Pantheon Report

Generated at 2018-12-10 23:55:03 (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.
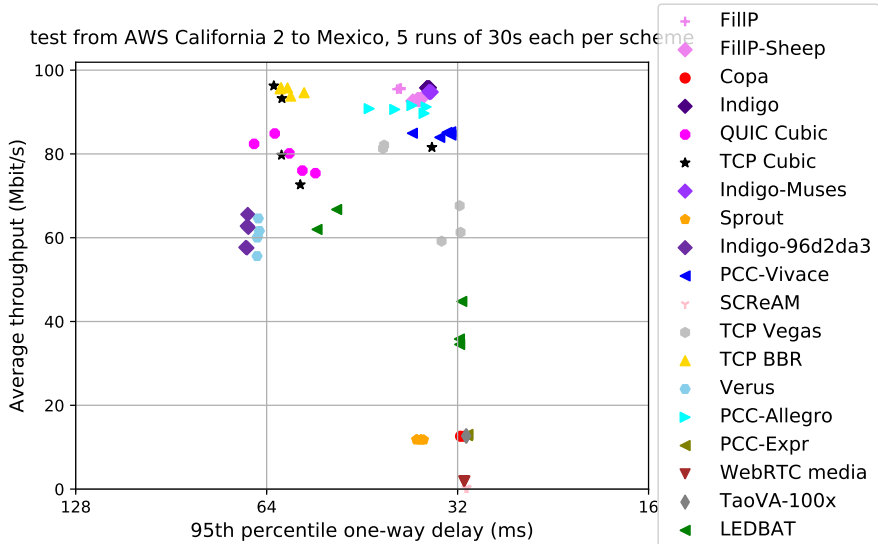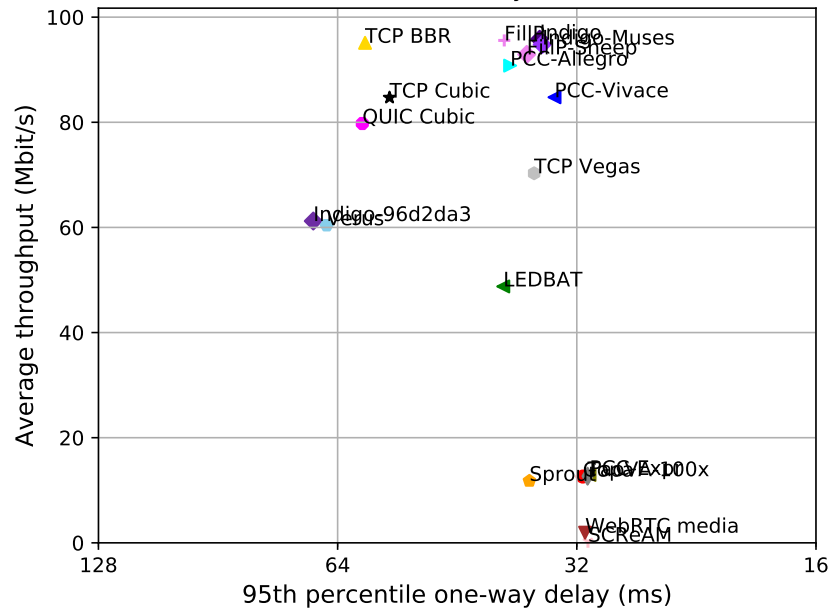
```
System info:
Linux 4.15.0-1029-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

Git summary:
branch: muses @ c6268d7c473682290bfe9901ef81a6b6a1e51d3c
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/indigo-96d2da3 @ 8413272d46f8aa0bcb967ed7048b6a8f994abb95
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
 M receiver/src/buffer.h
 M receiver/src/core.cpp
 M sender/src/buffer.h
 M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
 M src/ScreamClient
 M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
 M src/examples/cellsim.cc
 M src/examples/sproutbt2.cc
 M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
 M src/verus.hpp
 M tools/plot.py
```

```
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

test from AWS 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	95.12	59.11	1.27
Copa	2	12.61	31.45	71.27
TCP Cubic	5	84.69	55.06	0.57
FillP	5	95.57	39.49	0.78
FillP-Sheep	5	92.91	37.00	0.63
Indigo	5	95.79	35.64	0.03
Indigo-96d2da3	5	61.21	68.68	58.95
LEDBAT	5	48.77	39.60	0.05
Indigo-Muses	5	94.79	35.38	0.29
PCC-Allegro	5	90.78	38.82	0.82
PCC-Expr	2	12.91	30.85	51.35
QUIC Cubic	5	79.77	59.58	1.21
SCReAM	5	0.21	30.98	0.00
Sprout	5	11.79	36.71	0.09
TaoVA-100x	3	12.68	31.02	71.24
TCP Vegas	5	70.30	36.21	0.60
Verus	5	60.42	66.07	22.89
PCC-Vivace	5	84.76	34.14	0.06
WebRTC media	5	1.93	31.24	0.00

```
Run 1: Statistics of TCP BBR

Start at: 2018-12-10 22:02:22
End at: 2018-12-10 22:02:52
Local clock offset: 1.739 ms
Remote clock offset: -0.977 ms


# Below is generated by plot.py at 2018-12-10 23:47:21
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.62 Mbit/s
95th percentile per-packet one-way delay: 55.864 ms
Loss rate: 1.05%
-- Flow 1:
Average throughput: 94.62 Mbit/s
95th percentile per-packet one-way delay: 55.864 ms
Loss rate: 1.05%
```
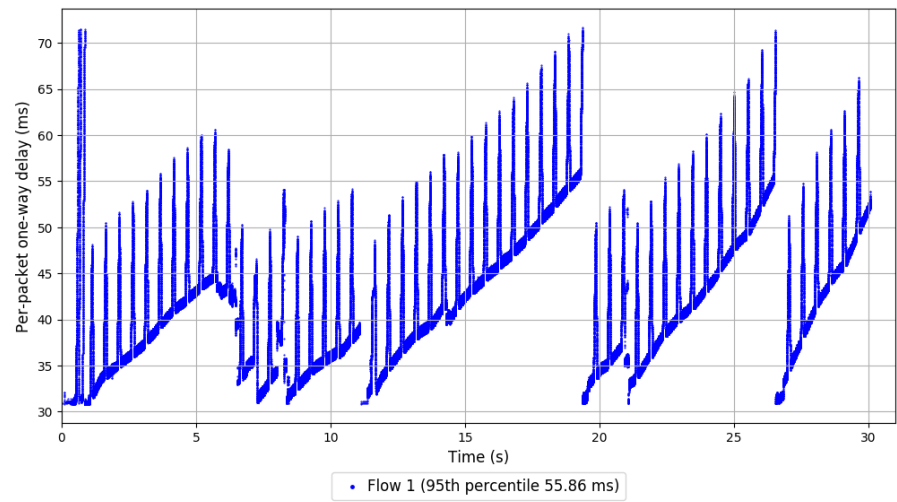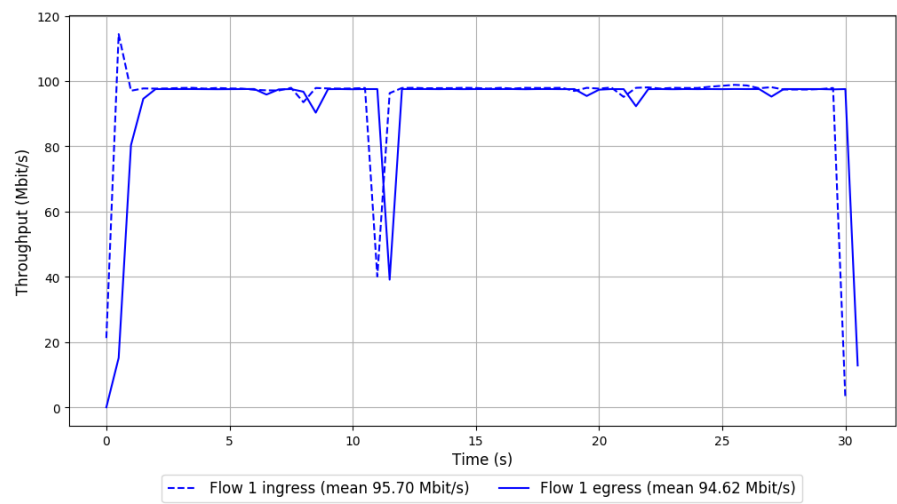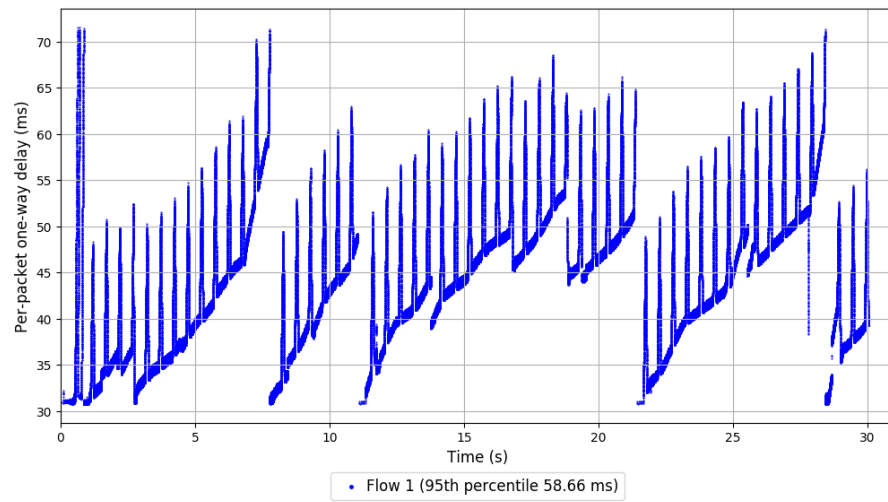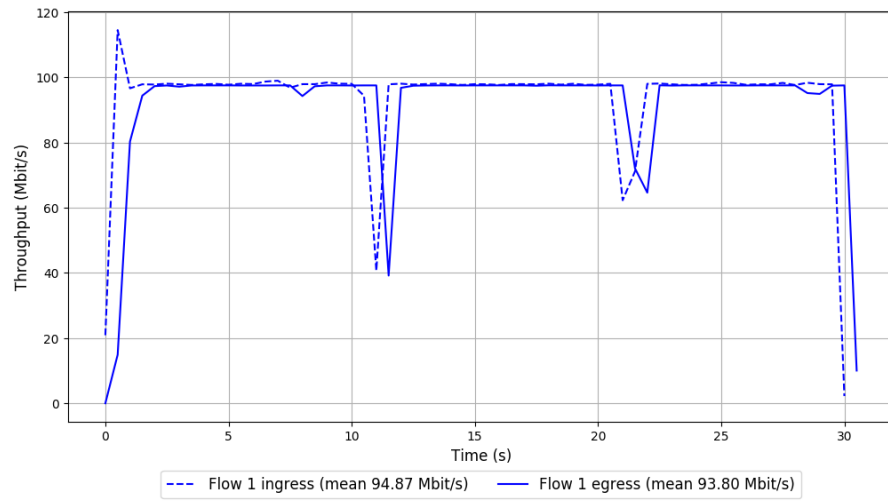
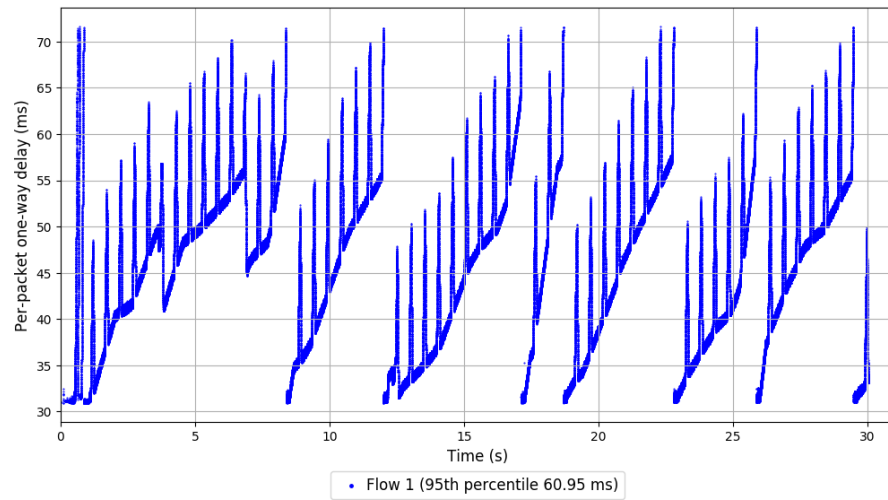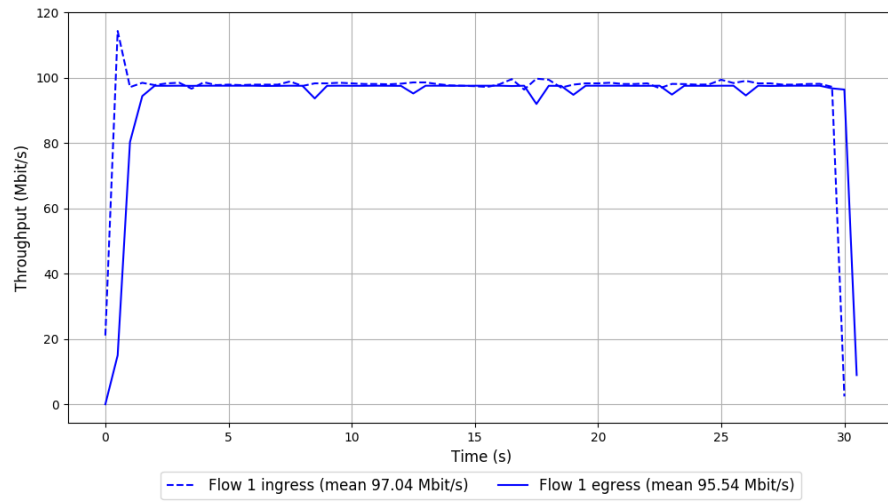Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2018-12-10 22:24:08
End at: 2018-12-10 22:24:38
Local clock offset: 1.874 ms
Remote clock offset: -1.146 ms


# Below is generated by plot.py at 2018-12-10 23:47:21
# Datalink statistics
-- Total of 1 flow:
Average throughput: 93.80 Mbit/s
95th percentile per-packet one-way delay: 58.658 ms
Loss rate: 1.09%
-- Flow 1:
Average throughput: 93.80 Mbit/s
95th percentile per-packet one-way delay: 58.658 ms
Loss rate: 1.09%
```

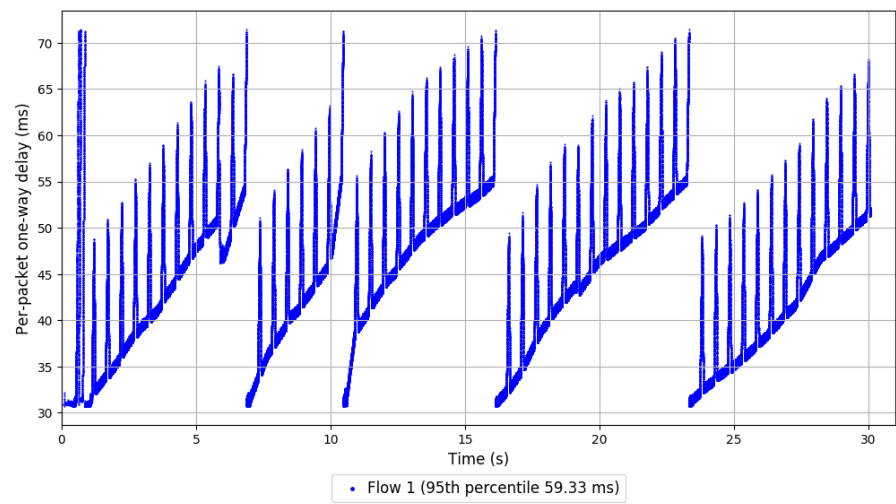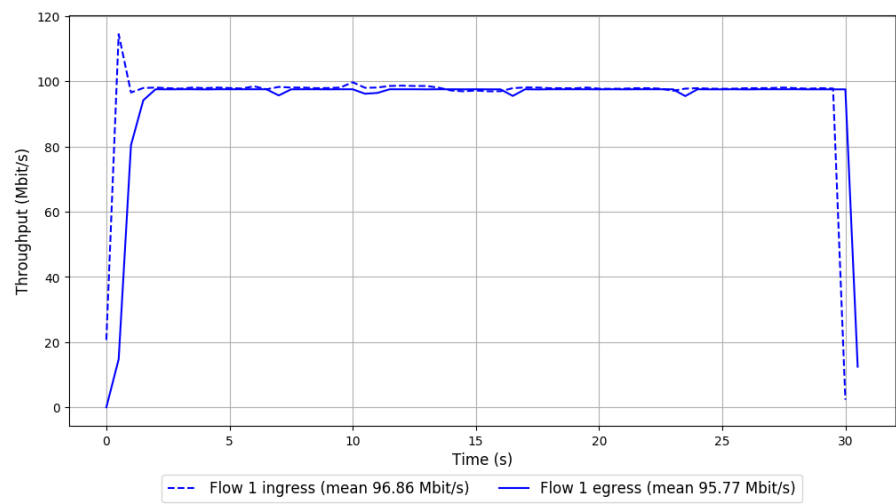Run 2: Report of TCP BBR — Data Link

Flow 1 ingress (mean 94.87 Mbit/s) — Flow 1 egress (mean 93.80 Mbit/s)

Flow 1 (95th percentile 58.66 ms)

```
Run 3: Statistics of TCP BBR

Start at: 2018-12-10 22:46:12
End at: 2018-12-10 22:46:43
Local clock offset: 5.259 ms
Remote clock offset: -0.994 ms


# Below is generated by plot.py at 2018-12-10 23:47:21
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.54 Mbit/s
95th percentile per-packet one-way delay: 60.947 ms
Loss rate: 1.54%
-- Flow 1:
Average throughput: 95.54 Mbit/s
95th percentile per-packet one-way delay: 60.947 ms
Loss rate: 1.54%
```

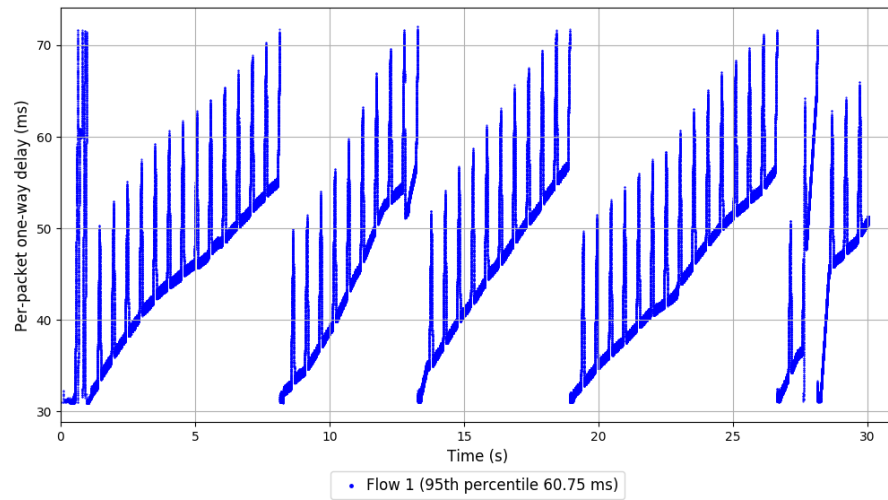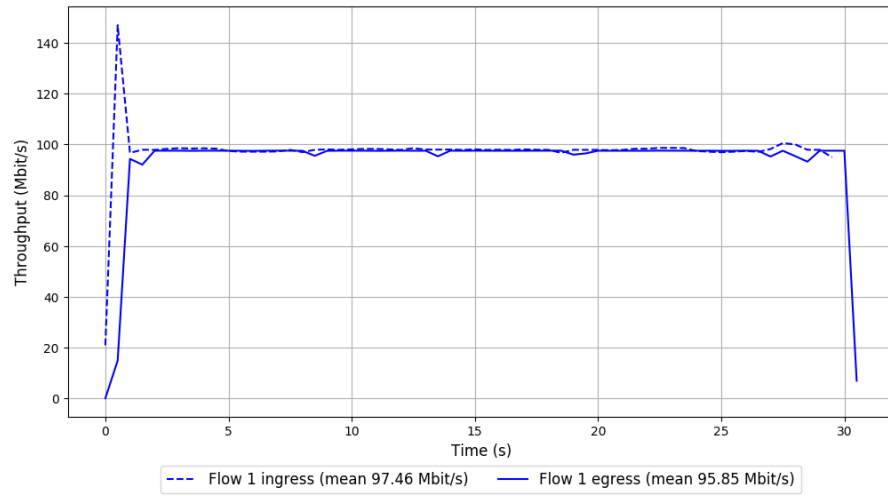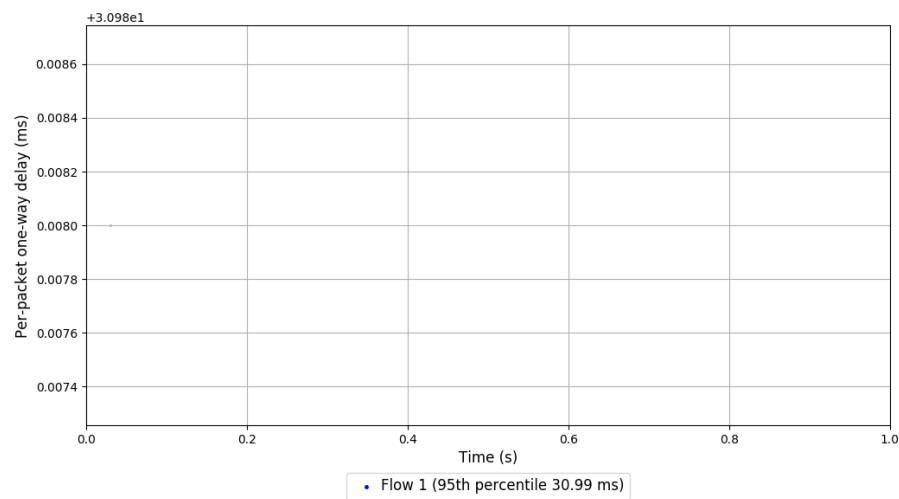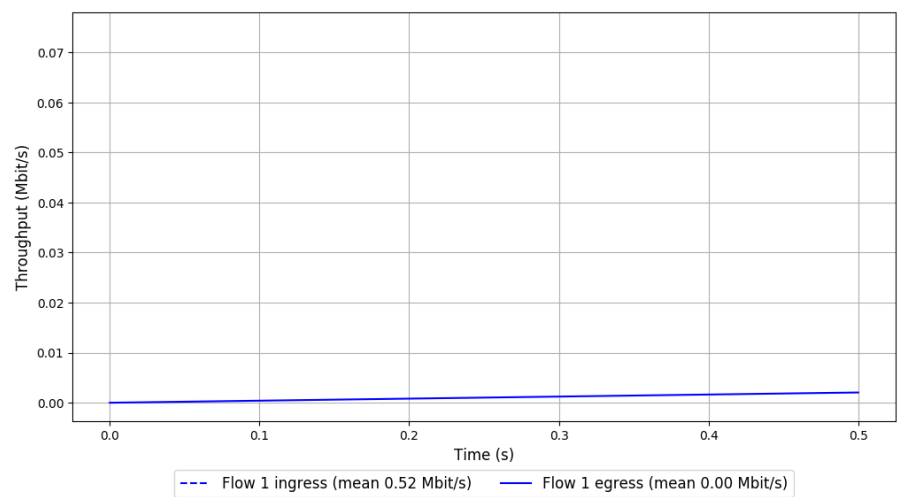Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 97.04 Mbit/s)   Flow 1 egress (mean 95.54 Mbit/s)

Flow 1 (95th percentile 60.95 ms)

```
Run 4: Statistics of TCP BBR

Start at: 2018-12-10 23:09:15
End at: 2018-12-10 23:09:45
Local clock offset: 2.89 ms
Remote clock offset: -2.063 ms


# Below is generated by plot.py at 2018-12-10 23:47:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.77 Mbit/s
95th percentile per-packet one-way delay: 59.328 ms
Loss rate: 1.06%
-- Flow 1:
Average throughput: 95.77 Mbit/s
95th percentile per-packet one-way delay: 59.328 ms
Loss rate: 1.06%
```

Run 4: Report of TCP BBR — Data Link

Flow 1 ingress (mean 96.86 Mbit/s)   Flow 1 egress (mean 95.77 Mbit/s)
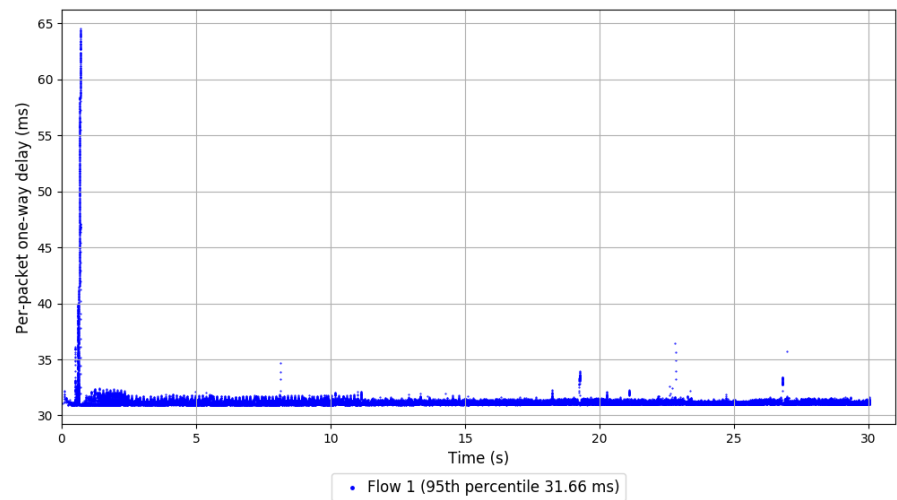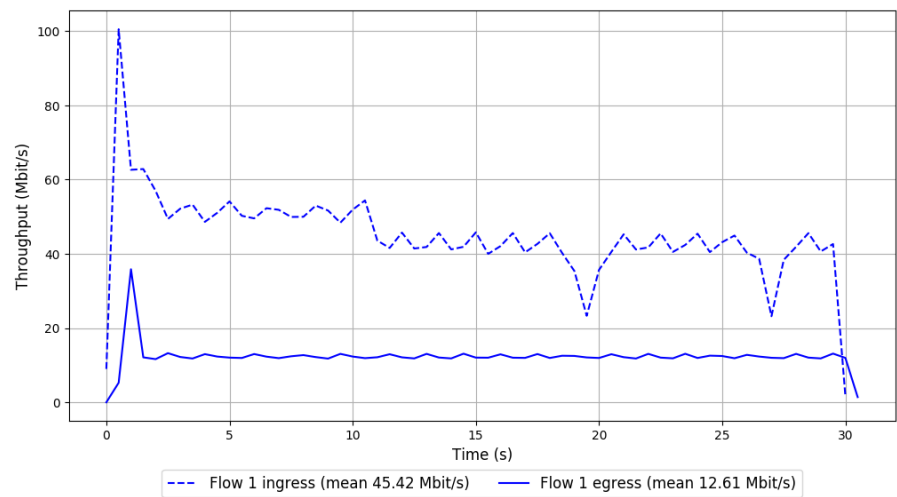

Flow 1 (95th percentile 59.33 ms)

```
Run 5: Statistics of TCP BBR

Start at: 2018-12-10 23:31:45
End at: 2018-12-10 23:32:15
Local clock offset: 3.212 ms
Remote clock offset: -3.169 ms


# Below is generated by plot.py at 2018-12-10 23:47:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.85 Mbit/s
95th percentile per-packet one-way delay: 60.747 ms
Loss rate: 1.59%
-- Flow 1:
Average throughput: 95.85 Mbit/s
95th percentile per-packet one-way delay: 60.747 ms
Loss rate: 1.59%
```

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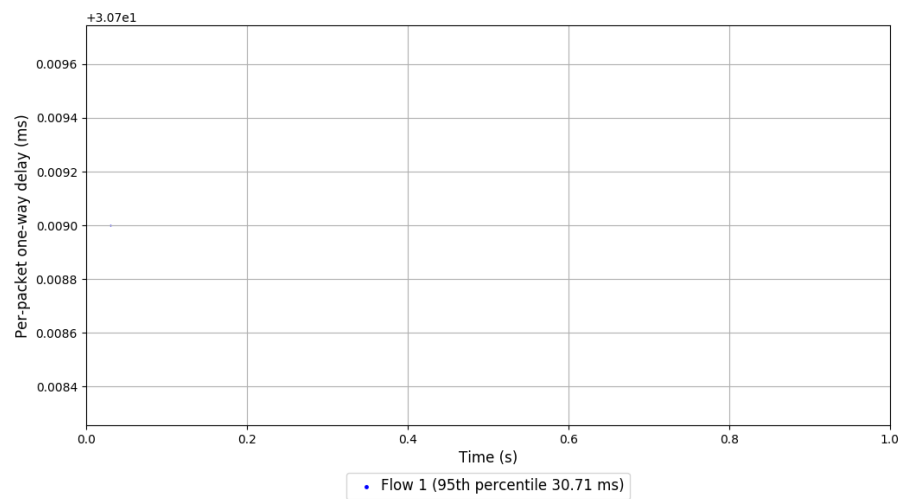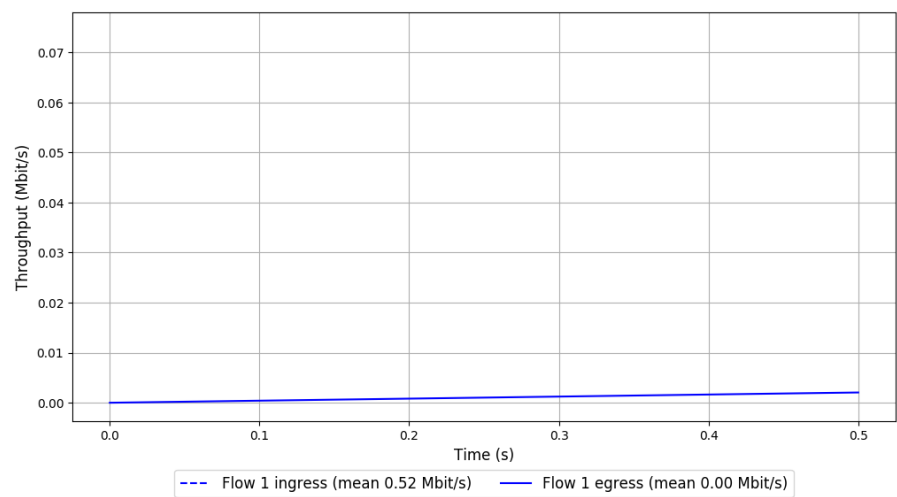
```
Run 1: Statistics of Copa

Start at: 2018-12-10 22:12:41
End at: 2018-12-10 22:13:11
Local clock offset: 2.015 ms
Remote clock offset: -1.093 ms
```

Run 1: Report of Copa — Data Link

Flow 1 ingress (mean 0.52 Mbit/s) --- Flow 1 egress (mean 0.00 Mbit/s)

Flow 1 (95th percentile 30.99 ms)

```
Run 2: Statistics of Copa

Start at: 2018-12-10 22:34:38
End at: 2018-12-10 22:35:08
Local clock offset: 3.919 ms
Remote clock offset: -1.061 ms

# Below is generated by plot.py at 2018-12-10 23:47:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 31.663 ms
Loss rate: 72.24%
-- Flow 1:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 31.663 ms
Loss rate: 72.24%
```
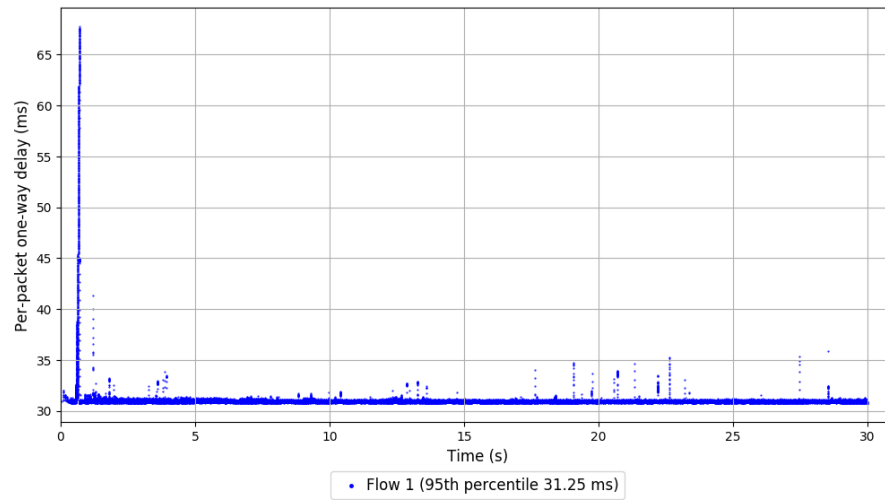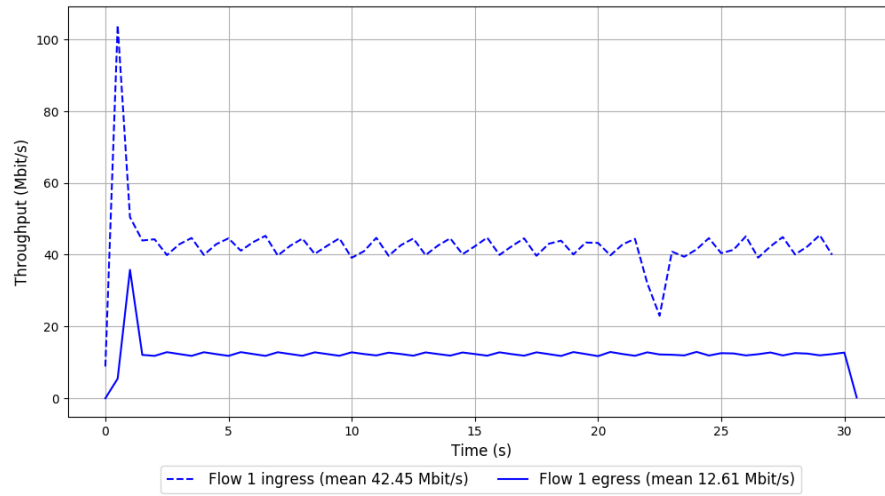
Run 2: Report of Copa — Data Link
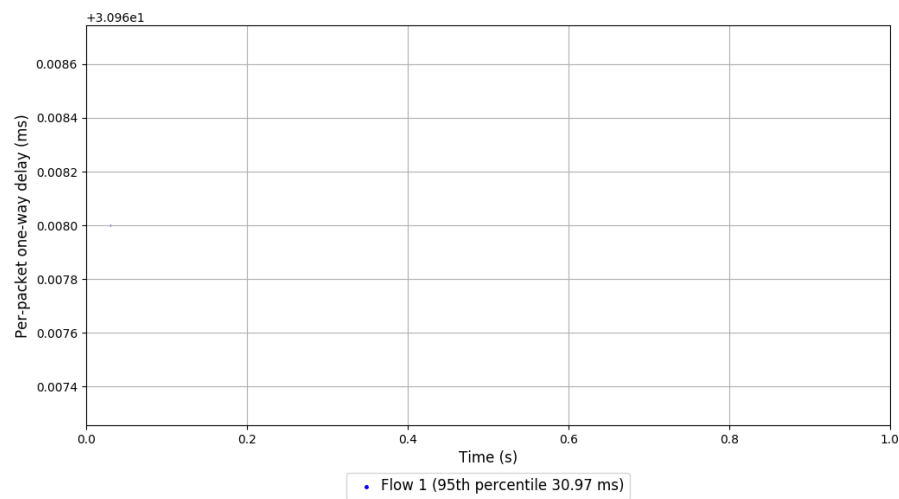
```
Run 3: Statistics of Copa

Start at: 2018-12-10 22:57:05
End at: 2018-12-10 22:57:35
Local clock offset: 5.785 ms
Remote clock offset: -1.774 ms
```

Run 3: Report of Copa — Data Link

```
Run 4: Statistics of Copa

Start at: 2018-12-10 23:20:02
End at: 2018-12-10 23:20:32
Local clock offset: 1.977 ms
Remote clock offset: -2.58 ms


# Below is generated by plot.py at 2018-12-10 23:47:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 31.245 ms
Loss rate: 70.30%
-- Flow 1:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 31.245 ms
Loss rate: 70.30%
```

Run 4: Report of Copa — Data Link

Flow 1 ingress (mean 42.45 Mbit/s)   Flow 1 egress (mean 12.61 Mbit/s)

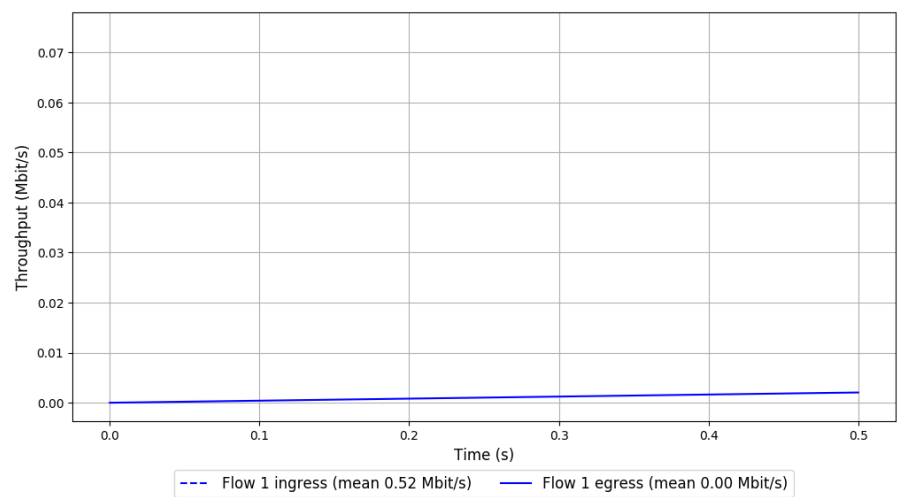Flow 1 (95th percentile 31.25 ms)

```
Run 5: Statistics of Copa

Start at: 2018-12-10 23:42:08
End at: 2018-12-10 23:42:38
Local clock offset: 5.115 ms
Remote clock offset: -3.577 ms
```
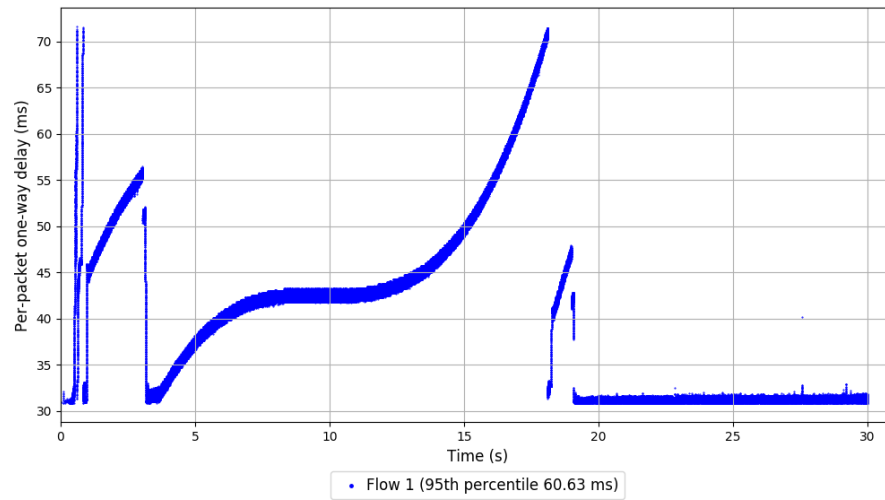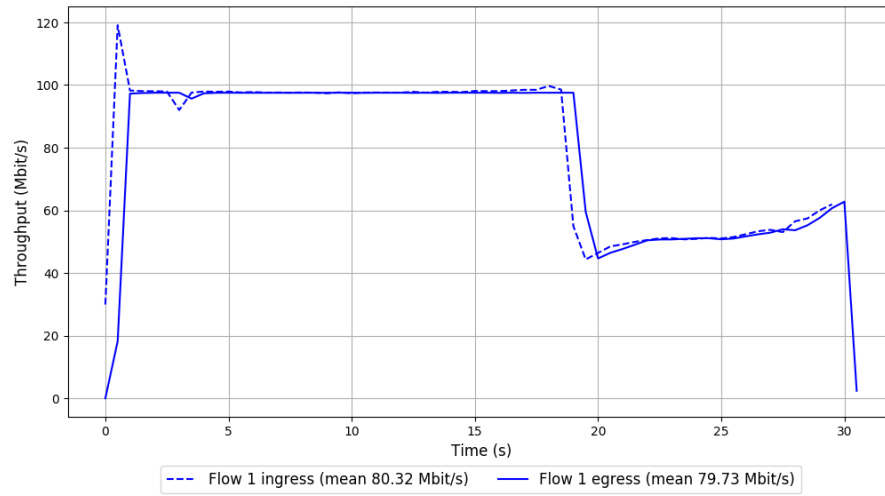
Run 5: Report of Copa — Data Link

```
Run 1: Statistics of TCP Cubic

Start at: 2018-12-10 22:06:57
End at: 2018-12-10 22:07:27
Local clock offset: 1.944 ms
Remote clock offset: -1.041 ms


# Below is generated by plot.py at 2018-12-10 23:47:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 79.73 Mbit/s
95th percentile per-packet one-way delay: 60.635 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 79.73 Mbit/s
95th percentile per-packet one-way delay: 60.635 ms
Loss rate: 0.73%
```

Run 1: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 80.32 Mbit/s) --- Flow 1 egress (mean 79.73 Mbit/s) ——
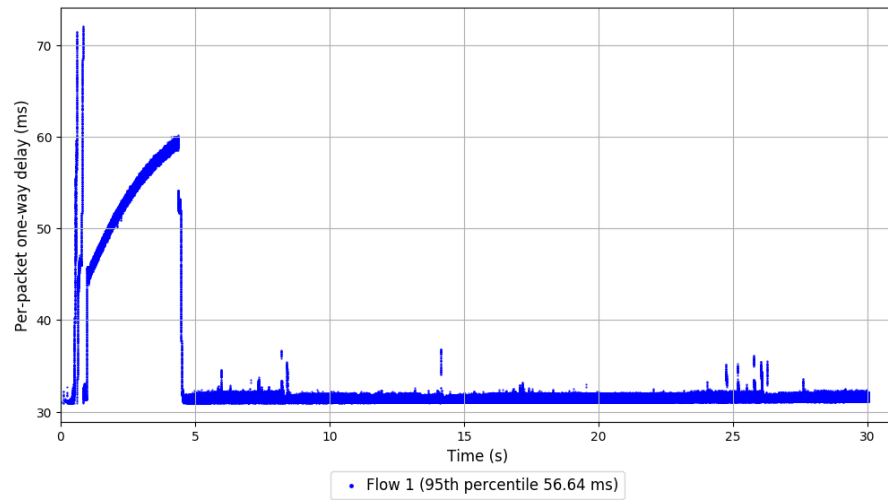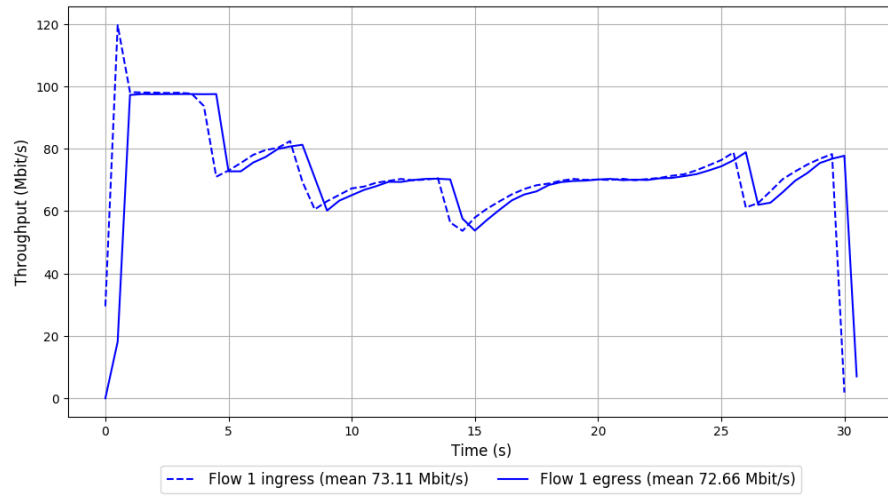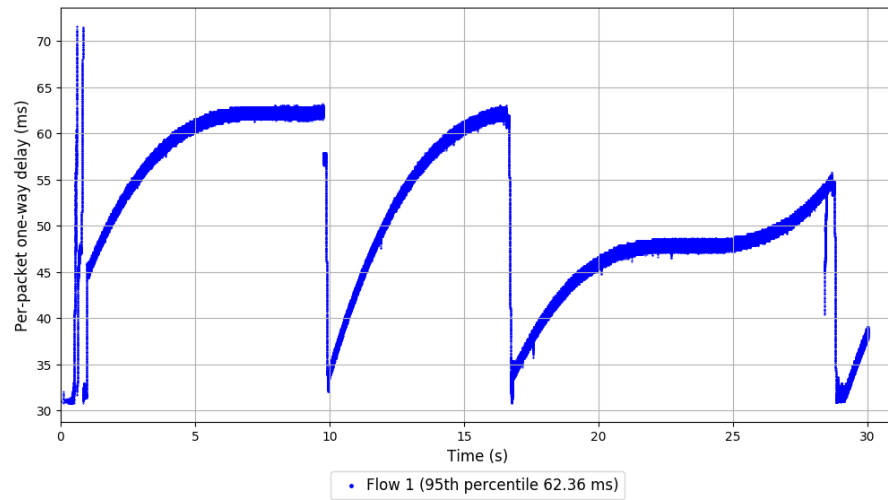

Flow 1 (95th percentile 60.63 ms)

```
Run 2: Statistics of TCP Cubic

Start at: 2018-12-10 22:28:51
End at: 2018-12-10 22:29:21
Local clock offset: 2.407 ms
Remote clock offset: -1.114 ms


# Below is generated by plot.py at 2018-12-10 23:47:23
# Datalink statistics
-- Total of 1 flow:
Average throughput: 72.66 Mbit/s
95th percentile per-packet one-way delay: 56.636 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 72.66 Mbit/s
95th percentile per-packet one-way delay: 56.636 ms
Loss rate: 0.62%
```

Run 2: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 73.11 Mbit/s) ---- Flow 1 egress (mean 72.66 Mbit/s) ——
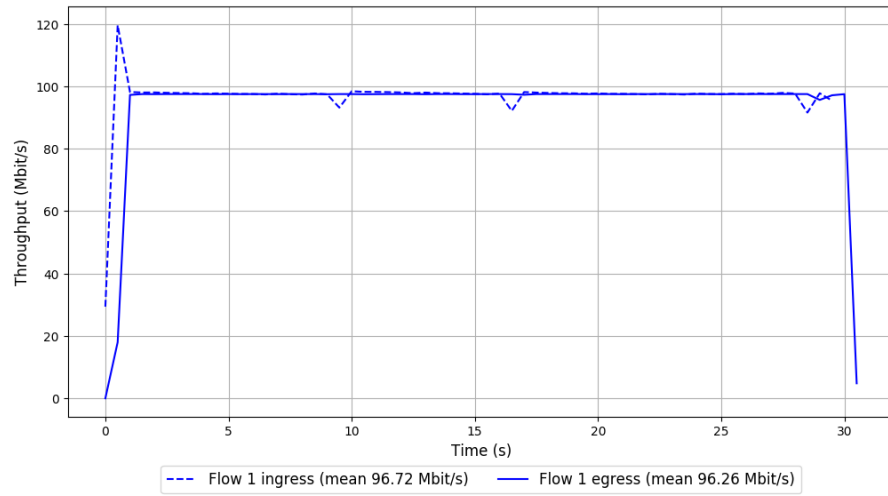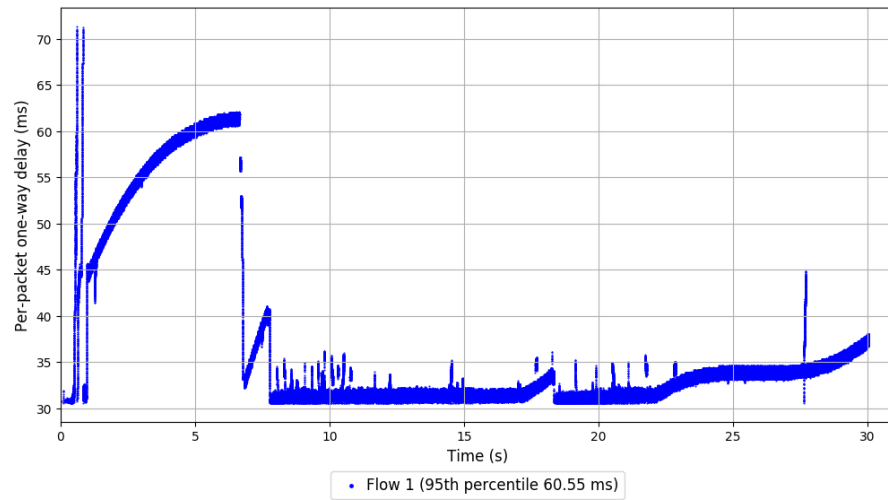

Flow 1 (95th percentile 56.64 ms)

```
Run 3: Statistics of TCP Cubic

Start at: 2018-12-10 22:51:02
End at: 2018-12-10 22:51:32
Local clock offset: 5.529 ms
Remote clock offset: -1.304 ms


# Below is generated by plot.py at 2018-12-10 23:47:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 96.26 Mbit/s
95th percentile per-packet one-way delay: 62.360 ms
Loss rate: 0.45%
-- Flow 1:
Average throughput: 96.26 Mbit/s
95th percentile per-packet one-way delay: 62.360 ms
Loss rate: 0.45%
```

Run 3: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 96.72 Mbit/s) --- Flow 1 egress (mean 96.26 Mbit/s)

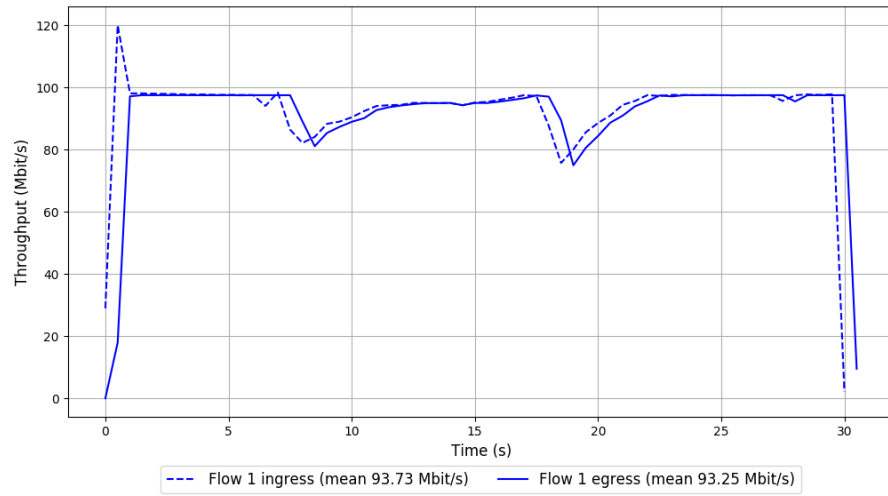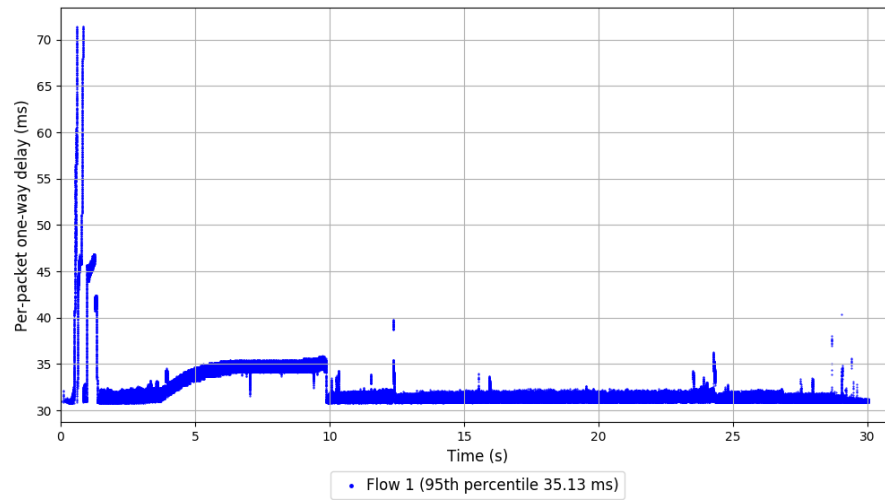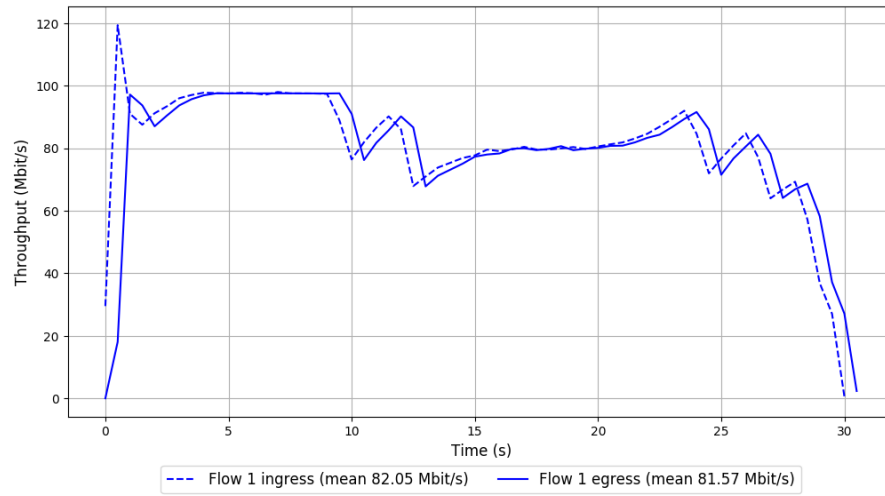

Flow 1 (95th percentile 62.36 ms)

```
Run 4: Statistics of TCP Cubic

Start at: 2018-12-10 23:14:05
End at: 2018-12-10 23:14:35
Local clock offset: 2.379 ms
Remote clock offset: -2.397 ms


# Below is generated by plot.py at 2018-12-10 23:48:05
# Datalink statistics
-- Total of 1 flow:
Average throughput: 93.25 Mbit/s
95th percentile per-packet one-way delay: 60.545 ms
Loss rate: 0.49%
-- Flow 1:
Average throughput: 93.25 Mbit/s
95th percentile per-packet one-way delay: 60.545 ms
Loss rate: 0.49%
```
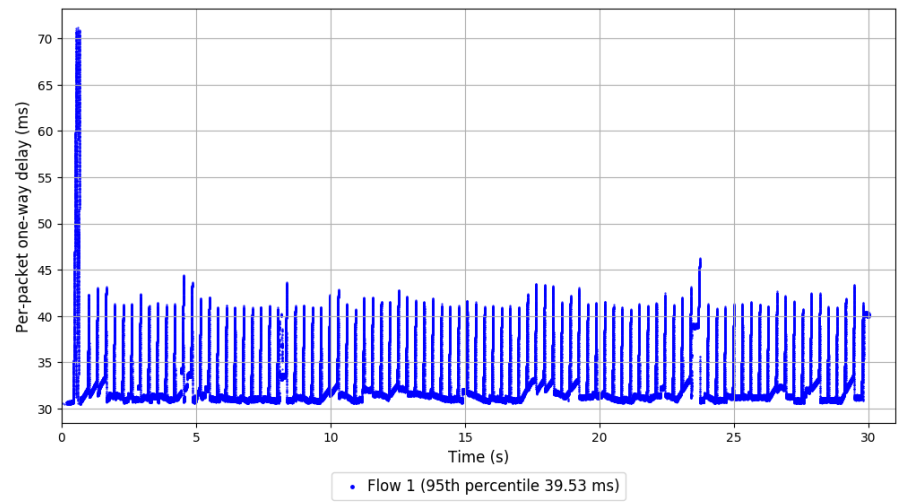
Run 4: Report of TCP Cubic — Data Link

```
Run 5: Statistics of TCP Cubic

Start at: 2018-12-10 23:36:20
End at: 2018-12-10 23:36:50
Local clock offset: 4.303 ms
Remote clock offset: -3.358 ms


# Below is generated by plot.py at 2018-12-10 23:48:05
# Datalink statistics
-- Total of 1 flow:
Average throughput: 81.57 Mbit/s
95th percentile per-packet one-way delay: 35.128 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 81.57 Mbit/s
95th percentile per-packet one-way delay: 35.128 ms
Loss rate: 0.58%
```

Run 5: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 82.05 Mbit/s) --- Flow 1 egress (mean 81.57 Mbit/s)
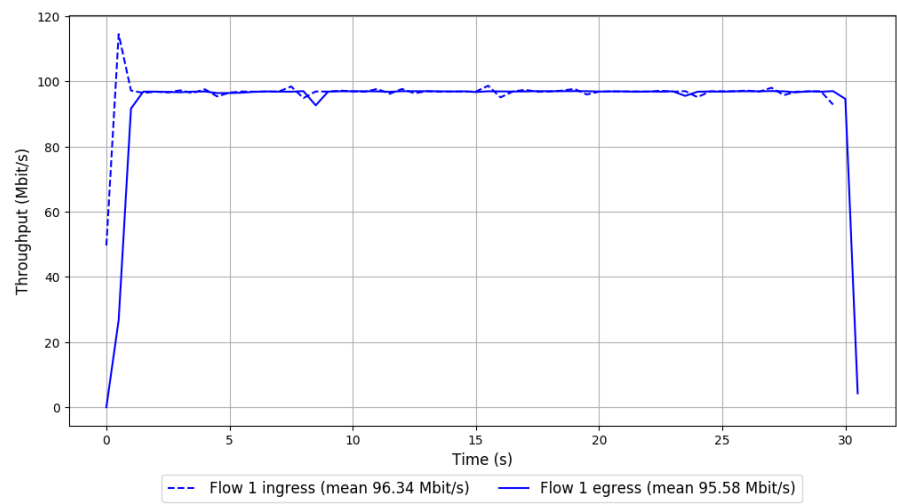

Flow 1 (95th percentile 35.13 ms)

```
Run 1: Statistics of FillP

Start at: 2018-12-10 22:14:56
End at: 2018-12-10 22:15:26
Local clock offset: 2.014 ms
Remote clock offset: -1.316 ms


# Below is generated by plot.py at 2018-12-10 23:48:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.58 Mbit/s
95th percentile per-packet one-way delay: 39.532 ms
Loss rate: 0.76%
-- Flow 1:
Average throughput: 95.58 Mbit/s
95th percentile per-packet one-way delay: 39.532 ms
Loss rate: 0.76%
```
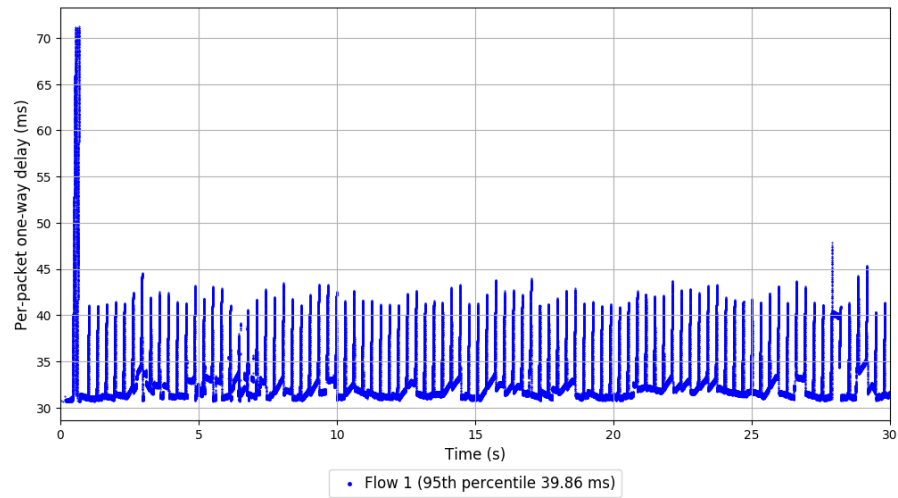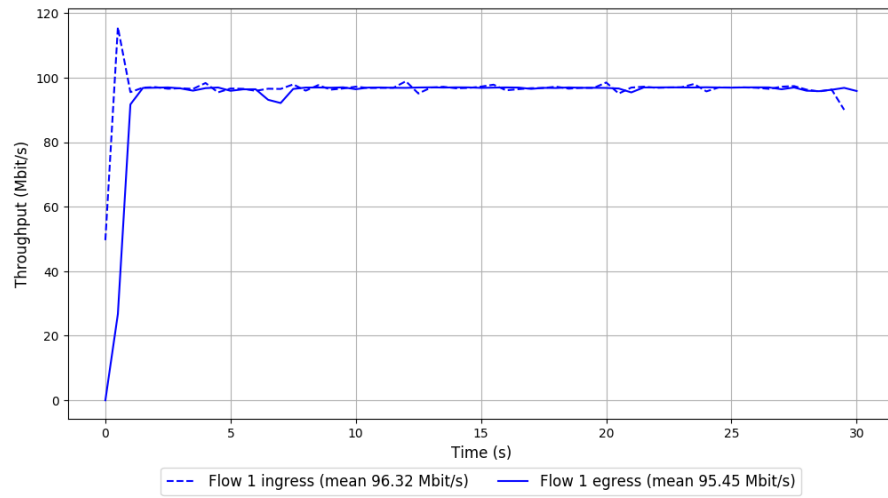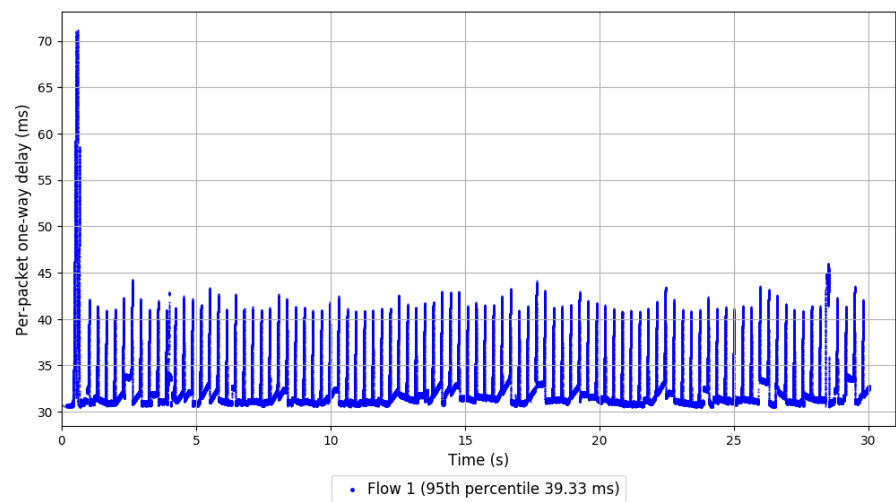
Run 1: Report of FillP — Data Link

```
Run 2: Statistics of FillP

Start at: 2018-12-10 22:36:56
End at: 2018-12-10 22:37:26
Local clock offset: 4.334 ms
Remote clock offset: -1.11 ms


# Below is generated by plot.py at 2018-12-10 23:48:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.45 Mbit/s
95th percentile per-packet one-way delay: 39.862 ms
Loss rate: 0.89%
-- Flow 1:
Average throughput: 95.45 Mbit/s
95th percentile per-packet one-way delay: 39.862 ms
Loss rate: 0.89%
```

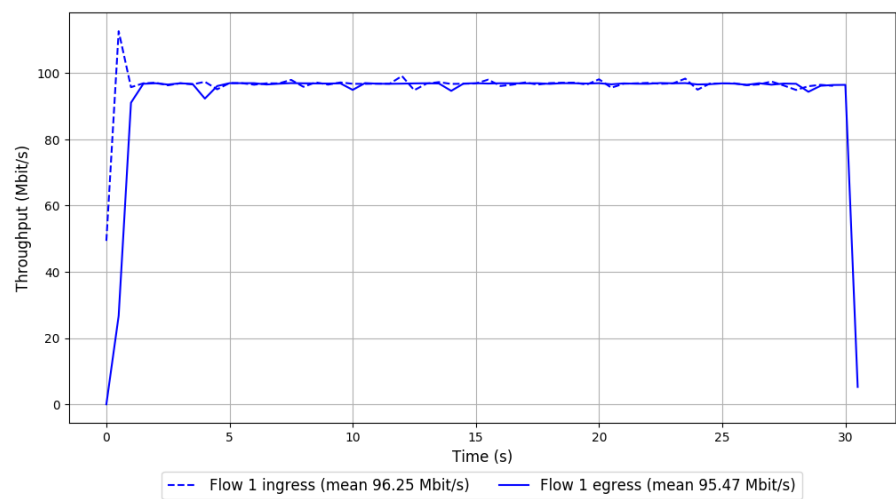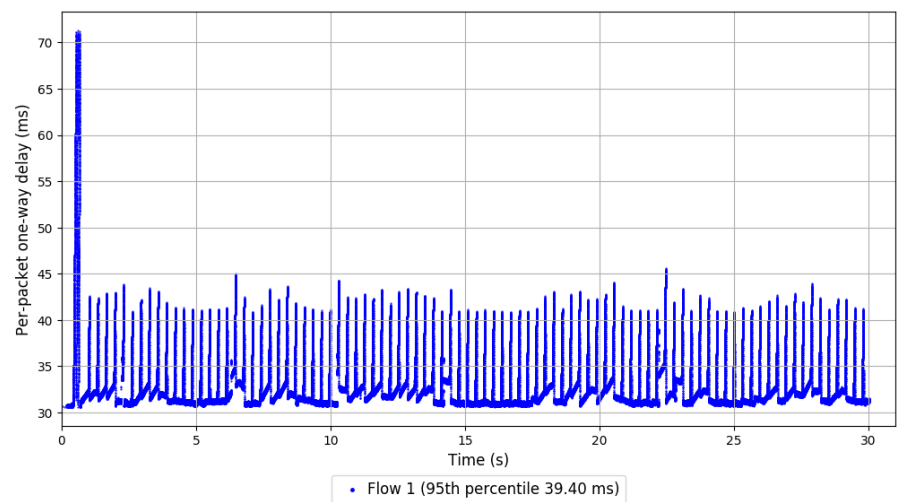Run 2: Report of FillP — Data Link

```
Run 3: Statistics of FillP

Start at: 2018-12-10 22:59:23
End at: 2018-12-10 22:59:53
Local clock offset: 4.998 ms
Remote clock offset: -1.654 ms


# Below is generated by plot.py at 2018-12-10 23:48:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.47 Mbit/s
95th percentile per-packet one-way delay: 39.334 ms
Loss rate: 0.81%
-- Flow 1:
Average throughput: 95.47 Mbit/s
95th percentile per-packet one-way delay: 39.334 ms
Loss rate: 0.81%
```

Run 3: Report of FillP — Data Link

Flow 1 ingress (mean 96.25 Mbit/s)   Flow 1 egress (mean 95.47 Mbit/s)

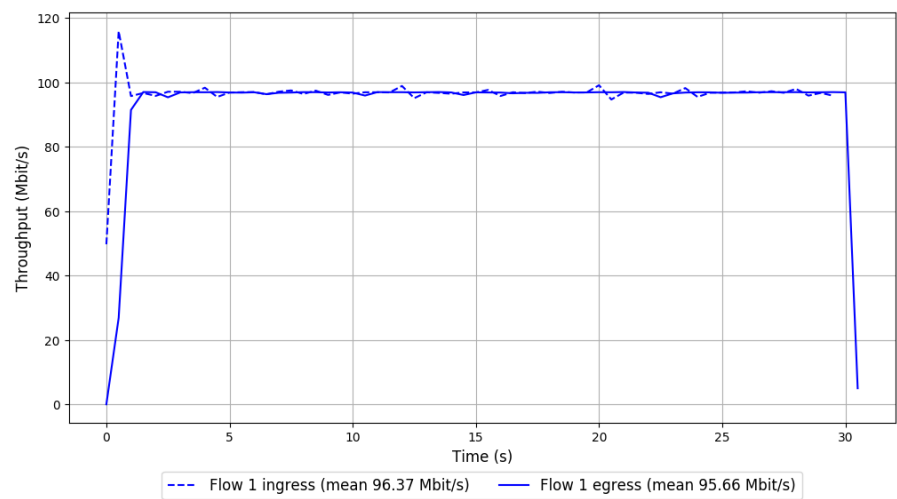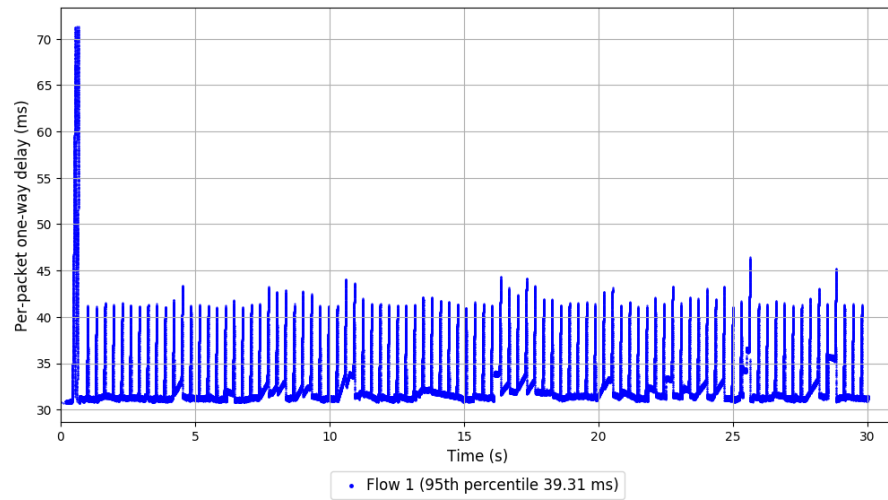Flow 1 (95th percentile 39.33 ms)

```
Run 4: Statistics of FillP

Start at: 2018-12-10 23:22:23
End at: 2018-12-10 23:22:53
Local clock offset: 1.913 ms
Remote clock offset: -2.753 ms


# Below is generated by plot.py at 2018-12-10 23:48:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.66 Mbit/s
95th percentile per-packet one-way delay: 39.395 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 95.66 Mbit/s
95th percentile per-packet one-way delay: 39.395 ms
Loss rate: 0.73%
```

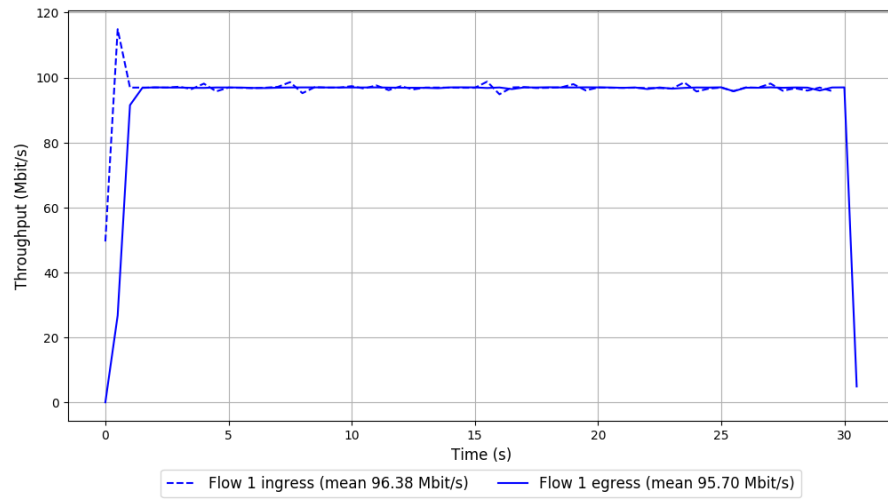Run 4: Report of FillP — Data Link

```
Run 5: Statistics of FillP

Start at: 2018-12-10 23:44:25
End at: 2018-12-10 23:44:55
Local clock offset: 5.31 ms
Remote clock offset: -3.632 ms


# Below is generated by plot.py at 2018-12-10 23:48:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.70 Mbit/s
95th percentile per-packet one-way delay: 39.315 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 95.70 Mbit/s
95th percentile per-packet one-way delay: 39.315 ms
Loss rate: 0.70%
```

Run 5: Report of FillP — Data Link

```
Run 1: Statistics of FillP-Sheep

Start at: 2018-12-10 21:58:53
End at: 2018-12-10 21:59:23
Local clock offset: 1.434 ms
Remote clock offset: -1.154 ms


# Below is generated by plot.py at 2018-12-10 23:48:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.93 Mbit/s
95th percentile per-packet one-way delay: 36.800 ms
Loss rate: 0.68%
-- Flow 1:
Average throughput: 92.93 Mbit/s
95th percentile per-packet one-way delay: 36.800 ms
Loss rate: 0.68%
```
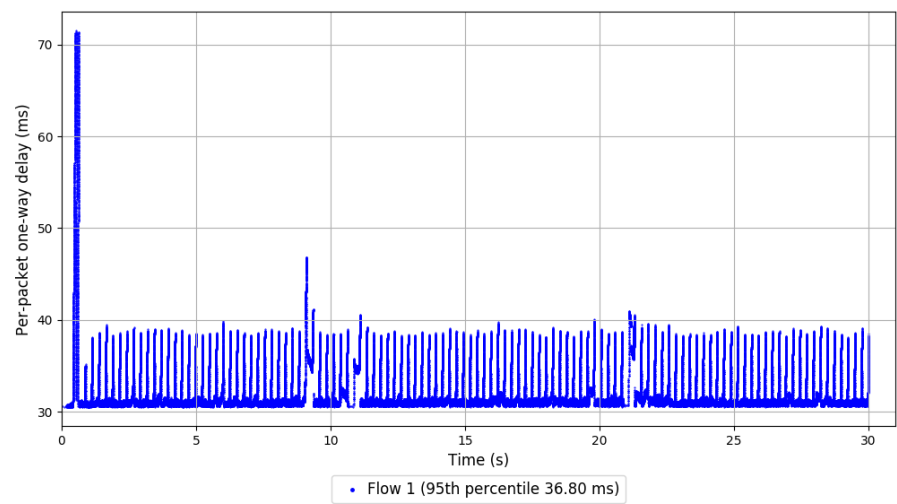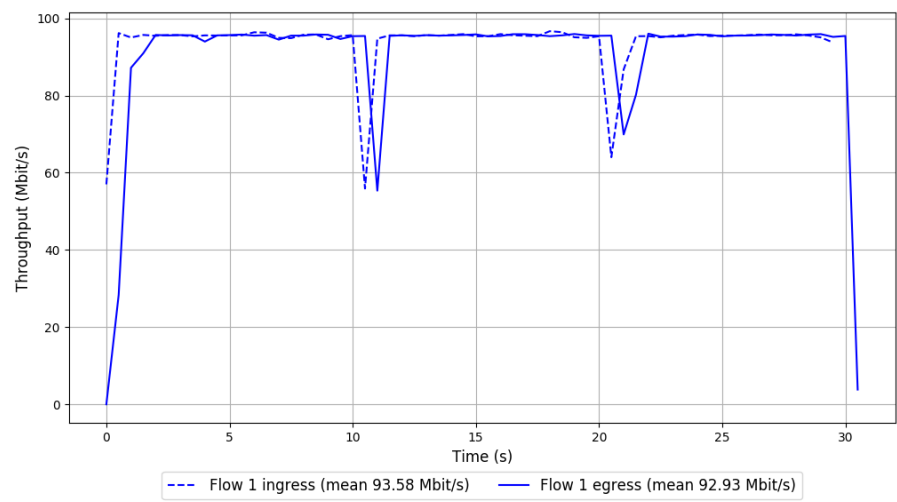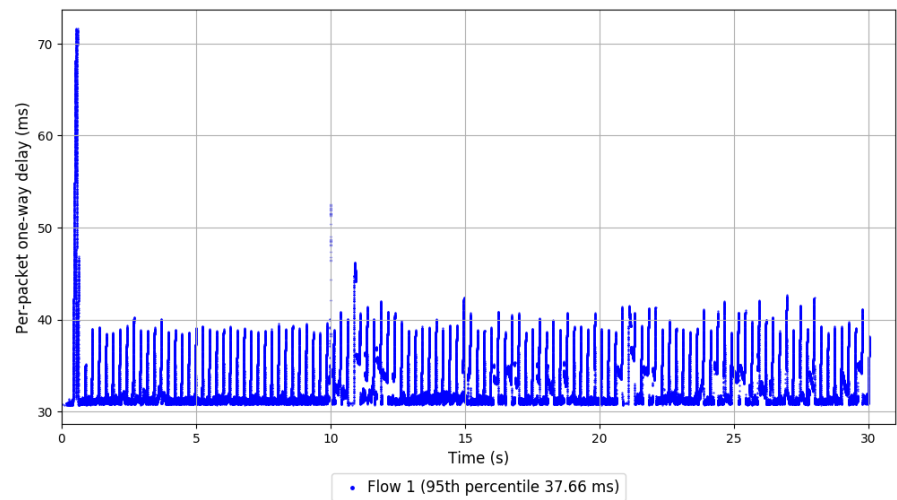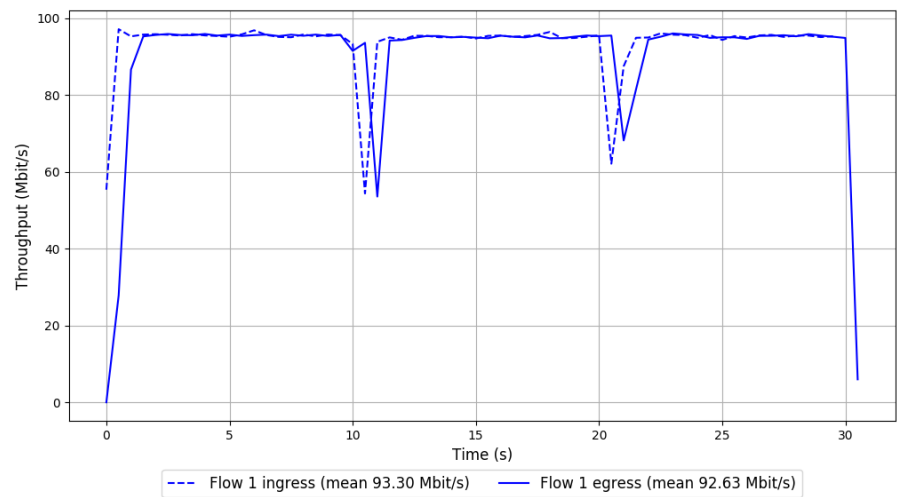
Run 1: Report of FillP-Sheep — Data Link

```
Run 2: Statistics of FillP-Sheep

Start at: 2018-12-10 22:20:38
End at: 2018-12-10 22:21:08
Local clock offset: 1.934 ms
Remote clock offset: -1.121 ms


# Below is generated by plot.py at 2018-12-10 23:49:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.63 Mbit/s
95th percentile per-packet one-way delay: 37.655 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 92.63 Mbit/s
95th percentile per-packet one-way delay: 37.655 ms
Loss rate: 0.69%
```

Run 2: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 93.30 Mbit/s) --- Flow 1 egress (mean 92.63 Mbit/s)
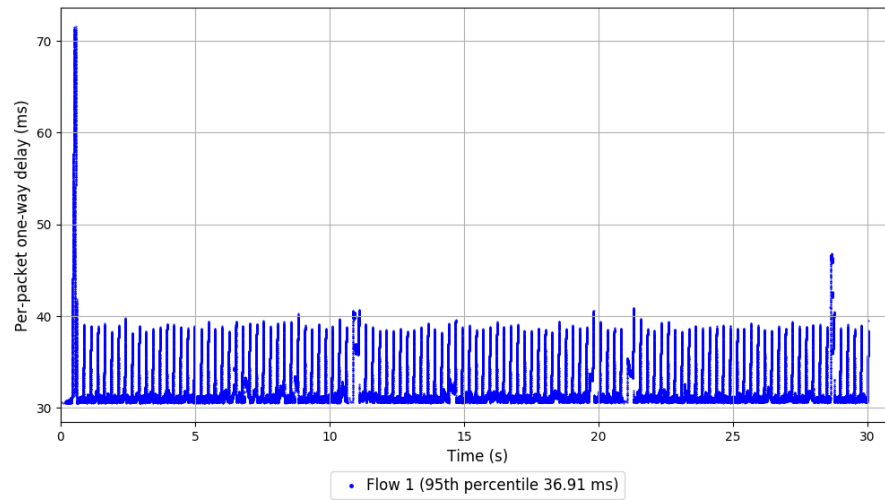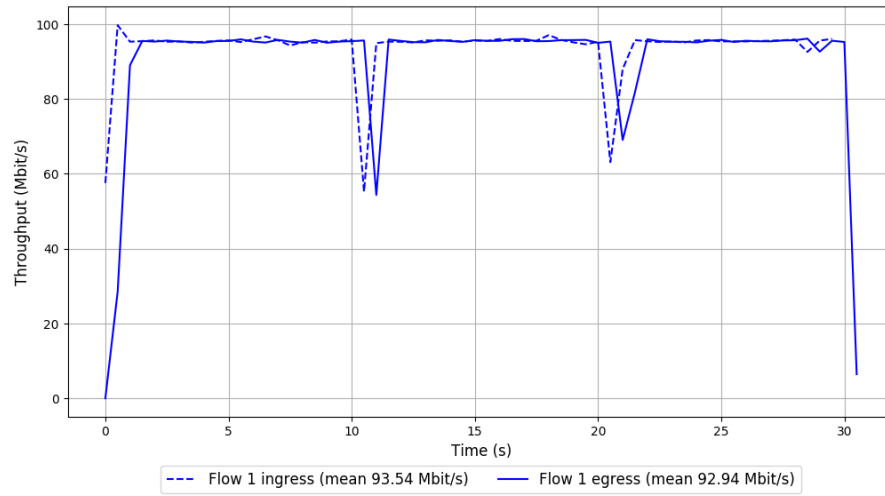

Flow 1 (95th percentile 37.66 ms)

```
Run 3: Statistics of FillP-Sheep

Start at: 2018-12-10 22:42:38
End at: 2018-12-10 22:43:08
Local clock offset: 4.993 ms
Remote clock offset: -1.192 ms


# Below is generated by plot.py at 2018-12-10 23:49:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.94 Mbit/s
95th percentile per-packet one-way delay: 36.914 ms
Loss rate: 0.61%
-- Flow 1:
Average throughput: 92.94 Mbit/s
95th percentile per-packet one-way delay: 36.914 ms
Loss rate: 0.61%
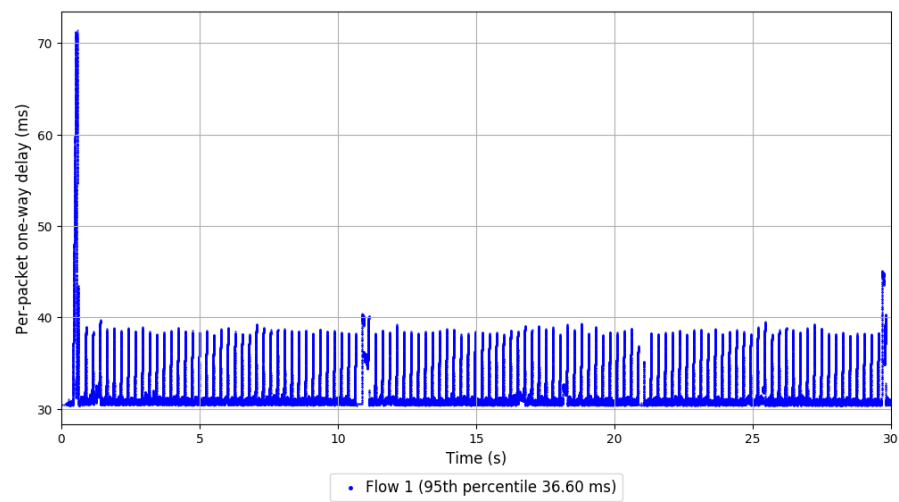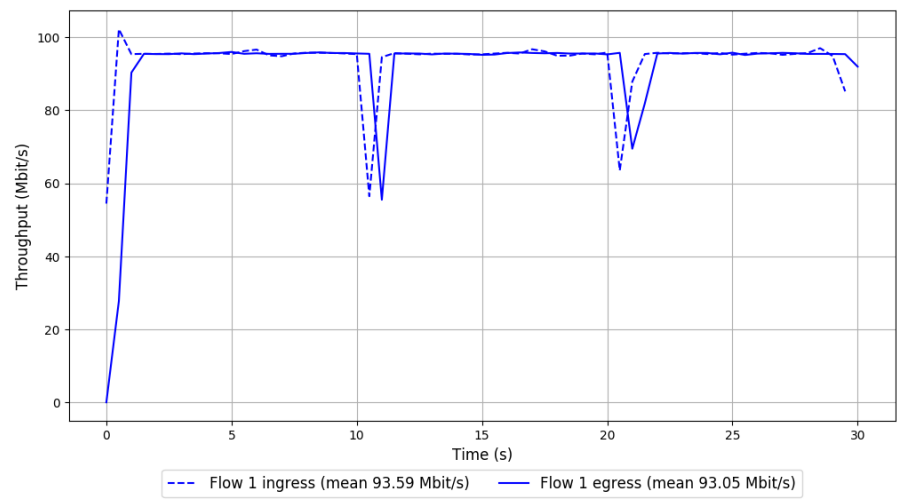```

Run 3: Report of FillP-Sheep — Data Link

```
Run 4: Statistics of FillP-Sheep

Start at: 2018-12-10 23:05:26
End at: 2018-12-10 23:05:56
Local clock offset: 3.51 ms
Remote clock offset: -2.136 ms

Below is generated by plot.py at 2018-12-10 23:49:55
Datalink statistics
-- Total of 1 flow:
Average throughput: 93.05 Mbit/s
95th percentile per-packet one-way delay: 36.598 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 93.05 Mbit/s
95th percentile per-packet one-way delay: 36.598 ms
Loss rate: 0.58%
```
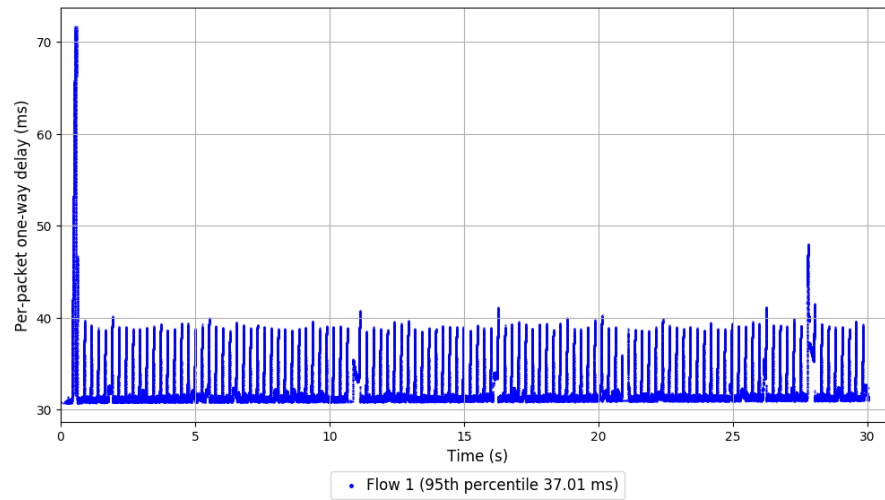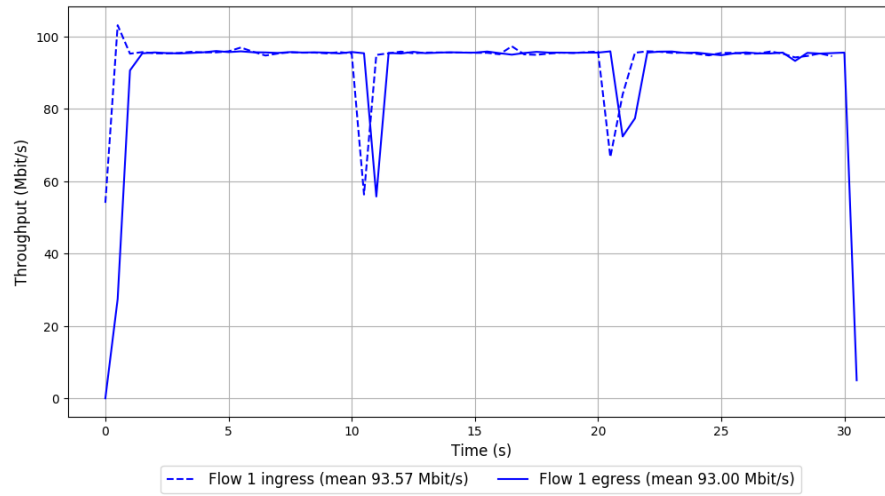
Run 4: Report of FillP-Sheep — Data Link

```
Run 5: Statistics of FillP-Sheep

Start at: 2018-12-10 23:28:15
End at: 2018-12-10 23:28:45
Local clock offset: 2.031 ms
Remote clock offset: -3.064 ms

Below is generated by plot.py at 2018-12-10 23:49:56
Datalink statistics
-- Total of 1 flow:
Average throughput: 93.00 Mbit/s
95th percentile per-packet one-way delay: 37.012 ms
Loss rate: 0.61%
-- Flow 1:
Average throughput: 93.00 Mbit/s
95th percentile per-packet one-way delay: 37.012 ms
Loss rate: 0.61%
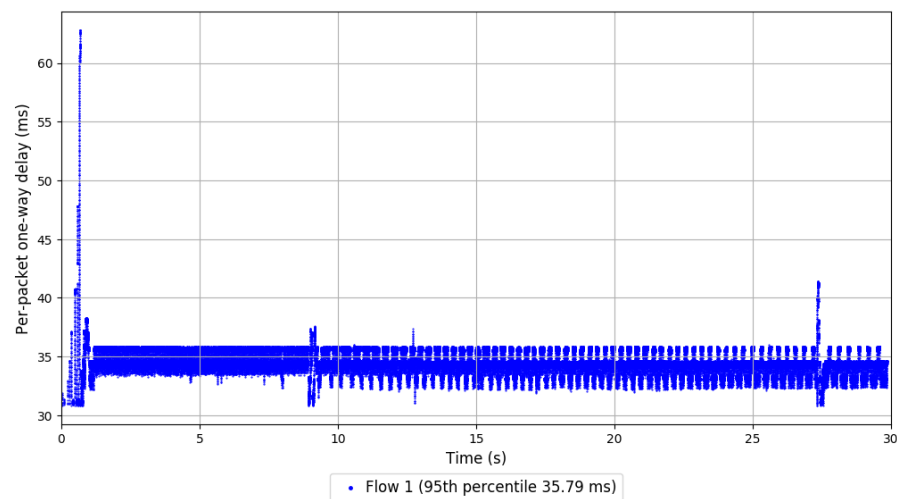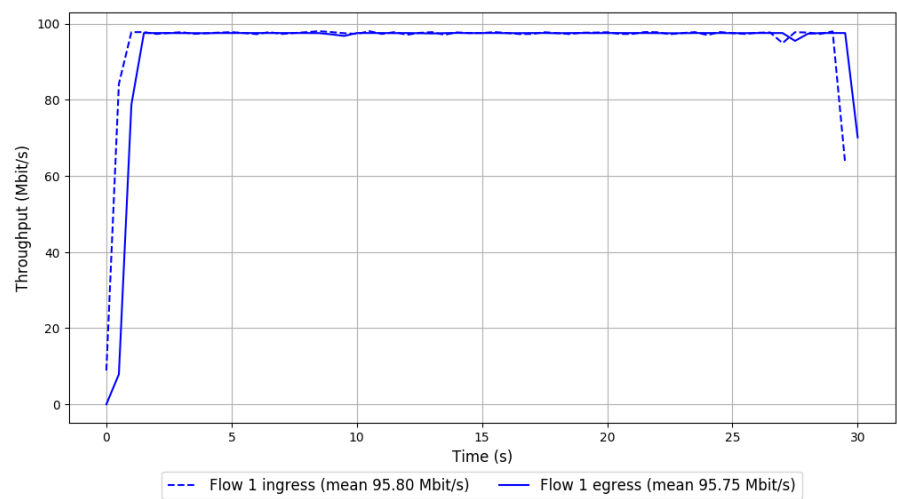```

Run 5: Report of FillP-Sheep — Data Link

```
Run 1: Statistics of Indigo

Start at: 2018-12-10 22:05:46
End at: 2018-12-10 22:06:16
Local clock offset: 1.904 ms
Remote clock offset: -1.018 ms


# Below is generated by plot.py at 2018-12-10 23:49:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.75 Mbit/s
95th percentile per-packet one-way delay: 35.786 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 95.75 Mbit/s
95th percentile per-packet one-way delay: 35.786 ms
Loss rate: 0.04%
```

Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2018-12-10 22:27:30
End at: 2018-12-10 22:28:00
Local clock offset: 1.9 ms
Remote clock offset: -1.158 ms


# Below is generated by plot.py at 2018-12-10 23:49:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.81 Mbit/s
95th percentile per-packet one-way delay: 35.784 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 95.81 Mbit/s
95th percentile per-packet one-way delay: 35.784 ms
Loss rate: 0.00%
```
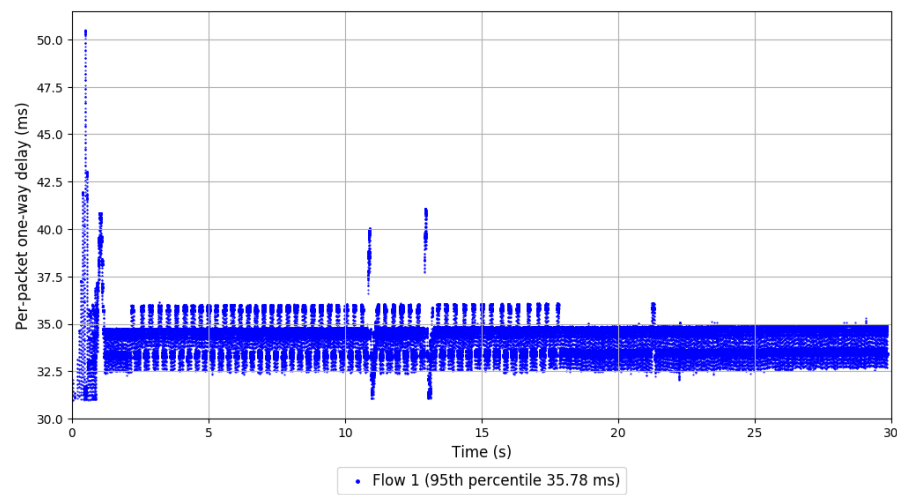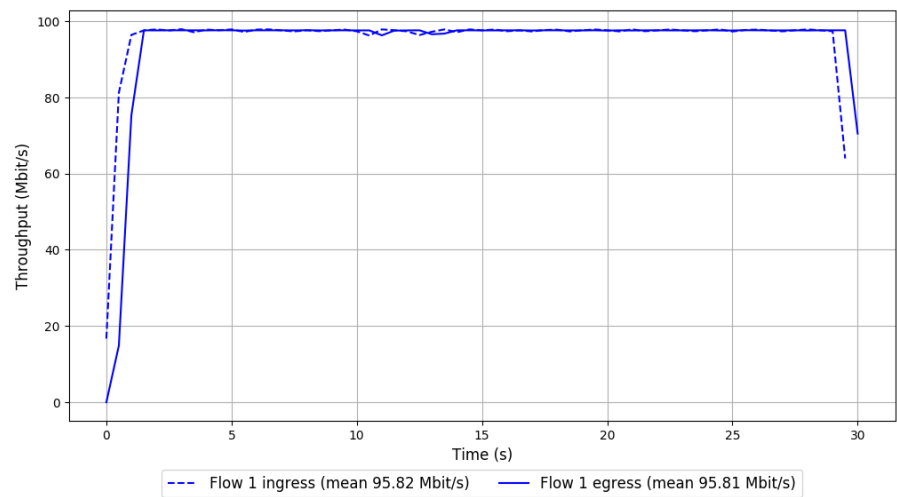
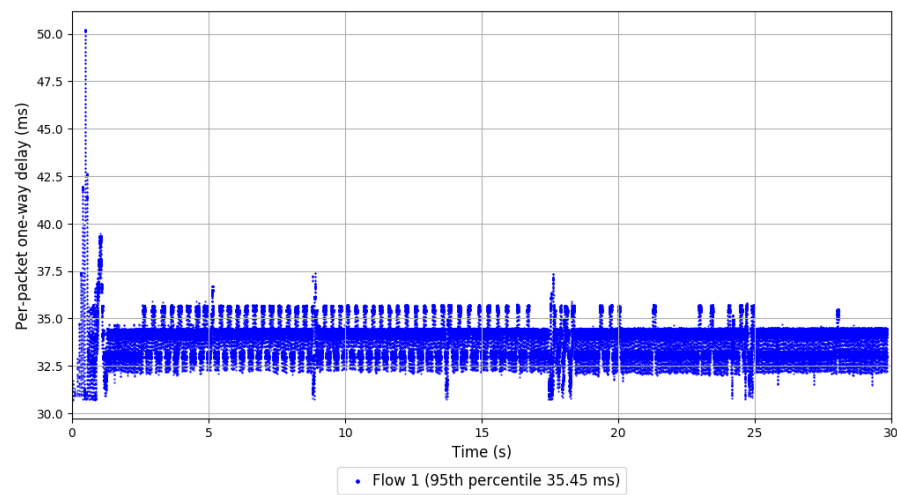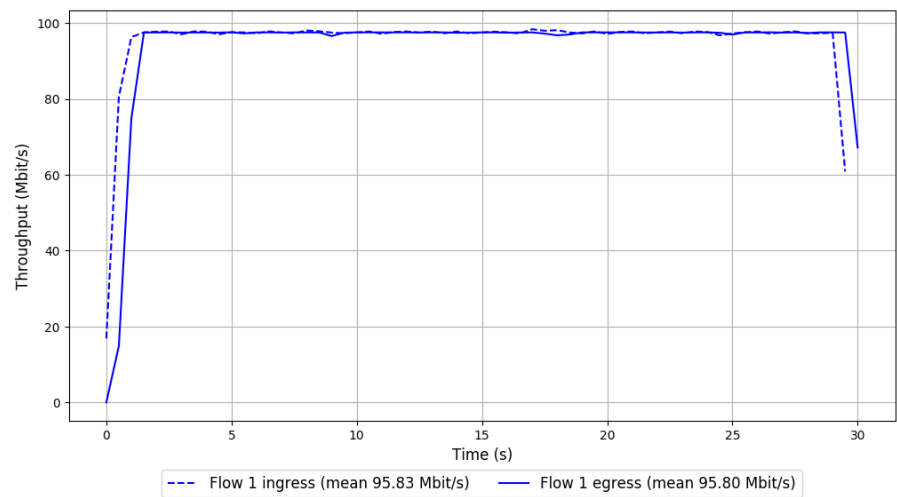Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2018-12-10 22:49:43
End at: 2018-12-10 22:50:13
Local clock offset: 5.48 ms
Remote clock offset: -1.436 ms


# Below is generated by plot.py at 2018-12-10 23:49:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.80 Mbit/s
95th percentile per-packet one-way delay: 35.447 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 95.80 Mbit/s
95th percentile per-packet one-way delay: 35.447 ms
Loss rate: 0.09%
```

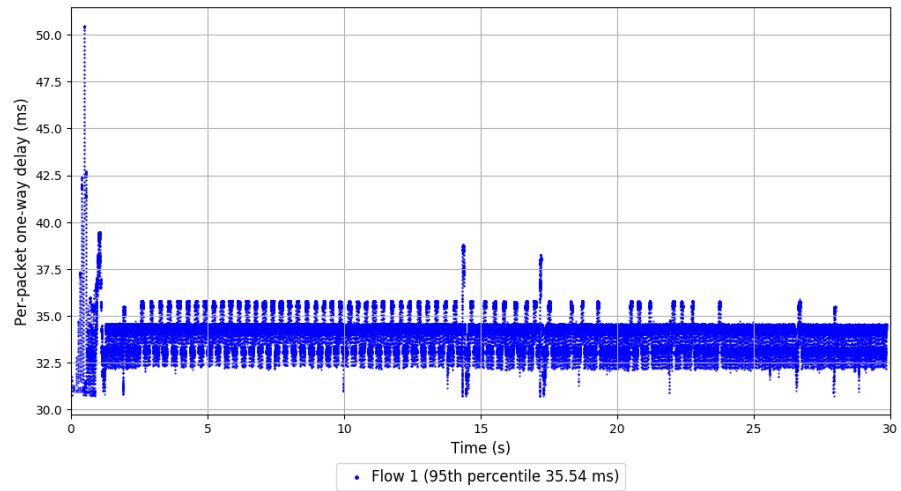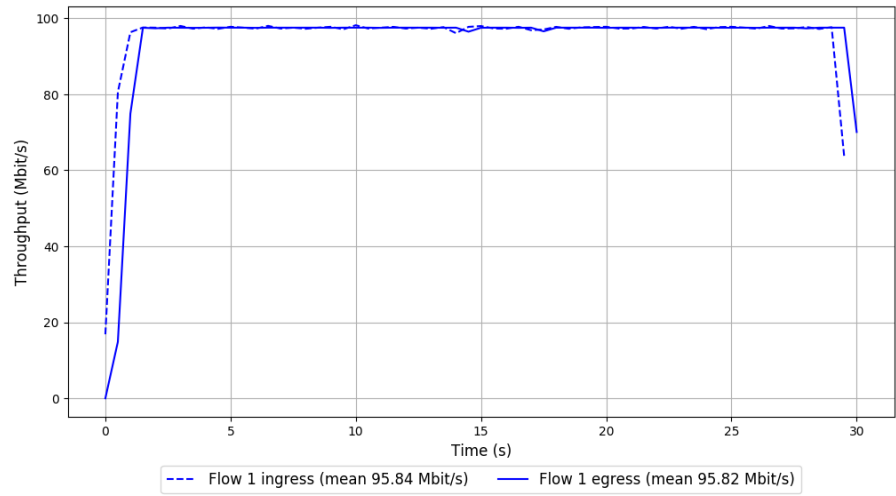Run 3: Report of Indigo — Data Link

```
Run 4: Statistics of Indigo

Start at: 2018-12-10 23:12:45
End at: 2018-12-10 23:13:15
Local clock offset: 2.522 ms
Remote clock offset: -2.177 ms


# Below is generated by plot.py at 2018-12-10 23:50:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.82 Mbit/s
95th percentile per-packet one-way delay: 35.542 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 95.82 Mbit/s
95th percentile per-packet one-way delay: 35.542 ms
Loss rate: 0.00%
```

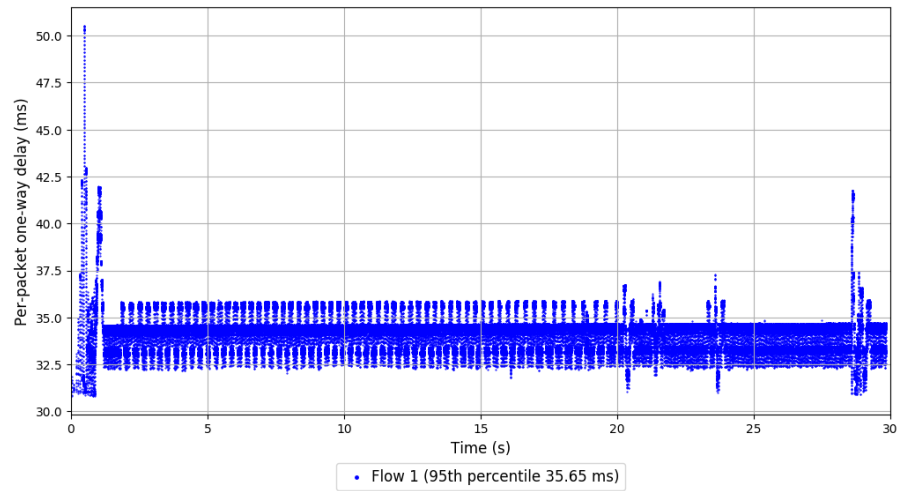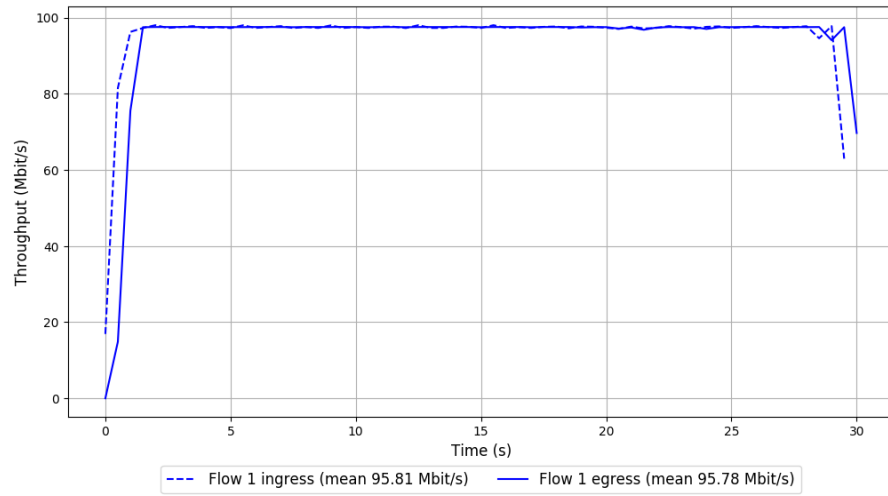Run 4: Report of Indigo — Data Link

```
Run 5: Statistics of Indigo

Start at: 2018-12-10 23:35:09
End at: 2018-12-10 23:35:39
Local clock offset: 4.077 ms
Remote clock offset: -3.329 ms


# Below is generated by plot.py at 2018-12-10 23:50:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.78 Mbit/s
95th percentile per-packet one-way delay: 35.648 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 95.78 Mbit/s
95th percentile per-packet one-way delay: 35.648 ms
Loss rate: 0.03%
```
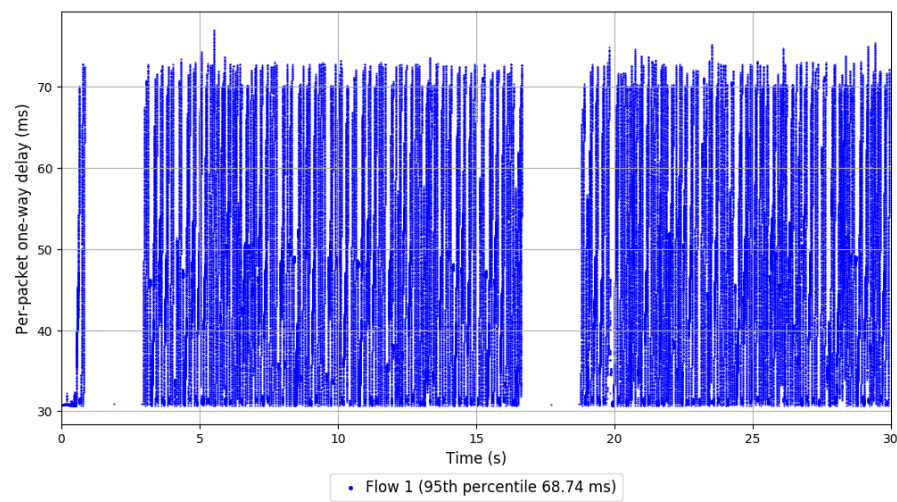
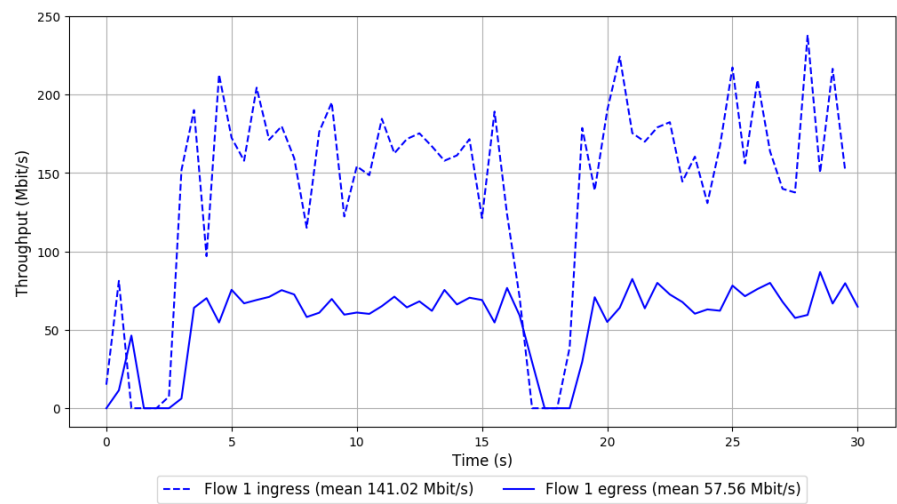## Run 5: Report of Indigo — Data Link

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

Start at: 2018-12-10 22:13:46
End at: 2018-12-10 22:14:16
Local clock offset: 2.012 ms
Remote clock offset: -1.256 ms

# Below is generated by plot.py at 2018-12-10 23:50:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 57.56 Mbit/s
95th percentile per-packet one-way delay: 68.740 ms
Loss rate: 59.13%
-- Flow 1:
Average throughput: 57.56 Mbit/s
95th percentile per-packet one-way delay: 68.740 ms
Loss rate: 59.13%
```

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

Flow 1 ingress (mean 141.02 Mbit/s) --- Flow 1 egress (mean 57.56 Mbit/s)
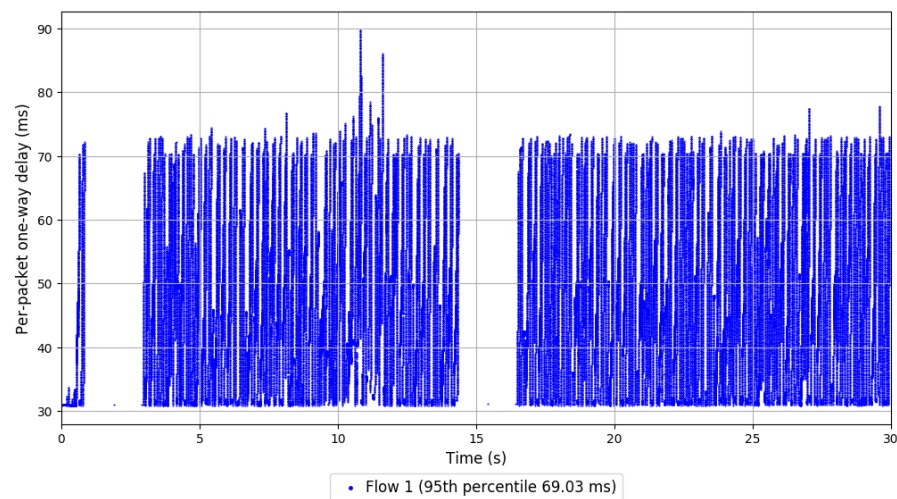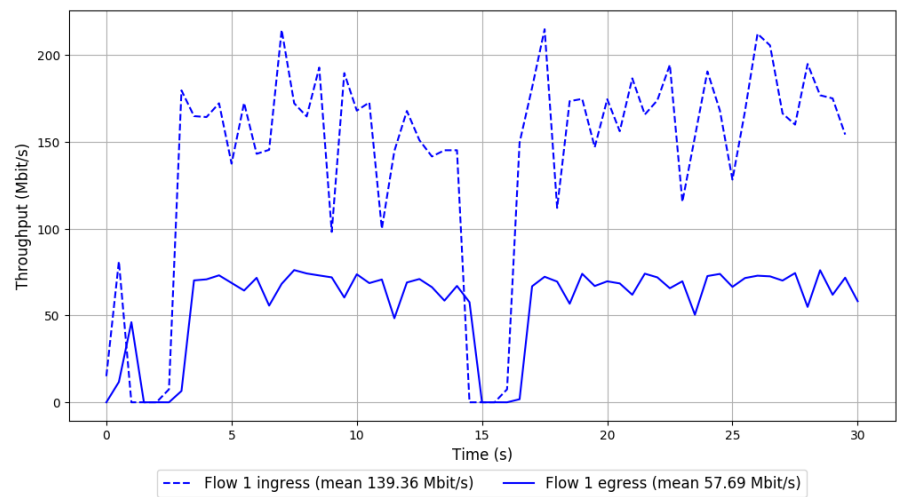

Flow 1 (95th percentile 68.74 ms)

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

Start at: 2018-12-10 22:35:46
End at: 2018-12-10 22:36:16
Local clock offset: 4.153 ms
Remote clock offset: -1.074 ms


# Below is generated by plot.py at 2018-12-10 23:50:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 57.69 Mbit/s
95th percentile per-packet one-way delay: 69.031 ms
Loss rate: 58.56%
-- Flow 1:
Average throughput: 57.69 Mbit/s
95th percentile per-packet one-way delay: 69.031 ms
Loss rate: 58.56%
```

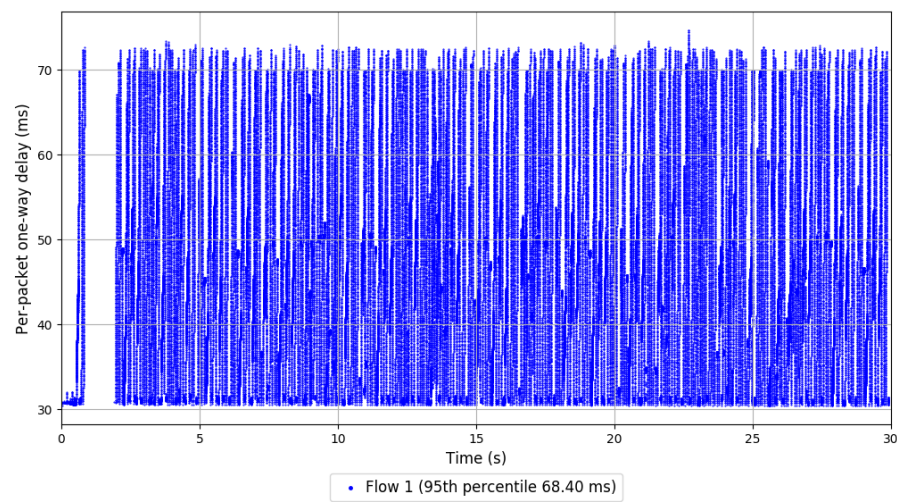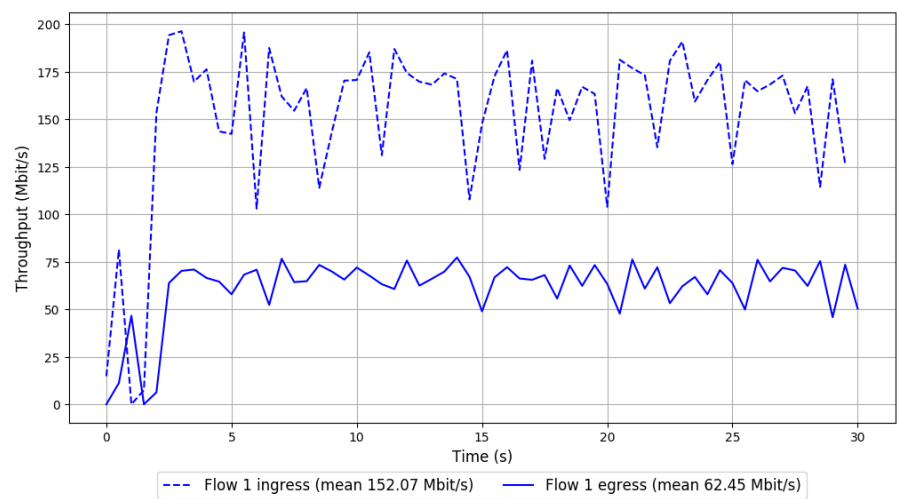Run 2: Report of Indigo-96d2da3 — Data Link

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

Start at: 2018-12-10 22:58:11
End at: 2018-12-10 22:58:41
Local clock offset: 5.376 ms
Remote clock offset: -1.785 ms


# Below is generated by plot.py at 2018-12-10 23:50:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 62.45 Mbit/s
95th percentile per-packet one-way delay: 68.403 ms
Loss rate: 58.93%
-- Flow 1:
Average throughput: 62.45 Mbit/s
95th percentile per-packet one-way delay: 68.403 ms
Loss rate: 58.93%
```

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

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

Start at: 2018-12-10 23:21:10
End at: 2018-12-10 23:21:40
Local clock offset: 1.929 ms
Remote clock offset: -2.68 ms


# Below is generated by plot.py at 2018-12-10 23:50:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 65.57 Mbit/s
95th percentile per-packet one-way delay: 68.542 ms
Loss rate: 58.63%
-- Flow 1:
Average throughput: 65.57 Mbit/s
95th percentile per-packet one-way delay: 68.542 ms
Loss rate: 58.63%
```
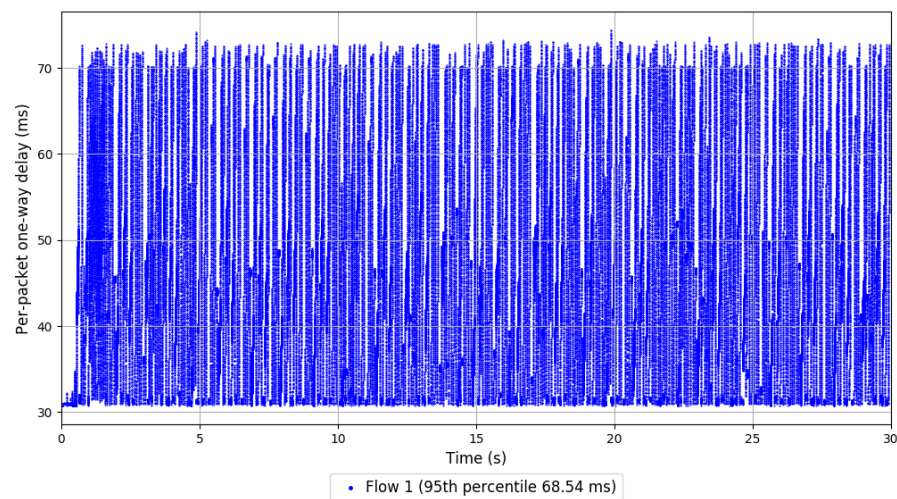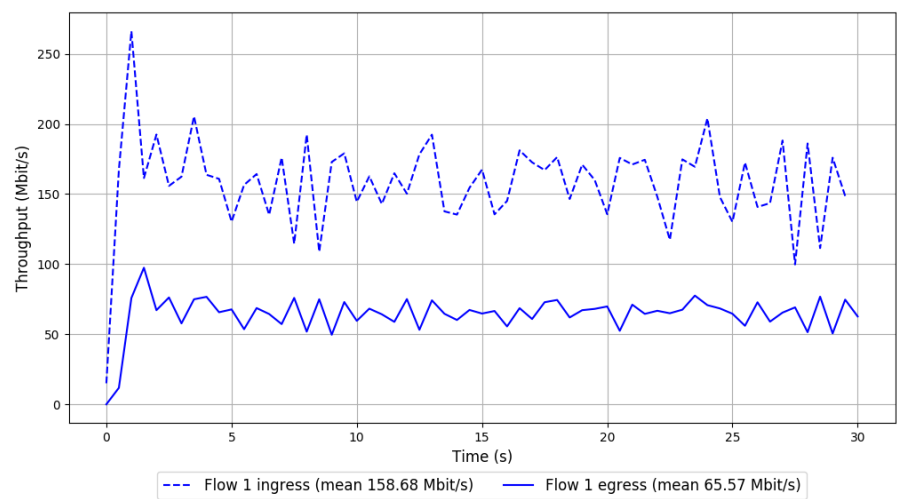
Run 4: Report of Indigo-96d2da3 — Data Link

Flow 1 ingress (mean 158.68 Mbit/s)   Flow 1 egress (mean 65.57 Mbit/s)

Flow 1 (95th percentile 68.54 ms)

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

Start at: 2018-12-10 23:43:14
End at: 2018-12-10 23:43:44
Local clock offset: 5.196 ms
Remote clock offset: -3.602 ms


# Below is generated by plot.py at 2018-12-10 23:50:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 62.80 Mbit/s
95th percentile per-packet one-way delay: 68.677 ms
Loss rate: 59.48%
-- Flow 1:
Average throughput: 62.80 Mbit/s
95th percentile per-packet one-way delay: 68.677 ms
Loss rate: 59.48%
```
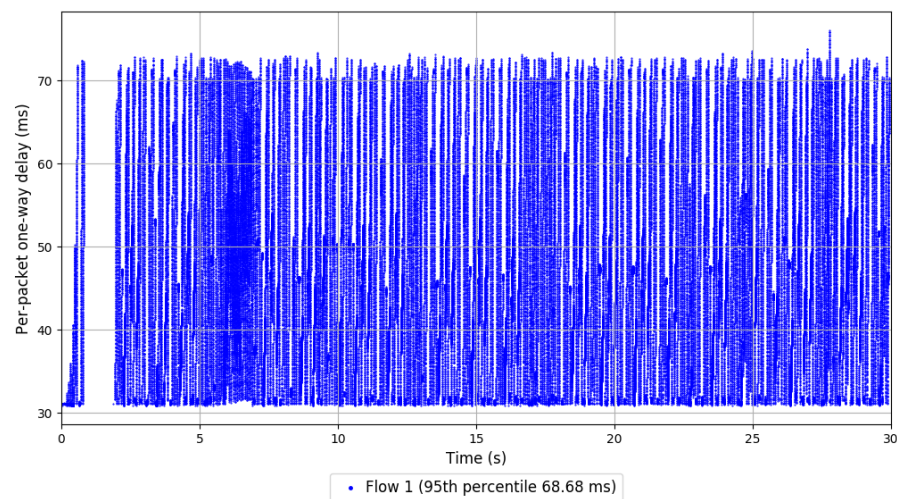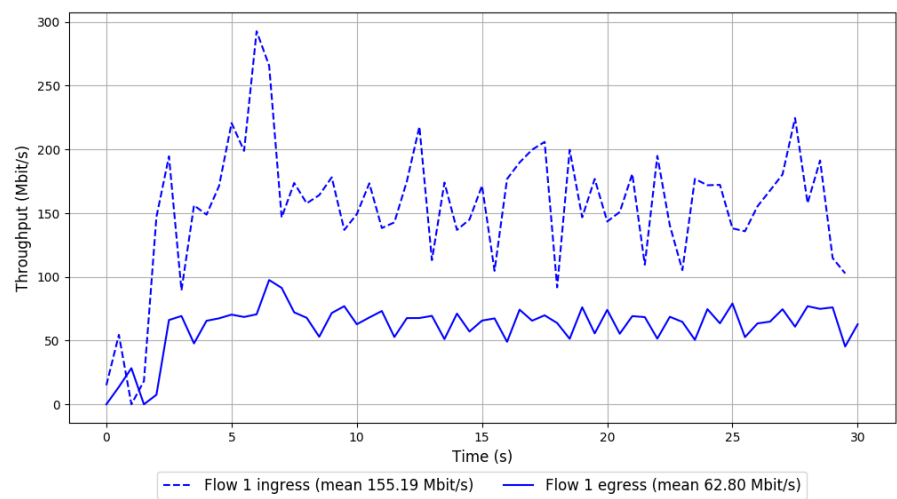
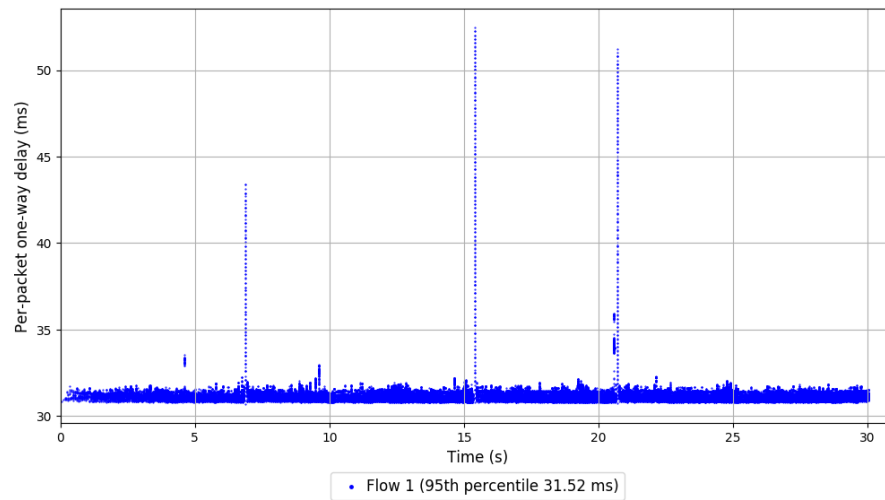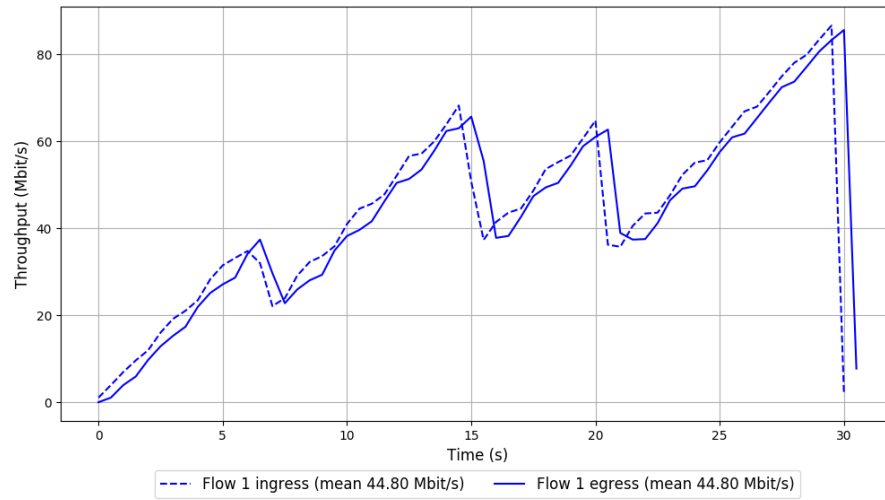Run 5: Report of Indigo-96d2da3 — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2018-12-10 22:09:17
End at: 2018-12-10 22:09:47
Local clock offset: 1.99 ms
Remote clock offset: -1.076 ms

# Below is generated by plot.py at 2018-12-10 23:50:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 44.80 Mbit/s
95th percentile per-packet one-way delay: 31.516 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 44.80 Mbit/s
95th percentile per-packet one-way delay: 31.516 ms
Loss rate: 0.01%
```

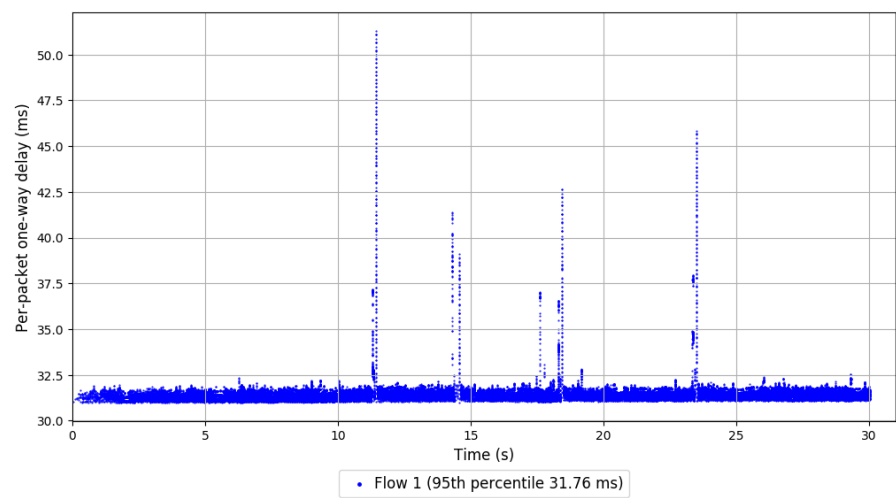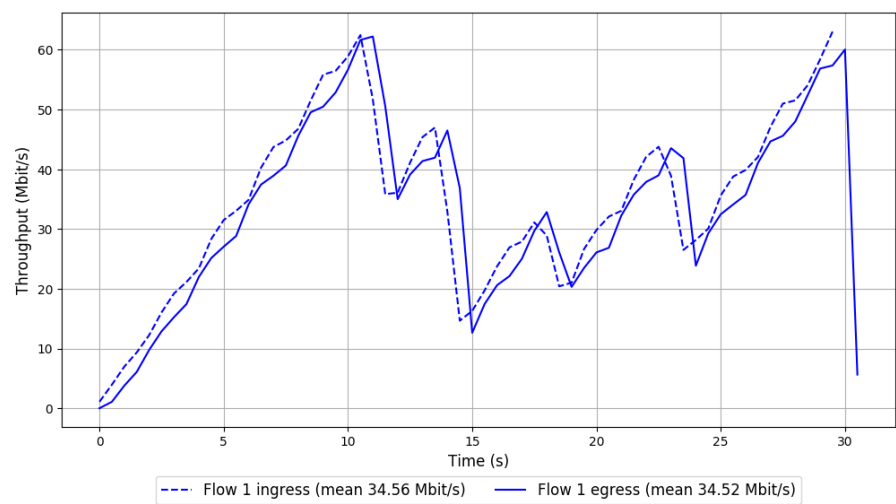# Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2018-12-10 22:31:14
End at: 2018-12-10 22:31:44
Local clock offset: 3.129 ms
Remote clock offset: -1.097 ms


# Below is generated by plot.py at 2018-12-10 23:50:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 34.52 Mbit/s
95th percentile per-packet one-way delay: 31.763 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 34.52 Mbit/s
95th percentile per-packet one-way delay: 31.763 ms
Loss rate: 0.11%
```
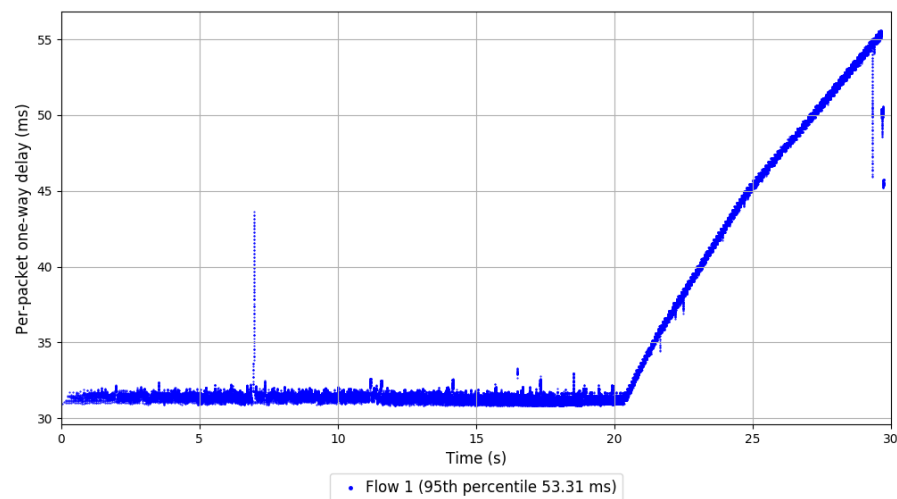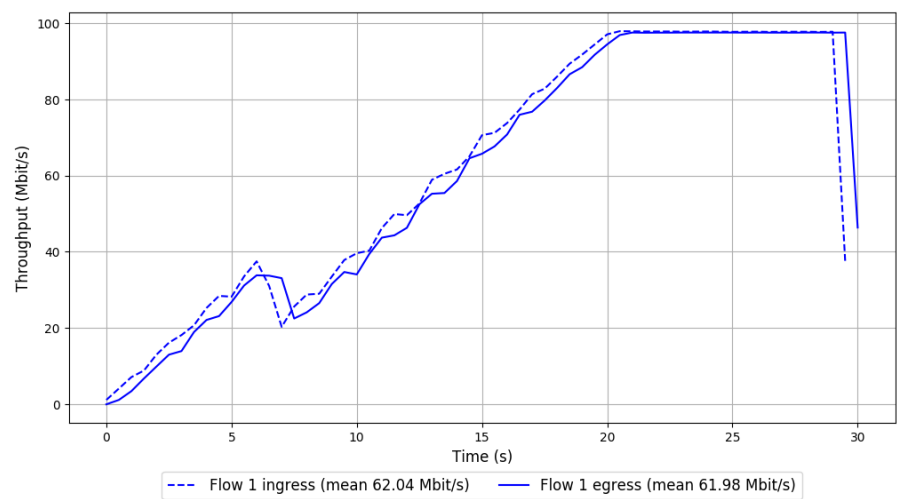
Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2018-12-10 22:53:29
End at: 2018-12-10 22:53:59
Local clock offset: 5.655 ms
Remote clock offset: -1.418 ms


# Below is generated by plot.py at 2018-12-10 23:51:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 61.98 Mbit/s
95th percentile per-packet one-way delay: 53.307 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 61.98 Mbit/s
95th percentile per-packet one-way delay: 53.307 ms
Loss rate: 0.05%
```

Run 3: Report of LEDBAT — Data Link

Flow 1 ingress (mean 62.04 Mbit/s) --- Flow 1 egress (mean 61.98 Mbit/s)

• Flow 1 (95th percentile 53.31 ms)

```
Run 4: Statistics of LEDBAT

Start at: 2018-12-10 23:16:31
End at: 2018-12-10 23:17:01
Local clock offset: 2.211 ms
Remote clock offset: -2.34 ms


# Below is generated by plot.py at 2018-12-10 23:51:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 35.82 Mbit/s
95th percentile per-packet one-way delay: 31.791 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 35.82 Mbit/s
95th percentile per-packet one-way delay: 31.791 ms
Loss rate: 0.05%
```
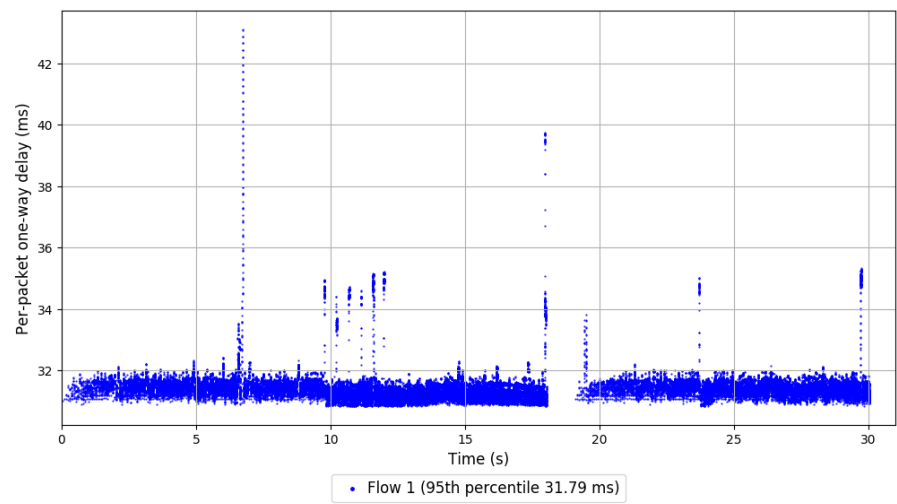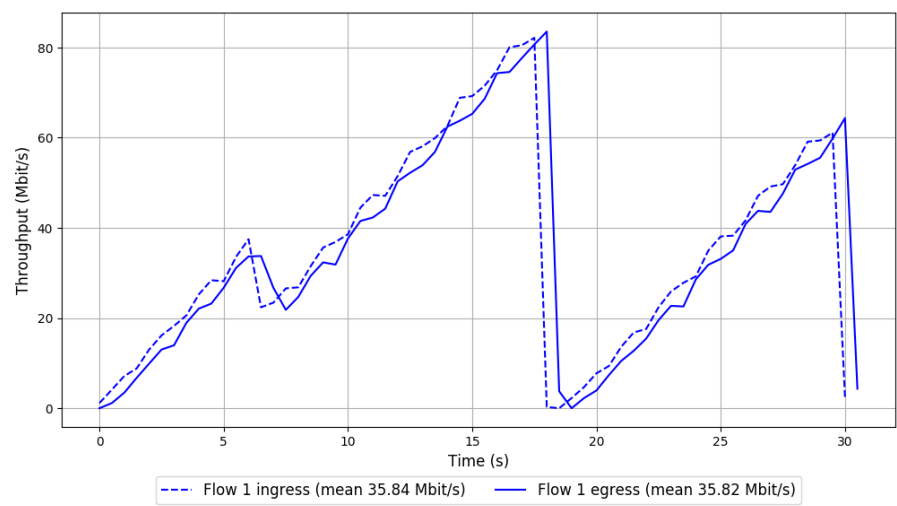
Run 4: Report of LEDBAT — Data Link

Flow 1 ingress (mean 35.84 Mbit/s) ----- Flow 1 egress (mean 35.82 Mbit/s)
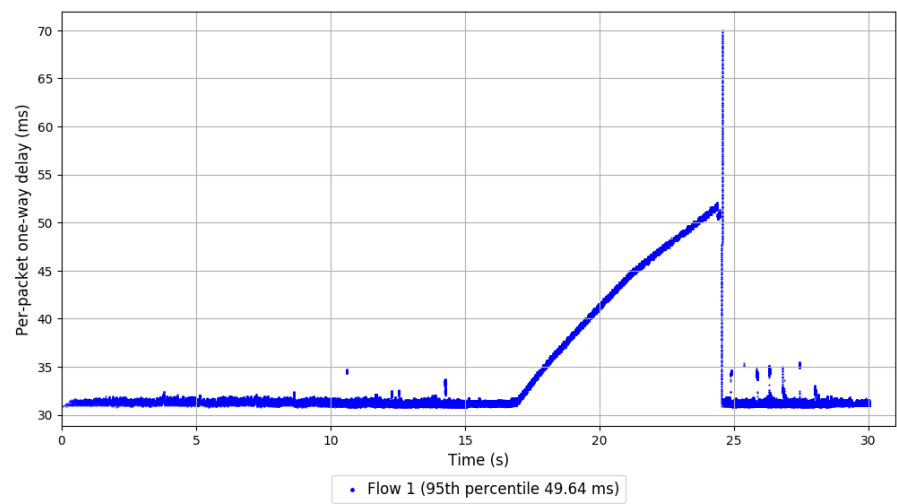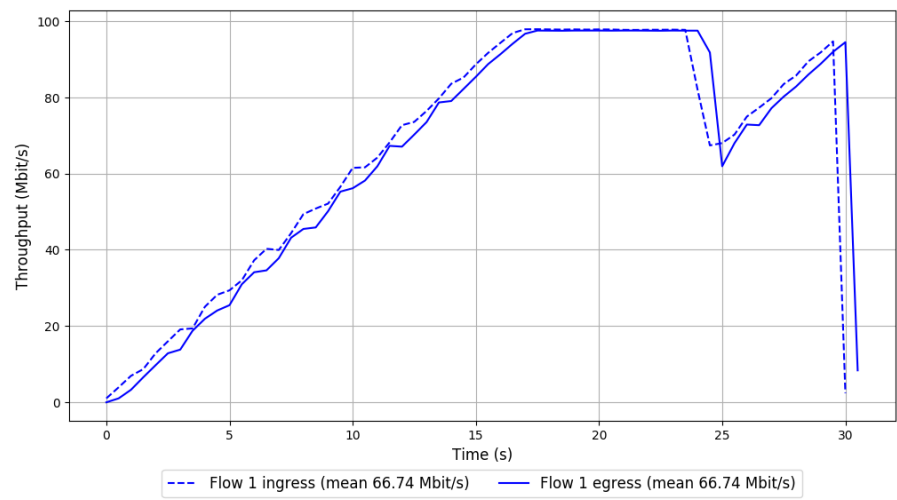

Flow 1 (95th percentile 31.79 ms)

```
Run 5: Statistics of LEDBAT

Start at: 2018-12-10 23:38:41
End at: 2018-12-10 23:39:11
Local clock offset: 4.669 ms
Remote clock offset: -3.465 ms

# Below is generated by plot.py at 2018-12-10 23:51:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 66.74 Mbit/s
95th percentile per-packet one-way delay: 49.641 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 66.74 Mbit/s
95th percentile per-packet one-way delay: 49.641 ms
Loss rate: 0.01%
```

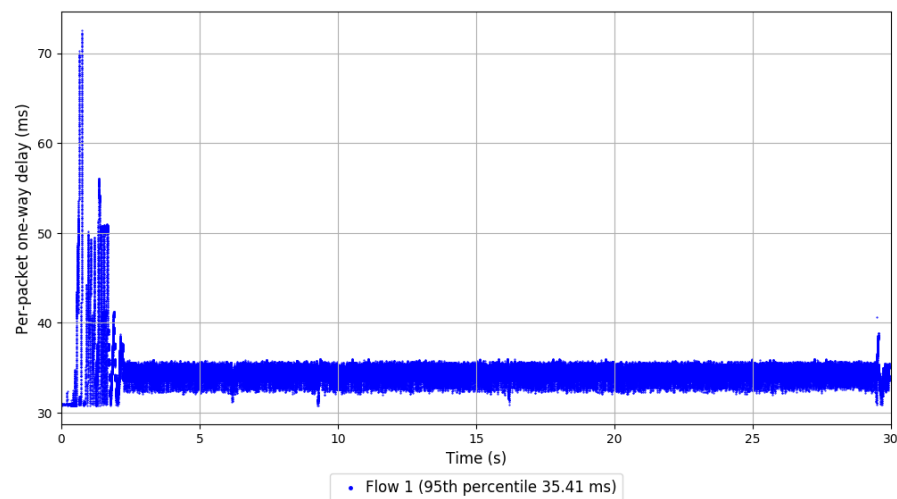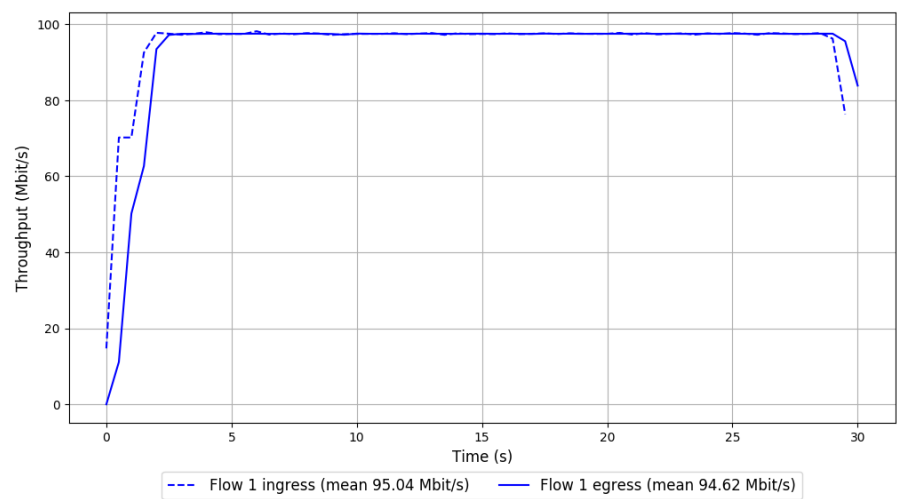# Run 5: Report of LEDBAT — Data Link

```
Run 1: Statistics of Indigo-Muses

Start at: 2018-12-10 22:08:07
End at: 2018-12-10 22:08:37
Local clock offset: 1.976 ms
Remote clock offset: -1.036 ms


# Below is generated by plot.py at 2018-12-10 23:51:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.62 Mbit/s
95th percentile per-packet one-way delay: 35.407 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 94.62 Mbit/s
95th percentile per-packet one-way delay: 35.407 ms
Loss rate: 0.43%
```

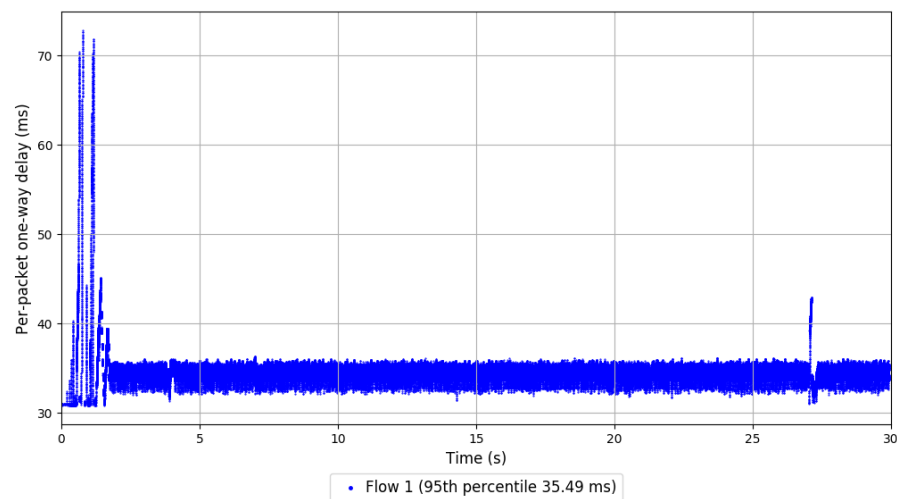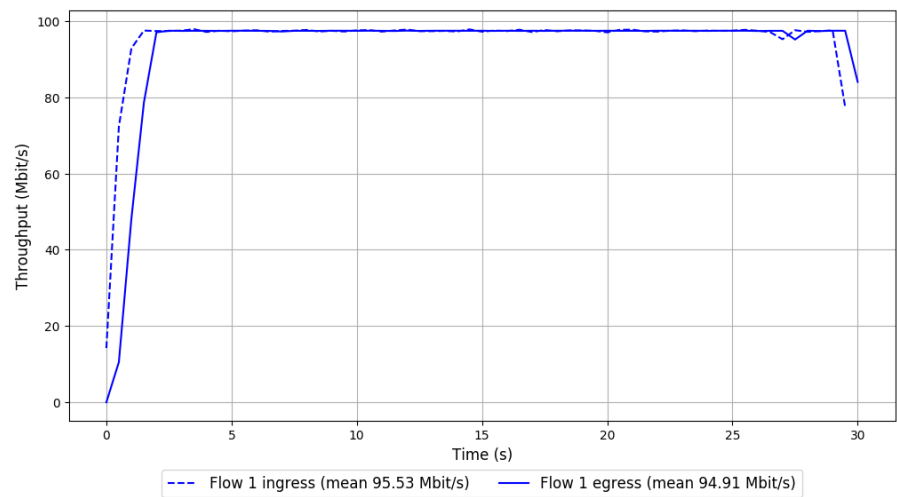## Run 1: Report of Indigo-Muses — Data Link

```
Run 2: Statistics of Indigo-Muses

Start at: 2018-12-10 22:30:02
End at: 2018-12-10 22:30:32
Local clock offset: 2.854 ms
Remote clock offset: -1.135 ms


# Below is generated by plot.py at 2018-12-10 23:51:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.91 Mbit/s
95th percentile per-packet one-way delay: 35.488 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 94.91 Mbit/s
95th percentile per-packet one-way delay: 35.488 ms
Loss rate: 0.63%
```

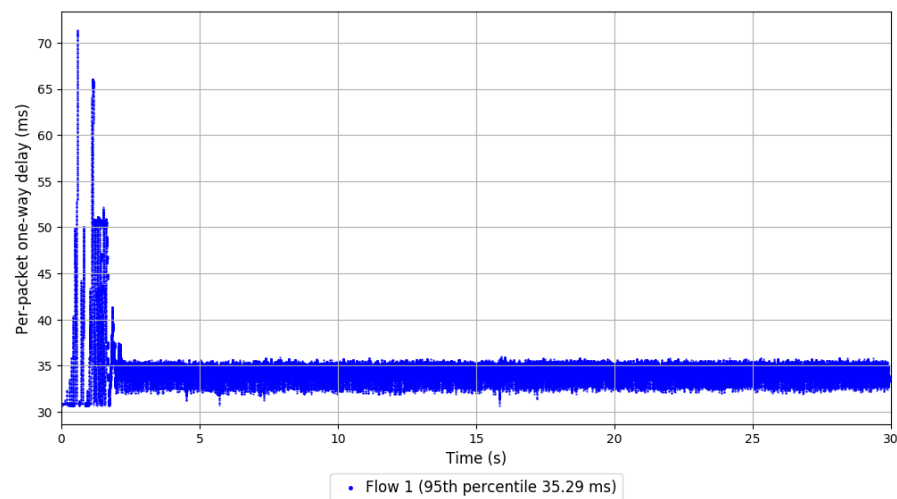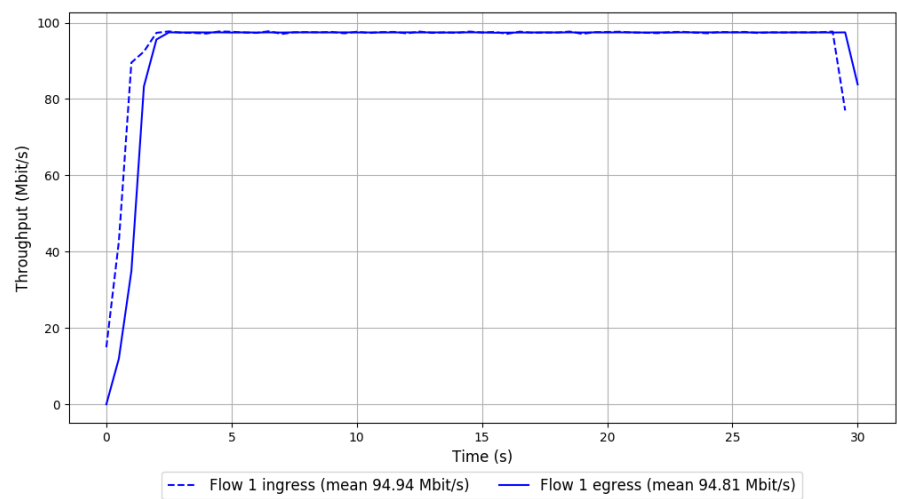Run 2: Report of Indigo-Muses — Data Link

```
Run 3: Statistics of Indigo-Muses

Start at: 2018-12-10 22:52:15
End at: 2018-12-10 22:52:45
Local clock offset: 5.601 ms
Remote clock offset: -1.517 ms


# Below is generated by plot.py at 2018-12-10 23:51:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.81 Mbit/s
95th percentile per-packet one-way delay: 35.287 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 94.81 Mbit/s
95th percentile per-packet one-way delay: 35.287 ms
Loss rate: 0.13%
```

Run 3: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 94.94 Mbit/s)   Flow 1 egress (mean 94.81 Mbit/s)
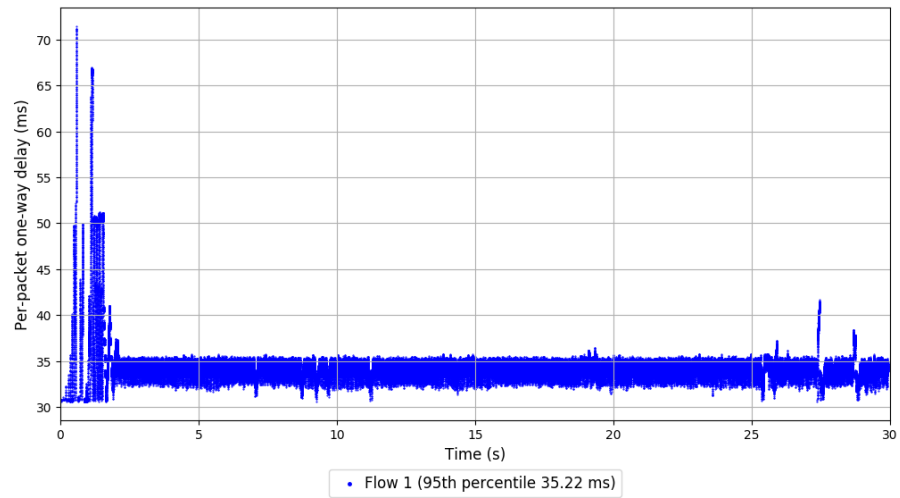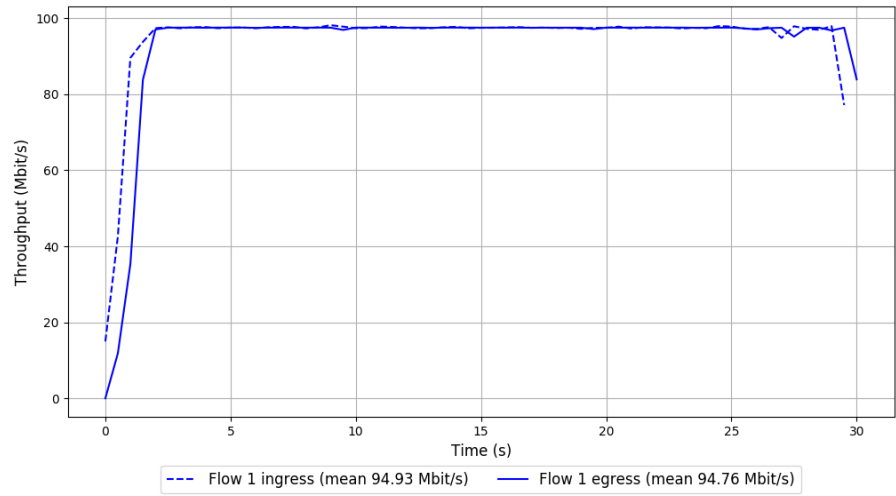

Flow 1 (95th percentile 35.29 ms)

```
Run 4: Statistics of Indigo-Muses

Start at: 2018-12-10 23:15:17
End at: 2018-12-10 23:15:47
Local clock offset: 2.31 ms
Remote clock offset: -2.465 ms


# Below is generated by plot.py at 2018-12-10 23:51:58
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.76 Mbit/s
95th percentile per-packet one-way delay: 35.217 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 94.76 Mbit/s
95th percentile per-packet one-way delay: 35.217 ms
Loss rate: 0.16%
```

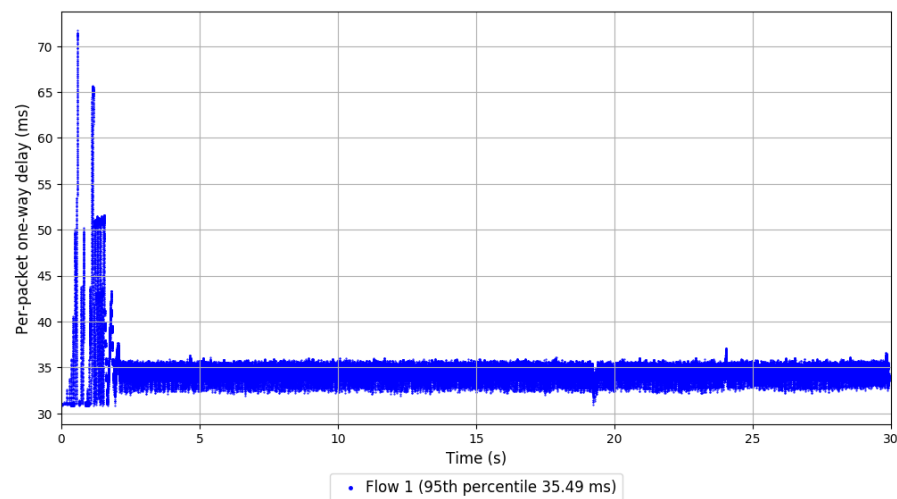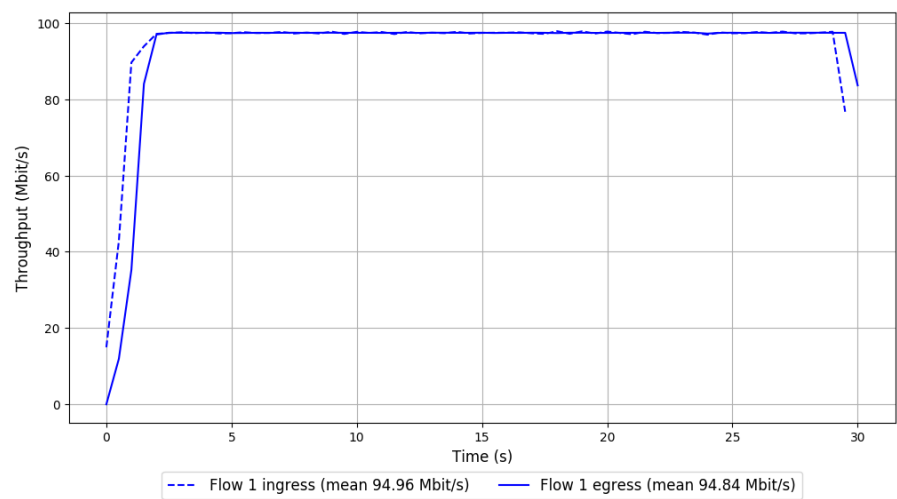Run 4: Report of Indigo-Muses — Data Link

```
Run 5: Statistics of Indigo-Muses

Start at: 2018-12-10 23:37:30
End at: 2018-12-10 23:38:00
Local clock offset: 4.506 ms
Remote clock offset: -3.351 ms

# Below is generated by plot.py at 2018-12-10 23:52:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.84 Mbit/s
95th percentile per-packet one-way delay: 35.494 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 94.84 Mbit/s
95th percentile per-packet one-way delay: 35.494 ms
Loss rate: 0.11%
```

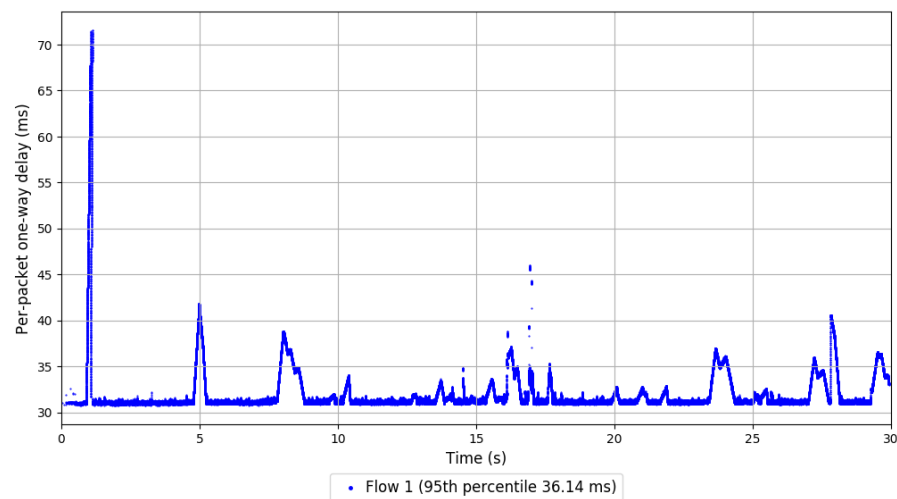# Run 5: Report of Indigo-Muses — Data Link

```
Run 1: Statistics of PCC-Allegro

Start at: 2018-12-10 22:00:02
End at: 2018-12-10 22:00:32
Local clock offset: 1.552 ms
Remote clock offset: -0.999 ms


# Below is generated by plot.py at 2018-12-10 23:52:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.68 Mbit/s
95th percentile per-packet one-way delay: 36.139 ms
Loss rate: 0.88%
-- Flow 1:
Average throughput: 89.68 Mbit/s
95th percentile per-packet one-way delay: 36.139 ms
Loss rate: 0.88%
```

Run 1: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 90.48 Mbit/s)　　Flow 1 egress (mean 89.68 Mbit/s)
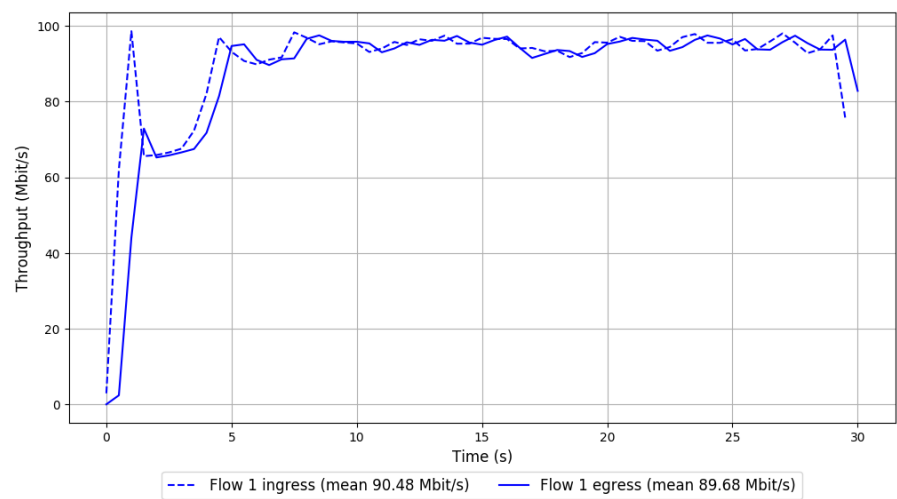

• Flow 1 (95th percentile 36.14 ms)

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-12-10 22:21:48
End at: 2018-12-10 22:22:18
Local clock offset: 1.912 ms
Remote clock offset: -1.133 ms


# Below is generated by plot.py at 2018-12-10 23:52:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 90.61 Mbit/s
95th percentile per-packet one-way delay: 40.197 ms
Loss rate: 0.82%
-- Flow 1:
Average throughput: 90.61 Mbit/s
95th percentile per-packet one-way delay: 40.197 ms
Loss rate: 0.82%
```
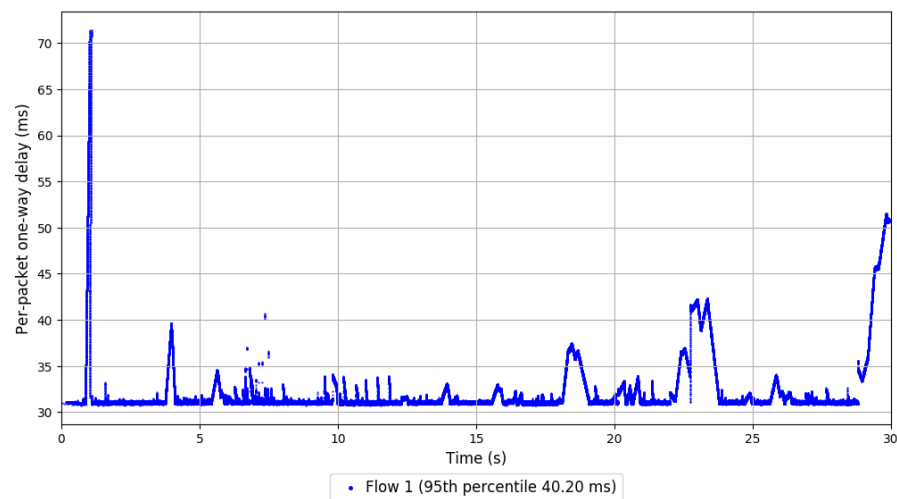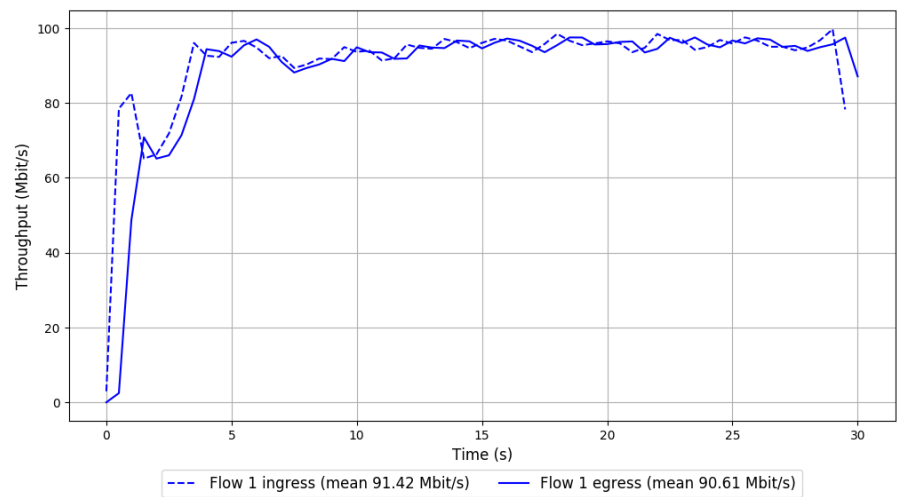
Run 2: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 91.42 Mbit/s)   Flow 1 egress (mean 90.61 Mbit/s)

Flow 1 (95th percentile 40.20 ms)

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-12-10 22:43:49
End at: 2018-12-10 22:44:19
Local clock offset: 5.075 ms
Remote clock offset: -0.999 ms


# Below is generated by plot.py at 2018-12-10 23:52:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.22 Mbit/s
95th percentile per-packet one-way delay: 35.872 ms
Loss rate: 0.78%
-- Flow 1:
Average throughput: 91.22 Mbit/s
95th percentile per-packet one-way delay: 35.872 ms
Loss rate: 0.78%
```
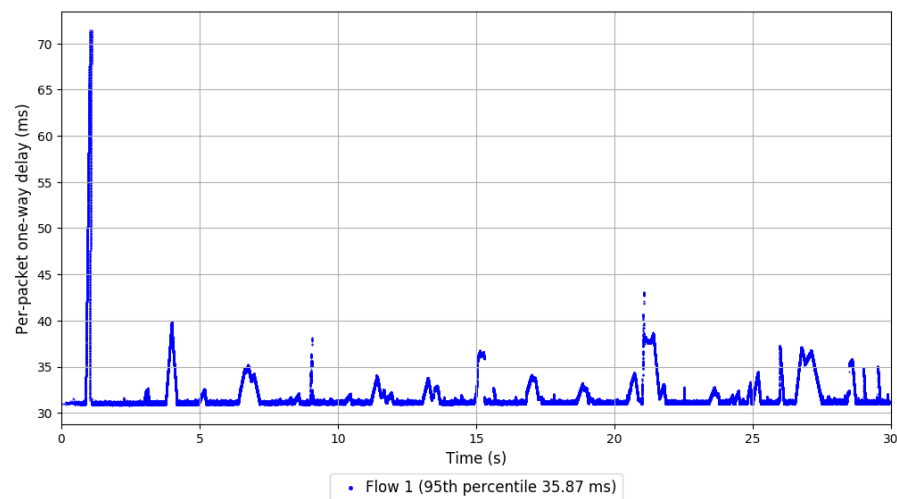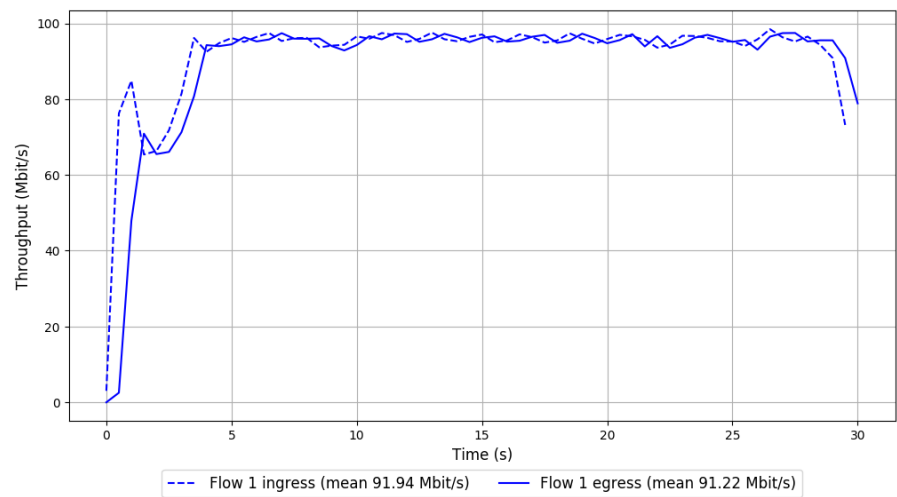
Run 3: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 91.94 Mbit/s)   Flow 1 egress (mean 91.22 Mbit/s)

• Flow 1 (95th percentile 35.87 ms)

```
Run 4: Statistics of PCC-Allegro

Start at: 2018-12-10 23:06:44
End at: 2018-12-10 23:07:14
Local clock offset: 3.244 ms
Remote clock offset: -1.958 ms


# Below is generated by plot.py at 2018-12-10 23:52:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.57 Mbit/s
95th percentile per-packet one-way delay: 37.769 ms
Loss rate: 0.82%
-- Flow 1:
Average throughput: 91.57 Mbit/s
95th percentile per-packet one-way delay: 37.769 ms
Loss rate: 0.82%
```
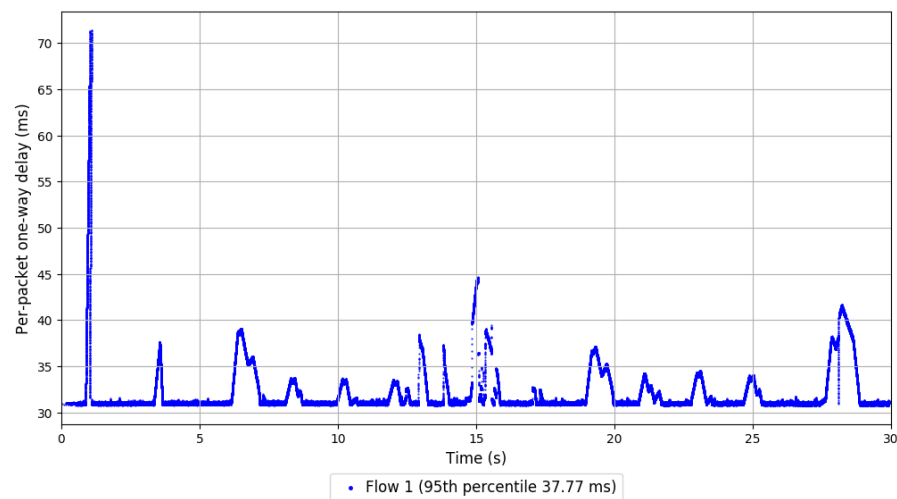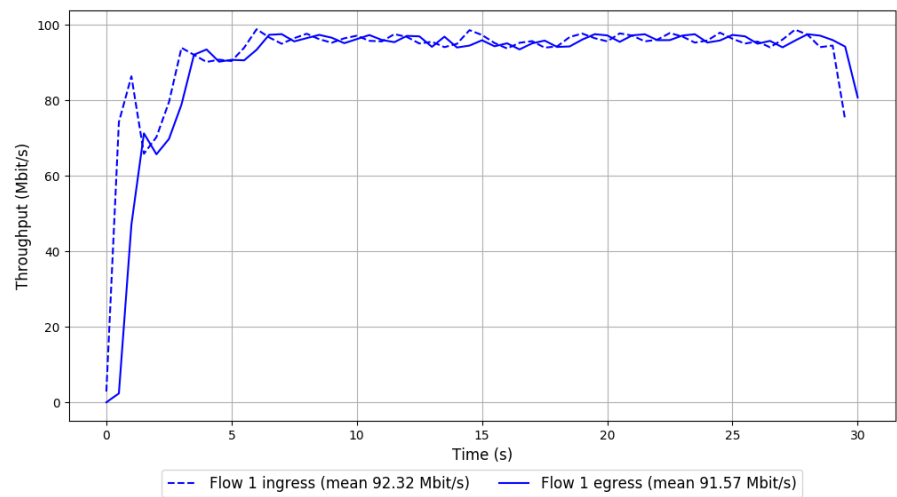
Run 4: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 92.32 Mbit/s)   Flow 1 egress (mean 91.57 Mbit/s)

Flow 1 (95th percentile 37.77 ms)

```
Run 5: Statistics of PCC-Allegro

Start at: 2018-12-10 23:29:24
End at: 2018-12-10 23:29:55
Local clock offset: 2.486 ms
Remote clock offset: -2.931 ms

# Below is generated by plot.py at 2018-12-10 23:52:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 90.80 Mbit/s
95th percentile per-packet one-way delay: 44.113 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 90.80 Mbit/s
95th percentile per-packet one-way delay: 44.113 ms
Loss rate: 0.79%
```
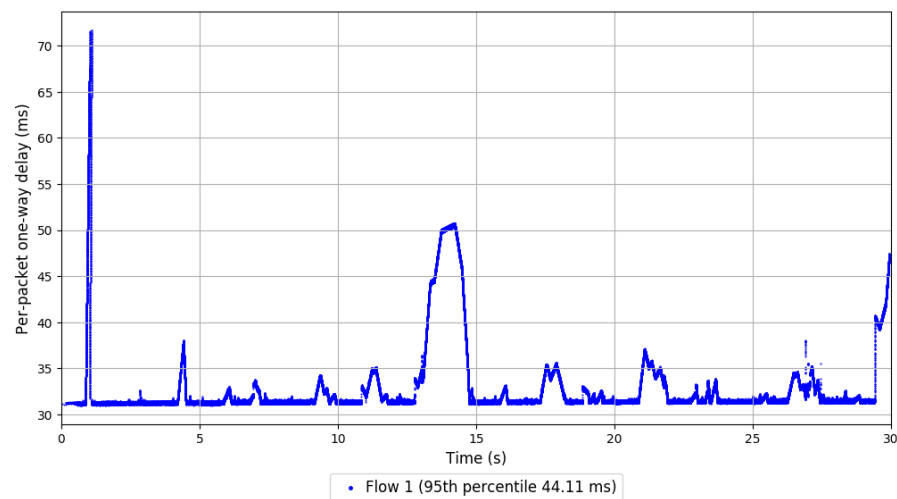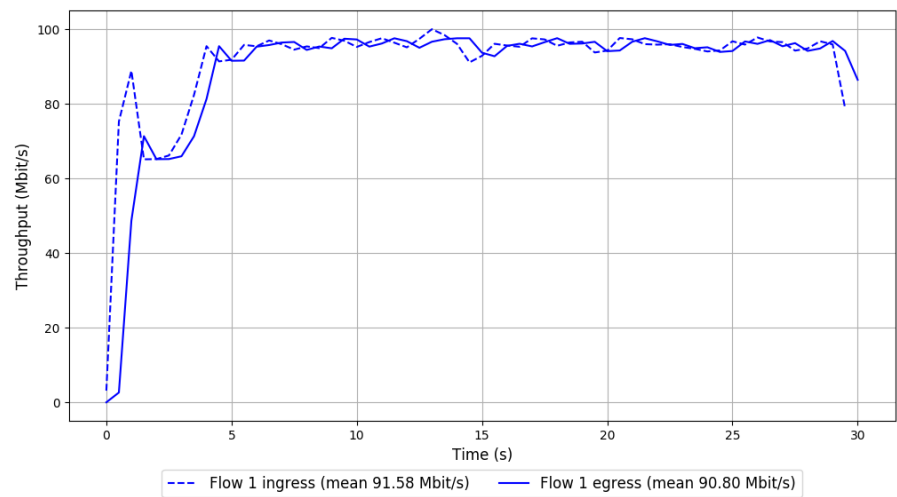
Run 5: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 91.58 Mbit/s) --- Flow 1 egress (mean 90.80 Mbit/s)

Flow 1 (95th percentile 44.11 ms)
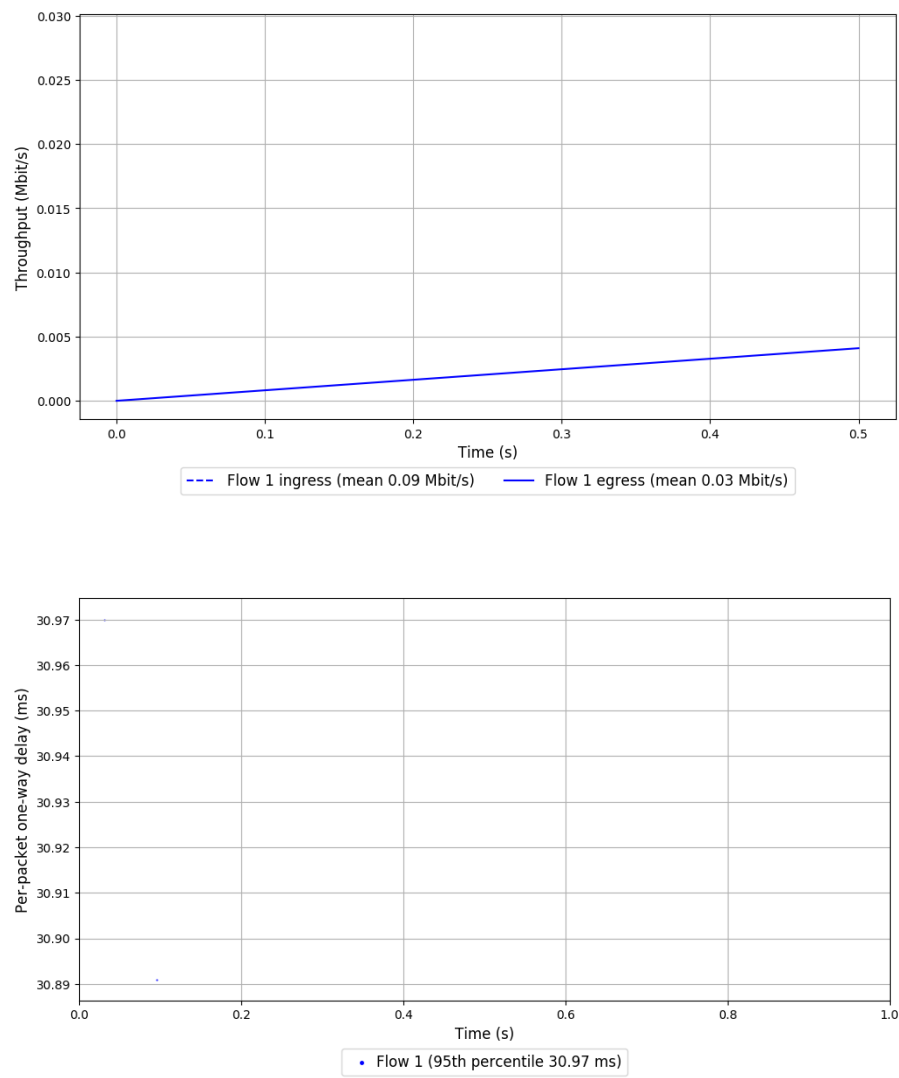
```
Run 1: Statistics of PCC-Expr

Start at: 2018-12-10 21:57:47
End at: 2018-12-10 21:58:17
Local clock offset: 1.299 ms
Remote clock offset: -0.949 ms
```

Run 1: Report of PCC-Expr — Data Link

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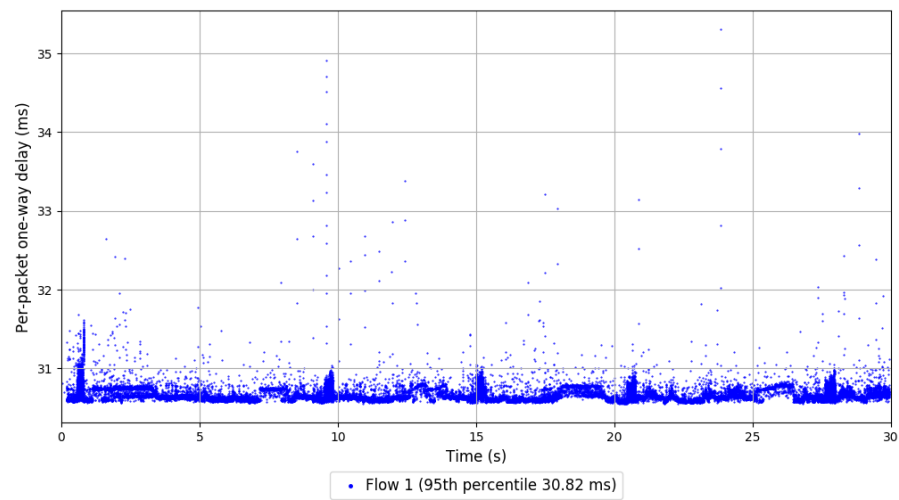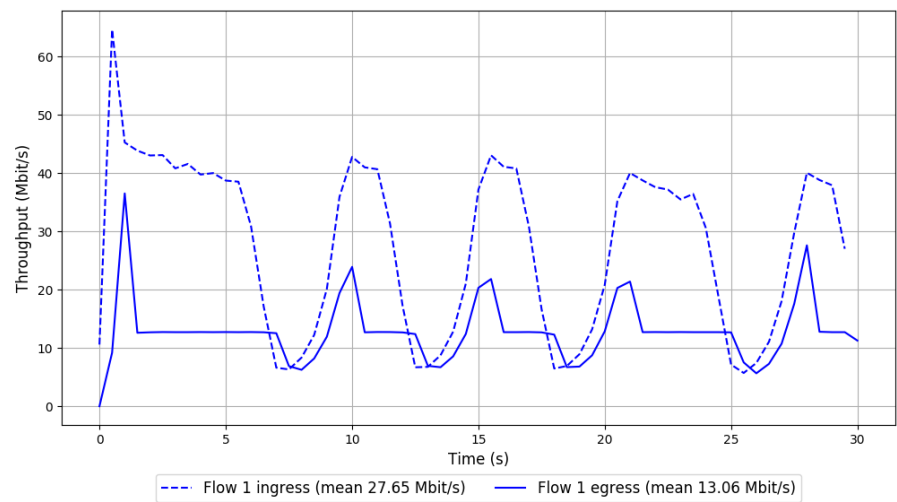

• Flow 1 (95th percentile 30.97 ms)

```
Run 2: Statistics of PCC-Expr

Start at: 2018-12-10 22:19:31
End at: 2018-12-10 22:20:01
Local clock offset: 1.955 ms
Remote clock offset: -1.343 ms

# Below is generated by plot.py at 2018-12-10 23:52:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 13.06 Mbit/s
95th percentile per-packet one-way delay: 30.825 ms
Loss rate: 52.77%
-- Flow 1:
Average throughput: 13.06 Mbit/s
95th percentile per-packet one-way delay: 30.825 ms
Loss rate: 52.77%
```

Run 2: Report of PCC-Expr — Data Link
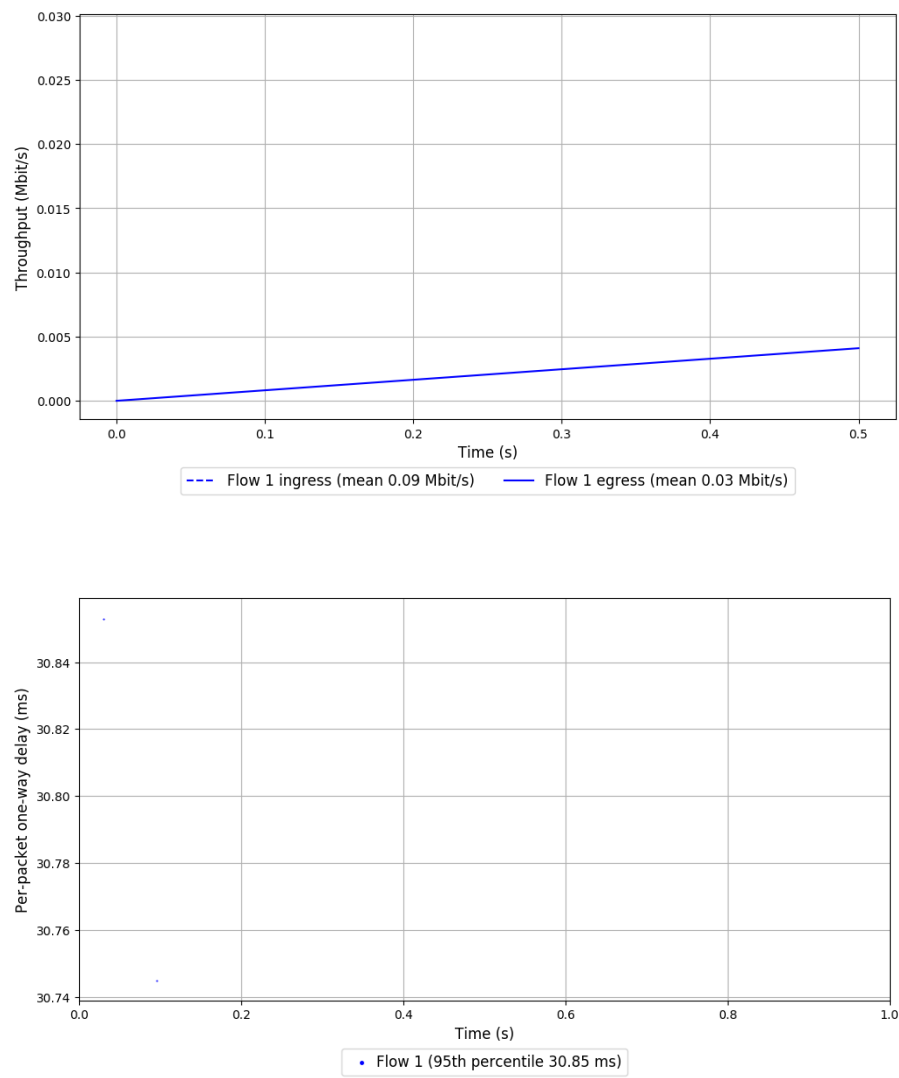
```
Run 3: Statistics of PCC-Expr

Start at: 2018-12-10 22:41:33
End at: 2018-12-10 22:42:03
Local clock offset: 4.879 ms
Remote clock offset: -1.207 ms
```

Run 3: Report of PCC-Expr — Data Link

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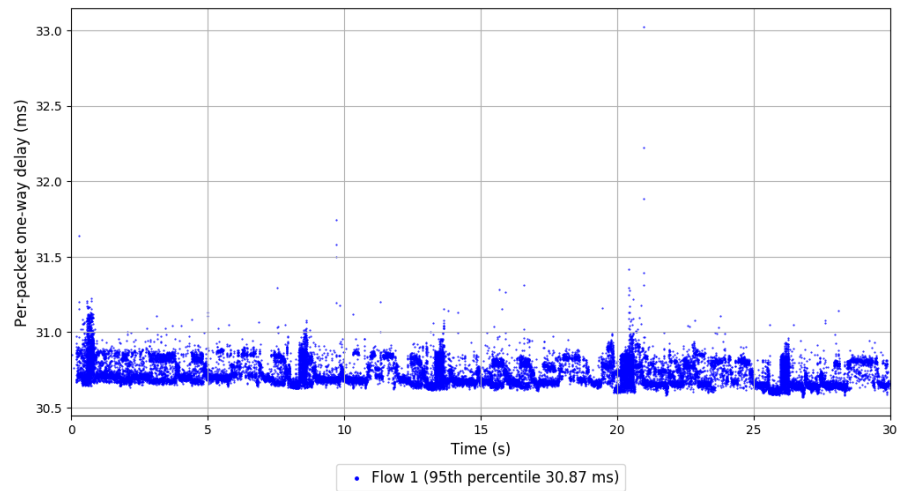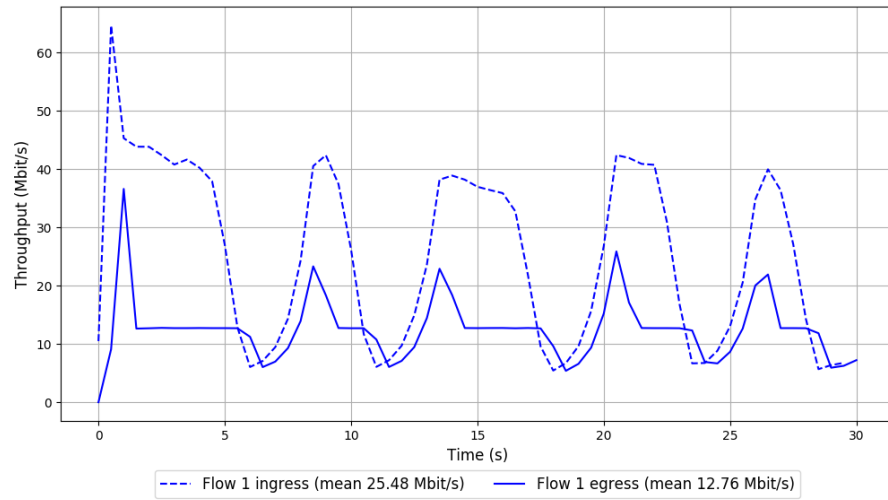

Flow 1 (95th percentile 30.85 ms)

```
Run 4: Statistics of PCC-Expr

Start at: 2018-12-10 23:04:18
End at: 2018-12-10 23:04:48
Local clock offset: 3.676 ms
Remote clock offset: -1.923 ms

# Below is generated by plot.py at 2018-12-10 23:52:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.76 Mbit/s
95th percentile per-packet one-way delay: 30.868 ms
Loss rate: 49.93%
-- Flow 1:
Average throughput: 12.76 Mbit/s
95th percentile per-packet one-way delay: 30.868 ms
Loss rate: 49.93%
```

Run 4: Report of PCC-Expr — Data Link
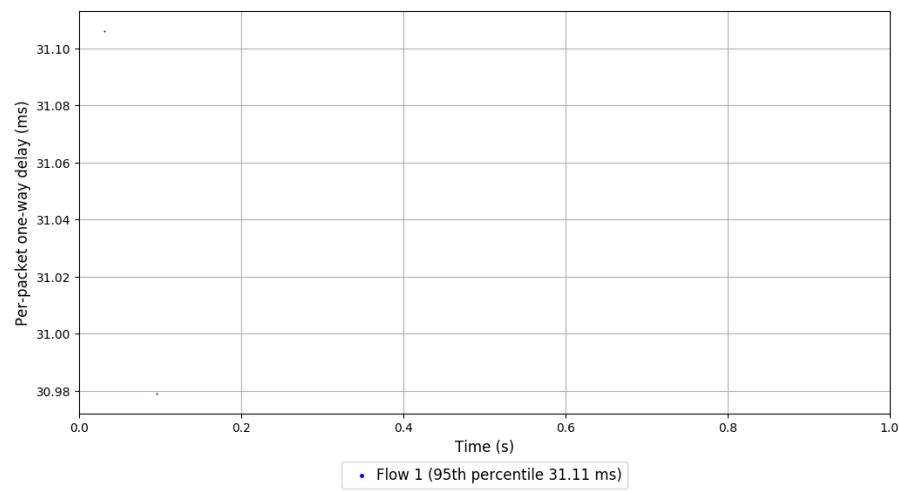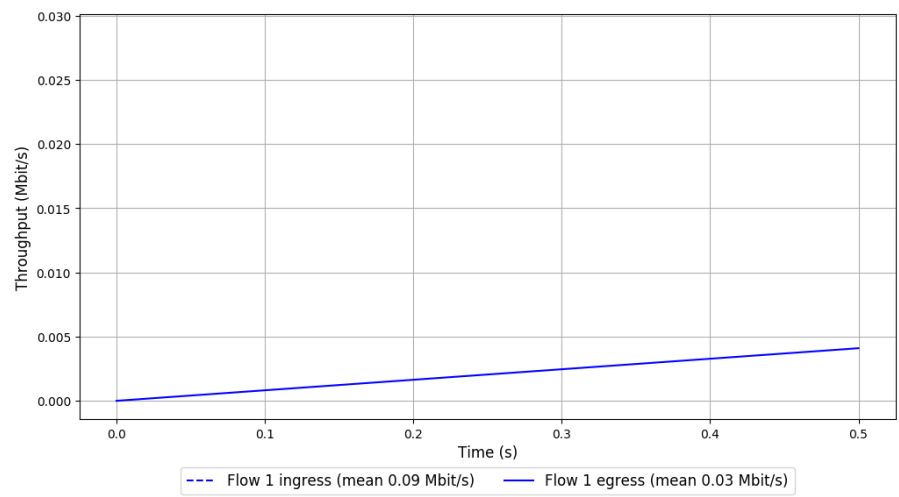
```
Run 5: Statistics of PCC-Expr

Start at: 2018-12-10 23:27:09
End at: 2018-12-10 23:27:39
Local clock offset: 1.646 ms
Remote clock offset: -2.837 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)
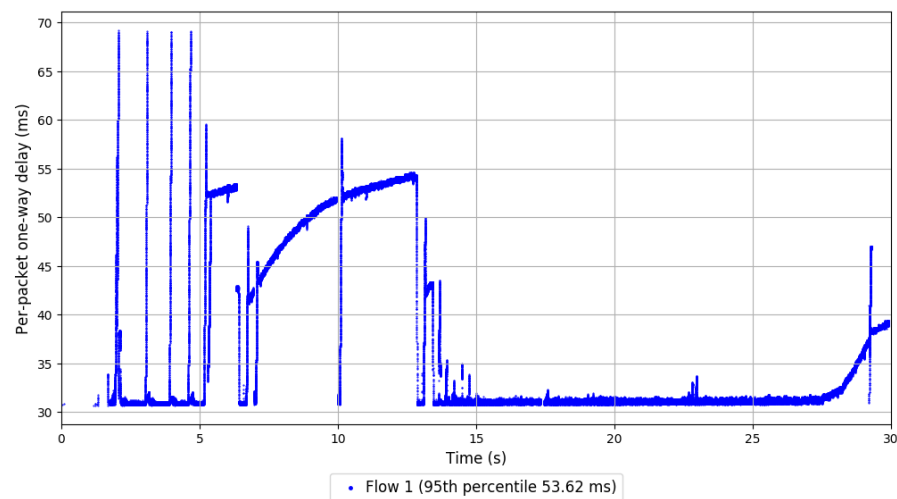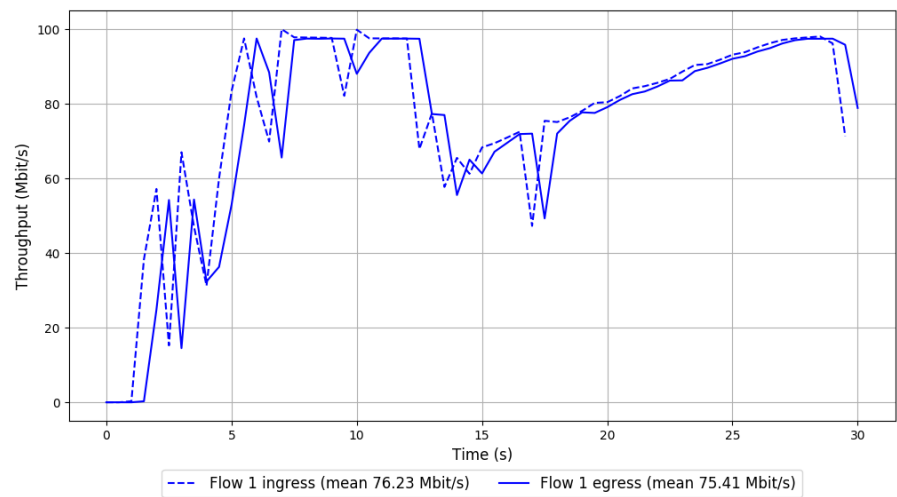

Flow 1 (95th percentile 31.11 ms)

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-12-10 22:10:25
End at: 2018-12-10 22:10:55
Local clock offset: 1.997 ms
Remote clock offset: -1.035 ms


# Below is generated by plot.py at 2018-12-10 23:53:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 75.41 Mbit/s
95th percentile per-packet one-way delay: 53.616 ms
Loss rate: 1.05%
-- Flow 1:
Average throughput: 75.41 Mbit/s
95th percentile per-packet one-way delay: 53.616 ms
Loss rate: 1.05%
```

Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-12-10 22:32:22
End at: 2018-12-10 22:32:52
Local clock offset: 3.468 ms
Remote clock offset: -1.056 ms


# Below is generated by plot.py at 2018-12-10 23:53:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 82.40 Mbit/s
95th percentile per-packet one-way delay: 66.983 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 82.40 Mbit/s
95th percentile per-packet one-way delay: 66.983 ms
Loss rate: 0.79%
```
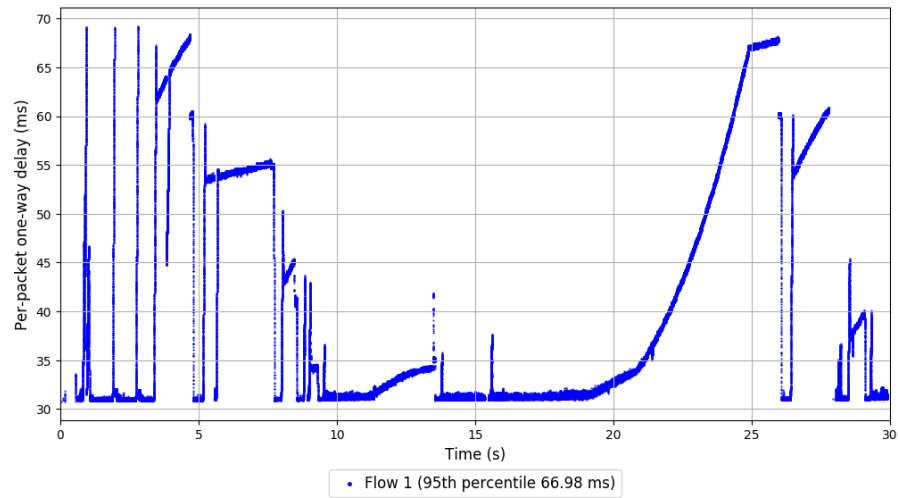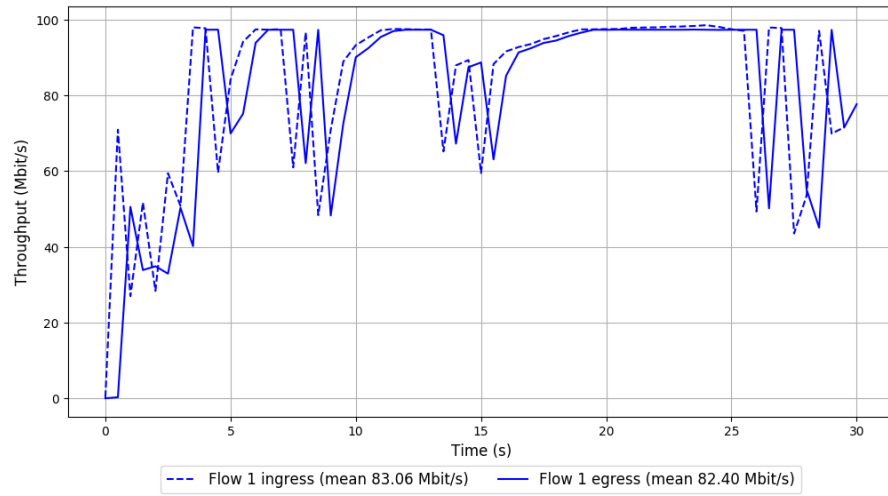
Run 2: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 83.06 Mbit/s)   Flow 1 egress (mean 82.40 Mbit/s)
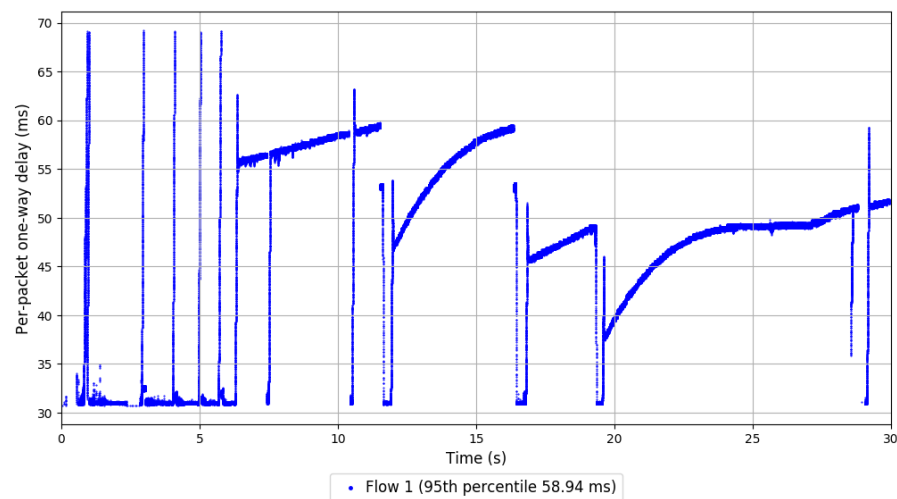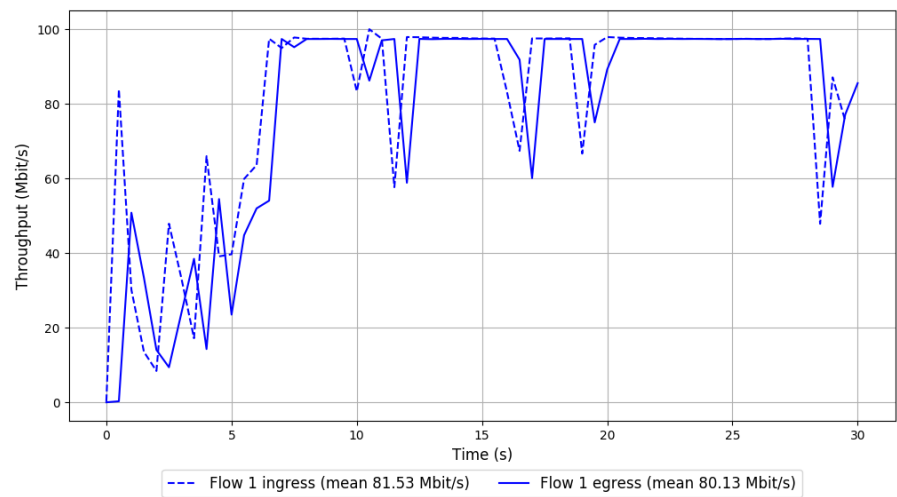

Flow 1 (95th percentile 66.98 ms)

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-12-10 22:54:41
End at: 2018-12-10 22:55:12
Local clock offset: 5.689 ms
Remote clock offset: -1.447 ms


# Below is generated by plot.py at 2018-12-10 23:53:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 80.13 Mbit/s
95th percentile per-packet one-way delay: 58.939 ms
Loss rate: 1.66%
-- Flow 1:
Average throughput: 80.13 Mbit/s
95th percentile per-packet one-way delay: 58.939 ms
Loss rate: 1.66%
```

Run 3: Report of QUIC Cubic — Data Link

```
Run 4: Statistics of QUIC Cubic

Start at: 2018-12-10 23:17:42
End at: 2018-12-10 23:18:12
Local clock offset: 2.12 ms
Remote clock offset: -2.481 ms


# Below is generated by plot.py at 2018-12-10 23:53:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 84.88 Mbit/s
95th percentile per-packet one-way delay: 62.148 ms
Loss rate: 0.77%
-- Flow 1:
Average throughput: 84.88 Mbit/s
95th percentile per-packet one-way delay: 62.148 ms
Loss rate: 0.77%
```
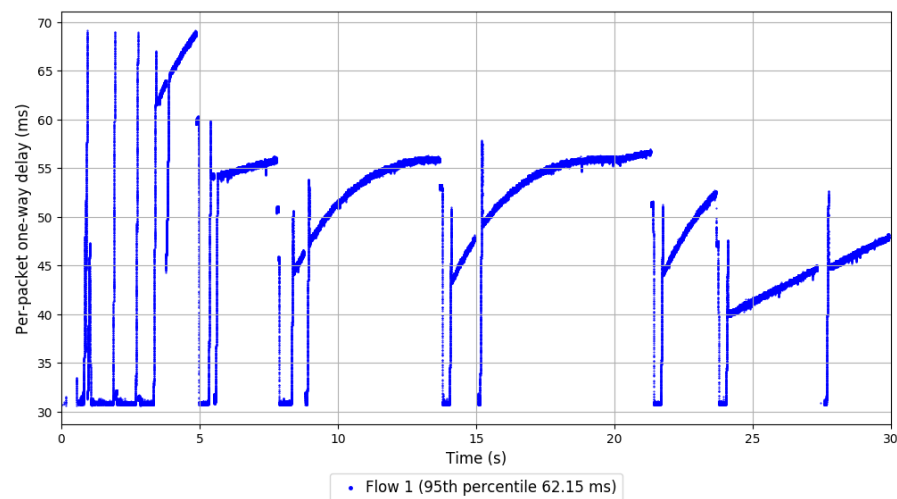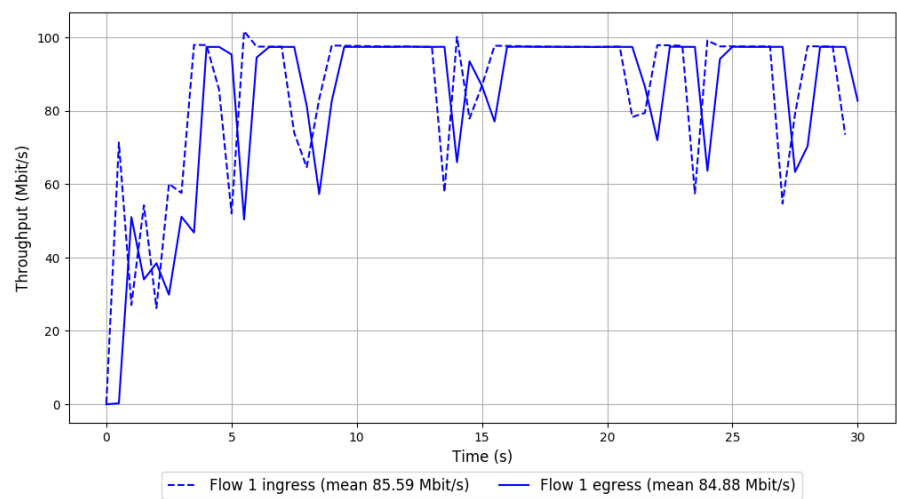
Run 4: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 85.59 Mbit/s)   ——— Flow 1 egress (mean 84.88 Mbit/s)

• Flow 1 (95th percentile 62.15 ms)

```
Run 5: Statistics of QUIC Cubic

Start at: 2018-12-10 23:39:52
End at: 2018-12-10 23:40:22
Local clock offset: 4.873 ms
Remote clock offset: -3.45 ms


# Below is generated by plot.py at 2018-12-10 23:53:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 76.02 Mbit/s
95th percentile per-packet one-way delay: 56.215 ms
Loss rate: 1.78%
-- Flow 1:
Average throughput: 76.02 Mbit/s
95th percentile per-packet one-way delay: 56.215 ms
Loss rate: 1.78%
```
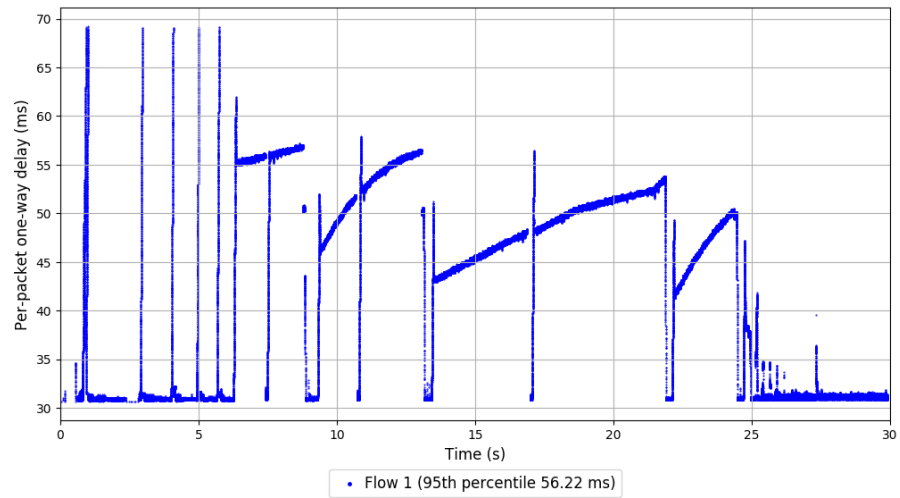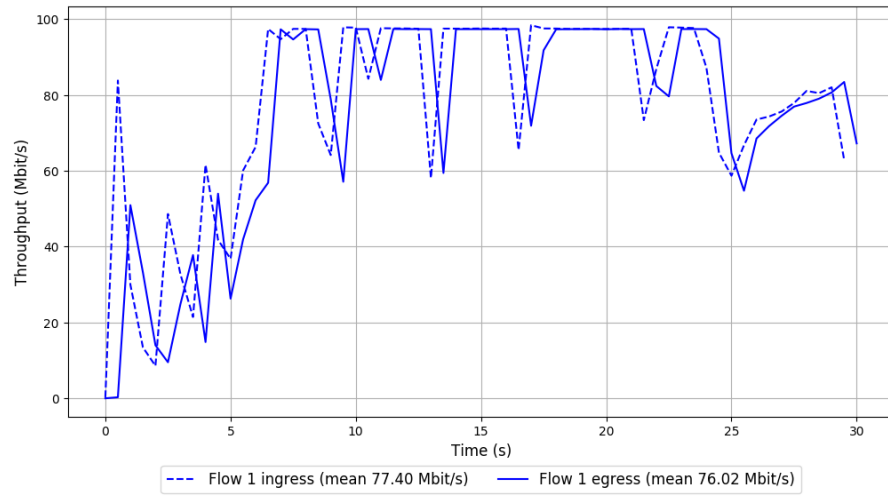
Run 5: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 77.40 Mbit/s)   Flow 1 egress (mean 76.02 Mbit/s)
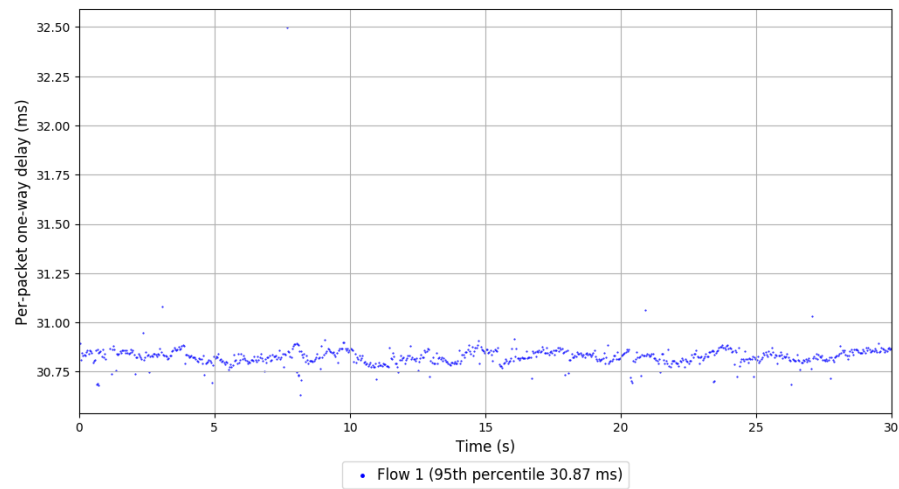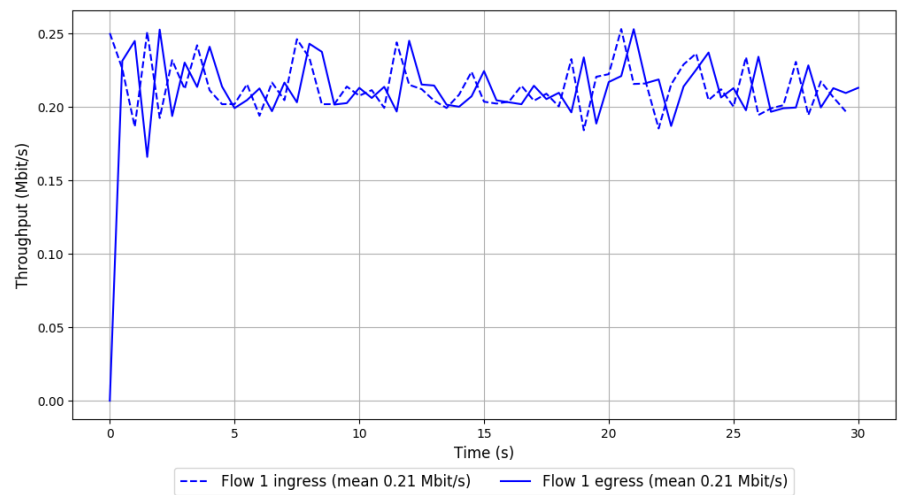

Flow 1 (95th percentile 56.22 ms)

```
Run 1: Statistics of SCReAM

Start at: 2018-12-10 22:11:35
End at: 2018-12-10 22:12:05
Local clock offset: 1.991 ms
Remote clock offset: -1.251 ms


# Below is generated by plot.py at 2018-12-10 23:53:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.872 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.872 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)
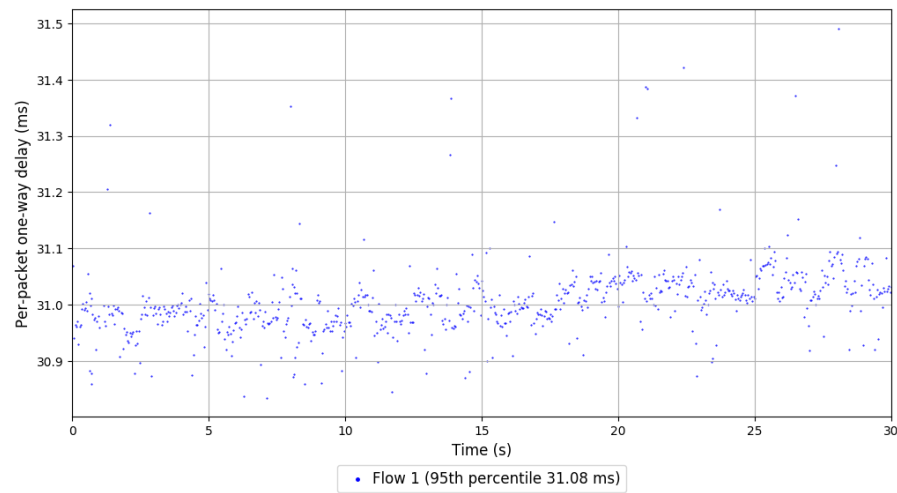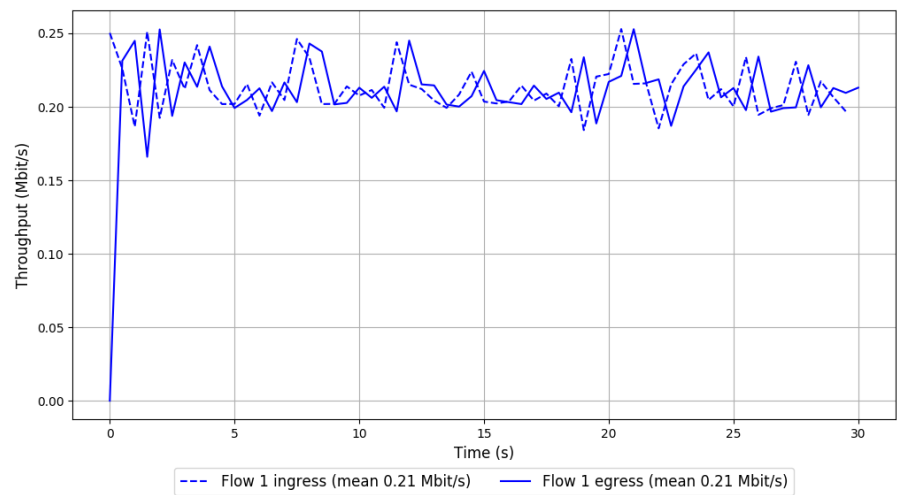

Flow 1 (95th percentile 30.87 ms)

```
Run 2: Statistics of SCReAM

Start at: 2018-12-10 22:33:33
End at: 2018-12-10 22:34:03
Local clock offset: 3.741 ms
Remote clock offset: -1.123 ms


# Below is generated by plot.py at 2018-12-10 23:53:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 31.082 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 31.082 ms
Loss rate: 0.00%
```
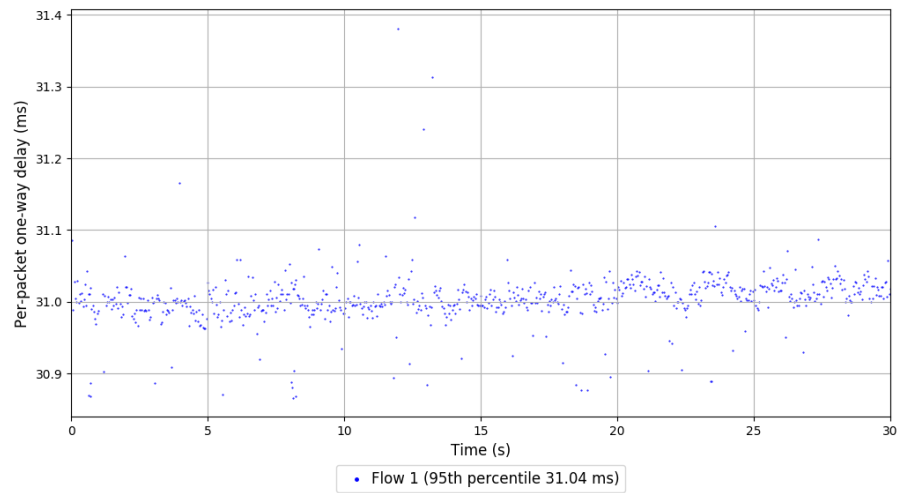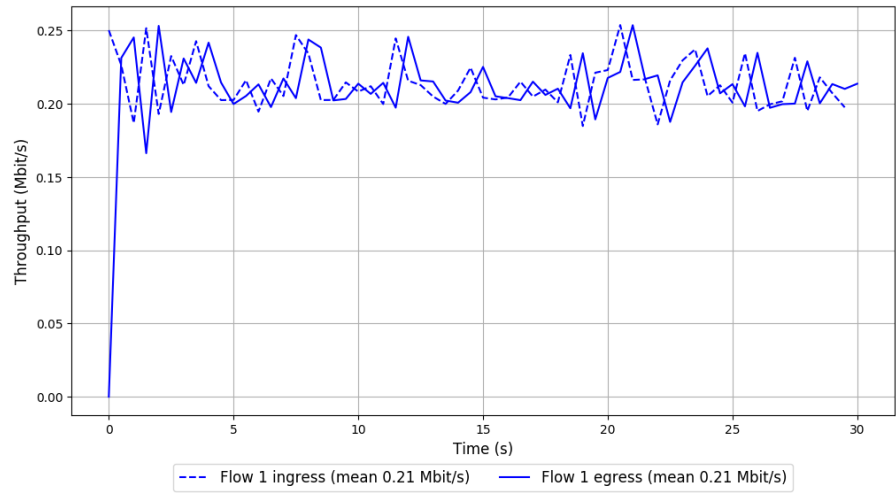
Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2018-12-10 22:55:59
End at: 2018-12-10 22:56:30
Local clock offset: 5.73 ms
Remote clock offset: -1.563 ms


# Below is generated by plot.py at 2018-12-10 23:53:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 31.041 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 31.041 ms
Loss rate: 0.00%
```
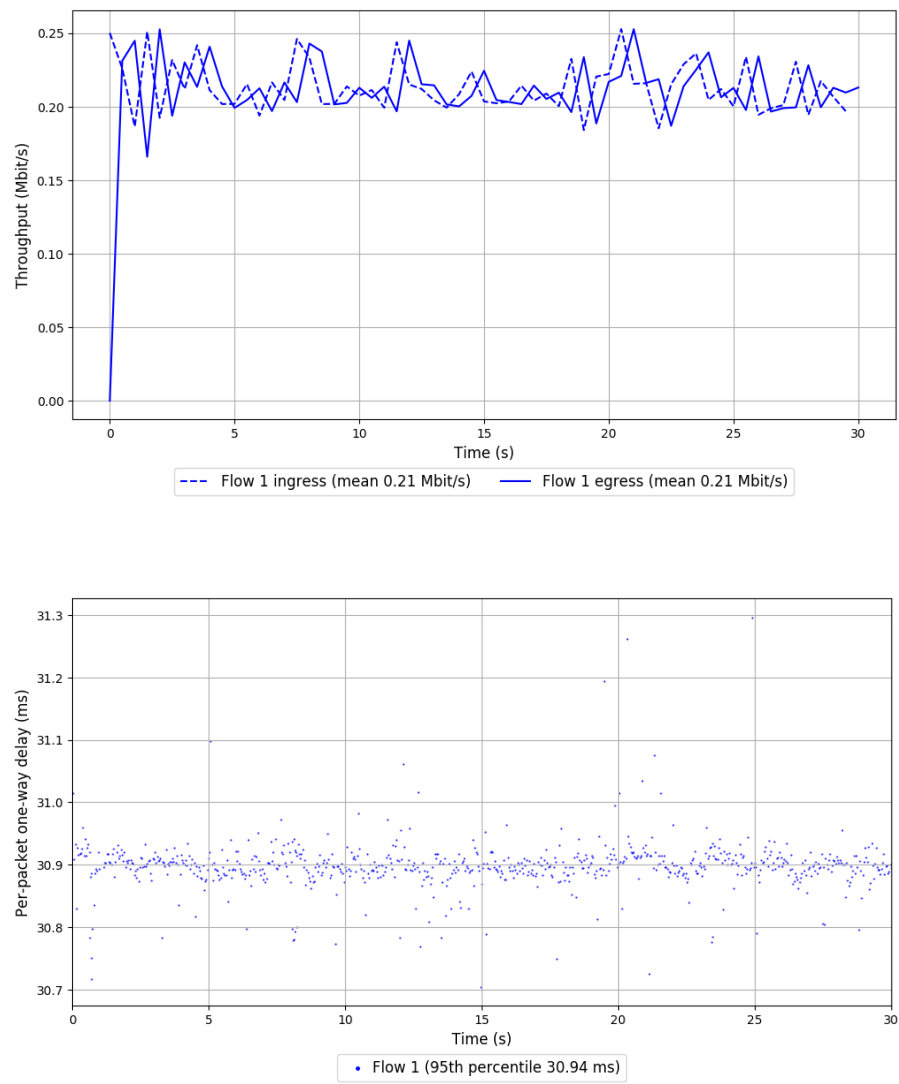
Run 3: Report of SCReAM — Data Link

```
Run 4: Statistics of SCReAM

Start at: 2018-12-10 23:18:56
End at: 2018-12-10 23:19:26
Local clock offset: 2.029 ms
Remote clock offset: -2.541 ms


# Below is generated by plot.py at 2018-12-10 23:53:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.940 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.940 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)
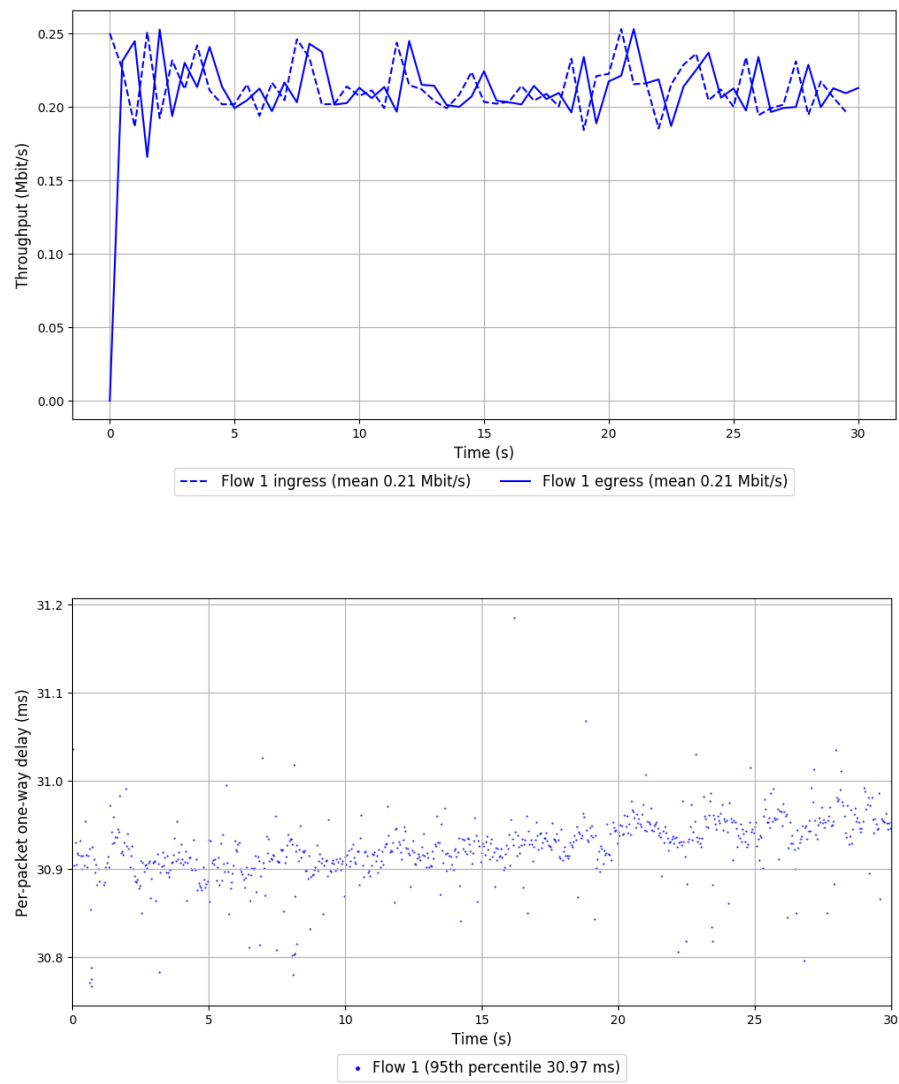

Flow 1 (95th percentile 30.94 ms)

```
Run 5: Statistics of SCReAM

Start at: 2018-12-10 23:41:03
End at: 2018-12-10 23:41:33
Local clock offset: 5.0 ms
Remote clock offset: -3.554 ms


# Below is generated by plot.py at 2018-12-10 23:53:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.973 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.973 ms
Loss rate: 0.00%
```

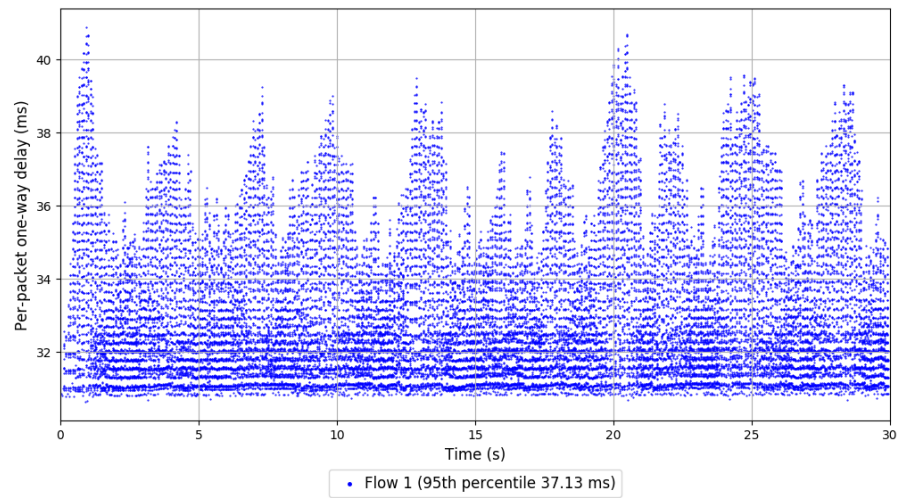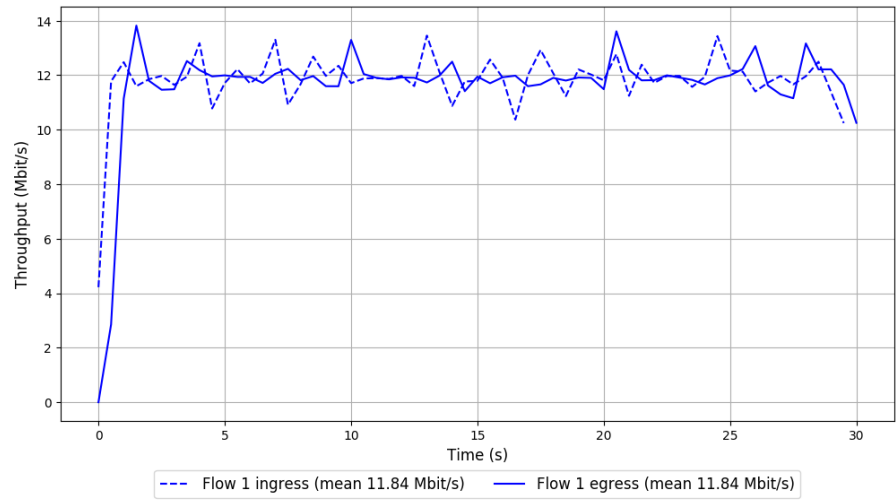## Run 5: Report of SCReAM — Data Link

```
Run 1: Statistics of Sprout

Start at: 2018-12-10 22:03:32
End at: 2018-12-10 22:04:02
Local clock offset: 1.809 ms
Remote clock offset: -1.048 ms


# Below is generated by plot.py at 2018-12-10 23:53:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.84 Mbit/s
95th percentile per-packet one-way delay: 37.129 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 11.84 Mbit/s
95th percentile per-packet one-way delay: 37.129 ms
Loss rate: 0.03%
```

Run 1: Report of Sprout — Data Link

Flow 1 ingress (mean 11.84 Mbit/s) Flow 1 egress (mean 11.84 Mbit/s)

• Flow 1 (95th percentile 37.13 ms)

```
Run 2: Statistics of Sprout

Start at: 2018-12-10 22:25:18
End at: 2018-12-10 22:25:48
Local clock offset: 1.86 ms
Remote clock offset: -1.15 ms


# Below is generated by plot.py at 2018-12-10 23:53:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.78 Mbit/s
95th percentile per-packet one-way delay: 37.135 ms
Loss rate: 0.24%
-- Flow 1:
Average throughput: 11.78 Mbit/s
95th percentile per-packet one-way delay: 37.135 ms
Loss rate: 0.24%
```
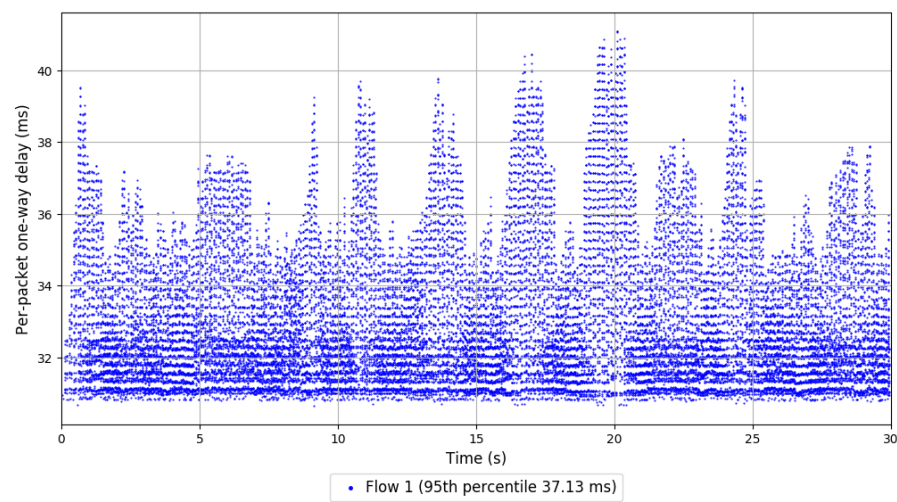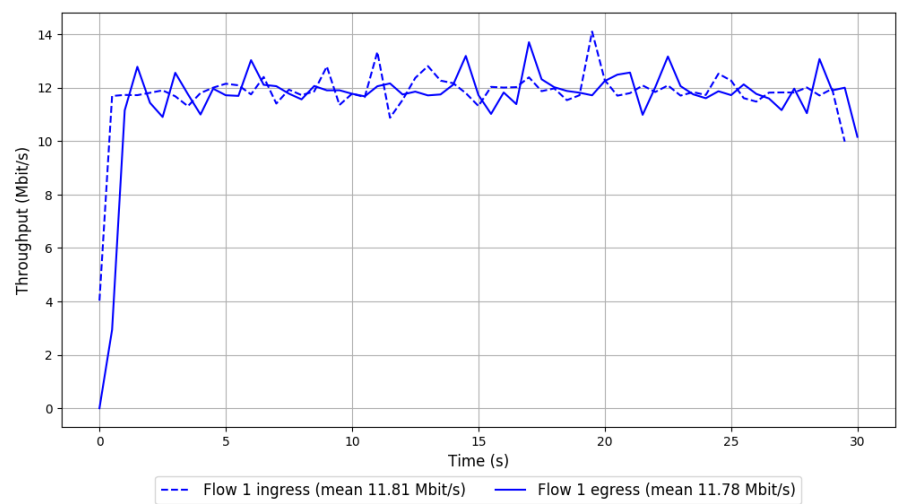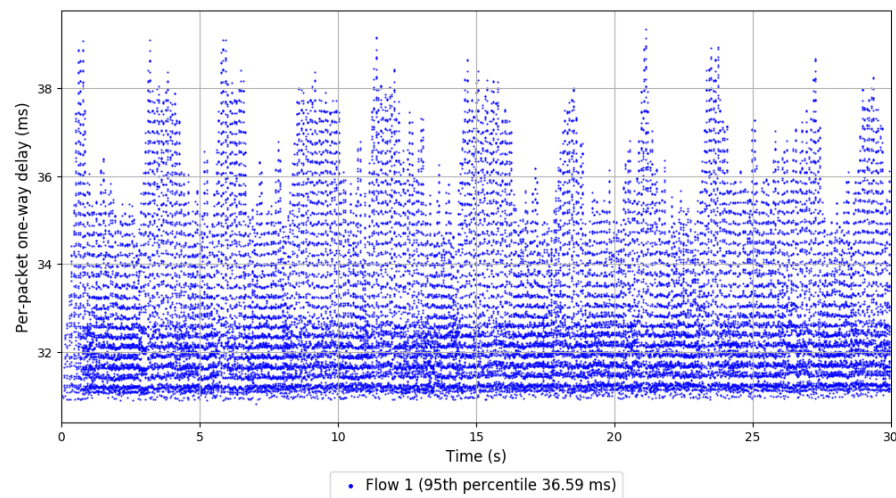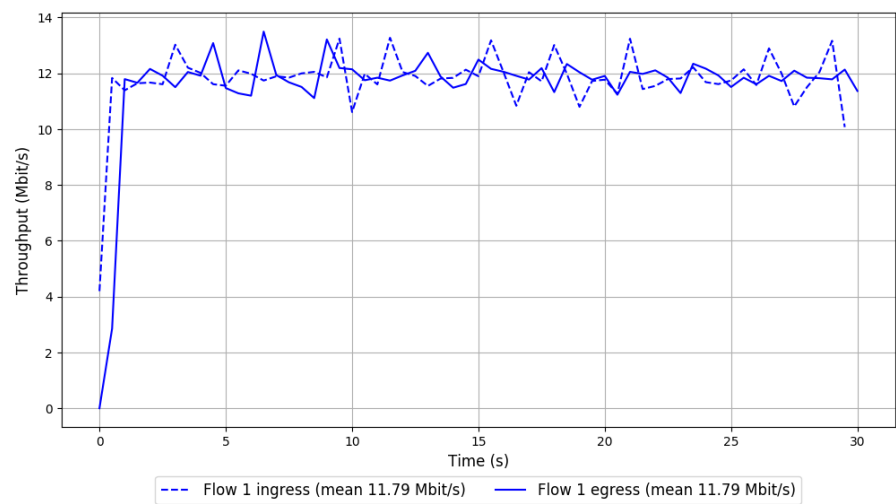
Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-12-10 22:47:27
End at: 2018-12-10 22:47:57
Local clock offset: 5.327 ms
Remote clock offset: -1.101 ms


# Below is generated by plot.py at 2018-12-10 23:53:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.79 Mbit/s
95th percentile per-packet one-way delay: 36.587 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 11.79 Mbit/s
95th percentile per-packet one-way delay: 36.587 ms
Loss rate: 0.00%
```

Run 3: Report of Sprout — Data Link

Flow 1 ingress (mean 11.79 Mbit/s) —— Flow 1 egress (mean 11.79 Mbit/s)
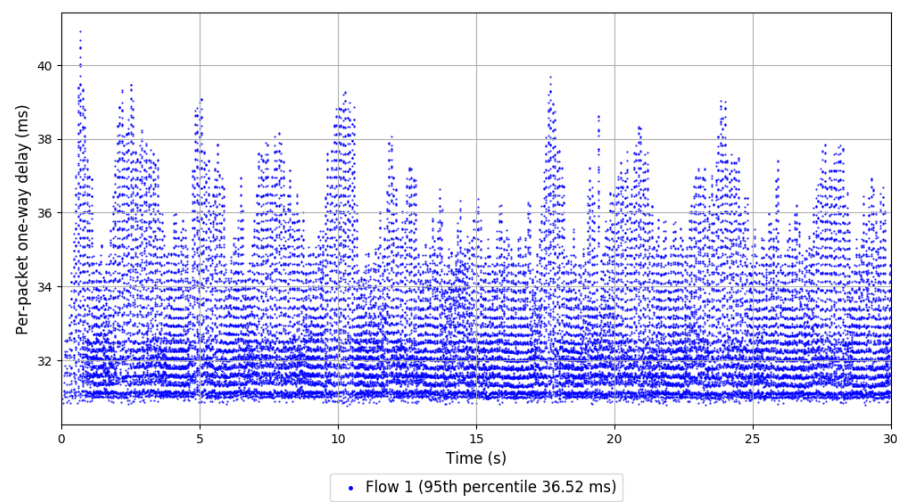
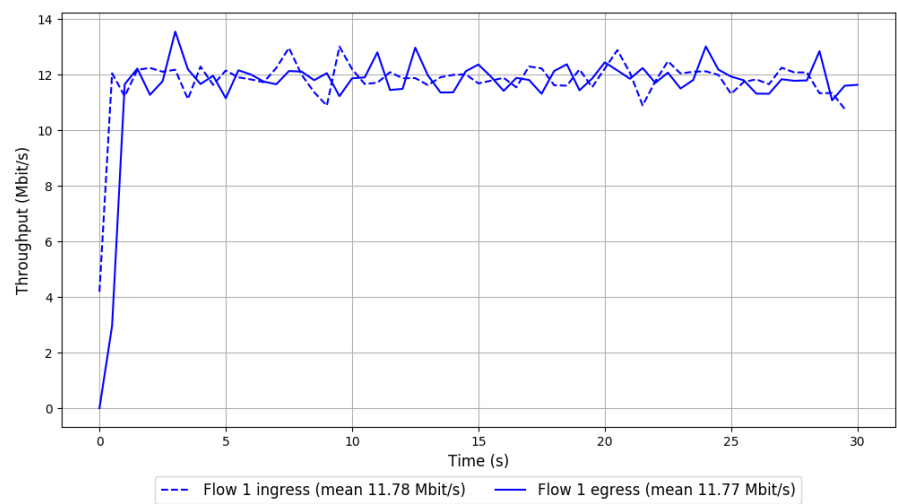

• Flow 1 (95th percentile 36.59 ms)

```
Run 4: Statistics of Sprout

Start at: 2018-12-10 23:10:32
End at: 2018-12-10 23:11:02
Local clock offset: 2.715 ms
Remote clock offset: -2.105 ms


# Below is generated by plot.py at 2018-12-10 23:53:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.77 Mbit/s
95th percentile per-packet one-way delay: 36.521 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 11.77 Mbit/s
95th percentile per-packet one-way delay: 36.521 ms
Loss rate: 0.08%
```
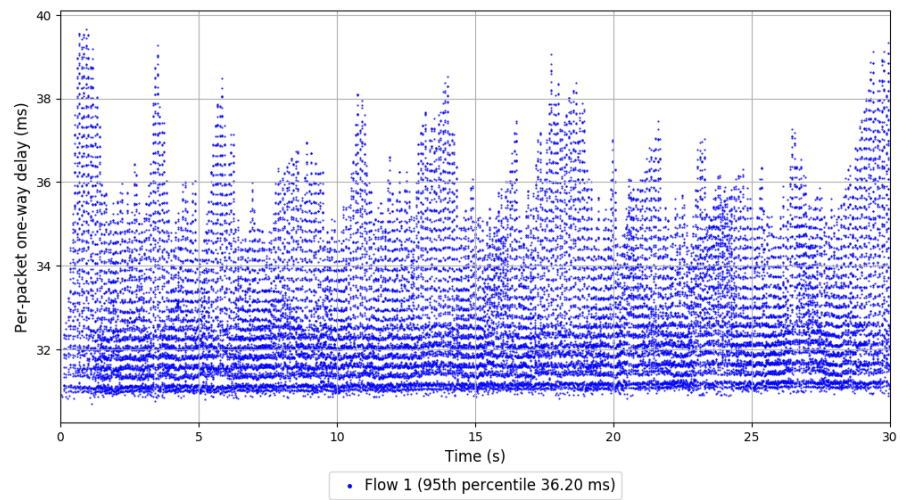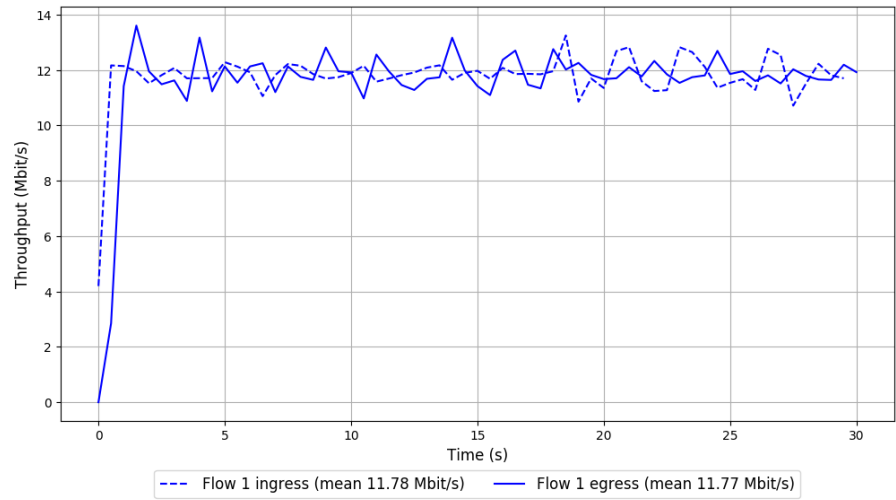
Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2018-12-10 23:32:55
End at: 2018-12-10 23:33:25
Local clock offset: 3.582 ms
Remote clock offset: -3.235 ms


# Below is generated by plot.py at 2018-12-10 23:53:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.77 Mbit/s
95th percentile per-packet one-way delay: 36.195 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 11.77 Mbit/s
95th percentile per-packet one-way delay: 36.195 ms
Loss rate: 0.08%
```

Run 5: Report of Sprout — Data Link

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

Start at: 2018-12-10 22:04:38
End at: 2018-12-10 22:05:08
Local clock offset: 1.882 ms
Remote clock offset: -0.983 ms

# Below is generated by plot.py at 2018-12-10 23:53:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.68 Mbit/s
95th percentile per-packet one-way delay: 31.031 ms
Loss rate: 77.47%
-- Flow 1:
Average throughput: 12.68 Mbit/s
95th percentile per-packet one-way delay: 31.031 ms
Loss rate: 77.47%
```
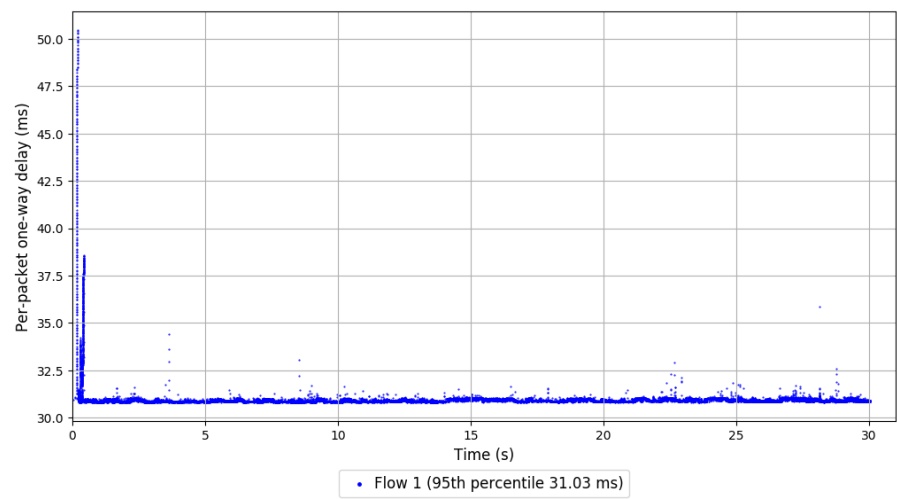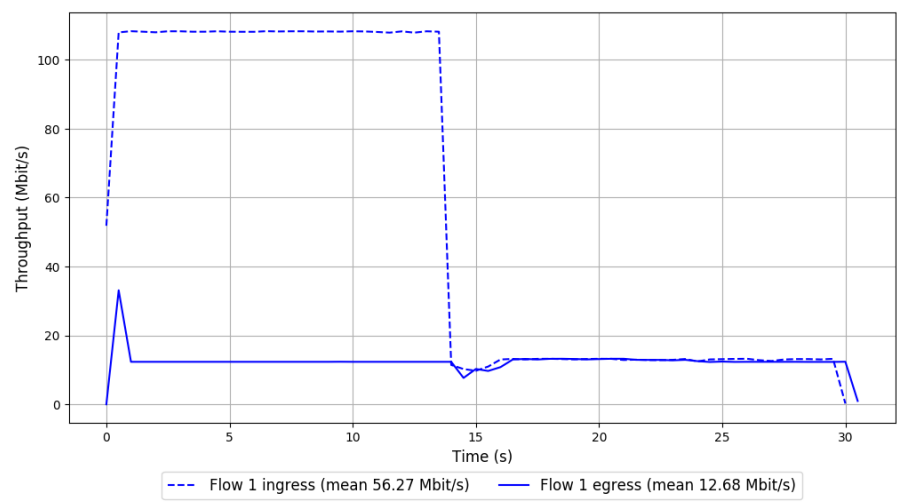
Run 1: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 56.27 Mbit/s)   Flow 1 egress (mean 12.68 Mbit/s)

Flow 1 (95th percentile 31.03 ms)
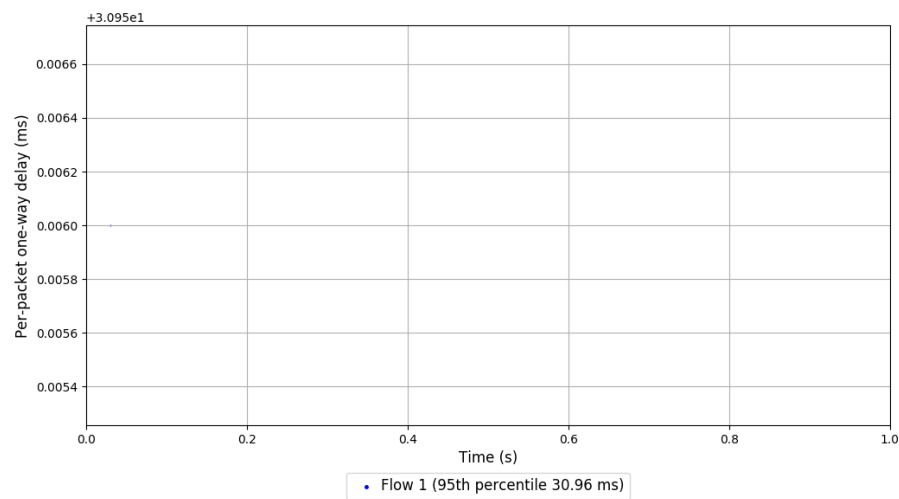
146

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

Start at: 2018-12-10 22:26:25
End at: 2018-12-10 22:26:55
Local clock offset: 1.825 ms
Remote clock offset: -1.121 ms
```
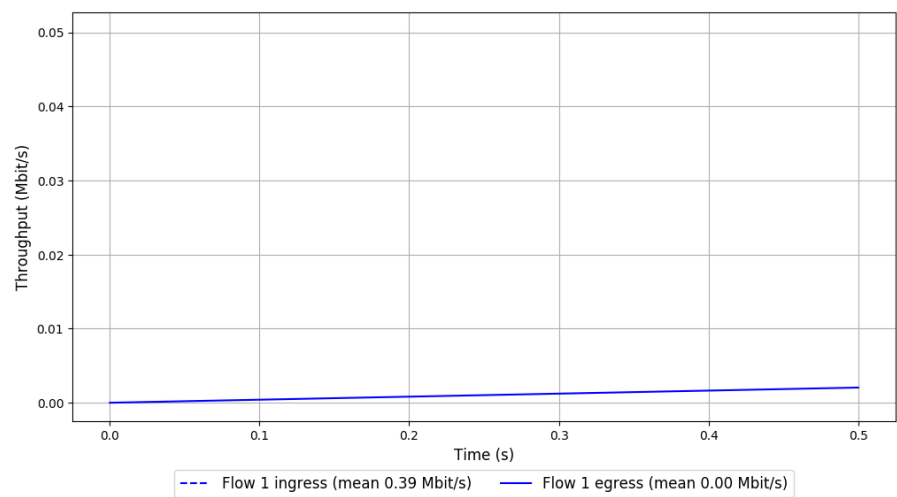
Run 2: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 0.39 Mbit/s) Flow 1 egress (mean 0.00 Mbit/s)

Flow 1 (95th percentile 30.96 ms)

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

Start at: 2018-12-10 22:48:34
End at: 2018-12-10 22:49:04
Local clock offset: 5.421 ms
Remote clock offset: -1.192 ms


# Below is generated by plot.py at 2018-12-10 23:53:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.68 Mbit/s
95th percentile per-packet one-way delay: 31.047 ms
Loss rate: 73.10%
-- Flow 1:
Average throughput: 12.68 Mbit/s
95th percentile per-packet one-way delay: 31.047 ms
Loss rate: 73.10%
```
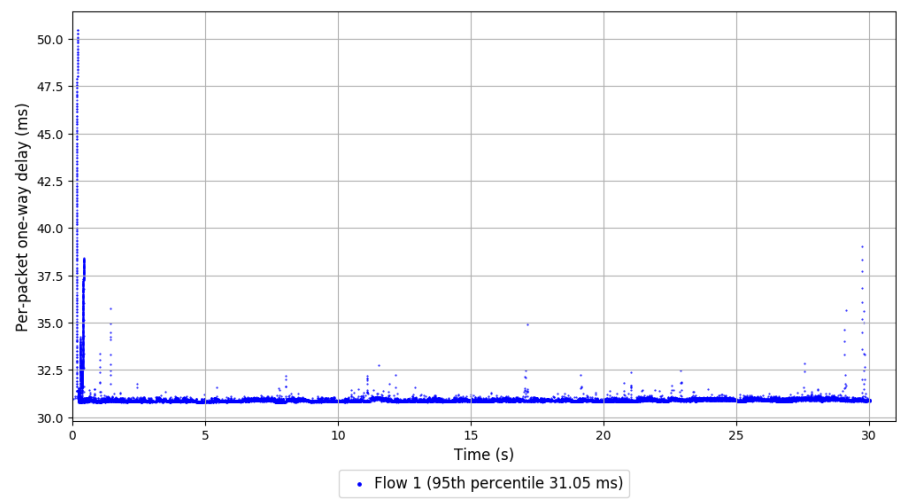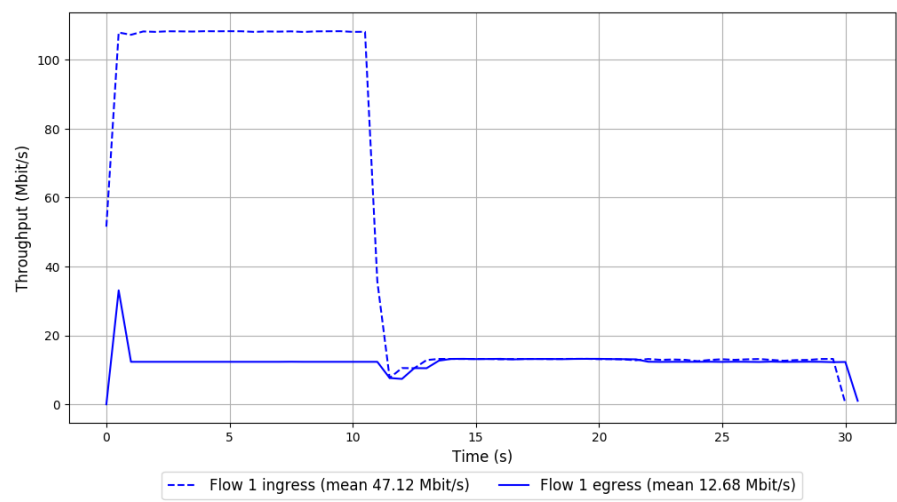
Run 3: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 47.12 Mbit/s) —— Flow 1 egress (mean 12.68 Mbit/s)

· Flow 1 (95th percentile 31.05 ms)
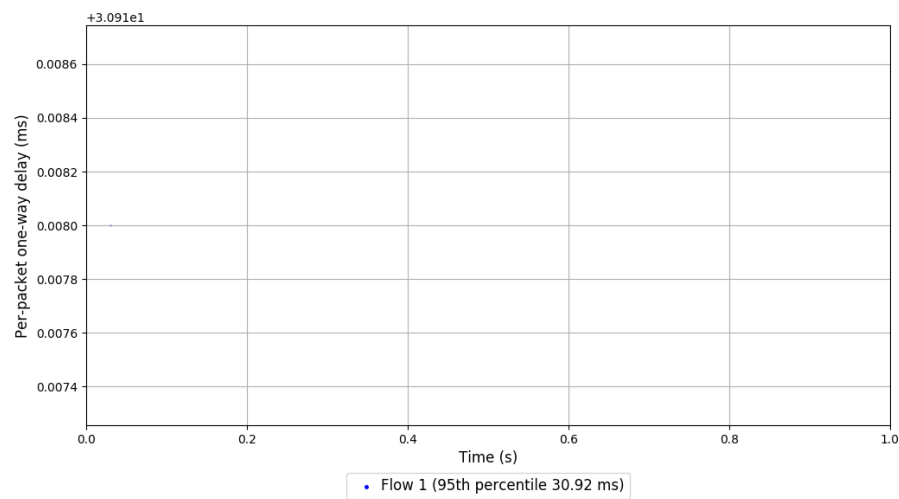
```
Run 4: Statistics of TaoVA-100x

Start at: 2018-12-10 23:11:39
End at: 2018-12-10 23:12:10
Local clock offset: 2.605 ms
Remote clock offset: -2.131 ms
```
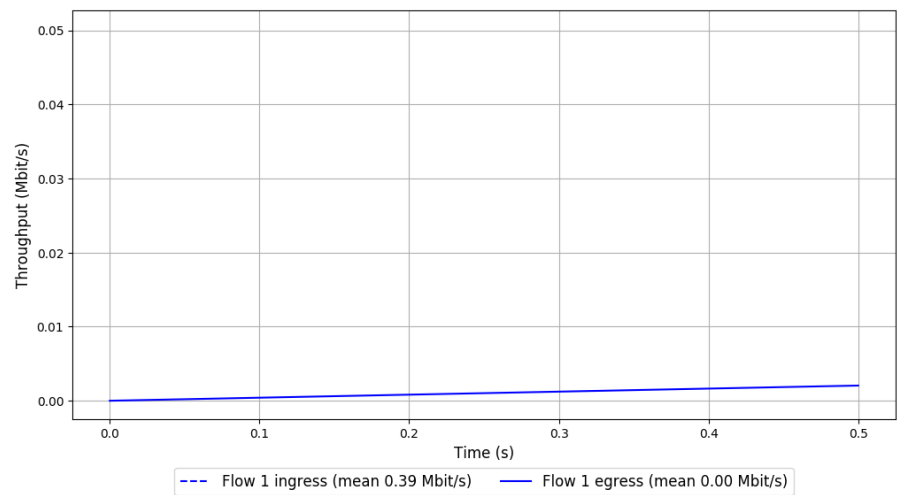
Run 4: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 0.39 Mbit/s) --- Flow 1 egress (mean 0.00 Mbit/s)

Flow 1 (95th percentile 30.92 ms)

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

Start at: 2018-12-10 23:34:02
End at: 2018-12-10 23:34:32
Local clock offset: 3.834 ms
Remote clock offset: -3.447 ms


# Below is generated by plot.py at 2018-12-10 23:53:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.68 Mbit/s
95th percentile per-packet one-way delay: 30.973 ms
Loss rate: 63.14%
-- Flow 1:
Average throughput: 12.68 Mbit/s
95th percentile per-packet one-way delay: 30.973 ms
Loss rate: 63.14%
```
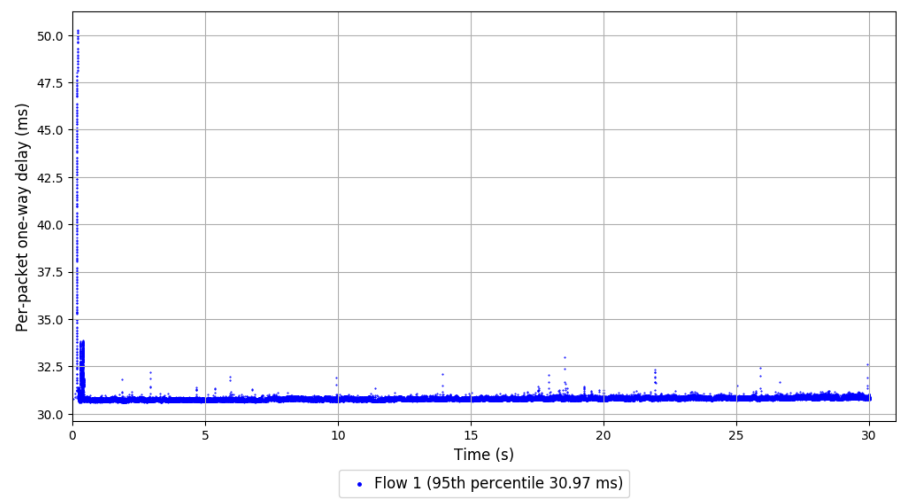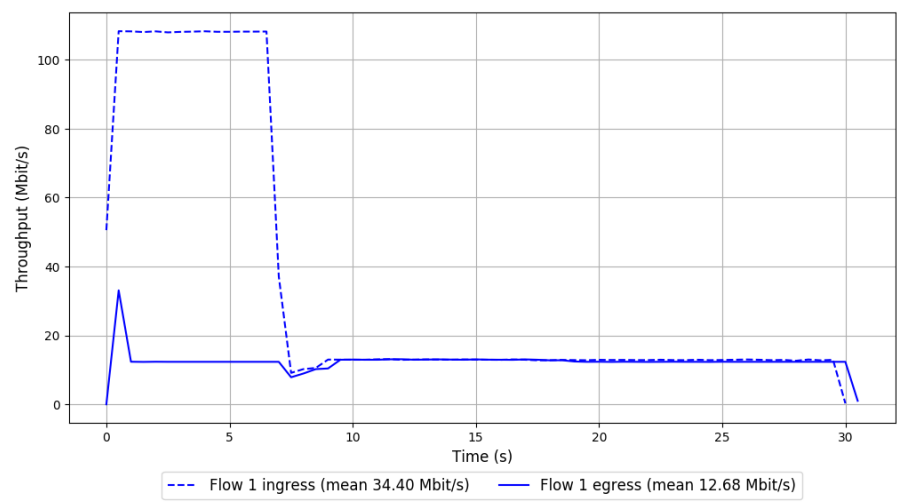
Run 5: Report of TaoVA-100x — Data Link

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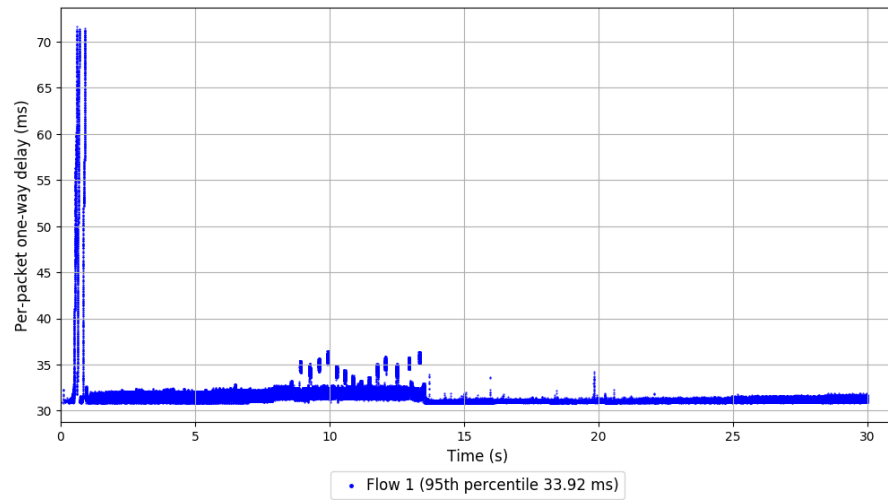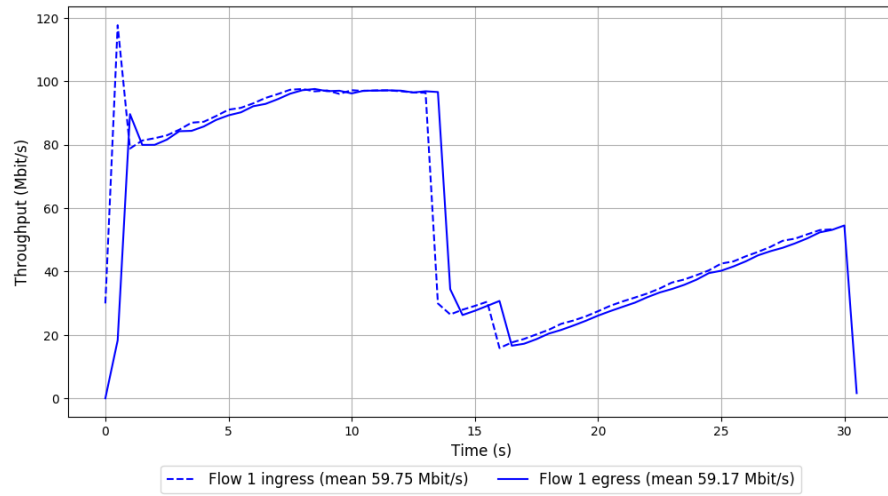

Flow 1 (95th percentile 30.97 ms)

```
Run 1: Statistics of TCP Vegas

Start at: 2018-12-10 21:56:39
End at: 2018-12-10 21:57:09
Local clock offset: 1.24 ms
Remote clock offset: -0.914 ms


# Below is generated by plot.py at 2018-12-10 23:53:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 59.17 Mbit/s
95th percentile per-packet one-way delay: 33.916 ms
Loss rate: 0.97%
-- Flow 1:
Average throughput: 59.17 Mbit/s
95th percentile per-packet one-way delay: 33.916 ms
Loss rate: 0.97%
```

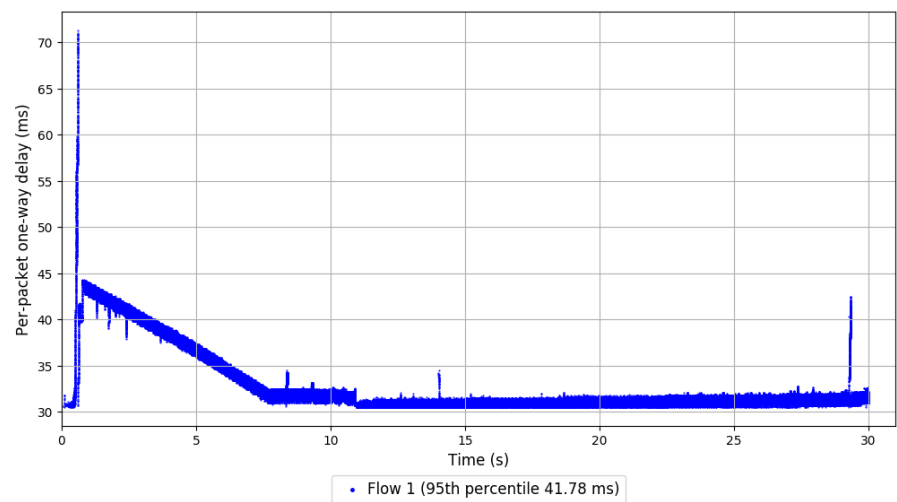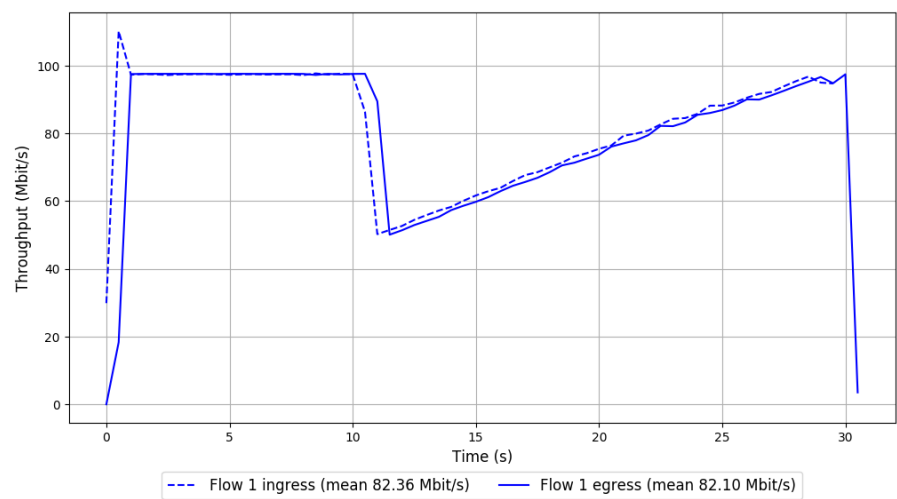Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-12-10 22:18:22
End at: 2018-12-10 22:18:52
Local clock offset: 1.982 ms
Remote clock offset: -1.371 ms


# Below is generated by plot.py at 2018-12-10 23:54:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 82.10 Mbit/s
95th percentile per-packet one-way delay: 41.783 ms
Loss rate: 0.32%
-- Flow 1:
Average throughput: 82.10 Mbit/s
95th percentile per-packet one-way delay: 41.783 ms
Loss rate: 0.32%
```

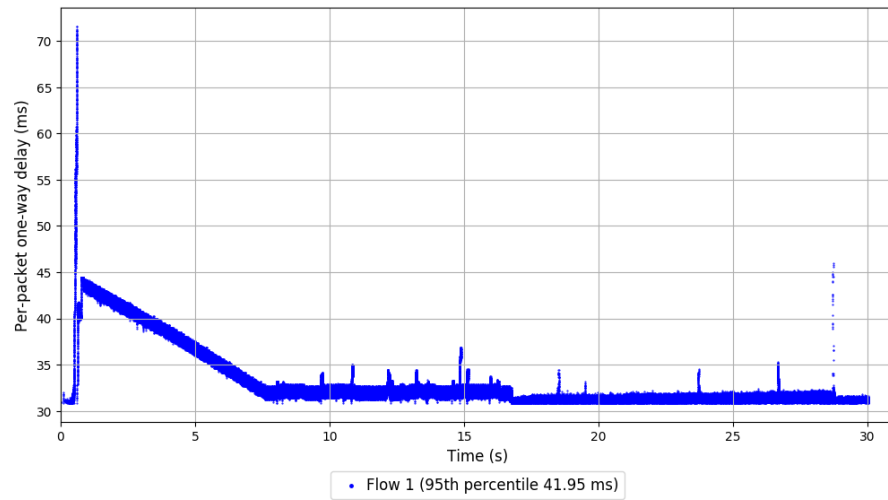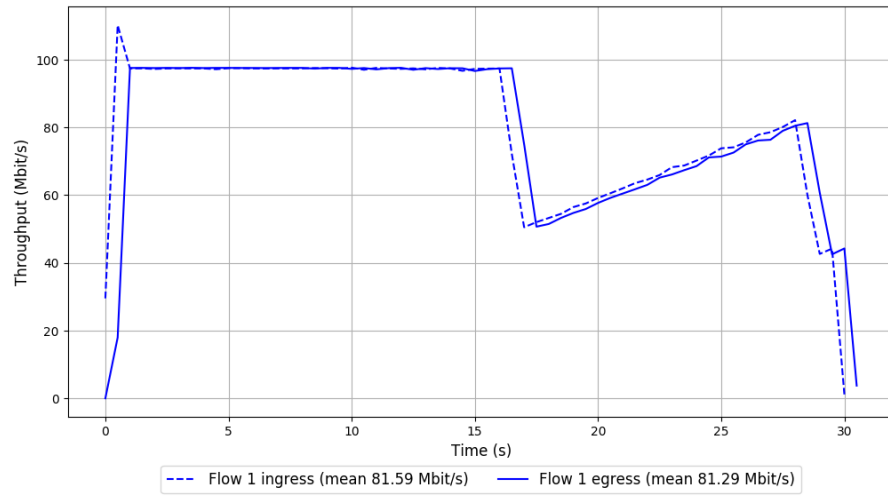Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2018-12-10 22:40:22
End at: 2018-12-10 22:40:52
Local clock offset: 4.764 ms
Remote clock offset: -1.072 ms


# Below is generated by plot.py at 2018-12-10 23:54:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 81.29 Mbit/s
95th percentile per-packet one-way delay: 41.949 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 81.29 Mbit/s
95th percentile per-packet one-way delay: 41.949 ms
Loss rate: 0.37%
```

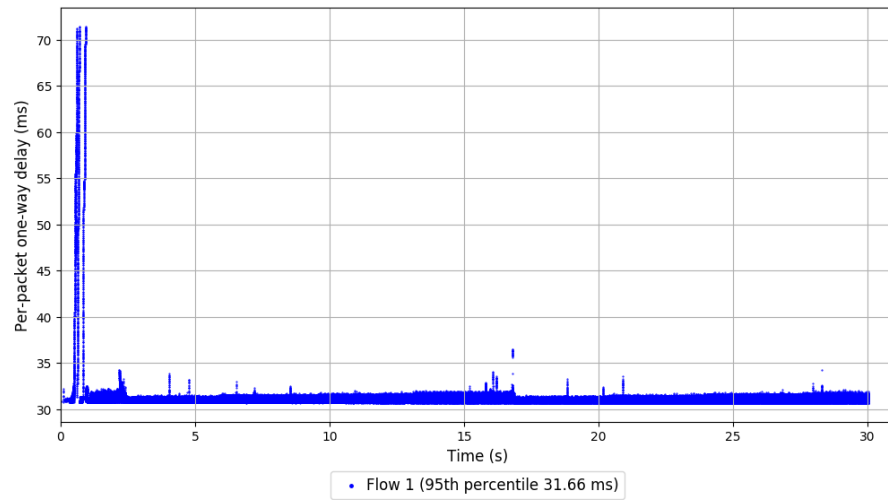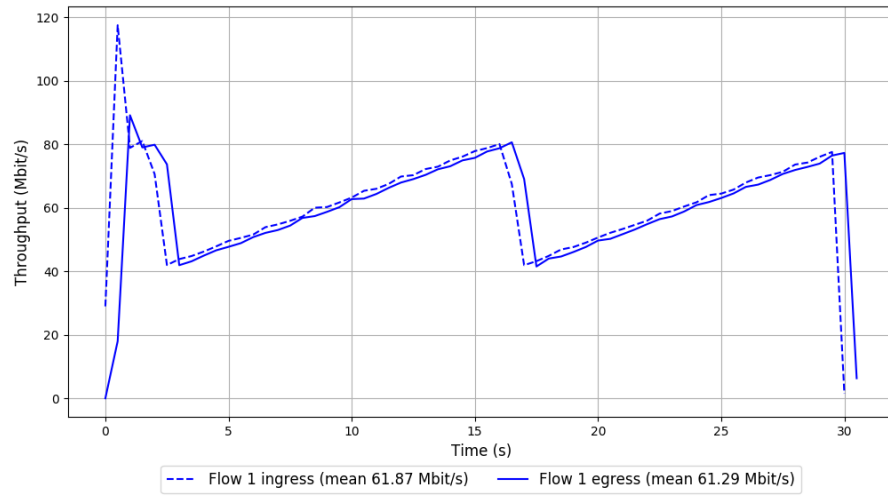Run 3: Report of TCP Vegas — Data Link

```
Run 4: Statistics of TCP Vegas

Start at: 2018-12-10 23:03:04
End at: 2018-12-10 23:03:34
Local clock offset: 3.958 ms
Remote clock offset: -1.803 ms


# Below is generated by plot.py at 2018-12-10 23:54:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 61.29 Mbit/s
95th percentile per-packet one-way delay: 31.661 ms
Loss rate: 0.94%
-- Flow 1:
Average throughput: 61.29 Mbit/s
95th percentile per-packet one-way delay: 31.661 ms
Loss rate: 0.94%
```

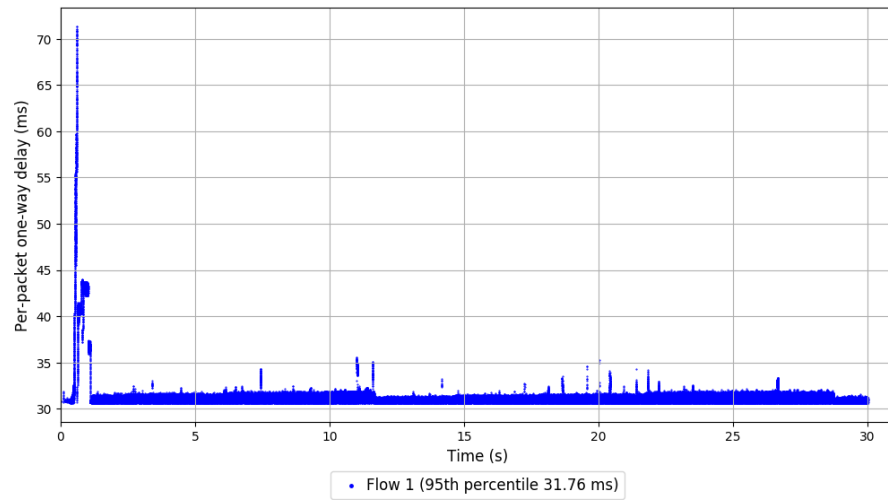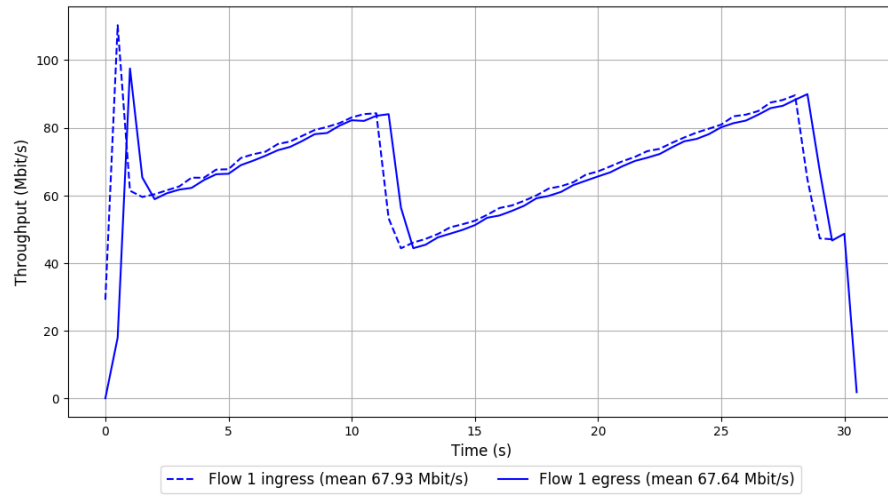Run 4: Report of TCP Vegas — Data Link

```
Run 5: Statistics of TCP Vegas

Start at: 2018-12-10 23:25:58
End at: 2018-12-10 23:26:28
Local clock offset: 1.688 ms
Remote clock offset: -3.012 ms

# Below is generated by plot.py at 2018-12-10 23:54:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 67.64 Mbit/s
95th percentile per-packet one-way delay: 31.762 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 67.64 Mbit/s
95th percentile per-packet one-way delay: 31.762 ms
Loss rate: 0.42%
```

Run 5: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 67.93 Mbit/s) --- Flow 1 egress (mean 67.64 Mbit/s)
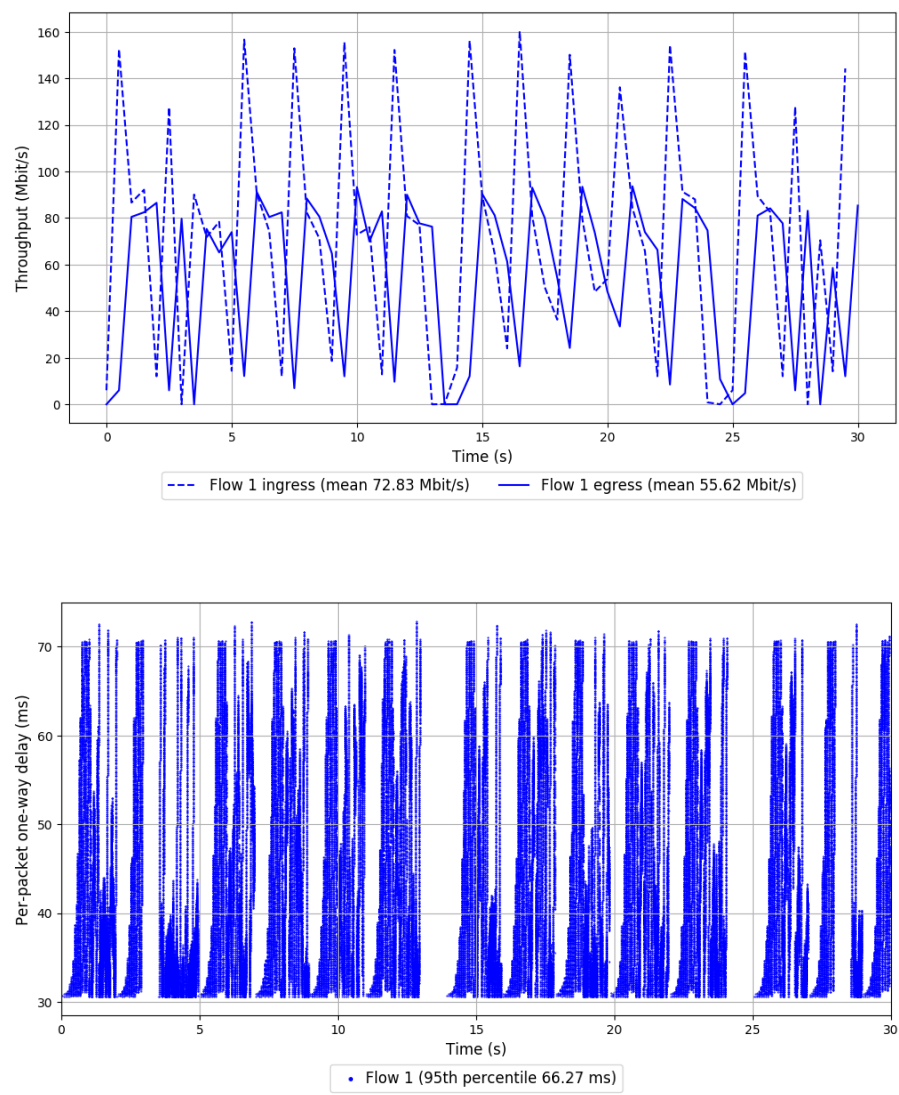

Flow 1 (95th percentile 31.76 ms)

```
Run 1: Statistics of Verus

Start at: 2018-12-10 21:55:30
End at: 2018-12-10 21:56:00
Local clock offset: 1.327 ms
Remote clock offset: -1.096 ms


# Below is generated by plot.py at 2018-12-10 23:54:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 55.62 Mbit/s
95th percentile per-packet one-way delay: 66.266 ms
Loss rate: 23.61%
-- Flow 1:
Average throughput: 55.62 Mbit/s
95th percentile per-packet one-way delay: 66.266 ms
Loss rate: 23.61%
```
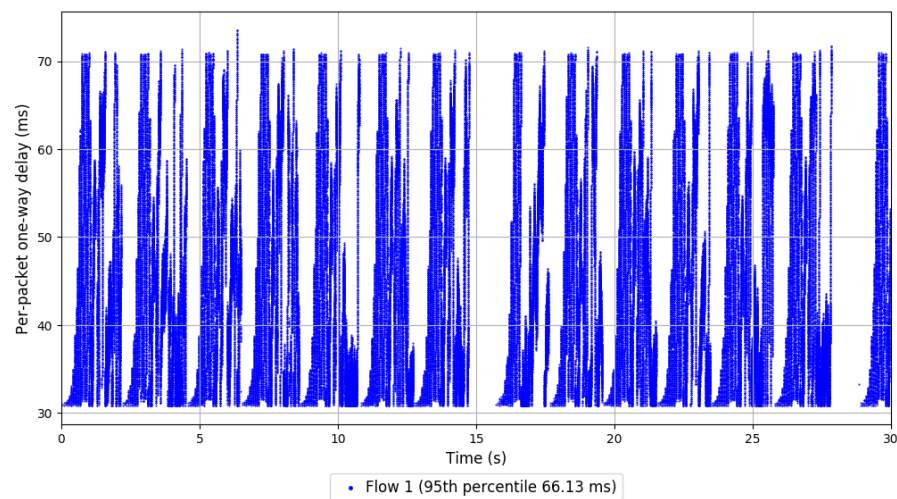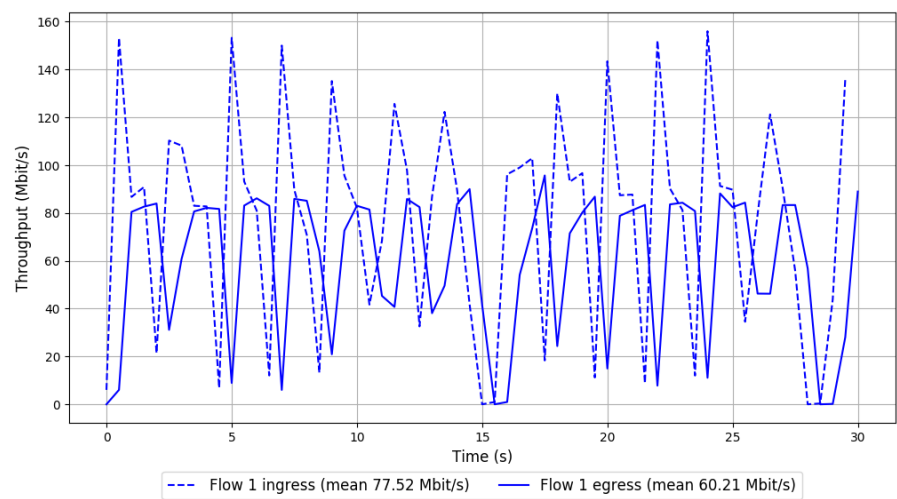
Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2018-12-10 22:17:12
End at: 2018-12-10 22:17:42
Local clock offset: 2.003 ms
Remote clock offset: -1.138 ms


# Below is generated by plot.py at 2018-12-10 23:54:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 60.21 Mbit/s
95th percentile per-packet one-way delay: 66.133 ms
Loss rate: 22.28%
-- Flow 1:
Average throughput: 60.21 Mbit/s
95th percentile per-packet one-way delay: 66.133 ms
Loss rate: 22.28%
```
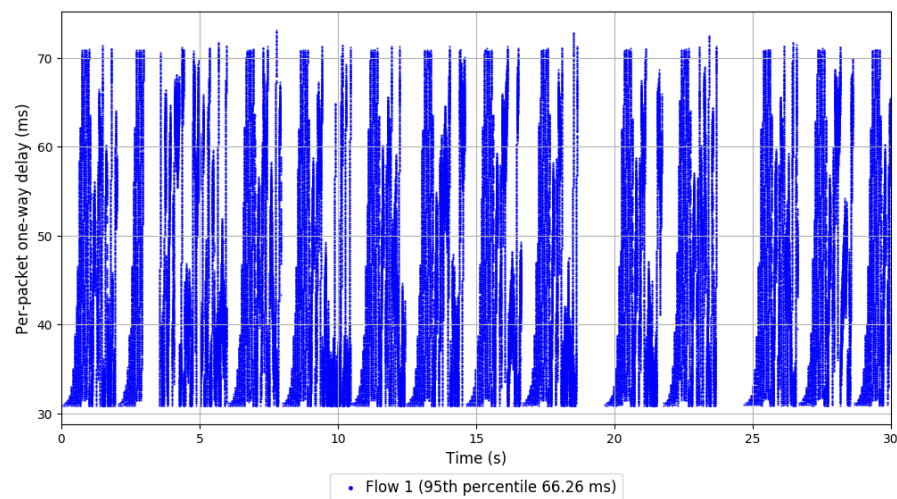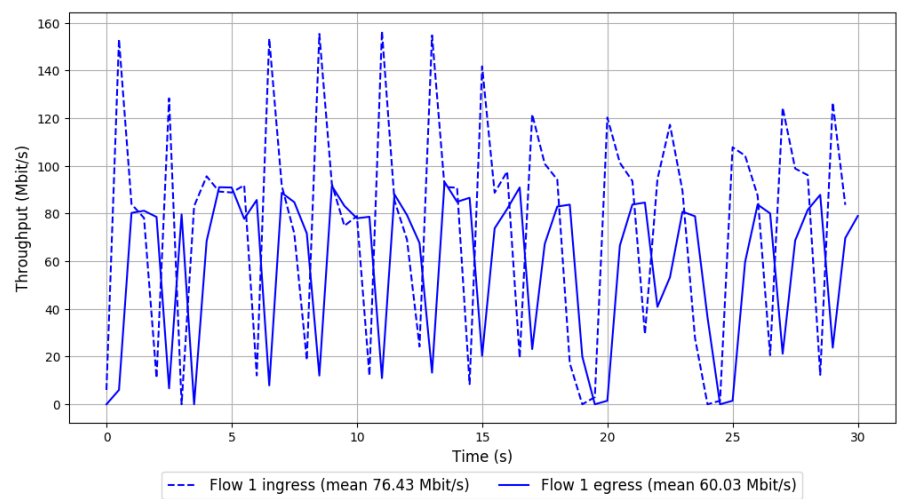
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-12-10 22:39:12
End at: 2018-12-10 22:39:42
Local clock offset: 4.613 ms
Remote clock offset: -1.038 ms


# Below is generated by plot.py at 2018-12-10 23:54:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 60.03 Mbit/s
95th percentile per-packet one-way delay: 66.260 ms
Loss rate: 21.38%
-- Flow 1:
Average throughput: 60.03 Mbit/s
95th percentile per-packet one-way delay: 66.260 ms
Loss rate: 21.38%
```
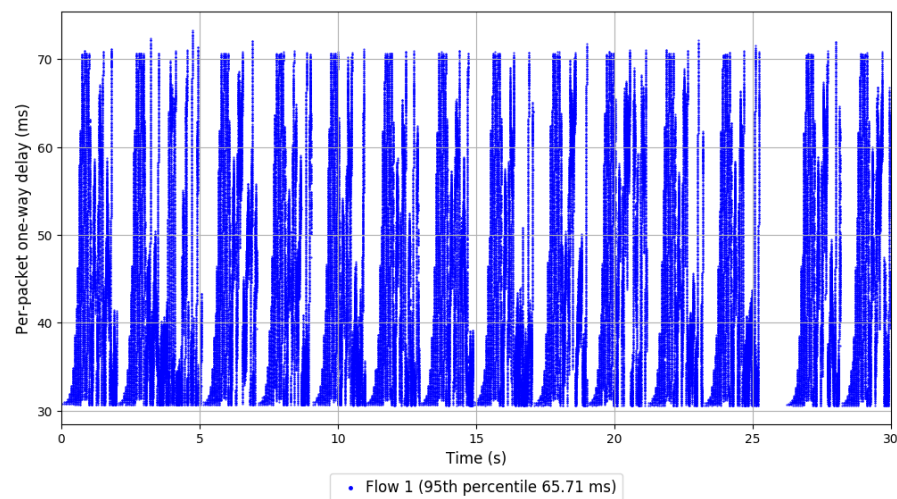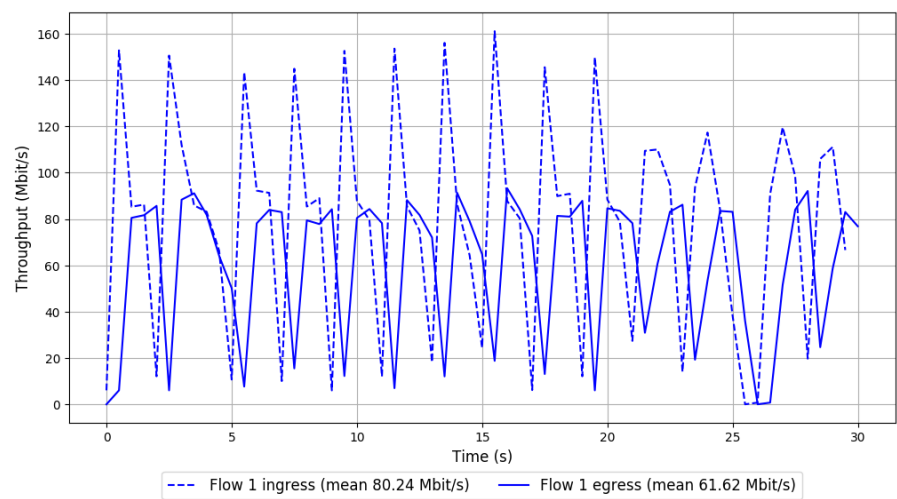
Run 3: Report of Verus — Data Link

```
Run 4: Statistics of Verus

Start at: 2018-12-10 23:01:46
End at: 2018-12-10 23:02:16
Local clock offset: 4.295 ms
Remote clock offset: -1.783 ms


# Below is generated by plot.py at 2018-12-10 23:54:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 61.62 Mbit/s
95th percentile per-packet one-way delay: 65.711 ms
Loss rate: 23.18%
-- Flow 1:
Average throughput: 61.62 Mbit/s
95th percentile per-packet one-way delay: 65.711 ms
Loss rate: 23.18%
```

Run 4: Report of Verus — Data Link

Flow 1 ingress (mean 80.24 Mbit/s)   Flow 1 egress (mean 61.62 Mbit/s)
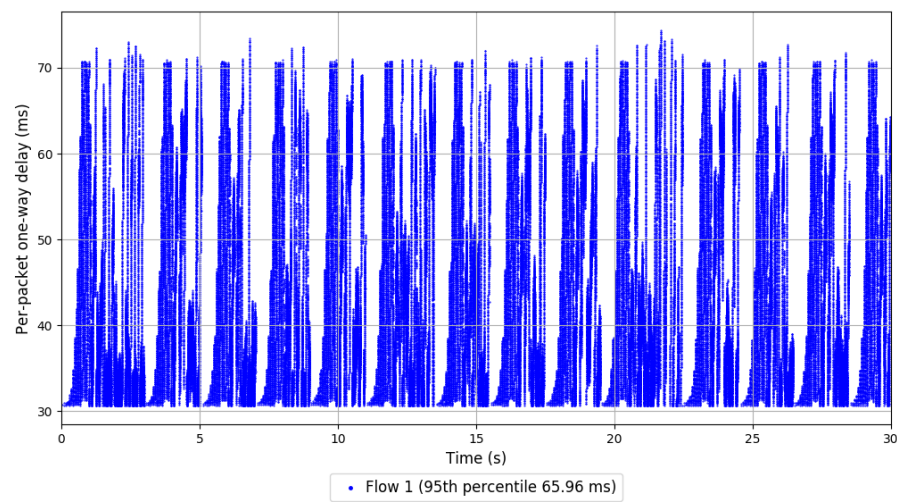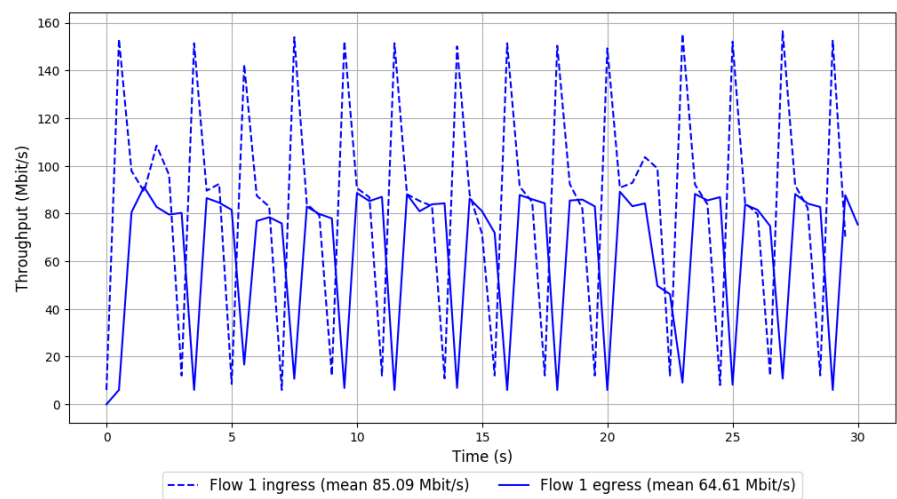

Flow 1 (95th percentile 65.71 ms)

```
Run 5: Statistics of Verus

Start at: 2018-12-10 23:24:43
End at: 2018-12-10 23:25:13
Local clock offset: 1.733 ms
Remote clock offset: -2.986 ms


# Below is generated by plot.py at 2018-12-10 23:54:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 64.61 Mbit/s
95th percentile per-packet one-way delay: 65.961 ms
Loss rate: 24.00%
-- Flow 1:
Average throughput: 64.61 Mbit/s
95th percentile per-packet one-way delay: 65.961 ms
Loss rate: 24.00%
```

Run 5: Report of Verus — Data Link

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-12-10 22:01:11
End at: 2018-12-10 22:01:41
Local clock offset: 1.651 ms
Remote clock offset: -0.99 ms


# Below is generated by plot.py at 2018-12-10 23:54:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 84.50 Mbit/s
95th percentile per-packet one-way delay: 32.780 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 84.50 Mbit/s
95th percentile per-packet one-way delay: 32.780 ms
Loss rate: 0.19%
```
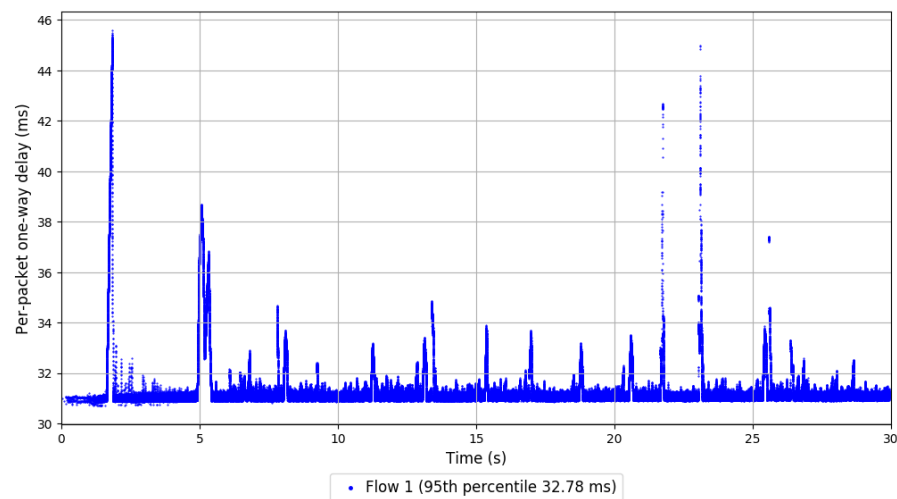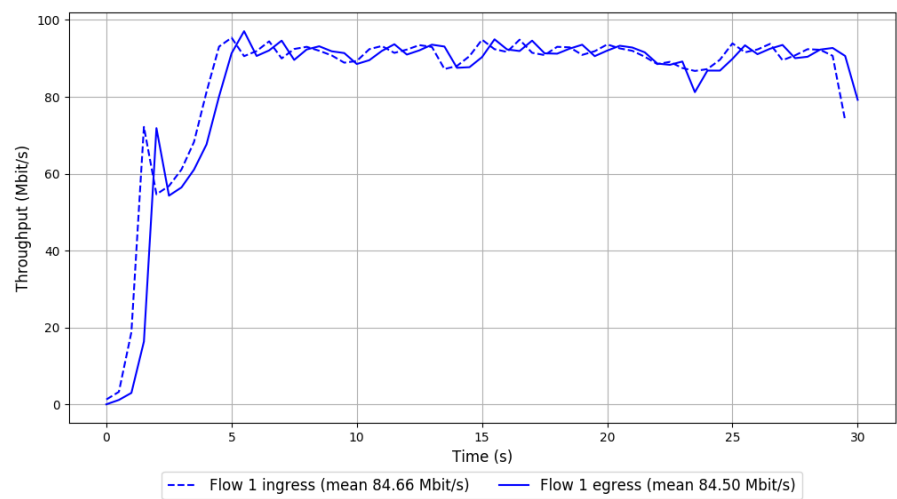
Run 1: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 84.66 Mbit/s)   Flow 1 egress (mean 84.50 Mbit/s)

Flow 1 (95th percentile 32.78 ms)

```
Run 2: Statistics of PCC-Vivace

Start at: 2018-12-10 22:22:57
End at: 2018-12-10 22:23:27
Local clock offset: 1.907 ms
Remote clock offset: -1.151 ms


# Below is generated by plot.py at 2018-12-10 23:55:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 84.94 Mbit/s
95th percentile per-packet one-way delay: 37.707 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 84.94 Mbit/s
95th percentile per-packet one-way delay: 37.707 ms
Loss rate: 0.03%
```
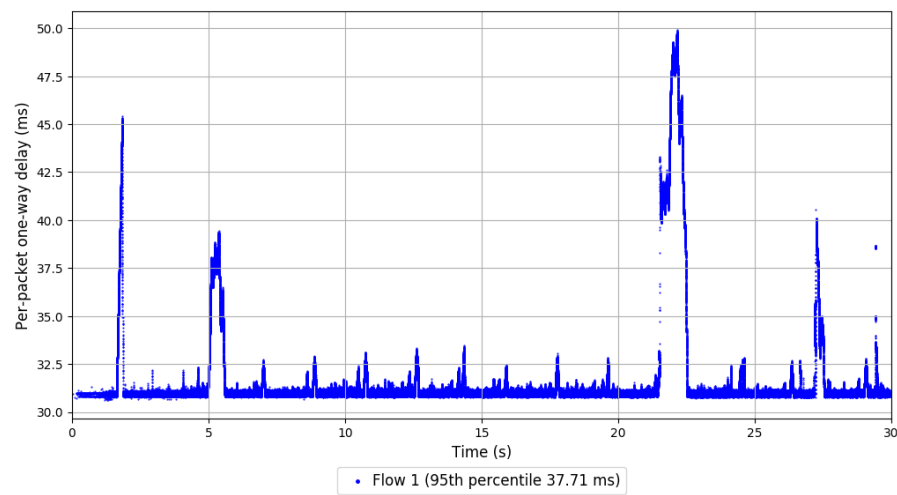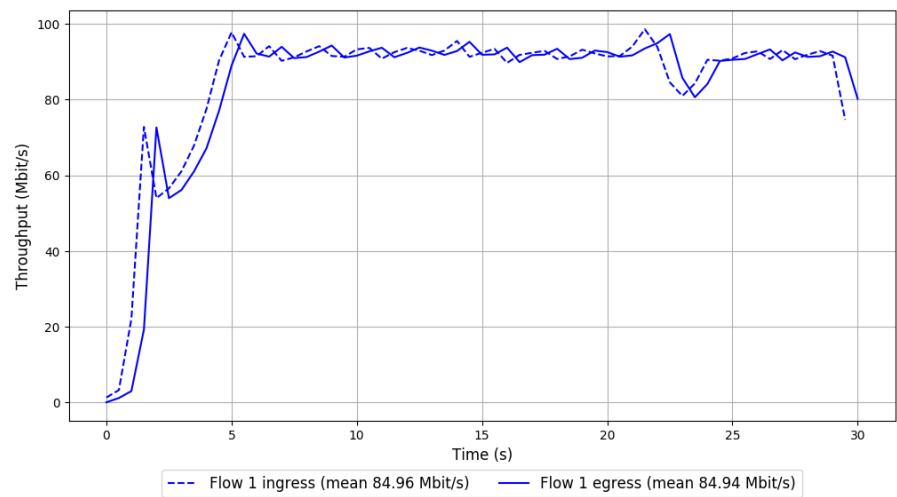
Run 2: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 84.96 Mbit/s) --- Flow 1 egress (mean 84.94 Mbit/s)

Flow 1 (95th percentile 37.71 ms)

```
Run 3: Statistics of PCC-Vivace

Start at: 2018-12-10 22:44:58
End at: 2018-12-10 22:45:28
Local clock offset: 5.179 ms
Remote clock offset: -1.041 ms


# Below is generated by plot.py at 2018-12-10 23:55:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 85.13 Mbit/s
95th percentile per-packet one-way delay: 33.263 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 85.13 Mbit/s
95th percentile per-packet one-way delay: 33.263 ms
Loss rate: 0.09%
```
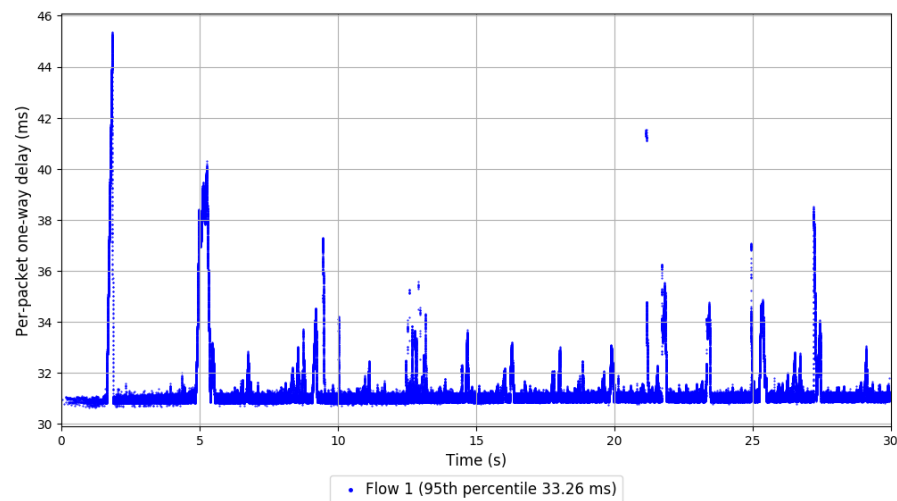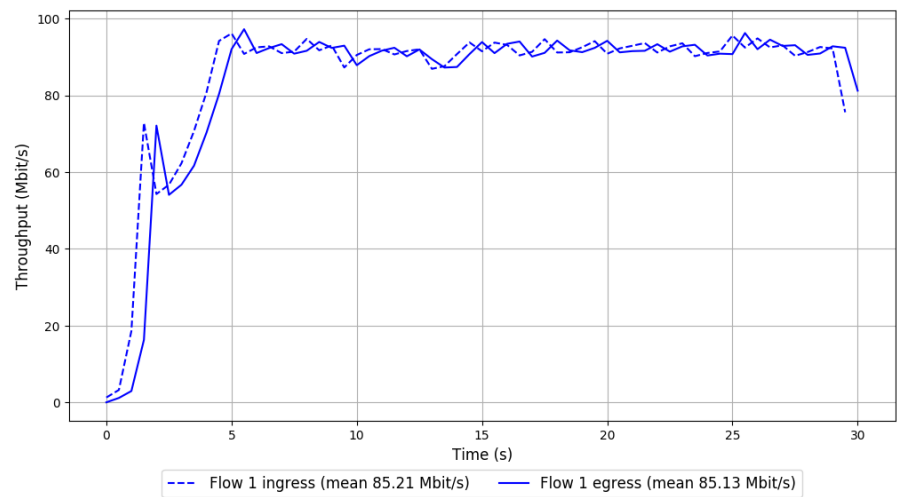
Run 3: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 85.21 Mbit/s) --- Flow 1 egress (mean 85.13 Mbit/s)

• Flow 1 (95th percentile 33.26 ms)

```
Run 4: Statistics of PCC-Vivace

Start at: 2018-12-10 23:07:59
End at: 2018-12-10 23:08:29
Local clock offset: 3.066 ms
Remote clock offset: -2.052 ms


# Below is generated by plot.py at 2018-12-10 23:55:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 83.95 Mbit/s
95th percentile per-packet one-way delay: 34.141 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 83.95 Mbit/s
95th percentile per-packet one-way delay: 34.141 ms
Loss rate: 0.00%
```
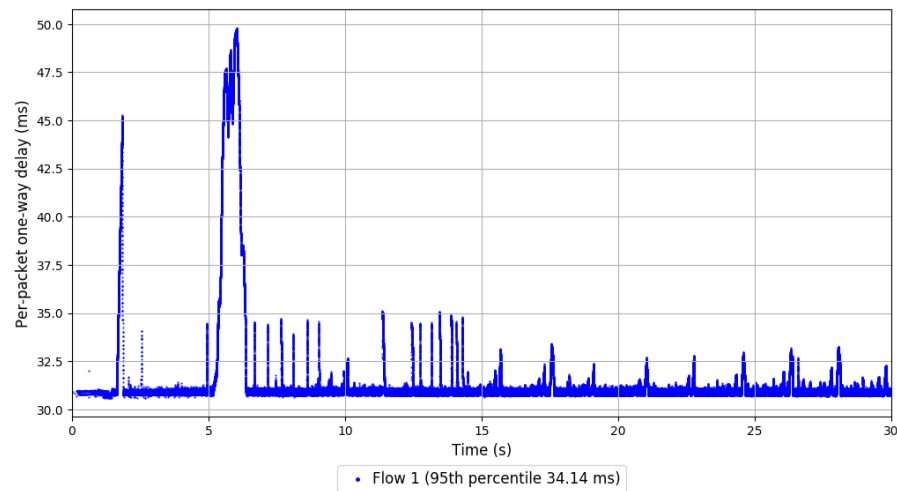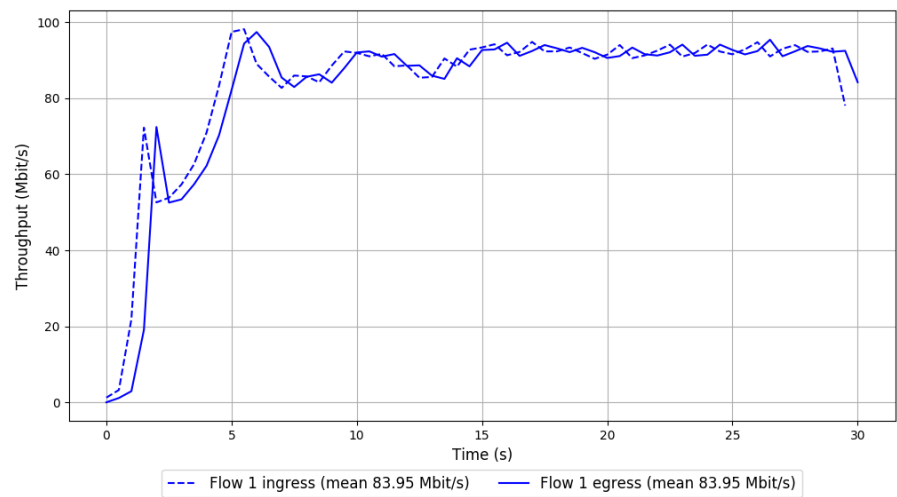
Run 4: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 83.95 Mbit/s)   Flow 1 egress (mean 83.95 Mbit/s)

Flow 1 (95th percentile 34.14 ms)

```
Run 5: Statistics of PCC-Vivace

Start at: 2018-12-10 23:30:34
End at: 2018-12-10 23:31:04
Local clock offset: 2.861 ms
Remote clock offset: -3.079 ms


# Below is generated by plot.py at 2018-12-10 23:55:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 85.28 Mbit/s
95th percentile per-packet one-way delay: 32.805 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 85.28 Mbit/s
95th percentile per-packet one-way delay: 32.805 ms
Loss rate: 0.01%
```
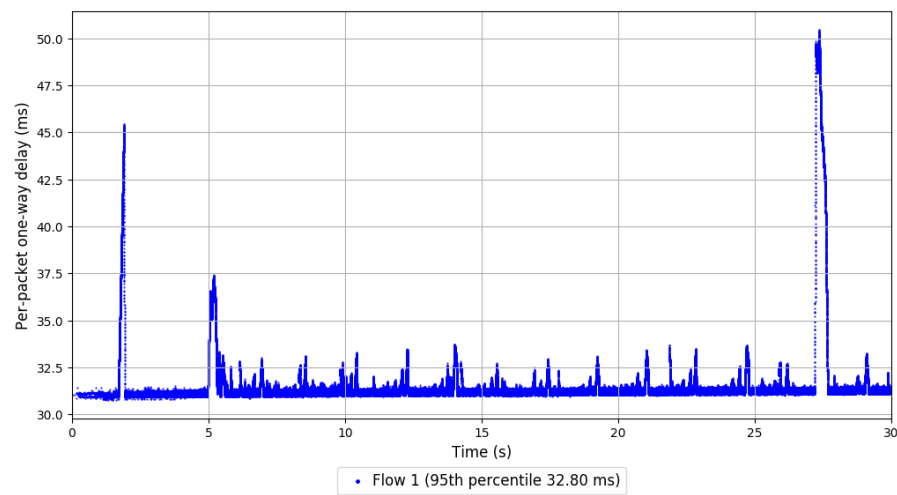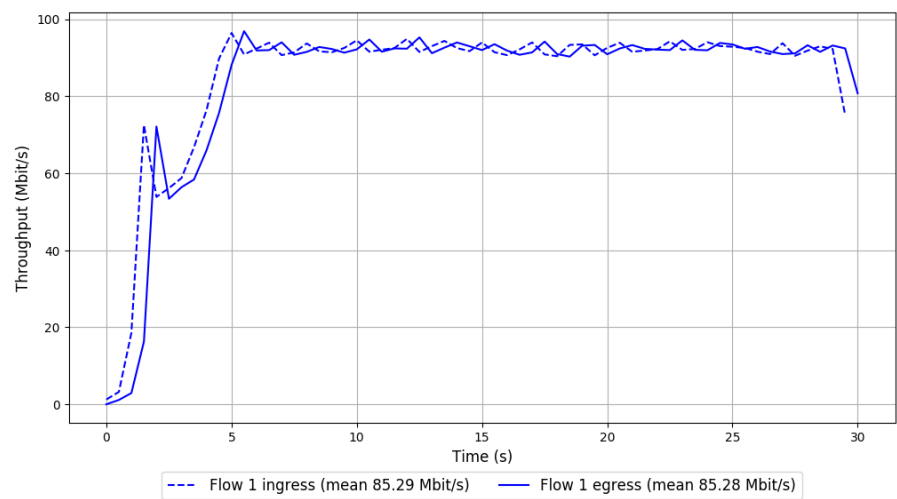
Run 5: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 85.29 Mbit/s)   Flow 1 egress (mean 85.28 Mbit/s)

Flow 1 (95th percentile 32.80 ms)

```
Run 1: Statistics of WebRTC media

Start at: 2018-12-10 21:54:23
End at: 2018-12-10 21:54:53
Local clock offset: 1.398 ms
Remote clock offset: -1.028 ms


# Below is generated by plot.py at 2018-12-10 23:55:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 31.162 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 31.162 ms
Loss rate: 0.02%
```
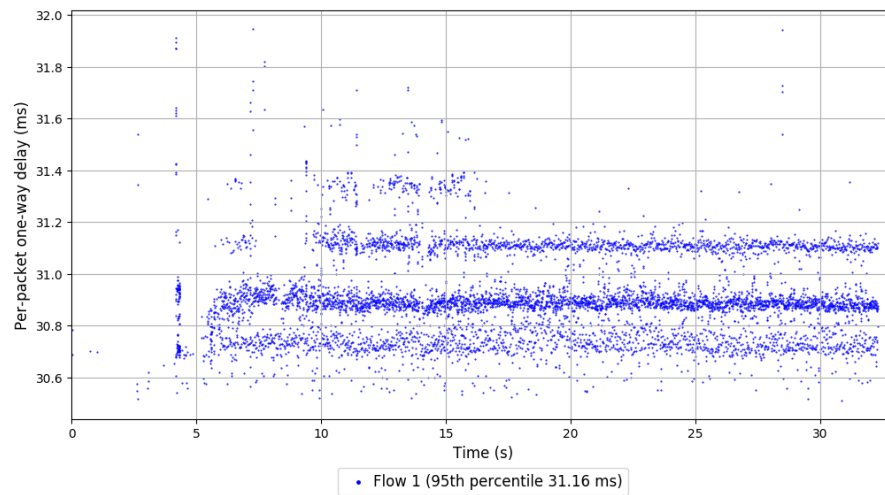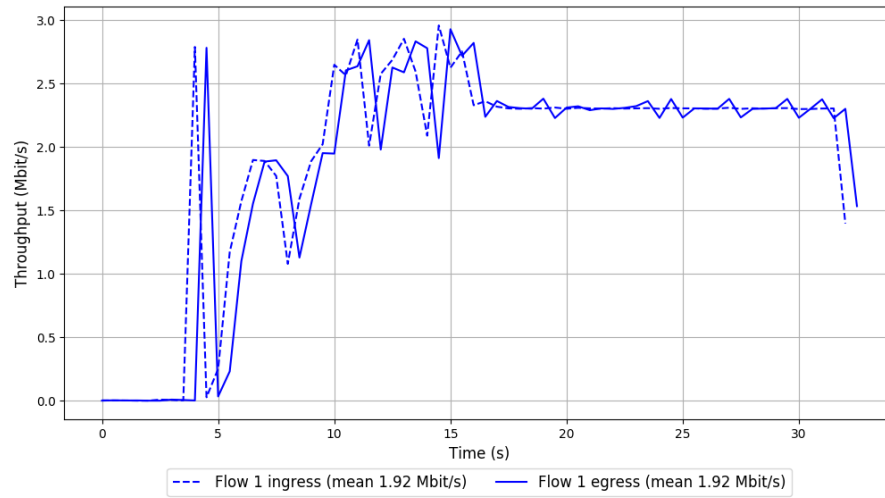
Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2018-12-10 22:16:06
End at: 2018-12-10 22:16:36
Local clock offset: 2.001 ms
Remote clock offset: -1.13 ms


# Below is generated by plot.py at 2018-12-10 23:55:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 31.254 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 31.254 ms
Loss rate: 0.00%
```

Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-12-10 22:38:06
End at: 2018-12-10 22:38:36
Local clock offset: 4.506 ms
Remote clock offset: -1.198 ms


# Below is generated by plot.py at 2018-12-10 23:55:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 31.235 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 31.235 ms
Loss rate: 0.00%
```
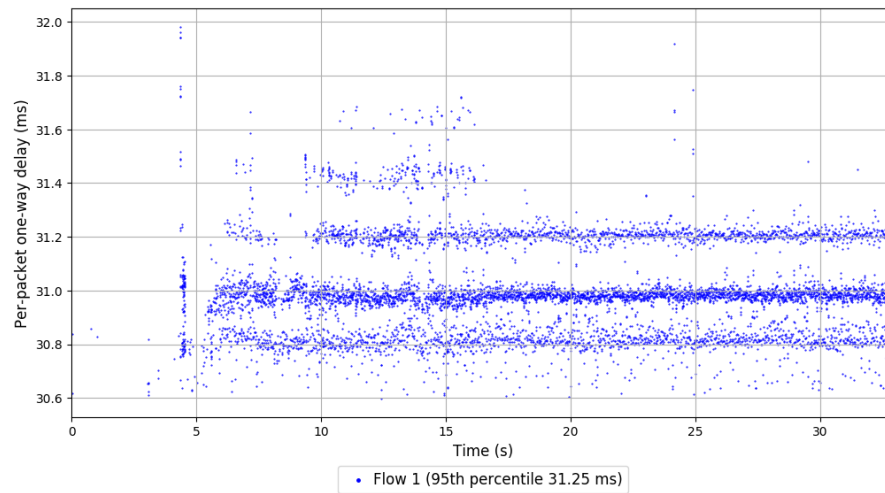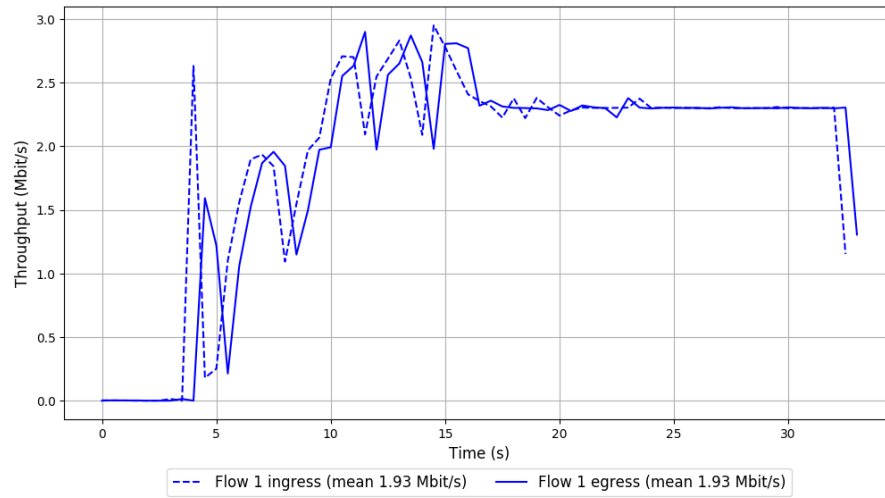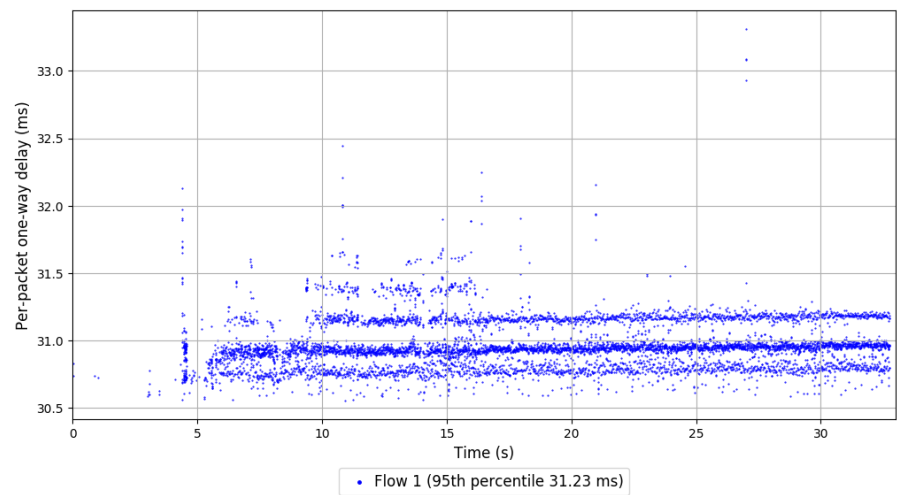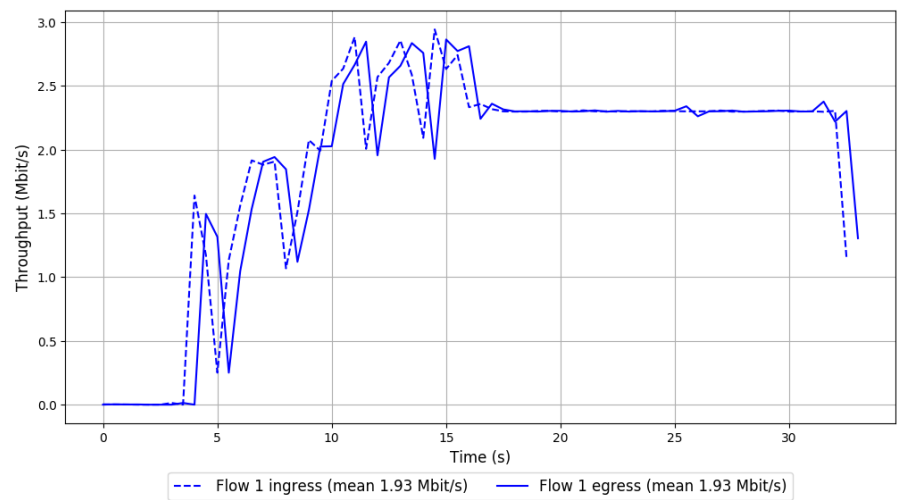
Run 3: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.93 Mbit/s)   Flow 1 egress (mean 1.93 Mbit/s)
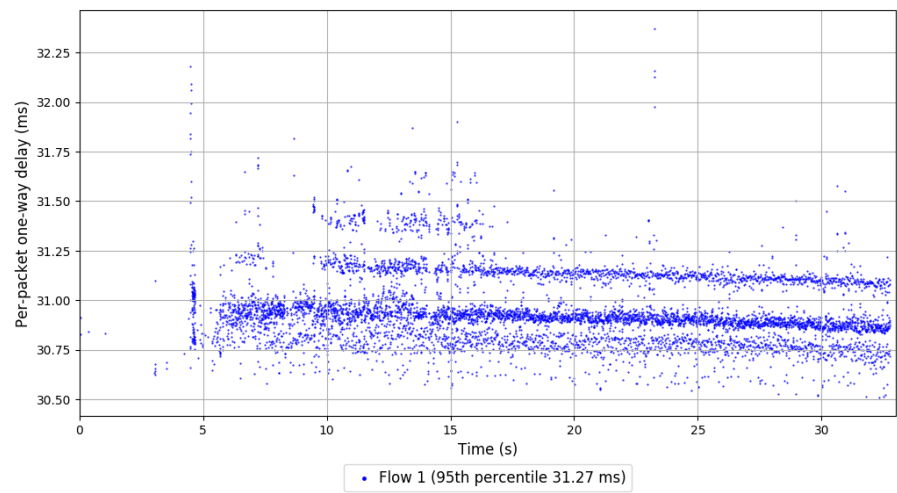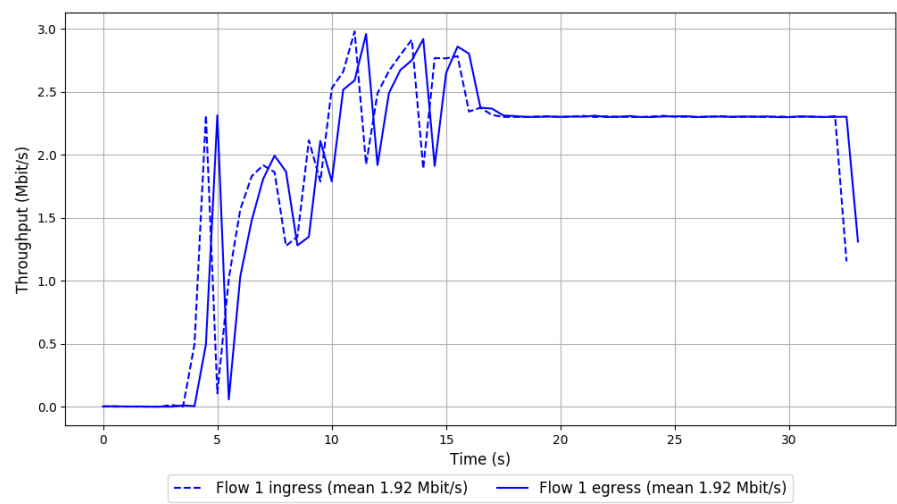

Flow 1 (95th percentile 31.23 ms)

```
Run 4: Statistics of WebRTC media

Start at: 2018-12-10 23:00:40
End at: 2018-12-10 23:01:10
Local clock offset: 4.526 ms
Remote clock offset: -1.731 ms


# Below is generated by plot.py at 2018-12-10 23:55:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 31.270 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 31.270 ms
Loss rate: 0.00%
```

Run 4: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.92 Mbit/s)   Flow 1 egress (mean 1.92 Mbit/s)

Flow 1 (95th percentile 31.27 ms)

```
Run 5: Statistics of WebRTC media

Start at: 2018-12-10 23:23:37
End at: 2018-12-10 23:24:07
Local clock offset: 1.786 ms
Remote clock offset: -2.736 ms


# Below is generated by plot.py at 2018-12-10 23:55:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 31.294 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 31.294 ms
Loss rate: 0.00%
```

Run 5: Report of WebRTC media — Data Link