Pantheon Report

Generated at 2018-10-26 21:08:06 (UTC).

Data path: GCE Iowa on ens4 (*remote*) →GCE London on ens4 (*local*).

Repeated the test of 18 congestion control schemes 5 times.

Each test lasted for 30 seconds running 1 flow.

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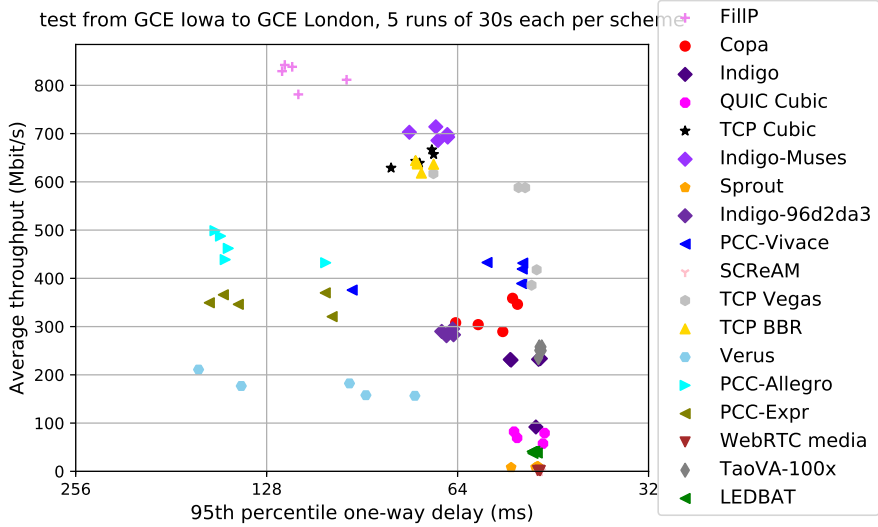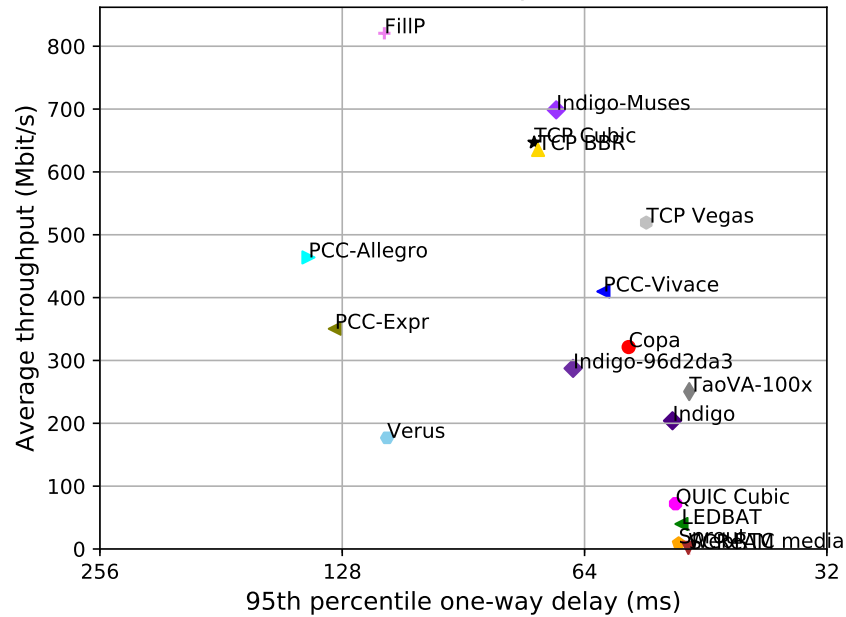
```
System info:
Linux 4.15.0-1021-gcp
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

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 GCE Iowa to GCE London, 5 runs of 30s each per scheme
(mean of all runs by scheme)

test from GCE Iowa to GCE London, 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	634.99	73.10	0.37
Copa	5	321.33	56.42	0.25
TCP Cubic	5	646.82	73.92	0.37
FillP	5	820.57	113.47	1.48
Indigo	5	204.03	49.77	0.34
Indigo-96d2da3	4	287.37	66.14	0.33
LEDBAT	5	39.79	48.51	0.64
Indigo-Muses	5	698.72	69.41	0.35
PCC-Allegro	5	463.93	140.99	1.51
PCC-Expr	5	350.41	130.74	3.37
QUIC Cubic	4	72.08	49.33	0.47
SCReAM	5	0.22	47.47	0.29
Sprout	5	9.05	48.90	0.31
TaoVA-100x	5	250.45	47.44	0.34
TCP Vegas	5	519.32	53.64	0.26
Verus	5	176.88	112.60	0.93
PCC-Vivace	5	409.74	60.65	0.38
WebRTC media	5	1.77	47.57	0.38

```
Run 1: Statistics of TCP BBR

Start at: 2018-10-26 17:30:05
End at: 2018-10-26 17:30:35
Local clock offset: 0.121 ms
Remote clock offset: 0.02 ms


# Below is generated by plot.py at 2018-10-26 19:56:31
# Datalink statistics
-- Total of 1 flow:
Average throughput: 618.16 Mbit/s
95th percentile per-packet one-way delay: 72.992 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 618.16 Mbit/s
95th percentile per-packet one-way delay: 72.992 ms
Loss rate: 0.38%
```
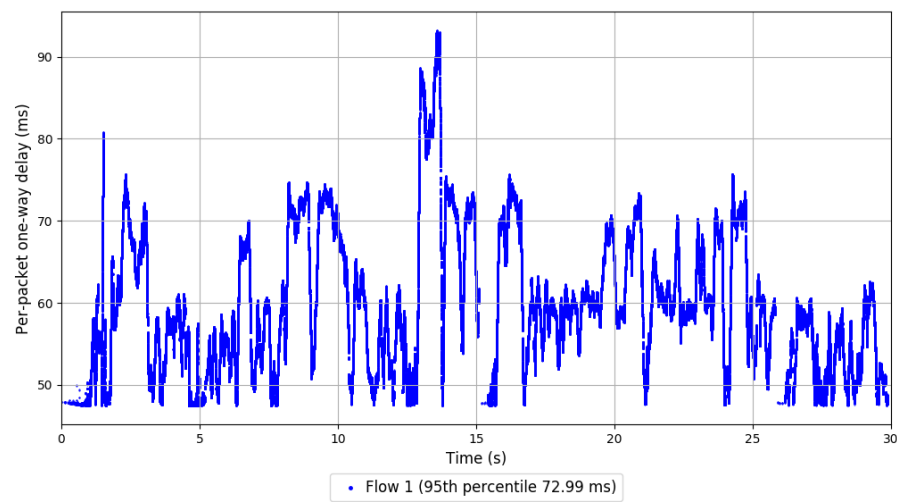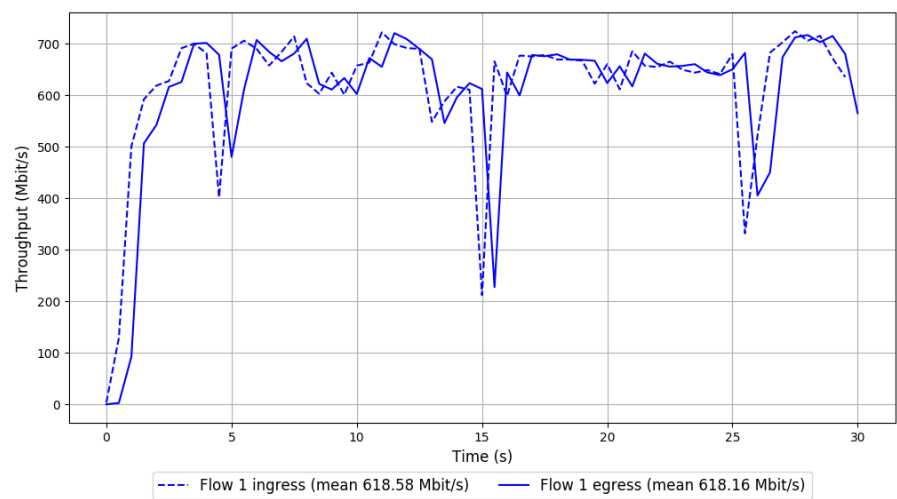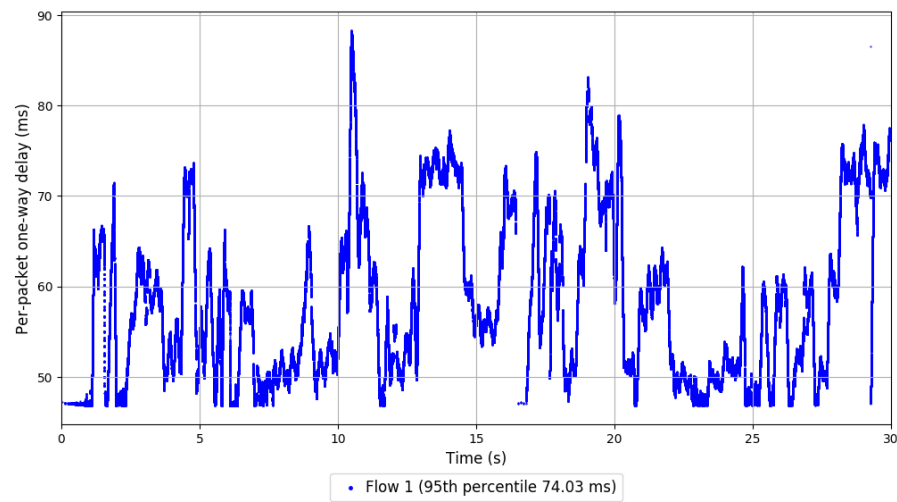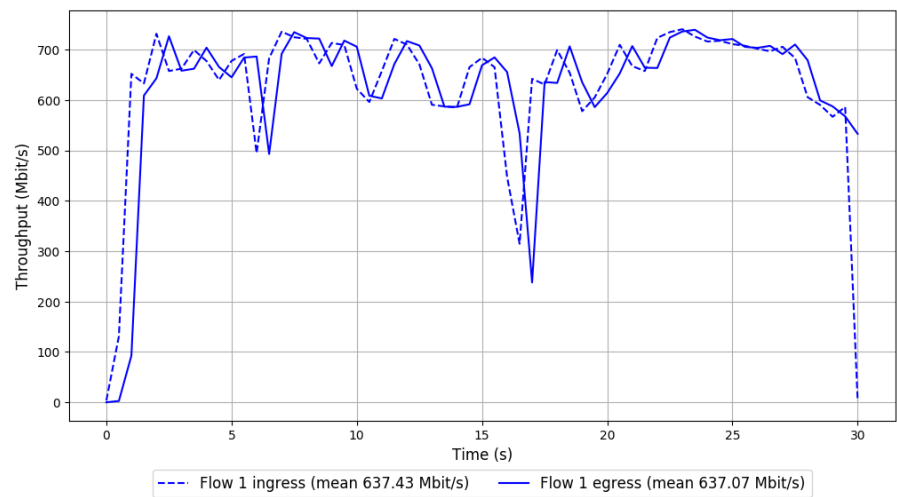
Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2018-10-26 17:55:23
End at: 2018-10-26 17:55:53
Local clock offset: -0.562 ms
Remote clock offset: -0.008 ms


# Below is generated by plot.py at 2018-10-26 19:56:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 637.07 Mbit/s
95th percentile per-packet one-way delay: 74.027 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 637.07 Mbit/s
95th percentile per-packet one-way delay: 74.027 ms
Loss rate: 0.37%
```
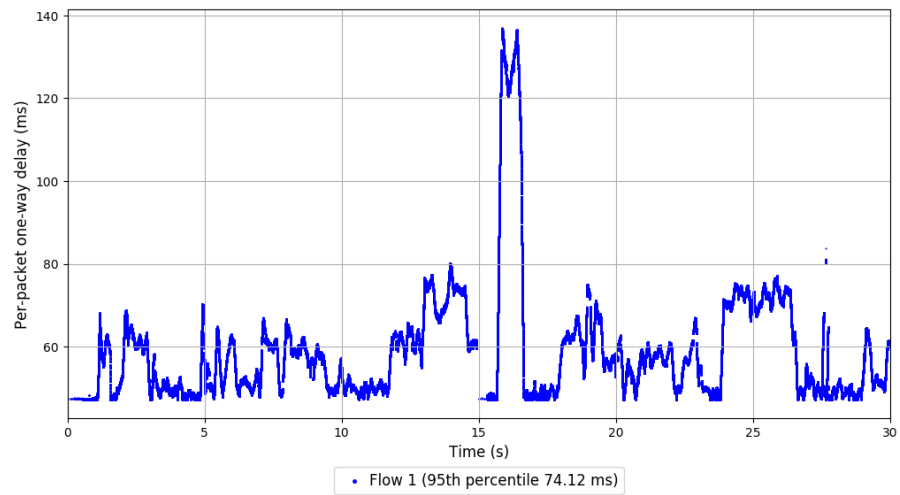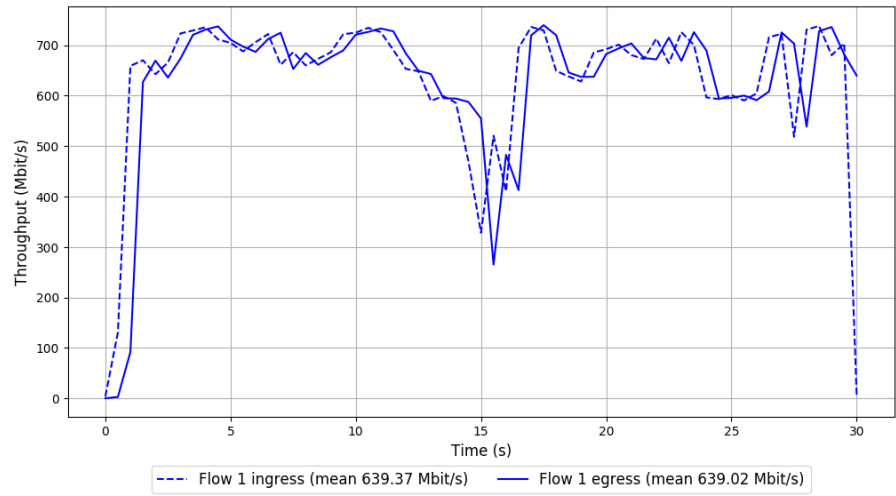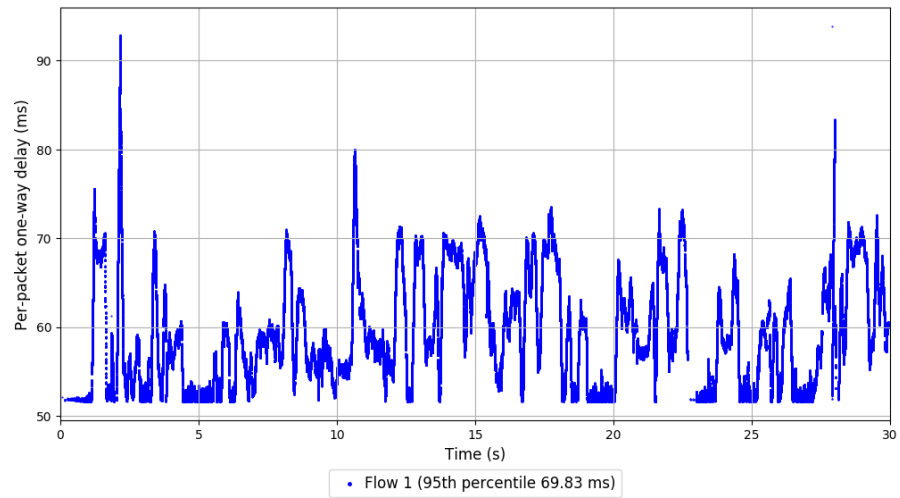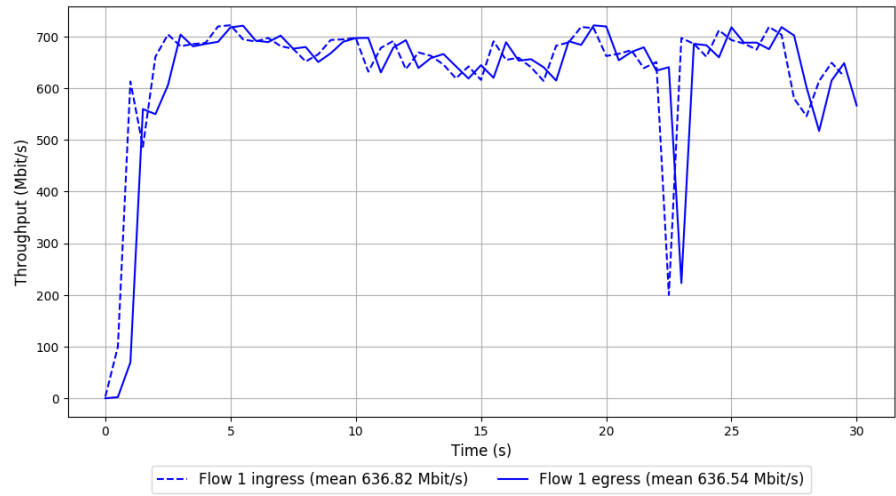
Run 2: Report of TCP BBR — Data Link

Flow 1 ingress (mean 637.43 Mbit/s) ----   Flow 1 egress (mean 637.07 Mbit/s) ——

• Flow 1 (95th percentile 74.03 ms)

```
Run 3: Statistics of TCP BBR

Start at: 2018-10-26 18:21:11
End at: 2018-10-26 18:21:41
Local clock offset: -0.139 ms
Remote clock offset: 0.01 ms


# Below is generated by plot.py at 2018-10-26 19:56:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 639.02 Mbit/s
95th percentile per-packet one-way delay: 74.125 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 639.02 Mbit/s
95th percentile per-packet one-way delay: 74.125 ms
Loss rate: 0.37%
```
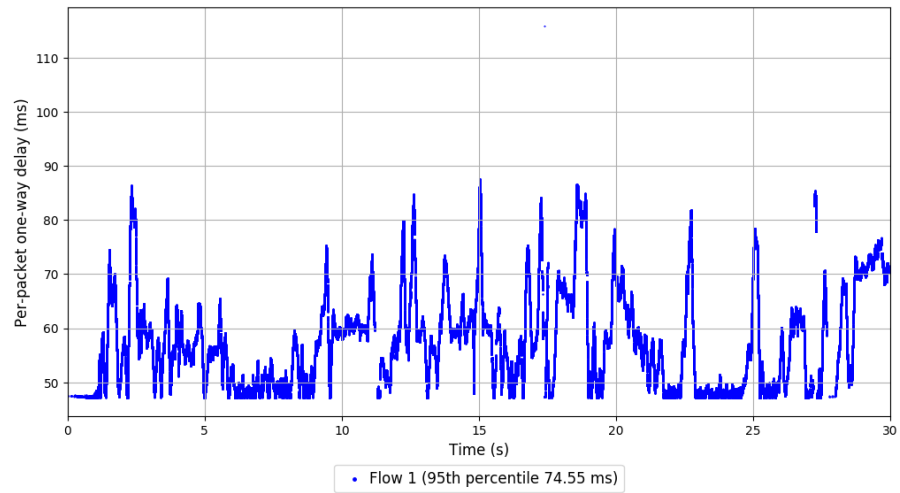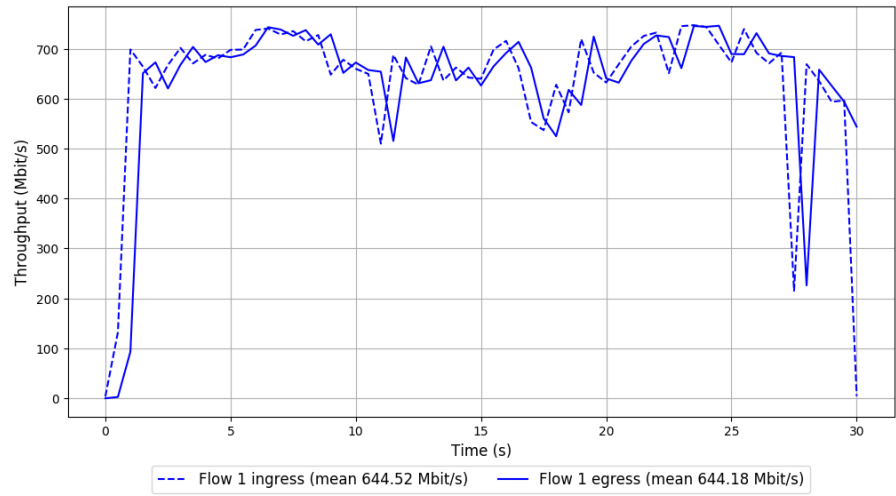
Run 3: Report of TCP BBR — Data Link

```
Run 4: Statistics of TCP BBR

Start at: 2018-10-26 18:46:55
End at: 2018-10-26 18:47:25
Local clock offset: -0.083 ms
Remote clock offset: -0.065 ms


# Below is generated by plot.py at 2018-10-26 19:56:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 636.54 Mbit/s
95th percentile per-packet one-way delay: 69.825 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 636.54 Mbit/s
95th percentile per-packet one-way delay: 69.825 ms
Loss rate: 0.37%
```

Run 4: Report of TCP BBR — Data Link

```
Run 5: Statistics of TCP BBR

Start at: 2018-10-26 19:12:32
End at: 2018-10-26 19:13:02
Local clock offset: -0.122 ms
Remote clock offset: -0.126 ms


# Below is generated by plot.py at 2018-10-26 19:56:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 644.18 Mbit/s
95th percentile per-packet one-way delay: 74.546 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 644.18 Mbit/s
95th percentile per-packet one-way delay: 74.546 ms
Loss rate: 0.37%
```

Run 5: Report of TCP BBR — Data Link

```
Run 1: Statistics of Copa

Start at: 2018-10-26 17:46:16
End at: 2018-10-26 17:46:46
Local clock offset: -0.185 ms
Remote clock offset: 0.064 ms

# Below is generated by plot.py at 2018-10-26 19:57:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 358.65 Mbit/s
95th percentile per-packet one-way delay: 52.422 ms
Loss rate: 0.31%
-- Flow 1:
Average throughput: 358.65 Mbit/s
95th percentile per-packet one-way delay: 52.422 ms
Loss rate: 0.31%
```
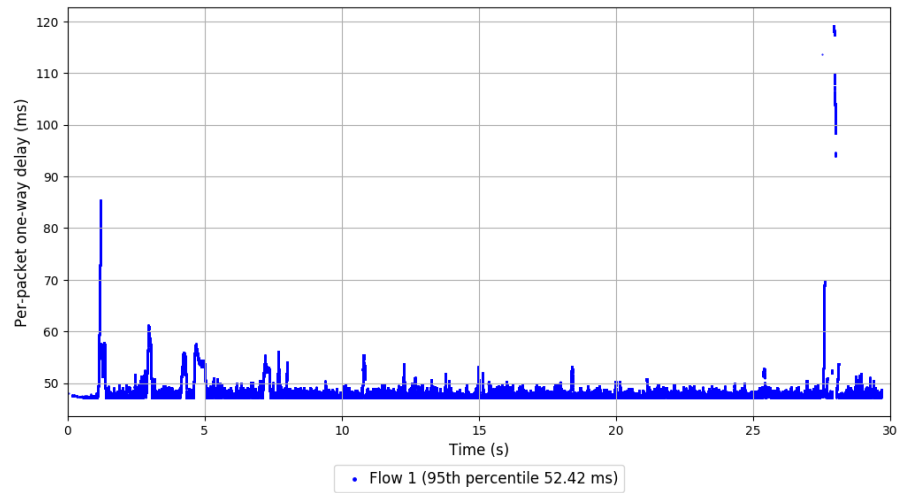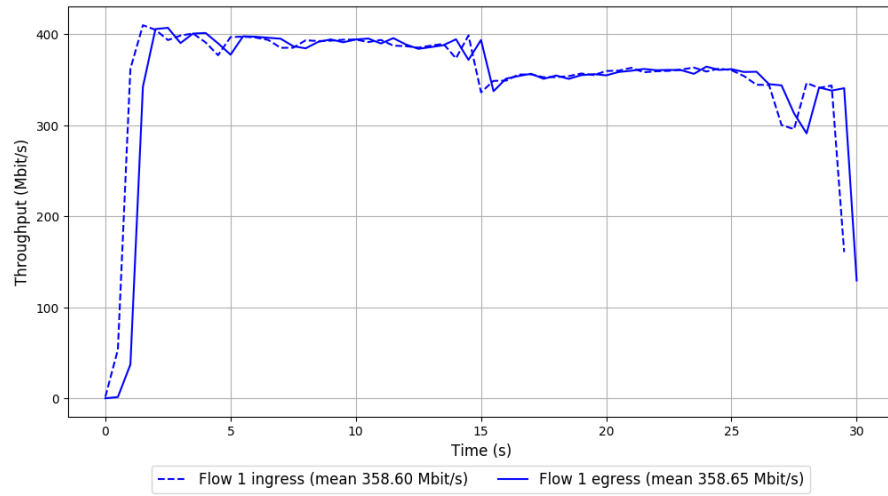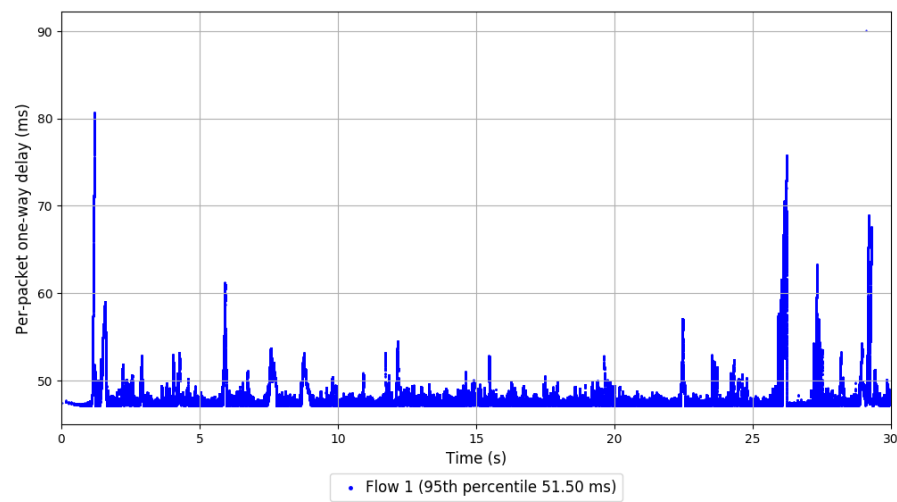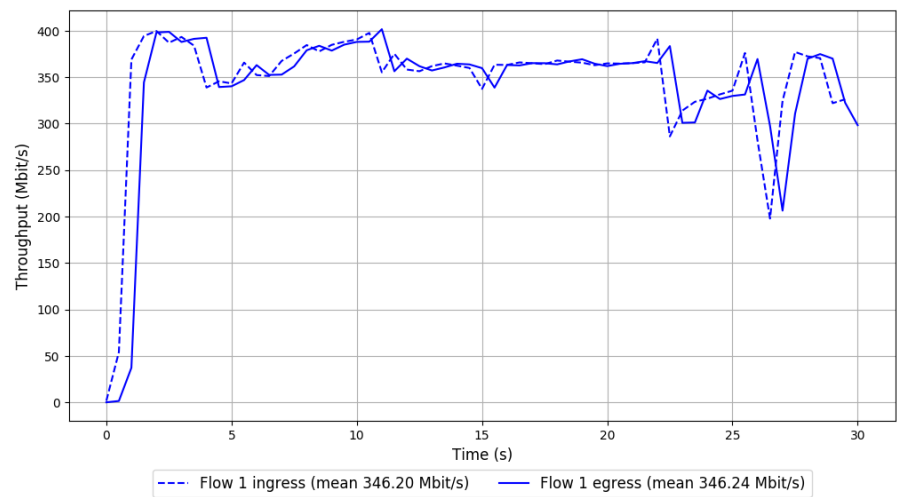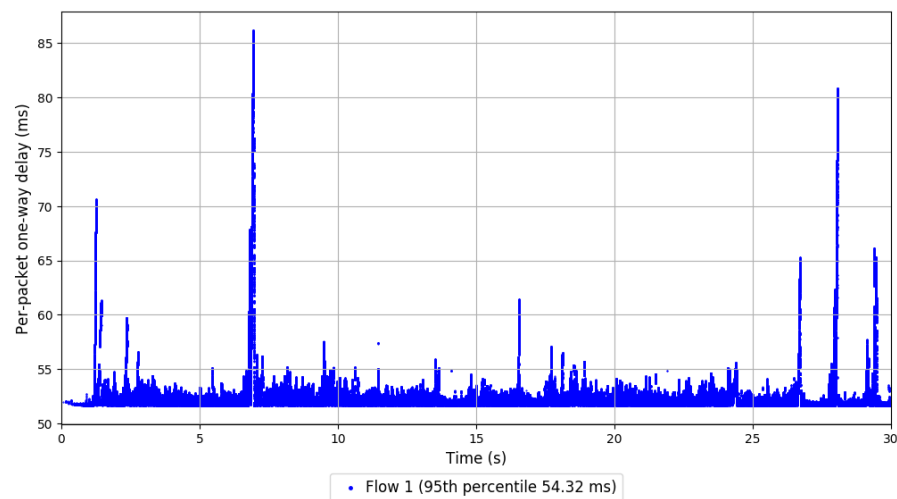
Run 1: Report of Copa — Data Link

```
Run 2: Statistics of Copa

Start at: 2018-10-26 18:12:07
End at: 2018-10-26 18:12:37
Local clock offset: -0.164 ms
Remote clock offset: -0.007 ms


# Below is generated by plot.py at 2018-10-26 19:57:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 346.24 Mbit/s
95th percentile per-packet one-way delay: 51.498 ms
Loss rate: 0.30%
-- Flow 1:
Average throughput: 346.24 Mbit/s
95th percentile per-packet one-way delay: 51.498 ms
Loss rate: 0.30%
```

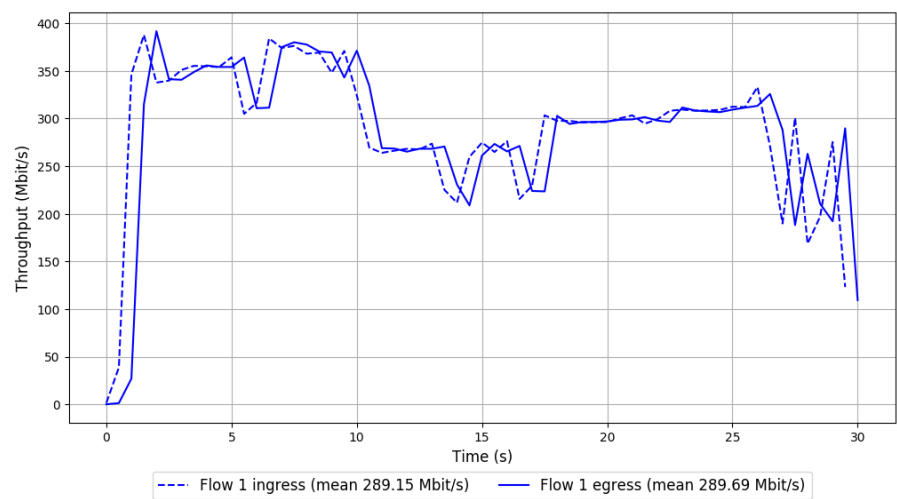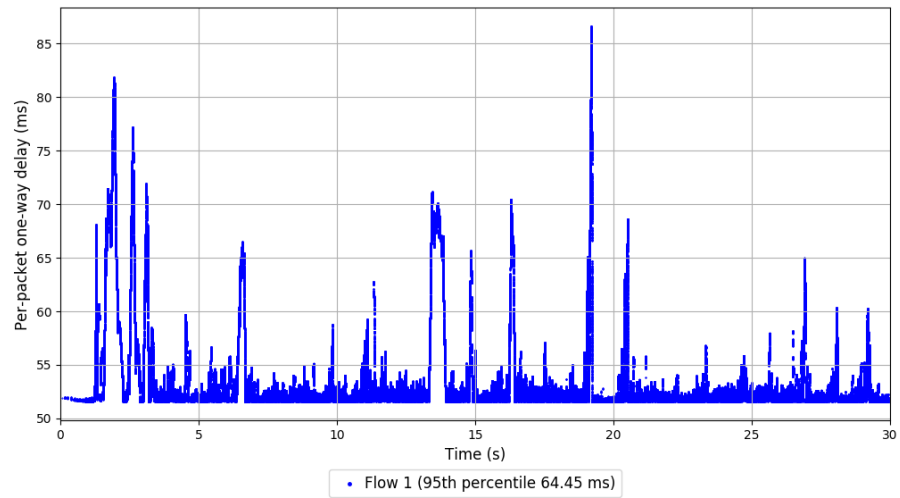Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2018-10-26 18:37:51
End at: 2018-10-26 18:38:21
Local clock offset: -0.092 ms
Remote clock offset: -0.131 ms


# Below is generated by plot.py at 2018-10-26 19:57:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 289.69 Mbit/s
95th percentile per-packet one-way delay: 54.319 ms
Loss rate: 0.14%
-- Flow 1:
Average throughput: 289.69 Mbit/s
95th percentile per-packet one-way delay: 54.319 ms
Loss rate: 0.14%
```

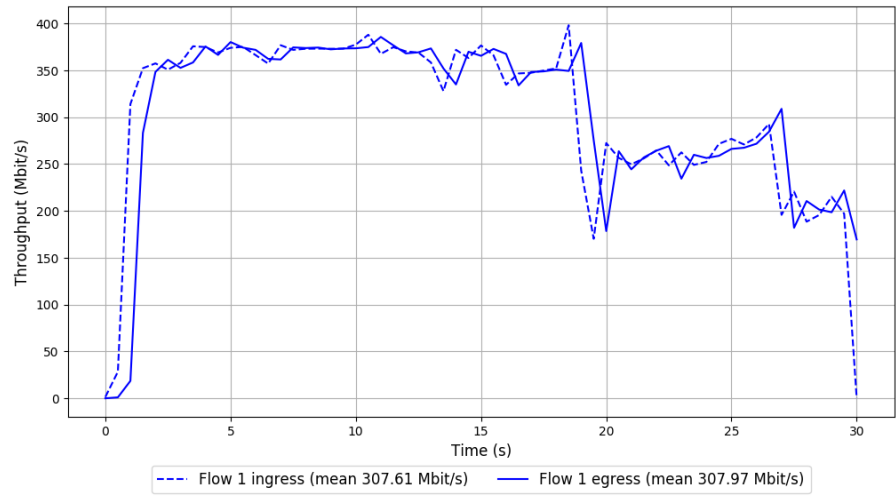Run 3: Report of Copa — Data Link

```
Run 4: Statistics of Copa

Start at: 2018-10-26 19:03:24
End at: 2018-10-26 19:03:54
Local clock offset: -0.1 ms
Remote clock offset: -0.079 ms


# Below is generated by plot.py at 2018-10-26 20:05:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 307.97 Mbit/s
95th percentile per-packet one-way delay: 64.455 ms
Loss rate: 0.22%
-- Flow 1:
Average throughput: 307.97 Mbit/s
95th percentile per-packet one-way delay: 64.455 ms
Loss rate: 0.22%
```

Run 4: Report of Copa — Data Link

Flow 1 ingress (mean 307.61 Mbit/s) ----   Flow 1 egress (mean 307.97 Mbit/s) ——

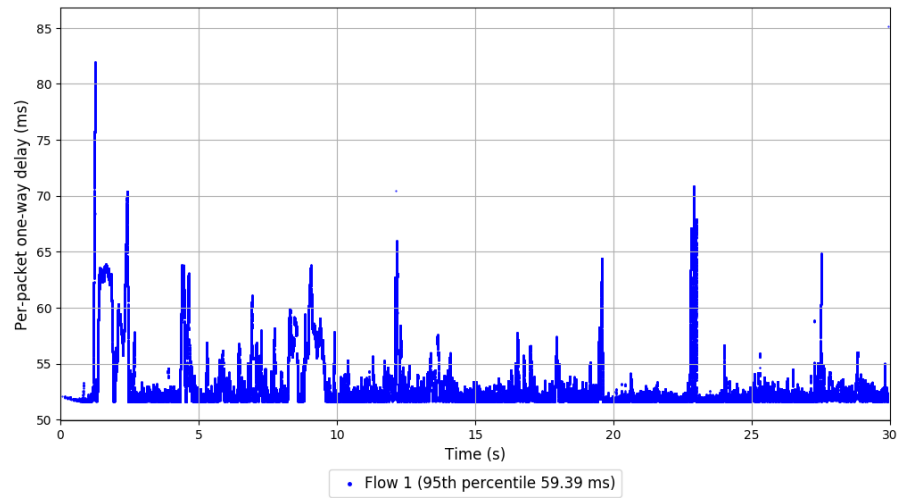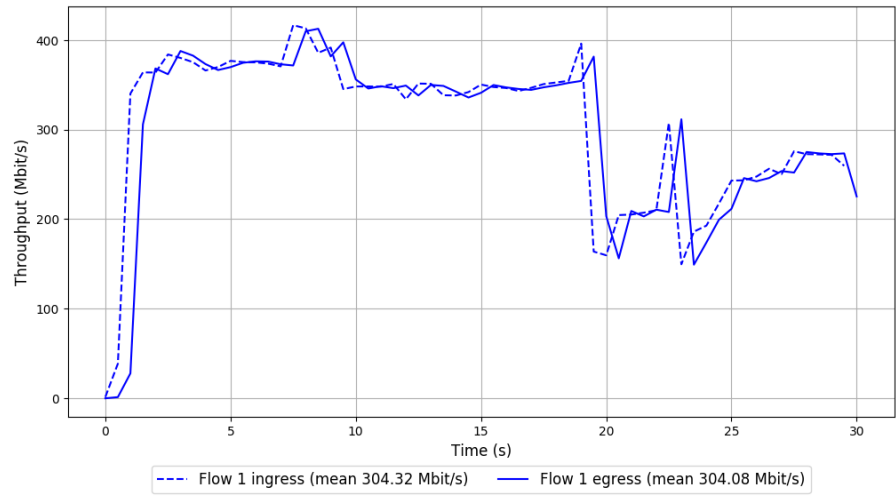• Flow 1 (95th percentile 64.45 ms)

```
Run 5: Statistics of Copa

Start at: 2018-10-26 19:29:10
End at: 2018-10-26 19:29:40
Local clock offset: -0.082 ms
Remote clock offset: -0.145 ms

# Below is generated by plot.py at 2018-10-26 20:06:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 304.08 Mbit/s
95th percentile per-packet one-way delay: 59.392 ms
Loss rate: 0.30%
-- Flow 1:
Average throughput: 304.08 Mbit/s
95th percentile per-packet one-way delay: 59.392 ms
Loss rate: 0.30%
```
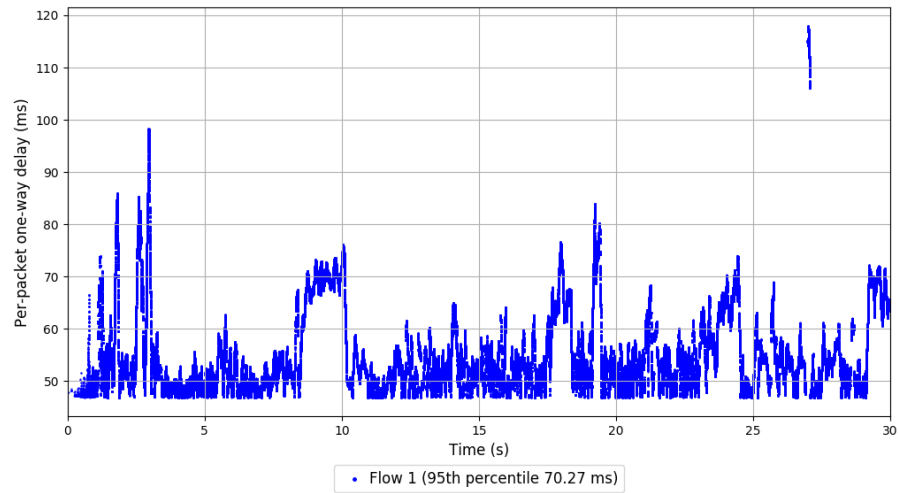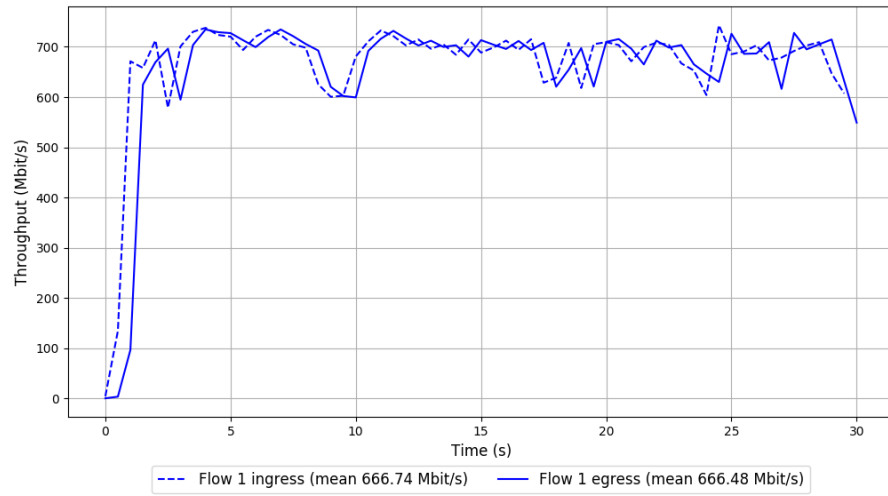
Run 5: Report of Copa — Data Link

Flow 1 ingress (mean 304.32 Mbit/s) — Flow 1 egress (mean 304.08 Mbit/s)

· Flow 1 (95th percentile 59.39 ms)

```
Run 1: Statistics of TCP Cubic

Start at: 2018-10-26 17:33:17
End at: 2018-10-26 17:33:47
Local clock offset: -0.58 ms
Remote clock offset: 0.026 ms


# Below is generated by plot.py at 2018-10-26 20:07:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 666.48 Mbit/s
95th percentile per-packet one-way delay: 70.271 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 666.48 Mbit/s
95th percentile per-packet one-way delay: 70.271 ms
Loss rate: 0.36%
```

Run 1: Report of TCP Cubic — Data Link

```
Run 2: Statistics of TCP Cubic

Start at: 2018-10-26 17:58:33
End at: 2018-10-26 17:59:03
Local clock offset: -0.173 ms
Remote clock offset: 0.002 ms


# Below is generated by plot.py at 2018-10-26 20:07:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 628.76 Mbit/s
95th percentile per-packet one-way delay: 81.482 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 628.76 Mbit/s
95th percentile per-packet one-way delay: 81.482 ms
Loss rate: 0.38%
```
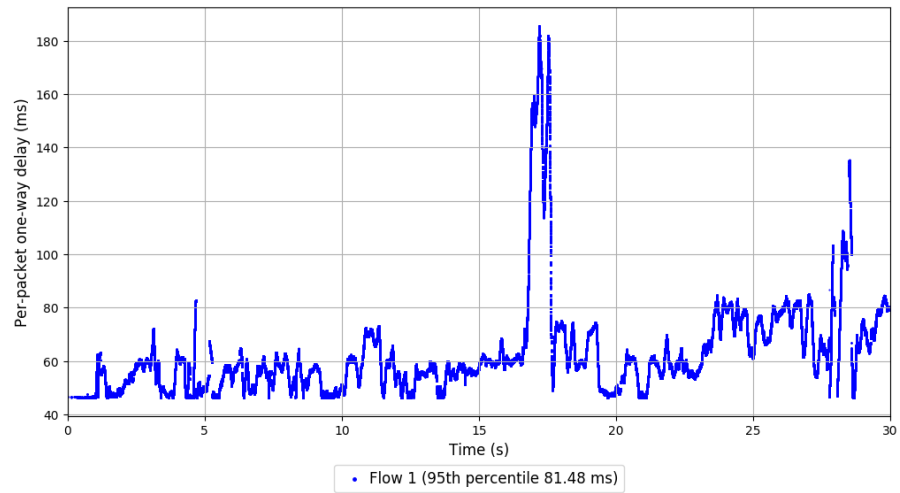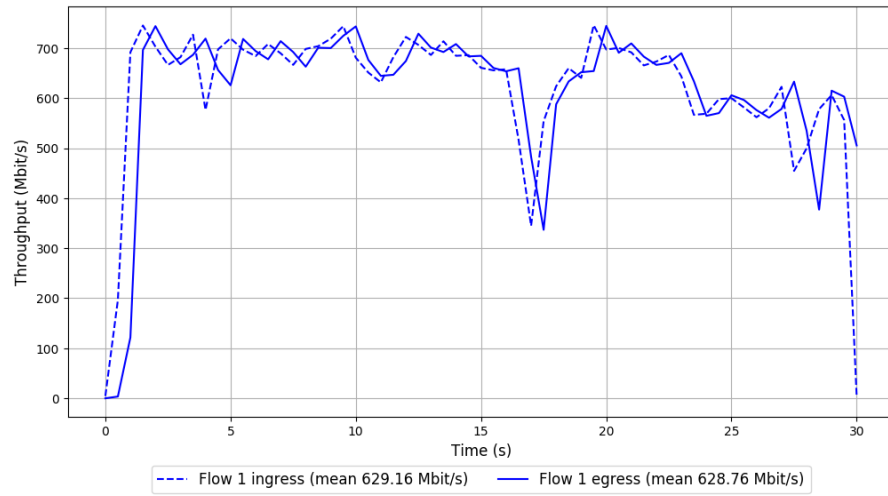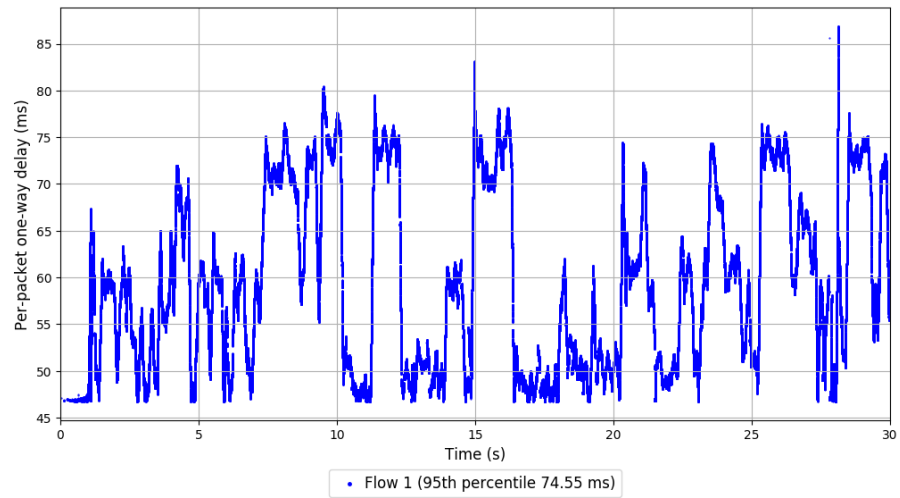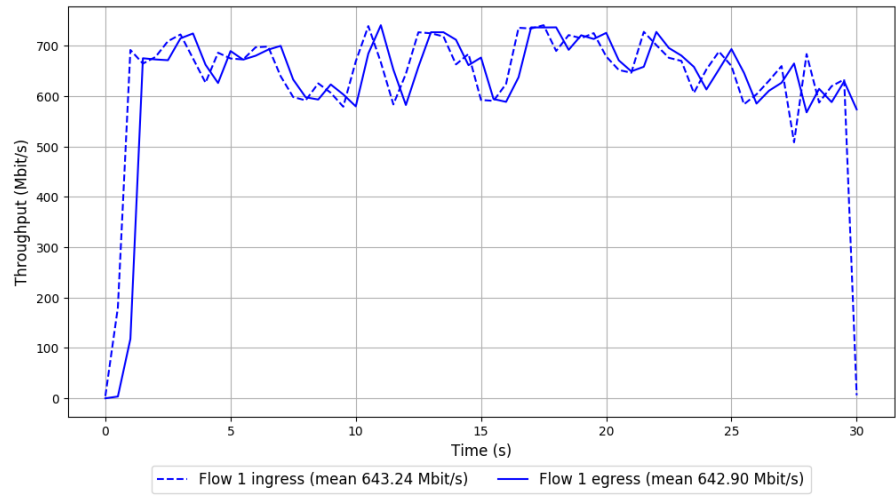
Run 2: Report of TCP Cubic — Data Link

```
Run 3: Statistics of TCP Cubic

Start at: 2018-10-26 18:24:20
End at: 2018-10-26 18:24:50
Local clock offset: -0.513 ms
Remote clock offset: -0.004 ms


# Below is generated by plot.py at 2018-10-26 20:07:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 642.90 Mbit/s
95th percentile per-packet one-way delay: 74.553 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 642.90 Mbit/s
95th percentile per-packet one-way delay: 74.553 ms
Loss rate: 0.37%
```
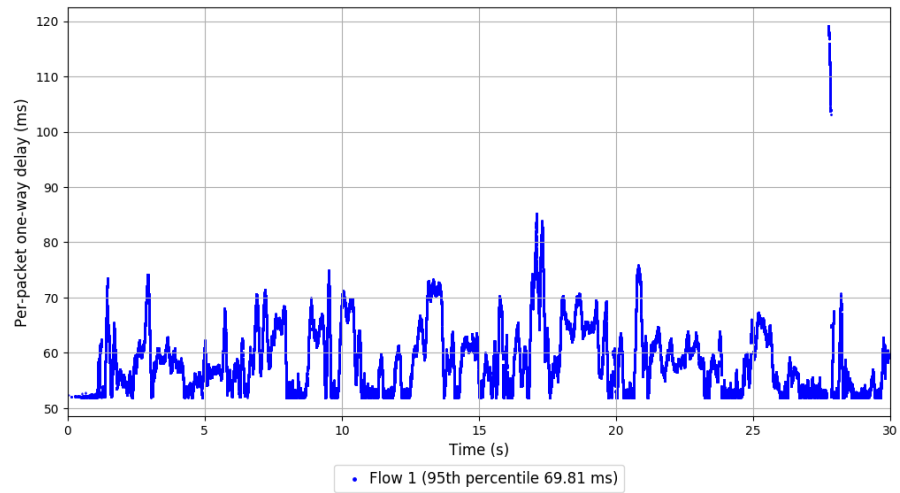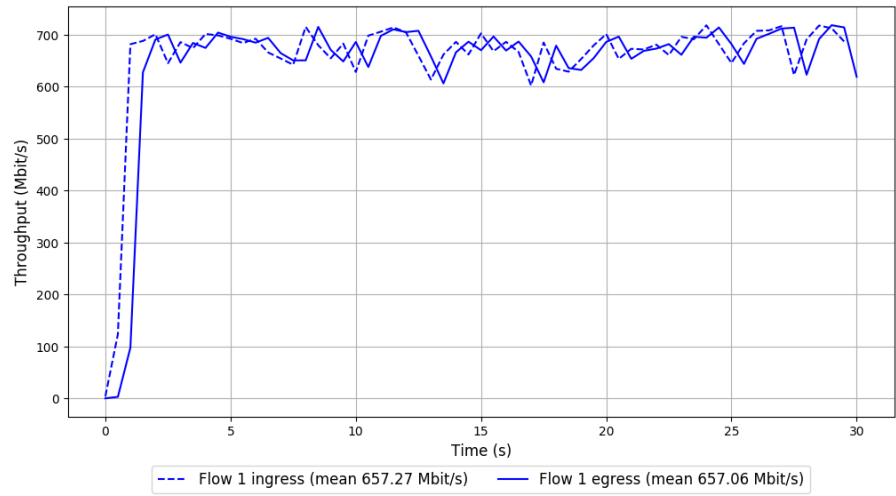
Run 3: Report of TCP Cubic — Data Link

```
Run 4: Statistics of TCP Cubic

Start at: 2018-10-26 18:49:56
End at: 2018-10-26 18:50:26
Local clock offset: 0.224 ms
Remote clock offset: -0.058 ms


# Below is generated by plot.py at 2018-10-26 20:07:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 657.06 Mbit/s
95th percentile per-packet one-way delay: 69.811 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 657.06 Mbit/s
95th percentile per-packet one-way delay: 69.811 ms
Loss rate: 0.36%
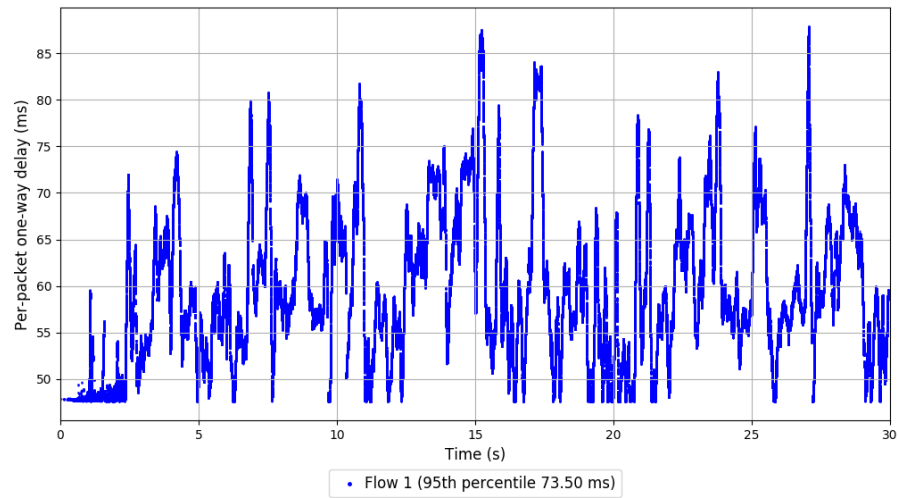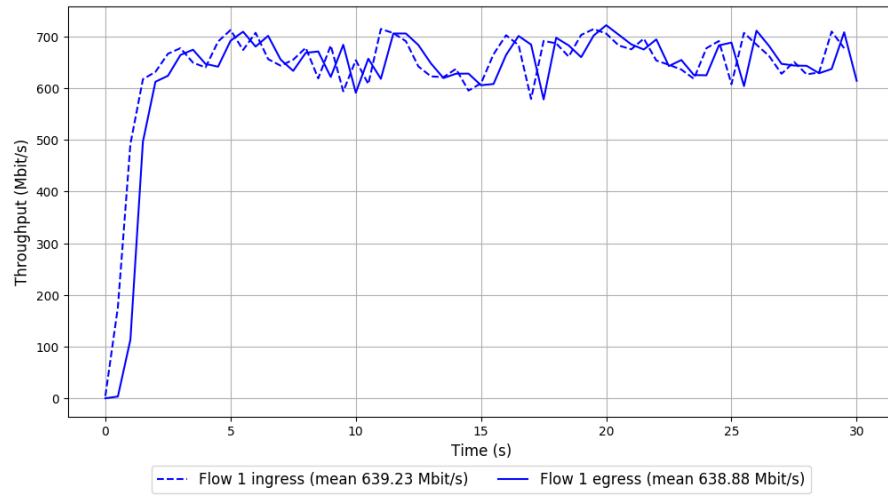```

Run 4: Report of TCP Cubic — Data Link

```
Run 5: Statistics of TCP Cubic

Start at: 2018-10-26 19:15:36
End at: 2018-10-26 19:16:06
Local clock offset: 0.216 ms
Remote clock offset: -0.156 ms


# Below is generated by plot.py at 2018-10-26 20:07:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 638.88 Mbit/s
95th percentile per-packet one-way delay: 73.495 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 638.88 Mbit/s
95th percentile per-packet one-way delay: 73.495 ms
Loss rate: 0.37%
```

Run 5: Report of TCP Cubic — Data Link

```
Run 1: Statistics of FillP

Start at: 2018-10-26 17:36:18
End at: 2018-10-26 17:36:48
Local clock offset: -0.177 ms
Remote clock offset: 0.018 ms


# Below is generated by plot.py at 2018-10-26 20:13:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 811.56 Mbit/s
95th percentile per-packet one-way delay: 95.757 ms
Loss rate: 0.44%
-- Flow 1:
Average throughput: 811.56 Mbit/s
95th percentile per-packet one-way delay: 95.757 ms
Loss rate: 0.44%
```
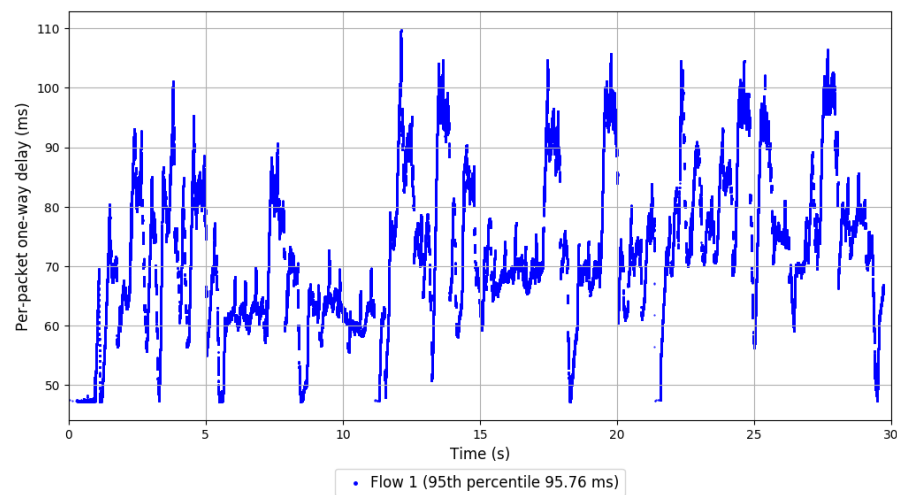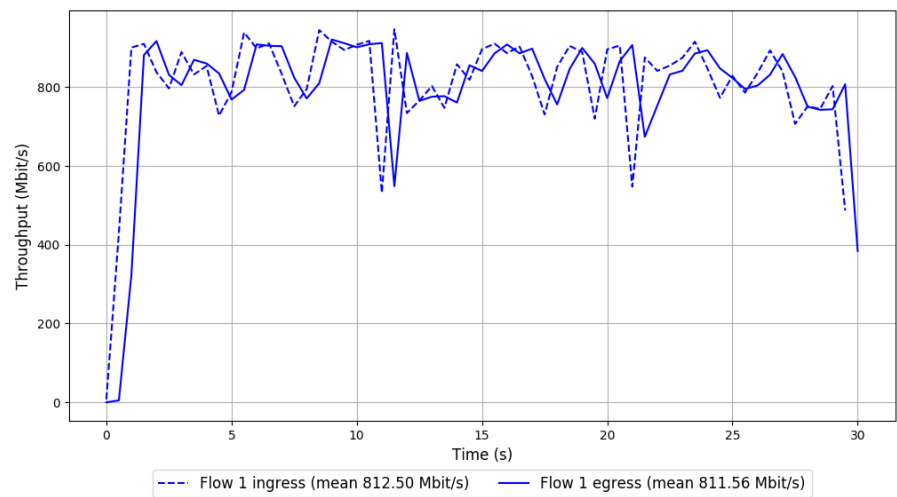
Run 1: Report of FillP — Data Link

```
Run 2: Statistics of FillP

Start at: 2018-10-26 18:01:33
End at: 2018-10-26 18:02:03
Local clock offset: -0.499 ms
Remote clock offset: 0.031 ms


# Below is generated by plot.py at 2018-10-26 20:22:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 829.40 Mbit/s
95th percentile per-packet one-way delay: 121.019 ms
Loss rate: 2.50%
-- Flow 1:
Average throughput: 829.40 Mbit/s
95th percentile per-packet one-way delay: 121.019 ms
Loss rate: 2.50%
```
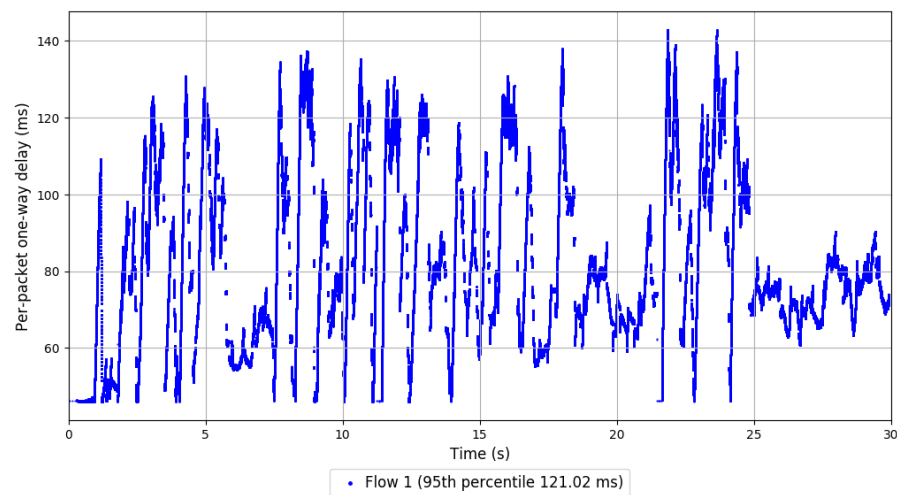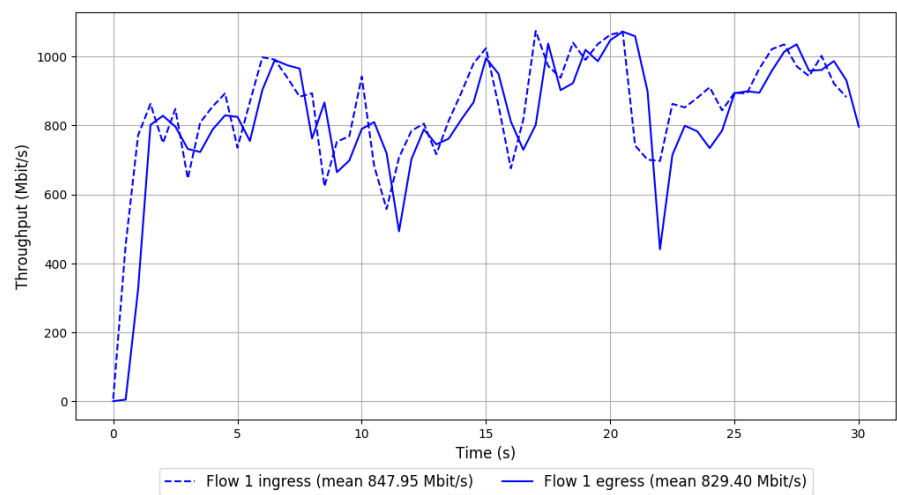
Run 2: Report of FillP — Data Link

Flow 1 ingress (mean 847.95 Mbit/s) — Flow 1 egress (mean 829.40 Mbit/s)

• Flow 1 (95th percentile 121.02 ms)

```
Run 3: Statistics of FillP

Start at: 2018-10-26 18:27:18
End at: 2018-10-26 18:27:48
Local clock offset: -0.085 ms
Remote clock offset: -0.03 ms


# Below is generated by plot.py at 2018-10-26 20:23:27
# Datalink statistics
-- Total of 1 flow:
Average throughput: 842.25 Mbit/s
95th percentile per-packet one-way delay: 119.841 ms
Loss rate: 1.87%
-- Flow 1:
Average throughput: 842.25 Mbit/s
95th percentile per-packet one-way delay: 119.841 ms
Loss rate: 1.87%
```
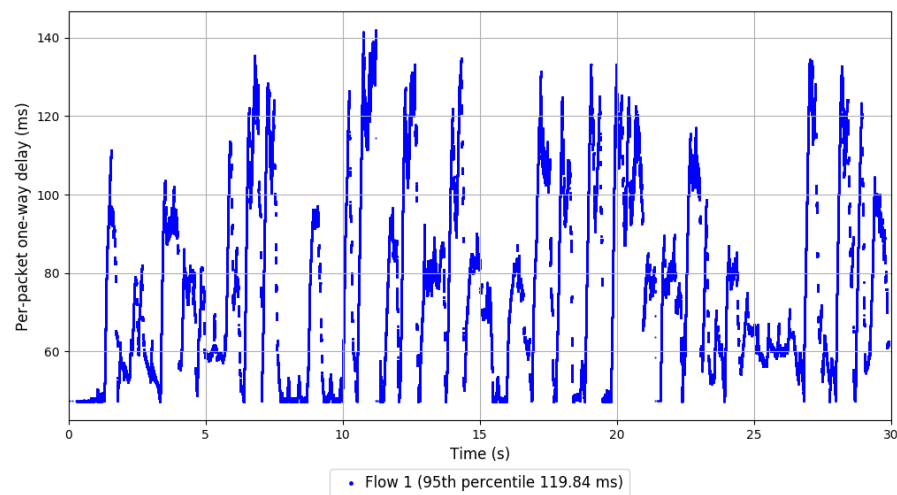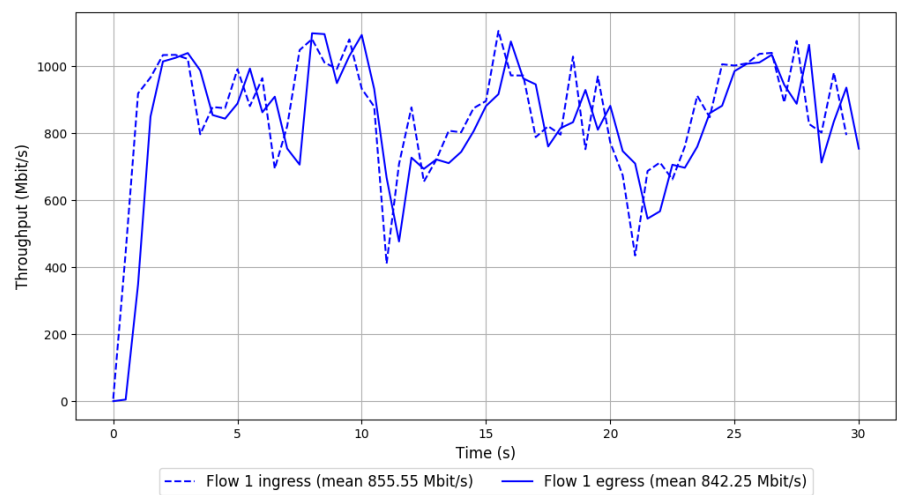
Run 3: Report of FillP — Data Link

Flow 1 ingress (mean 855.55 Mbit/s)   Flow 1 egress (mean 842.25 Mbit/s)

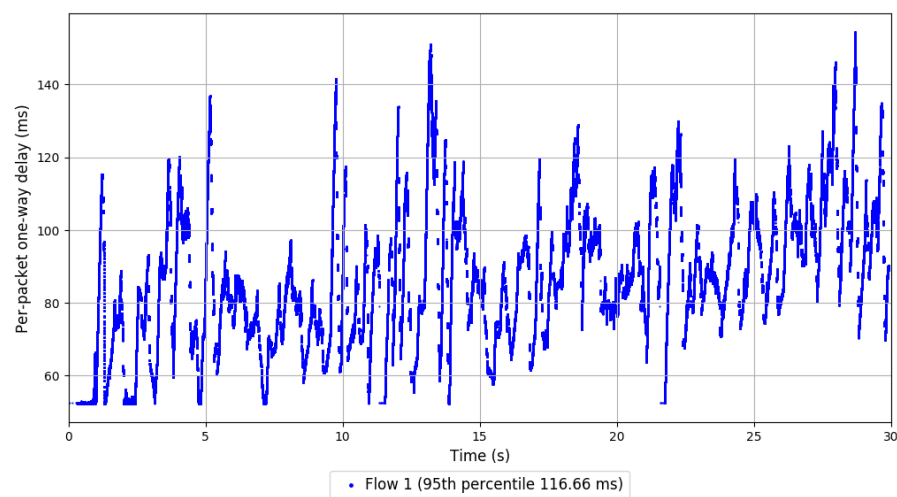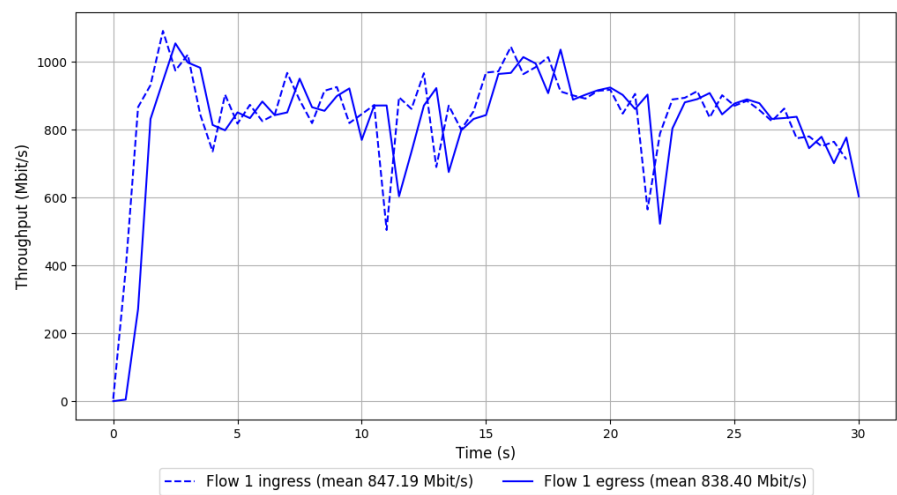• Flow 1 (95th percentile 119.84 ms)

```
Run 4: Statistics of FillP

Start at: 2018-10-26 18:52:54
End at: 2018-10-26 18:53:24
Local clock offset: 0.29 ms
Remote clock offset: -0.076 ms


# Below is generated by plot.py at 2018-10-26 20:24:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 838.40 Mbit/s
95th percentile per-packet one-way delay: 116.663 ms
Loss rate: 1.37%
-- Flow 1:
Average throughput: 838.40 Mbit/s
95th percentile per-packet one-way delay: 116.663 ms
Loss rate: 1.37%
```
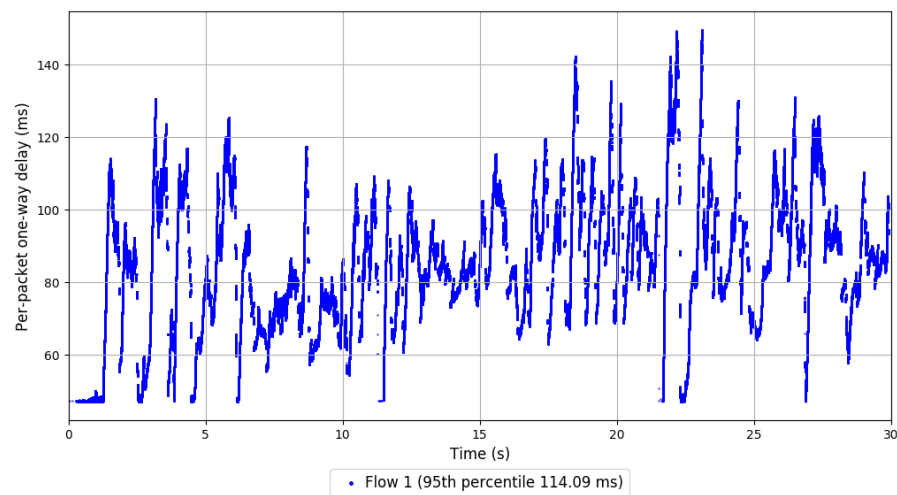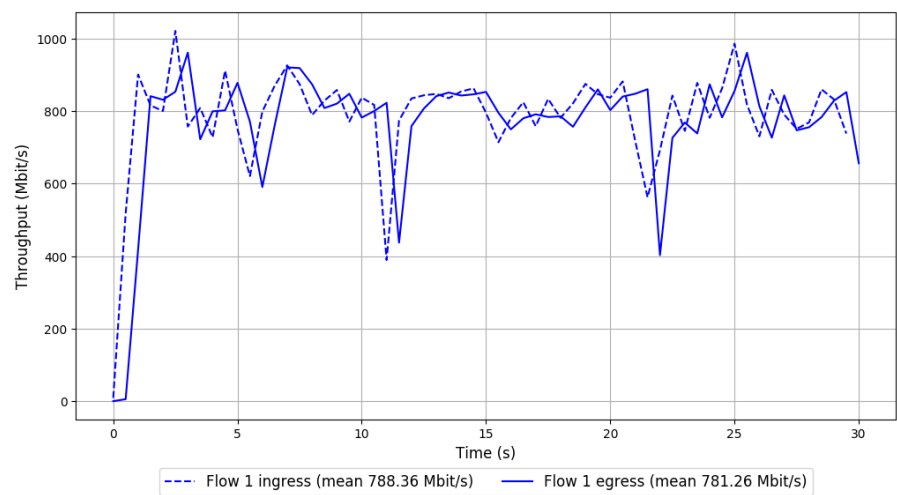
Run 4: Report of FillP — Data Link

```
Run 5: Statistics of FillP

Start at: 2018-10-26 19:18:38
End at: 2018-10-26 19:19:08
Local clock offset: -0.119 ms
Remote clock offset: -0.062 ms


# Below is generated by plot.py at 2018-10-26 20:24:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 781.26 Mbit/s
95th percentile per-packet one-way delay: 114.088 ms
Loss rate: 1.22%
-- Flow 1:
Average throughput: 781.26 Mbit/s
95th percentile per-packet one-way delay: 114.088 ms
Loss rate: 1.22%
```

Run 5: Report of FillP — Data Link

Flow 1 ingress (mean 788.36 Mbit/s)   Flow 1 egress (mean 781.26 Mbit/s)

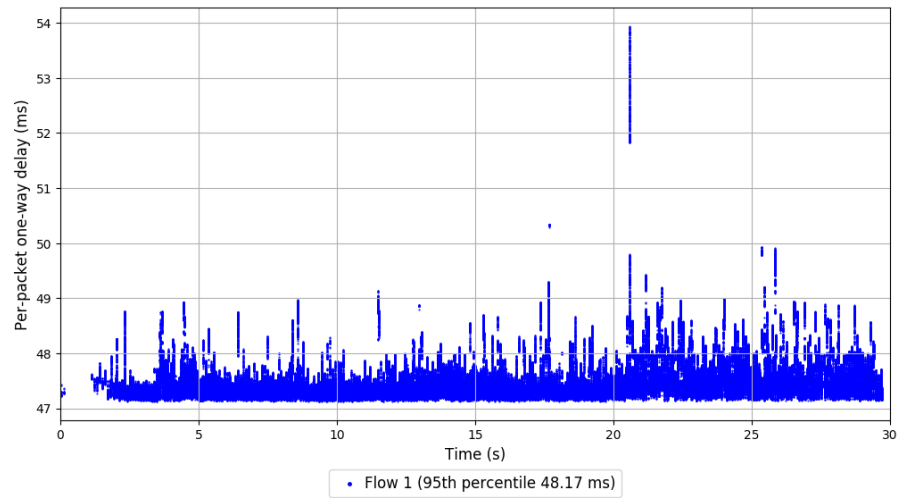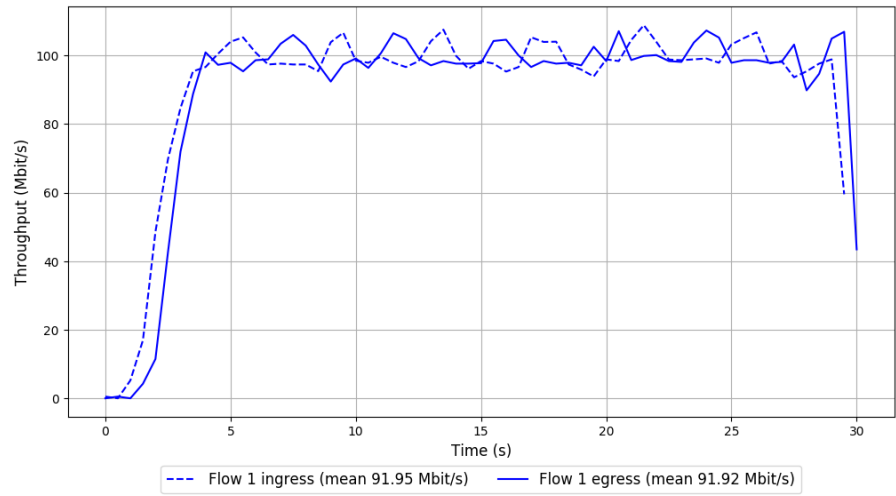

• Flow 1 (95th percentile 114.09 ms)

```
Run 1: Statistics of Indigo

Start at: 2018-10-26 17:43:55
End at: 2018-10-26 17:44:25
Local clock offset: -0.182 ms
Remote clock offset: 0.071 ms


# Below is generated by plot.py at 2018-10-26 20:24:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.92 Mbit/s
95th percentile per-packet one-way delay: 48.172 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 91.92 Mbit/s
95th percentile per-packet one-way delay: 48.172 ms
Loss rate: 0.36%
```

Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2018-10-26 18:09:32
End at: 2018-10-26 18:10:03
Local clock offset: -0.496 ms
Remote clock offset: 0.052 ms


# Below is generated by plot.py at 2018-10-26 20:24:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 233.68 Mbit/s
95th percentile per-packet one-way delay: 47.389 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 233.68 Mbit/s
95th percentile per-packet one-way delay: 47.389 ms
Loss rate: 0.34%
```
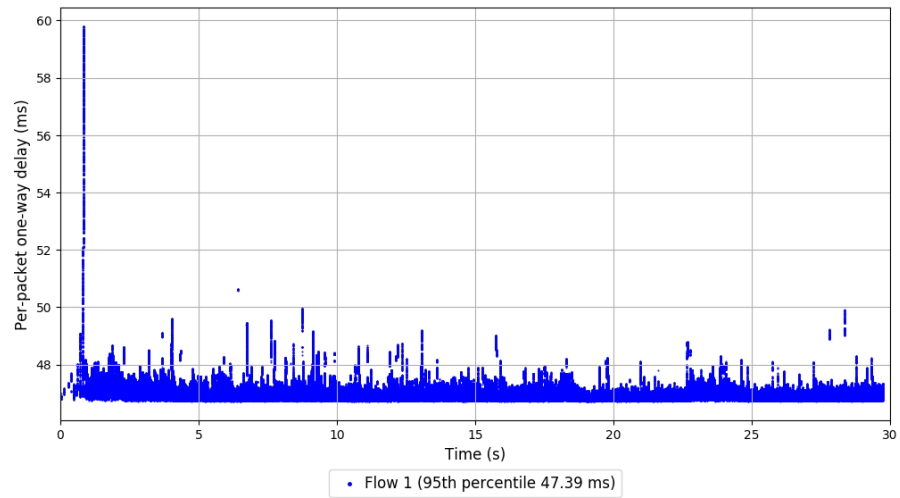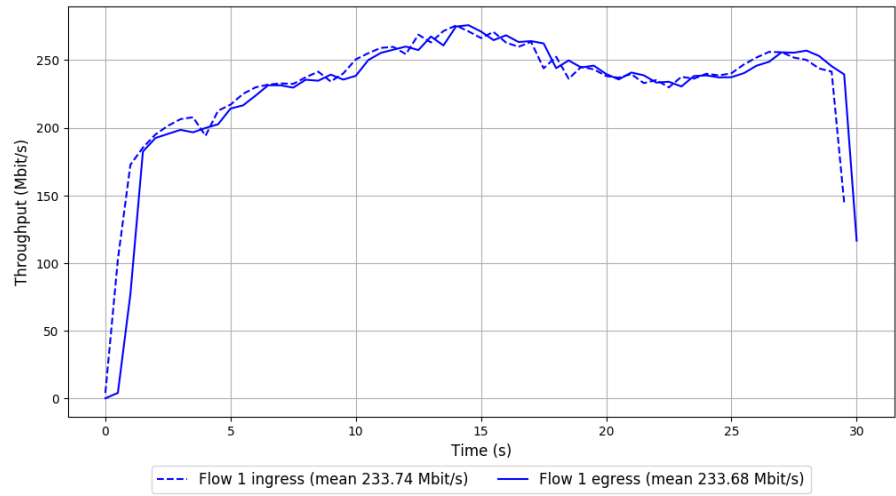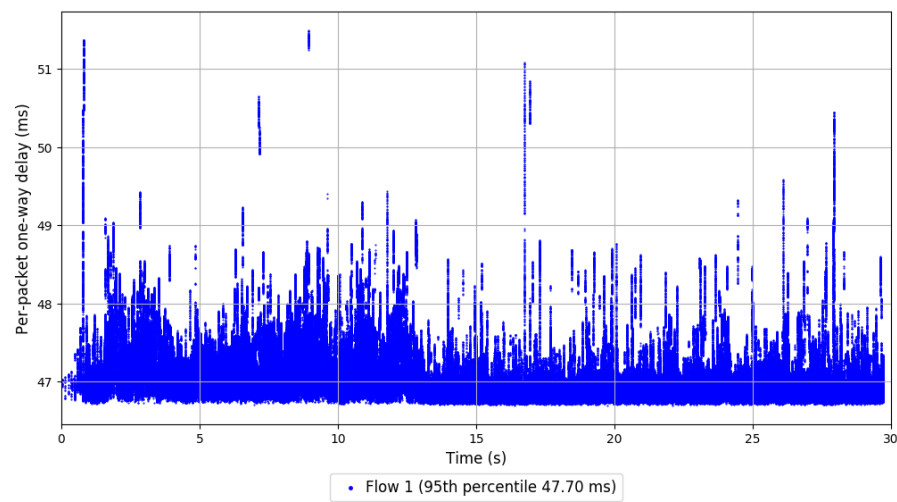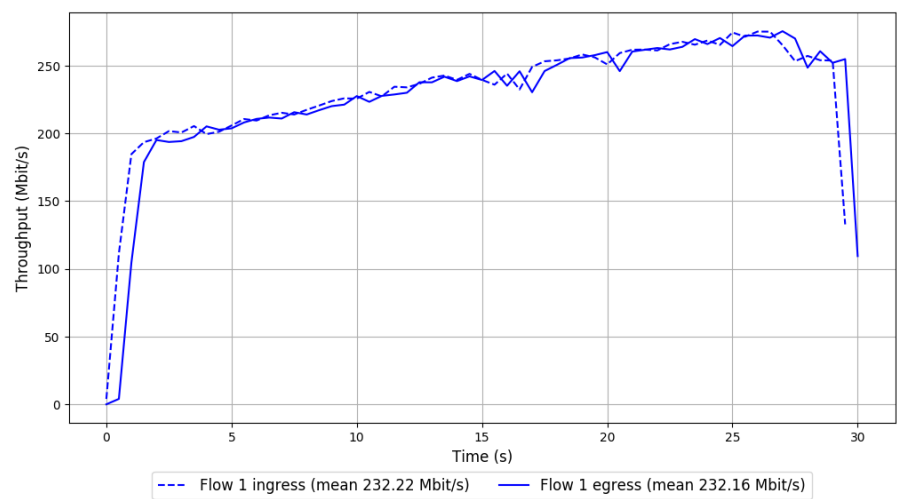
Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2018-10-26 18:35:16
End at: 2018-10-26 18:35:46
Local clock offset: -0.494 ms
Remote clock offset: -0.042 ms


# Below is generated by plot.py at 2018-10-26 20:24:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 232.16 Mbit/s
95th percentile per-packet one-way delay: 47.703 ms
Loss rate: 0.35%
-- Flow 1:
Average throughput: 232.16 Mbit/s
95th percentile per-packet one-way delay: 47.703 ms
Loss rate: 0.35%
```
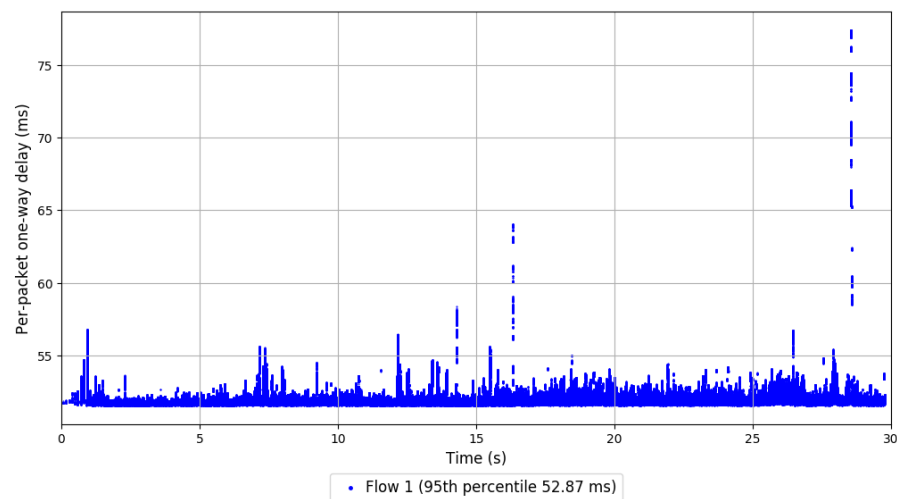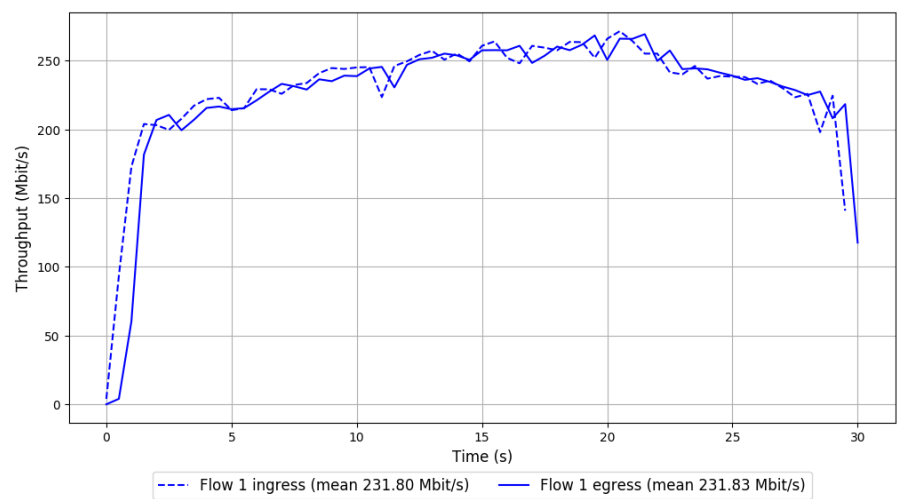
Run 3: Report of Indigo — Data Link

```
Run 4: Statistics of Indigo

Start at: 2018-10-26 19:00:51
End at: 2018-10-26 19:01:21
Local clock offset: -0.118 ms
Remote clock offset: -0.108 ms


# Below is generated by plot.py at 2018-10-26 20:24:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 231.83 Mbit/s
95th percentile per-packet one-way delay: 52.866 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 231.83 Mbit/s
95th percentile per-packet one-way delay: 52.866 ms
Loss rate: 0.33%
```
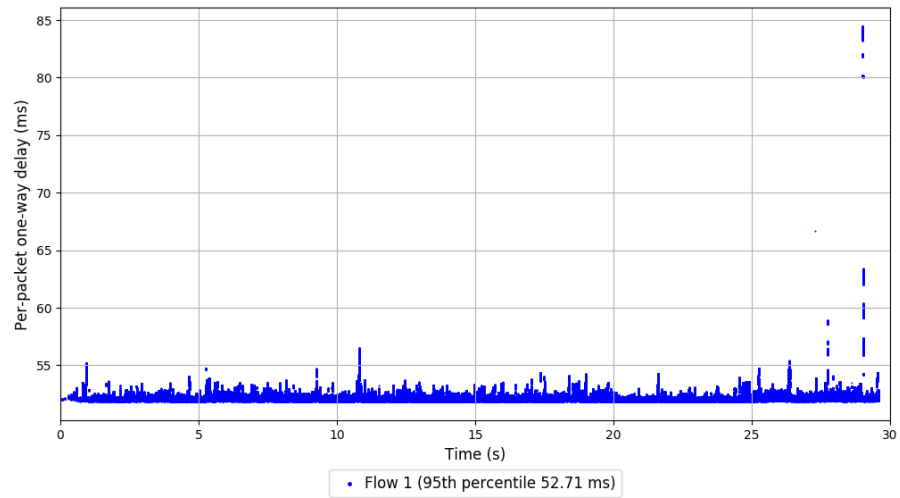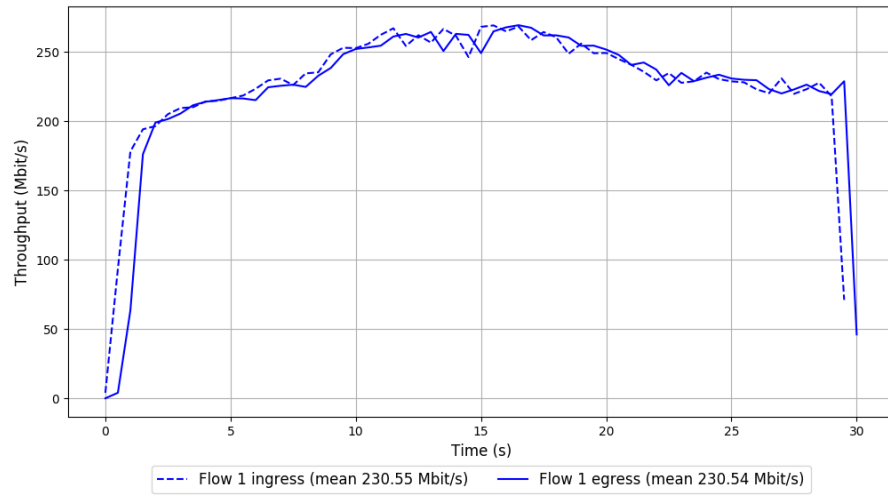
Run 4: Report of Indigo — Data Link

```
Run 5: Statistics of Indigo

Start at: 2018-10-26 19:26:36
End at: 2018-10-26 19:27:06
Local clock offset: 0.203 ms
Remote clock offset: -0.109 ms


# Below is generated by plot.py at 2018-10-26 20:24:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 230.54 Mbit/s
95th percentile per-packet one-way delay: 52.712 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 230.54 Mbit/s
95th percentile per-packet one-way delay: 52.712 ms
Loss rate: 0.34%
```

Run 5: Report of Indigo — Data Link
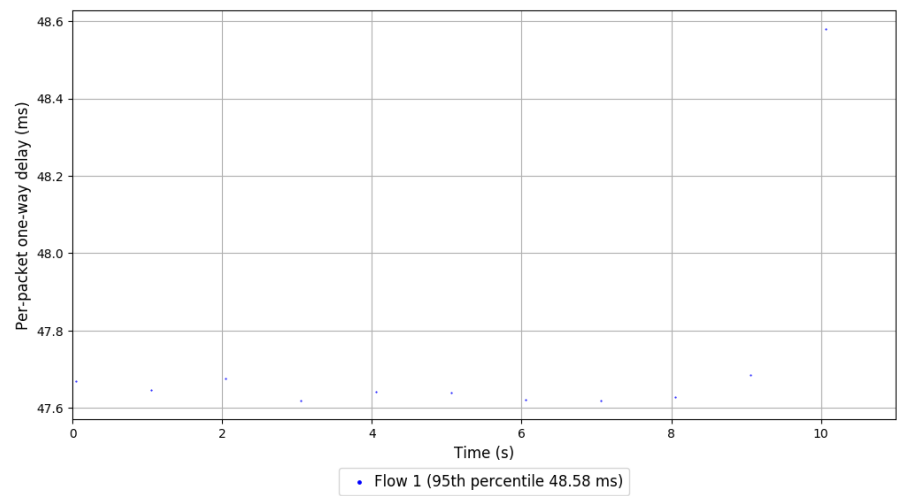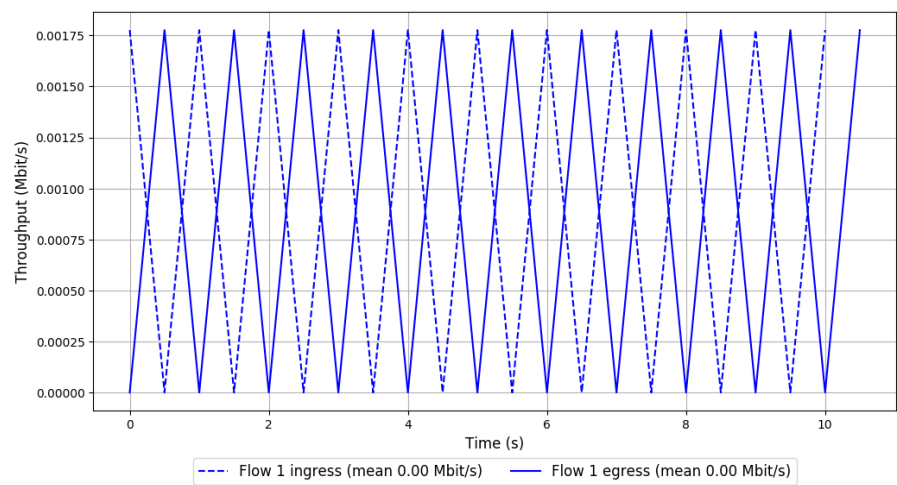
```
Run 1: Statistics of Indigo-96d2da3

Start at: 2018-10-26 17:42:48
End at: 2018-10-26 17:43:18
Local clock offset: 0.111 ms
Remote clock offset: 0.056 ms
```

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

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

Start at: 2018-10-26 18:08:12
End at: 2018-10-26 18:08:42
Local clock offset: -0.162 ms
Remote clock offset: 0.001 ms


# Below is generated by plot.py at 2018-10-26 20:24:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 295.31 Mbit/s
95th percentile per-packet one-way delay: 65.174 ms
Loss rate: 0.25%
-- Flow 1:
Average throughput: 295.31 Mbit/s
95th percentile per-packet one-way delay: 65.174 ms
Loss rate: 0.25%
```
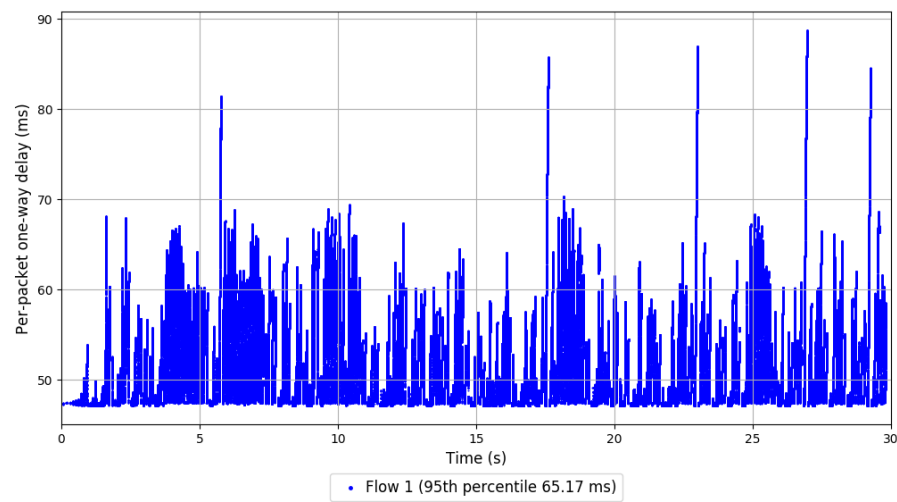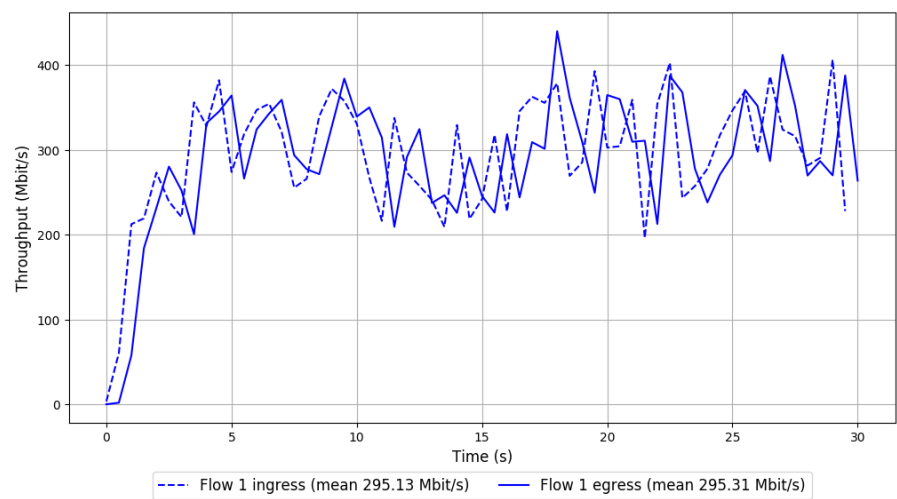
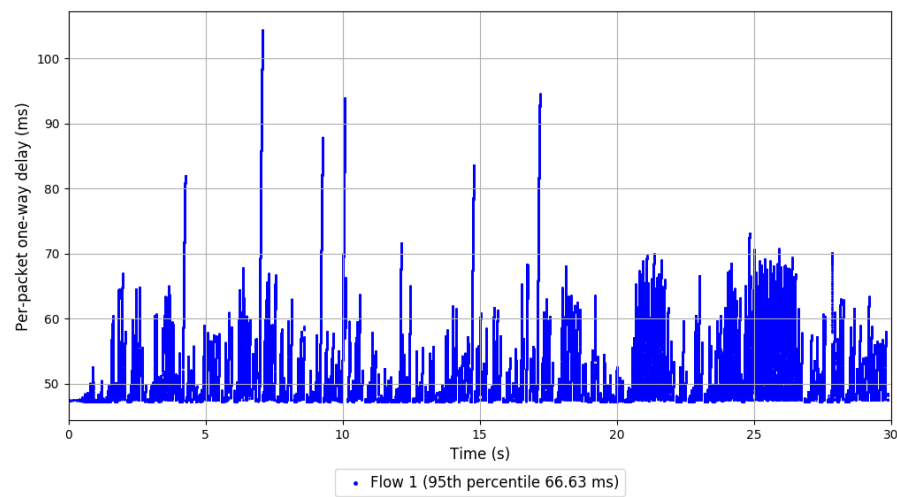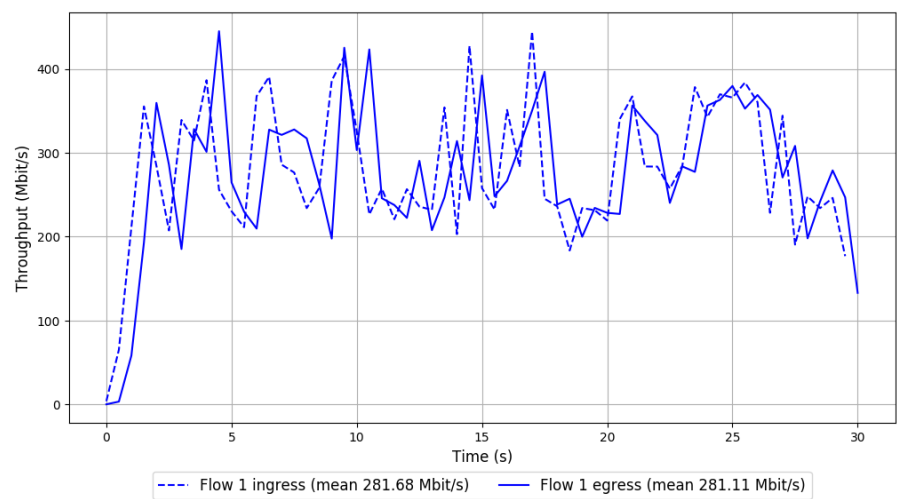Run 2: Report of Indigo-96d2da3 — Data Link

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

Start at: 2018-10-26 18:33:57
End at: 2018-10-26 18:34:27
Local clock offset: -0.107 ms
Remote clock offset: -0.078 ms


# Below is generated by plot.py at 2018-10-26 20:24:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 281.11 Mbit/s
95th percentile per-packet one-way delay: 66.630 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 281.11 Mbit/s
95th percentile per-packet one-way delay: 66.630 ms
Loss rate: 0.26%
```

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

Flow 1 ingress (mean 281.68 Mbit/s)   Flow 1 egress (mean 281.11 Mbit/s)
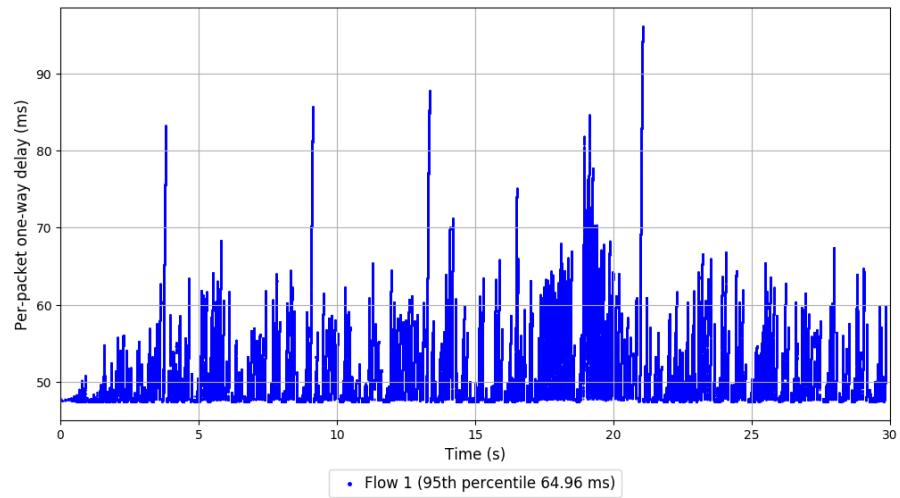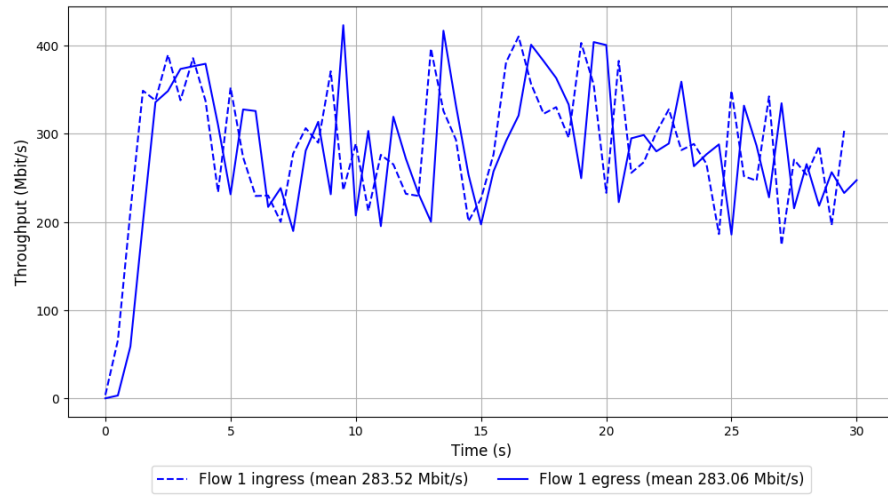

Flow 1 (95th percentile 66.63 ms)

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

Start at: 2018-10-26 18:59:31
End at: 2018-10-26 19:00:01
Local clock offset: 0.24 ms
Remote clock offset: -0.097 ms


# Below is generated by plot.py at 2018-10-26 20:24:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 283.06 Mbit/s
95th percentile per-packet one-way delay: 64.957 ms
Loss rate: 0.53%
-- Flow 1:
Average throughput: 283.06 Mbit/s
95th percentile per-packet one-way delay: 64.957 ms
Loss rate: 0.53%
```

Run 4: Report of Indigo-96d2da3 — Data Link

Flow 1 ingress (mean 283.52 Mbit/s)   Flow 1 egress (mean 283.06 Mbit/s)
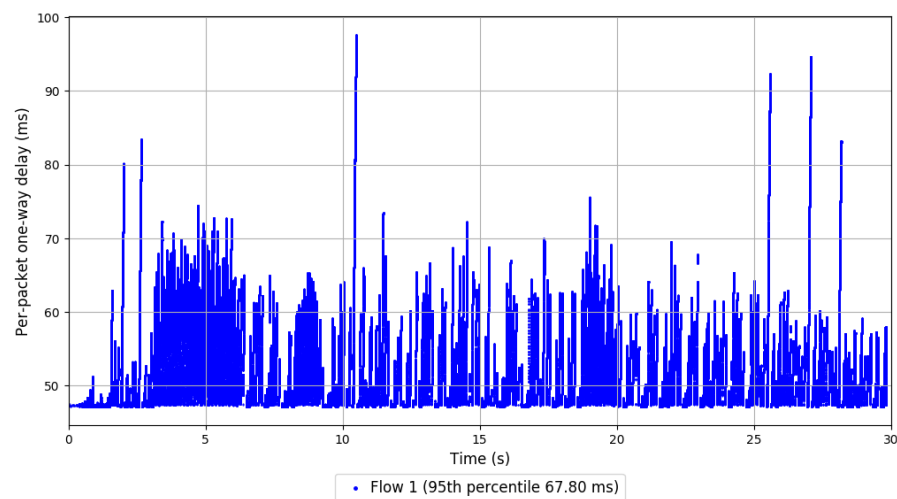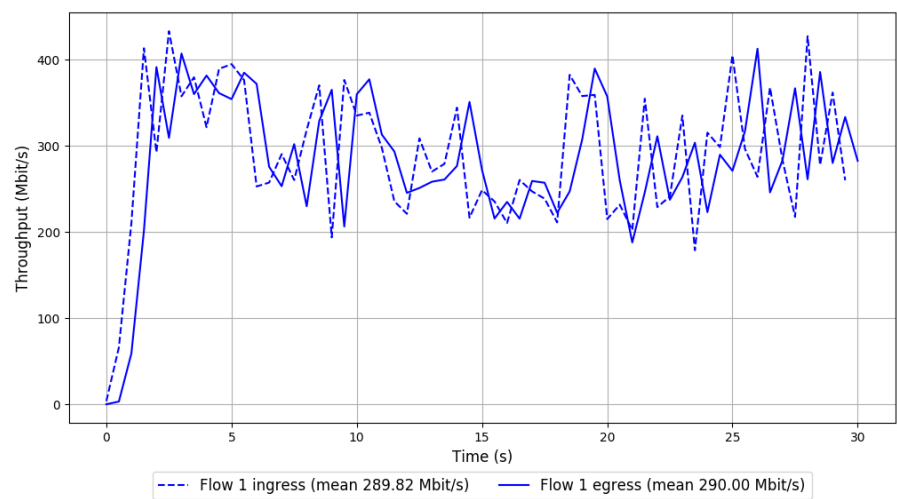

Flow 1 (95th percentile 64.96 ms)

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

Start at: 2018-10-26 19:25:16
End at: 2018-10-26 19:25:46
Local clock offset: -0.152 ms
Remote clock offset: -0.154 ms


# Below is generated by plot.py at 2018-10-26 20:25:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 290.00 Mbit/s
95th percentile per-packet one-way delay: 67.801 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 290.00 Mbit/s
95th percentile per-packet one-way delay: 67.801 ms
Loss rate: 0.26%
```

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

Flow 1 ingress (mean 289.82 Mbit/s)   Flow 1 egress (mean 290.00 Mbit/s)
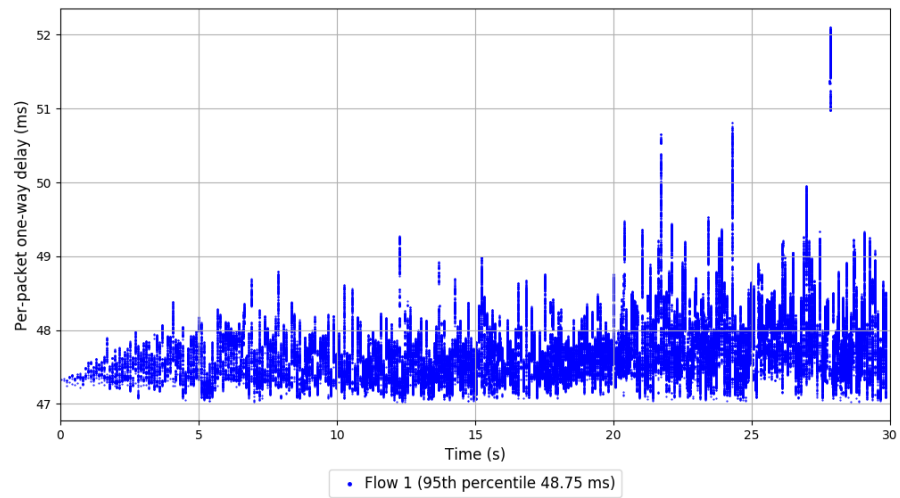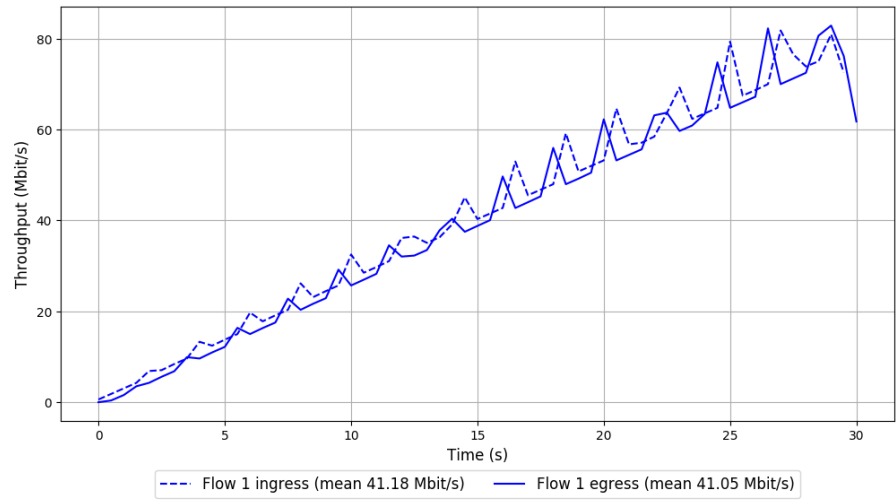

Flow 1 (95th percentile 67.80 ms)

```
Run 1: Statistics of LEDBAT

Start at: 2018-10-26 17:37:56
End at: 2018-10-26 17:38:26
Local clock offset: -0.218 ms
Remote clock offset: 0.031 ms

# Below is generated by plot.py at 2018-10-26 20:25:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 41.05 Mbit/s
95th percentile per-packet one-way delay: 48.752 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 41.05 Mbit/s
95th percentile per-packet one-way delay: 48.752 ms
Loss rate: 0.63%
```

Run 1: Report of LEDBAT — Data Link

Flow 1 ingress (mean 41.18 Mbit/s)   Flow 1 egress (mean 41.05 Mbit/s)

• Flow 1 (95th percentile 48.75 ms)

```
Run 2: Statistics of LEDBAT

Start at: 2018-10-26 18:03:12
End at: 2018-10-26 18:03:42
Local clock offset: -0.141 ms
Remote clock offset: -0.01 ms

# Below is generated by plot.py at 2018-10-26 20:25:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 38.01 Mbit/s
95th percentile per-packet one-way delay: 47.934 ms
Loss rate: 0.65%
-- Flow 1:
Average throughput: 38.01 Mbit/s
95th percentile per-packet one-way delay: 47.934 ms
Loss rate: 0.65%
```
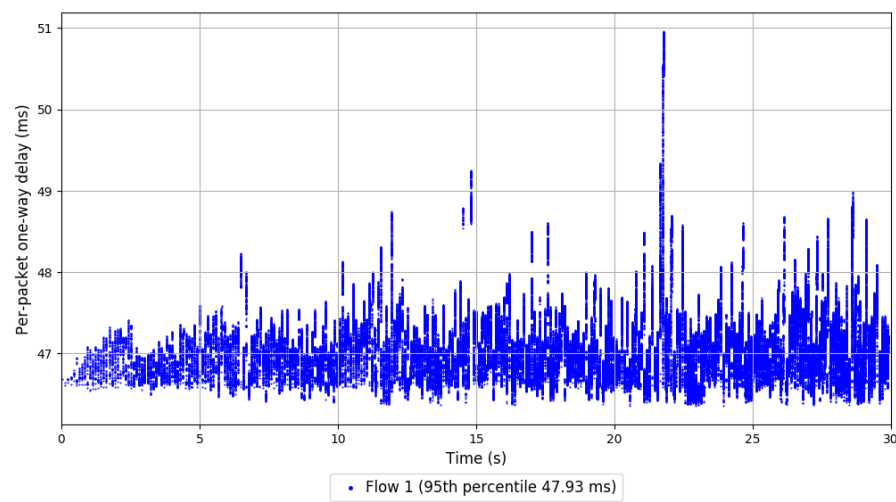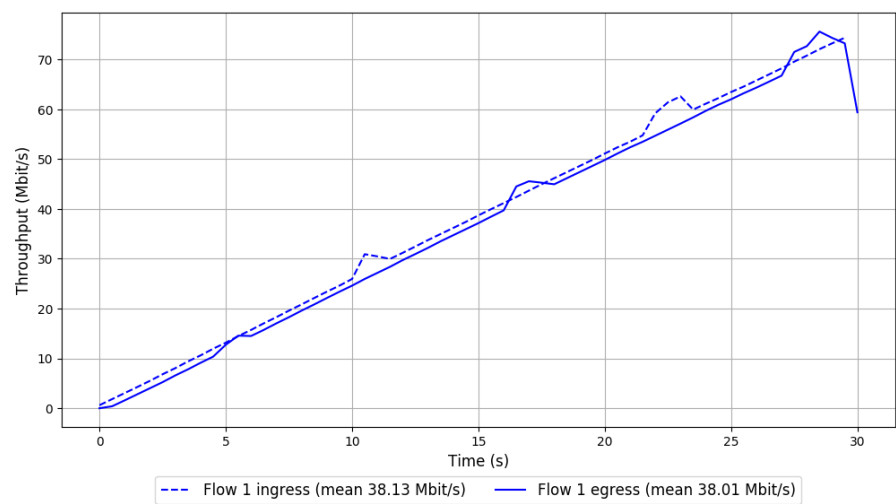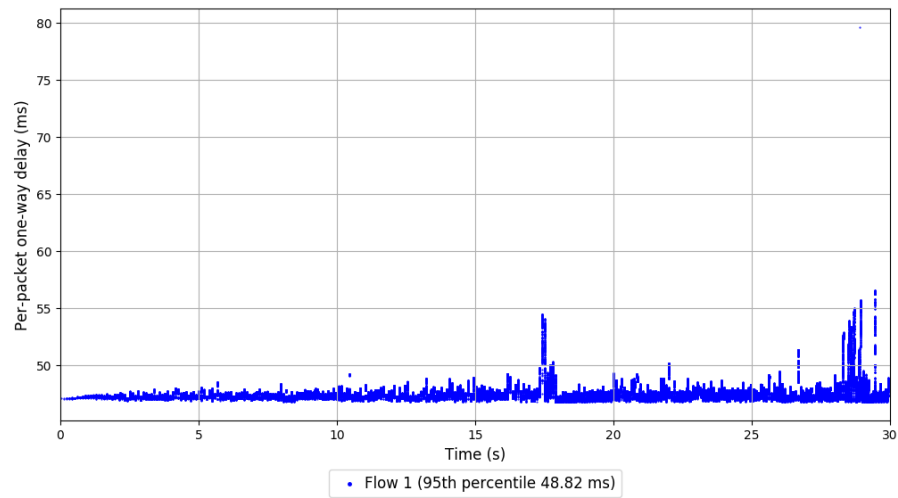
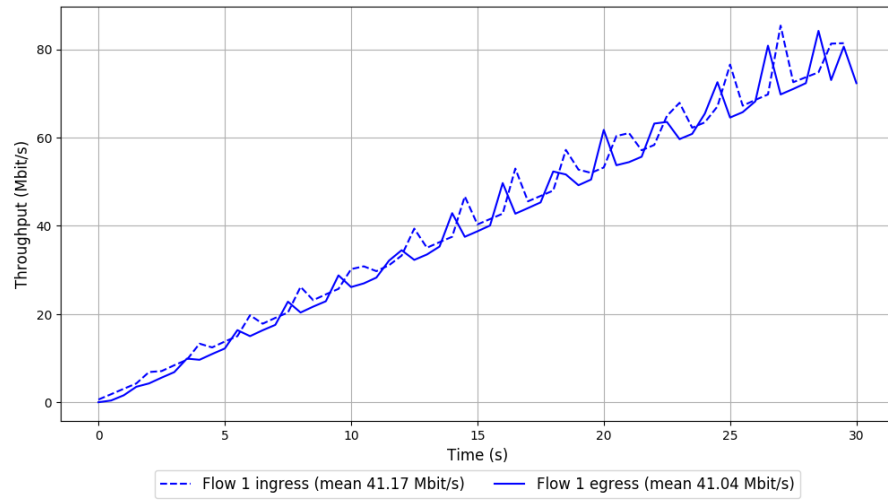# Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2018-10-26 18:28:57
End at: 2018-10-26 18:29:27
Local clock offset: -0.469 ms
Remote clock offset: -0.043 ms


# Below is generated by plot.py at 2018-10-26 20:25:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 41.04 Mbit/s
95th percentile per-packet one-way delay: 48.824 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 41.04 Mbit/s
95th percentile per-packet one-way delay: 48.824 ms
Loss rate: 0.63%
```

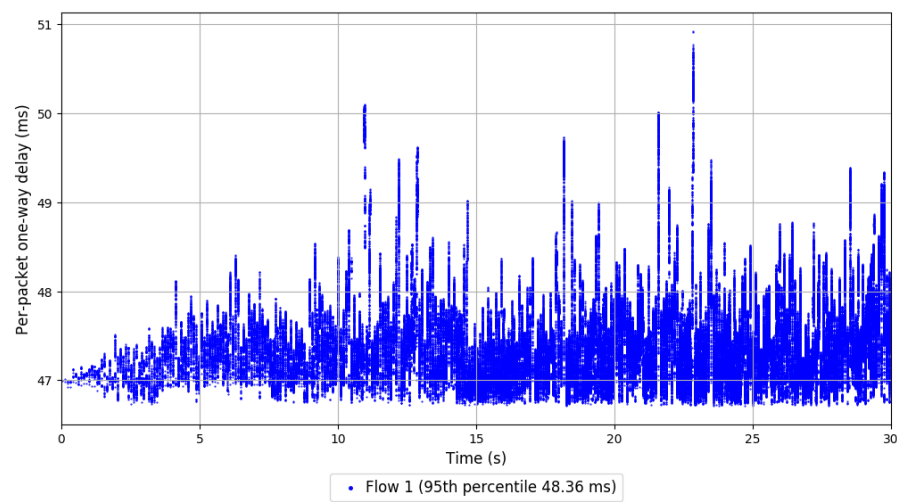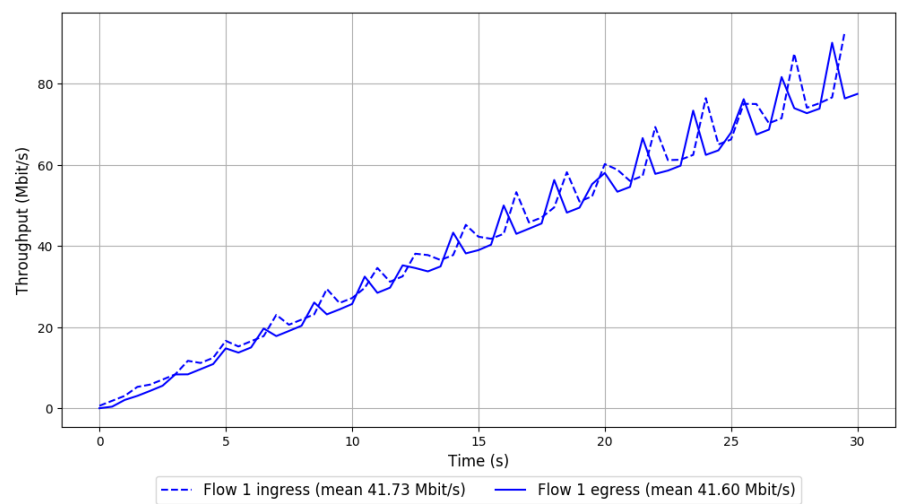## Run 3: Report of LEDBAT — Data Link

```
Run 4: Statistics of LEDBAT

Start at: 2018-10-26 18:54:32
End at: 2018-10-26 18:55:02
Local clock offset: 0.256 ms
Remote clock offset: -0.122 ms


# Below is generated by plot.py at 2018-10-26 20:25:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 41.60 Mbit/s
95th percentile per-packet one-way delay: 48.358 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 41.60 Mbit/s
95th percentile per-packet one-way delay: 48.358 ms
Loss rate: 0.62%
```

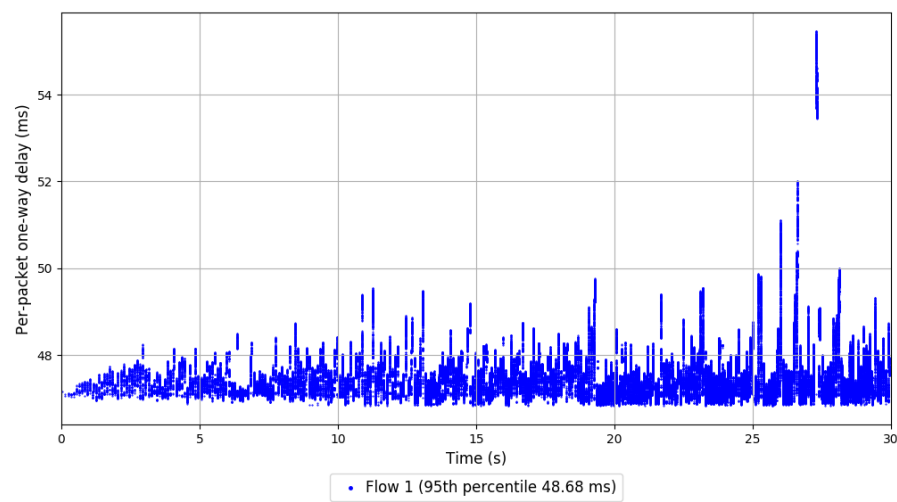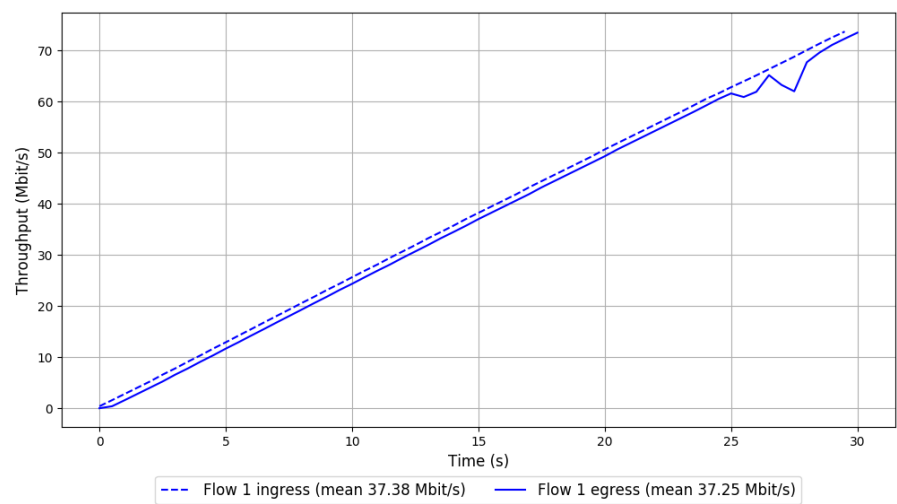# Run 4: Report of LEDBAT — Data Link

```
Run 5: Statistics of LEDBAT

Start at: 2018-10-26 19:20:15
End at: 2018-10-26 19:20:45
Local clock offset: -0.495 ms
Remote clock offset: -0.126 ms


# Below is generated by plot.py at 2018-10-26 20:25:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 37.25 Mbit/s
95th percentile per-packet one-way delay: 48.684 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 37.25 Mbit/s
95th percentile per-packet one-way delay: 48.684 ms
Loss rate: 0.66%
```

Run 5: Report of LEDBAT — Data Link

Flow 1 ingress (mean 37.38 Mbit/s) --- Flow 1 egress (mean 37.25 Mbit/s)

• Flow 1 (95th percentile 48.68 ms)

```
Run 1: Statistics of Indigo-Muses

Start at: 2018-10-26 17:50:31
End at: 2018-10-26 17:51:01
Local clock offset: -0.195 ms
Remote clock offset: 0.029 ms

# Below is generated by plot.py at 2018-10-26 20:34:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 692.82 Mbit/s
95th percentile per-packet one-way delay: 66.349 ms
Loss rate: 0.35%
-- Flow 1:
Average throughput: 692.82 Mbit/s
95th percentile per-packet one-way delay: 66.349 ms
Loss rate: 0.35%
```
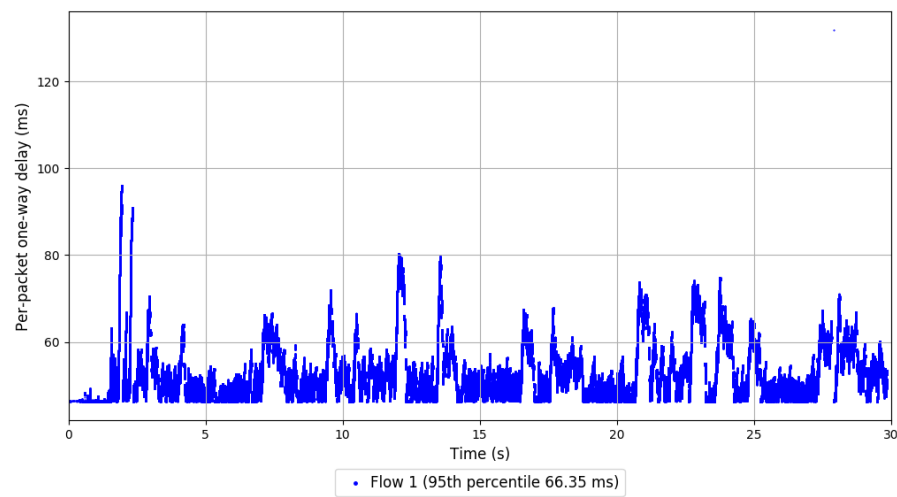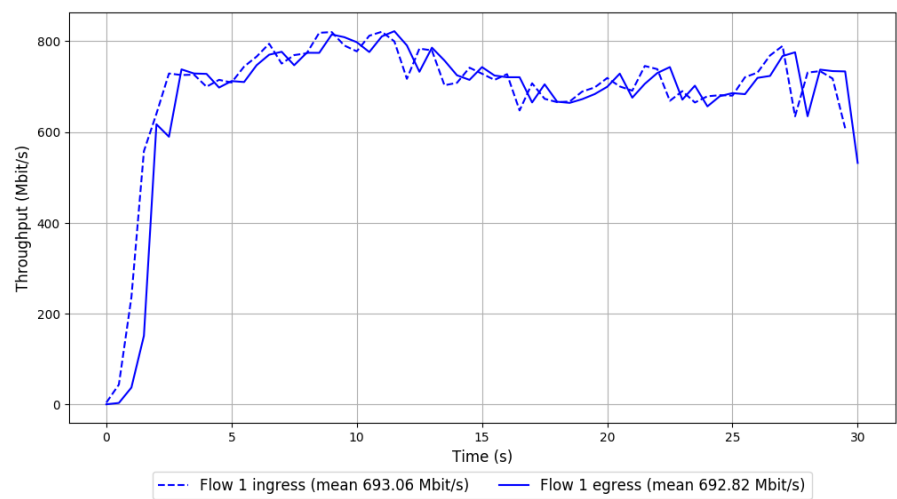
Run 1: Report of Indigo-Muses — Data Link

```
Run 2: Statistics of Indigo-Muses

Start at: 2018-10-26 18:16:20
End at: 2018-10-26 18:16:50
Local clock offset: -0.136 ms
Remote clock offset: 0.038 ms


# Below is generated by plot.py at 2018-10-26 20:34:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 698.14 Mbit/s
95th percentile per-packet one-way delay: 66.428 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 698.14 Mbit/s
95th percentile per-packet one-way delay: 66.428 ms
Loss rate: 0.34%
```
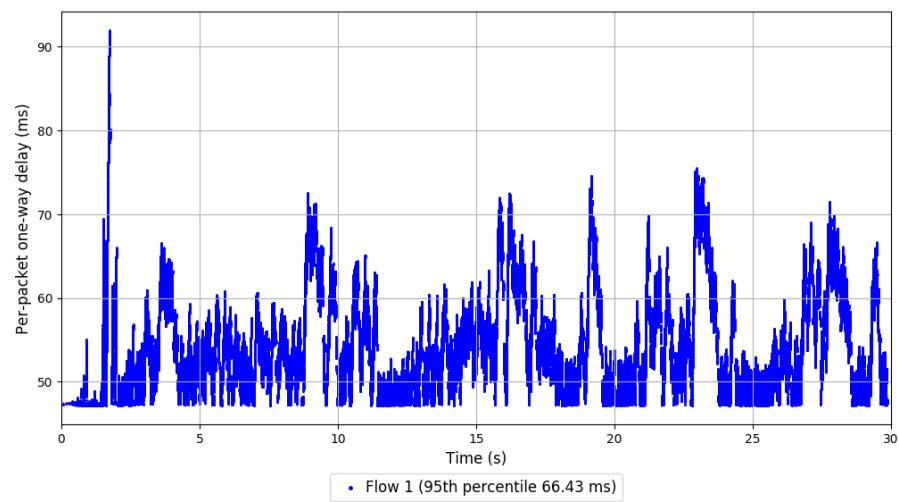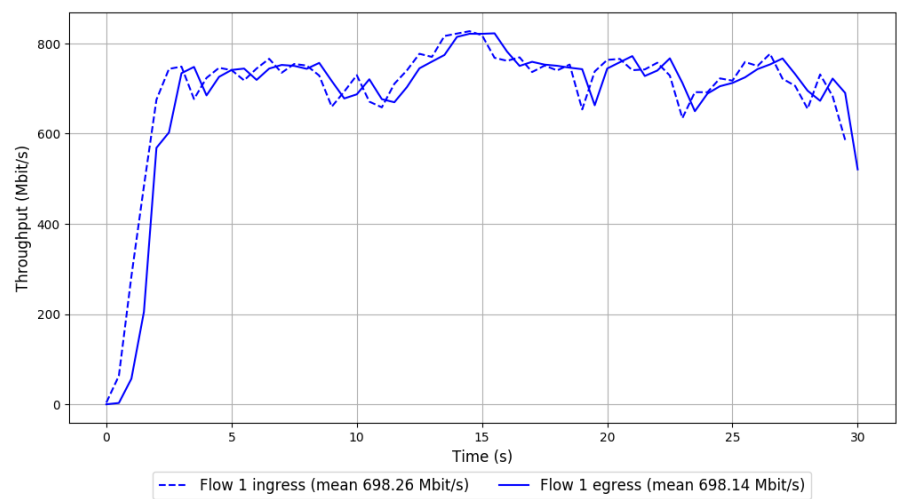
Run 2: Report of Indigo-Muses — Data Link

```
Run 3: Statistics of Indigo-Muses

Start at: 2018-10-26 18:42:01
End at: 2018-10-26 18:42:31
Local clock offset: -0.119 ms
Remote clock offset: -0.1 ms


# Below is generated by plot.py at 2018-10-26 20:34:46
# Datalink statistics
-- Total of 1 flow:
Average throughput: 685.76 Mbit/s
95th percentile per-packet one-way delay: 68.740 ms
Loss rate: 0.32%
-- Flow 1:
Average throughput: 685.76 Mbit/s
95th percentile per-packet one-way delay: 68.740 ms
Loss rate: 0.32%
```
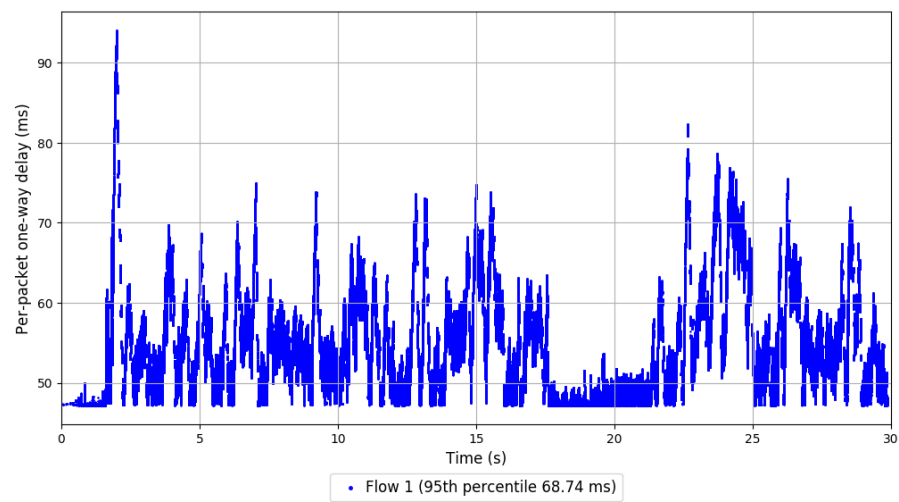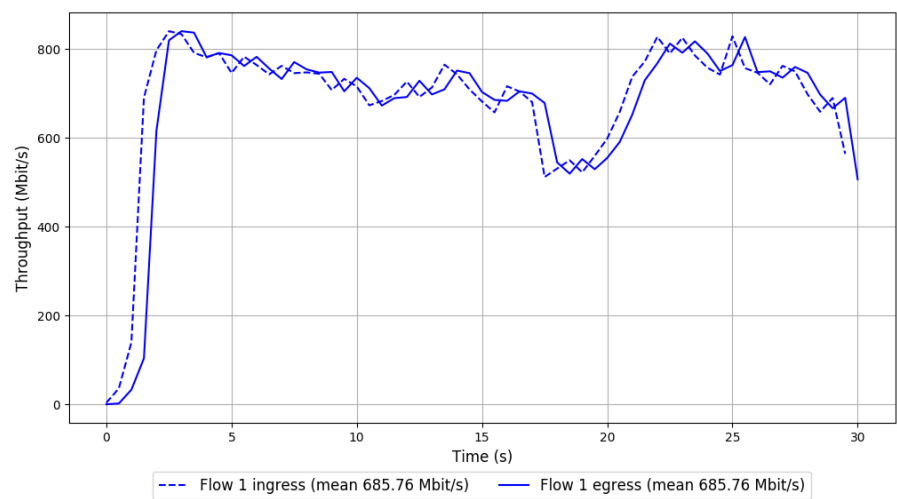
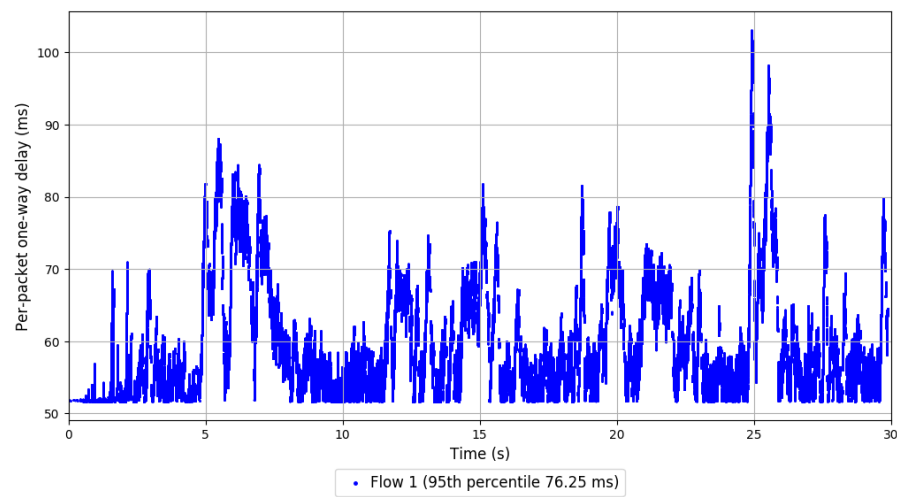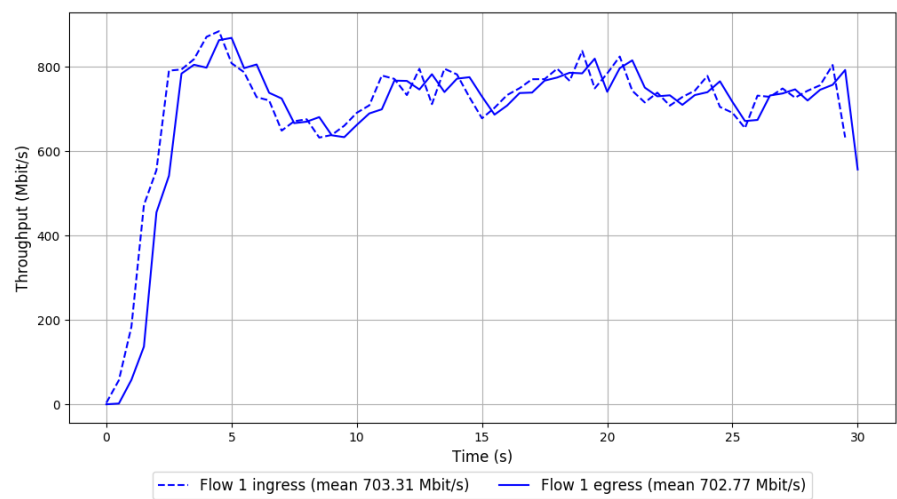Run 3: Report of Indigo-Muses — Data Link

```
Run 4: Statistics of Indigo-Muses

Start at: 2018-10-26 19:07:34
End at: 2018-10-26 19:08:04
Local clock offset: -0.099 ms
Remote clock offset: -0.087 ms


# Below is generated by plot.py at 2018-10-26 20:35:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 702.77 Mbit/s
95th percentile per-packet one-way delay: 76.250 ms
Loss rate: 0.41%
-- Flow 1:
Average throughput: 702.77 Mbit/s
95th percentile per-packet one-way delay: 76.250 ms
Loss rate: 0.41%
```

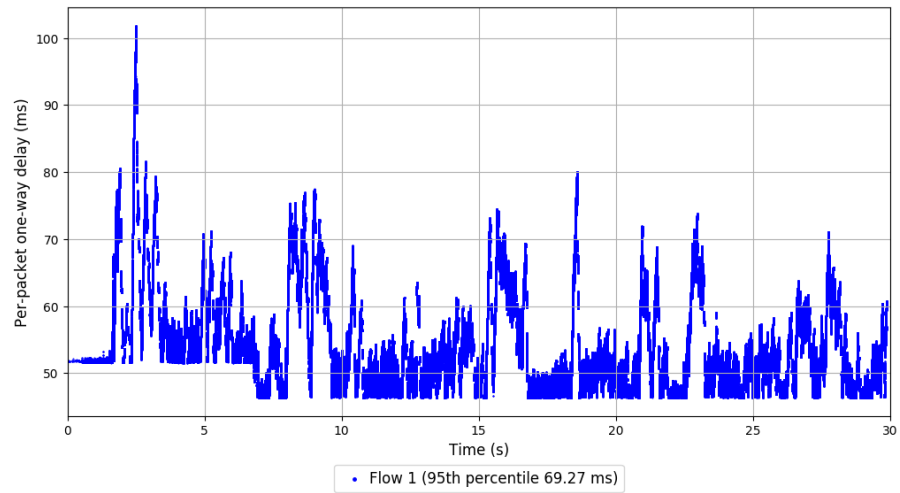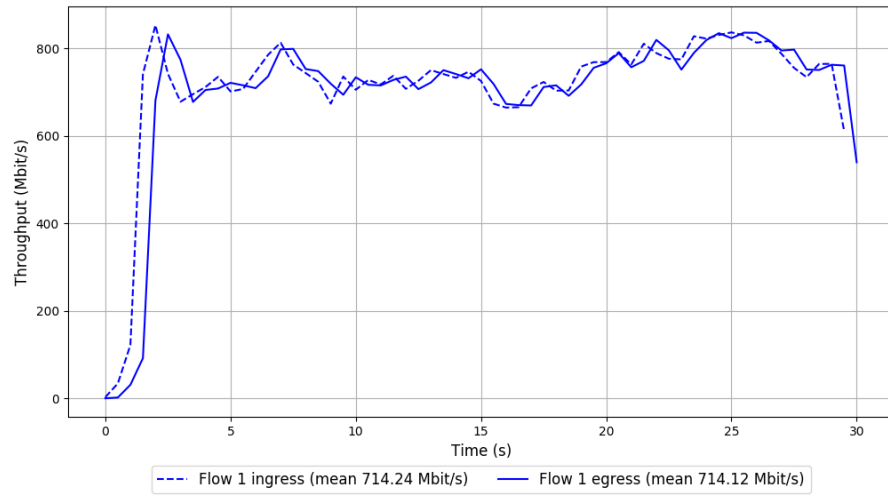Run 4: Report of Indigo-Muses — Data Link

```
Run 5: Statistics of Indigo-Muses

Start at: 2018-10-26 19:33:21
End at: 2018-10-26 19:33:51
Local clock offset: -0.122 ms
Remote clock offset: -0.101 ms


# Below is generated by plot.py at 2018-10-26 20:36:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 714.12 Mbit/s
95th percentile per-packet one-way delay: 69.270 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 714.12 Mbit/s
95th percentile per-packet one-way delay: 69.270 ms
Loss rate: 0.34%
```

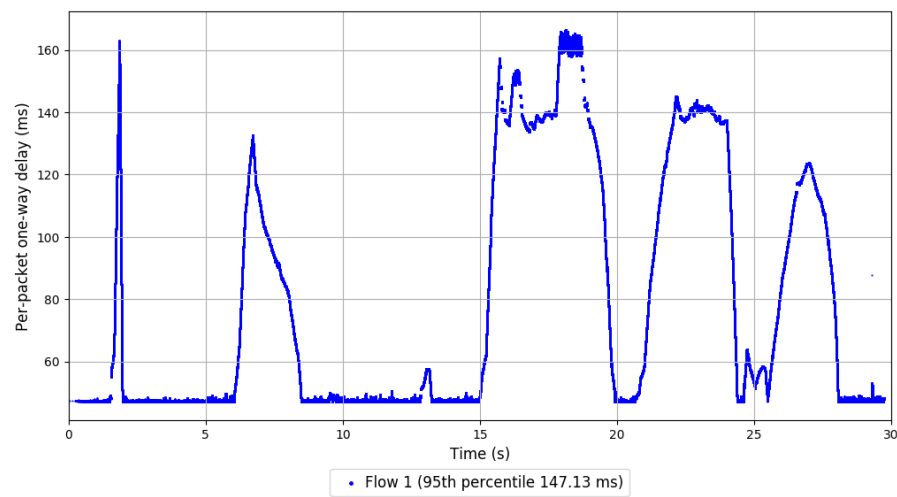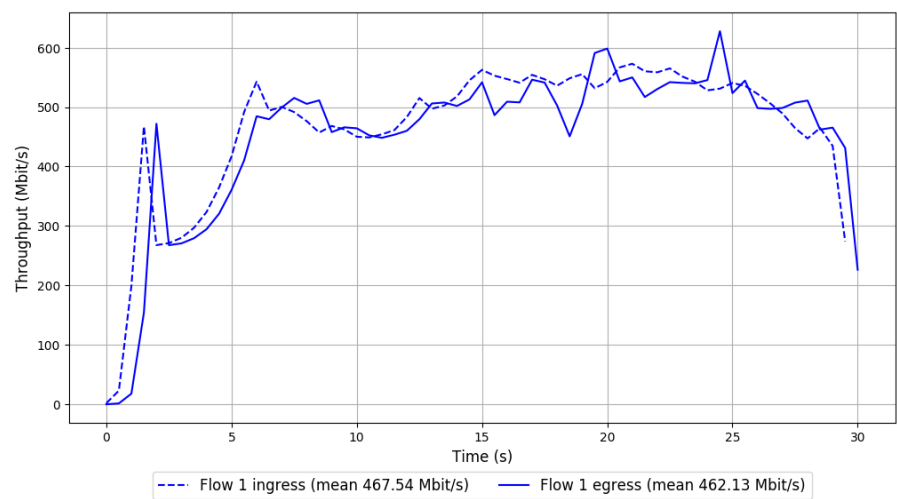Run 5: Report of Indigo-Muses — Data Link

```
Run 1: Statistics of PCC-Allegro

Start at: 2018-10-26 17:52:11
End at: 2018-10-26 17:52:41
Local clock offset: -0.177 ms
Remote clock offset: 0.061 ms


# Below is generated by plot.py at 2018-10-26 20:38:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 462.13 Mbit/s
95th percentile per-packet one-way delay: 147.129 ms
Loss rate: 1.48%
-- Flow 1:
Average throughput: 462.13 Mbit/s
95th percentile per-packet one-way delay: 147.129 ms
Loss rate: 1.48%
```

Run 1: Report of PCC-Allegro — Data Link

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-10-26 18:17:59
End at: 2018-10-26 18:18:29
Local clock offset: -0.528 ms
Remote clock offset: 0.031 ms


# Below is generated by plot.py at 2018-10-26 20:38:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 438.86 Mbit/s
95th percentile per-packet one-way delay: 148.775 ms
Loss rate: 2.82%
-- Flow 1:
Average throughput: 438.86 Mbit/s
95th percentile per-packet one-way delay: 148.775 ms
Loss rate: 2.82%
```
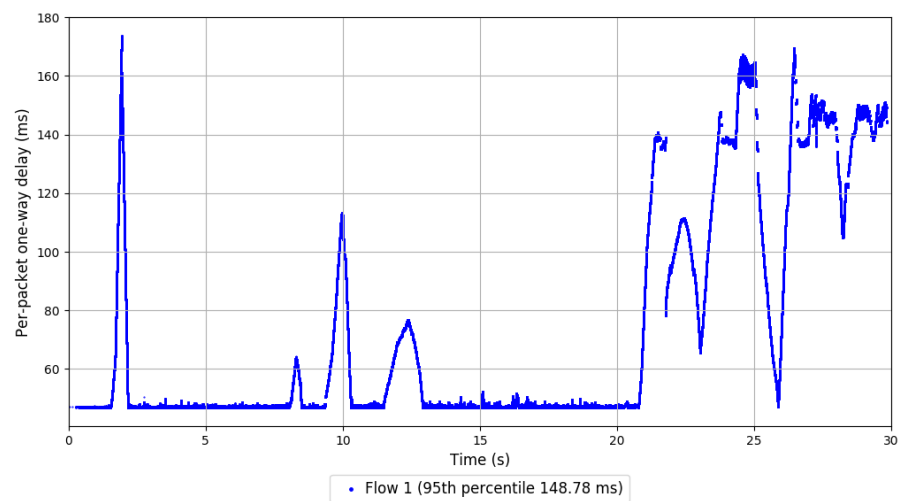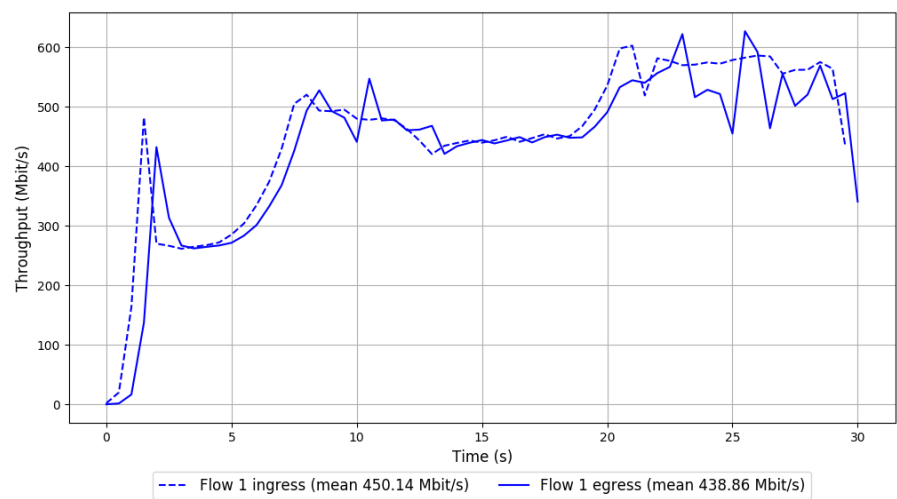
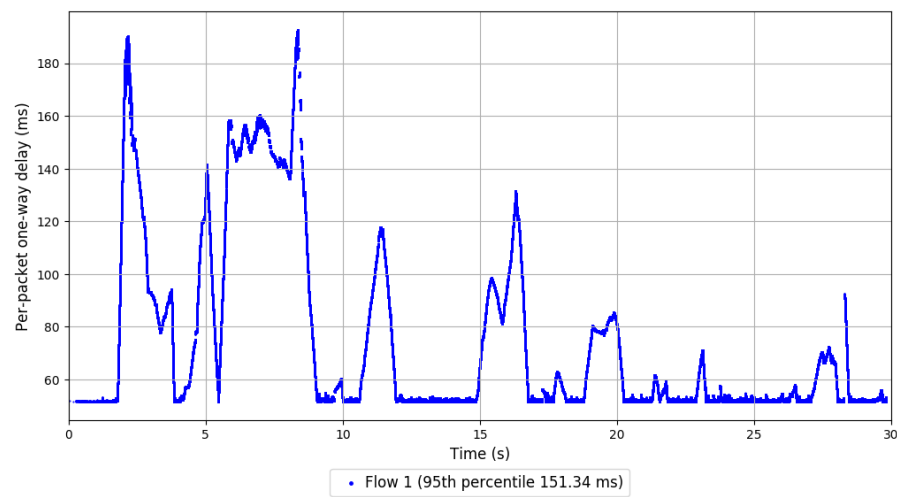## Run 2: Report of PCC-Allegro — Data Link

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-10-26 18:43:41
End at: 2018-10-26 18:44:11
Local clock offset: -0.103 ms
Remote clock offset: -0.083 ms


# Below is generated by plot.py at 2018-10-26 20:40:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 487.59 Mbit/s
95th percentile per-packet one-way delay: 151.343 ms
Loss rate: 1.62%
-- Flow 1:
Average throughput: 487.59 Mbit/s
95th percentile per-packet one-way delay: 151.343 ms
Loss rate: 1.62%
```

Run 3: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 493.98 Mbit/s)   Flow 1 egress (mean 487.59 Mbit/s)
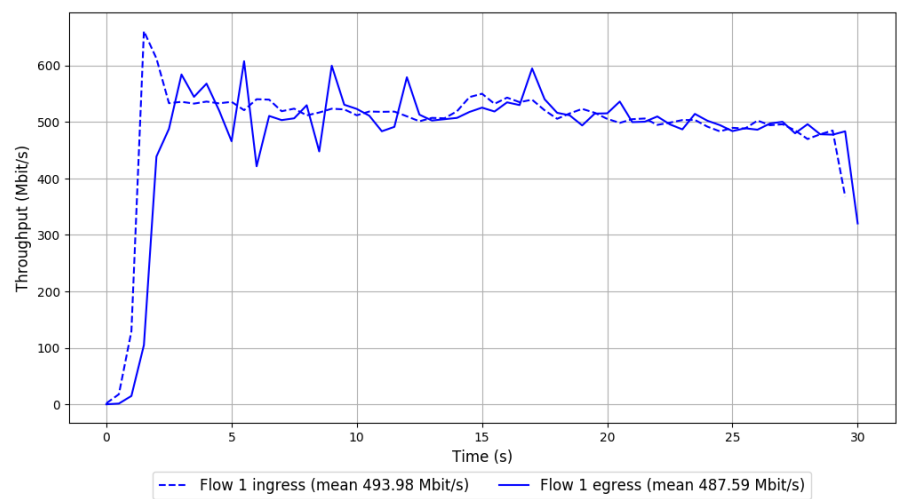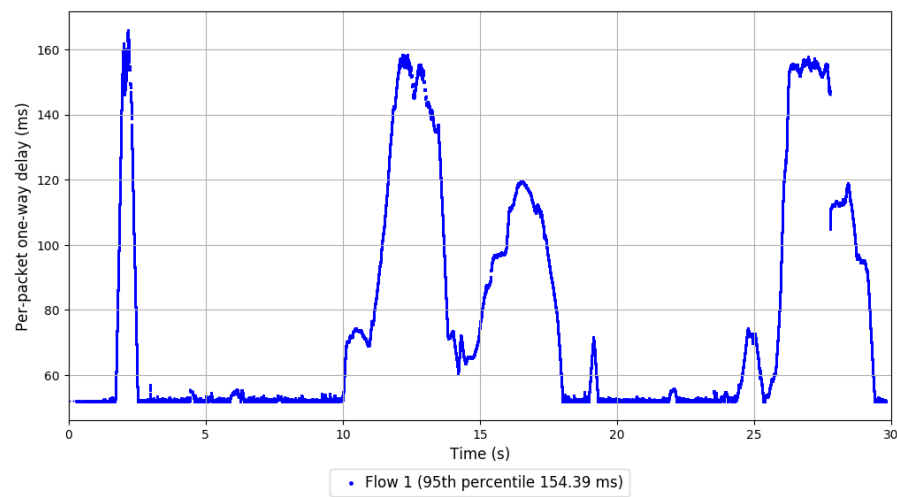

Flow 1 (95th percentile 151.34 ms)

```
Run 4: Statistics of PCC-Allegro

Start at: 2018-10-26 19:09:15
End at: 2018-10-26 19:09:45
Local clock offset: -0.097 ms
Remote clock offset: -0.125 ms


# Below is generated by plot.py at 2018-10-26 20:51:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 498.75 Mbit/s
95th percentile per-packet one-way delay: 154.387 ms
Loss rate: 1.22%
-- Flow 1:
Average throughput: 498.75 Mbit/s
95th percentile per-packet one-way delay: 154.387 ms
Loss rate: 1.22%
```
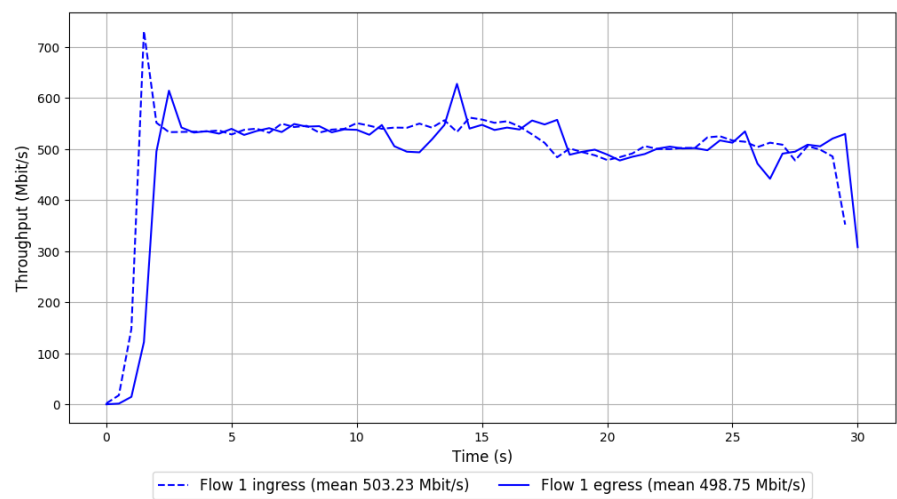
Run 4: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 503.23 Mbit/s) ----   Flow 1 egress (mean 498.75 Mbit/s) ——

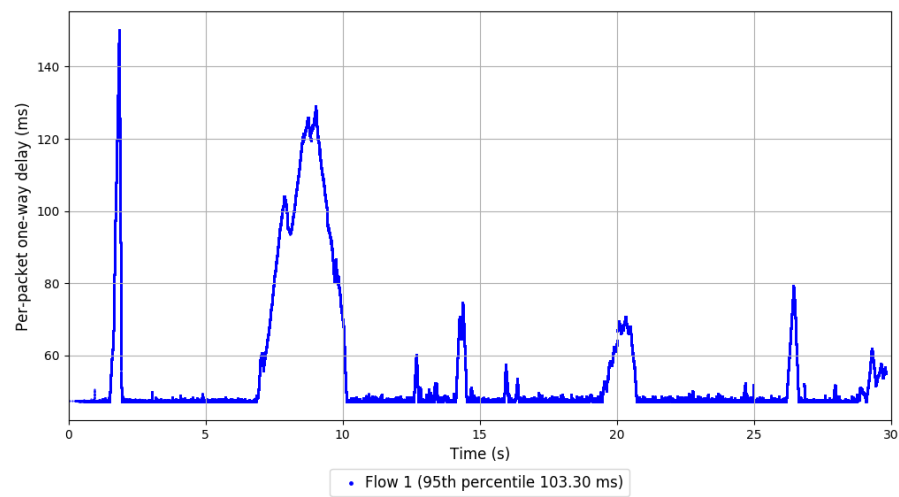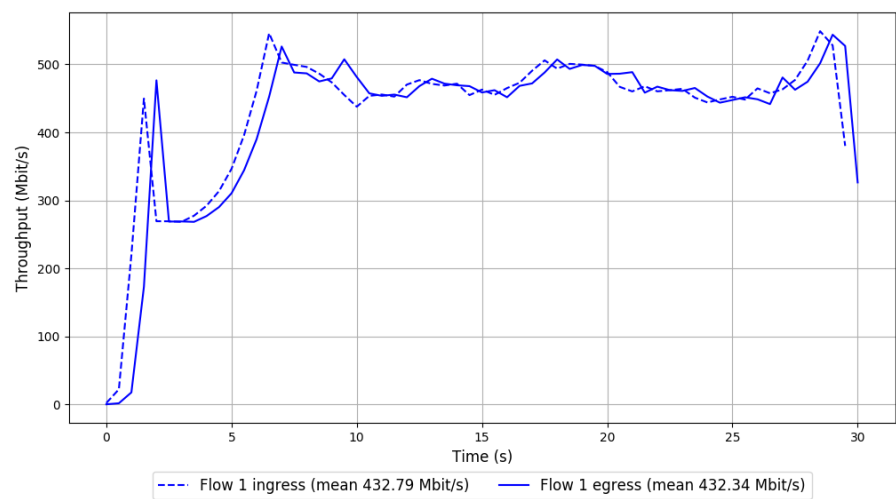
• Flow 1 (95th percentile 154.39 ms)

```
Run 5: Statistics of PCC-Allegro

Start at: 2018-10-26 19:35:00
End at: 2018-10-26 19:35:30
Local clock offset: -0.177 ms
Remote clock offset: -0.073 ms


# Below is generated by plot.py at 2018-10-26 20:51:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 432.34 Mbit/s
95th percentile per-packet one-way delay: 103.302 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 432.34 Mbit/s
95th percentile per-packet one-way delay: 103.302 ms
Loss rate: 0.43%
```

Run 5: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 432.79 Mbit/s)   Flow 1 egress (mean 432.34 Mbit/s)

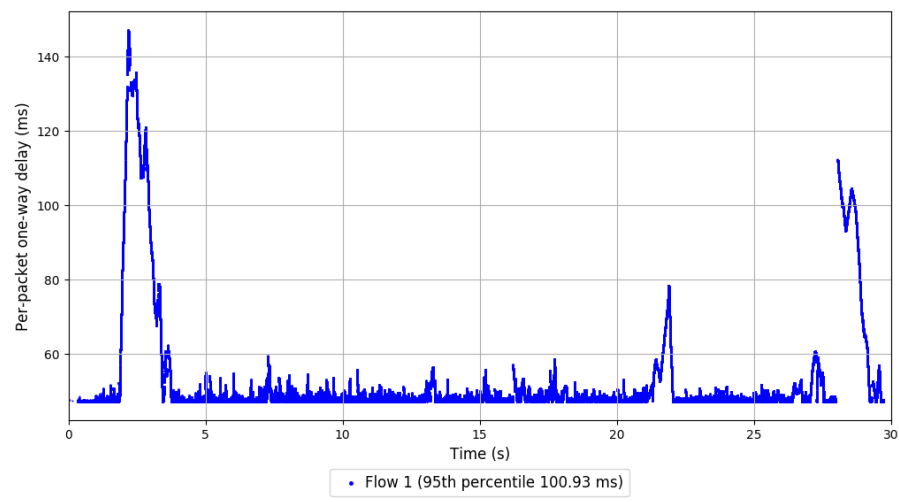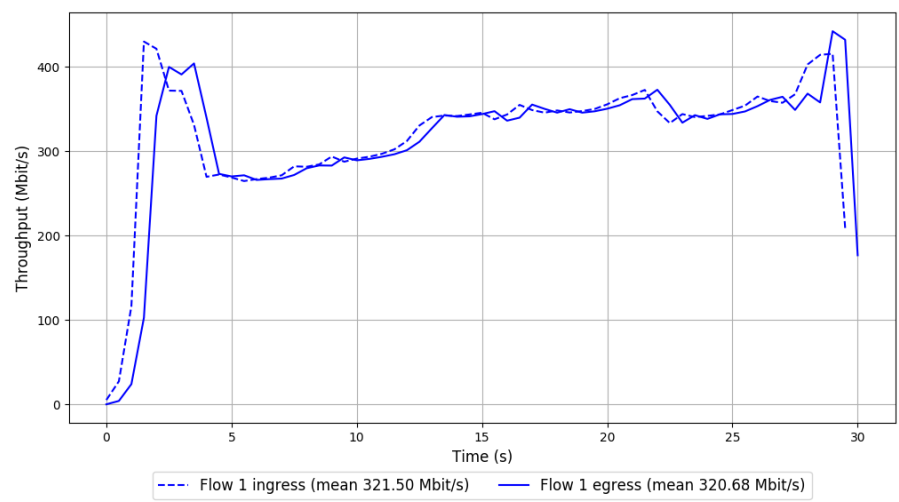
• Flow 1 (95th percentile 103.30 ms)

```
Run 1: Statistics of PCC-Expr

Start at: 2018-10-26 17:28:30
End at: 2018-10-26 17:29:00
Local clock offset: -0.192 ms
Remote clock offset: 0.023 ms


# Below is generated by plot.py at 2018-10-26 20:51:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 320.68 Mbit/s
95th percentile per-packet one-way delay: 100.932 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 320.68 Mbit/s
95th percentile per-packet one-way delay: 100.932 ms
Loss rate: 0.58%
```

Run 1: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 321.50 Mbit/s)   Flow 1 egress (mean 320.68 Mbit/s)

Flow 1 (95th percentile 100.93 ms)

```
Run 2: Statistics of PCC-Expr

Start at: 2018-10-26 17:53:46
End at: 2018-10-26 17:54:16
Local clock offset: -0.576 ms
Remote clock offset: 0.051 ms


# Below is generated by plot.py at 2018-10-26 20:51:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 346.13 Mbit/s
95th percentile per-packet one-way delay: 141.883 ms
Loss rate: 4.63%
-- Flow 1:
Average throughput: 346.13 Mbit/s
95th percentile per-packet one-way delay: 141.883 ms
Loss rate: 4.63%
```
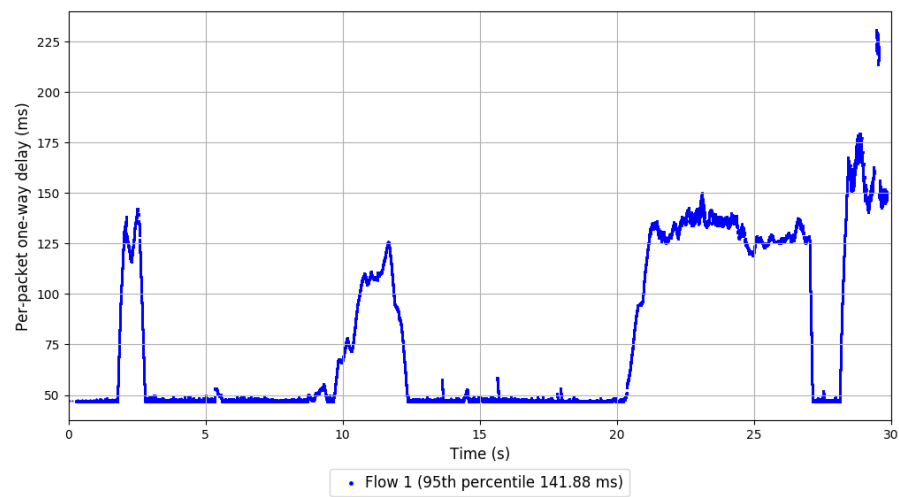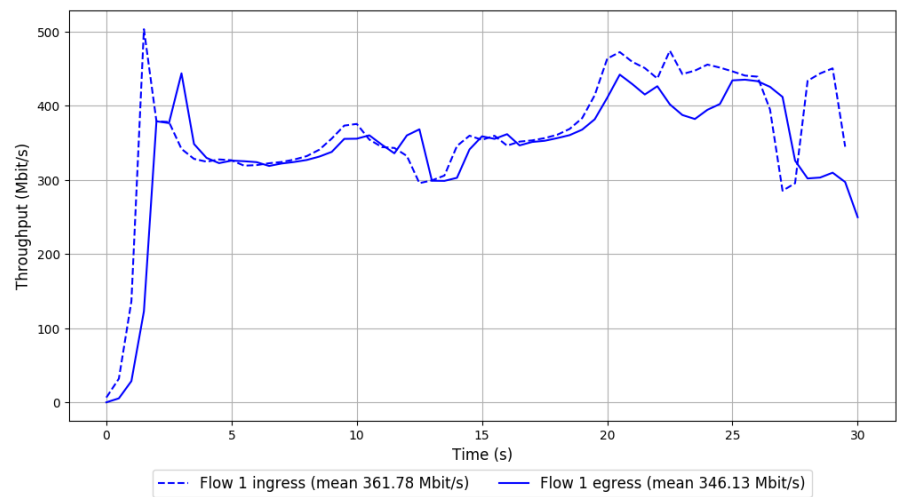
Run 2: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 361.78 Mbit/s)   Flow 1 egress (mean 346.13 Mbit/s)

Flow 1 (95th percentile 141.88 ms)

```
Run 3: Statistics of PCC-Expr

Start at: 2018-10-26 18:19:32
End at: 2018-10-26 18:20:02
Local clock offset: -0.151 ms
Remote clock offset: 0.007 ms


# Below is generated by plot.py at 2018-10-26 20:51:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 365.94 Mbit/s
95th percentile per-packet one-way delay: 149.801 ms
Loss rate: 7.54%
-- Flow 1:
Average throughput: 365.94 Mbit/s
95th percentile per-packet one-way delay: 149.801 ms
Loss rate: 7.54%
```
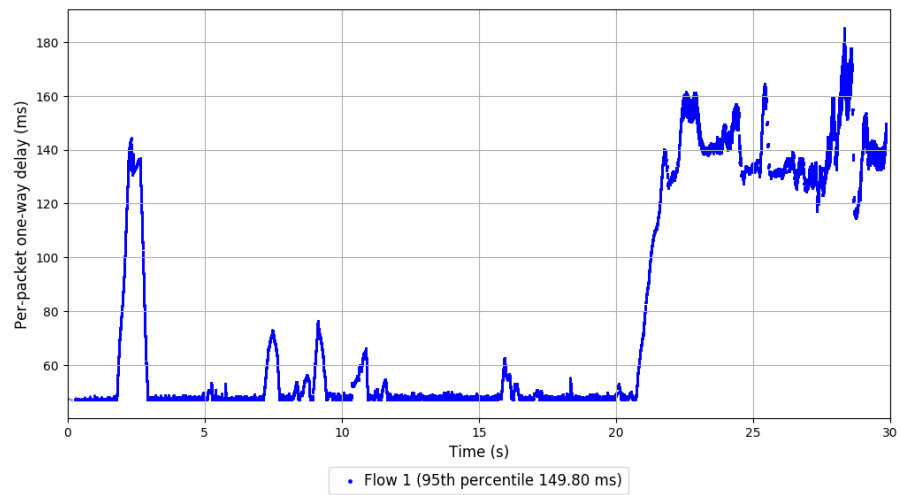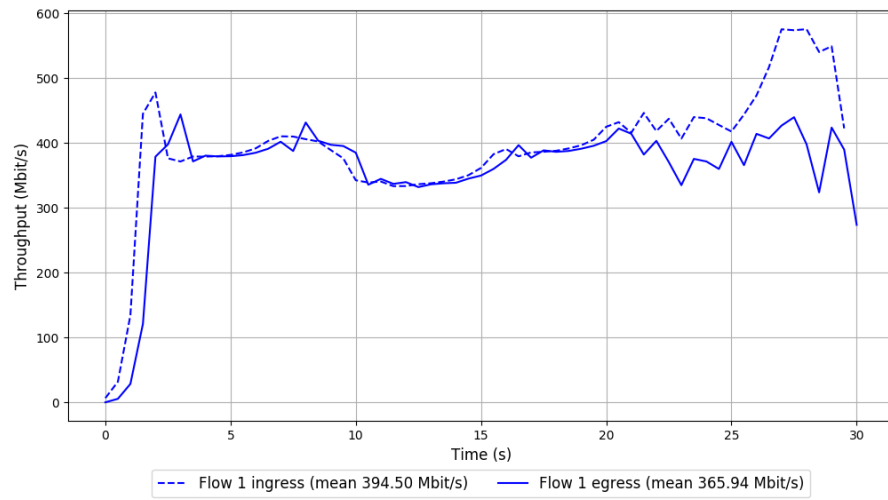
Run 3: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 394.50 Mbit/s)   Flow 1 egress (mean 365.94 Mbit/s)

Flow 1 (95th percentile 149.80 ms)

```
Run 4: Statistics of PCC-Expr

Start at: 2018-10-26 18:45:18
End at: 2018-10-26 18:45:48
Local clock offset: -0.468 ms
Remote clock offset: -0.1 ms


# Below is generated by plot.py at 2018-10-26 20:51:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 349.36 Mbit/s
95th percentile per-packet one-way delay: 157.622 ms
Loss rate: 3.51%
-- Flow 1:
Average throughput: 349.36 Mbit/s
95th percentile per-packet one-way delay: 157.622 ms
Loss rate: 3.51%
```
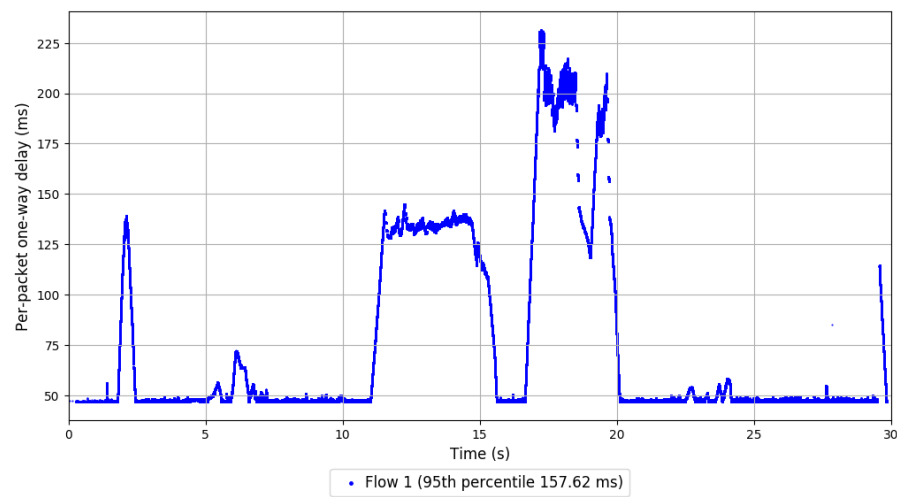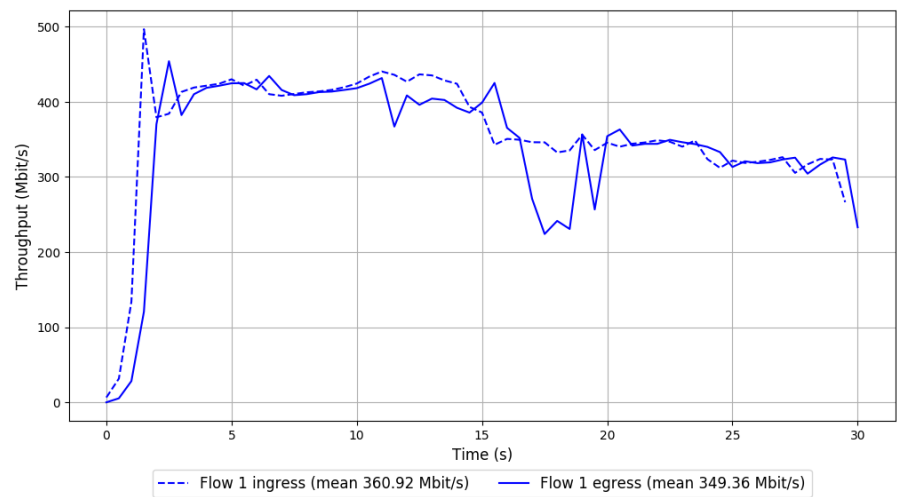
Run 4: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 360.92 Mbit/s)   Flow 1 egress (mean 349.36 Mbit/s)
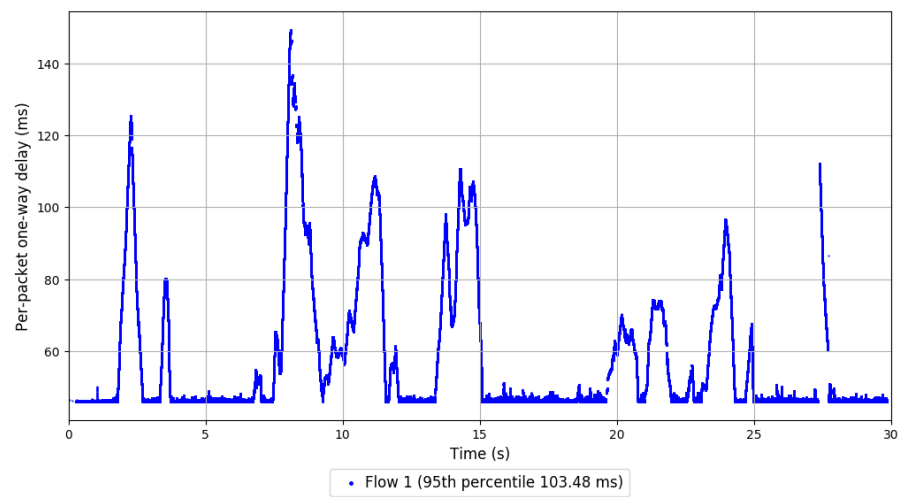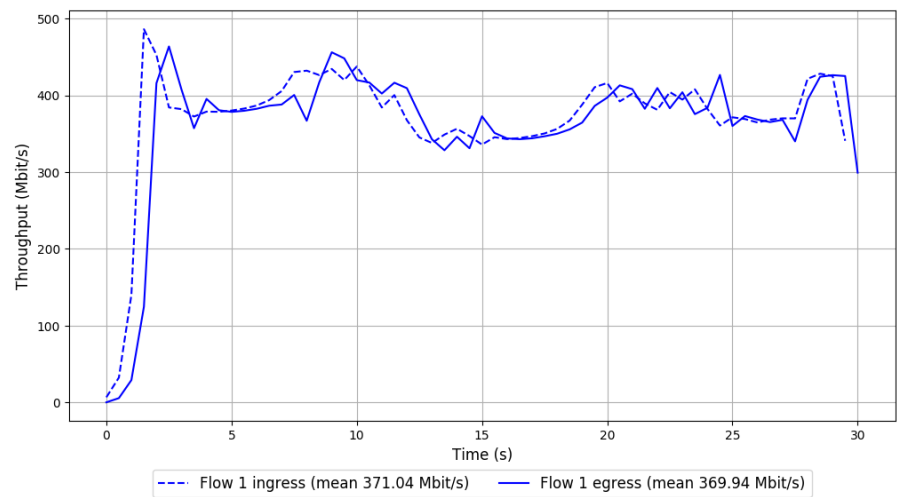

Flow 1 (95th percentile 157.62 ms)

```
Run 5: Statistics of PCC-Expr

Start at: 2018-10-26 19:10:53
End at: 2018-10-26 19:11:23
Local clock offset: -0.445 ms
Remote clock offset: -0.102 ms


# Below is generated by plot.py at 2018-10-26 20:51:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 369.94 Mbit/s
95th percentile per-packet one-way delay: 103.483 ms
Loss rate: 0.61%
-- Flow 1:
Average throughput: 369.94 Mbit/s
95th percentile per-packet one-way delay: 103.483 ms
Loss rate: 0.61%
```

Run 5: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 371.04 Mbit/s) ---- Flow 1 egress (mean 369.94 Mbit/s)

Flow 1 (95th percentile 103.48 ms)
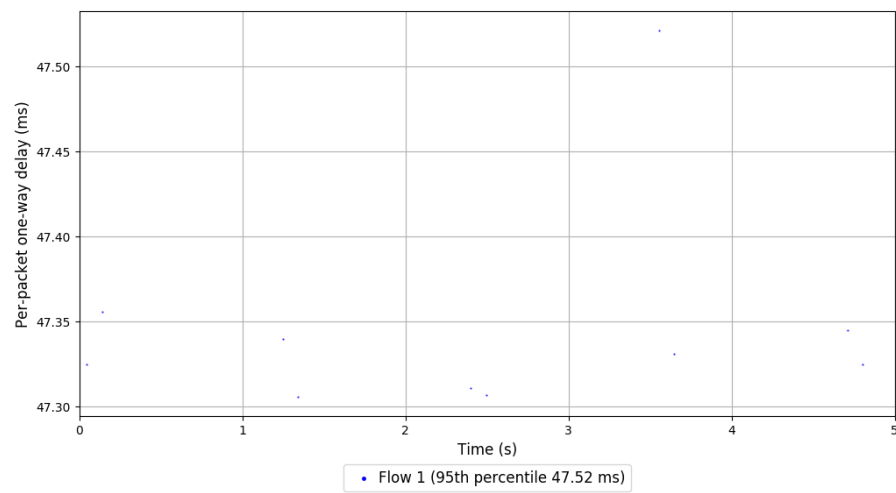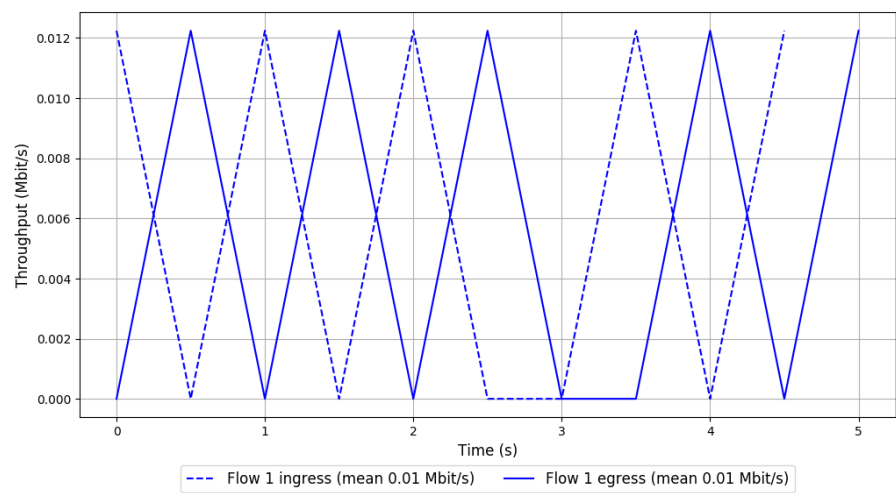
Run 1: Statistics of QUIC Cubic

Start at: 2018-10-26 17:39:06
End at: 2018-10-26 17:39:36
Local clock offset: -0.216 ms
Remote clock offset: 0.063 ms

Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-10-26 18:04:22
End at: 2018-10-26 18:04:52
Local clock offset: -0.513 ms
Remote clock offset: 0.013 ms


# Below is generated by plot.py at 2018-10-26 20:51:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 69.38 Mbit/s
95th percentile per-packet one-way delay: 51.567 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 69.38 Mbit/s
95th percentile per-packet one-way delay: 51.567 ms
Loss rate: 0.51%
```
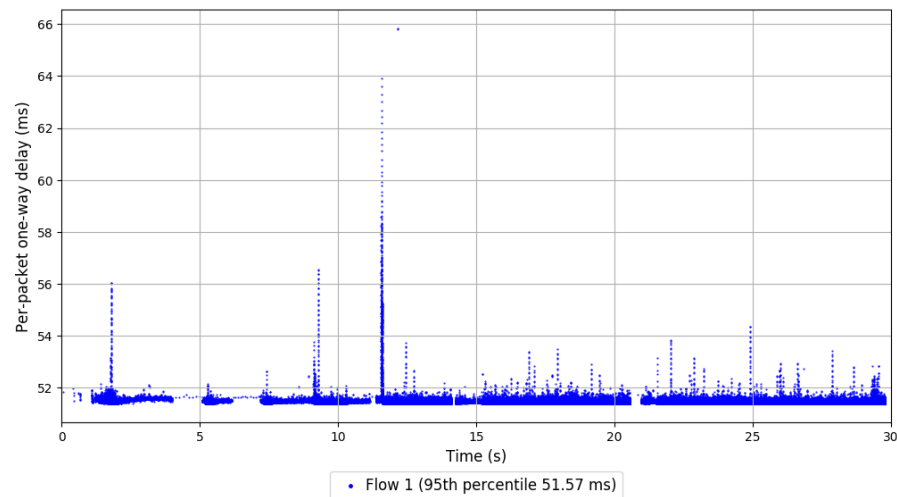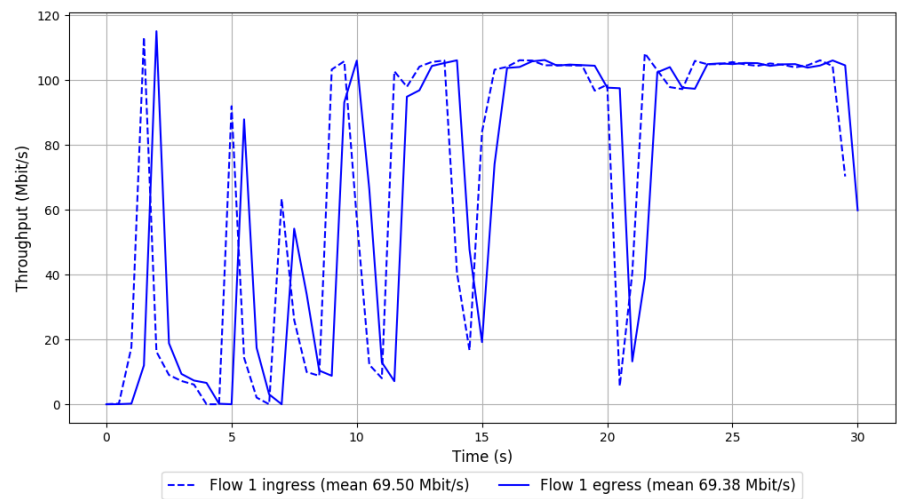
Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-10-26 18:30:07
End at: 2018-10-26 18:30:37
Local clock offset: -0.51 ms
Remote clock offset: -0.043 ms


# Below is generated by plot.py at 2018-10-26 20:51:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 57.46 Mbit/s
95th percentile per-packet one-way delay: 46.947 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 57.46 Mbit/s
95th percentile per-packet one-way delay: 46.947 ms
Loss rate: 0.58%
```
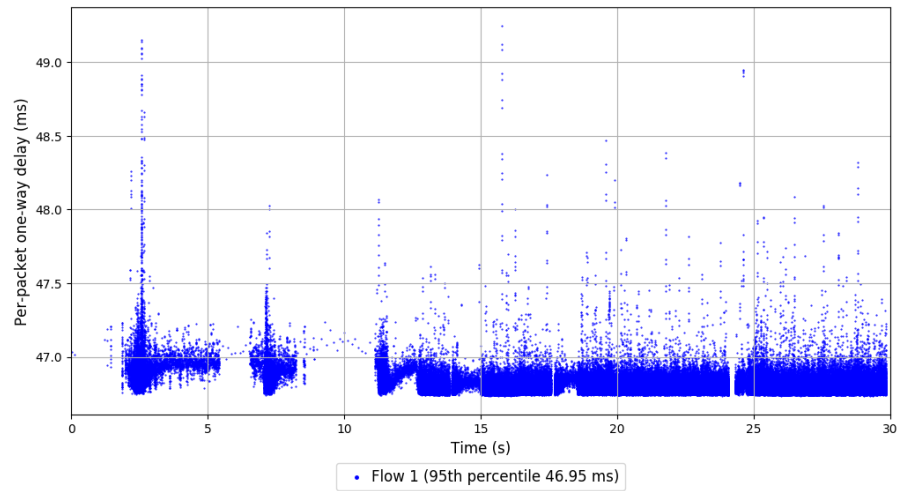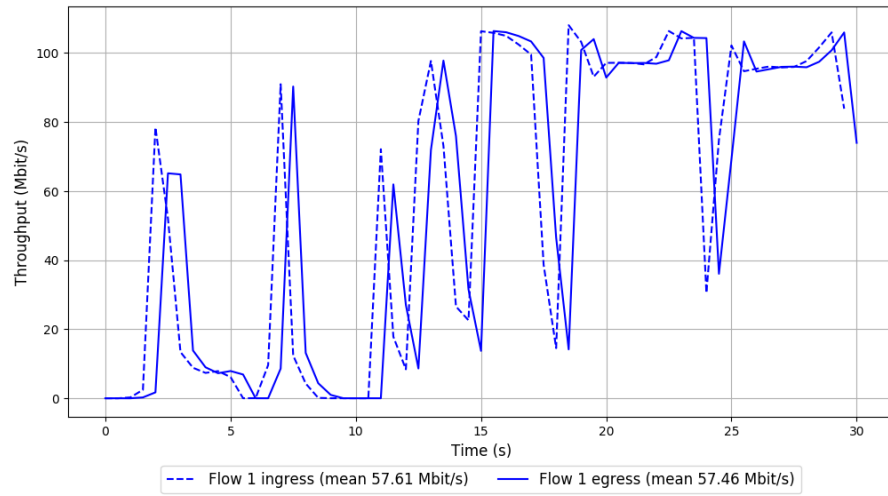
Run 3: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 57.61 Mbit/s)   Flow 1 egress (mean 57.46 Mbit/s)

Flow 1 (95th percentile 46.95 ms)

```
Run 4: Statistics of QUIC Cubic

Start at: 2018-10-26 18:55:42
End at: 2018-10-26 18:56:12
Local clock offset: -0.061 ms
Remote clock offset: -0.078 ms


# Below is generated by plot.py at 2018-10-26 20:51:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 79.30 Mbit/s
95th percentile per-packet one-way delay: 46.672 ms
Loss rate: 0.41%
-- Flow 1:
Average throughput: 79.30 Mbit/s
95th percentile per-packet one-way delay: 46.672 ms
Loss rate: 0.41%
```
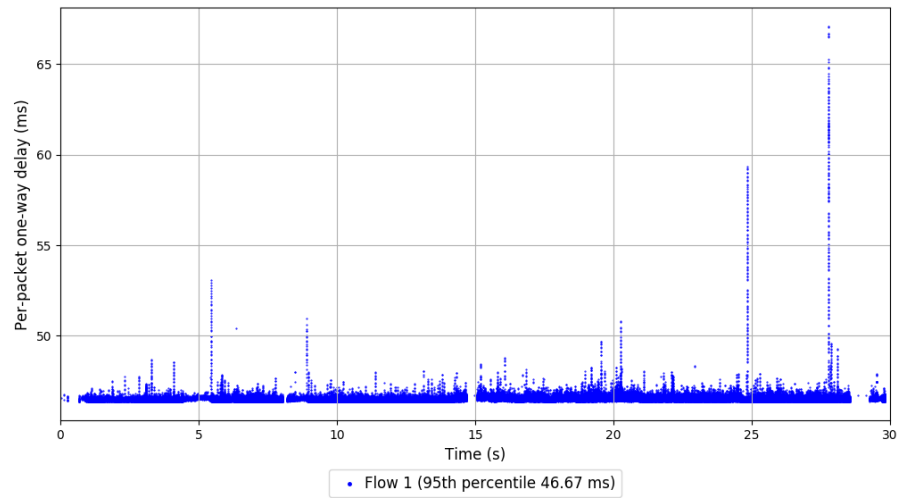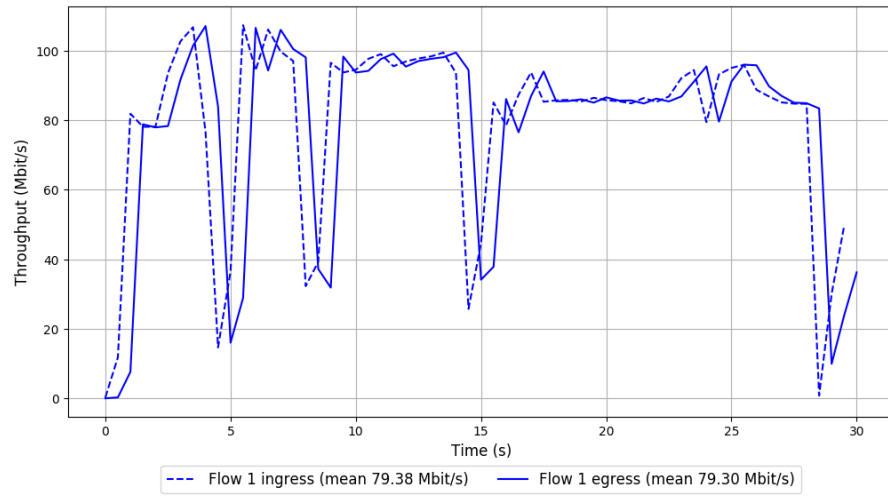
Run 4: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 79.38 Mbit/s) ---- Flow 1 egress (mean 79.30 Mbit/s) ——

Flow 1 (95th percentile 46.67 ms)

```
Run 5: Statistics of QUIC Cubic

Start at: 2018-10-26 19:21:25
End at: 2018-10-26 19:21:55
Local clock offset: 0.235 ms
Remote clock offset: -0.098 ms


# Below is generated by plot.py at 2018-10-26 20:51:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 82.19 Mbit/s
95th percentile per-packet one-way delay: 52.140 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 82.19 Mbit/s
95th percentile per-packet one-way delay: 52.140 ms
Loss rate: 0.39%
```
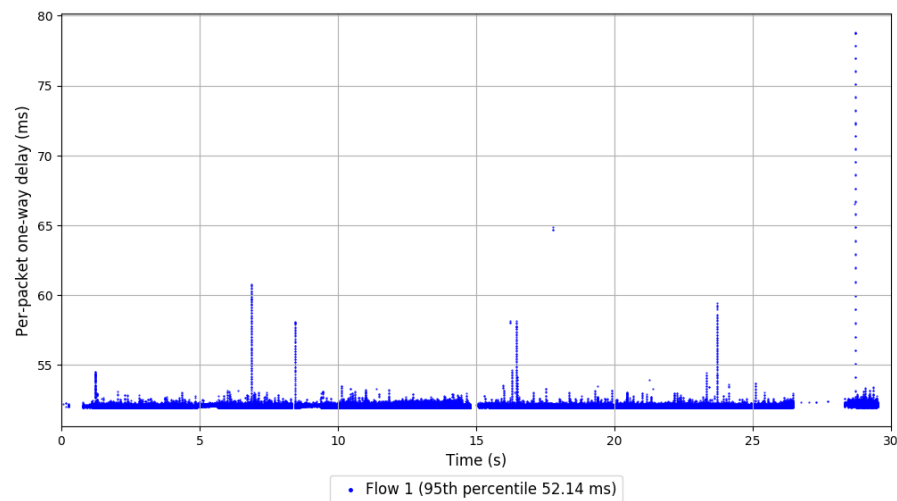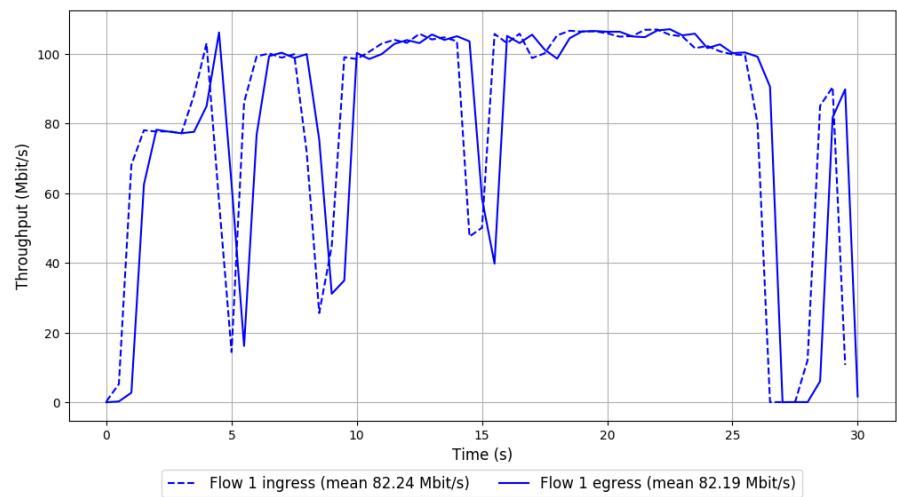
Run 5: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 82.24 Mbit/s) --- Flow 1 egress (mean 82.19 Mbit/s)

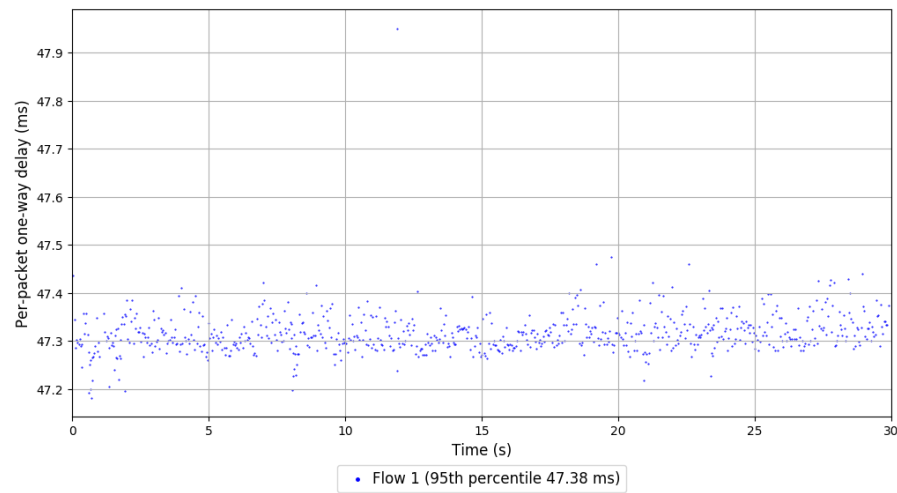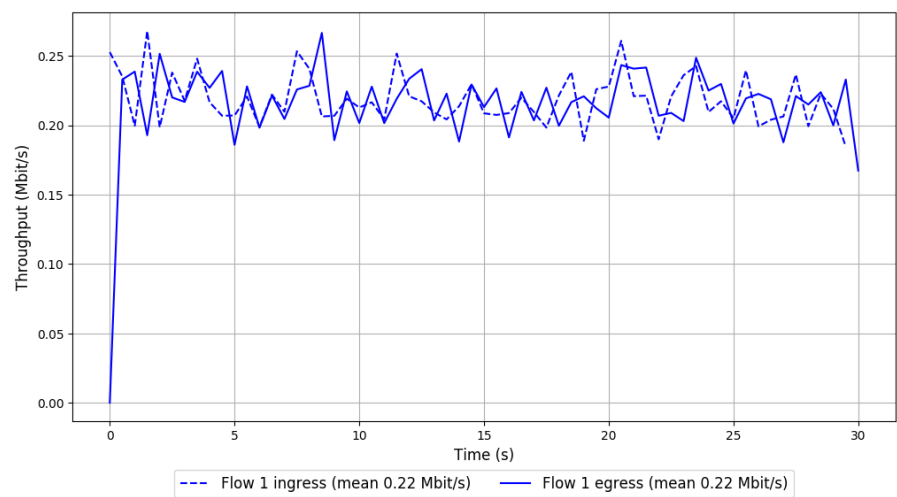

• Flow 1 (95th percentile 52.14 ms)

```
Run 1: Statistics of SCReAM

Start at: 2018-10-26 17:41:42
End at: 2018-10-26 17:42:12
Local clock offset: -0.217 ms
Remote clock offset: 0.014 ms


# Below is generated by plot.py at 2018-10-26 20:51:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 47.385 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 47.385 ms
Loss rate: 0.26%
```

Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2018-10-26 18:07:06
End at: 2018-10-26 18:07:36
Local clock offset: -0.141 ms
Remote clock offset: 0.0 ms

# Below is generated by plot.py at 2018-10-26 20:51:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 47.490 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 47.490 ms
Loss rate: 0.26%
```
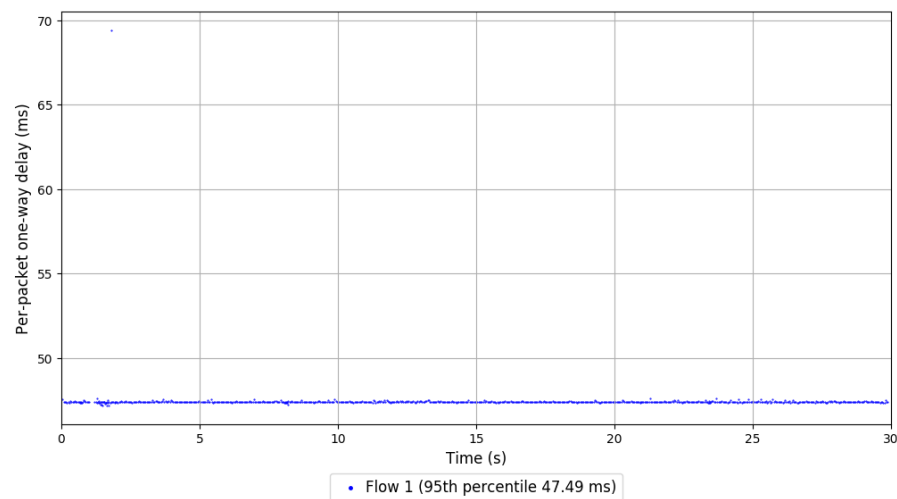
Run 2: Report of SCReAM — Data Link

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

Flow 1 (95th percentile 47.49 ms)

```
Run 3: Statistics of SCReAM

Start at: 2018-10-26 18:32:50
End at: 2018-10-26 18:33:20
Local clock offset: -0.482 ms
Remote clock offset: -0.047 ms


# Below is generated by plot.py at 2018-10-26 20:51:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 47.170 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 47.170 ms
Loss rate: 0.26%
```
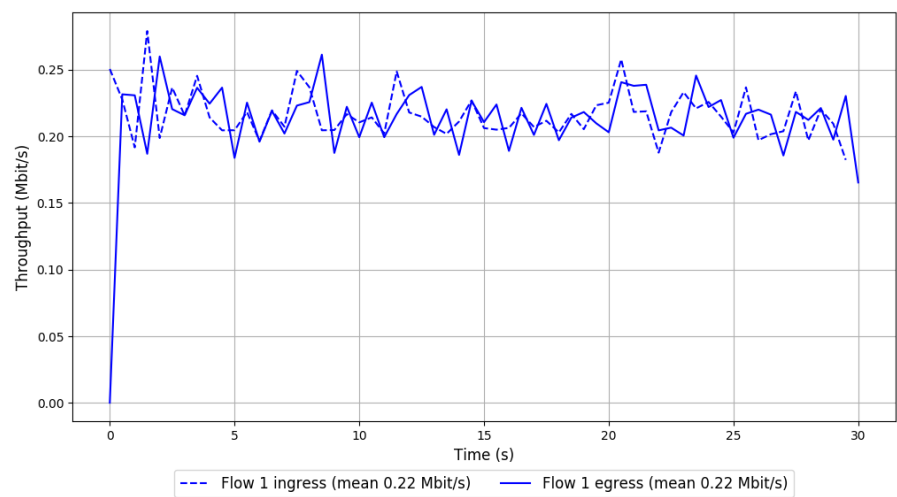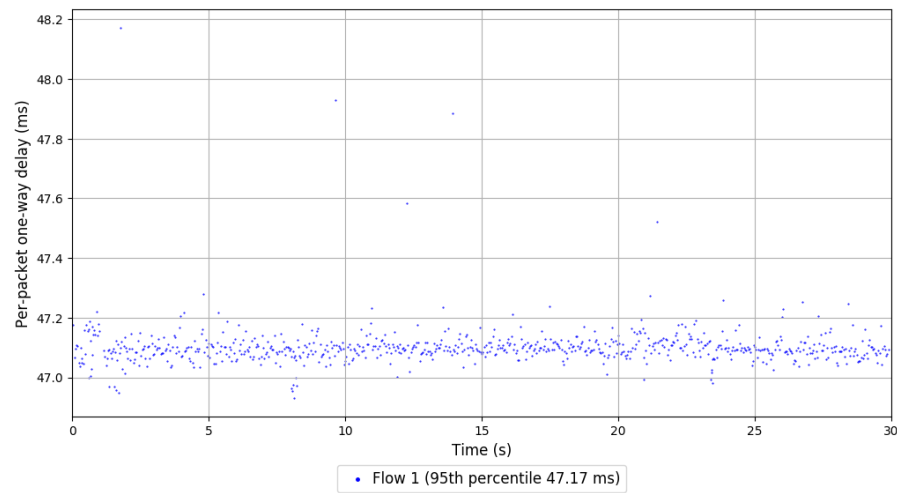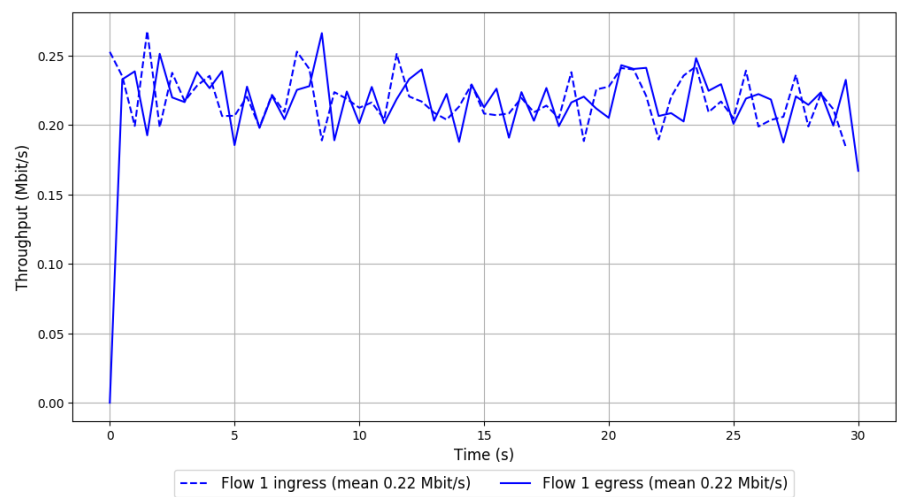
Run 3: Report of SCReAM — Data Link

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

Flow 1 (95th percentile 47.17 ms)

```
Run 4: Statistics of SCReAM

Start at: 2018-10-26 18:58:25
End at: 2018-10-26 18:58:55
Local clock offset: 0.238 ms
Remote clock offset: -0.11 ms

# Below is generated by plot.py at 2018-10-26 20:51:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 47.854 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 47.854 ms
Loss rate: 0.26%
```
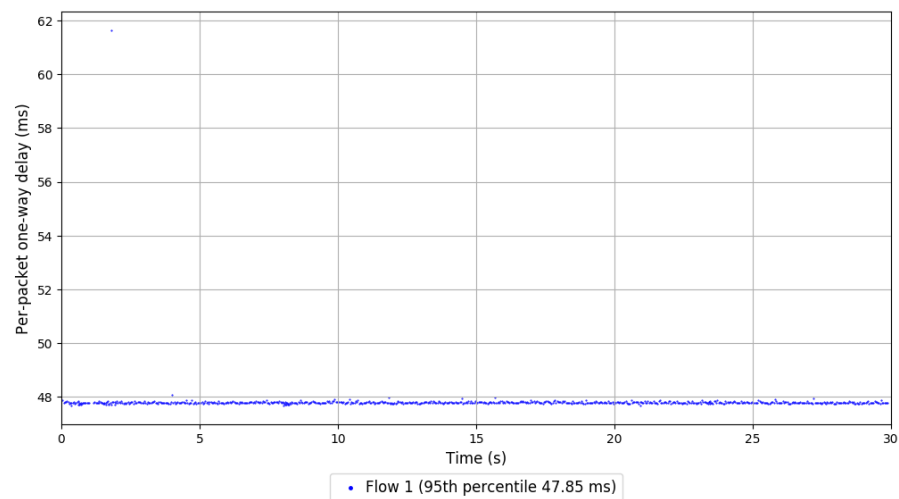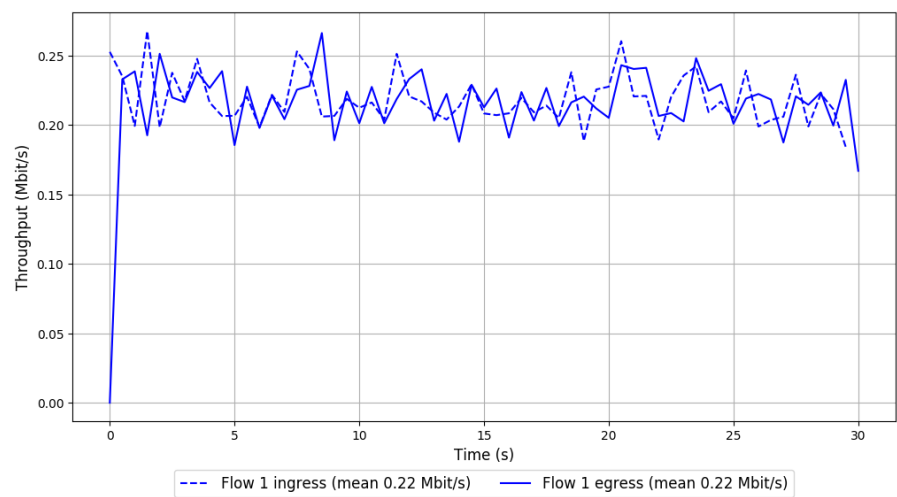
Run 4: Report of SCReAM — Data Link

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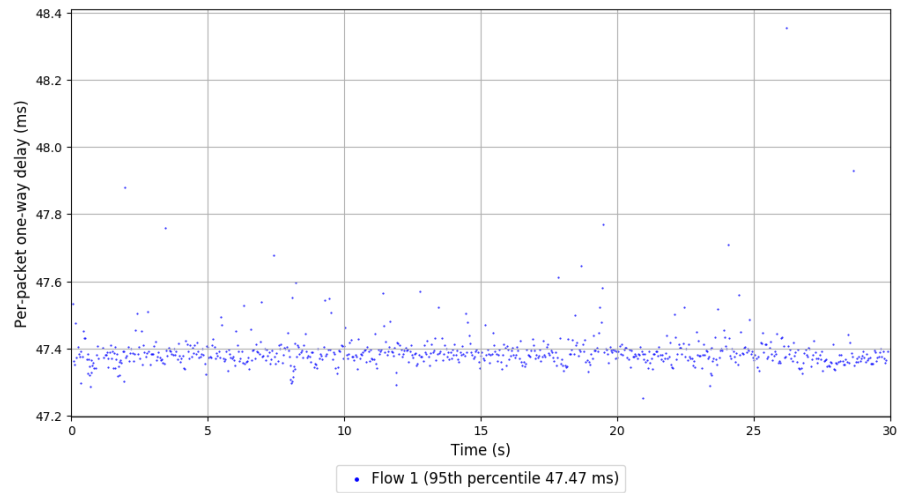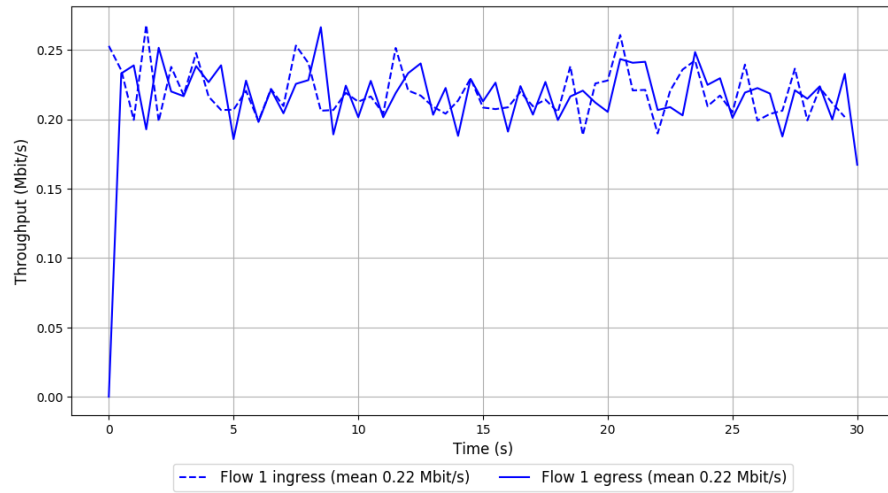

Flow 1 (95th percentile 47.85 ms)

```
Run 5: Statistics of SCReAM

Start at: 2018-10-26 19:24:10
End at: 2018-10-26 19:24:40
Local clock offset: -0.106 ms
Remote clock offset: -0.095 ms


# Below is generated by plot.py at 2018-10-26 20:51:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 47.469 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 47.469 ms
Loss rate: 0.39%
```

Run 5: Report of SCReAM — Data Link

```
Run 1: Statistics of Sprout

Start at: 2018-10-26 17:49:24
End at: 2018-10-26 17:49:54
Local clock offset: -0.227 ms
Remote clock offset: 0.032 ms


# Below is generated by plot.py at 2018-10-26 20:51:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.67 Mbit/s
95th percentile per-packet one-way delay: 47.788 ms
Loss rate: 0.18%
-- Flow 1:
Average throughput: 9.67 Mbit/s
95th percentile per-packet one-way delay: 47.788 ms
Loss rate: 0.18%
```
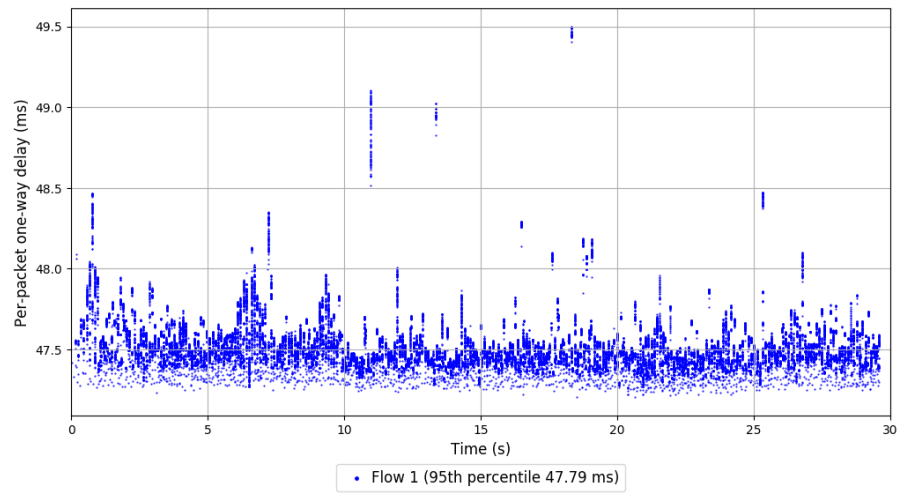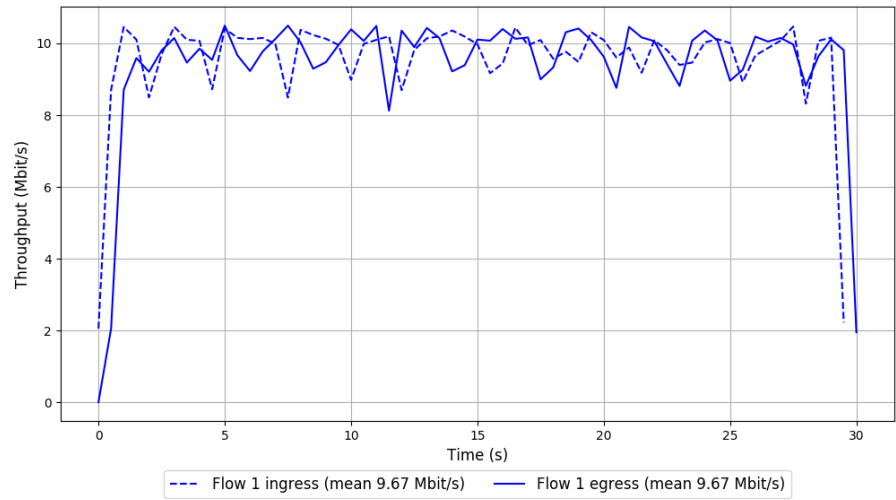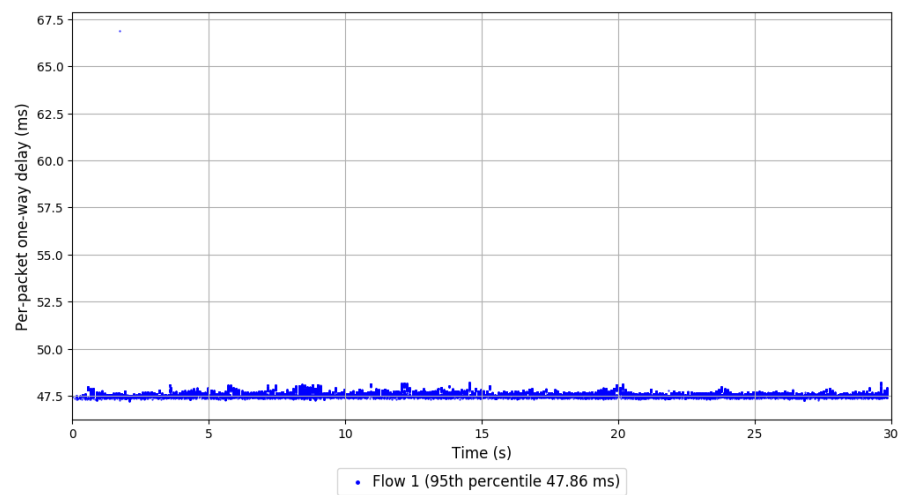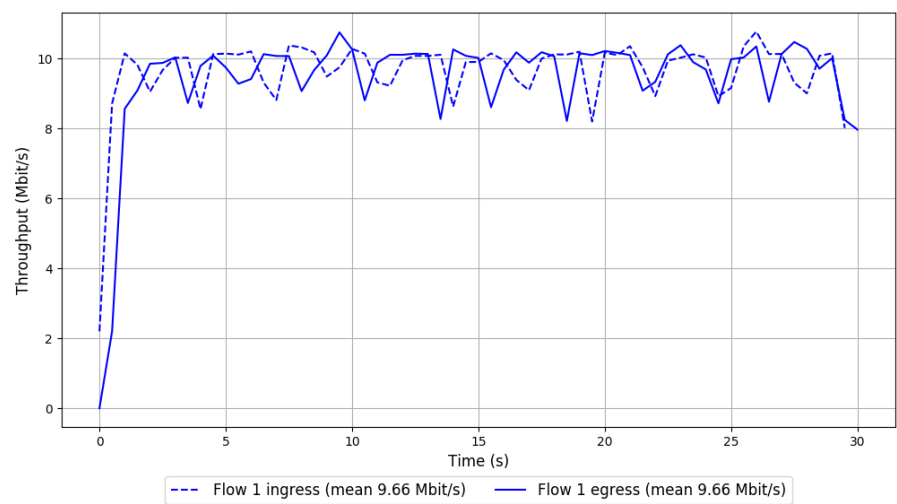
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-10-26 18:15:12
End at: 2018-10-26 18:15:42
Local clock offset: -0.173 ms
Remote clock offset: -0.021 ms


# Below is generated by plot.py at 2018-10-26 20:51:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.66 Mbit/s
95th percentile per-packet one-way delay: 47.857 ms
Loss rate: 0.35%
-- Flow 1:
Average throughput: 9.66 Mbit/s
95th percentile per-packet one-way delay: 47.857 ms
Loss rate: 0.35%
```

Run 2: Report of Sprout — Data Link

Flow 1 ingress (mean 9.66 Mbit/s)   Flow 1 egress (mean 9.66 Mbit/s)

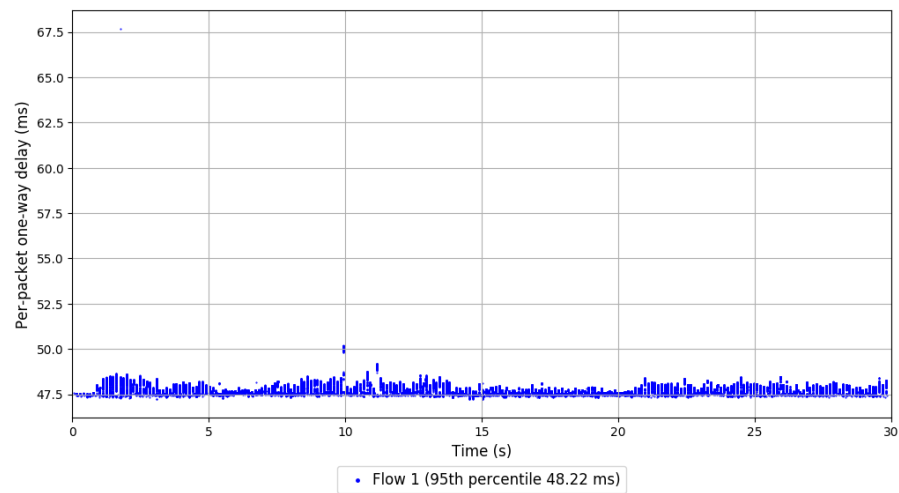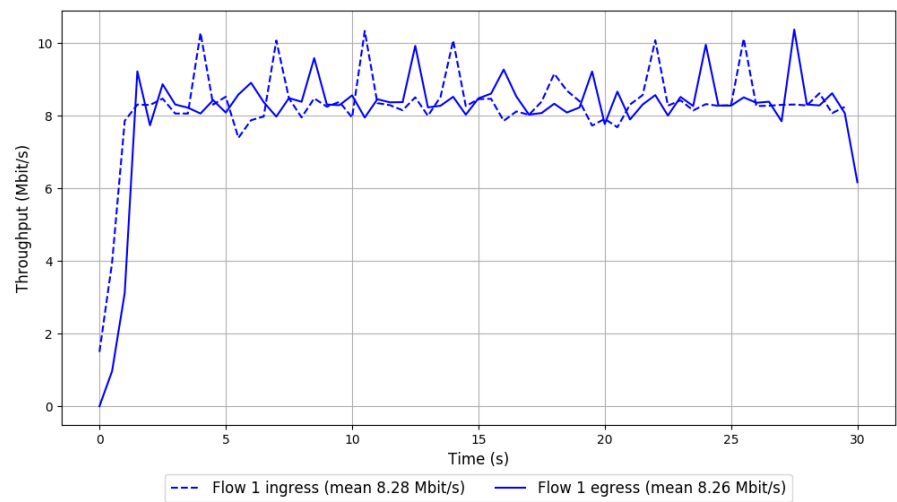

• Flow 1 (95th percentile 47.86 ms)

```
Run 3: Statistics of Sprout

Start at: 2018-10-26 18:40:53
End at: 2018-10-26 18:41:23
Local clock offset: -0.094 ms
Remote clock offset: -0.065 ms


# Below is generated by plot.py at 2018-10-26 20:51:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 8.26 Mbit/s
95th percentile per-packet one-way delay: 48.219 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 8.26 Mbit/s
95th percentile per-packet one-way delay: 48.219 ms
Loss rate: 0.42%
```

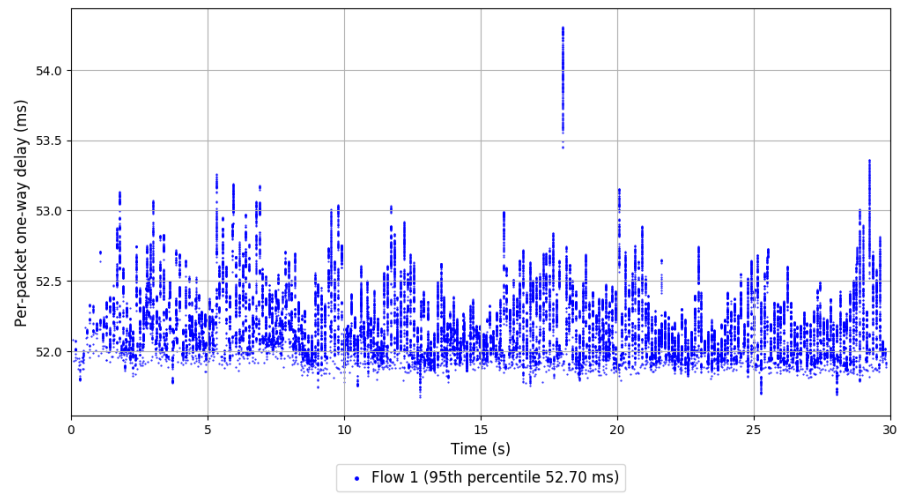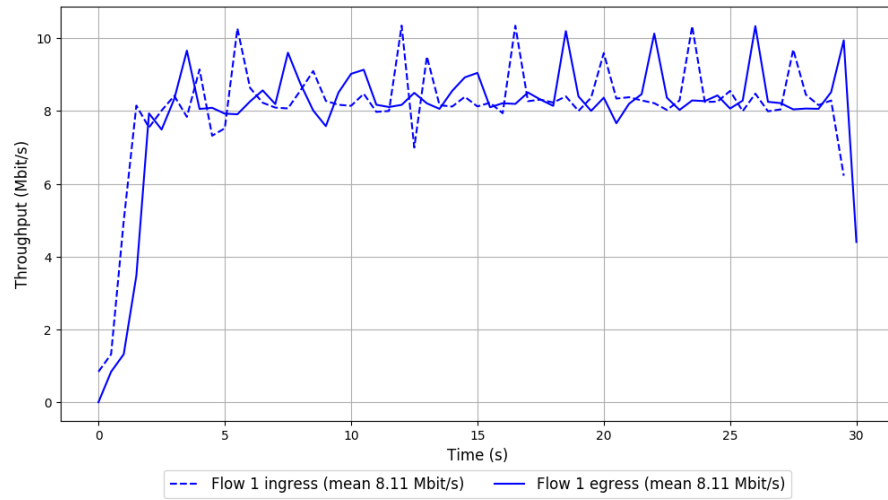# Run 3: Report of Sprout — Data Link

```
Run 4: Statistics of Sprout

Start at: 2018-10-26 19:06:27
End at: 2018-10-26 19:06:57
Local clock offset: -0.097 ms
Remote clock offset: -0.143 ms


# Below is generated by plot.py at 2018-10-26 20:51:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 8.11 Mbit/s
95th percentile per-packet one-way delay: 52.699 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 8.11 Mbit/s
95th percentile per-packet one-way delay: 52.699 ms
Loss rate: 0.38%
```
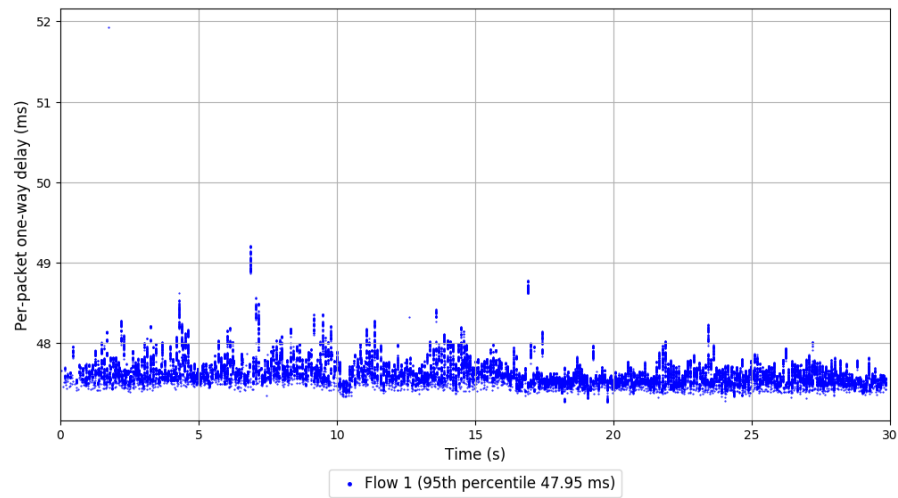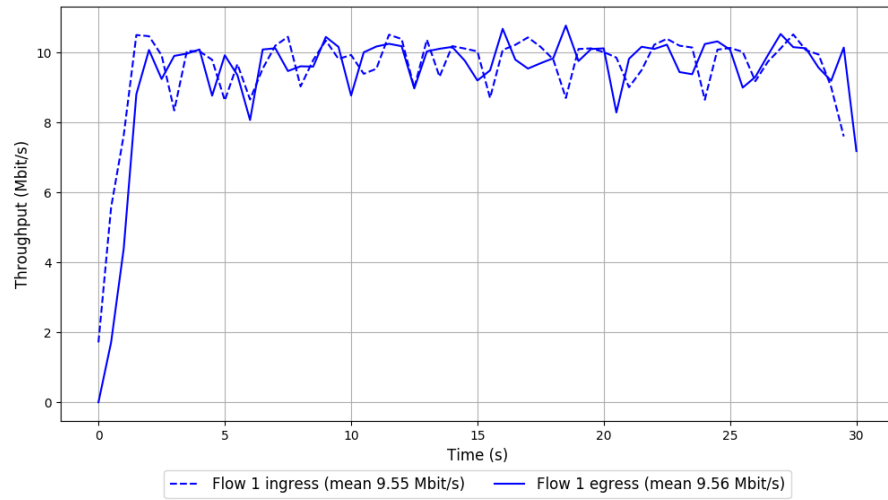
Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2018-10-26 19:32:13
End at: 2018-10-26 19:32:43
Local clock offset: -0.138 ms
Remote clock offset: -0.085 ms


# Below is generated by plot.py at 2018-10-26 20:51:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.56 Mbit/s
95th percentile per-packet one-way delay: 47.950 ms
Loss rate: 0.21%
-- Flow 1:
Average throughput: 9.56 Mbit/s
95th percentile per-packet one-way delay: 47.950 ms
Loss rate: 0.21%
```

Run 5: Report of Sprout — Data Link

Flow 1 ingress (mean 9.55 Mbit/s)   Flow 1 egress (mean 9.56 Mbit/s)

Flow 1 (95th percentile 47.95 ms)

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

Start at: 2018-10-26 17:47:54
End at: 2018-10-26 17:48:24
Local clock offset: -0.588 ms
Remote clock offset: 0.064 ms


# Below is generated by plot.py at 2018-10-26 20:54:46
# Datalink statistics
-- Total of 1 flow:
Average throughput: 257.93 Mbit/s
95th percentile per-packet one-way delay: 47.157 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 257.93 Mbit/s
95th percentile per-packet one-way delay: 47.157 ms
Loss rate: 0.34%
```
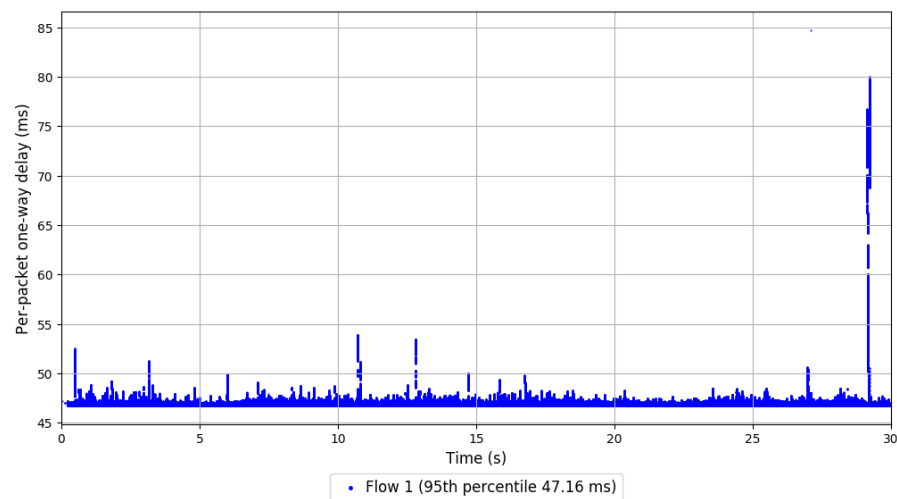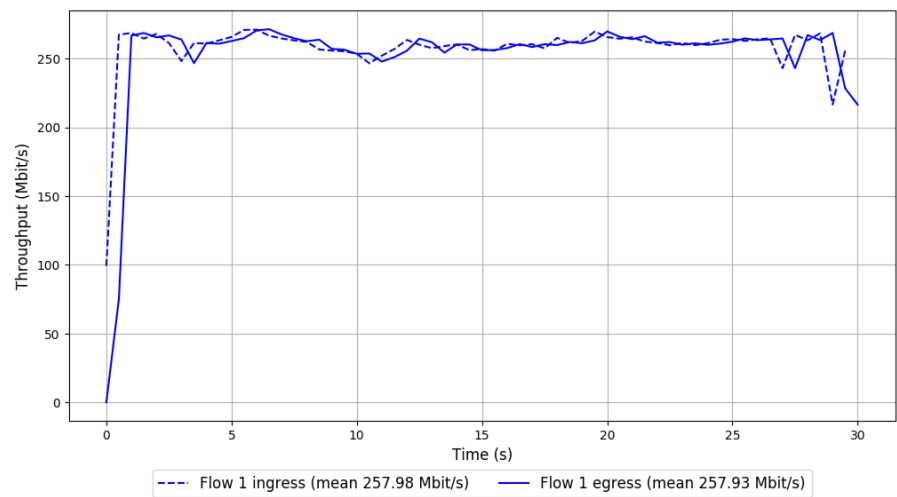
Run 1: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 257.98 Mbit/s)   Flow 1 egress (mean 257.93 Mbit/s)

Flow 1 (95th percentile 47.16 ms)

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

Start at: 2018-10-26 18:13:44
End at: 2018-10-26 18:14:14
Local clock offset: -0.125 ms
Remote clock offset: -0.019 ms


# Below is generated by plot.py at 2018-10-26 20:54:46
# Datalink statistics
-- Total of 1 flow:
Average throughput: 235.38 Mbit/s
95th percentile per-packet one-way delay: 47.723 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 235.38 Mbit/s
95th percentile per-packet one-way delay: 47.723 ms
Loss rate: 0.34%
```
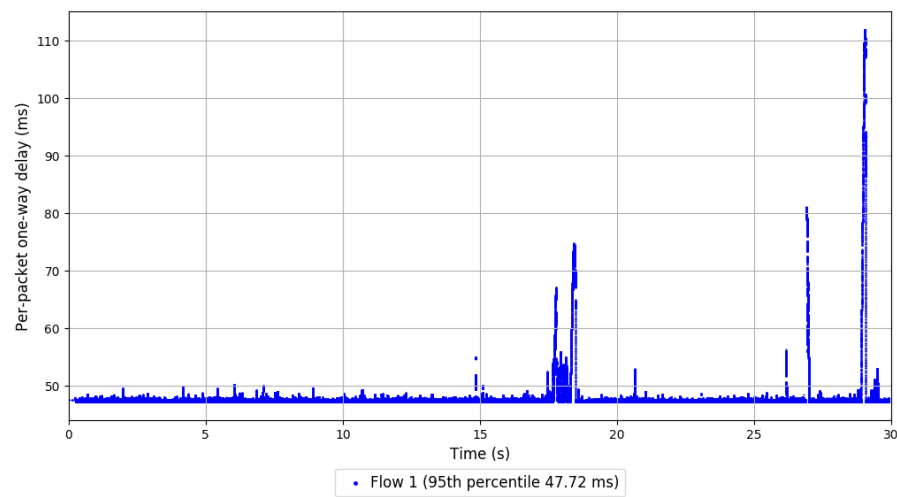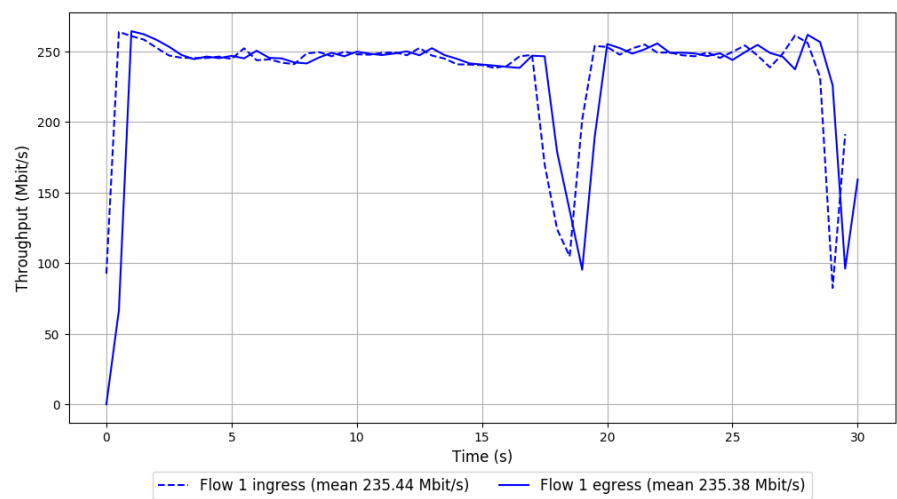
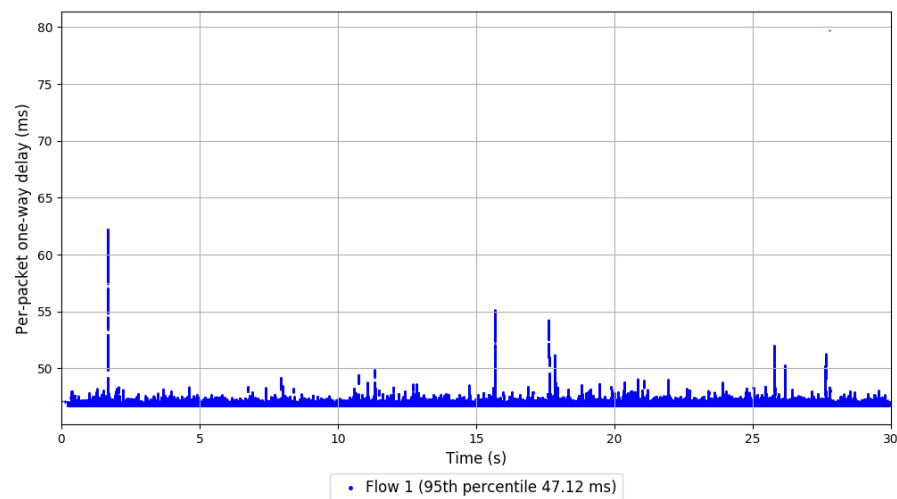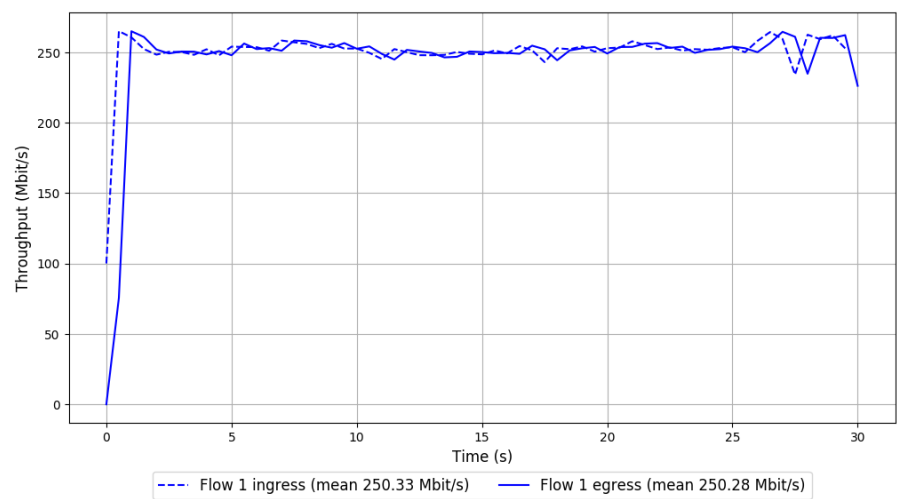Run 2: Report of TaoVA-100x — Data Link

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

Start at: 2018-10-26 18:39:24
End at: 2018-10-26 18:39:54
Local clock offset: -0.509 ms
Remote clock offset: -0.062 ms


# Below is generated by plot.py at 2018-10-26 20:54:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 250.28 Mbit/s
95th percentile per-packet one-way delay: 47.119 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 250.28 Mbit/s
95th percentile per-packet one-way delay: 47.119 ms
Loss rate: 0.34%
```

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

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

Start at: 2018-10-26 19:04:58
End at: 2018-10-26 19:05:28
Local clock offset: -0.12 ms
Remote clock offset: -0.104 ms


# Below is generated by plot.py at 2018-10-26 20:55:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 250.71 Mbit/s
95th percentile per-packet one-way delay: 47.629 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 250.71 Mbit/s
95th percentile per-packet one-way delay: 47.629 ms
Loss rate: 0.34%
```
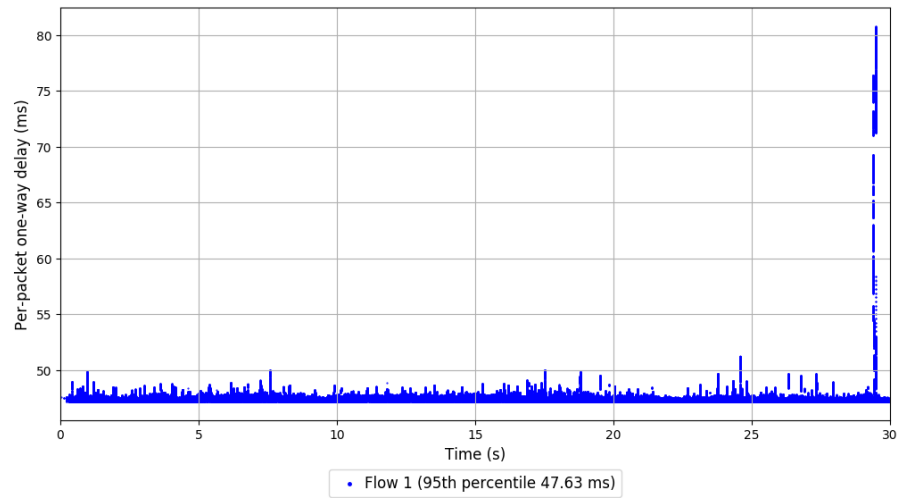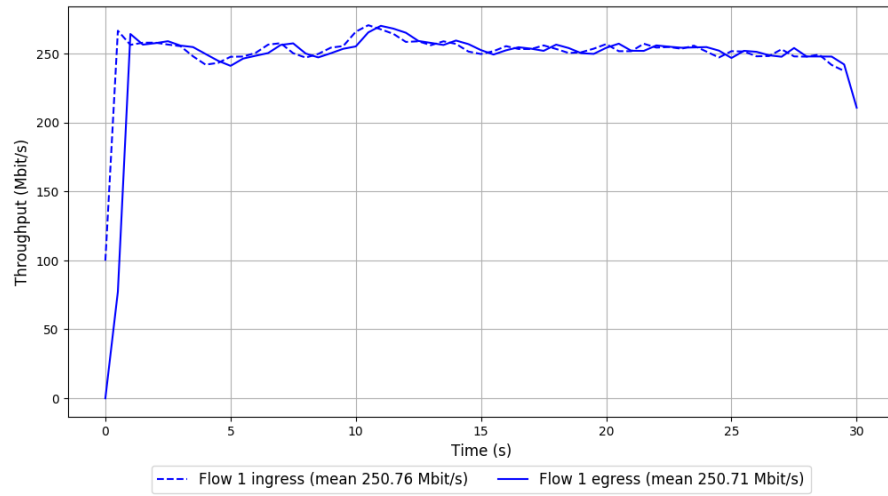
Run 4: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 250.76 Mbit/s) --- Flow 1 egress (mean 250.71 Mbit/s)
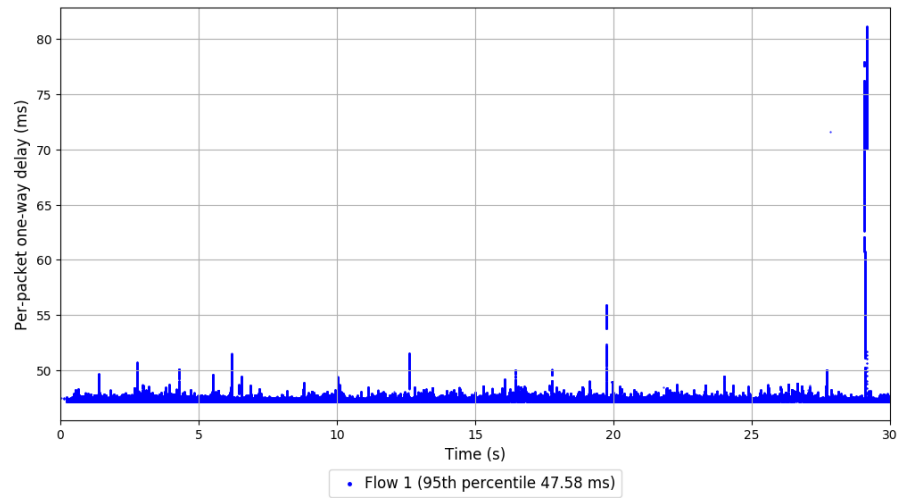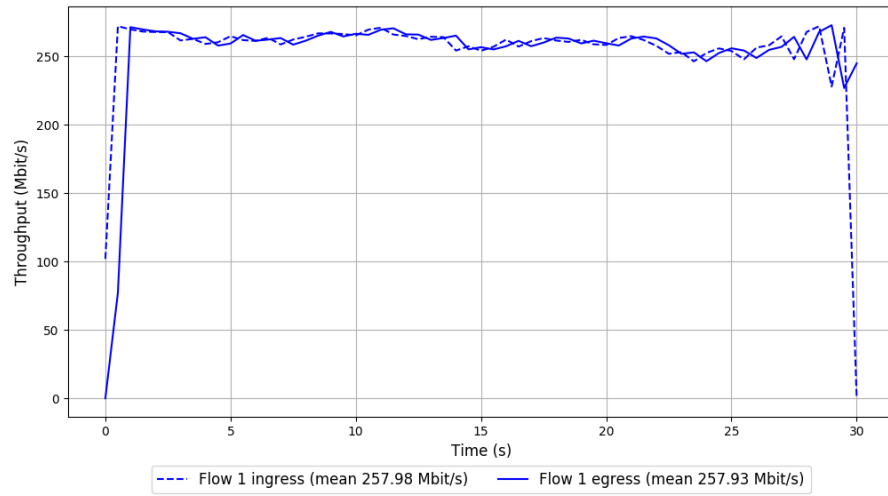

Flow 1 (95th percentile 47.63 ms)

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

Start at: 2018-10-26 19:30:44
End at: 2018-10-26 19:31:14
Local clock offset: -0.094 ms
Remote clock offset: -0.123 ms


# Below is generated by plot.py at 2018-10-26 20:57:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 257.93 Mbit/s
95th percentile per-packet one-way delay: 47.576 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 257.93 Mbit/s
95th percentile per-packet one-way delay: 47.576 ms
Loss rate: 0.34%
```

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

Flow 1 ingress (mean 257.98 Mbit/s)   Flow 1 egress (mean 257.93 Mbit/s)

Flow 1 (95th percentile 47.58 ms)

```
Run 1: Statistics of TCP Vegas

Start at: 2018-10-26 17:31:42
End at: 2018-10-26 17:32:12
Local clock offset: -0.577 ms
Remote clock offset: 0.008 ms


# Below is generated by plot.py at 2018-10-26 21:01:39
# Datalink statistics
-- Total of 1 flow:
Average throughput: 617.06 Mbit/s
95th percentile per-packet one-way delay: 69.874 ms
Loss rate: 0.30%
-- Flow 1:
Average throughput: 617.06 Mbit/s
95th percentile per-packet one-way delay: 69.874 ms
Loss rate: 0.30%
```
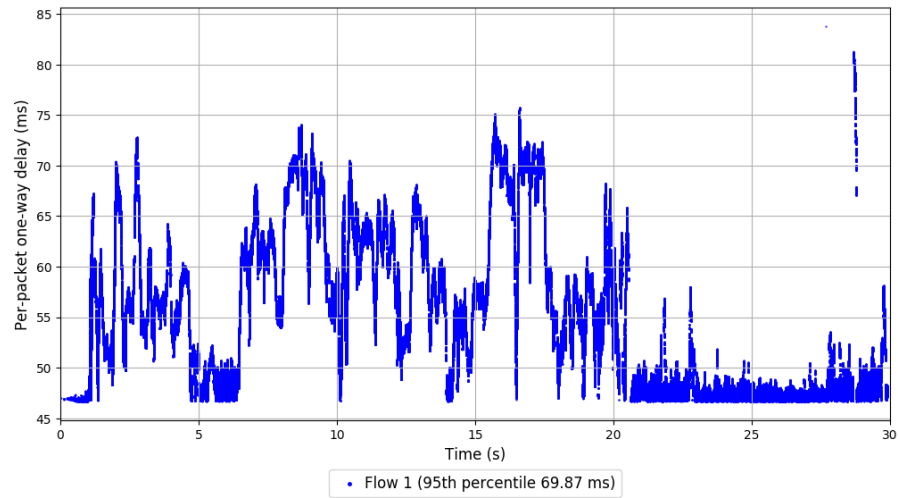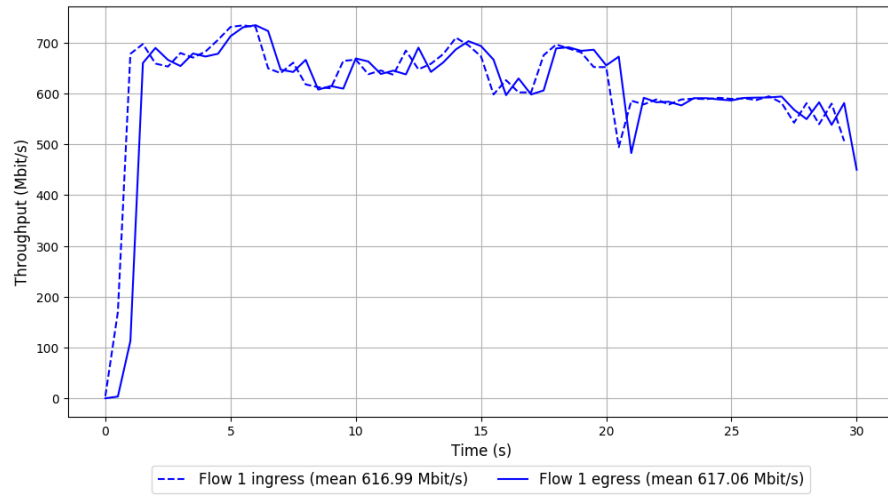
Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-10-26 17:56:59
End at: 2018-10-26 17:57:29
Local clock offset: -0.181 ms
Remote clock offset: 0.009 ms


# Below is generated by plot.py at 2018-10-26 21:01:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 588.09 Mbit/s
95th percentile per-packet one-way delay: 51.291 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 588.09 Mbit/s
95th percentile per-packet one-way delay: 51.291 ms
Loss rate: 0.33%
```
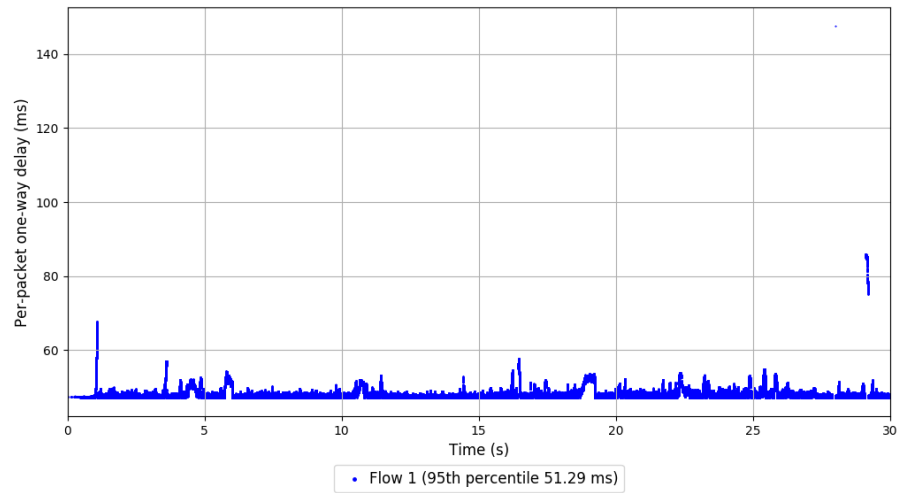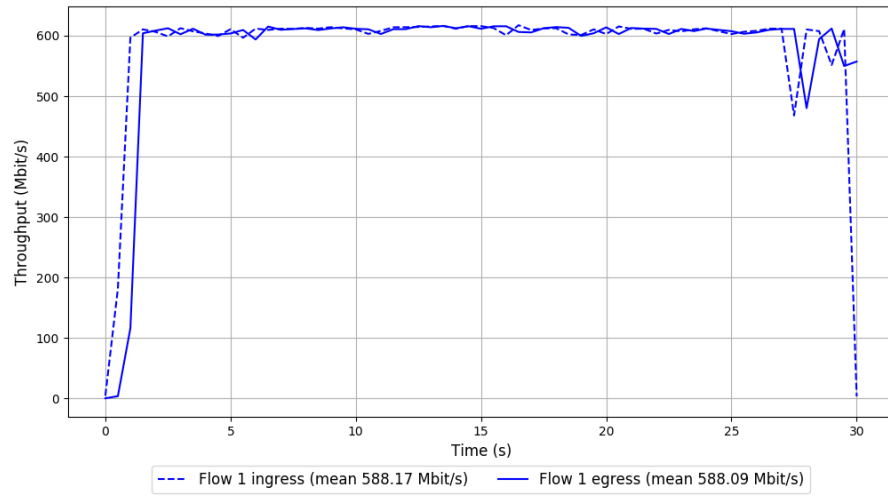
Run 2: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 588.17 Mbit/s)   Flow 1 egress (mean 588.09 Mbit/s)

Flow 1 (95th percentile 51.29 ms)

```
Run 3: Statistics of TCP Vegas

Start at: 2018-10-26 18:22:47
End at: 2018-10-26 18:23:17
Local clock offset: -0.137 ms
Remote clock offset: 0.006 ms


# Below is generated by plot.py at 2018-10-26 21:01:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 587.92 Mbit/s
95th percentile per-packet one-way delay: 50.080 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 587.92 Mbit/s
95th percentile per-packet one-way delay: 50.080 ms
Loss rate: 0.33%
```
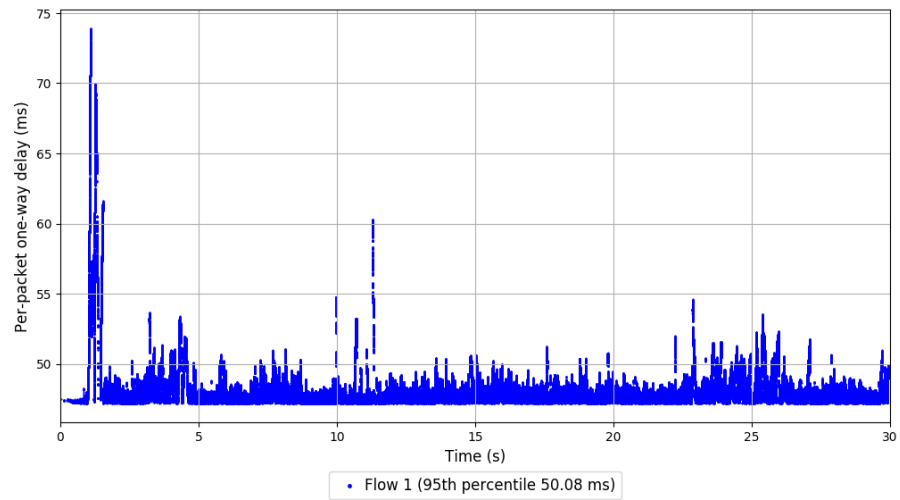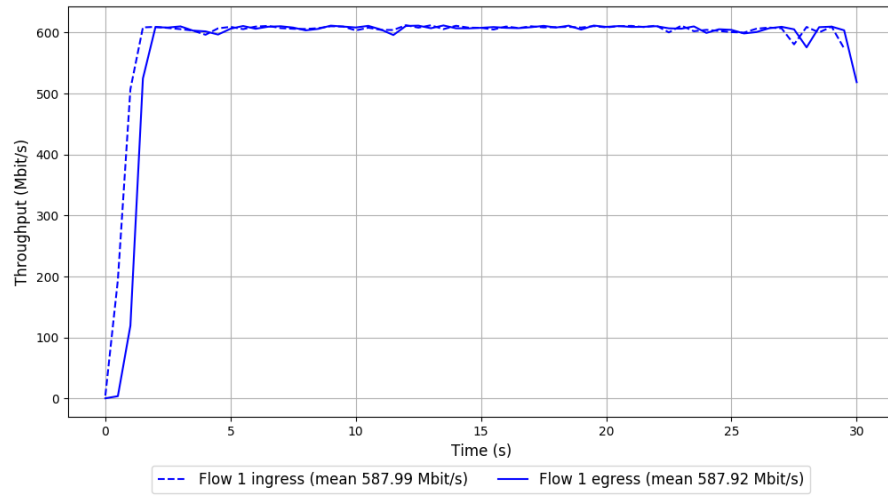
Run 3: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 587.99 Mbit/s) — Flow 1 egress (mean 587.92 Mbit/s)

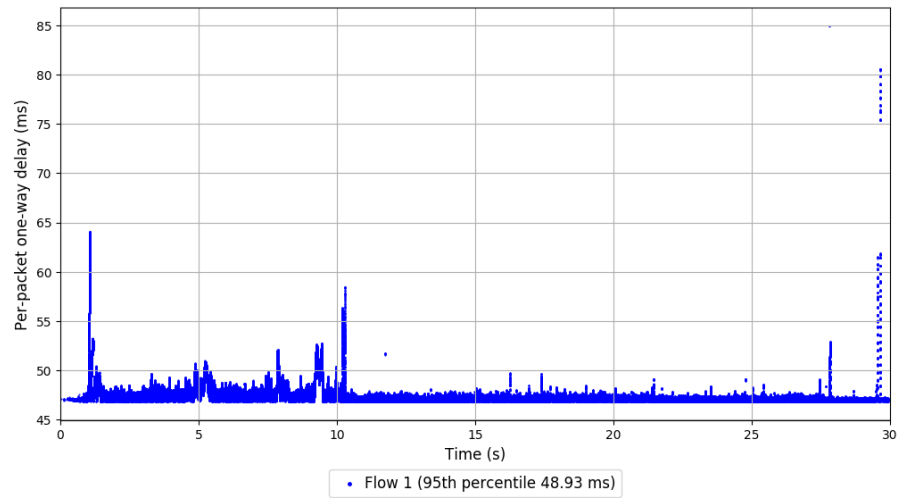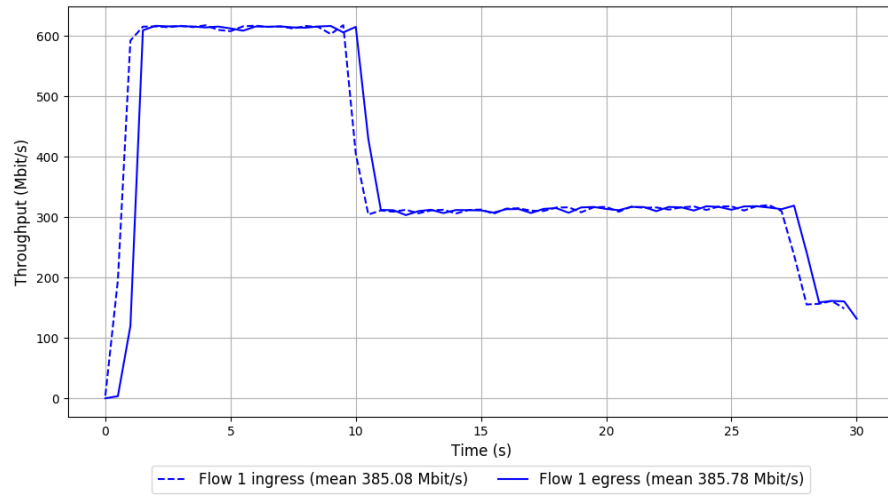

• Flow 1 (95th percentile 50.08 ms)

```
Run 4: Statistics of TCP Vegas

Start at: 2018-10-26 18:48:31
End at: 2018-10-26 18:49:01
Local clock offset: -0.494 ms
Remote clock offset: -0.098 ms


# Below is generated by plot.py at 2018-10-26 21:01:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 385.78 Mbit/s
95th percentile per-packet one-way delay: 48.934 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 385.78 Mbit/s
95th percentile per-packet one-way delay: 48.934 ms
Loss rate: 0.13%
```

Run 4: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 385.08 Mbit/s)   Flow 1 egress (mean 385.78 Mbit/s)
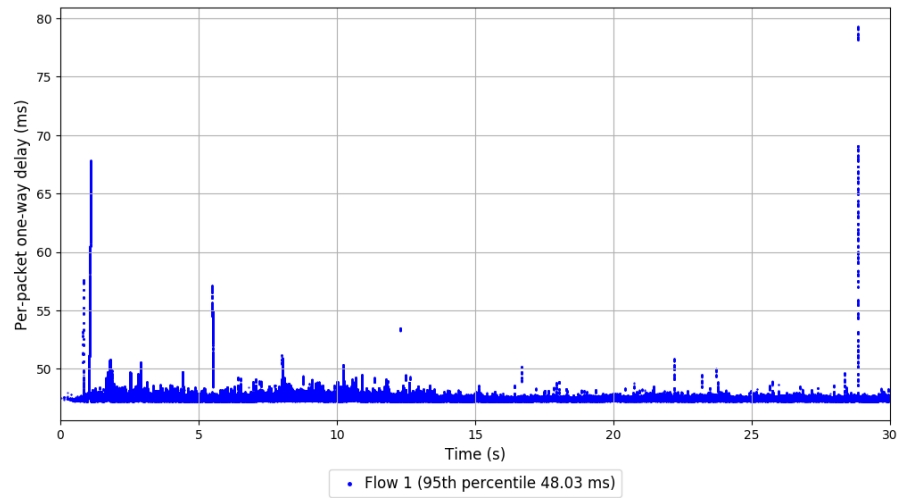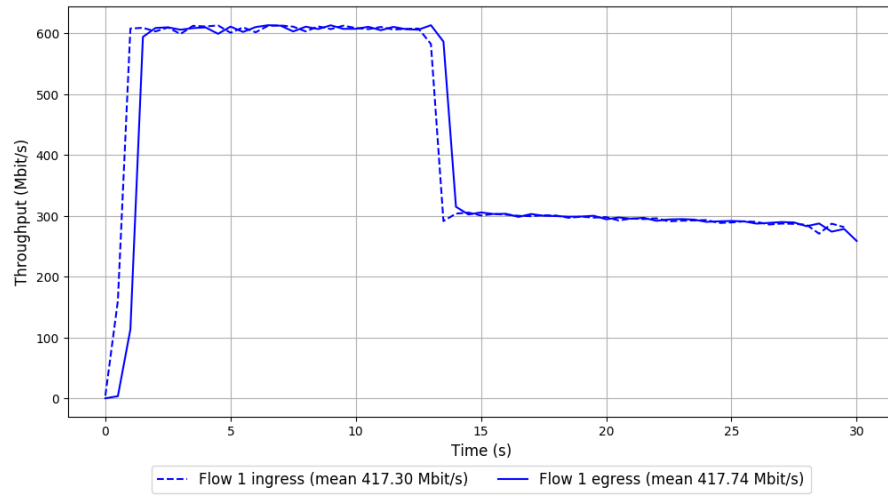

Flow 1 (95th percentile 48.93 ms)

```
Run 5: Statistics of TCP Vegas

Start at: 2018-10-26 19:14:09
End at: 2018-10-26 19:14:39
Local clock offset: -0.074 ms
Remote clock offset: -0.105 ms


# Below is generated by plot.py at 2018-10-26 21:02:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 417.74 Mbit/s
95th percentile per-packet one-way delay: 48.032 ms
Loss rate: 0.21%
-- Flow 1:
Average throughput: 417.74 Mbit/s
95th percentile per-packet one-way delay: 48.032 ms
Loss rate: 0.21%
```

Run 5: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 417.30 Mbit/s)   Flow 1 egress (mean 417.74 Mbit/s)

Flow 1 (95th percentile 48.03 ms)

```
Run 1: Statistics of Verus

Start at: 2018-10-26 17:34:55
End at: 2018-10-26 17:35:25
Local clock offset: -0.223 ms
Remote clock offset: 0.045 ms


# Below is generated by plot.py at 2018-10-26 21:02:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 176.88 Mbit/s
95th percentile per-packet one-way delay: 140.354 ms
Loss rate: 2.02%
-- Flow 1:
Average throughput: 176.88 Mbit/s
95th percentile per-packet one-way delay: 140.354 ms
Loss rate: 2.02%
```
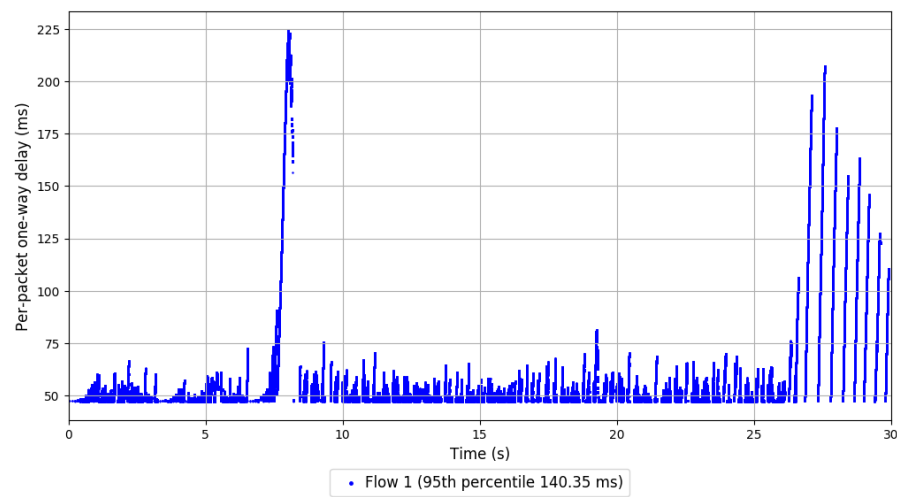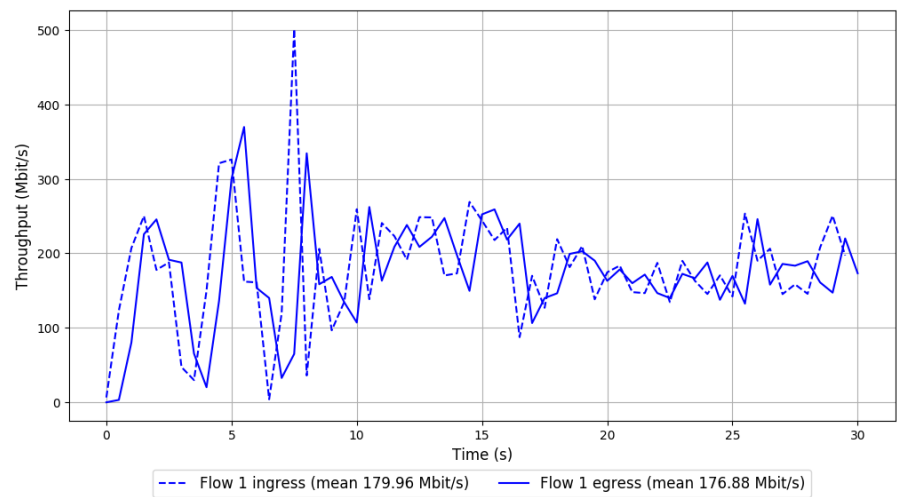
Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2018-10-26 18:00:10
End at: 2018-10-26 18:00:40
Local clock offset: 0.188 ms
Remote clock offset: 0.02 ms


# Below is generated by plot.py at 2018-10-26 21:02:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 182.25 Mbit/s
95th percentile per-packet one-way delay: 94.762 ms
Loss rate: 0.27%
-- Flow 1:
Average throughput: 182.25 Mbit/s
95th percentile per-packet one-way delay: 94.762 ms
Loss rate: 0.27%
```
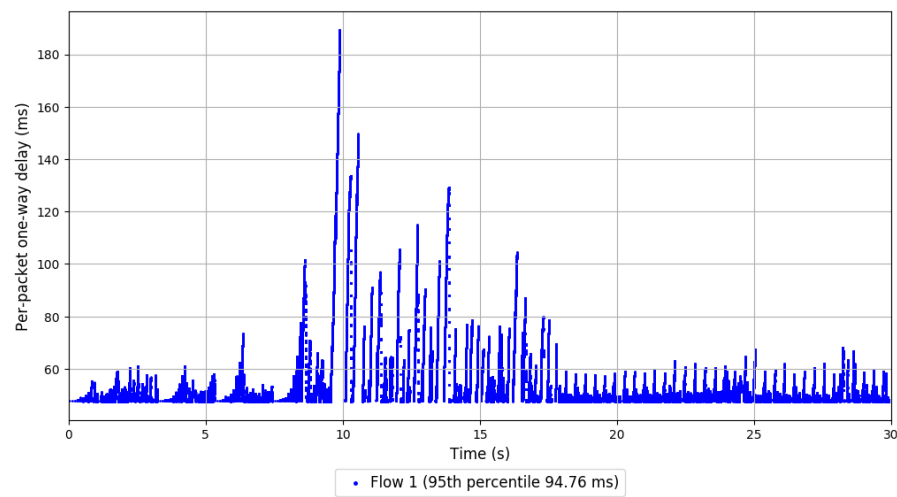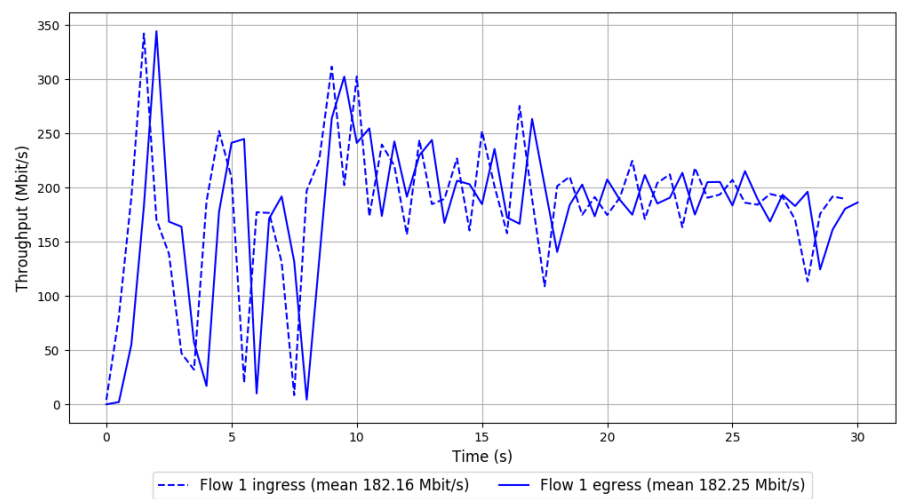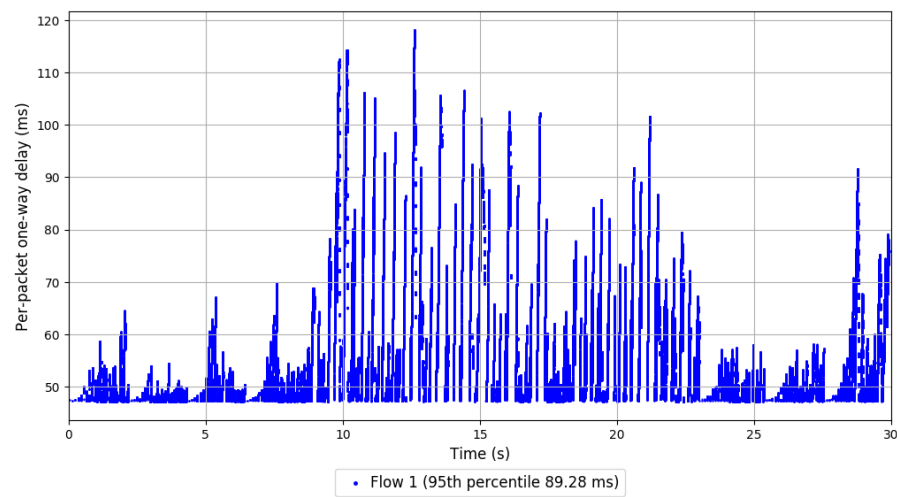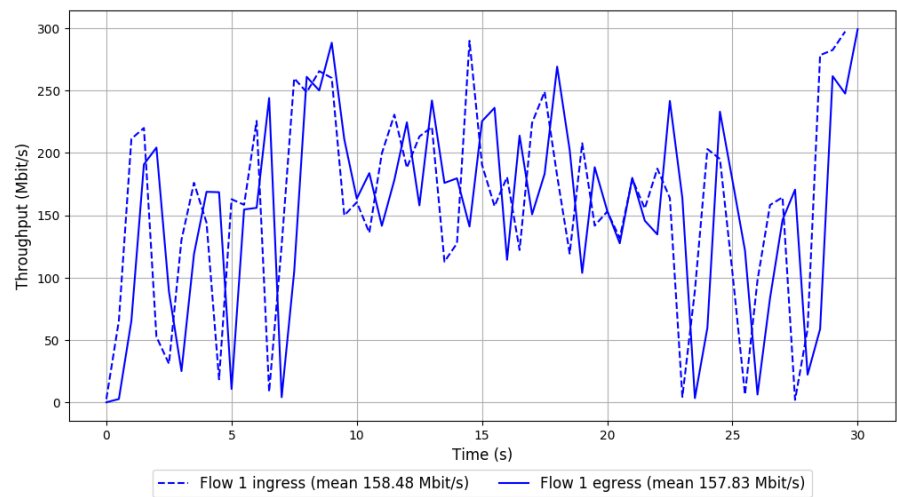
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-10-26 18:25:58
End at: 2018-10-26 18:26:28
Local clock offset: -0.131 ms
Remote clock offset: -0.014 ms


# Below is generated by plot.py at 2018-10-26 21:03:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 157.83 Mbit/s
95th percentile per-packet one-way delay: 89.276 ms
Loss rate: 0.53%
-- Flow 1:
Average throughput: 157.83 Mbit/s
95th percentile per-packet one-way delay: 89.276 ms
Loss rate: 0.53%
```
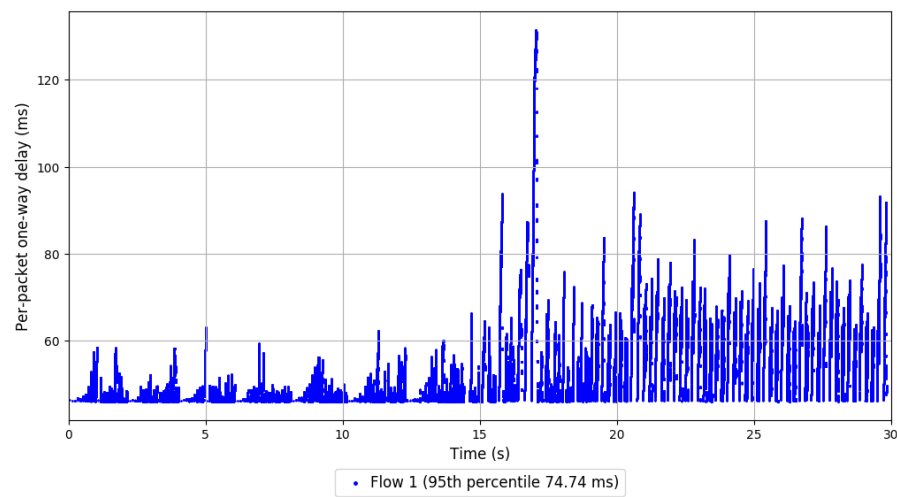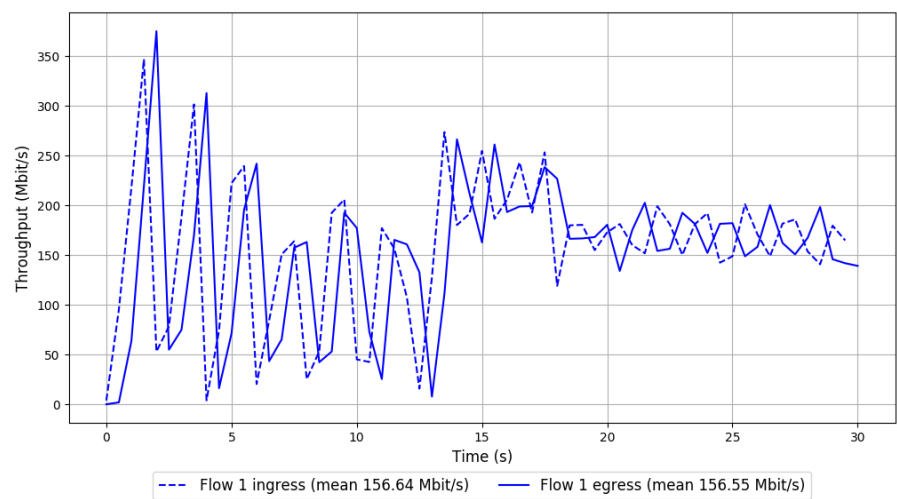
Run 3: Report of Verus — Data Link

```
Run 4: Statistics of Verus

Start at: 2018-10-26 18:51:33
End at: 2018-10-26 18:52:03
Local clock offset: -0.46 ms
Remote clock offset: -0.089 ms


# Below is generated by plot.py at 2018-10-26 21:05:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 156.55 Mbit/s
95th percentile per-packet one-way delay: 74.738 ms
Loss rate: 0.67%
-- Flow 1:
Average throughput: 156.55 Mbit/s
95th percentile per-packet one-way delay: 74.738 ms
Loss rate: 0.67%
```

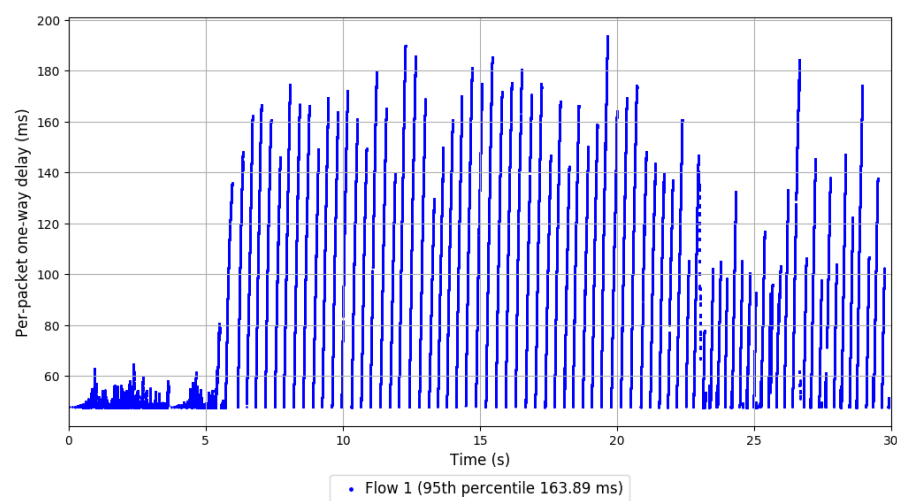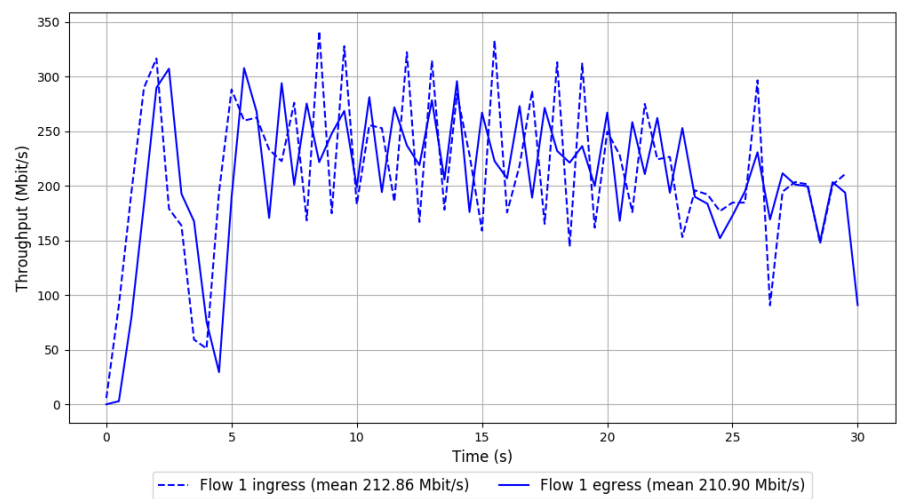## Run 4: Report of Verus — Data Link

```
Run 5: Statistics of Verus

Start at: 2018-10-26 19:17:12
End at: 2018-10-26 19:17:42
Local clock offset: 0.202 ms
Remote clock offset: -0.118 ms


# Below is generated by plot.py at 2018-10-26 21:07:23
# Datalink statistics
-- Total of 1 flow:
Average throughput: 210.90 Mbit/s
95th percentile per-packet one-way delay: 163.887 ms
Loss rate: 1.16%
-- Flow 1:
Average throughput: 210.90 Mbit/s
95th percentile per-packet one-way delay: 163.887 ms
Loss rate: 1.16%
```

Run 5: Report of Verus — Data Link

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-10-26 17:40:12
End at: 2018-10-26 17:40:42
Local clock offset: 0.134 ms
Remote clock offset: 0.018 ms


# Below is generated by plot.py at 2018-10-26 21:07:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 375.66 Mbit/s
95th percentile per-packet one-way delay: 93.852 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 375.66 Mbit/s
95th percentile per-packet one-way delay: 93.852 ms
Loss rate: 0.33%
```
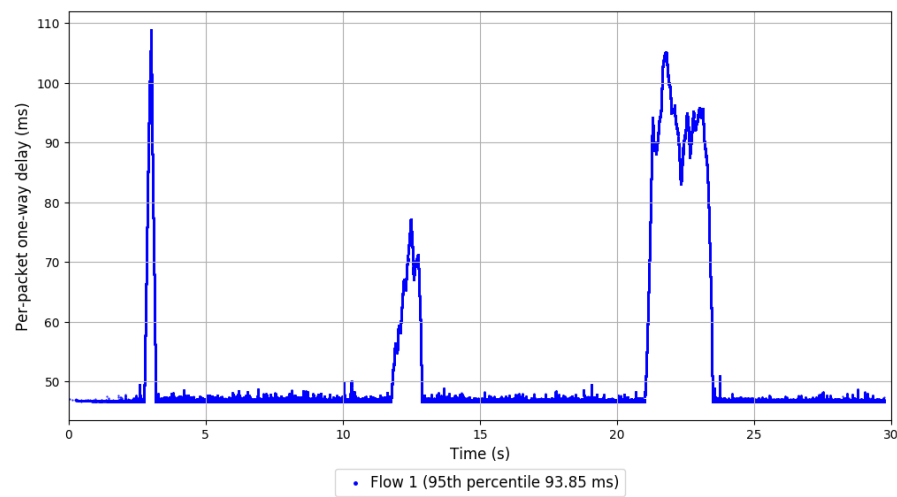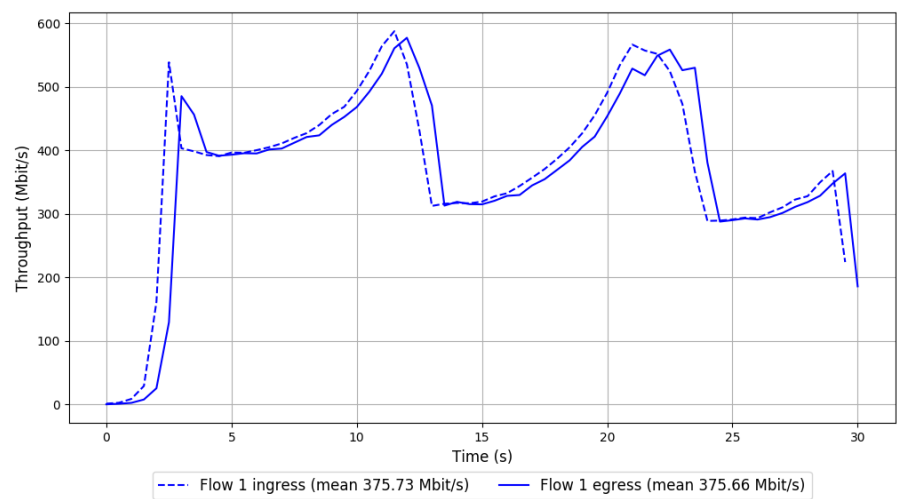
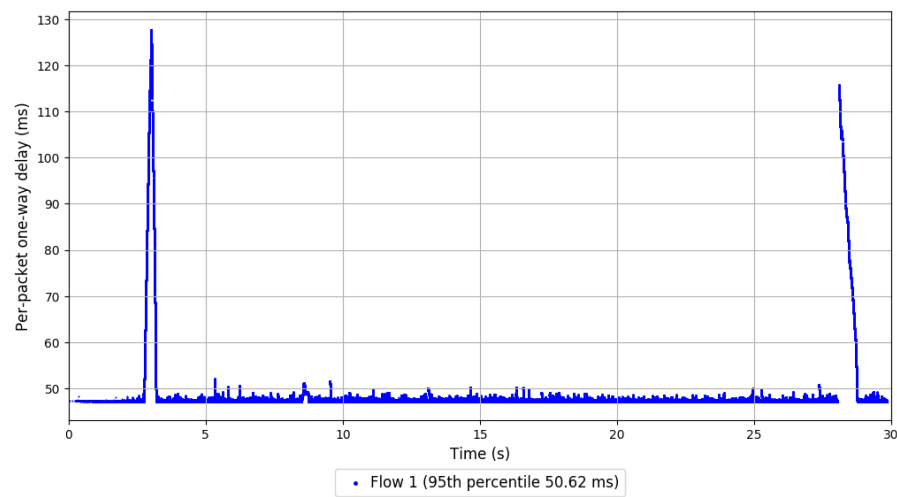# Run 1: Report of PCC-Vivace — Data Link

```
Run 2: Statistics of PCC-Vivace

Start at: 2018-10-26 18:05:32
End at: 2018-10-26 18:06:02
Local clock offset: -0.152 ms
Remote clock offset: -0.016 ms


# Below is generated by plot.py at 2018-10-26 21:07:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 419.35 Mbit/s
95th percentile per-packet one-way delay: 50.621 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 419.35 Mbit/s
95th percentile per-packet one-way delay: 50.621 ms
Loss rate: 0.37%
```

Run 2: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 419.56 Mbit/s)   Flow 1 egress (mean 419.35 Mbit/s)
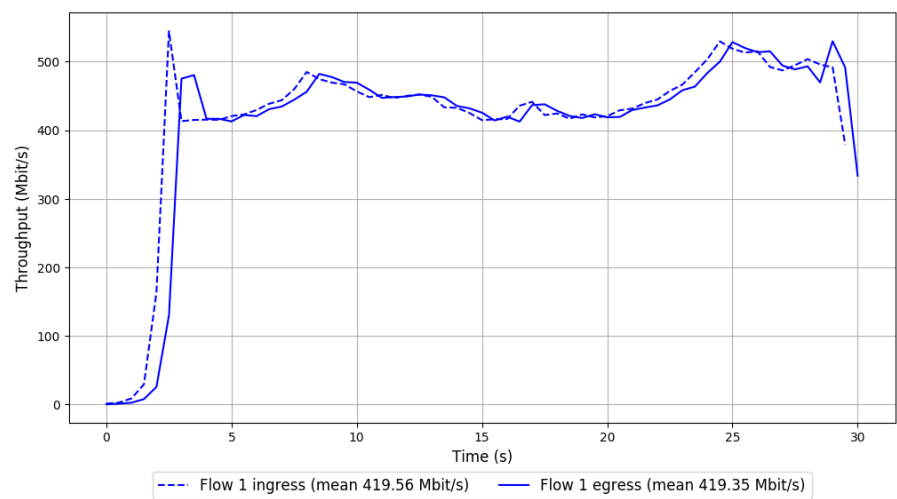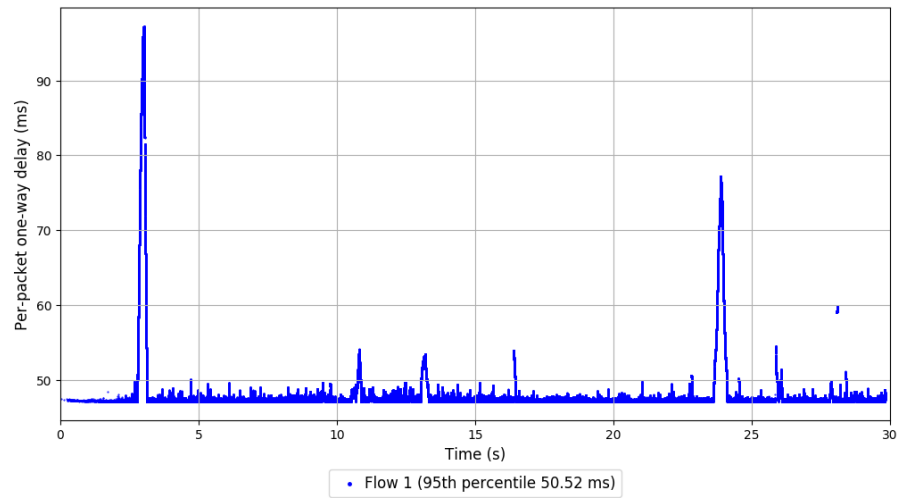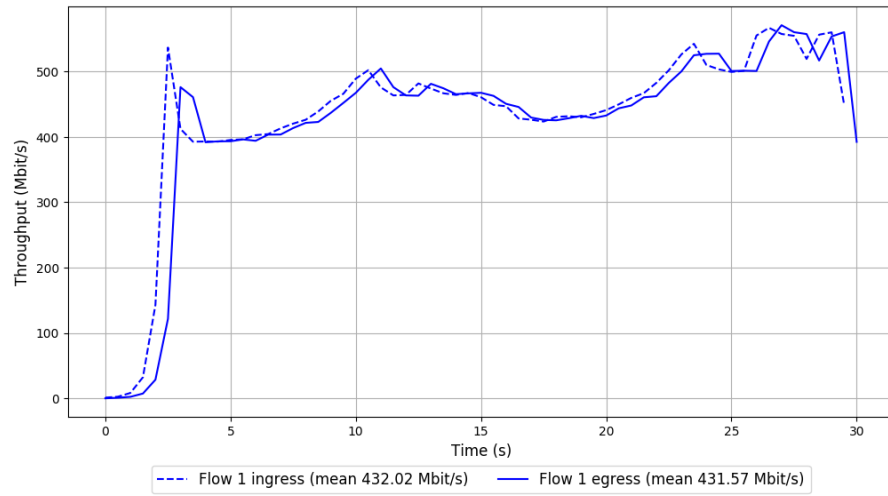

Flow 1 (95th percentile 50.62 ms)

```
Run 3: Statistics of PCC-Vivace

Start at: 2018-10-26 18:31:16
End at: 2018-10-26 18:31:46
Local clock offset: -0.12 ms
Remote clock offset: -0.051 ms


# Below is generated by plot.py at 2018-10-26 21:08:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 431.57 Mbit/s
95th percentile per-packet one-way delay: 50.524 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 431.57 Mbit/s
95th percentile per-packet one-way delay: 50.524 ms
Loss rate: 0.42%
```

Run 3: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 432.02 Mbit/s)   Flow 1 egress (mean 431.57 Mbit/s)

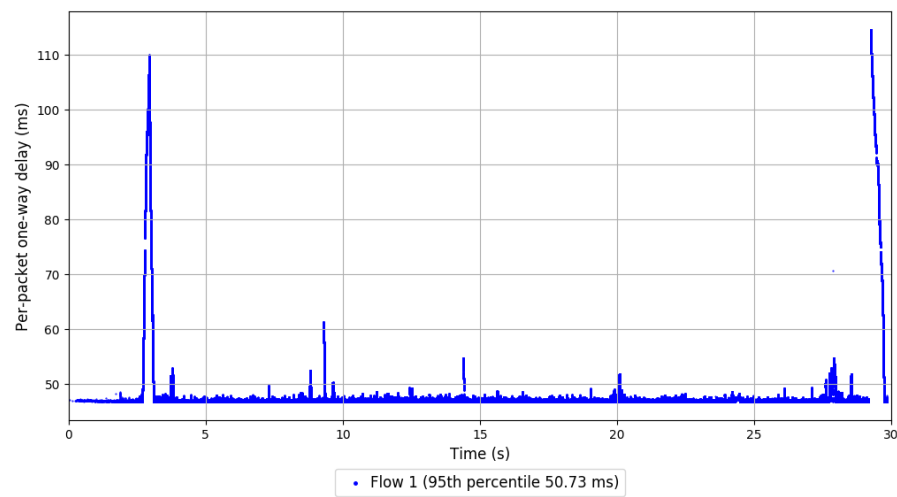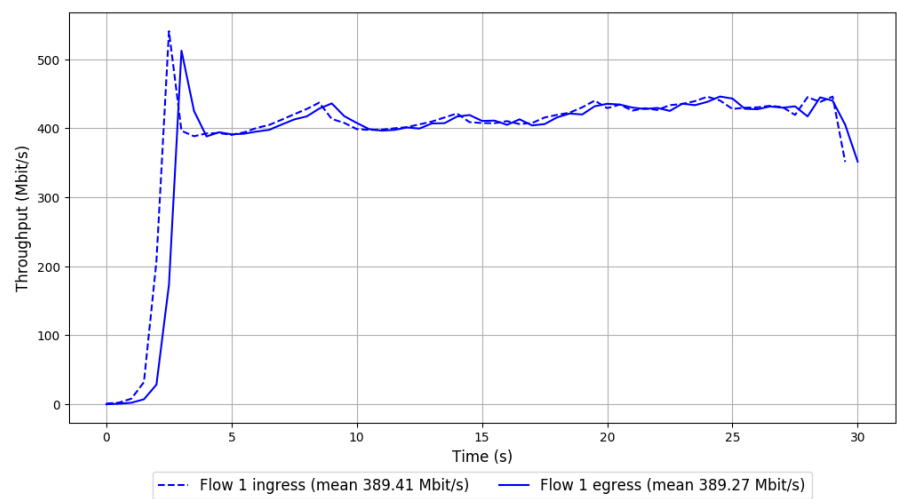

• Flow 1 (95th percentile 50.52 ms)

```
Run 4: Statistics of PCC-Vivace

Start at: 2018-10-26 18:56:53
End at: 2018-10-26 18:57:23
Local clock offset: -0.455 ms
Remote clock offset: -0.085 ms


# Below is generated by plot.py at 2018-10-26 21:08:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 389.27 Mbit/s
95th percentile per-packet one-way delay: 50.725 ms
Loss rate: 0.35%
-- Flow 1:
Average throughput: 389.27 Mbit/s
95th percentile per-packet one-way delay: 50.725 ms
Loss rate: 0.35%
```

Run 4: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 389.41 Mbit/s) ---- Flow 1 egress (mean 389.27 Mbit/s) ——

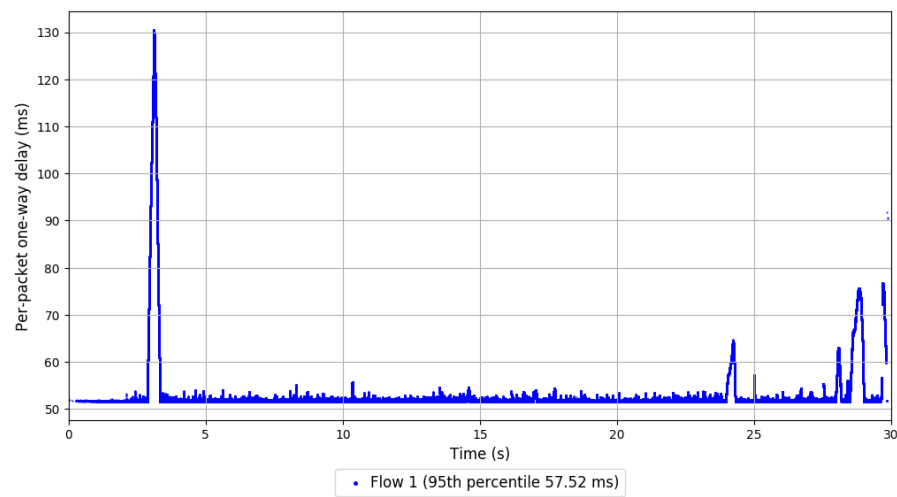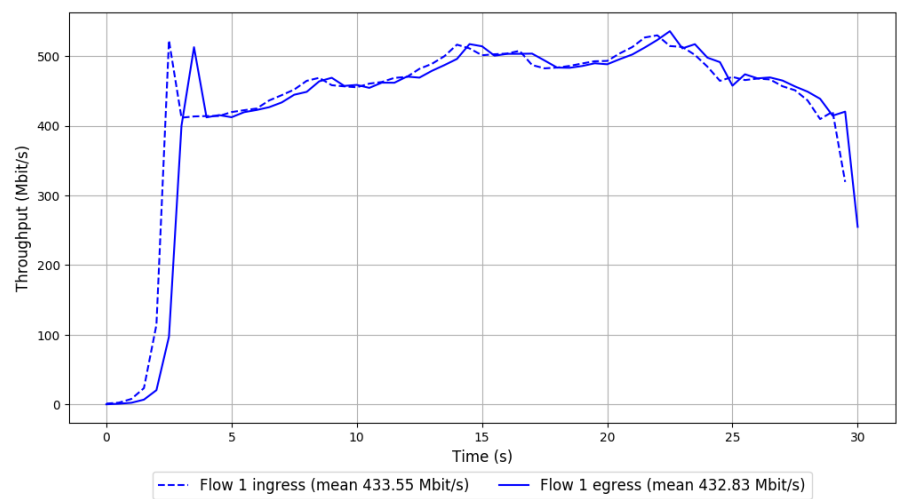

• Flow 1 (95th percentile 50.73 ms)

```
Run 5: Statistics of PCC-Vivace

Start at: 2018-10-26 19:22:36
End at: 2018-10-26 19:23:06
Local clock offset: -0.115 ms
Remote clock offset: -0.108 ms


# Below is generated by plot.py at 2018-10-26 21:08:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 432.83 Mbit/s
95th percentile per-packet one-way delay: 57.521 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 432.83 Mbit/s
95th percentile per-packet one-way delay: 57.521 ms
Loss rate: 0.42%
```

Run 5: Report of PCC-Vivace — Data Link

```
Run 1: Statistics of WebRTC media

Start at: 2018-10-26 17:45:09
End at: 2018-10-26 17:45:39
Local clock offset: -0.205 ms
Remote clock offset: 0.121 ms


# Below is generated by plot.py at 2018-10-26 21:08:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.57 Mbit/s
95th percentile per-packet one-way delay: 47.421 ms
Loss rate: 0.49%
-- Flow 1:
Average throughput: 1.57 Mbit/s
95th percentile per-packet one-way delay: 47.421 ms
Loss rate: 0.49%
```
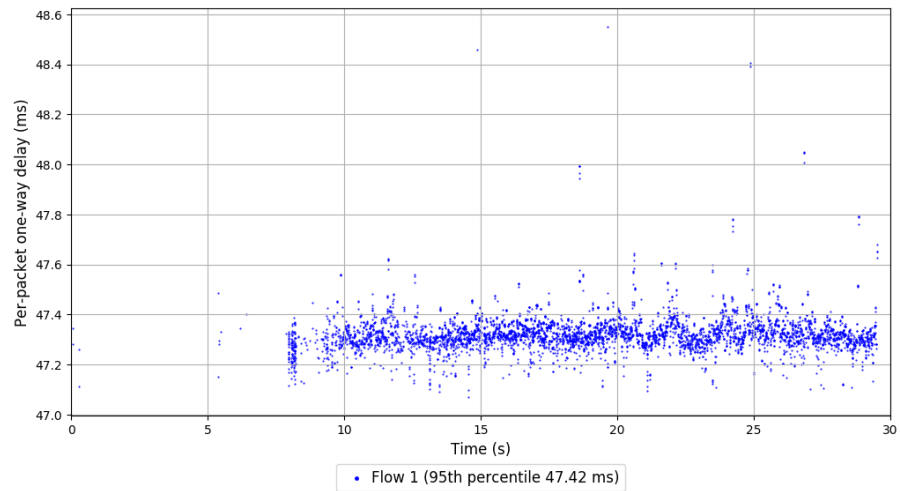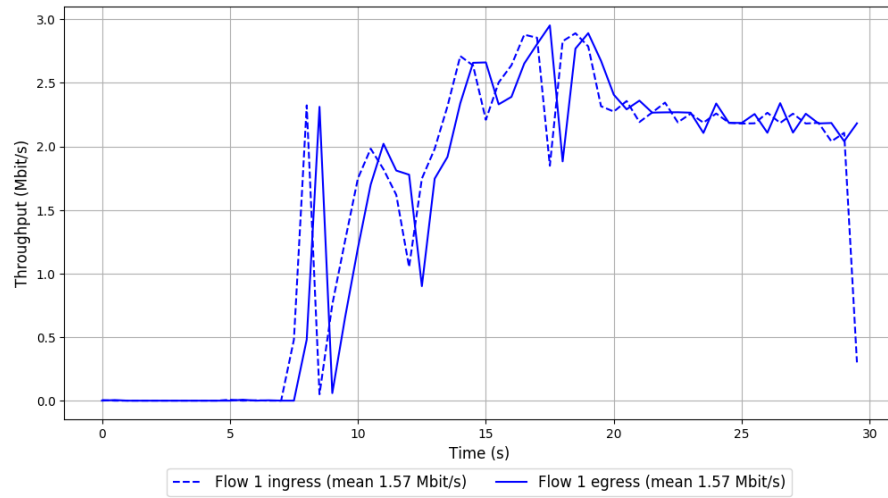
Run 1: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.57 Mbit/s)   Flow 1 egress (mean 1.57 Mbit/s)

Flow 1 (95th percentile 47.42 ms)

```
Run 2: Statistics of WebRTC media

Start at: 2018-10-26 18:11:00
End at: 2018-10-26 18:11:30
Local clock offset: -0.154 ms
Remote clock offset: 0.015 ms


# Below is generated by plot.py at 2018-10-26 21:08:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.97 Mbit/s
95th percentile per-packet one-way delay: 47.479 ms
Loss rate: 0.35%
-- Flow 1:
Average throughput: 1.97 Mbit/s
95th percentile per-packet one-way delay: 47.479 ms
Loss rate: 0.35%
```
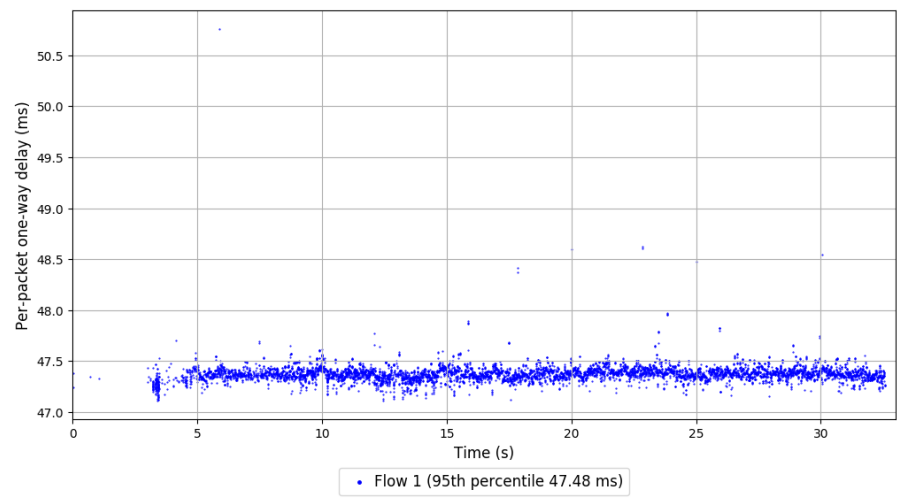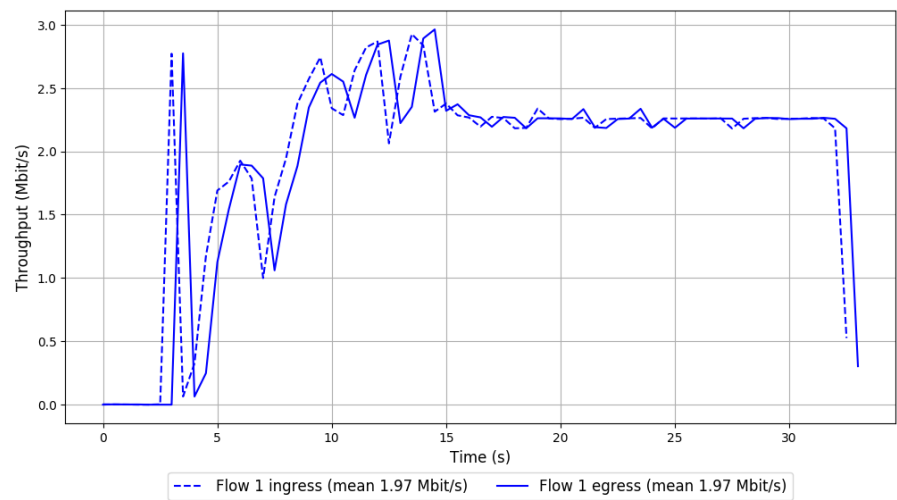
Run 2: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.97 Mbit/s) --- Flow 1 egress (mean 1.97 Mbit/s)

Flow 1 (95th percentile 47.48 ms)

```
Run 3: Statistics of WebRTC media

Start at: 2018-10-26 18:36:44
End at: 2018-10-26 18:37:14
Local clock offset: 0.236 ms
Remote clock offset: -0.05 ms


# Below is generated by plot.py at 2018-10-26 21:08:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.86 Mbit/s
95th percentile per-packet one-way delay: 47.868 ms
Loss rate: 0.32%
-- Flow 1:
Average throughput: 1.86 Mbit/s
95th percentile per-packet one-way delay: 47.868 ms
Loss rate: 0.32%
```
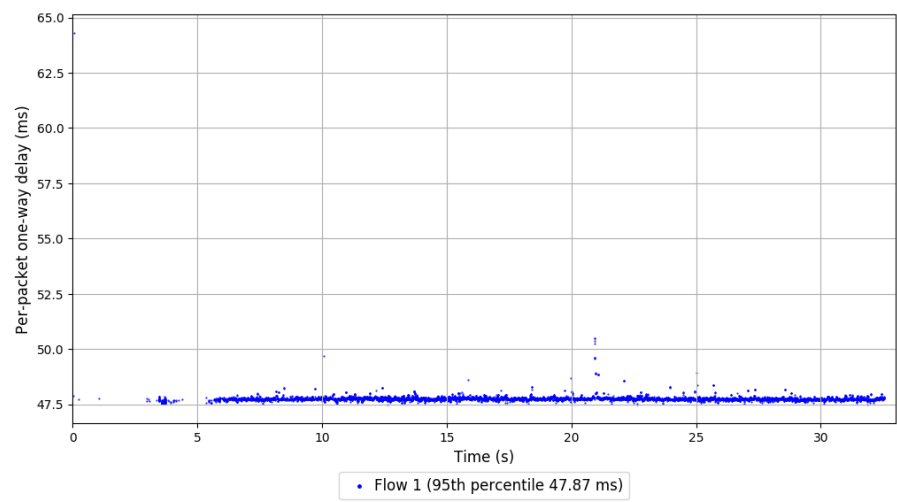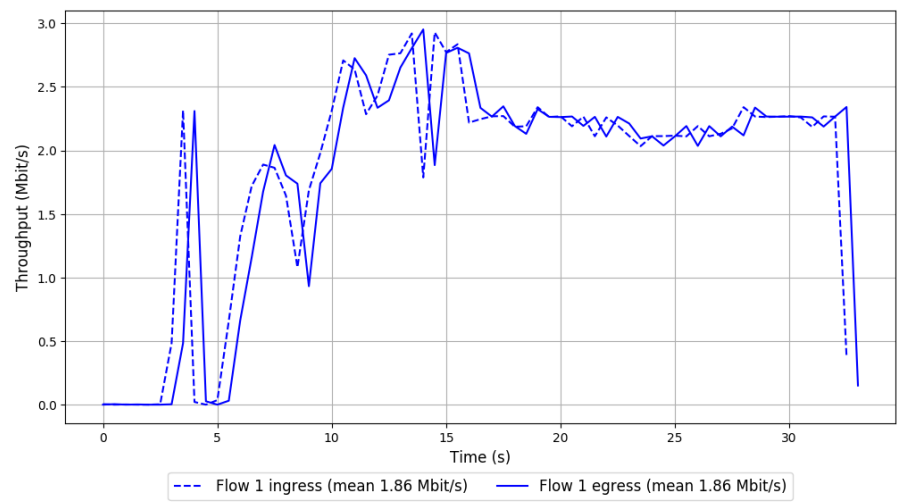
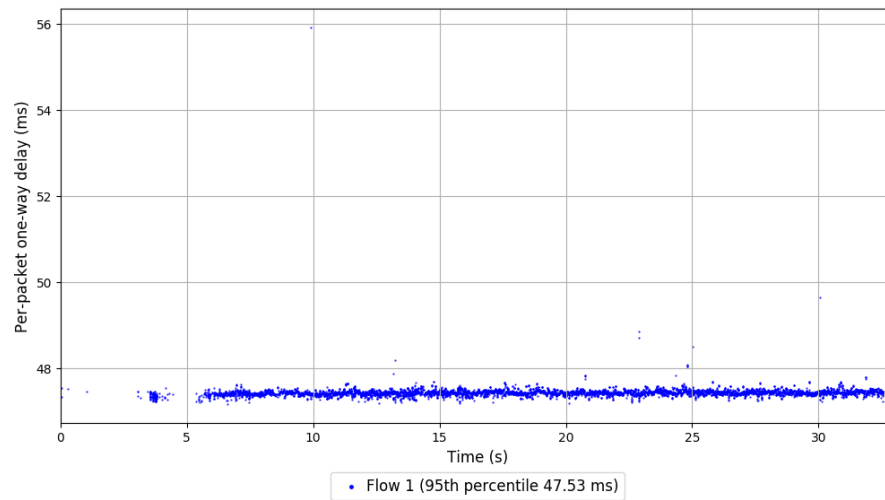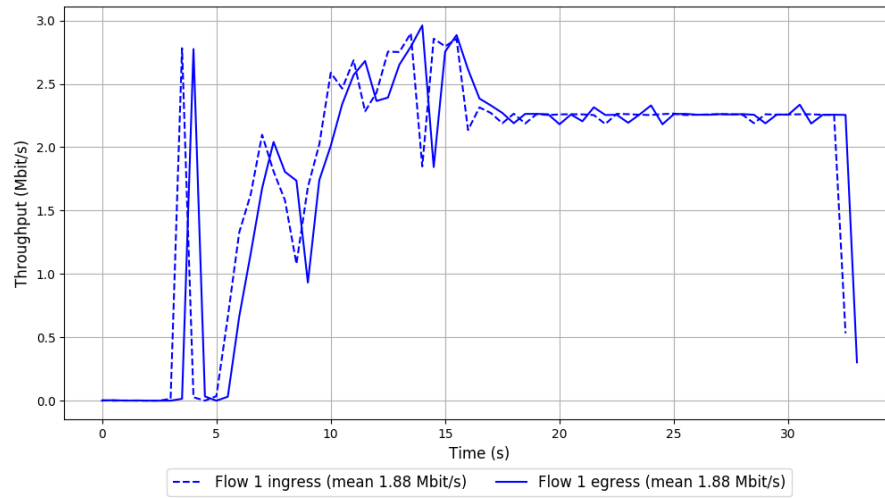Run 3: Report of WebRTC media — Data Link

```
Run 4: Statistics of WebRTC media

Start at: 2018-10-26 19:02:17
End at: 2018-10-26 19:02:47
Local clock offset: -0.124 ms
Remote clock offset: -0.096 ms


# Below is generated by plot.py at 2018-10-26 21:08:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.88 Mbit/s
95th percentile per-packet one-way delay: 47.529 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 1.88 Mbit/s
95th percentile per-packet one-way delay: 47.529 ms
Loss rate: 0.37%
```

Run 4: Report of WebRTC media — Data Link

```
Run 5: Statistics of WebRTC media

Start at: 2018-10-26 19:28:04
End at: 2018-10-26 19:28:34
Local clock offset: -0.124 ms
Remote clock offset: -0.106 ms


# Below is generated by plot.py at 2018-10-26 21:08:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.59 Mbit/s
95th percentile per-packet one-way delay: 47.537 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 1.59 Mbit/s
95th percentile per-packet one-way delay: 47.537 ms
Loss rate: 0.37%
```

Run 5: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.59 Mbit/s) --- Flow 1 egress (mean 1.59 Mbit/s)

Flow 1 (95th percentile 47.54 ms)