Pantheon Report

Generated at 2018-10-02 15:12:23 (UTC).

Data path: China on `eno1` (*remote*) →AWS Korea on `ens5` (*local*).

Repeated the test of 18 congestion control schemes 5 times.

Each test lasted for 30 seconds running 1 flow.

NTP offsets were measured against `ntp.nict.jp` and have been applied to correct the timestamps in logs.
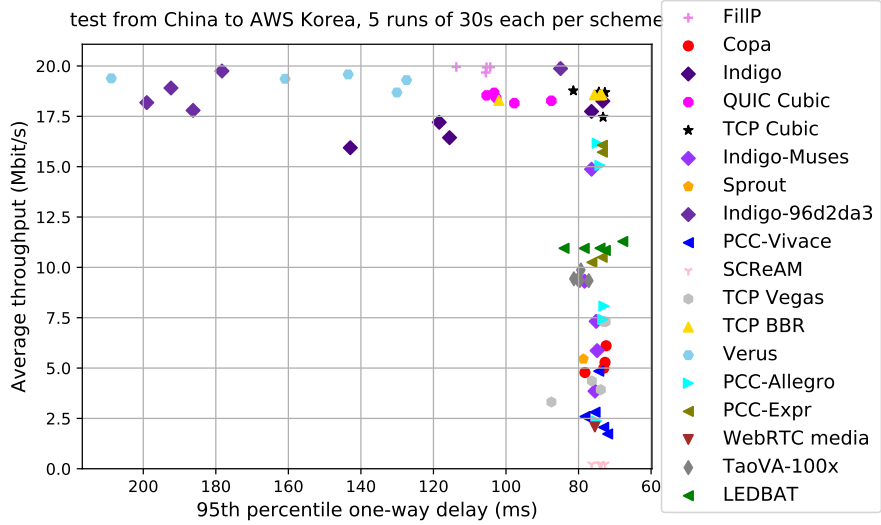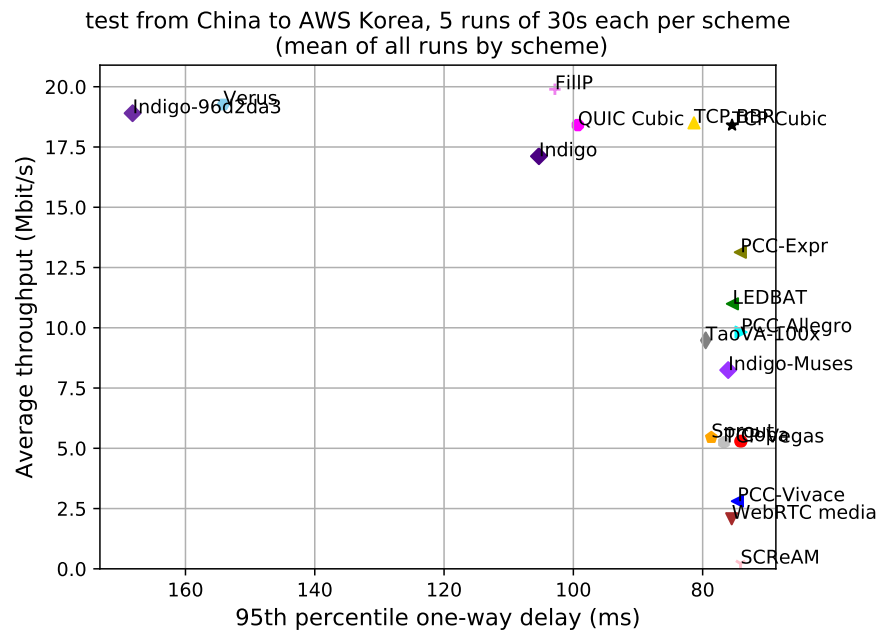
```
System info:
Linux 4.15.0-1021-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

Git summary:
branch: muses @ 2e19c0464530faa92c63f8217c9971438a26a3be
third_party/fillp @ 5332fc9127c63565e13f4933b336c02d1aabdac6
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 China to AWS Korea, 5 runs of 30s each per scheme
(mean of all runs by scheme)

test from China to AWS Korea, 5 runs of 30s each per scheme

3

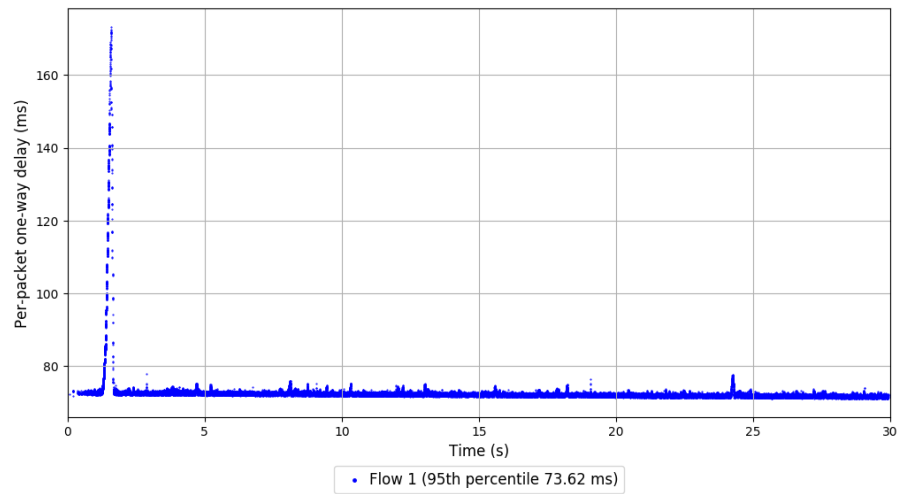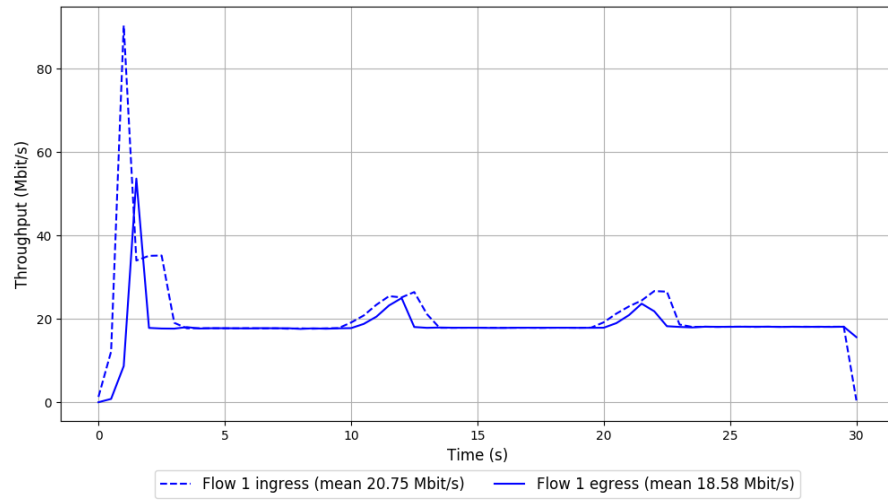| scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	4	18.50	81.34	12.48
Copa	4	5.29	74.09	0.51
TCP Cubic	4	18.41	75.45	6.95
FillP	5	19.90	102.85	22.08
Indigo	5	17.12	105.33	64.85
Indigo-96d2da3	5	18.90	168.18	60.39
LEDBAT	5	10.99	75.40	0.69
Indigo-Muses	5	8.25	76.05	3.45
PCC-Allegro	5	9.82	74.06	20.66
PCC-Expr	4	13.13	74.17	17.32
QUIC Cubic	5	18.41	99.30	11.02
SCReAM	5	0.22	74.14	0.46
Sprout	1	5.45	78.66	0.59
TaoVA-100x	5	9.48	79.53	4.24
TCP Vegas	5	5.24	76.70	0.33
Verus	5	19.26	154.14	71.09
PCC-Vivace	5	2.81	74.63	0.60
WebRTC media	1	2.08	75.51	0.55

```
Run 1: Statistics of TCP BBR

Start at: 2018-10-02 13:30:17
End at: 2018-10-02 13:30:47
Local clock offset: -10.926 ms
Remote clock offset: -44.166 ms

# Below is generated by plot.py at 2018-10-02 15:10:05
# Datalink statistics
-- Total of 1 flow:
Average throughput: 18.57 Mbit/s
95th percentile per-packet one-way delay: 75.634 ms
Loss rate: 12.91%
-- Flow 1:
Average throughput: 18.57 Mbit/s
95th percentile per-packet one-way delay: 75.634 ms
Loss rate: 12.91%
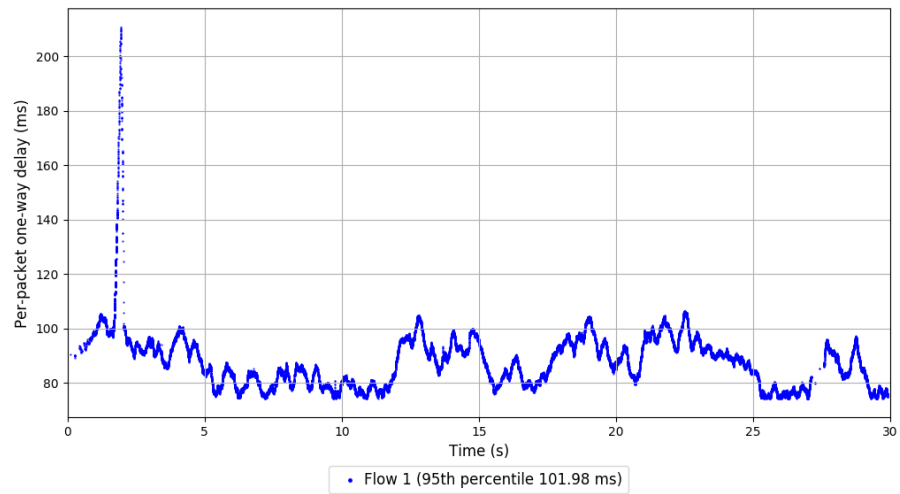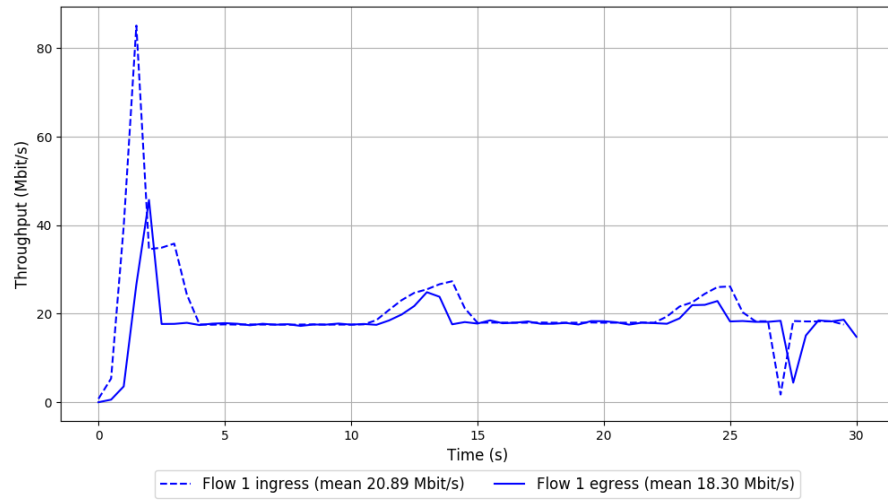```

Run 1: Report of TCP BBR — Data Link

Run 2: Statistics of TCP BBR

Start at: 2018-10-02 13:51:44
End at: 2018-10-02 13:52:14
Local clock offset: -11.215 ms
Remote clock offset: 30.812 ms

# Run 2: Report of TCP BBR — Data Link

```
Run 3: Statistics of TCP BBR

Start at: 2018-10-02 14:13:05
End at: 2018-10-02 14:13:35
Local clock offset: -11.45 ms
Remote clock offset: 32.937 ms

Below is generated by plot.py at 2018-10-02 15:10:05
Datalink statistics
-- Total of 1 flow:
Average throughput: 18.58 Mbit/s
95th percentile per-packet one-way delay: 73.623 ms
Loss rate: 10.91%
-- Flow 1:
Average throughput: 18.58 Mbit/s
95th percentile per-packet one-way delay: 73.623 ms
Loss rate: 10.91%
```
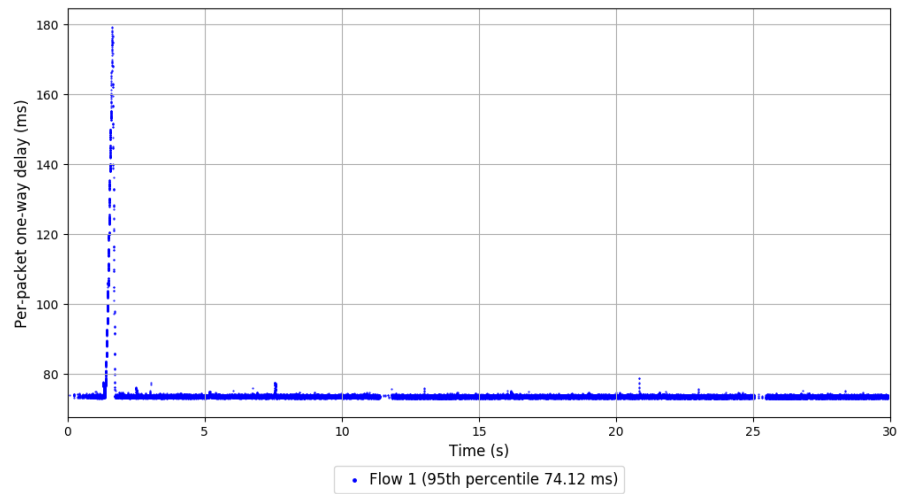
## Run 3: Report of TCP BBR — Data Link

```
Run 4: Statistics of TCP BBR

Start at: 2018-10-02 14:34:28
End at: 2018-10-02 14:34:58
Local clock offset: -8.805 ms
Remote clock offset: 12.609 ms

Below is generated by plot.py at 2018-10-02 15:10:05
Datalink statistics
-- Total of 1 flow:
Average throughput: 18.30 Mbit/s
95th percentile per-packet one-way delay: 101.985 ms
Loss rate: 12.90%
-- Flow 1:
Average throughput: 18.30 Mbit/s
95th percentile per-packet one-way delay: 101.985 ms
Loss rate: 12.90%
```
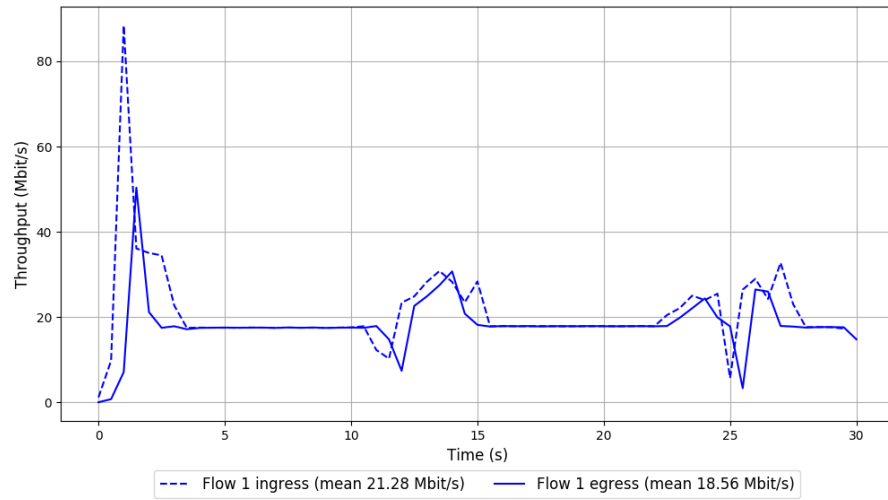
Run 4: Report of TCP BBR — Data Link
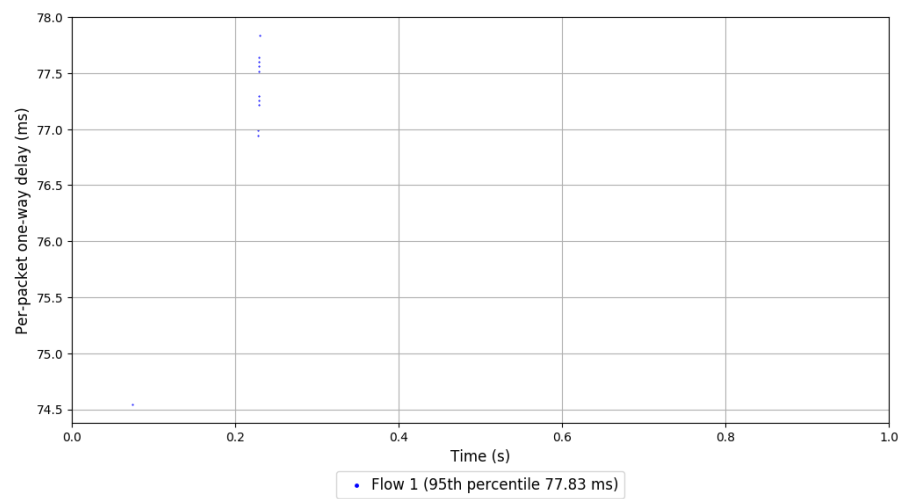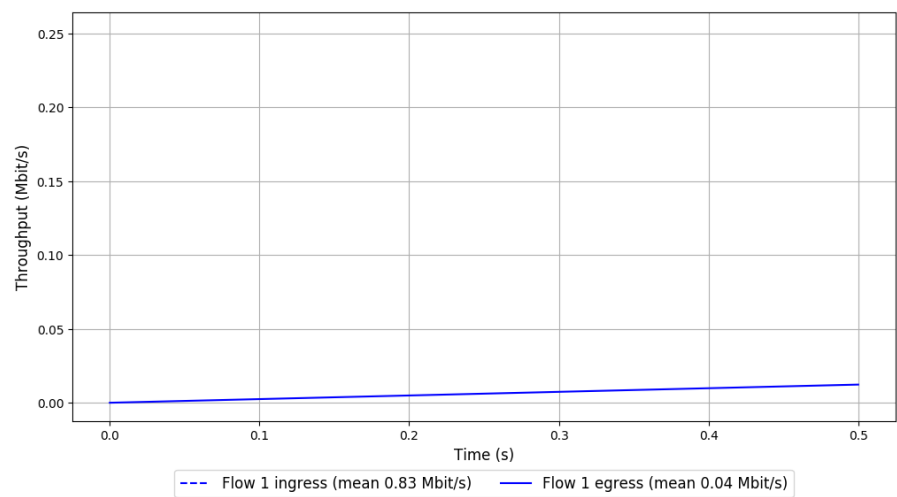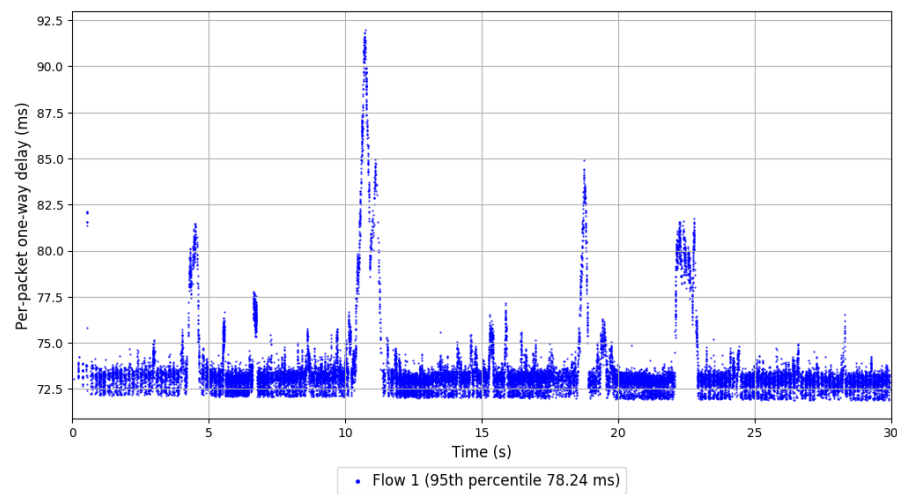
```
Run 5: Statistics of TCP BBR

Start at: 2018-10-02 14:55:51
End at: 2018-10-02 14:56:21
Local clock offset: -8.765 ms
Remote clock offset: 9.371 ms

Below is generated by plot.py at 2018-10-02 15:10:05
Datalink statistics
-- Total of 1 flow:
Average throughput: 18.56 Mbit/s
95th percentile per-packet one-way delay: 74.124 ms
Loss rate: 13.21%
-- Flow 1:
Average throughput: 18.56 Mbit/s
95th percentile per-packet one-way delay: 74.124 ms
Loss rate: 13.21%
```

## Run 5: Report of TCP BBR — Data Link



Flow 1 ingress (mean 21.28 Mbit/s) --- Flow 1 egress (mean 18.56 Mbit/s)



Flow 1 (95th percentile 74.12 ms)

14

```
Run 1: Statistics of Copa

Start at: 2018-10-02 13:23:09
End at: 2018-10-02 13:23:39
Local clock offset: -11.206 ms
Remote clock offset: -12.796 ms
```
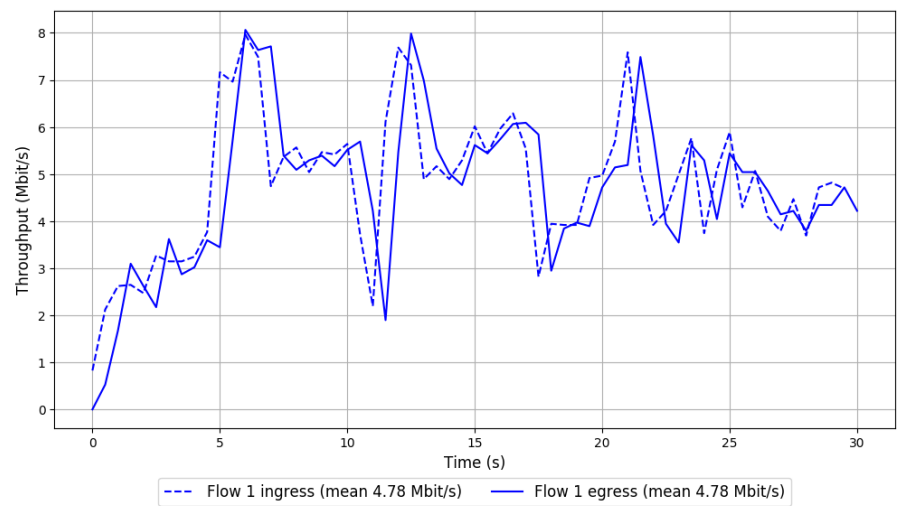
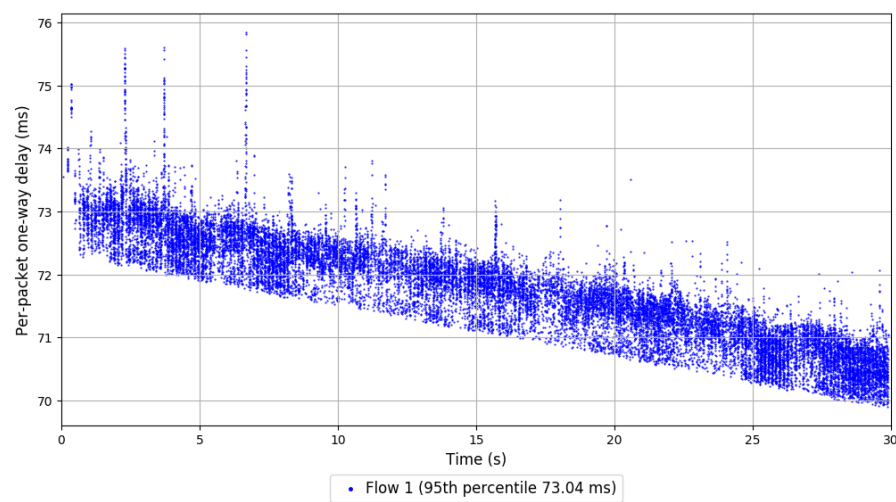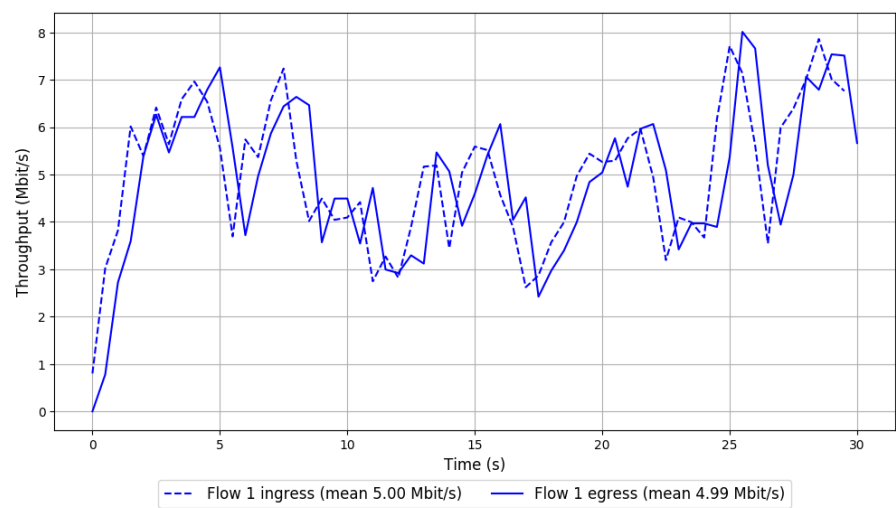Run 1: Report of Copa — Data Link

```
Run 2: Statistics of Copa

Start at: 2018-10-02 13:44:30
End at: 2018-10-02 13:45:00
Local clock offset: -11.284 ms
Remote clock offset: -4.788 ms

Below is generated by plot.py at 2018-10-02 15:10:05
Datalink statistics
-- Total of 1 flow:
Average throughput: 4.78 Mbit/s
95th percentile per-packet one-way delay: 78.243 ms
Loss rate: 0.46%
-- Flow 1:
Average throughput: 4.78 Mbit/s
95th percentile per-packet one-way delay: 78.243 ms
Loss rate: 0.46%
```
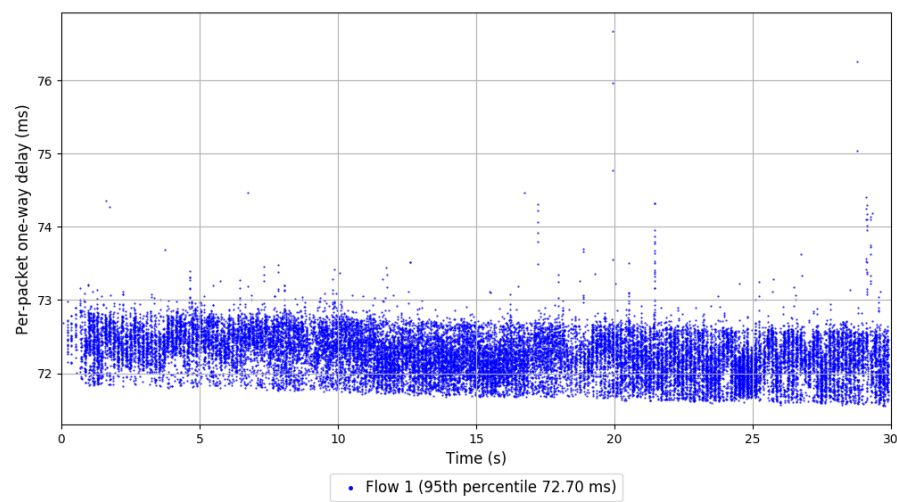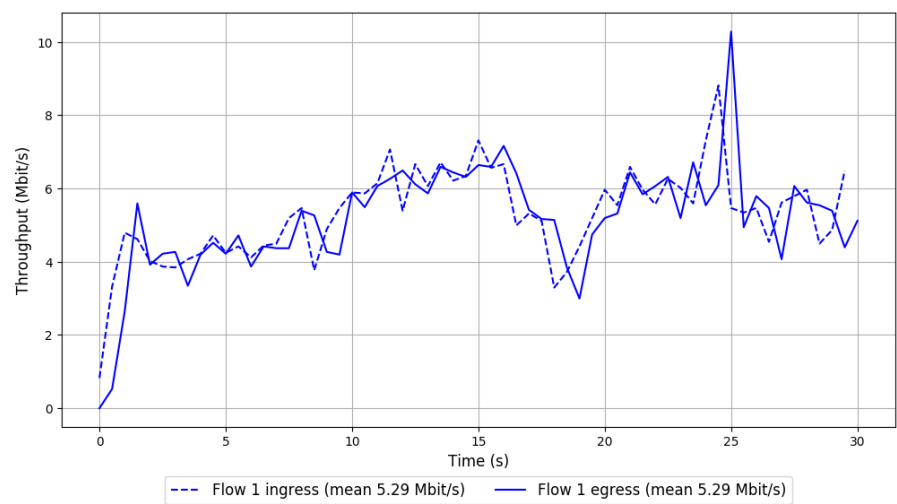
Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2018-10-02 14:05:53
End at: 2018-10-02 14:06:23
Local clock offset: -11.128 ms
Remote clock offset: 57.229 ms

Below is generated by plot.py at 2018-10-02 15:10:05
Datalink statistics
-- Total of 1 flow:
Average throughput: 4.99 Mbit/s
95th percentile per-packet one-way delay: 73.041 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 4.99 Mbit/s
95th percentile per-packet one-way delay: 73.041 ms
Loss rate: 0.62%
```
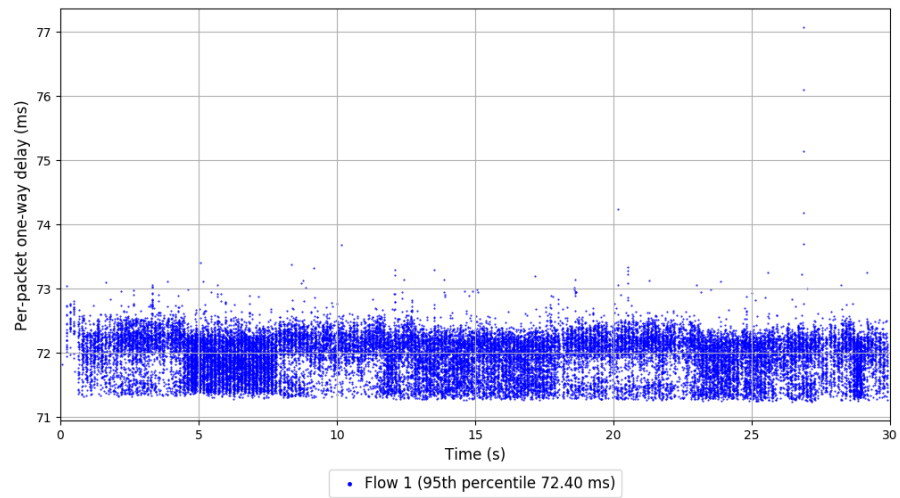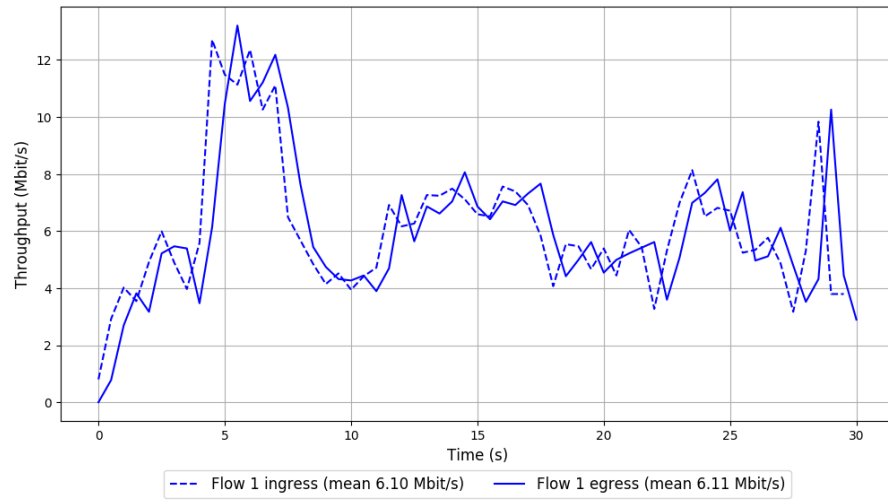
Run 3: Report of Copa — Data Link

```
Run 4: Statistics of Copa

Start at: 2018-10-02 14:27:17
End at: 2018-10-02 14:27:47
Local clock offset: -9.407 ms
Remote clock offset: 17.126 ms


# Below is generated by plot.py at 2018-10-02 15:10:05
# Datalink statistics
-- Total of 1 flow:
Average throughput: 5.29 Mbit/s
95th percentile per-packet one-way delay: 72.698 ms
Loss rate: 0.65%
-- Flow 1:
Average throughput: 5.29 Mbit/s
95th percentile per-packet one-way delay: 72.698 ms
Loss rate: 0.65%
```

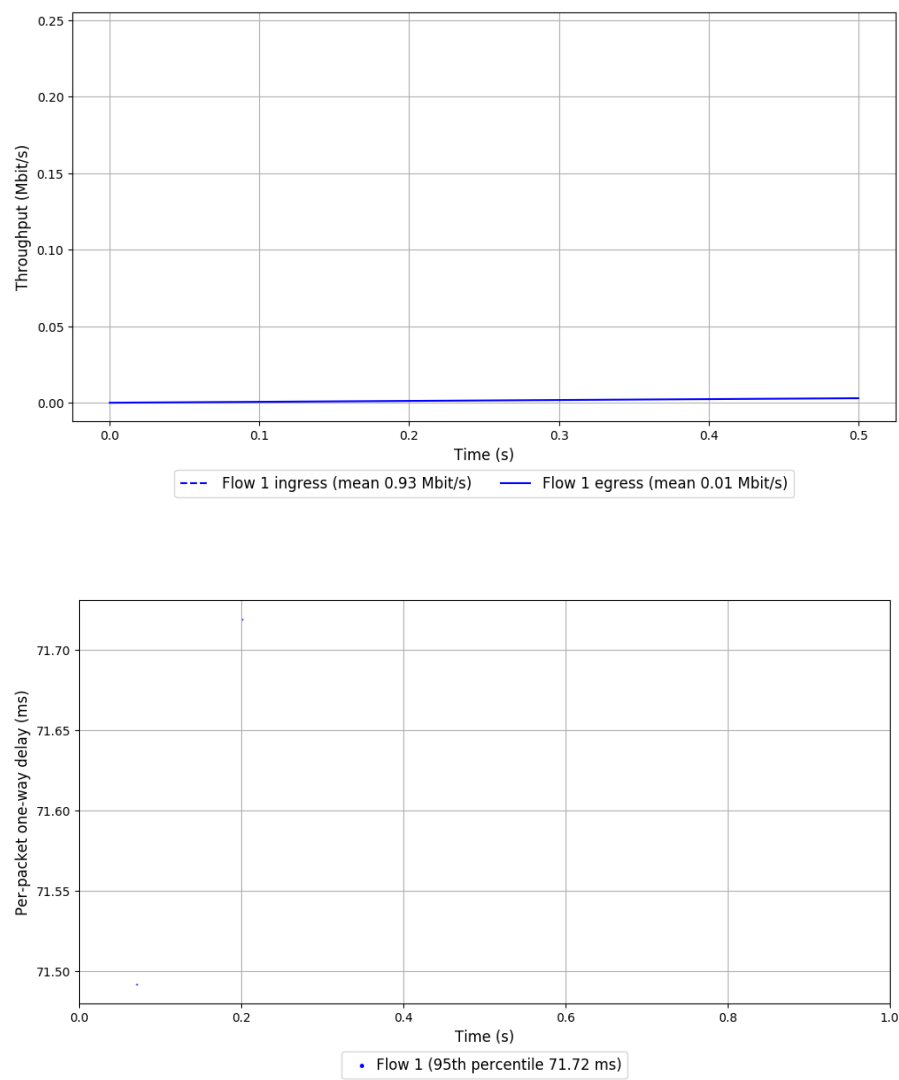Run 4: Report of Copa — Data Link

```
Run 5: Statistics of Copa

Start at: 2018-10-02 14:48:43
End at: 2018-10-02 14:49:13
Local clock offset: -8.759 ms
Remote clock offset: 11.609 ms


# Below is generated by plot.py at 2018-10-02 15:10:05
# Datalink statistics
-- Total of 1 flow:
Average throughput: 6.11 Mbit/s
95th percentile per-packet one-way delay: 72.398 ms
Loss rate: 0.31%
-- Flow 1:
Average throughput: 6.11 Mbit/s
95th percentile per-packet one-way delay: 72.398 ms
Loss rate: 0.31%
```

Run 5: Report of Copa — Data Link

```
Run 1: Statistics of TCP Cubic

Start at: 2018-10-02 13:27:53
End at: 2018-10-02 13:28:23
Local clock offset: -10.914 ms
Remote clock offset: -33.285 ms
```
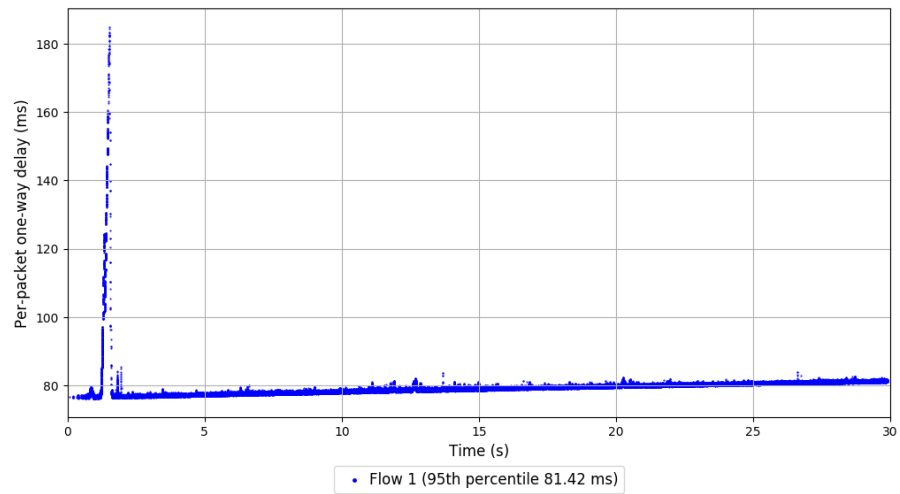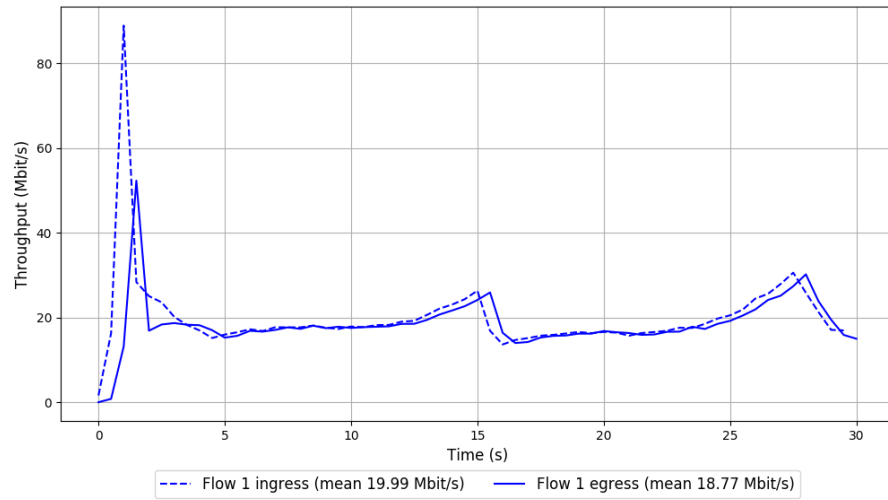
Run 1: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 0.93 Mbit/s) --- Flow 1 egress (mean 0.01 Mbit/s)
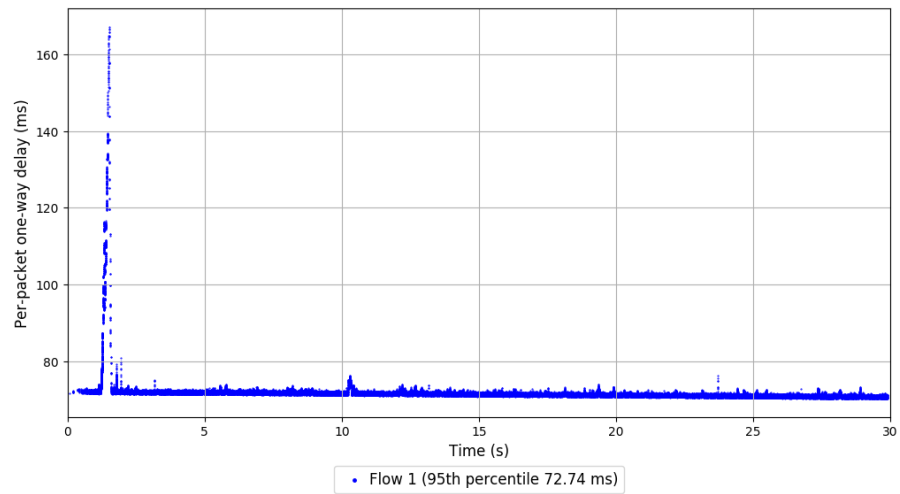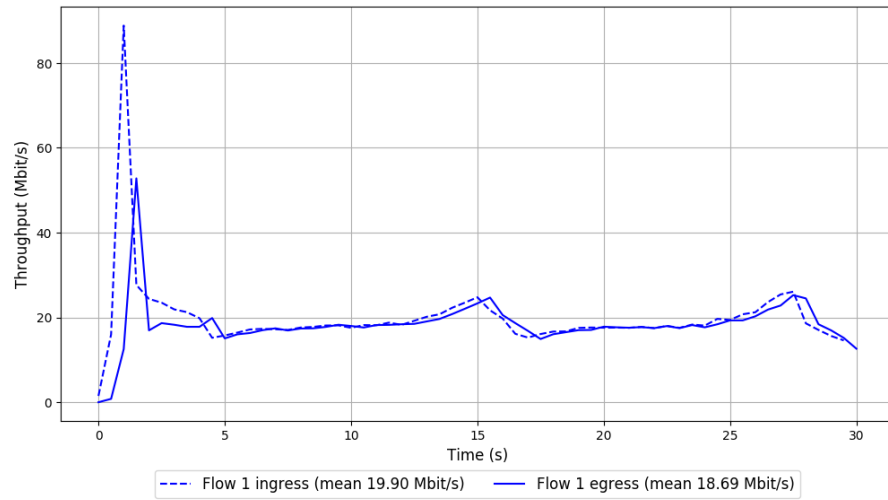

Flow 1 (95th percentile 71.72 ms)

```
Run 2: Statistics of TCP Cubic

Start at: 2018-10-02 13:49:17
End at: 2018-10-02 13:49:47
Local clock offset: -11.266 ms
Remote clock offset: 9.809 ms


# Below is generated by plot.py at 2018-10-02 15:10:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 18.77 Mbit/s
95th percentile per-packet one-way delay: 81.425 ms
Loss rate: 6.48%
-- Flow 1:
Average throughput: 18.77 Mbit/s
95th percentile per-packet one-way delay: 81.425 ms
Loss rate: 6.48%
```
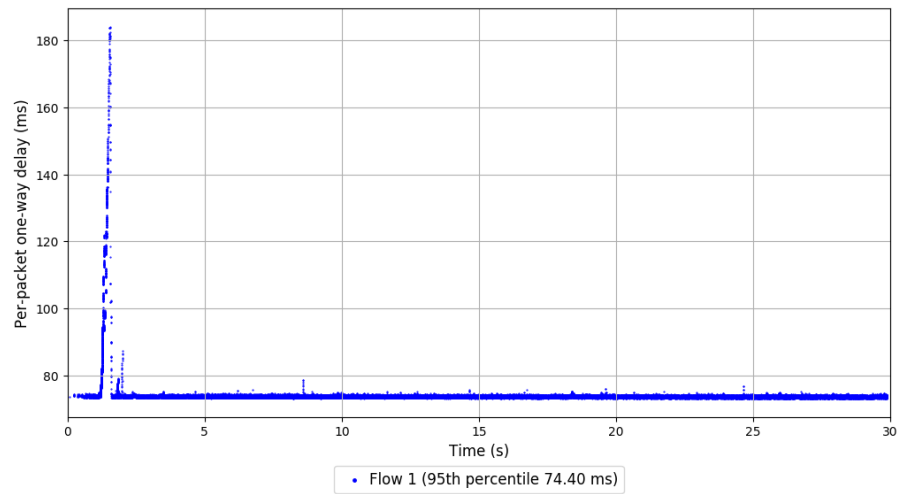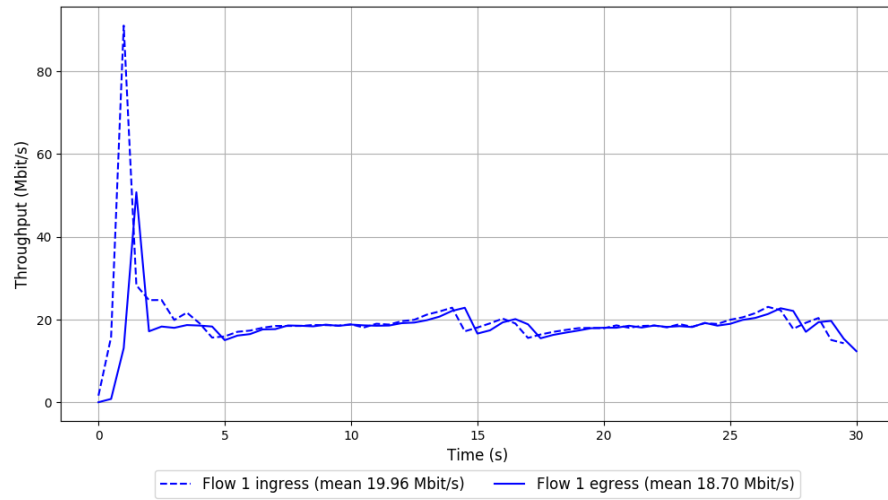
Run 2: Report of TCP Cubic — Data Link

```
Run 3: Statistics of TCP Cubic

Start at: 2018-10-02 14:10:40
End at: 2018-10-02 14:11:10
Local clock offset: -11.392 ms
Remote clock offset: 39.62 ms


# Below is generated by plot.py at 2018-10-02 15:10:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 18.69 Mbit/s
95th percentile per-packet one-way delay: 72.738 ms
Loss rate: 6.53%
-- Flow 1:
Average throughput: 18.69 Mbit/s
95th percentile per-packet one-way delay: 72.738 ms
Loss rate: 6.53%
```
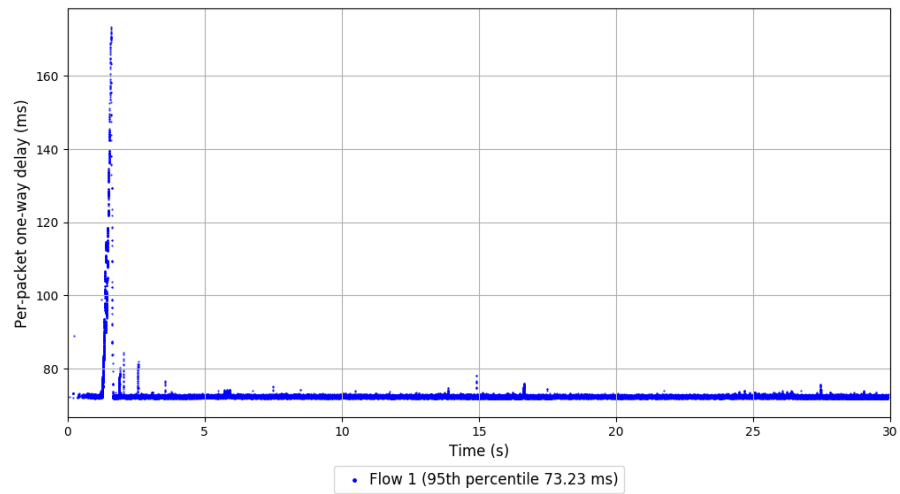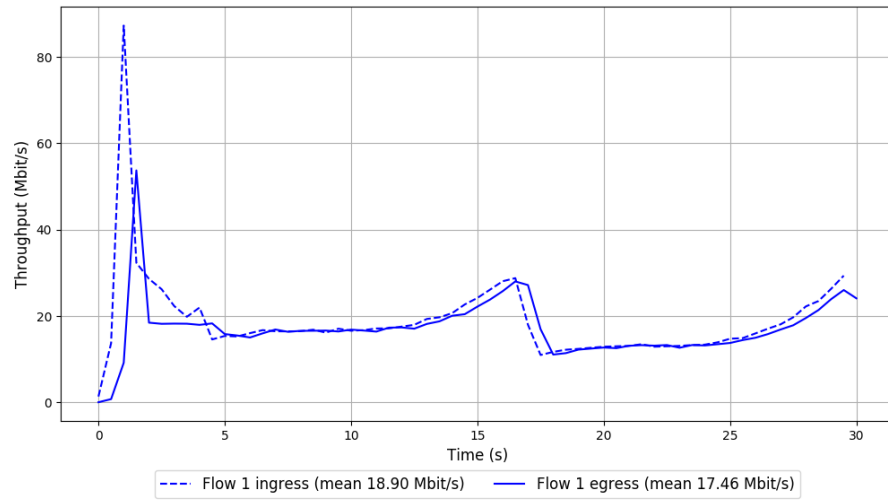
Run 3: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 19.90 Mbit/s) ----- Flow 1 egress (mean 18.69 Mbit/s)

Flow 1 (95th percentile 72.74 ms)

```
Run 4: Statistics of TCP Cubic

Start at: 2018-10-02 14:31:59
End at: 2018-10-02 14:32:29
Local clock offset: -8.927 ms
Remote clock offset: 14.189 ms


# Below is generated by plot.py at 2018-10-02 15:10:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 18.70 Mbit/s
95th percentile per-packet one-way delay: 74.402 ms
Loss rate: 6.73%
-- Flow 1:
Average throughput: 18.70 Mbit/s
95th percentile per-packet one-way delay: 74.402 ms
Loss rate: 6.73%
```
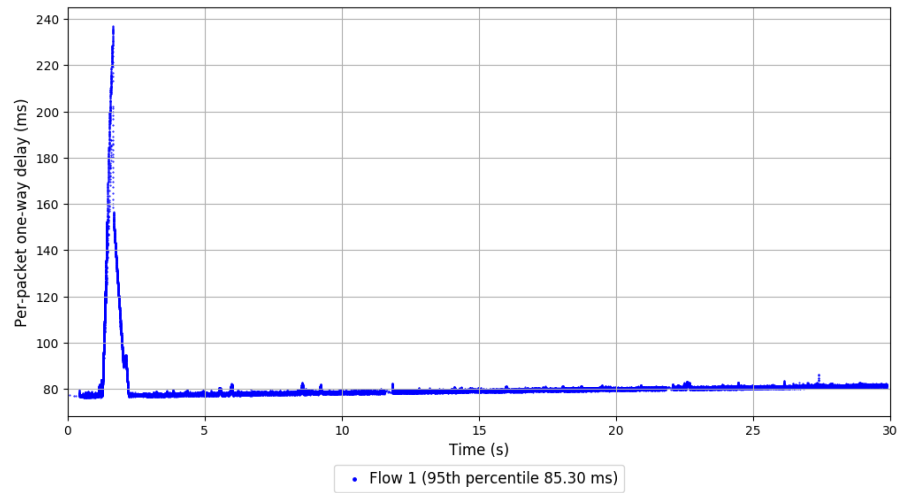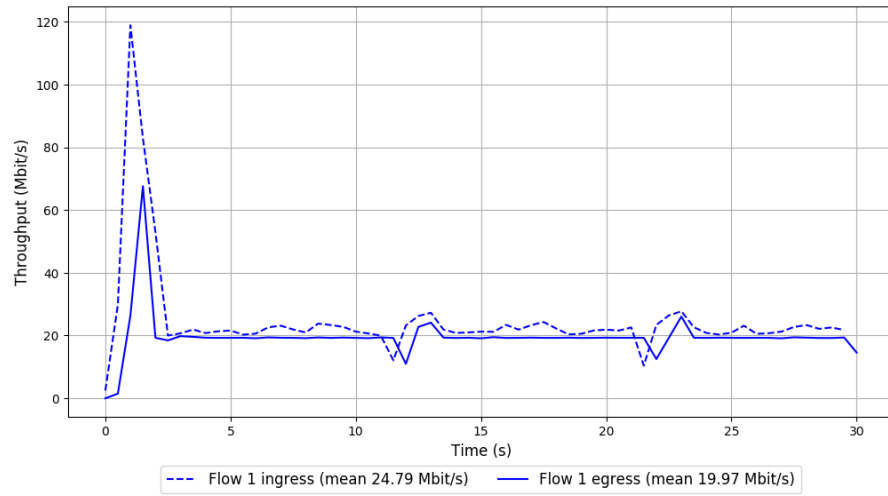
Run 4: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 19.96 Mbit/s) ----- Flow 1 egress (mean 18.70 Mbit/s)

Flow 1 (95th percentile 74.40 ms)

```
Run 5: Statistics of TCP Cubic

Start at: 2018-10-02 14:53:26
End at: 2018-10-02 14:53:56
Local clock offset: -8.856 ms
Remote clock offset: 10.696 ms


# Below is generated by plot.py at 2018-10-02 15:10:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 17.46 Mbit/s
95th percentile per-packet one-way delay: 73.232 ms
Loss rate: 8.04%
-- Flow 1:
Average throughput: 17.46 Mbit/s
95th percentile per-packet one-way delay: 73.232 ms
Loss rate: 8.04%
```

Run 5: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 18.90 Mbit/s)   Flow 1 egress (mean 17.46 Mbit/s)

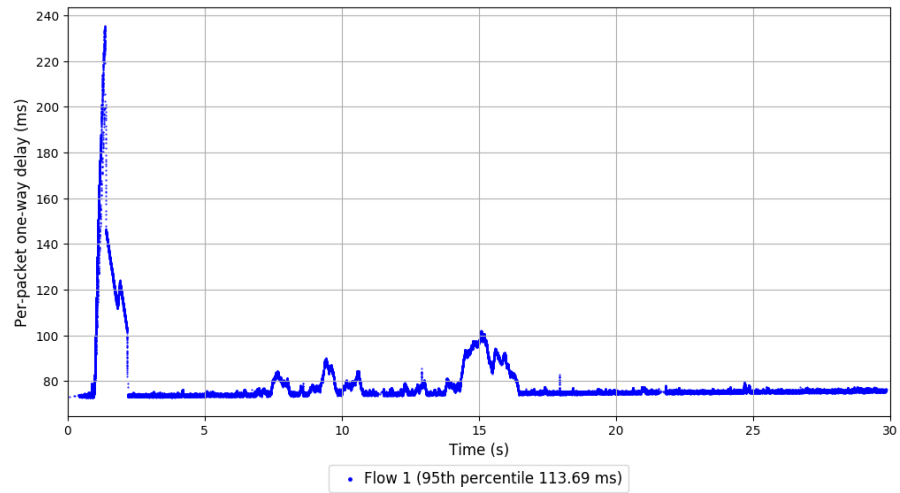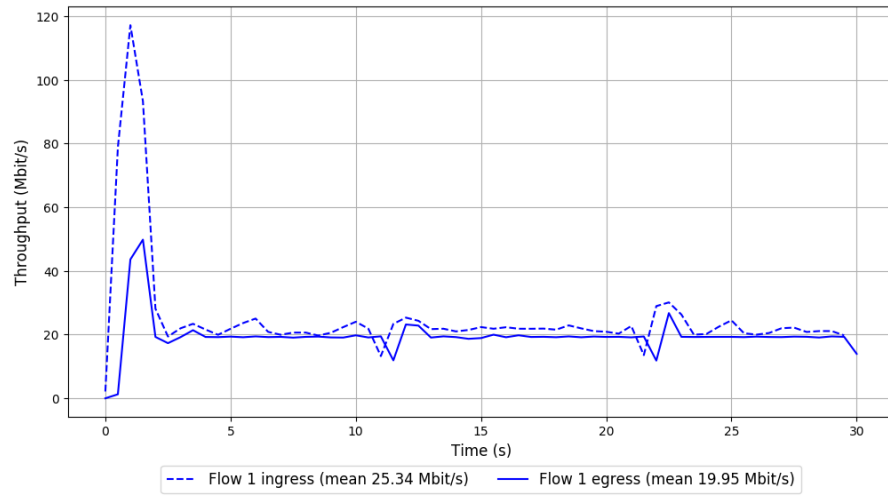• Flow 1 (95th percentile 73.23 ms)

```
Run 1: Statistics of FillP

Start at: 2018-10-02 13:31:31
End at: 2018-10-02 13:32:01
Local clock offset: -10.901 ms
Remote clock offset: -37.842 ms

# Below is generated by plot.py at 2018-10-02 15:10:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 19.97 Mbit/s
95th percentile per-packet one-way delay: 85.302 ms
Loss rate: 19.84%
-- Flow 1:
Average throughput: 19.97 Mbit/s
95th percentile per-packet one-way delay: 85.302 ms
Loss rate: 19.84%
```
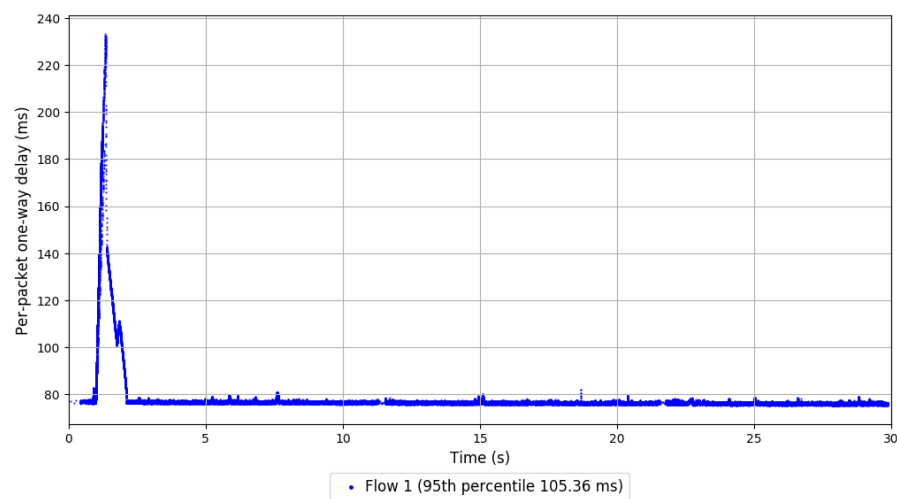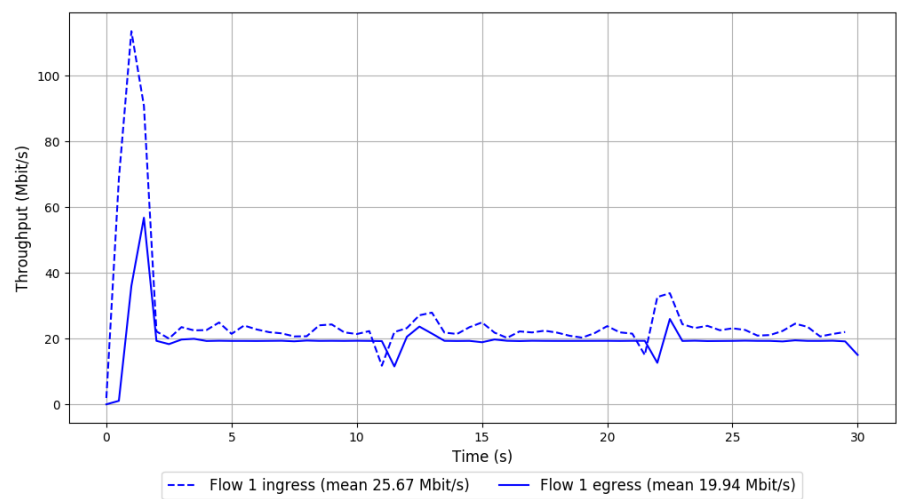
Run 1: Report of FillP — Data Link

```
Run 2: Statistics of FillP

Start at: 2018-10-02 13:52:53
End at: 2018-10-02 13:53:23
Local clock offset: -11.054 ms
Remote clock offset: 38.695 ms

# Below is generated by plot.py at 2018-10-02 15:10:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 19.95 Mbit/s
95th percentile per-packet one-way delay: 113.695 ms
Loss rate: 21.63%
-- Flow 1:
Average throughput: 19.95 Mbit/s
95th percentile per-packet one-way delay: 113.695 ms
Loss rate: 21.63%
```
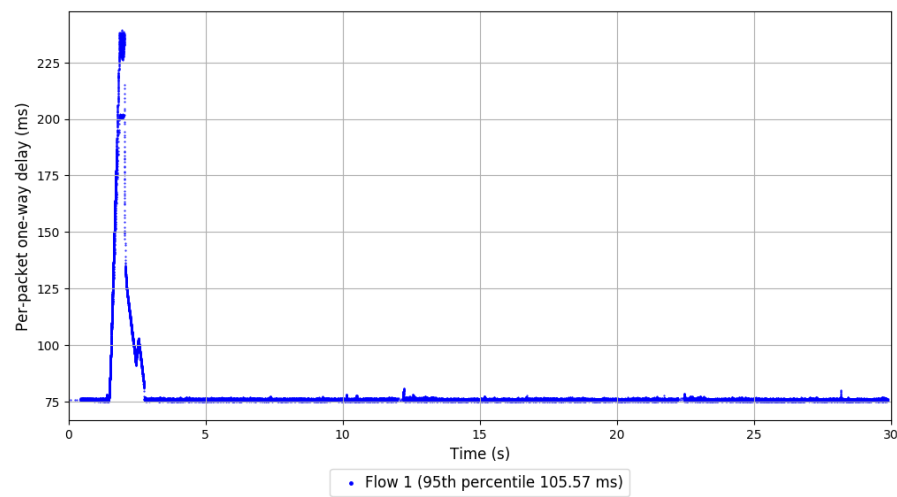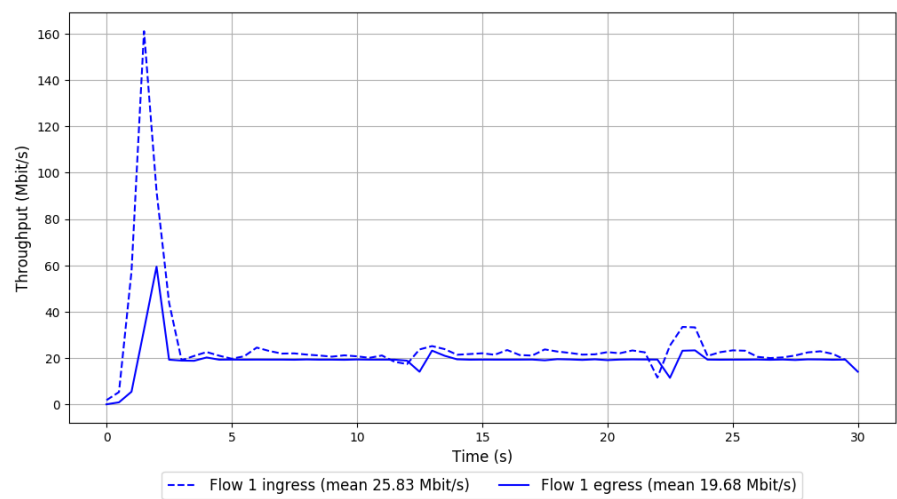
Run 2: Report of FillP — Data Link

38

```
Run 3: Statistics of FillP

Start at: 2018-10-02 14:14:16
End at: 2018-10-02 14:14:46
Local clock offset: -11.604 ms
Remote clock offset: 26.15 ms


# Below is generated by plot.py at 2018-10-02 15:10:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 19.94 Mbit/s
95th percentile per-packet one-way delay: 105.361 ms
Loss rate: 22.68%
-- Flow 1:
Average throughput: 19.94 Mbit/s
95th percentile per-packet one-way delay: 105.361 ms
Loss rate: 22.68%
```
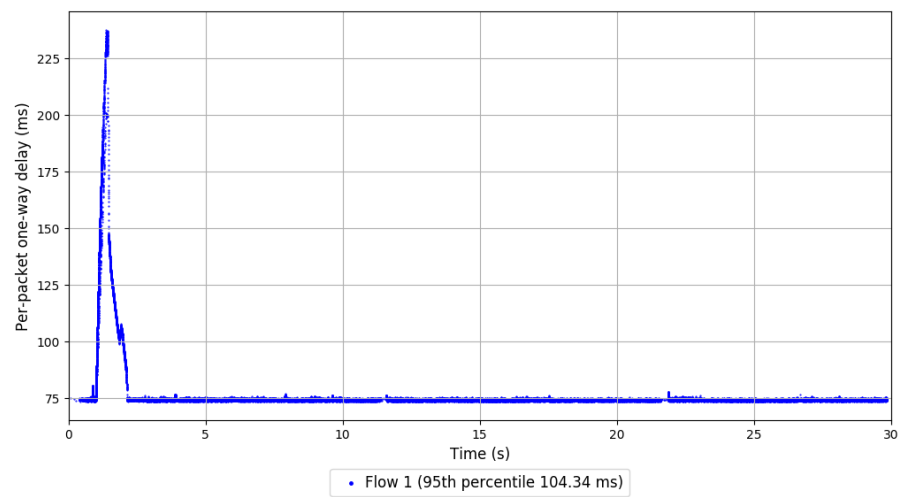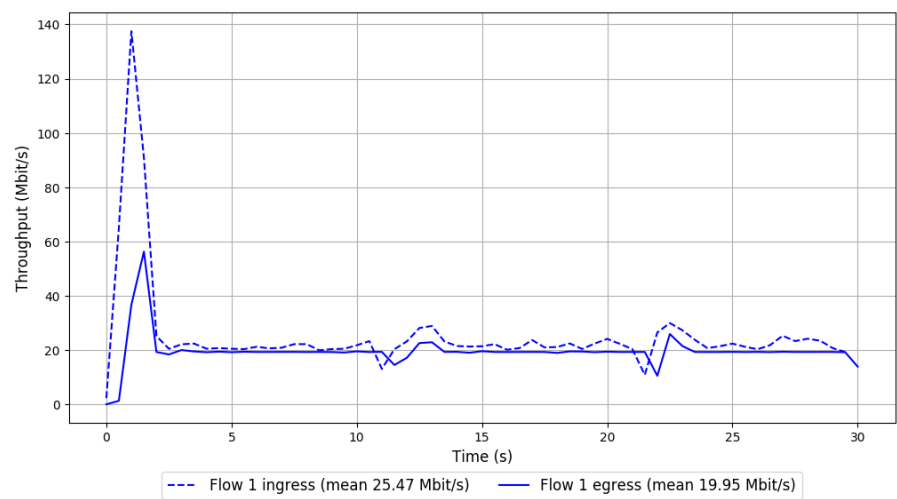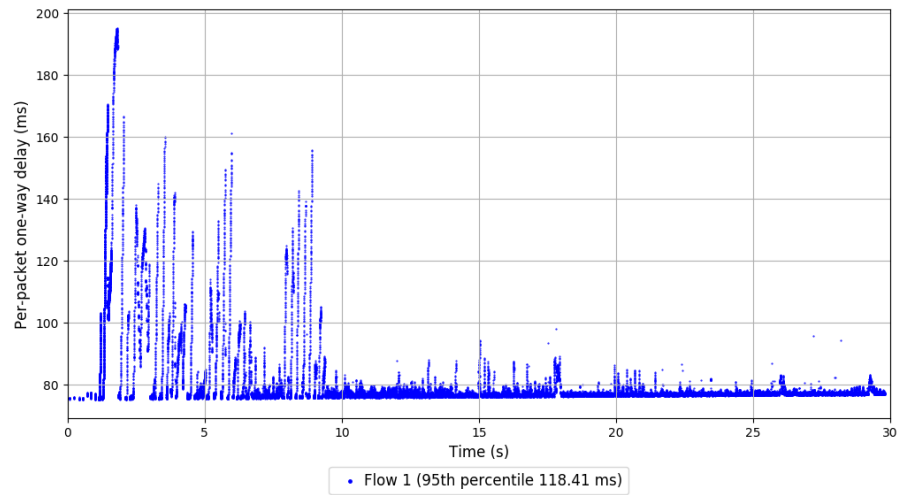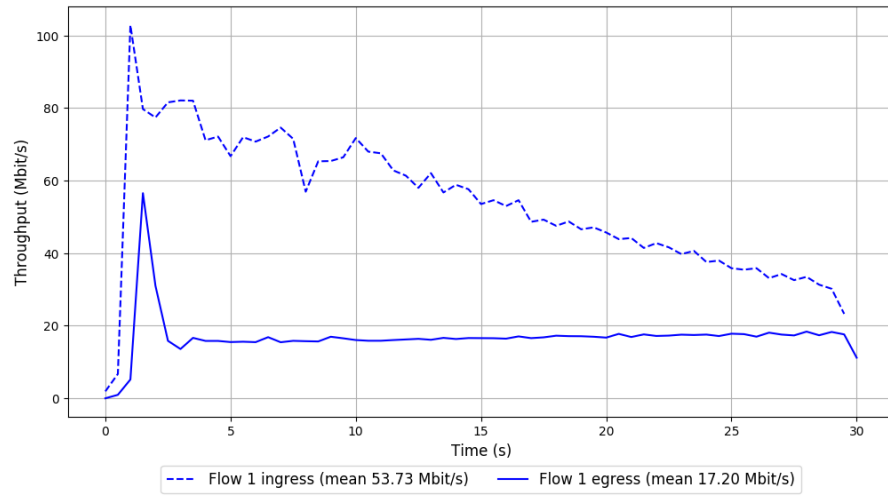
Run 3: Report of FillP — Data Link

```
Run 4: Statistics of FillP

Start at: 2018-10-02 14:35:40
End at: 2018-10-02 14:36:10
Local clock offset: -8.791 ms
Remote clock offset: 11.421 ms


# Below is generated by plot.py at 2018-10-02 15:10:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 19.68 Mbit/s
95th percentile per-packet one-way delay: 105.571 ms
Loss rate: 24.19%
-- Flow 1:
Average throughput: 19.68 Mbit/s
95th percentile per-packet one-way delay: 105.571 ms
Loss rate: 24.19%
```

Run 4: Report of FillP — Data Link

Flow 1 ingress (mean 25.83 Mbit/s)   Flow 1 egress (mean 19.68 Mbit/s)

Flow 1 (95th percentile 105.57 ms)

```
Run 5: Statistics of FillP

Start at: 2018-10-02 14:57:02
End at: 2018-10-02 14:57:32
Local clock offset: -8.632 ms
Remote clock offset: 9.023 ms


# Below is generated by plot.py at 2018-10-02 15:10:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 19.95 Mbit/s
95th percentile per-packet one-way delay: 104.338 ms
Loss rate: 22.06%
-- Flow 1:
Average throughput: 19.95 Mbit/s
95th percentile per-packet one-way delay: 104.338 ms
Loss rate: 22.06%
```
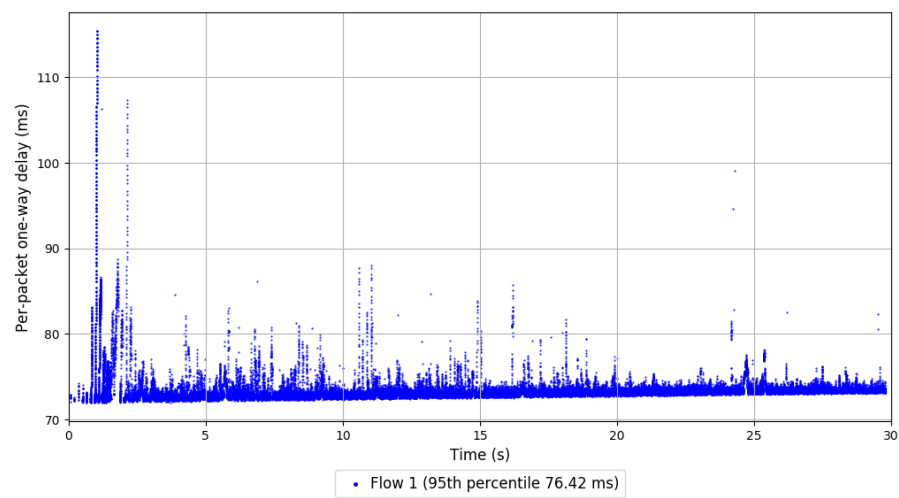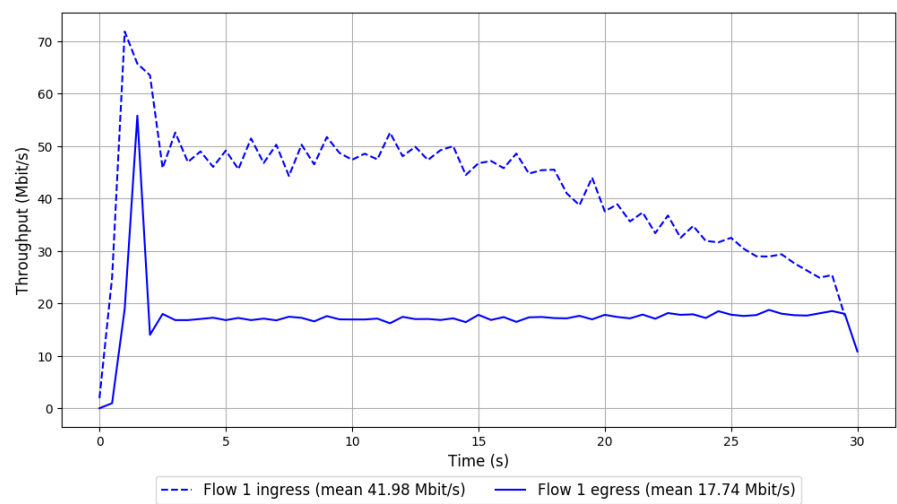
Run 5: Report of FillP — Data Link

```
Run 1: Statistics of Indigo

Start at: 2018-10-02 13:35:05
End at: 2018-10-02 13:35:35
Local clock offset: -10.928 ms
Remote clock offset: -14.17 ms


# Below is generated by plot.py at 2018-10-02 15:10:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 17.20 Mbit/s
95th percentile per-packet one-way delay: 118.407 ms
Loss rate: 68.11%
-- Flow 1:
Average throughput: 17.20 Mbit/s
95th percentile per-packet one-way delay: 118.407 ms
Loss rate: 68.11%
```
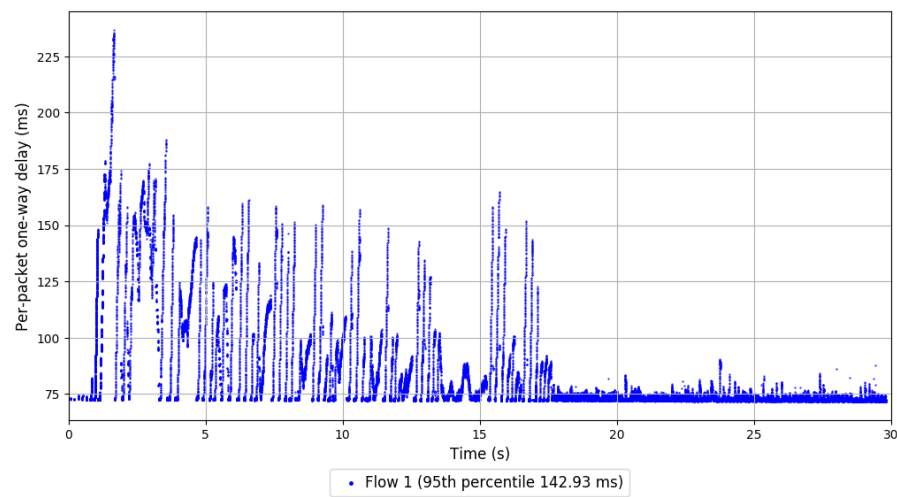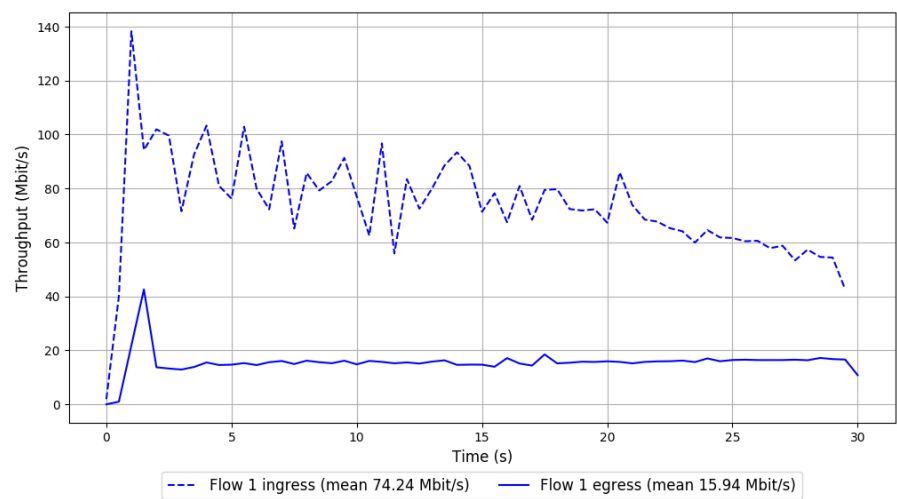
Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2018-10-02 13:56:27
End at: 2018-10-02 13:56:57
Local clock offset: -11.018 ms
Remote clock offset: 52.328 ms


# Below is generated by plot.py at 2018-10-02 15:10:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 17.74 Mbit/s
95th percentile per-packet one-way delay: 76.422 ms
Loss rate: 57.93%
-- Flow 1:
Average throughput: 17.74 Mbit/s
95th percentile per-packet one-way delay: 76.422 ms
Loss rate: 57.93%
```
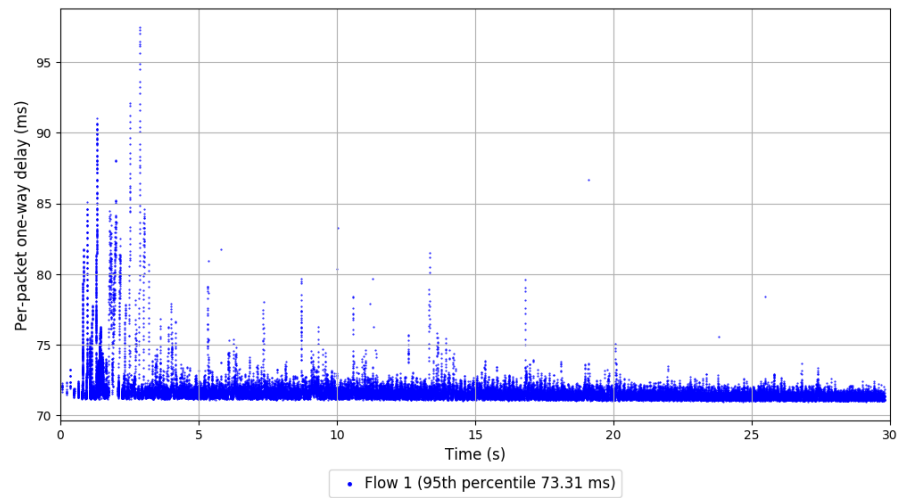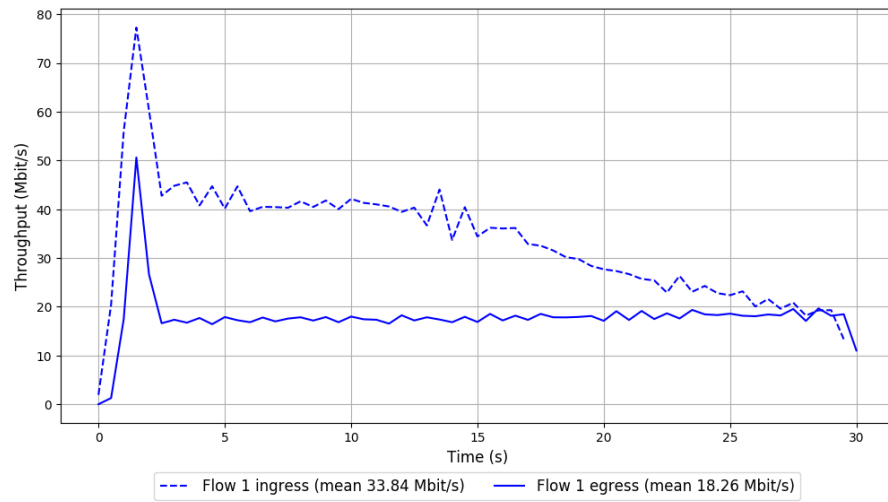
Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2018-10-02 14:17:49
End at: 2018-10-02 14:18:19
Local clock offset: -10.89 ms
Remote clock offset: 24.518 ms


# Below is generated by plot.py at 2018-10-02 15:10:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 15.94 Mbit/s
95th percentile per-packet one-way delay: 142.925 ms
Loss rate: 78.63%
-- Flow 1:
Average throughput: 15.94 Mbit/s
95th percentile per-packet one-way delay: 142.925 ms
Loss rate: 78.63%
```

Run 3: Report of Indigo — Data Link

```
Run 4: Statistics of Indigo

Start at: 2018-10-02 14:39:12
End at: 2018-10-02 14:39:42
Local clock offset: -8.692 ms
Remote clock offset: 14.689 ms


# Below is generated by plot.py at 2018-10-02 15:10:42
# Datalink statistics
-- Total of 1 flow:
Average throughput: 18.26 Mbit/s
95th percentile per-packet one-way delay: 73.311 ms
Loss rate: 46.31%
-- Flow 1:
Average throughput: 18.26 Mbit/s
95th percentile per-packet one-way delay: 73.311 ms
Loss rate: 46.31%
```
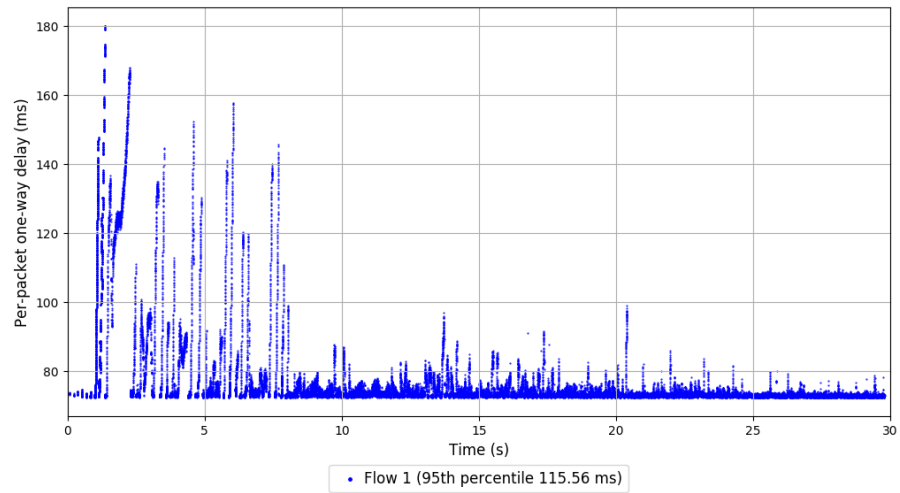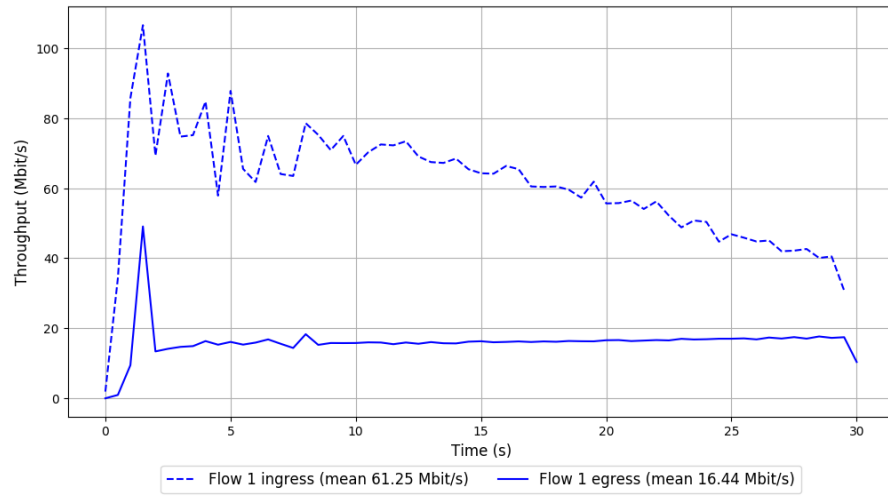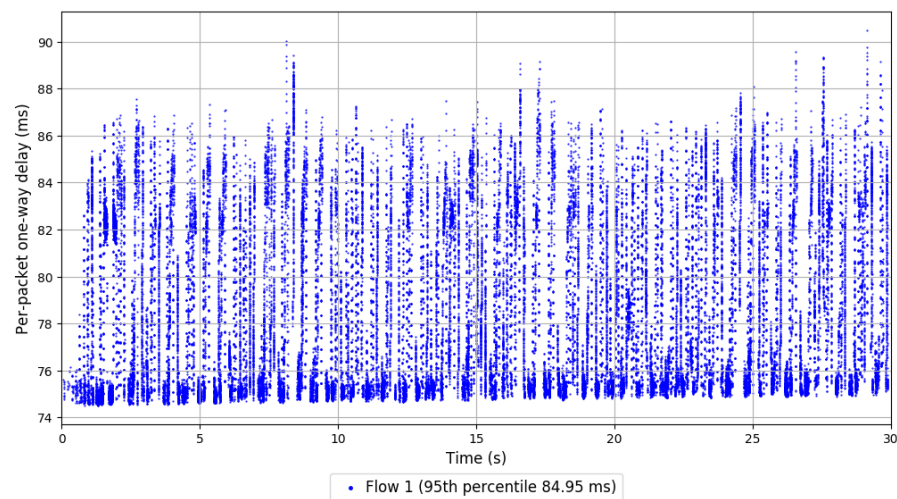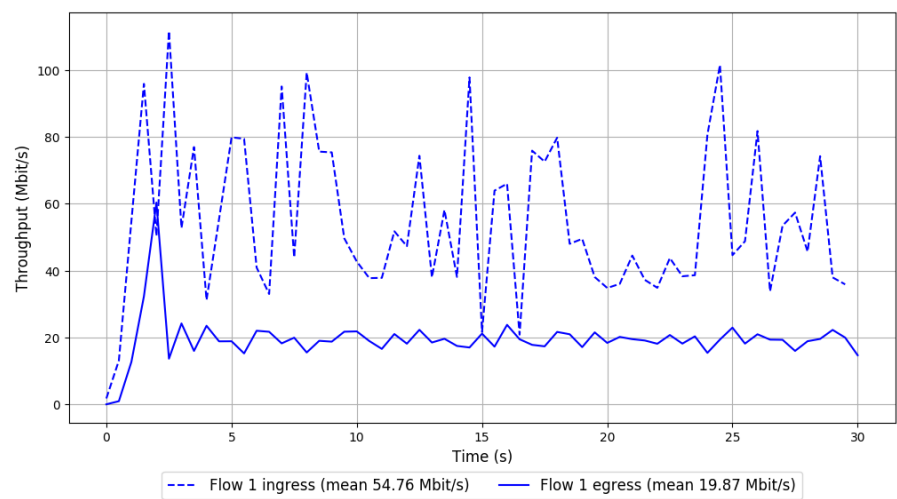
Run 4: Report of Indigo — Data Link

Flow 1 ingress (mean 33.84 Mbit/s)   Flow 1 egress (mean 18.26 Mbit/s)

Flow 1 (95th percentile 73.31 ms)

```
Run 5: Statistics of Indigo

Start at: 2018-10-02 15:00:35
End at: 2018-10-02 15:01:05
Local clock offset: -8.801 ms
Remote clock offset: 9.517 ms


# Below is generated by plot.py at 2018-10-02 15:10:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 16.44 Mbit/s
95th percentile per-packet one-way delay: 115.565 ms
Loss rate: 73.29%
-- Flow 1:
Average throughput: 16.44 Mbit/s
95th percentile per-packet one-way delay: 115.565 ms
Loss rate: 73.29%
```

Run 5: Report of Indigo — Data Link

Flow 1 ingress (mean 61.25 Mbit/s)   Flow 1 egress (mean 16.44 Mbit/s)
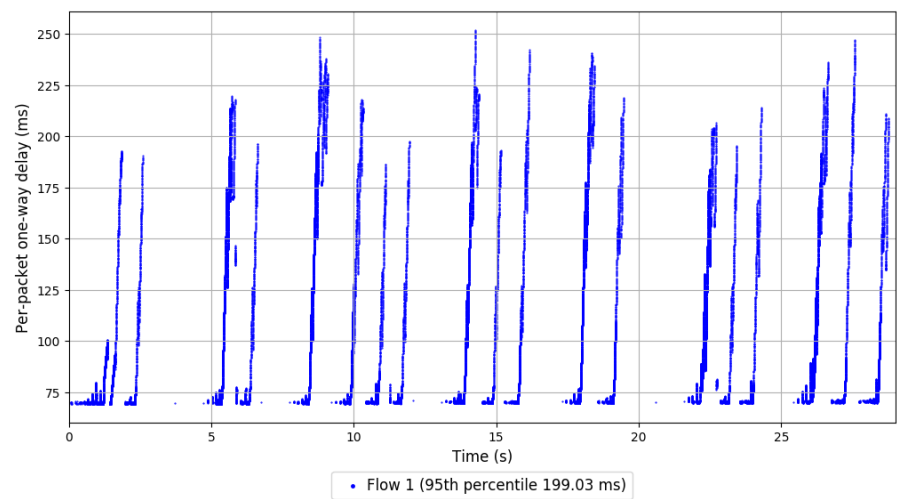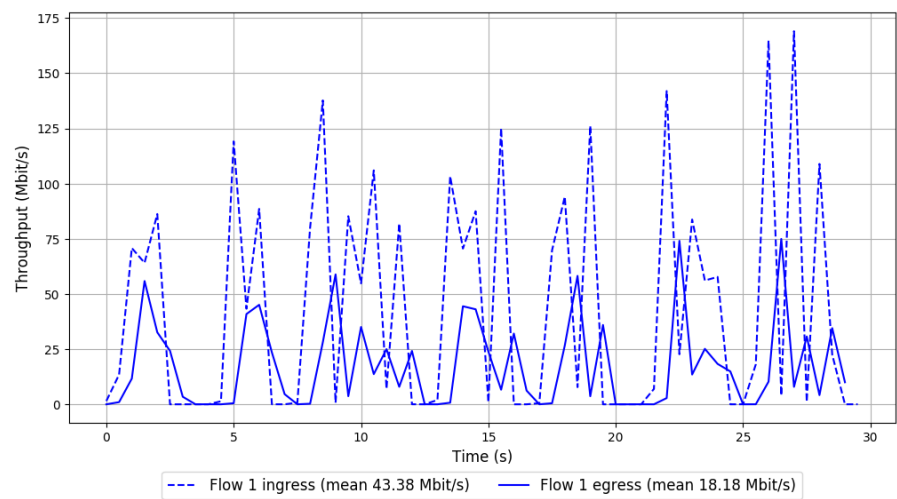

Flow 1 (95th percentile 115.56 ms)

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

Start at: 2018-10-02 13:38:38
End at: 2018-10-02 13:39:08
Local clock offset: -11.126 ms
Remote clock offset: -6.699 ms


# Below is generated by plot.py at 2018-10-02 15:10:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 19.87 Mbit/s
95th percentile per-packet one-way delay: 84.951 ms
Loss rate: 63.90%
-- Flow 1:
Average throughput: 19.87 Mbit/s
95th percentile per-packet one-way delay: 84.951 ms
Loss rate: 63.90%
```

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

Flow 1 ingress (mean 54.76 Mbit/s)   Flow 1 egress (mean 19.87 Mbit/s)
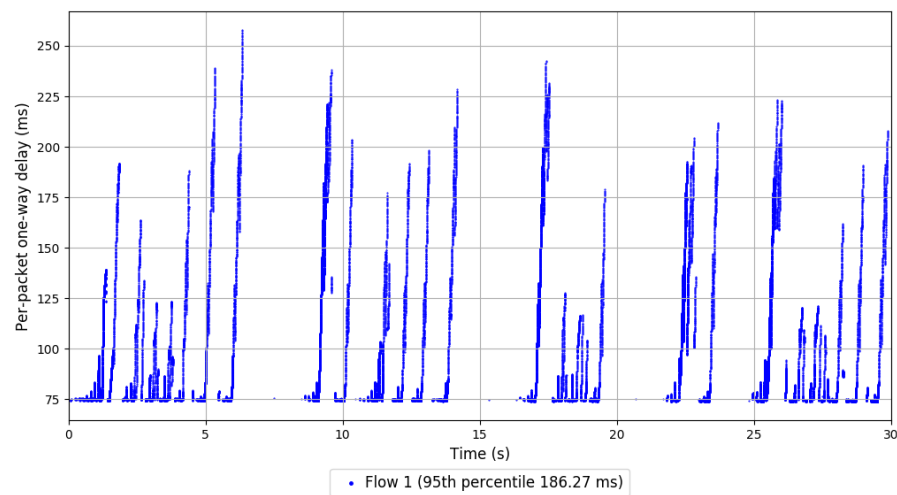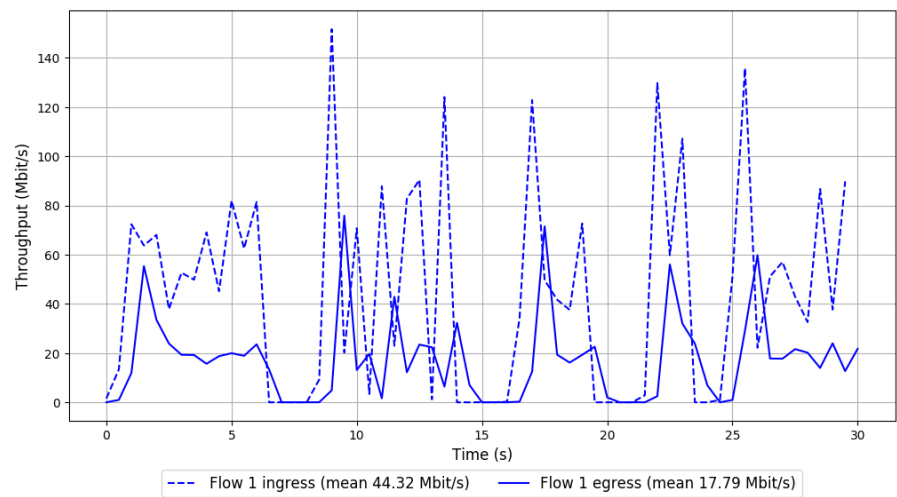

Flow 1 (95th percentile 84.95 ms)

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

Start at: 2018-10-02 14:00:01
End at: 2018-10-02 14:00:31
Local clock offset: -11.121 ms
Remote clock offset: 61.177 ms


# Below is generated by plot.py at 2018-10-02 15:10:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 18.18 Mbit/s
95th percentile per-packet one-way delay: 199.031 ms
Loss rate: 59.69%
-- Flow 1:
Average throughput: 18.18 Mbit/s
95th percentile per-packet one-way delay: 199.031 ms
Loss rate: 59.69%
```
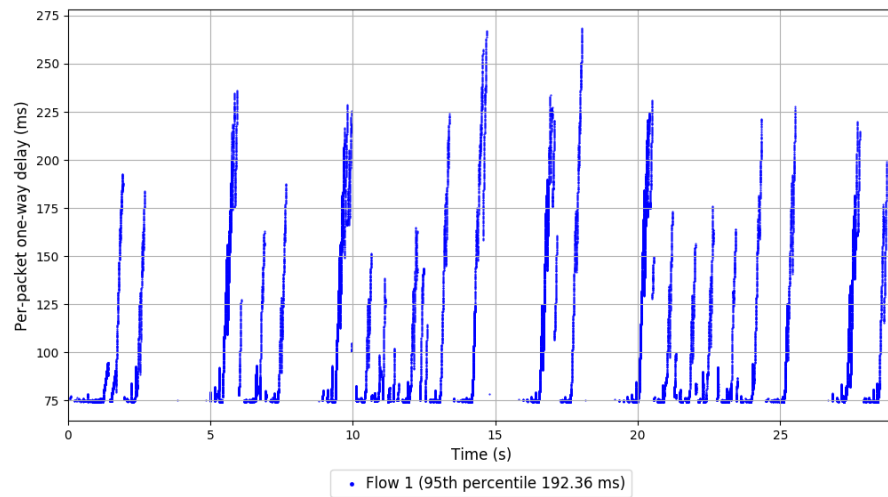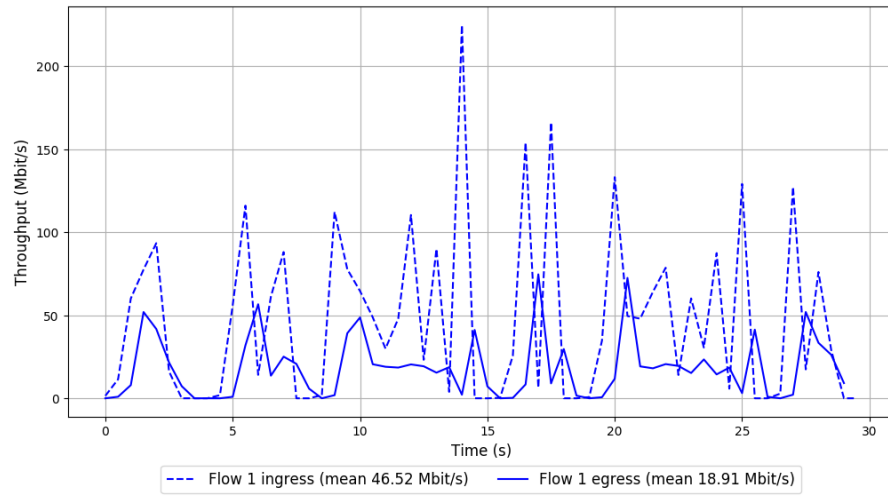
Run 2: Report of Indigo-96d2da3 — Data Link

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

Start at: 2018-10-02 14:21:26
End at: 2018-10-02 14:21:56
Local clock offset: -10.258 ms
Remote clock offset: 18.155 ms

# Below is generated by plot.py at 2018-10-02 15:10:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 17.79 Mbit/s
95th percentile per-packet one-way delay: 186.268 ms
Loss rate: 59.68%
-- Flow 1:
Average throughput: 17.79 Mbit/s
95th percentile per-packet one-way delay: 186.268 ms
Loss rate: 59.68%
```

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

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

Start at: 2018-10-02 14:42:50
End at: 2018-10-02 14:43:20
Local clock offset: -8.539 ms
Remote clock offset: 10.851 ms


# Below is generated by plot.py at 2018-10-02 15:10:58
# Datalink statistics
-- Total of 1 flow:
Average throughput: 18.91 Mbit/s
95th percentile per-packet one-way delay: 192.362 ms
Loss rate: 60.92%
-- Flow 1:
Average throughput: 18.91 Mbit/s
95th percentile per-packet one-way delay: 192.362 ms
Loss rate: 60.92%
```
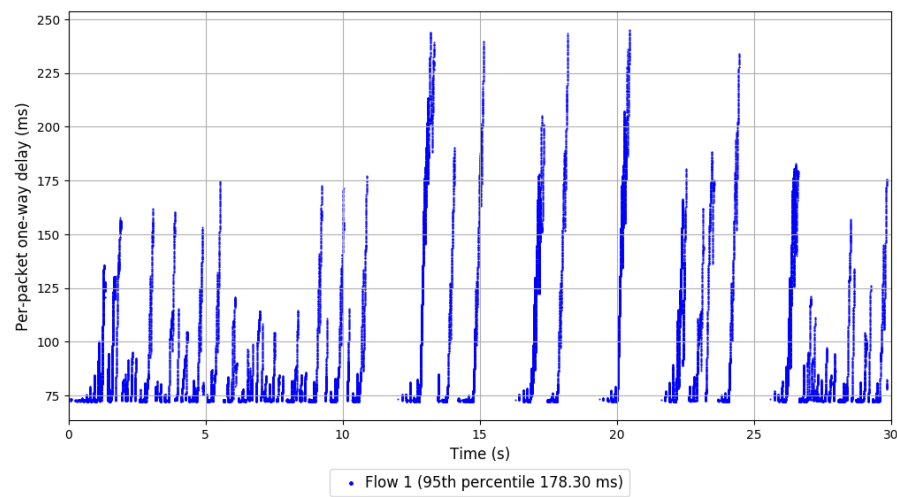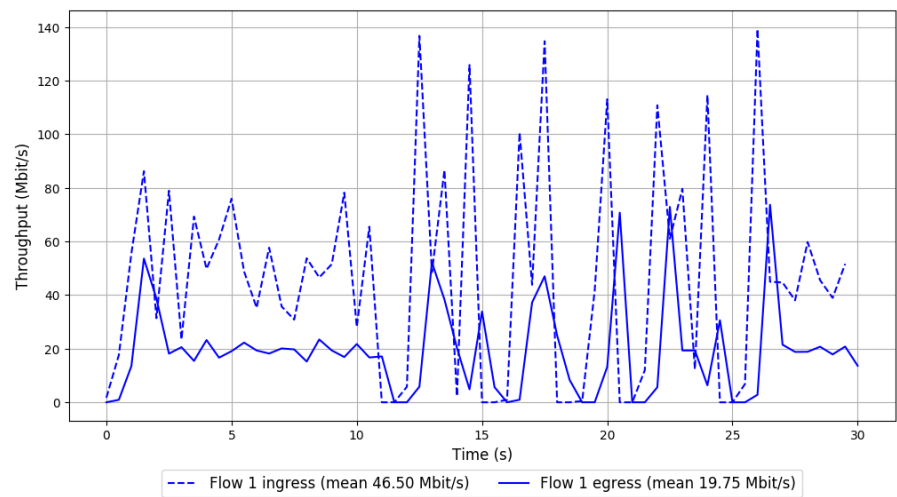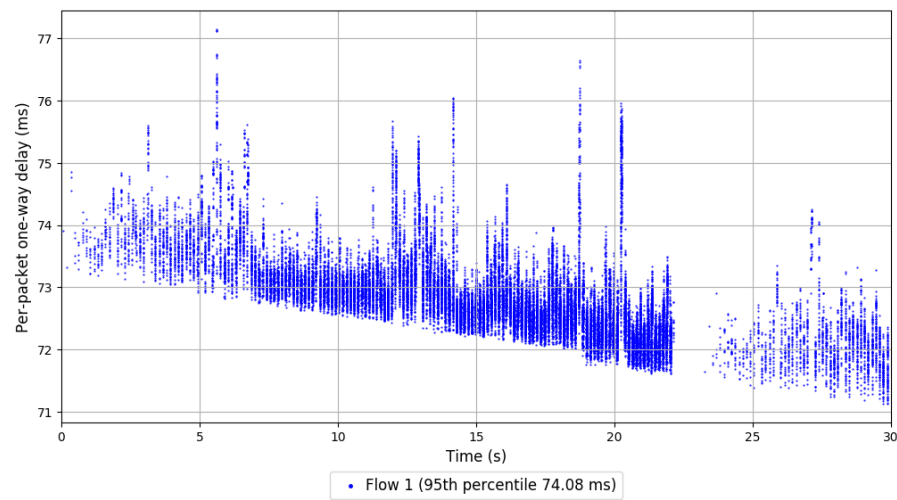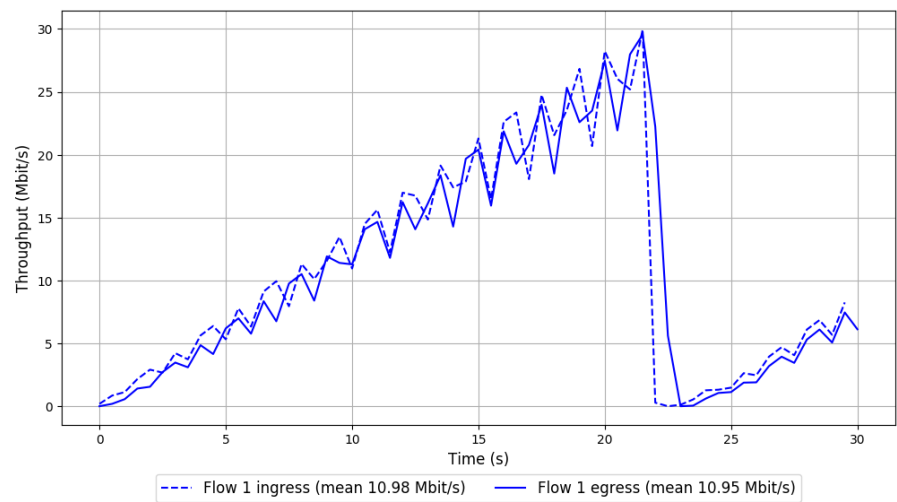
Run 4: Report of Indigo-96d2da3 — Data Link

Flow 1 ingress (mean 46.52 Mbit/s) --- Flow 1 egress (mean 18.91 Mbit/s)

Flow 1 (95th percentile 192.36 ms)

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

Start at: 2018-10-02 15:04:10
End at: 2018-10-02 15:04:40
Local clock offset: -8.746 ms
Remote clock offset: 9.295 ms

# Below is generated by plot.py at 2018-10-02 15:11:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 19.75 Mbit/s
95th percentile per-packet one-way delay: 178.304 ms
Loss rate: 57.75%
-- Flow 1:
Average throughput: 19.75 Mbit/s
95th percentile per-packet one-way delay: 178.304 ms
Loss rate: 57.75%
```

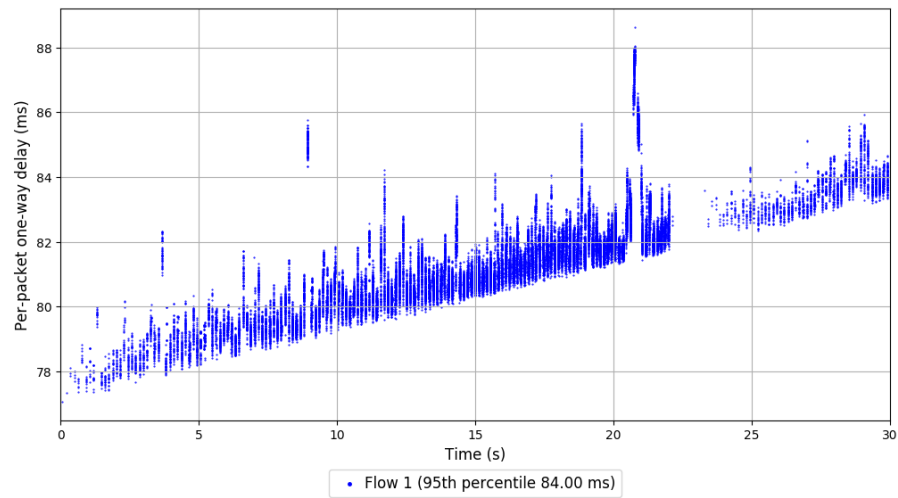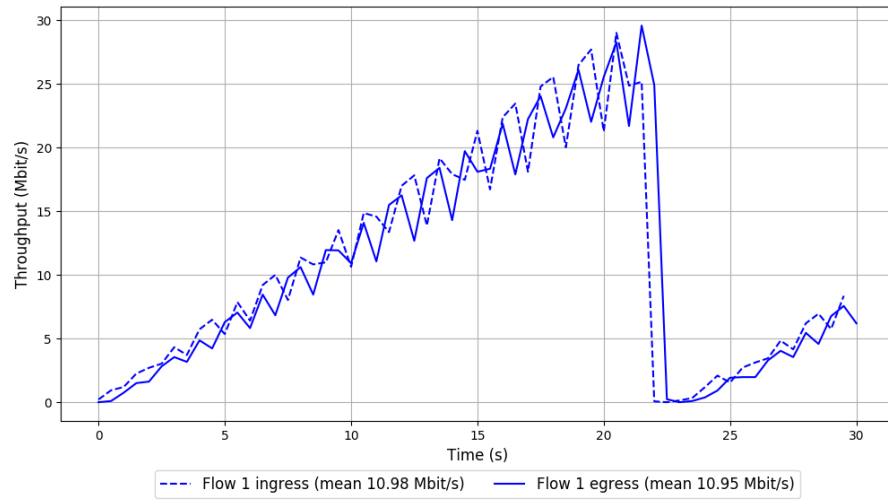Run 5: Report of Indigo-96d2da3 — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2018-10-02 13:26:42
End at: 2018-10-02 13:27:12
Local clock offset: -11.227 ms
Remote clock offset: -31.213 ms

# Below is generated by plot.py at 2018-10-02 15:11:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.95 Mbit/s
95th percentile per-packet one-way delay: 74.084 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 10.95 Mbit/s
95th percentile per-packet one-way delay: 74.084 ms
Loss rate: 0.69%
```
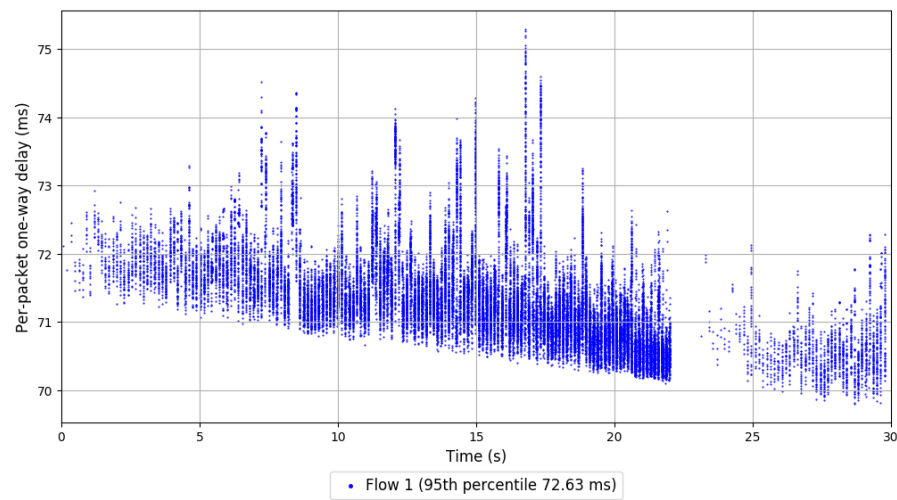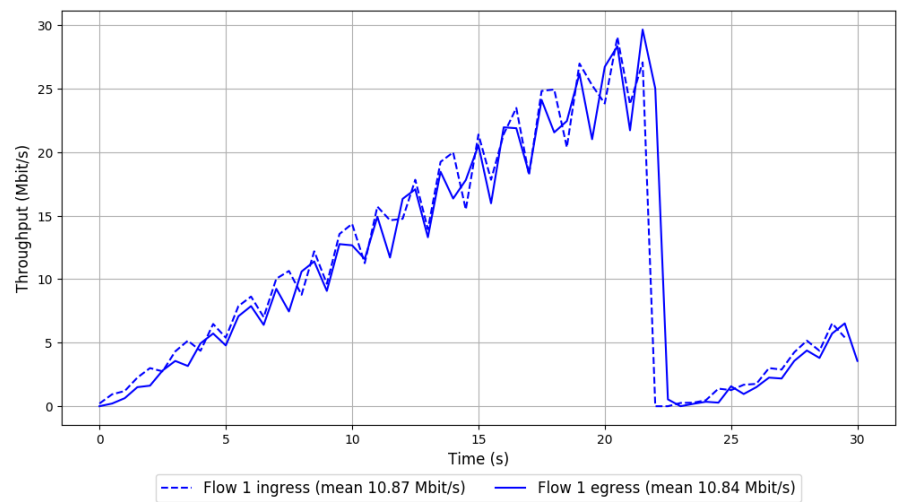
Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2018-10-02 13:48:06
End at: 2018-10-02 13:48:36
Local clock offset: -11.18 ms
Remote clock offset: -4.816 ms


# Below is generated by plot.py at 2018-10-02 15:11:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.95 Mbit/s
95th percentile per-packet one-way delay: 84.003 ms
Loss rate: 0.74%
-- Flow 1:
Average throughput: 10.95 Mbit/s
95th percentile per-packet one-way delay: 84.003 ms
Loss rate: 0.74%
```

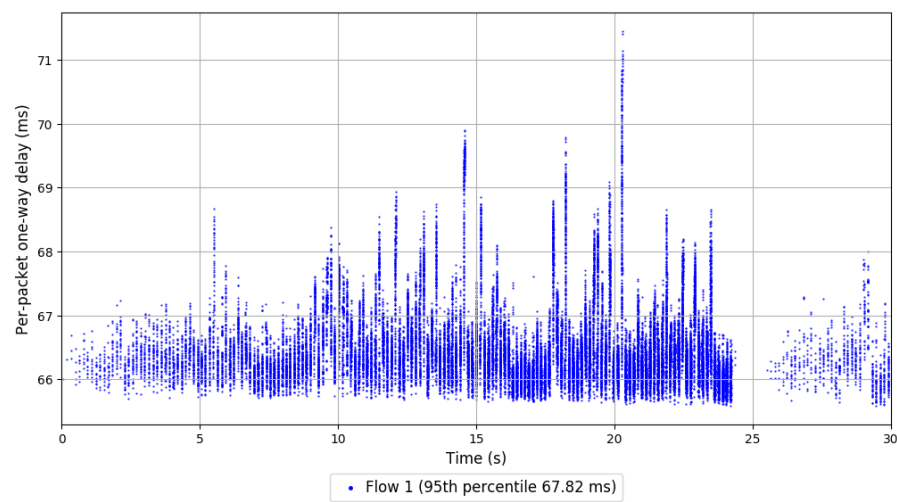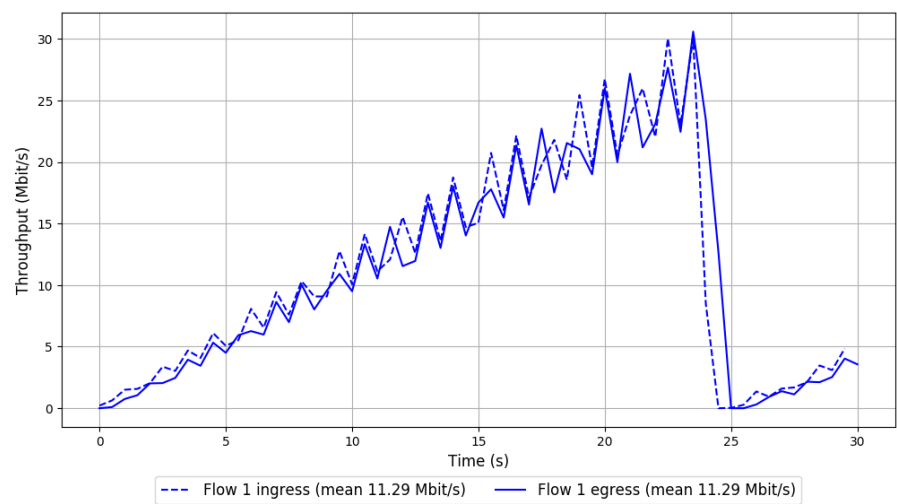# Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2018-10-02 14:09:30
End at: 2018-10-02 14:10:00
Local clock offset: -11.362 ms
Remote clock offset: 43.655 ms

# Below is generated by plot.py at 2018-10-02 15:11:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.84 Mbit/s
95th percentile per-packet one-way delay: 72.627 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 10.84 Mbit/s
95th percentile per-packet one-way delay: 72.627 ms
Loss rate: 0.75%
```

Run 3: Report of LEDBAT — Data Link

Flow 1 ingress (mean 10.87 Mbit/s)   Flow 1 egress (mean 10.84 Mbit/s)

• Flow 1 (95th percentile 72.63 ms)

```
Run 4: Statistics of LEDBAT

Start at: 2018-10-02 14:30:48
End at: 2018-10-02 14:31:18
Local clock offset: -8.924 ms
Remote clock offset: 22.504 ms


# Below is generated by plot.py at 2018-10-02 15:11:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.29 Mbit/s
95th percentile per-packet one-way delay: 67.816 ms
Loss rate: 0.55%
-- Flow 1:
Average throughput: 11.29 Mbit/s
95th percentile per-packet one-way delay: 67.816 ms
Loss rate: 0.55%
```
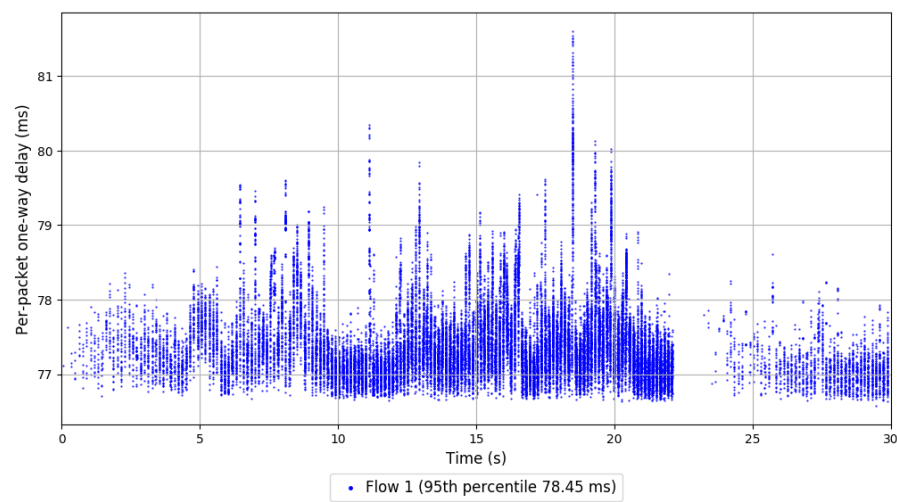
Run 4: Report of LEDBAT — Data Link

```
Run 5: Statistics of LEDBAT

Start at: 2018-10-02 14:52:15
End at: 2018-10-02 14:52:45
Local clock offset: -8.591 ms
Remote clock offset: 6.315 ms

# Below is generated by plot.py at 2018-10-02 15:11:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.94 Mbit/s
95th percentile per-packet one-way delay: 78.446 ms
Loss rate: 0.71%
-- Flow 1:
Average throughput: 10.94 Mbit/s
95th percentile per-packet one-way delay: 78.446 ms
Loss rate: 0.71%
```
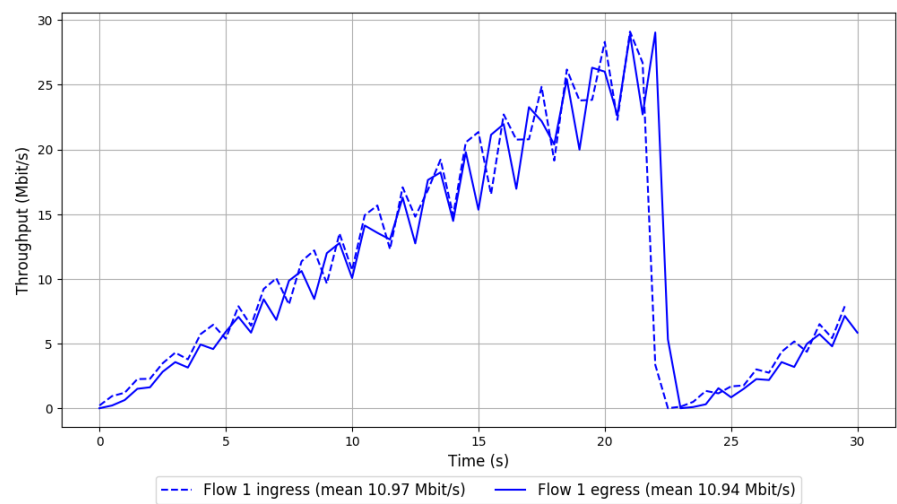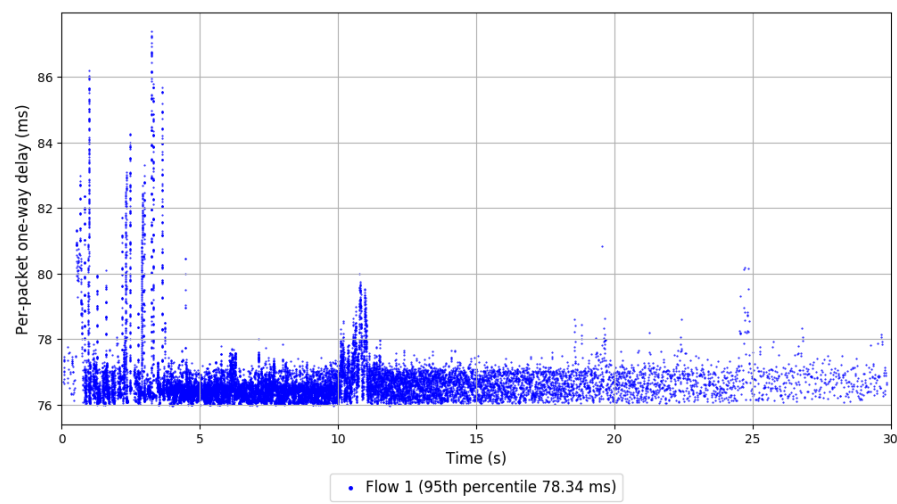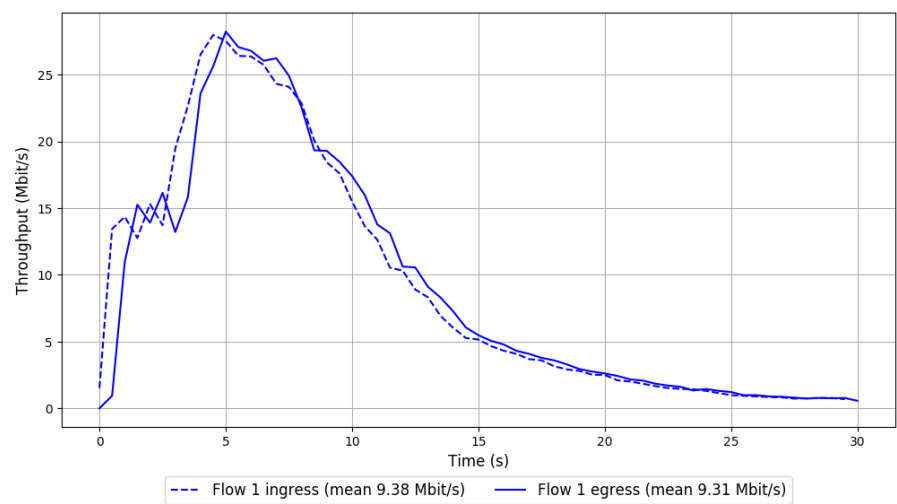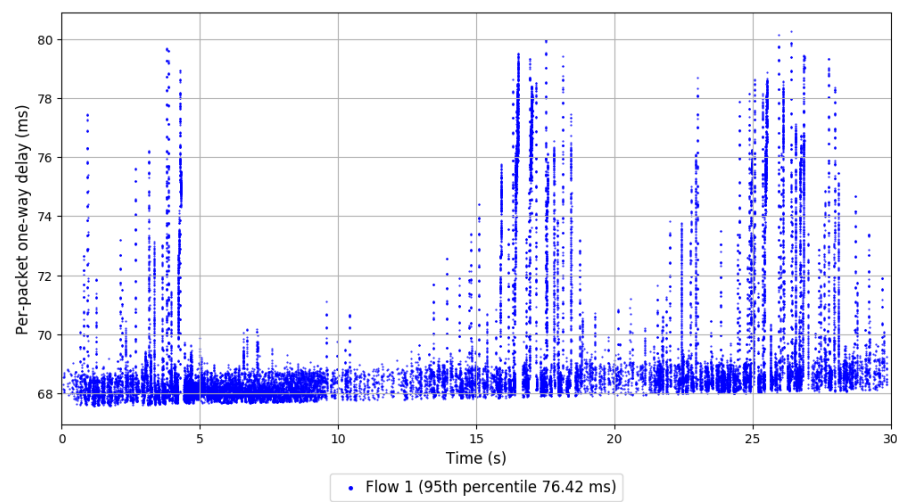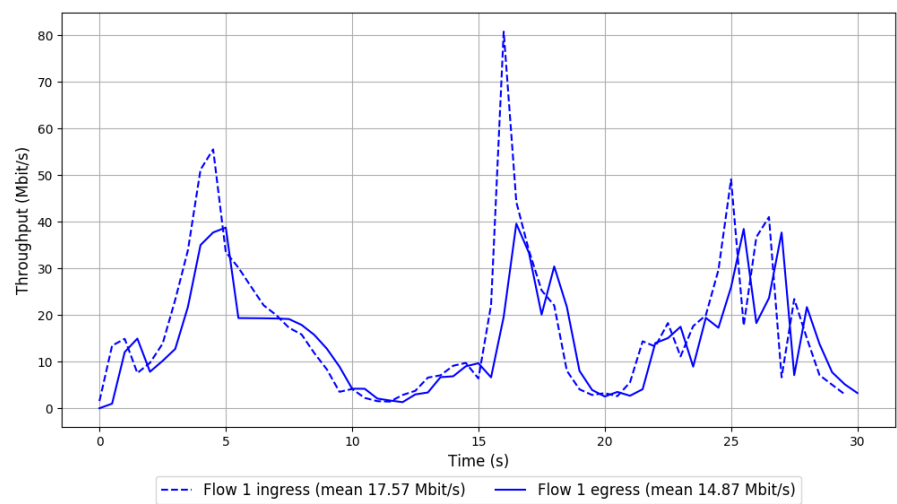
Run 5: Report of LEDBAT — Data Link

```
Run 1: Statistics of Indigo-Muses

Start at: 2018-10-02 13:41:00
End at: 2018-10-02 13:41:30
Local clock offset: -11.222 ms
Remote clock offset: -7.063 ms


# Below is generated by plot.py at 2018-10-02 15:11:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.31 Mbit/s
95th percentile per-packet one-way delay: 78.337 ms
Loss rate: 1.20%
-- Flow 1:
Average throughput: 9.31 Mbit/s
95th percentile per-packet one-way delay: 78.337 ms
Loss rate: 1.20%
```

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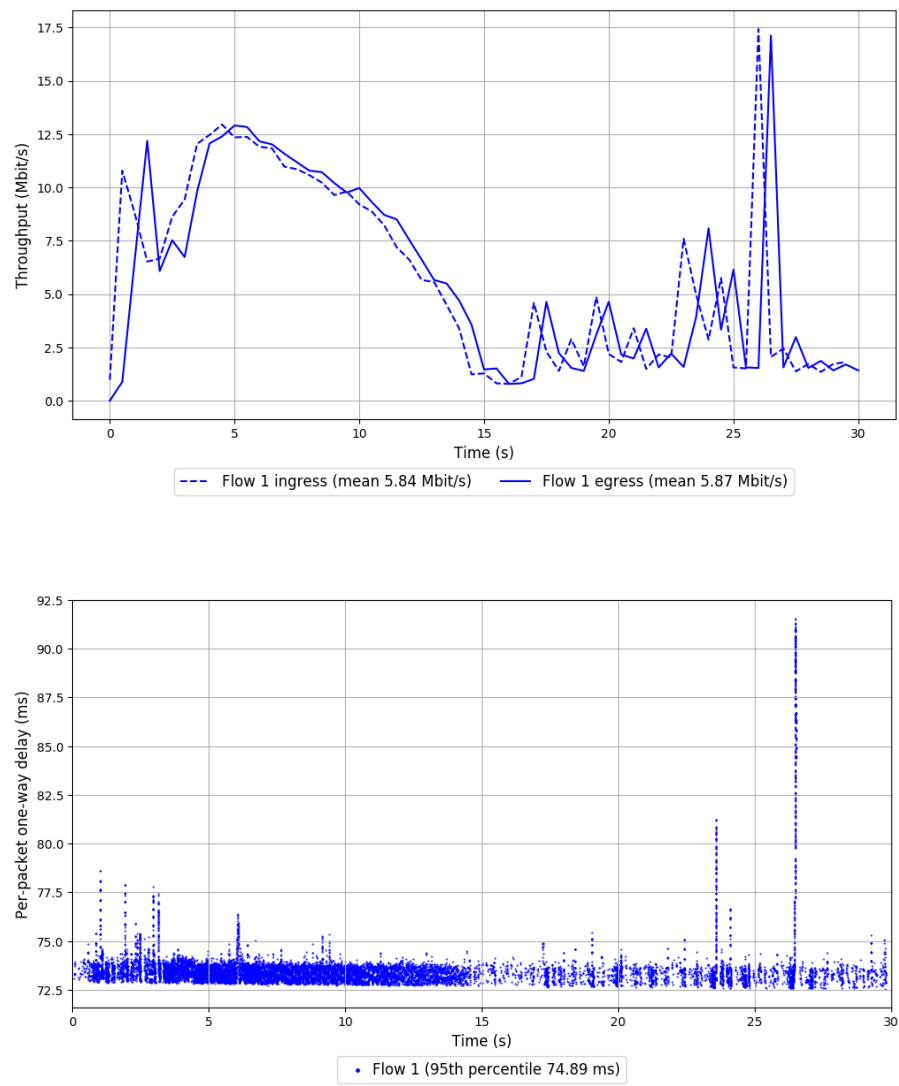
Run 1: Report of Indigo-Muses — Data Link

76

```
Run 2: Statistics of Indigo-Muses

Start at: 2018-10-02 14:02:24
End at: 2018-10-02 14:02:54
Local clock offset: -11.175 ms
Remote clock offset: 66.02 ms


# Below is generated by plot.py at 2018-10-02 15:11:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 14.87 Mbit/s
95th percentile per-packet one-way delay: 76.418 ms
Loss rate: 15.72%
-- Flow 1:
Average throughput: 14.87 Mbit/s
95th percentile per-packet one-way delay: 76.418 ms
Loss rate: 15.72%
```
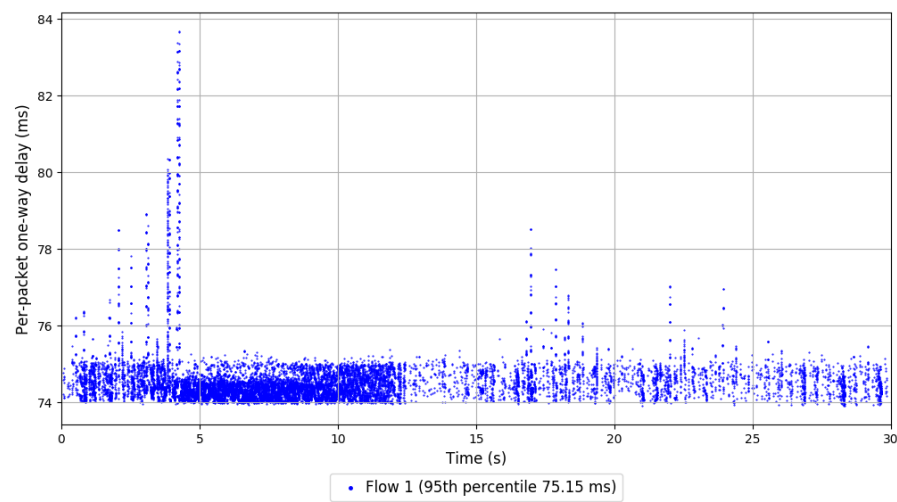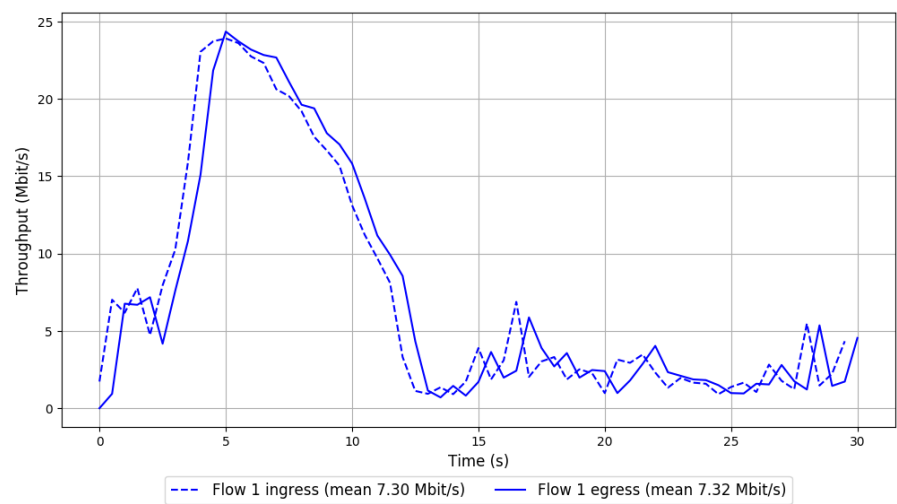
Run 2: Report of Indigo-Muses — Data Link

```
Run 3: Statistics of Indigo-Muses

Start at: 2018-10-02 14:23:49
End at: 2018-10-02 14:24:19
Local clock offset: -9.716 ms
Remote clock offset: 17.904 ms


# Below is generated by plot.py at 2018-10-02 15:11:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 5.87 Mbit/s
95th percentile per-packet one-way delay: 74.887 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 5.87 Mbit/s
95th percentile per-packet one-way delay: 74.887 ms
Loss rate: 0.13%
```

Run 3: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 5.84 Mbit/s)   Flow 1 egress (mean 5.87 Mbit/s)

Flow 1 (95th percentile 74.89 ms)

```
Run 4: Statistics of Indigo-Muses

Start at: 2018-10-02 14:45:16
End at: 2018-10-02 14:45:46
Local clock offset: -8.713 ms
Remote clock offset: 10.343 ms


# Below is generated by plot.py at 2018-10-02 15:11:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.32 Mbit/s
95th percentile per-packet one-way delay: 75.149 ms
Loss rate: 0.14%
-- Flow 1:
Average throughput: 7.32 Mbit/s
95th percentile per-packet one-way delay: 75.149 ms
Loss rate: 0.14%
```
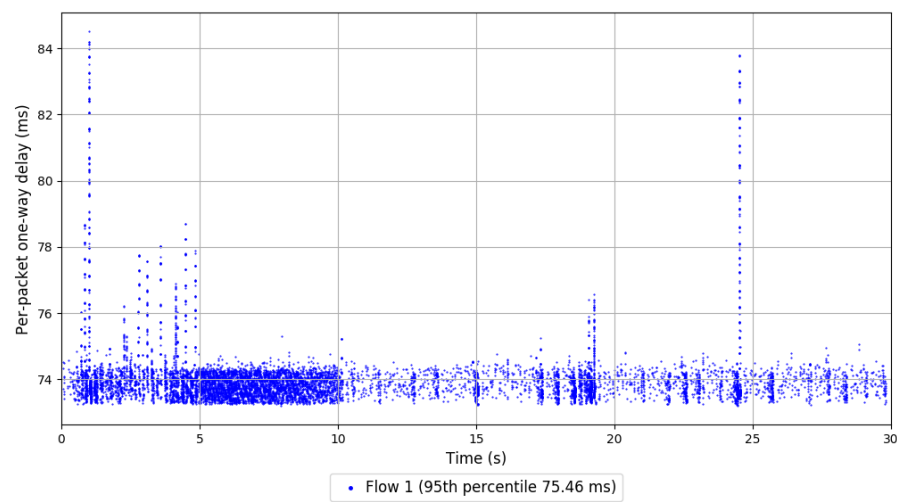
Run 4: Report of Indigo-Muses — Data Link

```
Run 5: Statistics of Indigo-Muses

Start at: 2018-10-02 15:06:35
End at: 2018-10-02 15:07:05
Local clock offset: -8.803 ms
Remote clock offset: 7.849 ms


# Below is generated by plot.py at 2018-10-02 15:11:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.86 Mbit/s
95th percentile per-packet one-way delay: 75.461 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 3.86 Mbit/s
95th percentile per-packet one-way delay: 75.461 ms
Loss rate: 0.06%
```
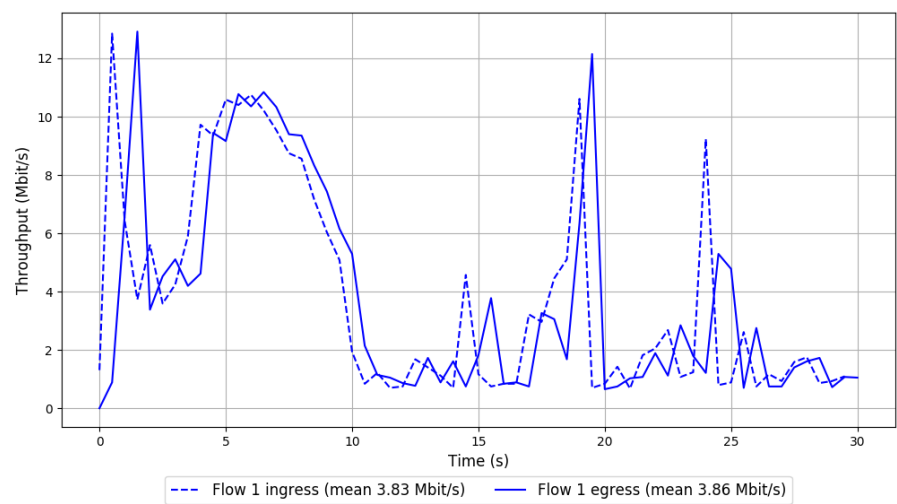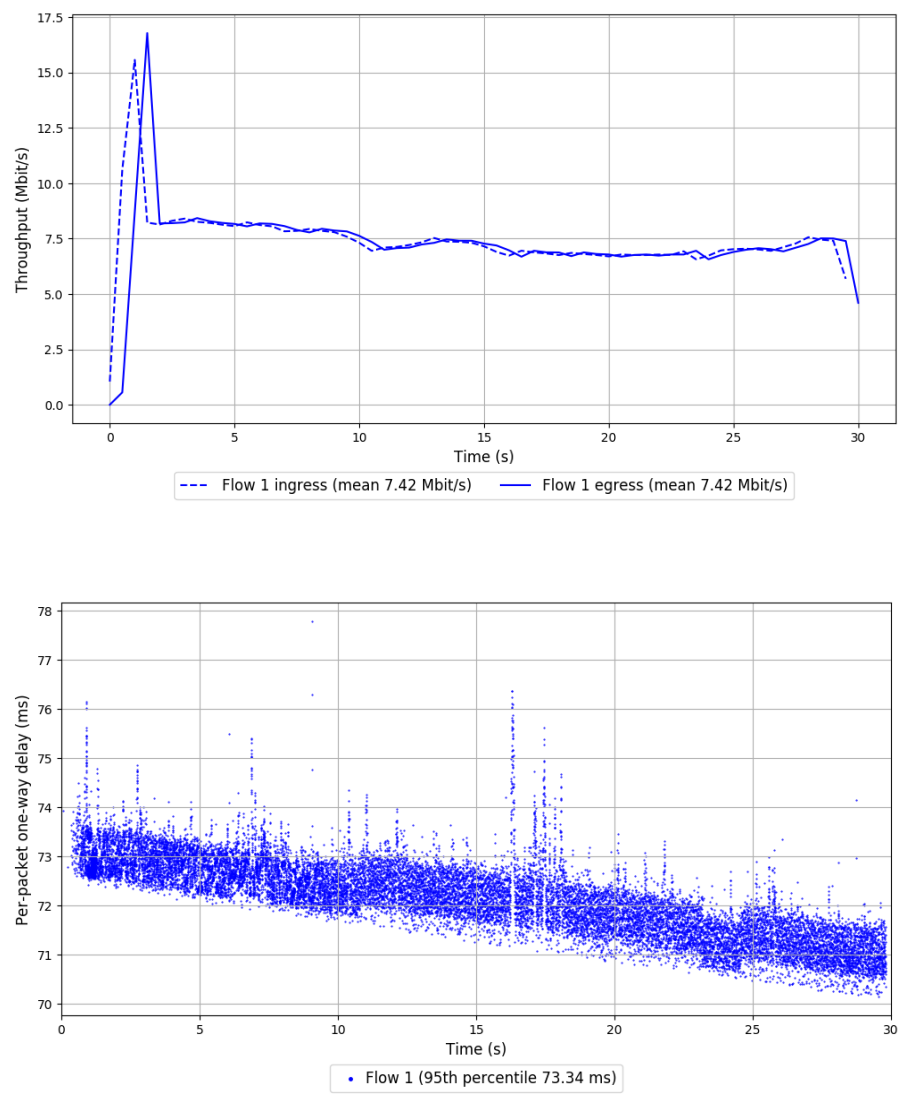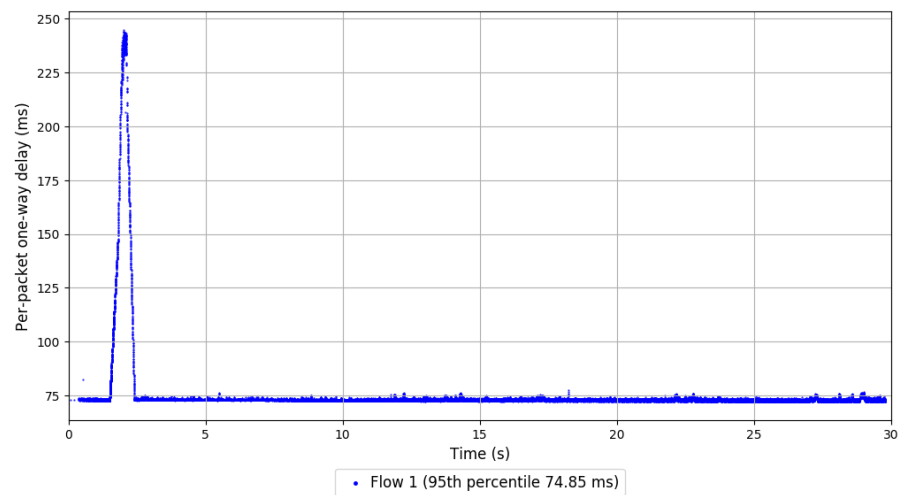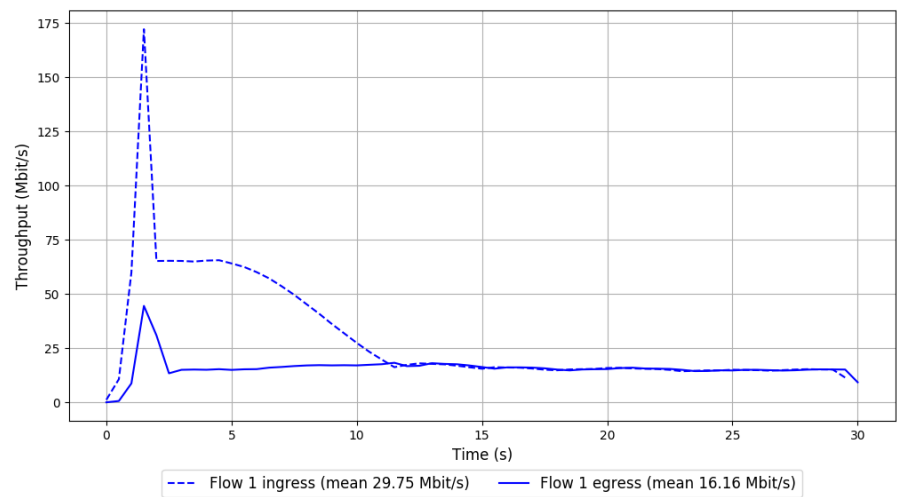
Run 5: Report of Indigo-Muses — Data Link

```
Run 1: Statistics of PCC-Allegro

Start at: 2018-10-02 13:24:18
End at: 2018-10-02 13:24:48
Local clock offset: -11.33 ms
Remote clock offset: -20.24 ms


# Below is generated by plot.py at 2018-10-02 15:11:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.42 Mbit/s
95th percentile per-packet one-way delay: 73.336 ms
Loss rate: 0.48%
-- Flow 1:
Average throughput: 7.42 Mbit/s
95th percentile per-packet one-way delay: 73.336 ms
Loss rate: 0.48%
```

Run 1: Report of PCC-Allegro — Data Link

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-10-02 13:45:42
End at: 2018-10-02 13:46:12
Local clock offset: -11.186 ms
Remote clock offset: -5.281 ms


# Below is generated by plot.py at 2018-10-02 15:11:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 16.16 Mbit/s
95th percentile per-packet one-way delay: 74.851 ms
Loss rate: 45.92%
-- Flow 1:
Average throughput: 16.16 Mbit/s
95th percentile per-packet one-way delay: 74.851 ms
Loss rate: 45.92%
```
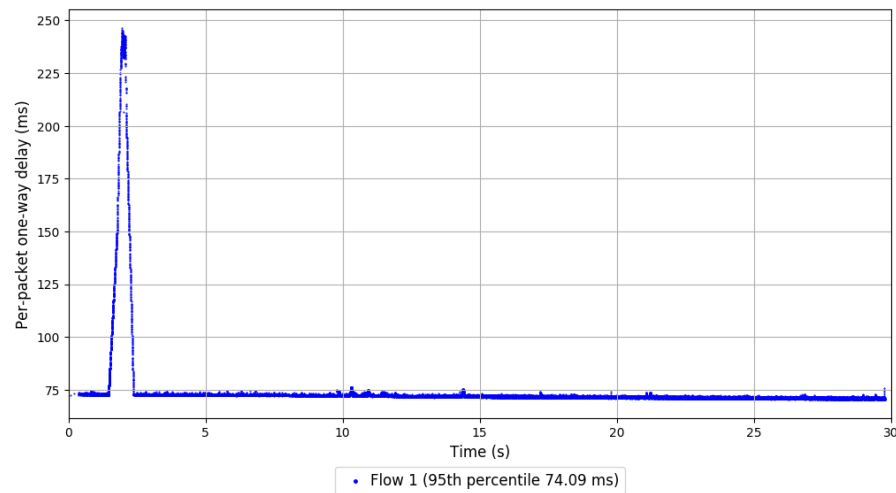
Run 2: Report of PCC-Allegro — Data Link

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-10-02 14:07:04
End at: 2018-10-02 14:07:34
Local clock offset: -11.11 ms
Remote clock offset: 51.937 ms


# Below is generated by plot.py at 2018-10-02 15:11:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 15.06 Mbit/s
95th percentile per-packet one-way delay: 74.090 ms
Loss rate: 55.72%
-- Flow 1:
Average throughput: 15.06 Mbit/s
95th percentile per-packet one-way delay: 74.090 ms
Loss rate: 55.72%
```
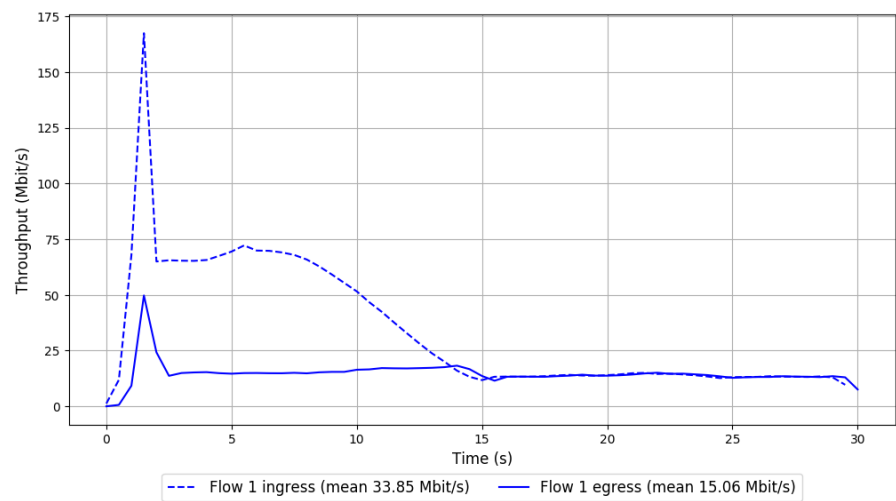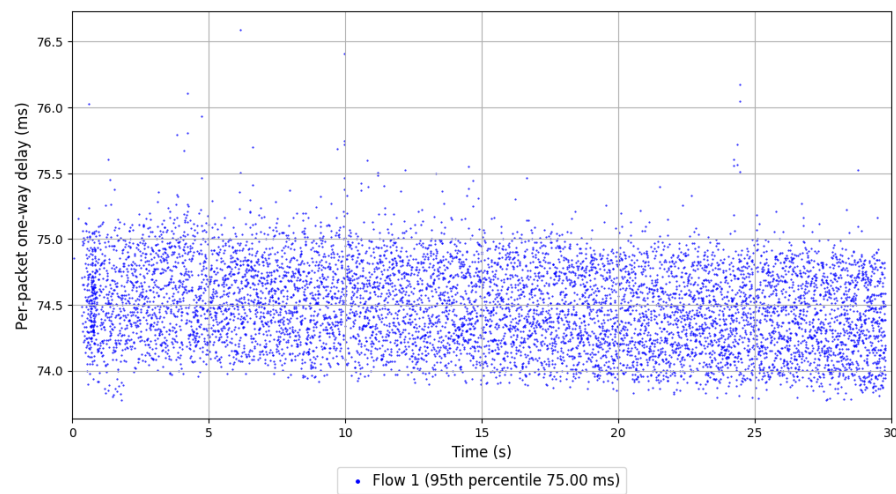
Run 3: Report of PCC-Allegro — Data Link

```
Run 4: Statistics of PCC-Allegro

Start at: 2018-10-02 14:28:27
End at: 2018-10-02 14:28:57
Local clock offset: -9.437 ms
Remote clock offset: 14.391 ms


# Below is generated by plot.py at 2018-10-02 15:11:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.37 Mbit/s
95th percentile per-packet one-way delay: 74.998 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 2.37 Mbit/s
95th percentile per-packet one-way delay: 74.998 ms
Loss rate: 0.64%
```
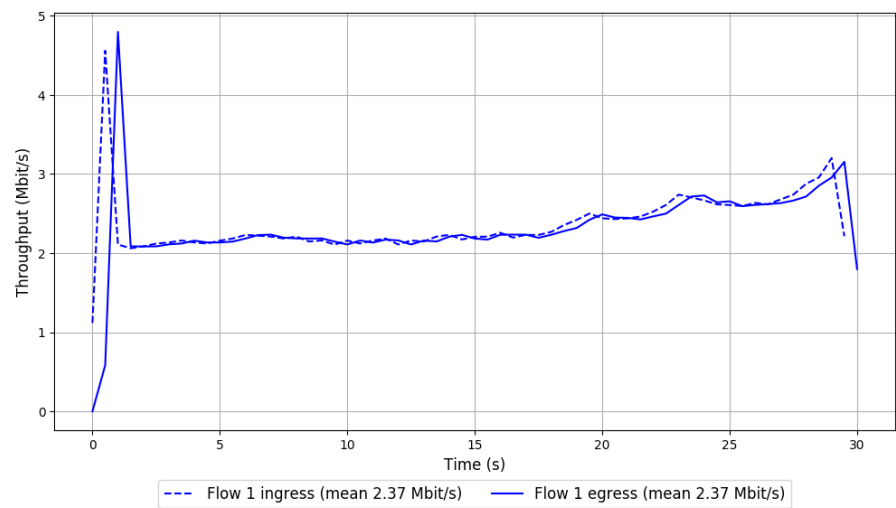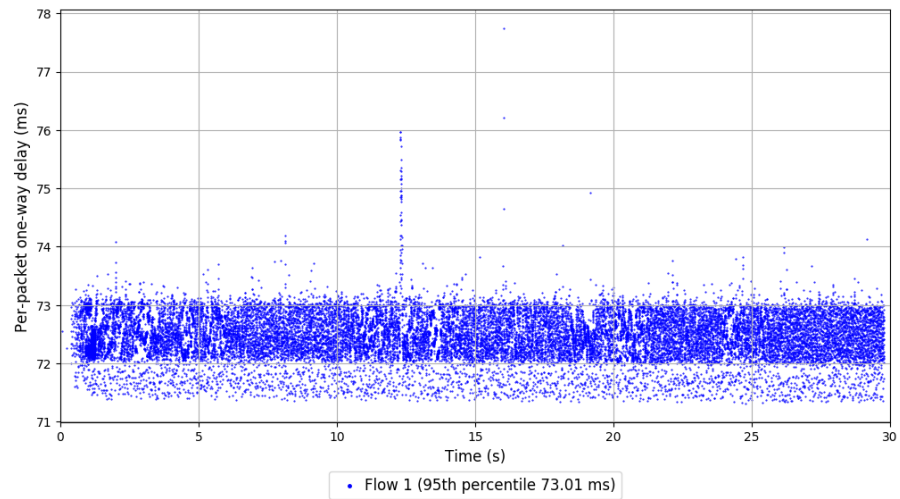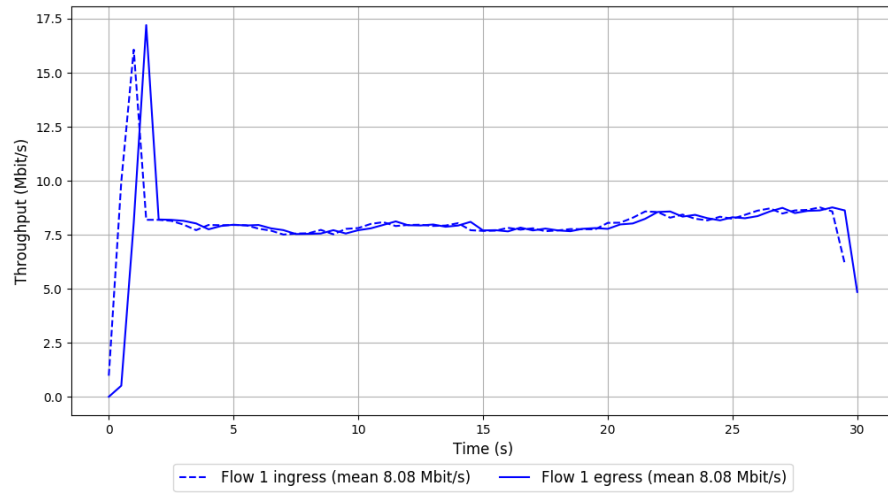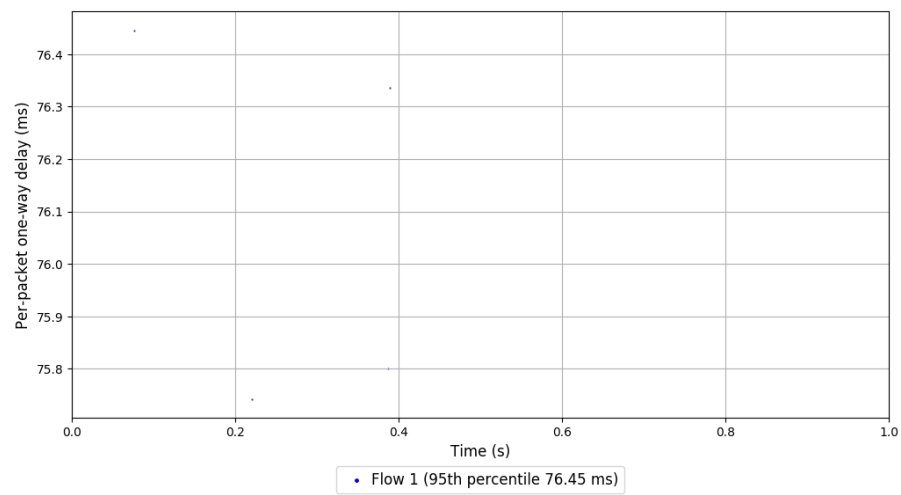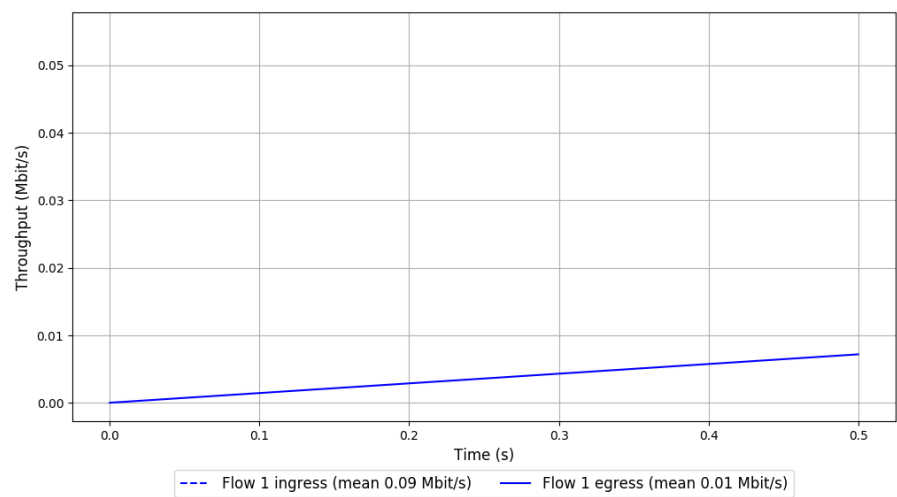
Run 4: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 2.37 Mbit/s)   Flow 1 egress (mean 2.37 Mbit/s)
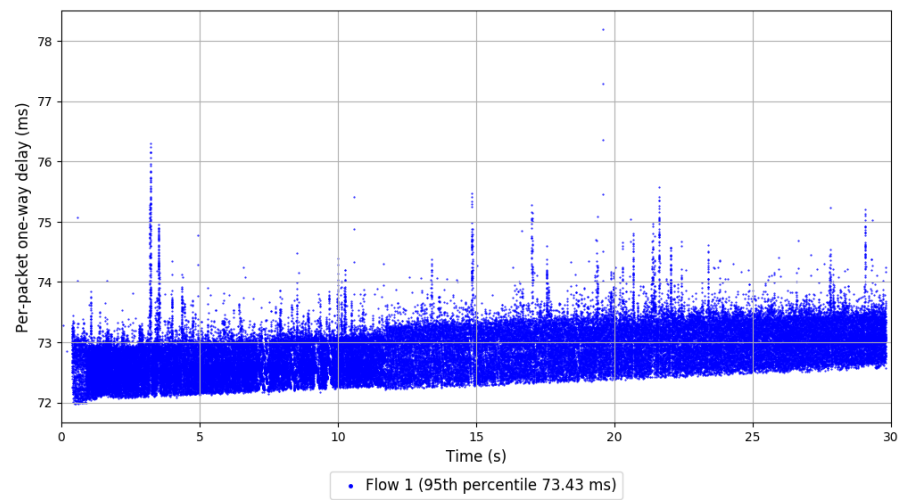

• Flow 1 (95th percentile 75.00 ms)

```
Run 5: Statistics of PCC-Allegro

Start at: 2018-10-02 14:49:54
End at: 2018-10-02 14:50:24
Local clock offset: -8.64 ms
Remote clock offset: 11.243 ms


# Below is generated by plot.py at 2018-10-02 15:11:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 8.08 Mbit/s
95th percentile per-packet one-way delay: 73.010 ms
Loss rate: 0.52%
-- Flow 1:
Average throughput: 8.08 Mbit/s
95th percentile per-packet one-way delay: 73.010 ms
Loss rate: 0.52%
```

Run 5: Report of PCC-Allegro — Data Link

```
Run 1: Statistics of PCC-Expr

Start at: 2018-10-02 13:39:51
End at: 2018-10-02 13:40:21
Local clock offset: -11.107 ms
Remote clock offset: -7.033 ms
```
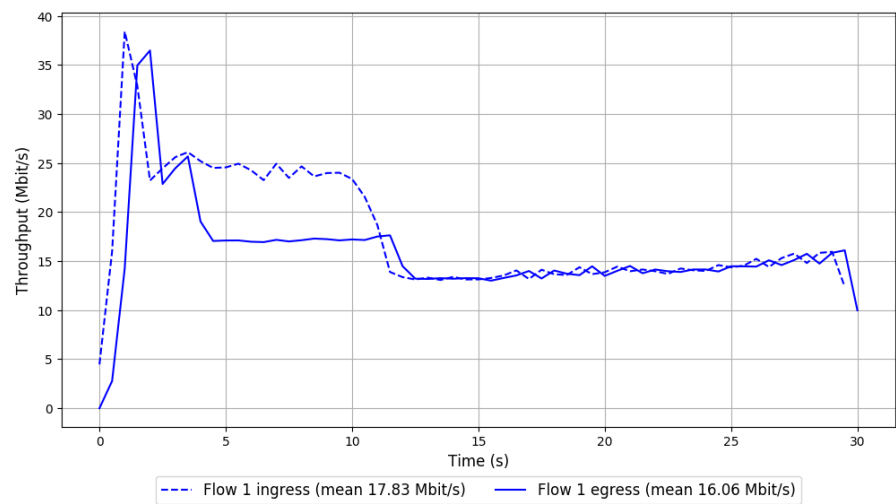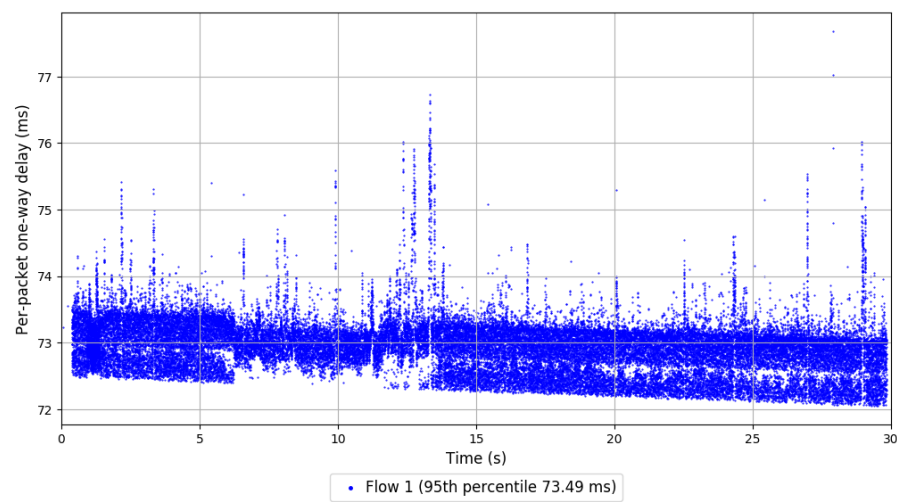
Run 1: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 0.09 Mbit/s) ——— Flow 1 egress (mean 0.01 Mbit/s)
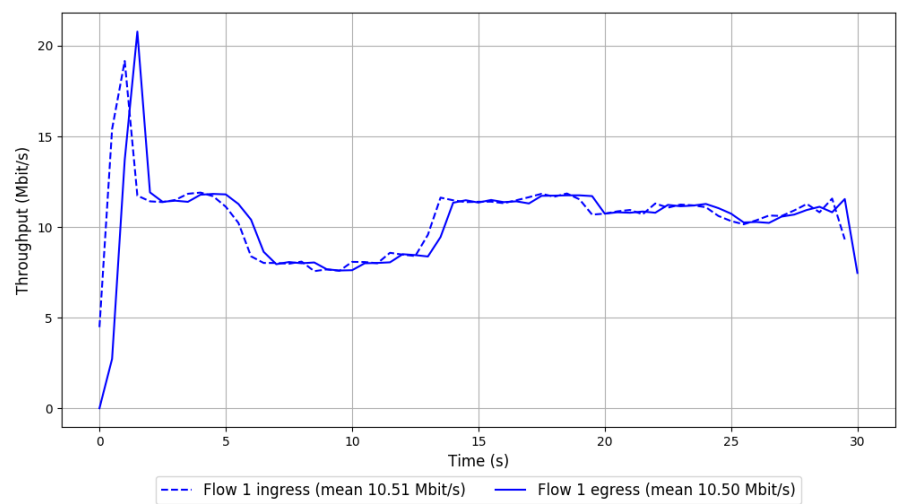

Flow 1 (95th percentile 76.45 ms)

```
Run 2: Statistics of PCC-Expr

Start at: 2018-10-02 14:01:13
End at: 2018-10-02 14:01:43
Local clock offset: -11.126 ms
Remote clock offset: 59.991 ms


# Below is generated by plot.py at 2018-10-02 15:11:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 16.06 Mbit/s
95th percentile per-packet one-way delay: 73.429 ms
Loss rate: 10.33%
-- Flow 1:
Average throughput: 16.06 Mbit/s
95th percentile per-packet one-way delay: 73.429 ms
Loss rate: 10.33%
```
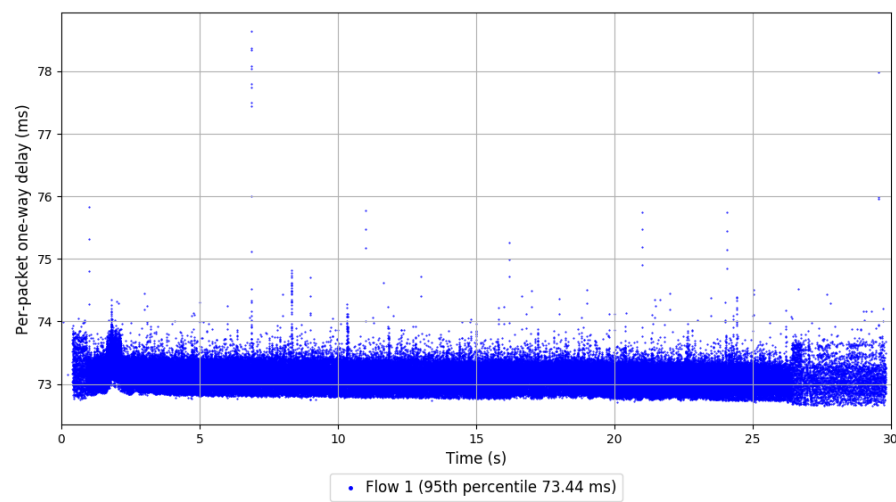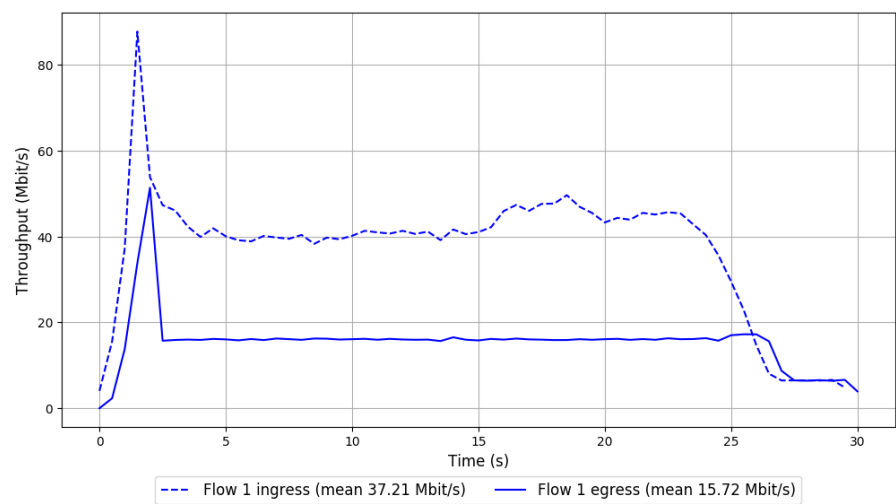
Run 2: Report of PCC-Expr — Data Link

```
Run 3: Statistics of PCC-Expr

Start at: 2018-10-02 14:22:38
End at: 2018-10-02 14:23:08
Local clock offset: -9.844 ms
Remote clock offset: 19.172 ms


# Below is generated by plot.py at 2018-10-02 15:11:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.50 Mbit/s
95th percentile per-packet one-way delay: 73.490 ms
Loss rate: 0.56%
-- Flow 1:
Average throughput: 10.50 Mbit/s
95th percentile per-packet one-way delay: 73.490 ms
Loss rate: 0.56%
```

Run 3: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 10.51 Mbit/s) --- Flow 1 egress (mean 10.50 Mbit/s)

Flow 1 (95th percentile 73.49 ms)

```
Run 4: Statistics of PCC-Expr

Start at: 2018-10-02 14:44:02
End at: 2018-10-02 14:44:33
Local clock offset: -8.806 ms
Remote clock offset: 11.303 ms


# Below is generated by plot.py at 2018-10-02 15:12:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 15.72 Mbit/s
95th percentile per-packet one-way delay: 73.436 ms
Loss rate: 57.94%
-- Flow 1:
Average throughput: 15.72 Mbit/s
95th percentile per-packet one-way delay: 73.436 ms
Loss rate: 57.94%
```
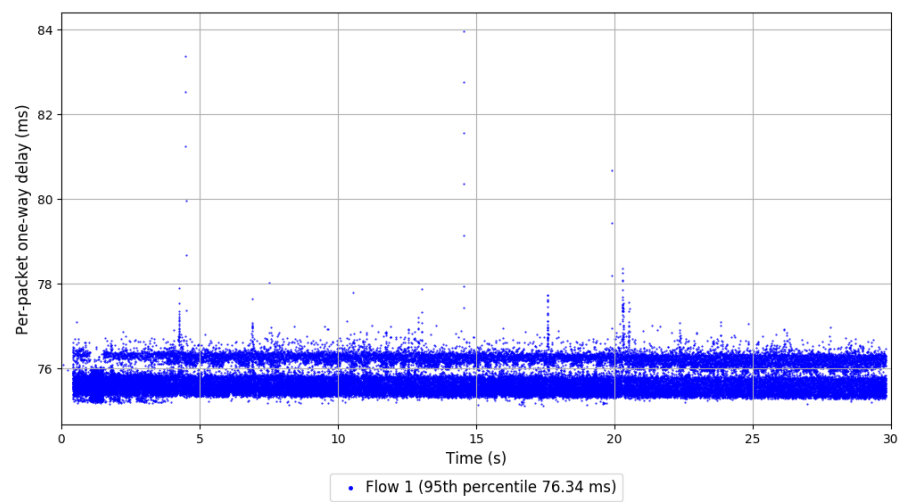
Run 4: Report of PCC-Expr — Data Link

```
Run 5: Statistics of PCC-Expr

Start at: 2018-10-02 15:05:23
End at: 2018-10-02 15:05:53
Local clock offset: -8.943 ms
Remote clock offset: 5.783 ms


# Below is generated by plot.py at 2018-10-02 15:12:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.25 Mbit/s
95th percentile per-packet one-way delay: 76.336 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 10.25 Mbit/s
95th percentile per-packet one-way delay: 76.336 ms
Loss rate: 0.43%
```
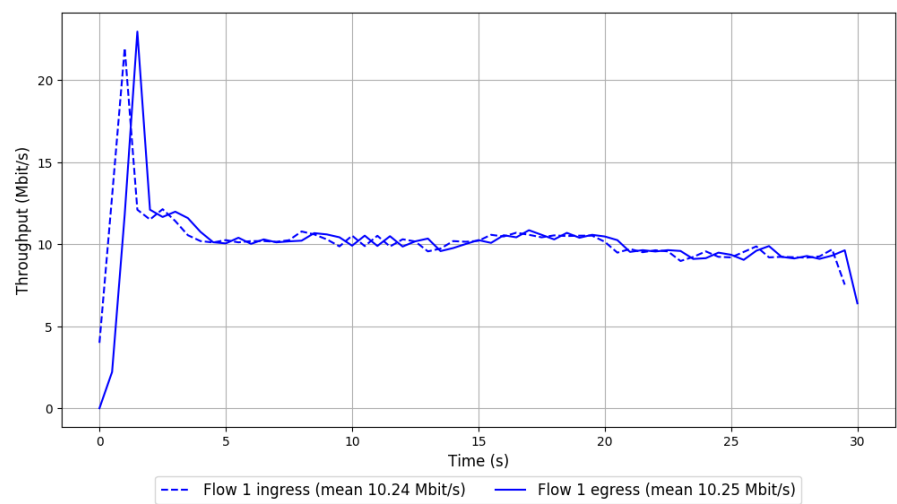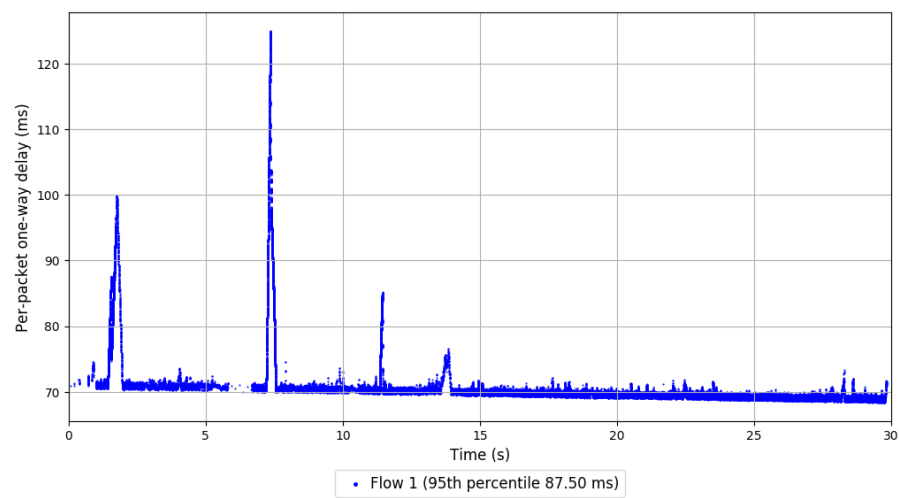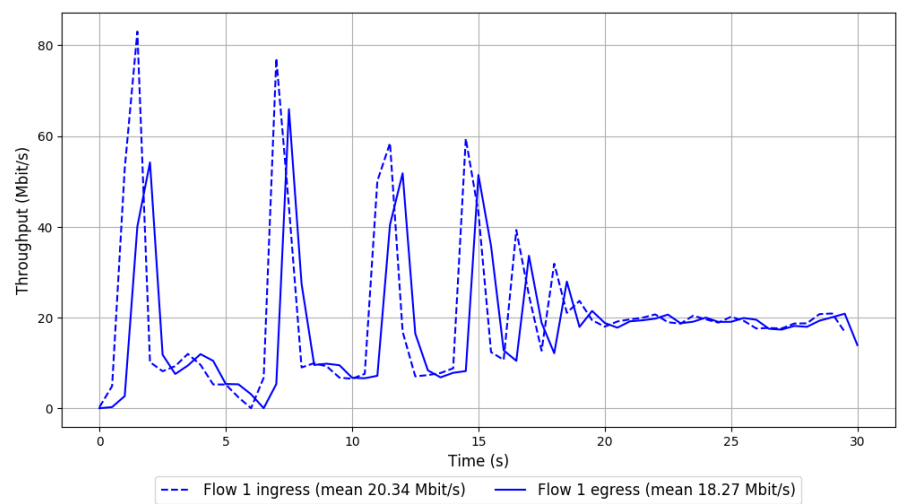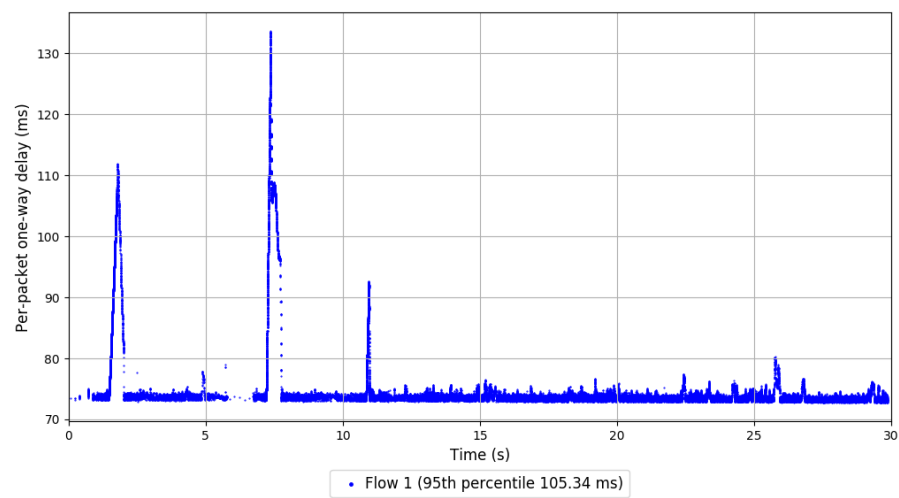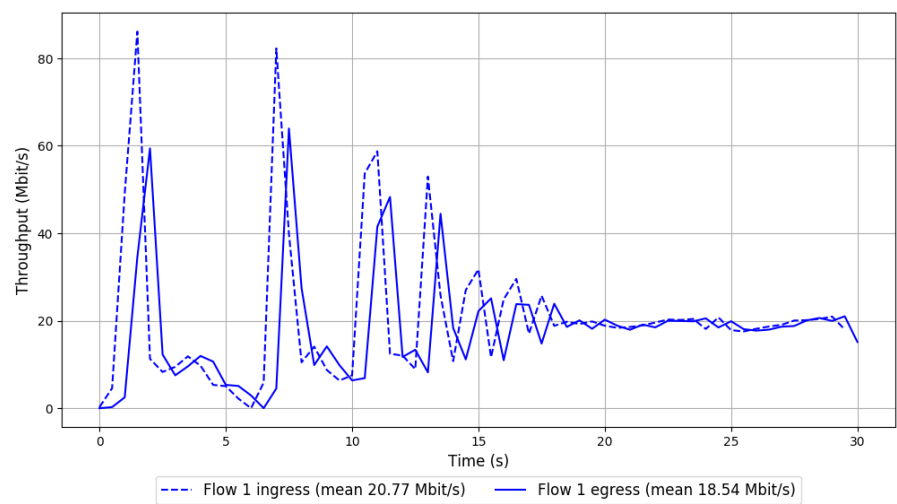
Run 5: Report of PCC-Expr — Data Link

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-10-02 13:25:29
End at: 2018-10-02 13:25:59
Local clock offset: -11.227 ms
Remote clock offset: -23.12 ms


# Below is generated by plot.py at 2018-10-02 15:12:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 18.27 Mbit/s
95th percentile per-packet one-way delay: 87.502 ms
Loss rate: 10.61%
-- Flow 1:
Average throughput: 18.27 Mbit/s
95th percentile per-packet one-way delay: 87.502 ms
Loss rate: 10.61%
```
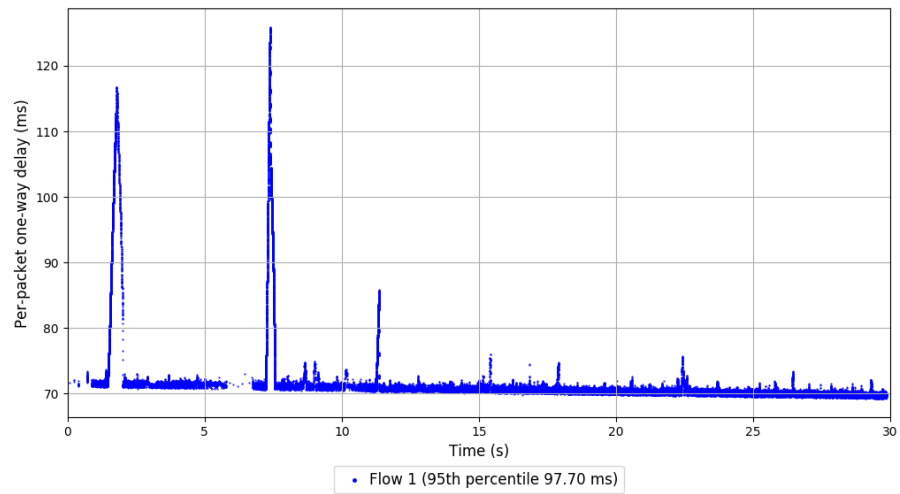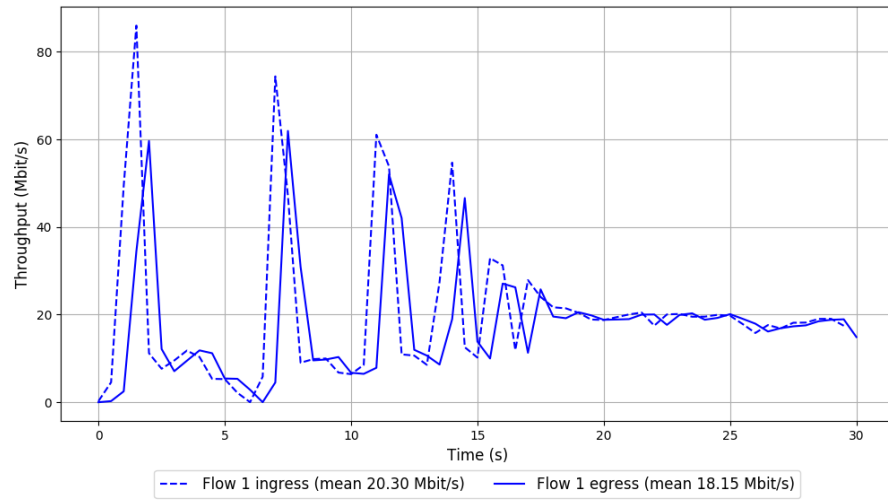
Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-10-02 13:46:55
End at: 2018-10-02 13:47:25
Local clock offset: -11.393 ms
Remote clock offset: -7.045 ms


# Below is generated by plot.py at 2018-10-02 15:12:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 18.54 Mbit/s
95th percentile per-packet one-way delay: 105.343 ms
Loss rate: 11.20%
-- Flow 1:
Average throughput: 18.54 Mbit/s
95th percentile per-packet one-way delay: 105.343 ms
Loss rate: 11.20%
```
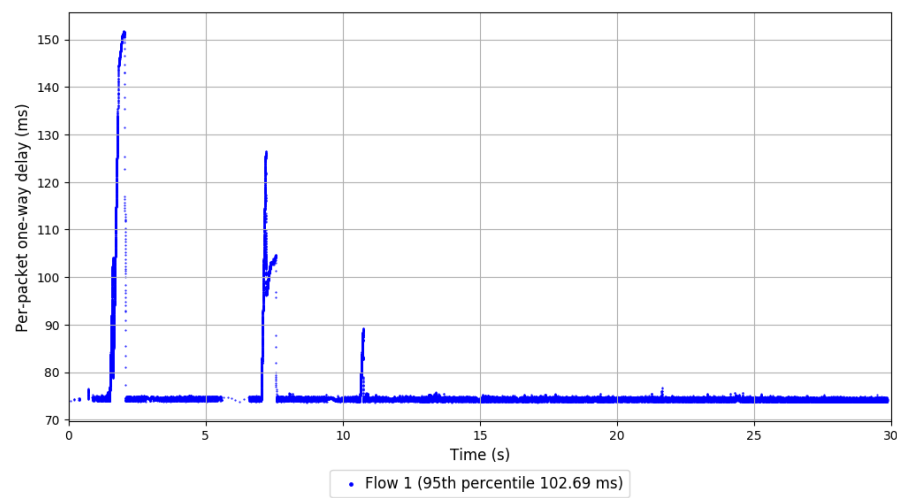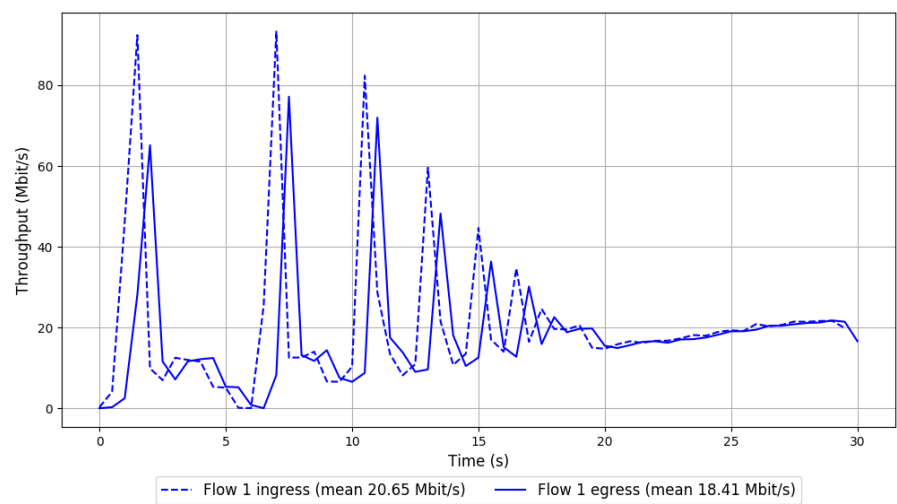
Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-10-02 14:08:17
End at: 2018-10-02 14:08:47
Local clock offset: -11.405 ms
Remote clock offset: 48.02 ms


# Below is generated by plot.py at 2018-10-02 15:12:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 18.15 Mbit/s
95th percentile per-packet one-way delay: 97.702 ms
Loss rate: 10.98%
-- Flow 1:
Average throughput: 18.15 Mbit/s
95th percentile per-packet one-way delay: 97.702 ms
Loss rate: 10.98%
```

Run 3: Report of QUIC Cubic — Data Link

```
Run 4: Statistics of QUIC Cubic

Start at: 2018-10-02 14:29:37
End at: 2018-10-02 14:30:07
Local clock offset: -8.983 ms
Remote clock offset: 14.128 ms

# Below is generated by plot.py at 2018-10-02 15:12:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 18.41 Mbit/s
95th percentile per-packet one-way delay: 102.691 ms
Loss rate: 11.27%
-- Flow 1:
Average throughput: 18.41 Mbit/s
95th percentile per-packet one-way delay: 102.691 ms
Loss rate: 11.27%
```
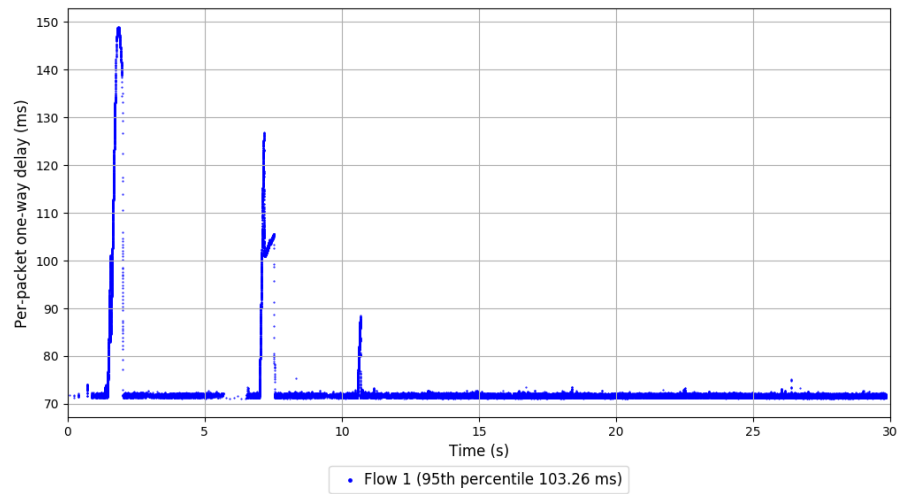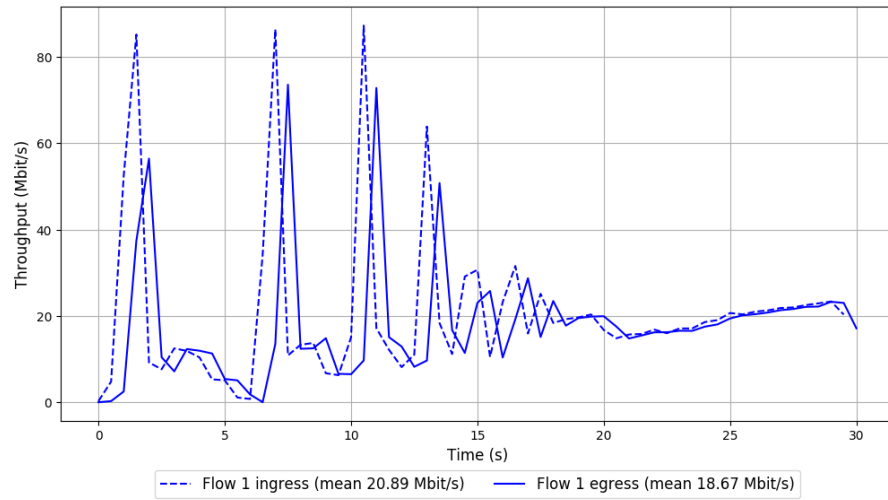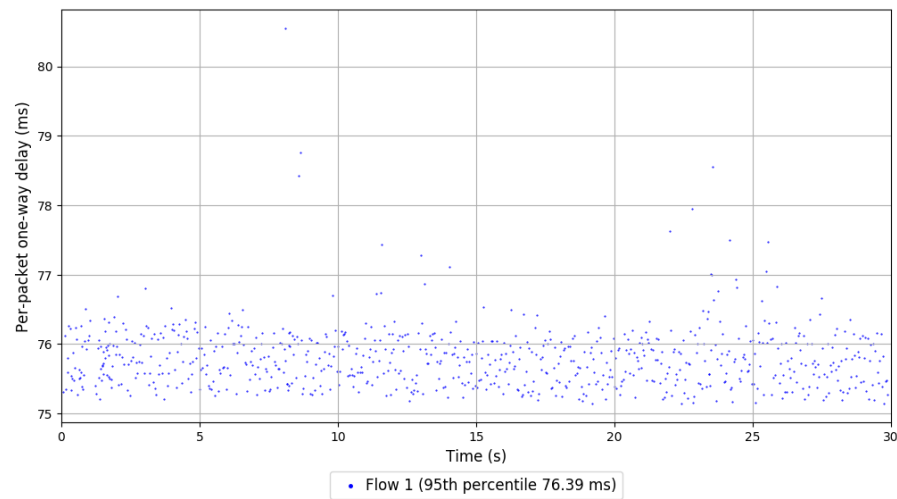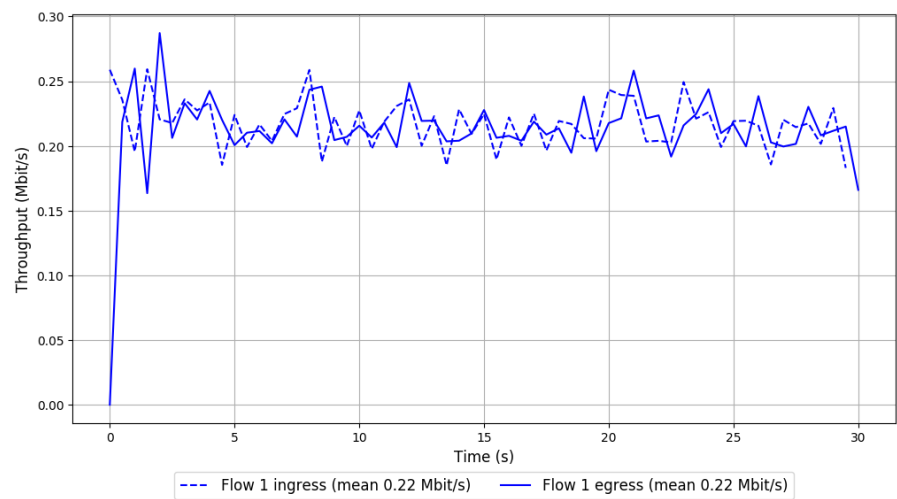
Run 4: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 20.65 Mbit/s) ----   Flow 1 egress (mean 18.41 Mbit/s) ——

• Flow 1 (95th percentile 102.69 ms)

```
Run 5: Statistics of QUIC Cubic

Start at: 2018-10-02 14:51:04
End at: 2018-10-02 14:51:34
Local clock offset: -8.575 ms
Remote clock offset: 12.272 ms


# Below is generated by plot.py at 2018-10-02 15:12:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 18.67 Mbit/s
95th percentile per-packet one-way delay: 103.259 ms
Loss rate: 11.03%
-- Flow 1:
Average throughput: 18.67 Mbit/s
95th percentile per-packet one-way delay: 103.259 ms
Loss rate: 11.03%
```

Run 5: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 20.89 Mbit/s)　　Flow 1 egress (mean 18.67 Mbit/s)
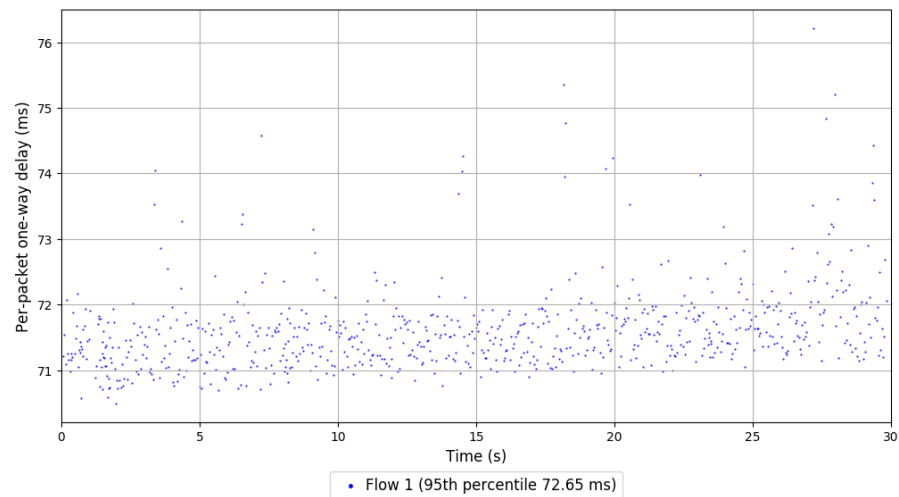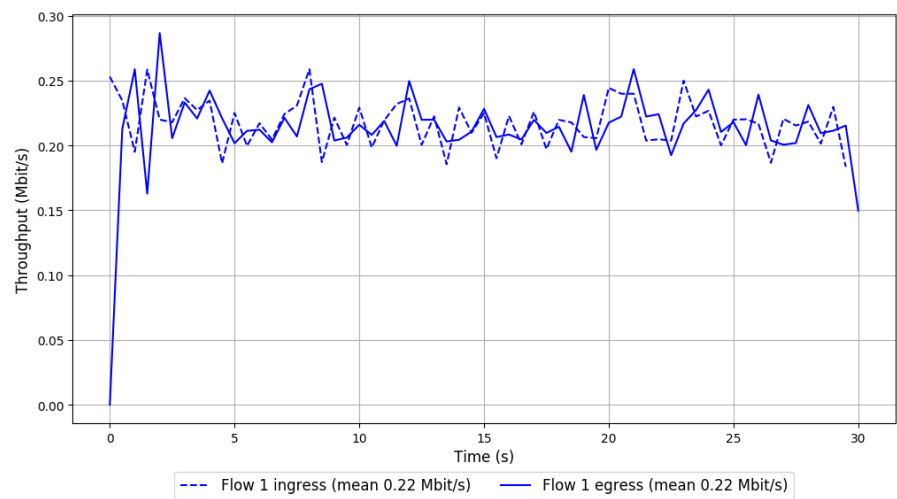

Flow 1 (95th percentile 103.26 ms)

```
Run 1: Statistics of SCReAM

Start at: 2018-10-02 13:42:11
End at: 2018-10-02 13:42:41
Local clock offset: -11.148 ms
Remote clock offset: -6.372 ms


# Below is generated by plot.py at 2018-10-02 15:12:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 76.391 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 76.391 ms
Loss rate: 0.38%
```

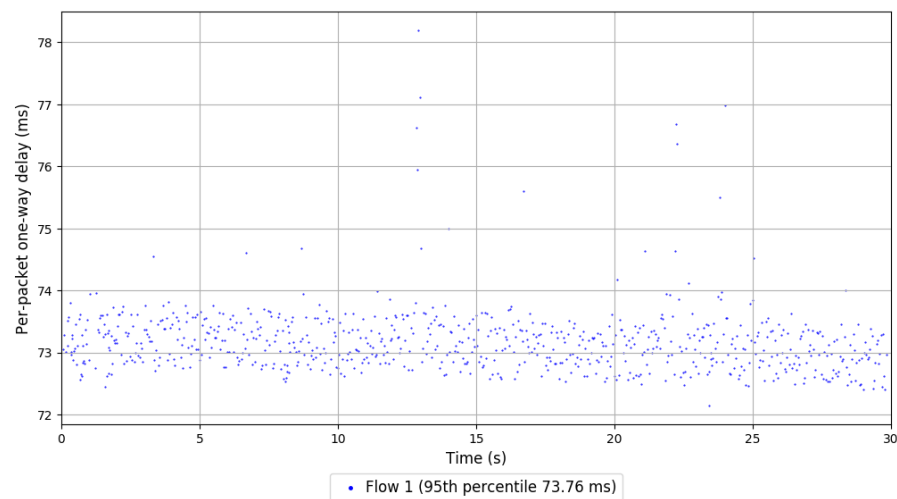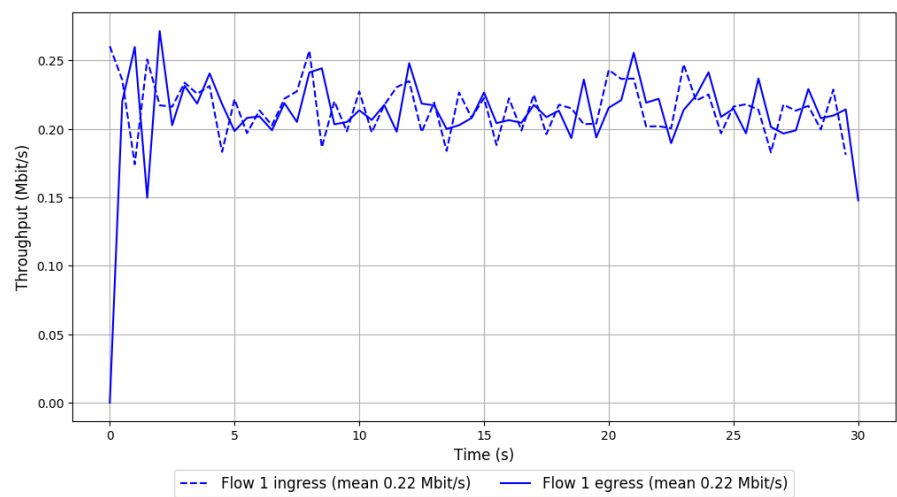# Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2018-10-02 14:03:36
End at: 2018-10-02 14:04:06
Local clock offset: -11.303 ms
Remote clock offset: 64.413 ms


# Below is generated by plot.py at 2018-10-02 15:12:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 72.652 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 72.652 ms
Loss rate: 0.51%
```

Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2018-10-02 14:24:59
End at: 2018-10-02 14:25:29
Local clock offset: -9.664 ms
Remote clock offset: 17.657 ms


# Below is generated by plot.py at 2018-10-02 15:12:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 73.762 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 73.762 ms
Loss rate: 0.51%
```
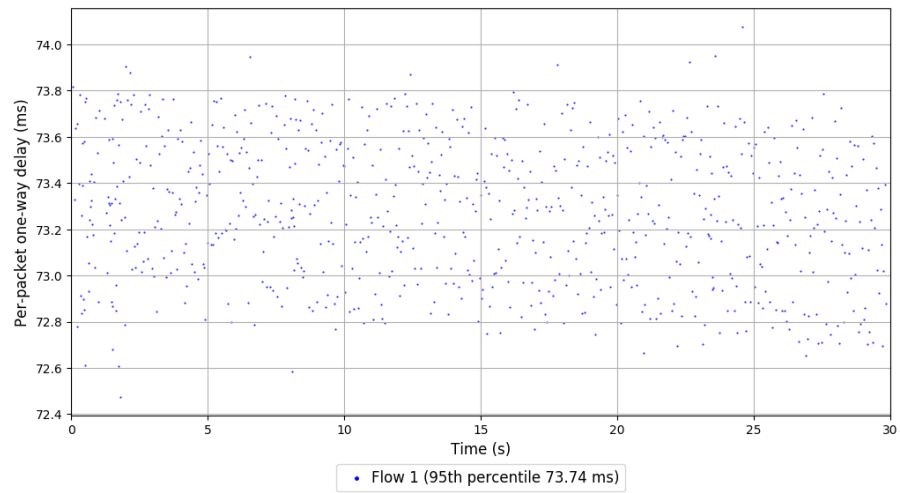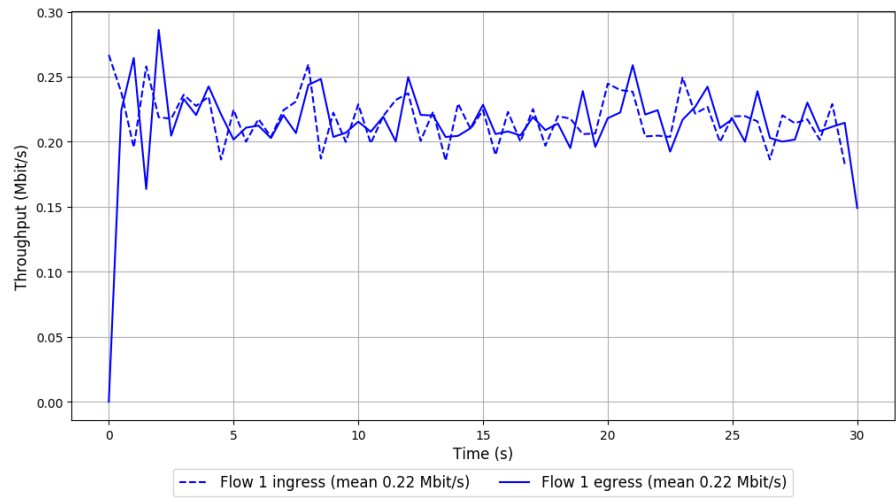
Run 3: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.22 Mbit/s)　　Flow 1 egress (mean 0.22 Mbit/s)

Flow 1 (95th percentile 73.76 ms)

```
Run 4: Statistics of SCReAM

Start at: 2018-10-02 14:46:26
End at: 2018-10-02 14:46:56
Local clock offset: -8.659 ms
Remote clock offset: 11.57 ms


# Below is generated by plot.py at 2018-10-02 15:12:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 73.740 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 73.740 ms
Loss rate: 0.51%
```
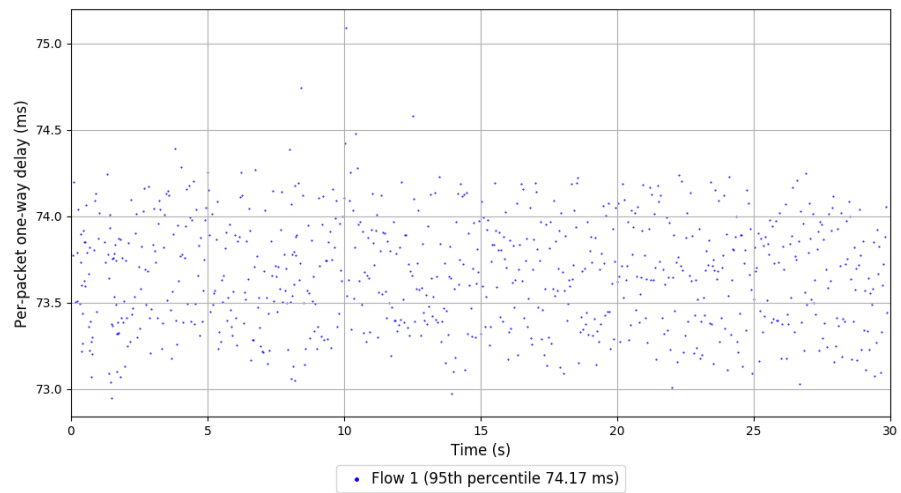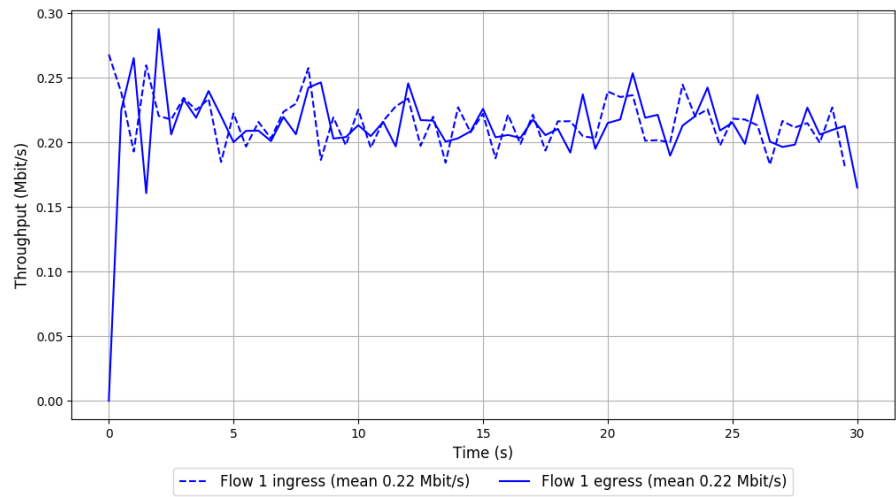
Run 4: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.22 Mbit/s)   Flow 1 egress (mean 0.22 Mbit/s)

Flow 1 (95th percentile 73.74 ms)

```
Run 5: Statistics of SCReAM

Start at: 2018-10-02 15:07:45
End at: 2018-10-02 15:08:15
Local clock offset: -8.958 ms
Remote clock offset: 7.947 ms


# Below is generated by plot.py at 2018-10-02 15:12:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 74.165 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 74.165 ms
Loss rate: 0.38%
```

Run 5: Report of SCReAM — Data Link

```
Run 1: Statistics of Sprout

Start at: 2018-10-02 13:32:44
End at: 2018-10-02 13:33:14
Local clock offset: -11.167 ms
Remote clock offset: -25.298 ms
```
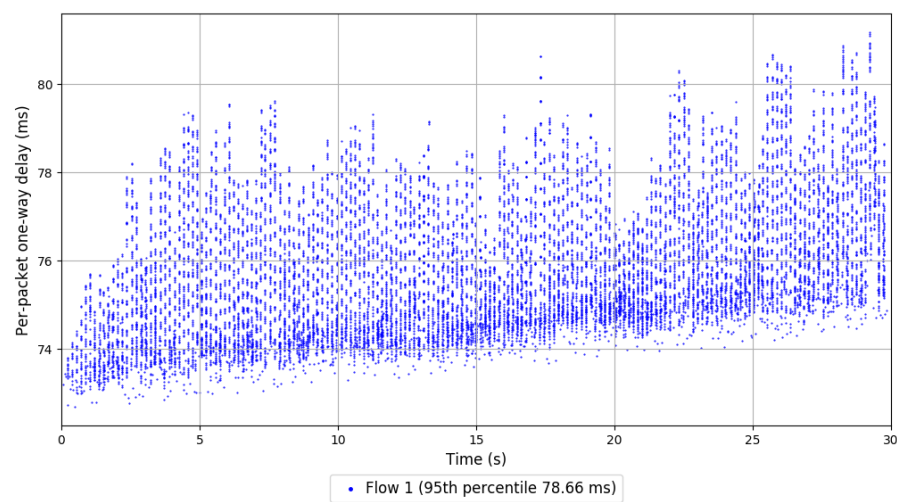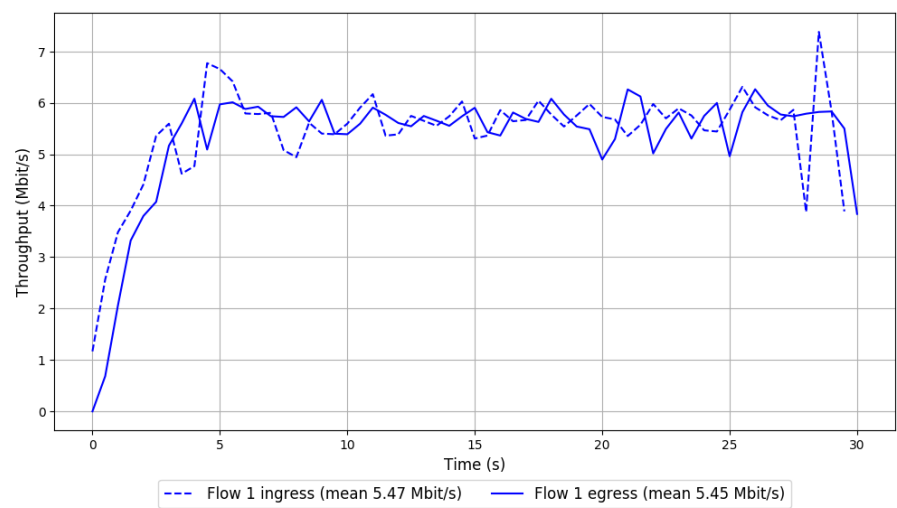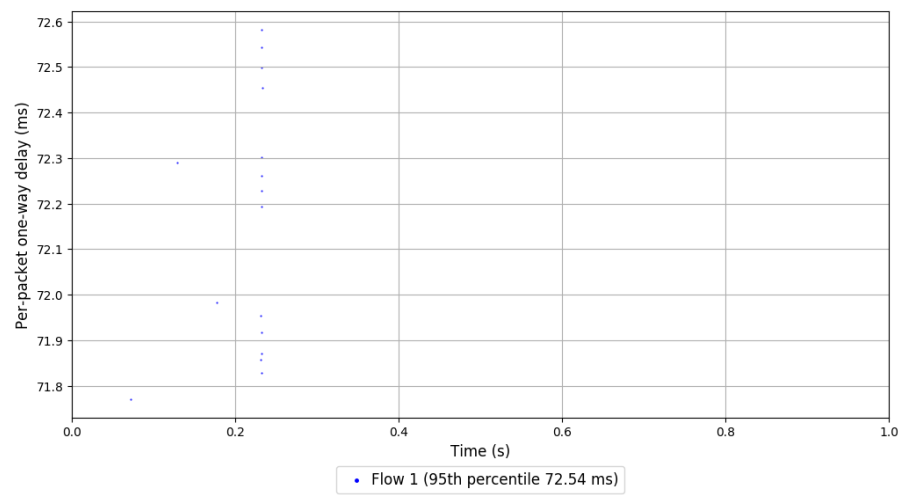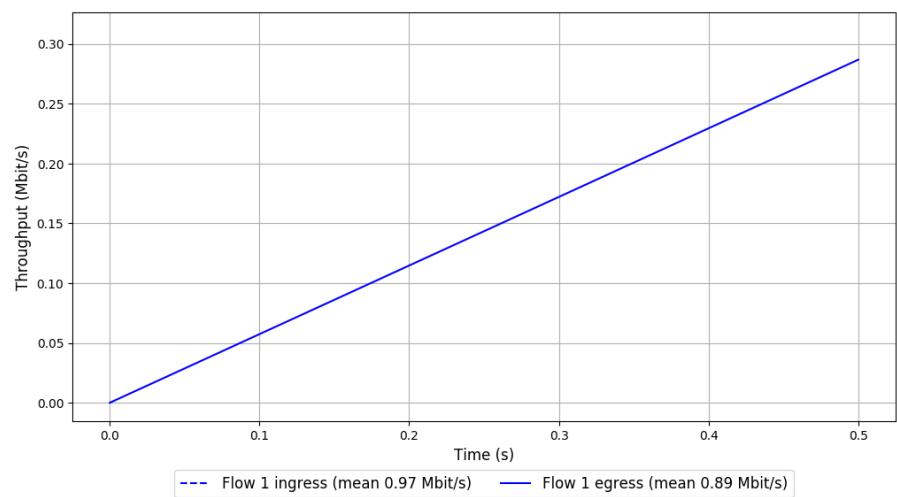
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-10-02 13:54:06
End at: 2018-10-02 13:54:36
Local clock offset: -11.196 ms
Remote clock offset: 44.103 ms


# Below is generated by plot.py at 2018-10-02 15:12:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 5.45 Mbit/s
95th percentile per-packet one-way delay: 78.659 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 5.45 Mbit/s
95th percentile per-packet one-way delay: 78.659 ms
Loss rate: 0.59%
```

Run 2: Report of Sprout — Data Link

Flow 1 ingress (mean 5.47 Mbit/s) —— Flow 1 egress (mean 5.45 Mbit/s)

• Flow 1 (95th percentile 78.66 ms)

128

```
Run 3: Statistics of Sprout

Start at: 2018-10-02 14:15:28
End at: 2018-10-02 14:15:58
Local clock offset: -11.617 ms
Remote clock offset: 29.006 ms
```
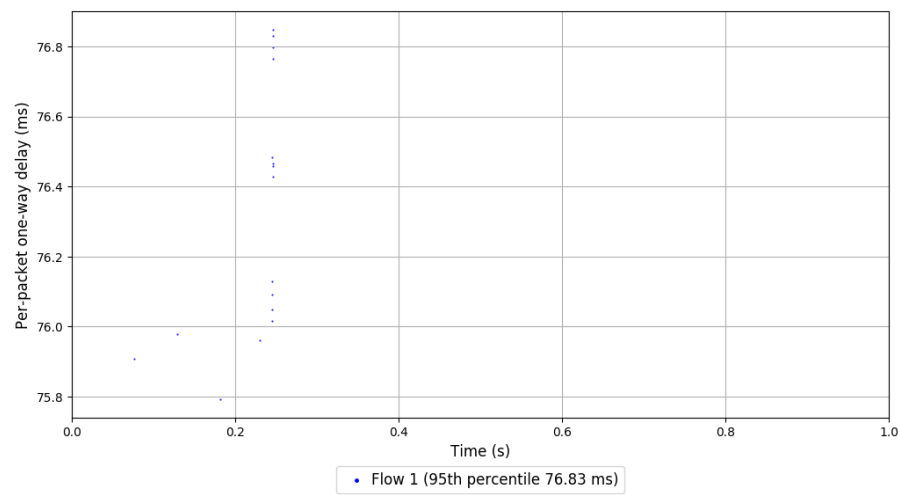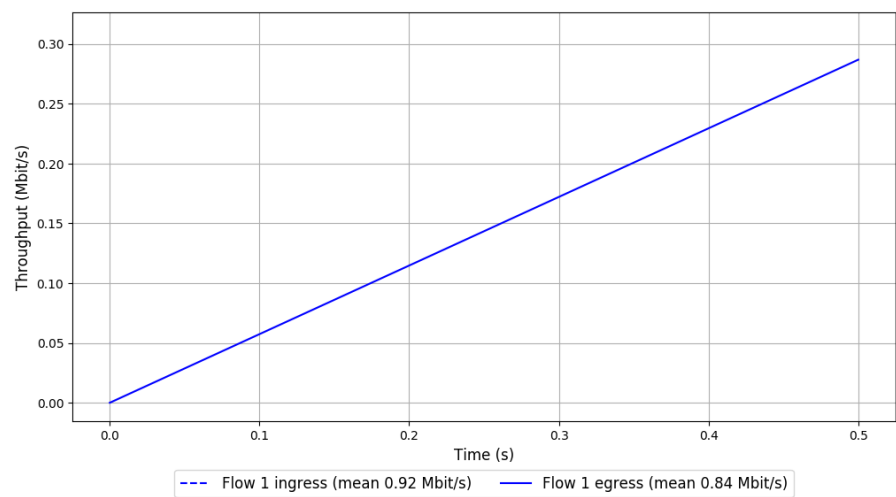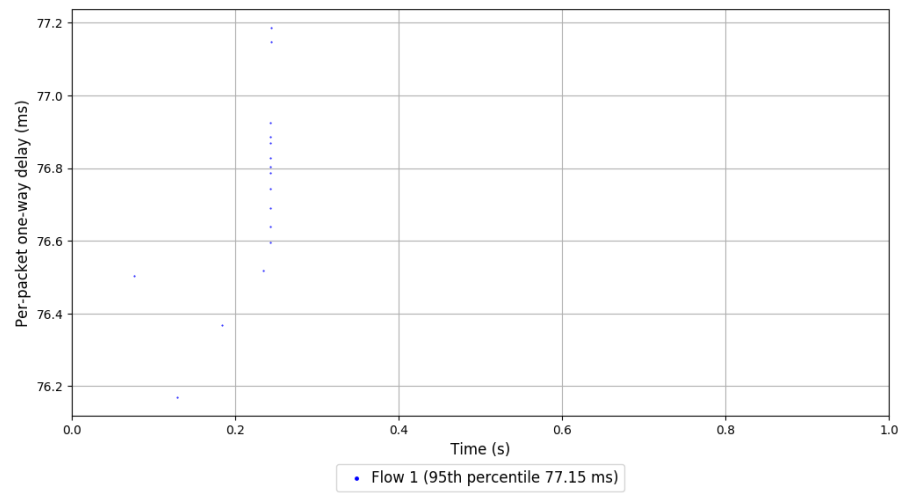
Run 3: Report of Sprout — Data Link

Flow 1 ingress (mean 0.97 Mbit/s)   Flow 1 egress (mean 0.89 Mbit/s)

Flow 1 (95th percentile 72.54 ms)

Run 4: Statistics of Sprout

Start at: 2018-10-02 14:36:52
End at: 2018-10-02 14:37:22
Local clock offset: -8.874 ms
Remote clock offset: 10.45 ms

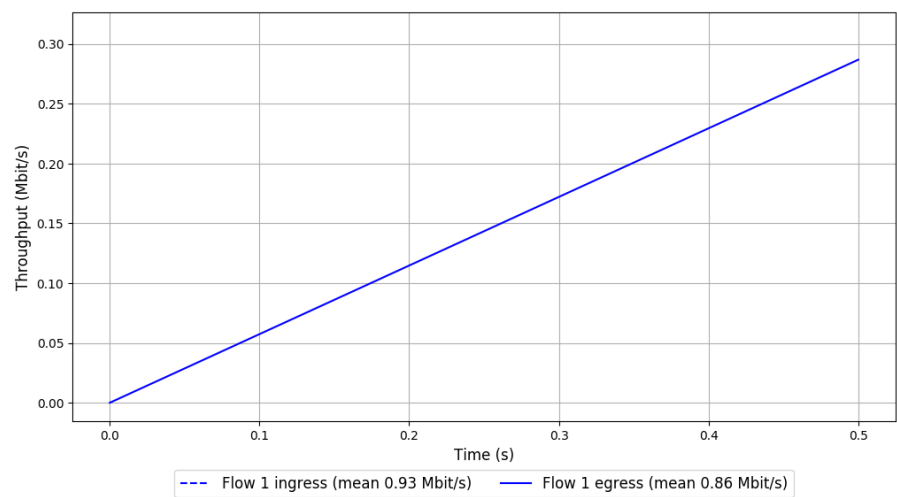Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2018-10-02 14:58:14
End at: 2018-10-02 14:58:44
Local clock offset: -8.66 ms
Remote clock offset: 6.096 ms
```
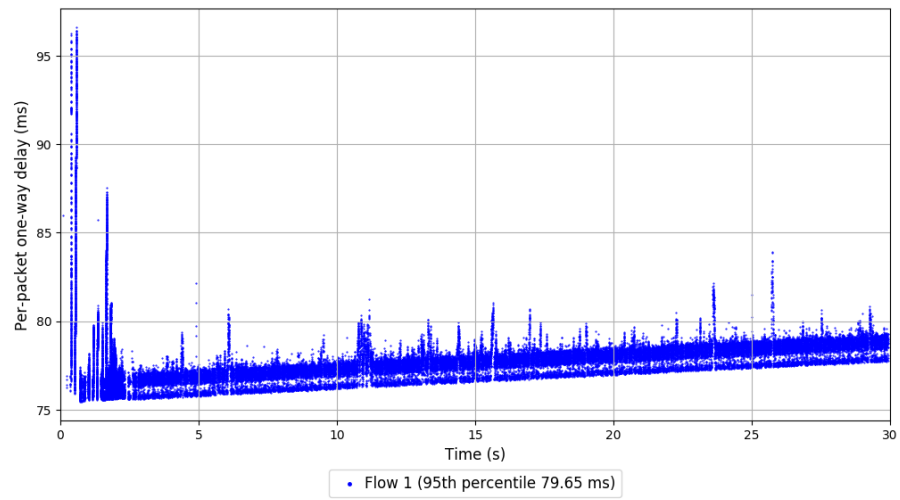
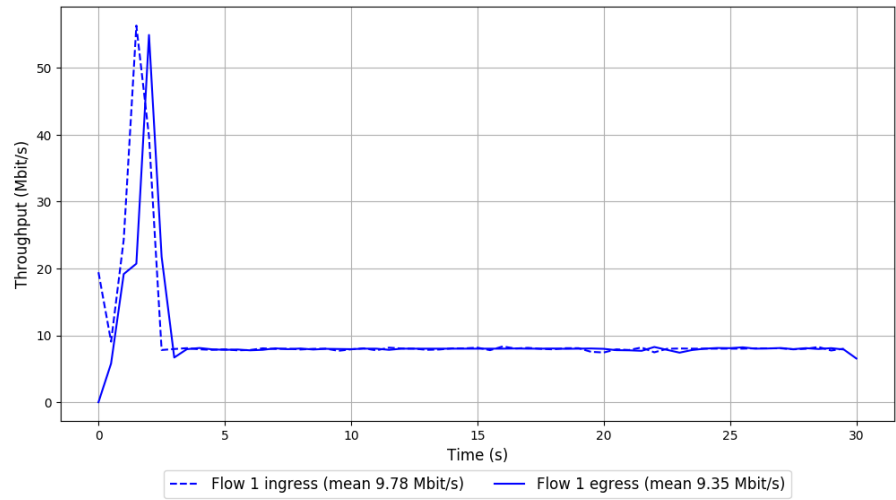Run 5: Report of Sprout — Data Link

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

Start at: 2018-10-02 13:33:53
End at: 2018-10-02 13:34:23
Local clock offset: -11.183 ms
Remote clock offset: -20.693 ms

# Below is generated by plot.py at 2018-10-02 15:12:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.35 Mbit/s
95th percentile per-packet one-way delay: 79.646 ms
Loss rate: 4.87%
-- Flow 1:
Average throughput: 9.35 Mbit/s
95th percentile per-packet one-way delay: 79.646 ms
Loss rate: 4.87%
```
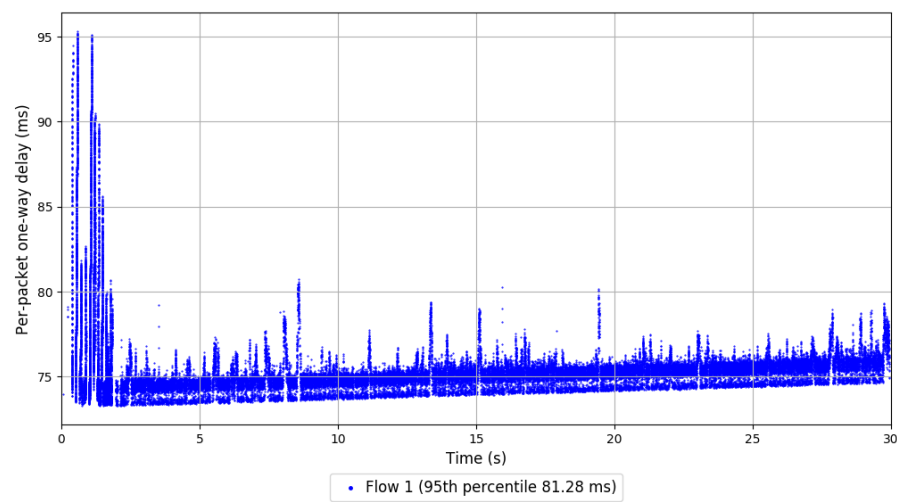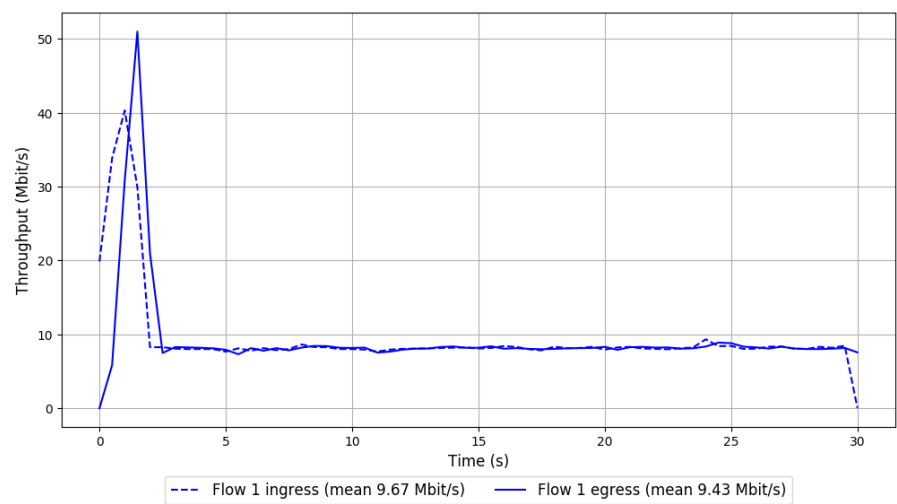
Run 1: Report of TaoVA-100x — Data Link

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

Start at: 2018-10-02 13:55:16
End at: 2018-10-02 13:55:46
Local clock offset: -11.227 ms
Remote clock offset: 46.818 ms


# Below is generated by plot.py at 2018-10-02 15:12:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.43 Mbit/s
95th percentile per-packet one-way delay: 81.283 ms
Loss rate: 2.95%
-- Flow 1:
Average throughput: 9.43 Mbit/s
95th percentile per-packet one-way delay: 81.283 ms
Loss rate: 2.95%
```
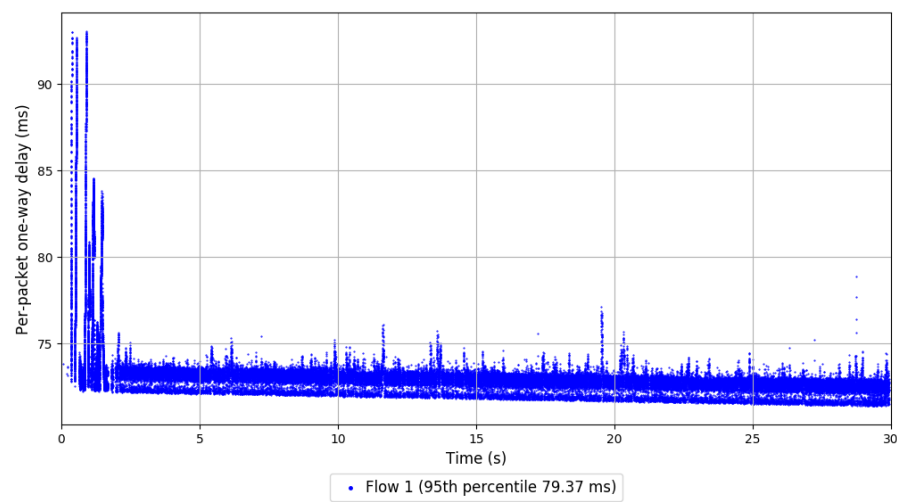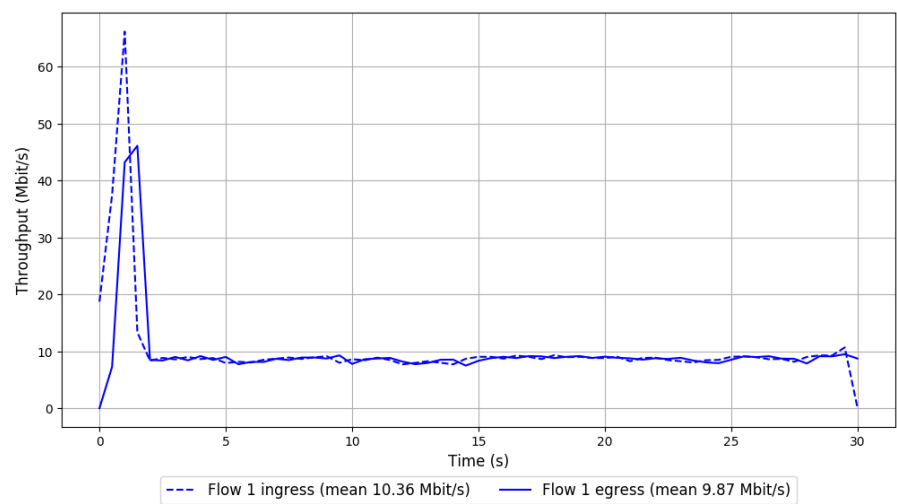
Run 2: Report of TaoVA-100x — Data Link

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

Start at: 2018-10-02 14:16:36
End at: 2018-10-02 14:17:06
Local clock offset: -11.161 ms
Remote clock offset: 25.623 ms


# Below is generated by plot.py at 2018-10-02 15:12:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.87 Mbit/s
95th percentile per-packet one-way delay: 79.371 ms
Loss rate: 5.23%
-- Flow 1:
Average throughput: 9.87 Mbit/s
95th percentile per-packet one-way delay: 79.371 ms
Loss rate: 5.23%
```

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

Flow 1 ingress (mean 10.36 Mbit/s) ---- Flow 1 egress (mean 9.87 Mbit/s)
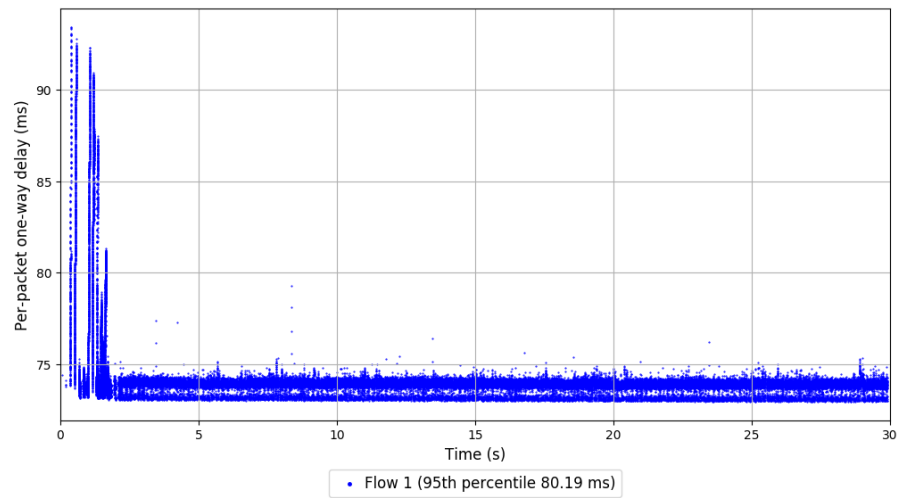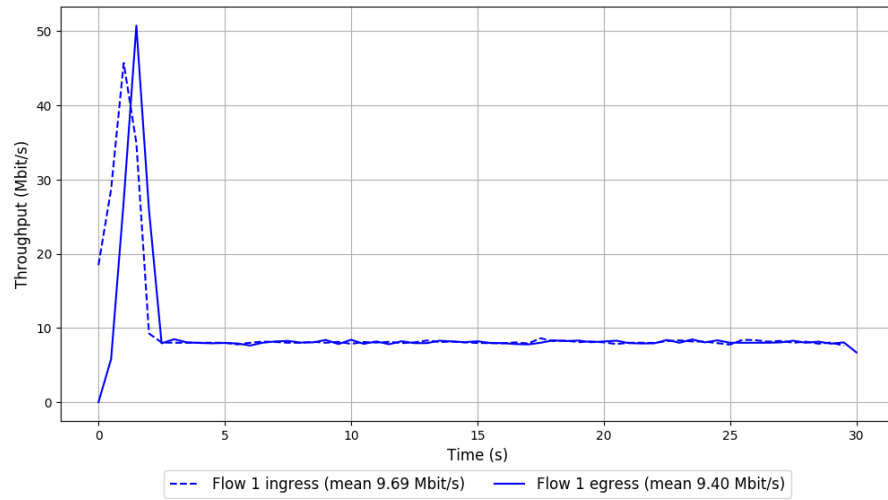

• Flow 1 (95th percentile 79.37 ms)

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

Start at: 2018-10-02 14:38:00
End at: 2018-10-02 14:38:30
Local clock offset: -8.927 ms
Remote clock offset: 12.388 ms


# Below is generated by plot.py at 2018-10-02 15:12:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.40 Mbit/s
95th percentile per-packet one-way delay: 80.185 ms
Loss rate: 3.49%
-- Flow 1:
Average throughput: 9.40 Mbit/s
95th percentile per-packet one-way delay: 80.185 ms
Loss rate: 3.49%
```

Run 4: Report of TaoVA-100x — Data Link

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

Start at: 2018-10-02 14:59:23
End at: 2018-10-02 14:59:53
Local clock offset: -8.747 ms
Remote clock offset: 7.442 ms


# Below is generated by plot.py at 2018-10-02 15:12:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.34 Mbit/s
95th percentile per-packet one-way delay: 77.175 ms
Loss rate: 4.64%
-- Flow 1:
Average throughput: 9.34 Mbit/s
95th percentile per-packet one-way delay: 77.175 ms
Loss rate: 4.64%
```
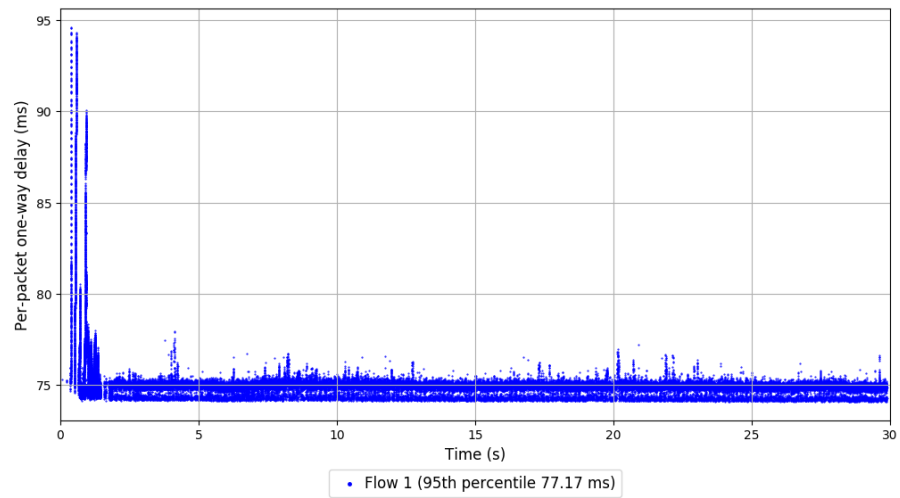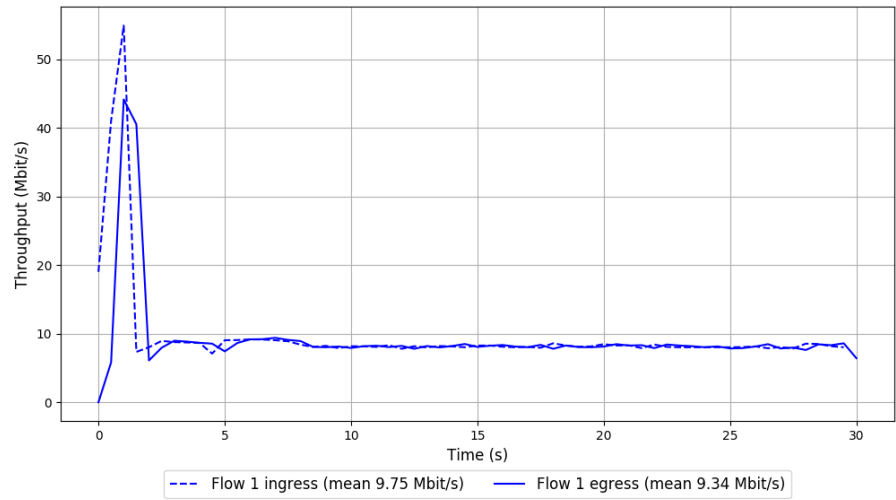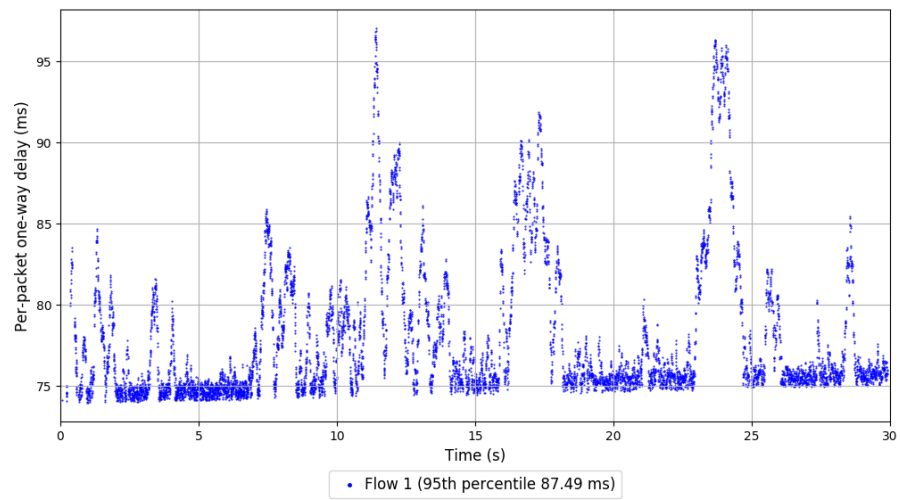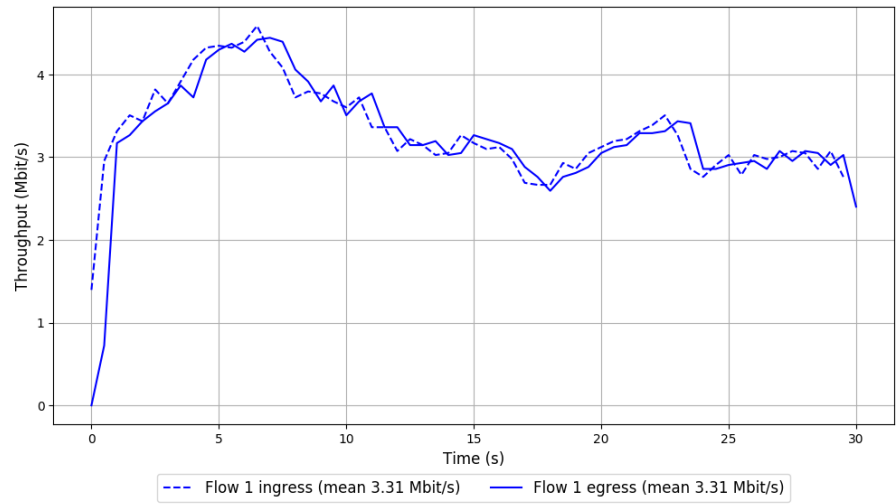
Run 5: Report of TaoVA-100x — Data Link

```
Run 1: Statistics of TCP Vegas

Start at: 2018-10-02 13:36:18
End at: 2018-10-02 13:36:48
Local clock offset: -10.99 ms
Remote clock offset: -9.465 ms


# Below is generated by plot.py at 2018-10-02 15:12:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.31 Mbit/s
95th percentile per-packet one-way delay: 87.488 ms
Loss rate: 0.41%
-- Flow 1:
Average throughput: 3.31 Mbit/s
95th percentile per-packet one-way delay: 87.488 ms
Loss rate: 0.41%
```
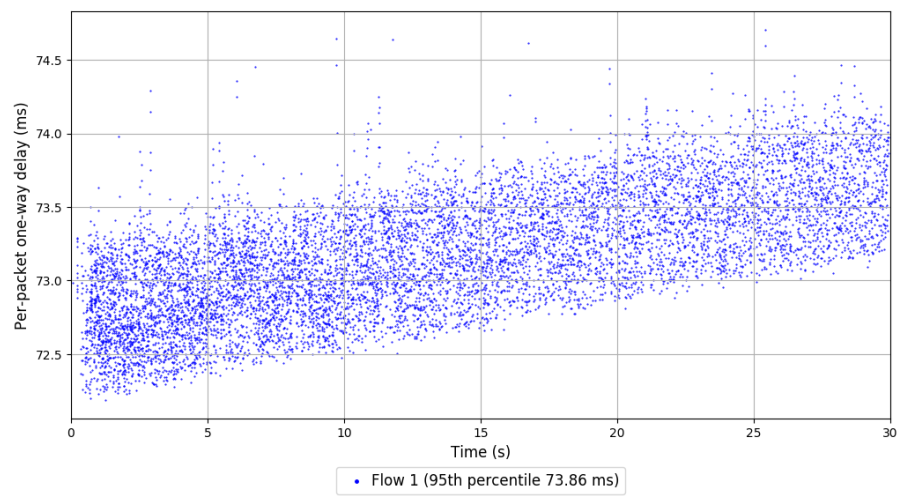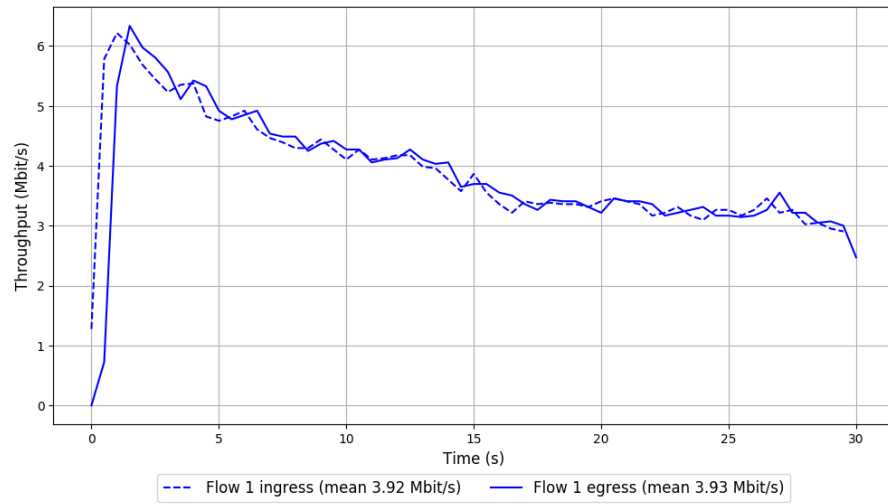
Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-10-02 13:57:41
End at: 2018-10-02 13:58:11
Local clock offset: -11.166 ms
Remote clock offset: 54.67 ms


# Below is generated by plot.py at 2018-10-02 15:12:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.93 Mbit/s
95th percentile per-packet one-way delay: 73.861 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 3.93 Mbit/s
95th percentile per-packet one-way delay: 73.861 ms
Loss rate: 0.36%
```
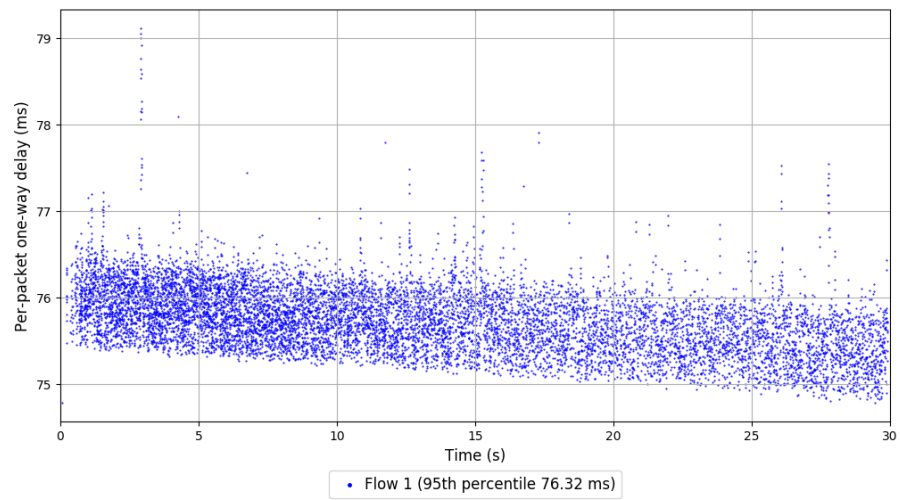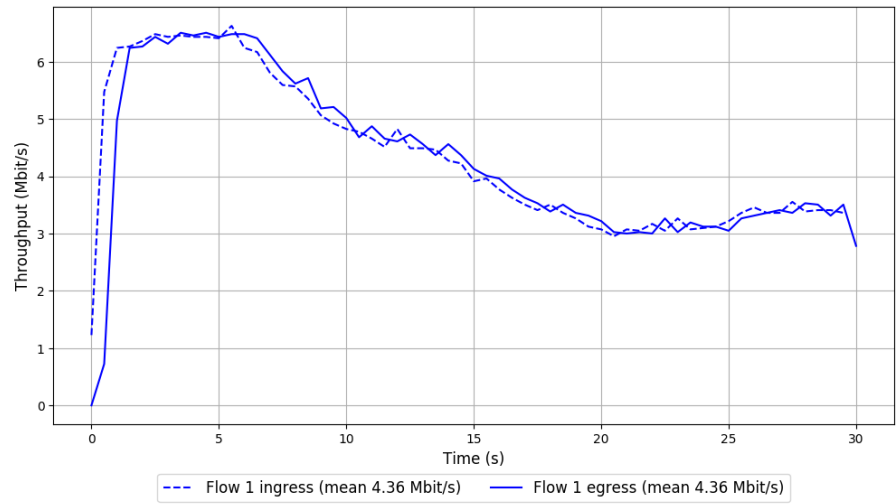
Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2018-10-02 14:19:06
End at: 2018-10-02 14:19:36
Local clock offset: -10.699 ms
Remote clock offset: 19.748 ms


# Below is generated by plot.py at 2018-10-02 15:12:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.36 Mbit/s
95th percentile per-packet one-way delay: 76.322 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 4.36 Mbit/s
95th percentile per-packet one-way delay: 76.322 ms
Loss rate: 0.39%
```
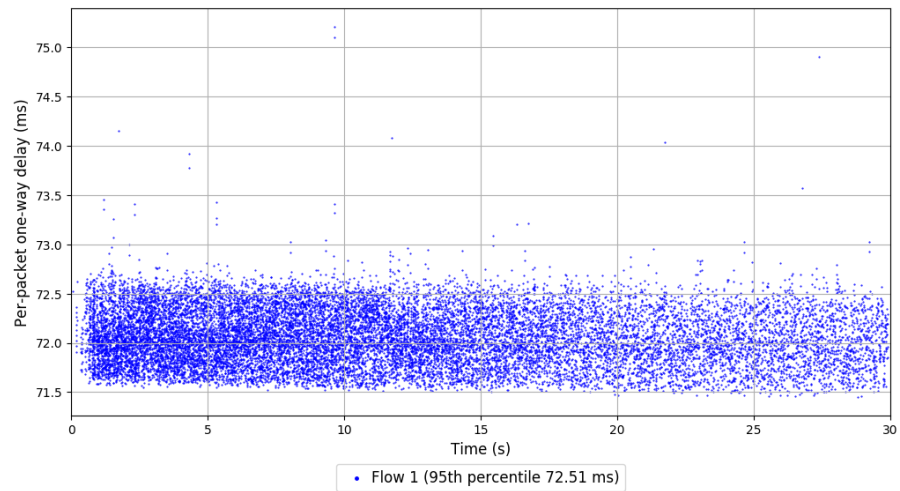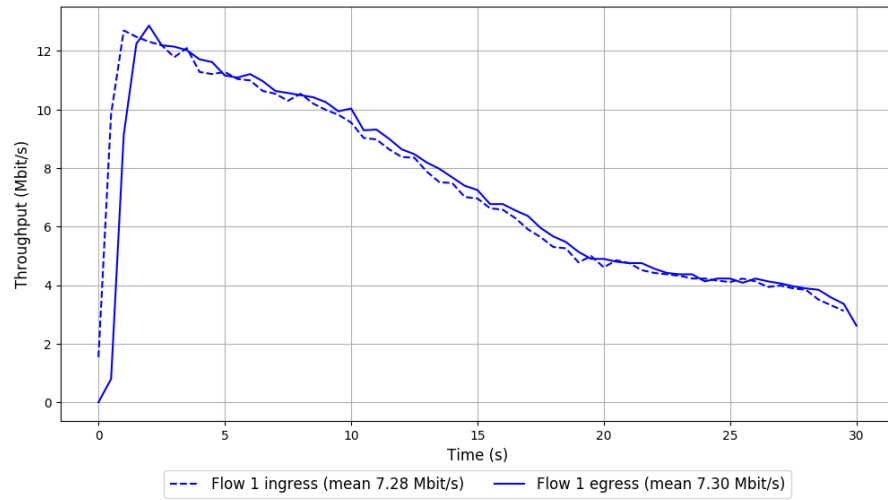
Run 3: Report of TCP Vegas — Data Link

```
Run 4: Statistics of TCP Vegas

Start at: 2018-10-02 14:40:29
End at: 2018-10-02 14:40:59
Local clock offset: -8.877 ms
Remote clock offset: 13.662 ms


# Below is generated by plot.py at 2018-10-02 15:12:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.30 Mbit/s
95th percentile per-packet one-way delay: 72.514 ms
Loss rate: 0.21%
-- Flow 1:
Average throughput: 7.30 Mbit/s
95th percentile per-packet one-way delay: 72.514 ms
Loss rate: 0.21%
```

Run 4: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 7.28 Mbit/s) --- Flow 1 egress (mean 7.30 Mbit/s)

Flow 1 (95th percentile 72.51 ms)

```
Run 5: Statistics of TCP Vegas

Start at: 2018-10-02 15:01:48
End at: 2018-10-02 15:02:18
Local clock offset: -8.822 ms
Remote clock offset: 9.273 ms


# Below is generated by plot.py at 2018-10-02 15:12:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.31 Mbit/s
95th percentile per-packet one-way delay: 73.339 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 7.31 Mbit/s
95th percentile per-packet one-way delay: 73.339 ms
Loss rate: 0.26%
```
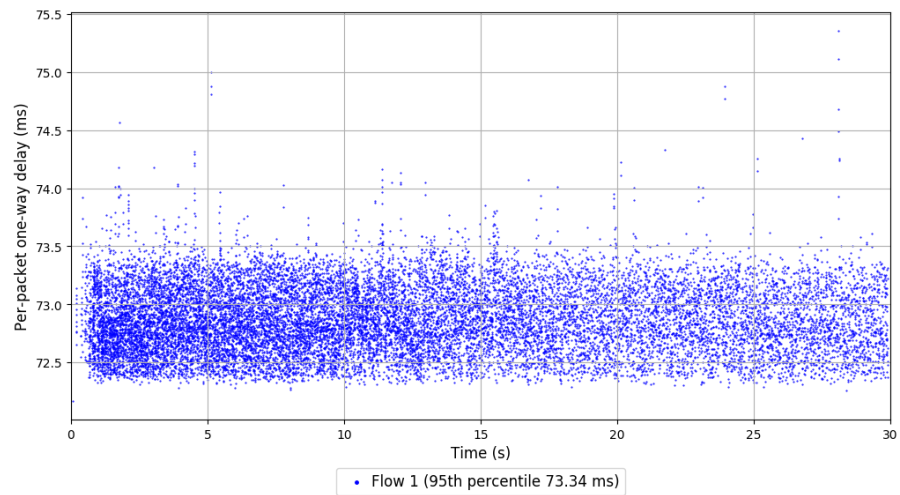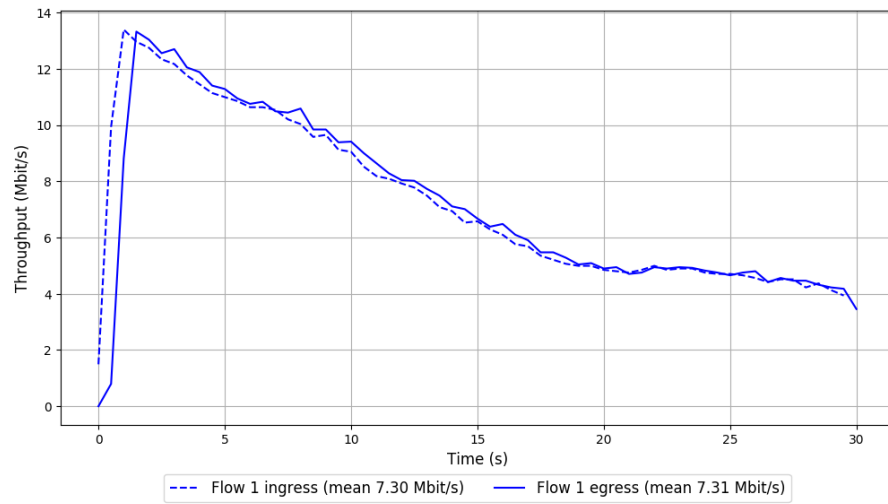
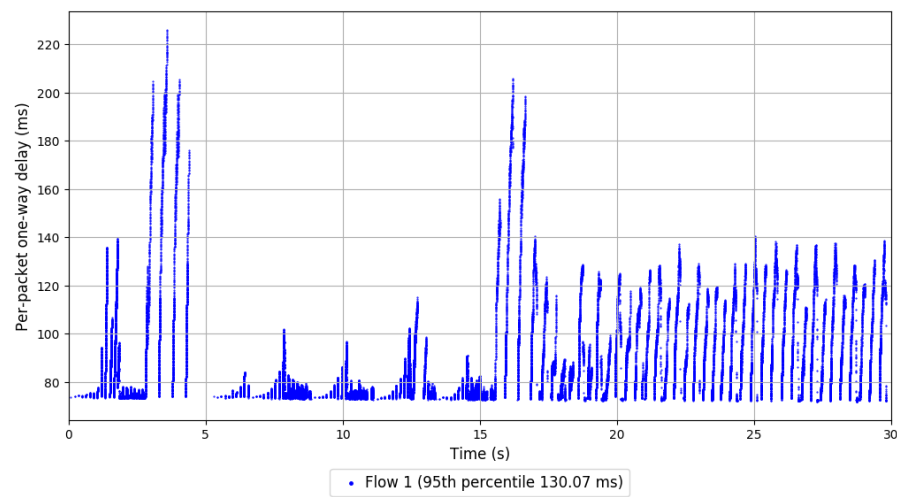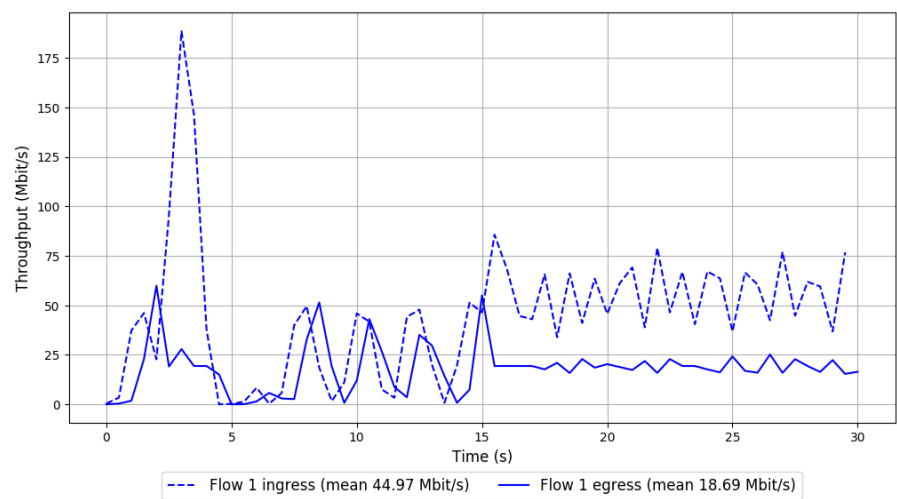Run 5: Report of TCP Vegas — Data Link

```
Run 1: Statistics of Verus

Start at: 2018-10-02 13:29:02
End at: 2018-10-02 13:29:32
Local clock offset: -11.14 ms
Remote clock offset: -40.333 ms


# Below is generated by plot.py at 2018-10-02 15:12:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 18.69 Mbit/s
95th percentile per-packet one-way delay: 130.069 ms
Loss rate: 58.76%
-- Flow 1:
Average throughput: 18.69 Mbit/s
95th percentile per-packet one-way delay: 130.069 ms
Loss rate: 58.76%
```

Run 1: Report of Verus — Data Link

Flow 1 ingress (mean 44.97 Mbit/s)   Flow 1 egress (mean 18.69 Mbit/s)

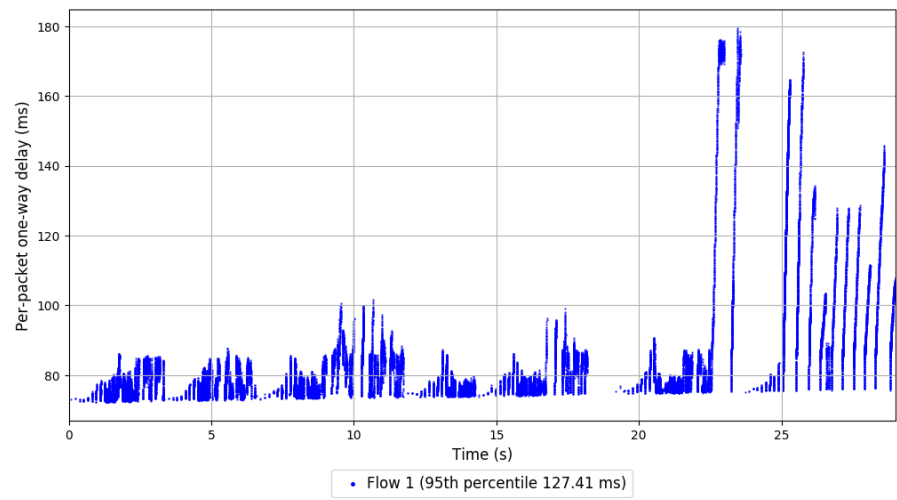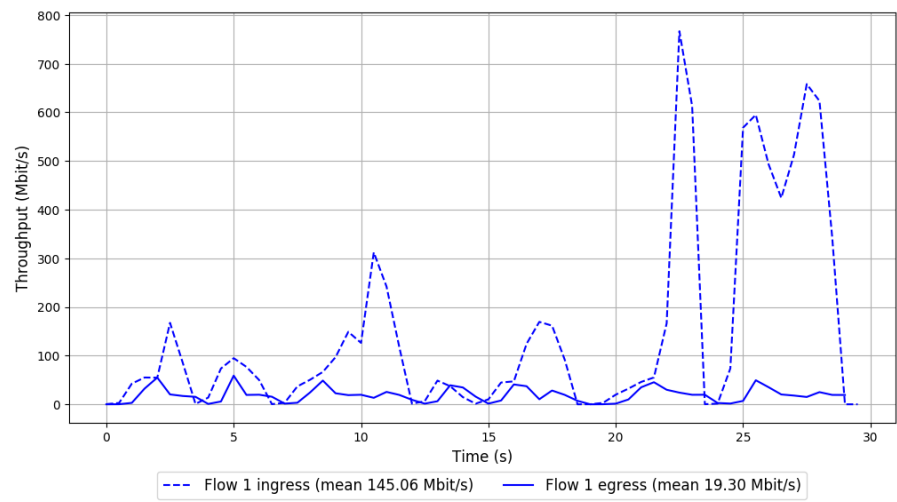• Flow 1 (95th percentile 130.07 ms)

```
Run 2: Statistics of Verus

Start at: 2018-10-02 13:50:28
End at: 2018-10-02 13:50:58
Local clock offset: -11.179 ms
Remote clock offset: 24.688 ms


# Below is generated by plot.py at 2018-10-02 15:12:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 19.30 Mbit/s
95th percentile per-packet one-way delay: 127.409 ms
Loss rate: 87.13%
-- Flow 1:
Average throughput: 19.30 Mbit/s
95th percentile per-packet one-way delay: 127.409 ms
Loss rate: 87.13%
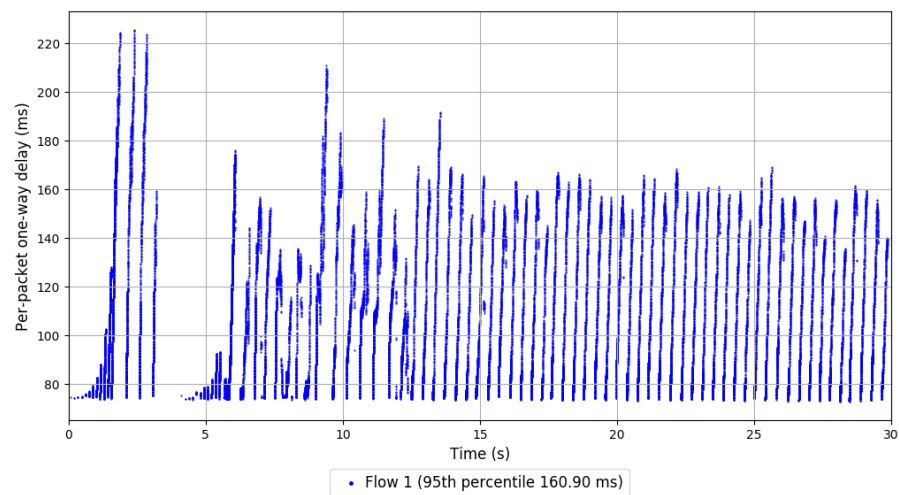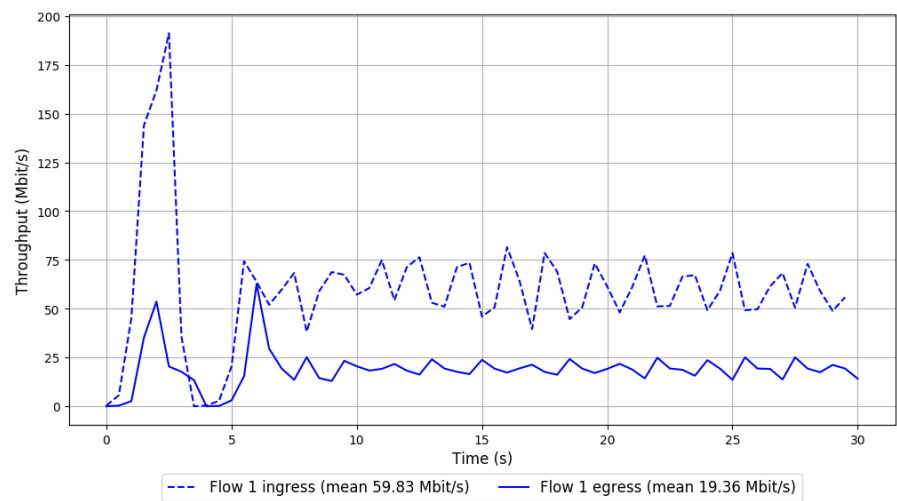```

Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-10-02 14:11:52
End at: 2018-10-02 14:12:22
Local clock offset: -11.378 ms
Remote clock offset: 34.409 ms


# Below is generated by plot.py at 2018-10-02 15:12:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 19.36 Mbit/s
95th percentile per-packet one-way delay: 160.902 ms
Loss rate: 67.85%
-- Flow 1:
Average throughput: 19.36 Mbit/s
95th percentile per-packet one-way delay: 160.902 ms
Loss rate: 67.85%
```

Run 3: Report of Verus — Data Link

Flow 1 ingress (mean 59.83 Mbit/s) ----   Flow 1 egress (mean 19.36 Mbit/s) ——
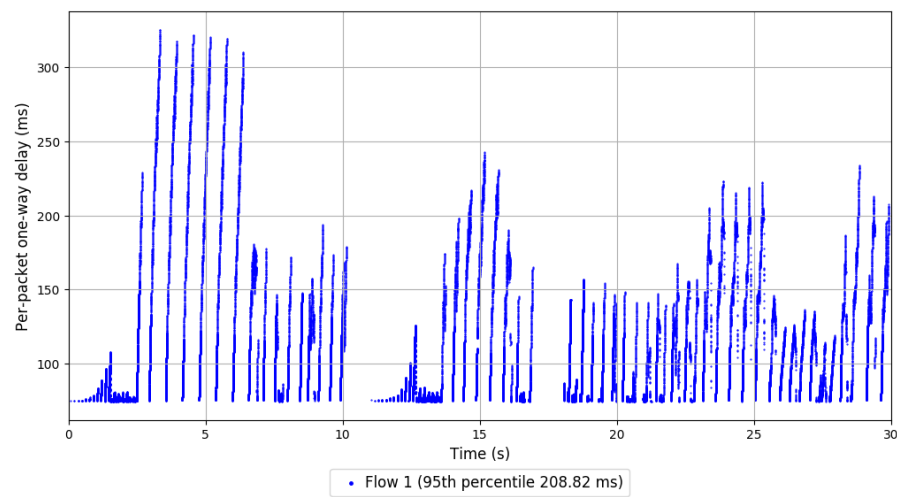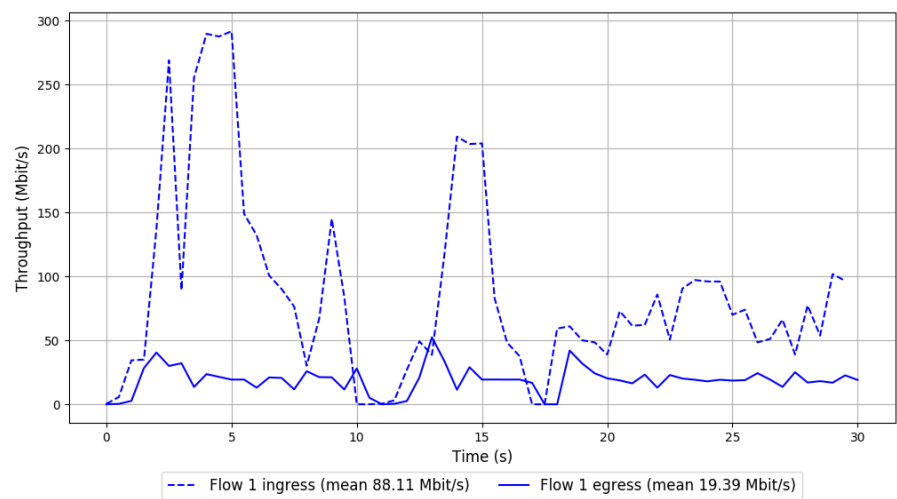

Flow 1 (95th percentile 160.90 ms) •

```
Run 4: Statistics of Verus

Start at: 2018-10-02 14:33:10
End at: 2018-10-02 14:33:40
Local clock offset: -8.79 ms
Remote clock offset: 12.816 ms


# Below is generated by plot.py at 2018-10-02 15:12:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 19.39 Mbit/s
95th percentile per-packet one-way delay: 208.818 ms
Loss rate: 77.90%
-- Flow 1:
Average throughput: 19.39 Mbit/s
95th percentile per-packet one-way delay: 208.818 ms
Loss rate: 77.90%
```

Run 4: Report of Verus — Data Link

```
Run 5: Statistics of Verus

Start at: 2018-10-02 14:54:37
End at: 2018-10-02 14:55:07
Local clock offset: -8.7 ms
Remote clock offset: 8.87 ms


# Below is generated by plot.py at 2018-10-02 15:12:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 19.58 Mbit/s
95th percentile per-packet one-way delay: 143.504 ms
Loss rate: 63.83%
-- Flow 1:
Average throughput: 19.58 Mbit/s
95th percentile per-packet one-way delay: 143.504 ms
Loss rate: 63.83%
```
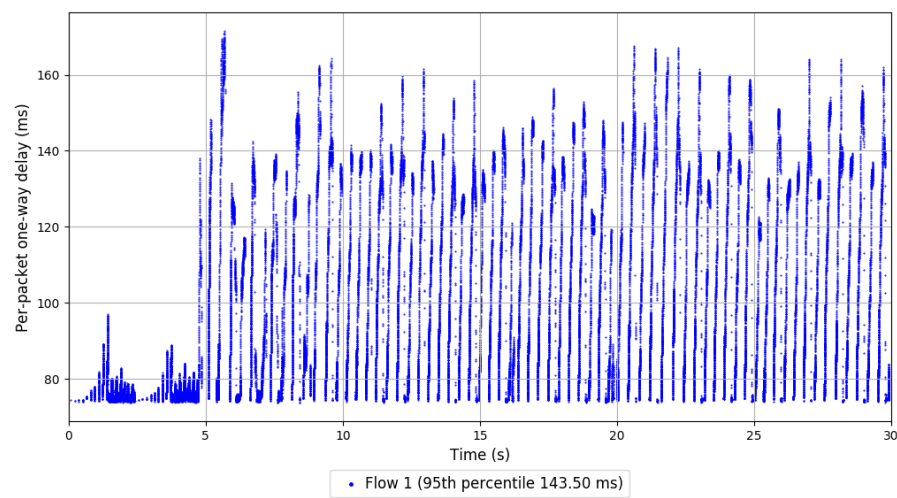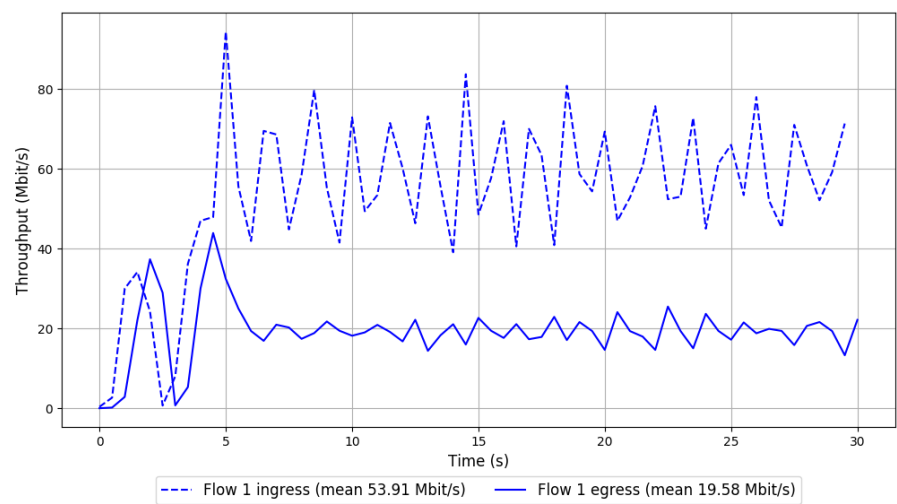
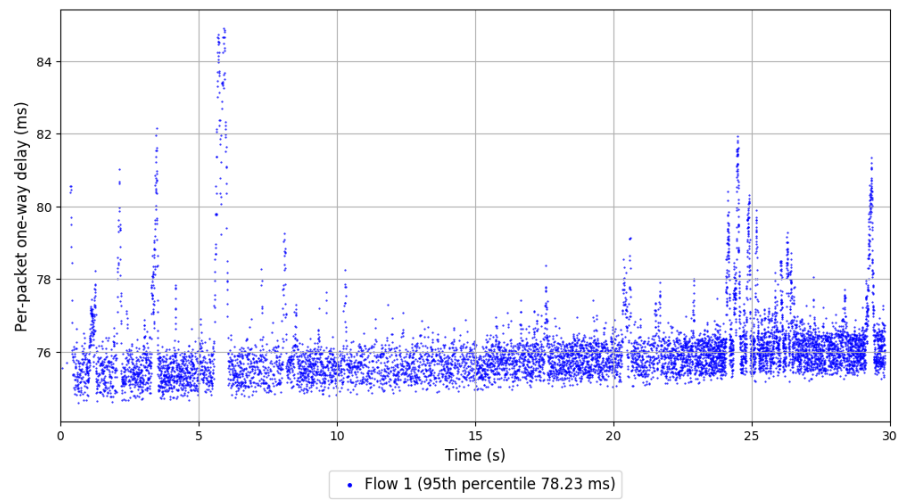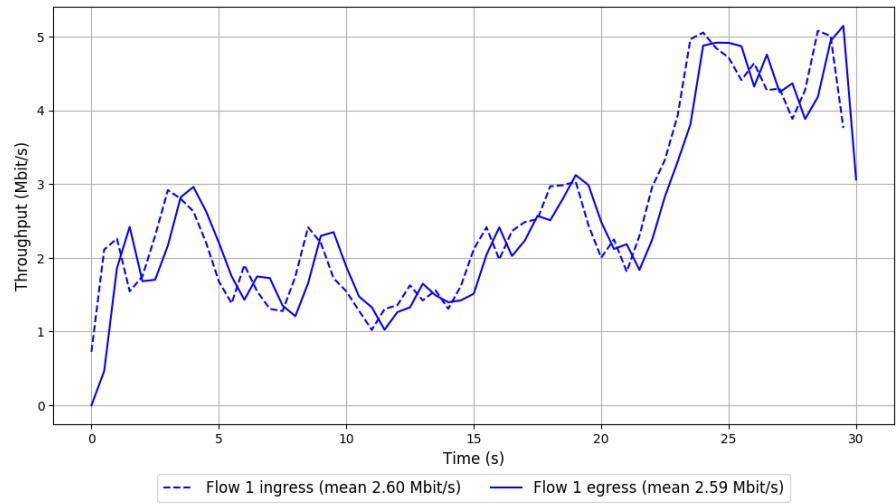## Run 5: Report of Verus — Data Link

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-10-02 13:37:28
End at: 2018-10-02 13:37:58
Local clock offset: -10.852 ms
Remote clock offset: -8.17 ms


# Below is generated by plot.py at 2018-10-02 15:12:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.59 Mbit/s
95th percentile per-packet one-way delay: 78.232 ms
Loss rate: 0.88%
-- Flow 1:
Average throughput: 2.59 Mbit/s
95th percentile per-packet one-way delay: 78.232 ms
Loss rate: 0.88%
```
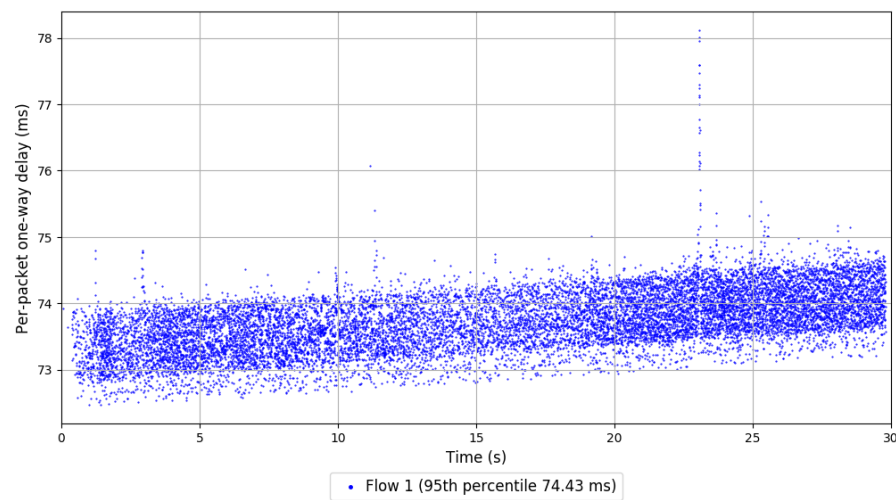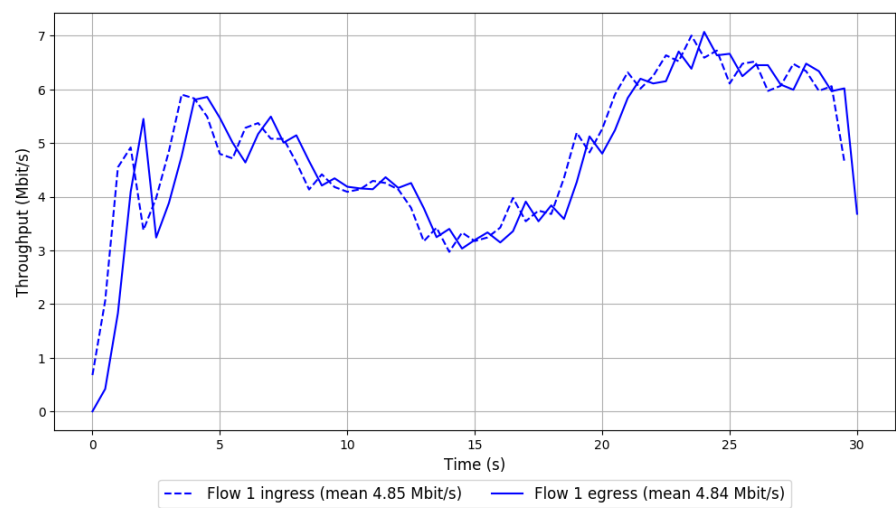
Run 1: Report of PCC-Vivace — Data Link

```
Run 2: Statistics of PCC-Vivace

Start at: 2018-10-02 13:58:51
End at: 2018-10-02 13:59:21
Local clock offset: -11.106 ms
Remote clock offset: 56.364 ms


# Below is generated by plot.py at 2018-10-02 15:12:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.84 Mbit/s
95th percentile per-packet one-way delay: 74.428 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 4.84 Mbit/s
95th percentile per-packet one-way delay: 74.428 ms
Loss rate: 0.66%
```

Run 2: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 4.85 Mbit/s)   Flow 1 egress (mean 4.84 Mbit/s)

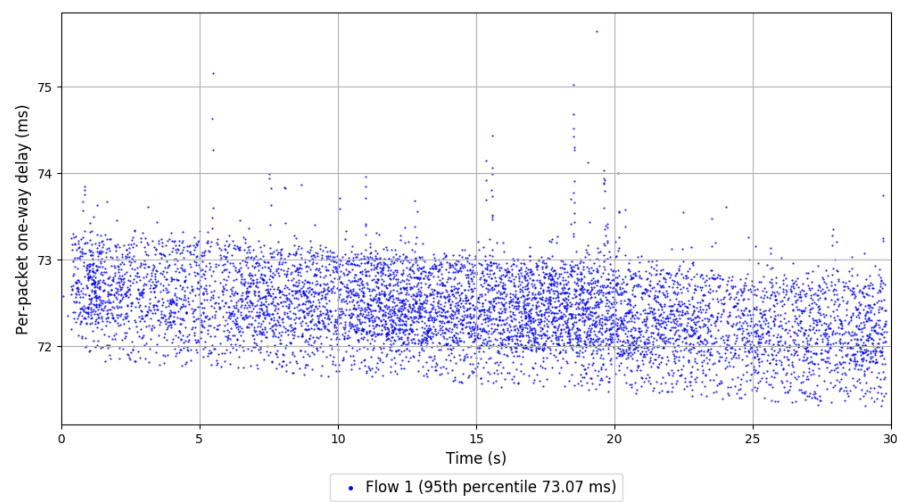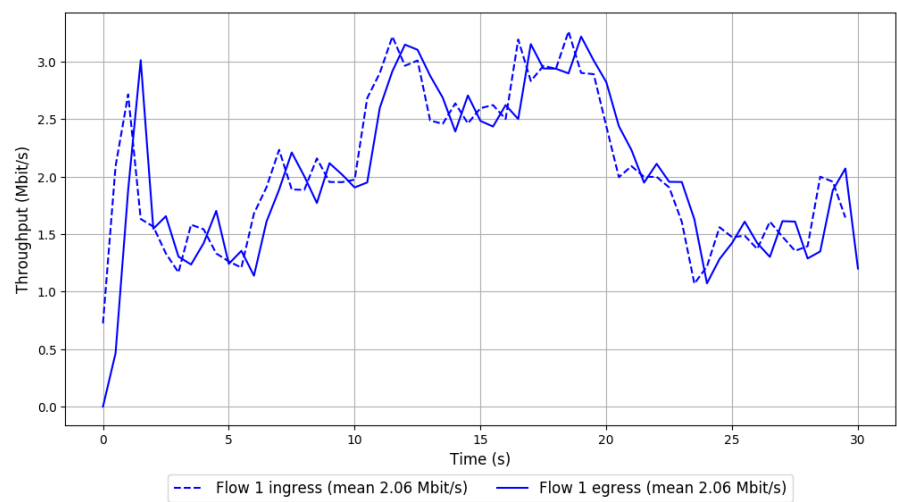

Flow 1 (95th percentile 74.43 ms)

```
Run 3: Statistics of PCC-Vivace

Start at: 2018-10-02 14:20:16
End at: 2018-10-02 14:20:46
Local clock offset: -10.41 ms
Remote clock offset: 21.643 ms


# Below is generated by plot.py at 2018-10-02 15:12:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.06 Mbit/s
95th percentile per-packet one-way delay: 73.073 ms
Loss rate: 0.55%
-- Flow 1:
Average throughput: 2.06 Mbit/s
95th percentile per-packet one-way delay: 73.073 ms
Loss rate: 0.55%
```
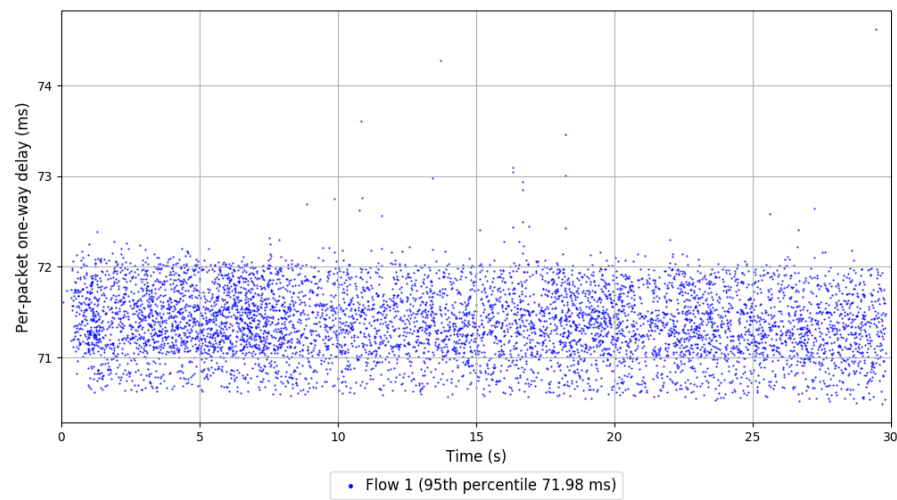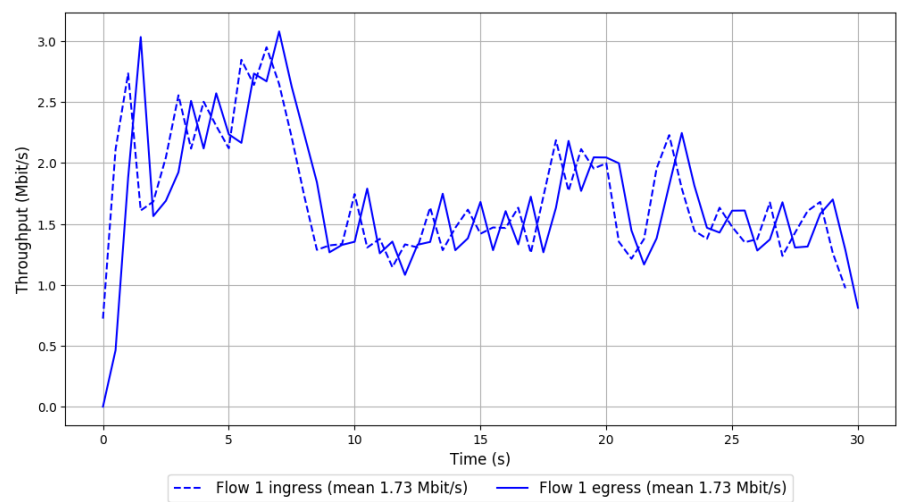
Run 3: Report of PCC-Vivace — Data Link

```
Run 4: Statistics of PCC-Vivace

Start at: 2018-10-02 14:41:40
End at: 2018-10-02 14:42:10
Local clock offset: -8.515 ms
Remote clock offset: 14.119 ms


# Below is generated by plot.py at 2018-10-02 15:12:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.73 Mbit/s
95th percentile per-packet one-way delay: 71.976 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 1.73 Mbit/s
95th percentile per-packet one-way delay: 71.976 ms
Loss rate: 0.36%
```

Run 4: Report of PCC-Vivace — Data Link

```
Run 5: Statistics of PCC-Vivace

Start at: 2018-10-02 15:03:00
End at: 2018-10-02 15:03:30
Local clock offset: -8.694 ms
Remote clock offset: 7.299 ms


# Below is generated by plot.py at 2018-10-02 15:12:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.81 Mbit/s
95th percentile per-packet one-way delay: 75.453 ms
Loss rate: 0.57%
-- Flow 1:
Average throughput: 2.81 Mbit/s
95th percentile per-packet one-way delay: 75.453 ms
Loss rate: 0.57%
```
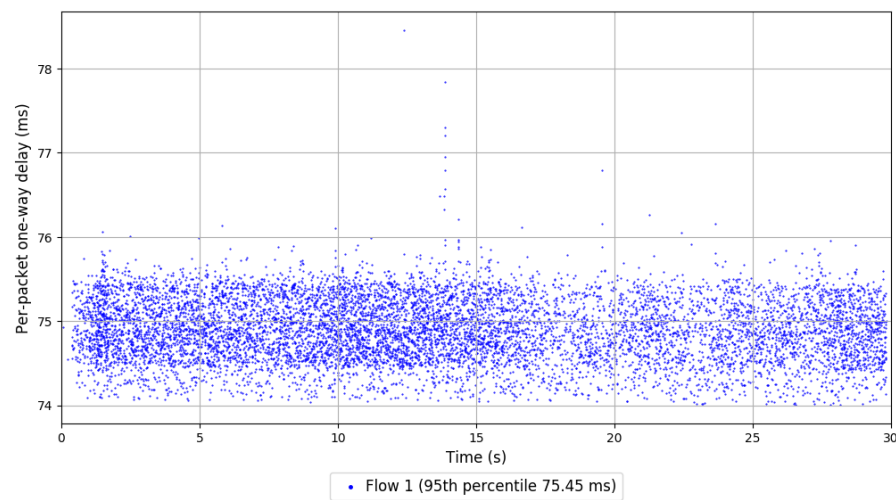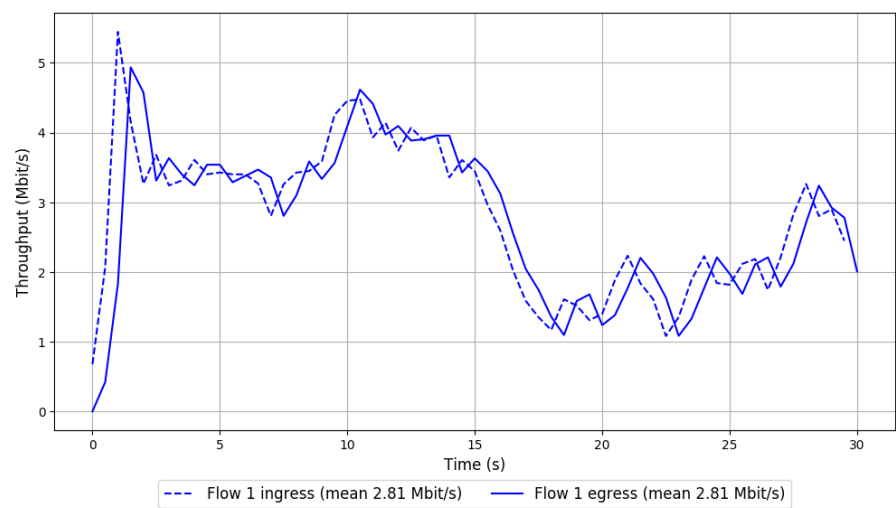
Run 5: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 2.81 Mbit/s) --- Flow 1 egress (mean 2.81 Mbit/s)

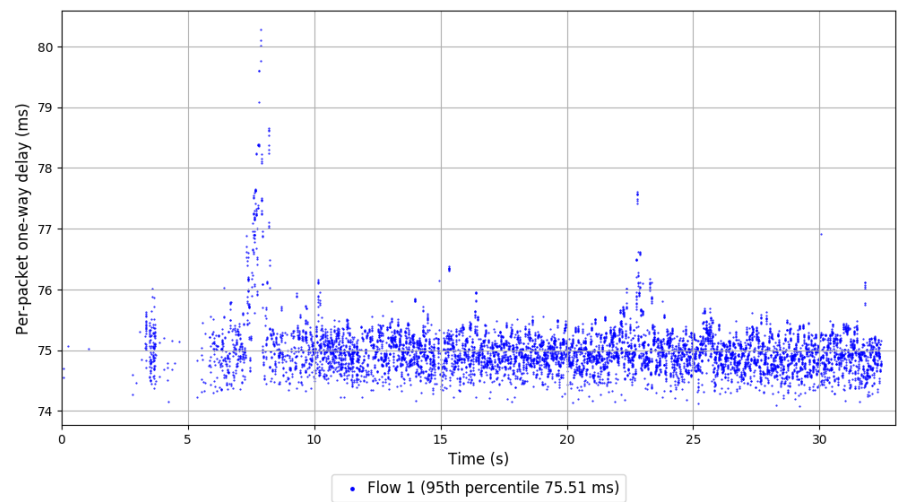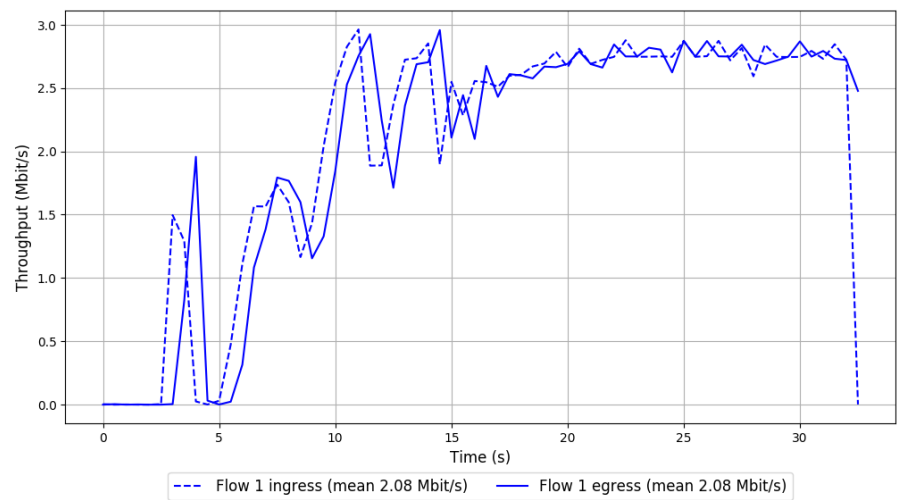· Flow 1 (95th percentile 75.45 ms)

```
Run 1: Statistics of WebRTC media

Start at: 2018-10-02 13:43:21
End at: 2018-10-02 13:43:51
Local clock offset: -11.324 ms
Remote clock offset: -5.769 ms


# Below is generated by plot.py at 2018-10-02 15:12:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.08 Mbit/s
95th percentile per-packet one-way delay: 75.506 ms
Loss rate: 0.55%
-- Flow 1:
Average throughput: 2.08 Mbit/s
95th percentile per-packet one-way delay: 75.506 ms
Loss rate: 0.55%
```

Run 1: Report of WebRTC media — Data Link
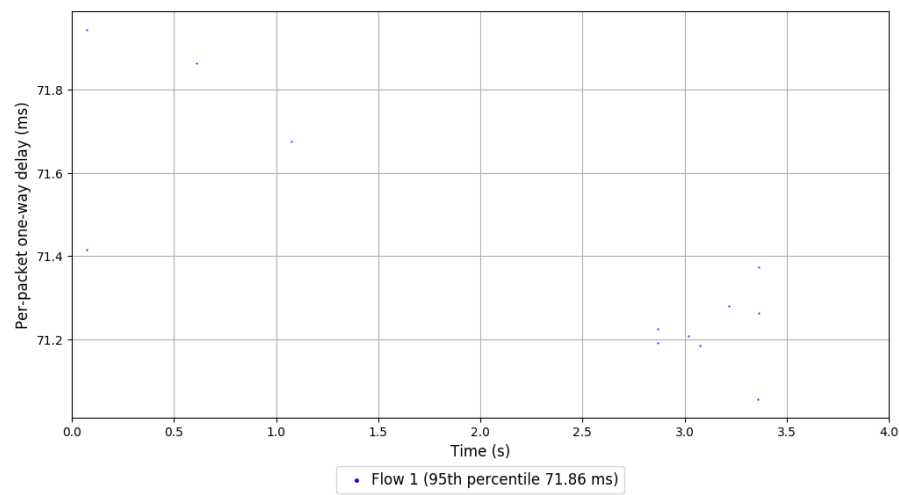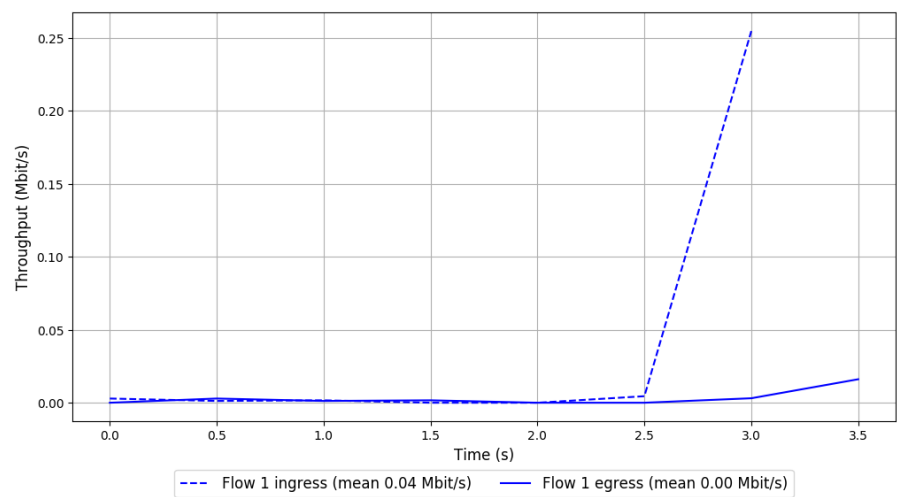
Run 2: Statistics of WebRTC media

Start at: 2018-10-02 14:04:44
End at: 2018-10-02 14:05:14
Local clock offset: -11.3 ms
Remote clock offset: 64.647 ms

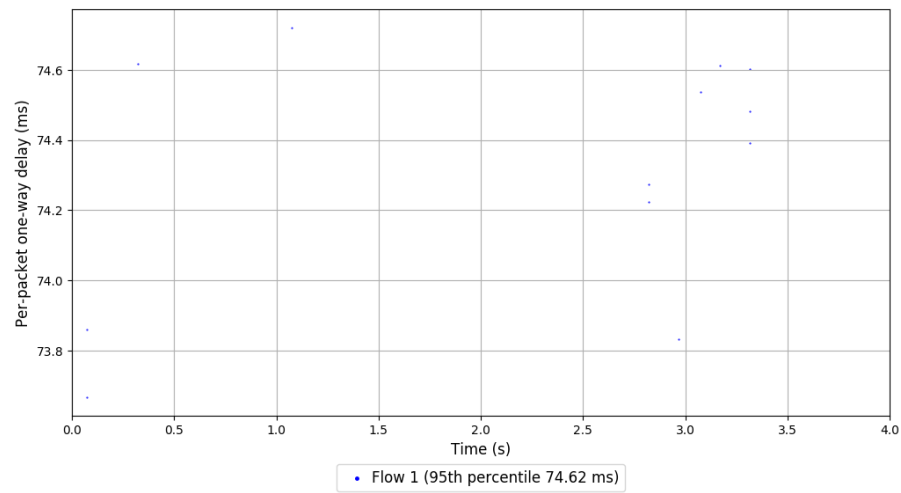Run 2: Report of WebRTC media — Data Link
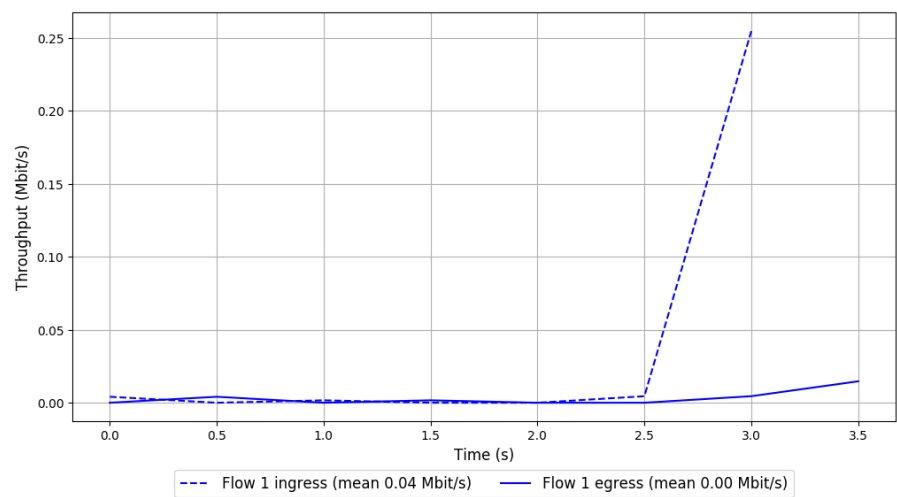
```
Run 3: Statistics of WebRTC media

Start at: 2018-10-02 14:26:08
End at: 2018-10-02 14:26:38
Local clock offset: -9.441 ms
Remote clock offset: 16.19 ms
```

Run 3: Report of WebRTC media — Data Link
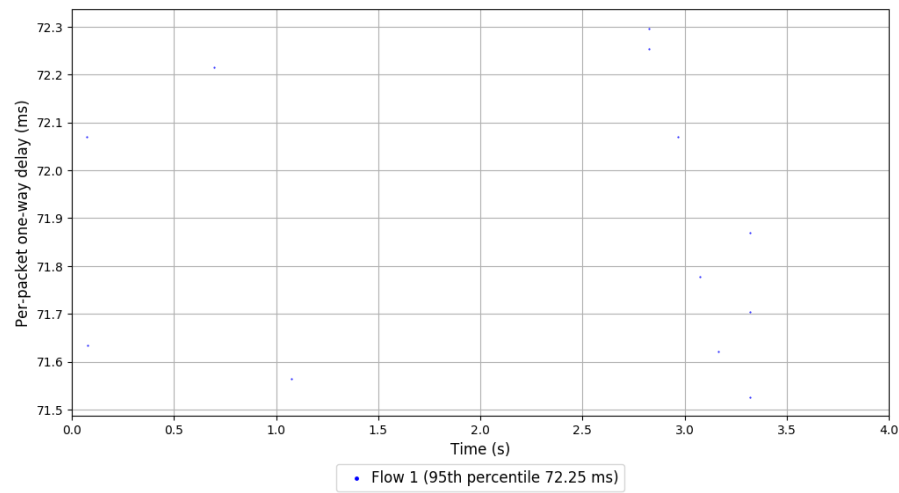
```
Run 4: Statistics of WebRTC media

Start at: 2018-10-02 14:47:35
End at: 2018-10-02 14:48:05
Local clock offset: -8.501 ms
Remote clock offset: 12.155 ms
```
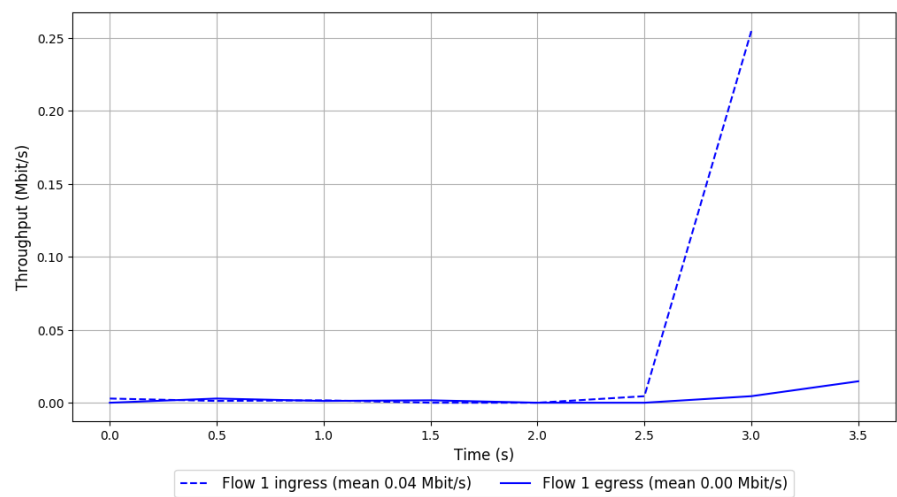
Run 4: Report of WebRTC media — Data Link

```
Run 5: Statistics of WebRTC media

Start at: 2018-10-02 15:08:54
End at: 2018-10-02 15:09:24
Local clock offset: -9.037 ms
Remote clock offset: 6.98 ms
```

Run 5: Report of WebRTC media — Data Link

Flow 1 ingress (mean 0.04 Mbit/s) — — —   Flow 1 egress (mean 0.00 Mbit/s) ———

• Flow 1 (95th percentile 74.21 ms)