

Pantheon Report

Generated at 2018-12-10 21:39:46 (UTC).

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

Repeated the test of 19 congestion control schemes 3 times.

Each test lasted for 30 seconds running 1 flow.

NTP offsets were measured against `nets.org.sg` and have been applied to correct the timestamps in logs.

System info:

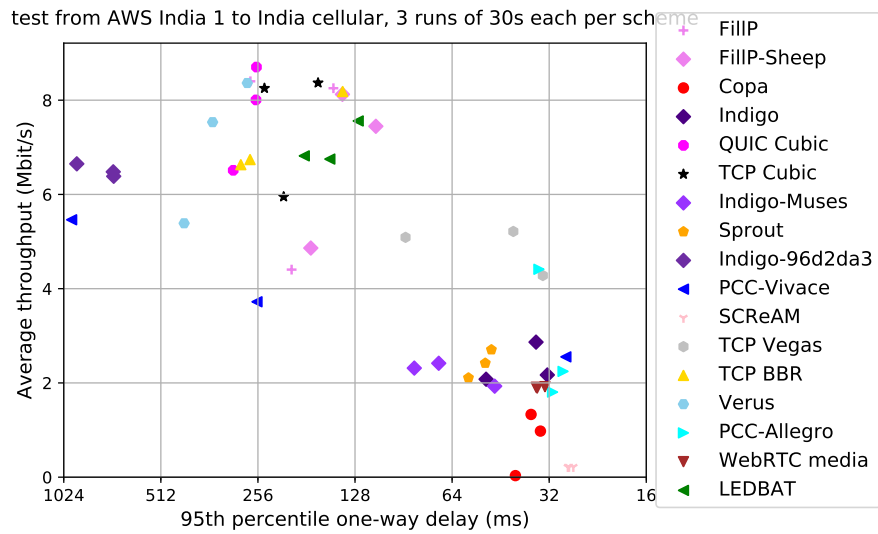
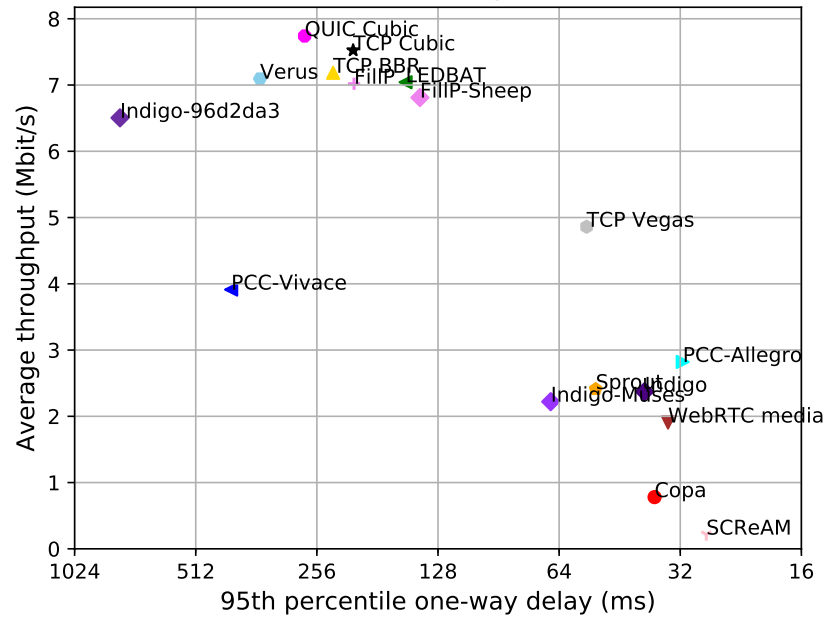
```
Linux 4.15.0-1029-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
```

Git summary:

```
branch: muses @ c6268d7c473682290bfe9901ef81a6b6a1e51d3c
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/indigo-96d2da3 @ 8413272d46f8aa0bcb967ed7048b6a8f994abb95
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
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 India 1 to India cellular, 3 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	3	7.18	233.29	0.53
Copa	3	0.78	37.07	54.96
TCP Cubic	3	7.52	208.02	0.29
FillP	3	7.02	206.91	0.58
FillP-Sheep	3	6.81	141.95	0.35
Indigo	3	2.37	39.26	0.08
Indigo-96d2da3	3	6.50	789.71	4.04
LEDBAT	3	7.04	154.10	0.54
Indigo-Muses	3	2.22	67.15	0.10
PCC-Allegro	3	2.82	31.55	0.04
PCC-Expr	0	N/A	N/A	N/A
QUIC Cubic	3	7.74	274.57	0.83
SCReAM	3	0.22	27.57	0.13
Sprout	3	2.41	51.93	0.04
TaoVA-100x	0	N/A	N/A	N/A
TCP Vegas	3	4.86	54.69	0.08
Verus	3	7.09	354.52	1.43
PCC-Vivace	3	3.91	418.12	1.31
WebRTC media	3	1.91	34.32	0.05

Run 1: Statistics of TCP BBR

Start at: 2018-12-10 20:39:12

End at: 2018-12-10 20:39:42

Local clock offset: 2.089 ms

Remote clock offset: -9.45 ms

Below is generated by plot.py at 2018-12-10 21:39:03

Datalink statistics

-- Total of 1 flow:

Average throughput: 6.74 Mbit/s

95th percentile per-packet one-way delay: 270.820 ms

Loss rate: 0.50%

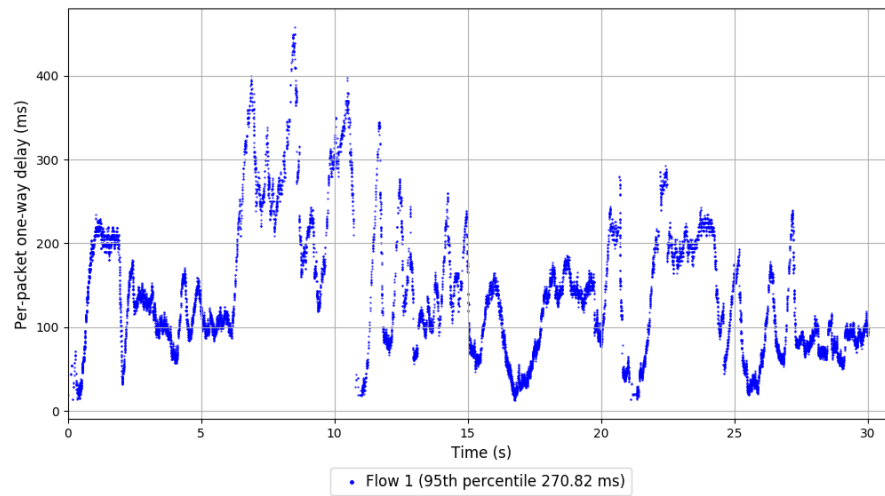
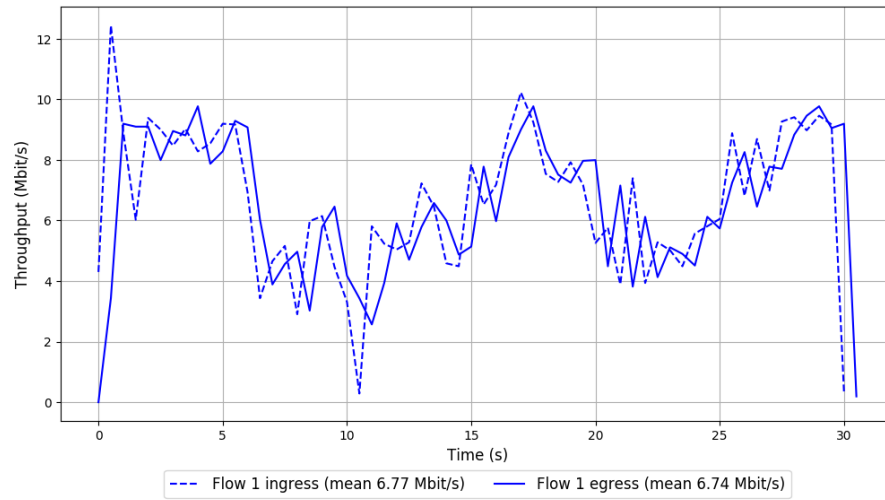
-- Flow 1:

Average throughput: 6.74 Mbit/s

95th percentile per-packet one-way delay: 270.820 ms

Loss rate: 0.50%

Run 1: Report of TCP BBR — Data Link

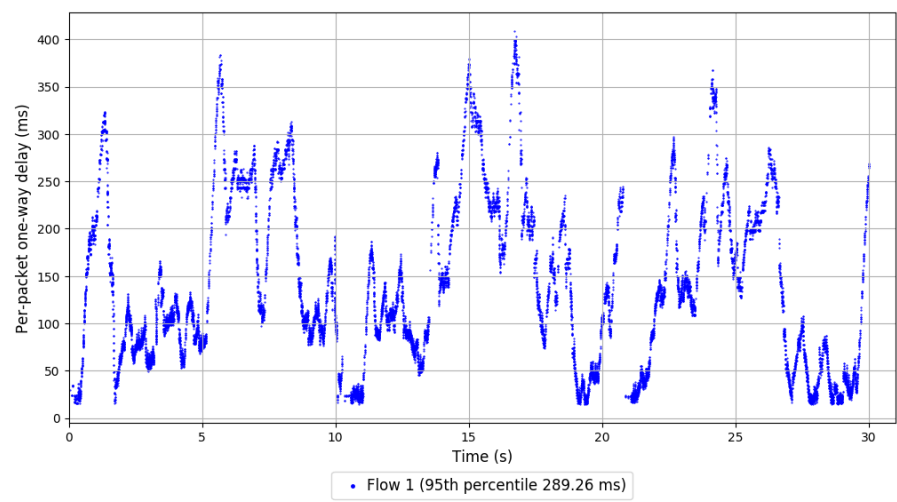
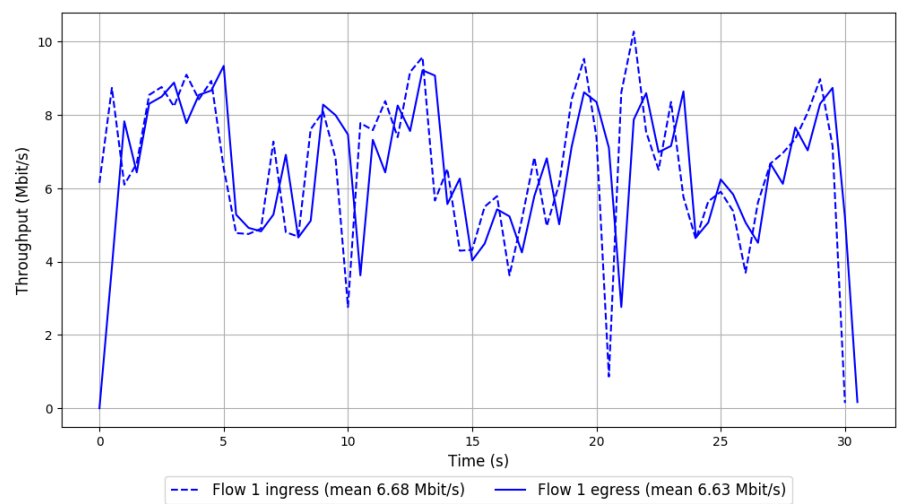


Run 2: Statistics of TCP BBR

Start at: 2018-12-10 20:59:59
End at: 2018-12-10 21:00:29
Local clock offset: 2.095 ms
Remote clock offset: -7.854 ms

Below is generated by plot.py at 2018-12-10 21:39:03
Datalink statistics
-- Total of 1 flow:
Average throughput: 6.63 Mbit/s
95th percentile per-packet one-way delay: 289.261 ms
Loss rate: 0.77%
-- Flow 1:
Average throughput: 6.63 Mbit/s
95th percentile per-packet one-way delay: 289.261 ms
Loss rate: 0.77%

Run 2: Report of TCP BBR — Data Link

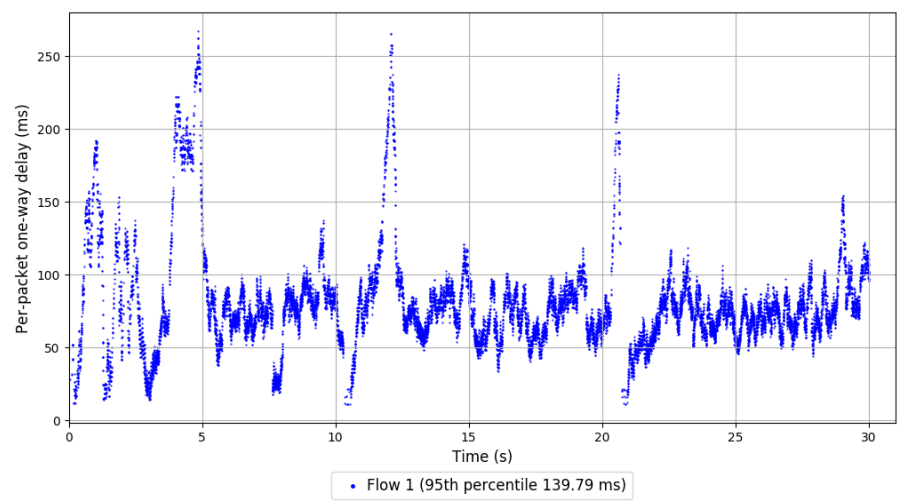
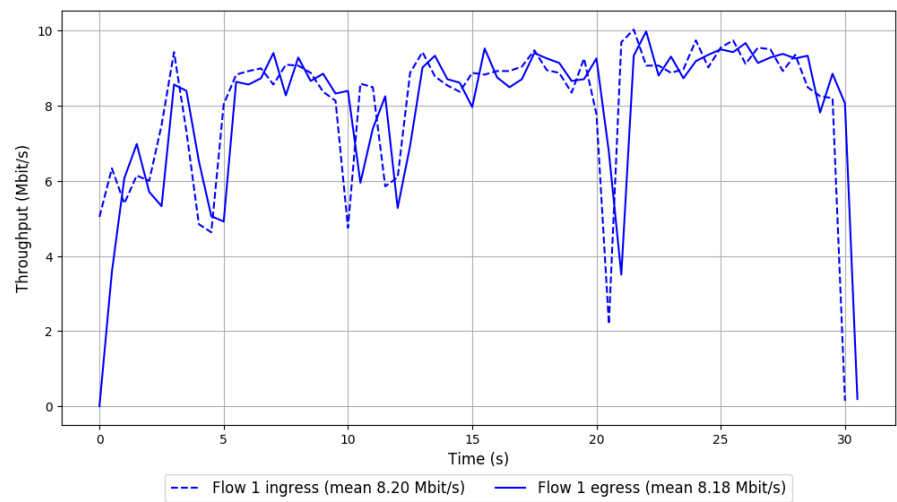


Run 3: Statistics of TCP BBR

Start at: 2018-12-10 21:20:44
End at: 2018-12-10 21:21:14
Local clock offset: -0.108 ms
Remote clock offset: -7.288 ms

Below is generated by plot.py at 2018-12-10 21:39:05
Datalink statistics
-- Total of 1 flow:
Average throughput: 8.18 Mbit/s
95th percentile per-packet one-way delay: 139.793 ms
Loss rate: 0.31%
-- Flow 1:
Average throughput: 8.18 Mbit/s
95th percentile per-packet one-way delay: 139.793 ms
Loss rate: 0.31%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of Copa

Start at: 2018-12-10 20:50:06

End at: 2018-12-10 20:50:36

Local clock offset: 2.363 ms

Remote clock offset: -8.85 ms

Below is generated by plot.py at 2018-12-10 21:39:05

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.98 Mbit/s

95th percentile per-packet one-way delay: 34.063 ms

Loss rate: 40.37%

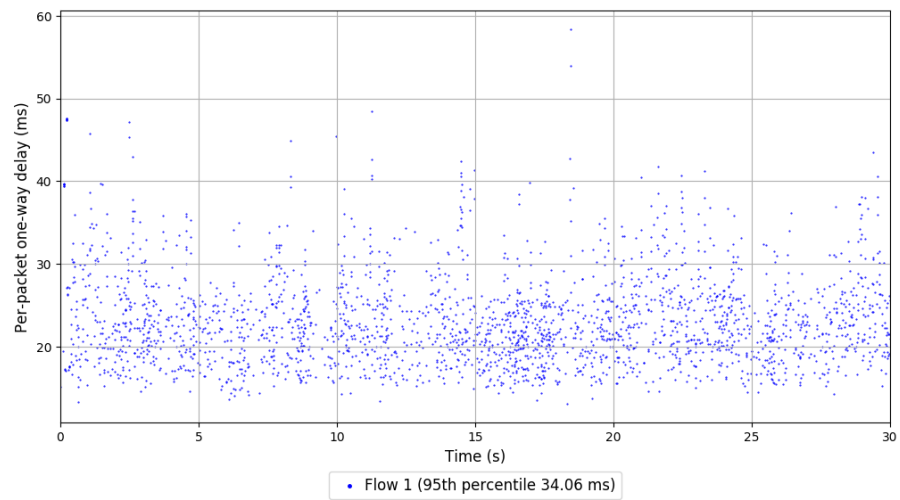
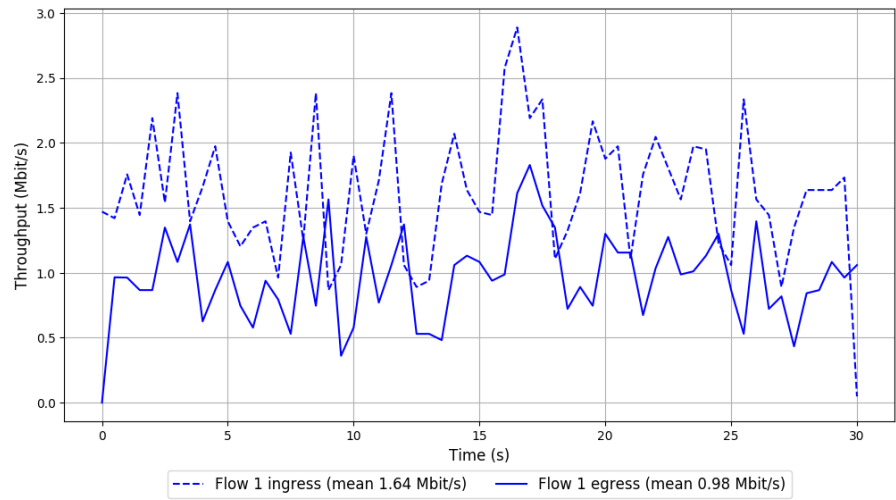
-- Flow 1:

Average throughput: 0.98 Mbit/s

95th percentile per-packet one-way delay: 34.063 ms

Loss rate: 40.37%

Run 1: Report of Copa — Data Link

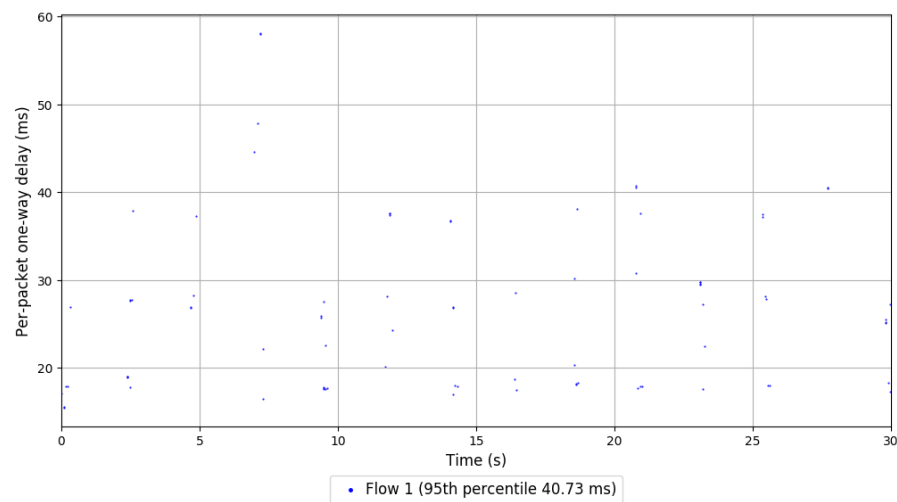
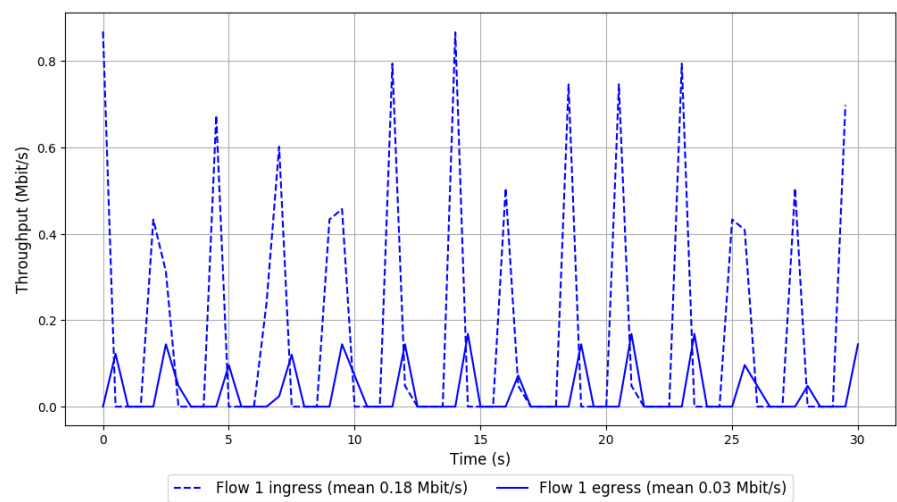


Run 2: Statistics of Copa

Start at: 2018-12-10 21:10:55
End at: 2018-12-10 21:11:25
Local clock offset: -1.174 ms
Remote clock offset: -10.173 ms

Below is generated by plot.py at 2018-12-10 21:39:05
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 40.725 ms
Loss rate: 81.47%
-- Flow 1:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 40.725 ms
Loss rate: 81.47%

Run 2: Report of Copa — Data Link

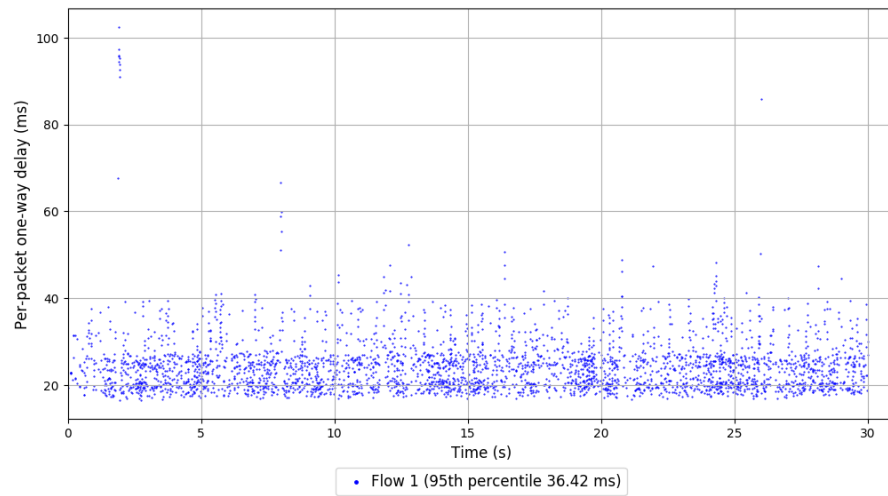
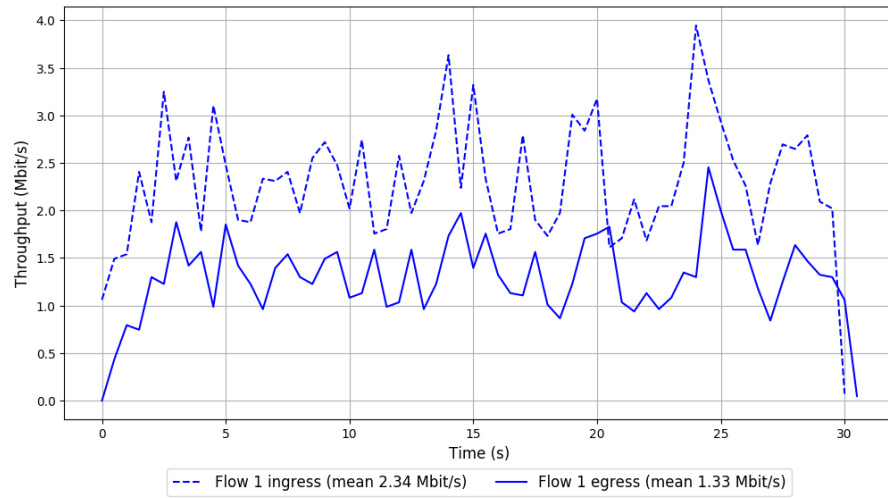


Run 3: Statistics of Copa

Start at: 2018-12-10 21:31:40
End at: 2018-12-10 21:32:10
Local clock offset: -2.445 ms
Remote clock offset: -6.973 ms

Below is generated by plot.py at 2018-12-10 21:39:05
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.33 Mbit/s
95th percentile per-packet one-way delay: 36.418 ms
Loss rate: 43.03%
-- Flow 1:
Average throughput: 1.33 Mbit/s
95th percentile per-packet one-way delay: 36.418 ms
Loss rate: 43.03%

Run 3: Report of Copa — Data Link

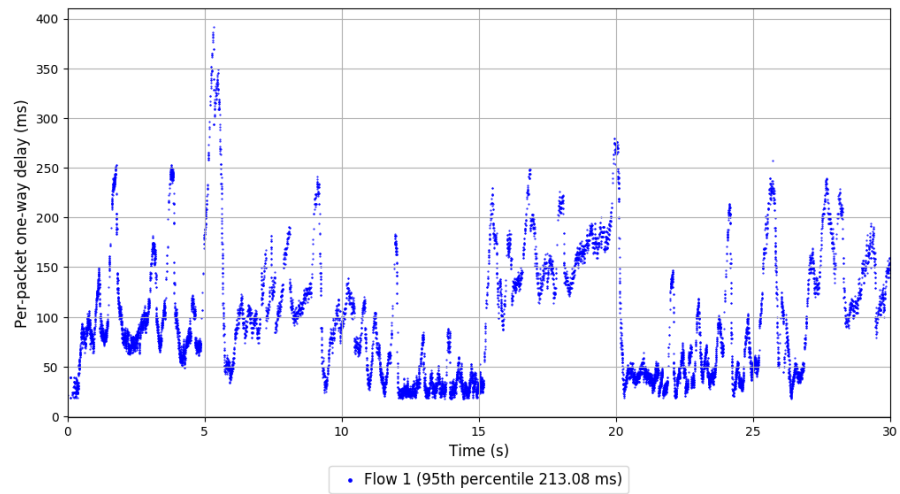
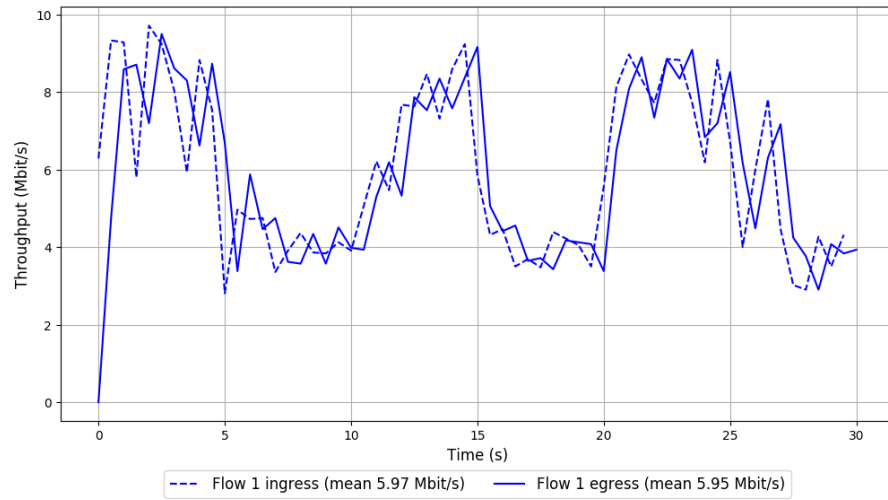


Run 1: Statistics of TCP Cubic

Start at: 2018-12-10 20:45:44
End at: 2018-12-10 20:46:14
Local clock offset: -1.112 ms
Remote clock offset: -9.414 ms

Below is generated by plot.py at 2018-12-10 21:39:05
Datalink statistics
-- Total of 1 flow:
Average throughput: 5.95 Mbit/s
95th percentile per-packet one-way delay: 213.079 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 5.95 Mbit/s
95th percentile per-packet one-way delay: 213.079 ms
Loss rate: 0.38%

Run 1: Report of TCP Cubic — Data Link

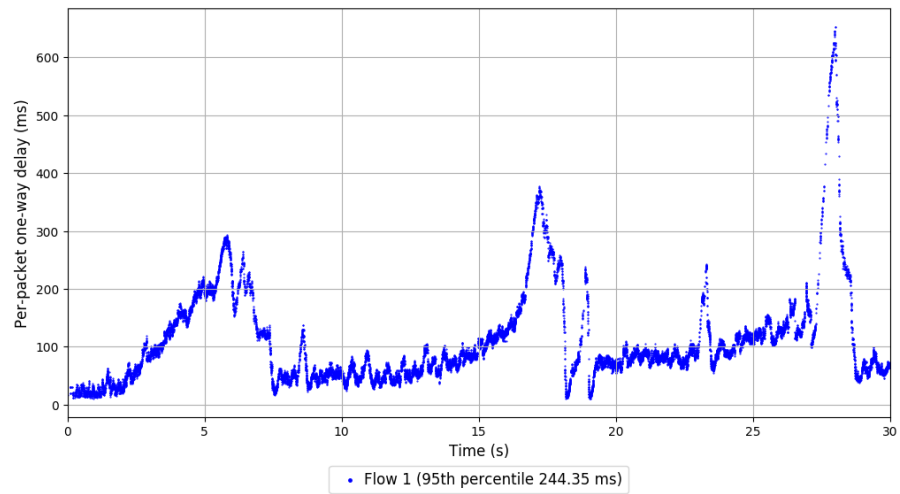
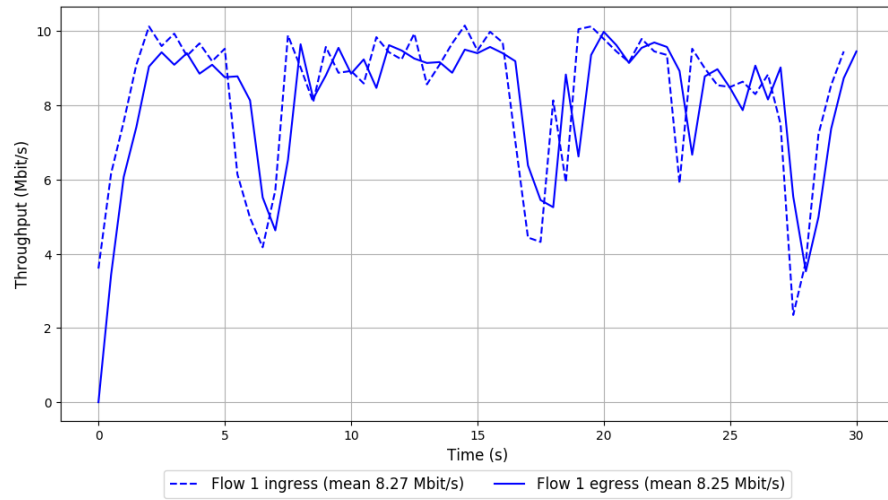


Run 2: Statistics of TCP Cubic

Start at: 2018-12-10 21:06:31
End at: 2018-12-10 21:07:01
Local clock offset: 2.602 ms
Remote clock offset: -9.822 ms

Below is generated by plot.py at 2018-12-10 21:39:05
Datalink statistics
-- Total of 1 flow:
Average throughput: 8.25 Mbit/s
95th percentile per-packet one-way delay: 244.347 ms
Loss rate: 0.28%
-- Flow 1:
Average throughput: 8.25 Mbit/s
95th percentile per-packet one-way delay: 244.347 ms
Loss rate: 0.28%

Run 2: Report of TCP Cubic — Data Link

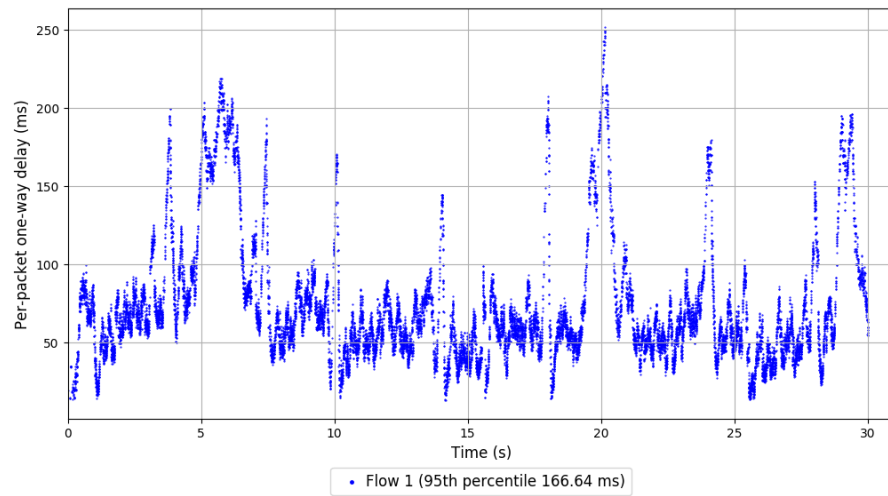
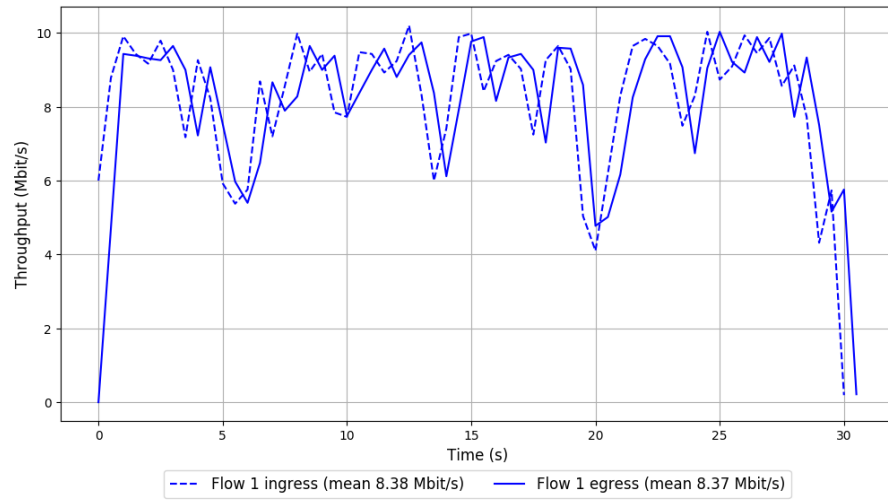


Run 3: Statistics of TCP Cubic

Start at: 2018-12-10 21:27:17
End at: 2018-12-10 21:27:47
Local clock offset: -3.161 ms
Remote clock offset: -8.191 ms

Below is generated by plot.py at 2018-12-10 21:39:05
Datalink statistics
-- Total of 1 flow:
Average throughput: 8.37 Mbit/s
95th percentile per-packet one-way delay: 166.639 ms
Loss rate: 0.20%
-- Flow 1:
Average throughput: 8.37 Mbit/s
95th percentile per-packet one-way delay: 166.639 ms
Loss rate: 0.20%

Run 3: Report of TCP Cubic — Data Link

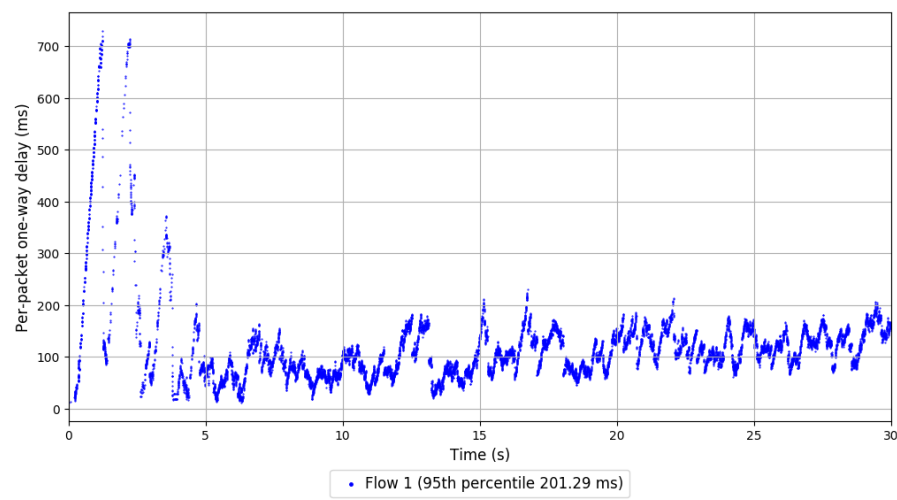
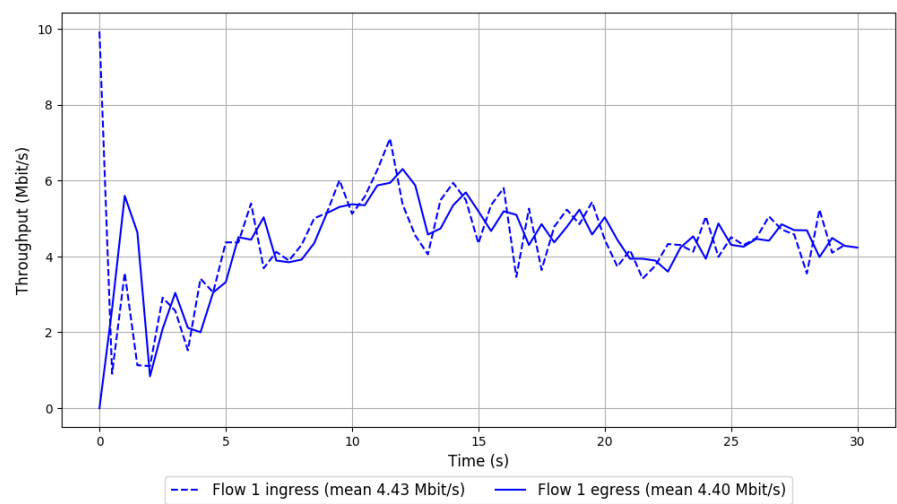


```
Run 1: Statistics of FillP

Start at: 2018-12-10 20:49:00
End at: 2018-12-10 20:49:30
Local clock offset: 2.553 ms
Remote clock offset: -9.284 ms

# Below is generated by plot.py at 2018-12-10 21:39:05
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.40 Mbit/s
95th percentile per-packet one-way delay: 201.286 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 4.40 Mbit/s
95th percentile per-packet one-way delay: 201.286 ms
Loss rate: 0.58%
```

Run 1: Report of FillP — Data Link

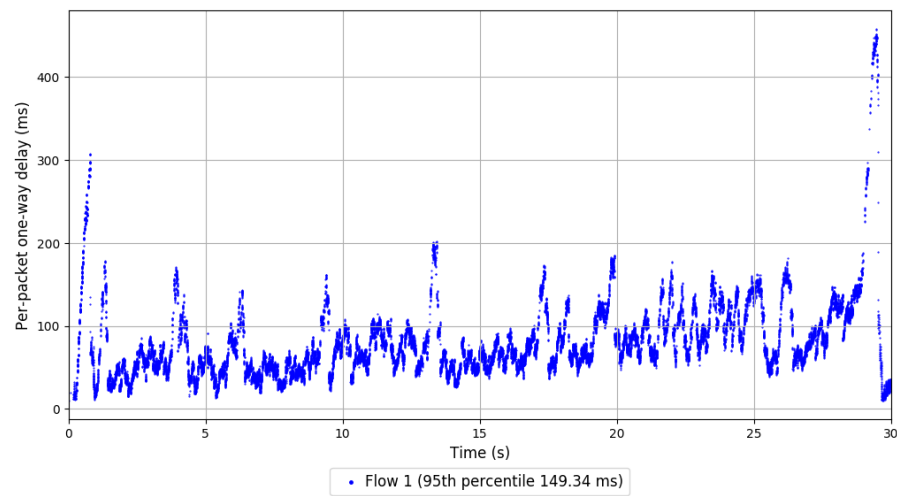
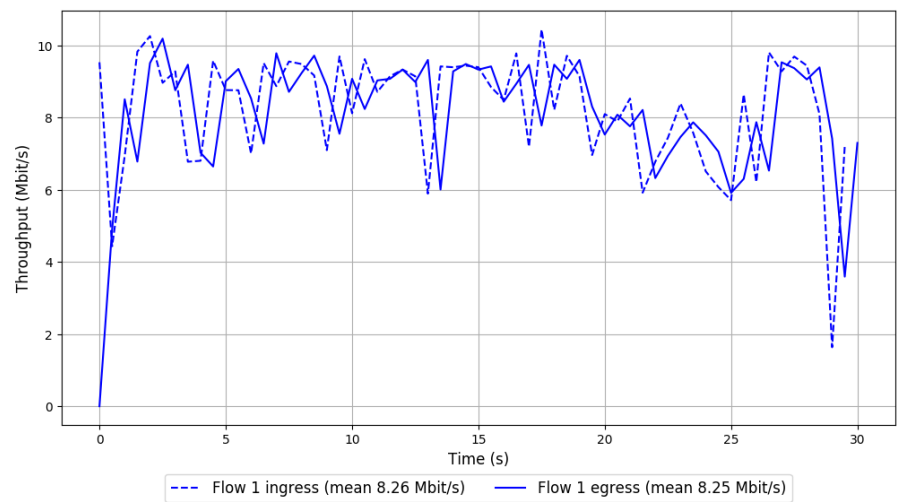


Run 2: Statistics of FillP

Start at: 2018-12-10 21:09:49
End at: 2018-12-10 21:10:19
Local clock offset: 0.928 ms
Remote clock offset: -9.996 ms

Below is generated by plot.py at 2018-12-10 21:39:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 8.25 Mbit/s
95th percentile per-packet one-way delay: 149.339 ms
Loss rate: 0.18%
-- Flow 1:
Average throughput: 8.25 Mbit/s
95th percentile per-packet one-way delay: 149.339 ms
Loss rate: 0.18%

Run 2: Report of FillP — Data Link



Run 3: Statistics of FillP

Start at: 2018-12-10 21:30:34

End at: 2018-12-10 21:31:04

Local clock offset: 0.225 ms

Remote clock offset: -6.71 ms

Below is generated by plot.py at 2018-12-10 21:39:14

Datalink statistics

-- Total of 1 flow:

Average throughput: 8.40 Mbit/s

95th percentile per-packet one-way delay: 270.119 ms

Loss rate: 0.97%

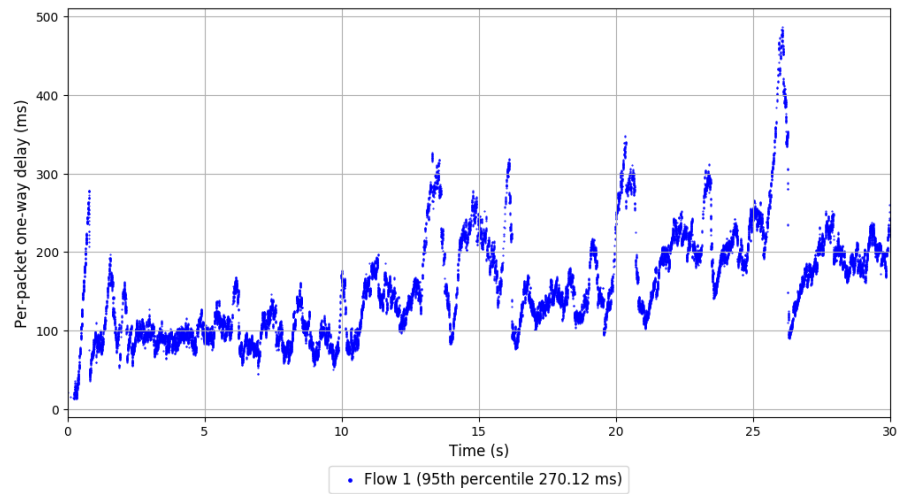
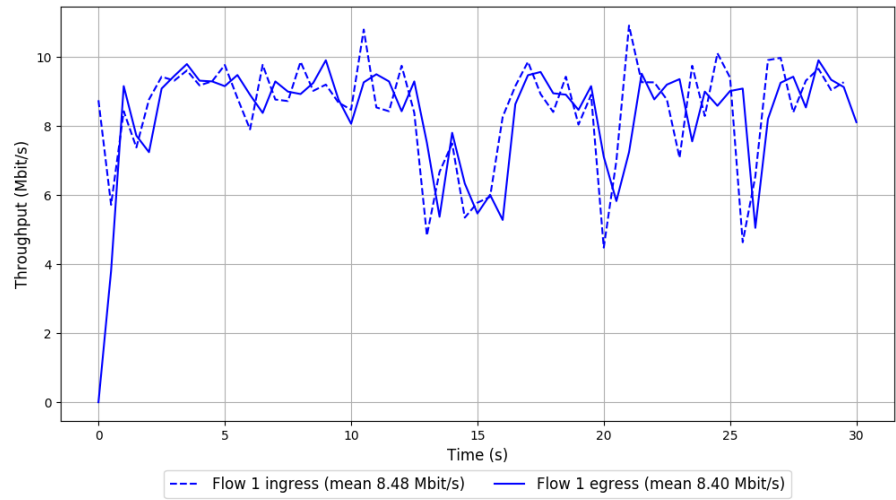
-- Flow 1:

Average throughput: 8.40 Mbit/s

95th percentile per-packet one-way delay: 270.119 ms

Loss rate: 0.97%

Run 3: Report of FillP — Data Link

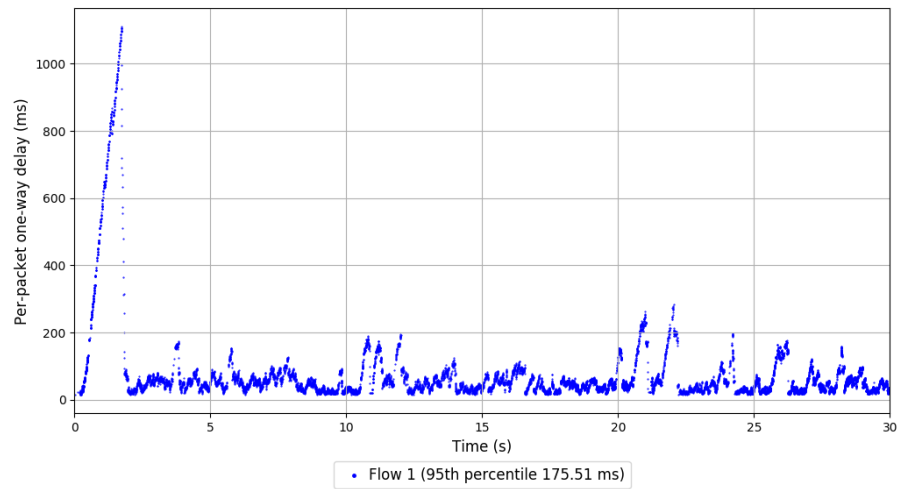
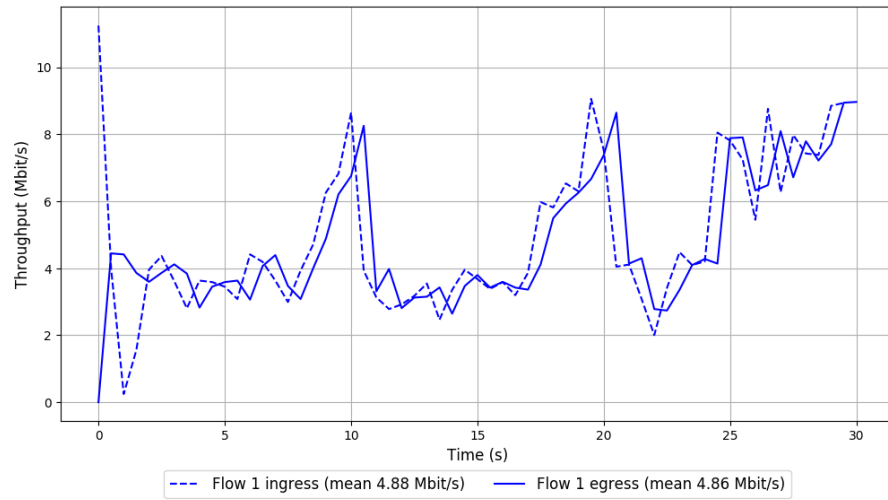


Run 1: Statistics of FillP-Sheep

Start at: 2018-12-10 20:44:39
End at: 2018-12-10 20:45:09
Local clock offset: -2.118 ms
Remote clock offset: -9.782 ms

Below is generated by plot.py at 2018-12-10 21:39:14
Datalink statistics
-- Total of 1 flow:
Average throughput: 4.86 Mbit/s
95th percentile per-packet one-way delay: 175.511 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 4.86 Mbit/s
95th percentile per-packet one-way delay: 175.511 ms
Loss rate: 0.42%

Run 1: Report of FillP-Sheep — Data Link



Run 2: Statistics of FillP-Sheep

Start at: 2018-12-10 21:05:26

End at: 2018-12-10 21:05:56

Local clock offset: 0.655 ms

Remote clock offset: -8.364 ms

Below is generated by plot.py at 2018-12-10 21:39:14

Datalink statistics

-- Total of 1 flow:

Average throughput: 7.45 Mbit/s

95th percentile per-packet one-way delay: 110.311 ms

Loss rate: 0.27%

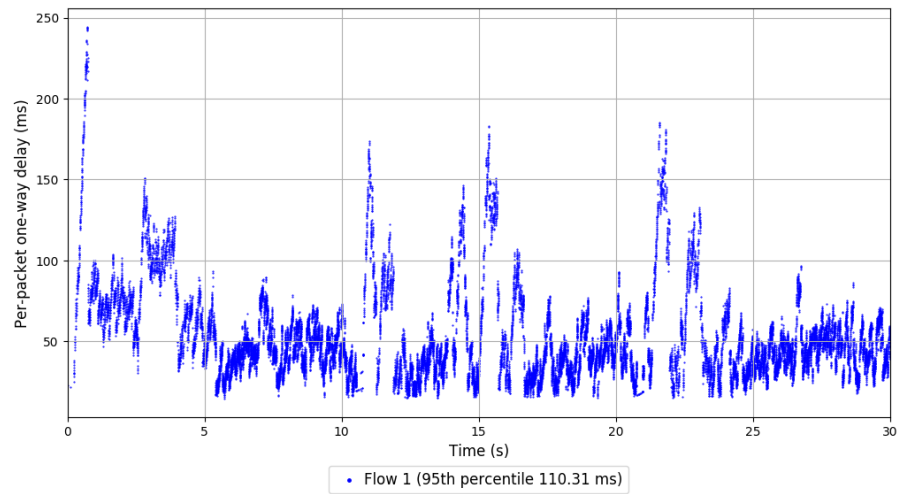
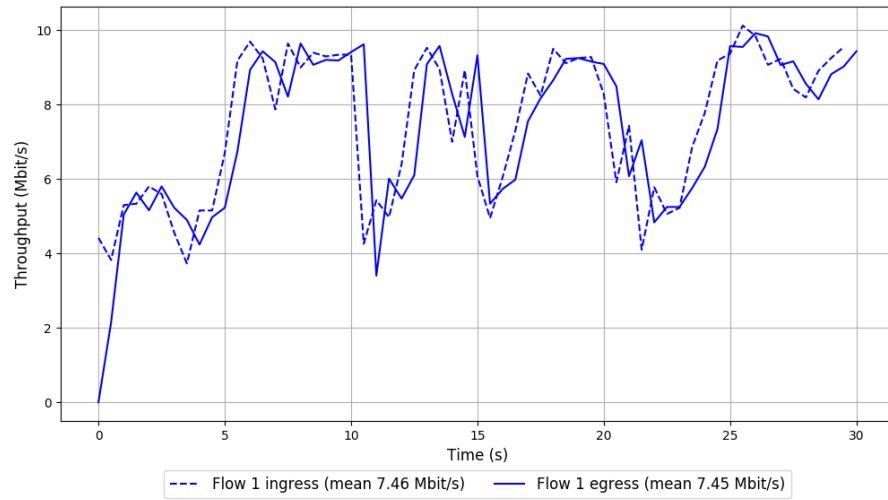
-- Flow 1:

Average throughput: 7.45 Mbit/s

95th percentile per-packet one-way delay: 110.311 ms

Loss rate: 0.27%

Run 2: Report of FillP-Sheep — Data Link

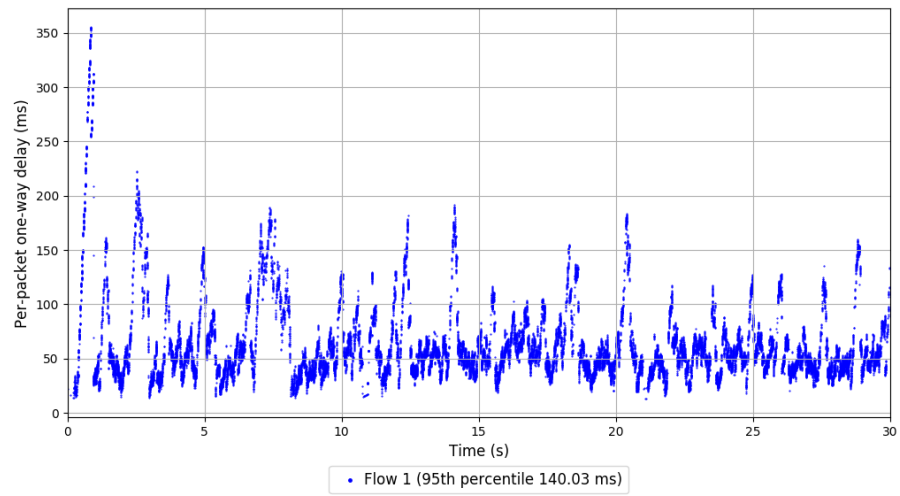
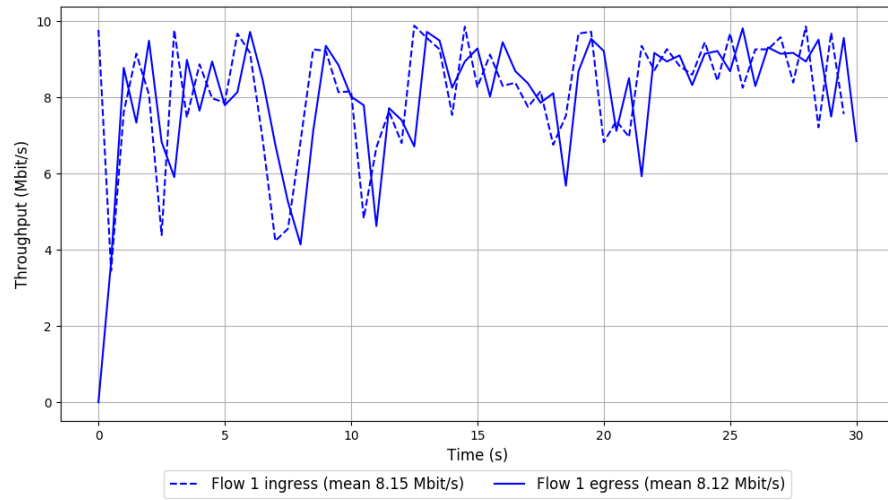


Run 3: Statistics of FillP-Sheep

Start at: 2018-12-10 21:26:11
End at: 2018-12-10 21:26:41
Local clock offset: -2.29 ms
Remote clock offset: -7.776 ms

Below is generated by plot.py at 2018-12-10 21:39:15
Datalink statistics
-- Total of 1 flow:
Average throughput: 8.12 Mbit/s
95th percentile per-packet one-way delay: 140.030 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 8.12 Mbit/s
95th percentile per-packet one-way delay: 140.030 ms
Loss rate: 0.37%

Run 3: Report of FillP-Sheep — Data Link

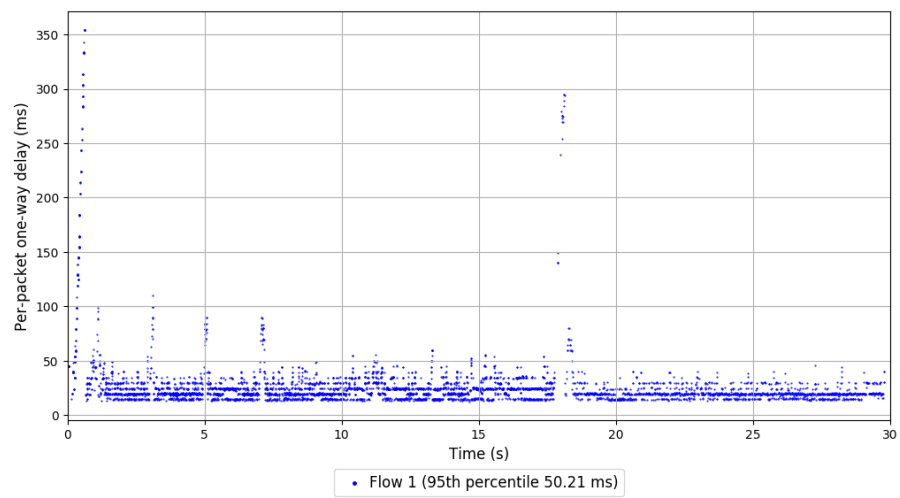
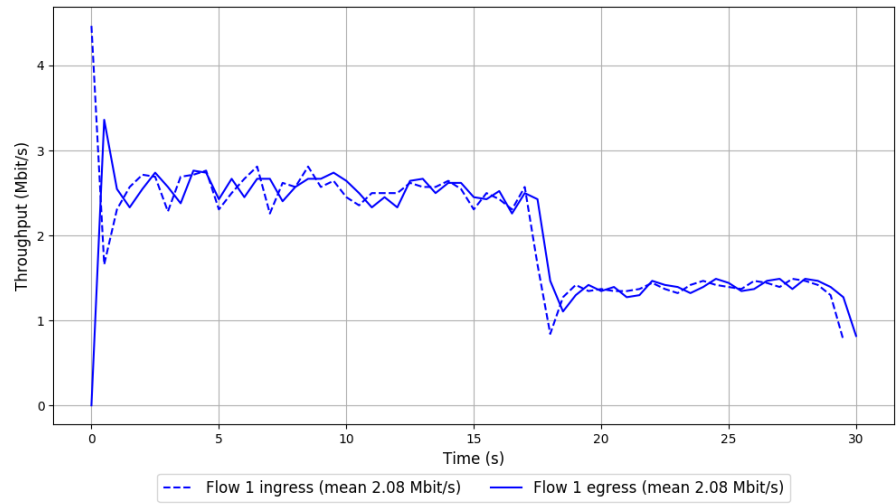


```
Run 1: Statistics of Indigo

Start at: 2018-12-10 20:47:55
End at: 2018-12-10 20:48:25
Local clock offset: 0.976 ms
Remote clock offset: -9.44 ms

# Below is generated by plot.py at 2018-12-10 21:39:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.08 Mbit/s
95th percentile per-packet one-way delay: 50.206 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 2.08 Mbit/s
95th percentile per-packet one-way delay: 50.206 ms
Loss rate: 0.08%
```

Run 1: Report of Indigo — Data Link

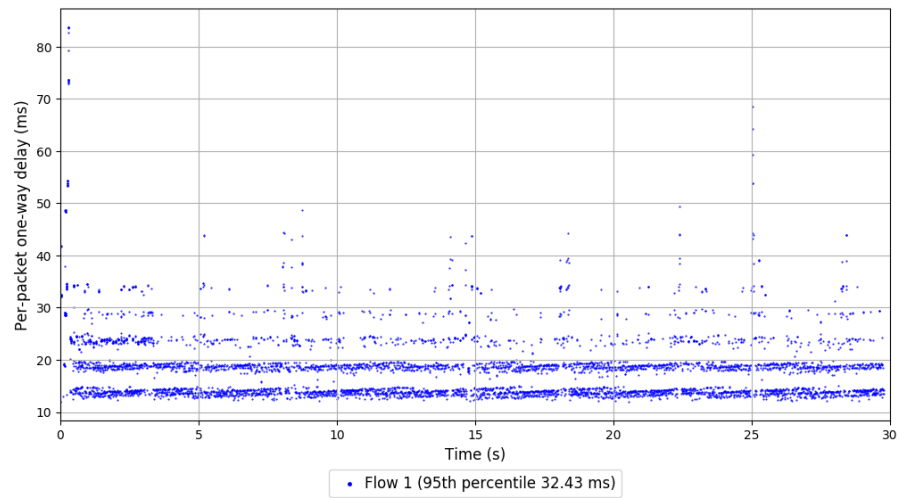
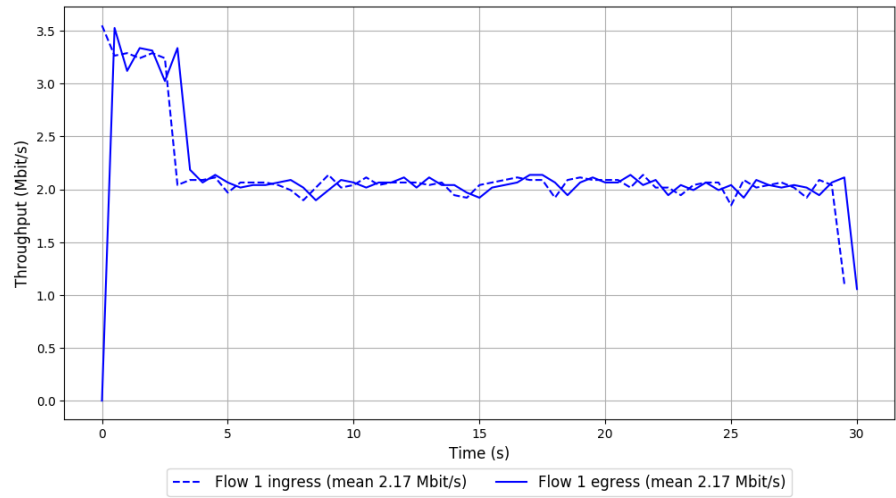


Run 2: Statistics of Indigo

Start at: 2018-12-10 21:08:44
End at: 2018-12-10 21:09:14
Local clock offset: -4.944 ms
Remote clock offset: -15.543 ms

Below is generated by plot.py at 2018-12-10 21:39:15
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.17 Mbit/s
95th percentile per-packet one-way delay: 32.428 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 2.17 Mbit/s
95th percentile per-packet one-way delay: 32.428 ms
Loss rate: 0.07%

Run 2: Report of Indigo — Data Link

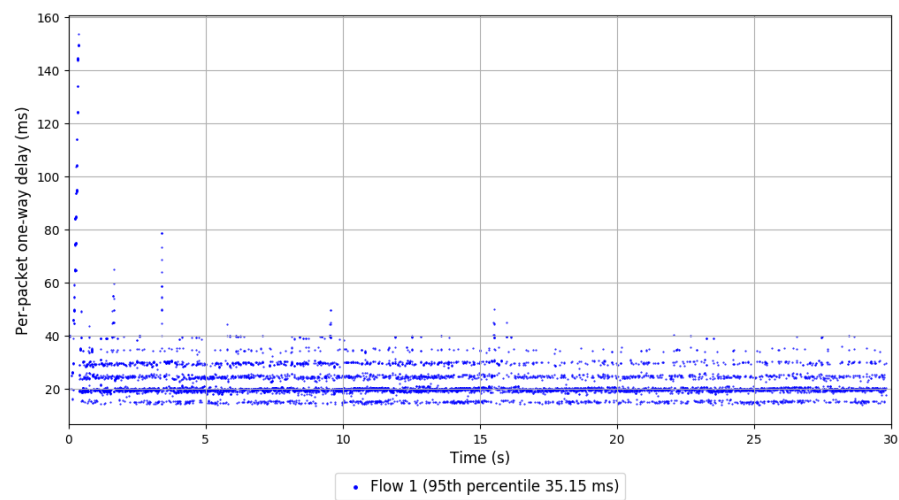
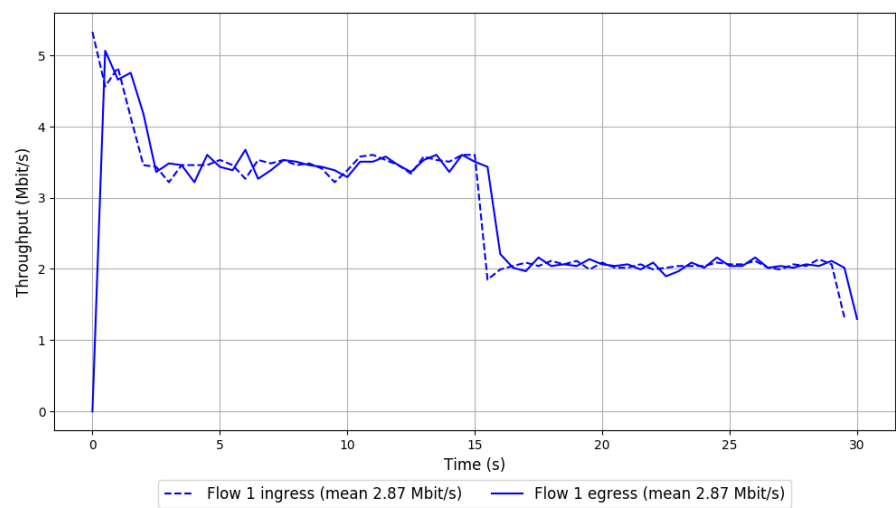


Run 3: Statistics of Indigo

Start at: 2018-12-10 21:29:29
End at: 2018-12-10 21:29:59
Local clock offset: -1.998 ms
Remote clock offset: -6.983 ms

Below is generated by plot.py at 2018-12-10 21:39:15
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.87 Mbit/s
95th percentile per-packet one-way delay: 35.150 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 2.87 Mbit/s
95th percentile per-packet one-way delay: 35.150 ms
Loss rate: 0.08%

Run 3: Report of Indigo — Data Link

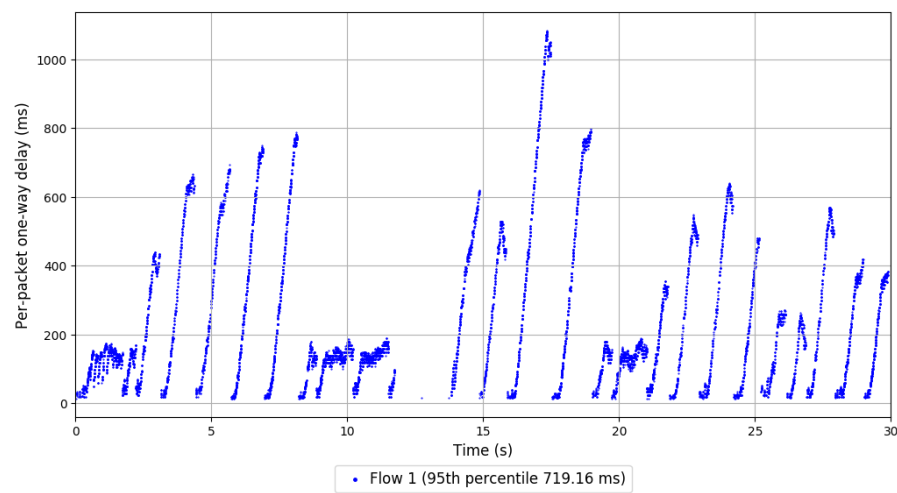
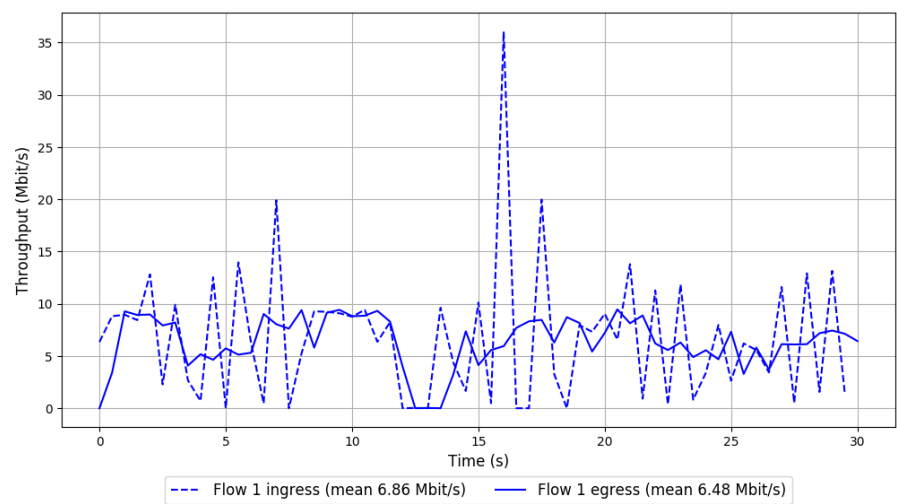


Run 1: Statistics of Indigo-96d2da3

Start at: 2018-12-10 20:55:37
End at: 2018-12-10 20:56:07
Local clock offset: 0.013 ms
Remote clock offset: -8.564 ms

Below is generated by plot.py at 2018-12-10 21:39:16
Datalink statistics
-- Total of 1 flow:
Average throughput: 6.48 Mbit/s
95th percentile per-packet one-way delay: 719.163 ms
Loss rate: 4.50%
-- Flow 1:
Average throughput: 6.48 Mbit/s
95th percentile per-packet one-way delay: 719.163 ms
Loss rate: 4.50%

Run 1: Report of Indigo-96d2da3 — Data Link



Run 2: Statistics of Indigo-96d2da3

Start at: 2018-12-10 21:16:22

End at: 2018-12-10 21:16:52

Local clock offset: 0.535 ms

Remote clock offset: -7.47 ms

Below is generated by plot.py at 2018-12-10 21:39:17

Datalink statistics

-- Total of 1 flow:

Average throughput: 6.65 Mbit/s

95th percentile per-packet one-way delay: 933.045 ms

Loss rate: 7.29%

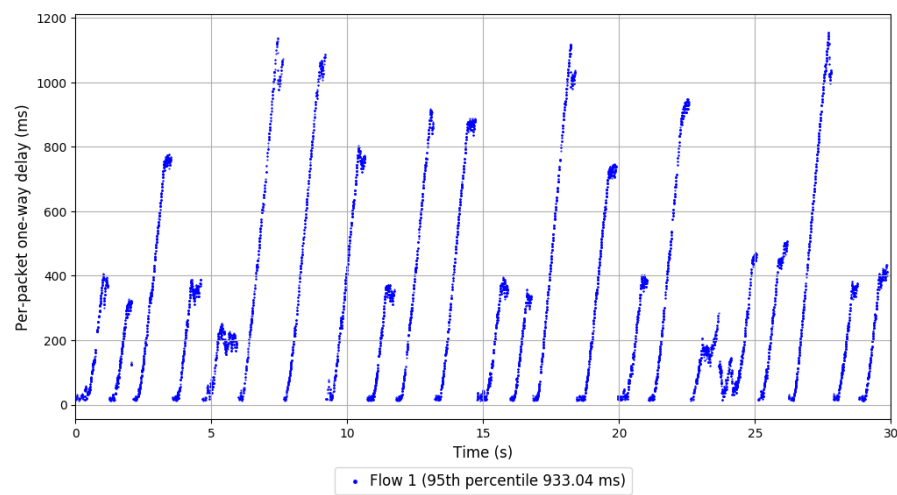
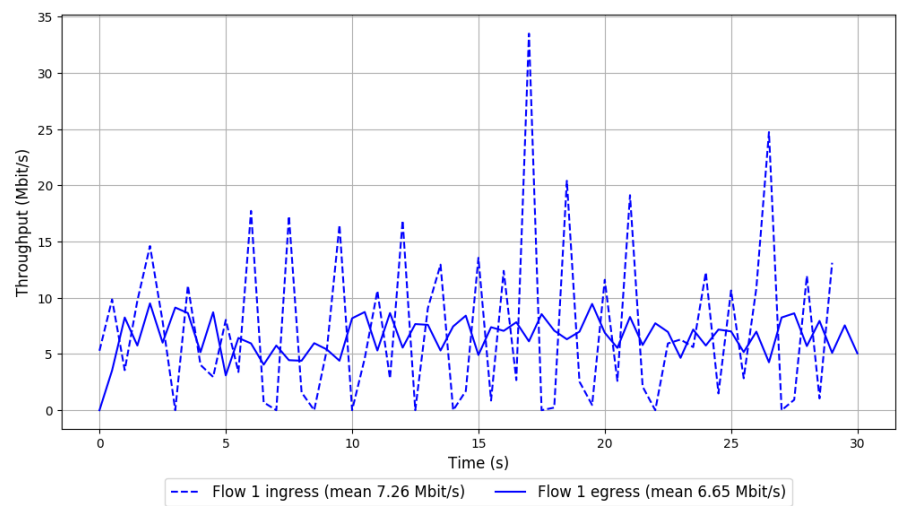
-- Flow 1:

Average throughput: 6.65 Mbit/s

95th percentile per-packet one-way delay: 933.045 ms

Loss rate: 7.29%

Run 2: Report of Indigo-96d2da3 — Data Link

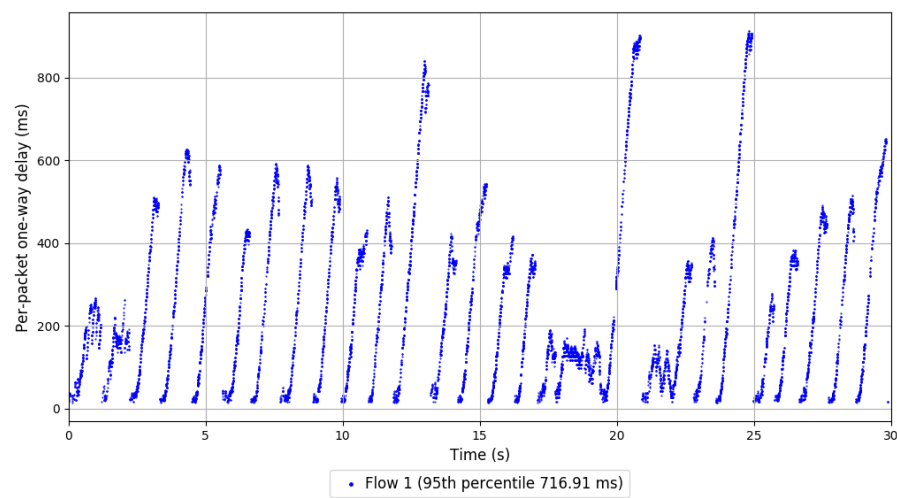
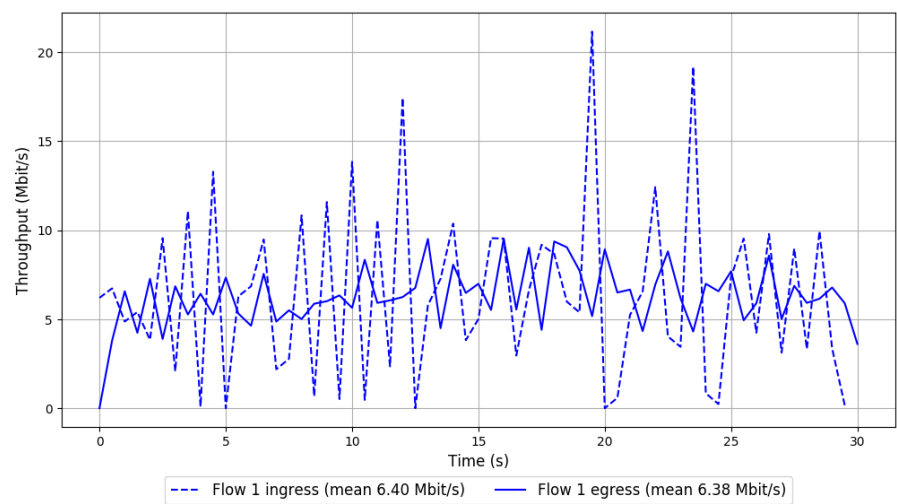


Run 3: Statistics of Indigo-96d2da3

Start at: 2018-12-10 21:37:12
End at: 2018-12-10 21:37:42
Local clock offset: -0.52 ms
Remote clock offset: -7.958 ms

Below is generated by plot.py at 2018-12-10 21:39:19
Datalink statistics
-- Total of 1 flow:
Average throughput: 6.38 Mbit/s
95th percentile per-packet one-way delay: 716.910 ms
Loss rate: 0.32%
-- Flow 1:
Average throughput: 6.38 Mbit/s
95th percentile per-packet one-way delay: 716.910 ms
Loss rate: 0.32%

Run 3: Report of Indigo-96d2da3 — Data Link

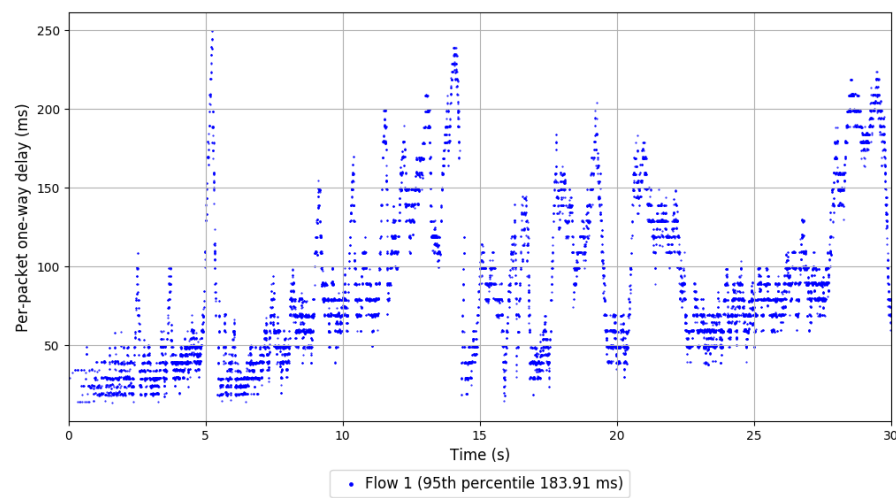
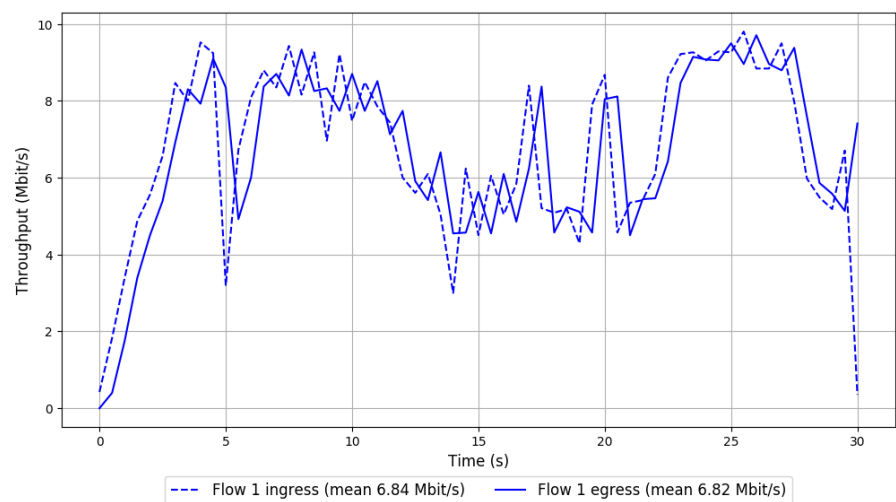


```
Run 1: Statistics of LEDBAT

Start at: 2018-12-10 20:54:32
End at: 2018-12-10 20:55:02
Local clock offset: 0.103 ms
Remote clock offset: -8.934 ms

# Below is generated by plot.py at 2018-12-10 21:39:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 6.82 Mbit/s
95th percentile per-packet one-way delay: 183.911 ms
Loss rate: 0.41%
-- Flow 1:
Average throughput: 6.82 Mbit/s
95th percentile per-packet one-way delay: 183.911 ms
Loss rate: 0.41%
```

Run 1: Report of LEDBAT — Data Link

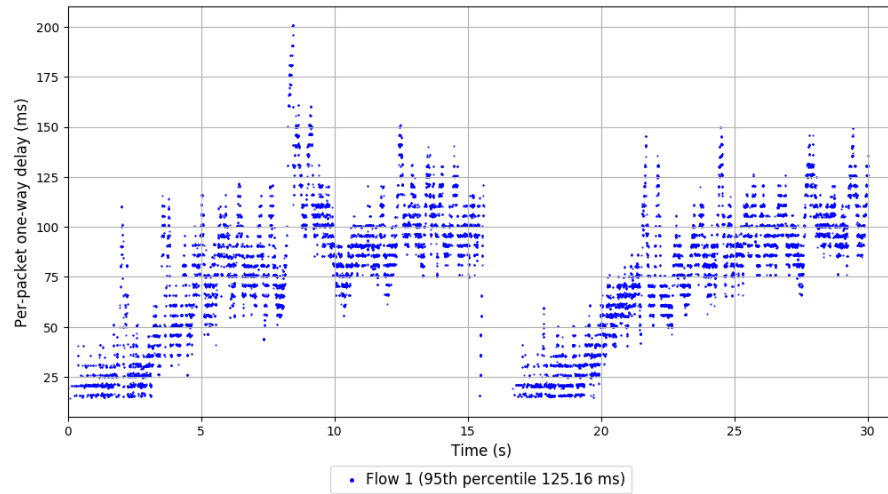
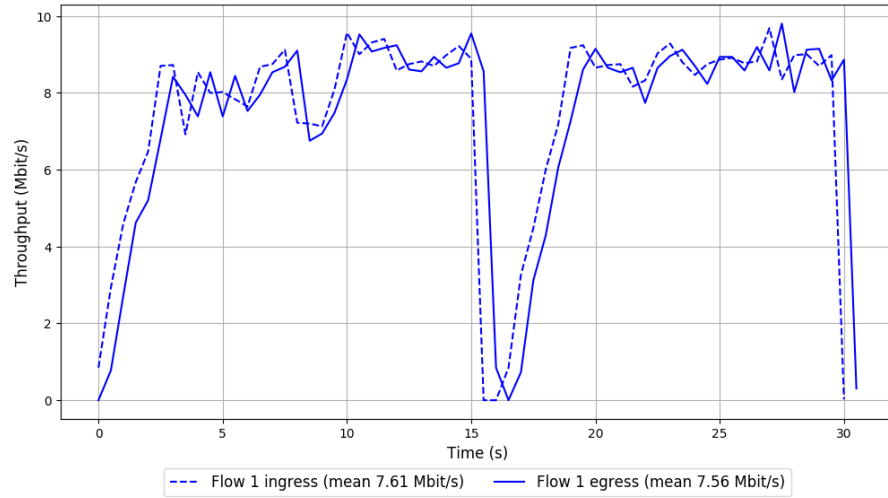


Run 2: Statistics of LEDBAT

Start at: 2018-12-10 21:15:16
End at: 2018-12-10 21:15:46
Local clock offset: 0.316 ms
Remote clock offset: -7.601 ms

Below is generated by plot.py at 2018-12-10 21:39:23
Datalink statistics
-- Total of 1 flow:
Average throughput: 7.56 Mbit/s
95th percentile per-packet one-way delay: 125.161 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 7.56 Mbit/s
95th percentile per-packet one-way delay: 125.161 ms
Loss rate: 0.70%

Run 2: Report of LEDBAT — Data Link

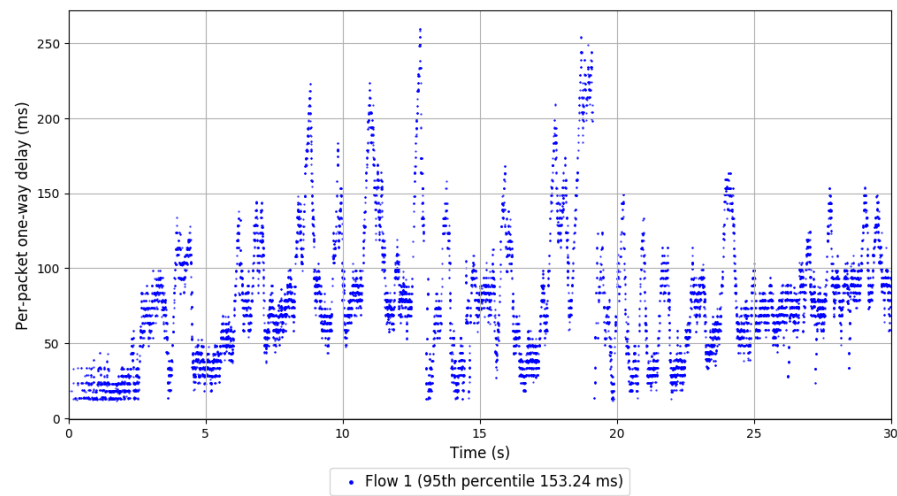
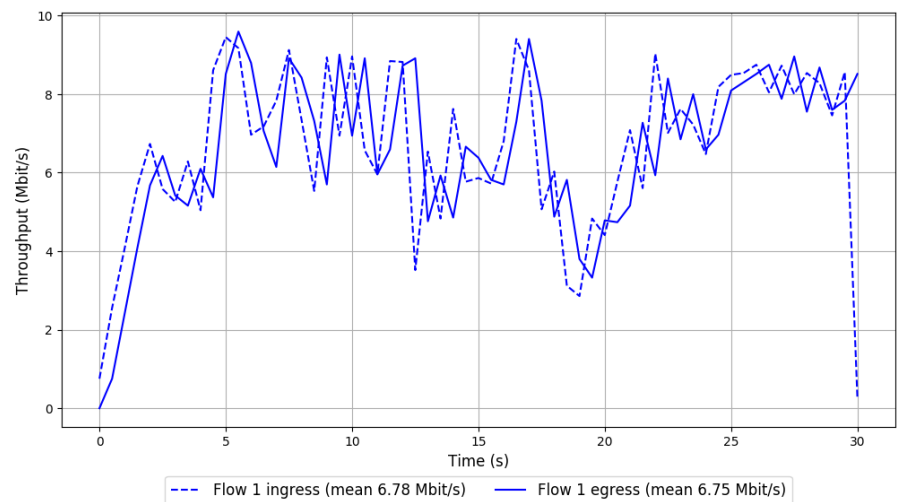


Run 3: Statistics of LEDBAT

Start at: 2018-12-10 21:36:07
End at: 2018-12-10 21:36:37
Local clock offset: 2.407 ms
Remote clock offset: -6.009 ms

Below is generated by plot.py at 2018-12-10 21:39:26
Datalink statistics
-- Total of 1 flow:
Average throughput: 6.75 Mbit/s
95th percentile per-packet one-way delay: 153.241 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 6.75 Mbit/s
95th percentile per-packet one-way delay: 153.241 ms
Loss rate: 0.51%

Run 3: Report of LEDBAT — Data Link



Run 1: Statistics of Indigo-Muses

Start at: 2018-12-10 20:56:43

End at: 2018-12-10 20:57:13

Local clock offset: 2.359 ms

Remote clock offset: -8.37 ms

Below is generated by plot.py at 2018-12-10 21:39:26

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.42 Mbit/s

95th percentile per-packet one-way delay: 70.410 ms

Loss rate: 0.06%

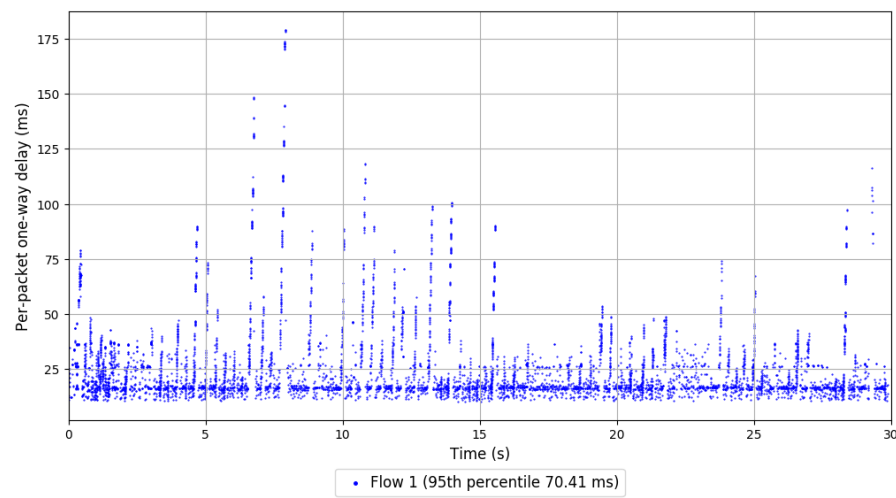
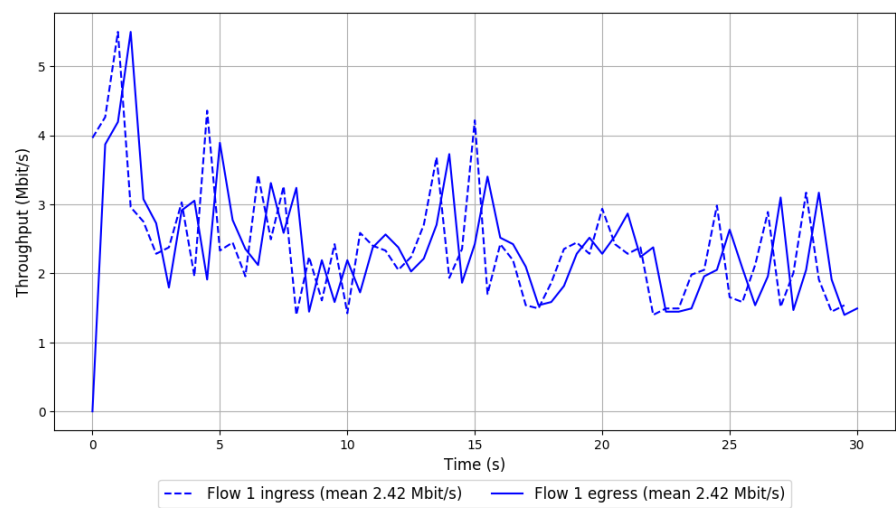
-- Flow 1:

Average throughput: 2.42 Mbit/s

95th percentile per-packet one-way delay: 70.410 ms

Loss rate: 0.06%

Run 1: Report of Indigo-Muses — Data Link

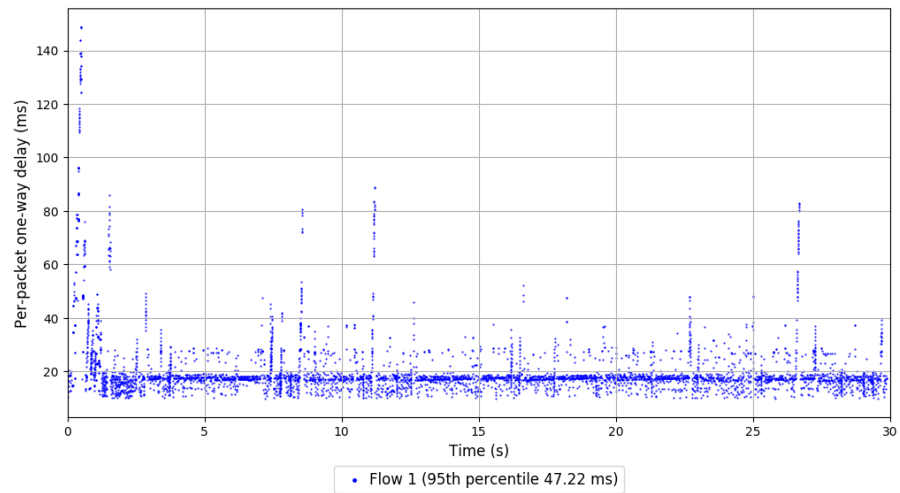
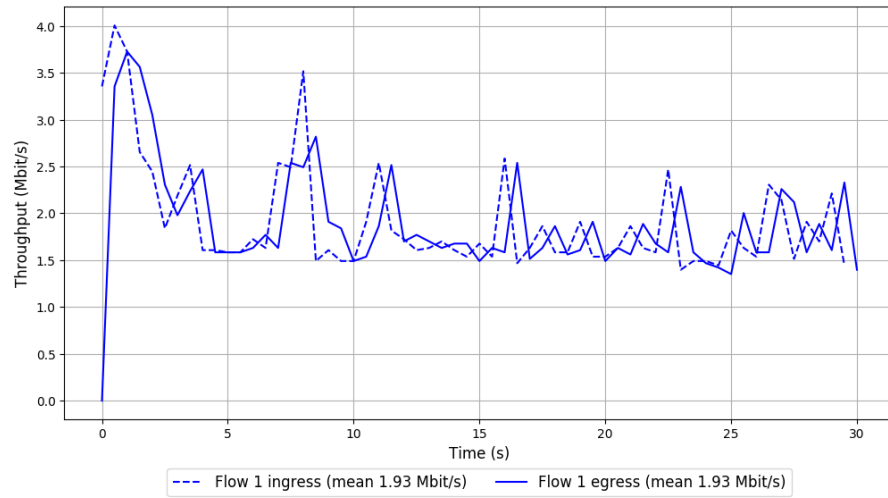


Run 2: Statistics of Indigo-Muses

Start at: 2018-12-10 21:17:28
End at: 2018-12-10 21:17:58
Local clock offset: 1.855 ms
Remote clock offset: -8.321 ms

Below is generated by plot.py at 2018-12-10 21:39:26
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 47.220 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 47.220 ms
Loss rate: 0.04%

Run 2: Report of Indigo-Muses — Data Link

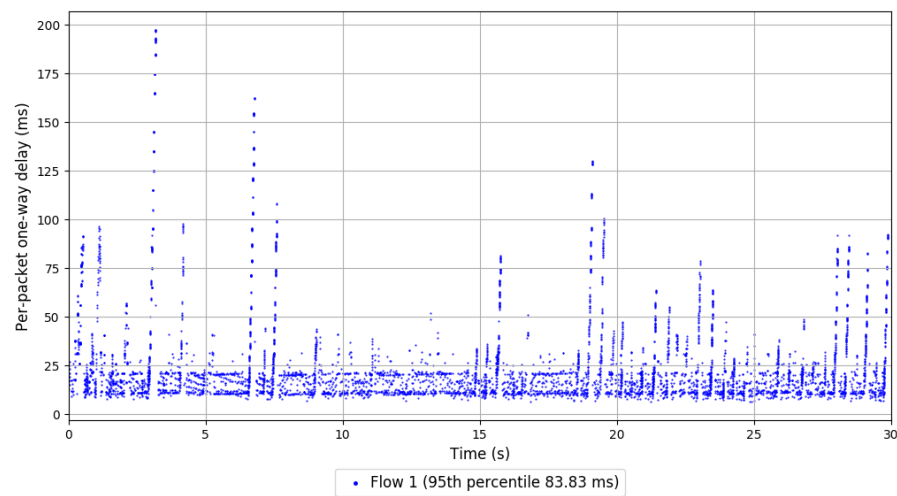
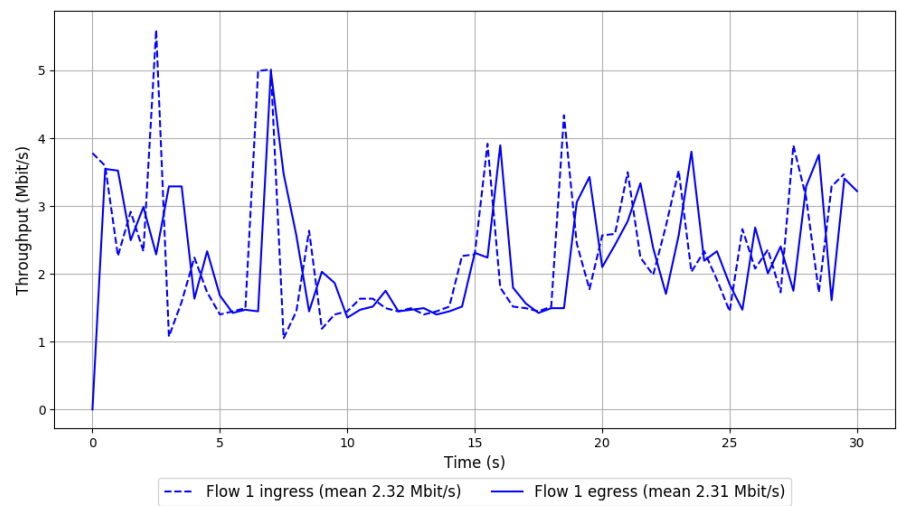


Run 3: Statistics of Indigo-Muses

Start at: 2018-12-10 21:38:18
End at: 2018-12-10 21:38:48
Local clock offset: 2.233 ms
Remote clock offset: -8.184 ms

Below is generated by plot.py at 2018-12-10 21:39:26
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.31 Mbit/s
95th percentile per-packet one-way delay: 83.830 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 2.31 Mbit/s
95th percentile per-packet one-way delay: 83.830 ms
Loss rate: 0.19%

Run 3: Report of Indigo-Muses — Data Link



Run 1: Statistics of PCC-Allegro

Start at: 2018-12-10 20:40:17

End at: 2018-12-10 20:40:47

Local clock offset: 1.138 ms

Remote clock offset: -9.331 ms

Below is generated by plot.py at 2018-12-10 21:39:28

Datalink statistics

-- Total of 1 flow:

Average throughput: 4.41 Mbit/s

95th percentile per-packet one-way delay: 34.428 ms

Loss rate: 0.05%

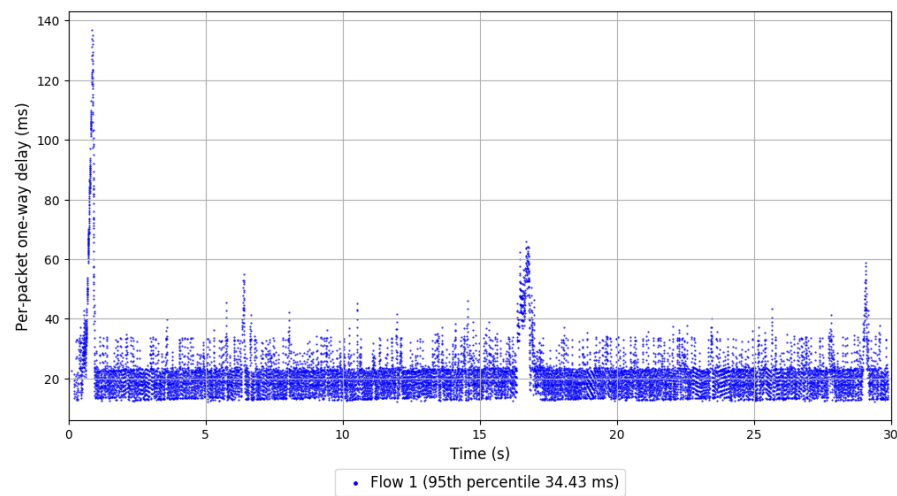
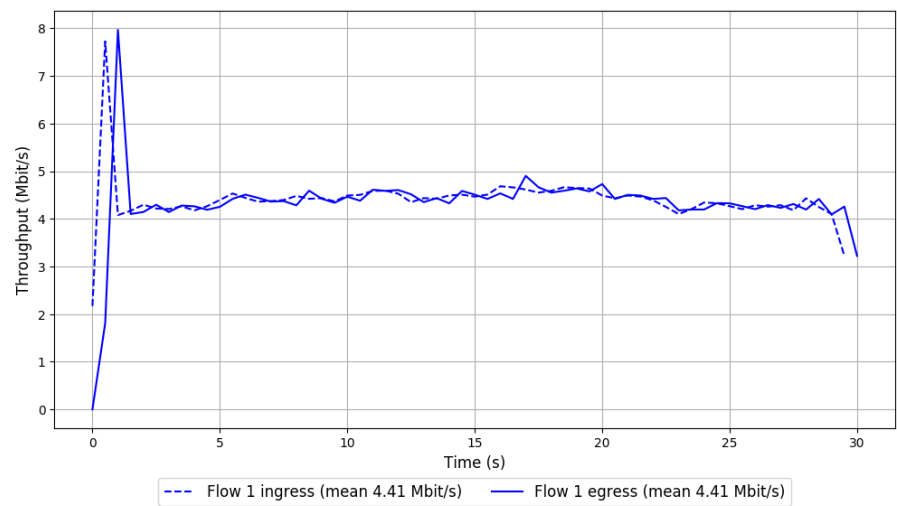
-- Flow 1:

Average throughput: 4.41 Mbit/s

95th percentile per-packet one-way delay: 34.428 ms

Loss rate: 0.05%

Run 1: Report of PCC-Allegro — Data Link



Run 2: Statistics of PCC-Allegro

Start at: 2018-12-10 21:01:05

End at: 2018-12-10 21:01:35

Local clock offset: 0.902 ms

Remote clock offset: -8.662 ms

Below is generated by plot.py at 2018-12-10 21:39:28

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.81 Mbit/s

95th percentile per-packet one-way delay: 31.232 ms

Loss rate: 0.05%

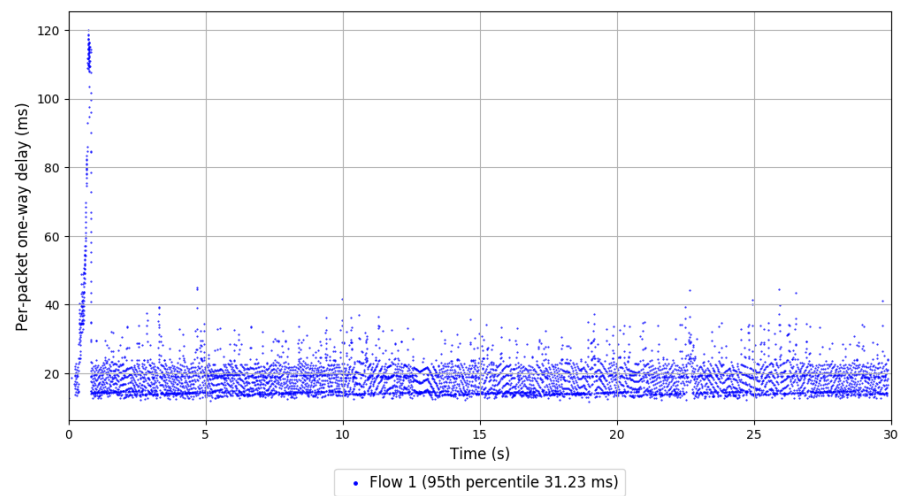
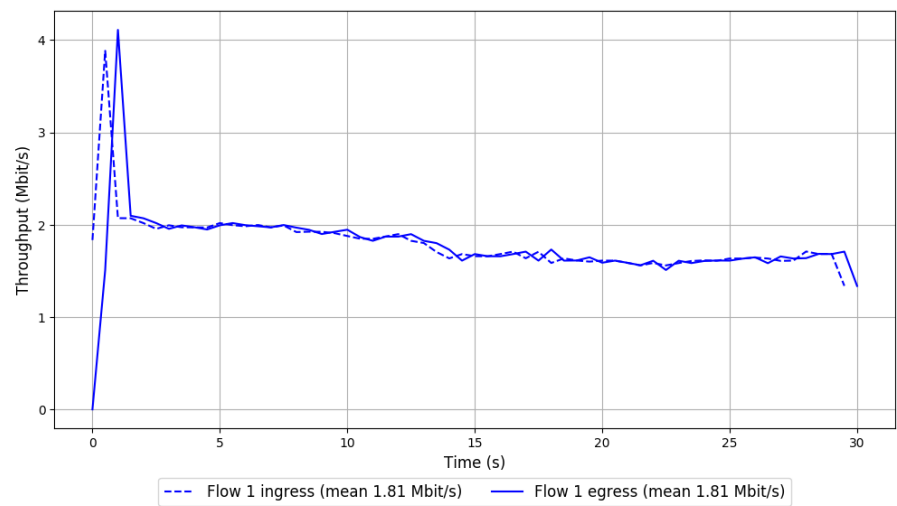
-- Flow 1:

Average throughput: 1.81 Mbit/s

95th percentile per-packet one-way delay: 31.232 ms

Loss rate: 0.05%

Run 2: Report of PCC-Allegro — Data Link

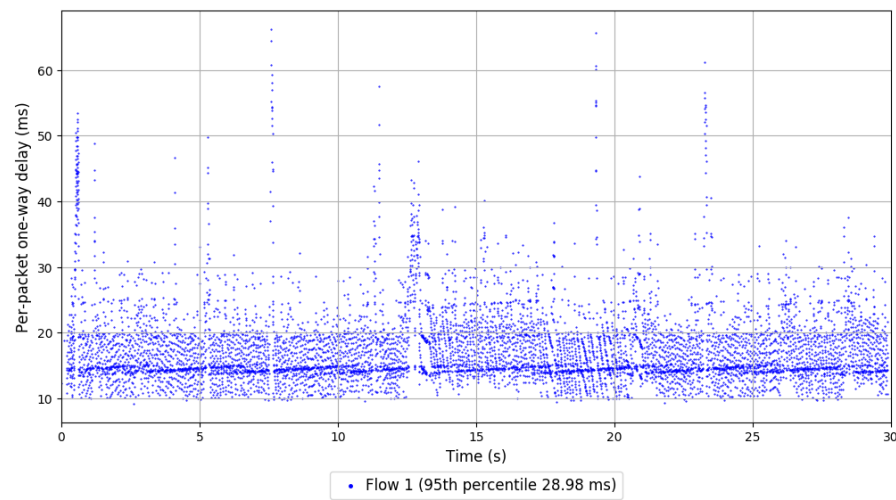
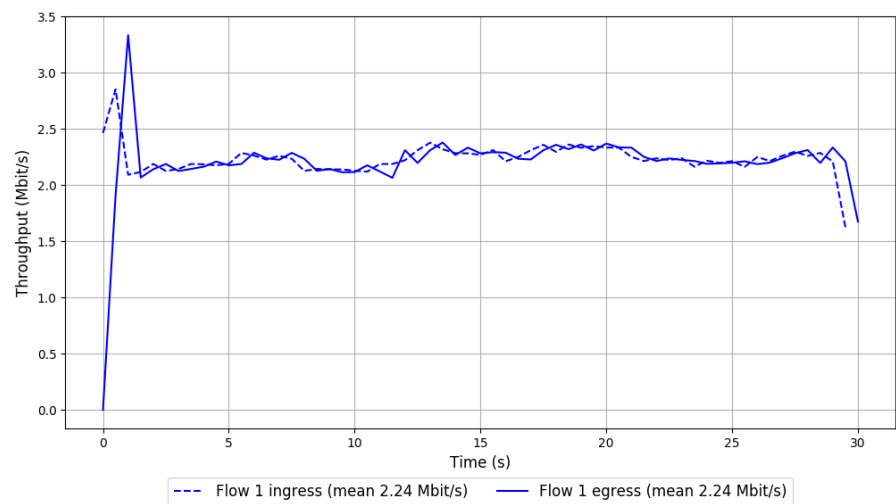


Run 3: Statistics of PCC-Allegro

Start at: 2018-12-10 21:21:50
End at: 2018-12-10 21:22:20
Local clock offset: -0.262 ms
Remote clock offset: -7.476 ms

Below is generated by plot.py at 2018-12-10 21:39:28
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.24 Mbit/s
95th percentile per-packet one-way delay: 28.976 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 2.24 Mbit/s
95th percentile per-packet one-way delay: 28.976 ms
Loss rate: 0.02%

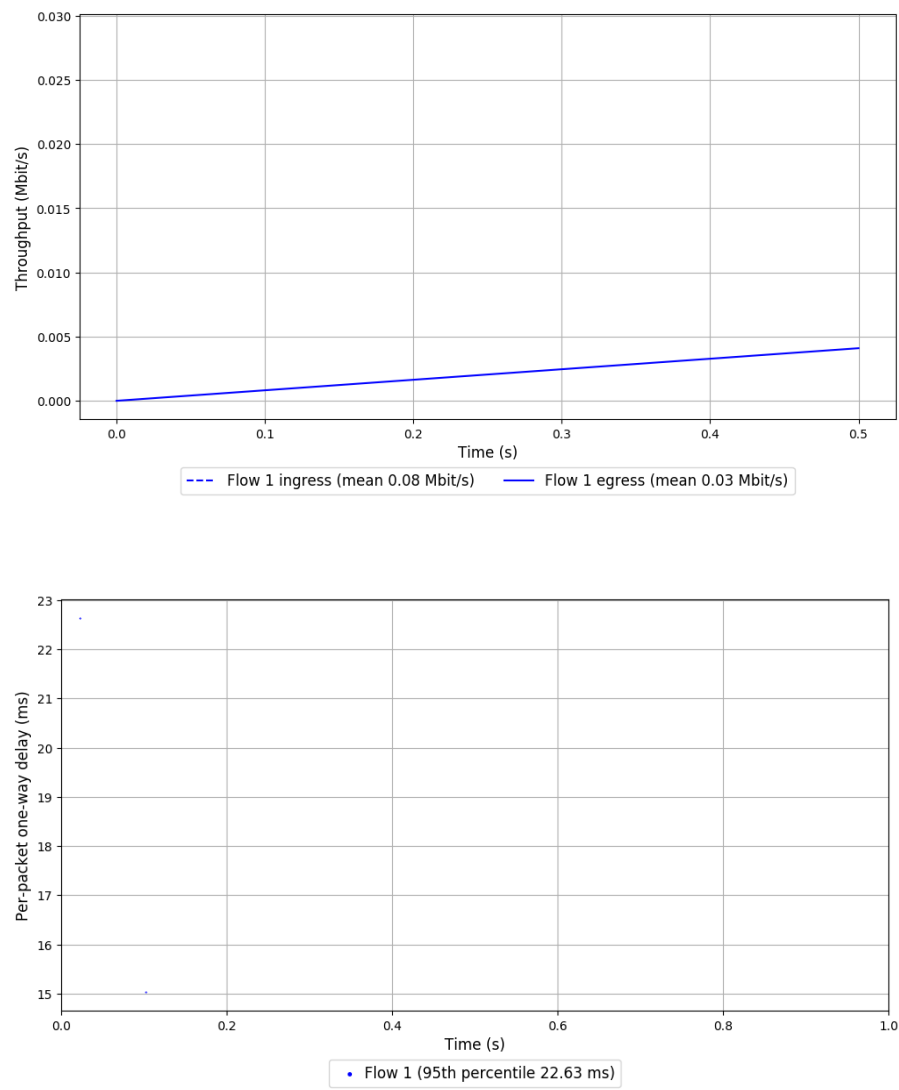
Run 3: Report of PCC-Allegro — Data Link



Run 1: Statistics of PCC-Expr

Start at: 2018-12-10 20:41:22
End at: 2018-12-10 20:41:52
Local clock offset: -0.809 ms
Remote clock offset: -9.448 ms

Run 1: Report of PCC-Expr — Data Link



Run 2: Statistics of PCC-Expr

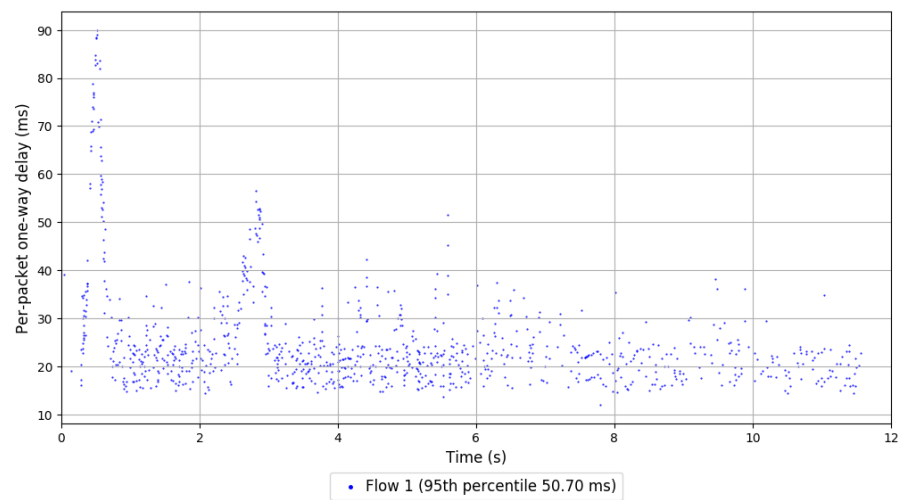
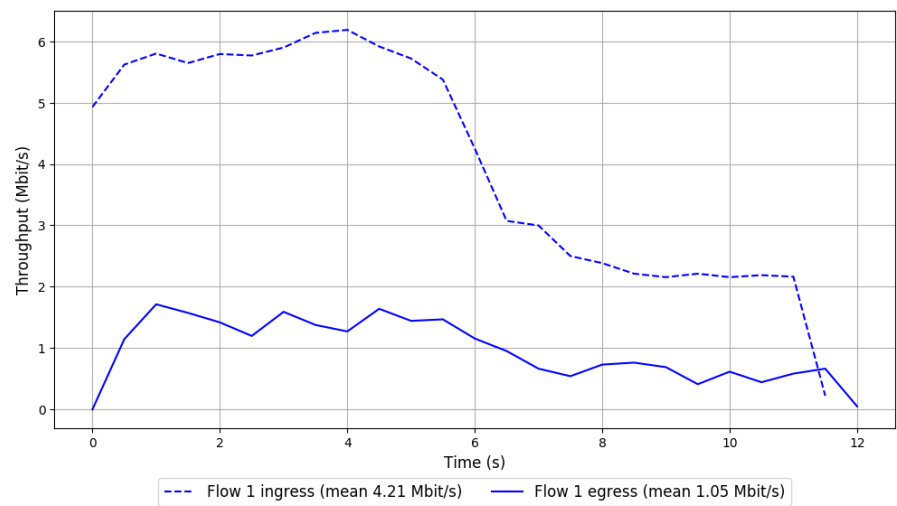
Start at: 2018-12-10 21:02:10

End at: 2018-12-10 21:02:40

Local clock offset: 3.373 ms

Remote clock offset: -7.721 ms

Run 2: Report of PCC-Expr — Data Link



Run 3: Statistics of PCC-Expr

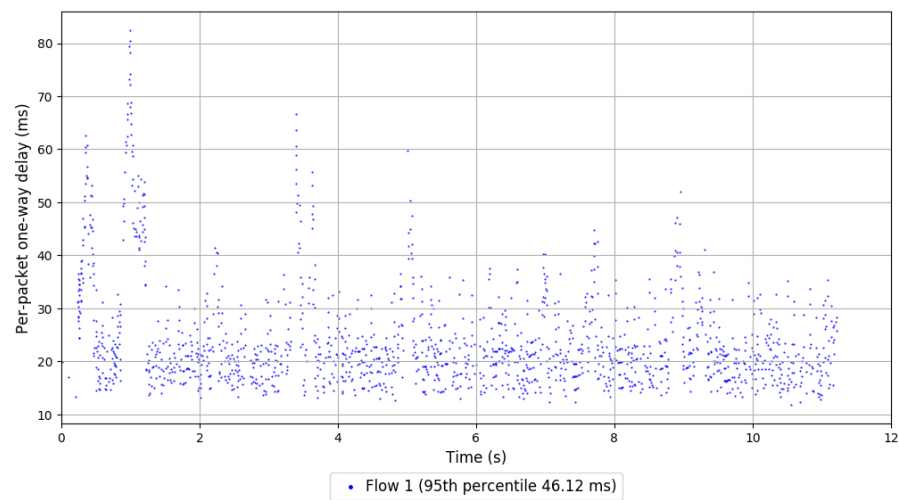
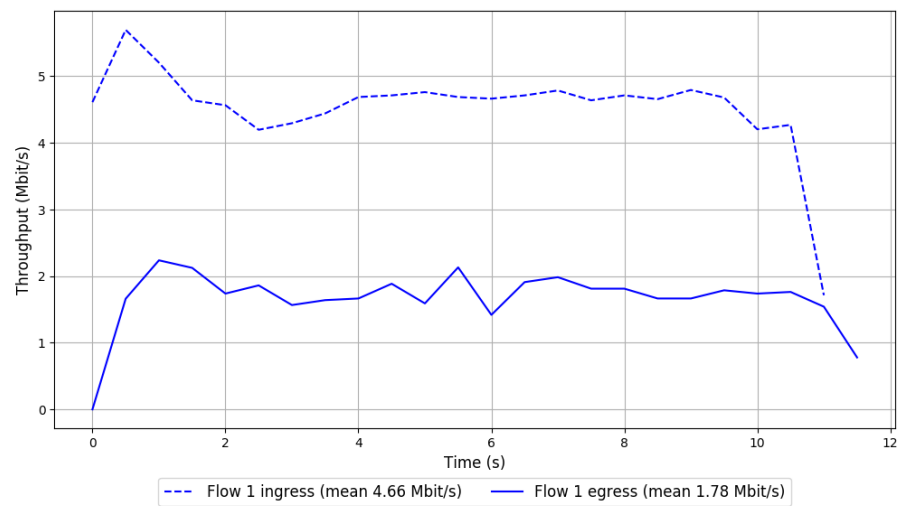
Start at: 2018-12-10 21:22:55

End at: 2018-12-10 21:23:25

Local clock offset: -1.459 ms

Remote clock offset: -7.845 ms

Run 3: Report of PCC-Expr — Data Link

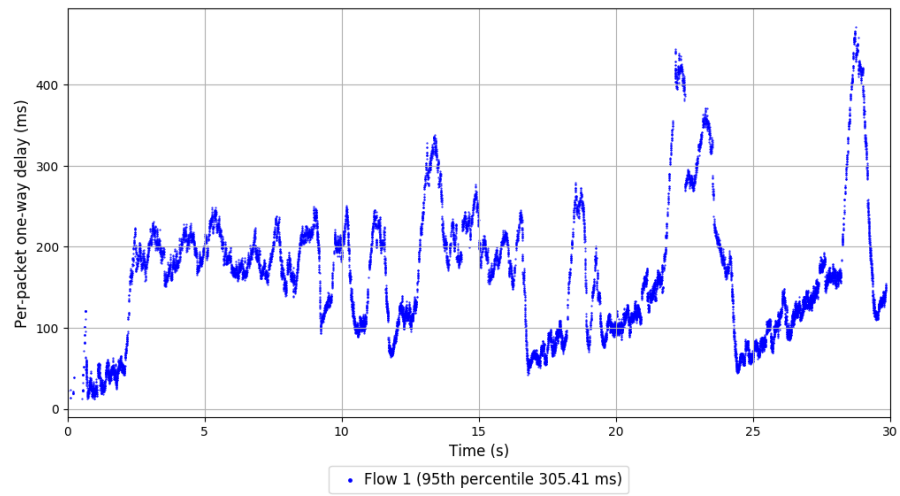
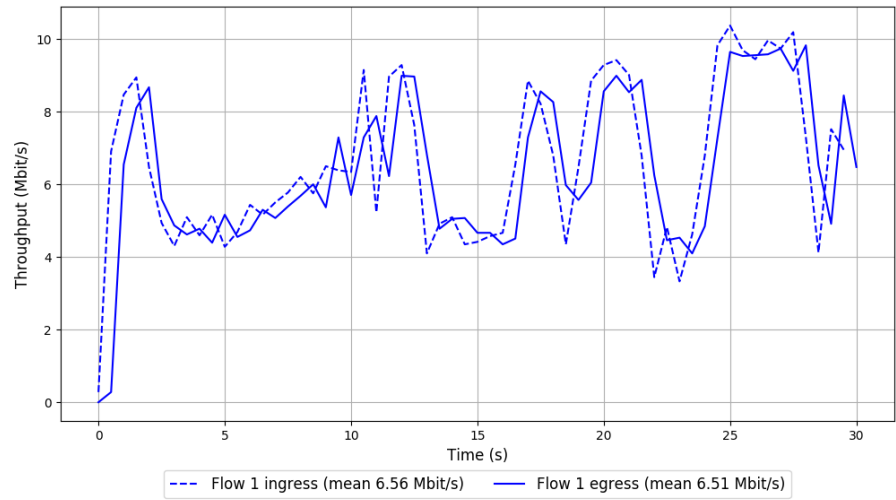


Run 1: Statistics of QUIC Cubic

Start at: 2018-12-10 20:51:11
End at: 2018-12-10 20:51:41
Local clock offset: 0.849 ms
Remote clock offset: -8.682 ms

Below is generated by plot.py at 2018-12-10 21:39:34
Datalink statistics
-- Total of 1 flow:
Average throughput: 6.51 Mbit/s
95th percentile per-packet one-way delay: 305.411 ms
Loss rate: 0.87%
-- Flow 1:
Average throughput: 6.51 Mbit/s
95th percentile per-packet one-way delay: 305.411 ms
Loss rate: 0.87%

Run 1: Report of QUIC Cubic — Data Link

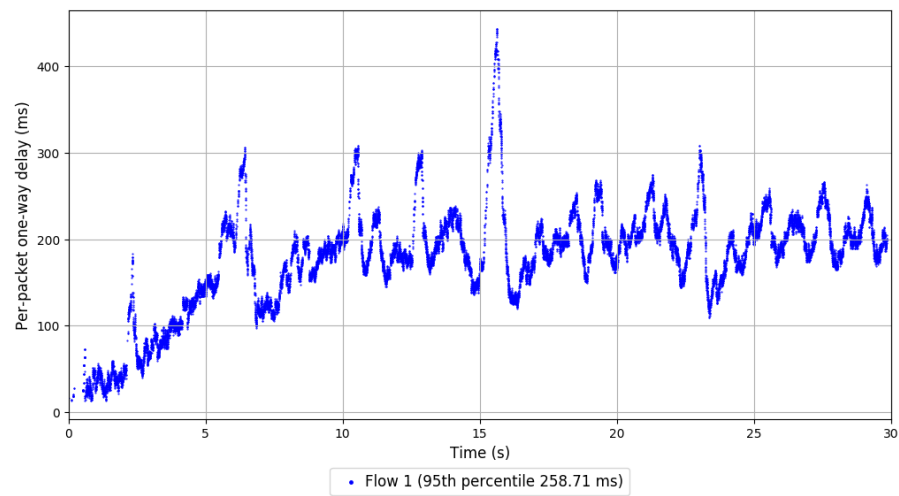
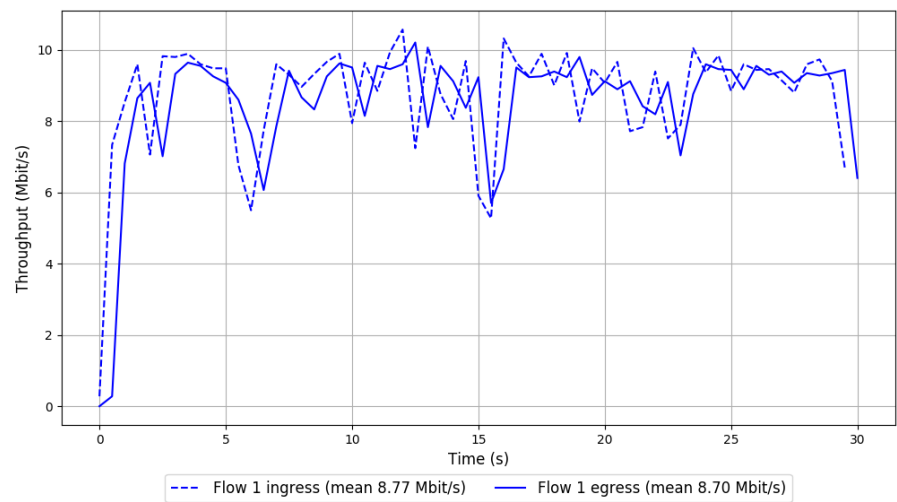


Run 2: Statistics of QUIC Cubic

Start at: 2018-12-10 21:12:00
End at: 2018-12-10 21:12:30
Local clock offset: 0.979 ms
Remote clock offset: -8.475 ms

Below is generated by plot.py at 2018-12-10 21:39:38
Datalink statistics
-- Total of 1 flow:
Average throughput: 8.70 Mbit/s
95th percentile per-packet one-way delay: 258.708 ms
Loss rate: 0.86%
-- Flow 1:
Average throughput: 8.70 Mbit/s
95th percentile per-packet one-way delay: 258.708 ms
Loss rate: 0.86%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2018-12-10 21:32:45

End at: 2018-12-10 21:33:15

Local clock offset: -2.052 ms

Remote clock offset: -6.426 ms

Below is generated by plot.py at 2018-12-10 21:39:38

Datalink statistics

-- Total of 1 flow:

Average throughput: 8.01 Mbit/s

95th percentile per-packet one-way delay: 259.582 ms

Loss rate: 0.75%

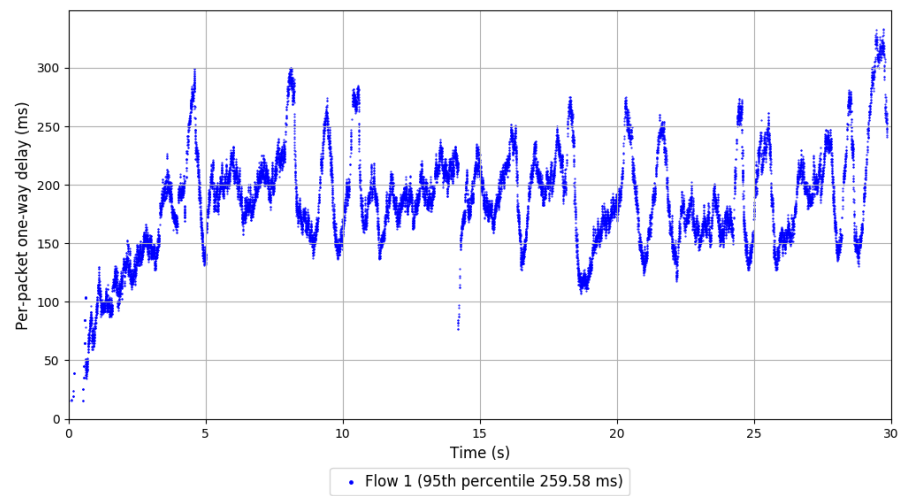
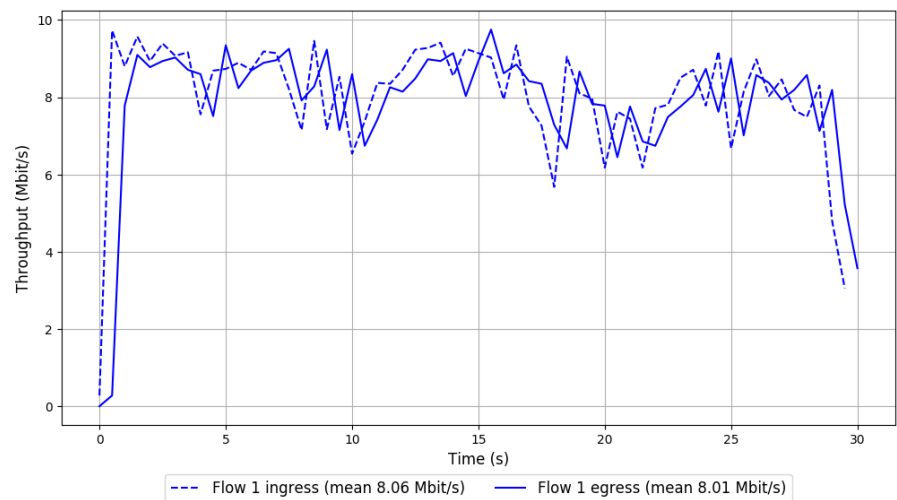
-- Flow 1:

Average throughput: 8.01 Mbit/s

95th percentile per-packet one-way delay: 259.582 ms

Loss rate: 0.75%

Run 3: Report of QUIC Cubic — Data Link

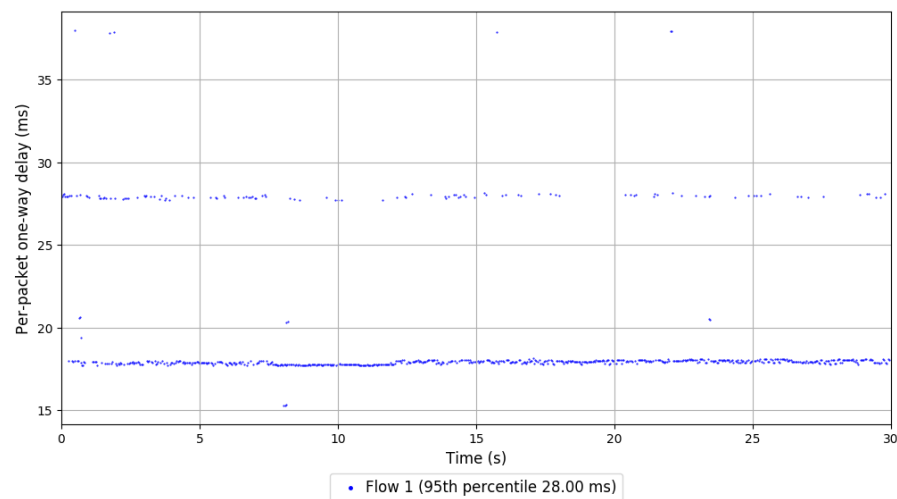
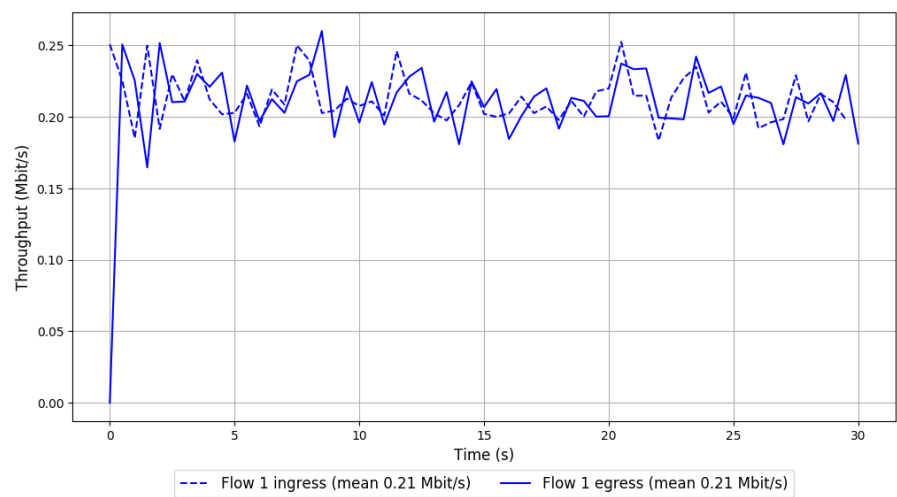


Run 1: Statistics of SCReAM

Start at: 2018-12-10 20:42:28
End at: 2018-12-10 20:42:58
Local clock offset: 0.697 ms
Remote clock offset: -9.196 ms

Below is generated by plot.py at 2018-12-10 21:39:38
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 28.004 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 28.004 ms
Loss rate: 0.13%

Run 1: Report of SReAM — Data Link

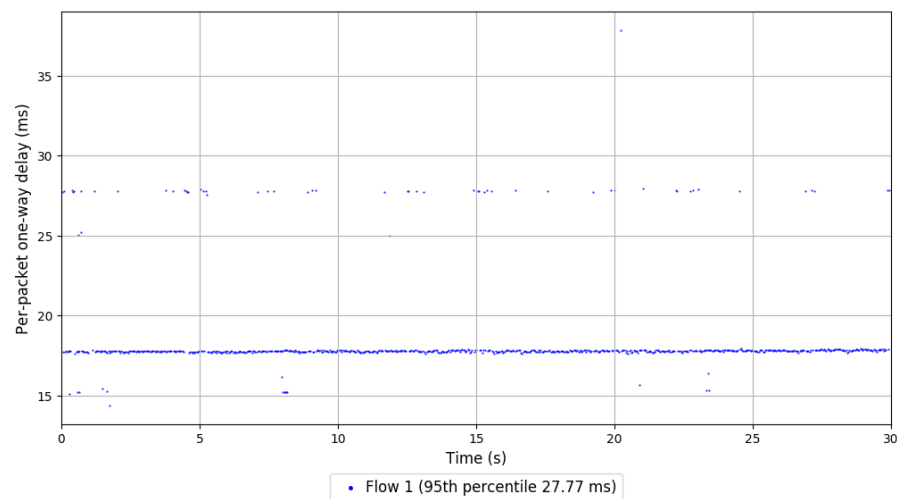
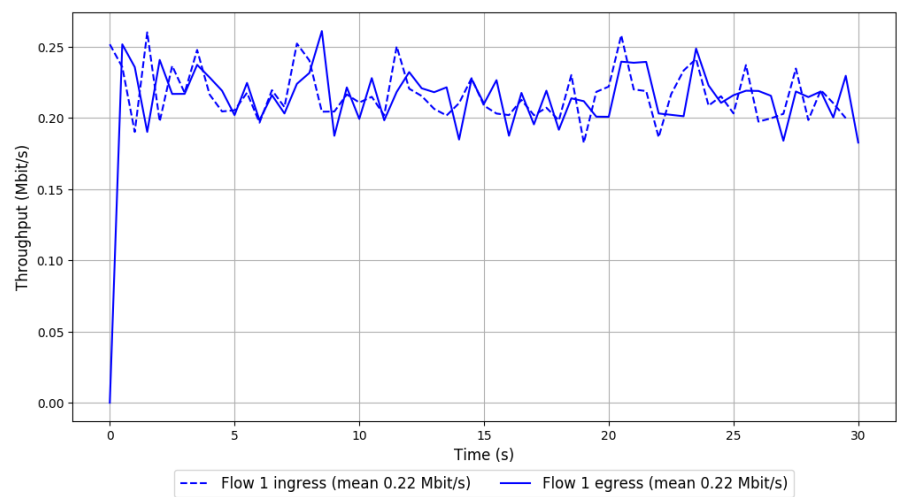


Run 2: Statistics of SCReAM

Start at: 2018-12-10 21:03:15
End at: 2018-12-10 21:03:45
Local clock offset: 0.694 ms
Remote clock offset: -10.241 ms

Below is generated by plot.py at 2018-12-10 21:39:38
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 27.775 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 27.775 ms
Loss rate: 0.13%

Run 2: Report of SReAM — Data Link

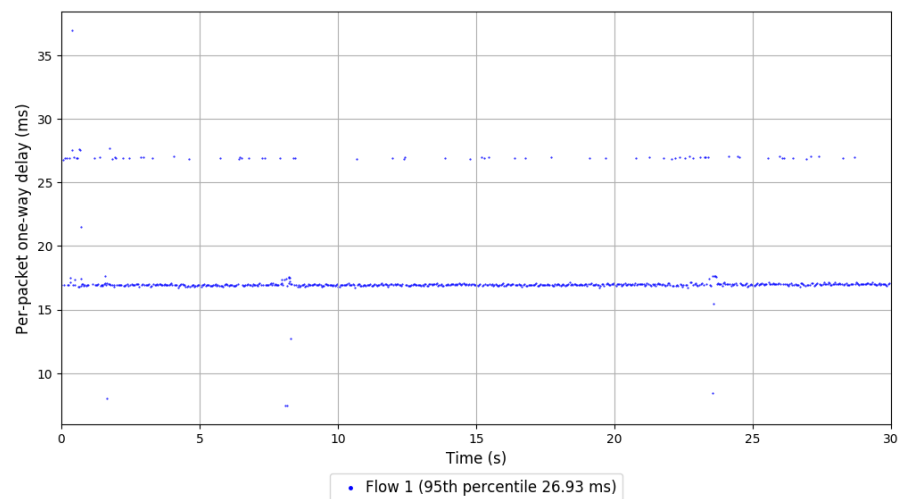
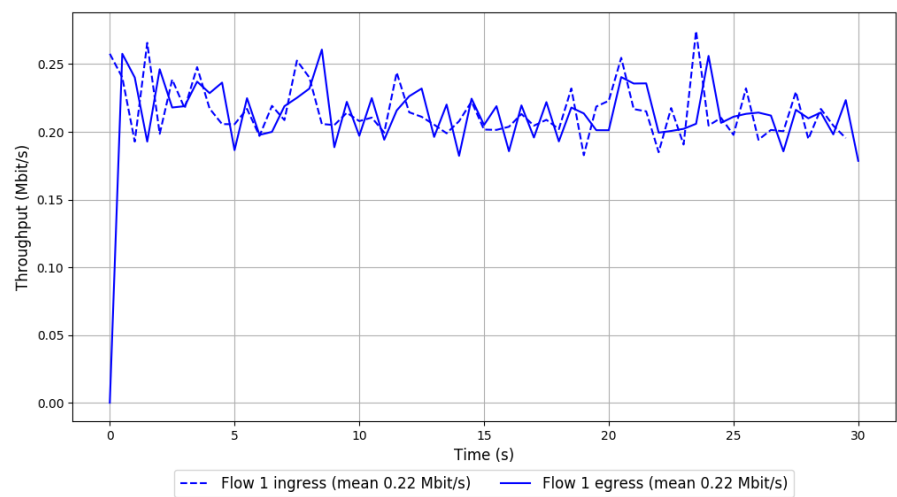


Run 3: Statistics of SCReAM

Start at: 2018-12-10 21:24:00
End at: 2018-12-10 21:24:30
Local clock offset: -0.906 ms
Remote clock offset: -8.939 ms

Below is generated by plot.py at 2018-12-10 21:39:38
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 26.933 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 26.933 ms
Loss rate: 0.13%

Run 3: Report of SReAM — Data Link

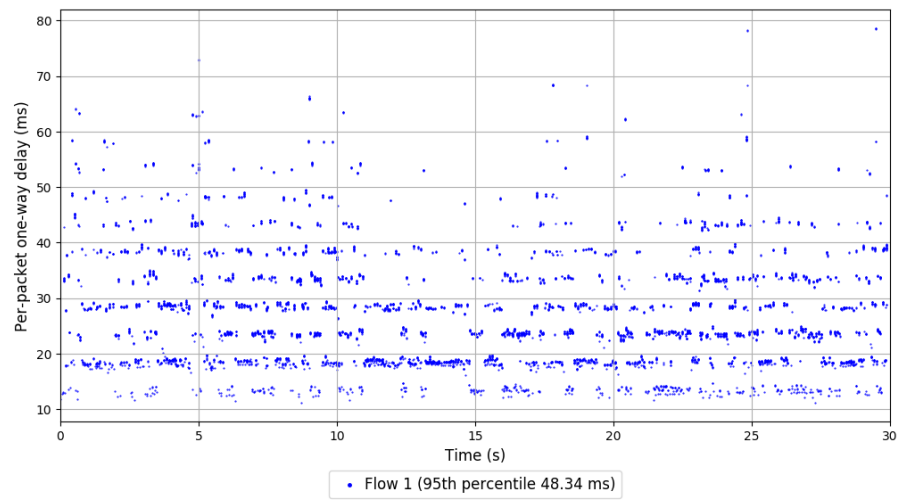
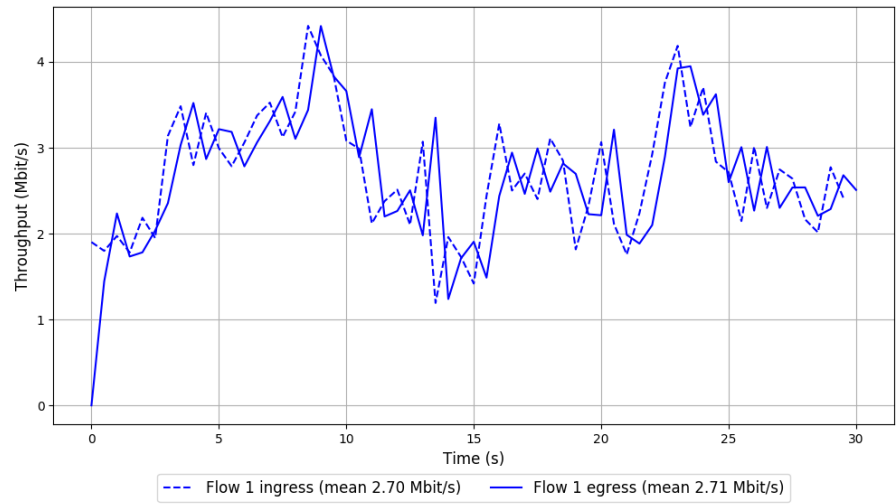


Run 1: Statistics of Sprout

Start at: 2018-12-10 20:38:06
End at: 2018-12-10 20:38:36
Local clock offset: 1.192 ms
Remote clock offset: -9.616 ms

Below is generated by plot.py at 2018-12-10 21:39:38
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.71 Mbit/s
95th percentile per-packet one-way delay: 48.341 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.71 Mbit/s
95th percentile per-packet one-way delay: 48.341 ms
Loss rate: 0.00%

Run 1: Report of Sprout — Data Link

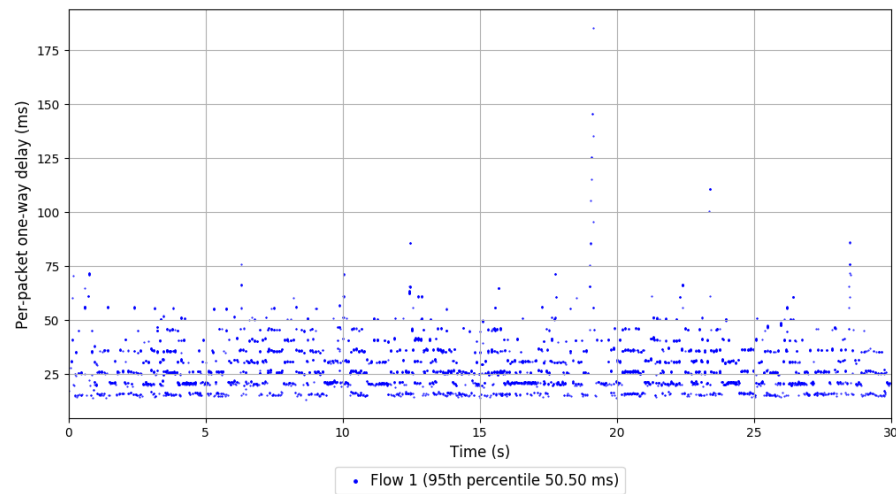
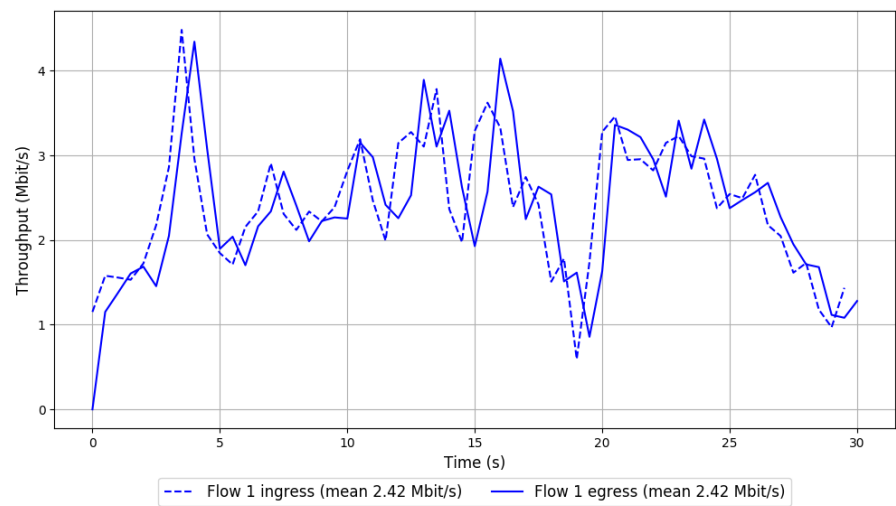


Run 2: Statistics of Sprout

Start at: 2018-12-10 20:58:54
End at: 2018-12-10 20:59:24
Local clock offset: -0.979 ms
Remote clock offset: -8.911 ms

Below is generated by plot.py at 2018-12-10 21:39:38
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.42 Mbit/s
95th percentile per-packet one-way delay: 50.502 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 2.42 Mbit/s
95th percentile per-packet one-way delay: 50.502 ms
Loss rate: 0.11%

Run 2: Report of Sprout — Data Link

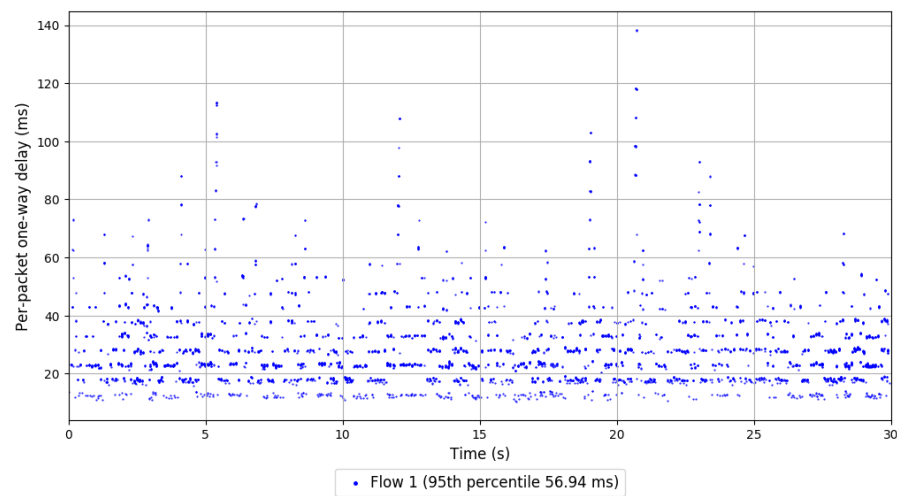
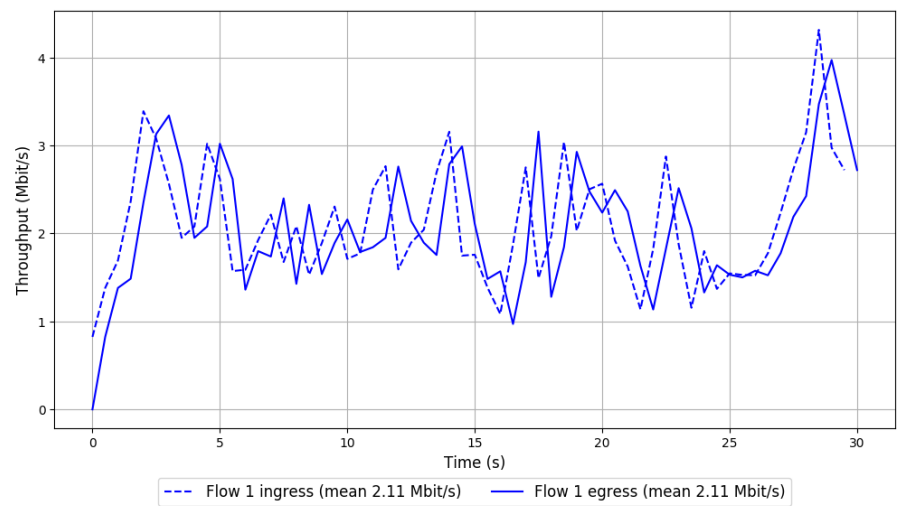


Run 3: Statistics of Sprout

Start at: 2018-12-10 21:19:38
End at: 2018-12-10 21:20:08
Local clock offset: -1.222 ms
Remote clock offset: -9.484 ms

Below is generated by plot.py at 2018-12-10 21:39:38
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.11 Mbit/s
95th percentile per-packet one-way delay: 56.937 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.11 Mbit/s
95th percentile per-packet one-way delay: 56.937 ms
Loss rate: 0.00%

Run 3: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

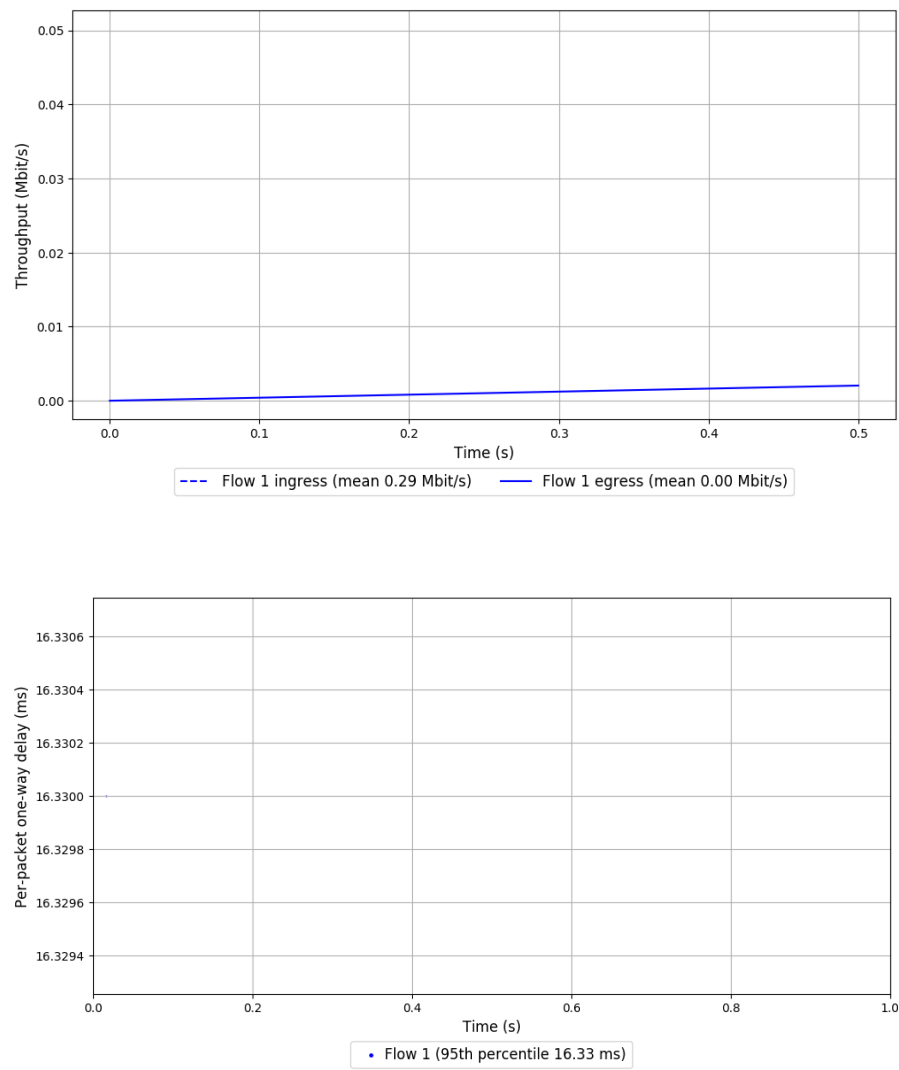
Start at: 2018-12-10 20:52:22

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

Local clock offset: 1.748 ms

Remote clock offset: -8.552 ms

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



Run 2: Statistics of TaoVA-100x

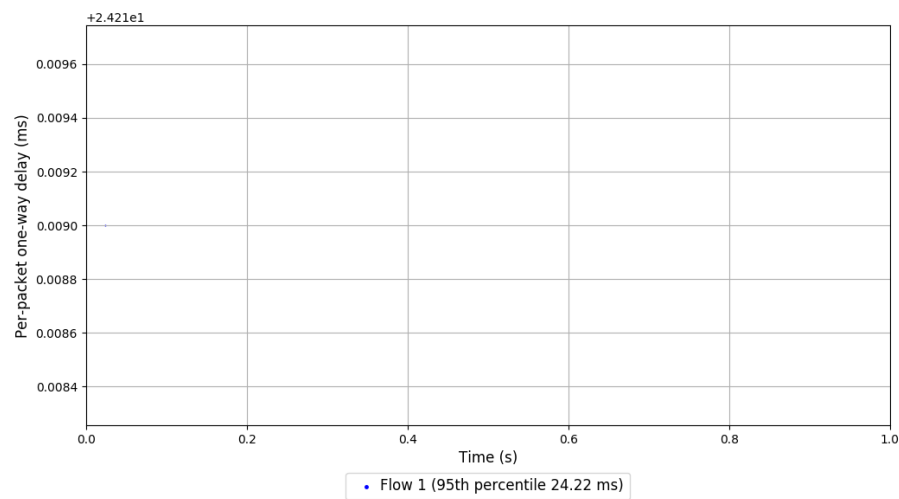
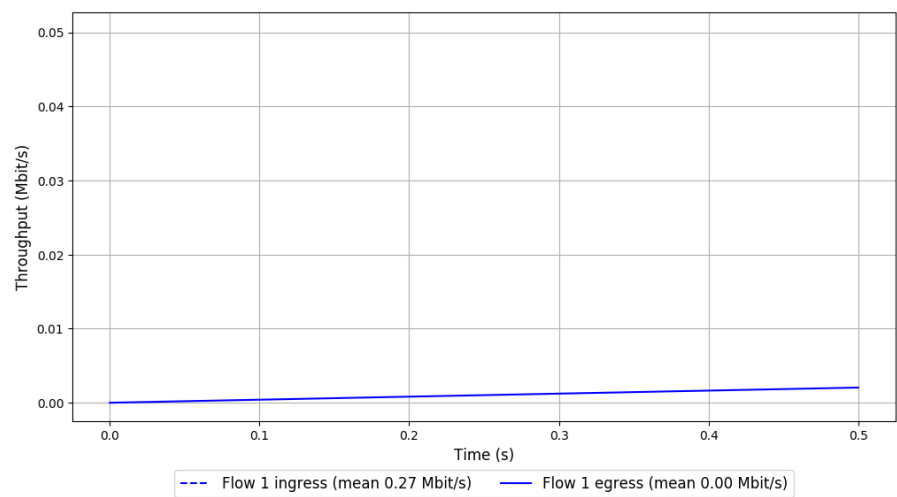
Start at: 2018-12-10 21:13:06

End at: 2018-12-10 21:13:36

Local clock offset: 1.297 ms

Remote clock offset: -9.737 ms

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



Run 3: Statistics of TaoVA-100x

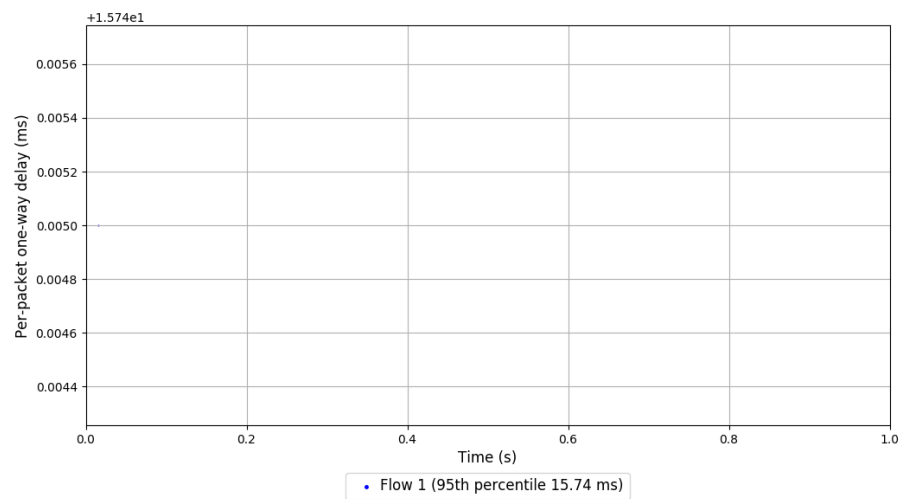
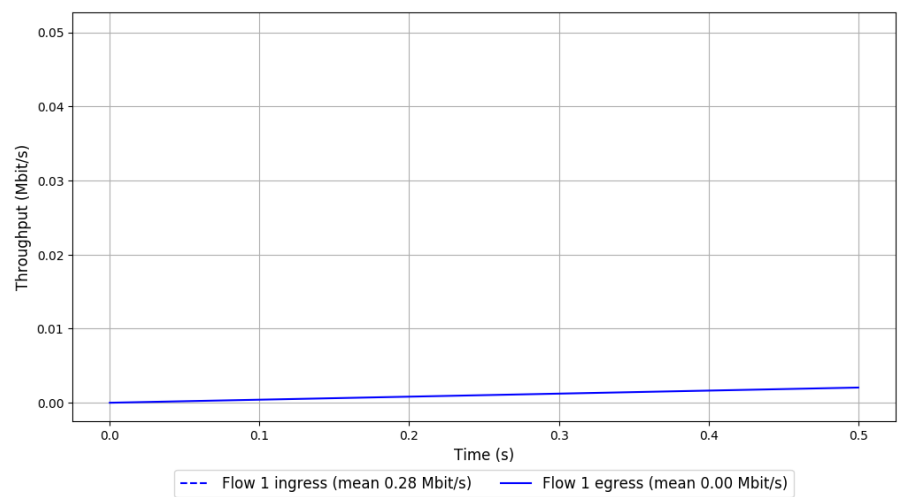
Start at: 2018-12-10 21:33:52

End at: 2018-12-10 21:34:22

Local clock offset: 1.052 ms

Remote clock offset: -6.849 ms

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

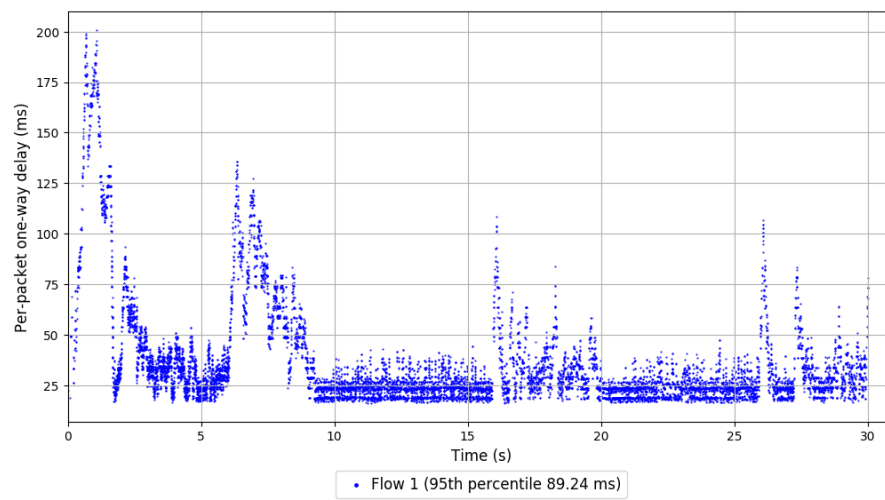
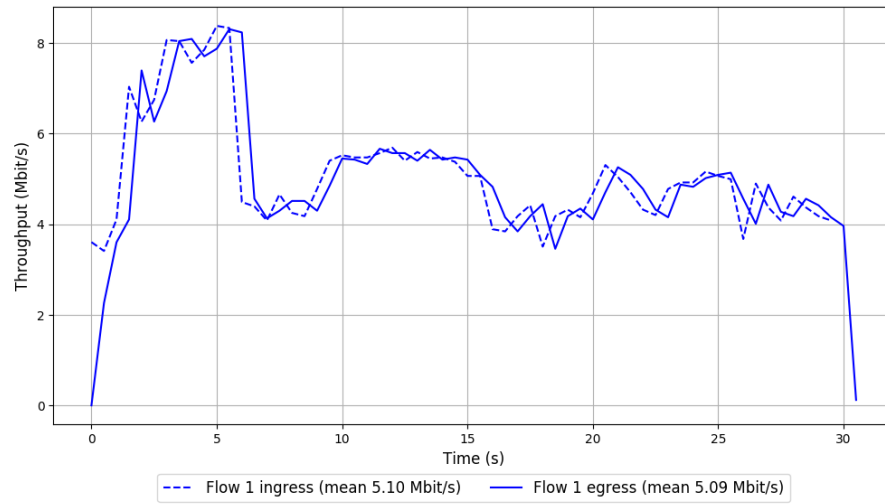


Run 1: Statistics of TCP Vegas

Start at: 2018-12-10 20:43:33
End at: 2018-12-10 20:44:04
Local clock offset: -2.716 ms
Remote clock offset: -9.502 ms

Below is generated by plot.py at 2018-12-10 21:39:38
Datalink statistics
-- Total of 1 flow:
Average throughput: 5.09 Mbit/s
95th percentile per-packet one-way delay: 89.238 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 5.09 Mbit/s
95th percentile per-packet one-way delay: 89.238 ms
Loss rate: 0.09%

Run 1: Report of TCP Vegas — Data Link

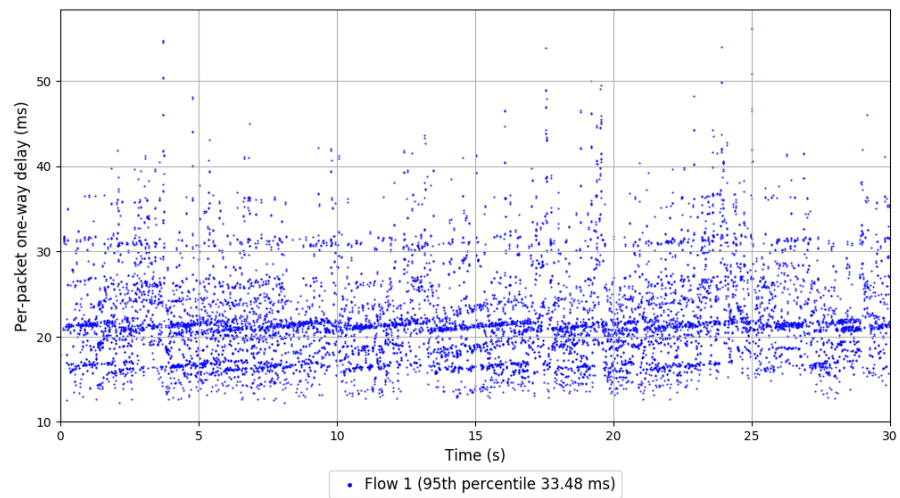
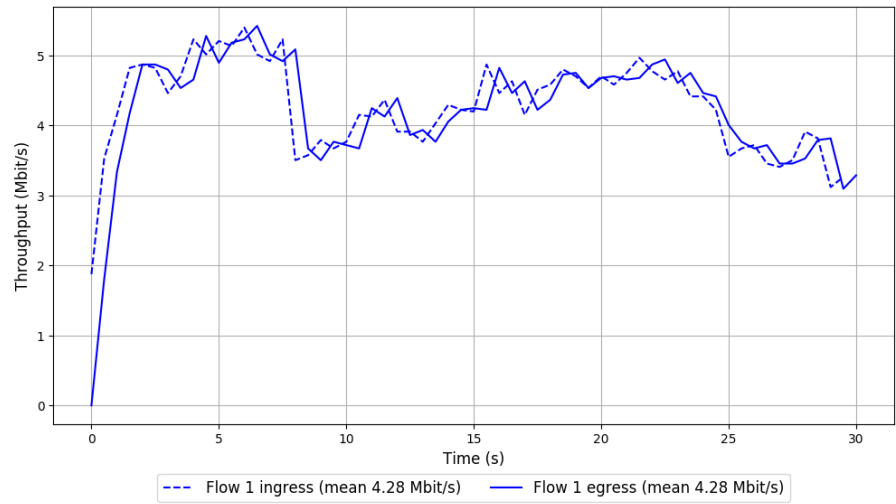


Run 2: Statistics of TCP Vegas

Start at: 2018-12-10 21:04:20
End at: 2018-12-10 21:04:50
Local clock offset: 0.139 ms
Remote clock offset: -10.484 ms

Below is generated by plot.py at 2018-12-10 21:39:38
Datalink statistics
-- Total of 1 flow:
Average throughput: 4.28 Mbit/s
95th percentile per-packet one-way delay: 33.483 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 4.28 Mbit/s
95th percentile per-packet one-way delay: 33.483 ms
Loss rate: 0.09%

Run 2: Report of TCP Vegas — Data Link

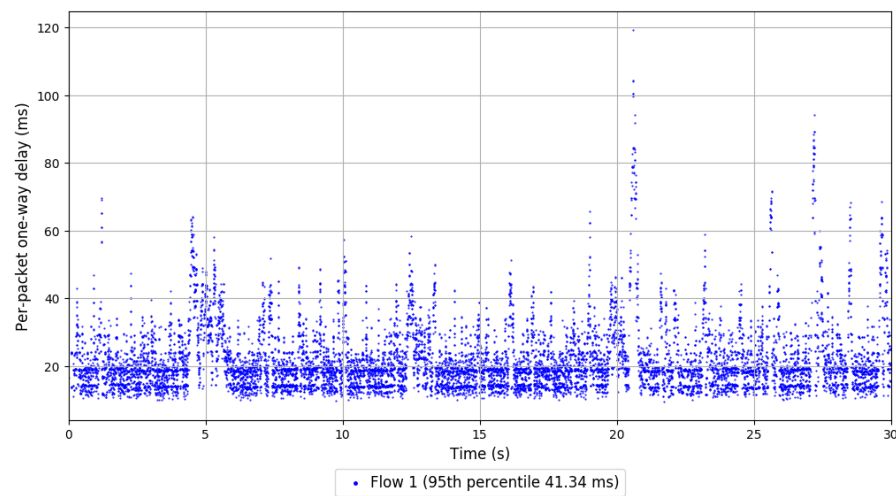
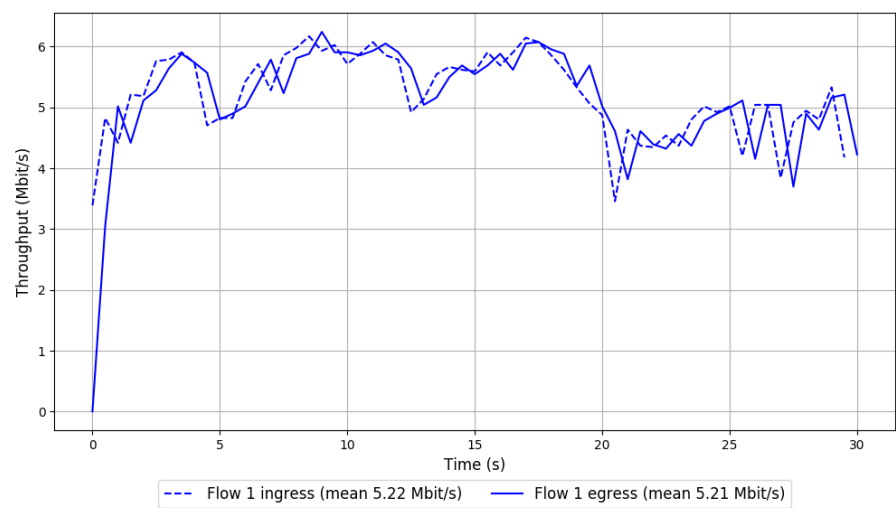


Run 3: Statistics of TCP Vegas

Start at: 2018-12-10 21:25:05
End at: 2018-12-10 21:25:35
Local clock offset: -1.5 ms
Remote clock offset: -9.445 ms

Below is generated by plot.py at 2018-12-10 21:39:38
Datalink statistics
-- Total of 1 flow:
Average throughput: 5.21 Mbit/s
95th percentile per-packet one-way delay: 41.335 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 5.21 Mbit/s
95th percentile per-packet one-way delay: 41.335 ms
Loss rate: 0.05%

Run 3: Report of TCP Vegas — Data Link

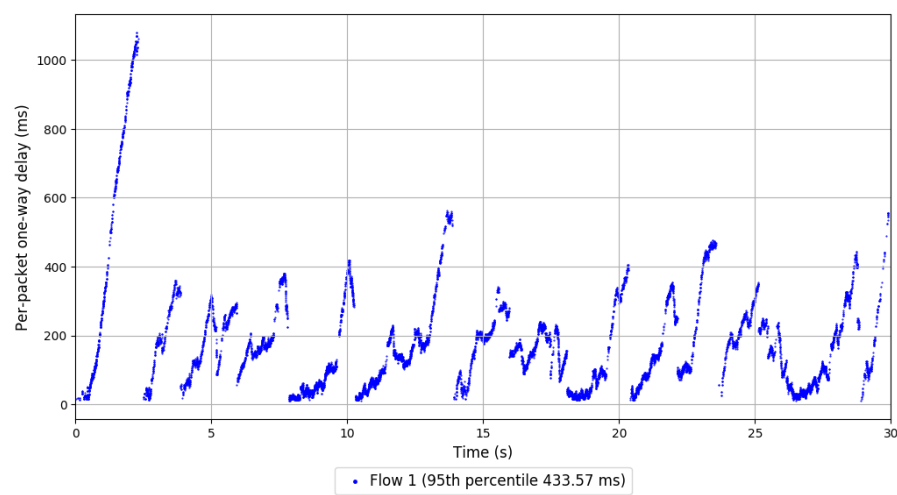
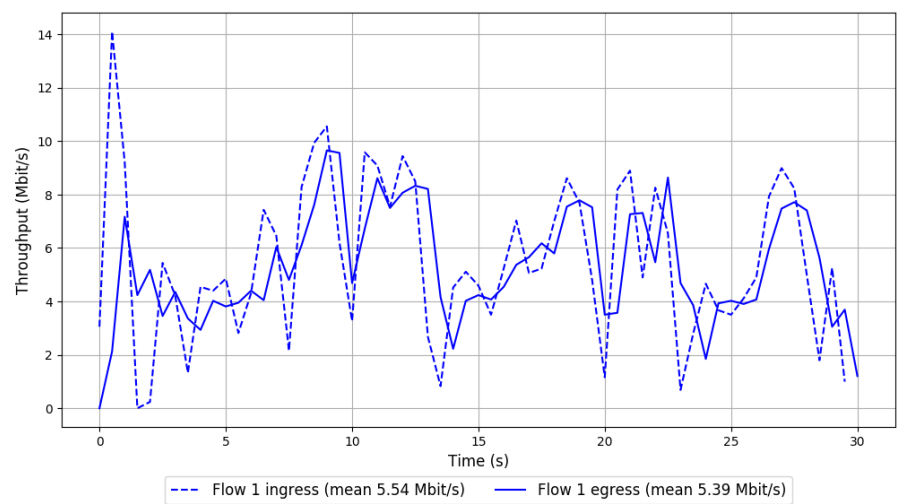


Run 1: Statistics of Verus

Start at: 2018-12-10 20:46:50
End at: 2018-12-10 20:47:20
Local clock offset: 3.069 ms
Remote clock offset: -9.796 ms

Below is generated by plot.py at 2018-12-10 21:39:39
Datalink statistics
-- Total of 1 flow:
Average throughput: 5.39 Mbit/s
95th percentile per-packet one-way delay: 433.566 ms
Loss rate: 2.12%
-- Flow 1:
Average throughput: 5.39 Mbit/s
95th percentile per-packet one-way delay: 433.566 ms
Loss rate: 2.12%

Run 1: Report of Verus — Data Link



Run 2: Statistics of Verus

Start at: 2018-12-10 21:07:37

End at: 2018-12-10 21:08:07

Local clock offset: -1.318 ms

Remote clock offset: -8.55 ms

Below is generated by plot.py at 2018-12-10 21:39:43

Datalink statistics

-- Total of 1 flow:

Average throughput: 7.53 Mbit/s

95th percentile per-packet one-way delay: 353.791 ms

Loss rate: 1.00%

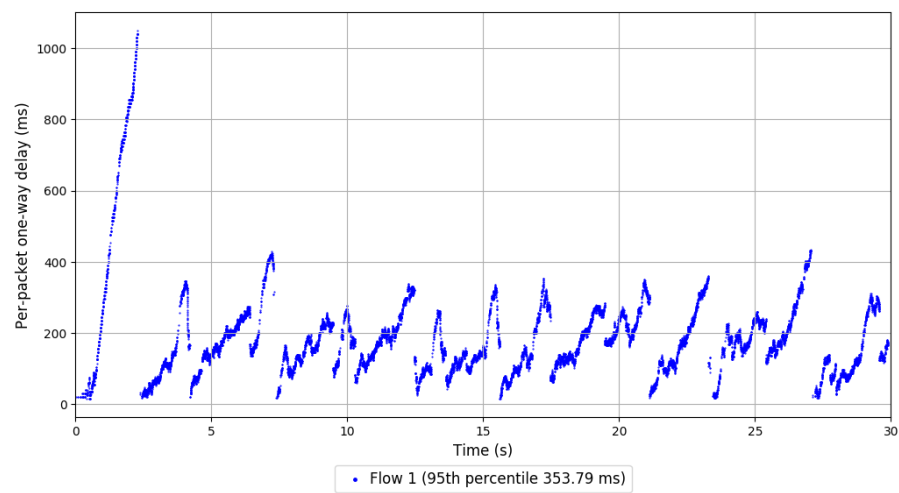
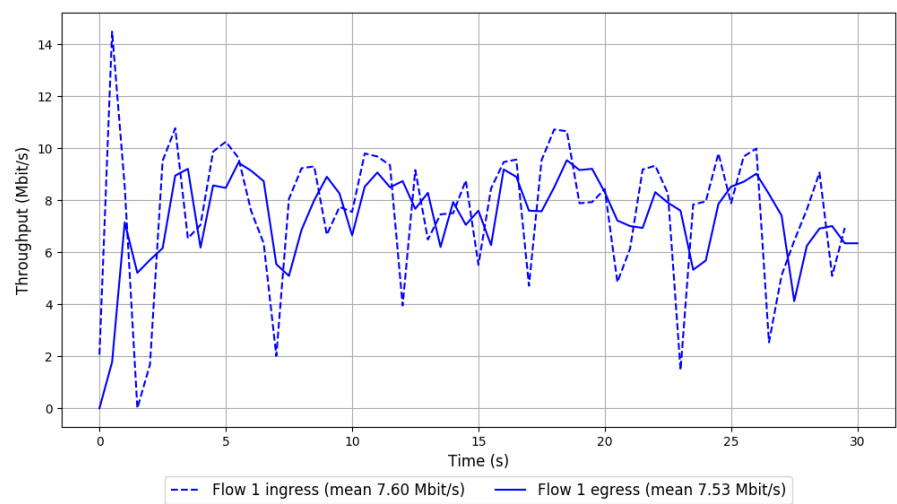
-- Flow 1:

Average throughput: 7.53 Mbit/s

95th percentile per-packet one-way delay: 353.791 ms

Loss rate: 1.00%

Run 2: Report of Verus — Data Link

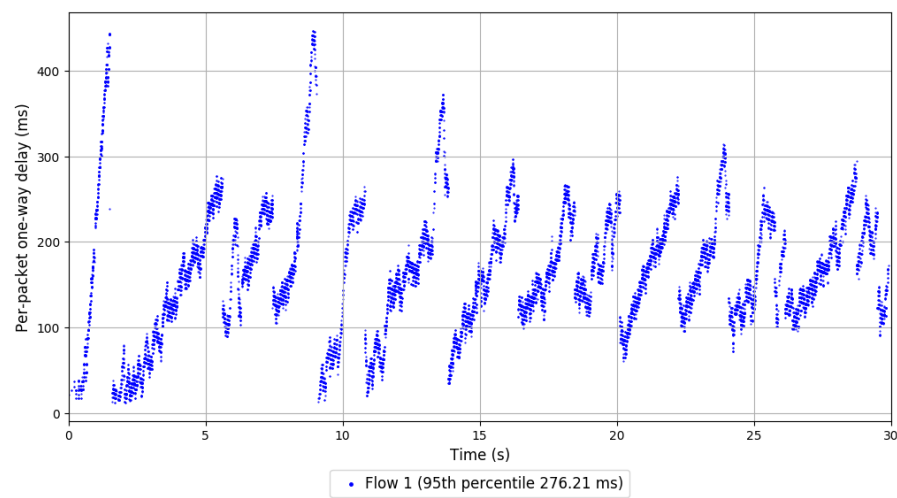
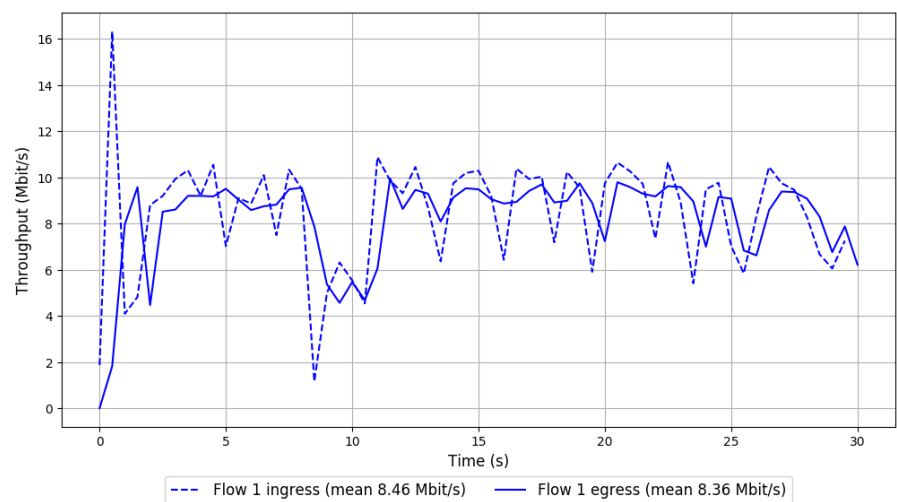


Run 3: Statistics of Verus

Start at: 2018-12-10 21:28:23
End at: 2018-12-10 21:28:53
Local clock offset: -1.12 ms
Remote clock offset: -7.651 ms

Below is generated by plot.py at 2018-12-10 21:39:45
Datalink statistics
-- Total of 1 flow:
Average throughput: 8.36 Mbit/s
95th percentile per-packet one-way delay: 276.206 ms
Loss rate: 1.17%
-- Flow 1:
Average throughput: 8.36 Mbit/s
95th percentile per-packet one-way delay: 276.206 ms
Loss rate: 1.17%

Run 3: Report of Verus — Data Link

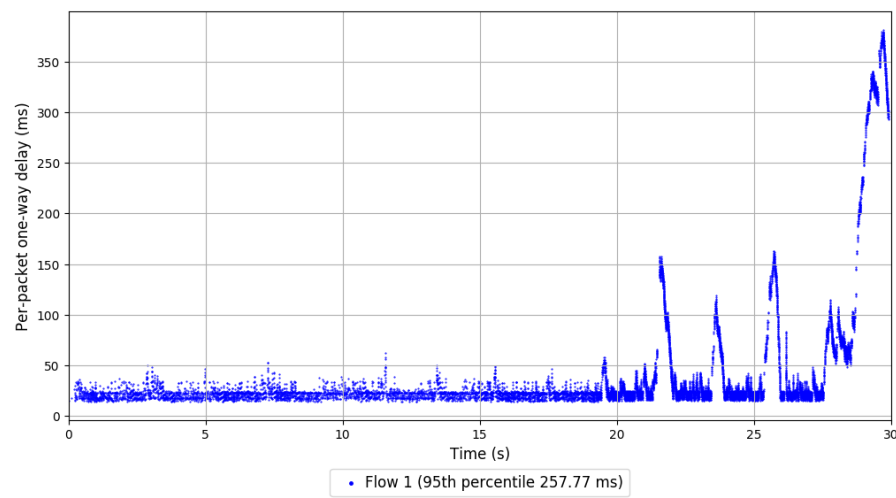
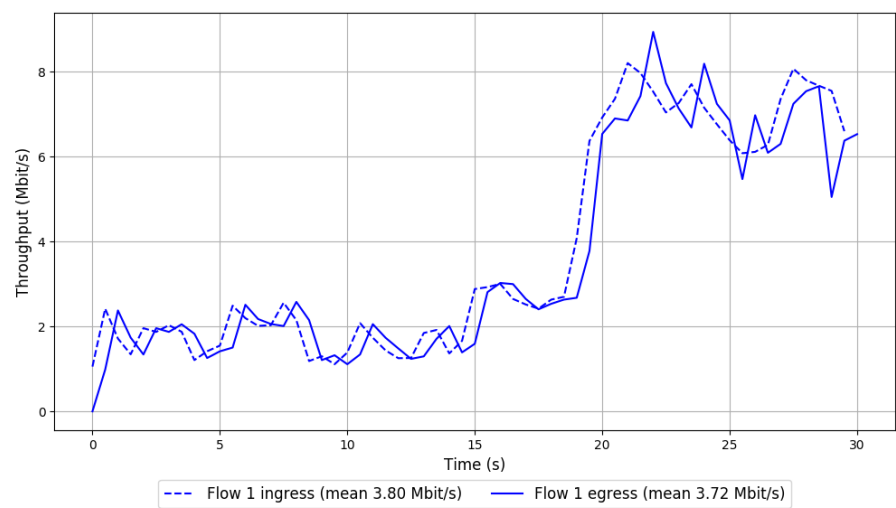


Run 1: Statistics of PCC-Vivace

Start at: 2018-12-10 20:37:01
End at: 2018-12-10 20:37:31
Local clock offset: 1.051 ms
Remote clock offset: -10.242 ms

Below is generated by plot.py at 2018-12-10 21:39:45
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.72 Mbit/s
95th percentile per-packet one-way delay: 257.773 ms
Loss rate: 2.15%
-- Flow 1:
Average throughput: 3.72 Mbit/s
95th percentile per-packet one-way delay: 257.773 ms
Loss rate: 2.15%

Run 1: Report of PCC-Vivace — Data Link



Run 2: Statistics of PCC-Vivace

Start at: 2018-12-10 20:57:48

End at: 2018-12-10 20:58:18

Local clock offset: 1.532 ms

Remote clock offset: -9.101 ms

Below is generated by plot.py at 2018-12-10 21:39:45

Datalink statistics

-- Total of 1 flow:

Average throughput: 5.46 Mbit/s

95th percentile per-packet one-way delay: 968.185 ms

Loss rate: 1.73%

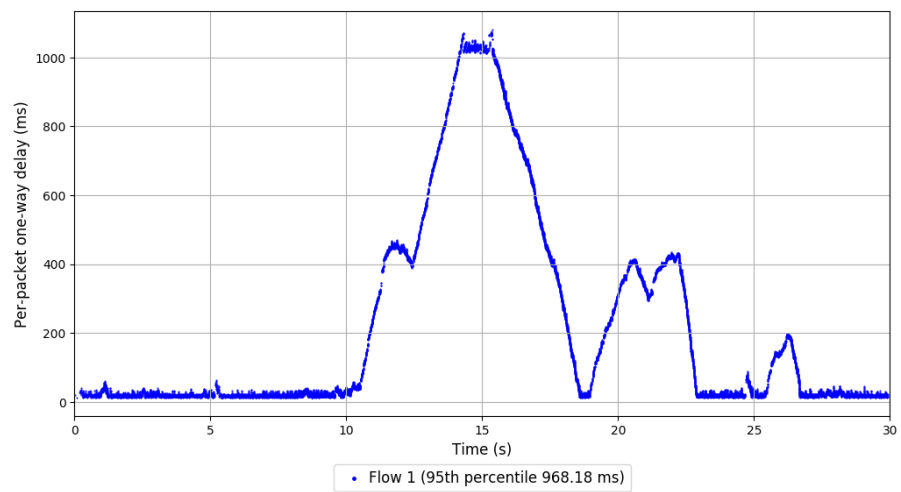
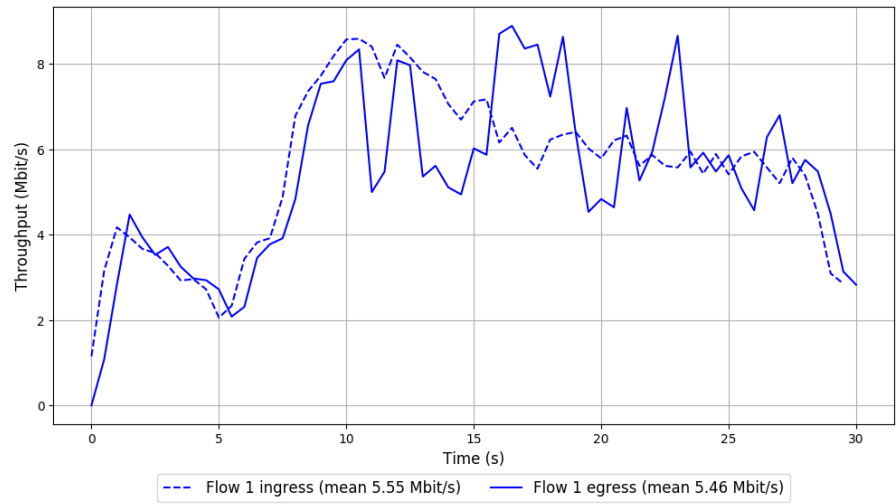
-- Flow 1:

Average throughput: 5.46 Mbit/s

95th percentile per-packet one-way delay: 968.185 ms

Loss rate: 1.73%

Run 2: Report of PCC-Vivace — Data Link



Run 3: Statistics of PCC-Vivace

Start at: 2018-12-10 21:18:33

End at: 2018-12-10 21:19:03

Local clock offset: 0.074 ms

Remote clock offset: -7.907 ms

Below is generated by plot.py at 2018-12-10 21:39:45

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.55 Mbit/s

95th percentile per-packet one-way delay: 28.412 ms

Loss rate: 0.05%

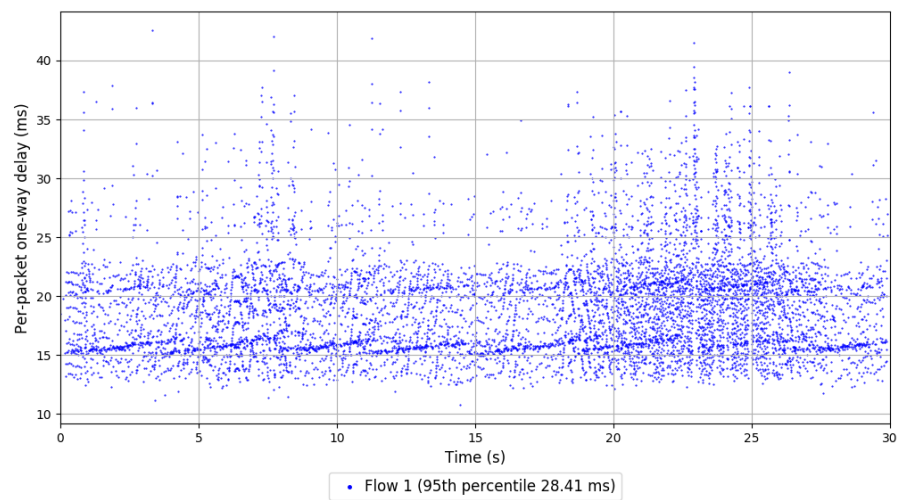
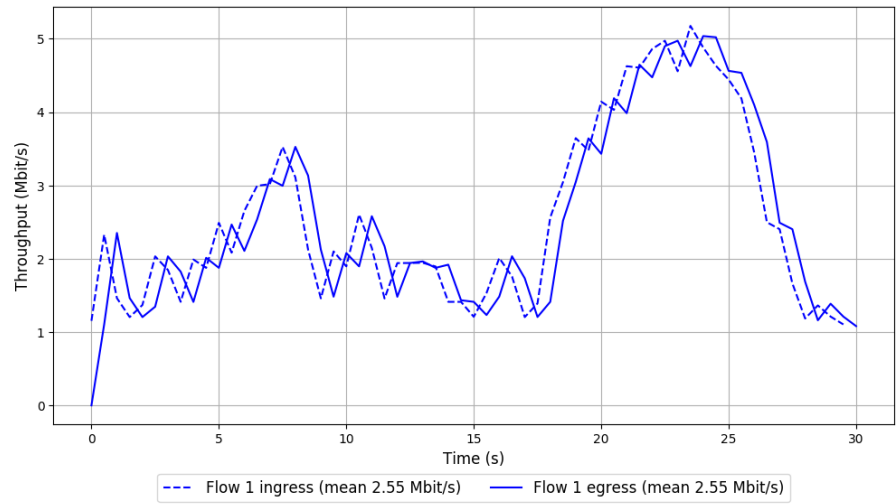
-- Flow 1:

Average throughput: 2.55 Mbit/s

95th percentile per-packet one-way delay: 28.412 ms

Loss rate: 0.05%

Run 3: Report of PCC-Vivace — Data Link

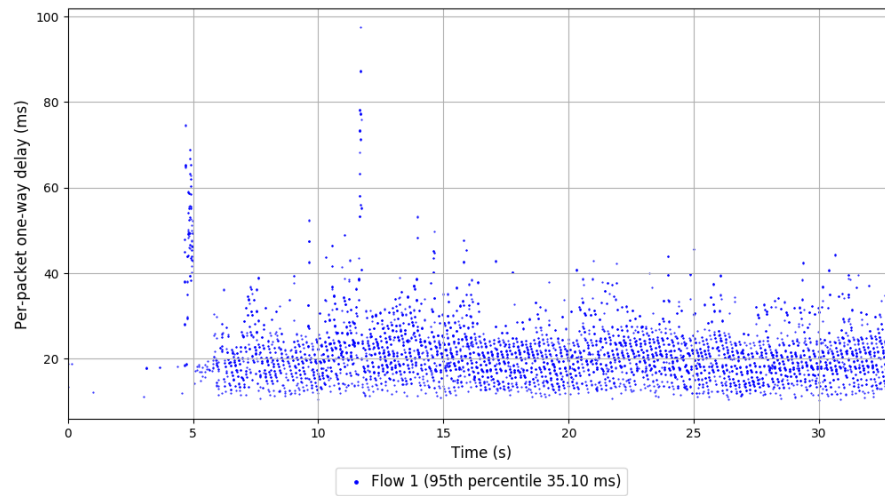
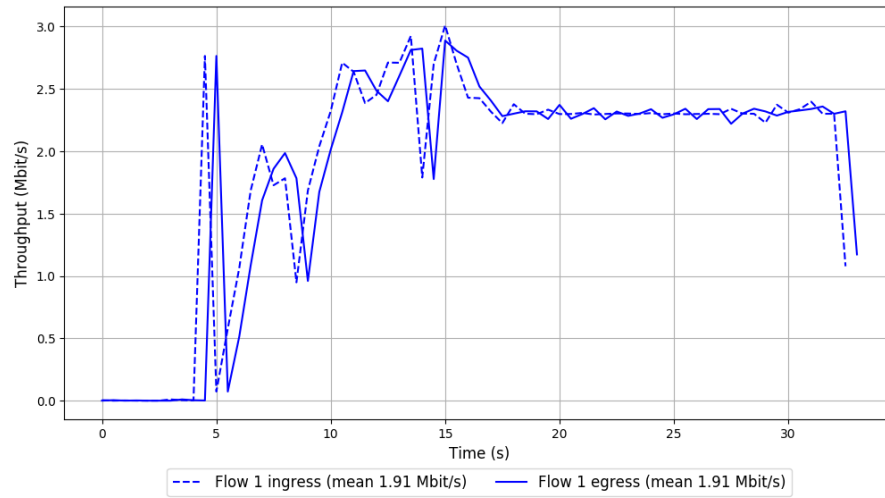


```
Run 1: Statistics of WebRTC media

Start at: 2018-12-10 20:53:27
End at: 2018-12-10 20:53:57
Local clock offset: 2.032 ms
Remote clock offset: -8.484 ms

# Below is generated by plot.py at 2018-12-10 21:39:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.91 Mbit/s
95th percentile per-packet one-way delay: 35.104 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 1.91 Mbit/s
95th percentile per-packet one-way delay: 35.104 ms
Loss rate: 0.03%
```

Run 1: Report of WebRTC media — Data Link

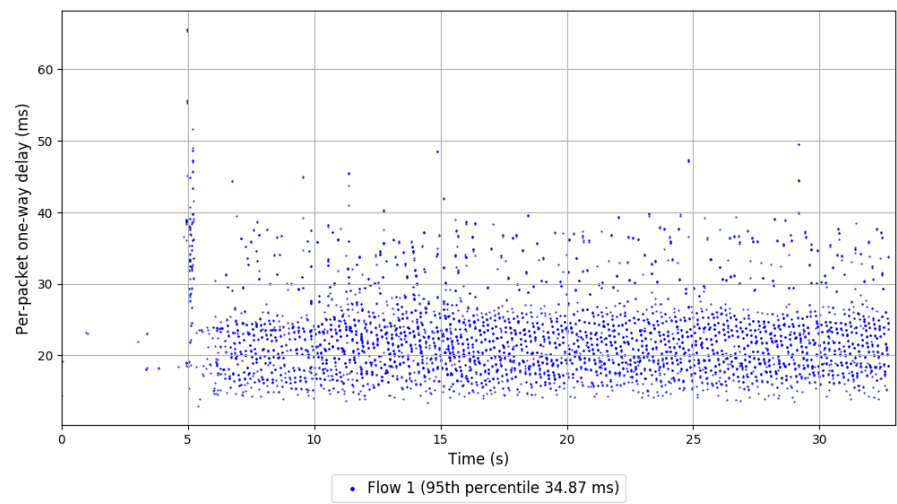
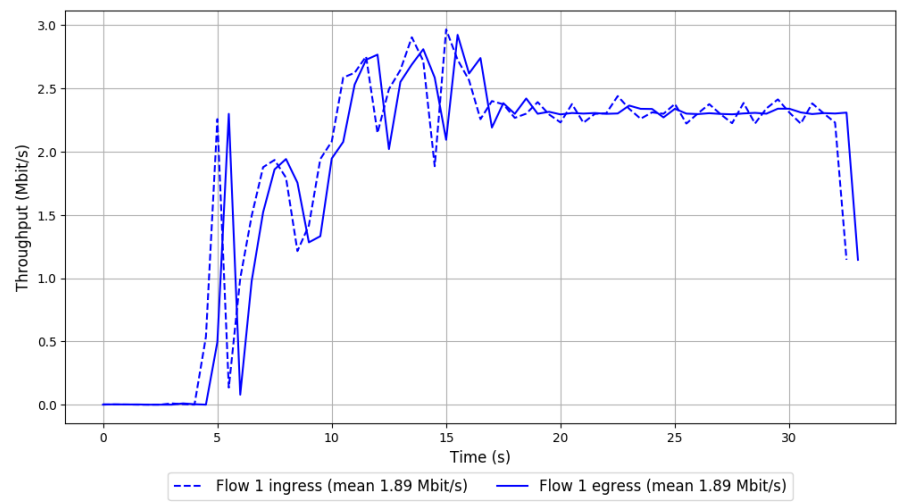


Run 2: Statistics of WebRTC media

Start at: 2018-12-10 21:14:11
End at: 2018-12-10 21:14:41
Local clock offset: -2.005 ms
Remote clock offset: -9.151 ms

Below is generated by plot.py at 2018-12-10 21:39:45
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.89 Mbit/s
95th percentile per-packet one-way delay: 34.873 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 1.89 Mbit/s
95th percentile per-packet one-way delay: 34.873 ms
Loss rate: 0.06%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2018-12-10 21:34:57
End at: 2018-12-10 21:35:27
Local clock offset: 1.856 ms
Remote clock offset: -7.799 ms

Below is generated by plot.py at 2018-12-10 21:39:45
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 32.977 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 32.977 ms
Loss rate: 0.06%

Run 3: Report of WebRTC media — Data Link

