Pantheon Report

Generated at 2018-12-02 02:19:28 (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.
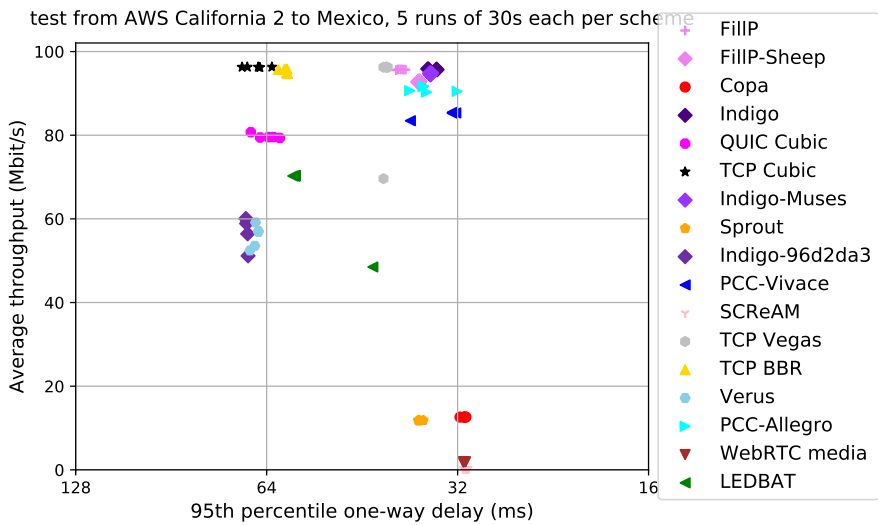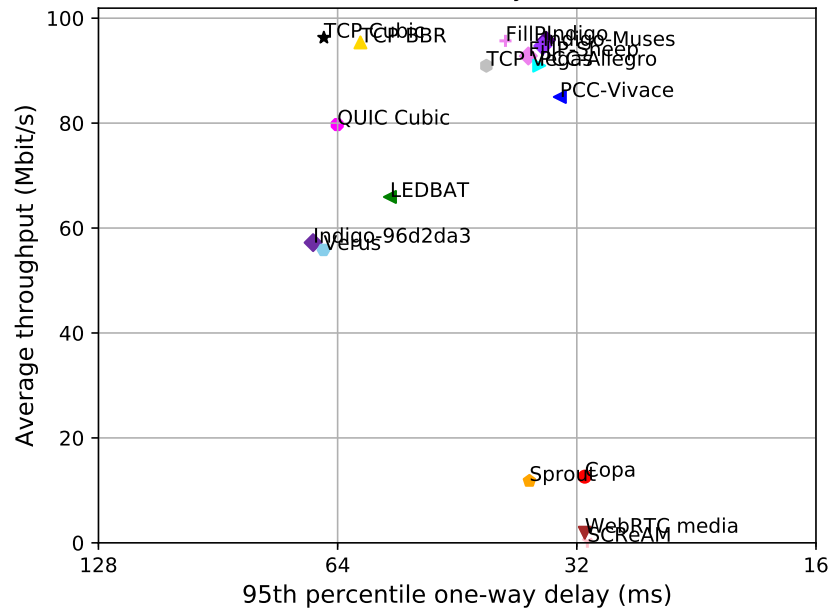
```
System info:
Linux 4.15.0-1027-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

Git summary:
branch: muses @ 7b6dad87cde3ab65f7c4052140eb54098aa58e9d
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	95.38	59.90	1.03
Copa	5	12.61	31.27	71.34
TCP Cubic	5	96.28	66.60	0.33
FillP	5	95.68	39.35	0.67
FillP-Sheep	5	92.79	36.83	0.60
Indigo	5	95.78	34.96	0.01
Indigo-96d2da3	5	57.22	68.71	58.59
LEDBAT	5	65.93	55.00	0.01
Indigo-Muses	5	94.72	35.31	0.38
PCC-Allegro	5	90.94	35.68	0.70
PCC-Expr	0	N/A	N/A	N/A
QUIC Cubic	5	79.72	64.07	1.70
SCReAM	5	0.21	31.04	0.00
Sprout	5	11.81	36.71	0.01
TaoVA-100x	0	N/A	N/A	N/A
TCP Vegas	5	90.93	41.59	0.29
Verus	5	55.83	66.67	29.79
PCC-Vivace	5	84.98	33.61	0.00
WebRTC media	5	1.93	31.27	0.00

```
Run 1: Statistics of TCP BBR

Start at: 2018-12-02 00:36:44
End at: 2018-12-02 00:37:14
Local clock offset: -2.743 ms
Remote clock offset: -1.52 ms

# Below is generated by plot.py at 2018-12-02 02:11:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.88 Mbit/s
95th percentile per-packet one-way delay: 59.505 ms
Loss rate: 0.87%
-- Flow 1:
Average throughput: 94.88 Mbit/s
95th percentile per-packet one-way delay: 59.505 ms
Loss rate: 0.87%
```
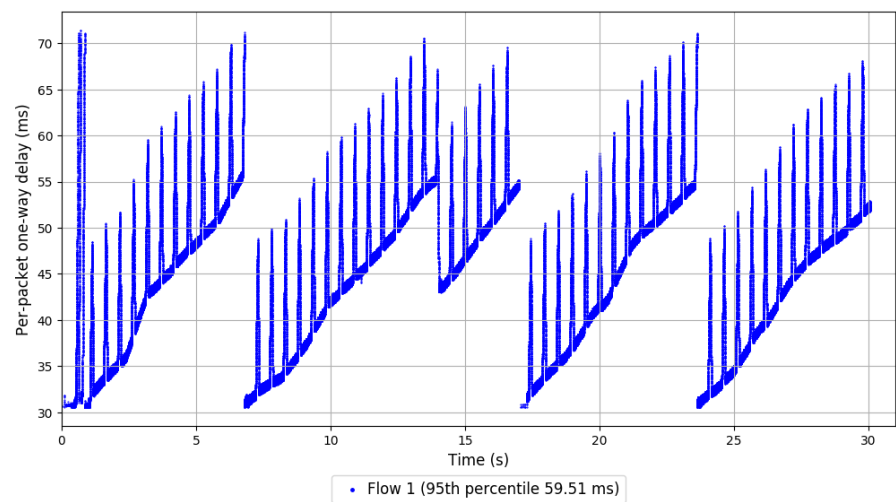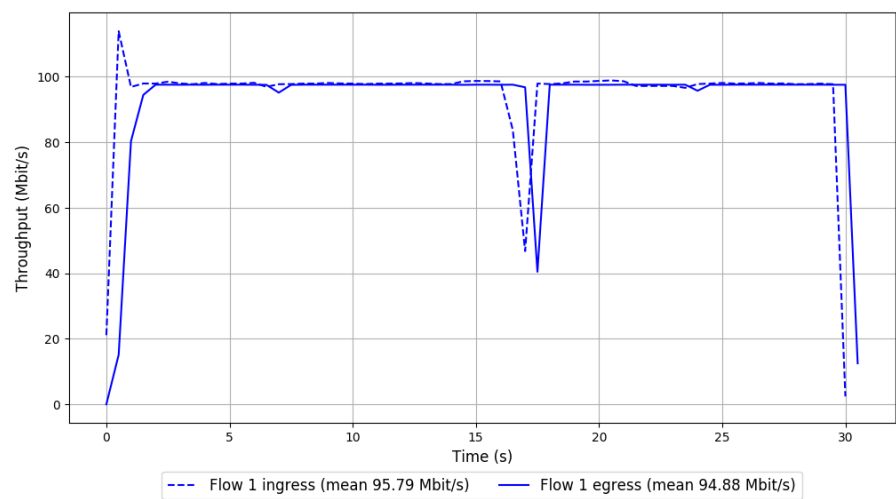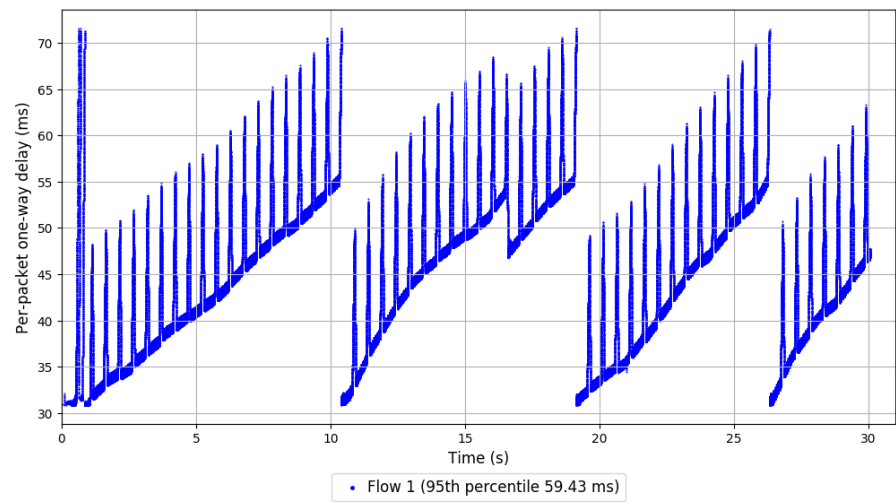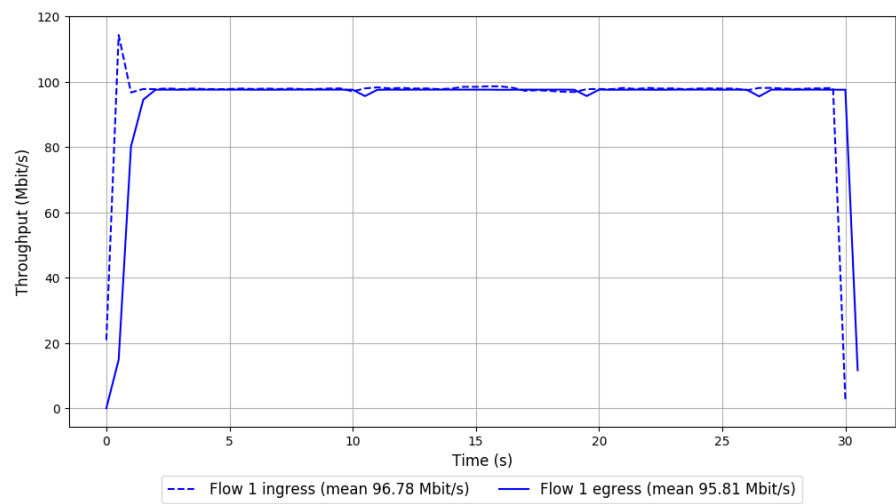
Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2018-12-02 00:58:30
End at: 2018-12-02 00:59:00
Local clock offset: -3.779 ms
Remote clock offset: -1.433 ms


# Below is generated by plot.py at 2018-12-02 02:11:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.81 Mbit/s
95th percentile per-packet one-way delay: 59.426 ms
Loss rate: 0.95%
-- Flow 1:
Average throughput: 95.81 Mbit/s
95th percentile per-packet one-way delay: 59.426 ms
Loss rate: 0.95%
```
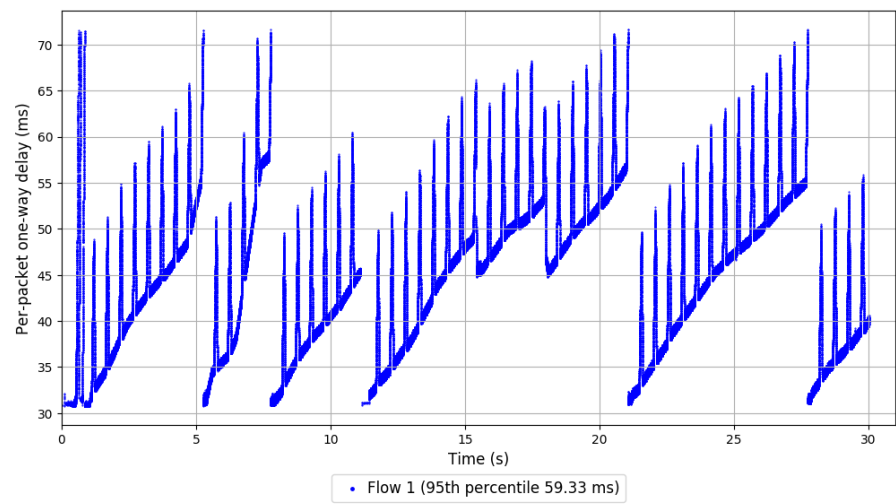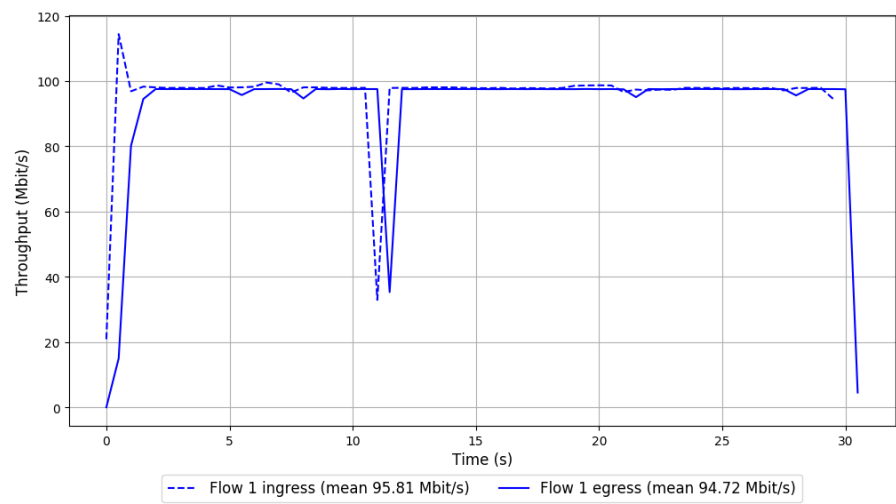
Run 2: Report of TCP BBR — Data Link

Flow 1 ingress (mean 96.78 Mbit/s)   Flow 1 egress (mean 95.81 Mbit/s)

Flow 1 (95th percentile 59.43 ms)

```
Run 3: Statistics of TCP BBR

Start at: 2018-12-02 01:20:48
End at: 2018-12-02 01:21:18
Local clock offset: -3.0 ms
Remote clock offset: -2.06 ms


# Below is generated by plot.py at 2018-12-02 02:11:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.72 Mbit/s
95th percentile per-packet one-way delay: 59.327 ms
Loss rate: 1.11%
-- Flow 1:
Average throughput: 94.72 Mbit/s
95th percentile per-packet one-way delay: 59.327 ms
Loss rate: 1.11%
```
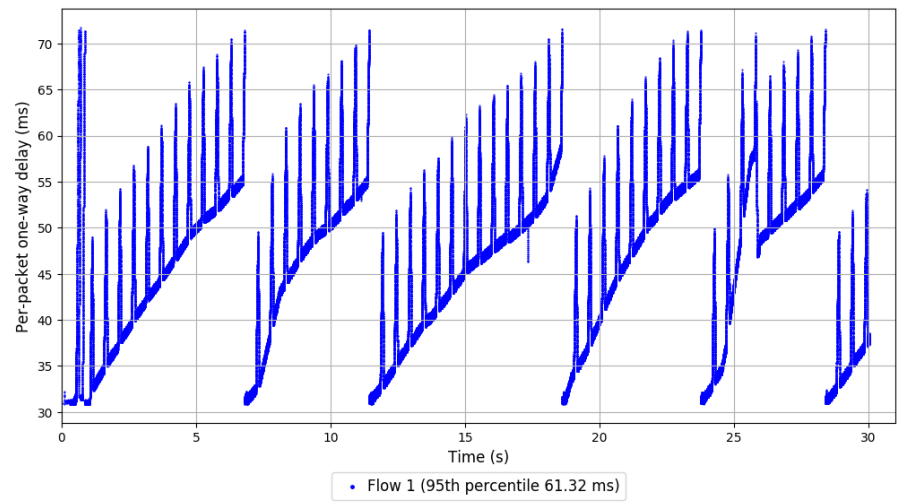
Run 3: Report of TCP BBR — Data Link

```
Run 4: Statistics of TCP BBR

Start at: 2018-12-02 01:42:35
End at: 2018-12-02 01:43:05
Local clock offset: 1.199 ms
Remote clock offset: -2.618 ms


# Below is generated by plot.py at 2018-12-02 02:11:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.71 Mbit/s
95th percentile per-packet one-way delay: 61.321 ms
Loss rate: 1.20%
-- Flow 1:
Average throughput: 95.71 Mbit/s
95th percentile per-packet one-way delay: 61.321 ms
Loss rate: 1.20%
```
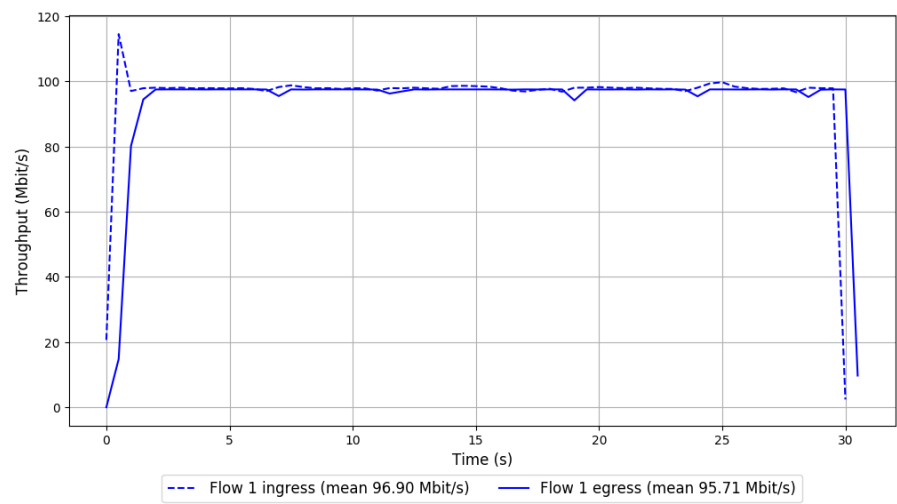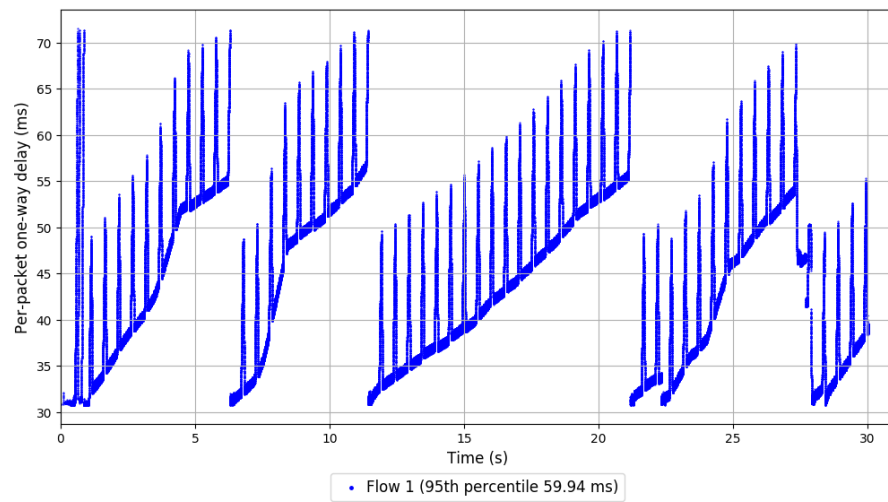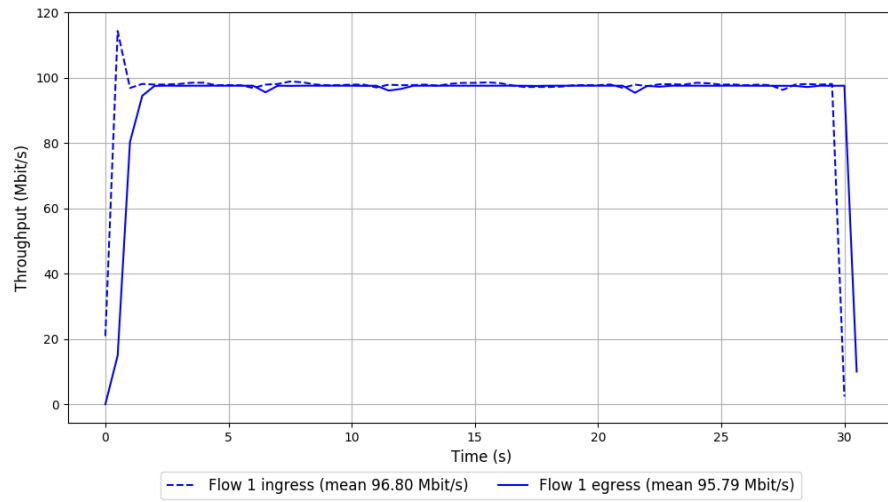
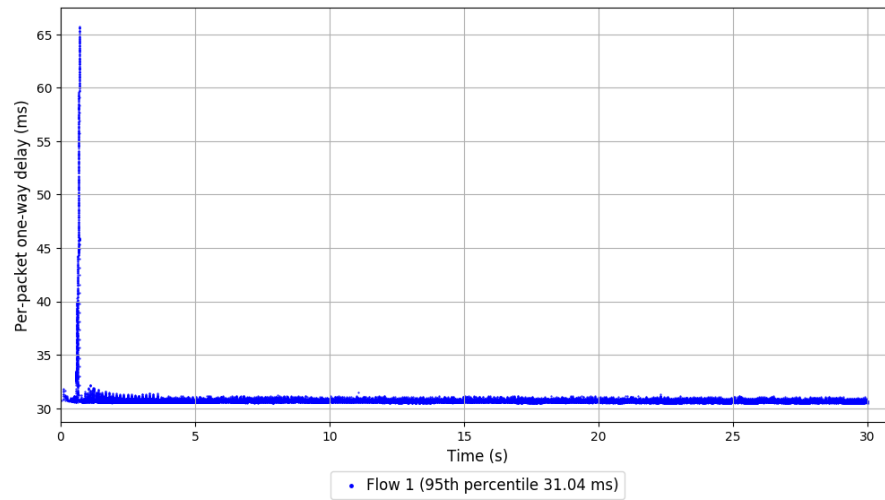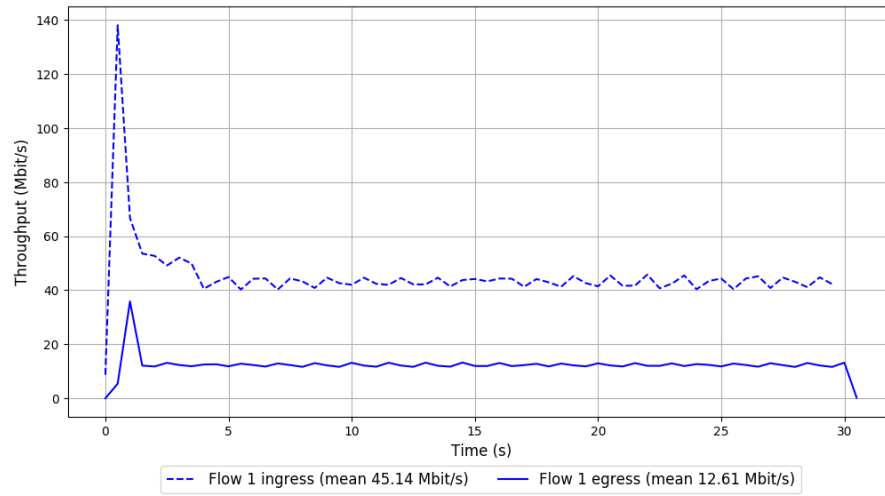Run 4: Report of TCP BBR — Data Link

Flow 1 ingress (mean 96.90 Mbit/s) ——— Flow 1 egress (mean 95.71 Mbit/s)

• Flow 1 (95th percentile 61.32 ms)

```
Run 5: Statistics of TCP BBR

Start at: 2018-12-02 02:04:22
End at: 2018-12-02 02:04:52
Local clock offset: 0.678 ms
Remote clock offset: -2.944 ms


# Below is generated by plot.py at 2018-12-02 02:11:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.79 Mbit/s
95th percentile per-packet one-way delay: 59.941 ms
Loss rate: 1.01%
-- Flow 1:
Average throughput: 95.79 Mbit/s
95th percentile per-packet one-way delay: 59.941 ms
Loss rate: 1.01%
```

Run 5: Report of TCP BBR — Data Link

Flow 1 ingress (mean 96.80 Mbit/s)   Flow 1 egress (mean 95.79 Mbit/s)

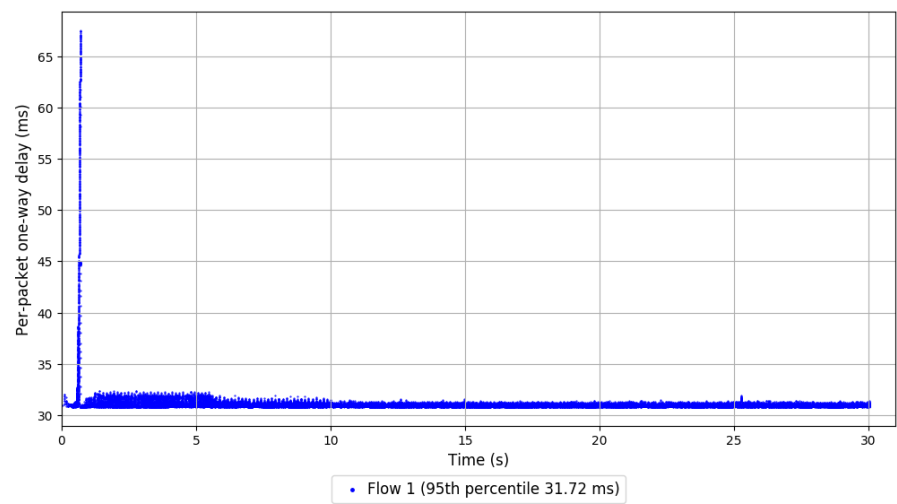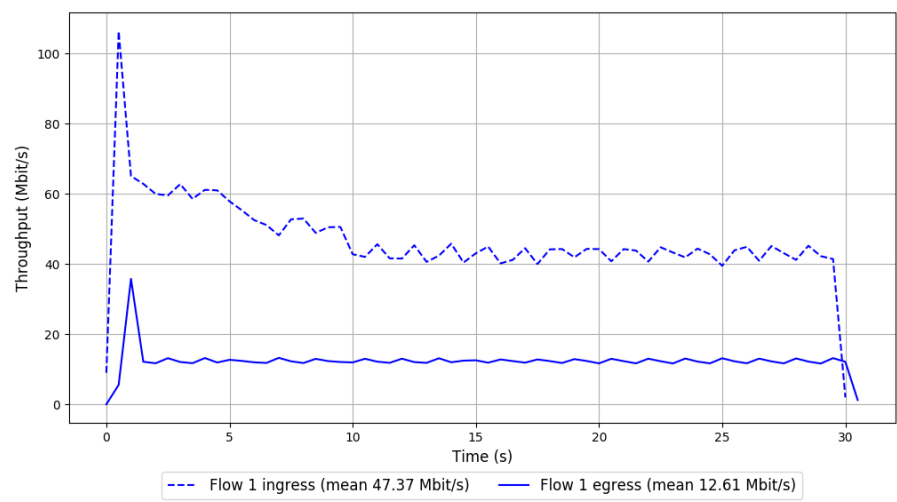• Flow 1 (95th percentile 59.94 ms)

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```
Run 1: Statistics of Copa

Start at: 2018-12-02 00:31:06
End at: 2018-12-02 00:31:36
Local clock offset: -2.195 ms
Remote clock offset: -1.436 ms


# Below is generated by plot.py at 2018-12-02 02:11:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 31.040 ms
Loss rate: 72.06%
-- Flow 1:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 31.040 ms
Loss rate: 72.06%
```

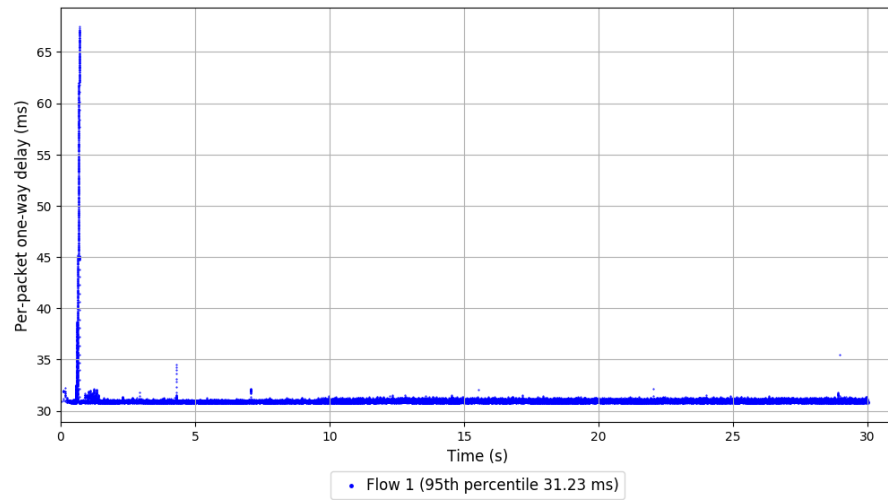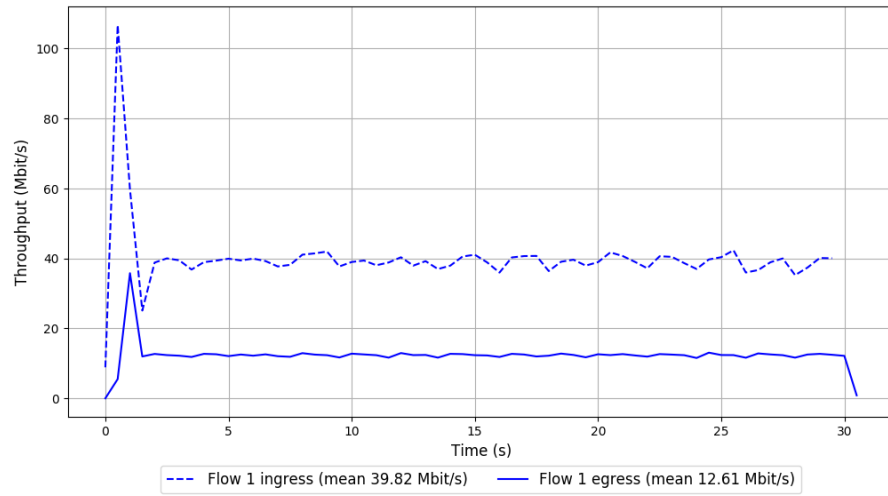## Run 1: Report of Copa — Data Link

Flow 1 ingress (mean 45.14 Mbit/s) --- Flow 1 egress (mean 12.61 Mbit/s)

Flow 1 (95th percentile 31.04 ms)

```
Run 2: Statistics of Copa

Start at: 2018-12-02 00:52:48
End at: 2018-12-02 00:53:18
Local clock offset: -3.558 ms
Remote clock offset: -1.38 ms


# Below is generated by plot.py at 2018-12-02 02:11:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 31.722 ms
Loss rate: 73.38%
-- Flow 1:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 31.722 ms
Loss rate: 73.38%
```
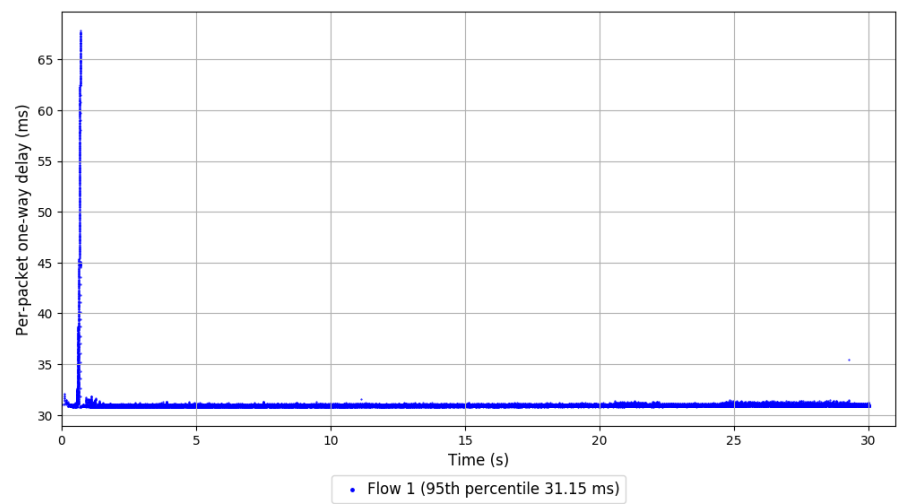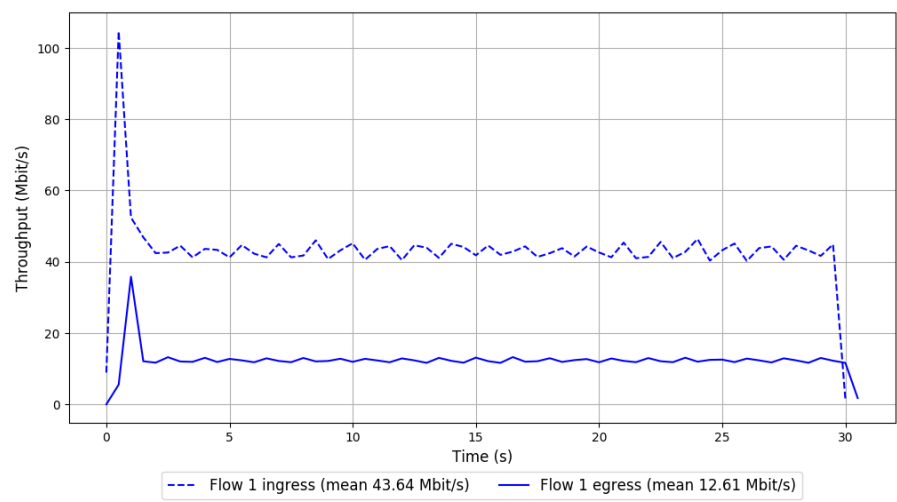
Run 2: Report of Copa — Data Link

Flow 1 ingress (mean 47.37 Mbit/s)   Flow 1 egress (mean 12.61 Mbit/s)

Flow 1 (95th percentile 31.72 ms)

```
Run 3: Statistics of Copa

Start at: 2018-12-02 01:15:02
End at: 2018-12-02 01:15:32
Local clock offset: -4.303 ms
Remote clock offset: -1.734 ms


# Below is generated by plot.py at 2018-12-02 02:11:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 31.229 ms
Loss rate: 68.33%
-- Flow 1:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 31.229 ms
Loss rate: 68.33%
```

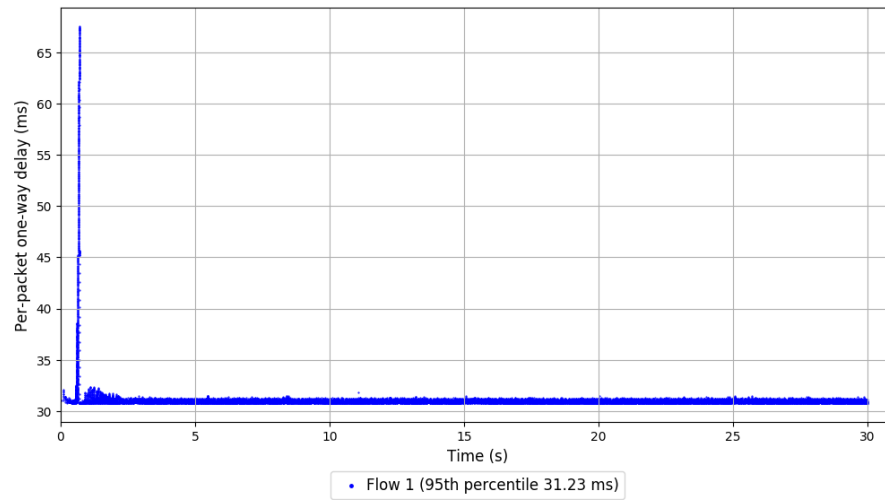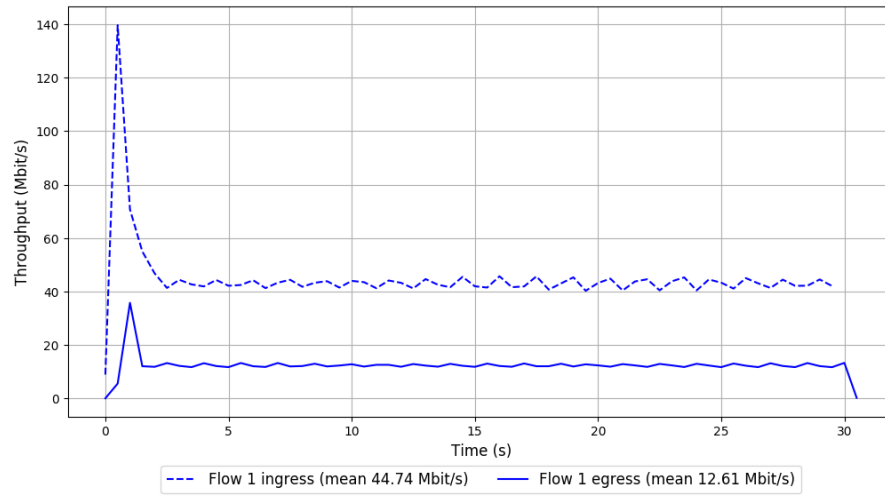Run 3: Report of Copa — Data Link

```
Run 4: Statistics of Copa

Start at: 2018-12-02 01:36:56
End at: 2018-12-02 01:37:26
Local clock offset: 0.663 ms
Remote clock offset: -2.484 ms


# Below is generated by plot.py at 2018-12-02 02:11:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 31.146 ms
Loss rate: 71.10%
-- Flow 1:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 31.146 ms
Loss rate: 71.10%
```
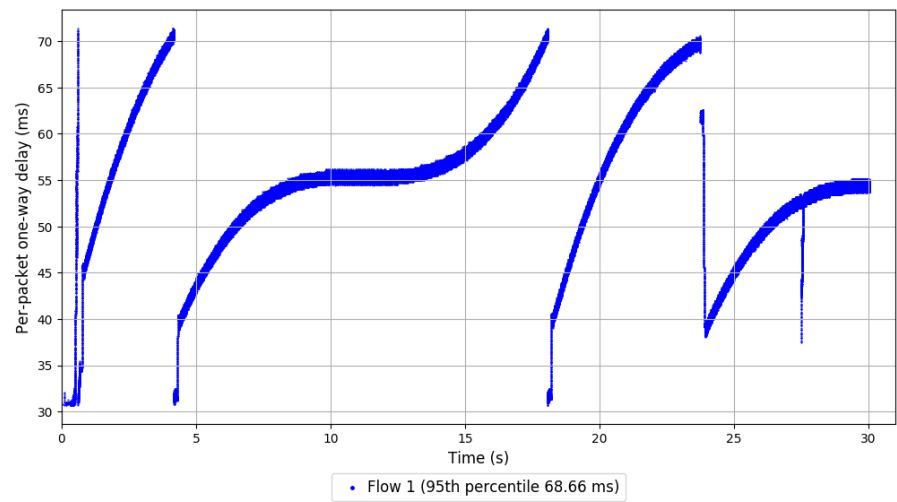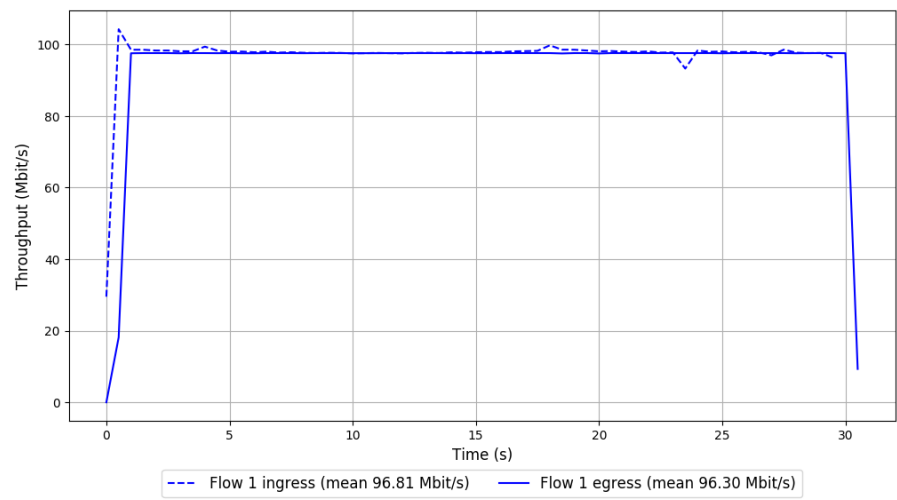
Run 4: Report of Copa — Data Link

Flow 1 ingress (mean 43.64 Mbit/s) --- Flow 1 egress (mean 12.61 Mbit/s)

• Flow 1 (95th percentile 31.15 ms)

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```
Run 5: Statistics of Copa

Start at: 2018-12-02 01:58:42
End at: 2018-12-02 01:59:12
Local clock offset: 0.734 ms
Remote clock offset: -2.856 ms

# Below is generated by plot.py at 2018-12-02 02:11:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 31.234 ms
Loss rate: 71.81%
-- Flow 1:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 31.234 ms
Loss rate: 71.81%
```

Run 5: Report of Copa — Data Link

Flow 1 ingress (mean 44.74 Mbit/s)   Flow 1 egress (mean 12.61 Mbit/s)

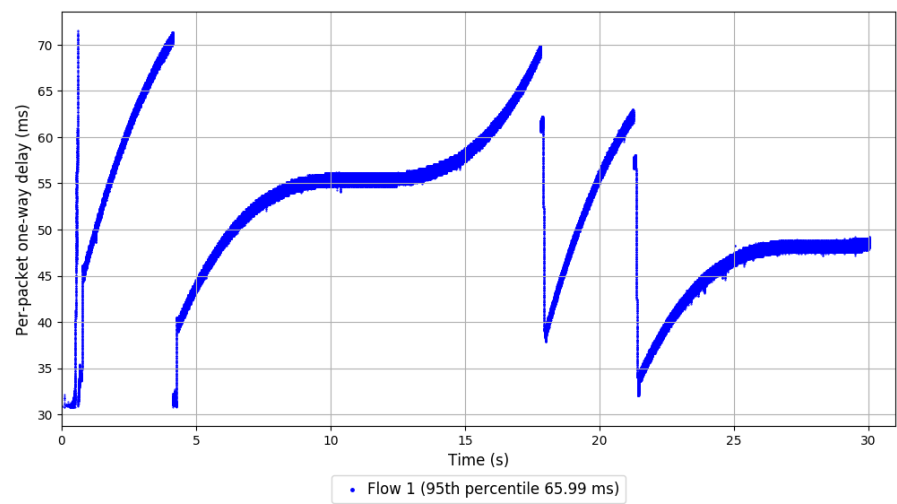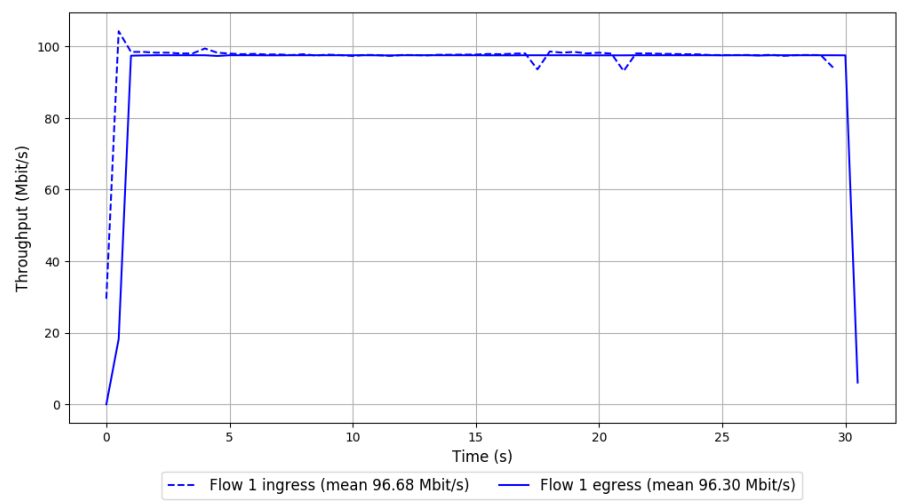• Flow 1 (95th percentile 31.23 ms)

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```
Run 1: Statistics of TCP Cubic

Start at: 2018-12-02 00:21:56
End at: 2018-12-02 00:22:26
Local clock offset: -0.431 ms
Remote clock offset: -1.251 ms

# Below is generated by plot.py at 2018-12-02 02:11:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 96.30 Mbit/s
95th percentile per-packet one-way delay: 68.659 ms
Loss rate: 0.45%
-- Flow 1:
Average throughput: 96.30 Mbit/s
95th percentile per-packet one-way delay: 68.659 ms
Loss rate: 0.45%
```
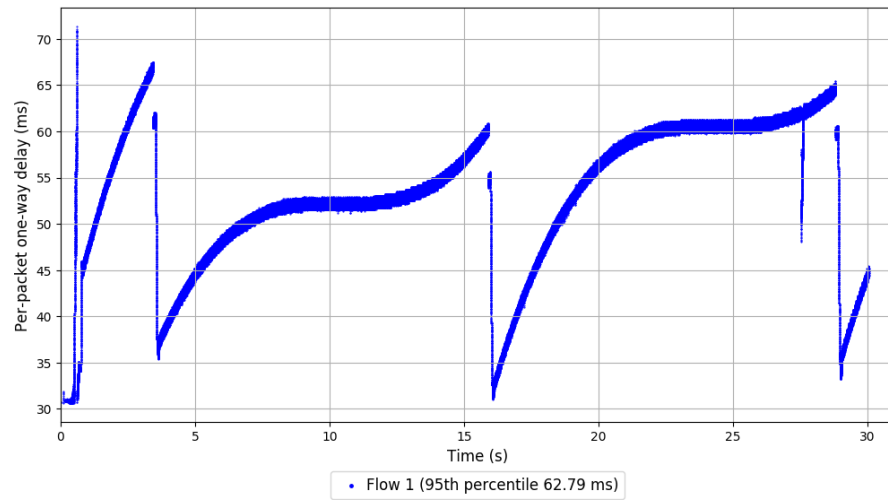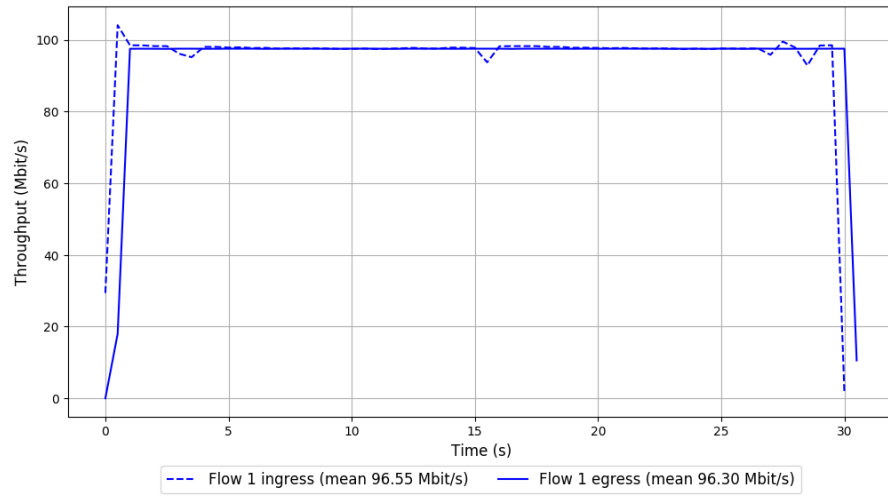
Run 1: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 96.81 Mbit/s) ----   Flow 1 egress (mean 96.30 Mbit/s) ——

• Flow 1 (95th percentile 68.66 ms)

```
Run 2: Statistics of TCP Cubic

Start at: 2018-12-02 00:43:39
End at: 2018-12-02 00:44:09
Local clock offset: -3.153 ms
Remote clock offset: -1.428 ms


# Below is generated by plot.py at 2018-12-02 02:11:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 96.30 Mbit/s
95th percentile per-packet one-way delay: 65.988 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 96.30 Mbit/s
95th percentile per-packet one-way delay: 65.988 ms
Loss rate: 0.33%
```
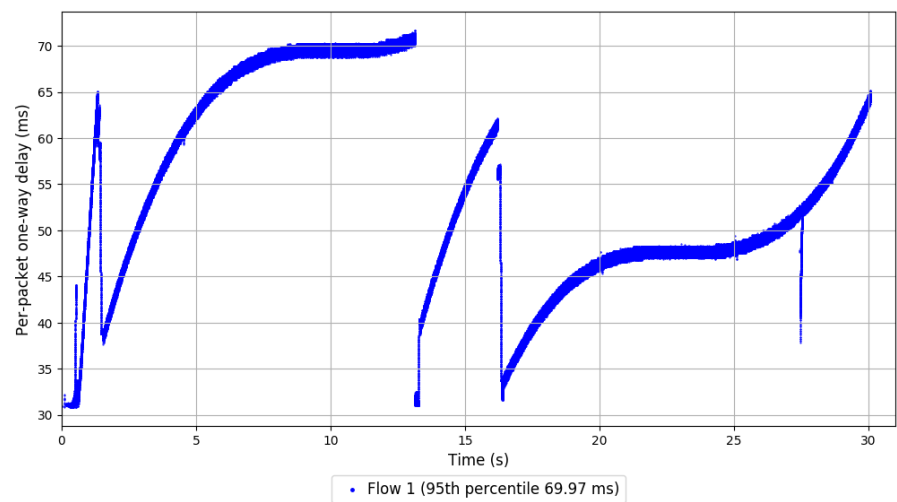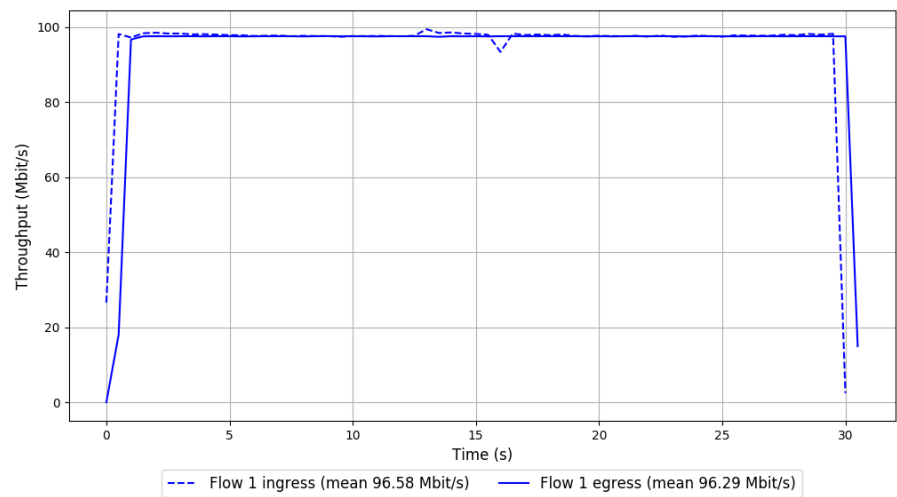
Run 2: Report of TCP Cubic — Data Link

```
Run 3: Statistics of TCP Cubic

Start at: 2018-12-02 01:05:35
End at: 2018-12-02 01:06:05
Local clock offset: -4.01 ms
Remote clock offset: -1.79 ms


# Below is generated by plot.py at 2018-12-02 02:11:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 96.30 Mbit/s
95th percentile per-packet one-way delay: 62.789 ms
Loss rate: 0.21%
-- Flow 1:
Average throughput: 96.30 Mbit/s
95th percentile per-packet one-way delay: 62.789 ms
Loss rate: 0.21%
```
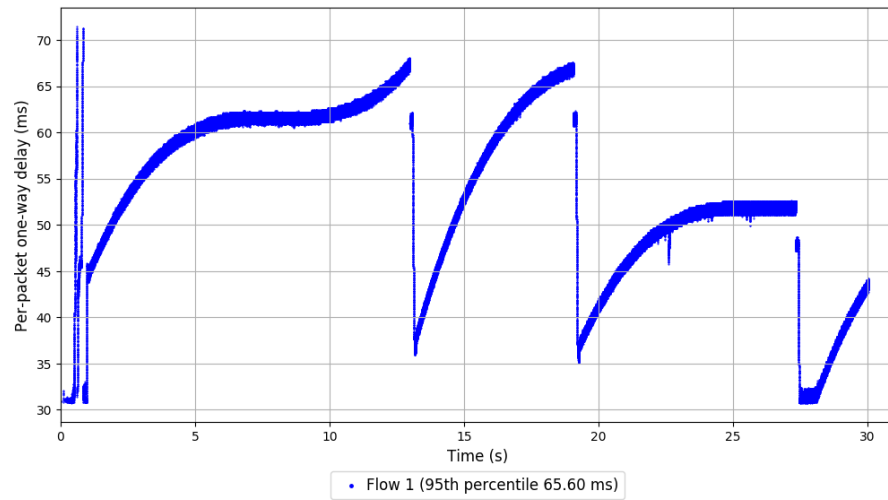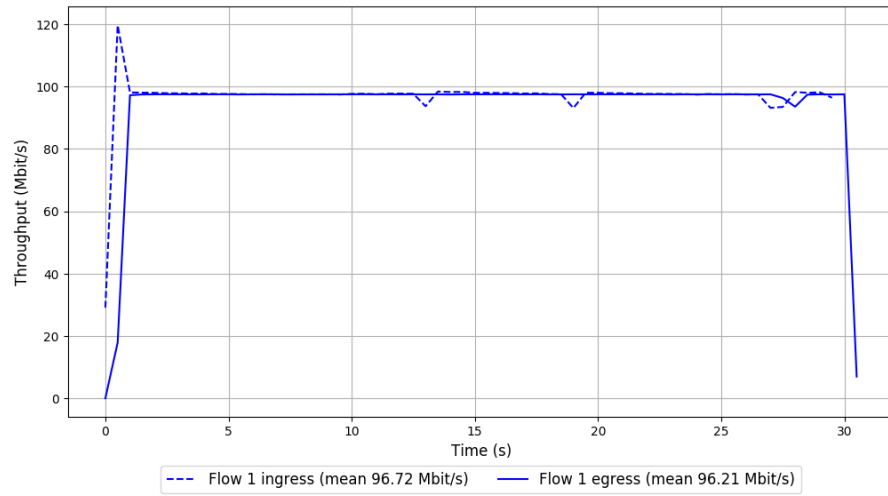
Run 3: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 96.55 Mbit/s)   Flow 1 egress (mean 96.30 Mbit/s)

Flow 1 (95th percentile 62.79 ms)

```
Run 4: Statistics of TCP Cubic

Start at: 2018-12-02 01:27:47
End at: 2018-12-02 01:28:17
Local clock offset: -0.793 ms
Remote clock offset: -2.225 ms


# Below is generated by plot.py at 2018-12-02 02:12:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 96.29 Mbit/s
95th percentile per-packet one-way delay: 69.967 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 96.29 Mbit/s
95th percentile per-packet one-way delay: 69.967 ms
Loss rate: 0.19%
```
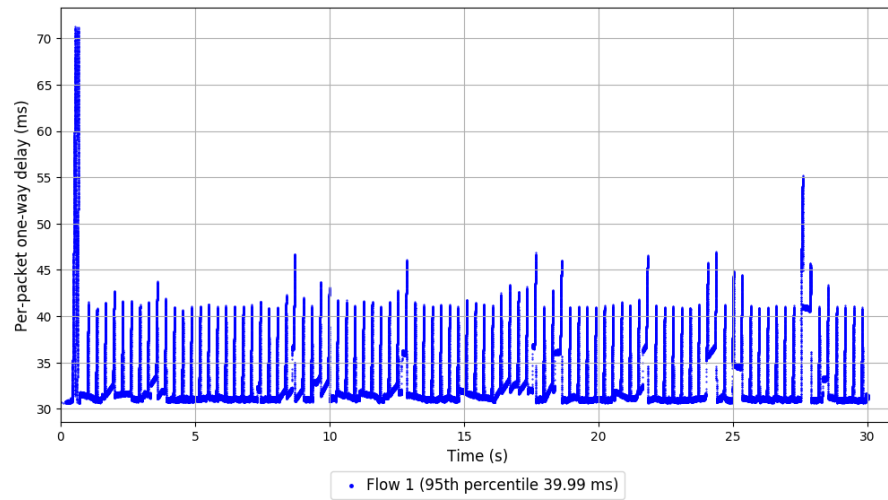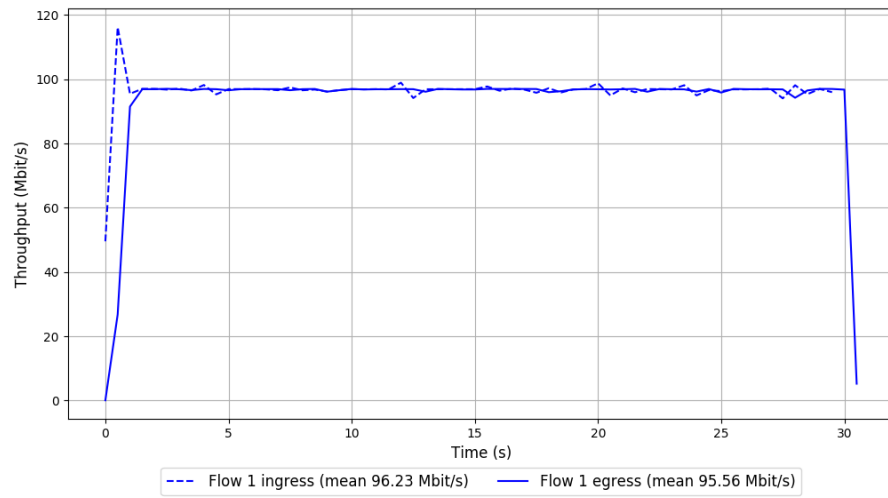
Run 4: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 96.58 Mbit/s)   Flow 1 egress (mean 96.29 Mbit/s)

Flow 1 (95th percentile 69.97 ms)

```
Run 5: Statistics of TCP Cubic

Start at: 2018-12-02 01:49:30
End at: 2018-12-02 01:50:00
Local clock offset: 1.388 ms
Remote clock offset: -2.744 ms


# Below is generated by plot.py at 2018-12-02 02:12:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 96.21 Mbit/s
95th percentile per-packet one-way delay: 65.600 ms
Loss rate: 0.48%
-- Flow 1:
Average throughput: 96.21 Mbit/s
95th percentile per-packet one-way delay: 65.600 ms
Loss rate: 0.48%
```

Run 5: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 96.72 Mbit/s)   Flow 1 egress (mean 96.21 Mbit/s)

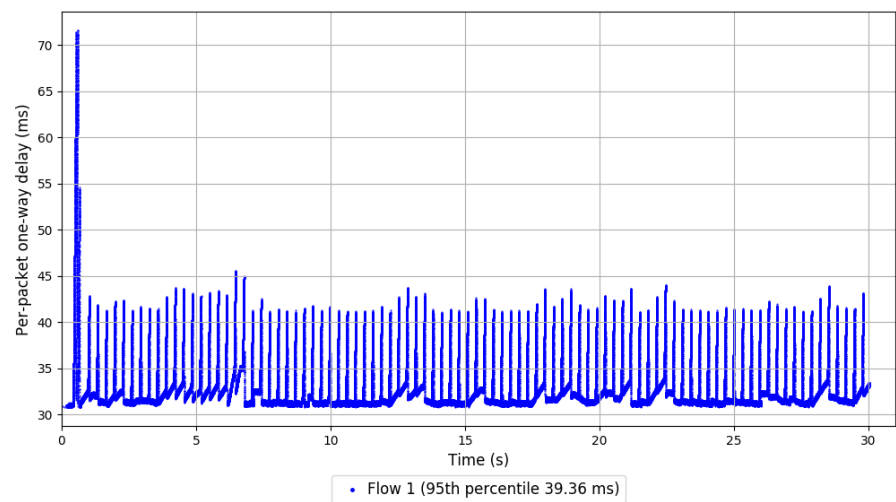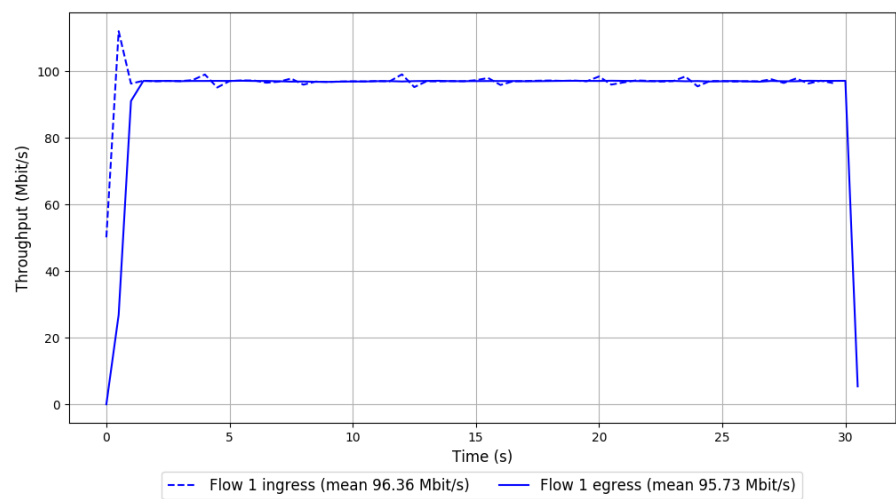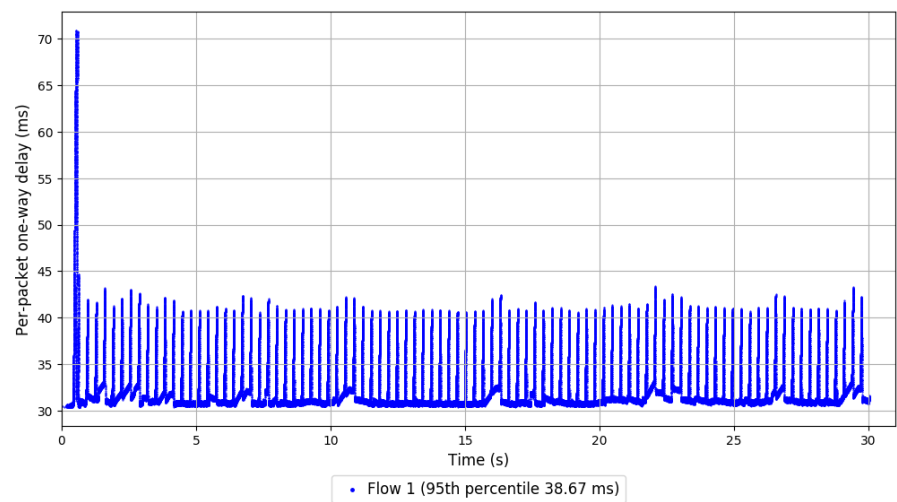

Flow 1 (95th percentile 65.60 ms)

```
Run 1: Statistics of FillP

Start at: 2018-12-02 00:33:23
End at: 2018-12-02 00:33:53
Local clock offset: -2.439 ms
Remote clock offset: -1.304 ms


# Below is generated by plot.py at 2018-12-02 02:12:23
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.56 Mbit/s
95th percentile per-packet one-way delay: 39.992 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 95.56 Mbit/s
95th percentile per-packet one-way delay: 39.992 ms
Loss rate: 0.69%
```

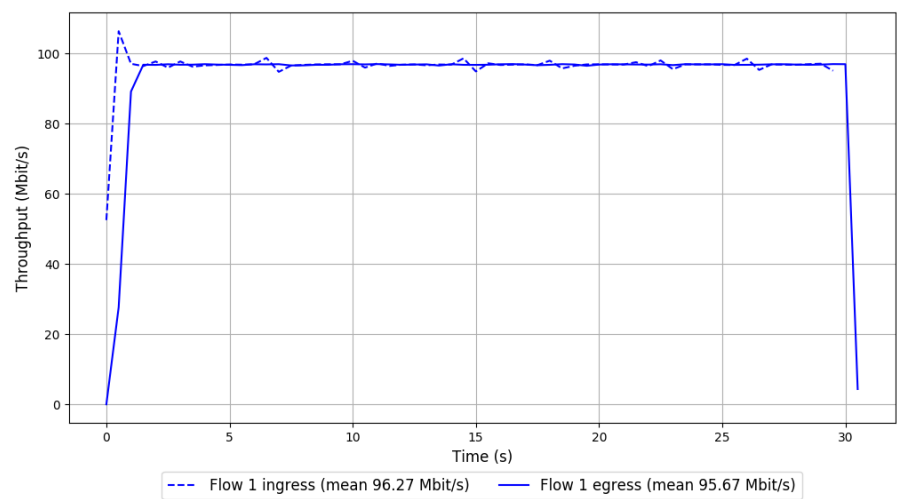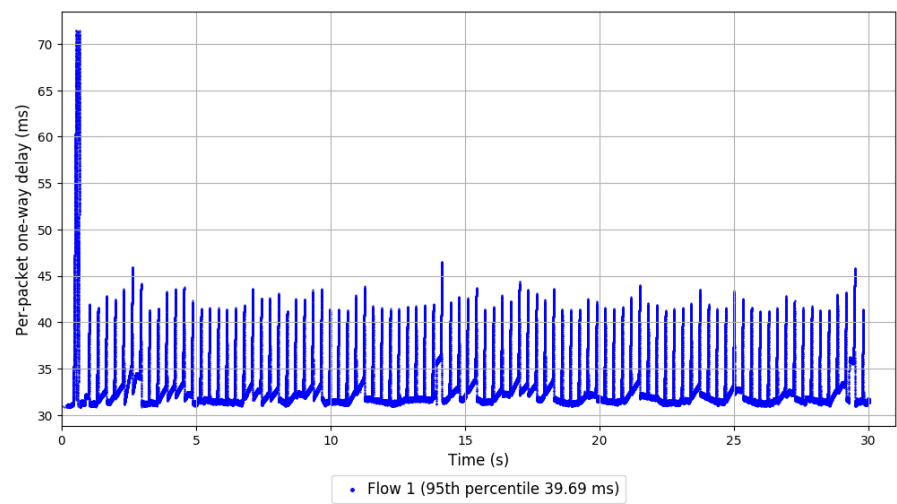Run 1: Report of FillP — Data Link

```
Run 2: Statistics of FillP

Start at: 2018-12-02 00:55:06
End at: 2018-12-02 00:55:36
Local clock offset: -3.644 ms
Remote clock offset: -1.283 ms


# Below is generated by plot.py at 2018-12-02 02:12:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.73 Mbit/s
95th percentile per-packet one-way delay: 39.359 ms
Loss rate: 0.65%
-- Flow 1:
Average throughput: 95.73 Mbit/s
95th percentile per-packet one-way delay: 39.359 ms
Loss rate: 0.65%
```

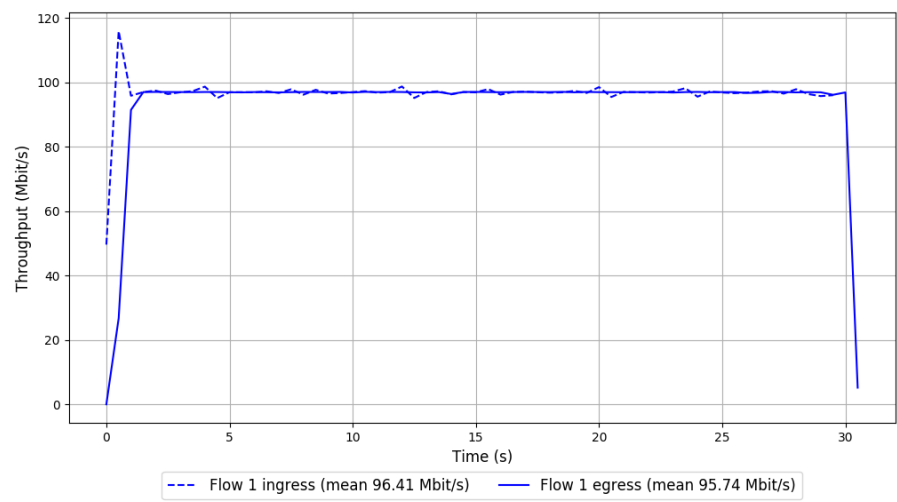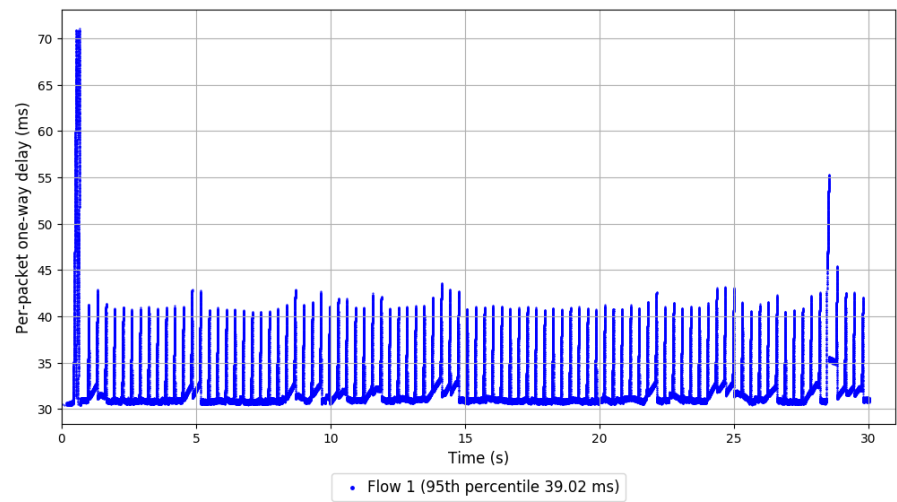# Run 2: Report of FillP — Data Link

Flow 1 ingress (mean 96.36 Mbit/s)   Flow 1 egress (mean 95.73 Mbit/s)

Flow 1 (95th percentile 39.36 ms)

```
Run 3: Statistics of FillP

Start at: 2018-12-02 01:17:23
End at: 2018-12-02 01:17:53
Local clock offset: -4.373 ms
Remote clock offset: -2.005 ms


# Below is generated by plot.py at 2018-12-02 02:12:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.67 Mbit/s
95th percentile per-packet one-way delay: 38.675 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 95.67 Mbit/s
95th percentile per-packet one-way delay: 38.675 ms
Loss rate: 0.62%
```

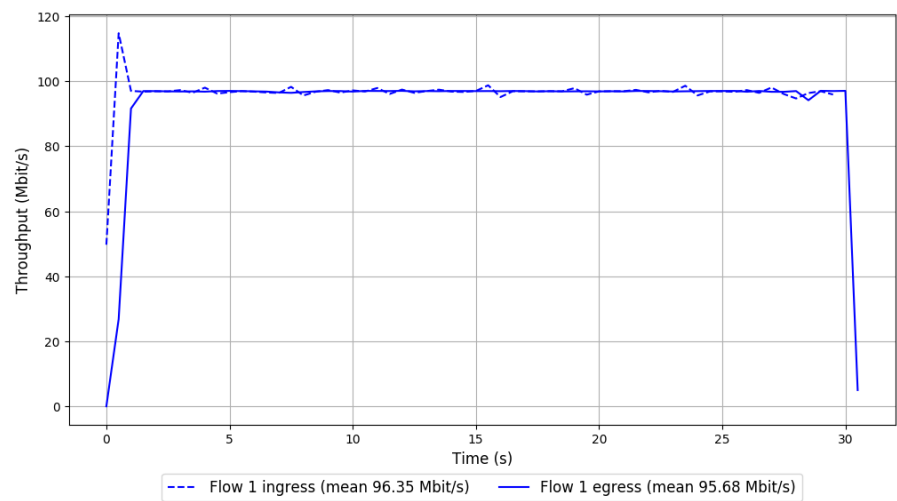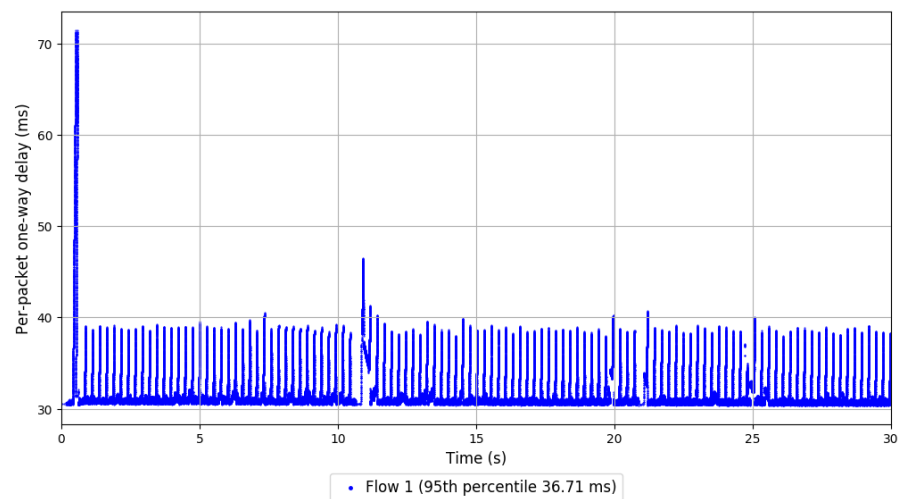## Run 3: Report of FillP — Data Link

Flow 1 ingress (mean 96.27 Mbit/s) --- Flow 1 egress (mean 95.67 Mbit/s)

Flow 1 (95th percentile 38.67 ms)

```
Run 4: Statistics of FillP

Start at: 2018-12-02 01:39:13
End at: 2018-12-02 01:39:43
Local clock offset: 0.893 ms
Remote clock offset: -2.408 ms


# Below is generated by plot.py at 2018-12-02 02:12:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.74 Mbit/s
95th percentile per-packet one-way delay: 39.692 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 95.74 Mbit/s
95th percentile per-packet one-way delay: 39.692 ms
Loss rate: 0.69%
```
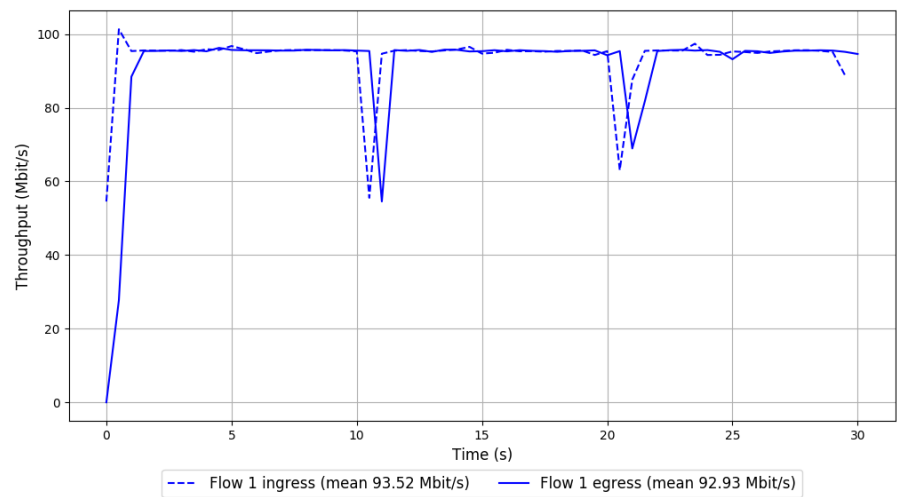
Run 4: Report of FillP — Data Link

```
Run 5: Statistics of FillP

Start at: 2018-12-02 02:01:00
End at: 2018-12-02 02:01:30
Local clock offset: 0.683 ms
Remote clock offset: -3.138 ms


# Below is generated by plot.py at 2018-12-02 02:12:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.68 Mbit/s
95th percentile per-packet one-way delay: 39.016 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 95.68 Mbit/s
95th percentile per-packet one-way delay: 39.016 ms
Loss rate: 0.69%
```

Run 5: Report of FillP — Data Link

Flow 1 ingress (mean 96.35 Mbit/s) — — — Flow 1 egress (mean 95.68 Mbit/s) ———
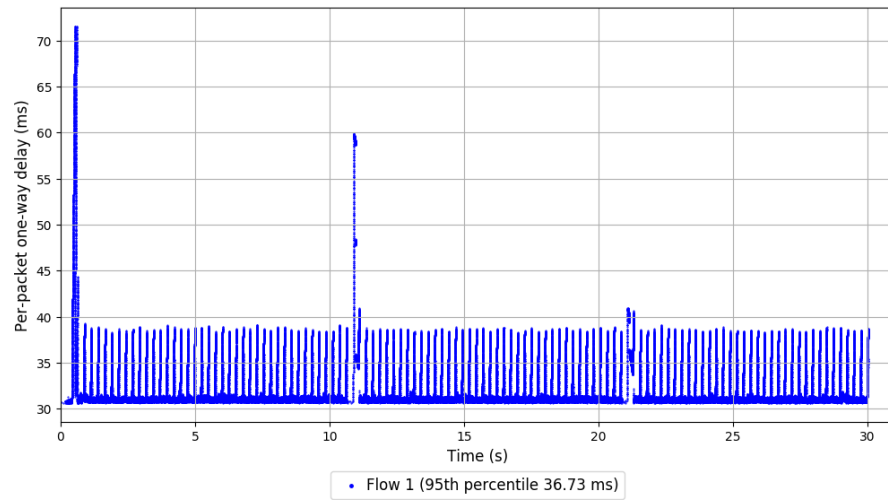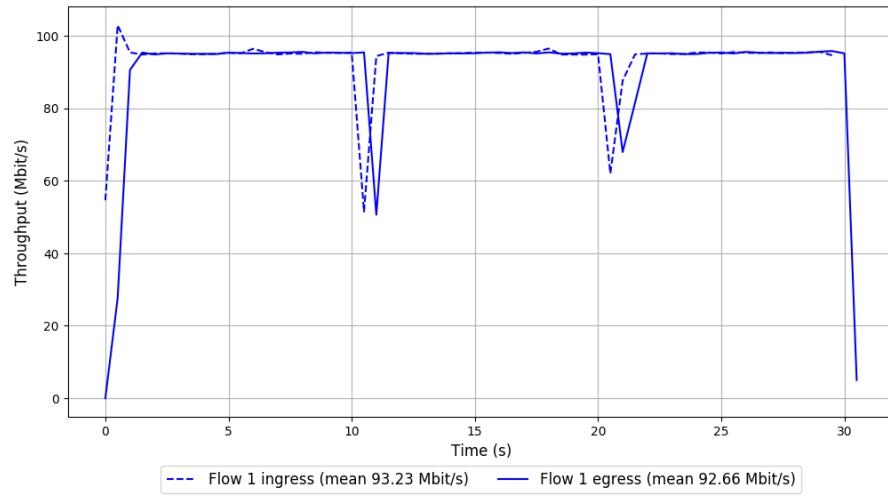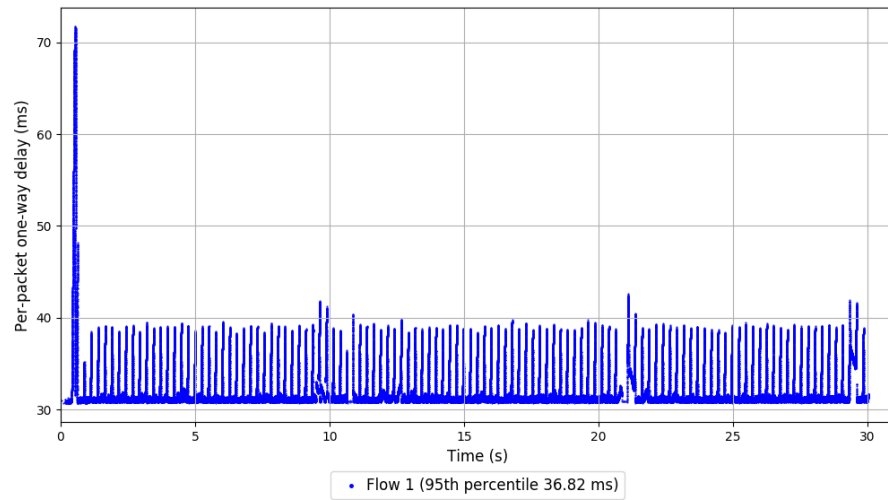

Flow 1 (95th percentile 39.02 ms)

44

```
Run 1: Statistics of FillP-Sheep

Start at: 2018-12-02 00:19:37
End at: 2018-12-02 00:20:07
Local clock offset: 0.305 ms
Remote clock offset: -1.222 ms


# Below is generated by plot.py at 2018-12-02 02:12:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.93 Mbit/s
95th percentile per-packet one-way delay: 36.712 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 92.93 Mbit/s
95th percentile per-packet one-way delay: 36.712 ms
Loss rate: 0.63%
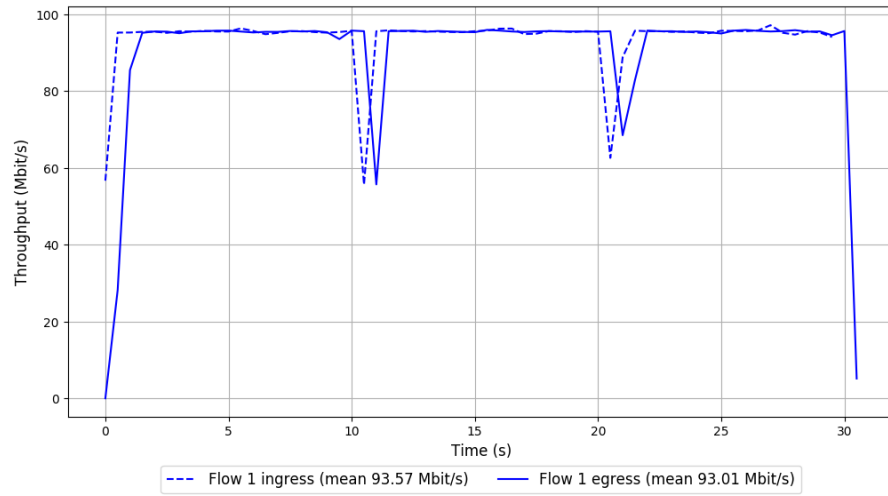```

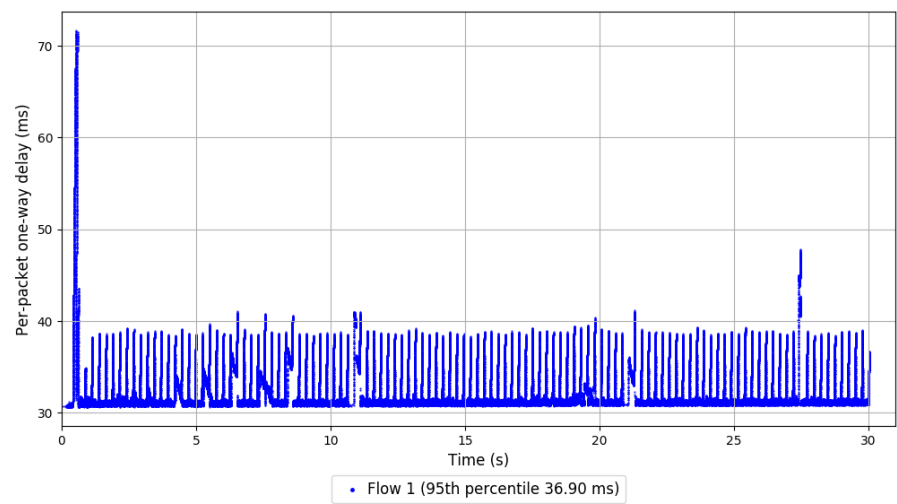Run 1: Report of FillP-Sheep — Data Link

```
Run 2: Statistics of FillP-Sheep

Start at: 2018-12-02 00:41:20
End at: 2018-12-02 00:41:50
Local clock offset: -3.043 ms
Remote clock offset: -1.412 ms

Below is generated by plot.py at 2018-12-02 02:13:31
Datalink statistics
-- Total of 1 flow:
Average throughput: 92.66 Mbit/s
95th percentile per-packet one-way delay: 36.735 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 92.66 Mbit/s
95th percentile per-packet one-way delay: 36.735 ms
Loss rate: 0.60%
```
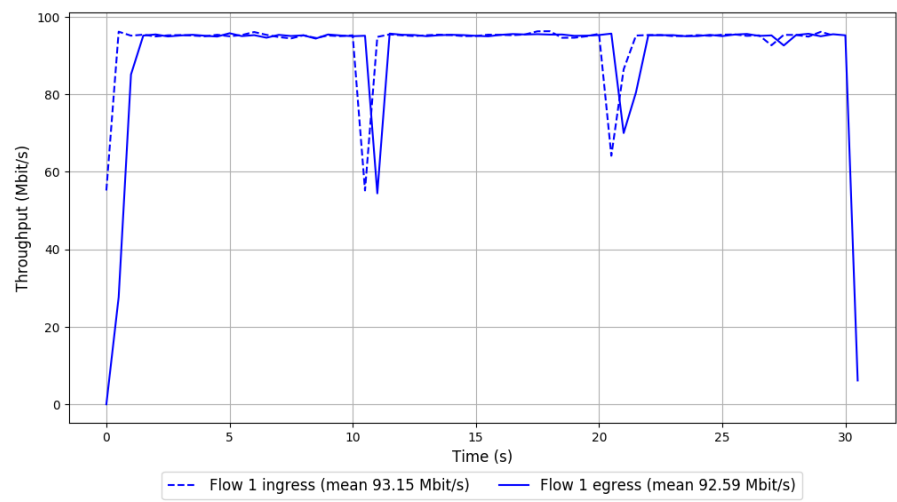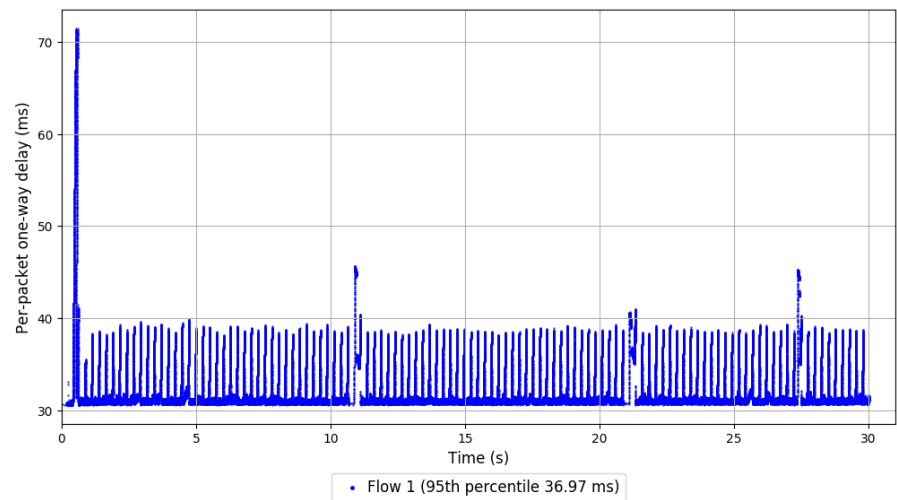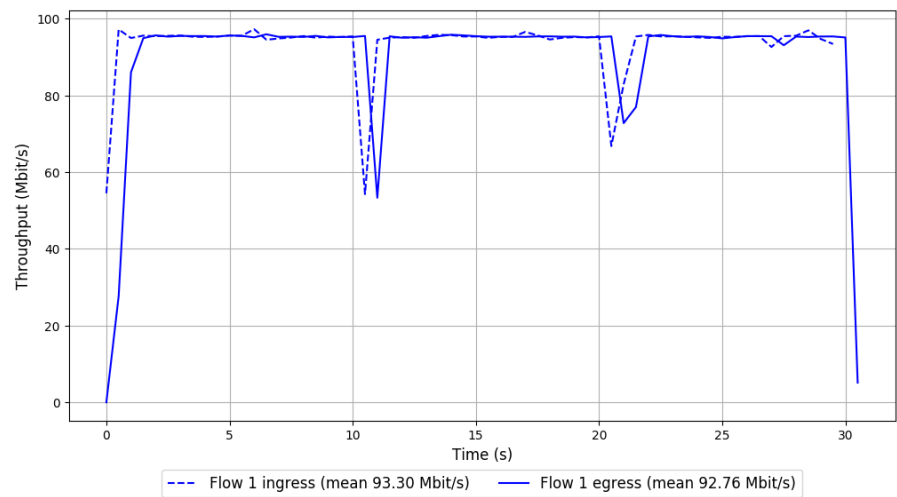
Run 2: Report of FillP-Sheep — Data Link

```
Run 3: Statistics of FillP-Sheep

Start at: 2018-12-02 01:03:14
End at: 2018-12-02 01:03:44
Local clock offset: -3.927 ms
Remote clock offset: -1.526 ms


# Below is generated by plot.py at 2018-12-02 02:13:31
# Datalink statistics
-- Total of 1 flow:
Average throughput: 93.01 Mbit/s
95th percentile per-packet one-way delay: 36.822 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 93.01 Mbit/s
95th percentile per-packet one-way delay: 36.822 ms
Loss rate: 0.60%
```

Run 3: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 93.57 Mbit/s)   Flow 1 egress (mean 93.01 Mbit/s)

Flow 1 (95th percentile 36.82 ms)

```
Run 4: Statistics of FillP-Sheep

Start at: 2018-12-02 01:25:28
End at: 2018-12-02 01:25:58
Local clock offset: -1.411 ms
Remote clock offset: -2.324 ms


# Below is generated by plot.py at 2018-12-02 02:13:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.59 Mbit/s
95th percentile per-packet one-way delay: 36.901 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 92.59 Mbit/s
95th percentile per-packet one-way delay: 36.901 ms
Loss rate: 0.58%
```
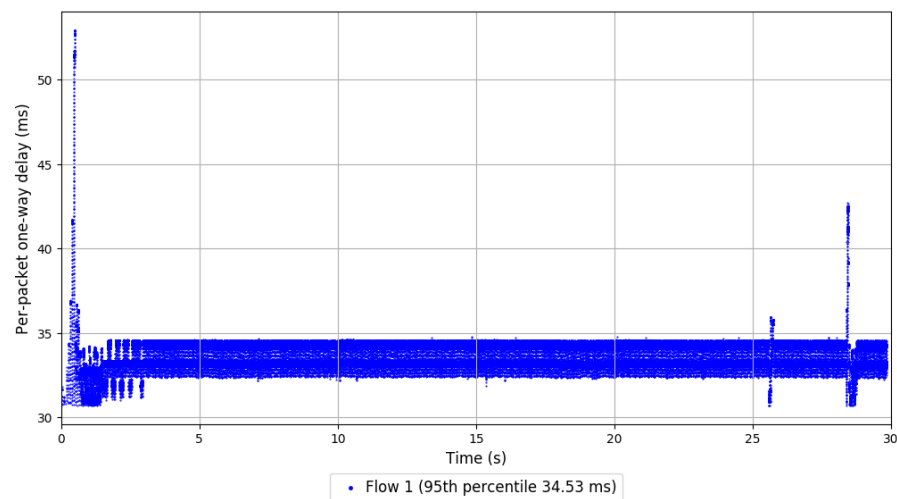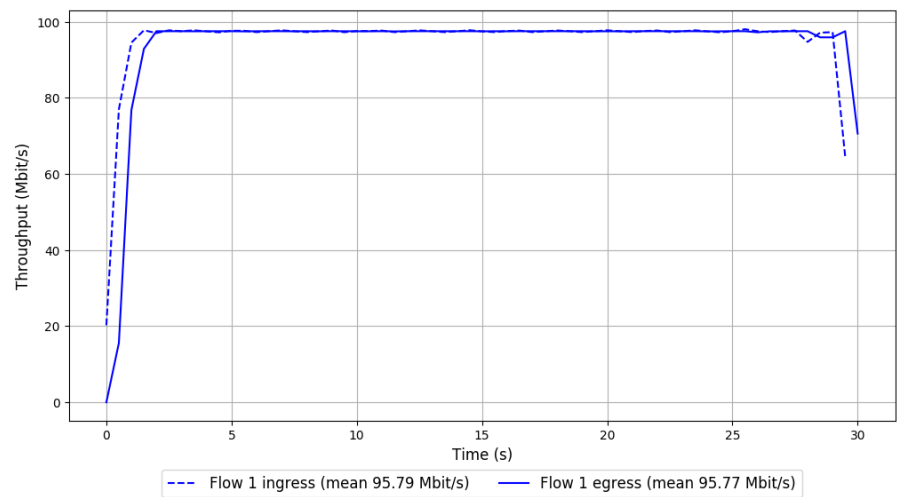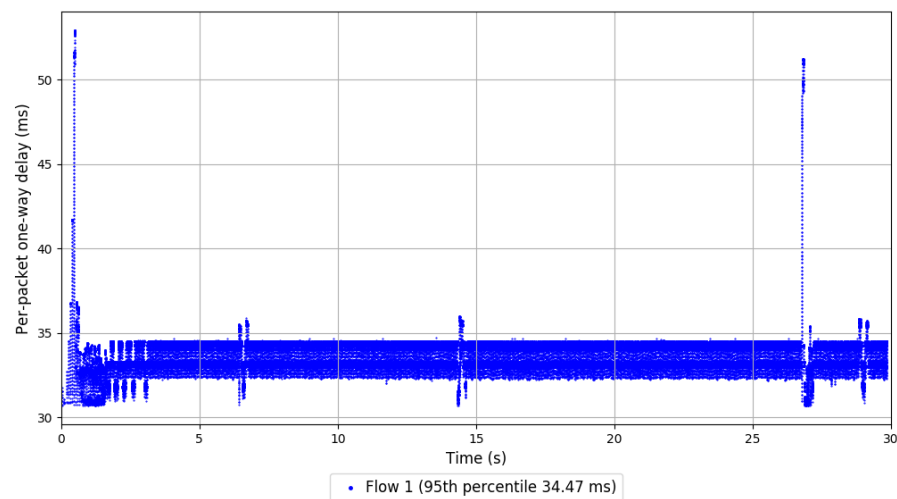
Run 4: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 93.15 Mbit/s)   Flow 1 egress (mean 92.59 Mbit/s)

• Flow 1 (95th percentile 36.90 ms)

```
Run 5: Statistics of FillP-Sheep

Start at: 2018-12-02 01:47:11
End at: 2018-12-02 01:47:41
Local clock offset: 1.52 ms
Remote clock offset: -2.838 ms


# Below is generated by plot.py at 2018-12-02 02:13:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.76 Mbit/s
95th percentile per-packet one-way delay: 36.969 ms
Loss rate: 0.57%
-- Flow 1:
Average throughput: 92.76 Mbit/s
95th percentile per-packet one-way delay: 36.969 ms
Loss rate: 0.57%
```

Run 5: Report of FillP-Sheep — Data Link
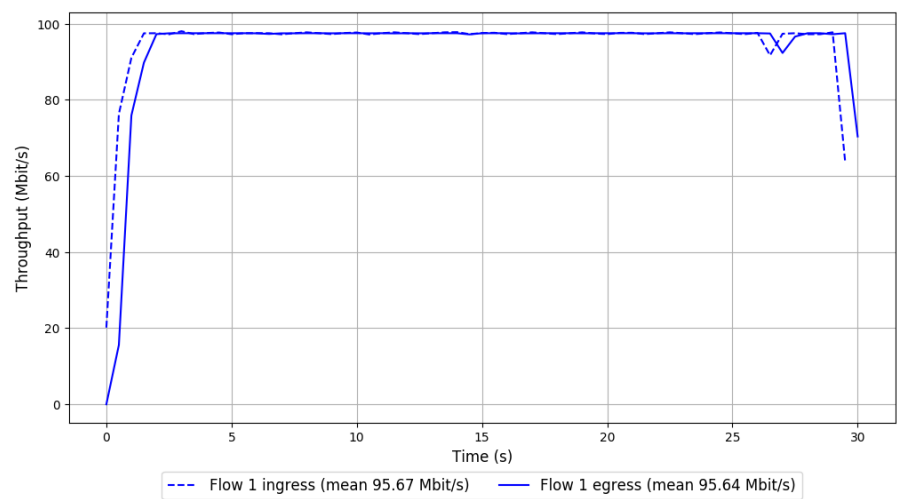
```
Run 1: Statistics of Indigo

Start at: 2018-12-02 00:38:59
End at: 2018-12-02 00:39:29
Local clock offset: -2.897 ms
Remote clock offset: -1.382 ms


# Below is generated by plot.py at 2018-12-02 02:13:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.77 Mbit/s
95th percentile per-packet one-way delay: 34.527 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 95.77 Mbit/s
95th percentile per-packet one-way delay: 34.527 ms
Loss rate: 0.02%
```

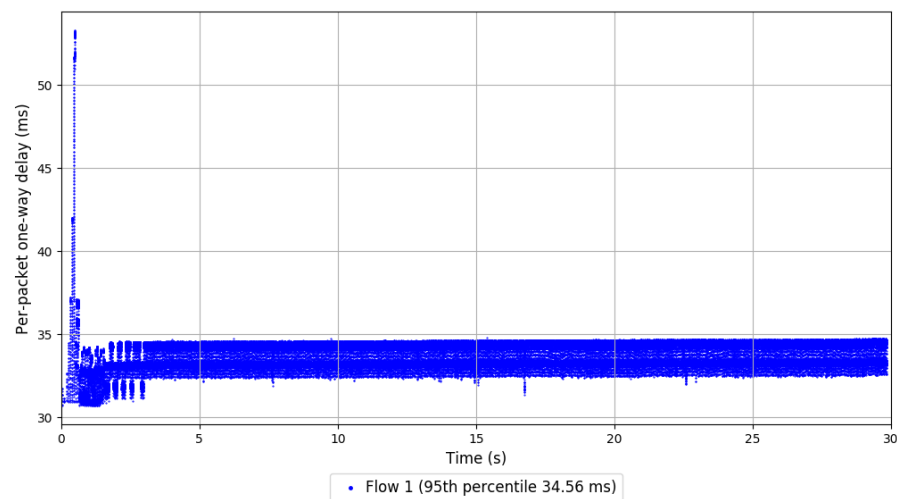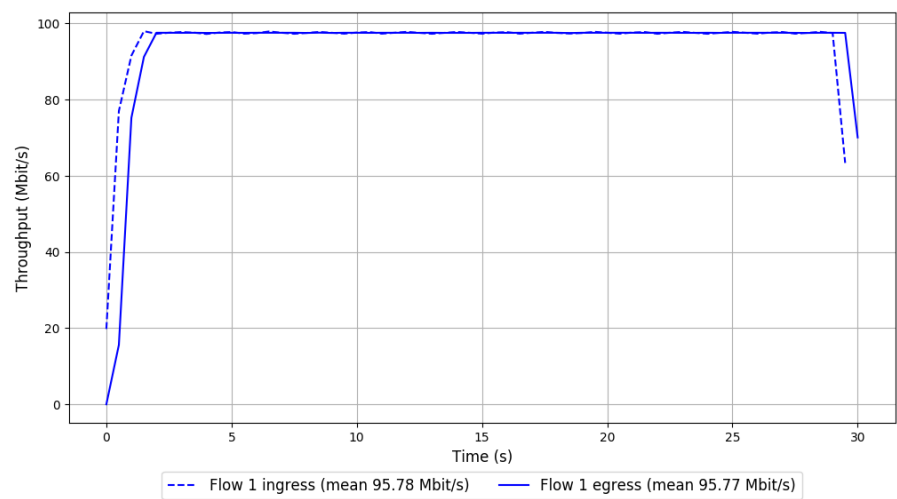Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2018-12-02 01:00:48
End at: 2018-12-02 01:01:18
Local clock offset: -3.845 ms
Remote clock offset: -1.507 ms

# Below is generated by plot.py at 2018-12-02 02:13:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.64 Mbit/s
95th percentile per-packet one-way delay: 34.474 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 95.64 Mbit/s
95th percentile per-packet one-way delay: 34.474 ms
Loss rate: 0.01%
```

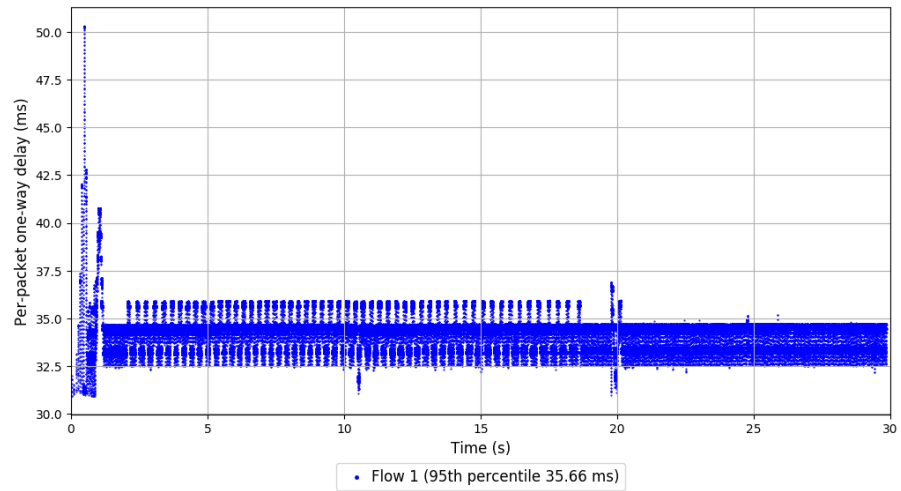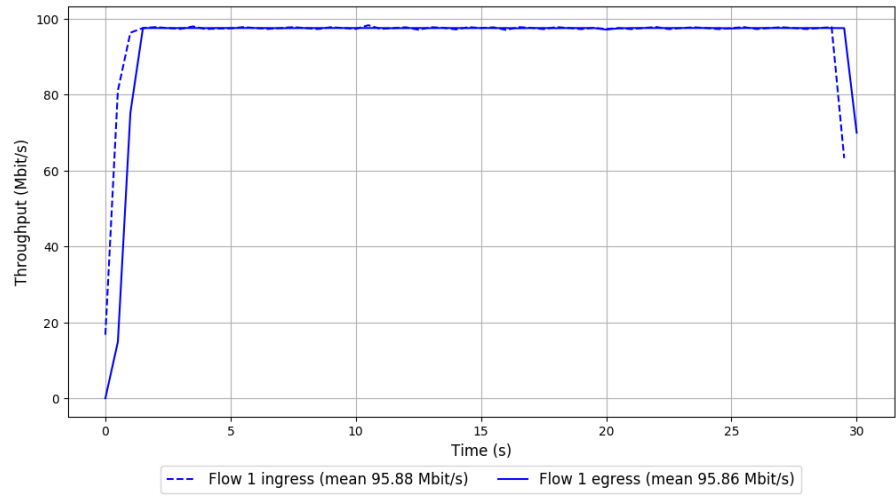Run 2: Report of Indigo — Data Link

Flow 1 ingress (mean 95.67 Mbit/s) ---- Flow 1 egress (mean 95.64 Mbit/s)

• Flow 1 (95th percentile 34.47 ms)

```
Run 3: Statistics of Indigo

Start at: 2018-12-02 01:23:06
End at: 2018-12-02 01:23:36
Local clock offset: -2.092 ms
Remote clock offset: -2.201 ms


# Below is generated by plot.py at 2018-12-02 02:14:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.77 Mbit/s
95th percentile per-packet one-way delay: 34.565 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 95.77 Mbit/s
95th percentile per-packet one-way delay: 34.565 ms
Loss rate: 0.00%
```
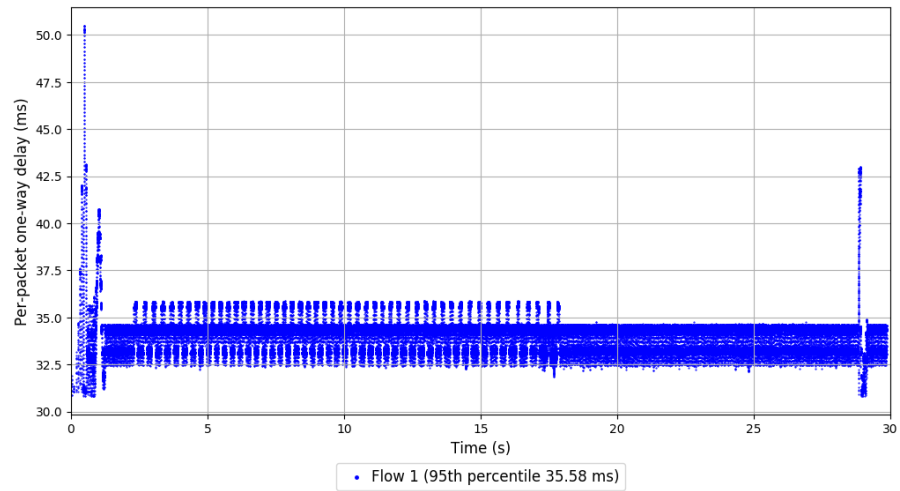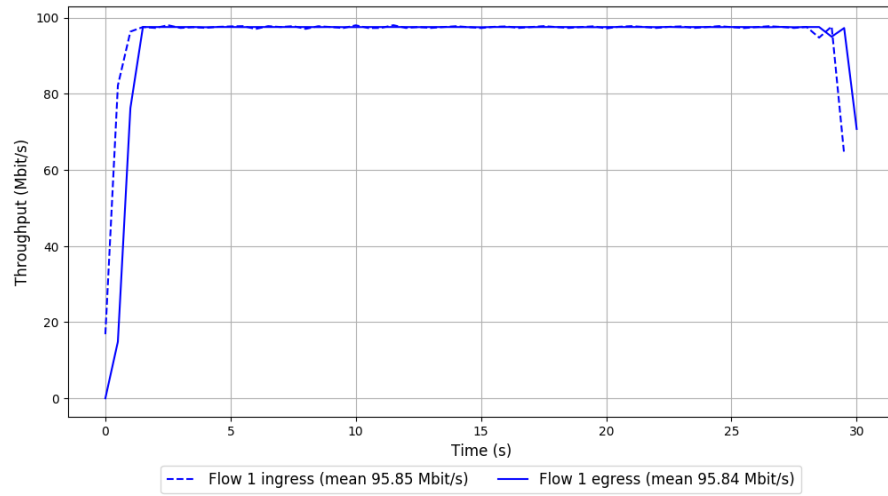
Run 3: Report of Indigo — Data Link

Flow 1 ingress (mean 95.78 Mbit/s)   Flow 1 egress (mean 95.77 Mbit/s)

Flow 1 (95th percentile 34.56 ms)

```
Run 4: Statistics of Indigo

Start at: 2018-12-02 01:44:50
End at: 2018-12-02 01:45:20
Local clock offset: 1.353 ms
Remote clock offset: -2.605 ms


# Below is generated by plot.py at 2018-12-02 02:14:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.86 Mbit/s
95th percentile per-packet one-way delay: 35.663 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 95.86 Mbit/s
95th percentile per-packet one-way delay: 35.663 ms
Loss rate: 0.01%
```
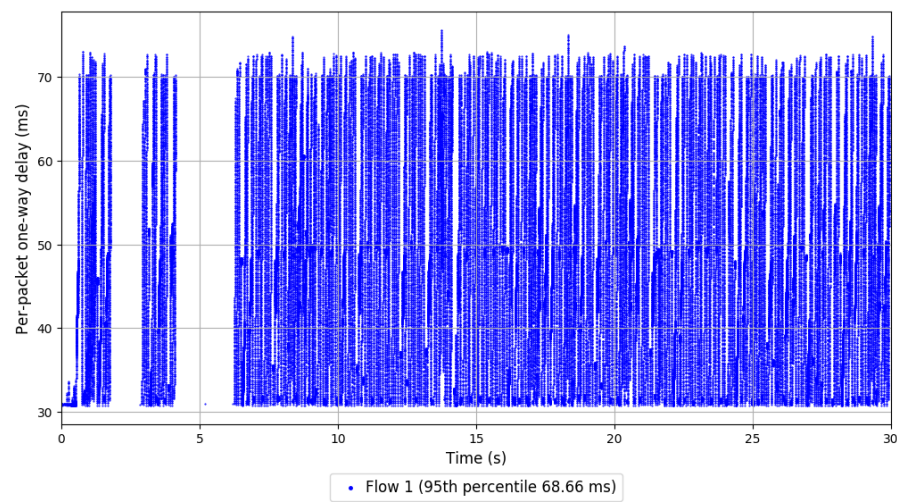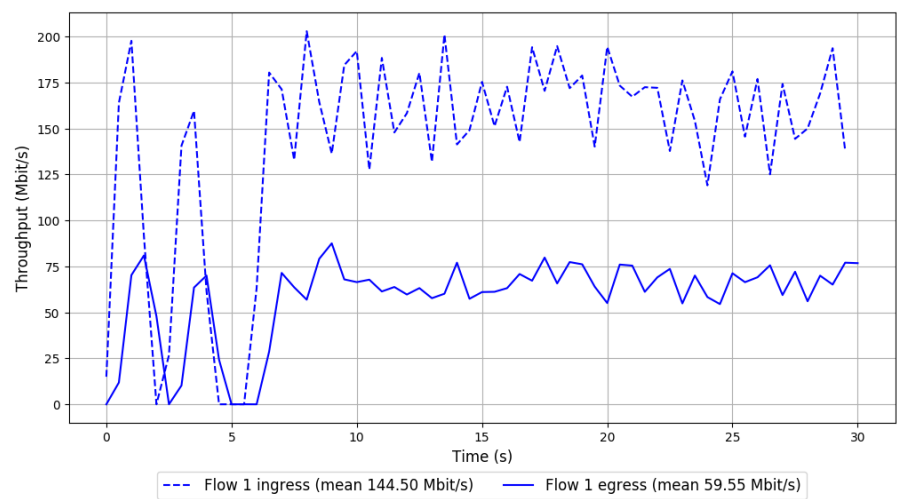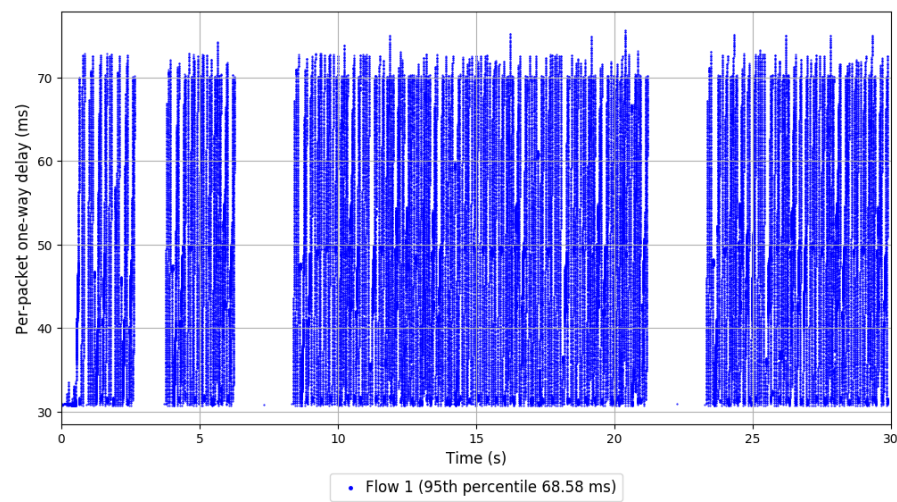
Run 4: Report of Indigo — Data Link

```
Run 5: Statistics of Indigo

Start at: 2018-12-02 02:06:43
End at: 2018-12-02 02:07:13
Local clock offset: 0.672 ms
Remote clock offset: -2.931 ms


# Below is generated by plot.py at 2018-12-02 02:14:39
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.84 Mbit/s
95th percentile per-packet one-way delay: 35.580 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 95.84 Mbit/s
95th percentile per-packet one-way delay: 35.580 ms
Loss rate: 0.00%
```
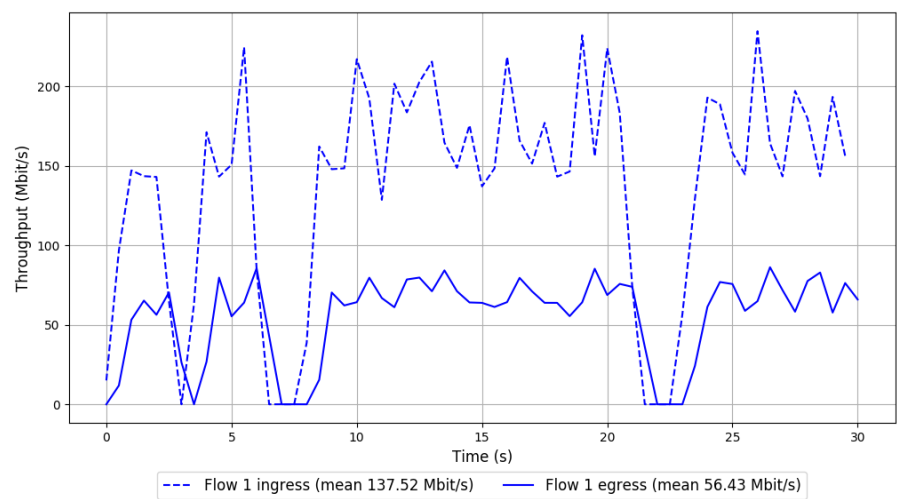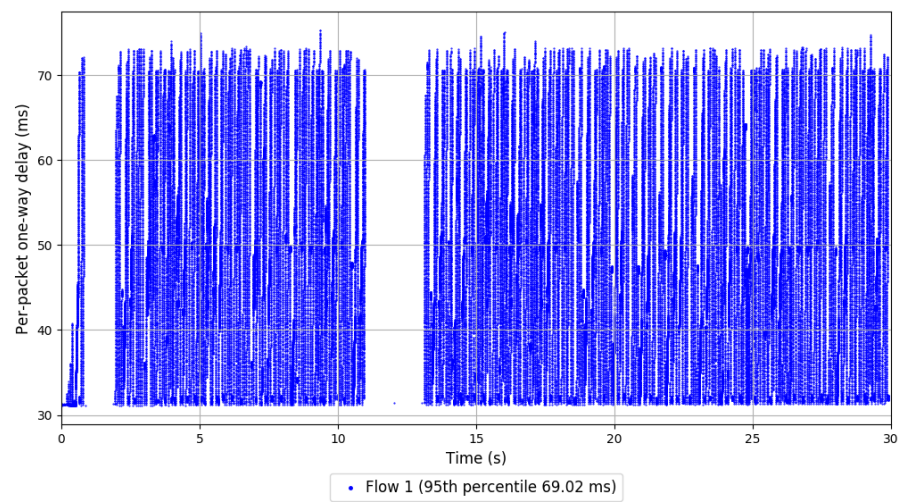
Run 5: Report of Indigo — Data Link

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

Start at: 2018-12-02 00:40:11
End at: 2018-12-02 00:40:41
Local clock offset: -2.973 ms
Remote clock offset: -1.41 ms

# Below is generated by plot.py at 2018-12-02 02:14:39
# Datalink statistics
-- Total of 1 flow:
Average throughput: 59.55 Mbit/s
95th percentile per-packet one-way delay: 68.657 ms
Loss rate: 58.74%
-- Flow 1:
Average throughput: 59.55 Mbit/s
95th percentile per-packet one-way delay: 68.657 ms
Loss rate: 58.74%
```

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

Flow 1 ingress (mean 144.50 Mbit/s) ——— Flow 1 egress (mean 59.55 Mbit/s)
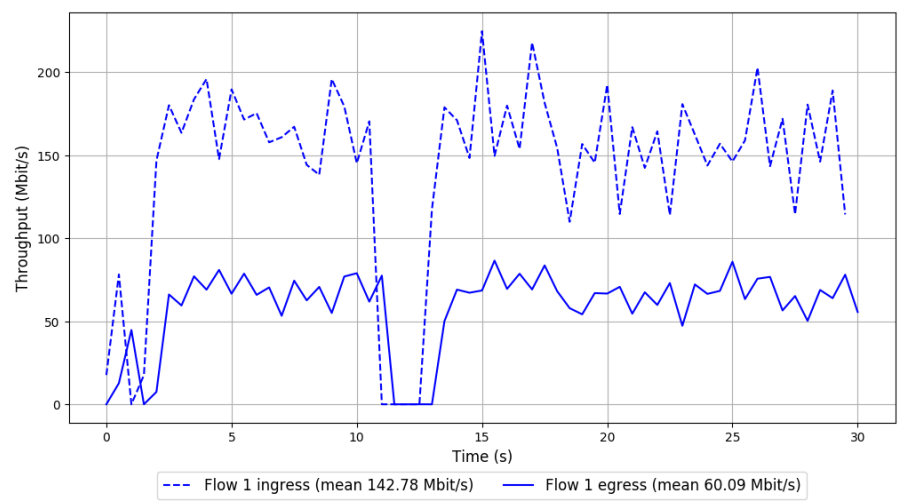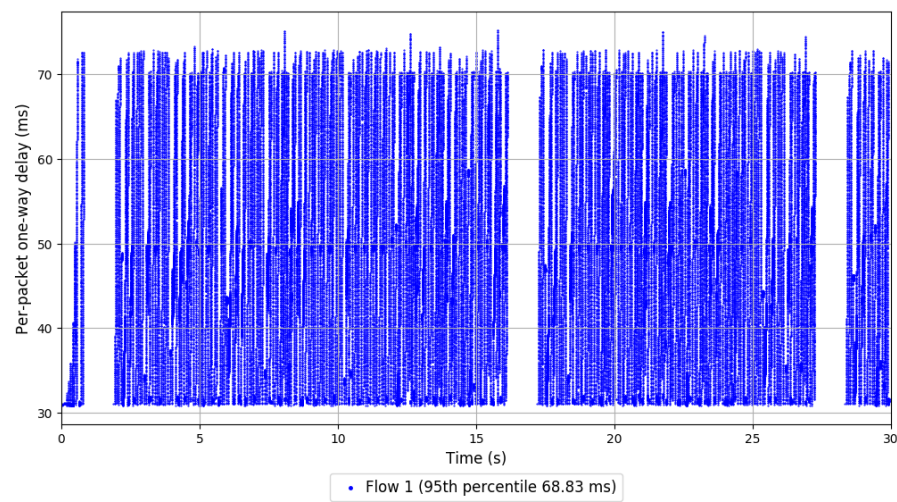

• Flow 1 (95th percentile 68.66 ms)

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

Start at: 2018-12-02 01:02:03
End at: 2018-12-02 01:02:33
Local clock offset: -3.896 ms
Remote clock offset: -1.488 ms


# Below is generated by plot.py at 2018-12-02 02:14:39
# Datalink statistics
-- Total of 1 flow:
Average throughput: 56.43 Mbit/s
95th percentile per-packet one-way delay: 68.578 ms
Loss rate: 58.96%
-- Flow 1:
Average throughput: 56.43 Mbit/s
95th percentile per-packet one-way delay: 68.578 ms
Loss rate: 58.96%
```
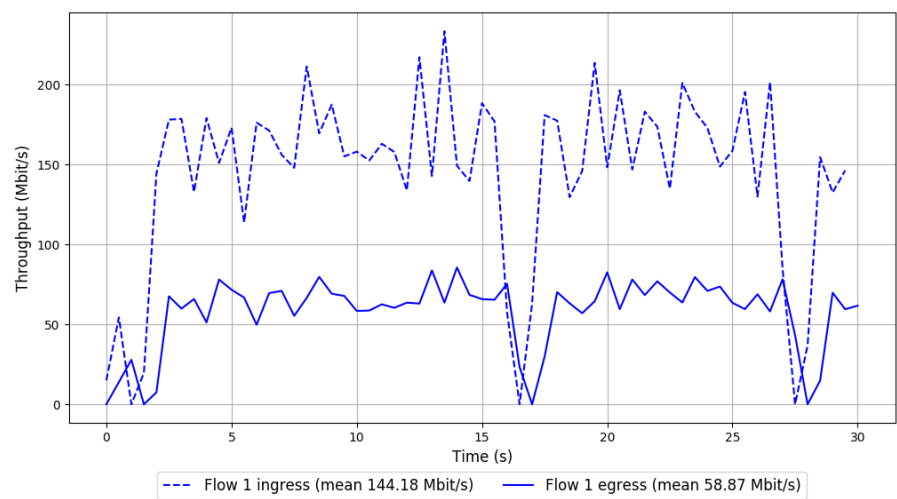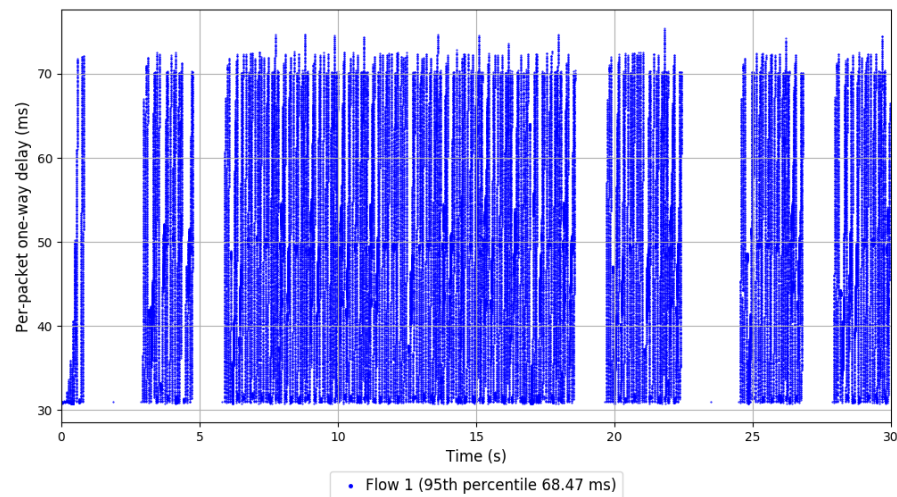
Run 2: Report of Indigo-96d2da3 — Data Link

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

Start at: 2018-12-02 01:24:18
End at: 2018-12-02 01:24:48
Local clock offset: -1.726 ms
Remote clock offset: -1.917 ms


# Below is generated by plot.py at 2018-12-02 02:14:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 60.09 Mbit/s
95th percentile per-packet one-way delay: 69.019 ms
Loss rate: 57.91%
-- Flow 1:
Average throughput: 60.09 Mbit/s
95th percentile per-packet one-way delay: 69.019 ms
Loss rate: 57.91%
```

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

Flow 1 ingress (mean 142.78 Mbit/s)   Flow 1 egress (mean 60.09 Mbit/s)
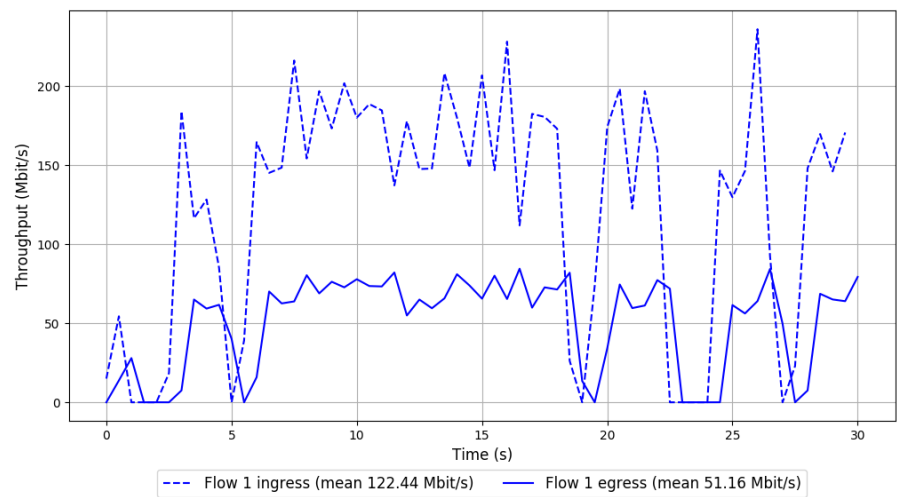

• Flow 1 (95th percentile 69.02 ms)

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

Start at: 2018-12-02 01:46:02
End at: 2018-12-02 01:46:32
Local clock offset: 1.446 ms
Remote clock offset: -2.622 ms


# Below is generated by plot.py at 2018-12-02 02:14:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 58.87 Mbit/s
95th percentile per-packet one-way delay: 68.833 ms
Loss rate: 59.17%
-- Flow 1:
Average throughput: 58.87 Mbit/s
95th percentile per-packet one-way delay: 68.833 ms
Loss rate: 59.17%
```
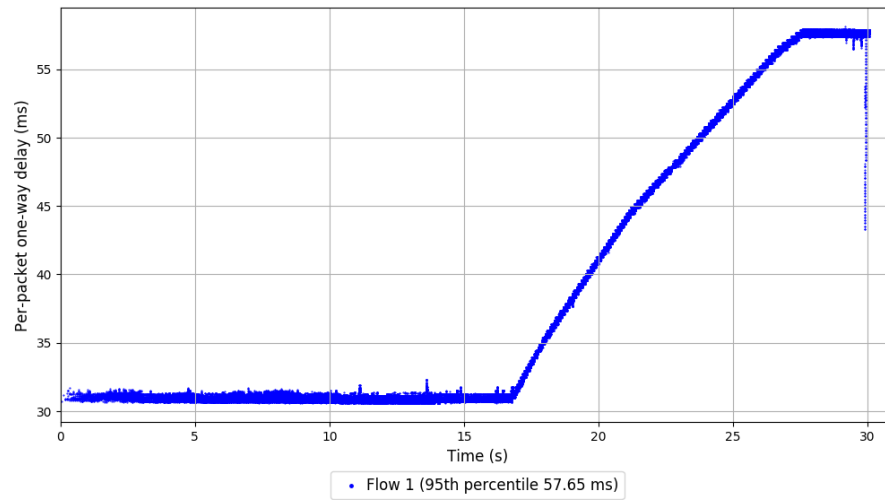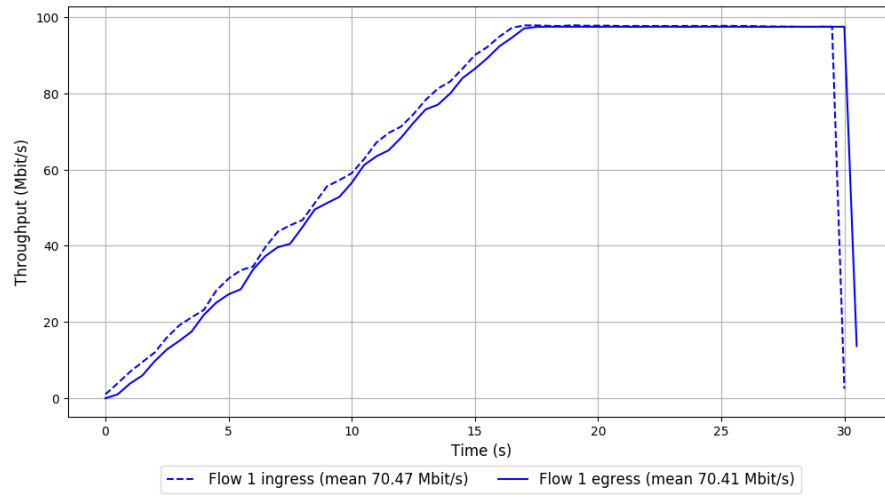
Run 4: Report of Indigo-96d2da3 — Data Link

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

Start at: 2018-12-02 02:08:00
End at: 2018-12-02 02:08:30
Local clock offset: 0.686 ms
Remote clock offset: -2.968 ms


# Below is generated by plot.py at 2018-12-02 02:14:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 51.16 Mbit/s
95th percentile per-packet one-way delay: 68.473 ms
Loss rate: 58.17%
-- Flow 1:
Average throughput: 51.16 Mbit/s
95th percentile per-packet one-way delay: 68.473 ms
Loss rate: 58.17%
```

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

```
Run 1: Statistics of LEDBAT

Start at: 2018-12-02 00:20:46
End at: 2018-12-02 00:21:16
Local clock offset: -0.095 ms
Remote clock offset: -1.248 ms


# Below is generated by plot.py at 2018-12-02 02:14:58
# Datalink statistics
-- Total of 1 flow:
Average throughput: 70.41 Mbit/s
95th percentile per-packet one-way delay: 57.651 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 70.41 Mbit/s
95th percentile per-packet one-way delay: 57.651 ms
Loss rate: 0.00%
```
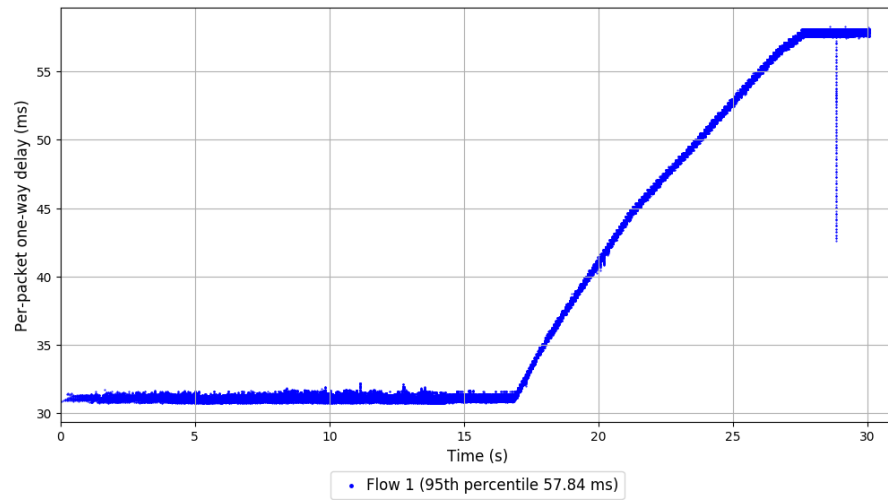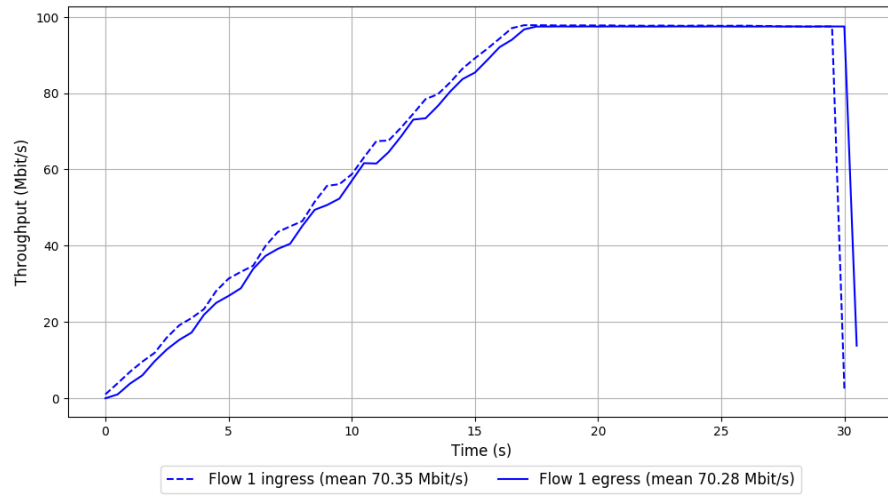
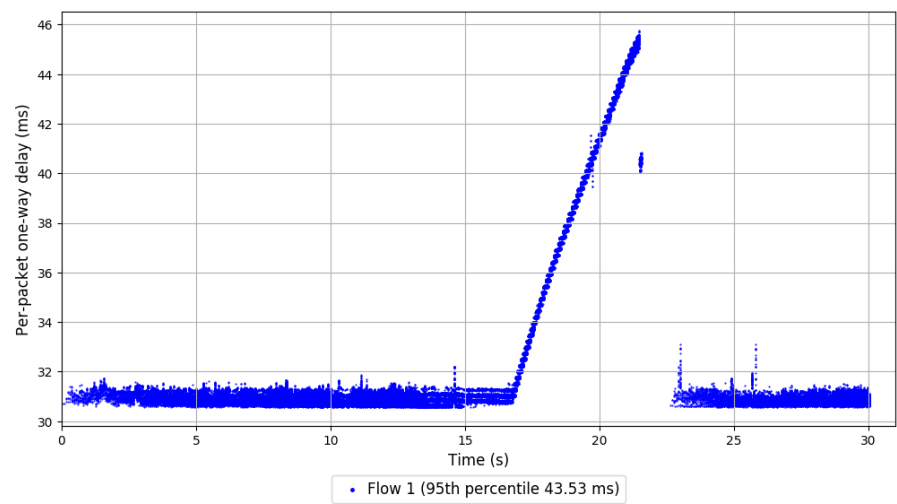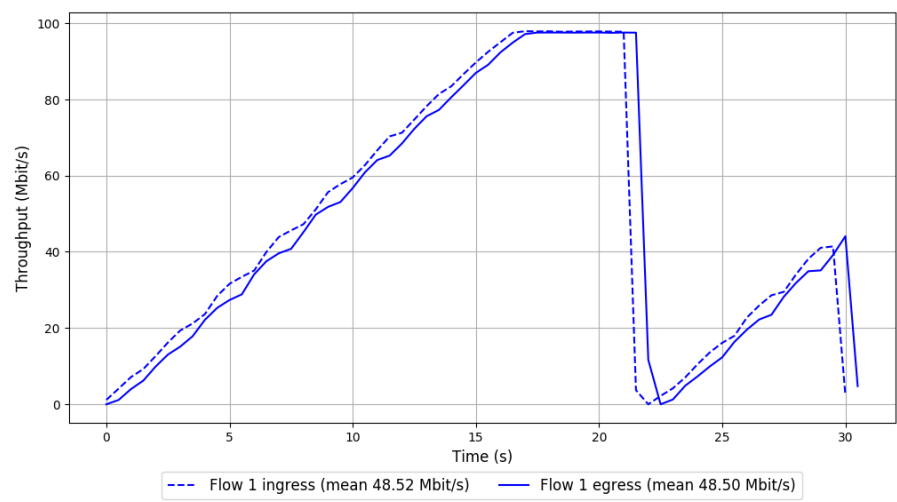## Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2018-12-02 00:42:29
End at: 2018-12-02 00:42:59
Local clock offset: -3.087 ms
Remote clock offset: -1.438 ms


# Below is generated by plot.py at 2018-12-02 02:15:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 70.28 Mbit/s
95th percentile per-packet one-way delay: 57.838 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 70.28 Mbit/s
95th percentile per-packet one-way delay: 57.838 ms
Loss rate: 0.00%
```

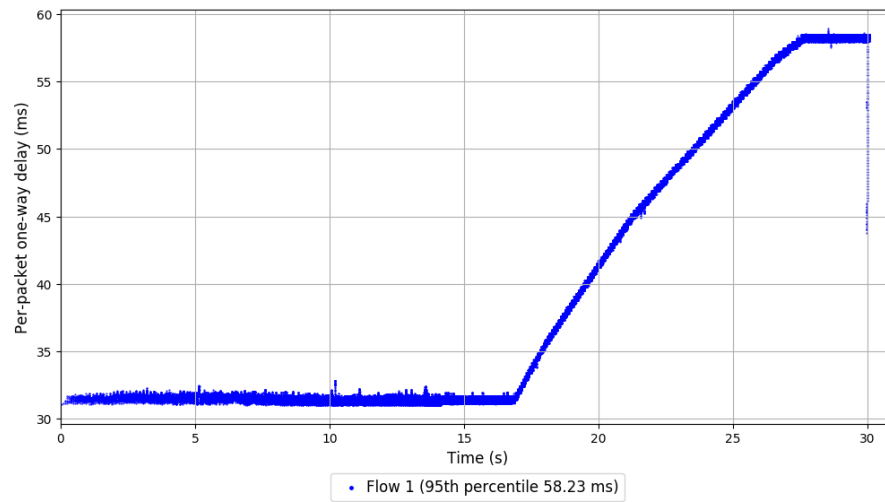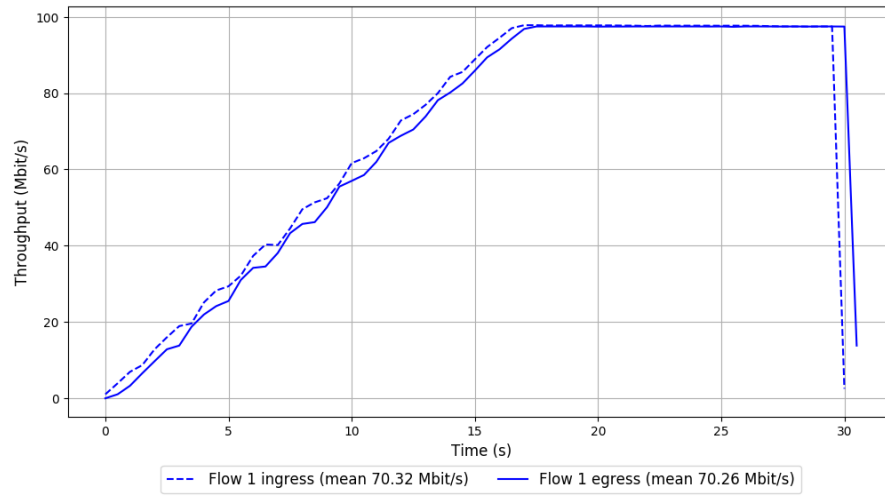# Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2018-12-02 01:04:25
End at: 2018-12-02 01:04:55
Local clock offset: -3.953 ms
Remote clock offset: -1.697 ms


# Below is generated by plot.py at 2018-12-02 02:15:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 48.50 Mbit/s
95th percentile per-packet one-way delay: 43.534 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 48.50 Mbit/s
95th percentile per-packet one-way delay: 43.534 ms
Loss rate: 0.03%
```

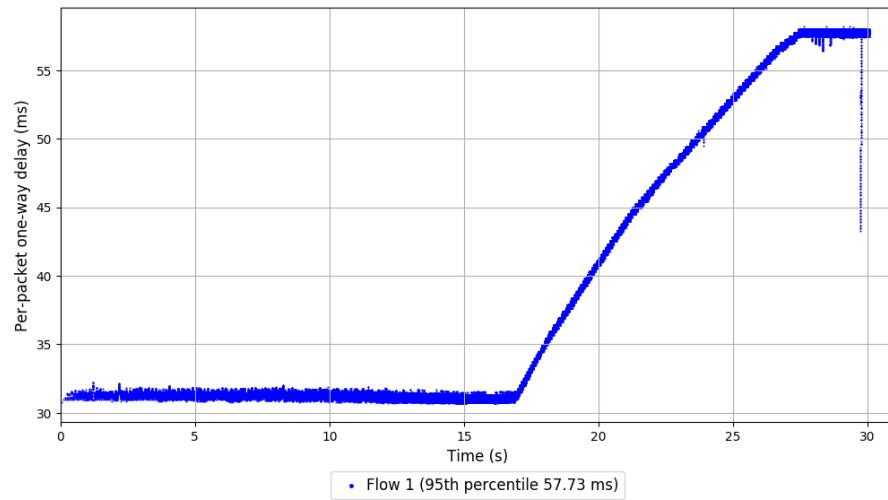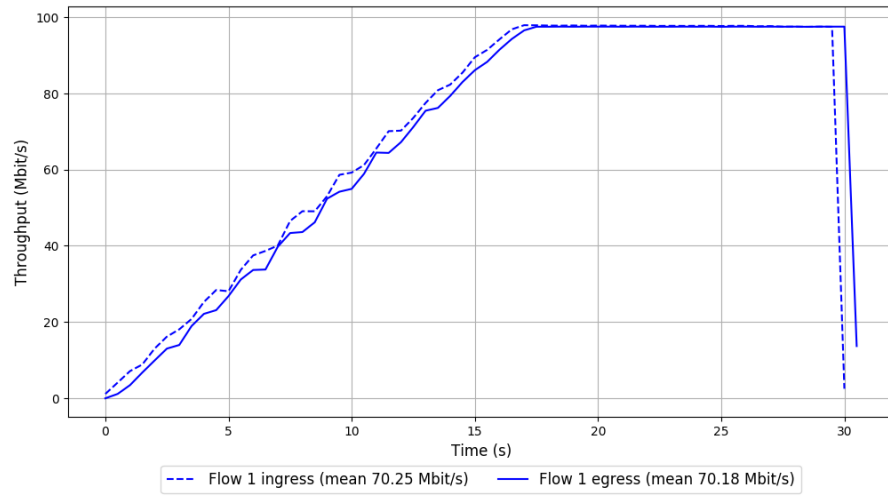# Run 3: Report of LEDBAT — Data Link

```
Run 4: Statistics of LEDBAT

Start at: 2018-12-02 01:26:37
End at: 2018-12-02 01:27:07
Local clock offset: -1.101 ms
Remote clock offset: -2.129 ms


# Below is generated by plot.py at 2018-12-02 02:15:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 70.26 Mbit/s
95th percentile per-packet one-way delay: 58.228 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 70.26 Mbit/s
95th percentile per-packet one-way delay: 58.228 ms
Loss rate: 0.00%
```

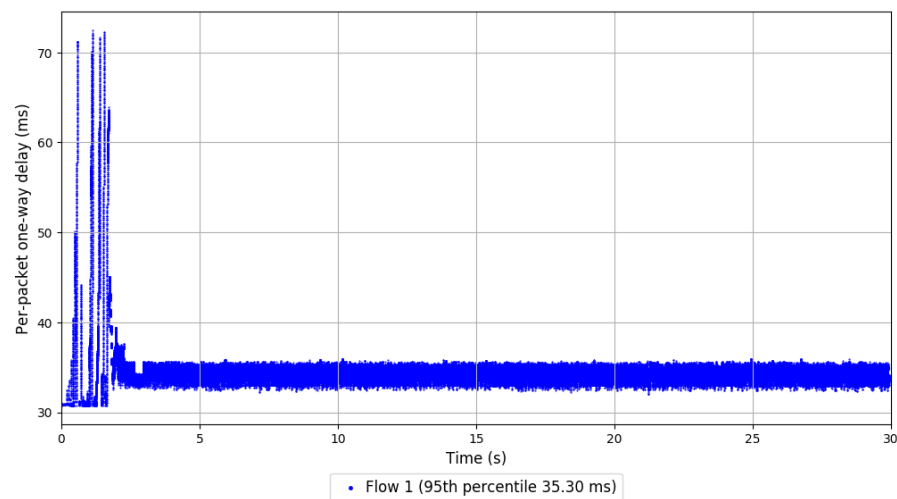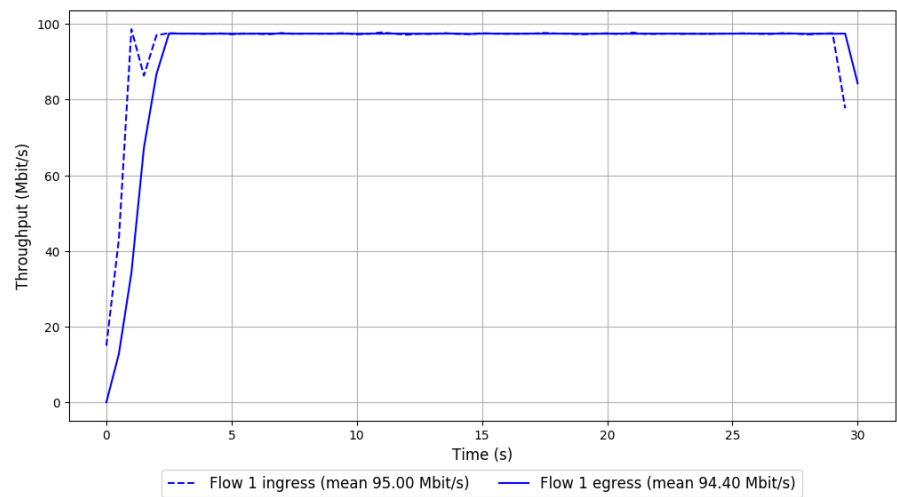Run 4: Report of LEDBAT — Data Link

Flow 1 ingress (mean 70.32 Mbit/s) ------ Flow 1 egress (mean 70.26 Mbit/s)

• Flow 1 (95th percentile 58.23 ms)

```
Run 5: Statistics of LEDBAT

Start at: 2018-12-02 01:48:21
End at: 2018-12-02 01:48:51
Local clock offset: 1.584 ms
Remote clock offset: -2.687 ms


# Below is generated by plot.py at 2018-12-02 02:15:27
# Datalink statistics
-- Total of 1 flow:
Average throughput: 70.18 Mbit/s
95th percentile per-packet one-way delay: 57.735 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 70.18 Mbit/s
95th percentile per-packet one-way delay: 57.735 ms
Loss rate: 0.00%
```

Run 5: Report of LEDBAT — Data Link

Flow 1 ingress (mean 70.25 Mbit/s)   Flow 1 egress (mean 70.18 Mbit/s)
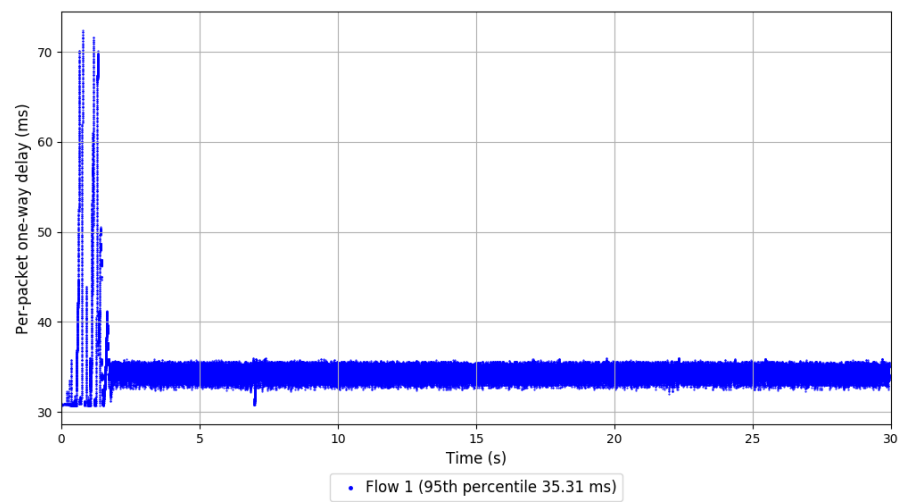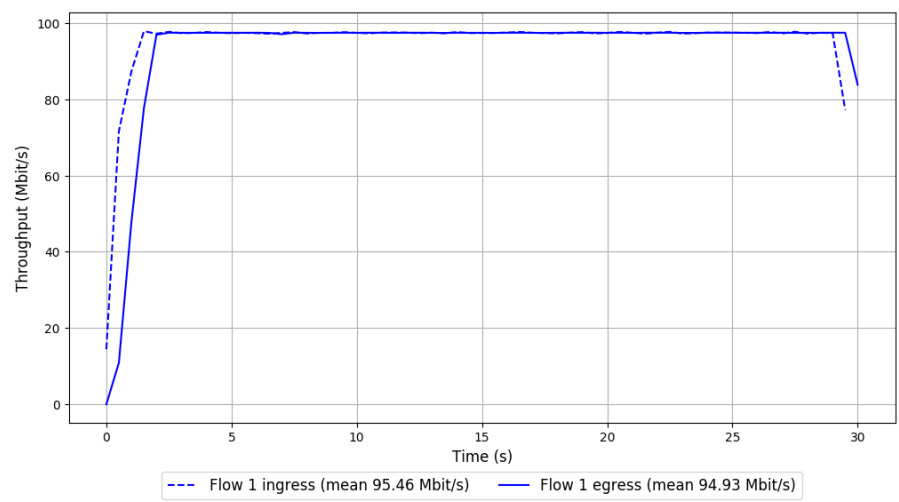

Flow 1 (95th percentile 57.73 ms)

```
Run 1: Statistics of Indigo-Muses

Start at: 2018-12-02 00:32:13
End at: 2018-12-02 00:32:43
Local clock offset: -2.344 ms
Remote clock offset: -1.241 ms

# Below is generated by plot.py at 2018-12-02 02:15:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.40 Mbit/s
95th percentile per-packet one-way delay: 35.302 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 94.40 Mbit/s
95th percentile per-packet one-way delay: 35.302 ms
Loss rate: 0.62%
```
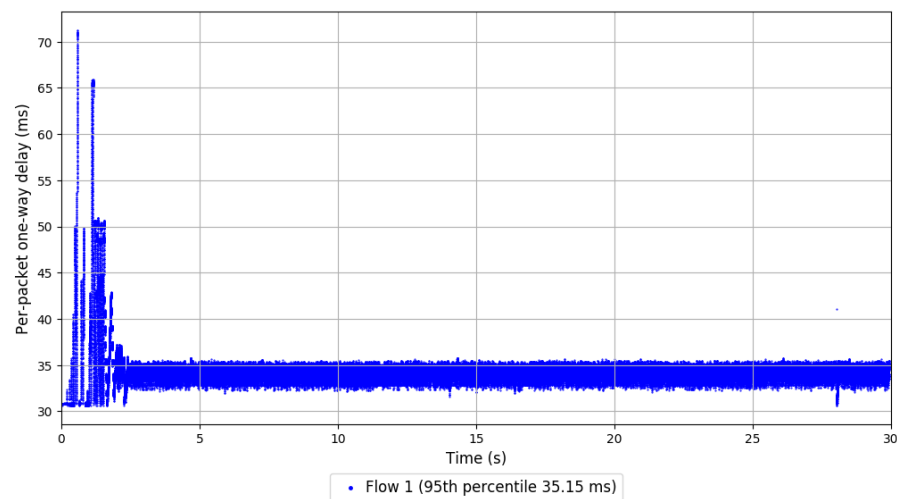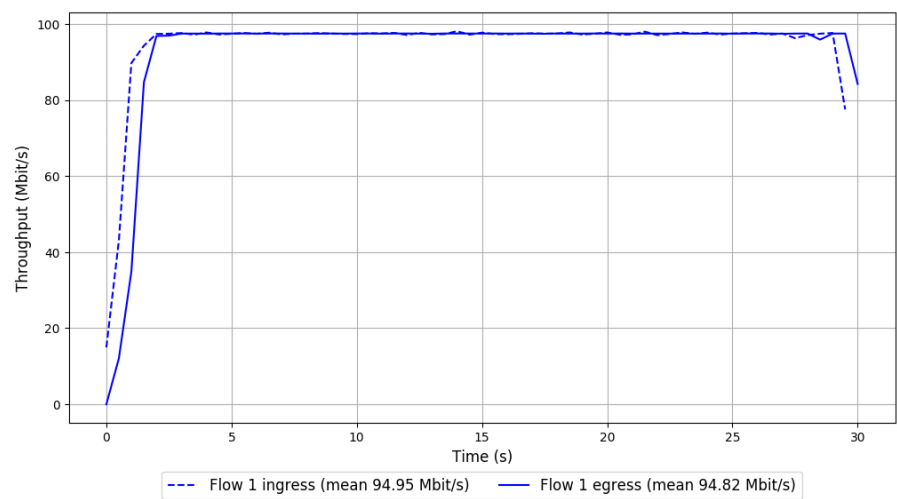
Run 1: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 95.00 Mbit/s)   Flow 1 egress (mean 94.40 Mbit/s)

• Flow 1 (95th percentile 35.30 ms)

```
Run 2: Statistics of Indigo-Muses

Start at: 2018-12-02 00:53:55
End at: 2018-12-02 00:54:25
Local clock offset: -3.609 ms
Remote clock offset: -1.487 ms


# Below is generated by plot.py at 2018-12-02 02:16:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.93 Mbit/s
95th percentile per-packet one-way delay: 35.314 ms
Loss rate: 0.55%
-- Flow 1:
Average throughput: 94.93 Mbit/s
95th percentile per-packet one-way delay: 35.314 ms
Loss rate: 0.55%
```
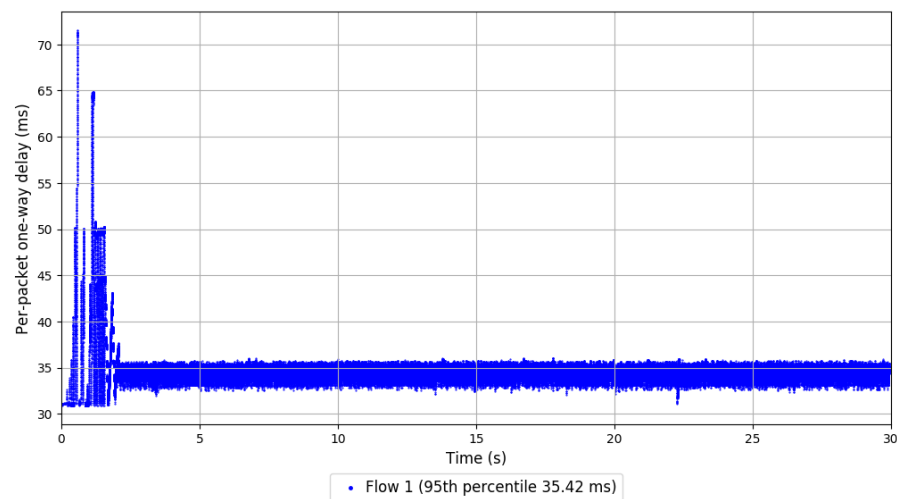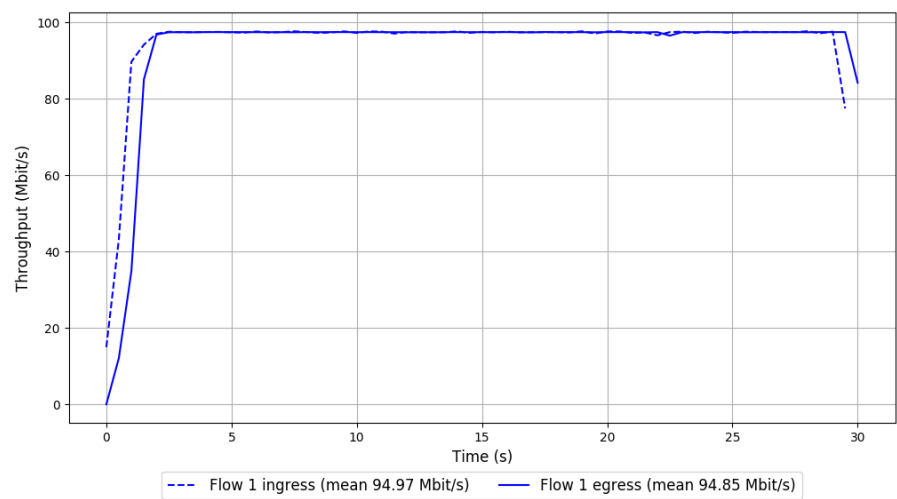
Run 2: Report of Indigo-Muses — Data Link

```
Run 3: Statistics of Indigo-Muses

Start at: 2018-12-02 01:16:09
End at: 2018-12-02 01:16:39
Local clock offset: -4.348 ms
Remote clock offset: -1.946 ms


# Below is generated by plot.py at 2018-12-02 02:16:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.82 Mbit/s
95th percentile per-packet one-way delay: 35.151 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 94.82 Mbit/s
95th percentile per-packet one-way delay: 35.151 ms
Loss rate: 0.13%
```
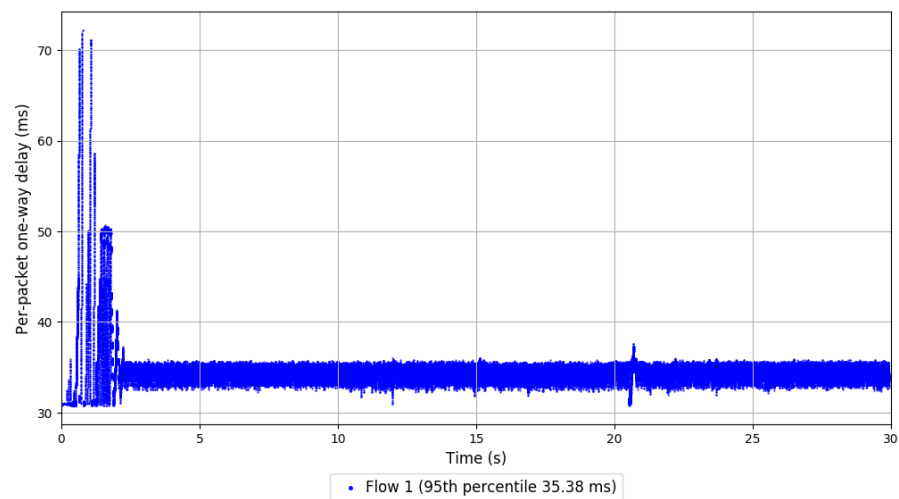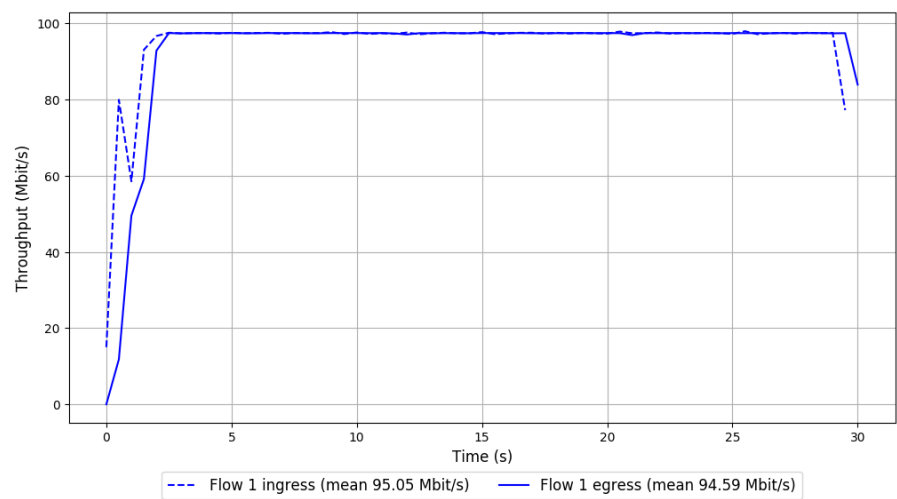
Run 3: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 94.95 Mbit/s)   Flow 1 egress (mean 94.82 Mbit/s)

Flow 1 (95th percentile 35.15 ms)

```
Run 4: Statistics of Indigo-Muses

Start at: 2018-12-02 01:38:03
End at: 2018-12-02 01:38:33
Local clock offset: 0.77 ms
Remote clock offset: -2.465 ms


# Below is generated by plot.py at 2018-12-02 02:16:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.85 Mbit/s
95th percentile per-packet one-way delay: 35.418 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 94.85 Mbit/s
95th percentile per-packet one-way delay: 35.418 ms
Loss rate: 0.11%
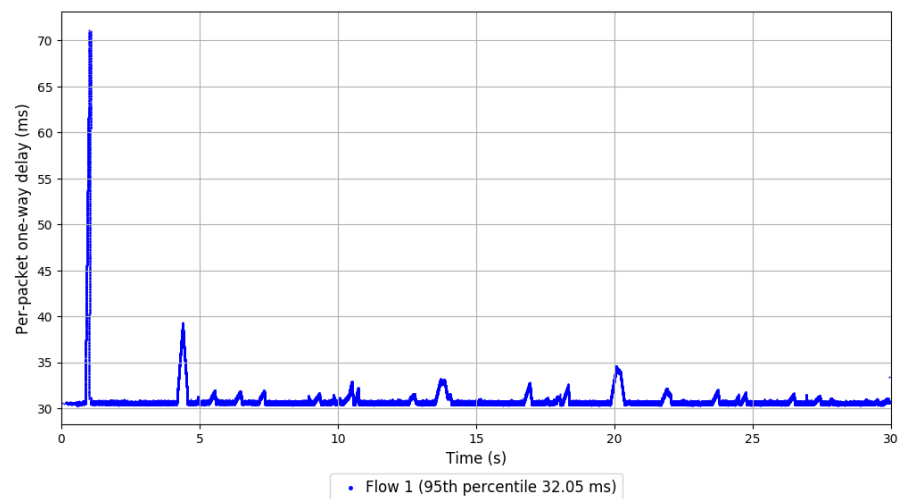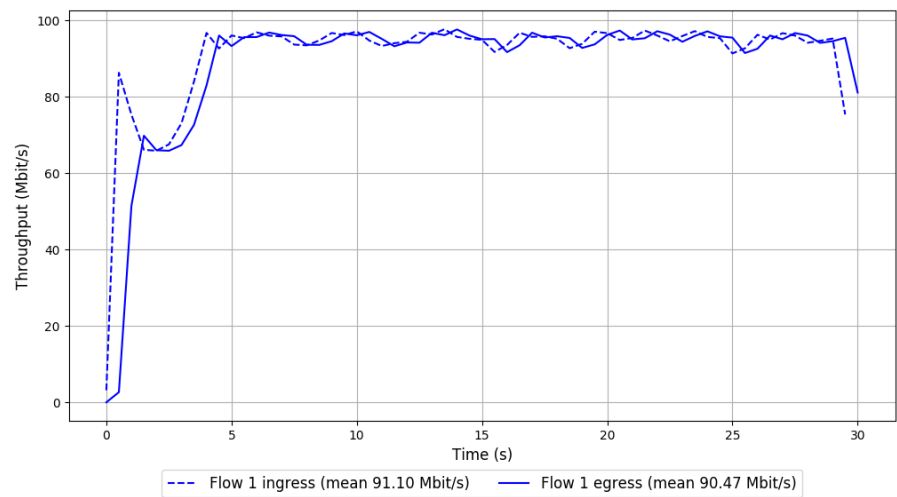```

# Run 4: Report of Indigo-Muses — Data Link



Flow 1 ingress (mean 94.97 Mbit/s) --- Flow 1 egress (mean 94.85 Mbit/s)



• Flow 1 (95th percentile 35.42 ms)

```
Run 5: Statistics of Indigo-Muses

Start at: 2018-12-02 01:59:49
End at: 2018-12-02 02:00:20
Local clock offset: 0.698 ms
Remote clock offset: -2.878 ms


# Below is generated by plot.py at 2018-12-02 02:16:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.59 Mbit/s
95th percentile per-packet one-way delay: 35.381 ms
Loss rate: 0.47%
-- Flow 1:
Average throughput: 94.59 Mbit/s
95th percentile per-packet one-way delay: 35.381 ms
Loss rate: 0.47%
```

Run 5: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 95.05 Mbit/s)   Flow 1 egress (mean 94.59 Mbit/s)
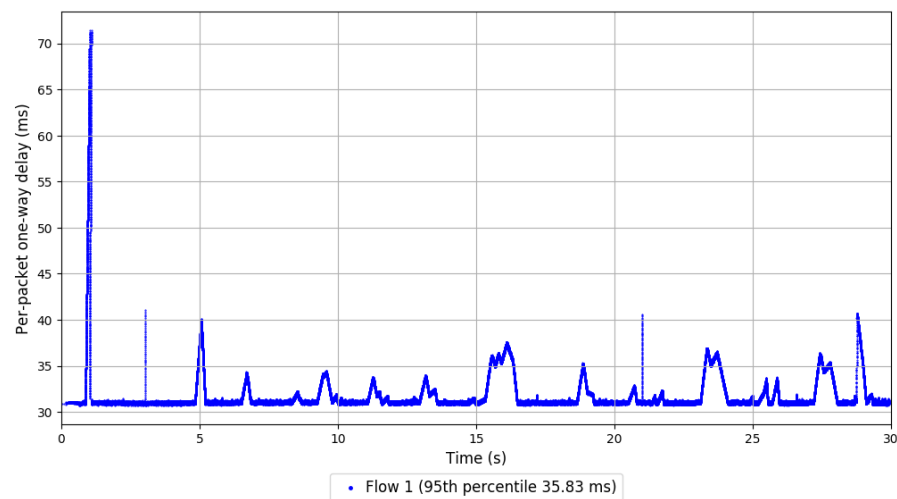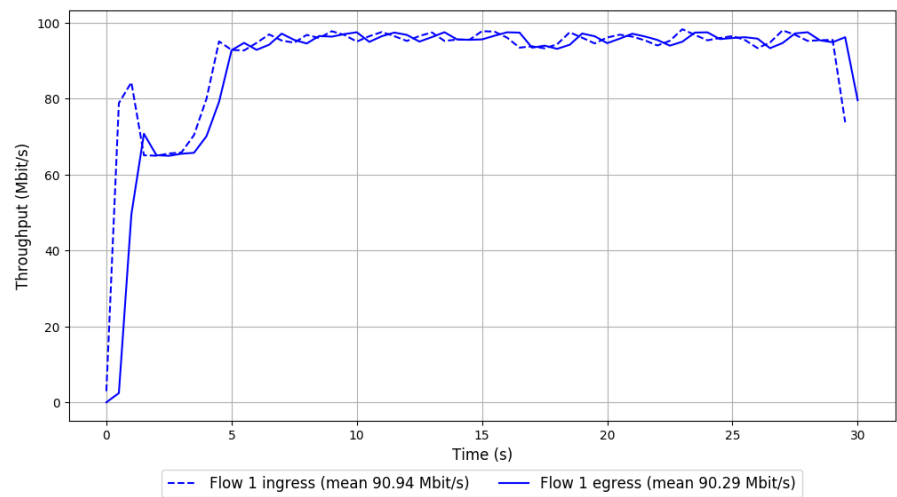

• Flow 1 (95th percentile 35.38 ms)

```
Run 1: Statistics of PCC-Allegro

Start at: 2018-12-02 00:27:36
End at: 2018-12-02 00:28:06
Local clock offset: -1.675 ms
Remote clock offset: -1.448 ms


# Below is generated by plot.py at 2018-12-02 02:16:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 90.47 Mbit/s
95th percentile per-packet one-way delay: 32.047 ms
Loss rate: 0.68%
-- Flow 1:
Average throughput: 90.47 Mbit/s
95th percentile per-packet one-way delay: 32.047 ms
Loss rate: 0.68%
```

Run 1: Report of PCC-Allegro — Data Link

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-12-02 00:49:19
End at: 2018-12-02 00:49:49
Local clock offset: -3.416 ms
Remote clock offset: -1.397 ms


# Below is generated by plot.py at 2018-12-02 02:16:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 90.29 Mbit/s
95th percentile per-packet one-way delay: 35.825 ms
Loss rate: 0.72%
-- Flow 1:
Average throughput: 90.29 Mbit/s
95th percentile per-packet one-way delay: 35.825 ms
Loss rate: 0.72%
```
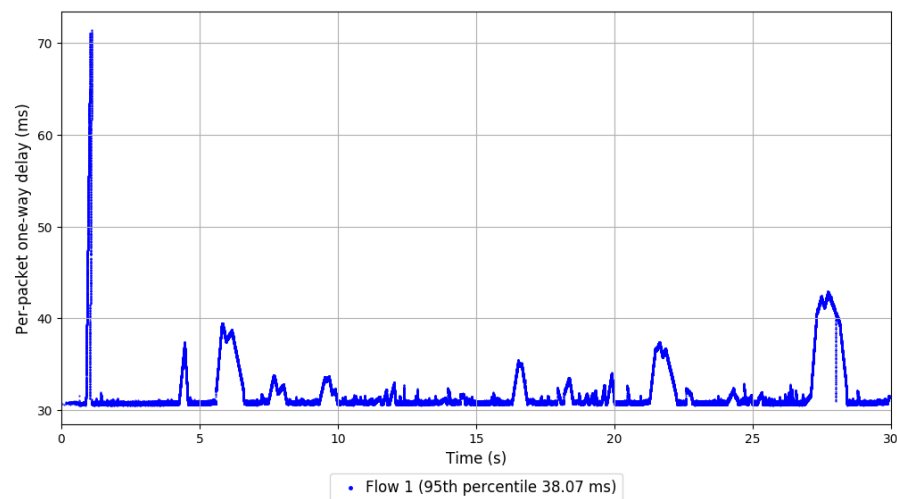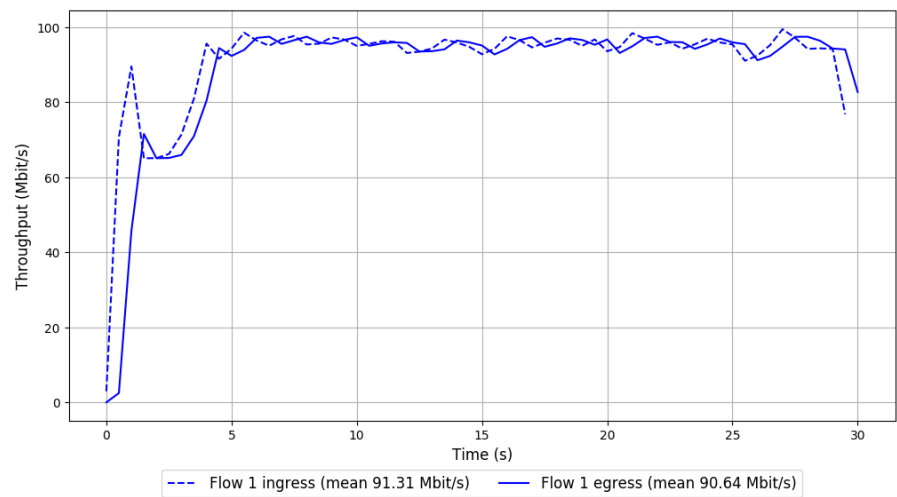
Run 2: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 90.94 Mbit/s)   Flow 1 egress (mean 90.29 Mbit/s)

Flow 1 (95th percentile 35.83 ms)

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-12-02 01:11:22
End at: 2018-12-02 01:11:52
Local clock offset: -4.189 ms
Remote clock offset: -1.874 ms


# Below is generated by plot.py at 2018-12-02 02:16:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 90.64 Mbit/s
95th percentile per-packet one-way delay: 38.074 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 90.64 Mbit/s
95th percentile per-packet one-way delay: 38.074 ms
Loss rate: 0.73%
```
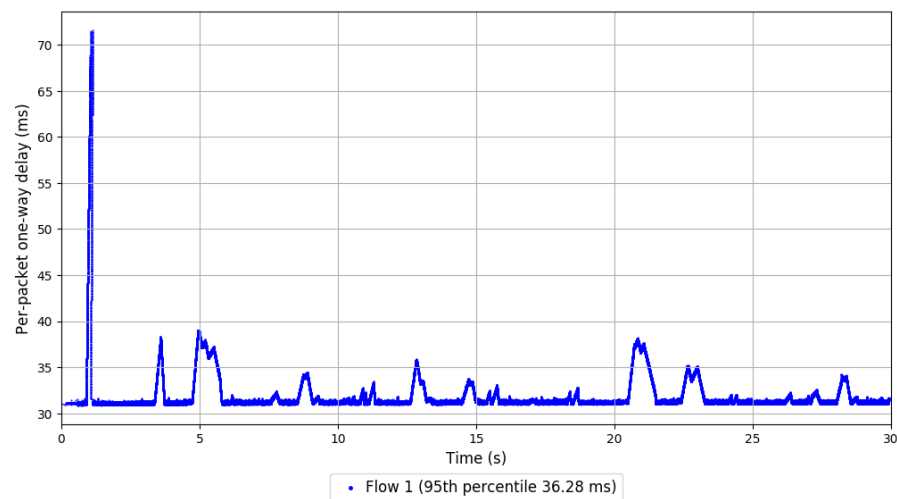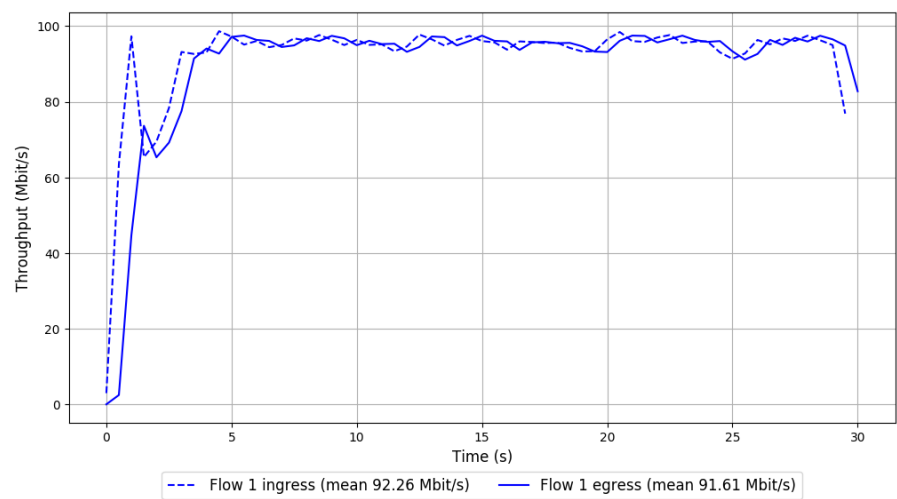
Run 3: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 91.31 Mbit/s) — — — Flow 1 egress (mean 90.64 Mbit/s)

• Flow 1 (95th percentile 38.07 ms)

```
Run 4: Statistics of PCC-Allegro

Start at: 2018-12-02 01:33:27
End at: 2018-12-02 01:33:57
Local clock offset: 0.214 ms
Remote clock offset: -2.343 ms


# Below is generated by plot.py at 2018-12-02 02:17:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.61 Mbit/s
95th percentile per-packet one-way delay: 36.281 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 91.61 Mbit/s
95th percentile per-packet one-way delay: 36.281 ms
Loss rate: 0.70%
```
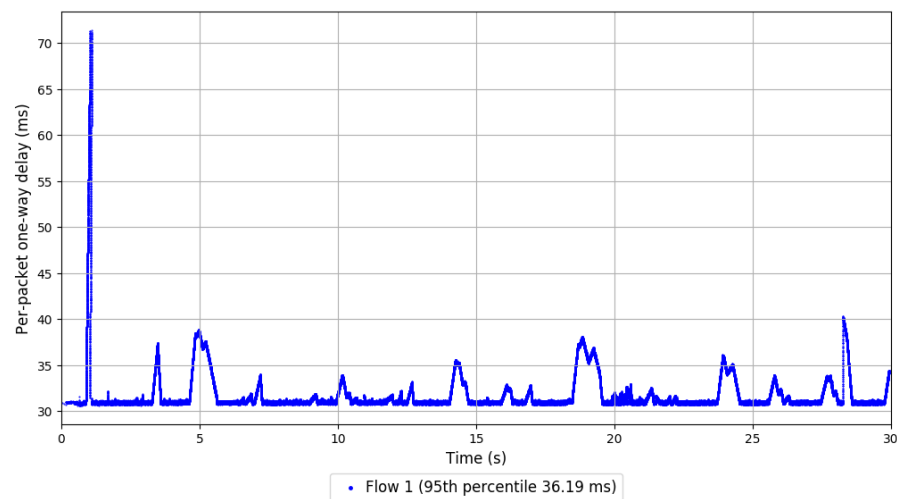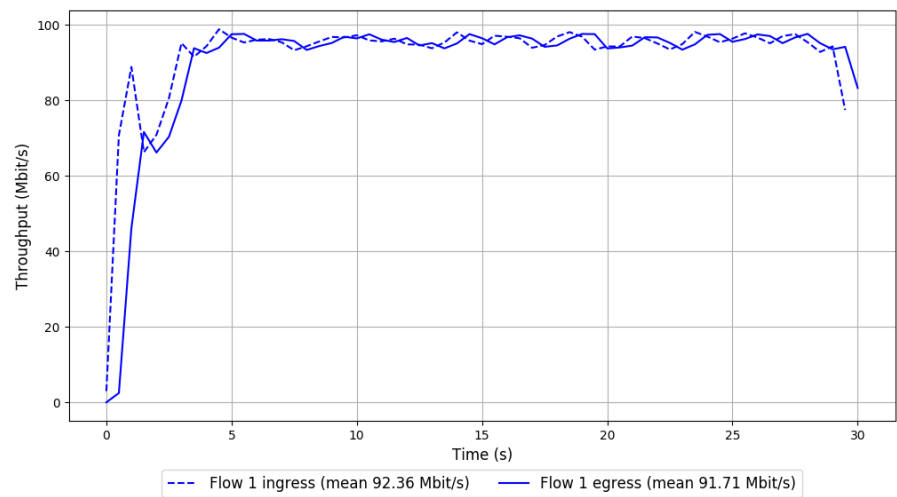
Run 4: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 92.26 Mbit/s)   Flow 1 egress (mean 91.61 Mbit/s)

Flow 1 (95th percentile 36.28 ms)

```
Run 5: Statistics of PCC-Allegro

Start at: 2018-12-02 01:55:12
End at: 2018-12-02 01:55:42
Local clock offset: 0.852 ms
Remote clock offset: -2.816 ms


# Below is generated by plot.py at 2018-12-02 02:17:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.71 Mbit/s
95th percentile per-packet one-way delay: 36.189 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 91.71 Mbit/s
95th percentile per-packet one-way delay: 36.189 ms
Loss rate: 0.69%
```

Run 5: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 92.36 Mbit/s)   Flow 1 egress (mean 91.71 Mbit/s)

Flow 1 (95th percentile 36.19 ms)

```
Run 1: Statistics of PCC-Expr

Start at: 2018-12-02 00:37:54
End at: 2018-12-02 00:38:24
Local clock offset: -2.814 ms
Remote clock offset: -1.509 ms
```
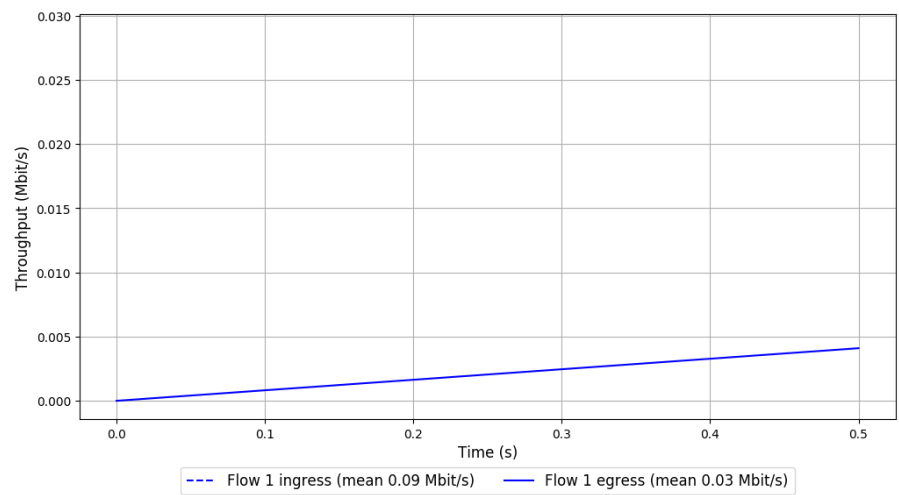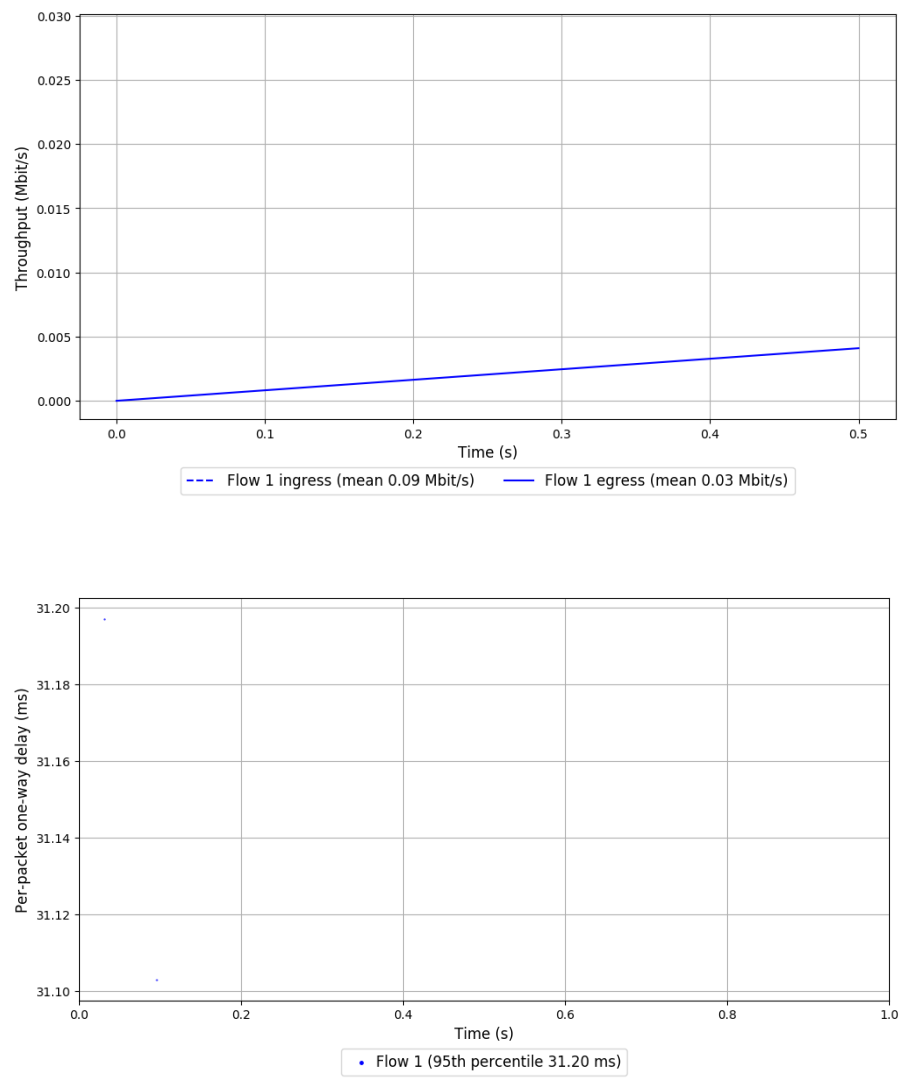
Run 1: Report of PCC-Expr — Data Link

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

Flow 1 (95th percentile 30.76 ms)

```
Run 2: Statistics of PCC-Expr

Start at: 2018-12-02 00:59:42
End at: 2018-12-02 01:00:12
Local clock offset: -3.81 ms
Remote clock offset: -1.434 ms
```

Run 2: 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 31.02 ms)

```
Run 3: Statistics of PCC-Expr

Start at: 2018-12-02 01:22:00
End at: 2018-12-02 01:22:30
Local clock offset: -2.514 ms
Remote clock offset: -1.913 ms
```

Run 3: Report of PCC-Expr — Data Link
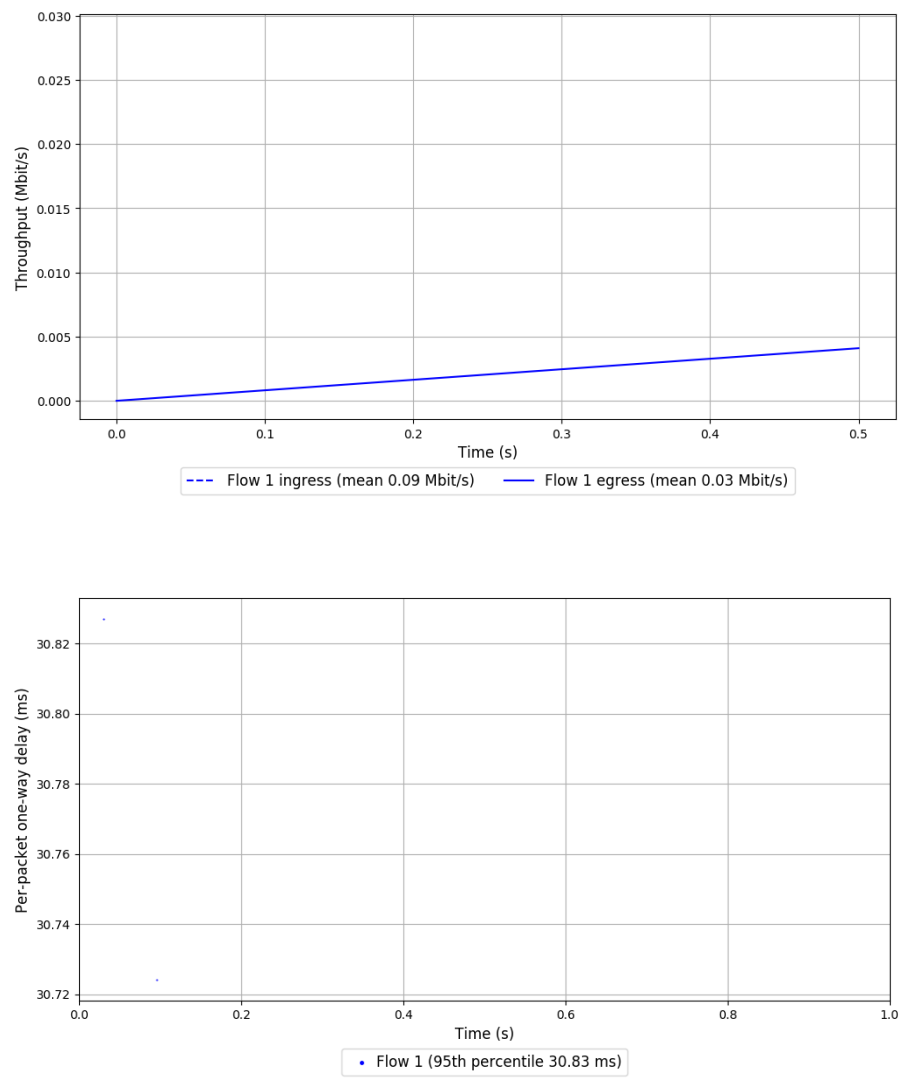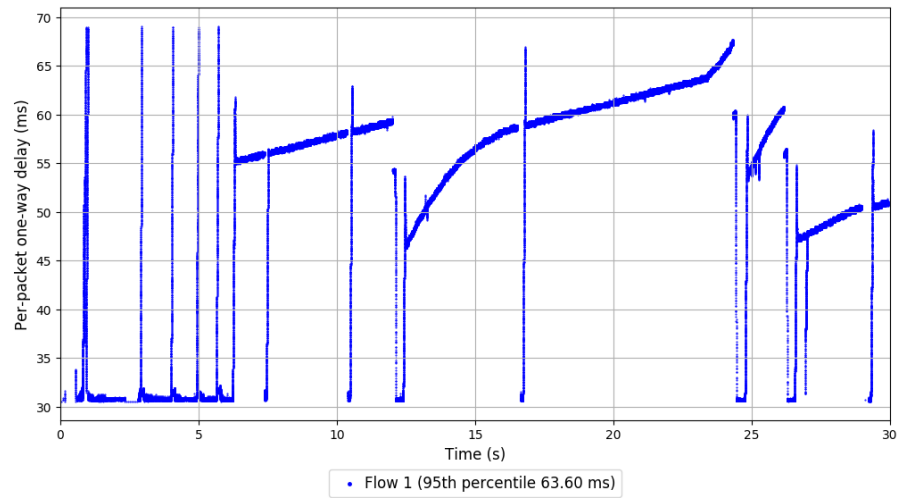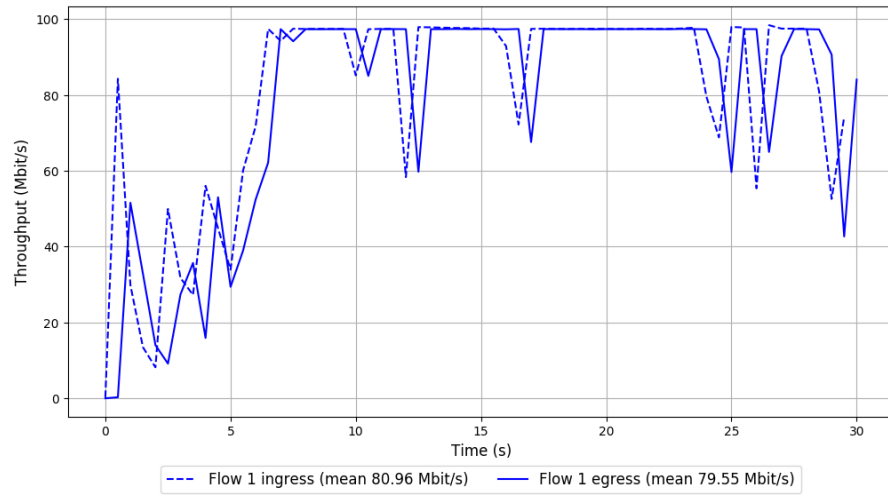
Run 4: Statistics of PCC-Expr

Start at: 2018-12-02 01:43:44
End at: 2018-12-02 01:44:15
Local clock offset: 1.288 ms
Remote clock offset: -2.642 ms

Run 4: Report of PCC-Expr — Data Link

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

• Flow 1 (95th percentile 30.99 ms)

```
Run 5: Statistics of PCC-Expr

Start at: 2018-12-02 02:05:37
End at: 2018-12-02 02:06:07
Local clock offset: 0.67 ms
Remote clock offset: -3.003 ms
```

Run 5: Report of PCC-Expr — Data Link

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-12-02 00:25:21
End at: 2018-12-02 00:25:51
Local clock offset: -1.28 ms
Remote clock offset: -1.184 ms


# Below is generated by plot.py at 2018-12-02 02:17:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 79.55 Mbit/s
95th percentile per-packet one-way delay: 63.603 ms
Loss rate: 1.68%
-- Flow 1:
Average throughput: 79.55 Mbit/s
95th percentile per-packet one-way delay: 63.603 ms
Loss rate: 1.68%
```
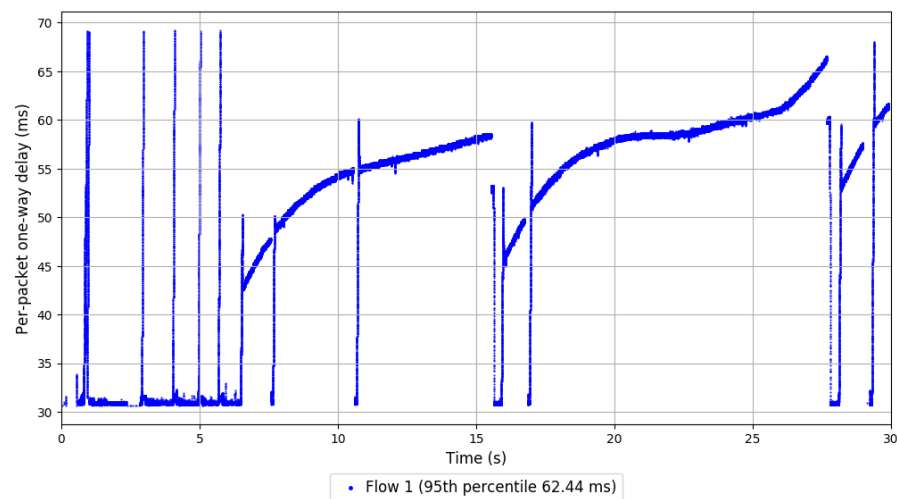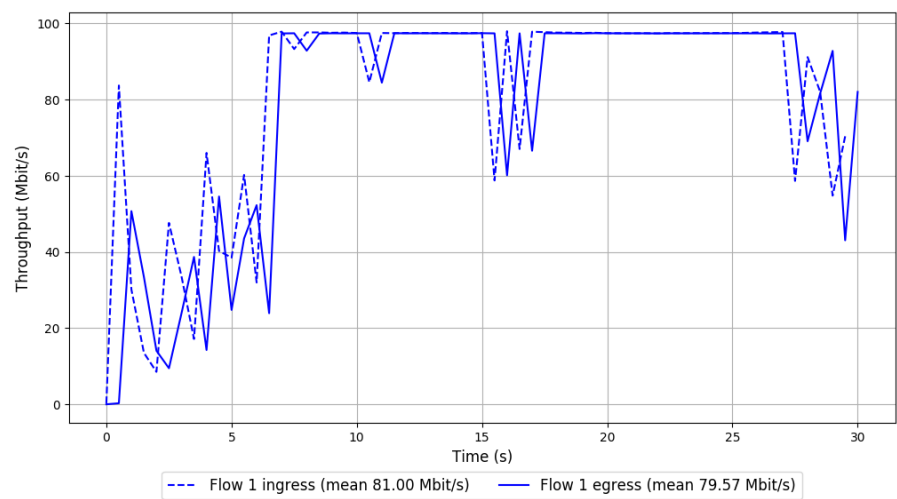
Run 1: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 80.96 Mbit/s) ----   Flow 1 egress (mean 79.55 Mbit/s) ——

• Flow 1 (95th percentile 63.60 ms)

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-12-02 00:47:04
End at: 2018-12-02 00:47:34
Local clock offset: -3.326 ms
Remote clock offset: -1.462 ms


# Below is generated by plot.py at 2018-12-02 02:17:21
# Datalink statistics
-- Total of 1 flow:
Average throughput: 79.57 Mbit/s
95th percentile per-packet one-way delay: 62.437 ms
Loss rate: 1.67%
-- Flow 1:
Average throughput: 79.57 Mbit/s
95th percentile per-packet one-way delay: 62.437 ms
Loss rate: 1.67%
```

Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-12-02 01:09:05
End at: 2018-12-02 01:09:35
Local clock offset: -4.12 ms
Remote clock offset: -1.666 ms


# Below is generated by plot.py at 2018-12-02 02:17:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 79.34 Mbit/s
95th percentile per-packet one-way delay: 61.004 ms
Loss rate: 1.70%
-- Flow 1:
Average throughput: 79.34 Mbit/s
95th percentile per-packet one-way delay: 61.004 ms
Loss rate: 1.70%
```
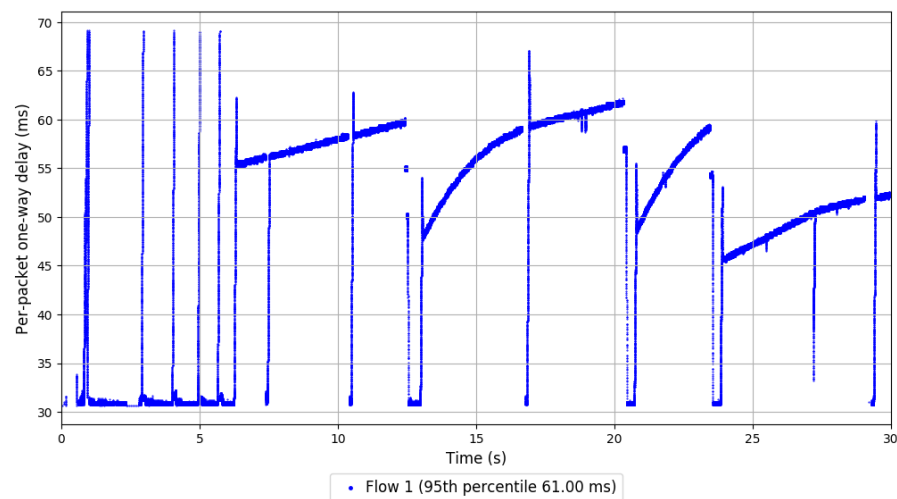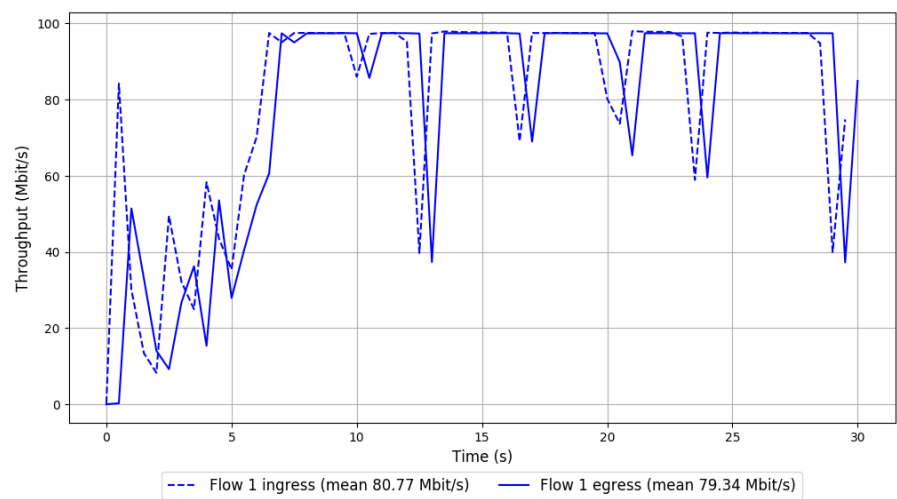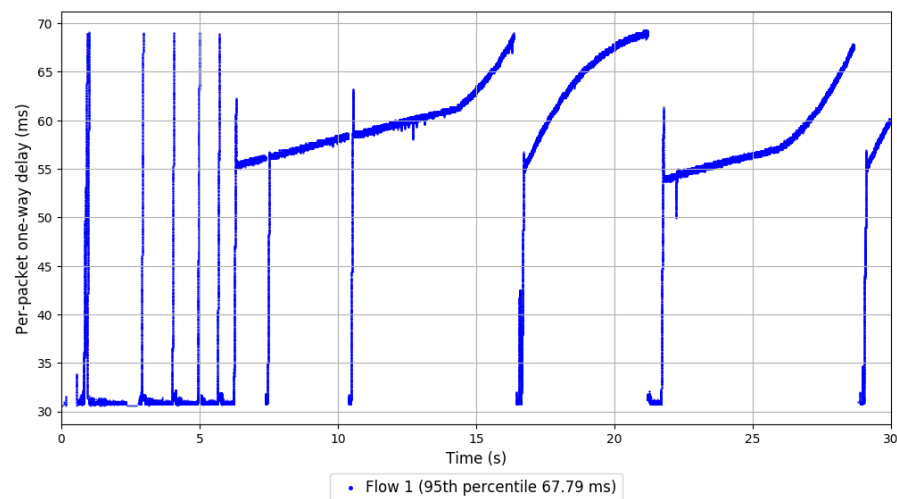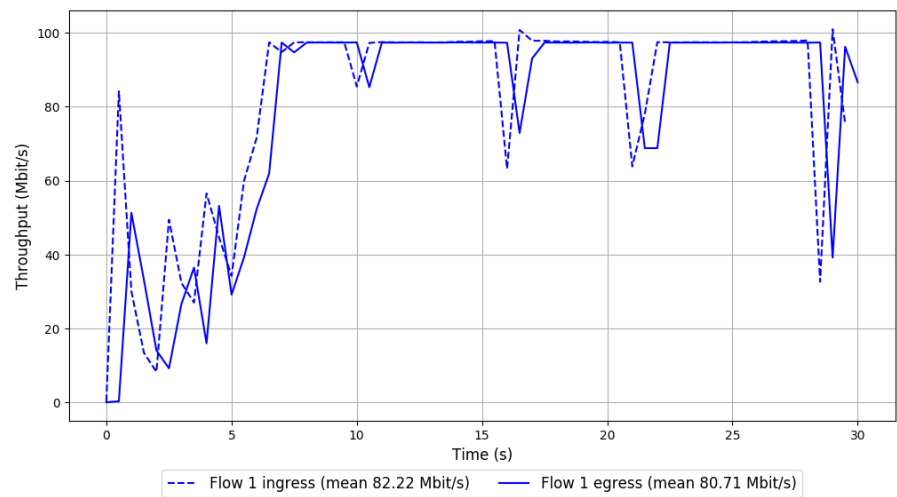
Run 3: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 80.77 Mbit/s) --- Flow 1 egress (mean 79.34 Mbit/s)

• Flow 1 (95th percentile 61.00 ms)

```
Run 4: Statistics of QUIC Cubic

Start at: 2018-12-02 01:31:12
End at: 2018-12-02 01:31:42
Local clock offset: -0.123 ms
Remote clock offset: -2.469 ms


# Below is generated by plot.py at 2018-12-02 02:17:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 80.71 Mbit/s
95th percentile per-packet one-way delay: 67.788 ms
Loss rate: 1.74%
-- Flow 1:
Average throughput: 80.71 Mbit/s
95th percentile per-packet one-way delay: 67.788 ms
Loss rate: 1.74%
```
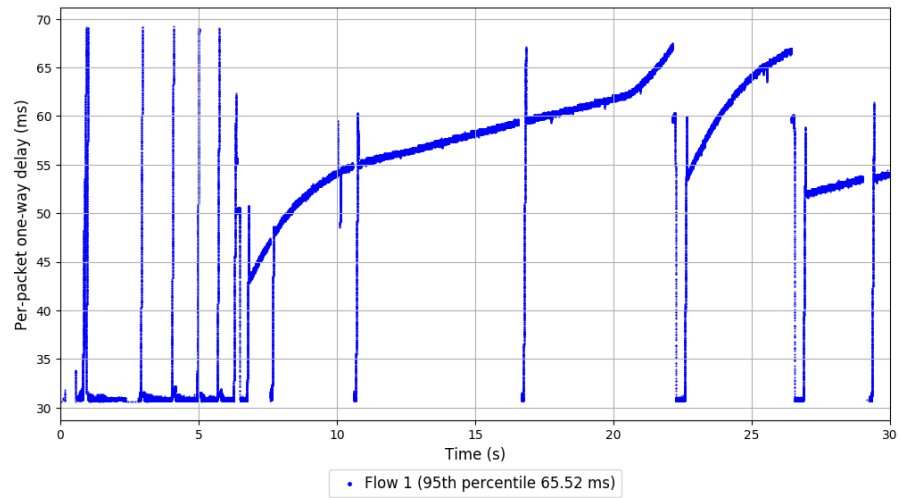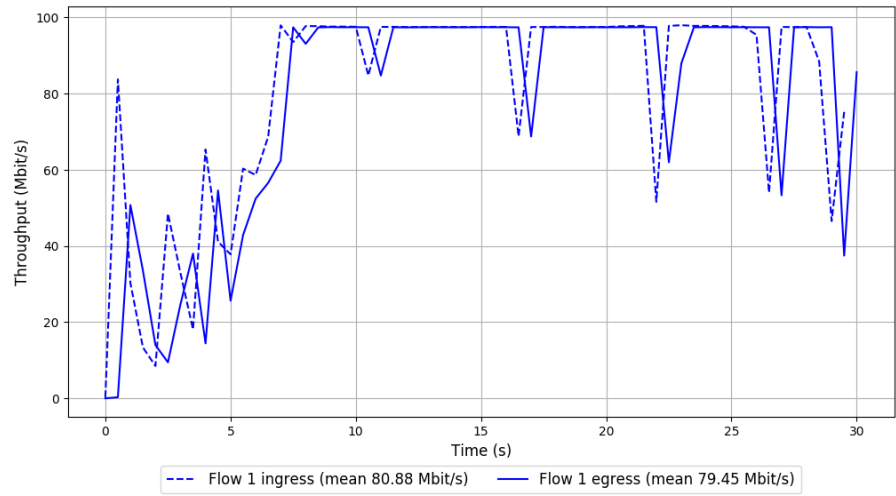
Run 4: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 82.22 Mbit/s) ----   Flow 1 egress (mean 80.71 Mbit/s) ——

• Flow 1 (95th percentile 67.79 ms)

```
Run 5: Statistics of QUIC Cubic

Start at: 2018-12-02 01:52:56
End at: 2018-12-02 01:53:26
Local clock offset: 1.027 ms
Remote clock offset: -2.809 ms


# Below is generated by plot.py at 2018-12-02 02:17:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 79.45 Mbit/s
95th percentile per-packet one-way delay: 65.518 ms
Loss rate: 1.70%
-- Flow 1:
Average throughput: 79.45 Mbit/s
95th percentile per-packet one-way delay: 65.518 ms
Loss rate: 1.70%
```

Run 5: Report of QUIC Cubic — Data Link

```
Run 1: Statistics of SCReAM

Start at: 2018-12-02 00:34:32
End at: 2018-12-02 00:35:02
Local clock offset: -2.575 ms
Remote clock offset: -1.49 ms


# Below is generated by plot.py at 2018-12-02 02:17:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.771 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.771 ms
Loss rate: 0.00%
```
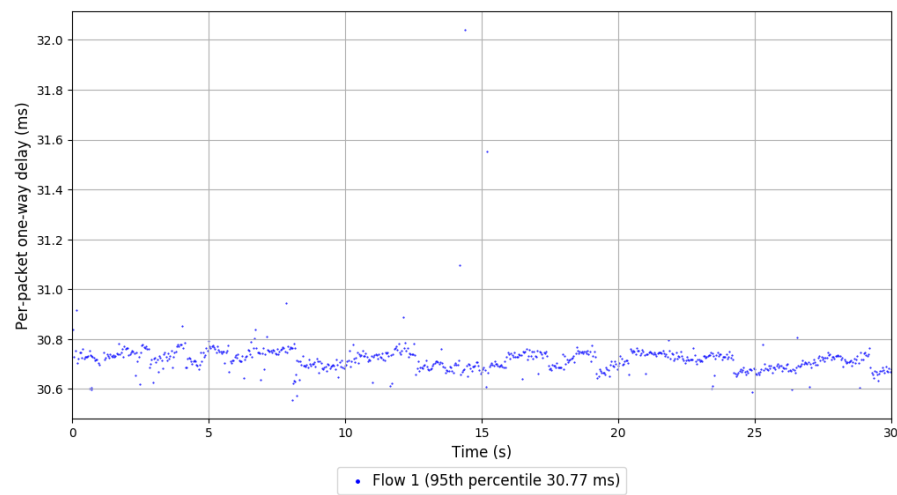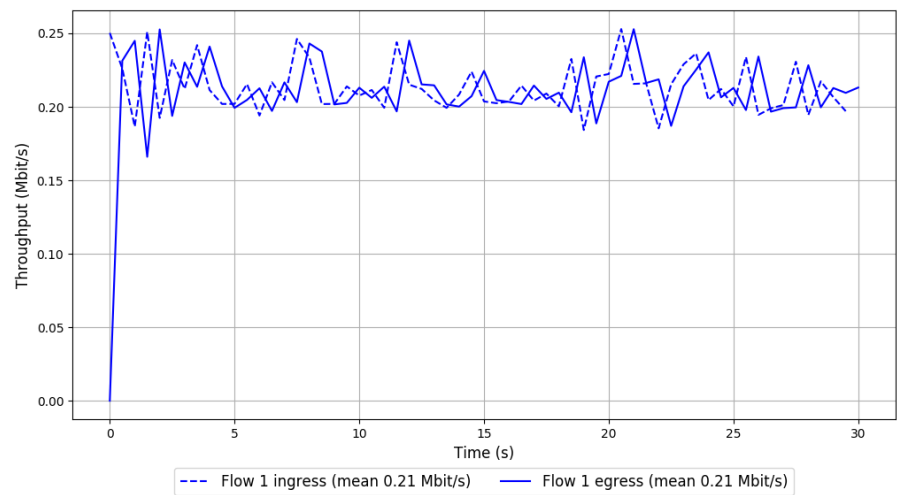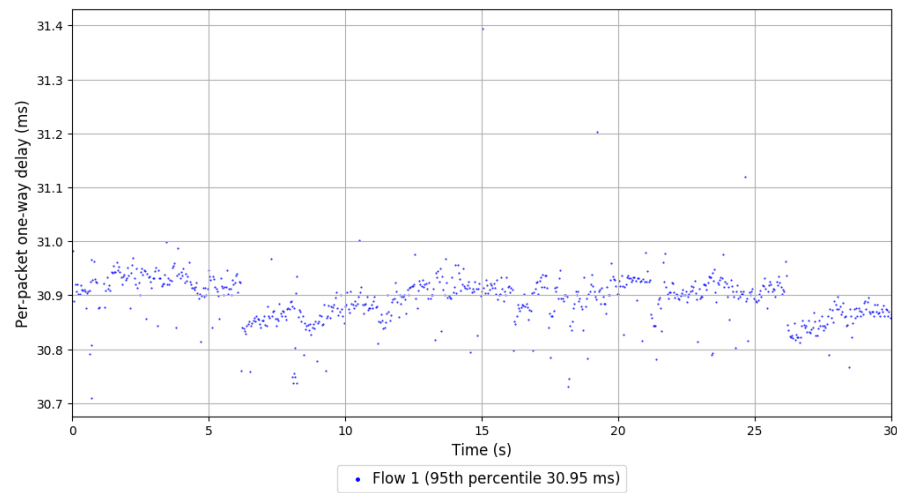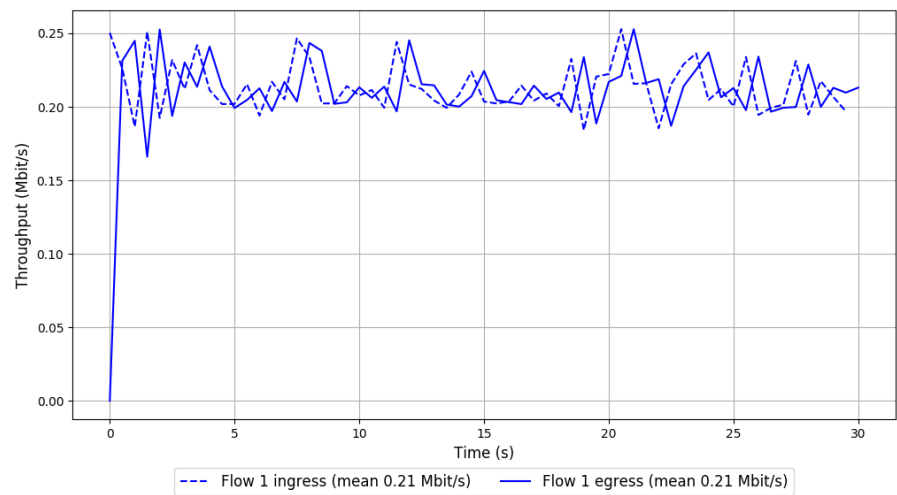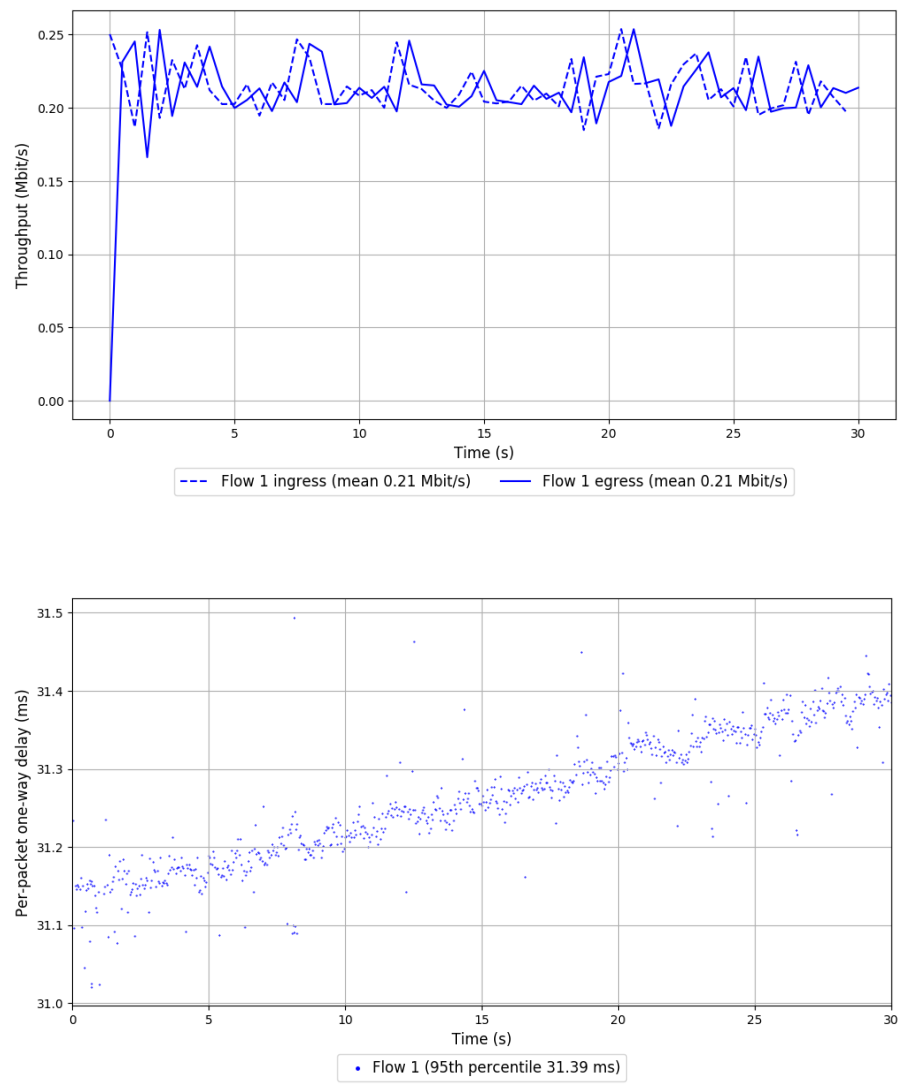
Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2018-12-02 00:56:18
End at: 2018-12-02 00:56:48
Local clock offset: -3.697 ms
Remote clock offset: -1.479 ms


# Below is generated by plot.py at 2018-12-02 02:17:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.947 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.947 ms
Loss rate: 0.00%
```
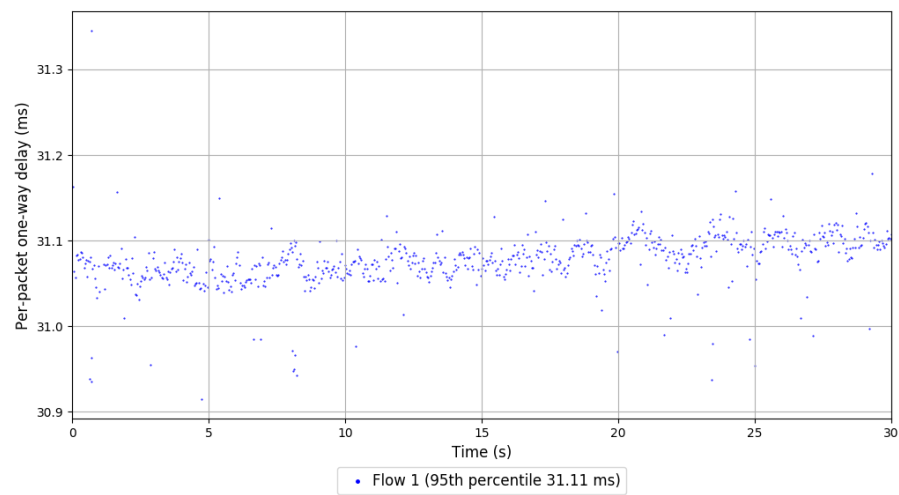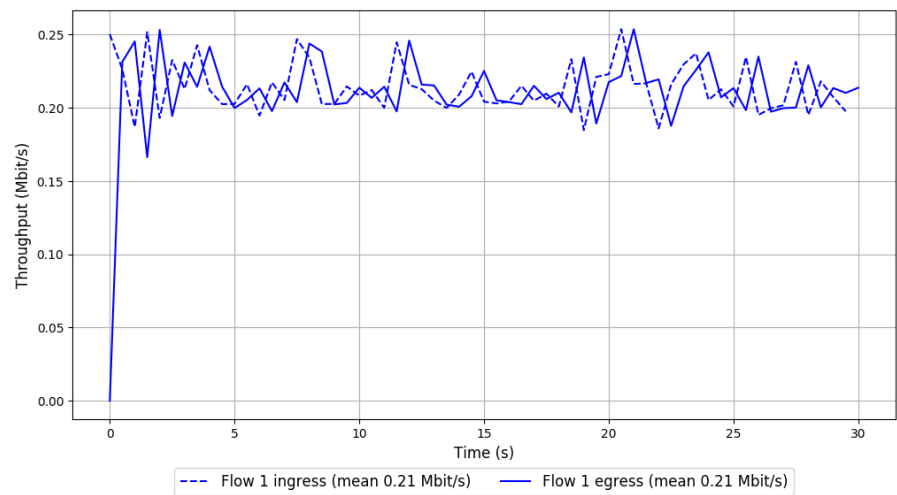
Run 2: Report of SCReAM — Data Link

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

Flow 1 (95th percentile 30.95 ms)

```
Run 3: Statistics of SCReAM

Start at: 2018-12-02 01:18:36
End at: 2018-12-02 01:19:06
Local clock offset: -4.072 ms
Remote clock offset: -1.812 ms


# Below is generated by plot.py at 2018-12-02 02:17:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 31.390 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 31.390 ms
Loss rate: 0.00%
```

Run 3: Report of SCReAM — Data Link

```
Run 4: Statistics of SCReAM

Start at: 2018-12-02 01:40:22
End at: 2018-12-02 01:40:52
Local clock offset: 0.978 ms
Remote clock offset: -2.511 ms


# Below is generated by plot.py at 2018-12-02 02:17:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 31.114 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 31.114 ms
Loss rate: 0.00%
```
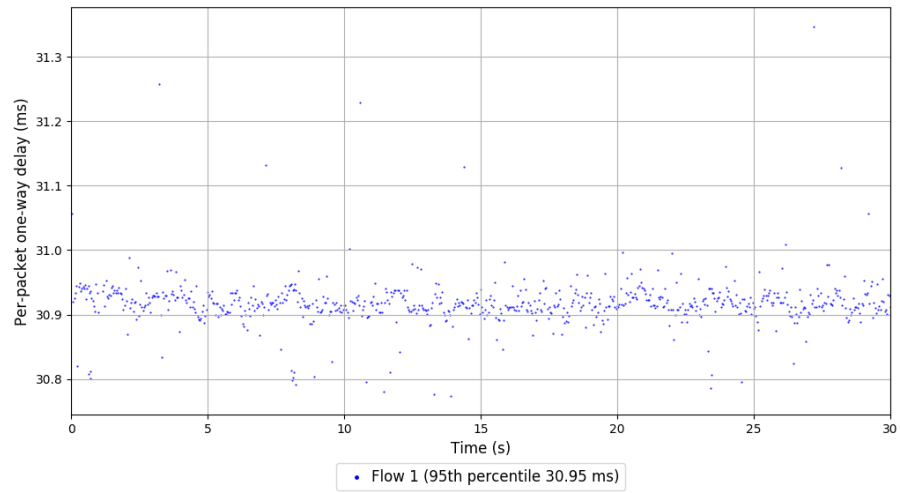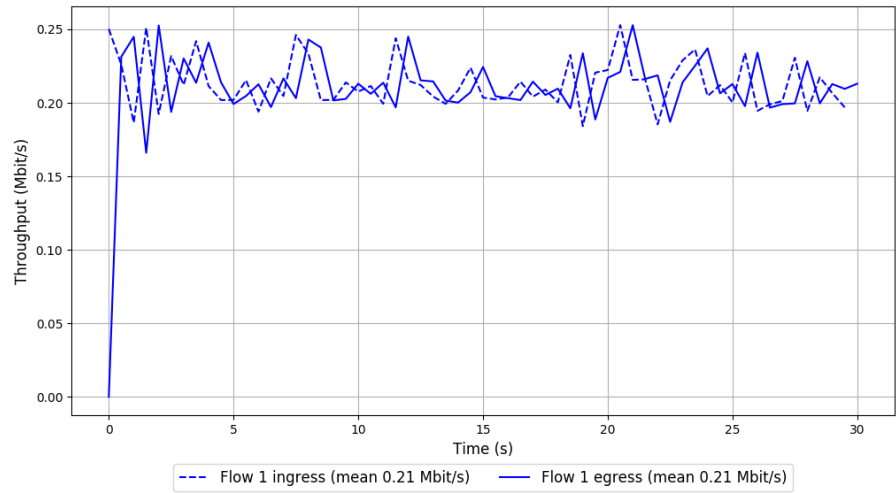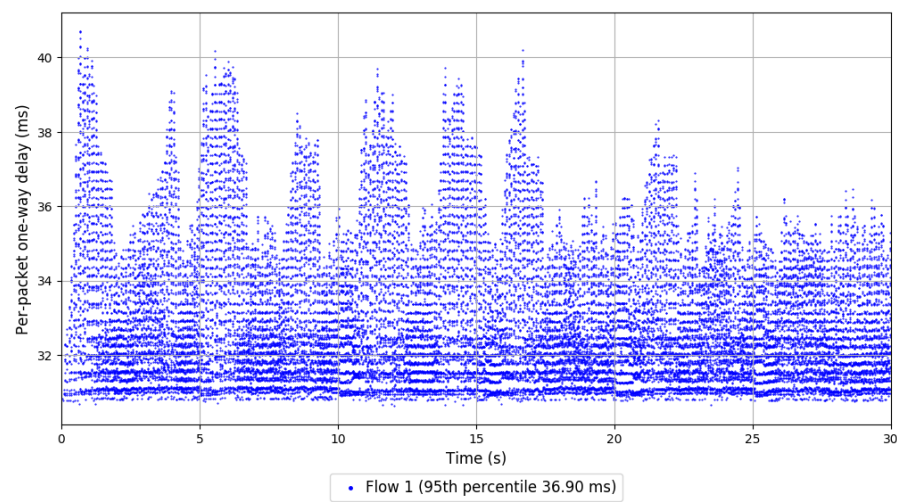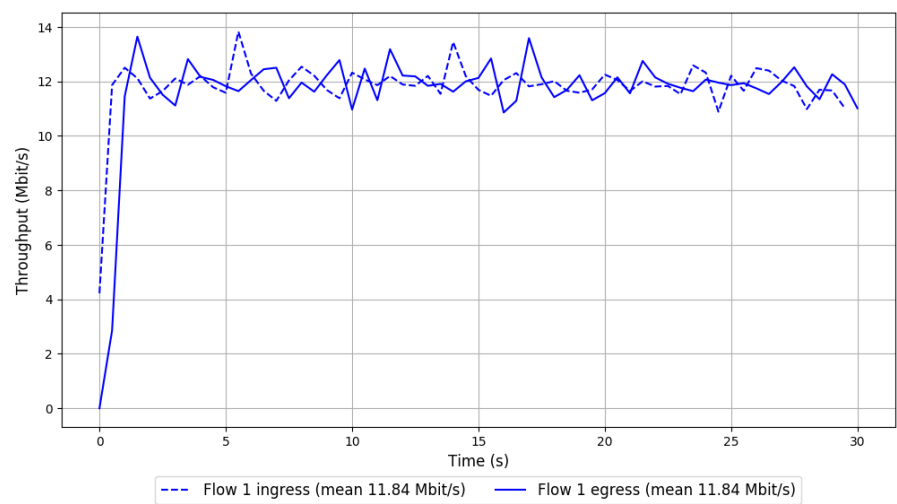
Run 4: Report of SCReAM — Data Link

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

Flow 1 (95th percentile 31.11 ms)

```
Run 5: Statistics of SCReAM

Start at: 2018-12-02 02:02:10
End at: 2018-12-02 02:02:40
Local clock offset: 0.684 ms
Remote clock offset: -3.0 ms


# Below is generated by plot.py at 2018-12-02 02:17:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.955 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.955 ms
Loss rate: 0.00%
```

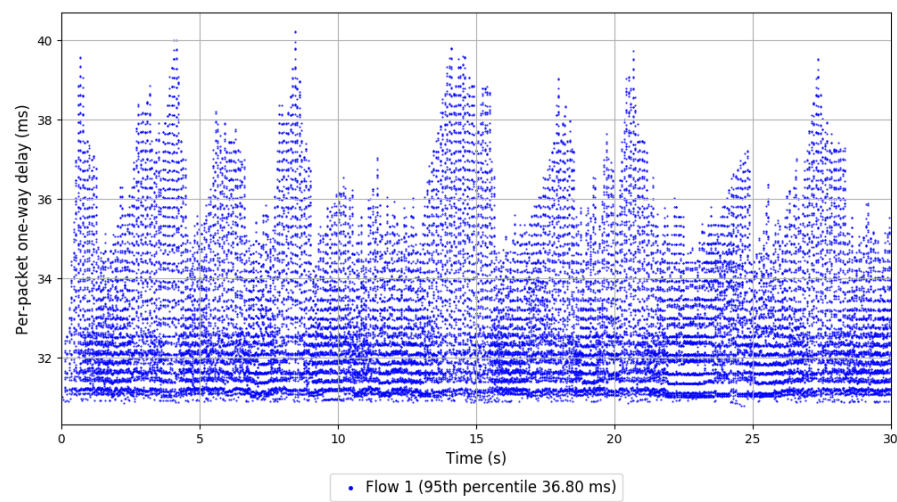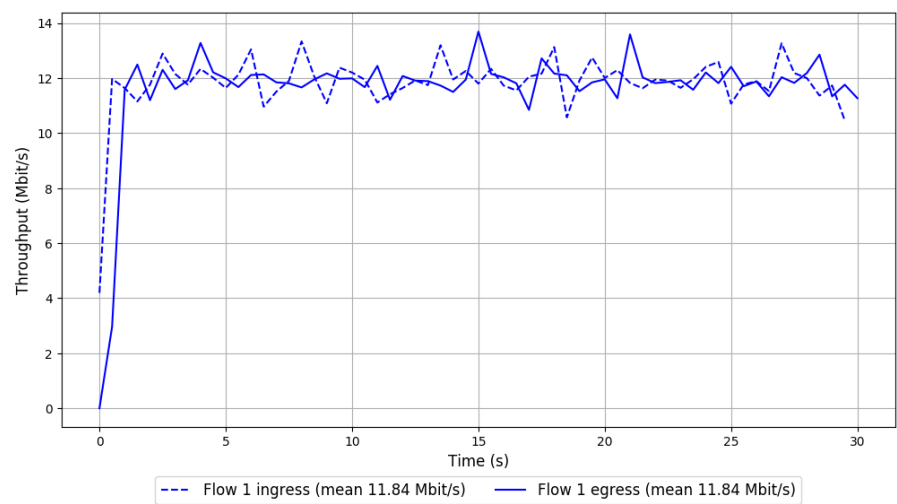Run 5: Report of SCReAM — Data Link

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```
Run 1: Statistics of Sprout

Start at: 2018-12-02 00:35:38
End at: 2018-12-02 00:36:08
Local clock offset: -2.664 ms
Remote clock offset: -1.345 ms


# Below is generated by plot.py at 2018-12-02 02:17:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.84 Mbit/s
95th percentile per-packet one-way delay: 36.900 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 11.84 Mbit/s
95th percentile per-packet one-way delay: 36.900 ms
Loss rate: 0.00%
```

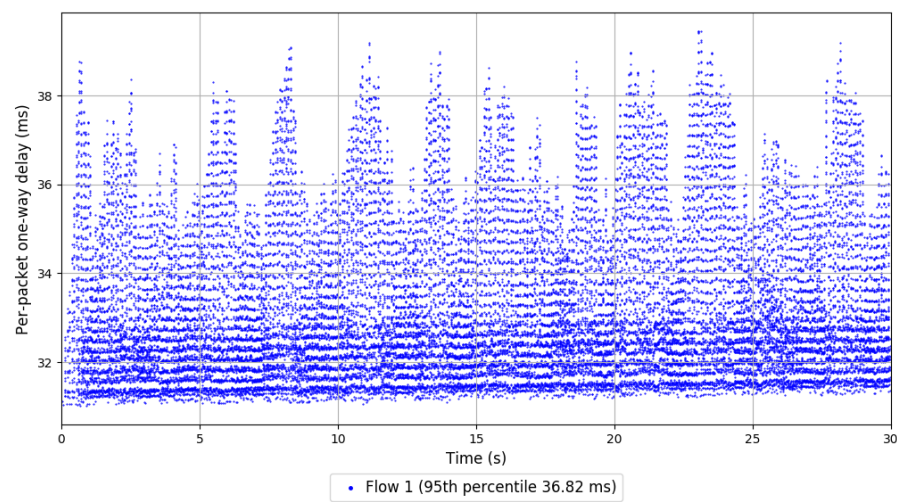Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-12-02 00:57:23
End at: 2018-12-02 00:57:53
Local clock offset: -3.741 ms
Remote clock offset: -1.431 ms


# Below is generated by plot.py at 2018-12-02 02:17:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.84 Mbit/s
95th percentile per-packet one-way delay: 36.797 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 11.84 Mbit/s
95th percentile per-packet one-way delay: 36.797 ms
Loss rate: 0.00%
```

Run 2: Report of Sprout — Data Link

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

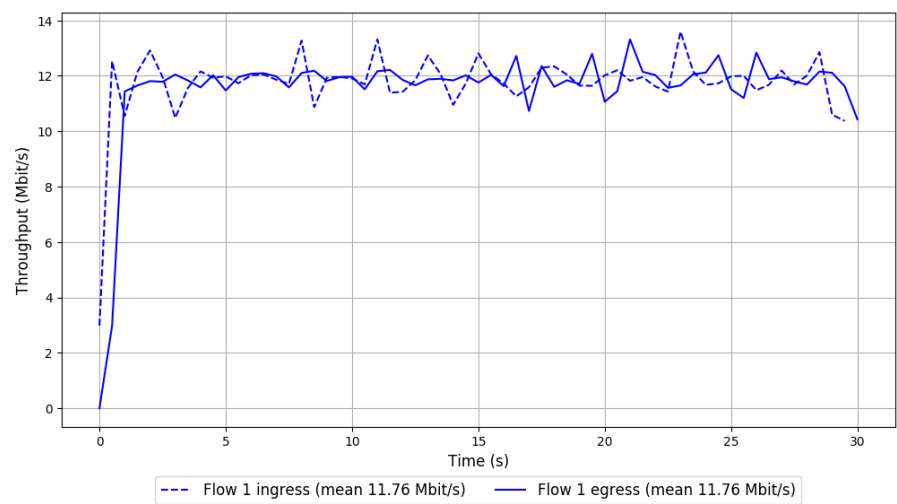Flow 1 (95th percentile 36.80 ms)

```
Run 3: Statistics of Sprout

Start at: 2018-12-02 01:19:41
End at: 2018-12-02 01:20:11
Local clock offset: -3.545 ms
Remote clock offset: -1.891 ms


# Below is generated by plot.py at 2018-12-02 02:17:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.76 Mbit/s
95th percentile per-packet one-way delay: 36.820 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 11.76 Mbit/s
95th percentile per-packet one-way delay: 36.820 ms
Loss rate: 0.04%
```
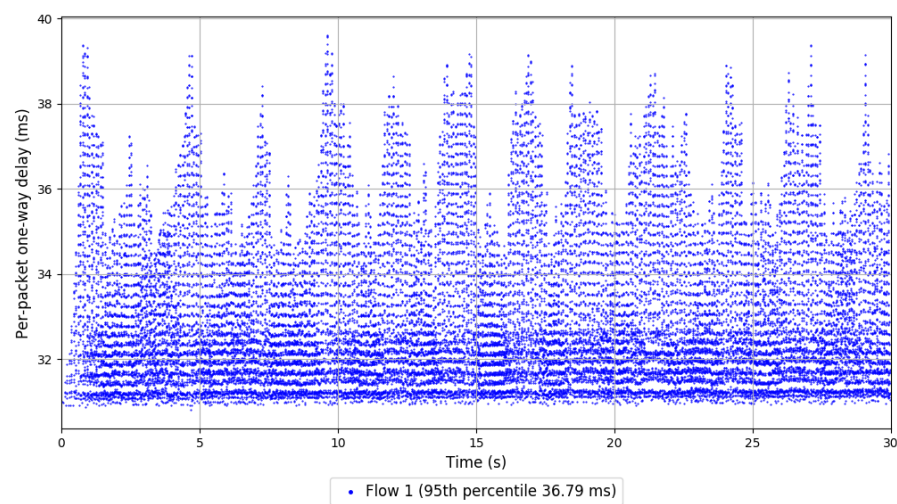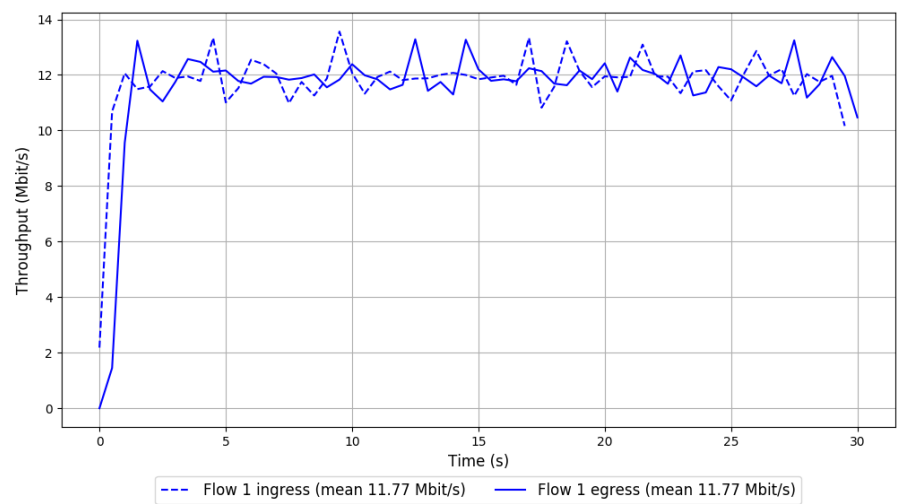
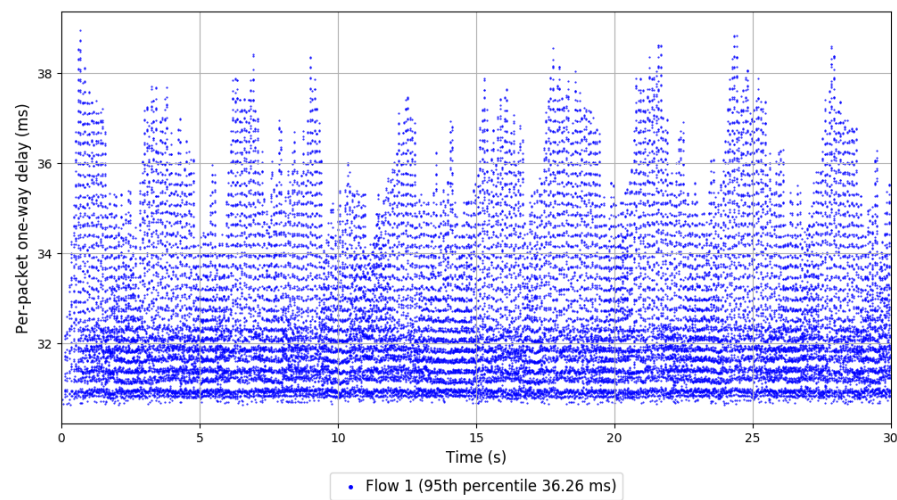## Run 3: Report of Sprout — Data Link

```
Run 4: Statistics of Sprout

Start at: 2018-12-02 01:41:28
End at: 2018-12-02 01:41:58
Local clock offset: 1.098 ms
Remote clock offset: -2.57 ms


# Below is generated by plot.py at 2018-12-02 02:17:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.77 Mbit/s
95th percentile per-packet one-way delay: 36.789 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 11.77 Mbit/s
95th percentile per-packet one-way delay: 36.789 ms
Loss rate: 0.00%
```

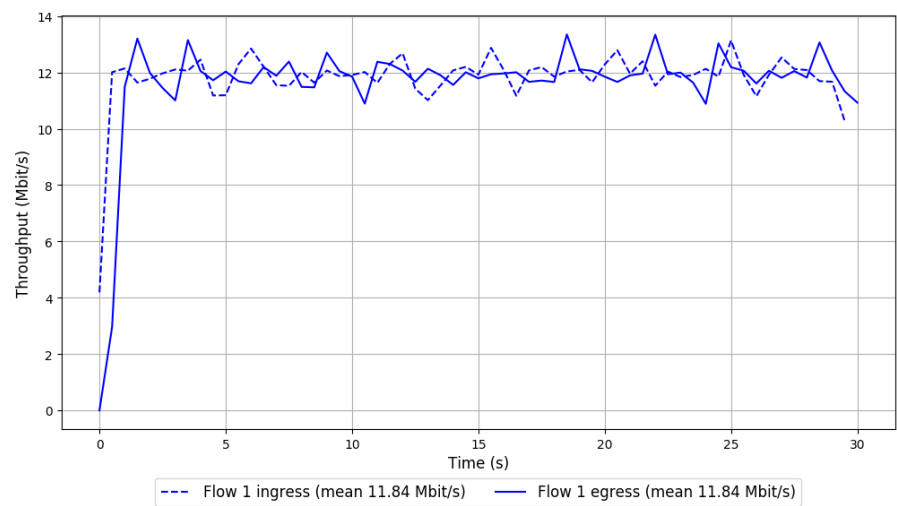Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2018-12-02 02:03:16
End at: 2018-12-02 02:03:46
Local clock offset: 0.67 ms
Remote clock offset: -3.099 ms


# Below is generated by plot.py at 2018-12-02 02:17:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.84 Mbit/s
95th percentile per-packet one-way delay: 36.255 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 11.84 Mbit/s
95th percentile per-packet one-way delay: 36.255 ms
Loss rate: 0.00%
```

Run 5: 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 36.26 ms)

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

Start at: 2018-12-02 00:26:31
End at: 2018-12-02 00:27:01
Local clock offset: -1.496 ms
Remote clock offset: -1.184 ms
```
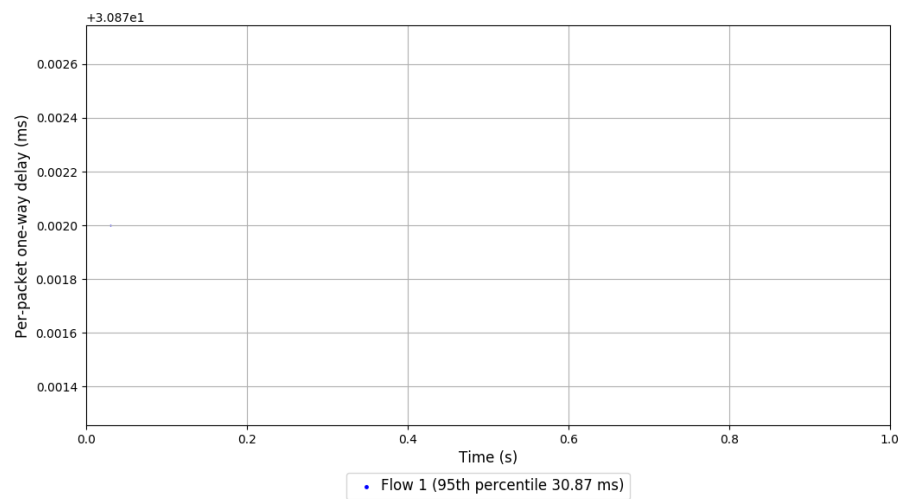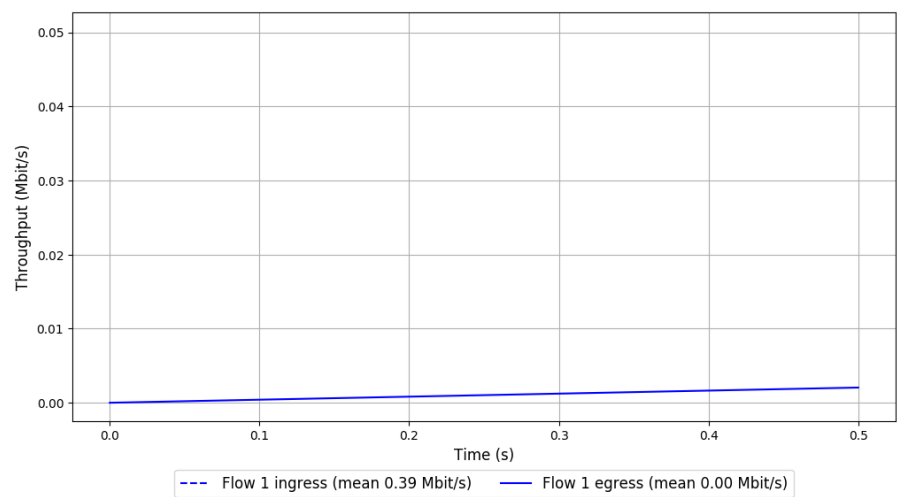
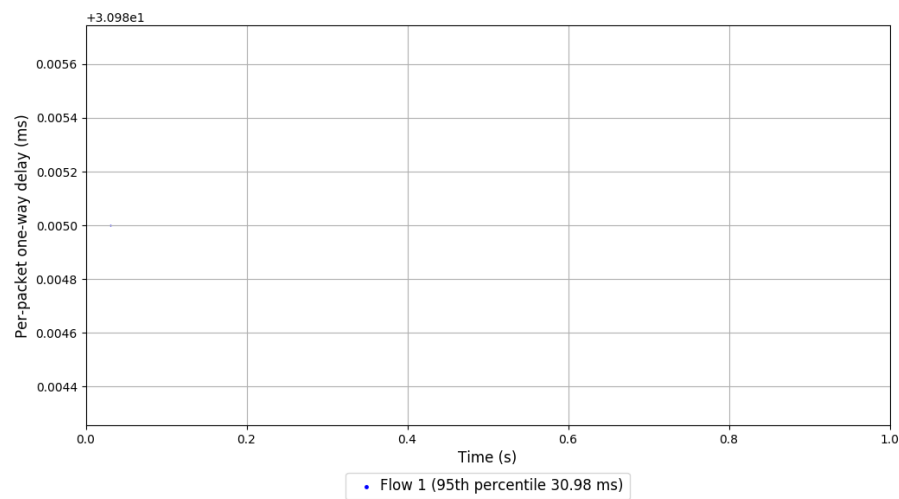# Run 1: Report of TaoVA-100x — Data Link
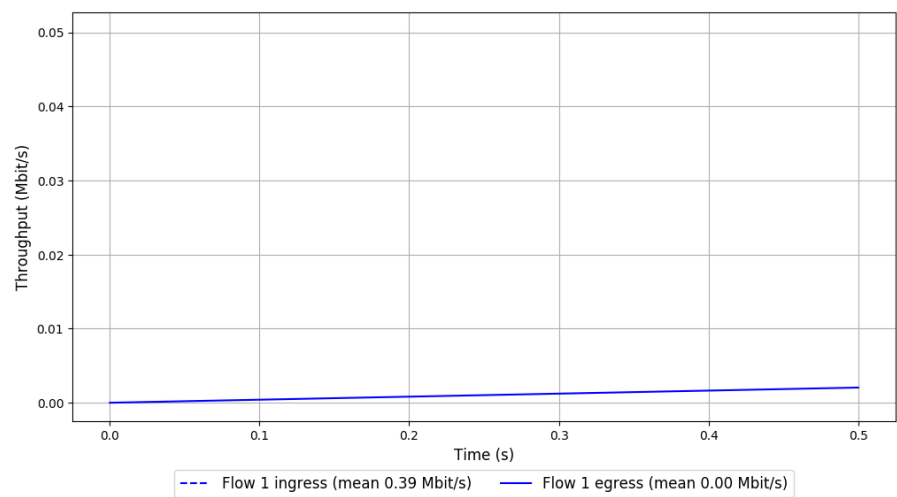
```
Run 2: Statistics of TaoVA-100x

Start at: 2018-12-02 00:48:13
End at: 2018-12-02 00:48:43
Local clock offset: -3.378 ms
Remote clock offset: -1.434 ms
```

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

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

Start at: 2018-12-02 01:10:17
End at: 2018-12-02 01:10:47
Local clock offset: -4.155 ms
Remote clock offset: -1.722 ms
```
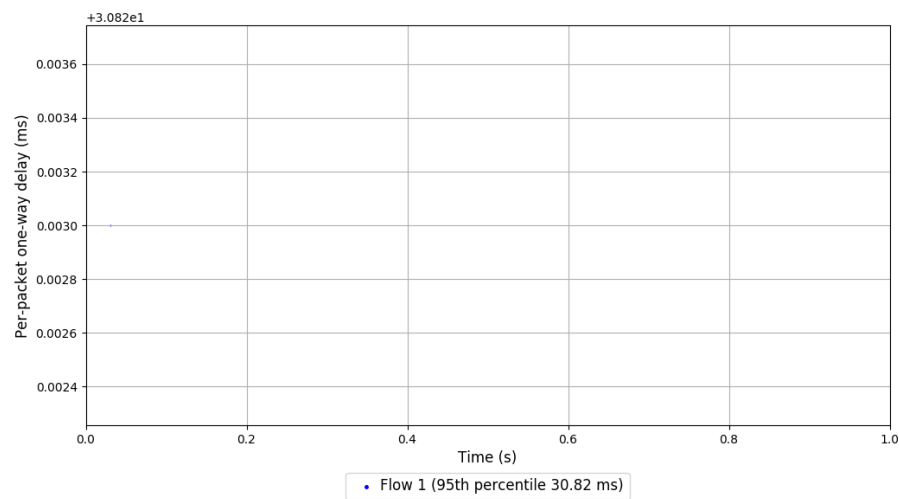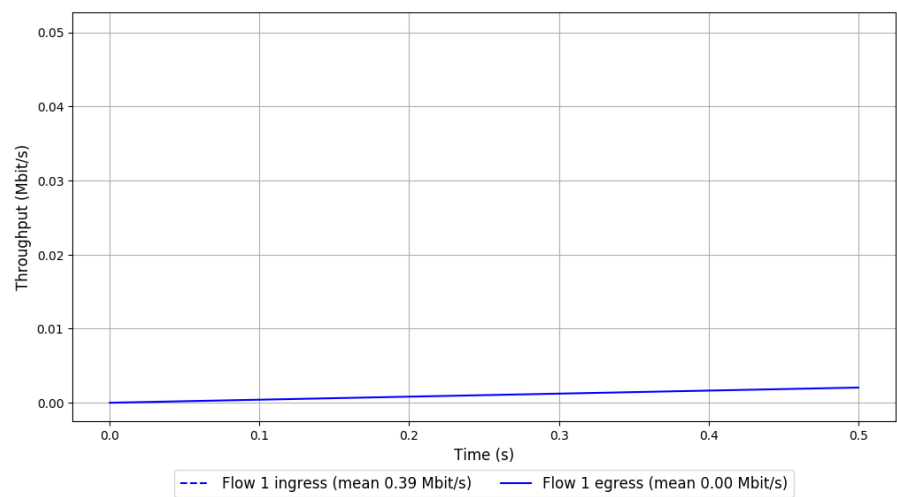
Run 3: Report of TaoVA-100x — Data Link

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

Flow 1 (95th percentile 30.82 ms)

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

Start at: 2018-12-02 01:32:21
End at: 2018-12-02 01:32:51
Local clock offset: 0.061 ms
Remote clock offset: -2.378 ms
```
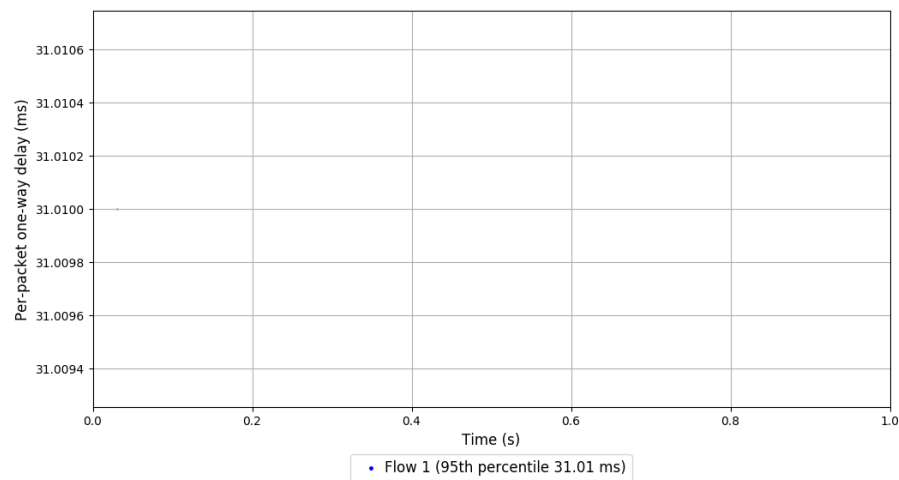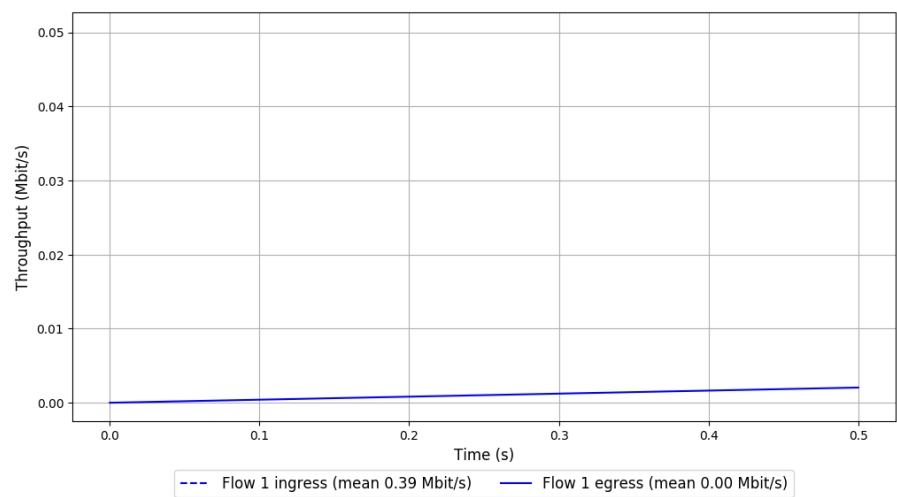
Run 4: Report of TaoVA-100x — Data Link

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

• Flow 1 (95th percentile 31.01 ms)

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

Start at: 2018-12-02 01:54:06
End at: 2018-12-02 01:54:36
Local clock offset: 0.936 ms
Remote clock offset: -2.825 ms
```
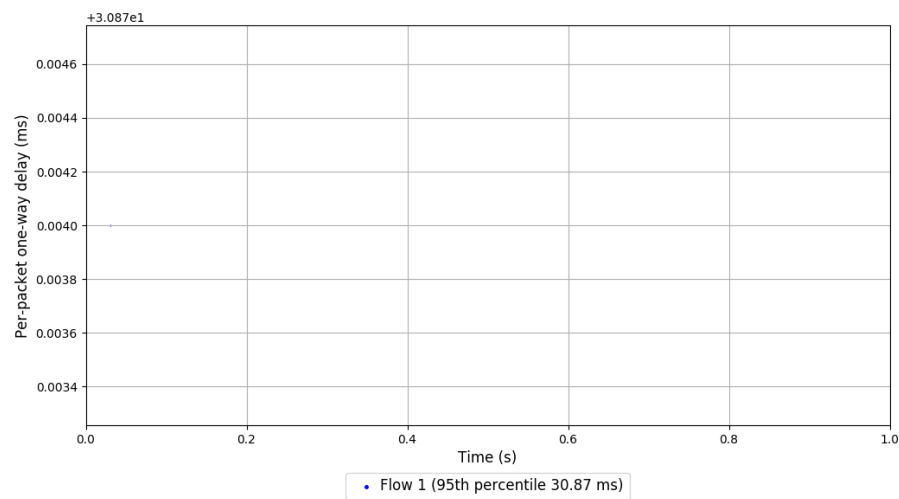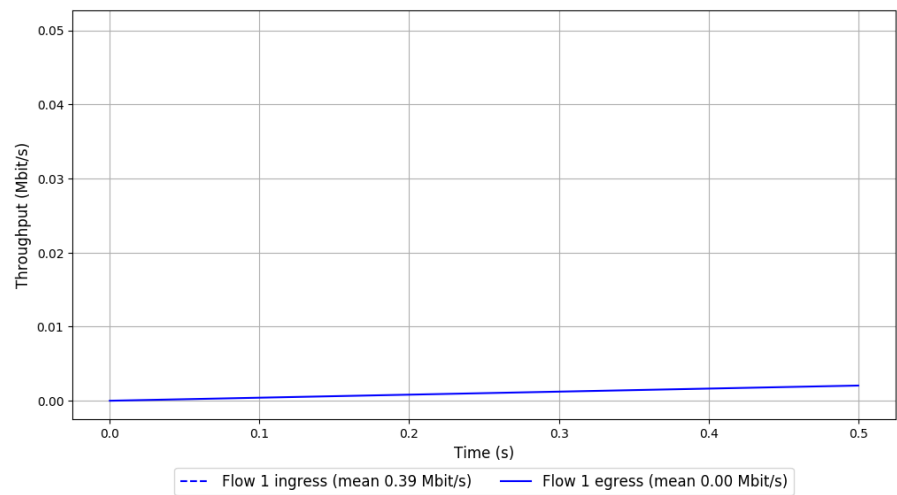
Run 5: Report of TaoVA-100x — Data Link

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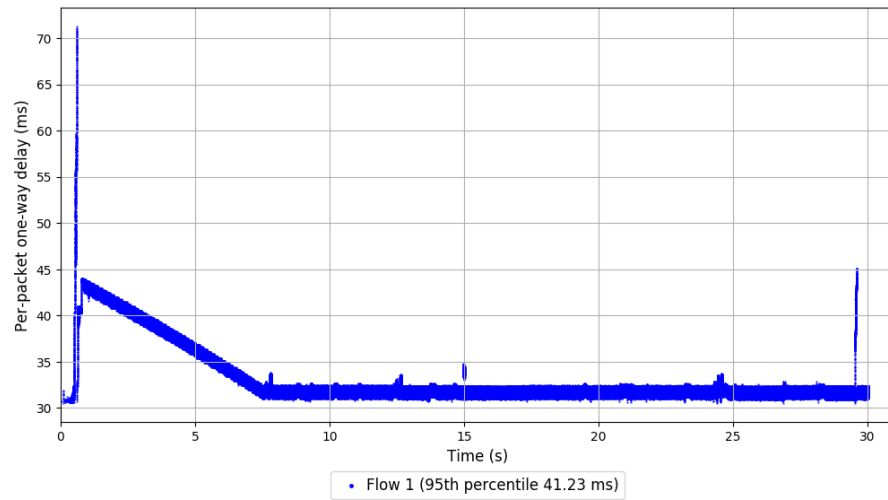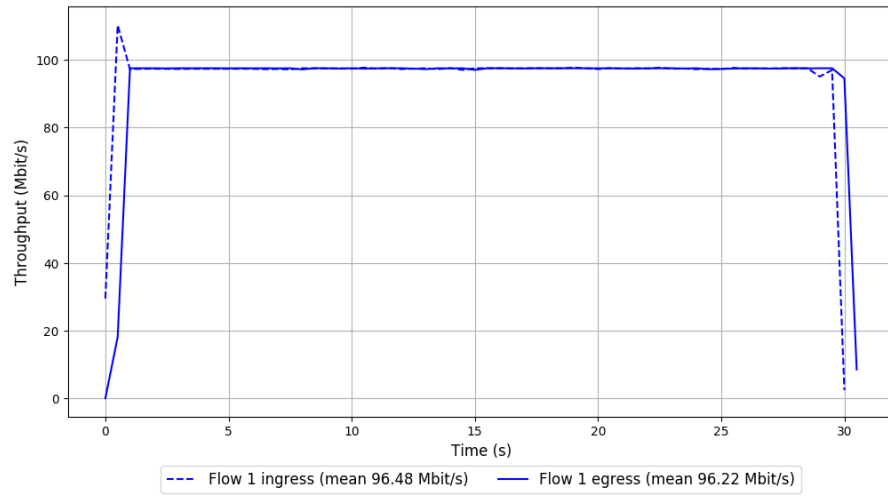

Flow 1 (95th percentile 30.87 ms)

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```
Run 1: Statistics of TCP Vegas

Start at: 2018-12-02 00:29:56
End at: 2018-12-02 00:30:26
Local clock offset: -2.052 ms
Remote clock offset: -1.437 ms


# Below is generated by plot.py at 2018-12-02 02:18:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 96.22 Mbit/s
95th percentile per-packet one-way delay: 41.234 ms
Loss rate: 0.27%
-- Flow 1:
Average throughput: 96.22 Mbit/s
95th percentile per-packet one-way delay: 41.234 ms
Loss rate: 0.27%
```
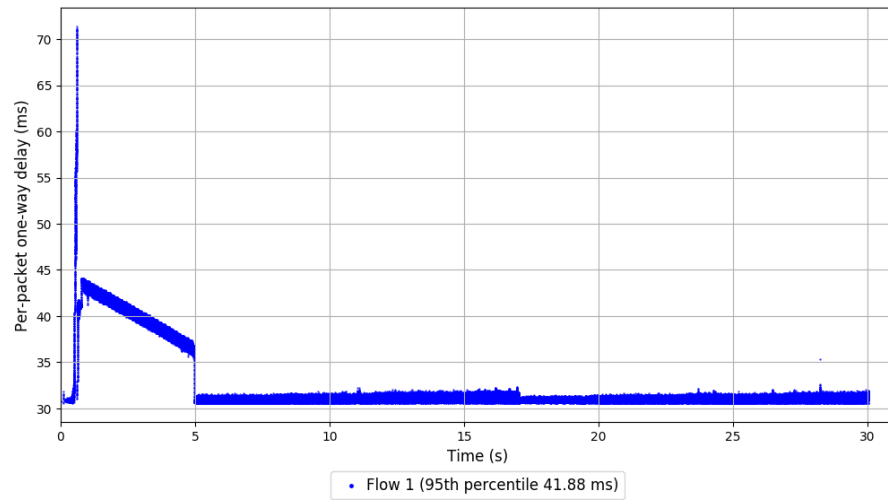
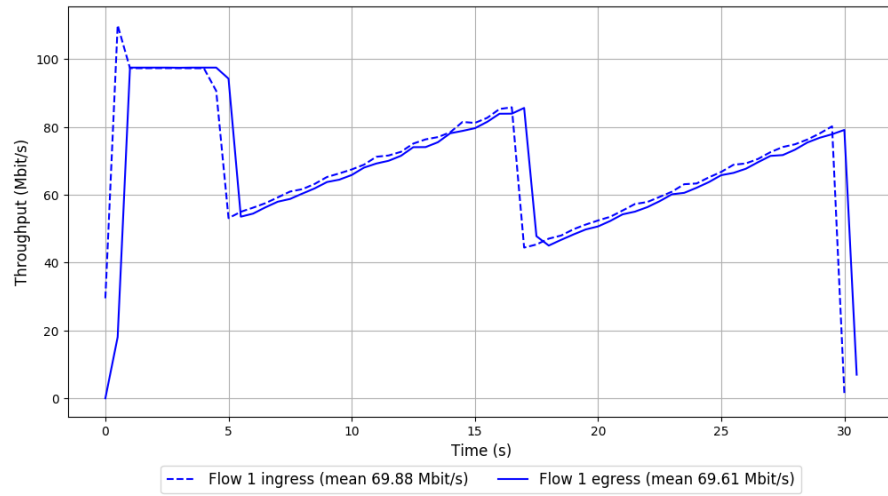Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-12-02 00:51:39
End at: 2018-12-02 00:52:09
Local clock offset: -3.529 ms
Remote clock offset: -1.605 ms


# Below is generated by plot.py at 2018-12-02 02:18:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 69.61 Mbit/s
95th percentile per-packet one-way delay: 41.877 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 69.61 Mbit/s
95th percentile per-packet one-way delay: 41.877 ms
Loss rate: 0.37%
```
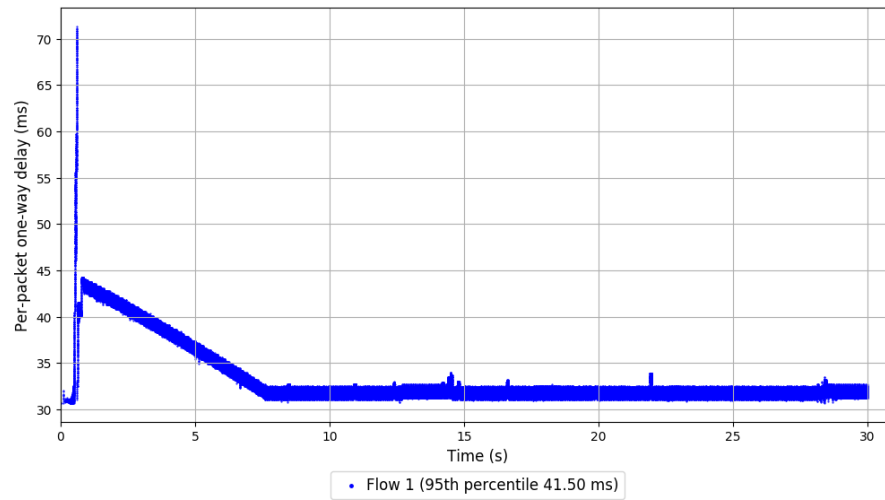
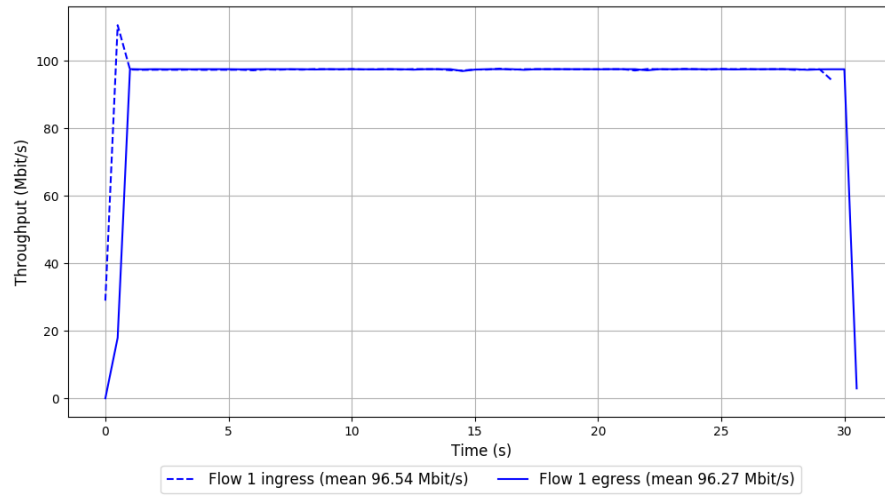Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2018-12-02 01:13:49
End at: 2018-12-02 01:14:19
Local clock offset: -4.253 ms
Remote clock offset: -1.893 ms


# Below is generated by plot.py at 2018-12-02 02:18:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 96.27 Mbit/s
95th percentile per-packet one-way delay: 41.502 ms
Loss rate: 0.27%
-- Flow 1:
Average throughput: 96.27 Mbit/s
95th percentile per-packet one-way delay: 41.502 ms
Loss rate: 0.27%
```

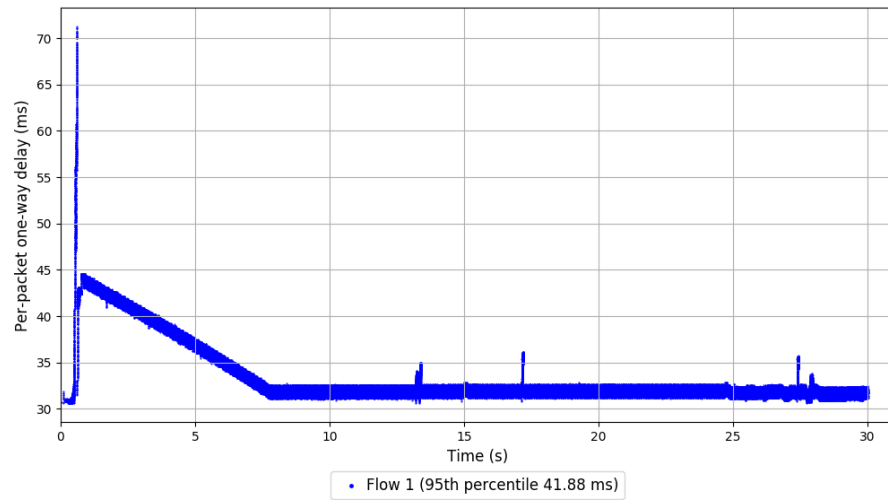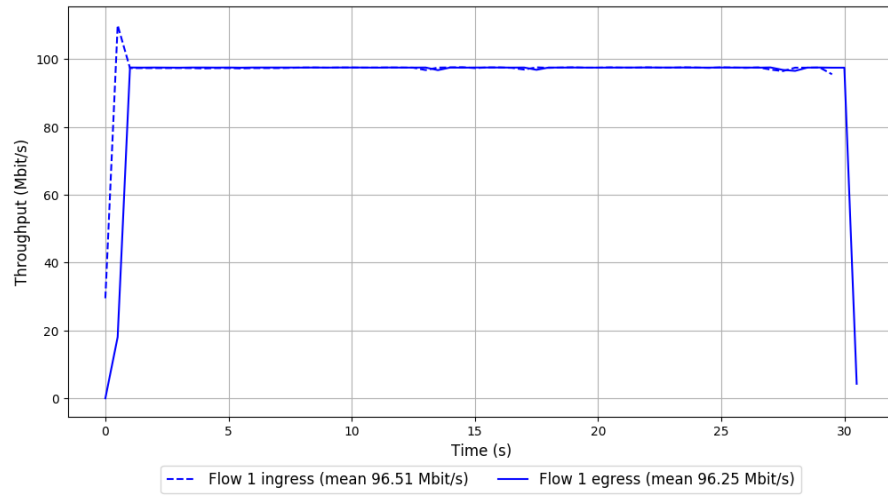# Run 3: Report of TCP Vegas — Data Link

```
Run 4: Statistics of TCP Vegas

Start at: 2018-12-02 01:35:46
End at: 2018-12-02 01:36:16
Local clock offset: 0.516 ms
Remote clock offset: -2.631 ms


# Below is generated by plot.py at 2018-12-02 02:18:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 96.25 Mbit/s
95th percentile per-packet one-way delay: 41.884 ms
Loss rate: 0.27%
-- Flow 1:
Average throughput: 96.25 Mbit/s
95th percentile per-packet one-way delay: 41.884 ms
Loss rate: 0.27%
```

Run 4: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 96.51 Mbit/s) --- Flow 1 egress (mean 96.25 Mbit/s)
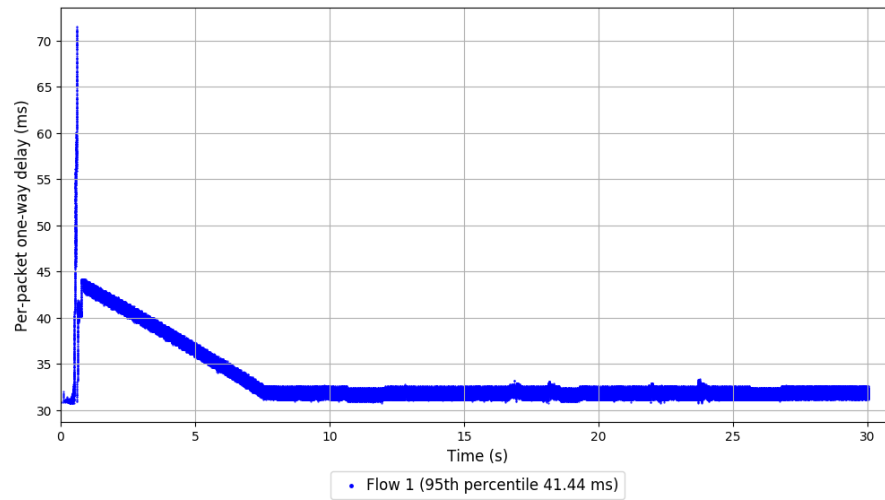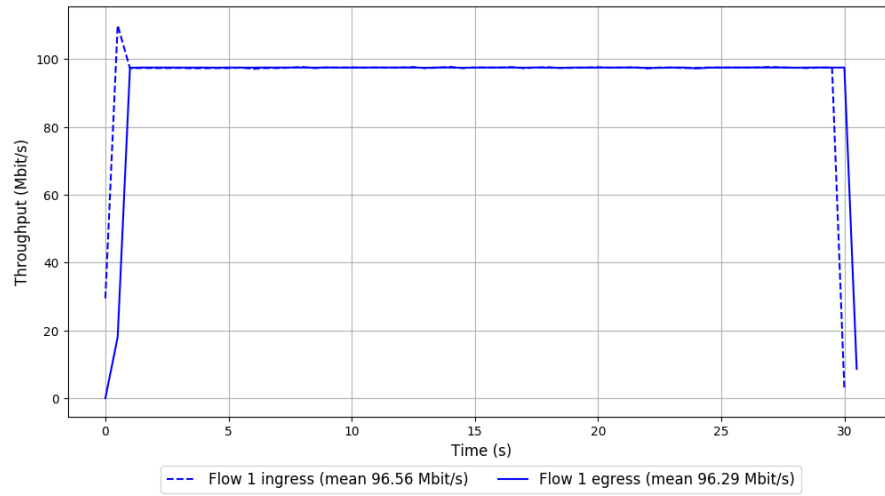

Flow 1 (95th percentile 41.88 ms)

```
Run 5: Statistics of TCP Vegas

Start at: 2018-12-02 01:57:32
End at: 2018-12-02 01:58:02
Local clock offset: 0.788 ms
Remote clock offset: -2.837 ms


# Below is generated by plot.py at 2018-12-02 02:18:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 96.29 Mbit/s
95th percentile per-packet one-way delay: 41.438 ms
Loss rate: 0.27%
-- Flow 1:
Average throughput: 96.29 Mbit/s
95th percentile per-packet one-way delay: 41.438 ms
Loss rate: 0.27%
```

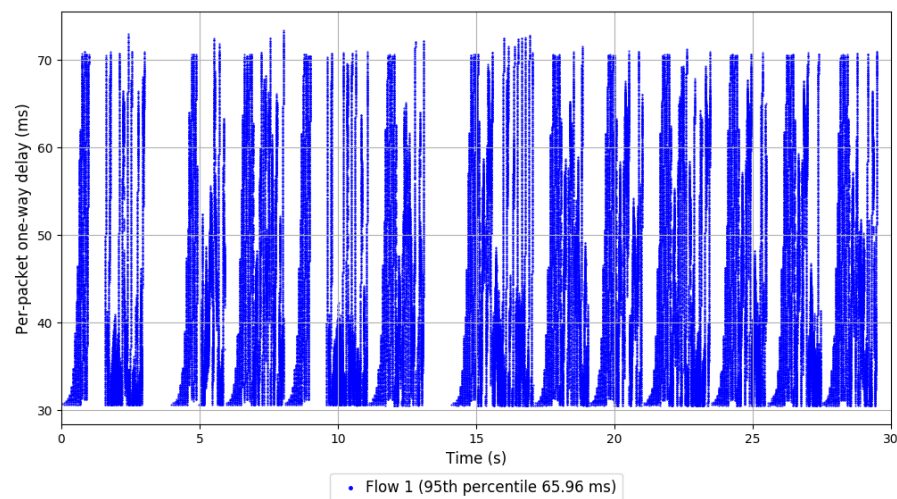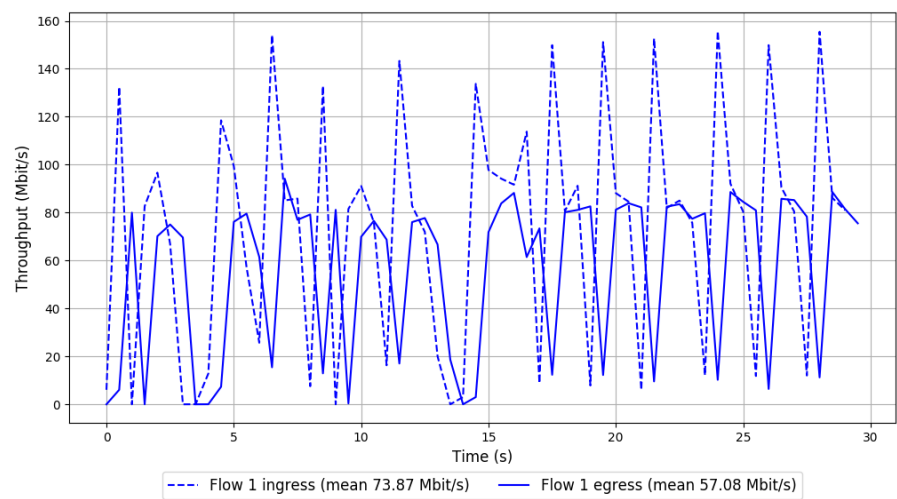Run 5: Report of TCP Vegas — Data Link

```
Run 1: Statistics of Verus

Start at: 2018-12-02 00:24:12
End at: 2018-12-02 00:24:42
Local clock offset: -1.017 ms
Remote clock offset: -1.263 ms


# Below is generated by plot.py at 2018-12-02 02:18:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 57.08 Mbit/s
95th percentile per-packet one-way delay: 65.960 ms
Loss rate: 22.71%
-- Flow 1:
Average throughput: 57.08 Mbit/s
95th percentile per-packet one-way delay: 65.960 ms
Loss rate: 22.71%
```
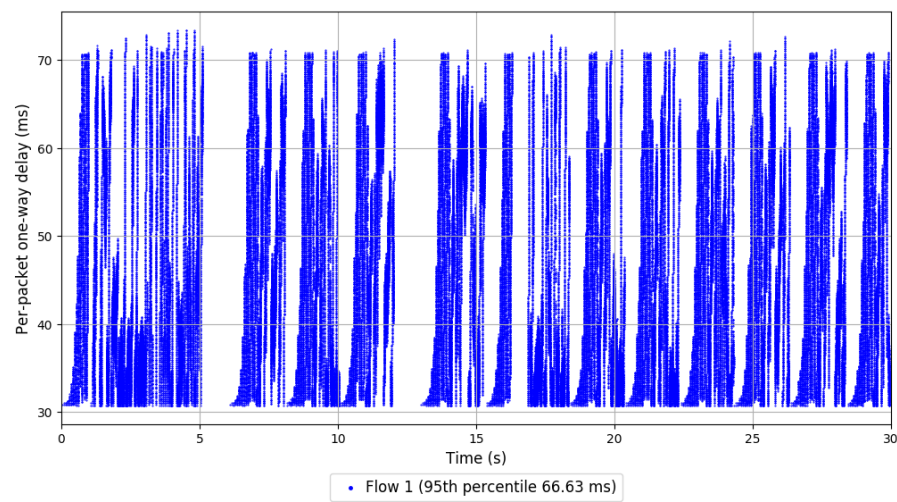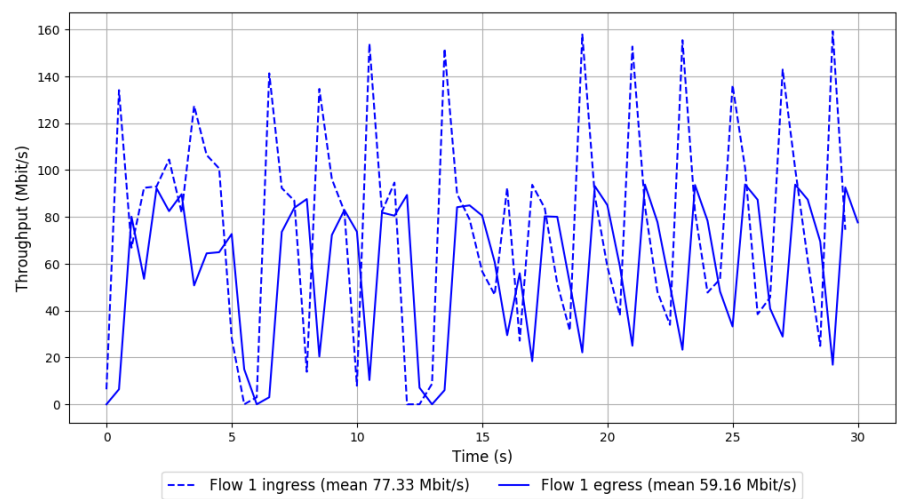
Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2018-12-02 00:45:55
End at: 2018-12-02 00:46:25
Local clock offset: -3.256 ms
Remote clock offset: -1.408 ms


# Below is generated by plot.py at 2018-12-02 02:18:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 59.16 Mbit/s
95th percentile per-packet one-way delay: 66.632 ms
Loss rate: 23.49%
-- Flow 1:
Average throughput: 59.16 Mbit/s
95th percentile per-packet one-way delay: 66.632 ms
Loss rate: 23.49%
```

Run 2: Report of Verus — Data Link

Flow 1 ingress (mean 77.33 Mbit/s)   Flow 1 egress (mean 59.16 Mbit/s)

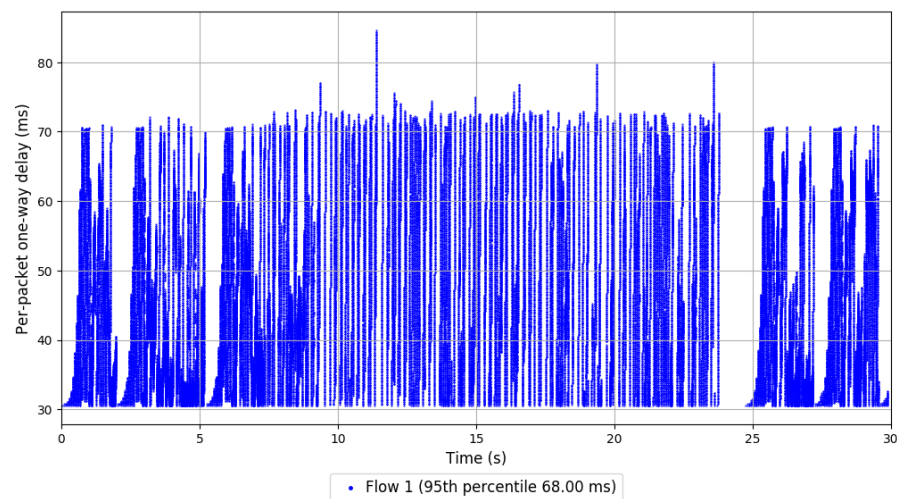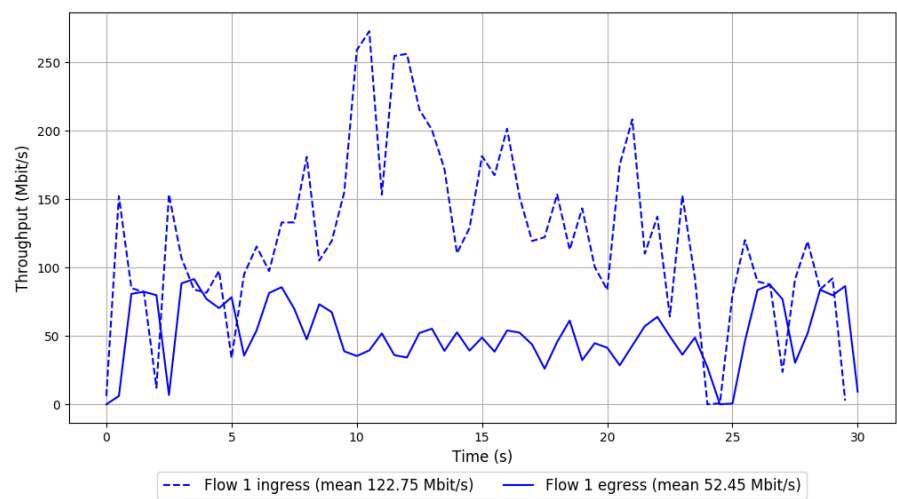

• Flow 1 (95th percentile 66.63 ms)

```
Run 3: Statistics of Verus

Start at: 2018-12-02 01:07:53
End at: 2018-12-02 01:08:23
Local clock offset: -4.069 ms
Remote clock offset: -1.797 ms


# Below is generated by plot.py at 2018-12-02 02:18:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 52.45 Mbit/s
95th percentile per-packet one-way delay: 67.999 ms
Loss rate: 57.27%
-- Flow 1:
Average throughput: 52.45 Mbit/s
95th percentile per-packet one-way delay: 67.999 ms
Loss rate: 57.27%
```

Run 3: Report of Verus — Data Link

Flow 1 ingress (mean 122.75 Mbit/s) ----   Flow 1 egress (mean 52.45 Mbit/s) ———

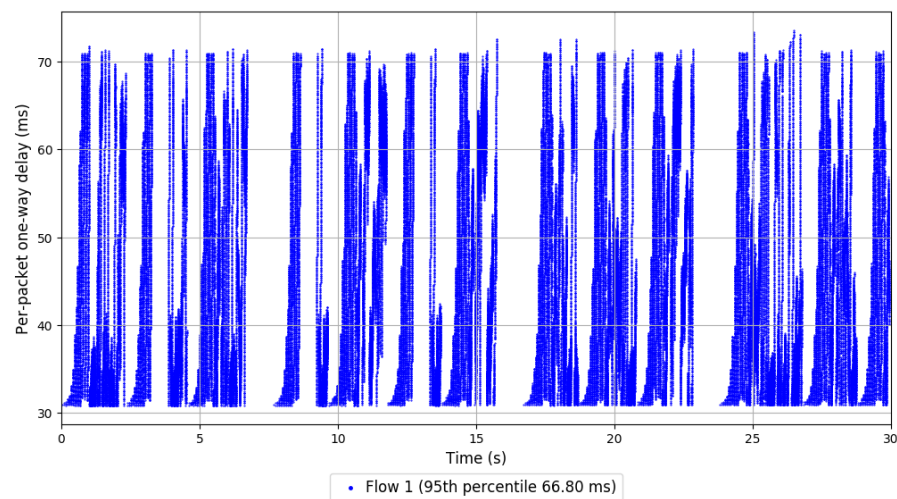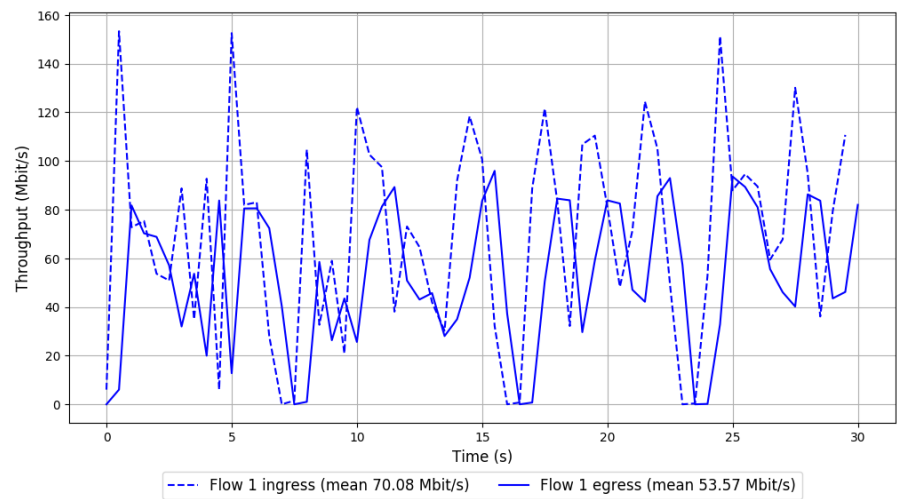

• Flow 1 (95th percentile 68.00 ms)

```
Run 4: Statistics of Verus

Start at: 2018-12-02 01:30:03
End at: 2018-12-02 01:30:33
Local clock offset: -0.354 ms
Remote clock offset: -2.316 ms


# Below is generated by plot.py at 2018-12-02 02:18:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 53.57 Mbit/s
95th percentile per-packet one-way delay: 66.800 ms
Loss rate: 23.53%
-- Flow 1:
Average throughput: 53.57 Mbit/s
95th percentile per-packet one-way delay: 66.800 ms
Loss rate: 23.53%
```

Run 4: Report of Verus — Data Link

Flow 1 ingress (mean 70.08 Mbit/s) --- Flow 1 egress (mean 53.57 Mbit/s)
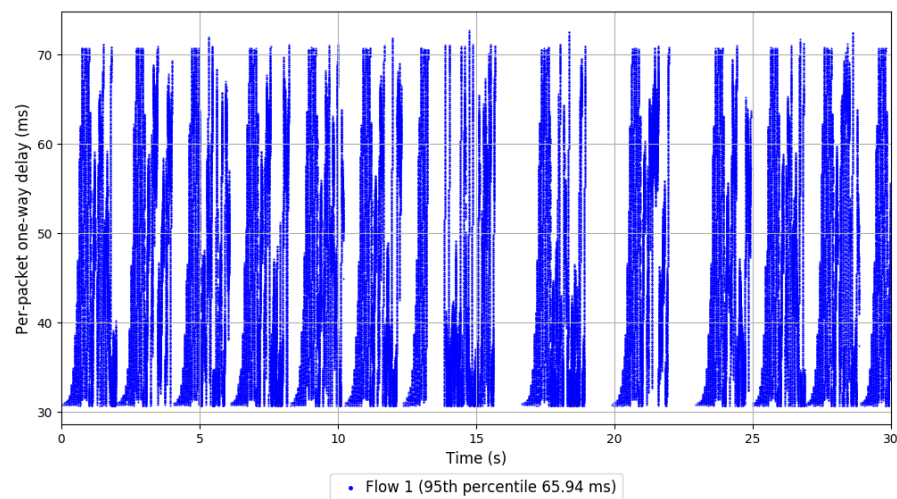
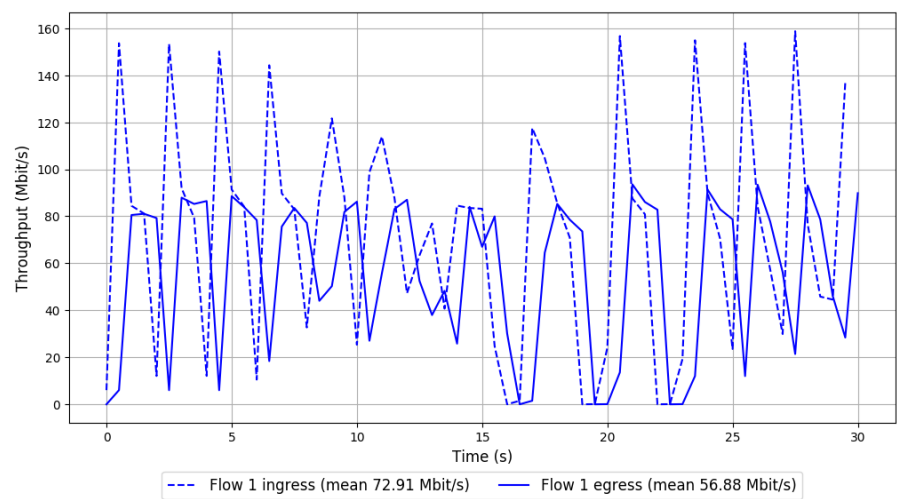

• Flow 1 (95th percentile 66.80 ms)

```
Run 5: Statistics of Verus

Start at: 2018-12-02 01:51:47
End at: 2018-12-02 01:52:17
Local clock offset: 1.118 ms
Remote clock offset: -2.796 ms


# Below is generated by plot.py at 2018-12-02 02:18:58
# Datalink statistics
-- Total of 1 flow:
Average throughput: 56.88 Mbit/s
95th percentile per-packet one-way delay: 65.944 ms
Loss rate: 21.93%
-- Flow 1:
Average throughput: 56.88 Mbit/s
95th percentile per-packet one-way delay: 65.944 ms
Loss rate: 21.93%
```

Run 5: Report of Verus — Data Link

Flow 1 ingress (mean 72.91 Mbit/s) ----   Flow 1 egress (mean 56.88 Mbit/s) ——
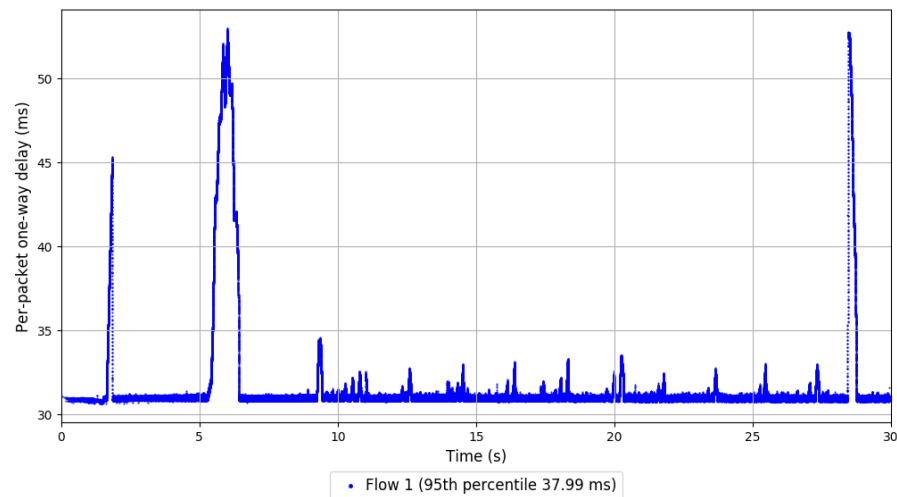
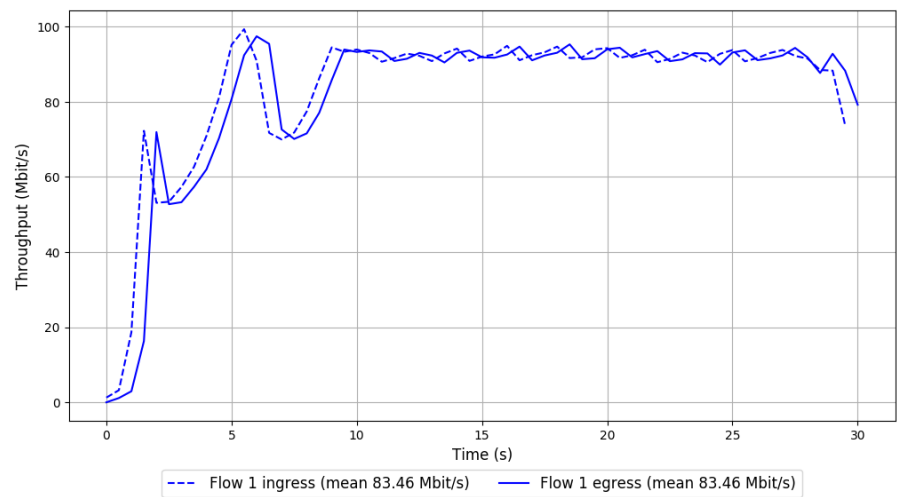

• Flow 1 (95th percentile 65.94 ms)

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-12-02 00:28:45
End at: 2018-12-02 00:29:15
Local clock offset: -1.888 ms
Remote clock offset: -1.212 ms


# Below is generated by plot.py at 2018-12-02 02:19:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 83.46 Mbit/s
95th percentile per-packet one-way delay: 37.988 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 83.46 Mbit/s
95th percentile per-packet one-way delay: 37.988 ms
Loss rate: 0.00%
```

Run 1: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 83.46 Mbit/s) — — — Flow 1 egress (mean 83.46 Mbit/s)
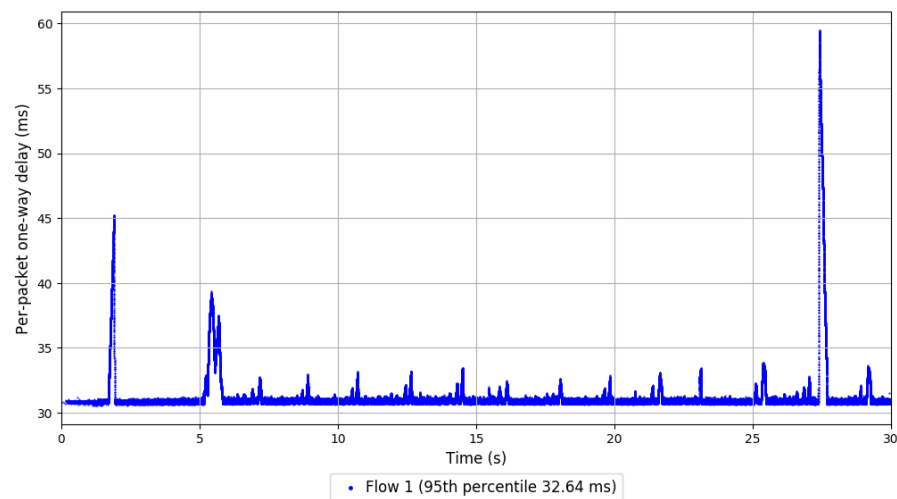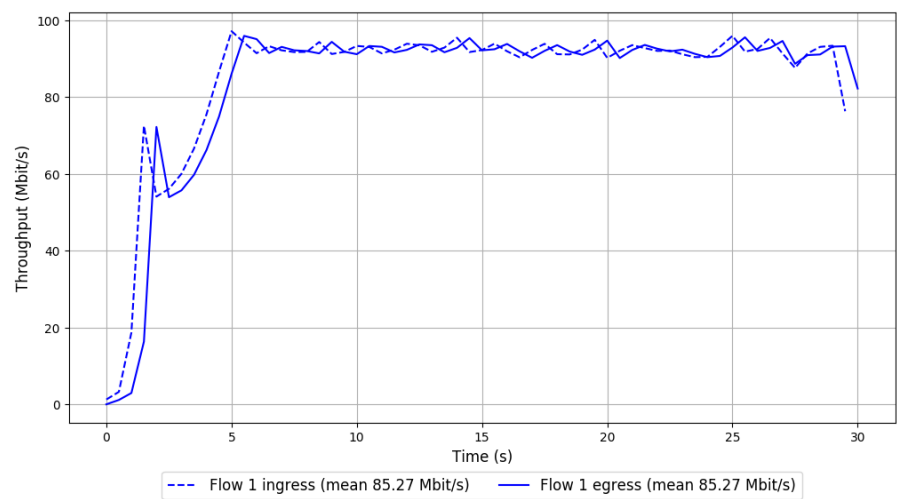

• Flow 1 (95th percentile 37.99 ms)

```
Run 2: Statistics of PCC-Vivace

Start at: 2018-12-02 00:50:28
End at: 2018-12-02 00:50:58
Local clock offset: -3.494 ms
Remote clock offset: -1.507 ms


# Below is generated by plot.py at 2018-12-02 02:19:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 85.27 Mbit/s
95th percentile per-packet one-way delay: 32.636 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 85.27 Mbit/s
95th percentile per-packet one-way delay: 32.636 ms
Loss rate: 0.00%
```

Run 2: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 85.27 Mbit/s)   Flow 1 egress (mean 85.27 Mbit/s)
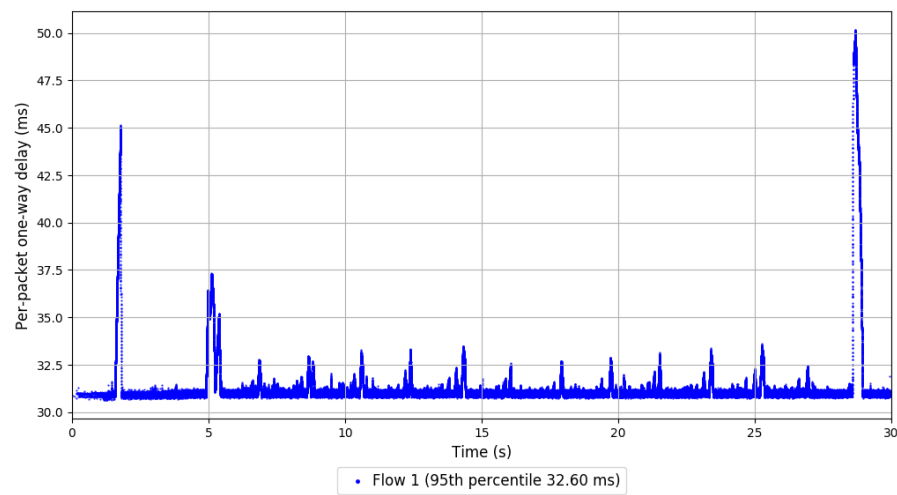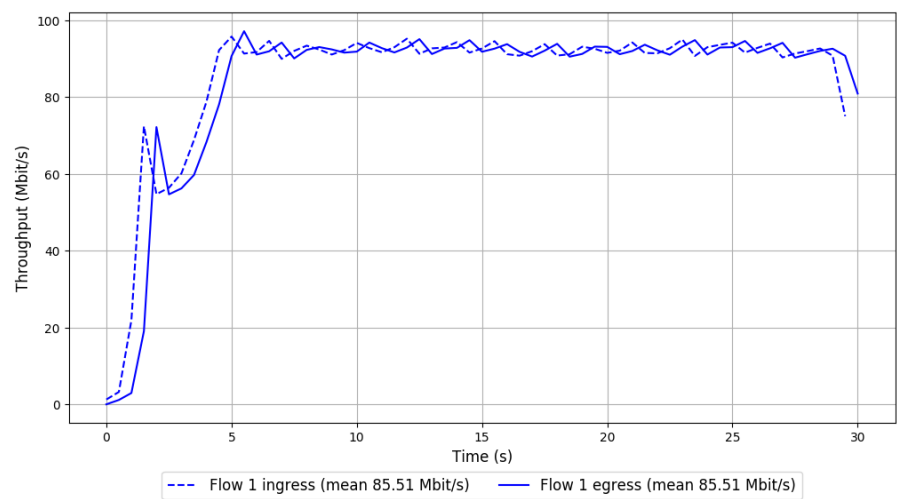

Flow 1 (95th percentile 32.64 ms)

```
Run 3: Statistics of PCC-Vivace

Start at: 2018-12-02 01:12:34
End at: 2018-12-02 01:13:04
Local clock offset: -4.218 ms
Remote clock offset: -1.681 ms


# Below is generated by plot.py at 2018-12-02 02:19:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 85.51 Mbit/s
95th percentile per-packet one-way delay: 32.596 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 85.51 Mbit/s
95th percentile per-packet one-way delay: 32.596 ms
Loss rate: 0.00%
```

Run 3: Report of PCC-Vivace — Data Link

```
Run 4: Statistics of PCC-Vivace

Start at: 2018-12-02 01:34:36
End at: 2018-12-02 01:35:06
Local clock offset: 0.364 ms
Remote clock offset: -2.359 ms


# Below is generated by plot.py at 2018-12-02 02:19:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 85.37 Mbit/s
95th percentile per-packet one-way delay: 32.638 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 85.37 Mbit/s
95th percentile per-packet one-way delay: 32.638 ms
Loss rate: 0.00%
```
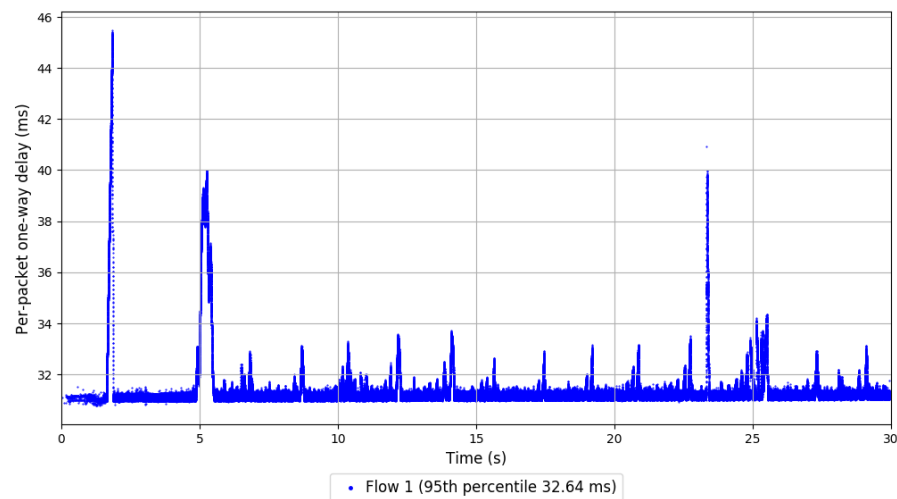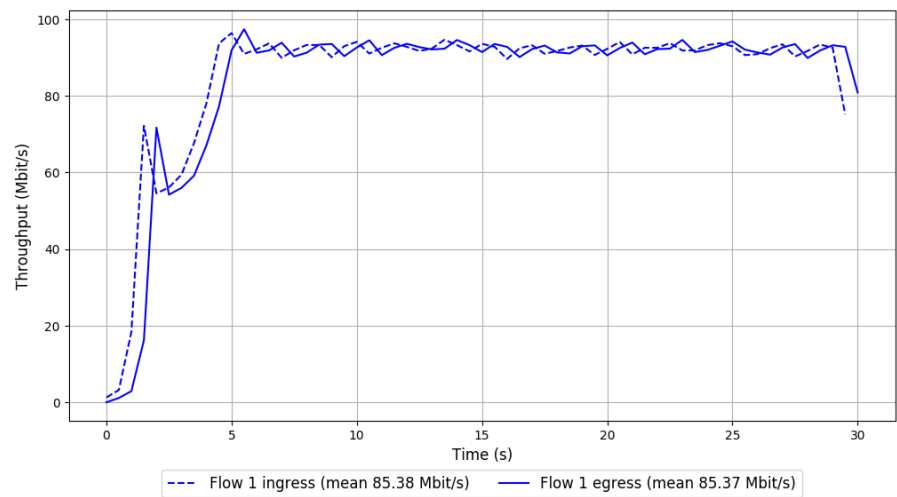
Run 4: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 85.38 Mbit/s)   Flow 1 egress (mean 85.37 Mbit/s)
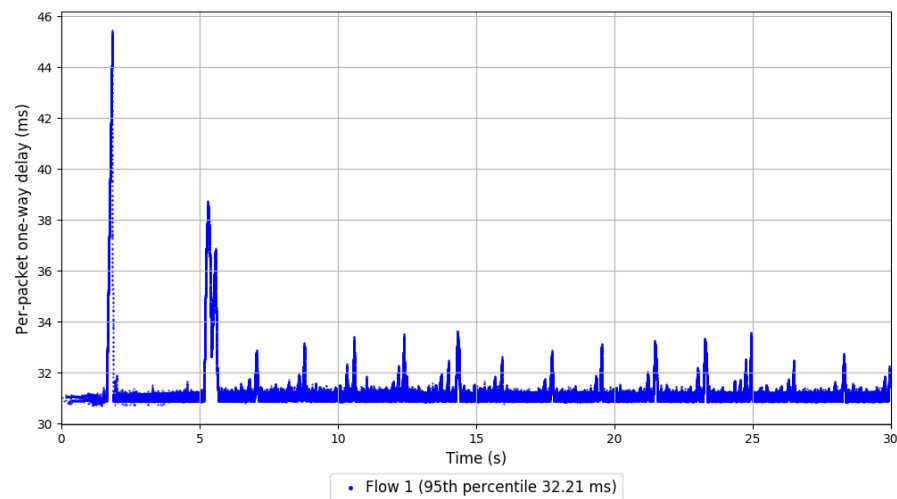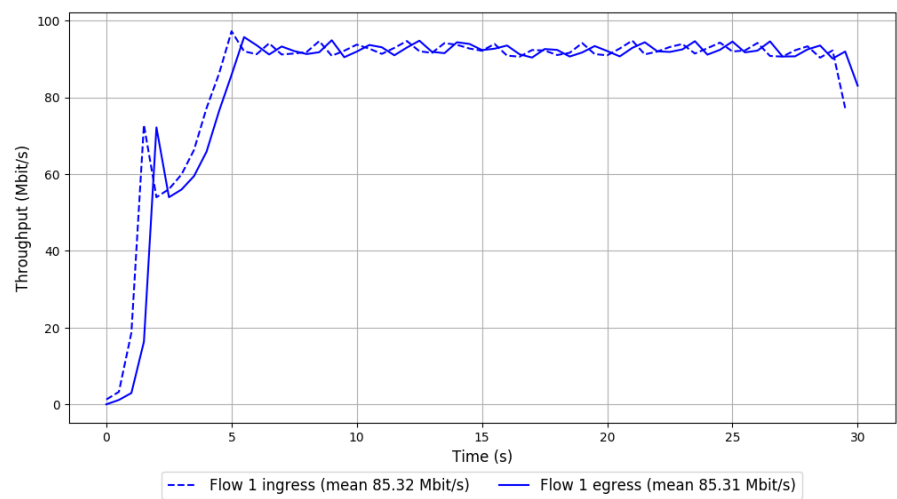

Flow 1 (95th percentile 32.64 ms)

```
Run 5: Statistics of PCC-Vivace

Start at: 2018-12-02 01:56:21
End at: 2018-12-02 01:56:51
Local clock offset: 0.806 ms
Remote clock offset: -2.826 ms


# Below is generated by plot.py at 2018-12-02 02:19:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 85.31 Mbit/s
95th percentile per-packet one-way delay: 32.214 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 85.31 Mbit/s
95th percentile per-packet one-way delay: 32.214 ms
Loss rate: 0.00%
```
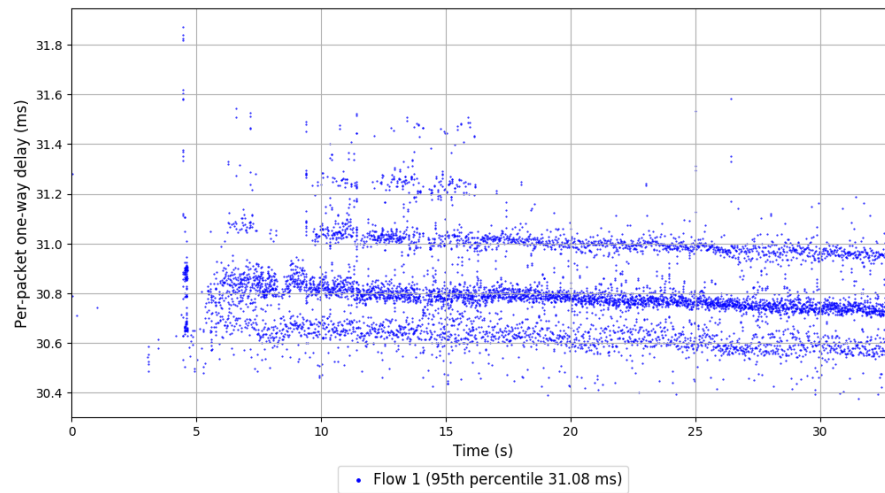
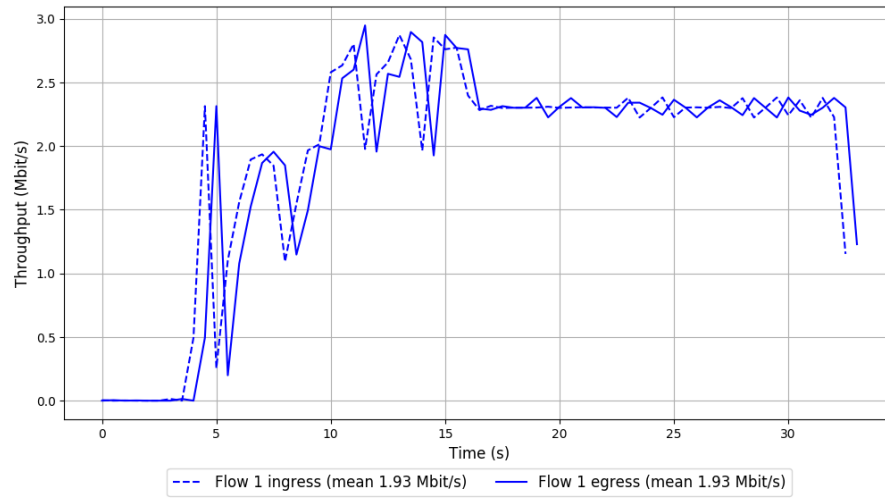## Run 5: Report of PCC-Vivace — Data Link

```
Run 1: Statistics of WebRTC media

Start at: 2018-12-02 00:23:06
End at: 2018-12-02 00:23:36
Local clock offset: -0.752 ms
Remote clock offset: -1.254 ms


# Below is generated by plot.py at 2018-12-02 02:19:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 31.084 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 31.084 ms
Loss rate: 0.00%
```
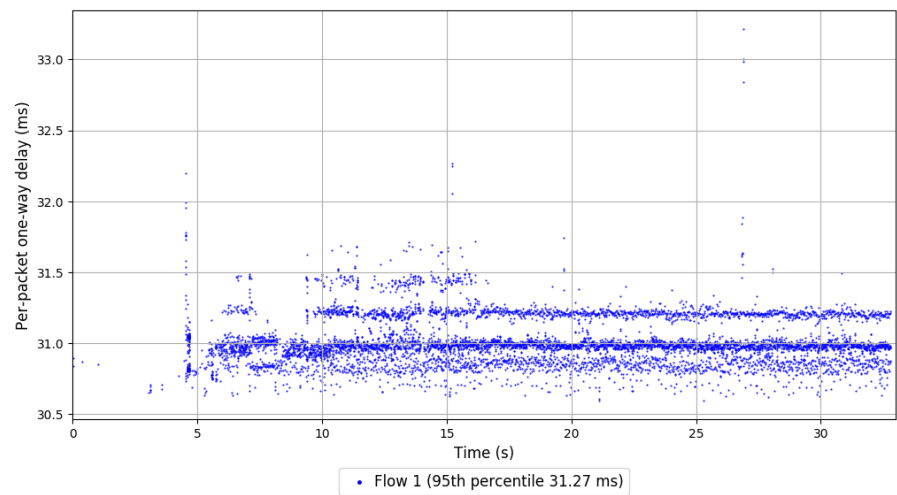
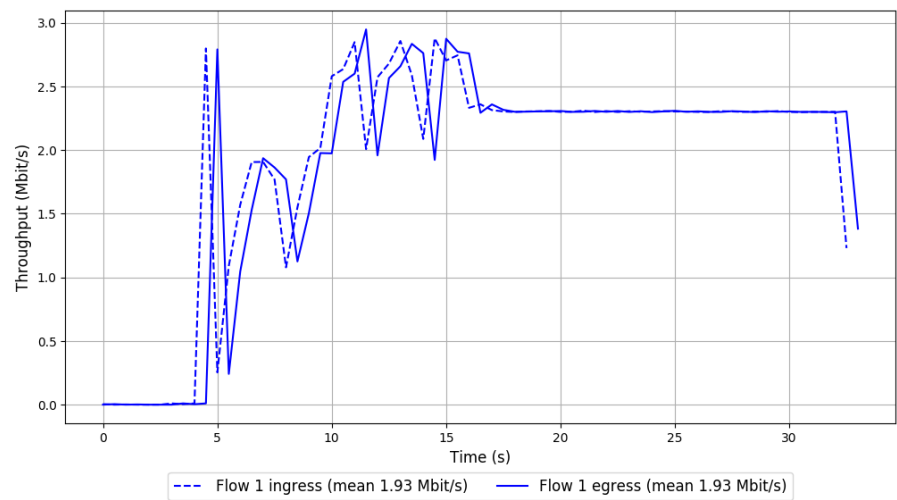Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2018-12-02 00:44:49
End at: 2018-12-02 00:45:19
Local clock offset: -3.224 ms
Remote clock offset: -1.412 ms


# Below is generated by plot.py at 2018-12-02 02:19:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 31.265 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 31.265 ms
Loss rate: 0.00%
```

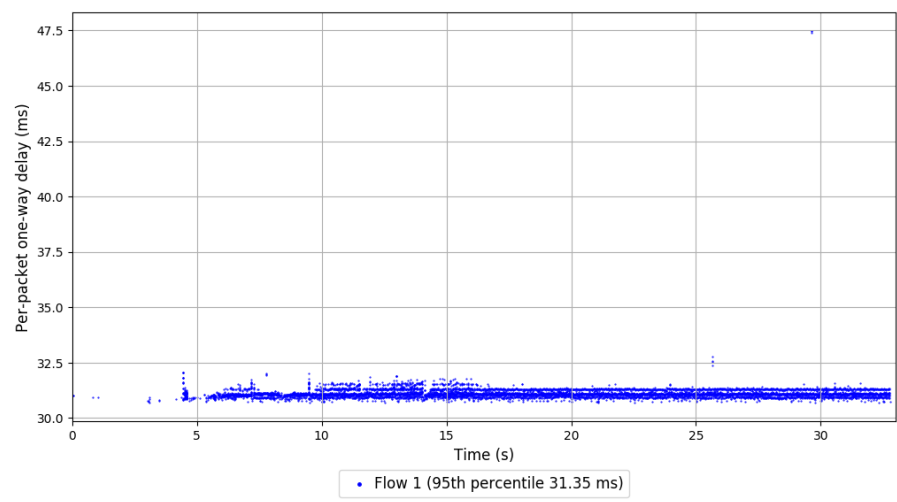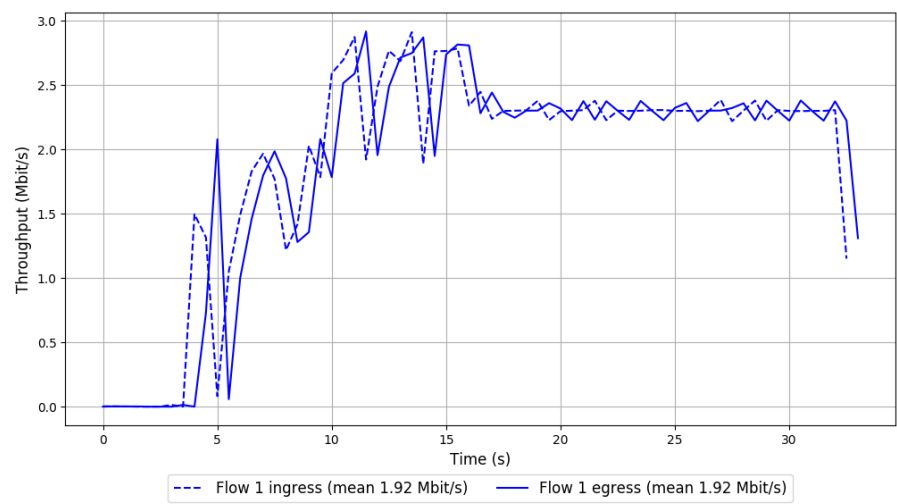Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-12-02 01:06:47
End at: 2018-12-02 01:07:17
Local clock offset: -4.04 ms
Remote clock offset: -1.553 ms


# Below is generated by plot.py at 2018-12-02 02:19:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 31.348 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 31.348 ms
Loss rate: 0.00%
```

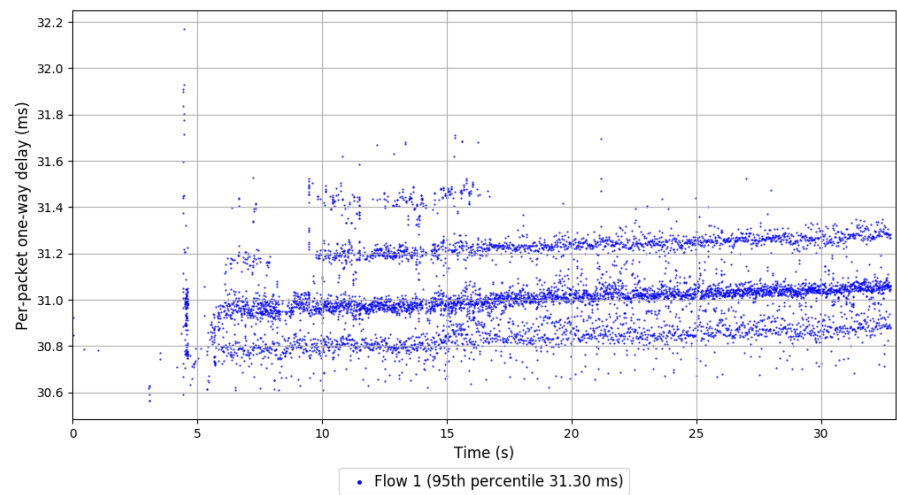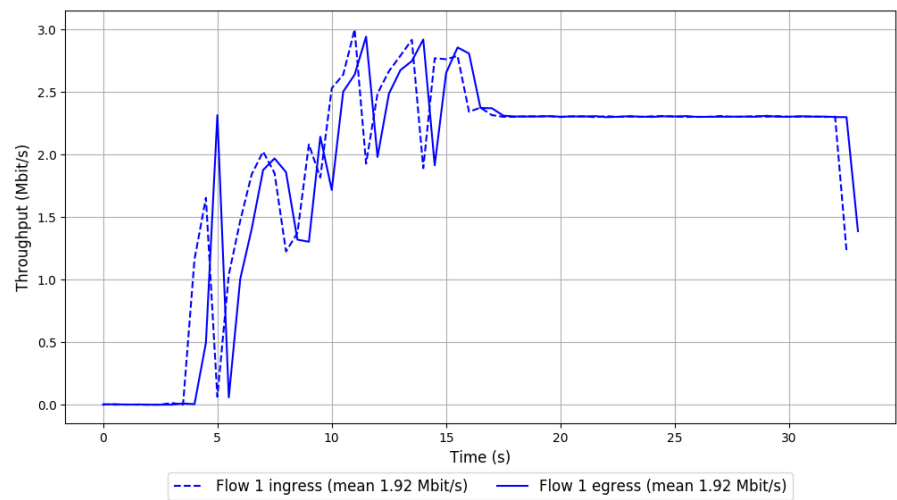Run 3: Report of WebRTC media — Data Link

```
Run 4: Statistics of WebRTC media

Start at: 2018-12-02 01:28:57
End at: 2018-12-02 01:29:27
Local clock offset: -0.542 ms
Remote clock offset: -2.414 ms


# Below is generated by plot.py at 2018-12-02 02:19:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 31.298 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 31.298 ms
Loss rate: 0.00%
```

Run 4: Report of WebRTC media — Data Link

```
Run 5: Statistics of WebRTC media

Start at: 2018-12-02 01:50:41
End at: 2018-12-02 01:51:11
Local clock offset: 1.262 ms
Remote clock offset: -2.625 ms


# Below is generated by plot.py at 2018-12-02 02:19:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 31.356 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 31.356 ms
Loss rate: 0.00%
```

Run 5: Report of WebRTC media — Data Link