Pantheon Report

Generated at 2018-10-09 21:04:52 (UTC).

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

Repeated the test of 18 congestion control schemes 5 times.

Each test lasted for 30 seconds running 1 flow.

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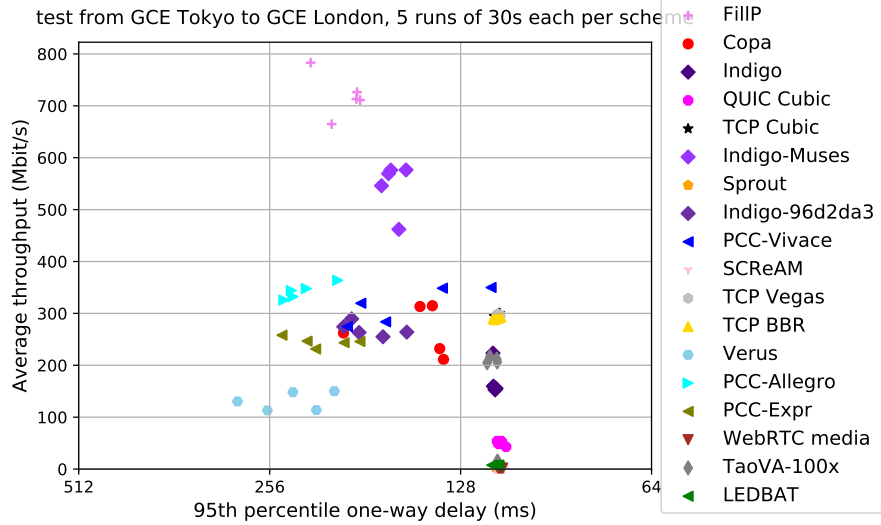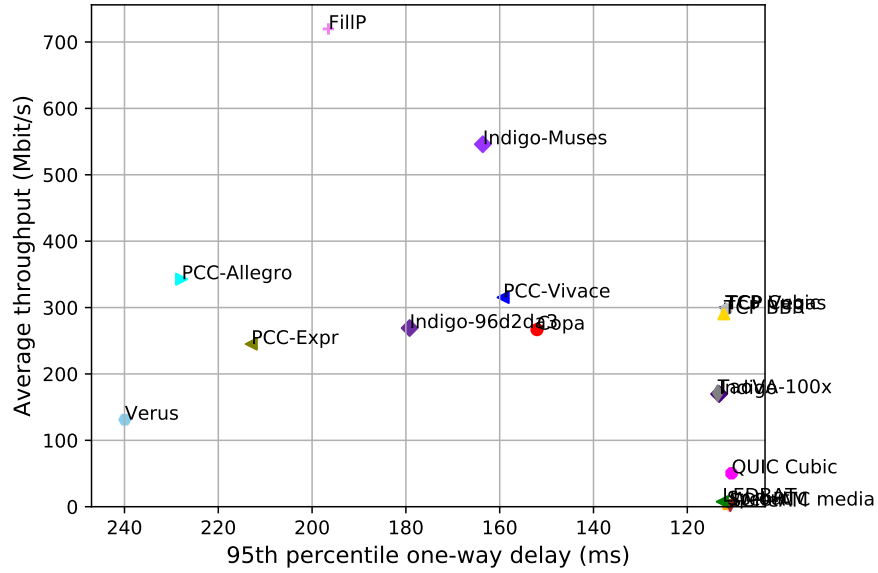
```
System info:
Linux 4.15.0-1021-gcp
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

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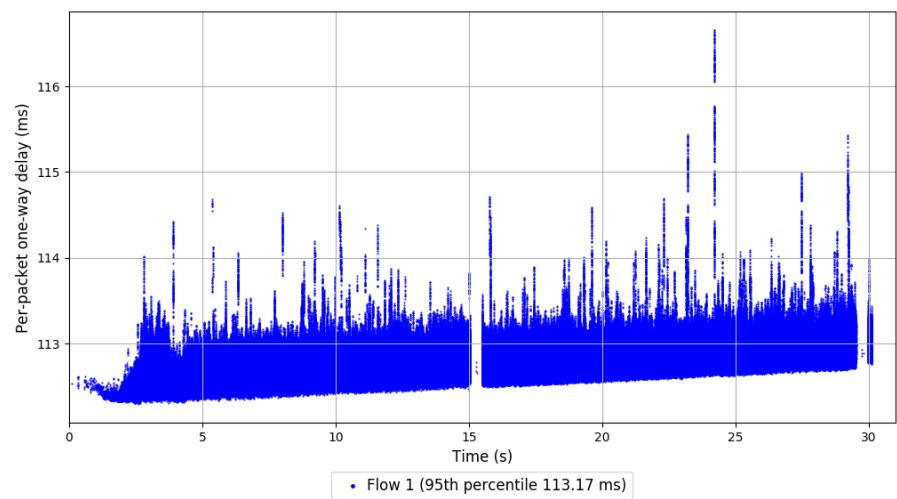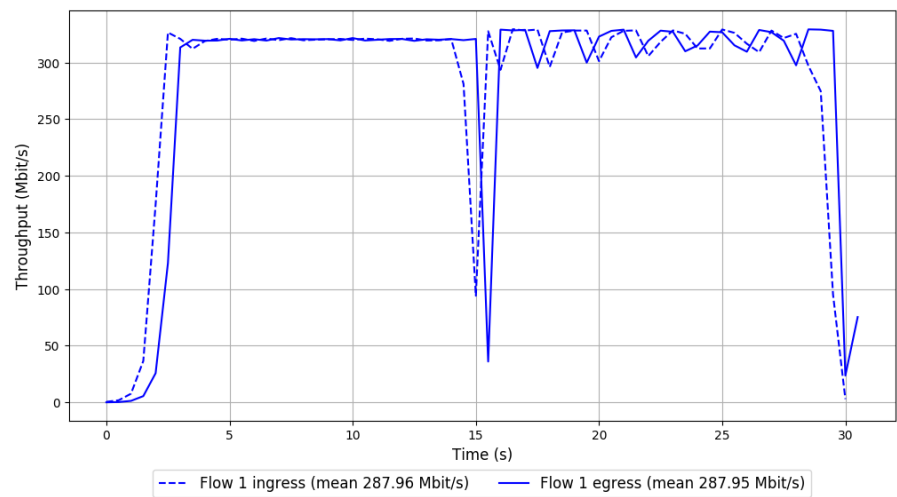(mean of all runs by scheme)

test from GCE Tokyo to GCE London, 5 runs of 30s each per scheme

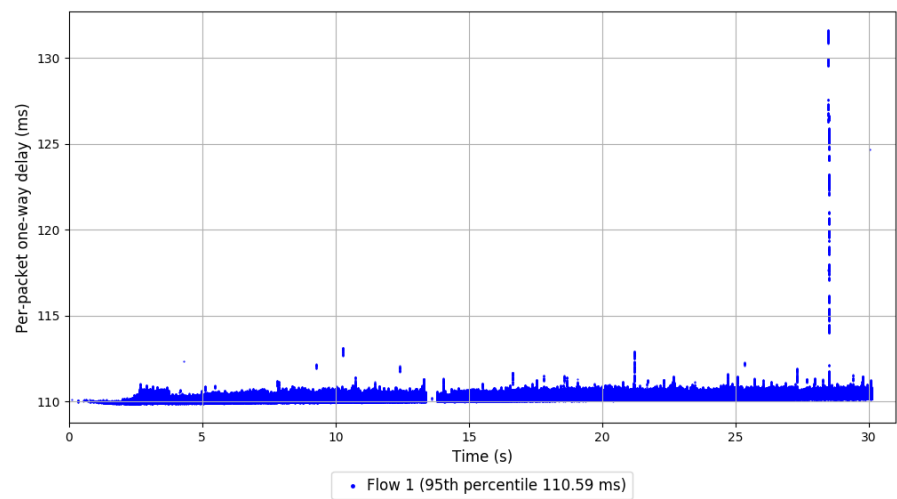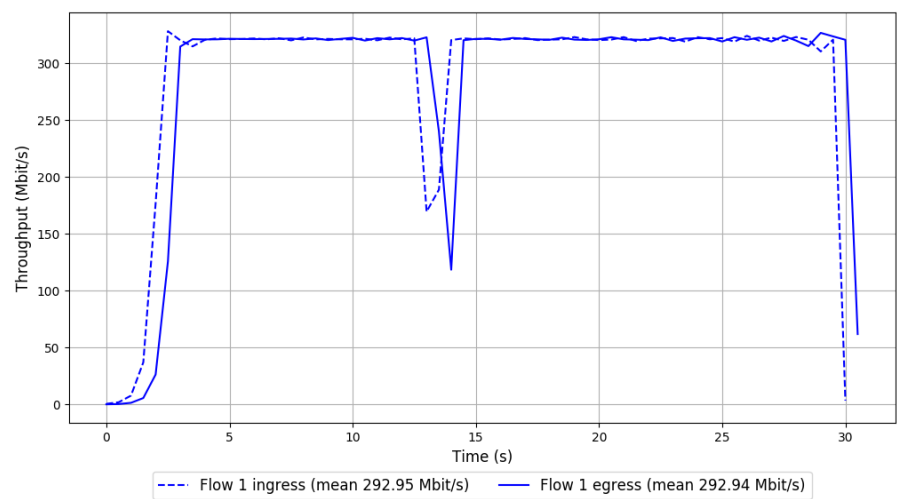| scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	5	290.59	112.20	0.00
Copa	5	266.74	152.05	0.03
TCP Cubic	5	297.88	111.93	0.00
FillP	5	719.67	196.51	5.52
Indigo	5	169.70	113.22	0.00
Indigo-96d2da3	5	269.16	179.21	0.71
LEDBAT	5	7.54	112.54	0.00
Indigo-Muses	5	545.98	163.60	0.18
PCC-Allegro	5	342.69	227.81	4.78
PCC-Expr	5	245.07	212.97	2.40
QUIC Cubic	5	50.32	110.57	0.00
SCReAM	5	0.22	111.09	0.00
Sprout	5	3.12	111.53	0.00
TaoVA-100x	5	171.05	113.51	0.00
TCP Vegas	5	297.33	111.65	0.00
Verus	5	131.12	239.92	4.40
PCC-Vivace	5	315.26	159.27	0.52
WebRTC media	5	1.82	110.82	0.00

```
Run 1: Statistics of TCP BBR

Start at: 2018-10-09 18:17:47
End at: 2018-10-09 18:18:18
Local clock offset: 12.919 ms
Remote clock offset: -0.199 ms

# Below is generated by plot.py at 2018-10-09 20:11:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 287.95 Mbit/s
95th percentile per-packet one-way delay: 113.175 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 287.95 Mbit/s
95th percentile per-packet one-way delay: 113.175 ms
Loss rate: 0.00%
```

Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2018-10-09 18:42:35
End at: 2018-10-09 18:43:05
Local clock offset: 21.428 ms
Remote clock offset: -0.228 ms


# Below is generated by plot.py at 2018-10-09 20:11:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 292.94 Mbit/s
95th percentile per-packet one-way delay: 110.595 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 292.94 Mbit/s
95th percentile per-packet one-way delay: 110.595 ms
Loss rate: 0.00%
```
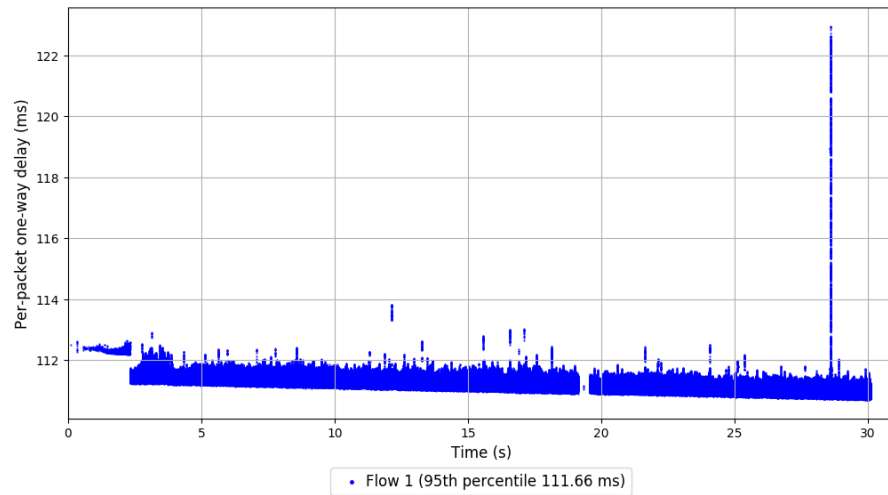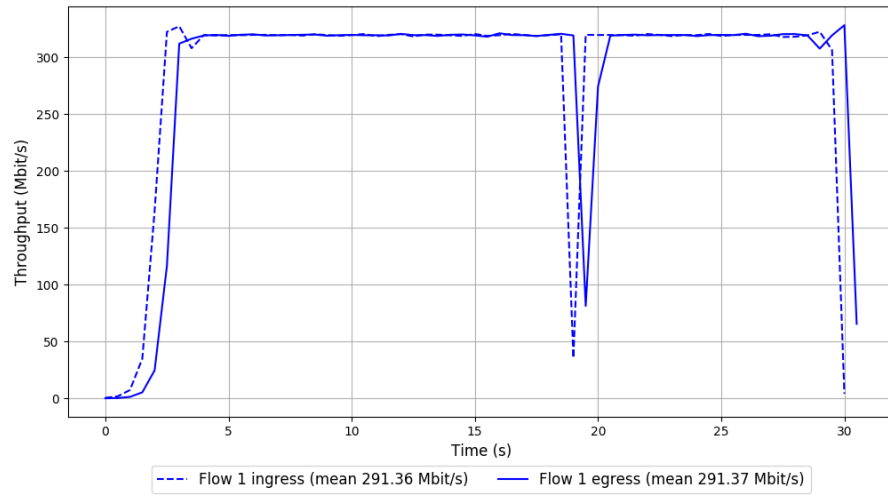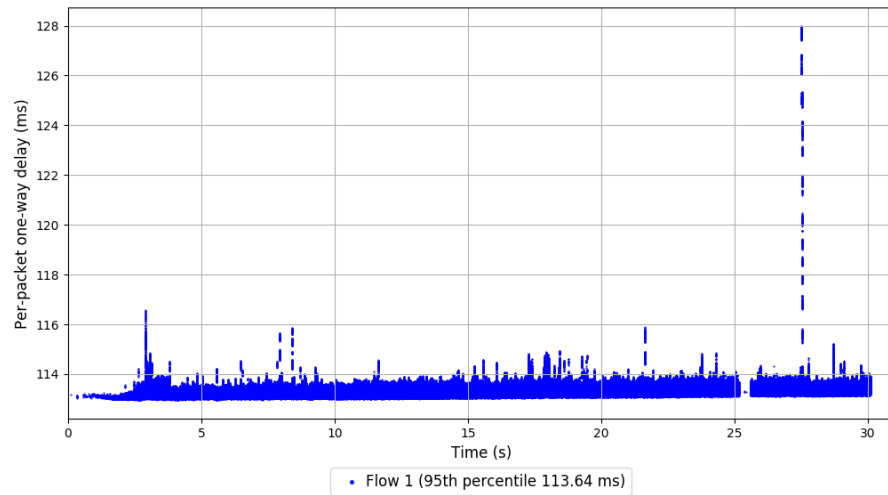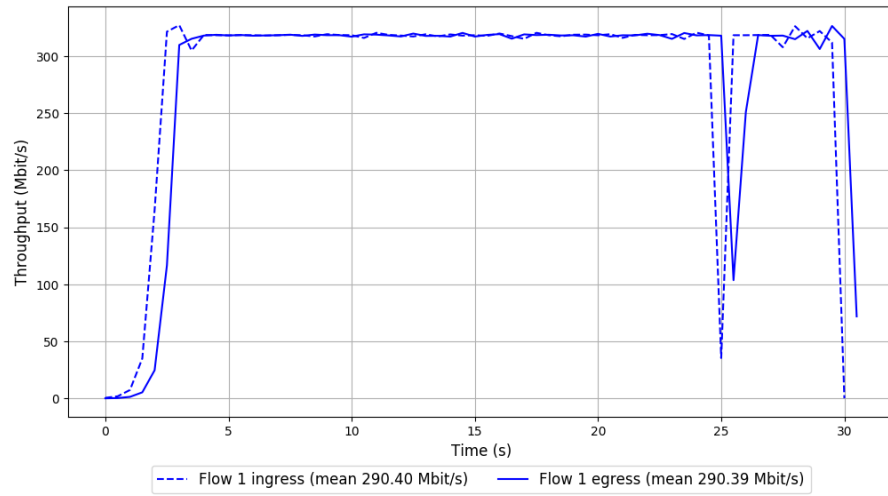
Run 2: Report of TCP BBR — Data Link

```
Run 3: Statistics of TCP BBR

Start at: 2018-10-09 19:08:09
End at: 2018-10-09 19:08:39
Local clock offset: 18.468 ms
Remote clock offset: -0.22 ms


# Below is generated by plot.py at 2018-10-09 20:11:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 291.37 Mbit/s
95th percentile per-packet one-way delay: 111.659 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 291.37 Mbit/s
95th percentile per-packet one-way delay: 111.659 ms
Loss rate: 0.00%
```
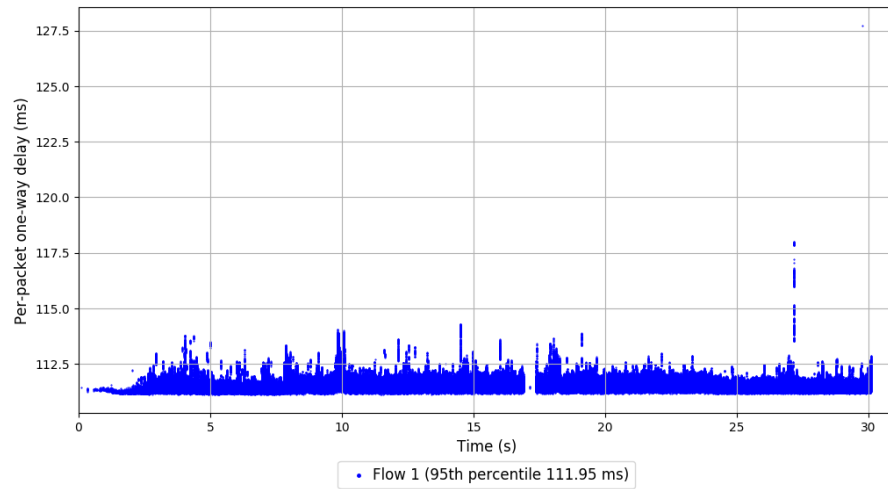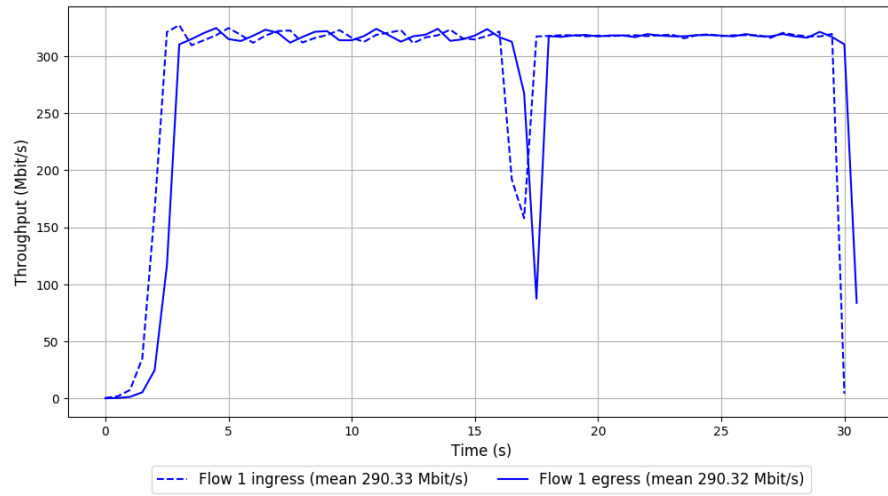
Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 291.36 Mbit/s) --- Flow 1 egress (mean 291.37 Mbit/s)

• Flow 1 (95th percentile 111.66 ms)

```
Run 4: Statistics of TCP BBR

Start at: 2018-10-09 19:33:43
End at: 2018-10-09 19:34:13
Local clock offset: 17.481 ms
Remote clock offset: -0.188 ms


# Below is generated by plot.py at 2018-10-09 20:11:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 290.39 Mbit/s
95th percentile per-packet one-way delay: 113.644 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 290.39 Mbit/s
95th percentile per-packet one-way delay: 113.644 ms
Loss rate: 0.00%
```
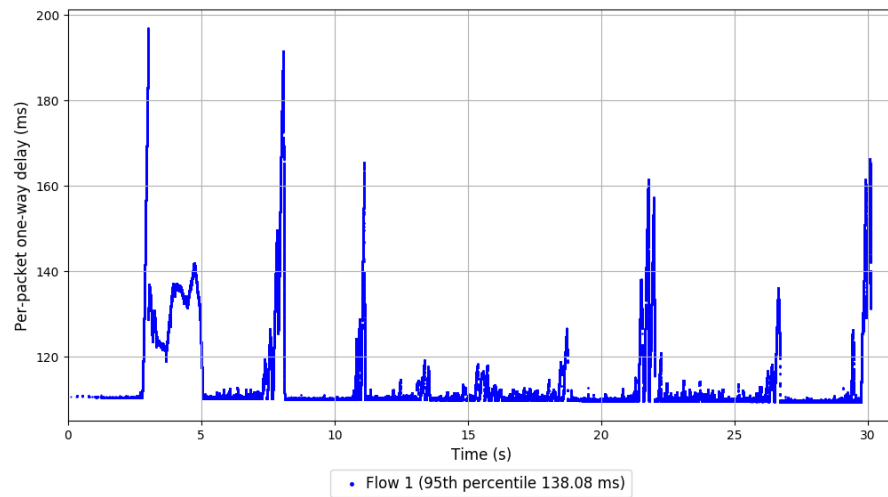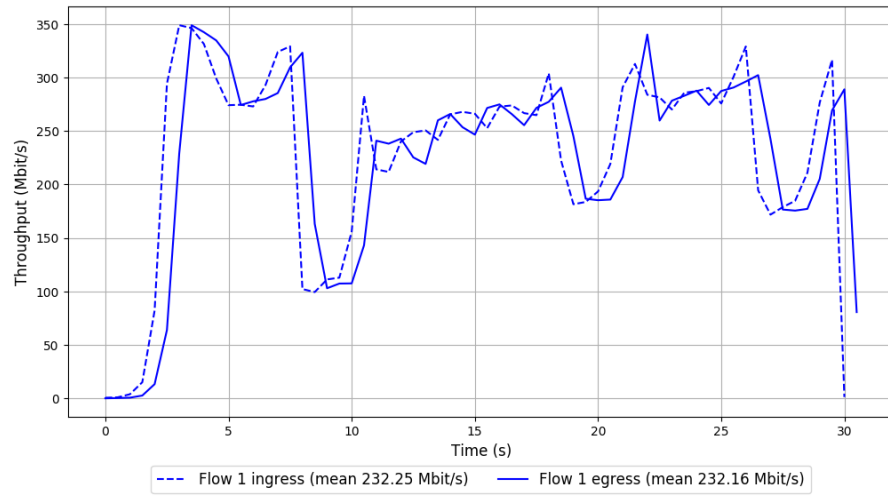
Run 4: Report of TCP BBR — Data Link

```
Run 5: Statistics of TCP BBR

Start at: 2018-10-09 19:58:57
End at: 2018-10-09 19:59:27
Local clock offset: 7.559 ms
Remote clock offset: -0.228 ms


# Below is generated by plot.py at 2018-10-09 20:11:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 290.32 Mbit/s
95th percentile per-packet one-way delay: 111.946 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 290.32 Mbit/s
95th percentile per-packet one-way delay: 111.946 ms
Loss rate: 0.00%
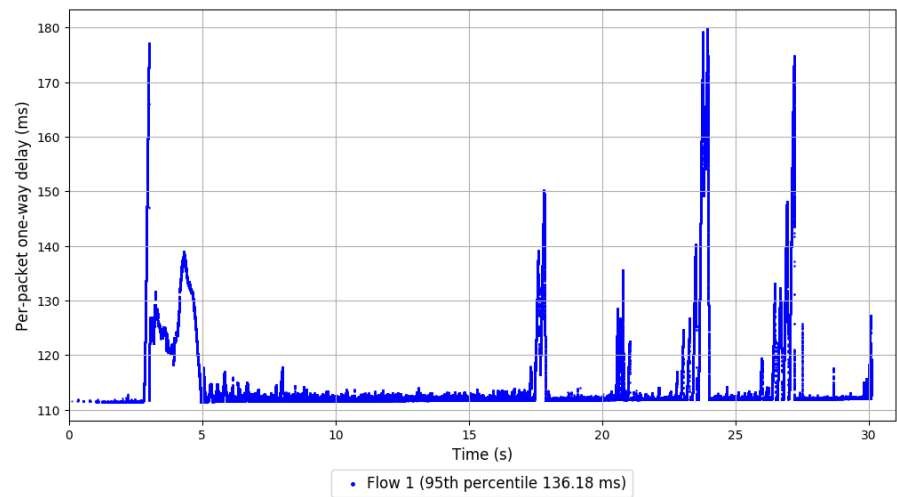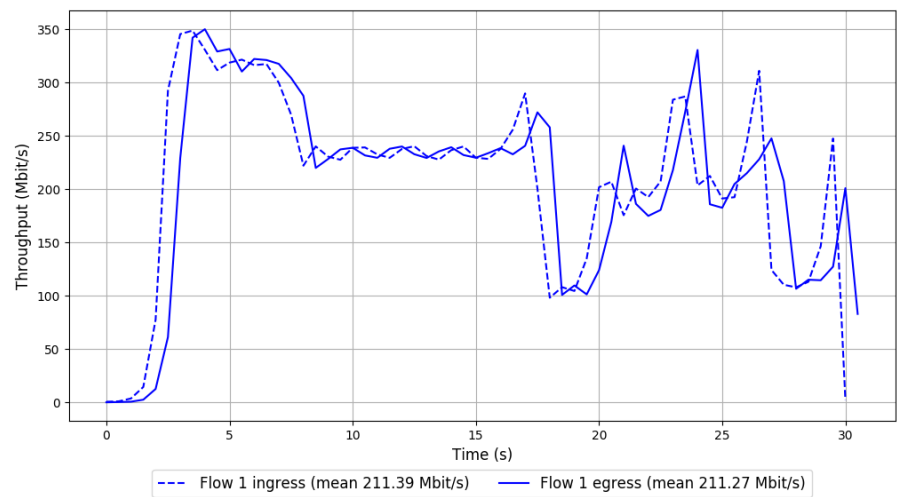```

# Run 5: Report of TCP BBR — Data Link

```
Run 1: Statistics of Copa

Start at: 2018-10-09 18:00:57
End at: 2018-10-09 18:01:27
Local clock offset: 10.631 ms
Remote clock offset: -0.243 ms

Below is generated by plot.py at 2018-10-09 20:13:43
Datalink statistics
-- Total of 1 flow:
Average throughput: 232.16 Mbit/s
95th percentile per-packet one-way delay: 138.080 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 232.16 Mbit/s
95th percentile per-packet one-way delay: 138.080 ms
Loss rate: 0.05%
```
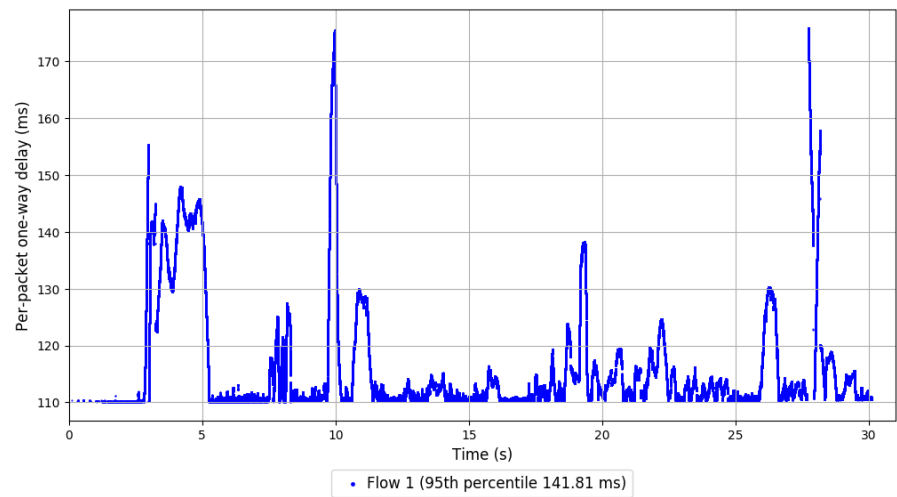
Run 1: Report of Copa — Data Link

```
Run 2: Statistics of Copa

Start at: 2018-10-09 18:25:48
End at: 2018-10-09 18:26:18
Local clock offset: 21.758 ms
Remote clock offset: -0.588 ms


# Below is generated by plot.py at 2018-10-09 20:13:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 211.27 Mbit/s
95th percentile per-packet one-way delay: 136.181 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 211.27 Mbit/s
95th percentile per-packet one-way delay: 136.181 ms
Loss rate: 0.05%
```

Run 2: Report of Copa — Data Link

Flow 1 ingress (mean 211.39 Mbit/s) --- Flow 1 egress (mean 211.27 Mbit/s)

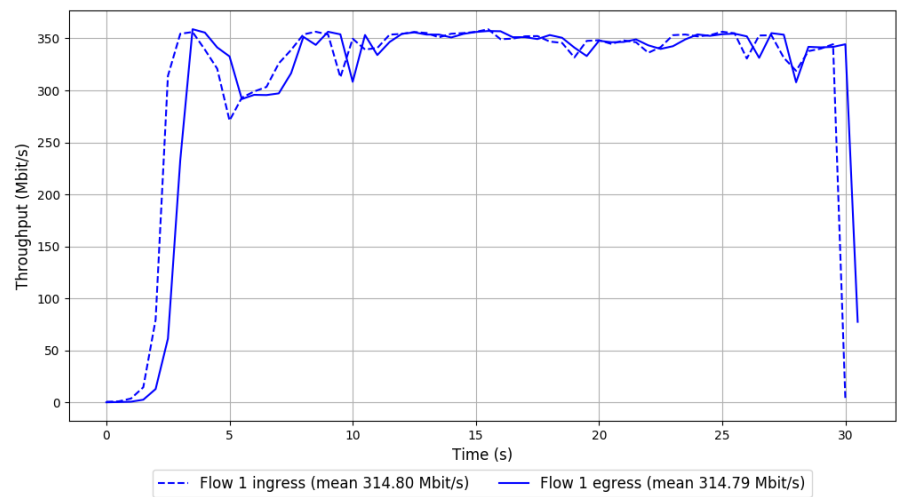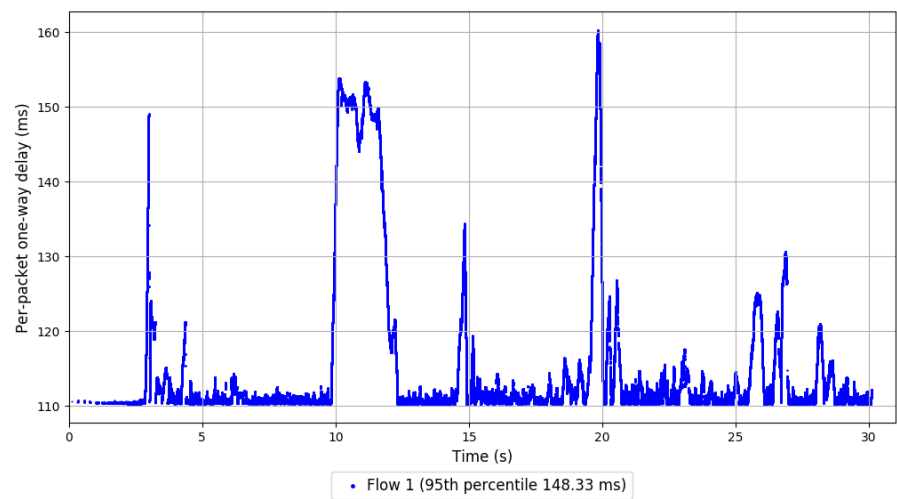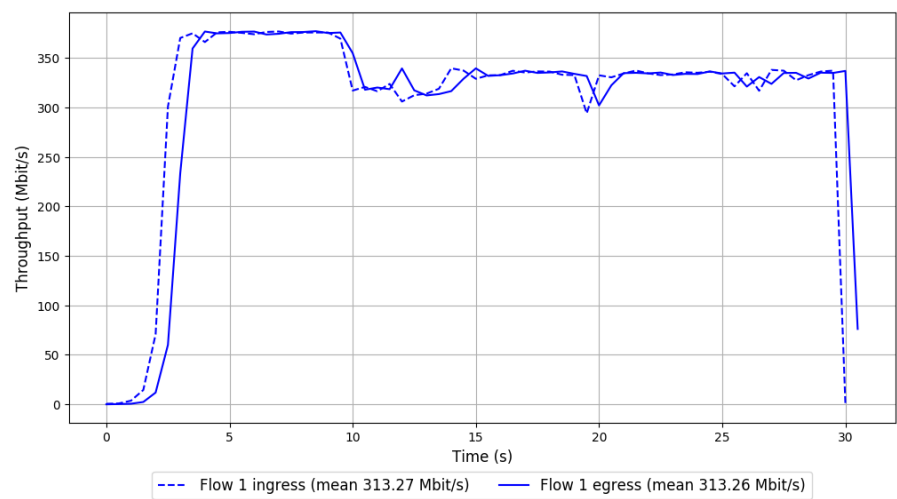· Flow 1 (95th percentile 136.18 ms)

```
Run 3: Statistics of Copa

Start at: 2018-10-09 18:50:55
End at: 2018-10-09 18:51:25
Local clock offset: 26.539 ms
Remote clock offset: -0.643 ms


# Below is generated by plot.py at 2018-10-09 20:16:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 314.79 Mbit/s
95th percentile per-packet one-way delay: 141.809 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 314.79 Mbit/s
95th percentile per-packet one-way delay: 141.809 ms
Loss rate: 0.00%
```

Run 3: Report of Copa — Data Link

```
Run 4: Statistics of Copa

Start at: 2018-10-09 19:16:41
End at: 2018-10-09 19:17:11
Local clock offset: 13.503 ms
Remote clock offset: -0.548 ms


# Below is generated by plot.py at 2018-10-09 20:20:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 313.26 Mbit/s
95th percentile per-packet one-way delay: 148.328 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 313.26 Mbit/s
95th percentile per-packet one-way delay: 148.328 ms
Loss rate: 0.00%
```
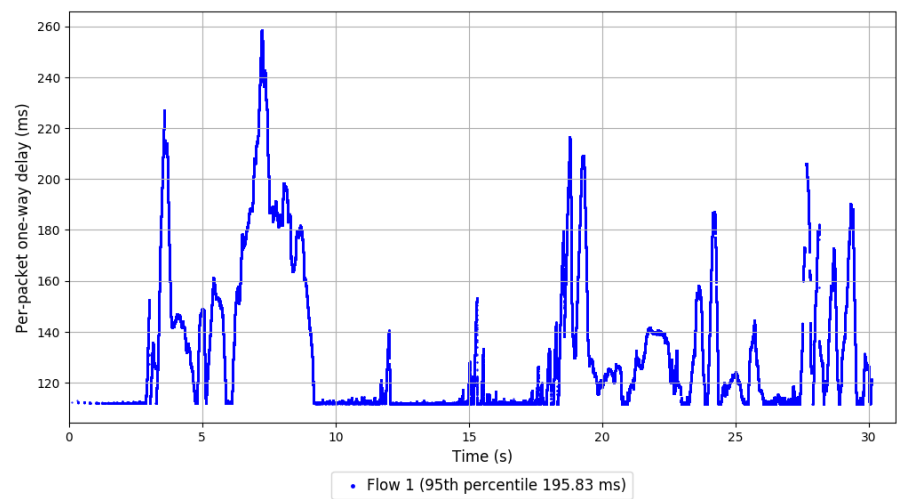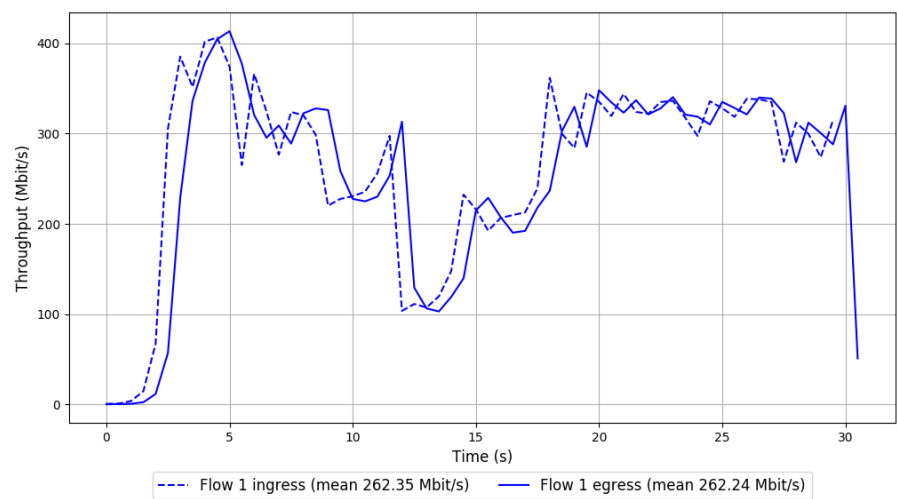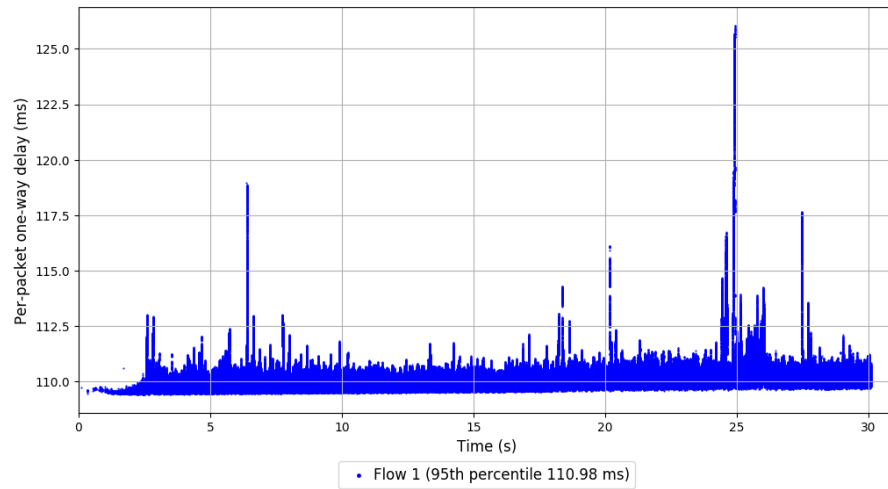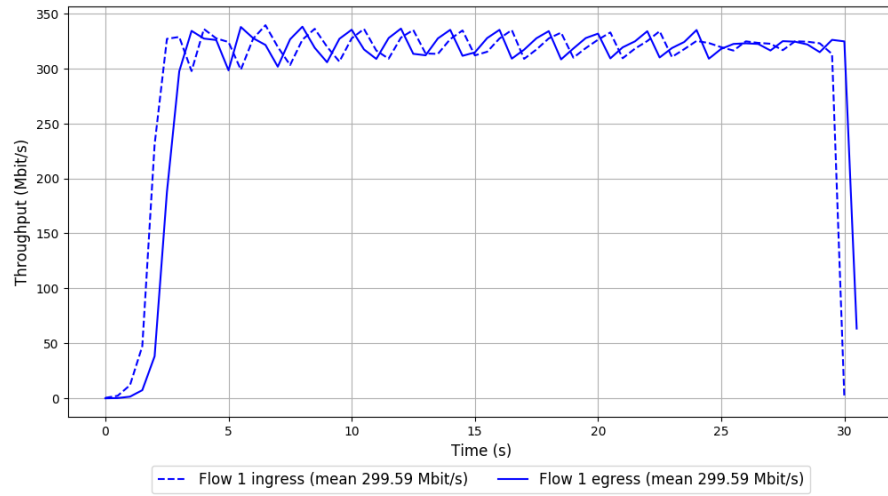
Run 4: Report of Copa — Data Link

Flow 1 ingress (mean 313.27 Mbit/s) --- Flow 1 egress (mean 313.26 Mbit/s)

Flow 1 (95th percentile 148.33 ms)

```
Run 5: Statistics of Copa

Start at: 2018-10-09 19:42:02
End at: 2018-10-09 19:42:32
Local clock offset: 10.408 ms
Remote clock offset: 0.14 ms


# Below is generated by plot.py at 2018-10-09 20:20:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 262.24 Mbit/s
95th percentile per-packet one-way delay: 195.832 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 262.24 Mbit/s
95th percentile per-packet one-way delay: 195.832 ms
Loss rate: 0.04%
```

Run 5: Report of Copa — Data Link

```
Run 1: Statistics of TCP Cubic

Start at: 2018-10-09 18:15:14
End at: 2018-10-09 18:15:44
Local clock offset: 12.176 ms
Remote clock offset: -0.195 ms


# Below is generated by plot.py at 2018-10-09 20:20:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 299.59 Mbit/s
95th percentile per-packet one-way delay: 110.982 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 299.59 Mbit/s
95th percentile per-packet one-way delay: 110.982 ms
Loss rate: 0.00%
```
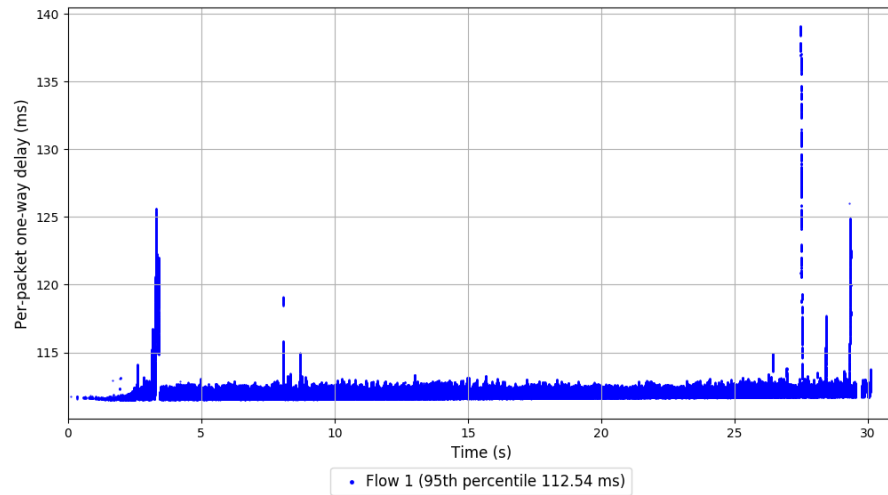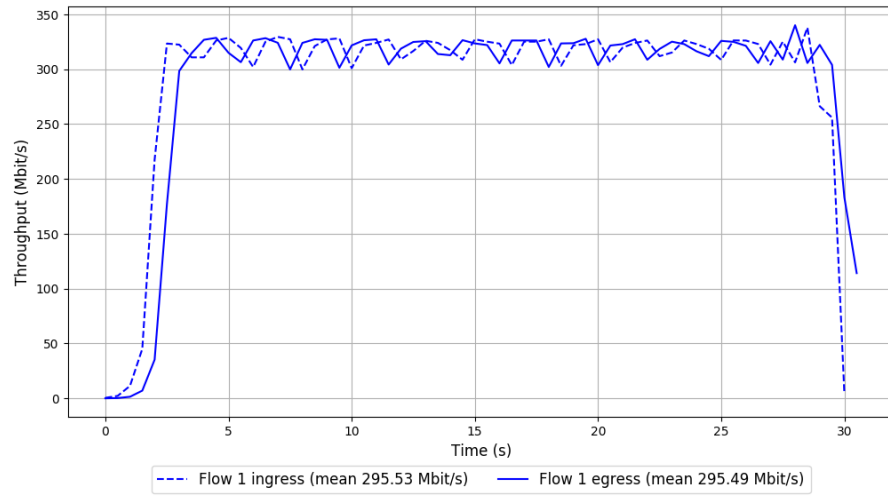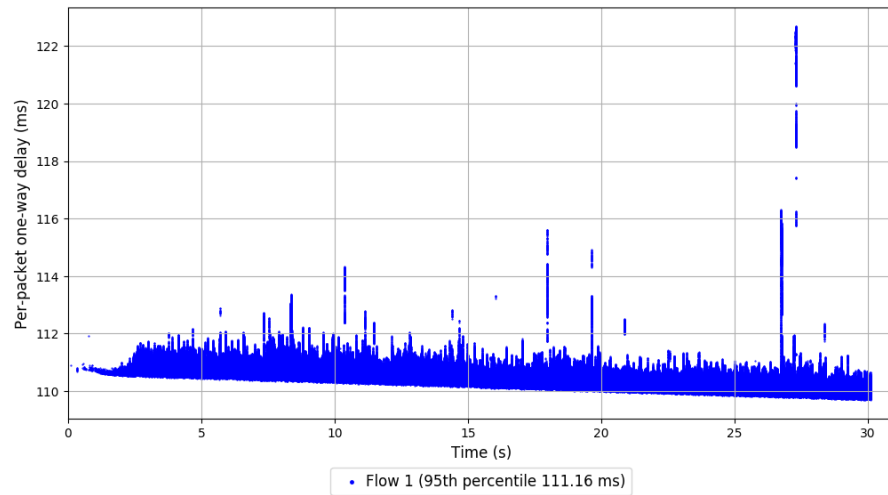
Run 1: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 299.59 Mbit/s) ---- Flow 1 egress (mean 299.59 Mbit/s)

• Flow 1 (95th percentile 110.98 ms)

```
Run 2: Statistics of TCP Cubic

Start at: 2018-10-09 18:40:02
End at: 2018-10-09 18:40:32
Local clock offset: 18.762 ms
Remote clock offset: -0.21 ms


# Below is generated by plot.py at 2018-10-09 20:20:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 295.49 Mbit/s
95th percentile per-packet one-way delay: 112.544 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 295.49 Mbit/s
95th percentile per-packet one-way delay: 112.544 ms
Loss rate: 0.02%
```

Run 2: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 295.53 Mbit/s) ----- Flow 1 egress (mean 295.49 Mbit/s) ———
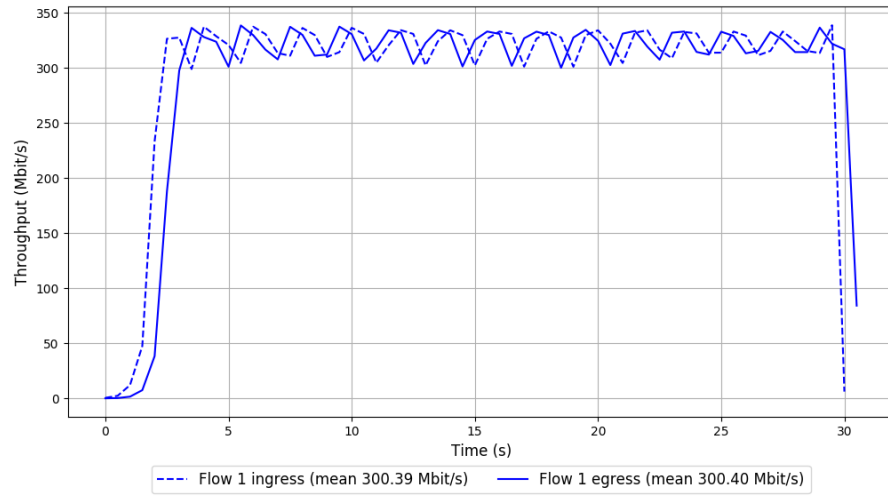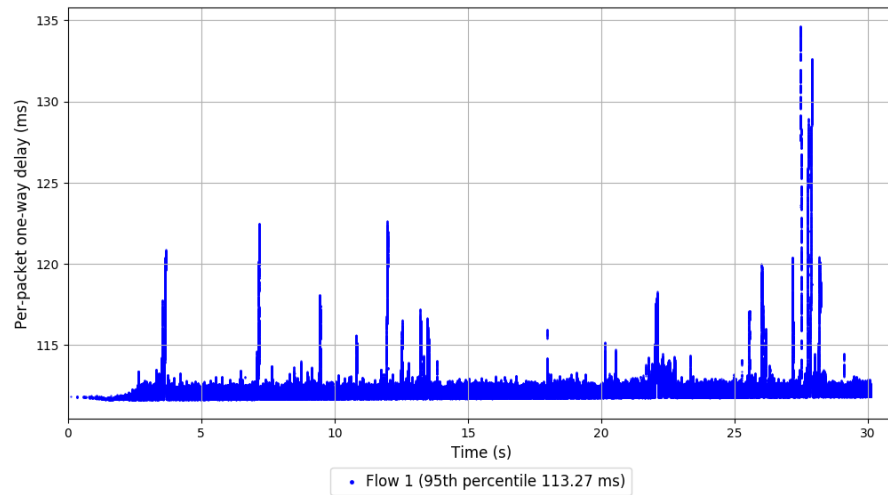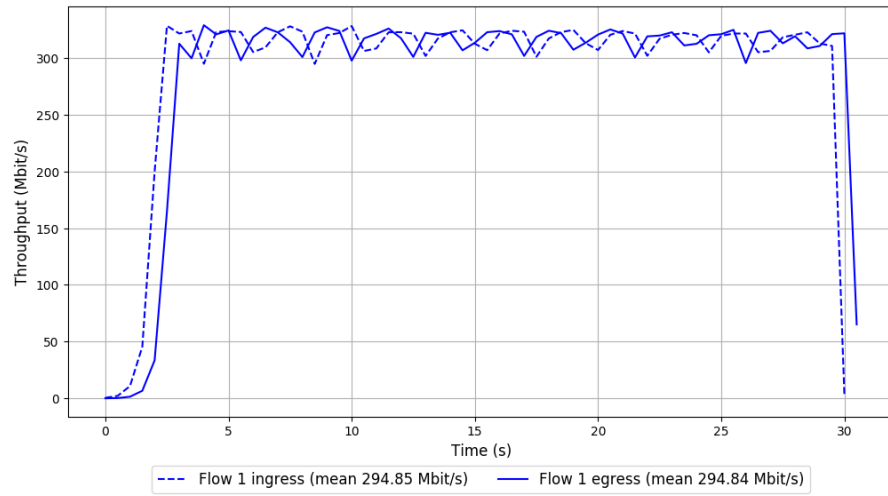

Flow 1 (95th percentile 112.54 ms)

```
Run 3: Statistics of TCP Cubic

Start at: 2018-10-09 19:05:21
End at: 2018-10-09 19:05:51
Local clock offset: 22.377 ms
Remote clock offset: -0.248 ms


# Below is generated by plot.py at 2018-10-09 20:20:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 300.40 Mbit/s
95th percentile per-packet one-way delay: 111.158 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 300.40 Mbit/s
95th percentile per-packet one-way delay: 111.158 ms
Loss rate: 0.00%
```
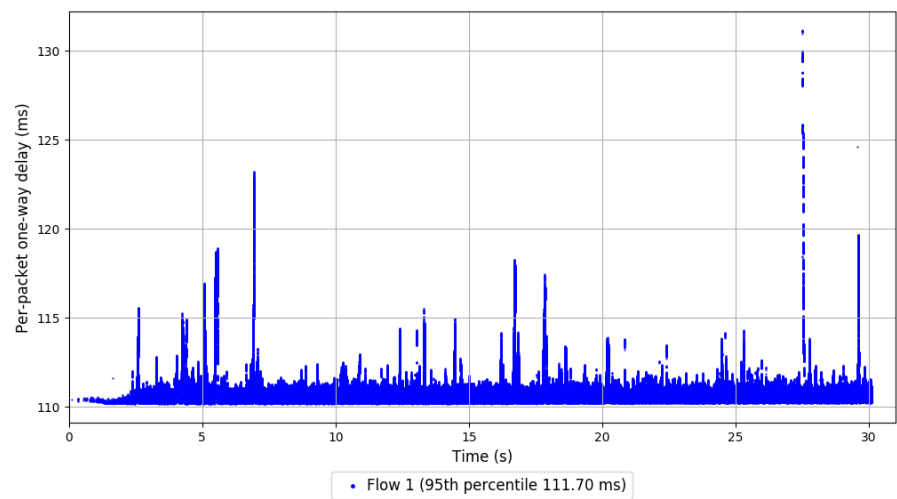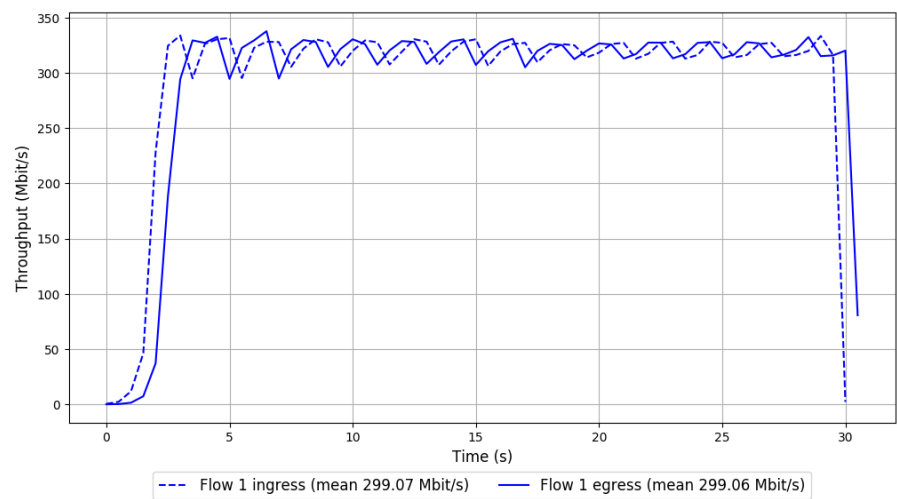
Run 3: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 300.39 Mbit/s) ——— Flow 1 egress (mean 300.40 Mbit/s)

• Flow 1 (95th percentile 111.16 ms)

```
Run 4: Statistics of TCP Cubic

Start at: 2018-10-09 19:31:09
End at: 2018-10-09 19:31:39
Local clock offset: 17.62 ms
Remote clock offset: -0.166 ms


# Below is generated by plot.py at 2018-10-09 20:20:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 294.84 Mbit/s
95th percentile per-packet one-way delay: 113.272 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 294.84 Mbit/s
95th percentile per-packet one-way delay: 113.272 ms
Loss rate: 0.00%
```
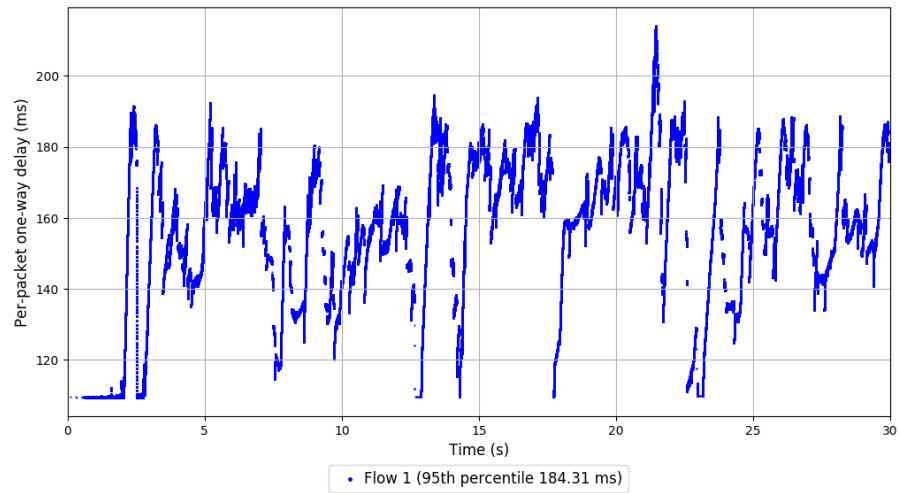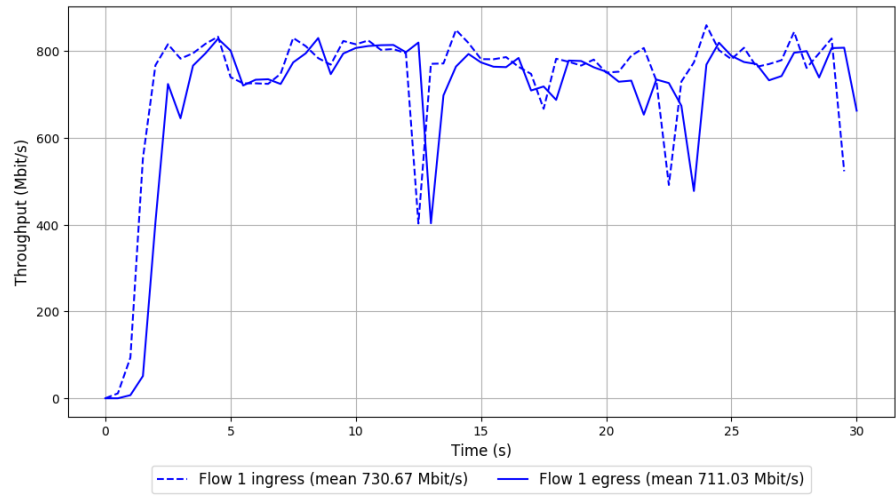
Run 4: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 294.85 Mbit/s)   Flow 1 egress (mean 294.84 Mbit/s)

Flow 1 (95th percentile 113.27 ms)

```
Run 5: Statistics of TCP Cubic

Start at: 2018-10-09 19:56:23
End at: 2018-10-09 19:56:53
Local clock offset: 6.93 ms
Remote clock offset: -0.553 ms


# Below is generated by plot.py at 2018-10-09 20:20:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 299.06 Mbit/s
95th percentile per-packet one-way delay: 111.701 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 299.06 Mbit/s
95th percentile per-packet one-way delay: 111.701 ms
Loss rate: 0.00%
```

Run 5: Report of TCP Cubic — Data Link

- - - Flow 1 ingress (mean 299.07 Mbit/s) ——— Flow 1 egress (mean 299.06 Mbit/s)

· Flow 1 (95th percentile 111.70 ms)

```
Run 1: Statistics of FillP

Start at: 2018-10-09 18:03:52
End at: 2018-10-09 18:04:22
Local clock offset: 8.907 ms
Remote clock offset: -0.601 ms


# Below is generated by plot.py at 2018-10-09 20:31:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 711.03 Mbit/s
95th percentile per-packet one-way delay: 184.310 ms
Loss rate: 2.69%
-- Flow 1:
Average throughput: 711.03 Mbit/s
95th percentile per-packet one-way delay: 184.310 ms
Loss rate: 2.69%
```
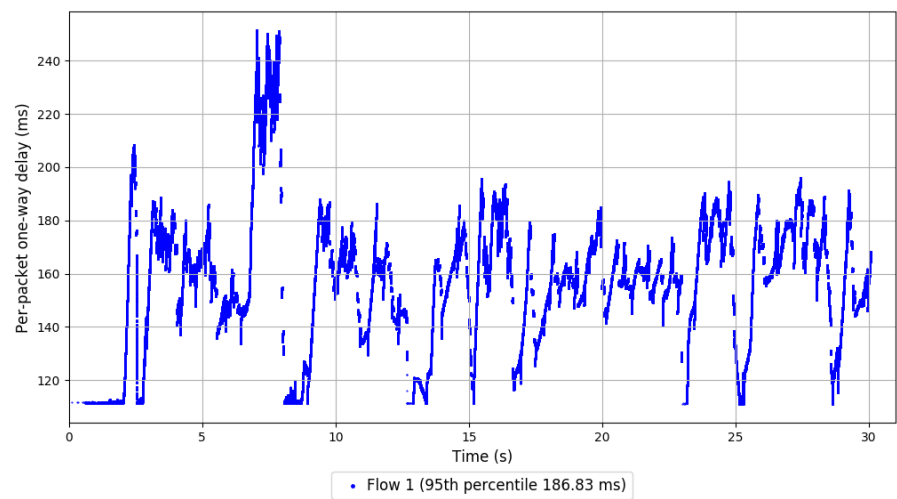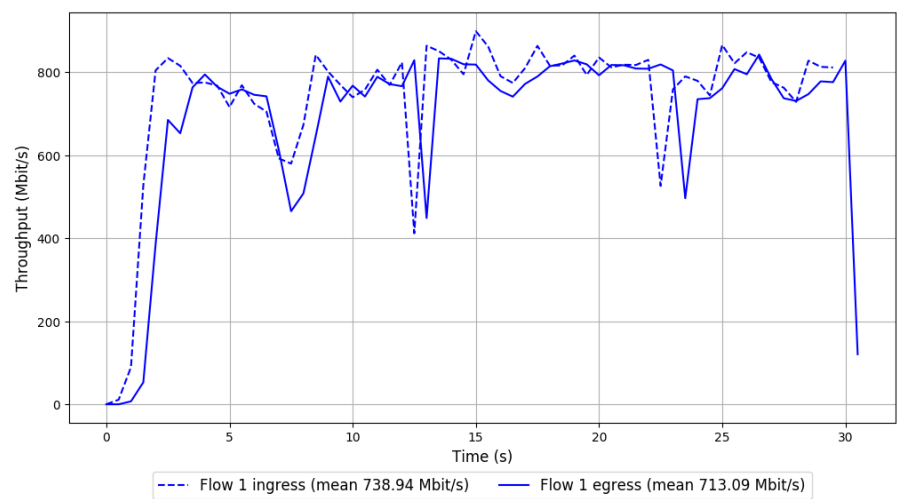
Run 1: Report of FillP — Data Link

Flow 1 ingress (mean 730.67 Mbit/s) ----   Flow 1 egress (mean 711.03 Mbit/s) ———

• Flow 1 (95th percentile 184.31 ms)

```
Run 2: Statistics of FillP

Start at: 2018-10-09 18:28:40
End at: 2018-10-09 18:29:10
Local clock offset: 20.359 ms
Remote clock offset: 0.111 ms


# Below is generated by plot.py at 2018-10-09 20:31:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 713.09 Mbit/s
95th percentile per-packet one-way delay: 186.831 ms
Loss rate: 3.50%
-- Flow 1:
Average throughput: 713.09 Mbit/s
95th percentile per-packet one-way delay: 186.831 ms
Loss rate: 3.50%
```
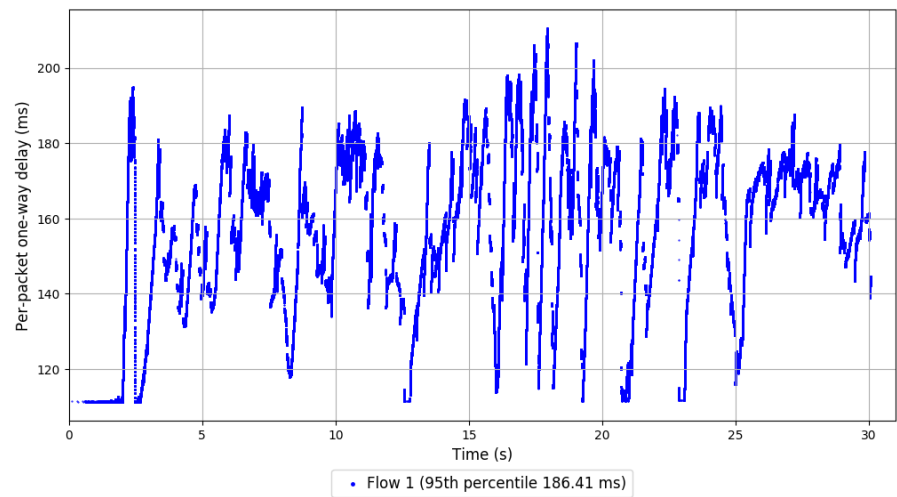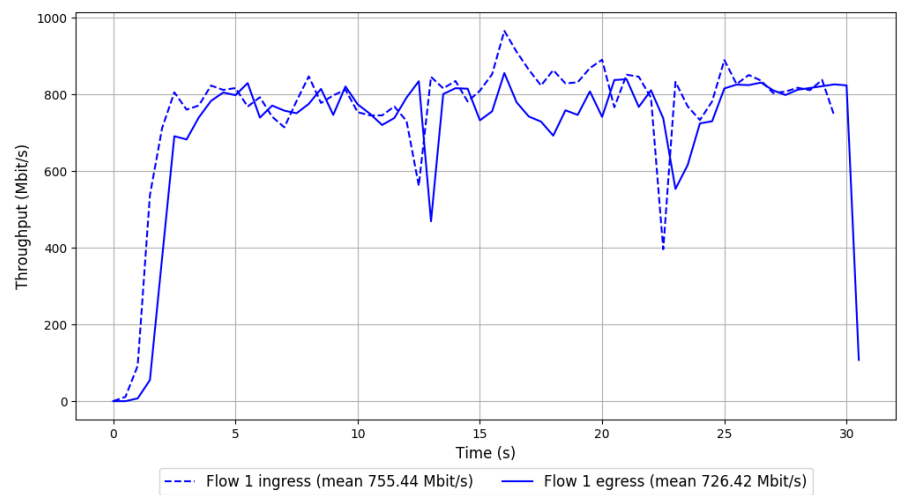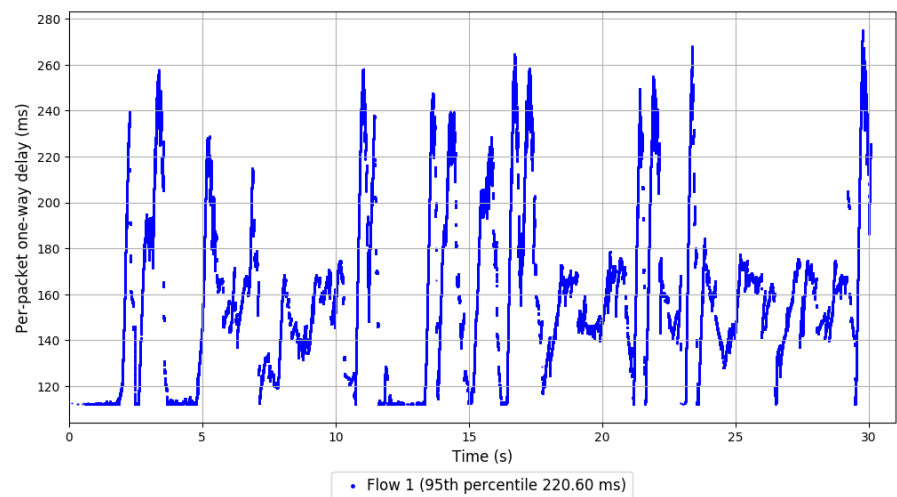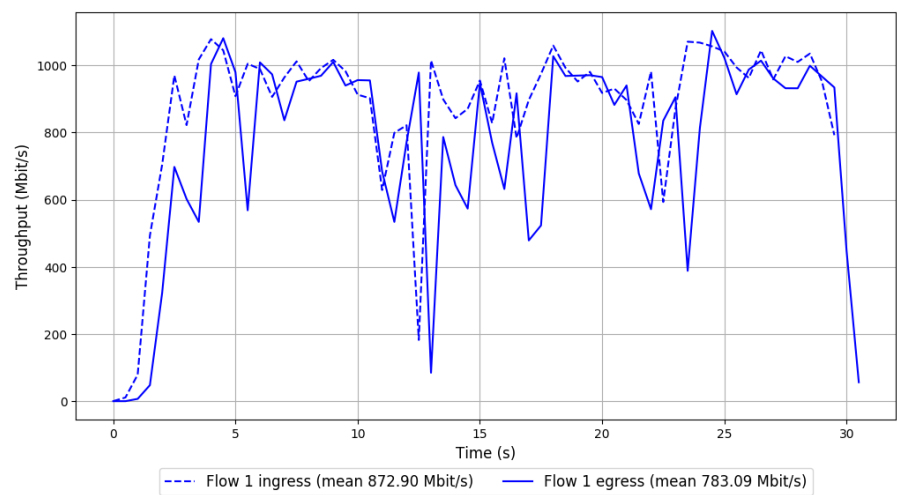
Run 2: Report of FillP — Data Link

```
Run 3: Statistics of FillP

Start at: 2018-10-09 18:53:58
End at: 2018-10-09 18:54:28
Local clock offset: 28.089 ms
Remote clock offset: 0.08 ms


# Below is generated by plot.py at 2018-10-09 20:31:27
# Datalink statistics
-- Total of 1 flow:
Average throughput: 726.42 Mbit/s
95th percentile per-packet one-way delay: 186.414 ms
Loss rate: 3.84%
-- Flow 1:
Average throughput: 726.42 Mbit/s
95th percentile per-packet one-way delay: 186.414 ms
Loss rate: 3.84%
```

Run 3: Report of FillP — Data Link

Flow 1 ingress (mean 755.44 Mbit/s) — — — Flow 1 egress (mean 726.42 Mbit/s)

· Flow 1 (95th percentile 186.41 ms)

```
Run 4: Statistics of FillP

Start at: 2018-10-09 19:19:41
End at: 2018-10-09 19:20:11
Local clock offset: 13.909 ms
Remote clock offset: -0.159 ms


# Below is generated by plot.py at 2018-10-09 20:33:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 783.09 Mbit/s
95th percentile per-packet one-way delay: 220.603 ms
Loss rate: 10.29%
-- Flow 1:
Average throughput: 783.09 Mbit/s
95th percentile per-packet one-way delay: 220.603 ms
Loss rate: 10.29%
```
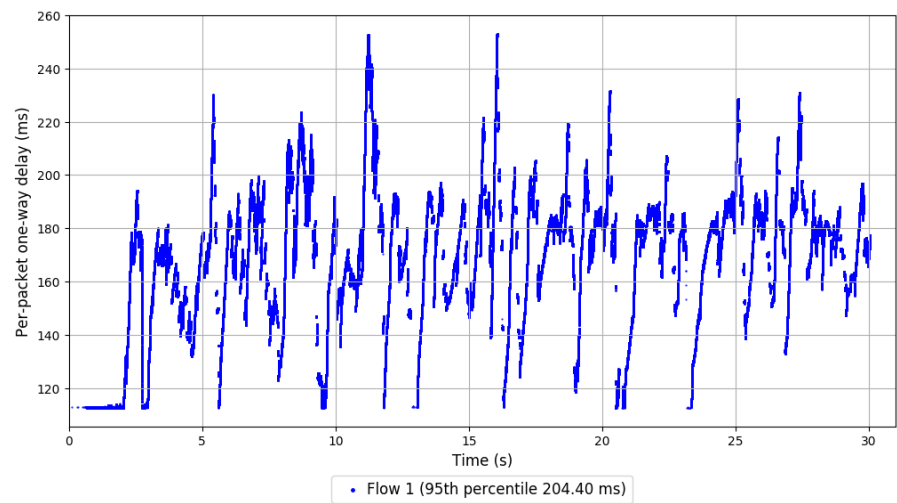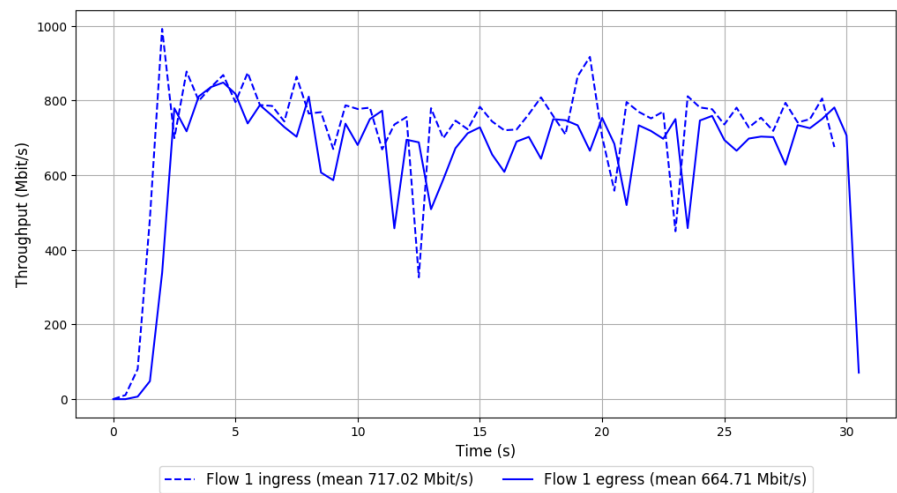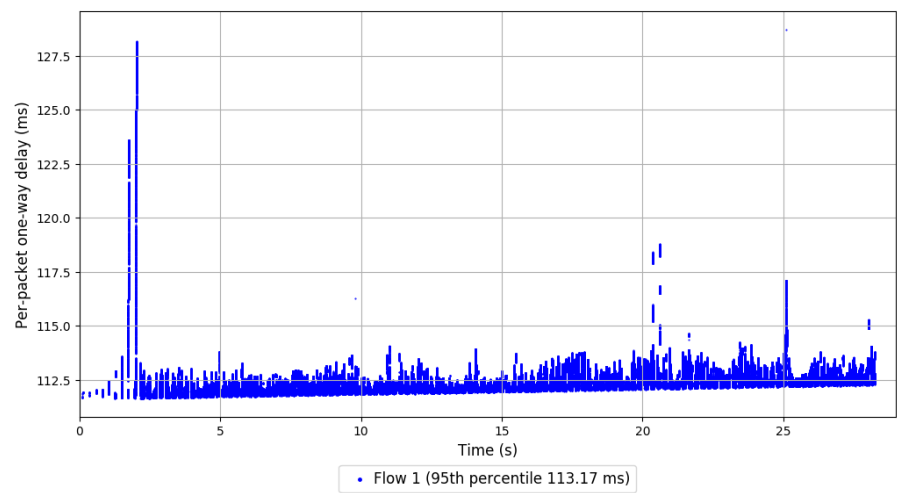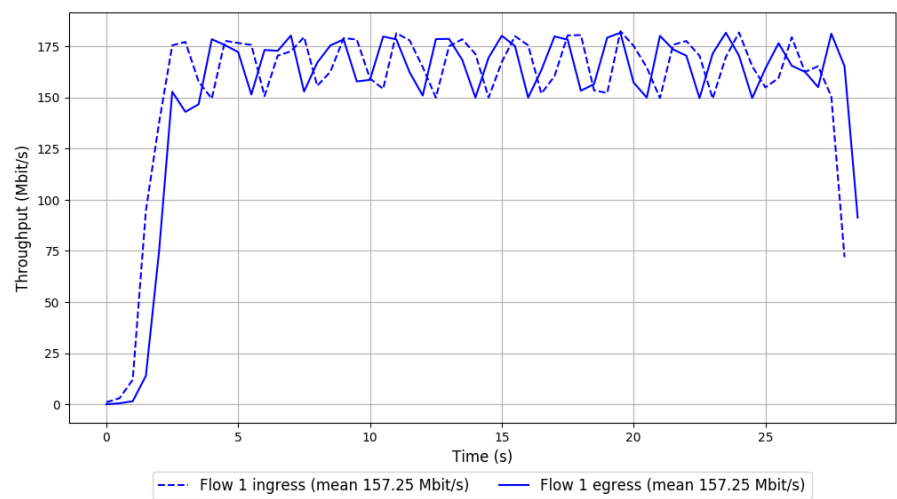
Run 4: Report of FillP — Data Link

Flow 1 ingress (mean 872.90 Mbit/s) ----- Flow 1 egress (mean 783.09 Mbit/s) ———

• Flow 1 (95th percentile 220.60 ms)

42

```
Run 5: Statistics of FillP

Start at: 2018-10-09 19:44:57
End at: 2018-10-09 19:45:27
Local clock offset: 8.259 ms
Remote clock offset: 0.159 ms


# Below is generated by plot.py at 2018-10-09 20:33:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 664.71 Mbit/s
95th percentile per-packet one-way delay: 204.396 ms
Loss rate: 7.29%
-- Flow 1:
Average throughput: 664.71 Mbit/s
95th percentile per-packet one-way delay: 204.396 ms
Loss rate: 7.29%
```
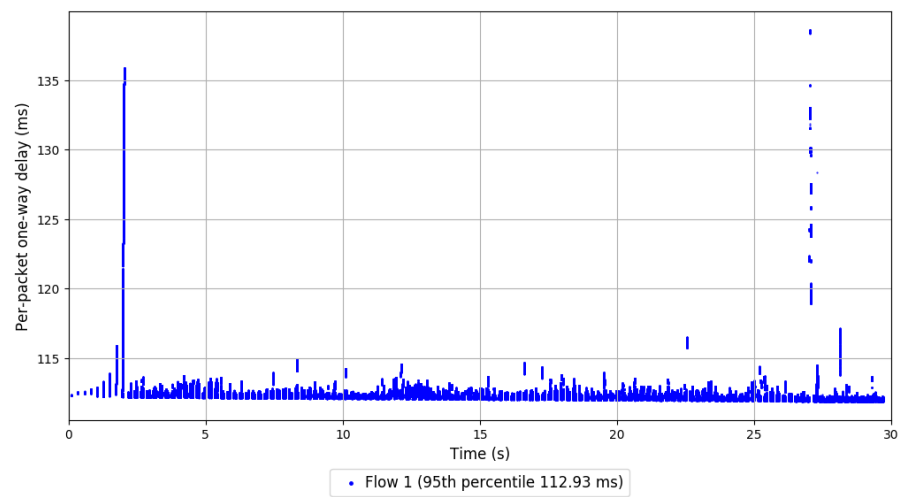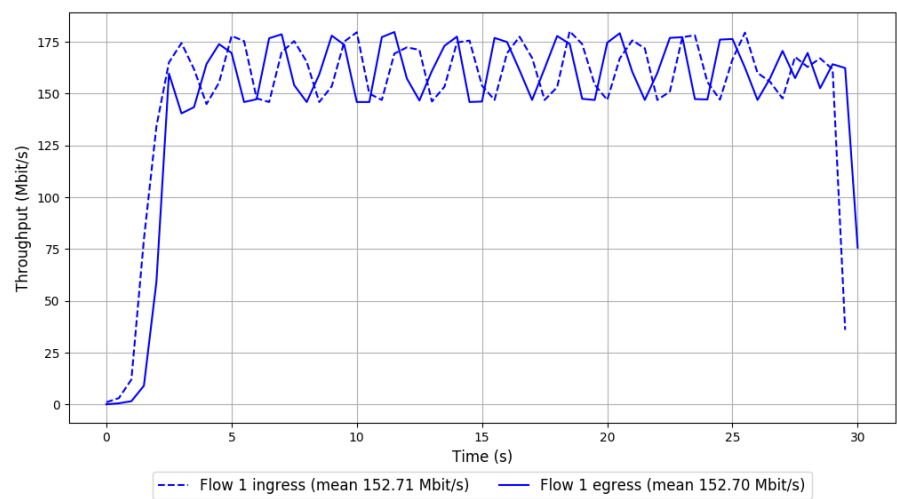
Run 5: Report of FillP — Data Link

```
Run 1: Statistics of Indigo

Start at: 2018-10-09 18:05:31
End at: 2018-10-09 18:06:01
Local clock offset: 8.261 ms
Remote clock offset: -0.269 ms


# Below is generated by plot.py at 2018-10-09 20:33:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 157.25 Mbit/s
95th percentile per-packet one-way delay: 113.171 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 157.25 Mbit/s
95th percentile per-packet one-way delay: 113.171 ms
Loss rate: 0.00%
```
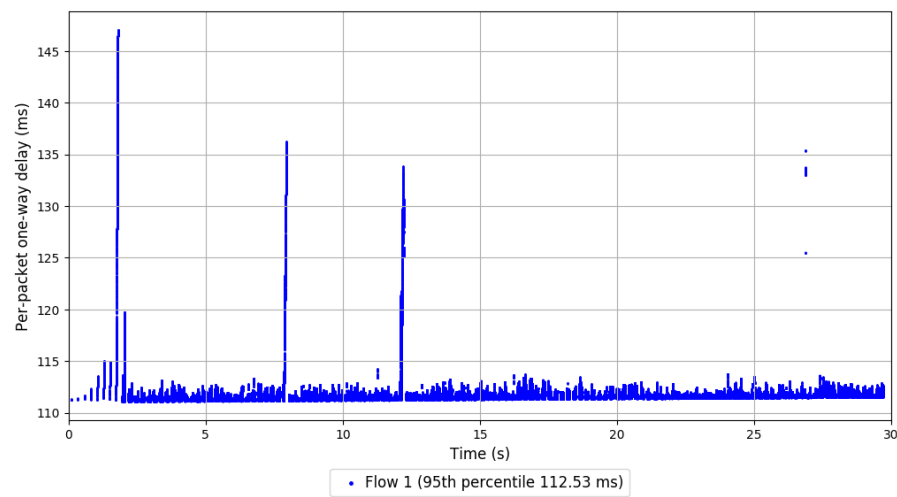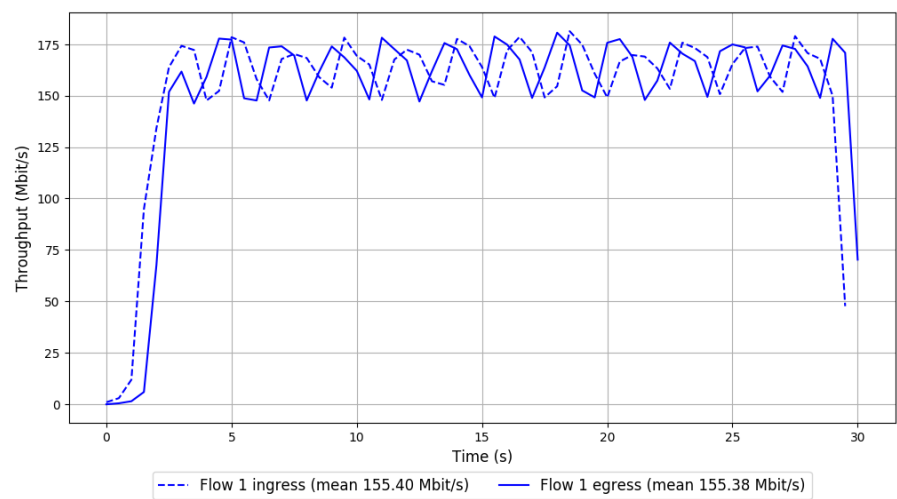
Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2018-10-09 18:30:20
End at: 2018-10-09 18:30:50
Local clock offset: 18.093 ms
Remote clock offset: -0.223 ms


# Below is generated by plot.py at 2018-10-09 20:33:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 152.70 Mbit/s
95th percentile per-packet one-way delay: 112.926 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 152.70 Mbit/s
95th percentile per-packet one-way delay: 112.926 ms
Loss rate: 0.01%
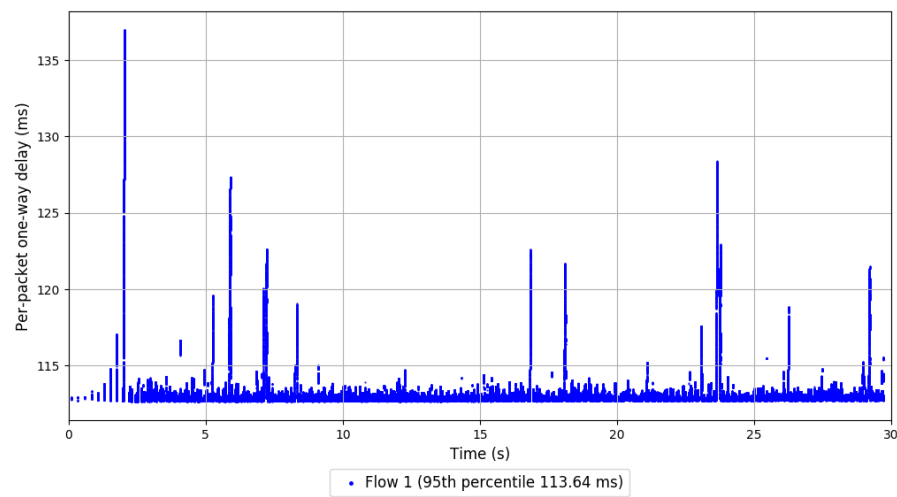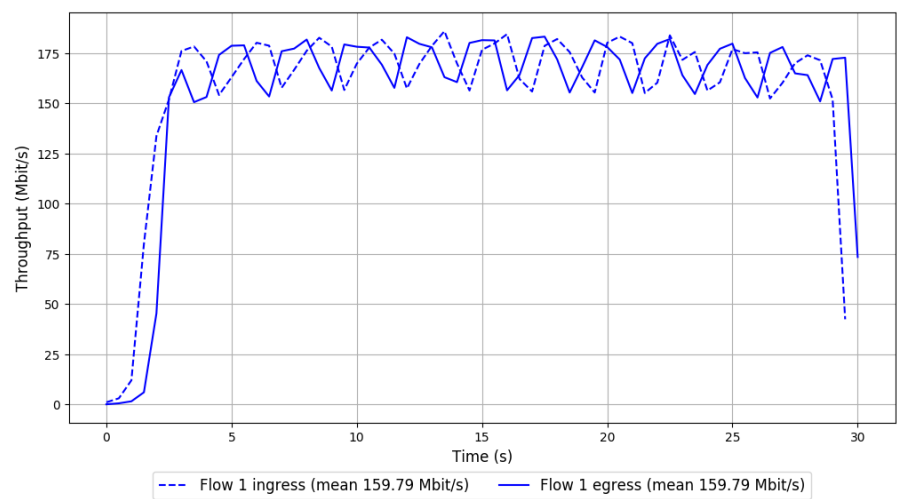```

Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2018-10-09 18:55:39
End at: 2018-10-09 18:56:09
Local clock offset: 30.64 ms
Remote clock offset: -0.589 ms


# Below is generated by plot.py at 2018-10-09 20:33:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 155.38 Mbit/s
95th percentile per-packet one-way delay: 112.525 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 155.38 Mbit/s
95th percentile per-packet one-way delay: 112.525 ms
Loss rate: 0.01%
```

Run 3: Report of Indigo — Data Link

Flow 1 ingress (mean 155.40 Mbit/s)   Flow 1 egress (mean 155.38 Mbit/s)

Flow 1 (95th percentile 112.53 ms)

```
Run 4: Statistics of Indigo

Start at: 2018-10-09 19:21:25
End at: 2018-10-09 19:21:55
Local clock offset: 13.488 ms
Remote clock offset: -0.228 ms


# Below is generated by plot.py at 2018-10-09 20:33:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 159.79 Mbit/s
95th percentile per-packet one-way delay: 113.642 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 159.79 Mbit/s
95th percentile per-packet one-way delay: 113.642 ms
Loss rate: 0.00%
```
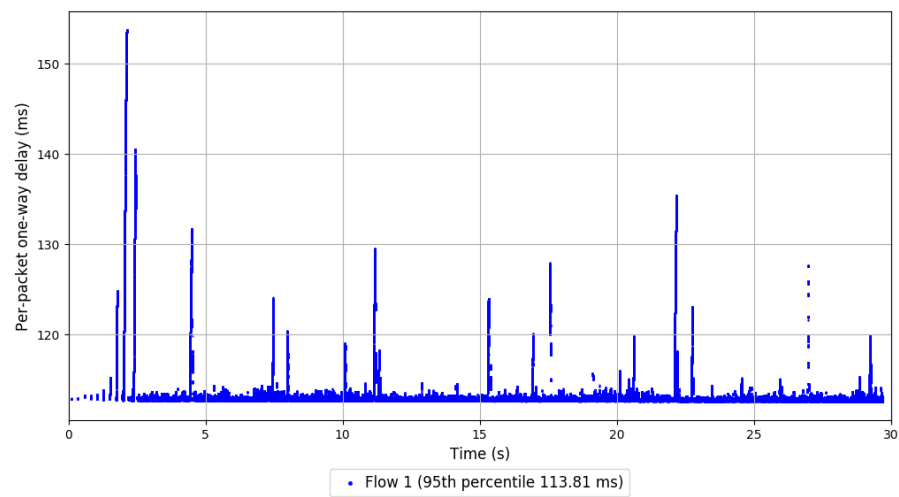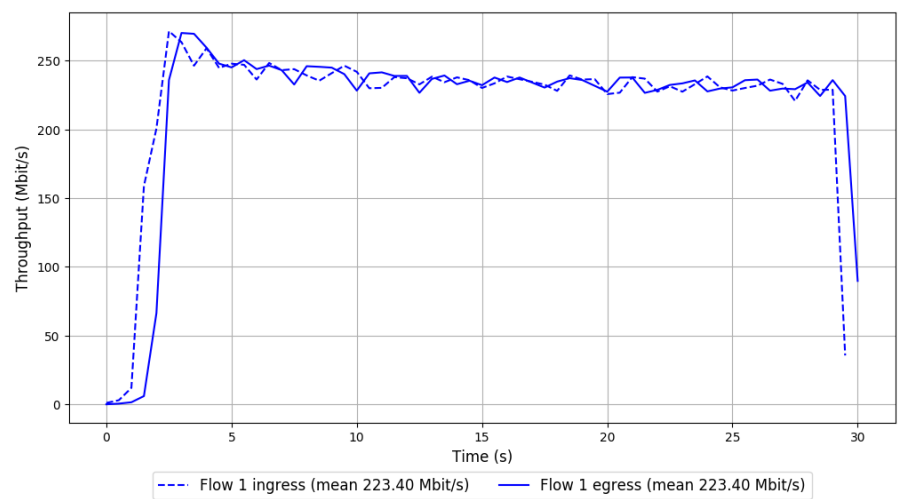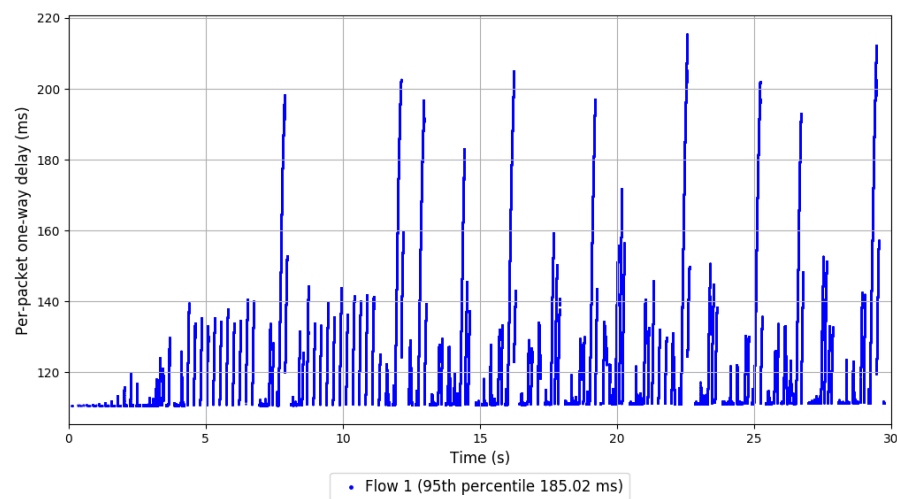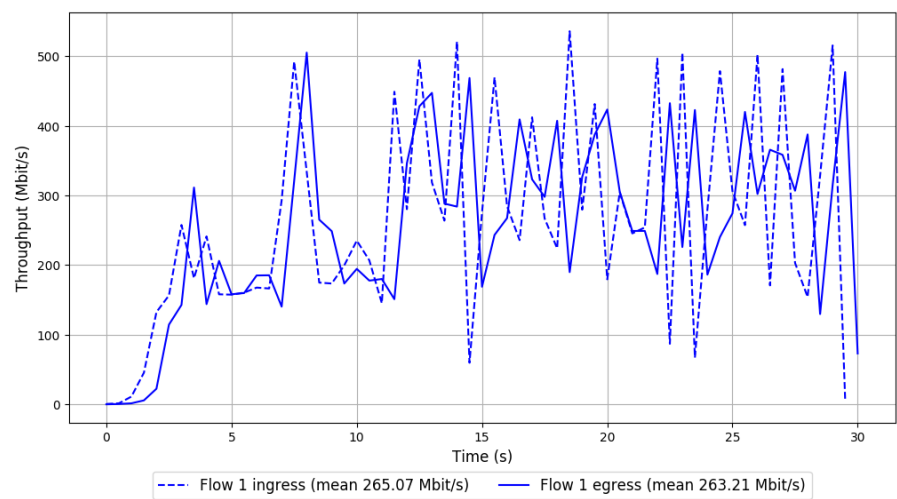
Run 4: Report of Indigo — Data Link

Flow 1 ingress (mean 159.79 Mbit/s)   Flow 1 egress (mean 159.79 Mbit/s)

Flow 1 (95th percentile 113.64 ms)

```
Run 5: Statistics of Indigo

Start at: 2018-10-09 19:46:35
End at: 2018-10-09 19:47:05
Local clock offset: 7.883 ms
Remote clock offset: 0.13 ms


# Below is generated by plot.py at 2018-10-09 20:33:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 223.40 Mbit/s
95th percentile per-packet one-way delay: 113.811 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 223.40 Mbit/s
95th percentile per-packet one-way delay: 113.811 ms
Loss rate: 0.00%
```
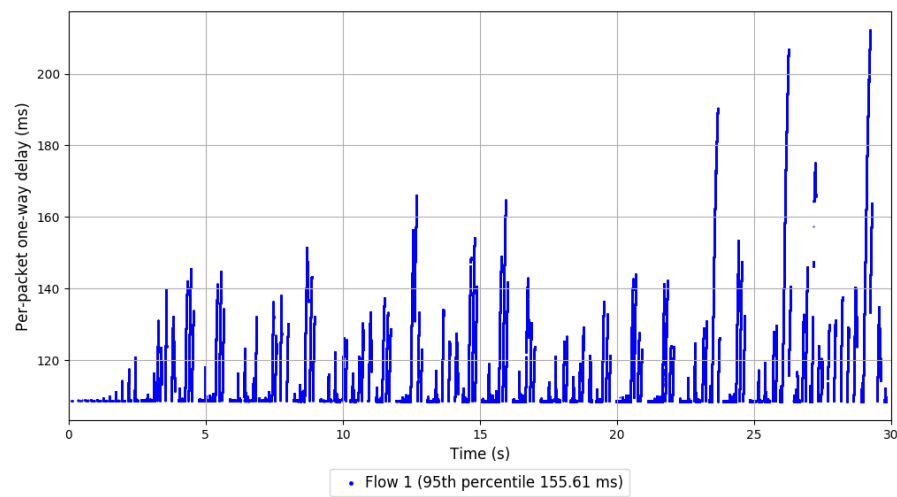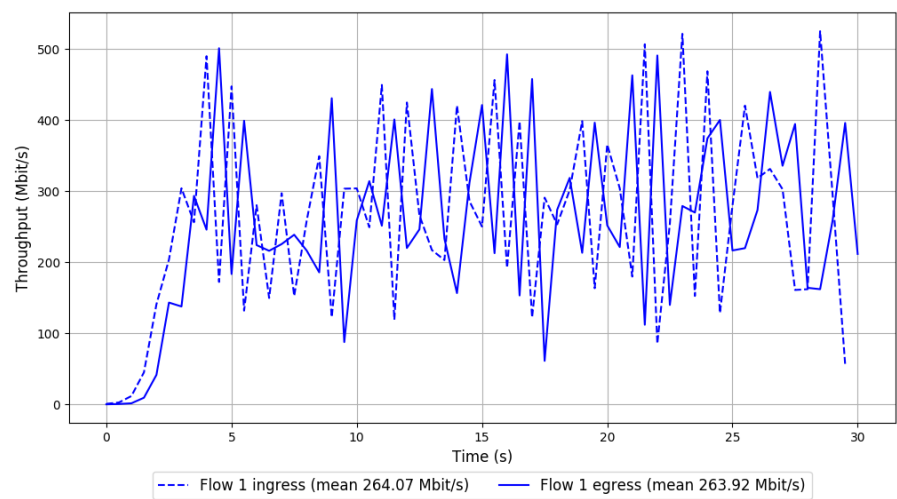
Run 5: Report of Indigo — Data Link

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

Start at: 2018-10-09 18:06:55
End at: 2018-10-09 18:07:25
Local clock offset: 10.984 ms
Remote clock offset: -0.627 ms


# Below is generated by plot.py at 2018-10-09 20:33:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 263.21 Mbit/s
95th percentile per-packet one-way delay: 185.016 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 263.21 Mbit/s
95th percentile per-packet one-way delay: 185.016 ms
Loss rate: 0.70%
```
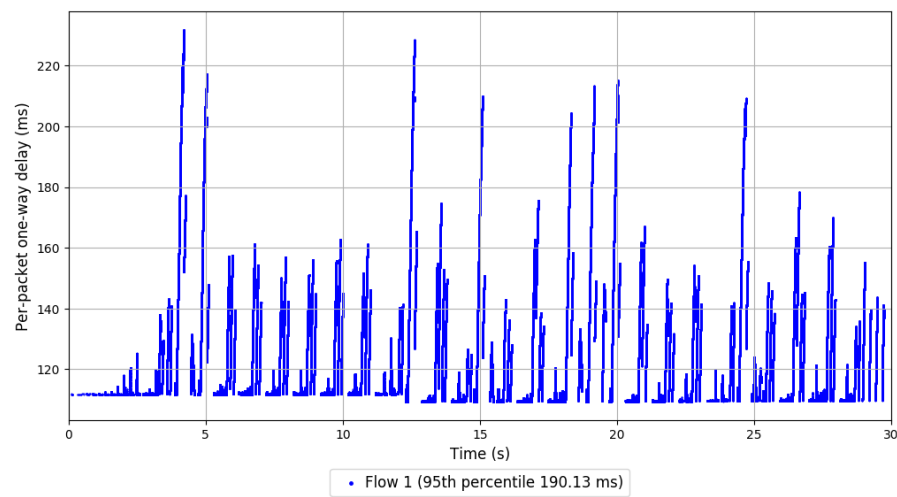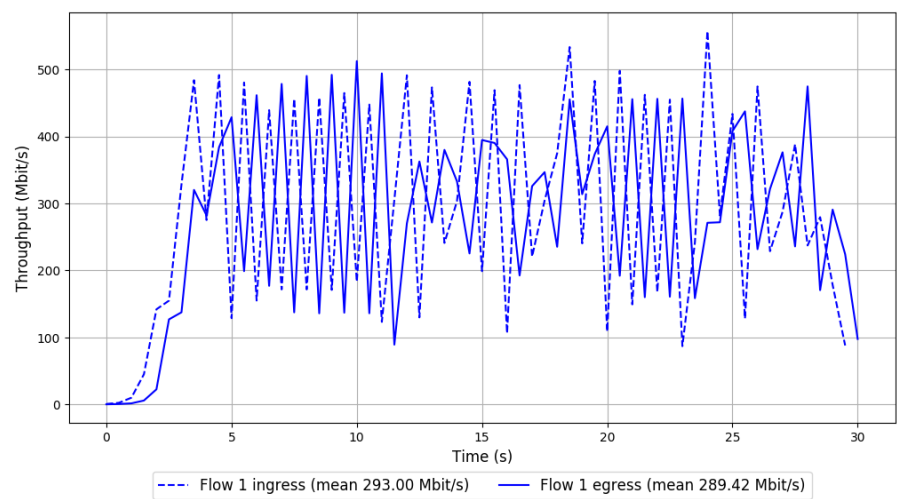
Run 1: Report of Indigo-96d2da3 — Data Link

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

Start at: 2018-10-09 18:31:44
End at: 2018-10-09 18:32:14
Local clock offset: 18.637 ms
Remote clock offset: -0.596 ms


# Below is generated by plot.py at 2018-10-09 20:33:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 263.92 Mbit/s
95th percentile per-packet one-way delay: 155.613 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 263.92 Mbit/s
95th percentile per-packet one-way delay: 155.613 ms
Loss rate: 0.06%
```

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

Flow 1 ingress (mean 264.07 Mbit/s)   Flow 1 egress (mean 263.92 Mbit/s)
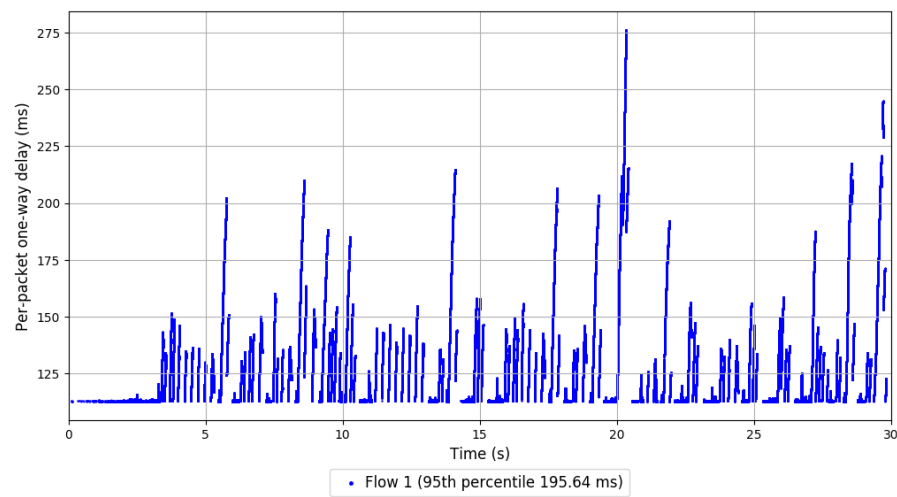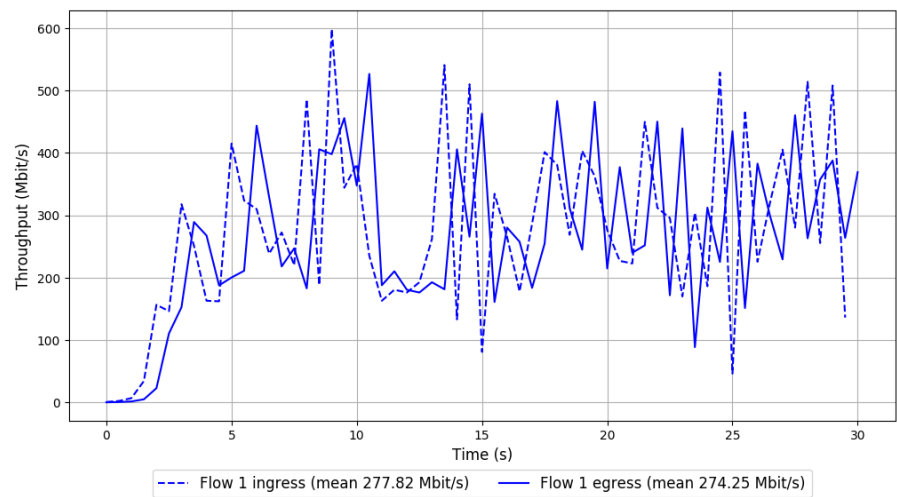

Flow 1 (95th percentile 155.61 ms)

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

Start at: 2018-10-09 18:57:03
End at: 2018-10-09 18:57:33
Local clock offset: 32.126 ms
Remote clock offset: -0.643 ms


# Below is generated by plot.py at 2018-10-09 20:35:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 289.42 Mbit/s
95th percentile per-packet one-way delay: 190.126 ms
Loss rate: 1.14%
-- Flow 1:
Average throughput: 289.42 Mbit/s
95th percentile per-packet one-way delay: 190.126 ms
Loss rate: 1.14%
```

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

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

Start at: 2018-10-09 19:22:50
End at: 2018-10-09 19:23:20
Local clock offset: 13.626 ms
Remote clock offset: -0.184 ms


# Below is generated by plot.py at 2018-10-09 20:35:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 274.25 Mbit/s
95th percentile per-packet one-way delay: 195.637 ms
Loss rate: 1.28%
-- Flow 1:
Average throughput: 274.25 Mbit/s
95th percentile per-packet one-way delay: 195.637 ms
Loss rate: 1.28%
```

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

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

Start at: 2018-10-09 19:48:06
End at: 2018-10-09 19:48:36
Local clock offset: 6.668 ms
Remote clock offset: 0.158 ms


# Below is generated by plot.py at 2018-10-09 20:35:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 254.99 Mbit/s
95th percentile per-packet one-way delay: 169.664 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 254.99 Mbit/s
95th percentile per-packet one-way delay: 169.664 ms
Loss rate: 0.37%
```
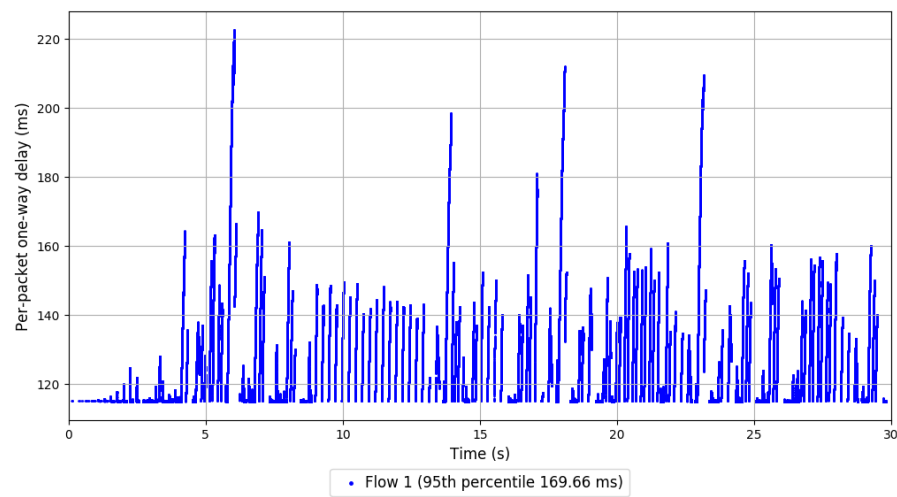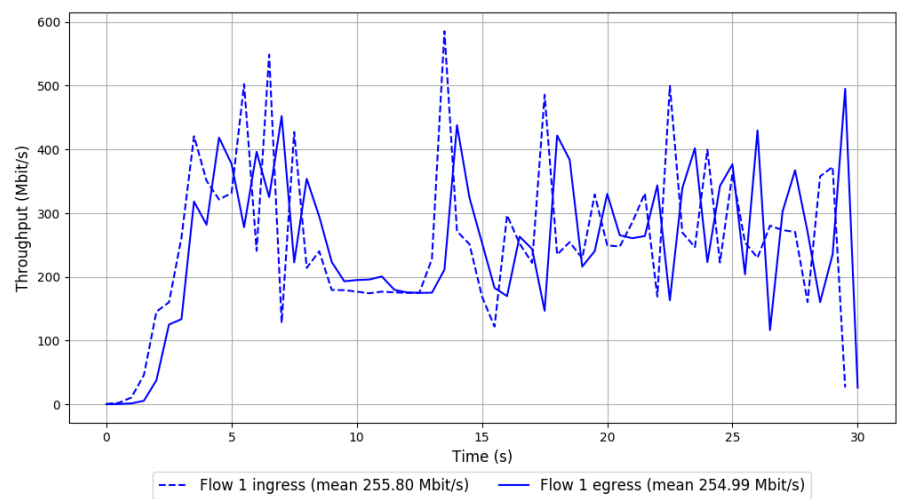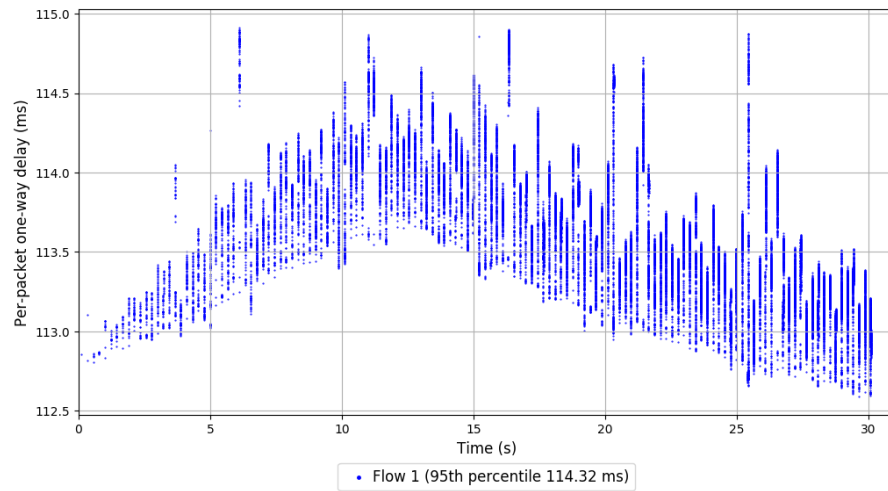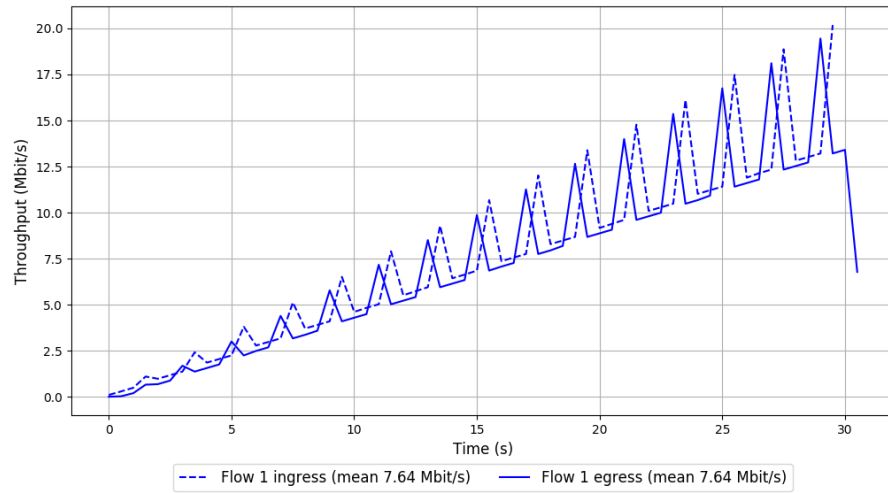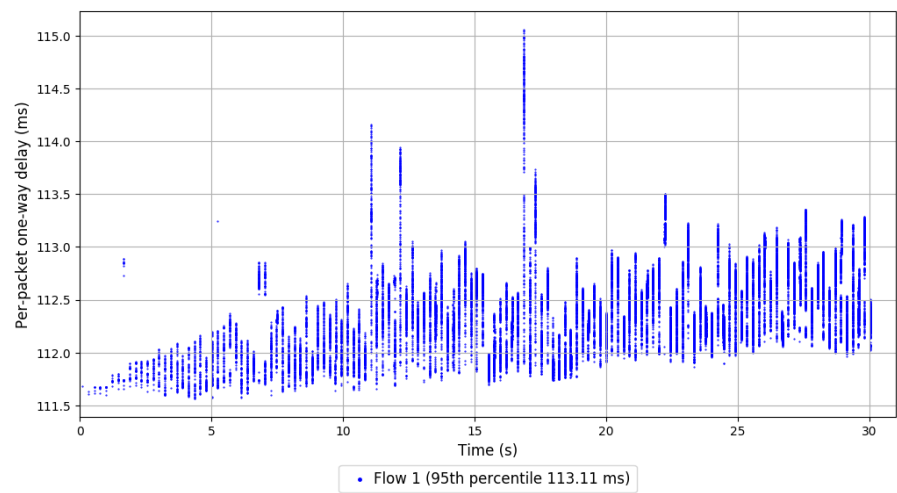
Run 5: Report of Indigo-96d2da3 — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2018-10-09 17:54:08
End at: 2018-10-09 17:54:38
Local clock offset: 1.42 ms
Remote clock offset: -0.167 ms

# Below is generated by plot.py at 2018-10-09 20:35:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.64 Mbit/s
95th percentile per-packet one-way delay: 114.320 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 7.64 Mbit/s
95th percentile per-packet one-way delay: 114.320 ms
Loss rate: 0.00%
```

Run 1: Report of LEDBAT — Data Link

Flow 1 ingress (mean 7.64 Mbit/s)　　Flow 1 egress (mean 7.64 Mbit/s)

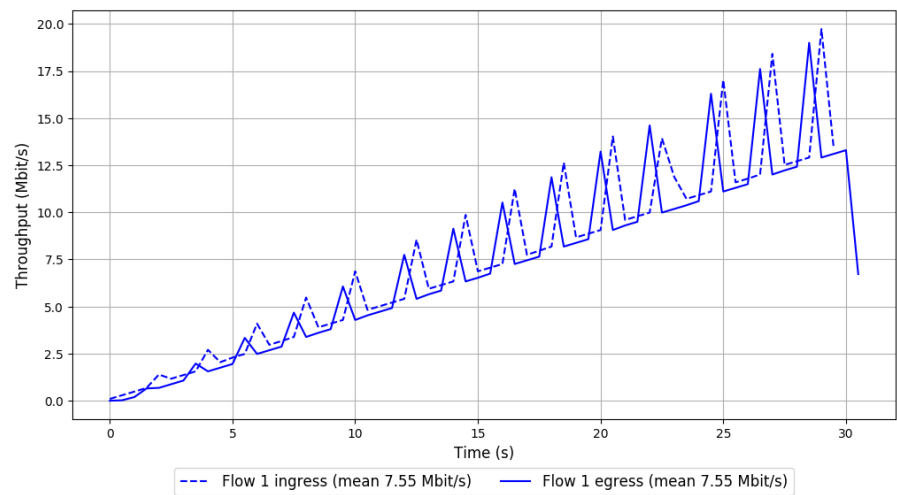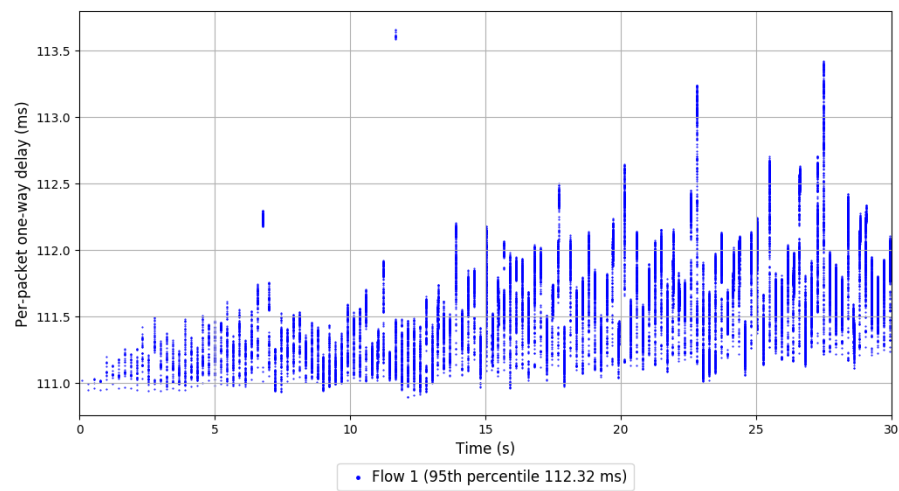Flow 1 (95th percentile 114.32 ms)

```
Run 2: Statistics of LEDBAT

Start at: 2018-10-09 18:19:12
End at: 2018-10-09 18:19:42
Local clock offset: 15.052 ms
Remote clock offset: -0.245 ms


# Below is generated by plot.py at 2018-10-09 20:35:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.55 Mbit/s
95th percentile per-packet one-way delay: 113.114 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 7.55 Mbit/s
95th percentile per-packet one-way delay: 113.114 ms
Loss rate: 0.00%
```

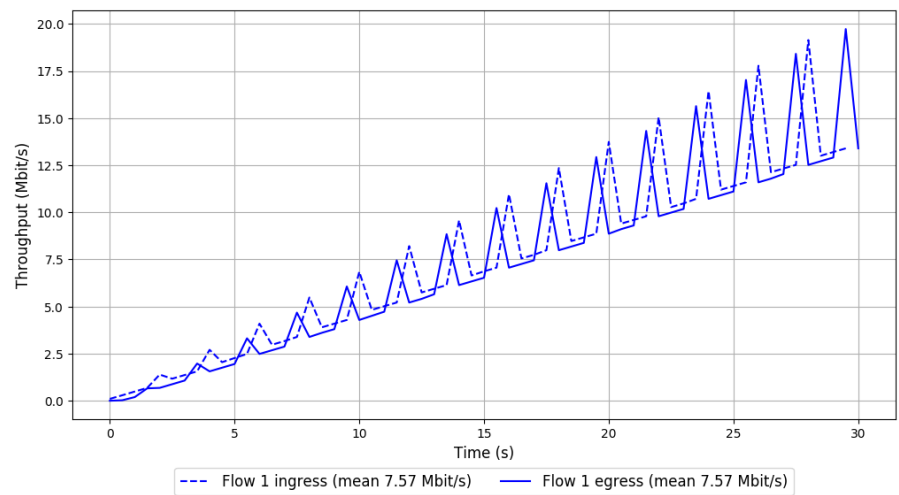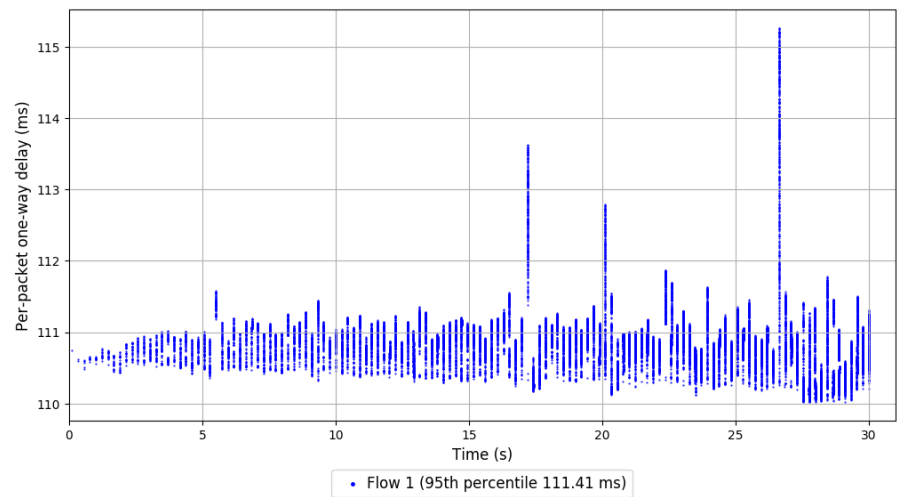# Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2018-10-09 18:44:00
End at: 2018-10-09 18:44:30
Local clock offset: 21.231 ms
Remote clock offset: -0.608 ms

# Below is generated by plot.py at 2018-10-09 20:35:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.57 Mbit/s
95th percentile per-packet one-way delay: 112.319 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 7.57 Mbit/s
95th percentile per-packet one-way delay: 112.319 ms
Loss rate: 0.00%
```

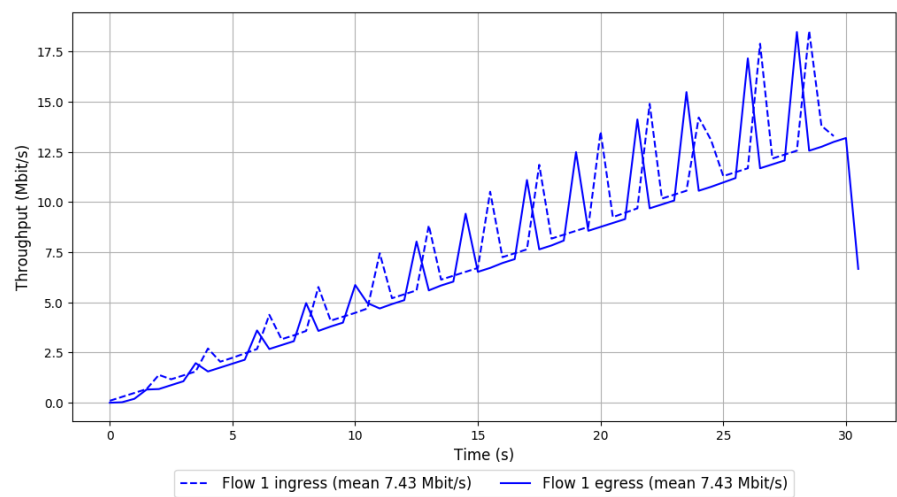# Run 3: Report of LEDBAT — Data Link

```
Run 4: Statistics of LEDBAT

Start at: 2018-10-09 19:09:46
End at: 2018-10-09 19:10:16
Local clock offset: 18.544 ms
Remote clock offset: -0.573 ms


# Below is generated by plot.py at 2018-10-09 20:35:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.43 Mbit/s
95th percentile per-packet one-way delay: 111.413 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 7.43 Mbit/s
95th percentile per-packet one-way delay: 111.413 ms
Loss rate: 0.00%
```
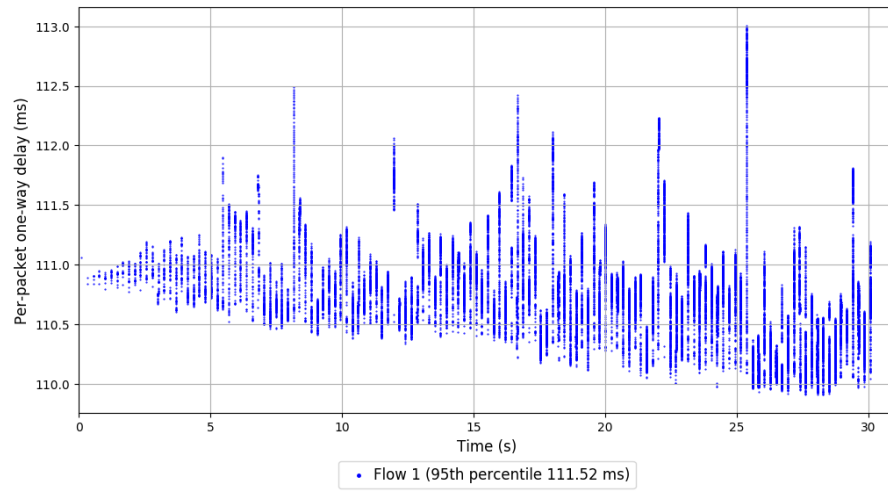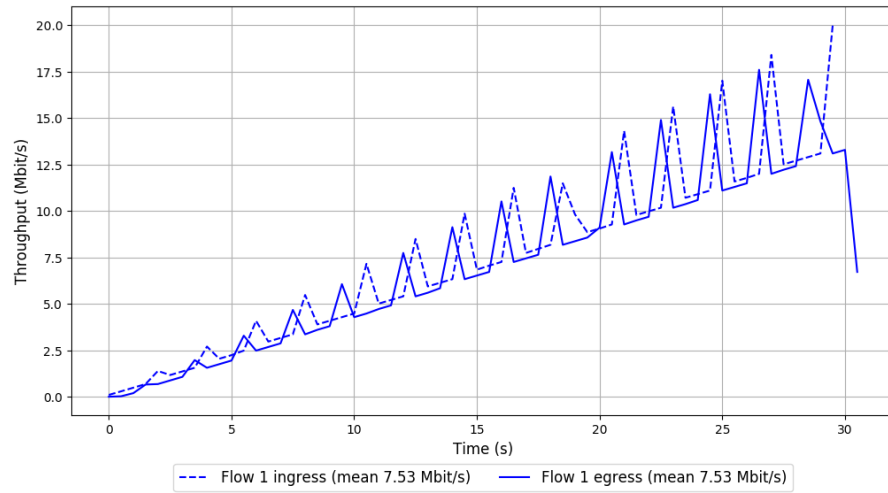
Run 4: Report of LEDBAT — Data Link

```
Run 5: Statistics of LEDBAT

Start at: 2018-10-09 19:35:07
End at: 2018-10-09 19:35:37
Local clock offset: 18.148 ms
Remote clock offset: 0.177 ms


# Below is generated by plot.py at 2018-10-09 20:35:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.53 Mbit/s
95th percentile per-packet one-way delay: 111.522 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 7.53 Mbit/s
95th percentile per-packet one-way delay: 111.522 ms
Loss rate: 0.00%
```

Run 5: Report of LEDBAT — Data Link

Flow 1 ingress (mean 7.53 Mbit/s) — — —   Flow 1 egress (mean 7.53 Mbit/s) ———
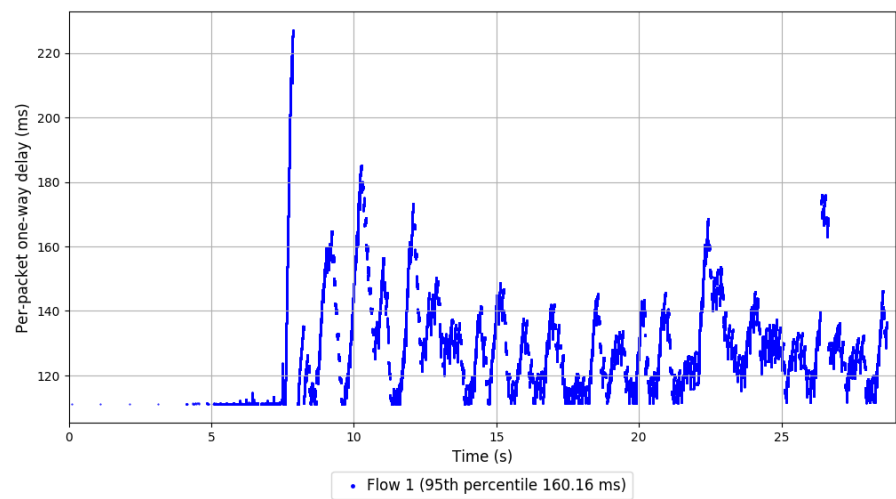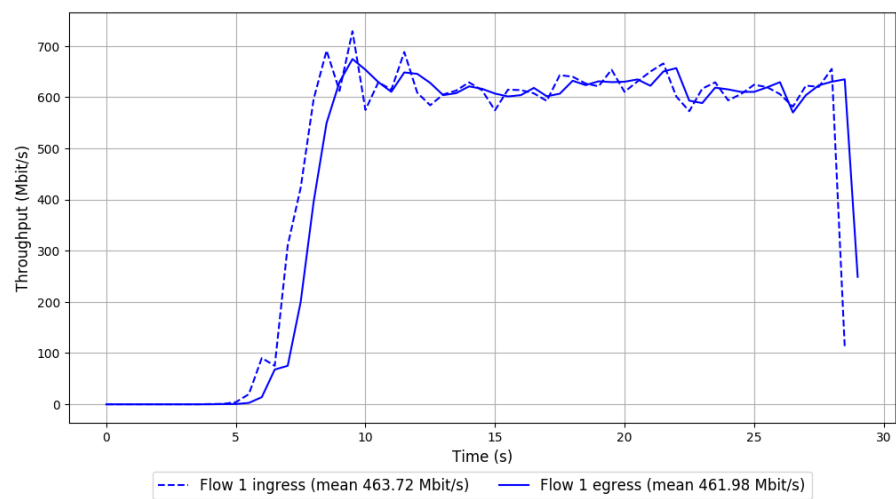

• Flow 1 (95th percentile 111.52 ms)

```
Run 1: Statistics of Indigo-Muses

Start at: 2018-10-09 17:57:56
End at: 2018-10-09 17:58:26
Local clock offset: 4.665 ms
Remote clock offset: -0.217 ms


# Below is generated by plot.py at 2018-10-09 20:39:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 461.98 Mbit/s
95th percentile per-packet one-way delay: 160.165 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 461.98 Mbit/s
95th percentile per-packet one-way delay: 160.165 ms
Loss rate: 0.37%
```
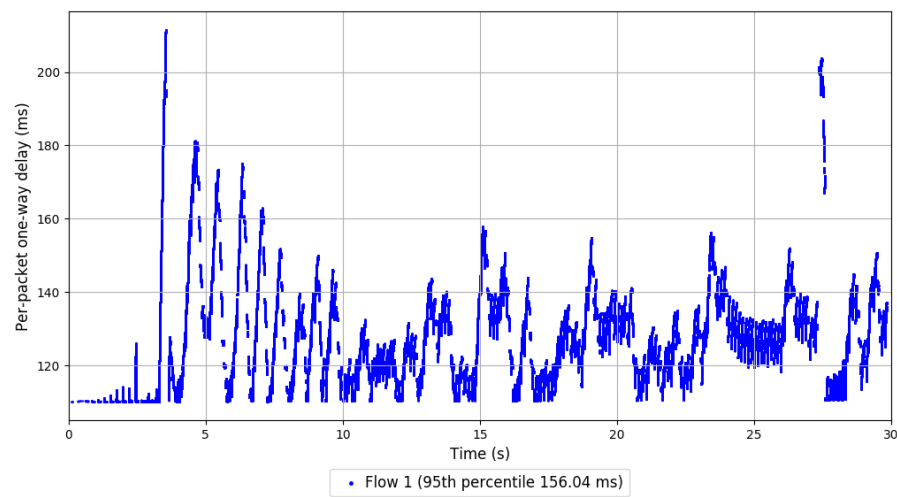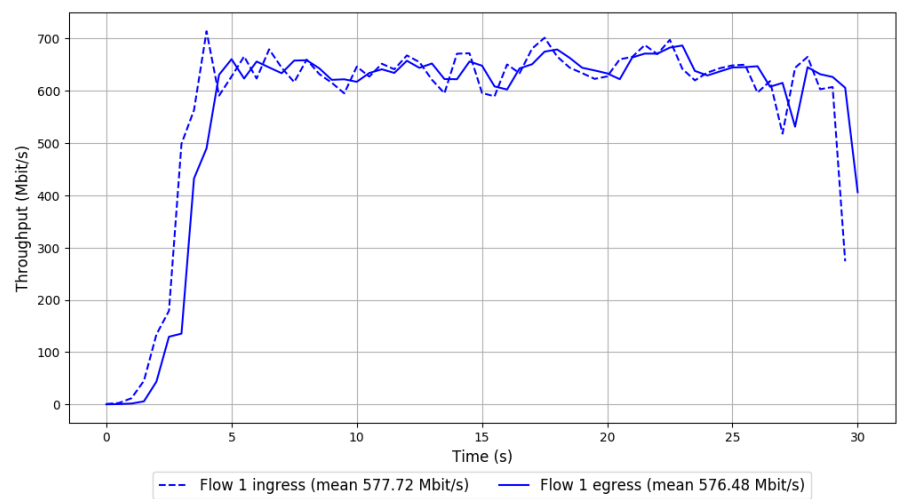
Run 1: Report of Indigo-Muses — Data Link

```
Run 2: Statistics of Indigo-Muses

Start at: 2018-10-09 18:22:59
End at: 2018-10-09 18:23:29
Local clock offset: 18.921 ms
Remote clock offset: -0.231 ms


# Below is generated by plot.py at 2018-10-09 20:41:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 576.48 Mbit/s
95th percentile per-packet one-way delay: 156.038 ms
Loss rate: 0.21%
-- Flow 1:
Average throughput: 576.48 Mbit/s
95th percentile per-packet one-way delay: 156.038 ms
Loss rate: 0.21%
```
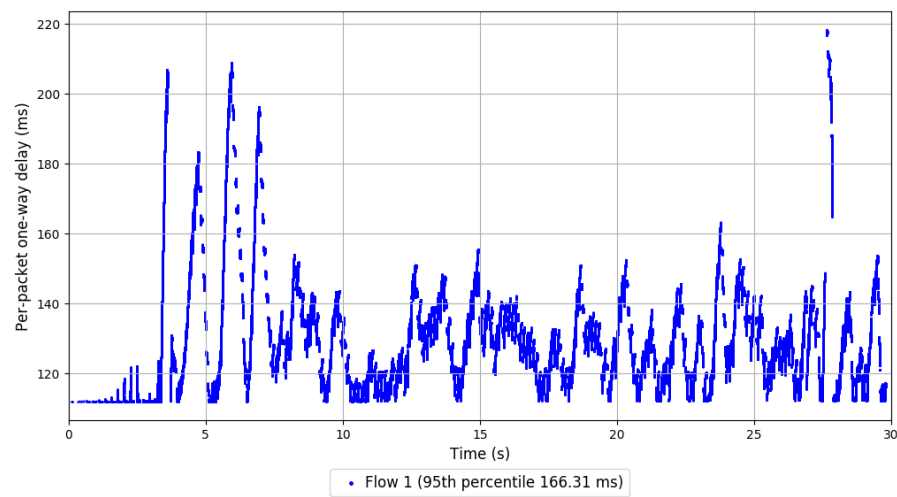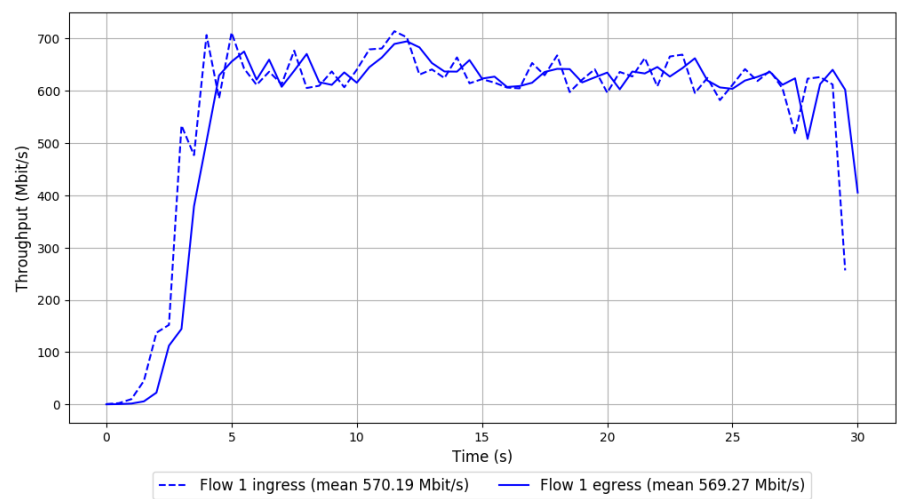
Run 2: Report of Indigo-Muses — Data Link

```
Run 3: Statistics of Indigo-Muses

Start at: 2018-10-09 18:47:46
End at: 2018-10-09 18:48:16
Local clock offset: 23.736 ms
Remote clock offset: -0.291 ms


# Below is generated by plot.py at 2018-10-09 20:41:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 569.27 Mbit/s
95th percentile per-packet one-way delay: 166.306 ms
Loss rate: 0.17%
-- Flow 1:
Average throughput: 569.27 Mbit/s
95th percentile per-packet one-way delay: 166.306 ms
Loss rate: 0.17%
```
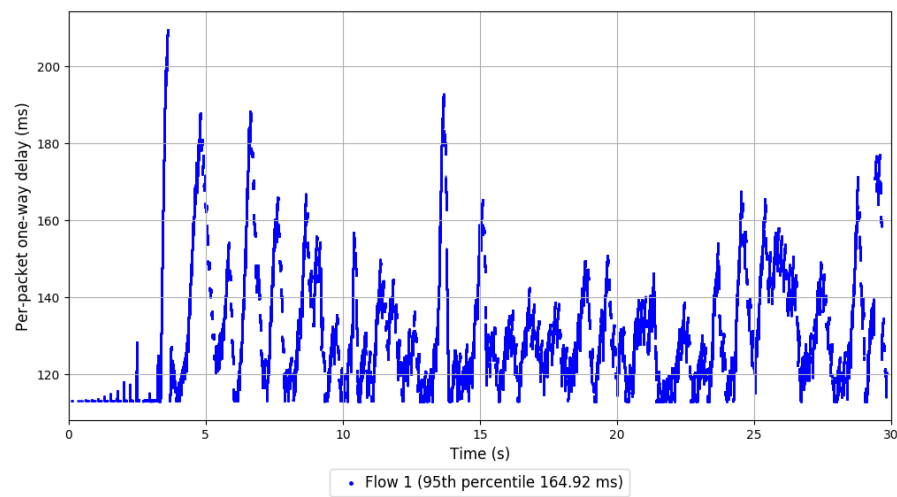
Run 3: Report of Indigo-Muses — Data Link

- - - - Flow 1 ingress (mean 570.19 Mbit/s) ——— Flow 1 egress (mean 569.27 Mbit/s)

· Flow 1 (95th percentile 166.31 ms)

```
Run 4: Statistics of Indigo-Muses

Start at: 2018-10-09 19:13:32
End at: 2018-10-09 19:14:02
Local clock offset: 14.568 ms
Remote clock offset: 0.204 ms


# Below is generated by plot.py at 2018-10-09 20:42:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 576.15 Mbit/s
95th percentile per-packet one-way delay: 164.922 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 576.15 Mbit/s
95th percentile per-packet one-way delay: 164.922 ms
Loss rate: 0.10%
```
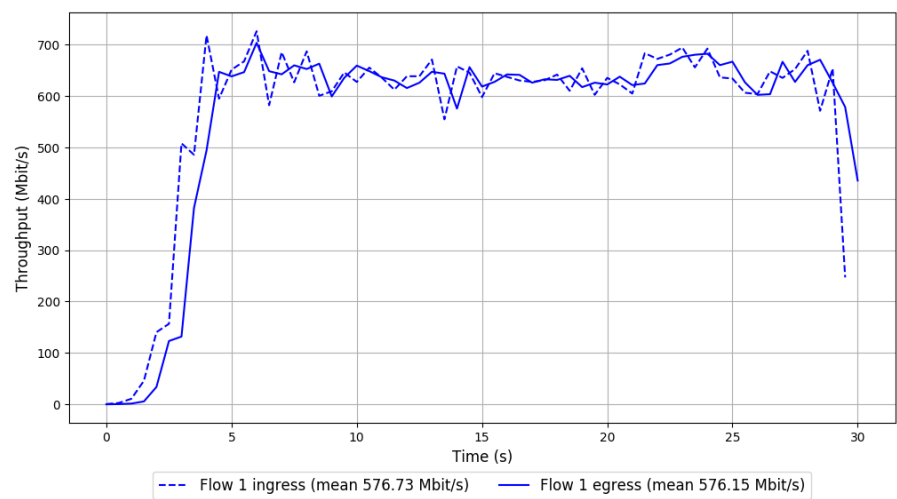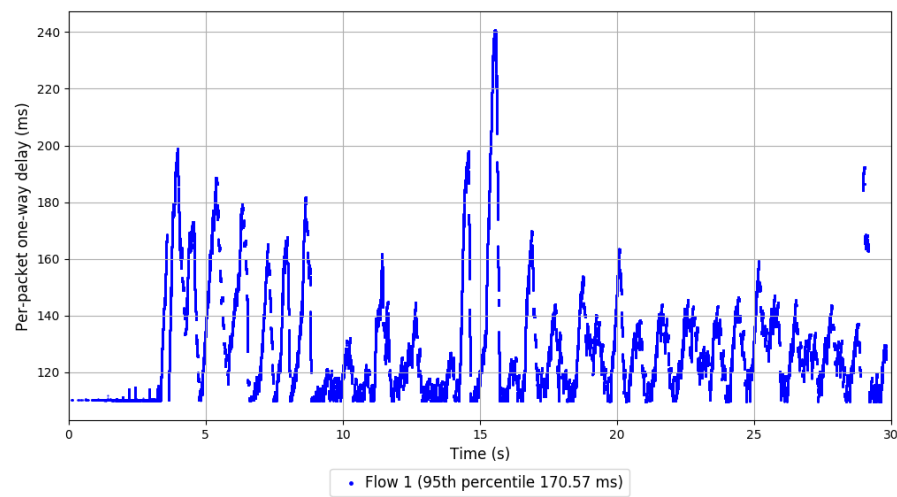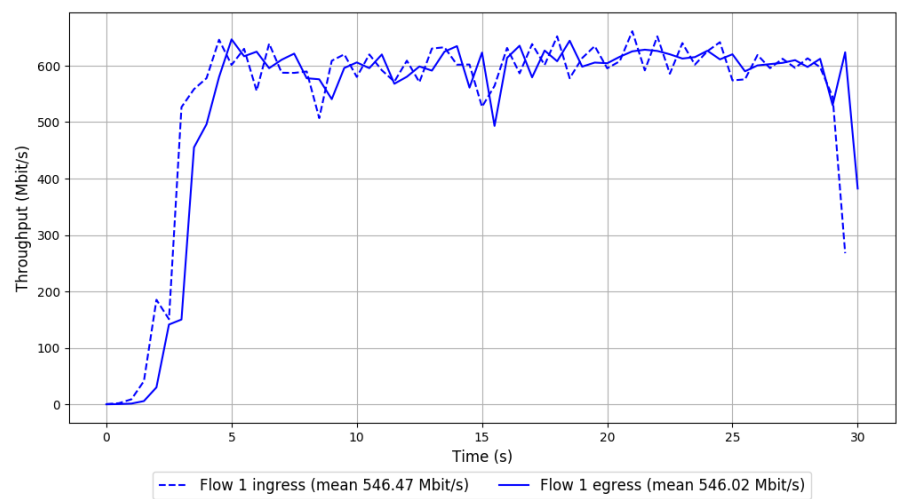
Run 4: Report of Indigo-Muses — Data Link

```
Run 5: Statistics of Indigo-Muses

Start at: 2018-10-09 19:38:54
End at: 2018-10-09 19:39:24
Local clock offset: 12.625 ms
Remote clock offset: -0.193 ms


# Below is generated by plot.py at 2018-10-09 20:42:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 546.02 Mbit/s
95th percentile per-packet one-way delay: 170.574 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 546.02 Mbit/s
95th percentile per-packet one-way delay: 170.574 ms
Loss rate: 0.07%
```
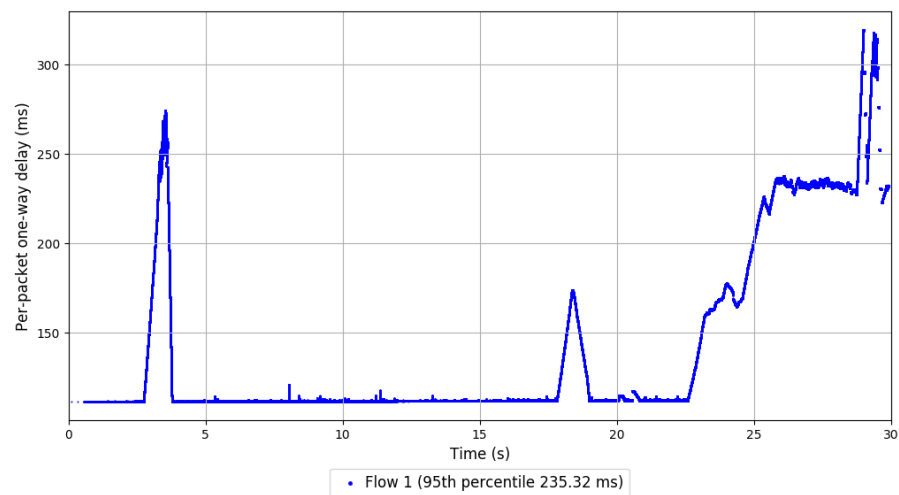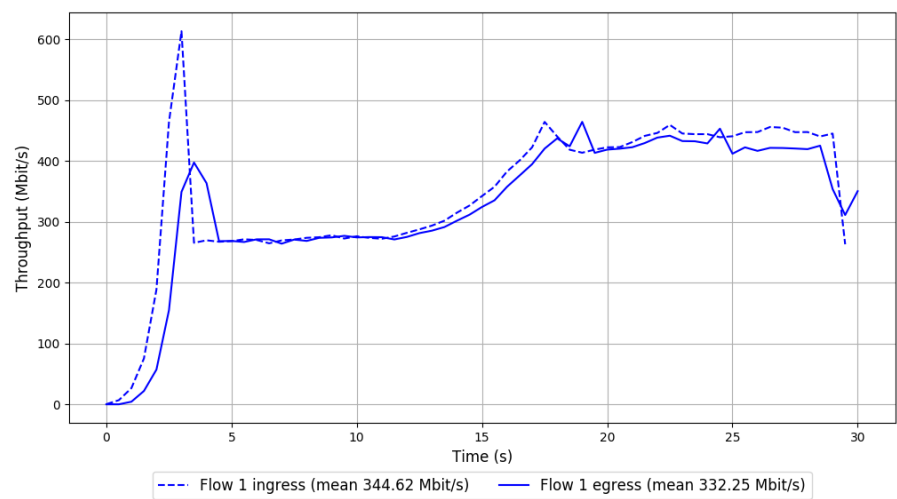
Run 5: Report of Indigo-Muses — Data Link

```
Run 1: Statistics of PCC-Allegro

Start at: 2018-10-09 18:08:17
End at: 2018-10-09 18:08:47
Local clock offset: 13.291 ms
Remote clock offset: -0.245 ms

# Below is generated by plot.py at 2018-10-09 20:45:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 332.25 Mbit/s
95th percentile per-packet one-way delay: 235.324 ms
Loss rate: 3.59%
-- Flow 1:
Average throughput: 332.25 Mbit/s
95th percentile per-packet one-way delay: 235.324 ms
Loss rate: 3.59%
```

Run 1: Report of PCC-Allegro — Data Link

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-10-09 18:33:07
End at: 2018-10-09 18:33:37
Local clock offset: 17.288 ms
Remote clock offset: -0.23 ms


# Below is generated by plot.py at 2018-10-09 20:46:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 347.85 Mbit/s
95th percentile per-packet one-way delay: 224.044 ms
Loss rate: 2.13%
-- Flow 1:
Average throughput: 347.85 Mbit/s
95th percentile per-packet one-way delay: 224.044 ms
Loss rate: 2.13%
```
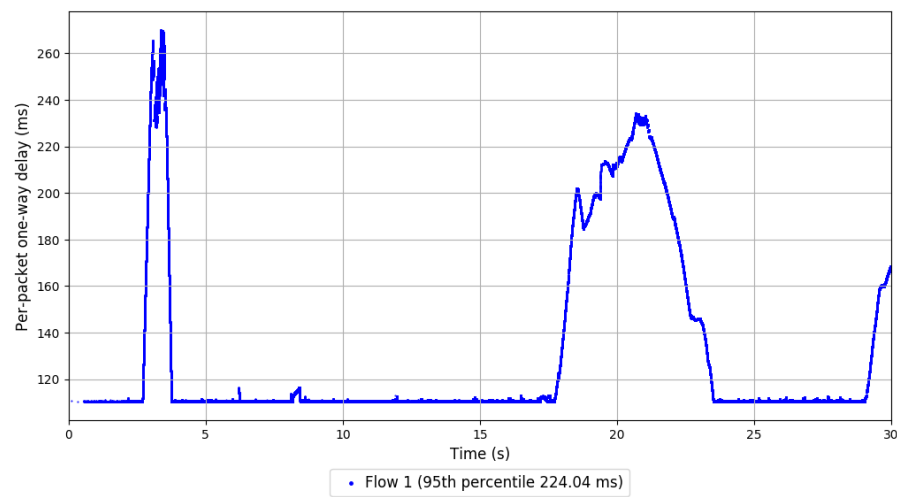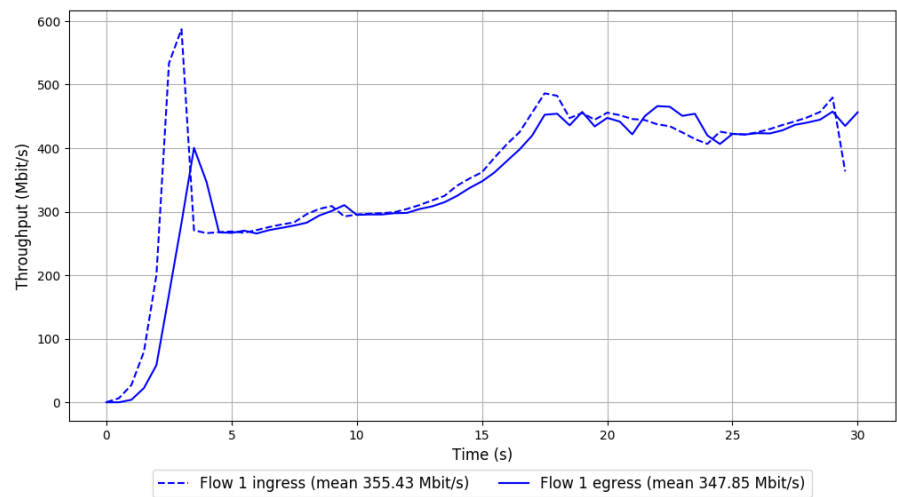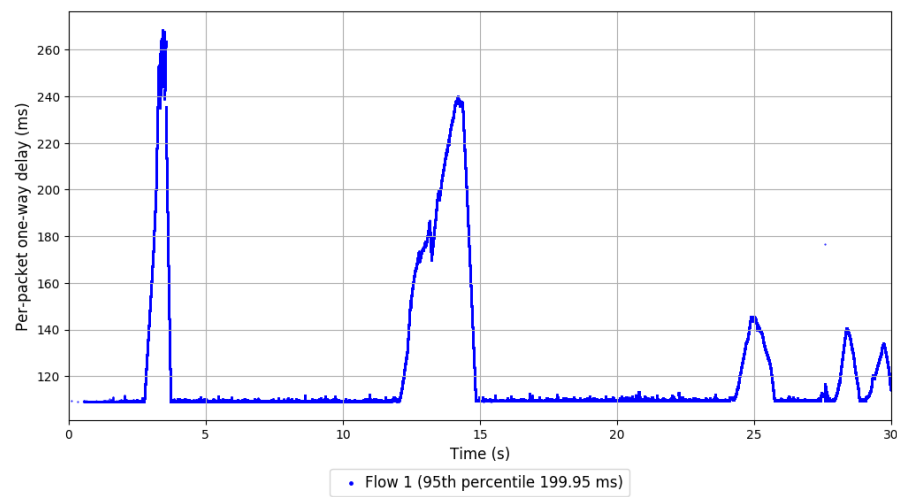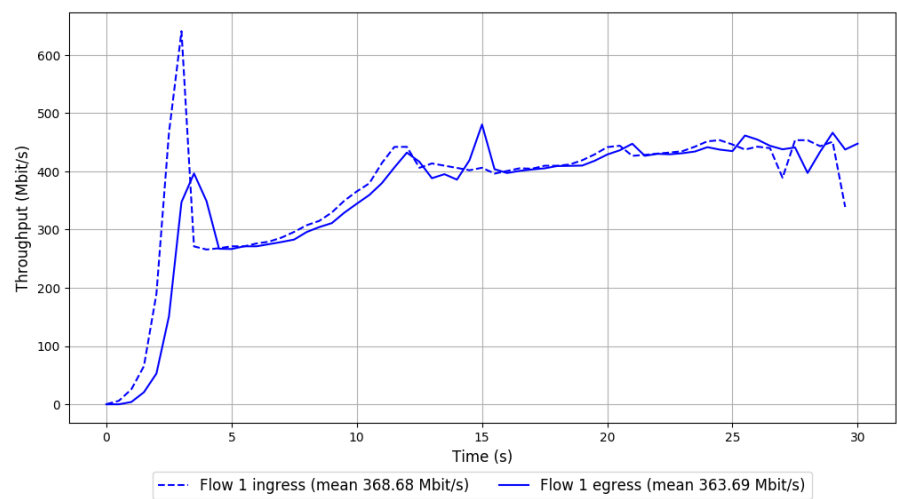
Run 2: Report of PCC-Allegro — Data Link

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-10-09 18:58:28
End at: 2018-10-09 18:58:58
Local clock offset: 33.567 ms
Remote clock offset: -0.645 ms


# Below is generated by plot.py at 2018-10-09 20:46:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 363.69 Mbit/s
95th percentile per-packet one-way delay: 199.948 ms
Loss rate: 1.35%
-- Flow 1:
Average throughput: 363.69 Mbit/s
95th percentile per-packet one-way delay: 199.948 ms
Loss rate: 1.35%
```

Run 3: Report of PCC-Allegro — Data Link

```
Run 4: Statistics of PCC-Allegro

Start at: 2018-10-09 19:24:13
End at: 2018-10-09 19:24:43
Local clock offset: 14.189 ms
Remote clock offset: -0.166 ms


# Below is generated by plot.py at 2018-10-09 20:50:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 325.62 Mbit/s
95th percentile per-packet one-way delay: 243.129 ms
Loss rate: 13.05%
-- Flow 1:
Average throughput: 325.62 Mbit/s
95th percentile per-packet one-way delay: 243.129 ms
Loss rate: 13.05%
```
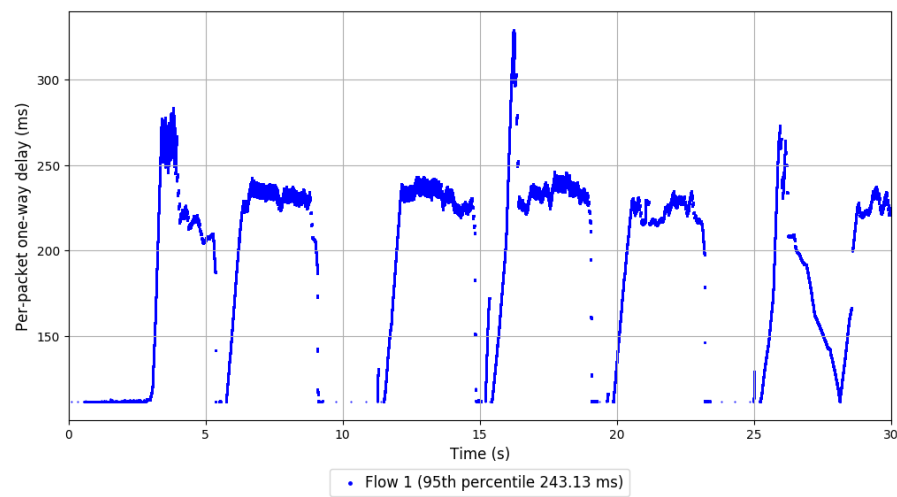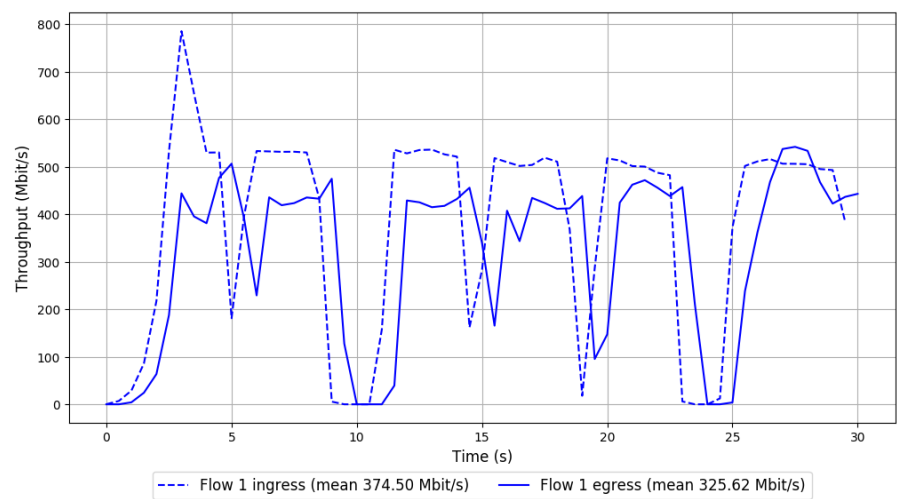
Run 4: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 374.50 Mbit/s) ----   Flow 1 egress (mean 325.62 Mbit/s) ——

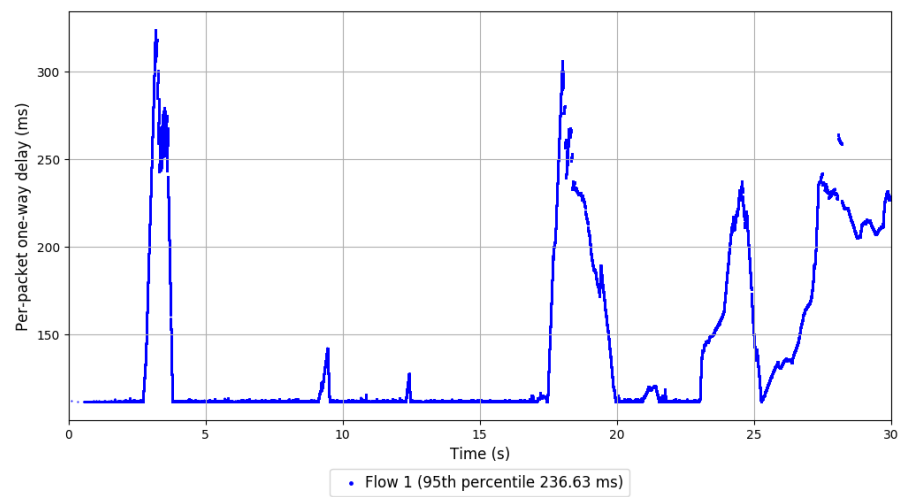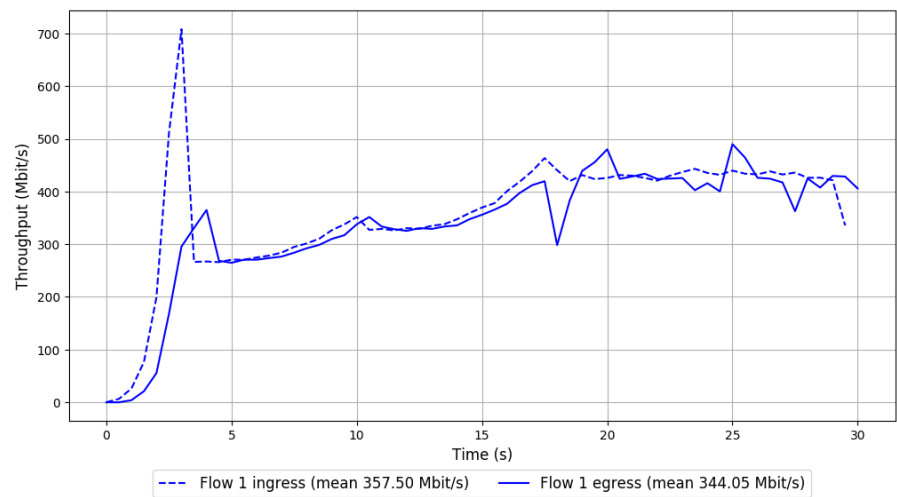Flow 1 (95th percentile 243.13 ms)

```
Run 5: Statistics of PCC-Allegro

Start at: 2018-10-09 19:49:29
End at: 2018-10-09 19:49:59
Local clock offset: 6.935 ms
Remote clock offset: -0.198 ms


# Below is generated by plot.py at 2018-10-09 20:53:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 344.05 Mbit/s
95th percentile per-packet one-way delay: 236.627 ms
Loss rate: 3.76%
-- Flow 1:
Average throughput: 344.05 Mbit/s
95th percentile per-packet one-way delay: 236.627 ms
Loss rate: 3.76%
```
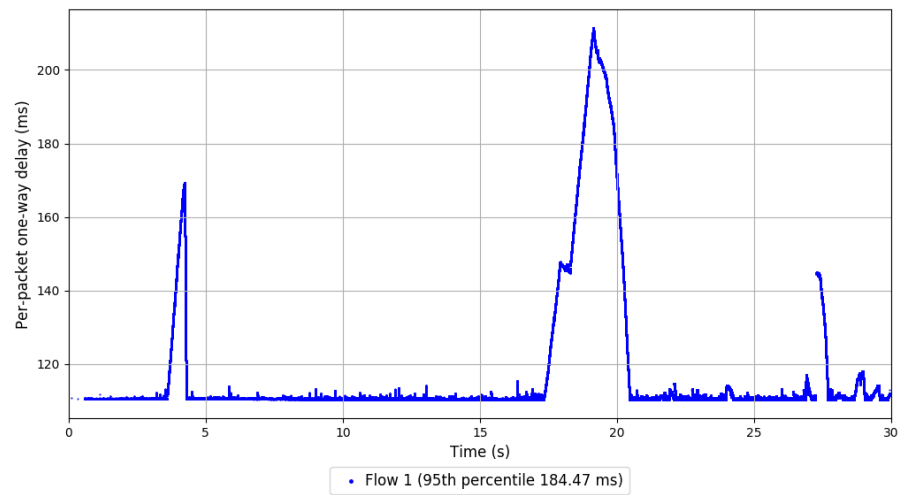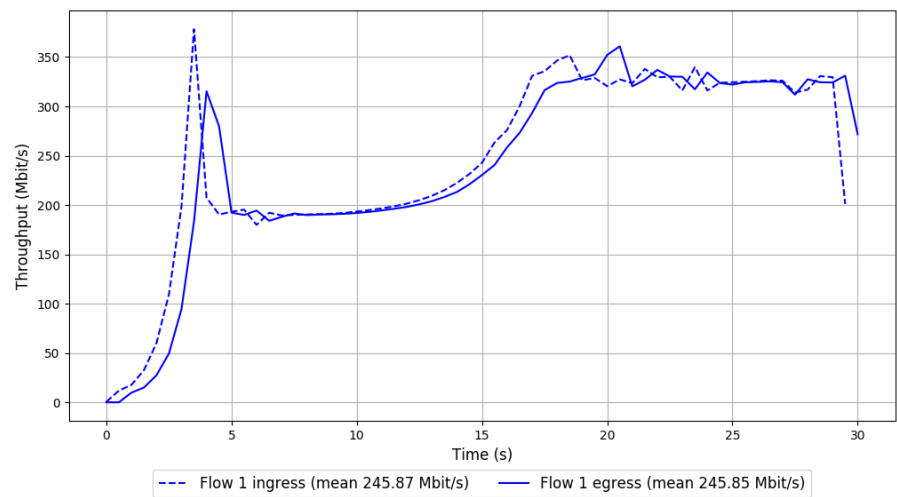
Run 5: Report of PCC-Allegro — Data Link

```
Run 1: Statistics of PCC-Expr

Start at: 2018-10-09 18:12:08
End at: 2018-10-09 18:12:38
Local clock offset: 12.502 ms
Remote clock offset: -0.266 ms


# Below is generated by plot.py at 2018-10-09 20:53:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 245.85 Mbit/s
95th percentile per-packet one-way delay: 184.467 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 245.85 Mbit/s
95th percentile per-packet one-way delay: 184.467 ms
Loss rate: 0.01%
```

Run 1: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 245.87 Mbit/s)   Flow 1 egress (mean 245.85 Mbit/s)

Flow 1 (95th percentile 184.47 ms)

```
Run 2: Statistics of PCC-Expr

Start at: 2018-10-09 18:36:58
End at: 2018-10-09 18:37:28
Local clock offset: 17.26 ms
Remote clock offset: 0.157 ms


# Below is generated by plot.py at 2018-10-09 20:53:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 246.54 Mbit/s
95th percentile per-packet one-way delay: 223.489 ms
Loss rate: 3.49%
-- Flow 1:
Average throughput: 246.54 Mbit/s
95th percentile per-packet one-way delay: 223.489 ms
Loss rate: 3.49%
```
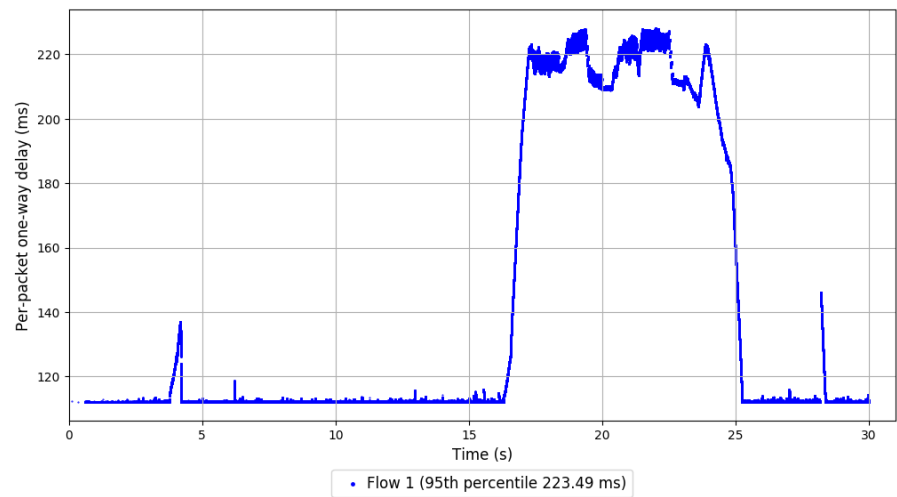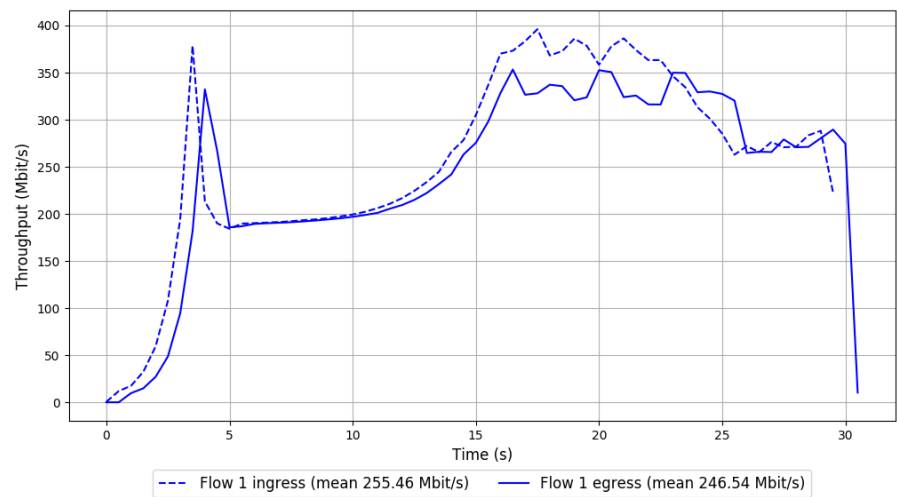
Run 2: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 255.46 Mbit/s) — Flow 1 egress (mean 246.54 Mbit/s)

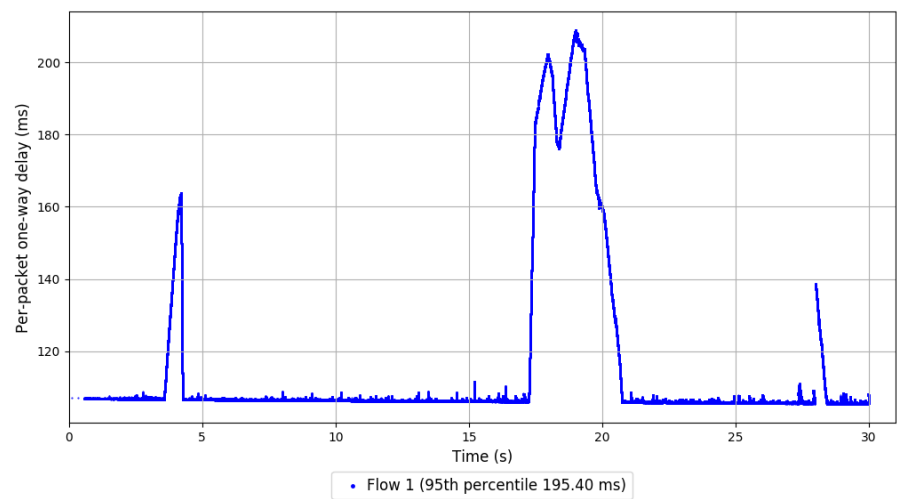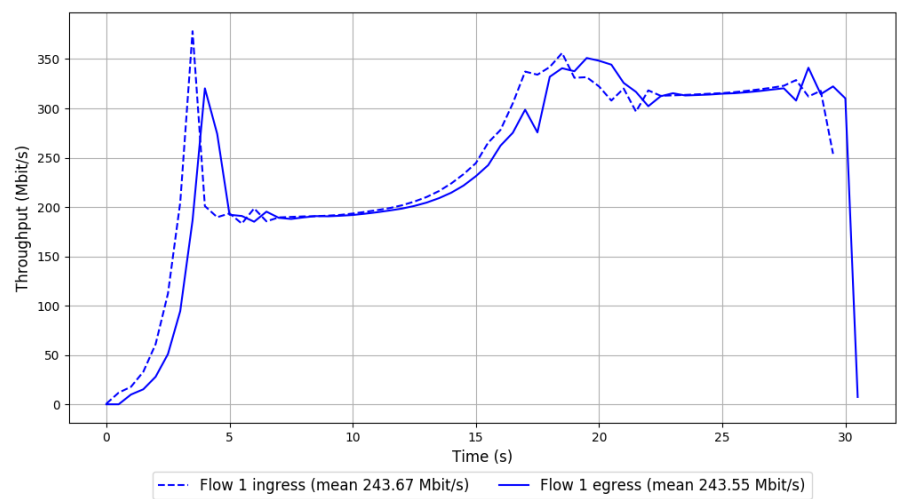
Flow 1 (95th percentile 223.49 ms)

```
Run 3: Statistics of PCC-Expr

Start at: 2018-10-09 19:02:20
End at: 2018-10-09 19:02:50
Local clock offset: 31.923 ms
Remote clock offset: -0.608 ms


# Below is generated by plot.py at 2018-10-09 20:53:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 243.55 Mbit/s
95th percentile per-packet one-way delay: 195.398 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 243.55 Mbit/s
95th percentile per-packet one-way delay: 195.398 ms
Loss rate: 0.05%
```

Run 3: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 243.67 Mbit/s) --- Flow 1 egress (mean 243.55 Mbit/s)

• Flow 1 (95th percentile 195.40 ms)

```
Run 4: Statistics of PCC-Expr

Start at: 2018-10-09 19:28:04
End at: 2018-10-09 19:28:34
Local clock offset: 16.549 ms
Remote clock offset: -0.509 ms

# Below is generated by plot.py at 2018-10-09 20:53:31
# Datalink statistics
-- Total of 1 flow:
Average throughput: 231.41 Mbit/s
95th percentile per-packet one-way delay: 216.671 ms
Loss rate: 1.42%
-- Flow 1:
Average throughput: 231.41 Mbit/s
95th percentile per-packet one-way delay: 216.671 ms
Loss rate: 1.42%
```
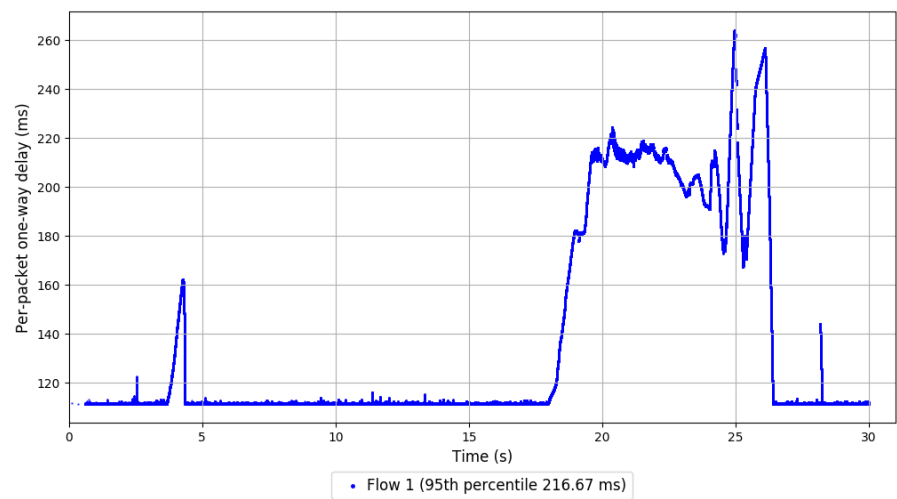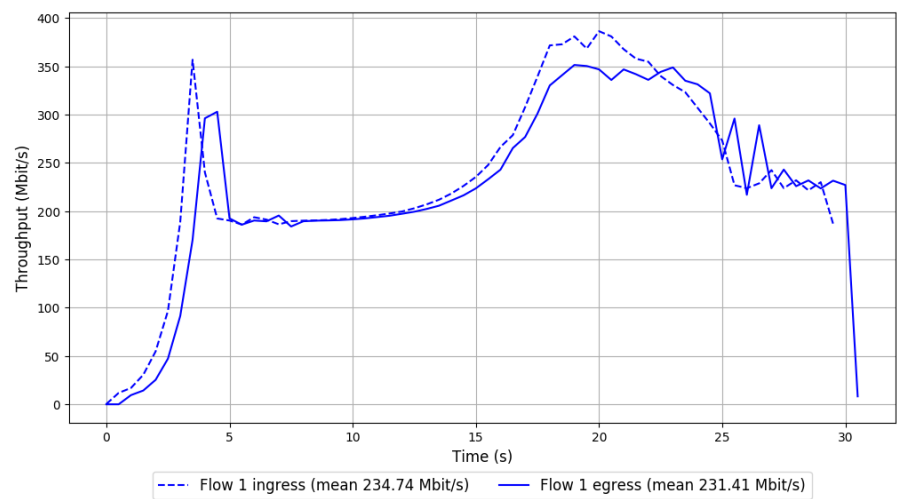
Run 4: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 234.74 Mbit/s)   Flow 1 egress (mean 231.41 Mbit/s)
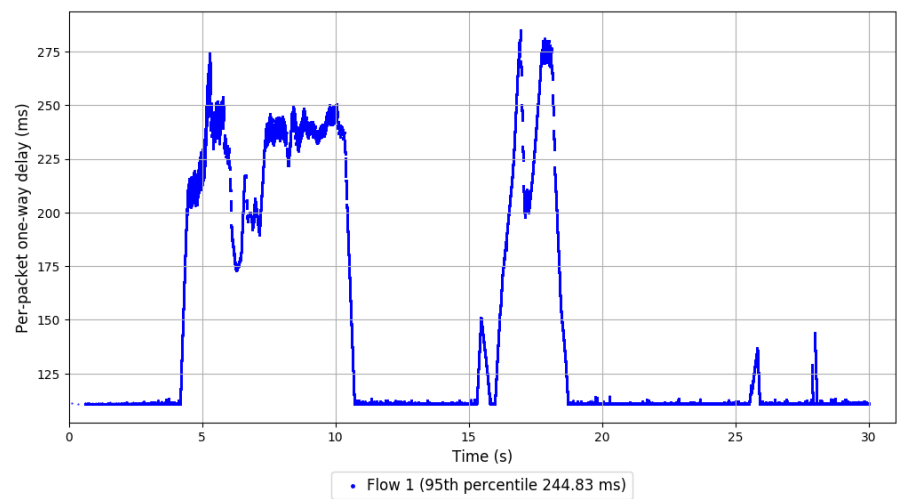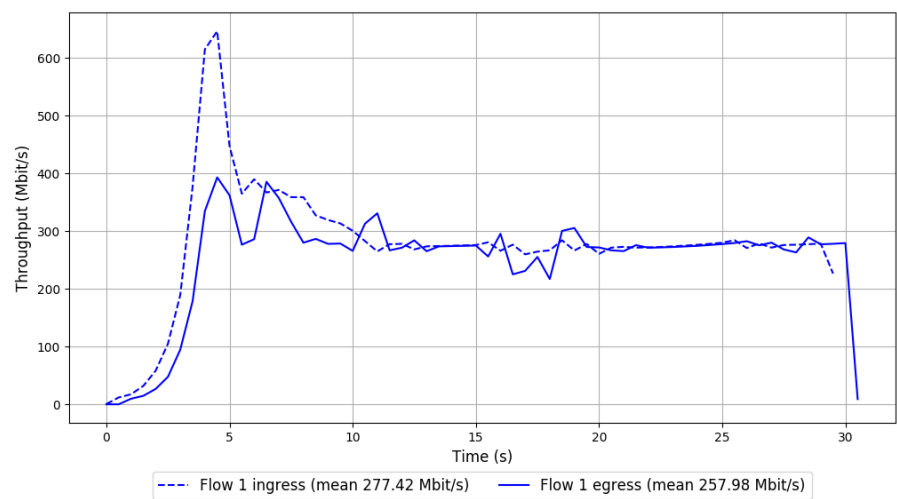

Flow 1 (95th percentile 216.67 ms)

```
Run 5: Statistics of PCC-Expr

Start at: 2018-10-09 19:53:20
End at: 2018-10-09 19:53:50
Local clock offset: 8.039 ms
Remote clock offset: -0.207 ms


# Below is generated by plot.py at 2018-10-09 20:54:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 257.98 Mbit/s
95th percentile per-packet one-way delay: 244.830 ms
Loss rate: 7.01%
-- Flow 1:
Average throughput: 257.98 Mbit/s
95th percentile per-packet one-way delay: 244.830 ms
Loss rate: 7.01%
```

Run 5: Report of PCC-Expr — Data Link

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-10-09 17:56:44
End at: 2018-10-09 17:57:14
Local clock offset: 7.174 ms
Remote clock offset: 0.174 ms


# Below is generated by plot.py at 2018-10-09 20:54:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 42.88 Mbit/s
95th percentile per-packet one-way delay: 108.507 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 42.88 Mbit/s
95th percentile per-packet one-way delay: 108.507 ms
Loss rate: 0.00%
```
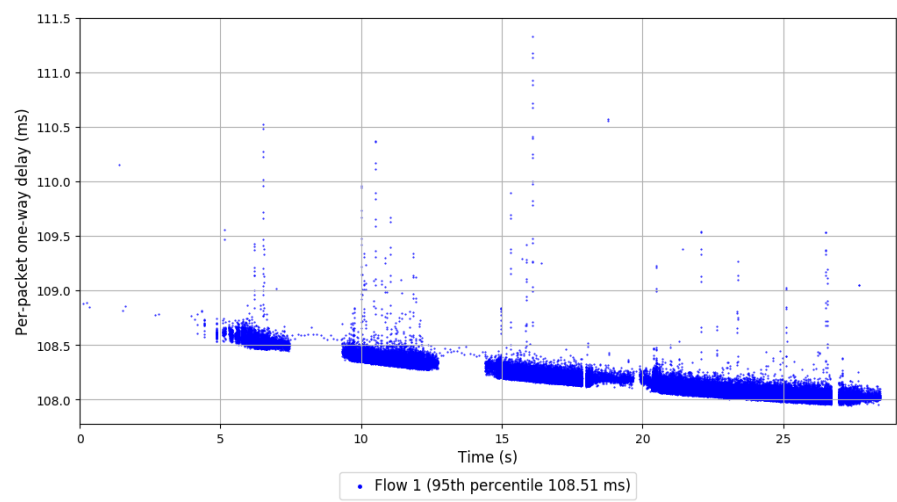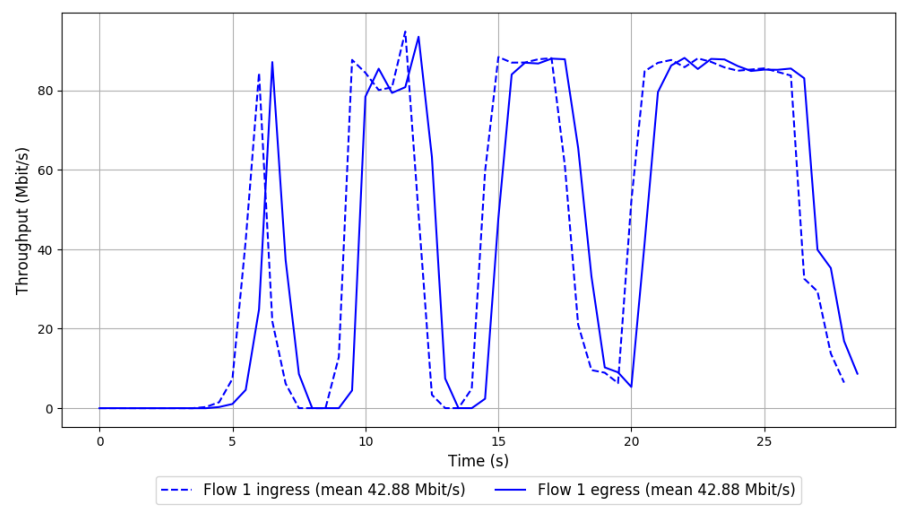
Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-10-09 18:21:47
End at: 2018-10-09 18:22:17
Local clock offset: 17.47 ms
Remote clock offset: -0.582 ms


# Below is generated by plot.py at 2018-10-09 20:54:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 52.20 Mbit/s
95th percentile per-packet one-way delay: 110.177 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 52.20 Mbit/s
95th percentile per-packet one-way delay: 110.177 ms
Loss rate: 0.00%
```
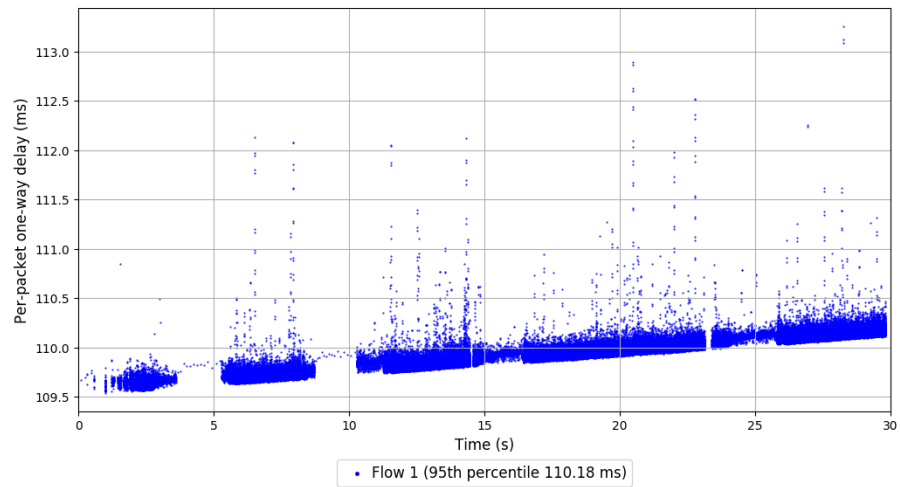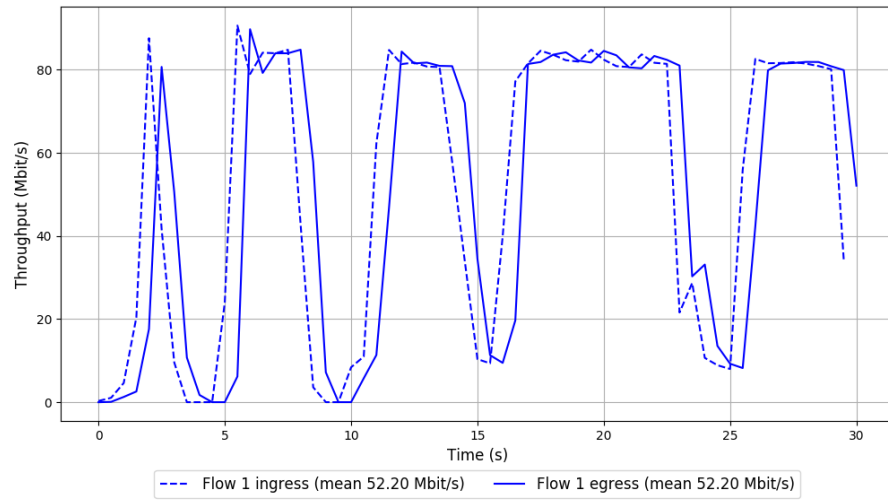
Run 2: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 52.20 Mbit/s)   Flow 1 egress (mean 52.20 Mbit/s)

Flow 1 (95th percentile 110.18 ms)

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-10-09 18:46:34
End at: 2018-10-09 18:47:04
Local clock offset: 22.445 ms
Remote clock offset: -0.218 ms


# Below is generated by plot.py at 2018-10-09 20:54:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 53.99 Mbit/s
95th percentile per-packet one-way delay: 110.451 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 53.99 Mbit/s
95th percentile per-packet one-way delay: 110.451 ms
Loss rate: 0.00%
```
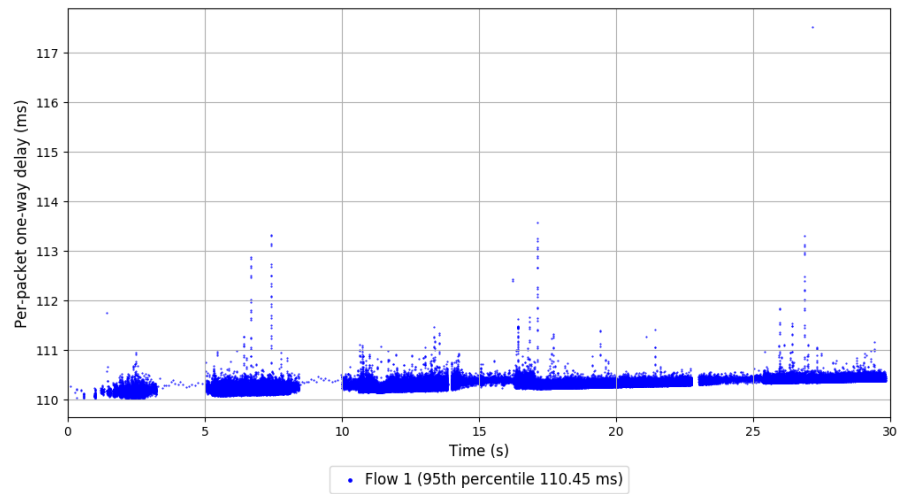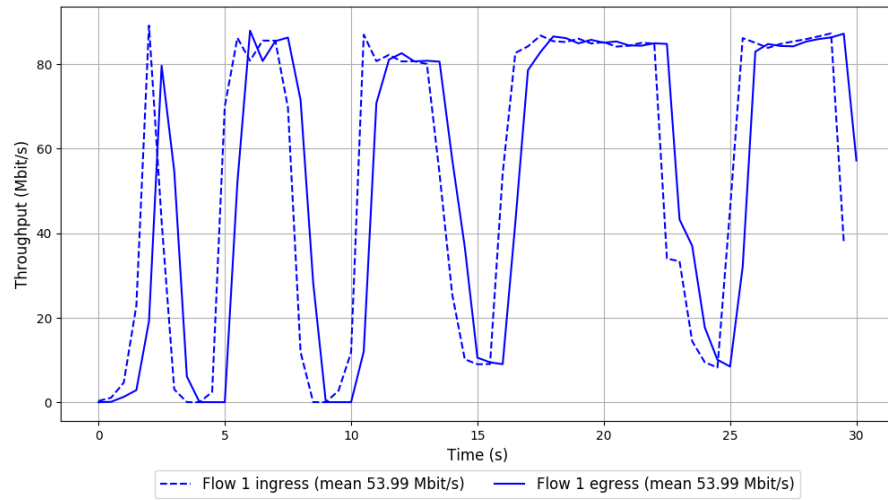
Run 3: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 53.99 Mbit/s) — Flow 1 egress (mean 53.99 Mbit/s)

• Flow 1 (95th percentile 110.45 ms)

```
Run 4: Statistics of QUIC Cubic

Start at: 2018-10-09 19:12:20
End at: 2018-10-09 19:12:50
Local clock offset: 15.466 ms
Remote clock offset: -0.56 ms


# Below is generated by plot.py at 2018-10-09 20:54:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 53.94 Mbit/s
95th percentile per-packet one-way delay: 112.121 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 53.94 Mbit/s
95th percentile per-packet one-way delay: 112.121 ms
Loss rate: 0.00%
```
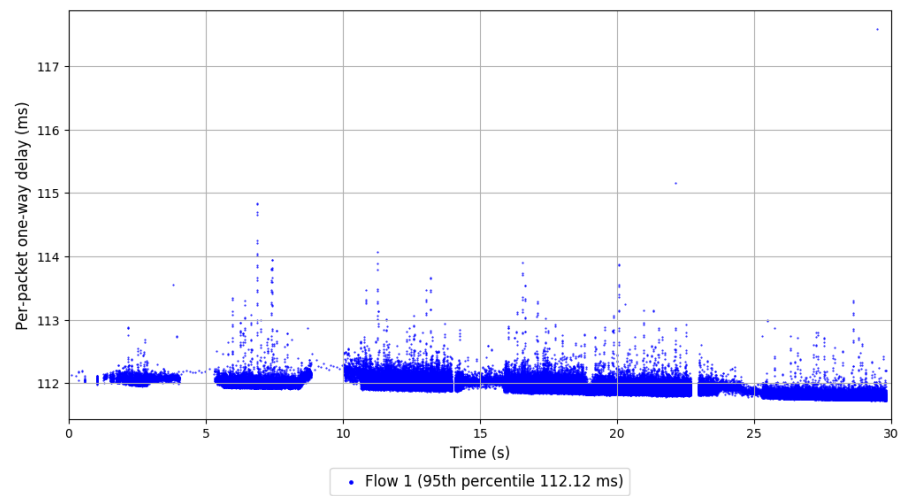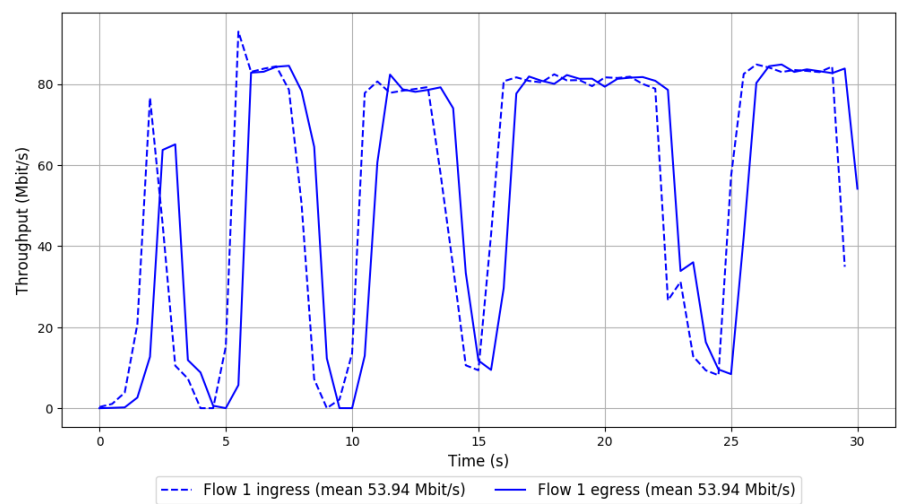
Run 4: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 53.94 Mbit/s) ----- Flow 1 egress (mean 53.94 Mbit/s)
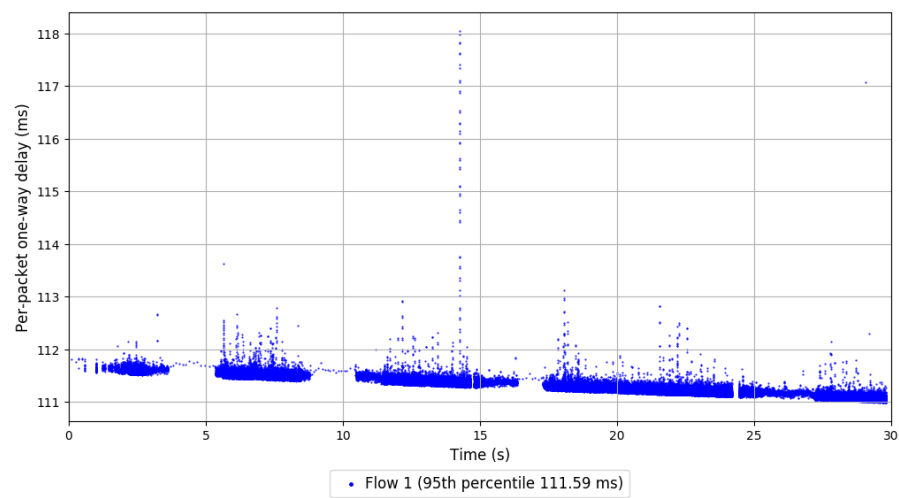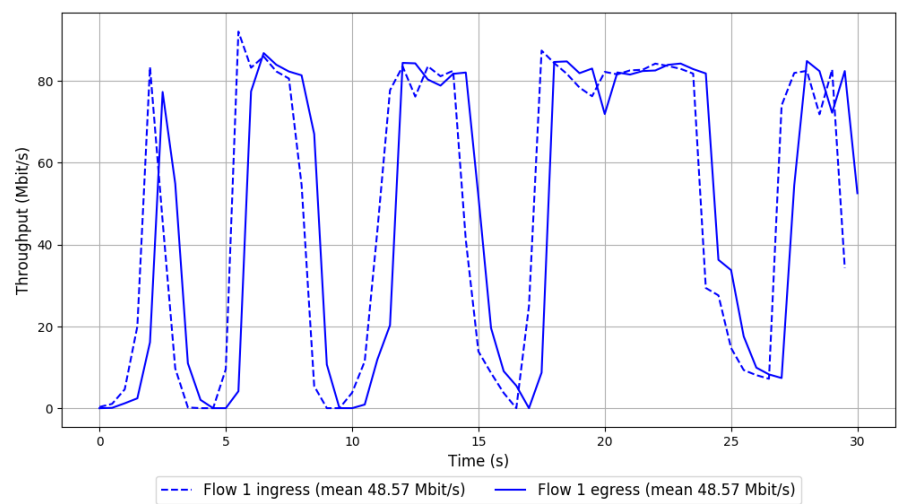

• Flow 1 (95th percentile 112.12 ms)

```
Run 5: Statistics of QUIC Cubic

Start at: 2018-10-09 19:37:42
End at: 2018-10-09 19:38:12
Local clock offset: 14.366 ms
Remote clock offset: -0.233 ms


# Below is generated by plot.py at 2018-10-09 20:54:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 48.57 Mbit/s
95th percentile per-packet one-way delay: 111.588 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 48.57 Mbit/s
95th percentile per-packet one-way delay: 111.588 ms
Loss rate: 0.00%
```
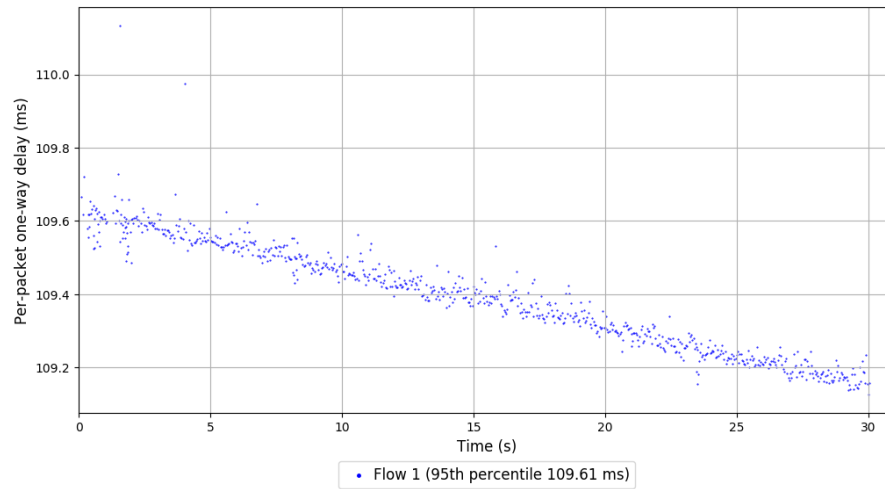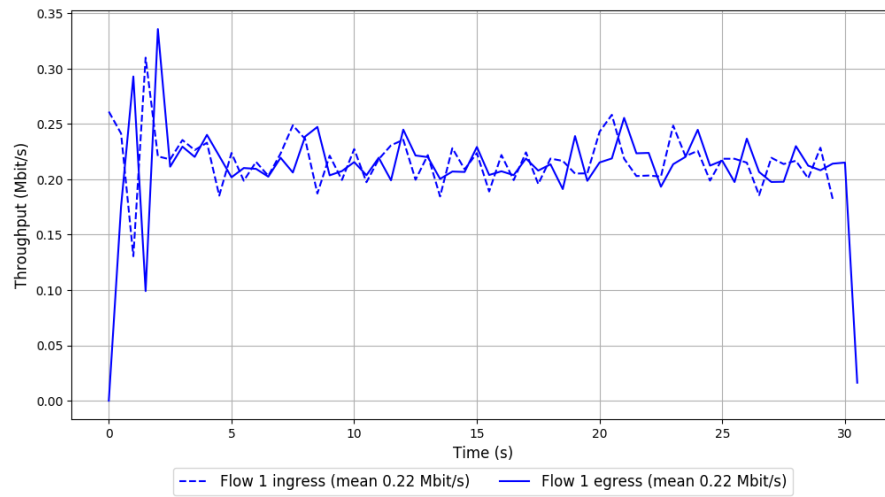
Run 5: Report of QUIC Cubic — Data Link

```
Run 1: Statistics of SCReAM

Start at: 2018-10-09 18:10:59
End at: 2018-10-09 18:11:29
Local clock offset: 13.532 ms
Remote clock offset: -0.241 ms


# Below is generated by plot.py at 2018-10-09 20:54:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 109.606 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 109.606 ms
Loss rate: 0.00%
```

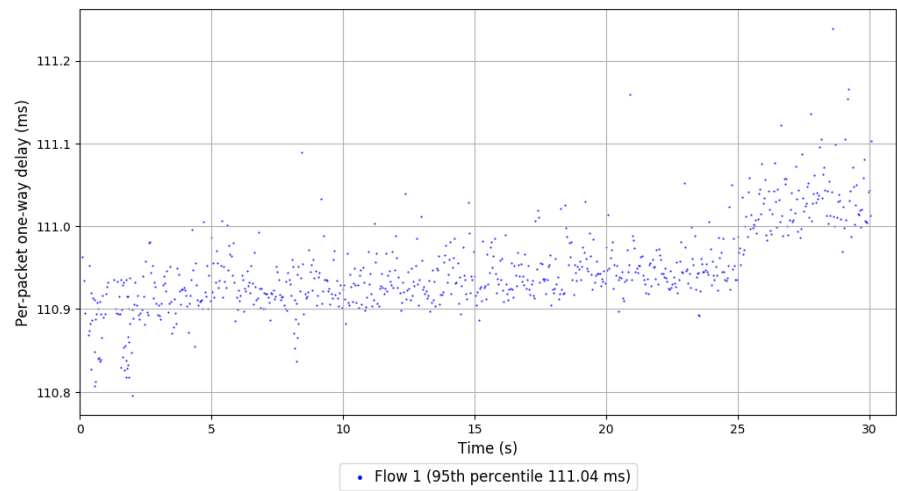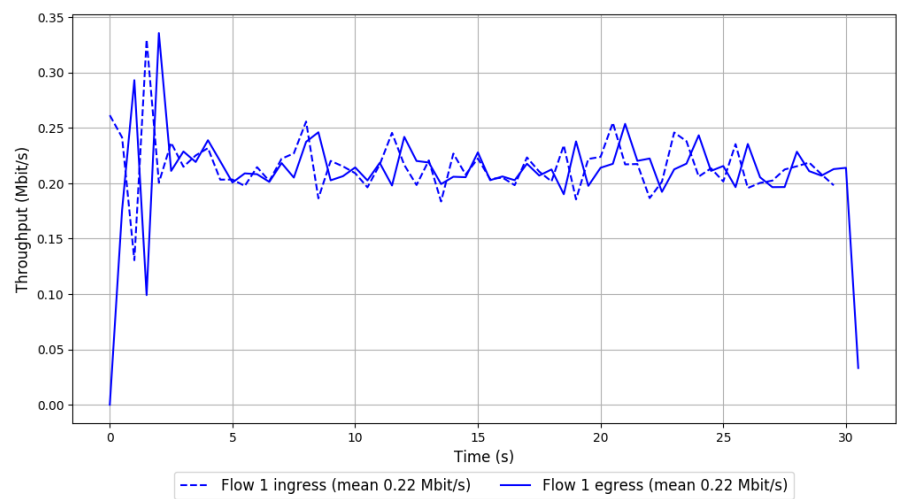Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2018-10-09 18:35:49
End at: 2018-10-09 18:36:19
Local clock offset: 17.861 ms
Remote clock offset: -0.228 ms


# Below is generated by plot.py at 2018-10-09 20:54:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 111.043 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 111.043 ms
Loss rate: 0.00%
```

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 111.04 ms)

```
Run 3: Statistics of SCReAM

Start at: 2018-10-09 19:01:11
End at: 2018-10-09 19:01:41
Local clock offset: 35.218 ms
Remote clock offset: 0.075 ms


# Below is generated by plot.py at 2018-10-09 20:54:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 109.311 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 109.311 ms
Loss rate: 0.00%
```
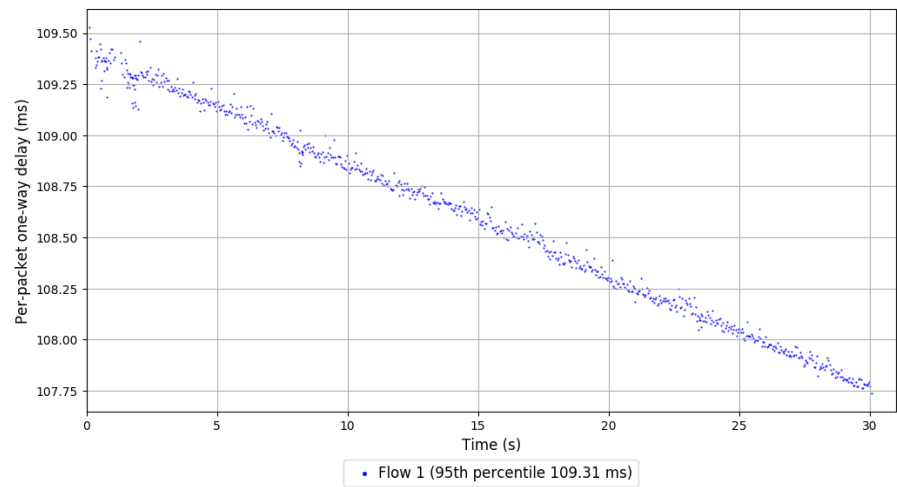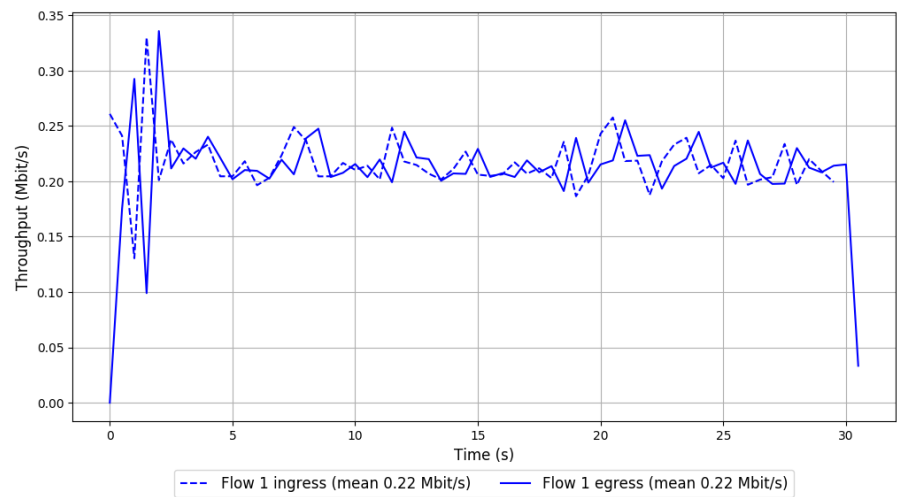
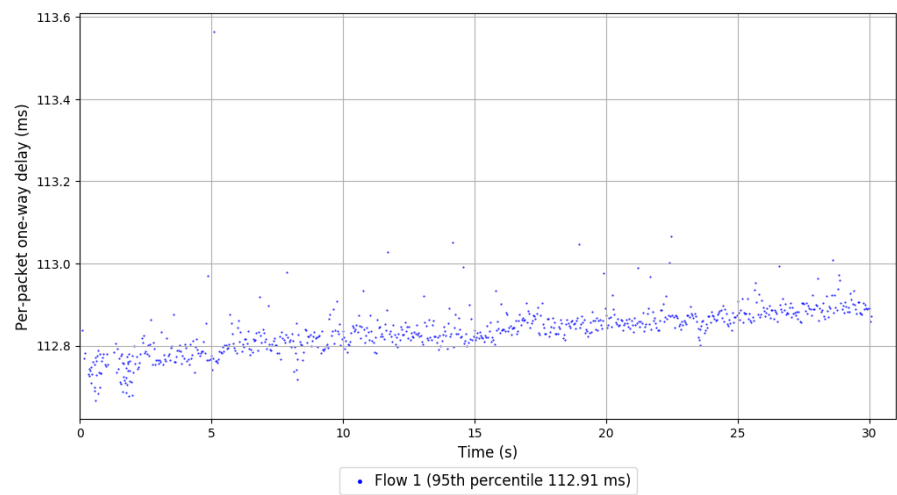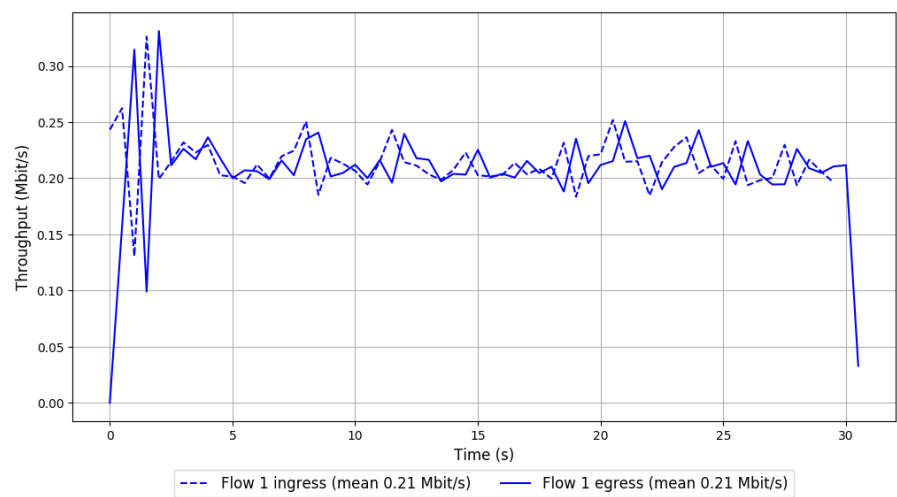Run 3: Report of SCReAM — Data Link

```
Run 4: Statistics of SCReAM

Start at: 2018-10-09 19:26:55
End at: 2018-10-09 19:27:25
Local clock offset: 15.337 ms
Remote clock offset: -0.162 ms


# Below is generated by plot.py at 2018-10-09 20:54:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 112.908 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 112.908 ms
Loss rate: 0.00%
```

Run 4: Report of SCReAM — Data Link

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

Flow 1 (95th percentile 112.91 ms)

```
Run 5: Statistics of SCReAM

Start at: 2018-10-09 19:52:12
End at: 2018-10-09 19:52:42
Local clock offset: 6.853 ms
Remote clock offset: 0.158 ms


# Below is generated by plot.py at 2018-10-09 20:54:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 112.570 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 112.570 ms
Loss rate: 0.00%
```
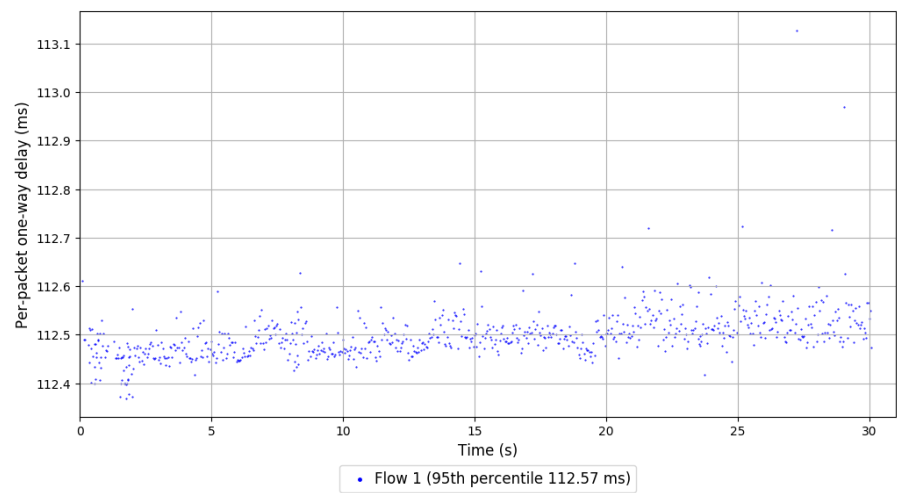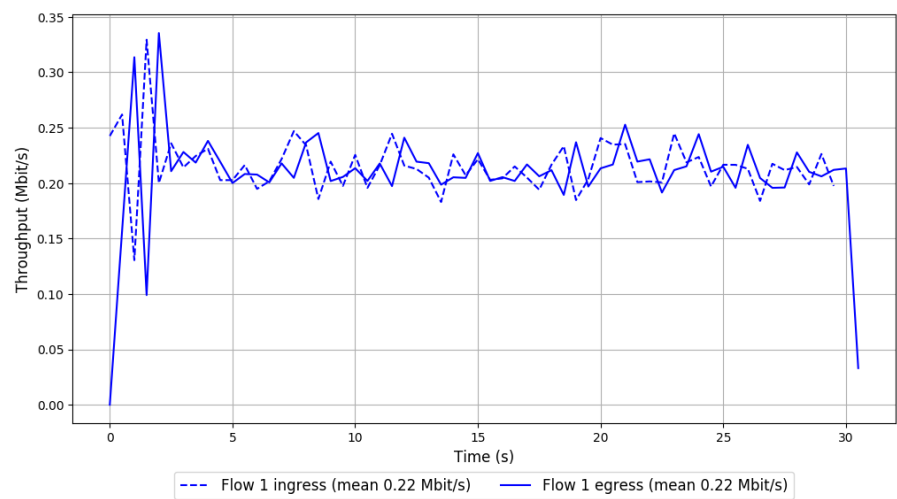
Run 5: Report of SCReAM — Data Link

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

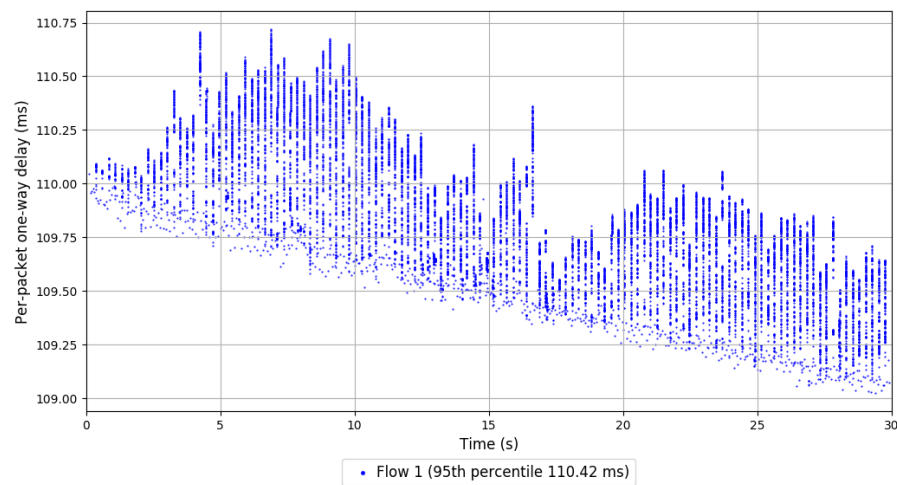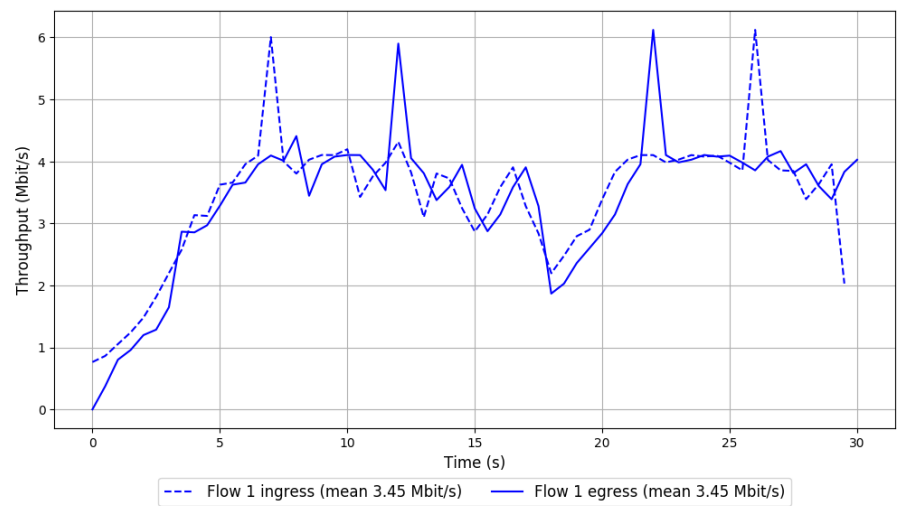• Flow 1 (95th percentile 112.57 ms)

```
Run 1: Statistics of Sprout

Start at: 2018-10-09 18:09:50
End at: 2018-10-09 18:10:20
Local clock offset: 16.261 ms
Remote clock offset: -0.269 ms


# Below is generated by plot.py at 2018-10-09 20:54:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.45 Mbit/s
95th percentile per-packet one-way delay: 110.419 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 3.45 Mbit/s
95th percentile per-packet one-way delay: 110.419 ms
Loss rate: 0.00%
```

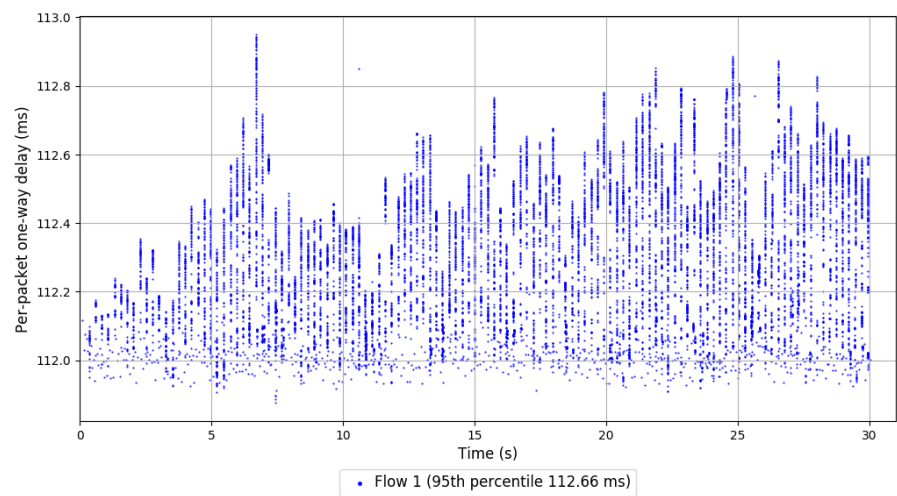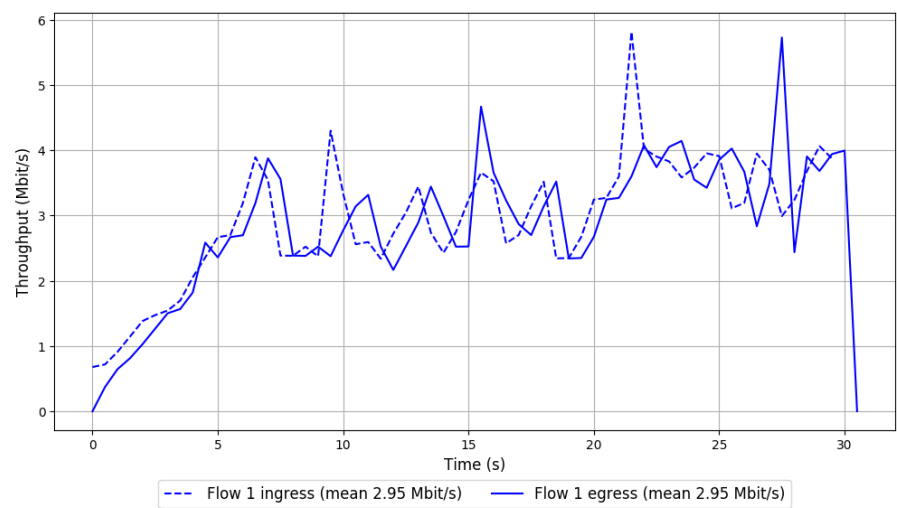## Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-10-09 18:34:40
End at: 2018-10-09 18:35:10
Local clock offset: 17.259 ms
Remote clock offset: -0.177 ms


# Below is generated by plot.py at 2018-10-09 20:54:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.95 Mbit/s
95th percentile per-packet one-way delay: 112.664 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.95 Mbit/s
95th percentile per-packet one-way delay: 112.664 ms
Loss rate: 0.00%
```

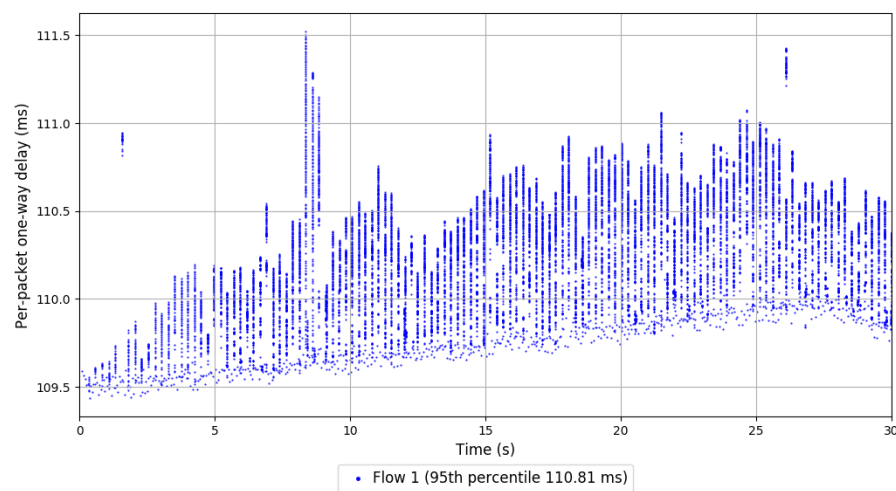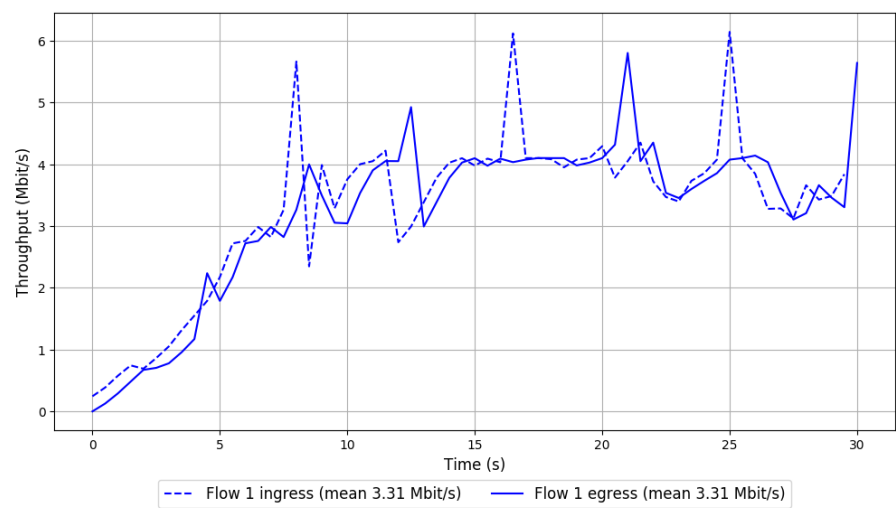Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-10-09 19:00:02
End at: 2018-10-09 19:00:32
Local clock offset: 36.109 ms
Remote clock offset: -0.239 ms


# Below is generated by plot.py at 2018-10-09 20:54:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.31 Mbit/s
95th percentile per-packet one-way delay: 110.807 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 3.31 Mbit/s
95th percentile per-packet one-way delay: 110.807 ms
Loss rate: 0.00%
```

Run 3: Report of Sprout — Data Link

```
Run 4: Statistics of Sprout

Start at: 2018-10-09 19:25:46
End at: 2018-10-09 19:26:16
Local clock offset: 15.841 ms
Remote clock offset: -0.55 ms


# Below is generated by plot.py at 2018-10-09 20:54:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.69 Mbit/s
95th percentile per-packet one-way delay: 112.419 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.69 Mbit/s
95th percentile per-packet one-way delay: 112.419 ms
Loss rate: 0.00%
```
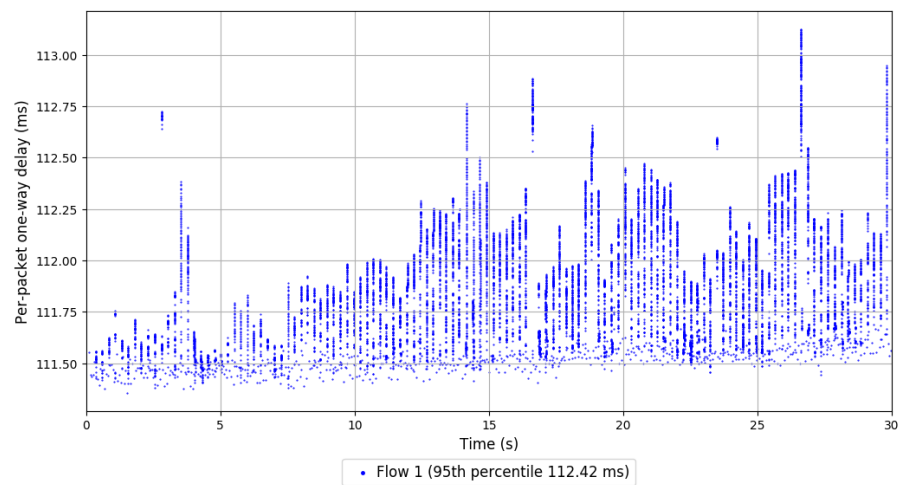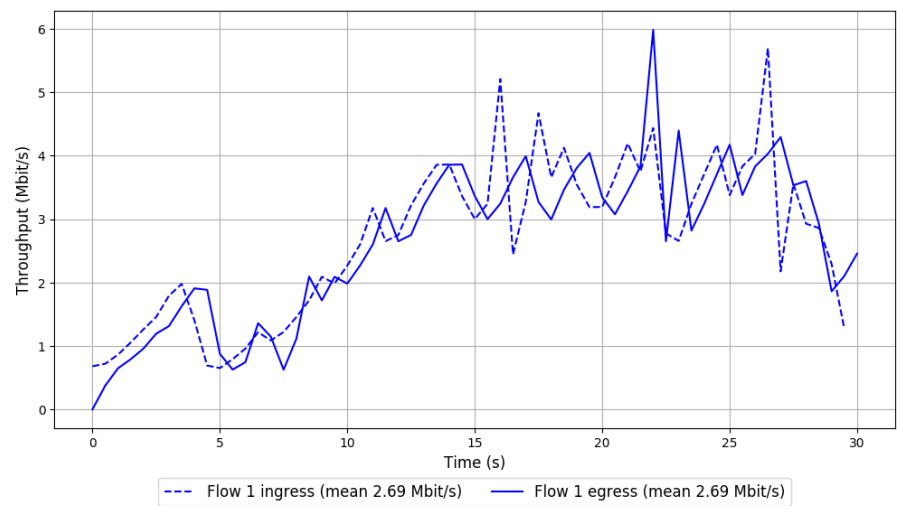
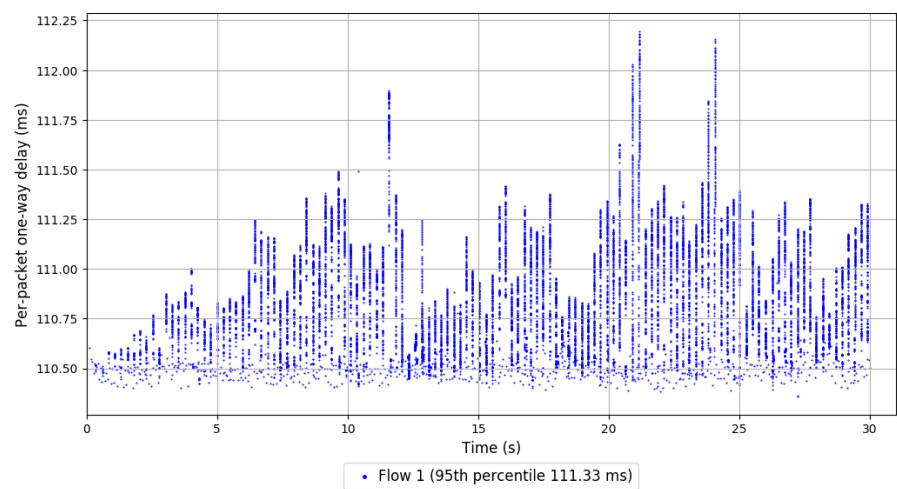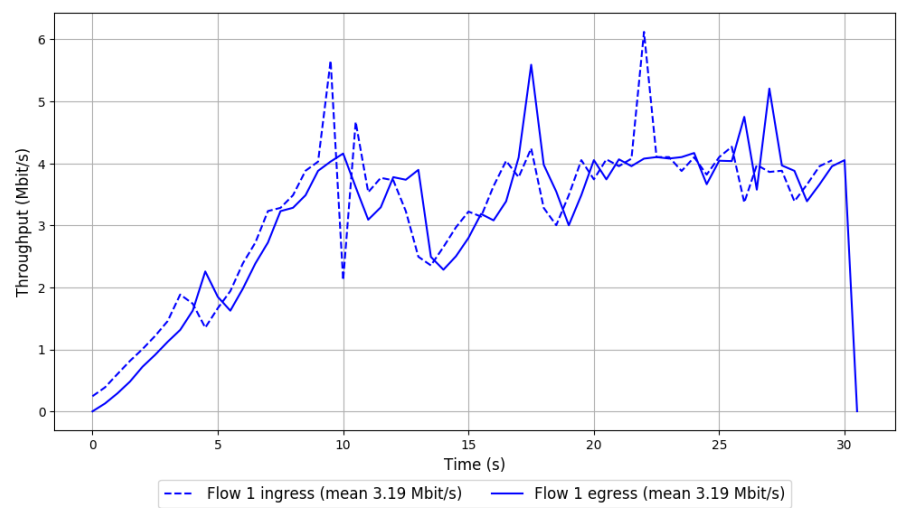Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2018-10-09 19:51:02
End at: 2018-10-09 19:51:32
Local clock offset: 6.992 ms
Remote clock offset: -0.201 ms


# Below is generated by plot.py at 2018-10-09 20:54:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.19 Mbit/s
95th percentile per-packet one-way delay: 111.331 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 3.19 Mbit/s
95th percentile per-packet one-way delay: 111.331 ms
Loss rate: 0.00%
```

Run 5: Report of Sprout — Data Link

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

Start at: 2018-10-09 17:59:28
End at: 2018-10-09 17:59:58
Local clock offset: 6.285 ms
Remote clock offset: -0.259 ms


# Below is generated by plot.py at 2018-10-09 20:57:46
# Datalink statistics
-- Total of 1 flow:
Average throughput: 206.32 Mbit/s
95th percentile per-packet one-way delay: 112.063 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 206.32 Mbit/s
95th percentile per-packet one-way delay: 112.063 ms
Loss rate: 0.00%
```
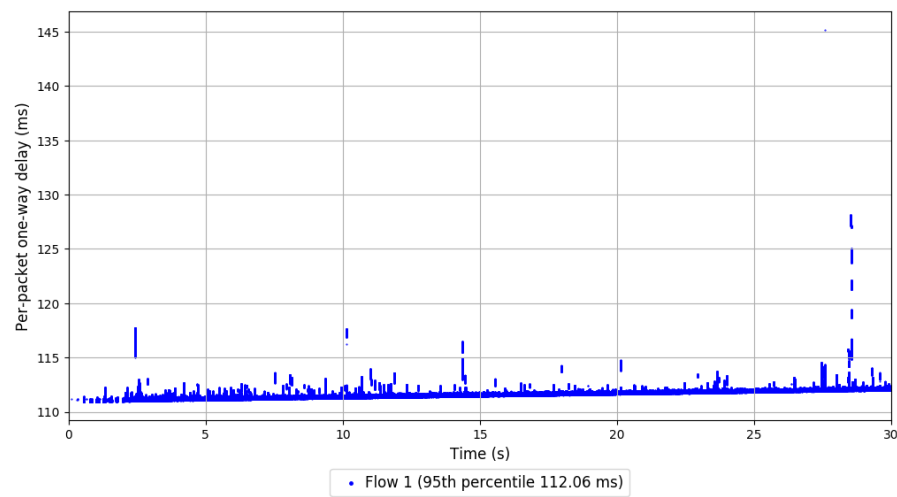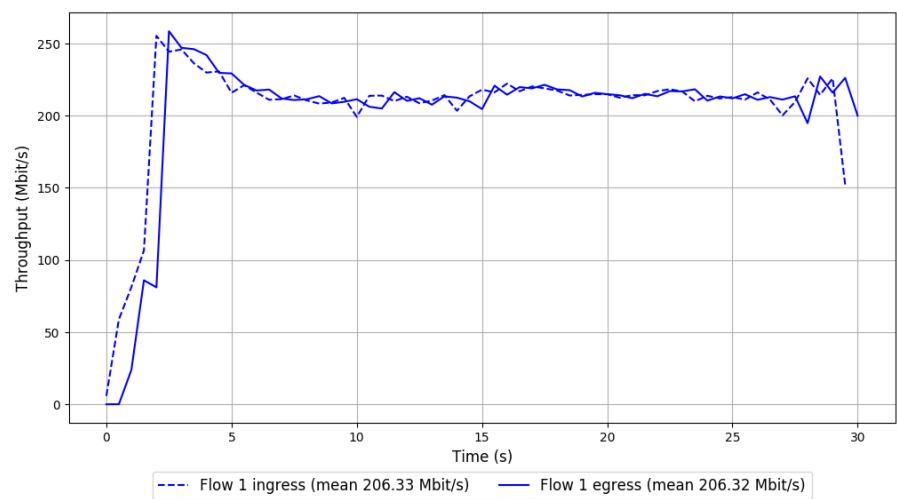
Run 1: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 206.33 Mbit/s) --- Flow 1 egress (mean 206.32 Mbit/s)
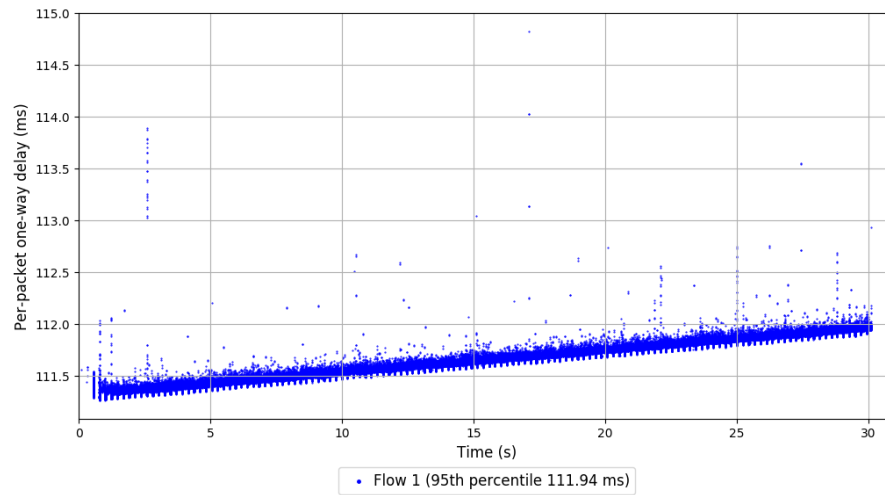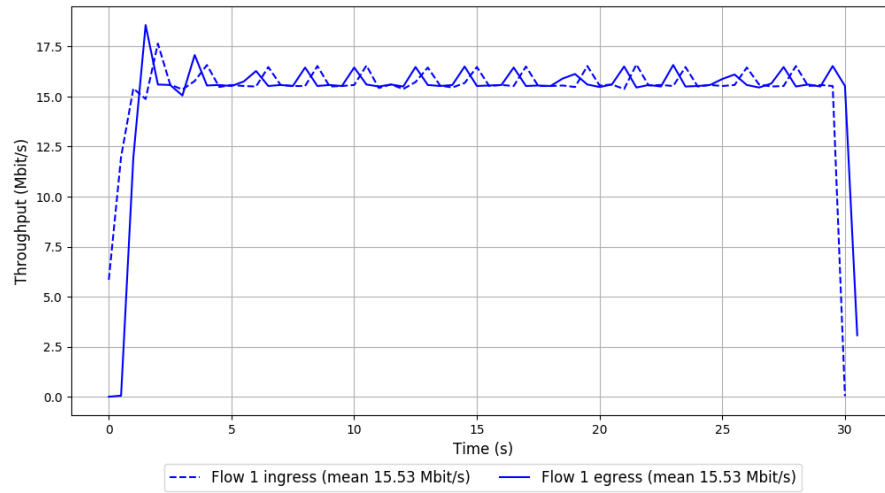

Flow 1 (95th percentile 112.06 ms)

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

Start at: 2018-10-09 18:24:37
End at: 2018-10-09 18:25:07
Local clock offset: 21.272 ms
Remote clock offset: -0.257 ms


# Below is generated by plot.py at 2018-10-09 20:57:46
# Datalink statistics
-- Total of 1 flow:
Average throughput: 15.53 Mbit/s
95th percentile per-packet one-way delay: 111.936 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 15.53 Mbit/s
95th percentile per-packet one-way delay: 111.936 ms
Loss rate: 0.00%
```

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

Flow 1 ingress (mean 15.53 Mbit/s)   Flow 1 egress (mean 15.53 Mbit/s)
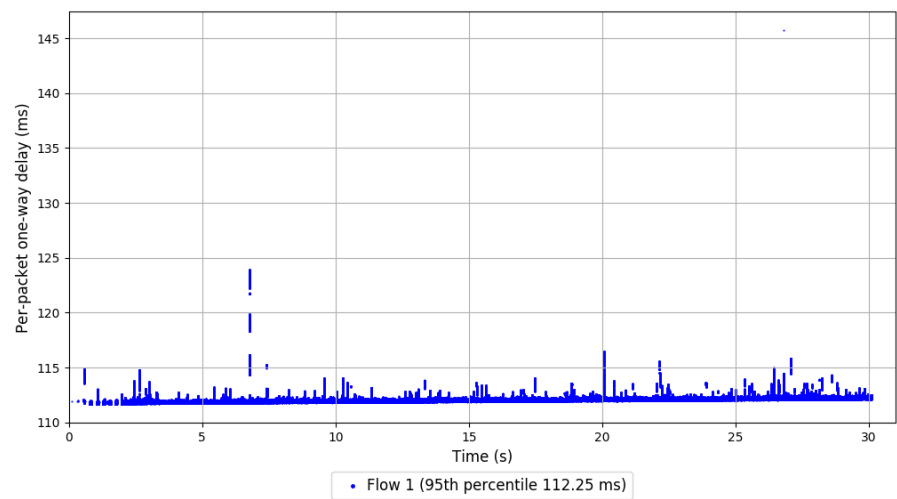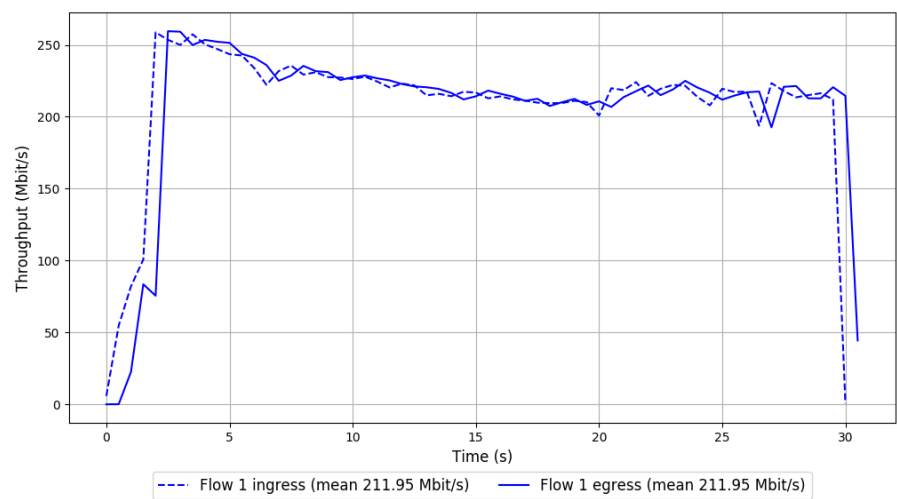

Flow 1 (95th percentile 111.94 ms)

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

Start at: 2018-10-09 18:49:25
End at: 2018-10-09 18:49:55
Local clock offset: 23.974 ms
Remote clock offset: -0.276 ms


# Below is generated by plot.py at 2018-10-09 20:57:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 211.95 Mbit/s
95th percentile per-packet one-way delay: 112.245 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 211.95 Mbit/s
95th percentile per-packet one-way delay: 112.245 ms
Loss rate: 0.00%
```
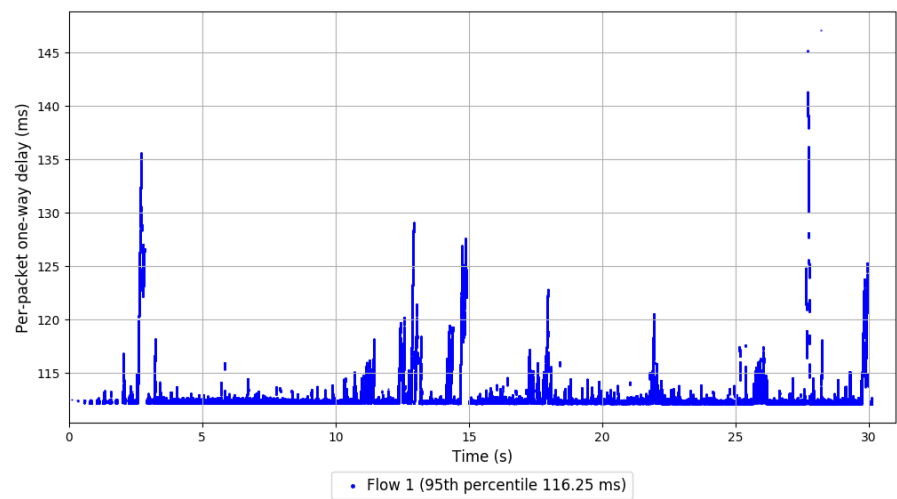
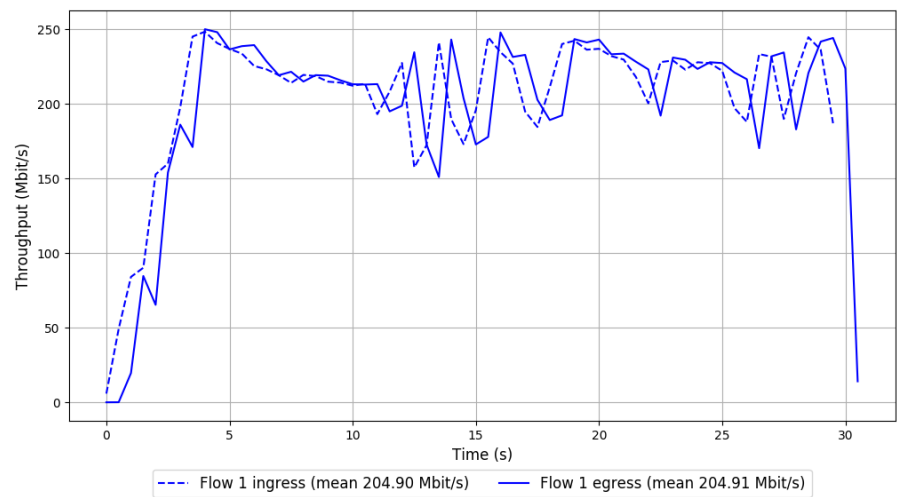Run 3: Report of TaoVA-100x — Data Link

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

Start at: 2018-10-09 19:15:12
End at: 2018-10-09 19:15:42
Local clock offset: 13.741 ms
Remote clock offset: -0.551 ms


# Below is generated by plot.py at 2018-10-09 20:57:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 204.91 Mbit/s
95th percentile per-packet one-way delay: 116.245 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 204.91 Mbit/s
95th percentile per-packet one-way delay: 116.245 ms
Loss rate: 0.00%
```

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

Flow 1 ingress (mean 204.90 Mbit/s) —— Flow 1 egress (mean 204.91 Mbit/s)
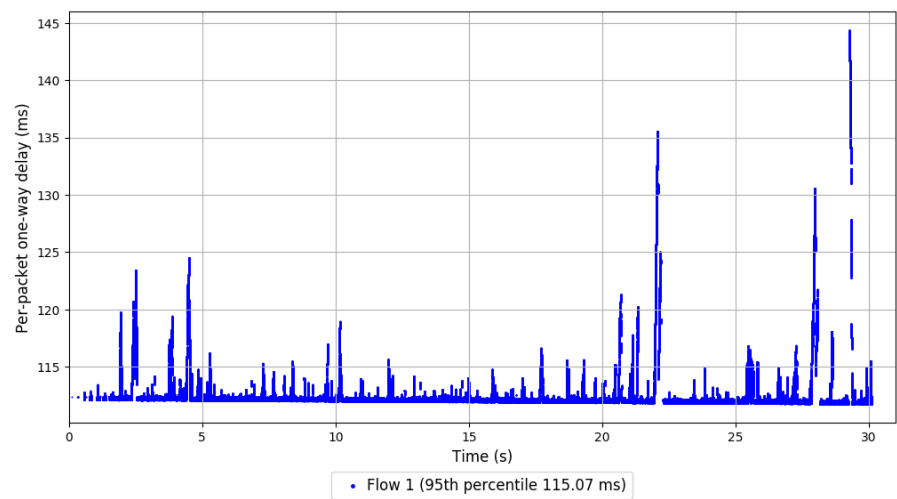

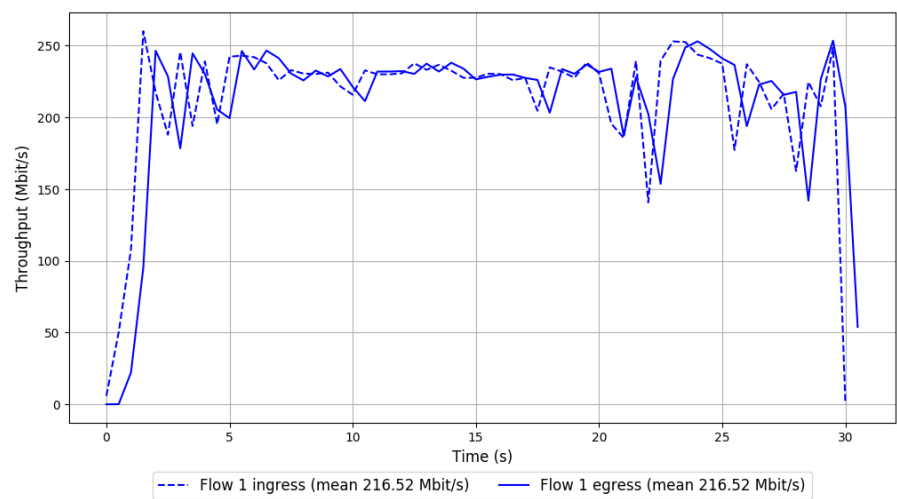
• Flow 1 (95th percentile 116.25 ms)

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

Start at: 2018-10-09 19:40:32
End at: 2018-10-09 19:41:02
Local clock offset: 11.124 ms
Remote clock offset: -0.171 ms


# Below is generated by plot.py at 2018-10-09 20:58:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 216.52 Mbit/s
95th percentile per-packet one-way delay: 115.073 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 216.52 Mbit/s
95th percentile per-packet one-way delay: 115.073 ms
Loss rate: 0.00%
```
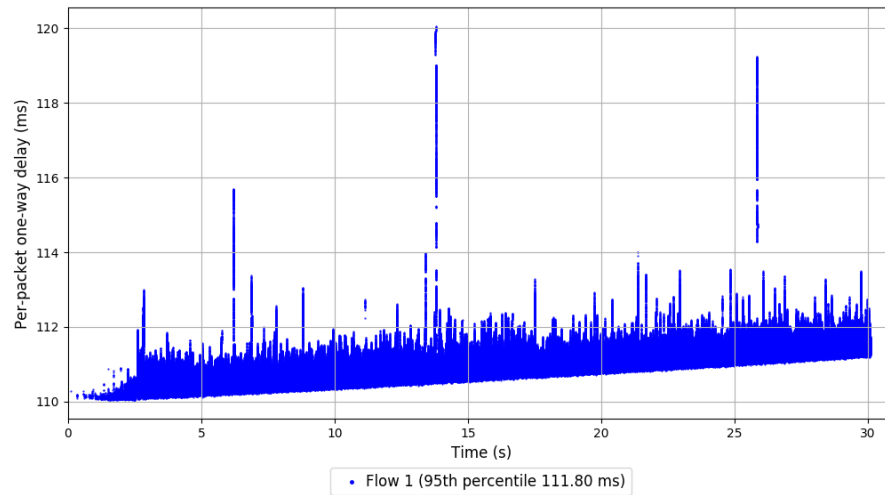
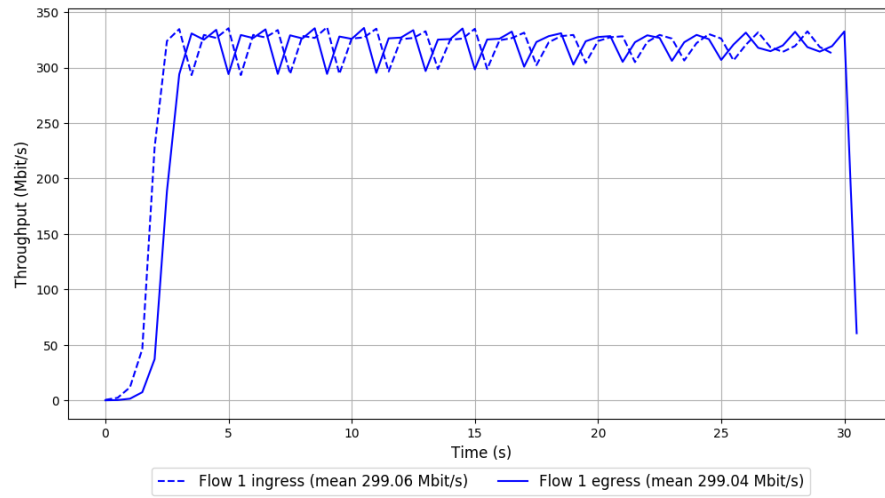Run 5: Report of TaoVA-100x — Data Link

```
Run 1: Statistics of TCP Vegas

Start at: 2018-10-09 17:55:20
End at: 2018-10-09 17:55:50
Local clock offset: 3.712 ms
Remote clock offset: -0.582 ms


# Below is generated by plot.py at 2018-10-09 20:58:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 299.04 Mbit/s
95th percentile per-packet one-way delay: 111.802 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 299.04 Mbit/s
95th percentile per-packet one-way delay: 111.802 ms
Loss rate: 0.00%
```

Run 1: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 299.06 Mbit/s) — Flow 1 egress (mean 299.04 Mbit/s)
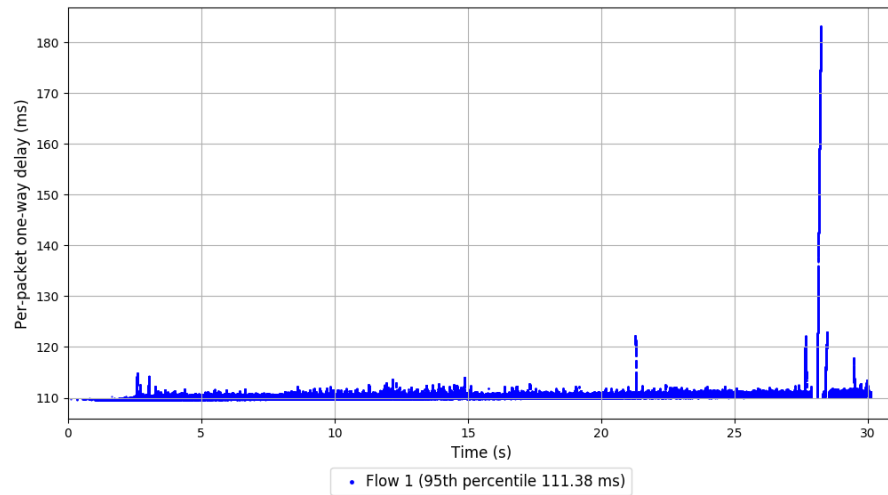

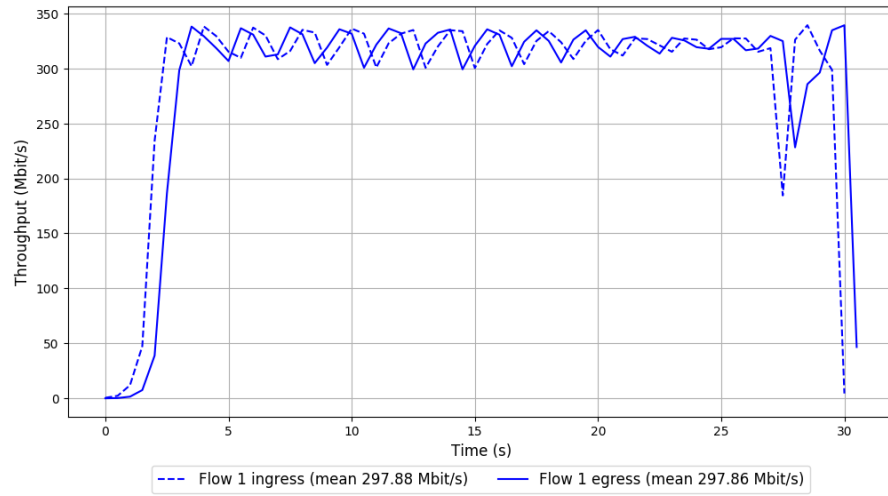Flow 1 (95th percentile 111.80 ms)

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```
Run 2: Statistics of TCP Vegas

Start at: 2018-10-09 18:20:22
End at: 2018-10-09 18:20:52
Local clock offset: 16.395 ms
Remote clock offset: -0.222 ms


# Below is generated by plot.py at 2018-10-09 20:58:27
# Datalink statistics
-- Total of 1 flow:
Average throughput: 297.86 Mbit/s
95th percentile per-packet one-way delay: 111.381 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 297.86 Mbit/s
95th percentile per-packet one-way delay: 111.381 ms
Loss rate: 0.00%
```

Run 2: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 297.88 Mbit/s)   Flow 1 egress (mean 297.86 Mbit/s)
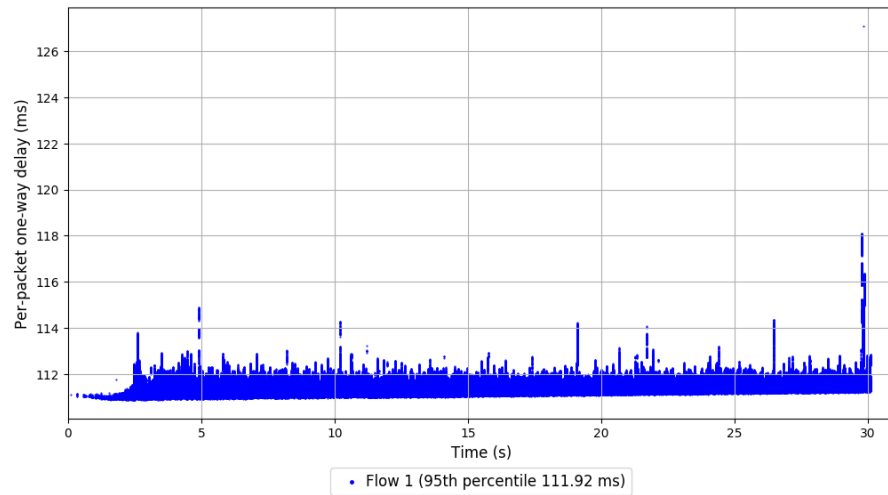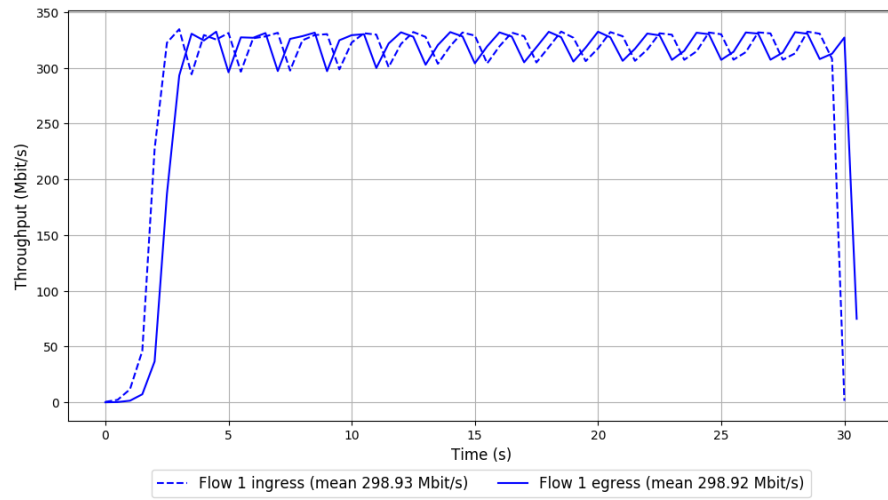

Flow 1 (95th percentile 111.38 ms)

```
Run 3: Statistics of TCP Vegas

Start at: 2018-10-09 18:45:10
End at: 2018-10-09 18:45:40
Local clock offset: 21.239 ms
Remote clock offset: -0.575 ms


# Below is generated by plot.py at 2018-10-09 20:58:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 298.92 Mbit/s
95th percentile per-packet one-way delay: 111.924 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 298.92 Mbit/s
95th percentile per-packet one-way delay: 111.924 ms
Loss rate: 0.00%
```

Run 3: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 298.93 Mbit/s)   Flow 1 egress (mean 298.92 Mbit/s)
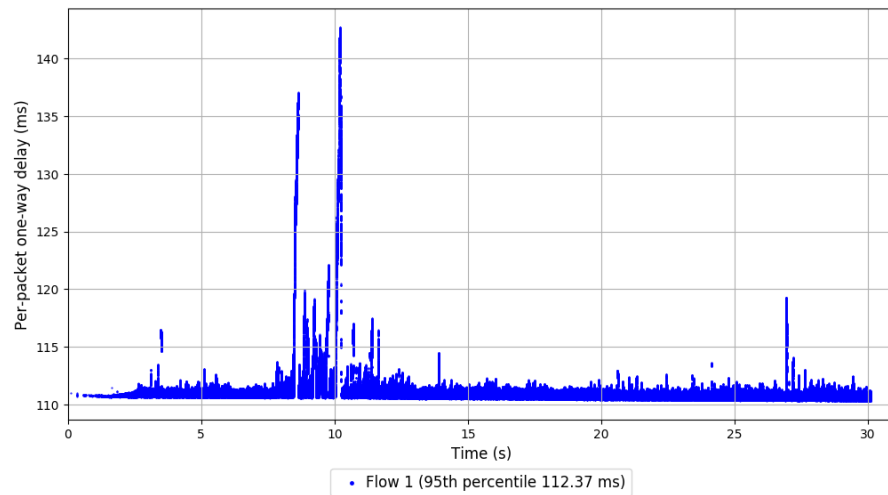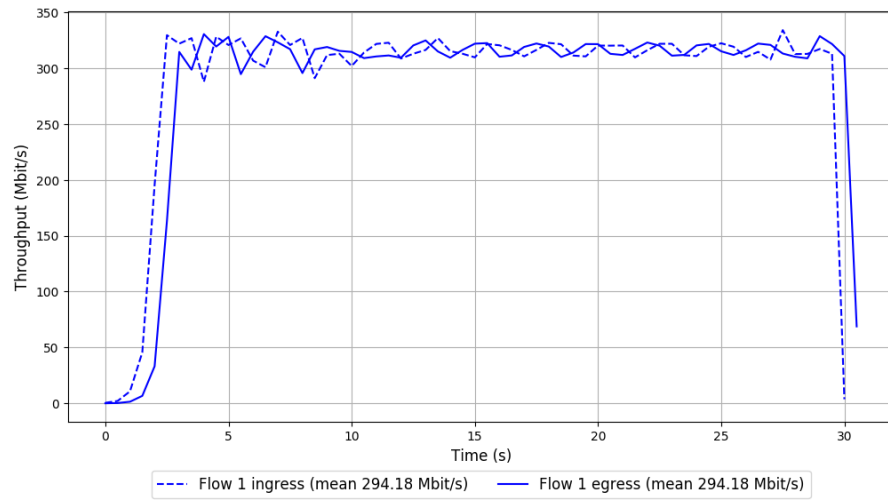

Flow 1 (95th percentile 111.92 ms)

```
Run 4: Statistics of TCP Vegas

Start at: 2018-10-09 19:10:55
End at: 2018-10-09 19:11:26
Local clock offset: 17.191 ms
Remote clock offset: -0.209 ms


# Below is generated by plot.py at 2018-10-09 21:00:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 294.18 Mbit/s
95th percentile per-packet one-way delay: 112.366 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 294.18 Mbit/s
95th percentile per-packet one-way delay: 112.366 ms
Loss rate: 0.00%
```
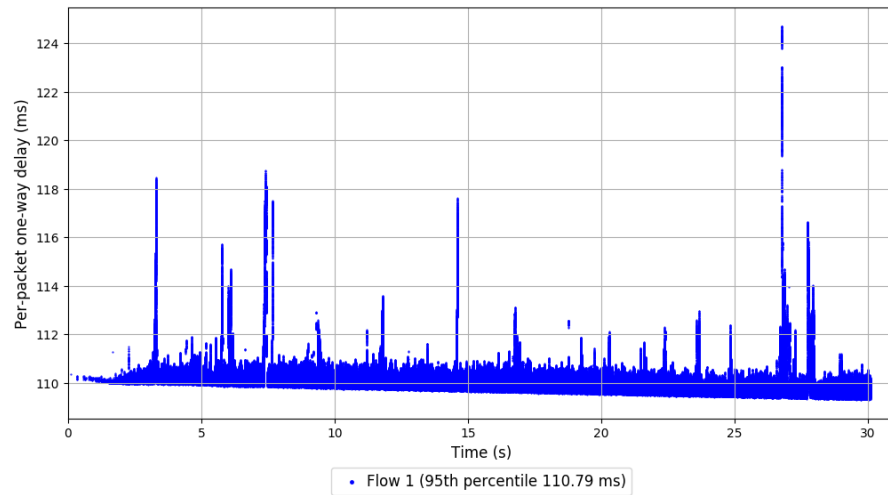
Run 4: Report of TCP Vegas — Data Link
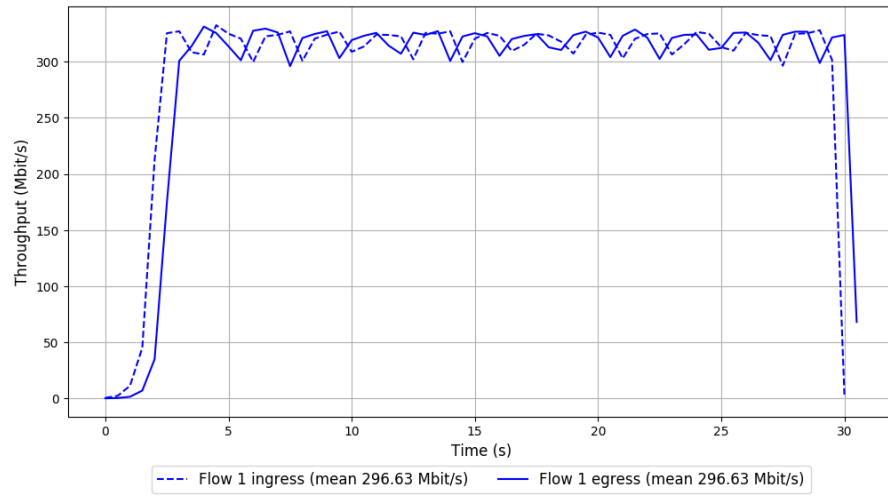

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```
Run 5: Statistics of TCP Vegas

Start at: 2018-10-09 19:36:17
End at: 2018-10-09 19:36:47
Local clock offset: 15.751 ms
Remote clock offset: -0.211 ms


# Below is generated by plot.py at 2018-10-09 21:01:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 296.63 Mbit/s
95th percentile per-packet one-way delay: 110.789 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 296.63 Mbit/s
95th percentile per-packet one-way delay: 110.789 ms
Loss rate: 0.00%
```
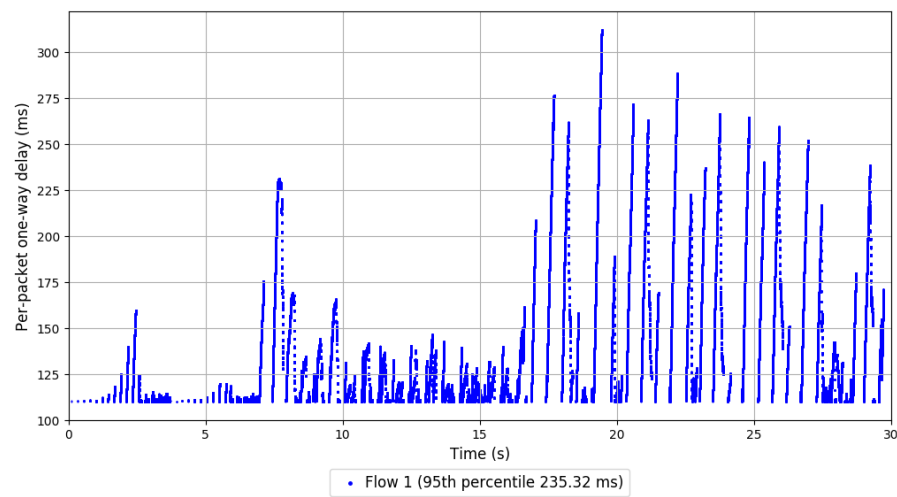
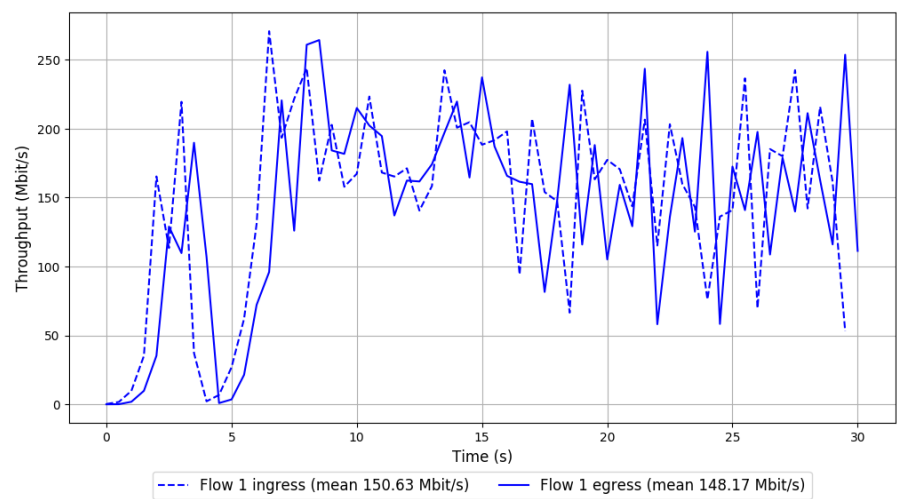Run 5: Report of TCP Vegas — Data Link

```
Run 1: Statistics of Verus

Start at: 2018-10-09 18:02:28
End at: 2018-10-09 18:02:58
Local clock offset: 8.011 ms
Remote clock offset: -0.235 ms

# Below is generated by plot.py at 2018-10-09 21:02:21
# Datalink statistics
-- Total of 1 flow:
Average throughput: 148.17 Mbit/s
95th percentile per-packet one-way delay: 235.316 ms
Loss rate: 1.43%
-- Flow 1:
Average throughput: 148.17 Mbit/s
95th percentile per-packet one-way delay: 235.316 ms
Loss rate: 1.43%
```
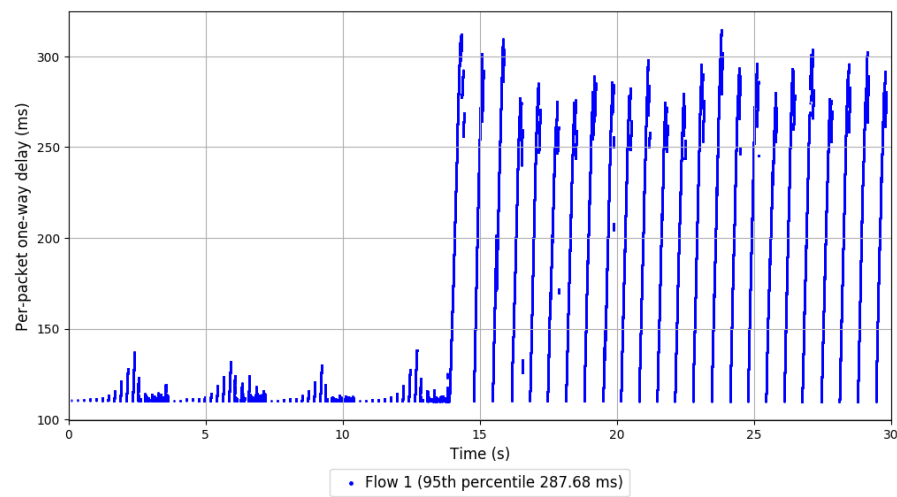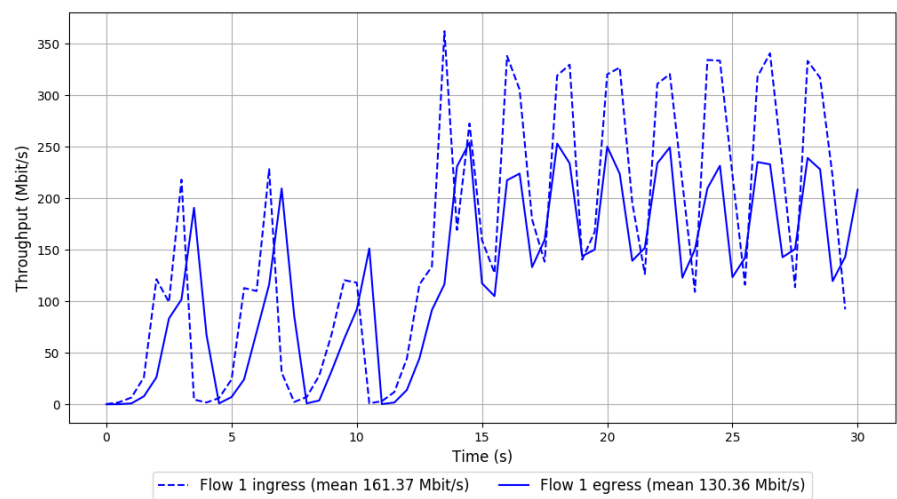
Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2018-10-09 18:27:18
End at: 2018-10-09 18:27:48
Local clock offset: 22.98 ms
Remote clock offset: -0.224 ms


# Below is generated by plot.py at 2018-10-09 21:02:21
# Datalink statistics
-- Total of 1 flow:
Average throughput: 130.36 Mbit/s
95th percentile per-packet one-way delay: 287.684 ms
Loss rate: 18.83%
-- Flow 1:
Average throughput: 130.36 Mbit/s
95th percentile per-packet one-way delay: 287.684 ms
Loss rate: 18.83%
```
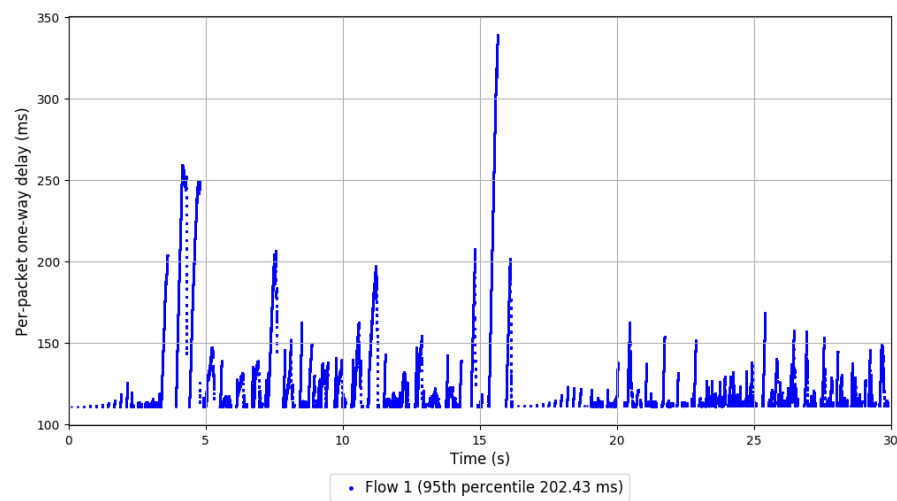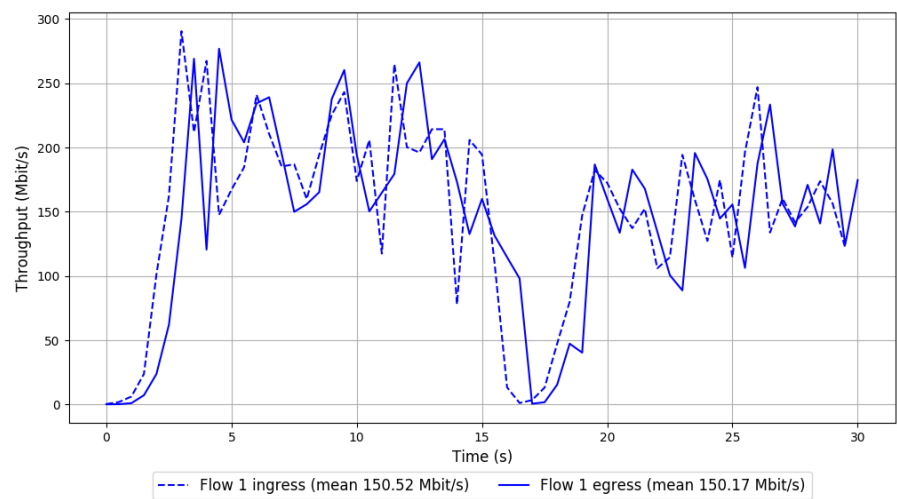
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-10-09 18:52:35
End at: 2018-10-09 18:53:05
Local clock offset: 27.722 ms
Remote clock offset: -0.231 ms


# Below is generated by plot.py at 2018-10-09 21:02:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 150.17 Mbit/s
95th percentile per-packet one-way delay: 202.433 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 150.17 Mbit/s
95th percentile per-packet one-way delay: 202.433 ms
Loss rate: 0.23%
```

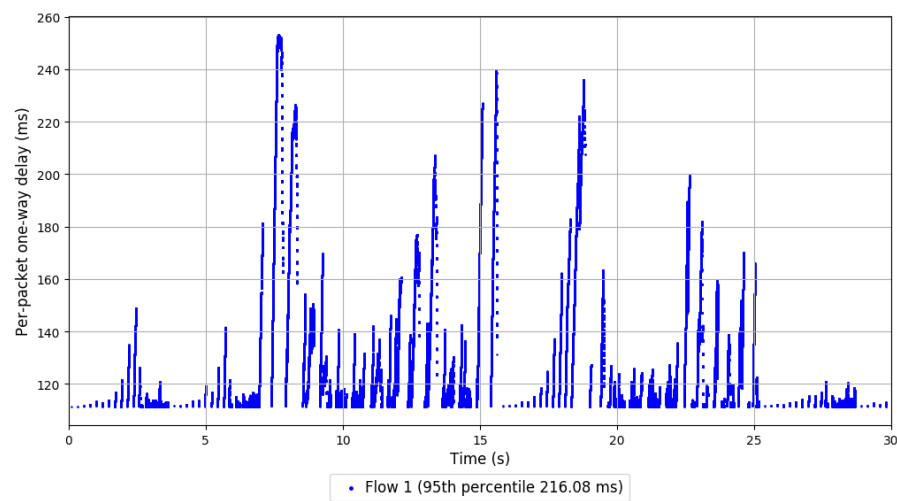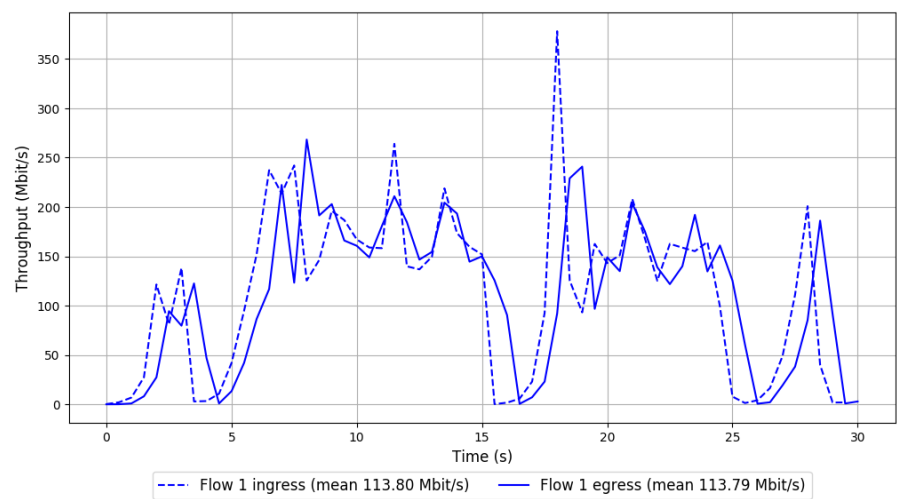## Run 3: Report of Verus — Data Link

```
Run 4: Statistics of Verus

Start at: 2018-10-09 19:18:21
End at: 2018-10-09 19:18:51
Local clock offset: 14.555 ms
Remote clock offset: -0.544 ms


# Below is generated by plot.py at 2018-10-09 21:02:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 113.79 Mbit/s
95th percentile per-packet one-way delay: 216.076 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 113.79 Mbit/s
95th percentile per-packet one-way delay: 216.076 ms
Loss rate: 0.00%
```

Run 4: Report of Verus — Data Link

Flow 1 ingress (mean 113.80 Mbit/s)   Flow 1 egress (mean 113.79 Mbit/s)

Flow 1 (95th percentile 216.08 ms)

```
Run 5: Statistics of Verus

Start at: 2018-10-09 19:43:36
End at: 2018-10-09 19:44:06
Local clock offset: 9.106 ms
Remote clock offset: 0.146 ms


# Below is generated by plot.py at 2018-10-09 21:02:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 113.10 Mbit/s
95th percentile per-packet one-way delay: 258.114 ms
Loss rate: 1.52%
-- Flow 1:
Average throughput: 113.10 Mbit/s
95th percentile per-packet one-way delay: 258.114 ms
Loss rate: 1.52%
```
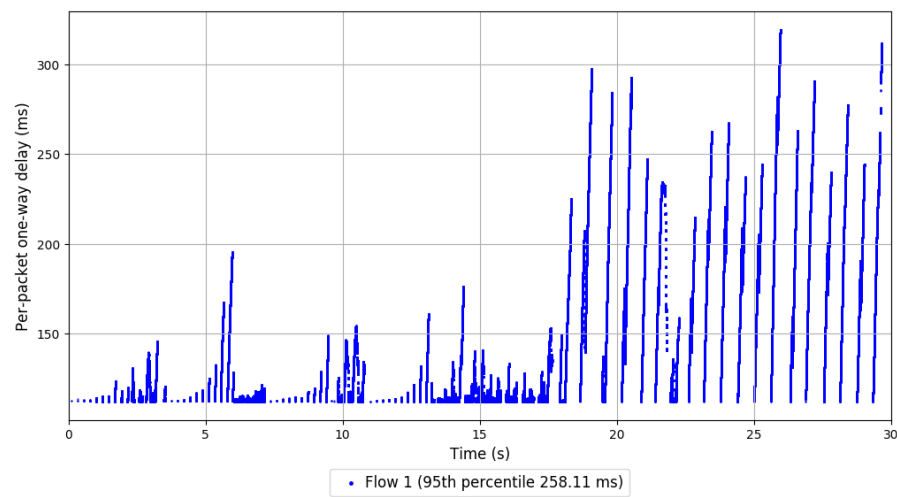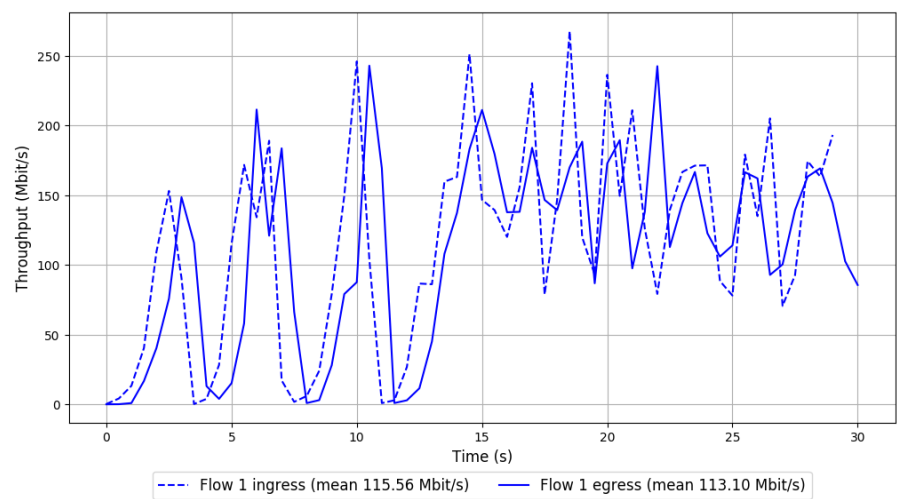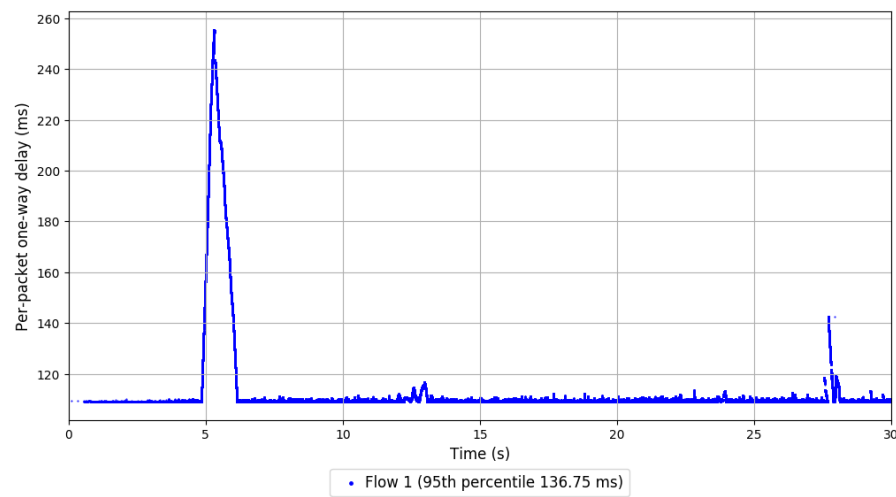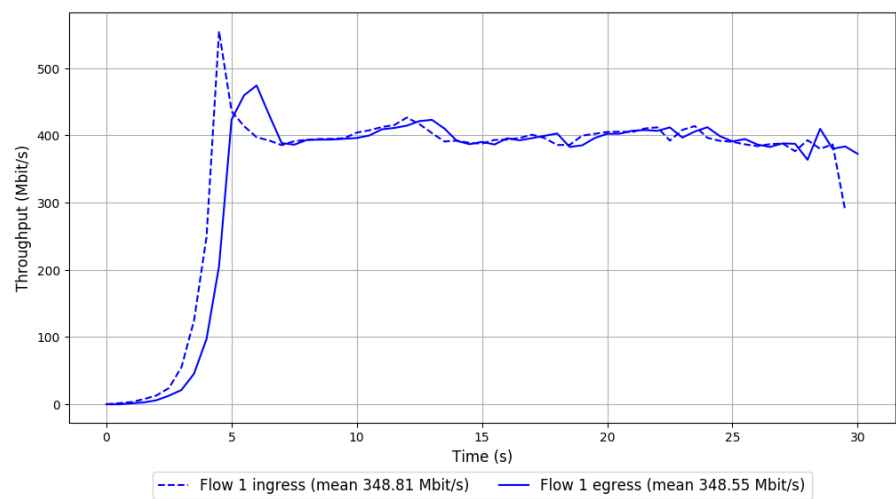
Run 5: Report of Verus — Data Link

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-10-09 18:13:40
End at: 2018-10-09 18:14:10
Local clock offset: 11.904 ms
Remote clock offset: -0.259 ms


# Below is generated by plot.py at 2018-10-09 21:03:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 348.55 Mbit/s
95th percentile per-packet one-way delay: 136.751 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 348.55 Mbit/s
95th percentile per-packet one-way delay: 136.751 ms
Loss rate: 0.07%
```

Run 1: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 348.81 Mbit/s) —— Flow 1 egress (mean 348.55 Mbit/s)

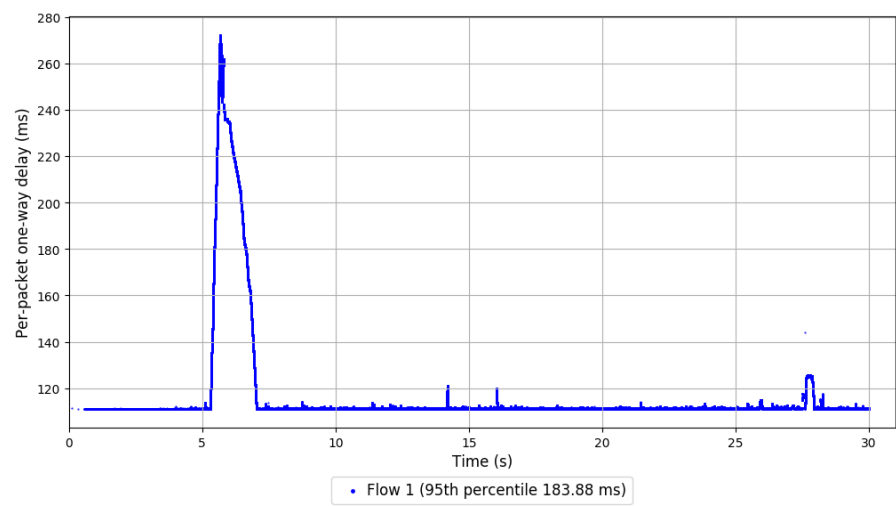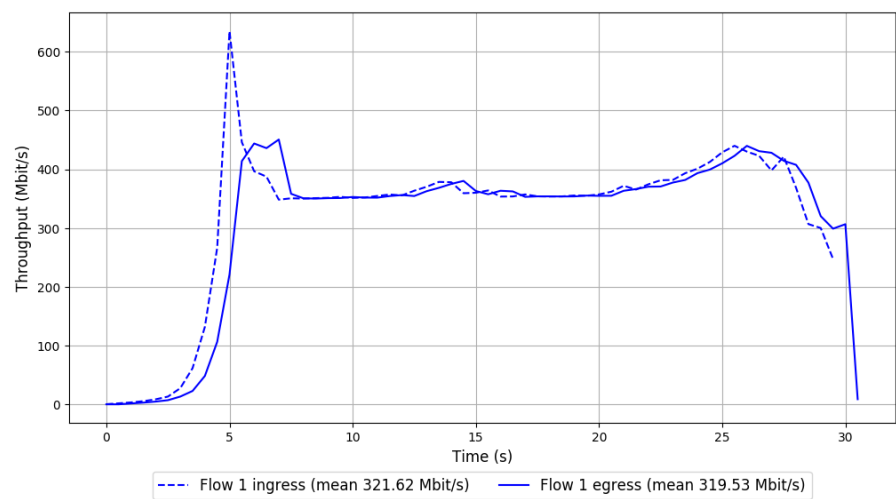
• Flow 1 (95th percentile 136.75 ms)

```
Run 2: Statistics of PCC-Vivace

Start at: 2018-10-09 18:38:30
End at: 2018-10-09 18:39:00
Local clock offset: 18.231 ms
Remote clock offset: -0.218 ms


# Below is generated by plot.py at 2018-10-09 21:04:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 319.53 Mbit/s
95th percentile per-packet one-way delay: 183.880 ms
Loss rate: 0.65%
-- Flow 1:
Average throughput: 319.53 Mbit/s
95th percentile per-packet one-way delay: 183.880 ms
Loss rate: 0.65%
```

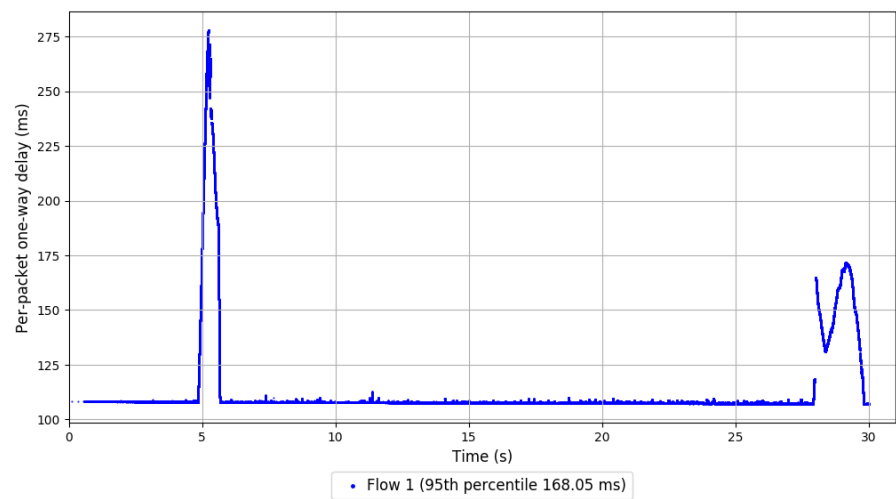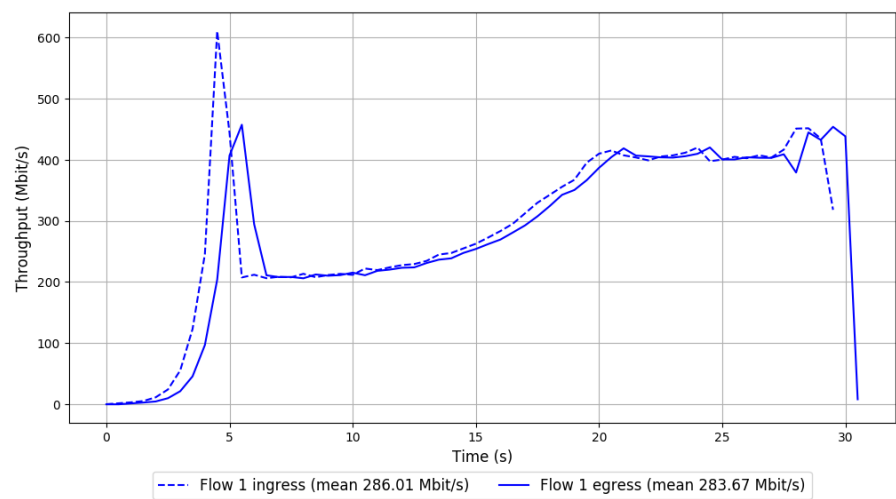## Run 2: Report of PCC-Vivace — Data Link

168

```
Run 3: Statistics of PCC-Vivace

Start at: 2018-10-09 19:03:52
End at: 2018-10-09 19:04:22
Local clock offset: 26.728 ms
Remote clock offset: -0.255 ms


# Below is generated by plot.py at 2018-10-09 21:04:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 283.67 Mbit/s
95th percentile per-packet one-way delay: 168.050 ms
Loss rate: 0.82%
-- Flow 1:
Average throughput: 283.67 Mbit/s
95th percentile per-packet one-way delay: 168.050 ms
Loss rate: 0.82%
```

Run 3: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 286.01 Mbit/s) —— Flow 1 egress (mean 283.67 Mbit/s)

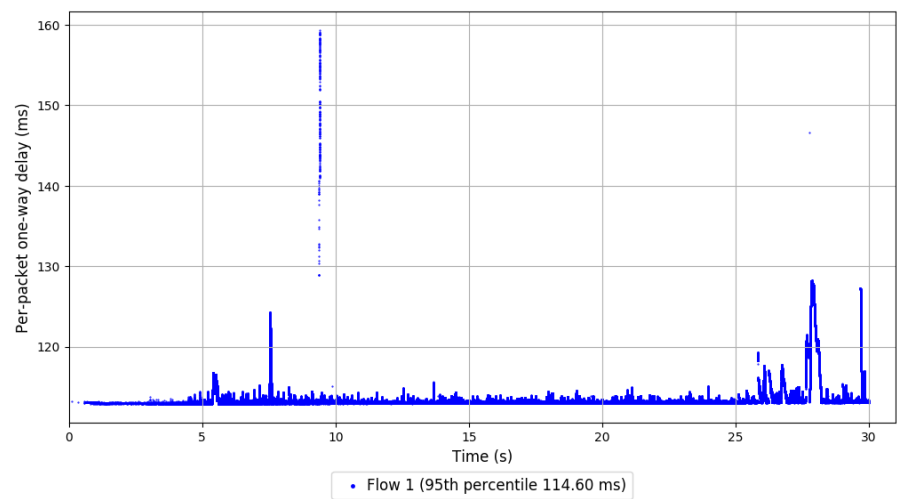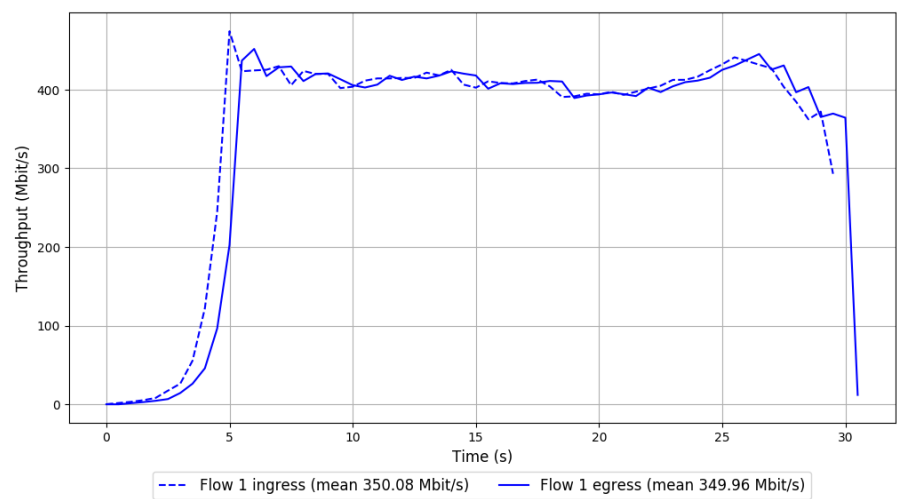
• Flow 1 (95th percentile 168.05 ms)

```
Run 4: Statistics of PCC-Vivace

Start at: 2018-10-09 19:29:35
End at: 2018-10-09 19:30:05
Local clock offset: 15.519 ms
Remote clock offset: -0.528 ms


# Below is generated by plot.py at 2018-10-09 21:04:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 349.96 Mbit/s
95th percentile per-packet one-way delay: 114.603 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 349.96 Mbit/s
95th percentile per-packet one-way delay: 114.603 ms
Loss rate: 0.03%
```

Run 4: Report of PCC-Vivace — Data Link

```
Run 5: Statistics of PCC-Vivace

Start at: 2018-10-09 19:54:54
End at: 2018-10-09 19:55:24
Local clock offset: 6.67 ms
Remote clock offset: -0.206 ms


# Below is generated by plot.py at 2018-10-09 21:04:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 274.58 Mbit/s
95th percentile per-packet one-way delay: 193.066 ms
Loss rate: 1.04%
-- Flow 1:
Average throughput: 274.58 Mbit/s
95th percentile per-packet one-way delay: 193.066 ms
Loss rate: 1.04%
```
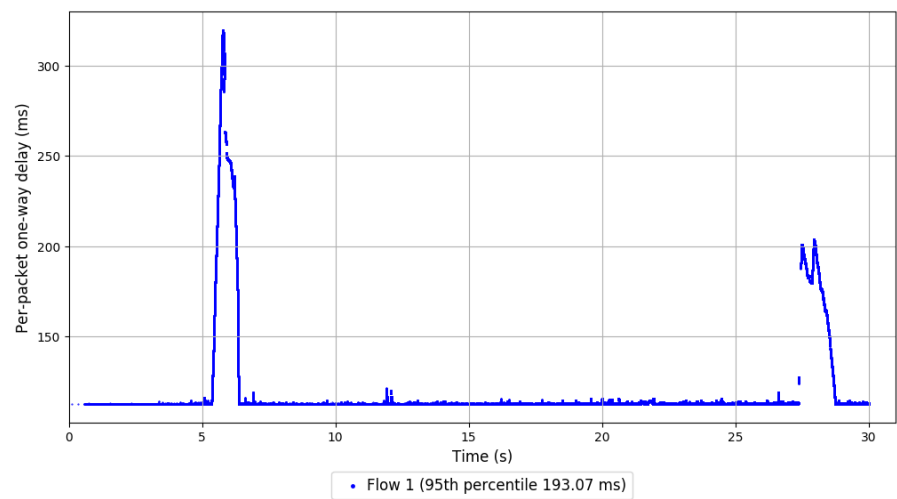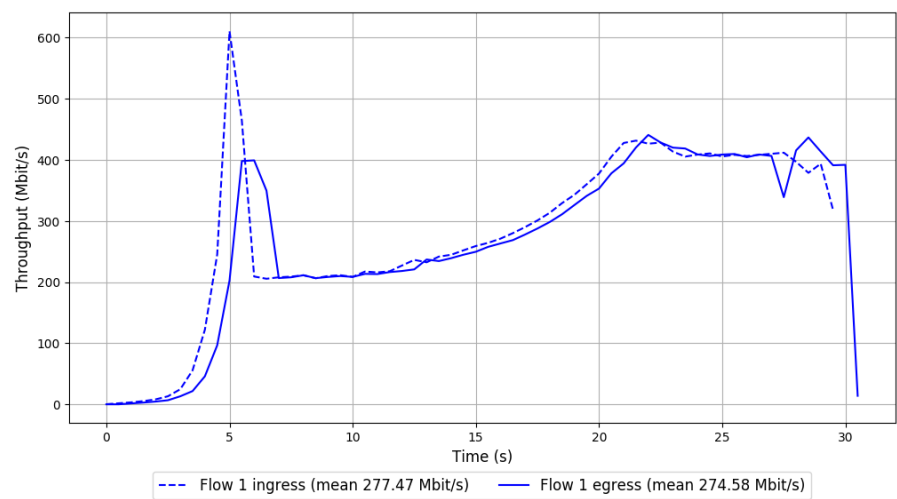
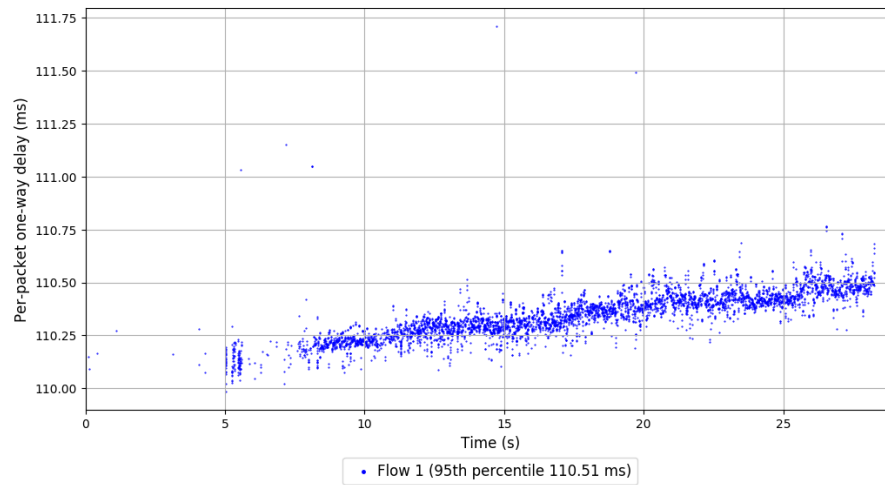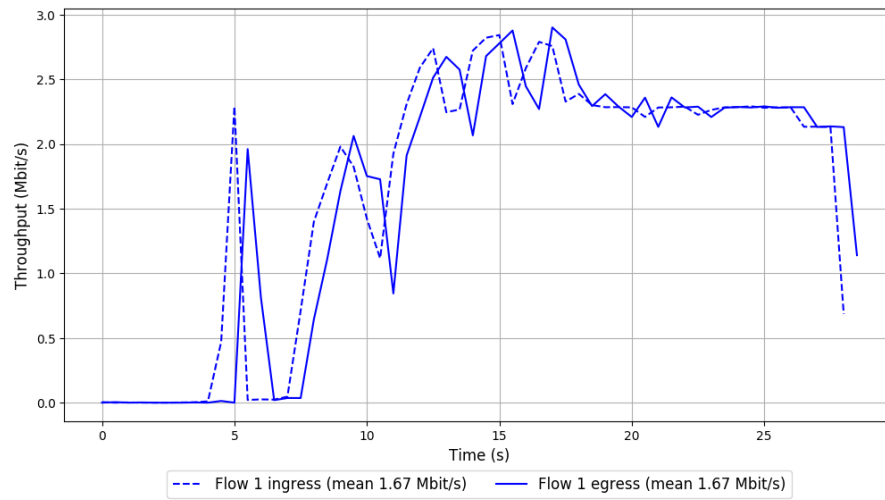Run 5: Report of PCC-Vivace — Data Link

```
Run 1: Statistics of WebRTC media

Start at: 2018-10-09 18:16:39
End at: 2018-10-09 18:17:09
Local clock offset: 12.537 ms
Remote clock offset: -0.252 ms


# Below is generated by plot.py at 2018-10-09 21:04:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.67 Mbit/s
95th percentile per-packet one-way delay: 110.511 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.67 Mbit/s
95th percentile per-packet one-way delay: 110.511 ms
Loss rate: 0.00%
```

Run 1: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.67 Mbit/s)   Flow 1 egress (mean 1.67 Mbit/s)
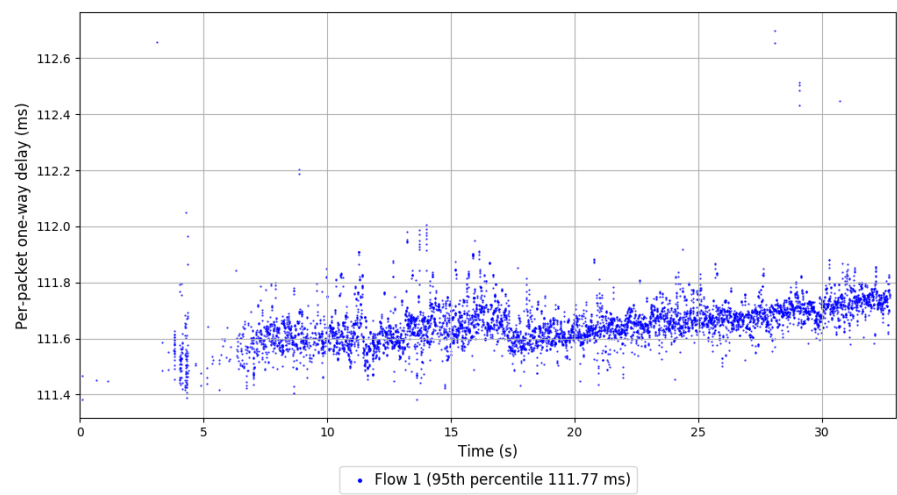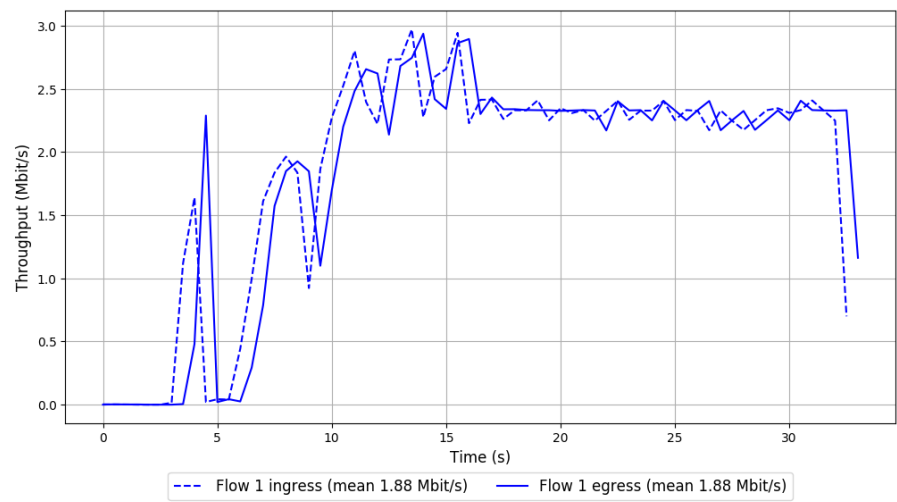

Flow 1 (95th percentile 110.51 ms)

```
Run 2: Statistics of WebRTC media

Start at: 2018-10-09 18:41:27
End at: 2018-10-09 18:41:57
Local clock offset: 19.341 ms
Remote clock offset: -0.245 ms


# Below is generated by plot.py at 2018-10-09 21:04:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.88 Mbit/s
95th percentile per-packet one-way delay: 111.773 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.88 Mbit/s
95th percentile per-packet one-way delay: 111.773 ms
Loss rate: 0.00%
```

Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-10-09 19:06:46
End at: 2018-10-09 19:07:16
Local clock offset: 20.787 ms
Remote clock offset: 0.108 ms


# Below is generated by plot.py at 2018-10-09 21:04:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.90 Mbit/s
95th percentile per-packet one-way delay: 109.881 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.90 Mbit/s
95th percentile per-packet one-way delay: 109.881 ms
Loss rate: 0.00%
```
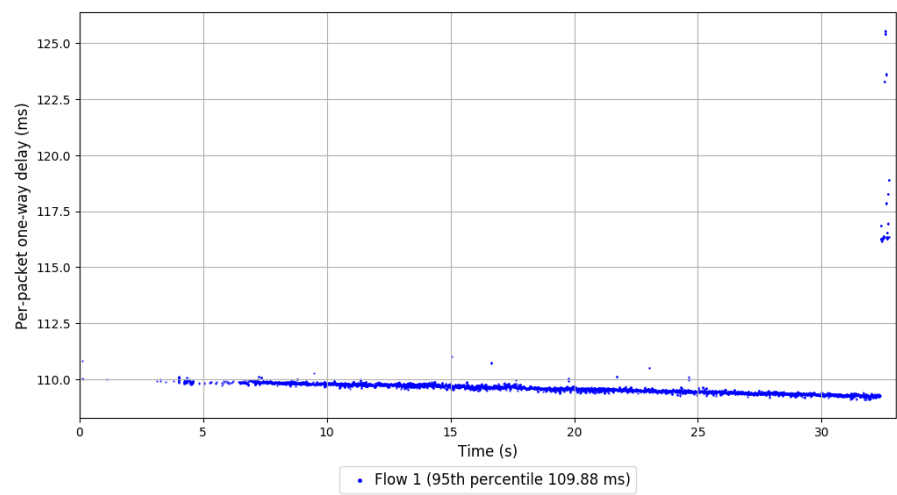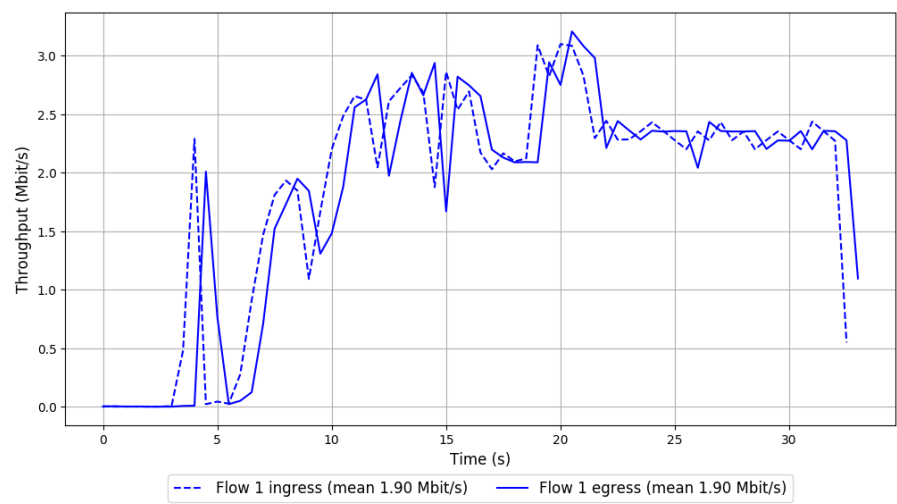
Run 3: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.90 Mbit/s)   Flow 1 egress (mean 1.90 Mbit/s)
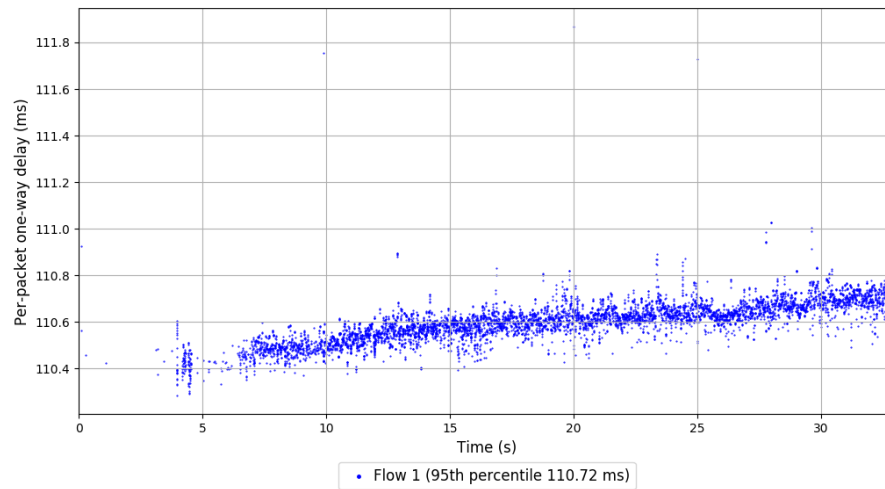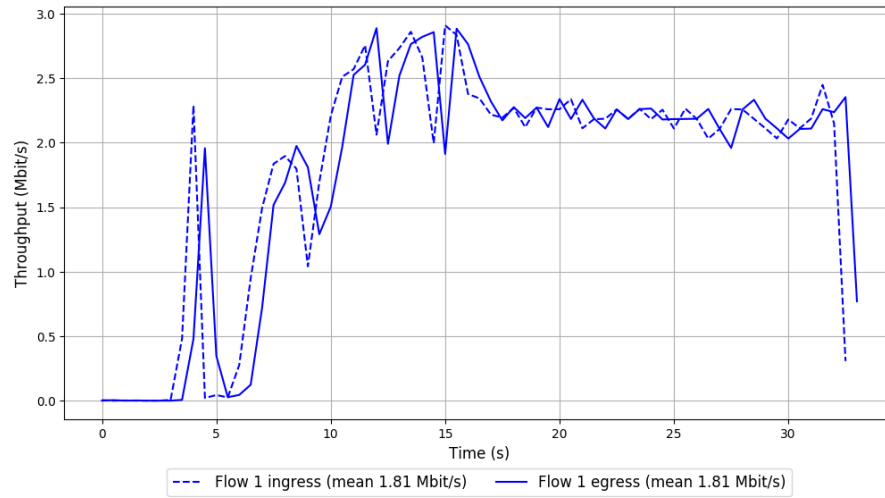

Flow 1 (95th percentile 109.88 ms)

```
Run 4: Statistics of WebRTC media

Start at: 2018-10-09 19:32:34
End at: 2018-10-09 19:33:04
Local clock offset: 18.187 ms
Remote clock offset: -0.185 ms


# Below is generated by plot.py at 2018-10-09 21:04:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.81 Mbit/s
95th percentile per-packet one-way delay: 110.723 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.81 Mbit/s
95th percentile per-packet one-way delay: 110.723 ms
Loss rate: 0.00%
```

Run 4: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.81 Mbit/s) — Flow 1 egress (mean 1.81 Mbit/s)

• Flow 1 (95th percentile 110.72 ms)

```
Run 5: Statistics of WebRTC media

Start at: 2018-10-09 19:57:48
End at: 2018-10-09 19:58:18
Local clock offset: 7.774 ms
Remote clock offset: 0.129 ms


# Below is generated by plot.py at 2018-10-09 21:04:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.85 Mbit/s
95th percentile per-packet one-way delay: 111.227 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.85 Mbit/s
95th percentile per-packet one-way delay: 111.227 ms
Loss rate: 0.00%
```

Run 5: Report of WebRTC media — Data Link