 21.466 ms
Loss rate: 0.00%

Run 2: Report of SReAM — Data Link

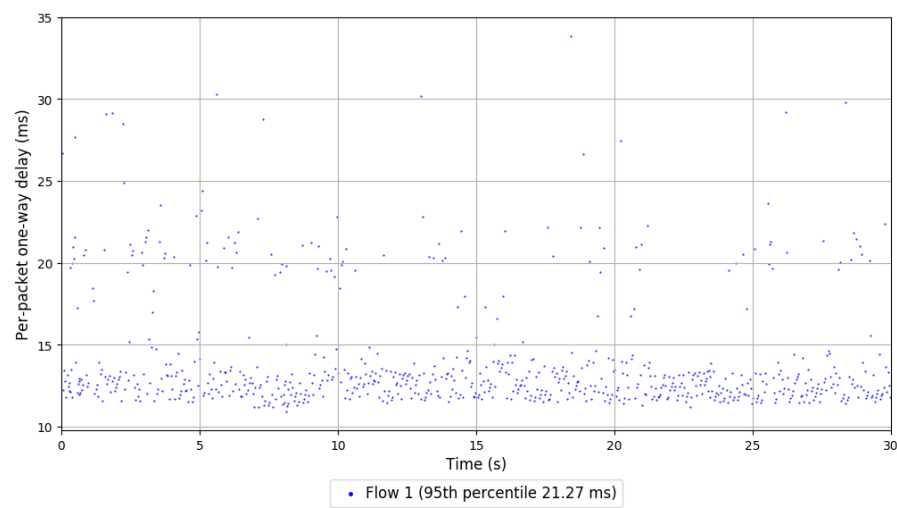
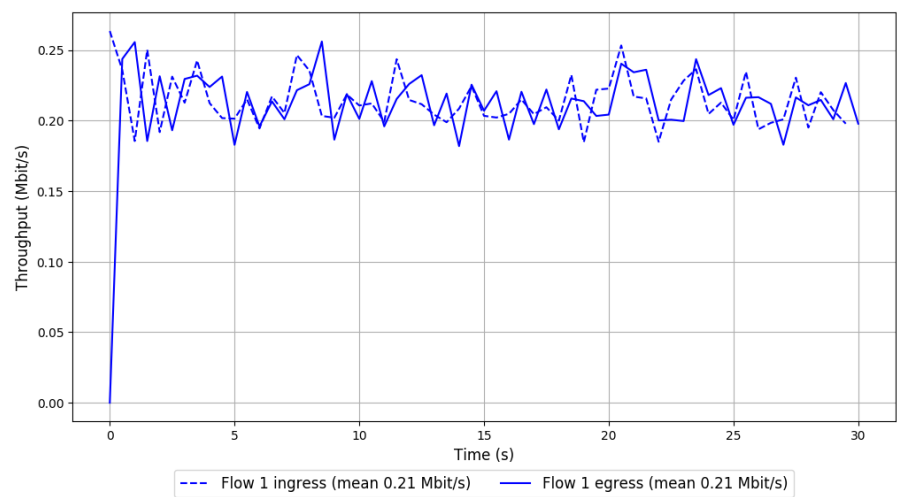


Run 3: Statistics of SCReAM

Start at: 2019-06-27 18:40:57
End at: 2019-06-27 18:41:27
Local clock offset: 0.181 ms
Remote clock offset: -3.283 ms

Below is generated by plot.py at 2019-06-27 19:04:47
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 21.274 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 21.274 ms
Loss rate: 0.00%

Run 3: Report of SReAM — Data Link



Run 1: Statistics of Sprout

Start at: 2019-06-27 17:49:12

End at: 2019-06-27 17:49:42

Local clock offset: 0.415 ms

Remote clock offset: 0.284 ms

Below is generated by plot.py at 2019-06-27 19:04:47

Datalink statistics

-- Total of 1 flow:

Average throughput: 3.39 Mbit/s

95th percentile per-packet one-way delay: 74.560 ms

Loss rate: 0.39%

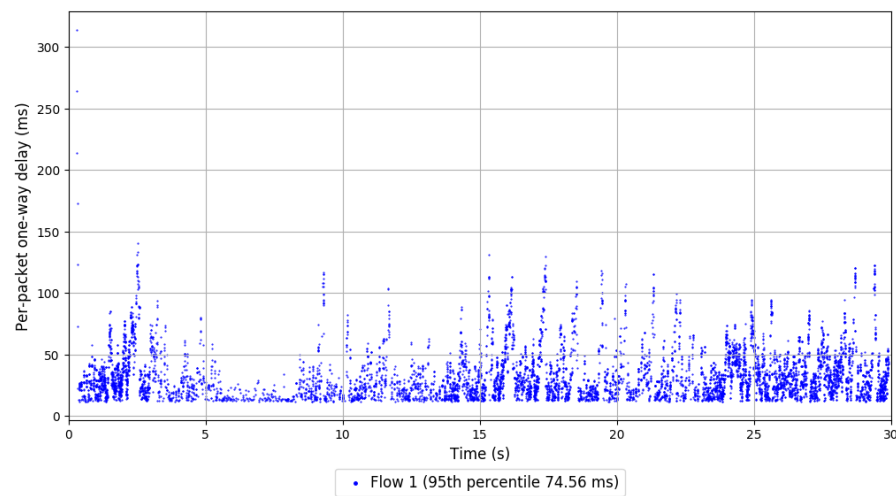
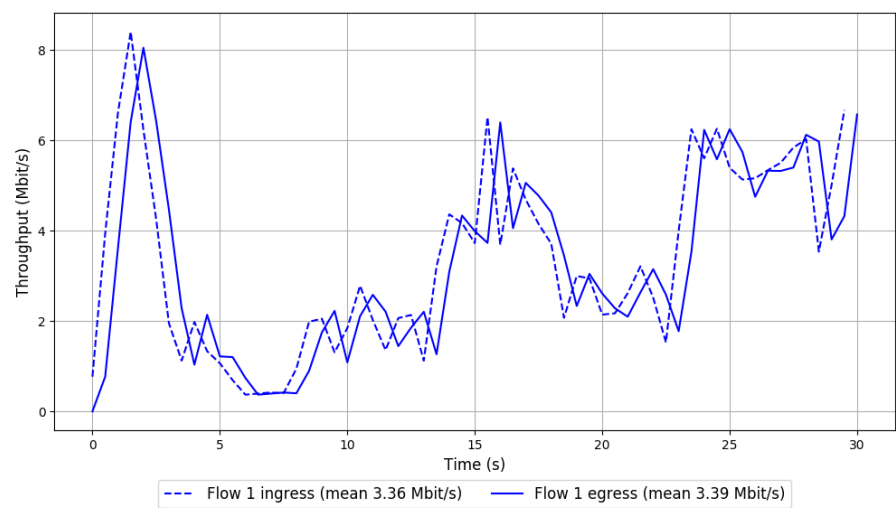
-- Flow 1:

Average throughput: 3.39 Mbit/s

95th percentile per-packet one-way delay: 74.560 ms

Loss rate: 0.39%

Run 1: Report of Sprout — Data Link

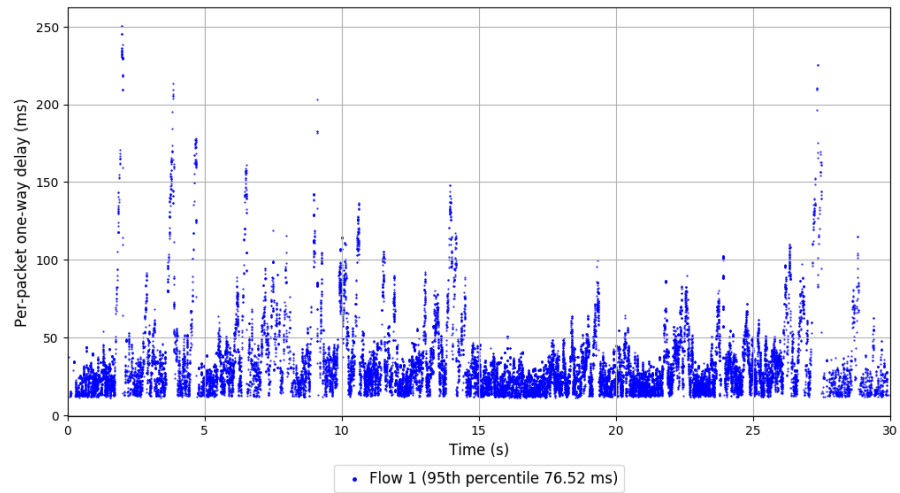
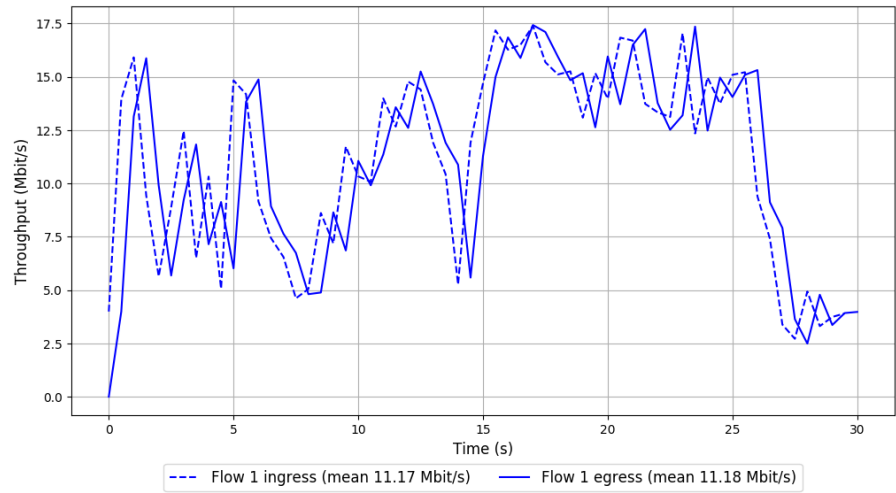


Run 2: Statistics of Sprout

Start at: 2019-06-27 18:16:18
End at: 2019-06-27 18:16:48
Local clock offset: 3.917 ms
Remote clock offset: -2.586 ms

Below is generated by plot.py at 2019-06-27 19:04:53
Datalink statistics
-- Total of 1 flow:
Average throughput: 11.18 Mbit/s
95th percentile per-packet one-way delay: 76.523 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 11.18 Mbit/s
95th percentile per-packet one-way delay: 76.523 ms
Loss rate: 0.01%

Run 2: Report of Sprout — Data Link

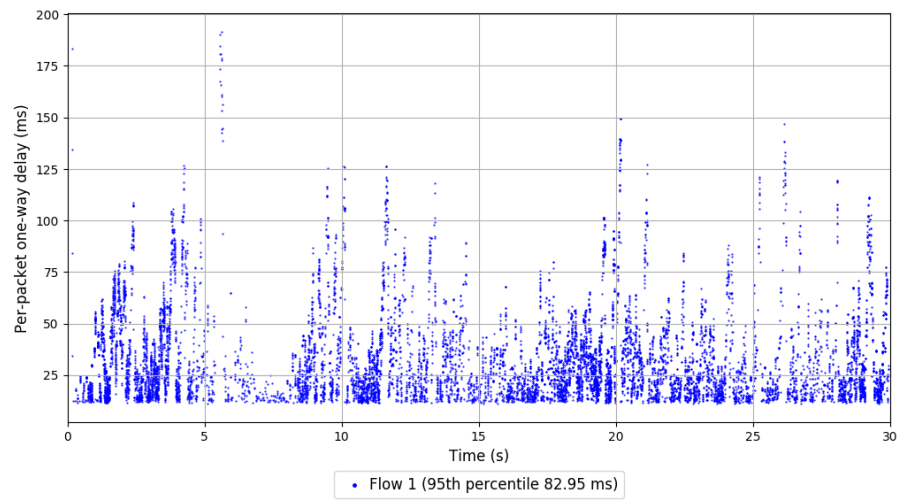
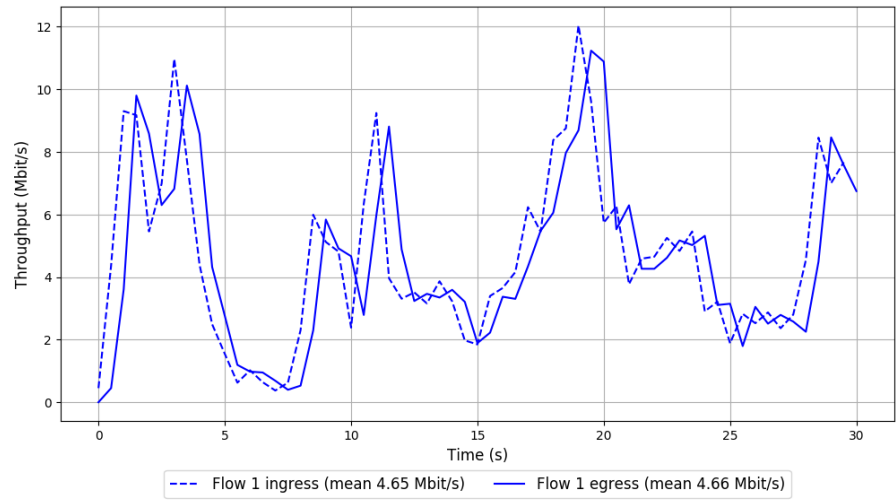


Run 3: Statistics of Sprout

Start at: 2019-06-27 18:43:24
End at: 2019-06-27 18:43:54
Local clock offset: 0.079 ms
Remote clock offset: -2.416 ms

Below is generated by plot.py at 2019-06-27 19:04:53
Datalink statistics
-- Total of 1 flow:
Average throughput: 4.66 Mbit/s
95th percentile per-packet one-way delay: 82.951 ms
Loss rate: 0.35%
-- Flow 1:
Average throughput: 4.66 Mbit/s
95th percentile per-packet one-way delay: 82.951 ms
Loss rate: 0.35%

Run 3: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

Start at: 2019-06-27 18:06:27

End at: 2019-06-27 18:06:57

Local clock offset: 3.275 ms

Remote clock offset: -0.501 ms

Below is generated by plot.py at 2019-06-27 19:04:53

Datalink statistics

-- Total of 1 flow:

Average throughput: 4.69 Mbit/s

95th percentile per-packet one-way delay: 73.155 ms

Loss rate: 0.11%

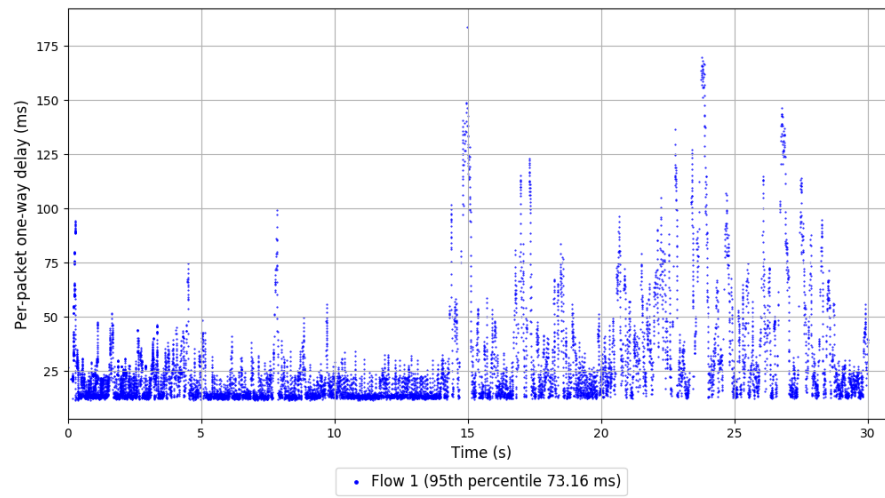
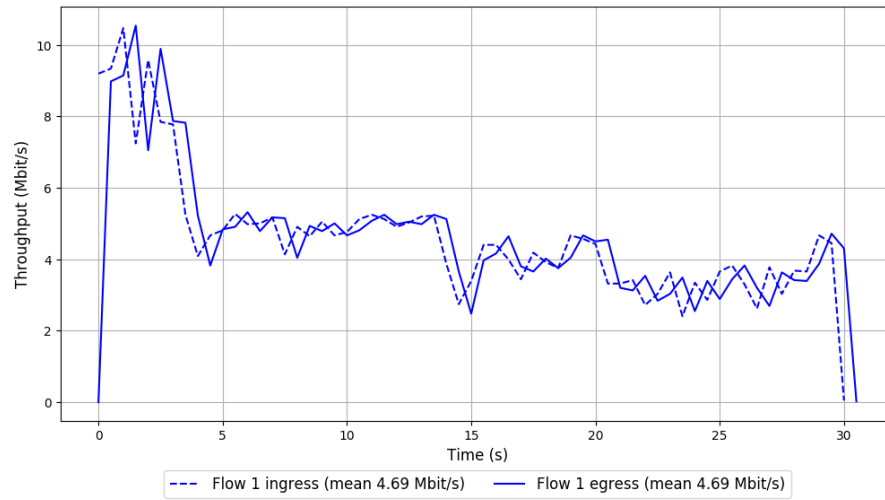
-- Flow 1:

Average throughput: 4.69 Mbit/s

95th percentile per-packet one-way delay: 73.155 ms

Loss rate: 0.11%

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



Run 2: Statistics of TaoVA-100x

Start at: 2019-06-27 18:33:34

End at: 2019-06-27 18:34:04

Local clock offset: 0.691 ms

Remote clock offset: -4.213 ms

Below is generated by plot.py at 2019-06-27 19:04:53

Datalink statistics

-- Total of 1 flow:

Average throughput: 4.88 Mbit/s

95th percentile per-packet one-way delay: 32.507 ms

Loss rate: 0.05%

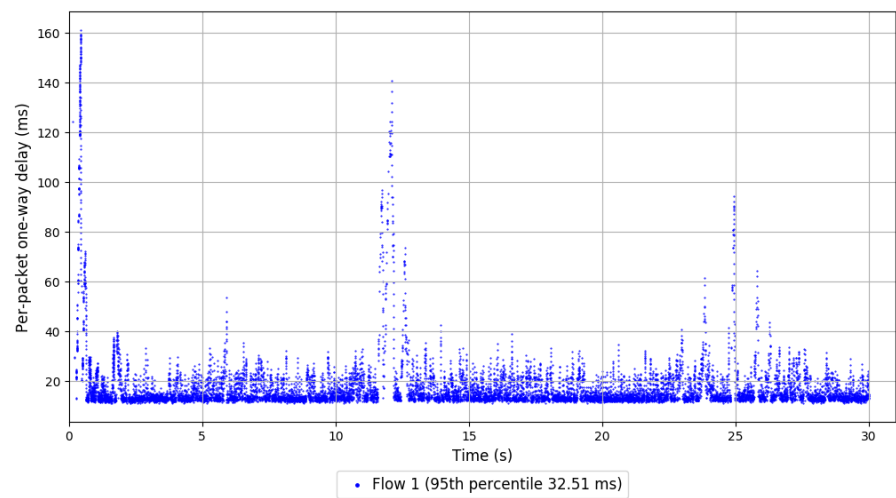
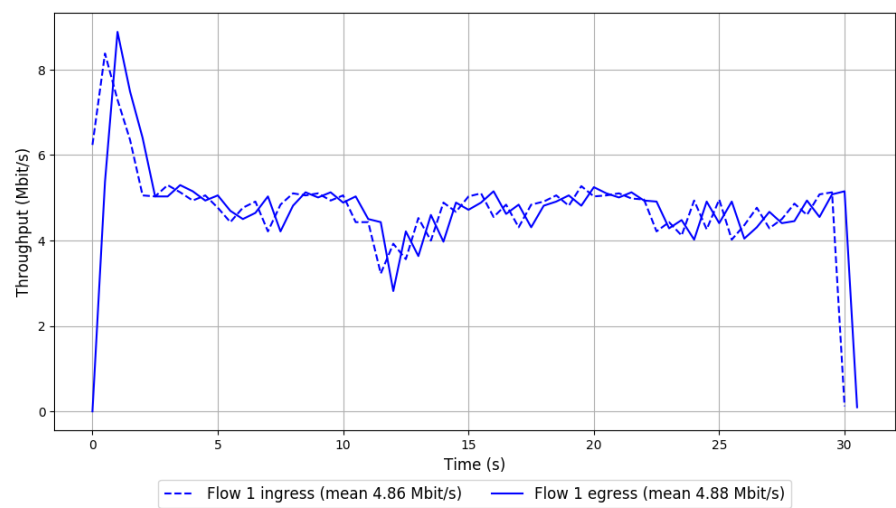
-- Flow 1:

Average throughput: 4.88 Mbit/s

95th percentile per-packet one-way delay: 32.507 ms

Loss rate: 0.05%

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



Run 3: Statistics of TaoVA-100x

Start at: 2019-06-27 19:00:39

End at: 2019-06-27 19:01:09

Local clock offset: 2.526 ms

Remote clock offset: -0.088 ms

Below is generated by plot.py at 2019-06-27 19:04:53

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.63 Mbit/s

95th percentile per-packet one-way delay: 325.483 ms

Loss rate: 2.80%

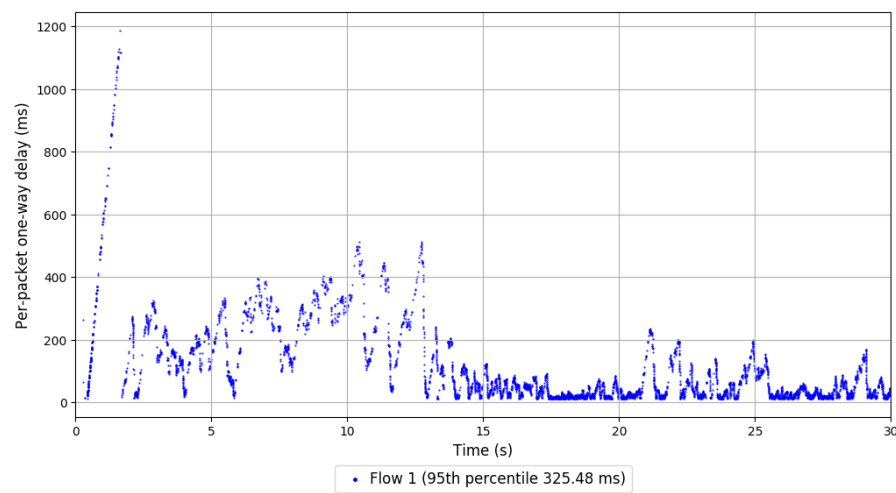
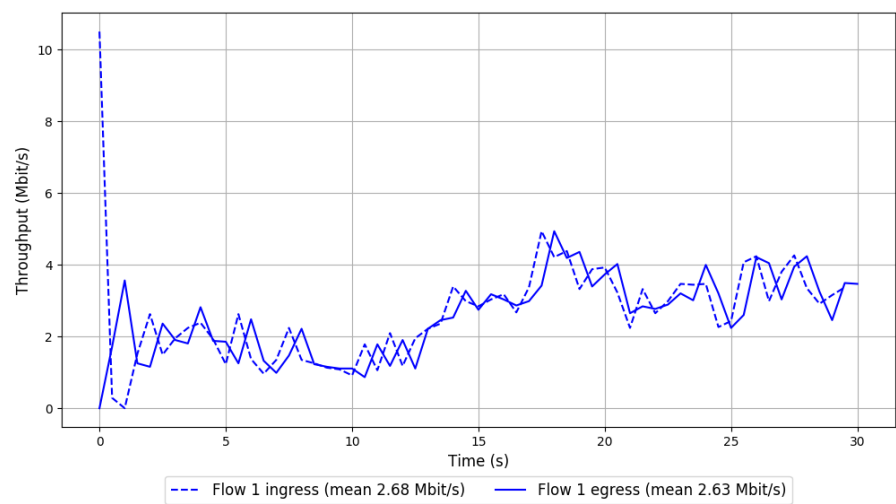
-- Flow 1:

Average throughput: 2.63 Mbit/s

95th percentile per-packet one-way delay: 325.483 ms

Loss rate: 2.80%

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



Run 1: Statistics of TCP Vegas

Start at: 2019-06-27 17:44:17

End at: 2019-06-27 17:44:47

Local clock offset: 0.093 ms

Remote clock offset: 0.309 ms

Below is generated by plot.py at 2019-06-27 19:04:53

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.76 Mbit/s

95th percentile per-packet one-way delay: 21.757 ms

Loss rate: 0.06%

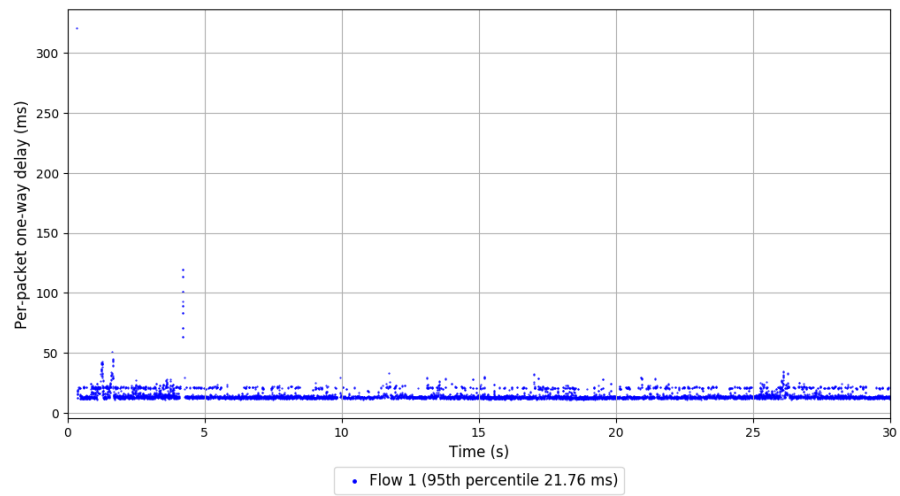
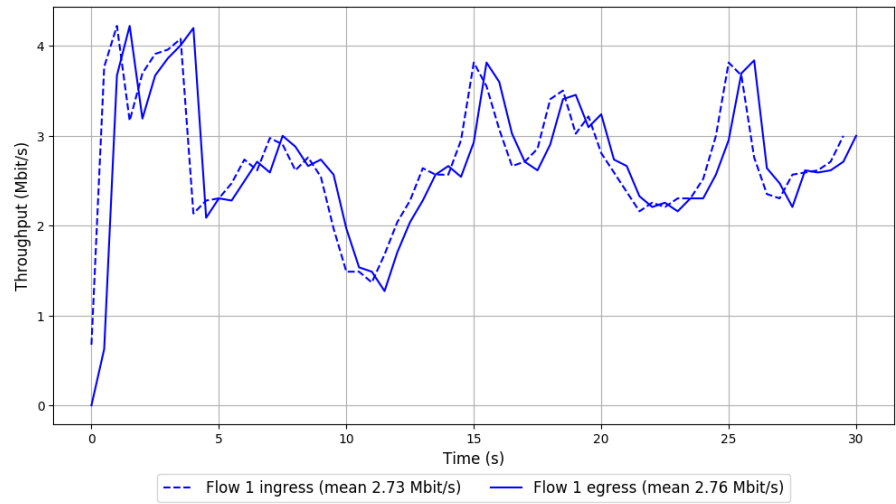
-- Flow 1:

Average throughput: 2.76 Mbit/s

95th percentile per-packet one-way delay: 21.757 ms

Loss rate: 0.06%

Run 1: Report of TCP Vegas — Data Link

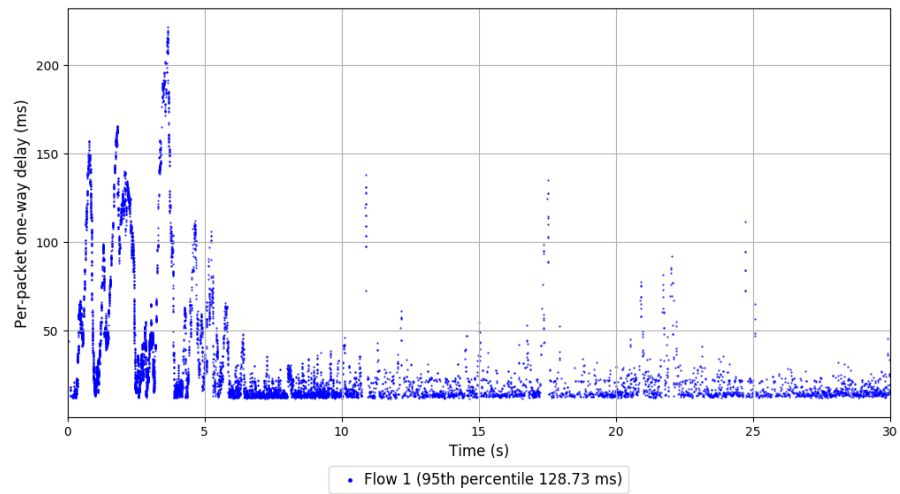
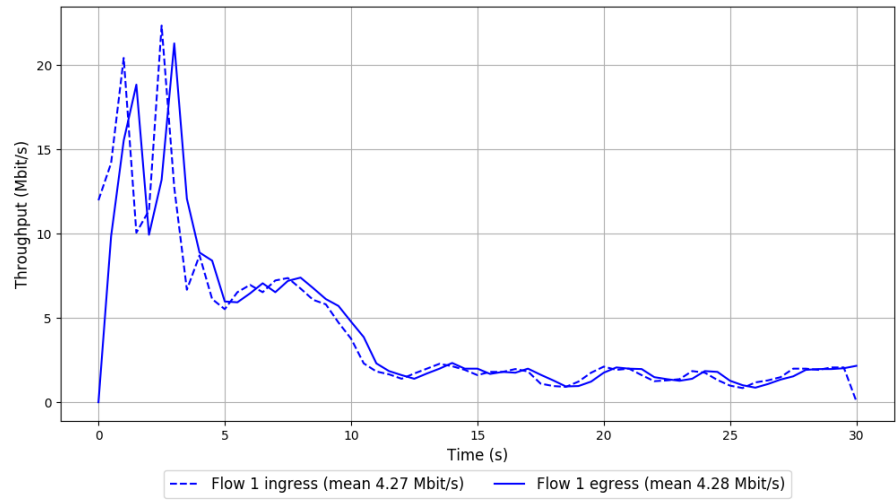


Run 2: Statistics of TCP Vegas

Start at: 2019-06-27 18:11:23
End at: 2019-06-27 18:11:53
Local clock offset: 3.598 ms
Remote clock offset: -1.646 ms

Below is generated by plot.py at 2019-06-27 19:04:53
Datalink statistics
-- Total of 1 flow:
Average throughput: 4.28 Mbit/s
95th percentile per-packet one-way delay: 128.730 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 4.28 Mbit/s
95th percentile per-packet one-way delay: 128.730 ms
Loss rate: 0.03%

Run 2: Report of TCP Vegas — Data Link

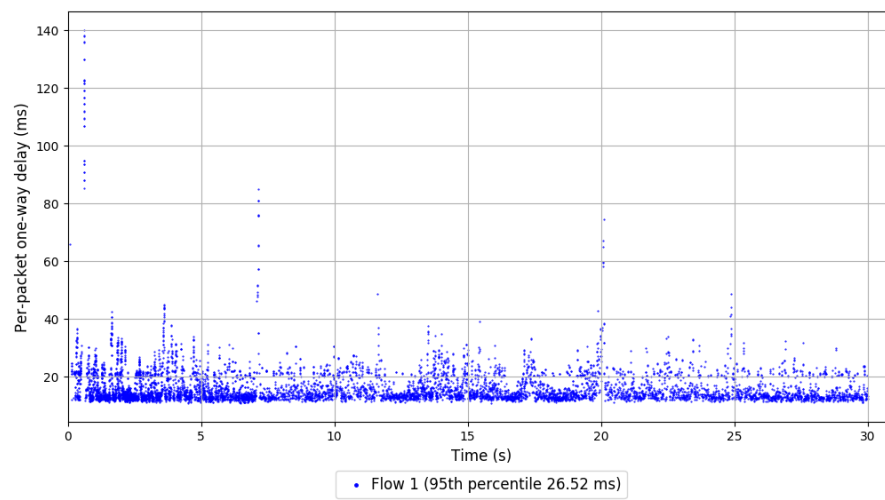
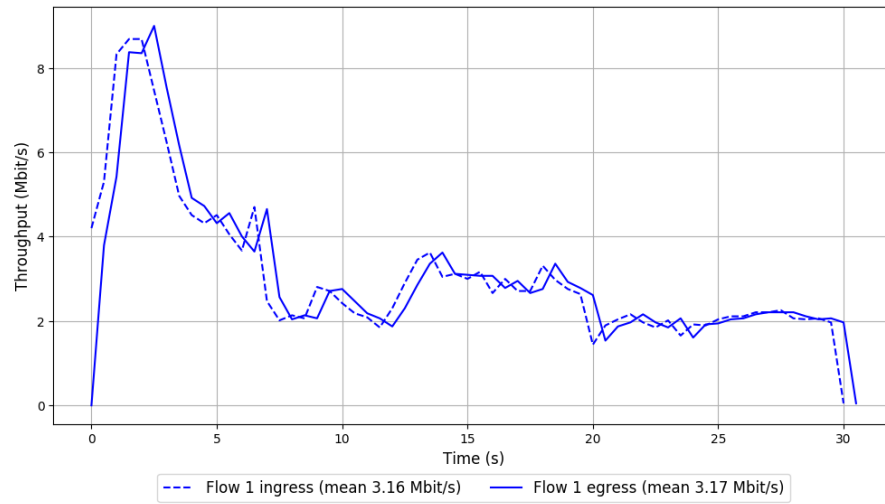


Run 3: Statistics of TCP Vegas

Start at: 2019-06-27 18:38:29
End at: 2019-06-27 18:38:59
Local clock offset: 0.323 ms
Remote clock offset: -4.347 ms

Below is generated by plot.py at 2019-06-27 19:04:53
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.17 Mbit/s
95th percentile per-packet one-way delay: 26.523 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 3.17 Mbit/s
95th percentile per-packet one-way delay: 26.523 ms
Loss rate: 0.03%

Run 3: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: 2019-06-27 17:54:08

End at: 2019-06-27 17:54:38

Local clock offset: 1.711 ms

Remote clock offset: 0.38 ms

Below is generated by plot.py at 2019-06-27 19:04:53

Datalink statistics

-- Total of 1 flow:

Average throughput: 4.63 Mbit/s

95th percentile per-packet one-way delay: 402.490 ms

Loss rate: 1.67%

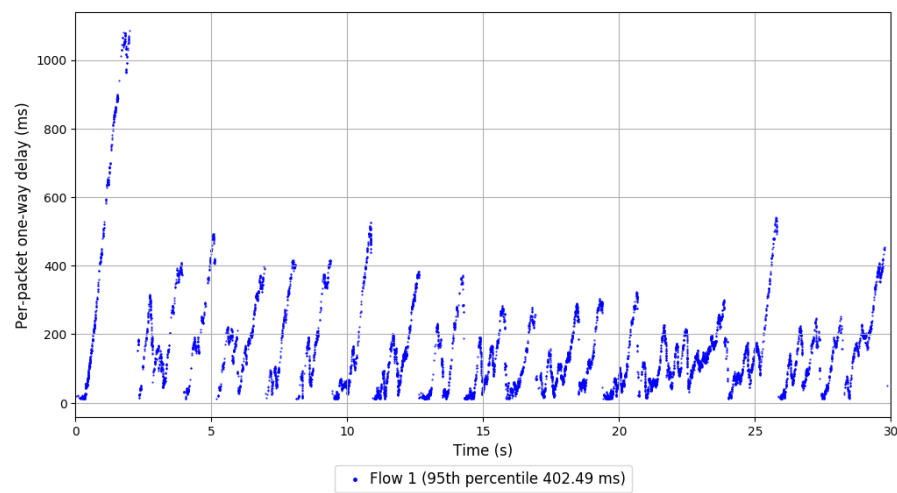
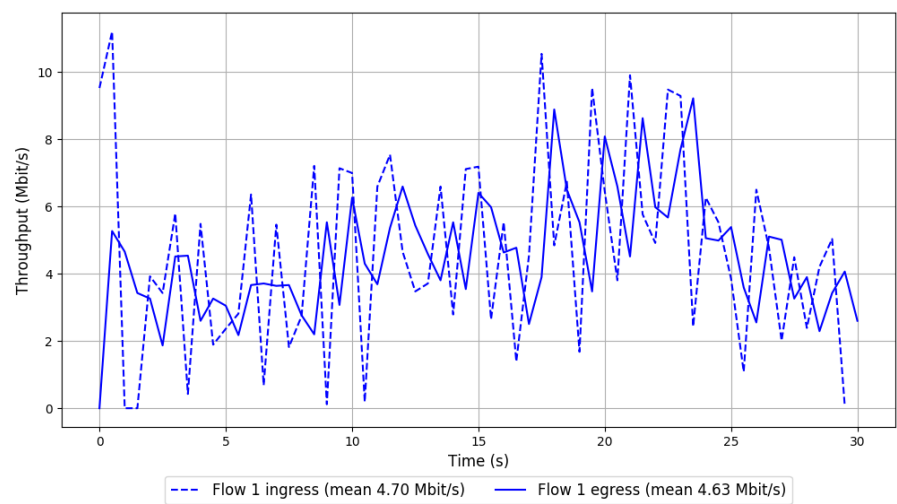
-- Flow 1:

Average throughput: 4.63 Mbit/s

95th percentile per-packet one-way delay: 402.490 ms

Loss rate: 1.67%

Run 1: Report of Verus — Data Link



Run 2: Statistics of Verus

Start at: 2019-06-27 18:21:14

End at: 2019-06-27 18:21:44

Local clock offset: 2.882 ms

Remote clock offset: -3.21 ms

Below is generated by plot.py at 2019-06-27 19:04:55

Datalink statistics

-- Total of 1 flow:

Average throughput: 6.70 Mbit/s

95th percentile per-packet one-way delay: 691.104 ms

Loss rate: 4.12%

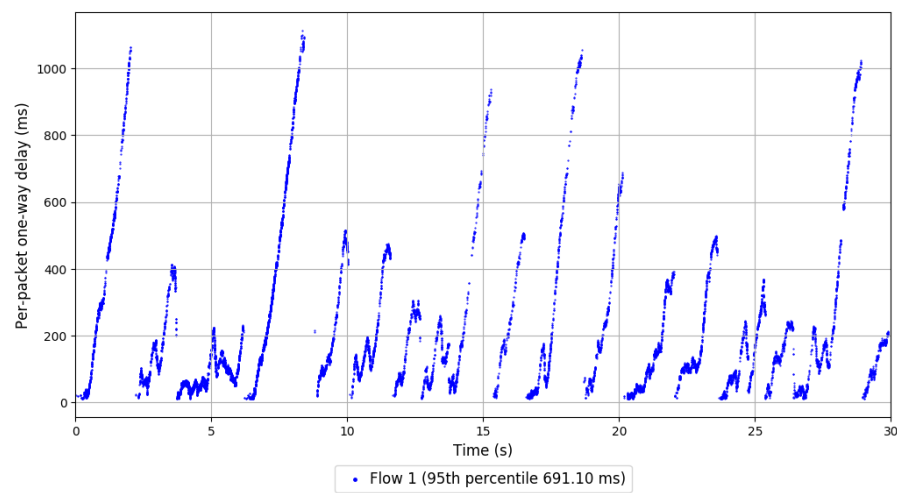
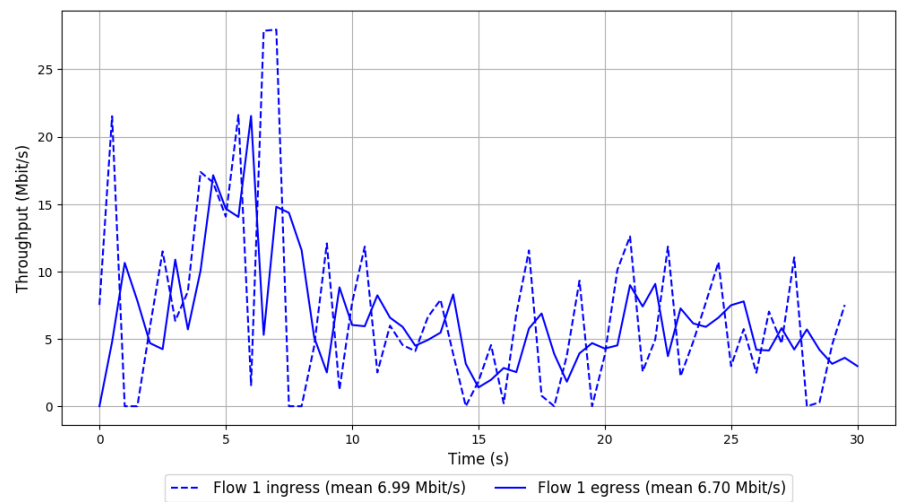
-- Flow 1:

Average throughput: 6.70 Mbit/s

95th percentile per-packet one-way delay: 691.104 ms

Loss rate: 4.12%

Run 2: Report of Verus — Data Link

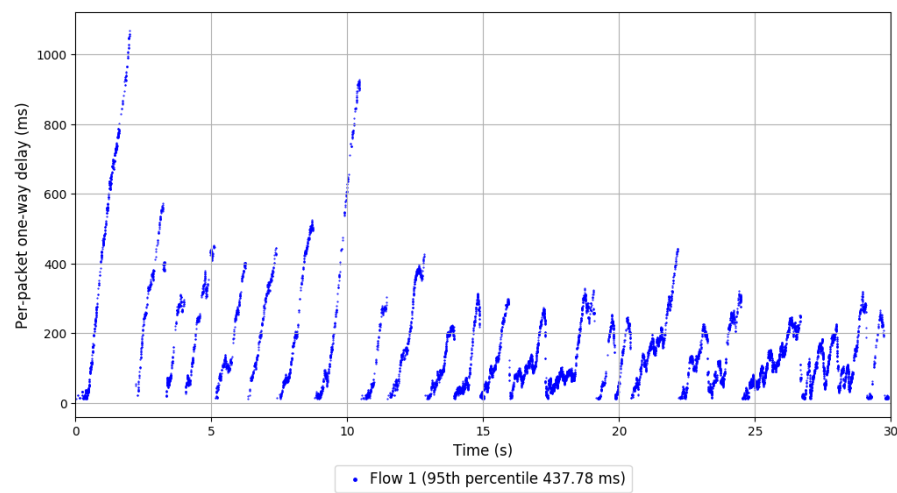
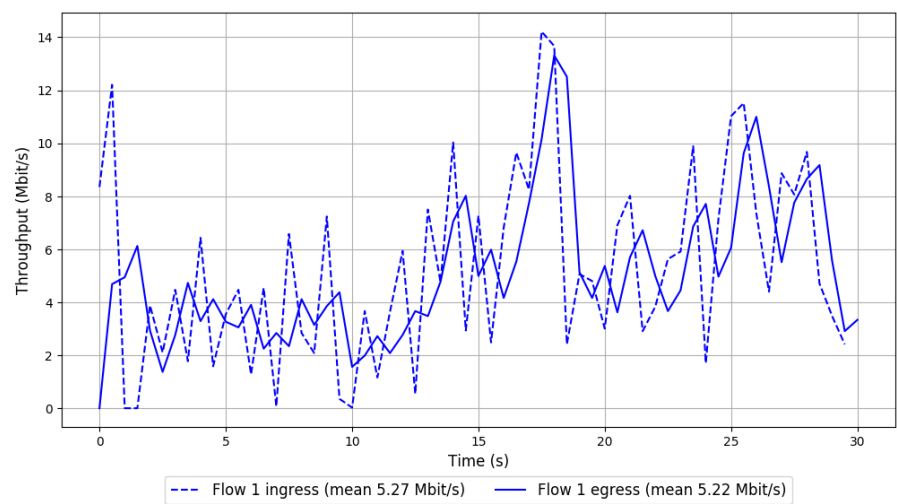


Run 3: Statistics of Verus

Start at: 2019-06-27 18:48:20
End at: 2019-06-27 18:48:50
Local clock offset: -0.118 ms
Remote clock offset: -1.269 ms

Below is generated by plot.py at 2019-06-27 19:04:55
Datalink statistics
-- Total of 1 flow:
Average throughput: 5.22 Mbit/s
95th percentile per-packet one-way delay: 437.777 ms
Loss rate: 1.01%
-- Flow 1:
Average throughput: 5.22 Mbit/s
95th percentile per-packet one-way delay: 437.777 ms
Loss rate: 1.01%

Run 3: Report of Verus — Data Link



Run 1: Statistics of PCC-Vivace

Start at: 2019-06-27 17:45:31

End at: 2019-06-27 17:46:01

Local clock offset: 0.107 ms

Remote clock offset: 0.309 ms

Below is generated by plot.py at 2019-06-27 19:04:55

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.45 Mbit/s

95th percentile per-packet one-way delay: 363.141 ms

Loss rate: 0.16%

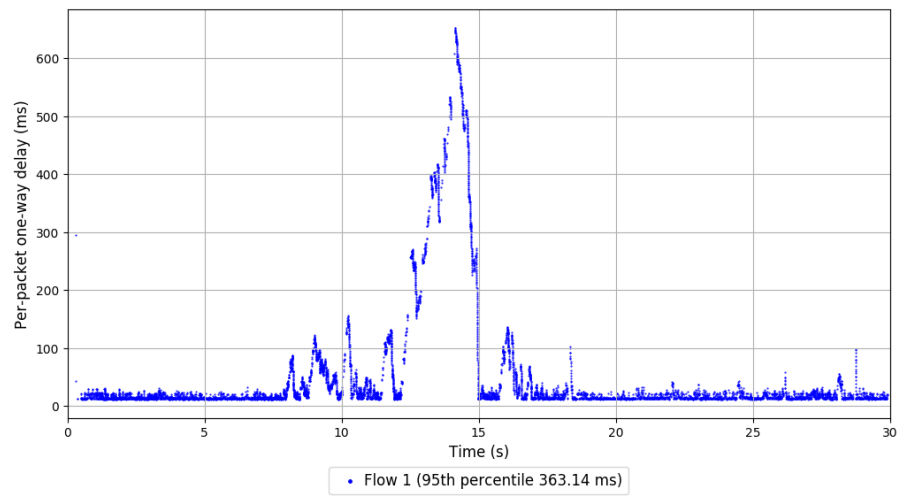
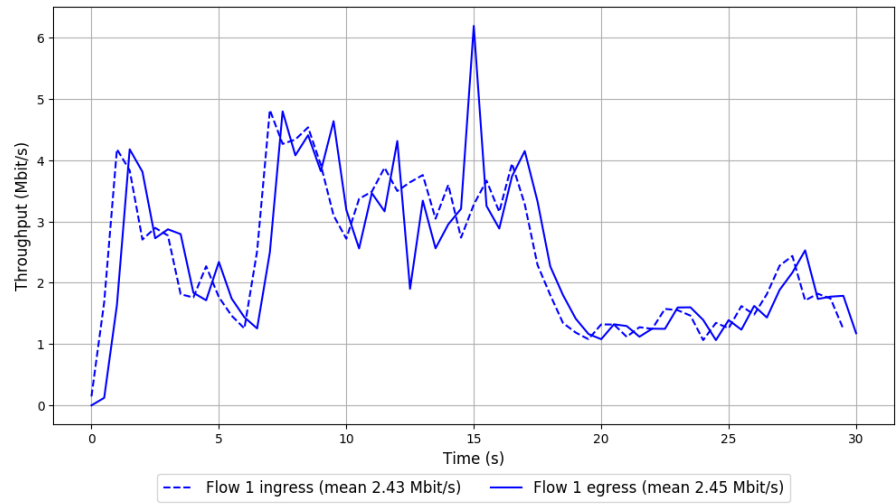
-- Flow 1:

Average throughput: 2.45 Mbit/s

95th percentile per-packet one-way delay: 363.141 ms

Loss rate: 0.16%

Run 1: Report of PCC-Vivace — Data Link

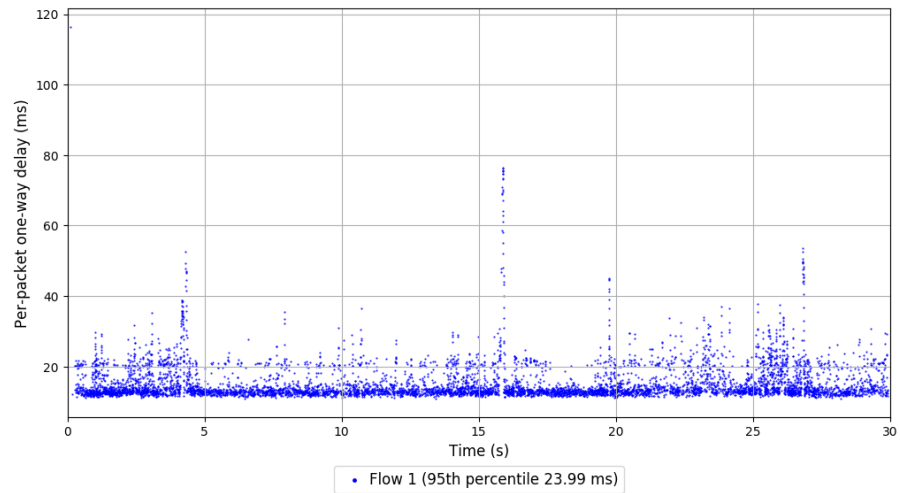
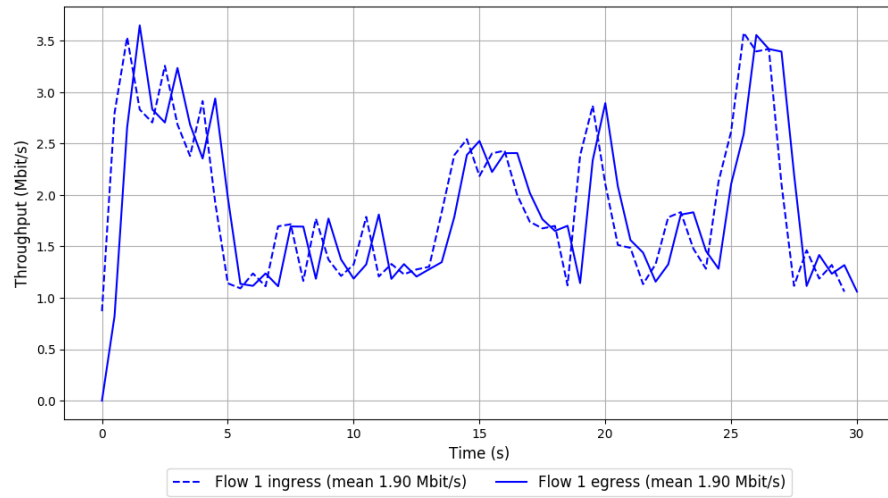


Run 2: Statistics of PCC-Vivace

Start at: 2019-06-27 18:12:37
End at: 2019-06-27 18:13:07
Local clock offset: 3.645 ms
Remote clock offset: -2.024 ms

Below is generated by plot.py at 2019-06-27 19:04:55
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.90 Mbit/s
95th percentile per-packet one-way delay: 23.986 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 1.90 Mbit/s
95th percentile per-packet one-way delay: 23.986 ms
Loss rate: 0.02%

Run 2: Report of PCC-Vivace — Data Link



Run 3: Statistics of PCC-Vivace

Start at: 2019-06-27 18:39:43

End at: 2019-06-27 18:40:13

Local clock offset: 0.244 ms

Remote clock offset: -3.706 ms

Below is generated by plot.py at 2019-06-27 19:04:55

Datalink statistics

-- Total of 1 flow:

Average throughput: 3.87 Mbit/s

95th percentile per-packet one-way delay: 1023.645 ms

Loss rate: 7.07%

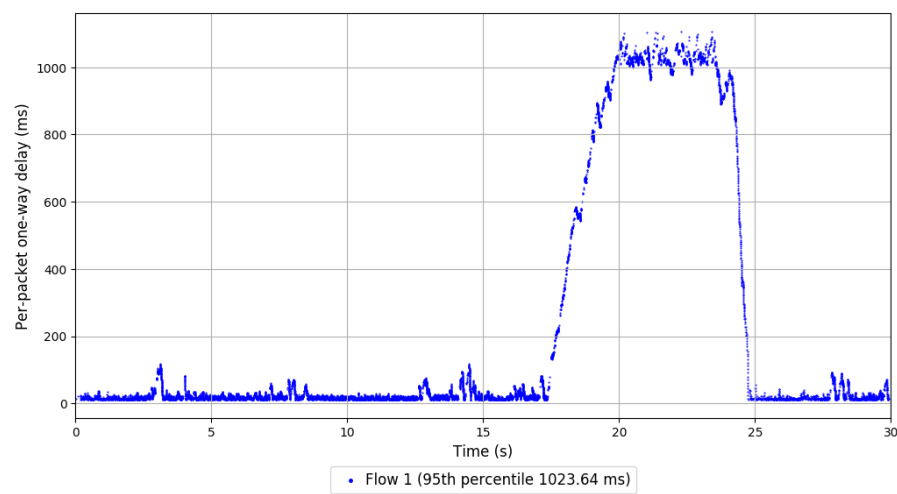
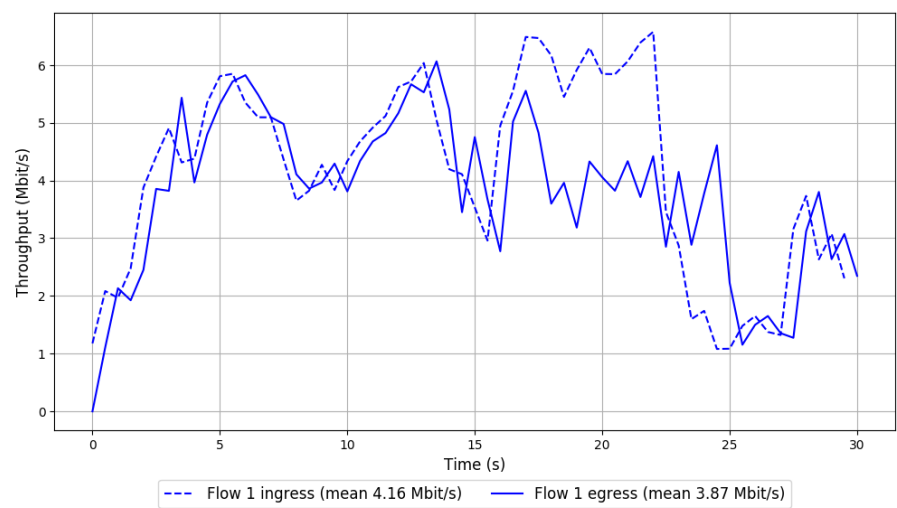
-- Flow 1:

Average throughput: 3.87 Mbit/s

95th percentile per-packet one-way delay: 1023.645 ms

Loss rate: 7.07%

Run 3: Report of PCC-Vivace — Data Link

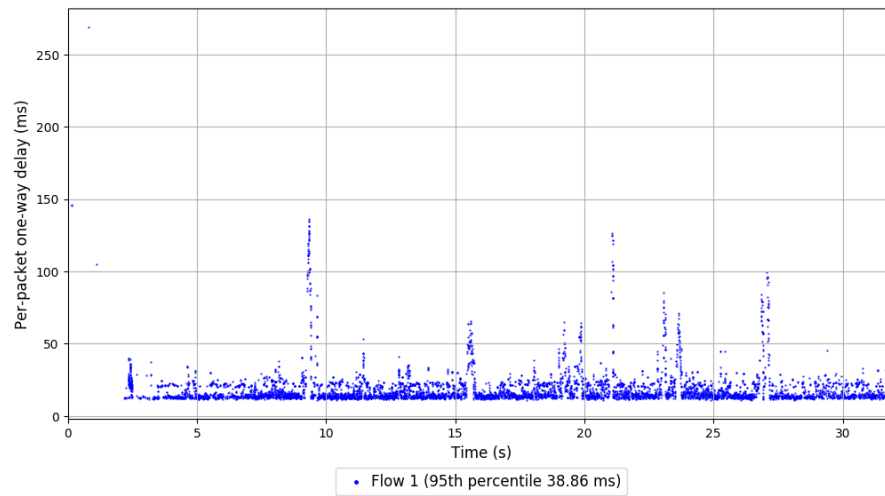
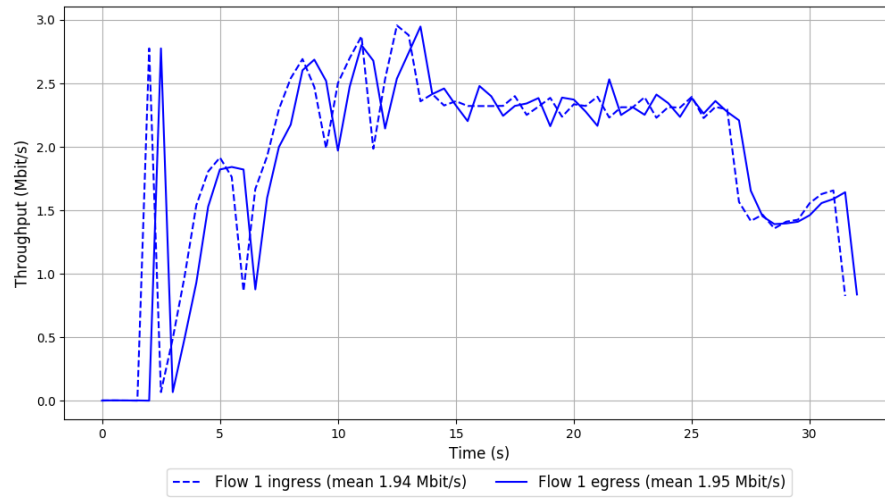


Run 1: Statistics of WebRTC media

Start at: 2019-06-27 18:07:41
End at: 2019-06-27 18:08:11
Local clock offset: 3.348 ms
Remote clock offset: -0.755 ms

Below is generated by plot.py at 2019-06-27 19:04:55
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.95 Mbit/s
95th percentile per-packet one-way delay: 38.862 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 1.95 Mbit/s
95th percentile per-packet one-way delay: 38.862 ms
Loss rate: 0.03%

Run 1: Report of WebRTC media — Data Link

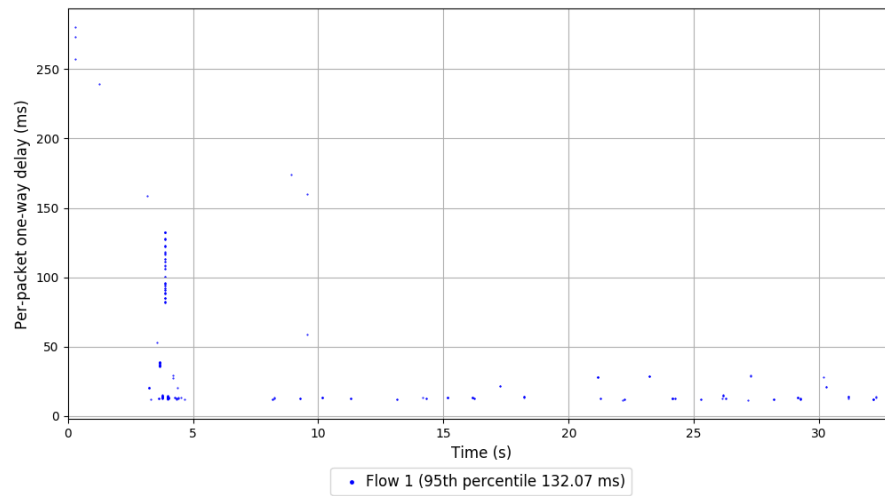
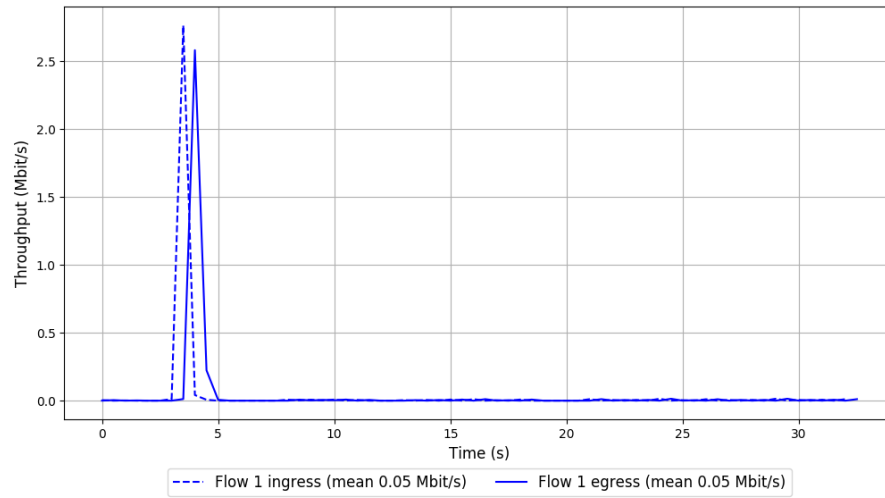


Run 2: Statistics of WebRTC media

Start at: 2019-06-27 18:34:48
End at: 2019-06-27 18:35:18
Local clock offset: 0.588 ms
Remote clock offset: -4.242 ms

Below is generated by plot.py at 2019-06-27 19:04:55
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 132.066 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 132.066 ms
Loss rate: 0.00%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2019-06-27 19:01:52
End at: 2019-06-27 19:02:22
Local clock offset: 2.667 ms
Remote clock offset: -0.139 ms

Below is generated by plot.py at 2019-06-27 19:04:55
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 27.506 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 27.506 ms
Loss rate: 0.00%

Run 3: Report of WebRTC media — Data Link

