Pantheon Report

Generated at 2018-12-10 23:48:56 (UTC).

Data path: AWS India 1 on `ens5` (*local*) →India on `em1` (*remote*).

Repeated the test of 19 congestion control schemes 5 times.

Each test lasted for 30 seconds running 1 flow.

NTP offsets were measured against `nets.org.sg` and have been applied to correct the timestamps in logs.
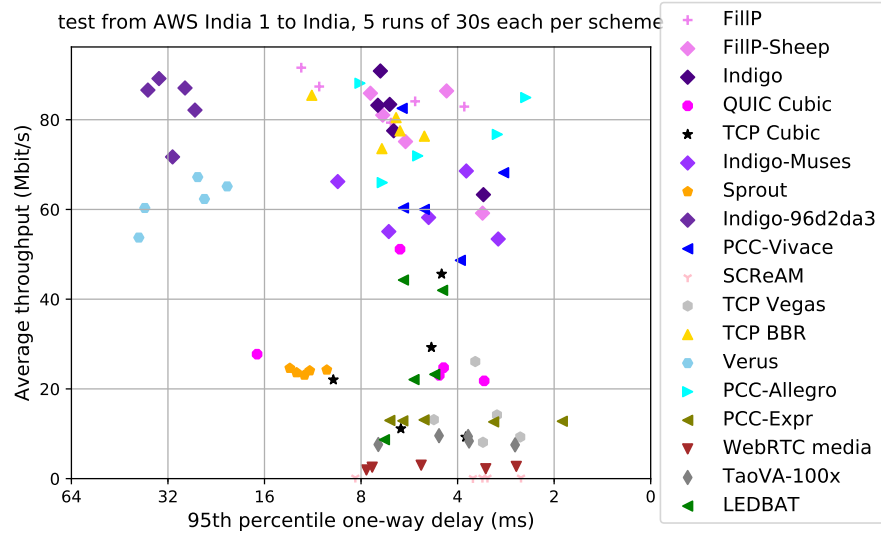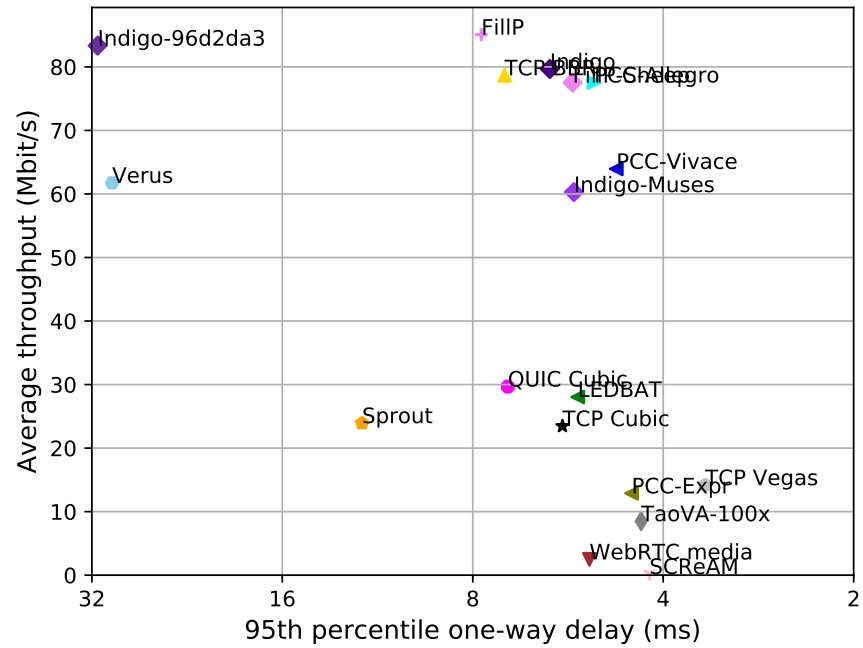
```
System info:
Linux 4.15.0-1029-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

Git summary:
branch: muses @ c6268d7c473682290bfe9901ef81a6b6a1e51d3c
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
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-quic @ 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, 5 runs of 30s each per scheme
(mean of all runs by scheme)

test from AWS India 1 to India, 5 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	5	78.67	7.12	9.93
Copa	0	N/A	N/A	N/A
TCP Cubic	5	23.46	5.77	0.32
FillP	5	85.07	7.76	10.29
FillP-Sheep	5	77.53	5.56	8.61
Indigo	5	79.67	6.04	7.68
Indigo-96d2da3	5	83.34	31.34	35.29
LEDBAT	5	28.05	5.46	0.67
Indigo-Muses	5	60.30	5.54	7.80
PCC-Allegro	5	77.54	5.14	6.12
PCC-Expr	5	12.87	4.49	43.72
QUIC Cubic	5	29.68	7.04	1.21
SCReAM	5	0.19	4.21	0.38
Sprout	5	23.92	11.97	1.25
TaoVA-100x	5	8.50	4.34	78.18
TCP Vegas	5	14.16	3.43	0.92
Verus	5	61.75	29.72	23.90
PCC-Vivace	5	63.95	4.75	6.13
WebRTC media	5	2.48	5.23	1.18

```
Run 1: Statistics of TCP BBR

Start at: 2018-12-10 22:11:20
End at: 2018-12-10 22:11:50
Local clock offset: 1.464 ms
Remote clock offset: -2.685 ms

# Below is generated by plot.py at 2018-12-10 23:43:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 73.56 Mbit/s
95th percentile per-packet one-way delay: 6.888 ms
Loss rate: 11.67%
-- Flow 1:
Average throughput: 73.56 Mbit/s
95th percentile per-packet one-way delay: 6.888 ms
Loss rate: 11.67%
```
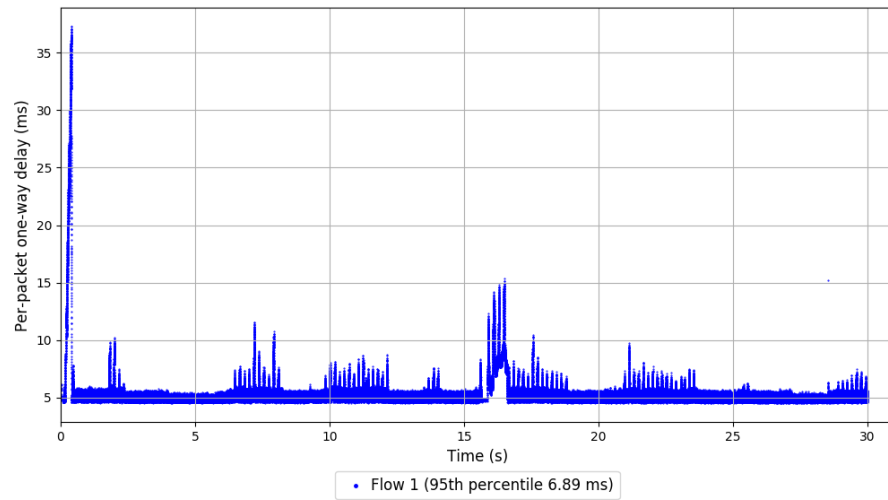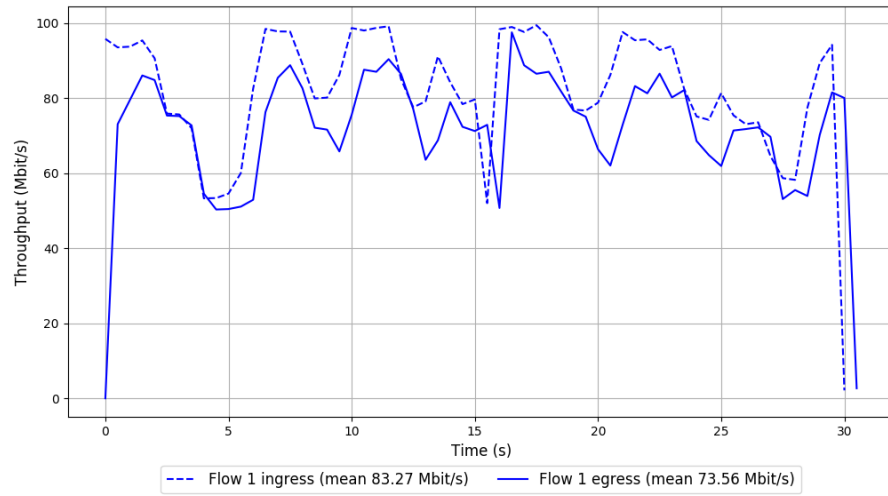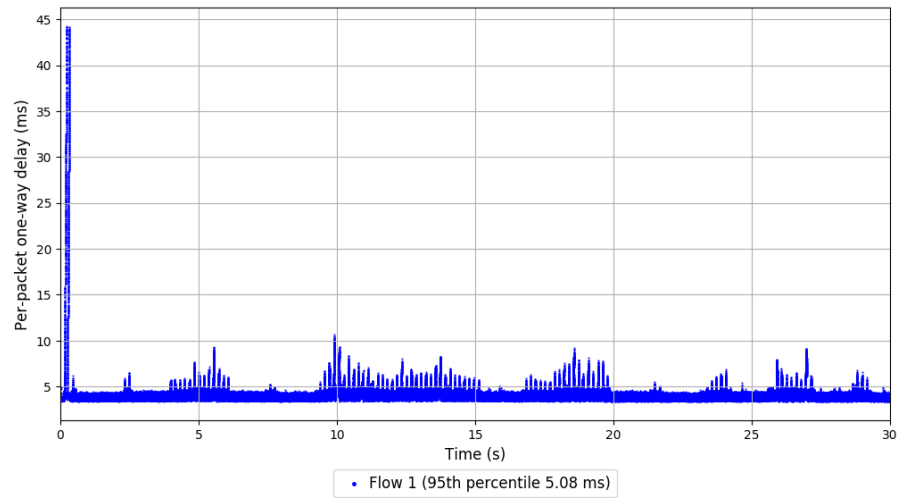
Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2018-12-10 22:32:48
End at: 2018-12-10 22:33:18
Local clock offset: 1.009 ms
Remote clock offset: -2.521 ms


# Below is generated by plot.py at 2018-12-10 23:43:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 76.34 Mbit/s
95th percentile per-packet one-way delay: 5.077 ms
Loss rate: 10.82%
-- Flow 1:
Average throughput: 76.34 Mbit/s
95th percentile per-packet one-way delay: 5.077 ms
Loss rate: 10.82%
```
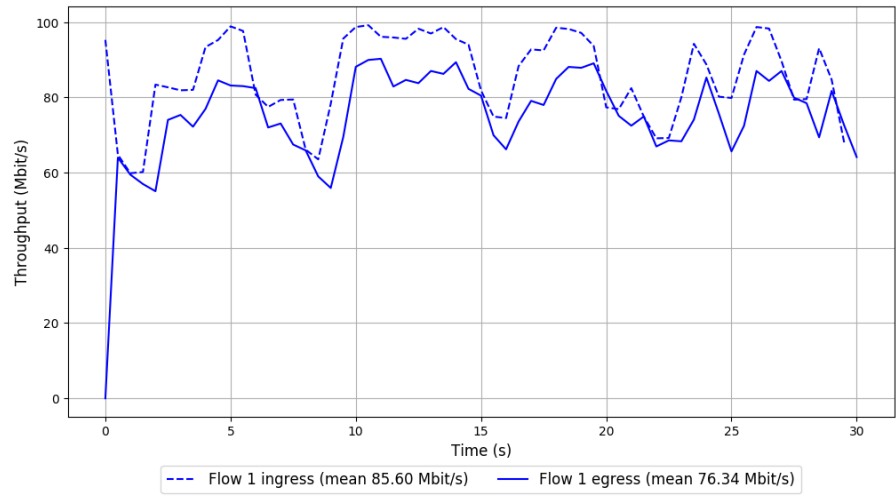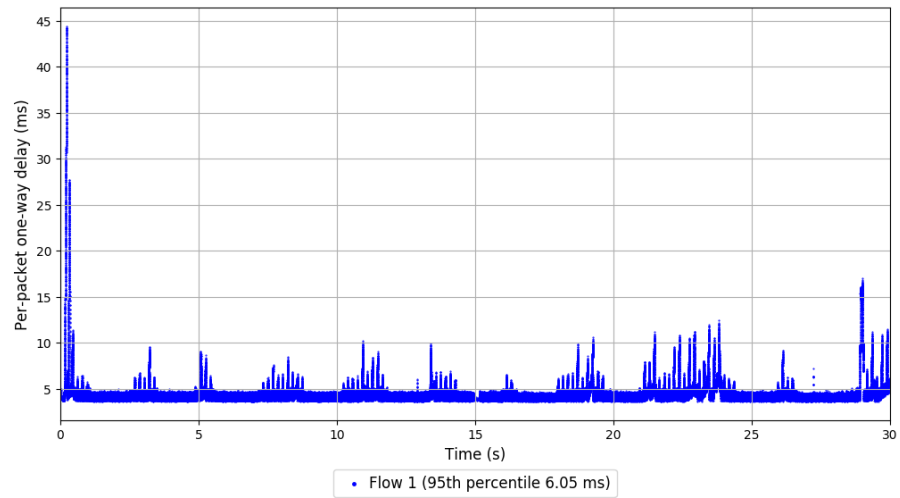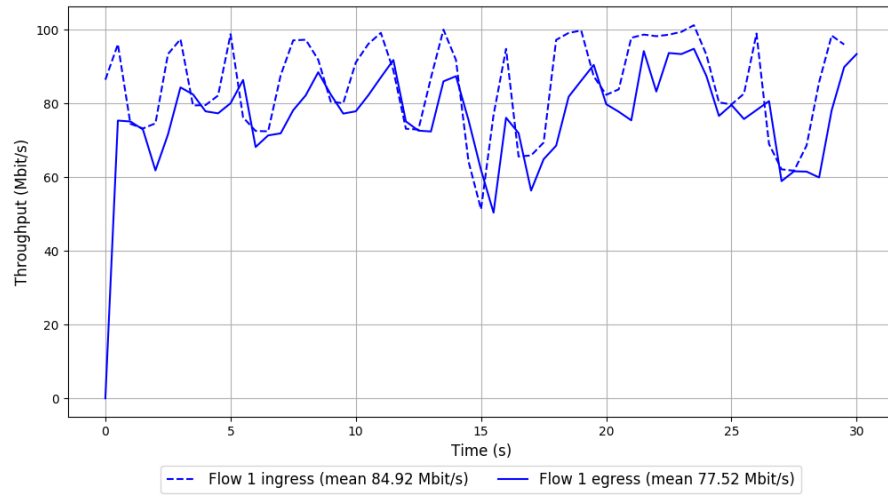
Run 2: Report of TCP BBR — Data Link

```
Run 3: Statistics of TCP BBR

Start at: 2018-12-10 22:54:15
End at: 2018-12-10 22:54:45
Local clock offset: 0.862 ms
Remote clock offset: -1.314 ms


# Below is generated by plot.py at 2018-12-10 23:43:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 77.52 Mbit/s
95th percentile per-packet one-way delay: 6.046 ms
Loss rate: 8.71%
-- Flow 1:
Average throughput: 77.52 Mbit/s
95th percentile per-packet one-way delay: 6.046 ms
Loss rate: 8.71%
```
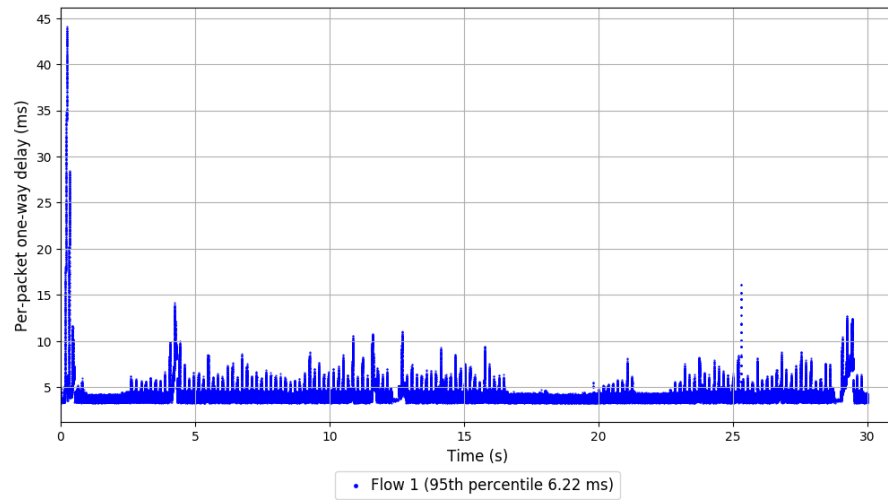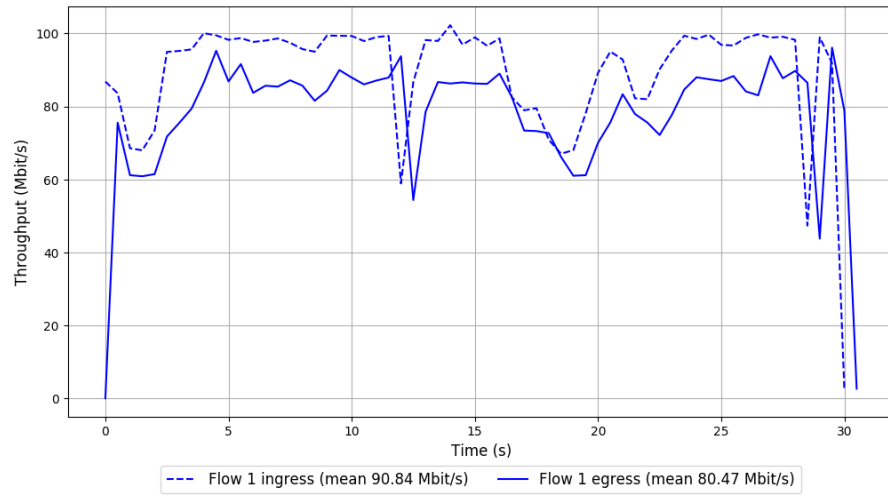
Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 84.92 Mbit/s)   Flow 1 egress (mean 77.52 Mbit/s)

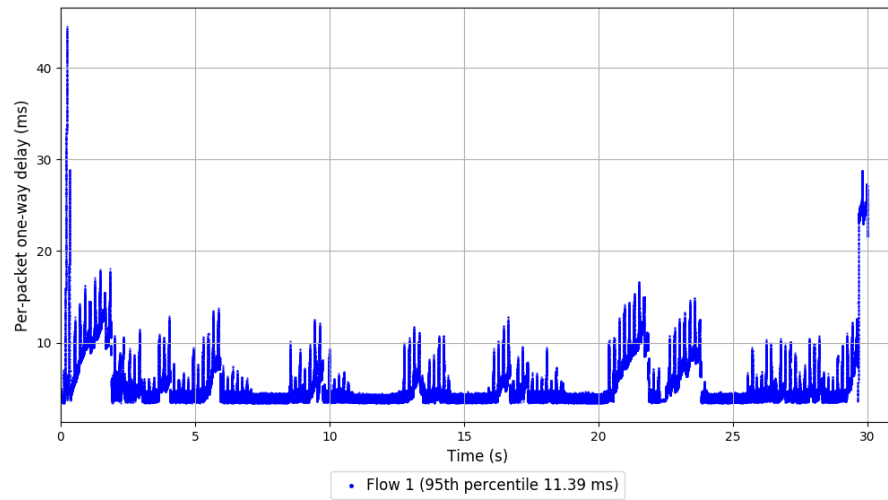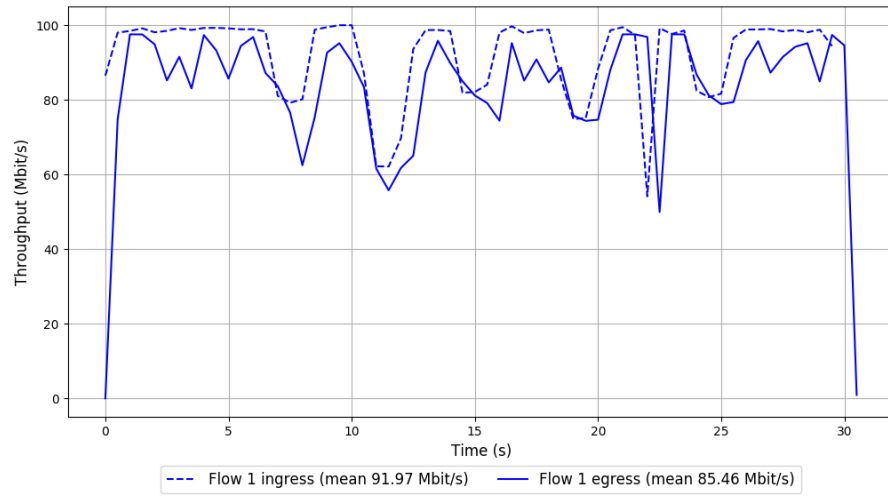• Flow 1 (95th percentile 6.05 ms)

```
Run 4: Statistics of TCP BBR

Start at: 2018-12-10 23:15:50
End at: 2018-12-10 23:16:20
Local clock offset: 2.347 ms
Remote clock offset: -0.821 ms


# Below is generated by plot.py at 2018-12-10 23:43:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 80.47 Mbit/s
95th percentile per-packet one-way delay: 6.221 ms
Loss rate: 11.41%
-- Flow 1:
Average throughput: 80.47 Mbit/s
95th percentile per-packet one-way delay: 6.221 ms
Loss rate: 11.41%
```

Run 4: Report of TCP BBR — Data Link

Flow 1 ingress (mean 90.84 Mbit/s)   Flow 1 egress (mean 80.47 Mbit/s)

Flow 1 (95th percentile 6.22 ms)

```
Run 5: Statistics of TCP BBR

Start at: 2018-12-10 23:37:25
End at: 2018-12-10 23:37:55
Local clock offset: -3.733 ms
Remote clock offset: -8.188 ms


# Below is generated by plot.py at 2018-12-10 23:43:27
# Datalink statistics
-- Total of 1 flow:
Average throughput: 85.46 Mbit/s
95th percentile per-packet one-way delay: 11.393 ms
Loss rate: 7.03%
-- Flow 1:
Average throughput: 85.46 Mbit/s
95th percentile per-packet one-way delay: 11.393 ms
Loss rate: 7.03%
```

Run 5: Report of TCP BBR — Data Link
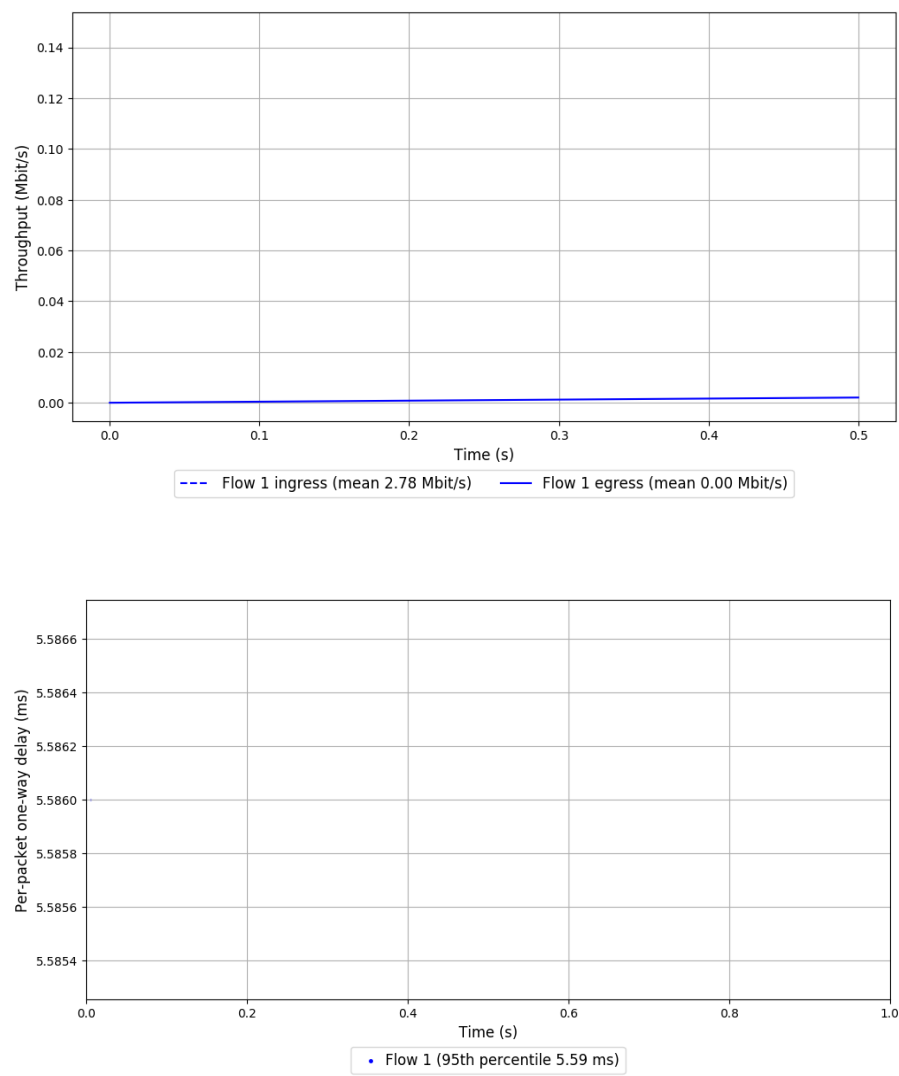
```
Run 1: Statistics of Copa

Start at: 2018-12-10 21:57:40
End at: 2018-12-10 21:58:10
Local clock offset: 1.33 ms
Remote clock offset: -6.196 ms
```

Run 1: Report of Copa — Data Link

Flow 1 ingress (mean 2.82 Mbit/s)   Flow 1 egress (mean 0.00 Mbit/s)

Flow 1 (95th percentile 0.86 ms)

```
Run 2: Statistics of Copa

Start at: 2018-12-10 22:19:15
End at: 2018-12-10 22:19:45
Local clock offset: 2.913 ms
Remote clock offset: -1.966 ms
```

Run 2: Report of Copa — Data Link
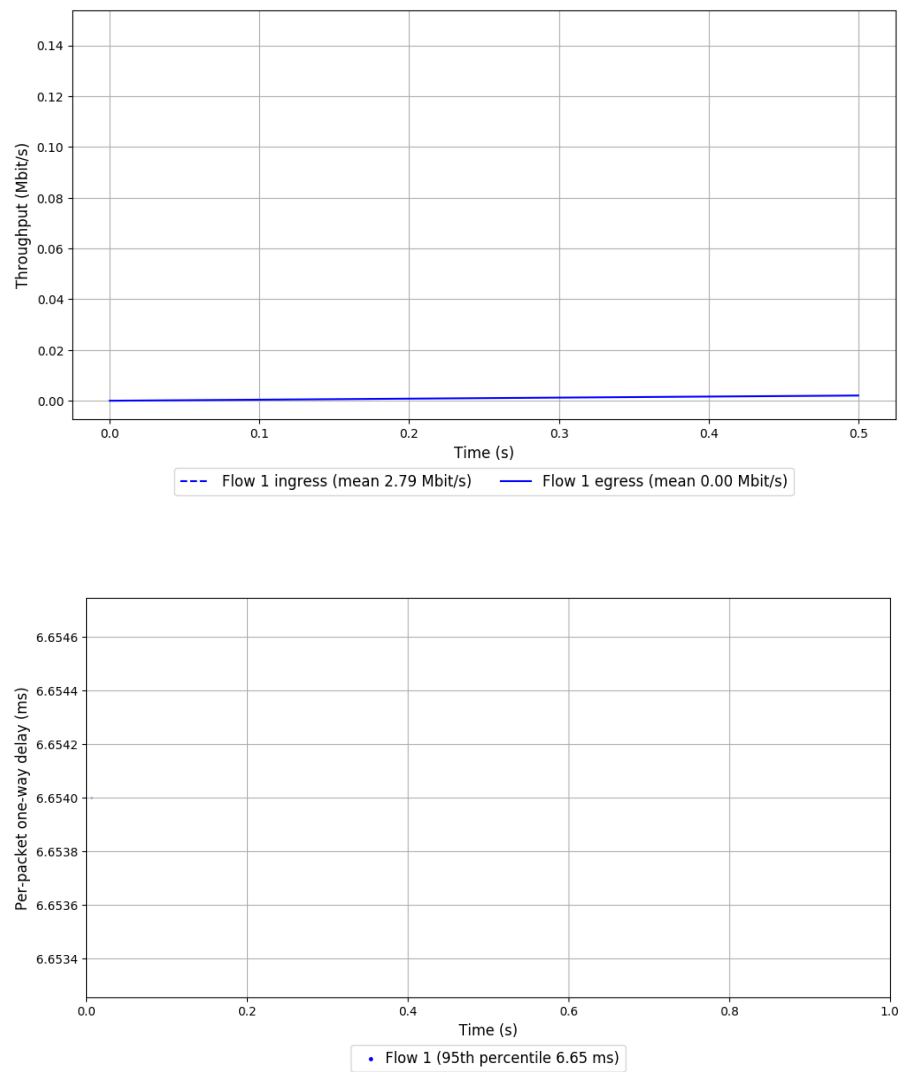
```
Run 3: Statistics of Copa

Start at: 2018-12-10 22:40:45
End at: 2018-12-10 22:41:15
Local clock offset: -0.064 ms
Remote clock offset: -1.74 ms
```
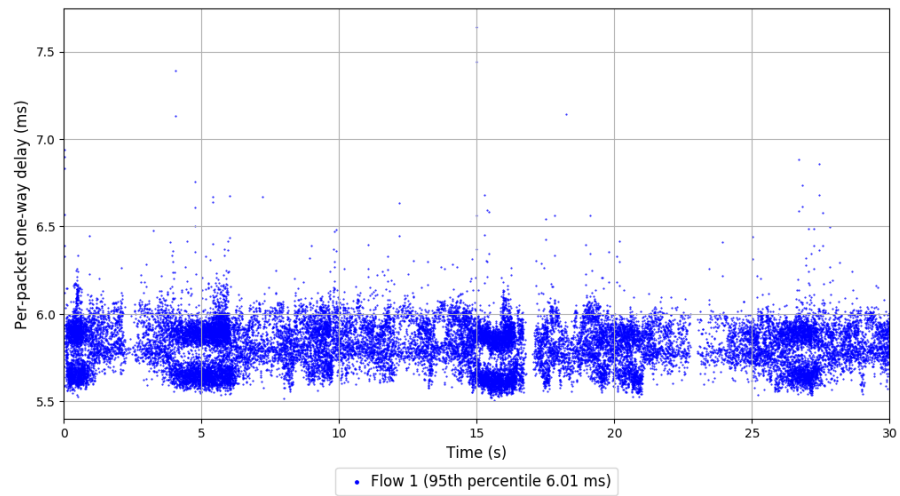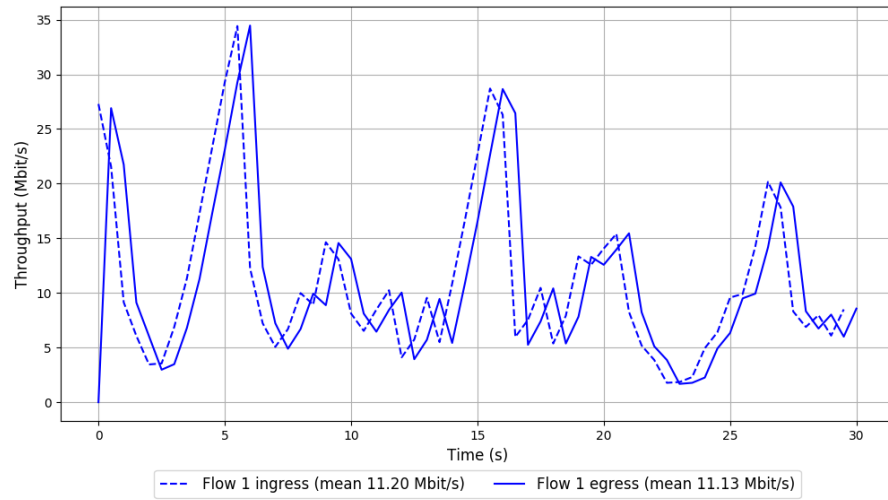
Run 3: Report of Copa — Data Link

Flow 1 ingress (mean 2.78 Mbit/s)   Flow 1 egress (mean 0.00 Mbit/s)
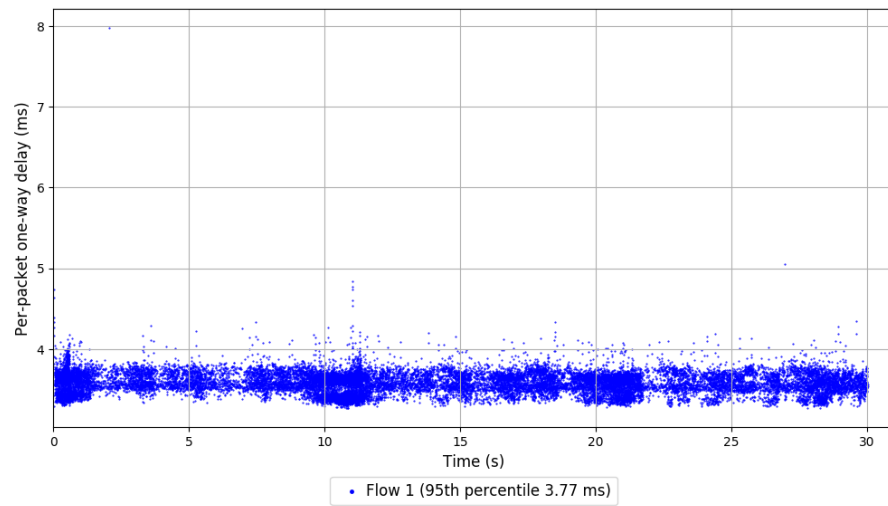

Flow 1 (95th percentile 5.59 ms)

```
Run 4: Statistics of Copa

Start at: 2018-12-10 23:02:15
End at: 2018-12-10 23:02:45
Local clock offset: 2.813 ms
Remote clock offset: -1.043 ms
```

Run 4: Report of Copa — Data Link

Flow 1 ingress (mean 2.77 Mbit/s) — Flow 1 egress (mean 0.00 Mbit/s)

Flow 1 (95th percentile 3.10 ms)

```
Run 5: Statistics of Copa

Start at: 2018-12-10 23:23:49
End at: 2018-12-10 23:24:19
Local clock offset: -0.515 ms
Remote clock offset: -0.64 ms
```

Run 5: Report of Copa — Data Link

Flow 1 ingress (mean 2.79 Mbit/s) — Flow 1 egress (mean 0.00 Mbit/s)
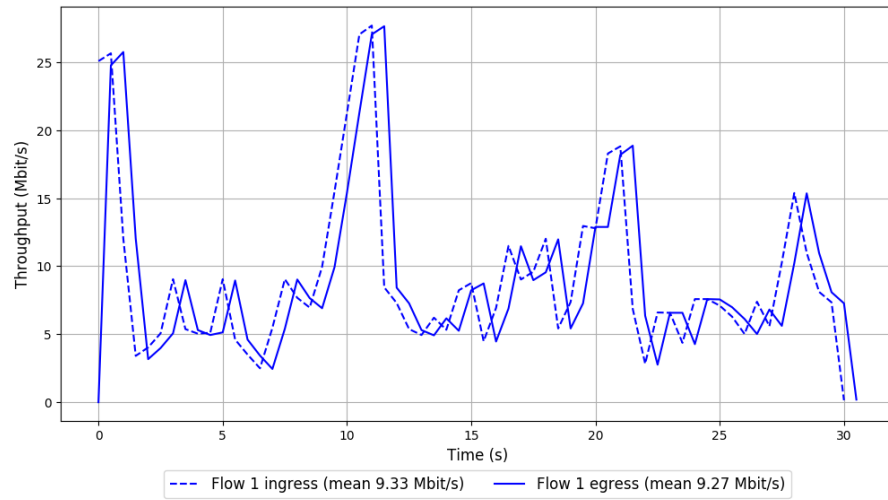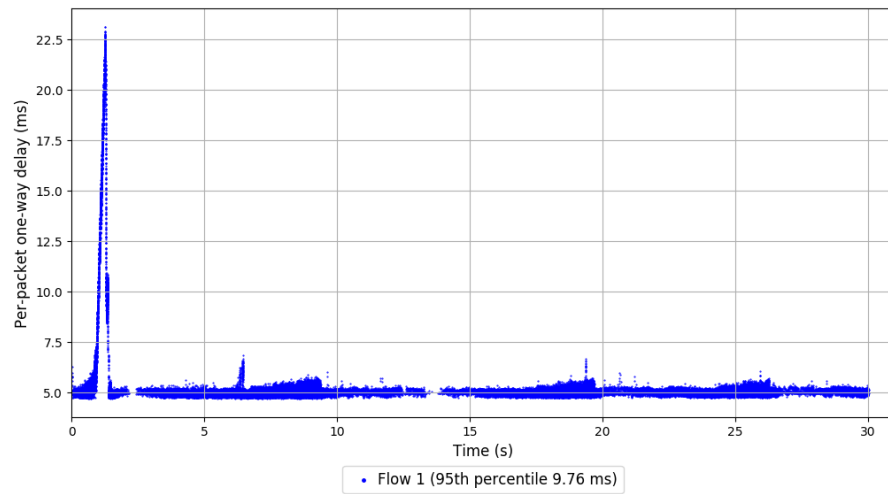

Flow 1 (95th percentile 6.65 ms)

```
Run 1: Statistics of TCP Cubic

Start at: 2018-12-10 22:14:48
End at: 2018-12-10 22:15:18
Local clock offset: -0.242 ms
Remote clock offset: -2.697 ms


# Below is generated by plot.py at 2018-12-10 23:43:27
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.13 Mbit/s
95th percentile per-packet one-way delay: 6.011 ms
Loss rate: 0.56%
-- Flow 1:
Average throughput: 11.13 Mbit/s
95th percentile per-packet one-way delay: 6.011 ms
Loss rate: 0.56%
```
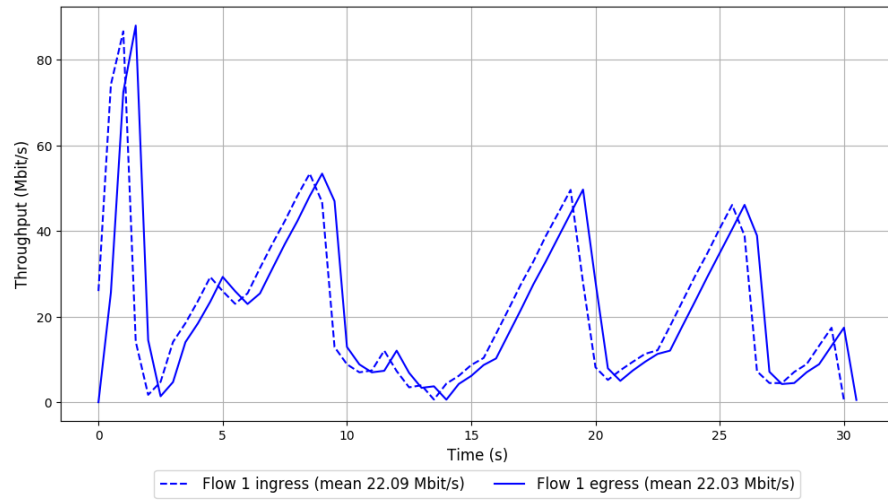
Run 1: Report of TCP Cubic — Data Link

```
Run 2: Statistics of TCP Cubic

Start at: 2018-12-10 22:36:15
End at: 2018-12-10 22:36:45
Local clock offset: 2.787 ms
Remote clock offset: -1.071 ms


# Below is generated by plot.py at 2018-12-10 23:43:27
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.27 Mbit/s
95th percentile per-packet one-way delay: 3.773 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 9.27 Mbit/s
95th percentile per-packet one-way delay: 3.773 ms
Loss rate: 0.64%
```

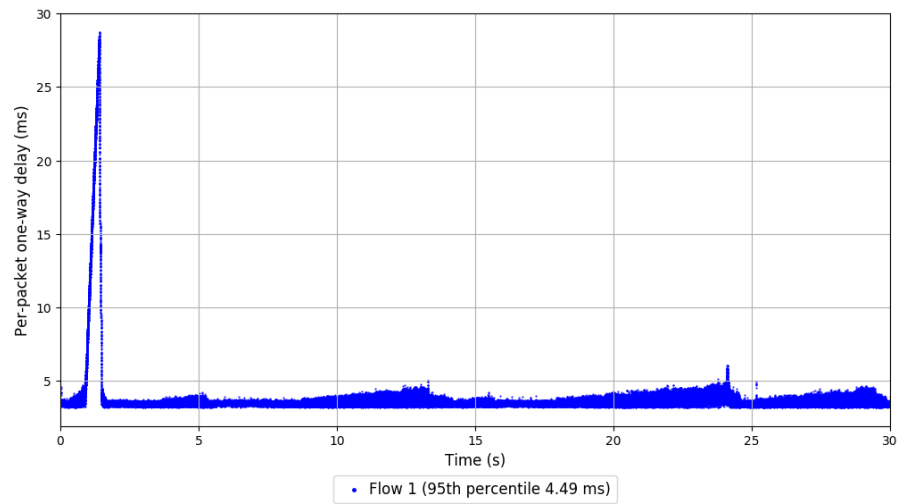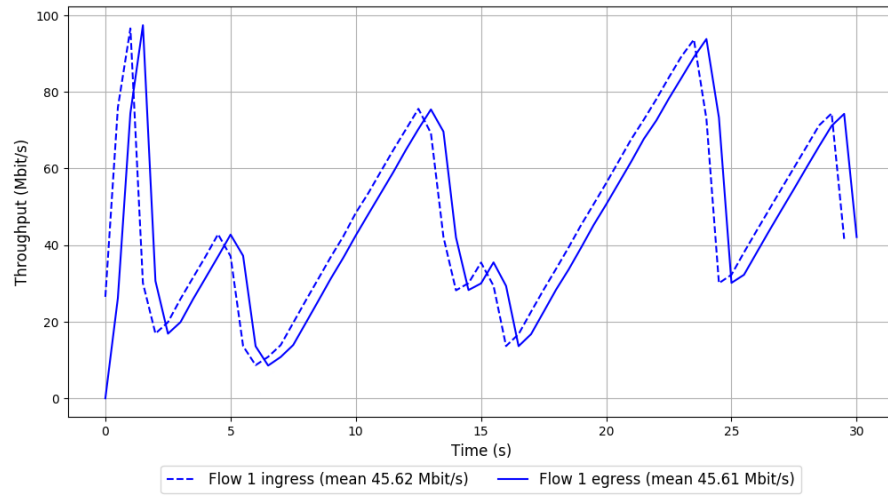Run 2: Report of TCP Cubic — Data Link

```
Run 3: Statistics of TCP Cubic

Start at: 2018-12-10 22:57:46
End at: 2018-12-10 22:58:16
Local clock offset: -0.096 ms
Remote clock offset: -1.252 ms


# Below is generated by plot.py at 2018-12-10 23:43:27
# Datalink statistics
-- Total of 1 flow:
Average throughput: 22.03 Mbit/s
95th percentile per-packet one-way delay: 9.760 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 22.03 Mbit/s
95th percentile per-packet one-way delay: 9.760 ms
Loss rate: 0.26%
```

Run 3: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 22.09 Mbit/s) ----   Flow 1 egress (mean 22.03 Mbit/s) ——

Flow 1 (95th percentile 9.76 ms)

```
Run 4: Statistics of TCP Cubic

Start at: 2018-12-10 23:19:19
End at: 2018-12-10 23:19:49
Local clock offset: 1.668 ms
Remote clock offset: -1.492 ms


# Below is generated by plot.py at 2018-12-10 23:43:27
# Datalink statistics
-- Total of 1 flow:
Average throughput: 45.61 Mbit/s
95th percentile per-packet one-way delay: 4.486 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 45.61 Mbit/s
95th percentile per-packet one-way delay: 4.486 ms
Loss rate: 0.04%
```
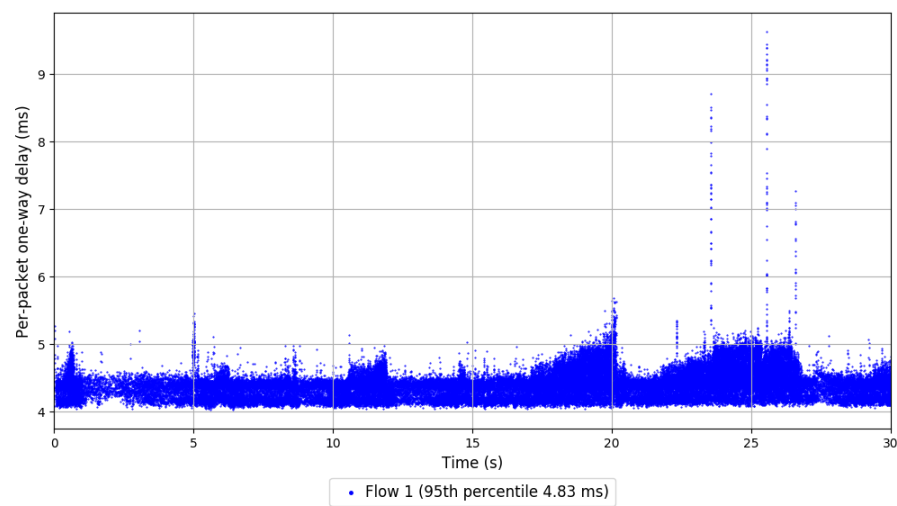
Run 4: Report of TCP Cubic — Data Link

```
Run 5: Statistics of TCP Cubic

Start at: 2018-12-10 23:40:57
End at: 2018-12-10 23:41:27
Local clock offset: 3.422 ms
Remote clock offset: -0.7 ms


# Below is generated by plot.py at 2018-12-10 23:43:27
# Datalink statistics
-- Total of 1 flow:
Average throughput: 29.27 Mbit/s
95th percentile per-packet one-way delay: 4.827 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 29.27 Mbit/s
95th percentile per-packet one-way delay: 4.827 ms
Loss rate: 0.11%
```
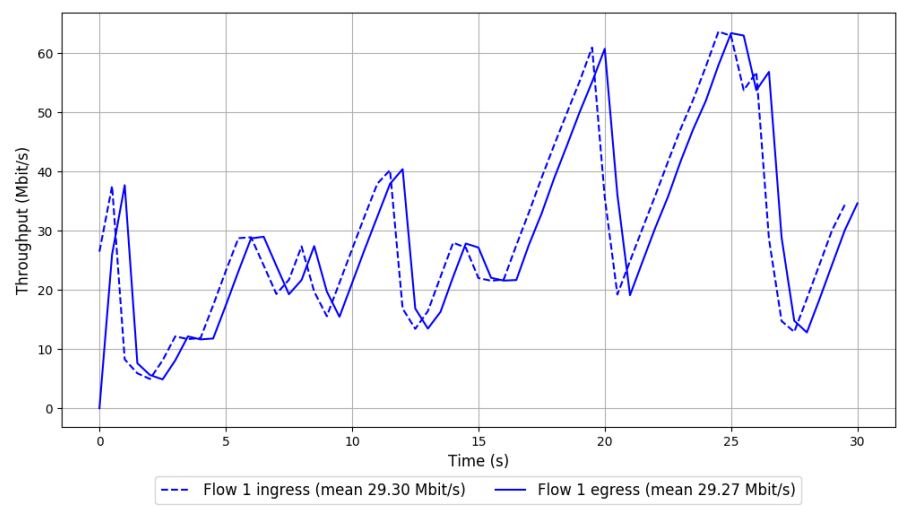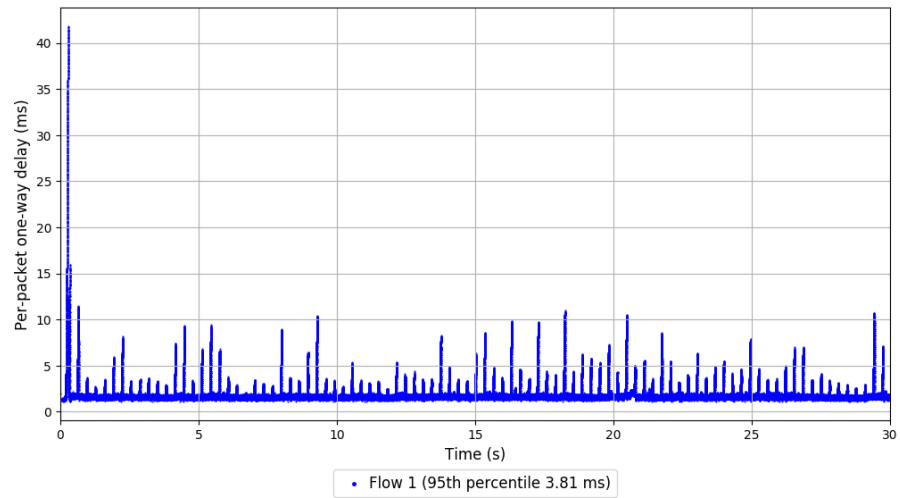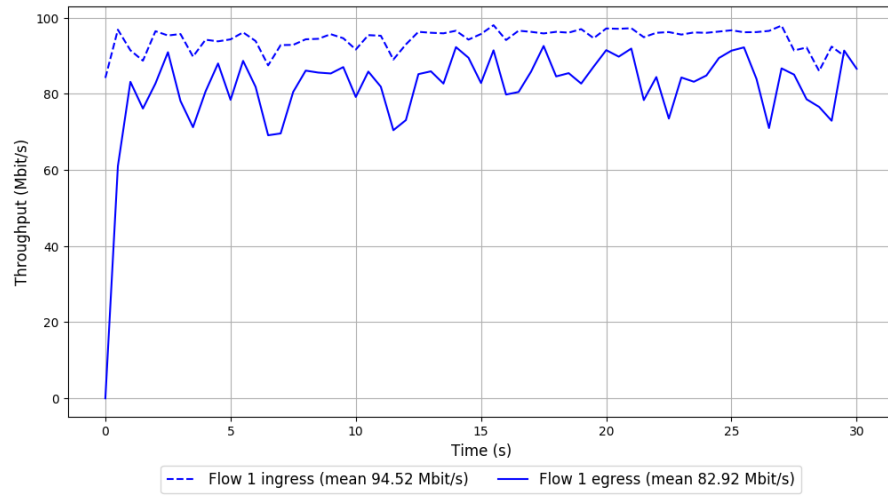
Run 5: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 29.30 Mbit/s) --- Flow 1 egress (mean 29.27 Mbit/s)

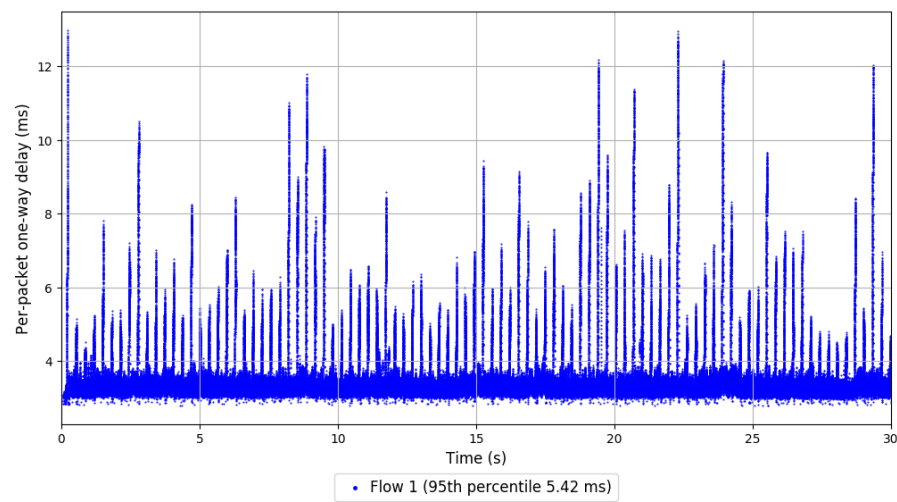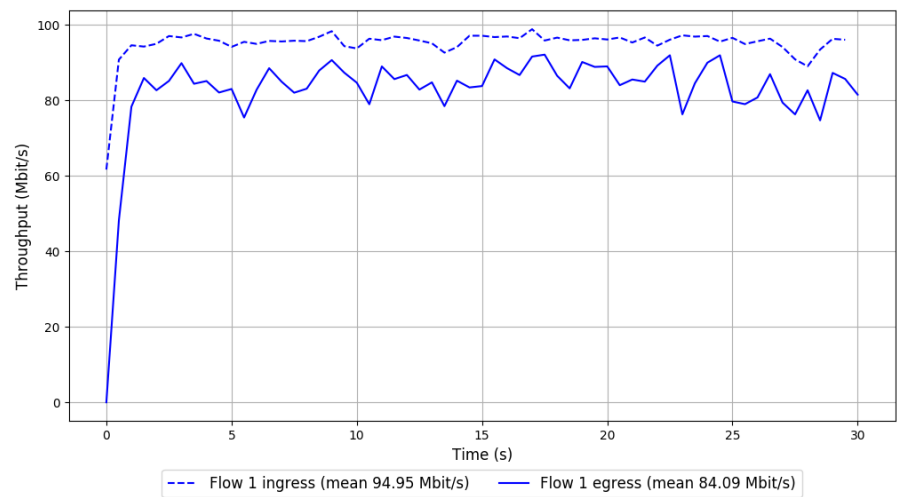• Flow 1 (95th percentile 4.83 ms)

```
Run 1: Statistics of FillP

Start at: 2018-12-10 22:12:30
End at: 2018-12-10 22:13:00
Local clock offset: 3.87 ms
Remote clock offset: -3.016 ms


# Below is generated by plot.py at 2018-12-10 23:43:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 82.92 Mbit/s
95th percentile per-packet one-way delay: 3.812 ms
Loss rate: 12.27%
-- Flow 1:
Average throughput: 82.92 Mbit/s
95th percentile per-packet one-way delay: 3.812 ms
Loss rate: 12.27%
```
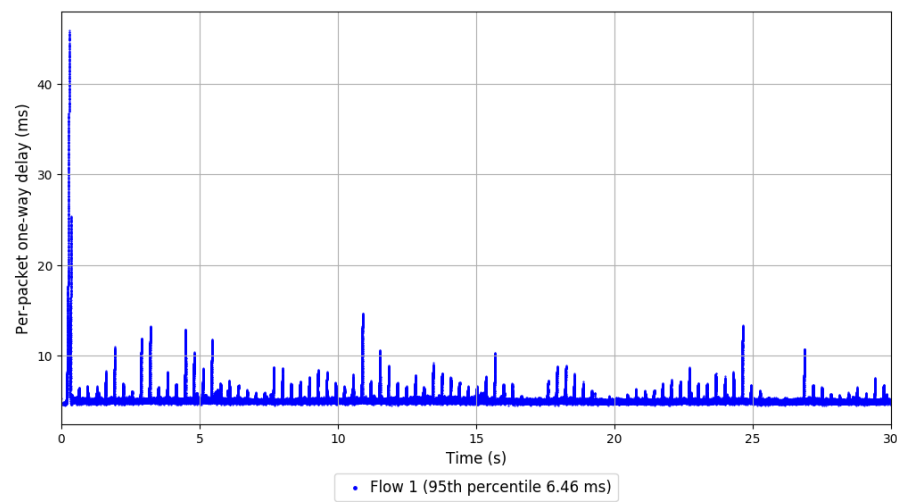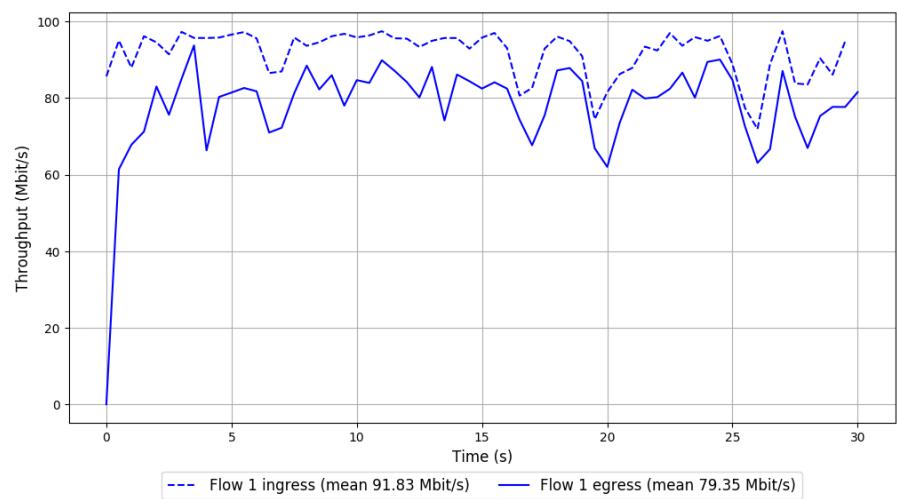
Run 1: Report of FillP — Data Link

```
Run 2: Statistics of FillP

Start at: 2018-12-10 22:34:00
End at: 2018-12-10 22:34:30
Local clock offset: 2.389 ms
Remote clock offset: -1.876 ms


# Below is generated by plot.py at 2018-12-10 23:44:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 84.09 Mbit/s
95th percentile per-packet one-way delay: 5.425 ms
Loss rate: 11.44%
-- Flow 1:
Average throughput: 84.09 Mbit/s
95th percentile per-packet one-way delay: 5.425 ms
Loss rate: 11.44%
```
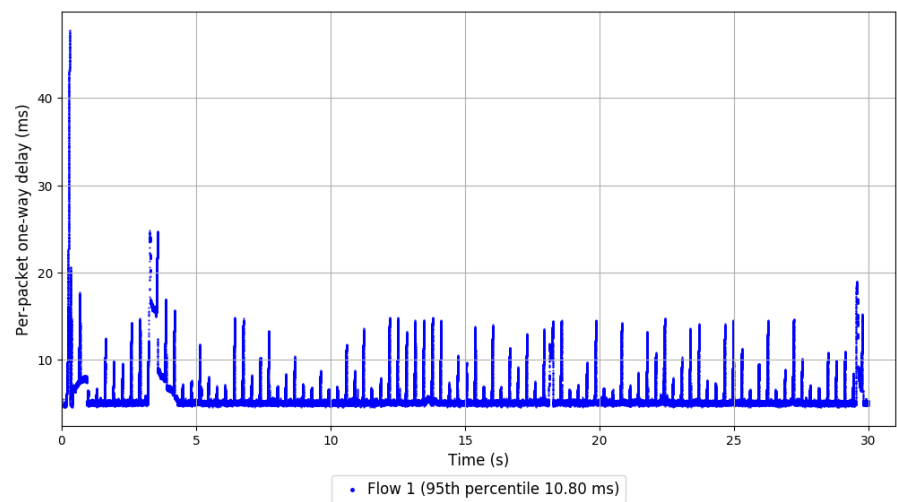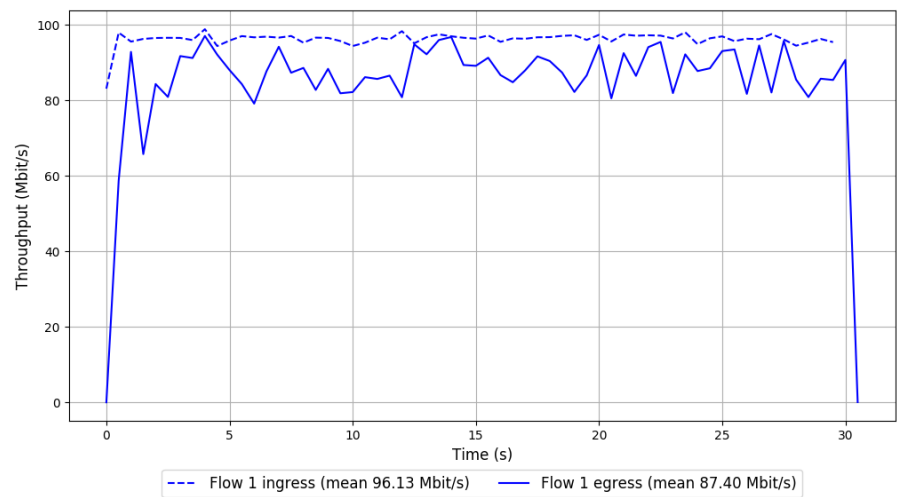
Run 2: Report of FillP — Data Link

```
Run 3: Statistics of FillP

Start at: 2018-12-10 22:55:29
End at: 2018-12-10 22:55:59
Local clock offset: 0.223 ms
Remote clock offset: -0.768 ms


# Below is generated by plot.py at 2018-12-10 23:44:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 79.35 Mbit/s
95th percentile per-packet one-way delay: 6.458 ms
Loss rate: 13.60%
-- Flow 1:
Average throughput: 79.35 Mbit/s
95th percentile per-packet one-way delay: 6.458 ms
Loss rate: 13.60%
```
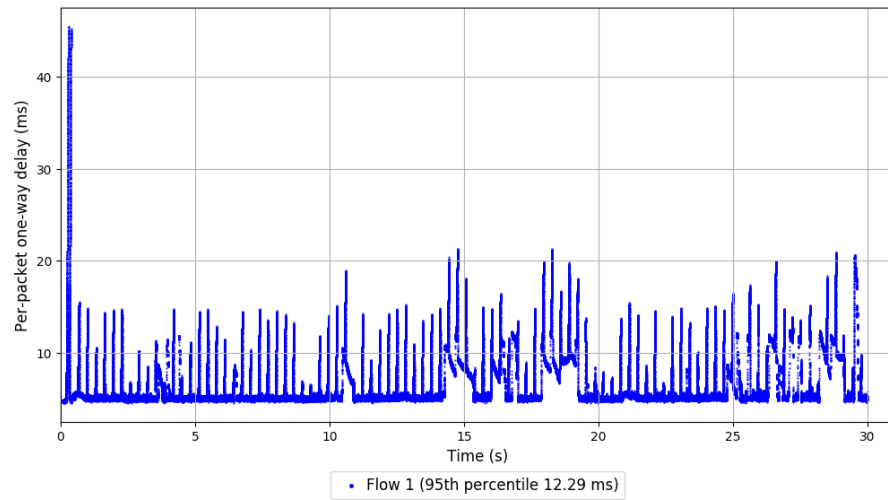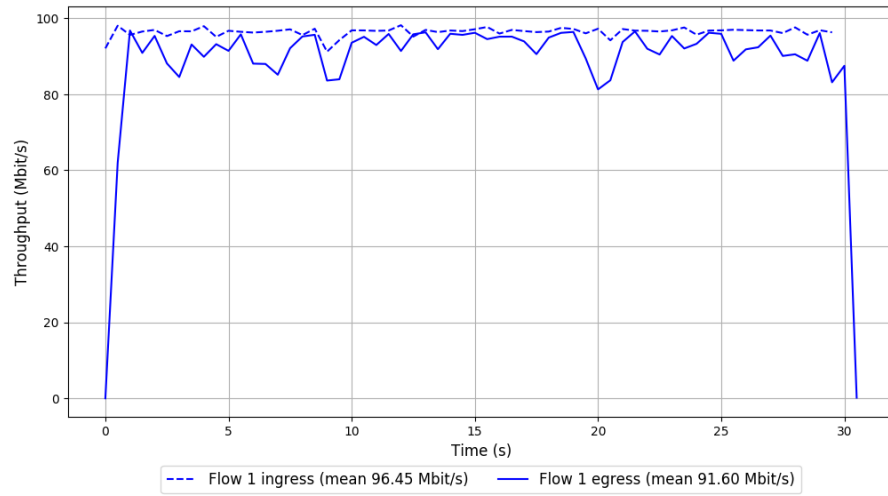
Run 3: Report of FillP — Data Link

Flow 1 ingress (mean 91.83 Mbit/s) --- Flow 1 egress (mean 79.35 Mbit/s)

• Flow 1 (95th percentile 6.46 ms)

```
Run 4: Statistics of FillP

Start at: 2018-12-10 23:17:02
End at: 2018-12-10 23:17:32
Local clock offset: 1.267 ms
Remote clock offset: -0.366 ms


# Below is generated by plot.py at 2018-12-10 23:44:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 87.40 Mbit/s
95th percentile per-packet one-way delay: 10.801 ms
Loss rate: 9.09%
-- Flow 1:
Average throughput: 87.40 Mbit/s
95th percentile per-packet one-way delay: 10.801 ms
Loss rate: 9.09%
```
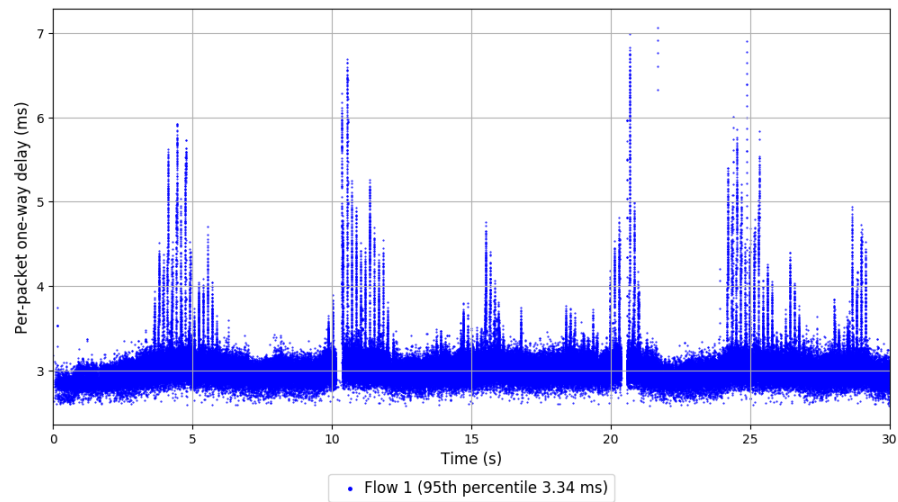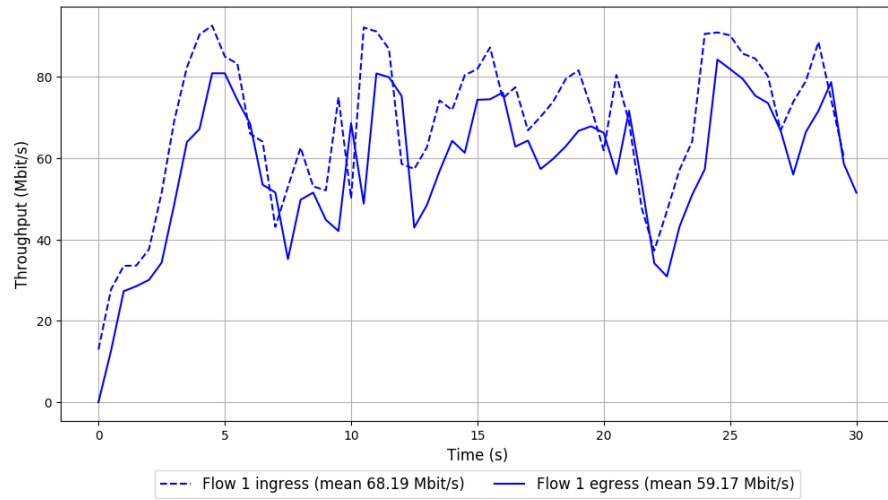
Run 4: Report of FillP — Data Link

Flow 1 ingress (mean 96.13 Mbit/s) — — — Flow 1 egress (mean 87.40 Mbit/s)

• Flow 1 (95th percentile 10.80 ms)

```
Run 5: Statistics of FillP

Start at: 2018-12-10 23:38:37
End at: 2018-12-10 23:39:07
Local clock offset: 2.778 ms
Remote clock offset: -0.429 ms


# Below is generated by plot.py at 2018-12-10 23:44:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.60 Mbit/s
95th percentile per-packet one-way delay: 12.289 ms
Loss rate: 5.03%
-- Flow 1:
Average throughput: 91.60 Mbit/s
95th percentile per-packet one-way delay: 12.289 ms
Loss rate: 5.03%
```

Run 5: Report of FillP — Data Link

```
Run 1: Statistics of FillP-Sheep

Start at: 2018-12-10 22:10:11
End at: 2018-12-10 22:10:41
Local clock offset: 2.94 ms
Remote clock offset: -3.053 ms


# Below is generated by plot.py at 2018-12-10 23:44:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 59.17 Mbit/s
95th percentile per-packet one-way delay: 3.344 ms
Loss rate: 13.22%
-- Flow 1:
Average throughput: 59.17 Mbit/s
95th percentile per-packet one-way delay: 3.344 ms
Loss rate: 13.22%
```

Run 1: Report of FillP-Sheep — Data Link

```
Run 2: Statistics of FillP-Sheep

Start at: 2018-12-10 22:31:38
End at: 2018-12-10 22:32:08
Local clock offset: 0.967 ms
Remote clock offset: -2.124 ms


# Below is generated by plot.py at 2018-12-10 23:44:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 75.13 Mbit/s
95th percentile per-packet one-way delay: 5.814 ms
Loss rate: 10.53%
-- Flow 1:
Average throughput: 75.13 Mbit/s
95th percentile per-packet one-way delay: 5.814 ms
Loss rate: 10.53%
```
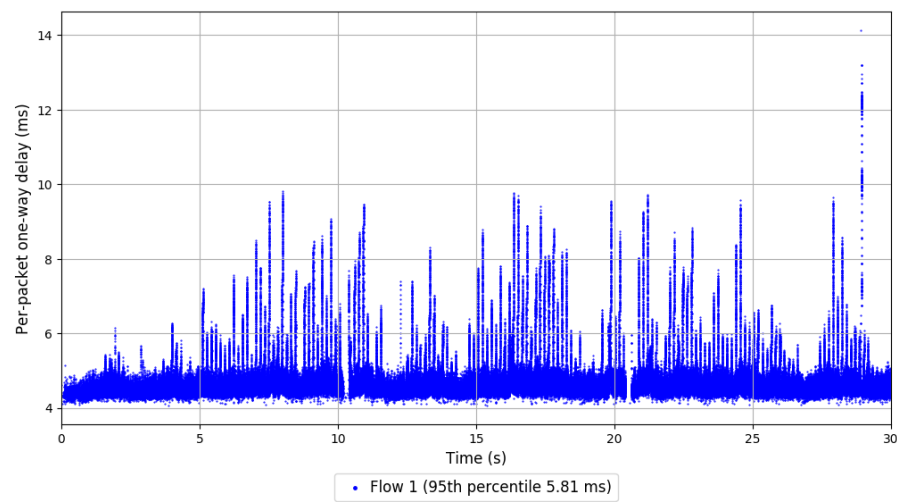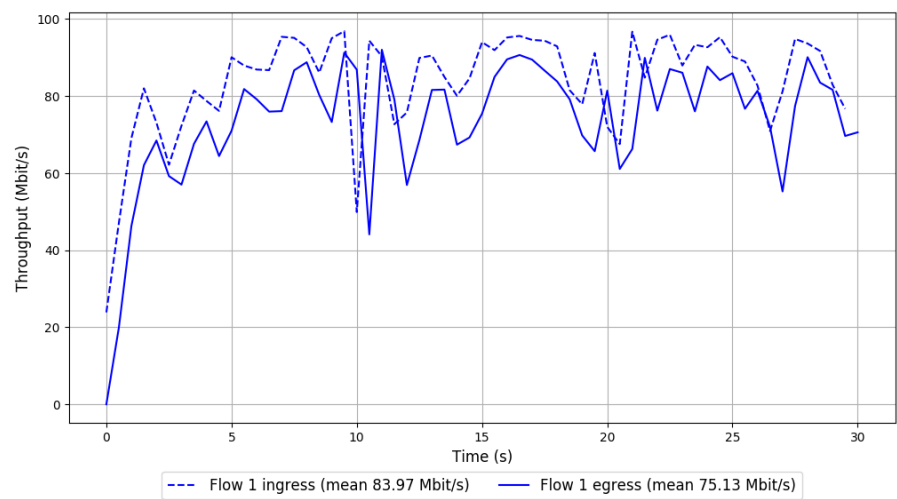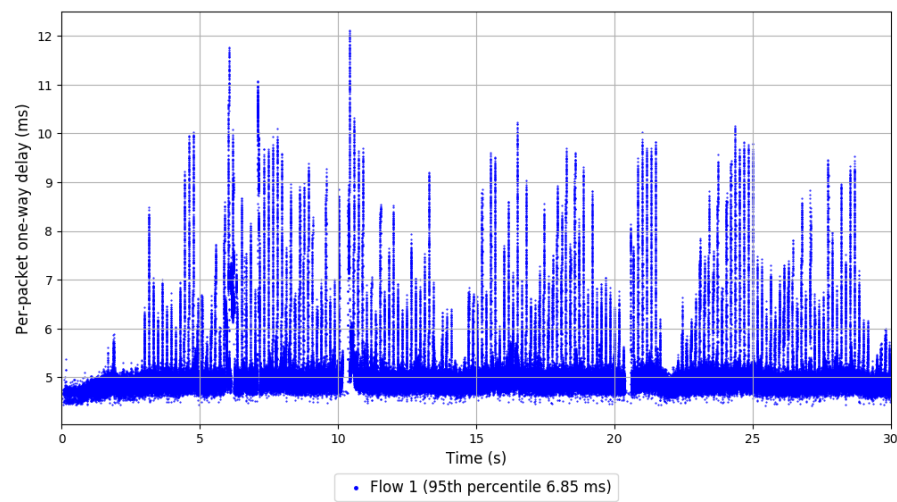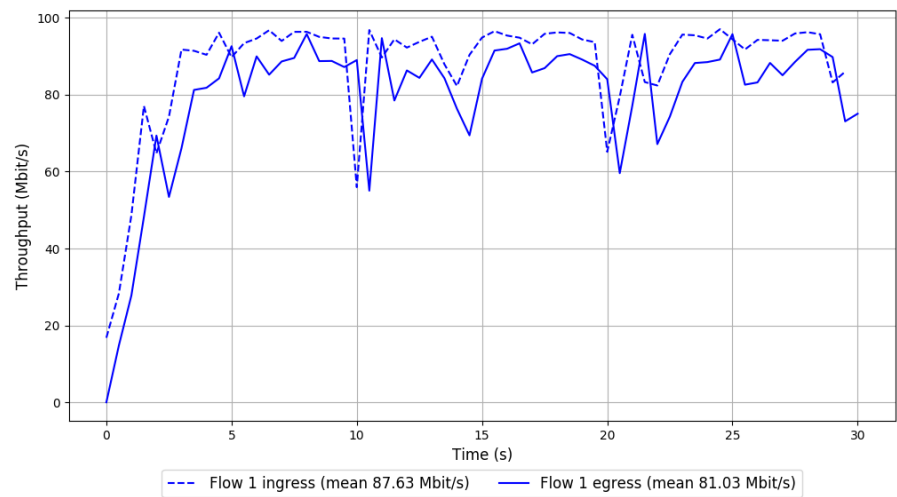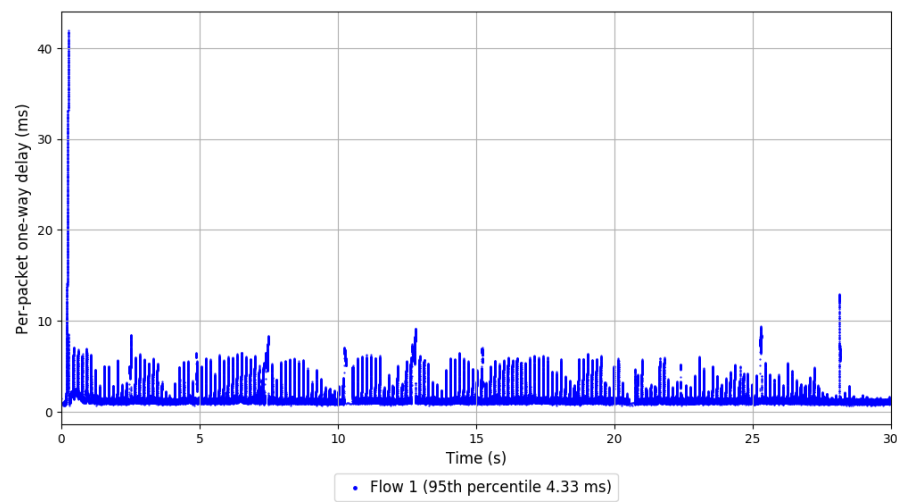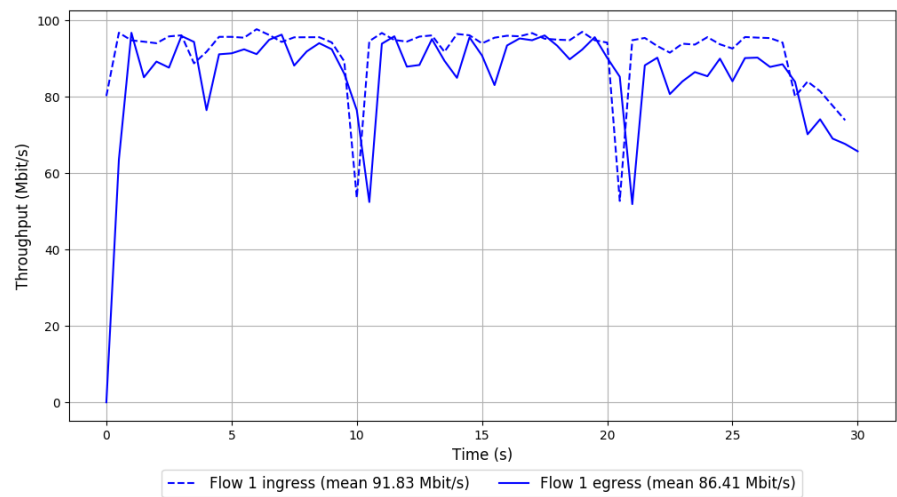
Run 2: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 83.97 Mbit/s) --- Flow 1 egress (mean 75.13 Mbit/s)

Flow 1 (95th percentile 5.81 ms)

```
Run 3: Statistics of FillP-Sheep

Start at: 2018-12-10 22:53:06
End at: 2018-12-10 22:53:36
Local clock offset: 0.296 ms
Remote clock offset: -0.843 ms


# Below is generated by plot.py at 2018-12-10 23:44:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 81.03 Mbit/s
95th percentile per-packet one-way delay: 6.847 ms
Loss rate: 7.53%
-- Flow 1:
Average throughput: 81.03 Mbit/s
95th percentile per-packet one-way delay: 6.847 ms
Loss rate: 7.53%
```
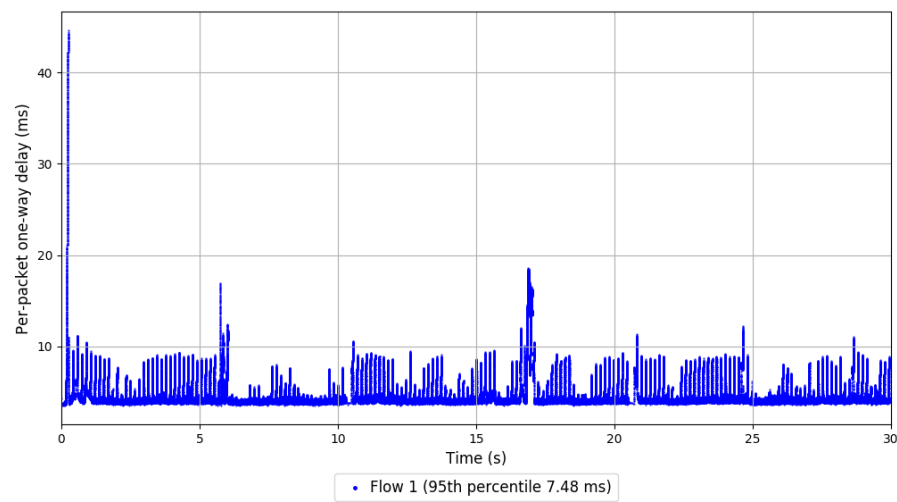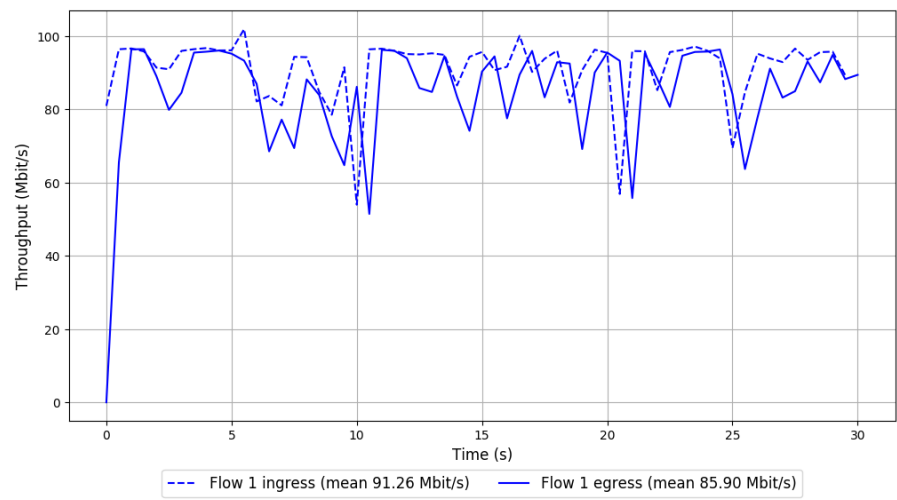
Run 3: Report of FillP-Sheep — Data Link

```
Run 4: Statistics of FillP-Sheep

Start at: 2018-12-10 23:14:40
End at: 2018-12-10 23:15:10
Local clock offset: 3.406 ms
Remote clock offset: -1.702 ms


# Below is generated by plot.py at 2018-12-10 23:45:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 86.41 Mbit/s
95th percentile per-packet one-way delay: 4.329 ms
Loss rate: 5.90%
-- Flow 1:
Average throughput: 86.41 Mbit/s
95th percentile per-packet one-way delay: 4.329 ms
Loss rate: 5.90%
```

Run 4: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 91.83 Mbit/s) — — — Flow 1 egress (mean 86.41 Mbit/s)

• Flow 1 (95th percentile 4.33 ms)

```
Run 5: Statistics of FillP-Sheep

Start at: 2018-12-10 23:36:12
End at: 2018-12-10 23:36:42
Local clock offset: 3.229 ms
Remote clock offset: -0.806 ms


# Below is generated by plot.py at 2018-12-10 23:45:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 85.90 Mbit/s
95th percentile per-packet one-way delay: 7.479 ms
Loss rate: 5.87%
-- Flow 1:
Average throughput: 85.90 Mbit/s
95th percentile per-packet one-way delay: 7.479 ms
Loss rate: 5.87%
```
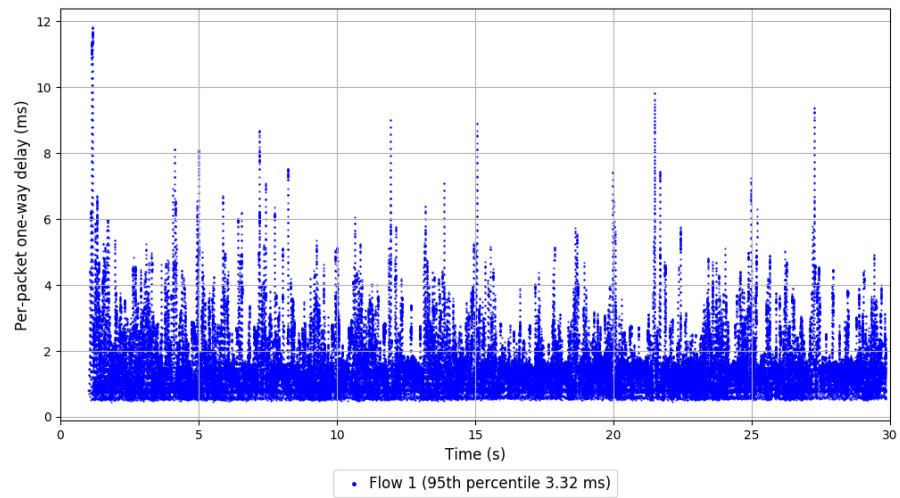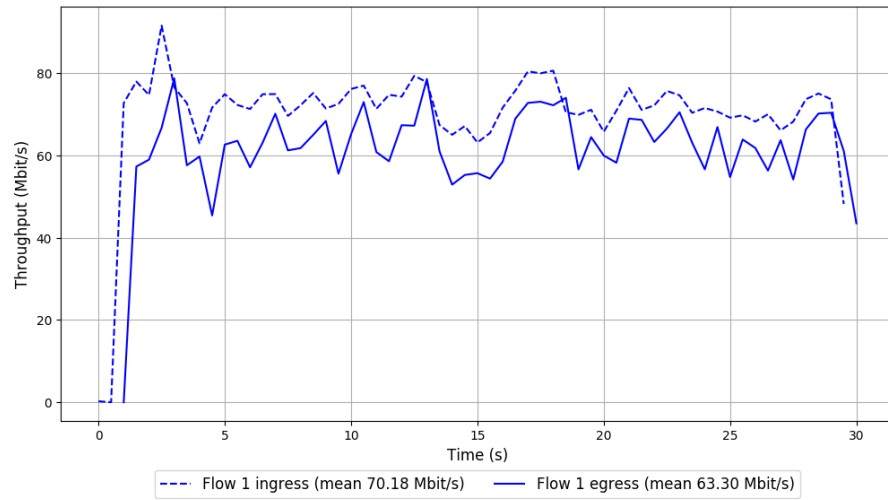
Run 5: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 91.26 Mbit/s)   Flow 1 egress (mean 85.90 Mbit/s)

Flow 1 (95th percentile 7.48 ms)

```
Run 1: Statistics of Indigo

Start at: 2018-12-10 22:03:25
End at: 2018-12-10 22:03:55
Local clock offset: 1.956 ms
Remote clock offset: -6.355 ms

# Below is generated by plot.py at 2018-12-10 23:45:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 63.30 Mbit/s
95th percentile per-packet one-way delay: 3.323 ms
Loss rate: 12.84%
-- Flow 1:
Average throughput: 63.30 Mbit/s
95th percentile per-packet one-way delay: 3.323 ms
Loss rate: 12.84%
```
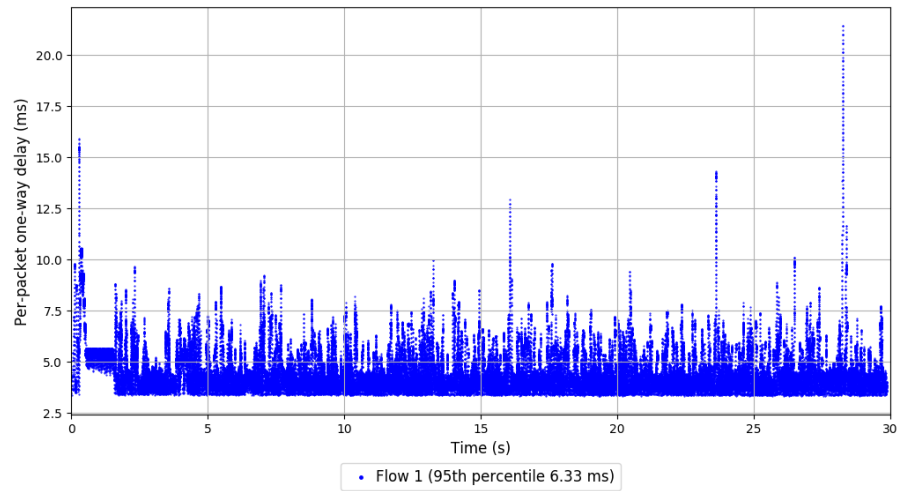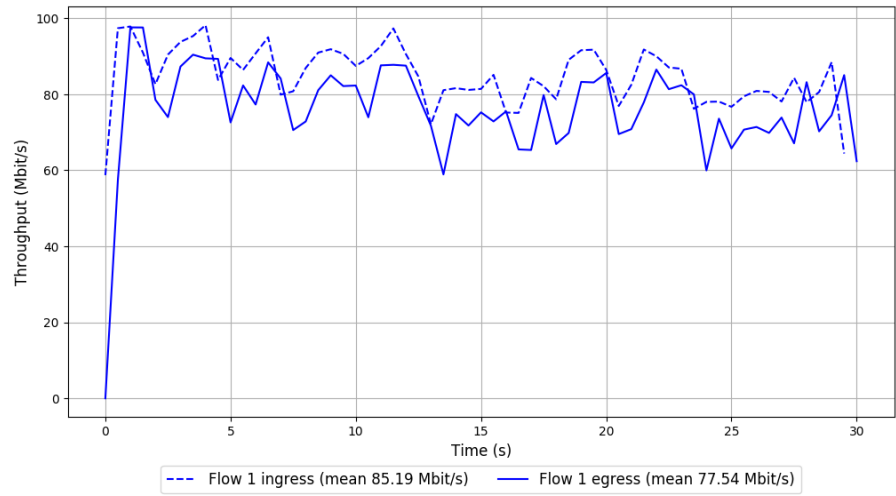
Run 1: Report of Indigo — Data Link

Flow 1 ingress (mean 70.18 Mbit/s)   Flow 1 egress (mean 63.30 Mbit/s)

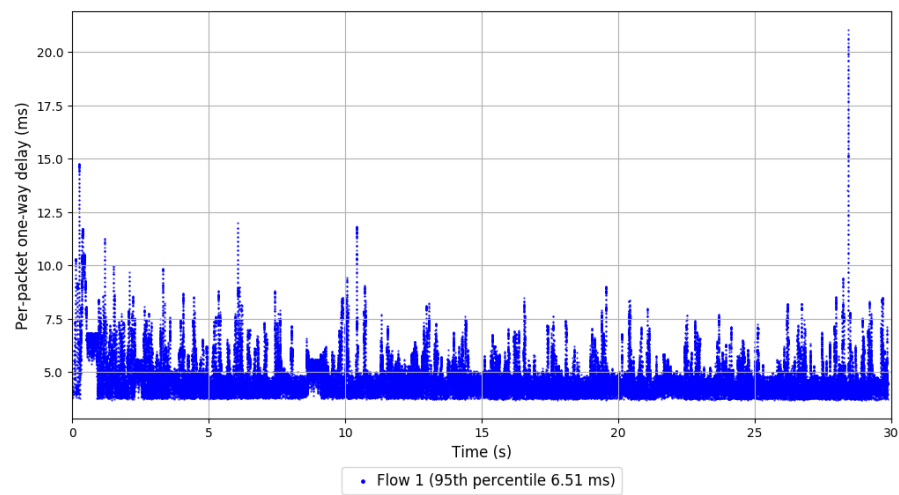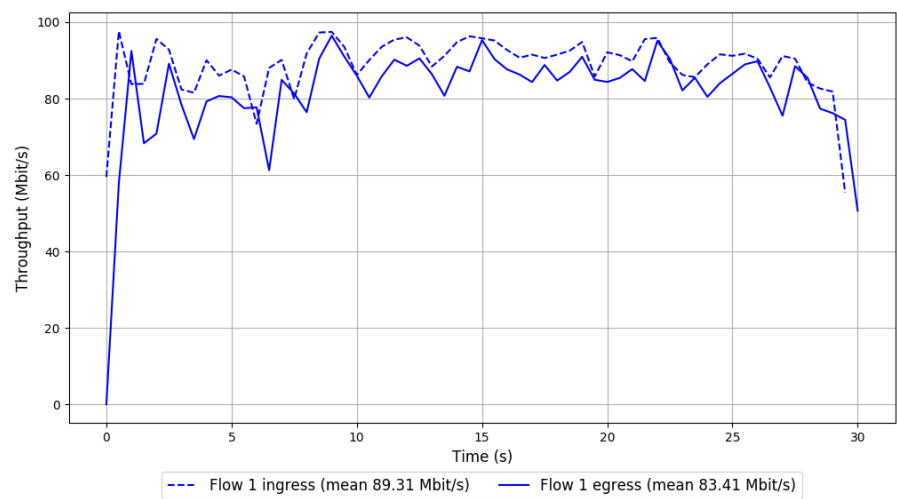Flow 1 (95th percentile 3.32 ms)

```
Run 2: Statistics of Indigo

Start at: 2018-12-10 22:24:54
End at: 2018-12-10 22:25:24
Local clock offset: 1.874 ms
Remote clock offset: -2.009 ms


# Below is generated by plot.py at 2018-12-10 23:45:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 77.54 Mbit/s
95th percentile per-packet one-way delay: 6.330 ms
Loss rate: 8.97%
-- Flow 1:
Average throughput: 77.54 Mbit/s
95th percentile per-packet one-way delay: 6.330 ms
Loss rate: 8.97%
```
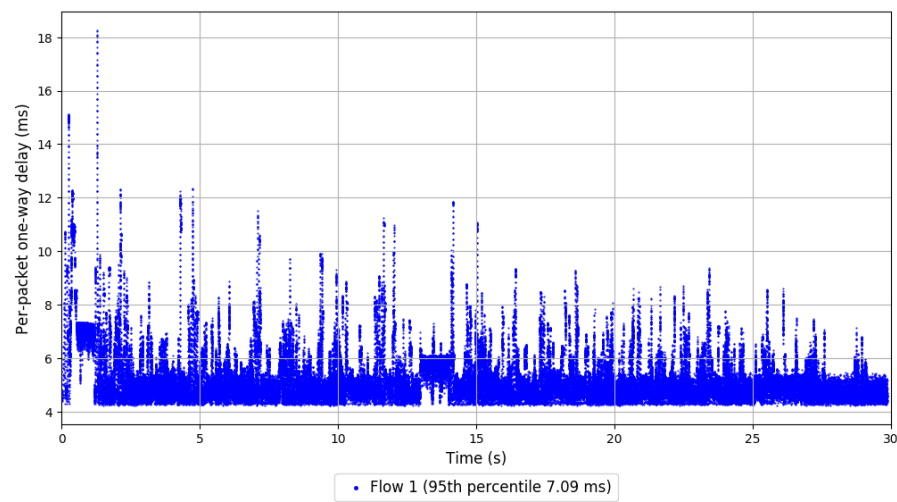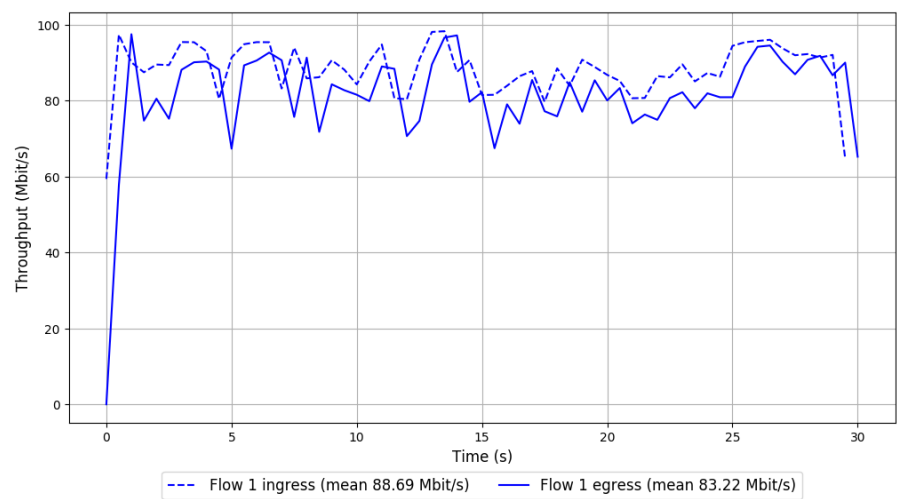
Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2018-12-10 22:46:25
End at: 2018-12-10 22:46:55
Local clock offset: 1.012 ms
Remote clock offset: -1.603 ms


# Below is generated by plot.py at 2018-12-10 23:45:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 83.41 Mbit/s
95th percentile per-packet one-way delay: 6.512 ms
Loss rate: 6.60%
-- Flow 1:
Average throughput: 83.41 Mbit/s
95th percentile per-packet one-way delay: 6.512 ms
Loss rate: 6.60%
```

Run 3: Report of Indigo — Data Link

```
Run 4: Statistics of Indigo

Start at: 2018-12-10 23:07:57
End at: 2018-12-10 23:08:27
Local clock offset: 1.457 ms
Remote clock offset: -0.808 ms


# Below is generated by plot.py at 2018-12-10 23:45:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 83.22 Mbit/s
95th percentile per-packet one-way delay: 7.091 ms
Loss rate: 6.16%
-- Flow 1:
Average throughput: 83.22 Mbit/s
95th percentile per-packet one-way delay: 7.091 ms
Loss rate: 6.16%
```
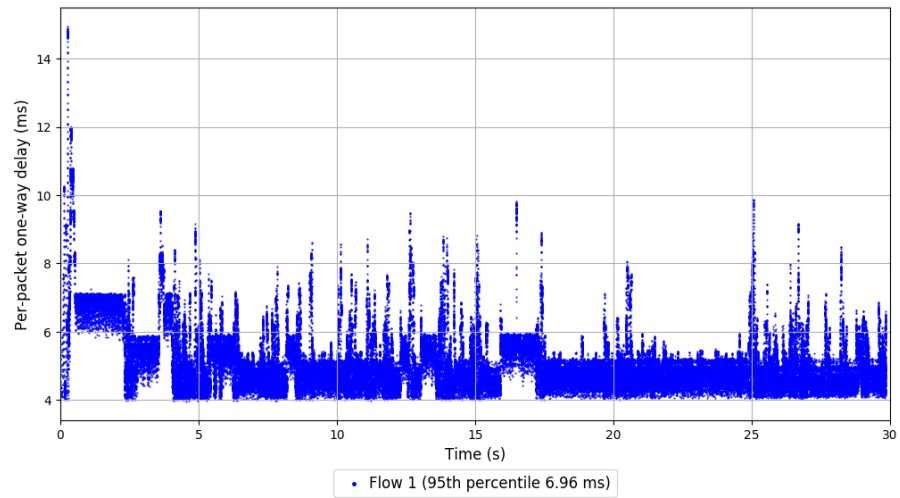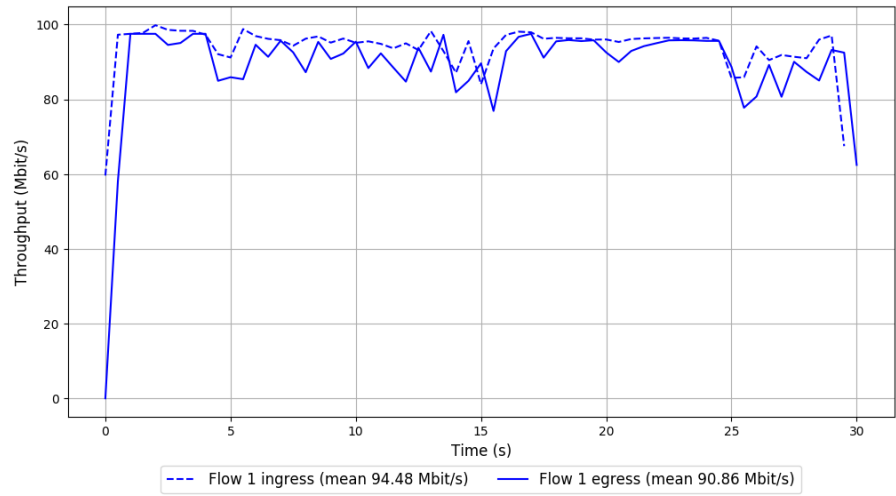
Run 4: Report of Indigo — Data Link

Flow 1 ingress (mean 88.69 Mbit/s) ----- Flow 1 egress (mean 83.22 Mbit/s)

Flow 1 (95th percentile 7.09 ms)

```
Run 5: Statistics of Indigo

Start at: 2018-12-10 23:29:28
End at: 2018-12-10 23:29:58
Local clock offset: 1.586 ms
Remote clock offset: -1.257 ms

# Below is generated by plot.py at 2018-12-10 23:45:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 90.86 Mbit/s
95th percentile per-packet one-way delay: 6.963 ms
Loss rate: 3.82%
-- Flow 1:
Average throughput: 90.86 Mbit/s
95th percentile per-packet one-way delay: 6.963 ms
Loss rate: 3.82%
```

Run 5: Report of Indigo — Data Link

```
Run 1: Statistics of Indigo-96d2da3

Start at: 2018-12-10 22:02:14
End at: 2018-12-10 22:02:44
Local clock offset: 1.208 ms
Remote clock offset: -5.221 ms


# Below is generated by plot.py at 2018-12-10 23:45:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 71.71 Mbit/s
95th percentile per-packet one-way delay: 30.959 ms
Loss rate: 37.76%
-- Flow 1:
Average throughput: 71.71 Mbit/s
95th percentile per-packet one-way delay: 30.959 ms
Loss rate: 37.76%
```
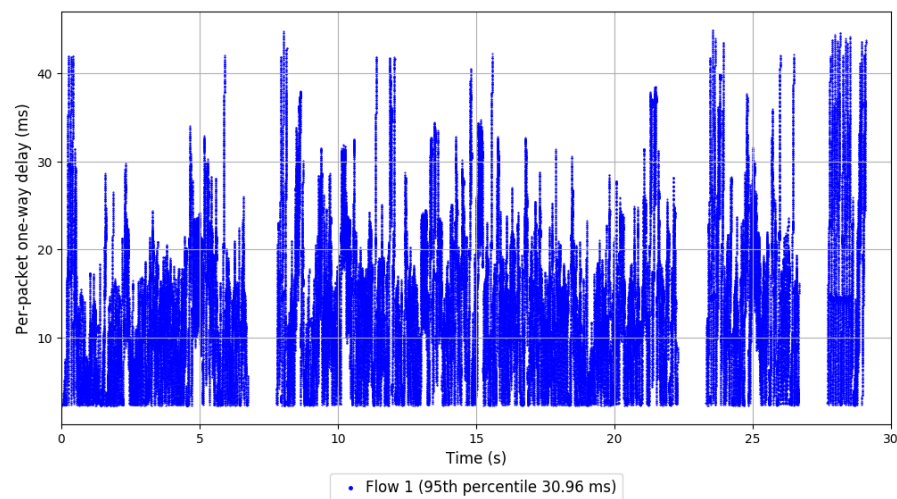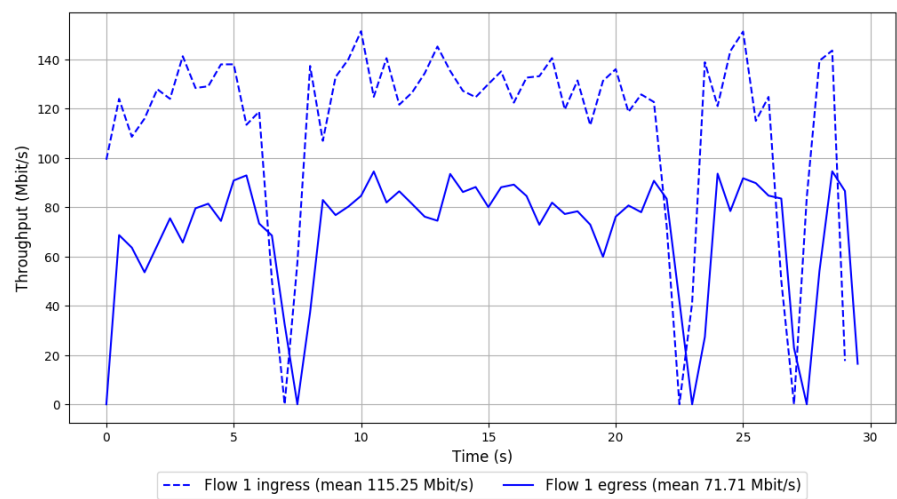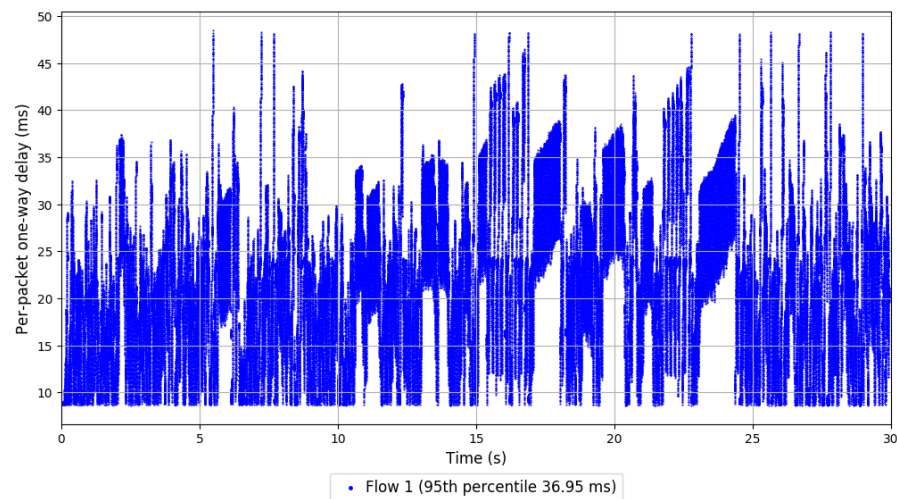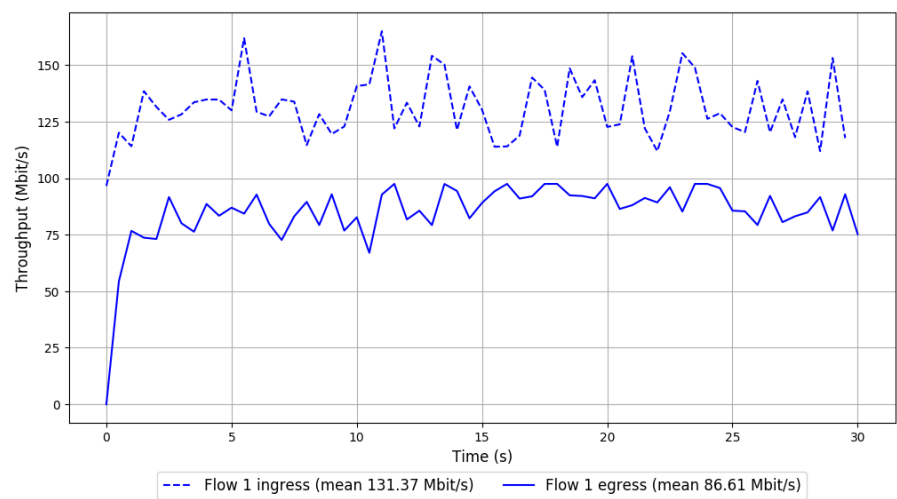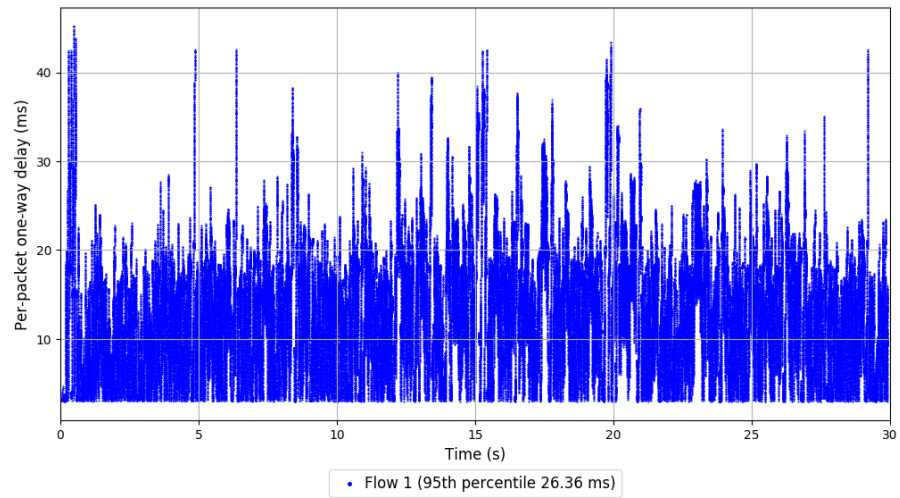
Run 1: Report of Indigo-96d2da3 — Data Link

```
Run 2: Statistics of Indigo-96d2da3

Start at: 2018-12-10 22:23:44
End at: 2018-12-10 22:24:14
Local clock offset: -2.931 ms
Remote clock offset: -1.608 ms


# Below is generated by plot.py at 2018-12-10 23:45:58
# Datalink statistics
-- Total of 1 flow:
Average throughput: 86.61 Mbit/s
95th percentile per-packet one-way delay: 36.955 ms
Loss rate: 34.05%
-- Flow 1:
Average throughput: 86.61 Mbit/s
95th percentile per-packet one-way delay: 36.955 ms
Loss rate: 34.05%
```

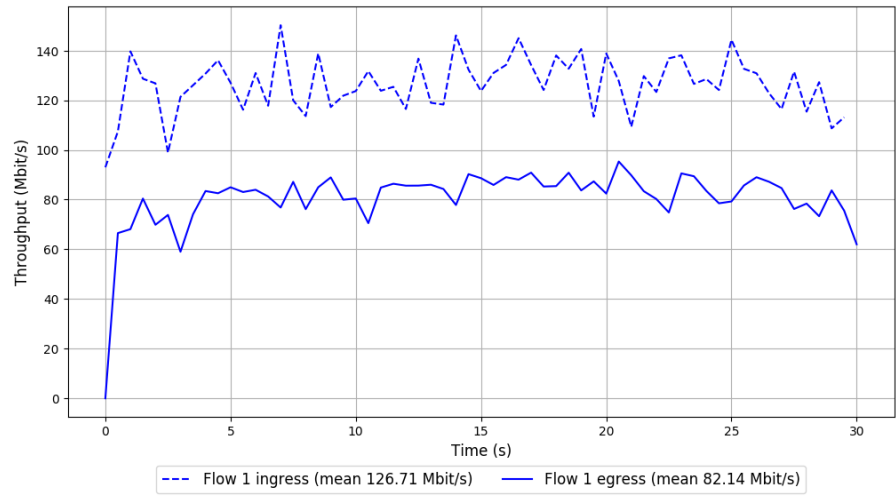Run 2: Report of Indigo-96d2da3 — Data Link

```
Run 3: Statistics of Indigo-96d2da3

Start at: 2018-12-10 22:45:14
End at: 2018-12-10 22:45:44
Local clock offset: 2.457 ms
Remote clock offset: -1.023 ms


# Below is generated by plot.py at 2018-12-10 23:46:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 82.14 Mbit/s
95th percentile per-packet one-way delay: 26.358 ms
Loss rate: 35.16%
-- Flow 1:
Average throughput: 82.14 Mbit/s
95th percentile per-packet one-way delay: 26.358 ms
Loss rate: 35.16%
```

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

```
Run 4: Statistics of Indigo-96d2da3

Start at: 2018-12-10 23:06:46
End at: 2018-12-10 23:07:16
Local clock offset: 2.236 ms
Remote clock offset: -1.79 ms


# Below is generated by plot.py at 2018-12-10 23:46:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 87.07 Mbit/s
95th percentile per-packet one-way delay: 28.310 ms
Loss rate: 34.91%
-- Flow 1:
Average throughput: 87.07 Mbit/s
95th percentile per-packet one-way delay: 28.310 ms
Loss rate: 34.91%
```
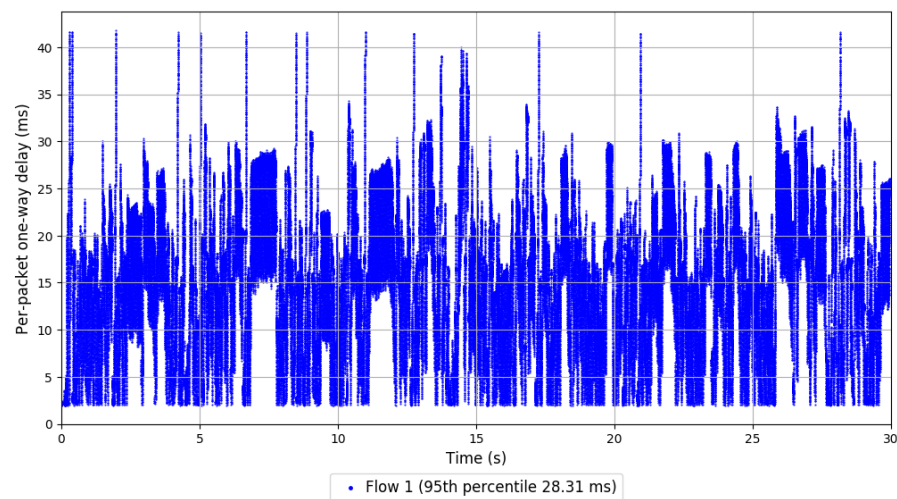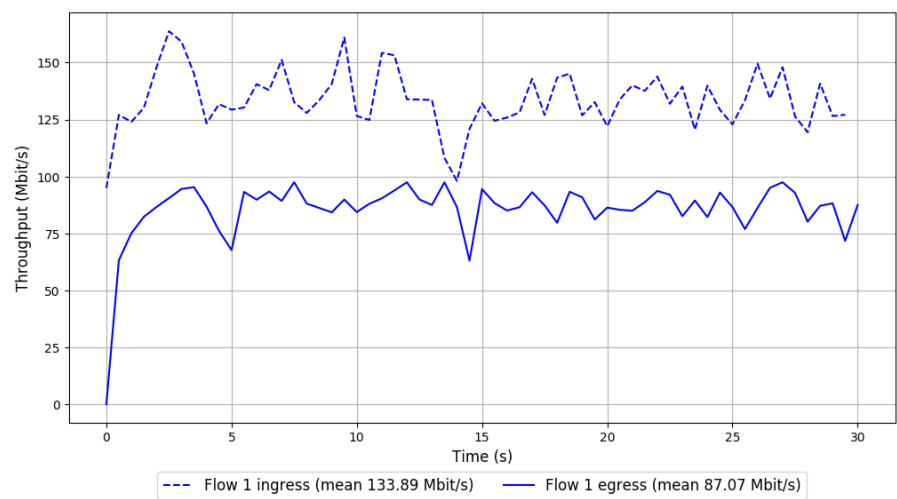
Run 4: Report of Indigo-96d2da3 — Data Link

Flow 1 ingress (mean 133.89 Mbit/s)   Flow 1 egress (mean 87.07 Mbit/s)
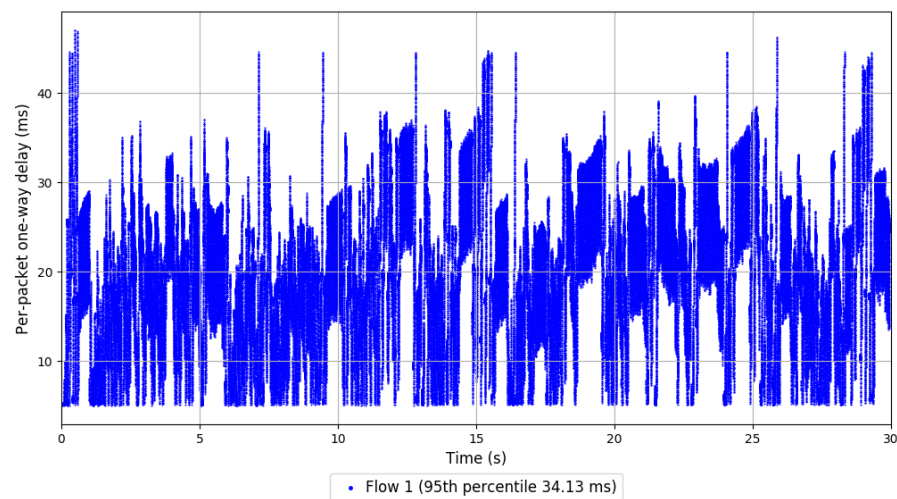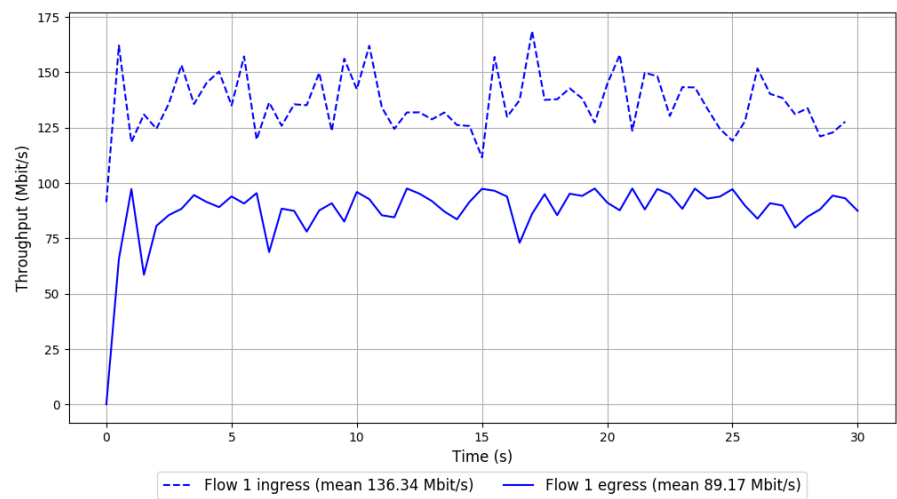

• Flow 1 (95th percentile 28.31 ms)

```
Run 5: Statistics of Indigo-96d2da3

Start at: 2018-12-10 23:28:18
End at: 2018-12-10 23:28:48
Local clock offset: 0.552 ms
Remote clock offset: -1.092 ms


# Below is generated by plot.py at 2018-12-10 23:46:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.17 Mbit/s
95th percentile per-packet one-way delay: 34.128 ms
Loss rate: 34.55%
-- Flow 1:
Average throughput: 89.17 Mbit/s
95th percentile per-packet one-way delay: 34.128 ms
Loss rate: 34.55%
```

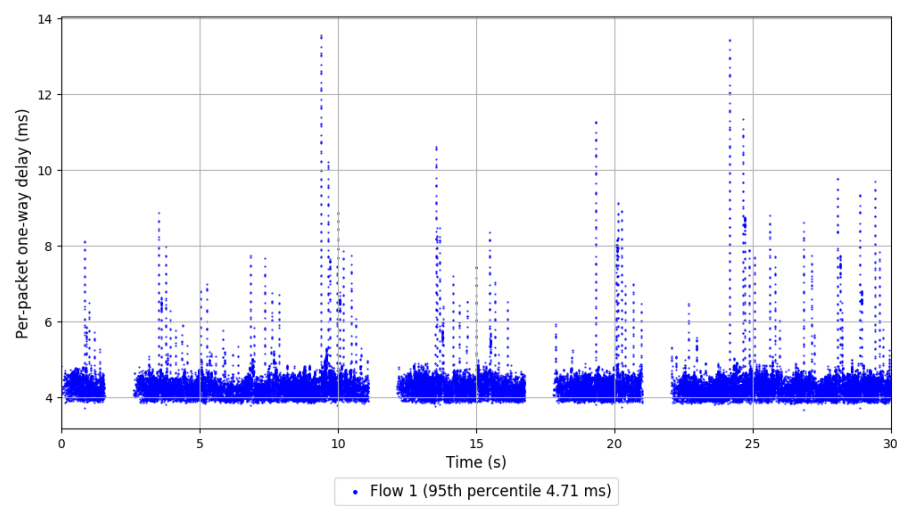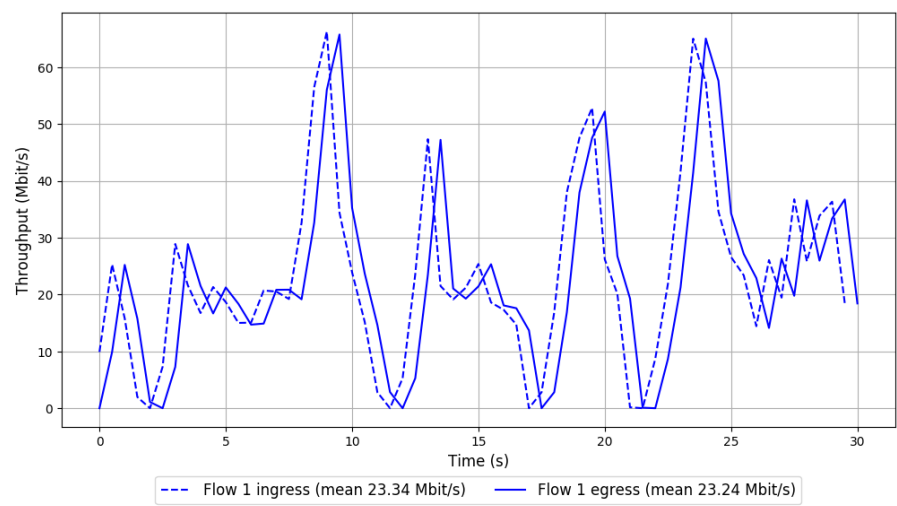Run 5: Report of Indigo-96d2da3 — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2018-12-10 22:13:42
End at: 2018-12-10 22:14:12
Local clock offset: 1.449 ms
Remote clock offset: -2.736 ms


# Below is generated by plot.py at 2018-12-10 23:46:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 23.24 Mbit/s
95th percentile per-packet one-way delay: 4.713 ms
Loss rate: 0.41%
-- Flow 1:
Average throughput: 23.24 Mbit/s
95th percentile per-packet one-way delay: 4.713 ms
Loss rate: 0.41%
```

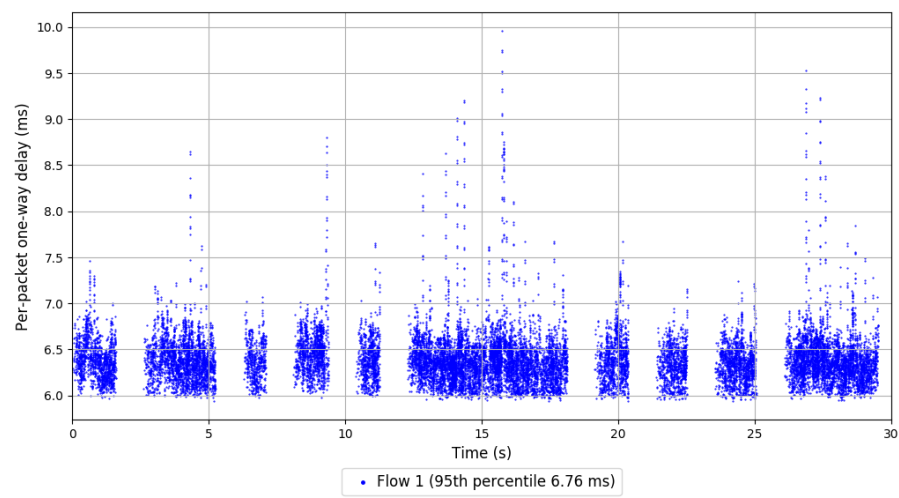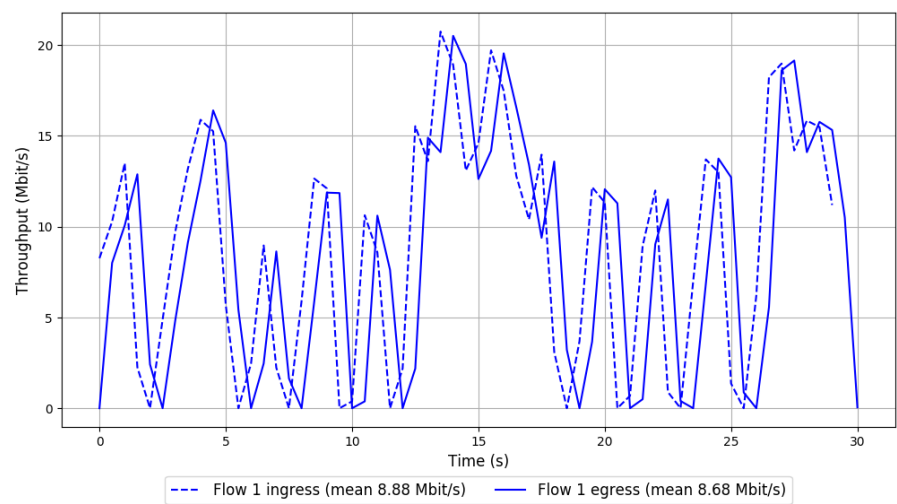Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2018-12-10 22:35:10
End at: 2018-12-10 22:35:40
Local clock offset: -0.304 ms
Remote clock offset: -1.597 ms


# Below is generated by plot.py at 2018-12-10 23:46:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 8.68 Mbit/s
95th percentile per-packet one-way delay: 6.764 ms
Loss rate: 2.24%
-- Flow 1:
Average throughput: 8.68 Mbit/s
95th percentile per-packet one-way delay: 6.764 ms
Loss rate: 2.24%
```

Run 2: Report of LEDBAT — Data Link

Flow 1 ingress (mean 8.88 Mbit/s) --- Flow 1 egress (mean 8.68 Mbit/s)

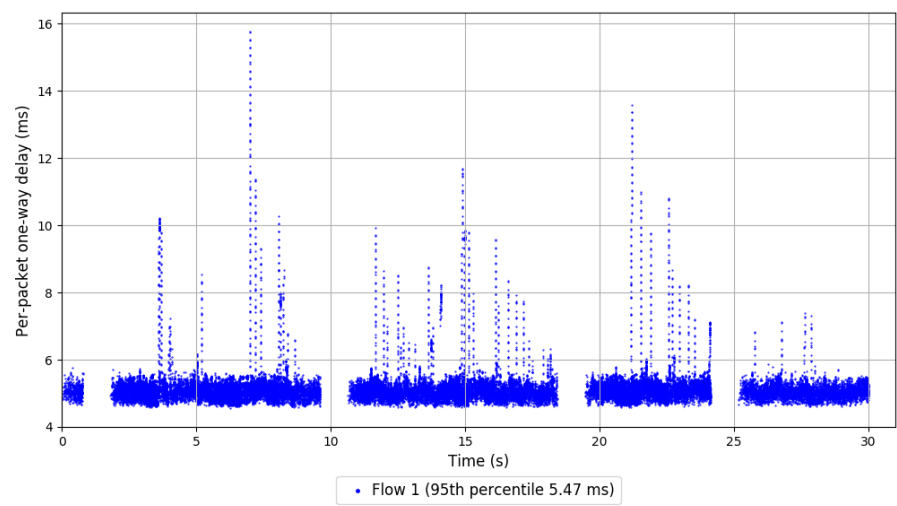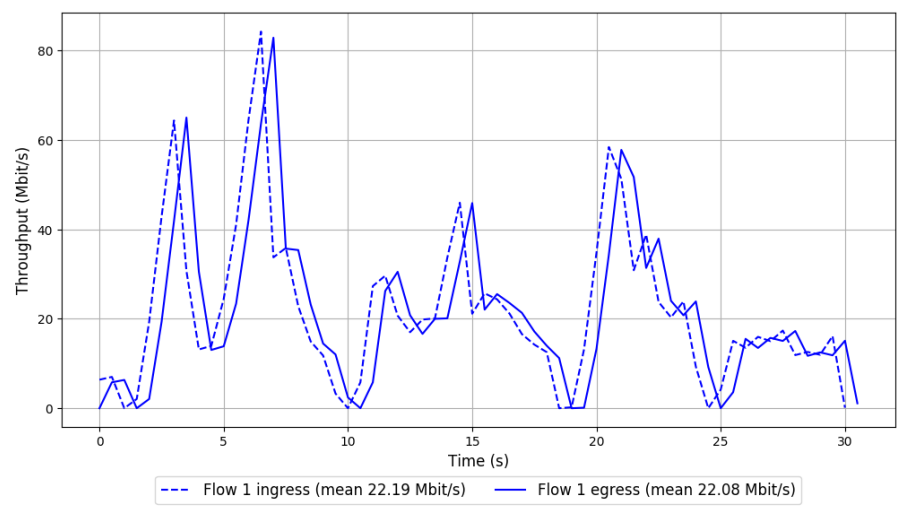Flow 1 (95th percentile 6.76 ms)

```
Run 3: Statistics of LEDBAT

Start at: 2018-12-10 22:56:39
End at: 2018-12-10 22:57:09
Local clock offset: -0.12 ms
Remote clock offset: -1.208 ms


# Below is generated by plot.py at 2018-12-10 23:46:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 22.08 Mbit/s
95th percentile per-packet one-way delay: 5.470 ms
Loss rate: 0.52%
-- Flow 1:
Average throughput: 22.08 Mbit/s
95th percentile per-packet one-way delay: 5.470 ms
Loss rate: 0.52%
```

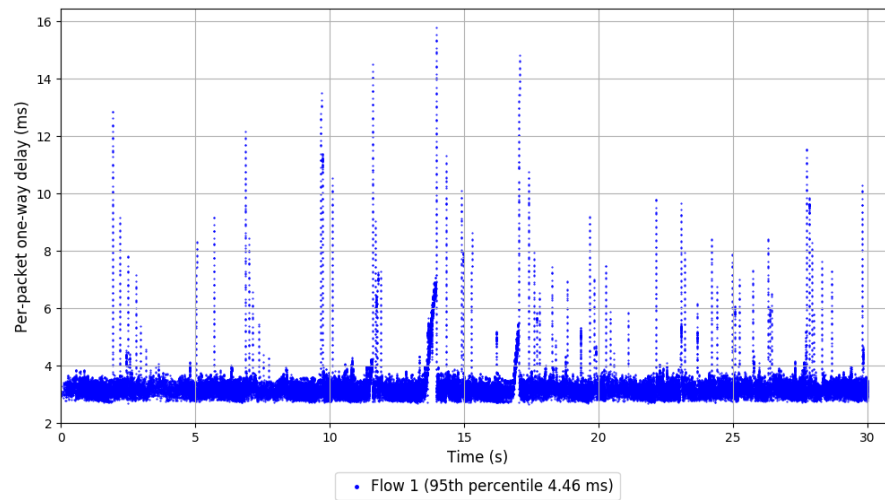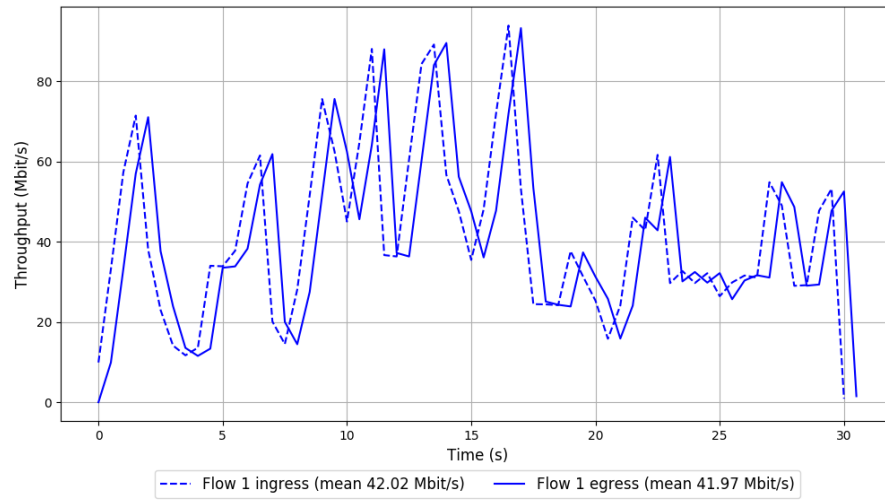# Run 3: Report of LEDBAT — Data Link

```
Run 4: Statistics of LEDBAT

Start at: 2018-12-10 23:18:12
End at: 2018-12-10 23:18:42
Local clock offset: 1.925 ms
Remote clock offset: -1.251 ms


# Below is generated by plot.py at 2018-12-10 23:46:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 41.97 Mbit/s
95th percentile per-packet one-way delay: 4.455 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 41.97 Mbit/s
95th percentile per-packet one-way delay: 4.455 ms
Loss rate: 0.10%
```

Run 4: Report of LEDBAT — Data Link

Flow 1 ingress (mean 42.02 Mbit/s) ----- Flow 1 egress (mean 41.97 Mbit/s)

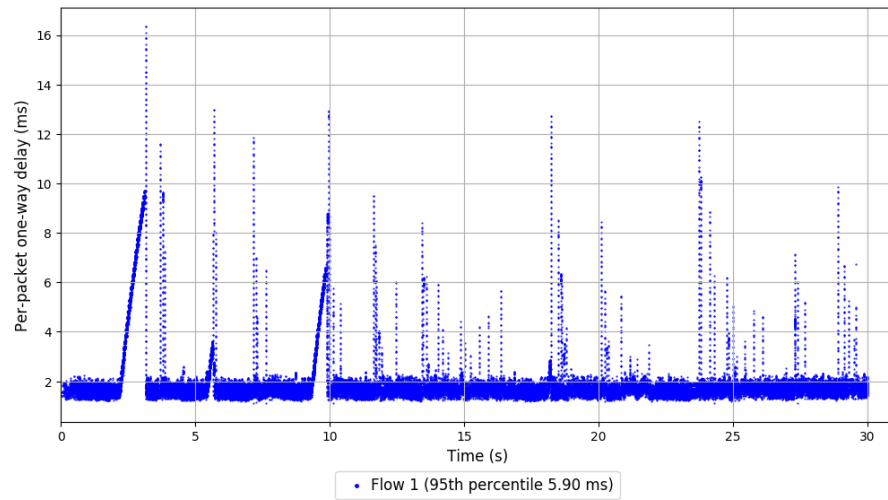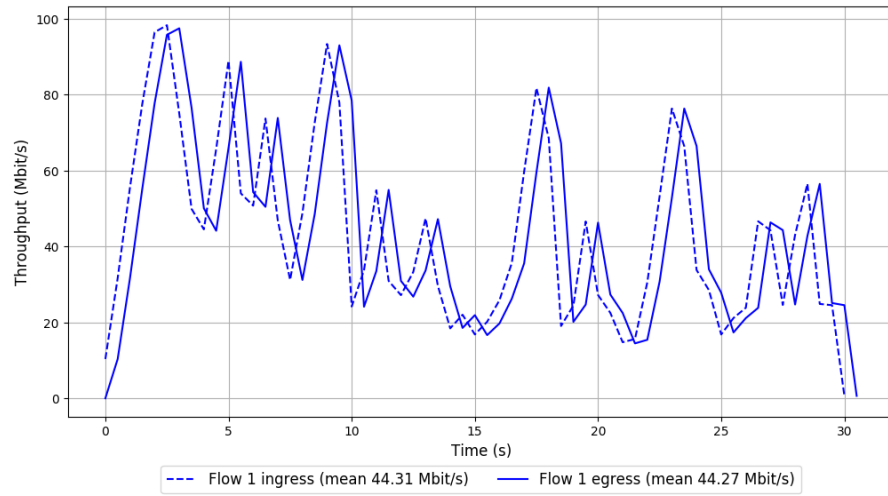Flow 1 (95th percentile 4.46 ms)

```
Run 5: Statistics of LEDBAT

Start at: 2018-12-10 23:39:49
End at: 2018-12-10 23:40:19
Local clock offset: 5.405 ms
Remote clock offset: -1.441 ms

# Below is generated by plot.py at 2018-12-10 23:46:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 44.27 Mbit/s
95th percentile per-packet one-way delay: 5.901 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 44.27 Mbit/s
95th percentile per-packet one-way delay: 5.901 ms
Loss rate: 0.09%
```

Run 5: Report of LEDBAT — Data Link

Flow 1 ingress (mean 44.31 Mbit/s)   Flow 1 egress (mean 44.27 Mbit/s)
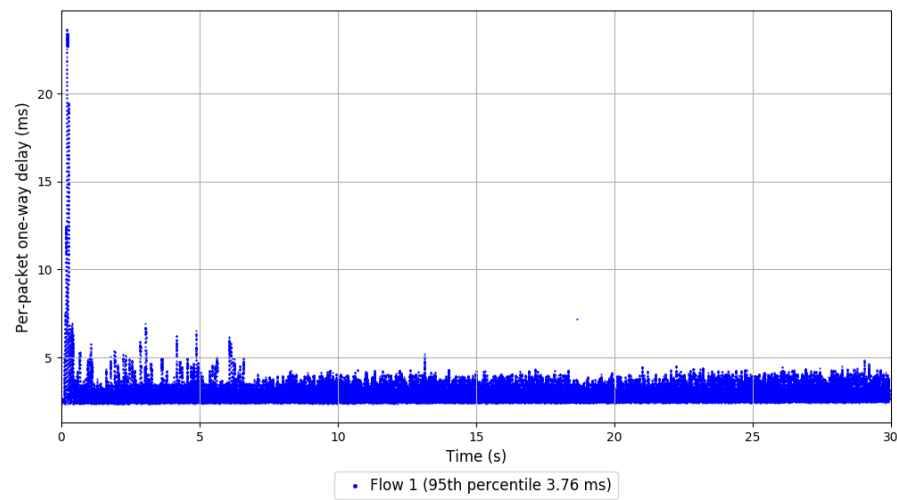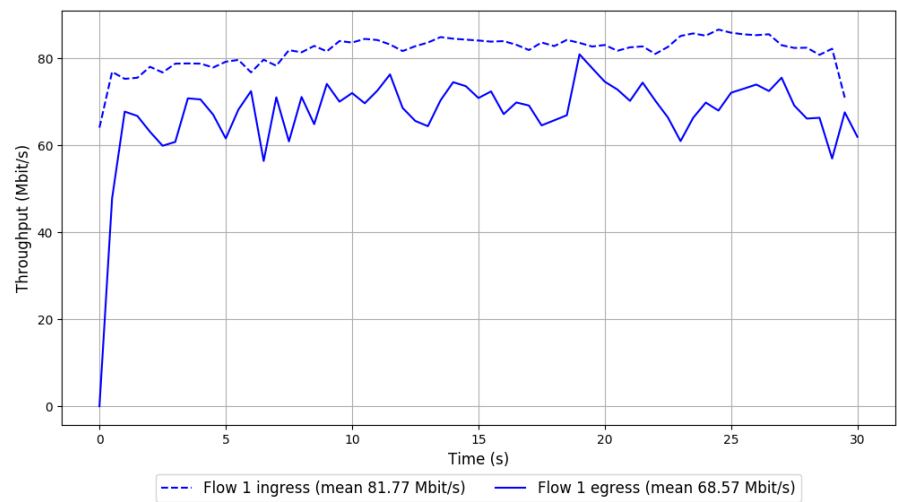

Flow 1 (95th percentile 5.90 ms)

```
Run 1: Statistics of Indigo-Muses

Start at: 2018-12-10 21:59:51
End at: 2018-12-10 22:00:21
Local clock offset: -0.466 ms
Remote clock offset: -6.062 ms


# Below is generated by plot.py at 2018-12-10 23:46:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 68.57 Mbit/s
95th percentile per-packet one-way delay: 3.757 ms
Loss rate: 16.14%
-- Flow 1:
Average throughput: 68.57 Mbit/s
95th percentile per-packet one-way delay: 3.757 ms
Loss rate: 16.14%
```
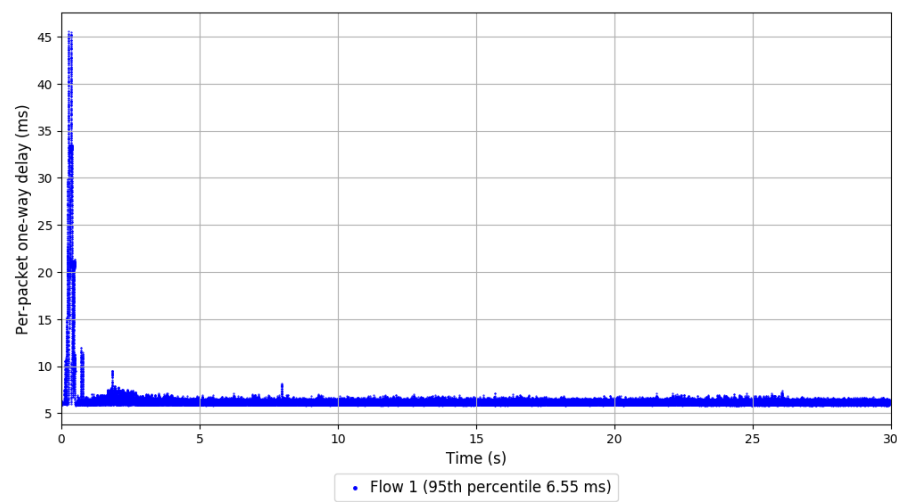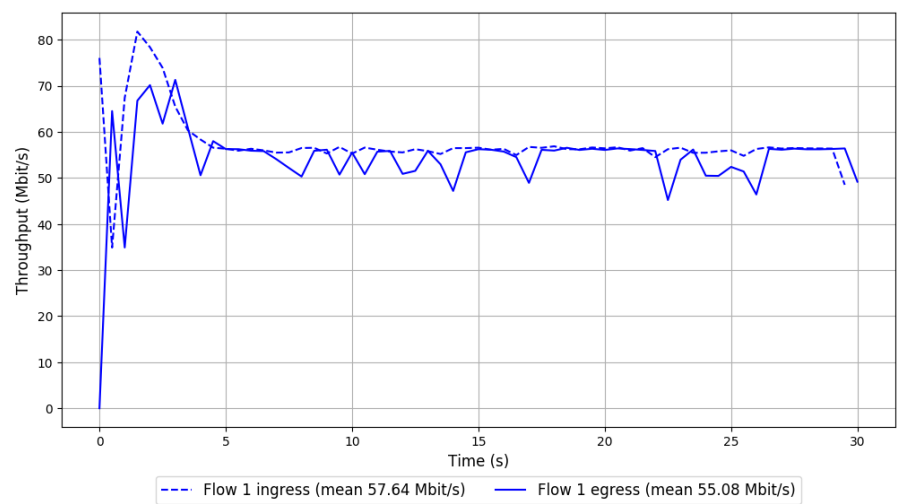
Run 1: Report of Indigo-Muses — Data Link

```
Run 2: Statistics of Indigo-Muses

Start at: 2018-12-10 22:21:26
End at: 2018-12-10 22:21:56
Local clock offset: 0.704 ms
Remote clock offset: -1.392 ms


# Below is generated by plot.py at 2018-12-10 23:46:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 55.08 Mbit/s
95th percentile per-packet one-way delay: 6.555 ms
Loss rate: 4.44%
-- Flow 1:
Average throughput: 55.08 Mbit/s
95th percentile per-packet one-way delay: 6.555 ms
Loss rate: 4.44%
```

Run 2: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 57.64 Mbit/s)   Flow 1 egress (mean 55.08 Mbit/s)
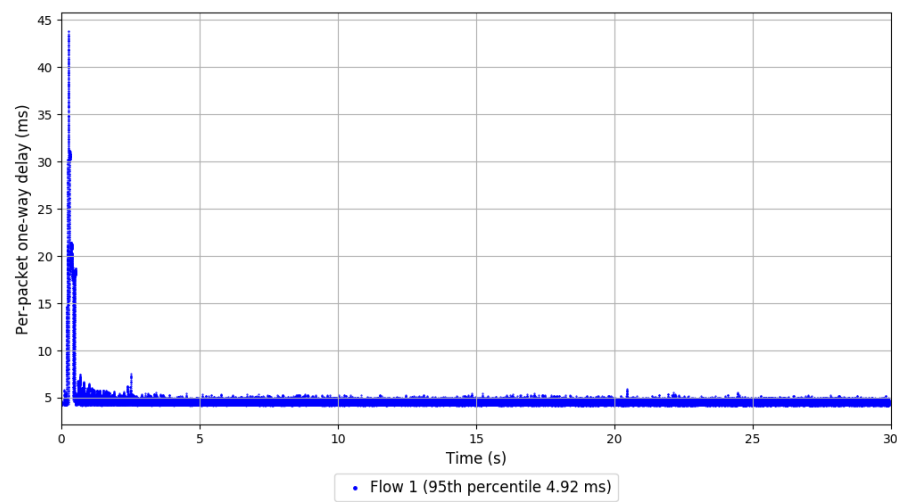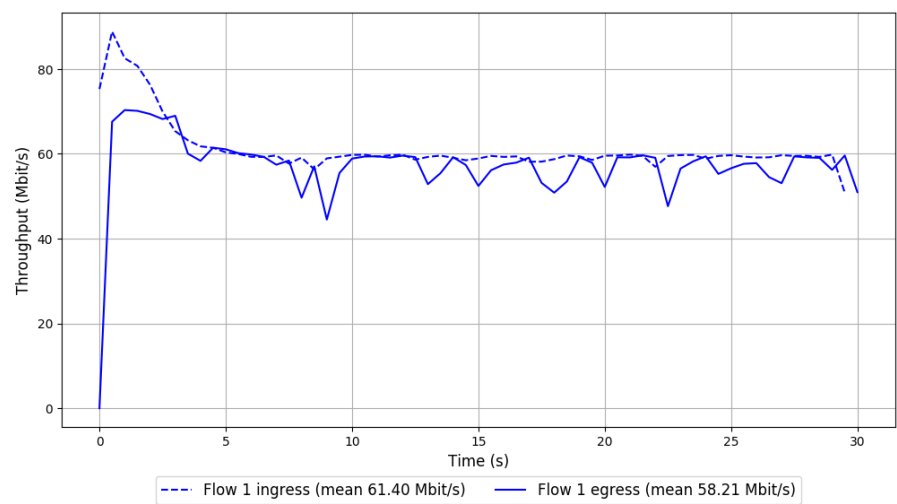

Flow 1 (95th percentile 6.55 ms)

```
Run 3: Statistics of Indigo-Muses

Start at: 2018-12-10 22:42:56
End at: 2018-12-10 22:43:26
Local clock offset: 1.486 ms
Remote clock offset: -0.965 ms


# Below is generated by plot.py at 2018-12-10 23:46:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 58.21 Mbit/s
95th percentile per-packet one-way delay: 4.925 ms
Loss rate: 5.20%
-- Flow 1:
Average throughput: 58.21 Mbit/s
95th percentile per-packet one-way delay: 4.925 ms
Loss rate: 5.20%
```
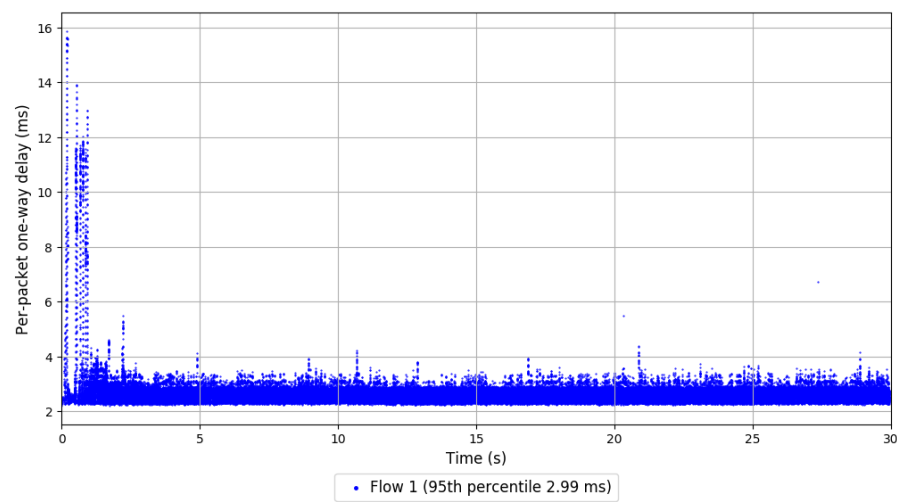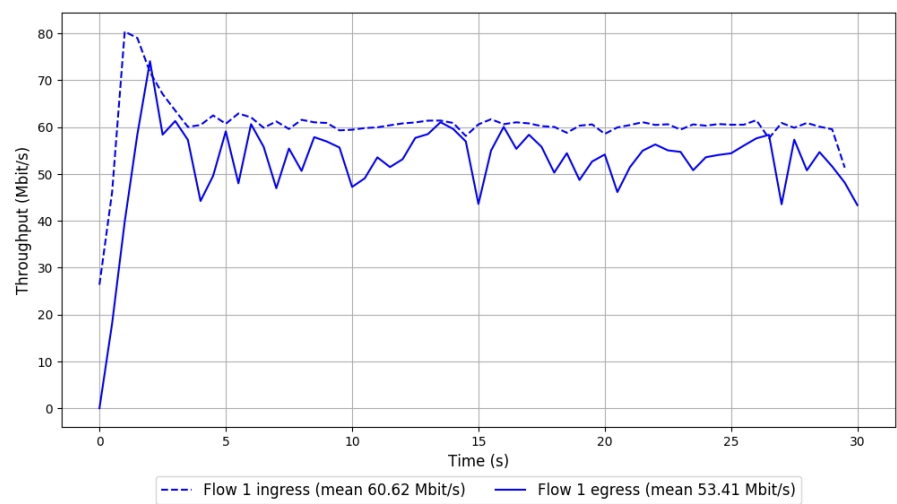
Run 3: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 61.40 Mbit/s) — Flow 1 egress (mean 58.21 Mbit/s)

Flow 1 (95th percentile 4.92 ms)

```
Run 4: Statistics of Indigo-Muses

Start at: 2018-12-10 23:04:26
End at: 2018-12-10 23:04:56
Local clock offset: 2.241 ms
Remote clock offset: -1.84 ms


# Below is generated by plot.py at 2018-12-10 23:46:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 53.41 Mbit/s
95th percentile per-packet one-way delay: 2.988 ms
Loss rate: 11.88%
-- Flow 1:
Average throughput: 53.41 Mbit/s
95th percentile per-packet one-way delay: 2.988 ms
Loss rate: 11.88%
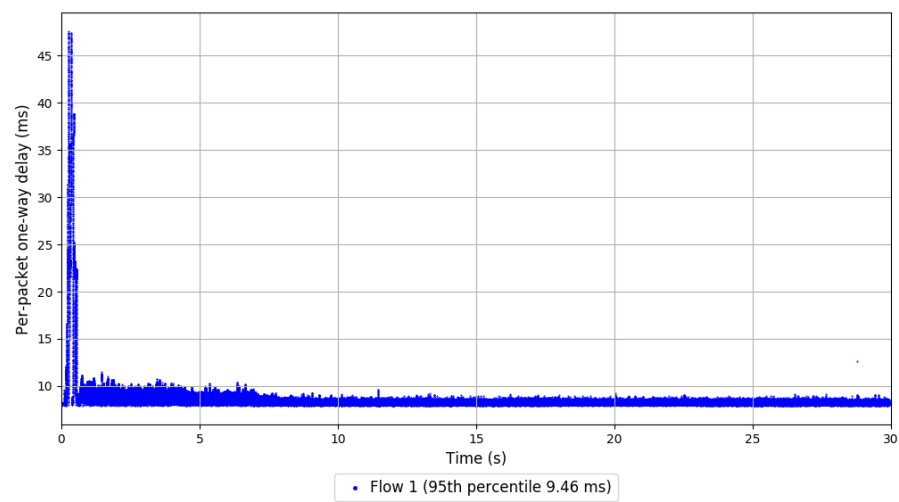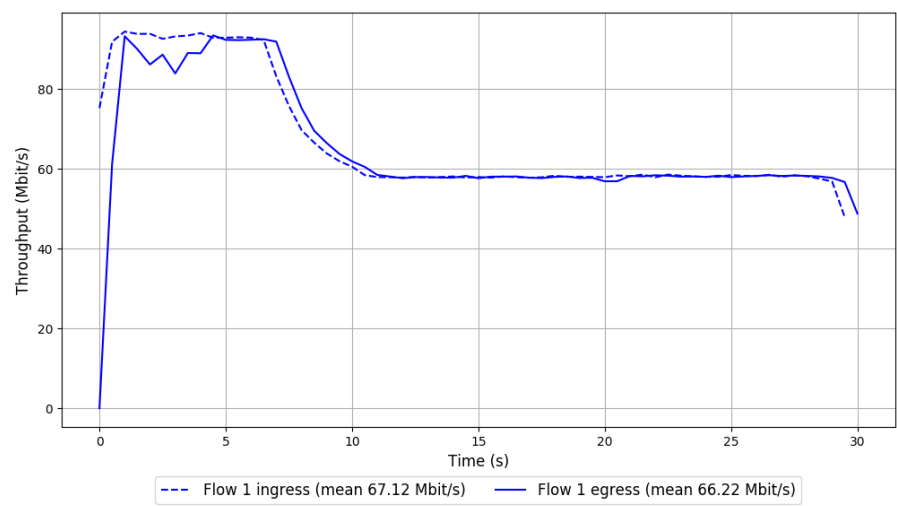```

Run 4: Report of Indigo-Muses — Data Link

```
Run 5: Statistics of Indigo-Muses

Start at: 2018-12-10 23:26:00
End at: 2018-12-10 23:26:30
Local clock offset: -3.103 ms
Remote clock offset: -1.481 ms

# Below is generated by plot.py at 2018-12-10 23:46:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 66.22 Mbit/s
95th percentile per-packet one-way delay: 9.456 ms
Loss rate: 1.35%
-- Flow 1:
Average throughput: 66.22 Mbit/s
95th percentile per-packet one-way delay: 9.456 ms
Loss rate: 1.35%
```

Run 5: Report of Indigo-Muses — Data Link

```
Run 1: Statistics of PCC-Allegro

Start at: 2018-12-10 22:07:52
End at: 2018-12-10 22:08:22
Local clock offset: -0.028 ms
Remote clock offset: -2.506 ms


# Below is generated by plot.py at 2018-12-10 23:46:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 65.98 Mbit/s
95th percentile per-packet one-way delay: 6.870 ms
Loss rate: 9.42%
-- Flow 1:
Average throughput: 65.98 Mbit/s
95th percentile per-packet one-way delay: 6.870 ms
Loss rate: 9.42%
```
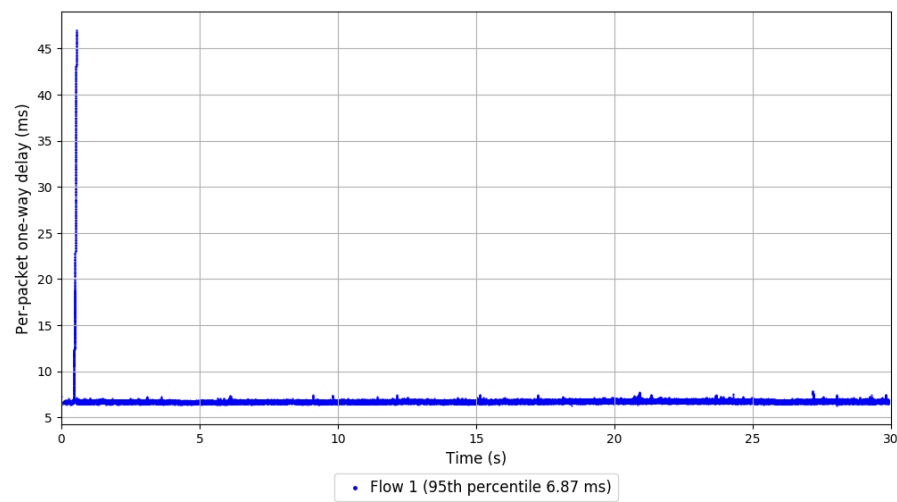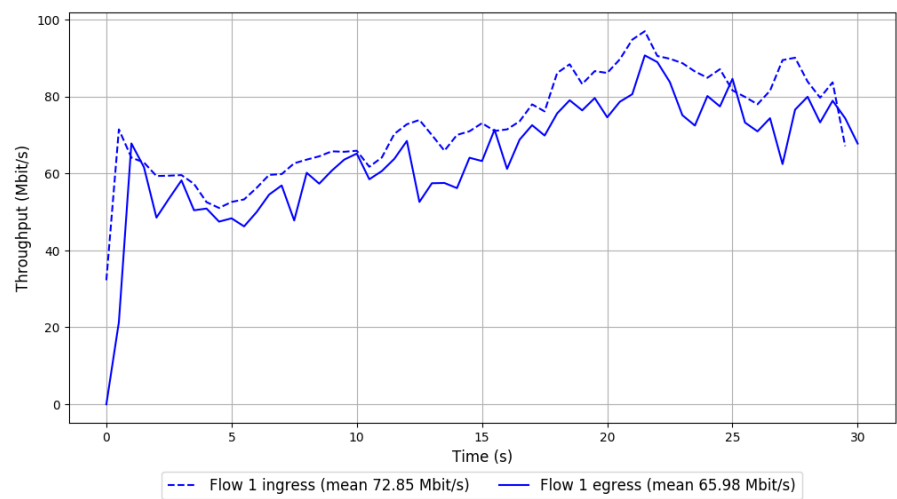
Run 1: Report of PCC-Allegro — Data Link

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-12-10 22:29:23
End at: 2018-12-10 22:29:53
Local clock offset: -0.275 ms
Remote clock offset: -2.485 ms


# Below is generated by plot.py at 2018-12-10 23:47:05
# Datalink statistics
-- Total of 1 flow:
Average throughput: 71.94 Mbit/s
95th percentile per-packet one-way delay: 5.325 ms
Loss rate: 8.47%
-- Flow 1:
Average throughput: 71.94 Mbit/s
95th percentile per-packet one-way delay: 5.325 ms
Loss rate: 8.47%
```
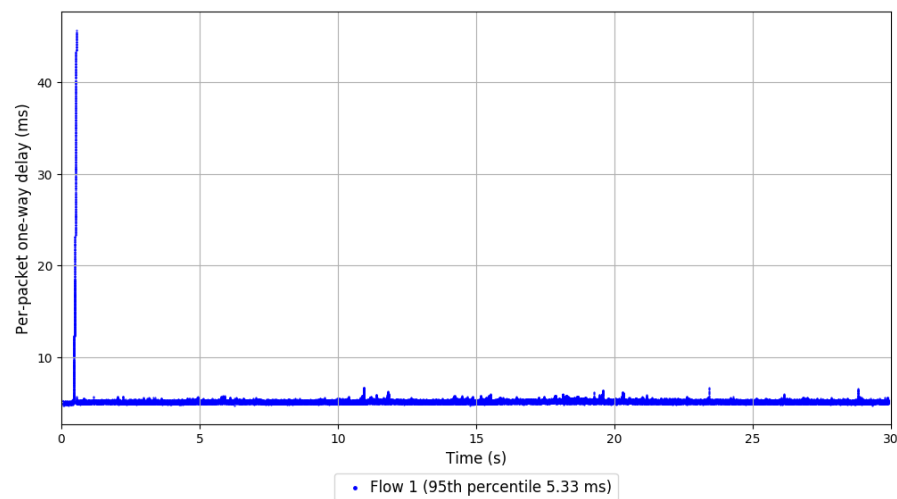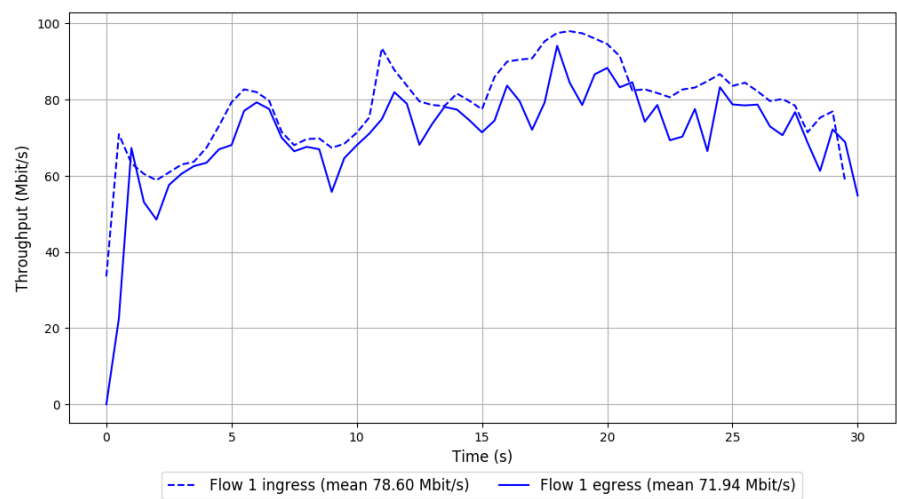
Run 2: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 78.60 Mbit/s)   Flow 1 egress (mean 71.94 Mbit/s)

Flow 1 (95th percentile 5.33 ms)

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-12-10 22:50:52
End at: 2018-12-10 22:51:22
Local clock offset: 2.398 ms
Remote clock offset: -1.777 ms


# Below is generated by plot.py at 2018-12-10 23:47:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 84.94 Mbit/s
95th percentile per-packet one-way delay: 2.452 ms
Loss rate: 4.14%
-- Flow 1:
Average throughput: 84.94 Mbit/s
95th percentile per-packet one-way delay: 2.452 ms
Loss rate: 4.14%
```
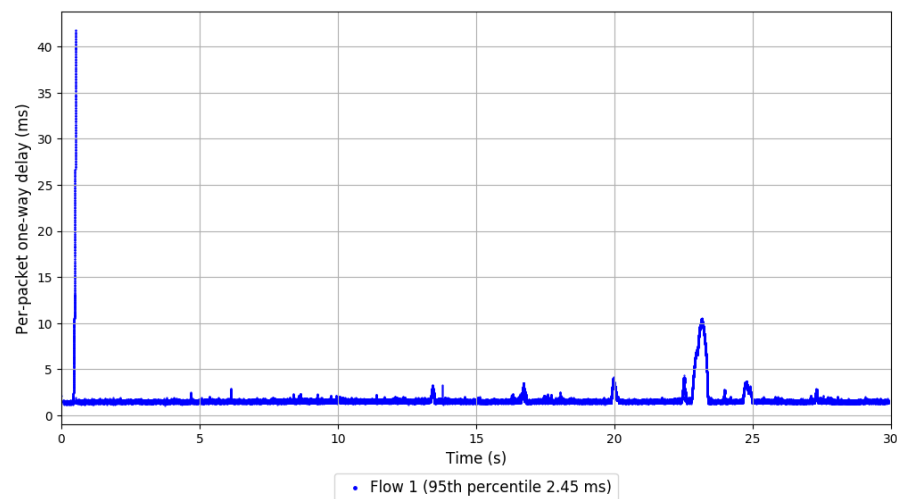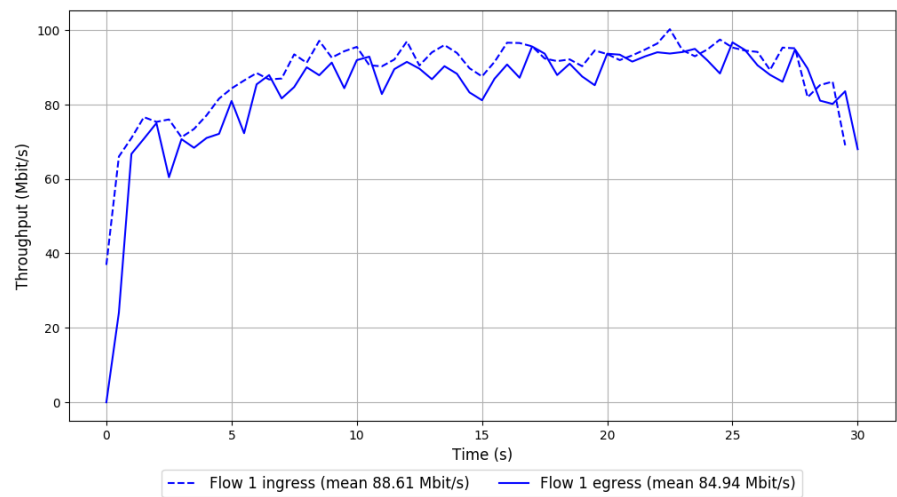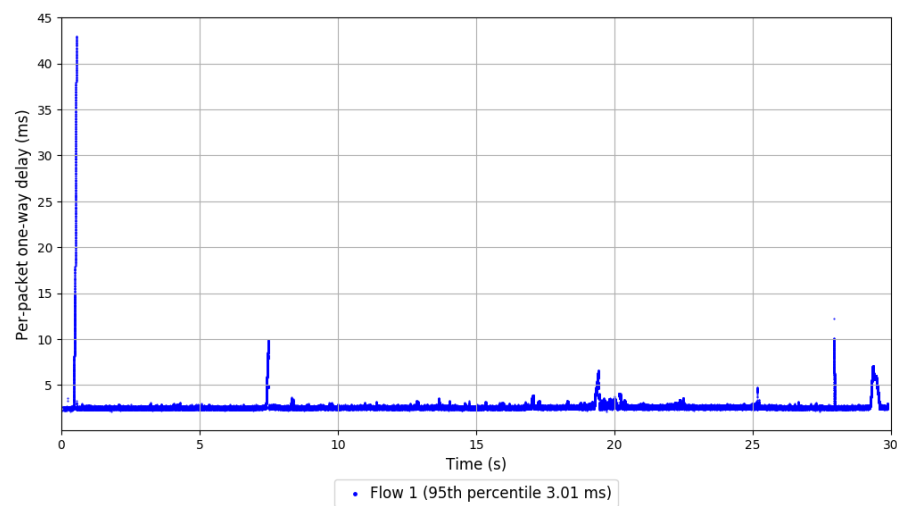
Run 3: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 88.61 Mbit/s)   Flow 1 egress (mean 84.94 Mbit/s)

Flow 1 (95th percentile 2.45 ms)

```
Run 4: Statistics of PCC-Allegro

Start at: 2018-12-10 23:12:27
End at: 2018-12-10 23:12:57
Local clock offset: 2.183 ms
Remote clock offset: -1.619 ms

# Below is generated by plot.py at 2018-12-10 23:47:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 76.73 Mbit/s
95th percentile per-packet one-way delay: 3.007 ms
Loss rate: 5.79%
-- Flow 1:
Average throughput: 76.73 Mbit/s
95th percentile per-packet one-way delay: 3.007 ms
Loss rate: 5.79%
```
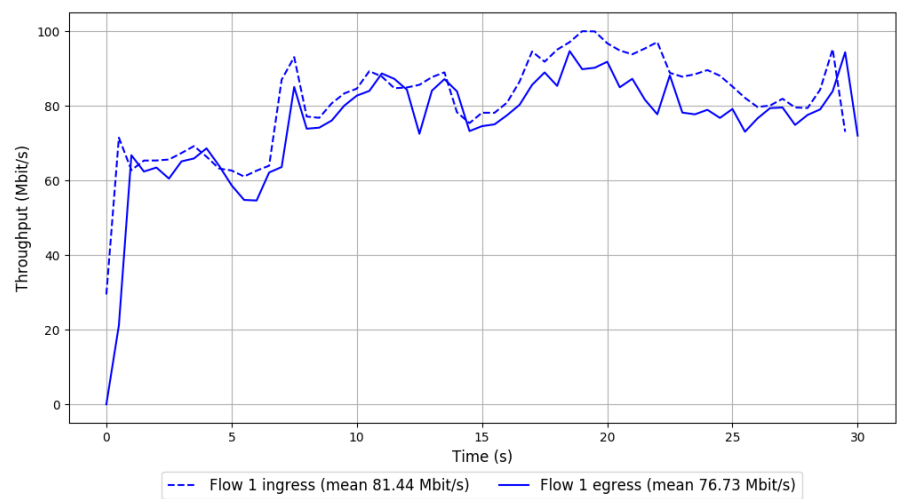
Run 4: Report of PCC-Allegro — Data Link

```
Run 5: Statistics of PCC-Allegro

Start at: 2018-12-10 23:33:59
End at: 2018-12-10 23:34:29
Local clock offset: 1.723 ms
Remote clock offset: -0.548 ms

# Below is generated by plot.py at 2018-12-10 23:47:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 88.13 Mbit/s
95th percentile per-packet one-way delay: 8.062 ms
Loss rate: 2.77%
-- Flow 1:
Average throughput: 88.13 Mbit/s
95th percentile per-packet one-way delay: 8.062 ms
Loss rate: 2.77%
```
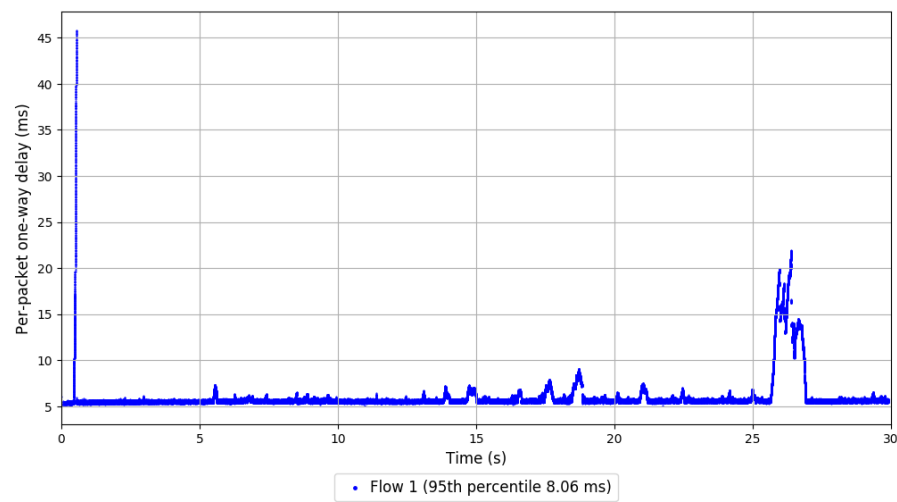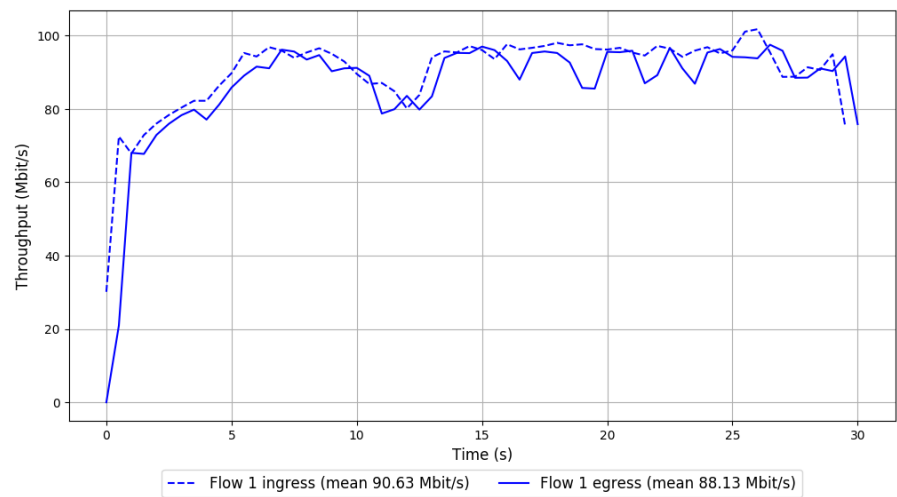
Run 5: Report of PCC-Allegro — Data Link

```
Run 1: Statistics of PCC-Expr

Start at: 2018-12-10 22:04:36
End at: 2018-12-10 22:05:06
Local clock offset: 1.974 ms
Remote clock offset: -5.474 ms

# Below is generated by plot.py at 2018-12-10 23:47:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.78 Mbit/s
95th percentile per-packet one-way delay: 1.831 ms
Loss rate: 38.94%
-- Flow 1:
Average throughput: 12.78 Mbit/s
95th percentile per-packet one-way delay: 1.831 ms
Loss rate: 38.94%
```
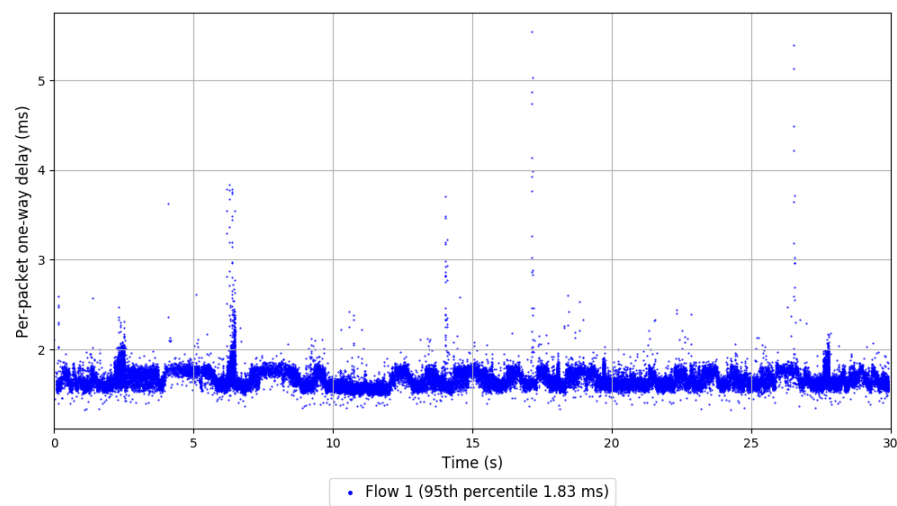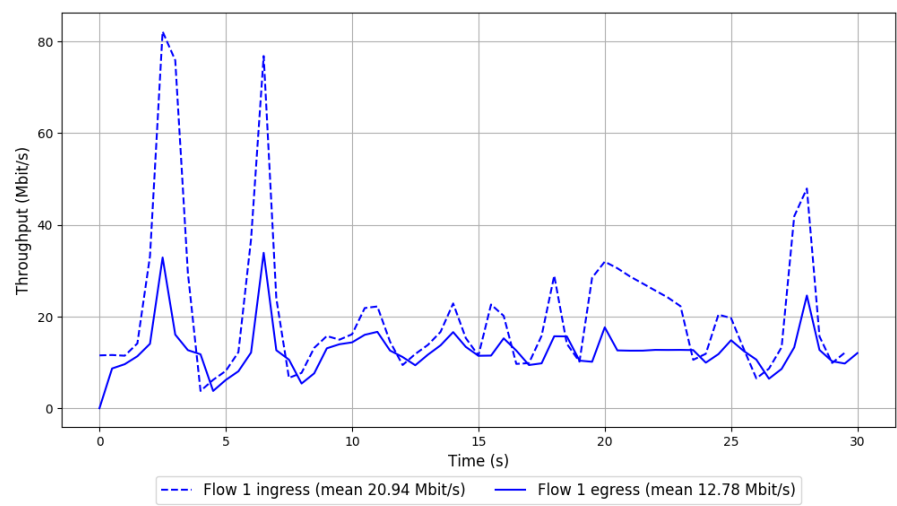
Run 1: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 20.94 Mbit/s)   Flow 1 egress (mean 12.78 Mbit/s)
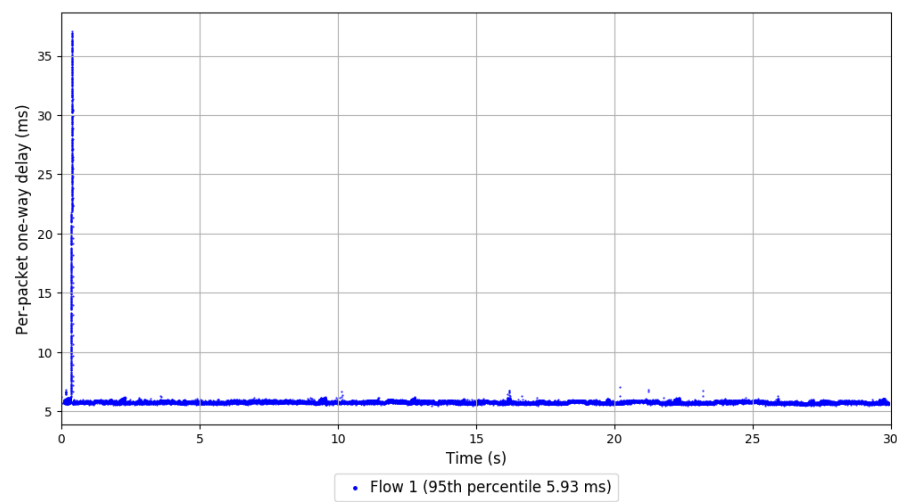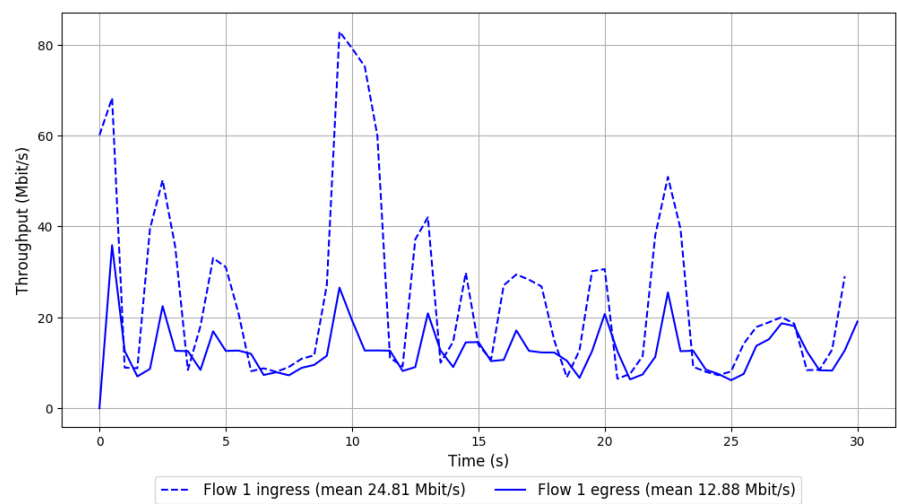

Flow 1 (95th percentile 1.83 ms)

```
Run 2: Statistics of PCC-Expr

Start at: 2018-12-10 22:26:06
End at: 2018-12-10 22:26:36
Local clock offset: 0.222 ms
Remote clock offset: -1.864 ms


# Below is generated by plot.py at 2018-12-10 23:47:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.88 Mbit/s
95th percentile per-packet one-way delay: 5.928 ms
Loss rate: 48.10%
-- Flow 1:
Average throughput: 12.88 Mbit/s
95th percentile per-packet one-way delay: 5.928 ms
Loss rate: 48.10%
```
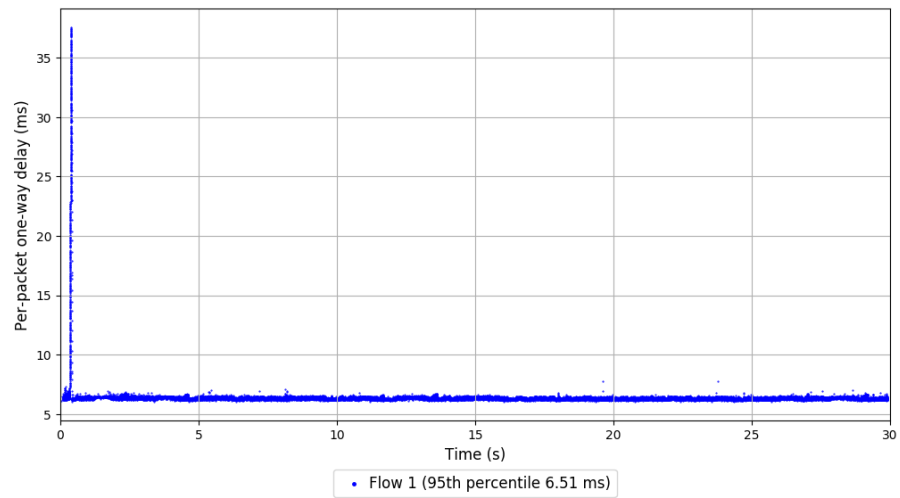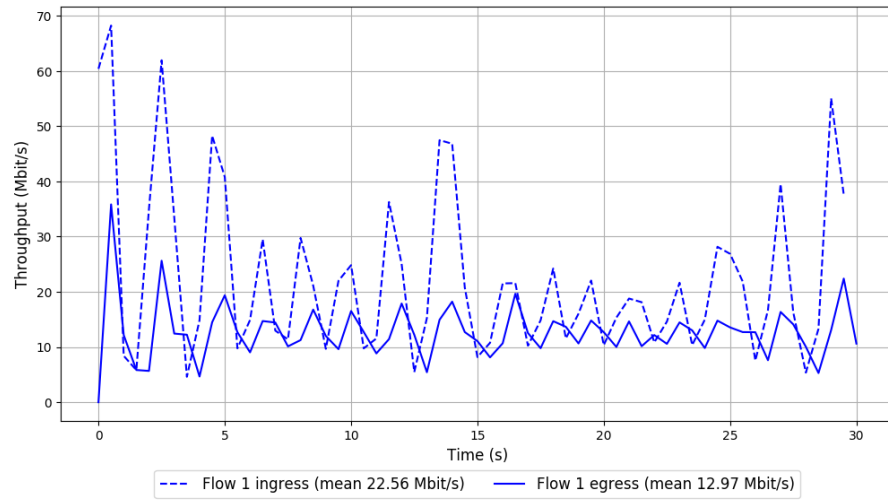
Run 2: Report of PCC-Expr — Data Link

```
Run 3: Statistics of PCC-Expr

Start at: 2018-12-10 22:47:35
End at: 2018-12-10 22:48:05
Local clock offset: -1.088 ms
Remote clock offset: -1.216 ms


# Below is generated by plot.py at 2018-12-10 23:47:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.97 Mbit/s
95th percentile per-packet one-way delay: 6.507 ms
Loss rate: 42.51%
-- Flow 1:
Average throughput: 12.97 Mbit/s
95th percentile per-packet one-way delay: 6.507 ms
Loss rate: 42.51%
```

Run 3: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 22.56 Mbit/s)   —— Flow 1 egress (mean 12.97 Mbit/s)
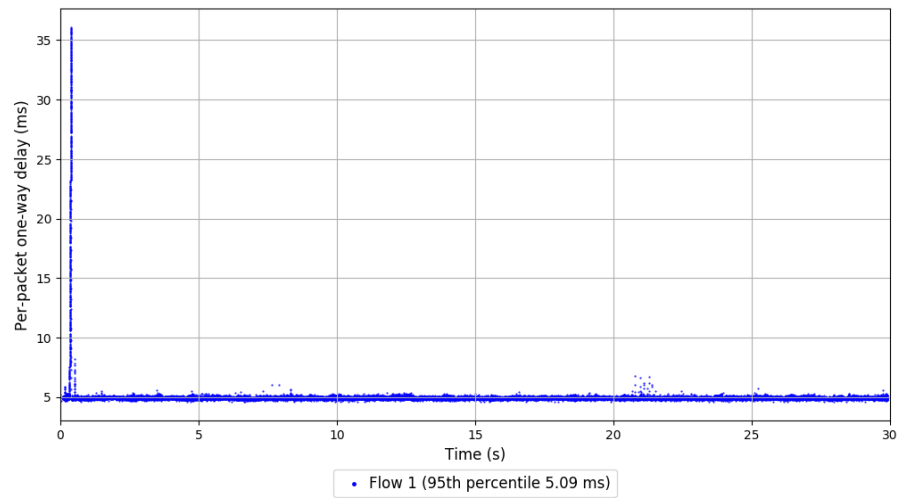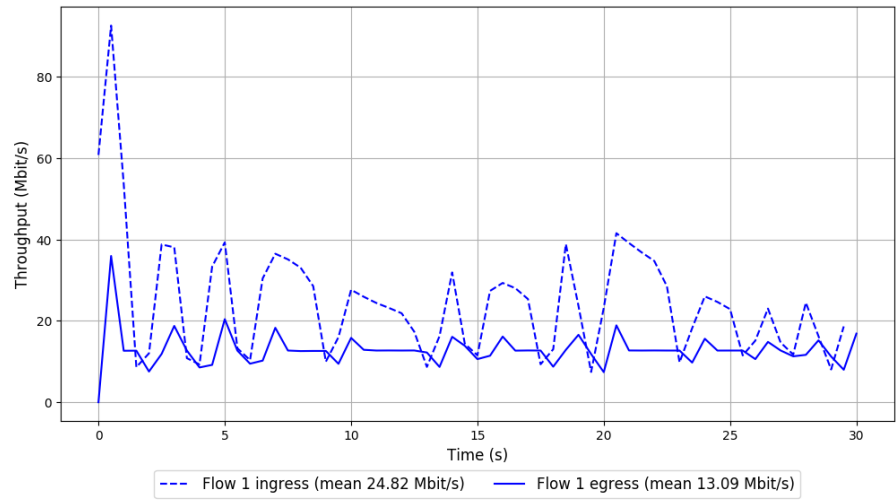

Flow 1 (95th percentile 6.51 ms)

```
Run 4: Statistics of PCC-Expr

Start at: 2018-12-10 23:09:10
End at: 2018-12-10 23:09:40
Local clock offset: 0.19 ms
Remote clock offset: -1.657 ms


# Below is generated by plot.py at 2018-12-10 23:47:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 13.09 Mbit/s
95th percentile per-packet one-way delay: 5.090 ms
Loss rate: 47.25%
-- Flow 1:
Average throughput: 13.09 Mbit/s
95th percentile per-packet one-way delay: 5.090 ms
Loss rate: 47.25%
```
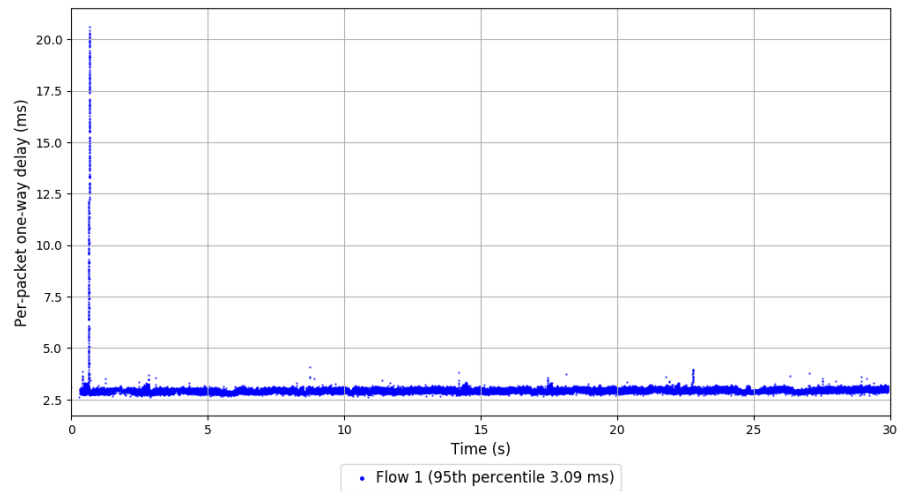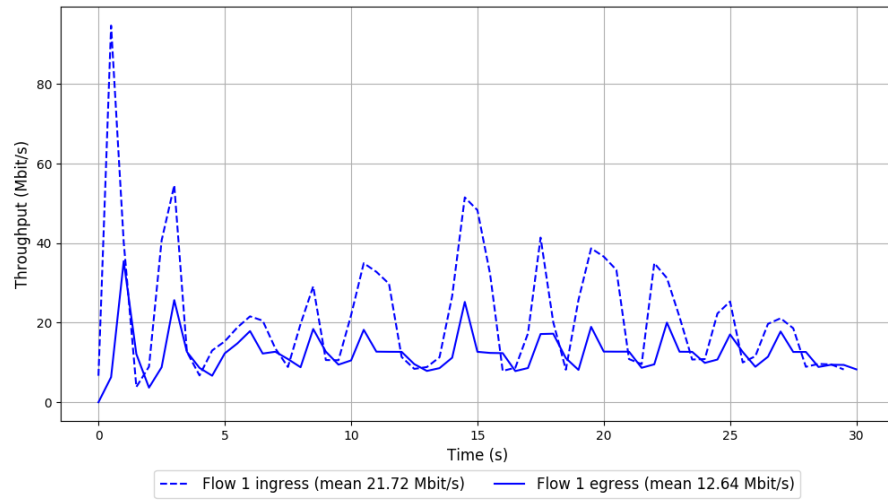
Run 4: Report of PCC-Expr — Data Link

```
Run 5: Statistics of PCC-Expr

Start at: 2018-12-10 23:30:42
End at: 2018-12-10 23:31:12
Local clock offset: 3.517 ms
Remote clock offset: -0.905 ms

# Below is generated by plot.py at 2018-12-10 23:47:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.64 Mbit/s
95th percentile per-packet one-way delay: 3.088 ms
Loss rate: 41.81%
-- Flow 1:
Average throughput: 12.64 Mbit/s
95th percentile per-packet one-way delay: 3.088 ms
Loss rate: 41.81%
```

Run 5: Report of PCC-Expr — Data Link

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-12-10 21:54:16
End at: 2018-12-10 21:54:46
Local clock offset: 1.88 ms
Remote clock offset: -4.461 ms

# Below is generated by plot.py at 2018-12-10 23:47:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 27.74 Mbit/s
95th percentile per-packet one-way delay: 16.873 ms
Loss rate: 1.59%
-- Flow 1:
Average throughput: 27.74 Mbit/s
95th percentile per-packet one-way delay: 16.873 ms
Loss rate: 1.59%
```
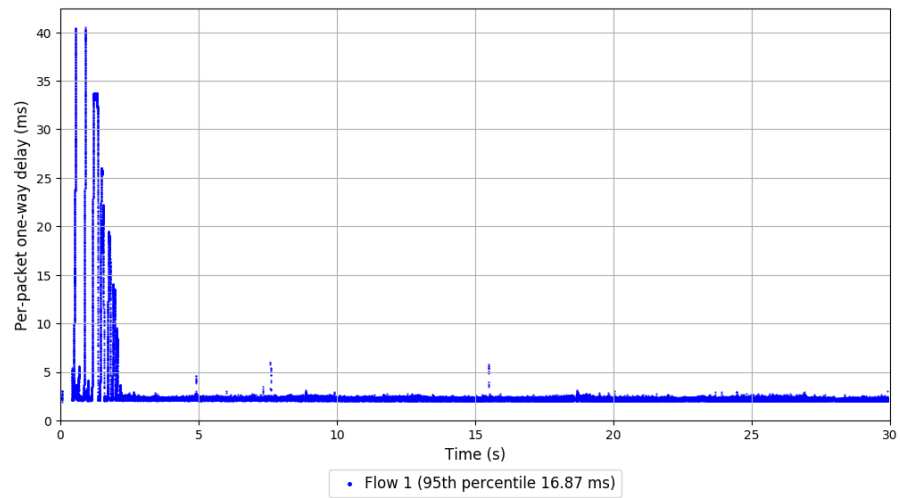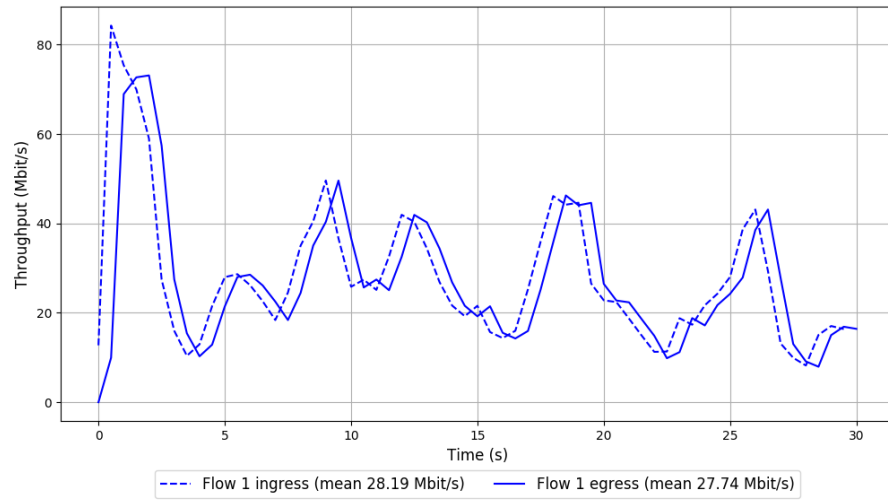
Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-12-10 22:15:54
End at: 2018-12-10 22:16:24
Local clock offset: 1.765 ms
Remote clock offset: -2.238 ms


# Below is generated by plot.py at 2018-12-10 23:47:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 23.02 Mbit/s
95th percentile per-packet one-way delay: 4.562 ms
Loss rate: 2.06%
-- Flow 1:
Average throughput: 23.02 Mbit/s
95th percentile per-packet one-way delay: 4.562 ms
Loss rate: 2.06%
```
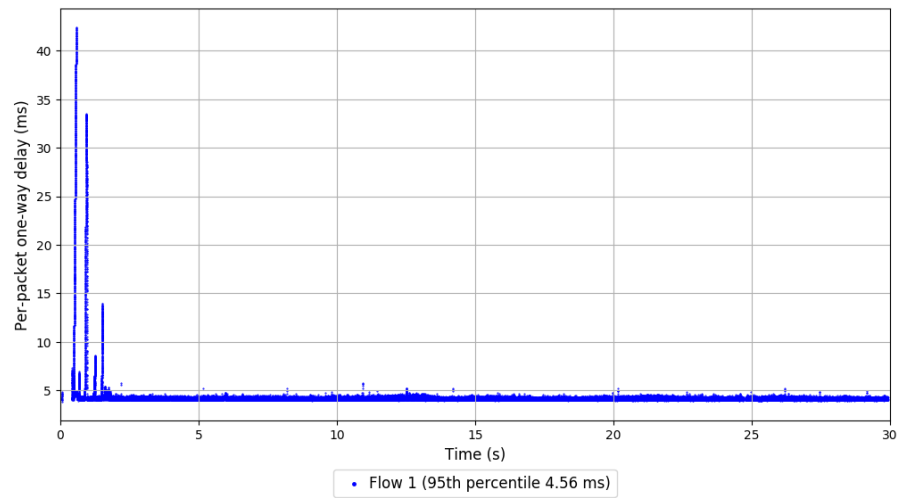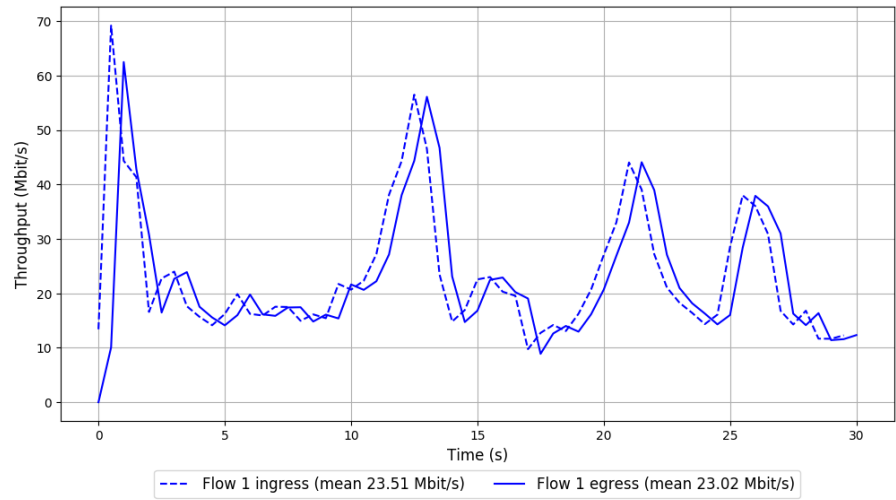
Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-12-10 22:37:21
End at: 2018-12-10 22:37:51
Local clock offset: 2.04 ms
Remote clock offset: -1.527 ms


# Below is generated by plot.py at 2018-12-10 23:47:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 21.79 Mbit/s
95th percentile per-packet one-way delay: 3.305 ms
Loss rate: 1.11%
-- Flow 1:
Average throughput: 21.79 Mbit/s
95th percentile per-packet one-way delay: 3.305 ms
Loss rate: 1.11%
```
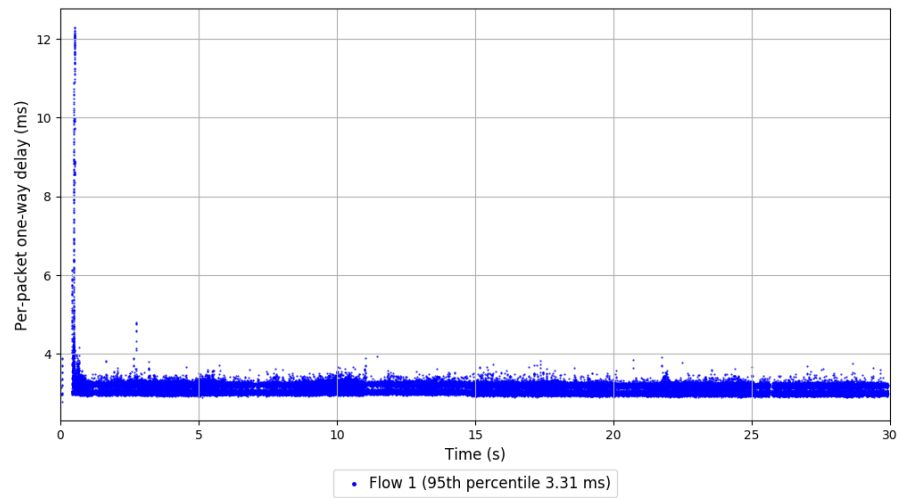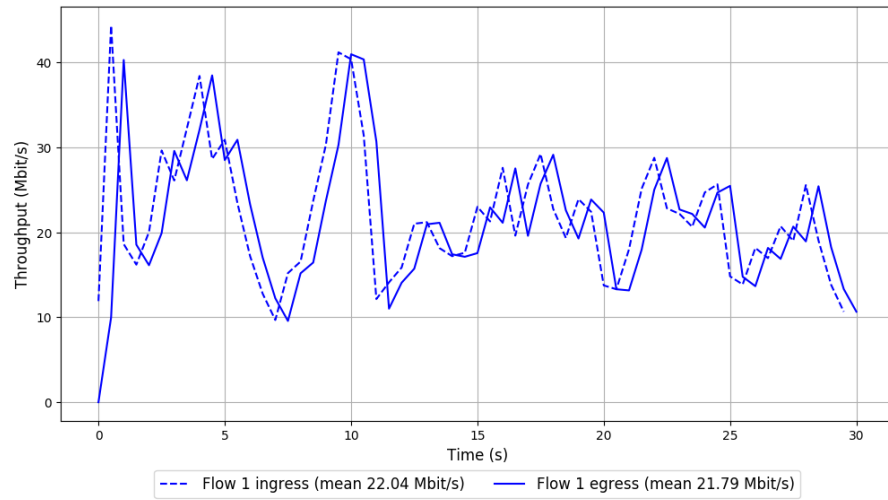
Run 3: Report of QUIC Cubic — Data Link

```
Run 4: Statistics of QUIC Cubic

Start at: 2018-12-10 22:58:53
End at: 2018-12-10 22:59:23
Local clock offset: 1.232 ms
Remote clock offset: -0.783 ms


# Below is generated by plot.py at 2018-12-10 23:47:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 24.73 Mbit/s
95th percentile per-packet one-way delay: 4.423 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 24.73 Mbit/s
95th percentile per-packet one-way delay: 4.423 ms
Loss rate: 0.64%
```
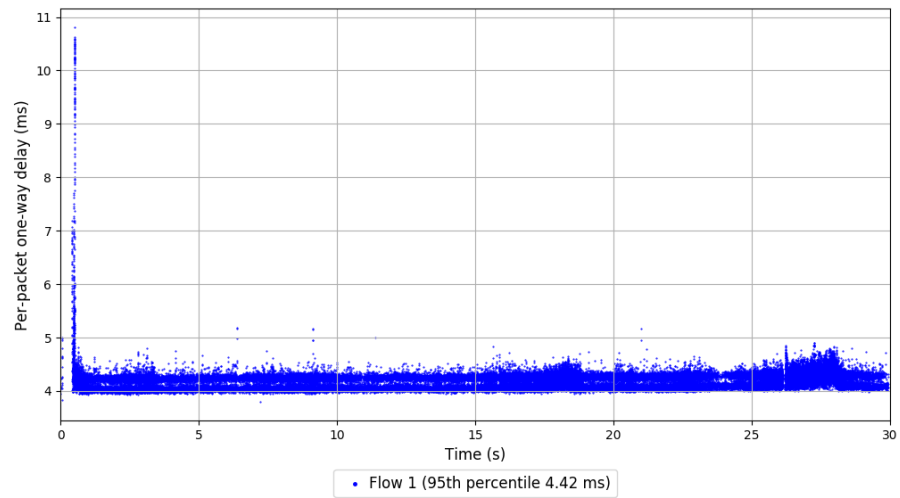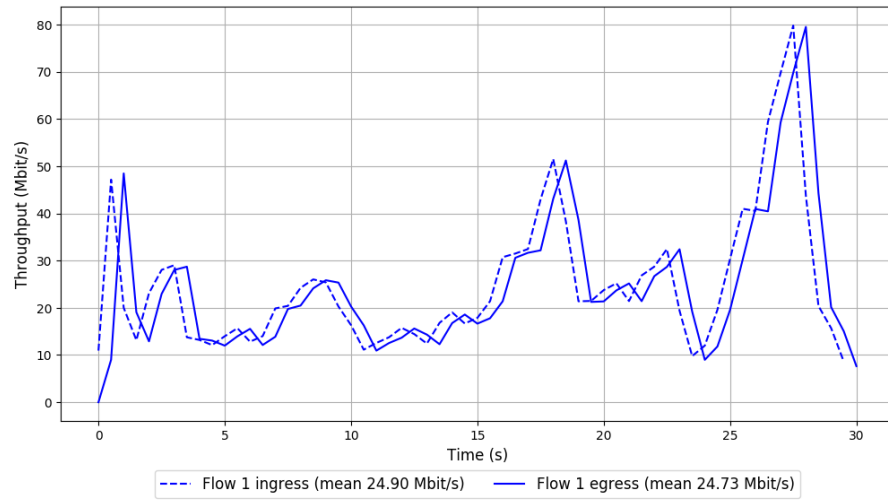
Run 4: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 24.90 Mbit/s) ----   Flow 1 egress (mean 24.73 Mbit/s) ——

Flow 1 (95th percentile 4.42 ms)

```
Run 5: Statistics of QUIC Cubic

Start at: 2018-12-10 23:20:26
End at: 2018-12-10 23:20:56
Local clock offset: 1.947 ms
Remote clock offset: -1.538 ms


# Below is generated by plot.py at 2018-12-10 23:47:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 51.13 Mbit/s
95th percentile per-packet one-way delay: 6.047 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 51.13 Mbit/s
95th percentile per-packet one-way delay: 6.047 ms
Loss rate: 0.66%
```
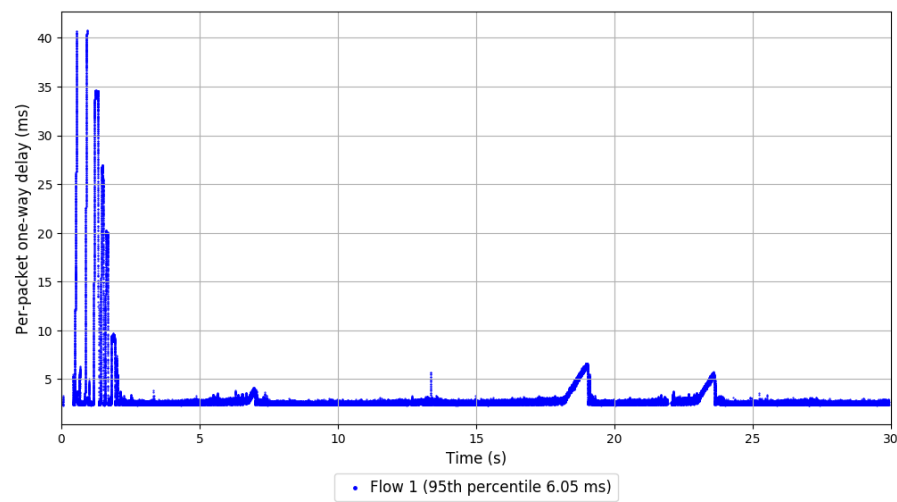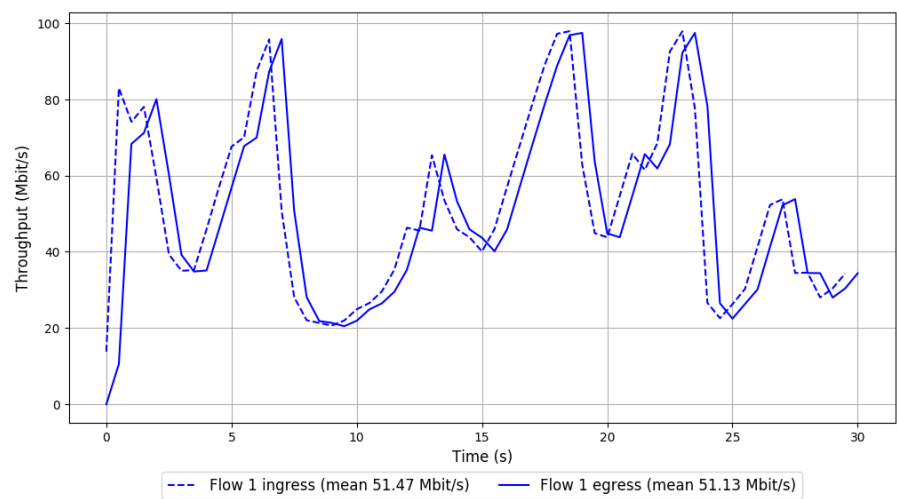
Run 5: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 51.47 Mbit/s)   Flow 1 egress (mean 51.13 Mbit/s)
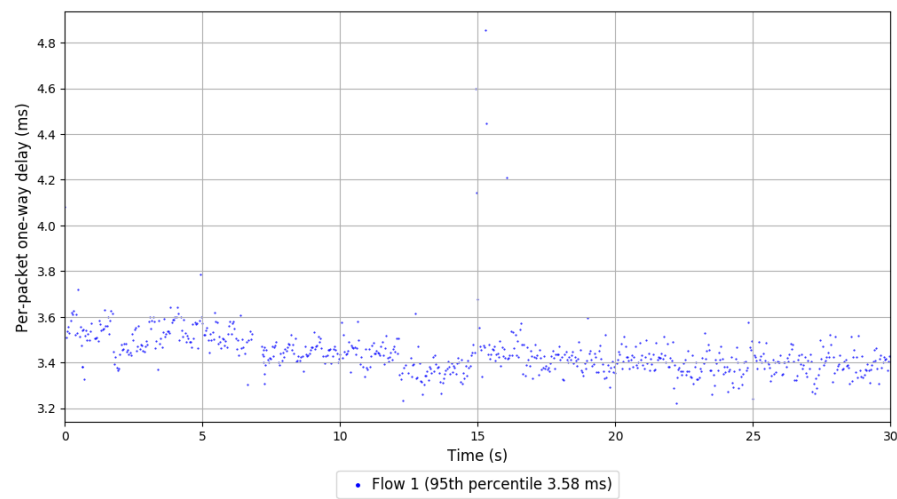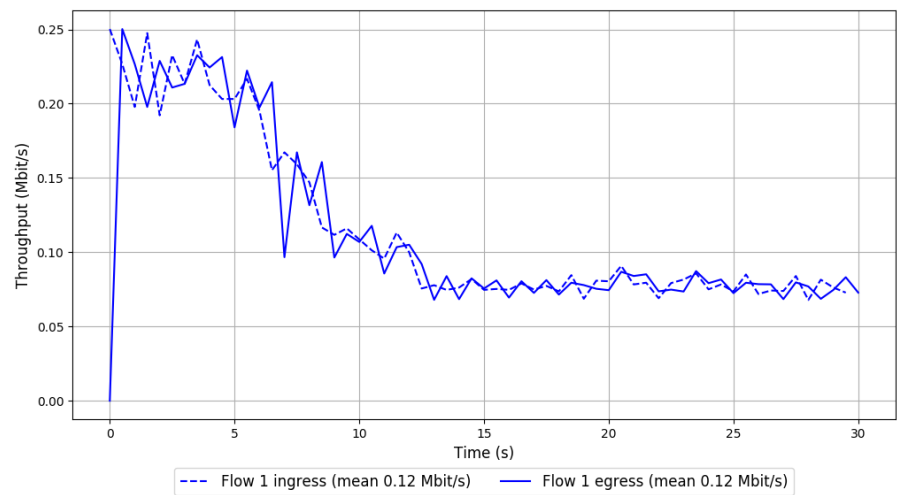

Flow 1 (95th percentile 6.05 ms)

```
Run 1: Statistics of SCReAM

Start at: 2018-12-10 22:05:42
End at: 2018-12-10 22:06:12
Local clock offset: -0.349 ms
Remote clock offset: -5.972 ms


# Below is generated by plot.py at 2018-12-10 23:47:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 3.583 ms
Loss rate: 1.76%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 3.583 ms
Loss rate: 1.76%
```

Run 1: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.12 Mbit/s) — — —   Flow 1 egress (mean 0.12 Mbit/s) ———
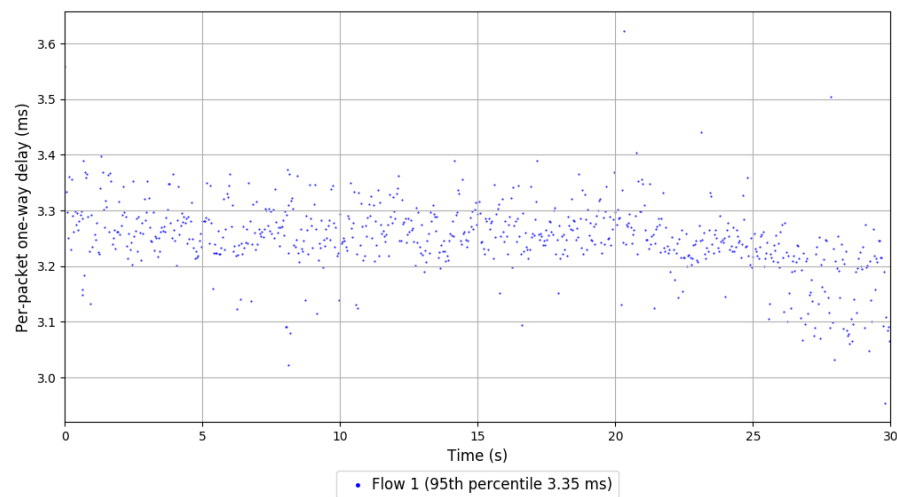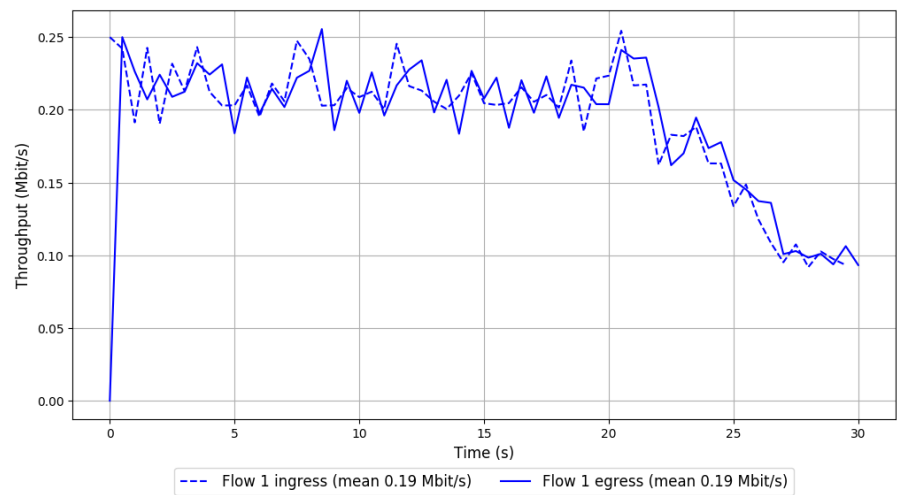

• Flow 1 (95th percentile 3.58 ms)

```
Run 2: Statistics of SCReAM

Start at: 2018-12-10 22:27:12
End at: 2018-12-10 22:27:42
Local clock offset: 1.401 ms
Remote clock offset: -2.599 ms


# Below is generated by plot.py at 2018-12-10 23:47:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 3.347 ms
Loss rate: 0.14%
-- Flow 1:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 3.347 ms
Loss rate: 0.14%
```

Run 2: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.19 Mbit/s)   Flow 1 egress (mean 0.19 Mbit/s)

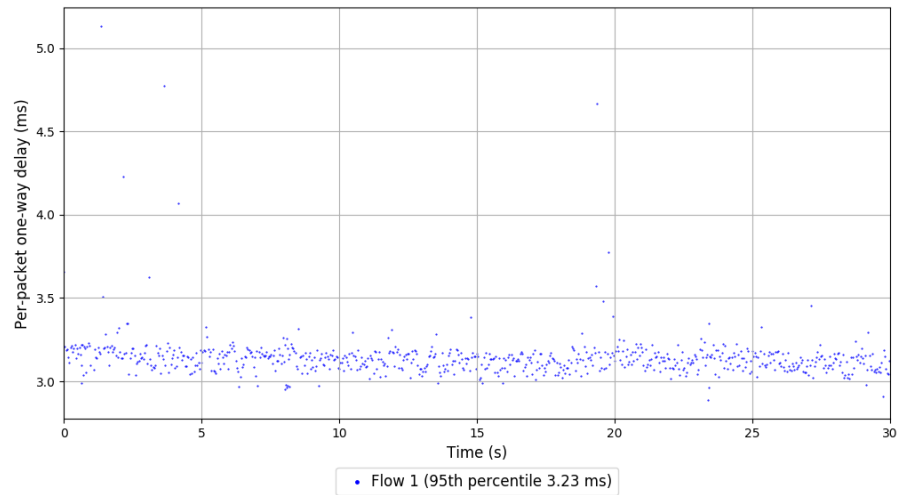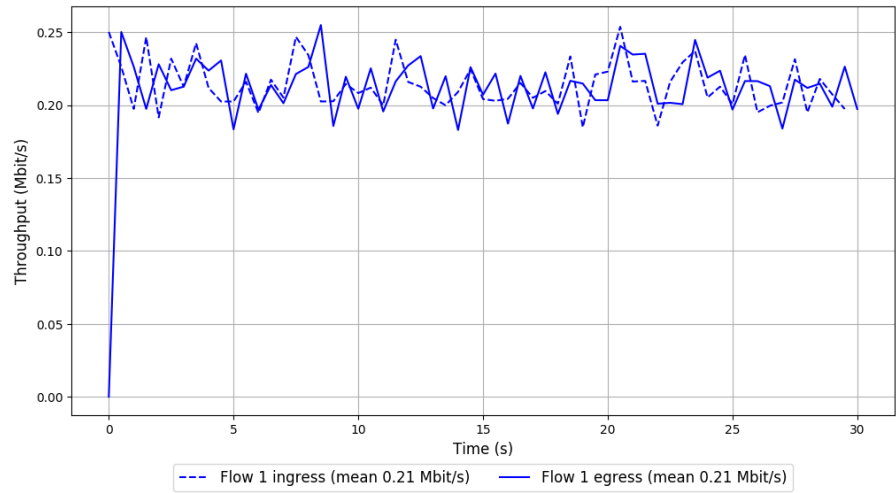
Flow 1 (95th percentile 3.35 ms)

```
Run 3: Statistics of SCReAM

Start at: 2018-12-10 22:48:41
End at: 2018-12-10 22:49:11
Local clock offset: 1.852 ms
Remote clock offset: -1.341 ms


# Below is generated by plot.py at 2018-12-10 23:47:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 3.228 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 3.228 ms
Loss rate: 0.00%
```

Run 3: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.21 Mbit/s) --- Flow 1 egress (mean 0.21 Mbit/s)

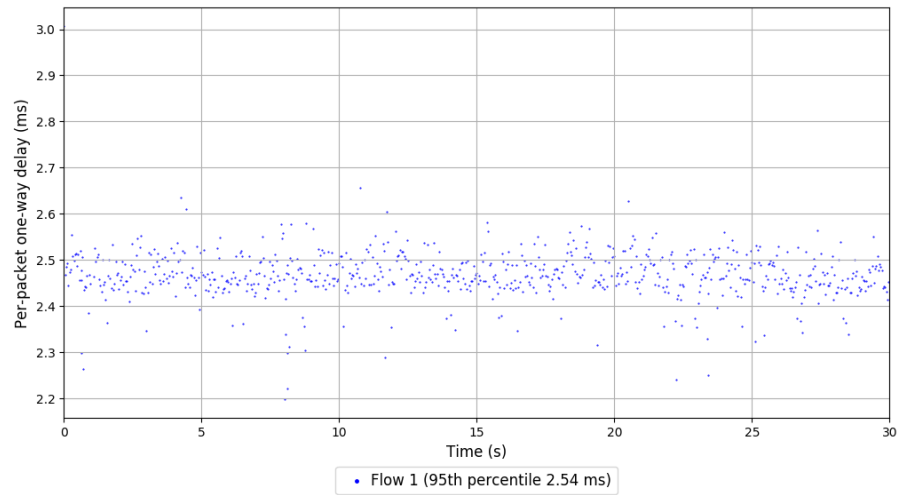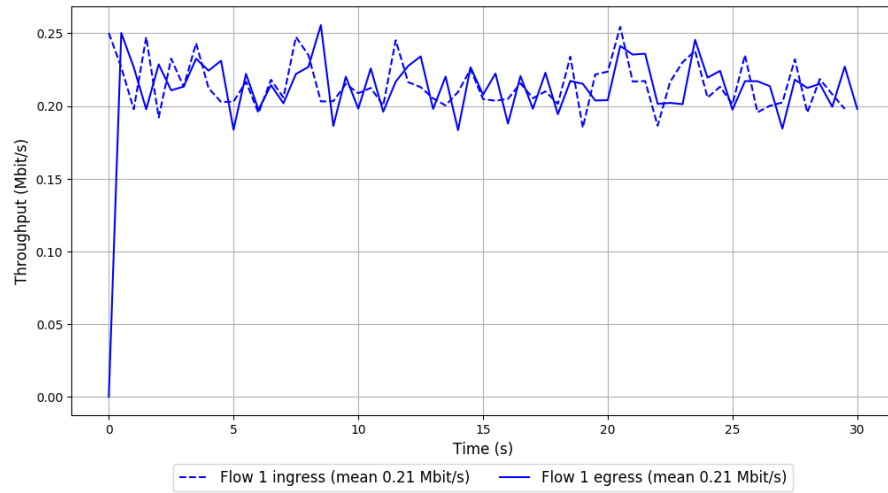Flow 1 (95th percentile 3.23 ms)

```
Run 4: Statistics of SCReAM

Start at: 2018-12-10 23:10:16
End at: 2018-12-10 23:10:46
Local clock offset: 2.53 ms
Remote clock offset: -1.693 ms

# Below is generated by plot.py at 2018-12-10 23:47:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 2.537 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 2.537 ms
Loss rate: 0.00%
```

Run 4: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.21 Mbit/s) — Flow 1 egress (mean 0.21 Mbit/s)
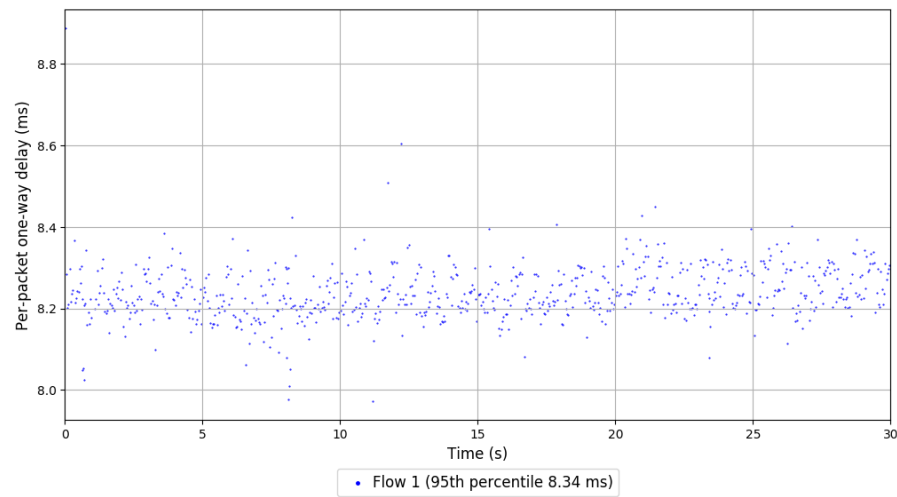

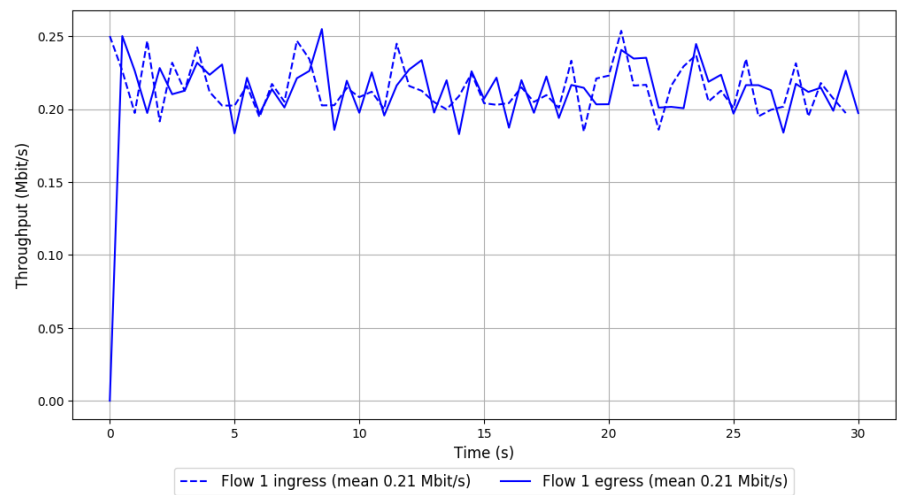• Flow 1 (95th percentile 2.54 ms)

```
Run 5: Statistics of SCReAM

Start at: 2018-12-10 23:31:48
End at: 2018-12-10 23:32:18
Local clock offset: -1.176 ms
Remote clock offset: -0.472 ms


# Below is generated by plot.py at 2018-12-10 23:47:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 8.335 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 8.335 ms
Loss rate: 0.00%
```

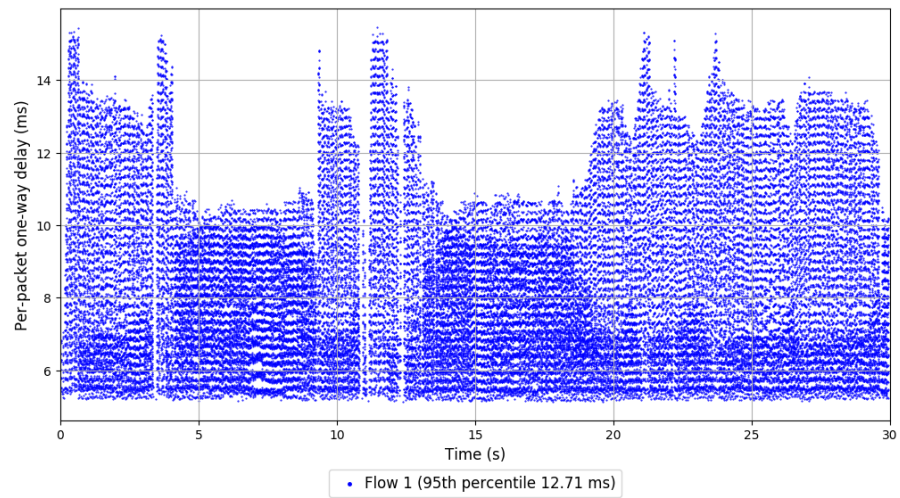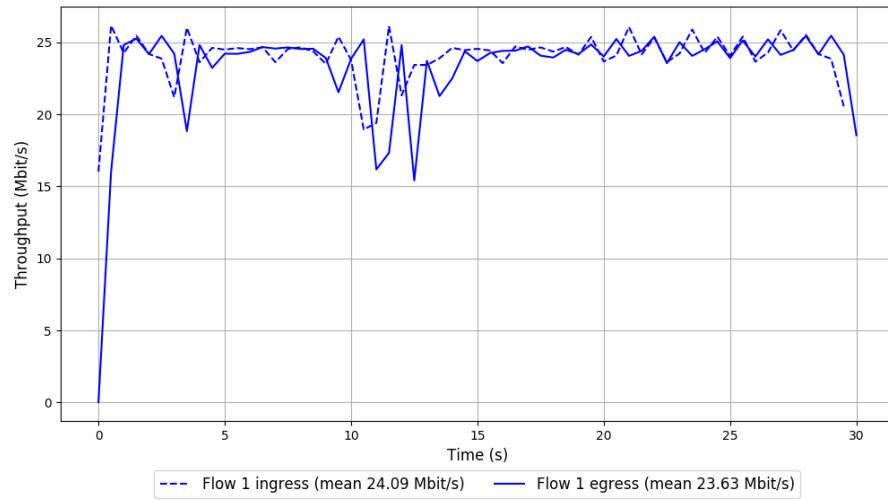Run 5: Report of SCReAM — Data Link

```
Run 1: Statistics of Sprout

Start at: 2018-12-10 21:56:35
End at: 2018-12-10 21:57:05
Local clock offset: -2.099 ms
Remote clock offset: -4.963 ms


# Below is generated by plot.py at 2018-12-10 23:47:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 23.63 Mbit/s
95th percentile per-packet one-way delay: 12.712 ms
Loss rate: 1.88%
-- Flow 1:
Average throughput: 23.63 Mbit/s
95th percentile per-packet one-way delay: 12.712 ms
Loss rate: 1.88%
```

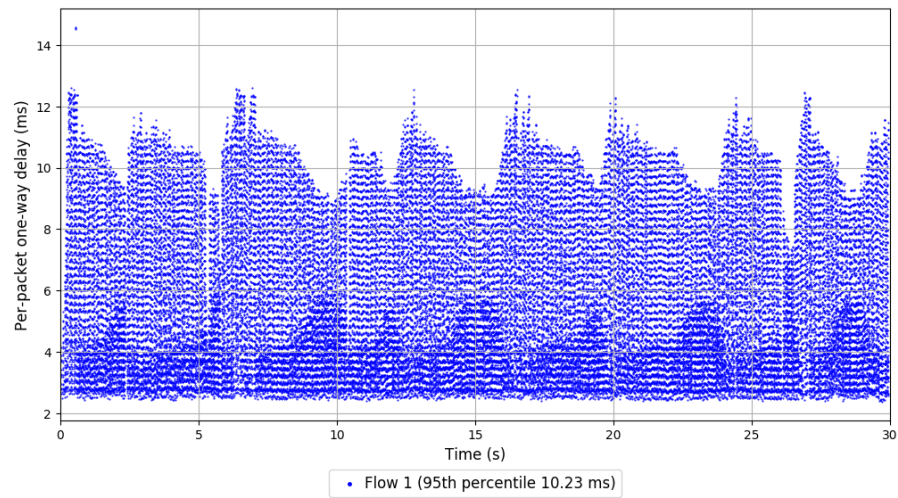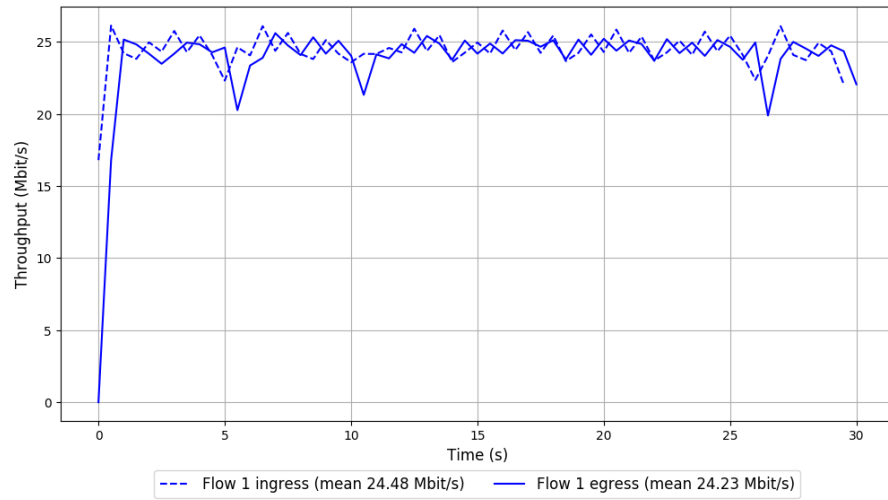## Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-12-10 22:18:09
End at: 2018-12-10 22:18:39
Local clock offset: 3.738 ms
Remote clock offset: -2.181 ms


# Below is generated by plot.py at 2018-12-10 23:47:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 24.23 Mbit/s
95th percentile per-packet one-way delay: 10.230 ms
Loss rate: 1.00%
-- Flow 1:
Average throughput: 24.23 Mbit/s
95th percentile per-packet one-way delay: 10.230 ms
Loss rate: 1.00%
```

Run 2: Report of Sprout — Data Link

Flow 1 ingress (mean 24.48 Mbit/s)   Flow 1 egress (mean 24.23 Mbit/s)
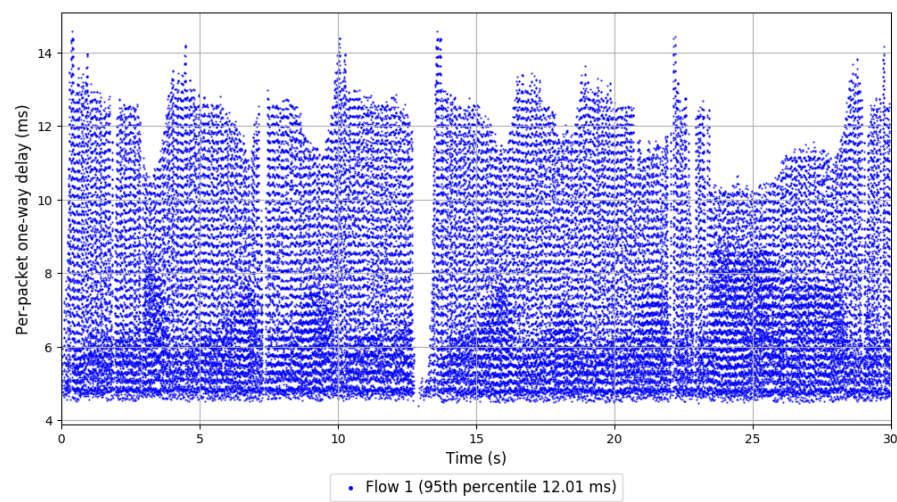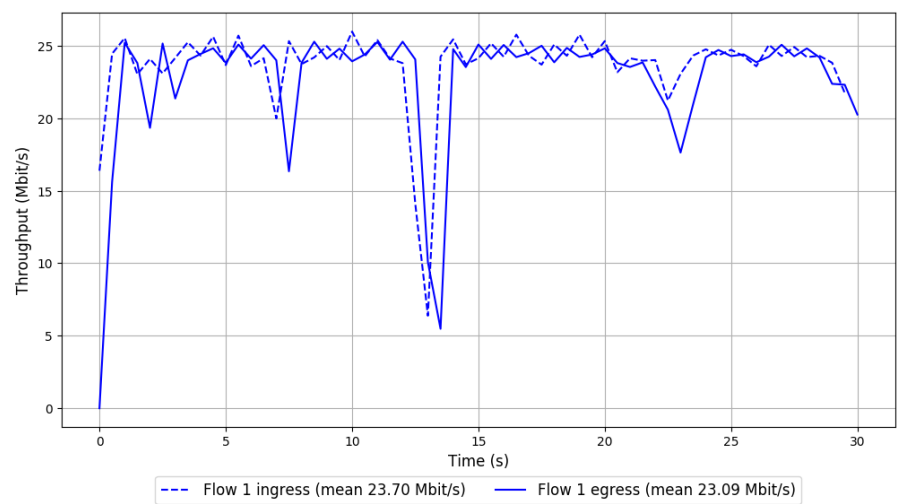

• Flow 1 (95th percentile 10.23 ms)

```
Run 3: Statistics of Sprout

Start at: 2018-12-10 22:39:38
End at: 2018-12-10 22:40:08
Local clock offset: 0.451 ms
Remote clock offset: -2.023 ms


# Below is generated by plot.py at 2018-12-10 23:47:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 23.09 Mbit/s
95th percentile per-packet one-way delay: 12.007 ms
Loss rate: 2.54%
-- Flow 1:
Average throughput: 23.09 Mbit/s
95th percentile per-packet one-way delay: 12.007 ms
Loss rate: 2.54%
```

Run 3: Report of Sprout — Data Link

Flow 1 ingress (mean 23.70 Mbit/s) Flow 1 egress (mean 23.09 Mbit/s)

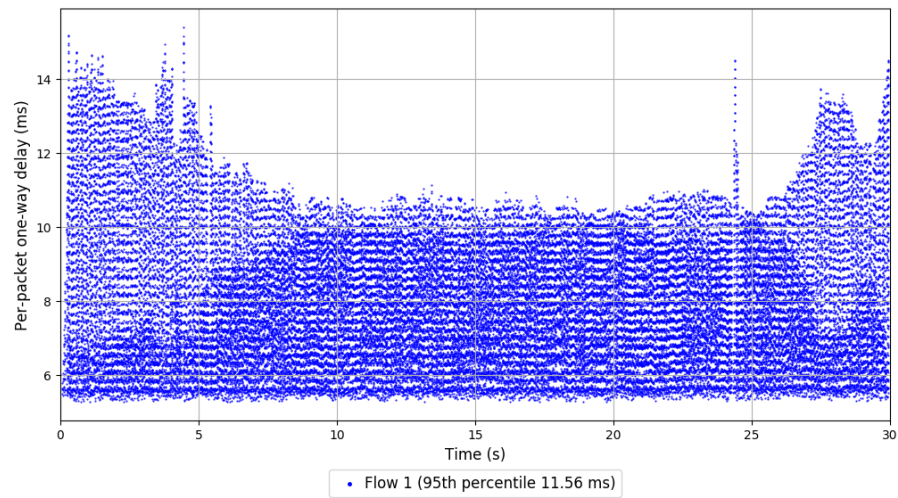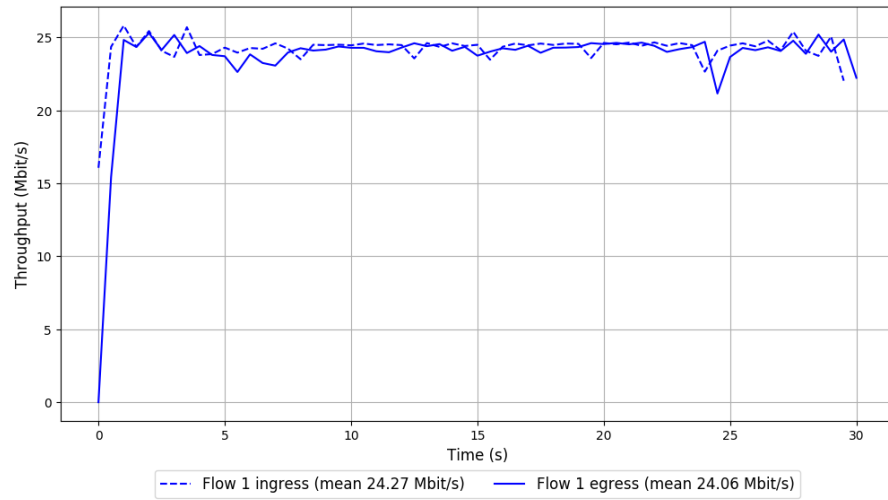• Flow 1 (95th percentile 12.01 ms)

```
Run 4: Statistics of Sprout

Start at: 2018-12-10 23:01:10
End at: 2018-12-10 23:01:40
Local clock offset: -0.35 ms
Remote clock offset: -1.278 ms


# Below is generated by plot.py at 2018-12-10 23:47:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 24.06 Mbit/s
95th percentile per-packet one-way delay: 11.564 ms
Loss rate: 0.85%
-- Flow 1:
Average throughput: 24.06 Mbit/s
95th percentile per-packet one-way delay: 11.564 ms
Loss rate: 0.85%
```

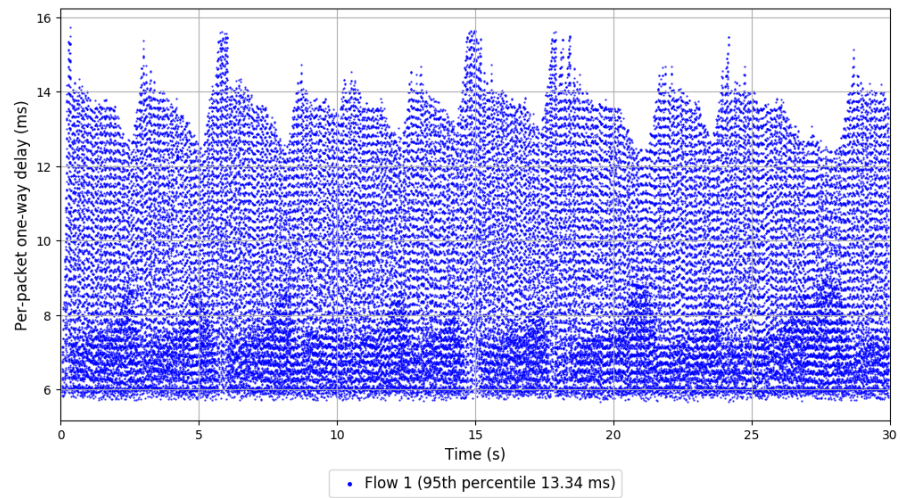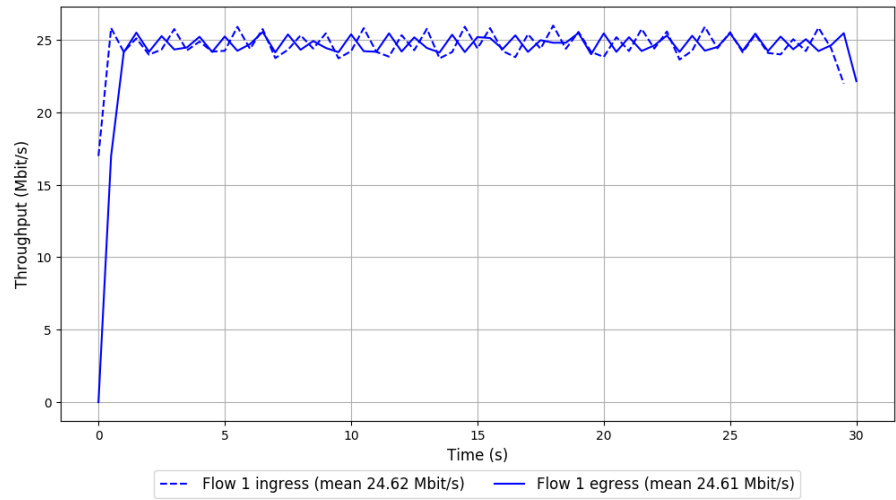# Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2018-12-10 23:22:43
End at: 2018-12-10 23:23:13
Local clock offset: -0.662 ms
Remote clock offset: -0.812 ms


# Below is generated by plot.py at 2018-12-10 23:47:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 24.61 Mbit/s
95th percentile per-packet one-way delay: 13.339 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 24.61 Mbit/s
95th percentile per-packet one-way delay: 13.339 ms
Loss rate: 0.00%
```

Run 5: Report of Sprout — Data Link

Flow 1 ingress (mean 24.62 Mbit/s) --- Flow 1 egress (mean 24.61 Mbit/s)

Flow 1 (95th percentile 13.34 ms)

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

Start at: 2018-12-10 22:06:46
End at: 2018-12-10 22:07:17
Local clock offset: 3.017 ms
Remote clock offset: -3.76 ms

# Below is generated by plot.py at 2018-12-10 23:47:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.53 Mbit/s
95th percentile per-packet one-way delay: 2.647 ms
Loss rate: 74.10%
-- Flow 1:
Average throughput: 7.53 Mbit/s
95th percentile per-packet one-way delay: 2.647 ms
Loss rate: 74.10%
```
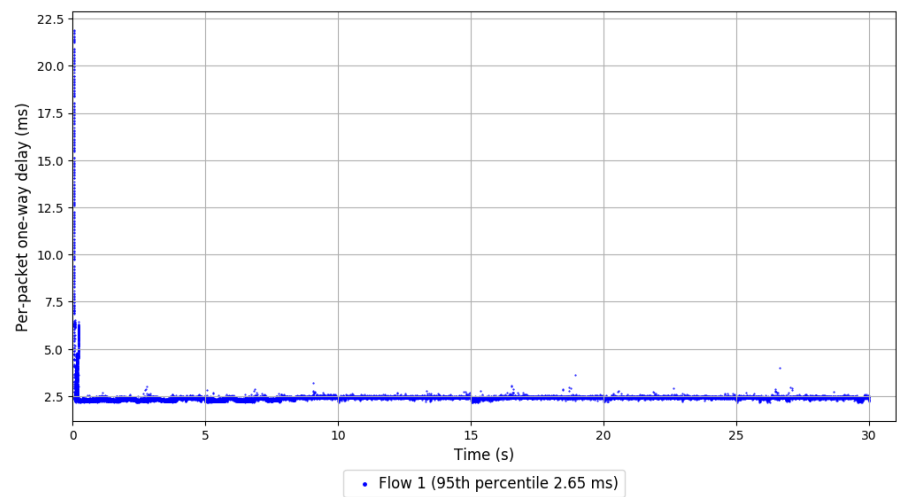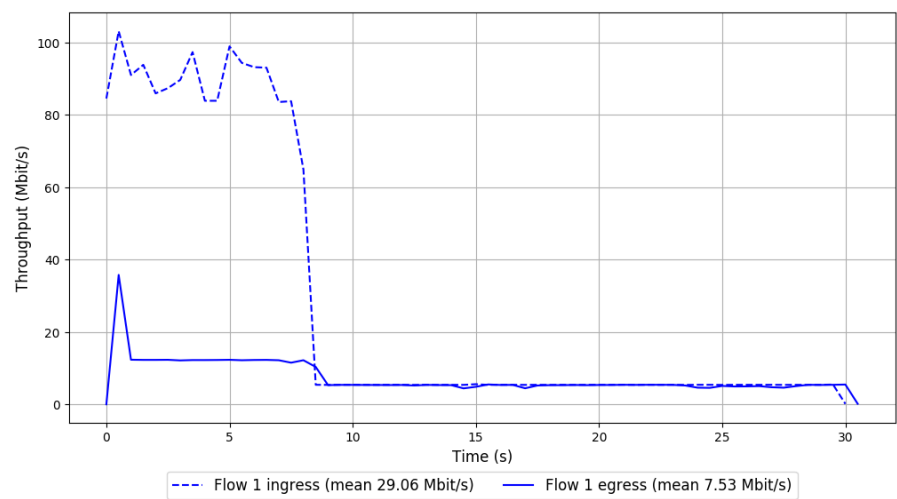
Run 1: Report of TaoVA-100x — Data Link

```
Run 2: Statistics of TaoVA-100x

Start at: 2018-12-10 22:28:17
End at: 2018-12-10 22:28:47
Local clock offset: 2.354 ms
Remote clock offset: -1.9 ms


# Below is generated by plot.py at 2018-12-10 23:47:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.40 Mbit/s
95th percentile per-packet one-way delay: 3.708 ms
Loss rate: 82.18%
-- Flow 1:
Average throughput: 9.40 Mbit/s
95th percentile per-packet one-way delay: 3.708 ms
Loss rate: 82.18%
```
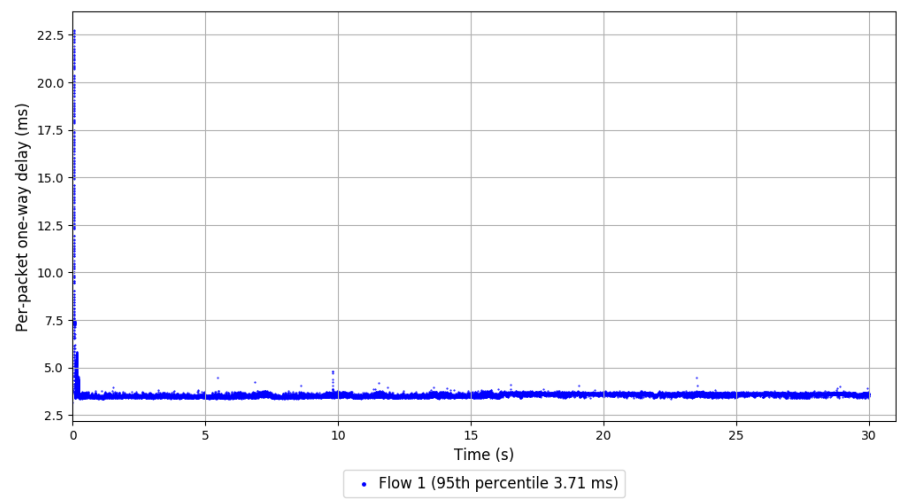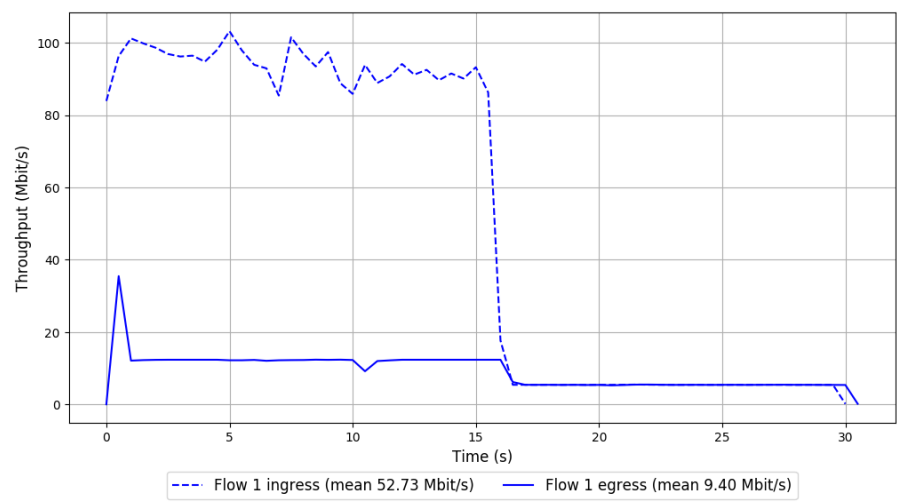
Run 2: Report of TaoVA-100x — Data Link

```
Run 3: Statistics of TaoVA-100x

Start at: 2018-12-10 22:49:46
End at: 2018-12-10 22:50:16
Local clock offset: 0.922 ms
Remote clock offset: -1.849 ms


# Below is generated by plot.py at 2018-12-10 23:47:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 8.38 Mbit/s
95th percentile per-packet one-way delay: 3.683 ms
Loss rate: 78.95%
-- Flow 1:
Average throughput: 8.38 Mbit/s
95th percentile per-packet one-way delay: 3.683 ms
Loss rate: 78.95%
```
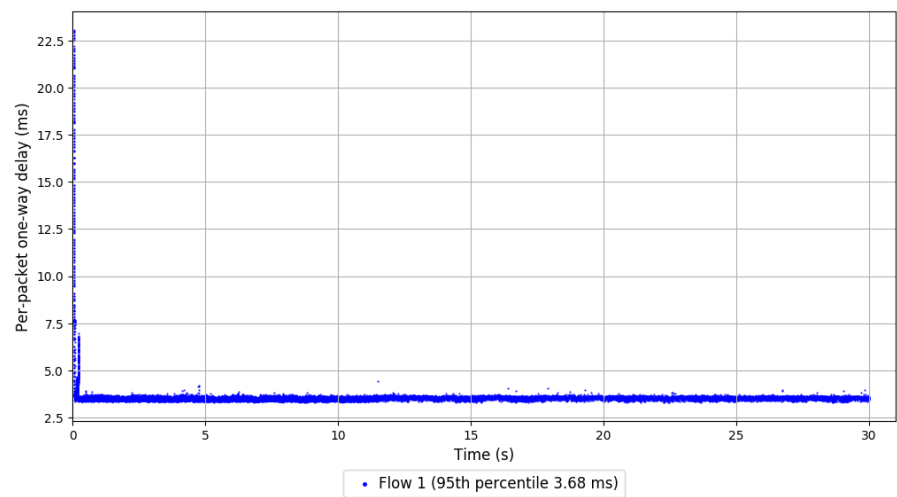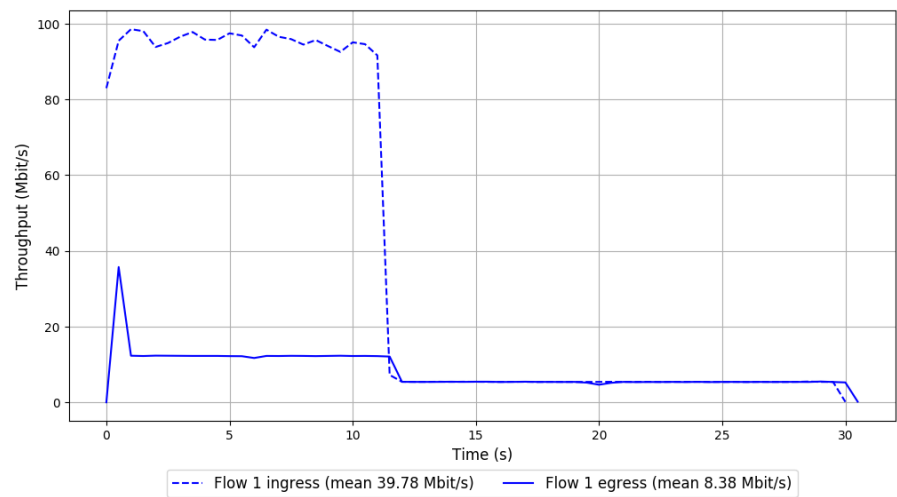
Run 3: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 39.78 Mbit/s)   Flow 1 egress (mean 8.38 Mbit/s)
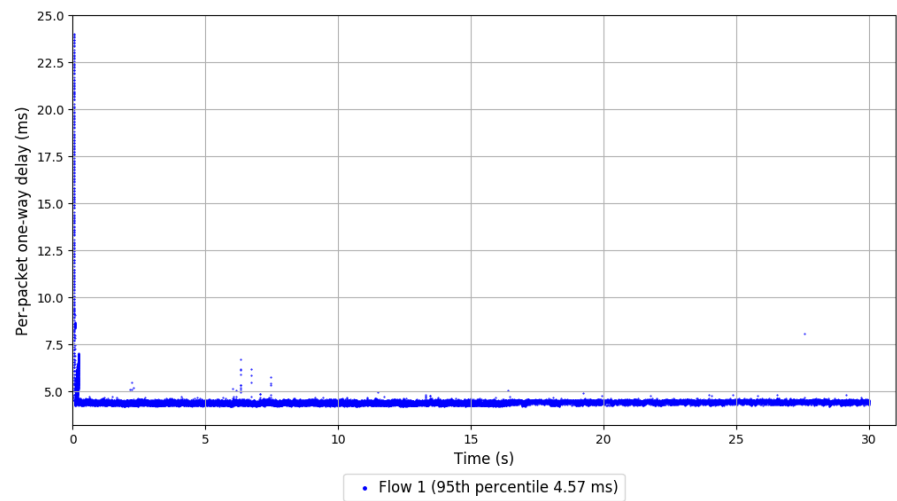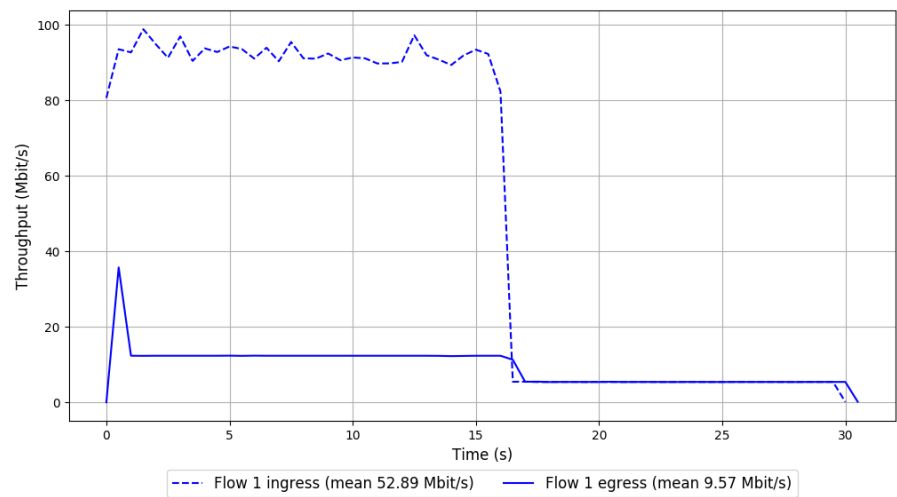

• Flow 1 (95th percentile 3.68 ms)

```
Run 4: Statistics of TaoVA-100x

Start at: 2018-12-10 23:11:21
End at: 2018-12-10 23:11:51
Local clock offset: 1.702 ms
Remote clock offset: -0.686 ms


# Below is generated by plot.py at 2018-12-10 23:47:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.57 Mbit/s
95th percentile per-packet one-way delay: 4.570 ms
Loss rate: 81.90%
-- Flow 1:
Average throughput: 9.57 Mbit/s
95th percentile per-packet one-way delay: 4.570 ms
Loss rate: 81.90%
```
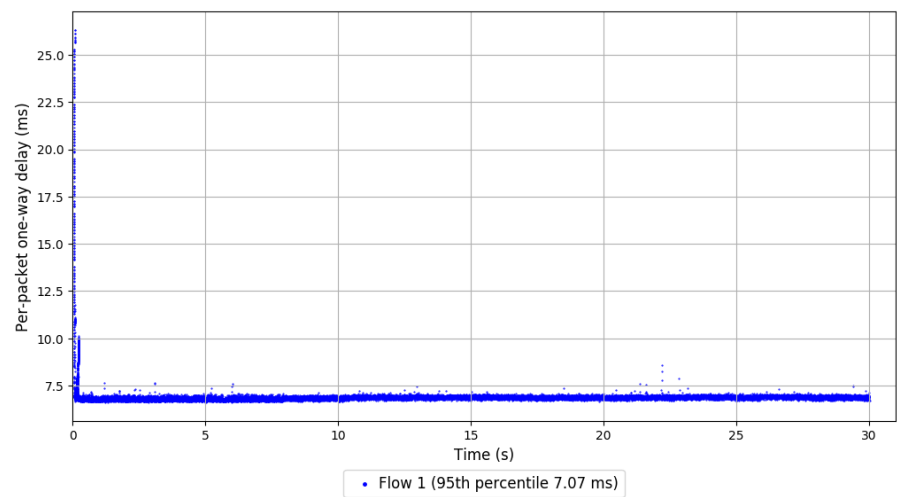
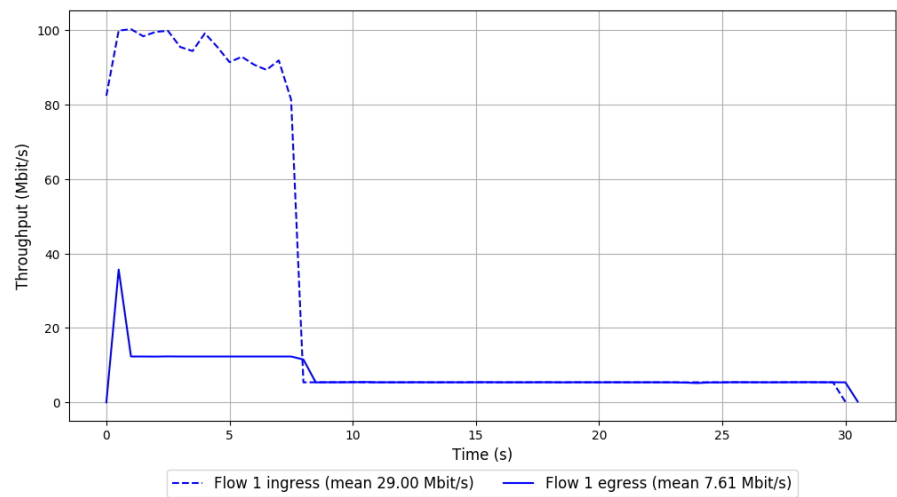Run 4: Report of TaoVA-100x — Data Link

```
Run 5: Statistics of TaoVA-100x

Start at: 2018-12-10 23:32:53
End at: 2018-12-10 23:33:23
Local clock offset: -0.103 ms
Remote clock offset: -0.964 ms


# Below is generated by plot.py at 2018-12-10 23:47:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.61 Mbit/s
95th percentile per-packet one-way delay: 7.068 ms
Loss rate: 73.77%
-- Flow 1:
Average throughput: 7.61 Mbit/s
95th percentile per-packet one-way delay: 7.068 ms
Loss rate: 73.77%
```

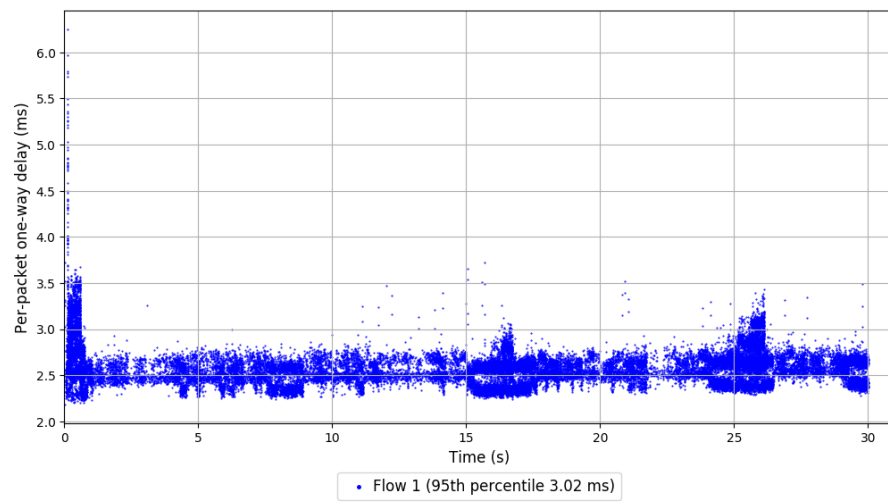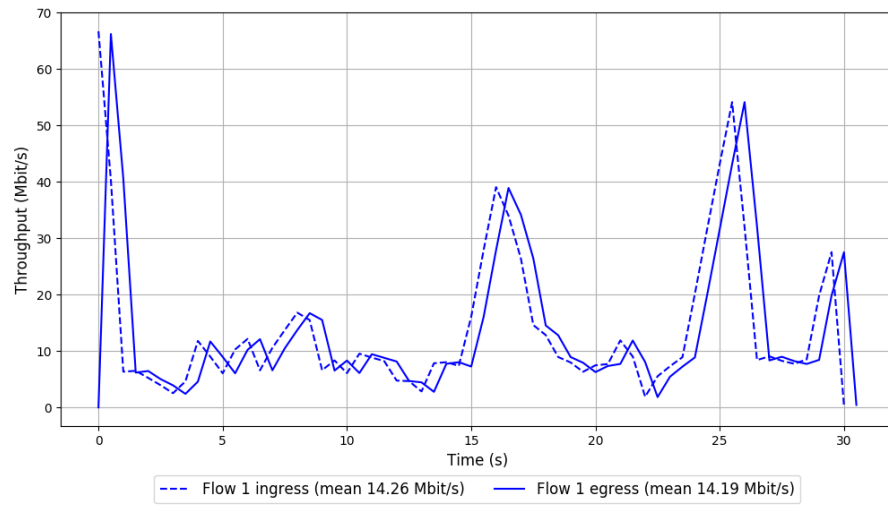## Run 5: Report of TaoVA-100x — Data Link

154

```
Run 1: Statistics of TCP Vegas

Start at: 2018-12-10 21:58:45
End at: 2018-12-10 21:59:15
Local clock offset: 1.018 ms
Remote clock offset: -4.691 ms


# Below is generated by plot.py at 2018-12-10 23:47:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 14.19 Mbit/s
95th percentile per-packet one-way delay: 3.015 ms
Loss rate: 0.46%
-- Flow 1:
Average throughput: 14.19 Mbit/s
95th percentile per-packet one-way delay: 3.015 ms
Loss rate: 0.46%
```

Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-12-10 22:20:20
End at: 2018-12-10 22:20:50
Local clock offset: 3.03 ms
Remote clock offset: -1.79 ms


# Below is generated by plot.py at 2018-12-10 23:47:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 8.10 Mbit/s
95th percentile per-packet one-way delay: 3.334 ms
Loss rate: 1.33%
-- Flow 1:
Average throughput: 8.10 Mbit/s
95th percentile per-packet one-way delay: 3.334 ms
Loss rate: 1.33%
```
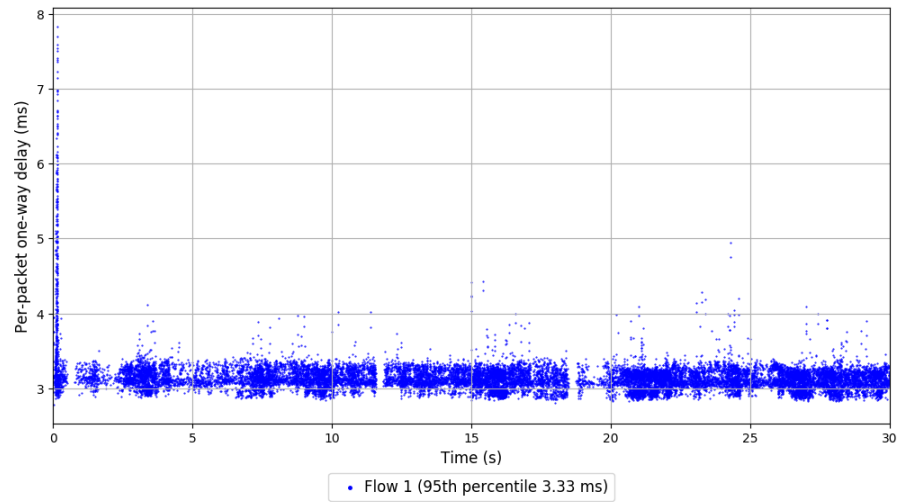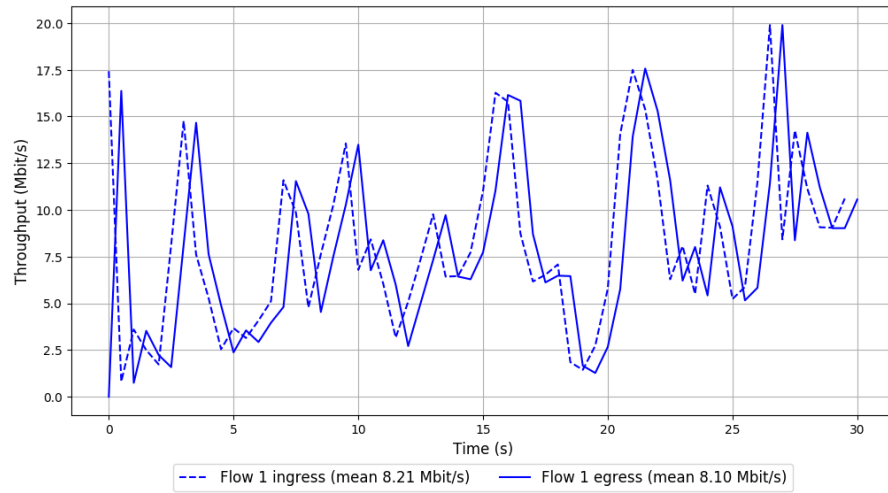
Run 2: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 8.21 Mbit/s) — — — Flow 1 egress (mean 8.10 Mbit/s)
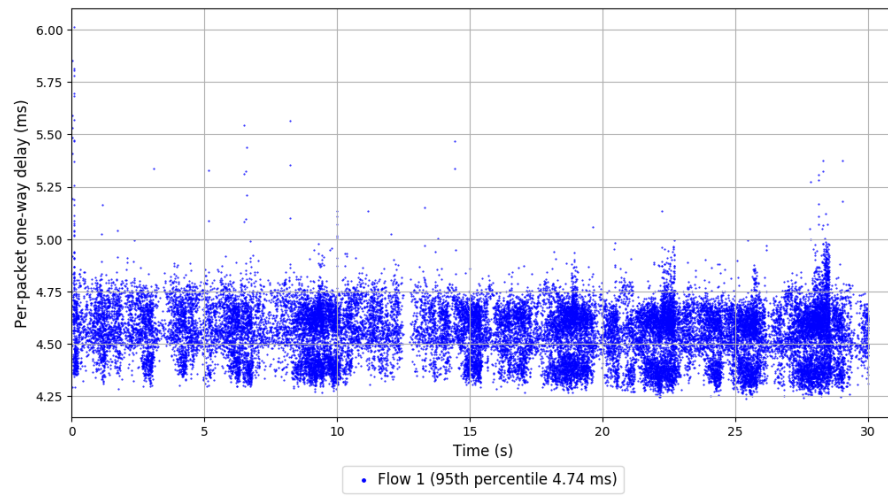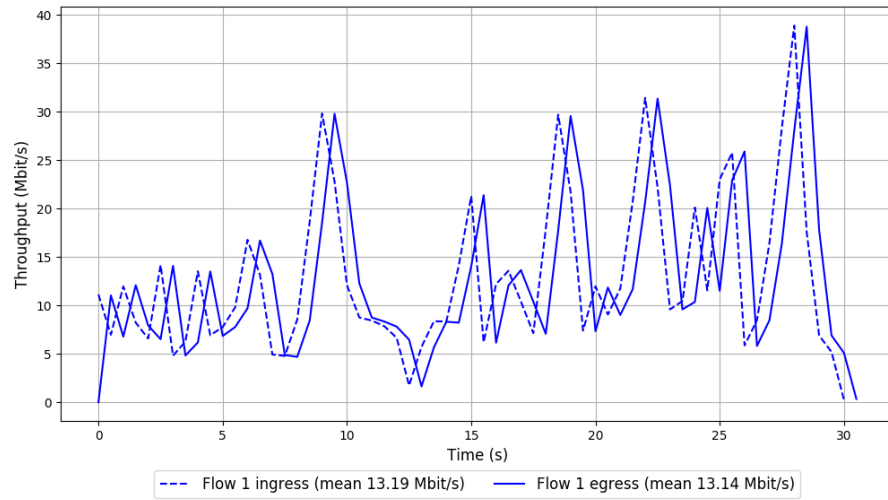

· Flow 1 (95th percentile 3.33 ms)

```
Run 3: Statistics of TCP Vegas

Start at: 2018-12-10 22:41:50
End at: 2018-12-10 22:42:20
Local clock offset: 0.298 ms
Remote clock offset: -1.651 ms


# Below is generated by plot.py at 2018-12-10 23:47:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 13.14 Mbit/s
95th percentile per-packet one-way delay: 4.743 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 13.14 Mbit/s
95th percentile per-packet one-way delay: 4.743 ms
Loss rate: 0.36%
```

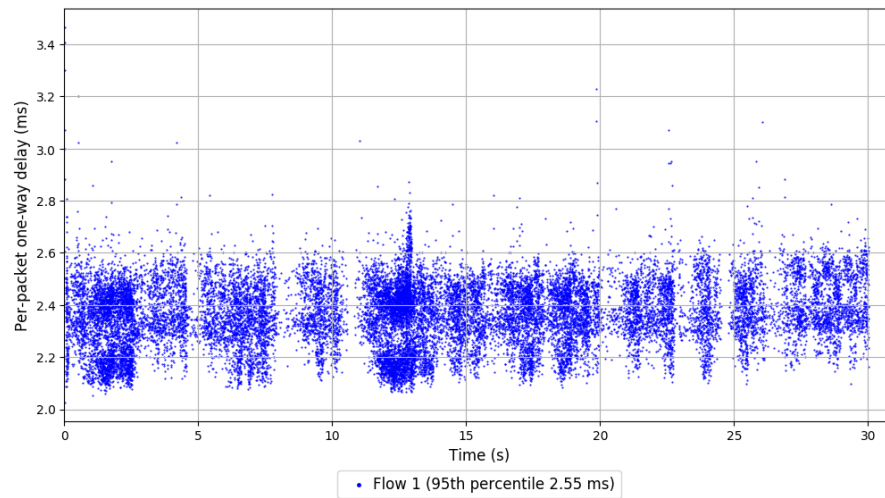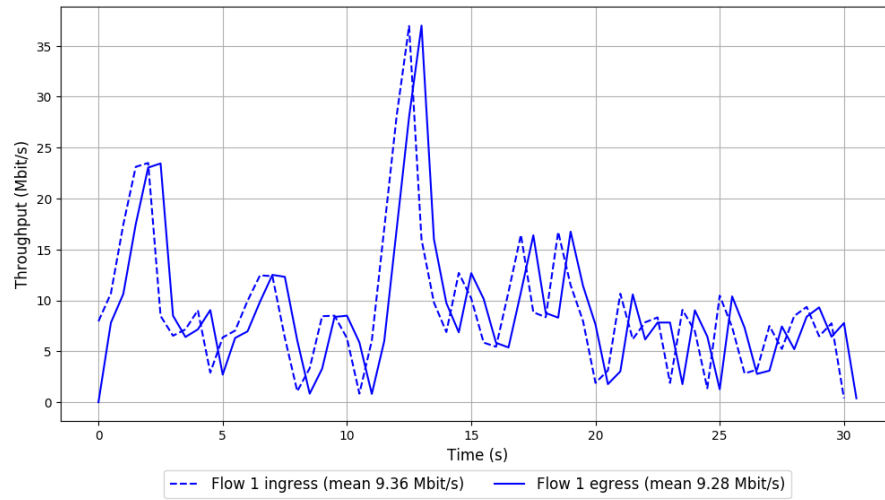# Run 3: Report of TCP Vegas — Data Link

```
Run 4: Statistics of TCP Vegas

Start at: 2018-12-10 23:03:20
End at: 2018-12-10 23:03:50
Local clock offset: 2.301 ms
Remote clock offset: -2.021 ms


# Below is generated by plot.py at 2018-12-10 23:47:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.28 Mbit/s
95th percentile per-packet one-way delay: 2.551 ms
Loss rate: 0.88%
-- Flow 1:
Average throughput: 9.28 Mbit/s
95th percentile per-packet one-way delay: 2.551 ms
Loss rate: 0.88%
```

Run 4: Report of TCP Vegas — Data Link

```
Run 5: Statistics of TCP Vegas

Start at: 2018-12-10 23:24:54
End at: 2018-12-10 23:25:24
Local clock offset: 2.962 ms
Remote clock offset: -0.704 ms


# Below is generated by plot.py at 2018-12-10 23:48:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 26.10 Mbit/s
95th percentile per-packet one-way delay: 3.523 ms
Loss rate: 1.58%
-- Flow 1:
Average throughput: 26.10 Mbit/s
95th percentile per-packet one-way delay: 3.523 ms
Loss rate: 1.58%
```
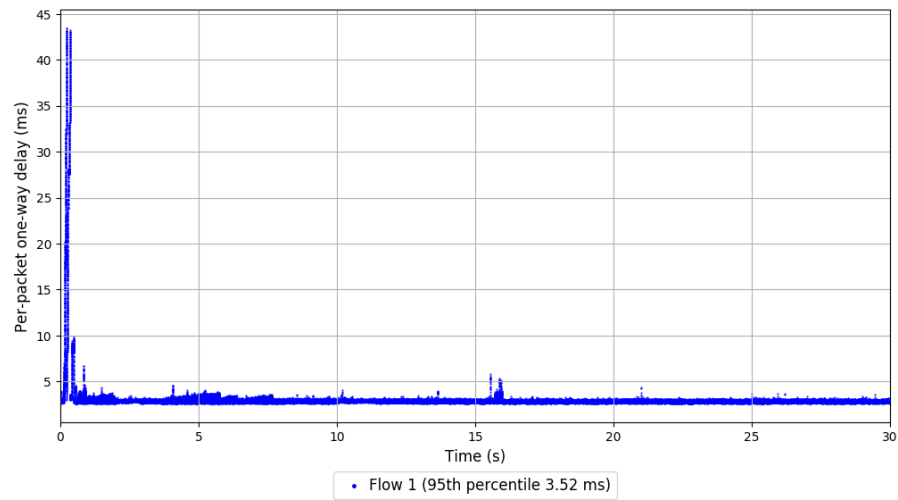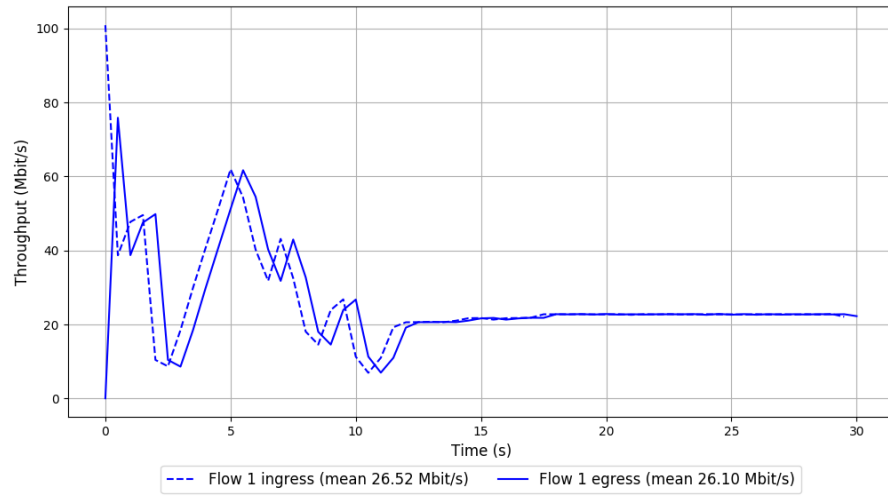
Run 5: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 26.52 Mbit/s)   Flow 1 egress (mean 26.10 Mbit/s)
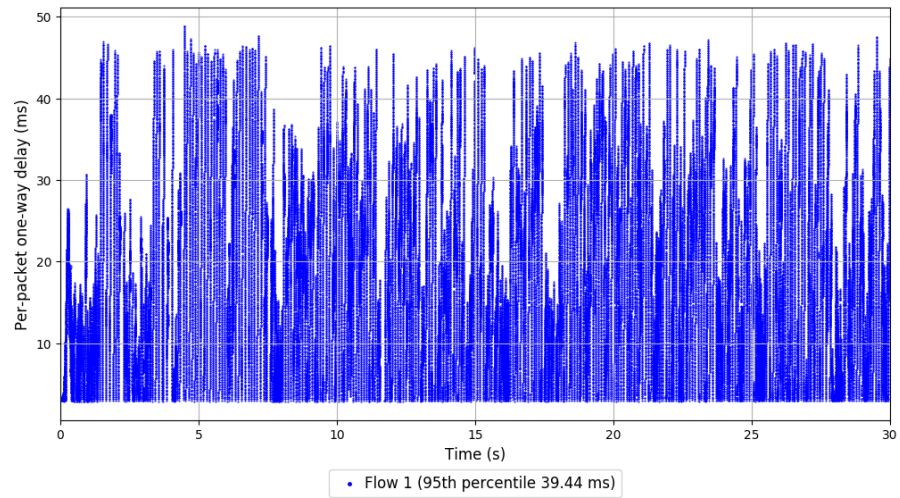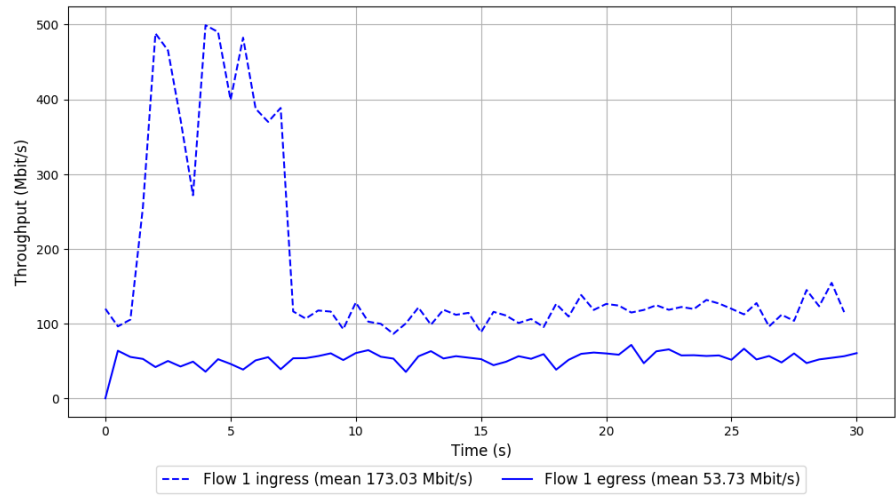

Flow 1 (95th percentile 3.52 ms)

```
Run 1: Statistics of Verus

Start at: 2018-12-10 22:01:02
End at: 2018-12-10 22:01:32
Local clock offset: 1.799 ms
Remote clock offset: -4.028 ms


# Below is generated by plot.py at 2018-12-10 23:48:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 53.73 Mbit/s
95th percentile per-packet one-way delay: 39.442 ms
Loss rate: 68.92%
-- Flow 1:
Average throughput: 53.73 Mbit/s
95th percentile per-packet one-way delay: 39.442 ms
Loss rate: 68.92%
```

Run 1: Report of Verus — Data Link

Flow 1 ingress (mean 173.03 Mbit/s)   Flow 1 egress (mean 53.73 Mbit/s)

• Flow 1 (95th percentile 39.44 ms)

```
Run 2: Statistics of Verus

Start at: 2018-12-10 22:22:35
End at: 2018-12-10 22:23:05
Local clock offset: 2.685 ms
Remote clock offset: -4.67 ms


# Below is generated by plot.py at 2018-12-10 23:48:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 65.14 Mbit/s
95th percentile per-packet one-way delay: 20.915 ms
Loss rate: 6.04%
-- Flow 1:
Average throughput: 65.14 Mbit/s
95th percentile per-packet one-way delay: 20.915 ms
Loss rate: 6.04%
```
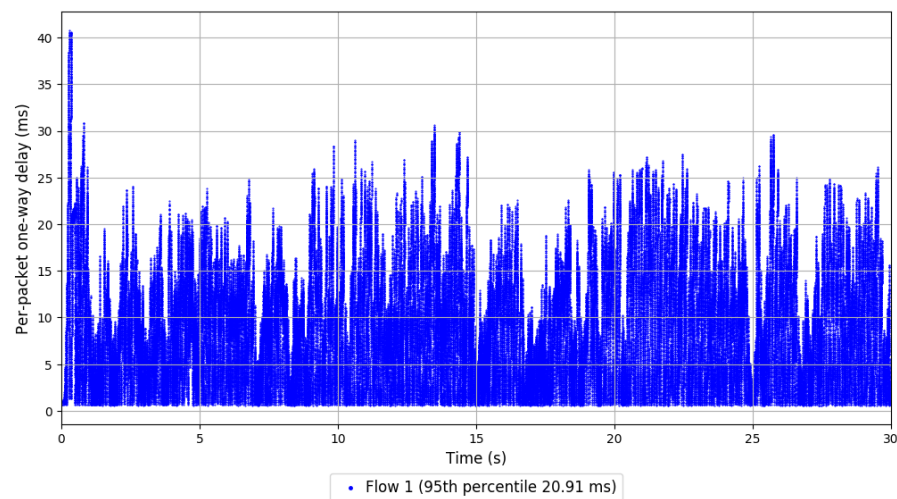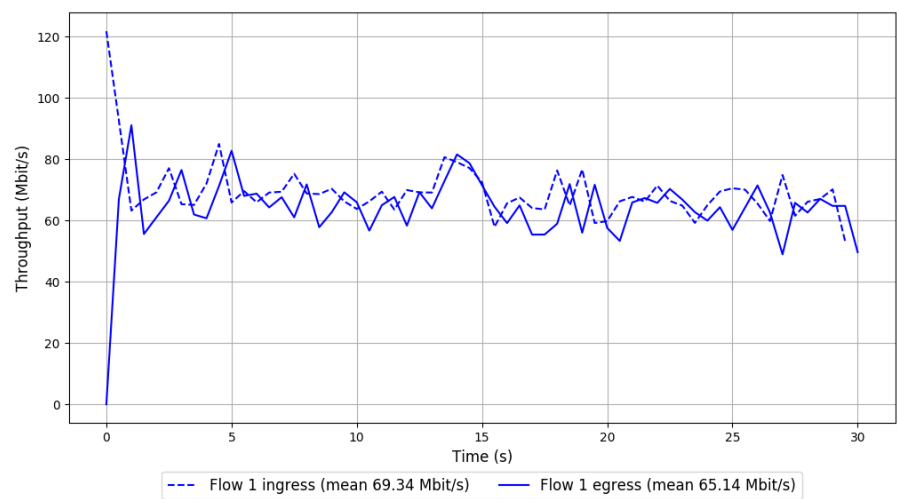
Run 2: Report of Verus — Data Link

Flow 1 ingress (mean 69.34 Mbit/s)   Flow 1 egress (mean 65.14 Mbit/s)

• Flow 1 (95th percentile 20.91 ms)

```
Run 3: Statistics of Verus

Start at: 2018-12-10 22:44:04
End at: 2018-12-10 22:44:34
Local clock offset: 1.354 ms
Remote clock offset: -2.14 ms


# Below is generated by plot.py at 2018-12-10 23:48:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 62.33 Mbit/s
95th percentile per-packet one-way delay: 24.624 ms
Loss rate: 9.29%
-- Flow 1:
Average throughput: 62.33 Mbit/s
95th percentile per-packet one-way delay: 24.624 ms
Loss rate: 9.29%
```
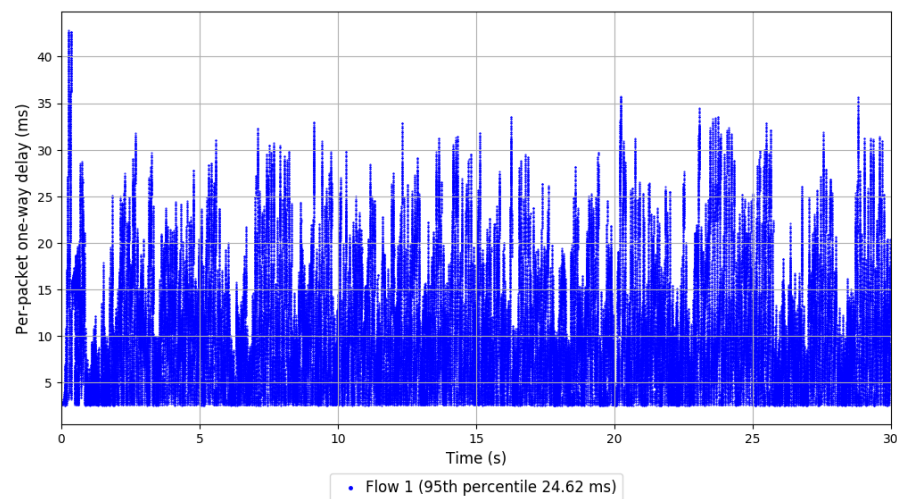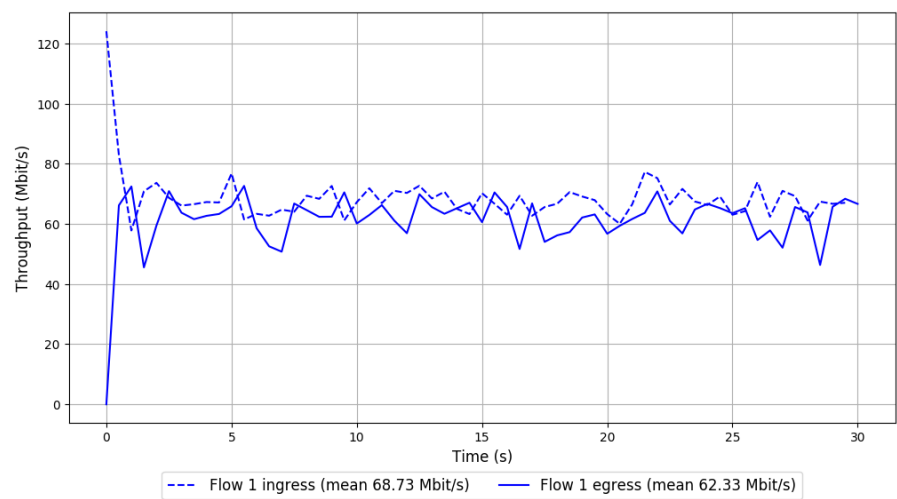
Run 3: Report of Verus — Data Link

Flow 1 ingress (mean 68.73 Mbit/s)   Flow 1 egress (mean 62.33 Mbit/s)
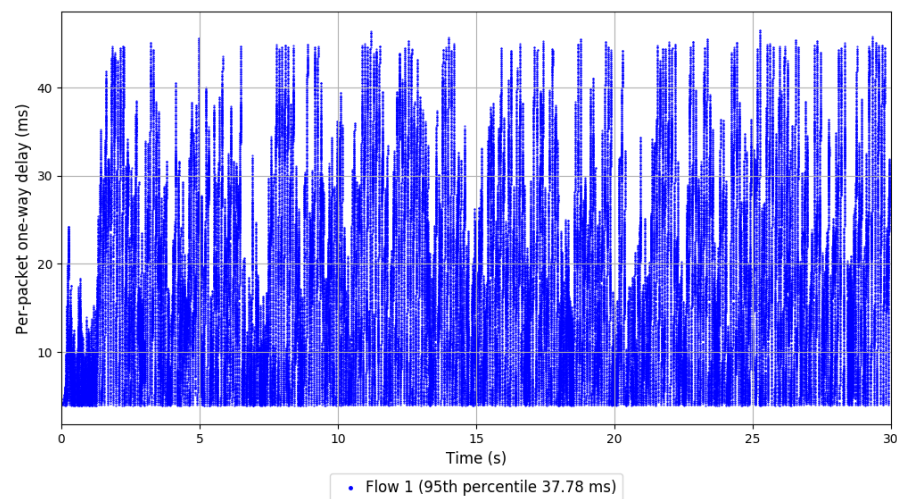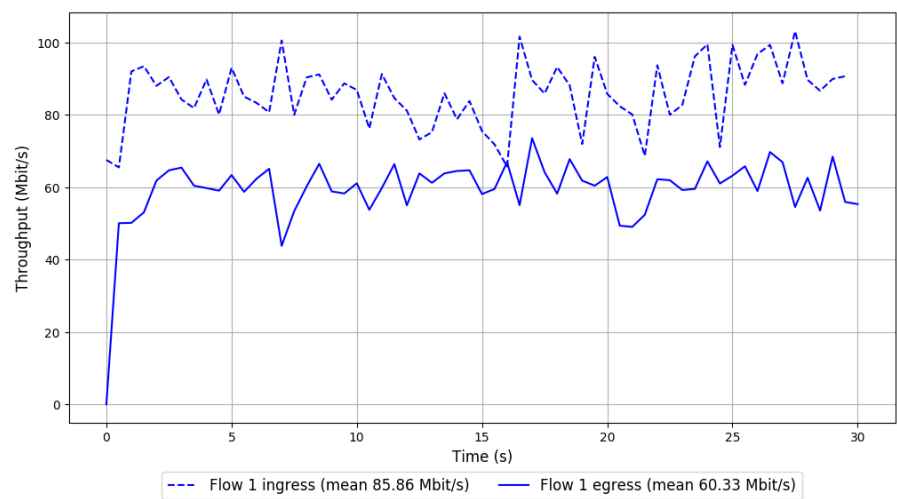

Flow 1 (95th percentile 24.62 ms)

```
Run 4: Statistics of Verus

Start at: 2018-12-10 23:05:36
End at: 2018-12-10 23:06:06
Local clock offset: 1.975 ms
Remote clock offset: -0.518 ms


# Below is generated by plot.py at 2018-12-10 23:48:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 60.33 Mbit/s
95th percentile per-packet one-way delay: 37.783 ms
Loss rate: 29.68%
-- Flow 1:
Average throughput: 60.33 Mbit/s
95th percentile per-packet one-way delay: 37.783 ms
Loss rate: 29.68%
```

Run 4: Report of Verus — Data Link

Flow 1 ingress (mean 85.86 Mbit/s)   Flow 1 egress (mean 60.33 Mbit/s)
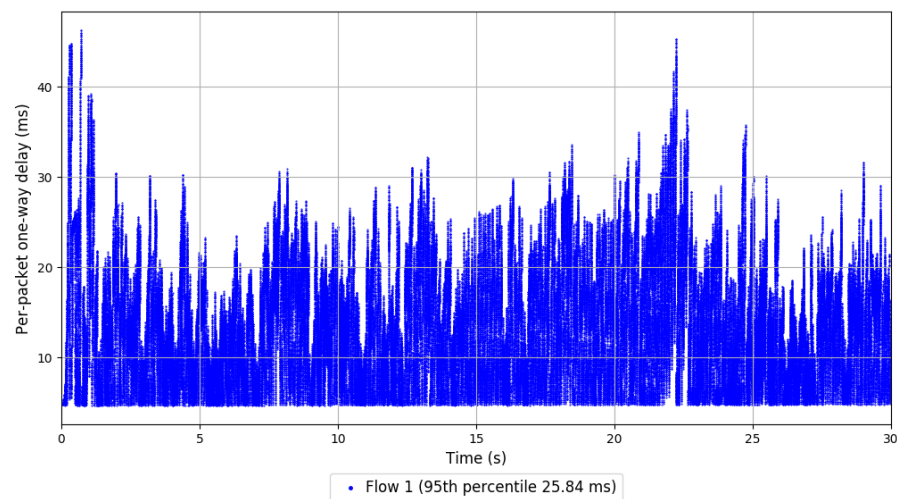
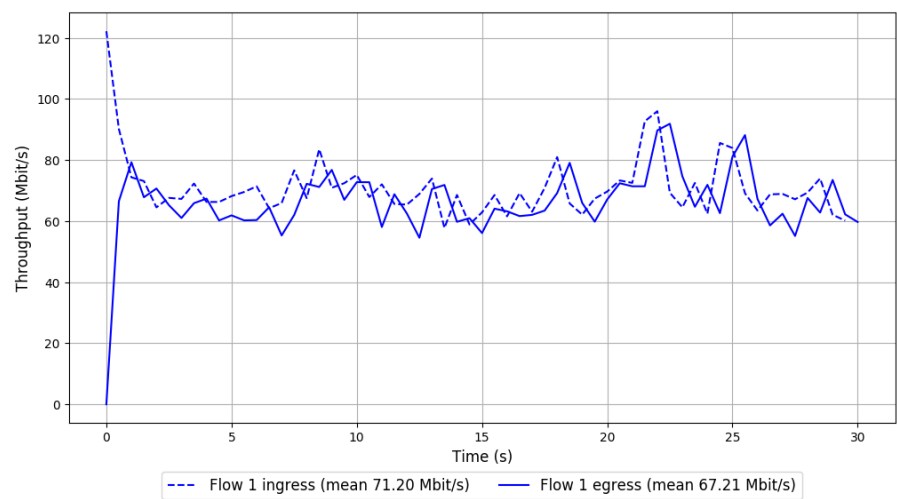

• Flow 1 (95th percentile 37.78 ms)

```
Run 5: Statistics of Verus

Start at: 2018-12-10 23:27:08
End at: 2018-12-10 23:27:38
Local clock offset: 0.077 ms
Remote clock offset: -1.491 ms


# Below is generated by plot.py at 2018-12-10 23:48:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 67.21 Mbit/s
95th percentile per-packet one-way delay: 25.845 ms
Loss rate: 5.57%
-- Flow 1:
Average throughput: 67.21 Mbit/s
95th percentile per-packet one-way delay: 25.845 ms
Loss rate: 5.57%
```

Run 5: Report of Verus — Data Link

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-12-10 21:55:24
End at: 2018-12-10 21:55:54
Local clock offset: 1.13 ms
Remote clock offset: -4.157 ms


# Below is generated by plot.py at 2018-12-10 23:48:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 68.19 Mbit/s
95th percentile per-packet one-way delay: 2.874 ms
Loss rate: 6.70%
-- Flow 1:
Average throughput: 68.19 Mbit/s
95th percentile per-packet one-way delay: 2.874 ms
Loss rate: 6.70%
```
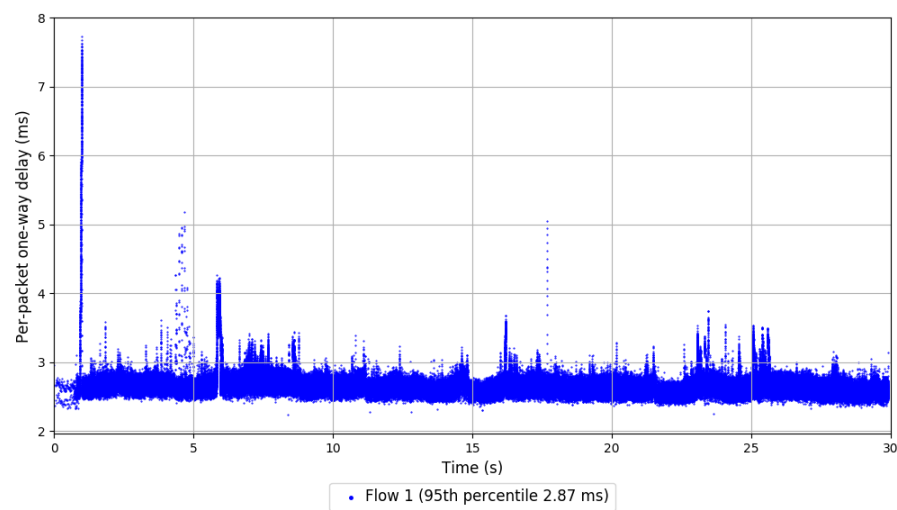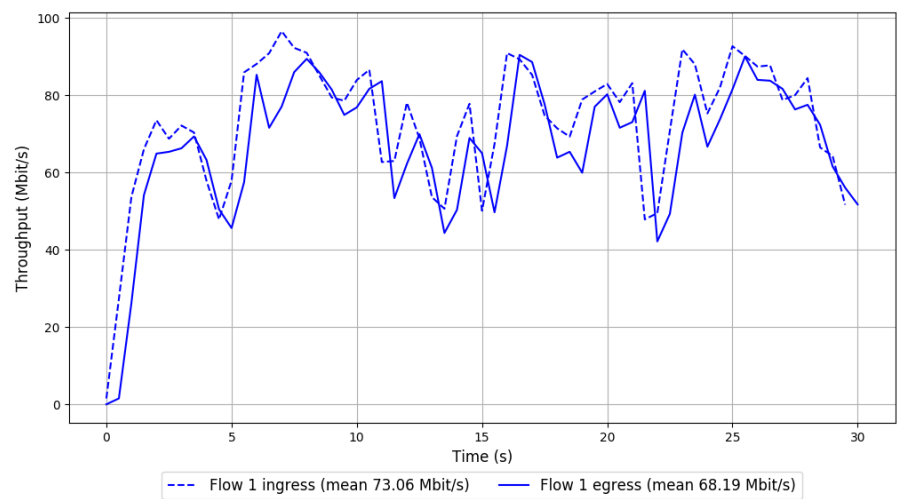
Run 1: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 73.06 Mbit/s) — — — Flow 1 egress (mean 68.19 Mbit/s)

Flow 1 (95th percentile 2.87 ms)

```
Run 2: Statistics of PCC-Vivace

Start at: 2018-12-10 22:17:00
End at: 2018-12-10 22:17:30
Local clock offset: 0.543 ms
Remote clock offset: -1.913 ms


# Below is generated by plot.py at 2018-12-10 23:48:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 60.34 Mbit/s
95th percentile per-packet one-way delay: 5.899 ms
Loss rate: 5.96%
-- Flow 1:
Average throughput: 60.34 Mbit/s
95th percentile per-packet one-way delay: 5.899 ms
Loss rate: 5.96%
```
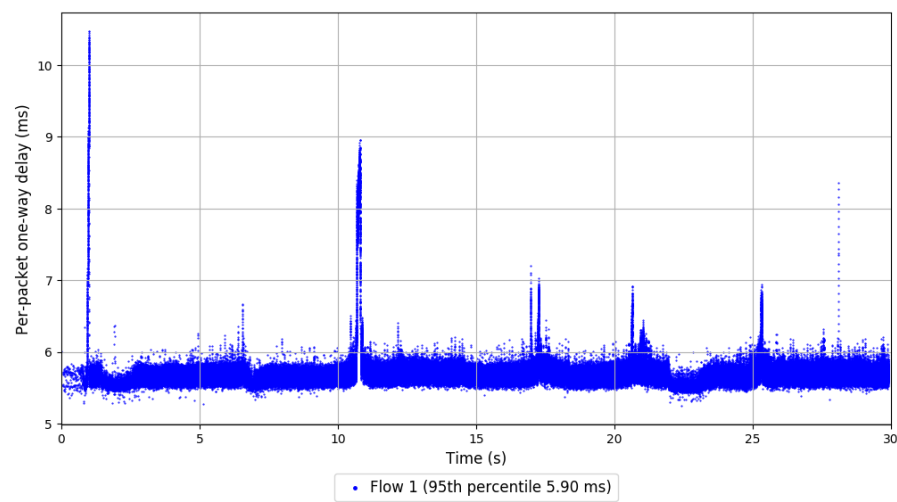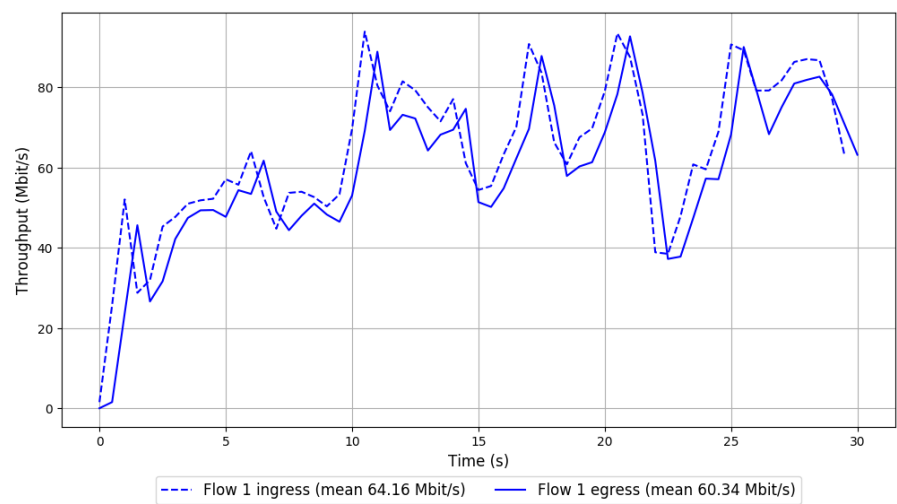
Run 2: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 64.16 Mbit/s) —— Flow 1 egress (mean 60.34 Mbit/s)

• Flow 1 (95th percentile 5.90 ms)

```
Run 3: Statistics of PCC-Vivace

Start at: 2018-12-10 22:38:27
End at: 2018-12-10 22:38:57
Local clock offset: 0.843 ms
Remote clock offset: -1.17 ms


# Below is generated by plot.py at 2018-12-10 23:48:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 60.01 Mbit/s
95th percentile per-packet one-way delay: 5.079 ms
Loss rate: 6.43%
-- Flow 1:
Average throughput: 60.01 Mbit/s
95th percentile per-packet one-way delay: 5.079 ms
Loss rate: 6.43%
```
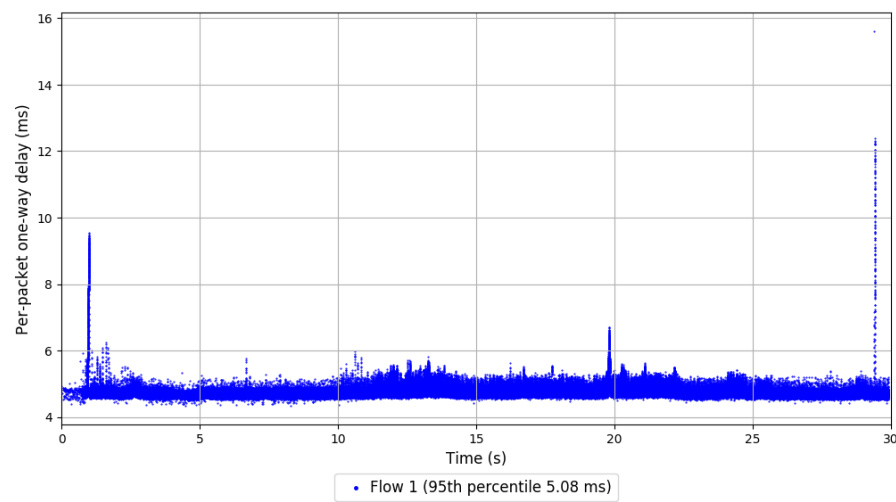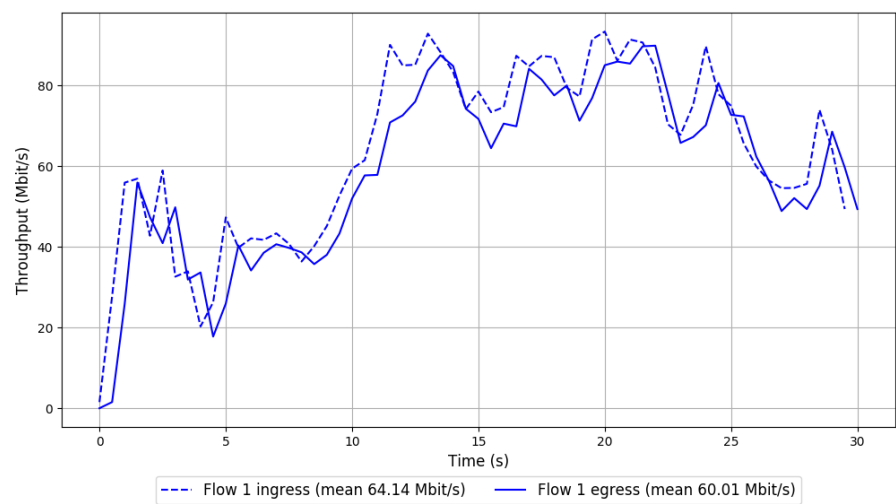
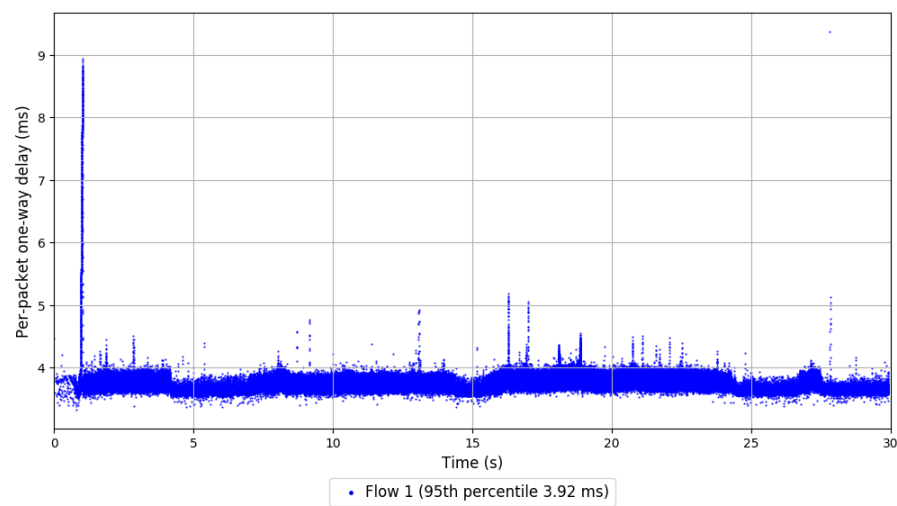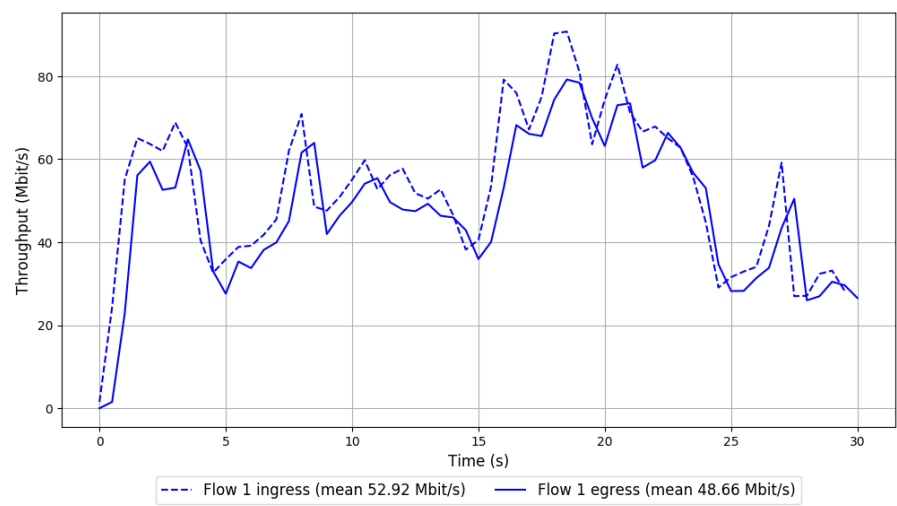## Run 3: Report of PCC-Vivace — Data Link

```
Run 4: Statistics of PCC-Vivace

Start at: 2018-12-10 22:59:59
End at: 2018-12-10 23:00:29
Local clock offset: 0.473 ms
Remote clock offset: -1.502 ms

# Below is generated by plot.py at 2018-12-10 23:48:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 48.66 Mbit/s
95th percentile per-packet one-way delay: 3.922 ms
Loss rate: 8.07%
-- Flow 1:
Average throughput: 48.66 Mbit/s
95th percentile per-packet one-way delay: 3.922 ms
Loss rate: 8.07%
```

Run 4: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 52.92 Mbit/s) —— Flow 1 egress (mean 48.66 Mbit/s)
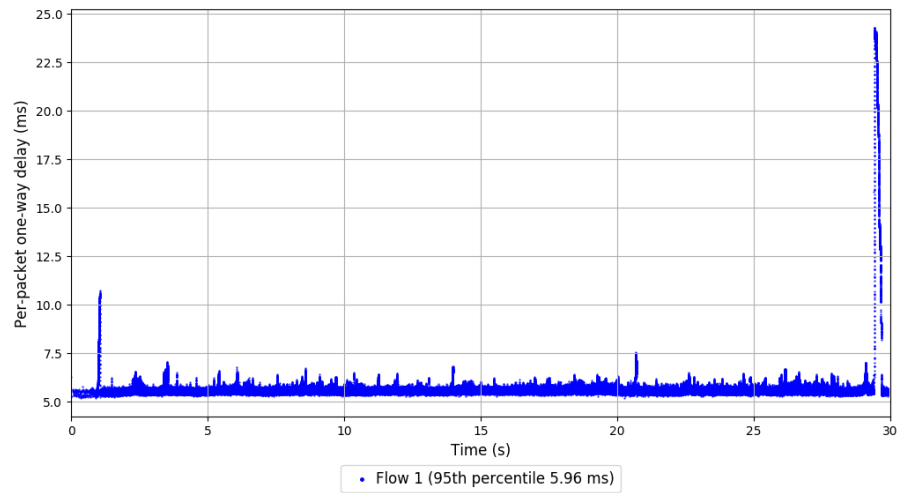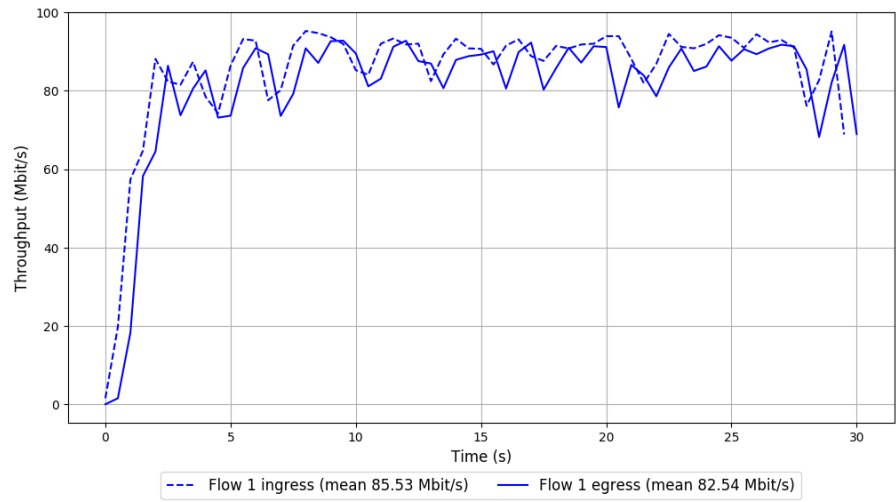

• Flow 1 (95th percentile 3.92 ms)

```
Run 5: Statistics of PCC-Vivace

Start at: 2018-12-10 23:21:33
End at: 2018-12-10 23:22:03
Local clock offset: -1.172 ms
Remote clock offset: -1.695 ms


# Below is generated by plot.py at 2018-12-10 23:48:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 82.54 Mbit/s
95th percentile per-packet one-way delay: 5.956 ms
Loss rate: 3.51%
-- Flow 1:
Average throughput: 82.54 Mbit/s
95th percentile per-packet one-way delay: 5.956 ms
Loss rate: 3.51%
```

Run 5: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 85.53 Mbit/s) --- Flow 1 egress (mean 82.54 Mbit/s)
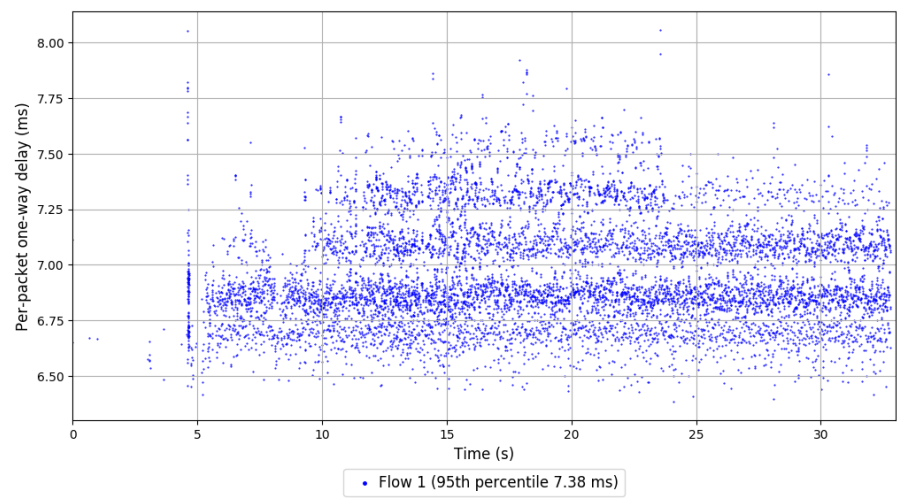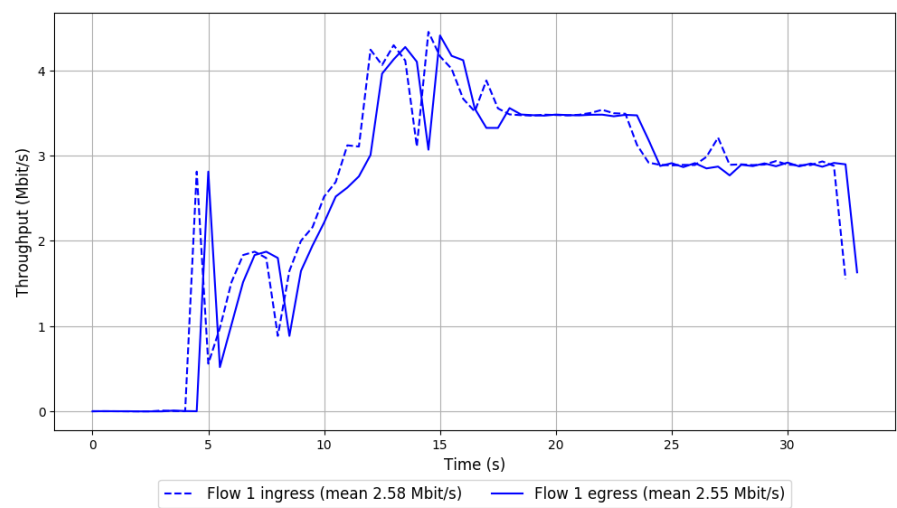

Flow 1 (95th percentile 5.96 ms)

```
Run 1: Statistics of WebRTC media

Start at: 2018-12-10 22:09:01
End at: 2018-12-10 22:09:31
Local clock offset: -0.479 ms
Remote clock offset: -2.752 ms


# Below is generated by plot.py at 2018-12-10 23:48:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.55 Mbit/s
95th percentile per-packet one-way delay: 7.383 ms
Loss rate: 1.35%
-- Flow 1:
Average throughput: 2.55 Mbit/s
95th percentile per-packet one-way delay: 7.383 ms
Loss rate: 1.35%
```
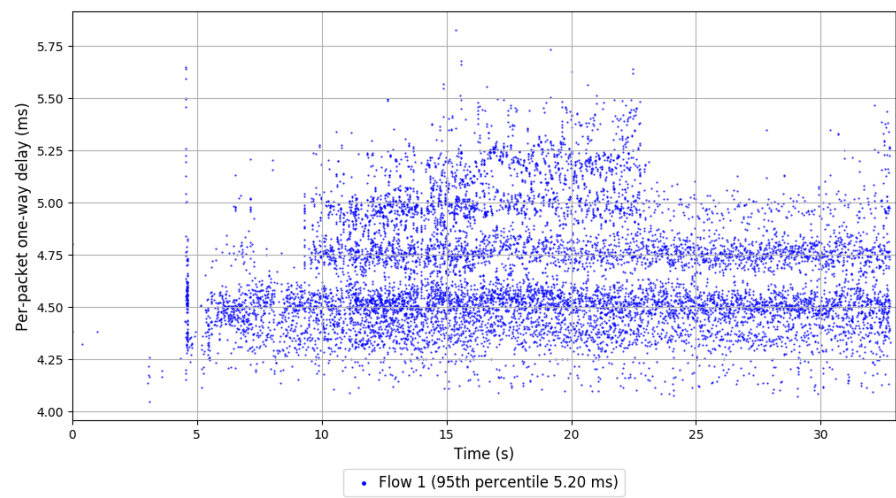
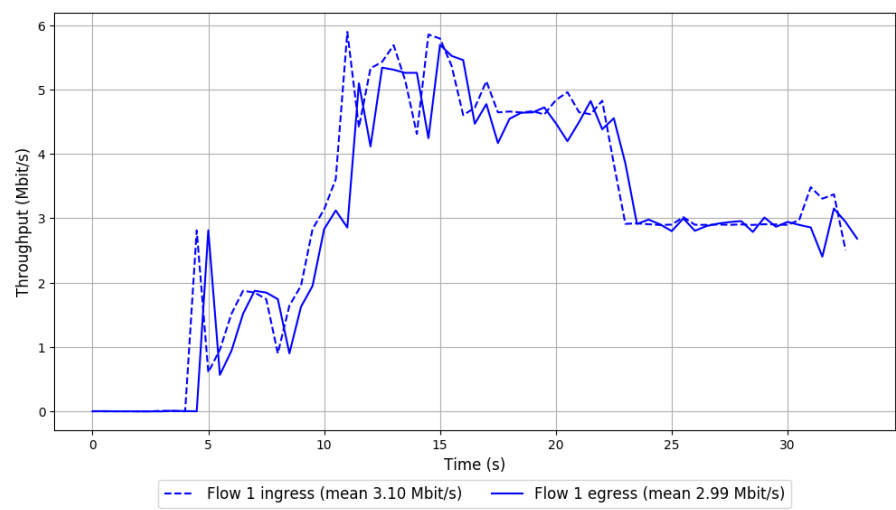Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2018-12-10 22:30:33
End at: 2018-12-10 22:31:03
Local clock offset: 1.528 ms
Remote clock offset: -1.634 ms


# Below is generated by plot.py at 2018-12-10 23:48:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.99 Mbit/s
95th percentile per-packet one-way delay: 5.195 ms
Loss rate: 3.49%
-- Flow 1:
Average throughput: 2.99 Mbit/s
95th percentile per-packet one-way delay: 5.195 ms
Loss rate: 3.49%
```

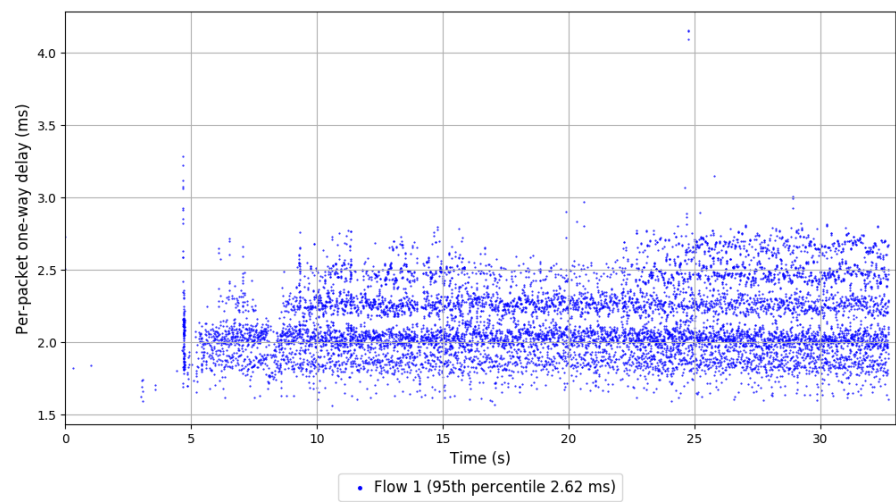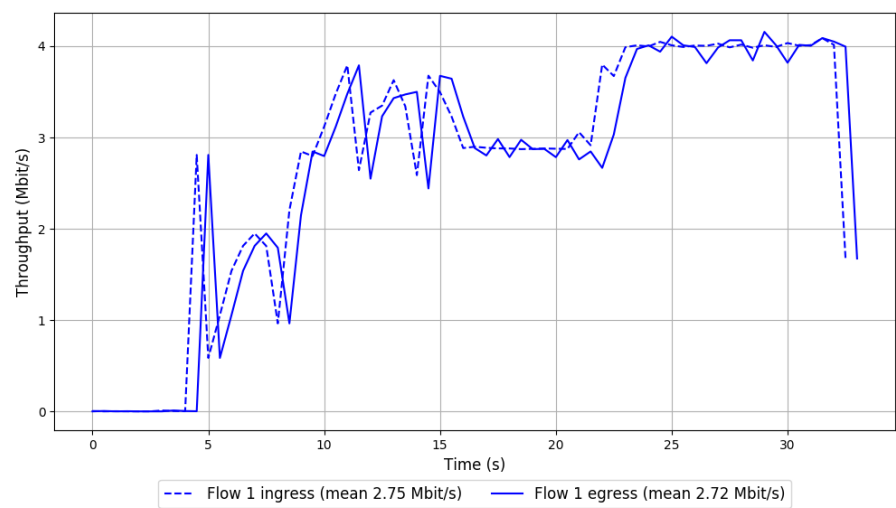Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-12-10 22:52:01
End at: 2018-12-10 22:52:31
Local clock offset: 2.397 ms
Remote clock offset: -1.638 ms


# Below is generated by plot.py at 2018-12-10 23:48:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.72 Mbit/s
95th percentile per-packet one-way delay: 2.624 ms
Loss rate: 0.98%
-- Flow 1:
Average throughput: 2.72 Mbit/s
95th percentile per-packet one-way delay: 2.624 ms
Loss rate: 0.98%
```

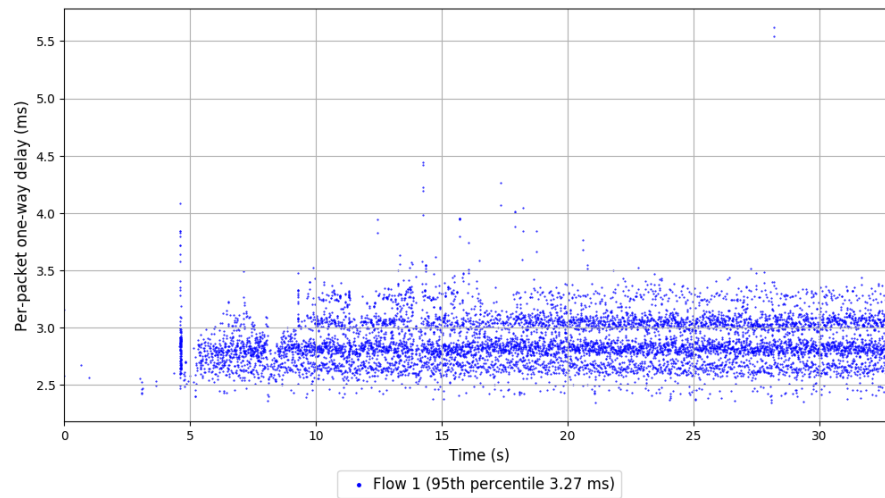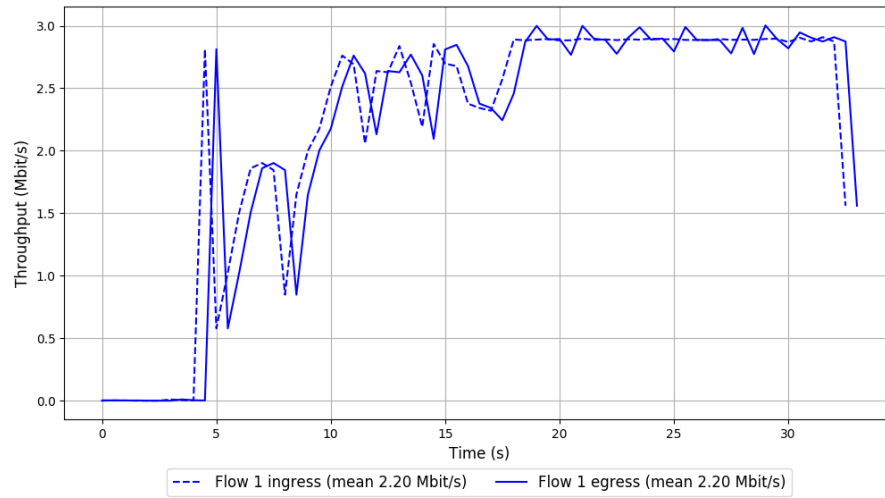## Run 3: Report of WebRTC media — Data Link

```
Run 4: Statistics of WebRTC media

Start at: 2018-12-10 23:13:35
End at: 2018-12-10 23:14:05
Local clock offset: 2.415 ms
Remote clock offset: -1.589 ms


# Below is generated by plot.py at 2018-12-10 23:48:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.20 Mbit/s
95th percentile per-packet one-way delay: 3.268 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 2.20 Mbit/s
95th percentile per-packet one-way delay: 3.268 ms
Loss rate: 0.08%
```

Run 4: Report of WebRTC media — Data Link

```
Run 5: Statistics of WebRTC media

Start at: 2018-12-10 23:35:07
End at: 2018-12-10 23:35:37
Local clock offset: -1.349 ms
Remote clock offset: -1.986 ms


# Below is generated by plot.py at 2018-12-10 23:48:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 7.696 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 7.696 ms
Loss rate: 0.00%
```

Run 5: Report of WebRTC media — Data Link