

Pantheon Report

Generated at 2018-12-11 13:09:36 (UTC).

Data path: GCE Tokyo on `ens4` (*local*) → GCE London on `ens4` (*remote*).

Repeated the test of 19 congestion control schemes 5 times.

Each test lasted for 30 seconds running 1 flow.

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

System info:

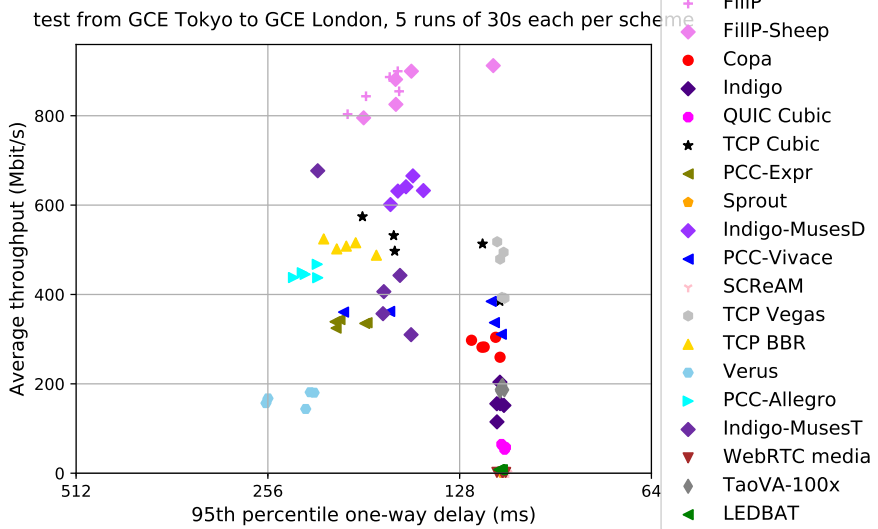
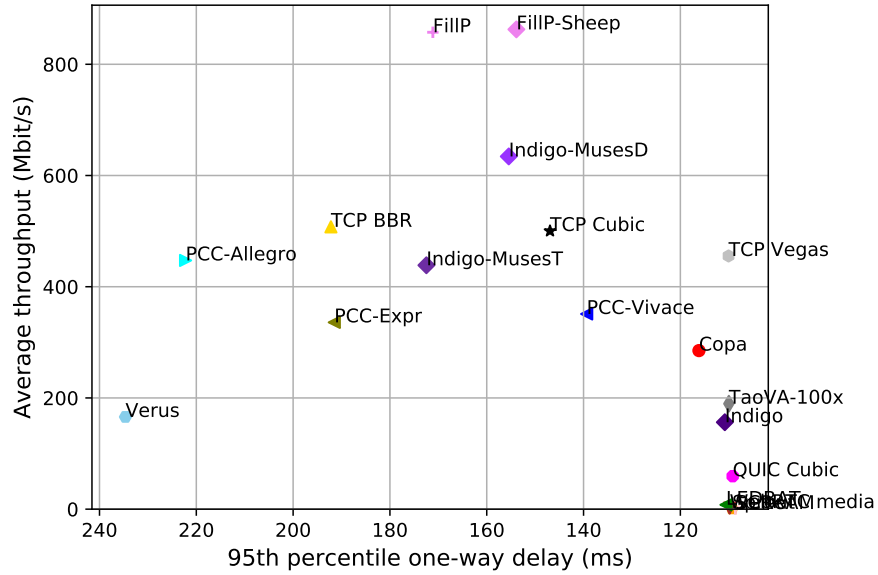
```
Linux 4.15.0-1024-gcp
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
```

Git summary:

```
branch: muses @ c654af0b7d59d4ef4b914cfac404e1fc2e96dc68
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfc58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
third_party/muses-refactored @ 31f8f0ba8ef8b1da76c2bc0cd0a7850c33ff64fb
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 GCE Tokyo to GCE London, 5 runs of 30s each per scheme
(mean of all runs by scheme)



scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	5	507.68	192.19	0.76
Copa	5	285.13	116.16	0.00
TCP Cubic	5	500.20	146.93	0.10
FillP	5	857.56	171.13	2.12
FillP-Sheep	5	862.76	153.88	0.72
Indigo	5	156.29	110.81	0.00
Indigo-MusesD	5	634.30	155.45	0.22
Indigo-MusesT	5	438.59	172.47	1.28
LEDBAT	5	7.86	110.58	0.00
PCC-Allegro	5	447.30	222.21	3.29
PCC-Expr	5	335.90	191.50	1.56
QUIC Cubic	4	59.29	109.19	0.00
SCReAM	5	0.22	108.63	0.00
Sprout	5	0.86	109.30	0.00
TaoVA-100x	5	189.64	109.98	0.00
TCP Vegas	5	455.29	110.04	0.00
Verus	5	165.89	234.64	3.22
PCC-Vivace	5	351.01	139.36	0.22
WebRTC media	5	1.93	109.82	0.00

Run 1: Statistics of TCP BBR

Start at: 2018-12-11 09:03:00

End at: 2018-12-11 09:03:30

Local clock offset: -0.111 ms

Remote clock offset: 0.315 ms

Below is generated by plot.py at 2018-12-11 11:42:55

Datalink statistics

-- Total of 1 flow:

Average throughput: 515.83 Mbit/s

95th percentile per-packet one-way delay: 186.388 ms

Loss rate: 0.33%

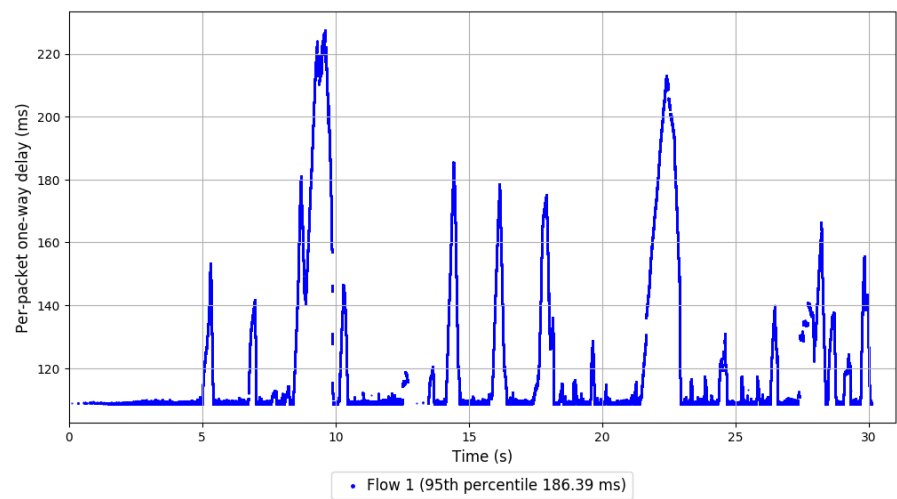
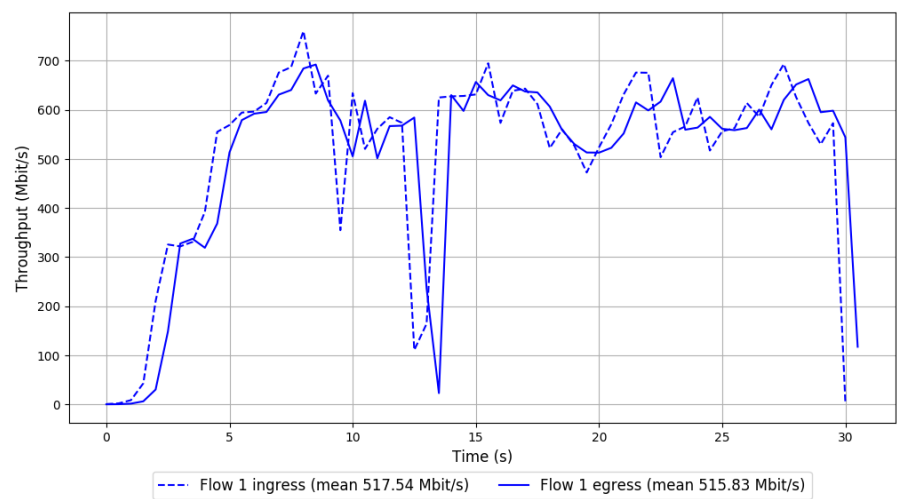
-- Flow 1:

Average throughput: 515.83 Mbit/s

95th percentile per-packet one-way delay: 186.388 ms

Loss rate: 0.33%

Run 1: Report of TCP BBR — Data Link

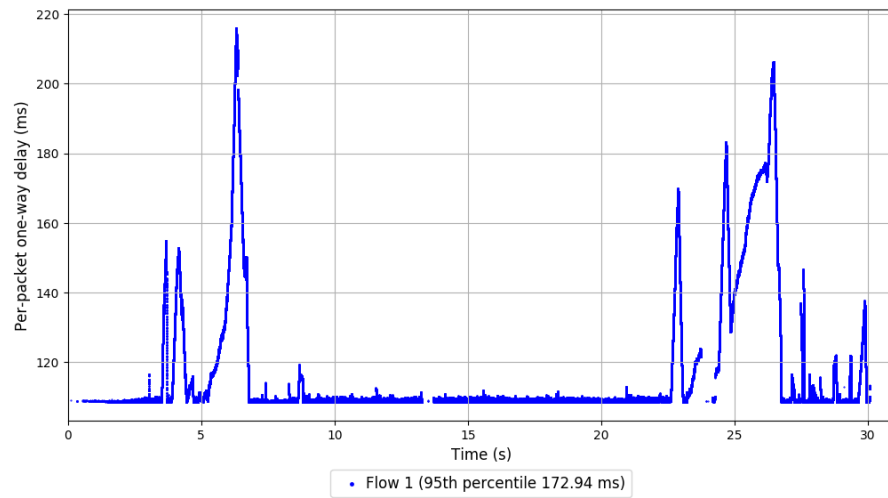
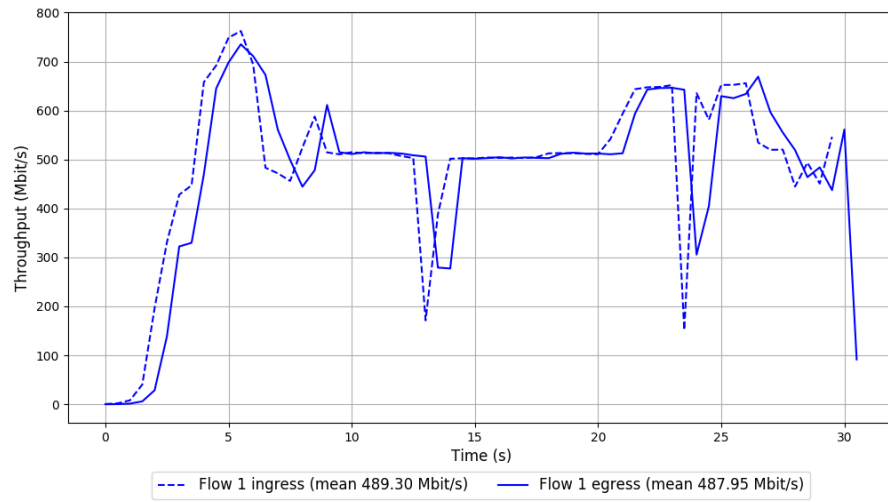


Run 2: Statistics of TCP BBR

Start at: 2018-12-11 09:31:31
End at: 2018-12-11 09:32:01
Local clock offset: -0.037 ms
Remote clock offset: -0.266 ms

Below is generated by plot.py at 2018-12-11 11:42:55
Datalink statistics
-- Total of 1 flow:
Average throughput: 487.95 Mbit/s
95th percentile per-packet one-way delay: 172.939 ms
Loss rate: 0.28%
-- Flow 1:
Average throughput: 487.95 Mbit/s
95th percentile per-packet one-way delay: 172.939 ms
Loss rate: 0.28%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-12-11 10:00:20

End at: 2018-12-11 10:00:50

Local clock offset: 0.126 ms

Remote clock offset: 0.5 ms

Below is generated by plot.py at 2018-12-11 11:43:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 524.35 Mbit/s

95th percentile per-packet one-way delay: 209.217 ms

Loss rate: 1.63%

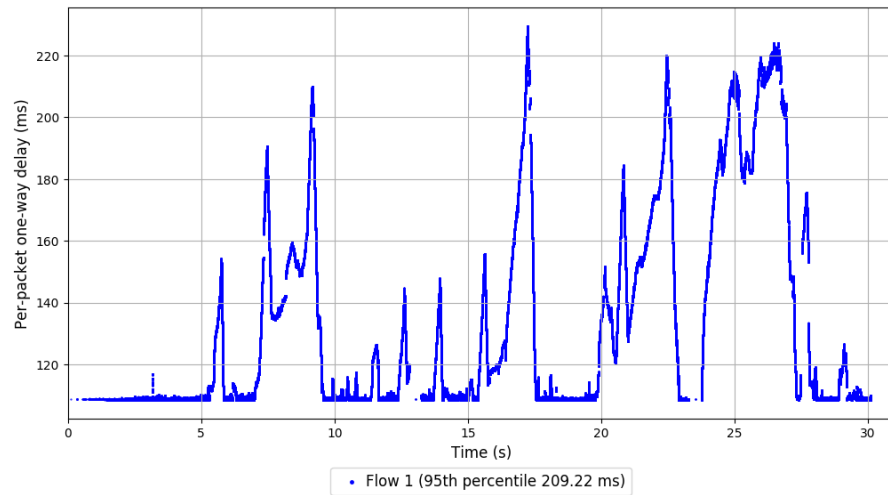
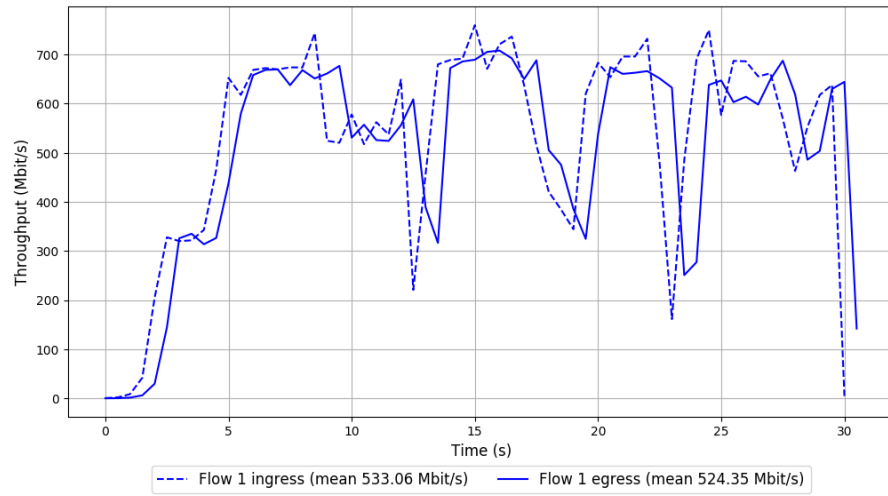
-- Flow 1:

Average throughput: 524.35 Mbit/s

95th percentile per-packet one-way delay: 209.217 ms

Loss rate: 1.63%

Run 3: Report of TCP BBR — Data Link



Run 4: Statistics of TCP BBR

Start at: 2018-12-11 10:29:15

End at: 2018-12-11 10:29:45

Local clock offset: -0.086 ms

Remote clock offset: 0.188 ms

Below is generated by plot.py at 2018-12-11 11:43:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 508.25 Mbit/s

95th percentile per-packet one-way delay: 192.798 ms

Loss rate: 0.42%

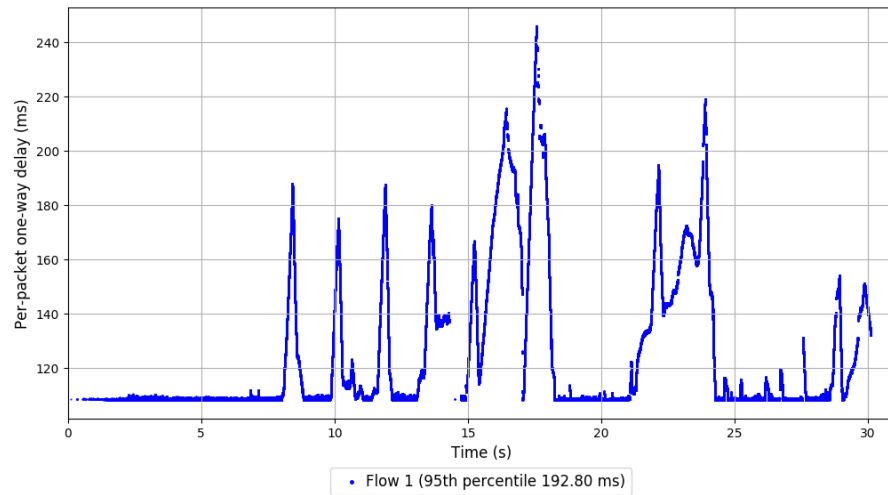
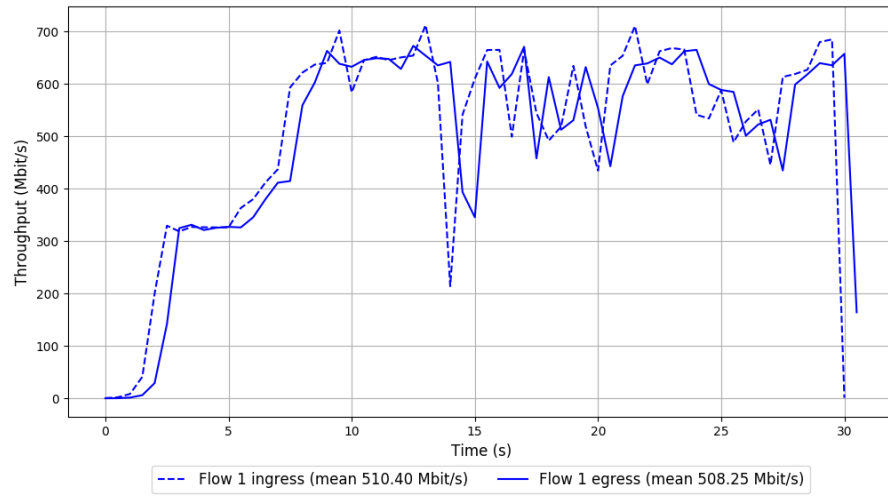
-- Flow 1:

Average throughput: 508.25 Mbit/s

95th percentile per-packet one-way delay: 192.798 ms

Loss rate: 0.42%

Run 4: Report of TCP BBR — Data Link



Run 5: Statistics of TCP BBR

Start at: 2018-12-11 10:58:06

End at: 2018-12-11 10:58:36

Local clock offset: 0.043 ms

Remote clock offset: 0.21 ms

Below is generated by plot.py at 2018-12-11 11:43:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 502.04 Mbit/s

95th percentile per-packet one-way delay: 199.596 ms

Loss rate: 1.12%

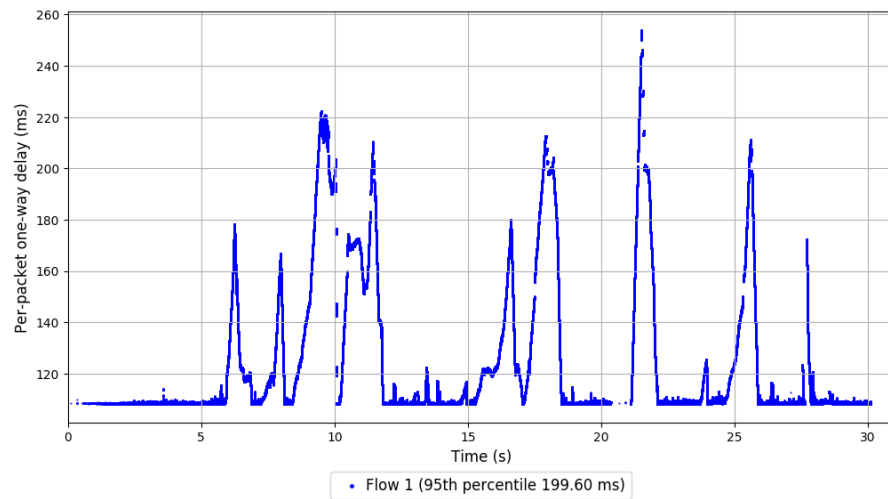
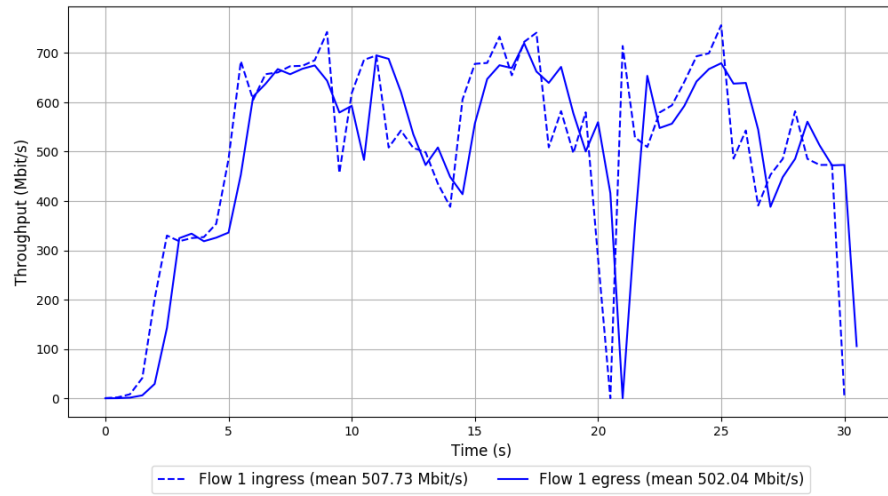
-- Flow 1:

Average throughput: 502.04 Mbit/s

95th percentile per-packet one-way delay: 199.596 ms

Loss rate: 1.12%

Run 5: Report of TCP BBR — Data Link

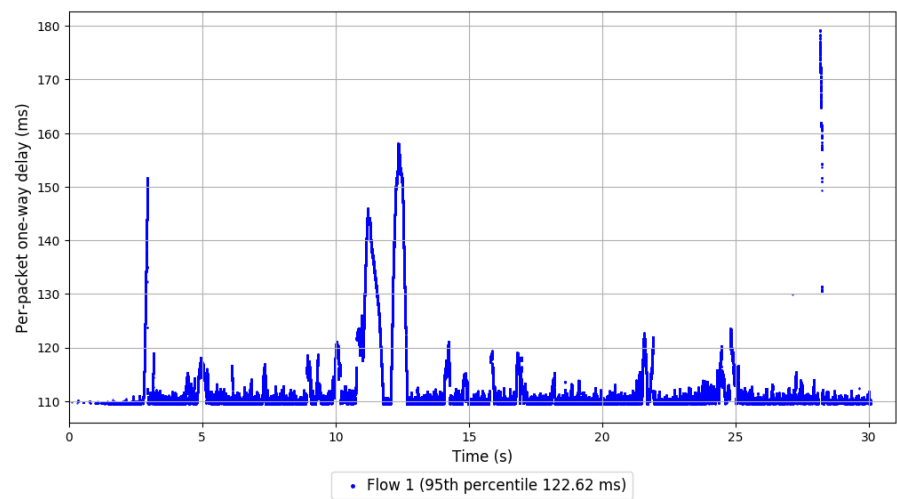
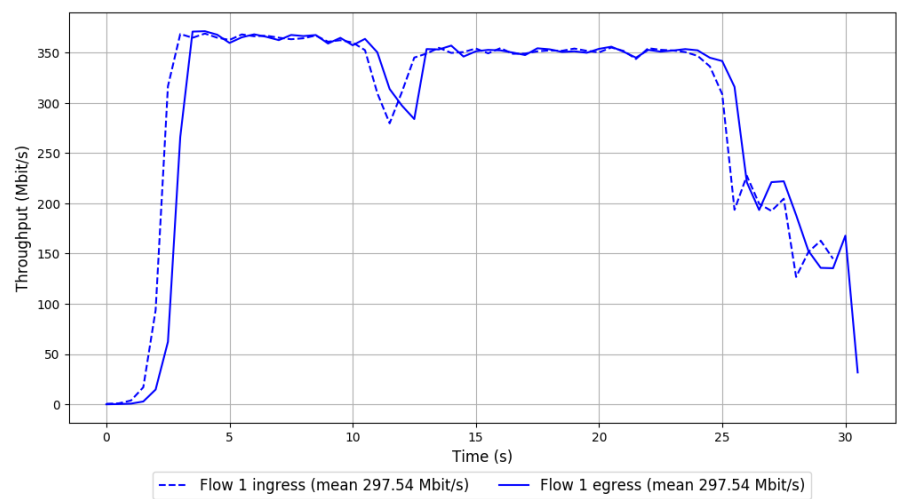


Run 1: Statistics of Copa

Start at: 2018-12-11 08:59:36
End at: 2018-12-11 09:00:06
Local clock offset: -0.246 ms
Remote clock offset: -0.051 ms

Below is generated by plot.py at 2018-12-11 11:43:28
Datalink statistics
-- Total of 1 flow:
Average throughput: 297.54 Mbit/s
95th percentile per-packet one-way delay: 122.625 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 297.54 Mbit/s
95th percentile per-packet one-way delay: 122.625 ms
Loss rate: 0.00%

Run 1: Report of Copa — Data Link

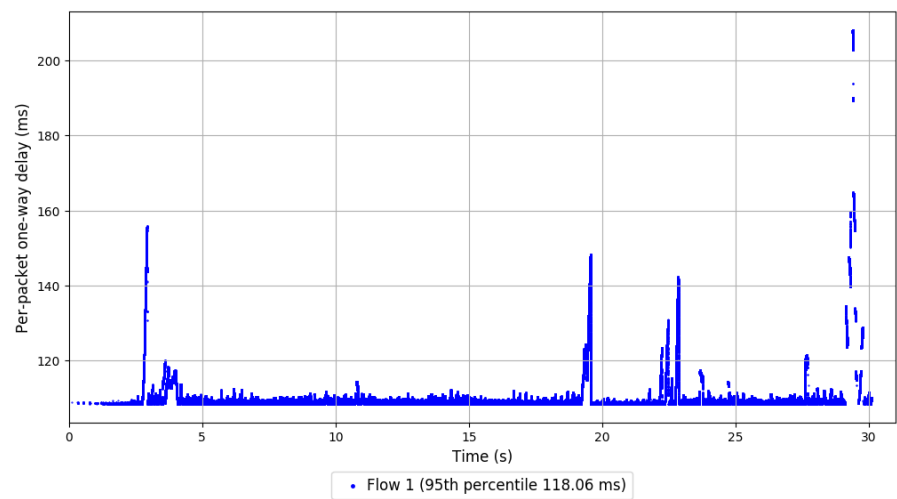
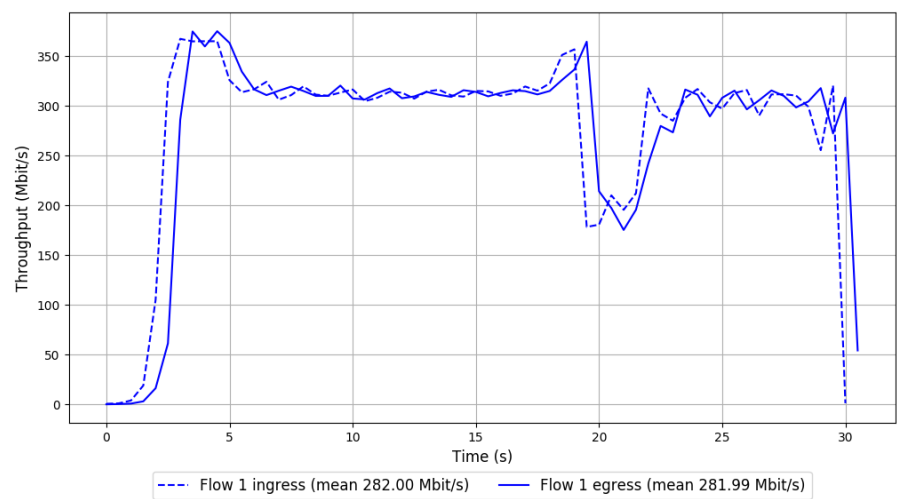


Run 2: Statistics of Copa

Start at: 2018-12-11 09:28:10
End at: 2018-12-11 09:28:40
Local clock offset: -0.174 ms
Remote clock offset: 0.121 ms

Below is generated by plot.py at 2018-12-11 11:43:28
Datalink statistics
-- Total of 1 flow:
Average throughput: 281.99 Mbit/s
95th percentile per-packet one-way delay: 118.063 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 281.99 Mbit/s
95th percentile per-packet one-way delay: 118.063 ms
Loss rate: 0.00%

Run 2: Report of Copa — Data Link

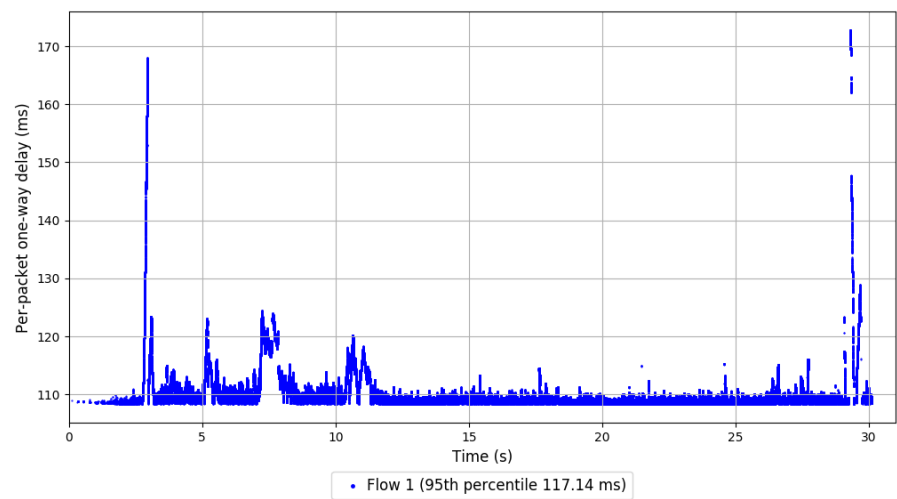
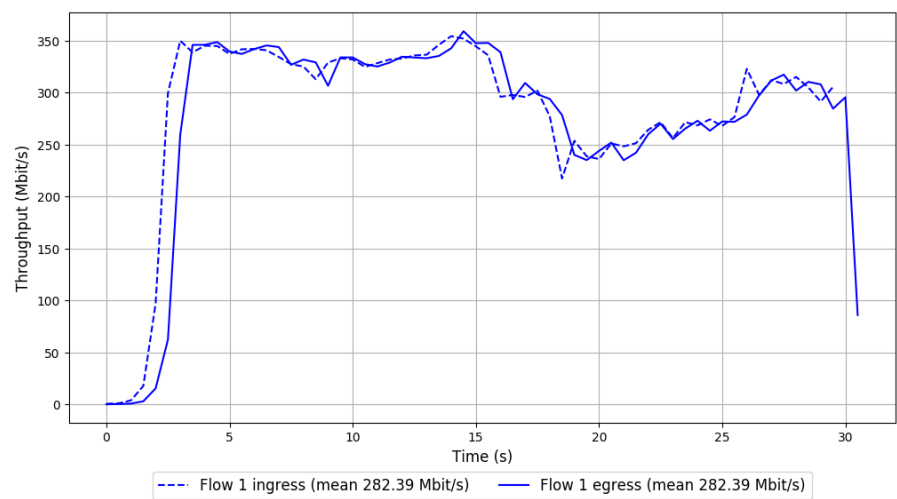


Run 3: Statistics of Copa

Start at: 2018-12-11 09:57:00
End at: 2018-12-11 09:57:30
Local clock offset: 0.494 ms
Remote clock offset: -0.237 ms

Below is generated by plot.py at 2018-12-11 11:43:28
Datalink statistics
-- Total of 1 flow:
Average throughput: 282.39 Mbit/s
95th percentile per-packet one-way delay: 117.135 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 282.39 Mbit/s
95th percentile per-packet one-way delay: 117.135 ms
Loss rate: 0.00%

Run 3: Report of Copa — Data Link



Run 4: Statistics of Copa

Start at: 2018-12-11 10:25:54

End at: 2018-12-11 10:26:24

Local clock offset: 1.134 ms

Remote clock offset: 0.187 ms

Below is generated by plot.py at 2018-12-11 11:51:46

Datalink statistics

-- Total of 1 flow:

Average throughput: 259.54 Mbit/s

95th percentile per-packet one-way delay: 110.611 ms

Loss rate: 0.00%

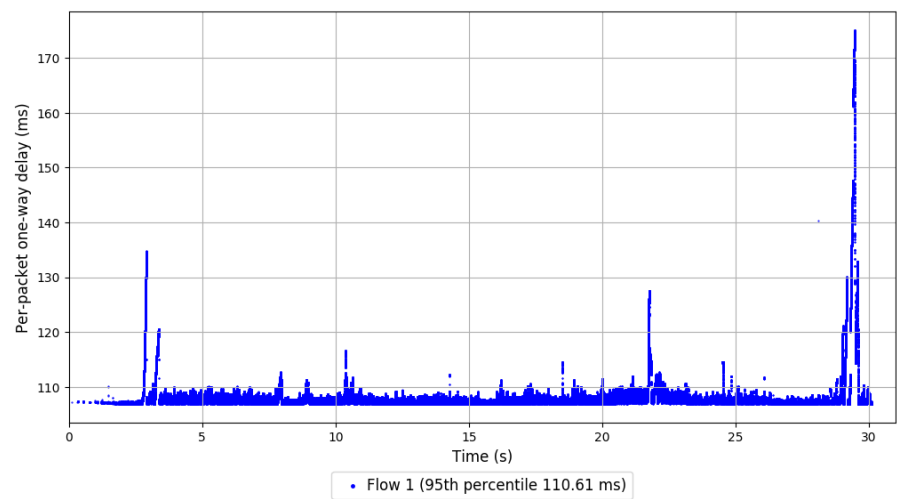
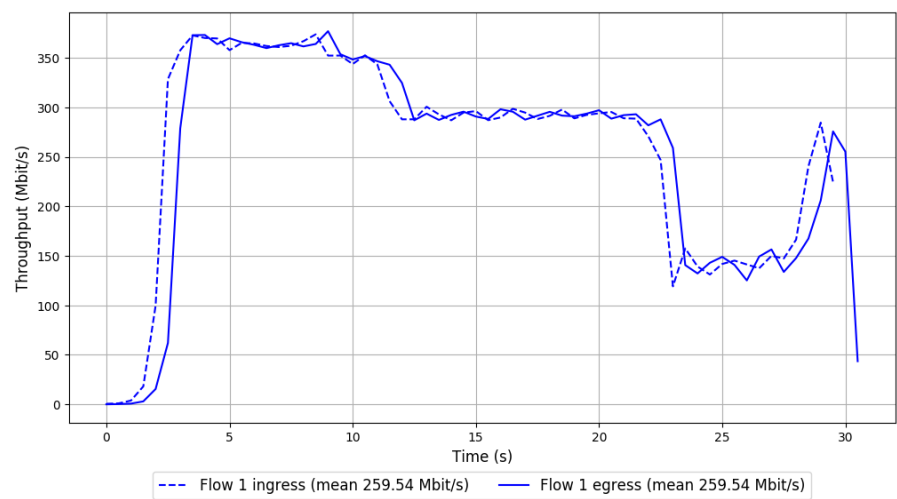
-- Flow 1:

Average throughput: 259.54 Mbit/s

95th percentile per-packet one-way delay: 110.611 ms

Loss rate: 0.00%

Run 4: Report of Copa — Data Link

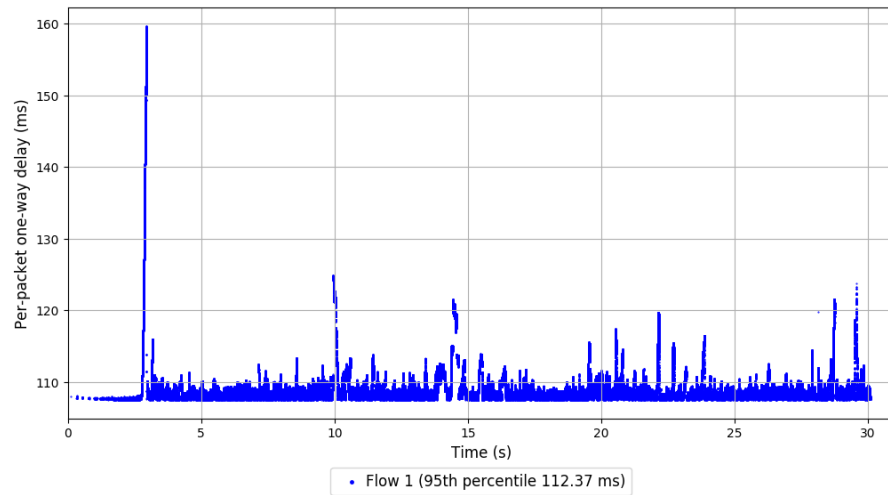
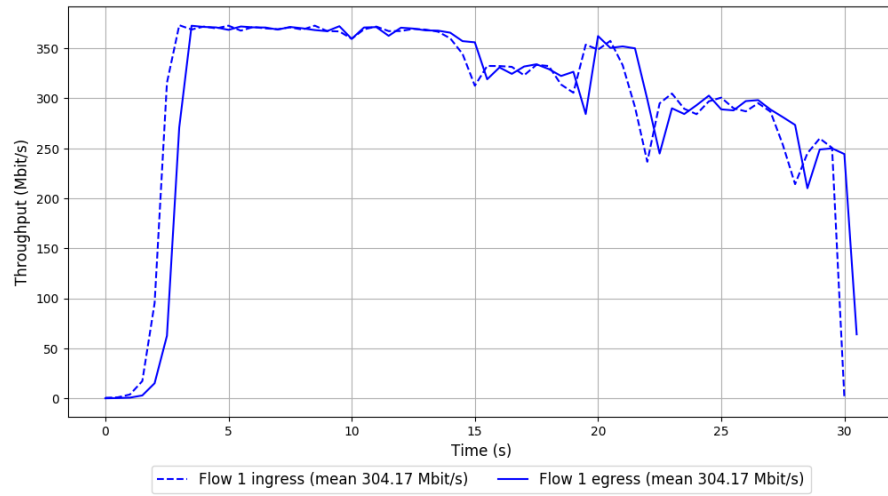


Run 5: Statistics of Copa

Start at: 2018-12-11 10:54:42
End at: 2018-12-11 10:55:12
Local clock offset: 1.084 ms
Remote clock offset: -0.175 ms

Below is generated by plot.py at 2018-12-11 11:53:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 304.17 Mbit/s
95th percentile per-packet one-way delay: 112.371 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 304.17 Mbit/s
95th percentile per-packet one-way delay: 112.371 ms
Loss rate: 0.00%

Run 5: Report of Copa — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-12-11 09:16:14

End at: 2018-12-11 09:16:44

Local clock offset: -0.155 ms

Remote clock offset: 0.042 ms

Below is generated by plot.py at 2018-12-11 11:53:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 513.17 Mbit/s

95th percentile per-packet one-way delay: 117.830 ms

Loss rate: 0.01%

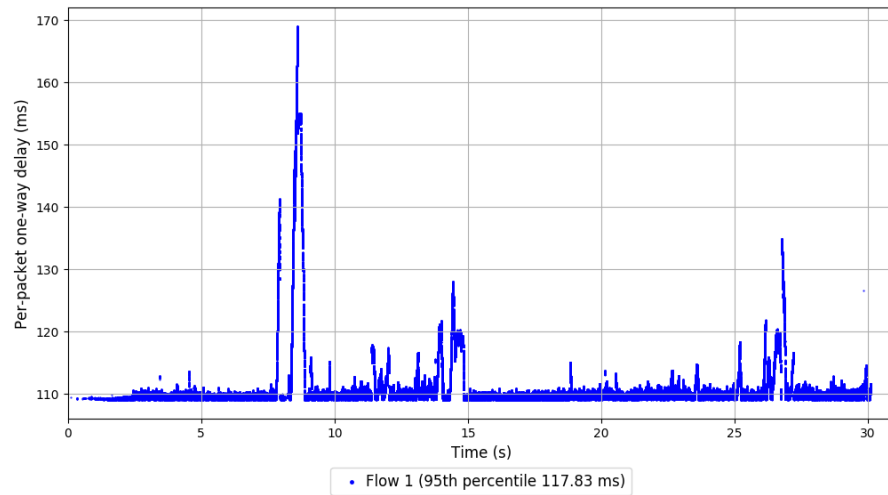
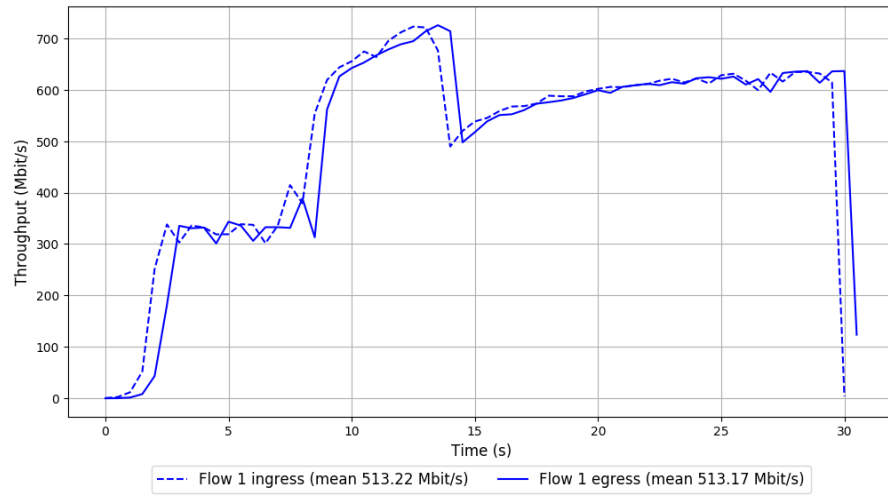
-- Flow 1:

Average throughput: 513.17 Mbit/s

95th percentile per-packet one-way delay: 117.830 ms

Loss rate: 0.01%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-12-11 09:45:13

End at: 2018-12-11 09:45:43

Local clock offset: -0.046 ms

Remote clock offset: 0.139 ms

Below is generated by plot.py at 2018-12-11 11:53:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 384.85 Mbit/s

95th percentile per-packet one-way delay: 110.688 ms

Loss rate: 0.00%

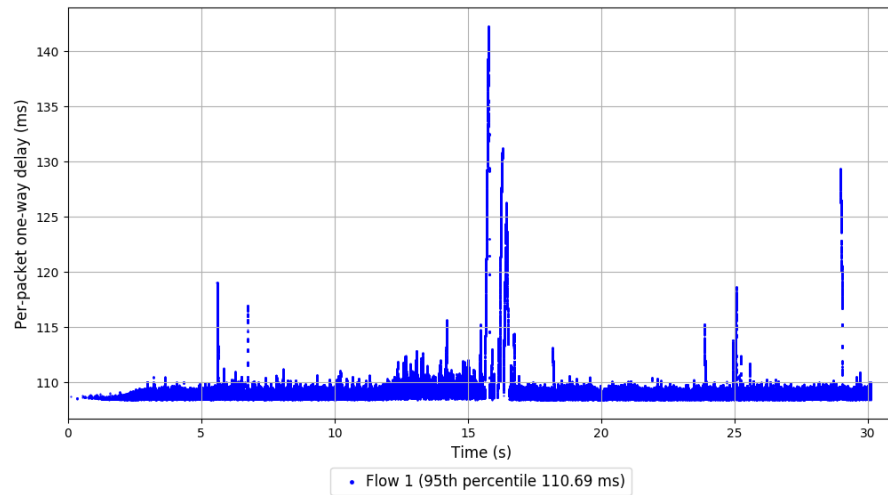
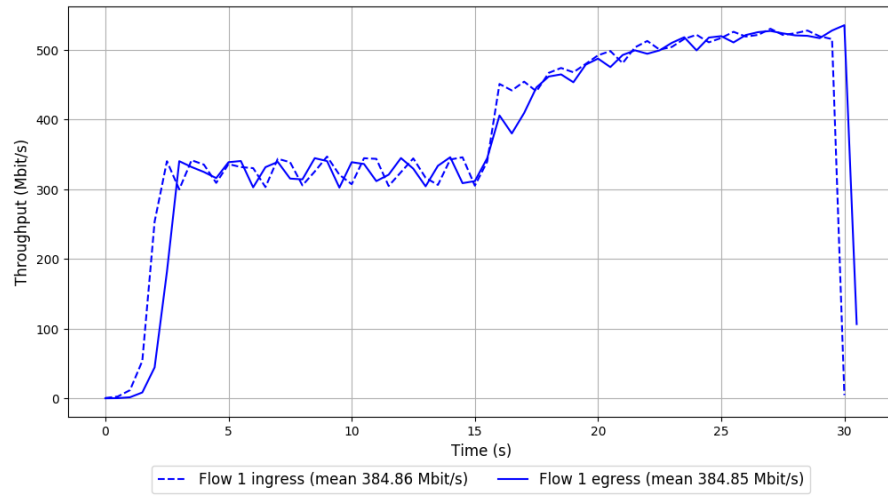
-- Flow 1:

Average throughput: 384.85 Mbit/s

95th percentile per-packet one-way delay: 110.688 ms

Loss rate: 0.00%

Run 2: Report of TCP Cubic — Data Link

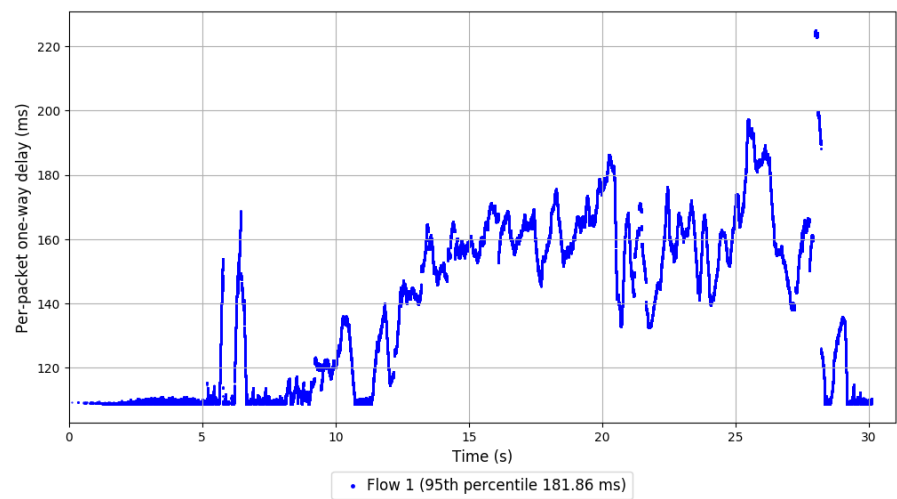
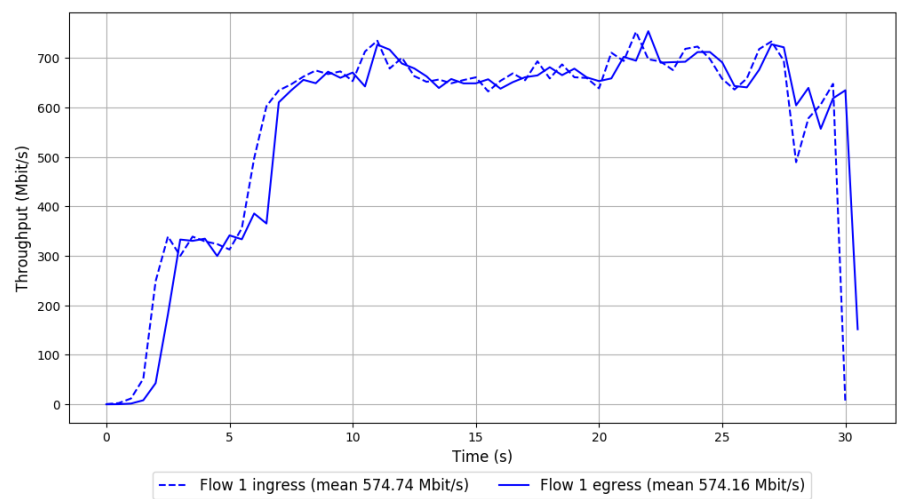


Run 3: Statistics of TCP Cubic

Start at: 2018-12-11 10:13:44
End at: 2018-12-11 10:14:14
Local clock offset: -0.127 ms
Remote clock offset: -0.212 ms

Below is generated by plot.py at 2018-12-11 11:53:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 574.16 Mbit/s
95th percentile per-packet one-way delay: 181.863 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 574.16 Mbit/s
95th percentile per-packet one-way delay: 181.863 ms
Loss rate: 0.10%

Run 3: Report of TCP Cubic — Data Link



Run 4: Statistics of TCP Cubic

Start at: 2018-12-11 10:42:46

End at: 2018-12-11 10:43:16

Local clock offset: 0.927 ms

Remote clock offset: 0.578 ms

Below is generated by plot.py at 2018-12-11 11:53:22

Datalink statistics

-- Total of 1 flow:

Average throughput: 531.84 Mbit/s

95th percentile per-packet one-way delay: 162.437 ms

Loss rate: 0.14%

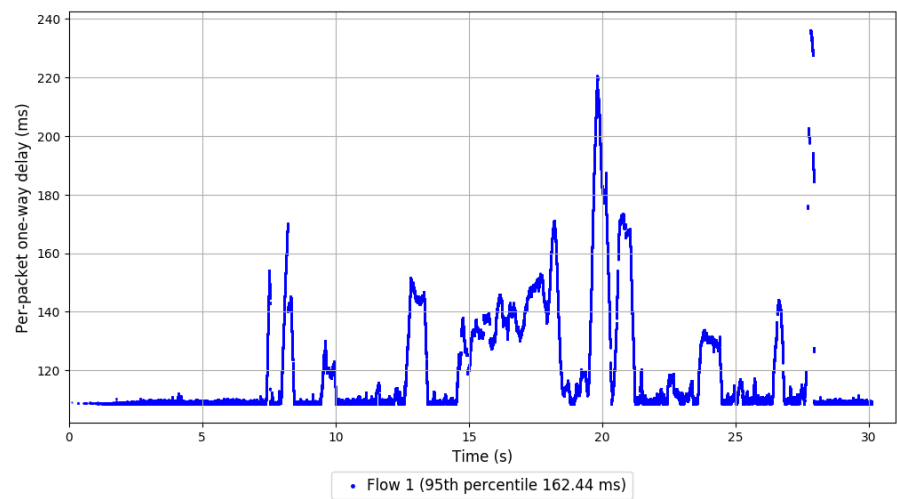
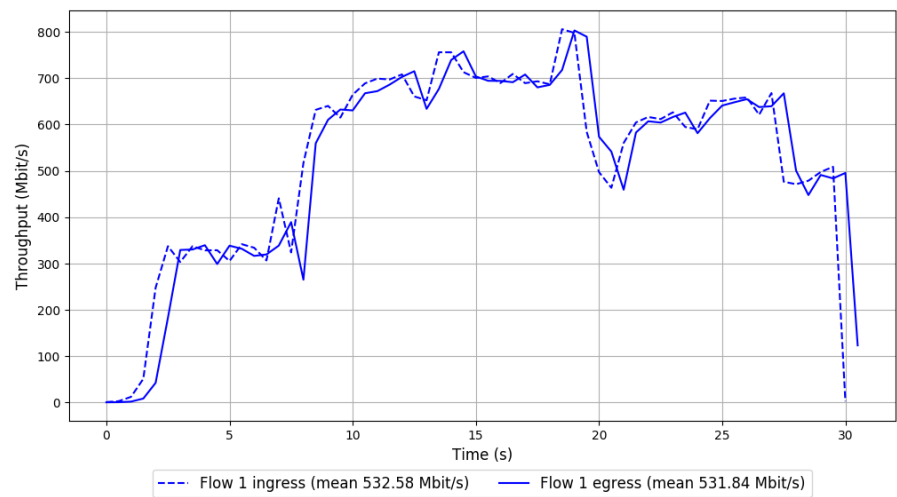
-- Flow 1:

Average throughput: 531.84 Mbit/s

95th percentile per-packet one-way delay: 162.437 ms

Loss rate: 0.14%

Run 4: Report of TCP Cubic — Data Link



Run 5: Statistics of TCP Cubic

Start at: 2018-12-11 11:11:22

End at: 2018-12-11 11:11:52

Local clock offset: -1.5 ms

Remote clock offset: 0.166 ms

Below is generated by plot.py at 2018-12-11 11:53:22

Datalink statistics

-- Total of 1 flow:

Average throughput: 497.00 Mbit/s

95th percentile per-packet one-way delay: 161.850 ms

Loss rate: 0.23%

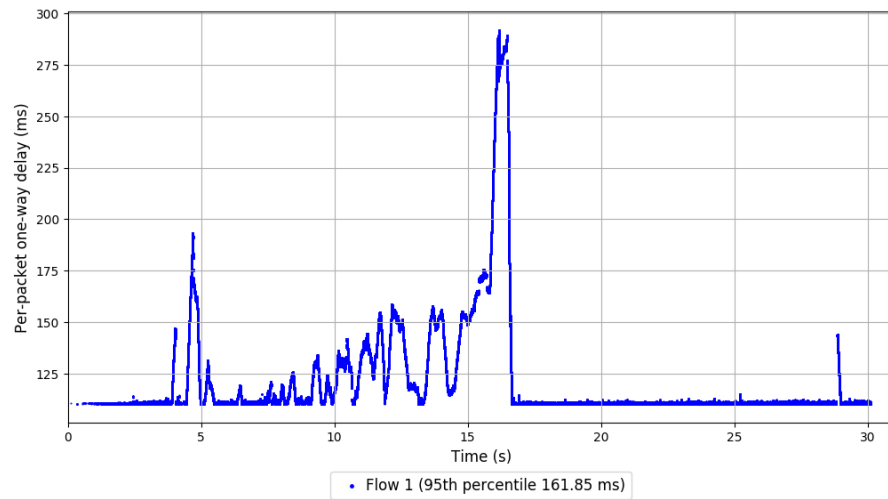
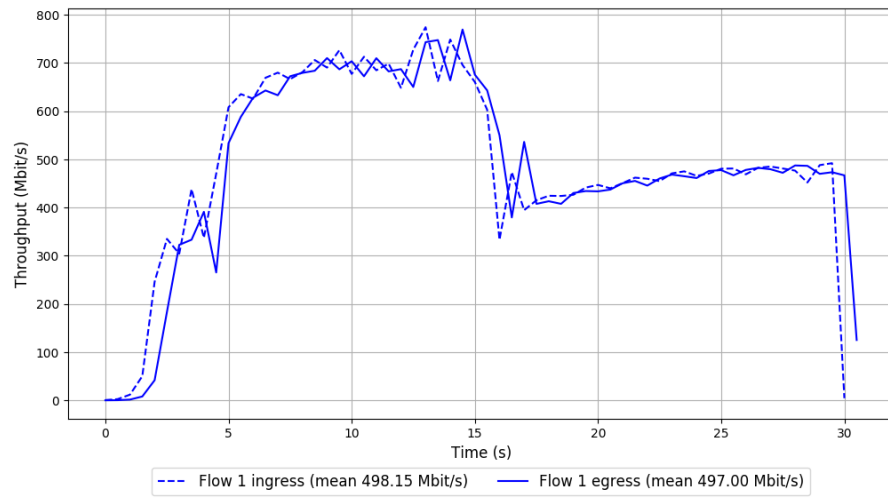
-- Flow 1:

Average throughput: 497.00 Mbit/s

95th percentile per-packet one-way delay: 161.850 ms

Loss rate: 0.23%

Run 5: Report of TCP Cubic — Data Link



Run 1: Statistics of FillP

Start at: 2018-12-11 09:09:02

End at: 2018-12-11 09:09:32

Local clock offset: -0.011 ms

Remote clock offset: 0.016 ms

Below is generated by plot.py at 2018-12-11 12:00:02

Datalink statistics

-- Total of 1 flow:

Average throughput: 843.57 Mbit/s

95th percentile per-packet one-way delay: 179.549 ms

Loss rate: 3.40%

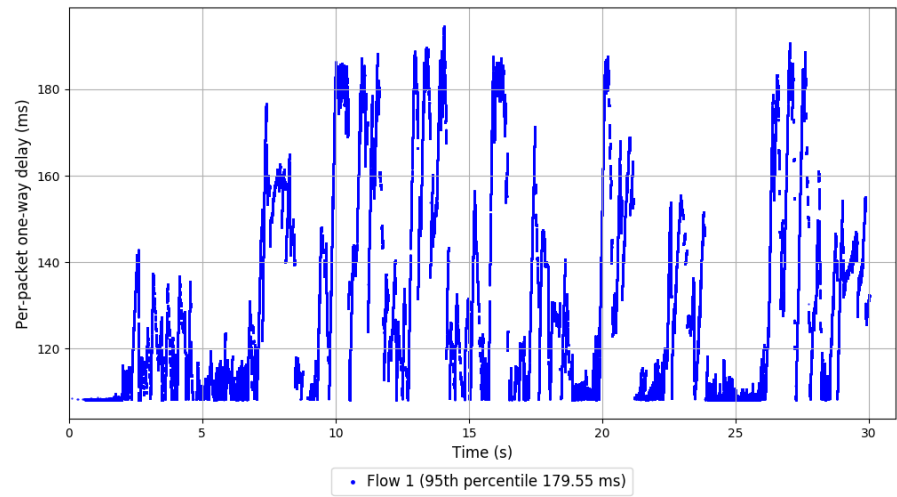
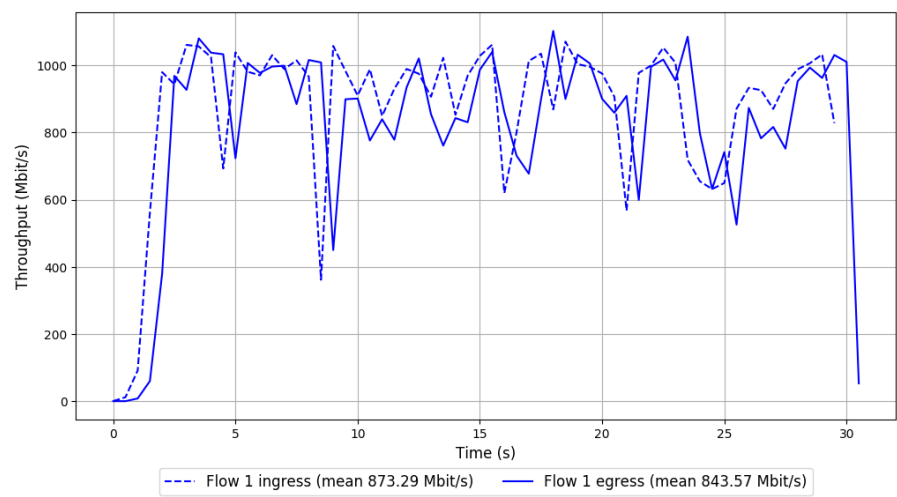
-- Flow 1:

Average throughput: 843.57 Mbit/s

95th percentile per-packet one-way delay: 179.549 ms

Loss rate: 3.40%

Run 1: Report of FillP — Data Link



Run 2: Statistics of FillP

Start at: 2018-12-11 09:37:41

End at: 2018-12-11 09:38:11

Local clock offset: -0.809 ms

Remote clock offset: 0.143 ms

Below is generated by plot.py at 2018-12-11 12:11:03

Datalink statistics

-- Total of 1 flow:

Average throughput: 899.59 Mbit/s

95th percentile per-packet one-way delay: 160.096 ms

Loss rate: 0.70%

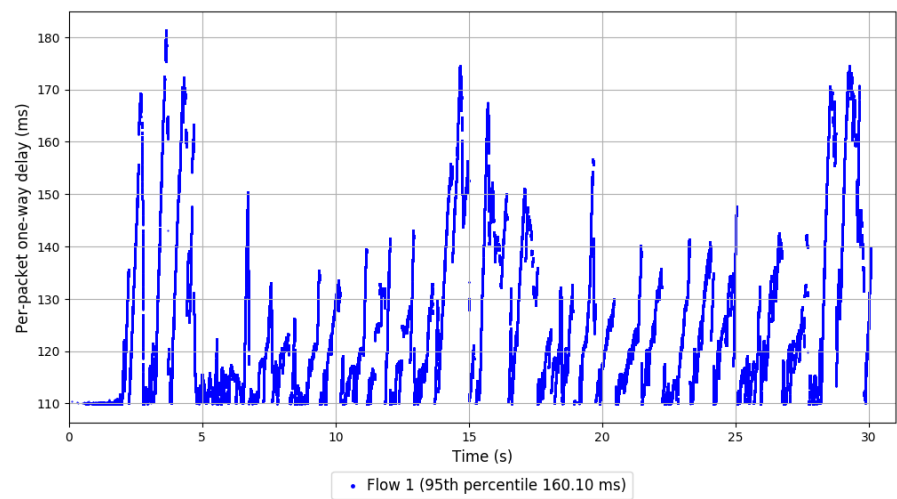
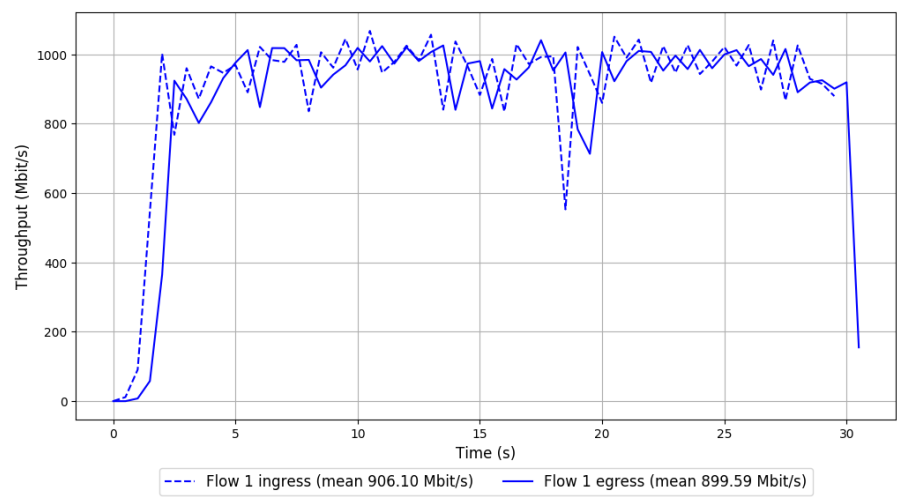
-- Flow 1:

Average throughput: 899.59 Mbit/s

95th percentile per-packet one-way delay: 160.096 ms

Loss rate: 0.70%

Run 2: Report of FillP — Data Link



Run 3: Statistics of FillP

Start at: 2018-12-11 10:06:25

End at: 2018-12-11 10:06:55

Local clock offset: -1.35 ms

Remote clock offset: 0.125 ms

Below is generated by plot.py at 2018-12-11 12:11:20

Datalink statistics

-- Total of 1 flow:

Average throughput: 854.64 Mbit/s

95th percentile per-packet one-way delay: 159.290 ms

Loss rate: 0.36%

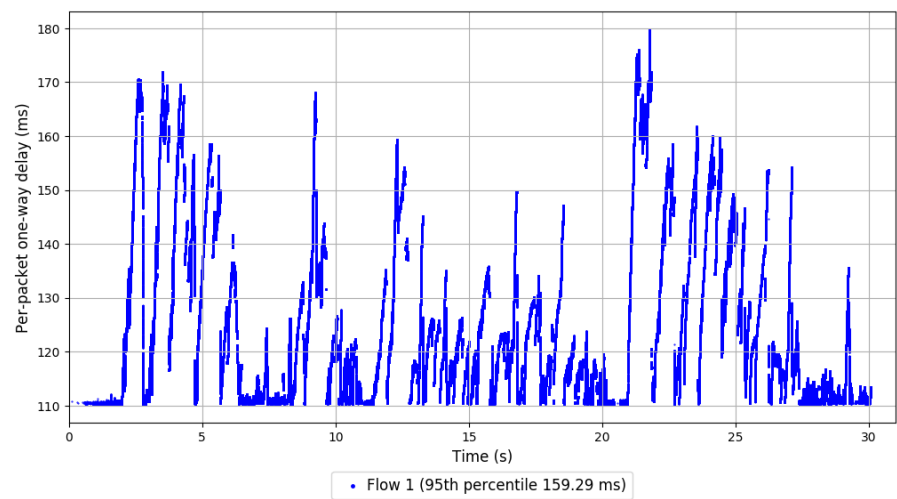
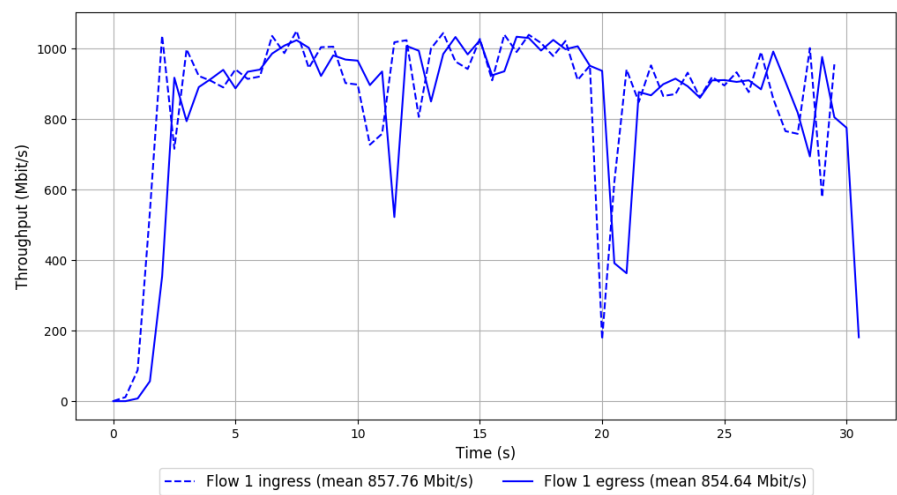
-- Flow 1:

Average throughput: 854.64 Mbit/s

95th percentile per-packet one-way delay: 159.290 ms

Loss rate: 0.36%

Run 3: Report of FillP — Data Link



Run 4: Statistics of FillP

Start at: 2018-12-11 10:35:25

End at: 2018-12-11 10:35:55

Local clock offset: -0.184 ms

Remote clock offset: 0.178 ms

Below is generated by plot.py at 2018-12-11 12:12:29

Datalink statistics

-- Total of 1 flow:

Average throughput: 886.55 Mbit/s

95th percentile per-packet one-way delay: 164.814 ms

Loss rate: 1.61%

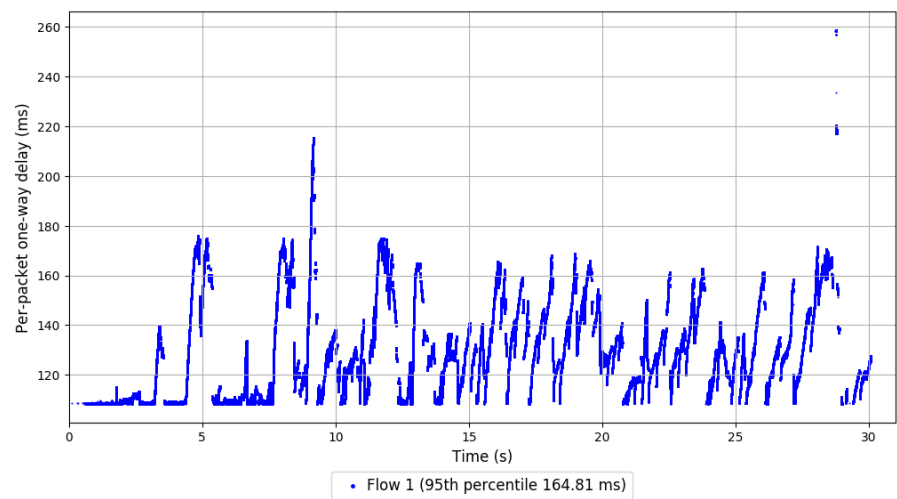
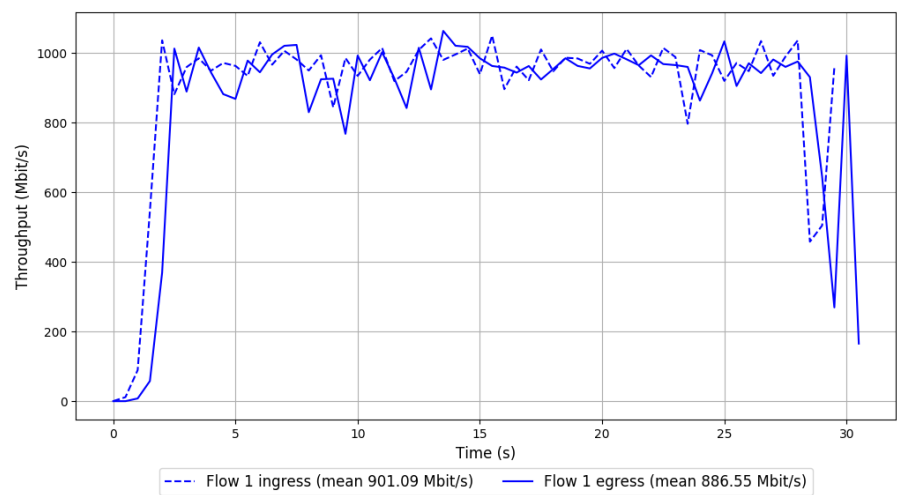
-- Flow 1:

Average throughput: 886.55 Mbit/s

95th percentile per-packet one-way delay: 164.814 ms

Loss rate: 1.61%

Run 4: Report of FillP — Data Link



Run 5: Statistics of FillP

Start at: 2018-12-11 11:04:12

End at: 2018-12-11 11:04:42

Local clock offset: -0.887 ms

Remote clock offset: 0.239 ms

Below is generated by plot.py at 2018-12-11 12:12:29

Datalink statistics

-- Total of 1 flow:

Average throughput: 803.43 Mbit/s

95th percentile per-packet one-way delay: 191.905 ms

Loss rate: 4.55%

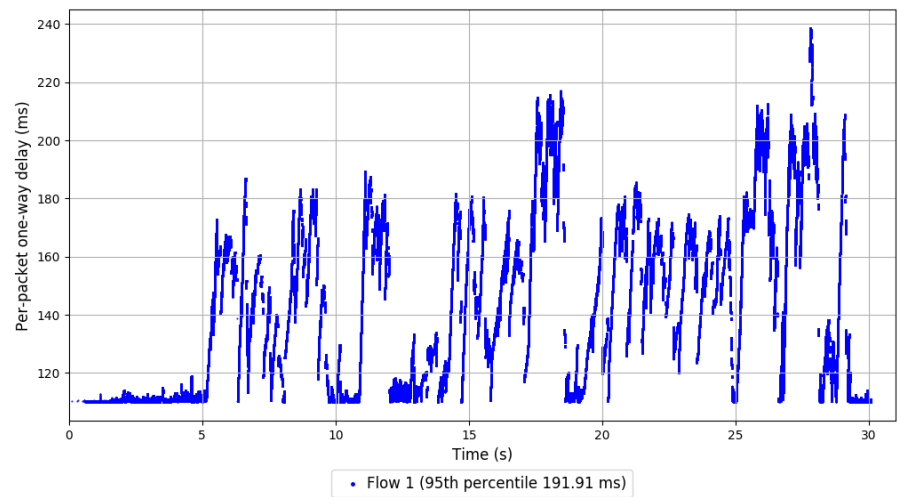
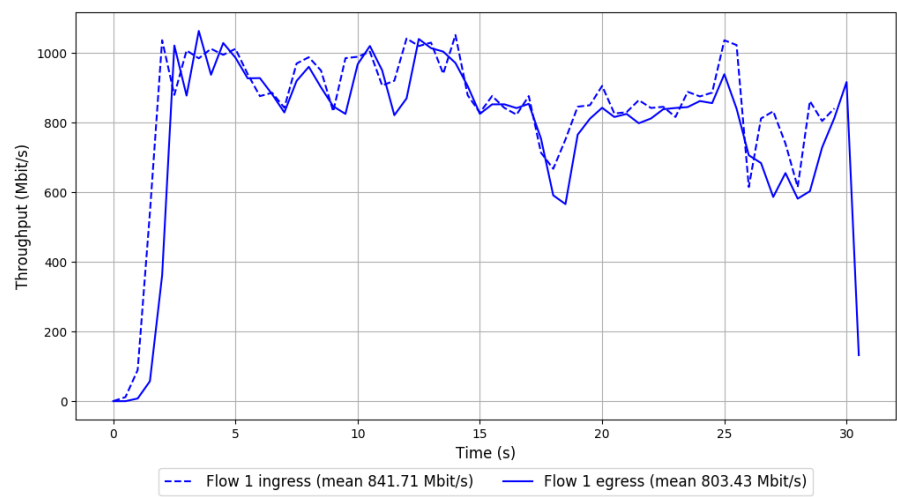
-- Flow 1:

Average throughput: 803.43 Mbit/s

95th percentile per-packet one-way delay: 191.905 ms

Loss rate: 4.55%

Run 5: Report of FillP — Data Link



Run 1: Statistics of FillP-Sheep

Start at: 2018-12-11 09:04:40

End at: 2018-12-11 09:05:10

Local clock offset: 0.149 ms

Remote clock offset: -0.385 ms

Below is generated by plot.py at 2018-12-11 12:13:16

Datalink statistics

-- Total of 1 flow:

Average throughput: 912.14 Mbit/s

95th percentile per-packet one-way delay: 113.358 ms

Loss rate: 0.00%

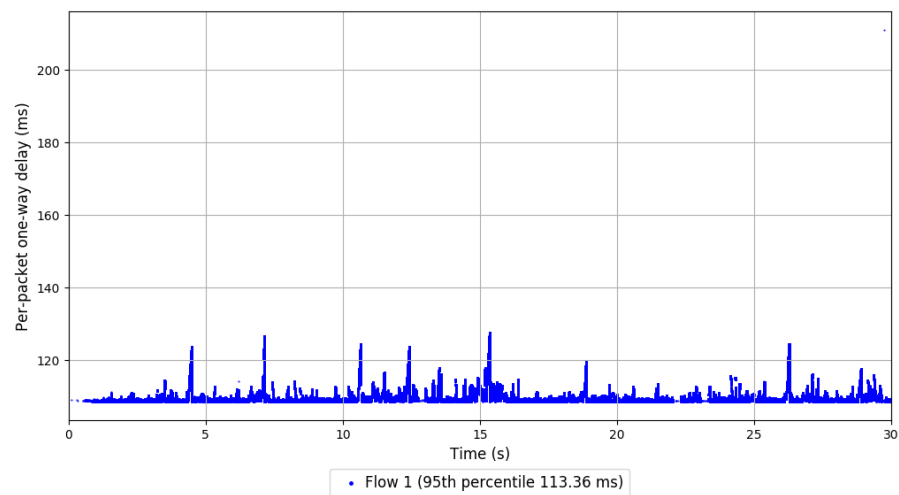
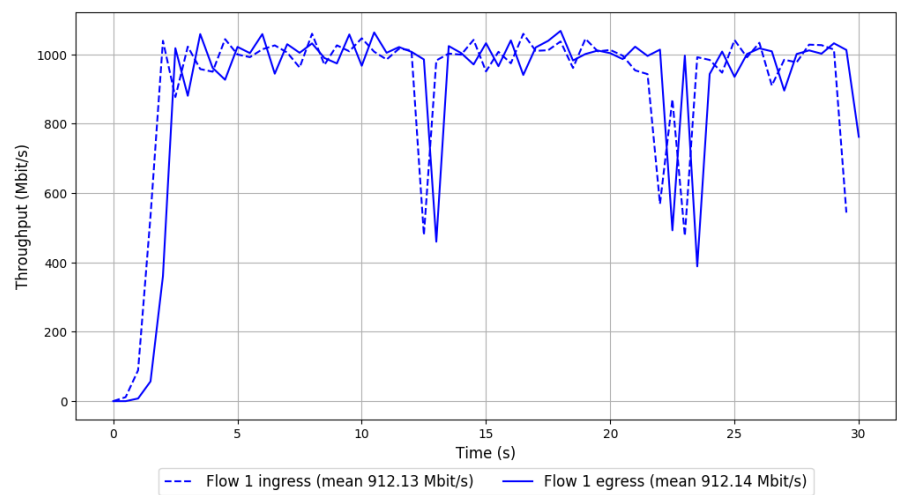
-- Flow 1:

Average throughput: 912.14 Mbit/s

95th percentile per-packet one-way delay: 113.358 ms

Loss rate: 0.00%

Run 1: Report of FillP-Sheep — Data Link



Run 2: Statistics of FillP-Sheep

Start at: 2018-12-11 09:33:09

End at: 2018-12-11 09:33:39

Local clock offset: 0.779 ms

Remote clock offset: 0.1 ms

Below is generated by plot.py at 2018-12-11 12:13:16

Datalink statistics

-- Total of 1 flow:

Average throughput: 881.25 Mbit/s

95th percentile per-packet one-way delay: 161.346 ms

Loss rate: 0.89%

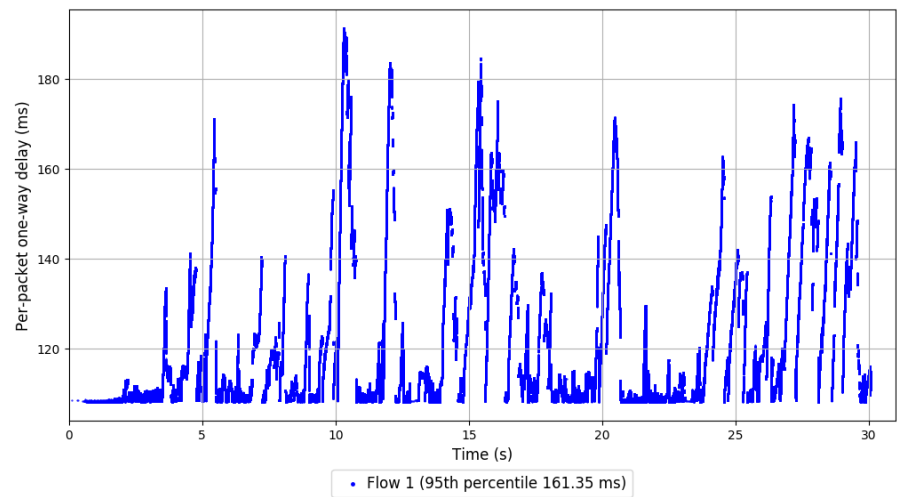
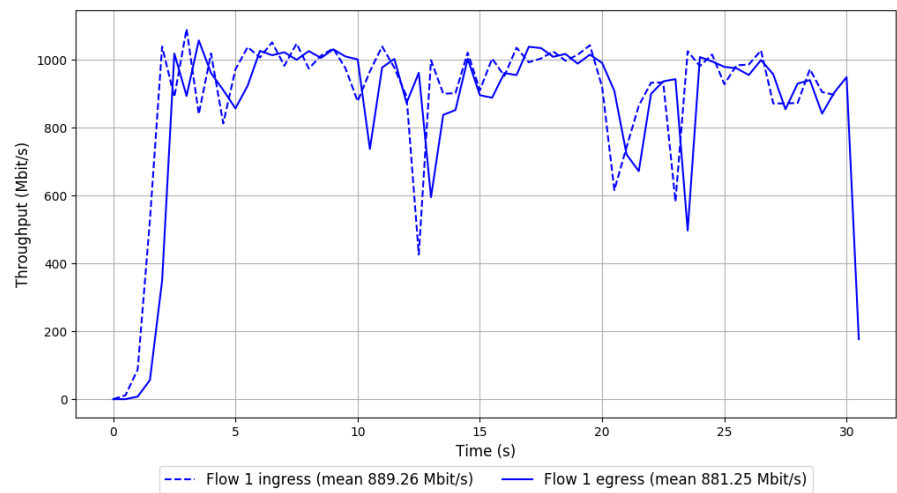
-- Flow 1:

Average throughput: 881.25 Mbit/s

95th percentile per-packet one-way delay: 161.346 ms

Loss rate: 0.89%

Run 2: Report of FillP-Sheep — Data Link



Run 3: Statistics of FillP-Sheep

Start at: 2018-12-11 10:02:02

End at: 2018-12-11 10:02:32

Local clock offset: 1.26 ms

Remote clock offset: 0.17 ms

Below is generated by plot.py at 2018-12-11 12:13:16

Datalink statistics

-- Total of 1 flow:

Average throughput: 825.41 Mbit/s

95th percentile per-packet one-way delay: 161.176 ms

Loss rate: 0.60%

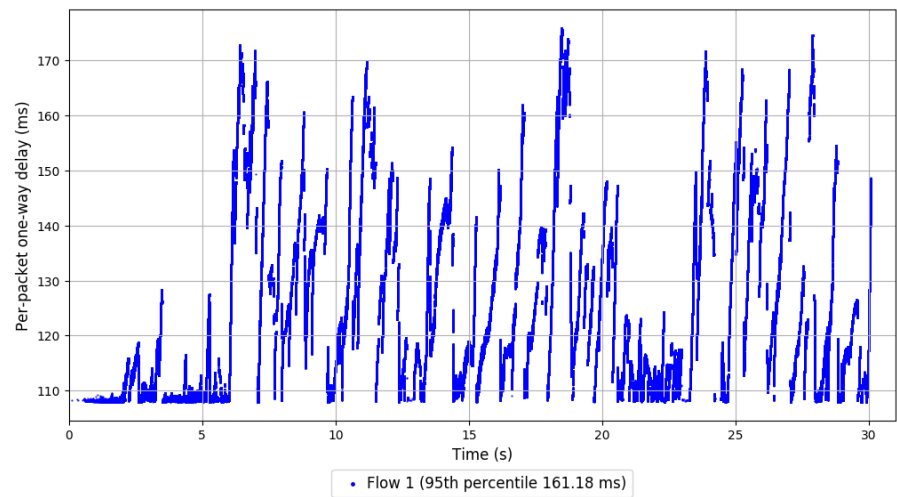
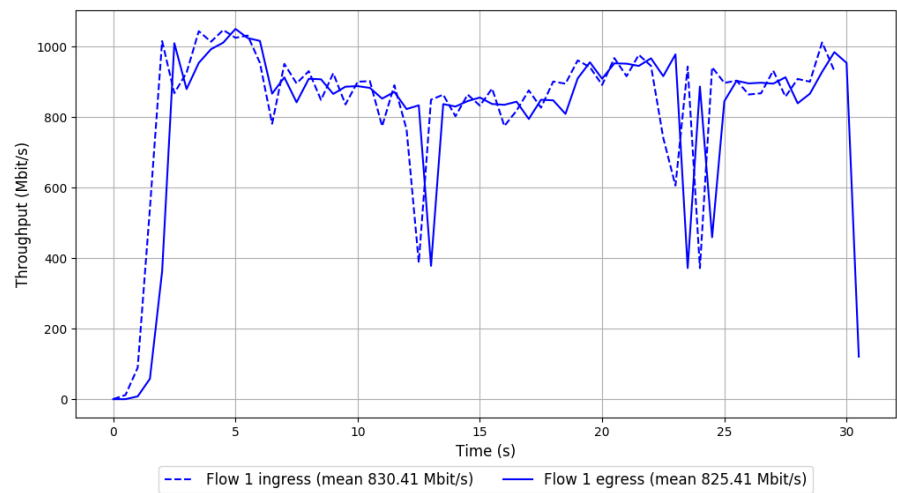
-- Flow 1:

Average throughput: 825.41 Mbit/s

95th percentile per-packet one-way delay: 161.176 ms

Loss rate: 0.60%

Run 3: Report of FillP-Sheep — Data Link



Run 4: Statistics of FillP-Sheep

Start at: 2018-12-11 10:30:55

End at: 2018-12-11 10:31:25

Local clock offset: -0.156 ms

Remote clock offset: 0.159 ms

Below is generated by plot.py at 2018-12-11 12:20:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 795.33 Mbit/s

95th percentile per-packet one-way delay: 181.100 ms

Loss rate: 1.58%

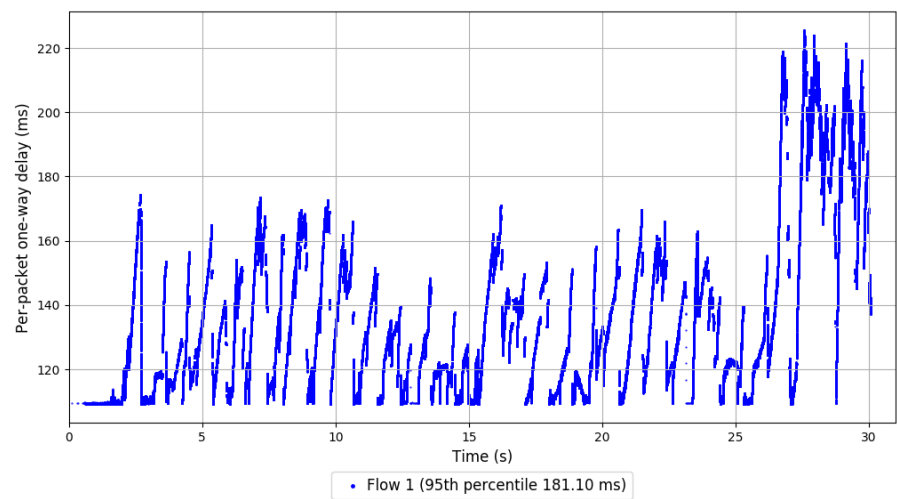
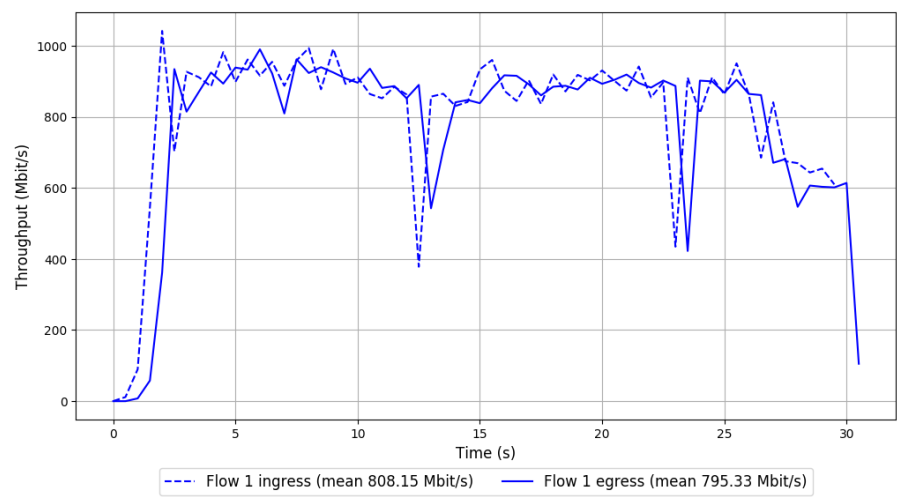
-- Flow 1:

Average throughput: 795.33 Mbit/s

95th percentile per-packet one-way delay: 181.100 ms

Loss rate: 1.58%

Run 4: Report of FillP-Sheep — Data Link



Run 5: Statistics of FillP-Sheep

Start at: 2018-12-11 10:59:46

End at: 2018-12-11 11:00:16

Local clock offset: 1.16 ms

Remote clock offset: 0.223 ms

Below is generated by plot.py at 2018-12-11 12:32:11

Datalink statistics

-- Total of 1 flow:

Average throughput: 899.65 Mbit/s

95th percentile per-packet one-way delay: 152.395 ms

Loss rate: 0.53%

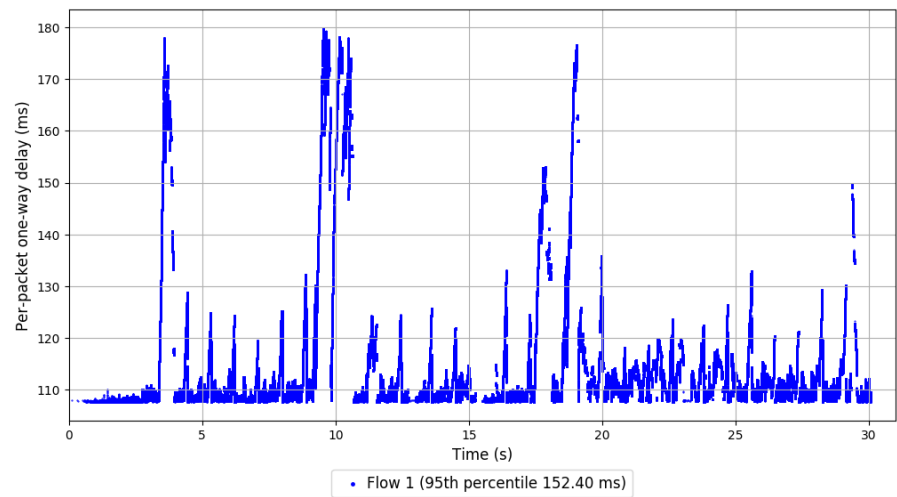
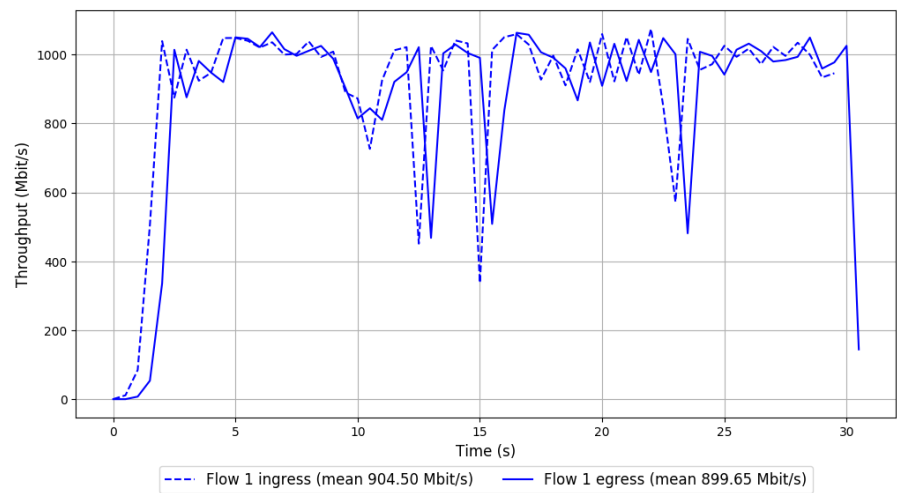
-- Flow 1:

Average throughput: 899.65 Mbit/s

95th percentile per-packet one-way delay: 152.395 ms

Loss rate: 0.53%

Run 5: Report of FillP-Sheep — Data Link



Run 1: Statistics of Indigo

Start at: 2018-12-11 09:07:41

End at: 2018-12-11 09:08:11

Local clock offset: 0.009 ms

Remote clock offset: 0.008 ms

Below is generated by plot.py at 2018-12-11 12:32:11

Datalink statistics

-- Total of 1 flow:

Average throughput: 114.94 Mbit/s

95th percentile per-packet one-way delay: 111.845 ms

Loss rate: 0.00%

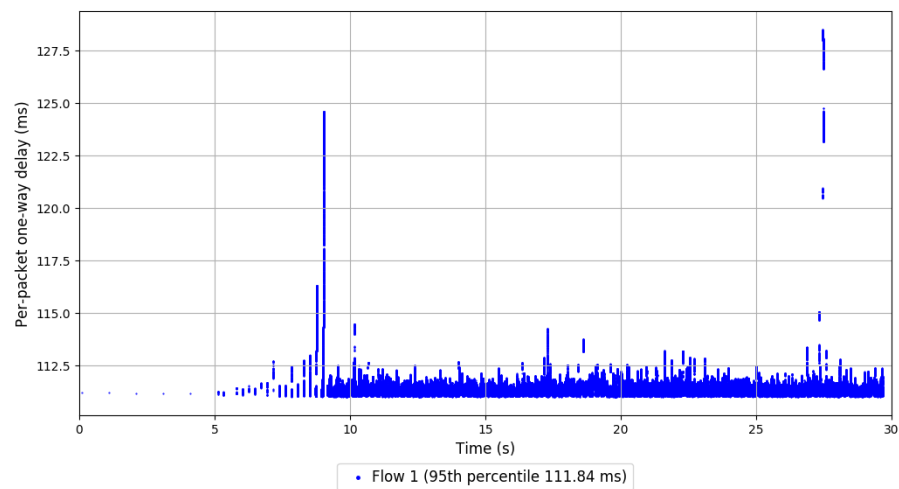
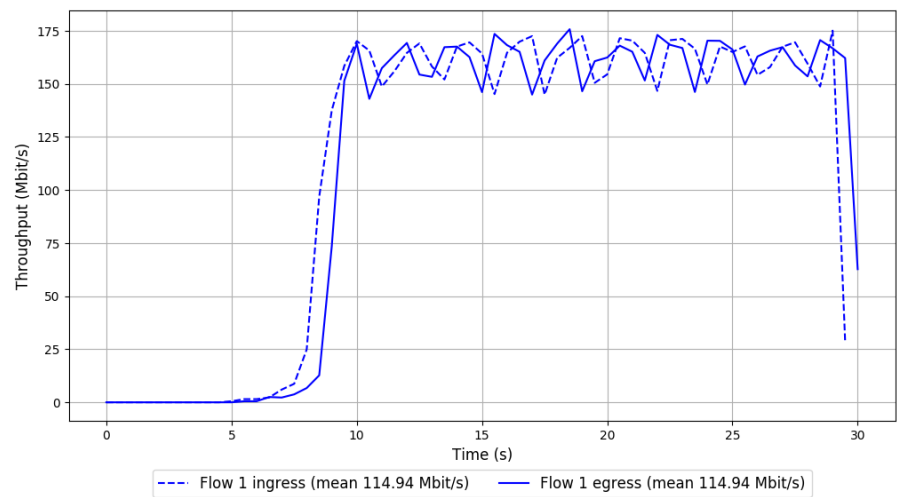
-- Flow 1:

Average throughput: 114.94 Mbit/s

95th percentile per-packet one-way delay: 111.845 ms

Loss rate: 0.00%

Run 1: Report of Indigo — Data Link

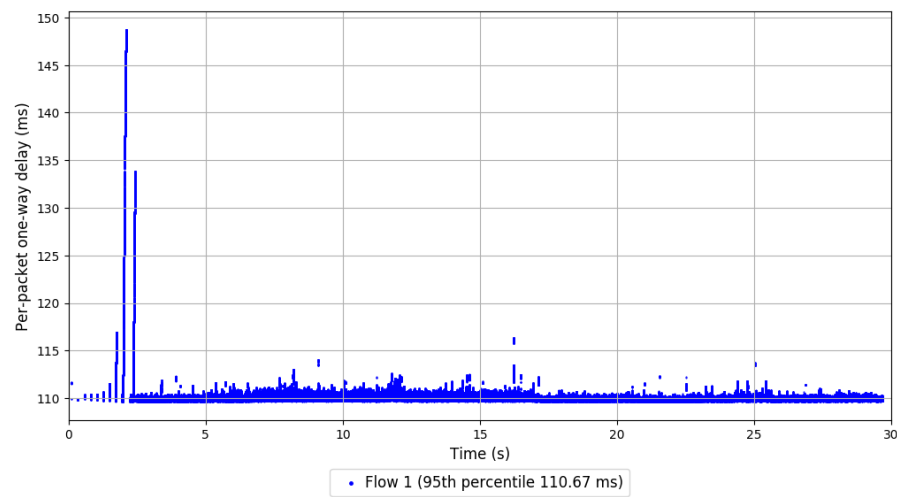
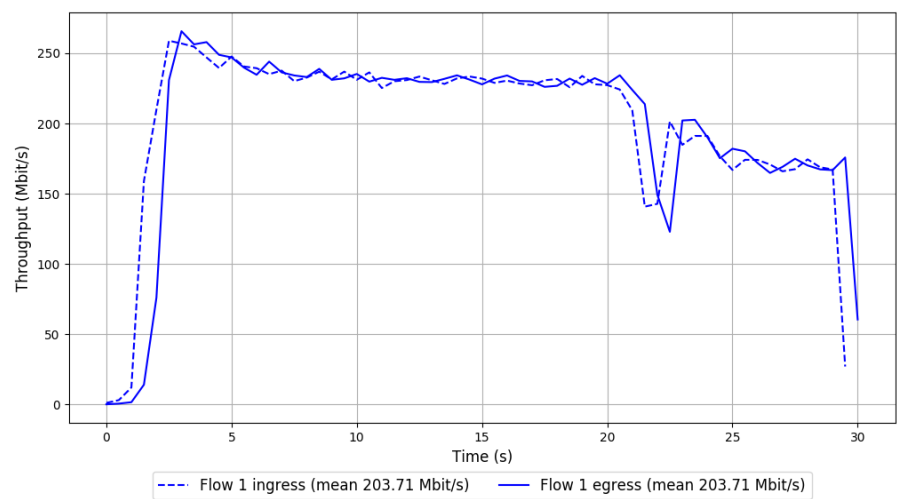


Run 2: Statistics of Indigo

Start at: 2018-12-11 09:36:10
End at: 2018-12-11 09:36:40
Local clock offset: -0.183 ms
Remote clock offset: 0.493 ms

Below is generated by plot.py at 2018-12-11 12:32:11
Datalink statistics
-- Total of 1 flow:
Average throughput: 203.71 Mbit/s
95th percentile per-packet one-way delay: 110.668 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 203.71 Mbit/s
95th percentile per-packet one-way delay: 110.668 ms
Loss rate: 0.00%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-12-11 10:04:59

End at: 2018-12-11 10:05:30

Local clock offset: -0.371 ms

Remote clock offset: 0.119 ms

Below is generated by plot.py at 2018-12-11 12:32:11

Datalink statistics

-- Total of 1 flow:

Average throughput: 155.63 Mbit/s

95th percentile per-packet one-way delay: 110.587 ms

Loss rate: 0.00%

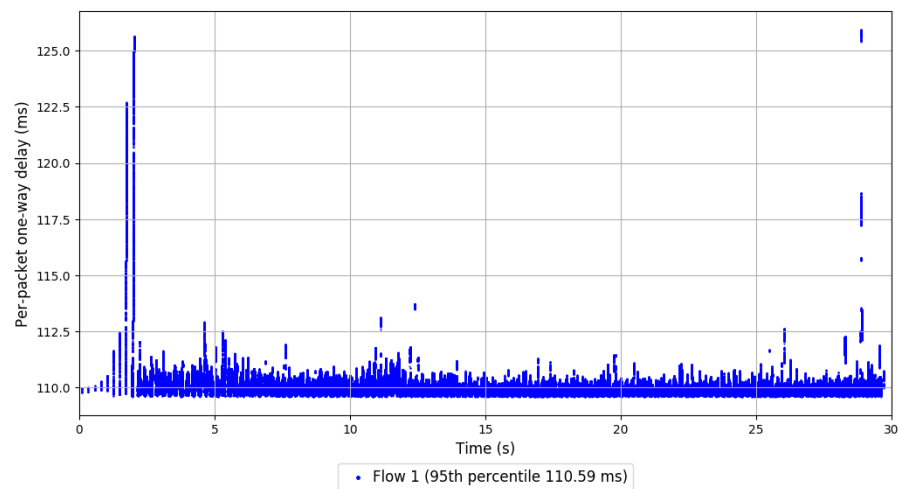
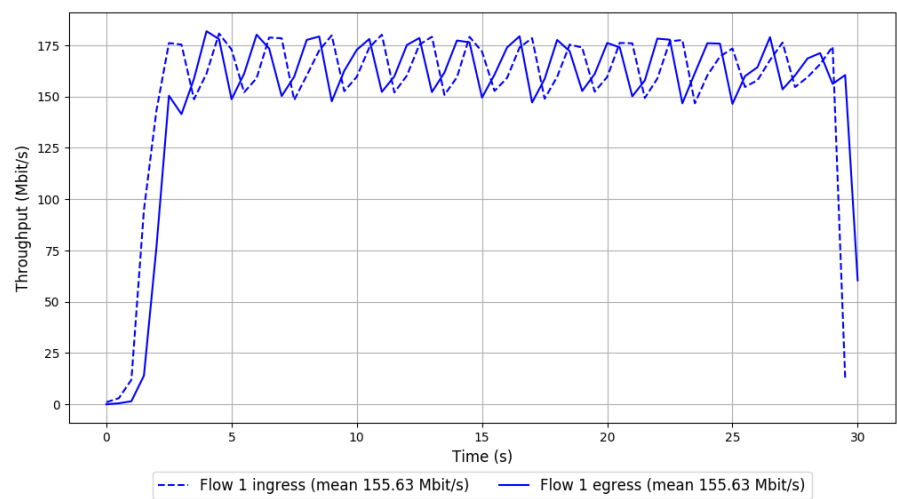
-- Flow 1:

Average throughput: 155.63 Mbit/s

95th percentile per-packet one-way delay: 110.587 ms

Loss rate: 0.00%

Run 3: Report of Indigo — Data Link



Run 4: Statistics of Indigo

Start at: 2018-12-11 10:33:51

End at: 2018-12-11 10:34:21

Local clock offset: -1.648 ms

Remote clock offset: 0.213 ms

Below is generated by plot.py at 2018-12-11 12:32:11

Datalink statistics

-- Total of 1 flow:

Average throughput: 155.49 Mbit/s

95th percentile per-packet one-way delay: 111.902 ms

Loss rate: 0.00%

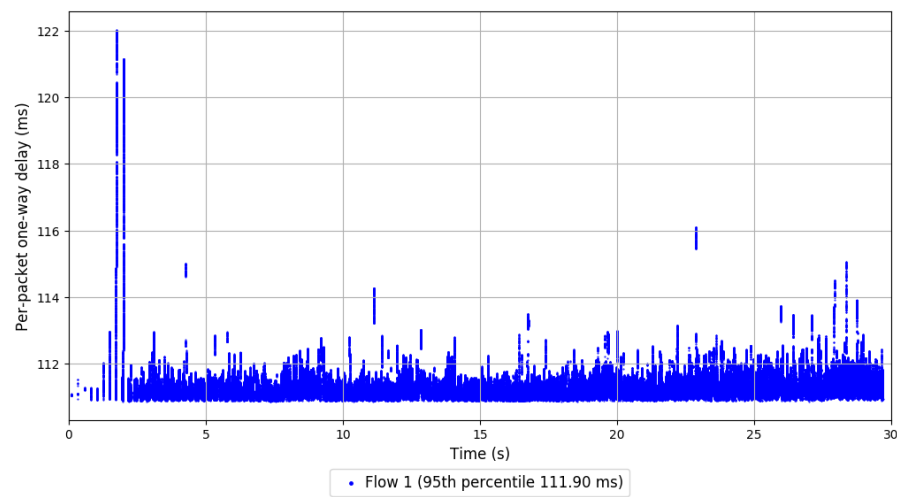
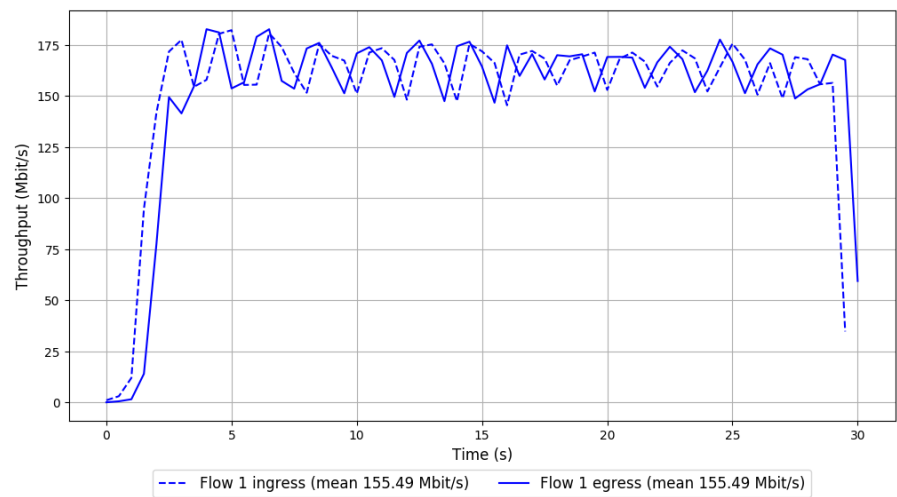
-- Flow 1:

Average throughput: 155.49 Mbit/s

95th percentile per-packet one-way delay: 111.902 ms

Loss rate: 0.00%

Run 4: Report of Indigo — Data Link



Run 5: Statistics of Indigo

Start at: 2018-12-11 11:02:47

End at: 2018-12-11 11:03:17

Local clock offset: 1.232 ms

Remote clock offset: 0.256 ms

Below is generated by plot.py at 2018-12-11 12:32:11

Datalink statistics

-- Total of 1 flow:

Average throughput: 151.70 Mbit/s

95th percentile per-packet one-way delay: 109.071 ms

Loss rate: 0.00%

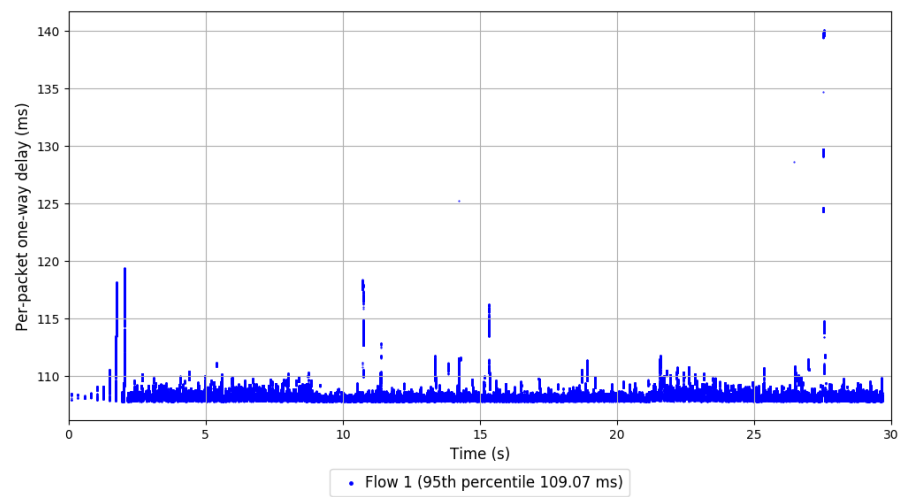
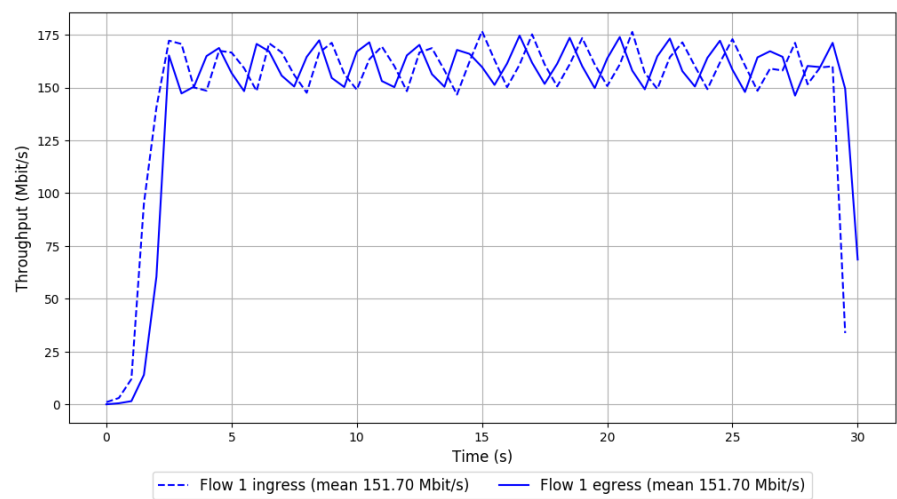
-- Flow 1:

Average throughput: 151.70 Mbit/s

95th percentile per-packet one-way delay: 109.071 ms

Loss rate: 0.00%

Run 5: Report of Indigo — Data Link

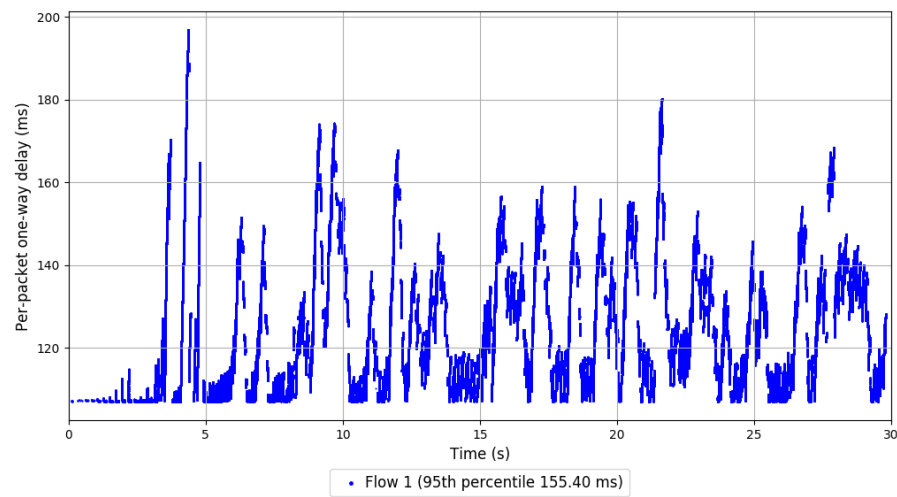
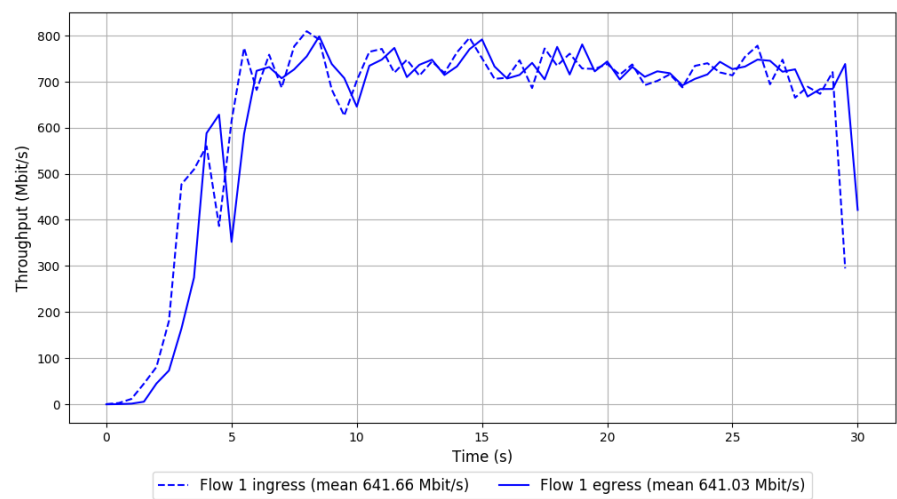


```
Run 1: Statistics of Indigo-MusesD

Start at: 2018-12-11 09:25:16
End at: 2018-12-11 09:25:46
Local clock offset: 1.314 ms
Remote clock offset: 0.07 ms

# Below is generated by plot.py at 2018-12-11 12:32:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 641.03 Mbit/s
95th percentile per-packet one-way delay: 155.402 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 641.03 Mbit/s
95th percentile per-packet one-way delay: 155.402 ms
Loss rate: 0.10%
```

Run 1: Report of Indigo-MusesD — Data Link



Run 2: Statistics of Indigo-MusesD

Start at: 2018-12-11 09:54:06

End at: 2018-12-11 09:54:36

Local clock offset: -0.059 ms

Remote clock offset: 0.479 ms

Below is generated by plot.py at 2018-12-11 12:32:11

Datalink statistics

-- Total of 1 flow:

Average throughput: 632.52 Mbit/s

95th percentile per-packet one-way delay: 145.918 ms

Loss rate: 0.12%

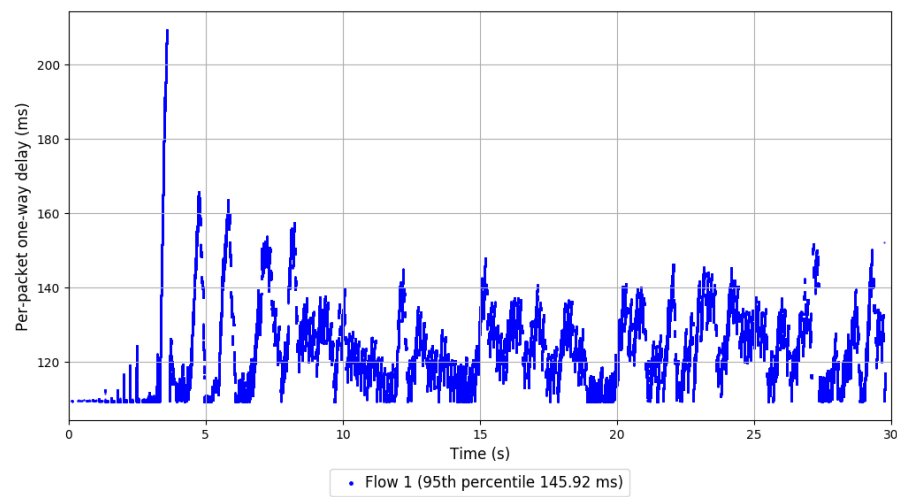
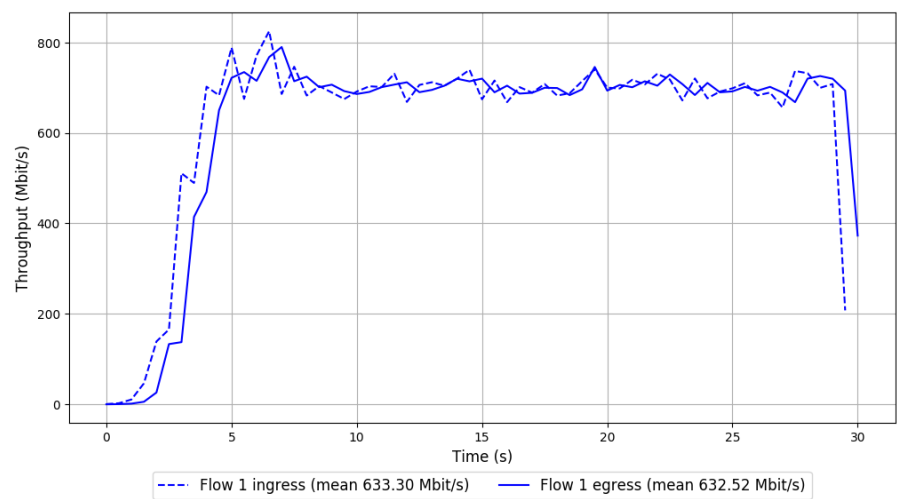
-- Flow 1:

Average throughput: 632.52 Mbit/s

95th percentile per-packet one-way delay: 145.918 ms

Loss rate: 0.12%

Run 2: Report of Indigo-MusesD — Data Link



Run 3: Statistics of Indigo-MusesD

Start at: 2018-12-11 10:23:01

End at: 2018-12-11 10:23:31

Local clock offset: -0.182 ms

Remote clock offset: 0.15 ms

Below is generated by plot.py at 2018-12-11 12:32:11

Datalink statistics

-- Total of 1 flow:

Average throughput: 631.36 Mbit/s

95th percentile per-packet one-way delay: 160.027 ms

Loss rate: 0.16%

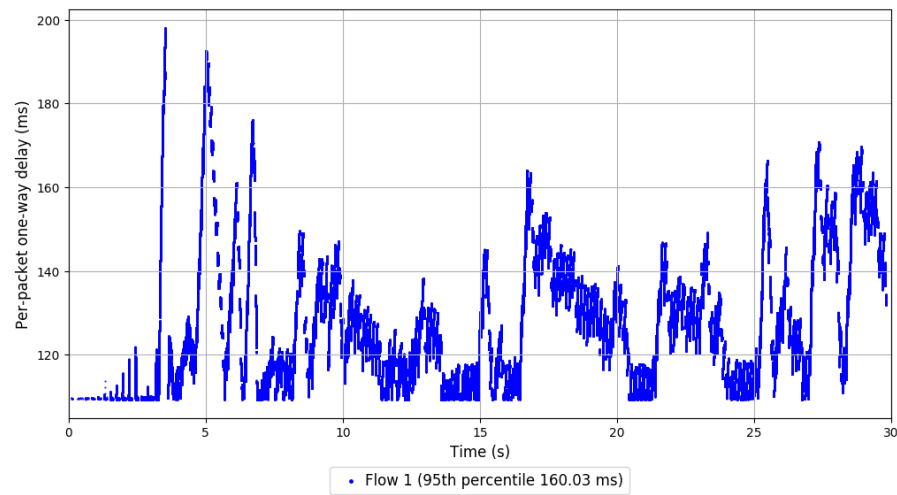
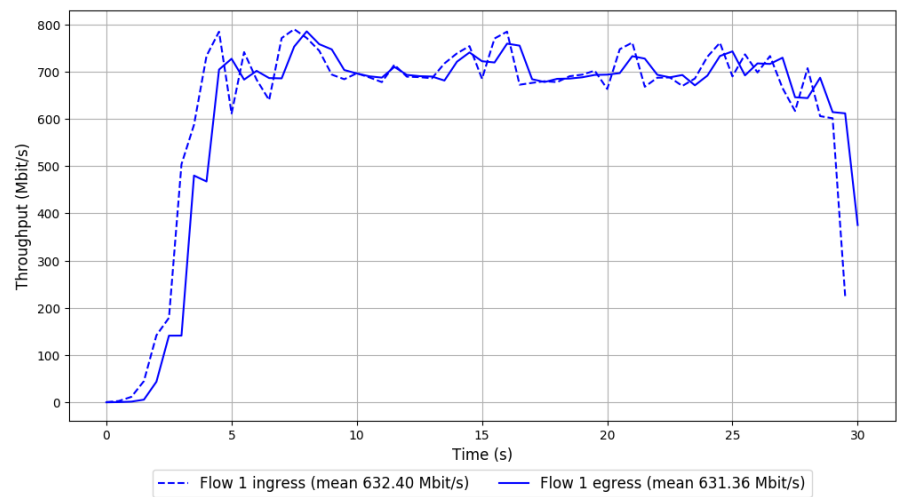
-- Flow 1:

Average throughput: 631.36 Mbit/s

95th percentile per-packet one-way delay: 160.027 ms

Loss rate: 0.16%

Run 3: Report of Indigo-MusesD — Data Link



Run 4: Statistics of Indigo-MusesD

Start at: 2018-12-11 10:51:50

End at: 2018-12-11 10:52:20

Local clock offset: 1.215 ms

Remote clock offset: 0.606 ms

Below is generated by plot.py at 2018-12-11 12:32:11

Datalink statistics

-- Total of 1 flow:

Average throughput: 601.21 Mbit/s

95th percentile per-packet one-way delay: 164.352 ms

Loss rate: 0.58%

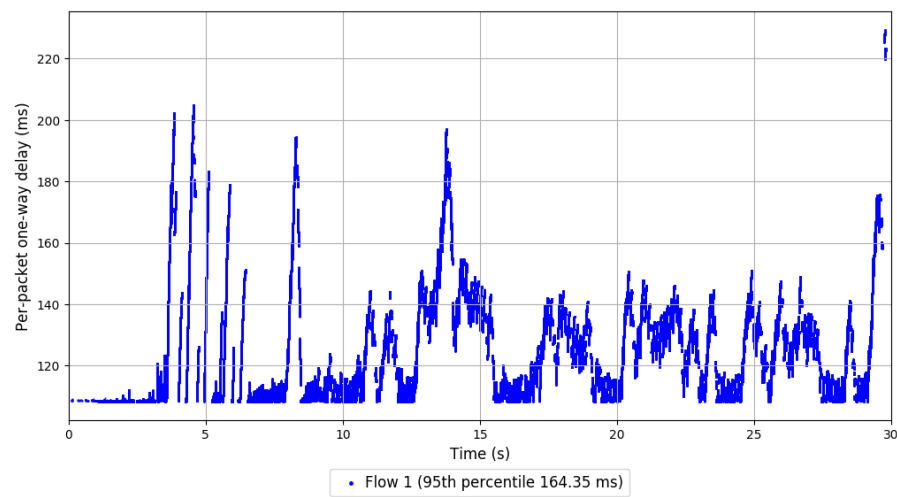
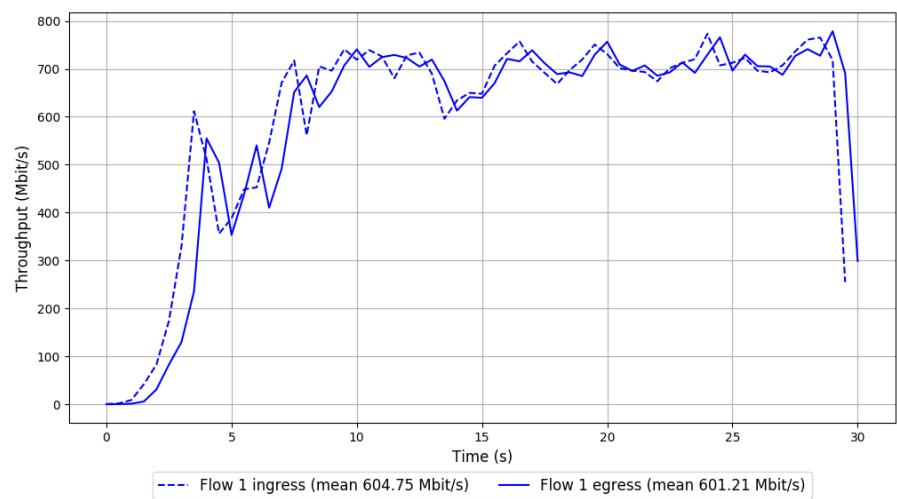
-- Flow 1:

Average throughput: 601.21 Mbit/s

95th percentile per-packet one-way delay: 164.352 ms

Loss rate: 0.58%

Run 4: Report of Indigo-MusesD — Data Link



Run 5: Statistics of Indigo-MusesD

Start at: 2018-12-11 11:20:30

End at: 2018-12-11 11:21:00

Local clock offset: -0.115 ms

Remote clock offset: 0.237 ms

Below is generated by plot.py at 2018-12-11 12:32:11

Datalink statistics

-- Total of 1 flow:

Average throughput: 665.39 Mbit/s

95th percentile per-packet one-way delay: 151.556 ms

Loss rate: 0.14%

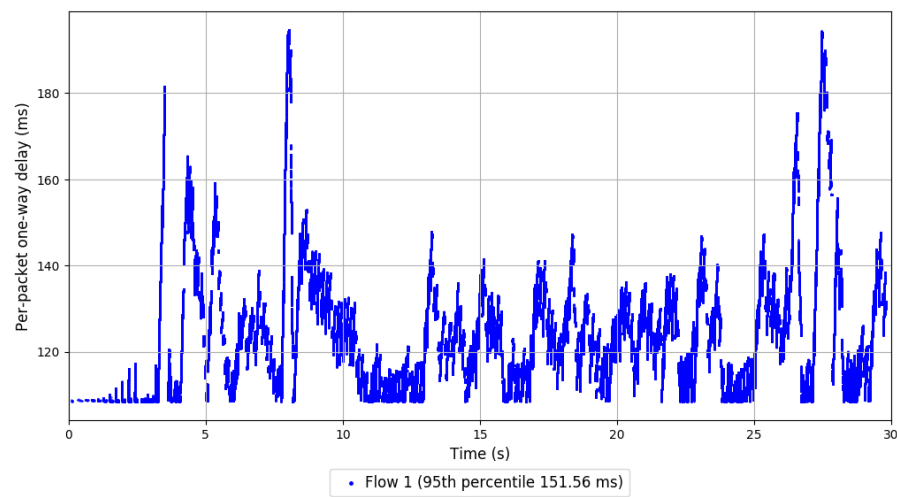
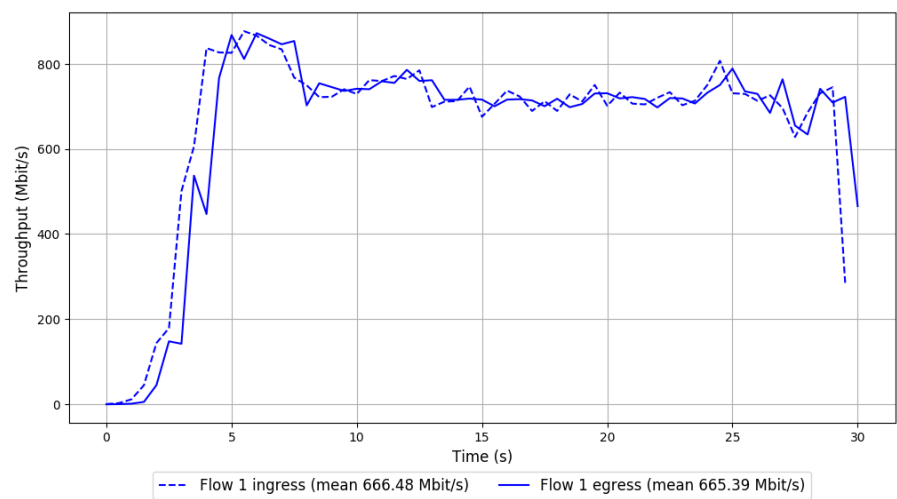
-- Flow 1:

Average throughput: 665.39 Mbit/s

95th percentile per-packet one-way delay: 151.556 ms

Loss rate: 0.14%

Run 5: Report of Indigo-MusesD — Data Link



Run 1: Statistics of Indigo-MusesT

Start at: 2018-12-11 09:13:33

End at: 2018-12-11 09:14:03

Local clock offset: -0.001 ms

Remote clock offset: 0.4 ms

Below is generated by plot.py at 2018-12-11 12:32:11

Datalink statistics

-- Total of 1 flow:

Average throughput: 406.38 Mbit/s

95th percentile per-packet one-way delay: 168.345 ms

Loss rate: 0.11%

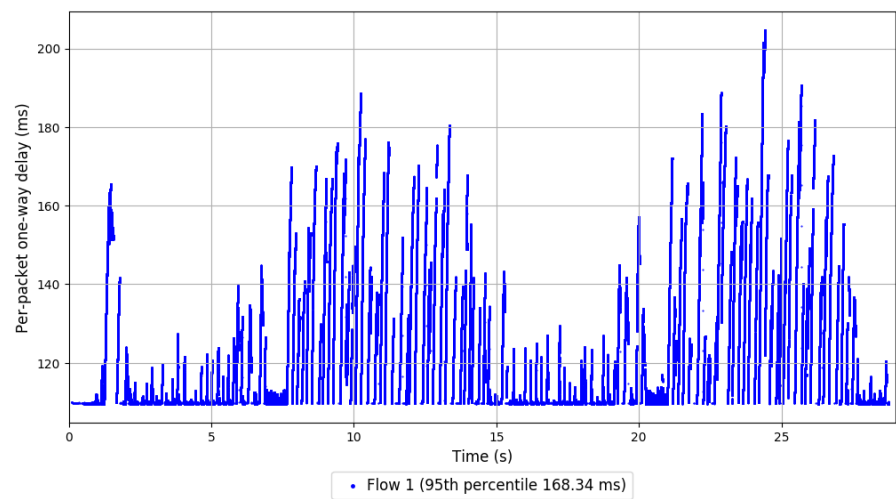
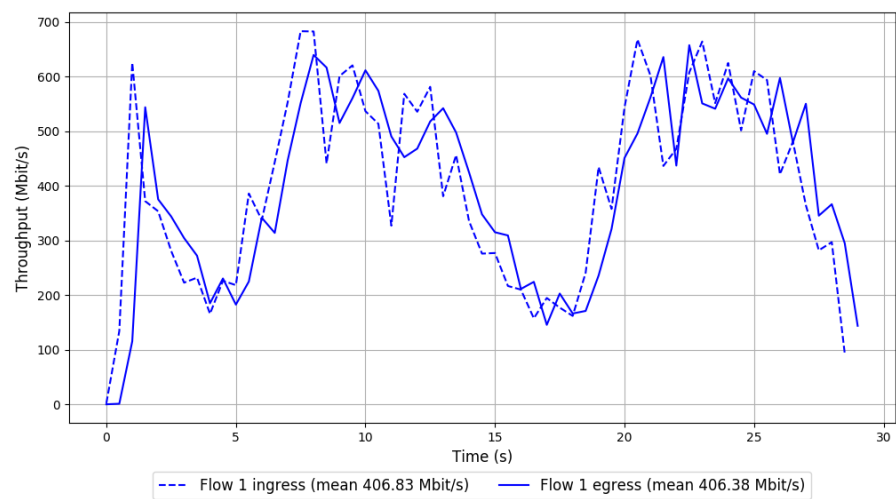
-- Flow 1:

Average throughput: 406.38 Mbit/s

95th percentile per-packet one-way delay: 168.345 ms

Loss rate: 0.11%

Run 1: Report of Indigo-MusesT — Data Link



Run 2: Statistics of Indigo-MusesT

Start at: 2018-12-11 09:42:17

End at: 2018-12-11 09:42:47

Local clock offset: -0.966 ms

Remote clock offset: 0.113 ms

Below is generated by plot.py at 2018-12-11 12:34:02

Datalink statistics

-- Total of 1 flow:

Average throughput: 676.88 Mbit/s

95th percentile per-packet one-way delay: 213.788 ms

Loss rate: 5.28%

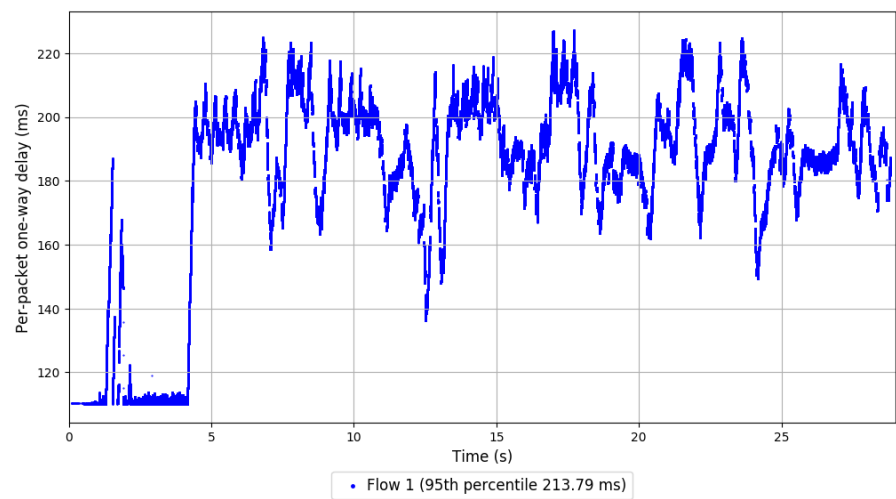
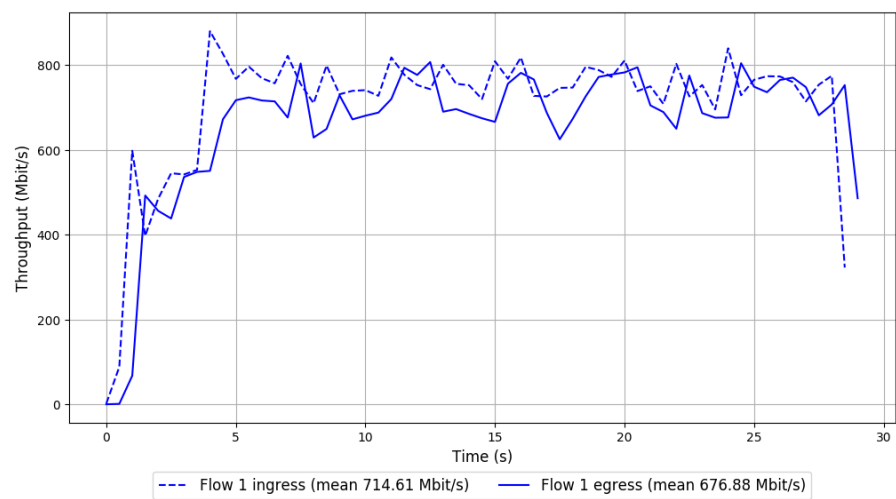
-- Flow 1:

Average throughput: 676.88 Mbit/s

95th percentile per-packet one-way delay: 213.788 ms

Loss rate: 5.28%

Run 2: Report of Indigo-MusesT — Data Link

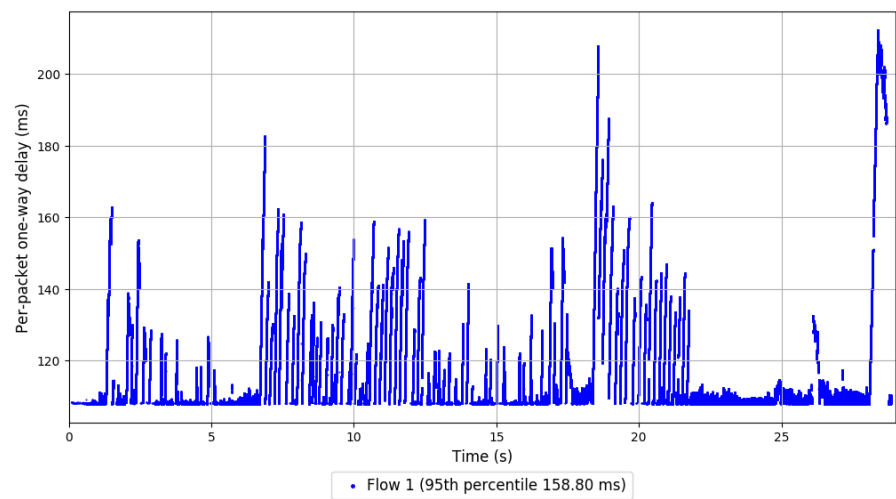
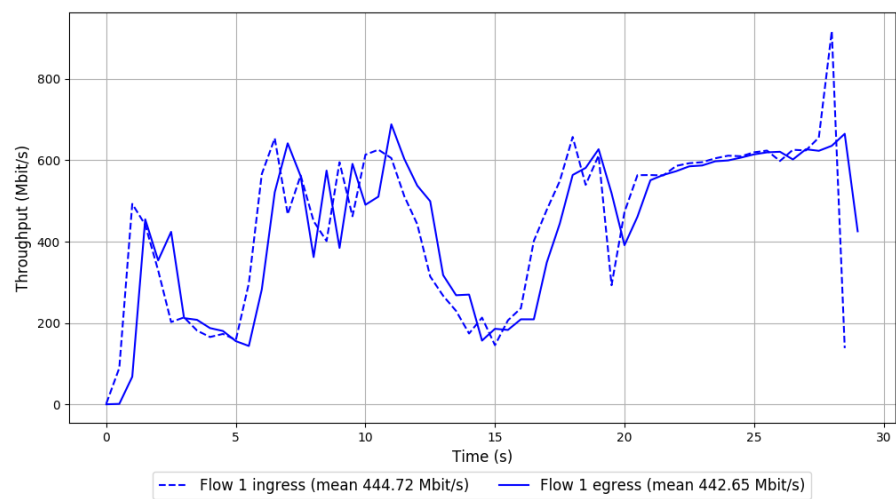


Run 3: Statistics of Indigo-MusesT

Start at: 2018-12-11 10:11:01
End at: 2018-12-11 10:11:31
Local clock offset: -0.124 ms
Remote clock offset: -0.202 ms

Below is generated by plot.py at 2018-12-11 12:34:15
Datalink statistics
-- Total of 1 flow:
Average throughput: 442.65 Mbit/s
95th percentile per-packet one-way delay: 158.804 ms
Loss rate: 0.46%
-- Flow 1:
Average throughput: 442.65 Mbit/s
95th percentile per-packet one-way delay: 158.804 ms
Loss rate: 0.46%

Run 3: Report of Indigo-MusesT — Data Link



Run 4: Statistics of Indigo-MusesT

Start at: 2018-12-11 10:40:07

End at: 2018-12-11 10:40:37

Local clock offset: 1.313 ms

Remote clock offset: 0.18 ms

Below is generated by plot.py at 2018-12-11 12:34:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 357.02 Mbit/s

95th percentile per-packet one-way delay: 168.853 ms

Loss rate: 0.54%

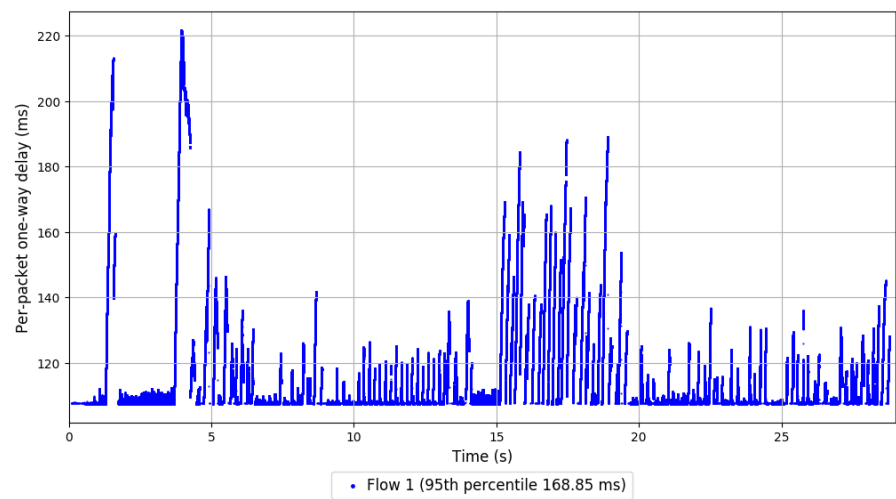
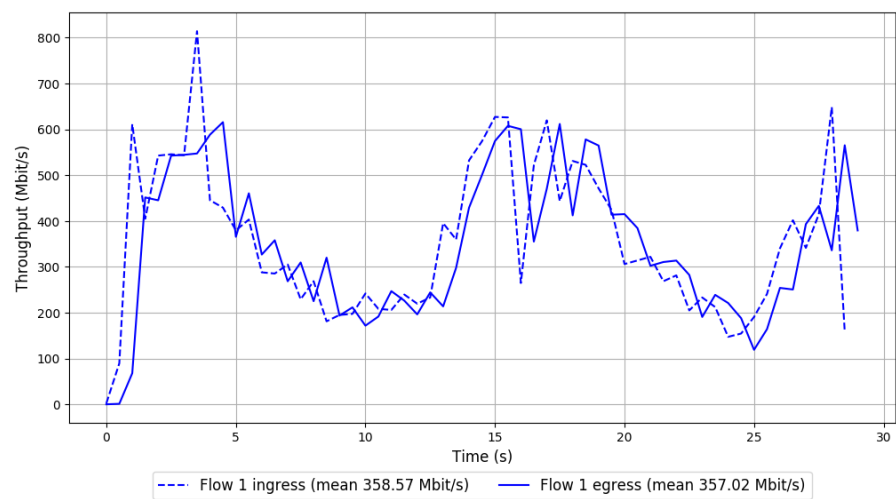
-- Flow 1:

Average throughput: 357.02 Mbit/s

95th percentile per-packet one-way delay: 168.853 ms

Loss rate: 0.54%

Run 4: Report of Indigo-MusesT — Data Link



Run 5: Statistics of Indigo-MusesT

Start at: 2018-12-11 11:08:46

End at: 2018-12-11 11:09:16

Local clock offset: 0.18 ms

Remote clock offset: 0.193 ms

Below is generated by plot.py at 2018-12-11 12:34:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 310.04 Mbit/s

95th percentile per-packet one-way delay: 152.550 ms

Loss rate: 0.00%

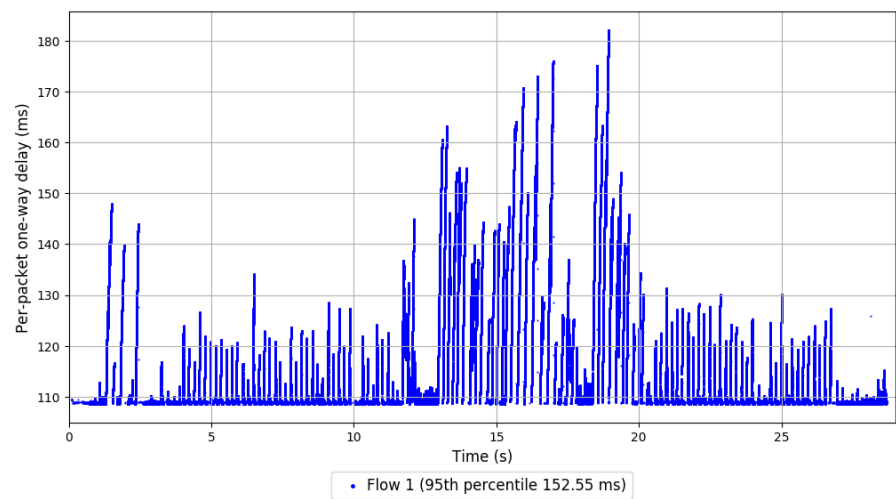
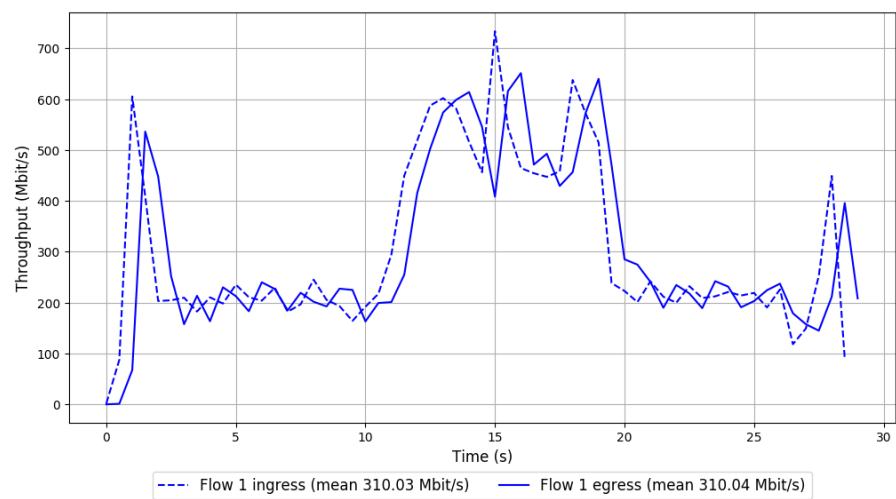
-- Flow 1:

Average throughput: 310.04 Mbit/s

95th percentile per-packet one-way delay: 152.550 ms

Loss rate: 0.00%

Run 5: Report of Indigo-MusesT — Data Link

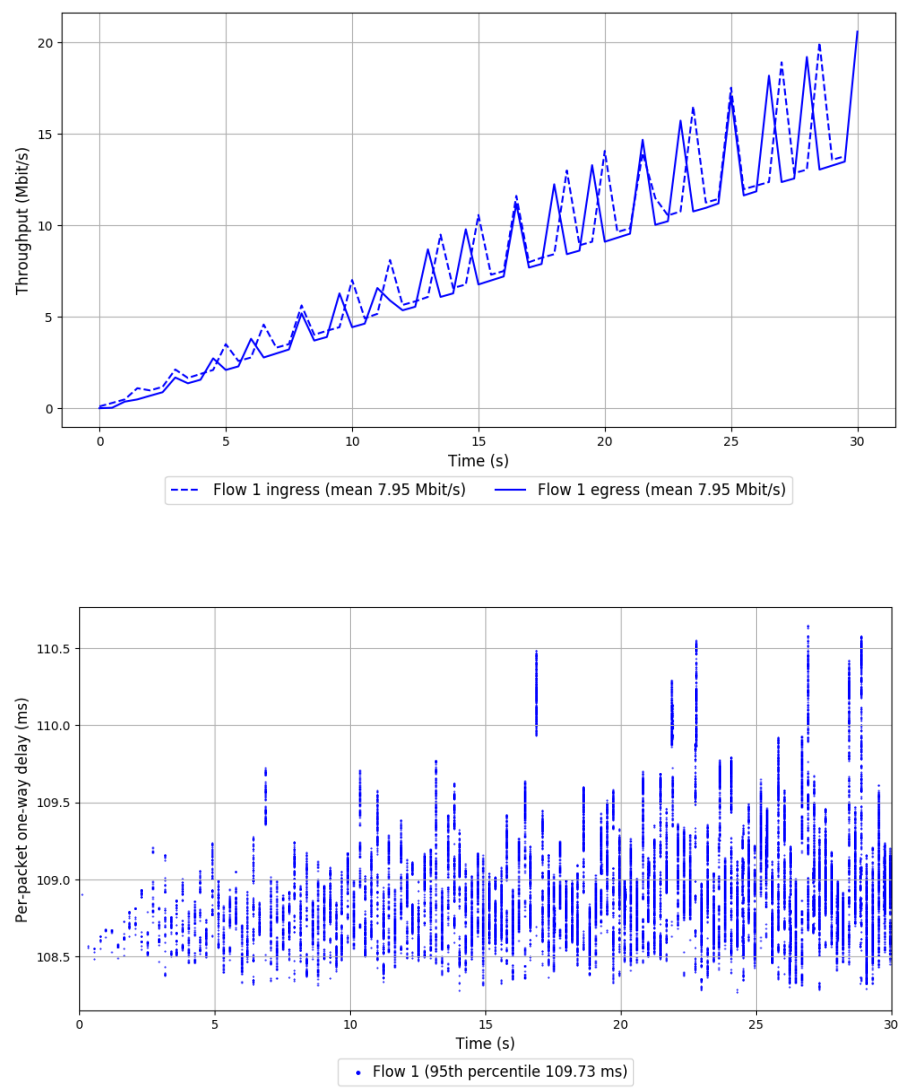



```
Run 1: Statistics of LEDBAT

Start at: 2018-12-11 09:06:29
End at: 2018-12-11 09:07:00
Local clock offset: -0.08 ms
Remote clock offset: 0.002 ms

# Below is generated by plot.py at 2018-12-11 12:34:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.95 Mbit/s
95th percentile per-packet one-way delay: 109.728 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 7.95 Mbit/s
95th percentile per-packet one-way delay: 109.728 ms
Loss rate: 0.00%
```

Run 1: Report of LEDBAT — Data Link



Run 2: Statistics of LEDBAT

Start at: 2018-12-11 09:34:59

End at: 2018-12-11 09:35:29

Local clock offset: -0.445 ms

Remote clock offset: 0.164 ms

Below is generated by plot.py at 2018-12-11 12:34:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 7.90 Mbit/s

95th percentile per-packet one-way delay: 111.115 ms

Loss rate: 0.00%

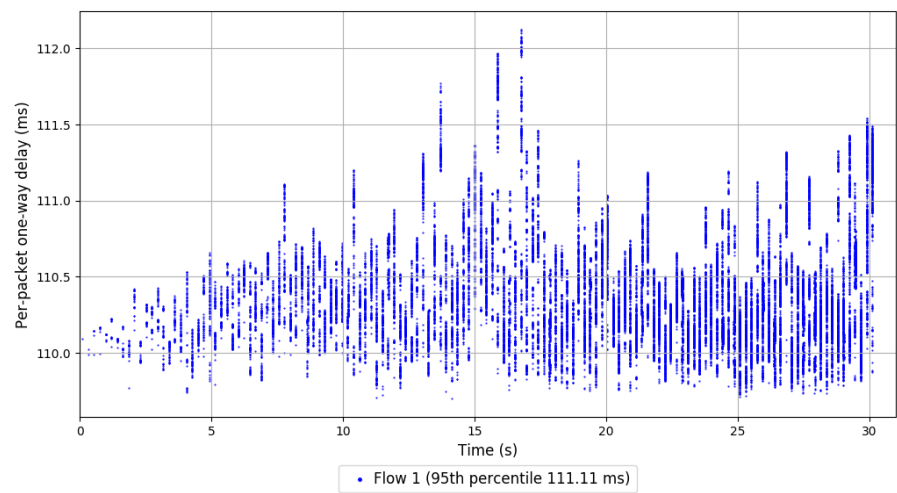
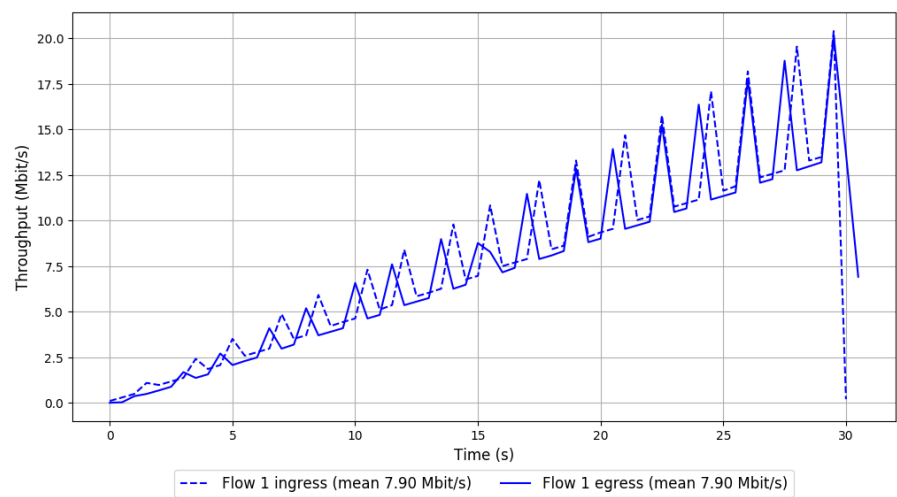
-- Flow 1:

Average throughput: 7.90 Mbit/s

95th percentile per-packet one-way delay: 111.115 ms

Loss rate: 0.00%

Run 2: Report of LEDBAT — Data Link



Run 3: Statistics of LEDBAT

Start at: 2018-12-11 10:03:48

End at: 2018-12-11 10:04:18

Local clock offset: 0.071 ms

Remote clock offset: 0.174 ms

Below is generated by plot.py at 2018-12-11 12:34:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 7.80 Mbit/s

95th percentile per-packet one-way delay: 110.537 ms

Loss rate: 0.00%

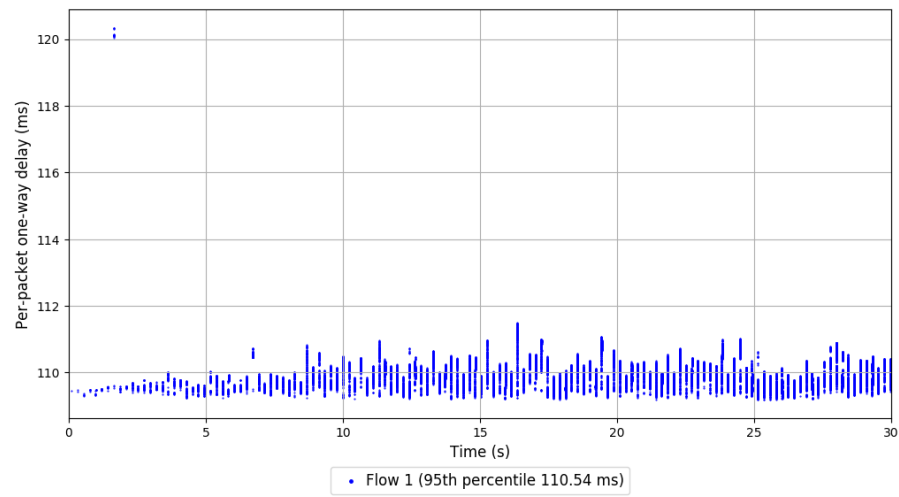
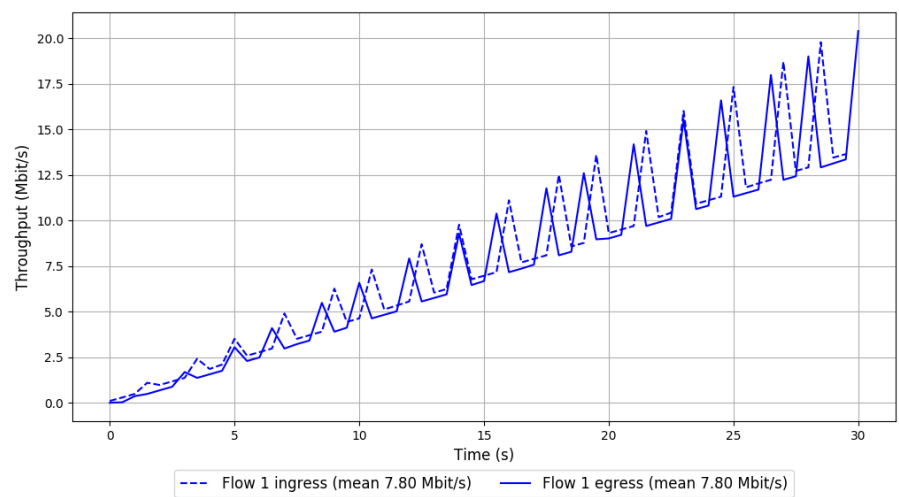
-- Flow 1:

Average throughput: 7.80 Mbit/s

95th percentile per-packet one-way delay: 110.537 ms

Loss rate: 0.00%

Run 3: Report of LEDBAT — Data Link



Run 4: Statistics of LEDBAT

Start at: 2018-12-11 10:32:40

End at: 2018-12-11 10:33:10

Local clock offset: -0.222 ms

Remote clock offset: 0.162 ms

Below is generated by plot.py at 2018-12-11 12:34:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 7.83 Mbit/s

95th percentile per-packet one-way delay: 110.905 ms

Loss rate: 0.00%

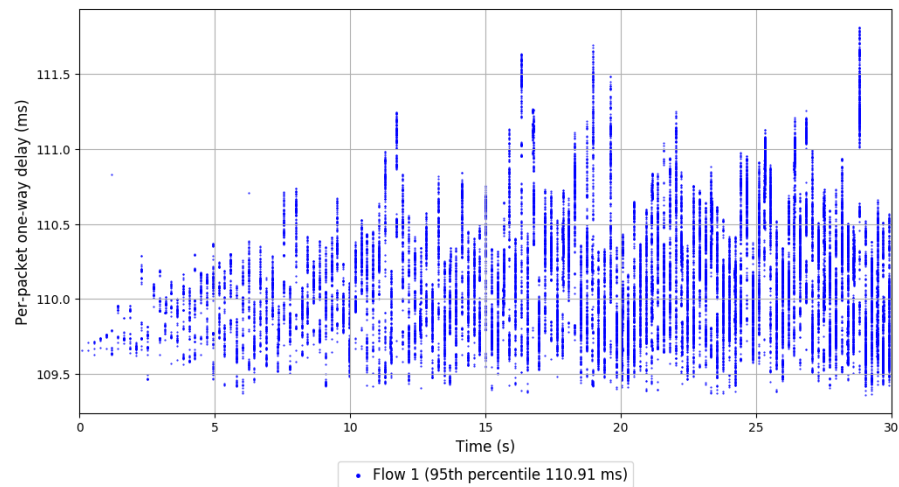
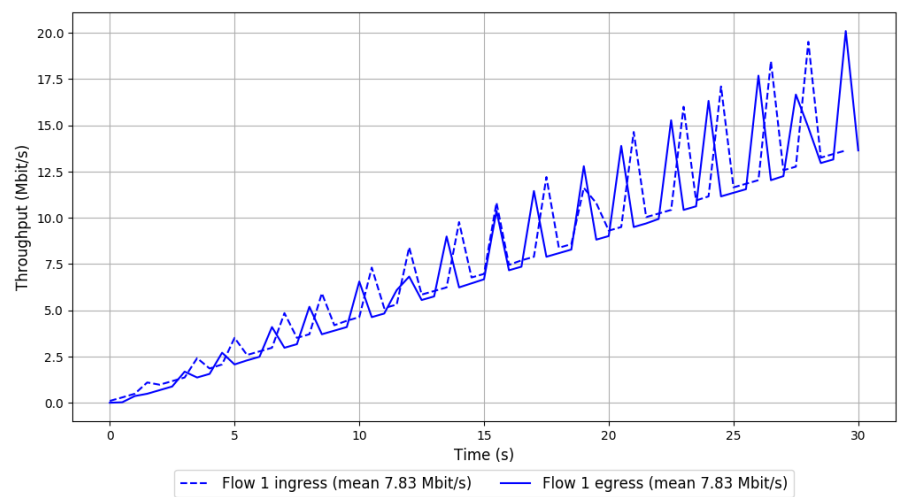
-- Flow 1:

Average throughput: 7.83 Mbit/s

95th percentile per-packet one-way delay: 110.905 ms

Loss rate: 0.00%

Run 4: Report of LEDBAT — Data Link

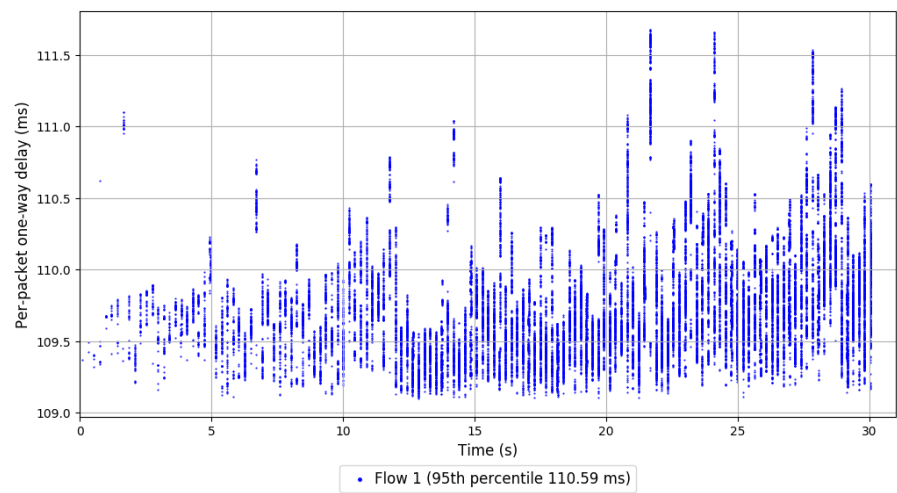
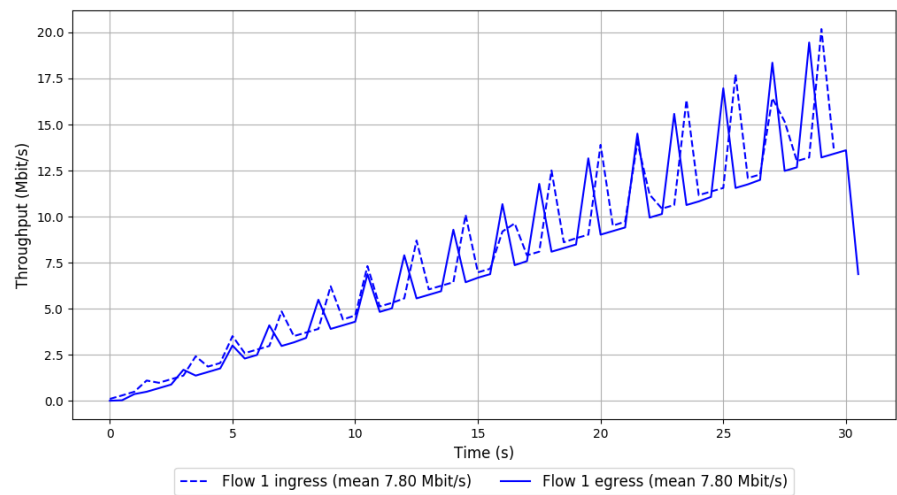


Run 5: Statistics of LEDBAT

Start at: 2018-12-11 11:01:35
End at: 2018-12-11 11:02:05
Local clock offset: -0.305 ms
Remote clock offset: -0.121 ms

Below is generated by plot.py at 2018-12-11 12:34:15
Datalink statistics
-- Total of 1 flow:
Average throughput: 7.80 Mbit/s
95th percentile per-packet one-way delay: 110.595 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 7.80 Mbit/s
95th percentile per-packet one-way delay: 110.595 ms
Loss rate: 0.00%

Run 5: Report of LEDBAT — Data Link



Run 1: Statistics of PCC-Allegro

Start at: 2018-12-11 09:17:52

End at: 2018-12-11 09:18:22

Local clock offset: -0.85 ms

Remote clock offset: 0.063 ms

Below is generated by plot.py at 2018-12-11 12:47:58

Datalink statistics

-- Total of 1 flow:

Average throughput: 445.03 Mbit/s

95th percentile per-packet one-way delay: 223.740 ms

Loss rate: 3.11%

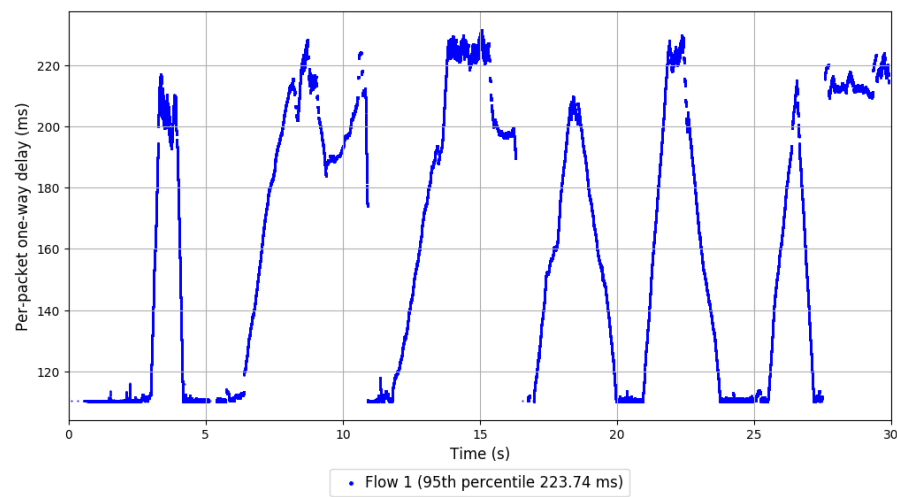
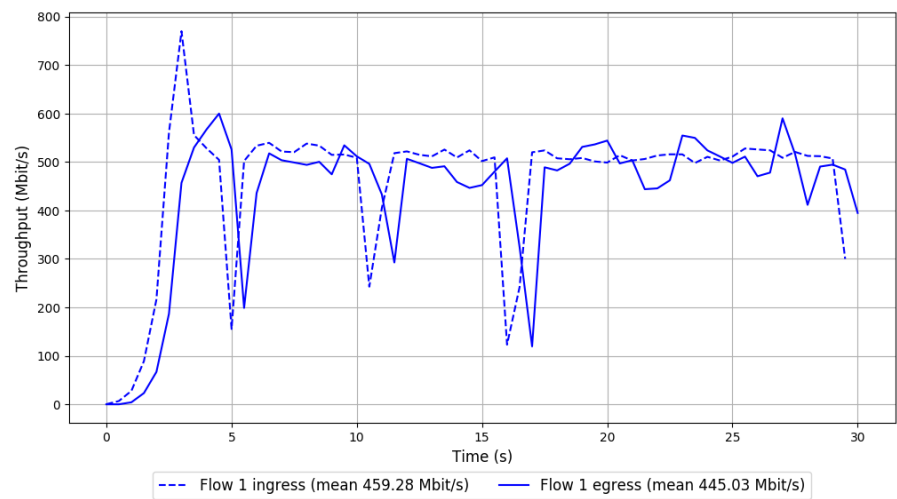
-- Flow 1:

Average throughput: 445.03 Mbit/s

95th percentile per-packet one-way delay: 223.740 ms

Loss rate: 3.11%

Run 1: Report of PCC-Allegro — Data Link



Run 2: Statistics of PCC-Allegro

Start at: 2018-12-11 09:46:44

End at: 2018-12-11 09:47:14

Local clock offset: -0.065 ms

Remote clock offset: 0.092 ms

Below is generated by plot.py at 2018-12-11 12:47:58

Datalink statistics

-- Total of 1 flow:

Average throughput: 437.89 Mbit/s

95th percentile per-packet one-way delay: 233.359 ms

Loss rate: 5.29%

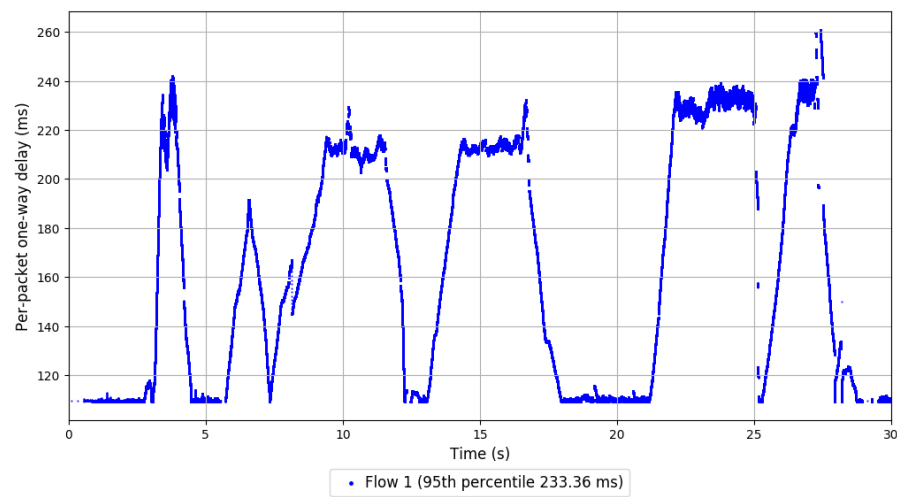
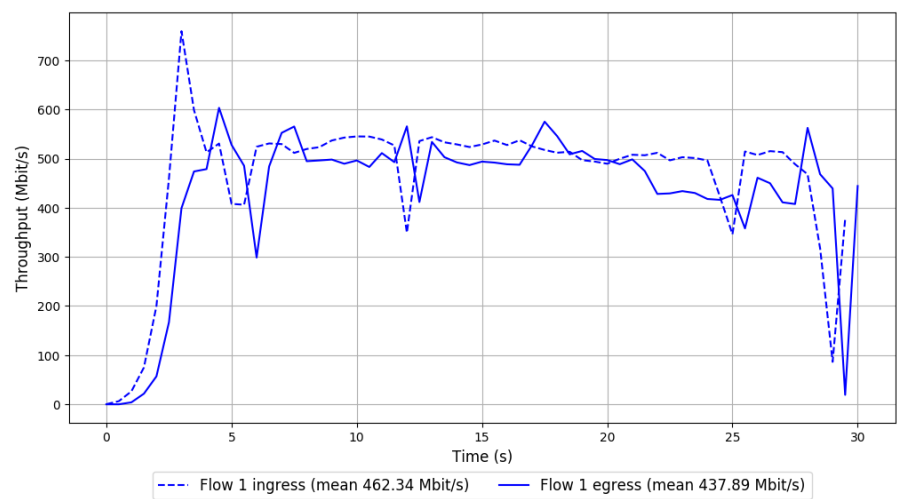
-- Flow 1:

Average throughput: 437.89 Mbit/s

95th percentile per-packet one-way delay: 233.359 ms

Loss rate: 5.29%

Run 2: Report of PCC-Allegro — Data Link



Run 3: Statistics of PCC-Allegro

Start at: 2018-12-11 10:15:25

End at: 2018-12-11 10:15:55

Local clock offset: 0.787 ms

Remote clock offset: 0.575 ms

Below is generated by plot.py at 2018-12-11 12:47:58

Datalink statistics

-- Total of 1 flow:

Average throughput: 437.44 Mbit/s

95th percentile per-packet one-way delay: 213.779 ms

Loss rate: 1.50%

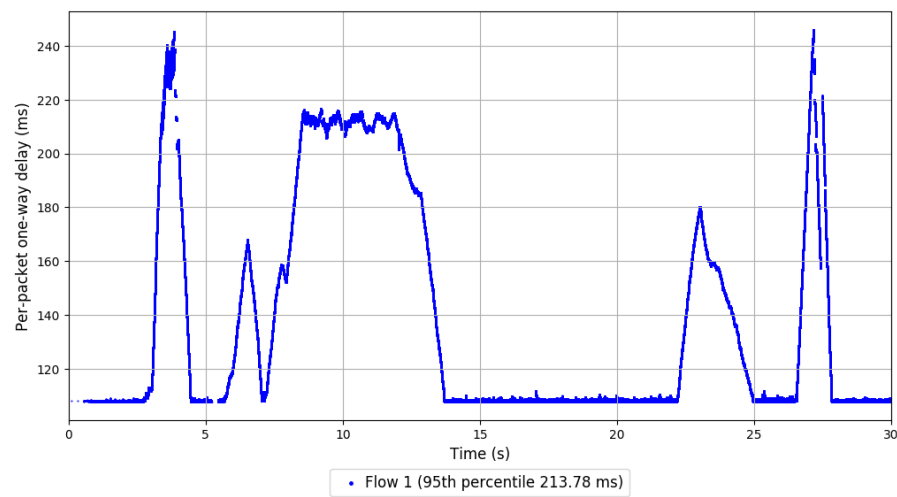
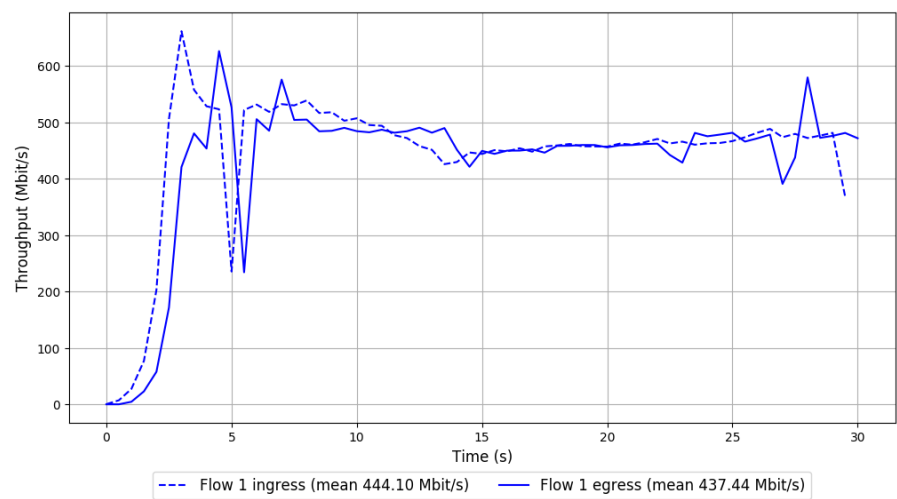
-- Flow 1:

Average throughput: 437.44 Mbit/s

95th percentile per-packet one-way delay: 213.779 ms

Loss rate: 1.50%

Run 3: Report of PCC-Allegro — Data Link



Run 4: Statistics of PCC-Allegro

Start at: 2018-12-11 10:44:26

End at: 2018-12-11 10:44:56

Local clock offset: -1.568 ms

Remote clock offset: 0.232 ms

Below is generated by plot.py at 2018-12-11 12:49:04

Datalink statistics

-- Total of 1 flow:

Average throughput: 448.61 Mbit/s

95th percentile per-packet one-way delay: 226.043 ms

Loss rate: 3.86%

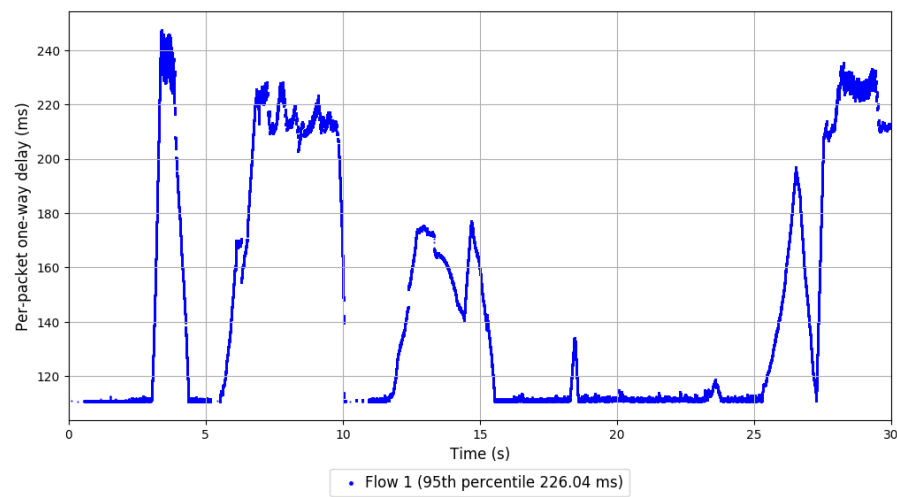
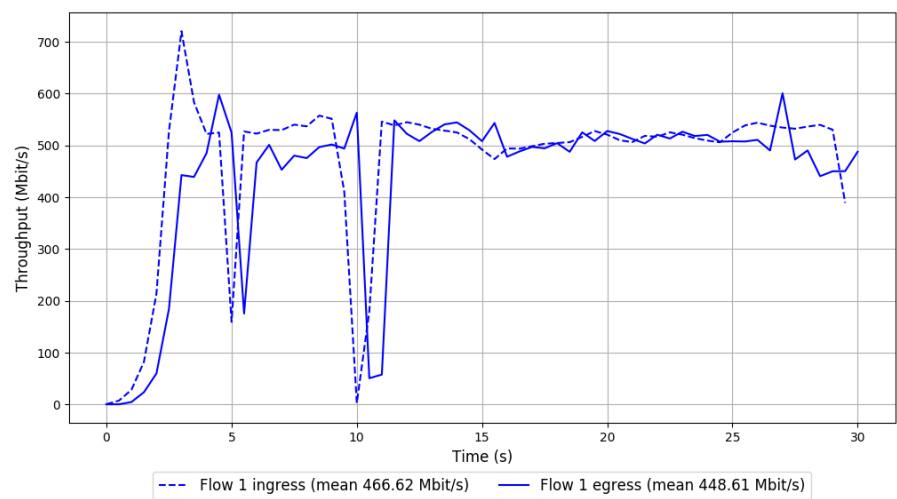
-- Flow 1:

Average throughput: 448.61 Mbit/s

95th percentile per-packet one-way delay: 226.043 ms

Loss rate: 3.86%

Run 4: Report of PCC-Allegro — Data Link



Run 5: Statistics of PCC-Allegro

Start at: 2018-12-11 11:12:59

End at: 2018-12-11 11:13:29

Local clock offset: -0.143 ms

Remote clock offset: 0.247 ms

Below is generated by plot.py at 2018-12-11 12:50:19

Datalink statistics

-- Total of 1 flow:

Average throughput: 467.51 Mbit/s

95th percentile per-packet one-way delay: 214.145 ms

Loss rate: 2.69%

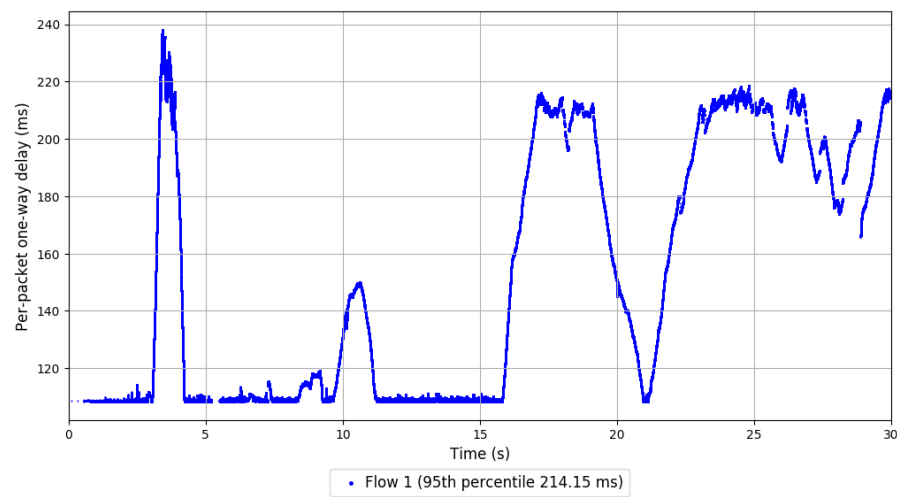
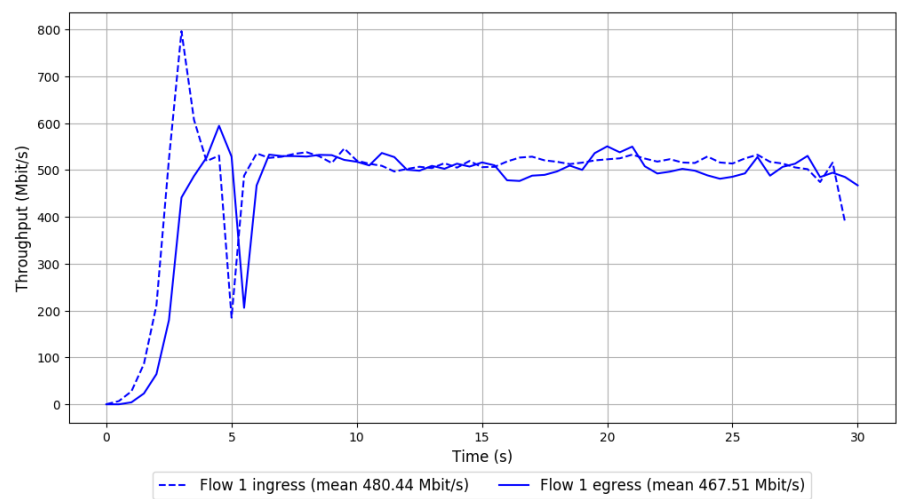
-- Flow 1:

Average throughput: 467.51 Mbit/s

95th percentile per-packet one-way delay: 214.145 ms

Loss rate: 2.69%

Run 5: Report of PCC-Allegro — Data Link

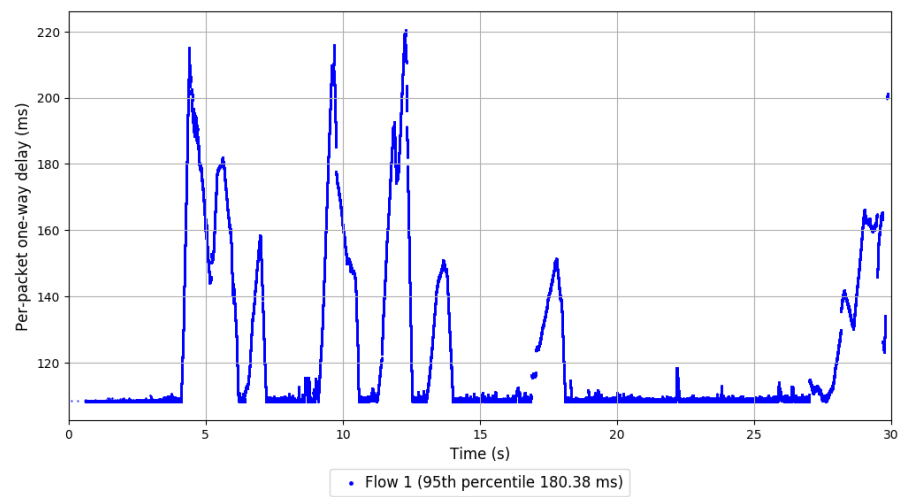
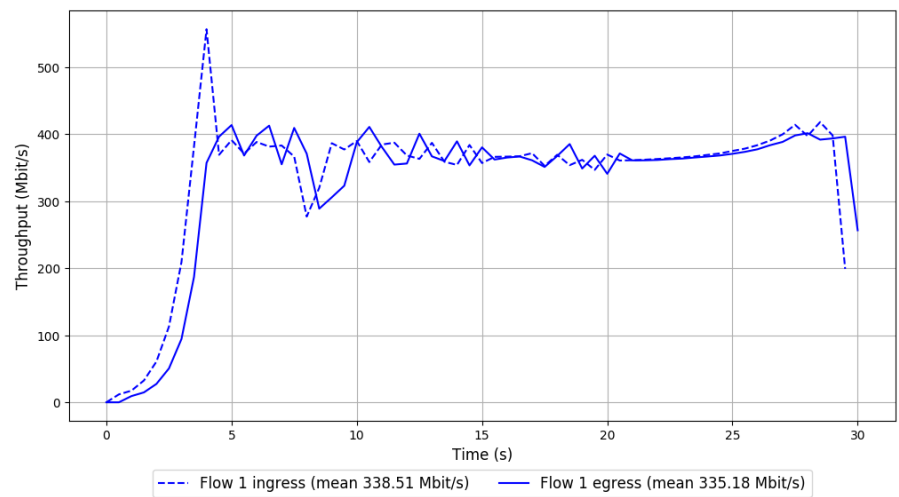


Run 1: Statistics of PCC-Expr

Start at: 2018-12-11 09:01:17
End at: 2018-12-11 09:01:47
Local clock offset: -0.064 ms
Remote clock offset: -0.056 ms

Below is generated by plot.py at 2018-12-11 12:50:19
Datalink statistics
-- Total of 1 flow:
Average throughput: 335.18 Mbit/s
95th percentile per-packet one-way delay: 180.377 ms
Loss rate: 0.98%
-- Flow 1:
Average throughput: 335.18 Mbit/s
95th percentile per-packet one-way delay: 180.377 ms
Loss rate: 0.98%

Run 1: Report of PCC-Expr — Data Link



Run 2: Statistics of PCC-Expr

Start at: 2018-12-11 09:29:48

End at: 2018-12-11 09:30:18

Local clock offset: -0.329 ms

Remote clock offset: 0.129 ms

Below is generated by plot.py at 2018-12-11 12:50:19

Datalink statistics

-- Total of 1 flow:

Average throughput: 336.80 Mbit/s

95th percentile per-packet one-way delay: 178.899 ms

Loss rate: 0.68%

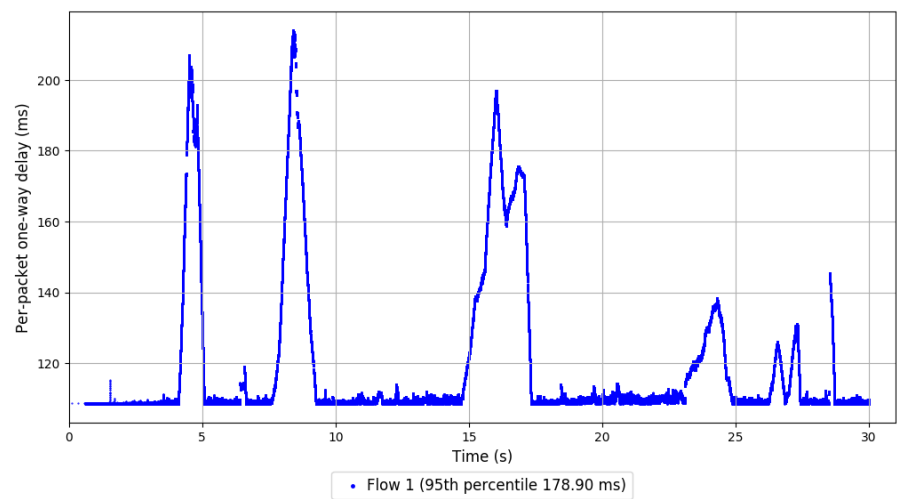
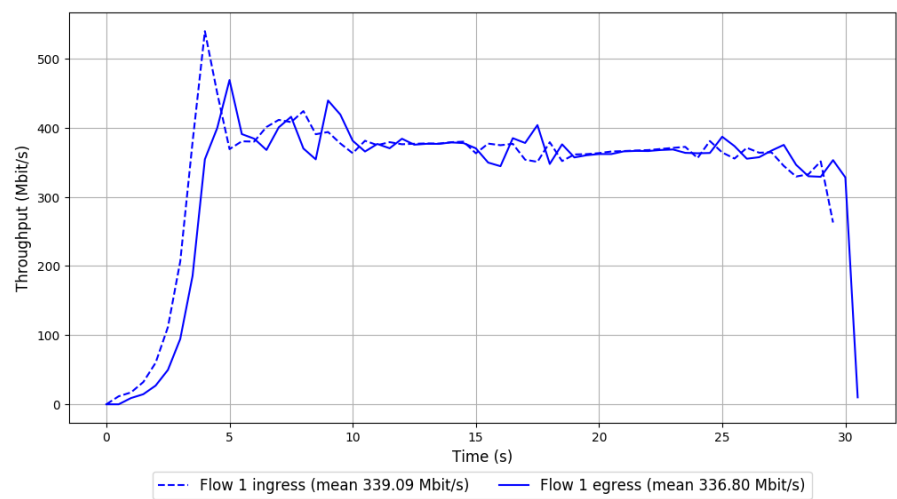
-- Flow 1:

Average throughput: 336.80 Mbit/s

95th percentile per-packet one-way delay: 178.899 ms

Loss rate: 0.68%

Run 2: Report of PCC-Expr — Data Link



Run 3: Statistics of PCC-Expr

Start at: 2018-12-11 09:58:38

End at: 2018-12-11 09:59:08

Local clock offset: 0.518 ms

Remote clock offset: 0.514 ms

Below is generated by plot.py at 2018-12-11 12:50:19

Datalink statistics

-- Total of 1 flow:

Average throughput: 324.65 Mbit/s

95th percentile per-packet one-way delay: 200.089 ms

Loss rate: 1.76%

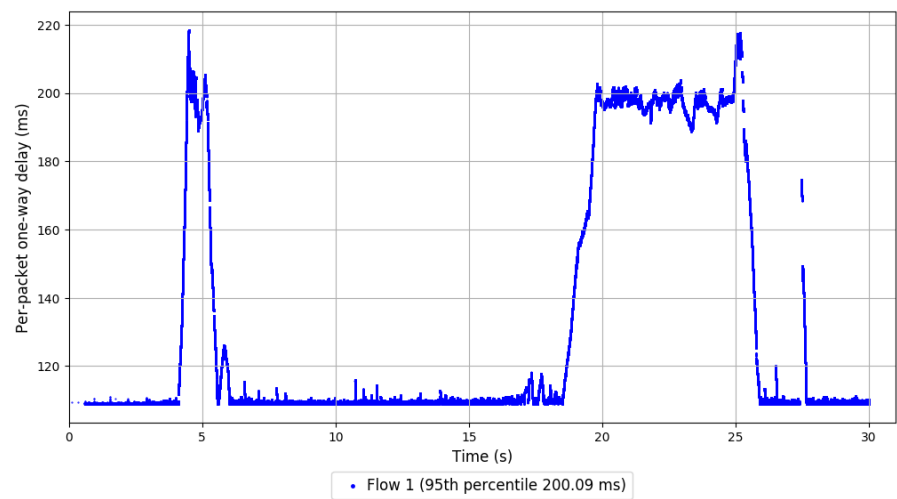
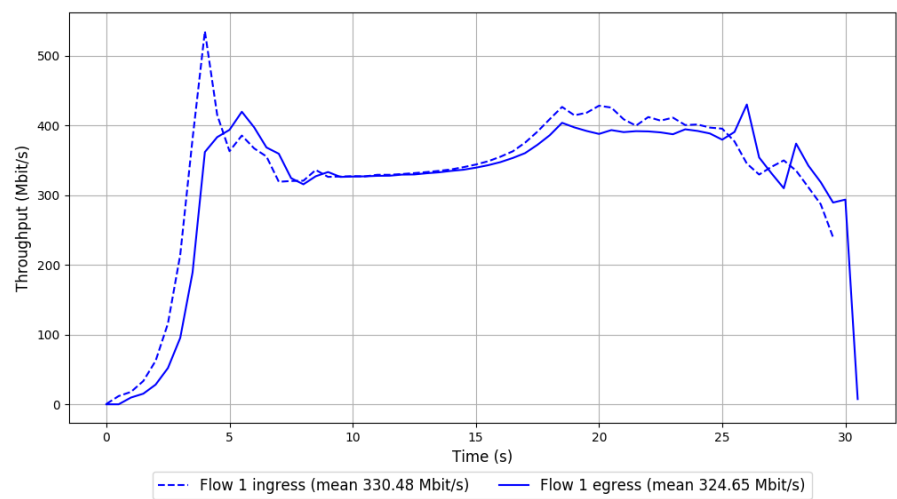
-- Flow 1:

Average throughput: 324.65 Mbit/s

95th percentile per-packet one-way delay: 200.089 ms

Loss rate: 1.76%

Run 3: Report of PCC-Expr — Data Link



Run 4: Statistics of PCC-Expr

Start at: 2018-12-11 10:27:31

End at: 2018-12-11 10:28:01

Local clock offset: -0.225 ms

Remote clock offset: 0.231 ms

Below is generated by plot.py at 2018-12-11 12:57:33

Datalink statistics

-- Total of 1 flow:

Average throughput: 339.01 Mbit/s

95th percentile per-packet one-way delay: 200.840 ms

Loss rate: 2.29%

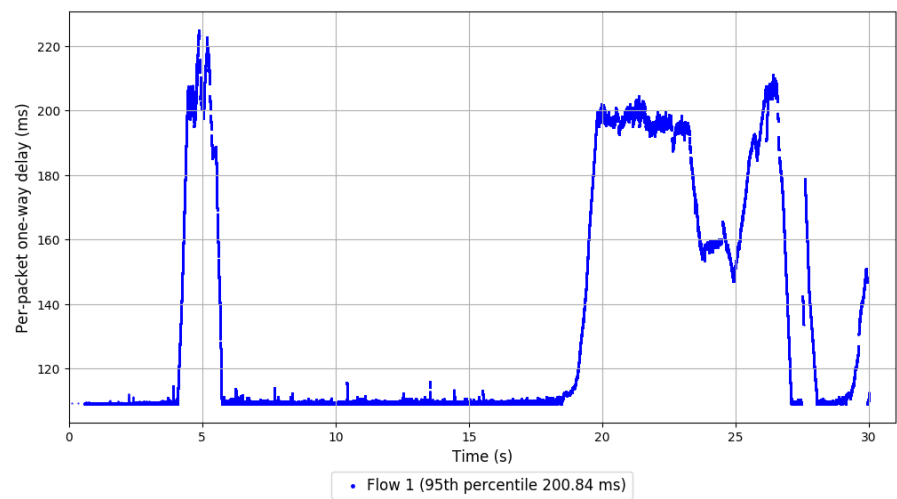
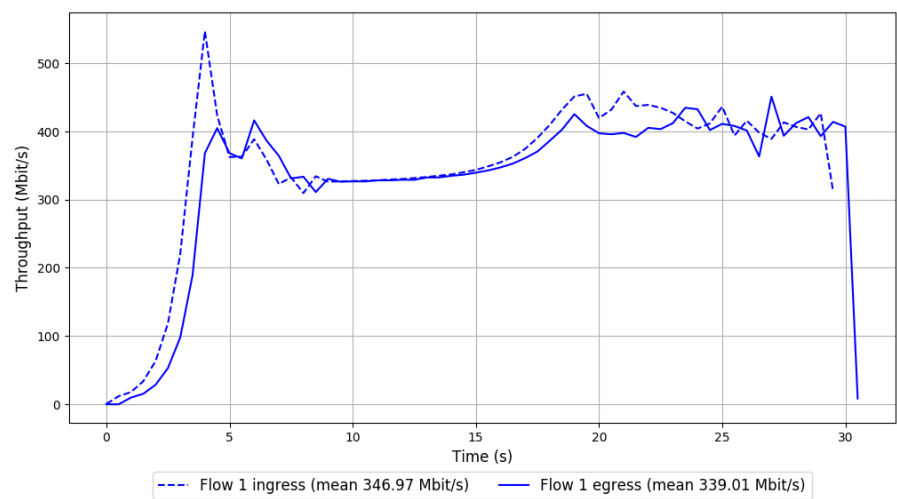
-- Flow 1:

Average throughput: 339.01 Mbit/s

95th percentile per-packet one-way delay: 200.840 ms

Loss rate: 2.29%

Run 4: Report of PCC-Expr — Data Link



Run 5: Statistics of PCC-Expr

Start at: 2018-12-11 10:56:22

End at: 2018-12-11 10:56:52

Local clock offset: -0.381 ms

Remote clock offset: 0.284 ms

Below is generated by plot.py at 2018-12-11 12:58:35

Datalink statistics

-- Total of 1 flow:

Average throughput: 343.87 Mbit/s

95th percentile per-packet one-way delay: 197.299 ms

Loss rate: 2.09%

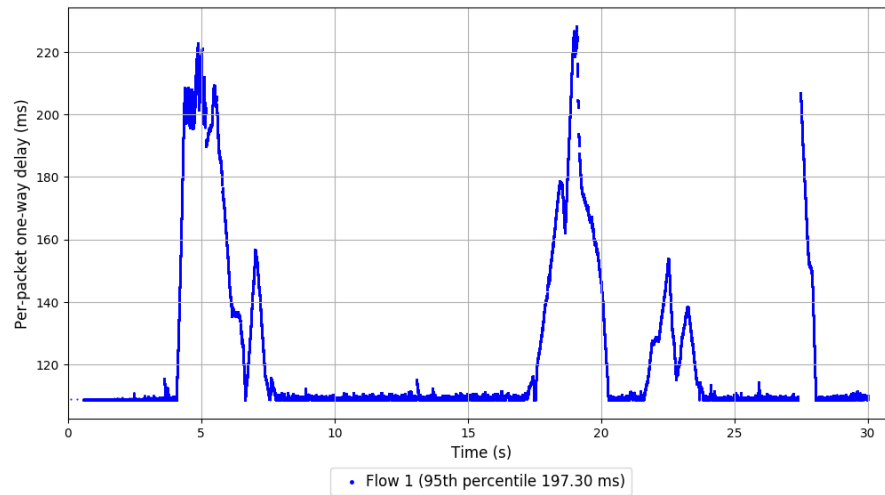
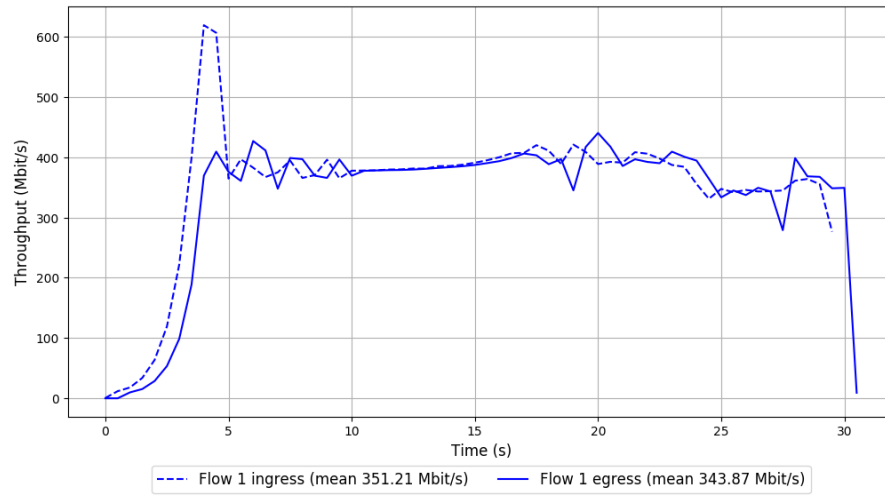
-- Flow 1:

Average throughput: 343.87 Mbit/s

95th percentile per-packet one-way delay: 197.299 ms

Loss rate: 2.09%

Run 5: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

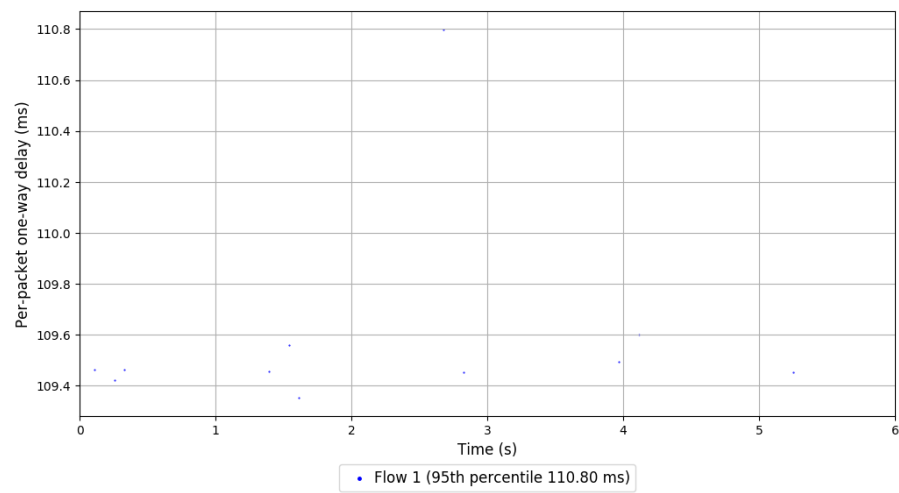
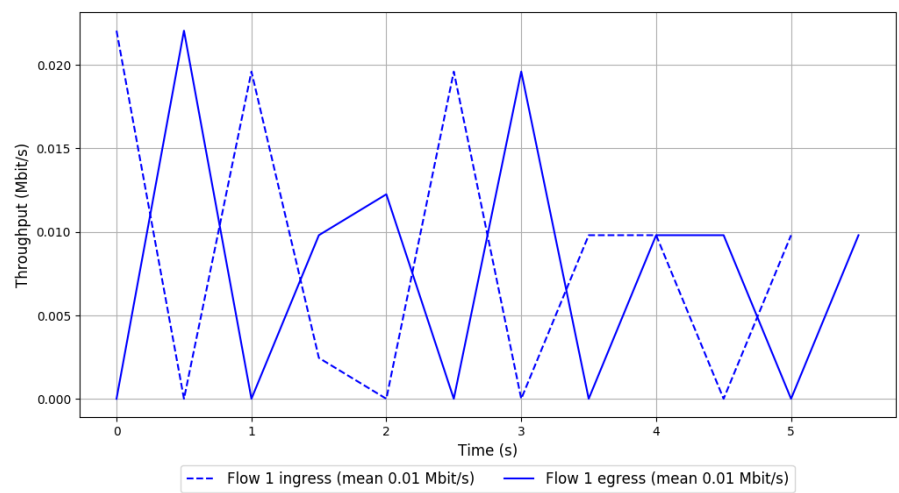
Start at: 2018-12-11 09:22:39

End at: 2018-12-11 09:23:09

Local clock offset: -0.311 ms

Remote clock offset: 0.086 ms

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2018-12-11 09:51:28

End at: 2018-12-11 09:51:58

Local clock offset: 0.74 ms

Remote clock offset: 0.094 ms

Below is generated by plot.py at 2018-12-11 12:58:35

Datalink statistics

-- Total of 1 flow:

Average throughput: 53.03 Mbit/s

95th percentile per-packet one-way delay: 108.791 ms

Loss rate: 0.00%

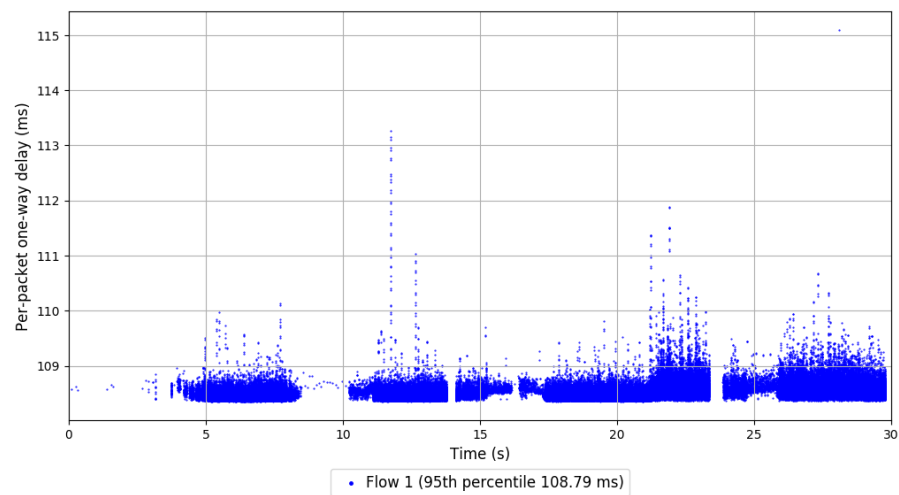
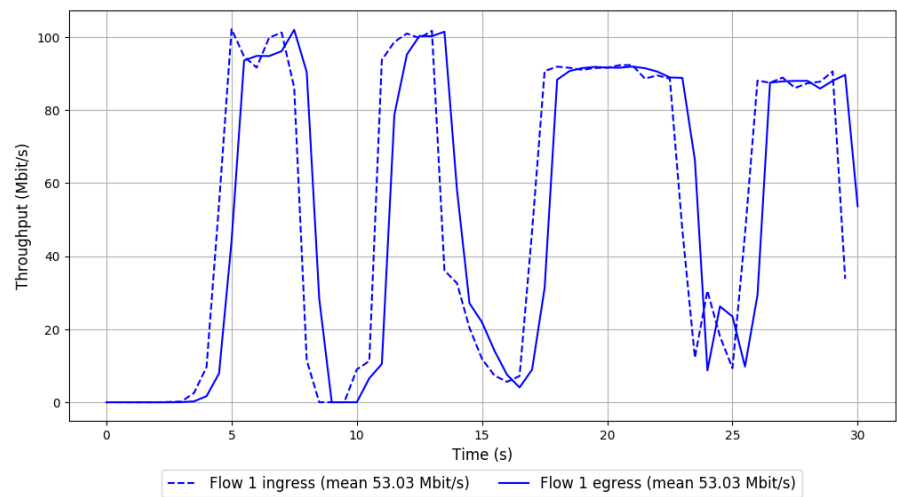
-- Flow 1:

Average throughput: 53.03 Mbit/s

95th percentile per-packet one-way delay: 108.791 ms

Loss rate: 0.00%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2018-12-11 10:20:18

End at: 2018-12-11 10:20:48

Local clock offset: -0.178 ms

Remote clock offset: 0.19 ms

Below is generated by plot.py at 2018-12-11 12:58:35

Datalink statistics

-- Total of 1 flow:

Average throughput: 61.38 Mbit/s

95th percentile per-packet one-way delay: 109.608 ms

Loss rate: 0.00%

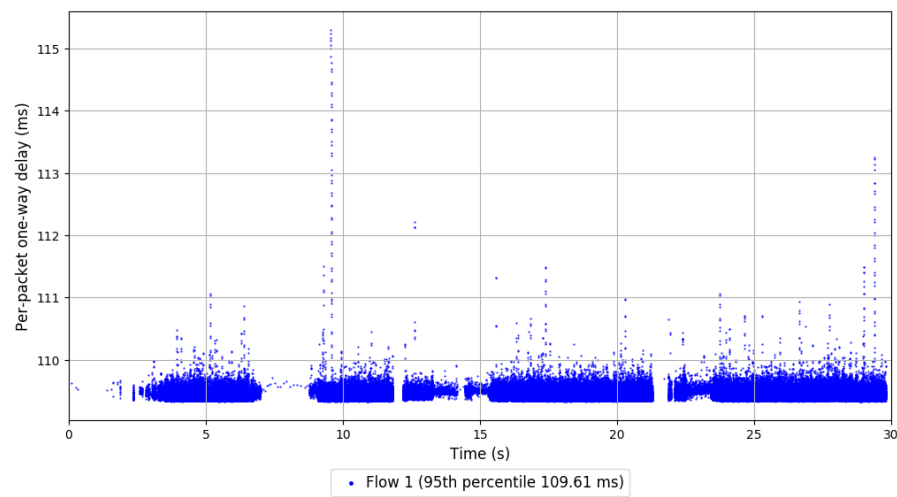
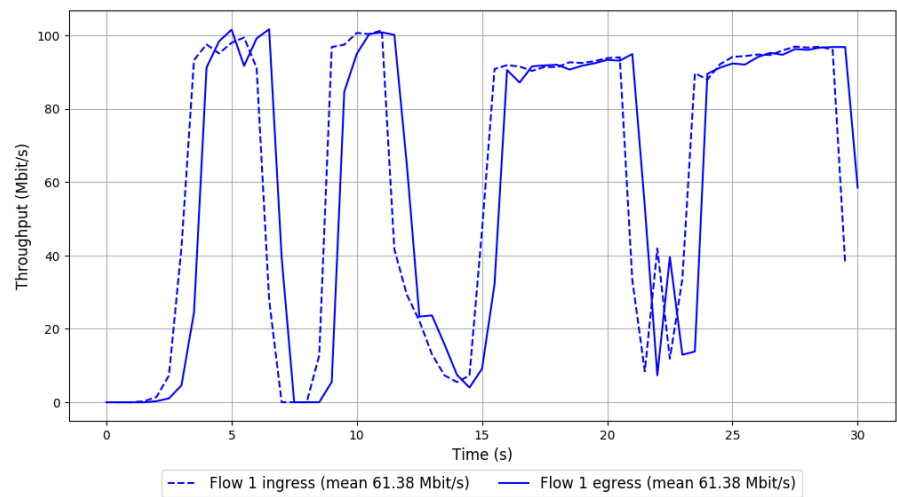
-- Flow 1:

Average throughput: 61.38 Mbit/s

95th percentile per-packet one-way delay: 109.608 ms

Loss rate: 0.00%

Run 3: Report of QUIC Cubic — Data Link



Run 4: Statistics of QUIC Cubic

Start at: 2018-12-11 10:49:09

End at: 2018-12-11 10:49:39

Local clock offset: -0.787 ms

Remote clock offset: 0.135 ms

Below is generated by plot.py at 2018-12-11 12:58:35

Datalink statistics

-- Total of 1 flow:

Average throughput: 64.93 Mbit/s

95th percentile per-packet one-way delay: 110.007 ms

Loss rate: 0.00%

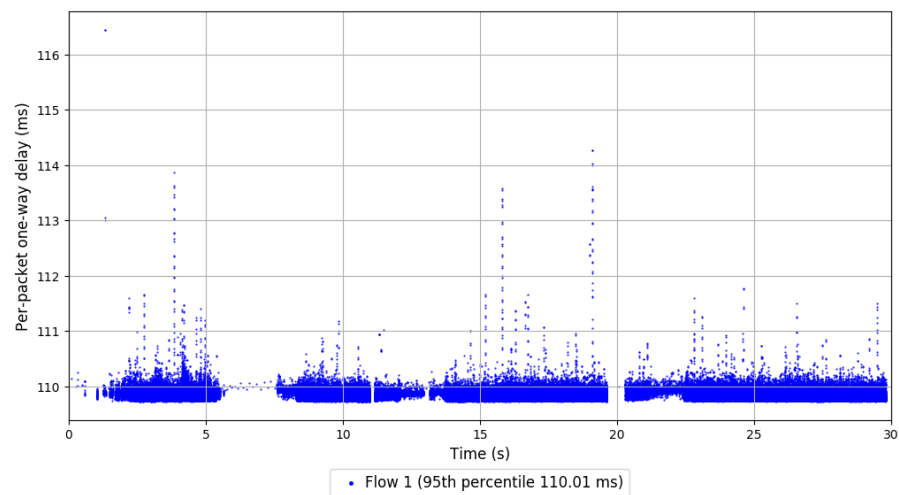
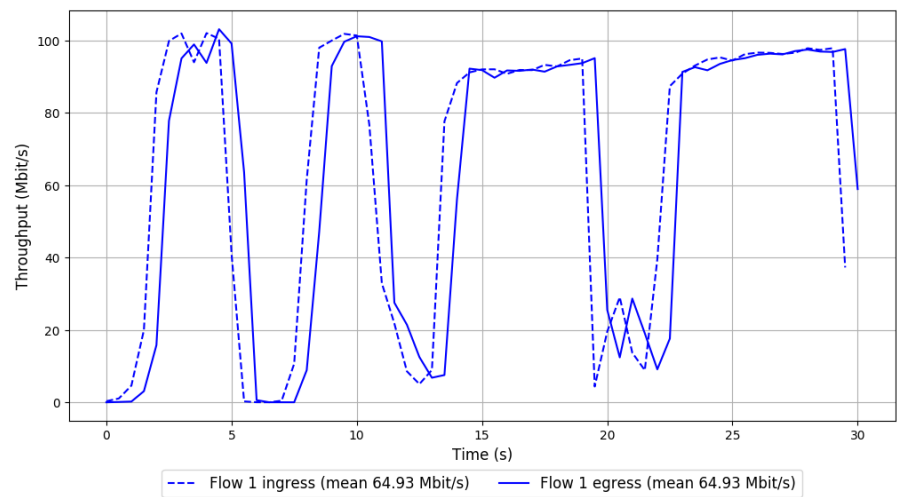
-- Flow 1:

Average throughput: 64.93 Mbit/s

95th percentile per-packet one-way delay: 110.007 ms

Loss rate: 0.00%

Run 4: Report of QUIC Cubic — Data Link



Run 5: Statistics of QUIC Cubic

Start at: 2018-12-11 11:17:48

End at: 2018-12-11 11:18:18

Local clock offset: 0.934 ms

Remote clock offset: 0.247 ms

Below is generated by plot.py at 2018-12-11 12:58:35

Datalink statistics

-- Total of 1 flow:

Average throughput: 57.83 Mbit/s

95th percentile per-packet one-way delay: 108.361 ms

Loss rate: 0.00%

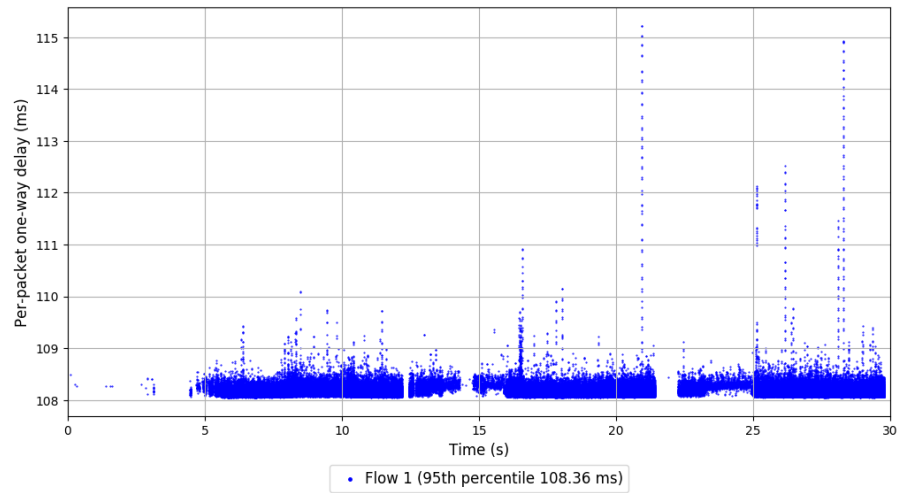
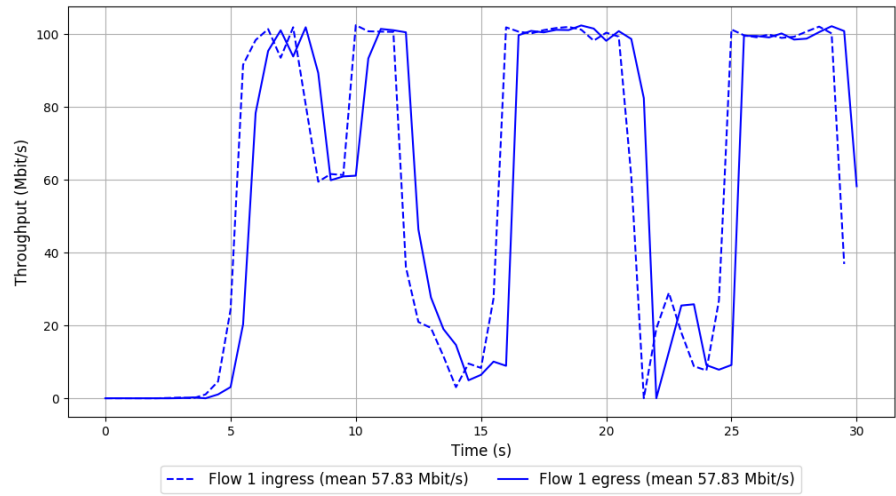
-- Flow 1:

Average throughput: 57.83 Mbit/s

95th percentile per-packet one-way delay: 108.361 ms

Loss rate: 0.00%

Run 5: Report of QUIC Cubic — Data Link

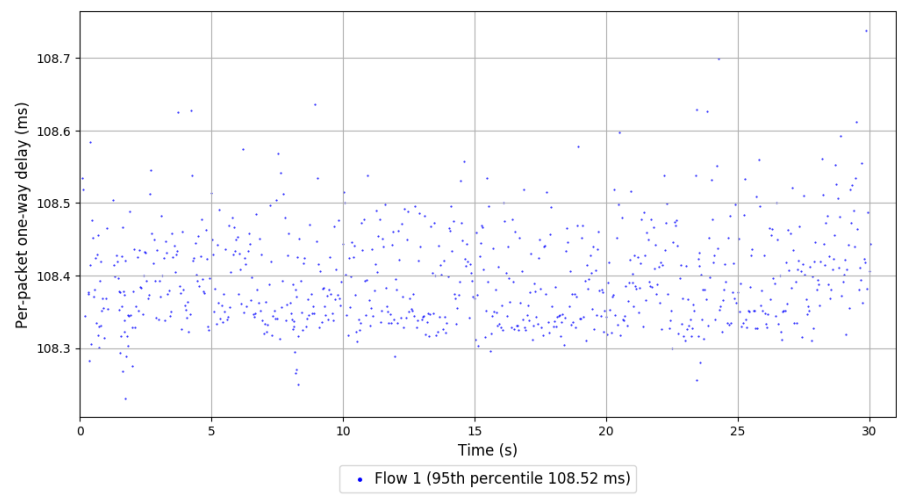
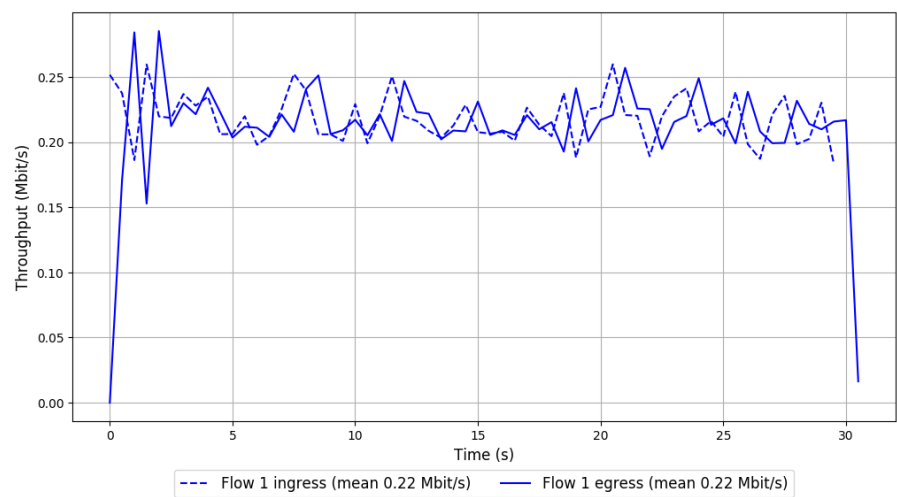



```
Run 1: Statistics of SCReAM

Start at: 2018-12-11 09:10:50
End at: 2018-12-11 09:11:20
Local clock offset: 0.031 ms
Remote clock offset: -0.003 ms

# Below is generated by plot.py at 2018-12-11 12:58:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 108.518 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 108.518 ms
Loss rate: 0.00%
```

Run 1: Report of SReAM — Data Link



Run 2: Statistics of SCReAM

Start at: 2018-12-11 09:39:30

End at: 2018-12-11 09:40:00

Local clock offset: 1.166 ms

Remote clock offset: 0.111 ms

Below is generated by plot.py at 2018-12-11 12:58:35

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 107.435 ms

Loss rate: 0.00%

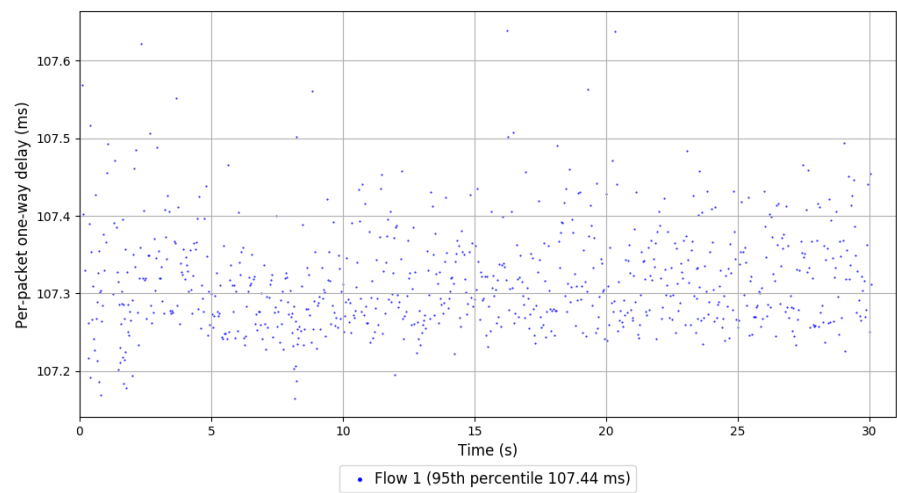
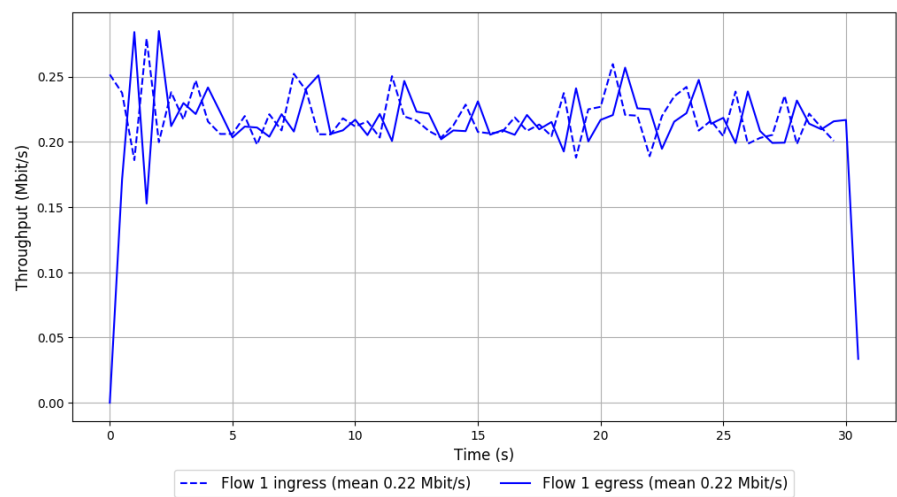
-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 107.435 ms

Loss rate: 0.00%

Run 2: Report of SReAM — Data Link



Run 3: Statistics of SCReAM

Start at: 2018-12-11 10:08:14

End at: 2018-12-11 10:08:44

Local clock offset: -0.081 ms

Remote clock offset: 0.164 ms

Below is generated by plot.py at 2018-12-11 12:58:35

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 109.778 ms

Loss rate: 0.00%

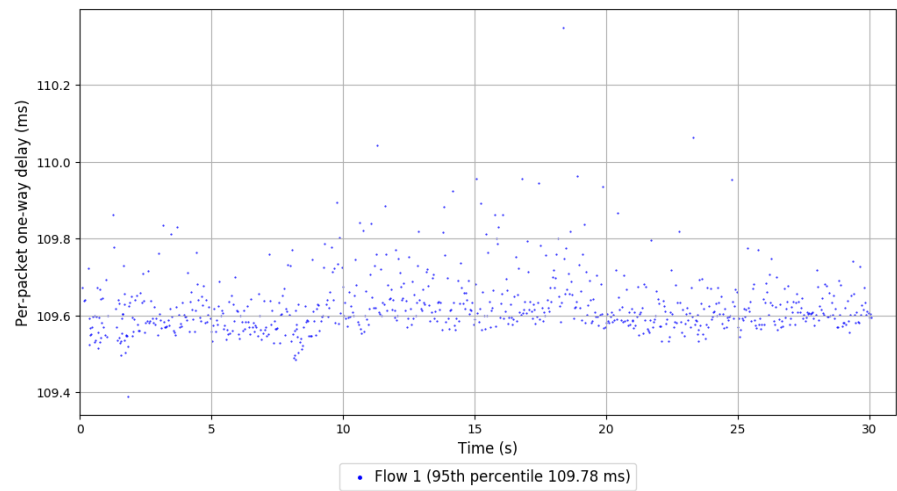
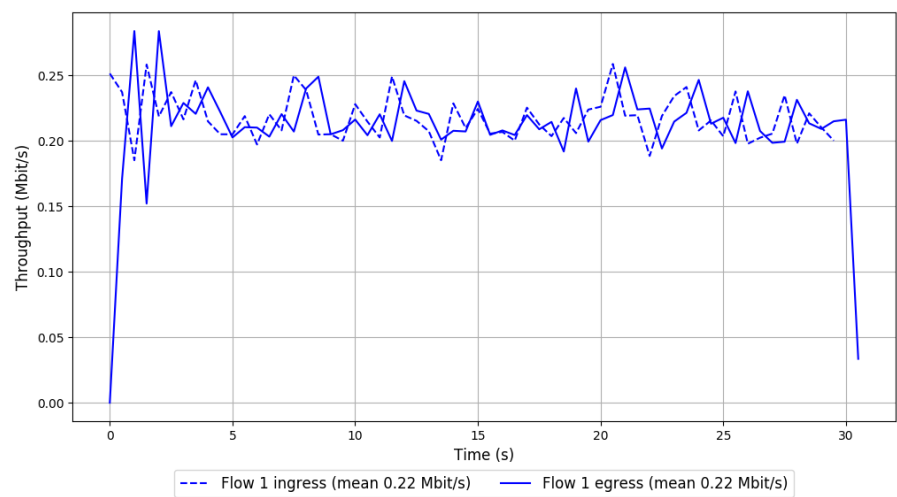
-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 109.778 ms

Loss rate: 0.00%

Run 3: Report of SReAM — Data Link



Run 4: Statistics of SCReAM

Start at: 2018-12-11 10:37:22

End at: 2018-12-11 10:37:52

Local clock offset: 0.965 ms

Remote clock offset: 0.568 ms

Below is generated by plot.py at 2018-12-11 12:58:35

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 107.757 ms

Loss rate: 0.00%

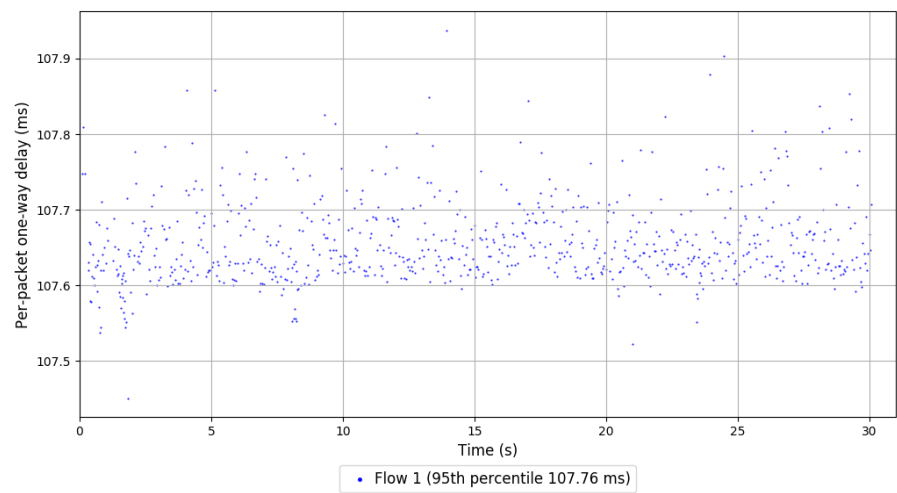
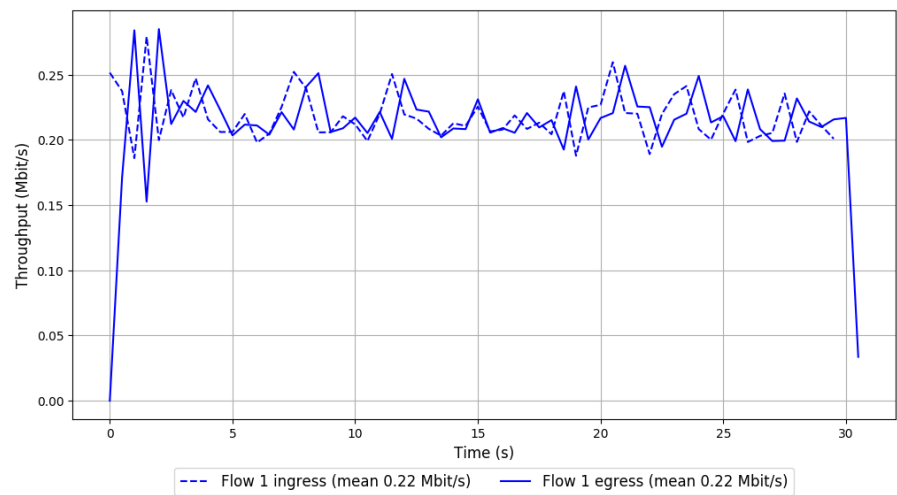
-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 107.757 ms

Loss rate: 0.00%

Run 4: Report of SReAM — Data Link



Run 5: Statistics of SCReAM

Start at: 2018-12-11 11:05:58

End at: 2018-12-11 11:06:28

Local clock offset: -0.354 ms

Remote clock offset: 0.262 ms

Below is generated by plot.py at 2018-12-11 12:58:36

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 109.651 ms

Loss rate: 0.00%

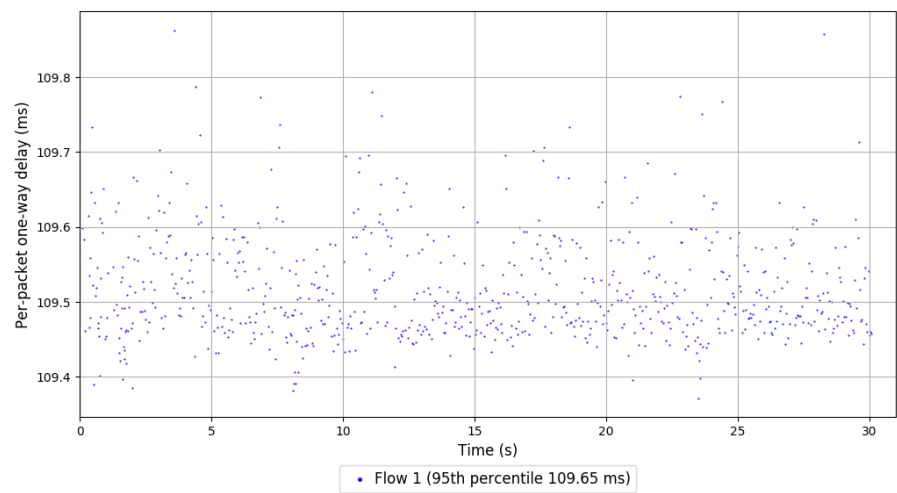
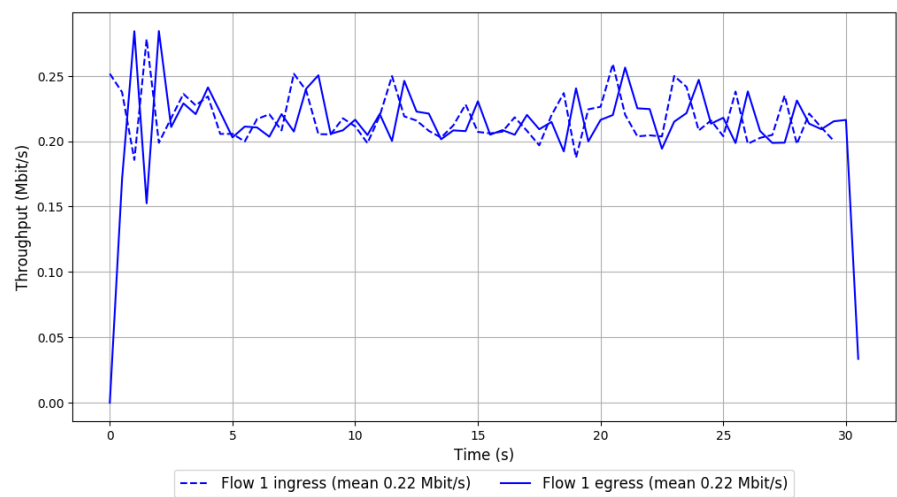
-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 109.651 ms

Loss rate: 0.00%

Run 5: Report of SReAM — Data Link



Run 1: Statistics of Sprout

Start at: 2018-12-11 09:27:00

End at: 2018-12-11 09:27:30

Local clock offset: -0.163 ms

Remote clock offset: 0.109 ms

Below is generated by plot.py at 2018-12-11 12:58:36

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.63 Mbit/s

95th percentile per-packet one-way delay: 109.534 ms

Loss rate: 0.00%

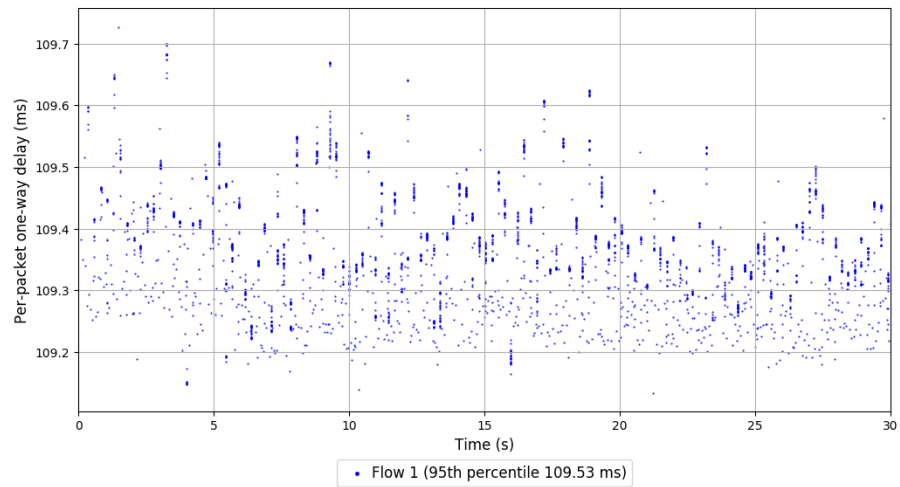
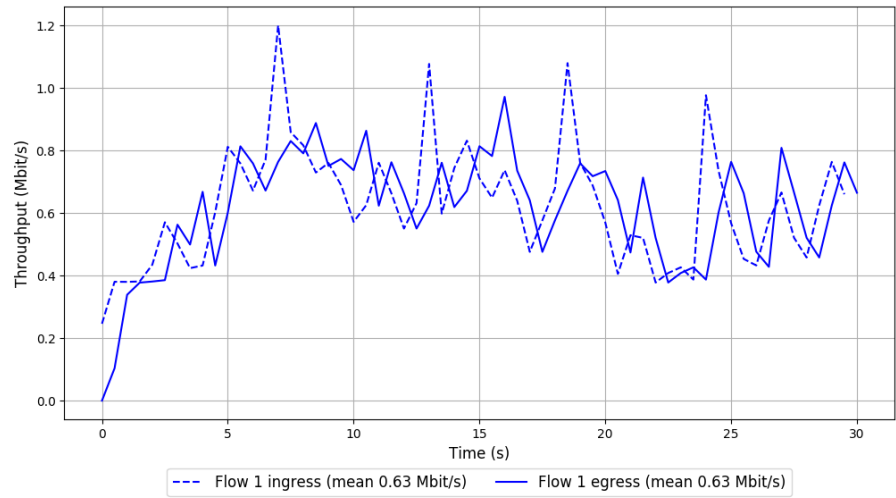
-- Flow 1:

Average throughput: 0.63 Mbit/s

95th percentile per-packet one-way delay: 109.534 ms

Loss rate: 0.00%

Run 1: Report of Sprout — Data Link



Run 2: Statistics of Sprout

Start at: 2018-12-11 09:55:50

End at: 2018-12-11 09:56:20

Local clock offset: 0.12 ms

Remote clock offset: 0.115 ms

Below is generated by plot.py at 2018-12-11 12:58:36

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.75 Mbit/s

95th percentile per-packet one-way delay: 109.184 ms

Loss rate: 0.00%

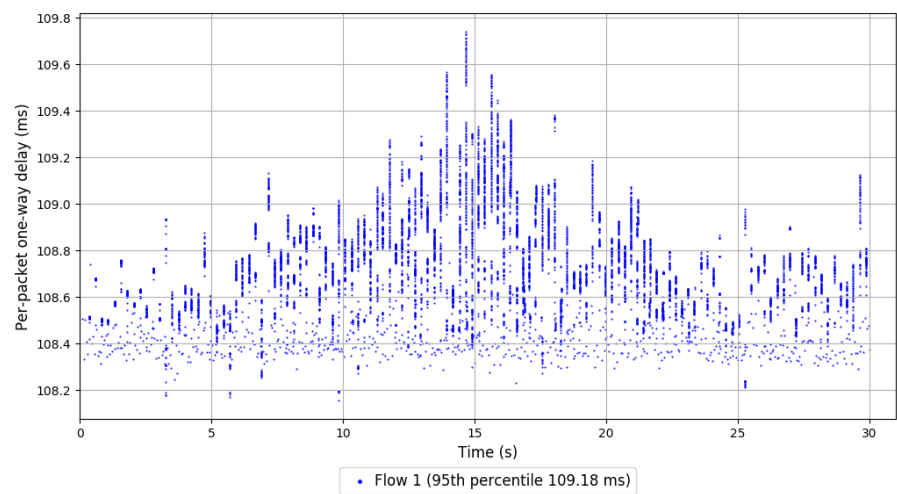
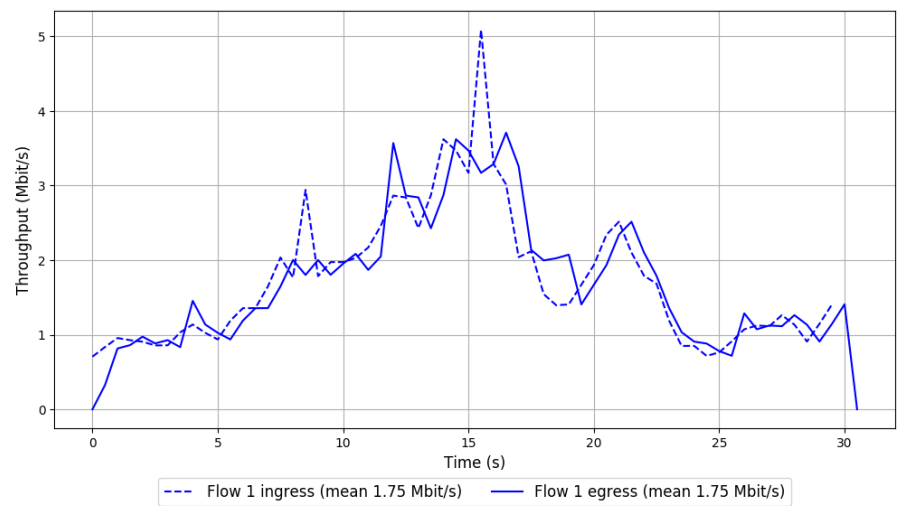
-- Flow 1:

Average throughput: 1.75 Mbit/s

95th percentile per-packet one-way delay: 109.184 ms

Loss rate: 0.00%

Run 2: Report of Sprout — Data Link



Run 3: Statistics of Sprout

Start at: 2018-12-11 10:24:44

End at: 2018-12-11 10:25:14

Local clock offset: -0.147 ms

Remote clock offset: 0.51 ms

Below is generated by plot.py at 2018-12-11 12:58:36

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.73 Mbit/s

95th percentile per-packet one-way delay: 109.222 ms

Loss rate: 0.00%

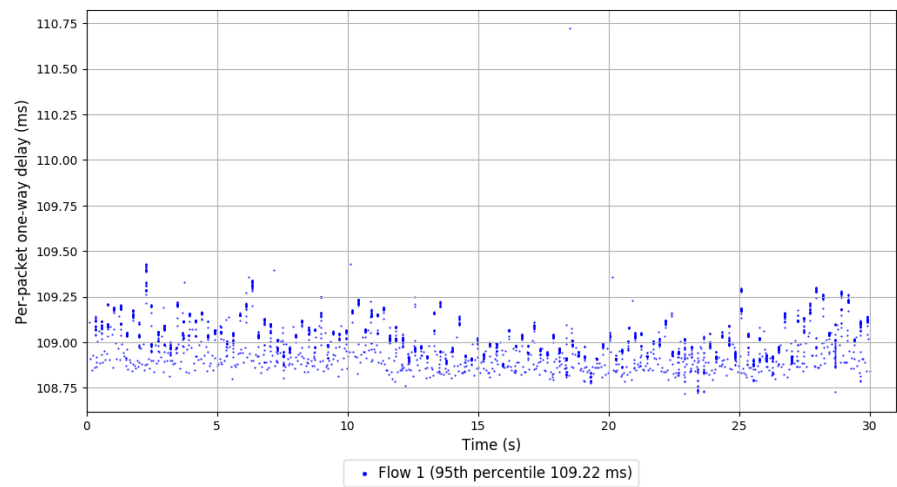
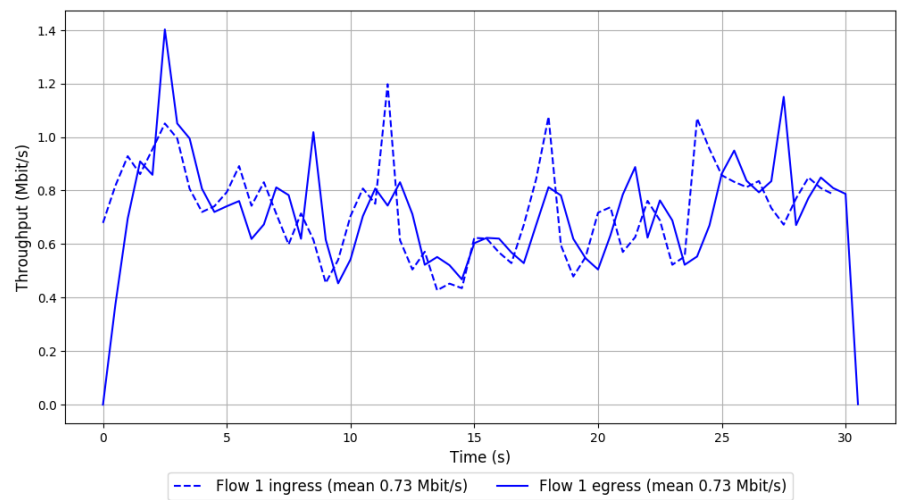
-- Flow 1:

Average throughput: 0.73 Mbit/s

95th percentile per-packet one-way delay: 109.222 ms

Loss rate: 0.00%

Run 3: Report of Sprout — Data Link

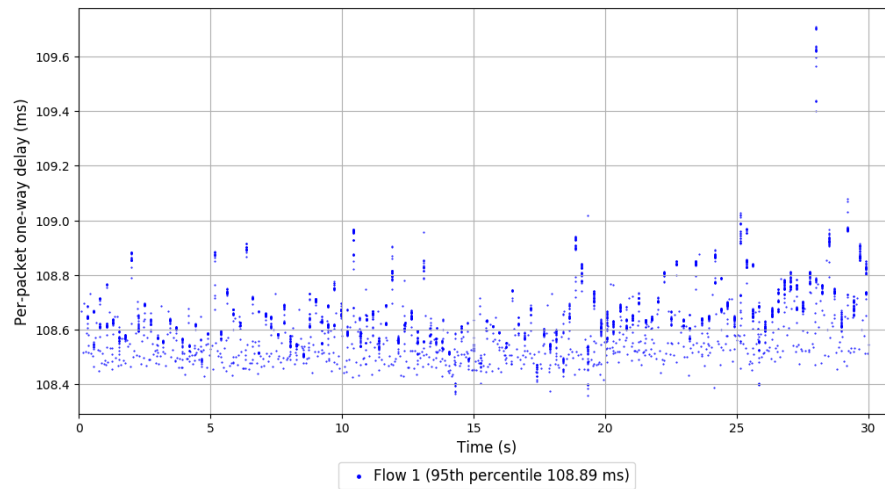
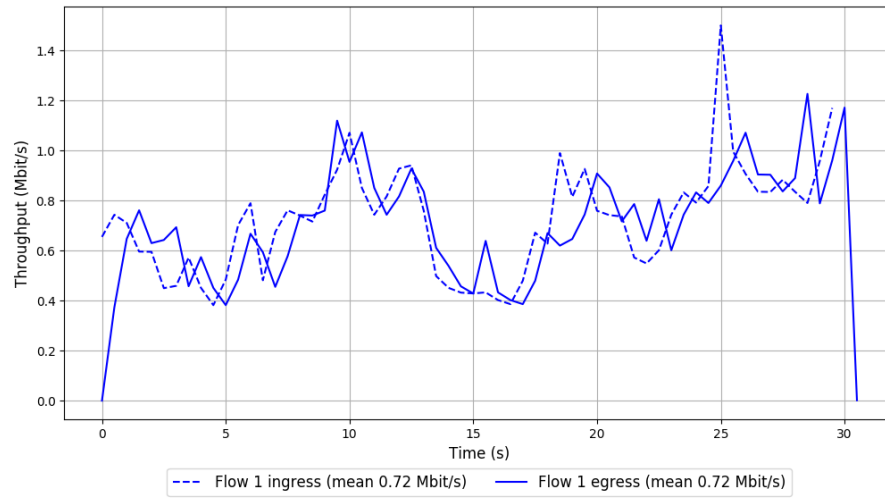


Run 4: Statistics of Sprout

Start at: 2018-12-11 10:53:32
End at: 2018-12-11 10:54:02
Local clock offset: -0.121 ms
Remote clock offset: 0.214 ms

Below is generated by plot.py at 2018-12-11 12:58:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.72 Mbit/s
95th percentile per-packet one-way delay: 108.892 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.72 Mbit/s
95th percentile per-packet one-way delay: 108.892 ms
Loss rate: 0.00%

Run 4: Report of Sprout — Data Link



Run 5: Statistics of Sprout

Start at: 2018-12-11 11:22:15

End at: 2018-12-11 11:22:45

Local clock offset: -0.099 ms

Remote clock offset: 0.264 ms

Below is generated by plot.py at 2018-12-11 12:58:36

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.47 Mbit/s

95th percentile per-packet one-way delay: 109.686 ms

Loss rate: 0.00%

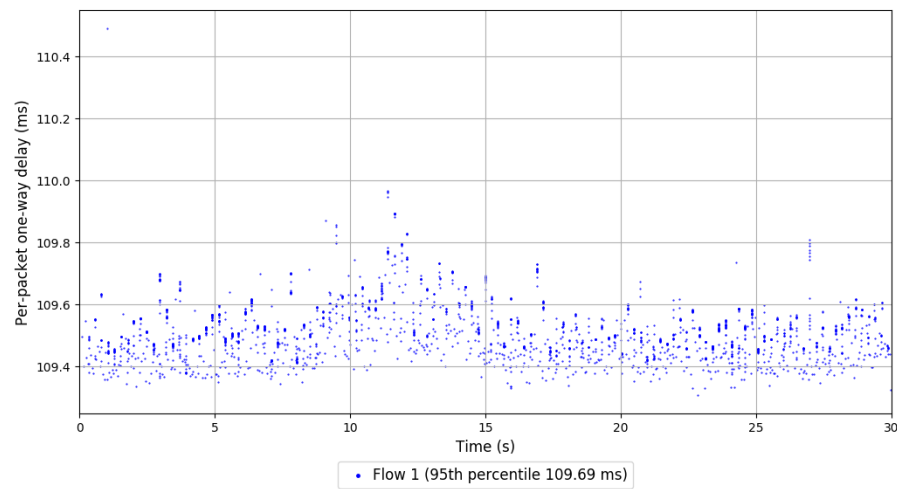
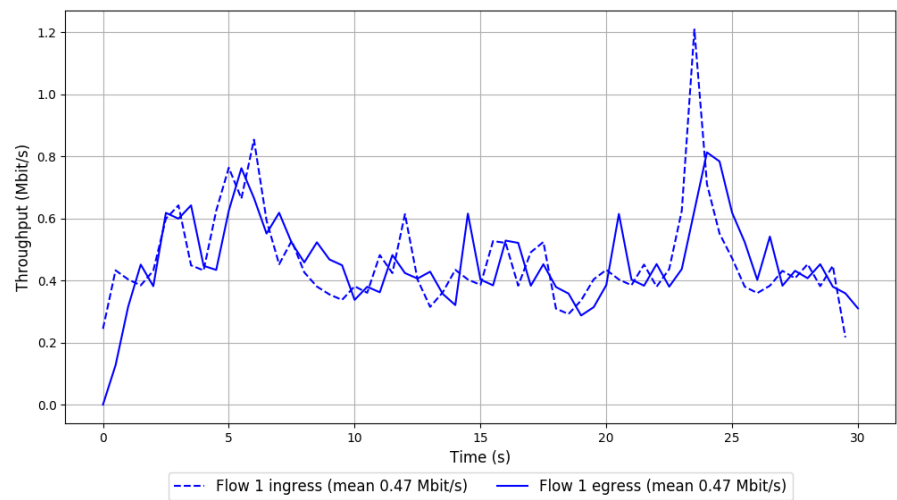
-- Flow 1:

Average throughput: 0.47 Mbit/s

95th percentile per-packet one-way delay: 109.686 ms

Loss rate: 0.00%

Run 5: Report of Sprout — Data Link

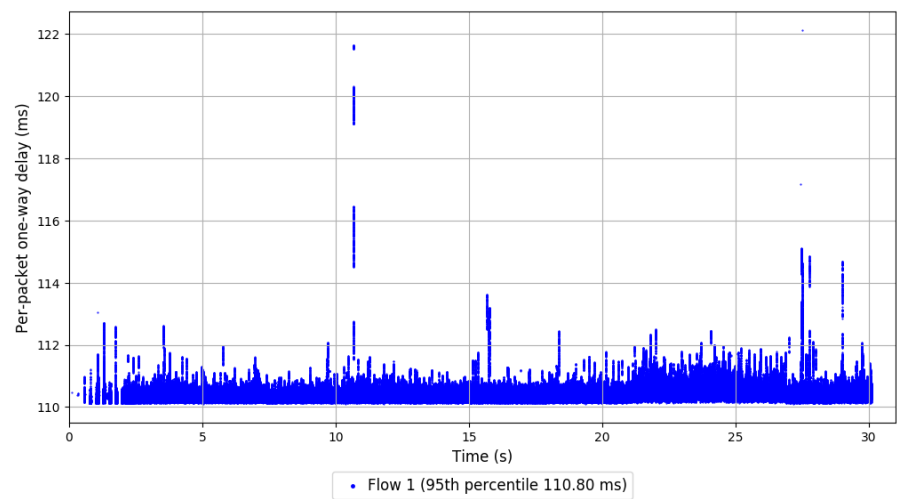
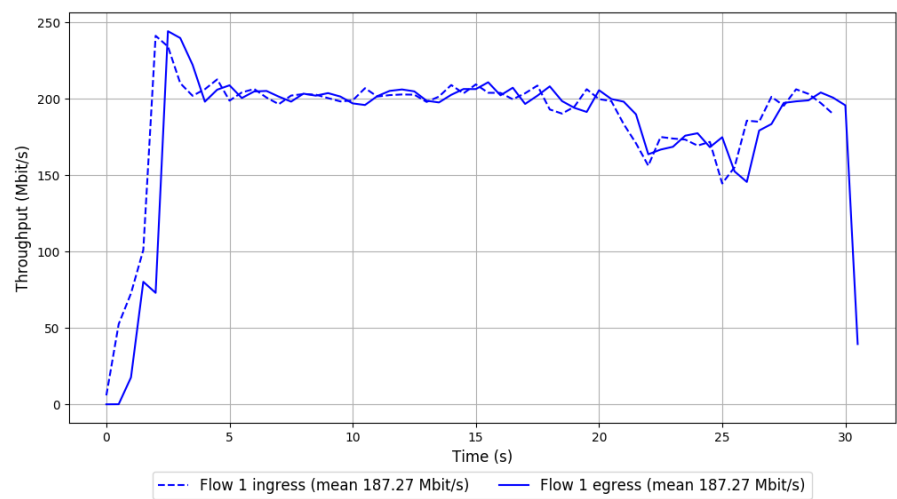


```
Run 1: Statistics of TaoVA-100x

Start at: 2018-12-11 09:19:33
End at: 2018-12-11 09:20:03
Local clock offset: -0.562 ms
Remote clock offset: 0.483 ms

# Below is generated by plot.py at 2018-12-11 12:58:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 187.27 Mbit/s
95th percentile per-packet one-way delay: 110.801 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 187.27 Mbit/s
95th percentile per-packet one-way delay: 110.801 ms
Loss rate: 0.00%
```

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



Run 2: Statistics of TaoVA-100x

Start at: 2018-12-11 09:48:27

End at: 2018-12-11 09:48:57

Local clock offset: -0.205 ms

Remote clock offset: 0.096 ms

Below is generated by plot.py at 2018-12-11 12:58:36

Datalink statistics

-- Total of 1 flow:

Average throughput: 196.67 Mbit/s

95th percentile per-packet one-way delay: 109.646 ms

Loss rate: 0.00%

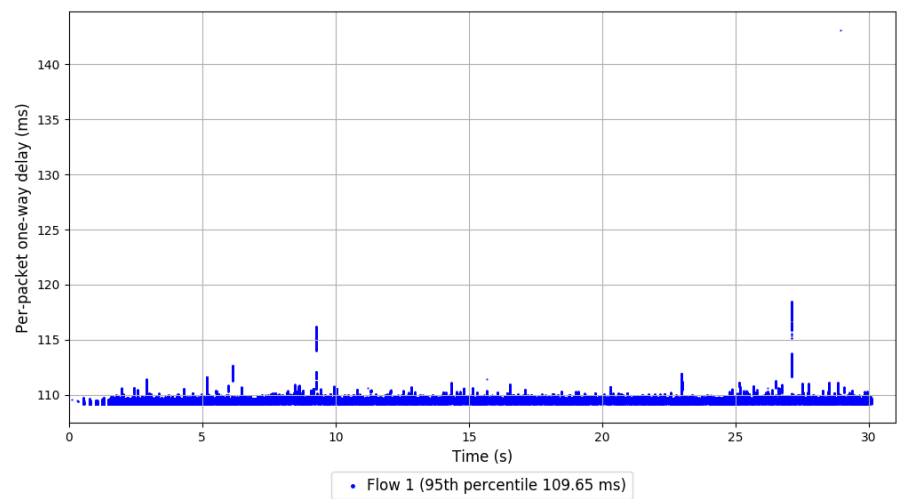
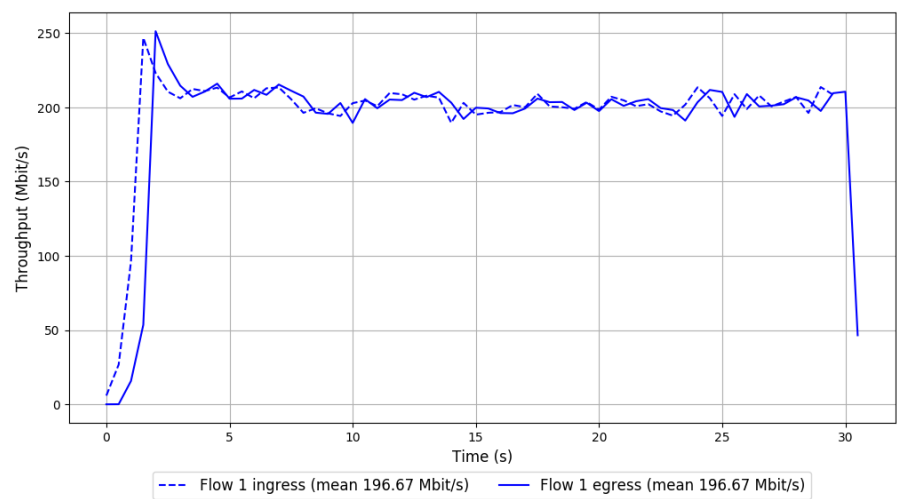
-- Flow 1:

Average throughput: 196.67 Mbit/s

95th percentile per-packet one-way delay: 109.646 ms

Loss rate: 0.00%

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



Run 3: Statistics of TaoVA-100x

Start at: 2018-12-11 10:17:10

End at: 2018-12-11 10:17:40

Local clock offset: -0.19 ms

Remote clock offset: 0.127 ms

Below is generated by plot.py at 2018-12-11 12:58:36

Datalink statistics

-- Total of 1 flow:

Average throughput: 186.72 Mbit/s

95th percentile per-packet one-way delay: 108.861 ms

Loss rate: 0.00%

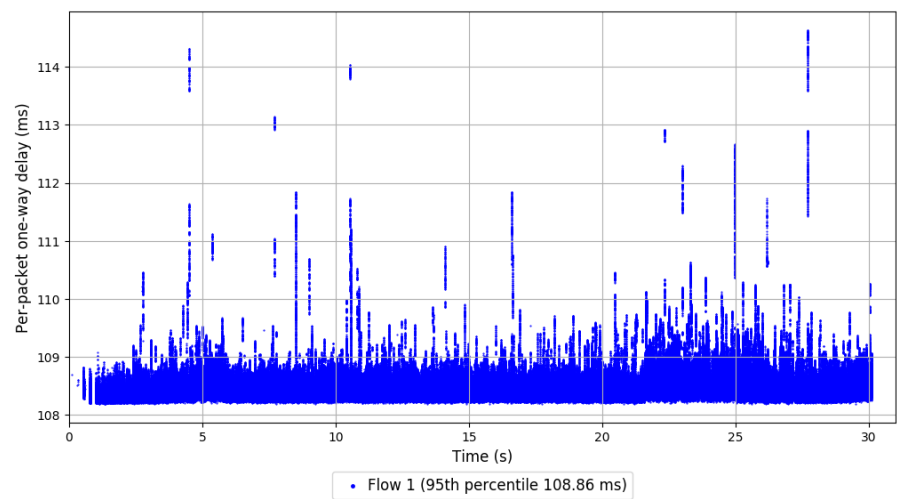
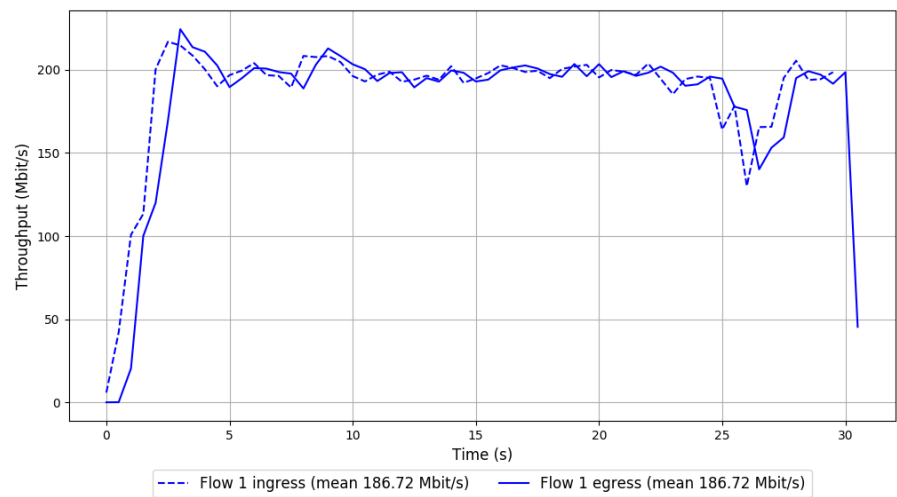
-- Flow 1:

Average throughput: 186.72 Mbit/s

95th percentile per-packet one-way delay: 108.861 ms

Loss rate: 0.00%

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



Run 4: Statistics of TaoVA-100x

Start at: 2018-12-11 10:46:08

End at: 2018-12-11 10:46:38

Local clock offset: -0.219 ms

Remote clock offset: 0.223 ms

Below is generated by plot.py at 2018-12-11 12:58:36

Datalink statistics

-- Total of 1 flow:

Average throughput: 194.14 Mbit/s

95th percentile per-packet one-way delay: 110.004 ms

Loss rate: 0.00%

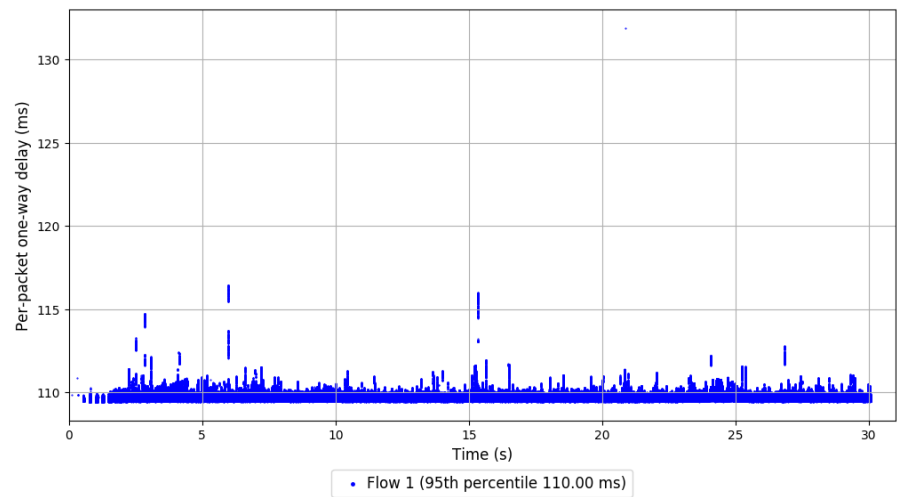
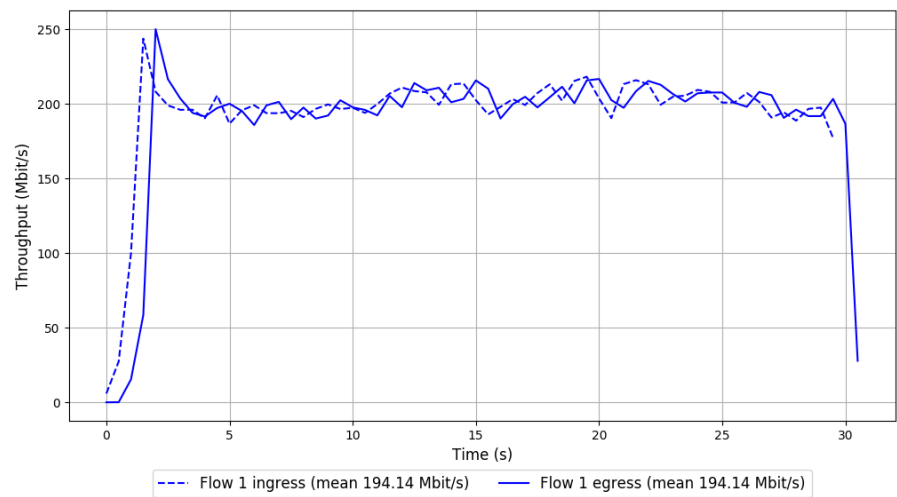
-- Flow 1:

Average throughput: 194.14 Mbit/s

95th percentile per-packet one-way delay: 110.004 ms

Loss rate: 0.00%

Run 4: Report of TaoVA-100x — Data Link



Run 5: Statistics of TaoVA-100x

Start at: 2018-12-11 11:14:44

End at: 2018-12-11 11:15:14

Local clock offset: -0.605 ms

Remote clock offset: 0.24 ms

Below is generated by plot.py at 2018-12-11 12:58:36

Datalink statistics

-- Total of 1 flow:

Average throughput: 183.40 Mbit/s

95th percentile per-packet one-way delay: 110.597 ms

Loss rate: 0.00%

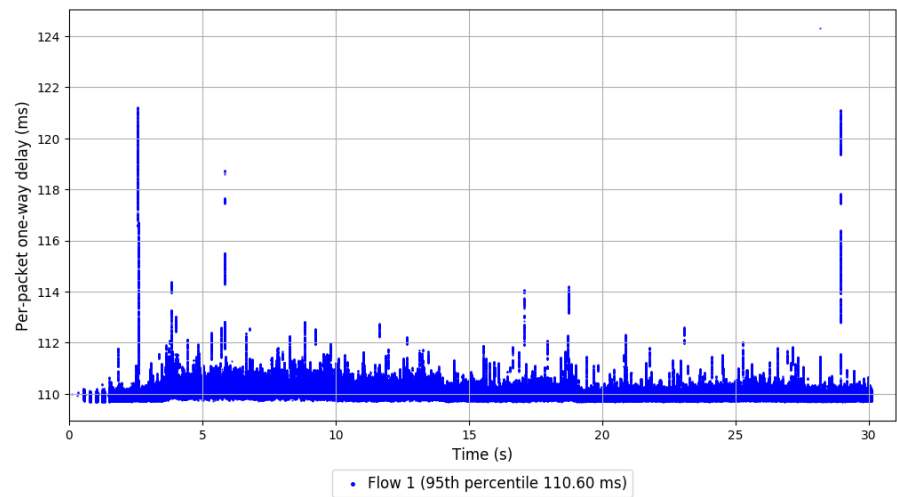
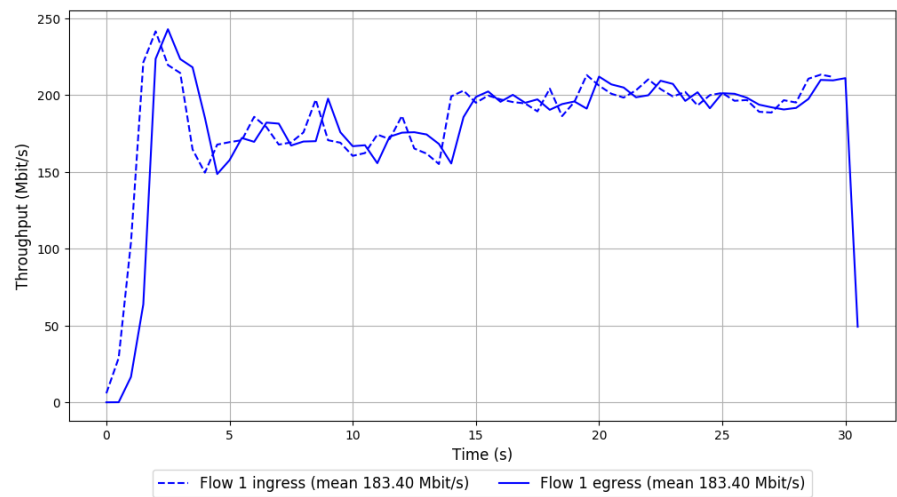
-- Flow 1:

Average throughput: 183.40 Mbit/s

95th percentile per-packet one-way delay: 110.597 ms

Loss rate: 0.00%

Run 5: Report of TaoVA-100x — Data Link



Run 1: Statistics of TCP Vegas

Start at: 2018-12-11 09:21:02

End at: 2018-12-11 09:21:32

Local clock offset: 1.145 ms

Remote clock offset: 0.47 ms

Below is generated by plot.py at 2018-12-11 12:59:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 494.41 Mbit/s

95th percentile per-packet one-way delay: 109.197 ms

Loss rate: 0.00%

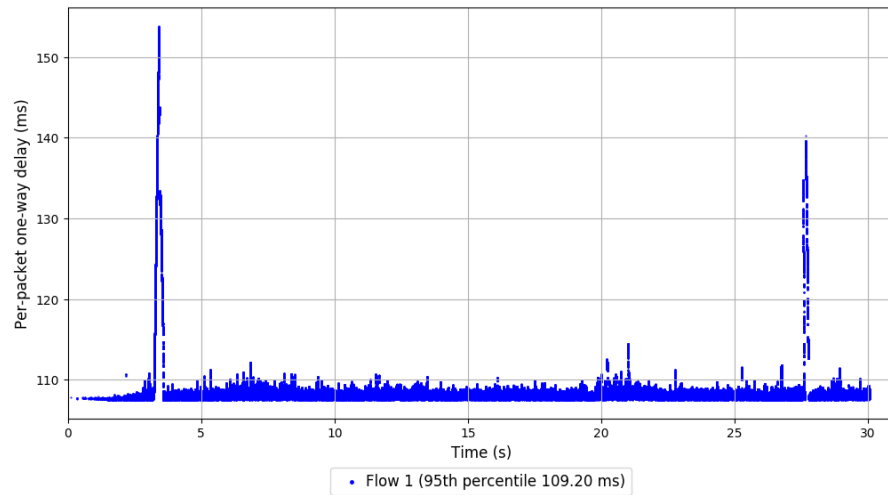
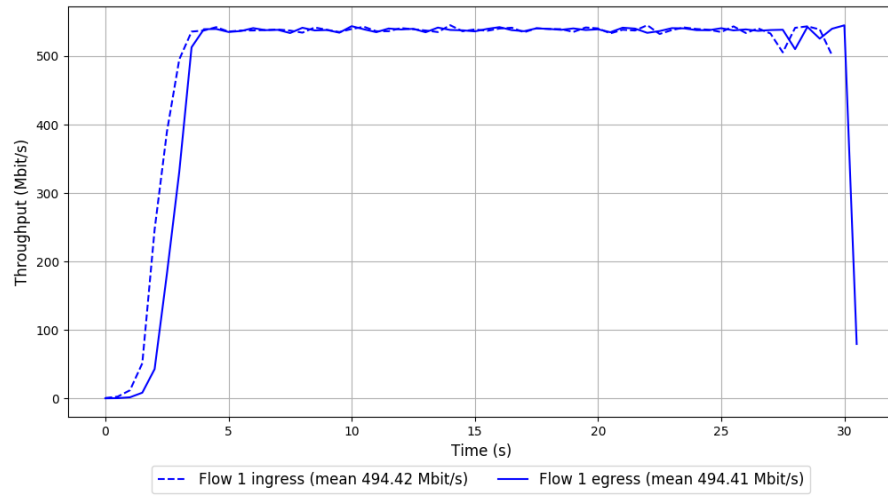
-- Flow 1:

Average throughput: 494.41 Mbit/s

95th percentile per-packet one-way delay: 109.197 ms

Loss rate: 0.00%

Run 1: Report of TCP Vegas — Data Link



Run 2: Statistics of TCP Vegas

Start at: 2018-12-11 09:49:57

End at: 2018-12-11 09:50:27

Local clock offset: 0.382 ms

Remote clock offset: 0.064 ms

Below is generated by plot.py at 2018-12-11 13:02:13

Datalink statistics

-- Total of 1 flow:

Average throughput: 391.57 Mbit/s

95th percentile per-packet one-way delay: 108.841 ms

Loss rate: 0.00%

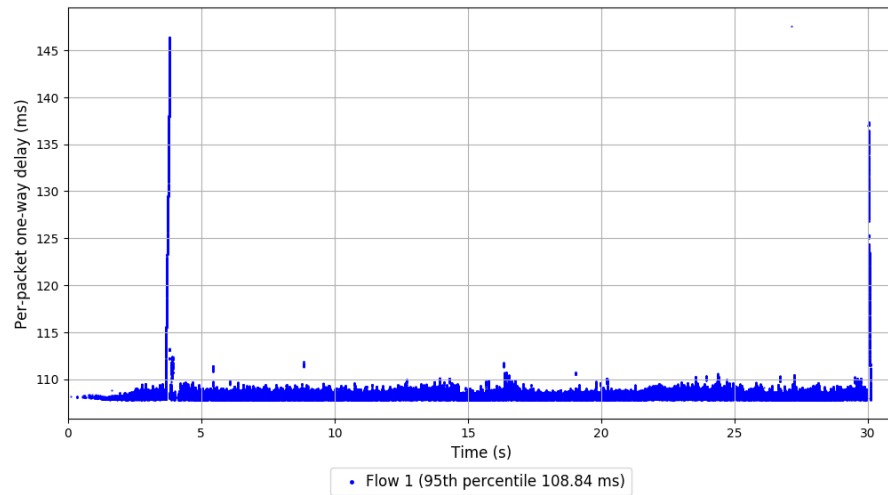
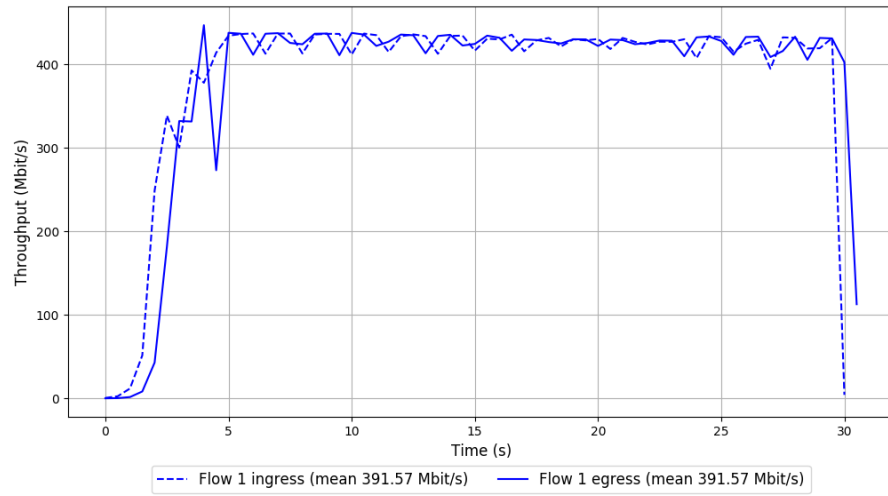
-- Flow 1:

Average throughput: 391.57 Mbit/s

95th percentile per-packet one-way delay: 108.841 ms

Loss rate: 0.00%

Run 2: Report of TCP Vegas — Data Link

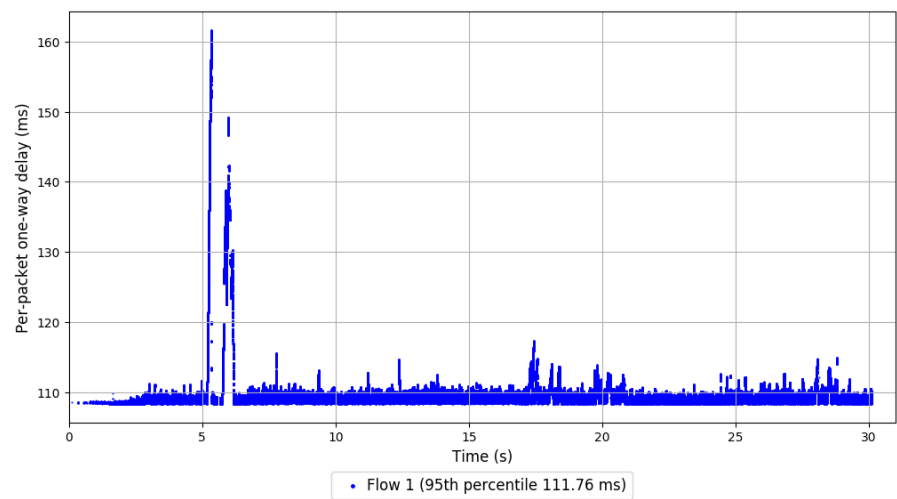
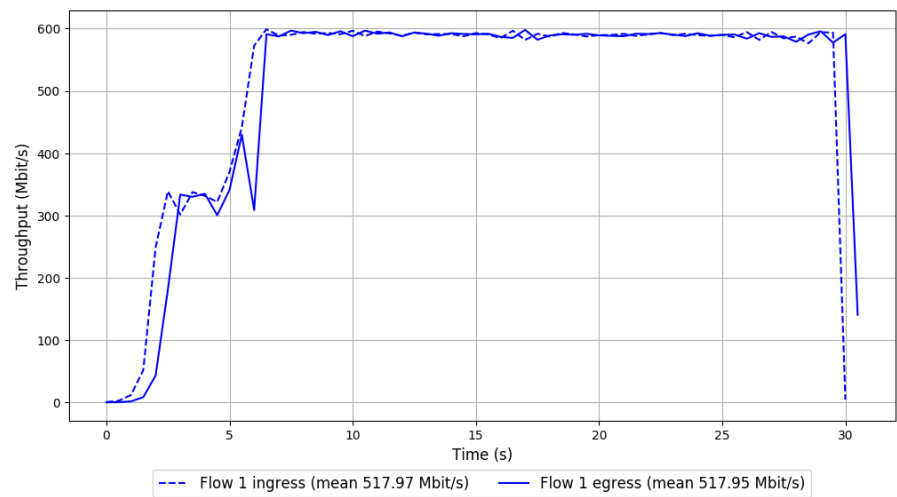


Run 3: Statistics of TCP Vegas

Start at: 2018-12-11 10:18:39
End at: 2018-12-11 10:19:09
Local clock offset: -0.189 ms
Remote clock offset: 0.158 ms

Below is generated by plot.py at 2018-12-11 13:05:52
Datalink statistics
-- Total of 1 flow:
Average throughput: 517.95 Mbit/s
95th percentile per-packet one-way delay: 111.756 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 517.95 Mbit/s
95th percentile per-packet one-way delay: 111.756 ms
Loss rate: 0.00%

Run 3: Report of TCP Vegas — Data Link



Run 4: Statistics of TCP Vegas

Start at: 2018-12-11 10:47:37

End at: 2018-12-11 10:48:07

Local clock offset: 0.41 ms

Remote clock offset: 0.197 ms

Below is generated by plot.py at 2018-12-11 13:05:52

Datalink statistics

-- Total of 1 flow:

Average throughput: 393.37 Mbit/s

95th percentile per-packet one-way delay: 109.853 ms

Loss rate: 0.00%

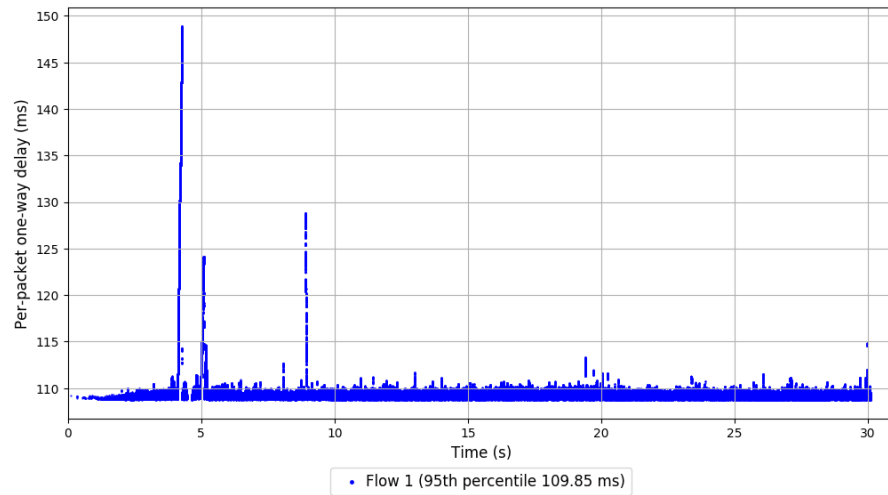
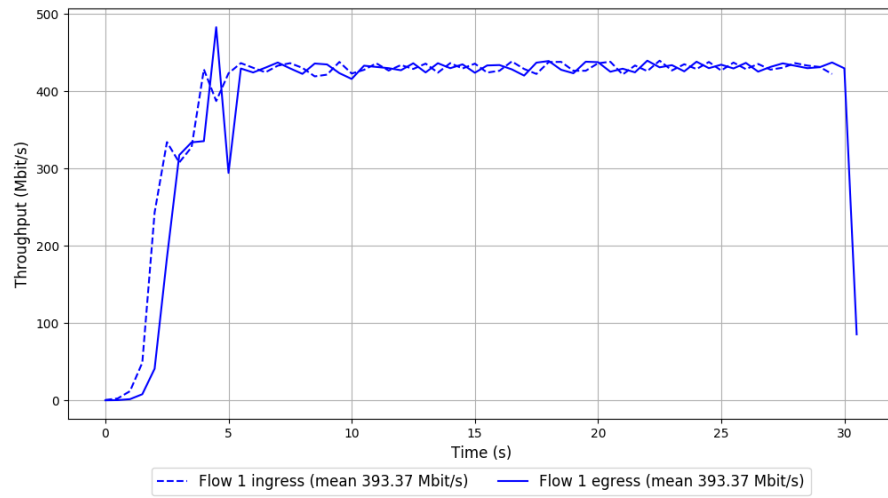
-- Flow 1:

Average throughput: 393.37 Mbit/s

95th percentile per-packet one-way delay: 109.853 ms

Loss rate: 0.00%

Run 4: Report of TCP Vegas — Data Link

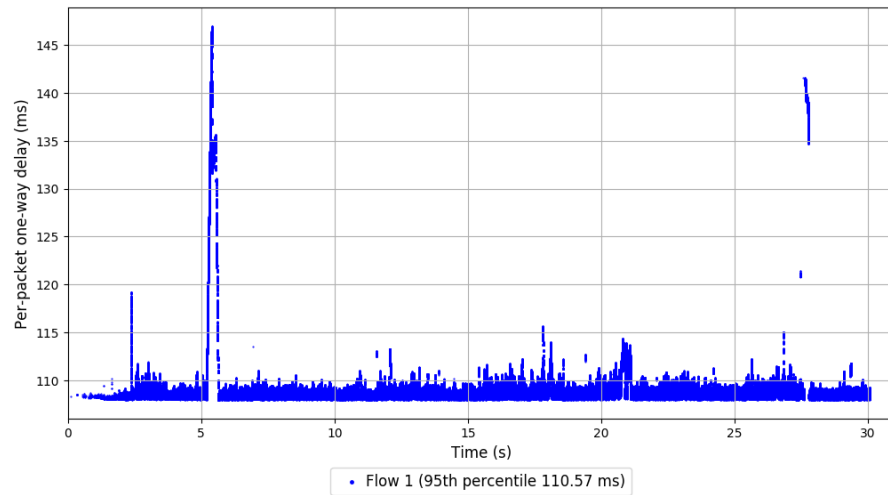
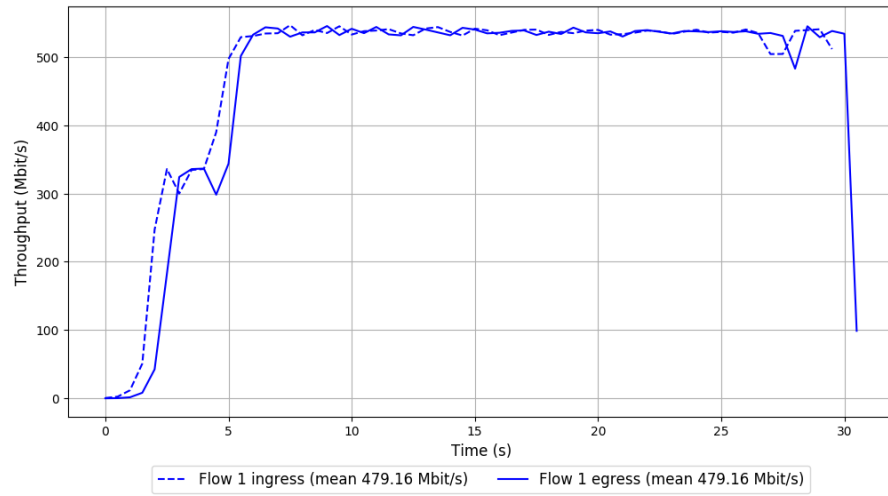


Run 5: Statistics of TCP Vegas

Start at: 2018-12-11 11:16:12
End at: 2018-12-11 11:16:42
Local clock offset: -0.128 ms
Remote clock offset: -0.118 ms

Below is generated by plot.py at 2018-12-11 13:05:52
Datalink statistics
-- Total of 1 flow:
Average throughput: 479.16 Mbit/s
95th percentile per-packet one-way delay: 110.570 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 479.16 Mbit/s
95th percentile per-packet one-way delay: 110.570 ms
Loss rate: 0.00%

Run 5: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: 2018-12-11 09:23:48

End at: 2018-12-11 09:24:18

Local clock offset: -0.134 ms

Remote clock offset: 0.068 ms

Below is generated by plot.py at 2018-12-11 13:05:52

Datalink statistics

-- Total of 1 flow:

Average throughput: 167.45 Mbit/s

95th percentile per-packet one-way delay: 255.891 ms

Loss rate: 7.57%

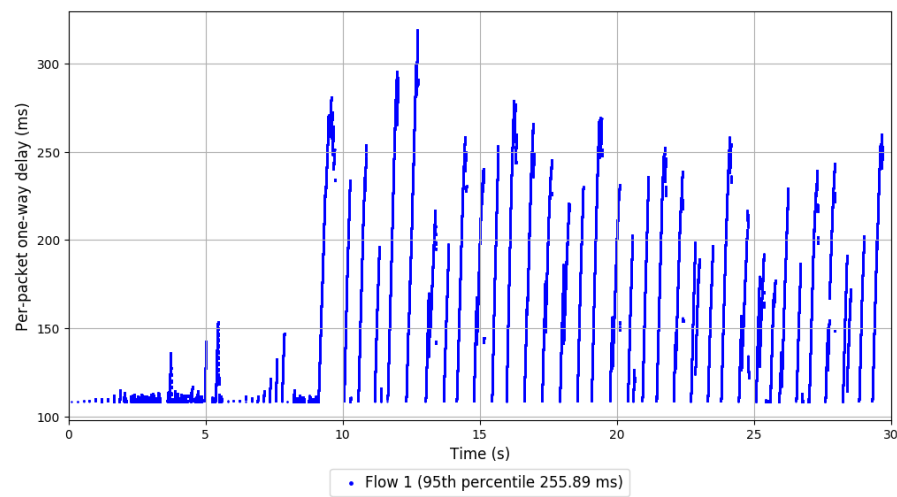
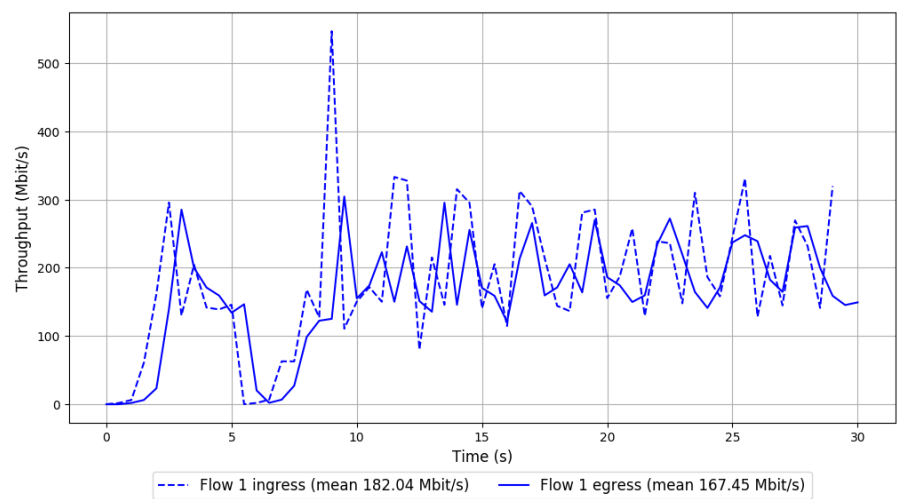
-- Flow 1:

Average throughput: 167.45 Mbit/s

95th percentile per-packet one-way delay: 255.891 ms

Loss rate: 7.57%

Run 1: Report of Verus — Data Link

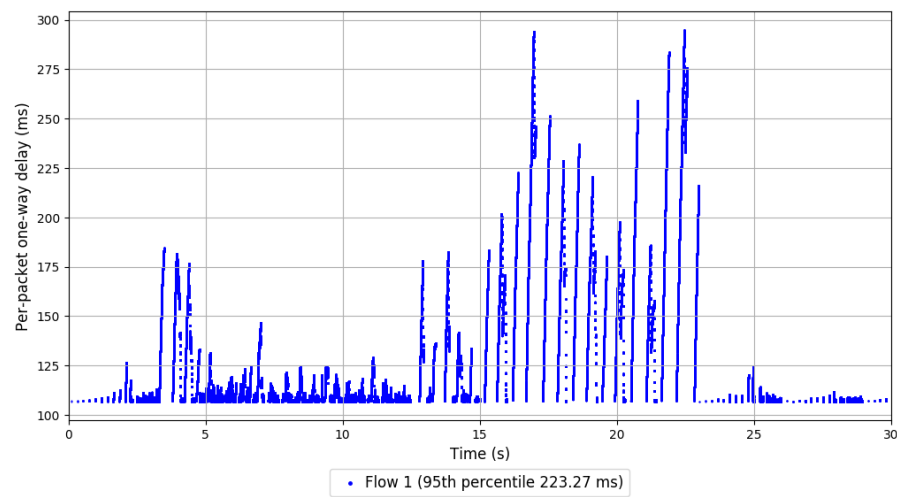
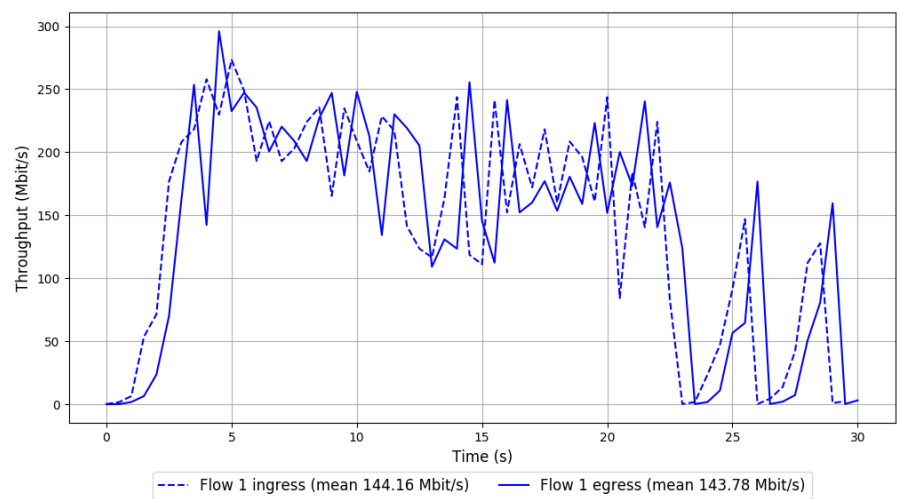


Run 2: Statistics of Verus

Start at: 2018-12-11 09:52:41
End at: 2018-12-11 09:53:12
Local clock offset: 1.172 ms
Remote clock offset: -0.235 ms

Below is generated by plot.py at 2018-12-11 13:05:52
Datalink statistics
-- Total of 1 flow:
Average throughput: 143.78 Mbit/s
95th percentile per-packet one-way delay: 223.266 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 143.78 Mbit/s
95th percentile per-packet one-way delay: 223.266 ms
Loss rate: 0.26%

Run 2: Report of Verus — Data Link



Run 3: Statistics of Verus

Start at: 2018-12-11 10:21:32

End at: 2018-12-11 10:22:02

Local clock offset: -0.195 ms

Remote clock offset: 0.179 ms

Below is generated by plot.py at 2018-12-11 13:05:52

Datalink statistics

-- Total of 1 flow:

Average throughput: 181.21 Mbit/s

95th percentile per-packet one-way delay: 219.703 ms

Loss rate: 0.46%

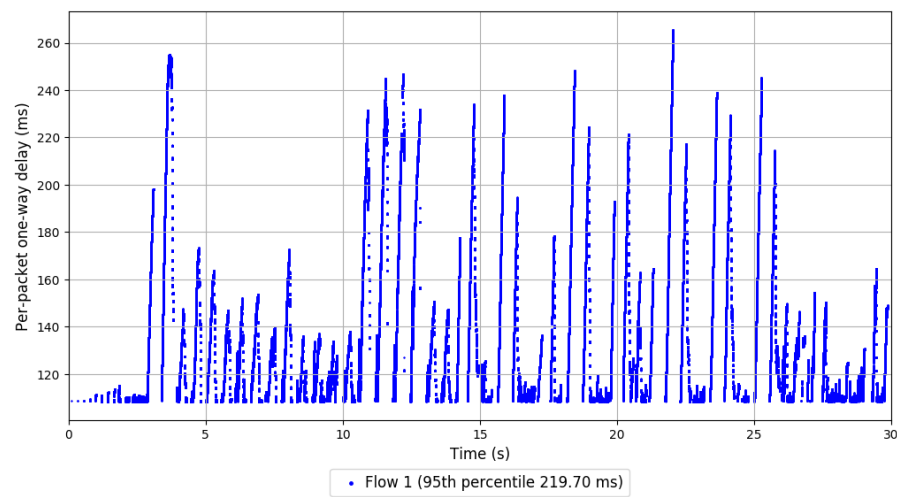
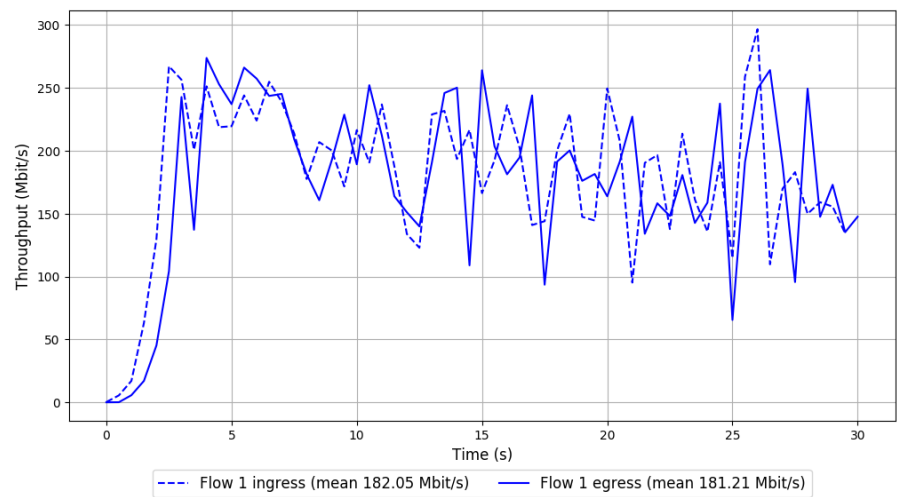
-- Flow 1:

Average throughput: 181.21 Mbit/s

95th percentile per-packet one-way delay: 219.703 ms

Loss rate: 0.46%

Run 3: Report of Verus — Data Link



Run 4: Statistics of Verus

Start at: 2018-12-11 10:50:24

End at: 2018-12-11 10:50:54

Local clock offset: 0.488 ms

Remote clock offset: 0.187 ms

Below is generated by plot.py at 2018-12-11 13:06:13

Datalink statistics

-- Total of 1 flow:

Average throughput: 156.79 Mbit/s

95th percentile per-packet one-way delay: 257.762 ms

Loss rate: 7.40%

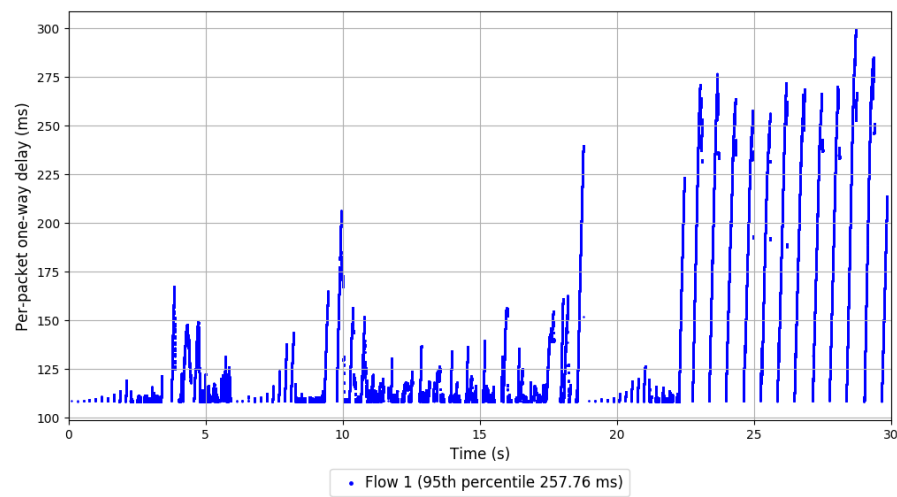
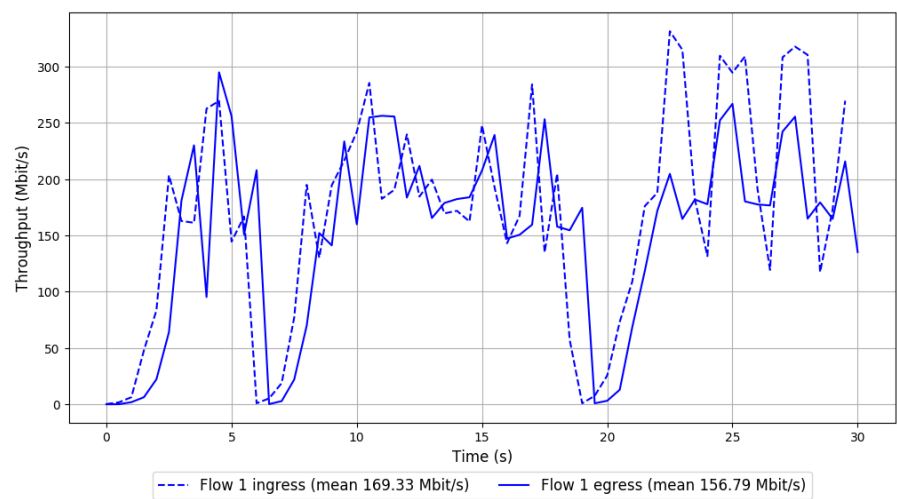
-- Flow 1:

Average throughput: 156.79 Mbit/s

95th percentile per-packet one-way delay: 257.762 ms

Loss rate: 7.40%

Run 4: Report of Verus — Data Link



Run 5: Statistics of Verus

Start at: 2018-12-11 11:19:01

End at: 2018-12-11 11:19:31

Local clock offset: -0.046 ms

Remote clock offset: 0.256 ms

Below is generated by plot.py at 2018-12-11 13:08:36

Datalink statistics

-- Total of 1 flow:

Average throughput: 180.20 Mbit/s

95th percentile per-packet one-way delay: 216.595 ms

Loss rate: 0.39%

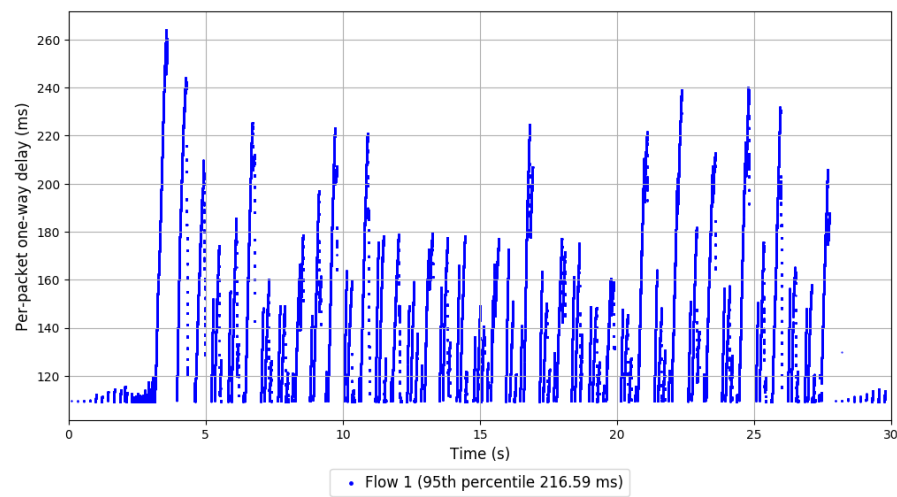
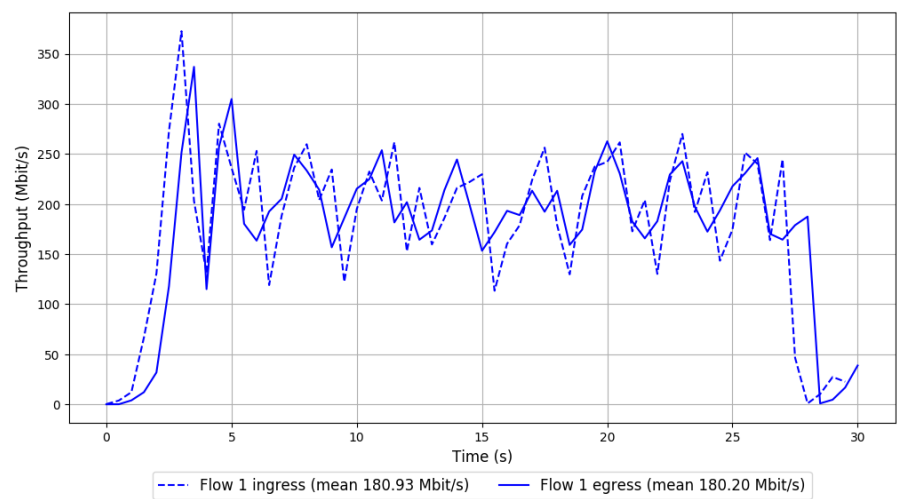
-- Flow 1:

Average throughput: 180.20 Mbit/s

95th percentile per-packet one-way delay: 216.595 ms

Loss rate: 0.39%

Run 5: Report of Verus — Data Link



Run 1: Statistics of PCC-Vivace

Start at: 2018-12-11 09:12:00

End at: 2018-12-11 09:12:30

Local clock offset: -0.128 ms

Remote clock offset: 0.431 ms

Below is generated by plot.py at 2018-12-11 13:08:36

Datalink statistics

-- Total of 1 flow:

Average throughput: 310.96 Mbit/s

95th percentile per-packet one-way delay: 110.107 ms

Loss rate: 0.00%

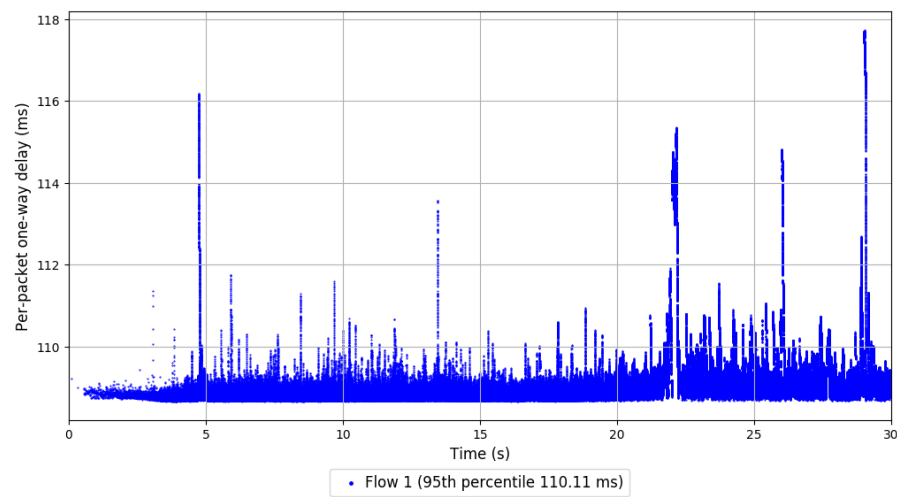
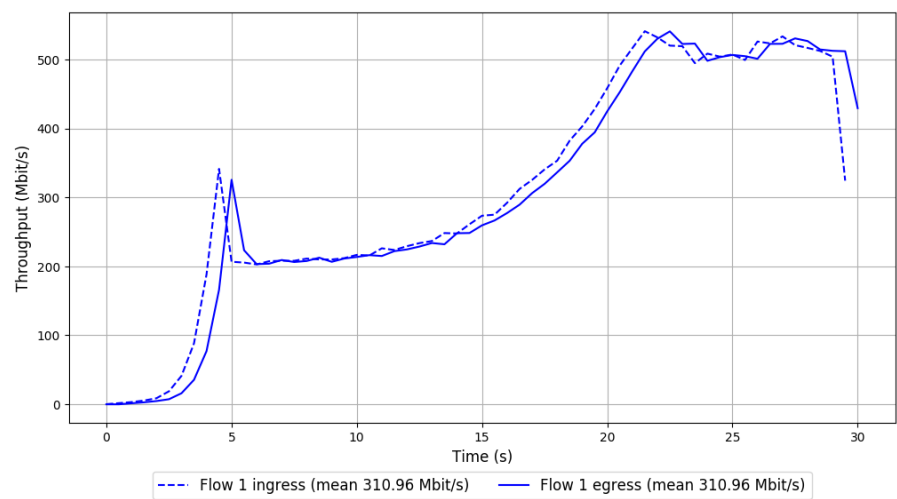
-- Flow 1:

Average throughput: 310.96 Mbit/s

95th percentile per-packet one-way delay: 110.107 ms

Loss rate: 0.00%

Run 1: Report of PCC-Vivace — Data Link



Run 2: Statistics of PCC-Vivace

Start at: 2018-12-11 09:40:40

End at: 2018-12-11 09:41:10

Local clock offset: -0.245 ms

Remote clock offset: 0.496 ms

Below is generated by plot.py at 2018-12-11 13:08:53

Datalink statistics

-- Total of 1 flow:

Average throughput: 360.53 Mbit/s

95th percentile per-packet one-way delay: 194.741 ms

Loss rate: 0.02%

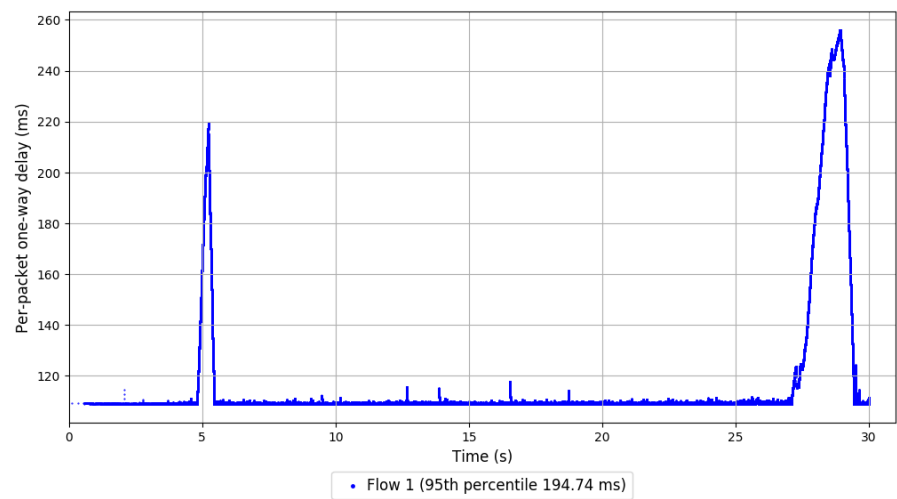
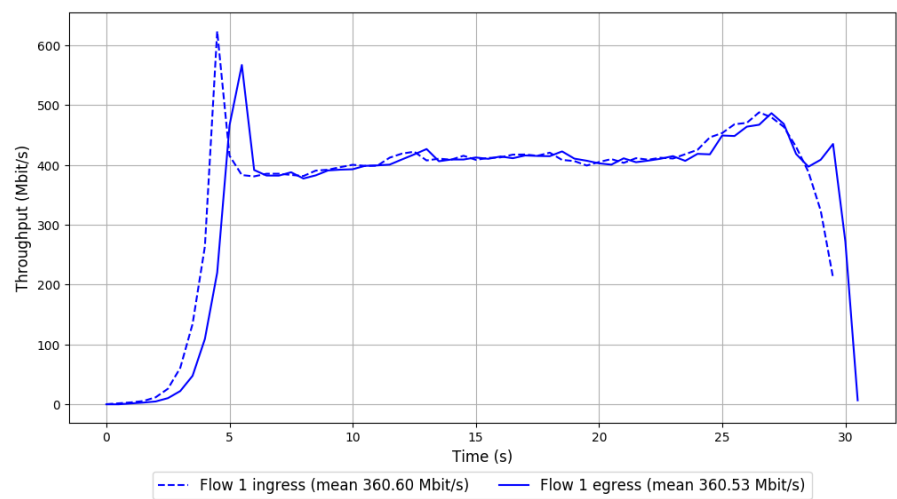
-- Flow 1:

Average throughput: 360.53 Mbit/s

95th percentile per-packet one-way delay: 194.741 ms

Loss rate: 0.02%

Run 2: Report of PCC-Vivace — Data Link



Run 3: Statistics of PCC-Vivace

Start at: 2018-12-11 10:09:24

End at: 2018-12-11 10:09:54

Local clock offset: 0.16 ms

Remote clock offset: -0.2 ms

Below is generated by plot.py at 2018-12-11 13:09:11

Datalink statistics

-- Total of 1 flow:

Average throughput: 362.08 Mbit/s

95th percentile per-packet one-way delay: 164.831 ms

Loss rate: 0.03%

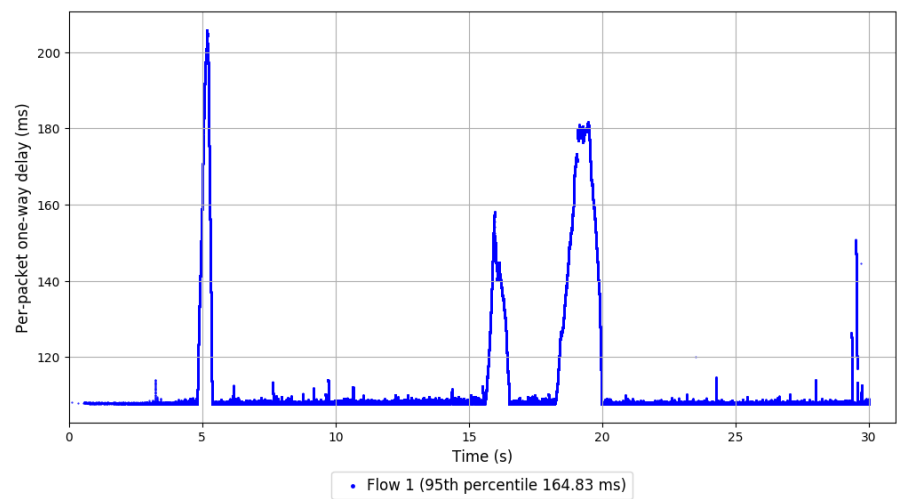
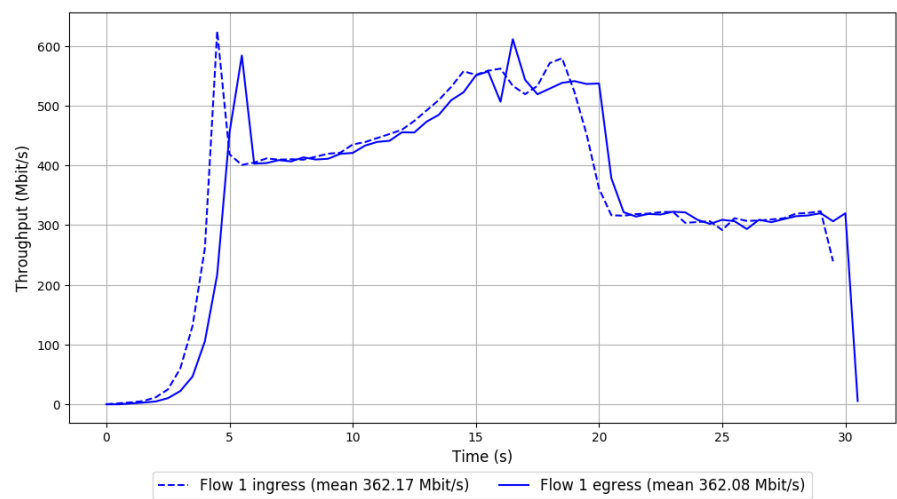
-- Flow 1:

Average throughput: 362.08 Mbit/s

95th percentile per-packet one-way delay: 164.831 ms

Loss rate: 0.03%

Run 3: Report of PCC-Vivace — Data Link



Run 4: Statistics of PCC-Vivace

Start at: 2018-12-11 10:38:32

End at: 2018-12-11 10:39:02

Local clock offset: -0.372 ms

Remote clock offset: 0.196 ms

Below is generated by plot.py at 2018-12-11 13:09:31

Datalink statistics

-- Total of 1 flow:

Average throughput: 337.00 Mbit/s

95th percentile per-packet one-way delay: 112.897 ms

Loss rate: 0.00%

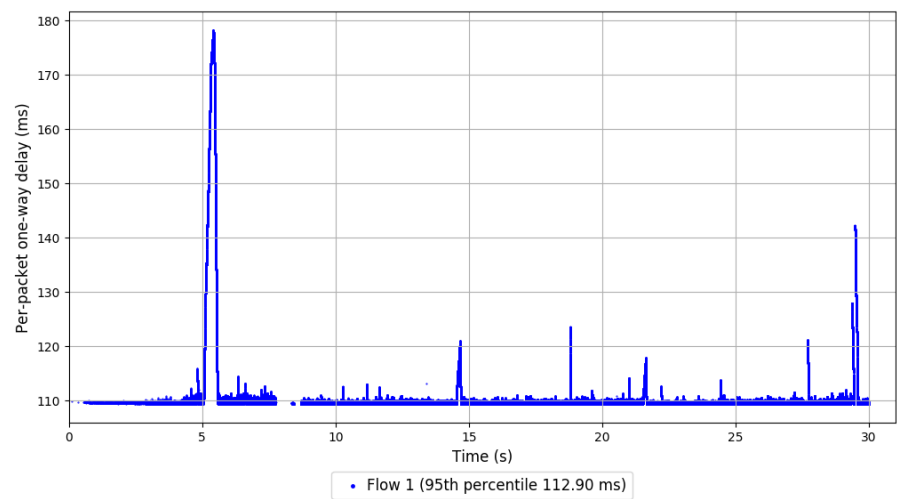
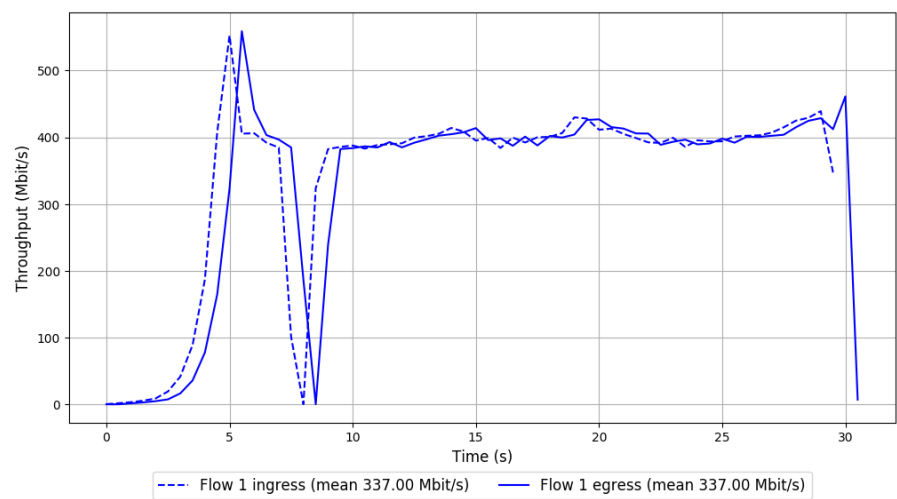
-- Flow 1:

Average throughput: 337.00 Mbit/s

95th percentile per-packet one-way delay: 112.897 ms

Loss rate: 0.00%

Run 4: Report of PCC-Vivace — Data Link



Run 5: Statistics of PCC-Vivace

Start at: 2018-12-11 11:07:07

End at: 2018-12-11 11:07:37

Local clock offset: 1.242 ms

Remote clock offset: 0.278 ms

Below is generated by plot.py at 2018-12-11 13:09:33

Datalink statistics

-- Total of 1 flow:

Average throughput: 384.50 Mbit/s

95th percentile per-packet one-way delay: 114.206 ms

Loss rate: 1.03%

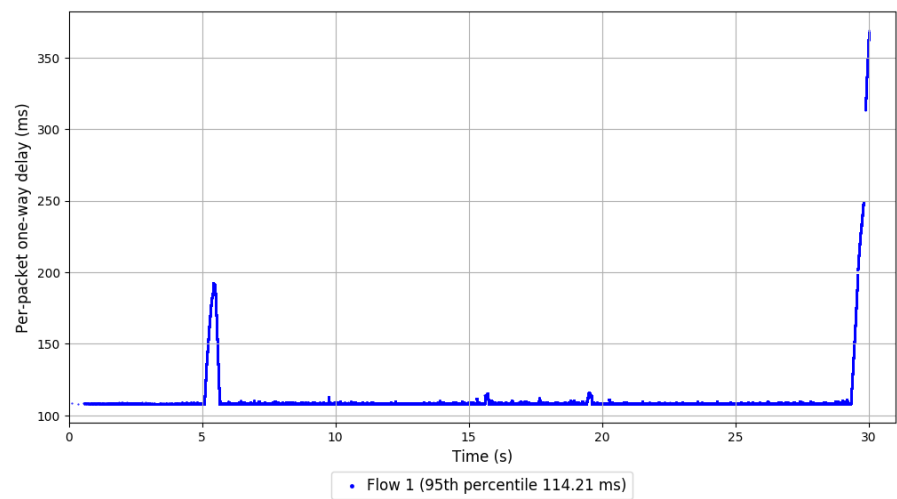
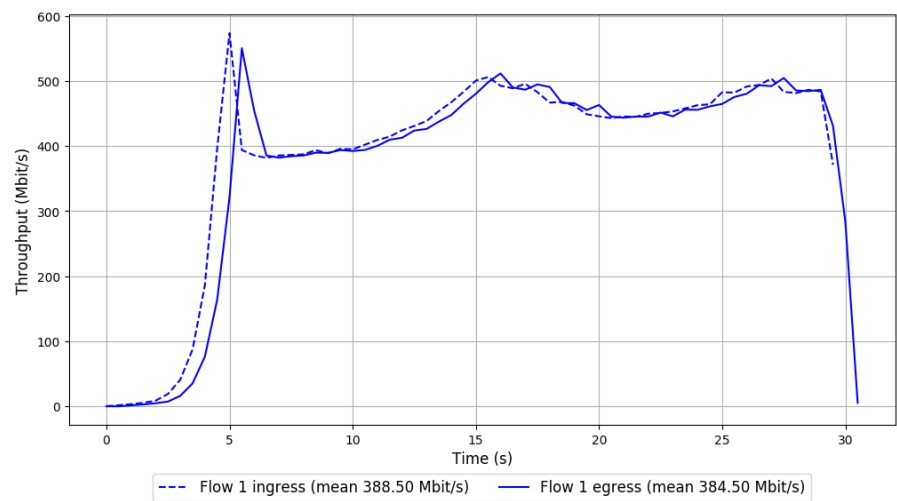
-- Flow 1:

Average throughput: 384.50 Mbit/s

95th percentile per-packet one-way delay: 114.206 ms

Loss rate: 1.03%

Run 5: Report of PCC-Vivace — Data Link

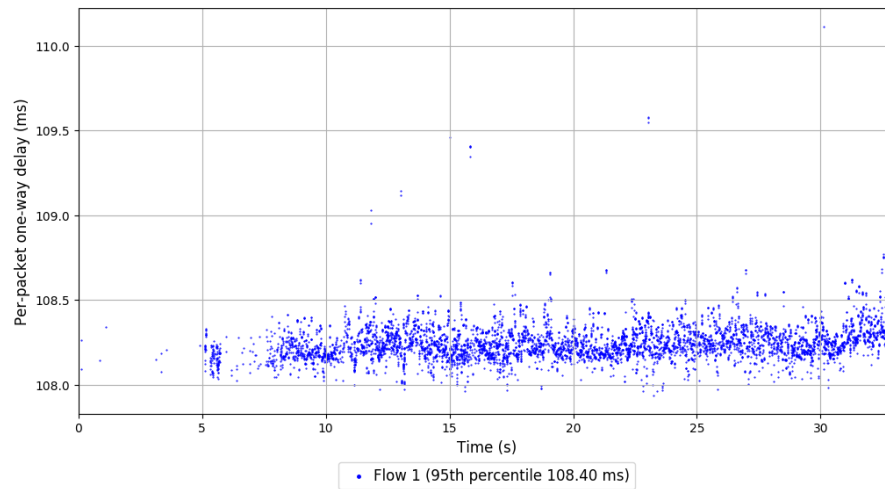
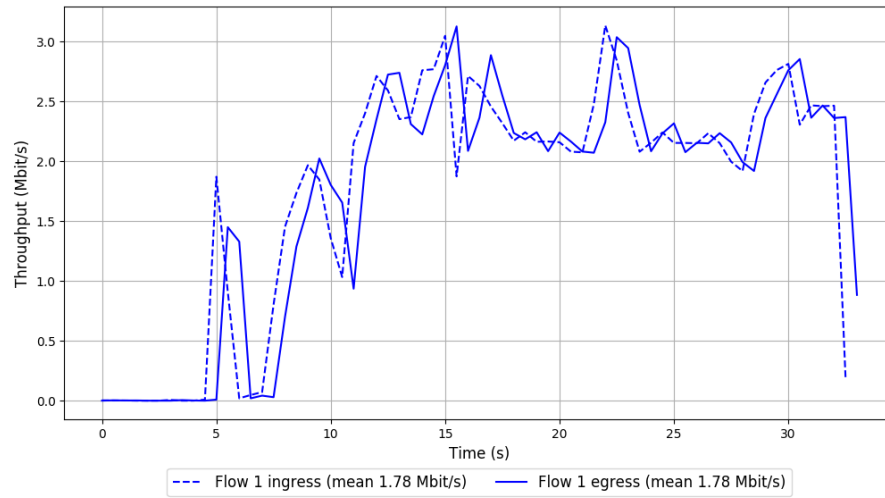


Run 1: Statistics of WebRTC media

Start at: 2018-12-11 09:15:04
End at: 2018-12-11 09:15:34
Local clock offset: -0.2 ms
Remote clock offset: -0.292 ms

Below is generated by plot.py at 2018-12-11 13:09:33
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.78 Mbit/s
95th percentile per-packet one-way delay: 108.404 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.78 Mbit/s
95th percentile per-packet one-way delay: 108.404 ms
Loss rate: 0.00%

Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

Start at: 2018-12-11 09:44:03

End at: 2018-12-11 09:44:33

Local clock offset: -0.269 ms

Remote clock offset: 0.109 ms

Below is generated by plot.py at 2018-12-11 13:09:33

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.93 Mbit/s

95th percentile per-packet one-way delay: 109.781 ms

Loss rate: 0.00%

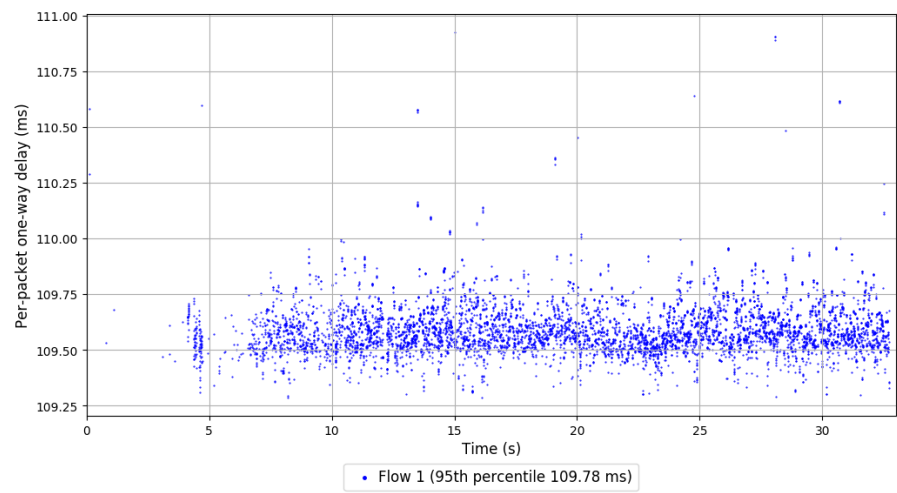
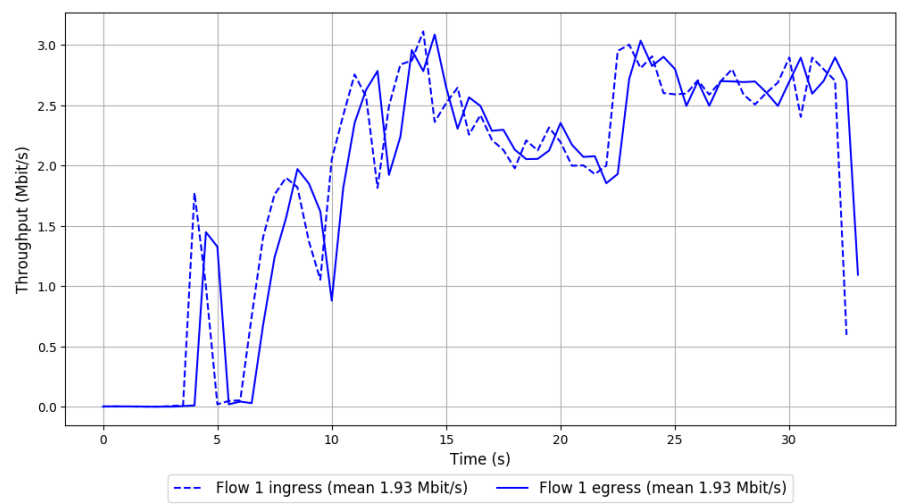
-- Flow 1:

Average throughput: 1.93 Mbit/s

95th percentile per-packet one-way delay: 109.781 ms

Loss rate: 0.00%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2018-12-11 10:12:34

End at: 2018-12-11 10:13:04

Local clock offset: -0.036 ms

Remote clock offset: 0.173 ms

Below is generated by plot.py at 2018-12-11 13:09:33

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.91 Mbit/s

95th percentile per-packet one-way delay: 111.860 ms

Loss rate: 0.00%

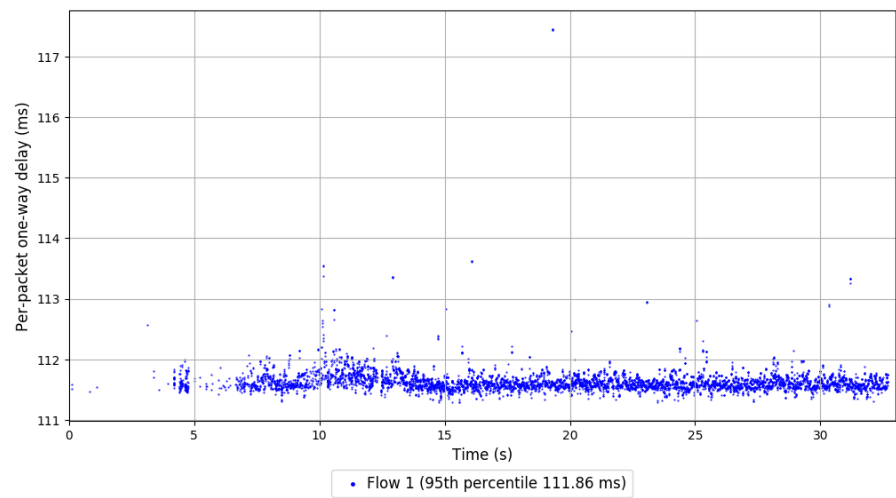
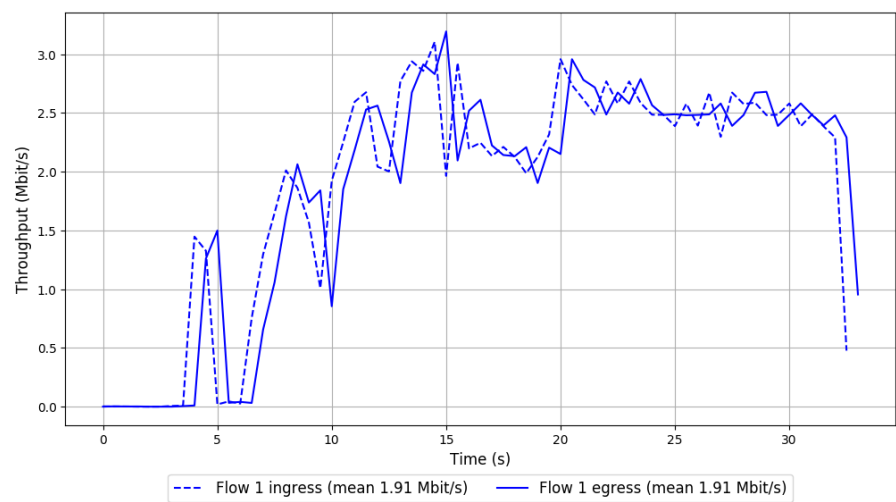
-- Flow 1:

Average throughput: 1.91 Mbit/s

95th percentile per-packet one-way delay: 111.860 ms

Loss rate: 0.00%

Run 3: Report of WebRTC media — Data Link



Run 4: Statistics of WebRTC media

Start at: 2018-12-11 10:41:36

End at: 2018-12-11 10:42:06

Local clock offset: -0.394 ms

Remote clock offset: 0.2 ms

Below is generated by plot.py at 2018-12-11 13:09:33

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.97 Mbit/s

95th percentile per-packet one-way delay: 109.707 ms

Loss rate: 0.02%

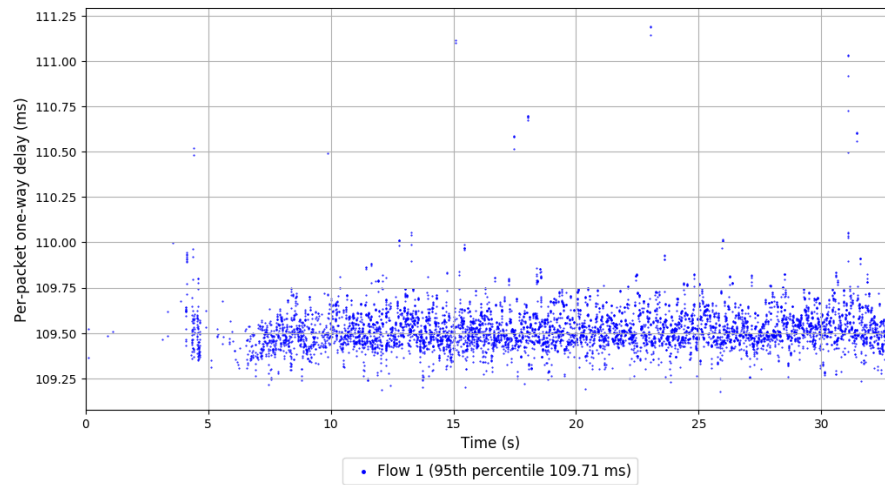
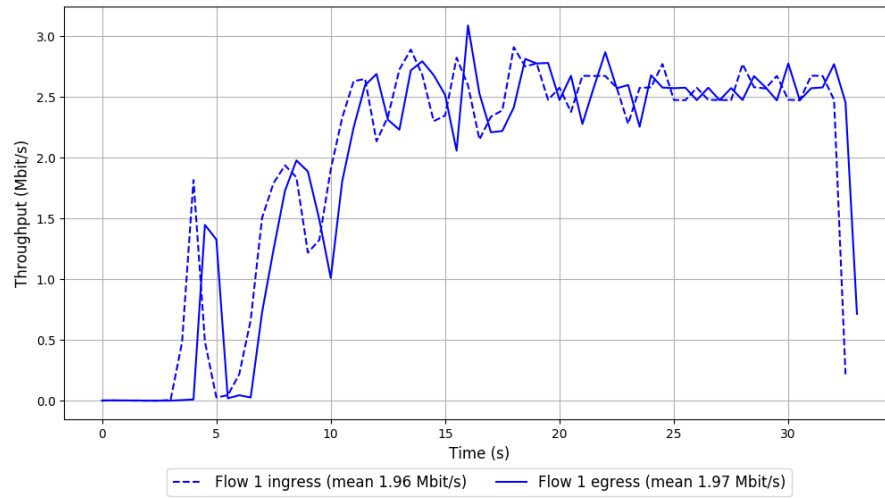
-- Flow 1:

Average throughput: 1.97 Mbit/s

95th percentile per-packet one-way delay: 109.707 ms

Loss rate: 0.02%

Run 4: Report of WebRTC media — Data Link



Run 5: Statistics of WebRTC media

Start at: 2018-12-11 11:10:12

End at: 2018-12-11 11:10:42

Local clock offset: -0.354 ms

Remote clock offset: -0.16 ms

Below is generated by plot.py at 2018-12-11 13:09:33

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.06 Mbit/s

95th percentile per-packet one-way delay: 109.354 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 2.06 Mbit/s

95th percentile per-packet one-way delay: 109.354 ms

Loss rate: 0.00%

Run 5: Report of WebRTC media — Data Link

