Pantheon Report

Generated at 2019-01-02 21:24:01 (UTC).

Data path: AWS California 2 on `ens5` (*local*) →Mexico 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 `time.stanford.edu` and have been applied to correct the timestamps in logs.
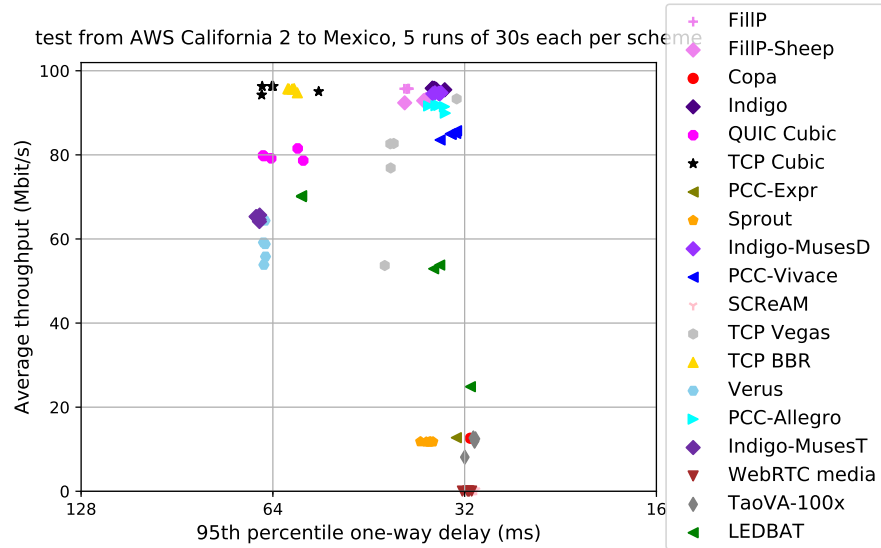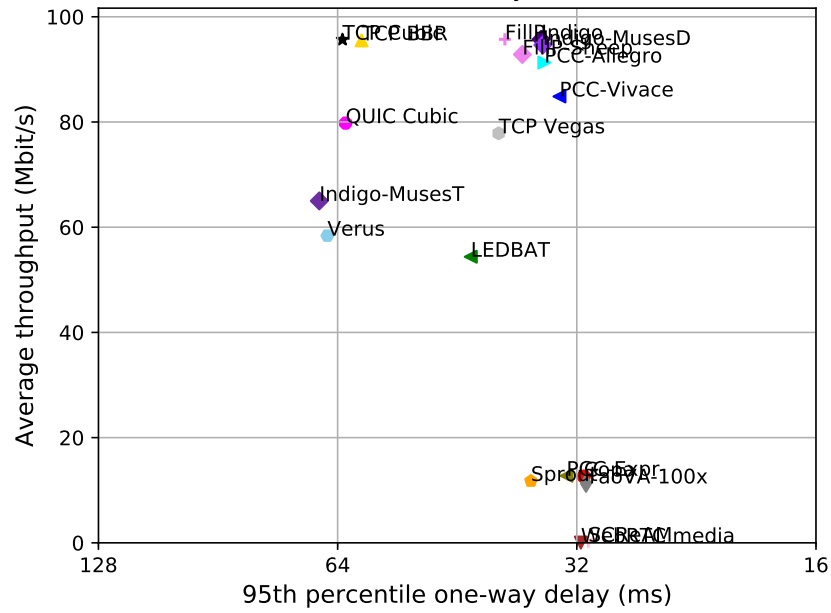
```
System info:
Linux 4.15.0-1029-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

Git summary:
branch: muses @ c654af0b7d59d4ef4b914cfac404e1fc2e96dc68
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
third_party/muses-refactored @ 31f8f0ba8ef8b1da76c2bc0cd0a7850c33ff64fb
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
 M receiver/src/buffer.h
 M receiver/src/core.cpp
 M sender/src/buffer.h
 M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-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 California 2 to Mexico, 5 runs of 30s each per scheme
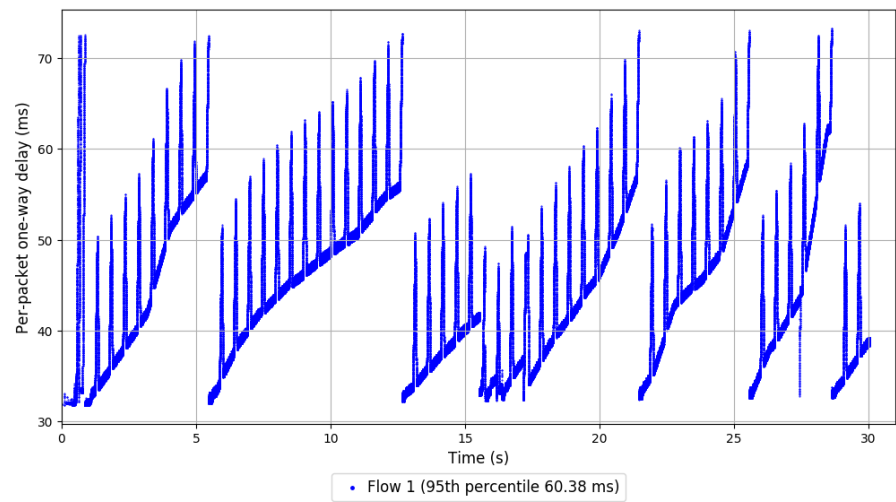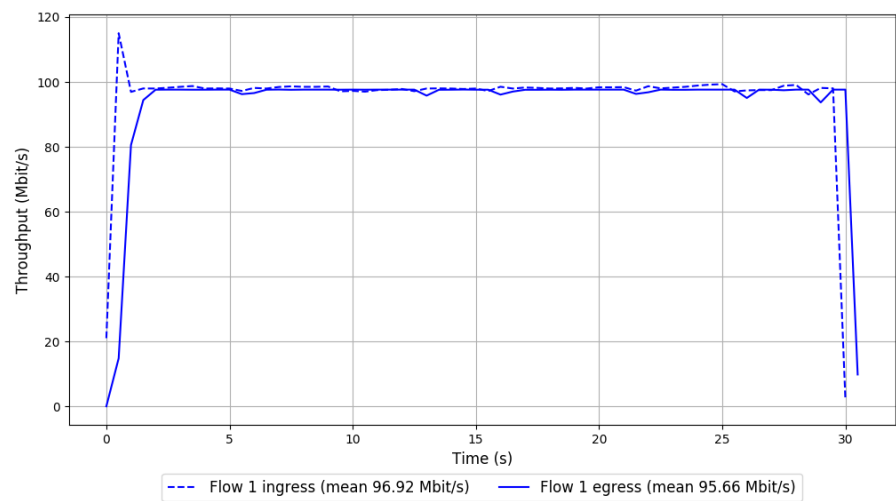(mean of all runs by scheme)

test from AWS California 2 to Mexico, 5 runs of 30s each per scheme

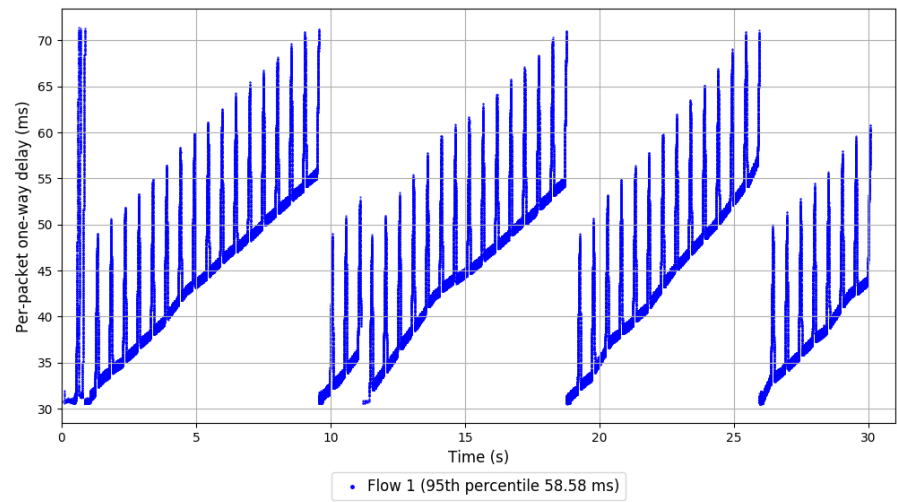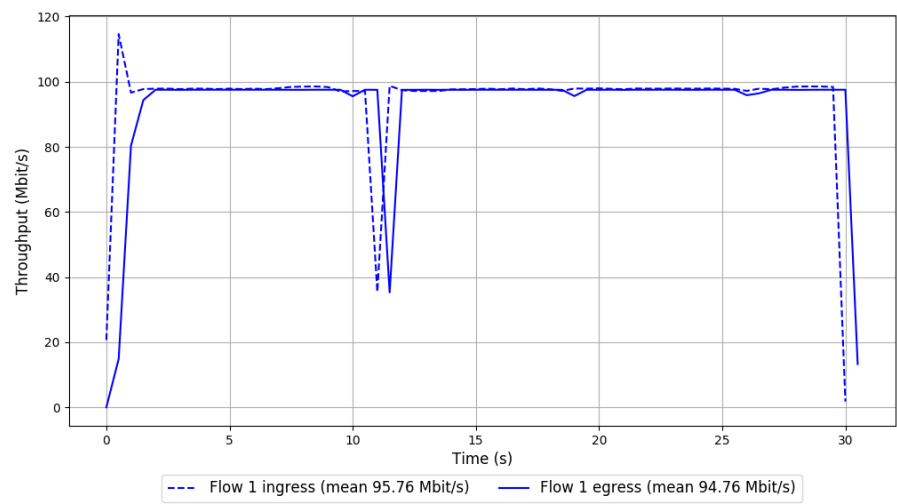| scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	5	95.51	59.71	1.19
Copa	1	12.61	31.35	71.23
TCP Cubic	5	95.65	63.11	0.44
FillP	5	95.72	39.42	0.68
FillP-Sheep	5	92.84	37.47	0.59
Indigo	5	95.71	35.49	0.05
Indigo-MusesD	5	94.64	35.31	0.47
Indigo-MusesT	5	65.00	67.49	38.34
LEDBAT	5	54.38	43.51	0.05
PCC-Allegro	5	91.30	35.16	0.72
PCC-Expr	1	12.74	32.98	49.57
QUIC Cubic	5	79.79	62.54	1.57
SCReAM	5	0.21	30.95	0.00
Sprout	5	11.76	36.55	0.03
TaoVA-100x	4	11.29	31.16	65.83
TCP Vegas	5	77.84	40.13	0.43
Verus	5	58.40	65.93	23.48
PCC-Vivace	5	84.86	33.65	0.02
WebRTC media	5	0.05	31.63	0.00

```
Run 1: Statistics of TCP BBR

Start at: 2019-01-02 19:26:49
End at: 2019-01-02 19:27:19
Local clock offset: -21.054 ms
Remote clock offset: -1.477 ms

# Below is generated by plot.py at 2019-01-02 21:16:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.66 Mbit/s
95th percentile per-packet one-way delay: 60.385 ms
Loss rate: 1.27%
-- Flow 1:
Average throughput: 95.66 Mbit/s
95th percentile per-packet one-way delay: 60.385 ms
Loss rate: 1.27%
```
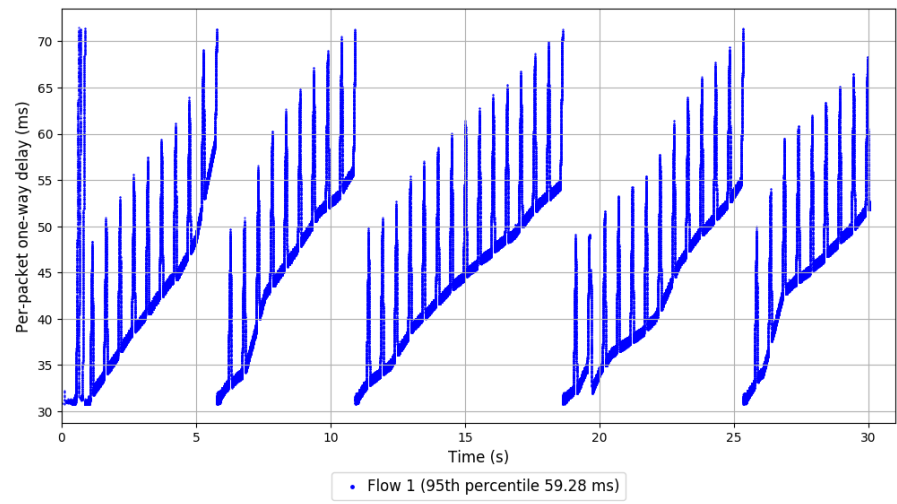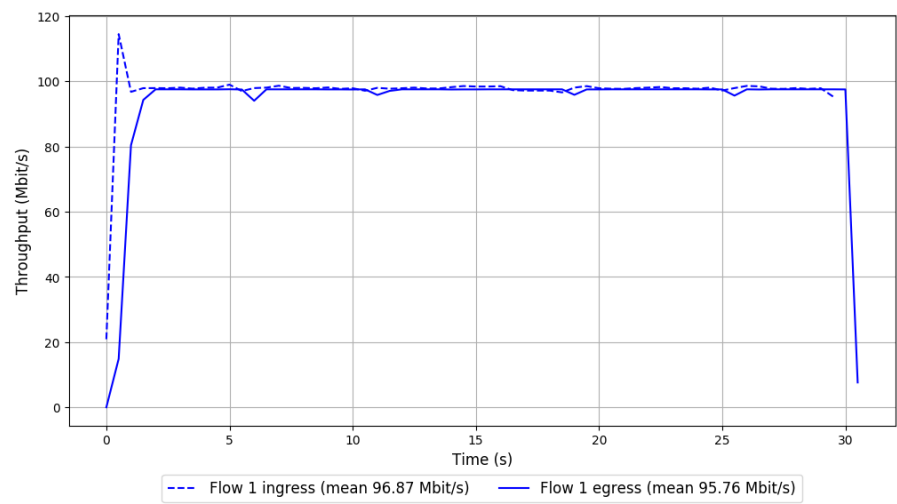
Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2019-01-02 19:48:48
End at: 2019-01-02 19:49:18
Local clock offset: -12.075 ms
Remote clock offset: -1.197 ms


# Below is generated by plot.py at 2019-01-02 21:16:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.76 Mbit/s
95th percentile per-packet one-way delay: 58.580 ms
Loss rate: 0.96%
-- Flow 1:
Average throughput: 94.76 Mbit/s
95th percentile per-packet one-way delay: 58.580 ms
Loss rate: 0.96%
```
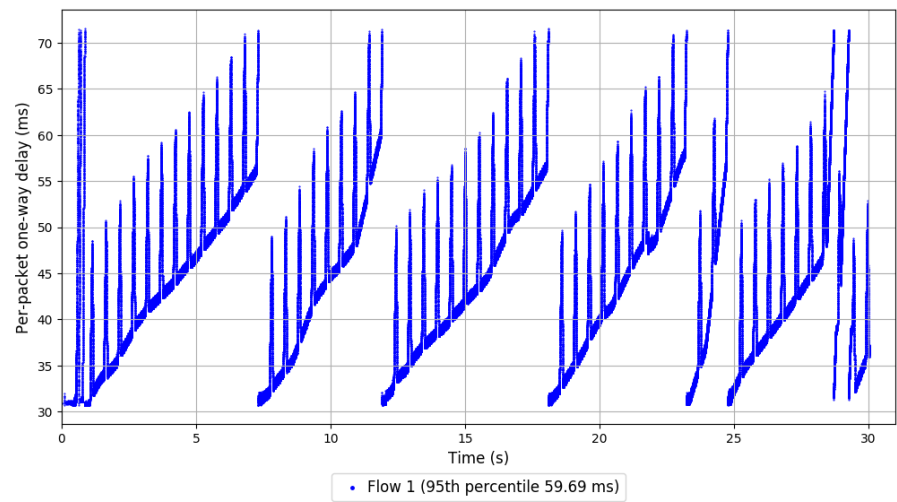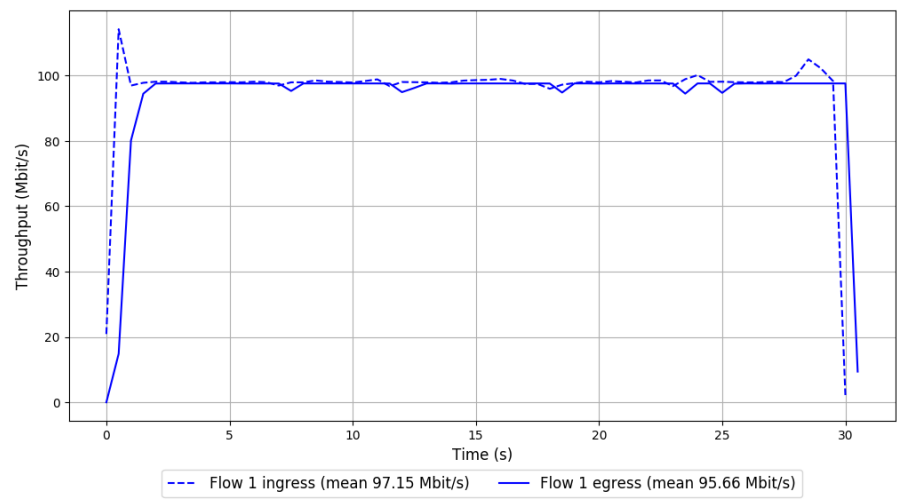
Run 2: Report of TCP BBR — Data Link

Flow 1 ingress (mean 95.76 Mbit/s) --- Flow 1 egress (mean 94.76 Mbit/s)

• Flow 1 (95th percentile 58.58 ms)

```
Run 3: Statistics of TCP BBR

Start at: 2019-01-02 20:11:16
End at: 2019-01-02 20:11:46
Local clock offset: -5.838 ms
Remote clock offset: -1.286 ms


# Below is generated by plot.py at 2019-01-02 21:16:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.76 Mbit/s
95th percentile per-packet one-way delay: 59.279 ms
Loss rate: 1.08%
-- Flow 1:
Average throughput: 95.76 Mbit/s
95th percentile per-packet one-way delay: 59.279 ms
Loss rate: 1.08%
```
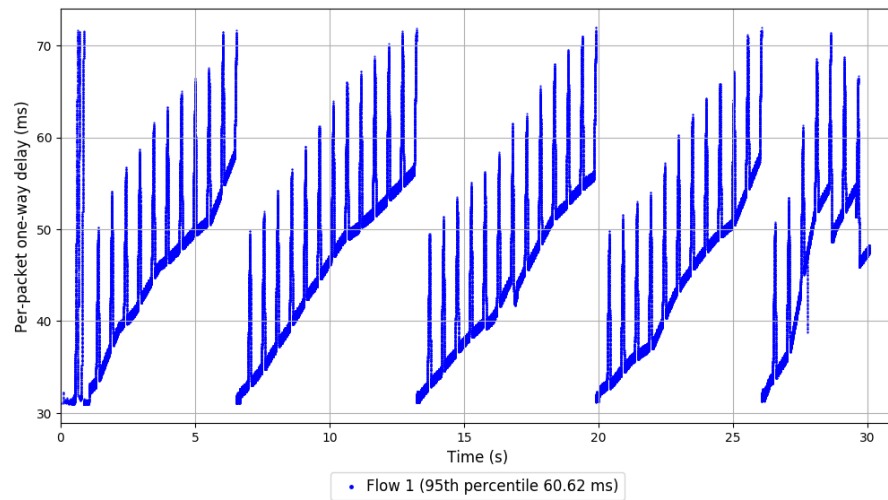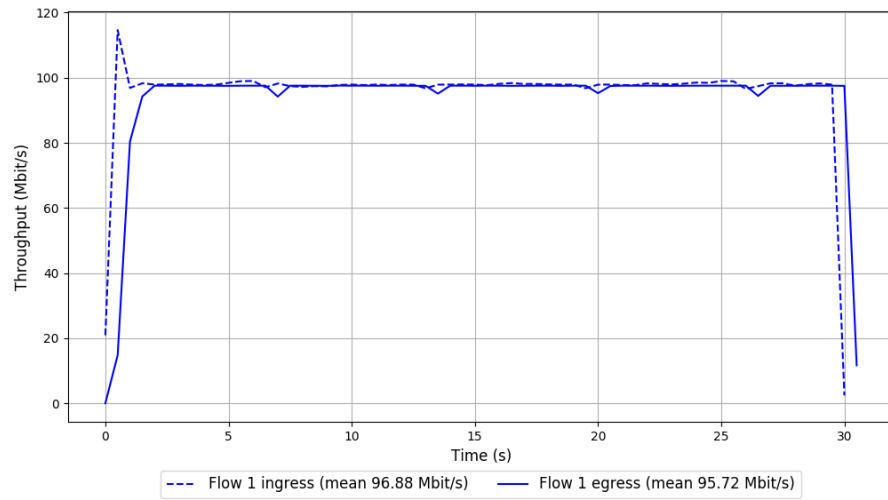
Run 3: Report of TCP BBR — Data Link

```
Run 4: Statistics of TCP BBR

Start at: 2019-01-02 20:33:29
End at: 2019-01-02 20:33:59
Local clock offset: -5.874 ms
Remote clock offset: -1.724 ms


# Below is generated by plot.py at 2019-01-02 21:16:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.66 Mbit/s
95th percentile per-packet one-way delay: 59.688 ms
Loss rate: 1.52%
-- Flow 1:
Average throughput: 95.66 Mbit/s
95th percentile per-packet one-way delay: 59.688 ms
Loss rate: 1.52%
```
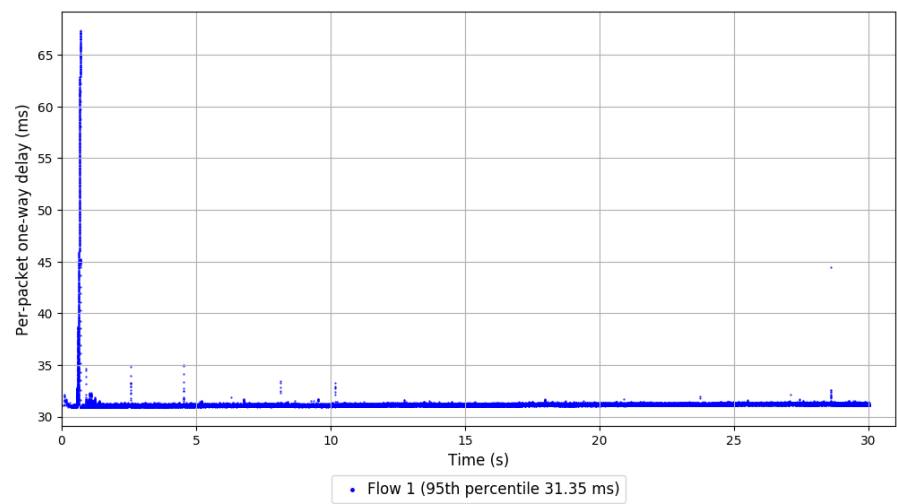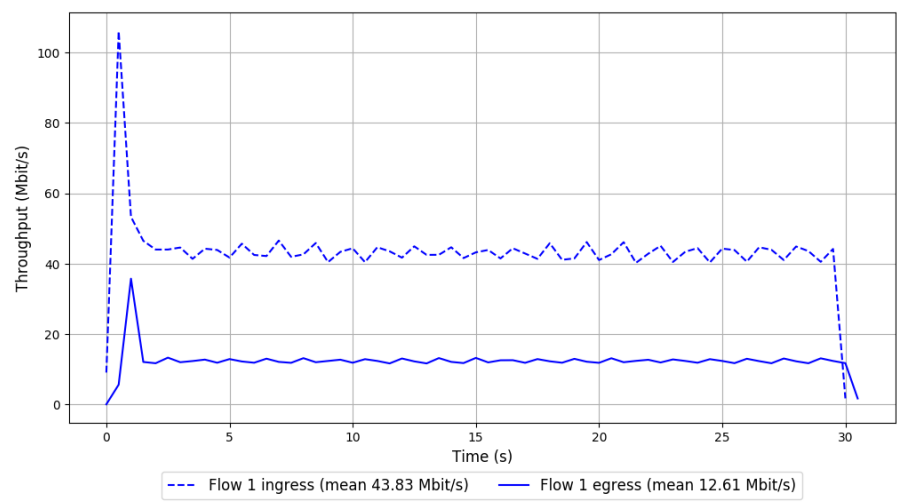
Run 4: Report of TCP BBR — Data Link

```
Run 5: Statistics of TCP BBR

Start at: 2019-01-02 20:55:27
End at: 2019-01-02 20:55:57
Local clock offset: -7.055 ms
Remote clock offset: -2.818 ms


# Below is generated by plot.py at 2019-01-02 21:16:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.72 Mbit/s
95th percentile per-packet one-way delay: 60.623 ms
Loss rate: 1.14%
-- Flow 1:
Average throughput: 95.72 Mbit/s
95th percentile per-packet one-way delay: 60.623 ms
Loss rate: 1.14%
```

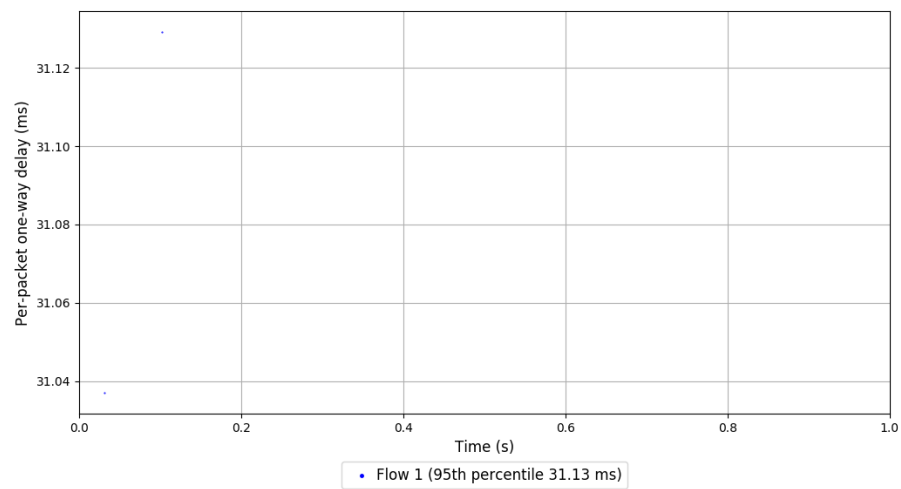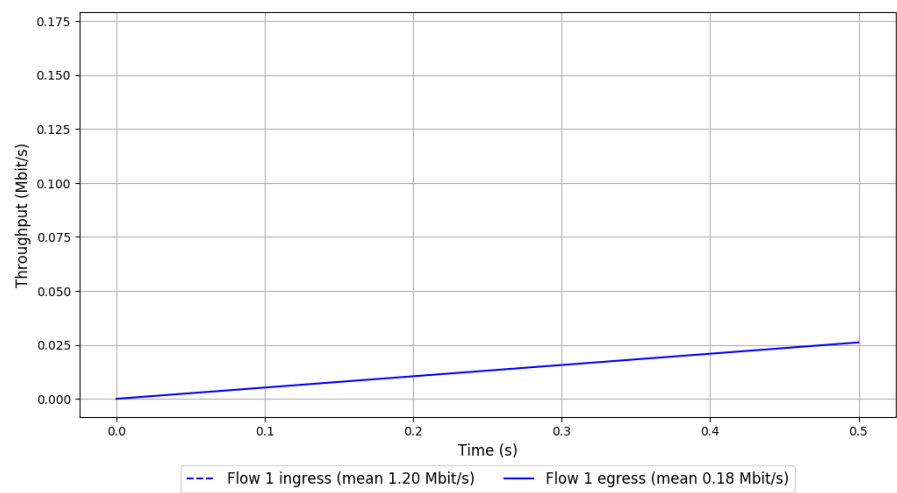Run 5: Report of TCP BBR — Data Link

```
Run 1: Statistics of Copa

Start at: 2019-01-02 19:34:56
End at: 2019-01-02 19:35:26
Local clock offset: -12.189 ms
Remote clock offset: -1.31 ms


# Below is generated by plot.py at 2019-01-02 21:16:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 31.354 ms
Loss rate: 71.23%
-- Flow 1:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 31.354 ms
Loss rate: 71.23%
```

Run 1: Report of Copa — Data Link

Flow 1 ingress (mean 43.83 Mbit/s)   Flow 1 egress (mean 12.61 Mbit/s)

Flow 1 (95th percentile 31.35 ms)

16

```
Run 2: Statistics of Copa

Start at: 2019-01-02 19:56:56
End at: 2019-01-02 19:57:26
Local clock offset: -10.971 ms
Remote clock offset: -1.263 ms
```

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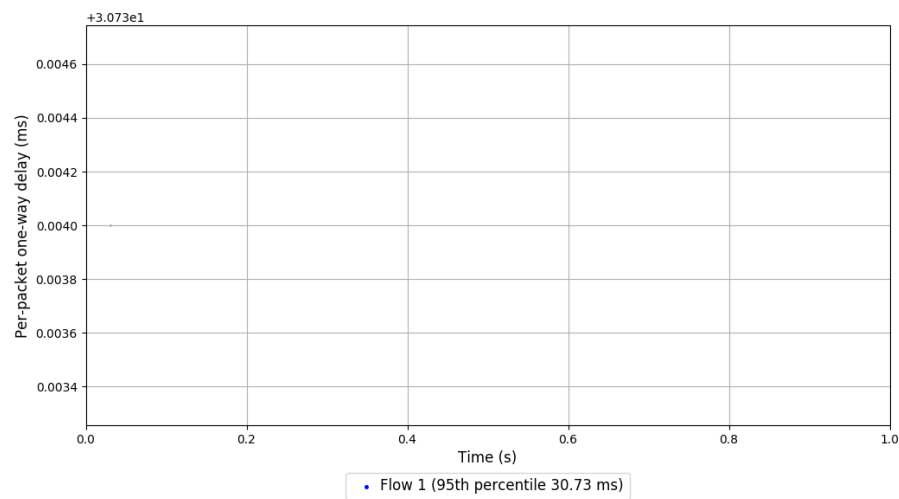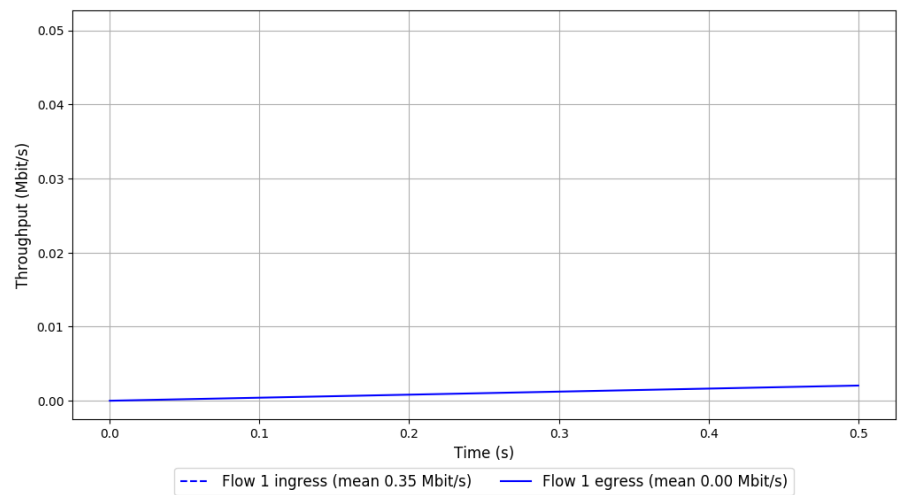
```
Run 3: Statistics of Copa

Start at: 2019-01-02 20:19:23
End at: 2019-01-02 20:19:53
Local clock offset: -6.493 ms
Remote clock offset: -1.474 ms
```

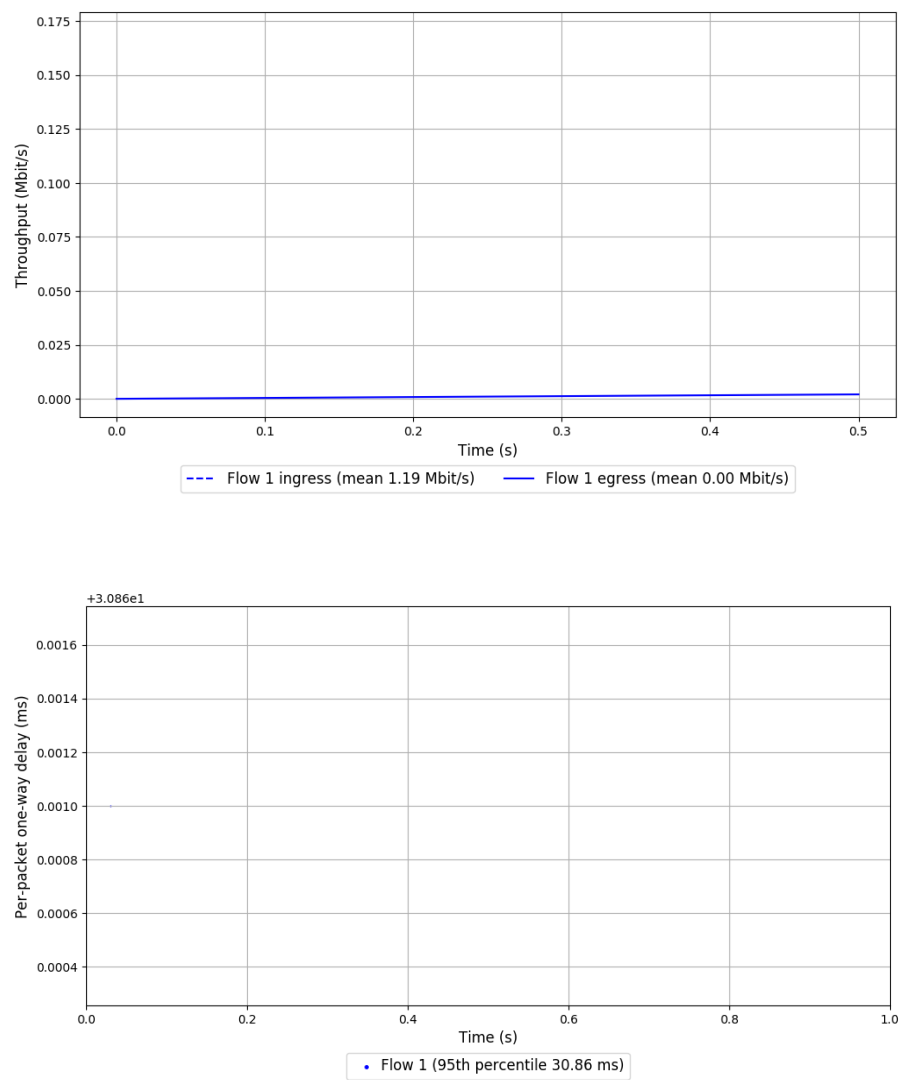Run 3: Report of Copa — Data Link

```
Run 4: Statistics of Copa

Start at: 2019-01-02 20:41:32
End at: 2019-01-02 20:42:02
Local clock offset: -6.232 ms
Remote clock offset: -2.192 ms
```
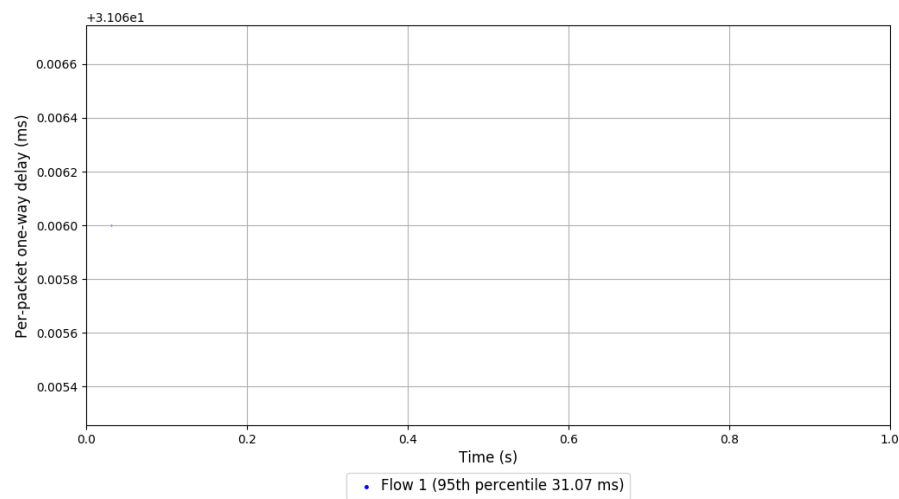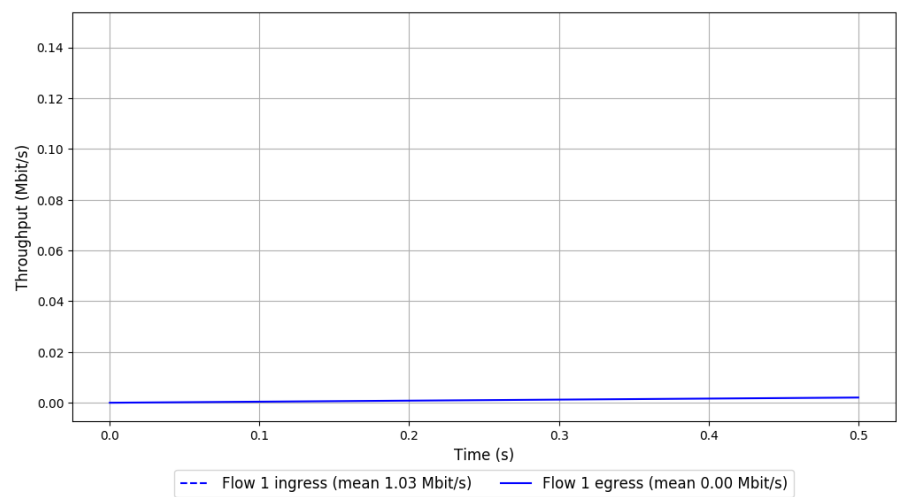
Run 4: Report of Copa — Data Link

Flow 1 ingress (mean 1.19 Mbit/s)   Flow 1 egress (mean 0.00 Mbit/s)

Flow 1 (95th percentile 30.86 ms)

```
Run 5: Statistics of Copa

Start at: 2019-01-02 21:03:33
End at: 2019-01-02 21:04:03
Local clock offset: -3.28 ms
Remote clock offset: -3.101 ms
```
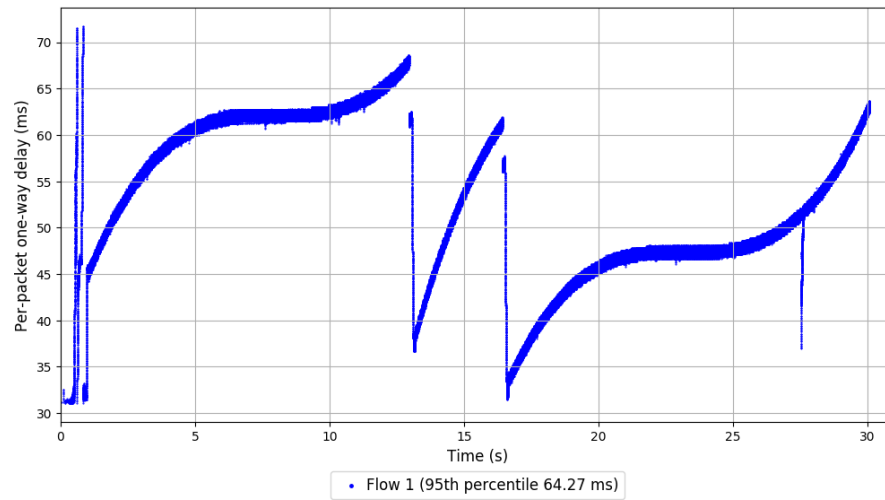
Run 5: Report of Copa — Data Link

Flow 1 ingress (mean 1.03 Mbit/s) —— Flow 1 egress (mean 0.00 Mbit/s)
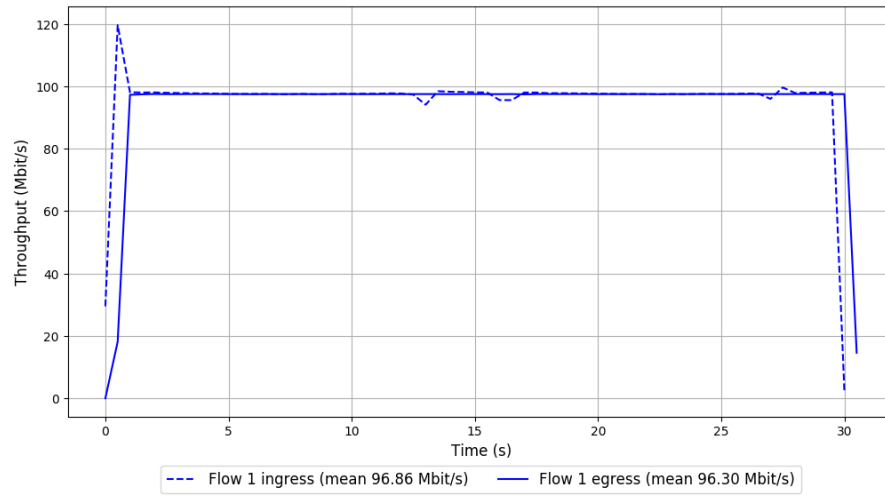

• Flow 1 (95th percentile 31.07 ms)

```
Run 1: Statistics of TCP Cubic

Start at: 2019-01-02 19:29:07
End at: 2019-01-02 19:29:37
Local clock offset: -16.973 ms
Remote clock offset: -1.496 ms


# Below is generated by plot.py at 2019-01-02 21:16:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 96.30 Mbit/s
95th percentile per-packet one-way delay: 64.265 ms
Loss rate: 0.46%
-- Flow 1:
Average throughput: 96.30 Mbit/s
95th percentile per-packet one-way delay: 64.265 ms
Loss rate: 0.46%
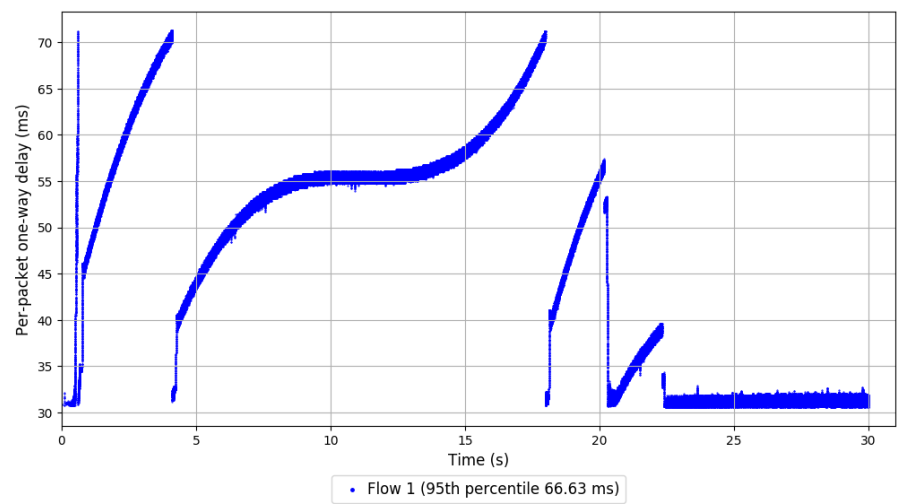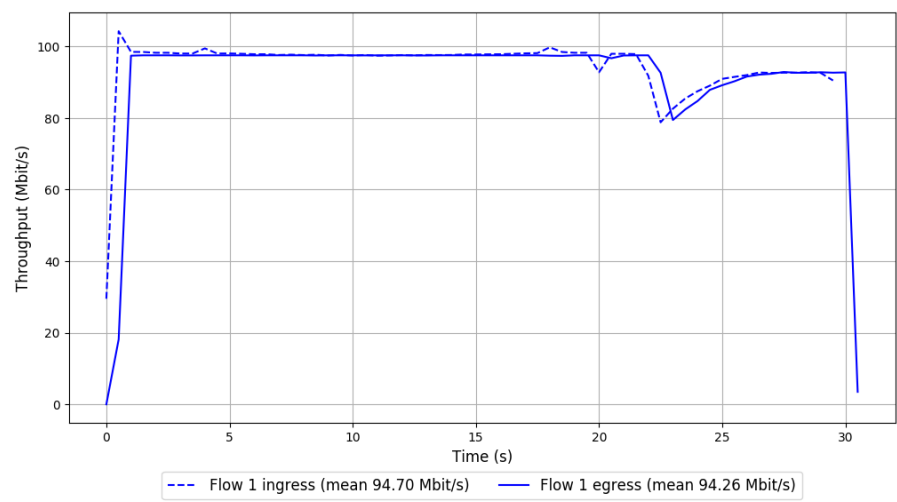```

Run 1: Report of TCP Cubic — Data Link

```
Run 2: Statistics of TCP Cubic

Start at: 2019-01-02 19:51:07
End at: 2019-01-02 19:51:37
Local clock offset: -12.742 ms
Remote clock offset: -1.074 ms


# Below is generated by plot.py at 2019-01-02 21:16:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.26 Mbit/s
95th percentile per-packet one-way delay: 66.634 ms
Loss rate: 0.46%
-- Flow 1:
Average throughput: 94.26 Mbit/s
95th percentile per-packet one-way delay: 66.634 ms
Loss rate: 0.46%
```

Run 2: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 94.70 Mbit/s)   Flow 1 egress (mean 94.26 Mbit/s)

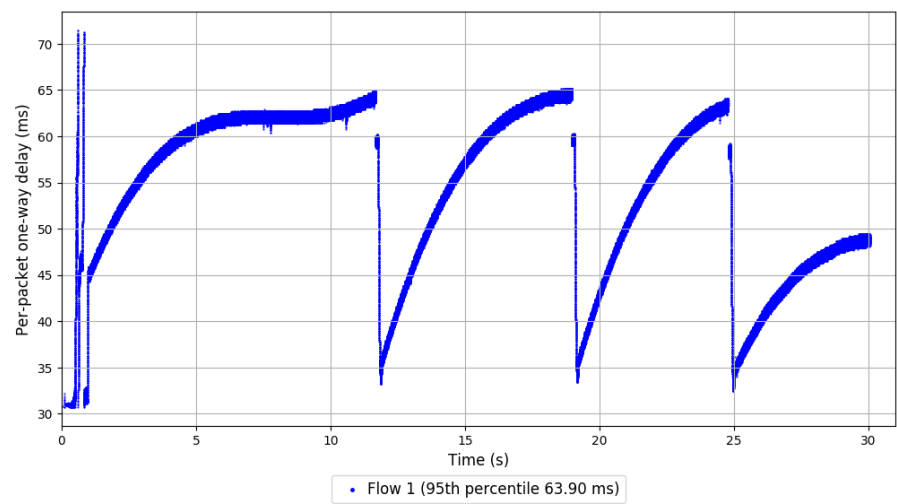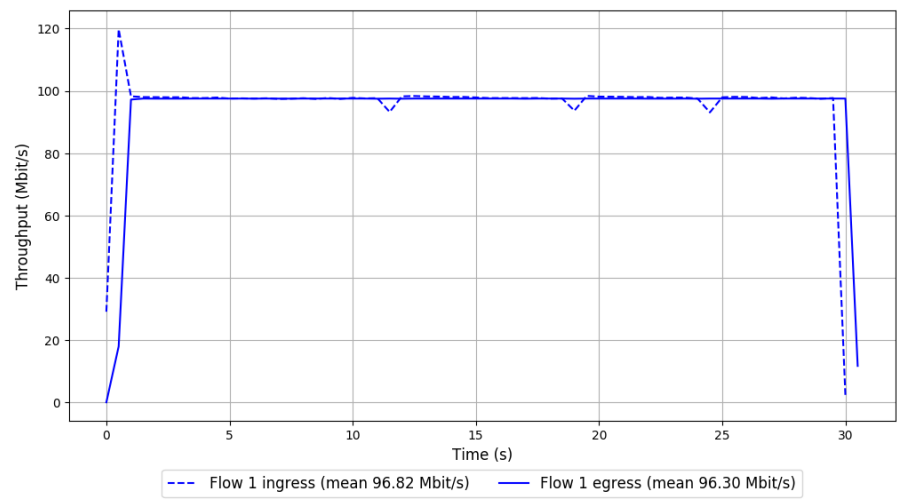
Flow 1 (95th percentile 66.63 ms)

```
Run 3: Statistics of TCP Cubic

Start at: 2019-01-02 20:13:34
End at: 2019-01-02 20:14:04
Local clock offset: -5.919 ms
Remote clock offset: -1.346 ms


# Below is generated by plot.py at 2019-01-02 21:16:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 96.30 Mbit/s
95th percentile per-packet one-way delay: 63.898 ms
Loss rate: 0.49%
-- Flow 1:
Average throughput: 96.30 Mbit/s
95th percentile per-packet one-way delay: 63.898 ms
Loss rate: 0.49%
```

Run 3: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 96.82 Mbit/s)   Flow 1 egress (mean 96.30 Mbit/s)

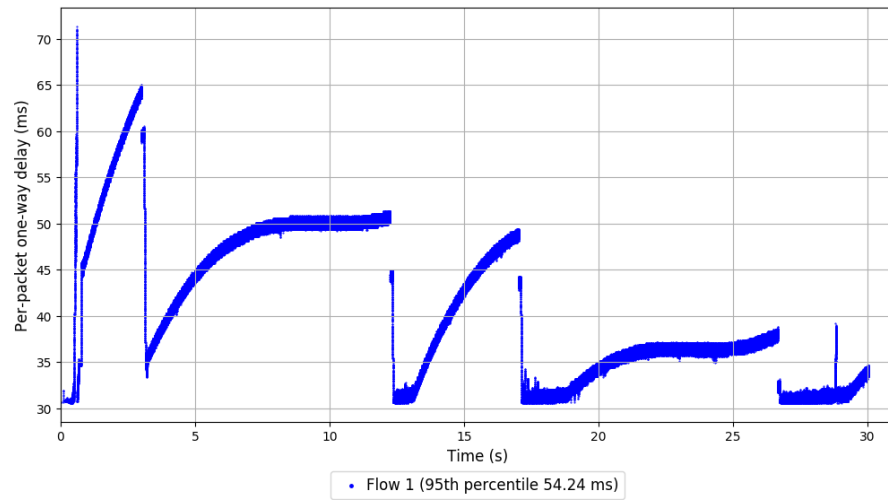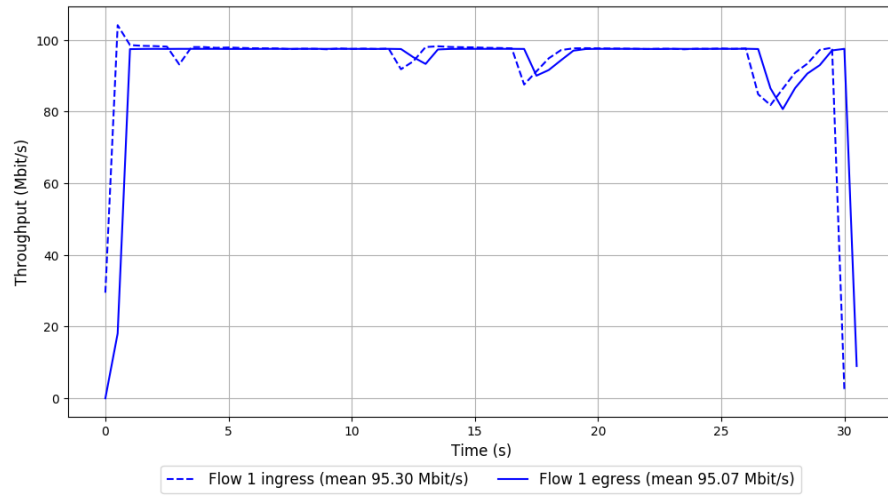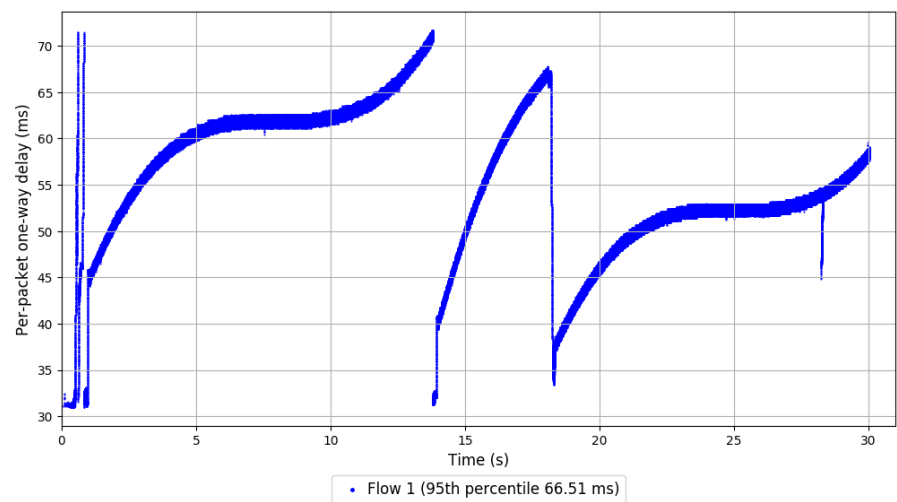Flow 1 (95th percentile 63.90 ms)

```
Run 4: Statistics of TCP Cubic

Start at: 2019-01-02 20:35:47
End at: 2019-01-02 20:36:17
Local clock offset: -5.885 ms
Remote clock offset: -2.061 ms


# Below is generated by plot.py at 2019-01-02 21:17:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.07 Mbit/s
95th percentile per-packet one-way delay: 54.236 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 95.07 Mbit/s
95th percentile per-packet one-way delay: 54.236 ms
Loss rate: 0.23%
```

Run 4: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 95.30 Mbit/s) --- Flow 1 egress (mean 95.07 Mbit/s)
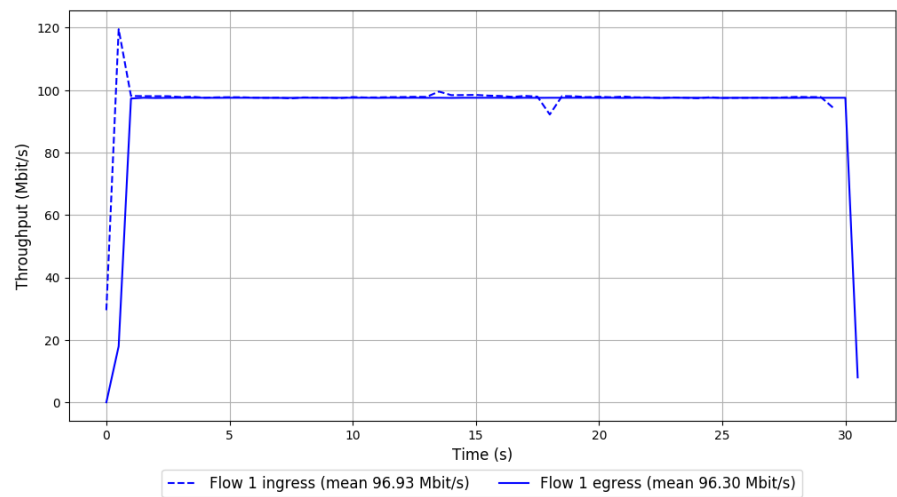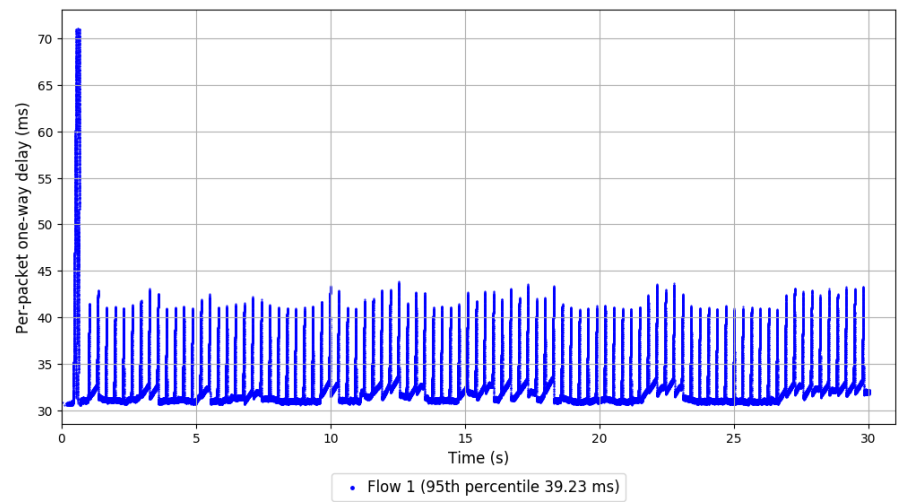

Flow 1 (95th percentile 54.24 ms)

```
Run 5: Statistics of TCP Cubic

Start at: 2019-01-02 20:57:44
End at: 2019-01-02 20:58:14
Local clock offset: -5.544 ms
Remote clock offset: -2.799 ms


# Below is generated by plot.py at 2019-01-02 21:17:10
# Datalink statistics
-- Total of 1 flow:
Average throughput: 96.30 Mbit/s
95th percentile per-packet one-way delay: 66.513 ms
Loss rate: 0.57%
-- Flow 1:
Average throughput: 96.30 Mbit/s
95th percentile per-packet one-way delay: 66.513 ms
Loss rate: 0.57%
```

Run 5: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 96.93 Mbit/s)   Flow 1 egress (mean 96.30 Mbit/s)

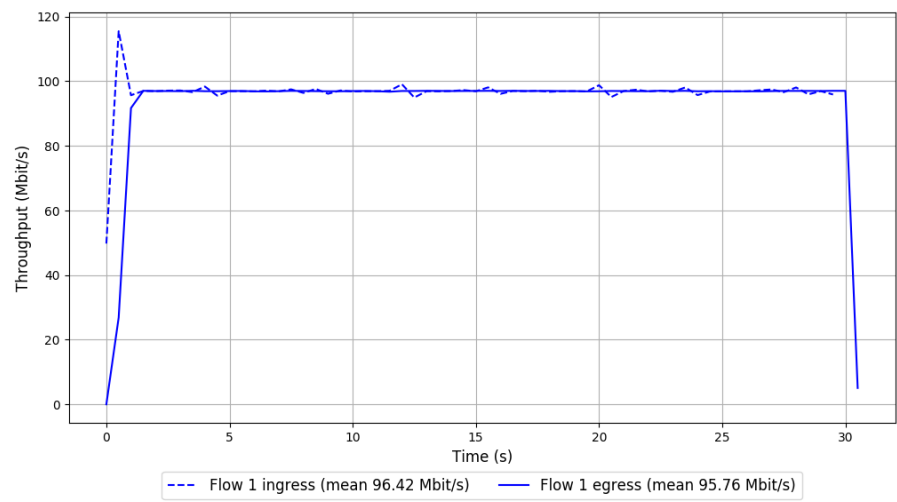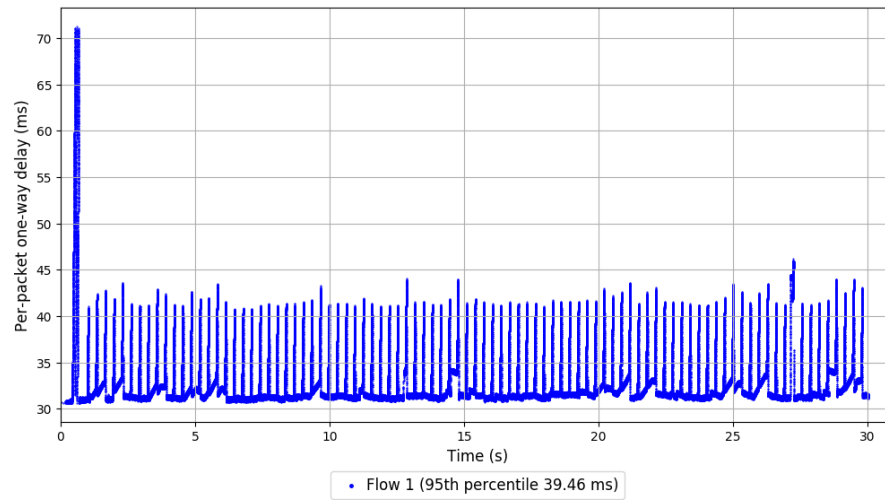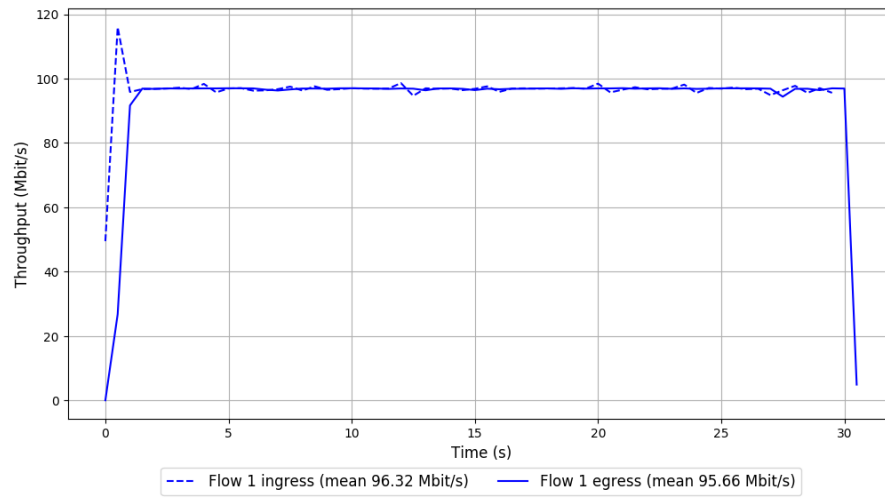Flow 1 (95th percentile 66.51 ms)

```
Run 1: Statistics of FillP

Start at: 2019-01-02 19:40:47
End at: 2019-01-02 19:41:17
Local clock offset: -10.941 ms
Remote clock offset: -1.341 ms


# Below is generated by plot.py at 2019-01-02 21:17:19
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.76 Mbit/s
95th percentile per-packet one-way delay: 39.232 ms
Loss rate: 0.68%
-- Flow 1:
Average throughput: 95.76 Mbit/s
95th percentile per-packet one-way delay: 39.232 ms
Loss rate: 0.68%
```

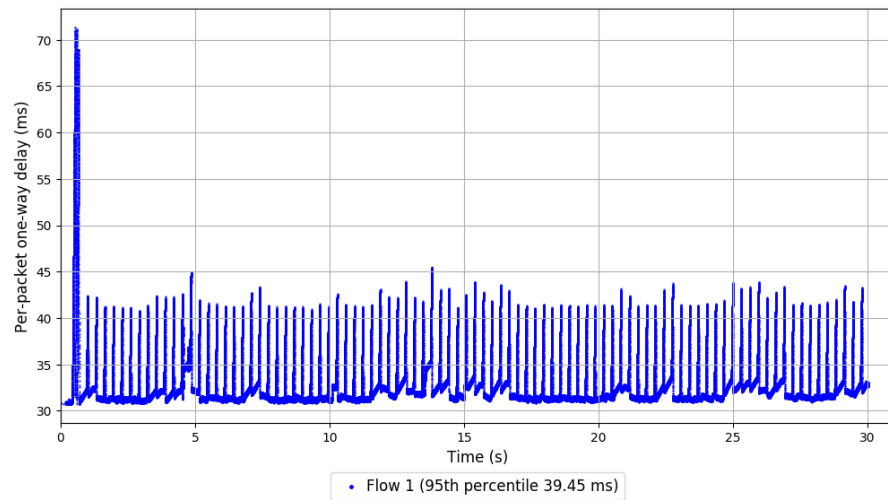Run 1: Report of FillP — Data Link

```
Run 2: Statistics of FillP

Start at: 2019-01-02 20:02:52
End at: 2019-01-02 20:03:22
Local clock offset: -7.177 ms
Remote clock offset: -1.341 ms


# Below is generated by plot.py at 2019-01-02 21:17:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.66 Mbit/s
95th percentile per-packet one-way delay: 39.459 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 95.66 Mbit/s
95th percentile per-packet one-way delay: 39.459 ms
Loss rate: 0.69%
```

Run 2: Report of FillP — Data Link

Flow 1 ingress (mean 96.32 Mbit/s) --- Flow 1 egress (mean 95.66 Mbit/s)

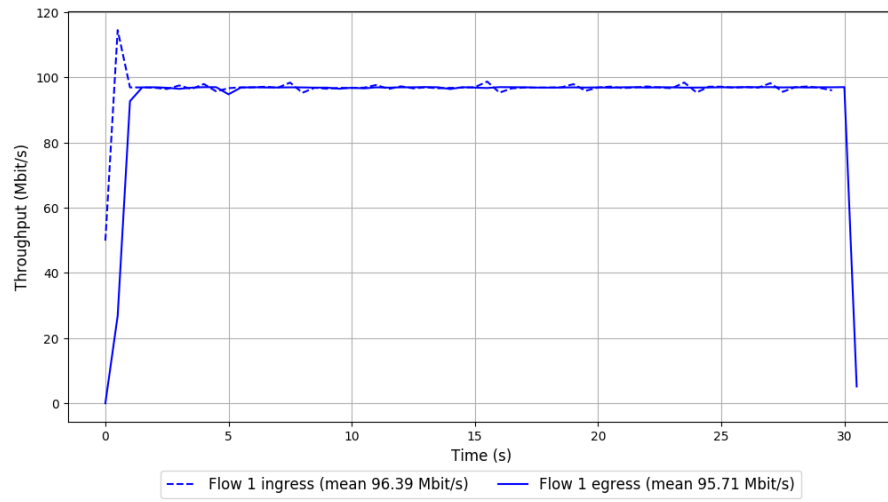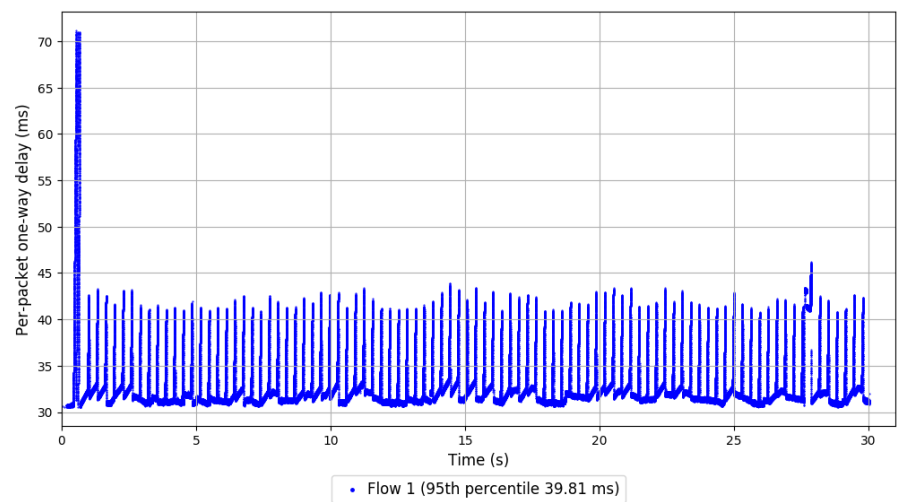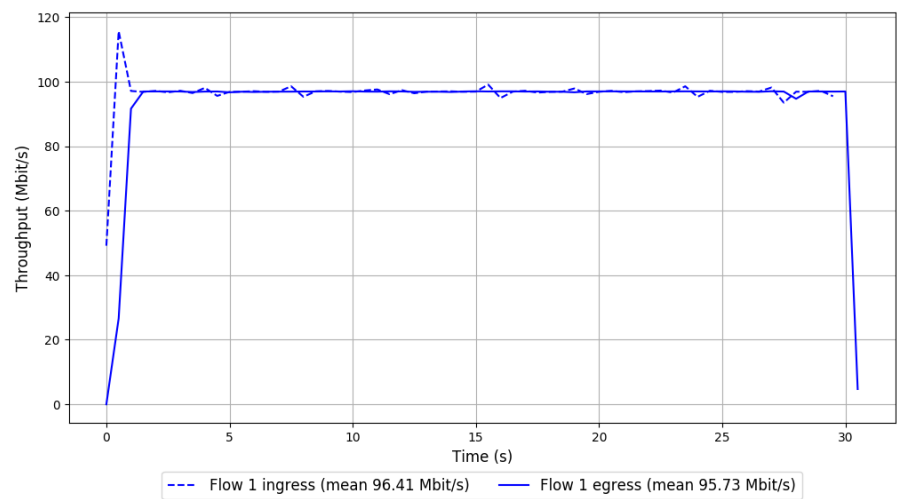Flow 1 (95th percentile 39.46 ms)

```
Run 3: Statistics of FillP

Start at: 2019-01-02 20:25:20
End at: 2019-01-02 20:25:50
Local clock offset: -7.09 ms
Remote clock offset: -1.469 ms


# Below is generated by plot.py at 2019-01-02 21:17:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.71 Mbit/s
95th percentile per-packet one-way delay: 39.450 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 95.71 Mbit/s
95th percentile per-packet one-way delay: 39.450 ms
Loss rate: 0.70%
```
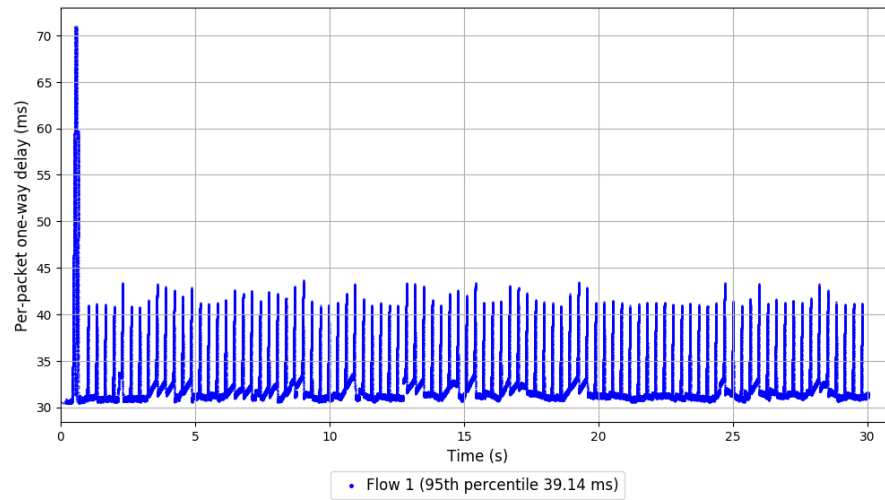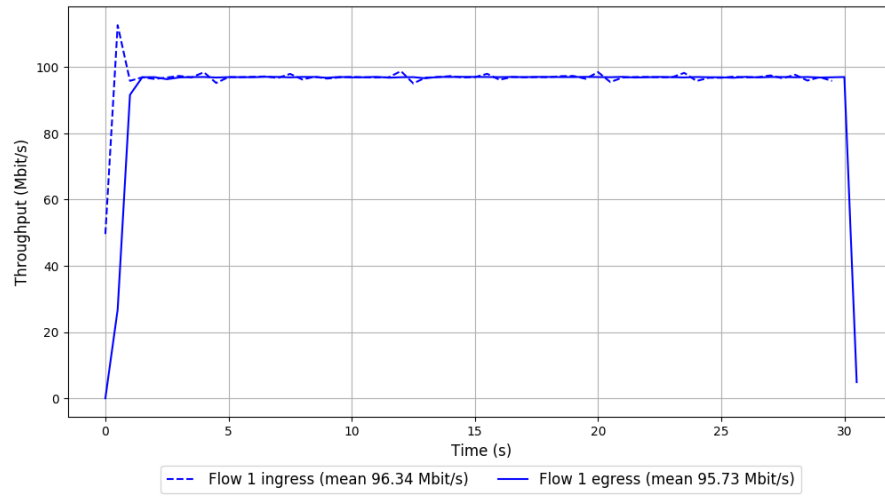
Run 3: Report of FillP — Data Link

Flow 1 ingress (mean 96.39 Mbit/s)   Flow 1 egress (mean 95.71 Mbit/s)

Flow 1 (95th percentile 39.45 ms)

```
Run 4: Statistics of FillP

Start at: 2019-01-02 20:47:20
End at: 2019-01-02 20:47:50
Local clock offset: -6.876 ms
Remote clock offset: -2.533 ms


# Below is generated by plot.py at 2019-01-02 21:17:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.73 Mbit/s
95th percentile per-packet one-way delay: 39.808 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 95.73 Mbit/s
95th percentile per-packet one-way delay: 39.808 ms
Loss rate: 0.70%
```

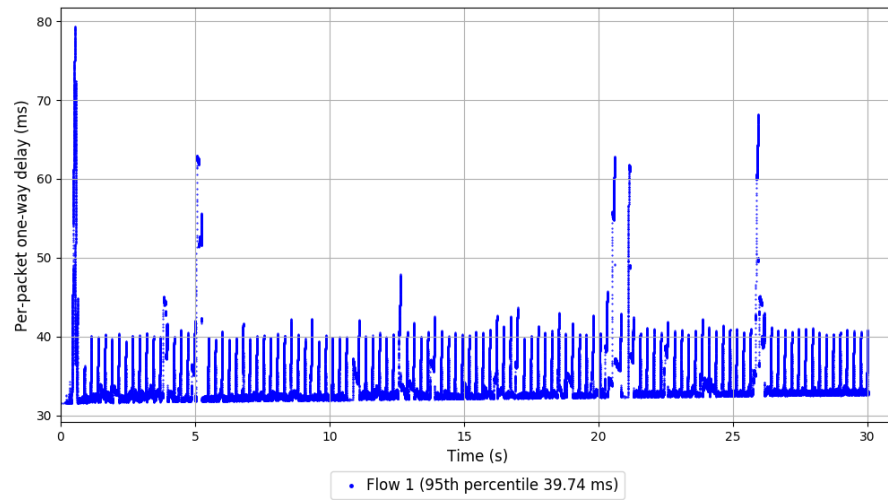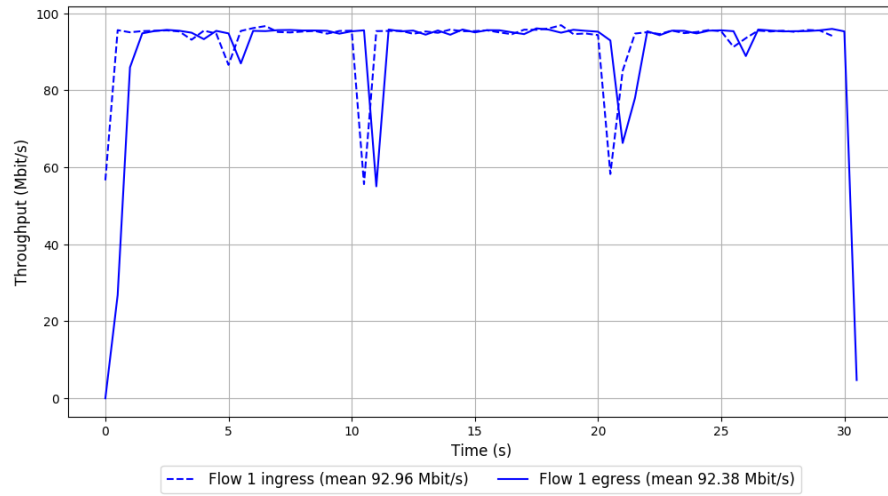## Run 4: Report of FillP — Data Link

```
Run 5: Statistics of FillP

Start at: 2019-01-02 21:09:33
End at: 2019-01-02 21:10:03
Local clock offset: -2.199 ms
Remote clock offset: -3.579 ms


# Below is generated by plot.py at 2019-01-02 21:17:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.73 Mbit/s
95th percentile per-packet one-way delay: 39.139 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 95.73 Mbit/s
95th percentile per-packet one-way delay: 39.139 ms
Loss rate: 0.64%
```
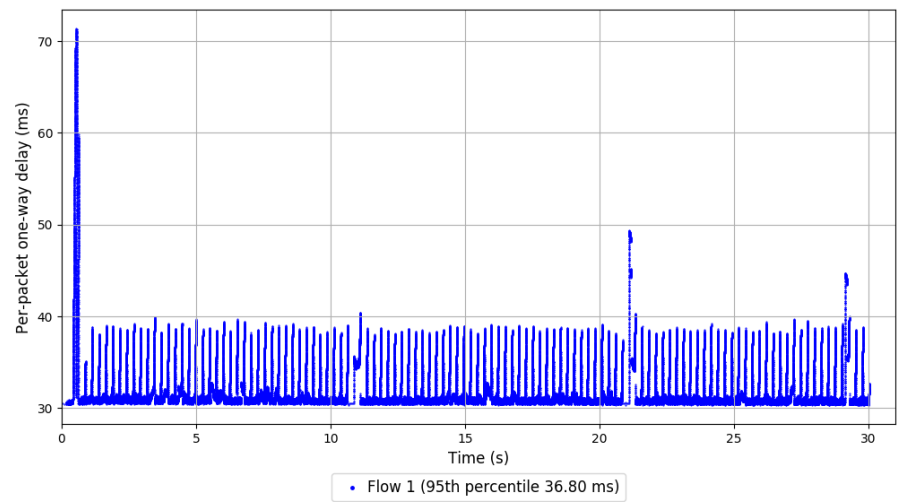
Run 5: Report of FillP — Data Link

```
Run 1: Statistics of FillP-Sheep

Start at: 2019-01-02 19:25:39
End at: 2019-01-02 19:26:09
Local clock offset: -23.29 ms
Remote clock offset: -1.574 ms


# Below is generated by plot.py at 2019-01-02 21:17:42
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.38 Mbit/s
95th percentile per-packet one-way delay: 39.743 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 92.38 Mbit/s
95th percentile per-packet one-way delay: 39.743 ms
Loss rate: 0.62%
```
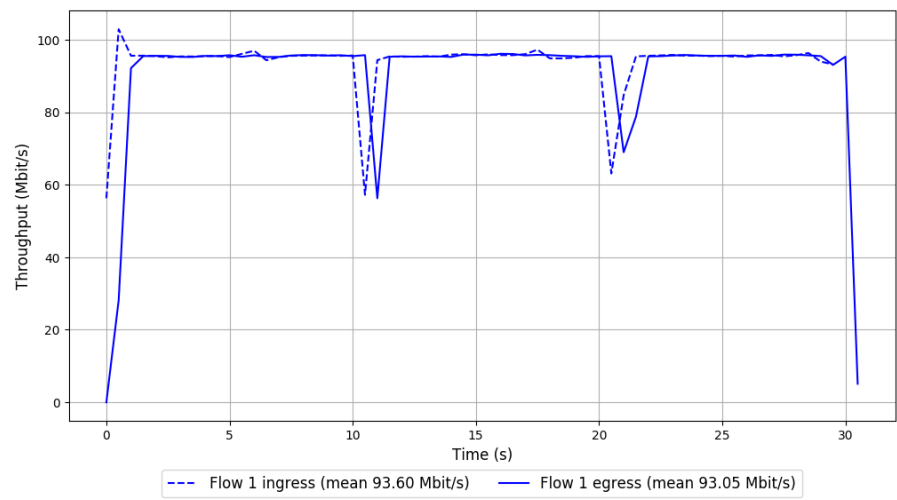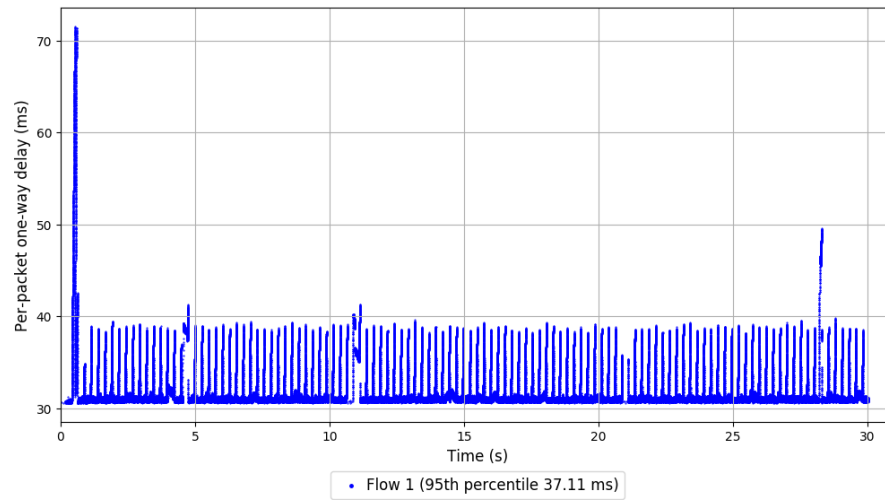
Run 1: Report of FillP-Sheep — Data Link

```
Run 2: Statistics of FillP-Sheep

Start at: 2019-01-02 19:47:39
End at: 2019-01-02 19:48:09
Local clock offset: -11.799 ms
Remote clock offset: -1.223 ms


# Below is generated by plot.py at 2019-01-02 21:18:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 93.05 Mbit/s
95th percentile per-packet one-way delay: 36.800 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 93.05 Mbit/s
95th percentile per-packet one-way delay: 36.800 ms
Loss rate: 0.59%
```

Run 2: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 93.60 Mbit/s) ----   Flow 1 egress (mean 93.05 Mbit/s) ——
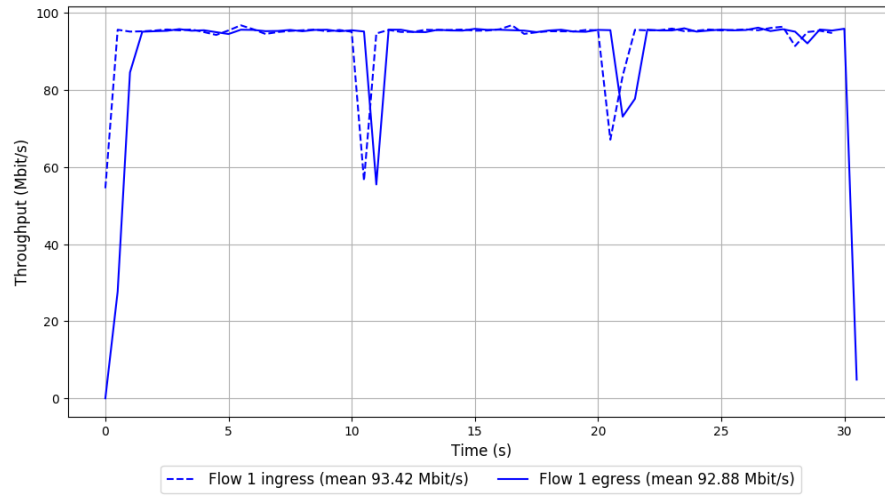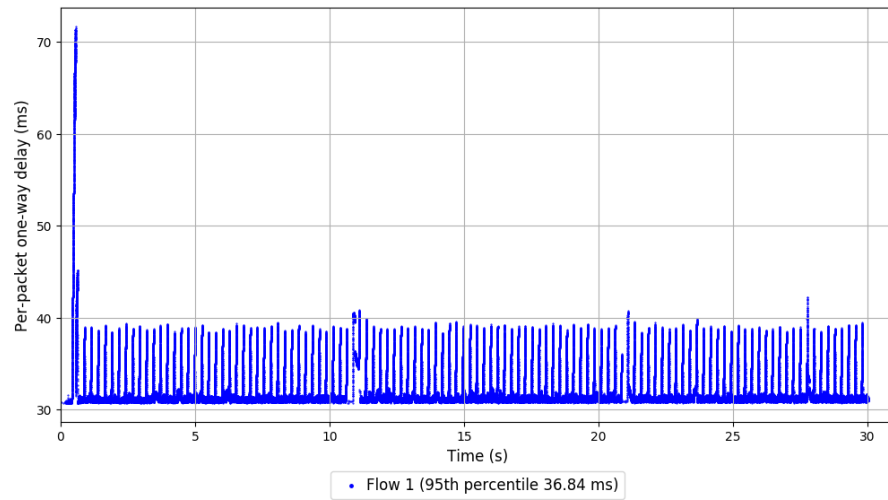

• Flow 1 (95th percentile 36.80 ms)

```
Run 3: Statistics of FillP-Sheep

Start at: 2019-01-02 20:10:07
End at: 2019-01-02 20:10:37
Local clock offset: -5.854 ms
Remote clock offset: -1.281 ms


# Below is generated by plot.py at 2019-01-02 21:18:28
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.88 Mbit/s
95th percentile per-packet one-way delay: 37.109 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 92.88 Mbit/s
95th percentile per-packet one-way delay: 37.109 ms
Loss rate: 0.58%
```

Run 3: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 93.42 Mbit/s) Flow 1 egress (mean 92.88 Mbit/s)
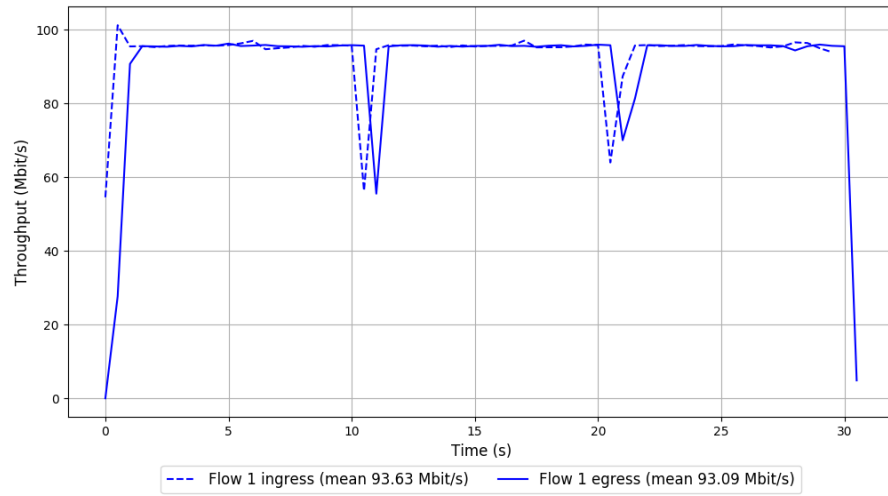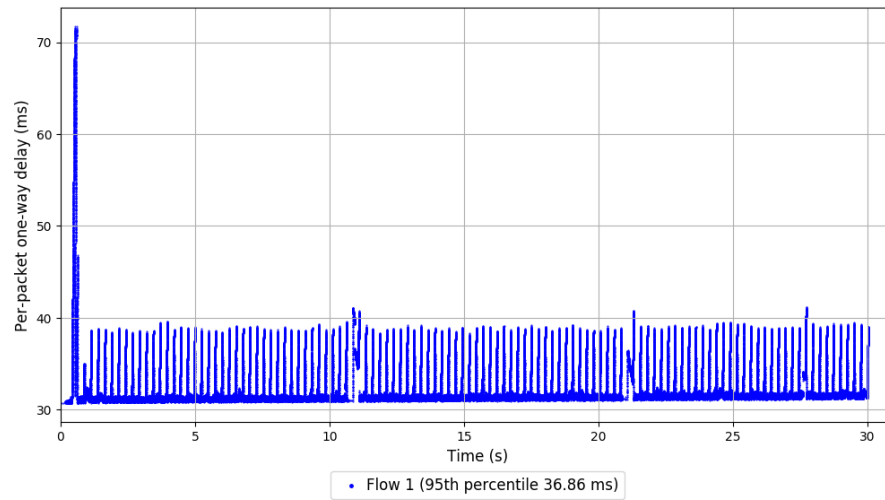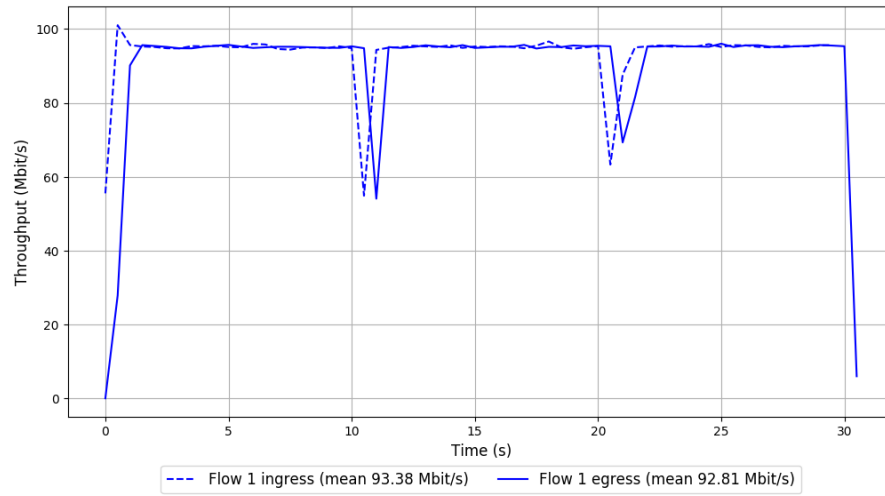

Flow 1 (95th percentile 37.11 ms)

```
Run 4: Statistics of FillP-Sheep

Start at: 2019-01-02 20:32:18
End at: 2019-01-02 20:32:48
Local clock offset: -5.949 ms
Remote clock offset: -1.66 ms


# Below is generated by plot.py at 2019-01-02 21:18:41
# Datalink statistics
-- Total of 1 flow:
Average throughput: 93.09 Mbit/s
95th percentile per-packet one-way delay: 36.838 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 93.09 Mbit/s
95th percentile per-packet one-way delay: 36.838 ms
Loss rate: 0.58%
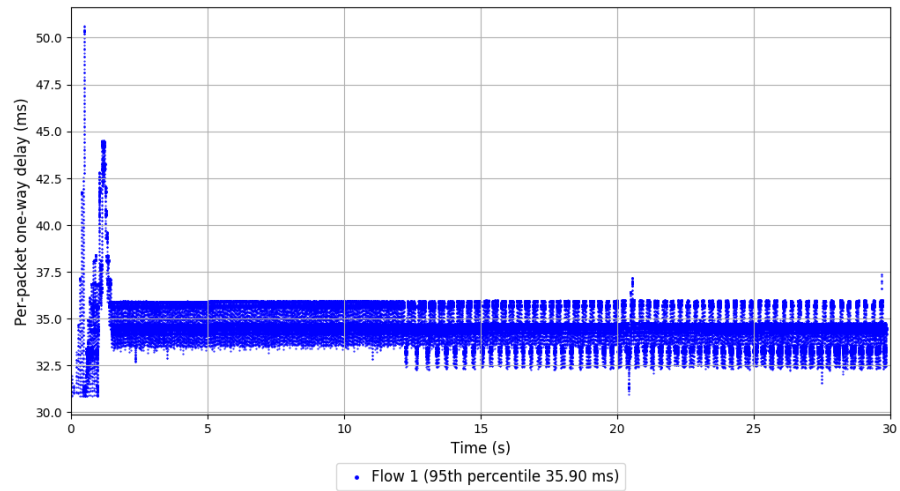```
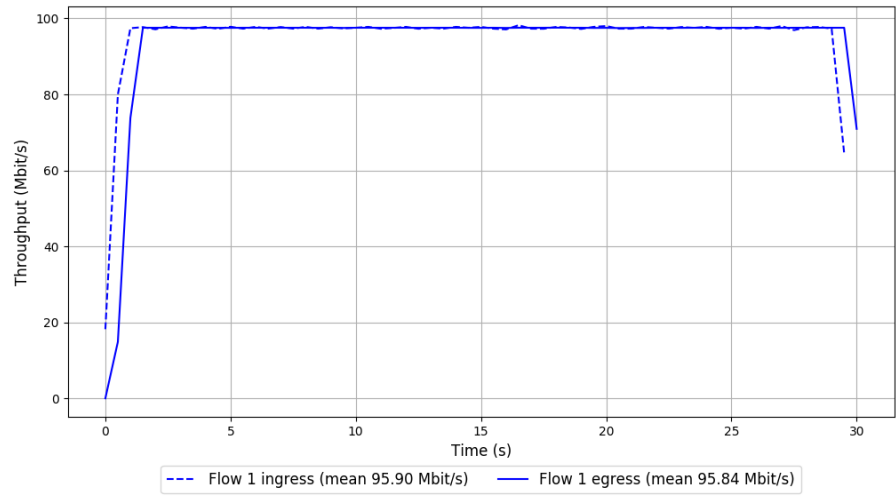
Run 4: Report of FillP-Sheep — Data Link



Flow 1 ingress (mean 93.63 Mbit/s) --- Flow 1 egress (mean 93.09 Mbit/s)



Flow 1 (95th percentile 36.84 ms)

```
Run 5: Statistics of FillP-Sheep

Start at: 2019-01-02 20:54:16
End at: 2019-01-02 20:54:46
Local clock offset: -7.84 ms
Remote clock offset: -2.788 ms

Below is generated by plot.py at 2019-01-02 21:18:43
Datalink statistics
-- Total of 1 flow:
Average throughput: 92.81 Mbit/s
95th percentile per-packet one-way delay: 36.859 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 92.81 Mbit/s
95th percentile per-packet one-way delay: 36.859 ms
Loss rate: 0.58%
```
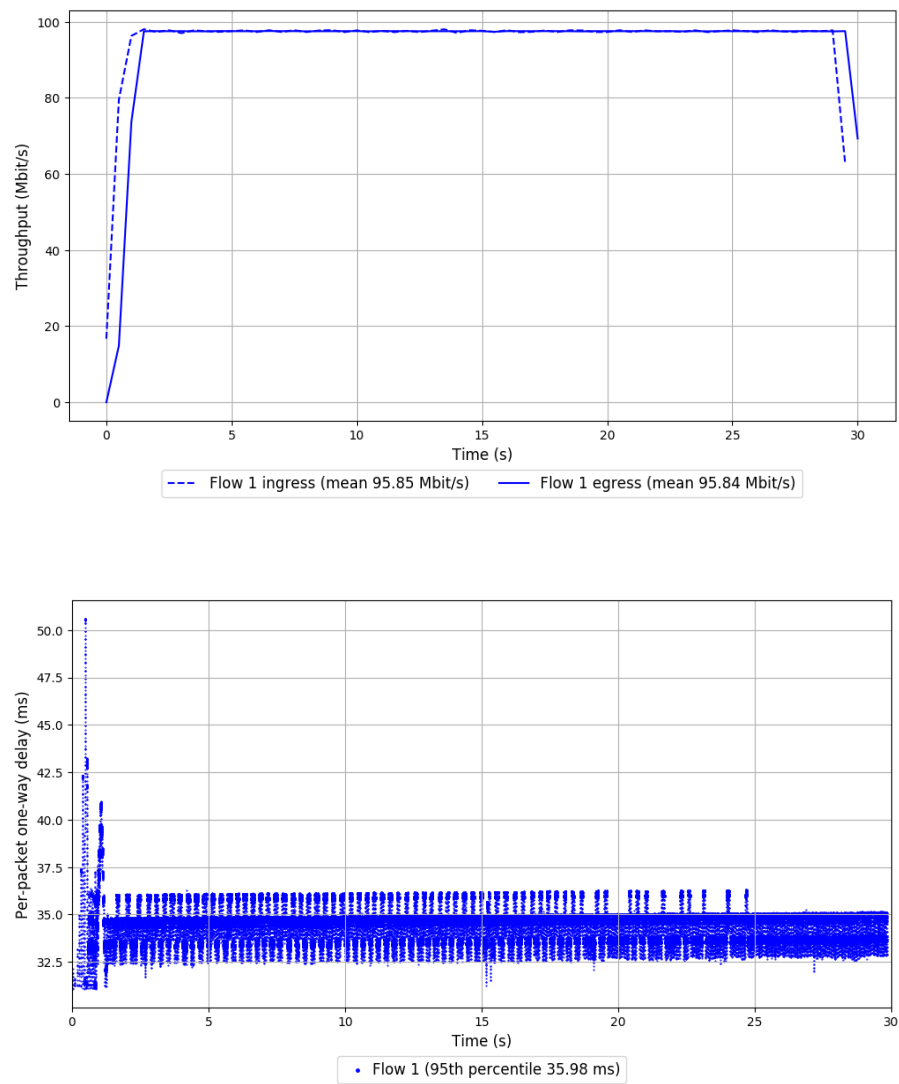
Run 5: Report of FillP-Sheep — Data Link

```
Run 1: Statistics of Indigo

Start at: 2019-01-02 19:37:13
End at: 2019-01-02 19:37:43
Local clock offset: -11.367 ms
Remote clock offset: -1.264 ms

Below is generated by plot.py at 2019-01-02 21:18:43
Datalink statistics
-- Total of 1 flow:
Average throughput: 95.84 Mbit/s
95th percentile per-packet one-way delay: 35.903 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 95.84 Mbit/s
95th percentile per-packet one-way delay: 35.903 ms
Loss rate: 0.05%
```
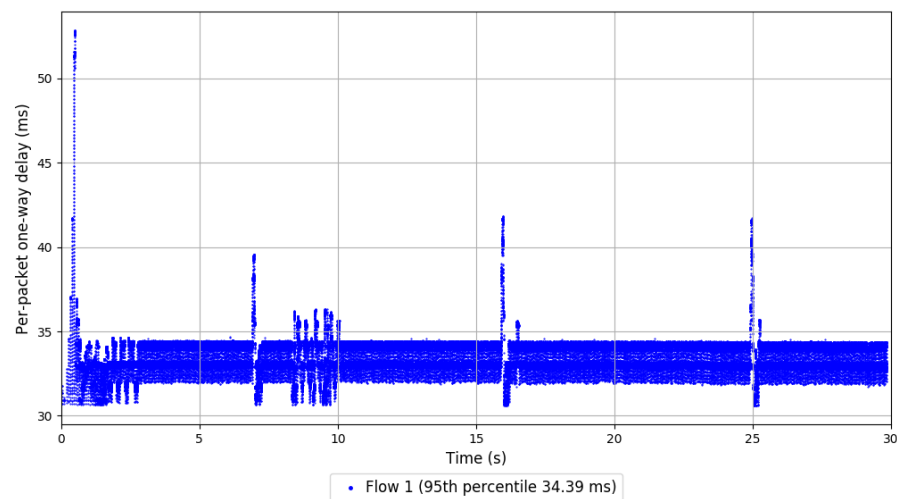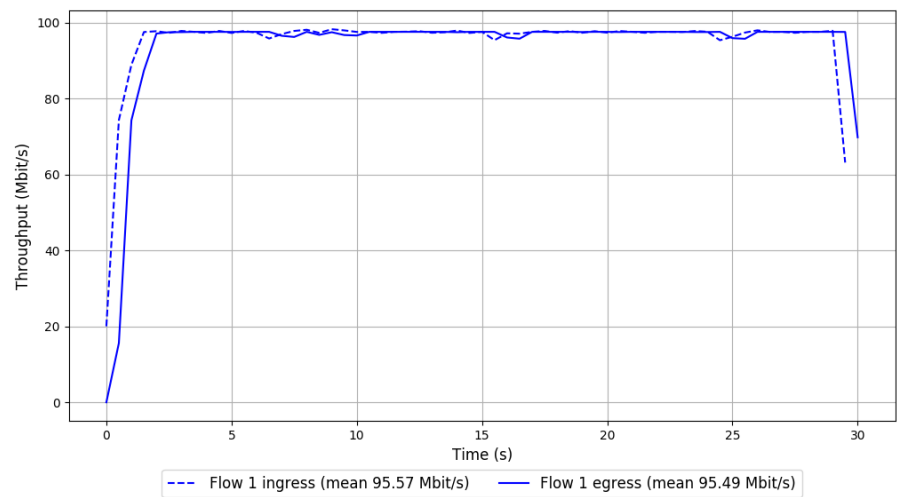
# Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2019-01-02 19:59:13
End at: 2019-01-02 19:59:43
Local clock offset: -9.134 ms
Remote clock offset: -1.082 ms


# Below is generated by plot.py at 2019-01-02 21:18:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.84 Mbit/s
95th percentile per-packet one-way delay: 35.980 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 95.84 Mbit/s
95th percentile per-packet one-way delay: 35.980 ms
Loss rate: 0.00%
```

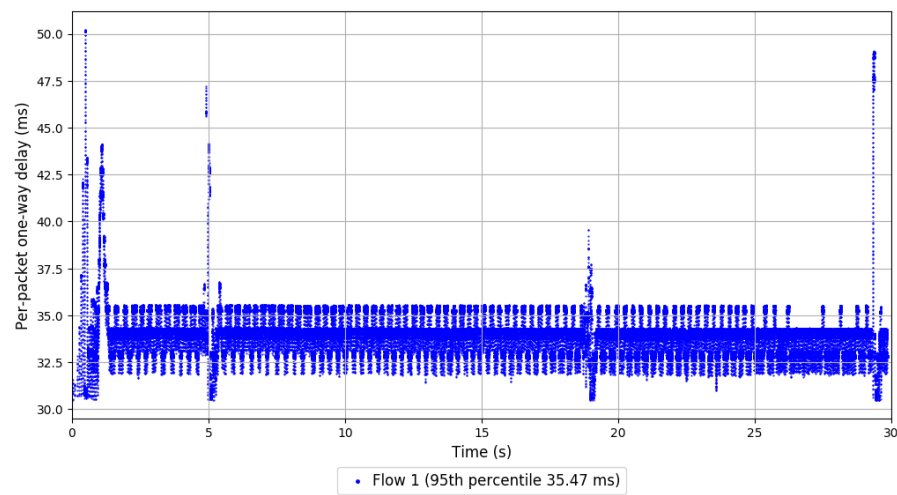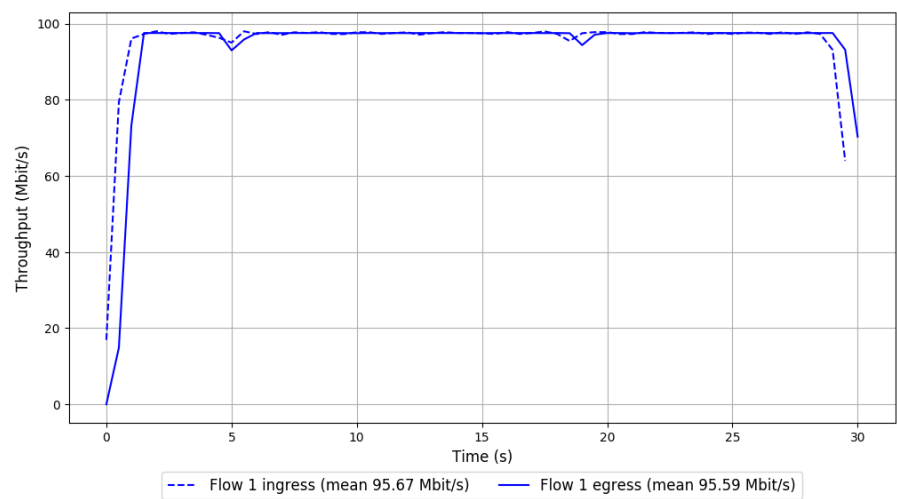Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2019-01-02 20:21:41
End at: 2019-01-02 20:22:11
Local clock offset: -6.876 ms
Remote clock offset: -1.482 ms


# Below is generated by plot.py at 2019-01-02 21:18:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.49 Mbit/s
95th percentile per-packet one-way delay: 34.387 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 95.49 Mbit/s
95th percentile per-packet one-way delay: 34.387 ms
Loss rate: 0.08%
```

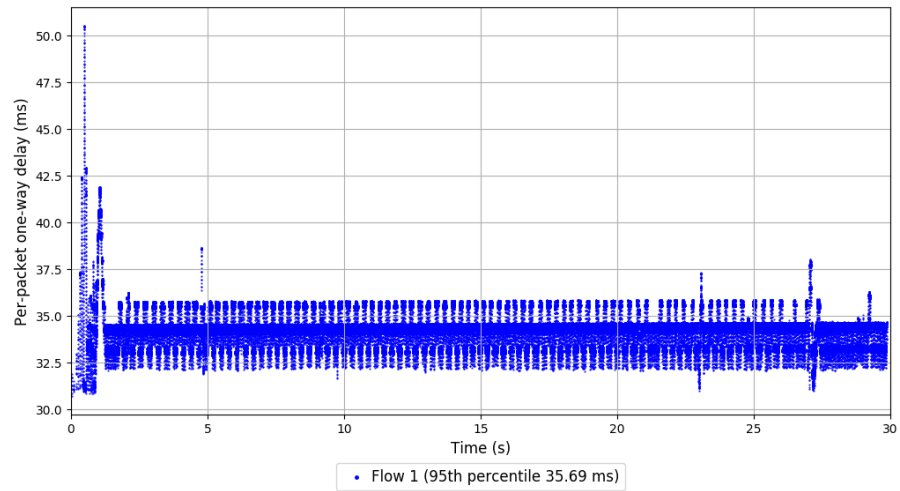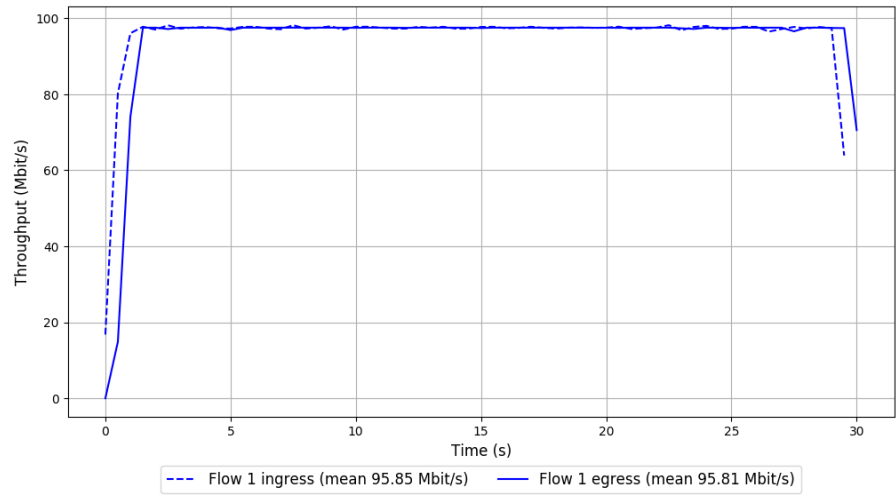## Run 3: Report of Indigo — Data Link

Flow 1 ingress (mean 95.57 Mbit/s)   Flow 1 egress (mean 95.49 Mbit/s)

Flow 1 (95th percentile 34.39 ms)

```
Run 4: Statistics of Indigo

Start at: 2019-01-02 20:43:49
End at: 2019-01-02 20:44:19
Local clock offset: -6.44 ms
Remote clock offset: -2.541 ms


# Below is generated by plot.py at 2019-01-02 21:18:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.59 Mbit/s
95th percentile per-packet one-way delay: 35.468 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 95.59 Mbit/s
95th percentile per-packet one-way delay: 35.468 ms
Loss rate: 0.07%
```

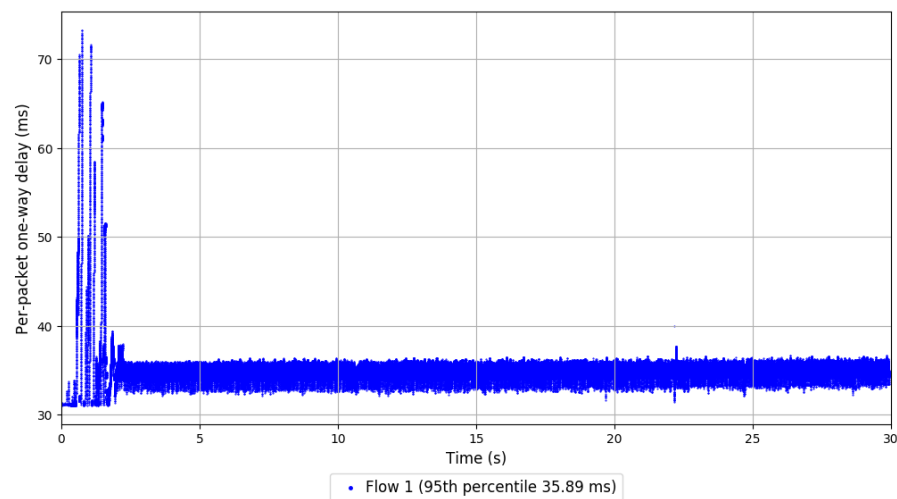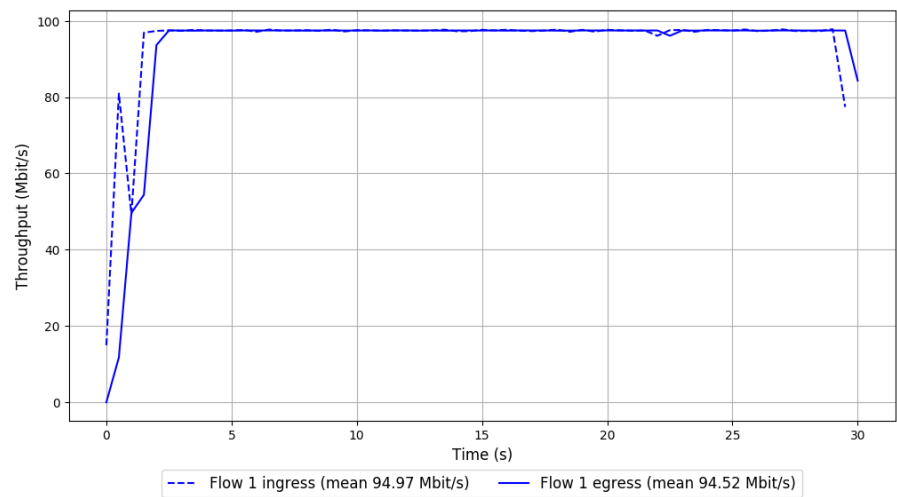## Run 4: Report of Indigo — Data Link

```
Run 5: Statistics of Indigo

Start at: 2019-01-02 21:05:51
End at: 2019-01-02 21:06:21
Local clock offset: -2.759 ms
Remote clock offset: -3.253 ms


# Below is generated by plot.py at 2019-01-02 21:19:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.81 Mbit/s
95th percentile per-packet one-way delay: 35.688 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 95.81 Mbit/s
95th percentile per-packet one-way delay: 35.688 ms
Loss rate: 0.03%
```
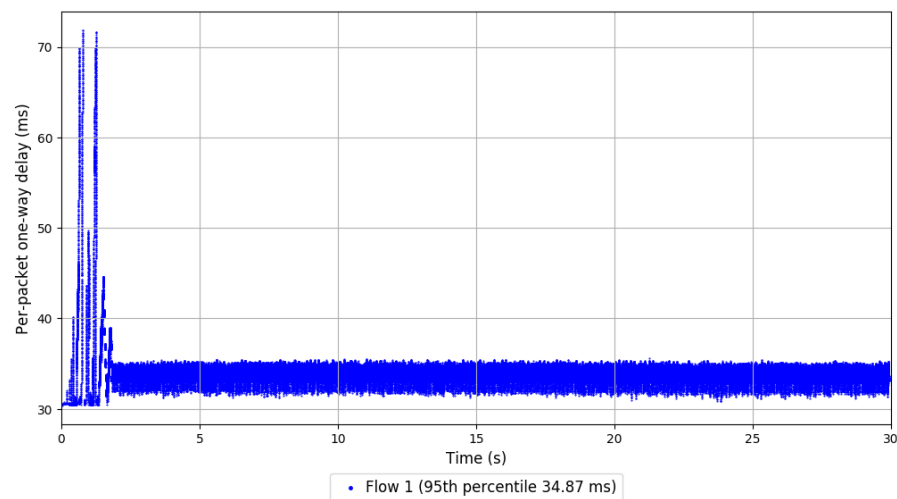
Run 5: Report of Indigo — Data Link

```
Run 1: Statistics of Indigo-MusesD

Start at: 2019-01-02 19:30:19
End at: 2019-01-02 19:30:49
Local clock offset: -15.53 ms
Remote clock offset: -1.452 ms


# Below is generated by plot.py at 2019-01-02 21:19:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.52 Mbit/s
95th percentile per-packet one-way delay: 35.887 ms
Loss rate: 0.46%
-- Flow 1:
Average throughput: 94.52 Mbit/s
95th percentile per-packet one-way delay: 35.887 ms
Loss rate: 0.46%
```
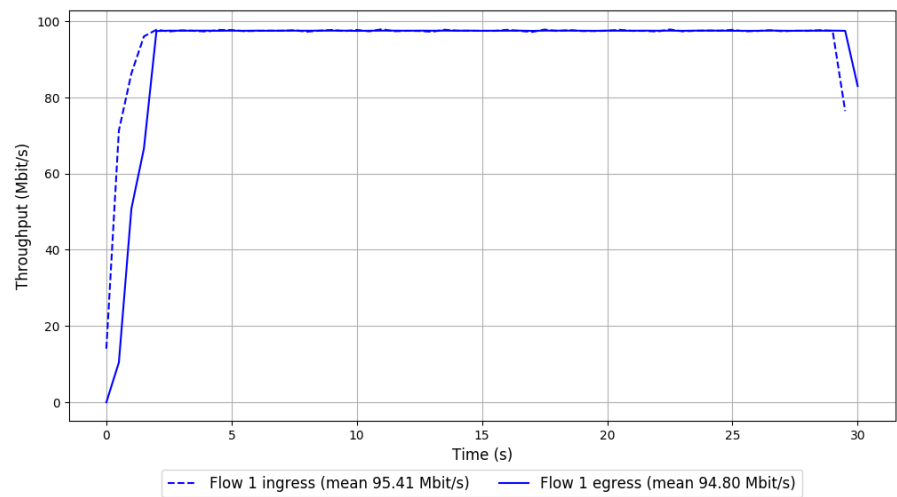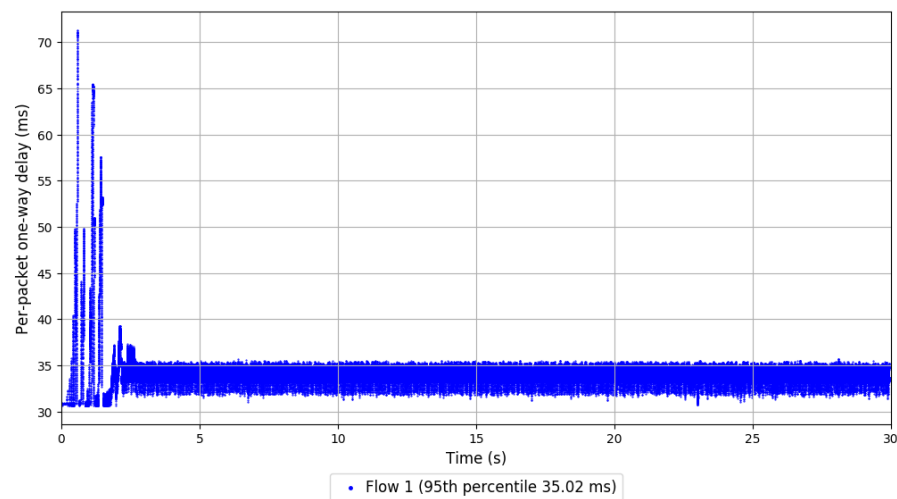
Run 1: Report of Indigo-MusesD — Data Link

```
Run 2: Statistics of Indigo-MusesD

Start at: 2019-01-02 19:52:19
End at: 2019-01-02 19:52:49
Local clock offset: -13.089 ms
Remote clock offset: -1.301 ms


# Below is generated by plot.py at 2019-01-02 21:19:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.80 Mbit/s
95th percentile per-packet one-way delay: 34.866 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 94.80 Mbit/s
95th percentile per-packet one-way delay: 34.866 ms
Loss rate: 0.63%
```
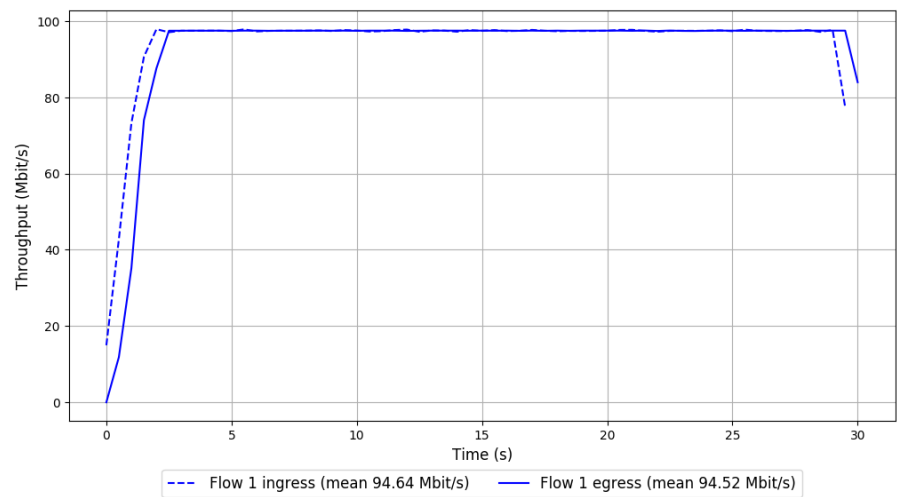
Run 2: Report of Indigo-MusesD — Data Link

```
Run 3: Statistics of Indigo-MusesD

Start at: 2019-01-02 20:14:45
End at: 2019-01-02 20:15:15
Local clock offset: -5.989 ms
Remote clock offset: -1.341 ms


# Below is generated by plot.py at 2019-01-02 21:19:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.52 Mbit/s
95th percentile per-packet one-way delay: 35.018 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 94.52 Mbit/s
95th percentile per-packet one-way delay: 35.018 ms
Loss rate: 0.11%
```

Run 3: Report of Indigo-MusesD — Data Link

Flow 1 ingress (mean 94.64 Mbit/s)   Flow 1 egress (mean 94.52 Mbit/s)
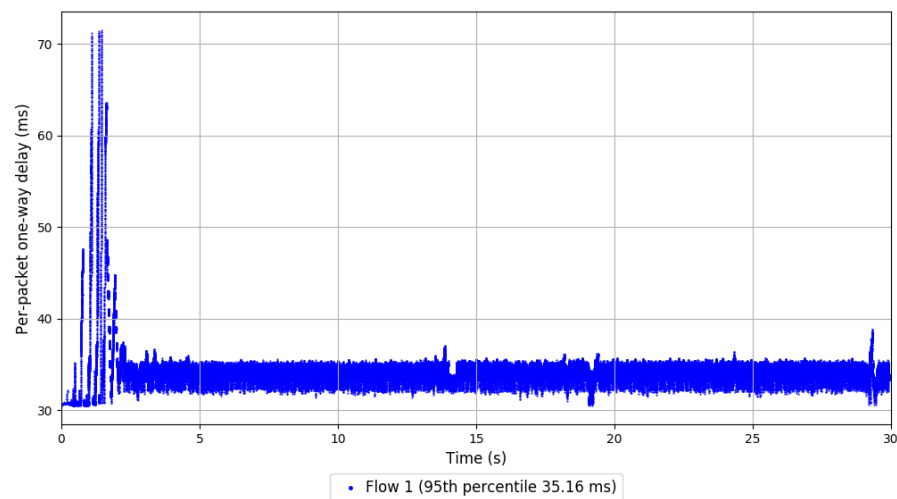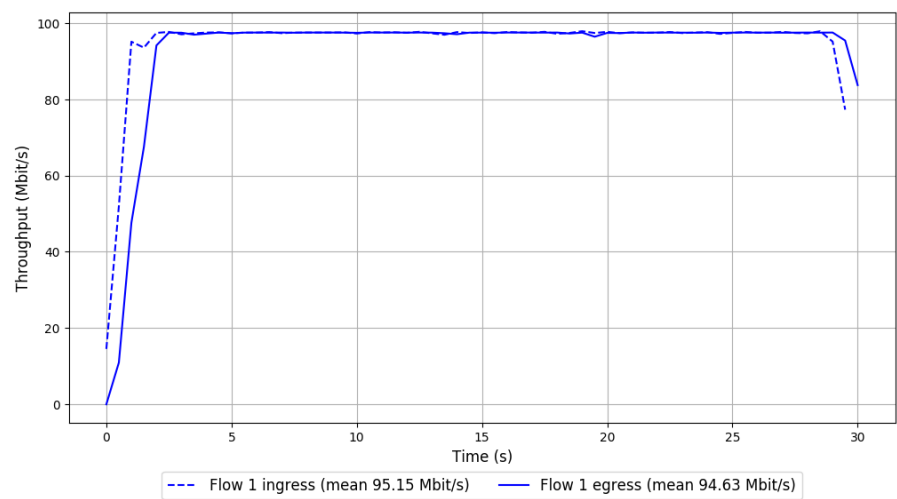

Flow 1 (95th percentile 35.02 ms)

```
Run 4: Statistics of Indigo-MusesD

Start at: 2019-01-02 20:36:58
End at: 2019-01-02 20:37:28
Local clock offset: -5.92 ms
Remote clock offset: -2.107 ms


# Below is generated by plot.py at 2019-01-02 21:19:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.63 Mbit/s
95th percentile per-packet one-way delay: 35.162 ms
Loss rate: 0.54%
-- Flow 1:
Average throughput: 94.63 Mbit/s
95th percentile per-packet one-way delay: 35.162 ms
Loss rate: 0.54%
```
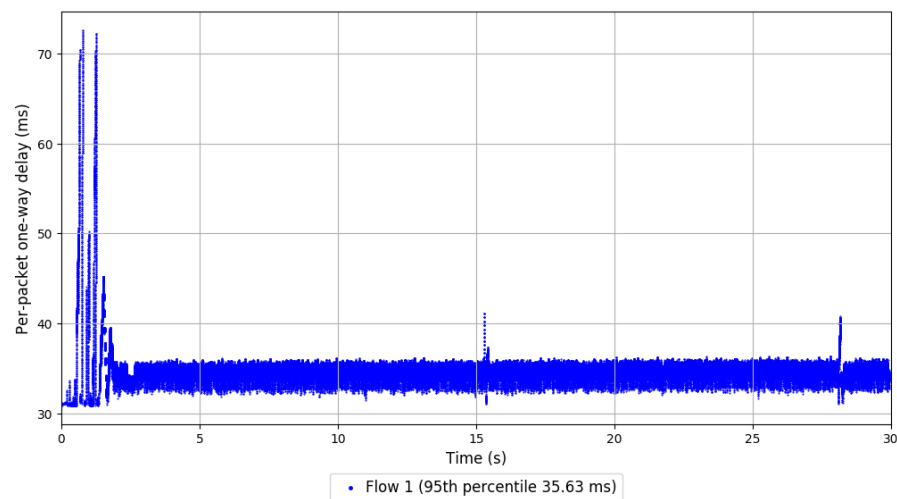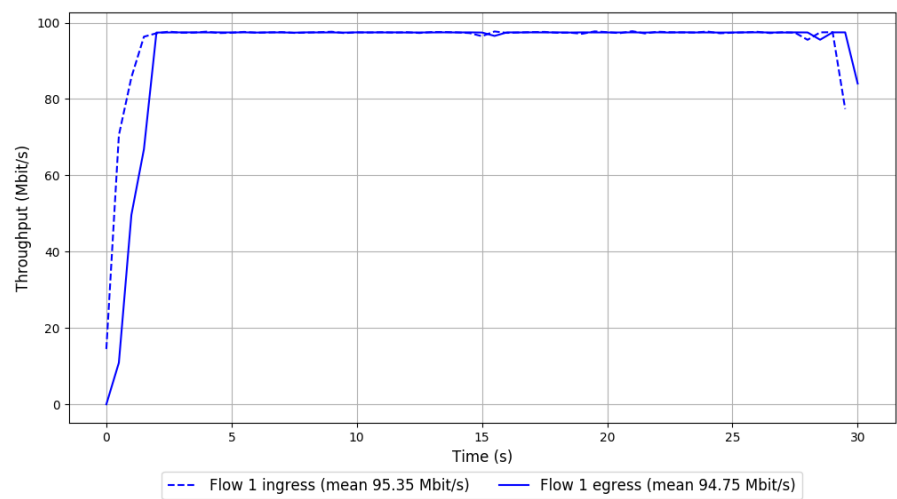
Run 4: Report of Indigo-MusesD — Data Link

```
Run 5: Statistics of Indigo-MusesD

Start at: 2019-01-02 20:58:55
End at: 2019-01-02 20:59:26
Local clock offset: -4.913 ms
Remote clock offset: -2.81 ms


# Below is generated by plot.py at 2019-01-02 21:19:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.75 Mbit/s
95th percentile per-packet one-way delay: 35.627 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 94.75 Mbit/s
95th percentile per-packet one-way delay: 35.627 ms
Loss rate: 0.62%
```
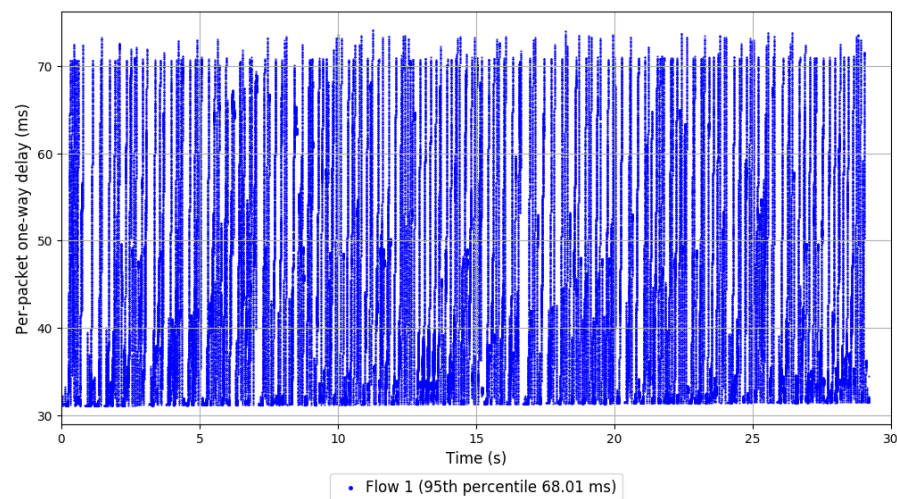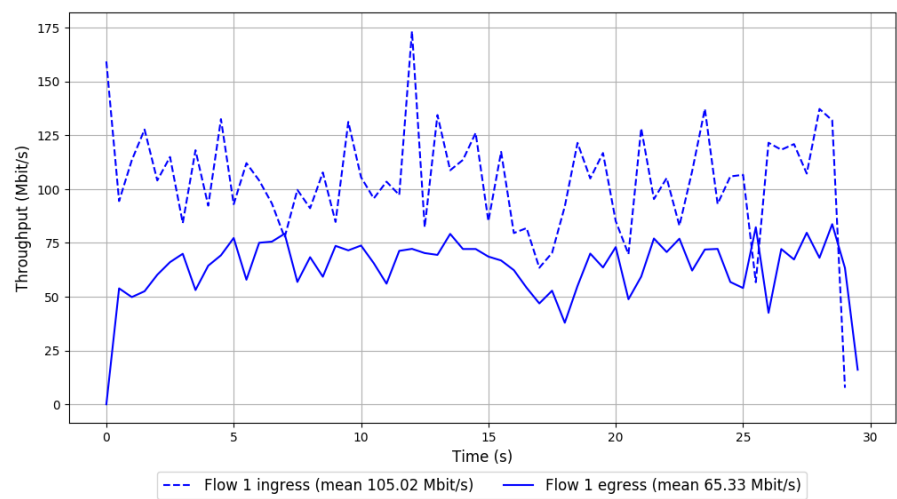
Run 5: Report of Indigo-MusesD — Data Link

```
Run 1: Statistics of Indigo-MusesT

Start at: 2019-01-02 19:31:32
End at: 2019-01-02 19:32:02
Local clock offset: -14.435 ms
Remote clock offset: -1.407 ms


# Below is generated by plot.py at 2019-01-02 21:19:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 65.33 Mbit/s
95th percentile per-packet one-way delay: 68.008 ms
Loss rate: 37.79%
-- Flow 1:
Average throughput: 65.33 Mbit/s
95th percentile per-packet one-way delay: 68.008 ms
Loss rate: 37.79%
```
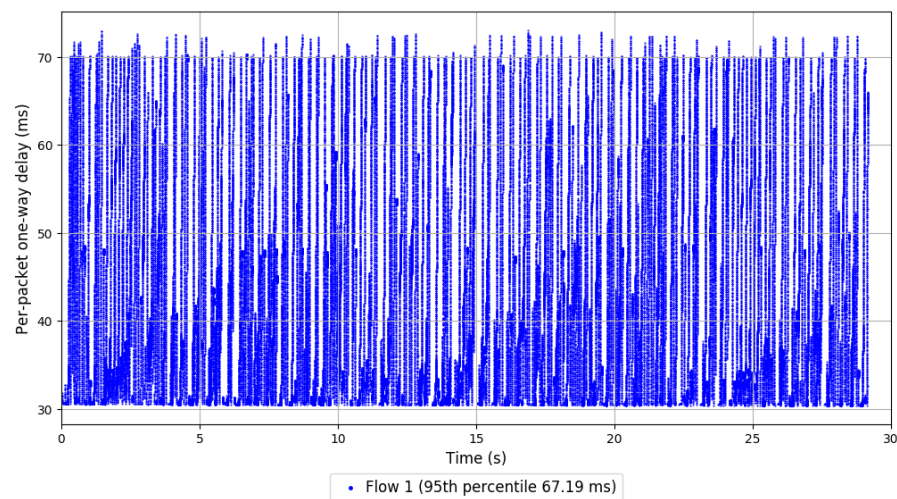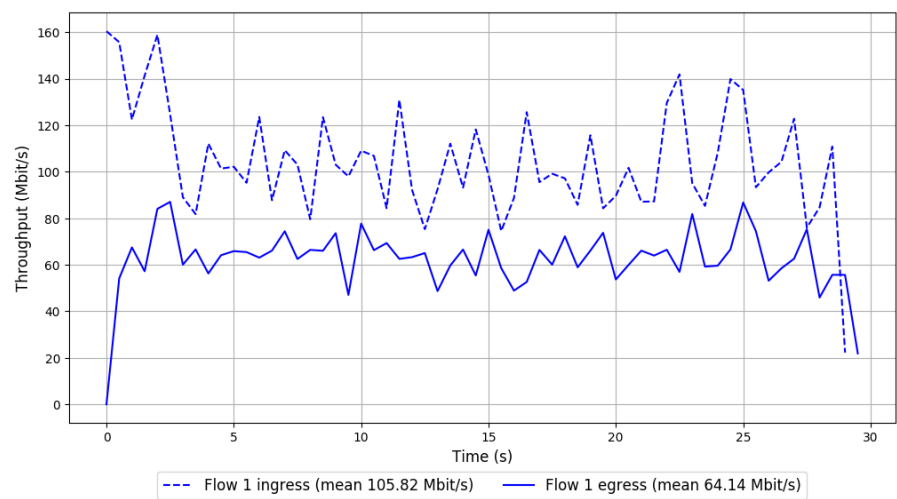
Run 1: Report of Indigo-MusesT — Data Link

```
Run 2: Statistics of Indigo-MusesT

Start at: 2019-01-02 19:53:32
End at: 2019-01-02 19:54:02
Local clock offset: -13.416 ms
Remote clock offset: -1.066 ms


# Below is generated by plot.py at 2019-01-02 21:19:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 64.14 Mbit/s
95th percentile per-packet one-way delay: 67.187 ms
Loss rate: 39.38%
-- Flow 1:
Average throughput: 64.14 Mbit/s
95th percentile per-packet one-way delay: 67.187 ms
Loss rate: 39.38%
```
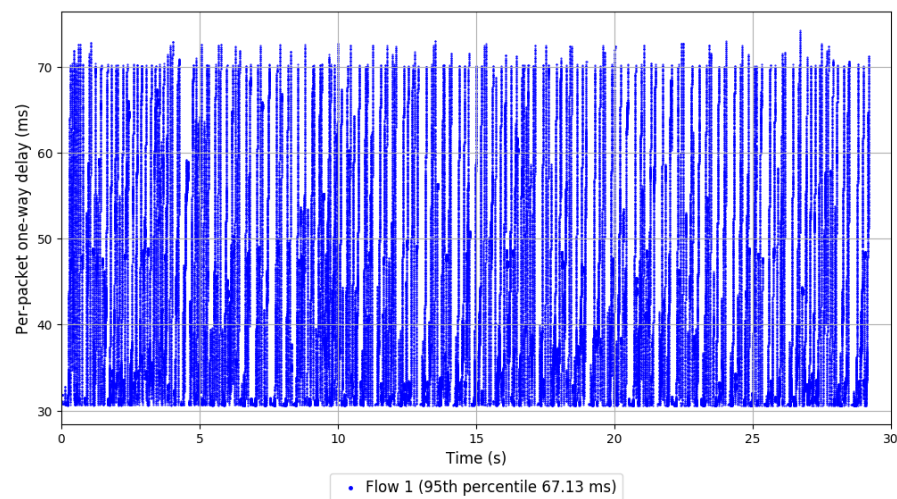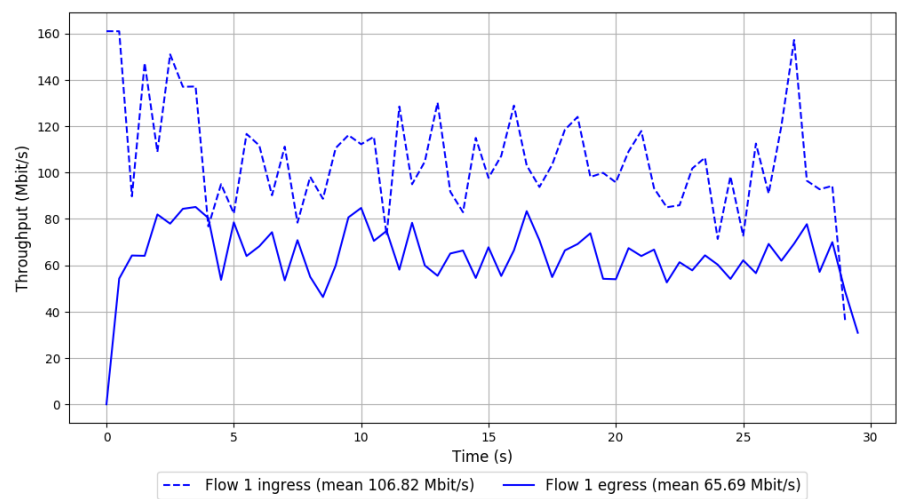
Run 2: Report of Indigo-MusesT — Data Link

```
Run 3: Statistics of Indigo-MusesT

Start at: 2019-01-02 20:15:58
End at: 2019-01-02 20:16:28
Local clock offset: -6.091 ms
Remote clock offset: -1.387 ms


# Below is generated by plot.py at 2019-01-02 21:20:27
# Datalink statistics
-- Total of 1 flow:
Average throughput: 65.69 Mbit/s
95th percentile per-packet one-way delay: 67.132 ms
Loss rate: 38.47%
-- Flow 1:
Average throughput: 65.69 Mbit/s
95th percentile per-packet one-way delay: 67.132 ms
Loss rate: 38.47%
```

Run 3: Report of Indigo-MusesT — Data Link

```
Run 4: Statistics of Indigo-MusesT

Start at: 2019-01-02 20:38:09
End at: 2019-01-02 20:38:39
Local clock offset: -5.96 ms
Remote clock offset: -1.99 ms


# Below is generated by plot.py at 2019-01-02 21:20:28
# Datalink statistics
-- Total of 1 flow:
Average throughput: 64.60 Mbit/s
95th percentile per-packet one-way delay: 67.278 ms
Loss rate: 38.10%
-- Flow 1:
Average throughput: 64.60 Mbit/s
95th percentile per-packet one-way delay: 67.278 ms
Loss rate: 38.10%
```
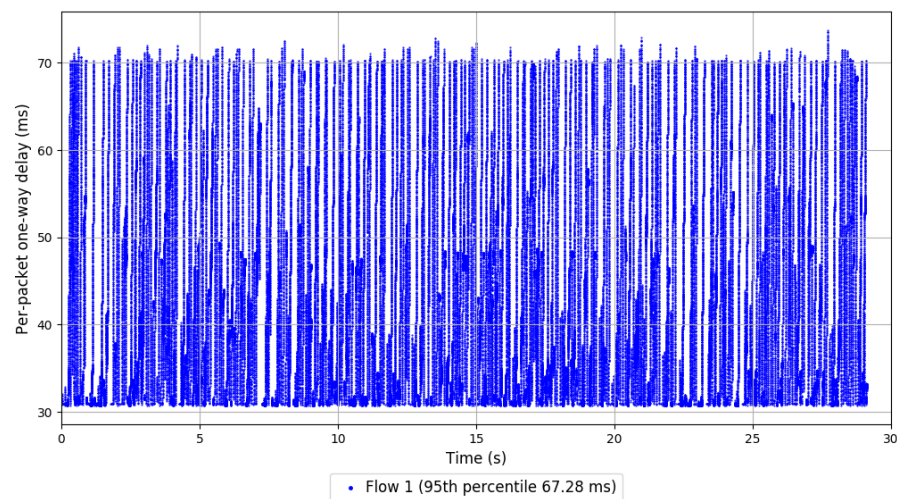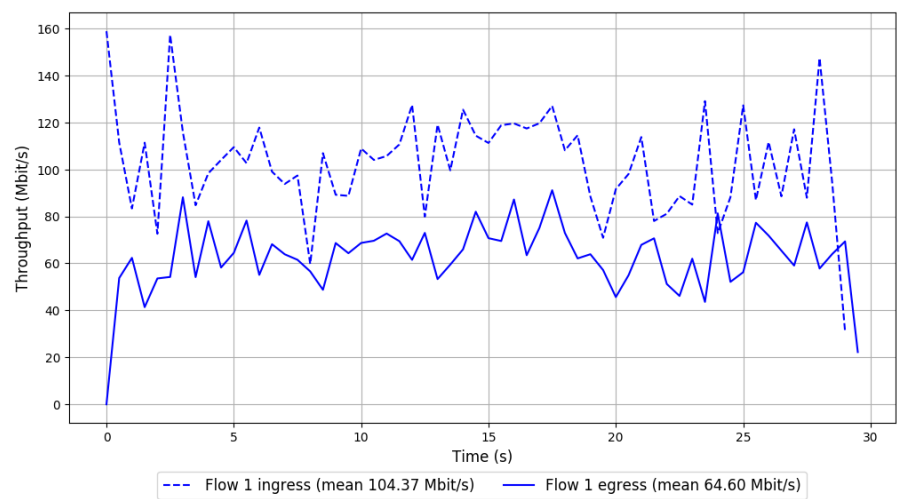
Run 4: Report of Indigo-MusesT — Data Link

Flow 1 ingress (mean 104.37 Mbit/s) --- Flow 1 egress (mean 64.60 Mbit/s)
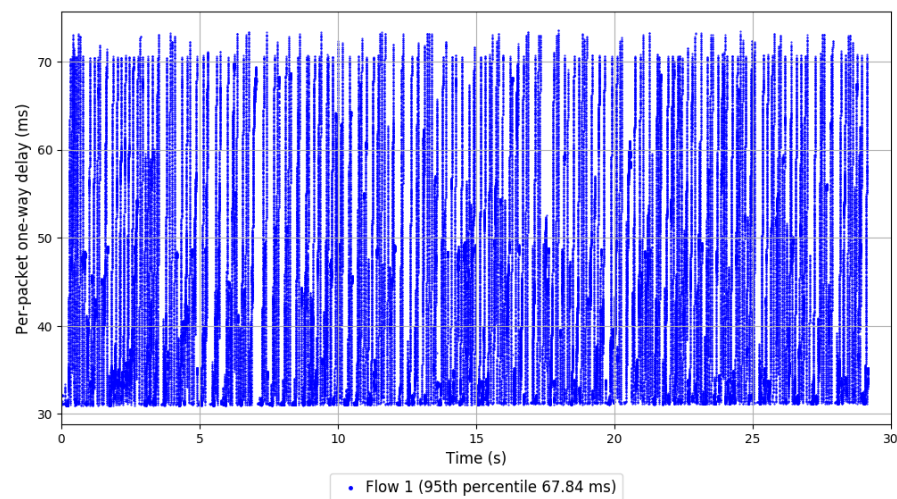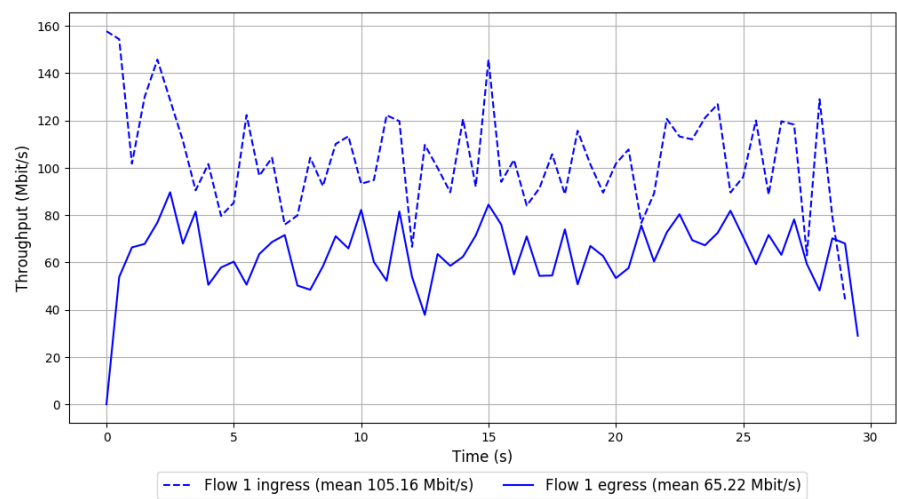

• Flow 1 (95th percentile 67.28 ms)

```
Run 5: Statistics of Indigo-MusesT

Start at: 2019-01-02 21:00:07
End at: 2019-01-02 21:00:37
Local clock offset: -4.446 ms
Remote clock offset: -2.839 ms


# Below is generated by plot.py at 2019-01-02 21:20:31
# Datalink statistics
-- Total of 1 flow:
Average throughput: 65.22 Mbit/s
95th percentile per-packet one-way delay: 67.844 ms
Loss rate: 37.98%
-- Flow 1:
Average throughput: 65.22 Mbit/s
95th percentile per-packet one-way delay: 67.844 ms
Loss rate: 37.98%
```

Run 5: Report of Indigo-MusesT — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2019-01-02 19:36:04
End at: 2019-01-02 19:36:34
Local clock offset: -11.71 ms
Remote clock offset: -1.537 ms


# Below is generated by plot.py at 2019-01-02 21:20:31
# Datalink statistics
-- Total of 1 flow:
Average throughput: 24.87 Mbit/s
95th percentile per-packet one-way delay: 31.344 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 24.87 Mbit/s
95th percentile per-packet one-way delay: 31.344 ms
Loss rate: 0.23%
```
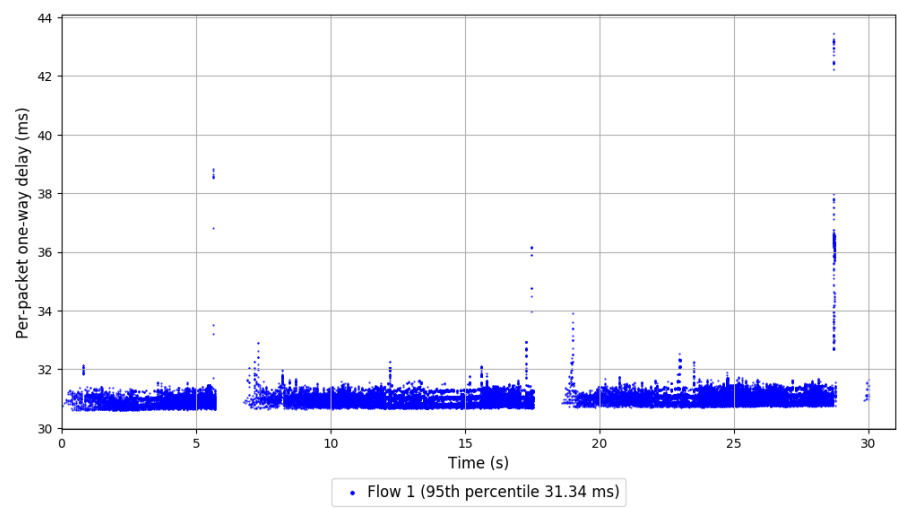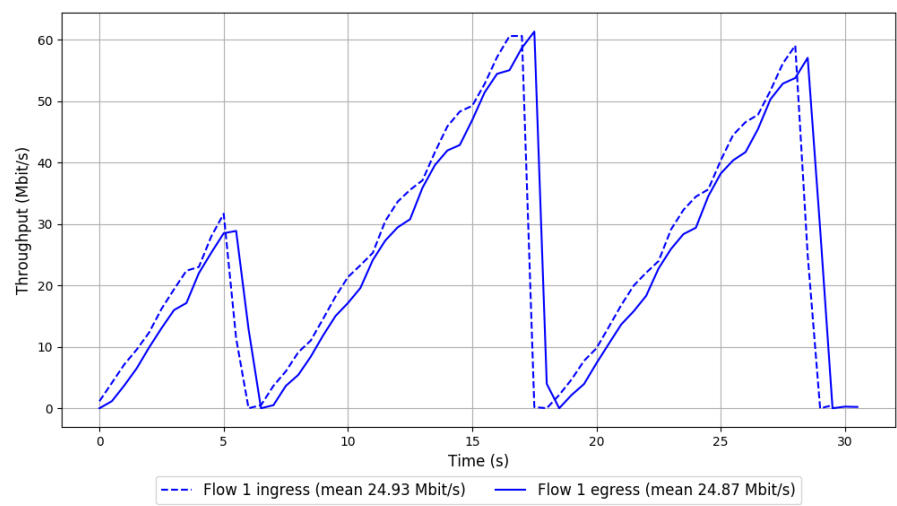
Run 1: Report of LEDBAT — Data Link

Flow 1 ingress (mean 24.93 Mbit/s)   Flow 1 egress (mean 24.87 Mbit/s)
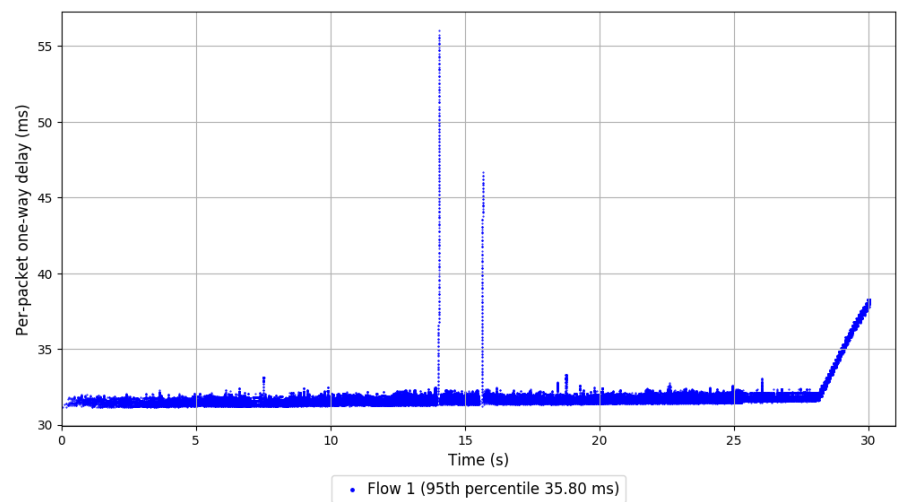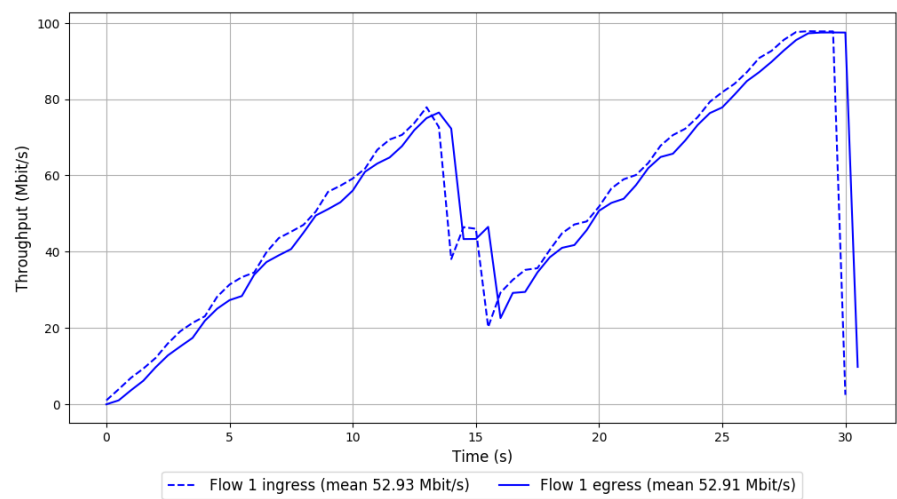

Flow 1 (95th percentile 31.34 ms)

```
Run 2: Statistics of LEDBAT

Start at: 2019-01-02 19:58:02
End at: 2019-01-02 19:58:32
Local clock offset: -10.059 ms
Remote clock offset: -1.113 ms


# Below is generated by plot.py at 2019-01-02 21:20:31
# Datalink statistics
-- Total of 1 flow:
Average throughput: 52.91 Mbit/s
95th percentile per-packet one-way delay: 35.796 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 52.91 Mbit/s
95th percentile per-packet one-way delay: 35.796 ms
Loss rate: 0.01%
```
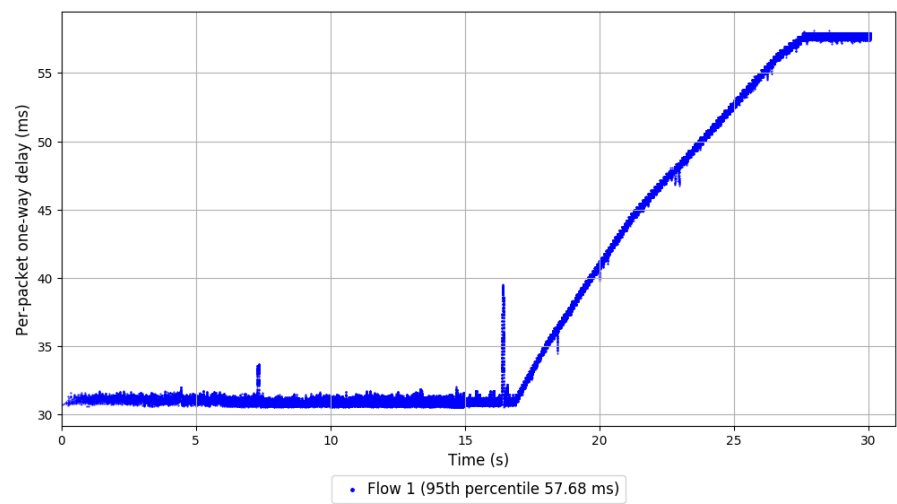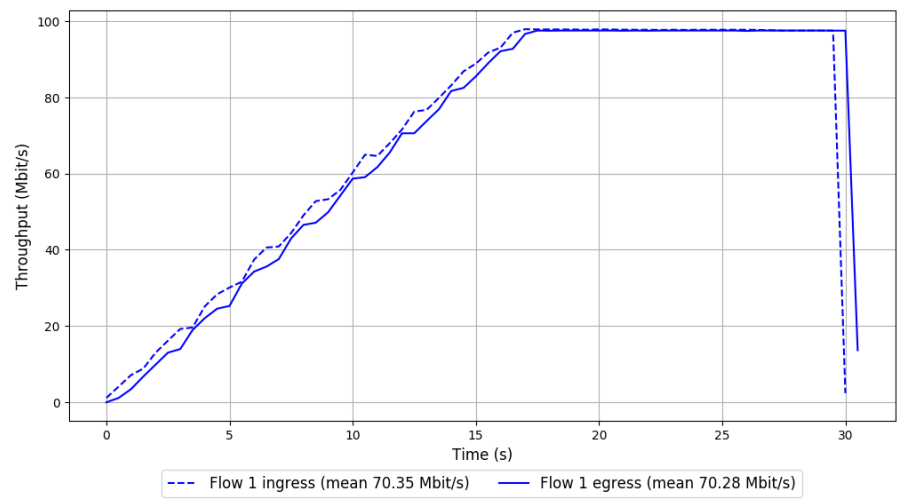
Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2019-01-02 20:20:29
End at: 2019-01-02 20:20:59
Local clock offset: -6.694 ms
Remote clock offset: -1.515 ms


# Below is generated by plot.py at 2019-01-02 21:20:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 70.28 Mbit/s
95th percentile per-packet one-way delay: 57.676 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 70.28 Mbit/s
95th percentile per-packet one-way delay: 57.676 ms
Loss rate: 0.00%
```

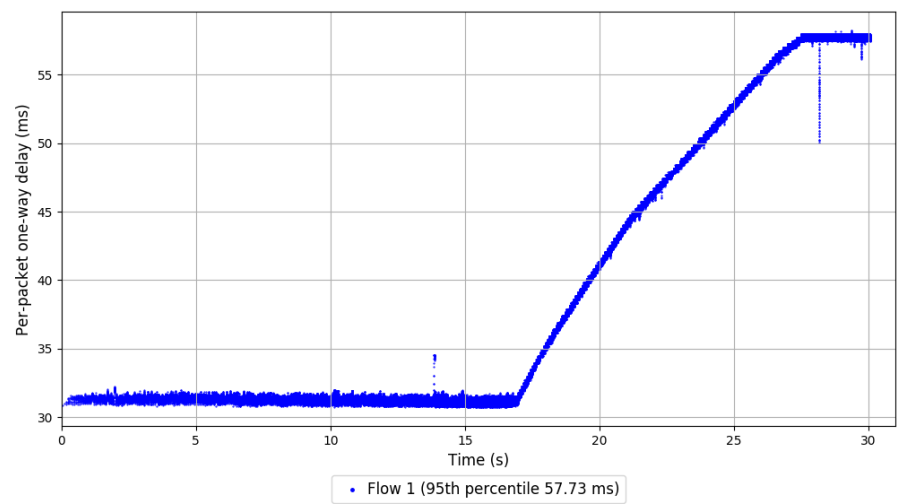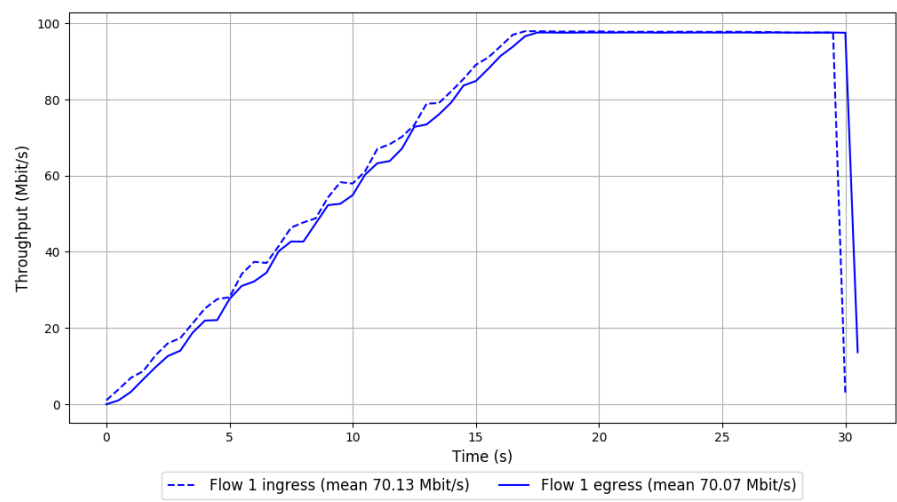Run 3: Report of LEDBAT — Data Link

```
Run 4: Statistics of LEDBAT

Start at: 2019-01-02 20:42:38
End at: 2019-01-02 20:43:08
Local clock offset: -6.333 ms
Remote clock offset: -2.287 ms


# Below is generated by plot.py at 2019-01-02 21:20:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 70.07 Mbit/s
95th percentile per-packet one-way delay: 57.733 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 70.07 Mbit/s
95th percentile per-packet one-way delay: 57.733 ms
Loss rate: 0.00%
```

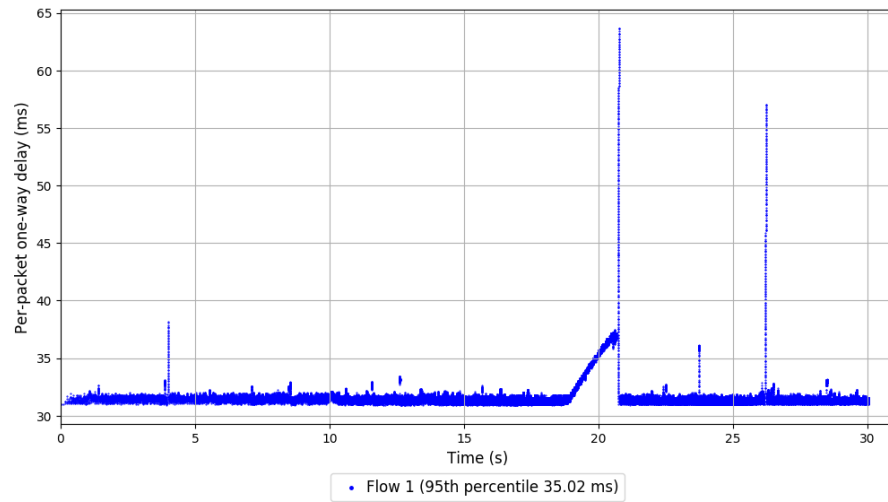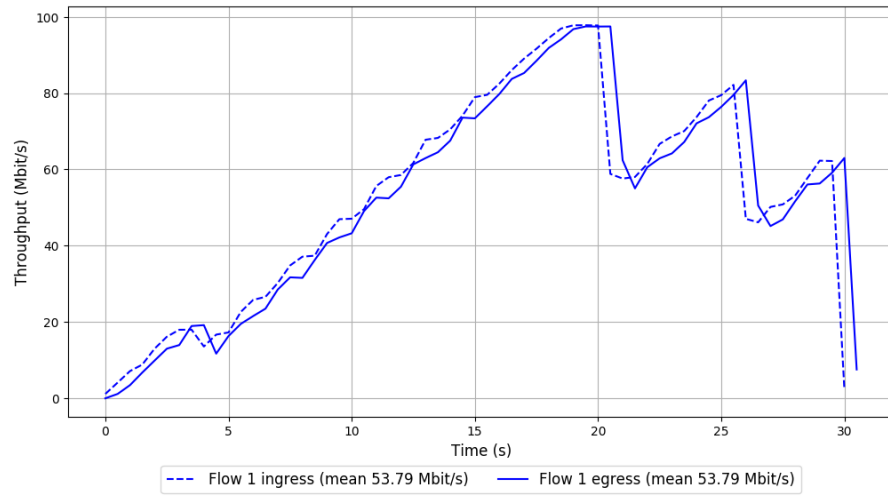# Run 4: Report of LEDBAT — Data Link

```
Run 5: Statistics of LEDBAT

Start at: 2019-01-02 21:04:39
End at: 2019-01-02 21:05:09
Local clock offset: -2.986 ms
Remote clock offset: -3.132 ms


# Below is generated by plot.py at 2019-01-02 21:20:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 53.79 Mbit/s
95th percentile per-packet one-way delay: 35.017 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 53.79 Mbit/s
95th percentile per-packet one-way delay: 35.017 ms
Loss rate: 0.00%
```

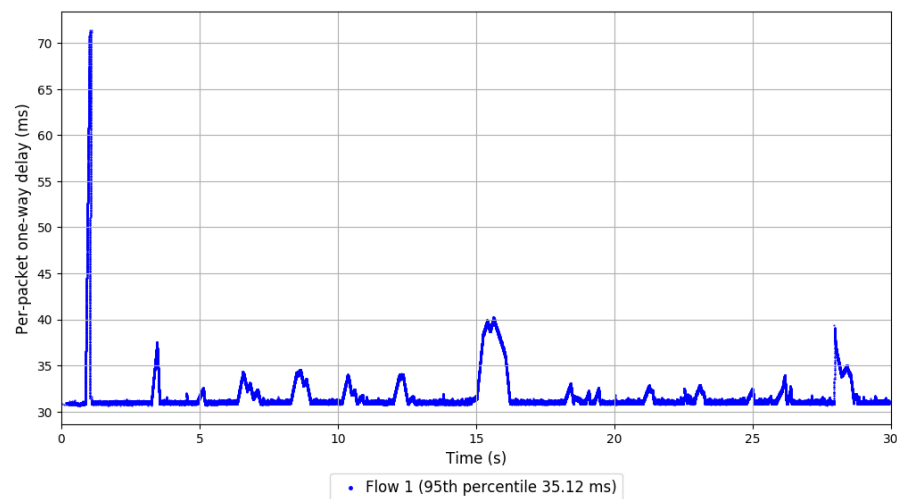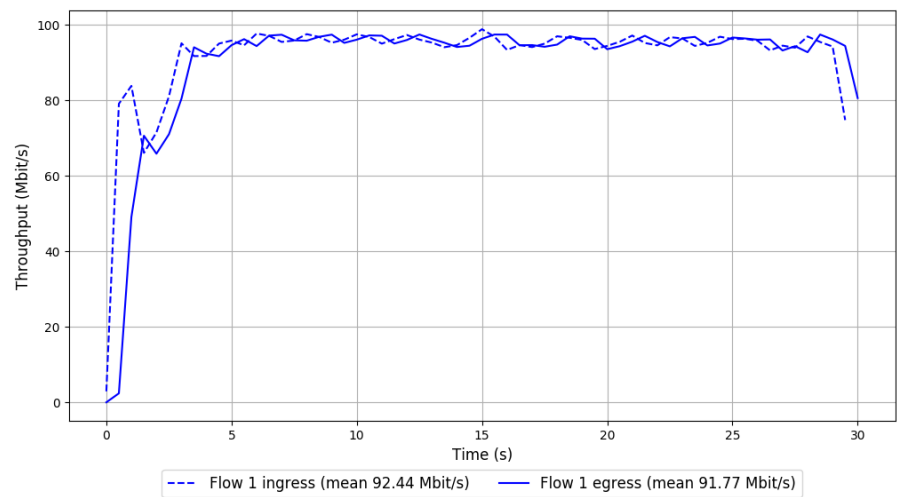# Run 5: Report of LEDBAT — Data Link

```
Run 1: Statistics of PCC-Allegro

Start at: 2019-01-02 19:39:38
End at: 2019-01-02 19:40:08
Local clock offset: -11.001 ms
Remote clock offset: -1.279 ms


# Below is generated by plot.py at 2019-01-02 21:21:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.77 Mbit/s
95th percentile per-packet one-way delay: 35.118 ms
Loss rate: 0.72%
-- Flow 1:
Average throughput: 91.77 Mbit/s
95th percentile per-packet one-way delay: 35.118 ms
Loss rate: 0.72%
```

Run 1: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 92.44 Mbit/s)   Flow 1 egress (mean 91.77 Mbit/s)

Flow 1 (95th percentile 35.12 ms)

```
Run 2: Statistics of PCC-Allegro

Start at: 2019-01-02 20:01:39
End at: 2019-01-02 20:02:09
Local clock offset: -7.599 ms
Remote clock offset: -1.11 ms


# Below is generated by plot.py at 2019-01-02 21:21:27
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.64 Mbit/s
95th percentile per-packet one-way delay: 36.443 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 91.64 Mbit/s
95th percentile per-packet one-way delay: 36.443 ms
Loss rate: 0.69%
```
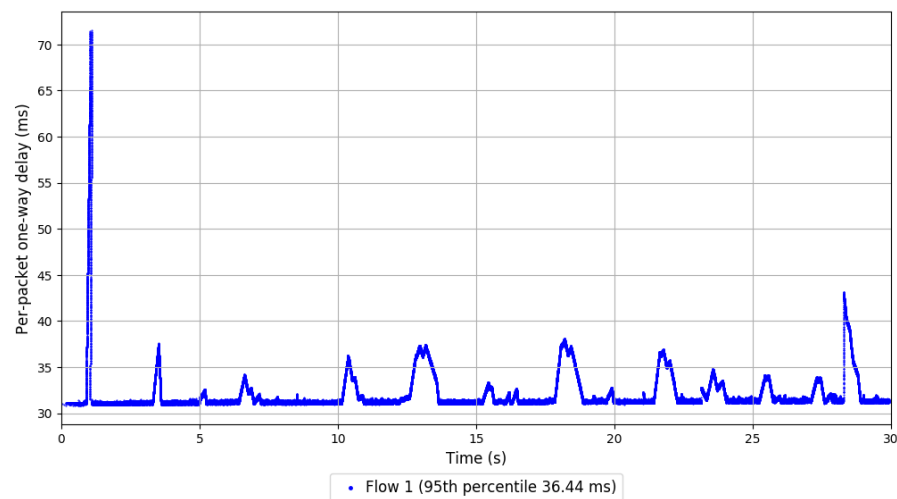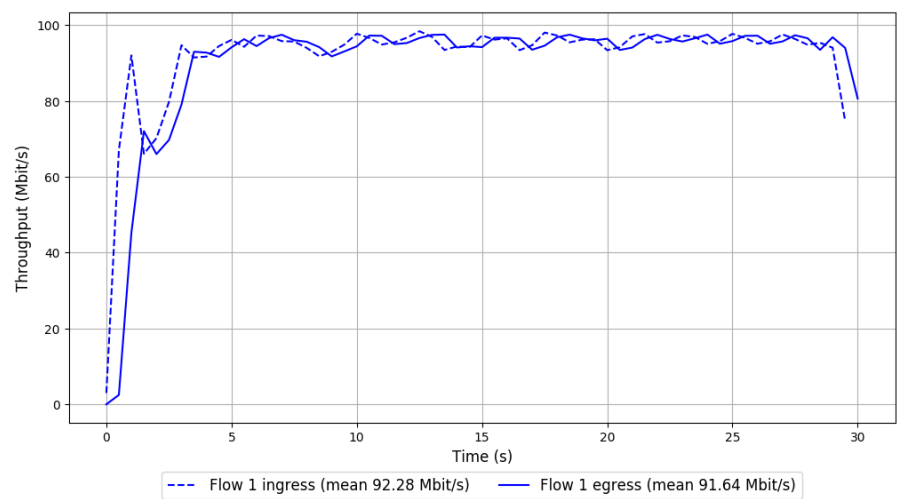
Run 2: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 92.28 Mbit/s) ---- Flow 1 egress (mean 91.64 Mbit/s) ——

• Flow 1 (95th percentile 36.44 ms)

```
Run 3: Statistics of PCC-Allegro

Start at: 2019-01-02 20:24:09
End at: 2019-01-02 20:24:39
Local clock offset: -7.302 ms
Remote clock offset: -1.51 ms


# Below is generated by plot.py at 2019-01-02 21:21:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.92 Mbit/s
95th percentile per-packet one-way delay: 34.319 ms
Loss rate: 0.71%
-- Flow 1:
Average throughput: 89.92 Mbit/s
95th percentile per-packet one-way delay: 34.319 ms
Loss rate: 0.71%
```
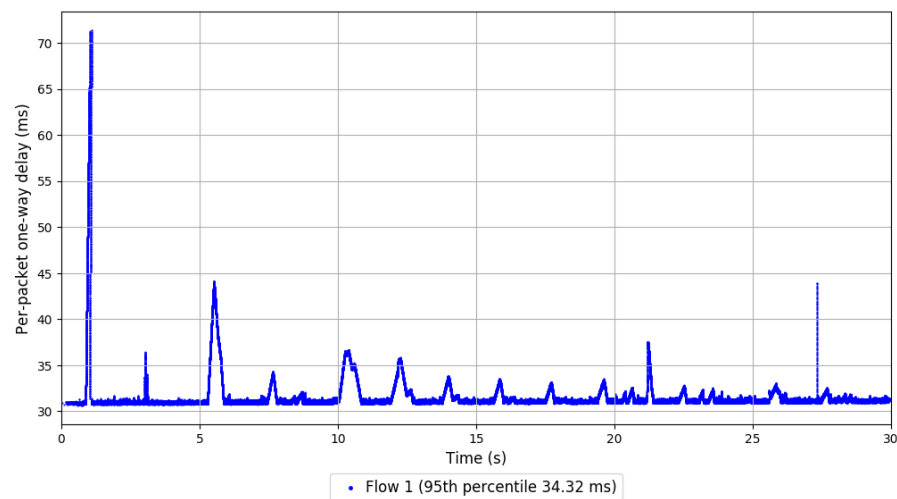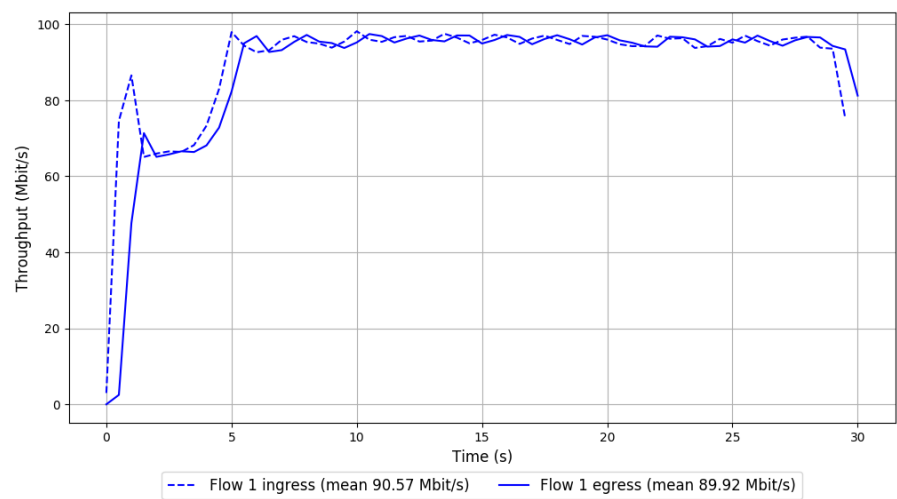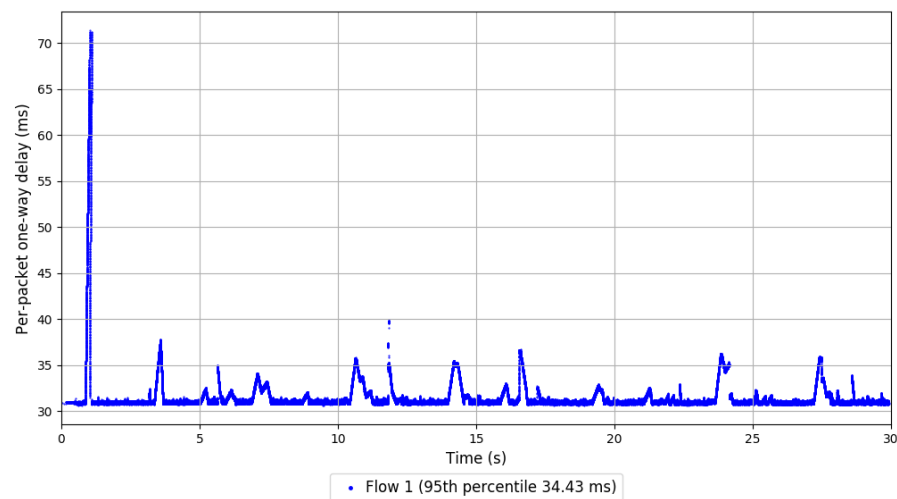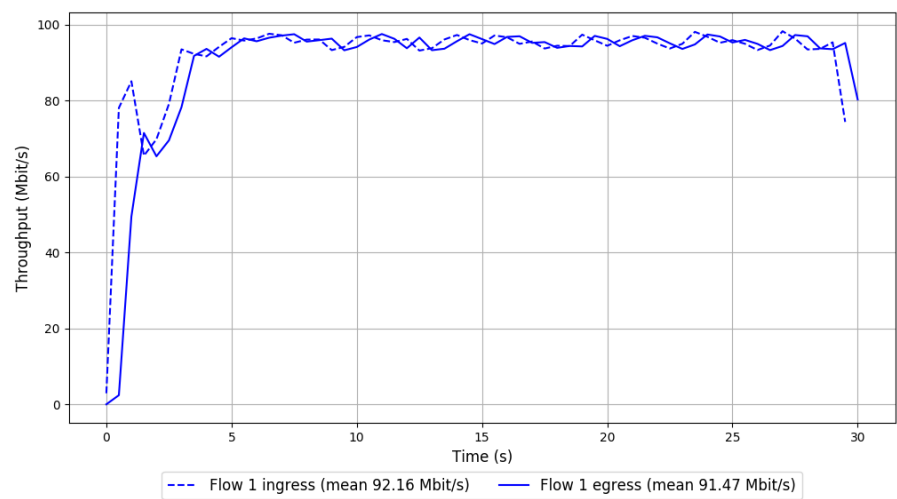
Run 3: Report of PCC-Allegro — Data Link

```
Run 4: Statistics of PCC-Allegro

Start at: 2019-01-02 20:46:11
End at: 2019-01-02 20:46:41
Local clock offset: -6.743 ms
Remote clock offset: -2.521 ms


# Below is generated by plot.py at 2019-01-02 21:21:39
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.47 Mbit/s
95th percentile per-packet one-way delay: 34.427 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 91.47 Mbit/s
95th percentile per-packet one-way delay: 34.427 ms
Loss rate: 0.75%
```

Run 4: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 92.16 Mbit/s)   Flow 1 egress (mean 91.47 Mbit/s)

Flow 1 (95th percentile 34.43 ms)

```
Run 5: Statistics of PCC-Allegro

Start at: 2019-01-02 21:08:22
End at: 2019-01-02 21:08:52
Local clock offset: -2.343 ms
Remote clock offset: -3.491 ms


# Below is generated by plot.py at 2019-01-02 21:21:42
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.70 Mbit/s
95th percentile per-packet one-way delay: 35.491 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 91.70 Mbit/s
95th percentile per-packet one-way delay: 35.491 ms
Loss rate: 0.73%
```
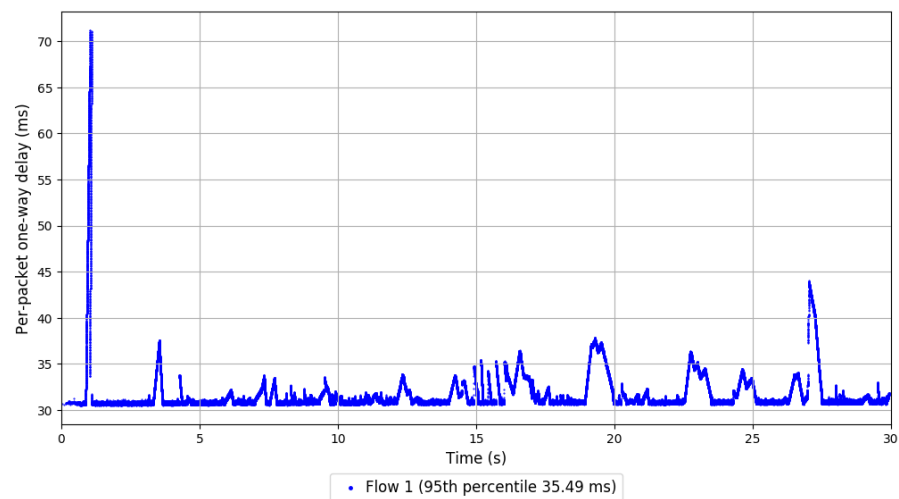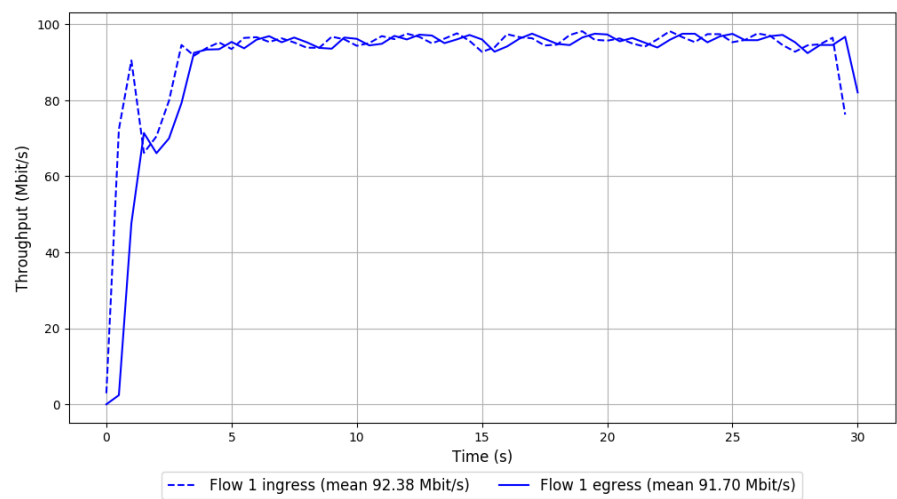
Run 5: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 92.38 Mbit/s)   Flow 1 egress (mean 91.70 Mbit/s)
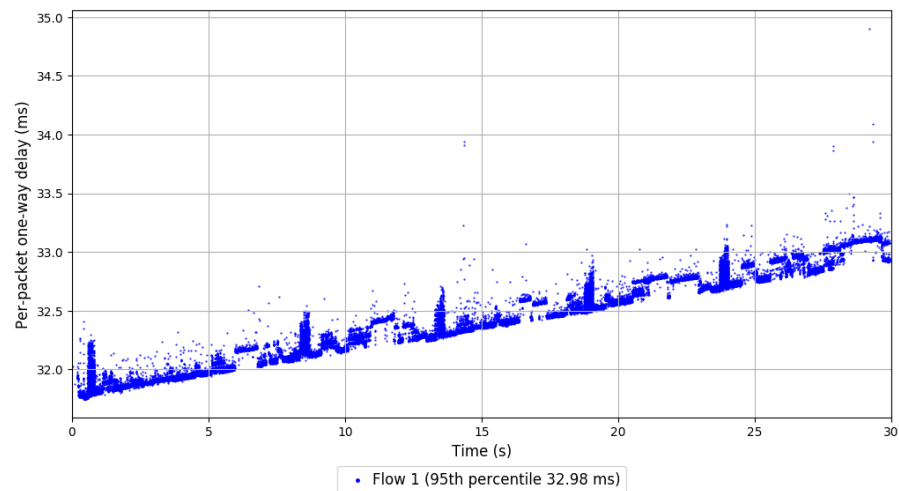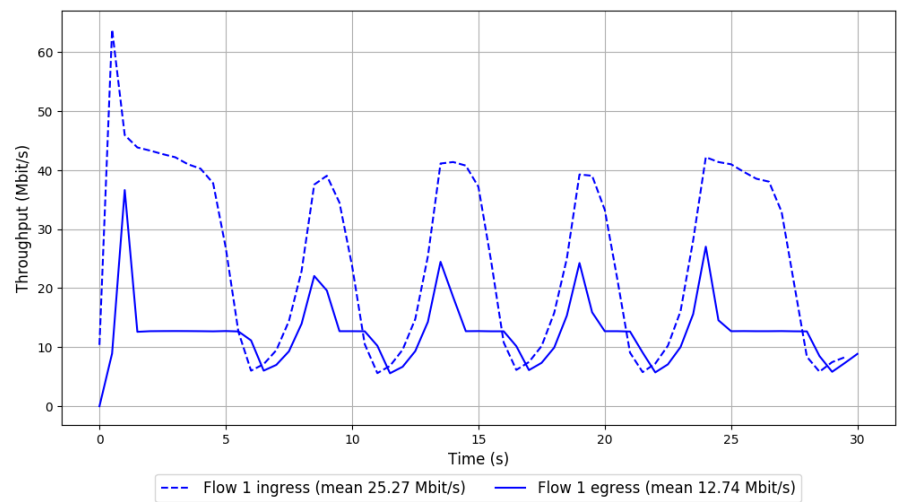

• Flow 1 (95th percentile 35.49 ms)

```
Run 1: Statistics of PCC-Expr

Start at: 2019-01-02 19:24:32
End at: 2019-01-02 19:25:02
Local clock offset: -25.759 ms
Remote clock offset: -1.446 ms


# Below is generated by plot.py at 2019-01-02 21:21:42
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.74 Mbit/s
95th percentile per-packet one-way delay: 32.977 ms
Loss rate: 49.57%
-- Flow 1:
Average throughput: 12.74 Mbit/s
95th percentile per-packet one-way delay: 32.977 ms
Loss rate: 49.57%
```

Run 1: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 25.27 Mbit/s)   Flow 1 egress (mean 12.74 Mbit/s)

Flow 1 (95th percentile 32.98 ms)
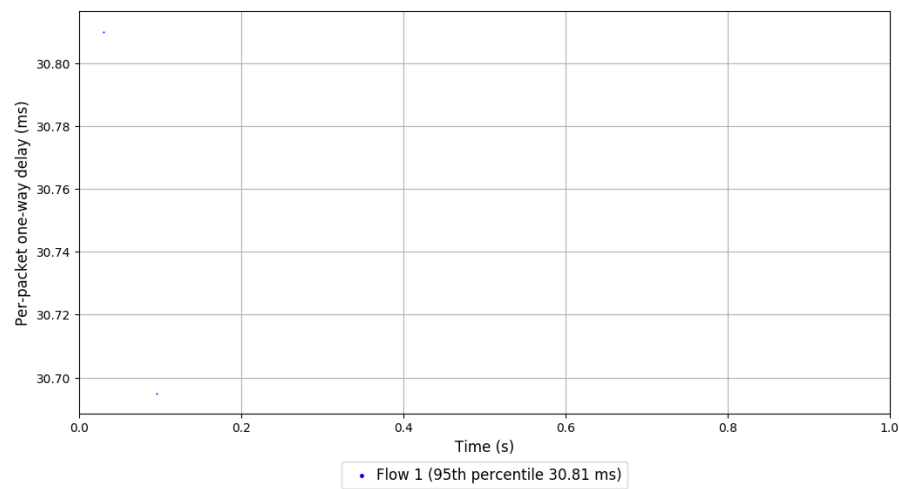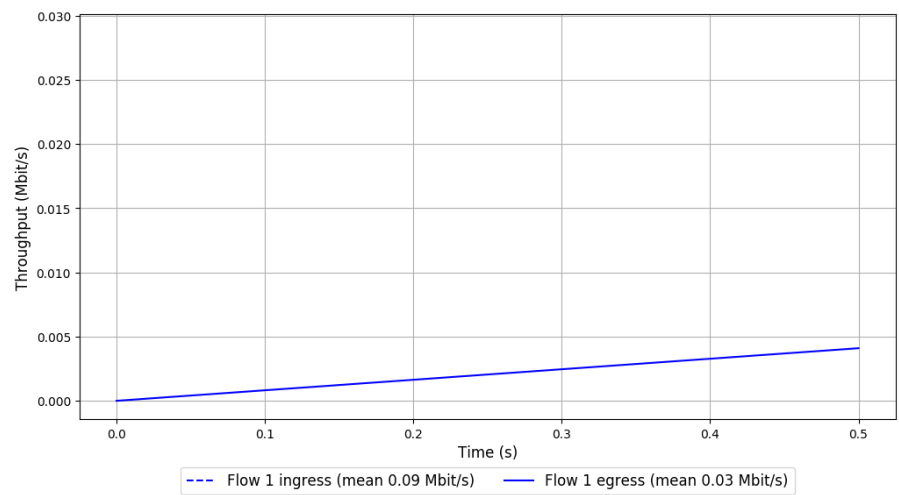
```
Run 2: Statistics of PCC-Expr

Start at: 2019-01-02 19:46:33
End at: 2019-01-02 19:47:03
Local clock offset: -11.571 ms
Remote clock offset: -1.202 ms
```

Run 2: Report of PCC-Expr — Data Link

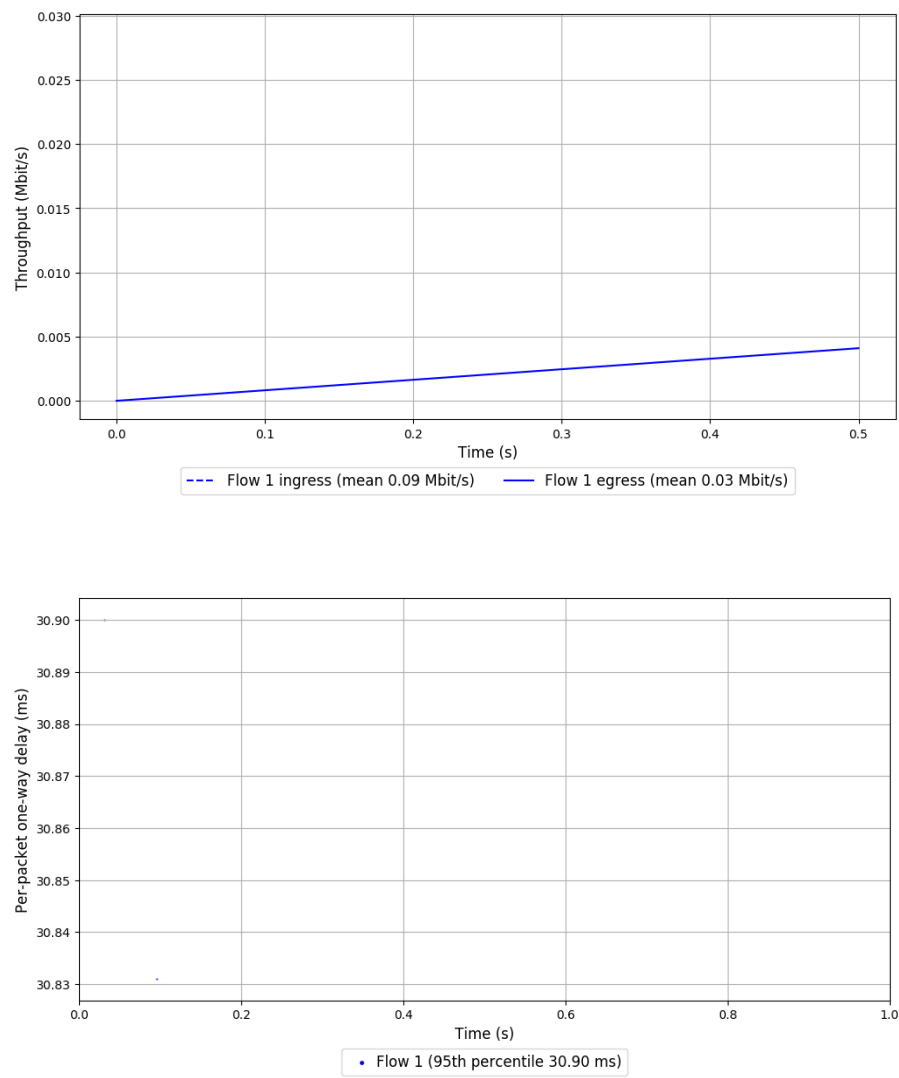```
Run 3: Statistics of PCC-Expr

Start at: 2019-01-02 20:09:01
End at: 2019-01-02 20:09:31
Local clock offset: -5.9 ms
Remote clock offset: -1.248 ms
```

# Run 3: Report of PCC-Expr — Data Link

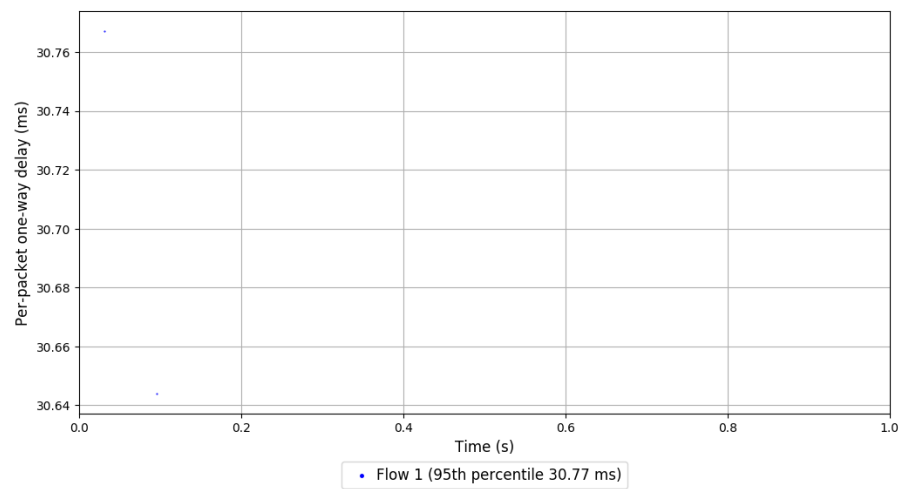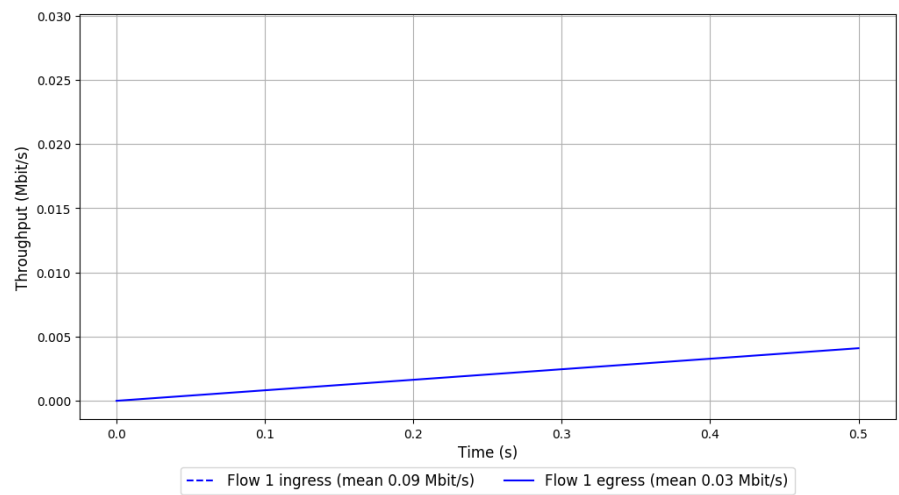Run 4: Statistics of PCC-Expr

Start at: 2019-01-02 20:31:12
End at: 2019-01-02 20:31:42
Local clock offset: -6.004 ms
Remote clock offset: -1.792 ms

## Run 4: Report of PCC-Expr — Data Link



Flow 1 ingress (mean 0.09 Mbit/s)    Flow 1 egress (mean 0.03 Mbit/s)



Flow 1 (95th percentile 30.77 ms)
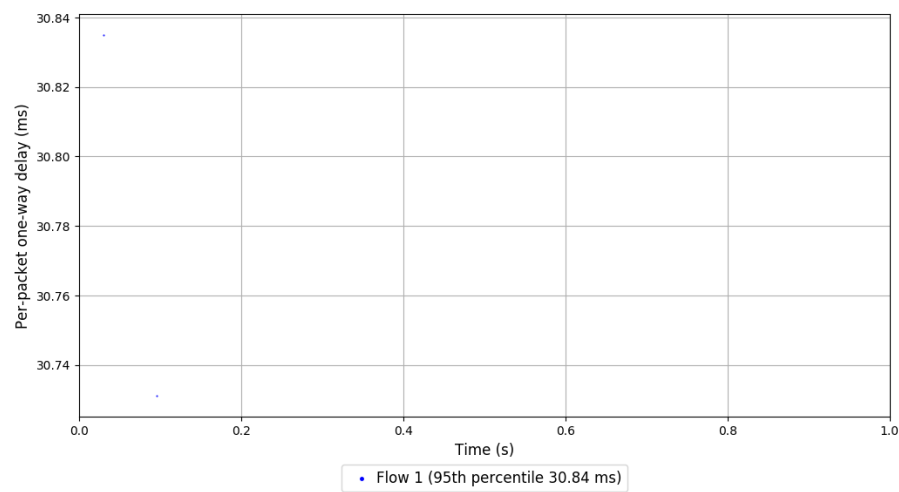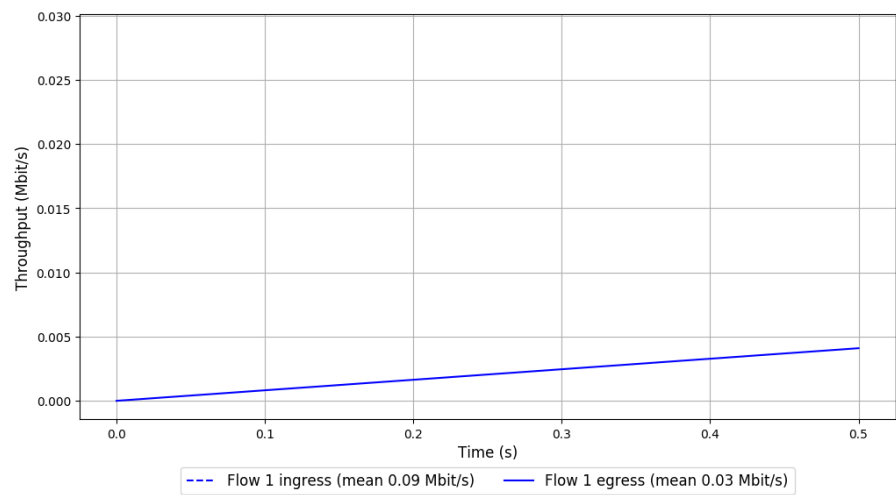
Run 5: Statistics of PCC-Expr

Start at: 2019-01-02 20:53:11
End at: 2019-01-02 20:53:41
Local clock offset: -7.655 ms
Remote clock offset: -2.728 ms

# Run 5: Report of PCC-Expr — Data Link



Flow 1 ingress (mean 0.09 Mbit/s)    Flow 1 egress (mean 0.03 Mbit/s)
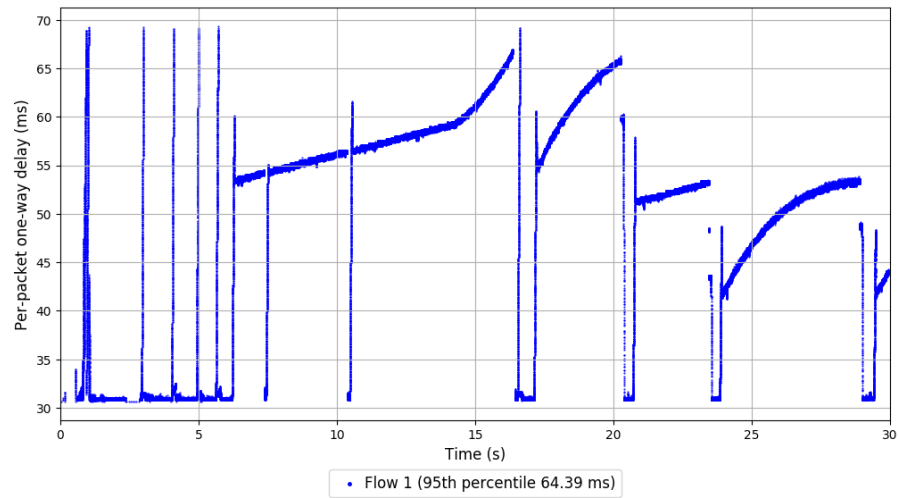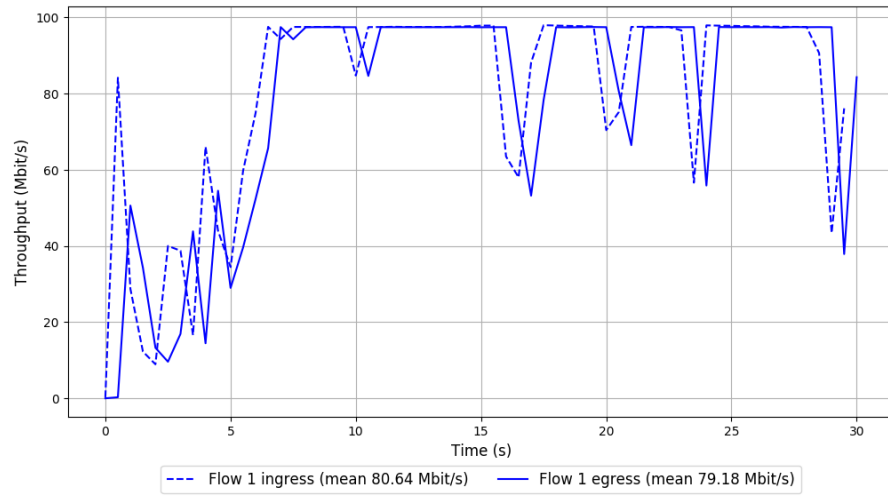


Flow 1 (95th percentile 30.84 ms)

```
Run 1: Statistics of QUIC Cubic

Start at: 2019-01-02 19:38:28
End at: 2019-01-02 19:38:58
Local clock offset: -11.141 ms
Remote clock offset: -1.329 ms


# Below is generated by plot.py at 2019-01-02 21:21:42
# Datalink statistics
-- Total of 1 flow:
Average throughput: 79.18 Mbit/s
95th percentile per-packet one-way delay: 64.390 ms
Loss rate: 1.77%
-- Flow 1:
Average throughput: 79.18 Mbit/s
95th percentile per-packet one-way delay: 64.390 ms
Loss rate: 1.77%
```

Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2019-01-02 20:00:28
End at: 2019-01-02 20:00:58
Local clock offset: -8.312 ms
Remote clock offset: -1.085 ms


# Below is generated by plot.py at 2019-01-02 21:21:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 79.85 Mbit/s
95th percentile per-packet one-way delay: 66.307 ms
Loss rate: 1.66%
-- Flow 1:
Average throughput: 79.85 Mbit/s
95th percentile per-packet one-way delay: 66.307 ms
Loss rate: 1.66%
```
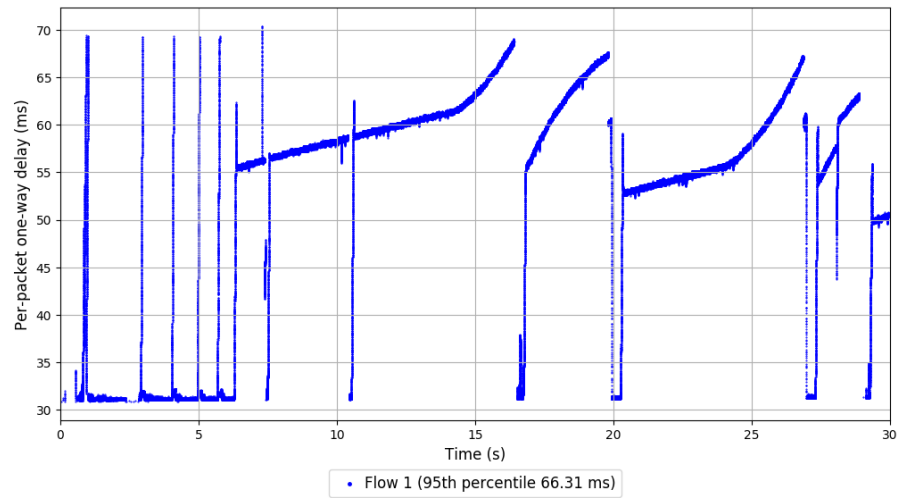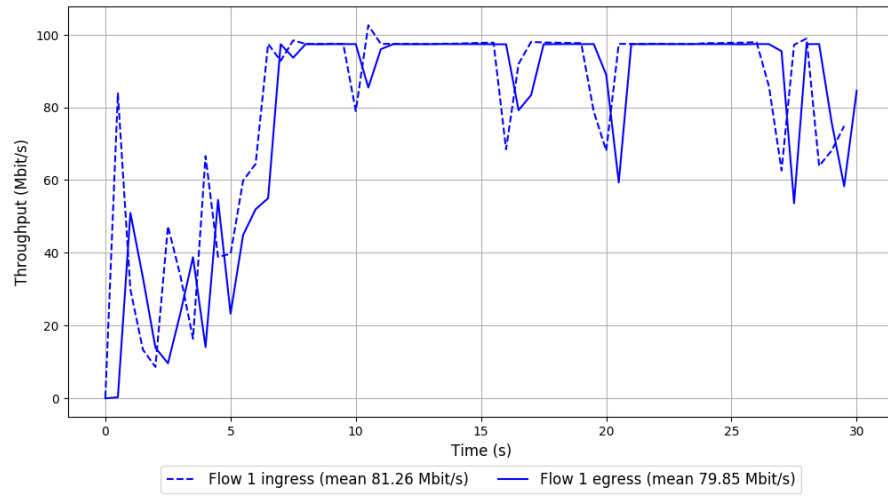
Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2019-01-02 20:22:57
End at: 2019-01-02 20:23:27
Local clock offset: -7.098 ms
Remote clock offset: -1.495 ms


# Below is generated by plot.py at 2019-01-02 21:21:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 81.53 Mbit/s
95th percentile per-packet one-way delay: 58.510 ms
Loss rate: 0.92%
-- Flow 1:
Average throughput: 81.53 Mbit/s
95th percentile per-packet one-way delay: 58.510 ms
Loss rate: 0.92%
```
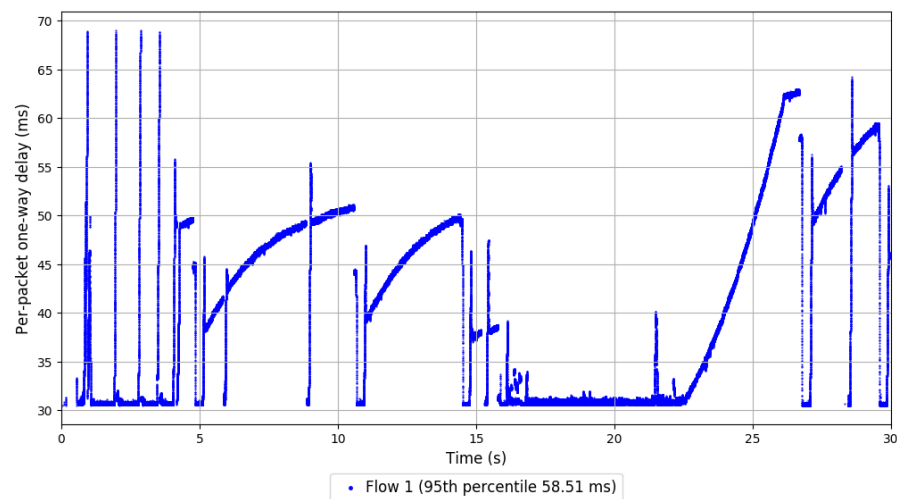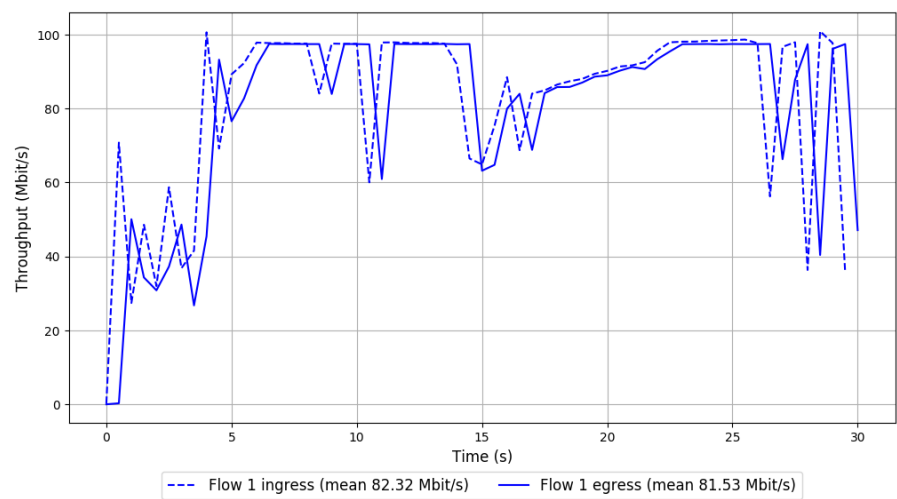
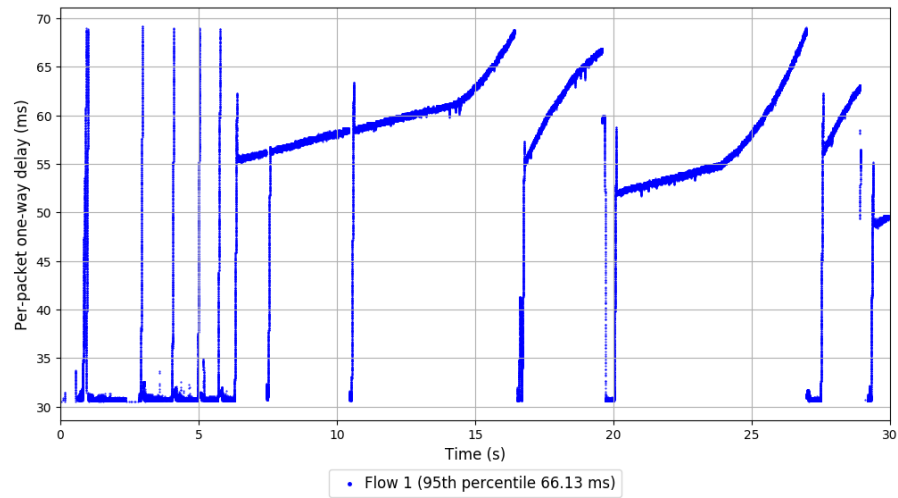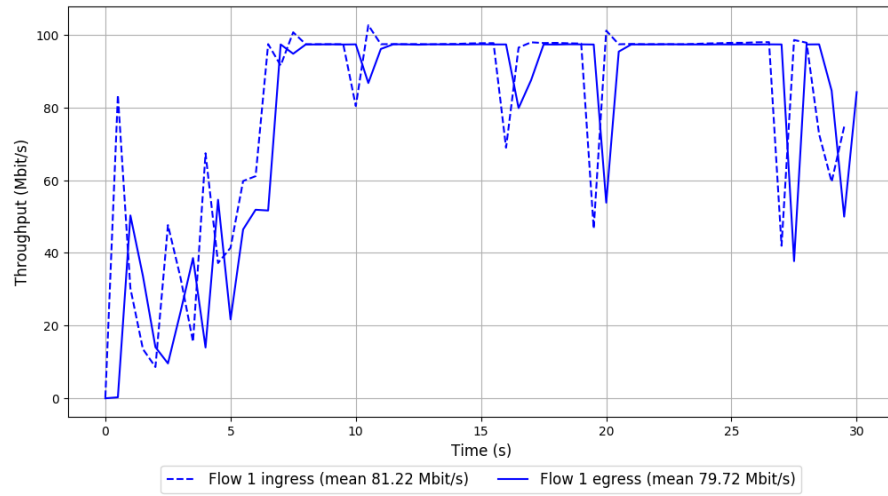Run 3: Report of QUIC Cubic — Data Link

```
Run 4: Statistics of QUIC Cubic

Start at: 2019-01-02 20:45:01
End at: 2019-01-02 20:45:31
Local clock offset: -6.574 ms
Remote clock offset: -2.471 ms


# Below is generated by plot.py at 2019-01-02 21:22:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 79.72 Mbit/s
95th percentile per-packet one-way delay: 66.133 ms
Loss rate: 1.79%
-- Flow 1:
Average throughput: 79.72 Mbit/s
95th percentile per-packet one-way delay: 66.133 ms
Loss rate: 1.79%
```

Run 4: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 81.22 Mbit/s)   Flow 1 egress (mean 79.72 Mbit/s)

Flow 1 (95th percentile 66.13 ms)

```
Run 5: Statistics of QUIC Cubic

Start at: 2019-01-02 21:07:08
End at: 2019-01-02 21:07:38
Local clock offset: -2.527 ms
Remote clock offset: -3.462 ms


# Below is generated by plot.py at 2019-01-02 21:22:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 78.65 Mbit/s
95th percentile per-packet one-way delay: 57.349 ms
Loss rate: 1.72%
-- Flow 1:
Average throughput: 78.65 Mbit/s
95th percentile per-packet one-way delay: 57.349 ms
Loss rate: 1.72%
```
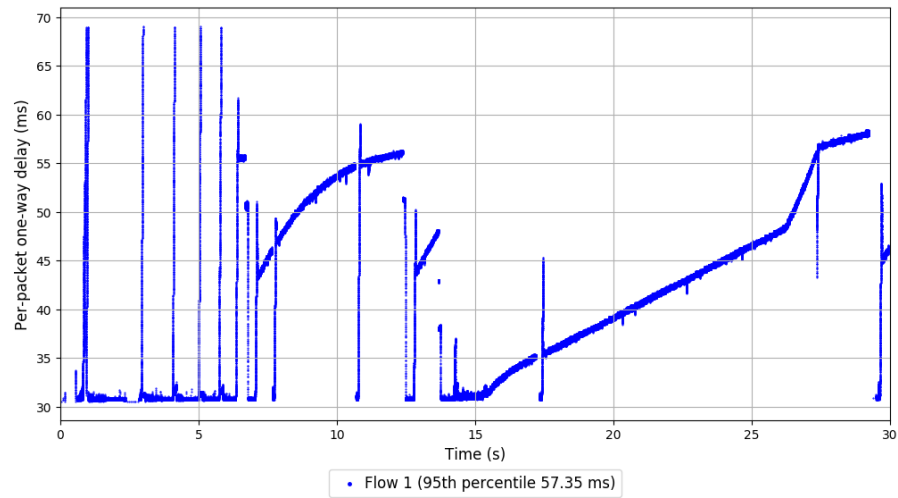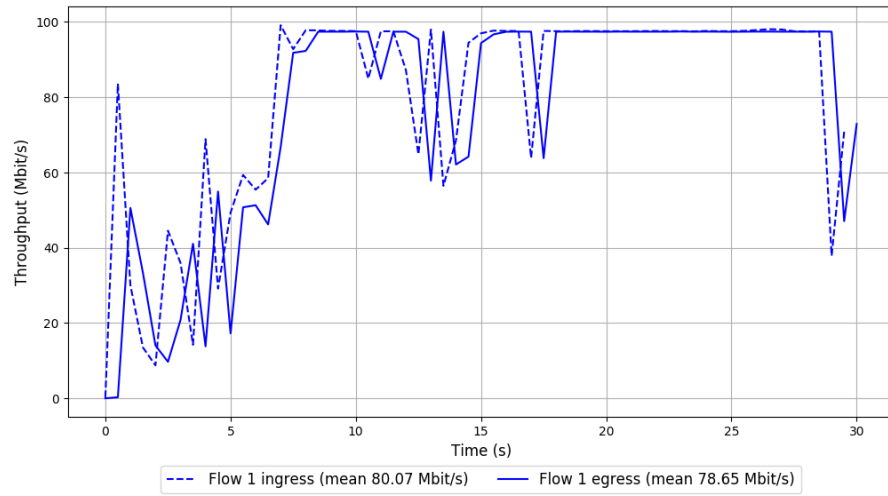
Run 5: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 80.07 Mbit/s)   Flow 1 egress (mean 78.65 Mbit/s)
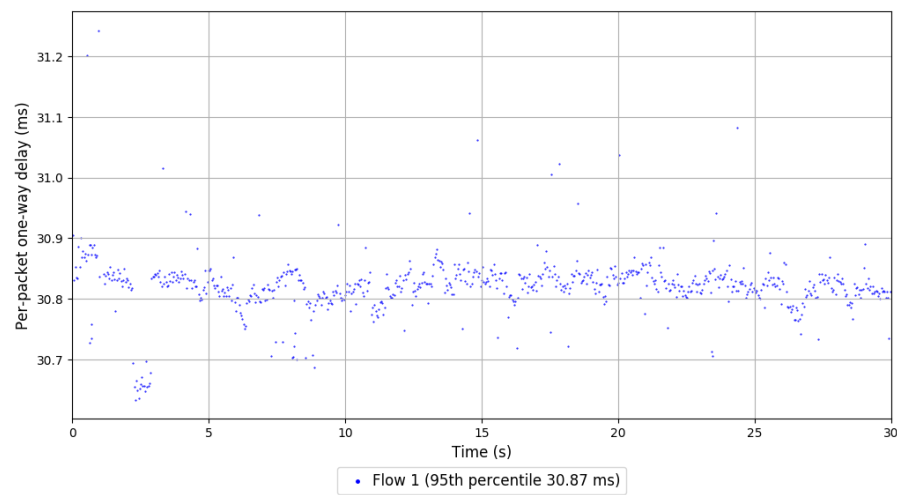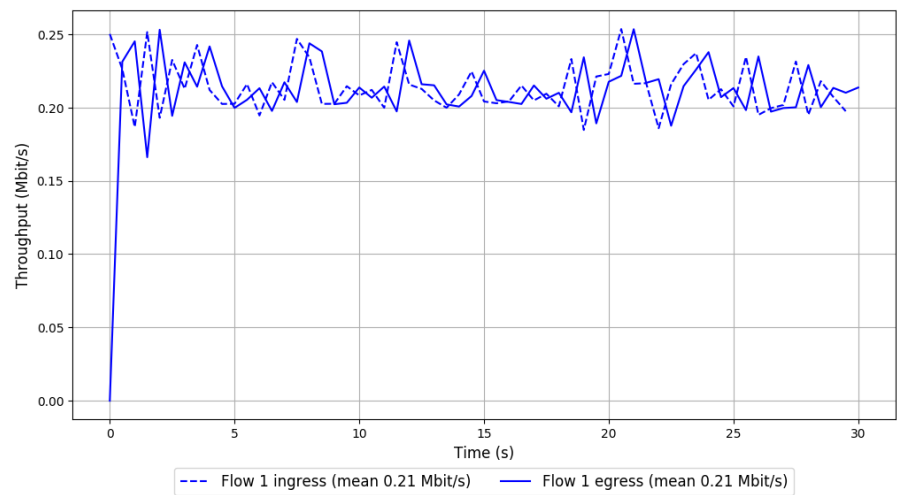

Flow 1 (95th percentile 57.35 ms)

```
Run 1: Statistics of SCReAM

Start at: 2019-01-02 19:41:57
End at: 2019-01-02 19:42:27
Local clock offset: -10.978 ms
Remote clock offset: -1.29 ms


# Below is generated by plot.py at 2019-01-02 21:22:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.871 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.871 ms
Loss rate: 0.00%
```

Run 1: Report of SCReAM — Data Link

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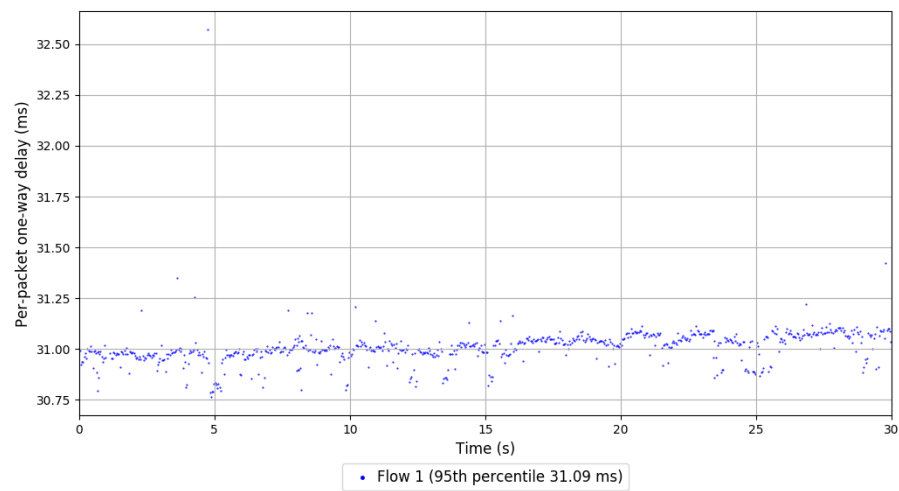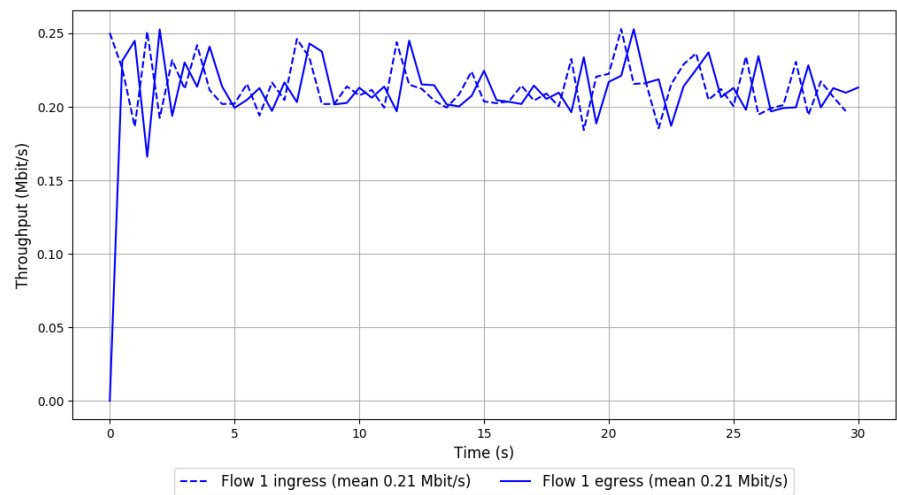

Flow 1 (95th percentile 30.87 ms)

```
Run 2: Statistics of SCReAM

Start at: 2019-01-02 20:04:05
End at: 2019-01-02 20:04:35
Local clock offset: -6.701 ms
Remote clock offset: -1.205 ms


# Below is generated by plot.py at 2019-01-02 21:22:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 31.091 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 31.091 ms
Loss rate: 0.00%
```

Run 2: Report of SCReAM — Data Link

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

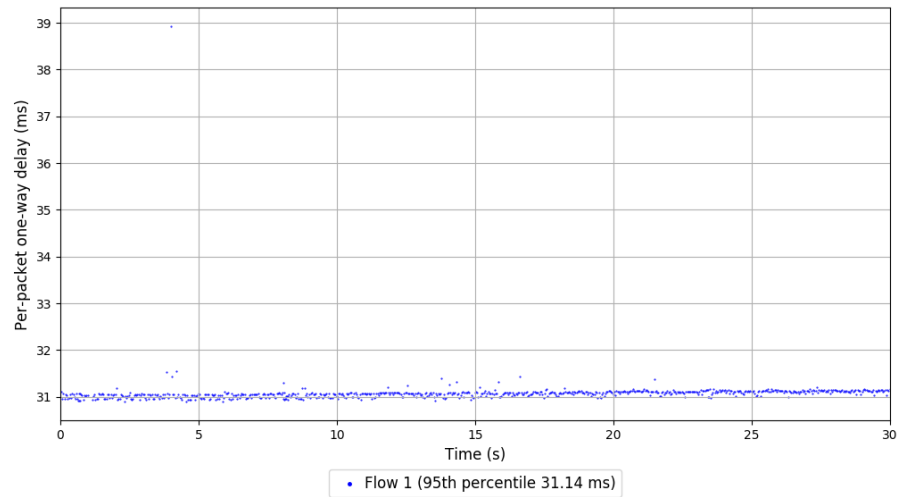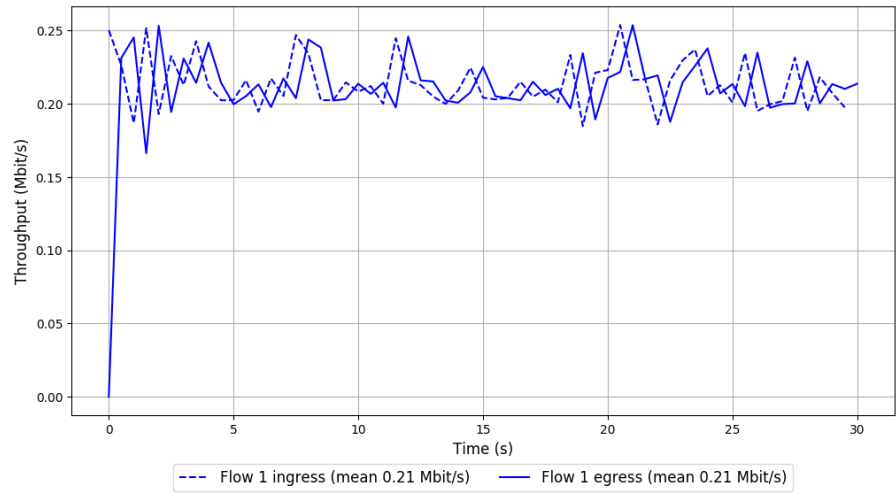Flow 1 (95th percentile 31.09 ms)

```
Run 3: Statistics of SCReAM

Start at: 2019-01-02 20:26:31
End at: 2019-01-02 20:27:01
Local clock offset: -6.785 ms
Remote clock offset: -1.523 ms


# Below is generated by plot.py at 2019-01-02 21:22:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 31.144 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 31.144 ms
Loss rate: 0.00%
```

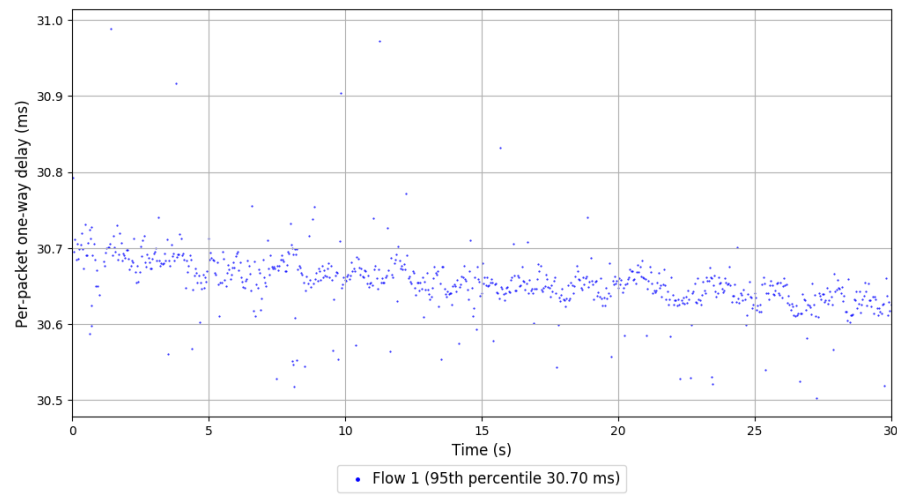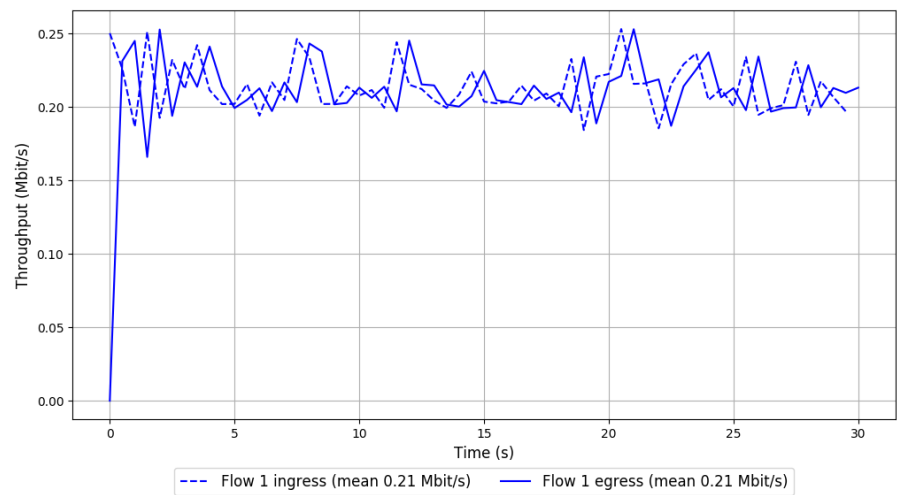# Run 3: Report of SCReAM — Data Link

```
Run 4: Statistics of SCReAM

Start at: 2019-01-02 20:48:31
End at: 2019-01-02 20:49:01
Local clock offset: -7.018 ms
Remote clock offset: -2.779 ms


# Below is generated by plot.py at 2019-01-02 21:22:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.705 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.705 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)
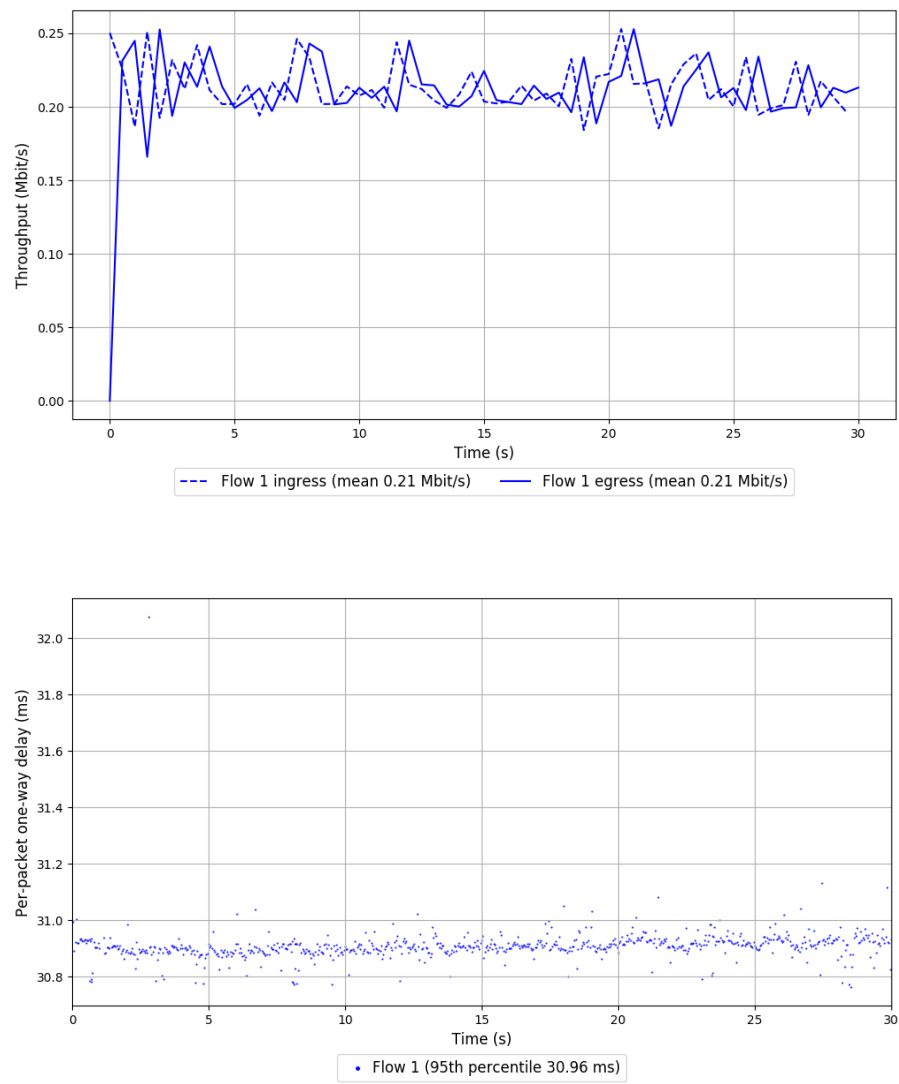

Flow 1 (95th percentile 30.70 ms)

```
Run 5: Statistics of SCReAM

Start at: 2019-01-02 21:10:45
End at: 2019-01-02 21:11:15
Local clock offset: -2.075 ms
Remote clock offset: -3.402 ms


# Below is generated by plot.py at 2019-01-02 21:22:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.962 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.962 ms
Loss rate: 0.00%
```

Run 5: Report of SCReAM — Data Link

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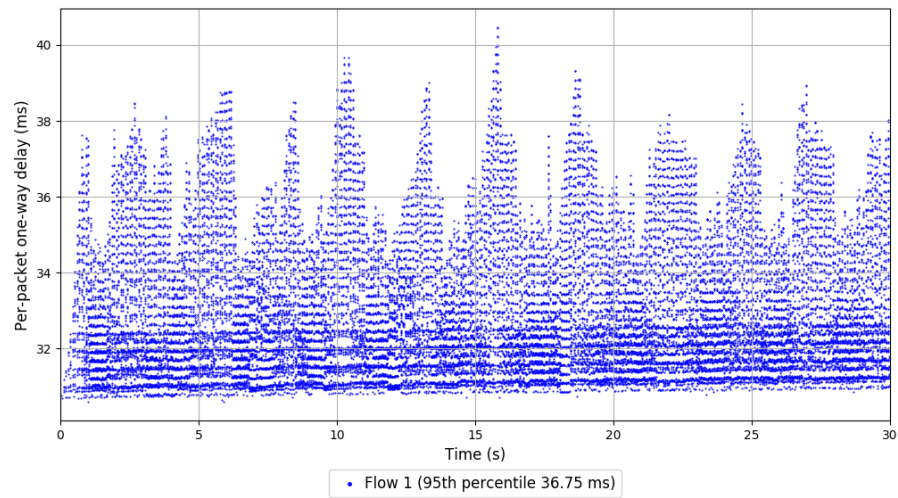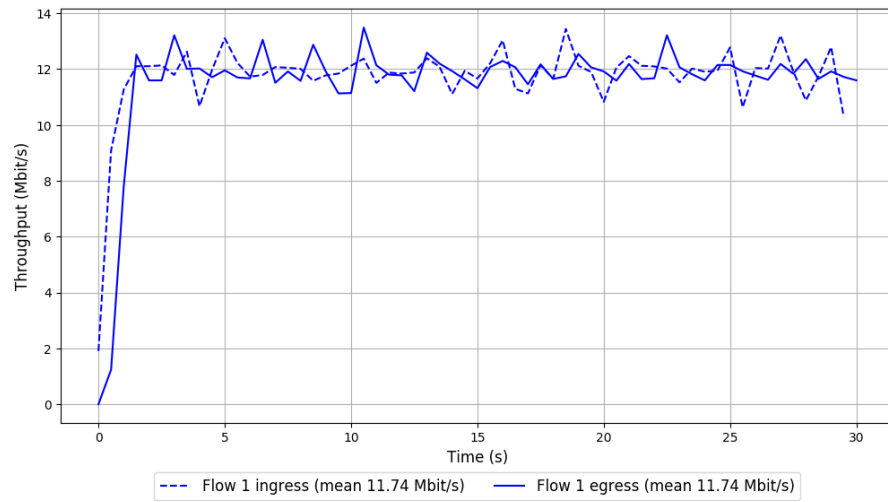

Flow 1 (95th percentile 30.96 ms)

```
Run 1: Statistics of Sprout

Start at: 2019-01-02 19:33:49
End at: 2019-01-02 19:34:19
Local clock offset: -12.689 ms
Remote clock offset: -1.573 ms


# Below is generated by plot.py at 2019-01-02 21:22:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.74 Mbit/s
95th percentile per-packet one-way delay: 36.754 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 11.74 Mbit/s
95th percentile per-packet one-way delay: 36.754 ms
Loss rate: 0.00%
```
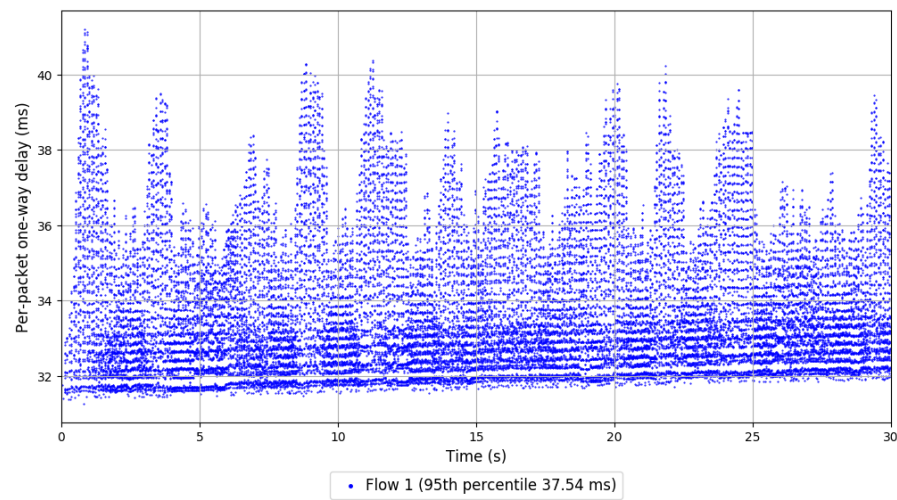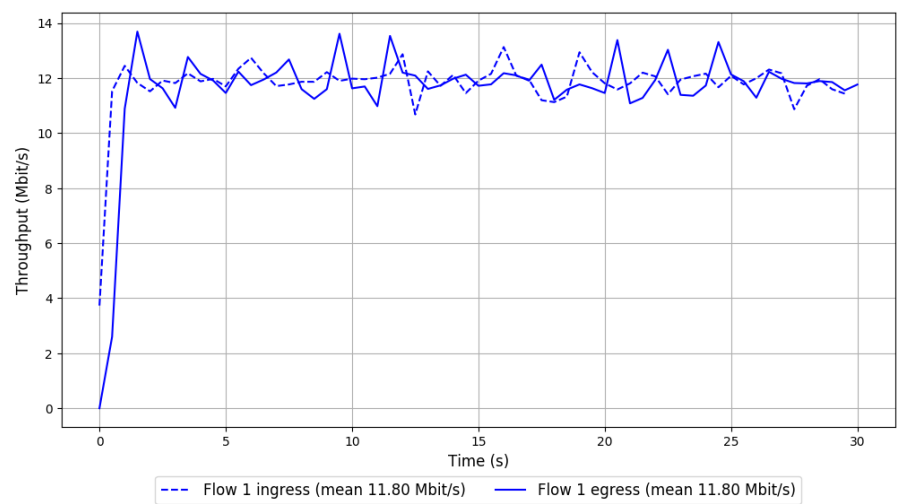
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2019-01-02 19:55:49
End at: 2019-01-02 19:56:19
Local clock offset: -12.373 ms
Remote clock offset: -1.093 ms


# Below is generated by plot.py at 2019-01-02 21:22:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.80 Mbit/s
95th percentile per-packet one-way delay: 37.536 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 11.80 Mbit/s
95th percentile per-packet one-way delay: 37.536 ms
Loss rate: 0.00%
```

Run 2: Report of Sprout — Data Link

Flow 1 ingress (mean 11.80 Mbit/s) — Flow 1 egress (mean 11.80 Mbit/s)

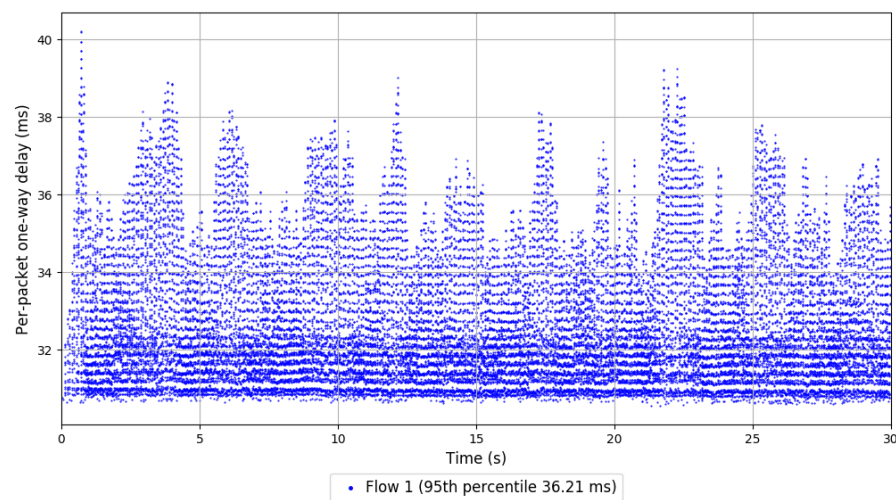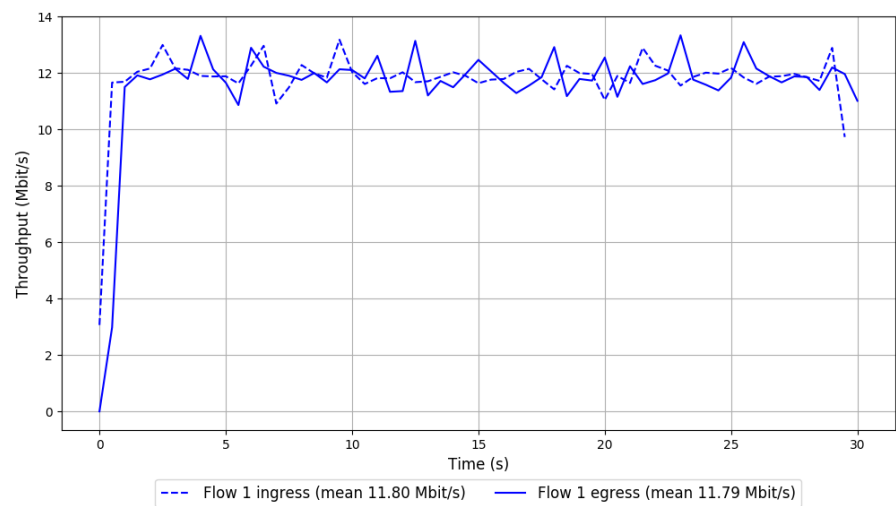• Flow 1 (95th percentile 37.54 ms)

```
Run 3: Statistics of Sprout

Start at: 2019-01-02 20:18:16
End at: 2019-01-02 20:18:46
Local clock offset: -6.373 ms
Remote clock offset: -1.447 ms


# Below is generated by plot.py at 2019-01-02 21:22:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.79 Mbit/s
95th percentile per-packet one-way delay: 36.212 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 11.79 Mbit/s
95th percentile per-packet one-way delay: 36.212 ms
Loss rate: 0.00%
```

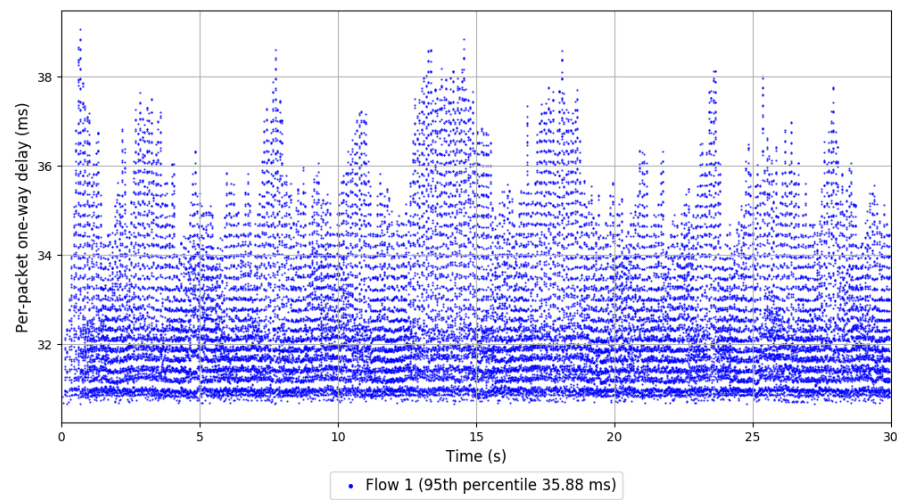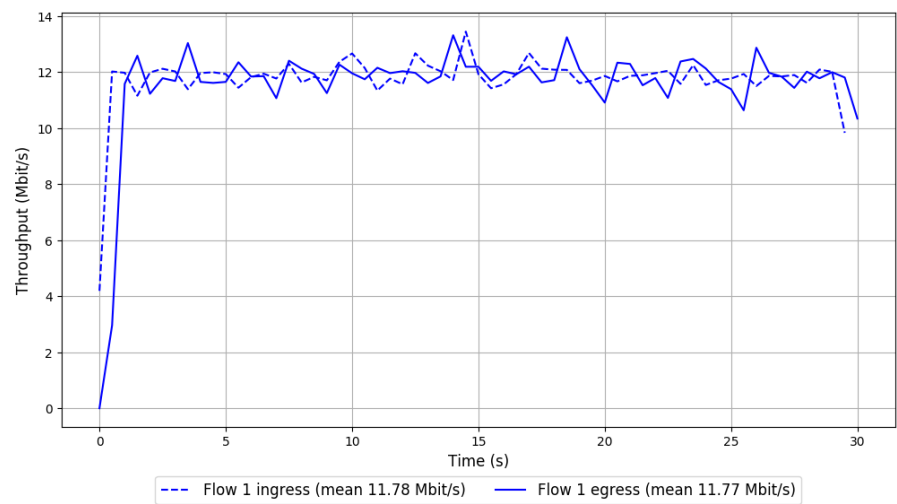Run 3: Report of Sprout — Data Link

```
Run 4: Statistics of Sprout

Start at: 2019-01-02 20:40:26
End at: 2019-01-02 20:40:56
Local clock offset: -6.123 ms
Remote clock offset: -2.129 ms


# Below is generated by plot.py at 2019-01-02 21:22:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.77 Mbit/s
95th percentile per-packet one-way delay: 35.880 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 11.77 Mbit/s
95th percentile per-packet one-way delay: 35.880 ms
Loss rate: 0.06%
```

Run 4: Report of Sprout — Data Link

Flow 1 ingress (mean 11.78 Mbit/s) --- Flow 1 egress (mean 11.77 Mbit/s)

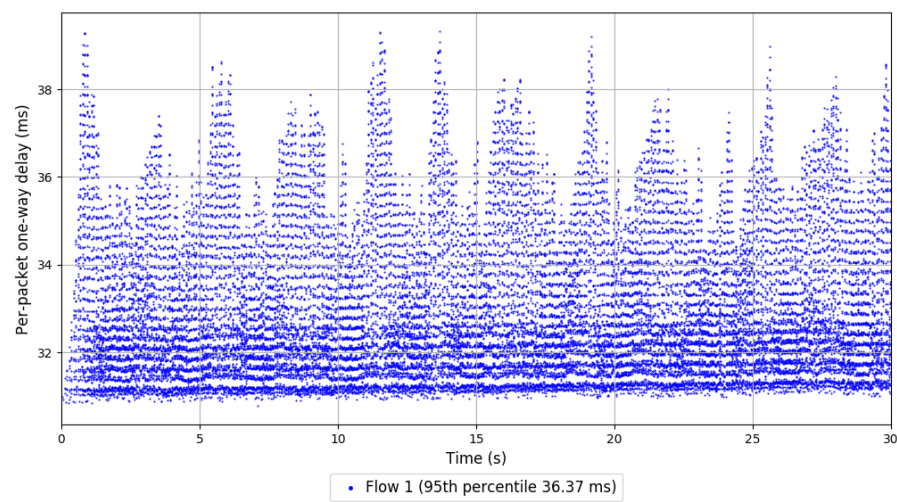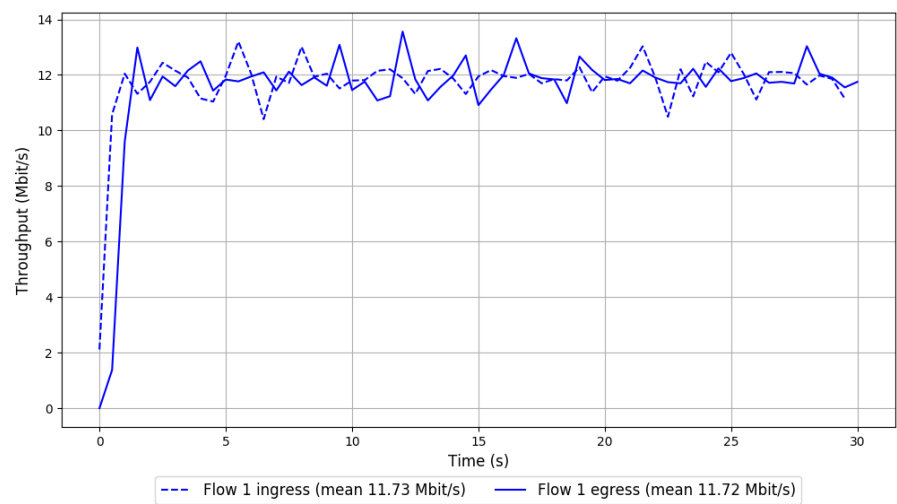• Flow 1 (95th percentile 35.88 ms)

```
Run 5: Statistics of Sprout

Start at: 2019-01-02 21:02:26
End at: 2019-01-02 21:02:56
Local clock offset: -3.553 ms
Remote clock offset: -3.004 ms


# Below is generated by plot.py at 2019-01-02 21:22:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.72 Mbit/s
95th percentile per-packet one-way delay: 36.373 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 11.72 Mbit/s
95th percentile per-packet one-way delay: 36.373 ms
Loss rate: 0.08%
```

Run 5: Report of Sprout — Data Link

Flow 1 ingress (mean 11.73 Mbit/s)   Flow 1 egress (mean 11.72 Mbit/s)

• Flow 1 (95th percentile 36.37 ms)
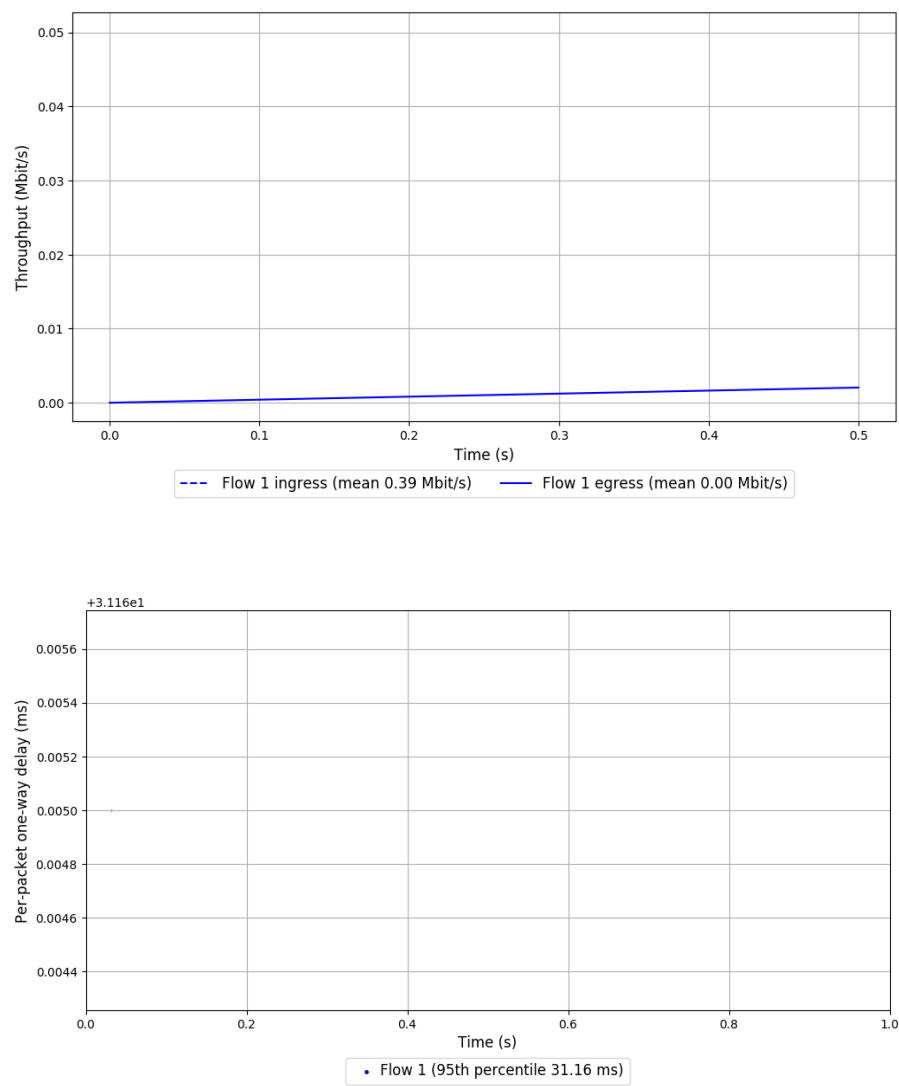
```
Run 1: Statistics of TaoVA-100x

Start at: 2019-01-02 19:32:43
End at: 2019-01-02 19:33:13
Local clock offset: -13.461 ms
Remote clock offset: -1.322 ms
```

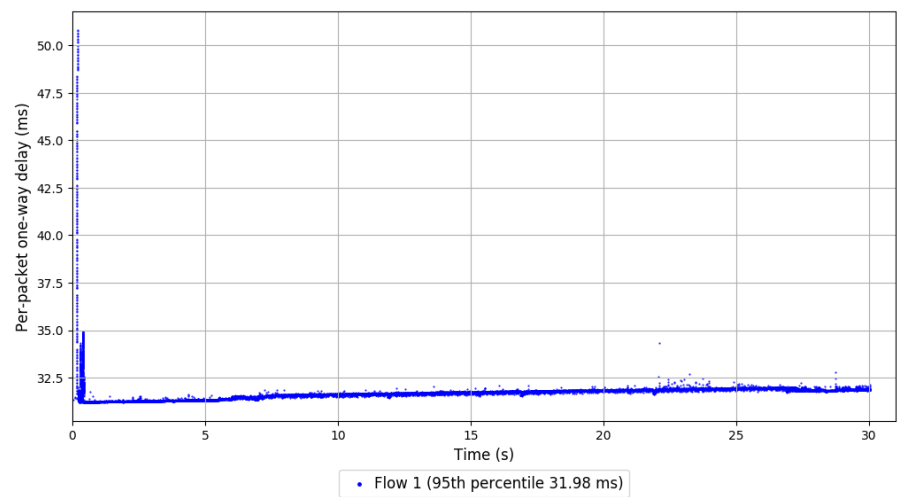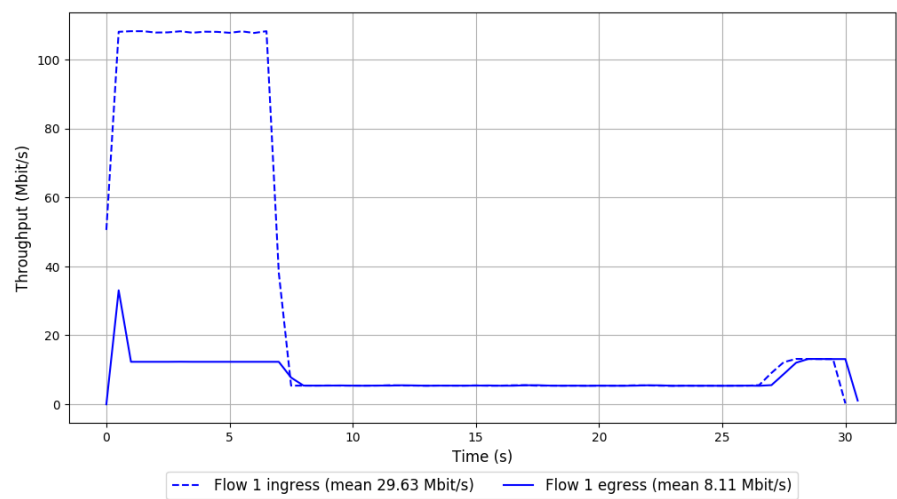Run 1: Report of TaoVA-100x — Data Link

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

Start at: 2019-01-02 19:54:43
End at: 2019-01-02 19:55:13
Local clock offset: -13.579 ms
Remote clock offset: -1.118 ms


# Below is generated by plot.py at 2019-01-02 21:22:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 8.11 Mbit/s
95th percentile per-packet one-way delay: 31.983 ms
Loss rate: 72.61%
-- Flow 1:
Average throughput: 8.11 Mbit/s
95th percentile per-packet one-way delay: 31.983 ms
Loss rate: 72.61%
```
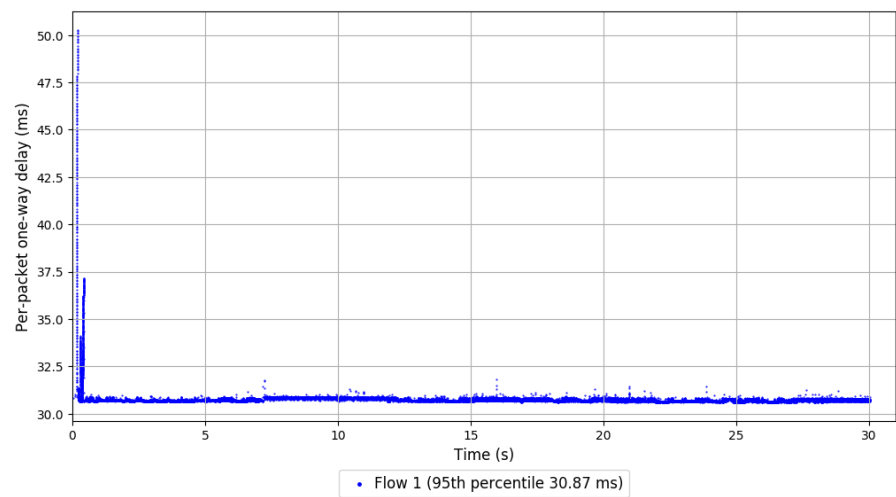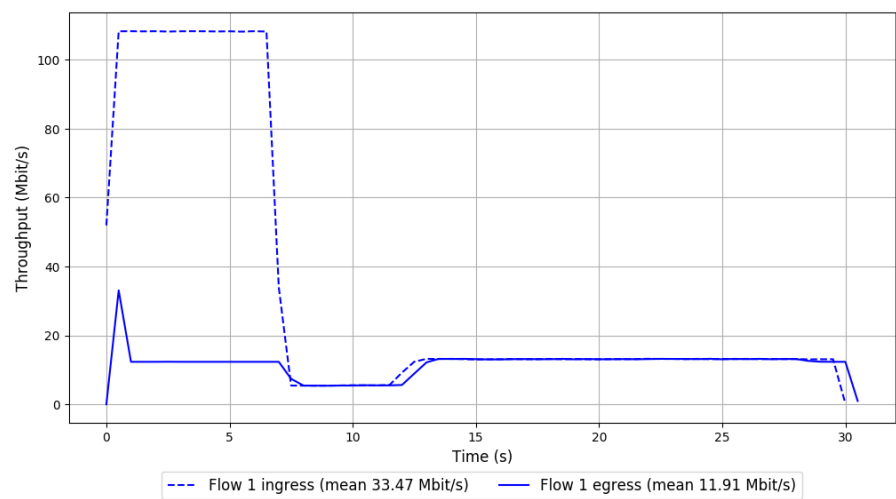
Run 2: Report of TaoVA-100x — Data Link

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

Start at: 2019-01-02 20:17:09
End at: 2019-01-02 20:17:39
Local clock offset: -6.221 ms
Remote clock offset: -1.394 ms


# Below is generated by plot.py at 2019-01-02 21:22:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.91 Mbit/s
95th percentile per-packet one-way delay: 30.870 ms
Loss rate: 64.41%
-- Flow 1:
Average throughput: 11.91 Mbit/s
95th percentile per-packet one-way delay: 30.870 ms
Loss rate: 64.41%
```

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

Flow 1 ingress (mean 33.47 Mbit/s) --- Flow 1 egress (mean 11.91 Mbit/s)

• Flow 1 (95th percentile 30.87 ms)

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

Start at: 2019-01-02 20:39:19
End at: 2019-01-02 20:39:49
Local clock offset: -6.05 ms
Remote clock offset: -2.205 ms


# Below is generated by plot.py at 2019-01-02 21:22:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.47 Mbit/s
95th percentile per-packet one-way delay: 30.774 ms
Loss rate: 63.15%
-- Flow 1:
Average throughput: 12.47 Mbit/s
95th percentile per-packet one-way delay: 30.774 ms
Loss rate: 63.15%
```
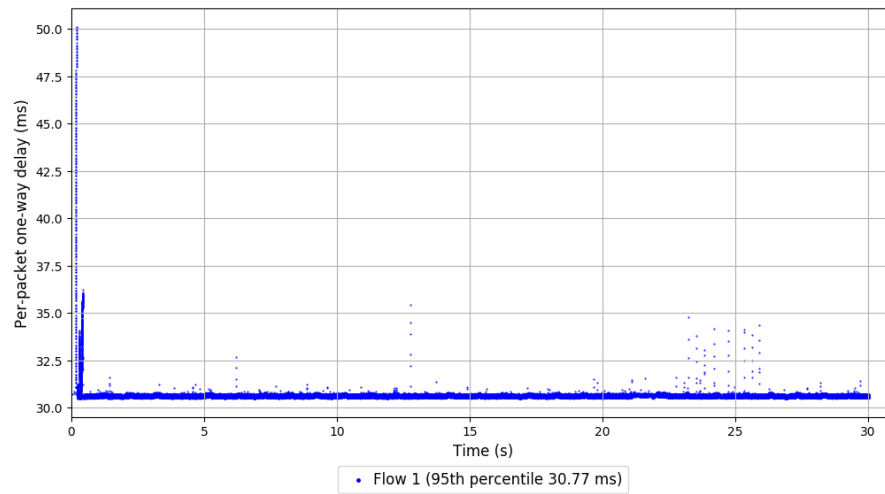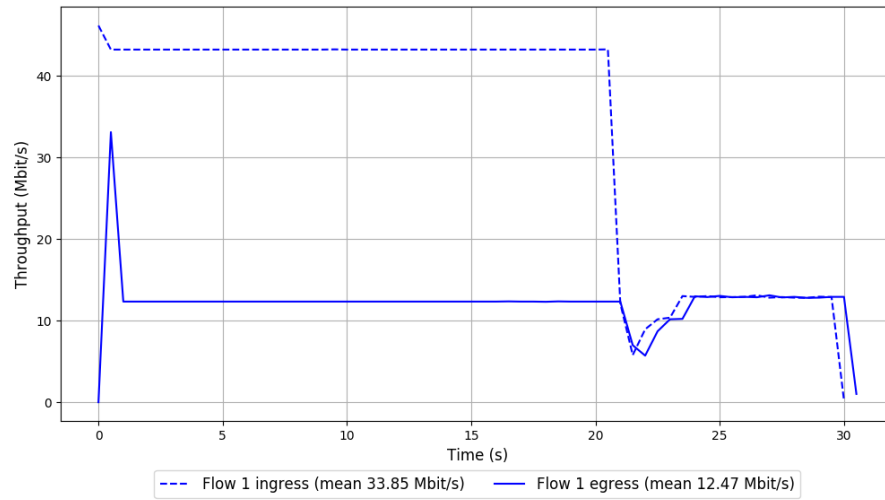
Run 4: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 33.85 Mbit/s)   Flow 1 egress (mean 12.47 Mbit/s)
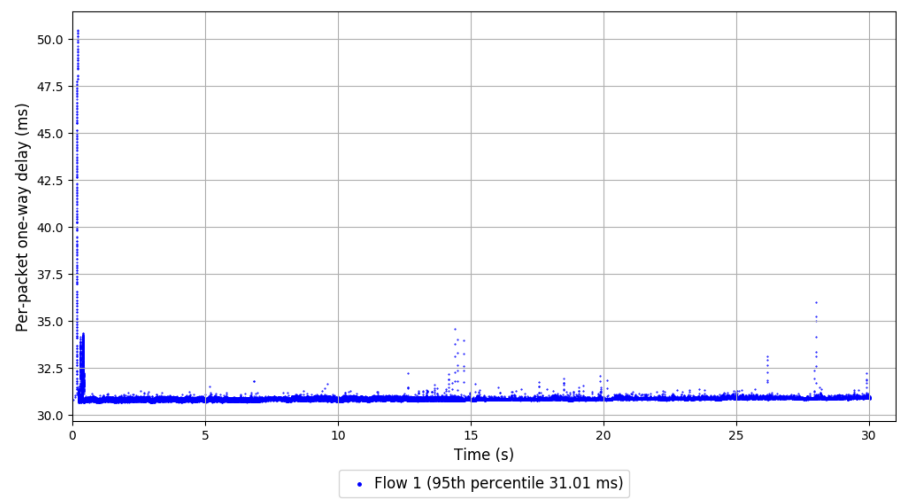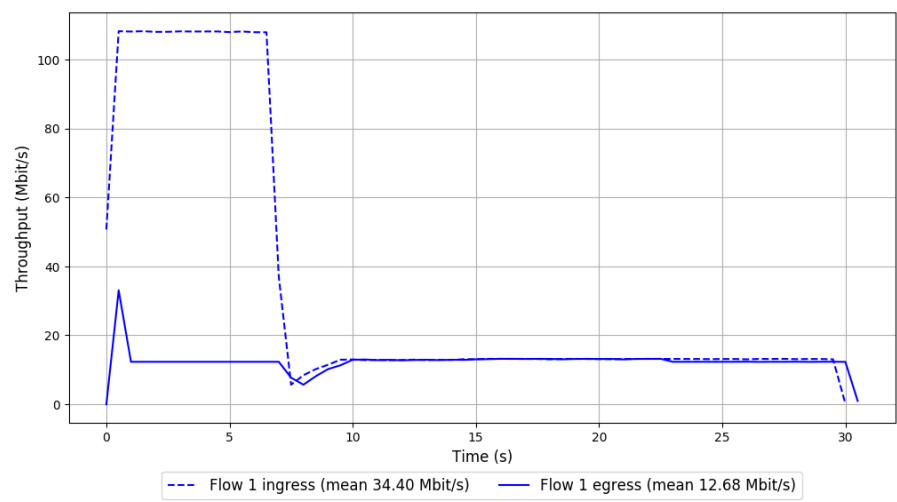

Flow 1 (95th percentile 30.77 ms)

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

Start at: 2019-01-02 21:01:18
End at: 2019-01-02 21:01:48
Local clock offset: -3.918 ms
Remote clock offset: -3.113 ms


# Below is generated by plot.py at 2019-01-02 21:22:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.68 Mbit/s
95th percentile per-packet one-way delay: 31.007 ms
Loss rate: 63.14%
-- Flow 1:
Average throughput: 12.68 Mbit/s
95th percentile per-packet one-way delay: 31.007 ms
Loss rate: 63.14%
```

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

Flow 1 ingress (mean 34.40 Mbit/s)   Flow 1 egress (mean 12.68 Mbit/s)
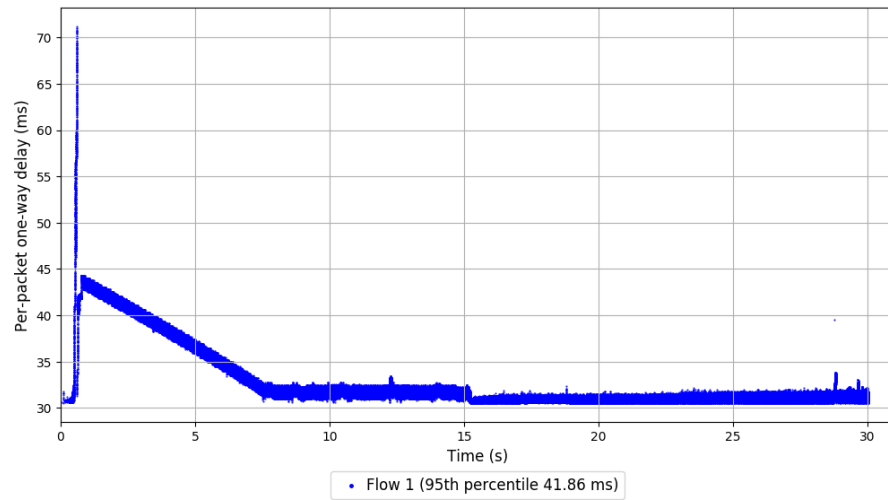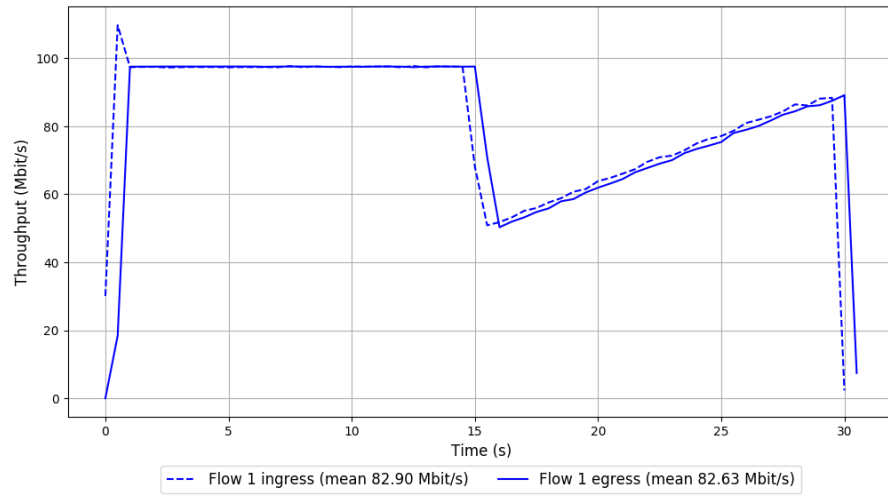

Flow 1 (95th percentile 31.01 ms)

```
Run 1: Statistics of TCP Vegas

Start at: 2019-01-02 19:43:02
End at: 2019-01-02 19:43:33
Local clock offset: -11.029 ms
Remote clock offset: -1.324 ms


# Below is generated by plot.py at 2019-01-02 21:22:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 82.63 Mbit/s
95th percentile per-packet one-way delay: 41.861 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 82.63 Mbit/s
95th percentile per-packet one-way delay: 41.861 ms
Loss rate: 0.33%
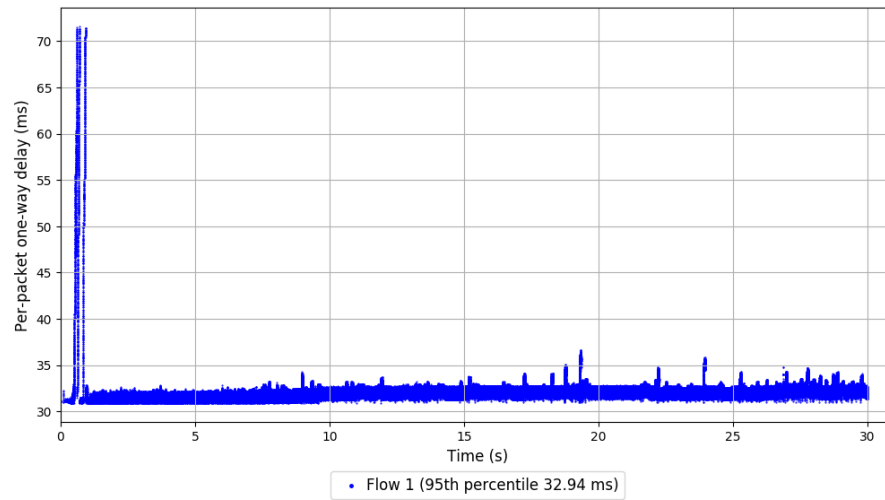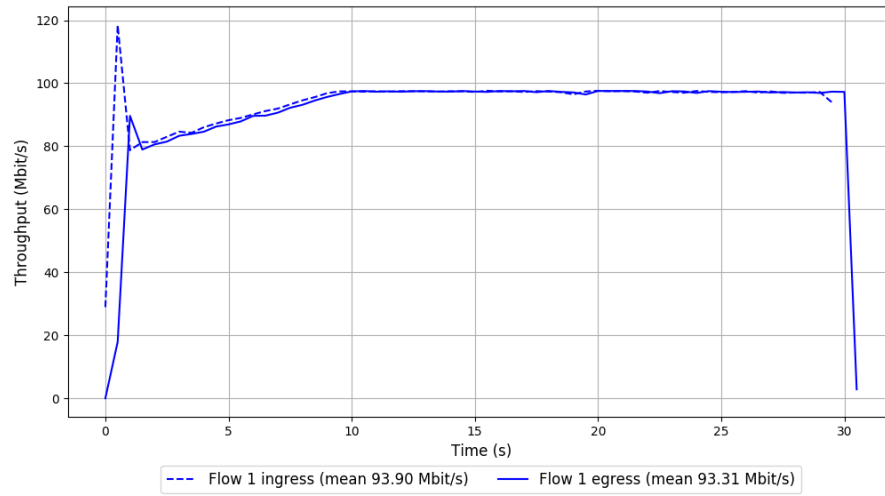```

Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2019-01-02 20:05:11
End at: 2019-01-02 20:05:41
Local clock offset: -6.46 ms
Remote clock offset: -1.154 ms

Below is generated by plot.py at 2019-01-02 21:23:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 93.31 Mbit/s
95th percentile per-packet one-way delay: 32.935 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 93.31 Mbit/s
95th percentile per-packet one-way delay: 32.935 ms
Loss rate: 0.62%
```
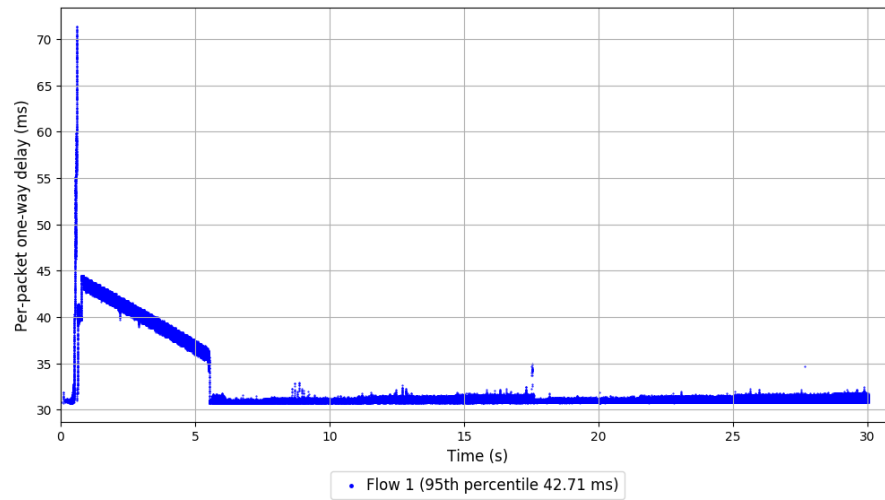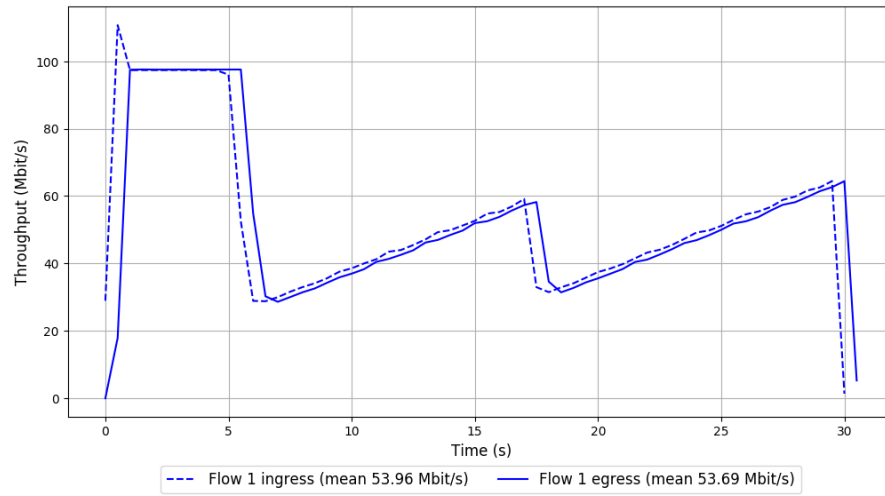
Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2019-01-02 20:27:37
End at: 2019-01-02 20:28:07
Local clock offset: -6.504 ms
Remote clock offset: -1.731 ms


# Below is generated by plot.py at 2019-01-02 21:23:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 53.69 Mbit/s
95th percentile per-packet one-way delay: 42.714 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 53.69 Mbit/s
95th percentile per-packet one-way delay: 42.714 ms
Loss rate: 0.51%
```

Run 3: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 53.96 Mbit/s) — — —   Flow 1 egress (mean 53.69 Mbit/s) ———
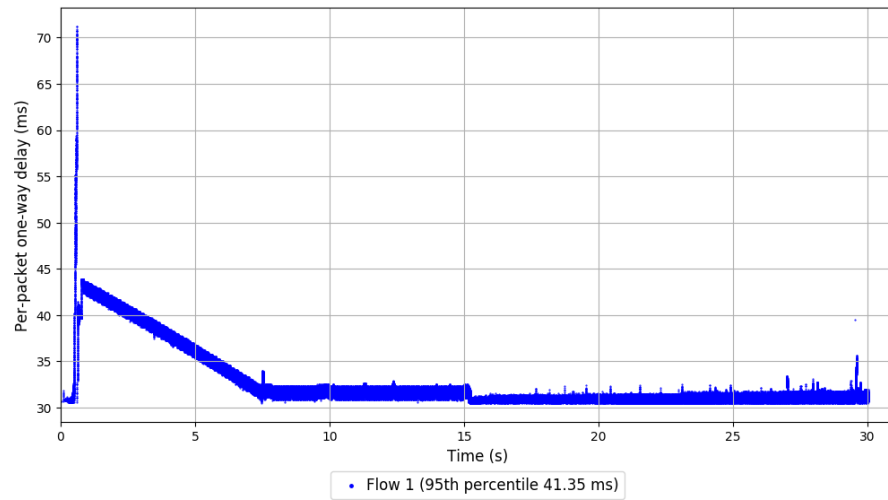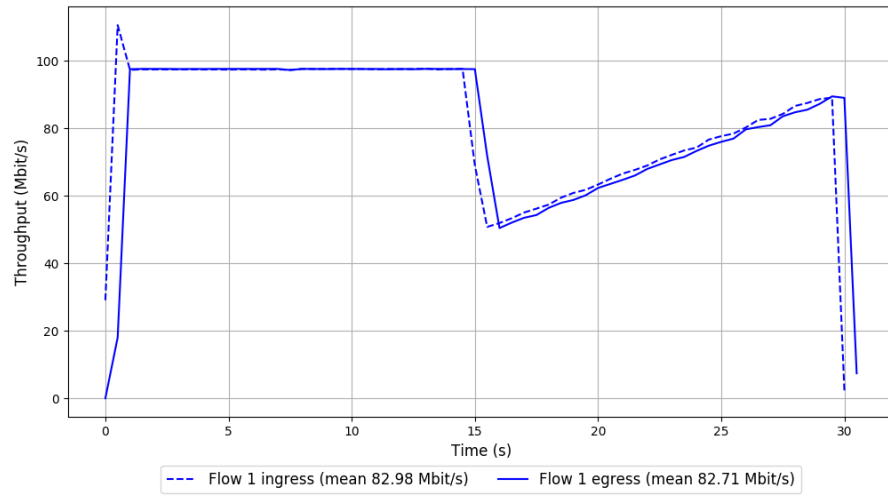

• Flow 1 (95th percentile 42.71 ms)

```
Run 4: Statistics of TCP Vegas

Start at: 2019-01-02 20:49:37
End at: 2019-01-02 20:50:07
Local clock offset: -7.19 ms
Remote clock offset: -2.859 ms


# Below is generated by plot.py at 2019-01-02 21:23:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 82.71 Mbit/s
95th percentile per-packet one-way delay: 41.353 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 82.71 Mbit/s
95th percentile per-packet one-way delay: 41.353 ms
Loss rate: 0.33%
```

Run 4: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 82.98 Mbit/s)   ——— Flow 1 egress (mean 82.71 Mbit/s)
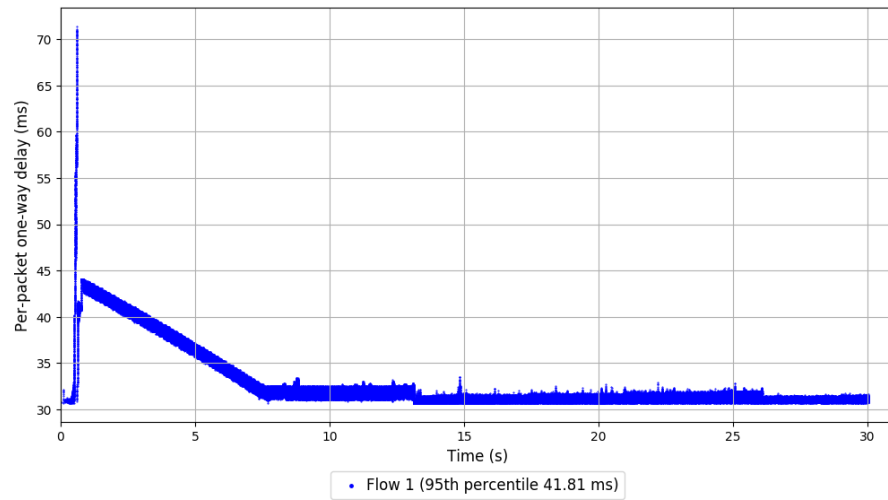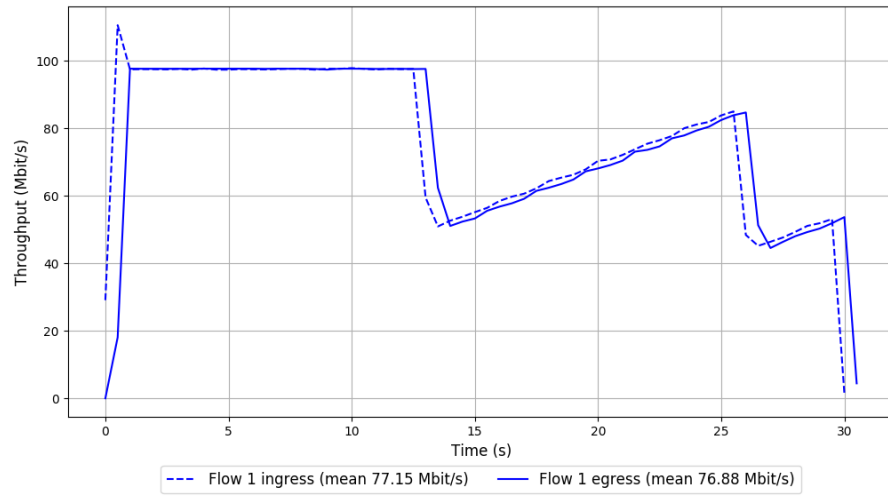

• Flow 1 (95th percentile 41.35 ms)

```
Run 5: Statistics of TCP Vegas

Start at: 2019-01-02 21:11:51
End at: 2019-01-02 21:12:21
Local clock offset: -2.006 ms
Remote clock offset: -3.563 ms


# Below is generated by plot.py at 2019-01-02 21:23:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 76.88 Mbit/s
95th percentile per-packet one-way delay: 41.807 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 76.88 Mbit/s
95th percentile per-packet one-way delay: 41.807 ms
Loss rate: 0.34%
```
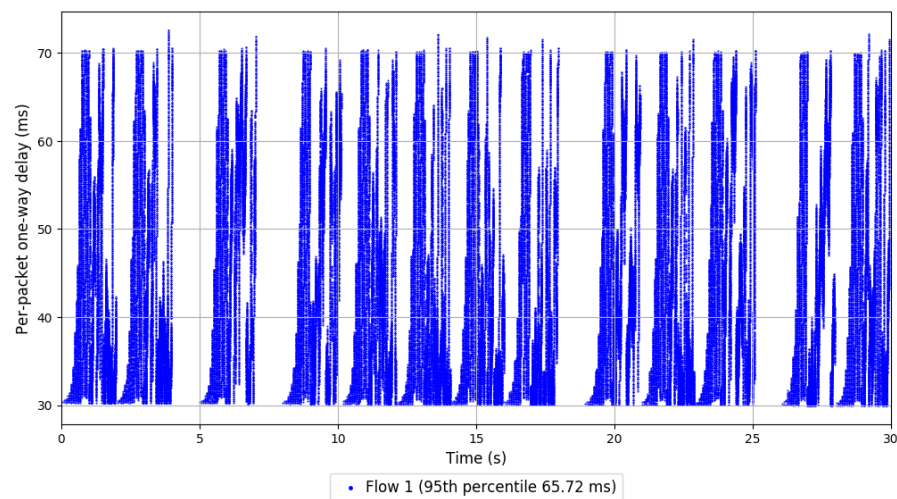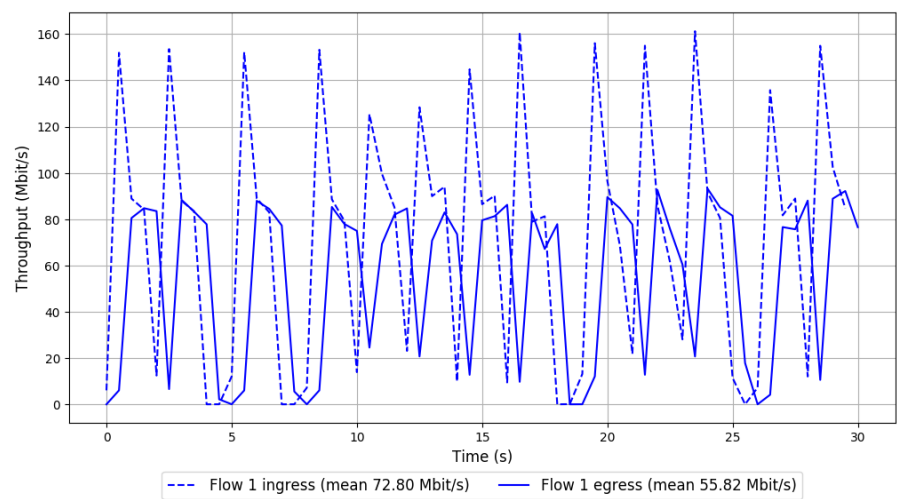
Run 5: Report of TCP Vegas — Data Link

```
Run 1: Statistics of Verus

Start at: 2019-01-02 19:23:22
End at: 2019-01-02 19:23:52
Local clock offset: -25.013 ms
Remote clock offset: -1.76 ms


# Below is generated by plot.py at 2019-01-02 21:23:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 55.82 Mbit/s
95th percentile per-packet one-way delay: 65.724 ms
Loss rate: 23.27%
-- Flow 1:
Average throughput: 55.82 Mbit/s
95th percentile per-packet one-way delay: 65.724 ms
Loss rate: 23.27%
```
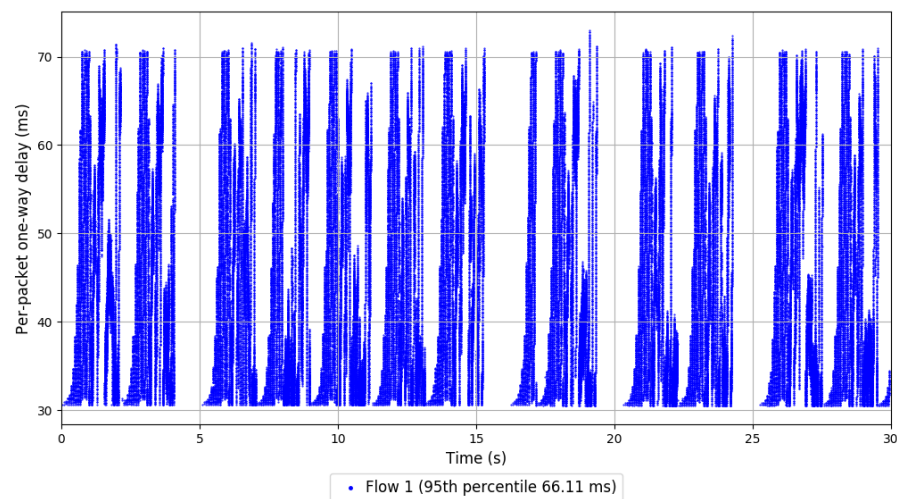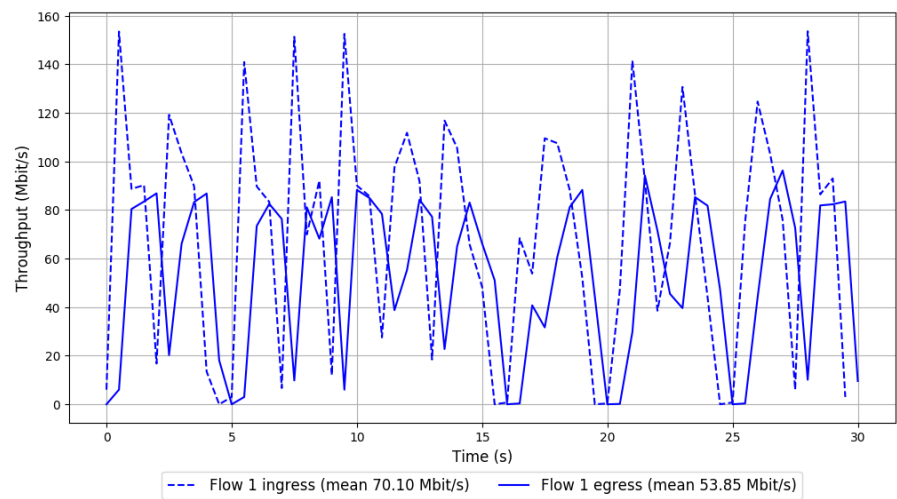
Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2019-01-02 19:45:23
End at: 2019-01-02 19:45:53
Local clock offset: -11.351 ms
Remote clock offset: -1.249 ms


# Below is generated by plot.py at 2019-01-02 21:23:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 53.85 Mbit/s
95th percentile per-packet one-way delay: 66.109 ms
Loss rate: 23.18%
-- Flow 1:
Average throughput: 53.85 Mbit/s
95th percentile per-packet one-way delay: 66.109 ms
Loss rate: 23.18%
```
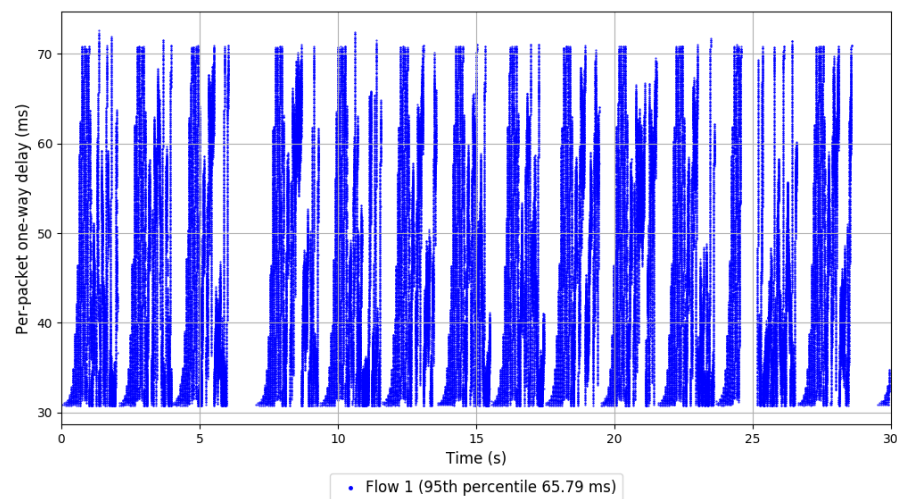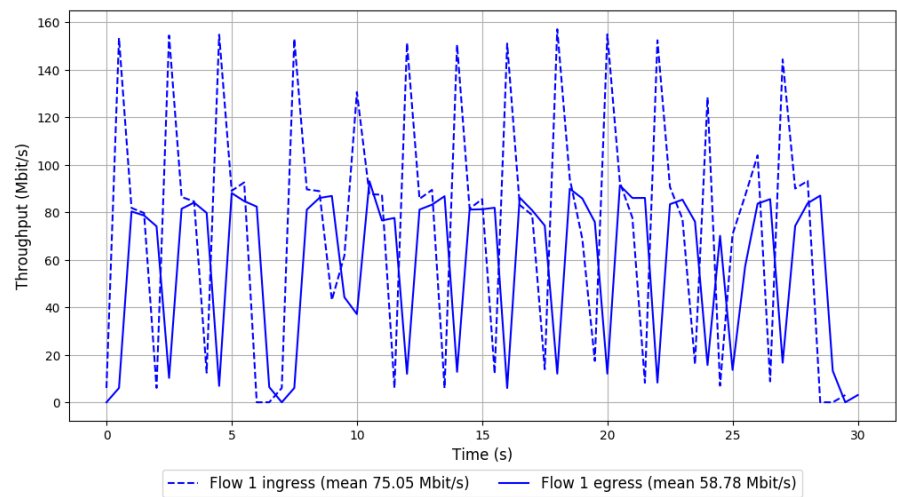
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2019-01-02 20:07:50
End at: 2019-01-02 20:08:20
Local clock offset: -6.005 ms
Remote clock offset: -1.212 ms


# Below is generated by plot.py at 2019-01-02 21:23:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 58.78 Mbit/s
95th percentile per-packet one-way delay: 65.792 ms
Loss rate: 21.67%
-- Flow 1:
Average throughput: 58.78 Mbit/s
95th percentile per-packet one-way delay: 65.792 ms
Loss rate: 21.67%
```

Run 3: Report of Verus — Data Link

```
Run 4: Statistics of Verus

Start at: 2019-01-02 20:30:01
End at: 2019-01-02 20:30:31
Local clock offset: -6.105 ms
Remote clock offset: -1.52 ms


# Below is generated by plot.py at 2019-01-02 21:23:28
# Datalink statistics
-- Total of 1 flow:
Average throughput: 59.17 Mbit/s
95th percentile per-packet one-way delay: 66.208 ms
Loss rate: 22.37%
-- Flow 1:
Average throughput: 59.17 Mbit/s
95th percentile per-packet one-way delay: 66.208 ms
Loss rate: 22.37%
```
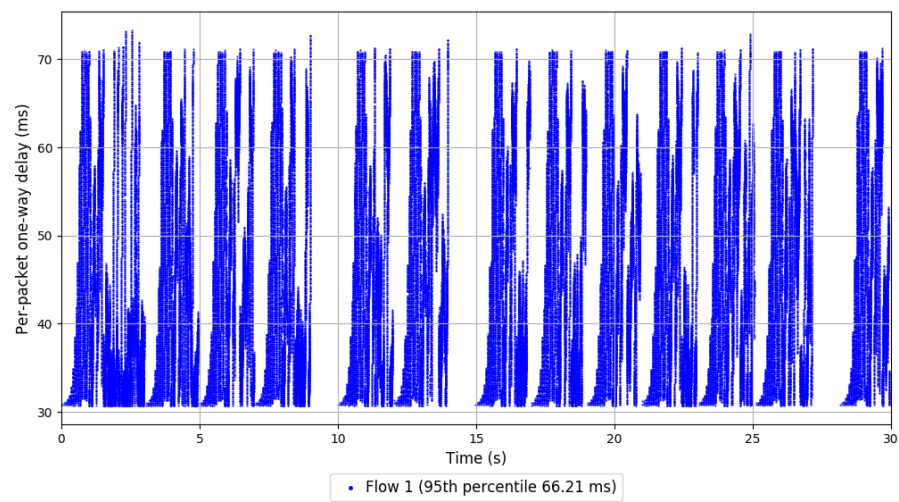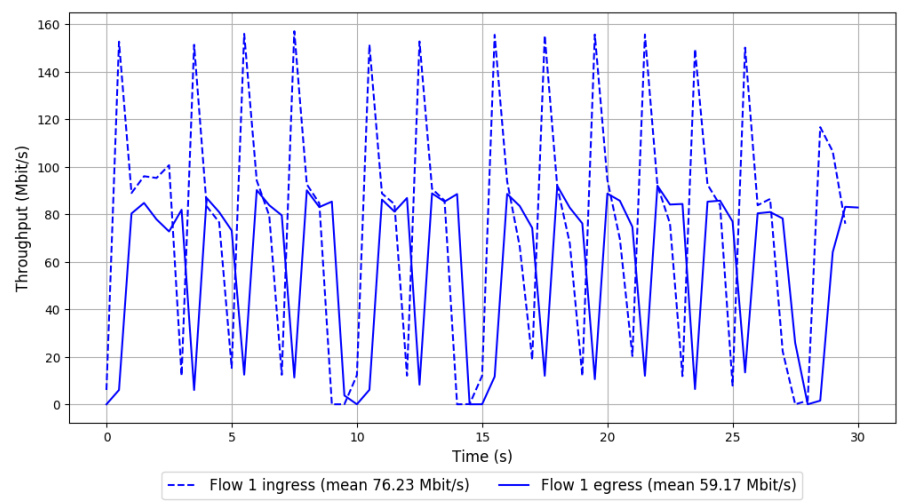
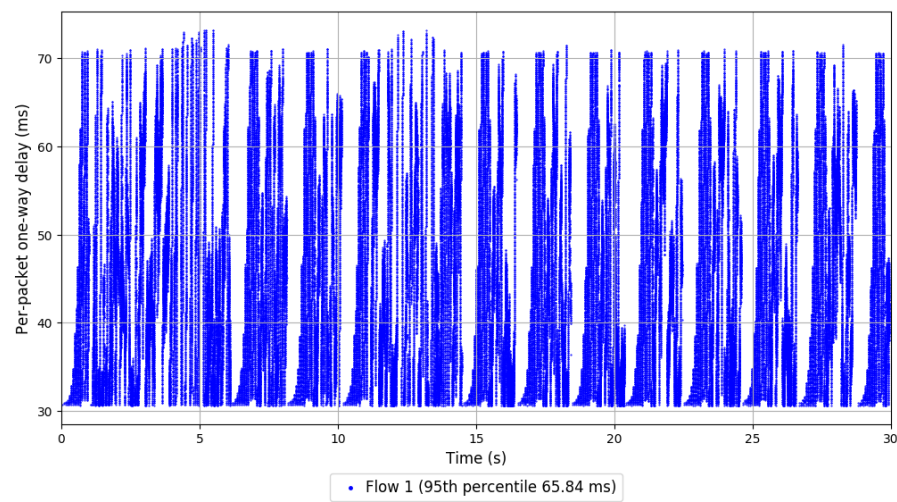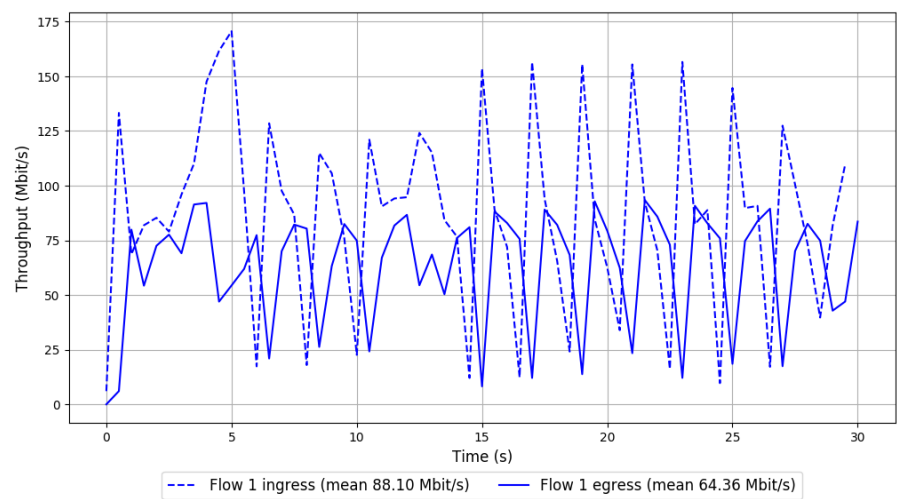Run 4: Report of Verus — Data Link

```
Run 5: Statistics of Verus

Start at: 2019-01-02 20:52:00
End at: 2019-01-02 20:52:30
Local clock offset: -7.499 ms
Remote clock offset: -2.712 ms


# Below is generated by plot.py at 2019-01-02 21:23:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 64.36 Mbit/s
95th percentile per-packet one-way delay: 65.842 ms
Loss rate: 26.90%
-- Flow 1:
Average throughput: 64.36 Mbit/s
95th percentile per-packet one-way delay: 65.842 ms
Loss rate: 26.90%
```
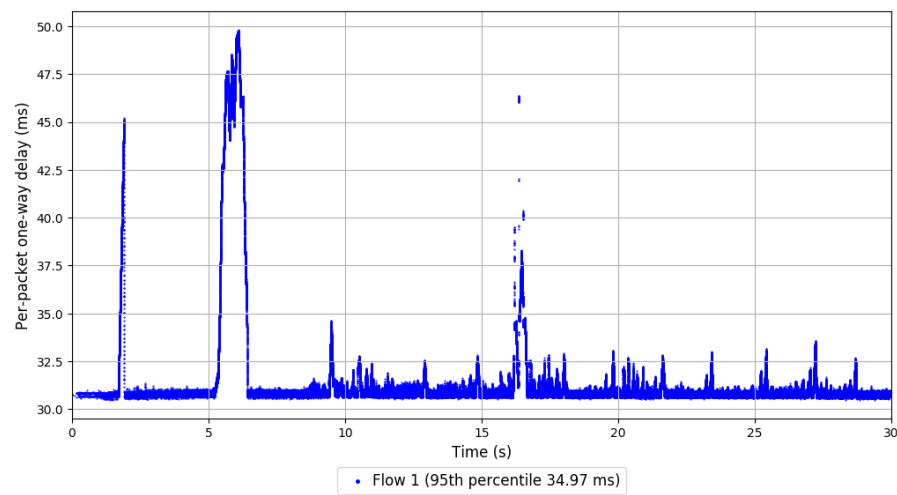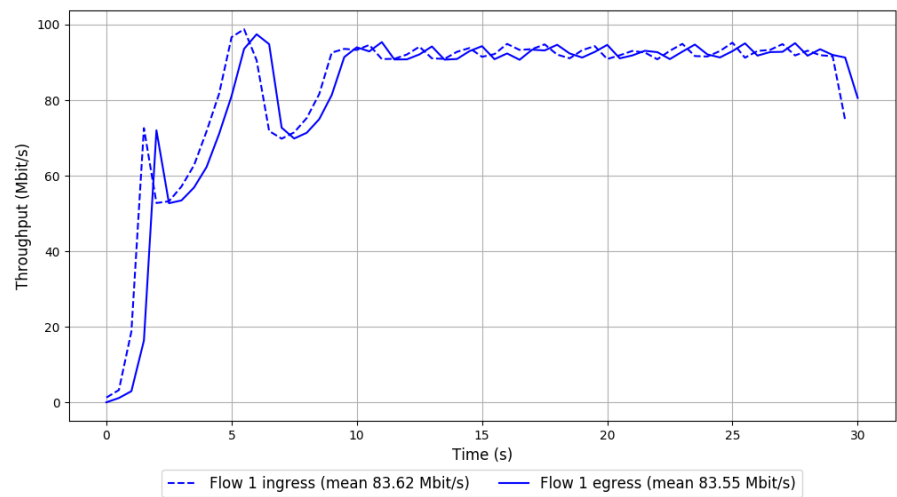
Run 5: Report of Verus — Data Link

```
Run 1: Statistics of PCC-Vivace

Start at: 2019-01-02 19:44:12
End at: 2019-01-02 19:44:42
Local clock offset: -11.145 ms
Remote clock offset: -1.207 ms


# Below is generated by plot.py at 2019-01-02 21:23:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 83.55 Mbit/s
95th percentile per-packet one-way delay: 34.972 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 83.55 Mbit/s
95th percentile per-packet one-way delay: 34.972 ms
Loss rate: 0.08%
```

Run 1: Report of PCC-Vivace — Data Link

```
Run 2: Statistics of PCC-Vivace

Start at: 2019-01-02 20:06:32
End at: 2019-01-02 20:07:02
Local clock offset: -6.192 ms
Remote clock offset: -1.23 ms


# Below is generated by plot.py at 2019-01-02 21:23:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 84.87 Mbit/s
95th percentile per-packet one-way delay: 33.591 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 84.87 Mbit/s
95th percentile per-packet one-way delay: 33.591 ms
Loss rate: 0.02%
```
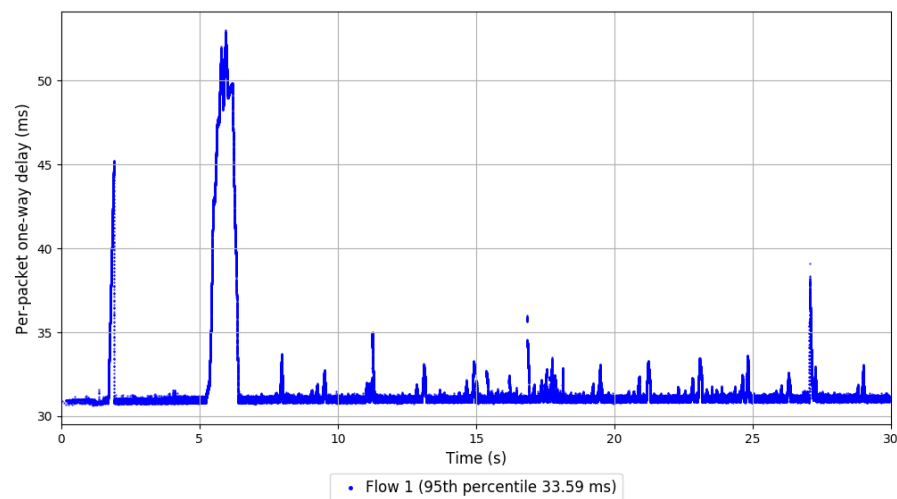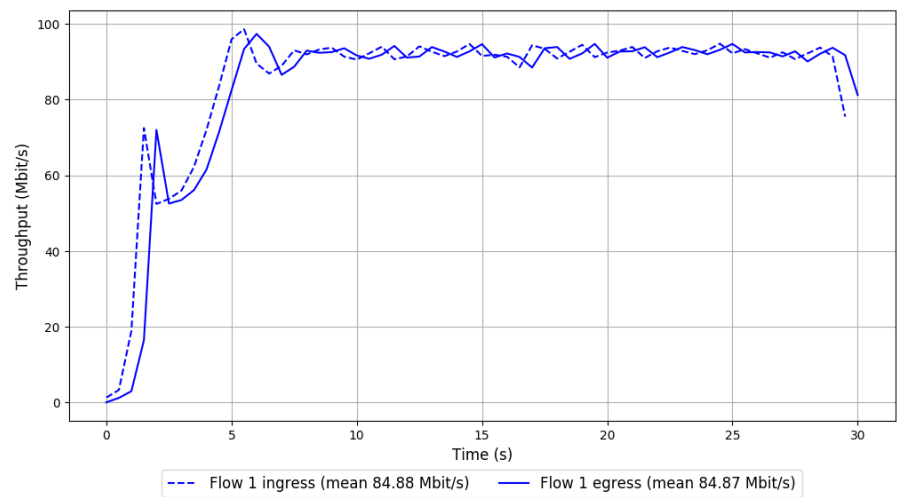
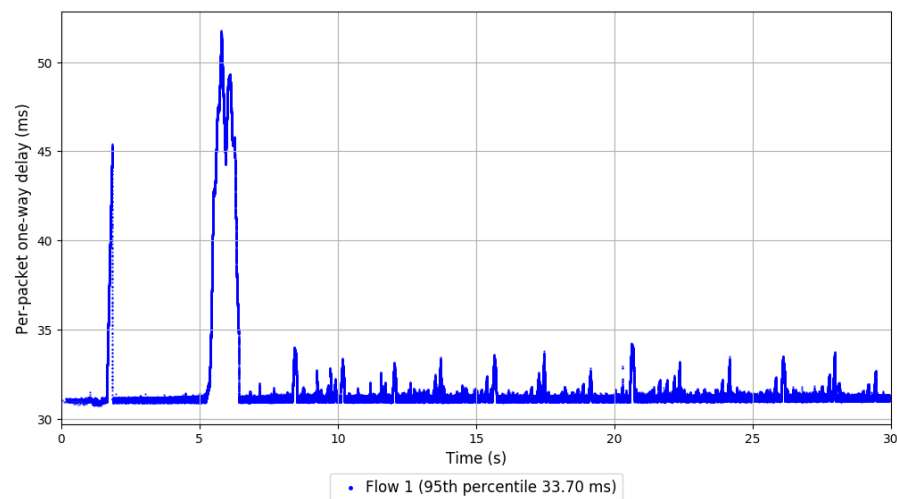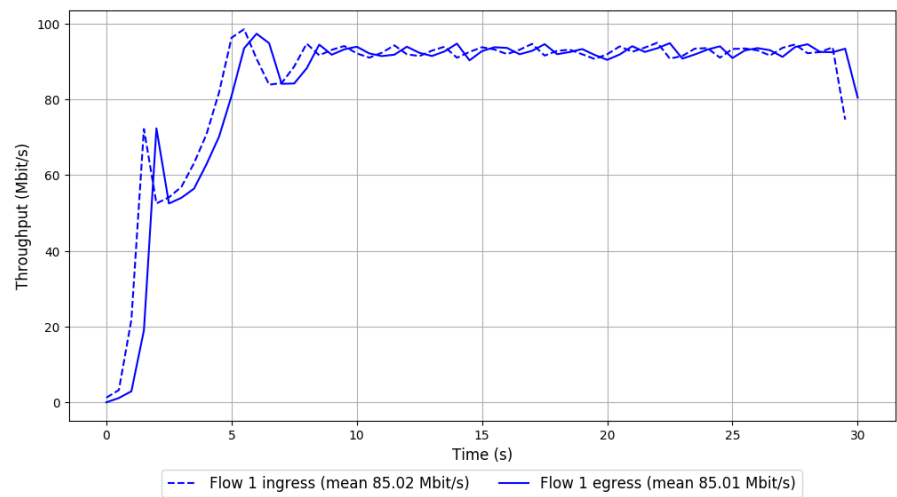## Run 2: Report of PCC-Vivace — Data Link

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```
Run 3: Statistics of PCC-Vivace

Start at: 2019-01-02 20:28:46
End at: 2019-01-02 20:29:16
Local clock offset: -6.314 ms
Remote clock offset: -1.521 ms


# Below is generated by plot.py at 2019-01-02 21:23:58
# Datalink statistics
-- Total of 1 flow:
Average throughput: 85.01 Mbit/s
95th percentile per-packet one-way delay: 33.701 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 85.01 Mbit/s
95th percentile per-packet one-way delay: 33.701 ms
Loss rate: 0.01%
```

Run 3: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 85.02 Mbit/s)   Flow 1 egress (mean 85.01 Mbit/s)
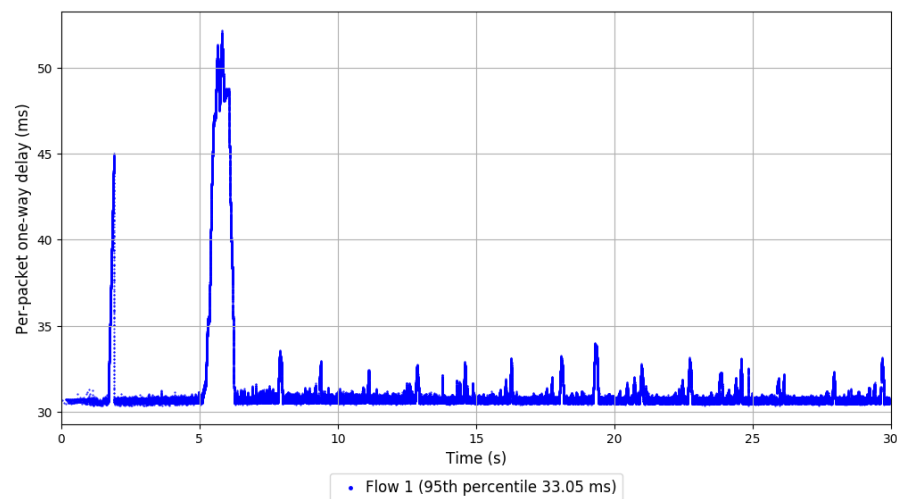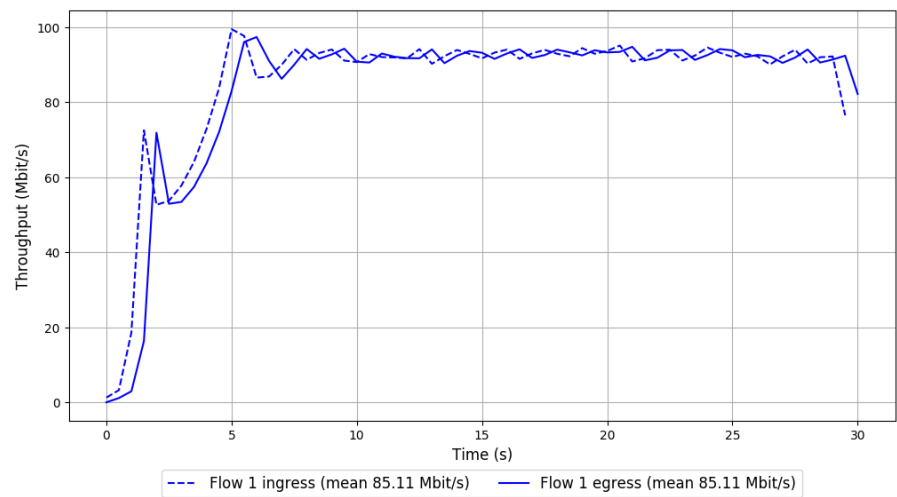

Flow 1 (95th percentile 33.70 ms)

```
Run 4: Statistics of PCC-Vivace

Start at: 2019-01-02 20:50:47
End at: 2019-01-02 20:51:17
Local clock offset: -7.329 ms
Remote clock offset: -2.845 ms


# Below is generated by plot.py at 2019-01-02 21:23:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 85.11 Mbit/s
95th percentile per-packet one-way delay: 33.049 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 85.11 Mbit/s
95th percentile per-packet one-way delay: 33.049 ms
Loss rate: 0.00%
```

Run 4: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 85.11 Mbit/s)   Flow 1 egress (mean 85.11 Mbit/s)
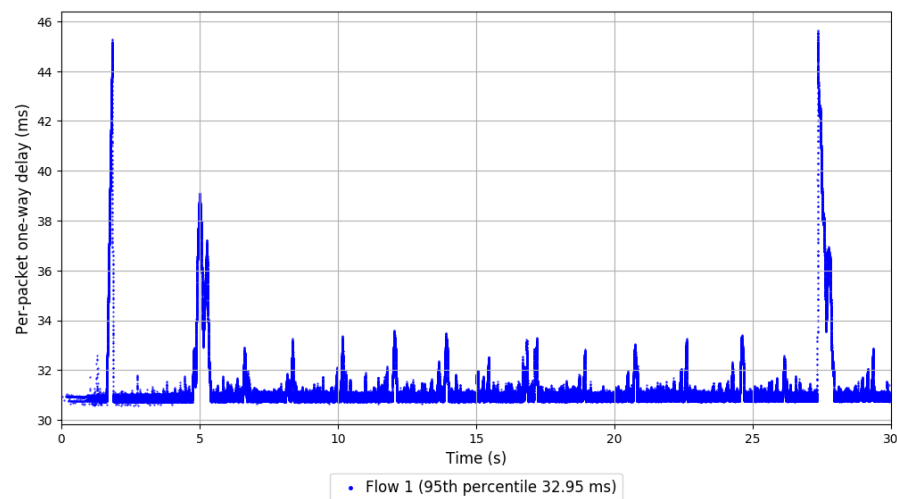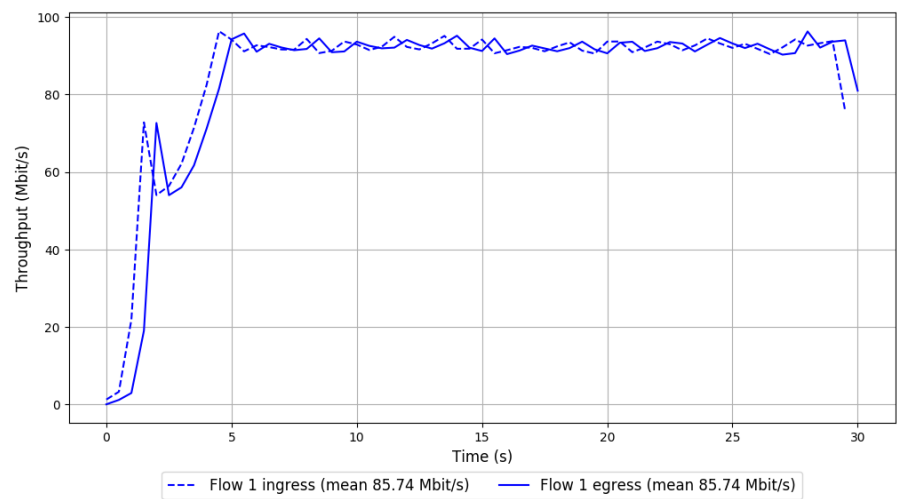

Flow 1 (95th percentile 33.05 ms)

```
Run 5: Statistics of PCC-Vivace

Start at: 2019-01-02 21:13:01
End at: 2019-01-02 21:13:31
Local clock offset: -1.927 ms
Remote clock offset: -3.458 ms


# Below is generated by plot.py at 2019-01-02 21:23:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 85.74 Mbit/s
95th percentile per-packet one-way delay: 32.950 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 85.74 Mbit/s
95th percentile per-packet one-way delay: 32.950 ms
Loss rate: 0.01%
```

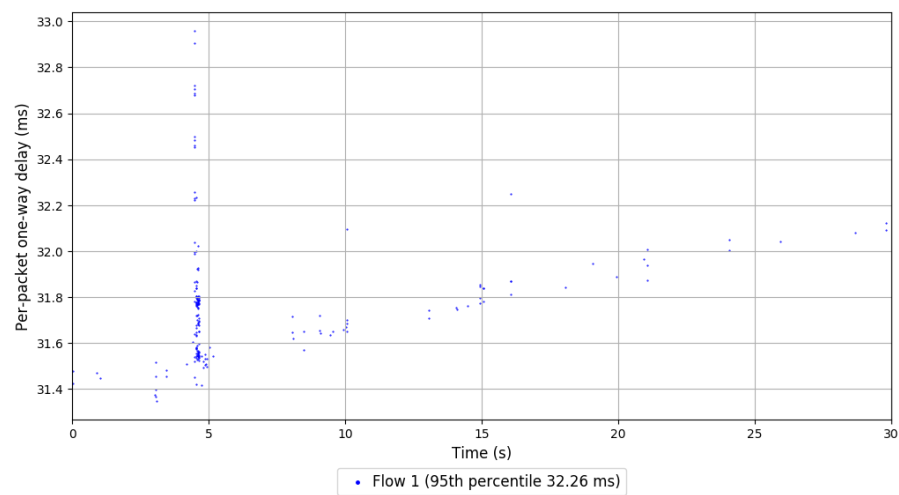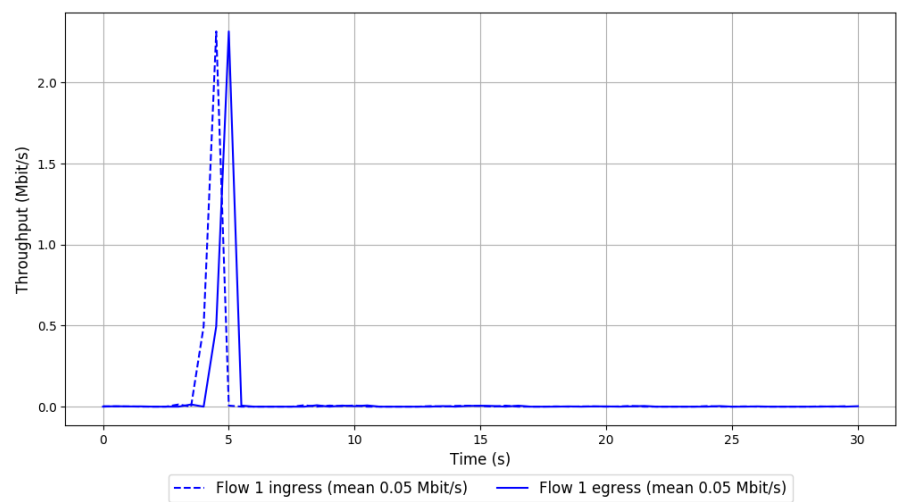## Run 5: Report of PCC-Vivace — Data Link

```
Run 1: Statistics of WebRTC media

Start at: 2019-01-02 19:28:01
End at: 2019-01-02 19:28:31
Local clock offset: -18.786 ms
Remote clock offset: -1.45 ms


# Below is generated by plot.py at 2019-01-02 21:23:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 32.258 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 32.258 ms
Loss rate: 0.00%
```

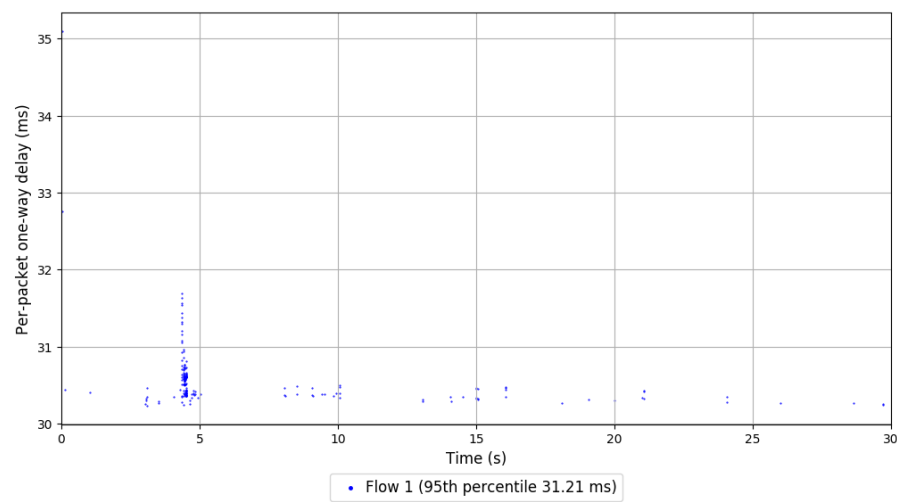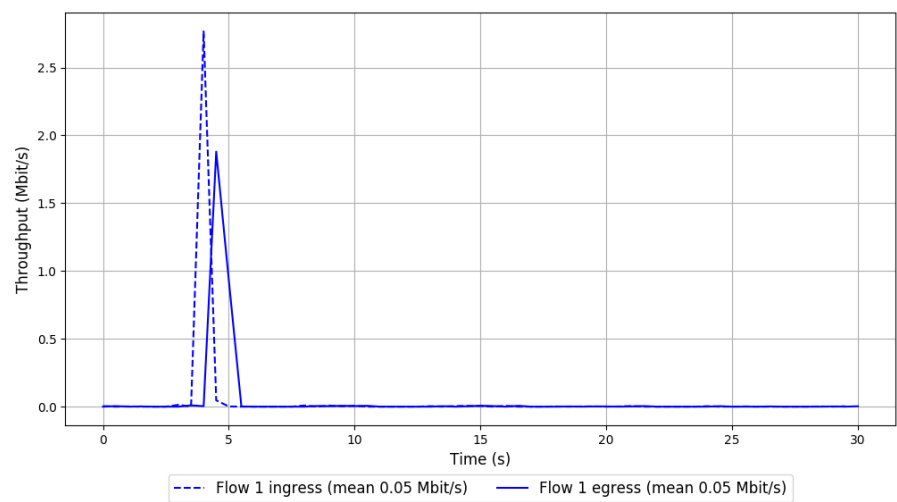Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2019-01-02 19:50:01
End at: 2019-01-02 19:50:31
Local clock offset: -12.387 ms
Remote clock offset: -1.333 ms


# Below is generated by plot.py at 2019-01-02 21:23:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.207 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.207 ms
Loss rate: 0.00%
```

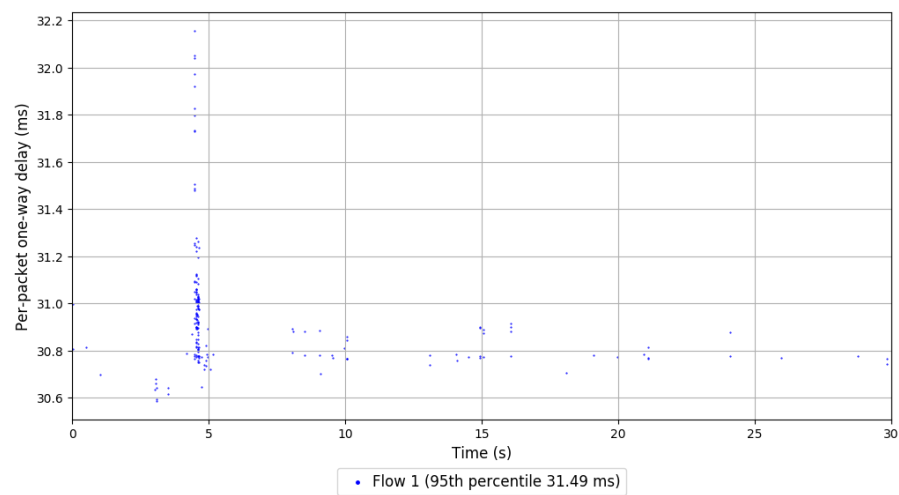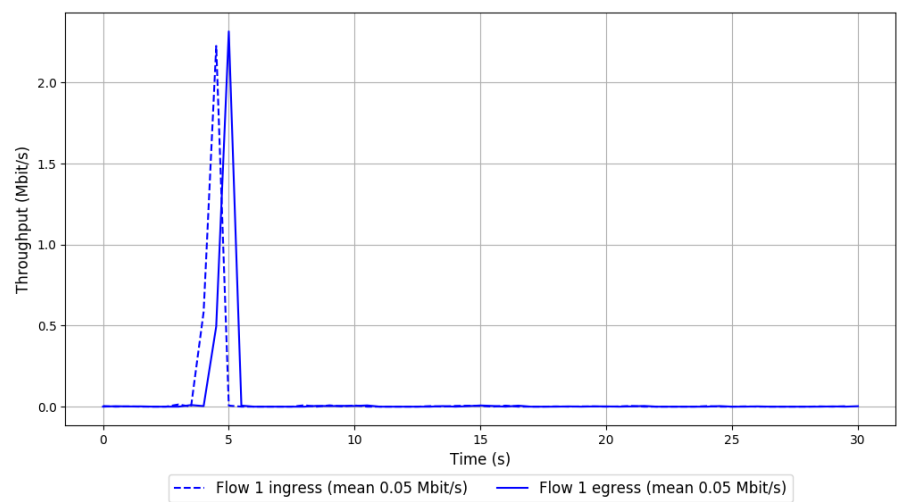Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2019-01-02 20:12:28
End at: 2019-01-02 20:12:58
Local clock offset: -5.851 ms
Remote clock offset: -1.329 ms


# Below is generated by plot.py at 2019-01-02 21:23:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.488 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.488 ms
Loss rate: 0.00%
```

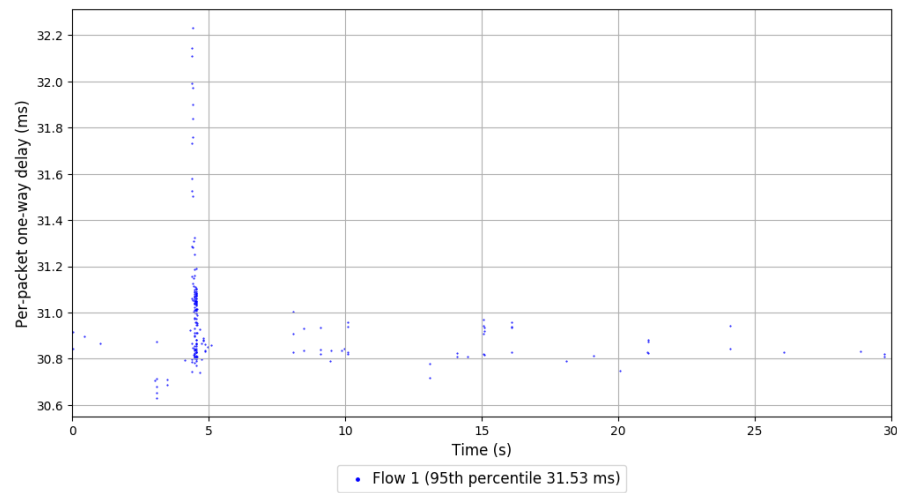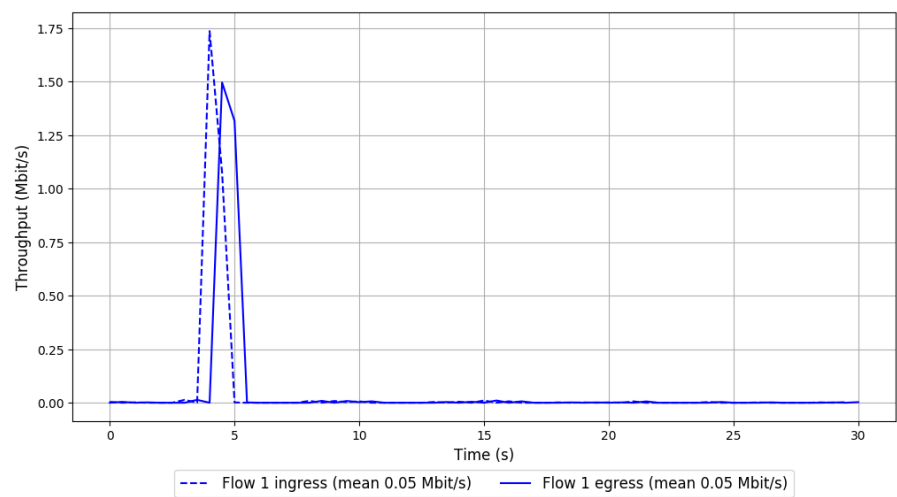Run 3: Report of WebRTC media — Data Link

```
Run 4: Statistics of WebRTC media

Start at: 2019-01-02 20:34:41
End at: 2019-01-02 20:35:11
Local clock offset: -5.862 ms
Remote clock offset: -1.833 ms


# Below is generated by plot.py at 2019-01-02 21:23:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.528 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.528 ms
Loss rate: 0.00%
```

Run 4: Report of WebRTC media — Data Link

```
Run 5: Statistics of WebRTC media

Start at: 2019-01-02 20:56:38
End at: 2019-01-02 20:57:08
Local clock offset: -6.21 ms
Remote clock offset: -2.826 ms


# Below is generated by plot.py at 2019-01-02 21:23:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.666 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.666 ms
Loss rate: 0.00%
```

Run 5: Report of WebRTC media — Data Link

Flow 1 ingress (mean 0.05 Mbit/s) ---- Flow 1 egress (mean 0.05 Mbit/s) ——

Flow 1 (95th percentile 31.67 ms) •