

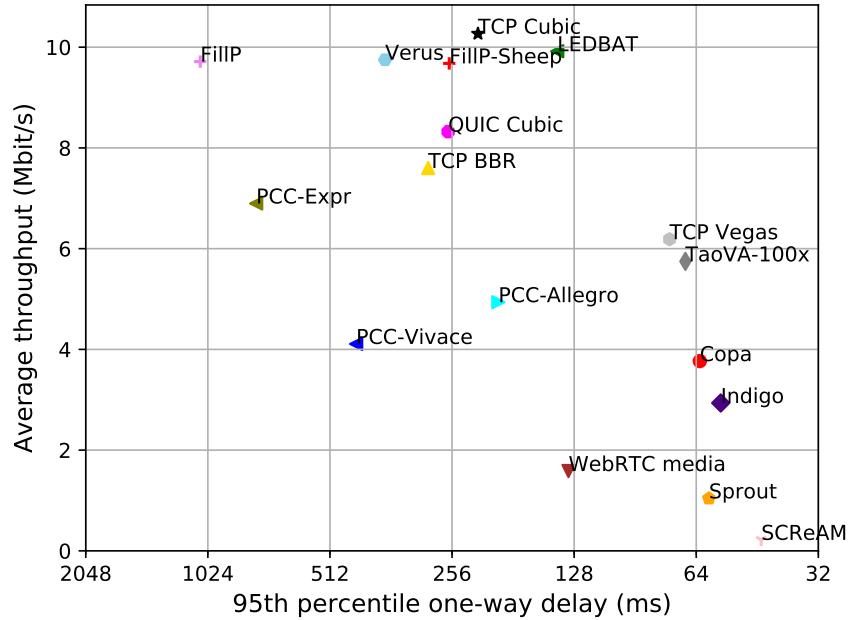
Pantheon Report

Generated at 2018-08-09 00:47:38 (UTC).
Data path: AWS India 1 Ethernet (*local*) → India ppp0 ppp0 (*remote*).
Repeated the test of 17 congestion control schemes 3 times.
Each test lasted for 30 seconds running 1 flow.
Increased UDP receive buffer to 16 MB (default) and 32 MB (max).
NTP offsets were measured against nets.org.sg and have been applied to correct the timestamps in logs.

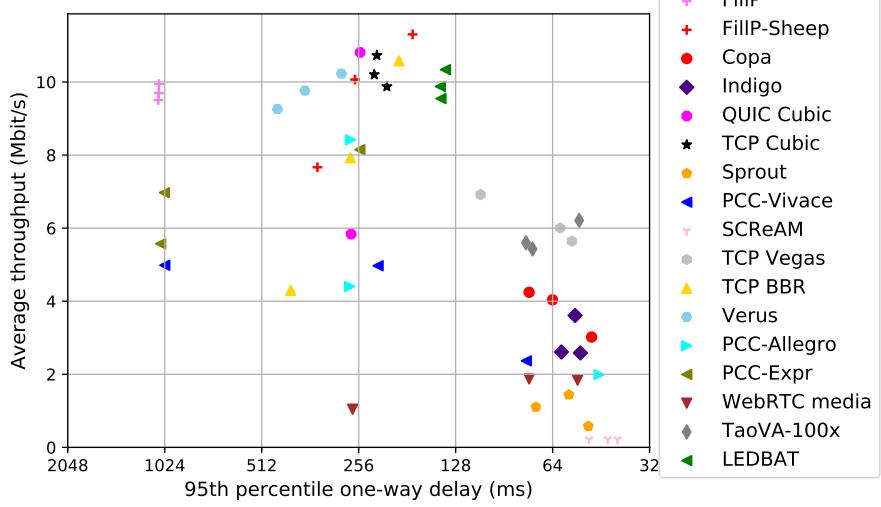
Git summary:

```
branch: master @ 7772df3413f4b07ba0096dfdd8e9d4c6dca623e3
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179aab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ 6f038ed31259d366f9840f65b82cbe8f464b1b39
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-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
  M src/ScreamClient
  M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
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 ppp0, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from AWS India 1 to India ppp0, 3 runs of 30s each per scheme



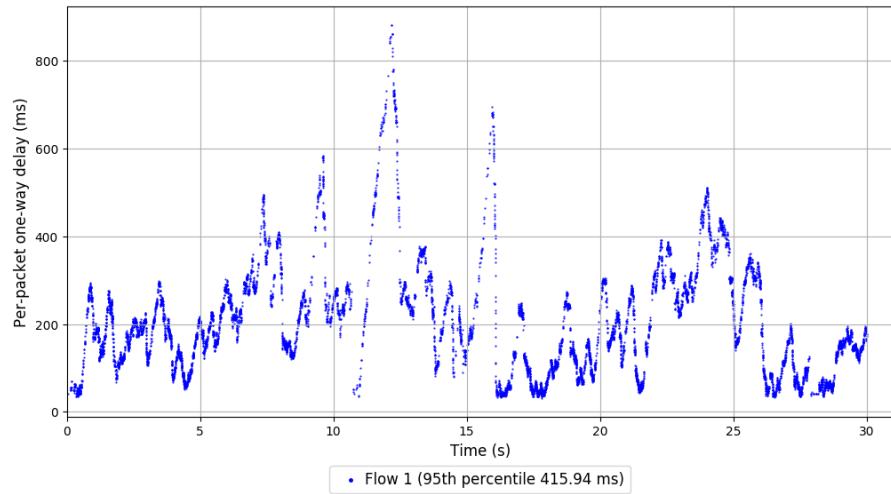
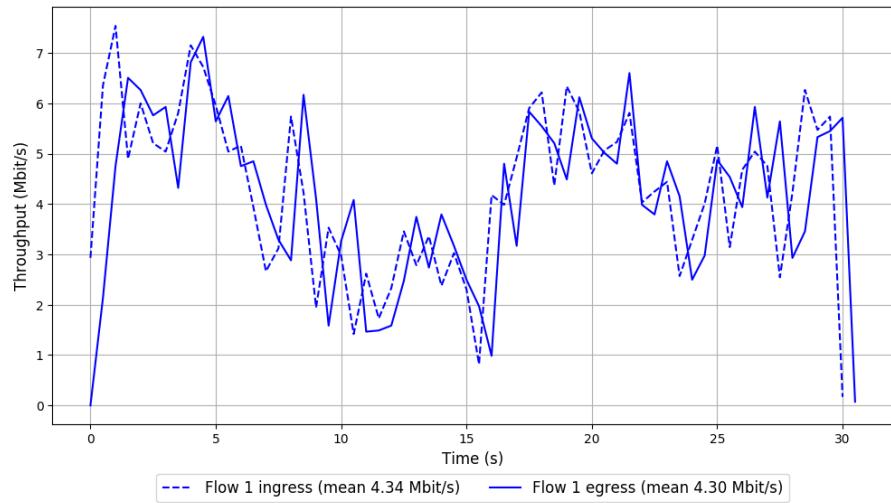
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	7.60	293.16	0.72
Copa	3	3.77	62.72	0.12
TCP Cubic	3	10.27	221.00	0.44
FillP	3	9.71	1069.04	44.75
FillP-Sheep	3	9.68	260.11	0.71
Indigo	3	2.94	55.69	0.11
LEDBAT	3	9.92	140.91	0.37
PCC-Allegro	3	4.94	196.79	0.17
PCC-Expr	3	6.90	778.47	8.19
QUIC Cubic	2	8.32	261.72	0.79
SCReAM	3	0.22	44.26	0.13
Sprout	3	1.04	59.56	0.13
TaoVA-100x	3	5.75	68.08	0.13
TCP Vegas	3	6.19	74.48	0.14
Verus	3	9.75	374.42	0.73
PCC-Vivace	3	4.11	441.33	1.33
WebRTC media	3	1.58	132.19	0.14

Run 1: Statistics of TCP BBR

```
Start at: 2018-08-09 00:04:46
End at: 2018-08-09 00:05:16
Local clock offset: -3.882 ms
Remote clock offset: -16.19 ms

# Below is generated by plot.py at 2018-08-09 00:46:41
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.30 Mbit/s
95th percentile per-packet one-way delay: 415.941 ms
Loss rate: 1.08%
-- Flow 1:
Average throughput: 4.30 Mbit/s
95th percentile per-packet one-way delay: 415.941 ms
Loss rate: 1.08%
```

Run 1: Report of TCP BBR — Data Link

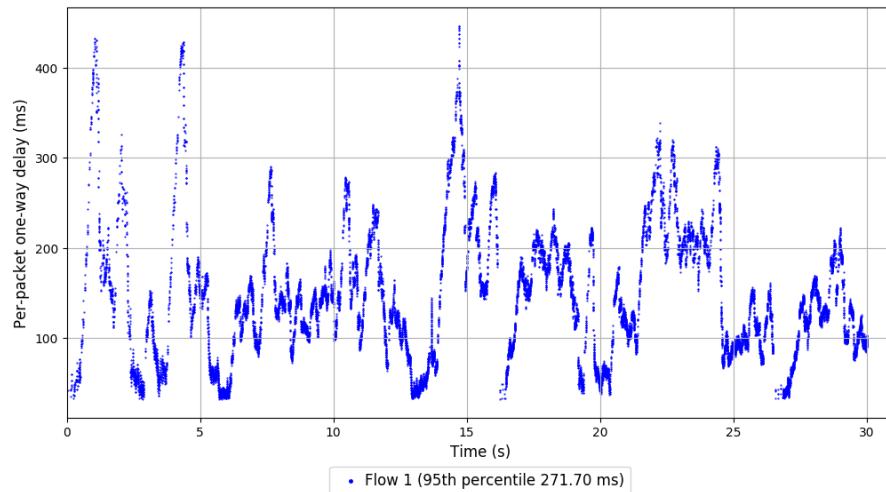
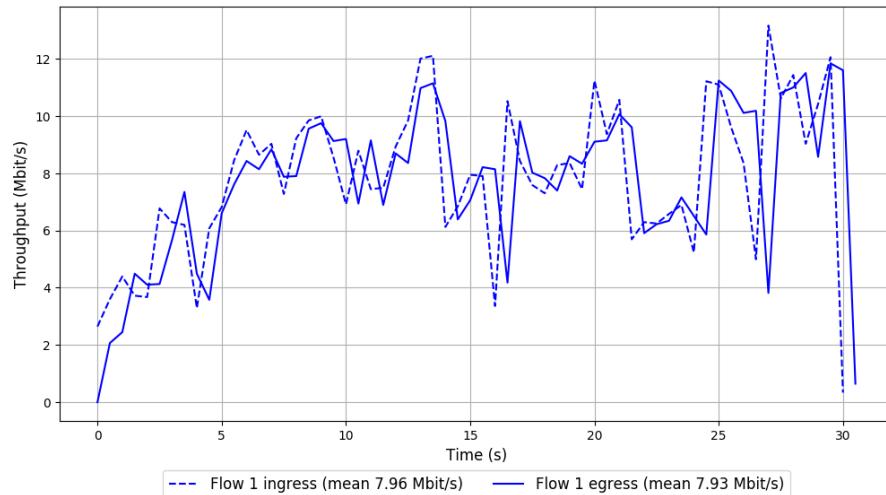


Run 2: Statistics of TCP BBR

```
Start at: 2018-08-09 00:23:11
End at: 2018-08-09 00:23:41
Local clock offset: -6.29 ms
Remote clock offset: -19.757 ms

# Below is generated by plot.py at 2018-08-09 00:46:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.93 Mbit/s
95th percentile per-packet one-way delay: 271.700 ms
Loss rate: 0.55%
-- Flow 1:
Average throughput: 7.93 Mbit/s
95th percentile per-packet one-way delay: 271.700 ms
Loss rate: 0.55%
```

Run 2: Report of TCP BBR — Data Link

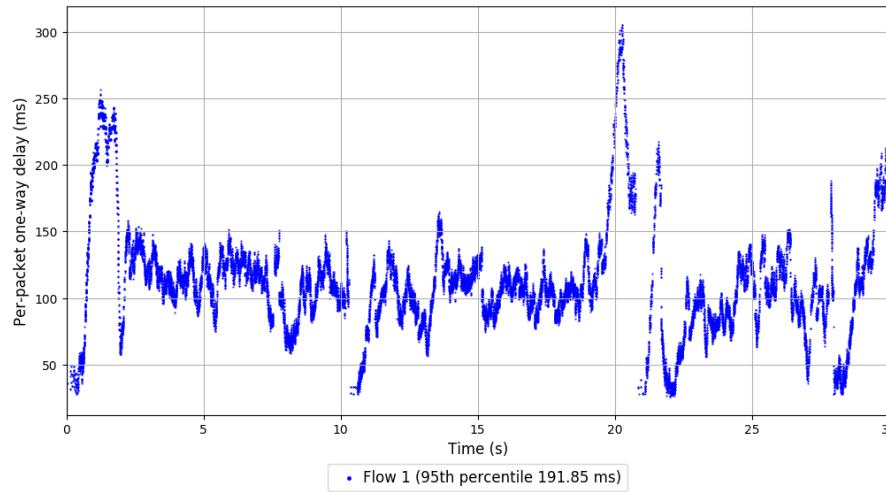
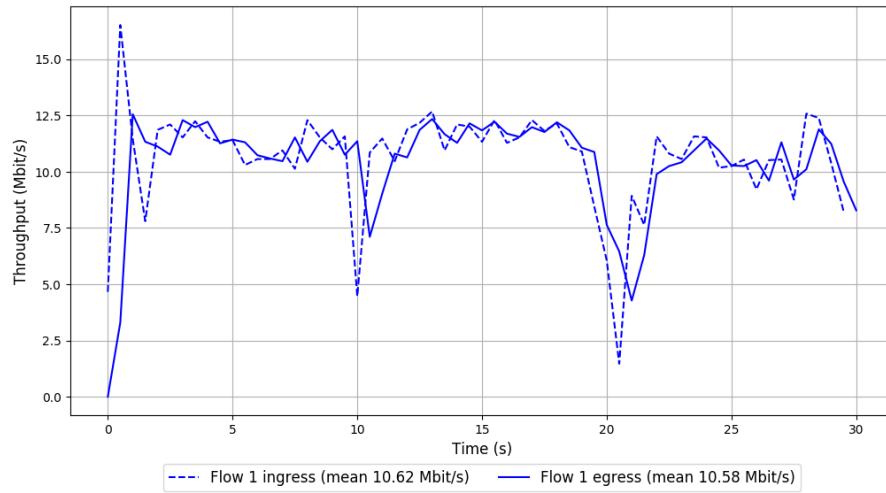


Run 3: Statistics of TCP BBR

```
Start at: 2018-08-09 00:41:38
End at: 2018-08-09 00:42:08
Local clock offset: -1.086 ms
Remote clock offset: -21.475 ms

# Below is generated by plot.py at 2018-08-09 00:46:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.58 Mbit/s
95th percentile per-packet one-way delay: 191.853 ms
Loss rate: 0.53%
-- Flow 1:
Average throughput: 10.58 Mbit/s
95th percentile per-packet one-way delay: 191.853 ms
Loss rate: 0.53%
```

Run 3: Report of TCP BBR — Data Link

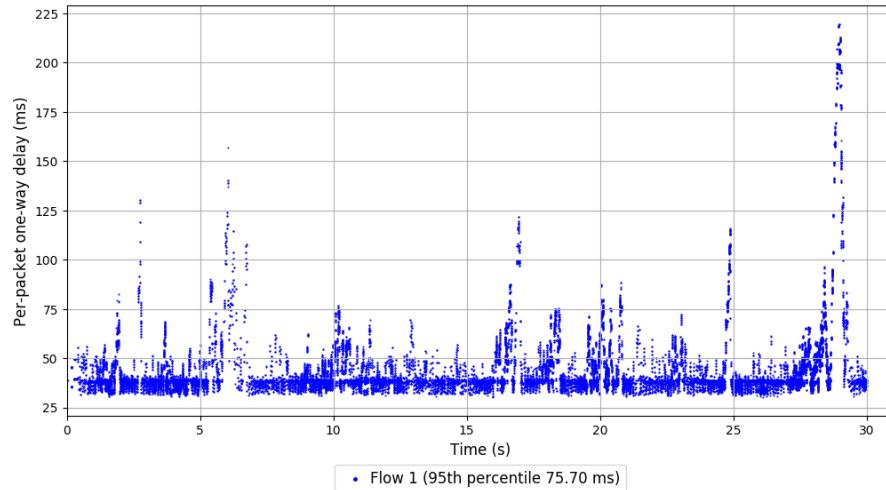
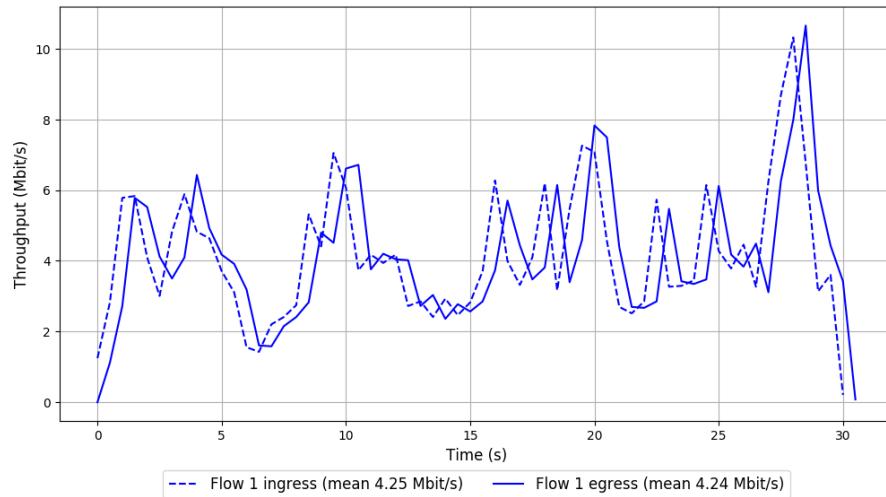


Run 1: Statistics of Copa

```
Start at: 2018-08-09 00:02:37
End at: 2018-08-09 00:03:07
Local clock offset: -2.616 ms
Remote clock offset: -15.2 ms

# Below is generated by plot.py at 2018-08-09 00:46:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.24 Mbit/s
95th percentile per-packet one-way delay: 75.700 ms
Loss rate: 0.20%
-- Flow 1:
Average throughput: 4.24 Mbit/s
95th percentile per-packet one-way delay: 75.700 ms
Loss rate: 0.20%
```

Run 1: Report of Copa — Data Link

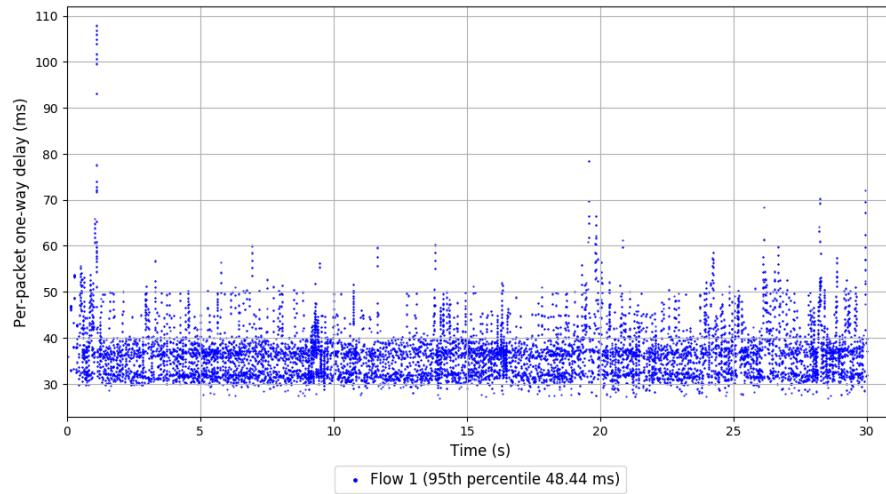
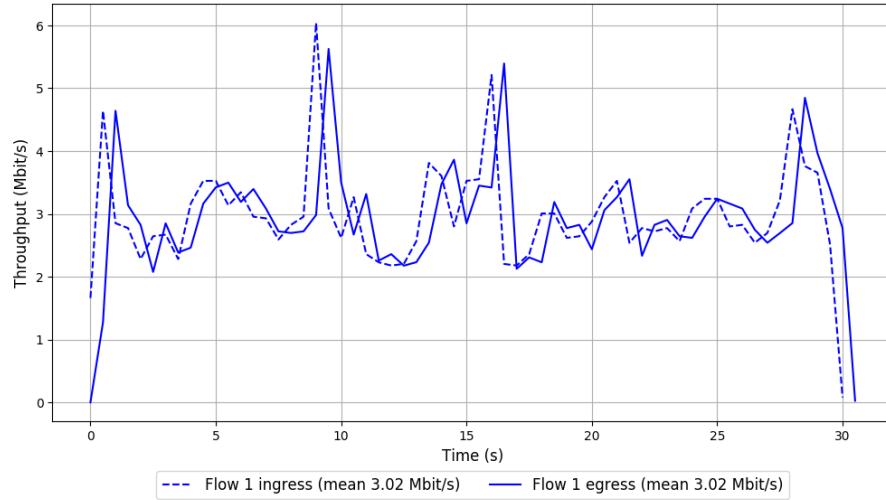


Run 2: Statistics of Copa

```
Start at: 2018-08-09 00:21:02
End at: 2018-08-09 00:21:32
Local clock offset: -1.746 ms
Remote clock offset: -19.086 ms

# Below is generated by plot.py at 2018-08-09 00:46:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.02 Mbit/s
95th percentile per-packet one-way delay: 48.438 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 3.02 Mbit/s
95th percentile per-packet one-way delay: 48.438 ms
Loss rate: 0.09%
```

Run 2: Report of Copa — Data Link

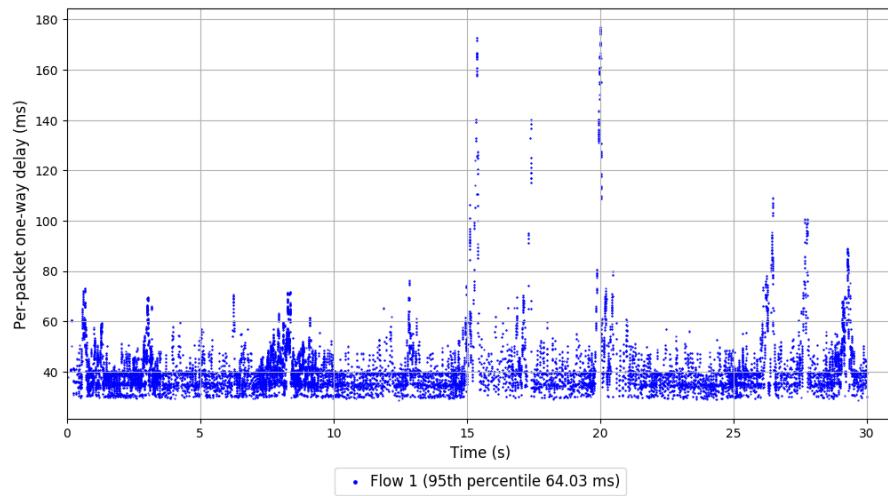
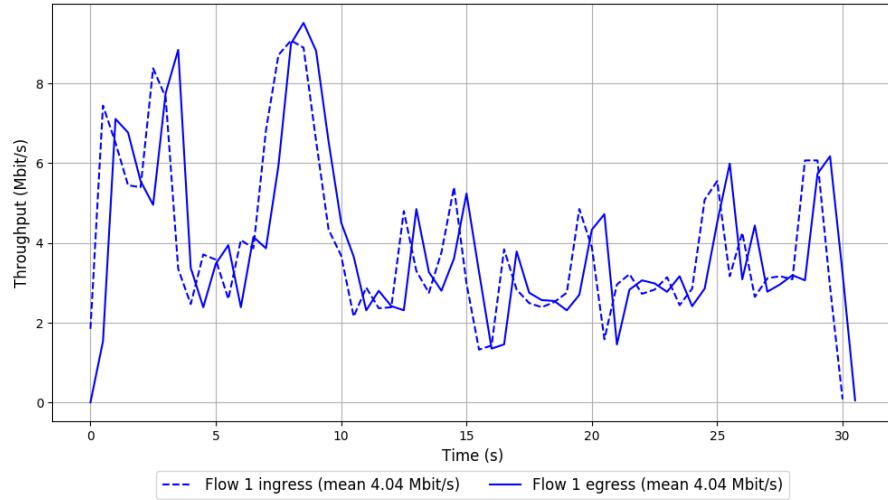


Run 3: Statistics of Copa

```
Start at: 2018-08-09 00:39:28
End at: 2018-08-09 00:39:58
Local clock offset: -3.128 ms
Remote clock offset: -20.209 ms

# Below is generated by plot.py at 2018-08-09 00:46:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.04 Mbit/s
95th percentile per-packet one-way delay: 64.029 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 4.04 Mbit/s
95th percentile per-packet one-way delay: 64.029 ms
Loss rate: 0.07%
```

Run 3: Report of Copa — Data Link

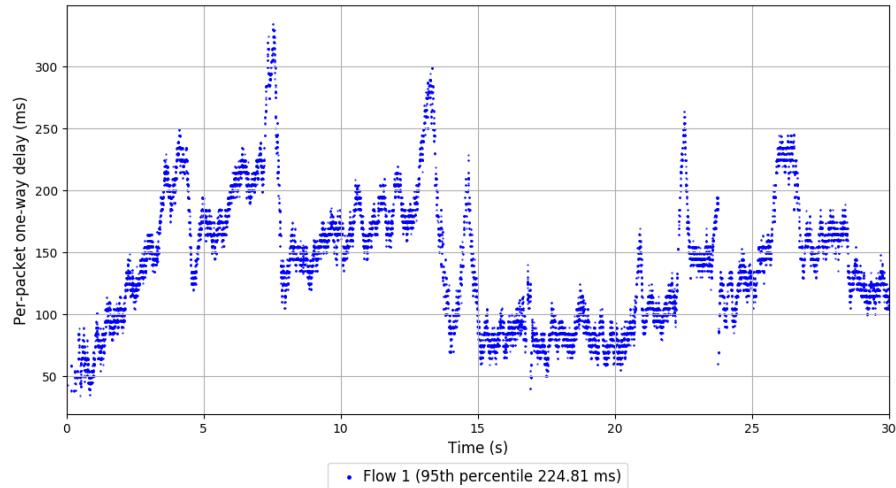
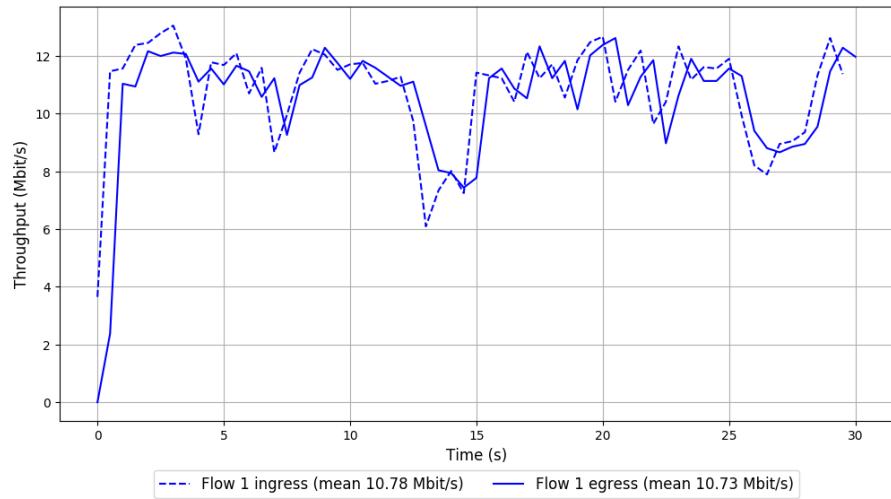


```
Run 1: Statistics of TCP Cubic
```

```
Start at: 2018-08-09 00:07:00
End at: 2018-08-09 00:07:30
Local clock offset: -5.037 ms
Remote clock offset: -15.674 ms

# Below is generated by plot.py at 2018-08-09 00:46:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.73 Mbit/s
95th percentile per-packet one-way delay: 224.806 ms
Loss rate: 0.57%
-- Flow 1:
Average throughput: 10.73 Mbit/s
95th percentile per-packet one-way delay: 224.806 ms
Loss rate: 0.57%
```

Run 1: Report of TCP Cubic — Data Link

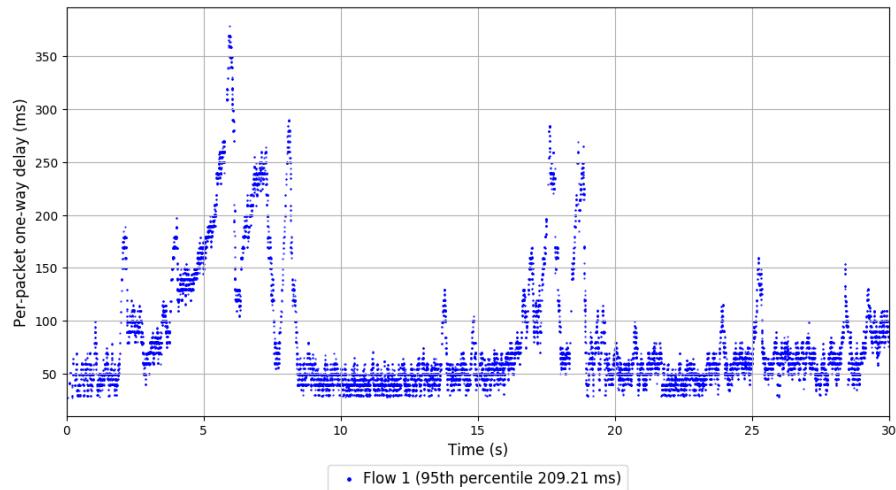
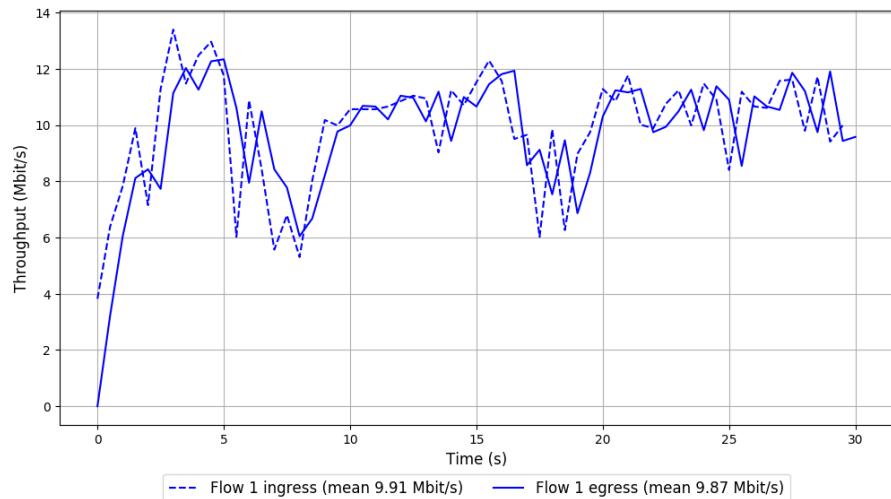


Run 2: Statistics of TCP Cubic

```
Start at: 2018-08-09 00:25:21
End at: 2018-08-09 00:25:51
Local clock offset: -1.162 ms
Remote clock offset: -19.755 ms

# Below is generated by plot.py at 2018-08-09 00:46:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.87 Mbit/s
95th percentile per-packet one-way delay: 209.207 ms
Loss rate: 0.46%
-- Flow 1:
Average throughput: 9.87 Mbit/s
95th percentile per-packet one-way delay: 209.207 ms
Loss rate: 0.46%
```

Run 2: Report of TCP Cubic — Data Link

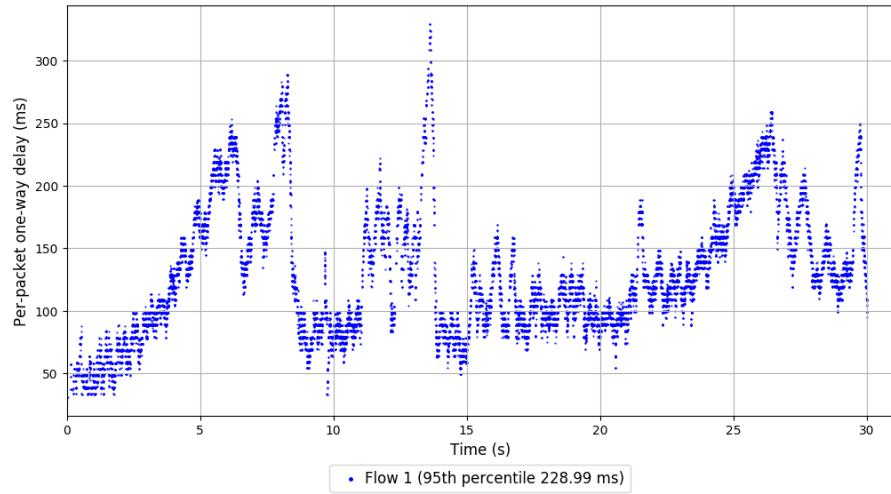
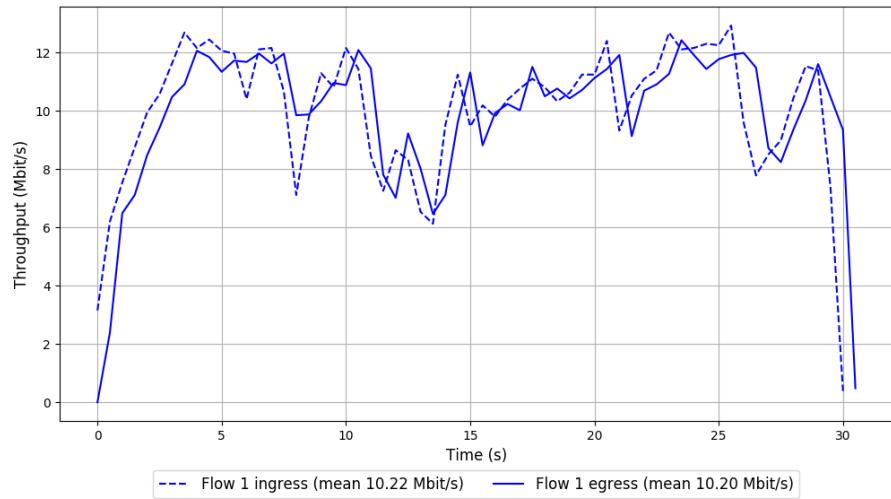


Run 3: Statistics of TCP Cubic

```
Start at: 2018-08-09 00:43:48
End at: 2018-08-09 00:44:18
Local clock offset: -7.01 ms
Remote clock offset: -22.431 ms

# Below is generated by plot.py at 2018-08-09 00:46:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.20 Mbit/s
95th percentile per-packet one-way delay: 228.990 ms
Loss rate: 0.29%
-- Flow 1:
Average throughput: 10.20 Mbit/s
95th percentile per-packet one-way delay: 228.990 ms
Loss rate: 0.29%
```

Run 3: Report of TCP Cubic — Data Link

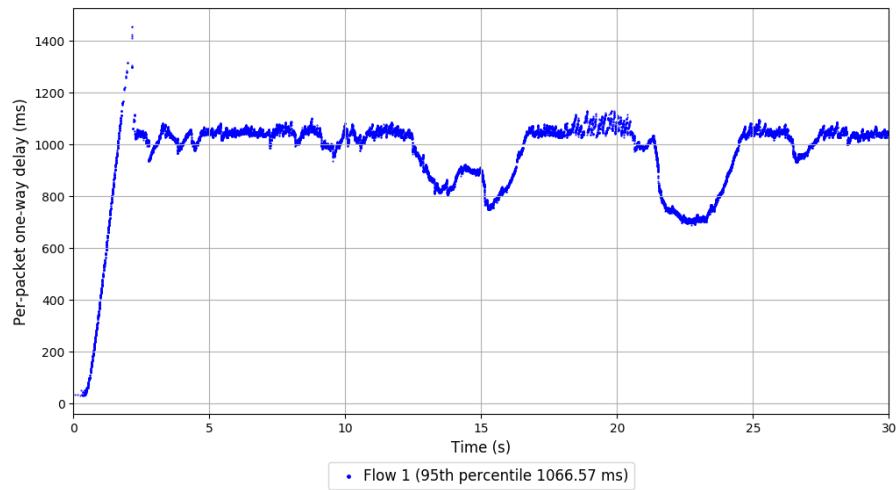
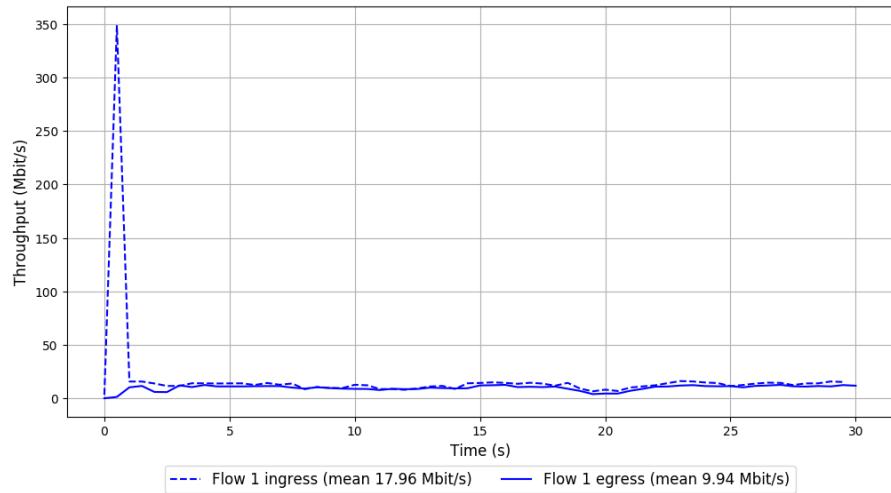


```
Run 1: Statistics of FillP

Start at: 2018-08-09 00:09:10
End at: 2018-08-09 00:09:40
Local clock offset: -2.908 ms
Remote clock offset: -16.149 ms

# Below is generated by plot.py at 2018-08-09 00:47:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.94 Mbit/s
95th percentile per-packet one-way delay: 1066.570 ms
Loss rate: 44.69%
-- Flow 1:
Average throughput: 9.94 Mbit/s
95th percentile per-packet one-way delay: 1066.570 ms
Loss rate: 44.69%
```

Run 1: Report of FillP — Data Link

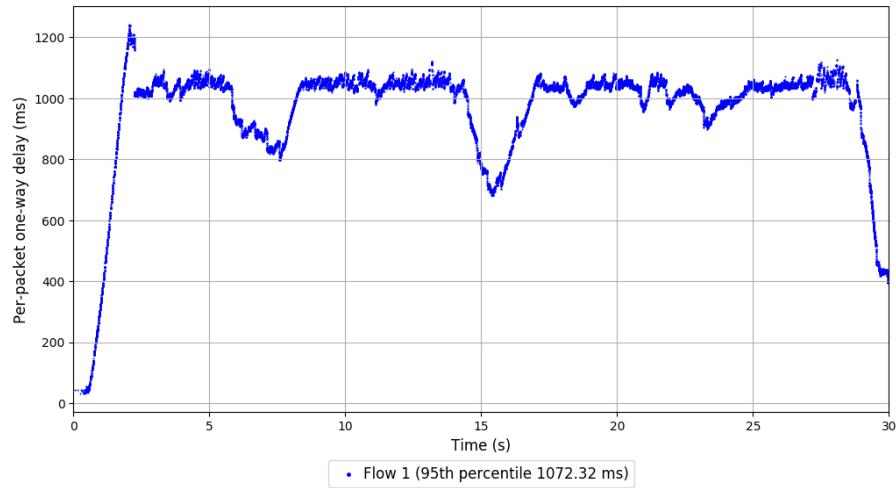
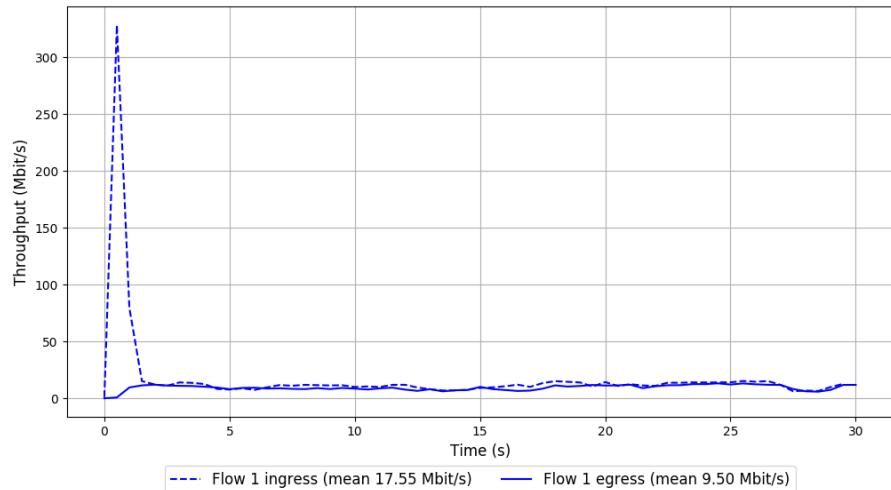


Run 2: Statistics of FillP

```
Start at: 2018-08-09 00:27:36
End at: 2018-08-09 00:28:06
Local clock offset: -3.592 ms
Remote clock offset: -19.081 ms

# Below is generated by plot.py at 2018-08-09 00:47:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.50 Mbit/s
95th percentile per-packet one-way delay: 1072.315 ms
Loss rate: 45.90%
-- Flow 1:
Average throughput: 9.50 Mbit/s
95th percentile per-packet one-way delay: 1072.315 ms
Loss rate: 45.90%
```

Run 2: Report of FillP — Data Link

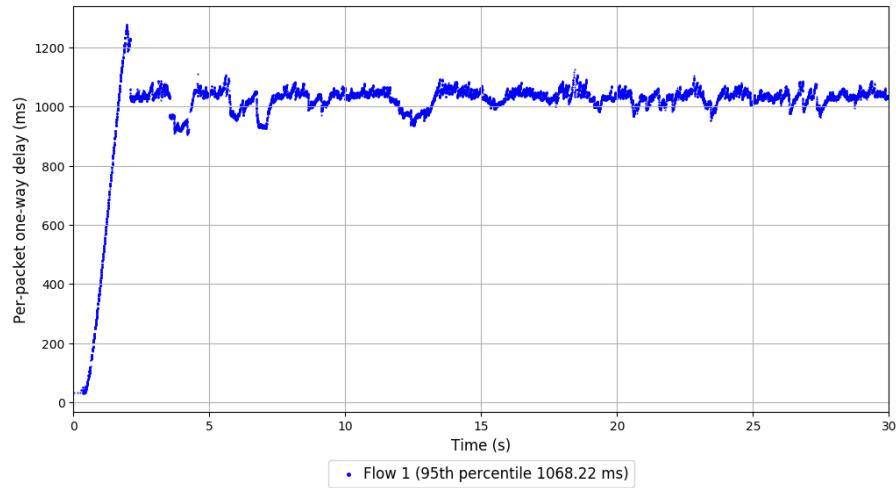
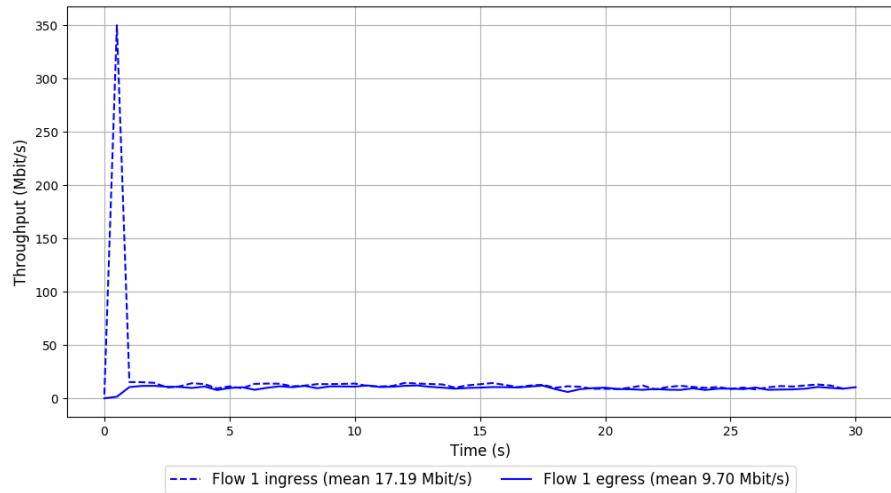


Run 3: Statistics of FillP

```
Start at: 2018-08-09 00:45:59
End at: 2018-08-09 00:46:29
Local clock offset: -5.117 ms
Remote clock offset: -22.439 ms

# Below is generated by plot.py at 2018-08-09 00:47:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.70 Mbit/s
95th percentile per-packet one-way delay: 1068.225 ms
Loss rate: 43.67%
-- Flow 1:
Average throughput: 9.70 Mbit/s
95th percentile per-packet one-way delay: 1068.225 ms
Loss rate: 43.67%
```

Run 3: Report of FillP — Data Link

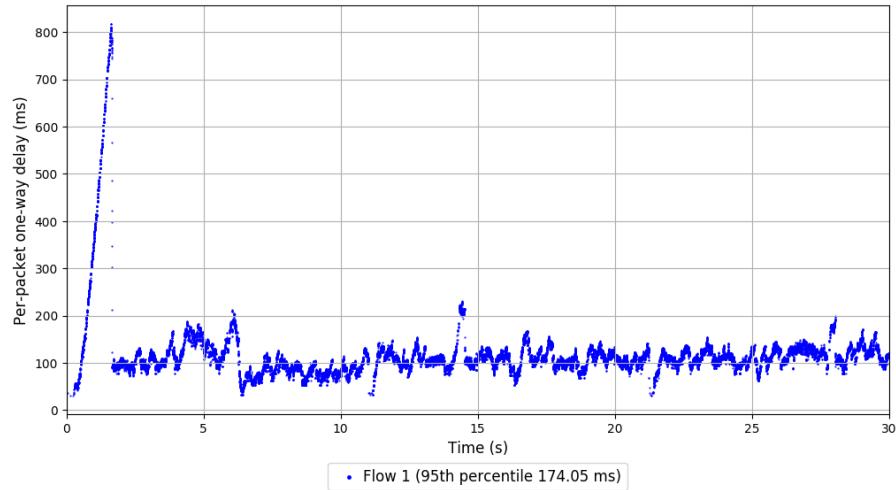
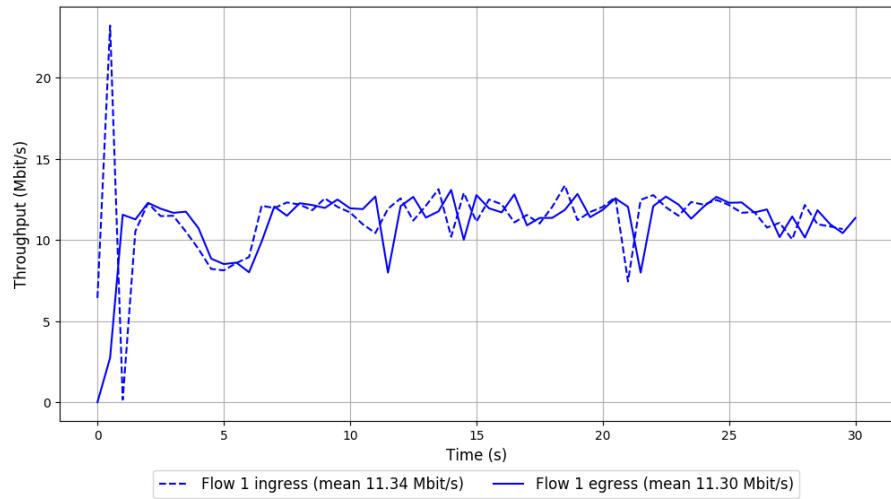


```
Run 1: Statistics of FillP-Sheep
```

```
Start at: 2018-08-08 23:56:09
End at: 2018-08-08 23:56:39
Local clock offset: -0.752 ms
Remote clock offset: -13.664 ms

# Below is generated by plot.py at 2018-08-09 00:47:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.30 Mbit/s
95th percentile per-packet one-way delay: 174.049 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 11.30 Mbit/s
95th percentile per-packet one-way delay: 174.049 ms
Loss rate: 0.38%
```

Run 1: Report of FillP-Sheep — Data Link

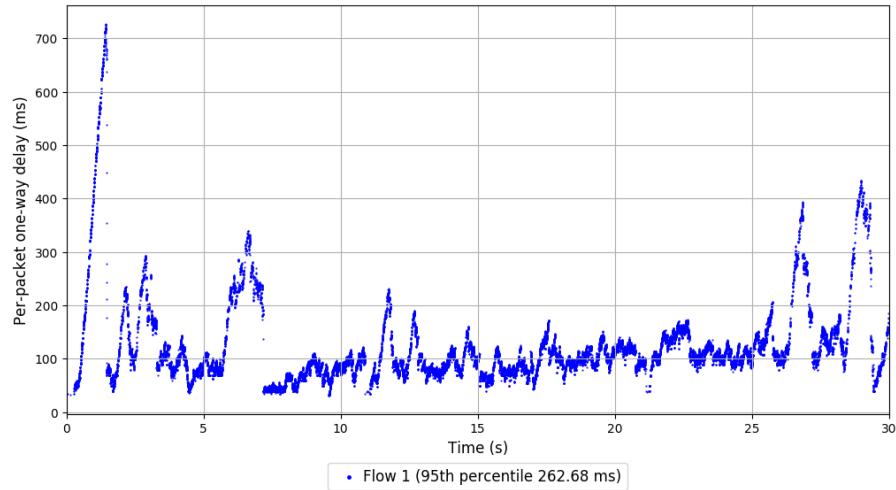
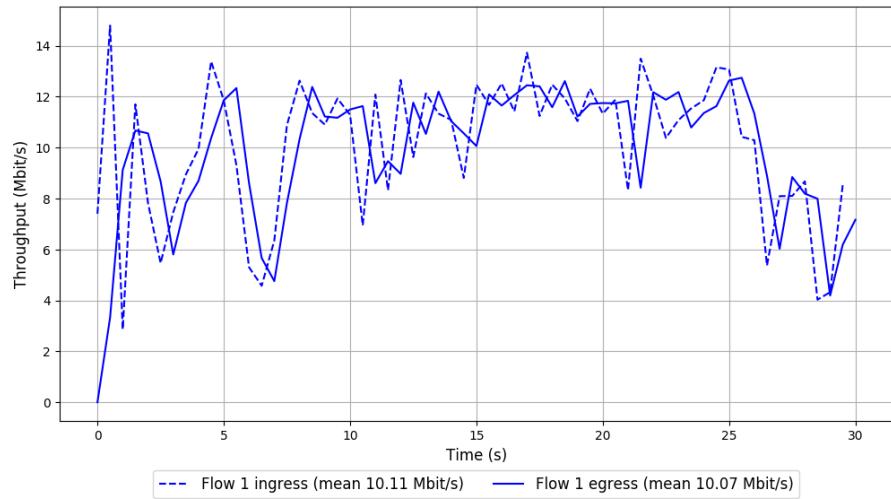


Run 2: Statistics of FillP-Sheep

```
Start at: 2018-08-09 00:14:34
End at: 2018-08-09 00:15:04
Local clock offset: -3.946 ms
Remote clock offset: -16.868 ms

# Below is generated by plot.py at 2018-08-09 00:47:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.07 Mbit/s
95th percentile per-packet one-way delay: 262.677 ms
Loss rate: 0.44%
-- Flow 1:
Average throughput: 10.07 Mbit/s
95th percentile per-packet one-way delay: 262.677 ms
Loss rate: 0.44%
```

Run 2: Report of FillP-Sheep — Data Link

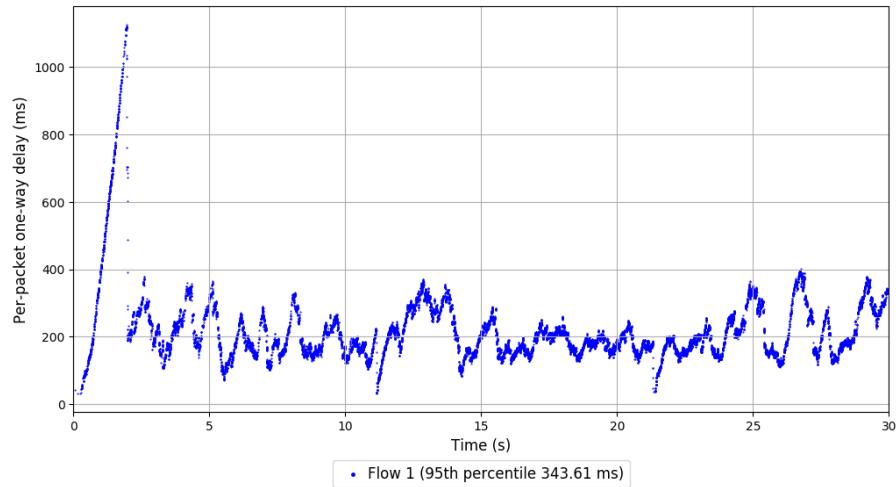
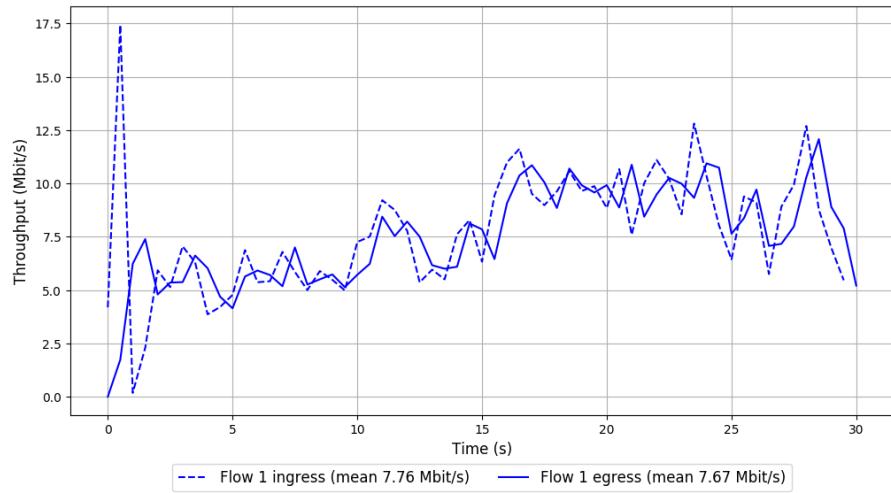


Run 3: Statistics of FillP-Sheep

```
Start at: 2018-08-09 00:32:59
End at: 2018-08-09 00:33:29
Local clock offset: -3.4 ms
Remote clock offset: -21.288 ms

# Below is generated by plot.py at 2018-08-09 00:47:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.67 Mbit/s
95th percentile per-packet one-way delay: 343.607 ms
Loss rate: 1.32%
-- Flow 1:
Average throughput: 7.67 Mbit/s
95th percentile per-packet one-way delay: 343.607 ms
Loss rate: 1.32%
```

Run 3: Report of FillP-Sheep — Data Link

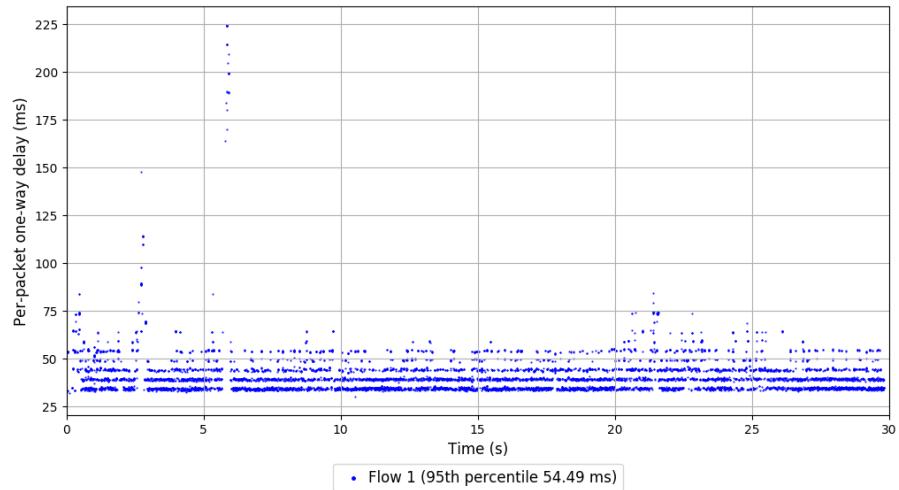
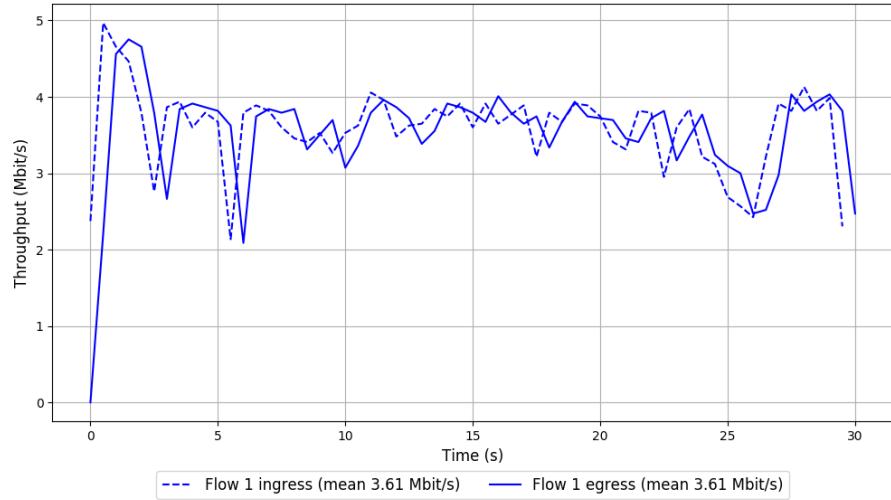


Run 1: Statistics of Indigo

```
Start at: 2018-08-08 23:58:19
End at: 2018-08-08 23:58:49
Local clock offset: -3.52 ms
Remote clock offset: -15.239 ms

# Below is generated by plot.py at 2018-08-09 00:47:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.61 Mbit/s
95th percentile per-packet one-way delay: 54.489 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 3.61 Mbit/s
95th percentile per-packet one-way delay: 54.489 ms
Loss rate: 0.08%
```

Run 1: Report of Indigo — Data Link

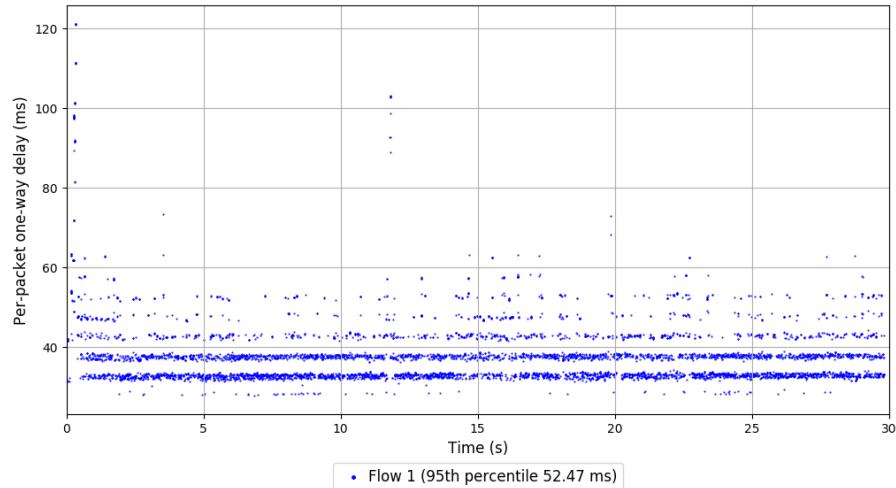
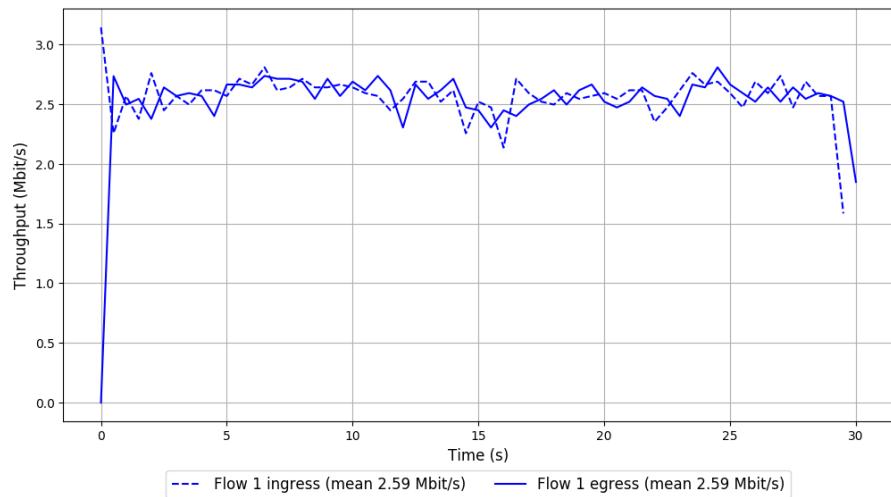


Run 2: Statistics of Indigo

```
Start at: 2018-08-09 00:16:43
End at: 2018-08-09 00:17:13
Local clock offset: -1.84 ms
Remote clock offset: -17.262 ms

# Below is generated by plot.py at 2018-08-09 00:47:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.59 Mbit/s
95th percentile per-packet one-way delay: 52.467 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 2.59 Mbit/s
95th percentile per-packet one-way delay: 52.467 ms
Loss rate: 0.08%
```

Run 2: Report of Indigo — Data Link

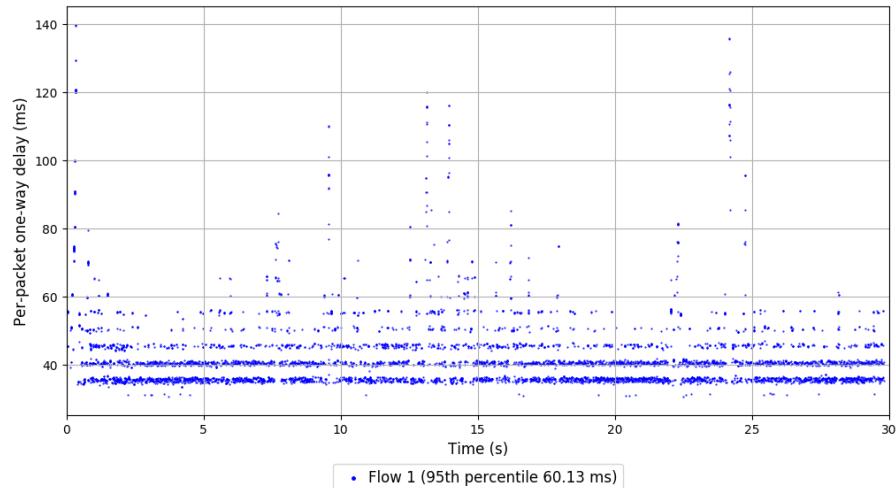
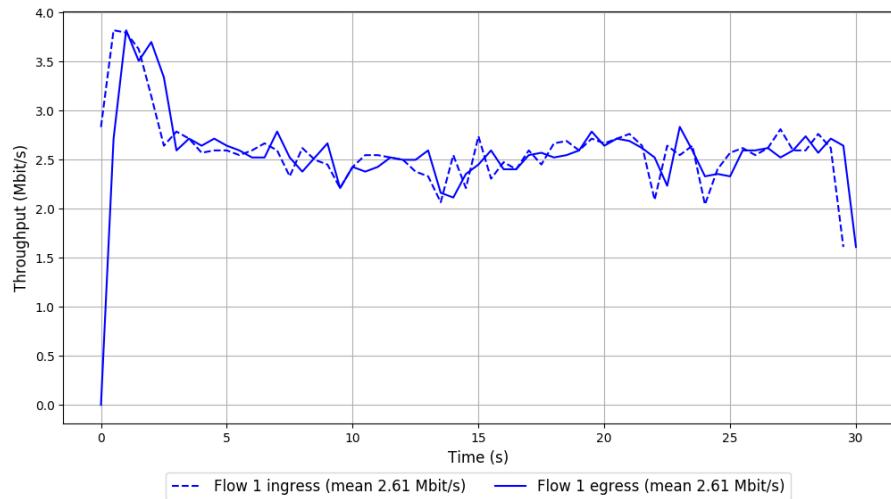


Run 3: Statistics of Indigo

```
Start at: 2018-08-09 00:35:09
End at: 2018-08-09 00:35:39
Local clock offset: -2.585 ms
Remote clock offset: -18.348 ms

# Below is generated by plot.py at 2018-08-09 00:47:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.61 Mbit/s
95th percentile per-packet one-way delay: 60.128 ms
Loss rate: 0.17%
-- Flow 1:
Average throughput: 2.61 Mbit/s
95th percentile per-packet one-way delay: 60.128 ms
Loss rate: 0.17%
```

Run 3: Report of Indigo — Data Link

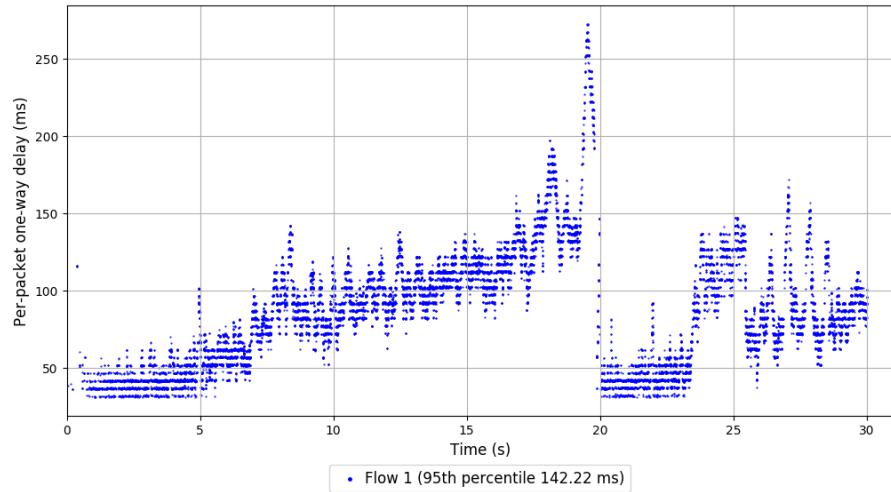
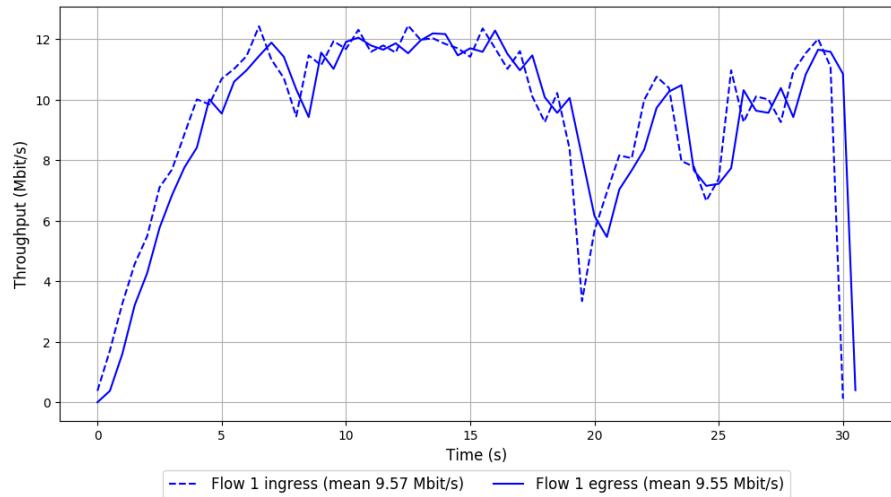


```
Run 1: Statistics of LEDBAT
```

```
Start at: 2018-08-09 00:08:05
End at: 2018-08-09 00:08:35
Local clock offset: -3.106 ms
Remote clock offset: -16.42 ms

# Below is generated by plot.py at 2018-08-09 00:47:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.55 Mbit/s
95th percentile per-packet one-way delay: 142.217 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 9.55 Mbit/s
95th percentile per-packet one-way delay: 142.217 ms
Loss rate: 0.34%
```

Run 1: Report of LEDBAT — Data Link

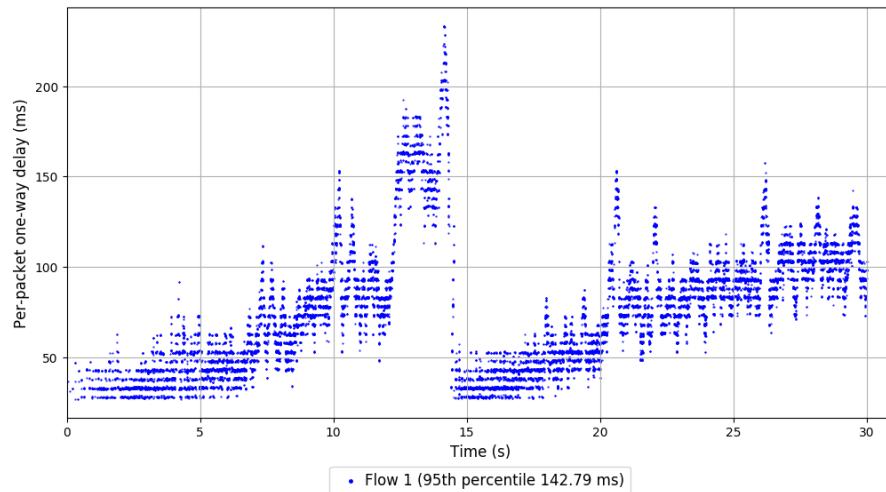
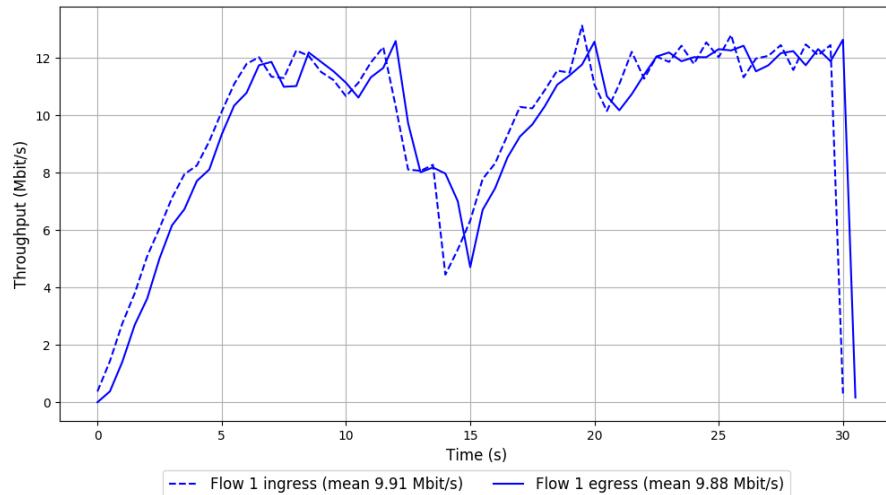


Run 2: Statistics of LEDBAT

```
Start at: 2018-08-09 00:26:31
End at: 2018-08-09 00:27:01
Local clock offset: 0.655 ms
Remote clock offset: -19.392 ms

# Below is generated by plot.py at 2018-08-09 00:47:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.88 Mbit/s
95th percentile per-packet one-way delay: 142.788 ms
Loss rate: 0.48%
-- Flow 1:
Average throughput: 9.88 Mbit/s
95th percentile per-packet one-way delay: 142.788 ms
Loss rate: 0.48%
```

Run 2: Report of LEDBAT — Data Link

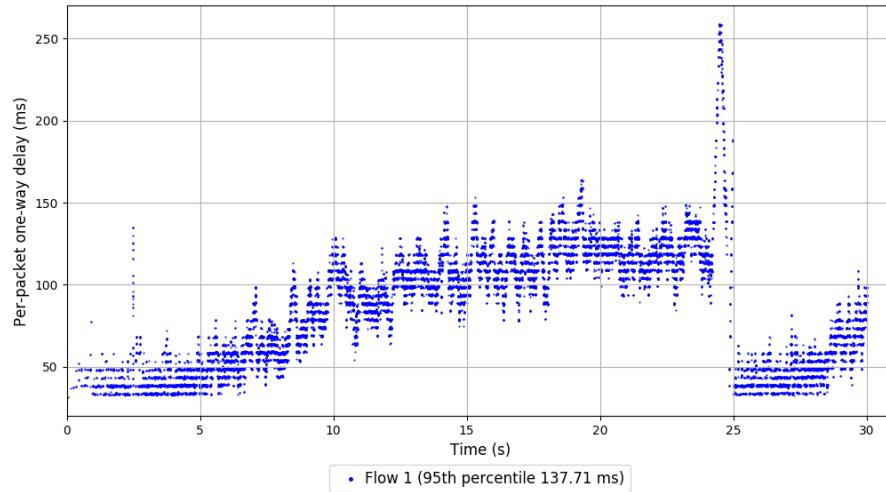
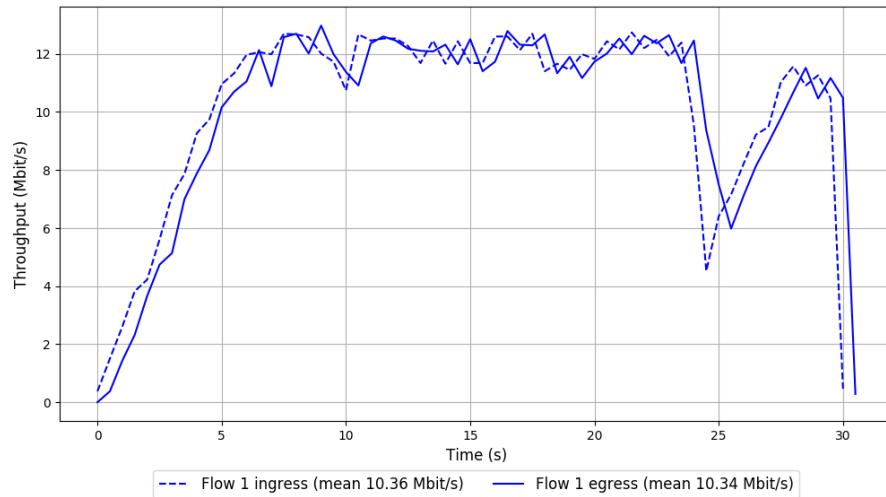


Run 3: Statistics of LEDBAT

```
Start at: 2018-08-09 00:44:53
End at: 2018-08-09 00:45:23
Local clock offset: -6.071 ms
Remote clock offset: -22.263 ms

# Below is generated by plot.py at 2018-08-09 00:47:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.34 Mbit/s
95th percentile per-packet one-way delay: 137.711 ms
Loss rate: 0.30%
-- Flow 1:
Average throughput: 10.34 Mbit/s
95th percentile per-packet one-way delay: 137.711 ms
Loss rate: 0.30%
```

Run 3: Report of LEDBAT — Data Link

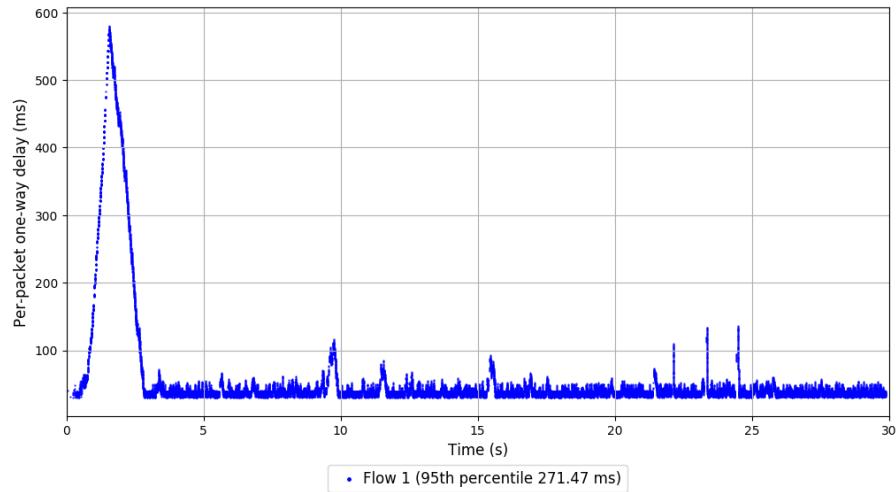
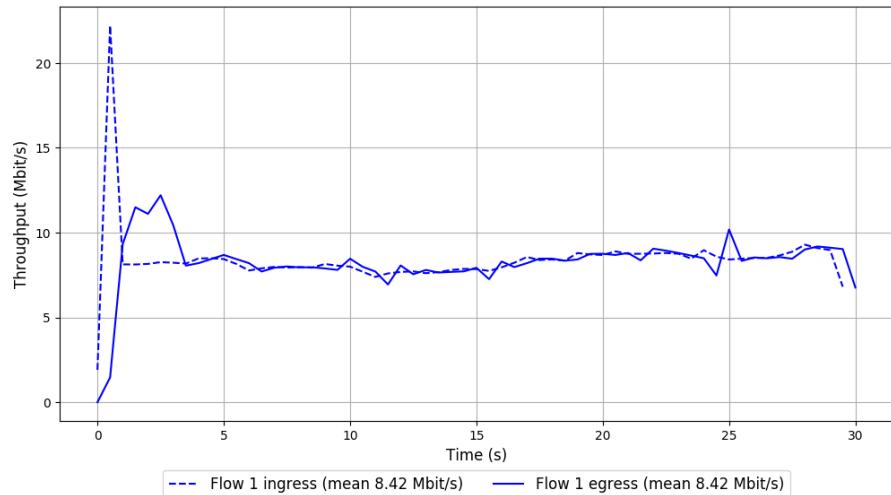


```
Run 1: Statistics of PCC-Allegro
```

```
Start at: 2018-08-08 23:57:14
End at: 2018-08-08 23:57:44
Local clock offset: -2.67 ms
Remote clock offset: -15.031 ms

# Below is generated by plot.py at 2018-08-09 00:47:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 8.42 Mbit/s
95th percentile per-packet one-way delay: 271.468 ms
Loss rate: 0.17%
-- Flow 1:
Average throughput: 8.42 Mbit/s
95th percentile per-packet one-way delay: 271.468 ms
Loss rate: 0.17%
```

Run 1: Report of PCC-Allegro — Data Link

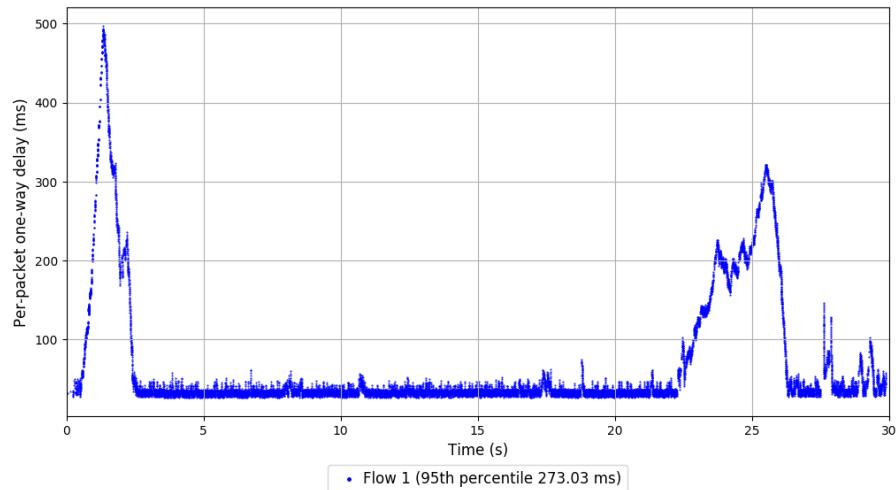
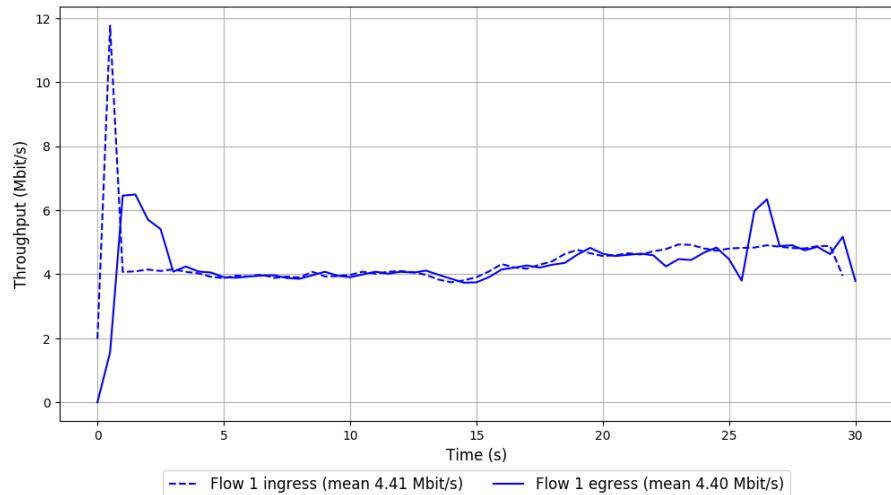


Run 2: Statistics of PCC-Allegro

```
Start at: 2018-08-09 00:15:39
End at: 2018-08-09 00:16:09
Local clock offset: 0.048 ms
Remote clock offset: -17.425 ms

# Below is generated by plot.py at 2018-08-09 00:47:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.40 Mbit/s
95th percentile per-packet one-way delay: 273.030 ms
Loss rate: 0.24%
-- Flow 1:
Average throughput: 4.40 Mbit/s
95th percentile per-packet one-way delay: 273.030 ms
Loss rate: 0.24%
```

Run 2: Report of PCC-Allegro — Data Link

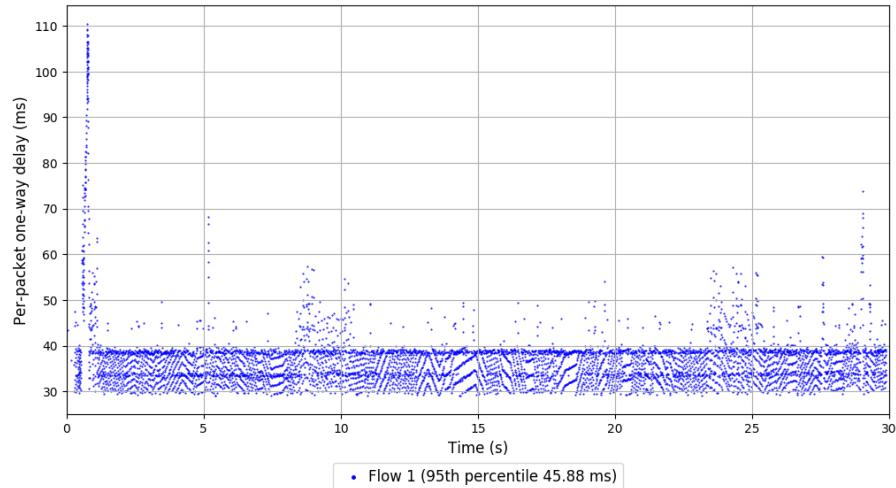
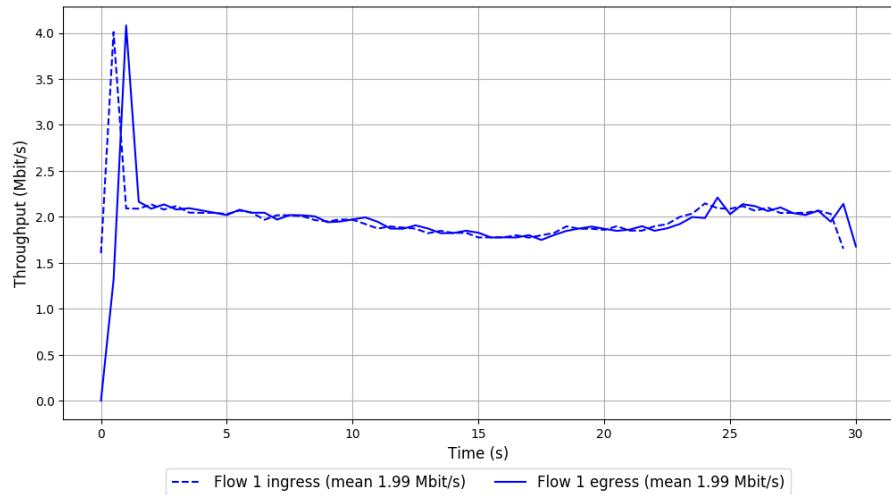


```
Run 3: Statistics of PCC-Allegro
```

```
Start at: 2018-08-09 00:34:05
End at: 2018-08-09 00:34:35
Local clock offset: -2.699 ms
Remote clock offset: -19.817 ms

# Below is generated by plot.py at 2018-08-09 00:47:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.99 Mbit/s
95th percentile per-packet one-way delay: 45.881 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 1.99 Mbit/s
95th percentile per-packet one-way delay: 45.881 ms
Loss rate: 0.11%
```

Run 3: Report of PCC-Allegro — Data Link

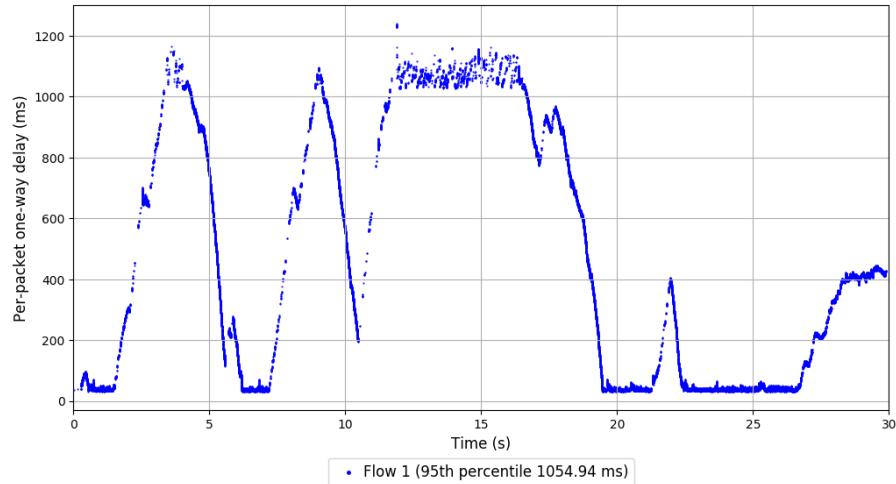
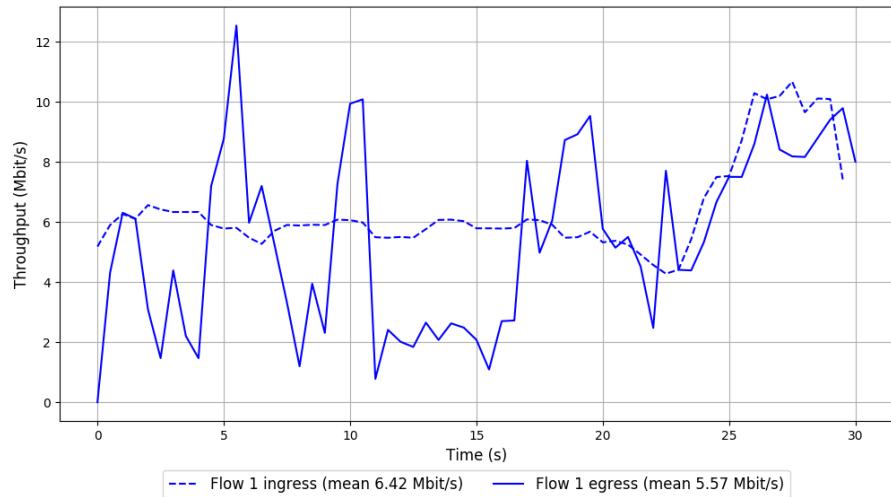


```
Run 1: Statistics of PCC-Expr
```

```
Start at: 2018-08-09 00:01:32
End at: 2018-08-09 00:02:02
Local clock offset: -2.638 ms
Remote clock offset: -14.864 ms

# Below is generated by plot.py at 2018-08-09 00:47:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 5.57 Mbit/s
95th percentile per-packet one-way delay: 1054.942 ms
Loss rate: 13.27%
-- Flow 1:
Average throughput: 5.57 Mbit/s
95th percentile per-packet one-way delay: 1054.942 ms
Loss rate: 13.27%
```

Run 1: Report of PCC-Expr — Data Link

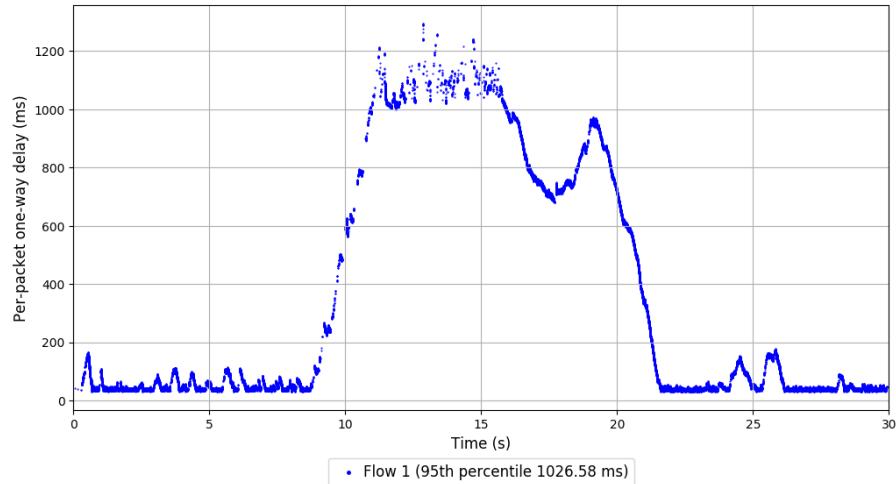
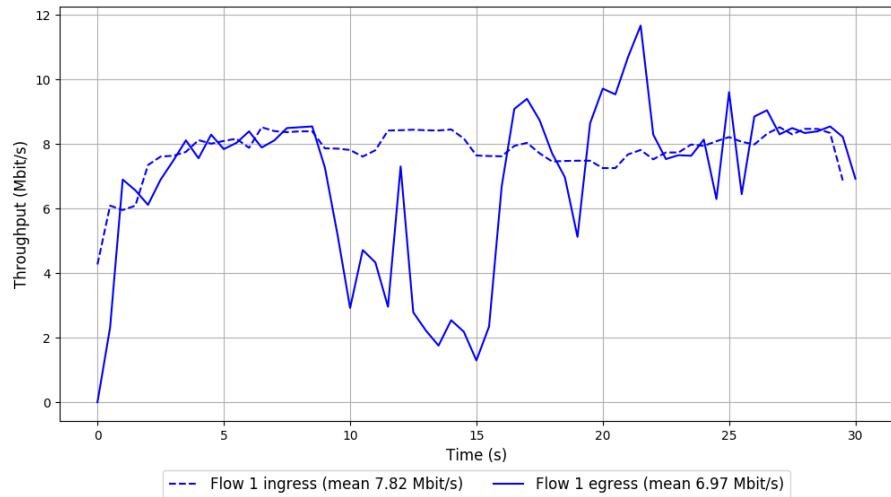


Run 2: Statistics of PCC-Expr

```
Start at: 2018-08-09 00:19:57
End at: 2018-08-09 00:20:27
Local clock offset: -3.888 ms
Remote clock offset: -17.994 ms

# Below is generated by plot.py at 2018-08-09 00:47:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 6.97 Mbit/s
95th percentile per-packet one-way delay: 1026.575 ms
Loss rate: 10.96%
-- Flow 1:
Average throughput: 6.97 Mbit/s
95th percentile per-packet one-way delay: 1026.575 ms
Loss rate: 10.96%
```

Run 2: Report of PCC-Expr — Data Link

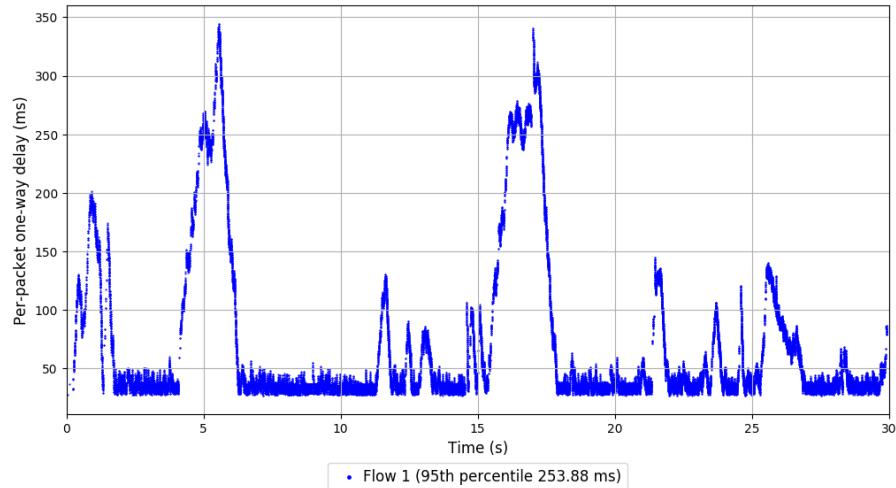
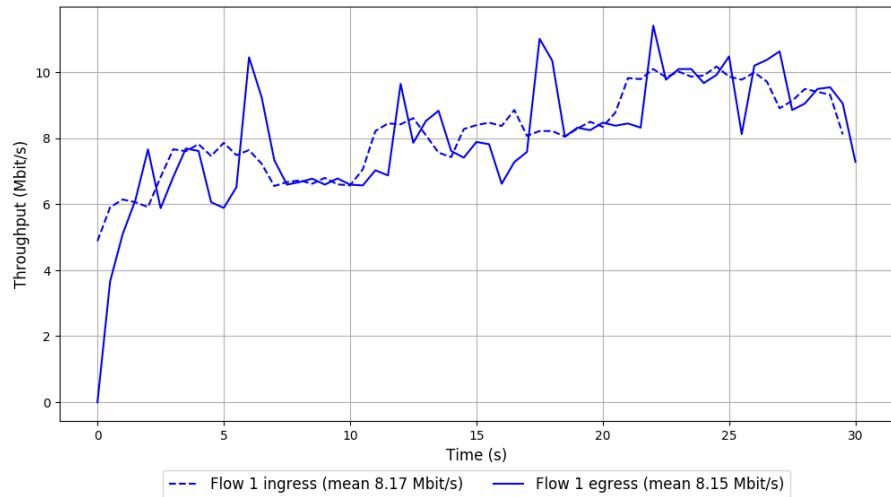


```
Run 3: Statistics of PCC-Expr
```

```
Start at: 2018-08-09 00:38:23
End at: 2018-08-09 00:38:53
Local clock offset: -2.007 ms
Remote clock offset: -21.618 ms

# Below is generated by plot.py at 2018-08-09 00:47:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 8.15 Mbit/s
95th percentile per-packet one-way delay: 253.878 ms
Loss rate: 0.35%
-- Flow 1:
Average throughput: 8.15 Mbit/s
95th percentile per-packet one-way delay: 253.878 ms
Loss rate: 0.35%
```

Run 3: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

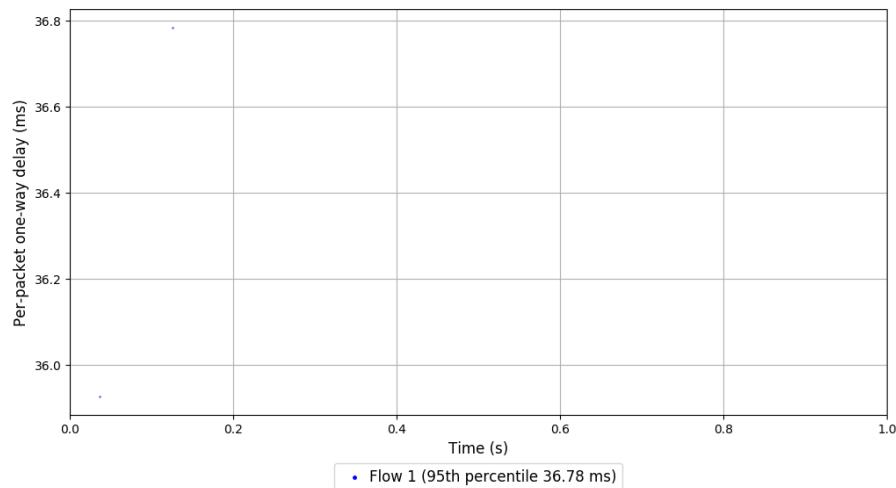
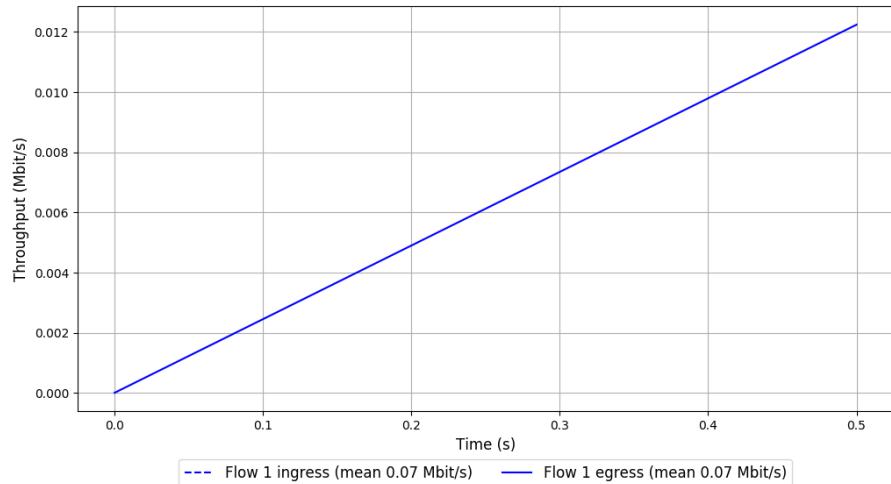
Start at: 2018-08-09 00:03:42

End at: 2018-08-09 00:04:12

Local clock offset: -0.404 ms

Remote clock offset: -15.861 ms

Run 1: Report of QUIC Cubic — Data Link

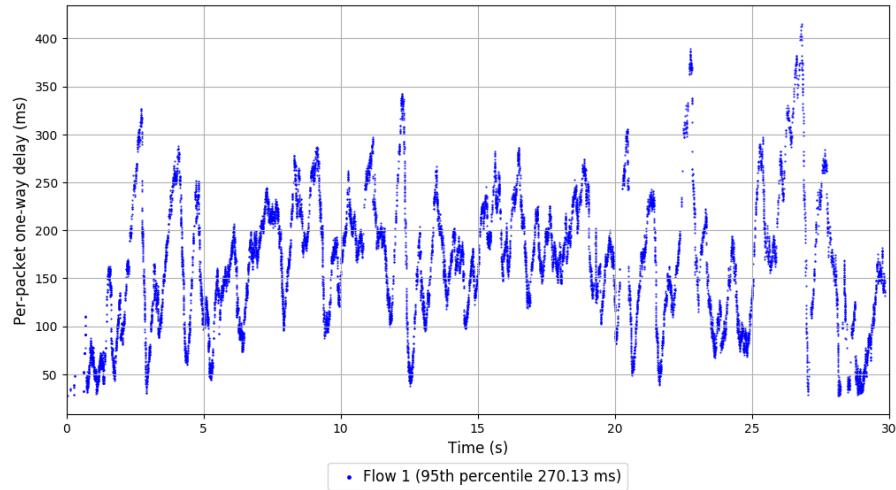
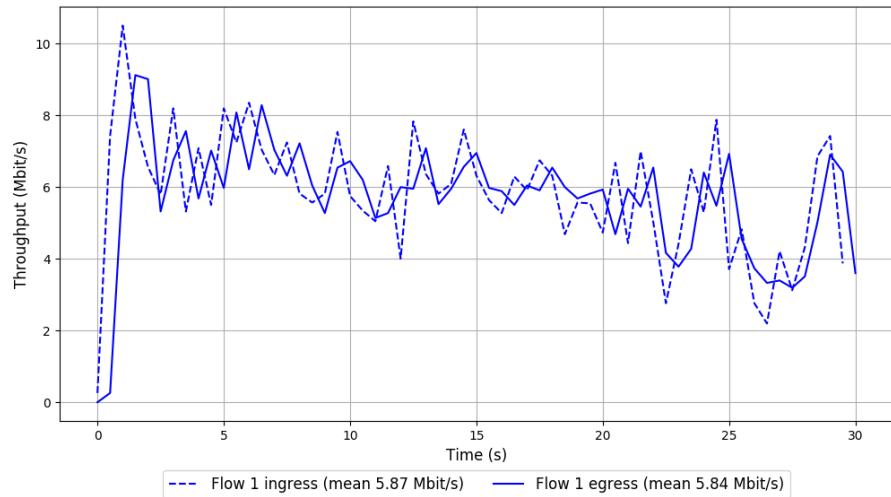


Run 2: Statistics of QUIC Cubic

```
Start at: 2018-08-09 00:22:07
End at: 2018-08-09 00:22:37
Local clock offset: -0.426 ms
Remote clock offset: -18.914 ms

# Below is generated by plot.py at 2018-08-09 00:47:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 5.84 Mbit/s
95th percentile per-packet one-way delay: 270.126 ms
Loss rate: 0.65%
-- Flow 1:
Average throughput: 5.84 Mbit/s
95th percentile per-packet one-way delay: 270.126 ms
Loss rate: 0.65%
```

Run 2: Report of QUIC Cubic — Data Link

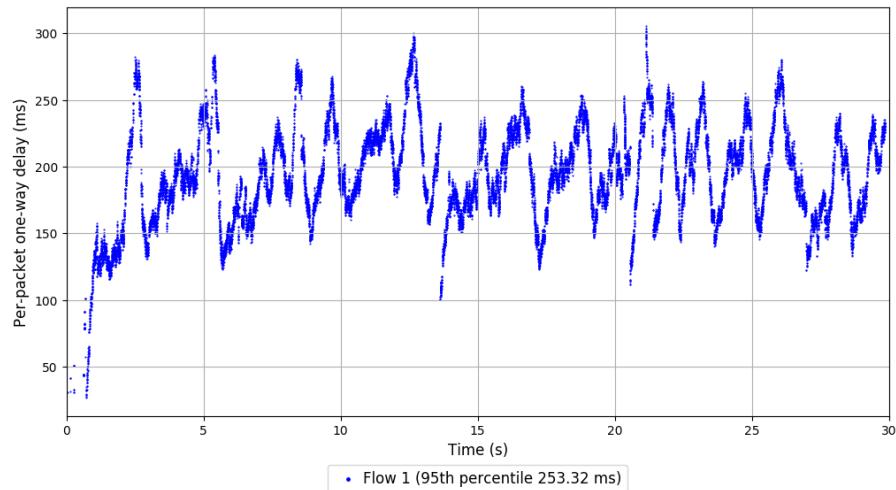
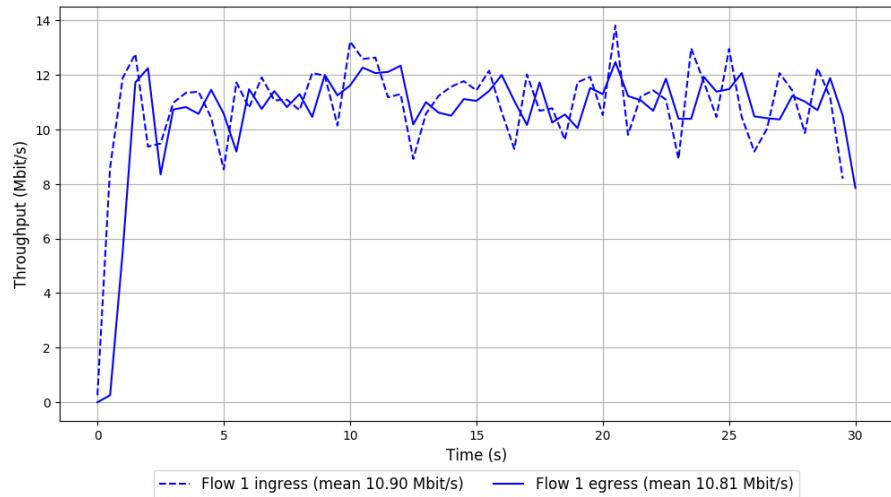


Run 3: Statistics of QUIC Cubic

```
Start at: 2018-08-09 00:40:33
End at: 2018-08-09 00:41:03
Local clock offset: -1.077 ms
Remote clock offset: -21.365 ms

# Below is generated by plot.py at 2018-08-09 00:47:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.81 Mbit/s
95th percentile per-packet one-way delay: 253.317 ms
Loss rate: 0.94%
-- Flow 1:
Average throughput: 10.81 Mbit/s
95th percentile per-packet one-way delay: 253.317 ms
Loss rate: 0.94%
```

Run 3: Report of QUIC Cubic — Data Link

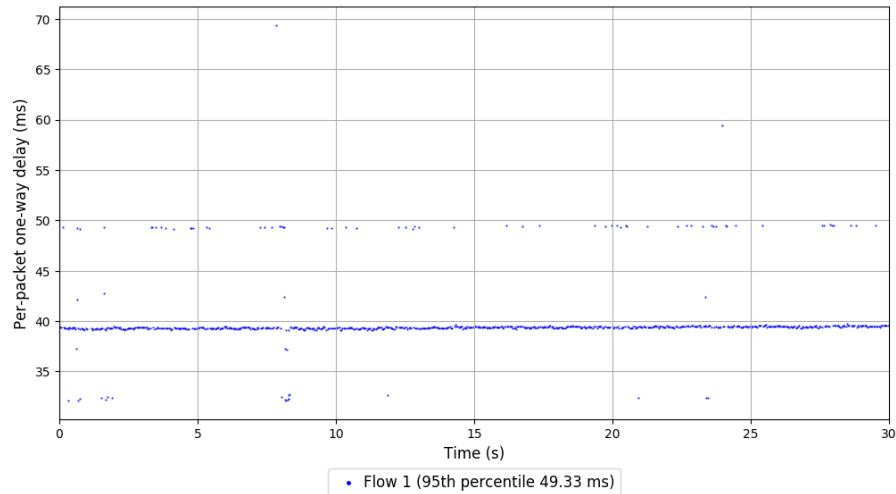
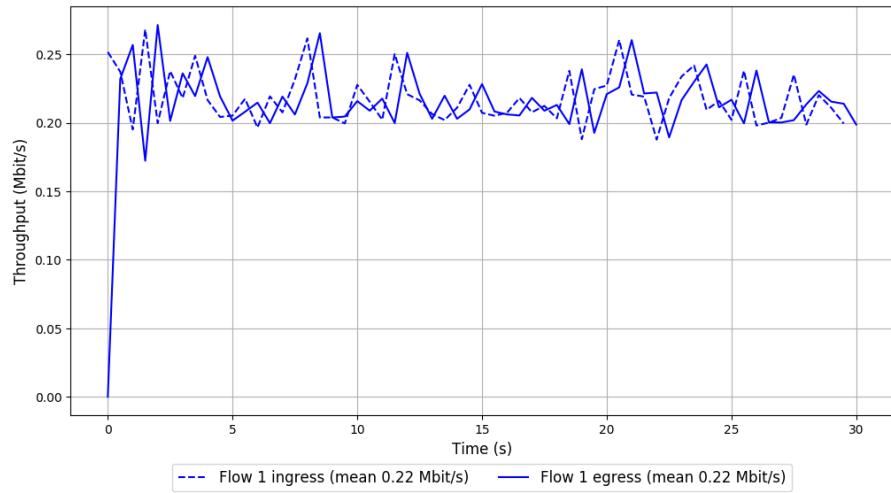


```
Run 1: Statistics of SCReAM

Start at: 2018-08-08 23:51:51
End at: 2018-08-08 23:52:21
Local clock offset: -1.49 ms
Remote clock offset: -12.7 ms

# Below is generated by plot.py at 2018-08-09 00:47:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 49.328 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 49.328 ms
Loss rate: 0.13%
```

Run 1: Report of SCReAM — Data Link

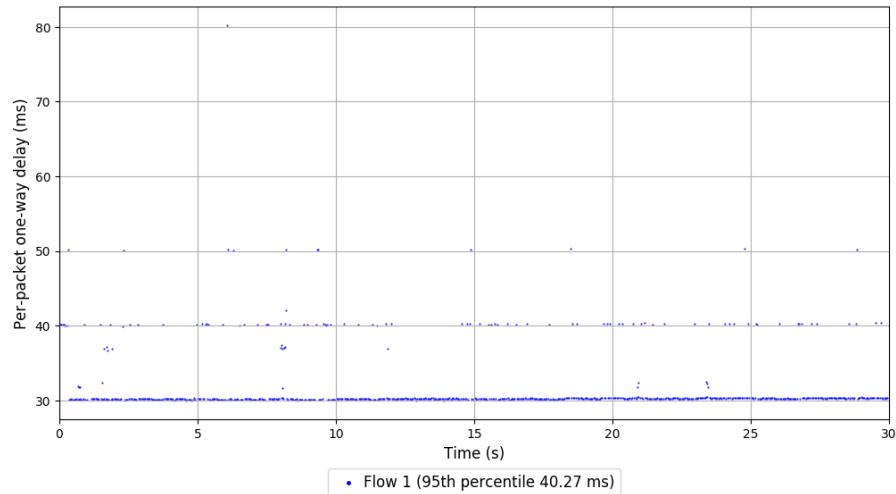
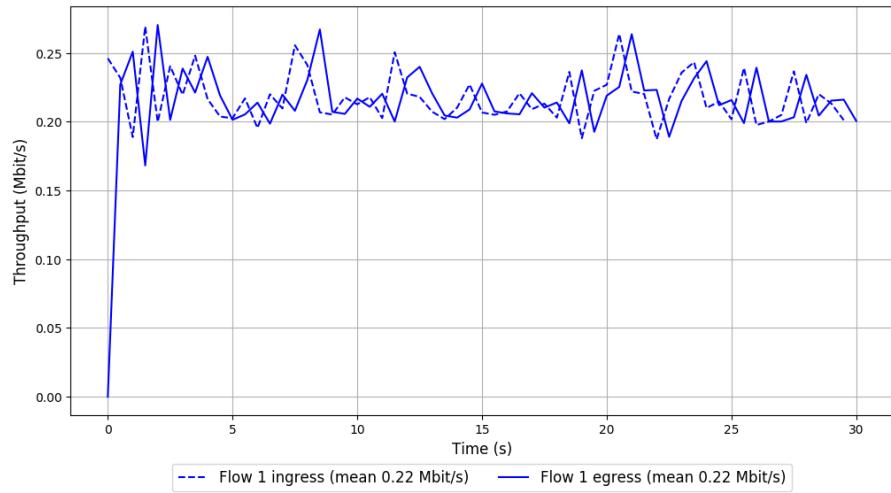


Run 2: Statistics of SCReAM

```
Start at: 2018-08-09 00:10:15
End at: 2018-08-09 00:10:45
Local clock offset: -2.678 ms
Remote clock offset: -16.269 ms

# Below is generated by plot.py at 2018-08-09 00:47:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 40.275 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 40.275 ms
Loss rate: 0.13%
```

Run 2: Report of SCReAM — Data Link

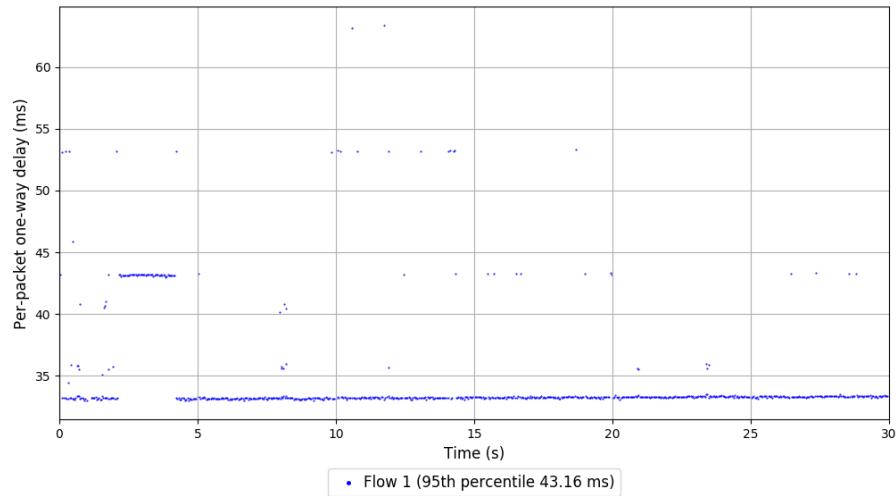
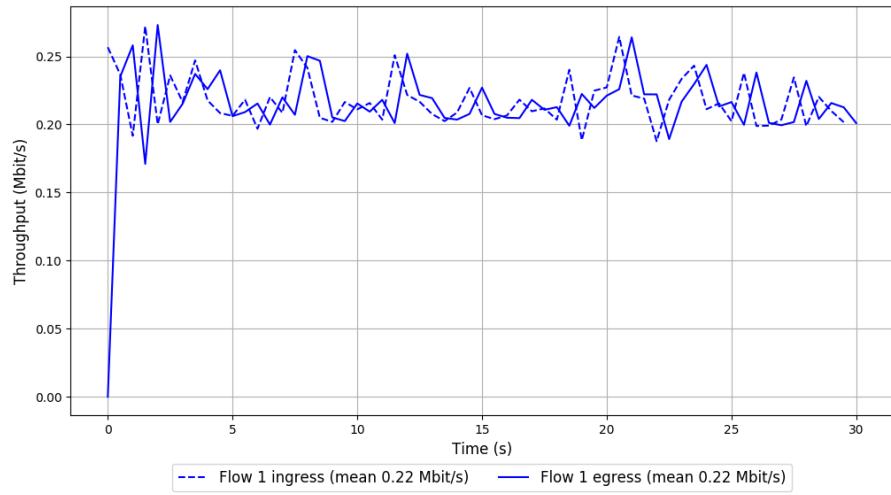


Run 3: Statistics of SCReAM

```
Start at: 2018-08-09 00:28:41
End at: 2018-08-09 00:29:11
Local clock offset: -6.88 ms
Remote clock offset: -20.06 ms

# Below is generated by plot.py at 2018-08-09 00:47:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 43.165 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 43.165 ms
Loss rate: 0.13%
```

Run 3: Report of SCReAM — Data Link

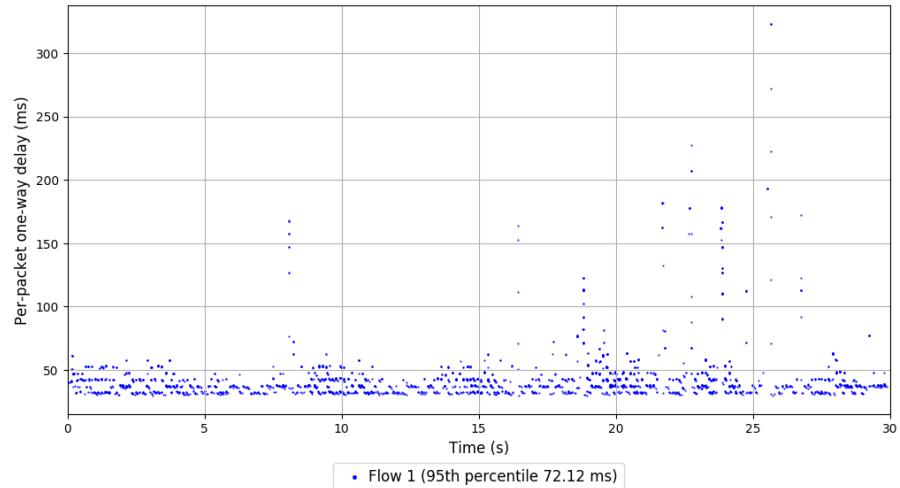
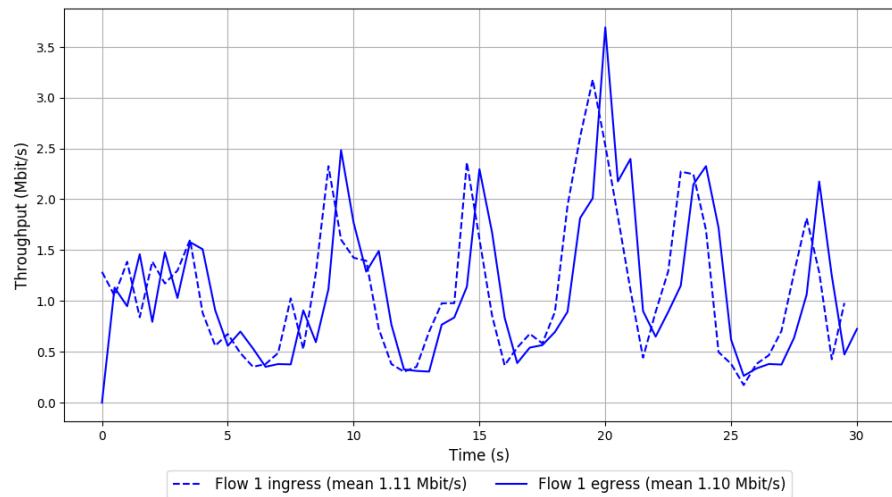


Run 1: Statistics of Sprout

```
Start at: 2018-08-08 23:55:05
End at: 2018-08-08 23:55:35
Local clock offset: -1.894 ms
Remote clock offset: -14.127 ms

# Below is generated by plot.py at 2018-08-09 00:47:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.10 Mbit/s
95th percentile per-packet one-way delay: 72.117 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 1.10 Mbit/s
95th percentile per-packet one-way delay: 72.117 ms
Loss rate: 0.39%
```

Run 1: Report of Sprout — Data Link

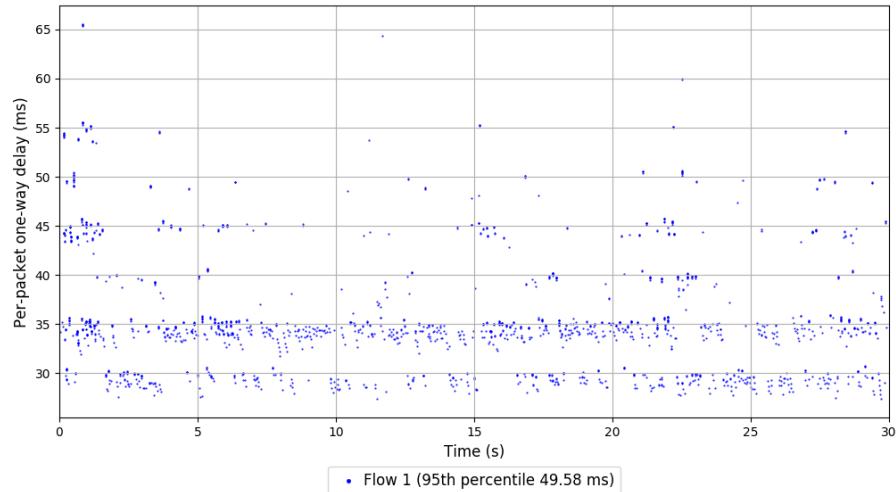
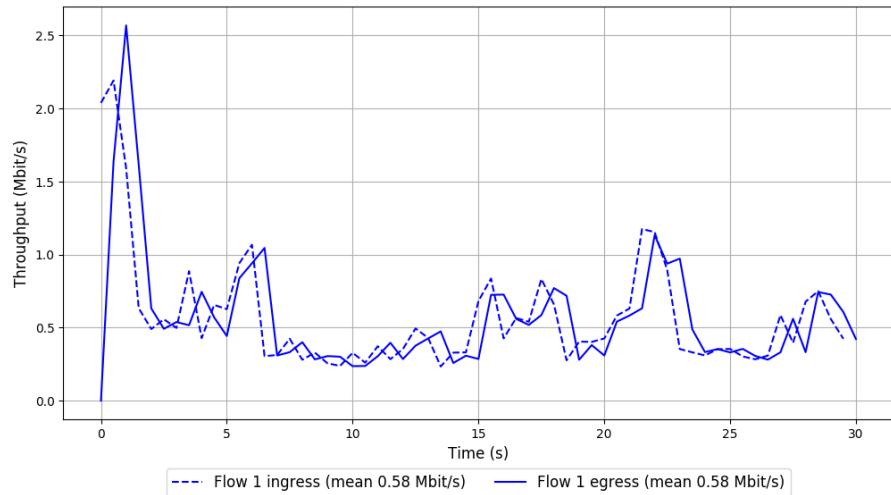


Run 2: Statistics of Sprout

```
Start at: 2018-08-09 00:13:29
End at: 2018-08-09 00:14:00
Local clock offset: -0.776 ms
Remote clock offset: -16.991 ms

# Below is generated by plot.py at 2018-08-09 00:47:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 49.582 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 49.582 ms
Loss rate: 0.00%
```

Run 2: Report of Sprout — Data Link

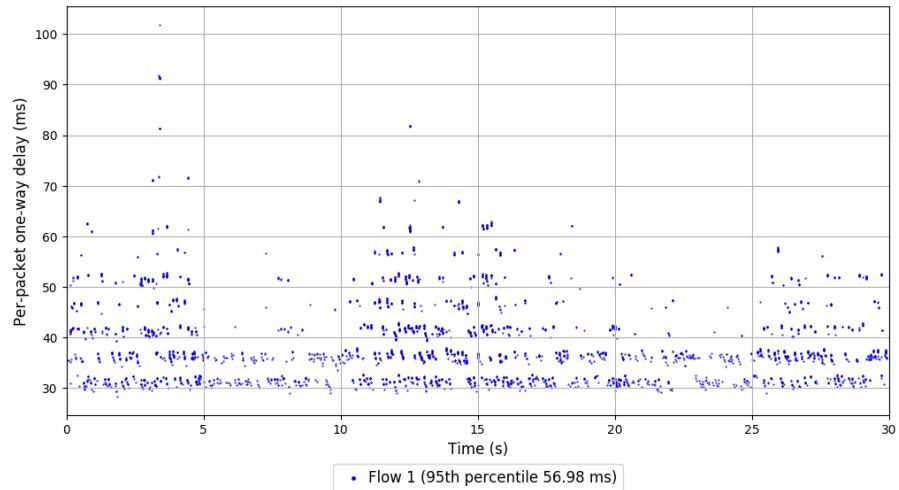
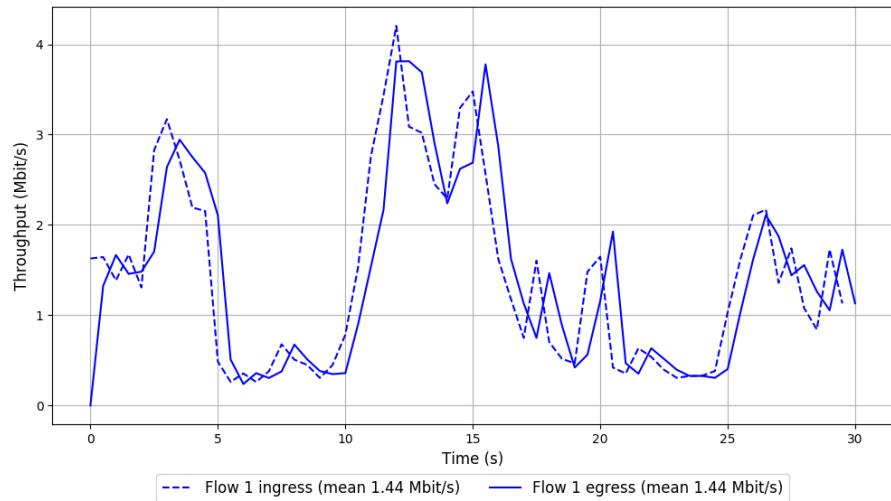


Run 3: Statistics of Sprout

```
Start at: 2018-08-09 00:31:55
End at: 2018-08-09 00:32:25
Local clock offset: -1.254 ms
Remote clock offset: -19.402 ms

# Below is generated by plot.py at 2018-08-09 00:47:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.44 Mbit/s
95th percentile per-packet one-way delay: 56.977 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.44 Mbit/s
95th percentile per-packet one-way delay: 56.977 ms
Loss rate: 0.00%
```

Run 3: Report of Sprout — Data Link

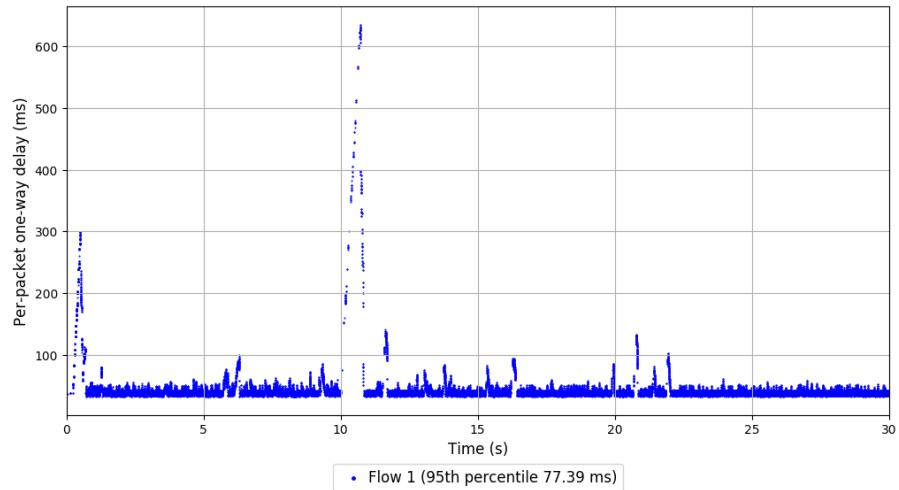
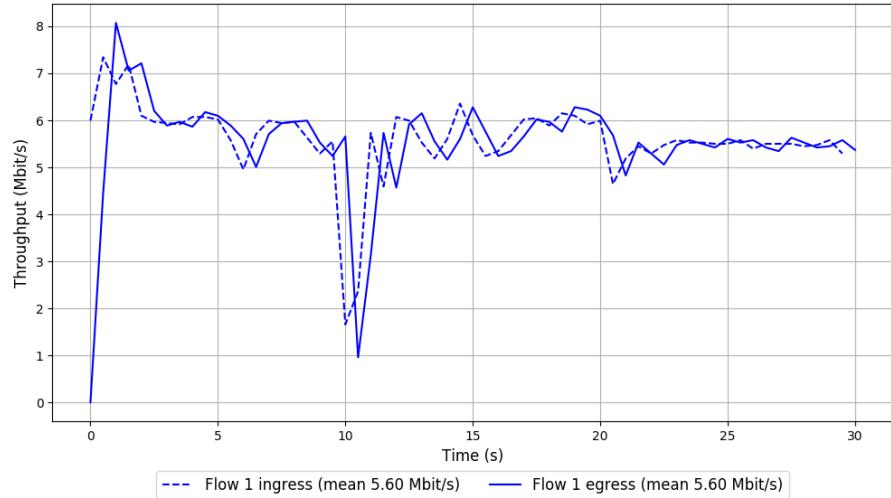


Run 1: Statistics of TaoVA-100x

```
Start at: 2018-08-08 23:54:00
End at: 2018-08-08 23:54:30
Local clock offset: -3.718 ms
Remote clock offset: -13.866 ms

# Below is generated by plot.py at 2018-08-09 00:47:27
# Datalink statistics
-- Total of 1 flow:
Average throughput: 5.60 Mbit/s
95th percentile per-packet one-way delay: 77.394 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 5.60 Mbit/s
95th percentile per-packet one-way delay: 77.394 ms
Loss rate: 0.10%
```

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

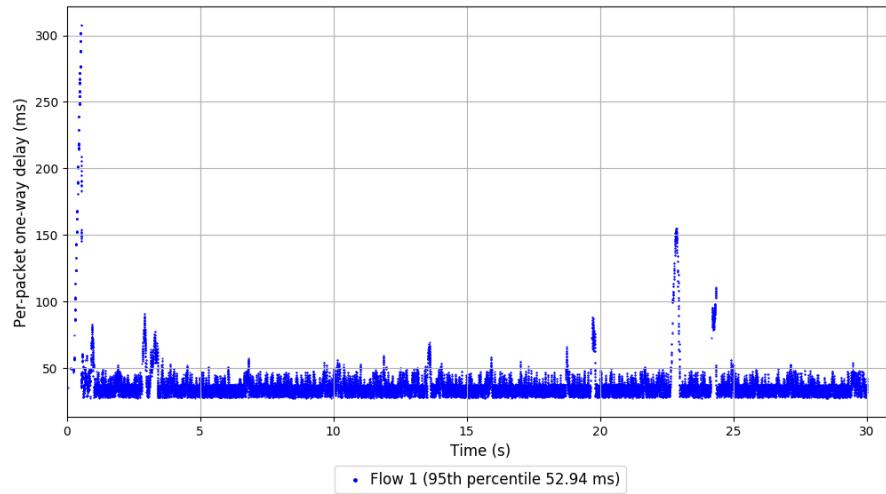
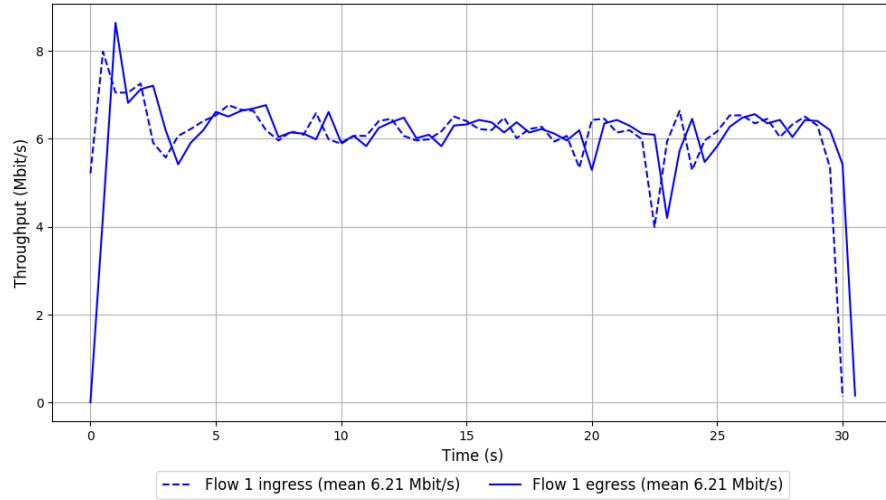


Run 2: Statistics of TaoVA-100x

```
Start at: 2018-08-09 00:12:24
End at: 2018-08-09 00:12:54
Local clock offset: -0.778 ms
Remote clock offset: -16.587 ms

# Below is generated by plot.py at 2018-08-09 00:47:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 6.21 Mbit/s
95th percentile per-packet one-way delay: 52.940 ms
Loss rate: 0.12%
-- Flow 1:
Average throughput: 6.21 Mbit/s
95th percentile per-packet one-way delay: 52.940 ms
Loss rate: 0.12%
```

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

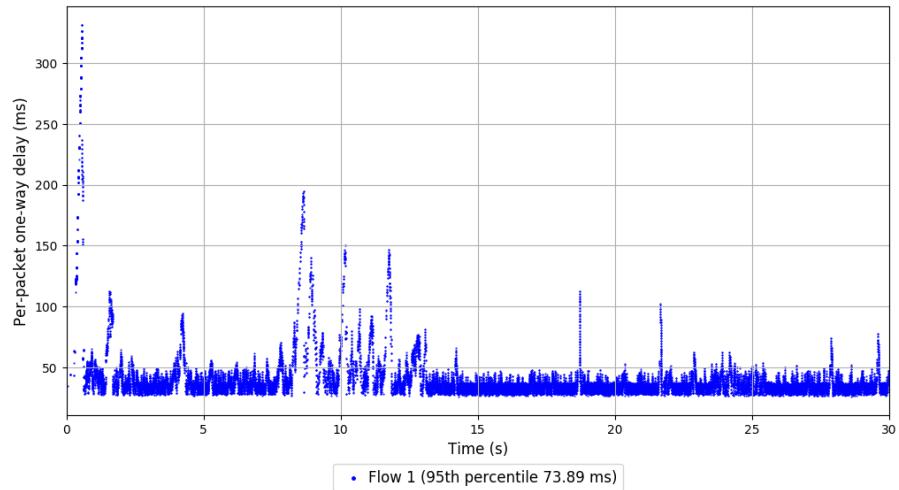
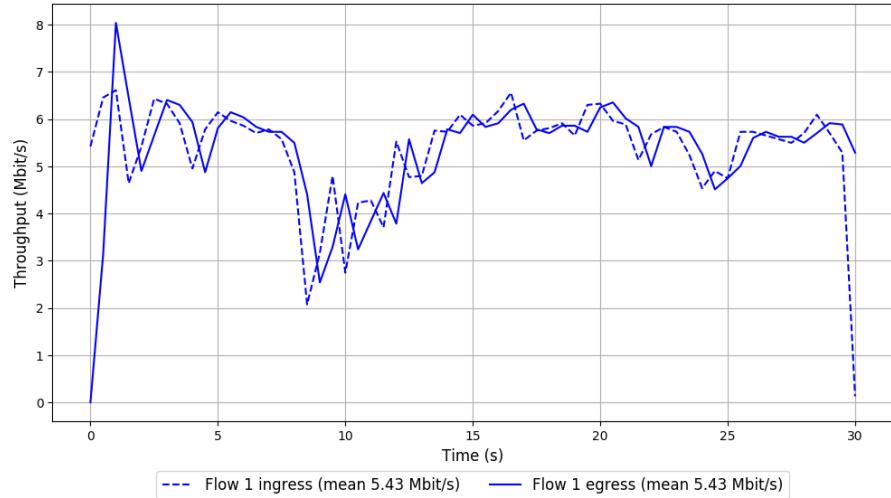


Run 3: Statistics of TaoVA-100x

```
Start at: 2018-08-09 00:30:50
End at: 2018-08-09 00:31:20
Local clock offset: -1.099 ms
Remote clock offset: -20.055 ms

# Below is generated by plot.py at 2018-08-09 00:47:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 5.43 Mbit/s
95th percentile per-packet one-way delay: 73.894 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 5.43 Mbit/s
95th percentile per-packet one-way delay: 73.894 ms
Loss rate: 0.16%
```

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

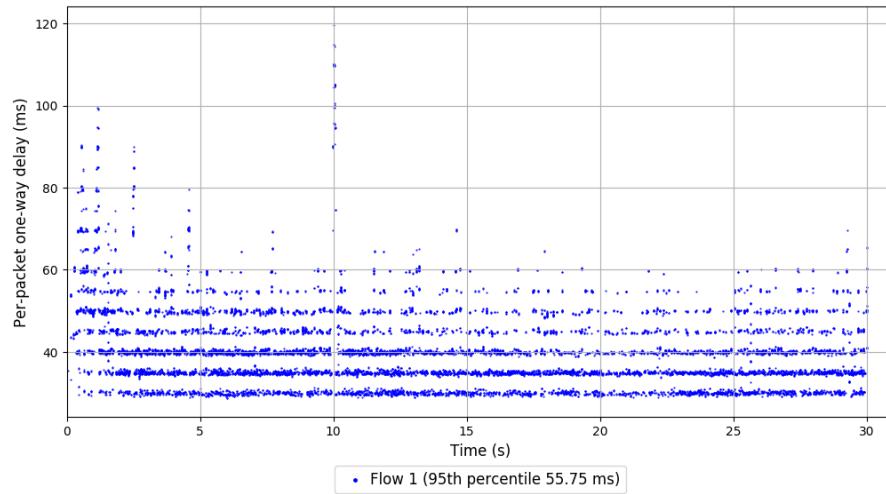
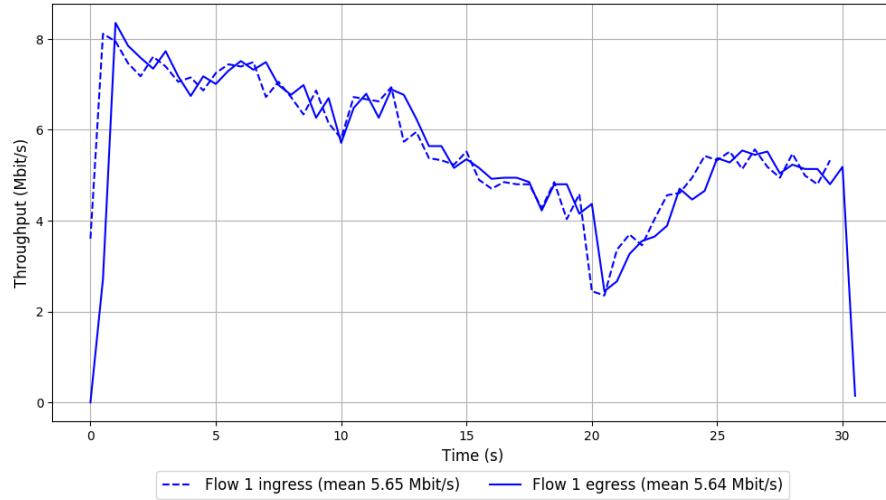


Run 1: Statistics of TCP Vegas

```
Start at: 2018-08-08 23:52:56
End at: 2018-08-08 23:53:26
Local clock offset: 1.351 ms
Remote clock offset: -13.543 ms

# Below is generated by plot.py at 2018-08-09 00:47:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 5.64 Mbit/s
95th percentile per-packet one-way delay: 55.752 ms
Loss rate: 0.12%
-- Flow 1:
Average throughput: 5.64 Mbit/s
95th percentile per-packet one-way delay: 55.752 ms
Loss rate: 0.12%
```

Run 1: Report of TCP Vegas — Data Link

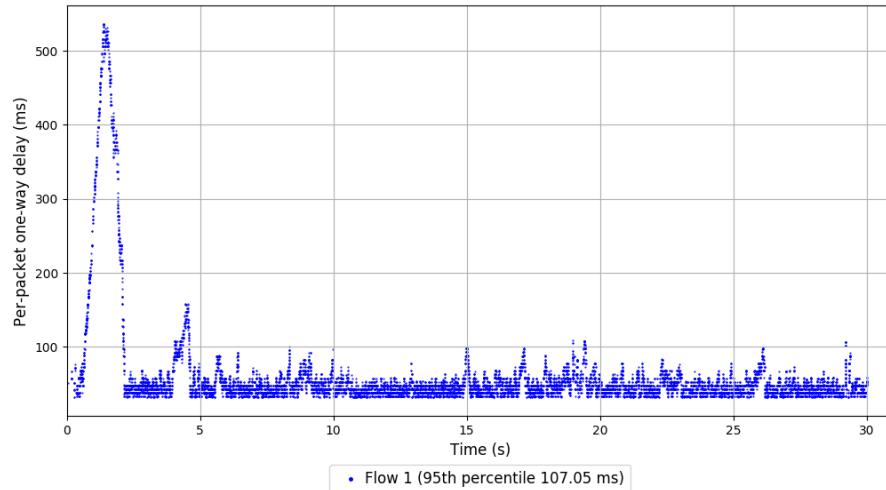
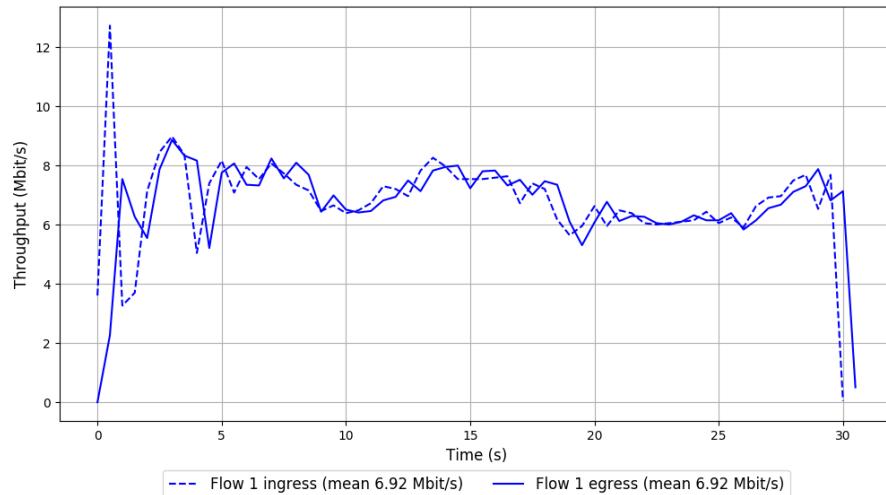


Run 2: Statistics of TCP Vegas

```
Start at: 2018-08-09 00:11:19
End at: 2018-08-09 00:11:49
Local clock offset: -2.768 ms
Remote clock offset: -16.945 ms

# Below is generated by plot.py at 2018-08-09 00:47:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 6.92 Mbit/s
95th percentile per-packet one-way delay: 107.054 ms
Loss rate: 0.14%
-- Flow 1:
Average throughput: 6.92 Mbit/s
95th percentile per-packet one-way delay: 107.054 ms
Loss rate: 0.14%
```

Run 2: Report of TCP Vegas — Data Link

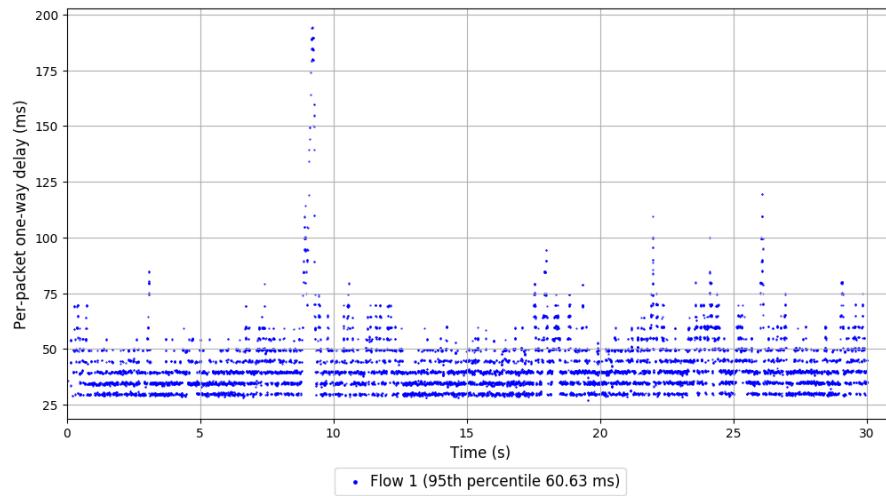
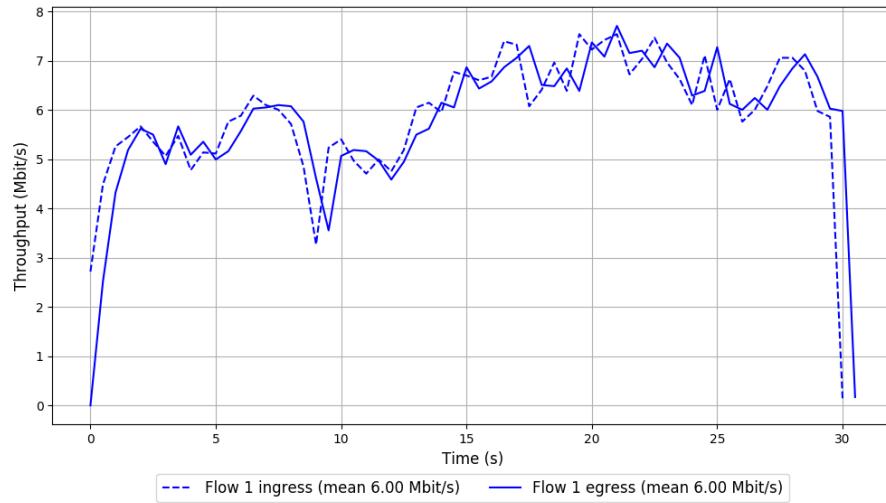


Run 3: Statistics of TCP Vegas

```
Start at: 2018-08-09 00:29:45
End at: 2018-08-09 00:30:15
Local clock offset: -0.487 ms
Remote clock offset: -20.523 ms

# Below is generated by plot.py at 2018-08-09 00:47:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 6.00 Mbit/s
95th percentile per-packet one-way delay: 60.634 ms
Loss rate: 0.15%
-- Flow 1:
Average throughput: 6.00 Mbit/s
95th percentile per-packet one-way delay: 60.634 ms
Loss rate: 0.15%
```

Run 3: Report of TCP Vegas — Data Link

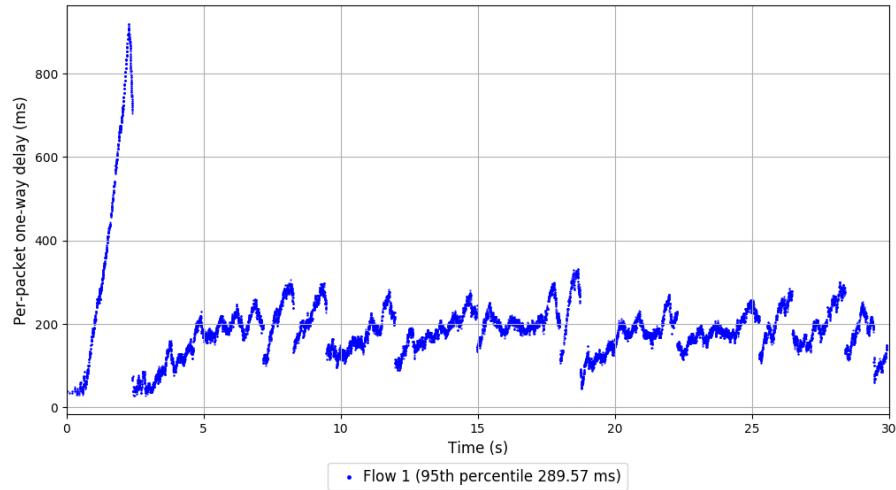
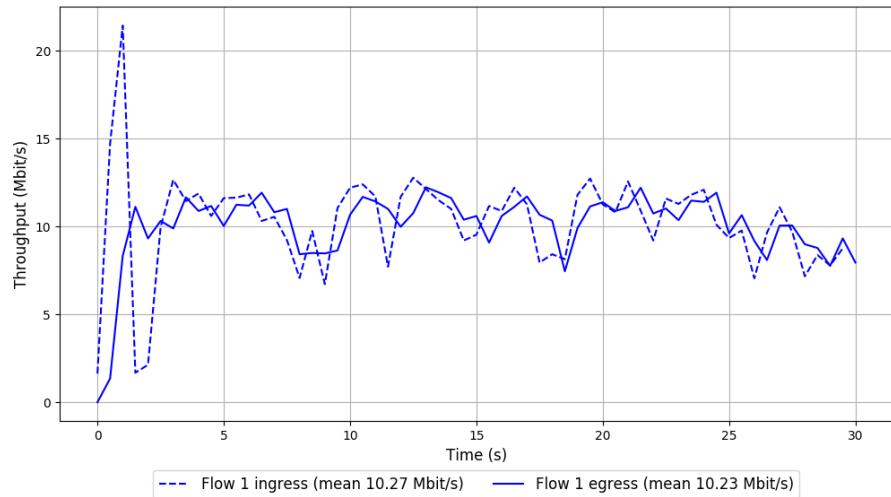


Run 1: Statistics of Verus

```
Start at: 2018-08-09 00:05:50
End at: 2018-08-09 00:06:20
Local clock offset: -2.278 ms
Remote clock offset: -16.481 ms

# Below is generated by plot.py at 2018-08-09 00:47:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.23 Mbit/s
95th percentile per-packet one-way delay: 289.573 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 10.23 Mbit/s
95th percentile per-packet one-way delay: 289.573 ms
Loss rate: 0.51%
```

Run 1: Report of Verus — Data Link

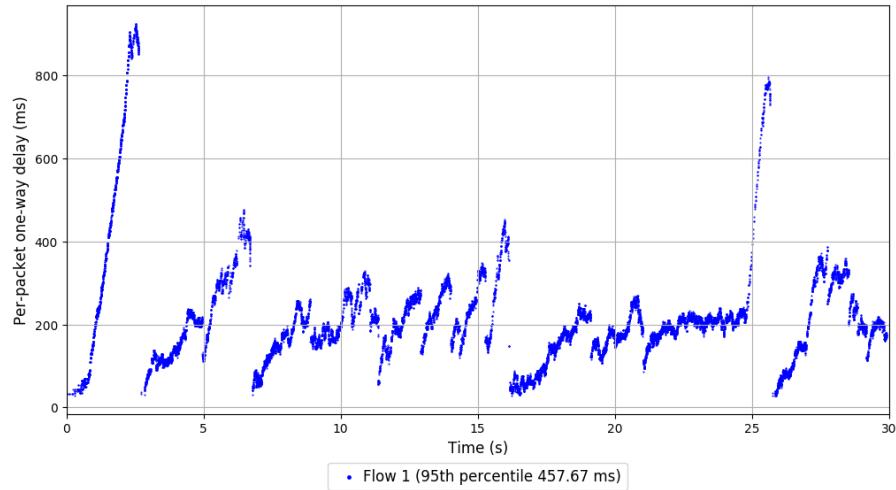
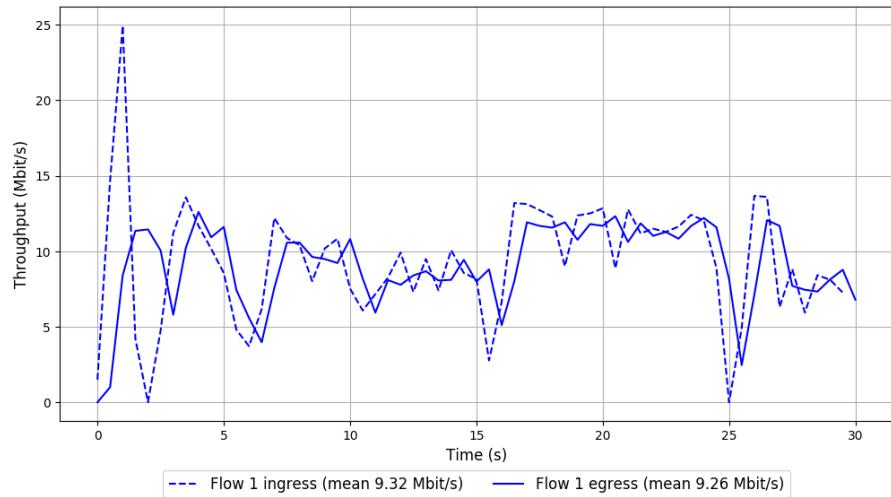


Run 2: Statistics of Verus

```
Start at: 2018-08-09 00:24:16
End at: 2018-08-09 00:24:46
Local clock offset: -1.079 ms
Remote clock offset: -18.575 ms

# Below is generated by plot.py at 2018-08-09 00:47:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.26 Mbit/s
95th percentile per-packet one-way delay: 457.665 ms
Loss rate: 0.76%
-- Flow 1:
Average throughput: 9.26 Mbit/s
95th percentile per-packet one-way delay: 457.665 ms
Loss rate: 0.76%
```

Run 2: Report of Verus — Data Link

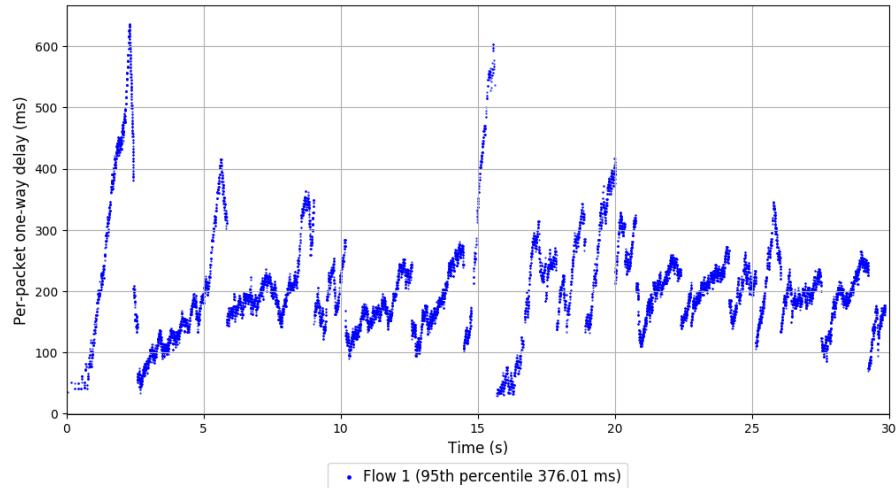
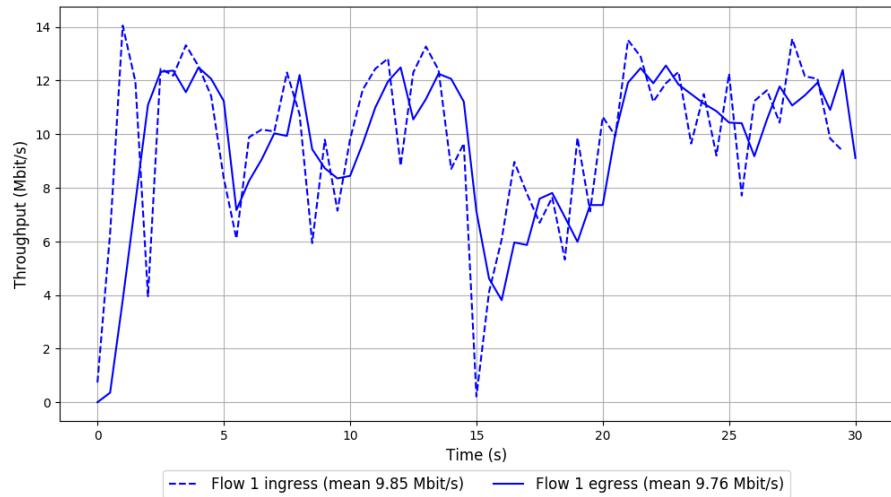


Run 3: Statistics of Verus

```
Start at: 2018-08-09 00:42:43
End at: 2018-08-09 00:43:13
Local clock offset: -4.042 ms
Remote clock offset: -21.258 ms

# Below is generated by plot.py at 2018-08-09 00:47:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.76 Mbit/s
95th percentile per-packet one-way delay: 376.010 ms
Loss rate: 0.93%
-- Flow 1:
Average throughput: 9.76 Mbit/s
95th percentile per-packet one-way delay: 376.010 ms
Loss rate: 0.93%
```

Run 3: Report of Verus — Data Link

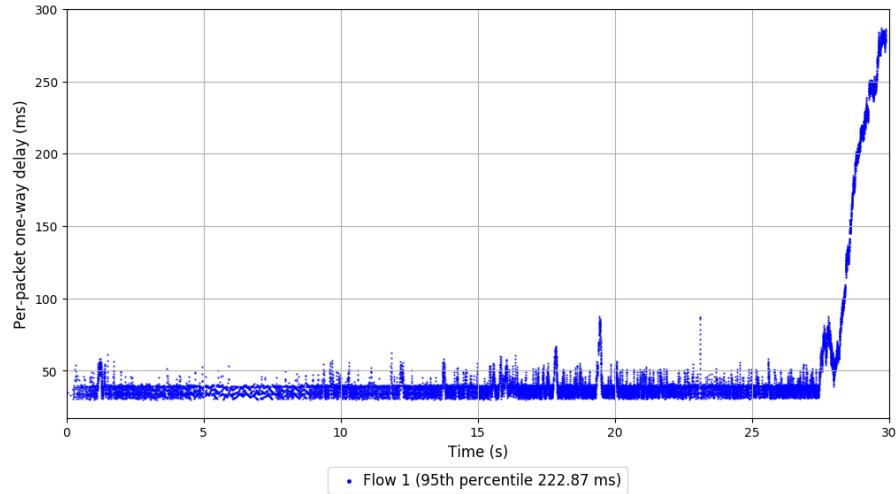
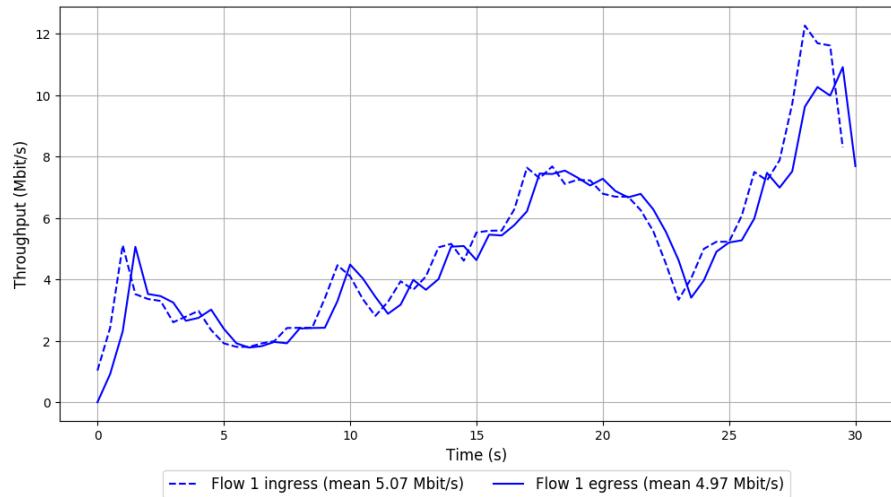


```
Run 1: Statistics of PCC-Vivace
```

```
Start at: 2018-08-08 23:59:23
End at: 2018-08-08 23:59:53
Local clock offset: -2.78 ms
Remote clock offset: -14.733 ms

# Below is generated by plot.py at 2018-08-09 00:47:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.97 Mbit/s
95th percentile per-packet one-way delay: 222.865 ms
Loss rate: 2.05%
-- Flow 1:
Average throughput: 4.97 Mbit/s
95th percentile per-packet one-way delay: 222.865 ms
Loss rate: 2.05%
```

Run 1: Report of PCC-Vivace — Data Link

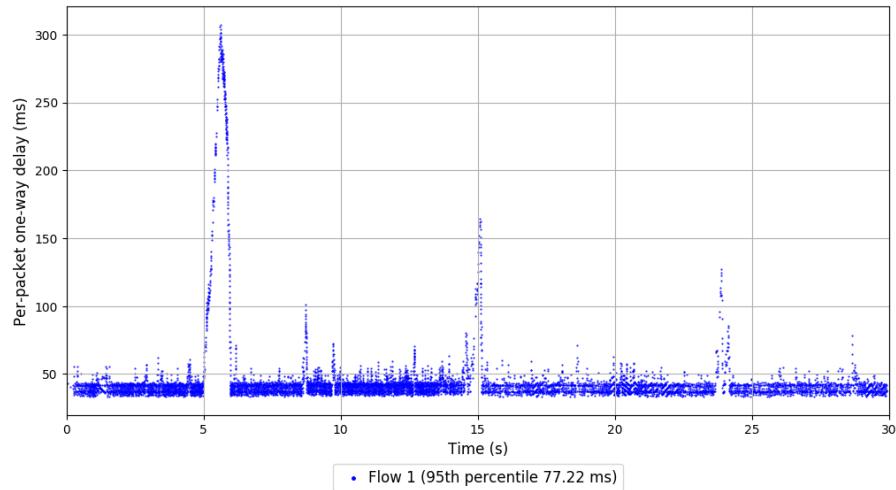
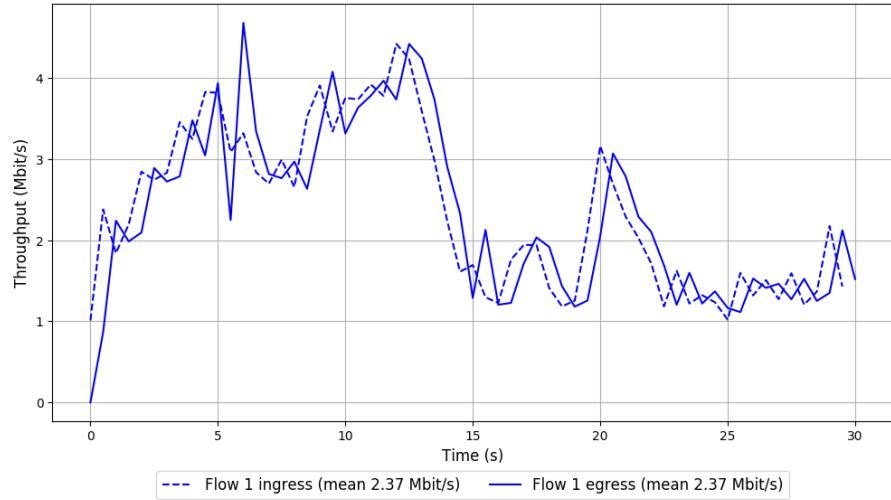


Run 2: Statistics of PCC-Vivace

```
Start at: 2018-08-09 00:17:48
End at: 2018-08-09 00:18:18
Local clock offset: -5.981 ms
Remote clock offset: -17.679 ms

# Below is generated by plot.py at 2018-08-09 00:47:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.37 Mbit/s
95th percentile per-packet one-way delay: 77.219 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 2.37 Mbit/s
95th percentile per-packet one-way delay: 77.219 ms
Loss rate: 0.08%
```

Run 2: Report of PCC-Vivace — Data Link

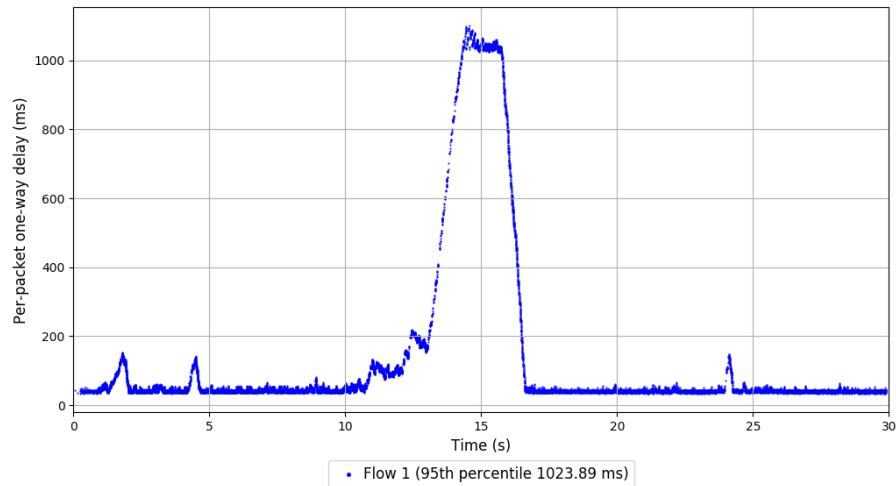
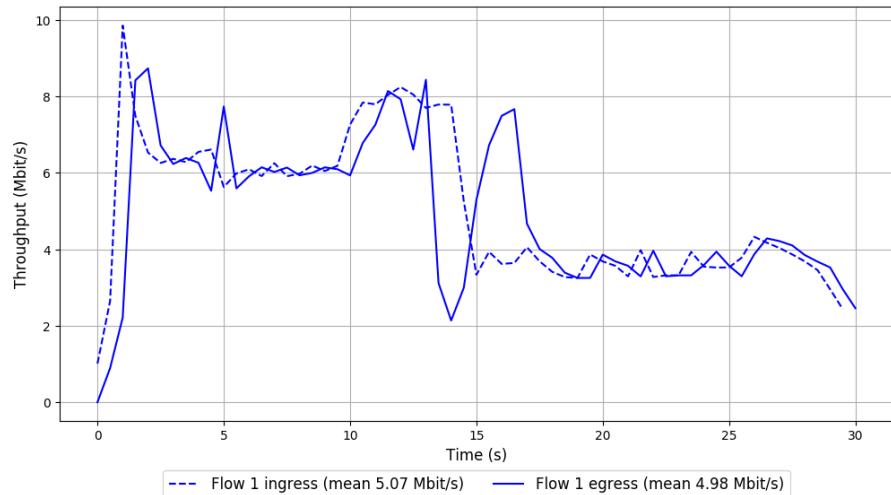


Run 3: Statistics of PCC-Vivace

```
Start at: 2018-08-09 00:36:13
End at: 2018-08-09 00:36:44
Local clock offset: -6.902 ms
Remote clock offset: -20.742 ms

# Below is generated by plot.py at 2018-08-09 00:47:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.98 Mbit/s
95th percentile per-packet one-way delay: 1023.892 ms
Loss rate: 1.87%
-- Flow 1:
Average throughput: 4.98 Mbit/s
95th percentile per-packet one-way delay: 1023.892 ms
Loss rate: 1.87%
```

Run 3: Report of PCC-Vivace — Data Link

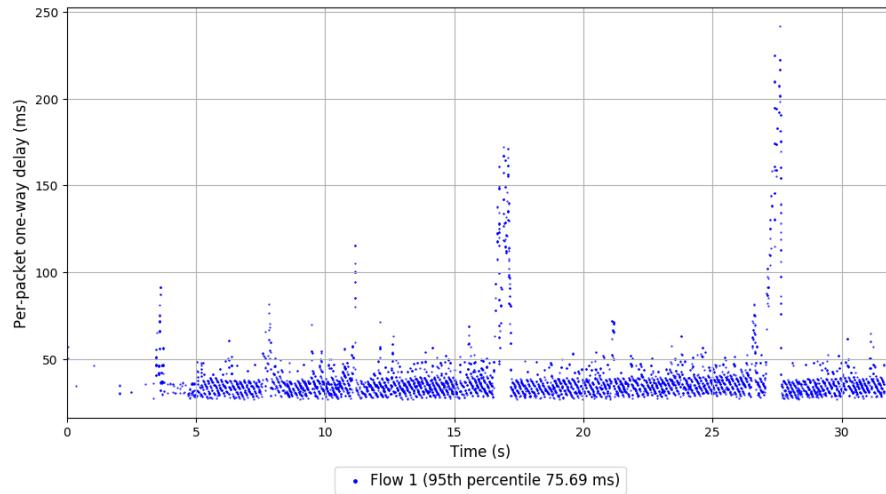
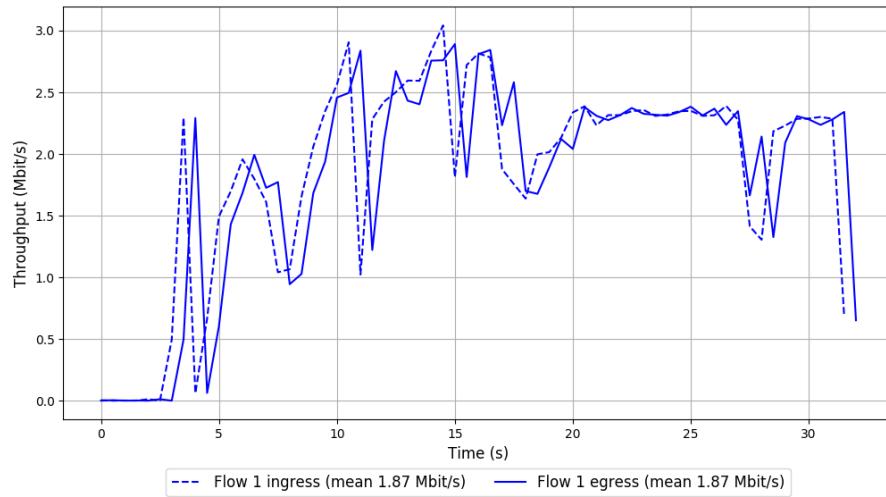


```
Run 1: Statistics of WebRTC media

Start at: 2018-08-09 00:00:28
End at: 2018-08-09 00:00:58
Local clock offset: -0.495 ms
Remote clock offset: -15.49 ms

# Below is generated by plot.py at 2018-08-09 00:47:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.87 Mbit/s
95th percentile per-packet one-way delay: 75.691 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 1.87 Mbit/s
95th percentile per-packet one-way delay: 75.691 ms
Loss rate: 0.11%
```

Run 1: Report of WebRTC media — Data Link

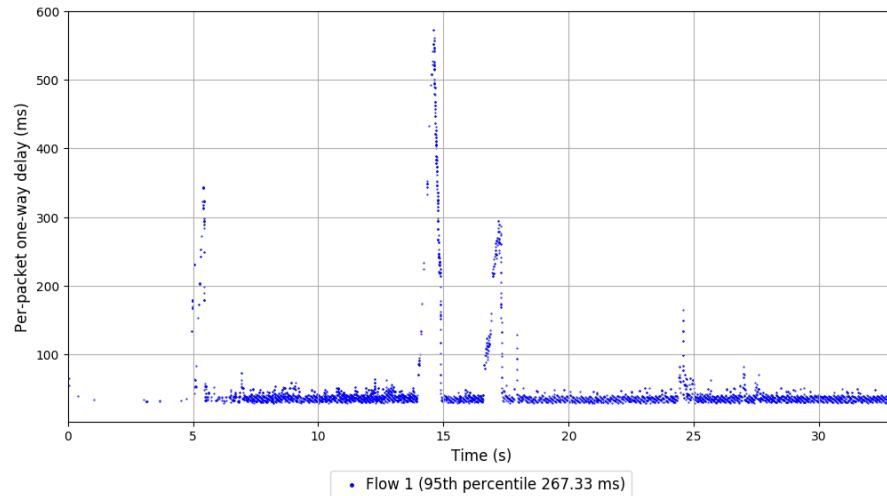
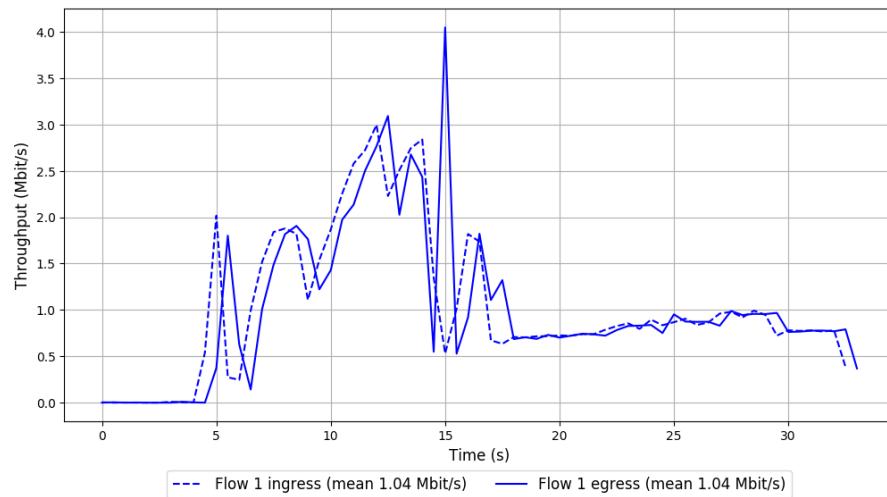


Run 2: Statistics of WebRTC media

```
Start at: 2018-08-09 00:18:52
End at: 2018-08-09 00:19:22
Local clock offset: -1.691 ms
Remote clock offset: -18.157 ms

# Below is generated by plot.py at 2018-08-09 00:47:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.04 Mbit/s
95th percentile per-packet one-way delay: 267.326 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 1.04 Mbit/s
95th percentile per-packet one-way delay: 267.326 ms
Loss rate: 0.19%
```

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

```
Start at: 2018-08-09 00:37:18
End at: 2018-08-09 00:37:48
Local clock offset: -4.062 ms
Remote clock offset: -19.95 ms

# Below is generated by plot.py at 2018-08-09 00:47:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.84 Mbit/s
95th percentile per-packet one-way delay: 53.542 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 1.84 Mbit/s
95th percentile per-packet one-way delay: 53.542 ms
Loss rate: 0.13%
```

Run 3: Report of WebRTC media — Data Link

