Pantheon Report

Generated at 2018-09-07 11:52:54 (UTC).

Data path: AWS Brazil 2 on `ens5` (*local*) →Colombia on `p4p1` (*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 `gps.ntp.br` and have been applied to correct the timestamps in logs.
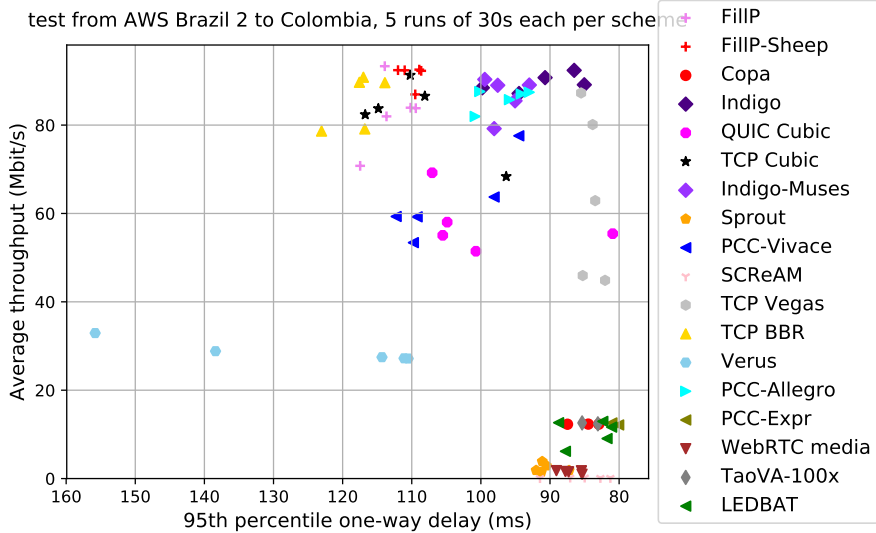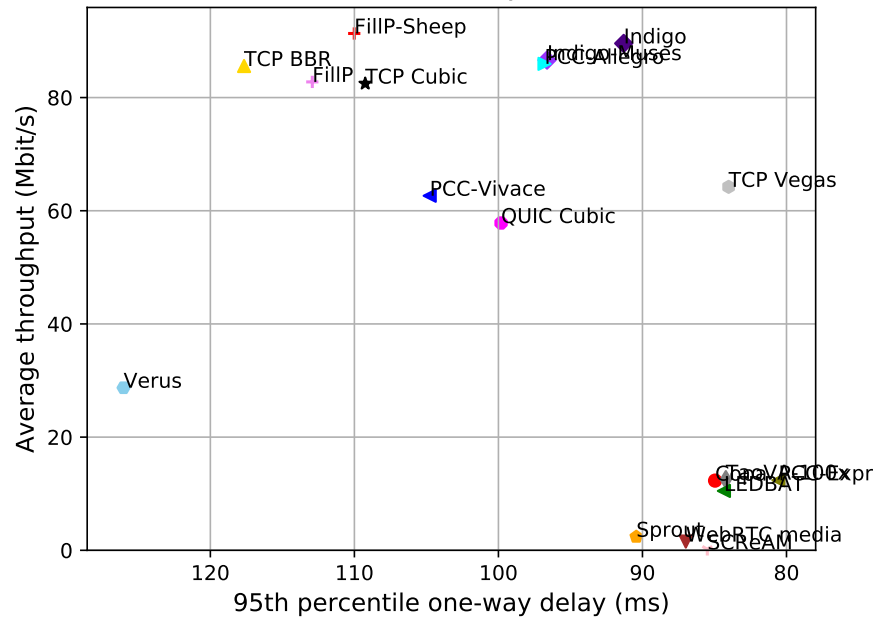
```
System info:
Linux 4.15.0-1020-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
net.ipv4.tcp_mem = 536870912 536870912 536870912

Git summary:
branch: muses @ e0a9b05ad97d268013b7cc9a9c95637b593a1b4c
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 7631aea3923a3598767c87765ae5103aca0678d3
third_party/pantheon-tunnel @ cbfce6db5ff5740dafe1771f813cd646339e1952
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
 M receiver/src/buffer.h
 M receiver/src/core.cpp
 M sender/src/buffer.h
 M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
 M src/ScreamClient
 M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
 M src/examples/cellsim.cc
 M src/examples/sproutbt2.cc
 M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
 M src/verus.hpp
 M tools/plot.py
```

```
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

test from AWS Brazil 2 to Colombia, 5 runs of 30s each per scheme
(mean of all runs by scheme)

test from AWS Brazil 2 to Colombia, 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	85.58	117.66	3.85
Copa	3	12.32	84.96	74.14
TCP Cubic	5	82.47	109.25	1.08
FillP	5	82.77	112.92	15.77
FillP-Sheep	5	91.32	110.01	3.35
Indigo	5	89.57	91.30	3.71
LEDBAT	5	10.49	84.35	0.26
Indigo-Muses	5	86.62	96.63	1.68
PCC-Allegro	5	85.96	96.80	1.89
PCC-Expr	2	12.36	80.56	56.70
QUIC Cubic	5	57.83	99.82	1.62
SCReAM	5	0.16	85.50	1.21
Sprout	5	2.39	90.43	0.63
TaoVA-100x	2	12.50	84.21	19.15
TCP Vegas	5	64.22	84.02	1.01
Verus	5	28.72	126.03	32.49
PCC-Vivace	5	62.65	104.77	1.77
WebRTC media	5	1.54	86.99	1.04

```
Run 1: Statistics of TCP BBR

Start at: 2018-09-07 09:59:52
End at: 2018-09-07 10:00:22
Local clock offset: 1.985 ms
Remote clock offset: 5.09 ms


# Below is generated by plot.py at 2018-09-07 11:46:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 90.83 Mbit/s
95th percentile per-packet one-way delay: 116.997 ms
Loss rate: 2.96%
-- Flow 1:
Average throughput: 90.83 Mbit/s
95th percentile per-packet one-way delay: 116.997 ms
Loss rate: 2.96%
```
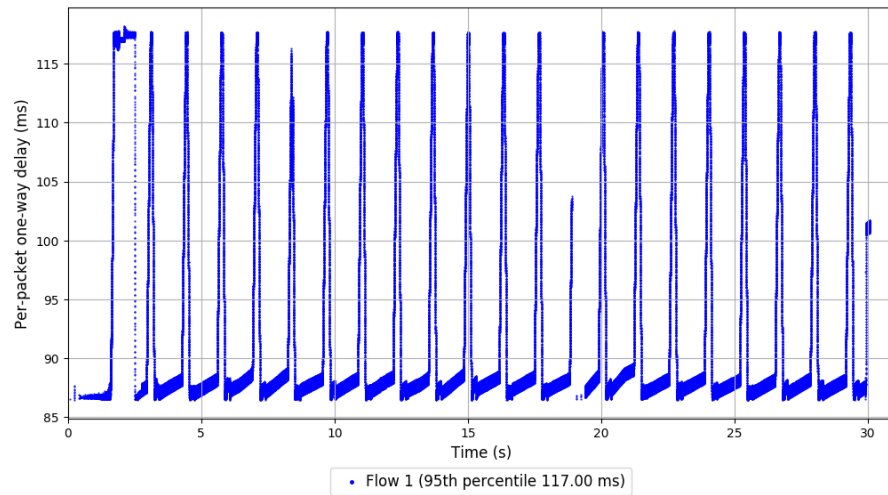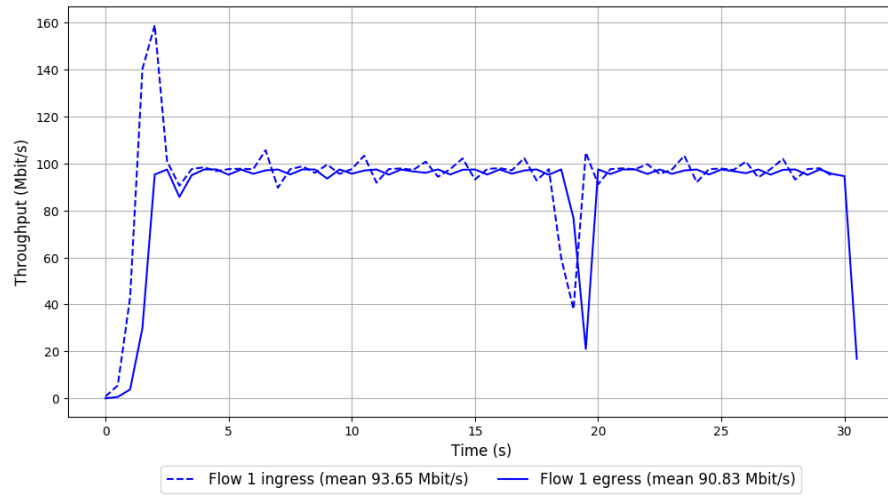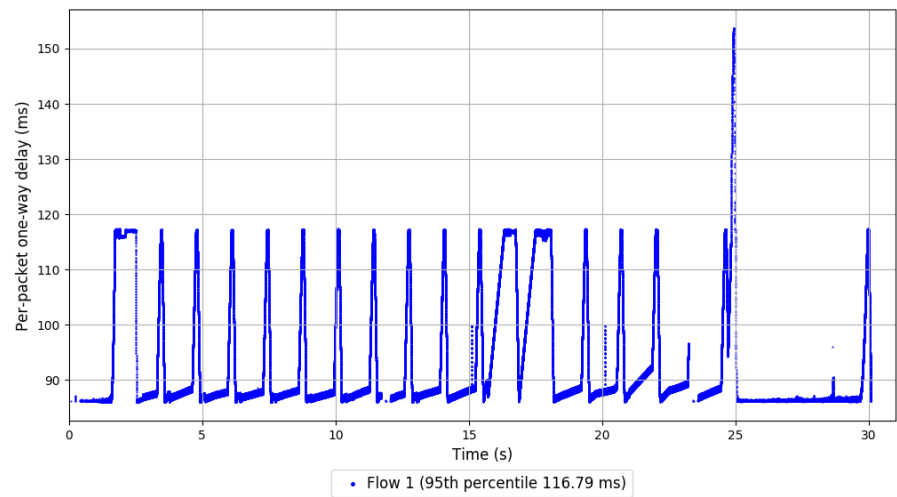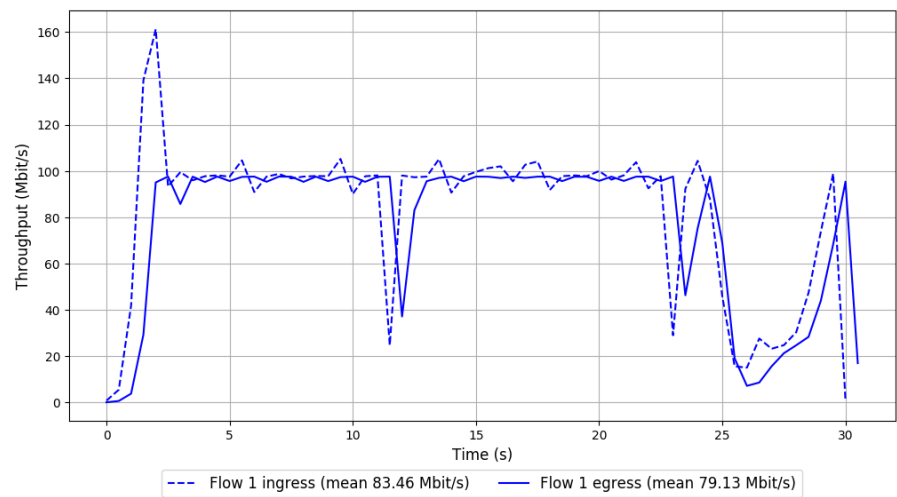
Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2018-09-07 10:21:14
End at: 2018-09-07 10:21:44
Local clock offset: 3.126 ms
Remote clock offset: 4.297 ms


# Below is generated by plot.py at 2018-09-07 11:46:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 79.13 Mbit/s
95th percentile per-packet one-way delay: 116.793 ms
Loss rate: 5.19%
-- Flow 1:
Average throughput: 79.13 Mbit/s
95th percentile per-packet one-way delay: 116.793 ms
Loss rate: 5.19%
```
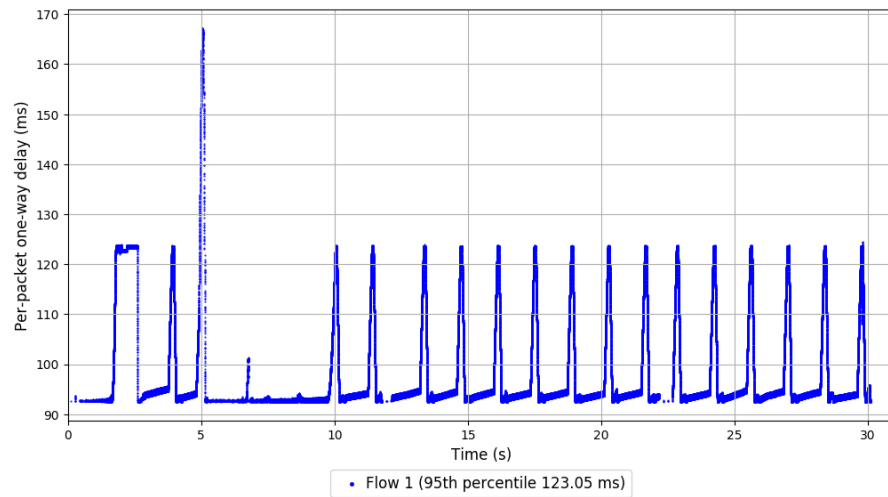
Run 2: Report of TCP BBR — Data Link

```
Run 3: Statistics of TCP BBR

Start at: 2018-09-07 10:42:34
End at: 2018-09-07 10:43:04
Local clock offset: 3.573 ms
Remote clock offset: 5.833 ms


# Below is generated by plot.py at 2018-09-07 11:46:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 78.65 Mbit/s
95th percentile per-packet one-way delay: 123.050 ms
Loss rate: 5.10%
-- Flow 1:
Average throughput: 78.65 Mbit/s
95th percentile per-packet one-way delay: 123.050 ms
Loss rate: 5.10%
```
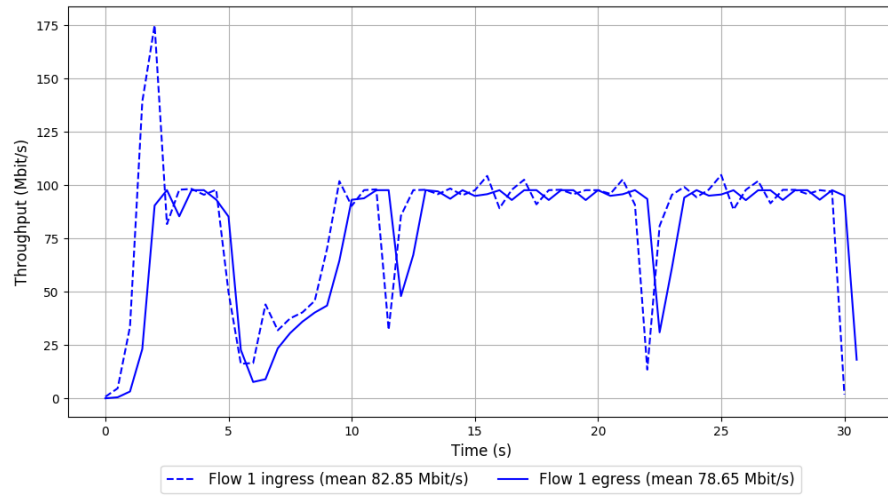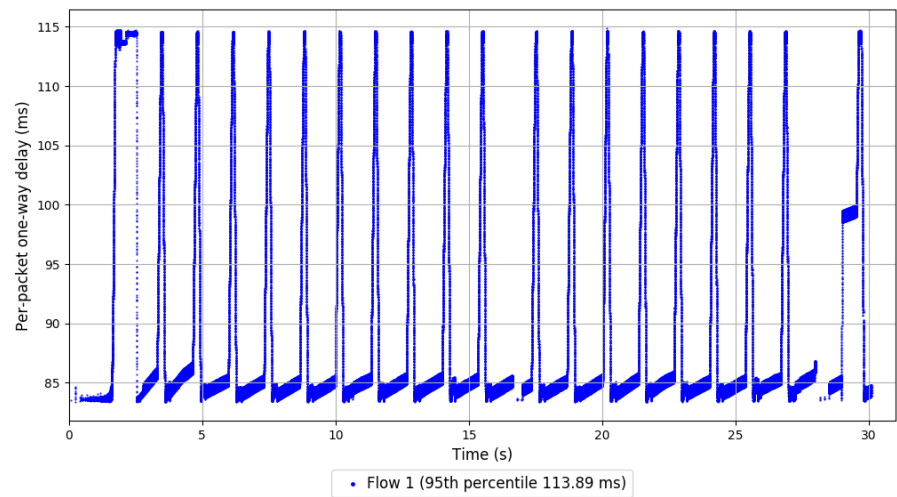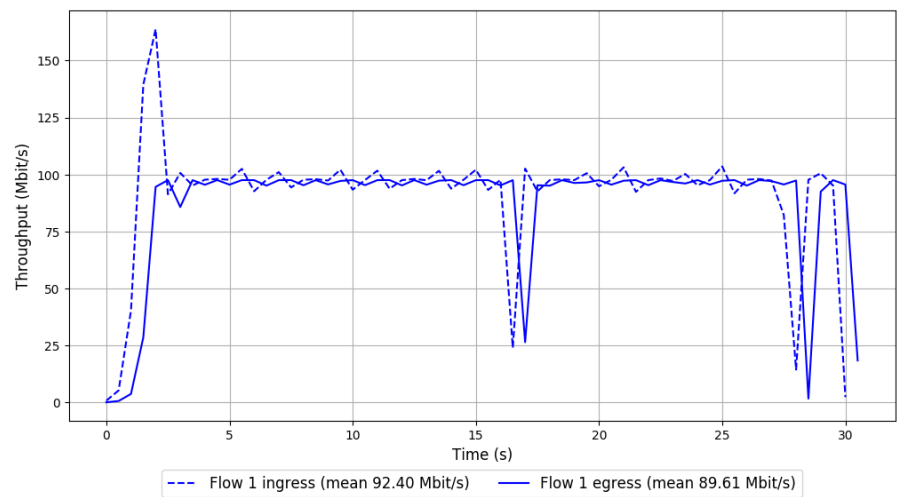
Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 82.85 Mbit/s) ---- Flow 1 egress (mean 78.65 Mbit/s)

Flow 1 (95th percentile 123.05 ms)

```
Run 4: Statistics of TCP BBR

Start at: 2018-09-07 11:03:51
End at: 2018-09-07 11:04:21
Local clock offset: 3.691 ms
Remote clock offset: 2.636 ms


# Below is generated by plot.py at 2018-09-07 11:46:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.61 Mbit/s
95th percentile per-packet one-way delay: 113.886 ms
Loss rate: 3.03%
-- Flow 1:
Average throughput: 89.61 Mbit/s
95th percentile per-packet one-way delay: 113.886 ms
Loss rate: 3.03%
```
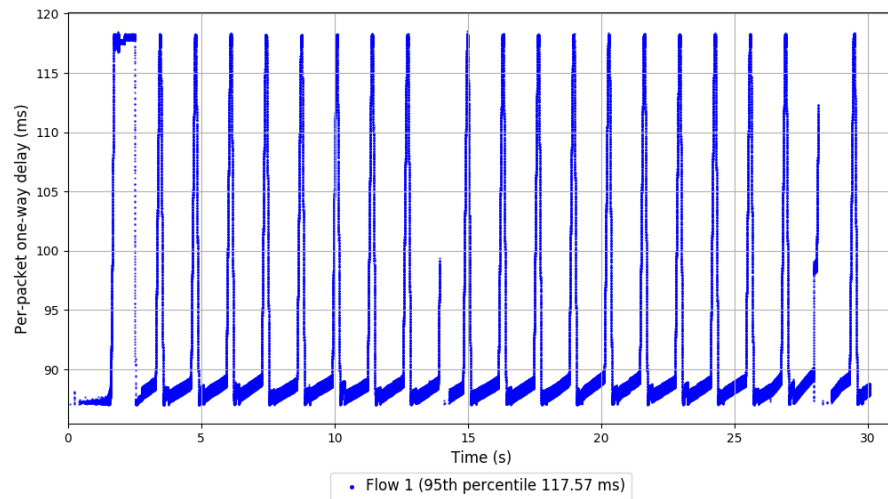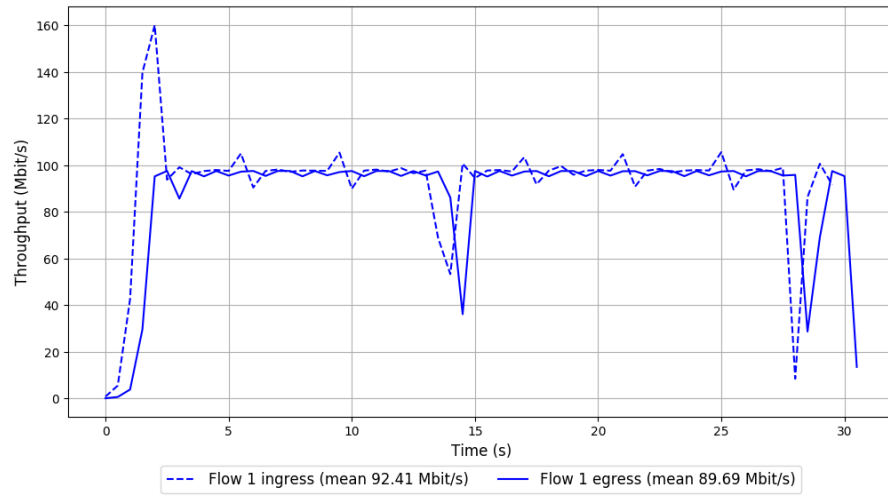
Run 4: Report of TCP BBR — Data Link

Flow 1 ingress (mean 92.40 Mbit/s) — — — Flow 1 egress (mean 89.61 Mbit/s)

• Flow 1 (95th percentile 113.89 ms)

```
Run 5: Statistics of TCP BBR

Start at: 2018-09-07 11:25:04
End at: 2018-09-07 11:25:34
Local clock offset: 3.652 ms
Remote clock offset: 5.369 ms


# Below is generated by plot.py at 2018-09-07 11:46:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.69 Mbit/s
95th percentile per-packet one-way delay: 117.572 ms
Loss rate: 2.95%
-- Flow 1:
Average throughput: 89.69 Mbit/s
95th percentile per-packet one-way delay: 117.572 ms
Loss rate: 2.95%
```
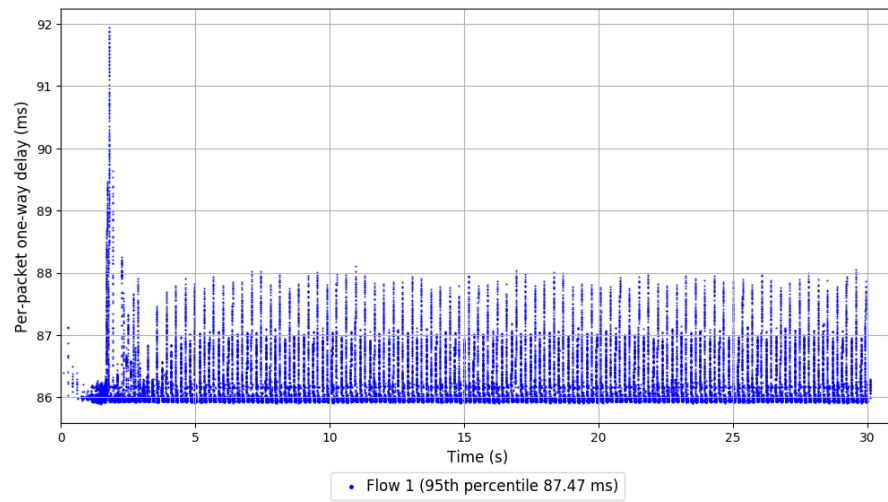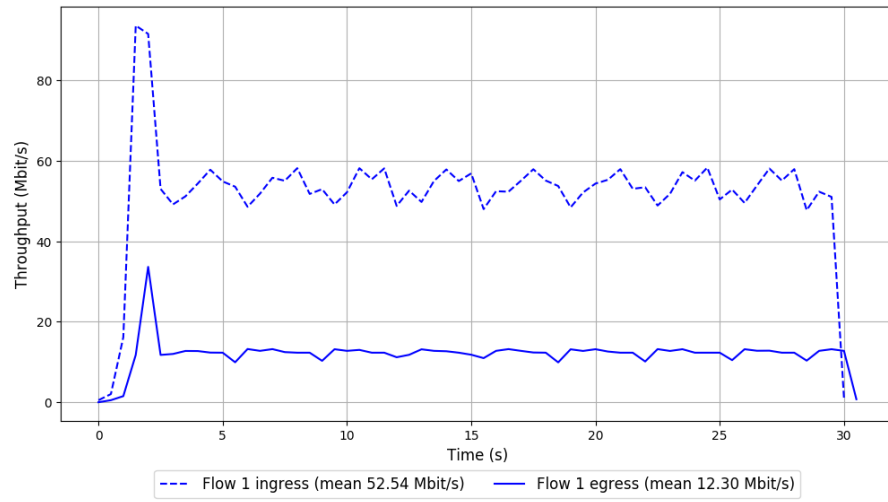
Run 5: Report of TCP BBR — Data Link

Flow 1 ingress (mean 92.41 Mbit/s)   Flow 1 egress (mean 89.69 Mbit/s)

• Flow 1 (95th percentile 117.57 ms)

```
Run 1: Statistics of Copa

Start at: 2018-09-07 10:07:08
End at: 2018-09-07 10:07:38
Local clock offset: 2.244 ms
Remote clock offset: 5.008 ms


# Below is generated by plot.py at 2018-09-07 11:46:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.30 Mbit/s
95th percentile per-packet one-way delay: 87.469 ms
Loss rate: 76.60%
-- Flow 1:
Average throughput: 12.30 Mbit/s
95th percentile per-packet one-way delay: 87.469 ms
Loss rate: 76.60%
```
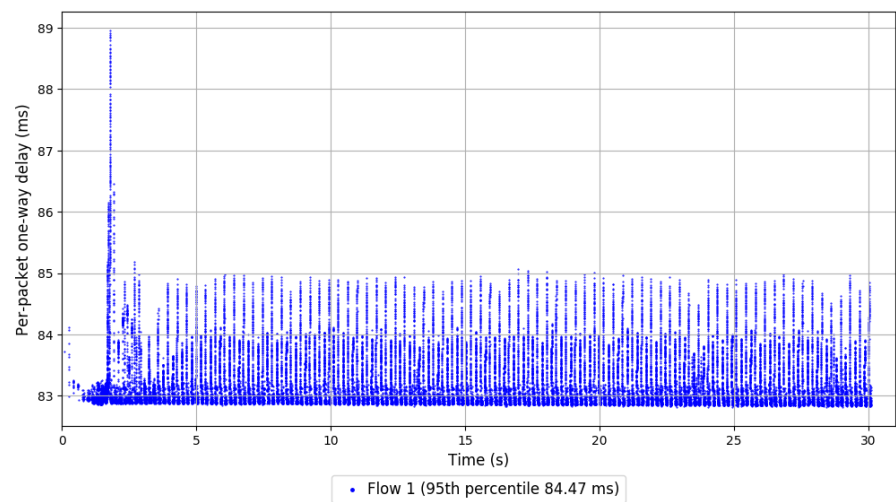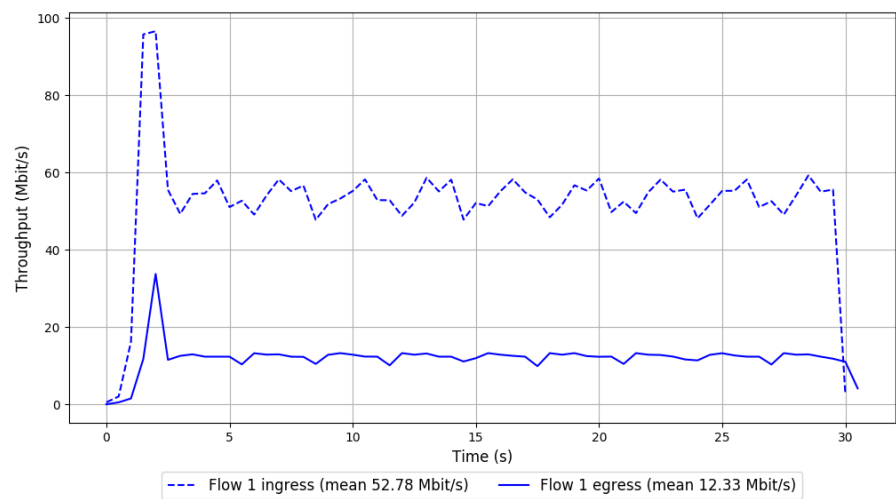
Run 1: Report of Copa — Data Link

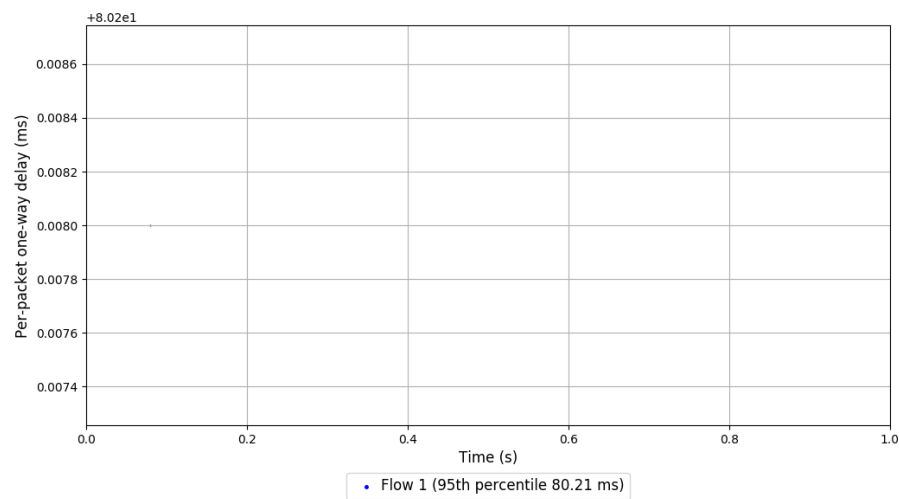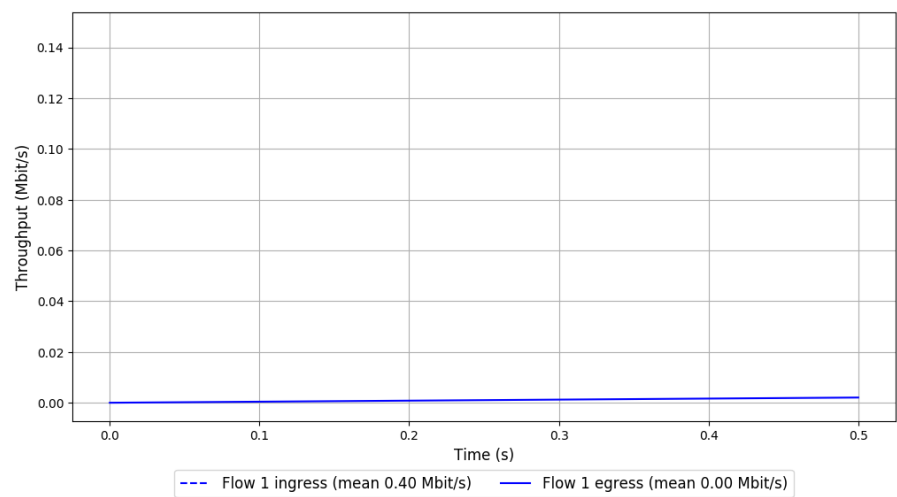Flow 1 ingress (mean 52.54 Mbit/s)   Flow 1 egress (mean 12.30 Mbit/s)

Flow 1 (95th percentile 87.47 ms)

```
Run 2: Statistics of Copa

Start at: 2018-09-07 10:28:23
End at: 2018-09-07 10:28:53
Local clock offset: 3.068 ms
Remote clock offset: 0.468 ms
```

Run 2: Report of Copa — Data Link

Flow 1 ingress (mean 0.34 Mbit/s) —— Flow 1 egress (mean 0.00 Mbit/s)

• Flow 1 (95th percentile 81.63 ms)

```
Run 3: Statistics of Copa

Start at: 2018-09-07 10:49:43
End at: 2018-09-07 10:50:13
Local clock offset: 3.563 ms
Remote clock offset: 2.635 ms


# Below is generated by plot.py at 2018-09-07 11:46:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.33 Mbit/s
95th percentile per-packet one-way delay: 84.466 ms
Loss rate: 76.65%
-- Flow 1:
Average throughput: 12.33 Mbit/s
95th percentile per-packet one-way delay: 84.466 ms
Loss rate: 76.65%
```
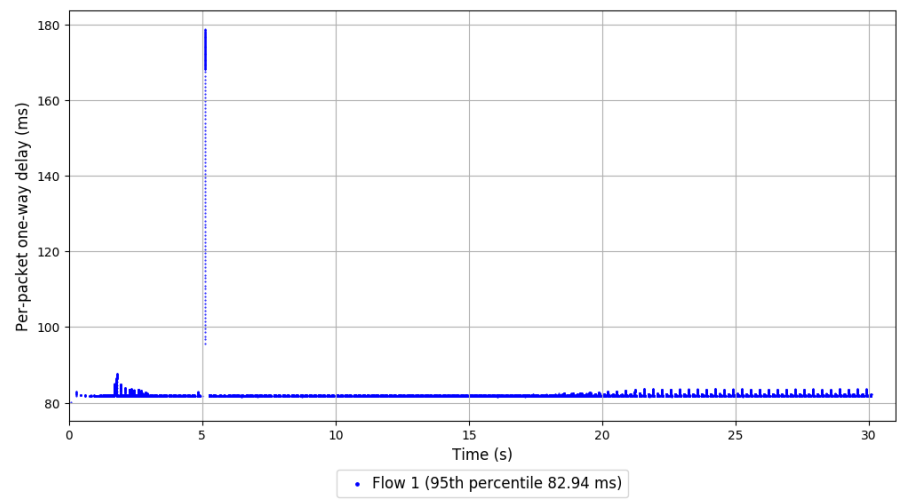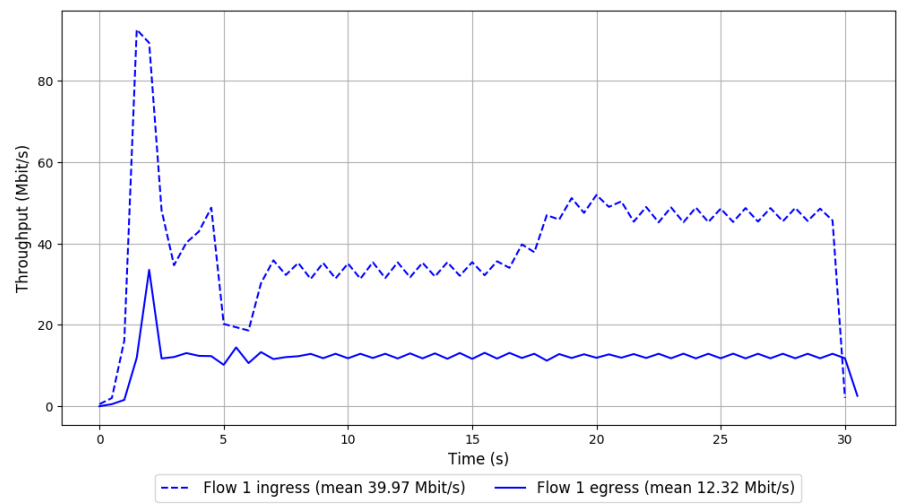
Run 3: Report of Copa — Data Link

Flow 1 ingress (mean 52.78 Mbit/s) --- Flow 1 egress (mean 12.33 Mbit/s)

• Flow 1 (95th percentile 84.47 ms)

```
Run 4: Statistics of Copa

Start at: 2018-09-07 11:11:01
End at: 2018-09-07 11:11:31
Local clock offset: 4.532 ms
Remote clock offset: 1.943 ms
```

Run 4: Report of Copa — Data Link

```
Run 5: Statistics of Copa

Start at: 2018-09-07 11:32:08
End at: 2018-09-07 11:32:38
Local clock offset: 4.398 ms
Remote clock offset: 1.259 ms


# Below is generated by plot.py at 2018-09-07 11:46:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.32 Mbit/s
95th percentile per-packet one-way delay: 82.939 ms
Loss rate: 69.18%
-- Flow 1:
Average throughput: 12.32 Mbit/s
95th percentile per-packet one-way delay: 82.939 ms
Loss rate: 69.18%
```
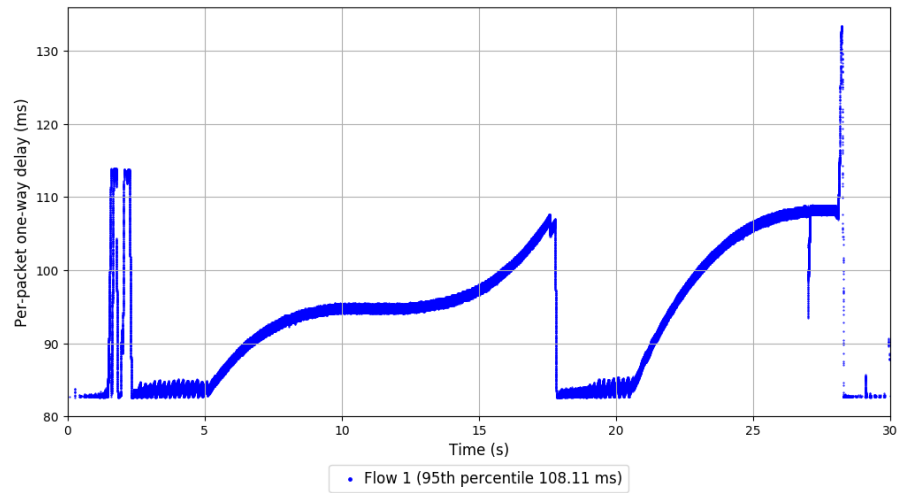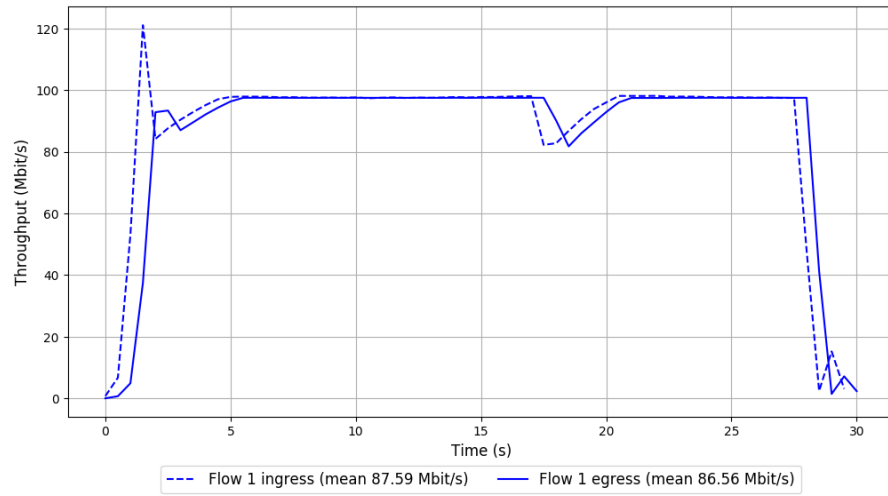
Run 5: Report of Copa — Data Link

Flow 1 ingress (mean 39.97 Mbit/s)   Flow 1 egress (mean 12.32 Mbit/s)

Flow 1 (95th percentile 82.94 ms)

```
Run 1: Statistics of TCP Cubic

Start at: 2018-09-07 10:14:11
End at: 2018-09-07 10:14:41
Local clock offset: 1.074 ms
Remote clock offset: 0.792 ms


# Below is generated by plot.py at 2018-09-07 11:46:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 86.56 Mbit/s
95th percentile per-packet one-way delay: 108.111 ms
Loss rate: 1.18%
-- Flow 1:
Average throughput: 86.56 Mbit/s
95th percentile per-packet one-way delay: 108.111 ms
Loss rate: 1.18%
```
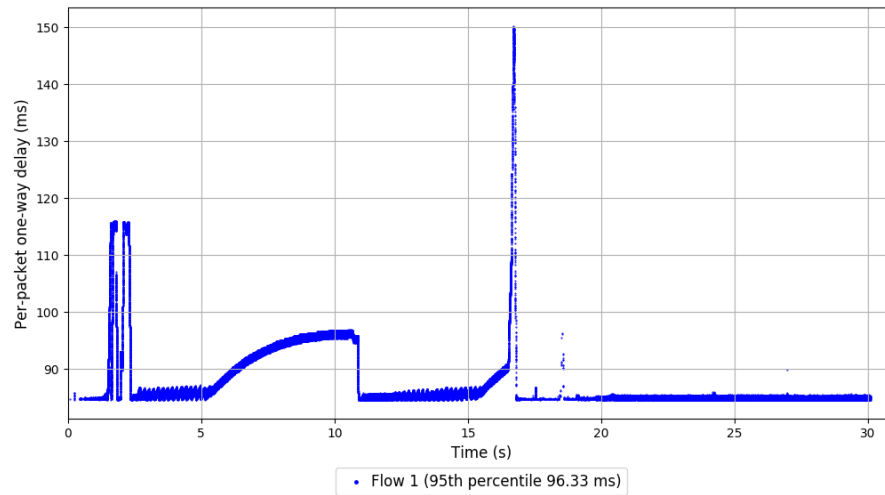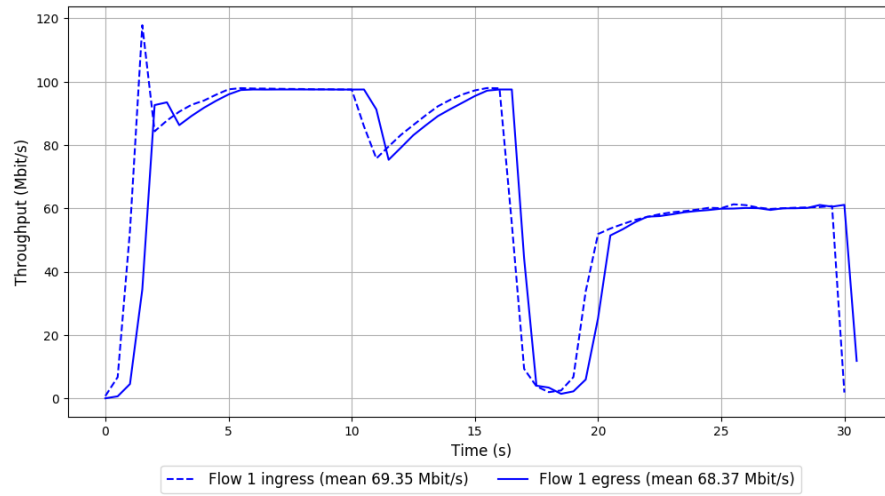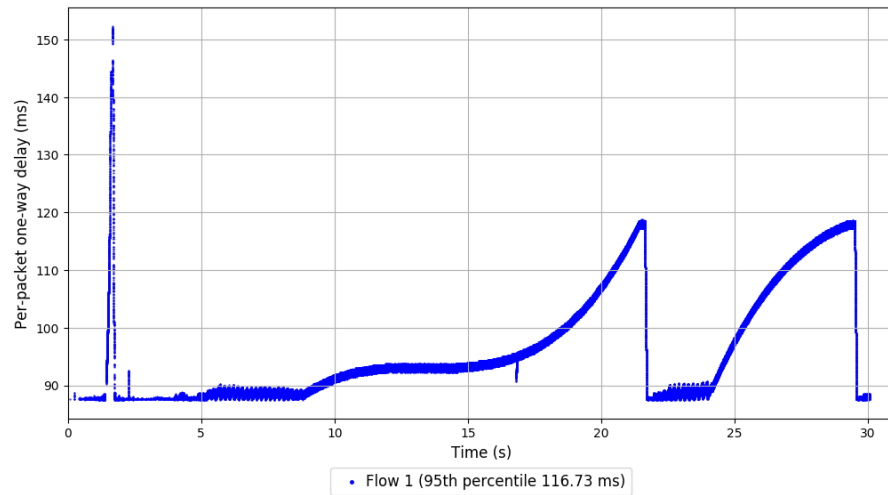
Run 1: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 87.59 Mbit/s)　　Flow 1 egress (mean 86.56 Mbit/s)

• Flow 1 (95th percentile 108.11 ms)

```
Run 2: Statistics of TCP Cubic

Start at: 2018-09-07 10:35:22
End at: 2018-09-07 10:35:52
Local clock offset: 3.386 ms
Remote clock offset: 1.08 ms


# Below is generated by plot.py at 2018-09-07 11:46:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 68.37 Mbit/s
95th percentile per-packet one-way delay: 96.335 ms
Loss rate: 1.43%
-- Flow 1:
Average throughput: 68.37 Mbit/s
95th percentile per-packet one-way delay: 96.335 ms
Loss rate: 1.43%
```
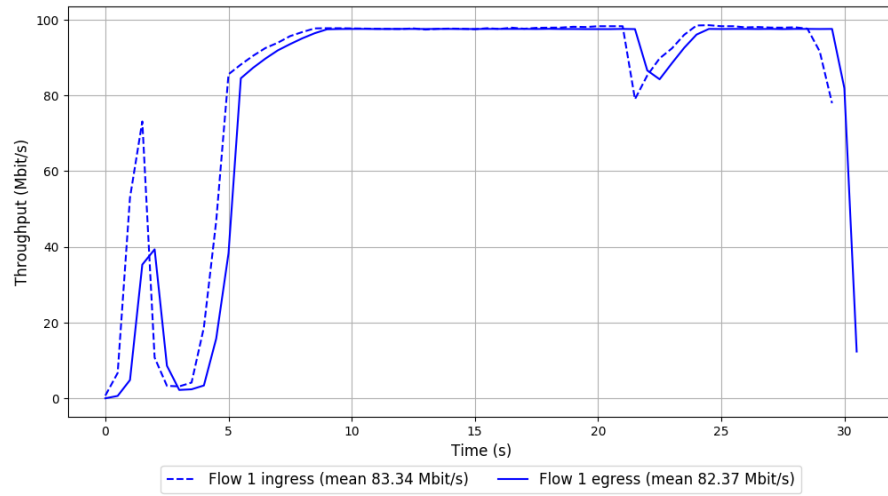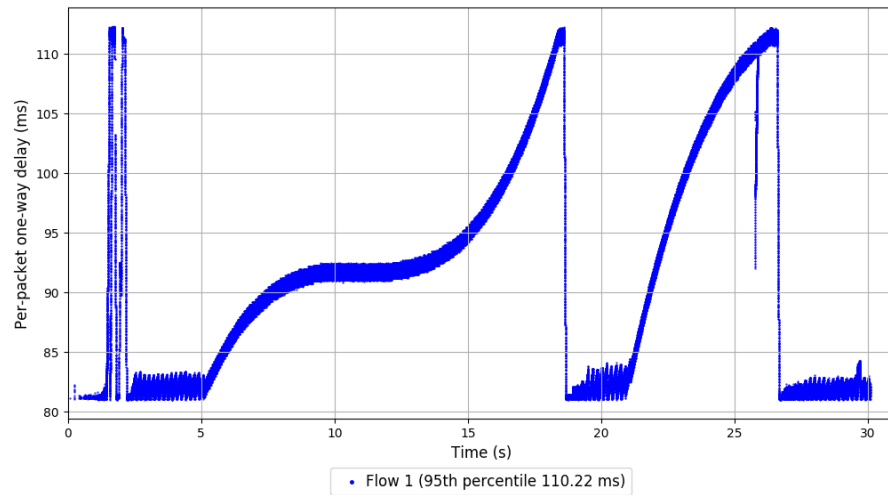
Run 2: Report of TCP Cubic — Data Link

```
Run 3: Statistics of TCP Cubic

Start at: 2018-09-07 10:56:37
End at: 2018-09-07 10:57:07
Local clock offset: 3.665 ms
Remote clock offset: 7.061 ms


# Below is generated by plot.py at 2018-09-07 11:46:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 82.37 Mbit/s
95th percentile per-packet one-way delay: 116.735 ms
Loss rate: 1.16%
-- Flow 1:
Average throughput: 82.37 Mbit/s
95th percentile per-packet one-way delay: 116.735 ms
Loss rate: 1.16%
```
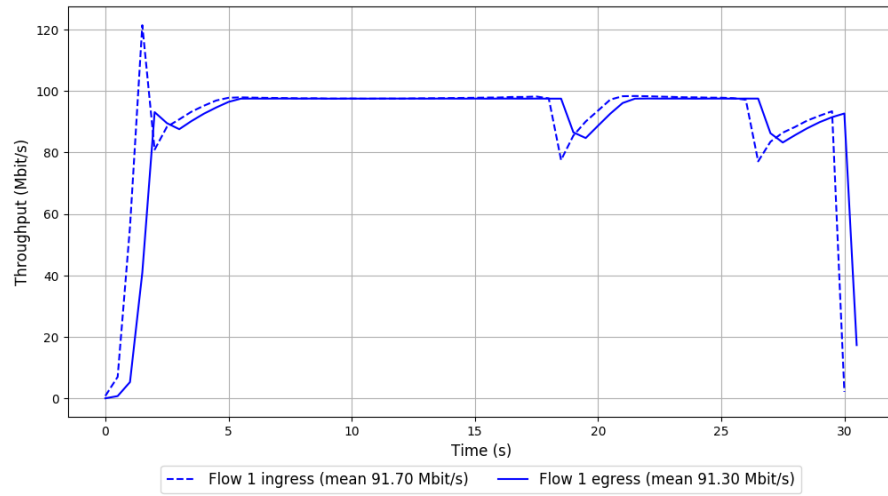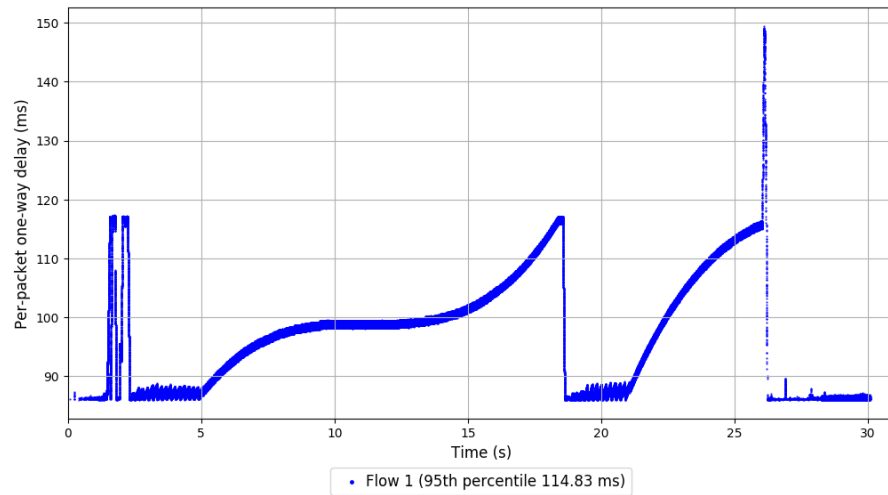
Run 3: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 83.34 Mbit/s) --- Flow 1 egress (mean 82.37 Mbit/s)

Flow 1 (95th percentile 116.73 ms)

```
Run 4: Statistics of TCP Cubic

Start at: 2018-09-07 11:18:01
End at: 2018-09-07 11:18:31
Local clock offset: 4.418 ms
Remote clock offset: 1.977 ms


# Below is generated by plot.py at 2018-09-07 11:47:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.30 Mbit/s
95th percentile per-packet one-way delay: 110.222 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 91.30 Mbit/s
95th percentile per-packet one-way delay: 110.222 ms
Loss rate: 0.43%
```
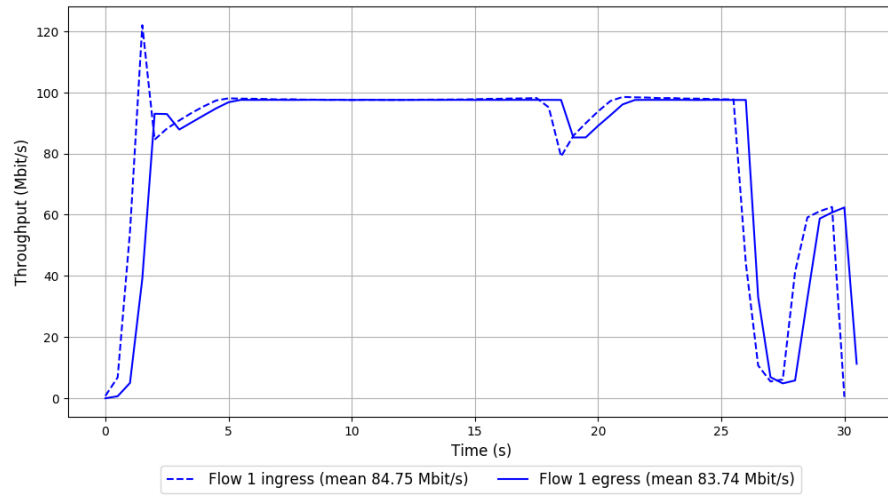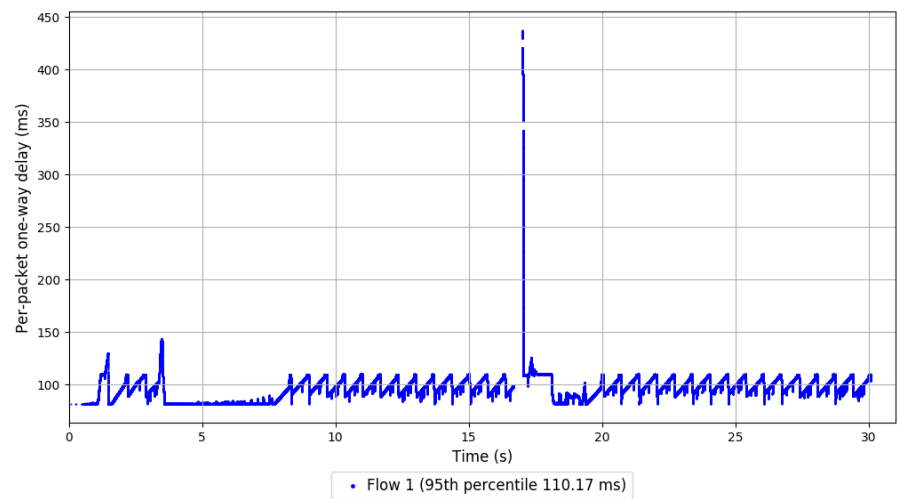
Run 4: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 91.70 Mbit/s) ——— Flow 1 egress (mean 91.30 Mbit/s)

• Flow 1 (95th percentile 110.22 ms)

```
Run 5: Statistics of TCP Cubic

Start at: 2018-09-07 11:39:13
End at: 2018-09-07 11:39:43
Local clock offset: 4.367 ms
Remote clock offset: 5.826 ms


# Below is generated by plot.py at 2018-09-07 11:47:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 83.74 Mbit/s
95th percentile per-packet one-way delay: 114.833 ms
Loss rate: 1.20%
-- Flow 1:
Average throughput: 83.74 Mbit/s
95th percentile per-packet one-way delay: 114.833 ms
Loss rate: 1.20%
```
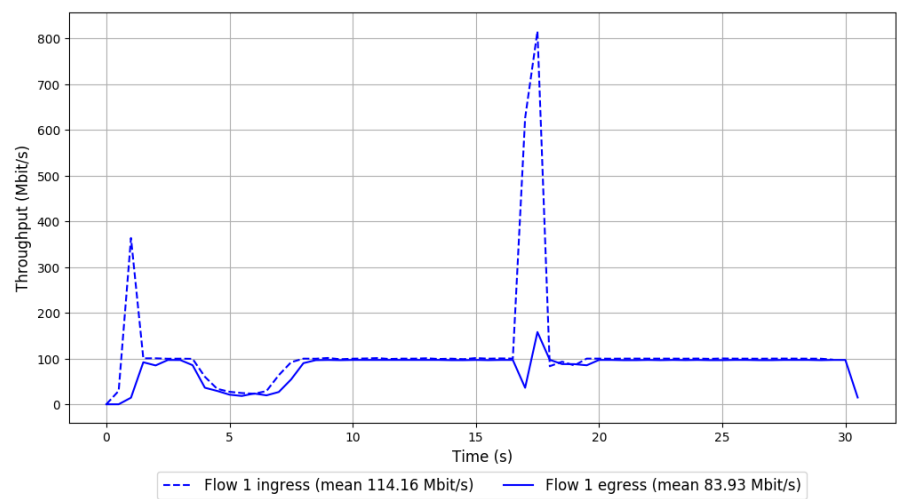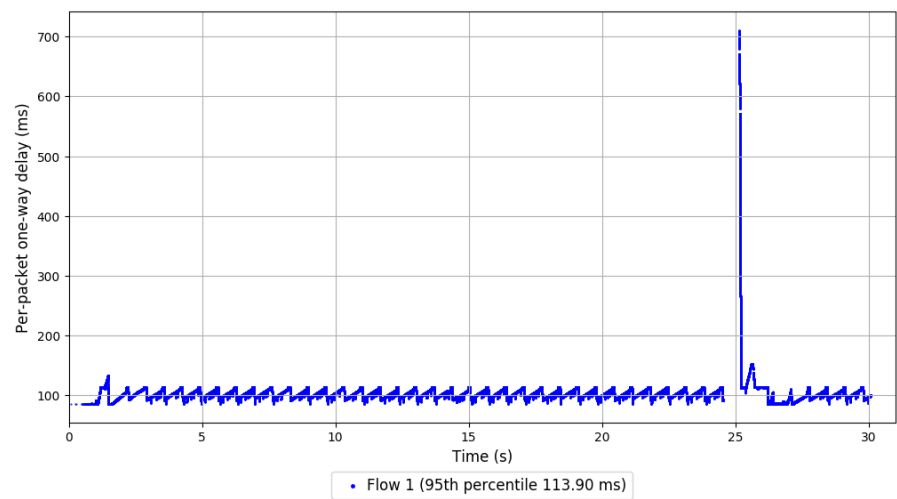
Run 5: Report of TCP Cubic — Data Link

```
Run 1: Statistics of FillP

Start at: 2018-09-07 10:03:36
End at: 2018-09-07 10:04:06
Local clock offset: 2.411 ms
Remote clock offset: 0.987 ms


# Below is generated by plot.py at 2018-09-07 11:48:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 83.93 Mbit/s
95th percentile per-packet one-way delay: 110.170 ms
Loss rate: 26.42%
-- Flow 1:
Average throughput: 83.93 Mbit/s
95th percentile per-packet one-way delay: 110.170 ms
Loss rate: 26.42%
```
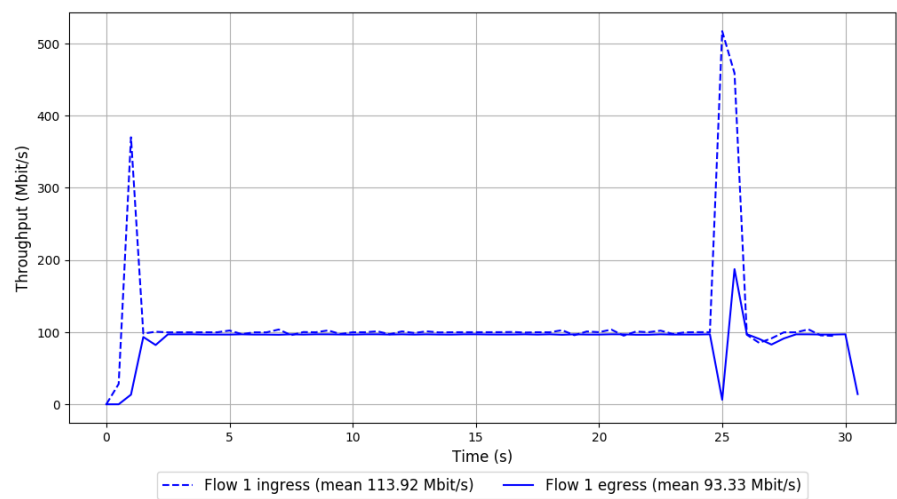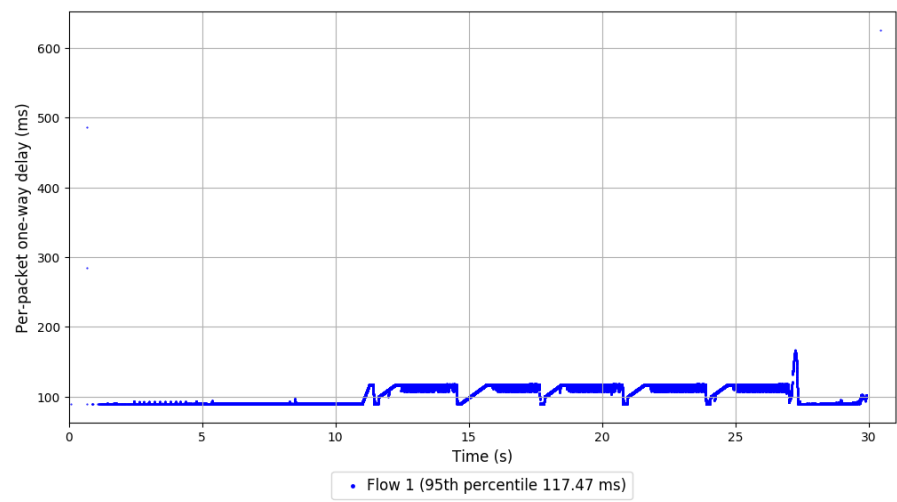
Run 1: Report of FillP — Data Link

Flow 1 ingress (mean 114.16 Mbit/s) --- Flow 1 egress (mean 83.93 Mbit/s)

Flow 1 (95th percentile 110.17 ms)

```
Run 2: Statistics of FillP

Start at: 2018-09-07 10:24:46
End at: 2018-09-07 10:25:16
Local clock offset: 3.485 ms
Remote clock offset: 3.851 ms


# Below is generated by plot.py at 2018-09-07 11:48:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 93.33 Mbit/s
95th percentile per-packet one-way delay: 113.902 ms
Loss rate: 18.04%
-- Flow 1:
Average throughput: 93.33 Mbit/s
95th percentile per-packet one-way delay: 113.902 ms
Loss rate: 18.04%
```
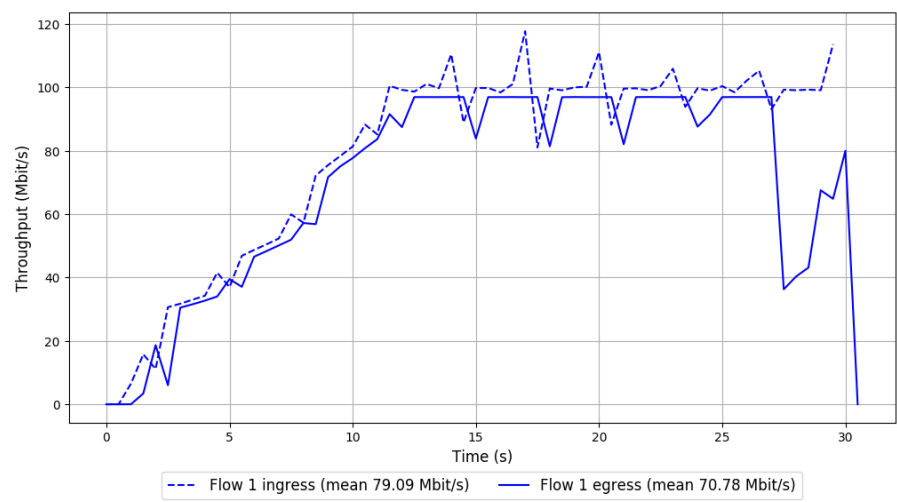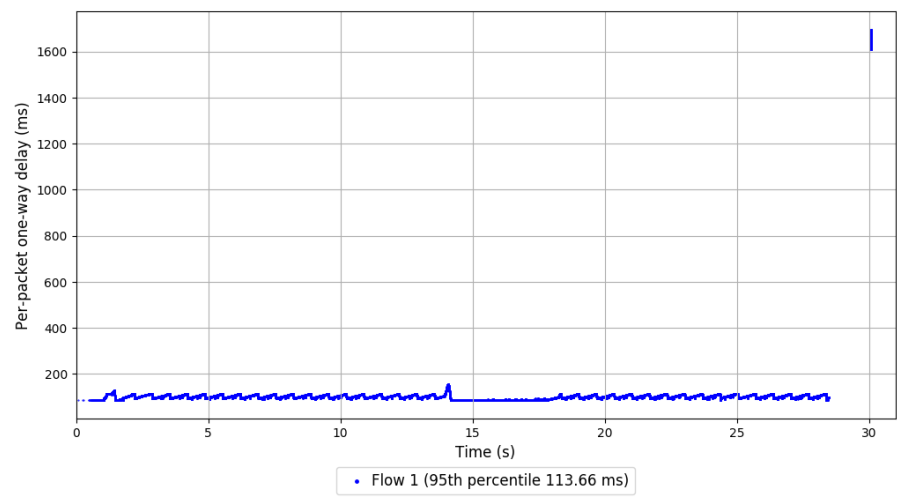
Run 2: Report of FillP — Data Link

```
Run 3: Statistics of FillP

Start at: 2018-09-07 10:46:12
End at: 2018-09-07 10:46:42
Local clock offset: 4.322 ms
Remote clock offset: 5.82 ms


# Below is generated by plot.py at 2018-09-07 11:48:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 70.78 Mbit/s
95th percentile per-packet one-way delay: 117.466 ms
Loss rate: 9.40%
-- Flow 1:
Average throughput: 70.78 Mbit/s
95th percentile per-packet one-way delay: 117.466 ms
Loss rate: 9.40%
```
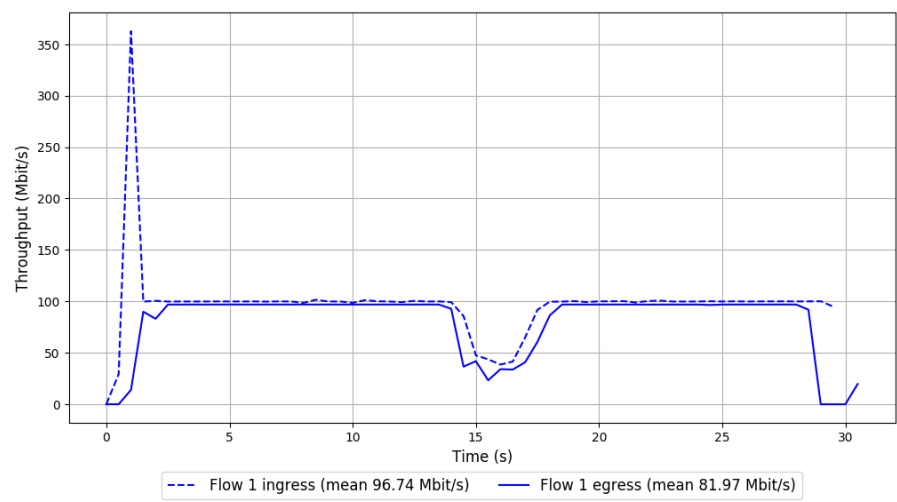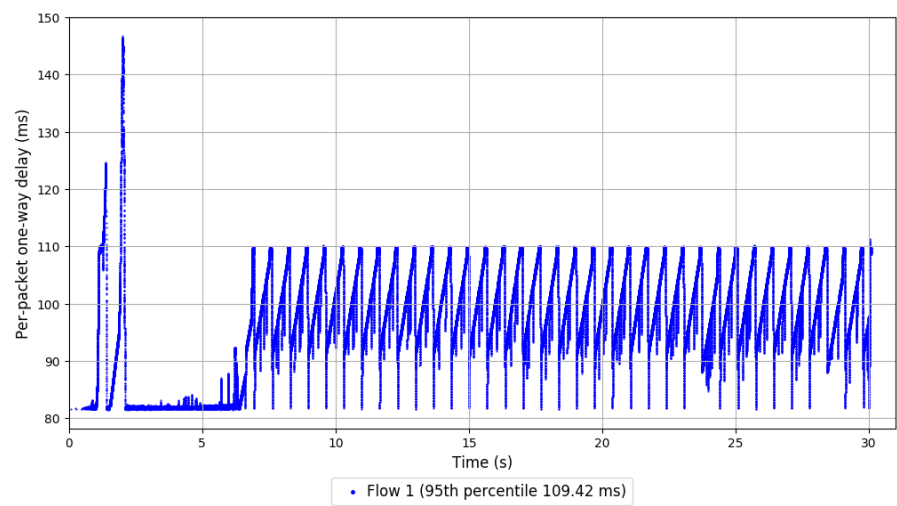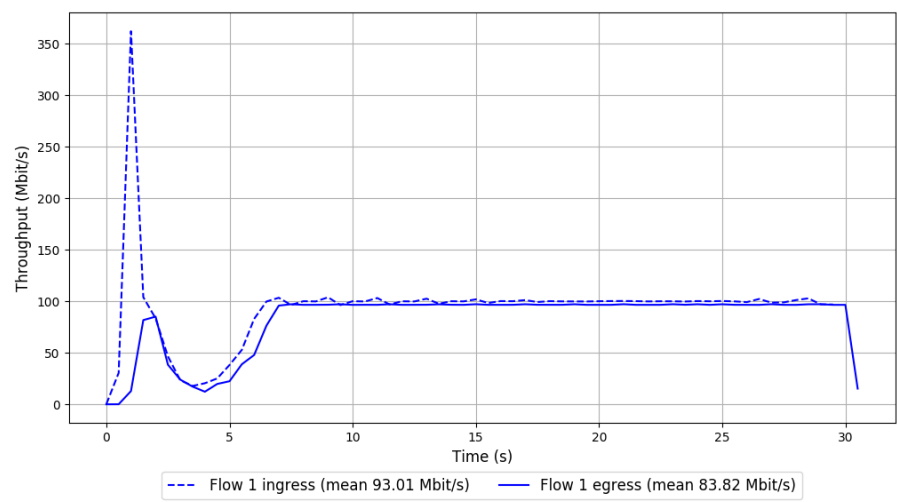
Run 3: Report of FillP — Data Link

Flow 1 ingress (mean 79.09 Mbit/s)   Flow 1 egress (mean 70.78 Mbit/s)

Flow 1 (95th percentile 117.47 ms)

```
Run 4: Statistics of FillP

Start at: 2018-09-07 11:07:25
End at: 2018-09-07 11:07:55
Local clock offset: 4.502 ms
Remote clock offset: 6.345 ms


# Below is generated by plot.py at 2018-09-07 11:48:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 81.97 Mbit/s
95th percentile per-packet one-way delay: 113.655 ms
Loss rate: 15.19%
-- Flow 1:
Average throughput: 81.97 Mbit/s
95th percentile per-packet one-way delay: 113.655 ms
Loss rate: 15.19%
```
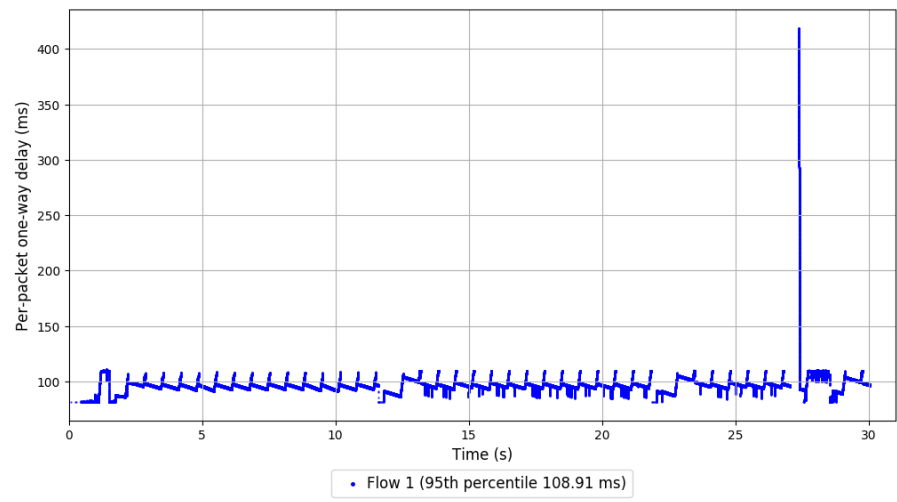
Run 4: Report of FillP — Data Link

```
Run 5: Statistics of FillP

Start at: 2018-09-07 11:28:37
End at: 2018-09-07 11:29:07
Local clock offset: 4.402 ms
Remote clock offset: 1.095 ms

# Below is generated by plot.py at 2018-09-07 11:48:10
# Datalink statistics
-- Total of 1 flow:
Average throughput: 83.82 Mbit/s
95th percentile per-packet one-way delay: 109.417 ms
Loss rate: 9.80%
-- Flow 1:
Average throughput: 83.82 Mbit/s
95th percentile per-packet one-way delay: 109.417 ms
Loss rate: 9.80%
```
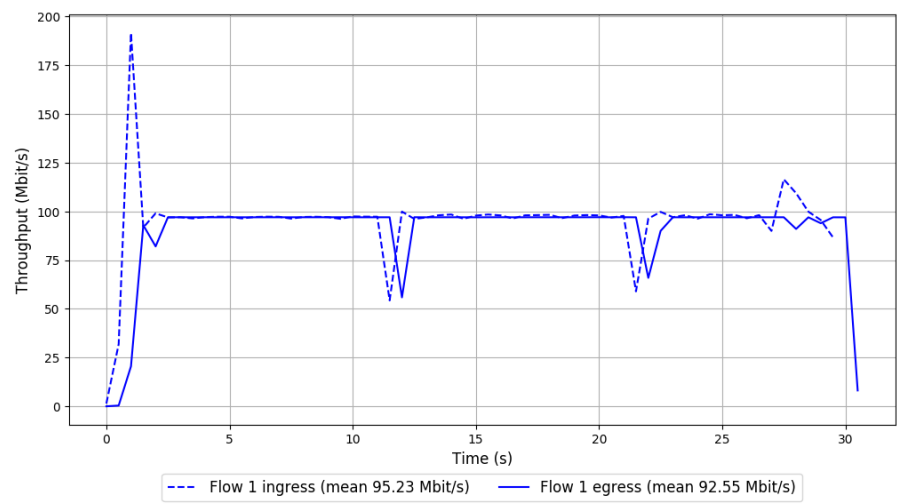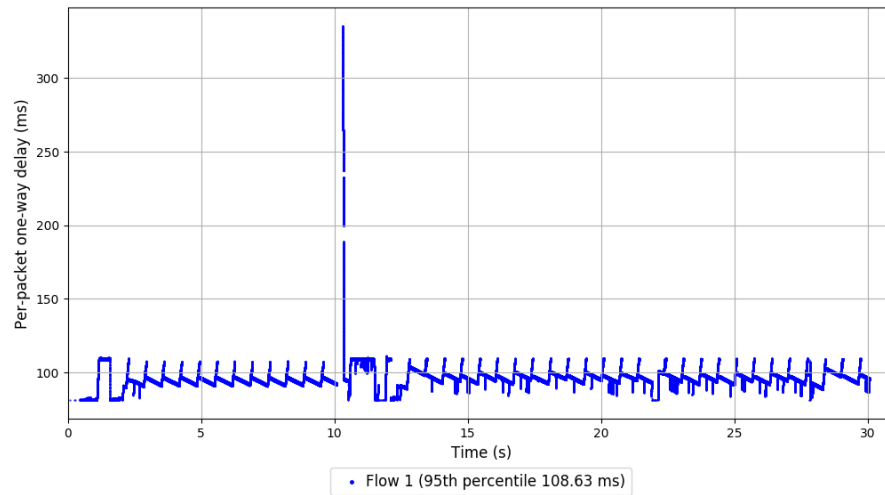
Run 5: Report of FillP — Data Link

Flow 1 ingress (mean 93.01 Mbit/s) Flow 1 egress (mean 83.82 Mbit/s)

Flow 1 (95th percentile 109.42 ms)

```
Run 1: Statistics of FillP-Sheep

Start at: 2018-09-07 10:18:54
End at: 2018-09-07 10:19:24
Local clock offset: 1.979 ms
Remote clock offset: 0.497 ms


# Below is generated by plot.py at 2018-09-07 11:48:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.55 Mbit/s
95th percentile per-packet one-way delay: 108.912 ms
Loss rate: 2.76%
-- Flow 1:
Average throughput: 92.55 Mbit/s
95th percentile per-packet one-way delay: 108.912 ms
Loss rate: 2.76%
```
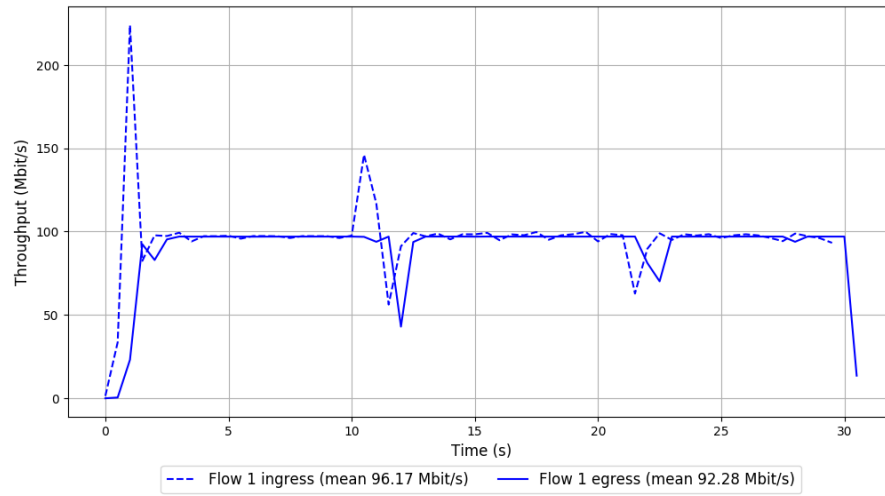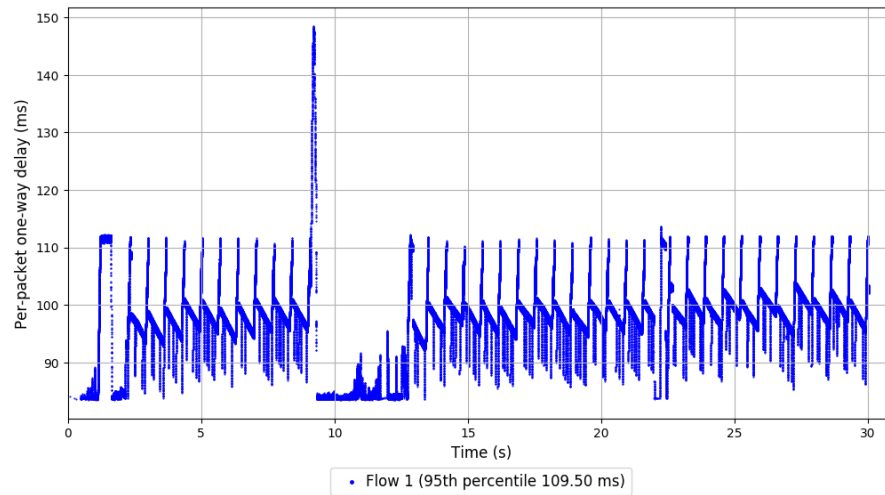
Run 1: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 95.23 Mbit/s) ——— Flow 1 egress (mean 92.55 Mbit/s)

• Flow 1 (95th percentile 108.91 ms)

```
Run 2: Statistics of FillP-Sheep

Start at: 2018-09-07 10:40:08
End at: 2018-09-07 10:40:38
Local clock offset: 3.52 ms
Remote clock offset: 1.705 ms


# Below is generated by plot.py at 2018-09-07 11:48:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.28 Mbit/s
95th percentile per-packet one-way delay: 108.633 ms
Loss rate: 3.99%
-- Flow 1:
Average throughput: 92.28 Mbit/s
95th percentile per-packet one-way delay: 108.633 ms
Loss rate: 3.99%
```
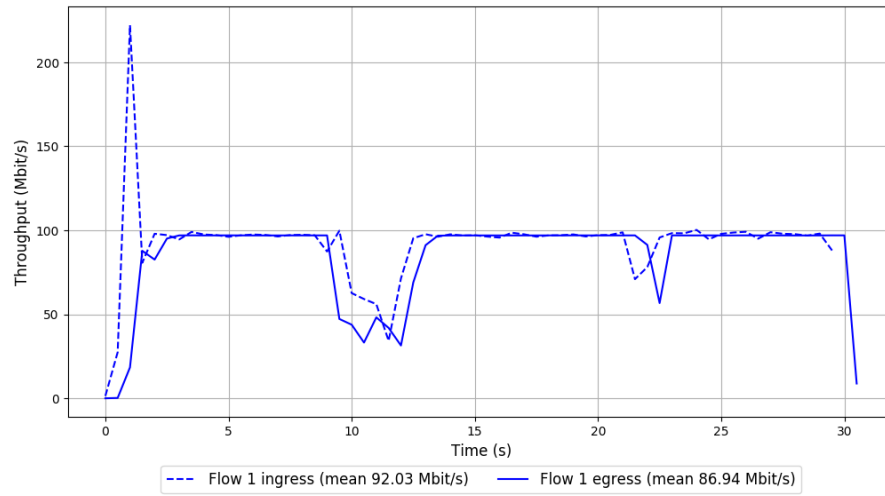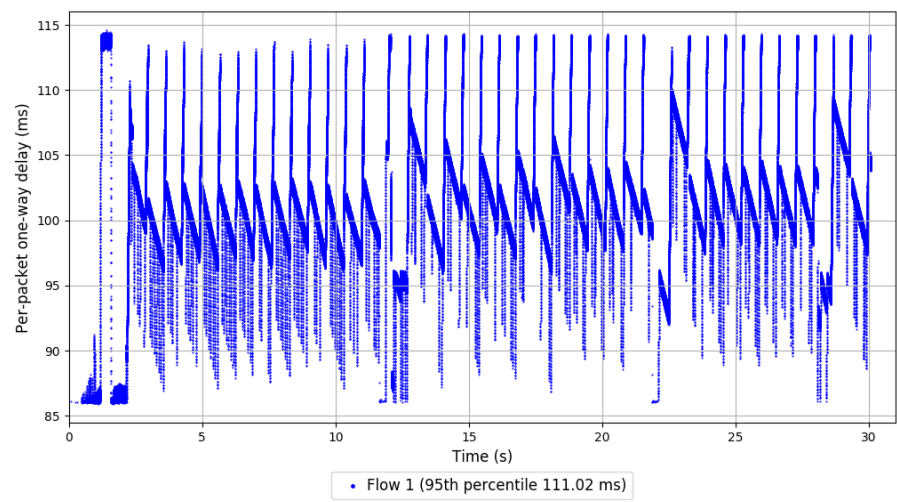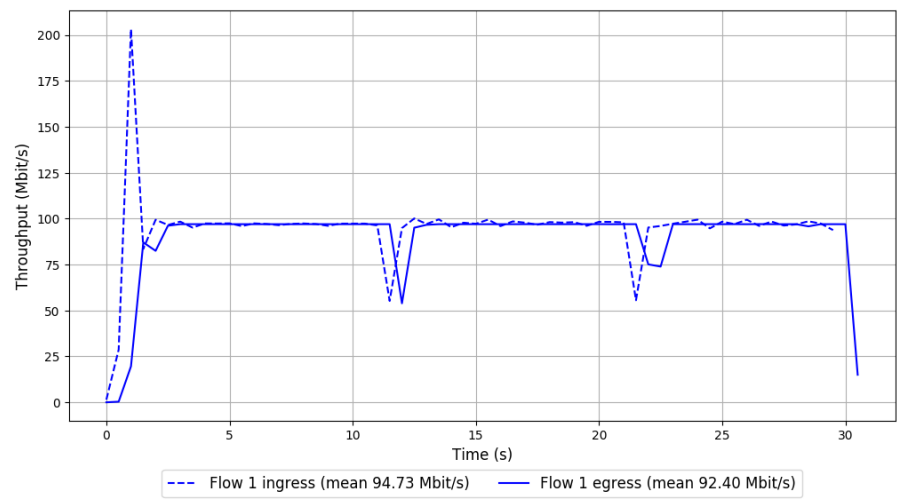
Run 2: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 96.17 Mbit/s) ---- Flow 1 egress (mean 92.28 Mbit/s)

Flow 1 (95th percentile 108.63 ms)

```
Run 3: Statistics of FillP-Sheep

Start at: 2018-09-07 11:01:30
End at: 2018-09-07 11:02:00
Local clock offset: 3.686 ms
Remote clock offset: 2.341 ms


# Below is generated by plot.py at 2018-09-07 11:48:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 86.94 Mbit/s
95th percentile per-packet one-way delay: 109.495 ms
Loss rate: 5.48%
-- Flow 1:
Average throughput: 86.94 Mbit/s
95th percentile per-packet one-way delay: 109.495 ms
Loss rate: 5.48%
```
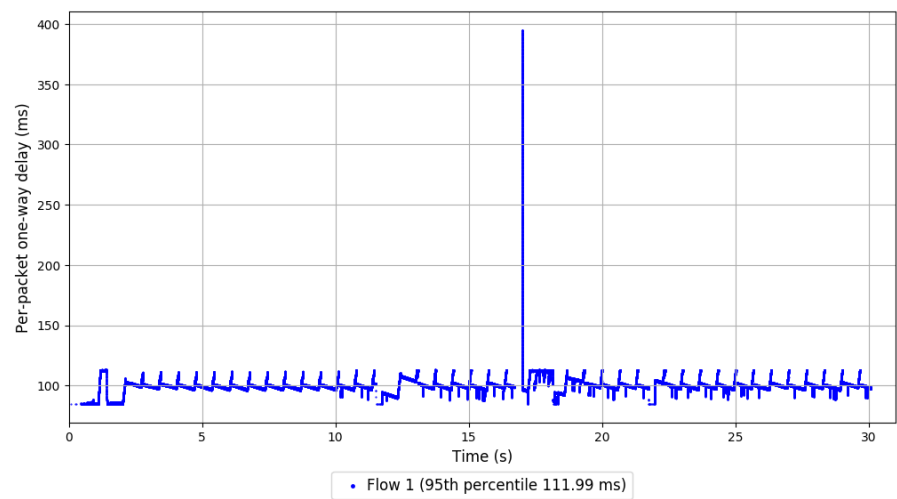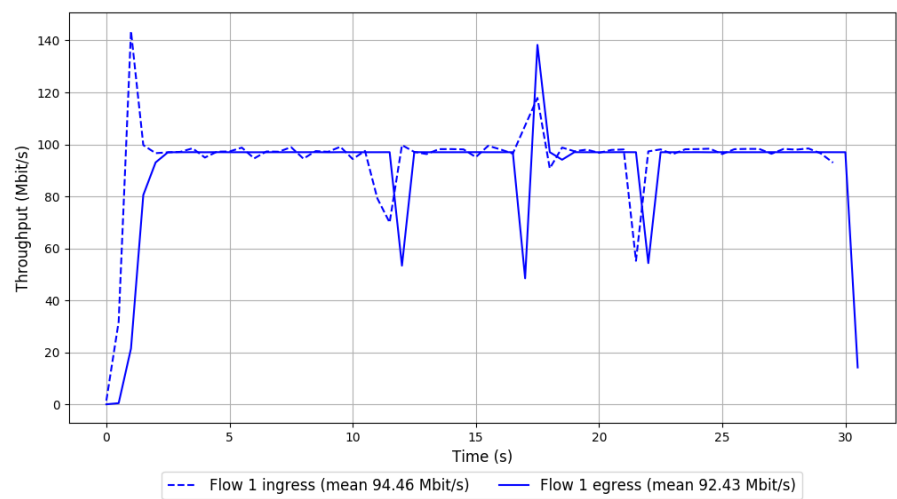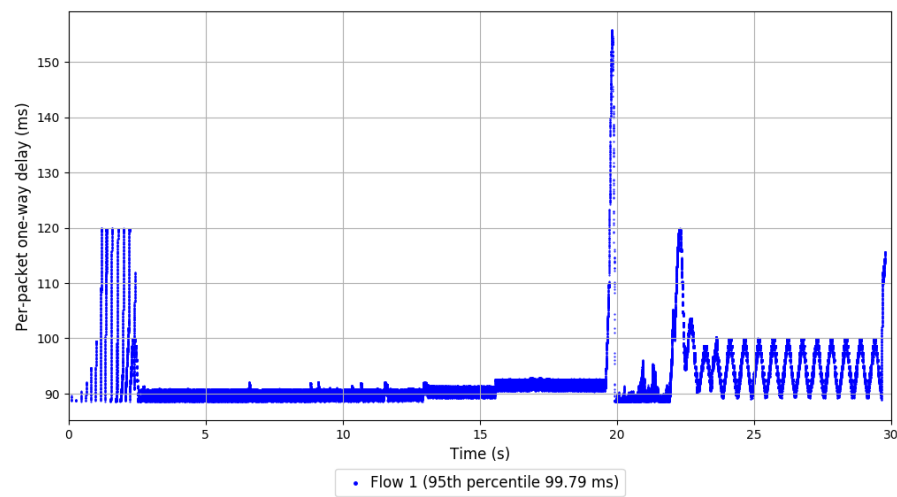
Run 3: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 92.03 Mbit/s)   Flow 1 egress (mean 86.94 Mbit/s)

Flow 1 (95th percentile 109.50 ms)

```
Run 4: Statistics of FillP-Sheep

Start at: 2018-09-07 11:22:46
End at: 2018-09-07 11:23:16
Local clock offset: 4.443 ms
Remote clock offset: 5.219 ms


# Below is generated by plot.py at 2018-09-07 11:49:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.40 Mbit/s
95th percentile per-packet one-way delay: 111.023 ms
Loss rate: 2.40%
-- Flow 1:
Average throughput: 92.40 Mbit/s
95th percentile per-packet one-way delay: 111.023 ms
Loss rate: 2.40%
```
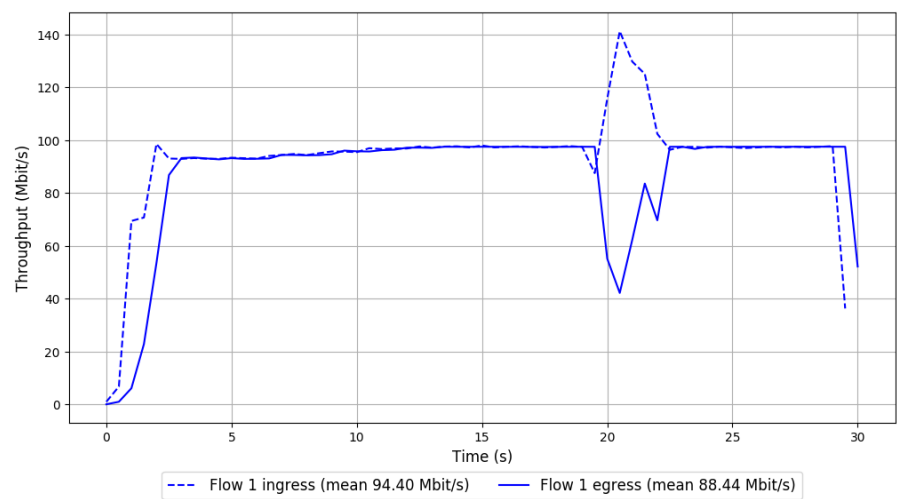
Run 4: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 94.73 Mbit/s) --- Flow 1 egress (mean 92.40 Mbit/s)

Flow 1 (95th percentile 111.02 ms)

```
Run 5: Statistics of FillP-Sheep

Start at: 2018-09-07 11:44:04
End at: 2018-09-07 11:44:34
Local clock offset: 3.653 ms
Remote clock offset: 5.884 ms


# Below is generated by plot.py at 2018-09-07 11:49:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.43 Mbit/s
95th percentile per-packet one-way delay: 111.989 ms
Loss rate: 2.10%
-- Flow 1:
Average throughput: 92.43 Mbit/s
95th percentile per-packet one-way delay: 111.989 ms
Loss rate: 2.10%
```
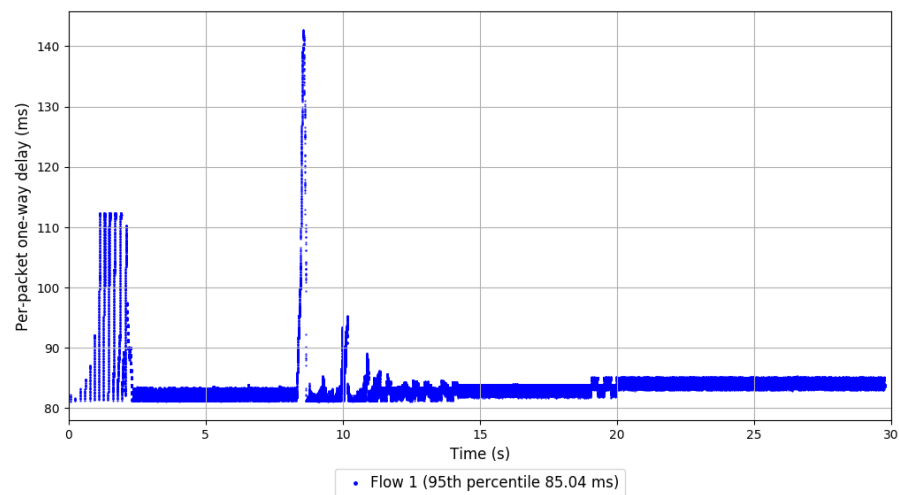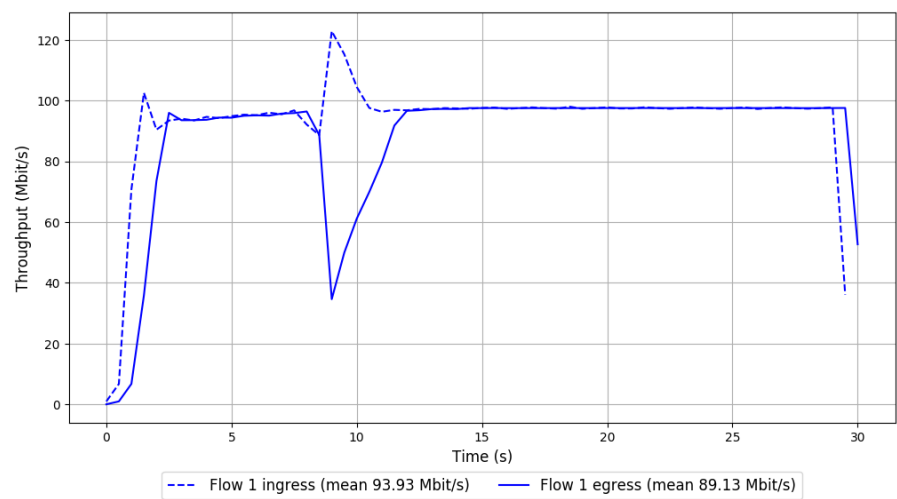
Run 5: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 94.46 Mbit/s)   Flow 1 egress (mean 92.43 Mbit/s)

Flow 1 (95th percentile 111.99 ms)

```
Run 1: Statistics of Indigo

Start at: 2018-09-07 10:08:19
End at: 2018-09-07 10:08:49
Local clock offset: 1.41 ms
Remote clock offset: 1.053 ms


# Below is generated by plot.py at 2018-09-07 11:49:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 88.44 Mbit/s
95th percentile per-packet one-way delay: 99.790 ms
Loss rate: 6.26%
-- Flow 1:
Average throughput: 88.44 Mbit/s
95th percentile per-packet one-way delay: 99.790 ms
Loss rate: 6.26%
```
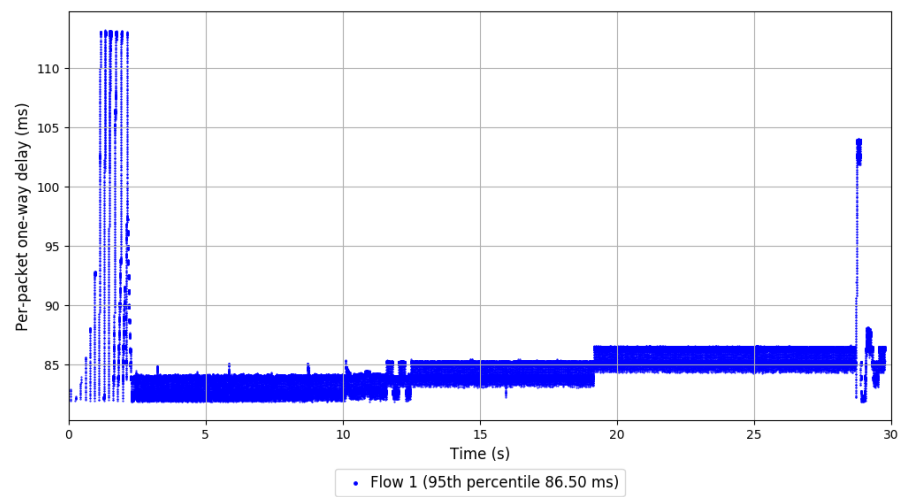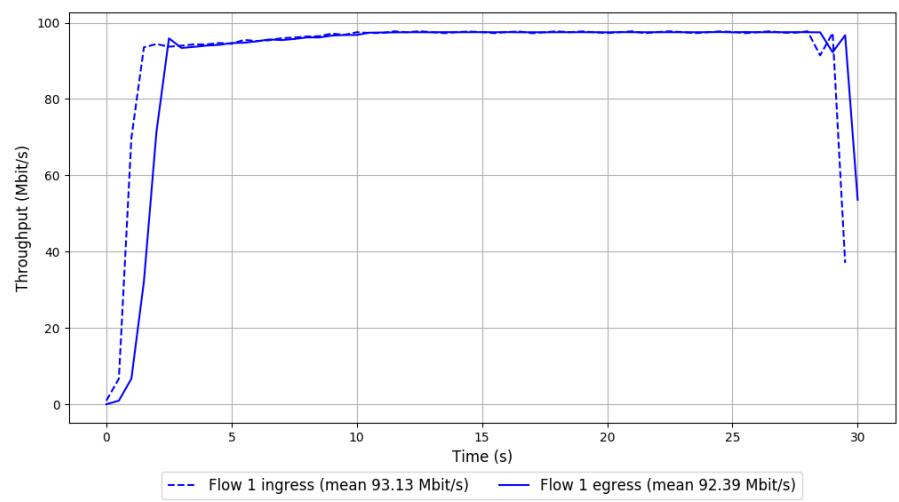
Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2018-09-07 10:29:30
End at: 2018-09-07 10:30:00
Local clock offset: 3.131 ms
Remote clock offset: 0.682 ms


# Below is generated by plot.py at 2018-09-07 11:49:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.13 Mbit/s
95th percentile per-packet one-way delay: 85.038 ms
Loss rate: 5.11%
-- Flow 1:
Average throughput: 89.13 Mbit/s
95th percentile per-packet one-way delay: 85.038 ms
Loss rate: 5.11%
```
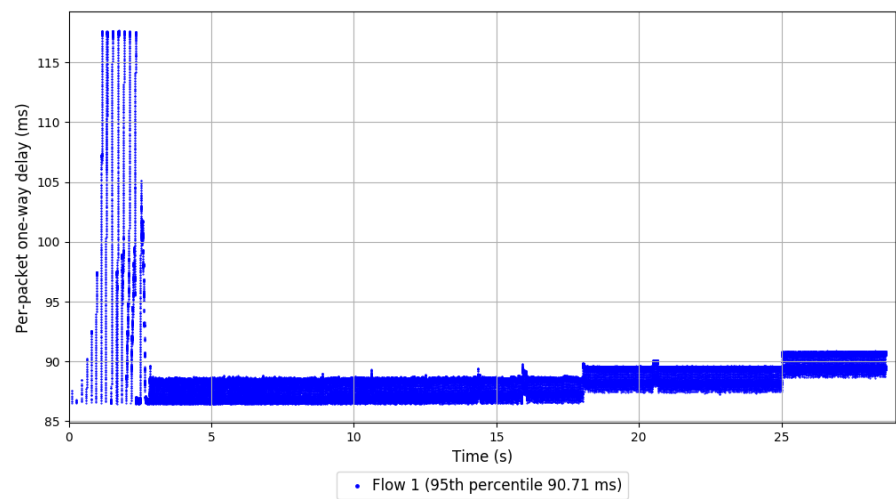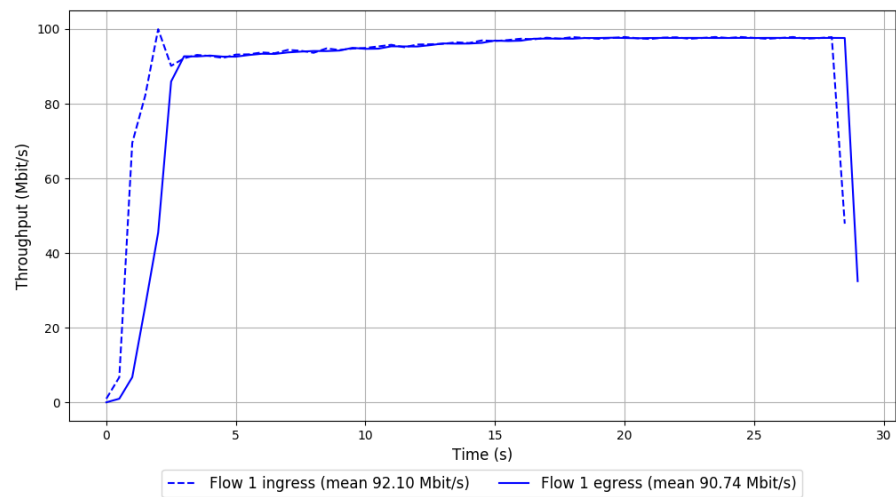
Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2018-09-07 10:50:52
End at: 2018-09-07 10:51:22
Local clock offset: 4.389 ms
Remote clock offset: 2.682 ms


# Below is generated by plot.py at 2018-09-07 11:49:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.39 Mbit/s
95th percentile per-packet one-way delay: 86.501 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 92.39 Mbit/s
95th percentile per-packet one-way delay: 86.501 ms
Loss rate: 0.79%
```
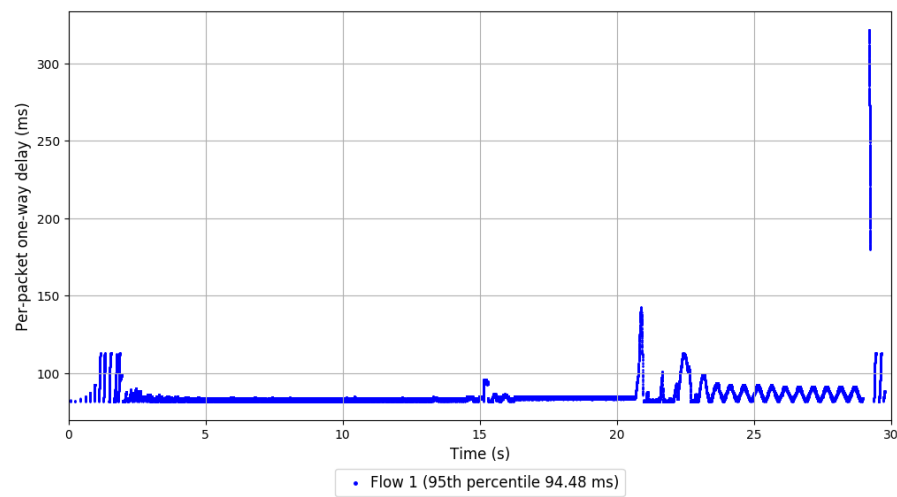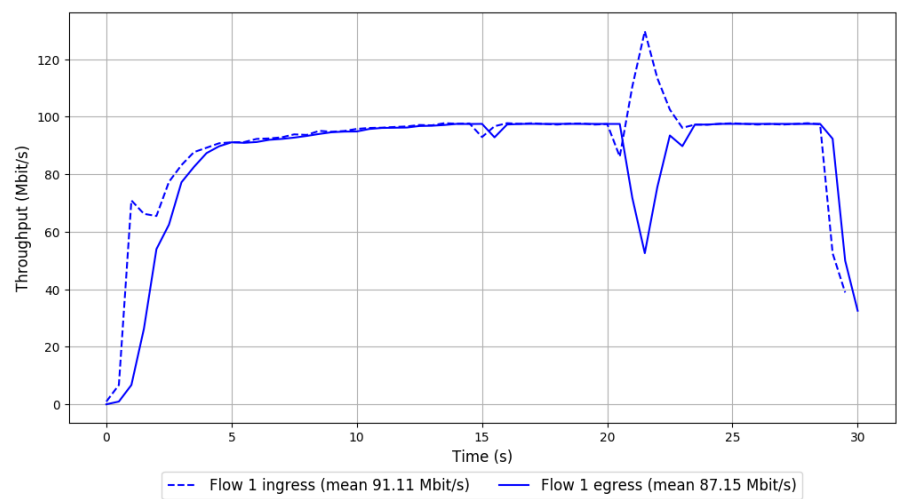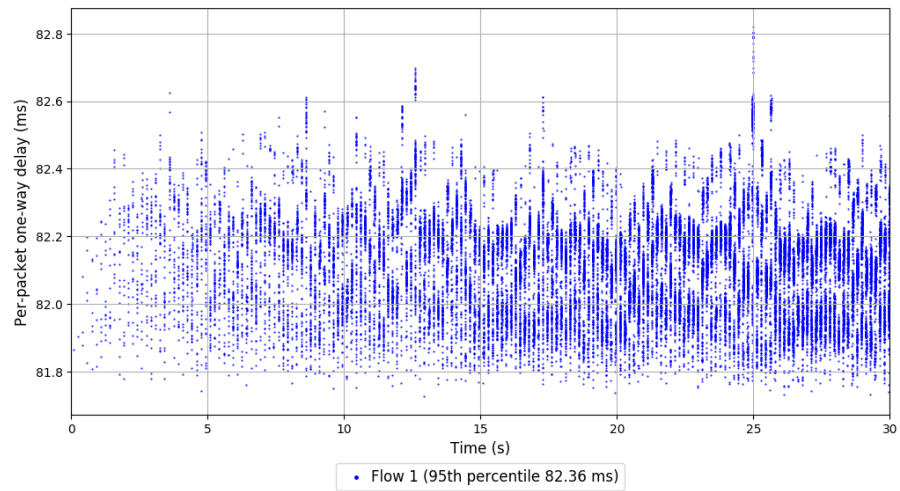
Run 3: Report of Indigo — Data Link

```
Run 4: Statistics of Indigo

Start at: 2018-09-07 11:12:08
End at: 2018-09-07 11:12:38
Local clock offset: 3.706 ms
Remote clock offset: 5.712 ms


# Below is generated by plot.py at 2018-09-07 11:49:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 90.74 Mbit/s
95th percentile per-packet one-way delay: 90.711 ms
Loss rate: 2.05%
-- Flow 1:
Average throughput: 90.74 Mbit/s
95th percentile per-packet one-way delay: 90.711 ms
Loss rate: 2.05%
```

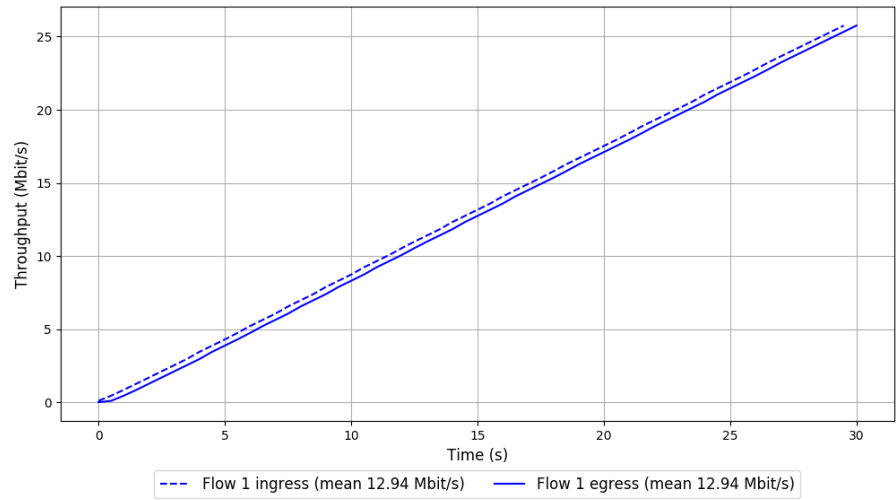Run 4: Report of Indigo — Data Link

```
Run 5: Statistics of Indigo

Start at: 2018-09-07 11:33:18
End at: 2018-09-07 11:33:48
Local clock offset: 4.402 ms
Remote clock offset: 1.249 ms


# Below is generated by plot.py at 2018-09-07 11:50:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 87.15 Mbit/s
95th percentile per-packet one-way delay: 94.477 ms
Loss rate: 4.32%
-- Flow 1:
Average throughput: 87.15 Mbit/s
95th percentile per-packet one-way delay: 94.477 ms
Loss rate: 4.32%
```
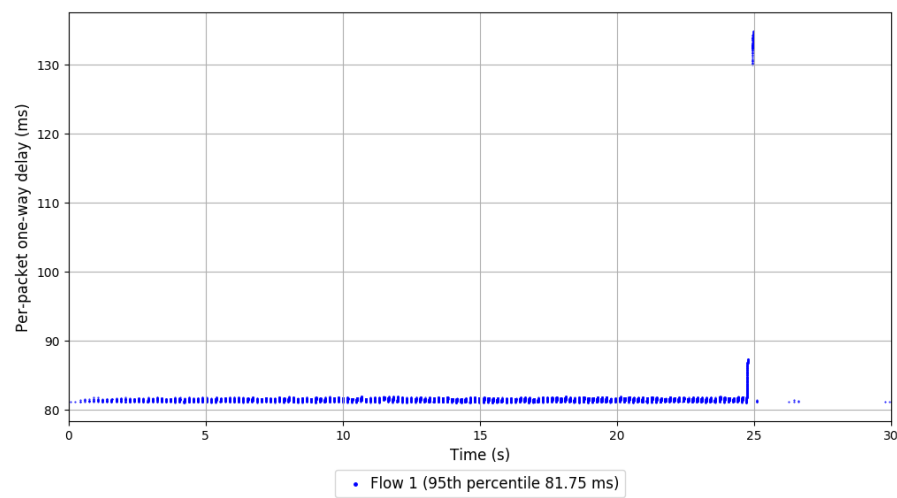
Run 5: Report of Indigo — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2018-09-07 10:13:02
End at: 2018-09-07 10:13:32
Local clock offset: 1.883 ms
Remote clock offset: 0.445 ms


# Below is generated by plot.py at 2018-09-07 11:50:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.94 Mbit/s
95th percentile per-packet one-way delay: 82.360 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 12.94 Mbit/s
95th percentile per-packet one-way delay: 82.360 ms
Loss rate: 0.00%
```
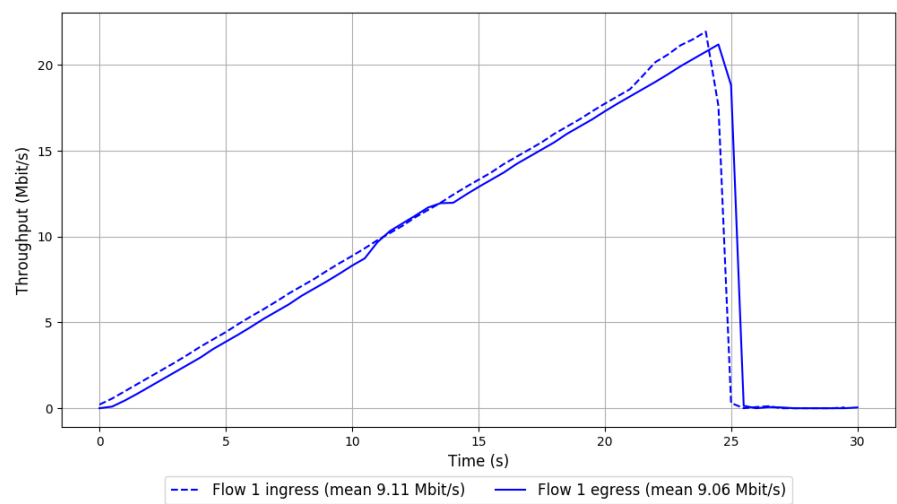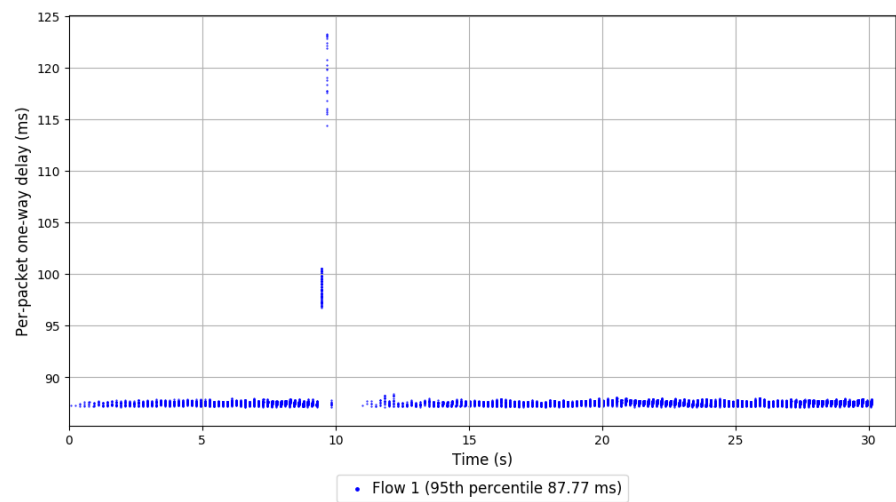
Run 1: Report of LEDBAT — Data Link

Flow 1 ingress (mean 12.94 Mbit/s) --- Flow 1 egress (mean 12.94 Mbit/s)

Flow 1 (95th percentile 82.36 ms)

```
Run 2: Statistics of LEDBAT

Start at: 2018-09-07 10:34:14
End at: 2018-09-07 10:34:44
Local clock offset: 3.359 ms
Remote clock offset: 1.044 ms


# Below is generated by plot.py at 2018-09-07 11:50:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.06 Mbit/s
95th percentile per-packet one-way delay: 81.752 ms
Loss rate: 0.56%
-- Flow 1:
Average throughput: 9.06 Mbit/s
95th percentile per-packet one-way delay: 81.752 ms
Loss rate: 0.56%
```
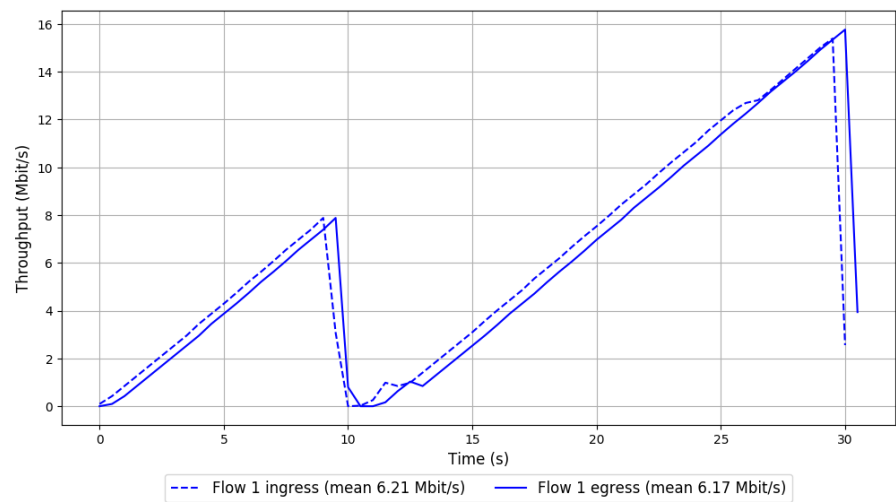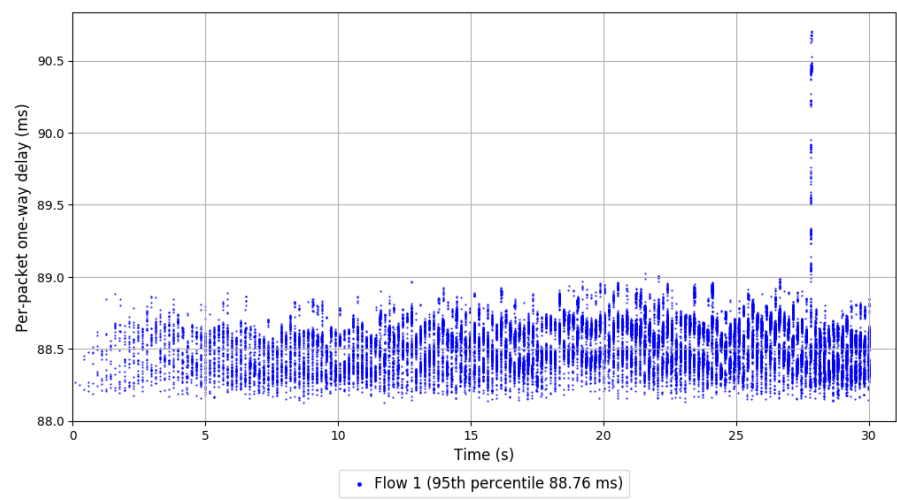
Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2018-09-07 10:55:29
End at: 2018-09-07 10:55:59
Local clock offset: 3.601 ms
Remote clock offset: 7.134 ms


# Below is generated by plot.py at 2018-09-07 11:50:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 6.17 Mbit/s
95th percentile per-packet one-way delay: 87.774 ms
Loss rate: 0.72%
-- Flow 1:
Average throughput: 6.17 Mbit/s
95th percentile per-packet one-way delay: 87.774 ms
Loss rate: 0.72%
```
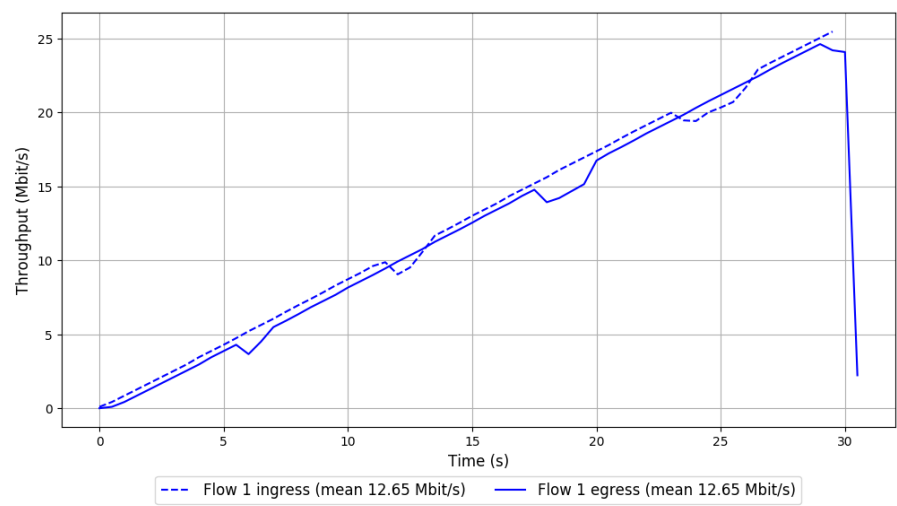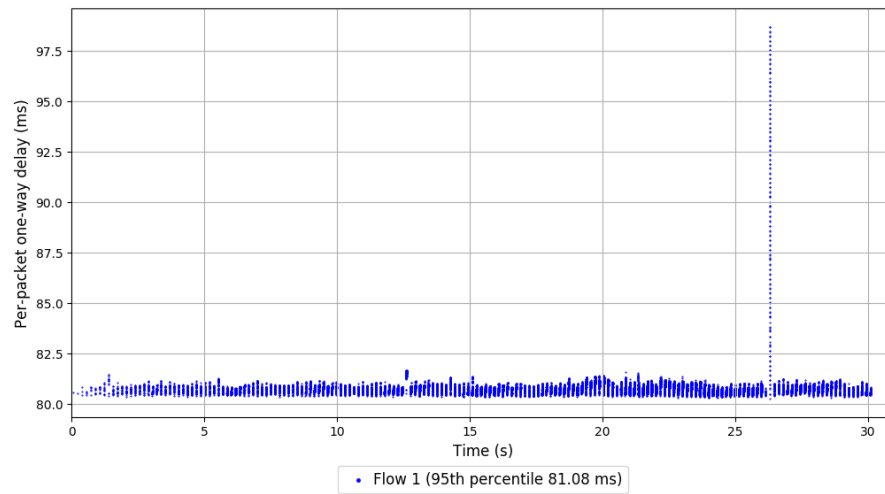
Run 3: Report of LEDBAT — Data Link

Flow 1 ingress (mean 6.21 Mbit/s)   Flow 1 egress (mean 6.17 Mbit/s)

Flow 1 (95th percentile 87.77 ms)

```
Run 4: Statistics of LEDBAT

Start at: 2018-09-07 11:16:52
End at: 2018-09-07 11:17:22
Local clock offset: 3.736 ms
Remote clock offset: 6.245 ms


# Below is generated by plot.py at 2018-09-07 11:50:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.65 Mbit/s
95th percentile per-packet one-way delay: 88.759 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 12.65 Mbit/s
95th percentile per-packet one-way delay: 88.759 ms
Loss rate: 0.00%
```
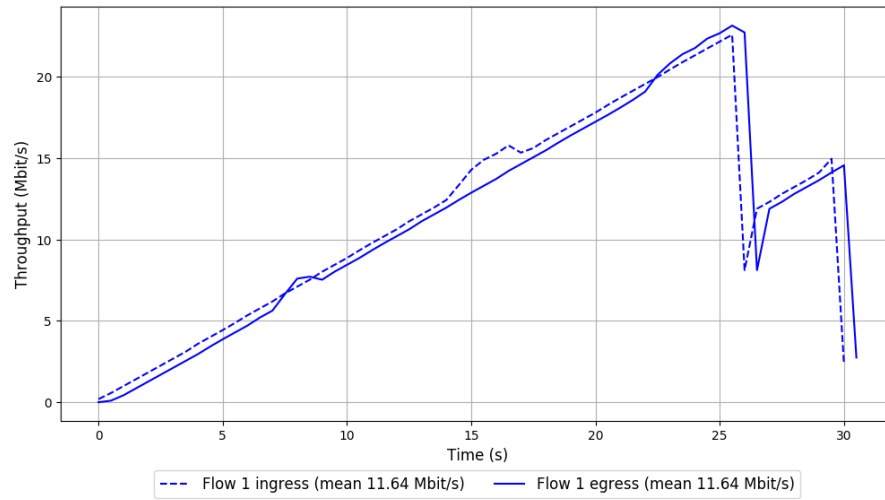
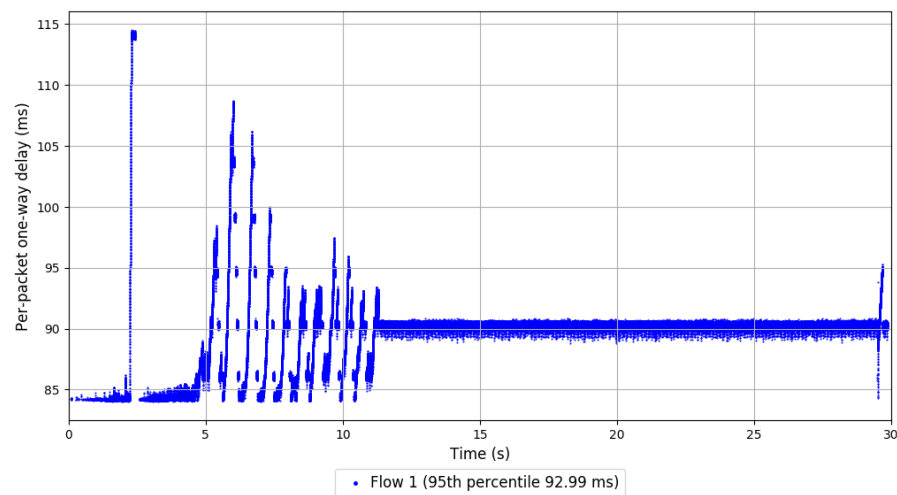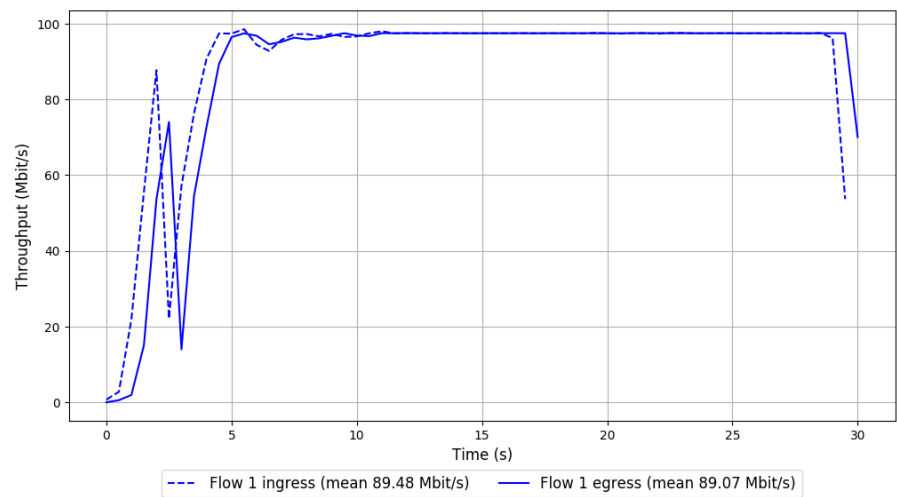Run 4: Report of LEDBAT — Data Link

Flow 1 ingress (mean 12.65 Mbit/s) --- Flow 1 egress (mean 12.65 Mbit/s)

Flow 1 (95th percentile 88.76 ms)

```
Run 5: Statistics of LEDBAT

Start at: 2018-09-07 11:38:04
End at: 2018-09-07 11:38:34
Local clock offset: 4.402 ms
Remote clock offset: 1.829 ms


# Below is generated by plot.py at 2018-09-07 11:50:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.64 Mbit/s
95th percentile per-packet one-way delay: 81.085 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 11.64 Mbit/s
95th percentile per-packet one-way delay: 81.085 ms
Loss rate: 0.00%
```
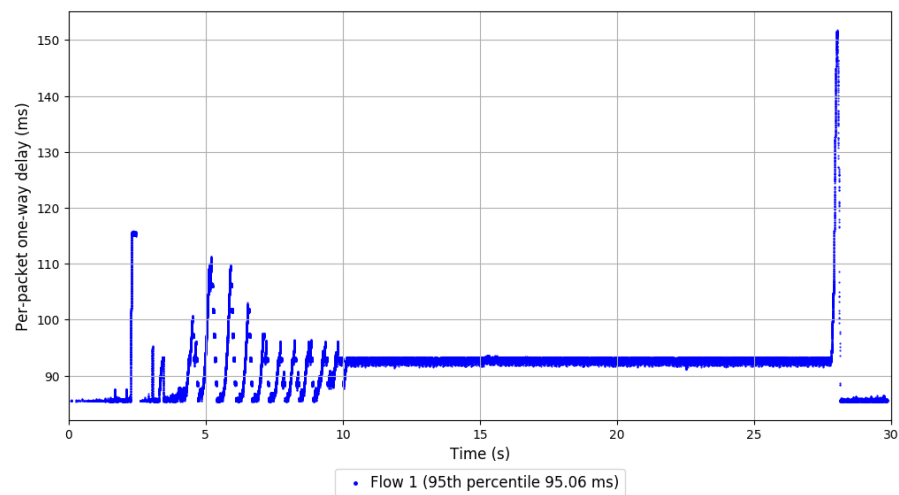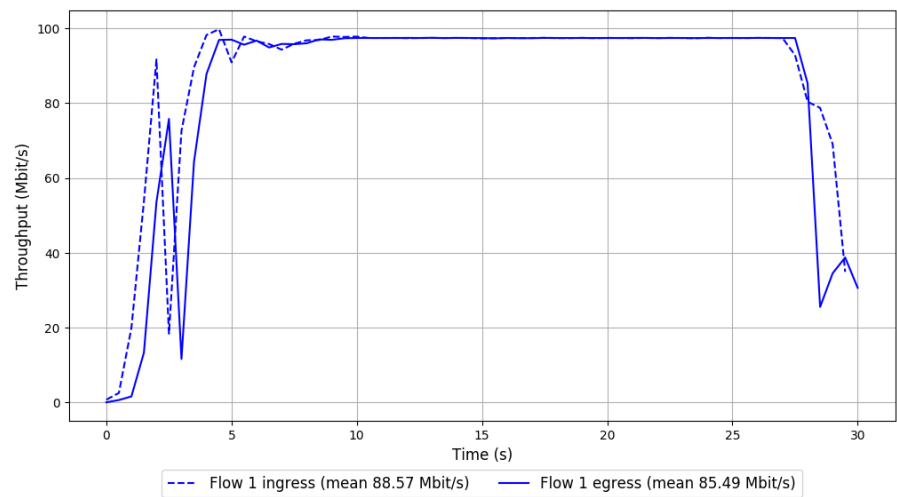
Run 5: Report of LEDBAT — Data Link

Flow 1 ingress (mean 11.64 Mbit/s)   Flow 1 egress (mean 11.64 Mbit/s)

Flow 1 (95th percentile 81.08 ms)

```
Run 1: Statistics of Indigo-Muses

Start at: 2018-09-07 10:05:56
End at: 2018-09-07 10:06:26
Local clock offset: 2.313 ms
Remote clock offset: 4.985 ms

# Below is generated by plot.py at 2018-09-07 11:50:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.07 Mbit/s
95th percentile per-packet one-way delay: 92.993 ms
Loss rate: 0.44%
-- Flow 1:
Average throughput: 89.07 Mbit/s
95th percentile per-packet one-way delay: 92.993 ms
Loss rate: 0.44%
```
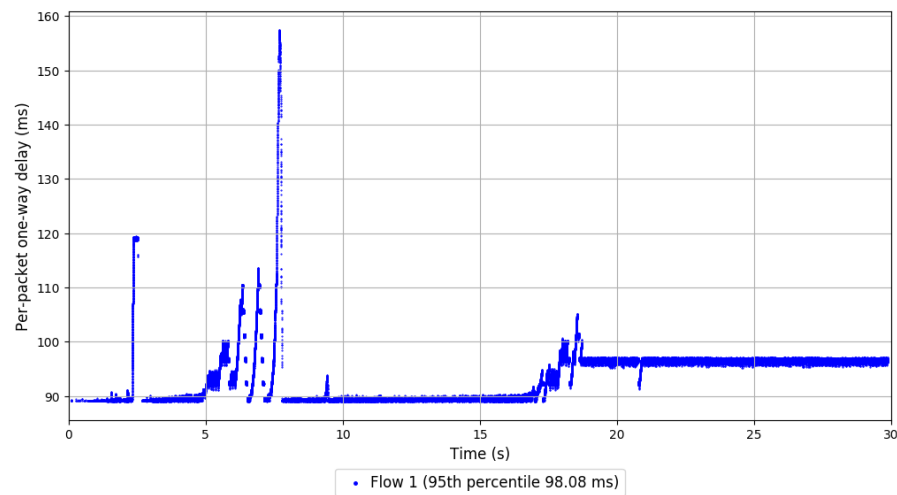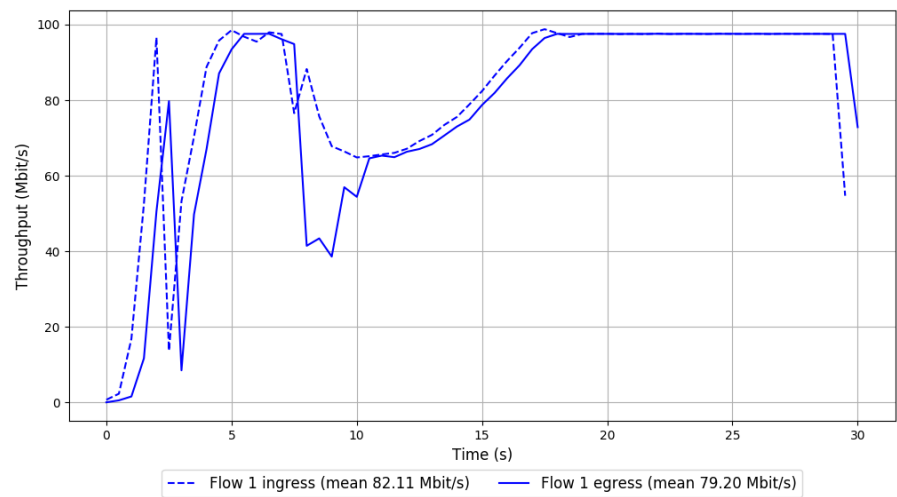
Run 1: Report of Indigo-Muses — Data Link

```
Run 2: Statistics of Indigo-Muses

Start at: 2018-09-07 10:27:11
End at: 2018-09-07 10:27:41
Local clock offset: 2.976 ms
Remote clock offset: 4.247 ms


# Below is generated by plot.py at 2018-09-07 11:50:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 85.49 Mbit/s
95th percentile per-packet one-way delay: 95.057 ms
Loss rate: 3.47%
-- Flow 1:
Average throughput: 85.49 Mbit/s
95th percentile per-packet one-way delay: 95.057 ms
Loss rate: 3.47%
```
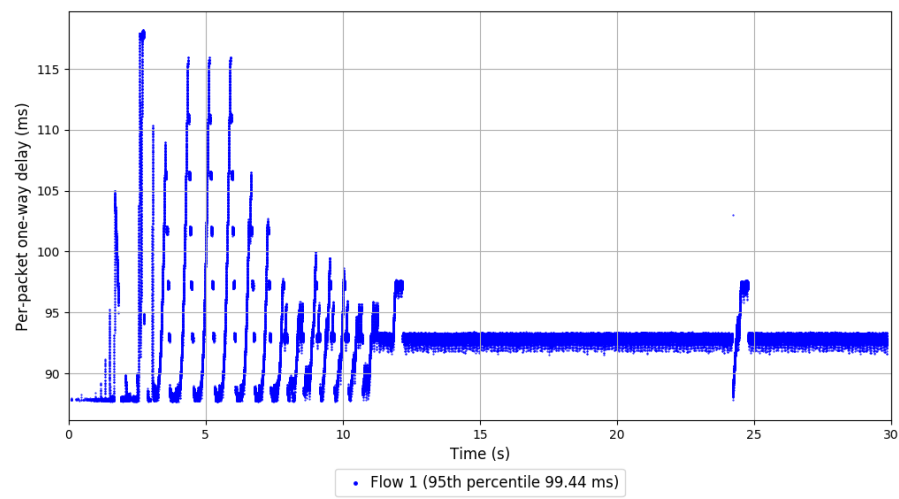
Run 2: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 88.57 Mbit/s) --- Flow 1 egress (mean 85.49 Mbit/s)

• Flow 1 (95th percentile 95.06 ms)

```
Run 3: Statistics of Indigo-Muses

Start at: 2018-09-07 10:48:31
End at: 2018-09-07 10:49:01
Local clock offset: 3.562 ms
Remote clock offset: 6.817 ms


# Below is generated by plot.py at 2018-09-07 11:50:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 79.20 Mbit/s
95th percentile per-packet one-way delay: 98.077 ms
Loss rate: 3.53%
-- Flow 1:
Average throughput: 79.20 Mbit/s
95th percentile per-packet one-way delay: 98.077 ms
Loss rate: 3.53%
```
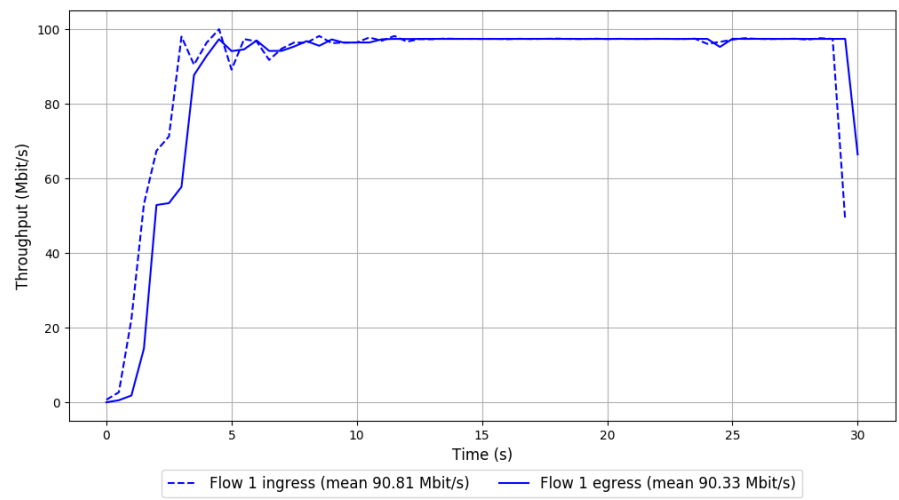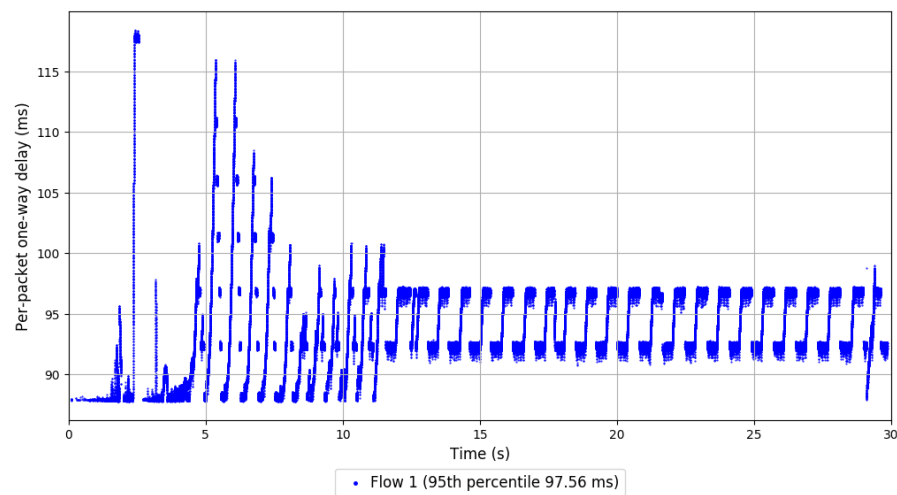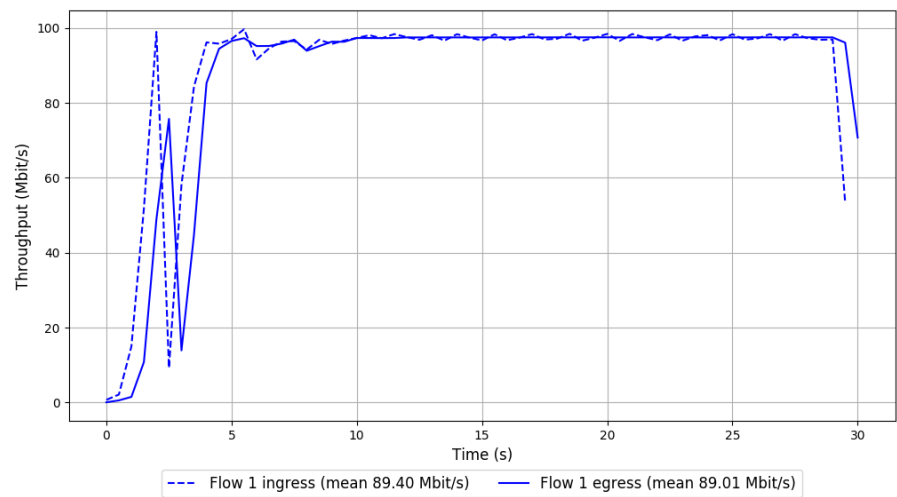
Run 3: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 82.11 Mbit/s)   Flow 1 egress (mean 79.20 Mbit/s)

Flow 1 (95th percentile 98.08 ms)

```
Run 4: Statistics of Indigo-Muses

Start at: 2018-09-07 11:09:49
End at: 2018-09-07 11:10:19
Local clock offset: 3.738 ms
Remote clock offset: 6.235 ms


# Below is generated by plot.py at 2018-09-07 11:50:28
# Datalink statistics
-- Total of 1 flow:
Average throughput: 90.33 Mbit/s
95th percentile per-packet one-way delay: 99.437 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 90.33 Mbit/s
95th percentile per-packet one-way delay: 99.437 ms
Loss rate: 0.51%
```
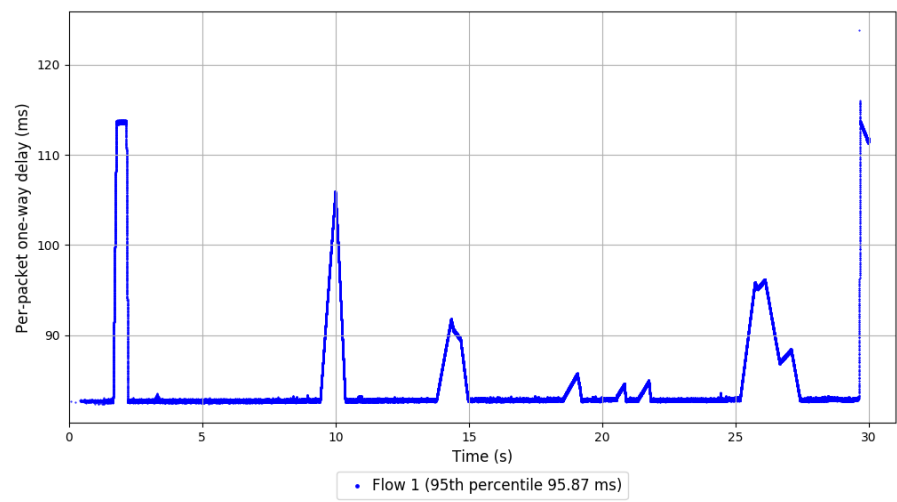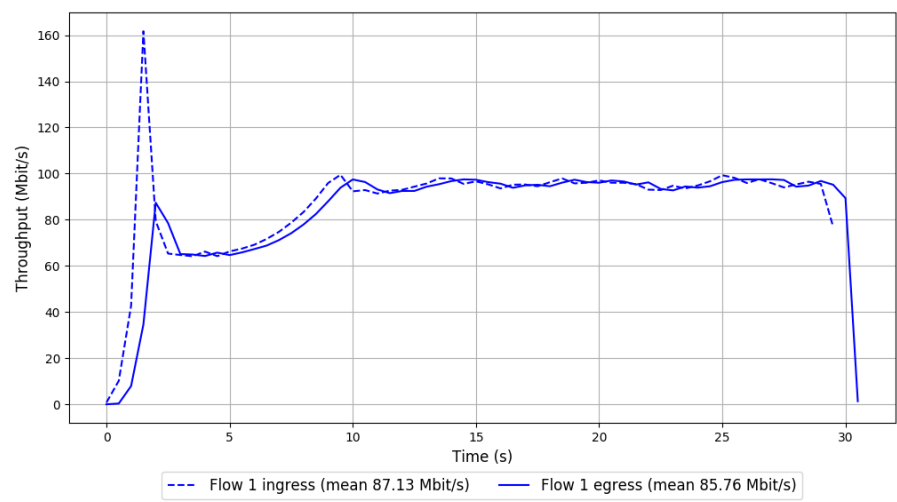
Run 4: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 90.81 Mbit/s) — Flow 1 egress (mean 90.33 Mbit/s)

Flow 1 (95th percentile 99.44 ms)

```
Run 5: Statistics of Indigo-Muses

Start at: 2018-09-07 11:30:56
End at: 2018-09-07 11:31:26
Local clock offset: 4.382 ms
Remote clock offset: 1.593 ms


# Below is generated by plot.py at 2018-09-07 11:50:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.01 Mbit/s
95th percentile per-packet one-way delay: 97.562 ms
Loss rate: 0.45%
-- Flow 1:
Average throughput: 89.01 Mbit/s
95th percentile per-packet one-way delay: 97.562 ms
Loss rate: 0.45%
```
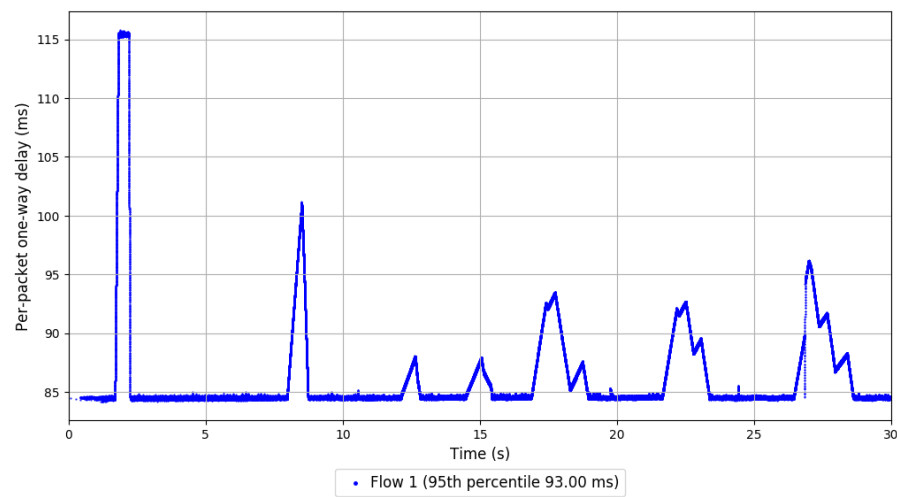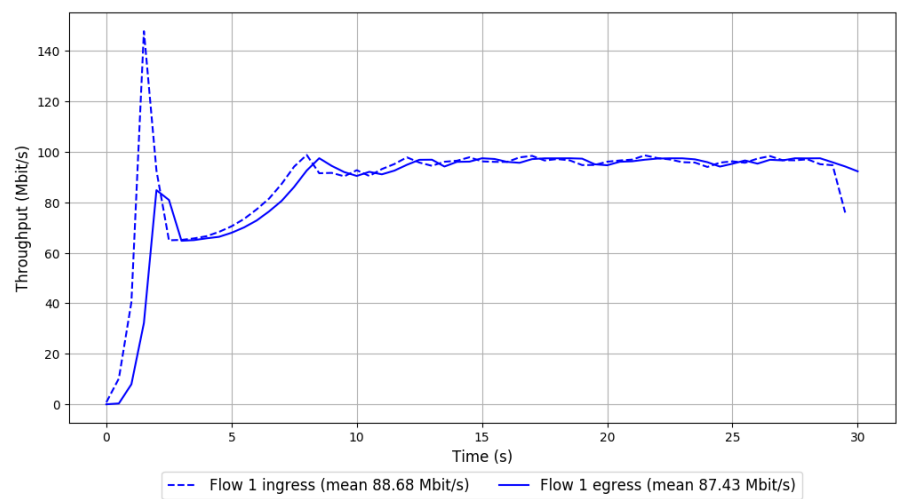
Run 5: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 89.40 Mbit/s) ---- Flow 1 egress (mean 89.01 Mbit/s)

Flow 1 (95th percentile 97.56 ms)

```
Run 1: Statistics of PCC-Allegro

Start at: 2018-09-07 10:17:43
End at: 2018-09-07 10:18:13
Local clock offset: 1.78 ms
Remote clock offset: 0.221 ms


# Below is generated by plot.py at 2018-09-07 11:50:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 85.76 Mbit/s
95th percentile per-packet one-way delay: 95.866 ms
Loss rate: 1.49%
-- Flow 1:
Average throughput: 85.76 Mbit/s
95th percentile per-packet one-way delay: 95.866 ms
Loss rate: 1.49%
```
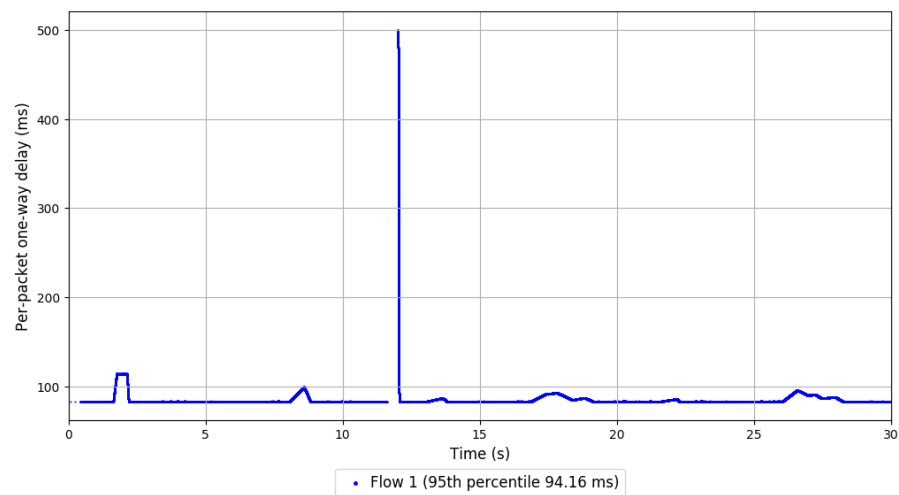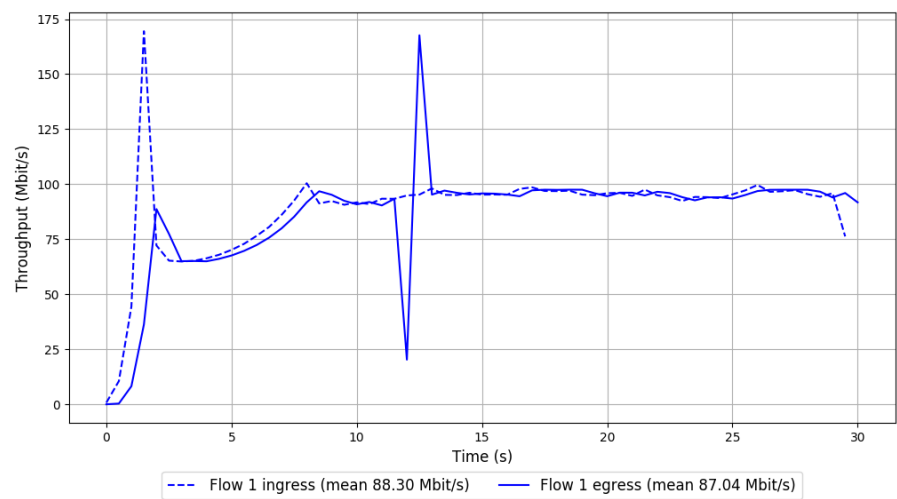
Run 1: Report of PCC-Allegro — Data Link

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-09-07 10:38:57
End at: 2018-09-07 10:39:27
Local clock offset: 4.244 ms
Remote clock offset: 5.365 ms

# Below is generated by plot.py at 2018-09-07 11:50:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 87.43 Mbit/s
95th percentile per-packet one-way delay: 93.004 ms
Loss rate: 1.41%
-- Flow 1:
Average throughput: 87.43 Mbit/s
95th percentile per-packet one-way delay: 93.004 ms
Loss rate: 1.41%
```
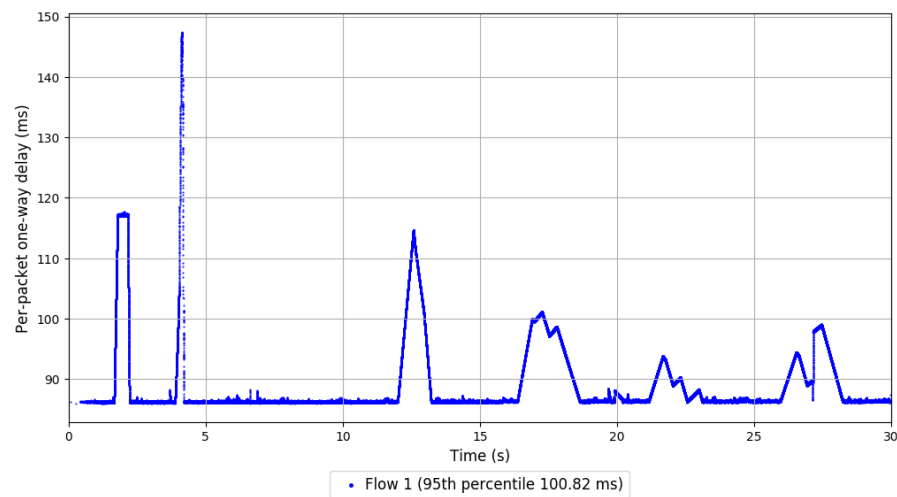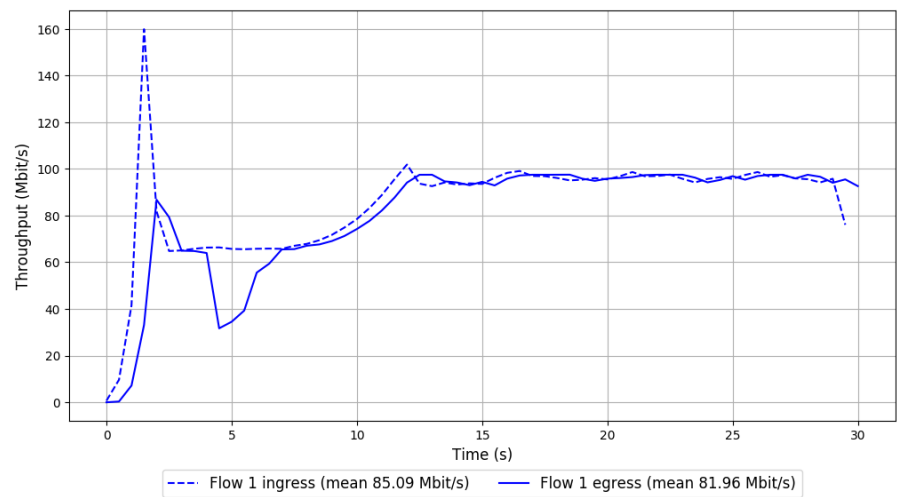
Run 2: Report of PCC-Allegro — Data Link

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-09-07 11:00:08
End at: 2018-09-07 11:00:38
Local clock offset: 3.622 ms
Remote clock offset: 2.673 ms


# Below is generated by plot.py at 2018-09-07 11:51:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 87.04 Mbit/s
95th percentile per-packet one-way delay: 94.155 ms
Loss rate: 1.44%
-- Flow 1:
Average throughput: 87.04 Mbit/s
95th percentile per-packet one-way delay: 94.155 ms
Loss rate: 1.44%
```
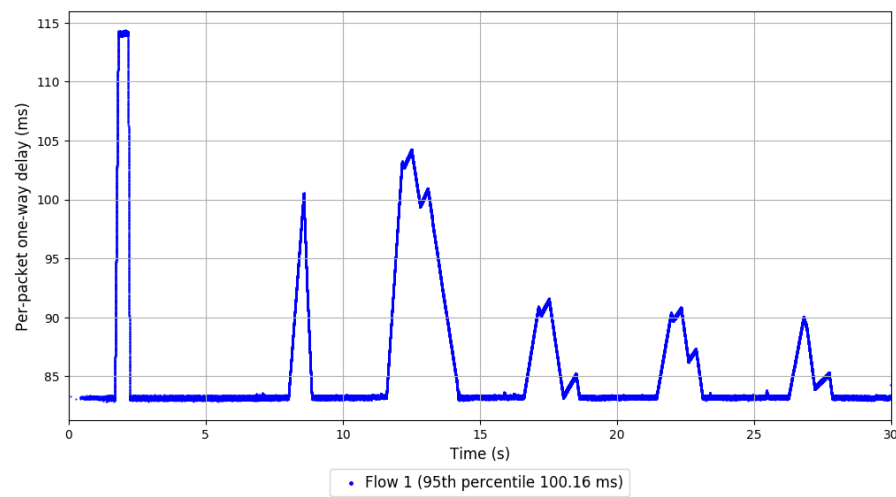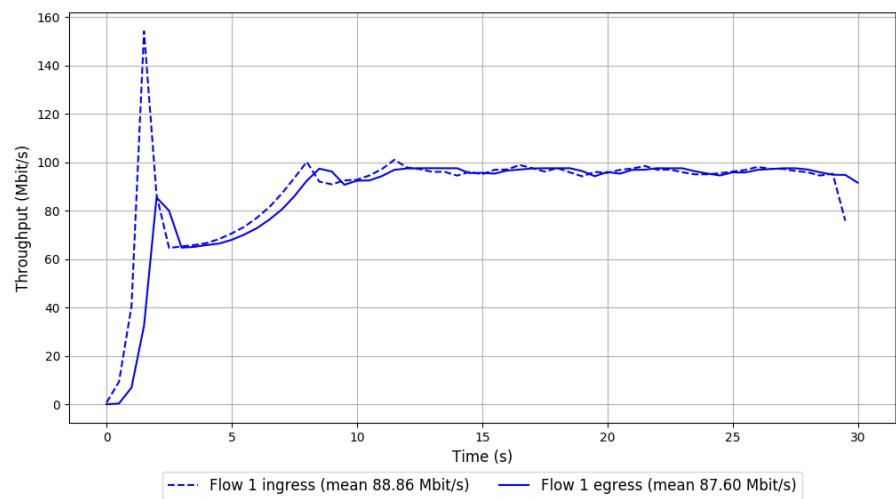
Run 3: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 88.30 Mbit/s) --- Flow 1 egress (mean 87.04 Mbit/s)

• Flow 1 (95th percentile 94.16 ms)

```
Run 4: Statistics of PCC-Allegro

Start at: 2018-09-07 11:21:35
End at: 2018-09-07 11:22:05
Local clock offset: 3.666 ms
Remote clock offset: 6.006 ms


# Below is generated by plot.py at 2018-09-07 11:51:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 81.96 Mbit/s
95th percentile per-packet one-way delay: 100.820 ms
Loss rate: 3.67%
-- Flow 1:
Average throughput: 81.96 Mbit/s
95th percentile per-packet one-way delay: 100.820 ms
Loss rate: 3.67%
```

Run 4: Report of PCC-Allegro — Data Link
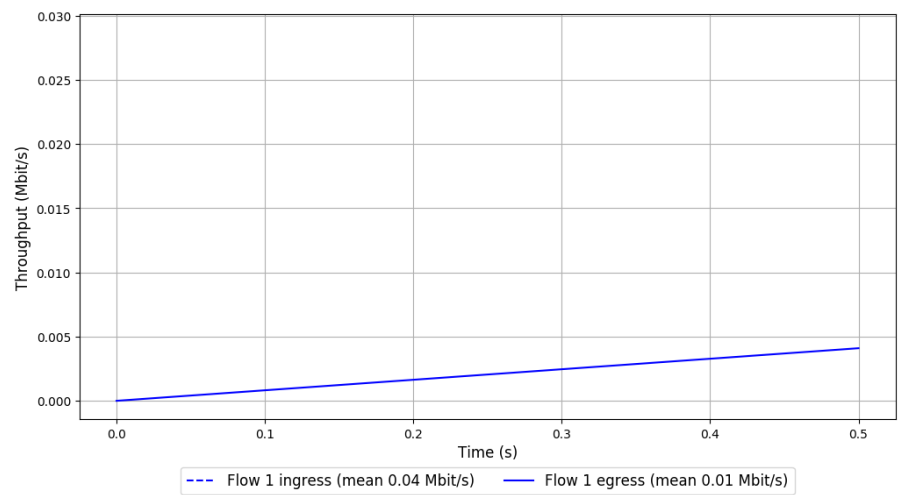
```
Run 5: Statistics of PCC-Allegro

Start at: 2018-09-07 11:42:47
End at: 2018-09-07 11:43:17
Local clock offset: 3.656 ms
Remote clock offset: 2.242 ms

# Below is generated by plot.py at 2018-09-07 11:51:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 87.60 Mbit/s
95th percentile per-packet one-way delay: 100.158 ms
Loss rate: 1.42%
-- Flow 1:
Average throughput: 87.60 Mbit/s
95th percentile per-packet one-way delay: 100.158 ms
Loss rate: 1.42%
```
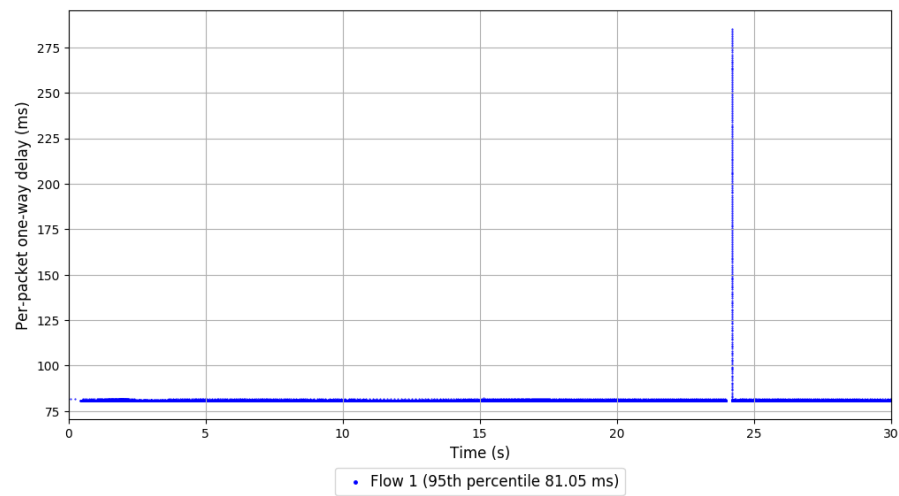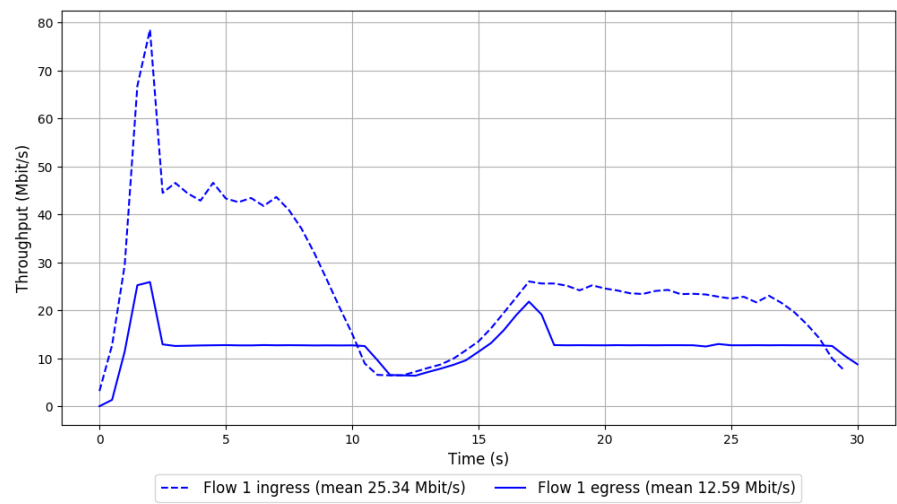
Run 5: Report of PCC-Allegro — Data Link
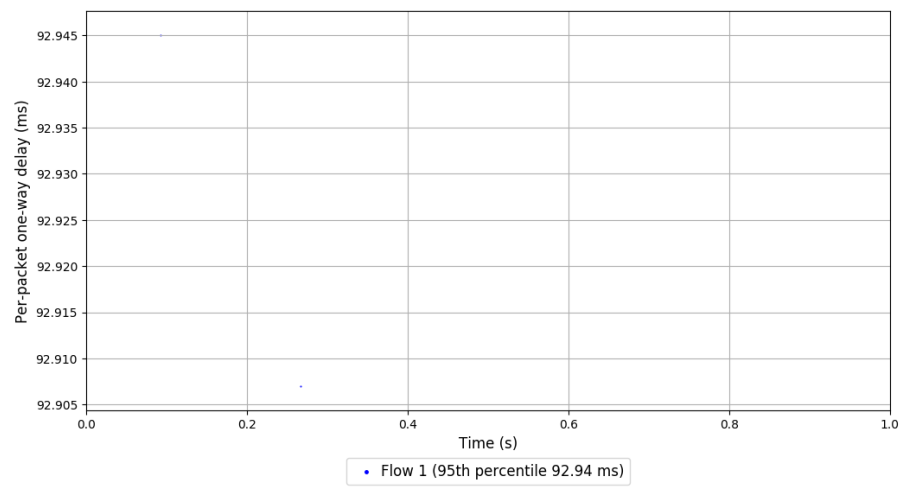

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```
Run 1: Statistics of PCC-Expr

Start at: 2018-09-07 09:58:45
End at: 2018-09-07 09:59:15
Local clock offset: 2.84 ms
Remote clock offset: 1.213 ms
```
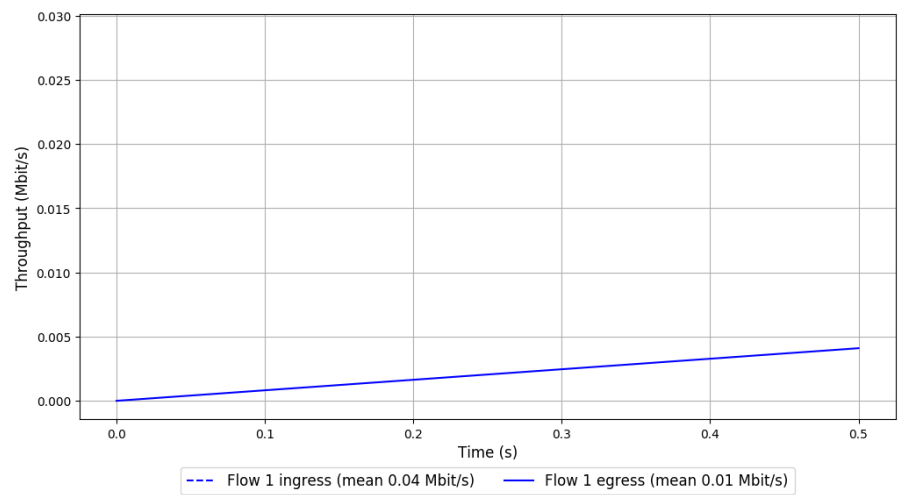
Run 1: Report of PCC-Expr — Data Link

```
Run 2: Statistics of PCC-Expr

Start at: 2018-09-07 10:20:06
End at: 2018-09-07 10:20:36
Local clock offset: 2.199 ms
Remote clock offset: 0.151 ms


# Below is generated by plot.py at 2018-09-07 11:51:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.59 Mbit/s
95th percentile per-packet one-way delay: 81.046 ms
Loss rate: 50.30%
-- Flow 1:
Average throughput: 12.59 Mbit/s
95th percentile per-packet one-way delay: 81.046 ms
Loss rate: 50.30%
```
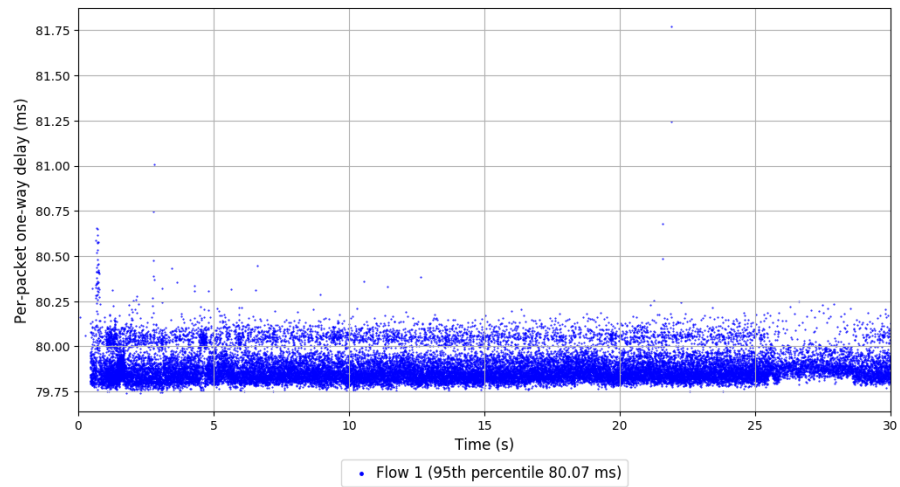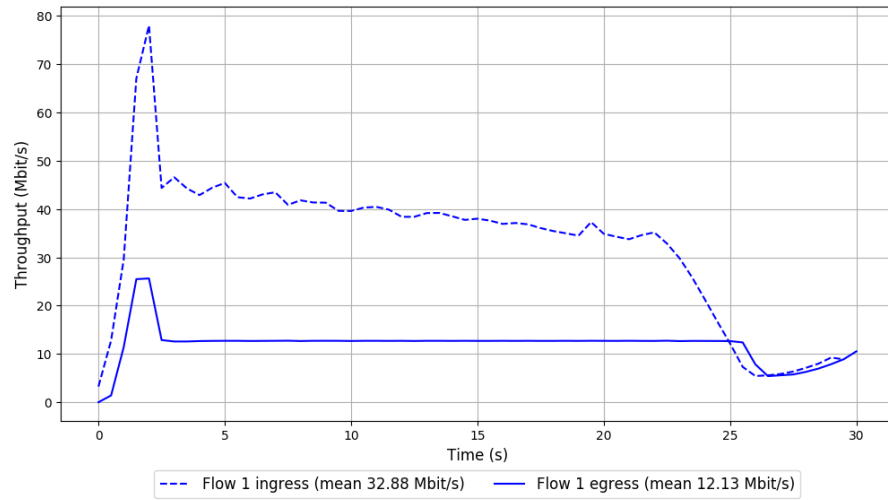
Run 2: Report of PCC-Expr — Data Link
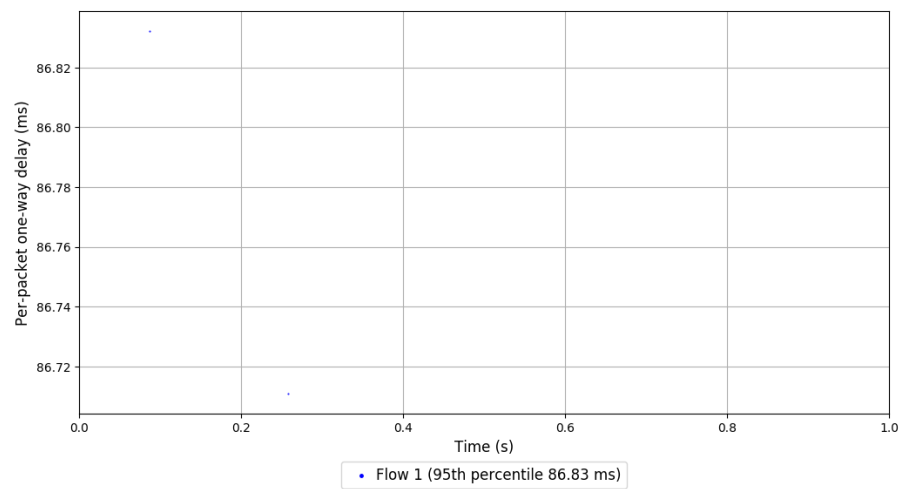
```
Run 3: Statistics of PCC-Expr

Start at: 2018-09-07 10:41:27
End at: 2018-09-07 10:41:57
Local clock offset: 3.493 ms
Remote clock offset: 6.165 ms
```

Run 3: Report of PCC-Expr — Data Link

```
Run 4: Statistics of PCC-Expr

Start at: 2018-09-07 11:02:42
End at: 2018-09-07 11:03:12
Local clock offset: 4.464 ms
Remote clock offset: 2.18 ms


# Below is generated by plot.py at 2018-09-07 11:51:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.13 Mbit/s
95th percentile per-packet one-way delay: 80.066 ms
Loss rate: 63.09%
-- Flow 1:
Average throughput: 12.13 Mbit/s
95th percentile per-packet one-way delay: 80.066 ms
Loss rate: 63.09%
```

Run 4: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 32.88 Mbit/s) --- Flow 1 egress (mean 12.13 Mbit/s)

Flow 1 (95th percentile 80.07 ms)
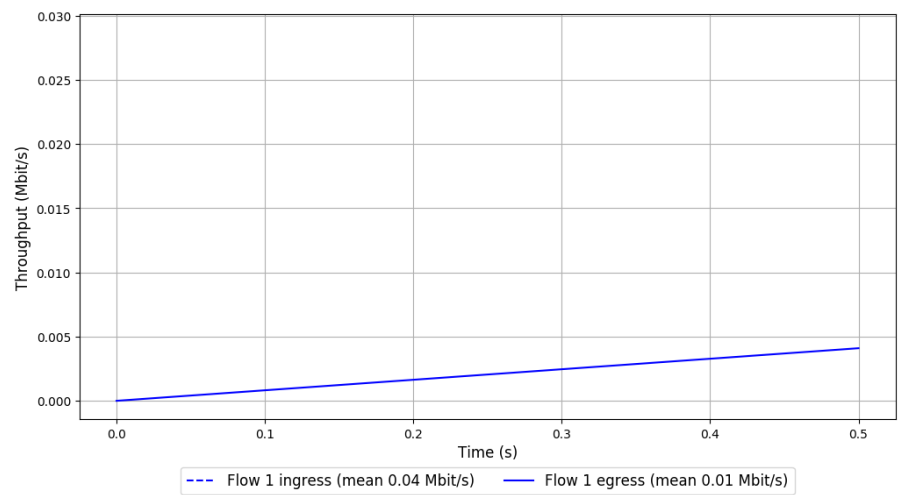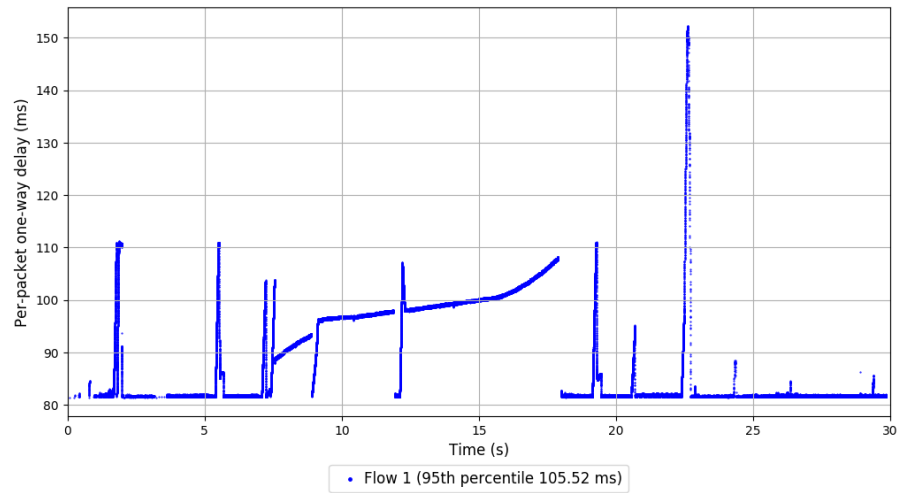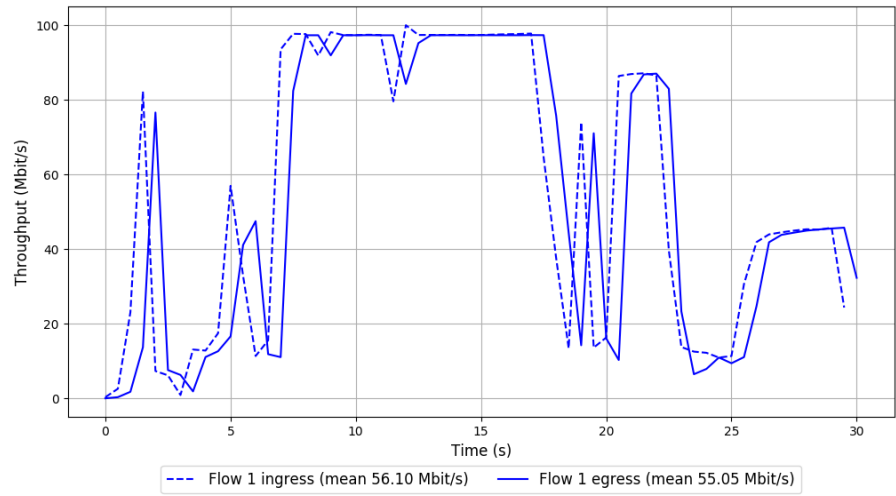
```
Run 5: Statistics of PCC-Expr

Start at: 2018-09-07 11:23:57
End at: 2018-09-07 11:24:27
Local clock offset: 3.664 ms
Remote clock offset: 1.153 ms
```

Run 5: Report of PCC-Expr — Data Link

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-09-07 10:02:16
End at: 2018-09-07 10:02:46
Local clock offset: 2.569 ms
Remote clock offset: 1.036 ms


# Below is generated by plot.py at 2018-09-07 11:51:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 55.05 Mbit/s
95th percentile per-packet one-way delay: 105.515 ms
Loss rate: 1.88%
-- Flow 1:
Average throughput: 55.05 Mbit/s
95th percentile per-packet one-way delay: 105.515 ms
Loss rate: 1.88%
```

Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-09-07 10:23:36
End at: 2018-09-07 10:24:06
Local clock offset: 3.437 ms
Remote clock offset: 0.004 ms


# Below is generated by plot.py at 2018-09-07 11:51:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 55.43 Mbit/s
95th percentile per-packet one-way delay: 80.925 ms
Loss rate: 2.10%
-- Flow 1:
Average throughput: 55.43 Mbit/s
95th percentile per-packet one-way delay: 80.925 ms
Loss rate: 2.10%
```
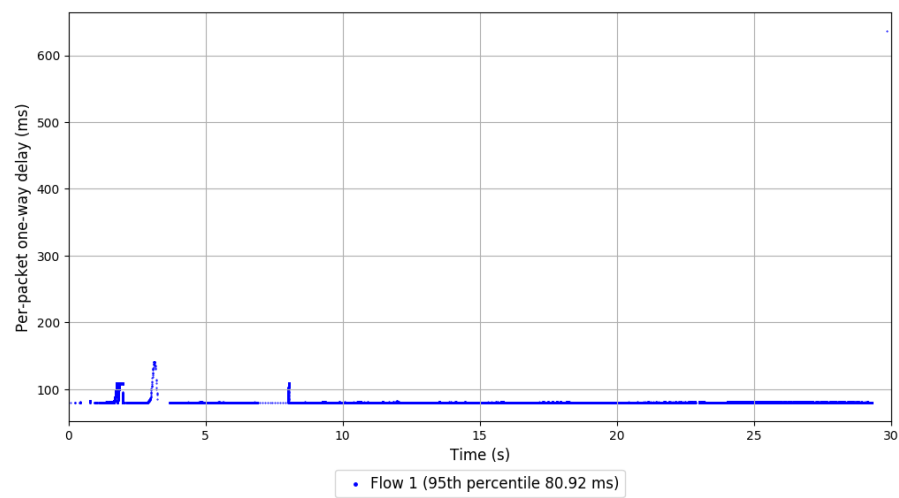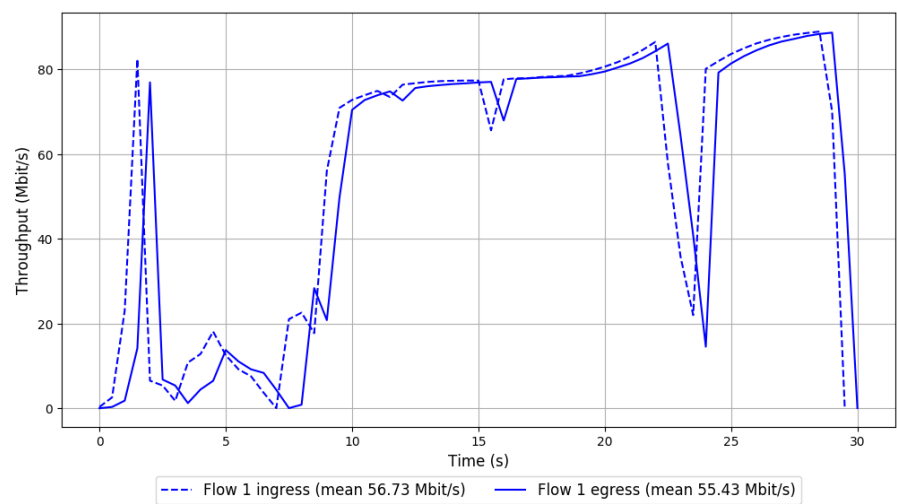
Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-09-07 10:45:01
End at: 2018-09-07 10:45:31
Local clock offset: 3.624 ms
Remote clock offset: 1.734 ms


# Below is generated by plot.py at 2018-09-07 11:51:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 69.21 Mbit/s
95th percentile per-packet one-way delay: 107.048 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 69.21 Mbit/s
95th percentile per-packet one-way delay: 107.048 ms
Loss rate: 0.43%
```
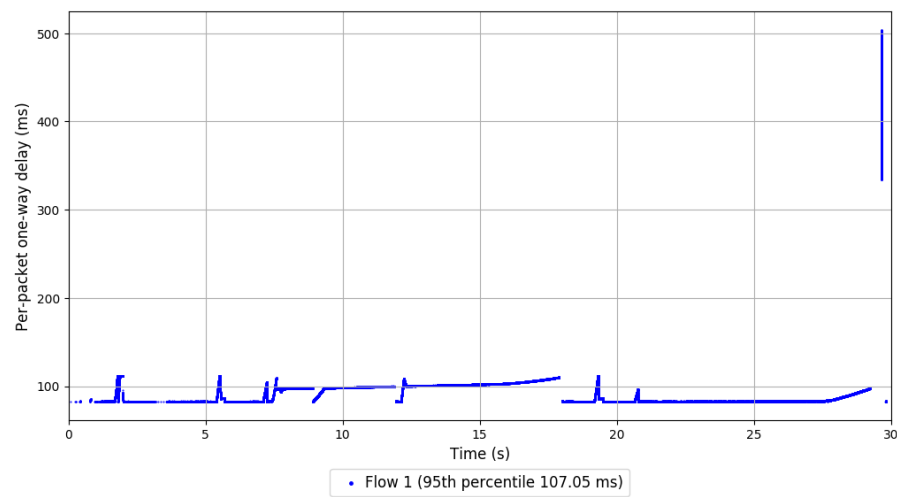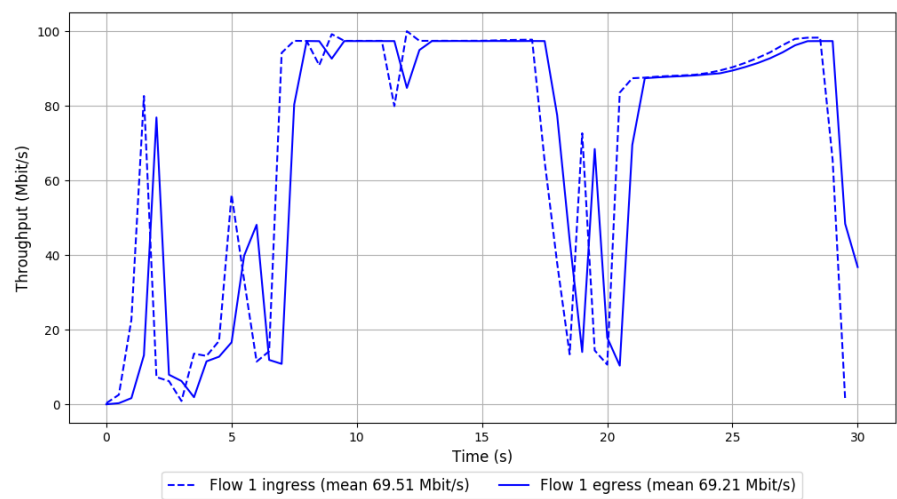
Run 3: Report of QUIC Cubic — Data Link

```
Run 4: Statistics of QUIC Cubic

Start at: 2018-09-07 11:06:14
End at: 2018-09-07 11:06:44
Local clock offset: 4.493 ms
Remote clock offset: 2.073 ms


# Below is generated by plot.py at 2018-09-07 11:51:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 58.03 Mbit/s
95th percentile per-packet one-way delay: 104.876 ms
Loss rate: 1.90%
-- Flow 1:
Average throughput: 58.03 Mbit/s
95th percentile per-packet one-way delay: 104.876 ms
Loss rate: 1.90%
```
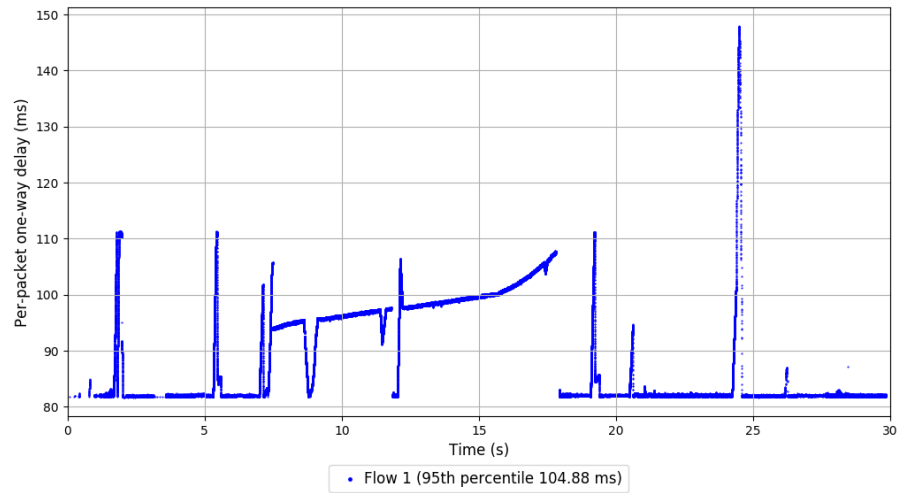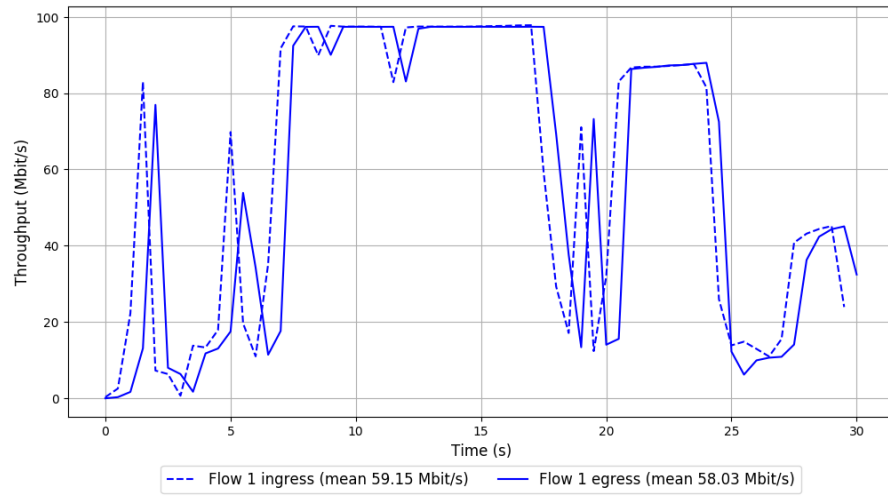
Run 4: Report of QUIC Cubic — Data Link

```
Run 5: Statistics of QUIC Cubic

Start at: 2018-09-07 11:27:27
End at: 2018-09-07 11:27:57
Local clock offset: 3.556 ms
Remote clock offset: 5.477 ms


# Below is generated by plot.py at 2018-09-07 11:51:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 51.45 Mbit/s
95th percentile per-packet one-way delay: 100.717 ms
Loss rate: 1.80%
-- Flow 1:
Average throughput: 51.45 Mbit/s
95th percentile per-packet one-way delay: 100.717 ms
Loss rate: 1.80%
```
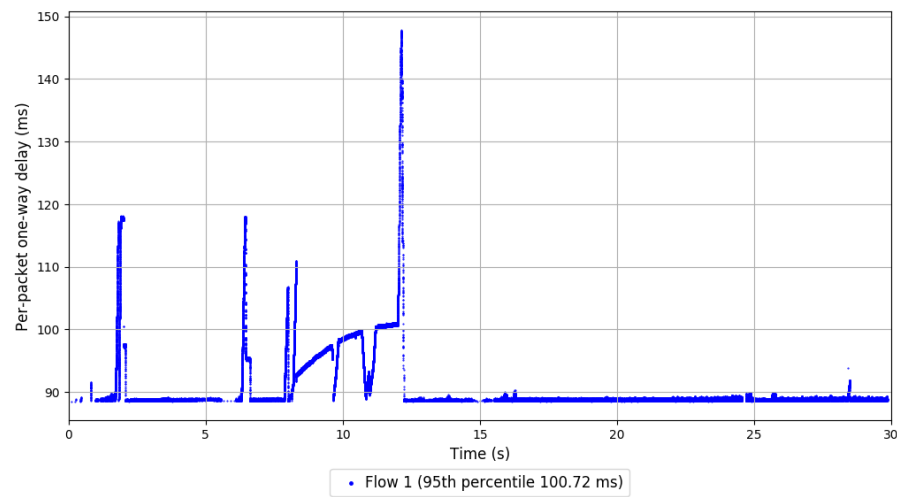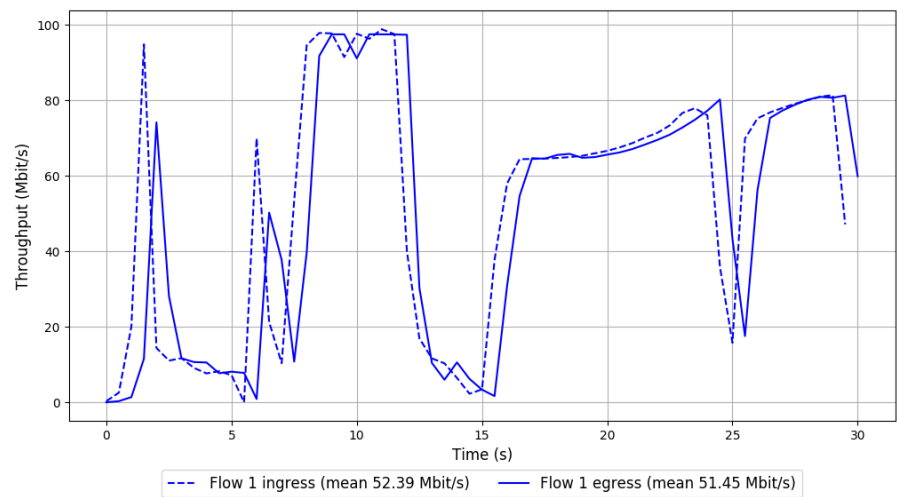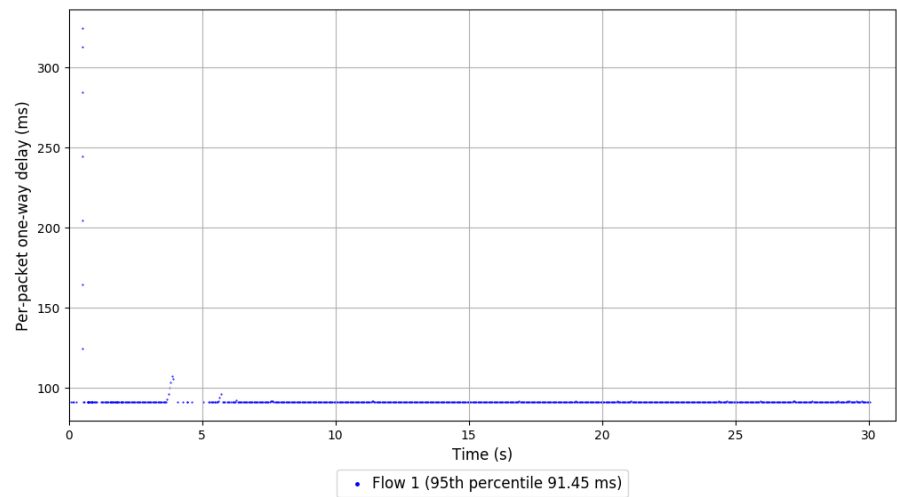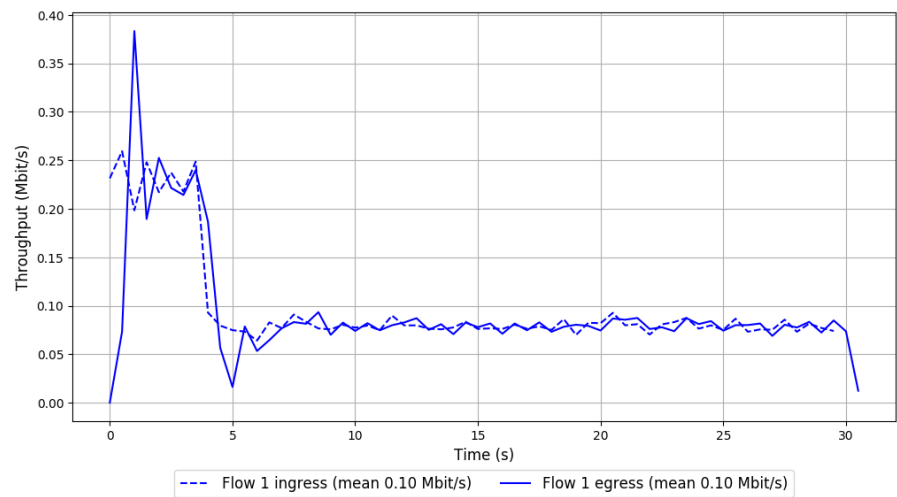
Run 5: Report of QUIC Cubic — Data Link

```
Run 1: Statistics of SCReAM

Start at: 2018-09-07 10:16:35
End at: 2018-09-07 10:17:05
Local clock offset: 1.471 ms
Remote clock offset: 4.538 ms


# Below is generated by plot.py at 2018-09-07 11:51:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 91.448 ms
Loss rate: 3.34%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 91.448 ms
Loss rate: 3.34%
```

Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2018-09-07 10:37:50
End at: 2018-09-07 10:38:20
Local clock offset: 3.454 ms
Remote clock offset: 1.489 ms


# Below is generated by plot.py at 2018-09-07 11:51:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 84.980 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 84.980 ms
Loss rate: 0.00%
```
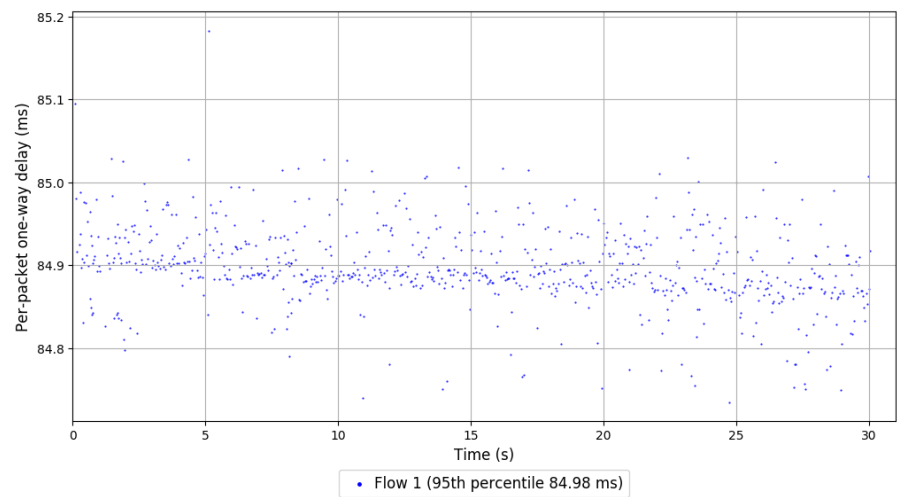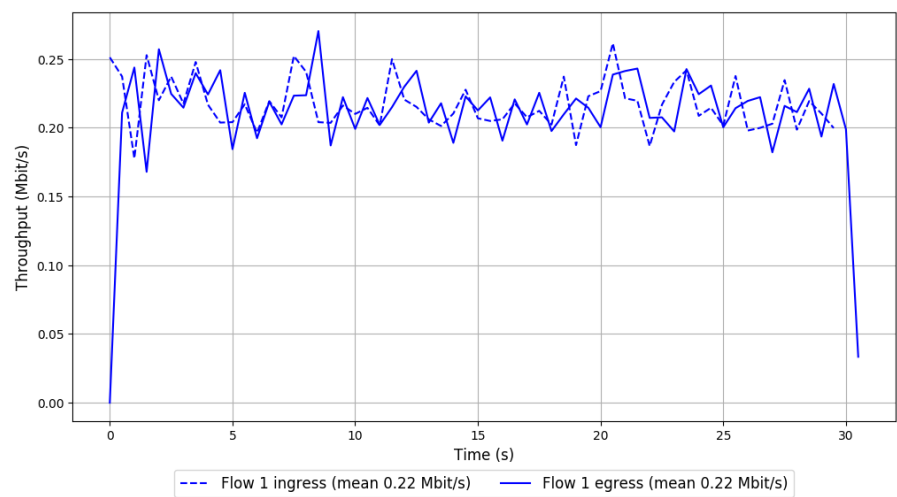
Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2018-09-07 10:59:01
End at: 2018-09-07 10:59:31
Local clock offset: 3.664 ms
Remote clock offset: 6.701 ms


# Below is generated by plot.py at 2018-09-07 11:51:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 87.079 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 87.079 ms
Loss rate: 0.00%
```
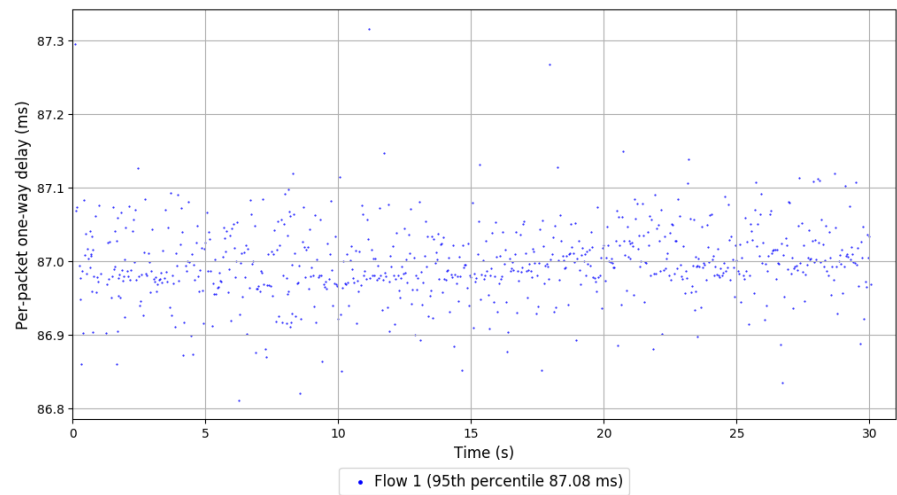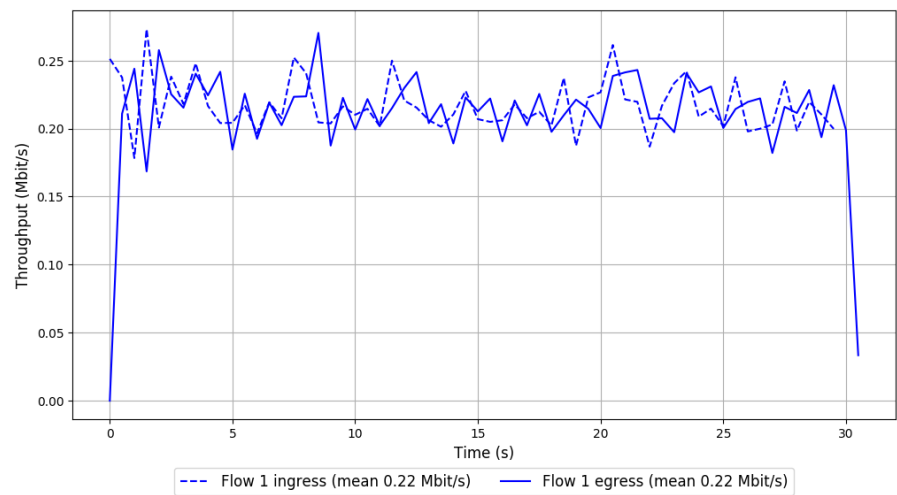
Run 3: Report of SCReAM — Data Link

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

Flow 1 (95th percentile 87.08 ms)

```
Run 4: Statistics of SCReAM

Start at: 2018-09-07 11:20:28
End at: 2018-09-07 11:20:58
Local clock offset: 4.455 ms
Remote clock offset: 1.674 ms


# Below is generated by plot.py at 2018-09-07 11:51:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 82.710 ms
Loss rate: 2.24%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 82.710 ms
Loss rate: 2.24%
```
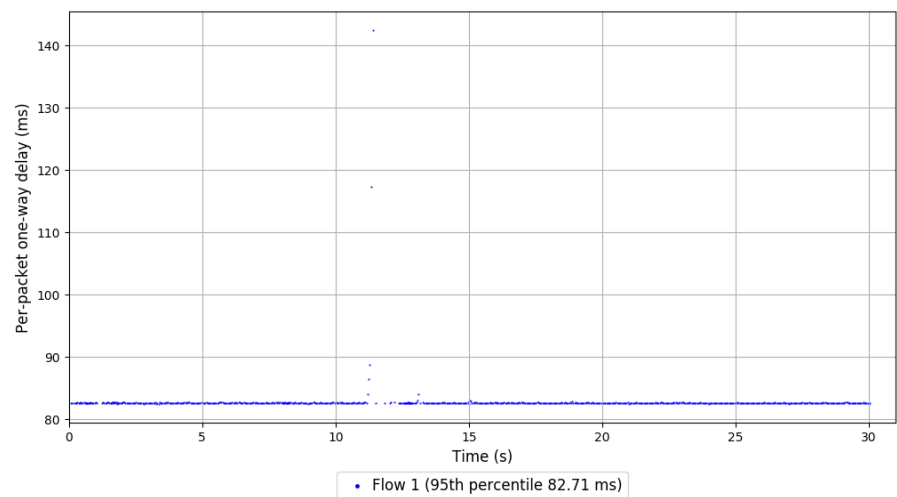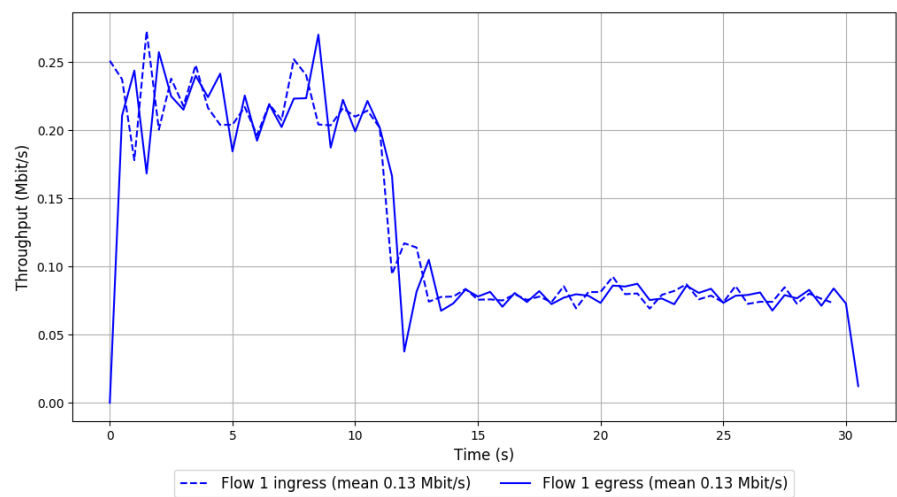
Run 4: Report of SCReAM — Data Link

```
Run 5: Statistics of SCReAM

Start at: 2018-09-07 11:41:40
End at: 2018-09-07 11:42:10
Local clock offset: 4.43 ms
Remote clock offset: 2.167 ms


# Below is generated by plot.py at 2018-09-07 11:51:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 81.267 ms
Loss rate: 0.47%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 81.267 ms
Loss rate: 0.47%
```
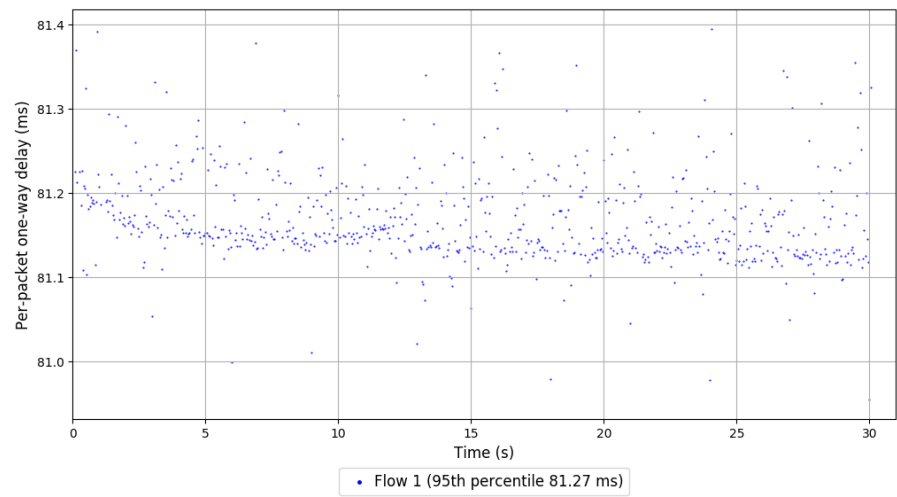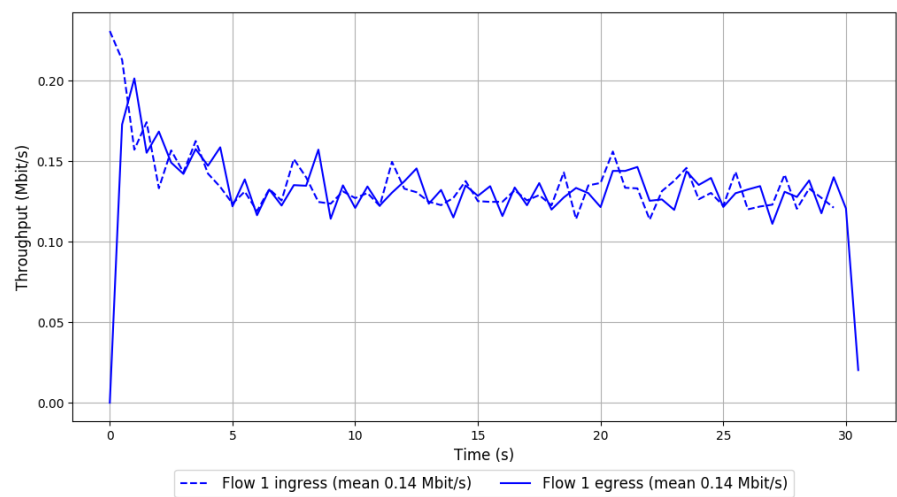
Run 5: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.14 Mbit/s) — — — Flow 1 egress (mean 0.14 Mbit/s)

• Flow 1 (95th percentile 81.27 ms)

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```
Run 1: Statistics of Sprout

Start at: 2018-09-07 10:09:35
End at: 2018-09-07 10:10:05
Local clock offset: 2.116 ms
Remote clock offset: 4.985 ms


# Below is generated by plot.py at 2018-09-07 11:51:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.87 Mbit/s
95th percentile per-packet one-way delay: 92.005 ms
Loss rate: 0.81%
-- Flow 1:
Average throughput: 1.87 Mbit/s
95th percentile per-packet one-way delay: 92.005 ms
Loss rate: 0.81%
```
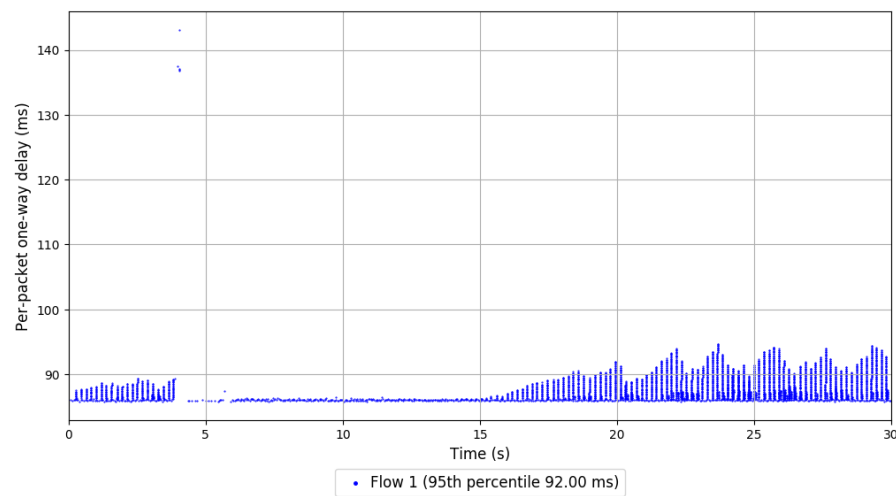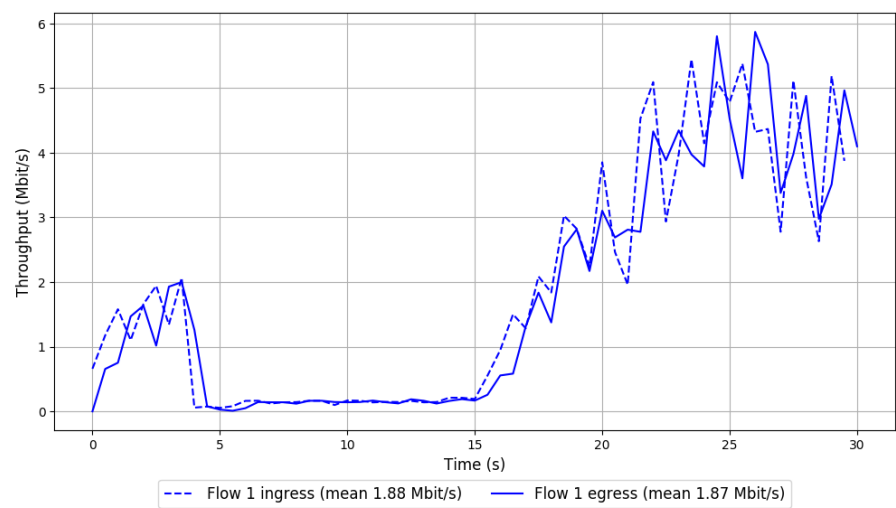
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-09-07 10:30:48
End at: 2018-09-07 10:31:18
Local clock offset: 3.969 ms
Remote clock offset: 4.231 ms


# Below is generated by plot.py at 2018-09-07 11:51:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.91 Mbit/s
95th percentile per-packet one-way delay: 90.523 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.91 Mbit/s
95th percentile per-packet one-way delay: 90.523 ms
Loss rate: 0.00%
```
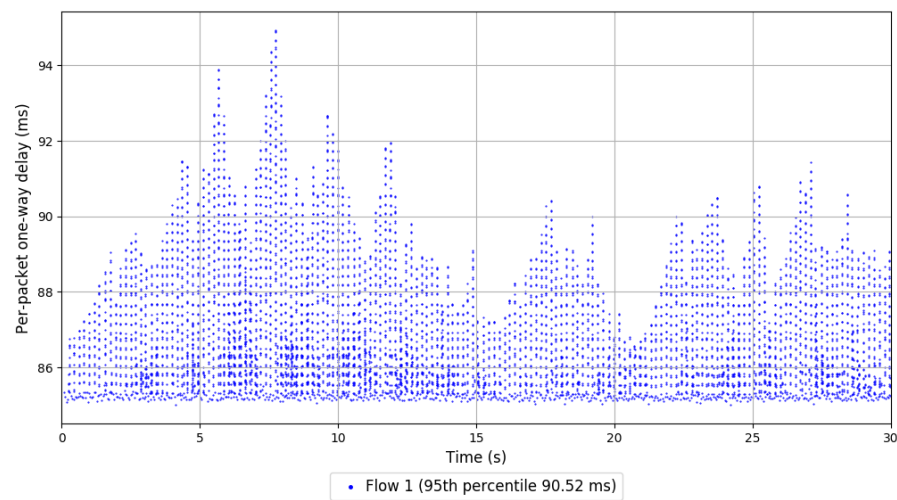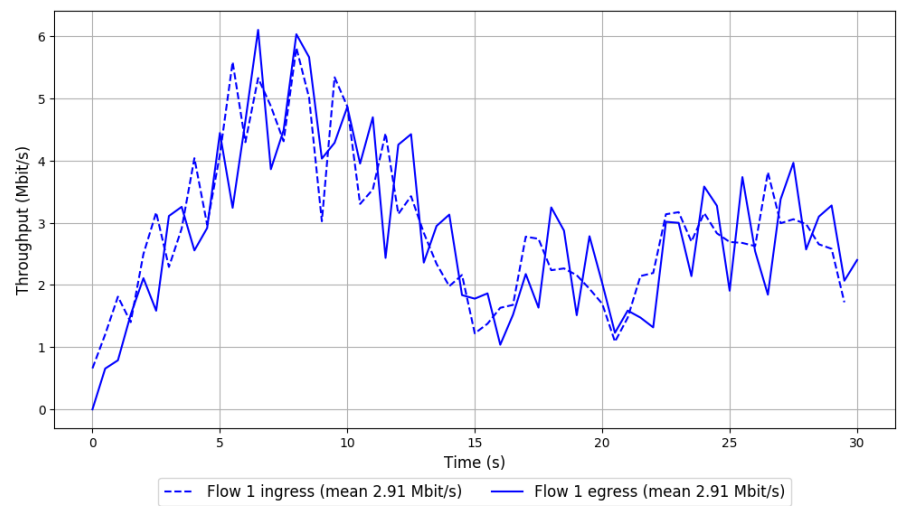
Run 2: Report of Sprout — Data Link

Flow 1 ingress (mean 2.91 Mbit/s) Flow 1 egress (mean 2.91 Mbit/s)

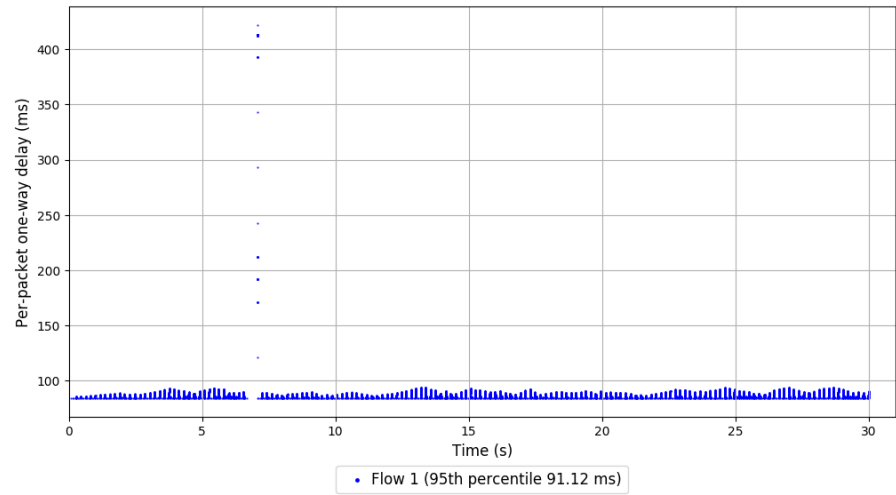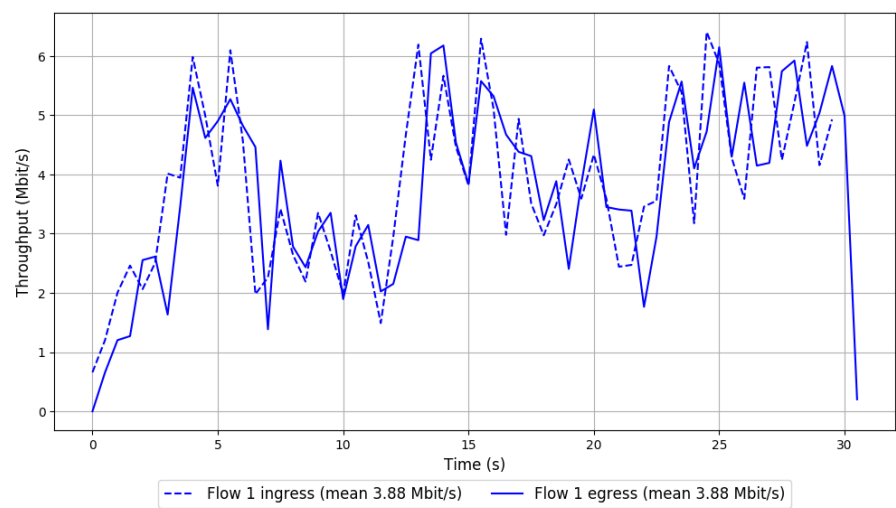• Flow 1 (95th percentile 90.52 ms)

```
Run 3: Statistics of Sprout

Start at: 2018-09-07 10:52:05
End at: 2018-09-07 10:52:35
Local clock offset: 4.398 ms
Remote clock offset: 6.788 ms


# Below is generated by plot.py at 2018-09-07 11:51:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.88 Mbit/s
95th percentile per-packet one-way delay: 91.121 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 3.88 Mbit/s
95th percentile per-packet one-way delay: 91.121 ms
Loss rate: 0.00%
```

Run 3: Report of Sprout — Data Link

```
Run 4: Statistics of Sprout

Start at: 2018-09-07 11:13:25
End at: 2018-09-07 11:13:55
Local clock offset: 3.765 ms
Remote clock offset: 1.681 ms

# Below is generated by plot.py at 2018-09-07 11:51:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.85 Mbit/s
95th percentile per-packet one-way delay: 87.236 ms
Loss rate: 1.38%
-- Flow 1:
Average throughput: 1.85 Mbit/s
95th percentile per-packet one-way delay: 87.236 ms
Loss rate: 1.38%
```
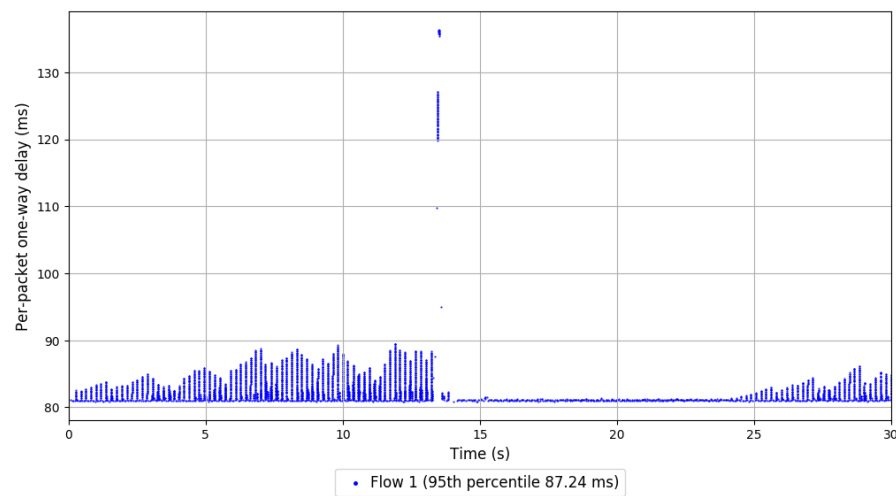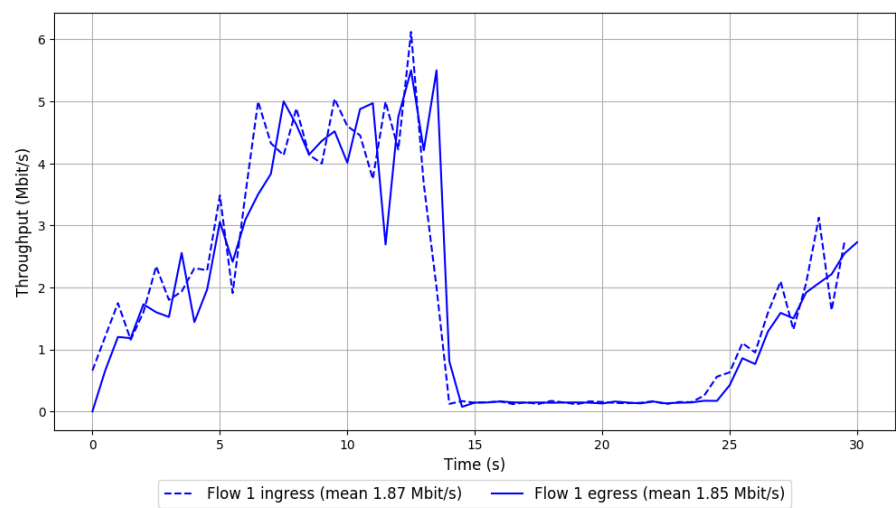
Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2018-09-07 11:34:35
End at: 2018-09-07 11:35:05
Local clock offset: 4.402 ms
Remote clock offset: 5.937 ms


# Below is generated by plot.py at 2018-09-07 11:51:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.46 Mbit/s
95th percentile per-packet one-way delay: 91.259 ms
Loss rate: 0.95%
-- Flow 1:
Average throughput: 1.46 Mbit/s
95th percentile per-packet one-way delay: 91.259 ms
Loss rate: 0.95%
```
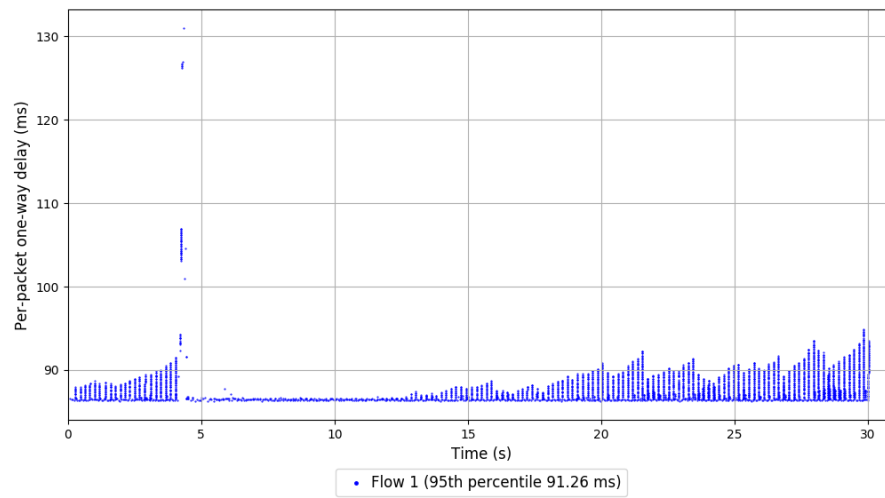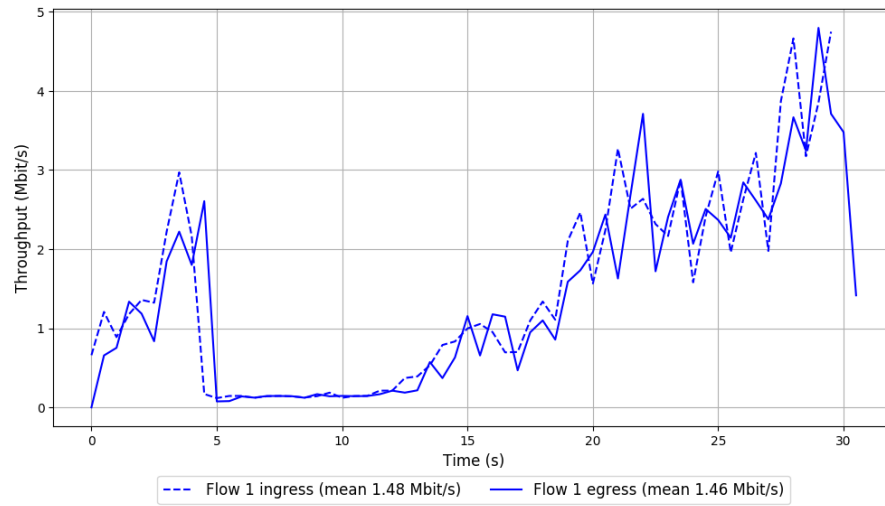
Run 5: Report of Sprout — Data Link

Flow 1 ingress (mean 1.48 Mbit/s)   Flow 1 egress (mean 1.46 Mbit/s)

Flow 1 (95th percentile 91.26 ms)
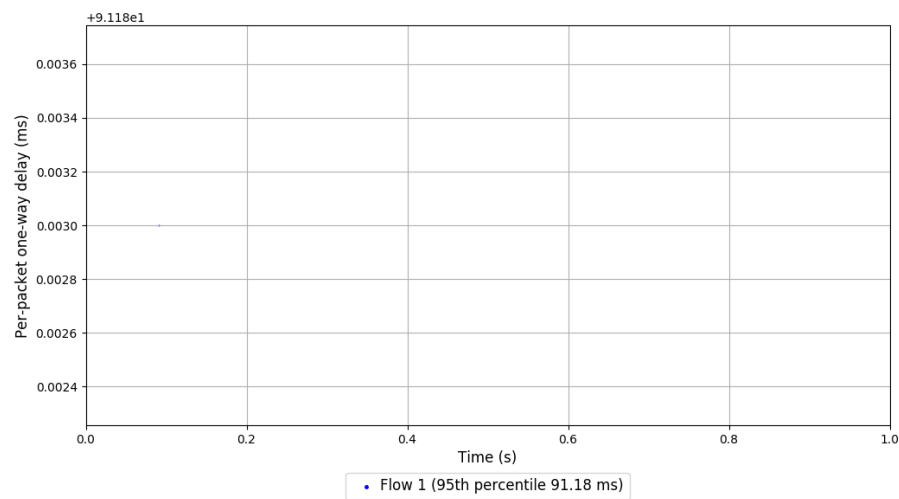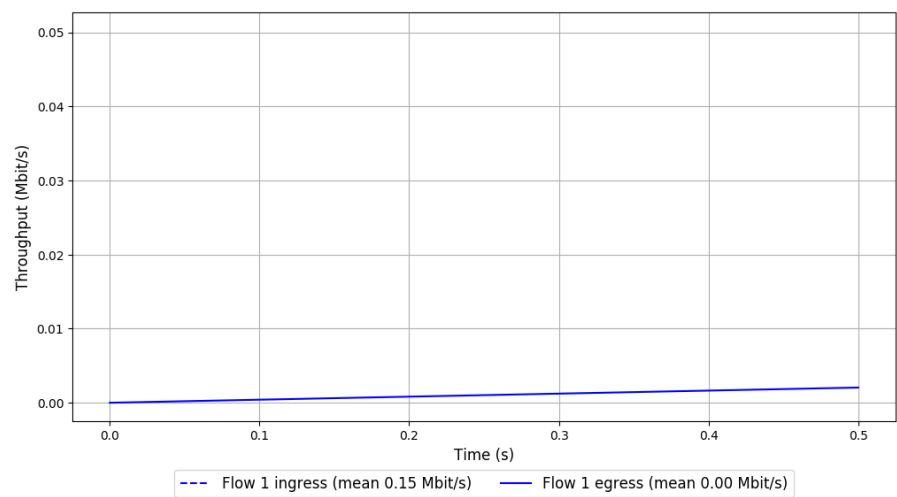
```
Run 1: Statistics of TaoVA-100x

Start at: 2018-09-07 10:10:44
End at: 2018-09-07 10:11:14
Local clock offset: 2.057 ms
Remote clock offset: 4.369 ms
```

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

Flow 1 ingress (mean 0.15 Mbit/s)   Flow 1 egress (mean 0.00 Mbit/s)

Flow 1 (95th percentile 91.18 ms)

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

Start at: 2018-09-07 10:31:56
End at: 2018-09-07 10:32:26
Local clock offset: 3.248 ms
Remote clock offset: 4.863 ms


# Below is generated by plot.py at 2018-09-07 11:51:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.60 Mbit/s
95th percentile per-packet one-way delay: 85.352 ms
Loss rate: 22.24%
-- Flow 1:
Average throughput: 12.60 Mbit/s
95th percentile per-packet one-way delay: 85.352 ms
Loss rate: 22.24%
```
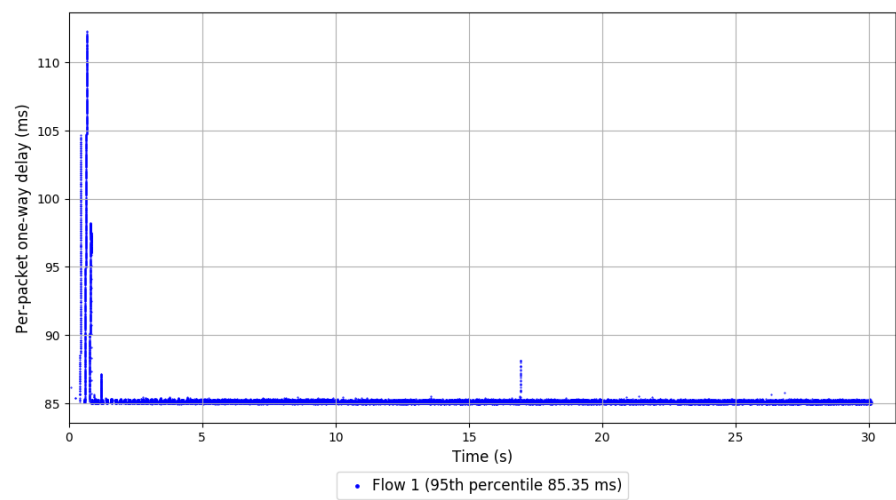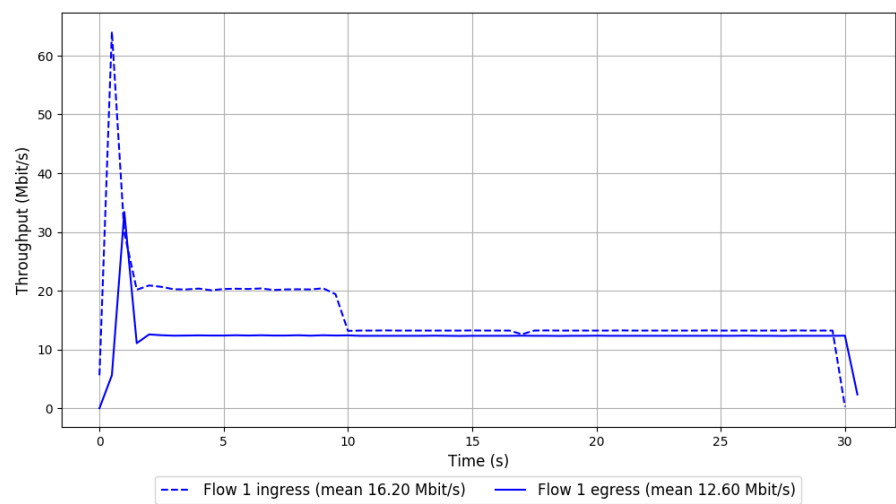
Run 2: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 16.20 Mbit/s) ——— Flow 1 egress (mean 12.60 Mbit/s)

Flow 1 (95th percentile 85.35 ms)
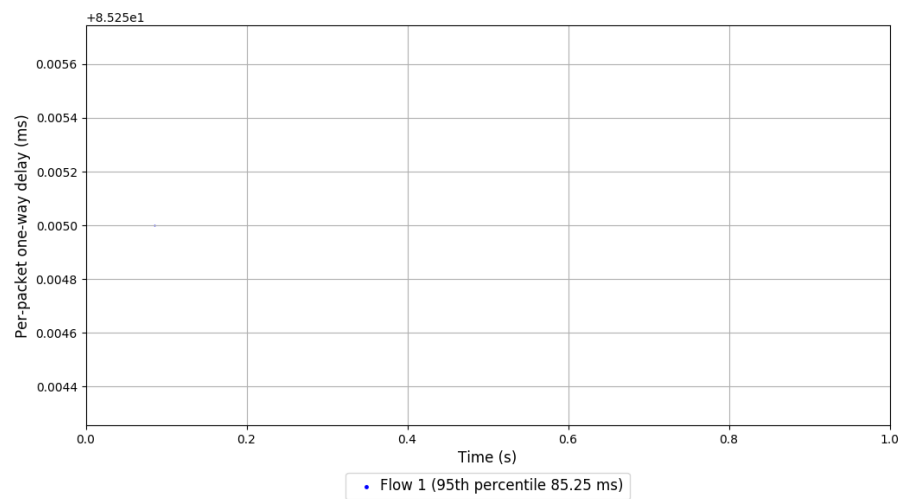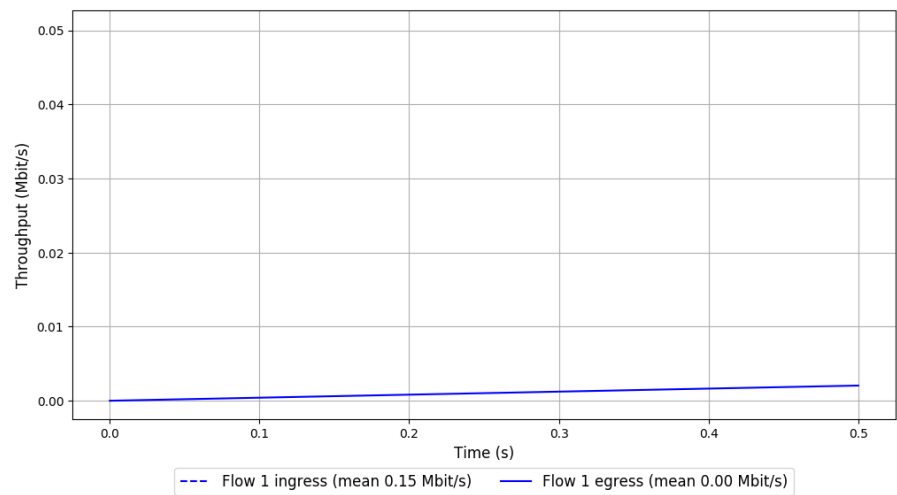
```
Run 3: Statistics of TaoVA-100x

Start at: 2018-09-07 10:53:12
End at: 2018-09-07 10:53:42
Local clock offset: 4.401 ms
Remote clock offset: 6.871 ms
```

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

Flow 1 ingress (mean 0.15 Mbit/s)   Flow 1 egress (mean 0.00 Mbit/s)

Flow 1 (95th percentile 85.25 ms)

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

Start at: 2018-09-07 11:14:33
End at: 2018-09-07 11:15:03
Local clock offset: 4.543 ms
Remote clock offset: 2.127 ms


# Below is generated by plot.py at 2018-09-07 11:51:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.39 Mbit/s
95th percentile per-packet one-way delay: 83.074 ms
Loss rate: 16.06%
-- Flow 1:
Average throughput: 12.39 Mbit/s
95th percentile per-packet one-way delay: 83.074 ms
Loss rate: 16.06%
```
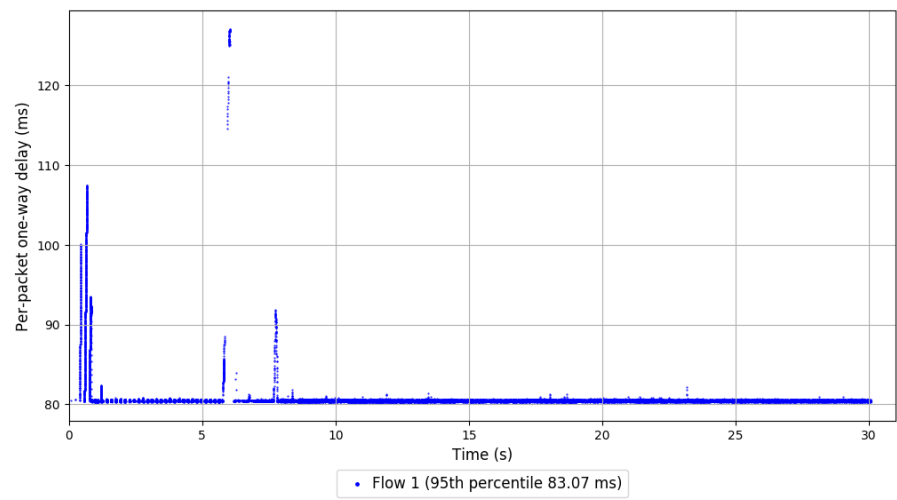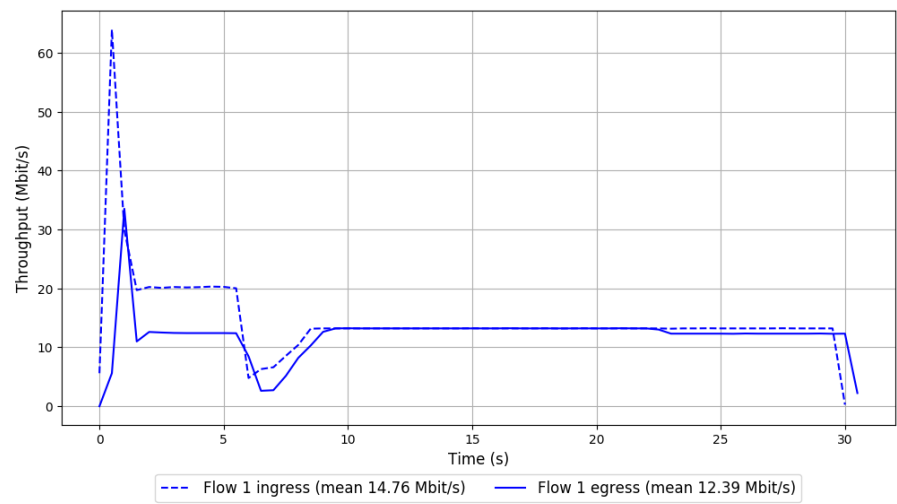
Run 4: Report of TaoVA-100x — Data Link

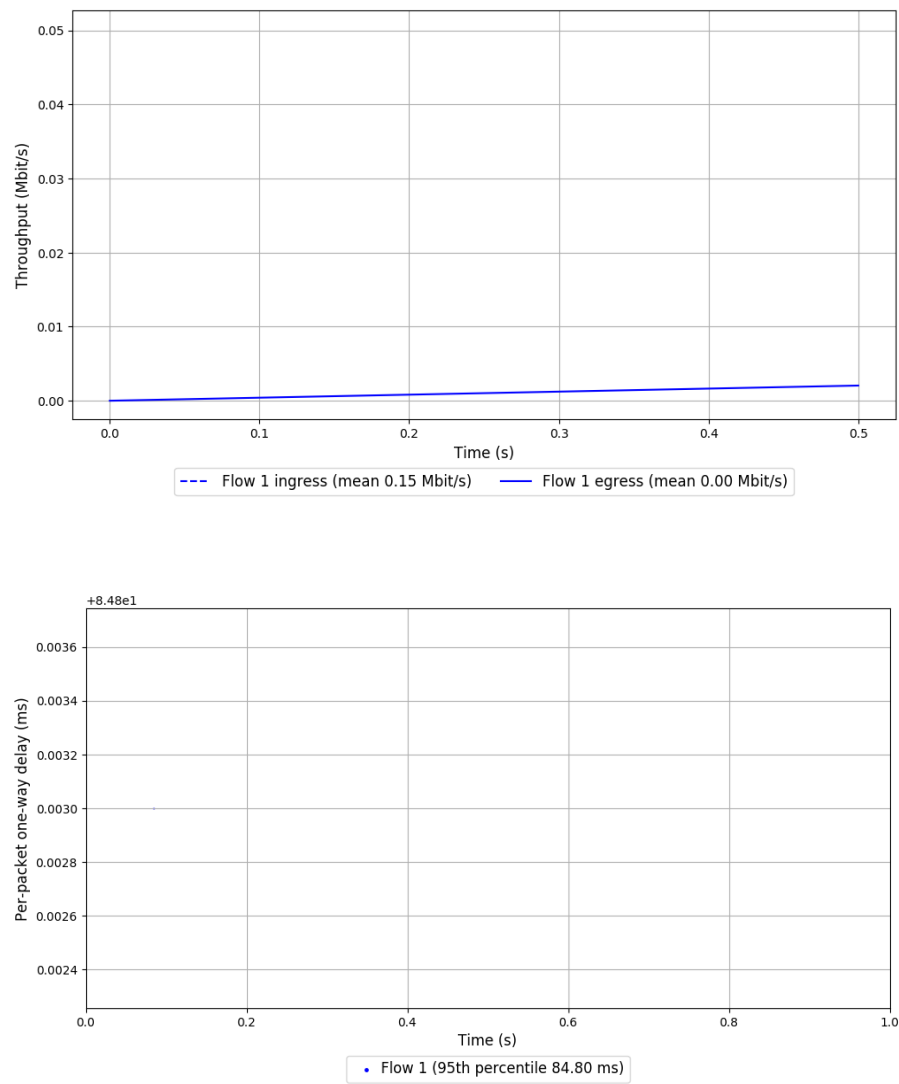

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```
Run 5: Statistics of TaoVA-100x

Start at: 2018-09-07 11:35:42
End at: 2018-09-07 11:36:12
Local clock offset: 4.396 ms
Remote clock offset: 5.592 ms
```

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

```
Run 1: Statistics of TCP Vegas

Start at: 2018-09-07 10:01:06
End at: 2018-09-07 10:01:36
Local clock offset: 1.891 ms
Remote clock offset: 5.016 ms


# Below is generated by plot.py at 2018-09-07 11:51:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 45.95 Mbit/s
95th percentile per-packet one-way delay: 85.266 ms
Loss rate: 0.91%
-- Flow 1:
Average throughput: 45.95 Mbit/s
95th percentile per-packet one-way delay: 85.266 ms
Loss rate: 0.91%
```
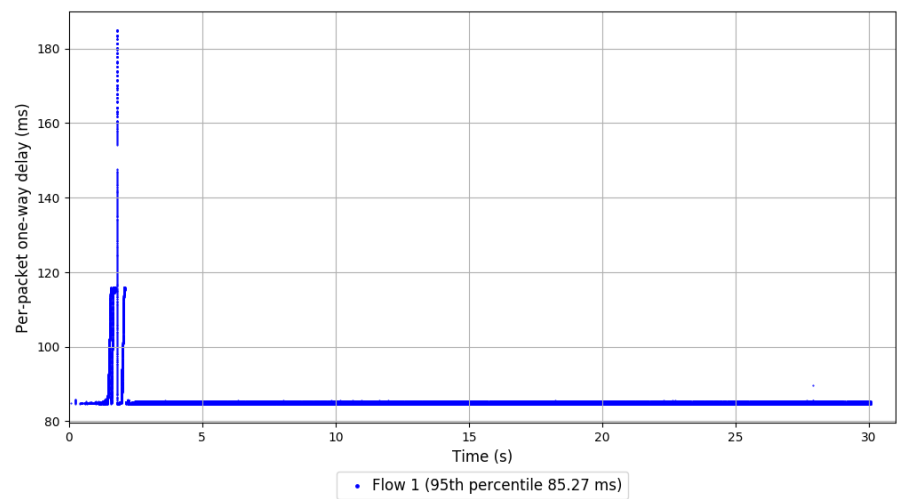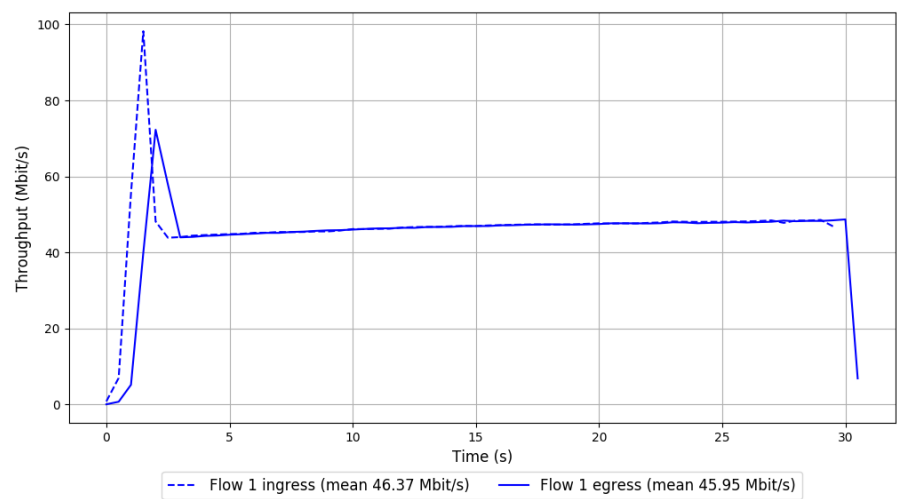
Run 1: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 46.37 Mbit/s) — — — Flow 1 egress (mean 45.95 Mbit/s)

Flow 1 (95th percentile 85.27 ms)

```
Run 2: Statistics of TCP Vegas

Start at: 2018-09-07 10:22:26
End at: 2018-09-07 10:22:56
Local clock offset: 3.234 ms
Remote clock offset: 0.379 ms


# Below is generated by plot.py at 2018-09-07 11:51:58
# Datalink statistics
-- Total of 1 flow:
Average throughput: 44.86 Mbit/s
95th percentile per-packet one-way delay: 82.035 ms
Loss rate: 1.78%
-- Flow 1:
Average throughput: 44.86 Mbit/s
95th percentile per-packet one-way delay: 82.035 ms
Loss rate: 1.78%
```
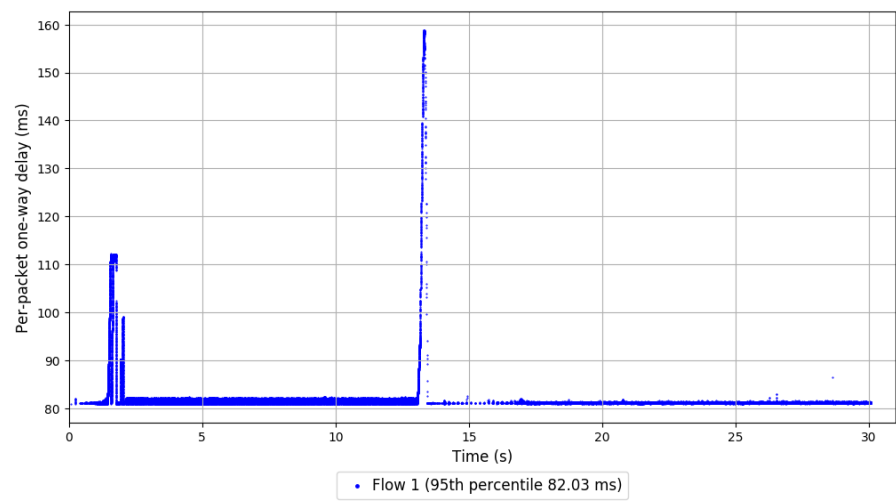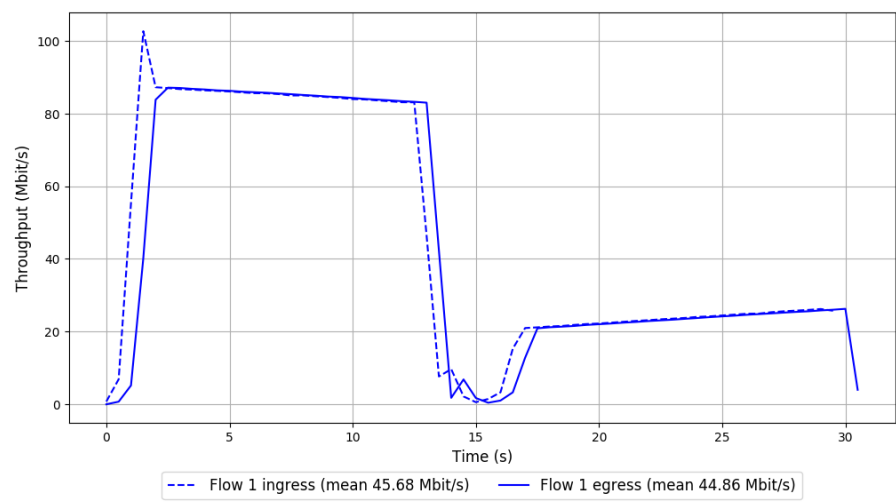
Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2018-09-07 10:43:49
End at: 2018-09-07 10:44:19
Local clock offset: 4.371 ms
Remote clock offset: 5.959 ms


# Below is generated by plot.py at 2018-09-07 11:52:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 87.27 Mbit/s
95th percentile per-packet one-way delay: 85.498 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 87.27 Mbit/s
95th percentile per-packet one-way delay: 85.498 ms
Loss rate: 0.66%
```
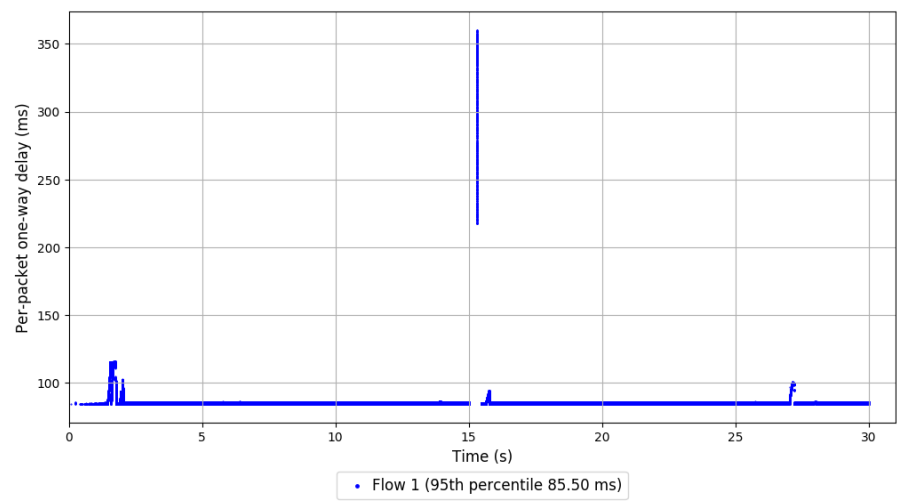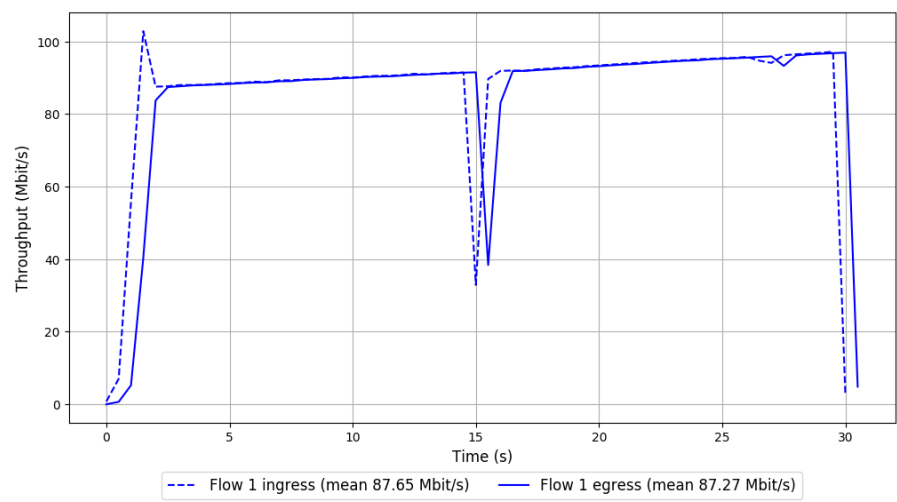
Run 3: Report of TCP Vegas — Data Link

```
Run 4: Statistics of TCP Vegas

Start at: 2018-09-07 11:05:03
End at: 2018-09-07 11:05:33
Local clock offset: 3.707 ms
Remote clock offset: 2.267 ms


# Below is generated by plot.py at 2018-09-07 11:52:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 80.12 Mbit/s
95th percentile per-packet one-way delay: 83.830 ms
Loss rate: 0.45%
-- Flow 1:
Average throughput: 80.12 Mbit/s
95th percentile per-packet one-way delay: 83.830 ms
Loss rate: 0.45%
```
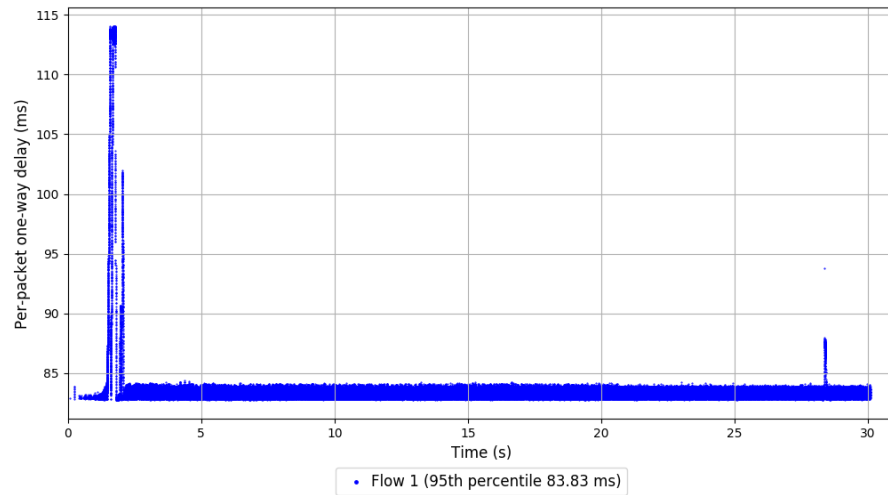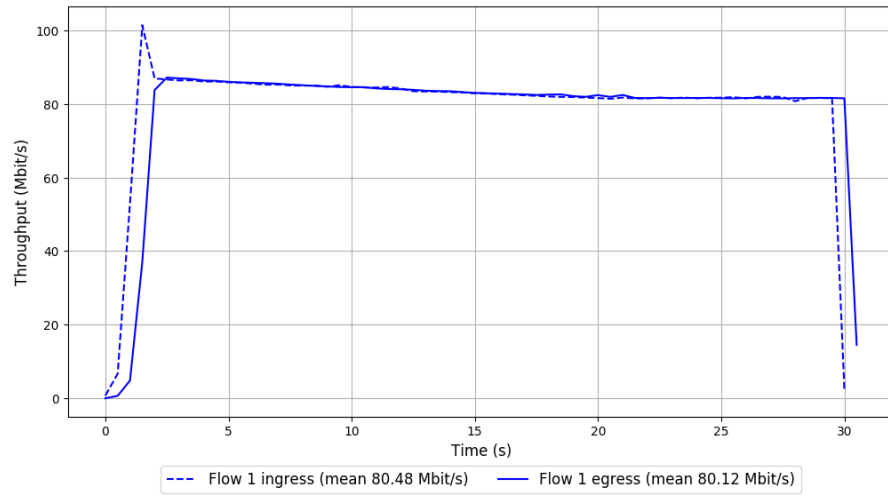
Run 4: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 80.48 Mbit/s)   Flow 1 egress (mean 80.12 Mbit/s)

Flow 1 (95th percentile 83.83 ms)

```
Run 5: Statistics of TCP Vegas

Start at: 2018-09-07 11:26:16
End at: 2018-09-07 11:26:46
Local clock offset: 3.628 ms
Remote clock offset: 1.154 ms


# Below is generated by plot.py at 2018-09-07 11:52:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 62.90 Mbit/s
95th percentile per-packet one-way delay: 83.461 ms
Loss rate: 1.27%
-- Flow 1:
Average throughput: 62.90 Mbit/s
95th percentile per-packet one-way delay: 83.461 ms
Loss rate: 1.27%
```
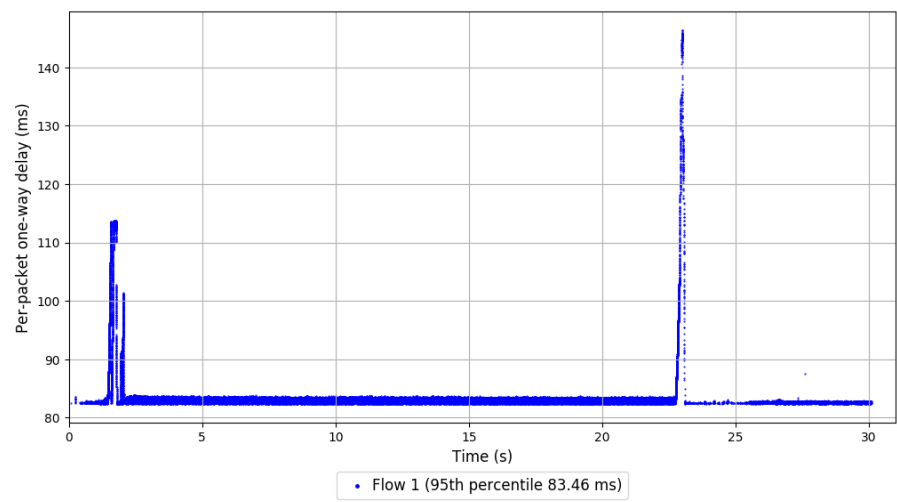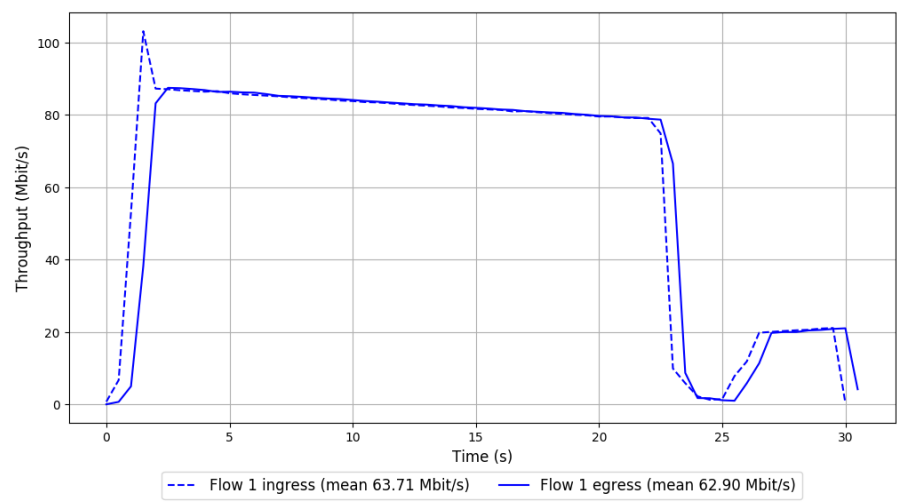
Run 5: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 63.71 Mbit/s)   Flow 1 egress (mean 62.90 Mbit/s)

Flow 1 (95th percentile 83.46 ms)

```
Run 1: Statistics of Verus

Start at: 2018-09-07 10:11:51
End at: 2018-09-07 10:12:21
Local clock offset: 1.228 ms
Remote clock offset: 0.622 ms


# Below is generated by plot.py at 2018-09-07 11:52:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 32.93 Mbit/s
95th percentile per-packet one-way delay: 155.804 ms
Loss rate: 77.12%
-- Flow 1:
Average throughput: 32.93 Mbit/s
95th percentile per-packet one-way delay: 155.804 ms
Loss rate: 77.12%
```
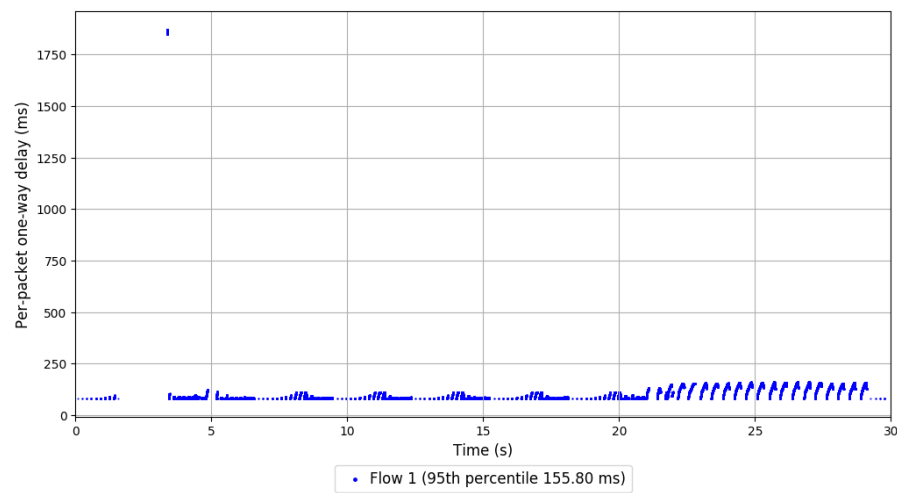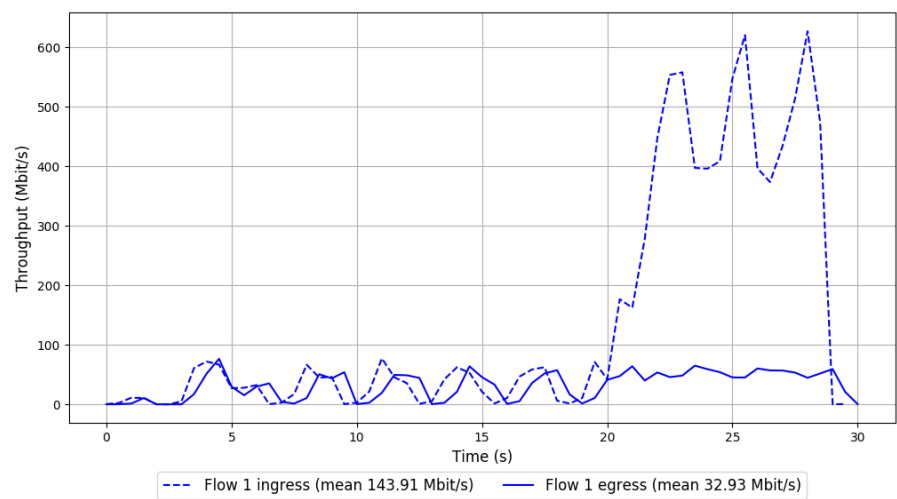
Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2018-09-07 10:33:05
End at: 2018-09-07 10:33:35
Local clock offset: 4.076 ms
Remote clock offset: 1.044 ms


# Below is generated by plot.py at 2018-09-07 11:52:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 27.22 Mbit/s
95th percentile per-packet one-way delay: 111.118 ms
Loss rate: 10.45%
-- Flow 1:
Average throughput: 27.22 Mbit/s
95th percentile per-packet one-way delay: 111.118 ms
Loss rate: 10.45%
```
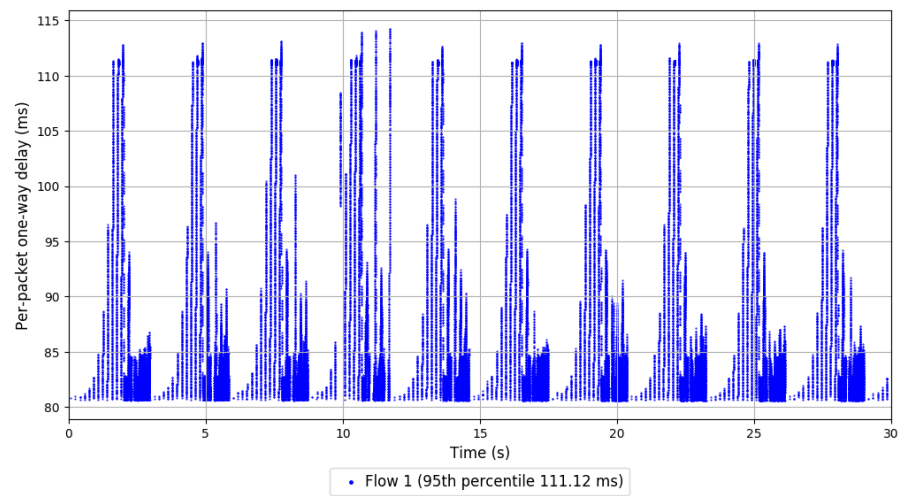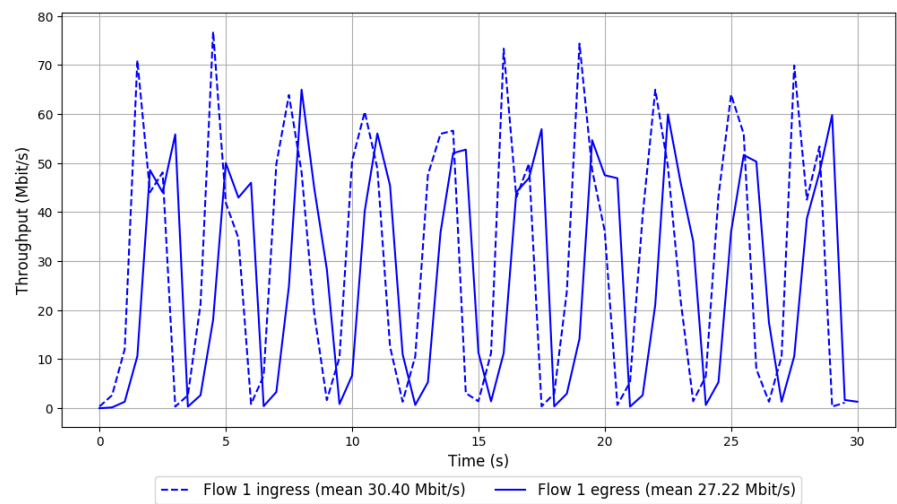
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-09-07 10:54:19
End at: 2018-09-07 10:54:50
Local clock offset: 3.587 ms
Remote clock offset: 6.949 ms


# Below is generated by plot.py at 2018-09-07 11:52:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 28.83 Mbit/s
95th percentile per-packet one-way delay: 138.389 ms
Loss rate: 55.63%
-- Flow 1:
Average throughput: 28.83 Mbit/s
95th percentile per-packet one-way delay: 138.389 ms
Loss rate: 55.63%
```
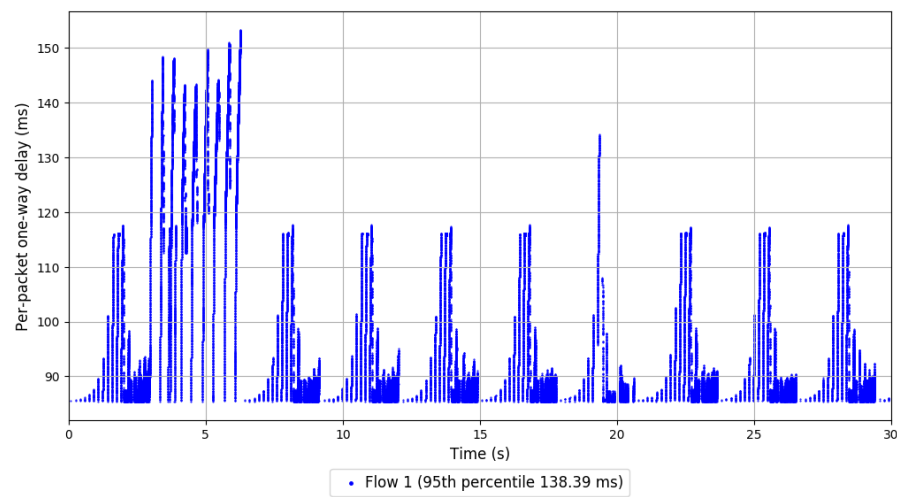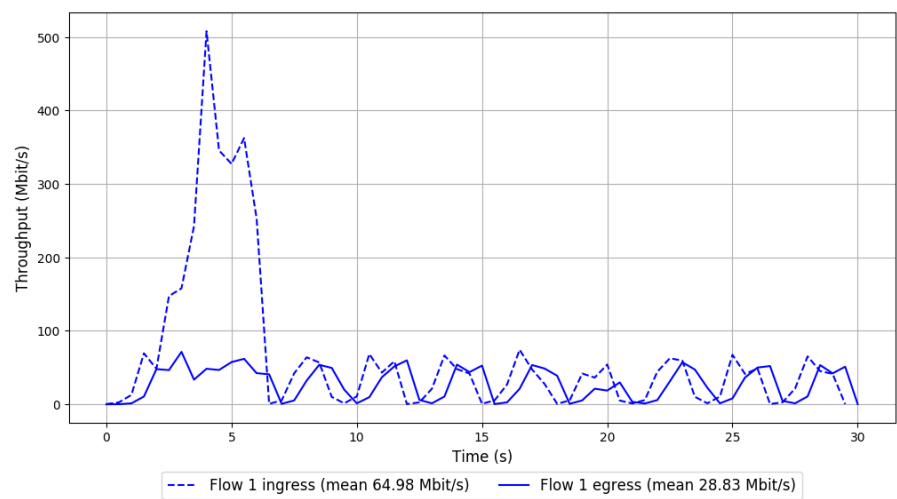
Run 3: Report of Verus — Data Link

```
Run 4: Statistics of Verus

Start at: 2018-09-07 11:15:42
End at: 2018-09-07 11:16:12
Local clock offset: 4.531 ms
Remote clock offset: 1.564 ms


# Below is generated by plot.py at 2018-09-07 11:52:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 27.17 Mbit/s
95th percentile per-packet one-way delay: 110.516 ms
Loss rate: 9.86%
-- Flow 1:
Average throughput: 27.17 Mbit/s
95th percentile per-packet one-way delay: 110.516 ms
Loss rate: 9.86%
```
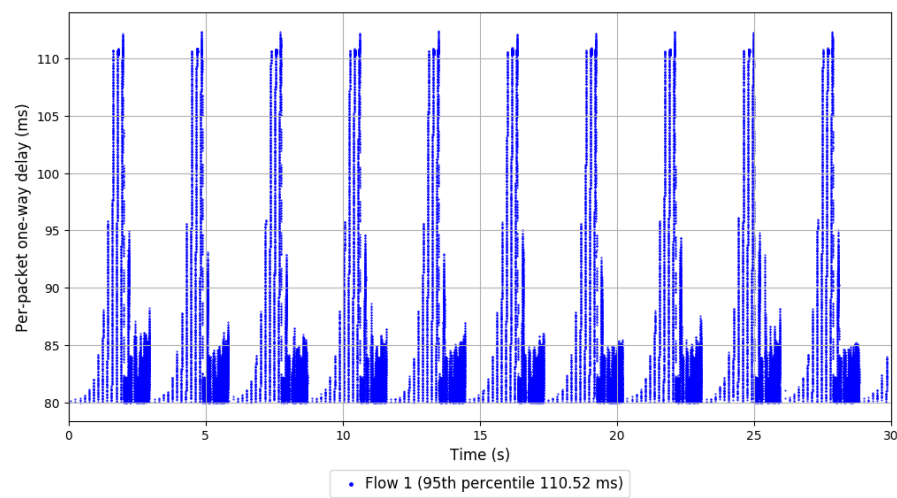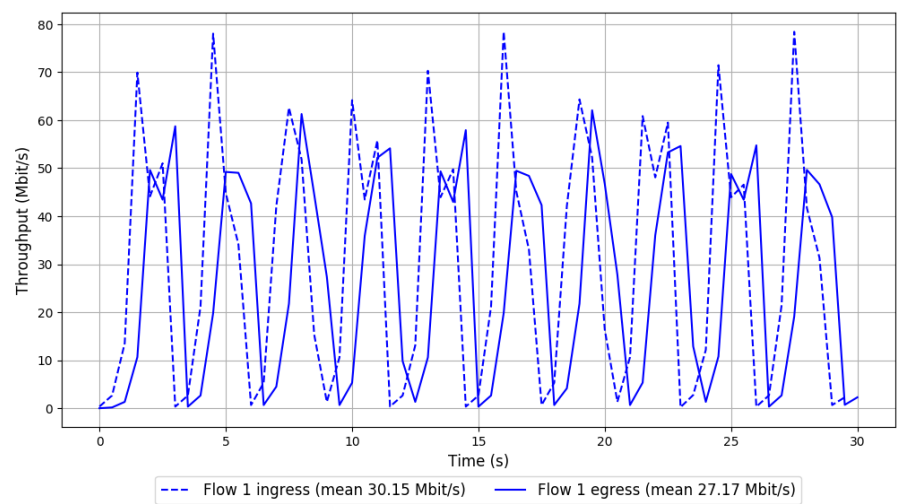
Run 4: Report of Verus — Data Link

```
Run 5: Statistics of Verus

Start at: 2018-09-07 11:36:49
End at: 2018-09-07 11:37:19
Local clock offset: 3.615 ms
Remote clock offset: 1.73 ms


# Below is generated by plot.py at 2018-09-07 11:52:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 27.47 Mbit/s
95th percentile per-packet one-way delay: 114.307 ms
Loss rate: 9.37%
-- Flow 1:
Average throughput: 27.47 Mbit/s
95th percentile per-packet one-way delay: 114.307 ms
Loss rate: 9.37%
```
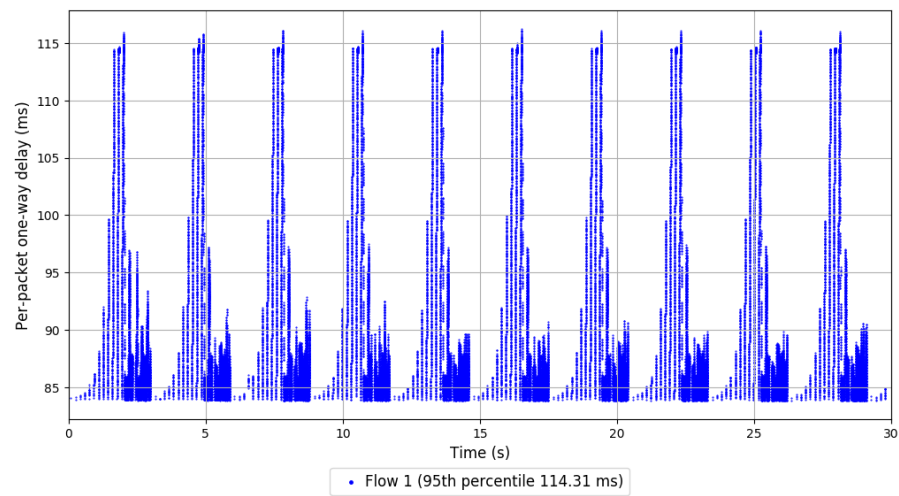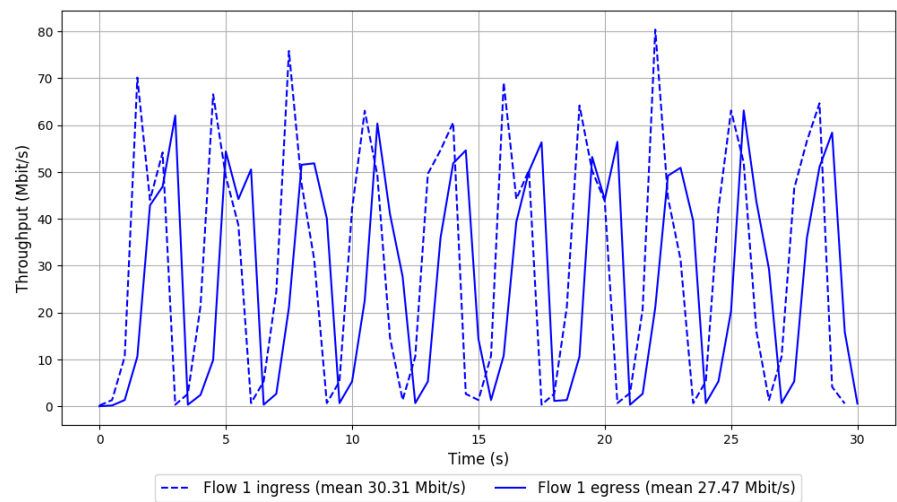
Run 5: Report of Verus — Data Link

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-09-07 10:15:24
End at: 2018-09-07 10:15:54
Local clock offset: 1.196 ms
Remote clock offset: 0.311 ms


# Below is generated by plot.py at 2018-09-07 11:52:41
# Datalink statistics
-- Total of 1 flow:
Average throughput: 53.40 Mbit/s
95th percentile per-packet one-way delay: 109.770 ms
Loss rate: 2.47%
-- Flow 1:
Average throughput: 53.40 Mbit/s
95th percentile per-packet one-way delay: 109.770 ms
Loss rate: 2.47%
```
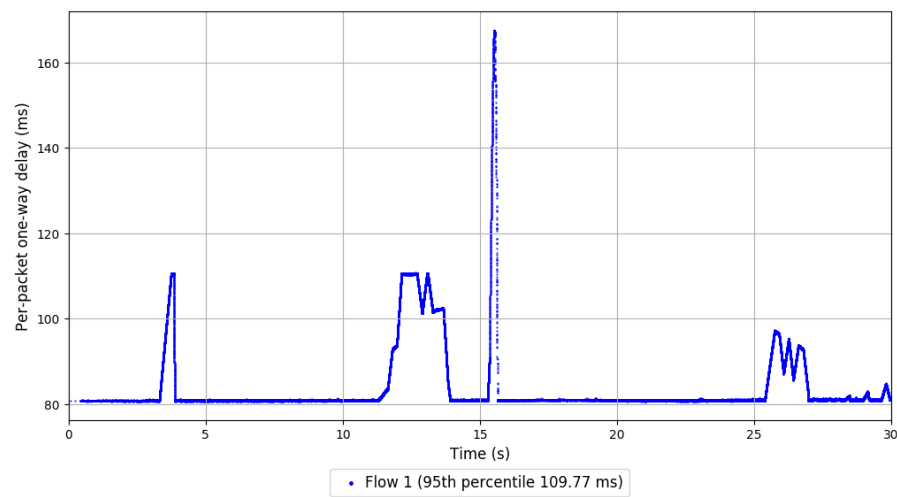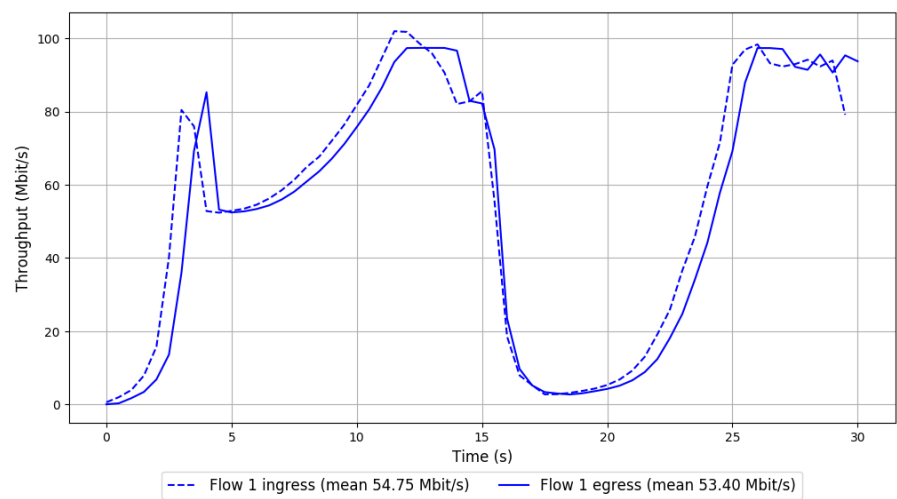
Run 1: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 54.75 Mbit/s) — Flow 1 egress (mean 53.40 Mbit/s)

• Flow 1 (95th percentile 109.77 ms)

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```
Run 2: Statistics of PCC-Vivace

Start at: 2018-09-07 10:36:33
End at: 2018-09-07 10:37:03
Local clock offset: 3.42 ms
Remote clock offset: 0.938 ms


# Below is generated by plot.py at 2018-09-07 11:52:46
# Datalink statistics
-- Total of 1 flow:
Average throughput: 59.31 Mbit/s
95th percentile per-packet one-way delay: 112.263 ms
Loss rate: 2.39%
-- Flow 1:
Average throughput: 59.31 Mbit/s
95th percentile per-packet one-way delay: 112.263 ms
Loss rate: 2.39%
```
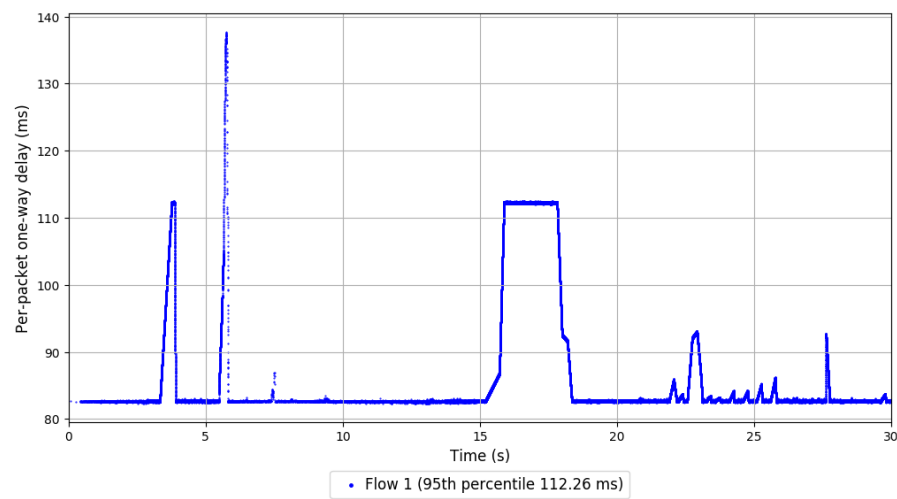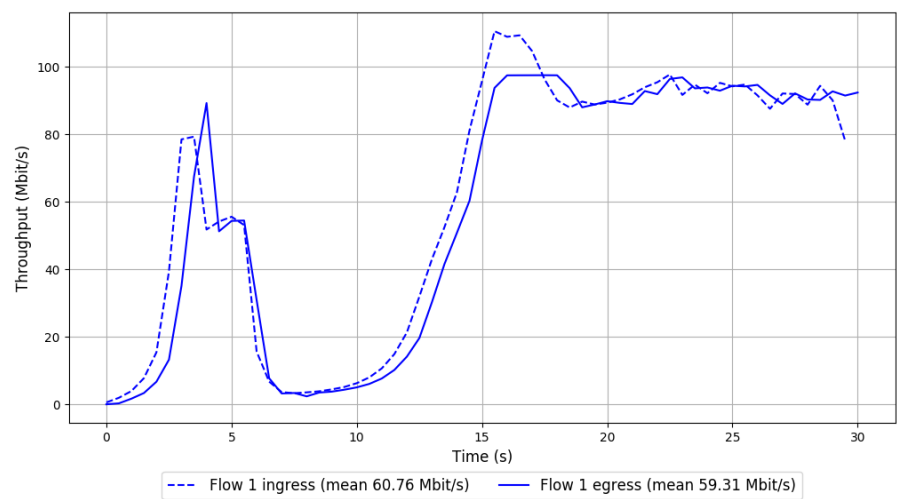
Run 2: Report of PCC-Vivace — Data Link

```
Run 3: Statistics of PCC-Vivace

Start at: 2018-09-07 10:57:49
End at: 2018-09-07 10:58:19
Local clock offset: 4.373 ms
Remote clock offset: 6.776 ms


# Below is generated by plot.py at 2018-09-07 11:52:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 77.57 Mbit/s
95th percentile per-packet one-way delay: 94.517 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 77.57 Mbit/s
95th percentile per-packet one-way delay: 94.517 ms
Loss rate: 0.03%
```
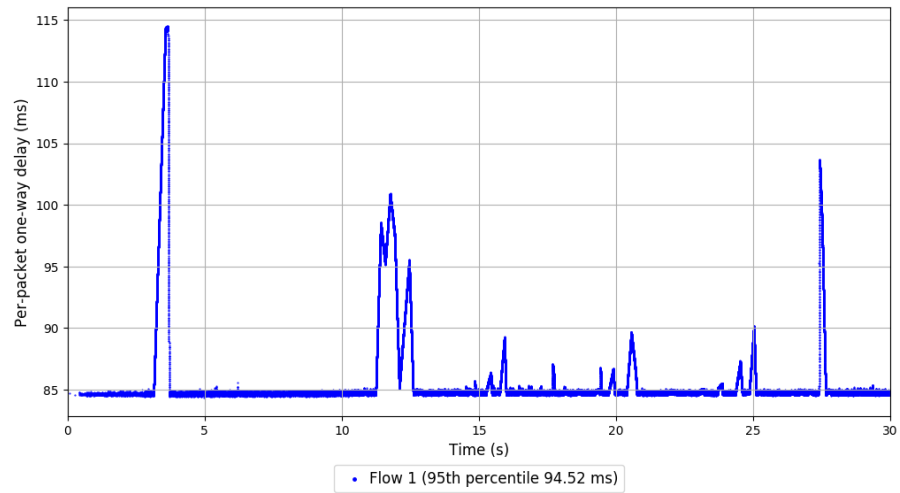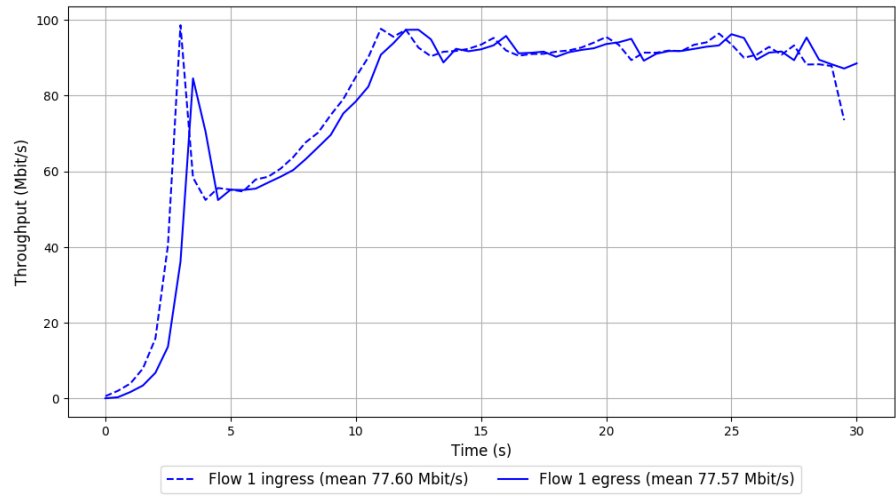
Run 3: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 77.60 Mbit/s)   Flow 1 egress (mean 77.57 Mbit/s)

Flow 1 (95th percentile 94.52 ms)

```
Run 4: Statistics of PCC-Vivace

Start at: 2018-09-07 11:19:15
End at: 2018-09-07 11:19:45
Local clock offset: 3.627 ms
Remote clock offset: 1.427 ms


# Below is generated by plot.py at 2018-09-07 11:52:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 63.72 Mbit/s
95th percentile per-packet one-way delay: 98.090 ms
Loss rate: 1.98%
-- Flow 1:
Average throughput: 63.72 Mbit/s
95th percentile per-packet one-way delay: 98.090 ms
Loss rate: 1.98%
```
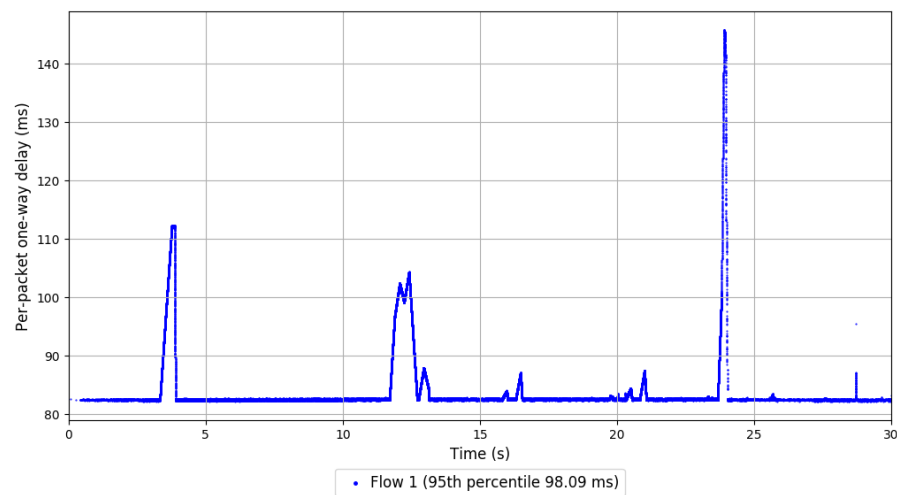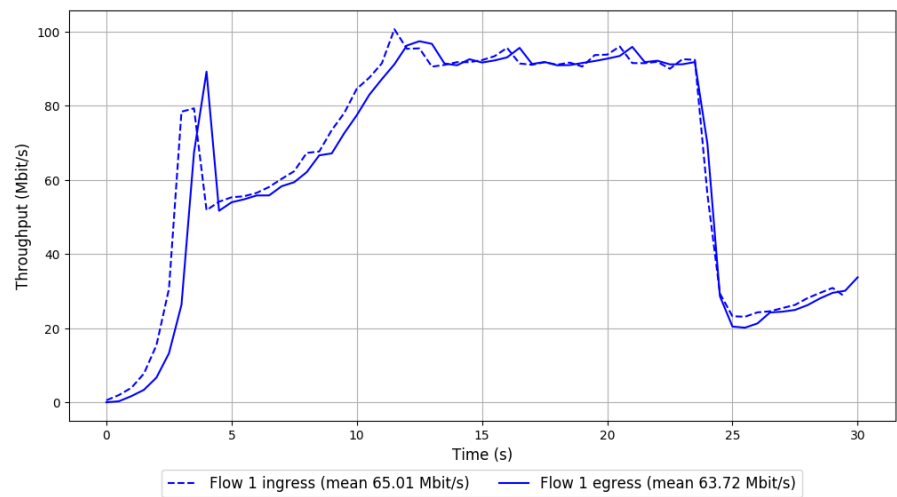
Run 4: Report of PCC-Vivace — Data Link

```
Run 5: Statistics of PCC-Vivace

Start at: 2018-09-07 11:40:26
End at: 2018-09-07 11:40:56
Local clock offset: 3.577 ms
Remote clock offset: 1.542 ms


# Below is generated by plot.py at 2018-09-07 11:52:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 59.24 Mbit/s
95th percentile per-packet one-way delay: 109.227 ms
Loss rate: 1.97%
-- Flow 1:
Average throughput: 59.24 Mbit/s
95th percentile per-packet one-way delay: 109.227 ms
Loss rate: 1.97%
```
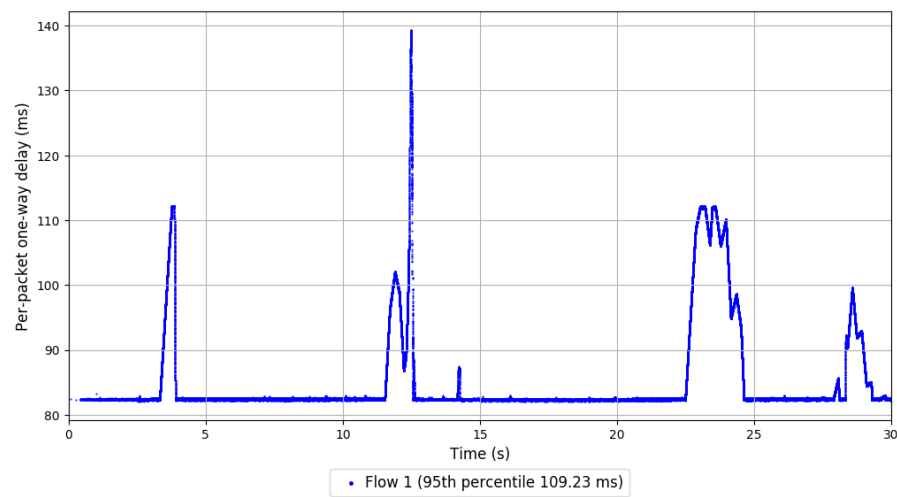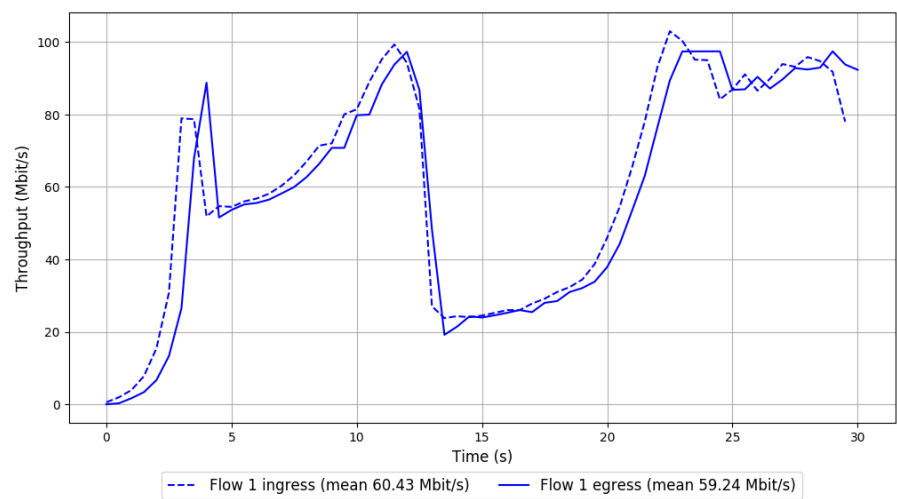
Run 5: Report of PCC-Vivace — Data Link

```
Run 1: Statistics of WebRTC media

Start at: 2018-09-07 10:04:48
End at: 2018-09-07 10:05:18
Local clock offset: 1.546 ms
Remote clock offset: 5.148 ms


# Below is generated by plot.py at 2018-09-07 11:52:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.60 Mbit/s
95th percentile per-packet one-way delay: 87.768 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.60 Mbit/s
95th percentile per-packet one-way delay: 87.768 ms
Loss rate: 0.00%
```
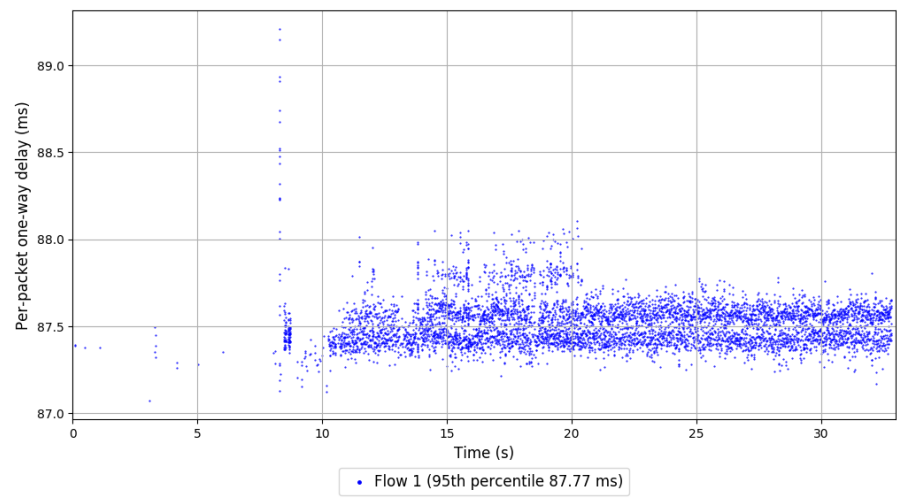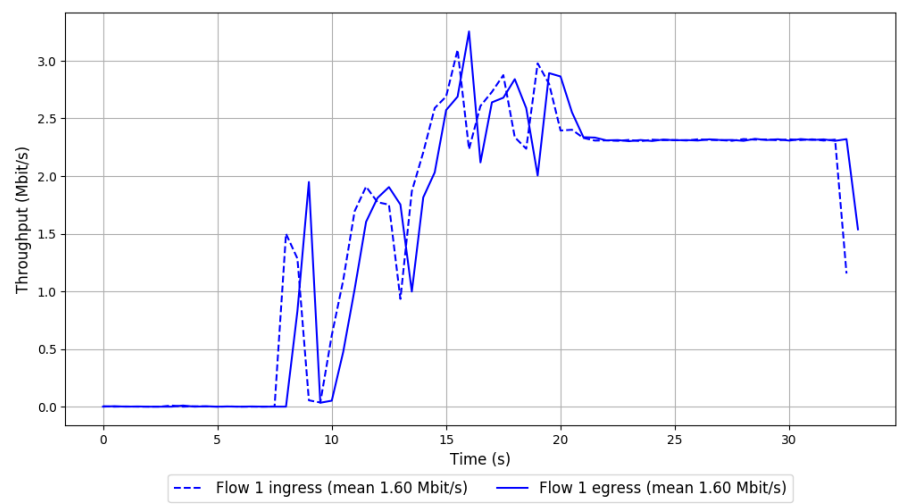
Run 1: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.60 Mbit/s)   Flow 1 egress (mean 1.60 Mbit/s)

Flow 1 (95th percentile 87.77 ms)

```
Run 2: Statistics of WebRTC media

Start at: 2018-09-07 10:26:03
End at: 2018-09-07 10:26:33
Local clock offset: 2.888 ms
Remote clock offset: 0.251 ms


# Below is generated by plot.py at 2018-09-07 11:52:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.79 Mbit/s
95th percentile per-packet one-way delay: 89.071 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.79 Mbit/s
95th percentile per-packet one-way delay: 89.071 ms
Loss rate: 0.00%
```
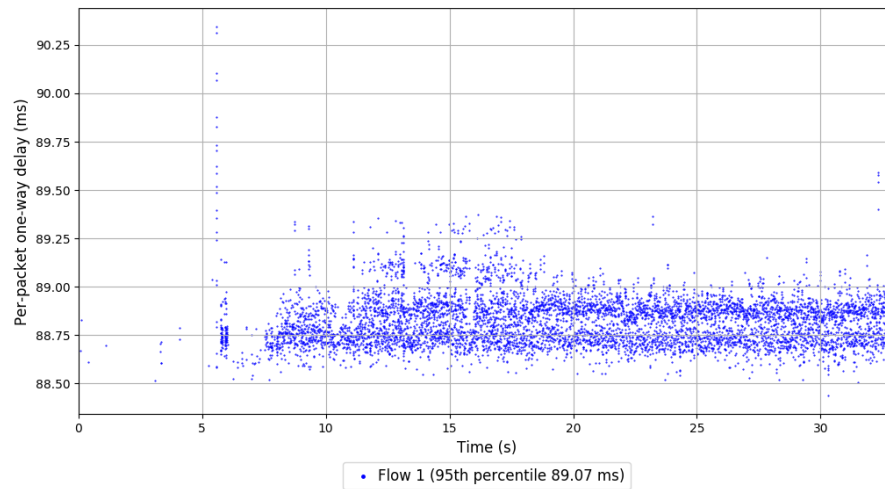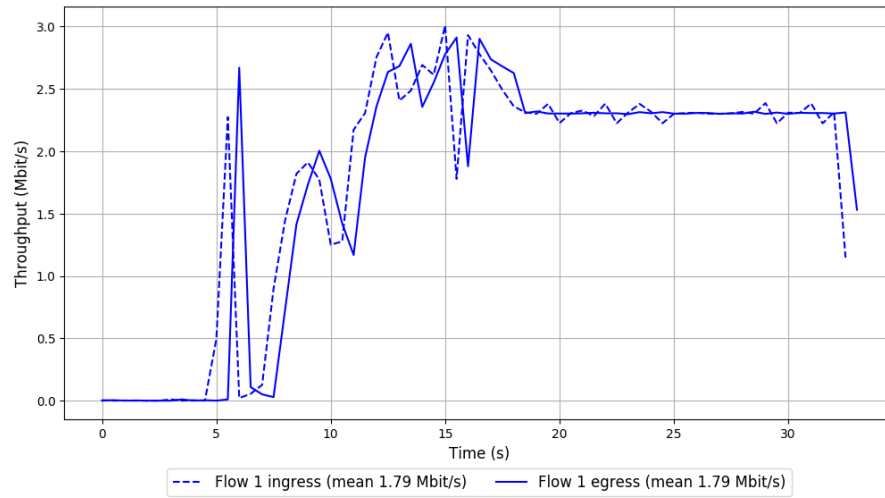
Run 2: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.79 Mbit/s) --- Flow 1 egress (mean 1.79 Mbit/s)

Flow 1 (95th percentile 89.07 ms)

```
Run 3: Statistics of WebRTC media

Start at: 2018-09-07 10:47:24
End at: 2018-09-07 10:47:54
Local clock offset: 3.62 ms
Remote clock offset: 5.89 ms


# Below is generated by plot.py at 2018-09-07 11:52:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.99 Mbit/s
95th percentile per-packet one-way delay: 85.361 ms
Loss rate: 4.22%
-- Flow 1:
Average throughput: 0.99 Mbit/s
95th percentile per-packet one-way delay: 85.361 ms
Loss rate: 4.22%
```
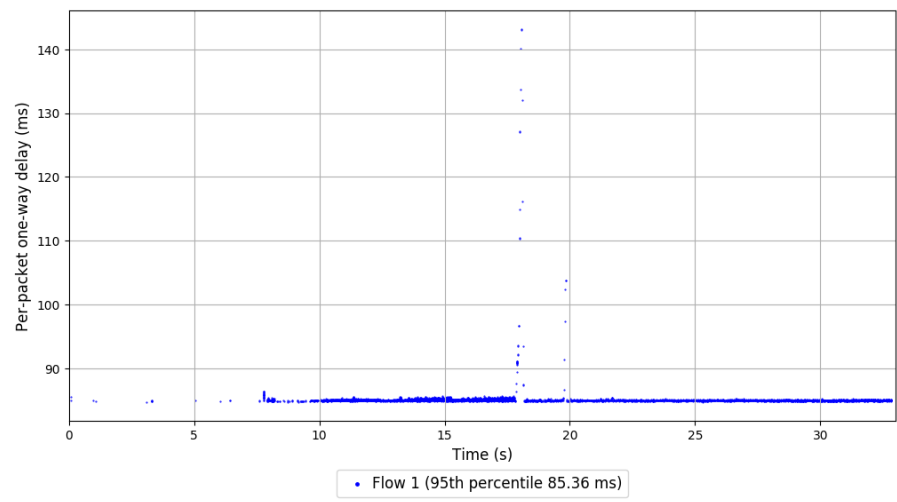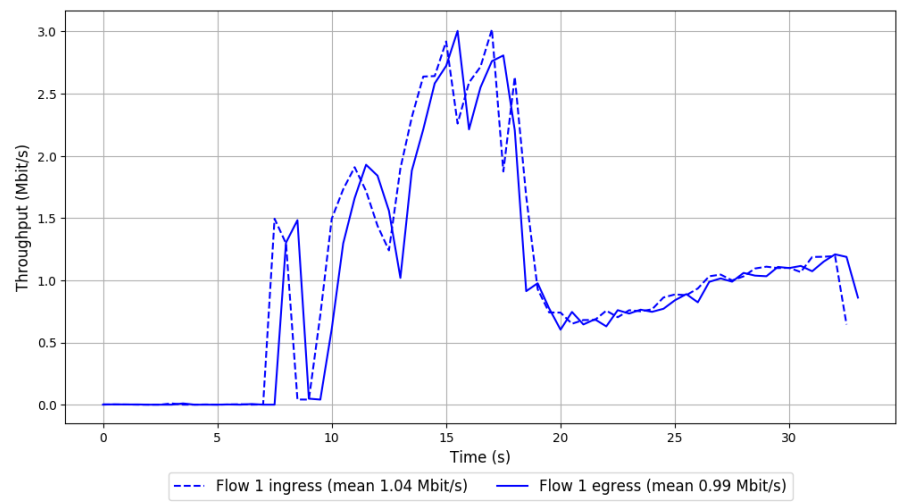
Run 3: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.04 Mbit/s) — — — Flow 1 egress (mean 0.99 Mbit/s) ———

Flow 1 (95th percentile 85.36 ms)

```
Run 4: Statistics of WebRTC media

Start at: 2018-09-07 11:08:36
End at: 2018-09-07 11:09:06
Local clock offset: 3.729 ms
Remote clock offset: 6.615 ms


# Below is generated by plot.py at 2018-09-07 11:52:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.54 Mbit/s
95th percentile per-packet one-way delay: 87.303 ms
Loss rate: 1.00%
-- Flow 1:
Average throughput: 1.54 Mbit/s
95th percentile per-packet one-way delay: 87.303 ms
Loss rate: 1.00%
```
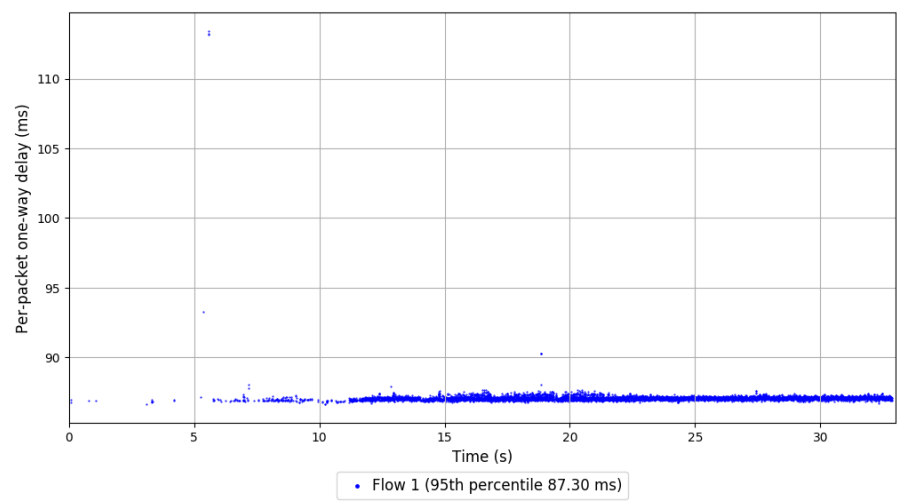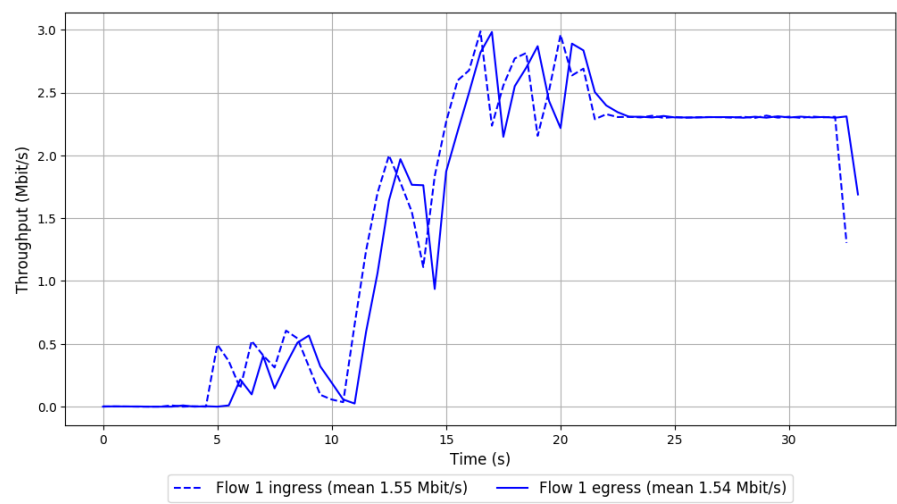
Run 4: Report of WebRTC media — Data Link

```
Run 5: Statistics of WebRTC media

Start at: 2018-09-07 11:29:48
End at: 2018-09-07 11:30:18
Local clock offset: 4.334 ms
Remote clock offset: 5.432 ms


# Below is generated by plot.py at 2018-09-07 11:52:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.77 Mbit/s
95th percentile per-packet one-way delay: 85.454 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.77 Mbit/s
95th percentile per-packet one-way delay: 85.454 ms
Loss rate: 0.00%
```

Run 5: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.77 Mbit/s)   Flow 1 egress (mean 1.77 Mbit/s)

Flow 1 (95th percentile 85.45 ms)