Pantheon Report

Generated at 2018-10-02 09:01:27 (UTC).

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

Repeated the test of 18 congestion control schemes 5 times.

Each test lasted for 30 seconds running 1 flow.

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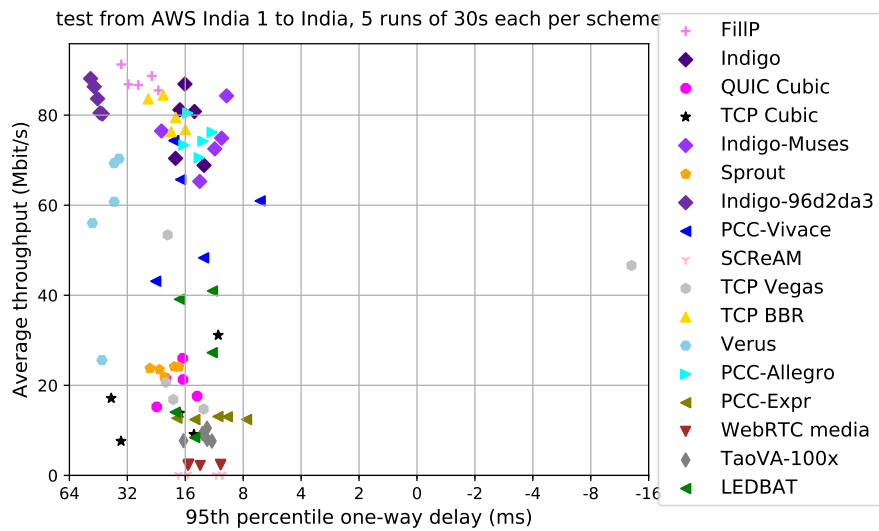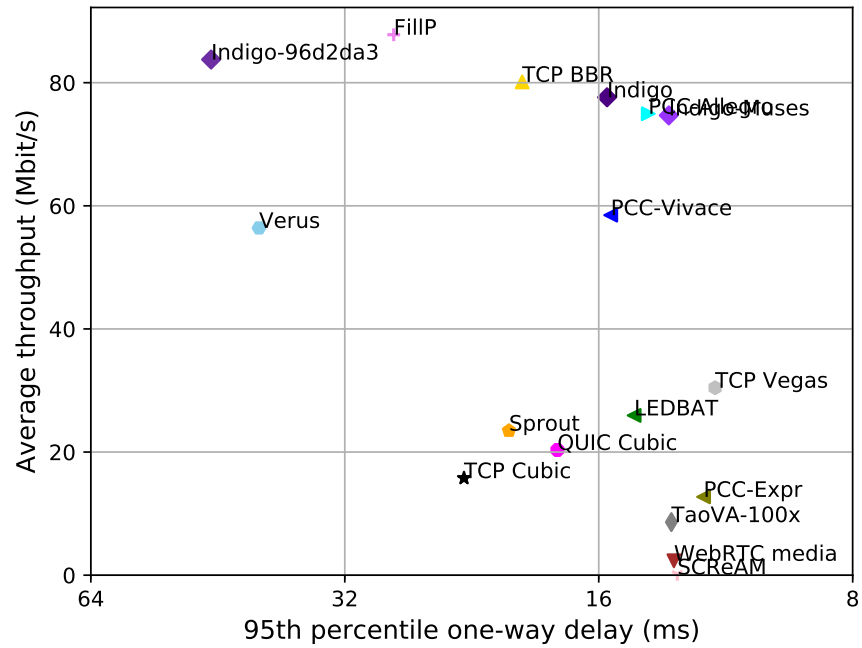
```
System info:
Linux 4.15.0-1021-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

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 AWS India 1 to India, 5 runs of 30s each per scheme
(mean of all runs by scheme)

test from AWS India 1 to India, 5 runs of 30s each per scheme

3

scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	5	80.13	19.72	8.39
Copa	0	N/A	N/A	N/A
TCP Cubic	5	15.76	23.11	0.50
FillP	5	87.80	28.00	9.98
Indigo	5	77.63	15.64	8.76
Indigo-96d2da3	5	83.76	46.09	41.48
LEDBAT	5	25.95	14.53	0.42
Indigo-Muses	5	74.69	13.21	6.31
PCC-Allegro	5	74.95	13.98	6.96
PCC-Expr	5	12.72	12.02	42.58
QUIC Cubic	5	20.34	17.91	1.87
SCReAM	5	0.13	12.91	0.71
Sprout	5	23.47	20.44	1.20
TaoVA-100x	5	8.62	13.12	76.17
TCP Vegas	5	30.45	11.65	0.70
Verus	5	56.41	40.44	27.52
PCC-Vivace	5	58.48	15.49	5.44
WebRTC media	5	2.34	13.03	0.80

```
Run 1: Statistics of TCP BBR

Start at: 2018-10-02 07:25:40
End at: 2018-10-02 07:26:10
Local clock offset: 2.419 ms
Remote clock offset: -3.389 ms


# Below is generated by plot.py at 2018-10-02 08:55:58
# Datalink statistics
-- Total of 1 flow:
Average throughput: 79.49 Mbit/s
95th percentile per-packet one-way delay: 17.938 ms
Loss rate: 7.45%
-- Flow 1:
Average throughput: 79.49 Mbit/s
95th percentile per-packet one-way delay: 17.938 ms
Loss rate: 7.45%
```
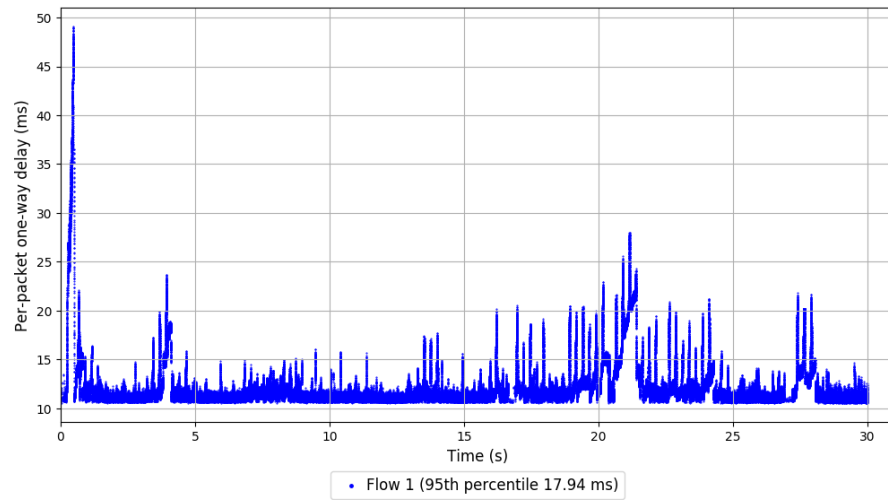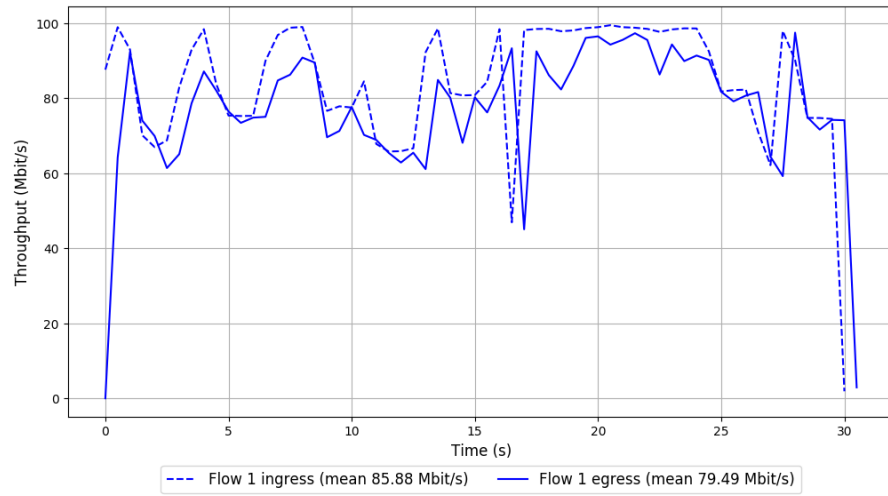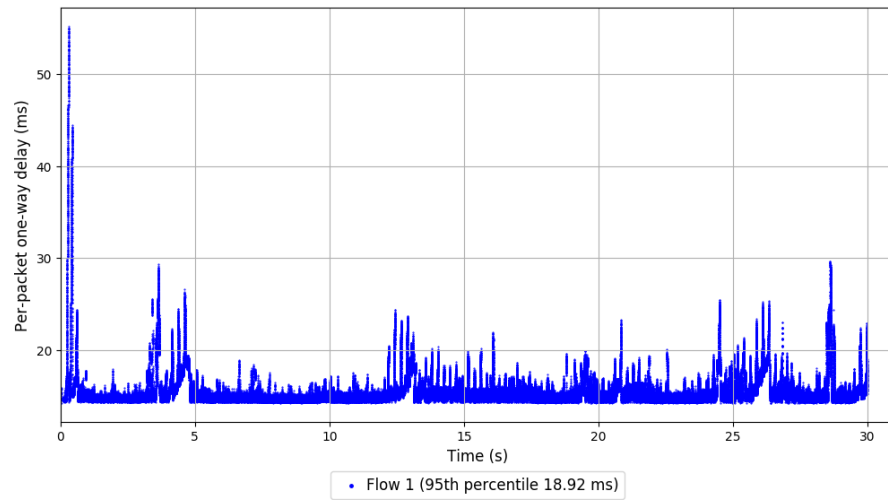
Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2018-10-02 07:46:15
End at: 2018-10-02 07:46:45
Local clock offset: -4.7 ms
Remote clock offset: -4.365 ms


# Below is generated by plot.py at 2018-10-02 08:55:58
# Datalink statistics
-- Total of 1 flow:
Average throughput: 76.33 Mbit/s
95th percentile per-packet one-way delay: 18.924 ms
Loss rate: 9.84%
-- Flow 1:
Average throughput: 76.33 Mbit/s
95th percentile per-packet one-way delay: 18.924 ms
Loss rate: 9.84%
```
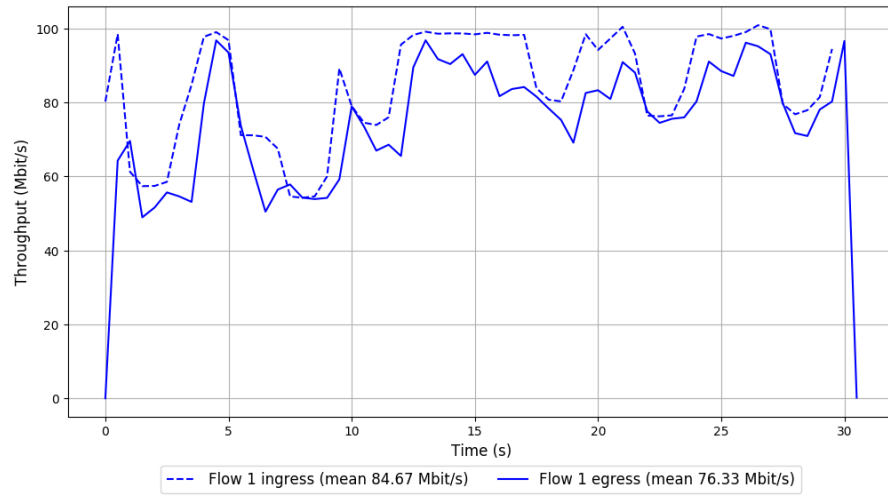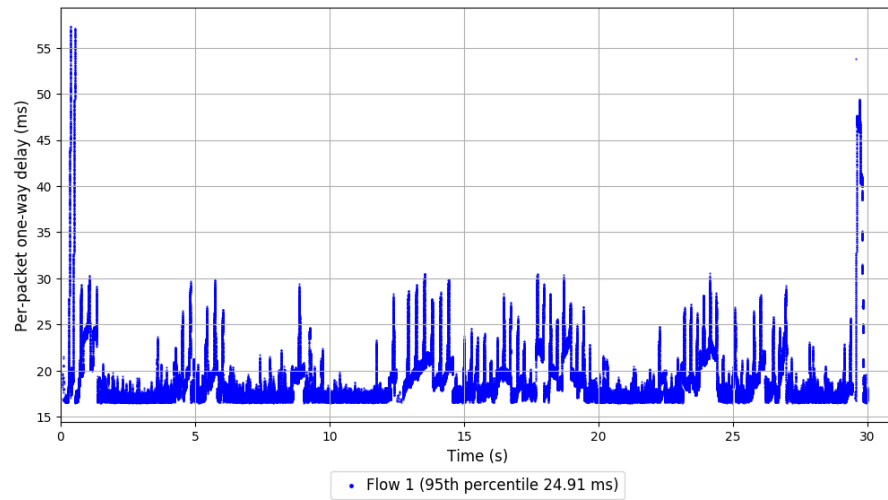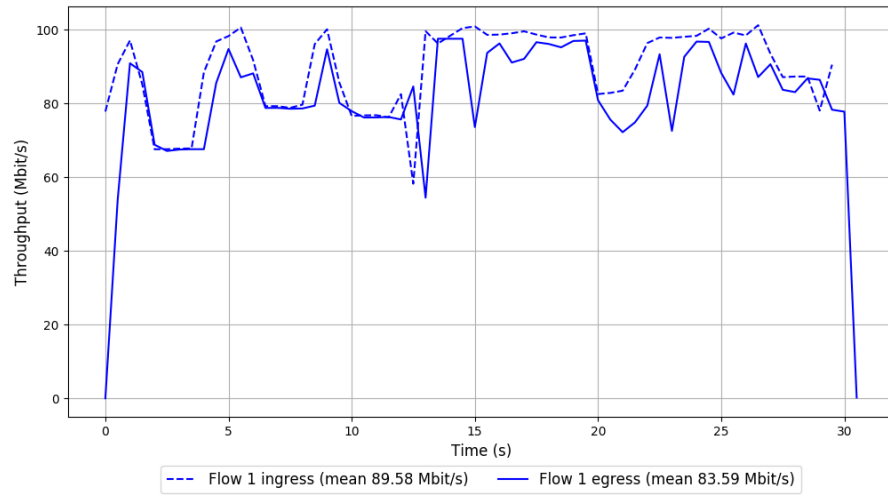
Run 2: Report of TCP BBR — Data Link

Flow 1 ingress (mean 84.67 Mbit/s) --- Flow 1 egress (mean 76.33 Mbit/s)
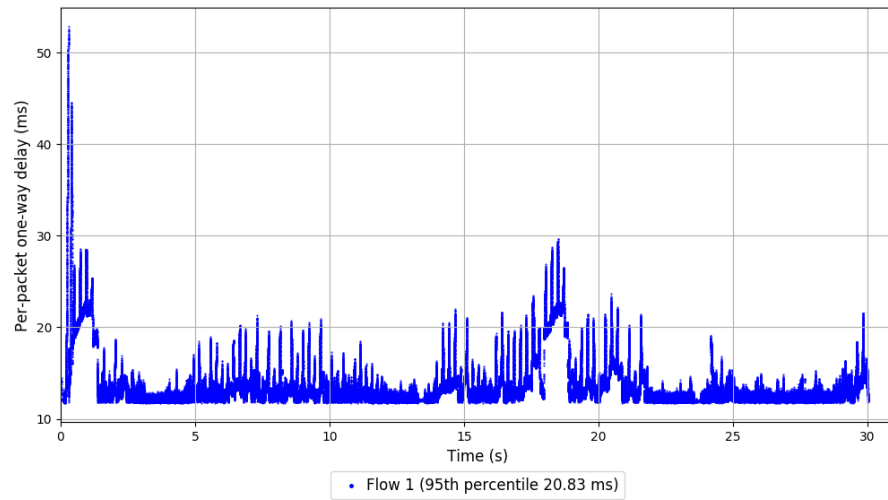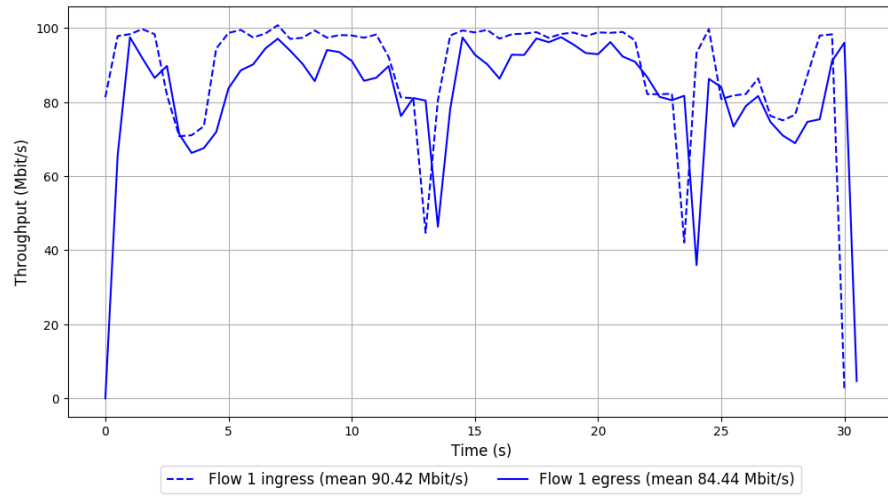

Flow 1 (95th percentile 18.92 ms)

```
Run 3: Statistics of TCP BBR

Start at: 2018-10-02 08:06:49
End at: 2018-10-02 08:07:19
Local clock offset: -6.536 ms
Remote clock offset: -3.181 ms


# Below is generated by plot.py at 2018-10-02 08:56:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 83.59 Mbit/s
95th percentile per-packet one-way delay: 24.910 ms
Loss rate: 6.68%
-- Flow 1:
Average throughput: 83.59 Mbit/s
95th percentile per-packet one-way delay: 24.910 ms
Loss rate: 6.68%
```

Run 3: Report of TCP BBR — Data Link

```
Run 4: Statistics of TCP BBR

Start at: 2018-10-02 08:27:26
End at: 2018-10-02 08:27:56
Local clock offset: -2.682 ms
Remote clock offset: -2.226 ms


# Below is generated by plot.py at 2018-10-02 08:56:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 84.44 Mbit/s
95th percentile per-packet one-way delay: 20.826 ms
Loss rate: 6.61%
-- Flow 1:
Average throughput: 84.44 Mbit/s
95th percentile per-packet one-way delay: 20.826 ms
Loss rate: 6.61%
```
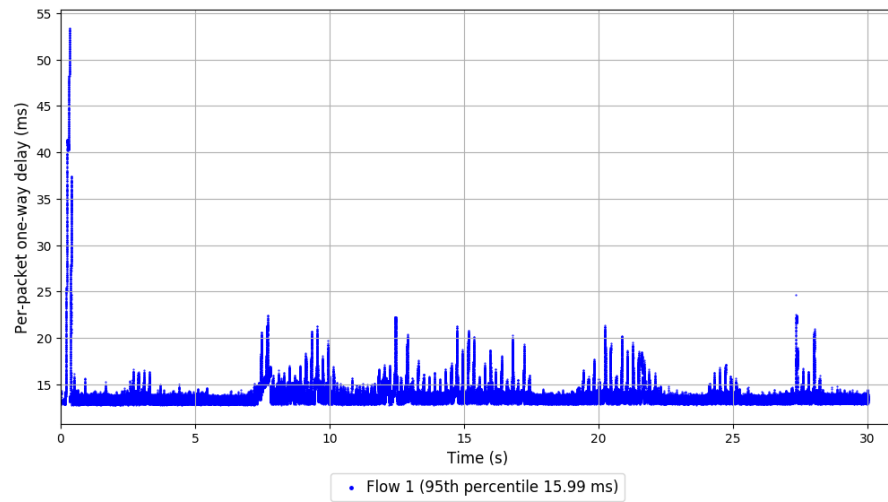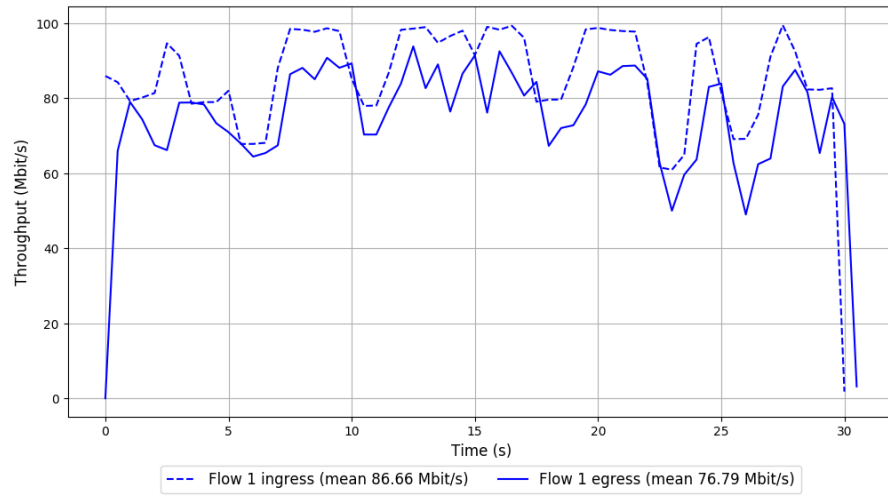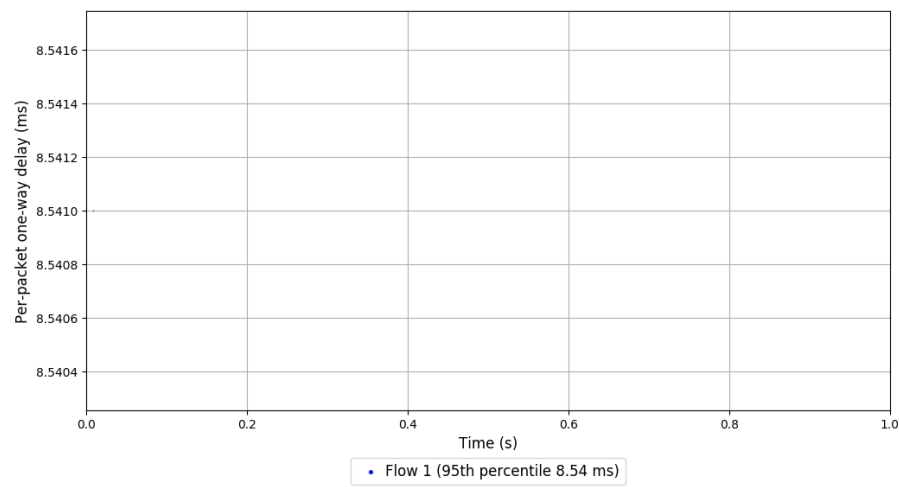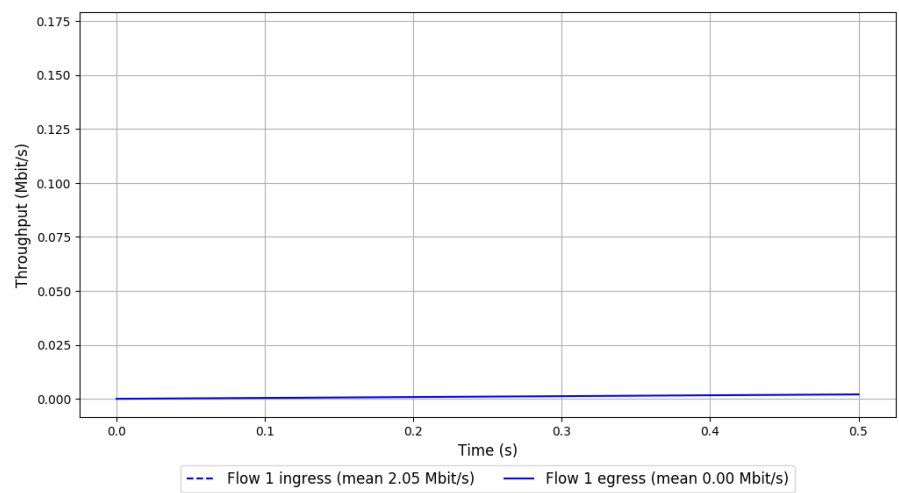
Run 4: Report of TCP BBR — Data Link

Flow 1 ingress (mean 90.42 Mbit/s) —— Flow 1 egress (mean 84.44 Mbit/s)

• Flow 1 (95th percentile 20.83 ms)

```
Run 5: Statistics of TCP BBR

Start at: 2018-10-02 08:47:54
End at: 2018-10-02 08:48:24
Local clock offset: -2.93 ms
Remote clock offset: -0.328 ms


# Below is generated by plot.py at 2018-10-02 08:56:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 76.79 Mbit/s
95th percentile per-packet one-way delay: 15.987 ms
Loss rate: 11.39%
-- Flow 1:
Average throughput: 76.79 Mbit/s
95th percentile per-packet one-way delay: 15.987 ms
Loss rate: 11.39%
```

Run 5: Report of TCP BBR — Data Link

Flow 1 ingress (mean 86.66 Mbit/s)   Flow 1 egress (mean 76.79 Mbit/s)

Flow 1 (95th percentile 15.99 ms)

```
Run 1: Statistics of Copa

Start at: 2018-10-02 07:14:27
End at: 2018-10-02 07:14:57
Local clock offset: 0.711 ms
Remote clock offset: -6.498 ms
```

Run 1: Report of Copa — Data Link
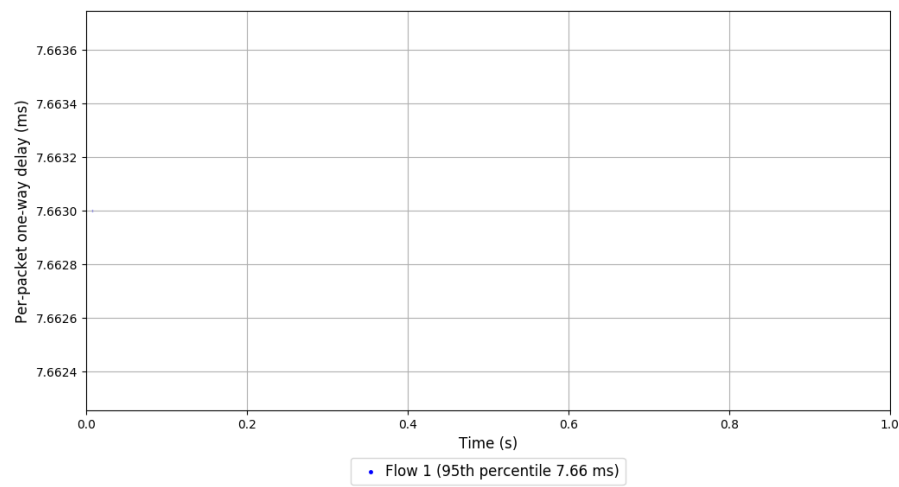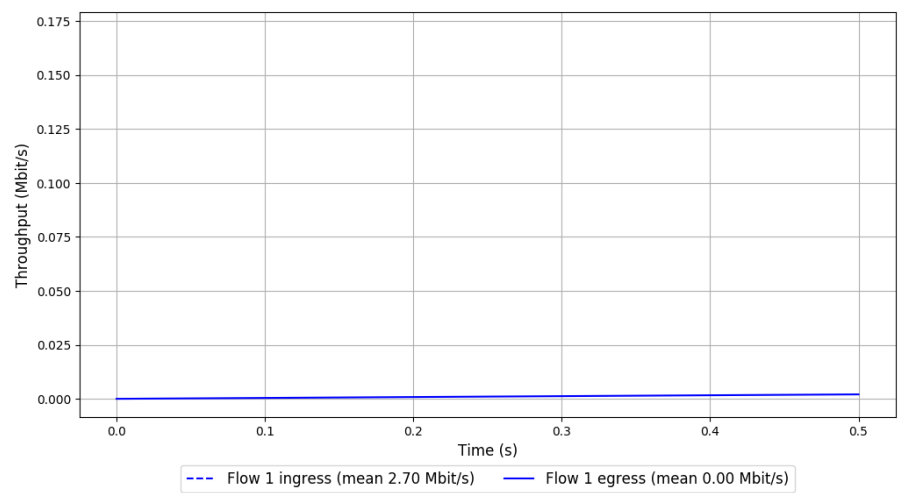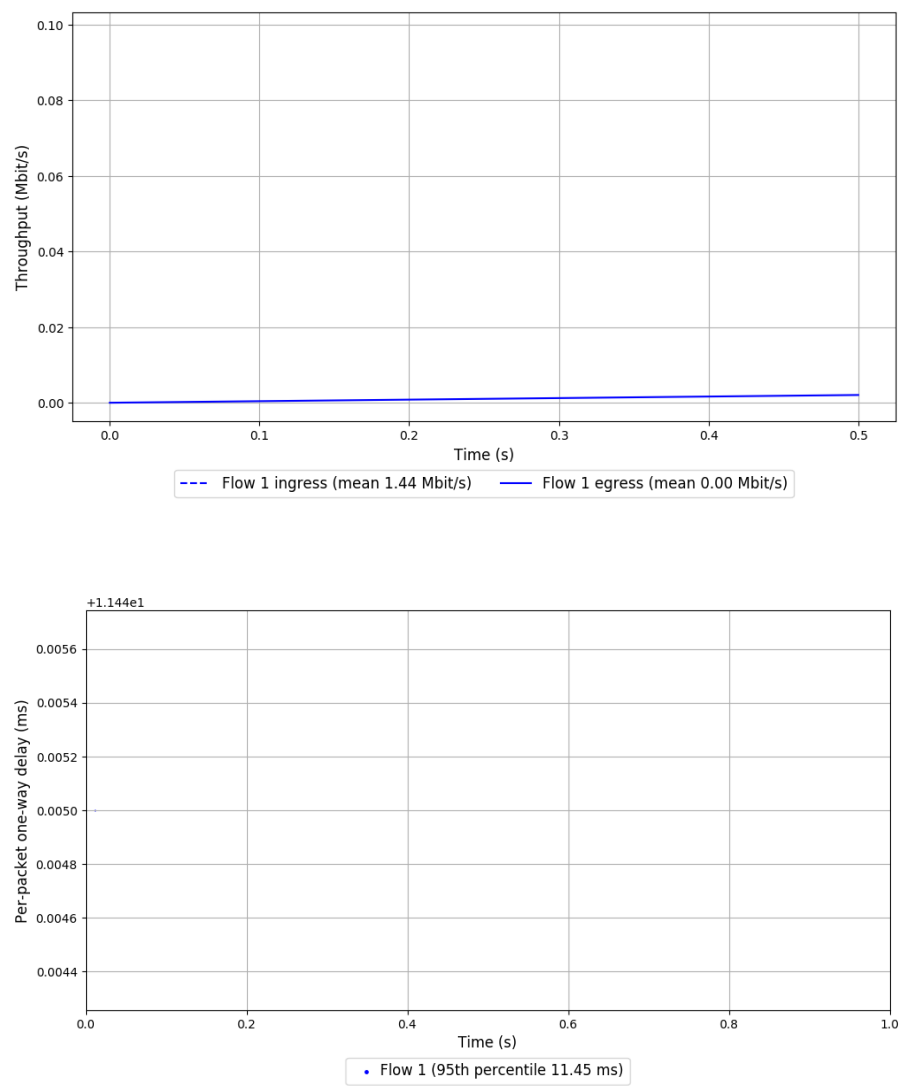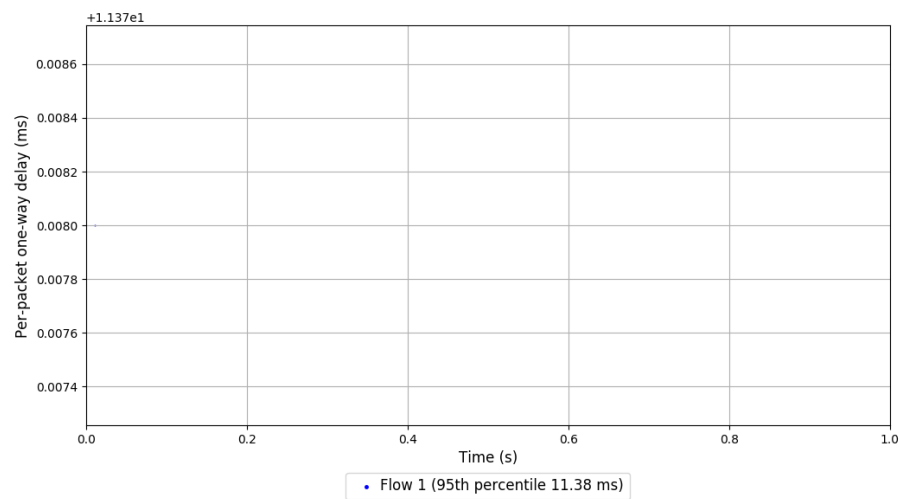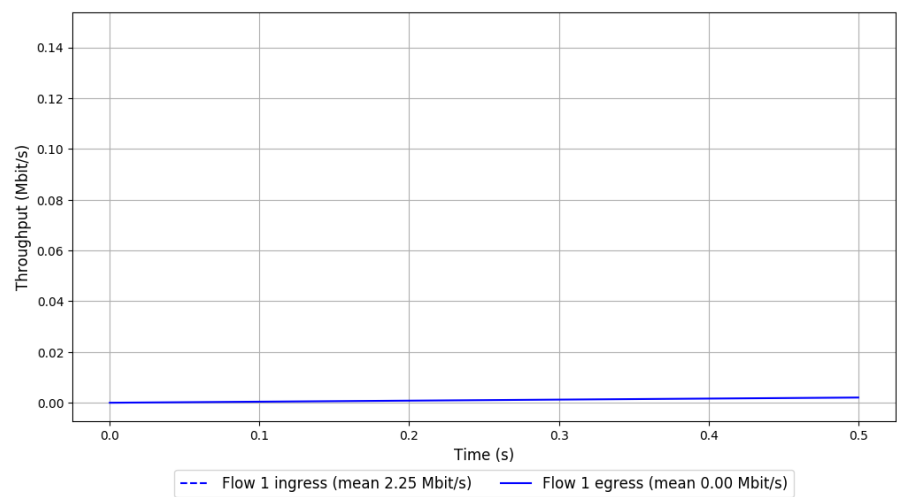
```
Run 2: Statistics of Copa

Start at: 2018-10-02 07:34:52
End at: 2018-10-02 07:35:22
Local clock offset: 2.151 ms
Remote clock offset: -3.29 ms
```

Run 2: Report of Copa — Data Link

Flow 1 ingress (mean 2.70 Mbit/s) ——— Flow 1 egress (mean 0.00 Mbit/s)

• Flow 1 (95th percentile 7.66 ms)
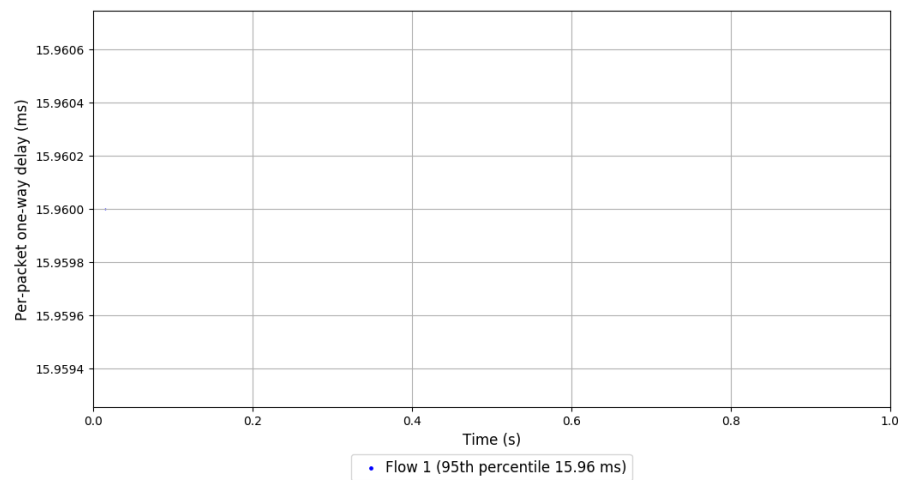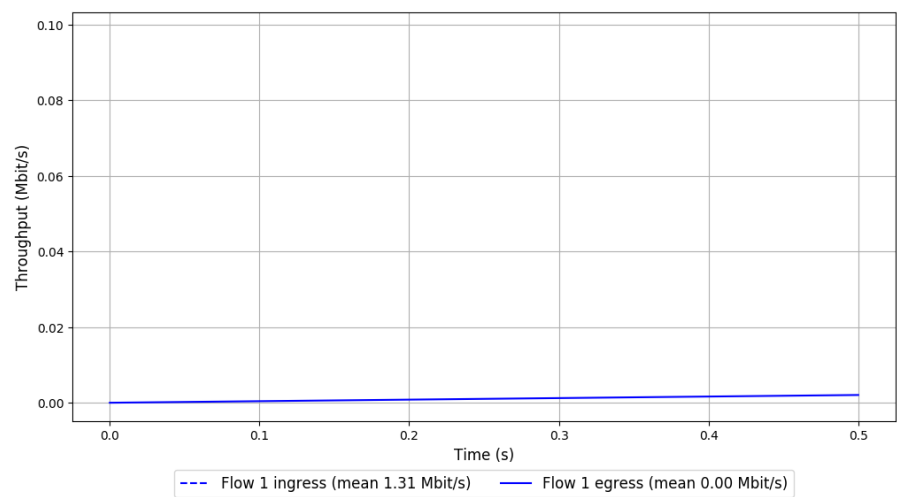
```
Run 3: Statistics of Copa

Start at: 2018-10-02 07:55:29
End at: 2018-10-02 07:55:59
Local clock offset: 0.321 ms
Remote clock offset: -2.483 ms
```

Run 3: Report of Copa — Data Link

Flow 1 ingress (mean 1.44 Mbit/s)   Flow 1 egress (mean 0.00 Mbit/s)

Flow 1 (95th percentile 11.45 ms)

```
Run 4: Statistics of Copa

Start at: 2018-10-02 08:16:06
End at: 2018-10-02 08:16:36
Local clock offset: -1.543 ms
Remote clock offset: -2.546 ms
```
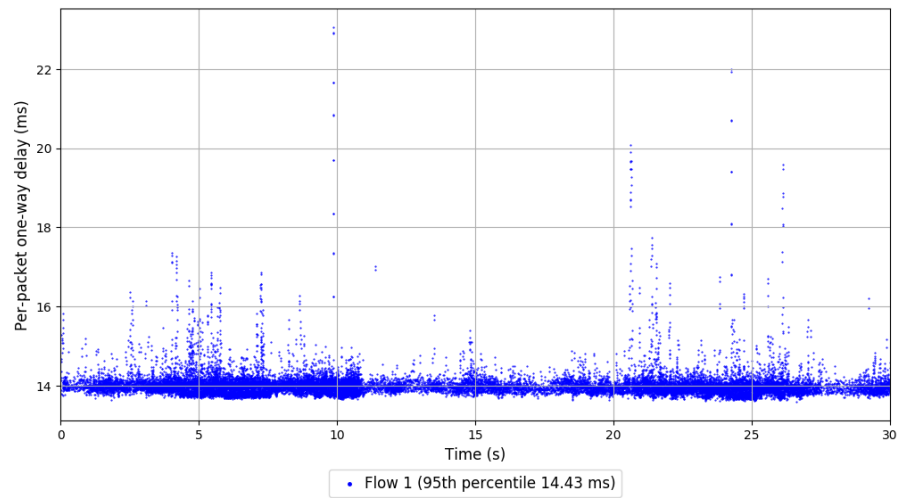
Run 4: Report of Copa — Data Link

Flow 1 ingress (mean 2.25 Mbit/s) --- Flow 1 egress (mean 0.00 Mbit/s)

Flow 1 (95th percentile 11.38 ms)

```
Run 5: Statistics of Copa

Start at: 2018-10-02 08:36:36
End at: 2018-10-02 08:37:06
Local clock offset: -1.376 ms
Remote clock offset: -2.808 ms
```
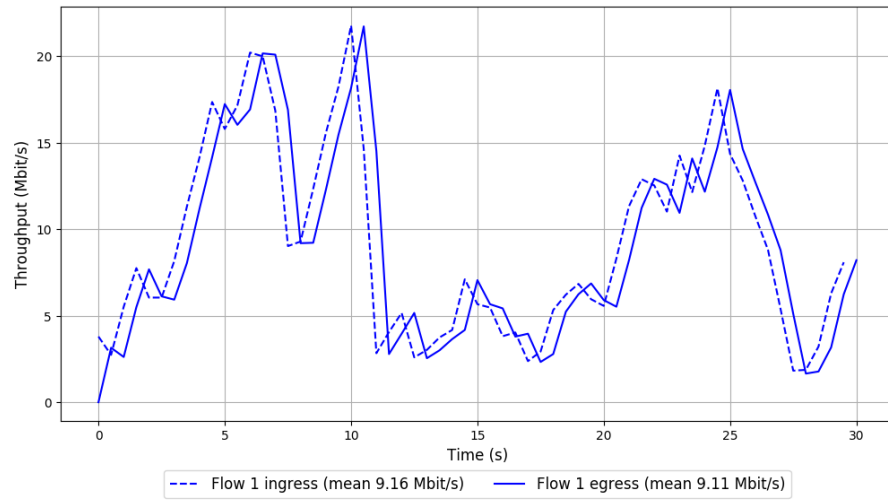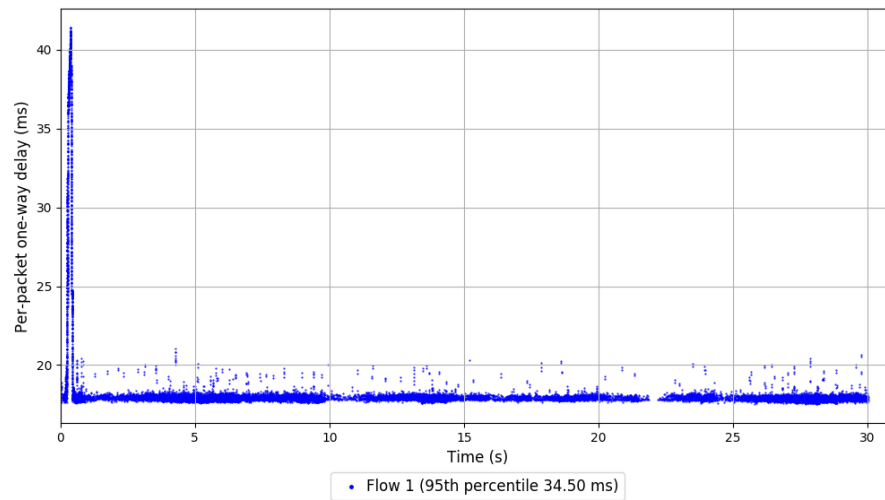
Run 5: Report of Copa — Data Link

```
Run 1: Statistics of TCP Cubic

Start at: 2018-10-02 07:24:35
End at: 2018-10-02 07:25:05
Local clock offset: -0.719 ms
Remote clock offset: -3.562 ms


# Below is generated by plot.py at 2018-10-02 08:56:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.11 Mbit/s
95th percentile per-packet one-way delay: 14.425 ms
Loss rate: 0.56%
-- Flow 1:
Average throughput: 9.11 Mbit/s
95th percentile per-packet one-way delay: 14.425 ms
Loss rate: 0.56%
```
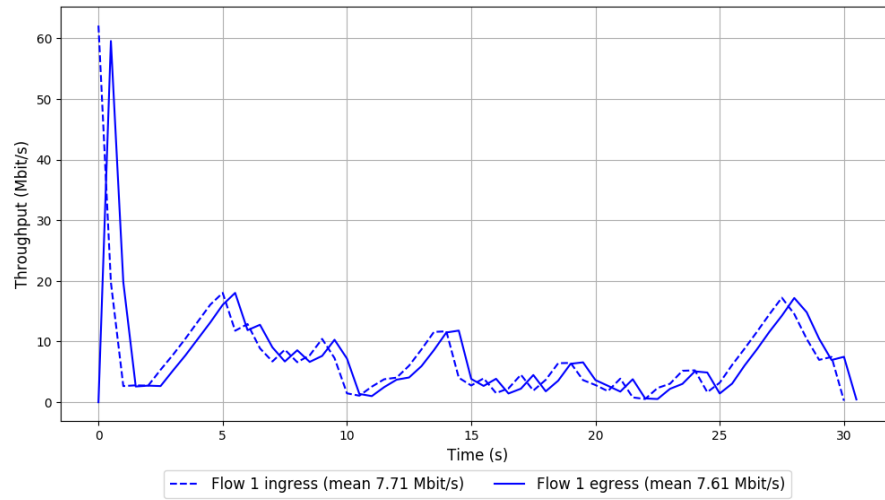
Run 1: Report of TCP Cubic — Data Link

```
Run 2: Statistics of TCP Cubic

Start at: 2018-10-02 07:45:09
End at: 2018-10-02 07:45:40
Local clock offset: -4.433 ms
Remote clock offset: -4.114 ms


# Below is generated by plot.py at 2018-10-02 08:56:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.61 Mbit/s
95th percentile per-packet one-way delay: 34.504 ms
Loss rate: 1.29%
-- Flow 1:
Average throughput: 7.61 Mbit/s
95th percentile per-packet one-way delay: 34.504 ms
Loss rate: 1.29%
```

Run 2: Report of TCP Cubic — Data Link

```
Run 3: Statistics of TCP Cubic

Start at: 2018-10-02 08:05:39
End at: 2018-10-02 08:06:09
Local clock offset: 0.992 ms
Remote clock offset: -2.67 ms


# Below is generated by plot.py at 2018-10-02 08:56:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 31.13 Mbit/s
95th percentile per-packet one-way delay: 10.777 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 31.13 Mbit/s
95th percentile per-packet one-way delay: 10.777 ms
Loss rate: 0.05%
```
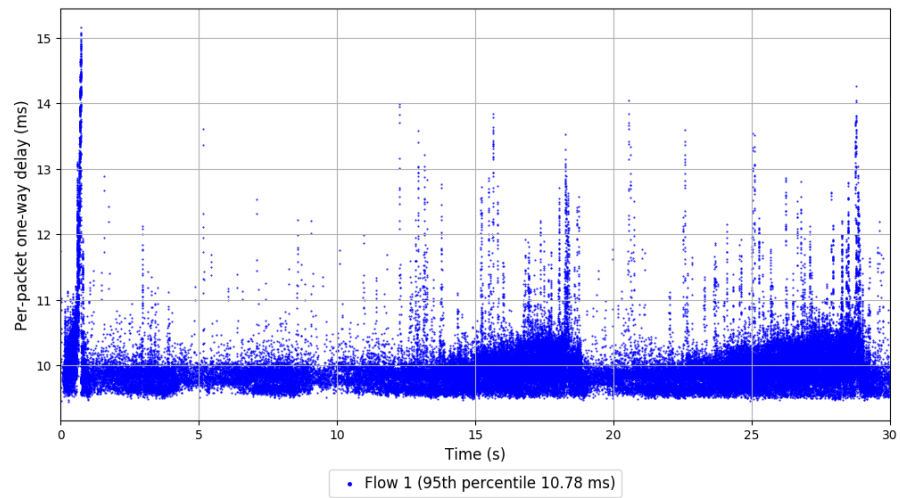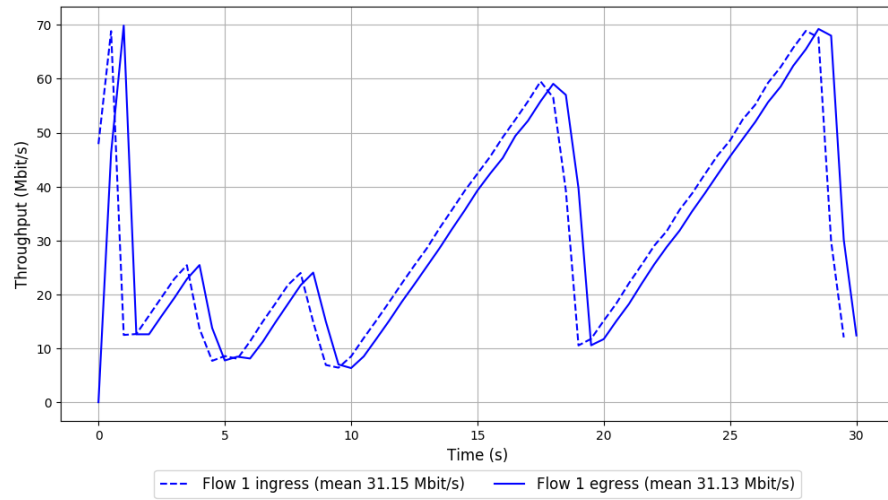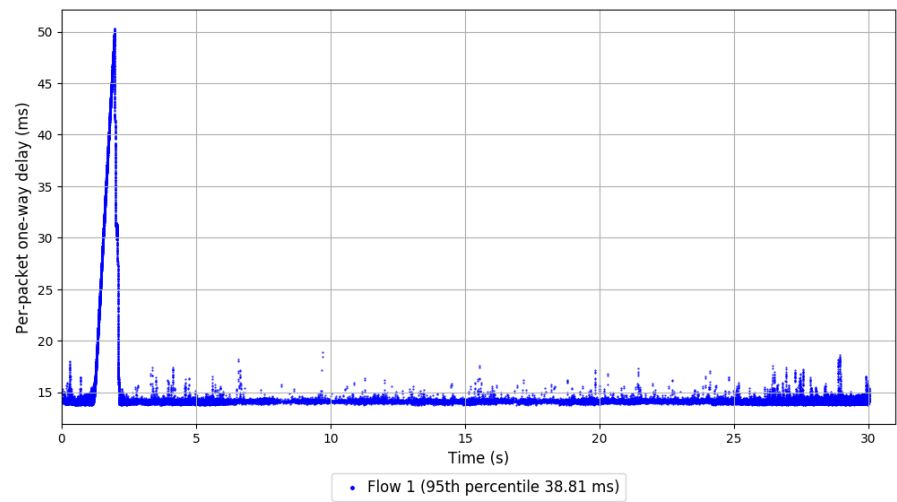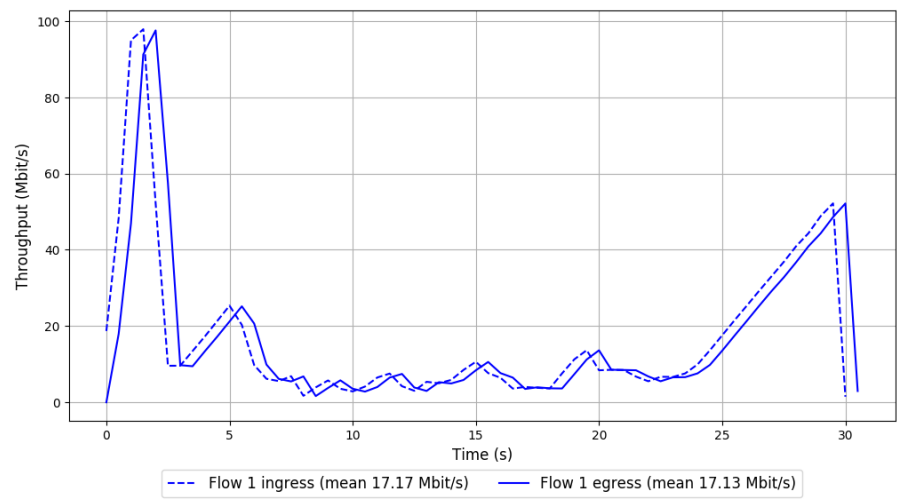
Run 3: Report of TCP Cubic — Data Link

```
Run 4: Statistics of TCP Cubic

Start at: 2018-10-02 08:26:20
End at: 2018-10-02 08:26:50
Local clock offset: -5.861 ms
Remote clock offset: -3.367 ms


# Below is generated by plot.py at 2018-10-02 08:56:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 17.13 Mbit/s
95th percentile per-packet one-way delay: 38.809 ms
Loss rate: 0.25%
-- Flow 1:
Average throughput: 17.13 Mbit/s
95th percentile per-packet one-way delay: 38.809 ms
Loss rate: 0.25%
```

Run 4: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 17.17 Mbit/s)   Flow 1 egress (mean 17.13 Mbit/s)
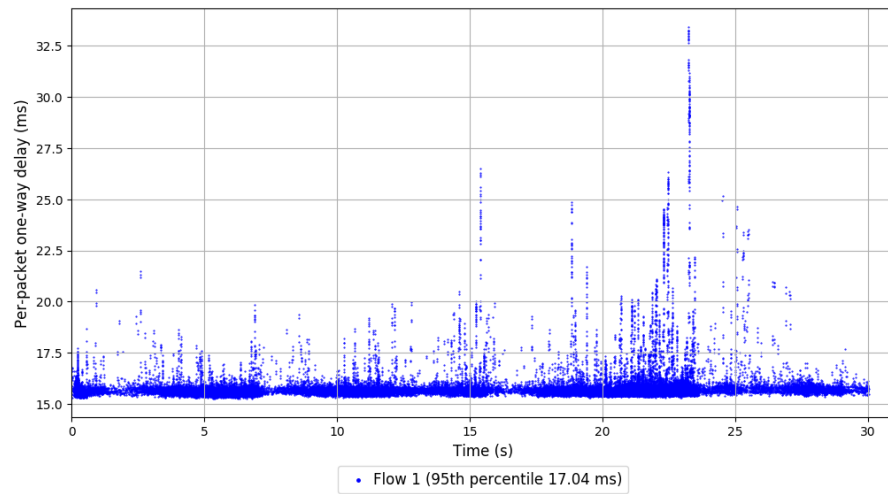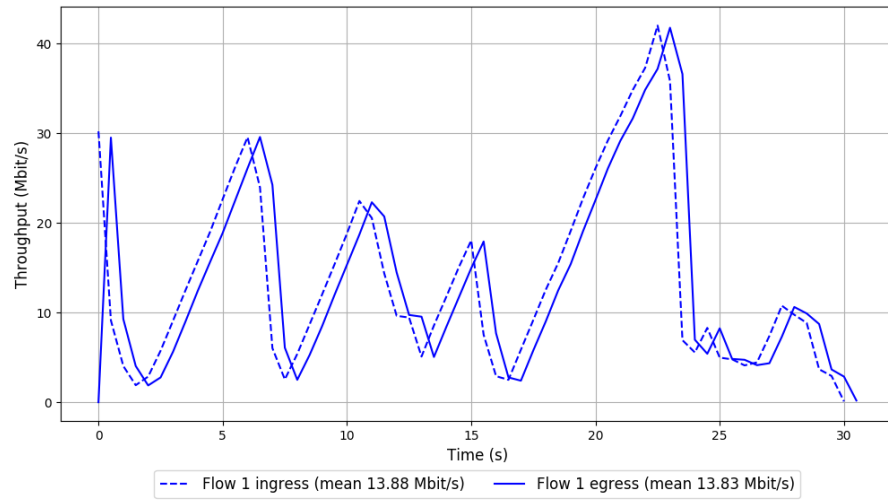

• Flow 1 (95th percentile 38.81 ms)

```
Run 5: Statistics of TCP Cubic

Start at: 2018-10-02 08:46:49
End at: 2018-10-02 08:47:19
Local clock offset: -3.027 ms
Remote clock offset: -1.336 ms


# Below is generated by plot.py at 2018-10-02 08:56:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 13.83 Mbit/s
95th percentile per-packet one-way delay: 17.044 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 13.83 Mbit/s
95th percentile per-packet one-way delay: 17.044 ms
Loss rate: 0.37%
```
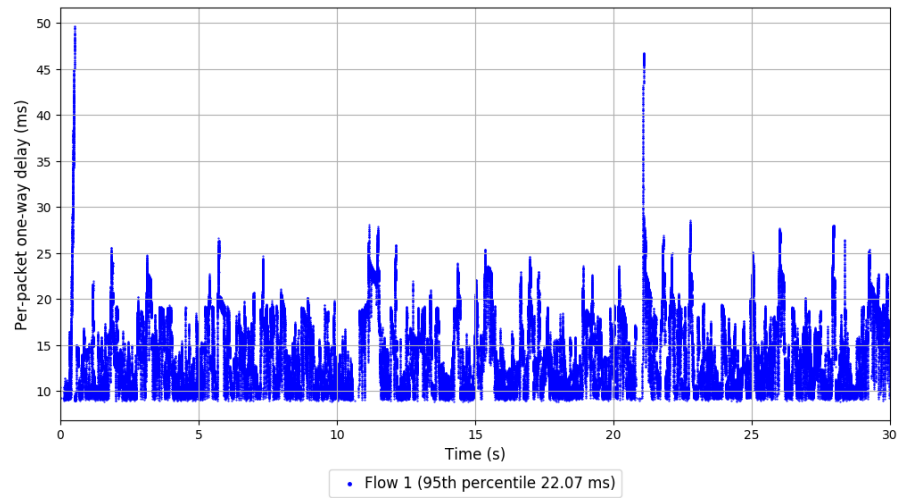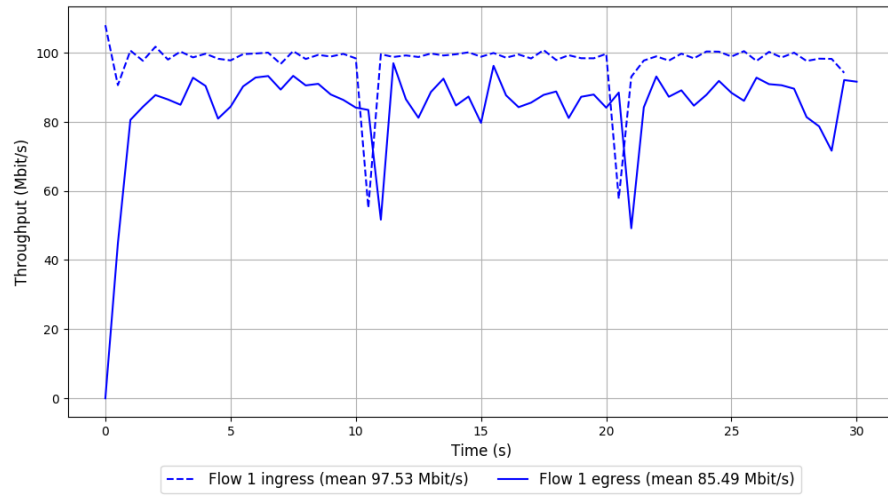
Run 5: Report of TCP Cubic — Data Link

```
Run 1: Statistics of FillP

Start at: 2018-10-02 07:13:10
End at: 2018-10-02 07:13:40
Local clock offset: 1.372 ms
Remote clock offset: -4.304 ms


# Below is generated by plot.py at 2018-10-02 08:56:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 85.49 Mbit/s
95th percentile per-packet one-way delay: 22.072 ms
Loss rate: 12.33%
-- Flow 1:
Average throughput: 85.49 Mbit/s
95th percentile per-packet one-way delay: 22.072 ms
Loss rate: 12.33%
```

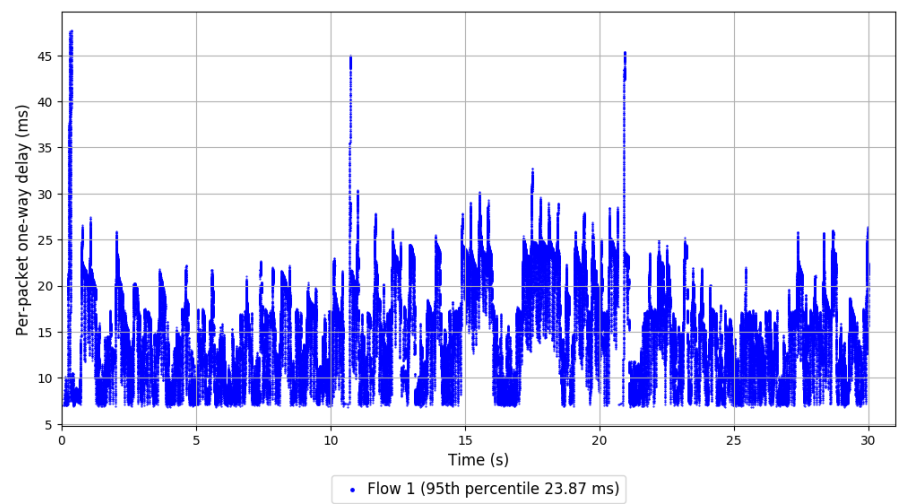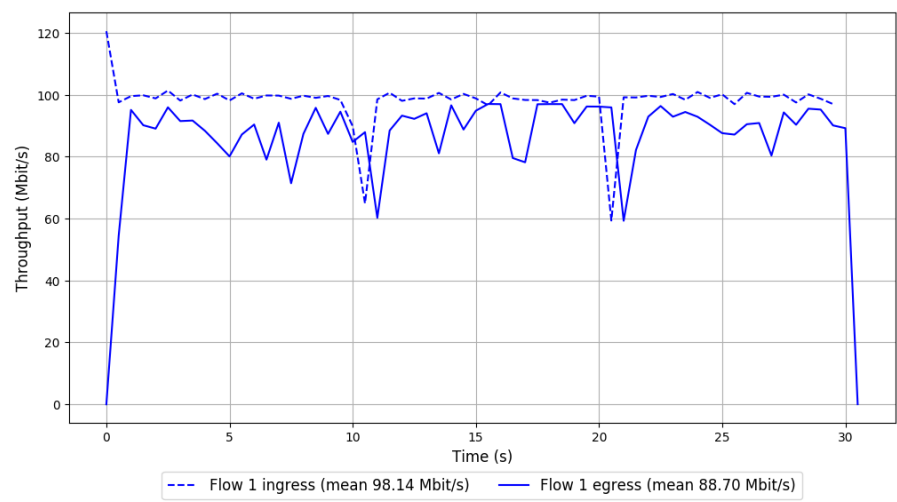Run 1: Report of FillP — Data Link

```
Run 2: Statistics of FillP

Start at: 2018-10-02 07:33:41
End at: 2018-10-02 07:34:11
Local clock offset: 2.358 ms
Remote clock offset: -3.123 ms


# Below is generated by plot.py at 2018-10-02 08:56:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 88.70 Mbit/s
95th percentile per-packet one-way delay: 23.871 ms
Loss rate: 9.60%
-- Flow 1:
Average throughput: 88.70 Mbit/s
95th percentile per-packet one-way delay: 23.871 ms
Loss rate: 9.60%
```
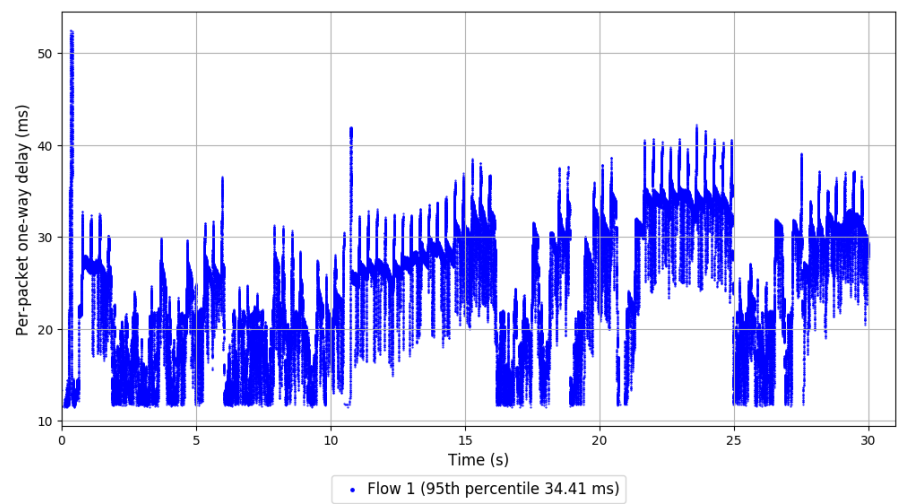
Run 2: Report of FillP — Data Link

Flow 1 ingress (mean 98.14 Mbit/s)   Flow 1 egress (mean 88.70 Mbit/s)

• Flow 1 (95th percentile 23.87 ms)

```
Run 3: Statistics of FillP

Start at: 2018-10-02 07:54:18
End at: 2018-10-02 07:54:48
Local clock offset: -1.425 ms
Remote clock offset: -3.12 ms


# Below is generated by plot.py at 2018-10-02 08:56:46
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.25 Mbit/s
95th percentile per-packet one-way delay: 34.409 ms
Loss rate: 5.96%
-- Flow 1:
Average throughput: 91.25 Mbit/s
95th percentile per-packet one-way delay: 34.409 ms
Loss rate: 5.96%
```
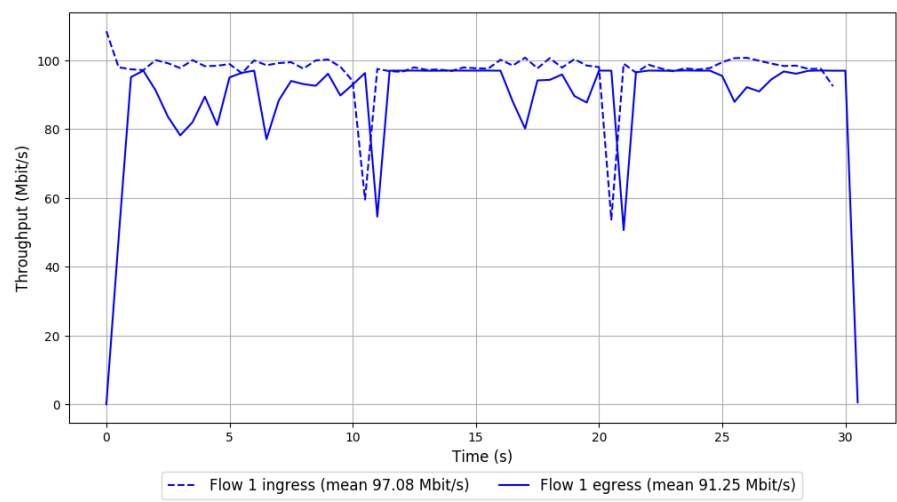
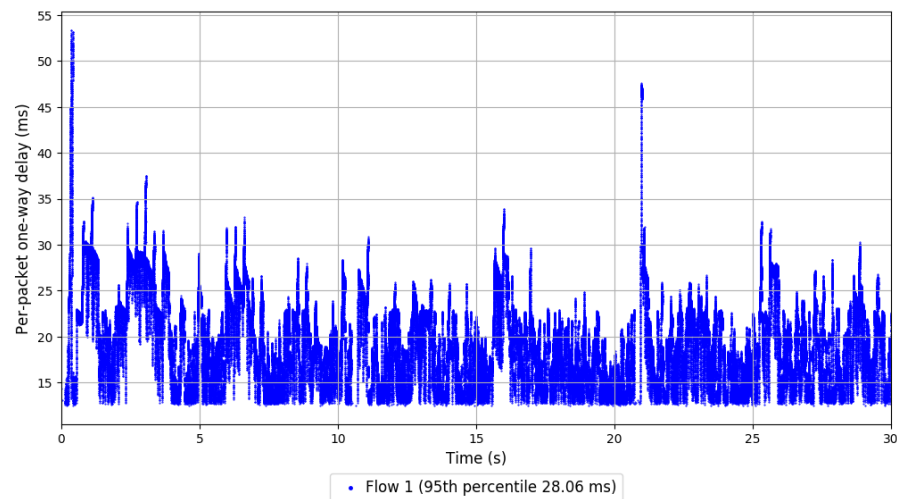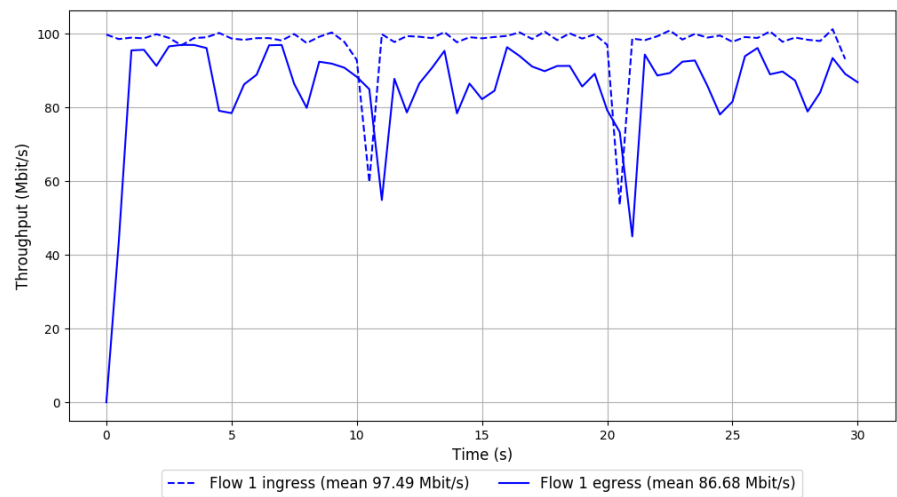Run 3: Report of FillP — Data Link

```
Run 4: Statistics of FillP

Start at: 2018-10-02 08:14:57
End at: 2018-10-02 08:15:27
Local clock offset: 0.976 ms
Remote clock offset: -2.614 ms


# Below is generated by plot.py at 2018-10-02 08:57:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 86.68 Mbit/s
95th percentile per-packet one-way delay: 28.058 ms
Loss rate: 11.07%
-- Flow 1:
Average throughput: 86.68 Mbit/s
95th percentile per-packet one-way delay: 28.058 ms
Loss rate: 11.07%
```

Run 4: Report of FillP — Data Link

Flow 1 ingress (mean 97.49 Mbit/s) --- Flow 1 egress (mean 86.68 Mbit/s)

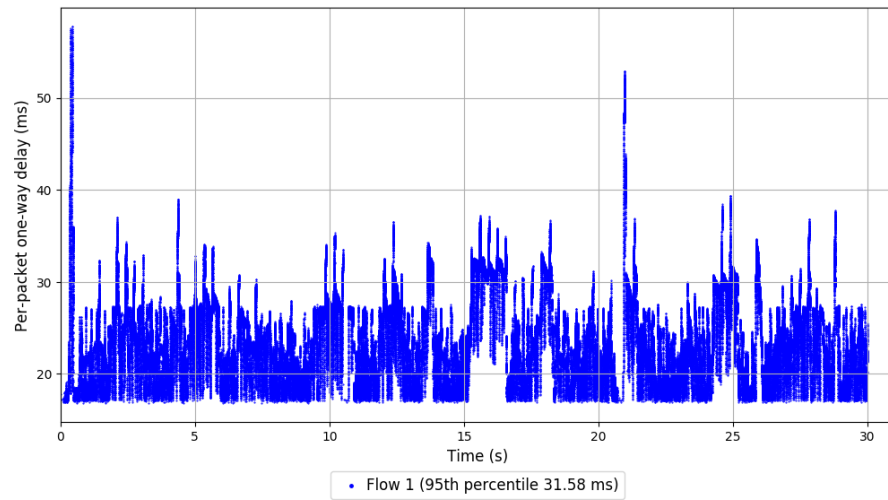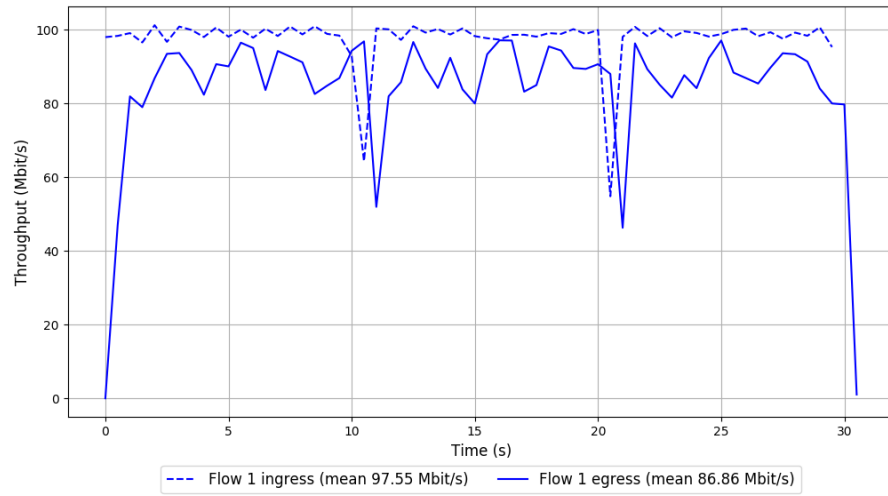Flow 1 (95th percentile 28.06 ms)

```
Run 5: Statistics of FillP

Start at: 2018-10-02 08:35:24
End at: 2018-10-02 08:35:54
Local clock offset: -2.977 ms
Remote clock offset: -2.462 ms


# Below is generated by plot.py at 2018-10-02 08:57:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 86.86 Mbit/s
95th percentile per-packet one-way delay: 31.583 ms
Loss rate: 10.95%
-- Flow 1:
Average throughput: 86.86 Mbit/s
95th percentile per-packet one-way delay: 31.583 ms
Loss rate: 10.95%
```

Run 5: Report of FillP — Data Link

```
Run 1: Statistics of Indigo

Start at: 2018-10-02 07:18:57
End at: 2018-10-02 07:19:27
Local clock offset: 0.631 ms
Remote clock offset: -5.846 ms


# Below is generated by plot.py at 2018-10-02 08:57:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 80.81 Mbit/s
95th percentile per-packet one-way delay: 14.334 ms
Loss rate: 9.55%
-- Flow 1:
Average throughput: 80.81 Mbit/s
95th percentile per-packet one-way delay: 14.334 ms
Loss rate: 9.55%
```
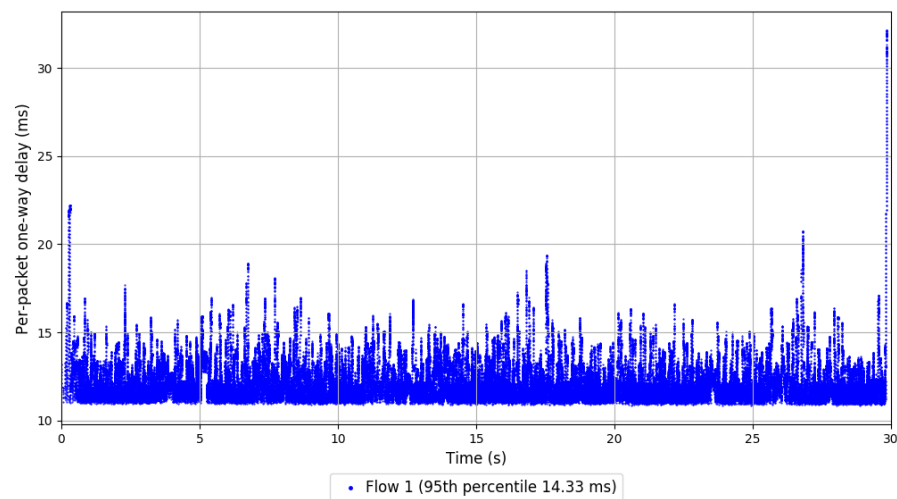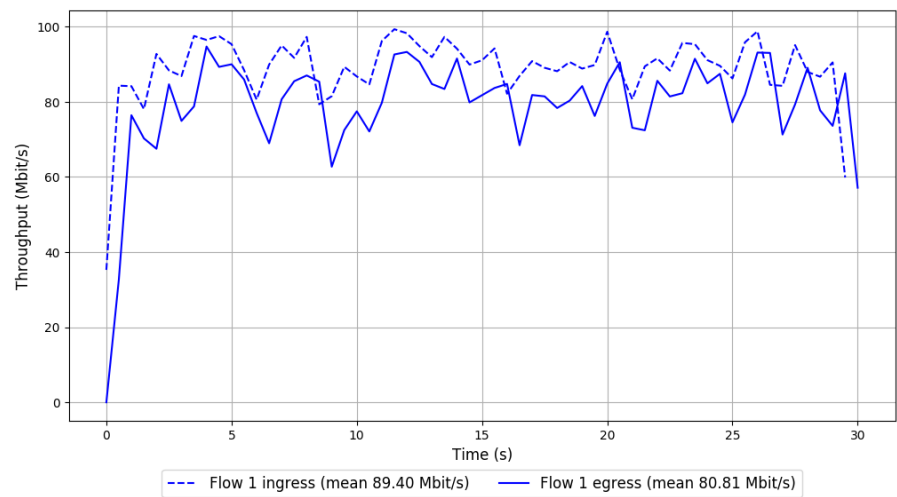
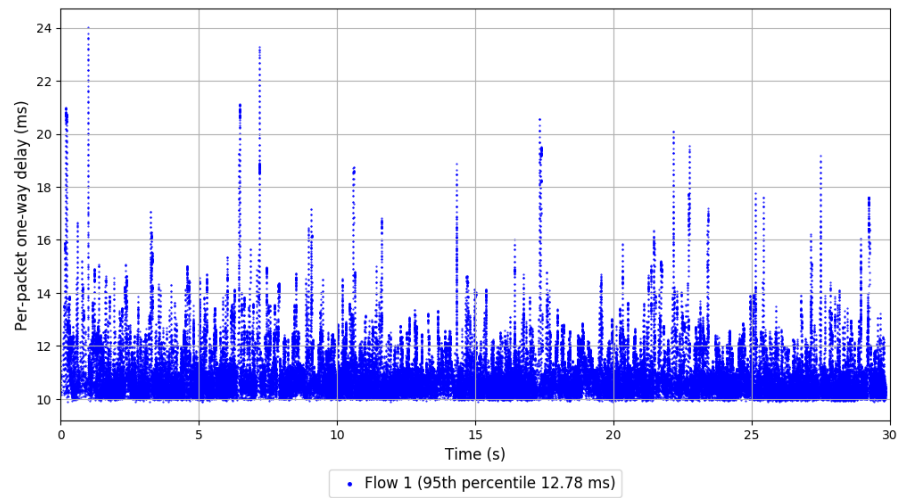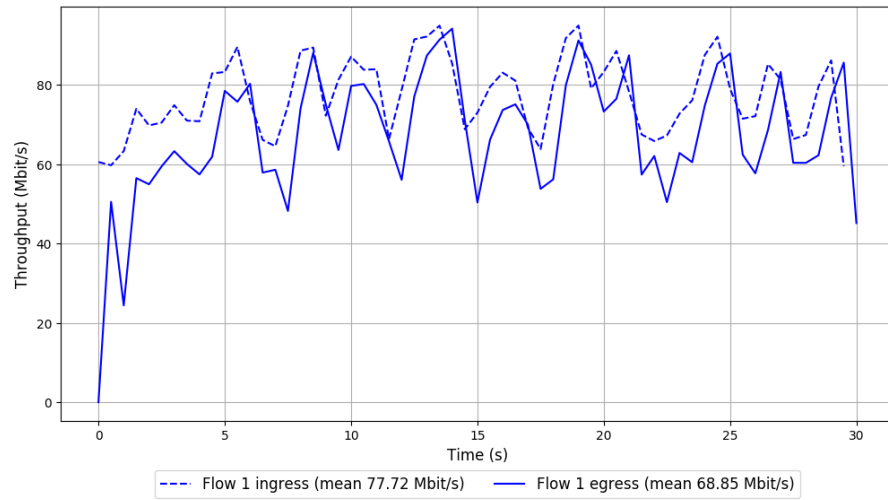Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2018-10-02 07:39:25
End at: 2018-10-02 07:39:55
Local clock offset: -0.982 ms
Remote clock offset: -3.367 ms


# Below is generated by plot.py at 2018-10-02 08:57:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 68.85 Mbit/s
95th percentile per-packet one-way delay: 12.780 ms
Loss rate: 11.42%
-- Flow 1:
Average throughput: 68.85 Mbit/s
95th percentile per-packet one-way delay: 12.780 ms
Loss rate: 11.42%
```
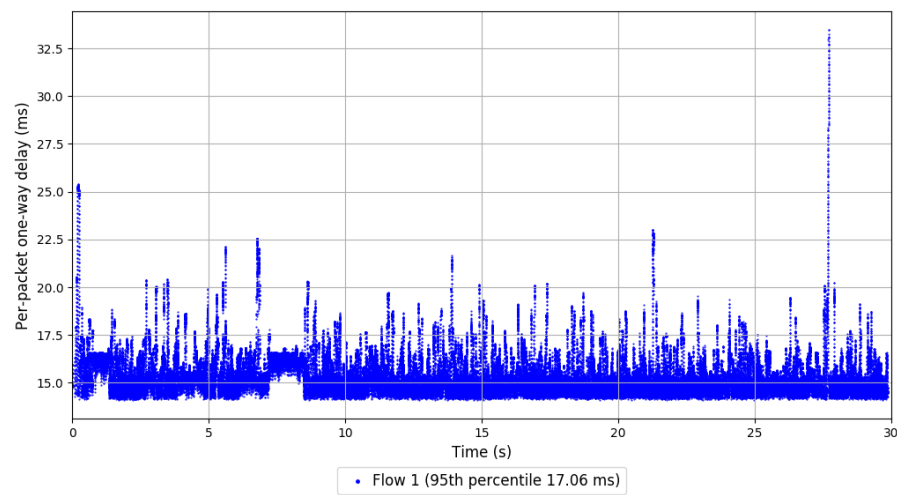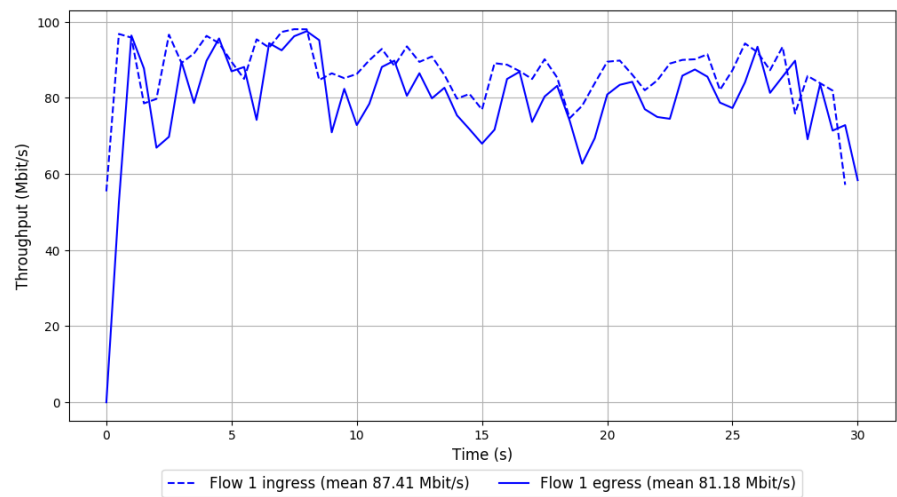
Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2018-10-02 08:00:01
End at: 2018-10-02 08:00:31
Local clock offset: -3.479 ms
Remote clock offset: -2.606 ms


# Below is generated by plot.py at 2018-10-02 08:57:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 81.18 Mbit/s
95th percentile per-packet one-way delay: 17.063 ms
Loss rate: 7.13%
-- Flow 1:
Average throughput: 81.18 Mbit/s
95th percentile per-packet one-way delay: 17.063 ms
Loss rate: 7.13%
```

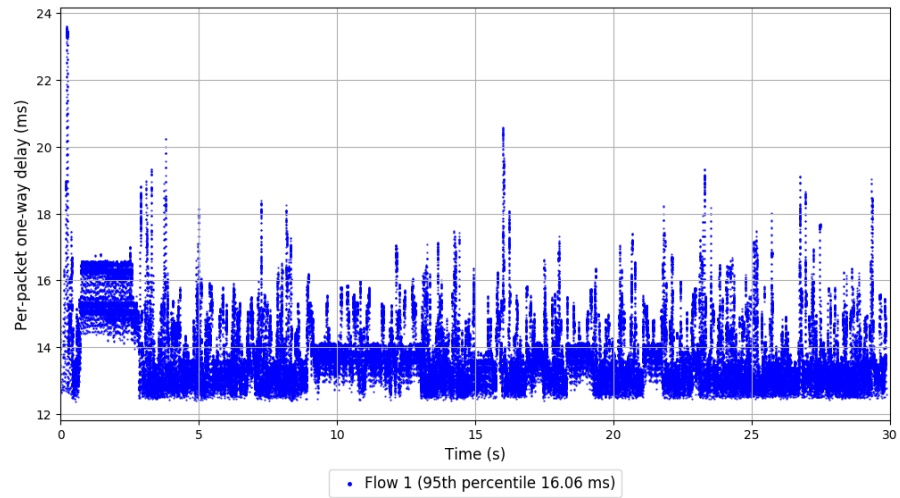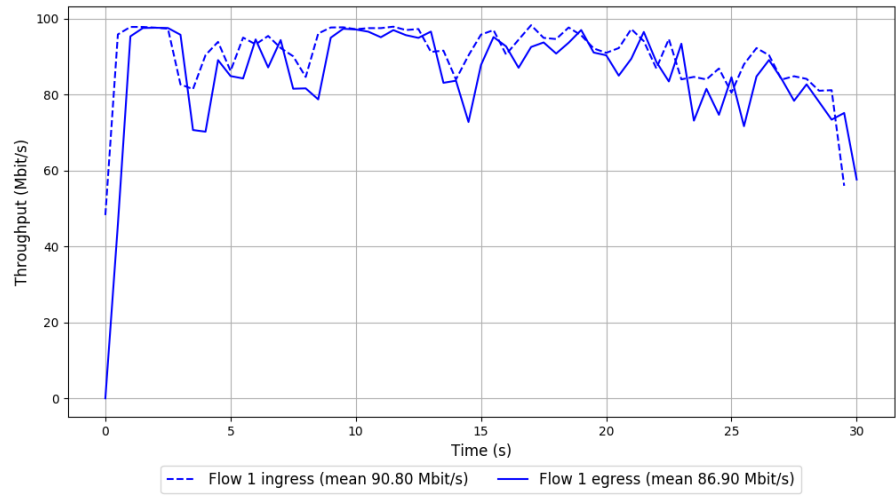Run 3: Report of Indigo — Data Link

```
Run 4: Statistics of Indigo

Start at: 2018-10-02 08:20:38
End at: 2018-10-02 08:21:08
Local clock offset: 0.44 ms
Remote clock offset: -3.505 ms


# Below is generated by plot.py at 2018-10-02 08:57:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 86.90 Mbit/s
95th percentile per-packet one-way delay: 16.061 ms
Loss rate: 4.30%
-- Flow 1:
Average throughput: 86.90 Mbit/s
95th percentile per-packet one-way delay: 16.061 ms
Loss rate: 4.30%
```

Run 4: Report of Indigo — Data Link

Flow 1 ingress (mean 90.80 Mbit/s)   Flow 1 egress (mean 86.90 Mbit/s)

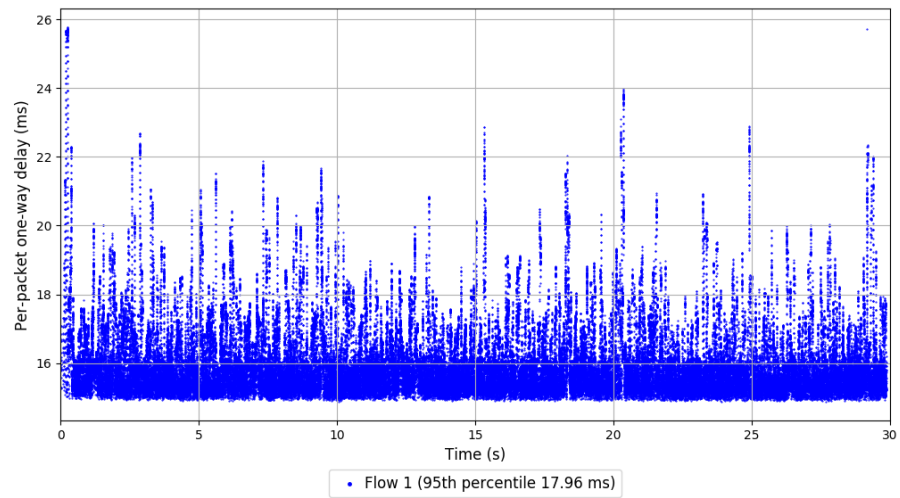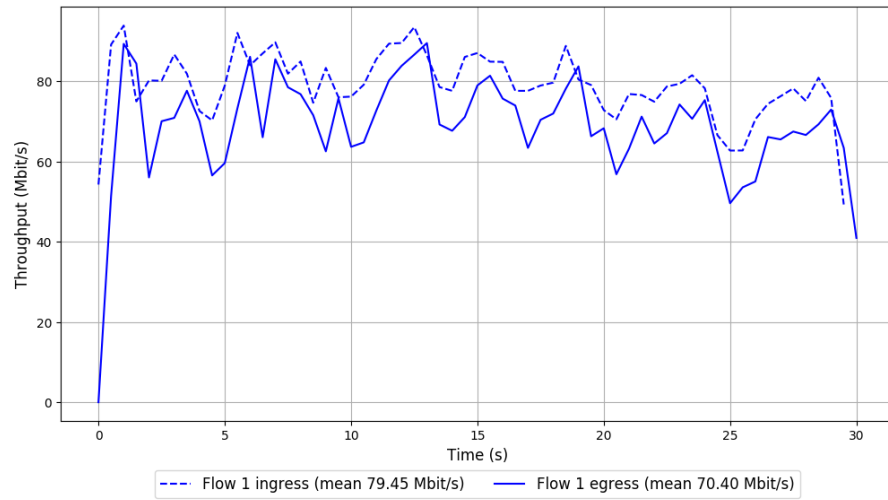Flow 1 (95th percentile 16.06 ms)

```
Run 5: Statistics of Indigo

Start at: 2018-10-02 08:41:08
End at: 2018-10-02 08:41:38
Local clock offset: -2.402 ms
Remote clock offset: -0.816 ms


# Below is generated by plot.py at 2018-10-02 08:57:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 70.40 Mbit/s
95th percentile per-packet one-way delay: 17.965 ms
Loss rate: 11.40%
-- Flow 1:
Average throughput: 70.40 Mbit/s
95th percentile per-packet one-way delay: 17.965 ms
Loss rate: 11.40%
```

Run 5: Report of Indigo — Data Link

Flow 1 ingress (mean 79.45 Mbit/s)   Flow 1 egress (mean 70.40 Mbit/s)

• Flow 1 (95th percentile 17.96 ms)

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

Start at: 2018-10-02 07:22:18
End at: 2018-10-02 07:22:48
Local clock offset: 0.42 ms
Remote clock offset: -3.69 ms


# Below is generated by plot.py at 2018-10-02 08:58:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 80.48 Mbit/s
95th percentile per-packet one-way delay: 44.348 ms
Loss rate: 42.83%
-- Flow 1:
Average throughput: 80.48 Mbit/s
95th percentile per-packet one-way delay: 44.348 ms
Loss rate: 42.83%
```
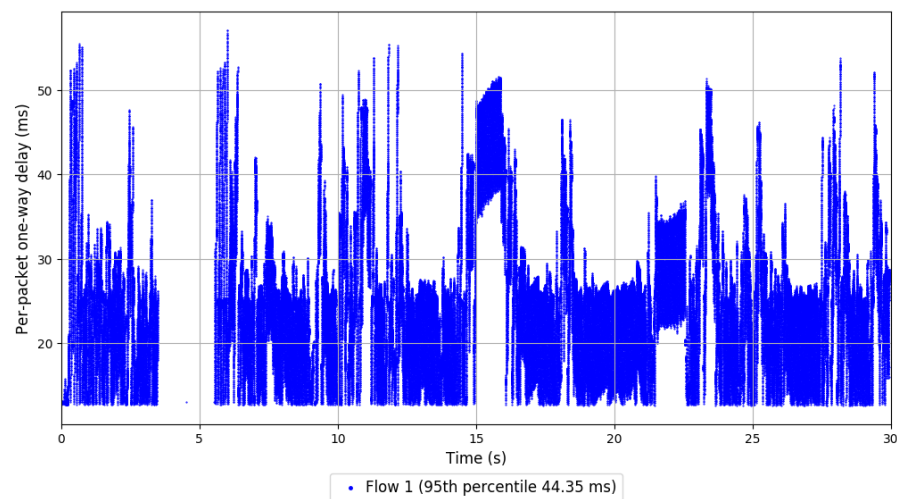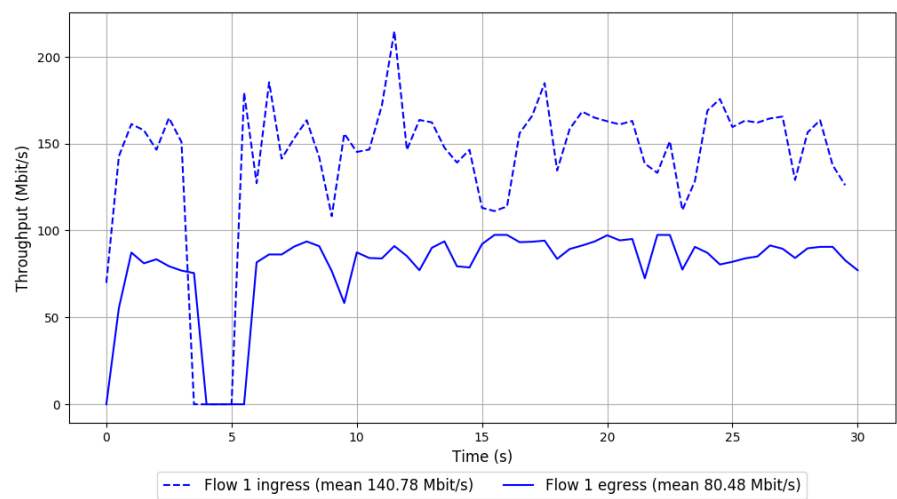
Run 1: Report of Indigo-96d2da3 — Data Link
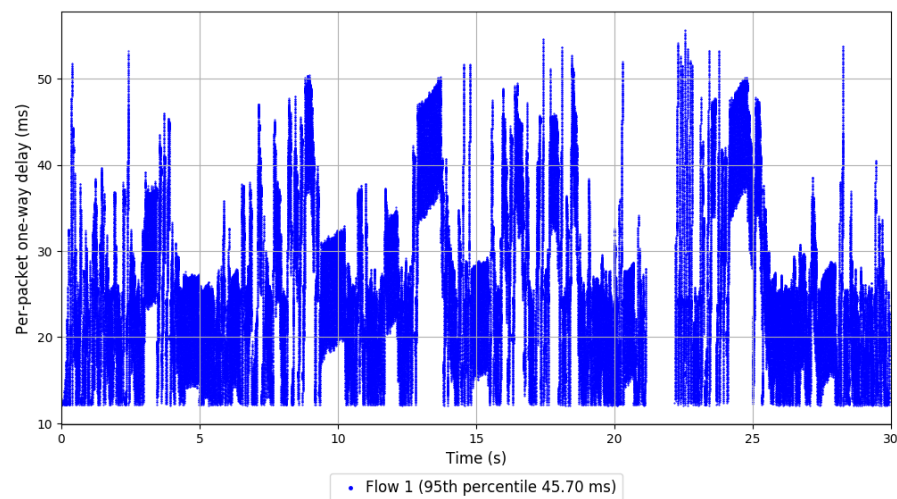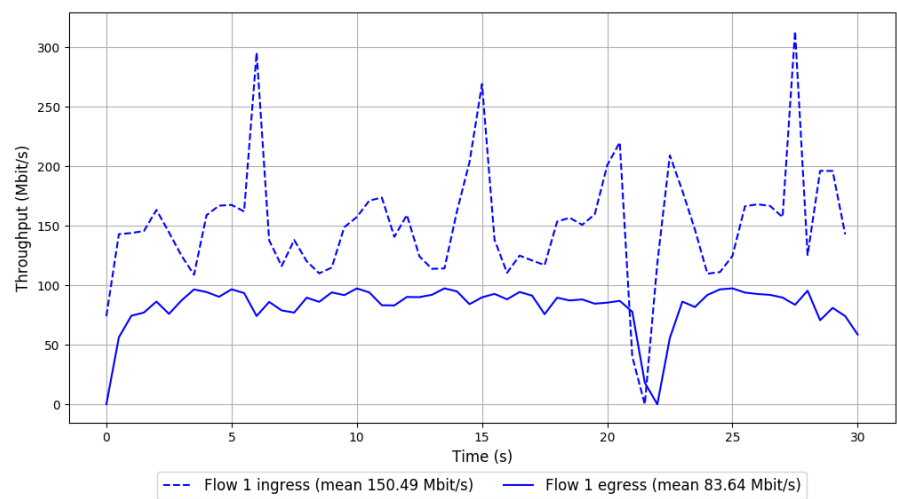

56

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

Start at: 2018-10-02 07:42:51
End at: 2018-10-02 07:43:21
Local clock offset: -1.707 ms
Remote clock offset: -3.783 ms


# Below is generated by plot.py at 2018-10-02 08:58:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 83.64 Mbit/s
95th percentile per-packet one-way delay: 45.701 ms
Loss rate: 44.40%
-- Flow 1:
Average throughput: 83.64 Mbit/s
95th percentile per-packet one-way delay: 45.701 ms
Loss rate: 44.40%
```

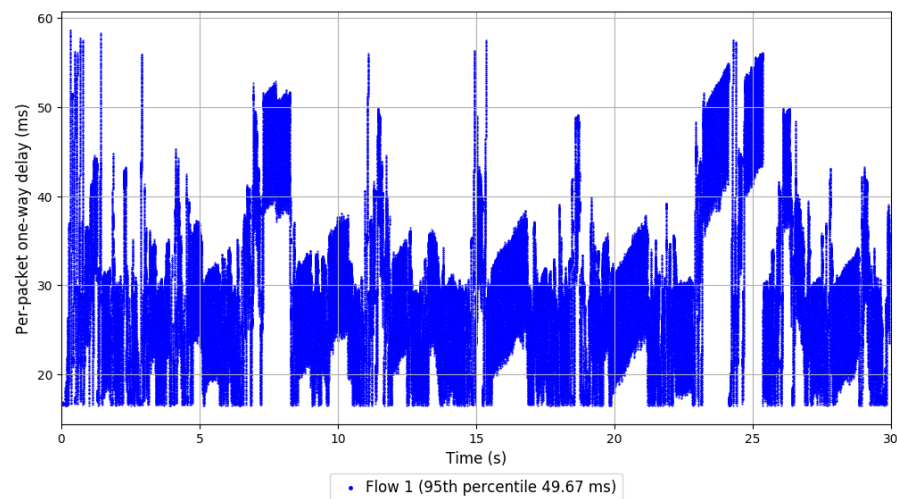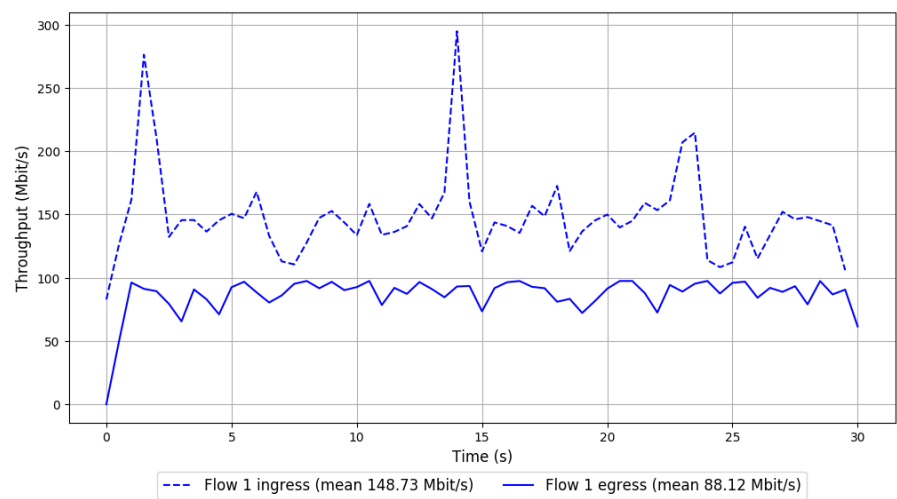Run 2: Report of Indigo-96d2da3 — Data Link

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

Start at: 2018-10-02 08:03:22
End at: 2018-10-02 08:03:52
Local clock offset: -4.216 ms
Remote clock offset: -4.111 ms


# Below is generated by plot.py at 2018-10-02 08:58:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 88.12 Mbit/s
95th percentile per-packet one-way delay: 49.670 ms
Loss rate: 40.72%
-- Flow 1:
Average throughput: 88.12 Mbit/s
95th percentile per-packet one-way delay: 49.670 ms
Loss rate: 40.72%
```

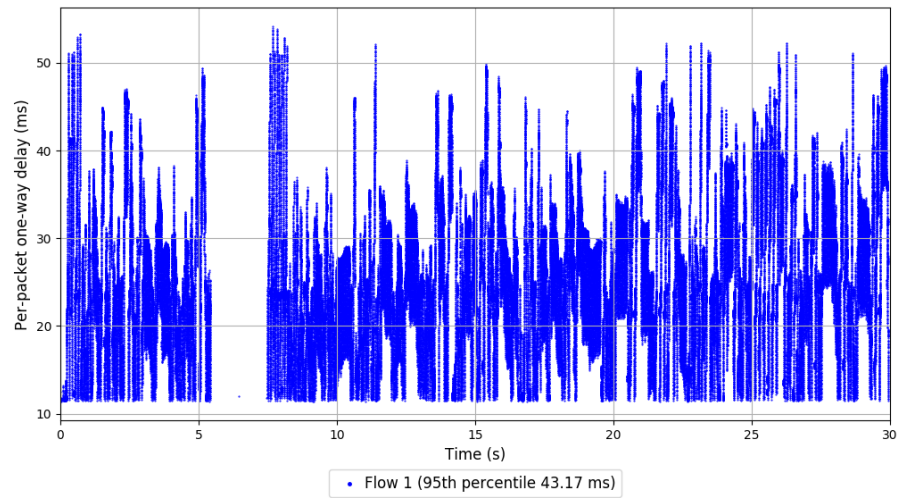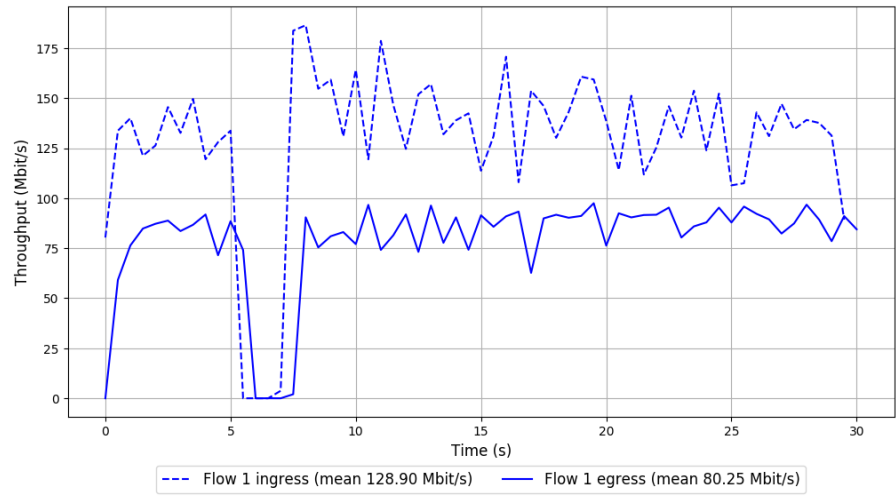Run 3: Report of Indigo-96d2da3 — Data Link

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

Start at: 2018-10-02 08:24:02
End at: 2018-10-02 08:24:32
Local clock offset: -3.257 ms
Remote clock offset: -3.065 ms


# Below is generated by plot.py at 2018-10-02 08:58:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 80.25 Mbit/s
95th percentile per-packet one-way delay: 43.170 ms
Loss rate: 37.72%
-- Flow 1:
Average throughput: 80.25 Mbit/s
95th percentile per-packet one-way delay: 43.170 ms
Loss rate: 37.72%
```
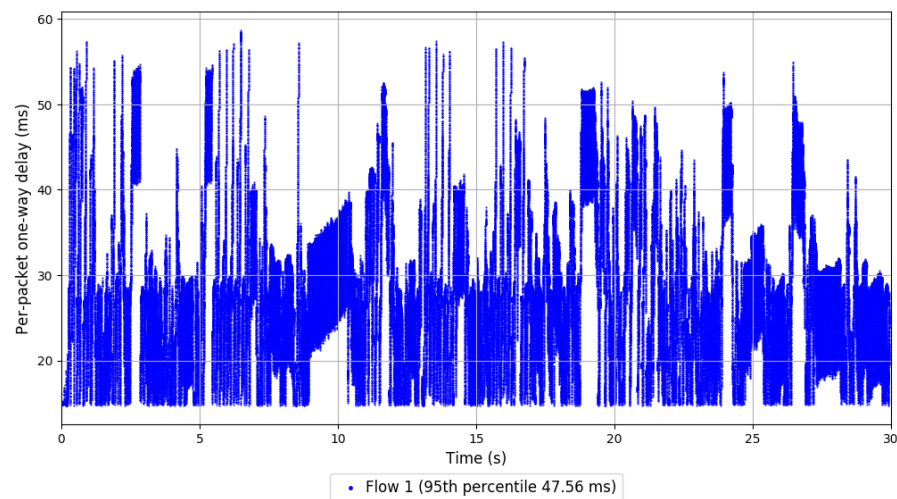
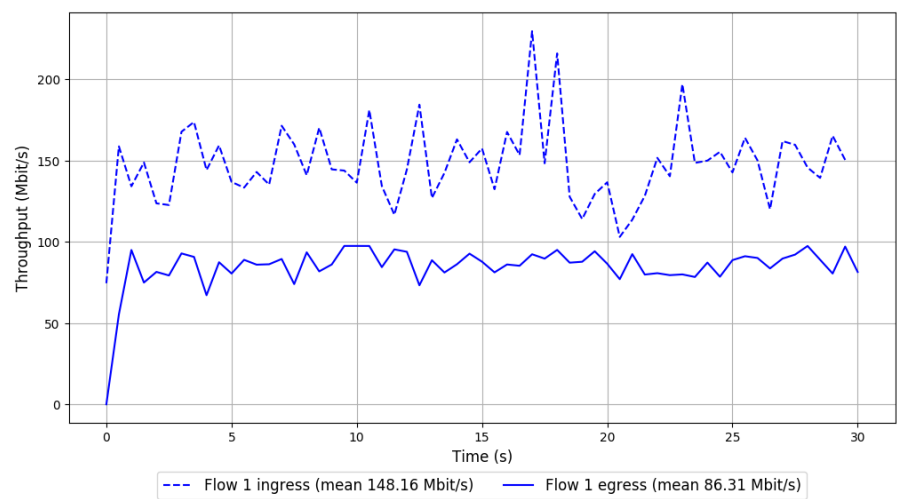Run 4: Report of Indigo-96d2da3 — Data Link

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

Start at: 2018-10-02 08:44:31
End at: 2018-10-02 08:45:01
Local clock offset: -1.7 ms
Remote clock offset: -0.294 ms


# Below is generated by plot.py at 2018-10-02 08:58:31
# Datalink statistics
-- Total of 1 flow:
Average throughput: 86.31 Mbit/s
95th percentile per-packet one-way delay: 47.557 ms
Loss rate: 41.73%
-- Flow 1:
Average throughput: 86.31 Mbit/s
95th percentile per-packet one-way delay: 47.557 ms
Loss rate: 41.73%
```

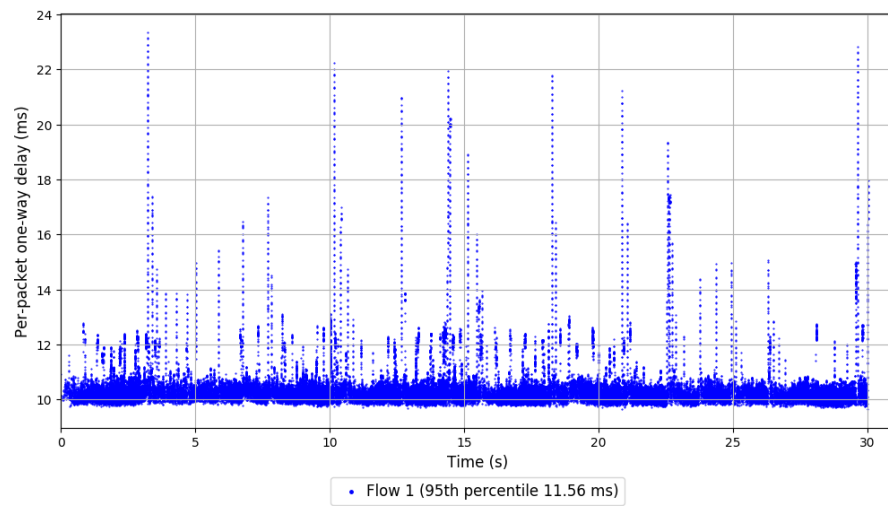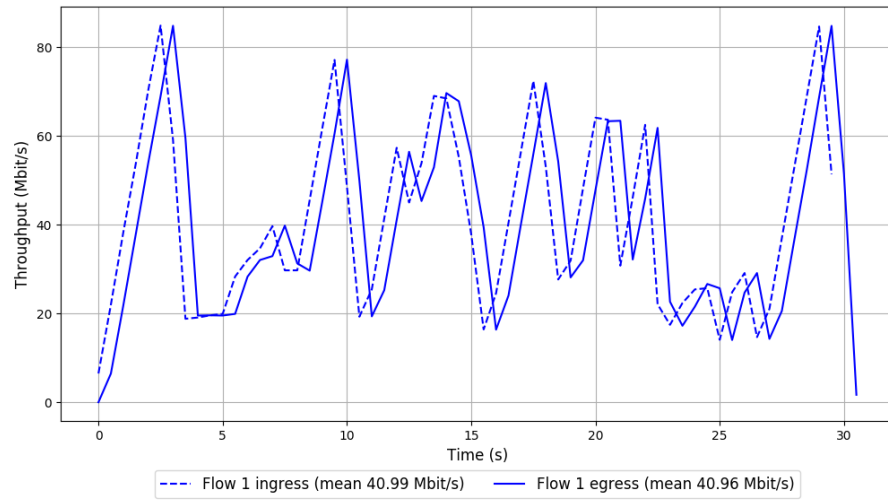Run 5: Report of Indigo-96d2da3 — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2018-10-02 07:29:06
End at: 2018-10-02 07:29:36
Local clock offset: -0.751 ms
Remote clock offset: -3.431 ms


# Below is generated by plot.py at 2018-10-02 08:58:31
# Datalink statistics
-- Total of 1 flow:
Average throughput: 40.96 Mbit/s
95th percentile per-packet one-way delay: 11.558 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 40.96 Mbit/s
95th percentile per-packet one-way delay: 11.558 ms
Loss rate: 0.05%
```

Run 1: Report of LEDBAT — Data Link

Flow 1 ingress (mean 40.99 Mbit/s)   Flow 1 egress (mean 40.96 Mbit/s)
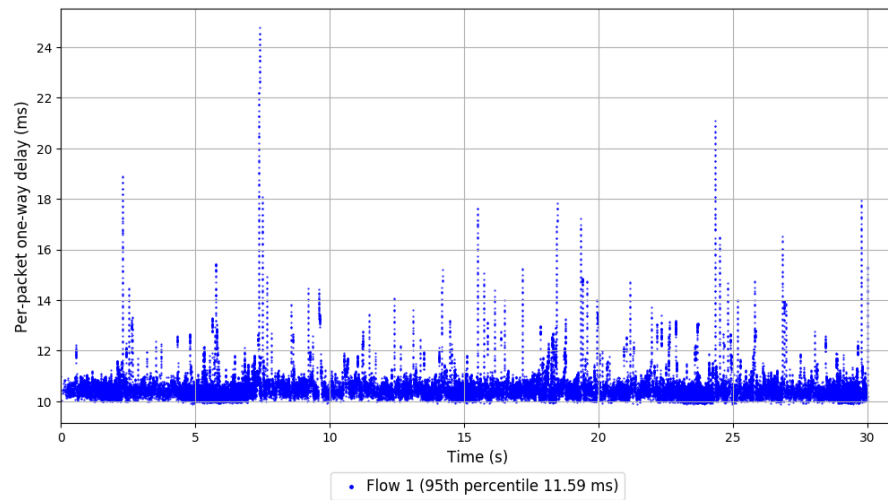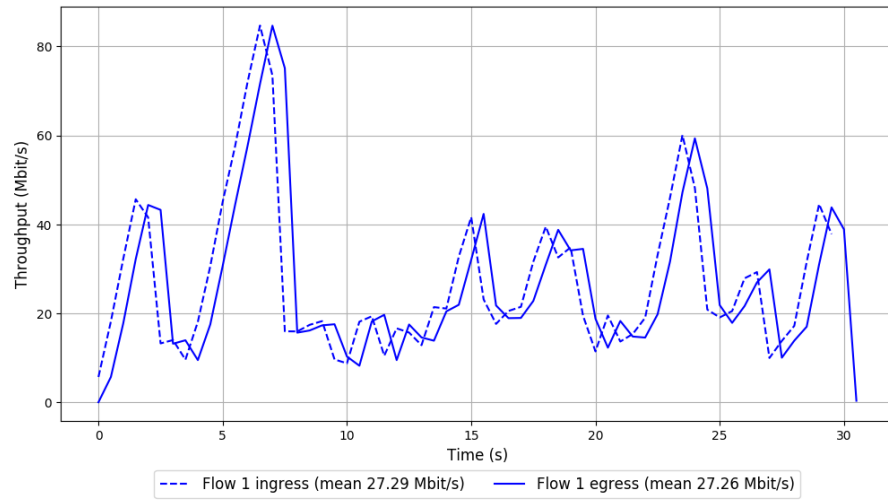

Flow 1 (95th percentile 11.56 ms)

```
Run 2: Statistics of LEDBAT

Start at: 2018-10-02 07:49:42
End at: 2018-10-02 07:50:12
Local clock offset: -6.724 ms
Remote clock offset: -10.447 ms

# Below is generated by plot.py at 2018-10-02 08:58:31
# Datalink statistics
-- Total of 1 flow:
Average throughput: 27.26 Mbit/s
95th percentile per-packet one-way delay: 11.593 ms
Loss rate: 0.12%
-- Flow 1:
Average throughput: 27.26 Mbit/s
95th percentile per-packet one-way delay: 11.593 ms
Loss rate: 0.12%
```

Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2018-10-02 08:10:26
End at: 2018-10-02 08:10:56
Local clock offset: -1.868 ms
Remote clock offset: -4.22 ms


# Below is generated by plot.py at 2018-10-02 08:58:31
# Datalink statistics
-- Total of 1 flow:
Average throughput: 39.11 Mbit/s
95th percentile per-packet one-way delay: 17.151 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 39.11 Mbit/s
95th percentile per-packet one-way delay: 17.151 ms
Loss rate: 0.05%
```
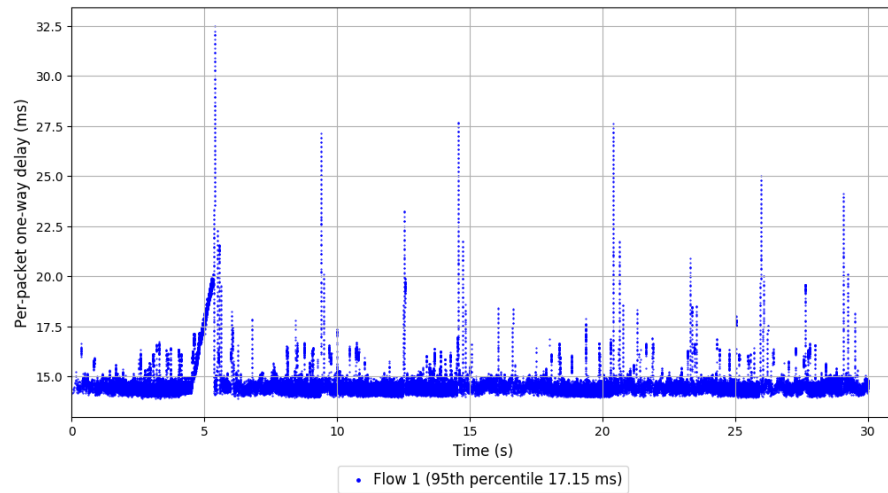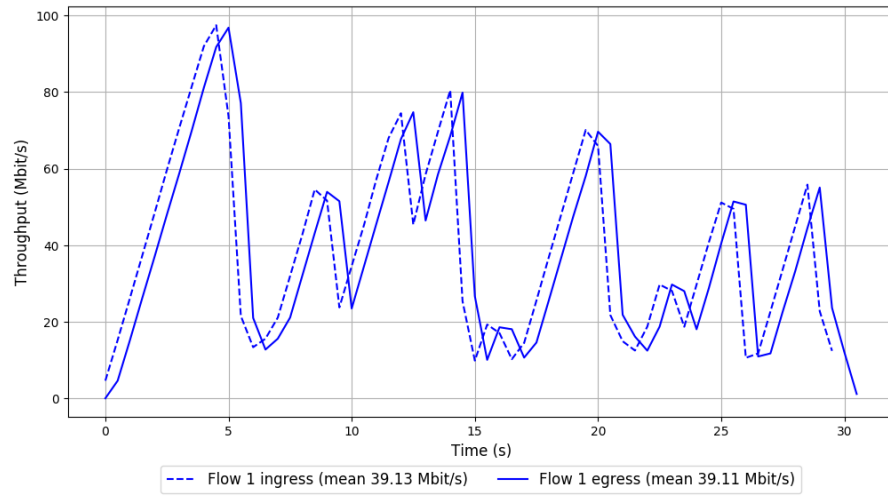
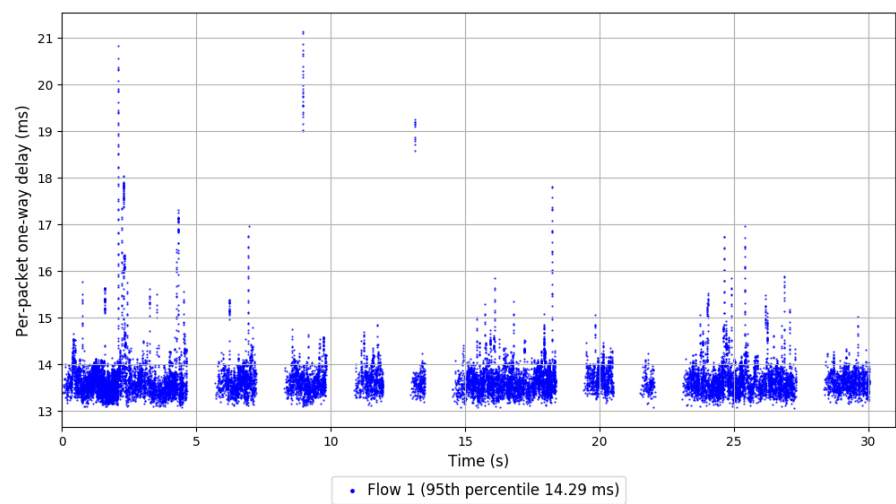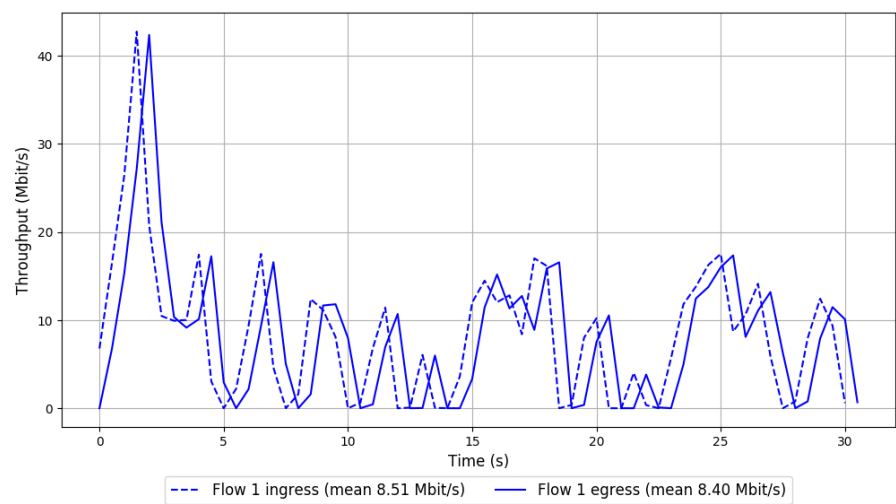## Run 3: Report of LEDBAT — Data Link

```
Run 4: Statistics of LEDBAT

Start at: 2018-10-02 08:30:54
End at: 2018-10-02 08:31:24
Local clock offset: -3.316 ms
Remote clock offset: -1.559 ms


# Below is generated by plot.py at 2018-10-02 08:58:31
# Datalink statistics
-- Total of 1 flow:
Average throughput: 8.40 Mbit/s
95th percentile per-packet one-way delay: 14.285 ms
Loss rate: 1.28%
-- Flow 1:
Average throughput: 8.40 Mbit/s
95th percentile per-packet one-way delay: 14.285 ms
Loss rate: 1.28%
```
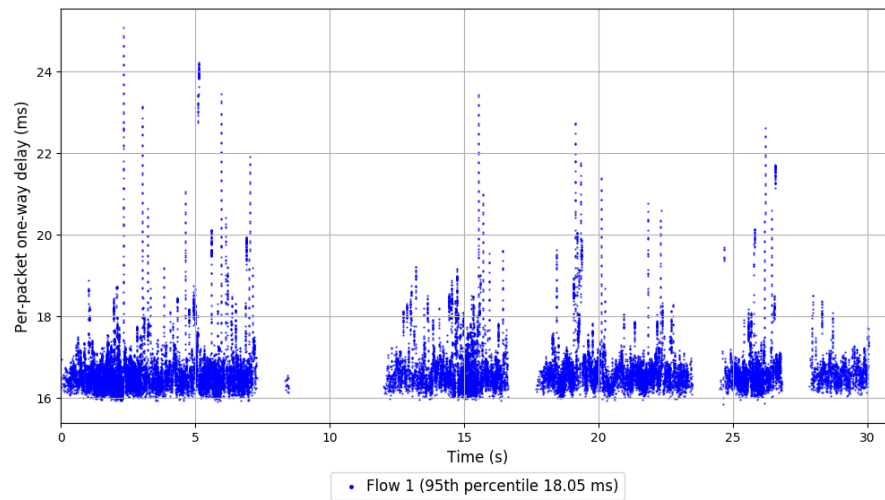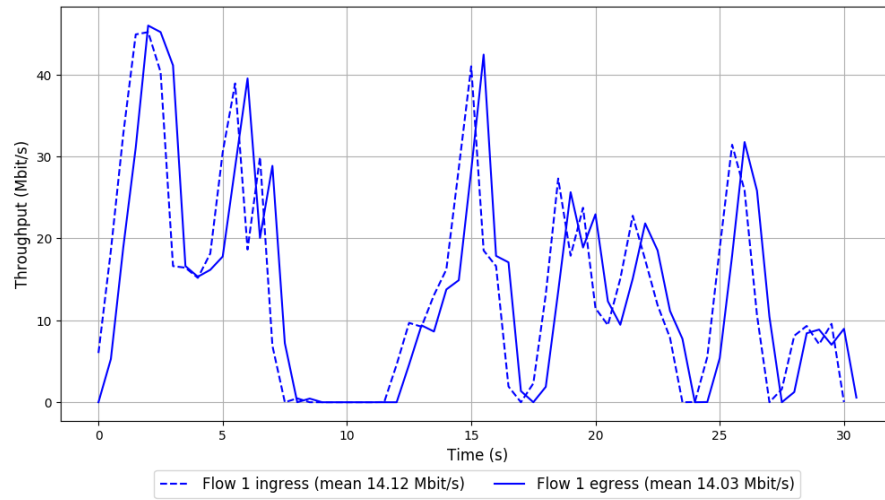
Run 4: Report of LEDBAT — Data Link

```
Run 5: Statistics of LEDBAT

Start at: 2018-10-02 08:51:15
End at: 2018-10-02 08:51:45
Local clock offset: -3.002 ms
Remote clock offset: -1.214 ms


# Below is generated by plot.py at 2018-10-02 08:58:31
# Datalink statistics
-- Total of 1 flow:
Average throughput: 14.03 Mbit/s
95th percentile per-packet one-way delay: 18.049 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 14.03 Mbit/s
95th percentile per-packet one-way delay: 18.049 ms
Loss rate: 0.60%
```
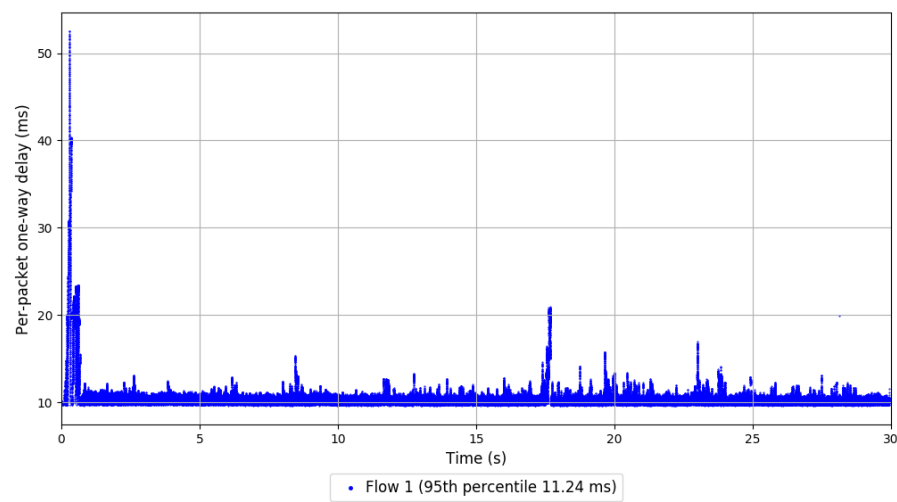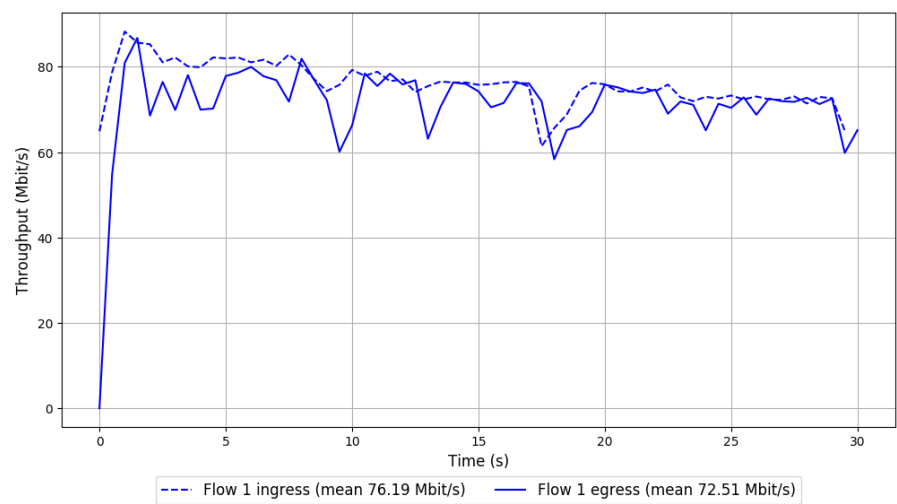
Run 5: Report of LEDBAT — Data Link

```
Run 1: Statistics of Indigo-Muses

Start at: 2018-10-02 07:31:21
End at: 2018-10-02 07:31:51
Local clock offset: -0.383 ms
Remote clock offset: -3.426 ms


# Below is generated by plot.py at 2018-10-02 08:58:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 72.51 Mbit/s
95th percentile per-packet one-way delay: 11.239 ms
Loss rate: 4.83%
-- Flow 1:
Average throughput: 72.51 Mbit/s
95th percentile per-packet one-way delay: 11.239 ms
Loss rate: 4.83%
```

Run 1: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 76.19 Mbit/s)   Flow 1 egress (mean 72.51 Mbit/s)

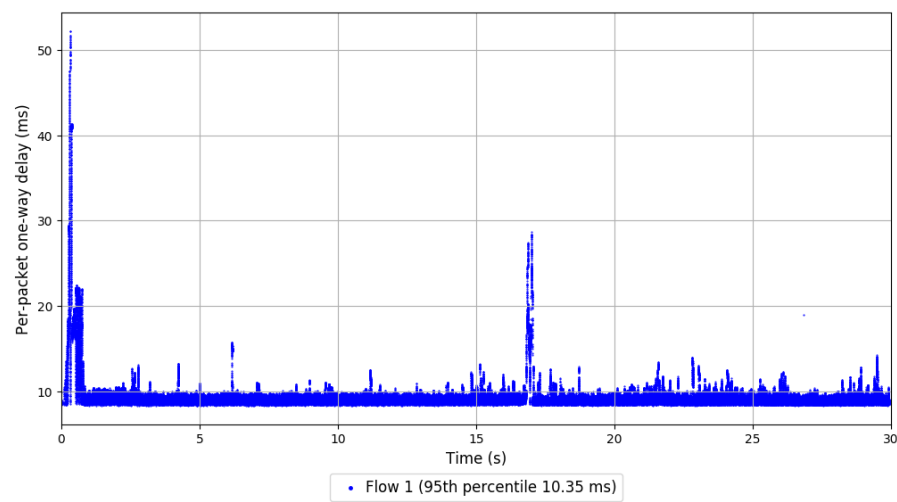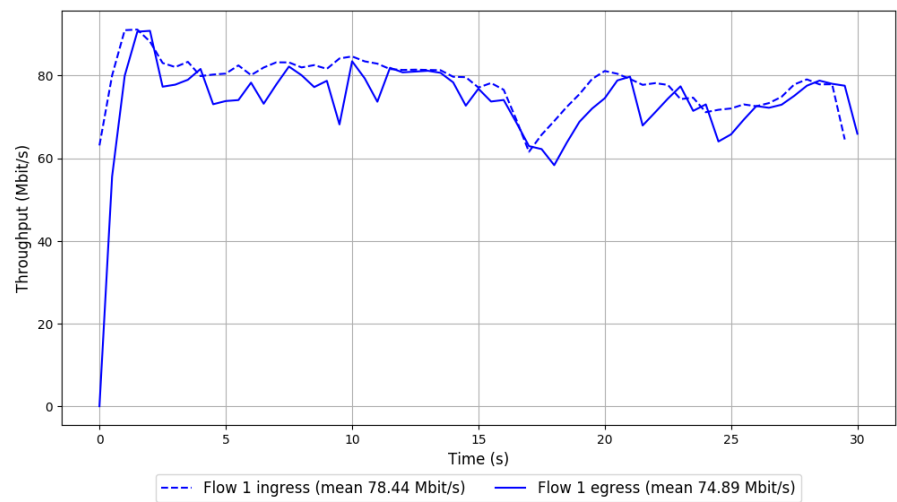

• Flow 1 (95th percentile 11.24 ms)

```
Run 2: Statistics of Indigo-Muses

Start at: 2018-10-02 07:51:55
End at: 2018-10-02 07:52:25
Local clock offset: 1.559 ms
Remote clock offset: -3.562 ms


# Below is generated by plot.py at 2018-10-02 08:58:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 74.89 Mbit/s
95th percentile per-packet one-way delay: 10.352 ms
Loss rate: 4.53%
-- Flow 1:
Average throughput: 74.89 Mbit/s
95th percentile per-packet one-way delay: 10.352 ms
Loss rate: 4.53%
```

Run 2: Report of Indigo-Muses — Data Link

```
Run 3: Statistics of Indigo-Muses

Start at: 2018-10-02 08:12:40
End at: 2018-10-02 08:13:10
Local clock offset: -3.386 ms
Remote clock offset: -2.83 ms


# Below is generated by plot.py at 2018-10-02 08:58:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 65.27 Mbit/s
95th percentile per-packet one-way delay: 13.456 ms
Loss rate: 4.10%
-- Flow 1:
Average throughput: 65.27 Mbit/s
95th percentile per-packet one-way delay: 13.456 ms
Loss rate: 4.10%
```
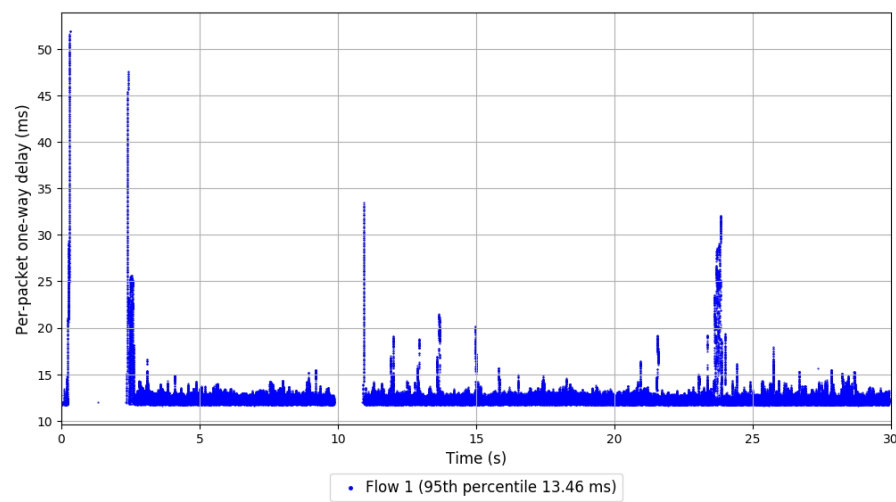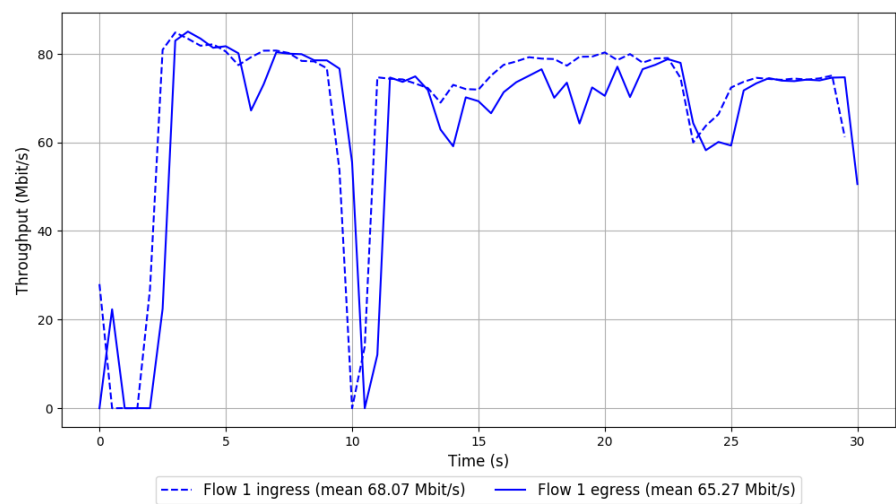
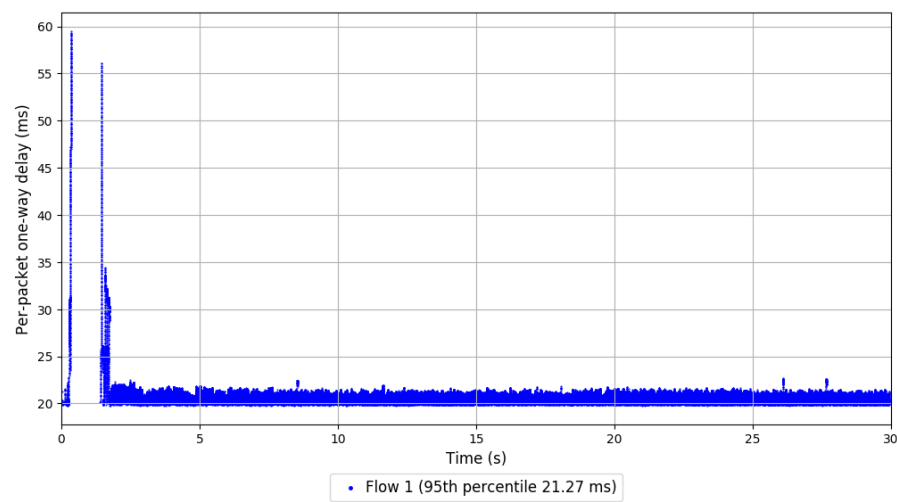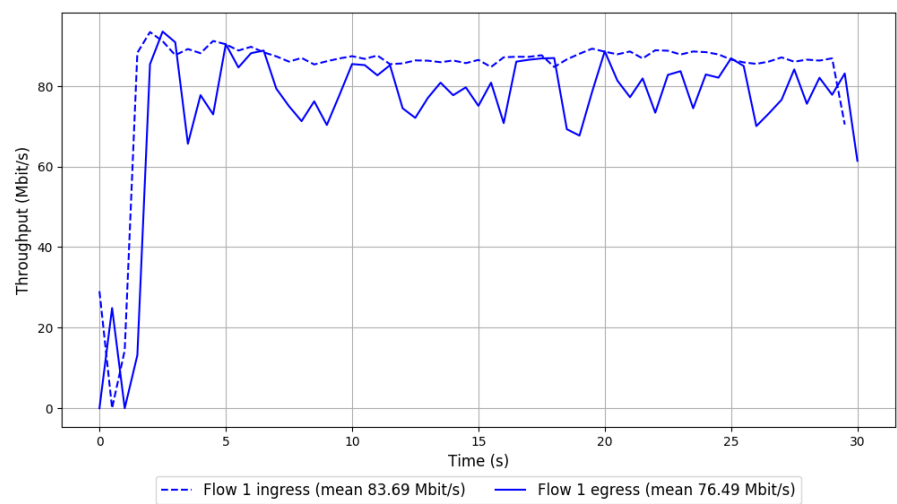Run 3: Report of Indigo-Muses — Data Link

```
Run 4: Statistics of Indigo-Muses

Start at: 2018-10-02 08:33:05
End at: 2018-10-02 08:33:35
Local clock offset: -6.752 ms
Remote clock offset: -3.442 ms


# Below is generated by plot.py at 2018-10-02 08:59:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 76.49 Mbit/s
95th percentile per-packet one-way delay: 21.268 ms
Loss rate: 8.61%
-- Flow 1:
Average throughput: 76.49 Mbit/s
95th percentile per-packet one-way delay: 21.268 ms
Loss rate: 8.61%
```

Run 4: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 83.69 Mbit/s) --- Flow 1 egress (mean 76.49 Mbit/s)

• Flow 1 (95th percentile 21.27 ms)

```
Run 5: Statistics of Indigo-Muses

Start at: 2018-10-02 08:53:26
End at: 2018-10-02 08:53:56
Local clock offset: 1.584 ms
Remote clock offset: -1.413 ms


# Below is generated by plot.py at 2018-10-02 08:59:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 84.28 Mbit/s
95th percentile per-packet one-way delay: 9.760 ms
Loss rate: 9.47%
-- Flow 1:
Average throughput: 84.28 Mbit/s
95th percentile per-packet one-way delay: 9.760 ms
Loss rate: 9.47%
```
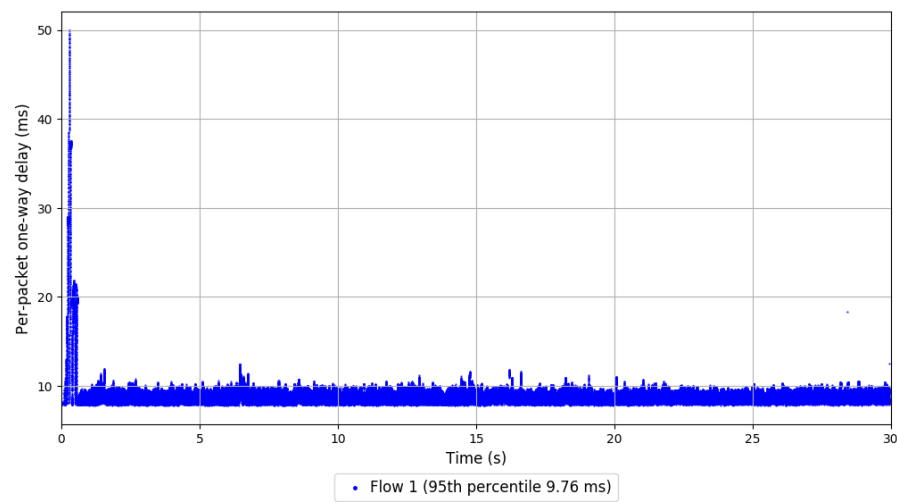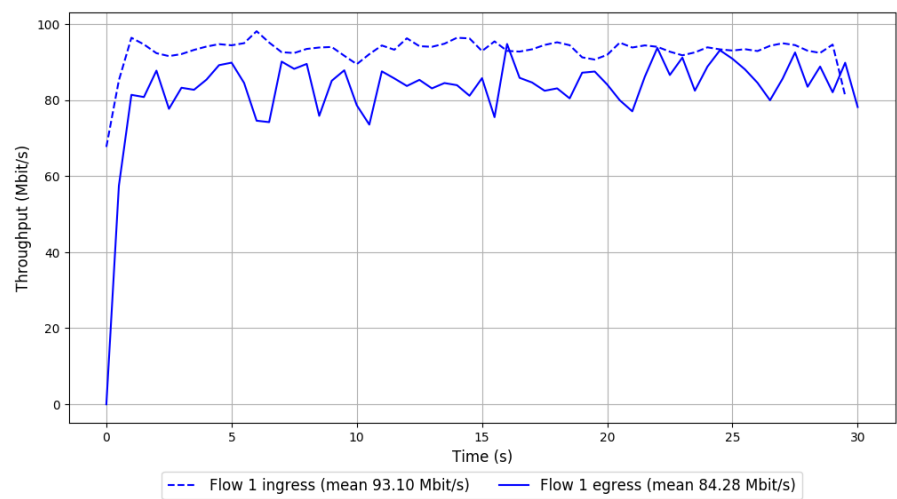
Run 5: Report of Indigo-Muses — Data Link

```
Run 1: Statistics of PCC-Allegro

Start at: 2018-10-02 07:11:59
End at: 2018-10-02 07:12:29
Local clock offset: 3.21 ms
Remote clock offset: -3.616 ms

# Below is generated by plot.py at 2018-10-02 08:59:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 74.24 Mbit/s
95th percentile per-packet one-way delay: 12.957 ms
Loss rate: 8.54%
-- Flow 1:
Average throughput: 74.24 Mbit/s
95th percentile per-packet one-way delay: 12.957 ms
Loss rate: 8.54%
```
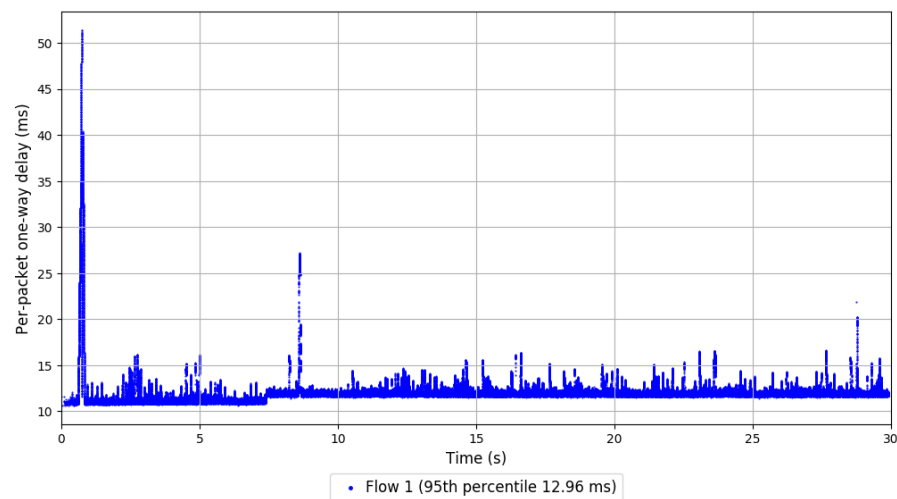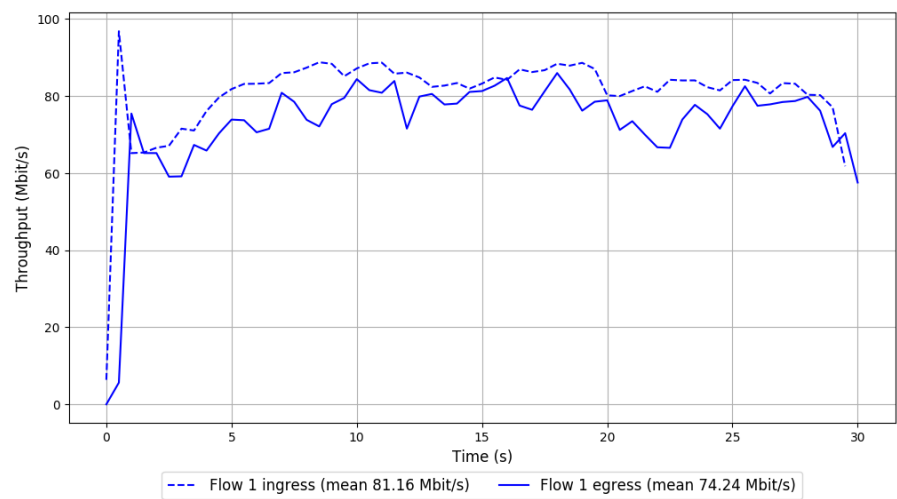
Run 1: Report of PCC-Allegro — Data Link

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-10-02 07:32:30
End at: 2018-10-02 07:33:00
Local clock offset: -0.489 ms
Remote clock offset: -3.072 ms


# Below is generated by plot.py at 2018-10-02 08:59:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 76.18 Mbit/s
95th percentile per-packet one-way delay: 11.590 ms
Loss rate: 7.03%
-- Flow 1:
Average throughput: 76.18 Mbit/s
95th percentile per-packet one-way delay: 11.590 ms
Loss rate: 7.03%
```
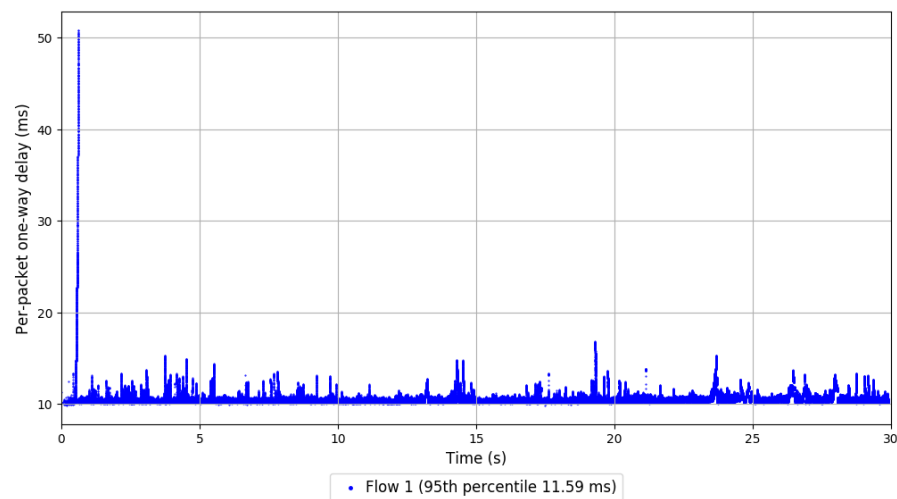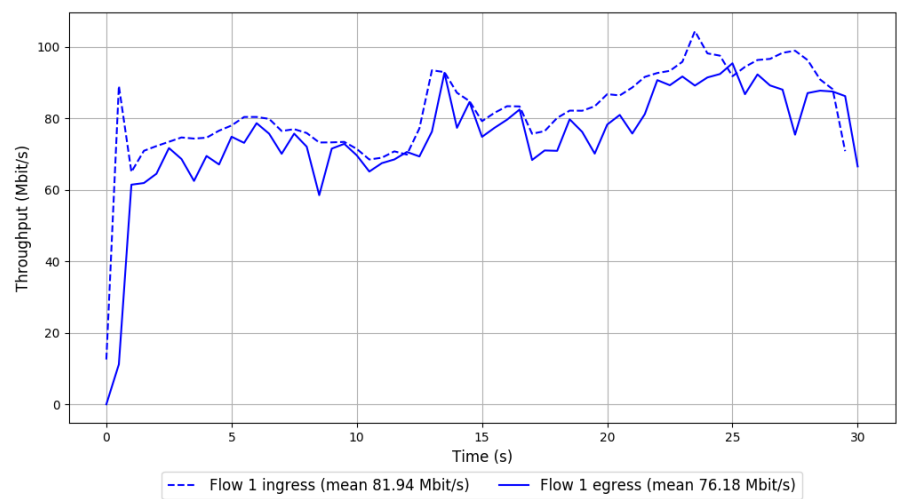
Run 2: Report of PCC-Allegro — Data Link

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-10-02 07:53:07
End at: 2018-10-02 07:53:37
Local clock offset: 0.657 ms
Remote clock offset: -2.299 ms


# Below is generated by plot.py at 2018-10-02 08:59:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 80.44 Mbit/s
95th percentile per-packet one-way delay: 15.543 ms
Loss rate: 6.29%
-- Flow 1:
Average throughput: 80.44 Mbit/s
95th percentile per-packet one-way delay: 15.543 ms
Loss rate: 6.29%
```
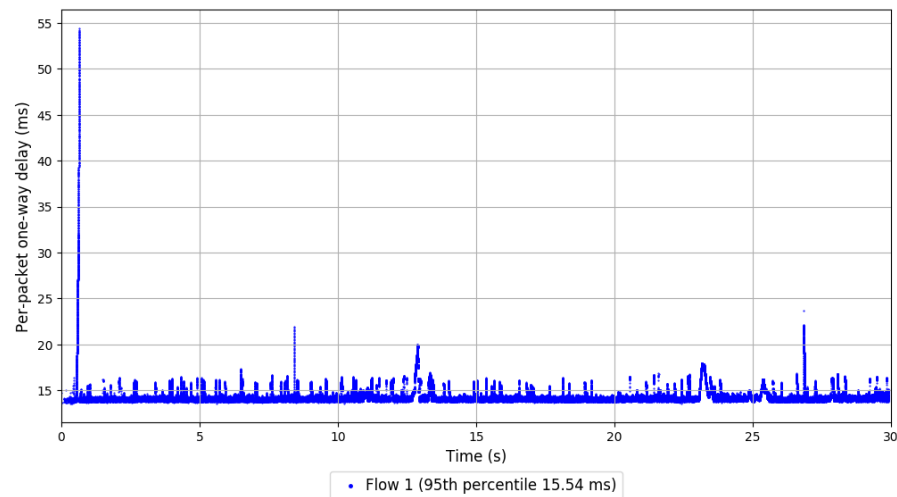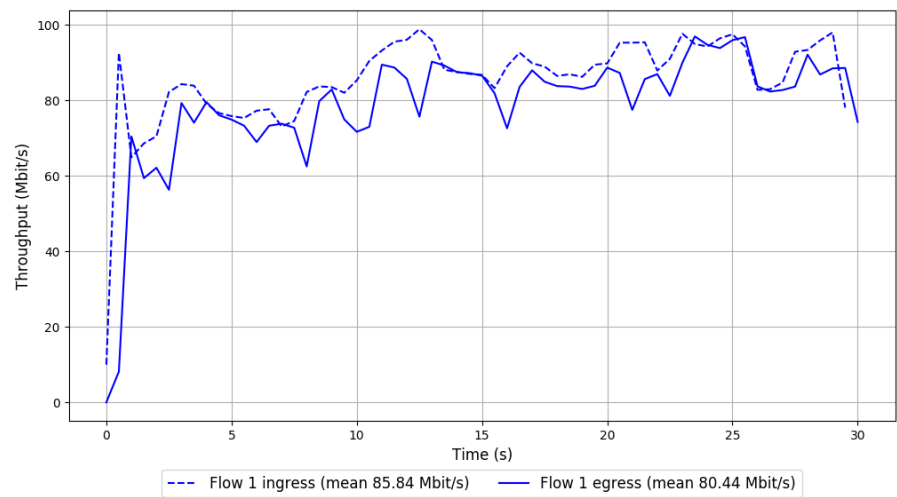
Run 3: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 85.84 Mbit/s)   Flow 1 egress (mean 80.44 Mbit/s)

• Flow 1 (95th percentile 15.54 ms)

90

```
Run 4: Statistics of PCC-Allegro

Start at: 2018-10-02 08:13:49
End at: 2018-10-02 08:14:19
Local clock offset: -6.889 ms
Remote clock offset: -3.116 ms


# Below is generated by plot.py at 2018-10-02 08:59:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 73.37 Mbit/s
95th percentile per-packet one-way delay: 16.251 ms
Loss rate: 3.18%
-- Flow 1:
Average throughput: 73.37 Mbit/s
95th percentile per-packet one-way delay: 16.251 ms
Loss rate: 3.18%
```
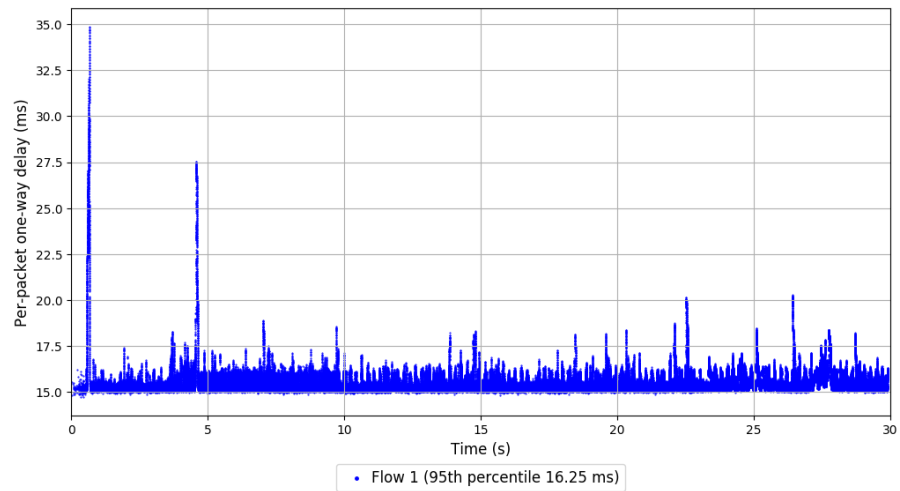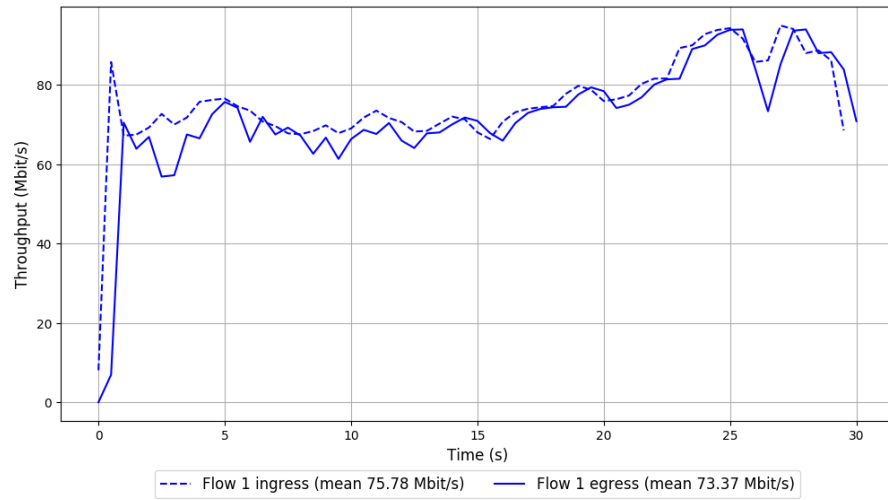
Run 4: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 75.78 Mbit/s)   Flow 1 egress (mean 73.37 Mbit/s)
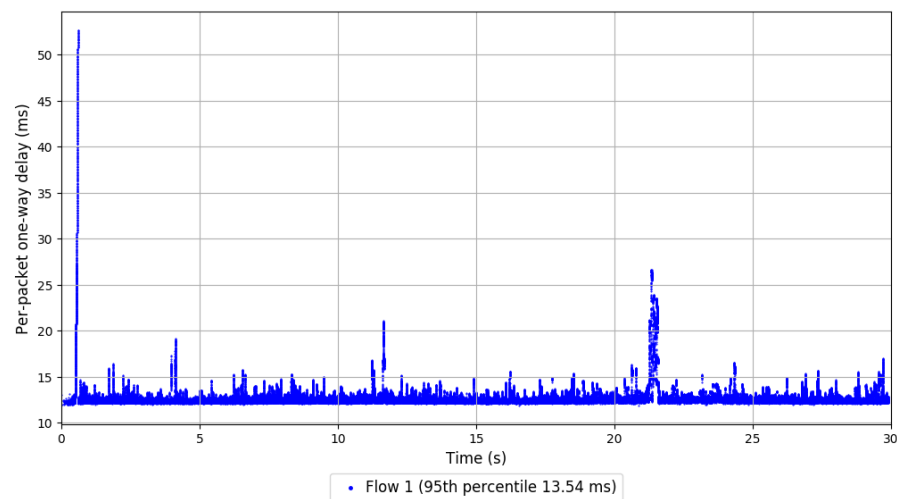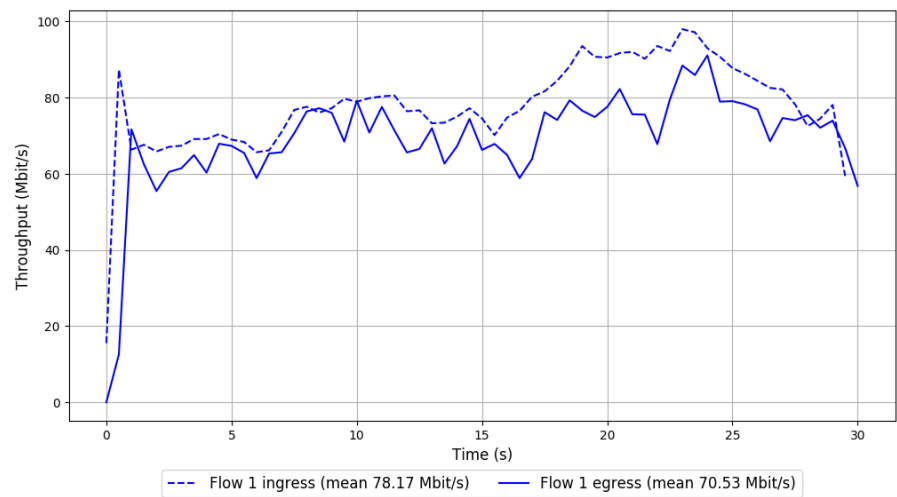

Flow 1 (95th percentile 16.25 ms)

```
Run 5: Statistics of PCC-Allegro

Start at: 2018-10-02 08:34:16
End at: 2018-10-02 08:34:46
Local clock offset: -3.571 ms
Remote clock offset: -2.861 ms


# Below is generated by plot.py at 2018-10-02 08:59:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 70.53 Mbit/s
95th percentile per-packet one-way delay: 13.540 ms
Loss rate: 9.77%
-- Flow 1:
Average throughput: 70.53 Mbit/s
95th percentile per-packet one-way delay: 13.540 ms
Loss rate: 9.77%
```

Run 5: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 78.17 Mbit/s) — Flow 1 egress (mean 70.53 Mbit/s)

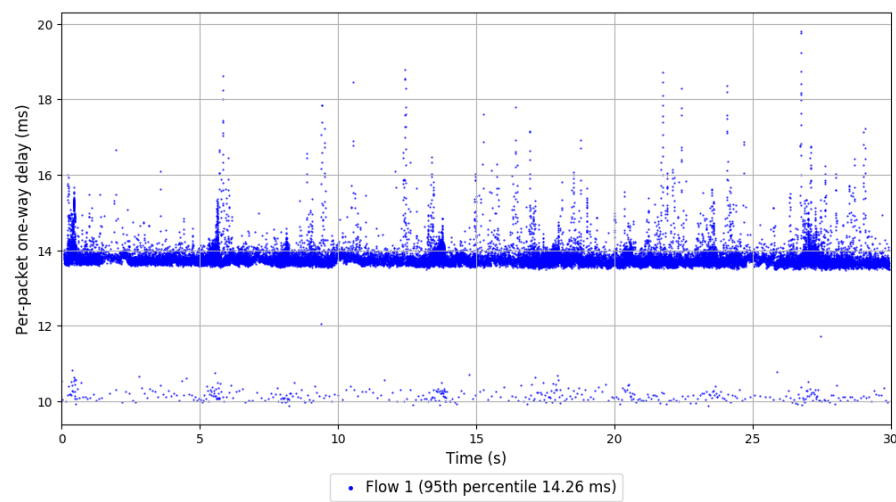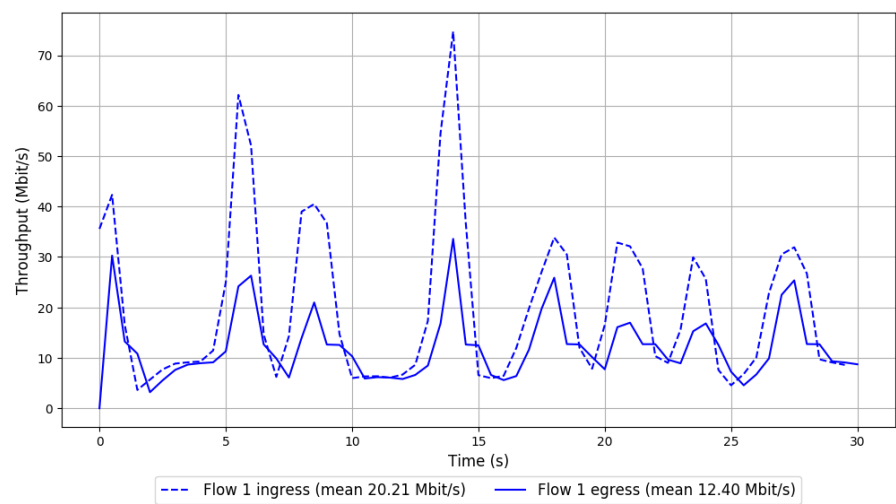

• Flow 1 (95th percentile 13.54 ms)

```
Run 1: Statistics of PCC-Expr

Start at: 2018-10-02 07:21:12
End at: 2018-10-02 07:21:42
Local clock offset: -0.099 ms
Remote clock offset: -3.522 ms

# Below is generated by plot.py at 2018-10-02 08:59:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.40 Mbit/s
95th percentile per-packet one-way delay: 14.261 ms
Loss rate: 38.61%
-- Flow 1:
Average throughput: 12.40 Mbit/s
95th percentile per-packet one-way delay: 14.261 ms
Loss rate: 38.61%
```

Run 1: Report of PCC-Expr — Data Link

```
Run 2: Statistics of PCC-Expr

Start at: 2018-10-02 07:41:44
End at: 2018-10-02 07:42:14
Local clock offset: 1.172 ms
Remote clock offset: -4.694 ms

# Below is generated by plot.py at 2018-10-02 08:59:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.41 Mbit/s
95th percentile per-packet one-way delay: 7.685 ms
Loss rate: 48.67%
-- Flow 1:
Average throughput: 12.41 Mbit/s
95th percentile per-packet one-way delay: 7.685 ms
Loss rate: 48.67%
```
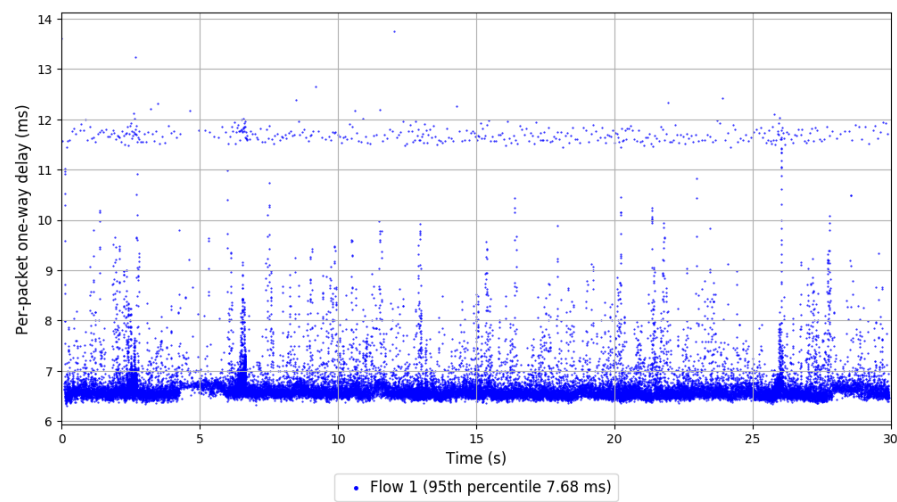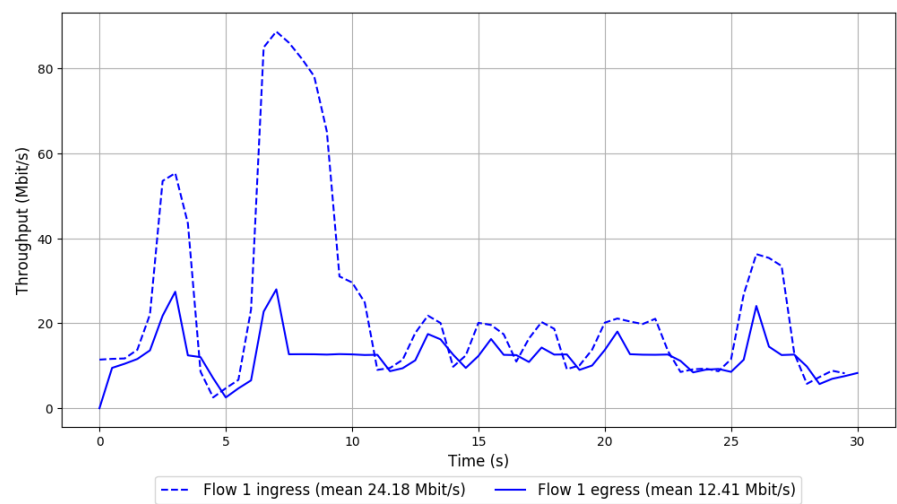
Run 2: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 24.18 Mbit/s) --- Flow 1 egress (mean 12.41 Mbit/s)
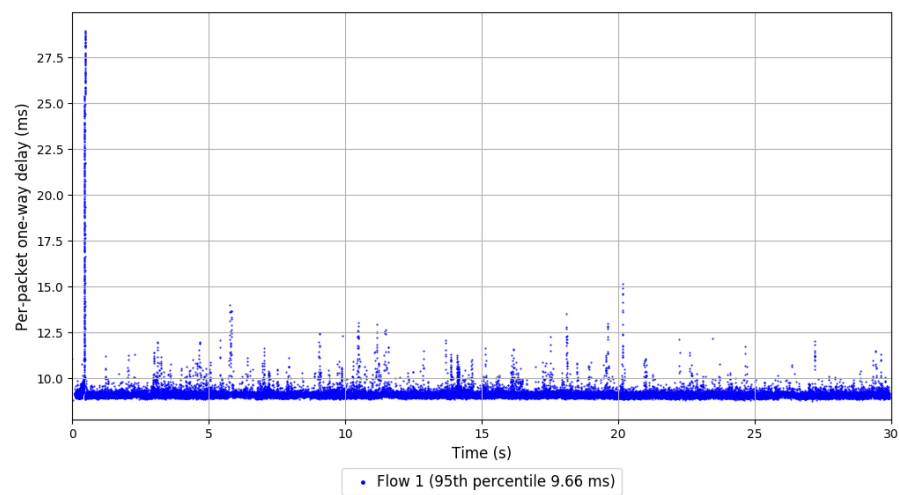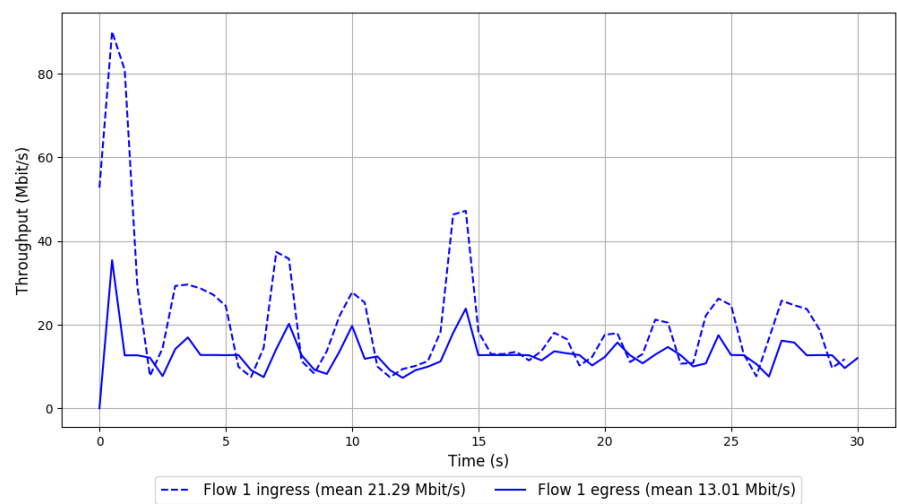

• Flow 1 (95th percentile 7.68 ms)

```
Run 3: Statistics of PCC-Expr

Start at: 2018-10-02 08:02:16
End at: 2018-10-02 08:02:46
Local clock offset: 1.201 ms
Remote clock offset: -3.147 ms


# Below is generated by plot.py at 2018-10-02 08:59:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 13.01 Mbit/s
95th percentile per-packet one-way delay: 9.664 ms
Loss rate: 38.89%
-- Flow 1:
Average throughput: 13.01 Mbit/s
95th percentile per-packet one-way delay: 9.664 ms
Loss rate: 38.89%
```

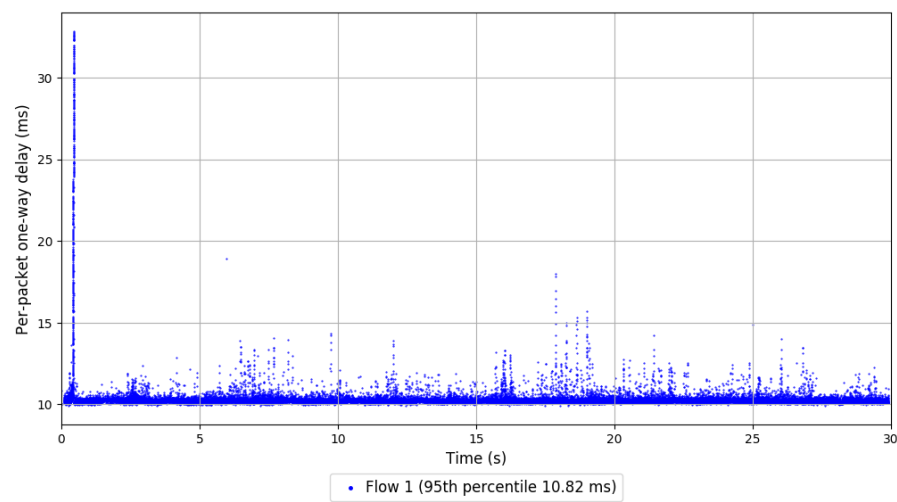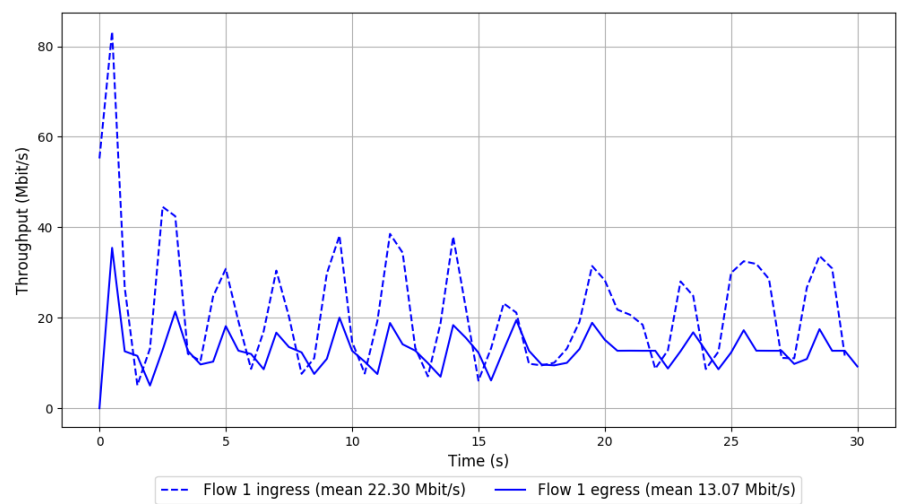Run 3: Report of PCC-Expr — Data Link

```
Run 4: Statistics of PCC-Expr

Start at: 2018-10-02 08:22:56
End at: 2018-10-02 08:23:26
Local clock offset: -2.056 ms
Remote clock offset: -3.297 ms


# Below is generated by plot.py at 2018-10-02 08:59:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 13.07 Mbit/s
95th percentile per-packet one-way delay: 10.817 ms
Loss rate: 41.38%
-- Flow 1:
Average throughput: 13.07 Mbit/s
95th percentile per-packet one-way delay: 10.817 ms
Loss rate: 41.38%
```

Run 4: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 22.30 Mbit/s) --- Flow 1 egress (mean 13.07 Mbit/s)

Flow 1 (95th percentile 10.82 ms)

```
Run 5: Statistics of PCC-Expr

Start at: 2018-10-02 08:43:25
End at: 2018-10-02 08:43:55
Local clock offset: -3.79 ms
Remote clock offset: -0.36 ms


# Below is generated by plot.py at 2018-10-02 08:59:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.70 Mbit/s
95th percentile per-packet one-way delay: 17.672 ms
Loss rate: 45.34%
-- Flow 1:
Average throughput: 12.70 Mbit/s
95th percentile per-packet one-way delay: 17.672 ms
Loss rate: 45.34%
```
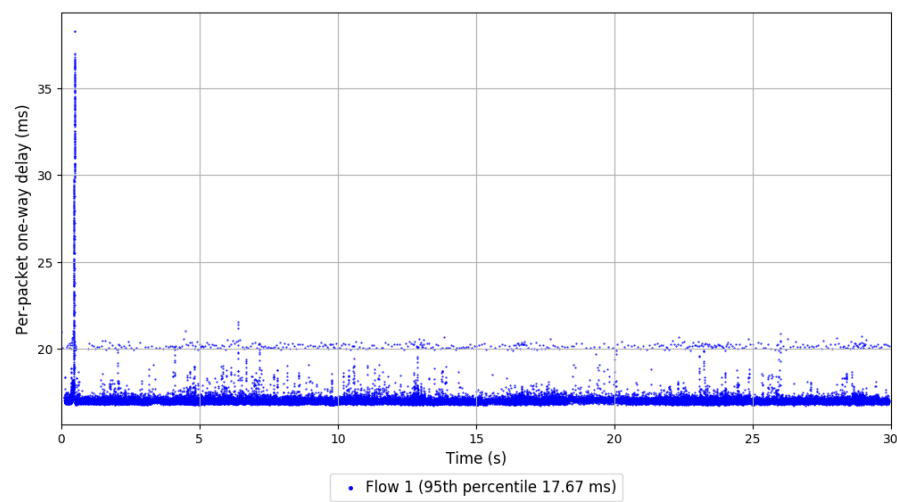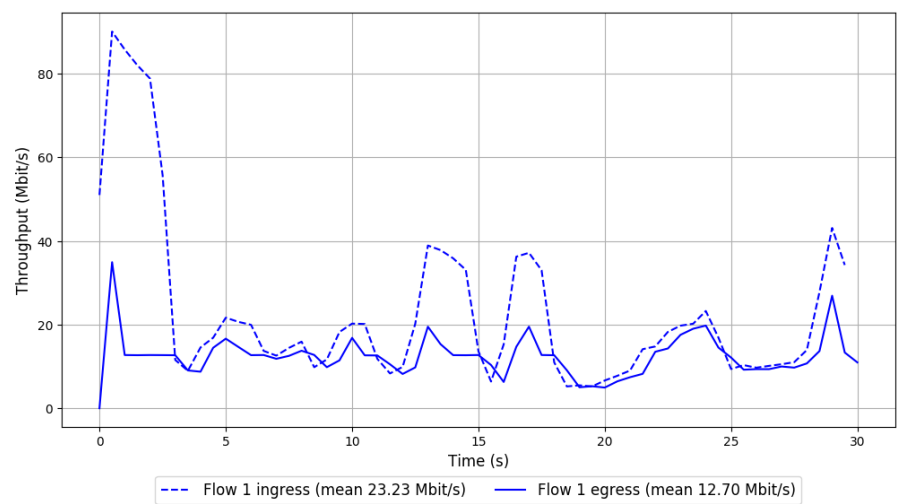
Run 5: Report of PCC-Expr — Data Link

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-10-02 07:23:27
End at: 2018-10-02 07:23:57
Local clock offset: -0.832 ms
Remote clock offset: -1.781 ms


# Below is generated by plot.py at 2018-10-02 08:59:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 21.30 Mbit/s
95th percentile per-packet one-way delay: 16.443 ms
Loss rate: 1.51%
-- Flow 1:
Average throughput: 21.30 Mbit/s
95th percentile per-packet one-way delay: 16.443 ms
Loss rate: 1.51%
```
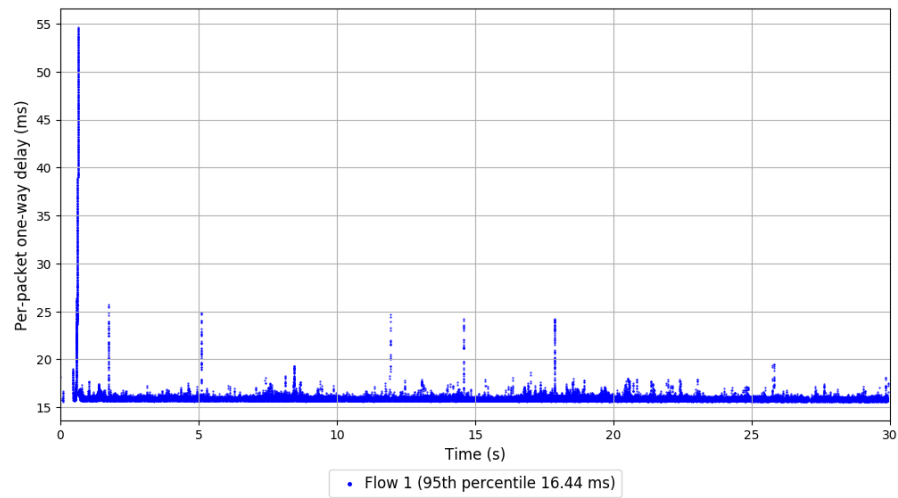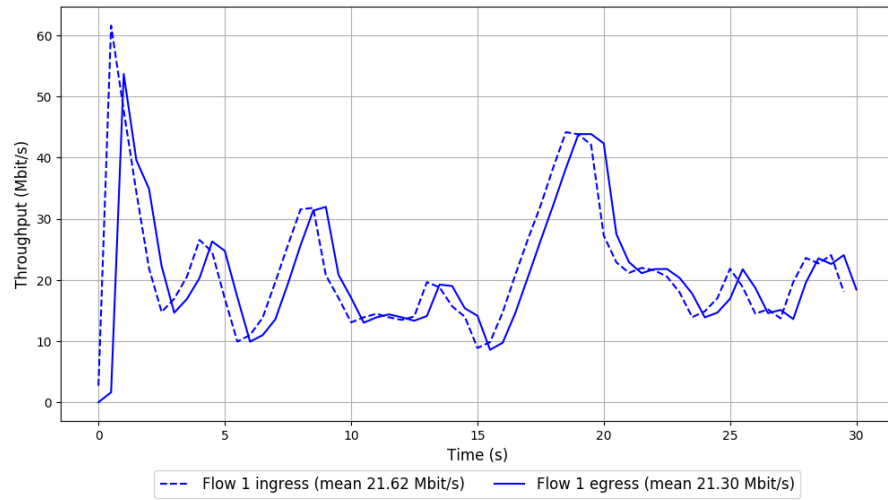
Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-10-02 07:44:03
End at: 2018-10-02 07:44:33
Local clock offset: -0.193 ms
Remote clock offset: -4.148 ms


# Below is generated by plot.py at 2018-10-02 08:59:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 17.60 Mbit/s
95th percentile per-packet one-way delay: 13.885 ms
Loss rate: 0.90%
-- Flow 1:
Average throughput: 17.60 Mbit/s
95th percentile per-packet one-way delay: 13.885 ms
Loss rate: 0.90%
```
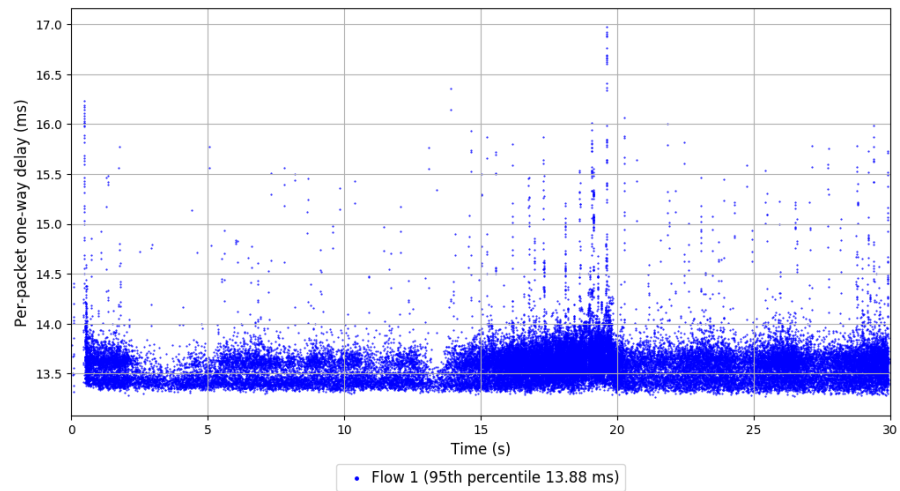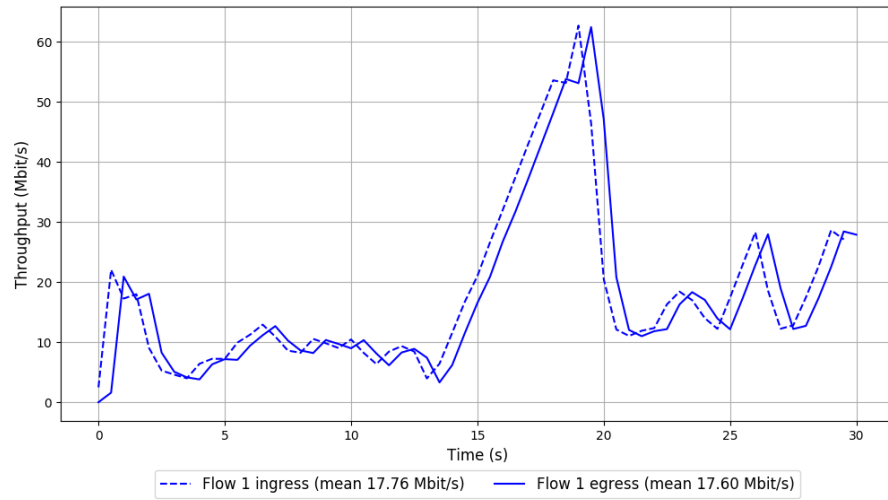
Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-10-02 08:04:33
End at: 2018-10-02 08:05:03
Local clock offset: -5.81 ms
Remote clock offset: -2.738 ms


# Below is generated by plot.py at 2018-10-02 08:59:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 21.57 Mbit/s
95th percentile per-packet one-way delay: 20.202 ms
Loss rate: 0.98%
-- Flow 1:
Average throughput: 21.57 Mbit/s
95th percentile per-packet one-way delay: 20.202 ms
Loss rate: 0.98%
```
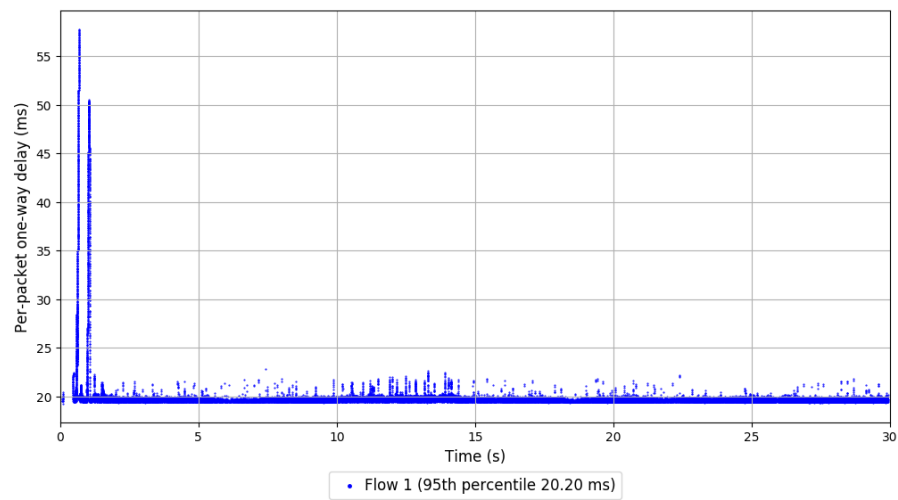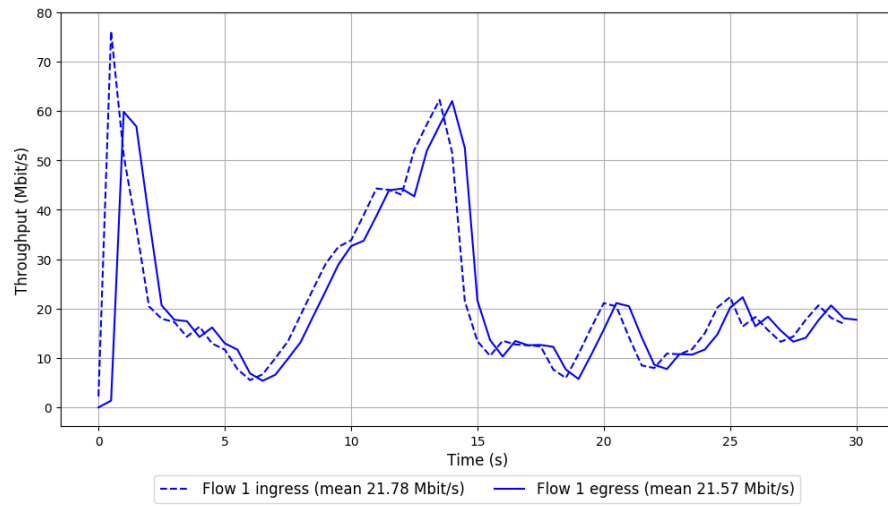
Run 3: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 21.78 Mbit/s)   Flow 1 egress (mean 21.57 Mbit/s)
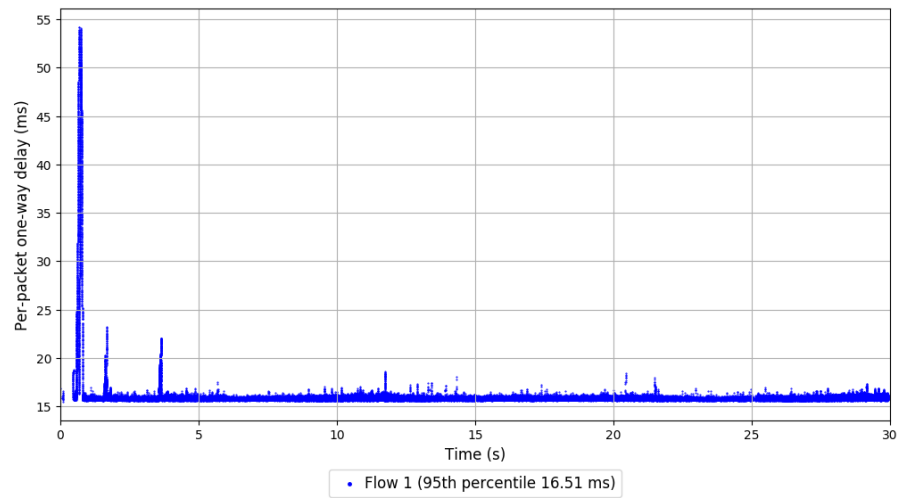

Flow 1 (95th percentile 20.20 ms)

```
Run 4: Statistics of QUIC Cubic

Start at: 2018-10-02 08:25:13
End at: 2018-10-02 08:25:43
Local clock offset: -2.06 ms
Remote clock offset: -2.839 ms


# Below is generated by plot.py at 2018-10-02 08:59:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 26.01 Mbit/s
95th percentile per-packet one-way delay: 16.514 ms
Loss rate: 2.14%
-- Flow 1:
Average throughput: 26.01 Mbit/s
95th percentile per-packet one-way delay: 16.514 ms
Loss rate: 2.14%
```
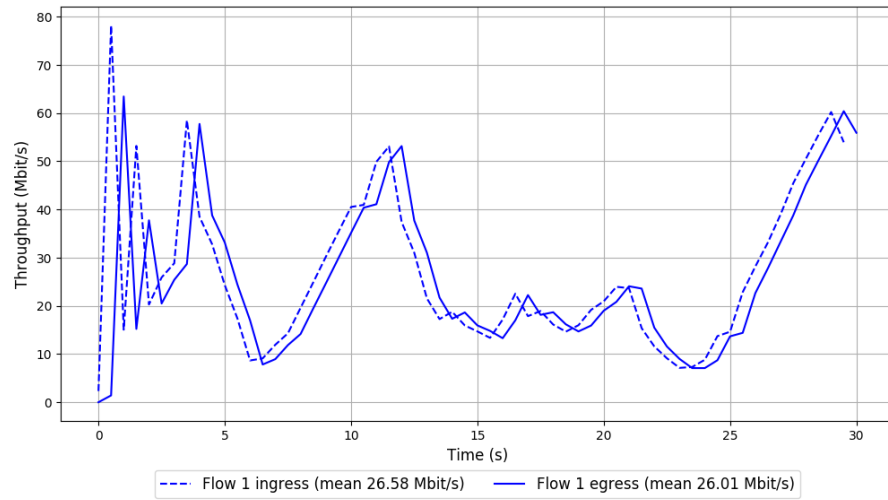
Run 4: Report of QUIC Cubic — Data Link

```
Run 5: Statistics of QUIC Cubic

Start at: 2018-10-02 08:45:43
End at: 2018-10-02 08:46:13
Local clock offset: 0.857 ms
Remote clock offset: -1.291 ms


# Below is generated by plot.py at 2018-10-02 08:59:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 15.22 Mbit/s
95th percentile per-packet one-way delay: 22.512 ms
Loss rate: 3.83%
-- Flow 1:
Average throughput: 15.22 Mbit/s
95th percentile per-packet one-way delay: 22.512 ms
Loss rate: 3.83%
```
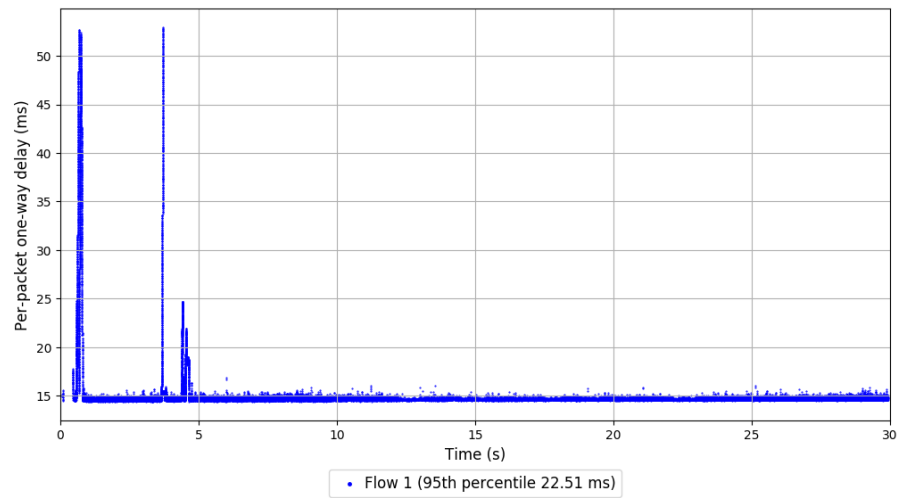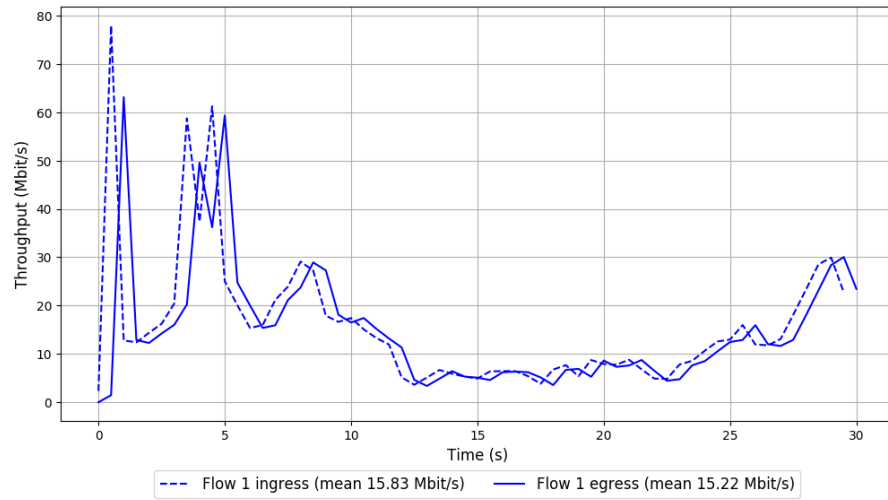
Run 5: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 15.83 Mbit/s)   Flow 1 egress (mean 15.22 Mbit/s)
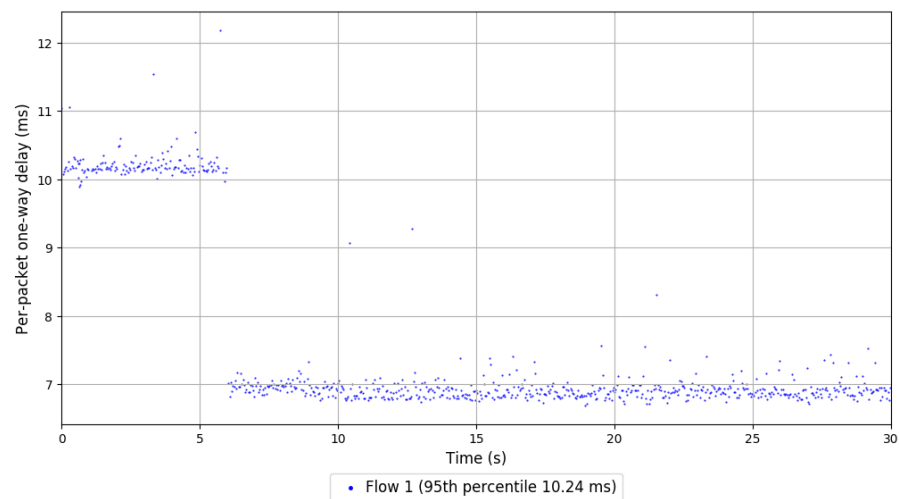

Flow 1 (95th percentile 22.51 ms)

```
Run 1: Statistics of SCReAM

Start at: 2018-10-02 07:30:16
End at: 2018-10-02 07:30:46
Local clock offset: 2.11 ms
Remote clock offset: -3.85 ms


# Below is generated by plot.py at 2018-10-02 08:59:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 10.243 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 10.243 ms
Loss rate: 0.64%
```

Run 1: Report of SCReAM — Data Link

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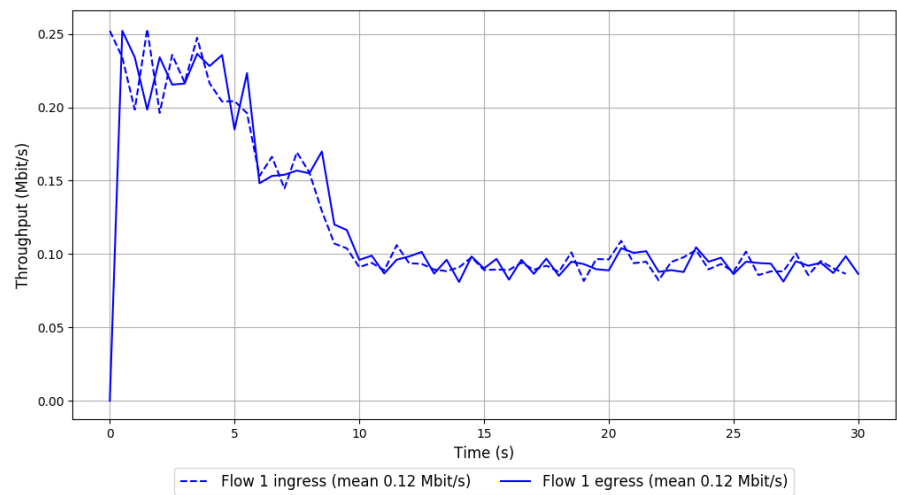

Flow 1 (95th percentile 10.24 ms)

```
Run 2: Statistics of SCReAM

Start at: 2018-10-02 07:50:50
End at: 2018-10-02 07:51:20
Local clock offset: -1.782 ms
Remote clock offset: -3.43 ms


# Below is generated by plot.py at 2018-10-02 08:59:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 15.541 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 15.541 ms
Loss rate: 0.26%
```
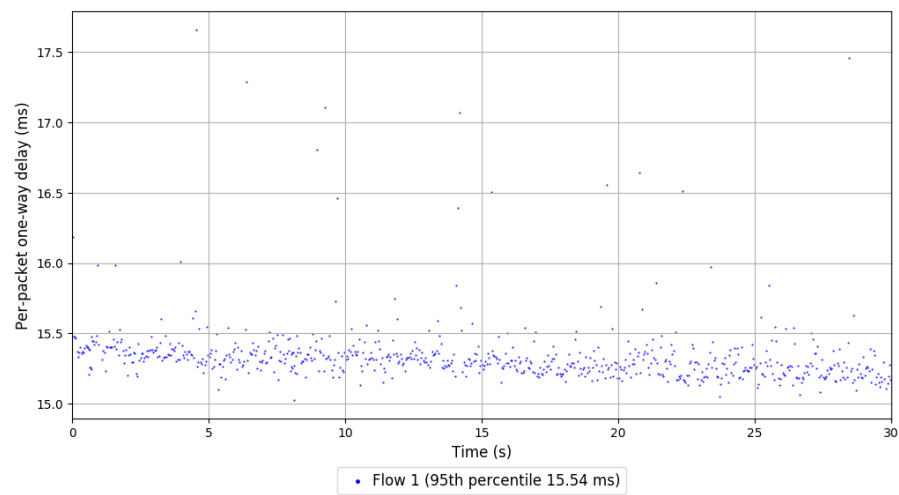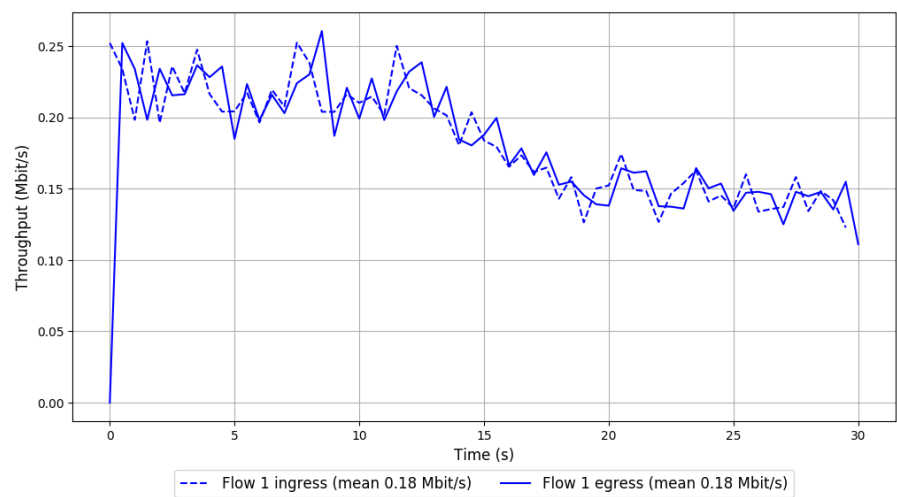
Run 2: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.18 Mbit/s) --- Flow 1 egress (mean 0.18 Mbit/s)

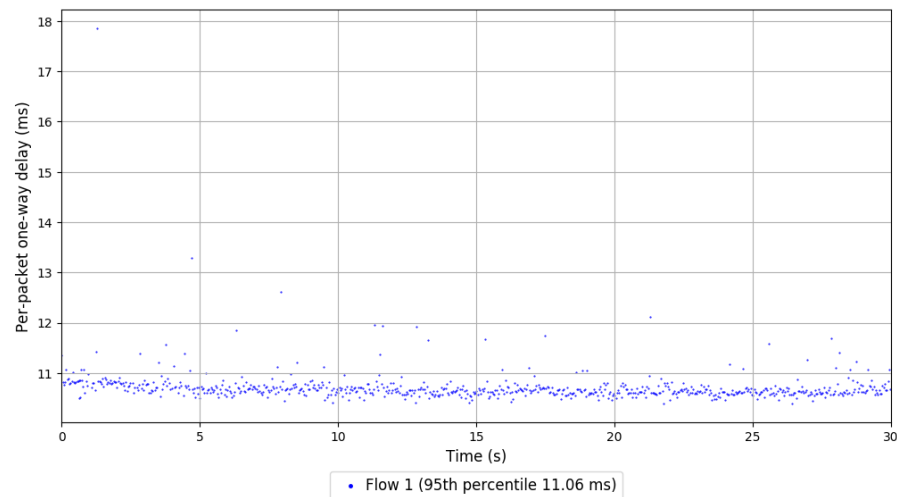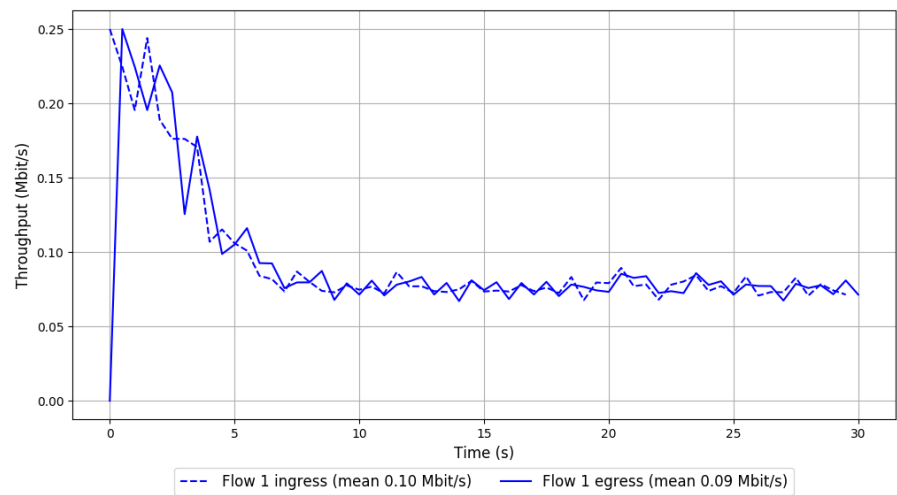Flow 1 (95th percentile 15.54 ms)

118

```
Run 3: Statistics of SCReAM

Start at: 2018-10-02 08:11:35
End at: 2018-10-02 08:12:05
Local clock offset: -2.094 ms
Remote clock offset: -2.675 ms


# Below is generated by plot.py at 2018-10-02 08:59:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 11.060 ms
Loss rate: 1.50%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 11.060 ms
Loss rate: 1.50%
```

Run 3: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.10 Mbit/s)   Flow 1 egress (mean 0.09 Mbit/s)
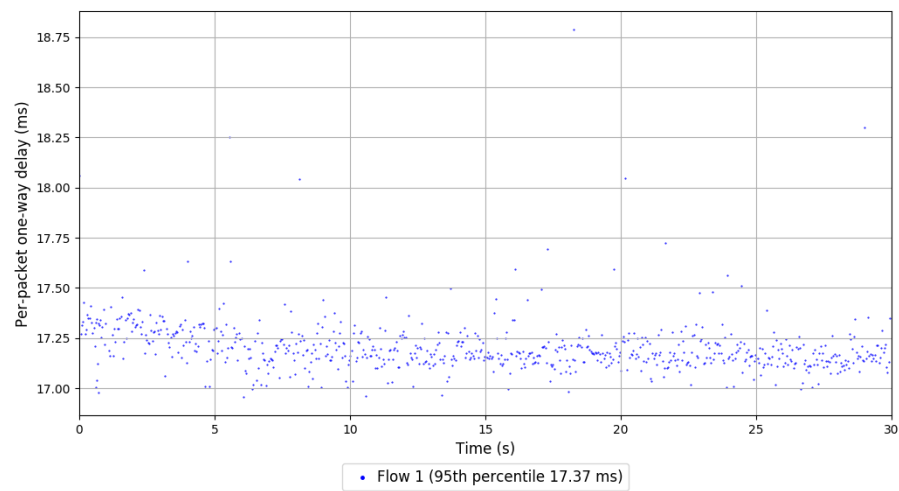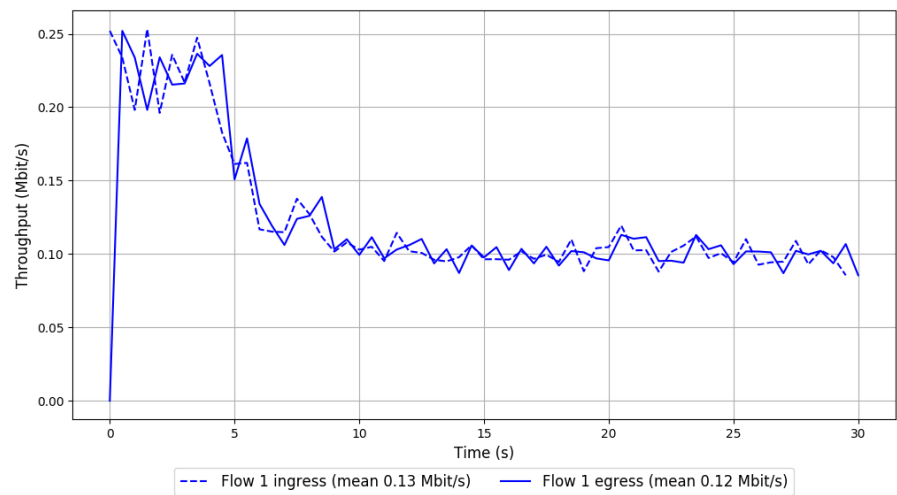

Flow 1 (95th percentile 11.06 ms)

```
Run 4: Statistics of SCReAM

Start at: 2018-10-02 08:32:00
End at: 2018-10-02 08:32:30
Local clock offset: -3.371 ms
Remote clock offset: -2.838 ms

# Below is generated by plot.py at 2018-10-02 08:59:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 17.373 ms
Loss rate: 0.53%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 17.373 ms
Loss rate: 0.53%
```

Run 4: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.13 Mbit/s) — — —   Flow 1 egress (mean 0.12 Mbit/s) ——————
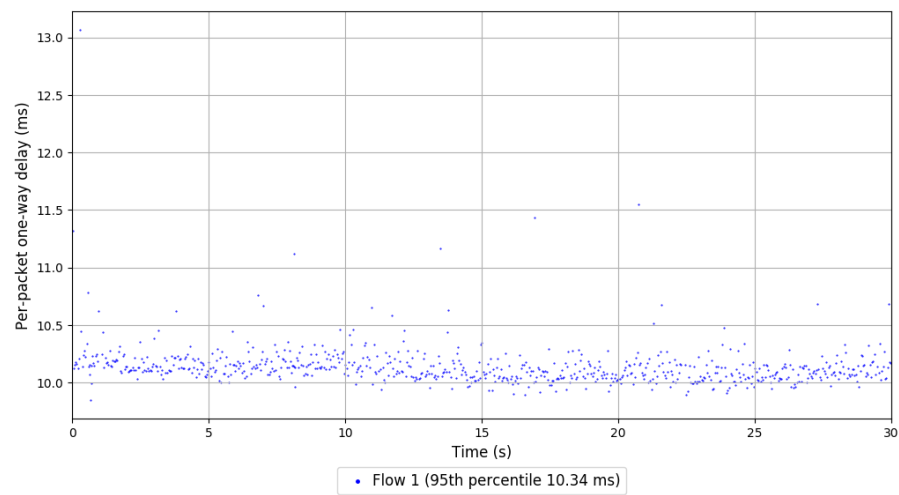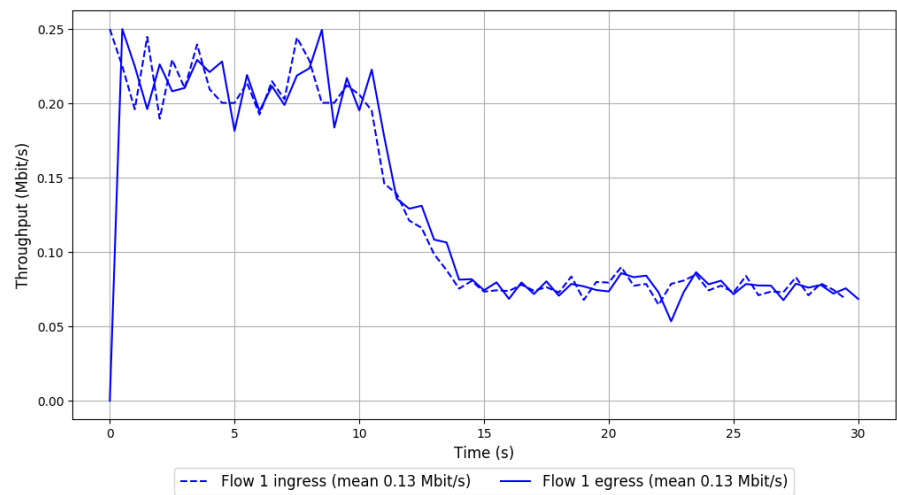

Flow 1 (95th percentile 17.37 ms)

```
Run 5: Statistics of SCReAM

Start at: 2018-10-02 08:52:21
End at: 2018-10-02 08:52:51
Local clock offset: -1.001 ms
Remote clock offset: -1.764 ms


# Below is generated by plot.py at 2018-10-02 08:59:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 10.339 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 10.339 ms
Loss rate: 0.64%
```

Run 5: Report of SCReAM — Data Link

```
Run 1: Statistics of Sprout

Start at: 2018-10-02 07:26:53
End at: 2018-10-02 07:27:23
Local clock offset: -0.162 ms
Remote clock offset: -3.51 ms


# Below is generated by plot.py at 2018-10-02 09:00:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 24.15 Mbit/s
95th percentile per-packet one-way delay: 18.263 ms
Loss rate: 0.30%
-- Flow 1:
Average throughput: 24.15 Mbit/s
95th percentile per-packet one-way delay: 18.263 ms
Loss rate: 0.30%
```
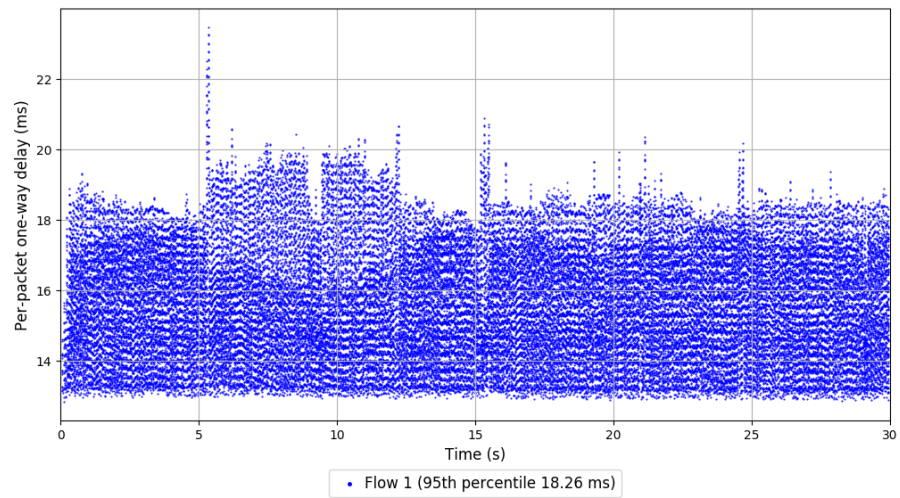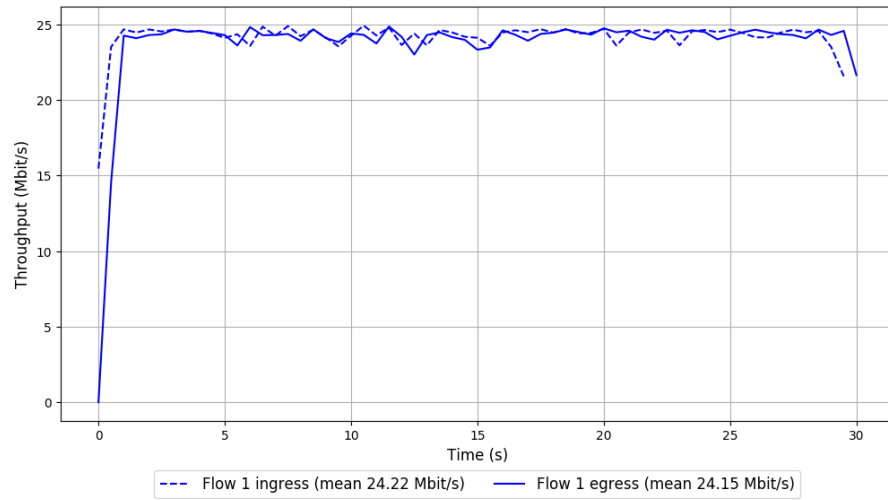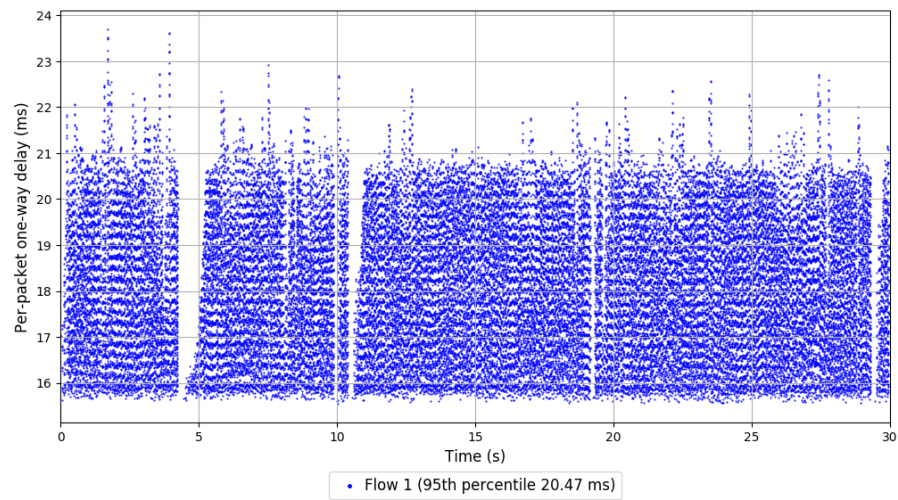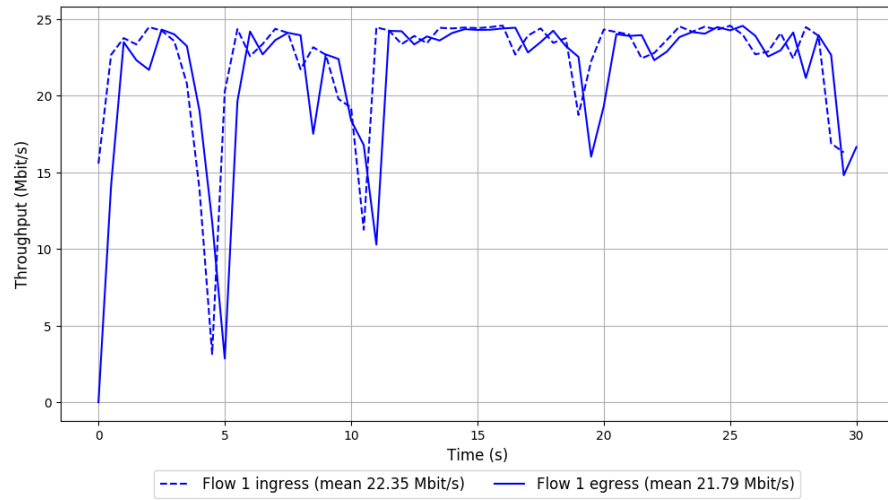
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-10-02 07:47:28
End at: 2018-10-02 07:47:58
Local clock offset: -1.722 ms
Remote clock offset: -3.222 ms


# Below is generated by plot.py at 2018-10-02 09:00:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 21.79 Mbit/s
95th percentile per-packet one-way delay: 20.466 ms
Loss rate: 2.52%
-- Flow 1:
Average throughput: 21.79 Mbit/s
95th percentile per-packet one-way delay: 20.466 ms
Loss rate: 2.52%
```

Run 2: Report of Sprout — Data Link

Flow 1 ingress (mean 22.35 Mbit/s) --- Flow 1 egress (mean 21.79 Mbit/s)

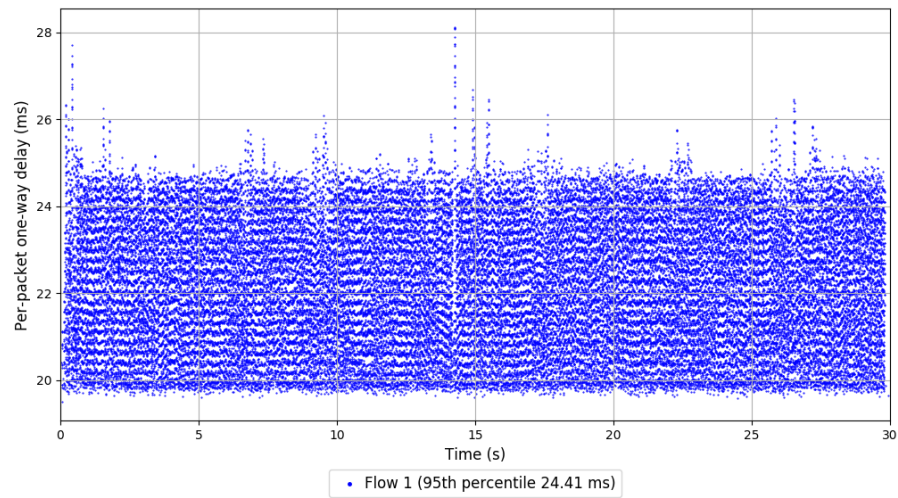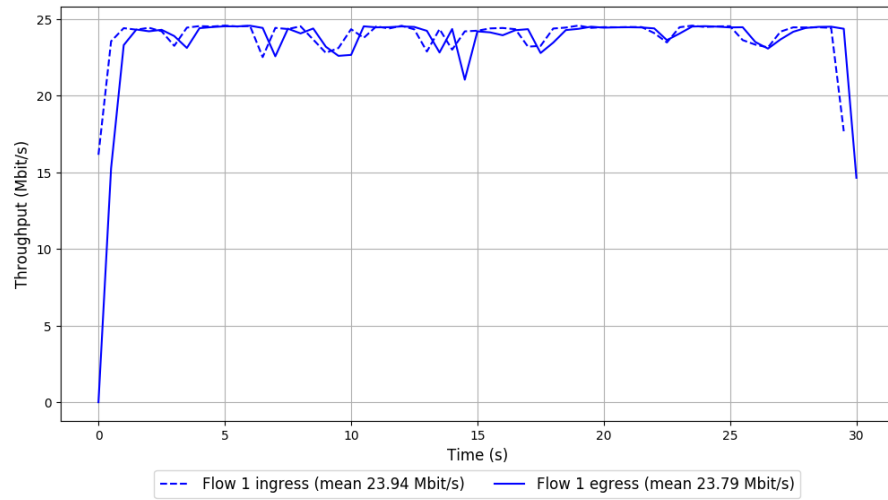

• Flow 1 (95th percentile 20.47 ms)

```
Run 3: Statistics of Sprout

Start at: 2018-10-02 08:08:07
End at: 2018-10-02 08:08:37
Local clock offset: -6.048 ms
Remote clock offset: -2.828 ms

# Below is generated by plot.py at 2018-10-02 09:00:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 23.79 Mbit/s
95th percentile per-packet one-way delay: 24.407 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 23.79 Mbit/s
95th percentile per-packet one-way delay: 24.407 ms
Loss rate: 0.63%
```

Run 3: Report of Sprout — Data Link

Flow 1 ingress (mean 23.94 Mbit/s) --- Flow 1 egress (mean 23.79 Mbit/s)
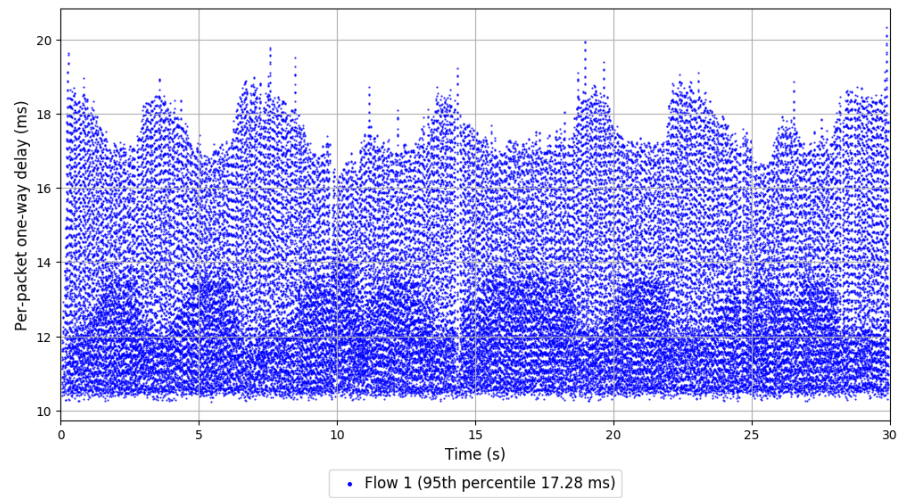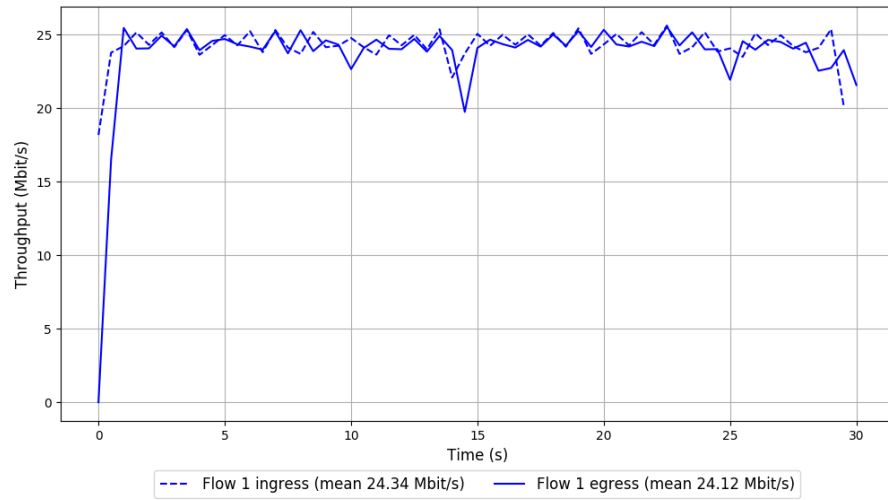

Flow 1 (95th percentile 24.41 ms)

```
Run 4: Statistics of Sprout

Start at: 2018-10-02 08:28:39
End at: 2018-10-02 08:29:09
Local clock offset: -1.509 ms
Remote clock offset: -2.603 ms

# Below is generated by plot.py at 2018-10-02 09:00:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 24.12 Mbit/s
95th percentile per-packet one-way delay: 17.282 ms
Loss rate: 0.91%
-- Flow 1:
Average throughput: 24.12 Mbit/s
95th percentile per-packet one-way delay: 17.282 ms
Loss rate: 0.91%
```
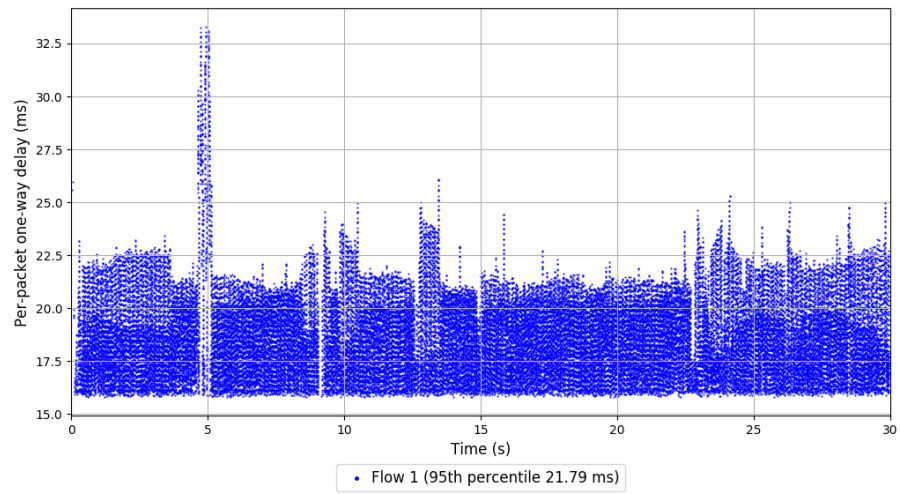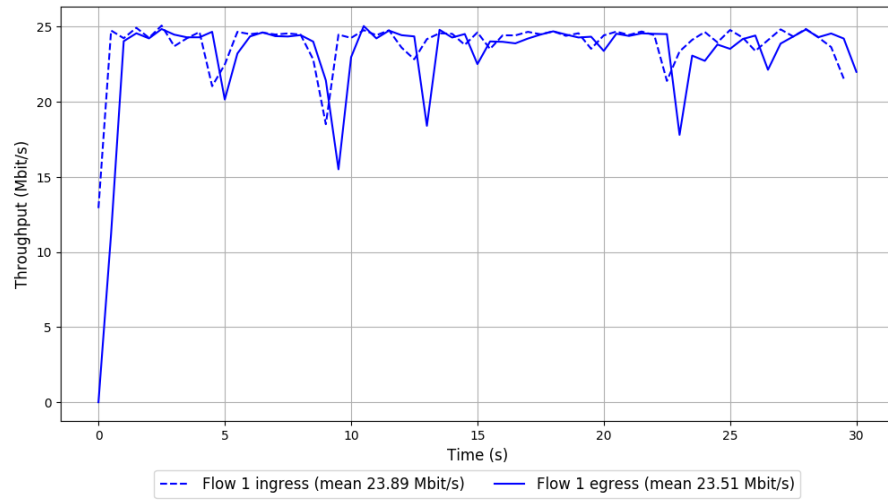
Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2018-10-02 08:49:04
End at: 2018-10-02 08:49:34
Local clock offset: -2.958 ms
Remote clock offset: -1.117 ms


# Below is generated by plot.py at 2018-10-02 09:00:05
# Datalink statistics
-- Total of 1 flow:
Average throughput: 23.51 Mbit/s
95th percentile per-packet one-way delay: 21.789 ms
Loss rate: 1.62%
-- Flow 1:
Average throughput: 23.51 Mbit/s
95th percentile per-packet one-way delay: 21.789 ms
Loss rate: 1.62%
```

Run 5: Report of Sprout — Data Link

Flow 1 ingress (mean 23.89 Mbit/s) --- Flow 1 egress (mean 23.51 Mbit/s)
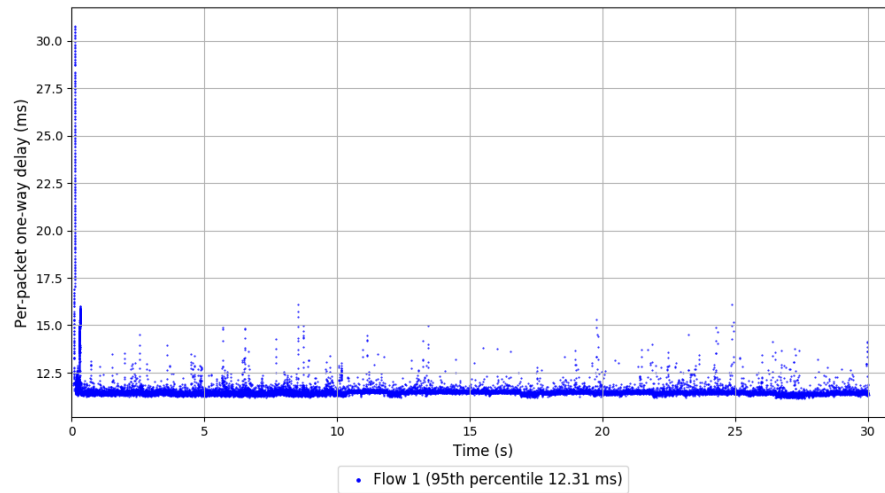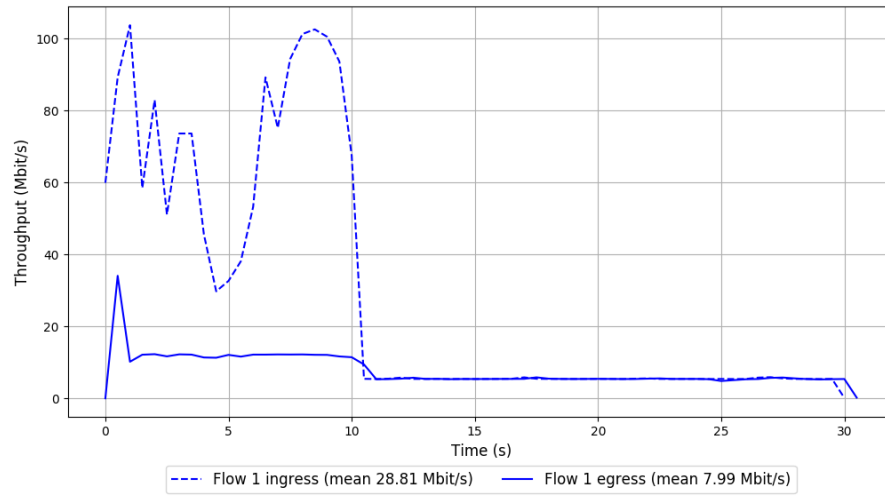

Flow 1 (95th percentile 21.79 ms)

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

Start at: 2018-10-02 07:16:41
End at: 2018-10-02 07:17:11
Local clock offset: 0.629 ms
Remote clock offset: -6.134 ms


# Below is generated by plot.py at 2018-10-02 09:00:05
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.99 Mbit/s
95th percentile per-packet one-way delay: 12.313 ms
Loss rate: 72.29%
-- Flow 1:
Average throughput: 7.99 Mbit/s
95th percentile per-packet one-way delay: 12.313 ms
Loss rate: 72.29%
```

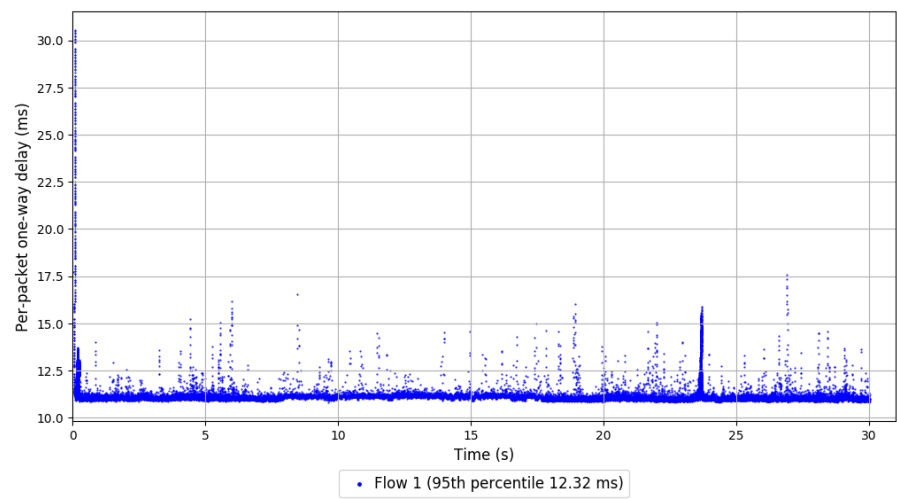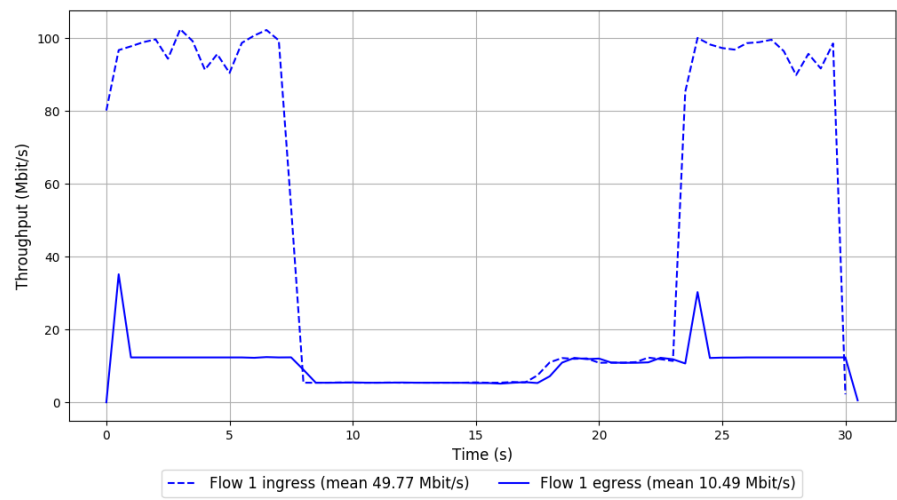Run 1: Report of TaoVA-100x — Data Link

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

Start at: 2018-10-02 07:37:07
End at: 2018-10-02 07:37:37
Local clock offset: -1.122 ms
Remote clock offset: -2.678 ms


# Below is generated by plot.py at 2018-10-02 09:00:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.49 Mbit/s
95th percentile per-packet one-way delay: 12.325 ms
Loss rate: 78.93%
-- Flow 1:
Average throughput: 10.49 Mbit/s
95th percentile per-packet one-way delay: 12.325 ms
Loss rate: 78.93%
```

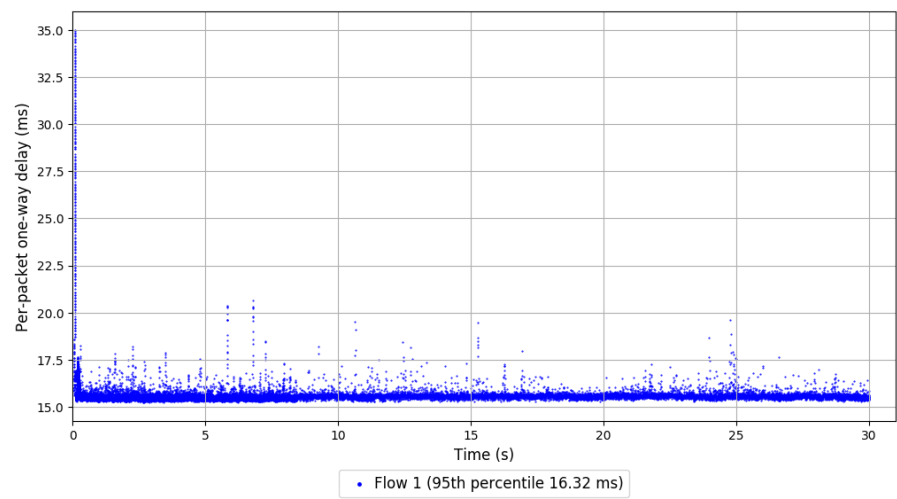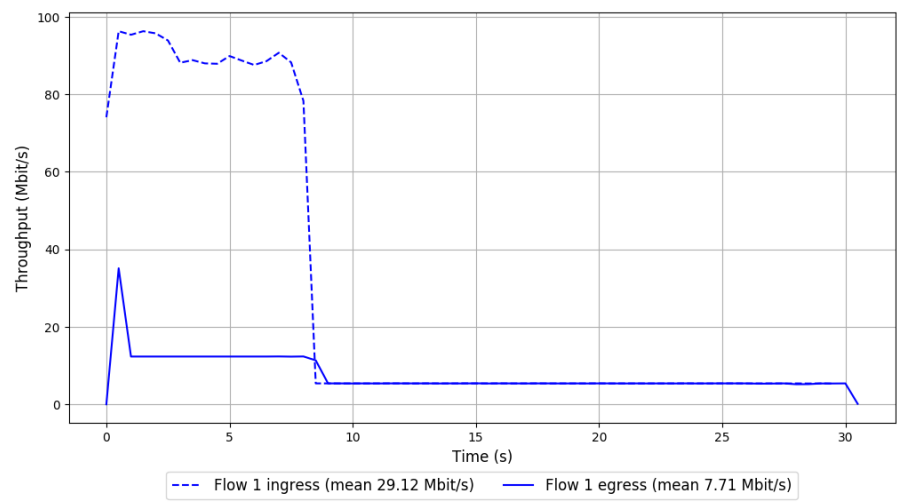Run 2: Report of TaoVA-100x — Data Link

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

Start at: 2018-10-02 07:57:45
End at: 2018-10-02 07:58:15
Local clock offset: -5.585 ms
Remote clock offset: -3.615 ms


# Below is generated by plot.py at 2018-10-02 09:00:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.71 Mbit/s
95th percentile per-packet one-way delay: 16.325 ms
Loss rate: 73.54%
-- Flow 1:
Average throughput: 7.71 Mbit/s
95th percentile per-packet one-way delay: 16.325 ms
Loss rate: 73.54%
```

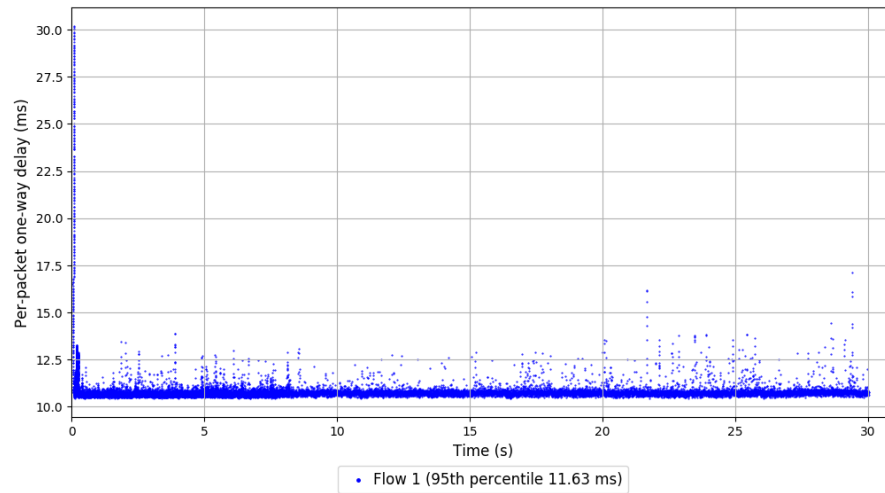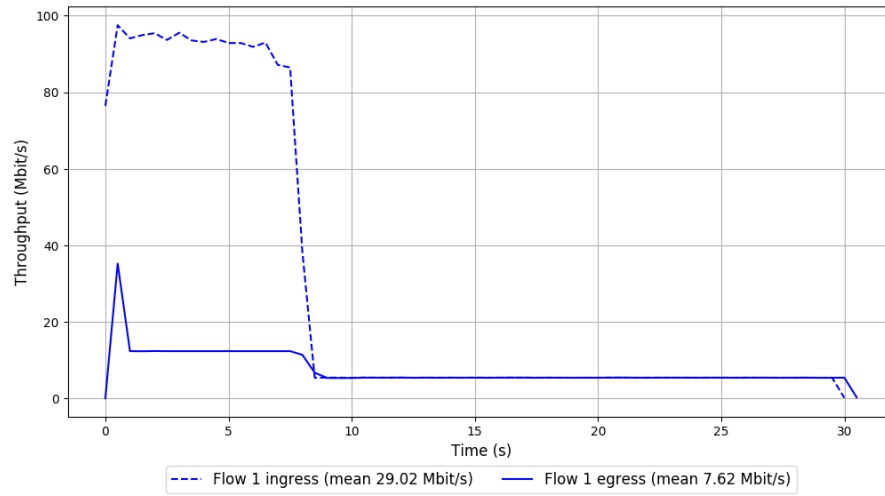Run 3: Report of TaoVA-100x — Data Link

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

Start at: 2018-10-02 08:18:22
End at: 2018-10-02 08:18:52
Local clock offset: -1.789 ms
Remote clock offset: -2.542 ms


# Below is generated by plot.py at 2018-10-02 09:00:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.62 Mbit/s
95th percentile per-packet one-way delay: 11.628 ms
Loss rate: 73.75%
-- Flow 1:
Average throughput: 7.62 Mbit/s
95th percentile per-packet one-way delay: 11.628 ms
Loss rate: 73.75%
```

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

Flow 1 ingress (mean 29.02 Mbit/s) --- Flow 1 egress (mean 7.62 Mbit/s)

Flow 1 (95th percentile 11.63 ms)

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

Start at: 2018-10-02 08:38:52
End at: 2018-10-02 08:39:22
Local clock offset: 0.934 ms
Remote clock offset: -0.109 ms


# Below is generated by plot.py at 2018-10-02 09:00:19
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.30 Mbit/s
95th percentile per-packet one-way delay: 13.023 ms
Loss rate: 82.36%
-- Flow 1:
Average throughput: 9.30 Mbit/s
95th percentile per-packet one-way delay: 13.023 ms
Loss rate: 82.36%
```
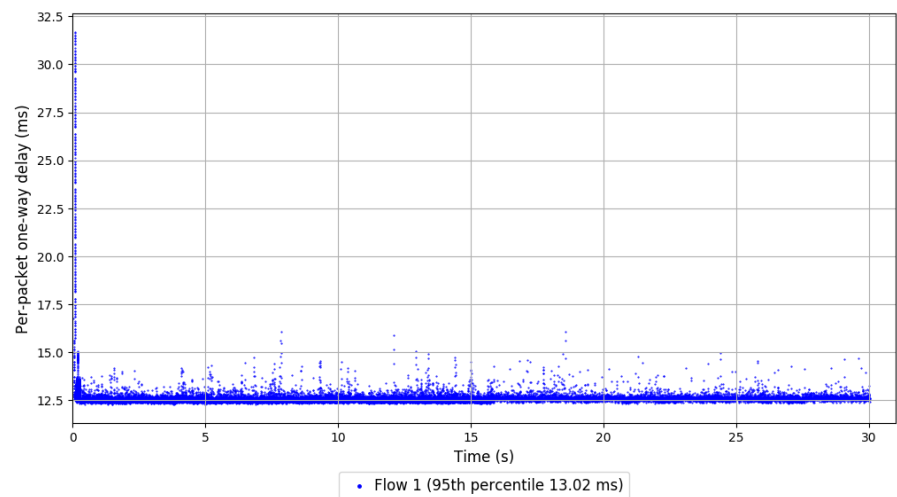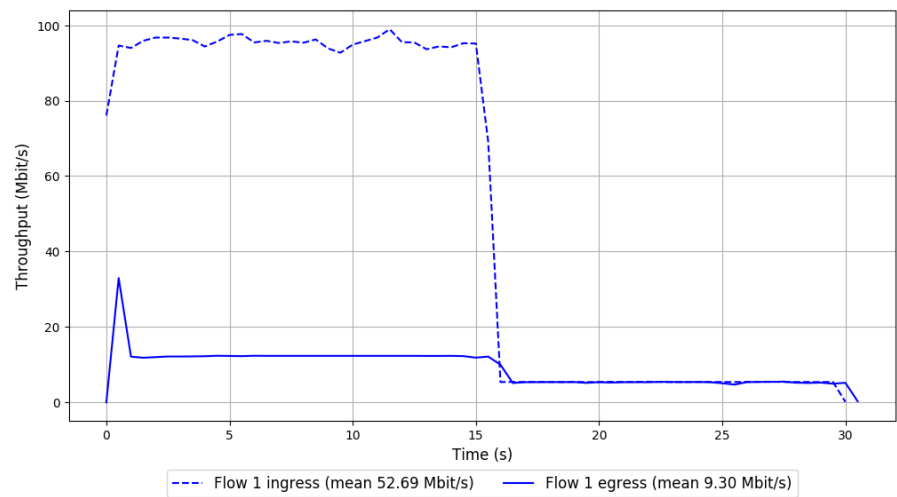
Run 5: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 52.69 Mbit/s)   Flow 1 egress (mean 9.30 Mbit/s)

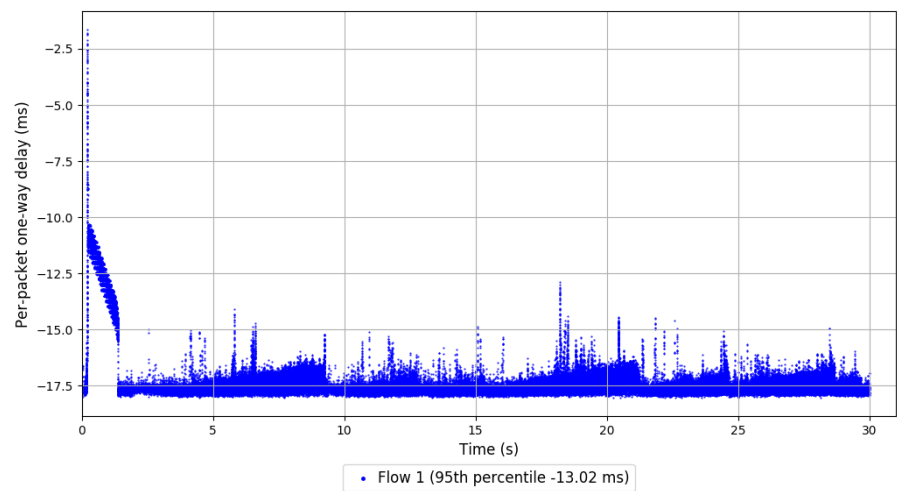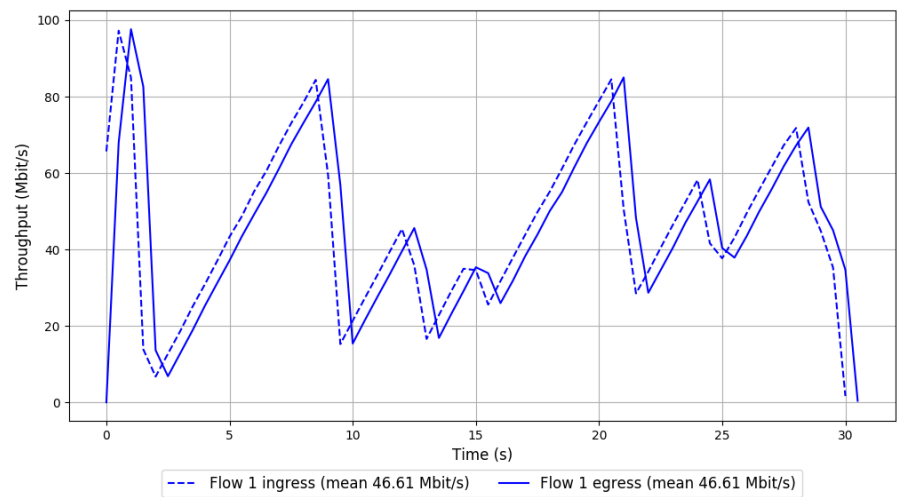Flow 1 (95th percentile 13.02 ms)

144

```
Run 1: Statistics of TCP Vegas

Start at: 2018-10-02 07:27:59
End at: 2018-10-02 07:28:29
Local clock offset: 1.87 ms
Remote clock offset: -32.229 ms


# Below is generated by plot.py at 2018-10-02 09:00:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 46.61 Mbit/s
95th percentile per-packet one-way delay: -13.019 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 46.61 Mbit/s
95th percentile per-packet one-way delay: -13.019 ms
Loss rate: 0.03%
```

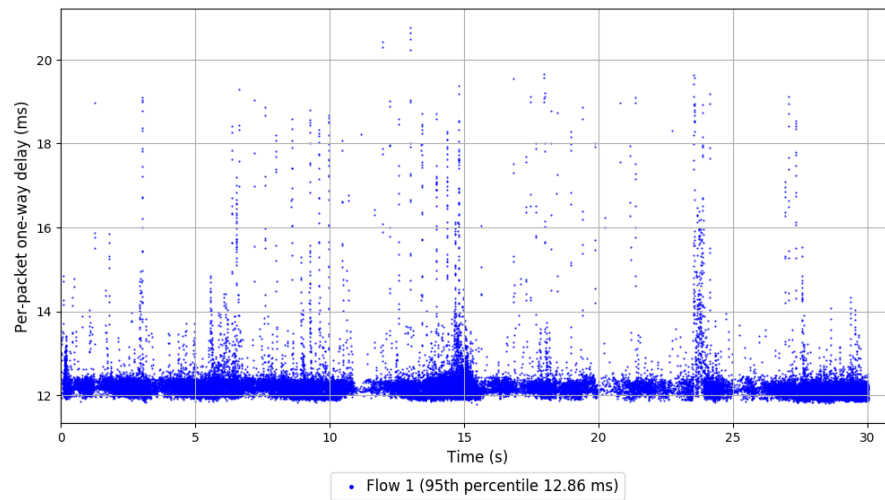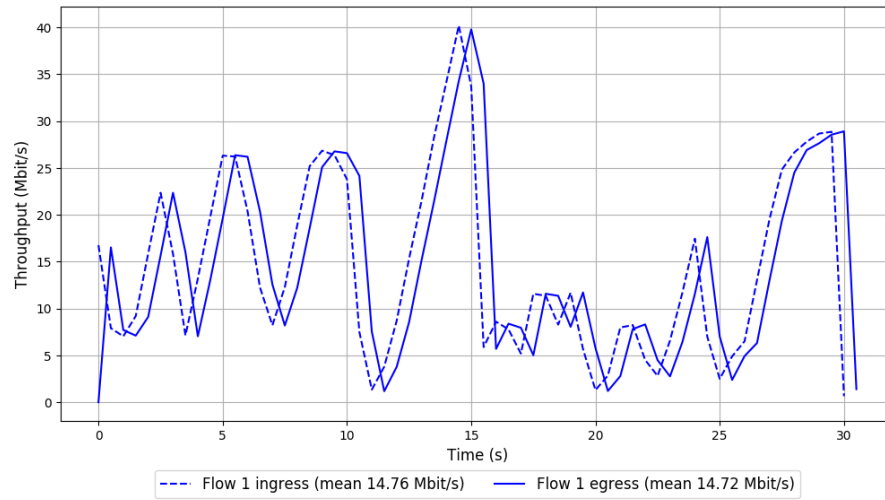## Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-10-02 07:48:34
End at: 2018-10-02 07:49:04
Local clock offset: -2.844 ms
Remote clock offset: -4.716 ms


# Below is generated by plot.py at 2018-10-02 09:00:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 14.72 Mbit/s
95th percentile per-packet one-way delay: 12.855 ms
Loss rate: 0.28%
-- Flow 1:
Average throughput: 14.72 Mbit/s
95th percentile per-packet one-way delay: 12.855 ms
Loss rate: 0.28%
```

Run 2: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 14.76 Mbit/s)   Flow 1 egress (mean 14.72 Mbit/s)
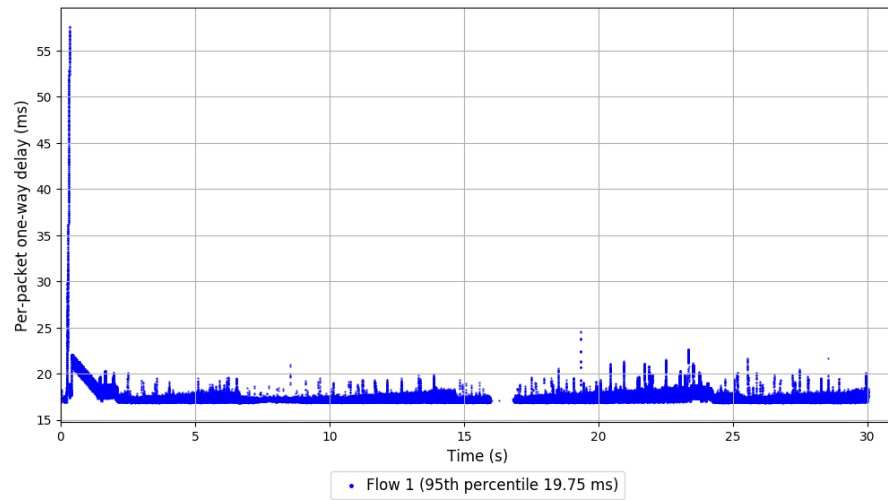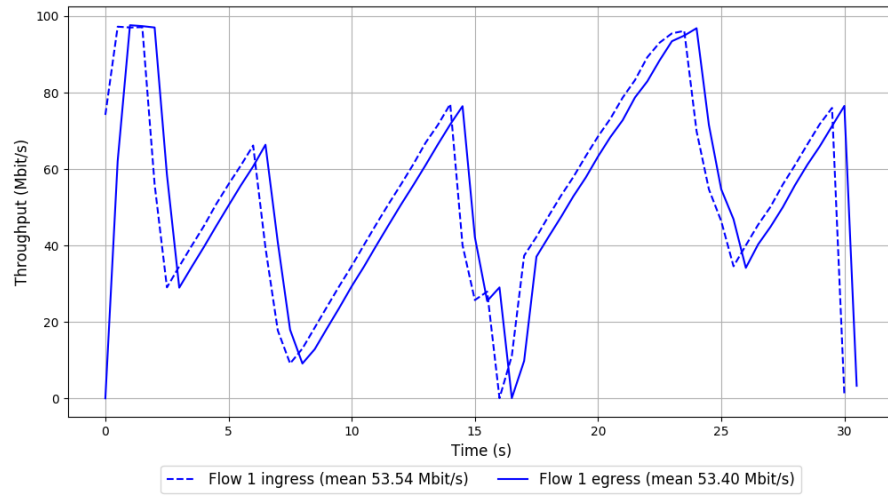

Flow 1 (95th percentile 12.86 ms)

```
Run 3: Statistics of TCP Vegas

Start at: 2018-10-02 08:09:13
End at: 2018-10-02 08:09:43
Local clock offset: -4.105 ms
Remote clock offset: -3.596 ms


# Below is generated by plot.py at 2018-10-02 09:00:39
# Datalink statistics
-- Total of 1 flow:
Average throughput: 53.40 Mbit/s
95th percentile per-packet one-way delay: 19.747 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 53.40 Mbit/s
95th percentile per-packet one-way delay: 19.747 ms
Loss rate: 0.26%
```

Run 3: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 53.54 Mbit/s)   Flow 1 egress (mean 53.40 Mbit/s)

Flow 1 (95th percentile 19.75 ms)

```
Run 4: Statistics of TCP Vegas

Start at: 2018-10-02 08:29:47
End at: 2018-10-02 08:30:17
Local clock offset: -5.497 ms
Remote clock offset: -2.76 ms


# Below is generated by plot.py at 2018-10-02 09:00:39
# Datalink statistics
-- Total of 1 flow:
Average throughput: 20.66 Mbit/s
95th percentile per-packet one-way delay: 20.183 ms
Loss rate: 1.91%
-- Flow 1:
Average throughput: 20.66 Mbit/s
95th percentile per-packet one-way delay: 20.183 ms
Loss rate: 1.91%
```
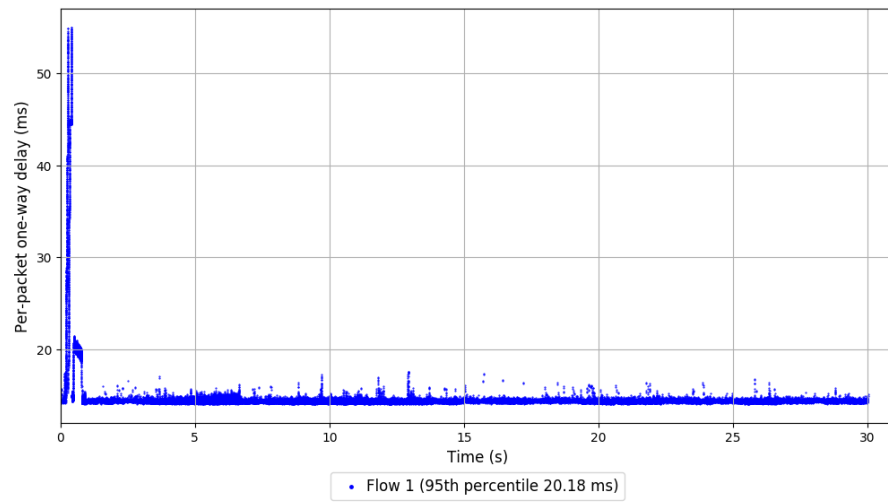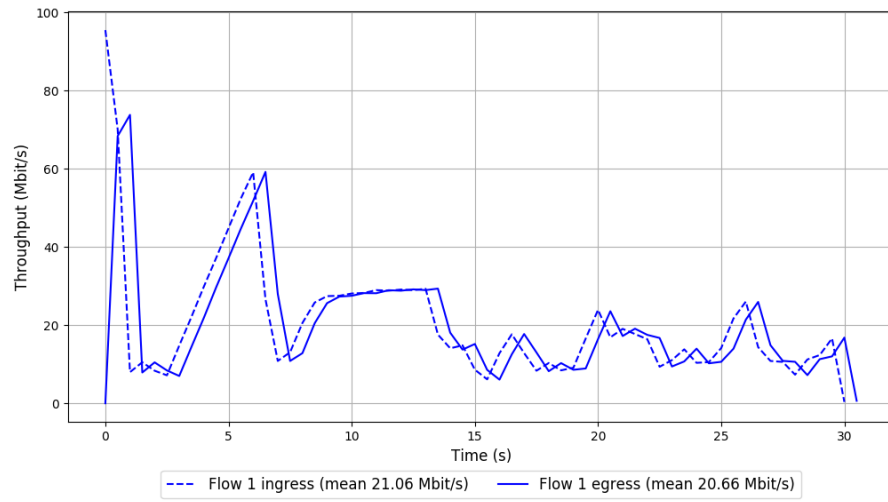
Run 4: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 21.06 Mbit/s)   Flow 1 egress (mean 20.66 Mbit/s)
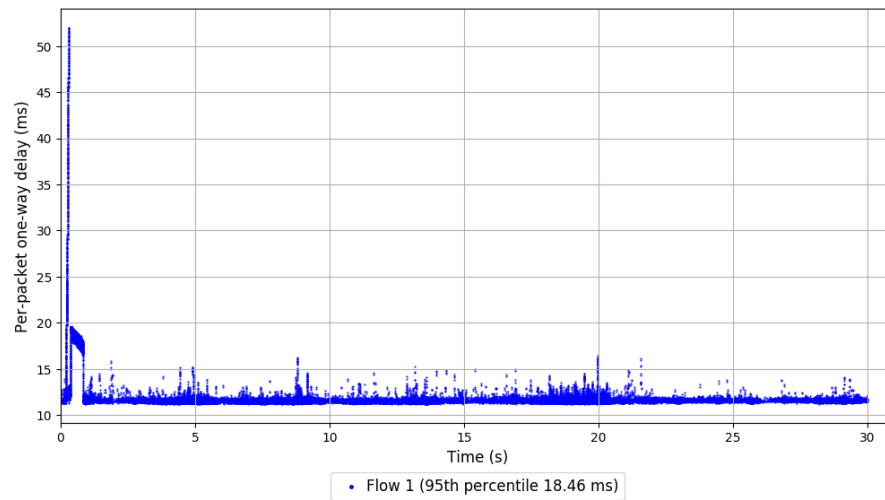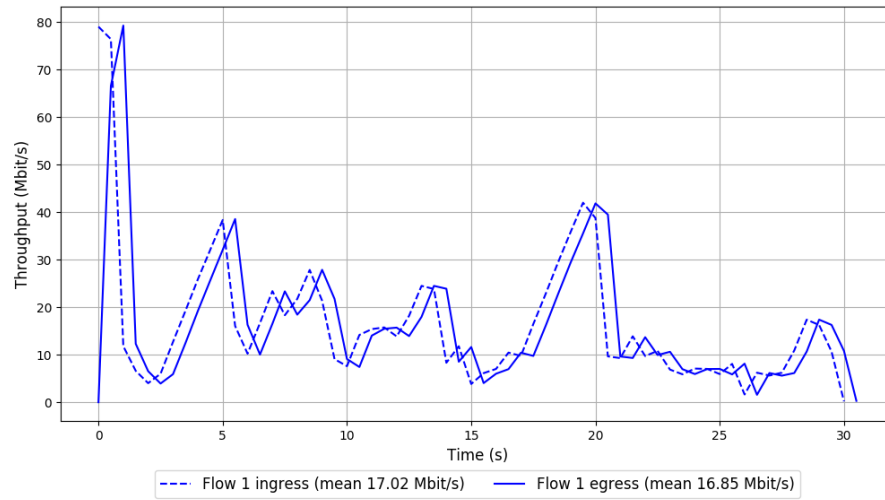

Flow 1 (95th percentile 20.18 ms)

```
Run 5: Statistics of TCP Vegas

Start at: 2018-10-02 08:50:10
End at: 2018-10-02 08:50:40
Local clock offset: 1.782 ms
Remote clock offset: -1.044 ms


# Below is generated by plot.py at 2018-10-02 09:00:39
# Datalink statistics
-- Total of 1 flow:
Average throughput: 16.85 Mbit/s
95th percentile per-packet one-way delay: 18.461 ms
Loss rate: 1.02%
-- Flow 1:
Average throughput: 16.85 Mbit/s
95th percentile per-packet one-way delay: 18.461 ms
Loss rate: 1.02%
```

Run 5: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 17.02 Mbit/s)   Flow 1 egress (mean 16.85 Mbit/s)

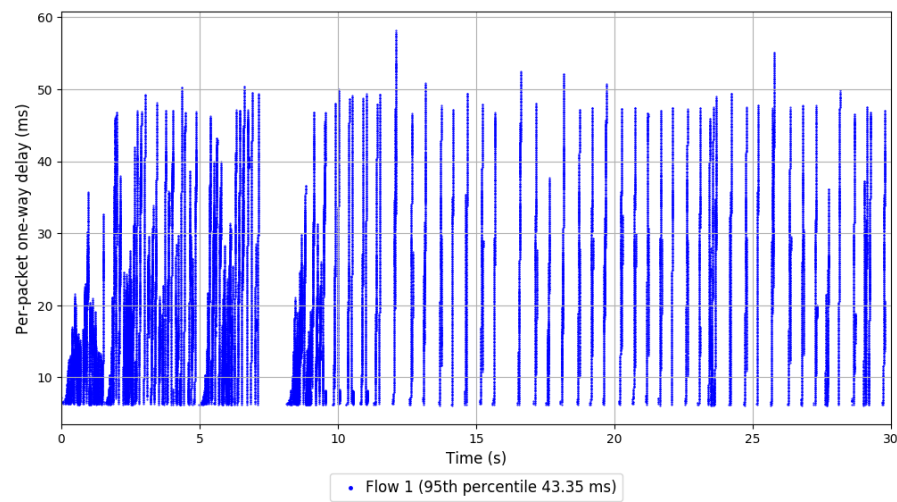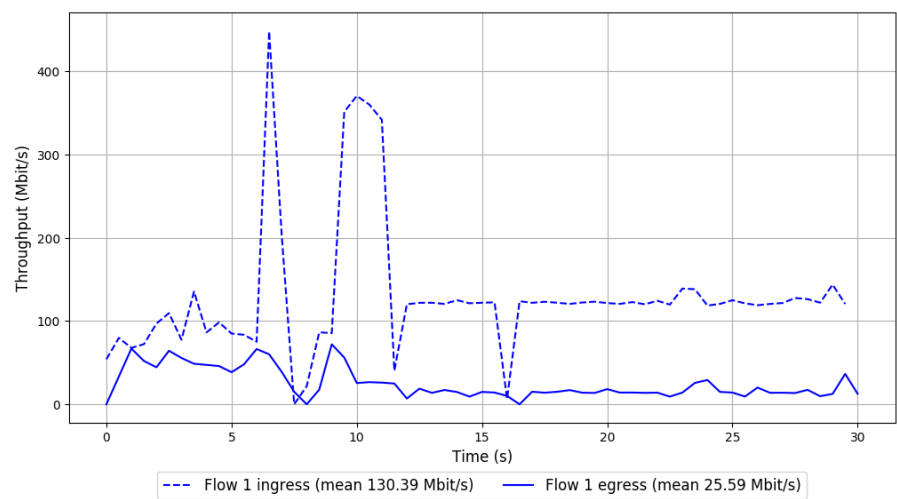Flow 1 (95th percentile 18.46 ms)

154

```
Run 1: Statistics of Verus

Start at: 2018-10-02 07:15:32
End at: 2018-10-02 07:16:02
Local clock offset: 1.562 ms
Remote clock offset: -7.023 ms


# Below is generated by plot.py at 2018-10-02 09:00:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 25.59 Mbit/s
95th percentile per-packet one-way delay: 43.350 ms
Loss rate: 80.37%
-- Flow 1:
Average throughput: 25.59 Mbit/s
95th percentile per-packet one-way delay: 43.350 ms
Loss rate: 80.37%
```
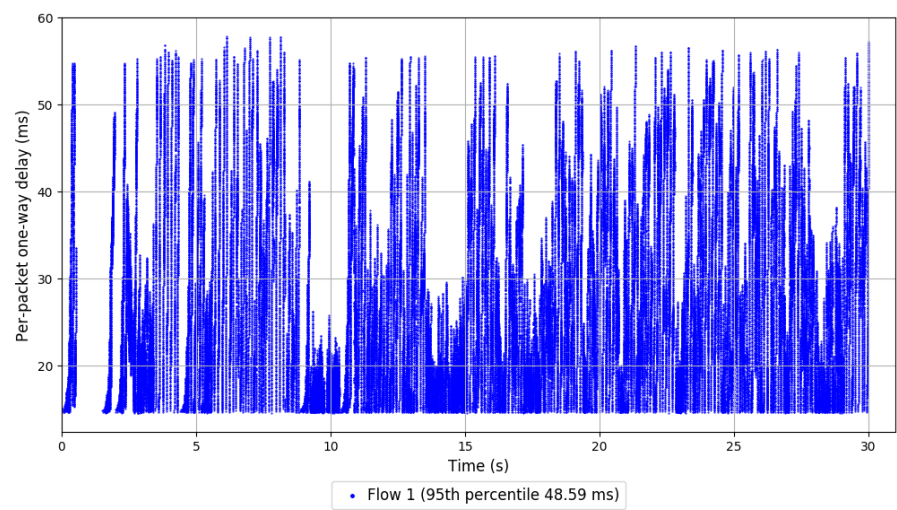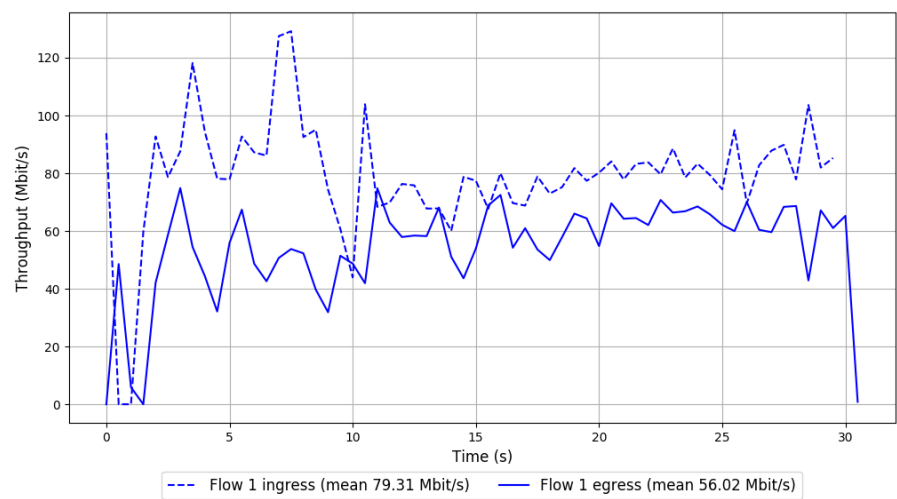
Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2018-10-02 07:35:57
End at: 2018-10-02 07:36:27
Local clock offset: -0.262 ms
Remote clock offset: -3.282 ms


# Below is generated by plot.py at 2018-10-02 09:00:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 56.02 Mbit/s
95th percentile per-packet one-way delay: 48.595 ms
Loss rate: 29.28%
-- Flow 1:
Average throughput: 56.02 Mbit/s
95th percentile per-packet one-way delay: 48.595 ms
Loss rate: 29.28%
```
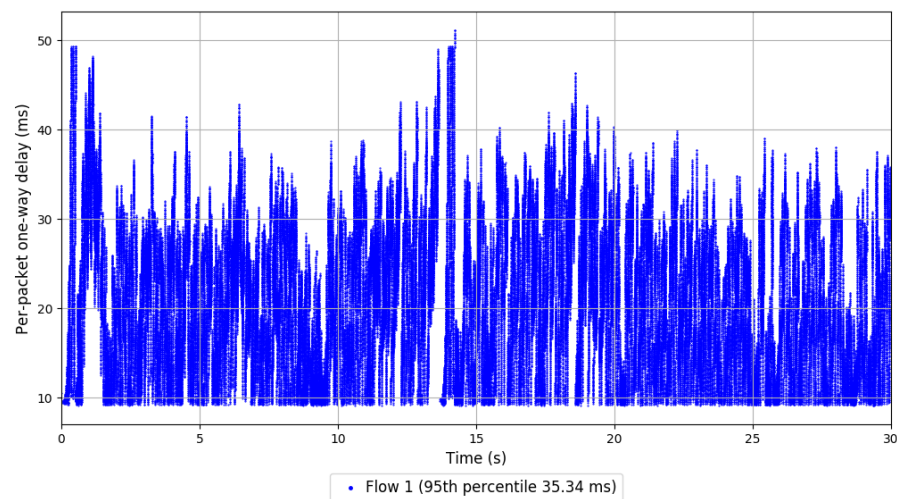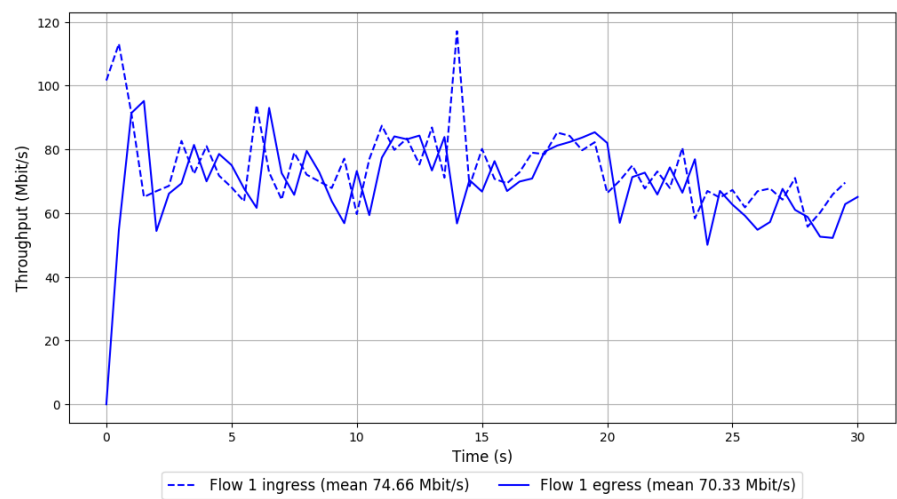
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-10-02 07:56:34
End at: 2018-10-02 07:57:04
Local clock offset: 1.467 ms
Remote clock offset: -2.668 ms


# Below is generated by plot.py at 2018-10-02 09:01:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 70.33 Mbit/s
95th percentile per-packet one-way delay: 35.340 ms
Loss rate: 5.72%
-- Flow 1:
Average throughput: 70.33 Mbit/s
95th percentile per-packet one-way delay: 35.340 ms
Loss rate: 5.72%
```
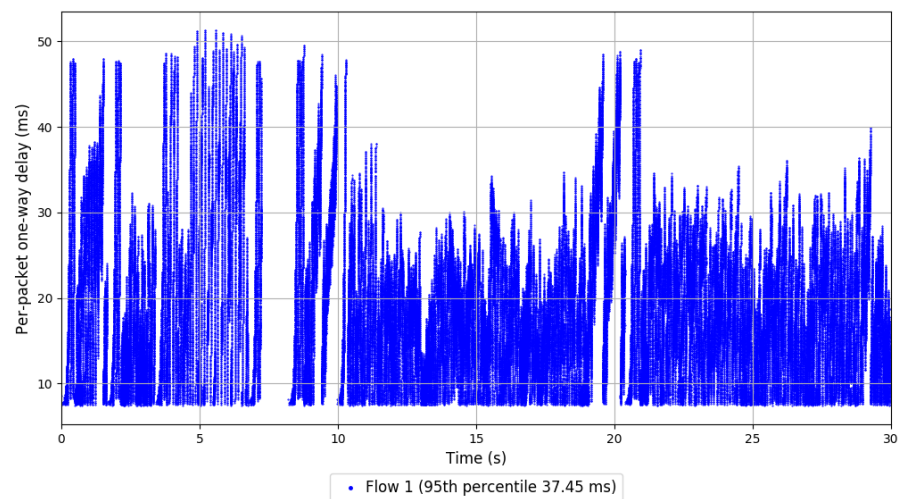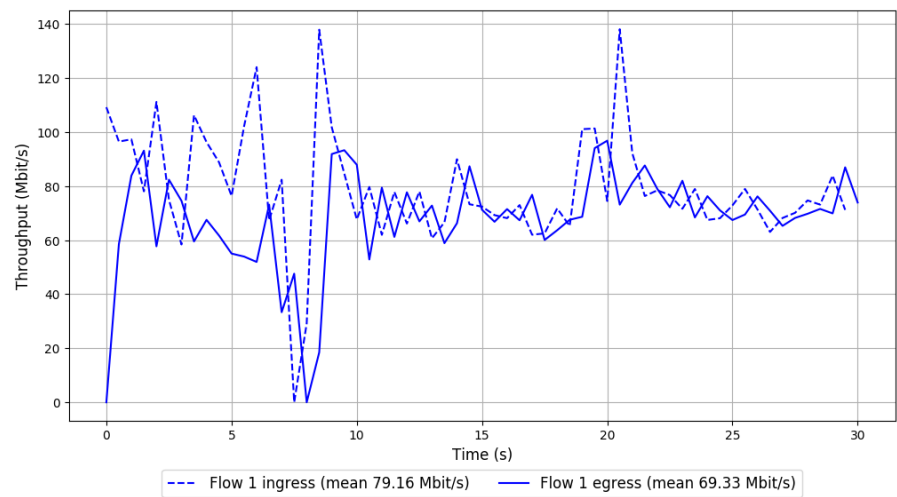
Run 3: Report of Verus — Data Link

```
Run 4: Statistics of Verus

Start at: 2018-10-02 08:17:11
End at: 2018-10-02 08:17:41
Local clock offset: 0.546 ms
Remote clock offset: -3.131 ms


# Below is generated by plot.py at 2018-10-02 09:01:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 69.33 Mbit/s
95th percentile per-packet one-way delay: 37.447 ms
Loss rate: 12.39%
-- Flow 1:
Average throughput: 69.33 Mbit/s
95th percentile per-packet one-way delay: 37.447 ms
Loss rate: 12.39%
```

Run 4: Report of Verus — Data Link

Flow 1 ingress (mean 79.16 Mbit/s)   Flow 1 egress (mean 69.33 Mbit/s)

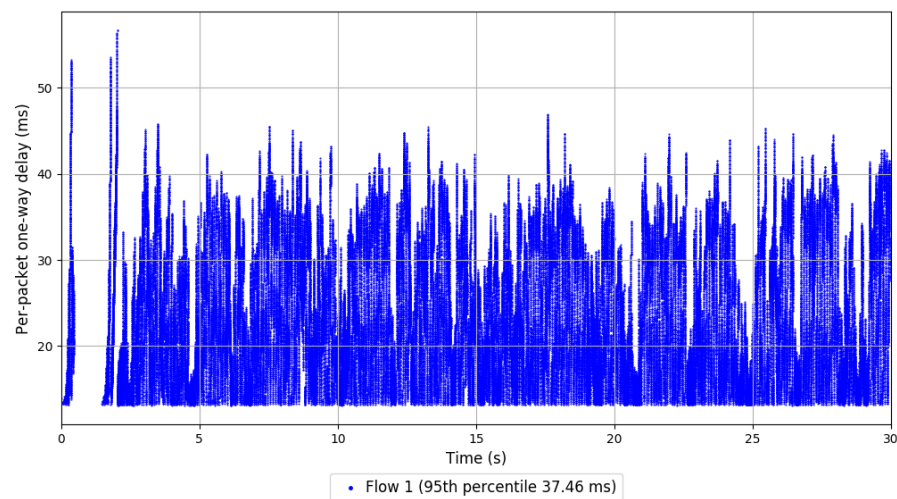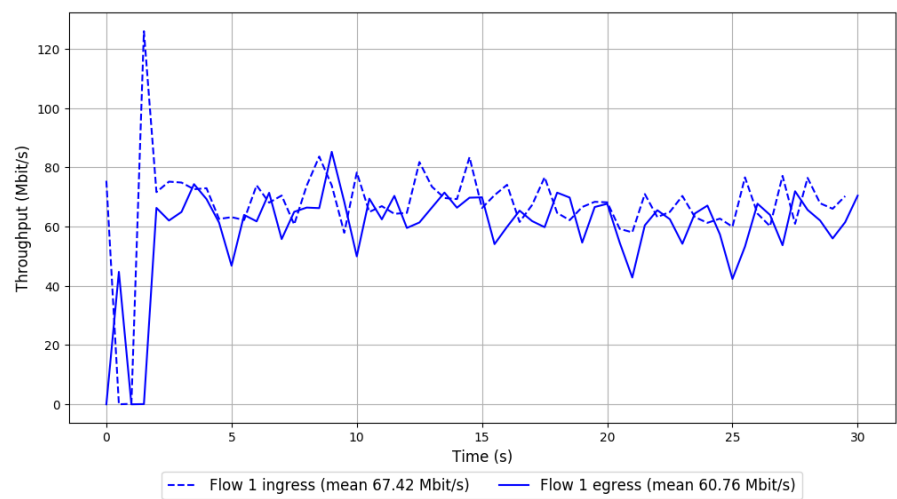

• Flow 1 (95th percentile 37.45 ms)

```
Run 5: Statistics of Verus

Start at: 2018-10-02 08:37:40
End at: 2018-10-02 08:38:11
Local clock offset: -1.48 ms
Remote clock offset: -1.659 ms


# Below is generated by plot.py at 2018-10-02 09:01:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 60.76 Mbit/s
95th percentile per-packet one-way delay: 37.456 ms
Loss rate: 9.83%
-- Flow 1:
Average throughput: 60.76 Mbit/s
95th percentile per-packet one-way delay: 37.456 ms
Loss rate: 9.83%
```

Run 5: Report of Verus — Data Link

Flow 1 ingress (mean 67.42 Mbit/s) ----   Flow 1 egress (mean 60.76 Mbit/s) ——

• Flow 1 (95th percentile 37.46 ms)

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-10-02 07:17:47
End at: 2018-10-02 07:18:17
Local clock offset: 1.609 ms
Remote clock offset: -6.538 ms


# Below is generated by plot.py at 2018-10-02 09:01:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 60.95 Mbit/s
95th percentile per-packet one-way delay: 6.531 ms
Loss rate: 6.62%
-- Flow 1:
Average throughput: 60.95 Mbit/s
95th percentile per-packet one-way delay: 6.531 ms
Loss rate: 6.62%
```
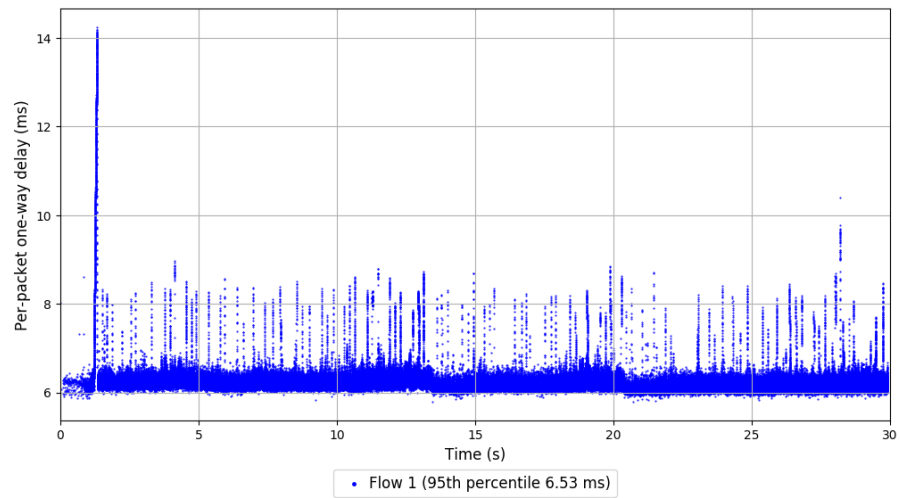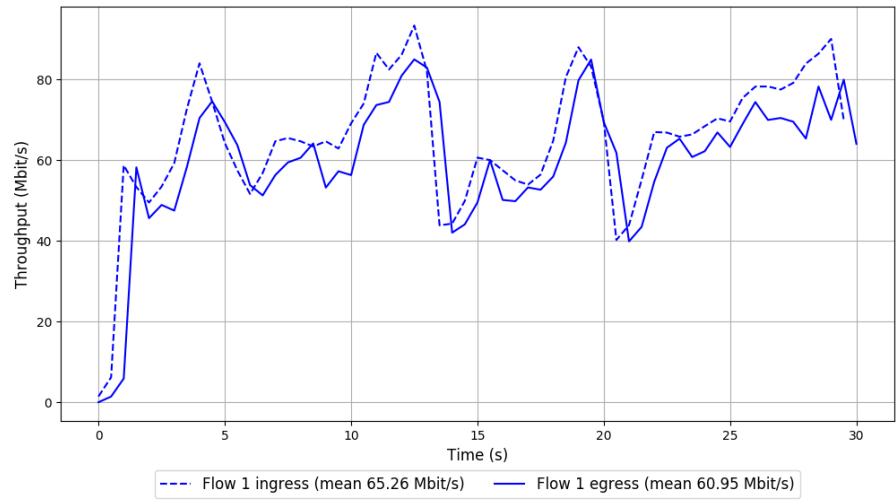
Run 1: Report of PCC-Vivace — Data Link

```
Run 2: Statistics of PCC-Vivace

Start at: 2018-10-02 07:38:13
End at: 2018-10-02 07:38:43
Local clock offset: 1.681 ms
Remote clock offset: -3.446 ms


# Below is generated by plot.py at 2018-10-02 09:01:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 48.31 Mbit/s
95th percentile per-packet one-way delay: 12.845 ms
Loss rate: 8.11%
-- Flow 1:
Average throughput: 48.31 Mbit/s
95th percentile per-packet one-way delay: 12.845 ms
Loss rate: 8.11%
```
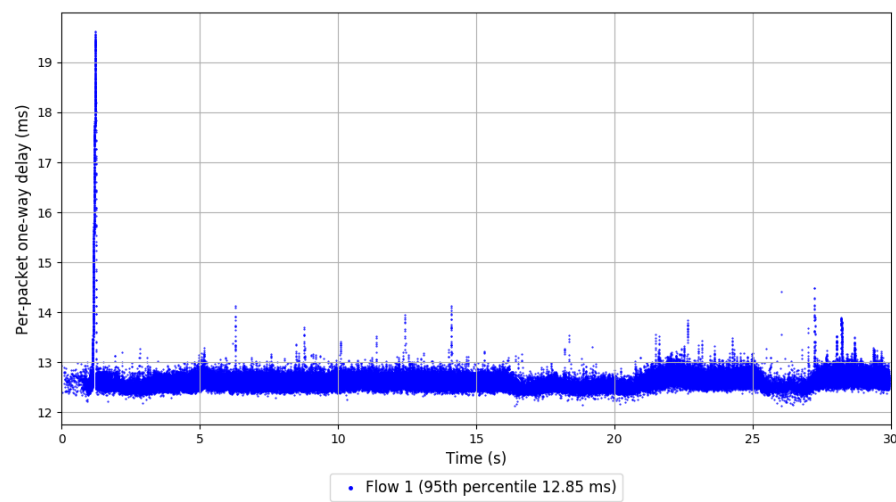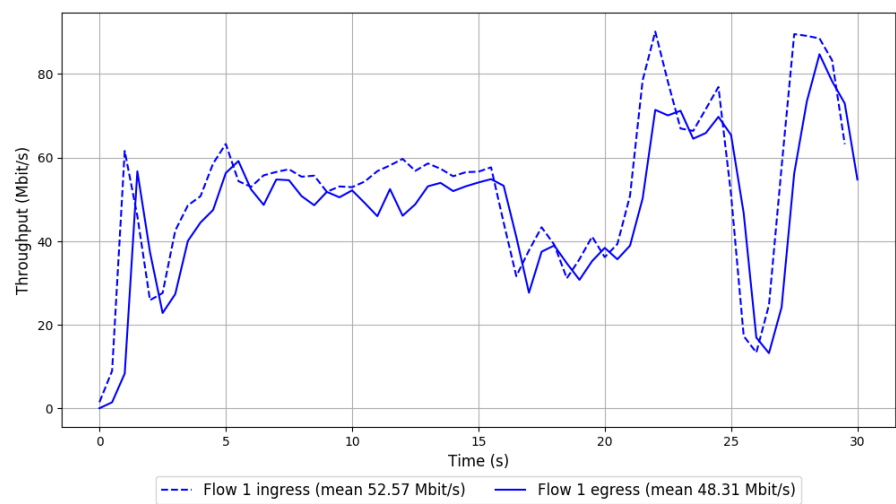
Run 2: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 52.57 Mbit/s)   Flow 1 egress (mean 48.31 Mbit/s)
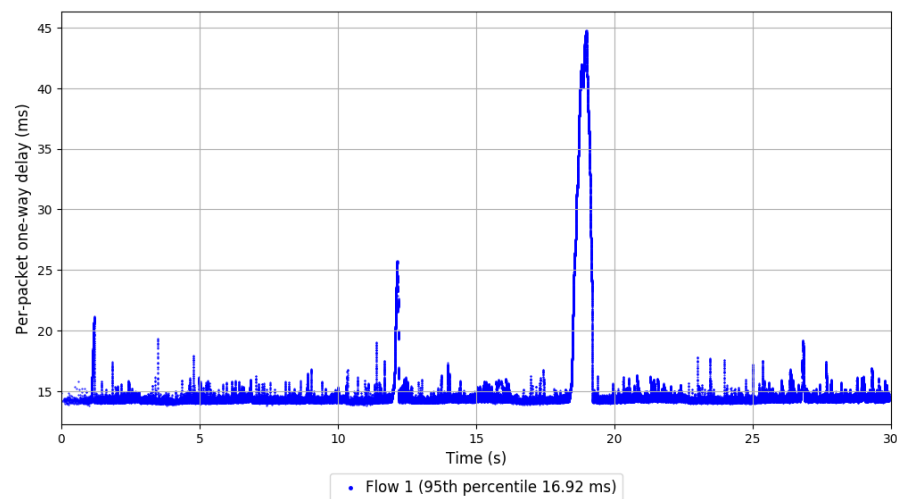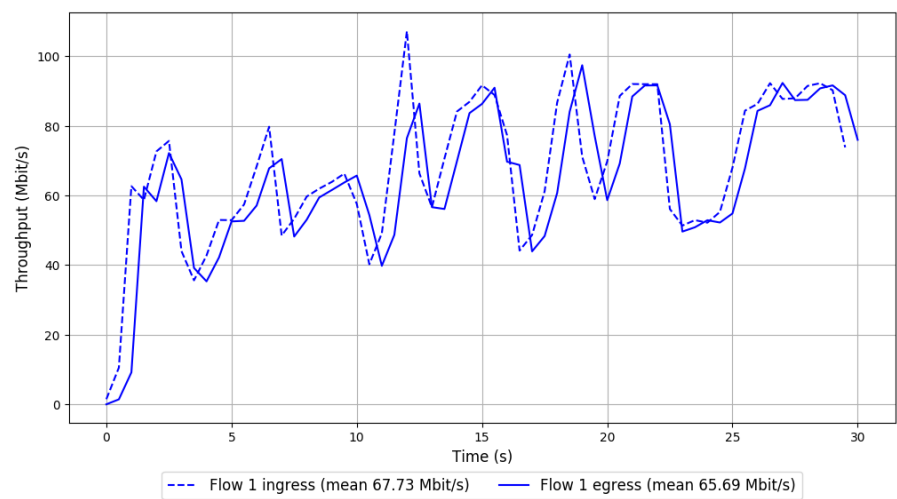

Flow 1 (95th percentile 12.85 ms)

```
Run 3: Statistics of PCC-Vivace

Start at: 2018-10-02 07:58:51
End at: 2018-10-02 07:59:21
Local clock offset: -3.937 ms
Remote clock offset: -3.175 ms


# Below is generated by plot.py at 2018-10-02 09:01:23
# Datalink statistics
-- Total of 1 flow:
Average throughput: 65.69 Mbit/s
95th percentile per-packet one-way delay: 16.917 ms
Loss rate: 3.01%
-- Flow 1:
Average throughput: 65.69 Mbit/s
95th percentile per-packet one-way delay: 16.917 ms
Loss rate: 3.01%
```

Run 3: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 67.73 Mbit/s) — Flow 1 egress (mean 65.69 Mbit/s)

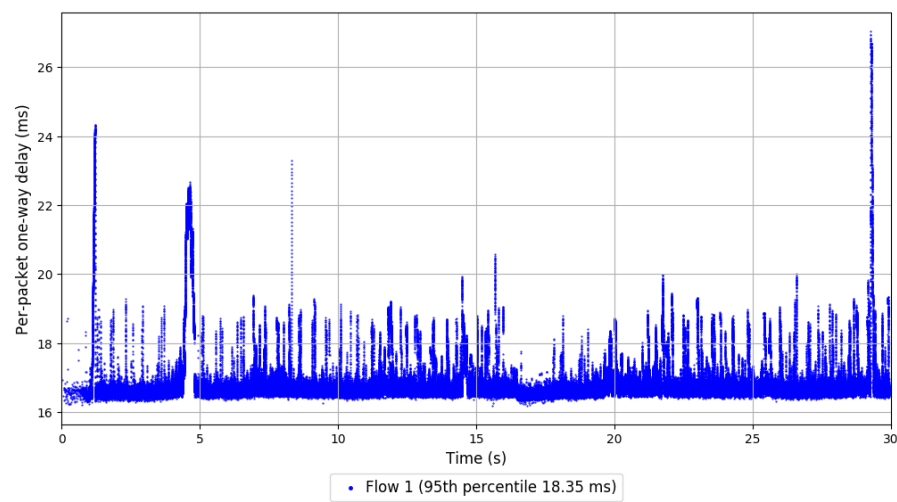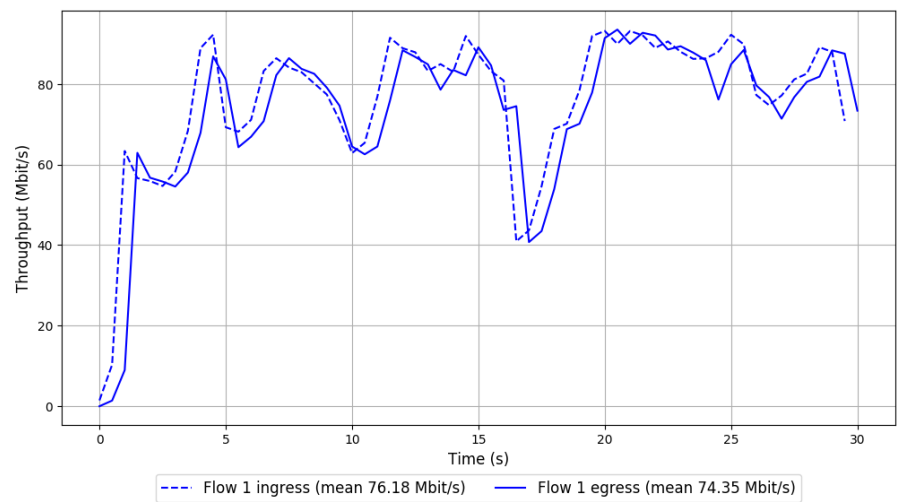

• Flow 1 (95th percentile 16.92 ms)

```
Run 4: Statistics of PCC-Vivace

Start at: 2018-10-02 08:19:27
End at: 2018-10-02 08:19:57
Local clock offset: -3.708 ms
Remote clock offset: -3.725 ms


# Below is generated by plot.py at 2018-10-02 09:01:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 74.35 Mbit/s
95th percentile per-packet one-way delay: 18.346 ms
Loss rate: 2.40%
-- Flow 1:
Average throughput: 74.35 Mbit/s
95th percentile per-packet one-way delay: 18.346 ms
Loss rate: 2.40%
```

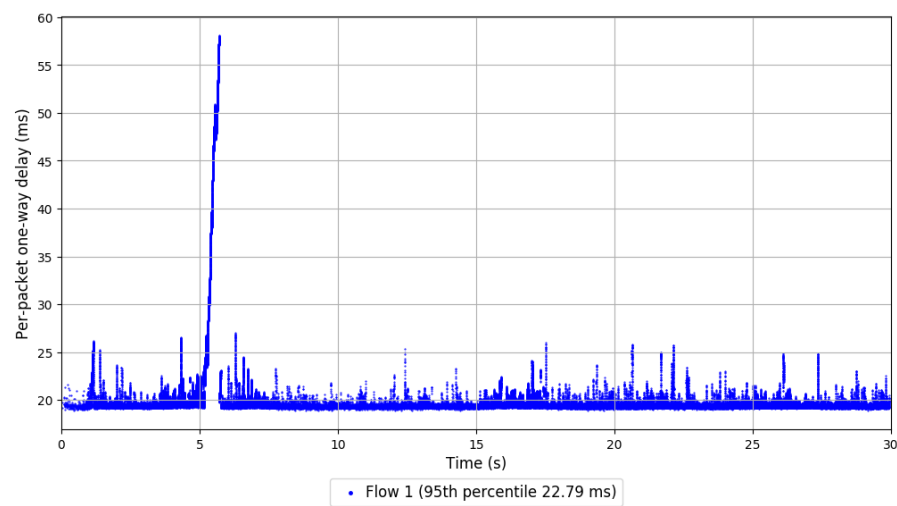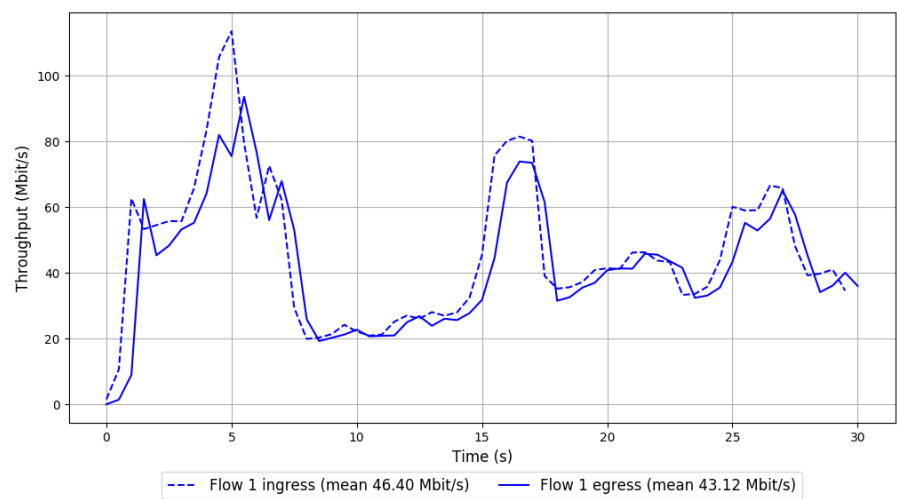## Run 4: Report of PCC-Vivace — Data Link

```
Run 5: Statistics of PCC-Vivace

Start at: 2018-10-02 08:39:58
End at: 2018-10-02 08:40:28
Local clock offset: -6.014 ms
Remote clock offset: -0.218 ms


# Below is generated by plot.py at 2018-10-02 09:01:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 43.12 Mbit/s
95th percentile per-packet one-way delay: 22.788 ms
Loss rate: 7.06%
-- Flow 1:
Average throughput: 43.12 Mbit/s
95th percentile per-packet one-way delay: 22.788 ms
Loss rate: 7.06%
```

Run 5: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 46.40 Mbit/s) — Flow 1 egress (mean 43.12 Mbit/s)

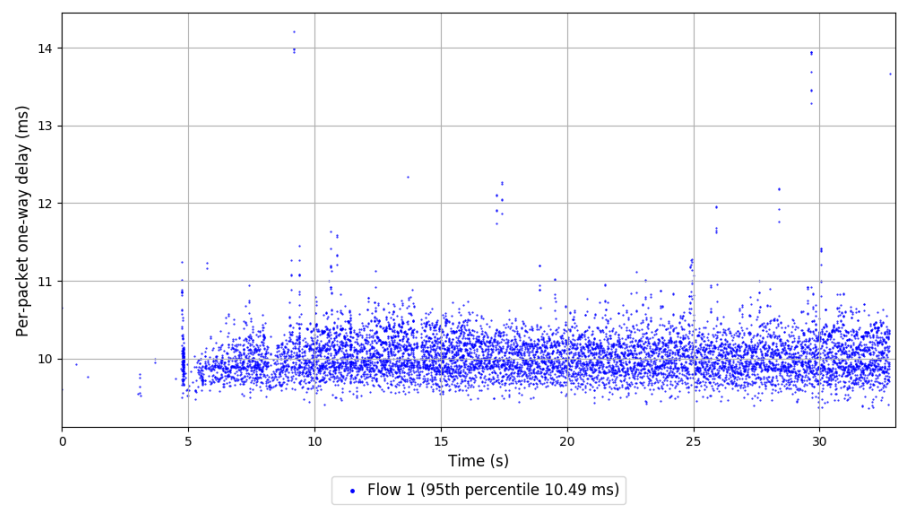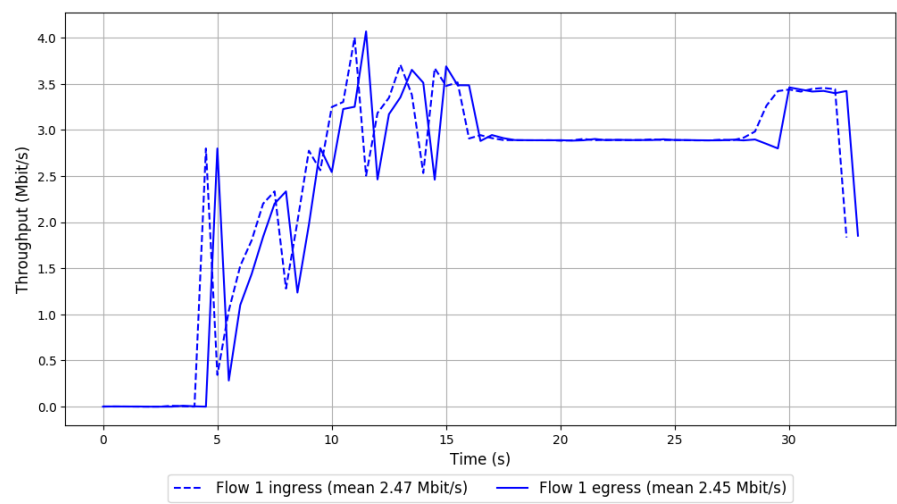

• Flow 1 (95th percentile 22.79 ms)

```
Run 1: Statistics of WebRTC media

Start at: 2018-10-02 07:20:07
End at: 2018-10-02 07:20:37
Local clock offset: 0.616 ms
Remote clock offset: -6.901 ms


# Below is generated by plot.py at 2018-10-02 09:01:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.45 Mbit/s
95th percentile per-packet one-way delay: 10.488 ms
Loss rate: 0.53%
-- Flow 1:
Average throughput: 2.45 Mbit/s
95th percentile per-packet one-way delay: 10.488 ms
Loss rate: 0.53%
```

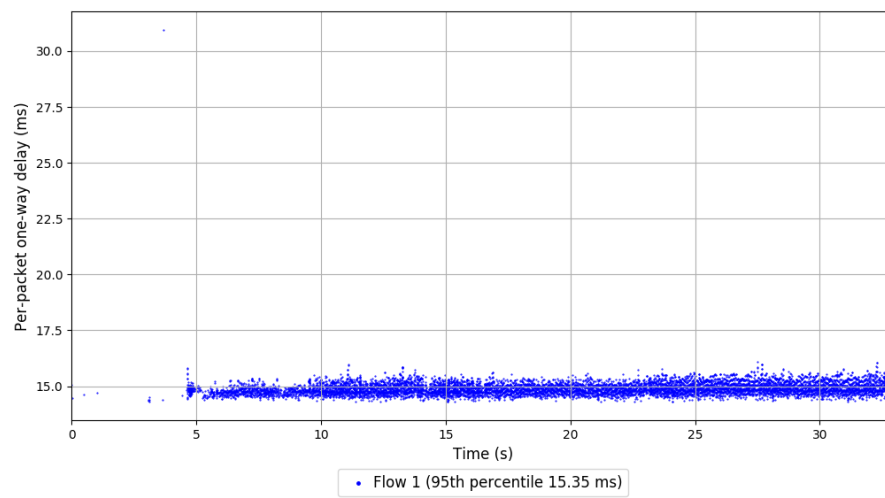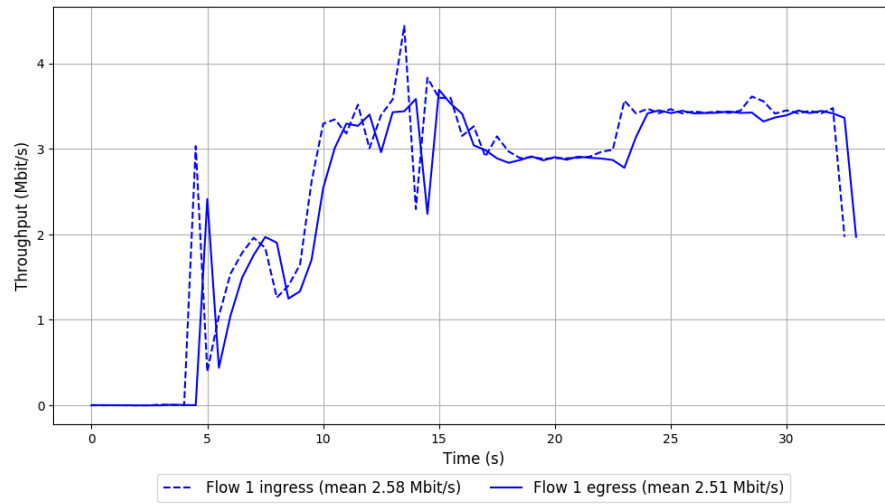Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2018-10-02 07:40:39
End at: 2018-10-02 07:41:09
Local clock offset: -0.706 ms
Remote clock offset: -3.608 ms


# Below is generated by plot.py at 2018-10-02 09:01:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.51 Mbit/s
95th percentile per-packet one-way delay: 15.345 ms
Loss rate: 2.81%
-- Flow 1:
Average throughput: 2.51 Mbit/s
95th percentile per-packet one-way delay: 15.345 ms
Loss rate: 2.81%
```

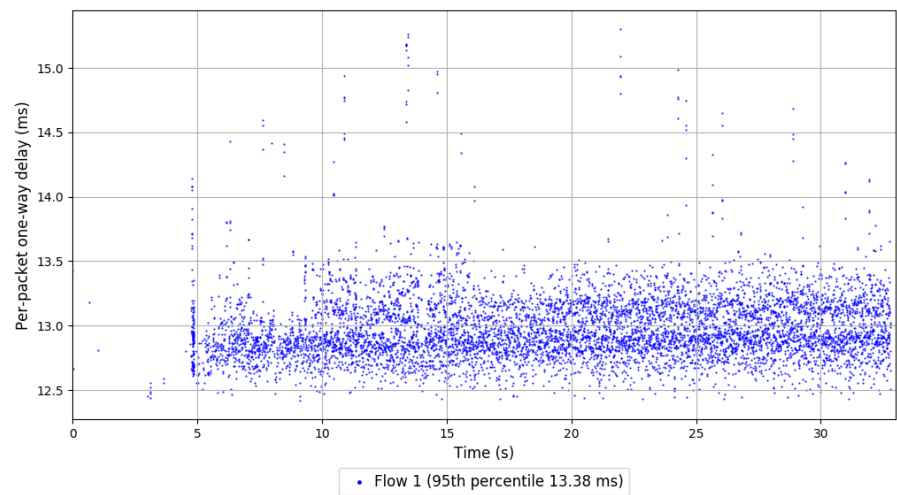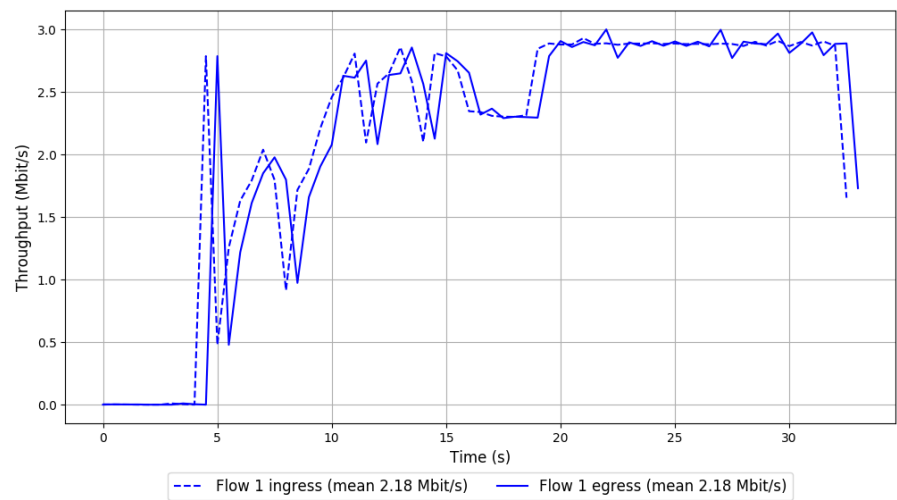Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-10-02 08:01:11
End at: 2018-10-02 08:01:41
Local clock offset: 0.553 ms
Remote clock offset: -3.246 ms


# Below is generated by plot.py at 2018-10-02 09:01:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.18 Mbit/s
95th percentile per-packet one-way delay: 13.383 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 2.18 Mbit/s
95th percentile per-packet one-way delay: 13.383 ms
Loss rate: 0.06%
```

Run 3: Report of WebRTC media — Data Link

Flow 1 ingress (mean 2.18 Mbit/s) — Flow 1 egress (mean 2.18 Mbit/s)

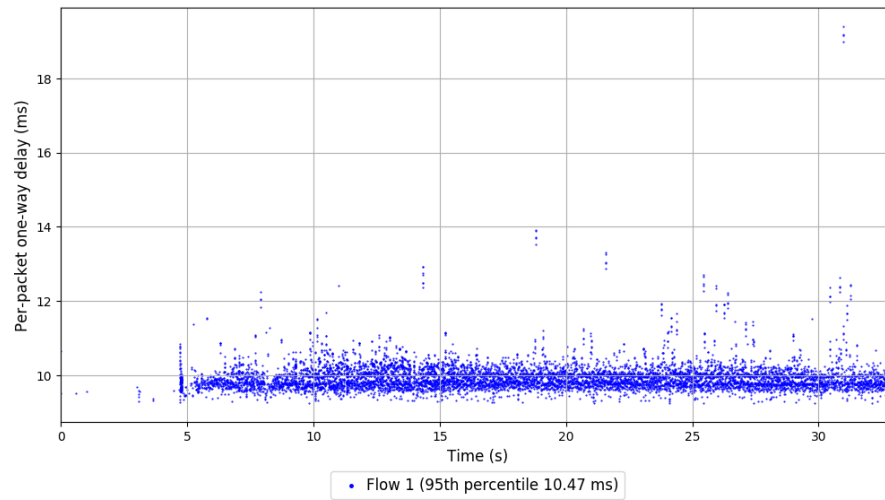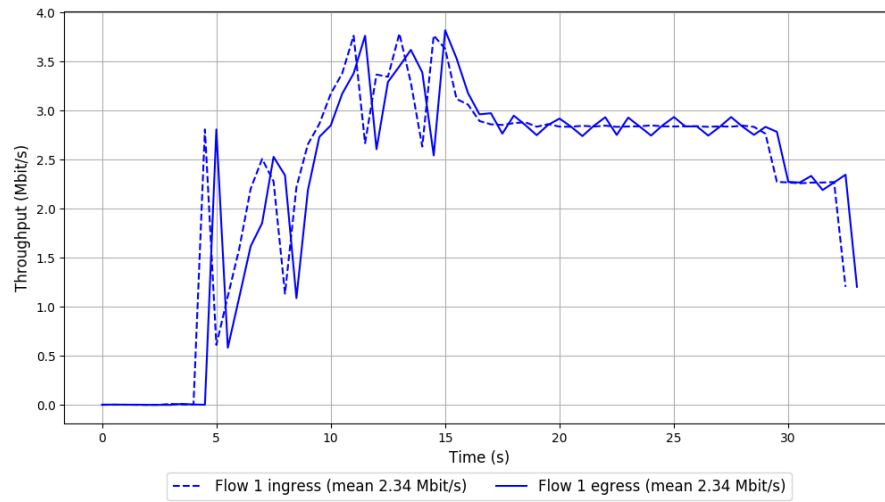

• Flow 1 (95th percentile 13.38 ms)

```
Run 4: Statistics of WebRTC media

Start at: 2018-10-02 08:21:50
End at: 2018-10-02 08:22:20
Local clock offset: -1.397 ms
Remote clock offset: -3.102 ms


# Below is generated by plot.py at 2018-10-02 09:01:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.34 Mbit/s
95th percentile per-packet one-way delay: 10.466 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 2.34 Mbit/s
95th percentile per-packet one-way delay: 10.466 ms
Loss rate: 0.36%
```

Run 4: Report of WebRTC media — Data Link

```
Run 5: Statistics of WebRTC media

Start at: 2018-10-02 08:42:19
End at: 2018-10-02 08:42:50
Local clock offset: 1.368 ms
Remote clock offset: -0.494 ms


# Below is generated by plot.py at 2018-10-02 09:01:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.21 Mbit/s
95th percentile per-packet one-way delay: 15.478 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 2.21 Mbit/s
95th percentile per-packet one-way delay: 15.478 ms
Loss rate: 0.26%
```

Run 5: Report of WebRTC media — Data Link