Pantheon Report

Generated at 2018-12-12 09:17:27 (UTC).

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

Repeated the test of 19 congestion control schemes 5 times.

Each test lasted for 30 seconds running 1 flow.

NTP offsets were measured against `time.google.com` and have been applied to correct the timestamps in logs.
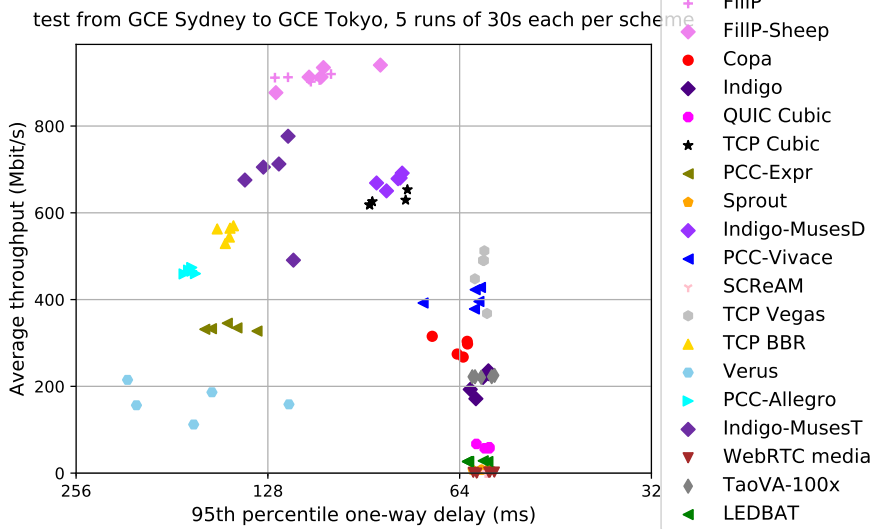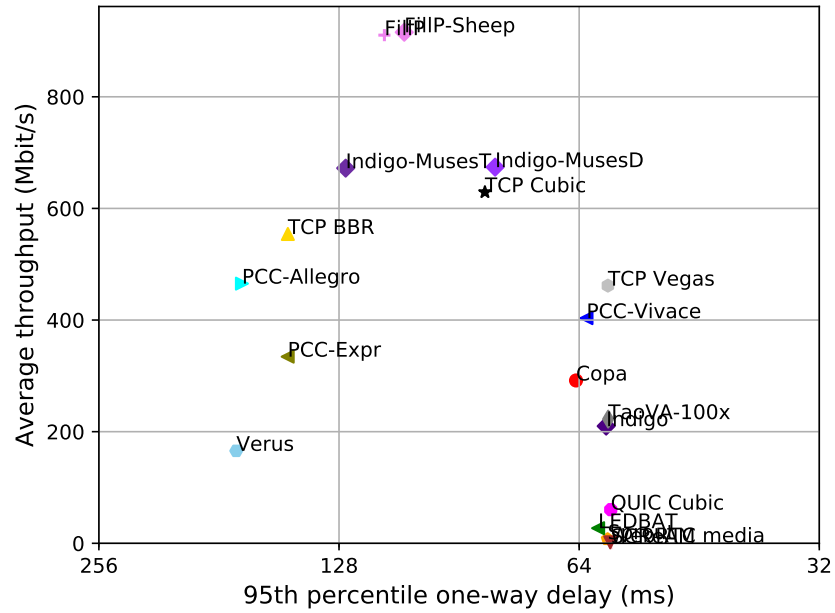
```
System info:
Linux 4.15.0-1024-gcp
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

Git summary:
branch: muses @ c654af0b7d59d4ef4b914cfac404e1fc2e96dc68
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
third_party/muses-refactored @ 31f8f0ba8ef8b1da76c2bc0cd0a7850c33ff64fb
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
 M receiver/src/buffer.h
 M receiver/src/core.cpp
 M sender/src/buffer.h
 M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
 M src/ScreamClient
 M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
 M src/examples/cellsim.cc
 M src/examples/sproutbt2.cc
 M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
 M src/verus.hpp
 M tools/plot.py
```

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

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

test from GCE Sydney to GCE Tokyo, 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	554.23	148.37	0.63
Copa	5	291.74	64.58	0.02
TCP Cubic	5	629.10	84.01	0.06
FillP	5	910.43	112.29	0.94
FillP-Sheep	5	915.61	106.04	0.39
Indigo	5	209.98	59.20	0.00
Indigo-MusesD	5	673.96	81.57	0.02
Indigo-MusesT	5	672.15	125.57	0.17
LEDBAT	5	27.10	60.59	0.00
PCC-Allegro	5	465.26	169.39	2.36
PCC-Expr	5	334.40	148.45	1.32
QUIC Cubic	4	60.31	58.43	0.00
SCReAM	5	0.22	58.40	0.00
Sprout	5	7.43	58.96	0.00
TaoVA-100x	5	222.53	58.86	0.01
TCP Vegas	5	461.66	58.90	0.00
Verus	5	165.66	172.20	3.20
PCC-Vivace	5	403.40	62.66	0.01
WebRTC media	5	1.72	58.51	0.01

```
Run 1: Statistics of TCP BBR

Start at: 2018-12-12 05:12:18
End at: 2018-12-12 05:12:48
Local clock offset: -0.424 ms
Remote clock offset: -0.33 ms


# Below is generated by plot.py at 2018-12-12 07:43:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 562.86 Mbit/s
95th percentile per-packet one-way delay: 153.709 ms
Loss rate: 0.52%
-- Flow 1:
Average throughput: 562.86 Mbit/s
95th percentile per-packet one-way delay: 153.709 ms
Loss rate: 0.52%
```
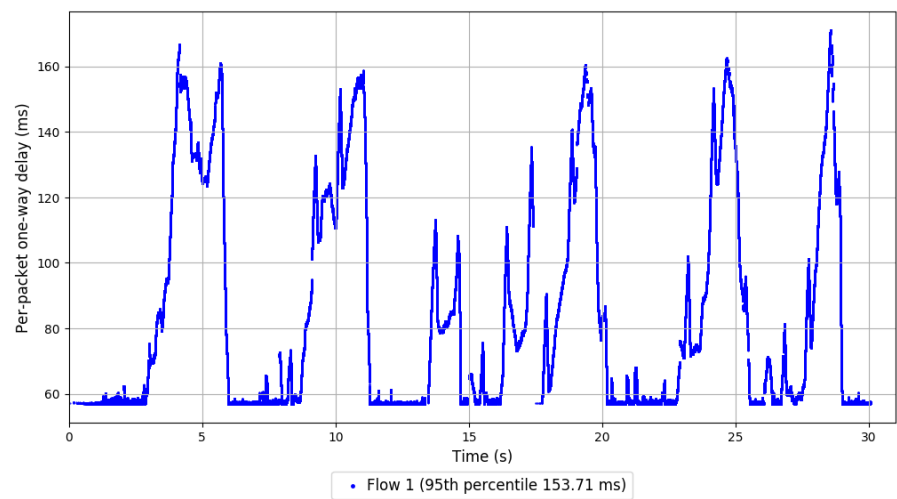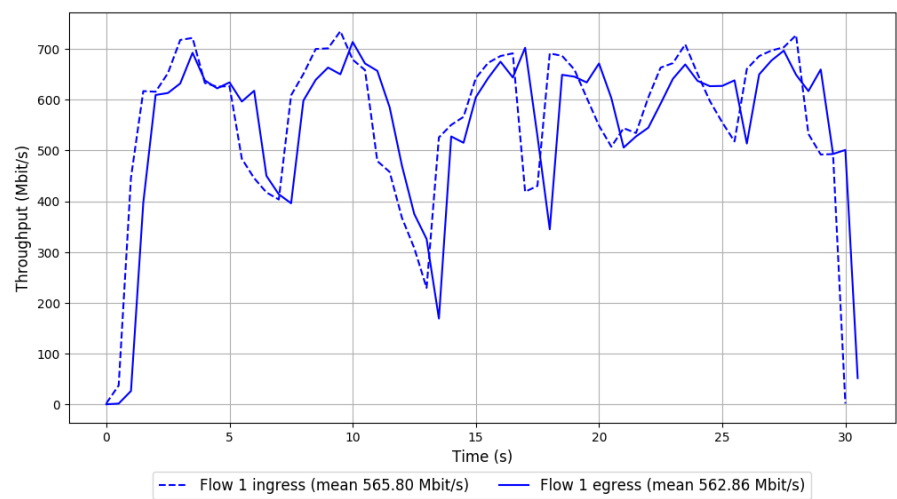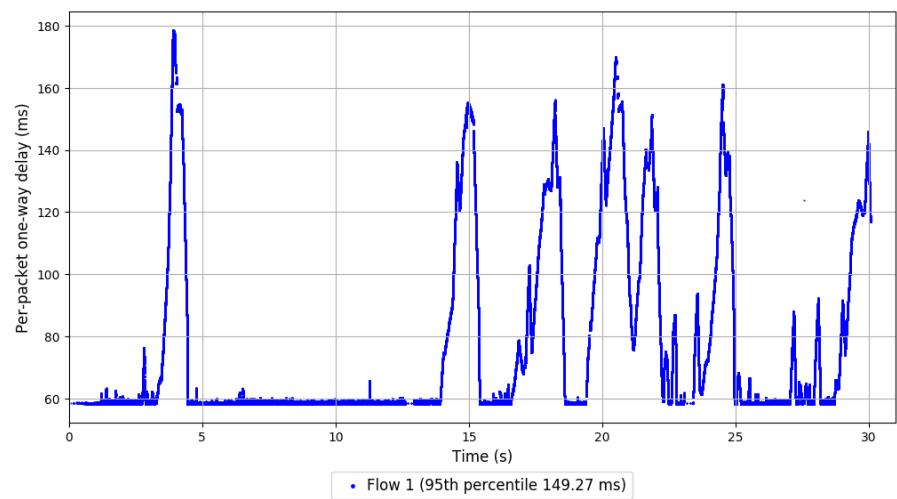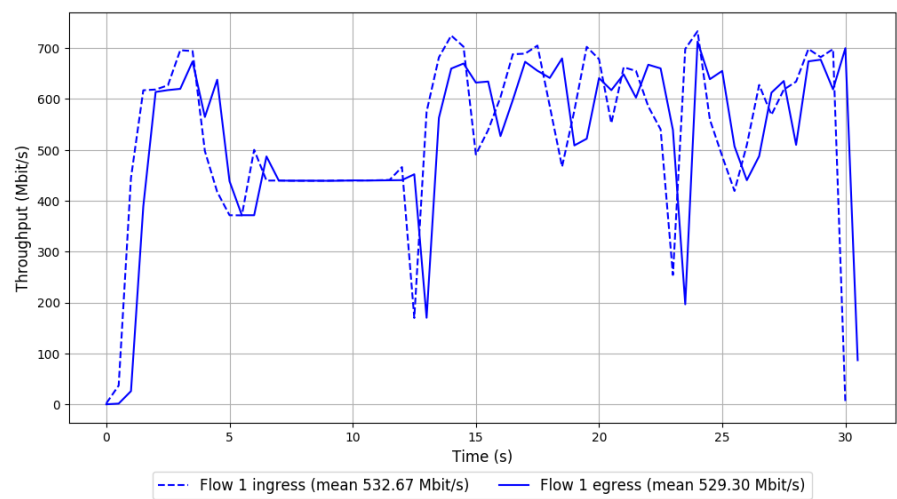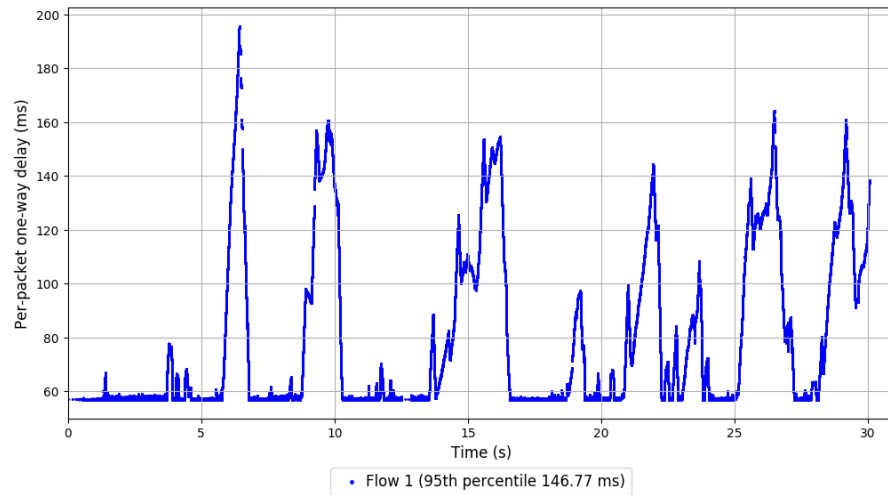
Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2018-12-12 05:40:52
End at: 2018-12-12 05:41:22
Local clock offset: -0.307 ms
Remote clock offset: 1.177 ms


# Below is generated by plot.py at 2018-12-12 07:43:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 529.30 Mbit/s
95th percentile per-packet one-way delay: 149.270 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 529.30 Mbit/s
95th percentile per-packet one-way delay: 149.270 ms
Loss rate: 0.63%
```
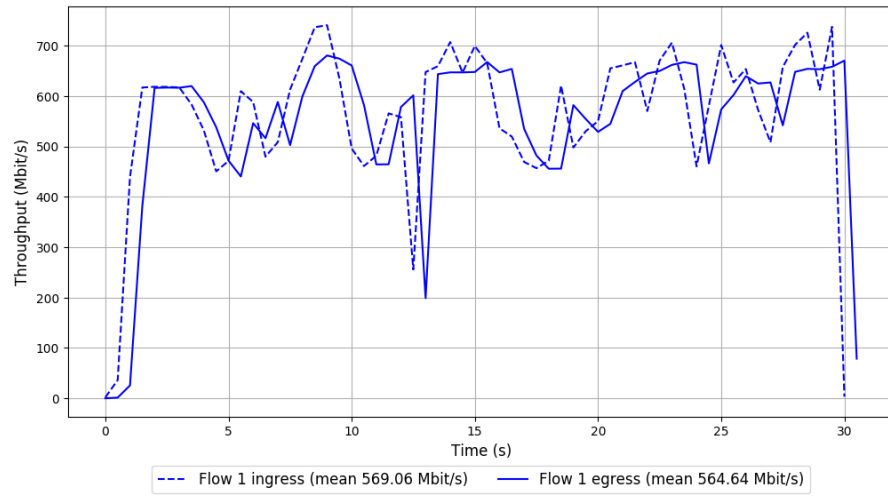
Run 2: Report of TCP BBR — Data Link

```
Run 3: Statistics of TCP BBR

Start at: 2018-12-12 06:10:04
End at: 2018-12-12 06:10:34
Local clock offset: 0.143 ms
Remote clock offset: -0.096 ms


# Below is generated by plot.py at 2018-12-12 07:43:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 564.64 Mbit/s
95th percentile per-packet one-way delay: 146.768 ms
Loss rate: 0.78%
-- Flow 1:
Average throughput: 564.64 Mbit/s
95th percentile per-packet one-way delay: 146.768 ms
Loss rate: 0.78%
```
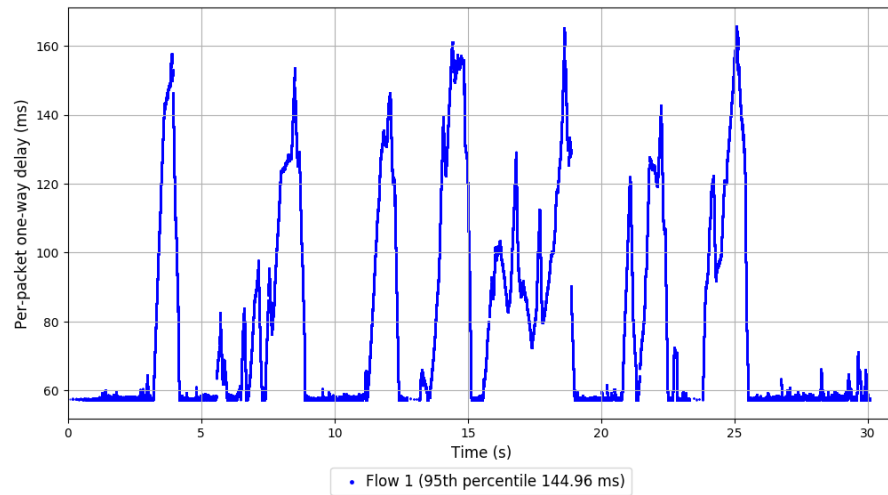
Run 3: Report of TCP BBR — Data Link

```
Run 4: Statistics of TCP BBR

Start at: 2018-12-12 06:39:28
End at: 2018-12-12 06:39:58
Local clock offset: -0.325 ms
Remote clock offset: 0.04 ms


# Below is generated by plot.py at 2018-12-12 07:43:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 570.19 Mbit/s
95th percentile per-packet one-way delay: 144.959 ms
Loss rate: 0.55%
-- Flow 1:
Average throughput: 570.19 Mbit/s
95th percentile per-packet one-way delay: 144.959 ms
Loss rate: 0.55%
```
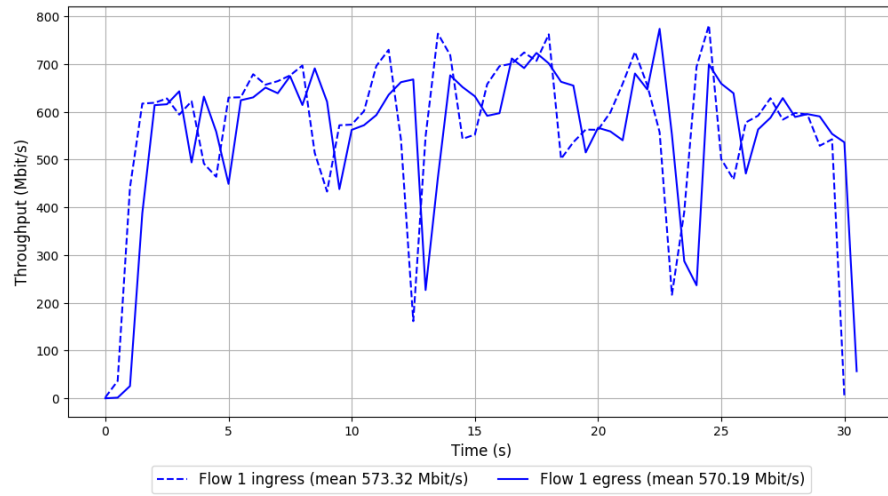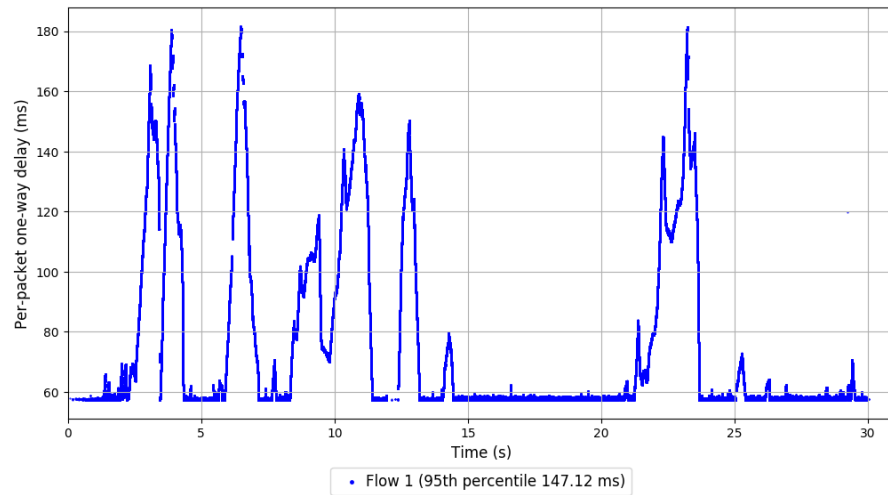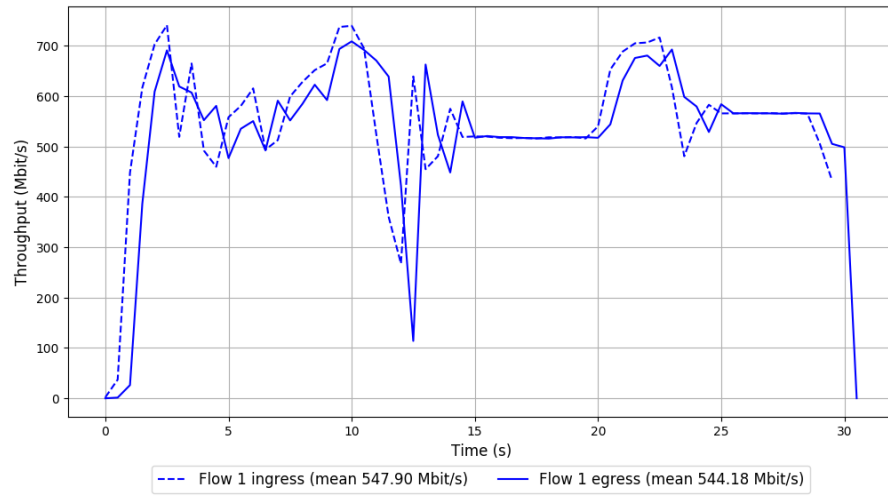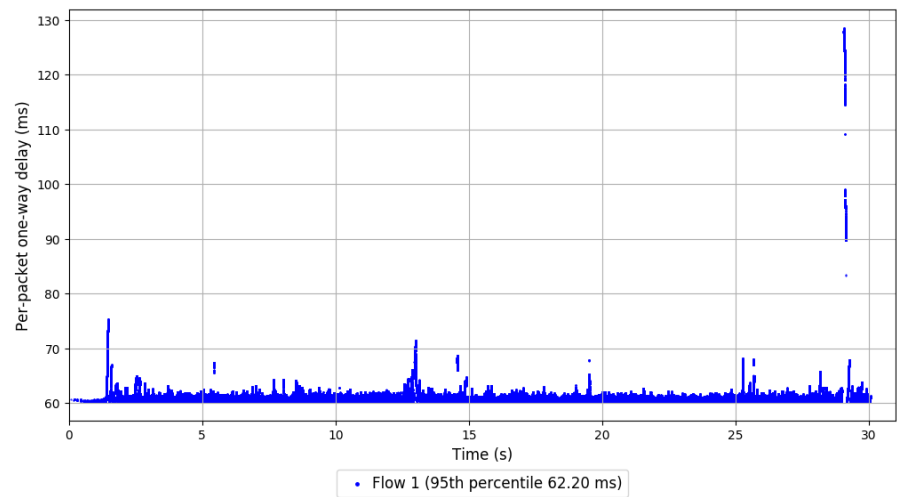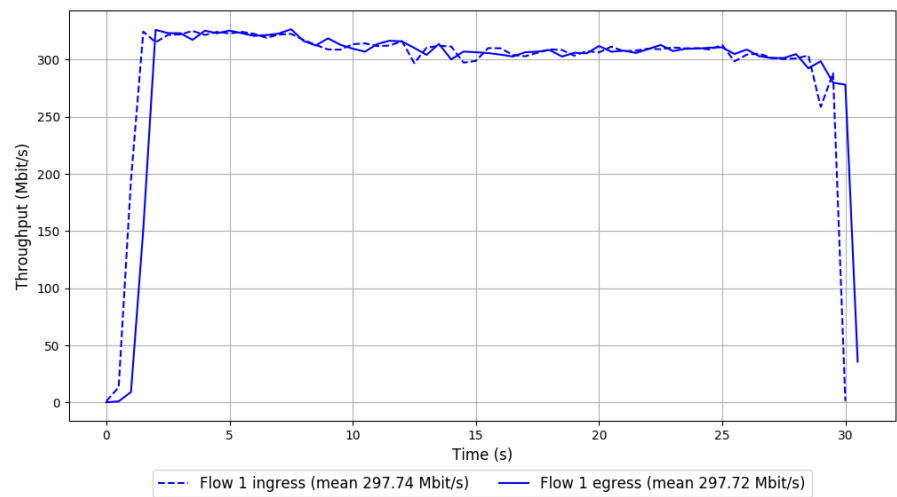
Run 4: Report of TCP BBR — Data Link

Flow 1 ingress (mean 573.32 Mbit/s)   Flow 1 egress (mean 570.19 Mbit/s)

Flow 1 (95th percentile 144.96 ms)

```
Run 5: Statistics of TCP BBR

Start at: 2018-12-12 07:08:45
End at: 2018-12-12 07:09:15
Local clock offset: -0.449 ms
Remote clock offset: -0.245 ms


# Below is generated by plot.py at 2018-12-12 07:43:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 544.18 Mbit/s
95th percentile per-packet one-way delay: 147.120 ms
Loss rate: 0.68%
-- Flow 1:
Average throughput: 544.18 Mbit/s
95th percentile per-packet one-way delay: 147.120 ms
Loss rate: 0.68%
```

Run 5: Report of TCP BBR — Data Link

Flow 1 ingress (mean 547.90 Mbit/s)   Flow 1 egress (mean 544.18 Mbit/s)

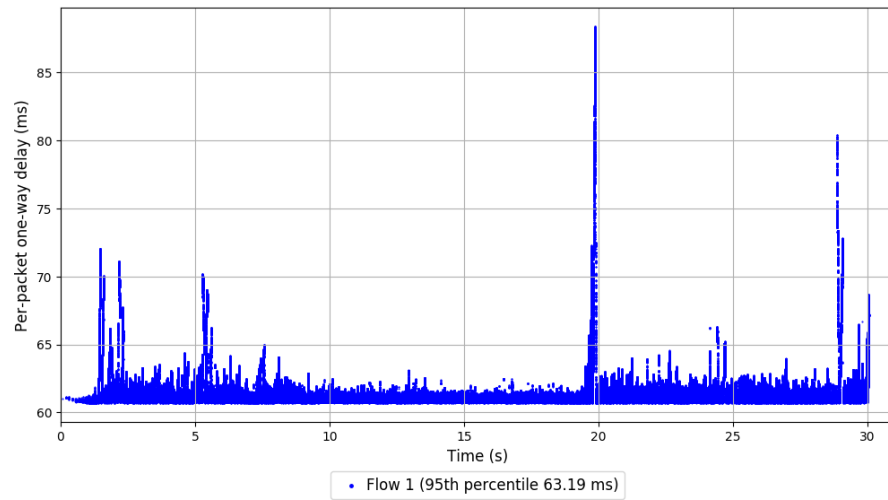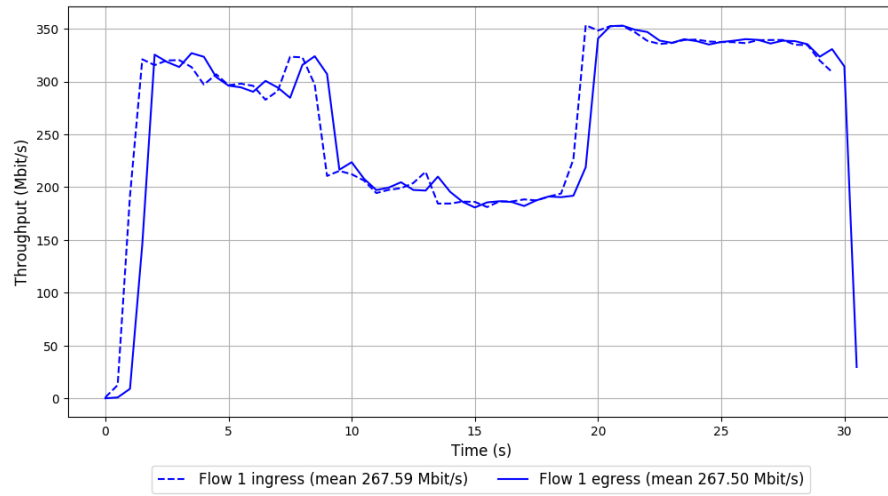
Flow 1 (95th percentile 147.12 ms)

```
Run 1: Statistics of Copa

Start at: 2018-12-12 05:22:16
End at: 2018-12-12 05:22:46
Local clock offset: -0.326 ms
Remote clock offset: -0.086 ms


# Below is generated by plot.py at 2018-12-12 07:43:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 297.72 Mbit/s
95th percentile per-packet one-way delay: 62.204 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 297.72 Mbit/s
95th percentile per-packet one-way delay: 62.204 ms
Loss rate: 0.02%
```

Run 1: Report of Copa — Data Link

```
Run 2: Statistics of Copa

Start at: 2018-12-12 05:51:05
End at: 2018-12-12 05:51:35
Local clock offset: -0.46 ms
Remote clock offset: -0.016 ms


# Below is generated by plot.py at 2018-12-12 07:43:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 267.50 Mbit/s
95th percentile per-packet one-way delay: 63.186 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 267.50 Mbit/s
95th percentile per-packet one-way delay: 63.186 ms
Loss rate: 0.05%
```
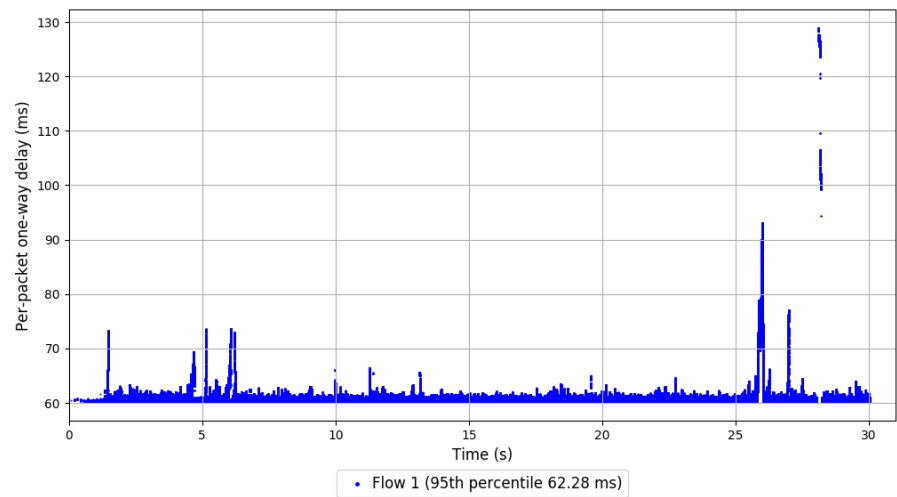
Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2018-12-12 06:20:24
End at: 2018-12-12 06:20:54
Local clock offset: 0.306 ms
Remote clock offset: -0.071 ms


# Below is generated by plot.py at 2018-12-12 07:43:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 303.71 Mbit/s
95th percentile per-packet one-way delay: 62.279 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 303.71 Mbit/s
95th percentile per-packet one-way delay: 62.279 ms
Loss rate: 0.01%
```
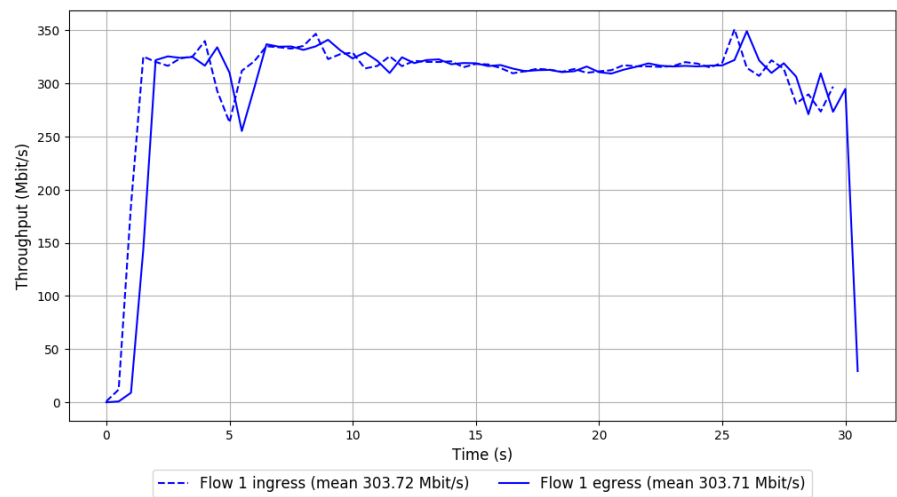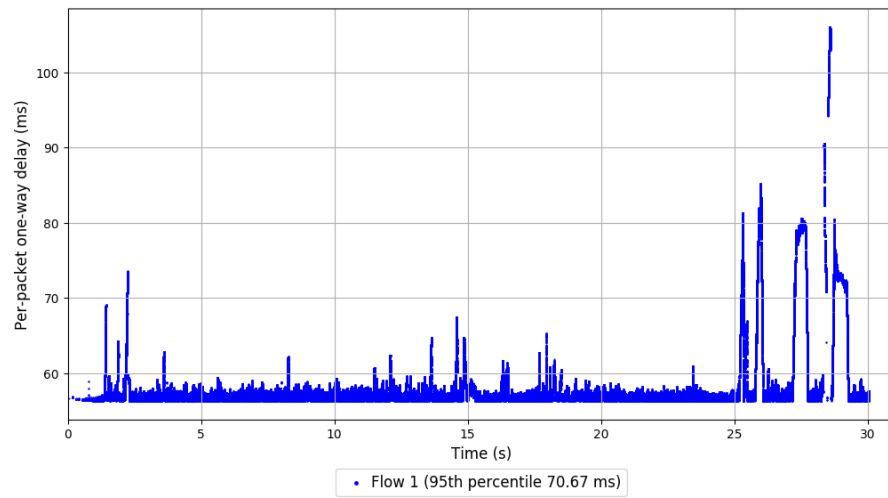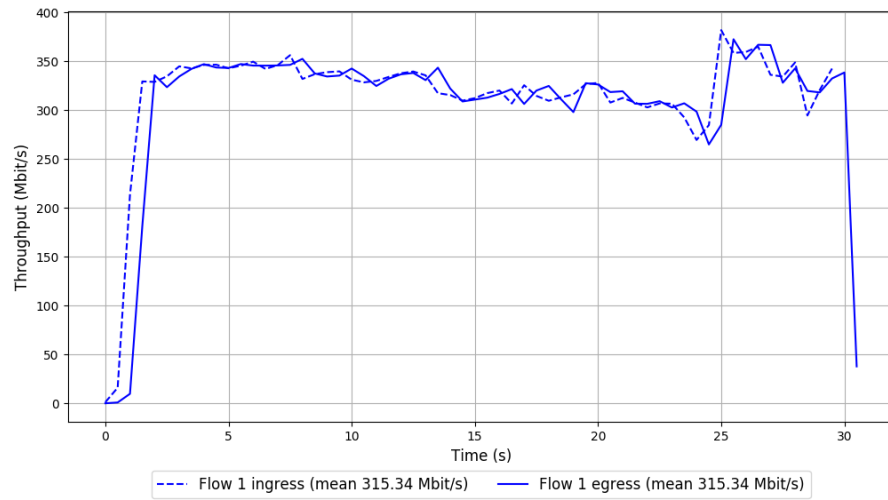
Run 3: Report of Copa — Data Link

Flow 1 ingress (mean 303.72 Mbit/s)   Flow 1 egress (mean 303.71 Mbit/s)

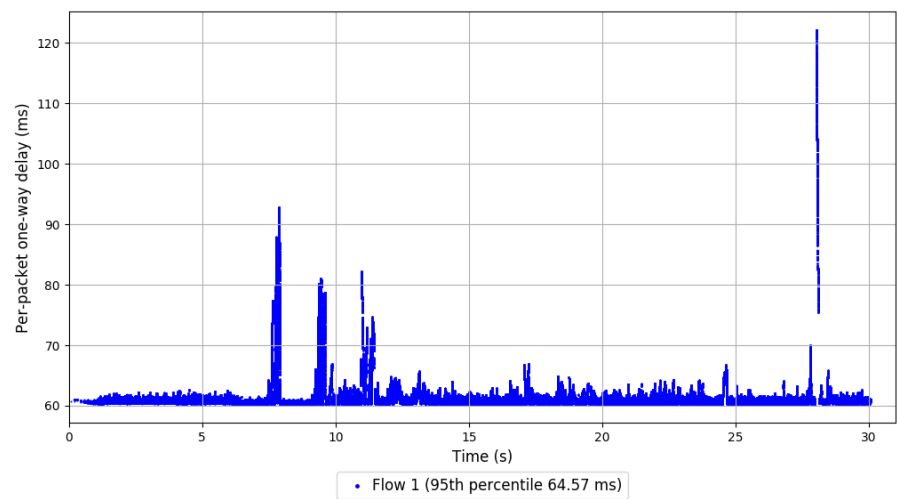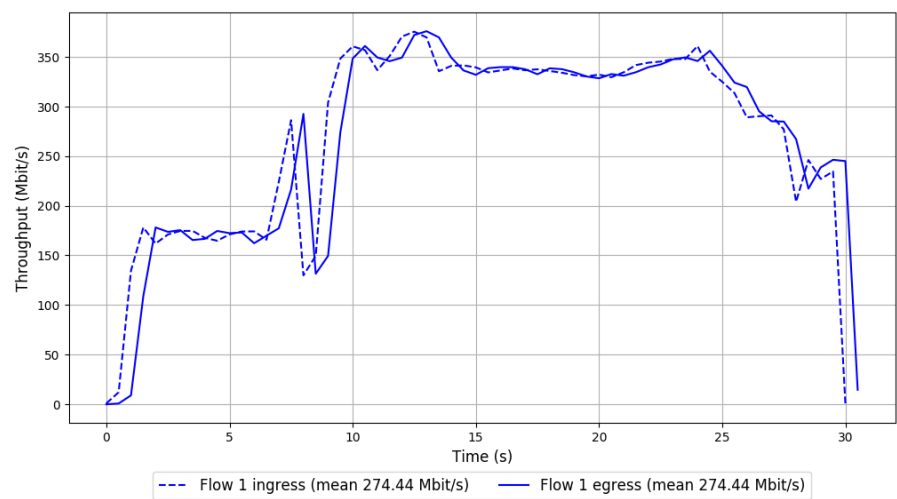Flow 1 (95th percentile 62.28 ms)

```
Run 4: Statistics of Copa

Start at: 2018-12-12 06:49:26
End at: 2018-12-12 06:49:56
Local clock offset: -0.049 ms
Remote clock offset: -0.811 ms


# Below is generated by plot.py at 2018-12-12 07:53:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 315.34 Mbit/s
95th percentile per-packet one-way delay: 70.668 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 315.34 Mbit/s
95th percentile per-packet one-way delay: 70.668 ms
Loss rate: 0.00%
```

Run 4: Report of Copa — Data Link

```
Run 5: Statistics of Copa

Start at: 2018-12-12 07:18:53
End at: 2018-12-12 07:19:23
Local clock offset: -0.063 ms
Remote clock offset: -0.255 ms


# Below is generated by plot.py at 2018-12-12 07:53:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 274.44 Mbit/s
95th percentile per-packet one-way delay: 64.566 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 274.44 Mbit/s
95th percentile per-packet one-way delay: 64.566 ms
Loss rate: 0.01%
```
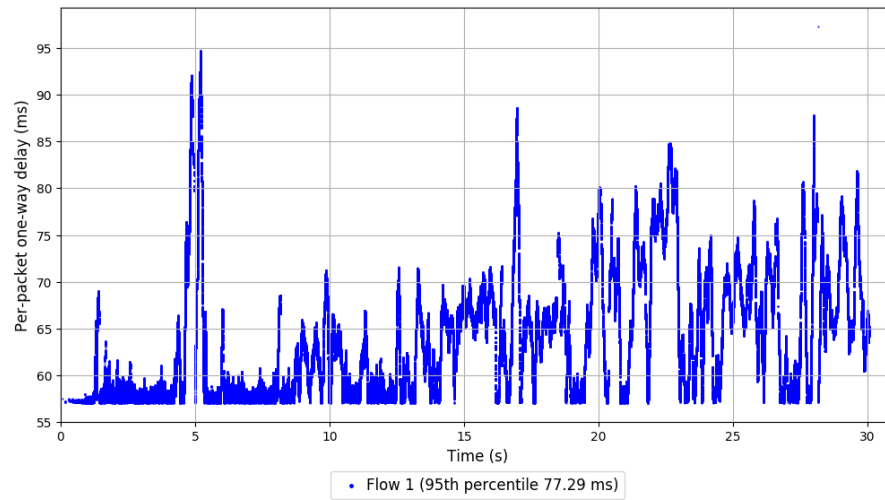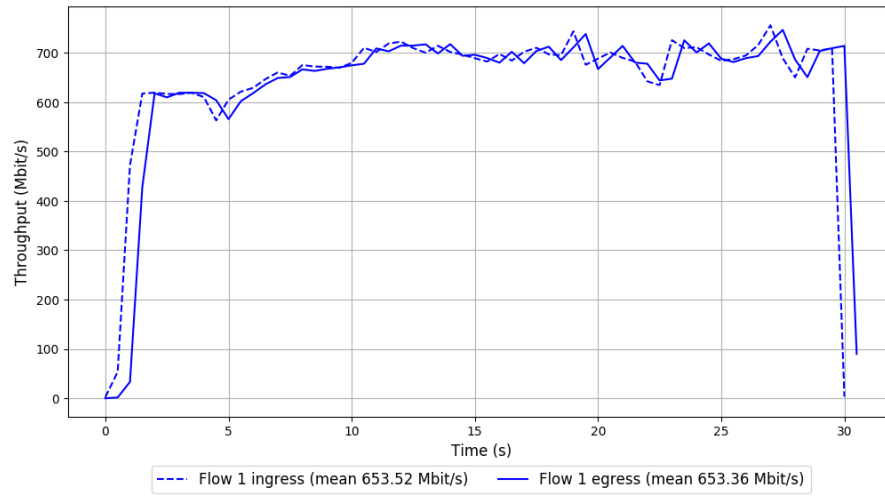
Run 5: Report of Copa — Data Link

Flow 1 ingress (mean 274.44 Mbit/s) --- Flow 1 egress (mean 274.44 Mbit/s)
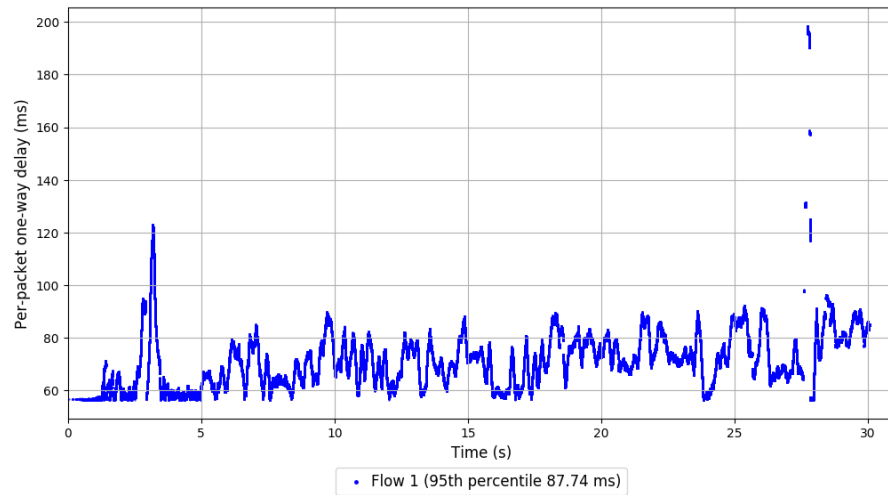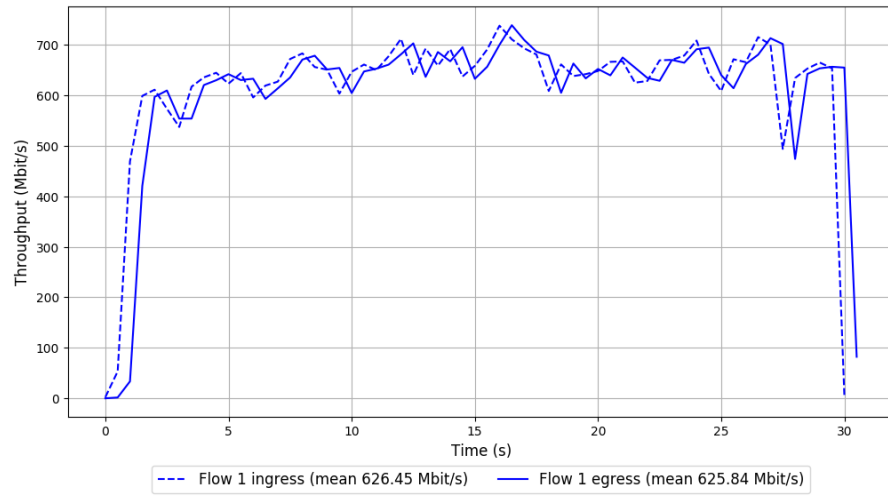

Flow 1 (95th percentile 64.57 ms)

24

```
Run 1: Statistics of TCP Cubic

Start at: 2018-12-12 05:06:30
End at: 2018-12-12 05:07:00
Local clock offset: -0.11 ms
Remote clock offset: 0.002 ms


# Below is generated by plot.py at 2018-12-12 07:54:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 653.36 Mbit/s
95th percentile per-packet one-way delay: 77.293 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 653.36 Mbit/s
95th percentile per-packet one-way delay: 77.293 ms
Loss rate: 0.02%
```
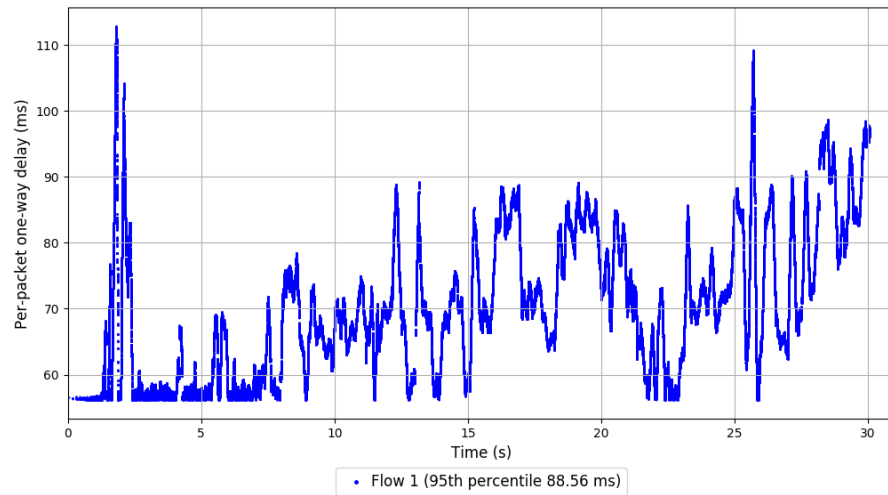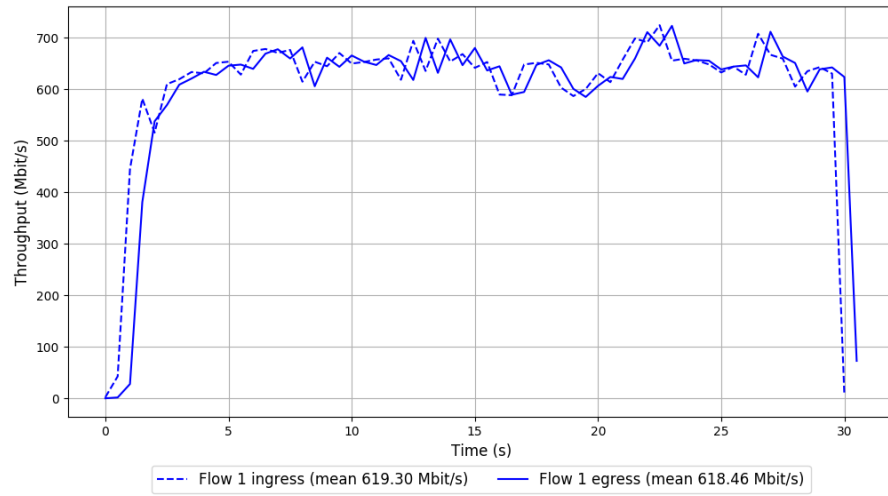
Run 1: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 653.52 Mbit/s) —— Flow 1 egress (mean 653.36 Mbit/s)

• Flow 1 (95th percentile 77.29 ms)

```
Run 2: Statistics of TCP Cubic

Start at: 2018-12-12 05:35:03
End at: 2018-12-12 05:35:34
Local clock offset: 0.127 ms
Remote clock offset: -0.453 ms


# Below is generated by plot.py at 2018-12-12 07:54:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 625.84 Mbit/s
95th percentile per-packet one-way delay: 87.740 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 625.84 Mbit/s
95th percentile per-packet one-way delay: 87.740 ms
Loss rate: 0.09%
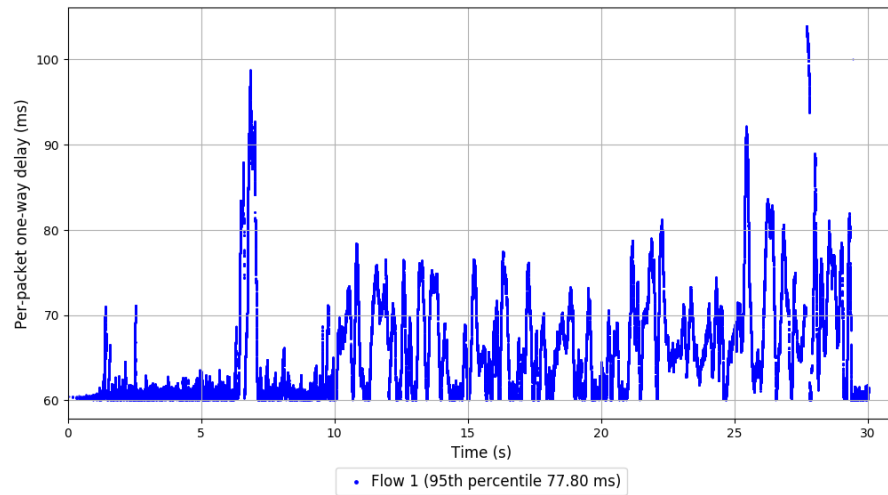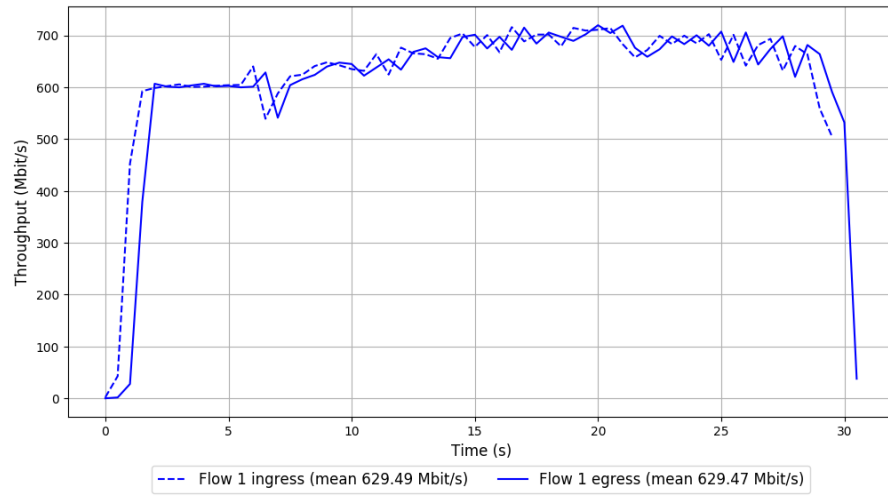```

Run 2: Report of TCP Cubic — Data Link

```
Run 3: Statistics of TCP Cubic

Start at: 2018-12-12 06:04:17
End at: 2018-12-12 06:04:47
Local clock offset: 0.309 ms
Remote clock offset: -0.705 ms

Below is generated by plot.py at 2018-12-12 07:54:43
Datalink statistics
-- Total of 1 flow:
Average throughput: 618.46 Mbit/s
95th percentile per-packet one-way delay: 88.560 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 618.46 Mbit/s
95th percentile per-packet one-way delay: 88.560 ms
Loss rate: 0.13%
```
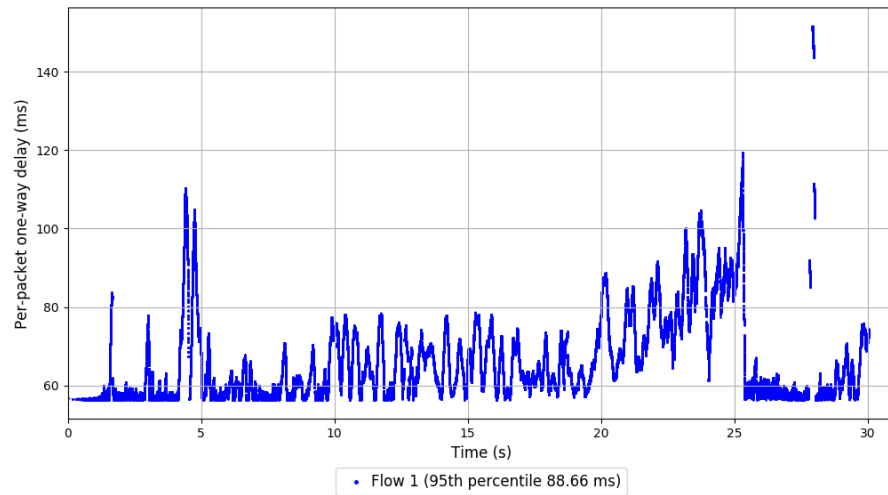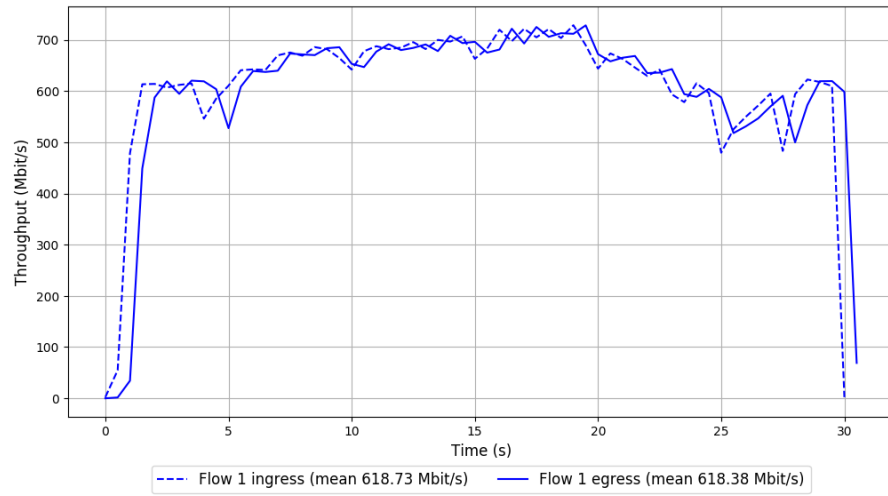
Run 3: Report of TCP Cubic — Data Link

```
Run 4: Statistics of TCP Cubic

Start at: 2018-12-12 06:33:37
End at: 2018-12-12 06:34:07
Local clock offset: 0.187 ms
Remote clock offset: -0.022 ms

Below is generated by plot.py at 2018-12-12 07:54:43
Datalink statistics
-- Total of 1 flow:
Average throughput: 629.47 Mbit/s
95th percentile per-packet one-way delay: 77.802 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 629.47 Mbit/s
95th percentile per-packet one-way delay: 77.802 ms
Loss rate: 0.01%
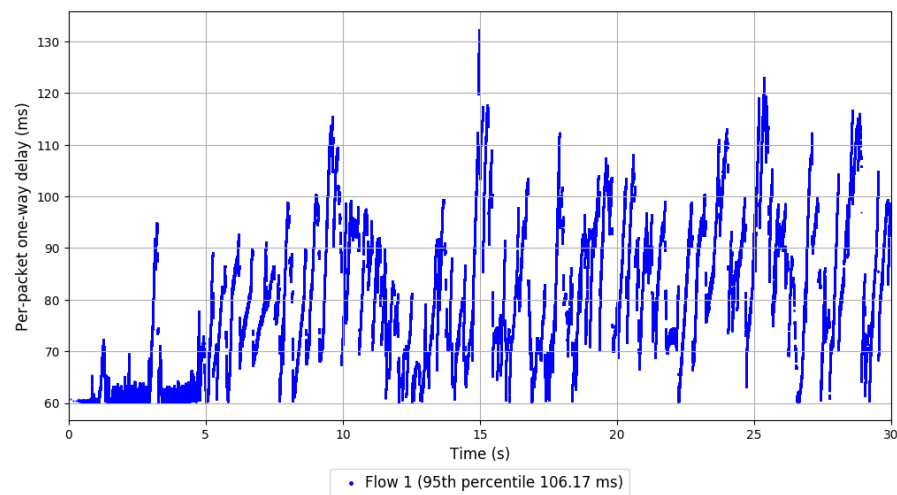```
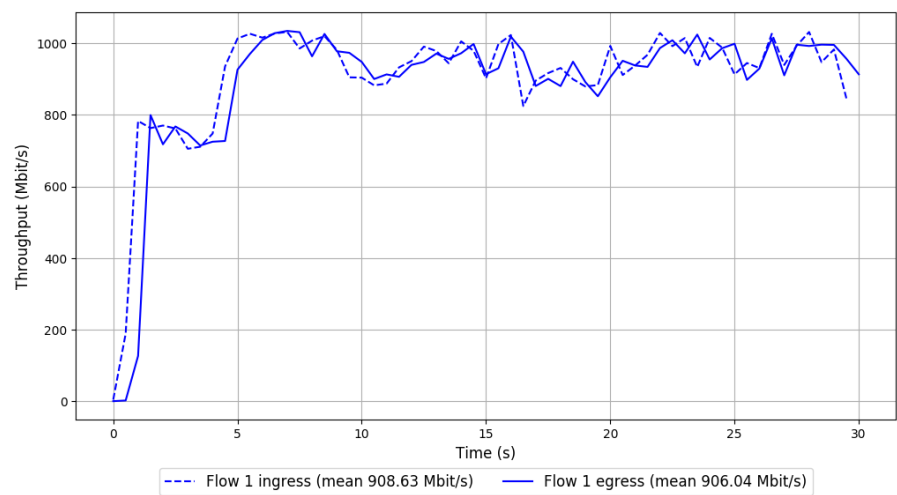
Run 4: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 629.49 Mbit/s) --- Flow 1 egress (mean 629.47 Mbit/s)

• Flow 1 (95th percentile 77.80 ms)

```
Run 5: Statistics of TCP Cubic

Start at: 2018-12-12 07:02:52
End at: 2018-12-12 07:03:22
Local clock offset: -0.294 ms
Remote clock offset: -0.879 ms


# Below is generated by plot.py at 2018-12-12 07:54:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 618.38 Mbit/s
95th percentile per-packet one-way delay: 88.659 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 618.38 Mbit/s
95th percentile per-packet one-way delay: 88.659 ms
Loss rate: 0.05%
```
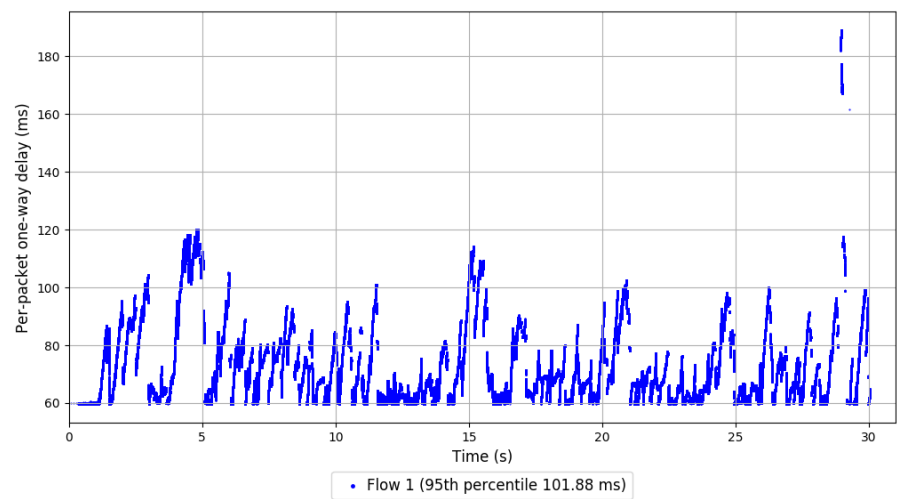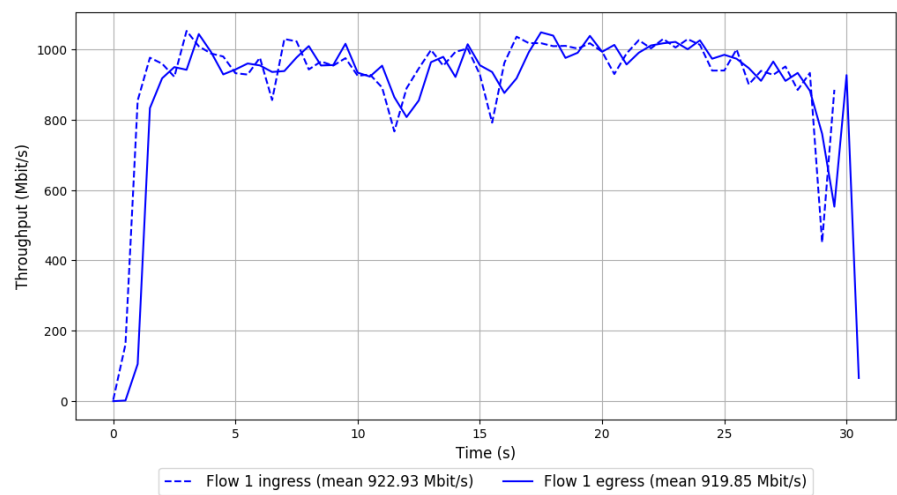
Run 5: Report of TCP Cubic — Data Link

```
Run 1: Statistics of FillP

Start at: 2018-12-12 05:00:21
End at: 2018-12-12 05:00:51
Local clock offset: -0.292 ms
Remote clock offset: -0.302 ms


# Below is generated by plot.py at 2018-12-12 08:01:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 906.04 Mbit/s
95th percentile per-packet one-way delay: 106.172 ms
Loss rate: 0.29%
-- Flow 1:
Average throughput: 906.04 Mbit/s
95th percentile per-packet one-way delay: 106.172 ms
Loss rate: 0.29%
```

Run 1: Report of FillP — Data Link

Flow 1 ingress (mean 908.63 Mbit/s) Flow 1 egress (mean 906.04 Mbit/s)
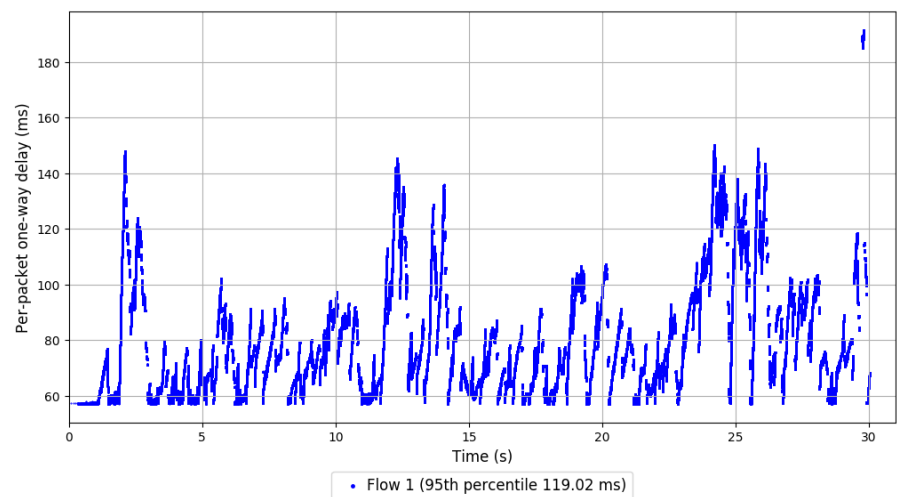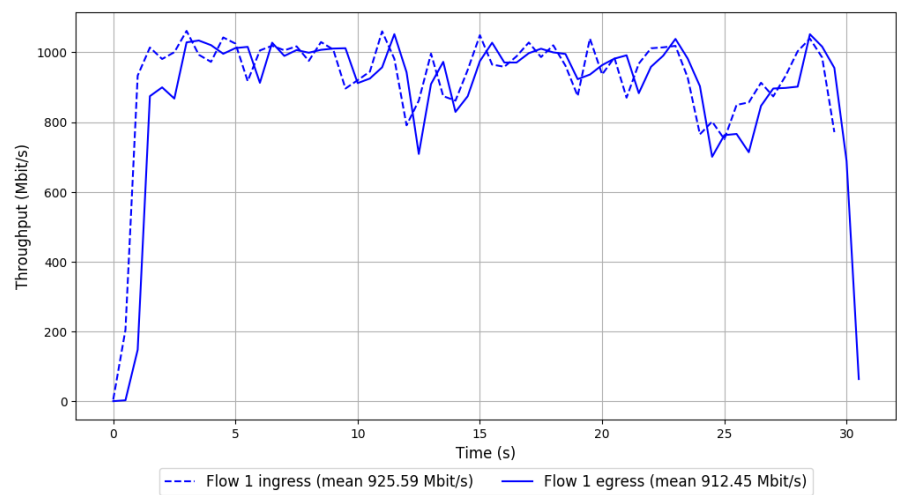

• Flow 1 (95th percentile 106.17 ms)

```
Run 2: Statistics of FillP

Start at: 2018-12-12 05:28:35
End at: 2018-12-12 05:29:05
Local clock offset: 0.391 ms
Remote clock offset: -0.044 ms


# Below is generated by plot.py at 2018-12-12 08:13:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 919.85 Mbit/s
95th percentile per-packet one-way delay: 101.882 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 919.85 Mbit/s
95th percentile per-packet one-way delay: 101.882 ms
Loss rate: 0.34%
```
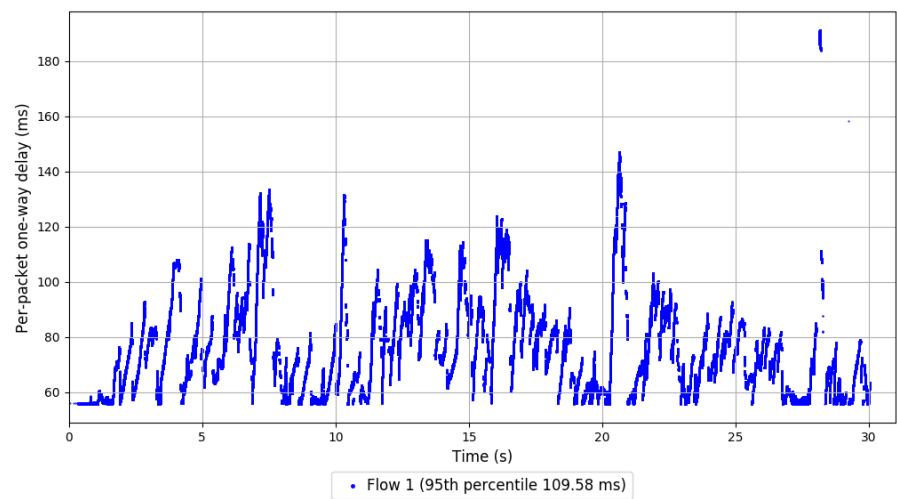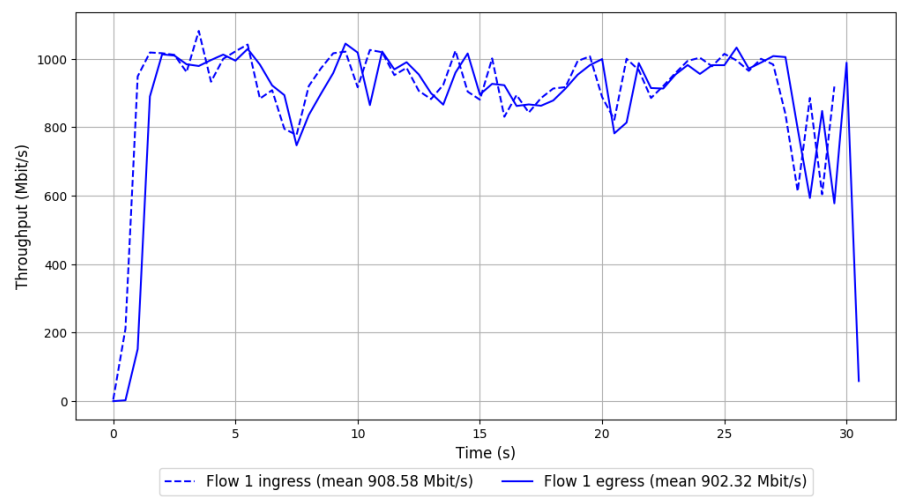
Run 2: Report of FillP — Data Link

```
Run 3: Statistics of FillP

Start at: 2018-12-12 05:57:47
End at: 2018-12-12 05:58:17
Local clock offset: -0.491 ms
Remote clock offset: -0.236 ms


# Below is generated by plot.py at 2018-12-12 08:13:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 912.45 Mbit/s
95th percentile per-packet one-way delay: 119.021 ms
Loss rate: 1.42%
-- Flow 1:
Average throughput: 912.45 Mbit/s
95th percentile per-packet one-way delay: 119.021 ms
Loss rate: 1.42%
```
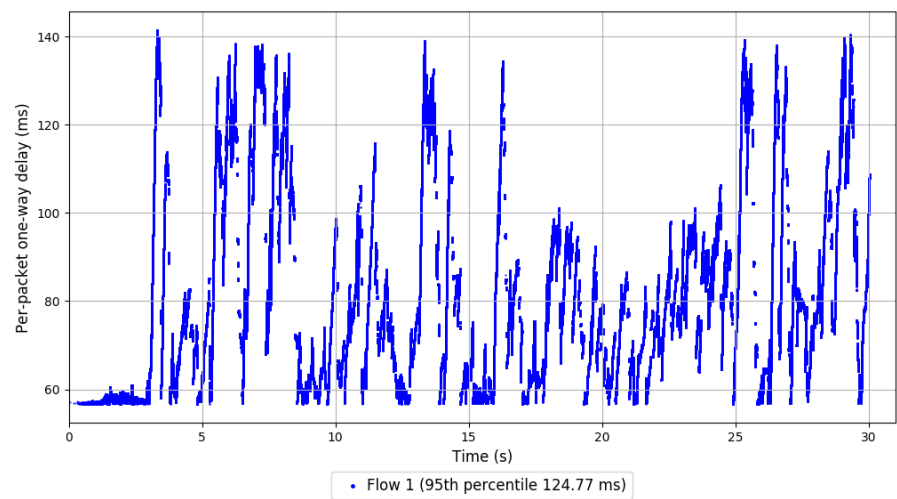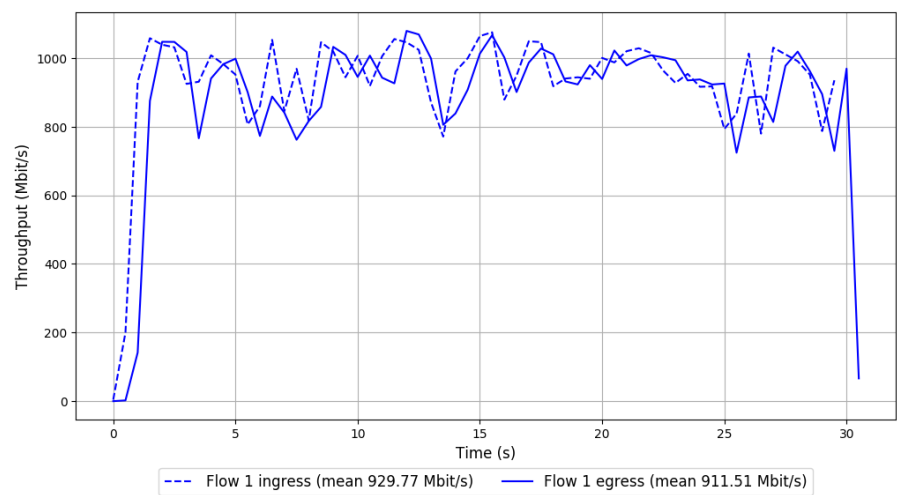
Run 3: Report of FillP — Data Link

Flow 1 ingress (mean 925.59 Mbit/s)　　—— Flow 1 egress (mean 912.45 Mbit/s)

• Flow 1 (95th percentile 119.02 ms)

```
Run 4: Statistics of FillP

Start at: 2018-12-12 06:27:12
End at: 2018-12-12 06:27:42
Local clock offset: -0.211 ms
Remote clock offset: -1.368 ms


# Below is generated by plot.py at 2018-12-12 08:14:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 902.32 Mbit/s
95th percentile per-packet one-way delay: 109.582 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 902.32 Mbit/s
95th percentile per-packet one-way delay: 109.582 ms
Loss rate: 0.69%
```
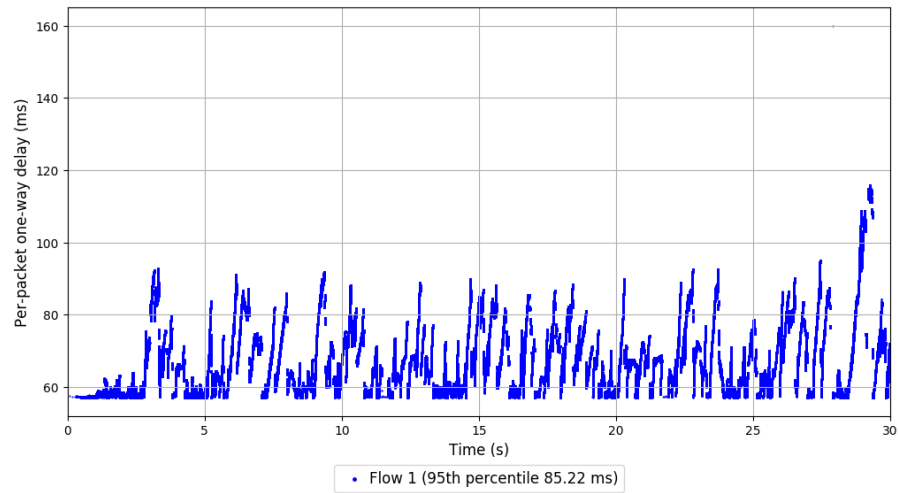
Run 4: Report of FillP — Data Link

```
Run 5: Statistics of FillP

Start at: 2018-12-12 06:56:21
End at: 2018-12-12 06:56:51
Local clock offset: 0.199 ms
Remote clock offset: -0.252 ms


# Below is generated by plot.py at 2018-12-12 08:14:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 911.51 Mbit/s
95th percentile per-packet one-way delay: 124.769 ms
Loss rate: 1.96%
-- Flow 1:
Average throughput: 911.51 Mbit/s
95th percentile per-packet one-way delay: 124.769 ms
Loss rate: 1.96%
```

Run 5: Report of FillP — Data Link

Flow 1 ingress (mean 929.77 Mbit/s)   Flow 1 egress (mean 911.51 Mbit/s)

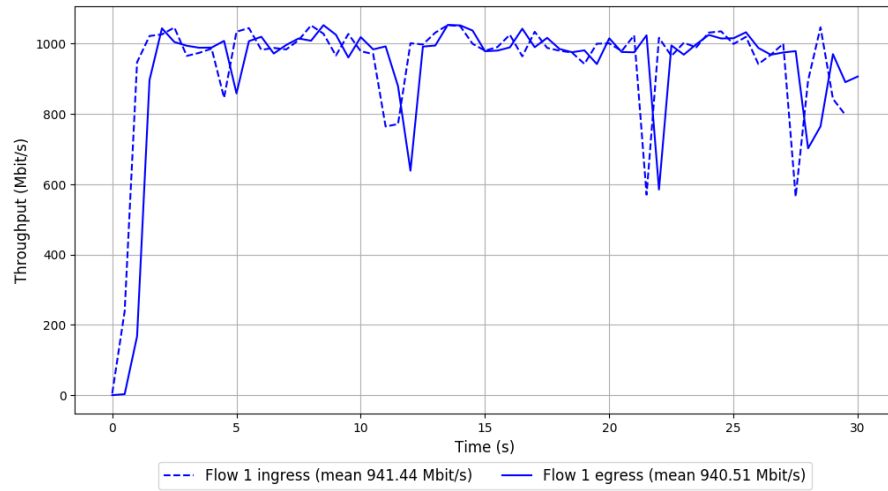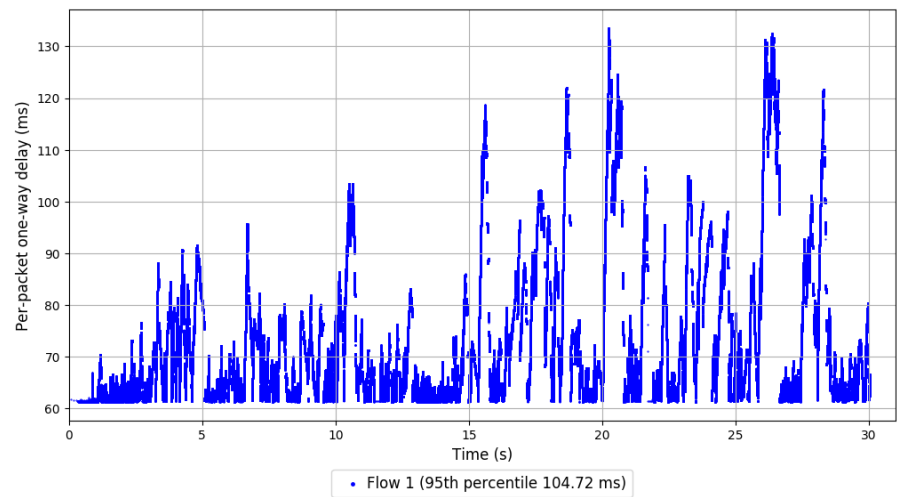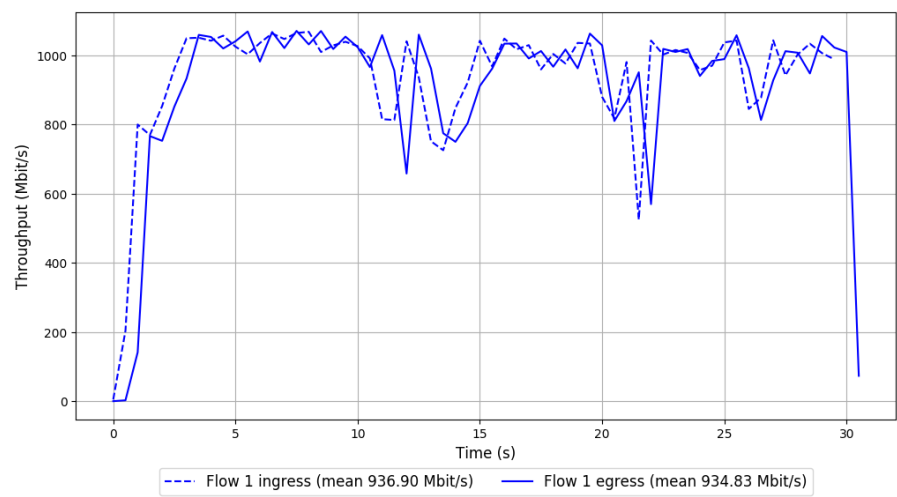• Flow 1 (95th percentile 124.77 ms)

```
Run 1: Statistics of FillP-Sheep

Start at: 2018-12-12 05:04:45
End at: 2018-12-12 05:05:15
Local clock offset: -0.343 ms
Remote clock offset: -0.352 ms


# Below is generated by plot.py at 2018-12-12 08:15:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 940.51 Mbit/s
95th percentile per-packet one-way delay: 85.224 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 940.51 Mbit/s
95th percentile per-packet one-way delay: 85.224 ms
Loss rate: 0.10%
```

Run 1: Report of FillP-Sheep — Data Link

```
Run 2: Statistics of FillP-Sheep

Start at: 2018-12-12 05:33:13
End at: 2018-12-12 05:33:43
Local clock offset: -0.221 ms
Remote clock offset: 0.862 ms


# Below is generated by plot.py at 2018-12-12 08:15:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 934.83 Mbit/s
95th percentile per-packet one-way delay: 104.721 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 934.83 Mbit/s
95th percentile per-packet one-way delay: 104.721 ms
Loss rate: 0.23%
```
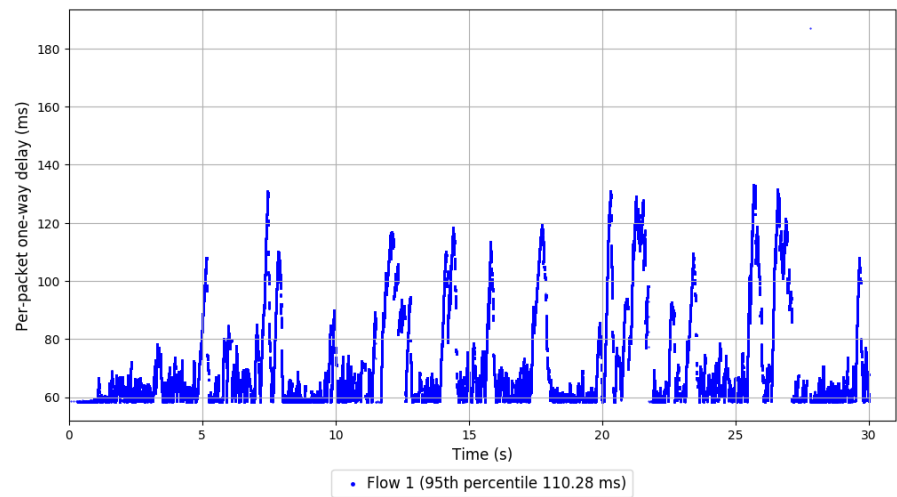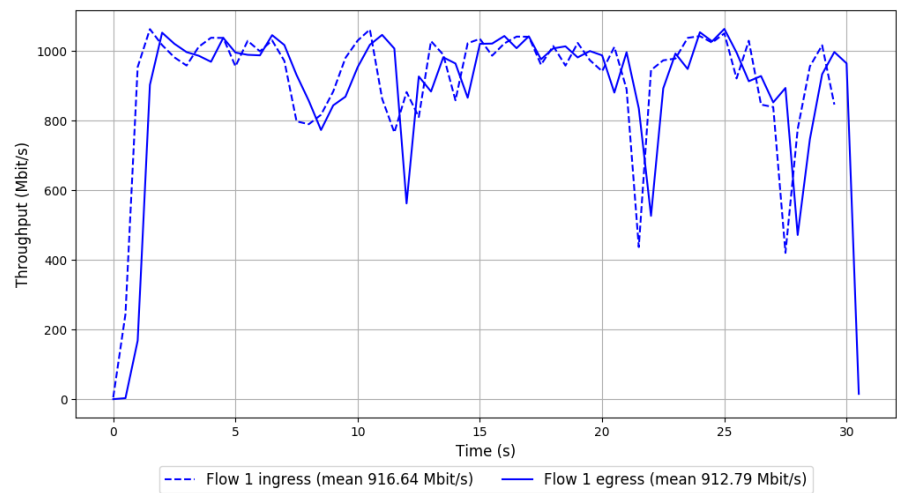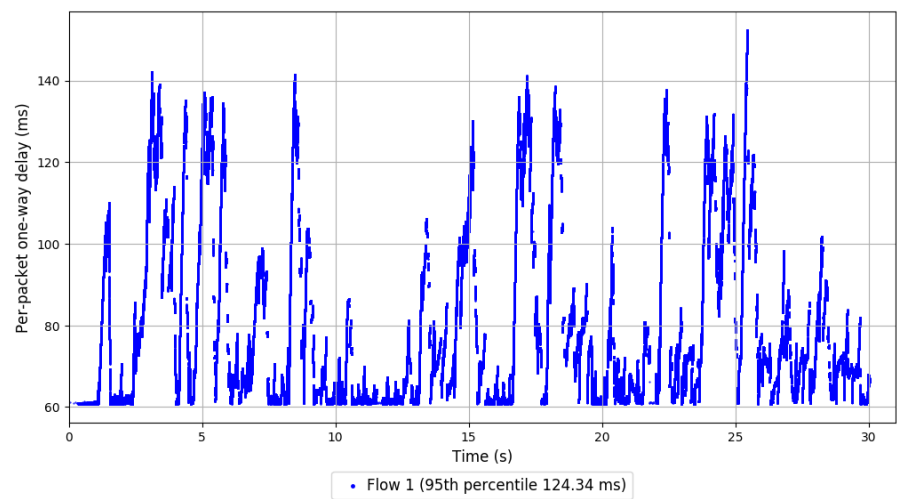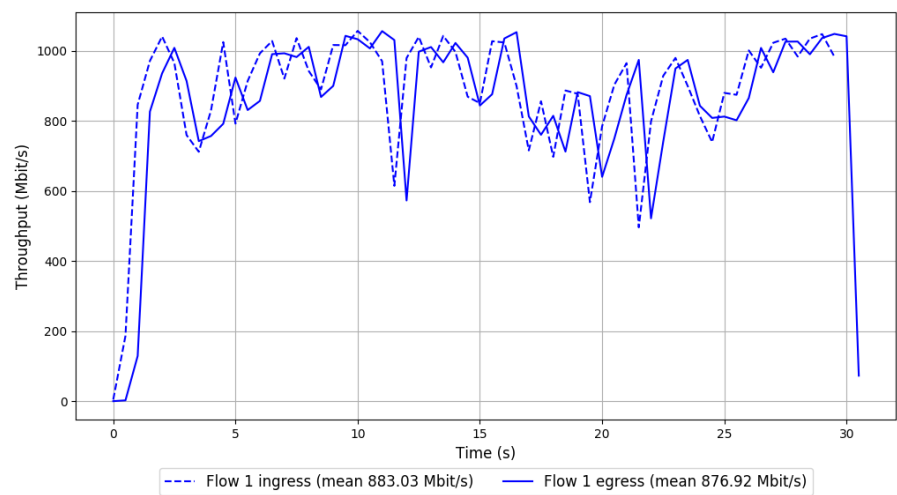
Run 2: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 936.90 Mbit/s)   Flow 1 egress (mean 934.83 Mbit/s)

• Flow 1 (95th percentile 104.72 ms)

```
Run 3: Statistics of FillP-Sheep

Start at: 2018-12-12 06:02:22
End at: 2018-12-12 06:02:52
Local clock offset: -0.112 ms
Remote clock offset: 1.335 ms


# Below is generated by plot.py at 2018-12-12 08:15:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 912.79 Mbit/s
95th percentile per-packet one-way delay: 110.281 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 912.79 Mbit/s
95th percentile per-packet one-way delay: 110.281 ms
Loss rate: 0.42%
```

Run 3: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 916.64 Mbit/s)   Flow 1 egress (mean 912.79 Mbit/s)

Flow 1 (95th percentile 110.28 ms)

```
Run 4: Statistics of FillP-Sheep

Start at: 2018-12-12 06:31:49
End at: 2018-12-12 06:32:20
Local clock offset: -0.303 ms
Remote clock offset: -0.038 ms


# Below is generated by plot.py at 2018-12-12 08:22:39
# Datalink statistics
-- Total of 1 flow:
Average throughput: 876.92 Mbit/s
95th percentile per-packet one-way delay: 124.345 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 876.92 Mbit/s
95th percentile per-packet one-way delay: 124.345 ms
Loss rate: 0.70%
```
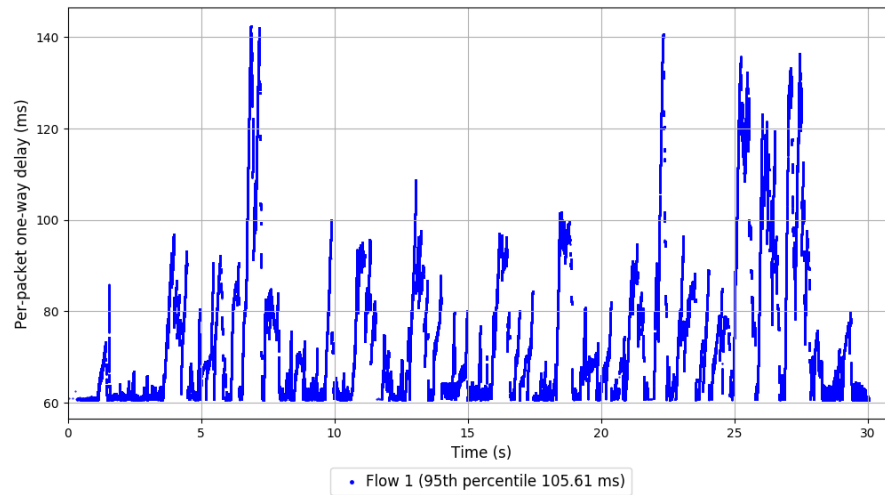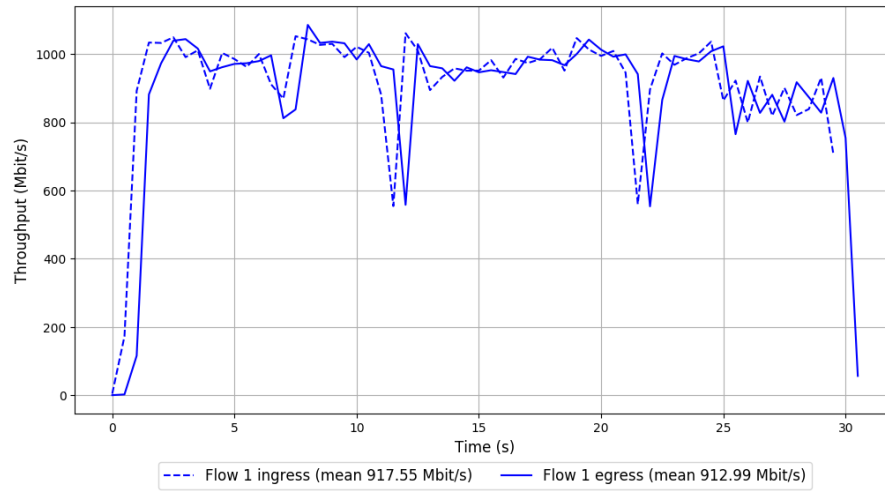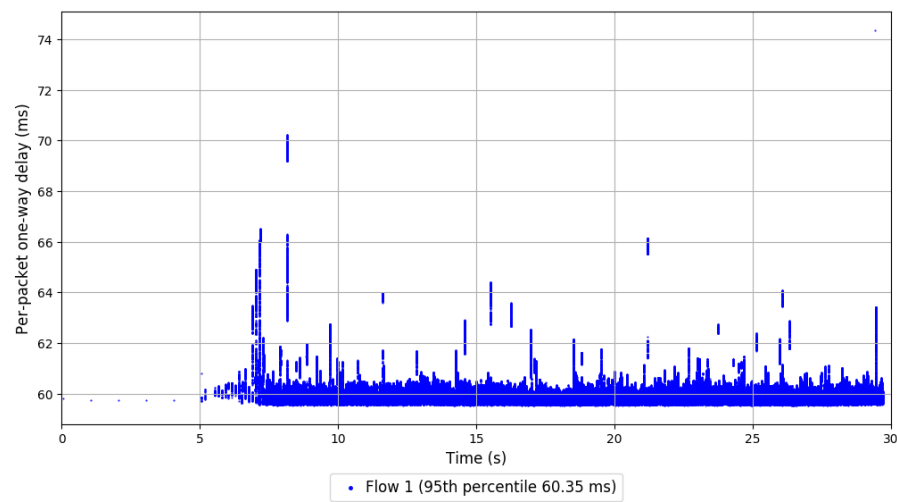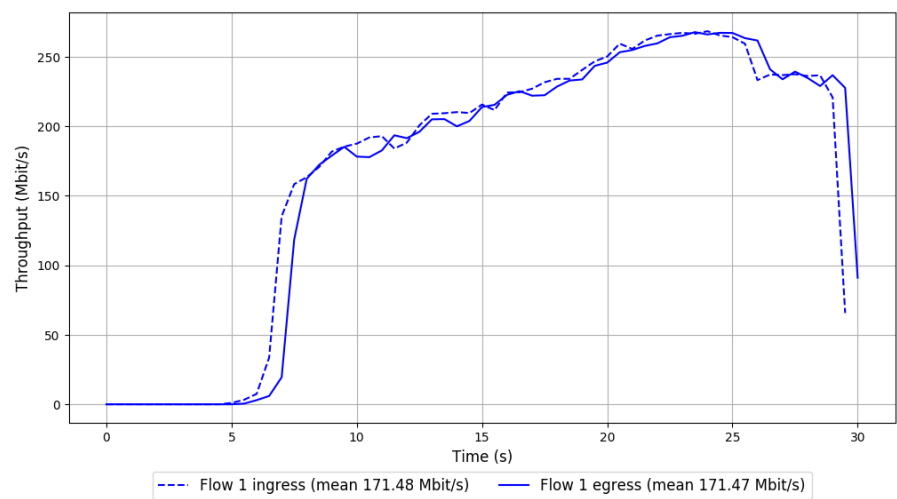
Run 4: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 883.03 Mbit/s) --- Flow 1 egress (mean 876.92 Mbit/s)

• Flow 1 (95th percentile 124.34 ms)

```
Run 5: Statistics of FillP-Sheep

Start at: 2018-12-12 07:01:01
End at: 2018-12-12 07:01:31
Local clock offset: -0.284 ms
Remote clock offset: -0.18 ms


# Below is generated by plot.py at 2018-12-12 08:34:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 912.99 Mbit/s
95th percentile per-packet one-way delay: 105.607 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 912.99 Mbit/s
95th percentile per-packet one-way delay: 105.607 ms
Loss rate: 0.51%
```

Run 5: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 917.55 Mbit/s) ---- Flow 1 egress (mean 912.99 Mbit/s) ——

Flow 1 (95th percentile 105.61 ms)

```
Run 1: Statistics of Indigo

Start at: 2018-12-12 04:57:16
End at: 2018-12-12 04:57:47
Local clock offset: -0.169 ms
Remote clock offset: -0.937 ms


# Below is generated by plot.py at 2018-12-12 08:34:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 171.47 Mbit/s
95th percentile per-packet one-way delay: 60.353 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 171.47 Mbit/s
95th percentile per-packet one-way delay: 60.353 ms
Loss rate: 0.01%
```
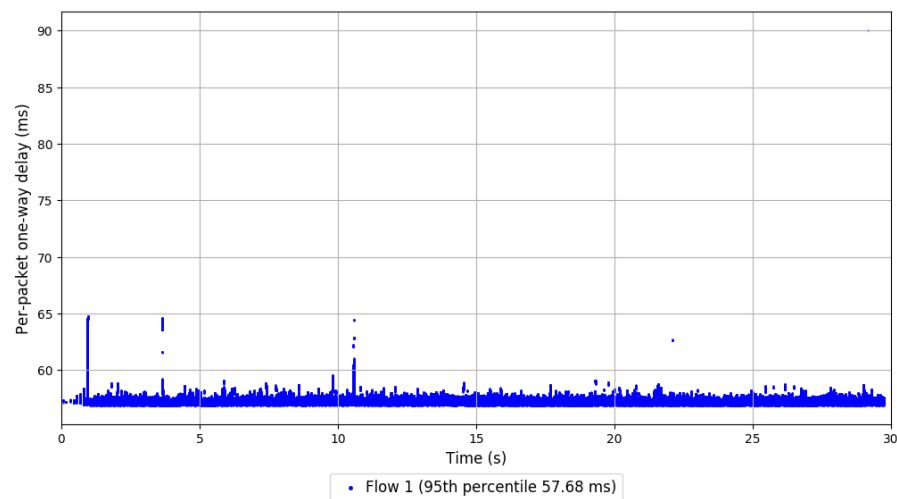
Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2018-12-12 05:25:33
End at: 2018-12-12 05:26:03
Local clock offset: -0.013 ms
Remote clock offset: -0.13 ms


# Below is generated by plot.py at 2018-12-12 08:34:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 235.77 Mbit/s
95th percentile per-packet one-way delay: 57.682 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 235.77 Mbit/s
95th percentile per-packet one-way delay: 57.682 ms
Loss rate: 0.00%
```
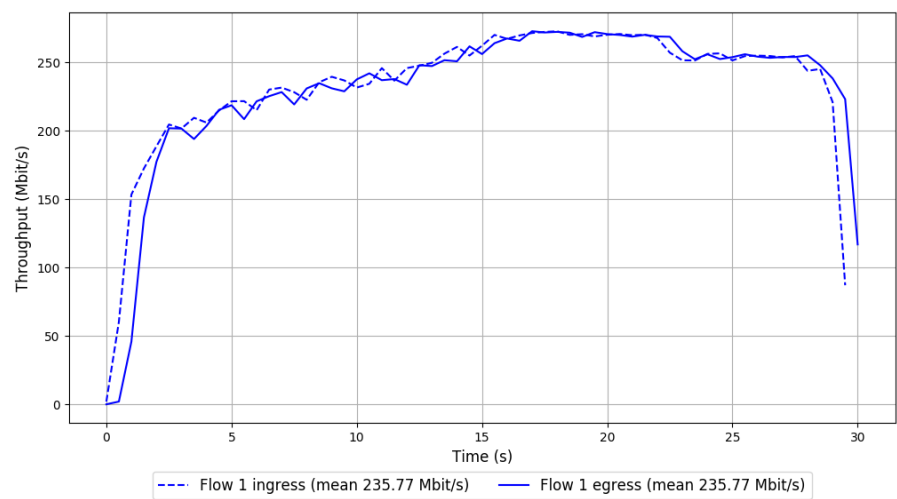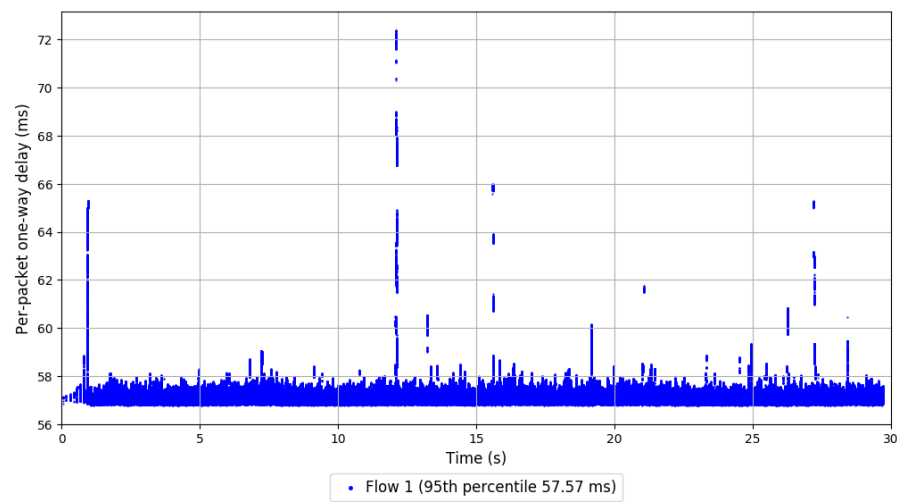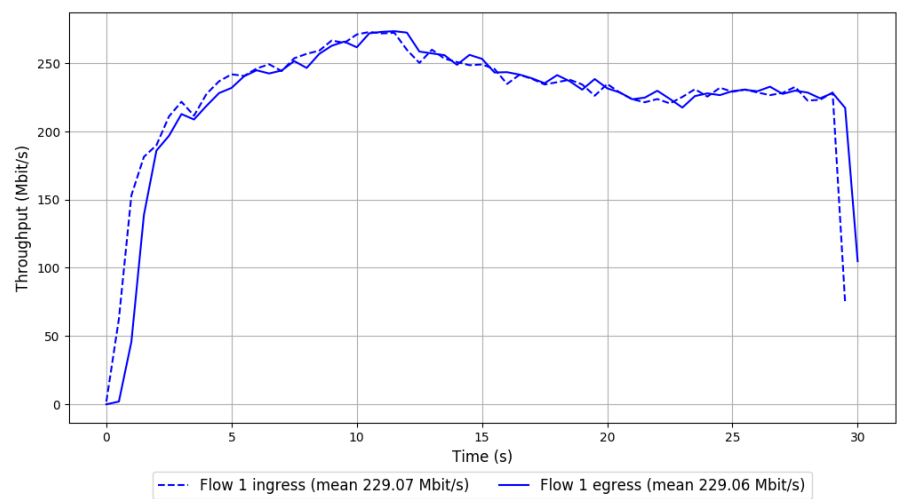
Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2018-12-12 05:54:23
End at: 2018-12-12 05:54:53
Local clock offset: -0.084 ms
Remote clock offset: -0.185 ms


# Below is generated by plot.py at 2018-12-12 08:34:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 229.06 Mbit/s
95th percentile per-packet one-way delay: 57.572 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 229.06 Mbit/s
95th percentile per-packet one-way delay: 57.572 ms
Loss rate: 0.00%
```

Run 3: Report of Indigo — Data Link

```
Run 4: Statistics of Indigo

Start at: 2018-12-12 06:23:57
End at: 2018-12-12 06:24:27
Local clock offset: 0.154 ms
Remote clock offset: 0.703 ms


# Below is generated by plot.py at 2018-12-12 08:34:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 192.89 Mbit/s
95th percentile per-packet one-way delay: 61.593 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 192.89 Mbit/s
95th percentile per-packet one-way delay: 61.593 ms
Loss rate: 0.00%
```
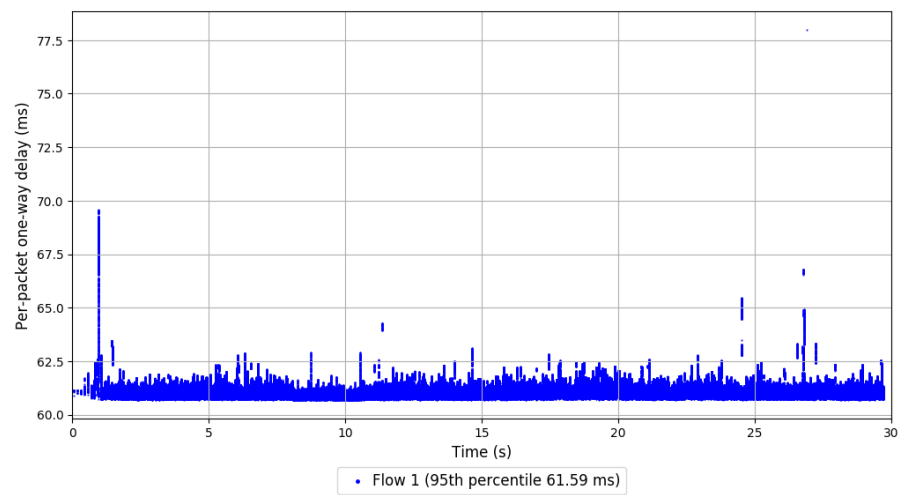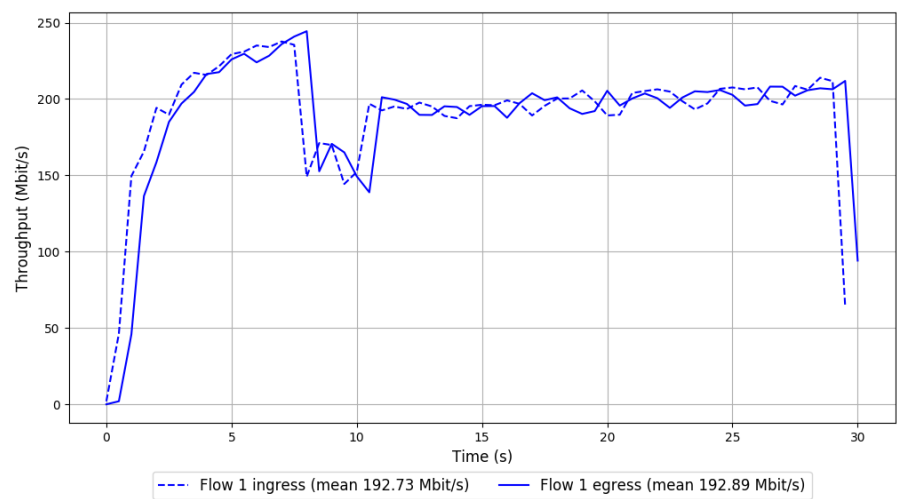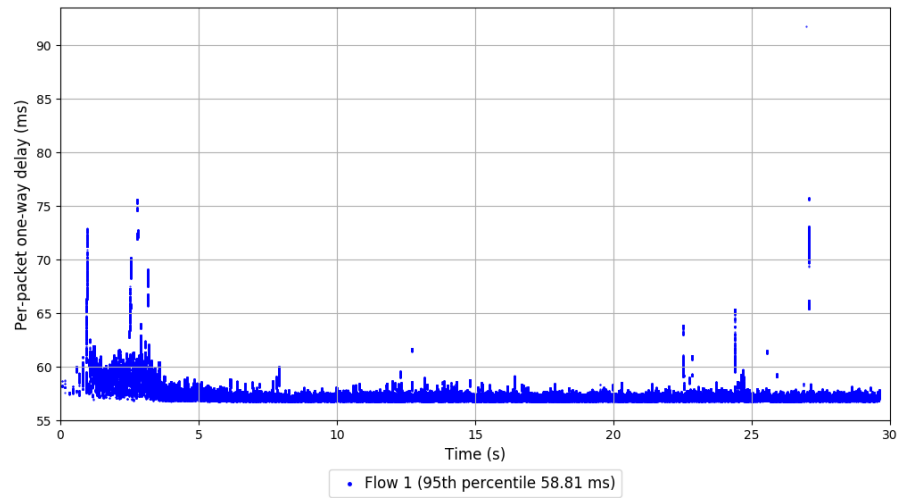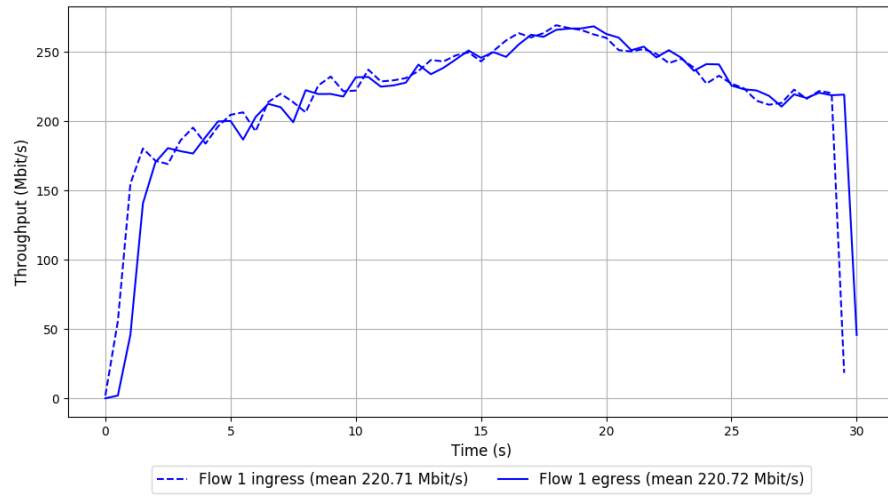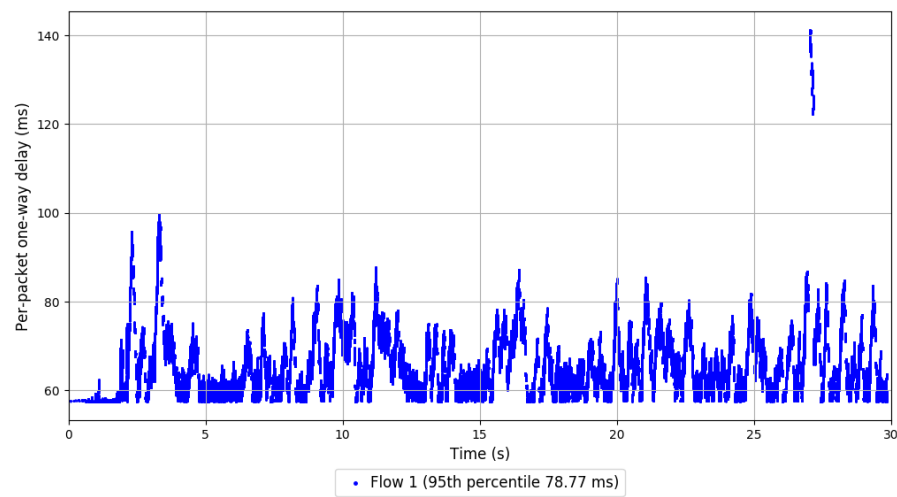
Run 4: Report of Indigo — Data Link

```
Run 5: Statistics of Indigo

Start at: 2018-12-12 06:52:58
End at: 2018-12-12 06:53:28
Local clock offset: 0.066 ms
Remote clock offset: -0.168 ms


# Below is generated by plot.py at 2018-12-12 08:34:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 220.72 Mbit/s
95th percentile per-packet one-way delay: 58.808 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 220.72 Mbit/s
95th percentile per-packet one-way delay: 58.808 ms
Loss rate: 0.00%
```
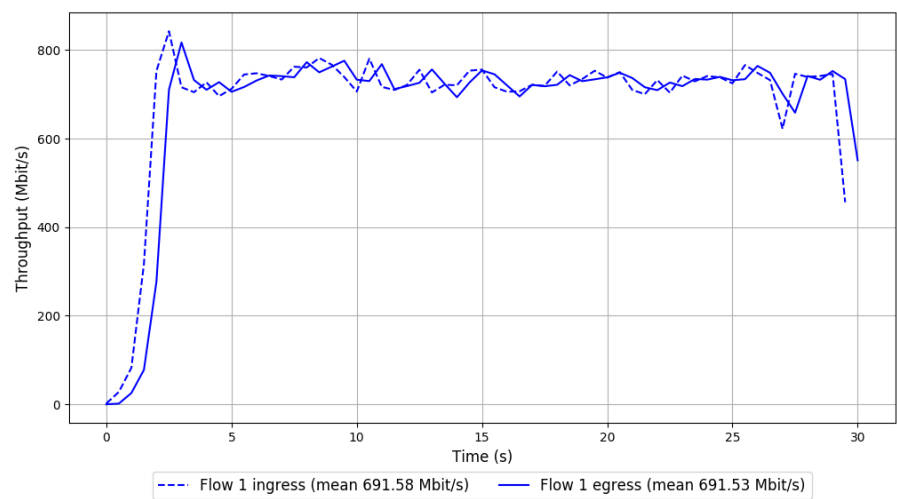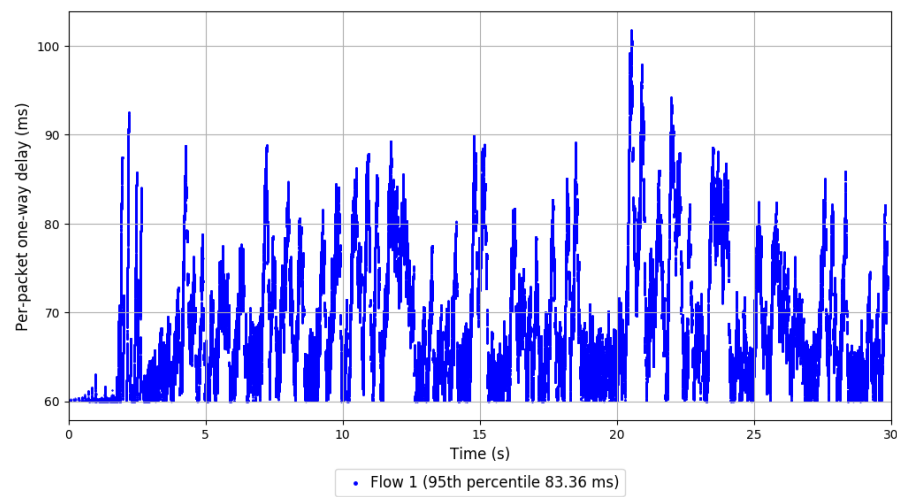
Run 5: Report of Indigo — Data Link

```
Run 1: Statistics of Indigo-MusesD

Start at: 2018-12-12 05:23:52
End at: 2018-12-12 05:24:22
Local clock offset: -0.066 ms
Remote clock offset: 0.51 ms


# Below is generated by plot.py at 2018-12-12 08:34:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 691.53 Mbit/s
95th percentile per-packet one-way delay: 78.772 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 691.53 Mbit/s
95th percentile per-packet one-way delay: 78.772 ms
Loss rate: 0.01%
```

Run 1: Report of Indigo-MusesD — Data Link

Flow 1 ingress (mean 691.58 Mbit/s)   Flow 1 egress (mean 691.53 Mbit/s)
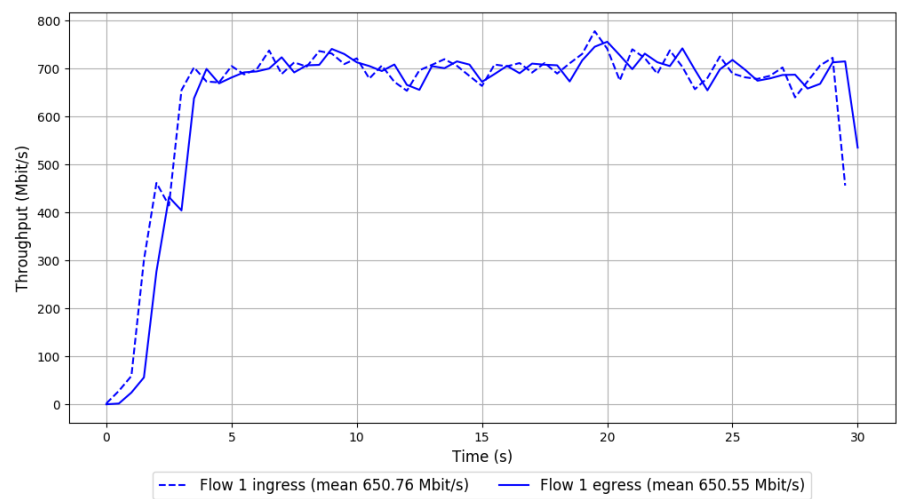

Flow 1 (95th percentile 78.77 ms)

```
Run 2: Statistics of Indigo-MusesD

Start at: 2018-12-12 05:52:41
End at: 2018-12-12 05:53:11
Local clock offset: -0.091 ms
Remote clock offset: -0.057 ms


# Below is generated by plot.py at 2018-12-12 08:34:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 650.55 Mbit/s
95th percentile per-packet one-way delay: 83.363 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 650.55 Mbit/s
95th percentile per-packet one-way delay: 83.363 ms
Loss rate: 0.04%
```

Run 2: Report of Indigo-MusesD — Data Link

```
Run 3: Statistics of Indigo-MusesD

Start at: 2018-12-12 06:22:14
End at: 2018-12-12 06:22:44
Local clock offset: -0.083 ms
Remote clock offset: -0.46 ms


# Below is generated by plot.py at 2018-12-12 08:34:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 668.79 Mbit/s
95th percentile per-packet one-way delay: 86.414 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 668.79 Mbit/s
95th percentile per-packet one-way delay: 86.414 ms
Loss rate: 0.05%
```
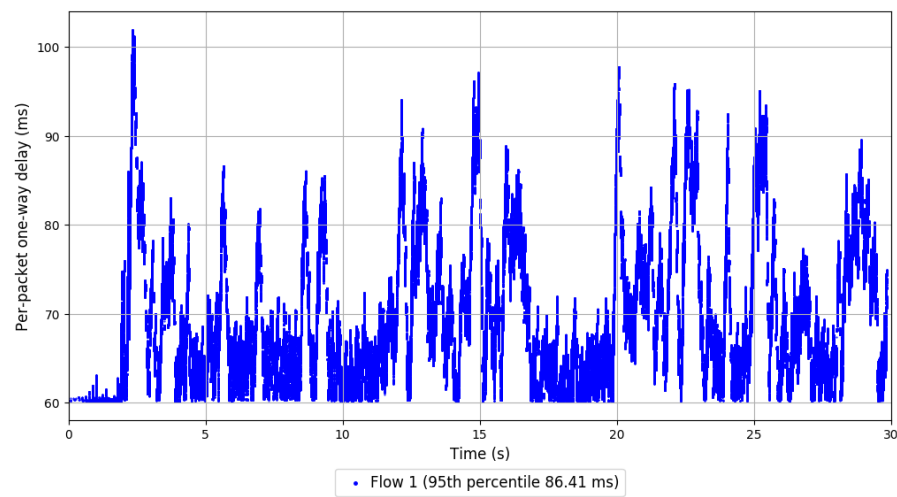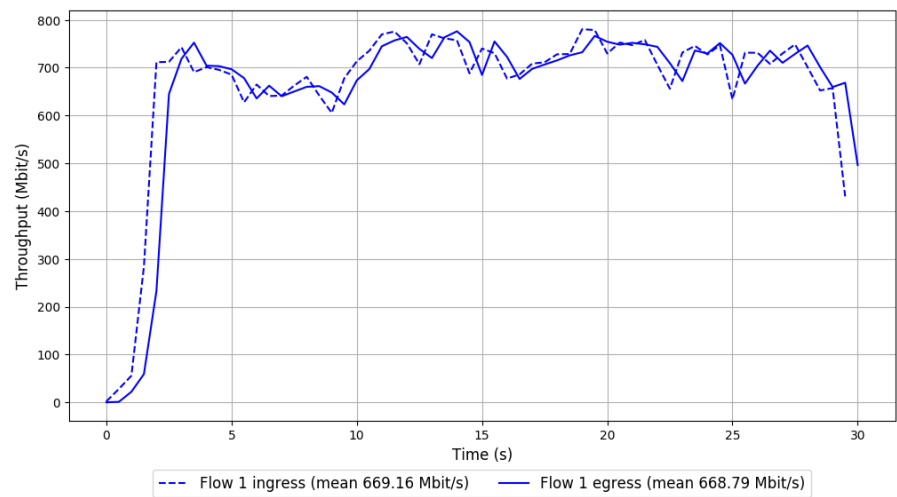
Run 3: Report of Indigo-MusesD — Data Link

```
Run 4: Statistics of Indigo-MusesD

Start at: 2018-12-12 06:51:07
End at: 2018-12-12 06:51:37
Local clock offset: -0.269 ms
Remote clock offset: 0.06 ms


# Below is generated by plot.py at 2018-12-12 08:35:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 680.25 Mbit/s
95th percentile per-packet one-way delay: 79.356 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 680.25 Mbit/s
95th percentile per-packet one-way delay: 79.356 ms
Loss rate: 0.00%
```
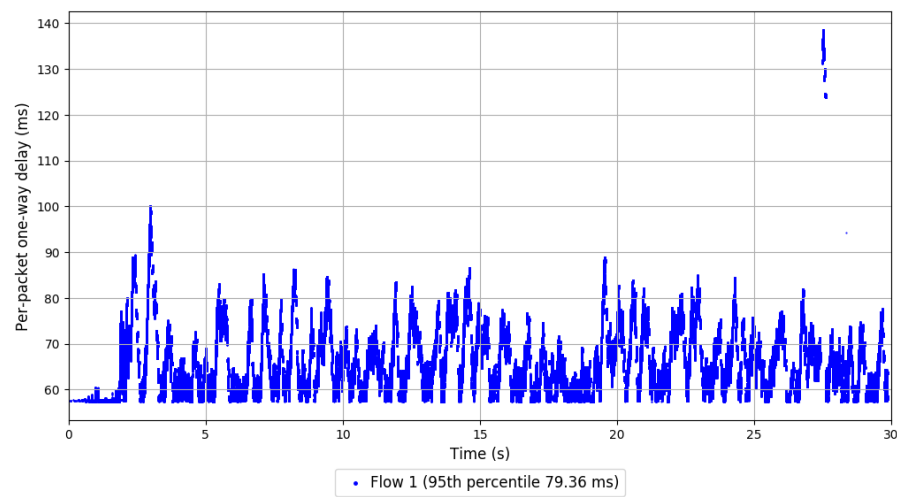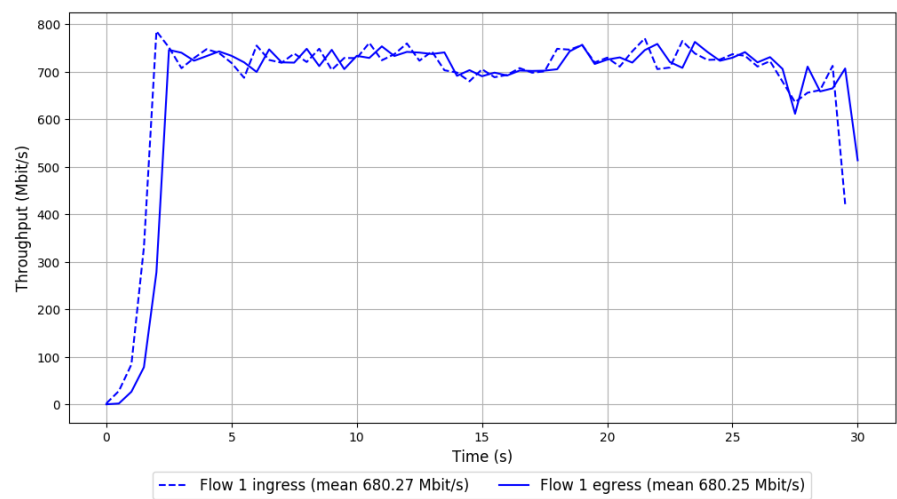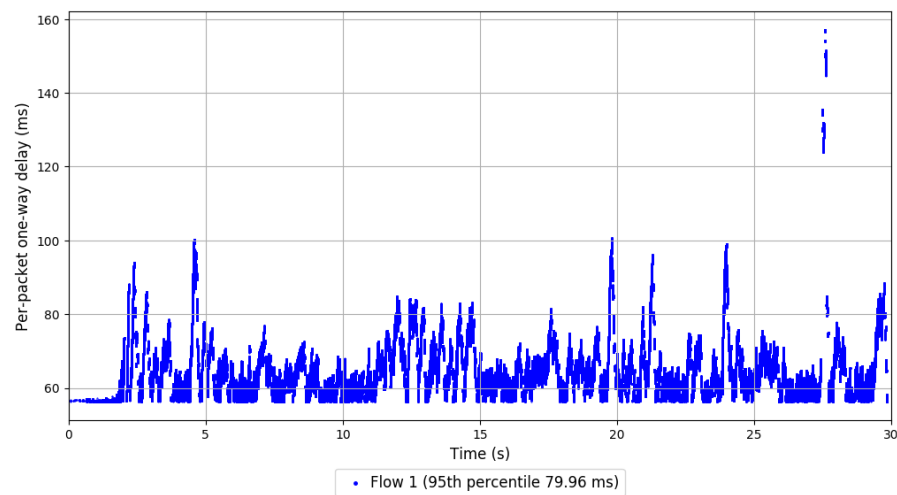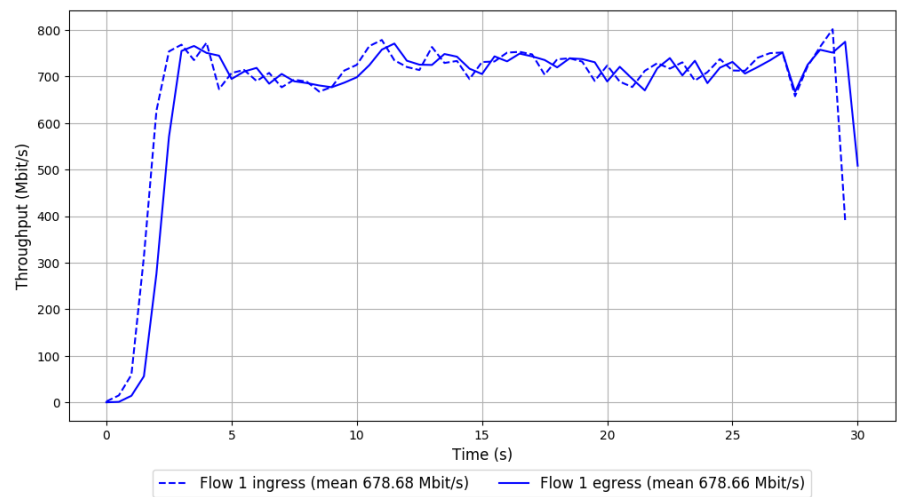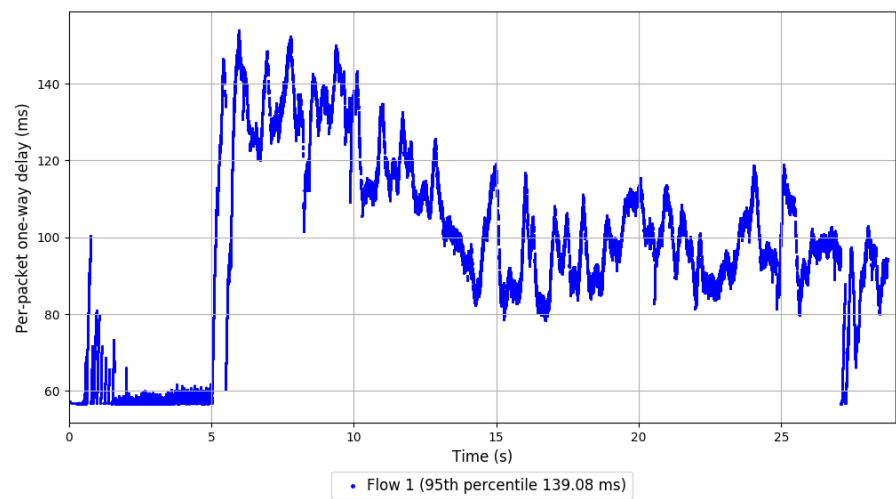
Run 4: Report of Indigo-MusesD — Data Link

Flow 1 ingress (mean 680.27 Mbit/s)   Flow 1 egress (mean 680.25 Mbit/s)

• Flow 1 (95th percentile 79.36 ms)

```
Run 5: Statistics of Indigo-MusesD

Start at: 2018-12-12 07:20:25
End at: 2018-12-12 07:20:55
Local clock offset: -0.46 ms
Remote clock offset: -1.11 ms


# Below is generated by plot.py at 2018-12-12 08:35:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 678.66 Mbit/s
95th percentile per-packet one-way delay: 79.956 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 678.66 Mbit/s
95th percentile per-packet one-way delay: 79.956 ms
Loss rate: 0.00%
```
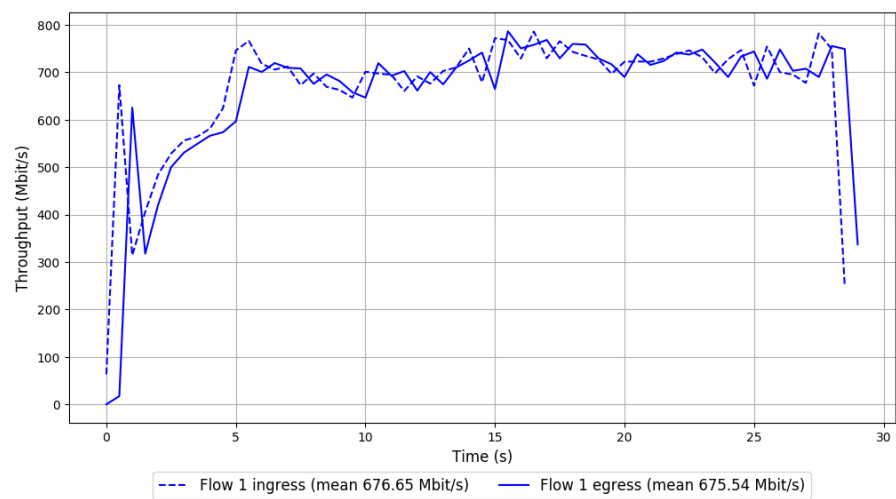
Run 5: Report of Indigo-MusesD — Data Link

```
Run 1: Statistics of Indigo-MusesT

Start at: 2018-12-12 04:58:41
End at: 2018-12-12 04:59:11
Local clock offset: -0.555 ms
Remote clock offset: -1.018 ms


# Below is generated by plot.py at 2018-12-12 08:35:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 675.54 Mbit/s
95th percentile per-packet one-way delay: 139.078 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 675.54 Mbit/s
95th percentile per-packet one-way delay: 139.078 ms
Loss rate: 0.16%
```
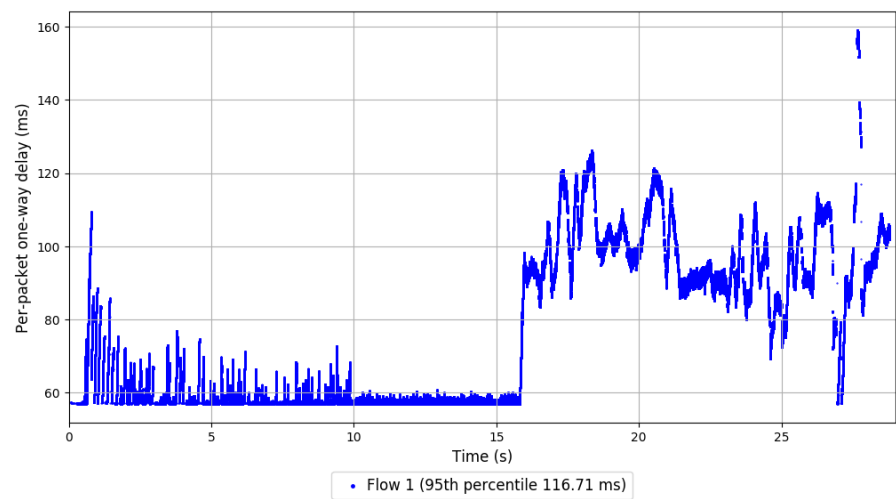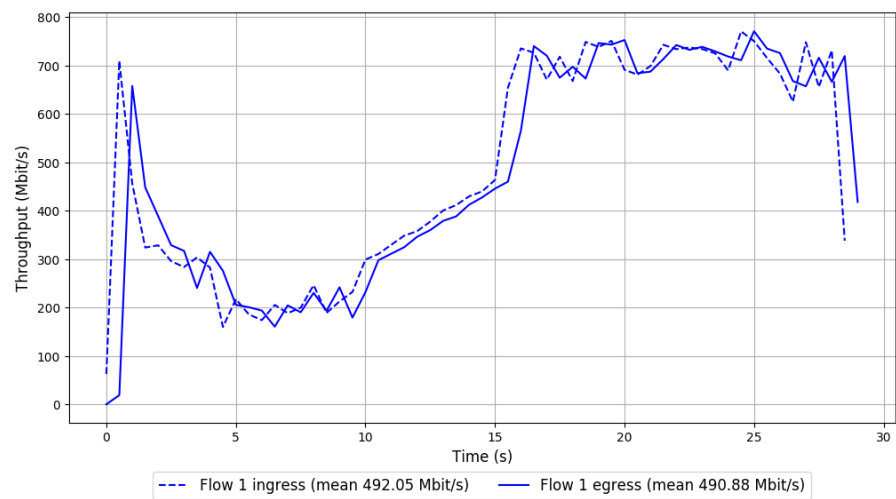
Run 1: Report of Indigo-MusesT — Data Link

- - - Flow 1 ingress (mean 676.65 Mbit/s) —— Flow 1 egress (mean 675.54 Mbit/s)

• Flow 1 (95th percentile 139.08 ms)

```
Run 2: Statistics of Indigo-MusesT

Start at: 2018-12-12 05:27:02
End at: 2018-12-12 05:27:33
Local clock offset: -0.05 ms
Remote clock offset: -0.081 ms


# Below is generated by plot.py at 2018-12-12 08:35:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 490.88 Mbit/s
95th percentile per-packet one-way delay: 116.707 ms
Loss rate: 0.24%
-- Flow 1:
Average throughput: 490.88 Mbit/s
95th percentile per-packet one-way delay: 116.707 ms
Loss rate: 0.24%
```

Run 2: Report of Indigo-MusesT — Data Link

```
Run 3: Statistics of Indigo-MusesT

Start at: 2018-12-12 05:55:53
End at: 2018-12-12 05:56:23
Local clock offset: -0.254 ms
Remote clock offset: -0.044 ms


# Below is generated by plot.py at 2018-12-12 08:40:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 712.53 Mbit/s
95th percentile per-packet one-way delay: 123.007 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 712.53 Mbit/s
95th percentile per-packet one-way delay: 123.007 ms
Loss rate: 0.19%
```
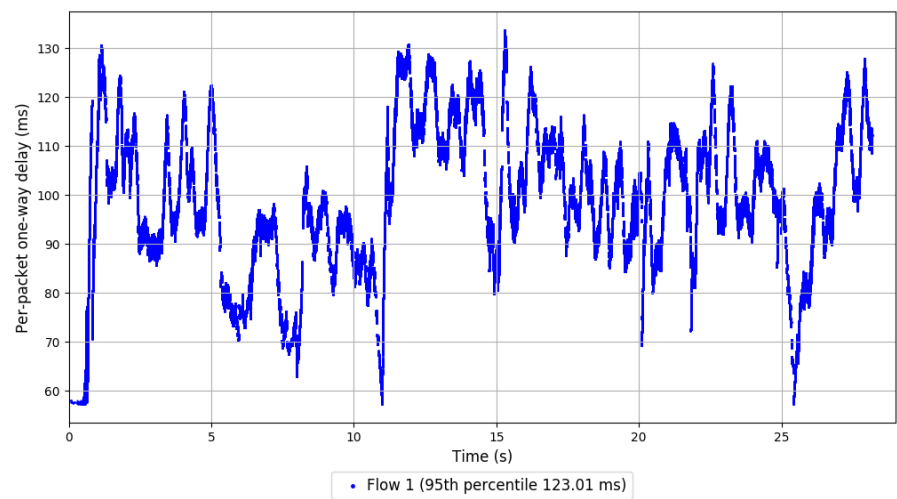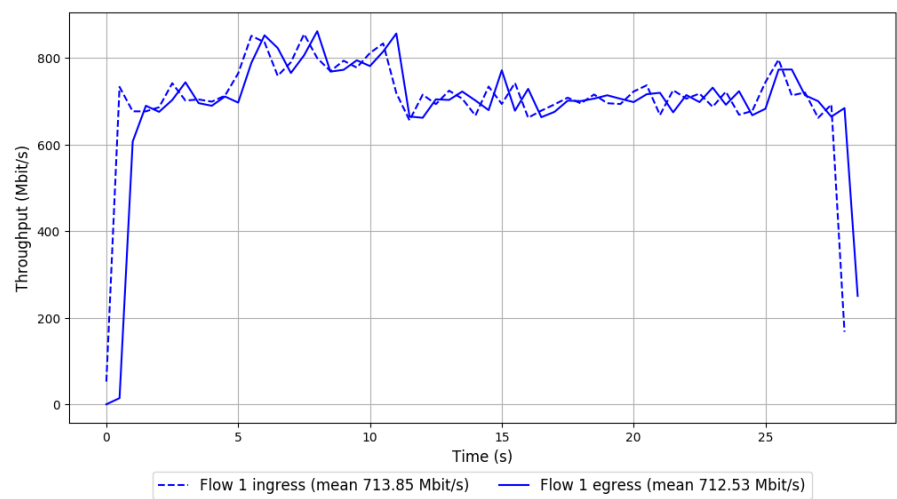
Run 3: Report of Indigo-MusesT — Data Link

```
Run 4: Statistics of Indigo-MusesT

Start at: 2018-12-12 06:25:24
End at: 2018-12-12 06:25:54
Local clock offset: -0.456 ms
Remote clock offset: -0.454 ms


# Below is generated by plot.py at 2018-12-12 08:44:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 776.52 Mbit/s
95th percentile per-packet one-way delay: 118.983 ms
Loss rate: 0.14%
-- Flow 1:
Average throughput: 776.52 Mbit/s
95th percentile per-packet one-way delay: 118.983 ms
Loss rate: 0.14%
```
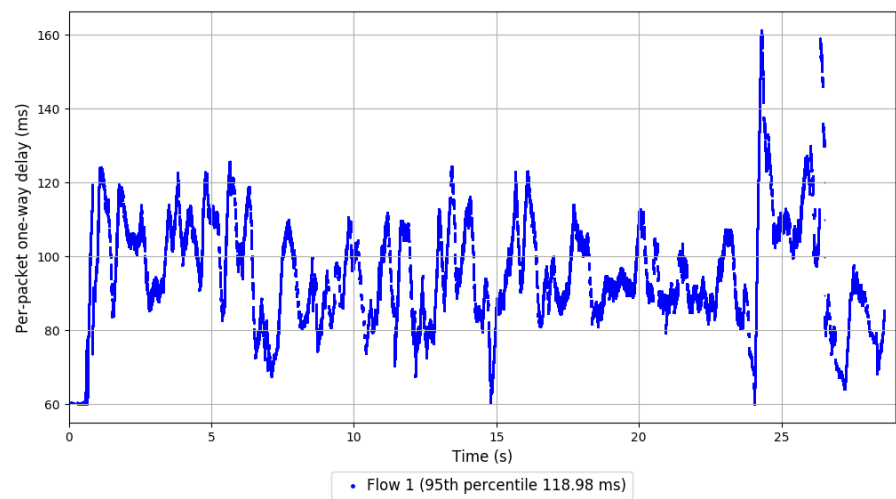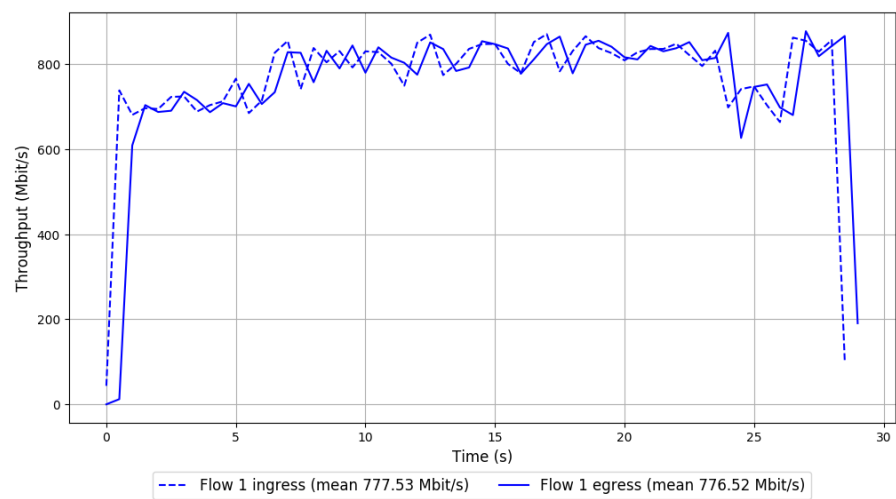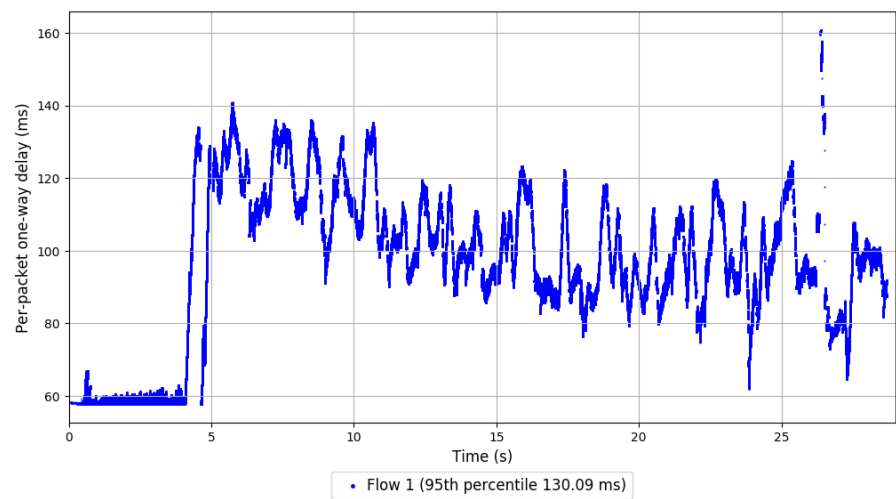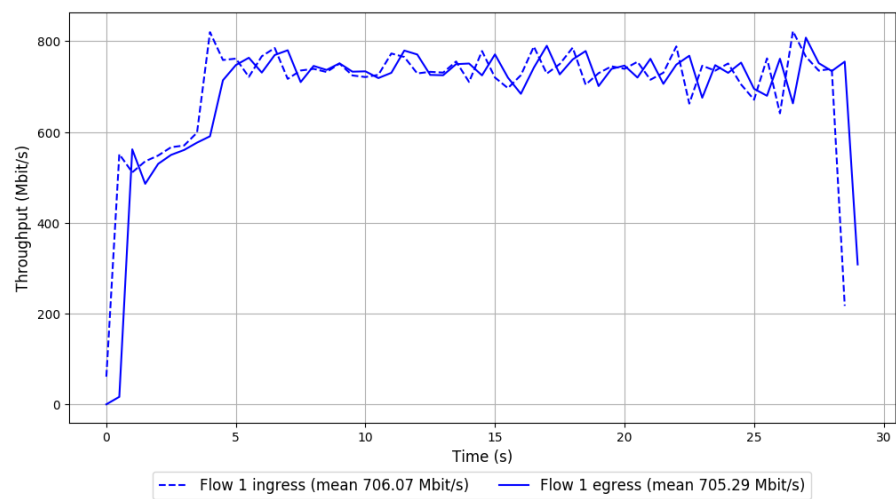
Run 4: Report of Indigo-MusesT — Data Link

Flow 1 ingress (mean 777.53 Mbit/s)   Flow 1 egress (mean 776.52 Mbit/s)

Flow 1 (95th percentile 118.98 ms)

```
Run 5: Statistics of Indigo-MusesT

Start at: 2018-12-12 06:54:30
End at: 2018-12-12 06:55:00
Local clock offset: 0.355 ms
Remote clock offset: 1.118 ms


# Below is generated by plot.py at 2018-12-12 08:44:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 705.29 Mbit/s
95th percentile per-packet one-way delay: 130.095 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 705.29 Mbit/s
95th percentile per-packet one-way delay: 130.095 ms
Loss rate: 0.11%
```

Run 5: Report of Indigo-MusesT — Data Link

Flow 1 ingress (mean 706.07 Mbit/s)   Flow 1 egress (mean 705.29 Mbit/s)
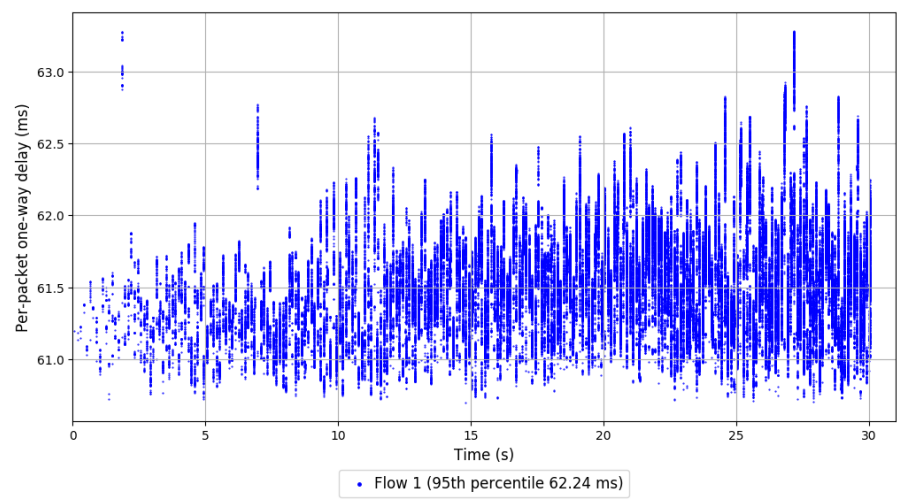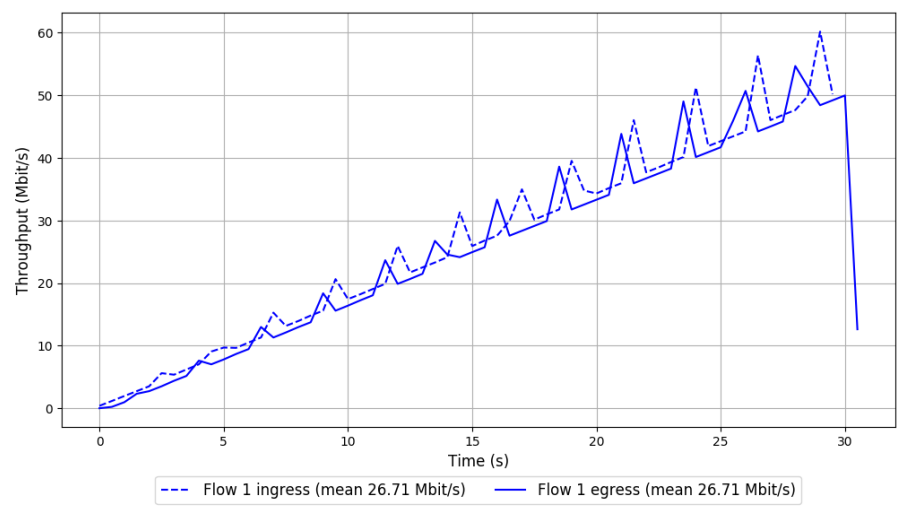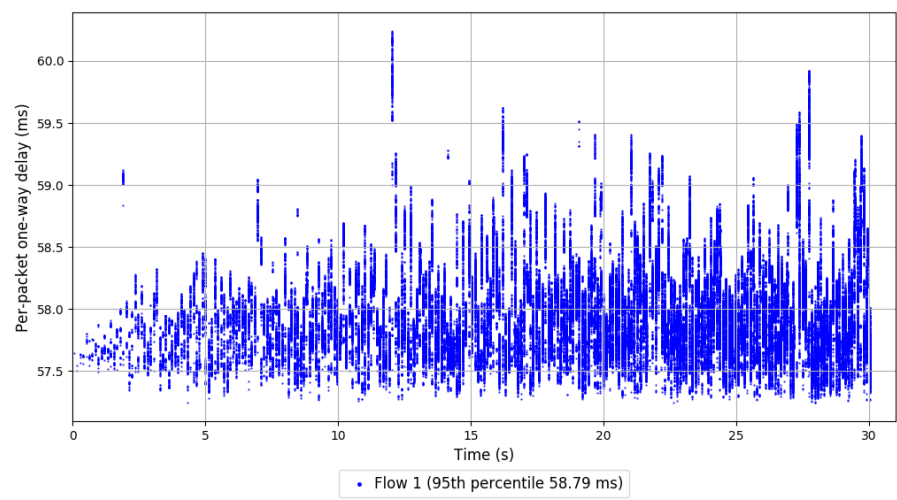

Flow 1 (95th percentile 130.09 ms)

```
Run 1: Statistics of LEDBAT

Start at: 2018-12-12 05:21:06
End at: 2018-12-12 05:21:36
Local clock offset: -0.044 ms
Remote clock offset: 0.086 ms


# Below is generated by plot.py at 2018-12-12 08:44:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 26.71 Mbit/s
95th percentile per-packet one-way delay: 62.242 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 26.71 Mbit/s
95th percentile per-packet one-way delay: 62.242 ms
Loss rate: 0.00%
```

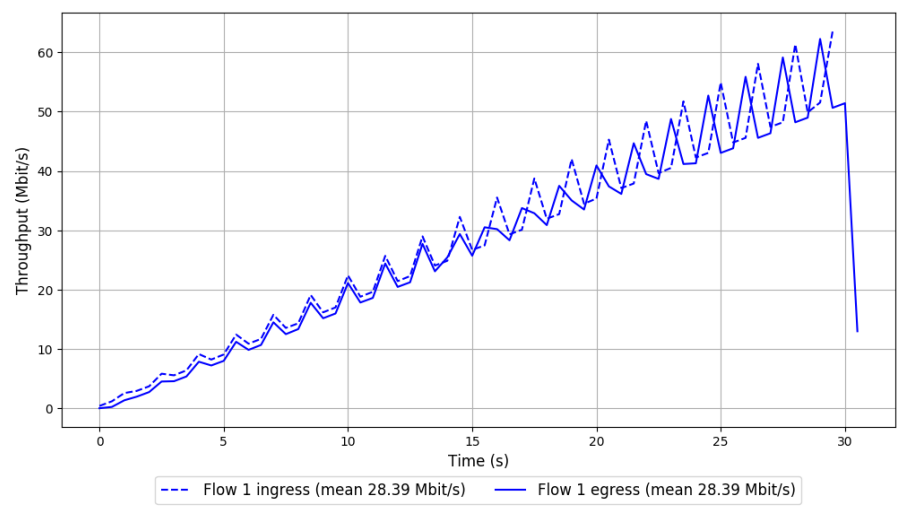# Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2018-12-12 05:49:54
End at: 2018-12-12 05:50:24
Local clock offset: -0.283 ms
Remote clock offset: -0.075 ms


# Below is generated by plot.py at 2018-12-12 08:44:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 28.39 Mbit/s
95th percentile per-packet one-way delay: 58.786 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 28.39 Mbit/s
95th percentile per-packet one-way delay: 58.786 ms
Loss rate: 0.00%
```
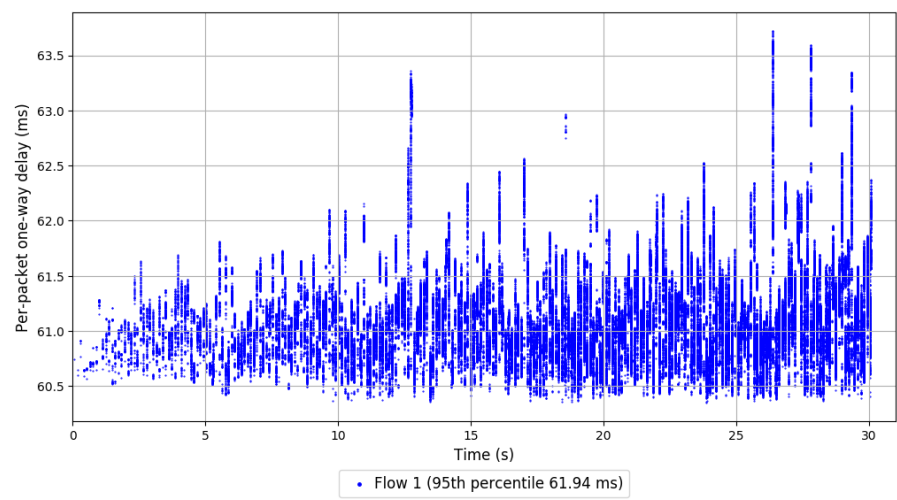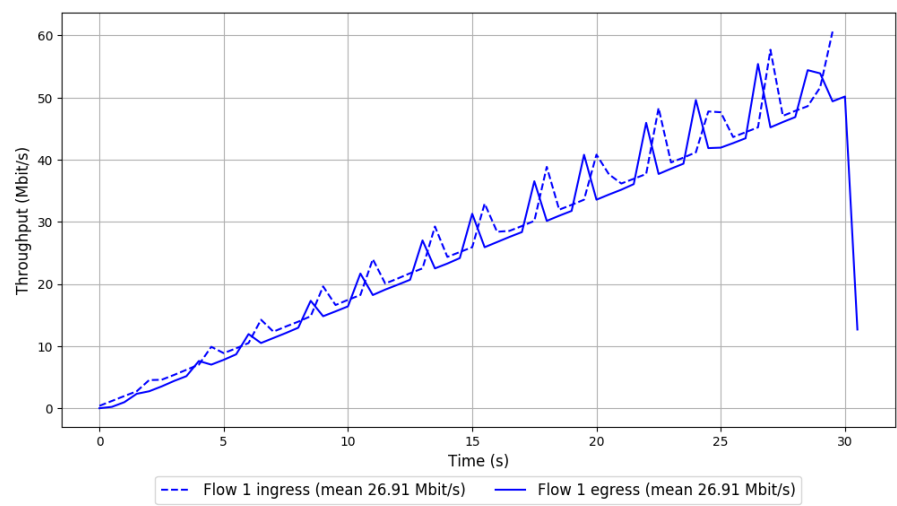
Run 2: Report of LEDBAT — Data Link

Flow 1 ingress (mean 28.39 Mbit/s) — Flow 1 egress (mean 28.39 Mbit/s)
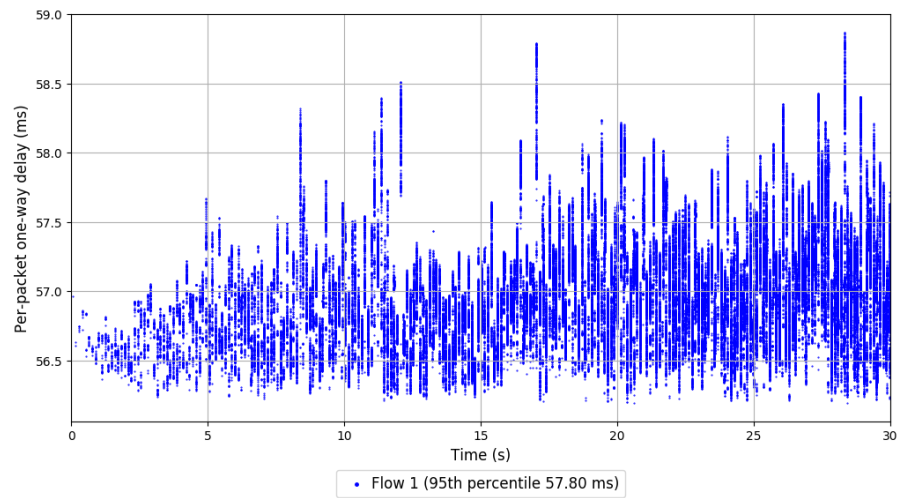

• Flow 1 (95th percentile 58.79 ms)

```
Run 3: Statistics of LEDBAT

Start at: 2018-12-12 06:19:13
End at: 2018-12-12 06:19:43
Local clock offset: 0.338 ms
Remote clock offset: 0.334 ms


# Below is generated by plot.py at 2018-12-12 08:44:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 26.91 Mbit/s
95th percentile per-packet one-way delay: 61.940 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 26.91 Mbit/s
95th percentile per-packet one-way delay: 61.940 ms
Loss rate: 0.00%
```

Run 3: Report of LEDBAT — Data Link

Flow 1 ingress (mean 26.91 Mbit/s)   Flow 1 egress (mean 26.91 Mbit/s)

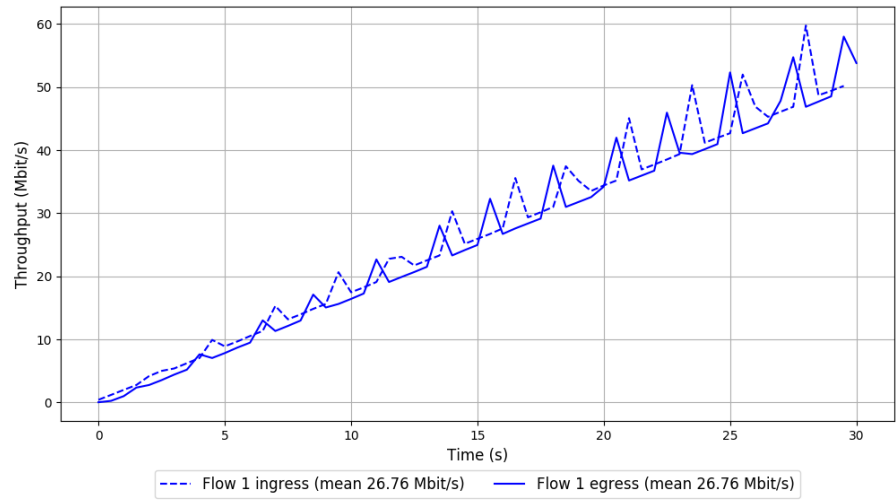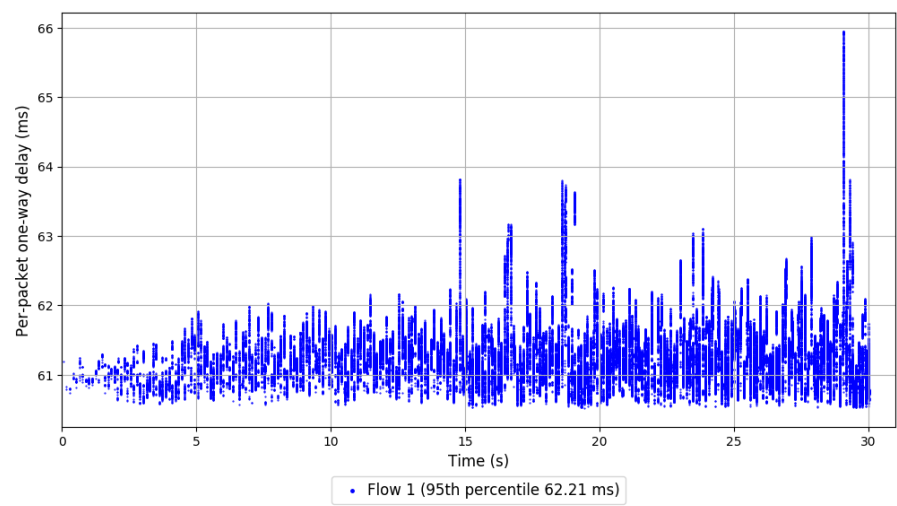Flow 1 (95th percentile 61.94 ms)

```
Run 4: Statistics of LEDBAT

Start at: 2018-12-12 06:48:15
End at: 2018-12-12 06:48:45
Local clock offset: -0.059 ms
Remote clock offset: -0.812 ms


# Below is generated by plot.py at 2018-12-12 08:44:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 26.76 Mbit/s
95th percentile per-packet one-way delay: 57.799 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 26.76 Mbit/s
95th percentile per-packet one-way delay: 57.799 ms
Loss rate: 0.00%
```

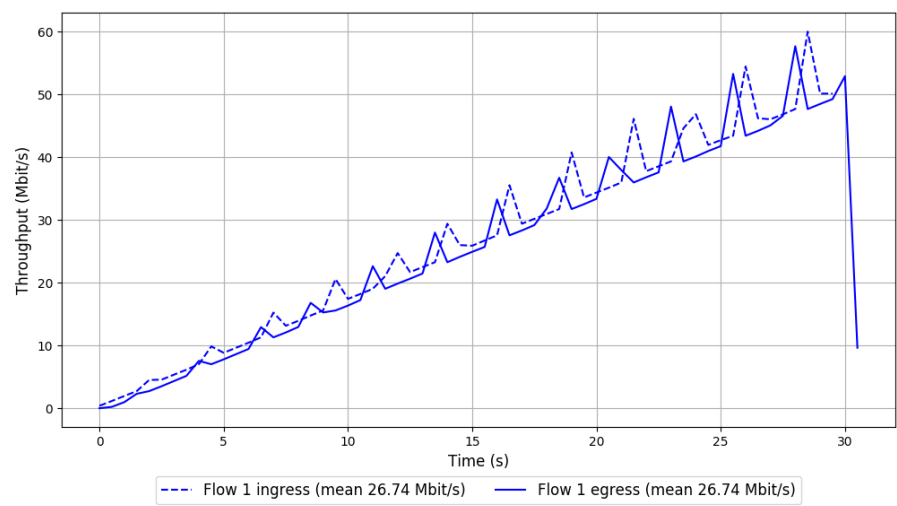# Run 4: Report of LEDBAT — Data Link

```
Run 5: Statistics of LEDBAT

Start at: 2018-12-12 07:17:42
End at: 2018-12-12 07:18:12
Local clock offset: -0.068 ms
Remote clock offset: -0.202 ms

# Below is generated by plot.py at 2018-12-12 08:44:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 26.74 Mbit/s
95th percentile per-packet one-way delay: 62.206 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 26.74 Mbit/s
95th percentile per-packet one-way delay: 62.206 ms
Loss rate: 0.00%
```
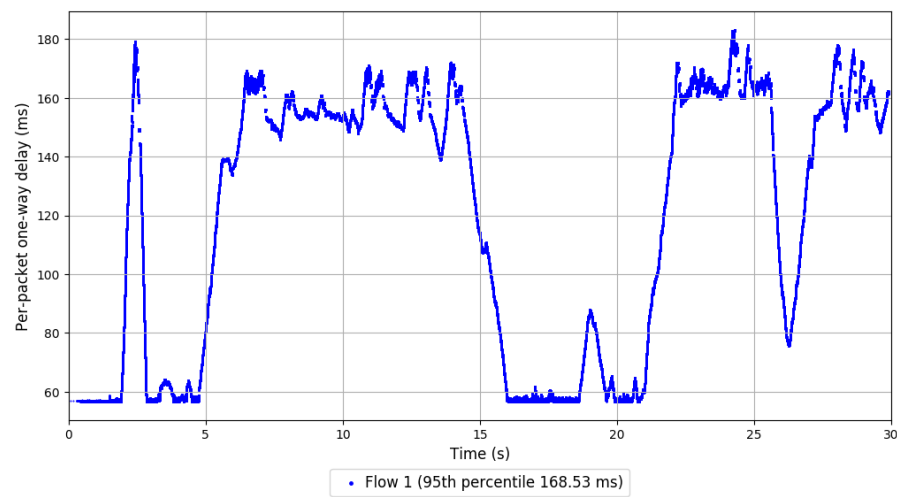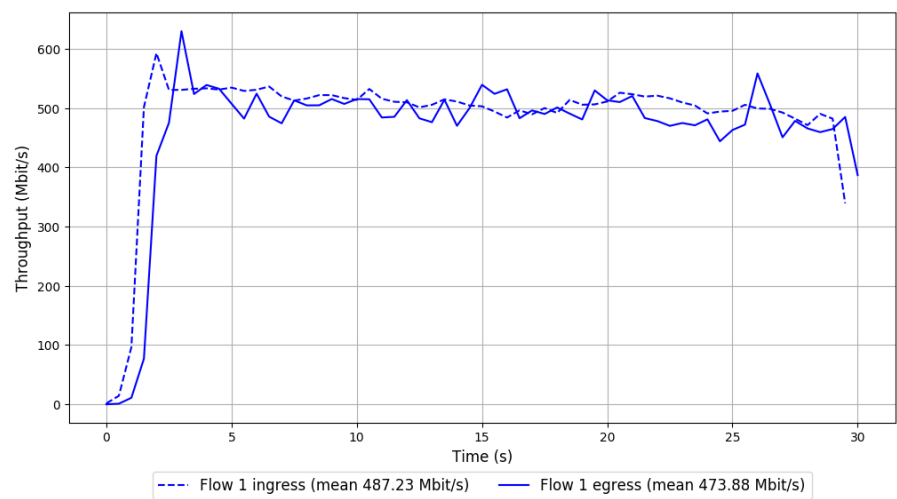
Run 5: Report of LEDBAT — Data Link

Flow 1 ingress (mean 26.74 Mbit/s) ----- Flow 1 egress (mean 26.74 Mbit/s)
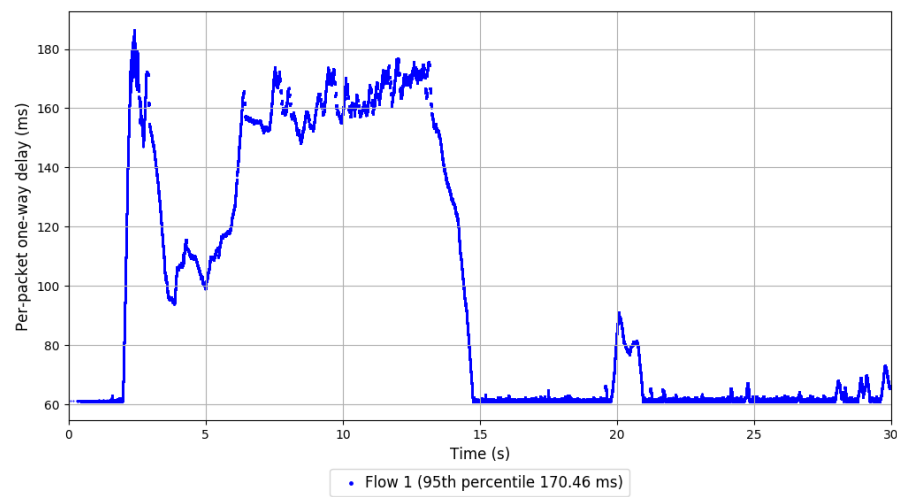

• Flow 1 (95th percentile 62.21 ms)

```
Run 1: Statistics of PCC-Allegro

Start at: 2018-12-12 05:13:58
End at: 2018-12-12 05:14:28
Local clock offset: 0.353 ms
Remote clock offset: -0.201 ms


# Below is generated by plot.py at 2018-12-12 08:52:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 473.88 Mbit/s
95th percentile per-packet one-way delay: 168.525 ms
Loss rate: 2.74%
-- Flow 1:
Average throughput: 473.88 Mbit/s
95th percentile per-packet one-way delay: 168.525 ms
Loss rate: 2.74%
```

Run 1: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 487.23 Mbit/s) — — — Flow 1 egress (mean 473.88 Mbit/s)
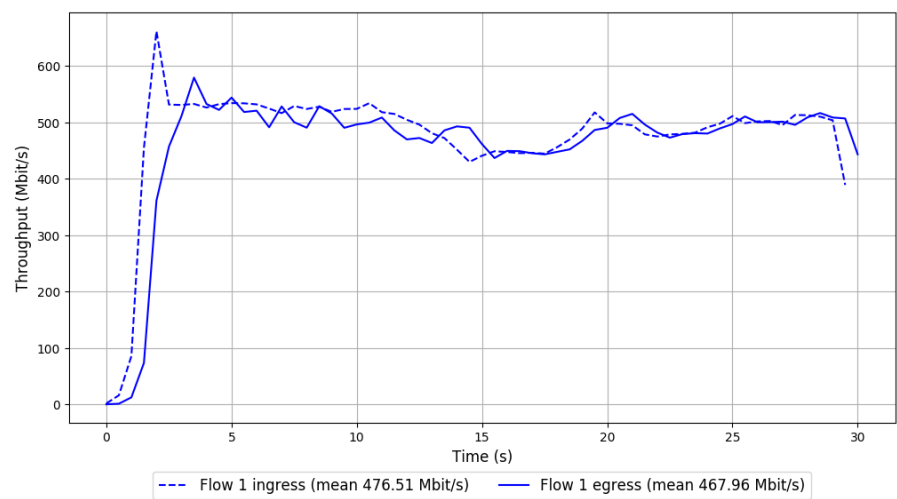

• Flow 1 (95th percentile 168.53 ms)

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-12-12 05:42:41
End at: 2018-12-12 05:43:11
Local clock offset: -0.494 ms
Remote clock offset: -0.155 ms


# Below is generated by plot.py at 2018-12-12 08:52:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 467.96 Mbit/s
95th percentile per-packet one-way delay: 170.458 ms
Loss rate: 1.80%
-- Flow 1:
Average throughput: 467.96 Mbit/s
95th percentile per-packet one-way delay: 170.458 ms
Loss rate: 1.80%
```
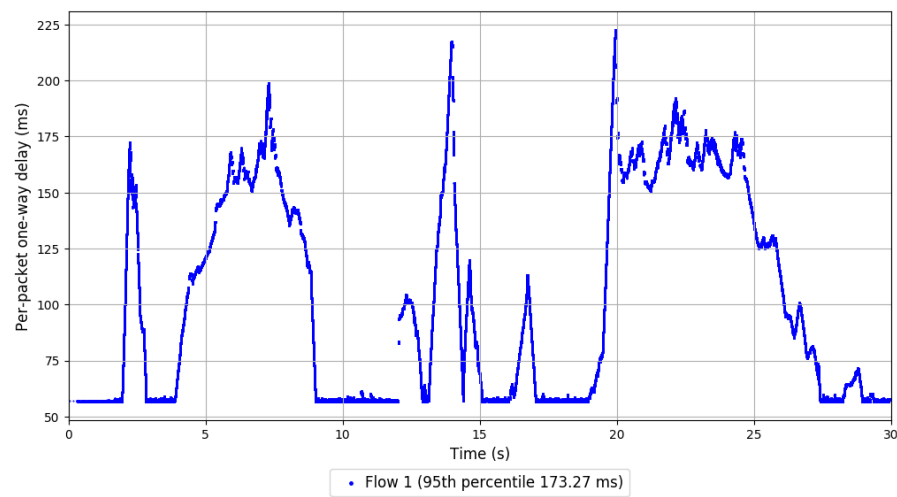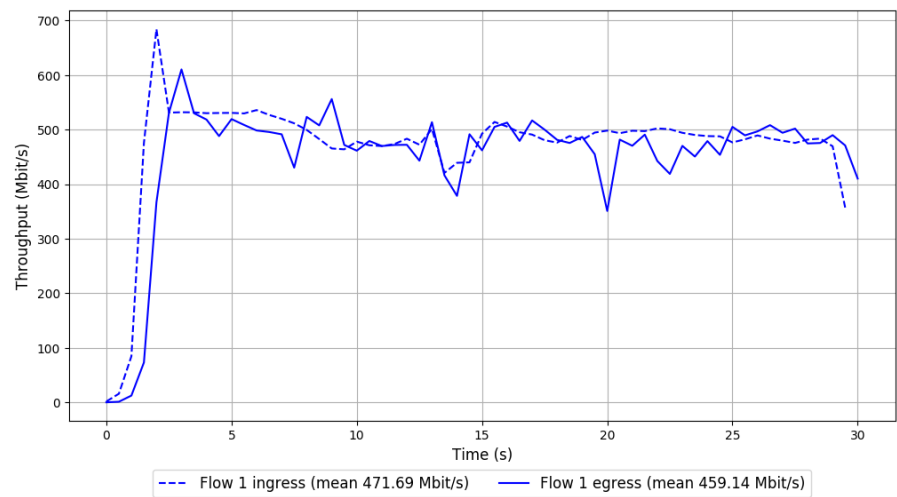
Run 2: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 476.51 Mbit/s) — — — Flow 1 egress (mean 467.96 Mbit/s)
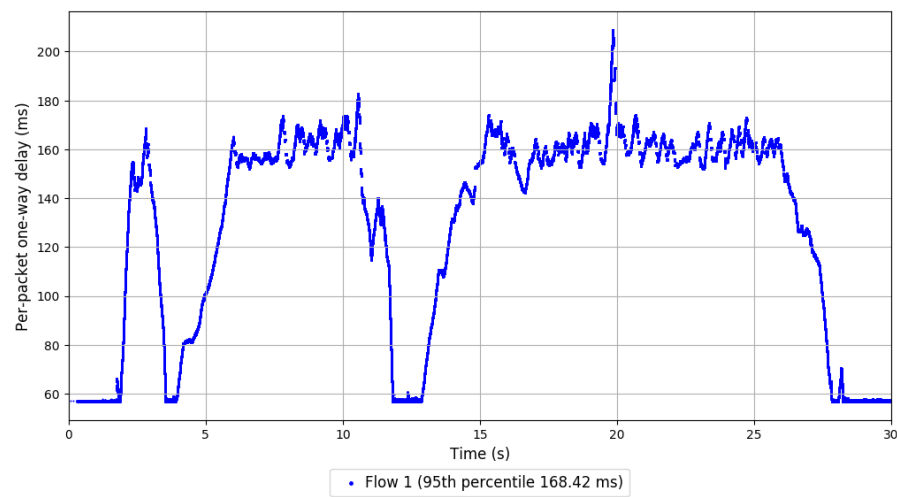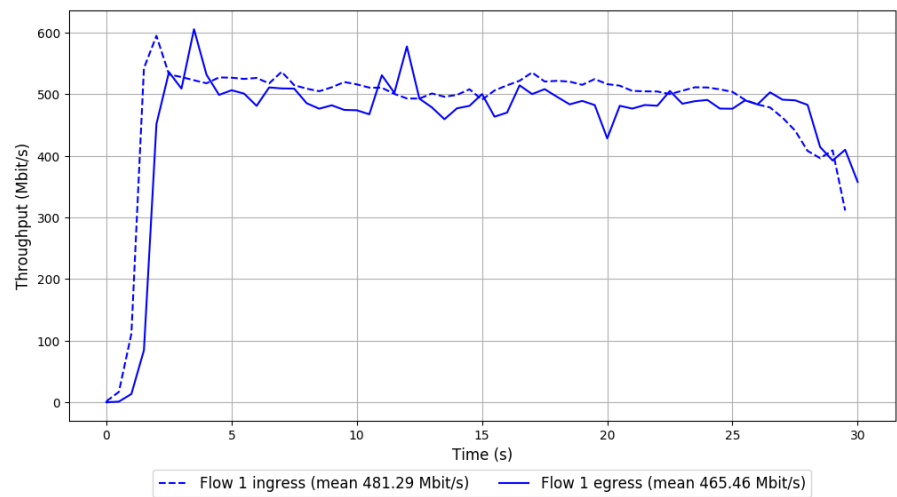

• Flow 1 (95th percentile 170.46 ms)

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-12-12 06:11:47
End at: 2018-12-12 06:12:17
Local clock offset: -0.505 ms
Remote clock offset: -0.61 ms


# Below is generated by plot.py at 2018-12-12 08:52:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 459.14 Mbit/s
95th percentile per-packet one-way delay: 173.267 ms
Loss rate: 2.66%
-- Flow 1:
Average throughput: 459.14 Mbit/s
95th percentile per-packet one-way delay: 173.267 ms
Loss rate: 2.66%
```

Run 3: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 471.69 Mbit/s) ----   Flow 1 egress (mean 459.14 Mbit/s) ——

• Flow 1 (95th percentile 173.27 ms)

```
Run 4: Statistics of PCC-Allegro

Start at: 2018-12-12 06:41:09
End at: 2018-12-12 06:41:39
Local clock offset: -0.135 ms
Remote clock offset: -0.022 ms


# Below is generated by plot.py at 2018-12-12 08:53:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 465.46 Mbit/s
95th percentile per-packet one-way delay: 168.423 ms
Loss rate: 3.29%
-- Flow 1:
Average throughput: 465.46 Mbit/s
95th percentile per-packet one-way delay: 168.423 ms
Loss rate: 3.29%
```
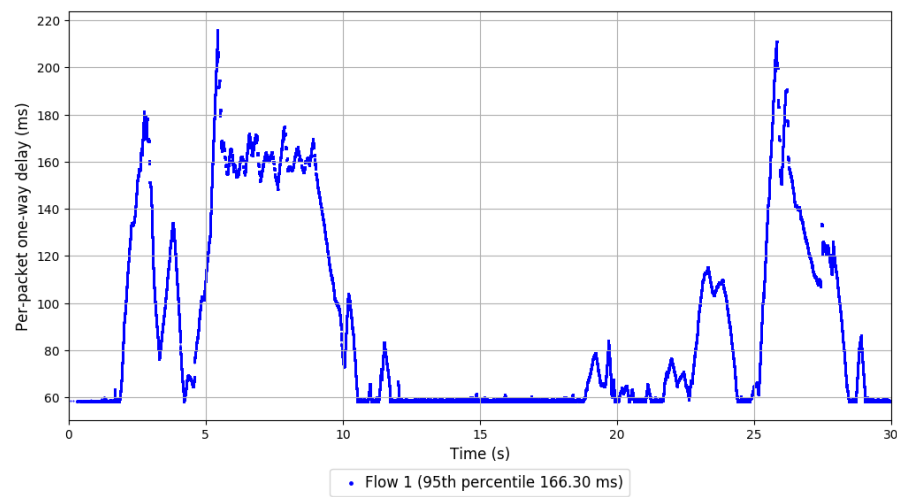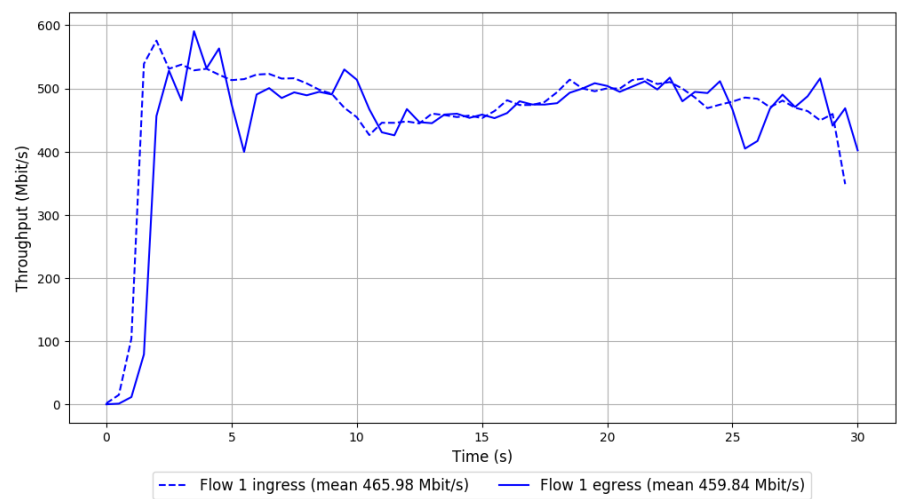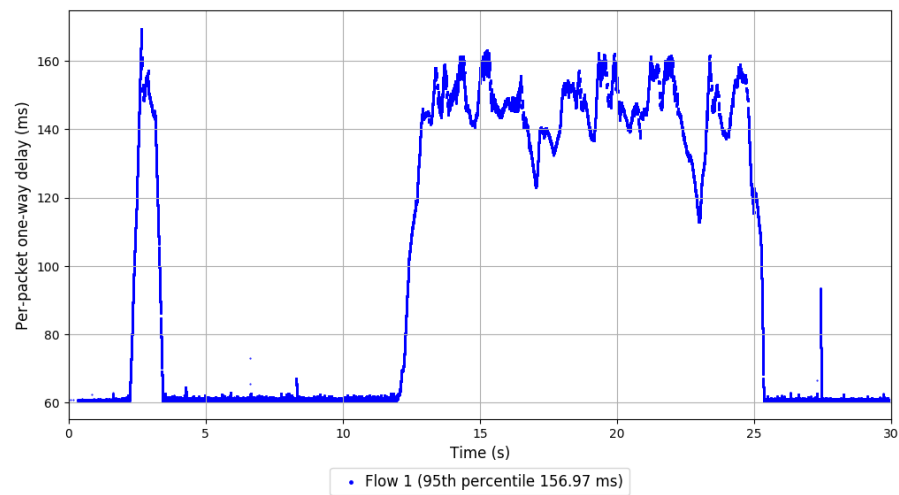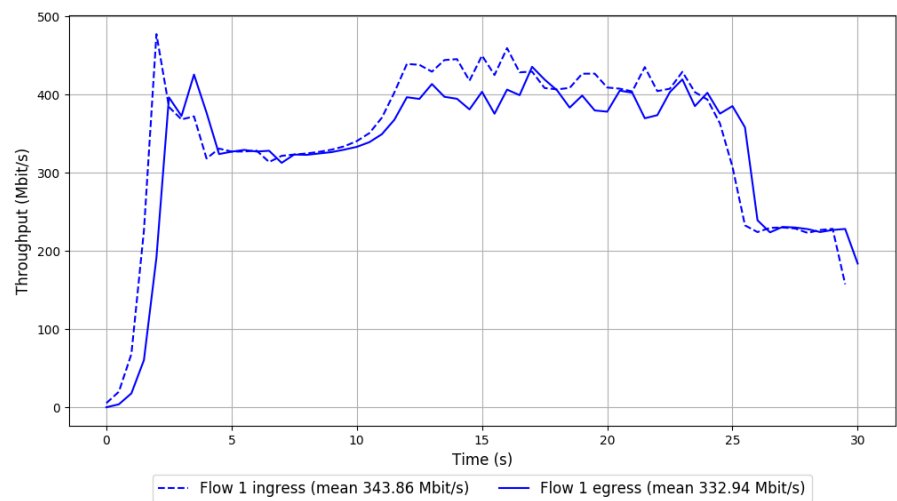
Run 4: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 481.29 Mbit/s) — Flow 1 egress (mean 465.46 Mbit/s)

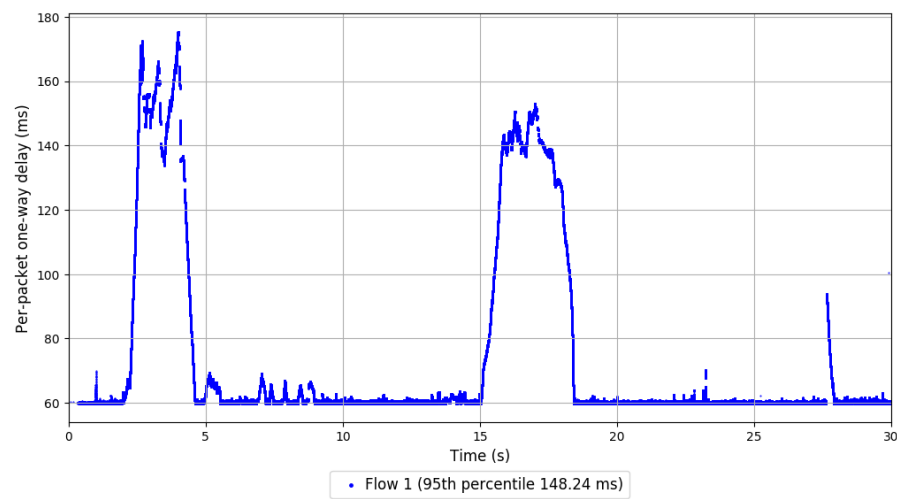
• Flow 1 (95th percentile 168.42 ms)

```
Run 5: Statistics of PCC-Allegro

Start at: 2018-12-12 07:10:30
End at: 2018-12-12 07:11:00
Local clock offset: -0.43 ms
Remote clock offset: 0.689 ms


# Below is generated by plot.py at 2018-12-12 08:53:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 459.84 Mbit/s
95th percentile per-packet one-way delay: 166.299 ms
Loss rate: 1.32%
-- Flow 1:
Average throughput: 459.84 Mbit/s
95th percentile per-packet one-way delay: 166.299 ms
Loss rate: 1.32%
```

Run 5: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 465.98 Mbit/s) --- Flow 1 egress (mean 459.84 Mbit/s)
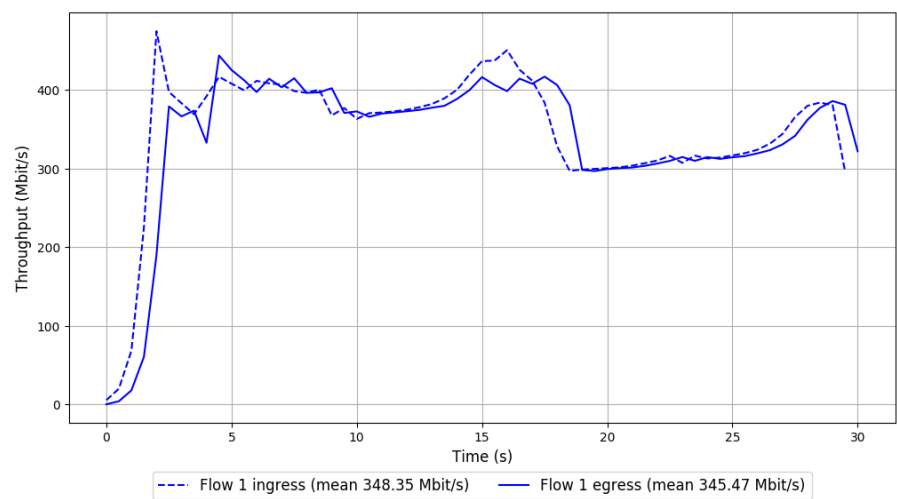

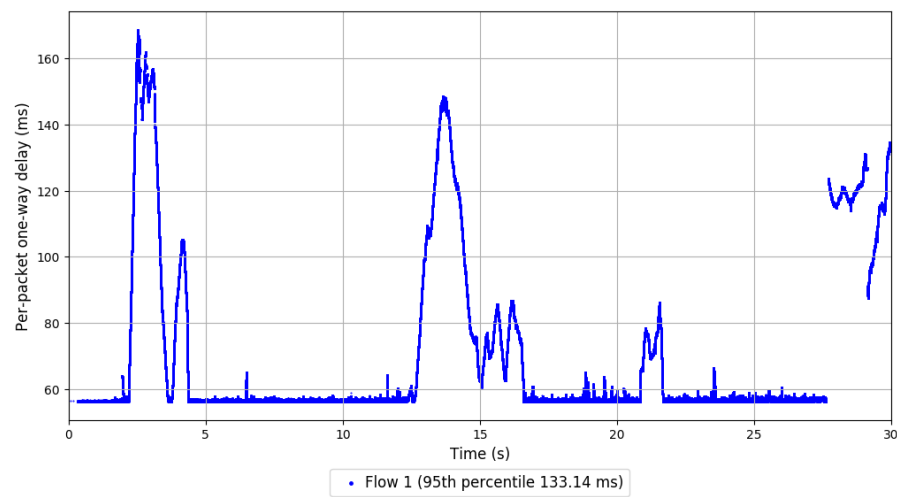
• Flow 1 (95th percentile 166.30 ms)

```
Run 1: Statistics of PCC-Expr

Start at: 2018-12-12 05:17:53
End at: 2018-12-12 05:18:23
Local clock offset: -0.031 ms
Remote clock offset: -0.084 ms


# Below is generated by plot.py at 2018-12-12 08:53:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 332.94 Mbit/s
95th percentile per-packet one-way delay: 156.969 ms
Loss rate: 3.18%
-- Flow 1:
Average throughput: 332.94 Mbit/s
95th percentile per-packet one-way delay: 156.969 ms
Loss rate: 3.18%
```

Run 1: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 343.86 Mbit/s) — — — — Flow 1 egress (mean 332.94 Mbit/s)
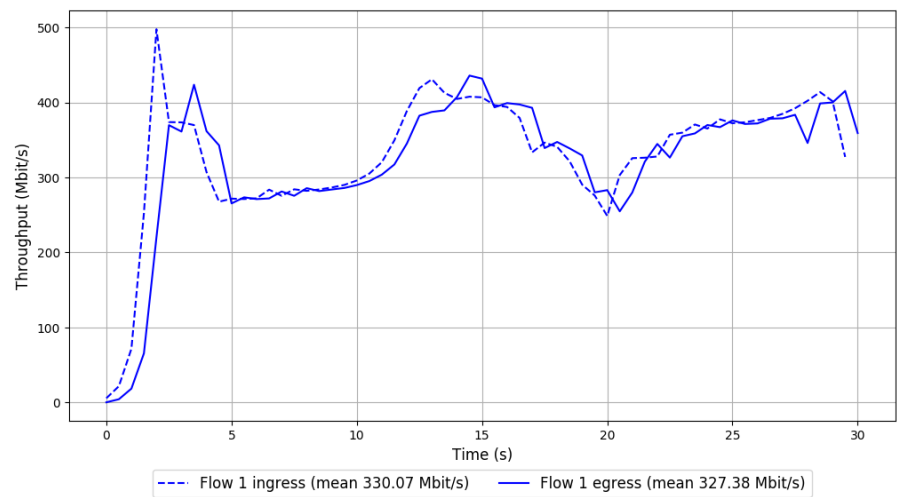

· Flow 1 (95th percentile 156.97 ms)

```
Run 2: Statistics of PCC-Expr

Start at: 2018-12-12 05:46:36
End at: 2018-12-12 05:47:06
Local clock offset: -0.086 ms
Remote clock offset: -0.549 ms


# Below is generated by plot.py at 2018-12-12 08:57:10
# Datalink statistics
-- Total of 1 flow:
Average throughput: 345.47 Mbit/s
95th percentile per-packet one-way delay: 148.238 ms
Loss rate: 0.89%
-- Flow 1:
Average throughput: 345.47 Mbit/s
95th percentile per-packet one-way delay: 148.238 ms
Loss rate: 0.89%
```
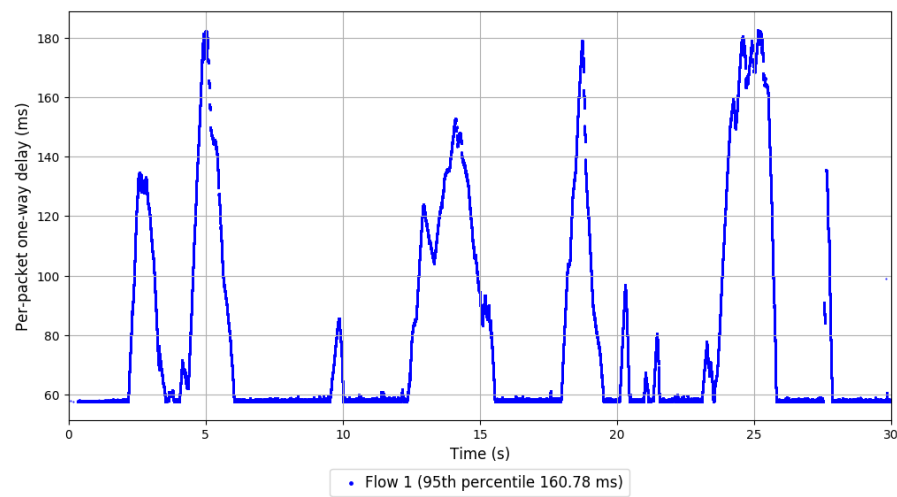
Run 2: Report of PCC-Expr — Data Link

```
Run 3: Statistics of PCC-Expr

Start at: 2018-12-12 06:15:43
End at: 2018-12-12 06:16:13
Local clock offset: -0.112 ms
Remote clock offset: -0.727 ms


# Below is generated by plot.py at 2018-12-12 08:57:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 327.38 Mbit/s
95th percentile per-packet one-way delay: 133.144 ms
Loss rate: 0.82%
-- Flow 1:
Average throughput: 327.38 Mbit/s
95th percentile per-packet one-way delay: 133.144 ms
Loss rate: 0.82%
```
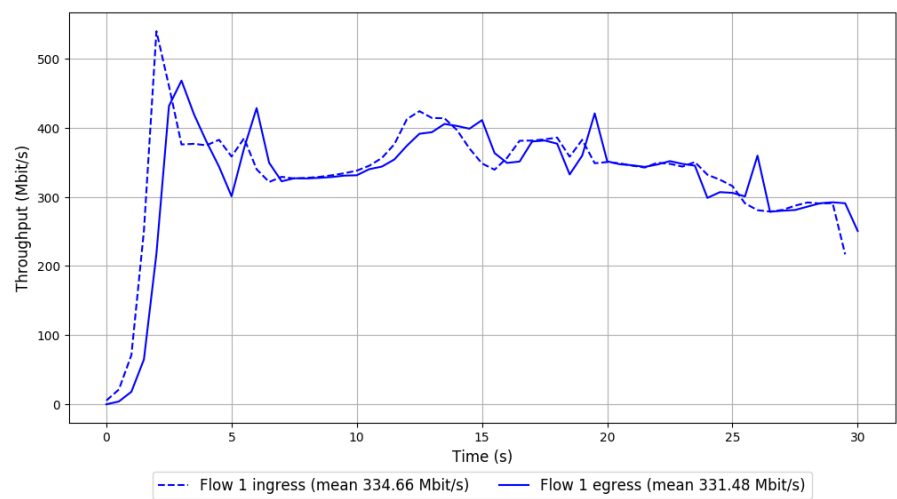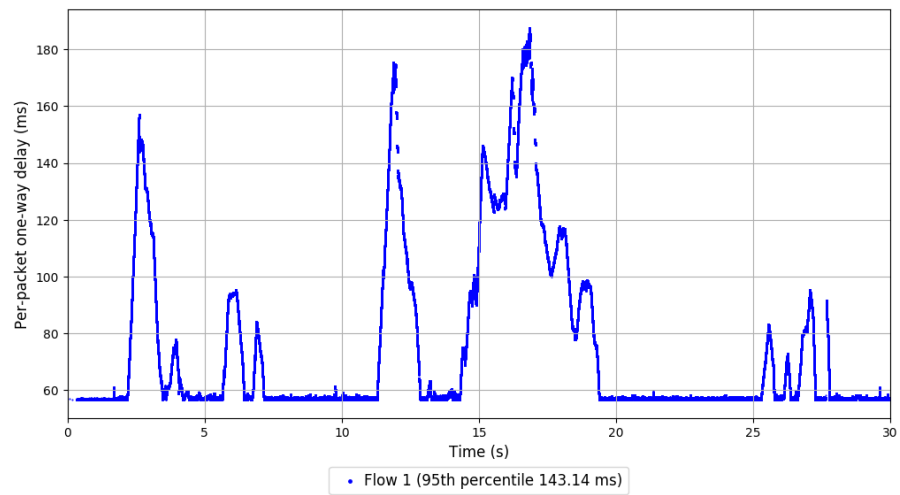
Run 3: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 330.07 Mbit/s)   Flow 1 egress (mean 327.38 Mbit/s)
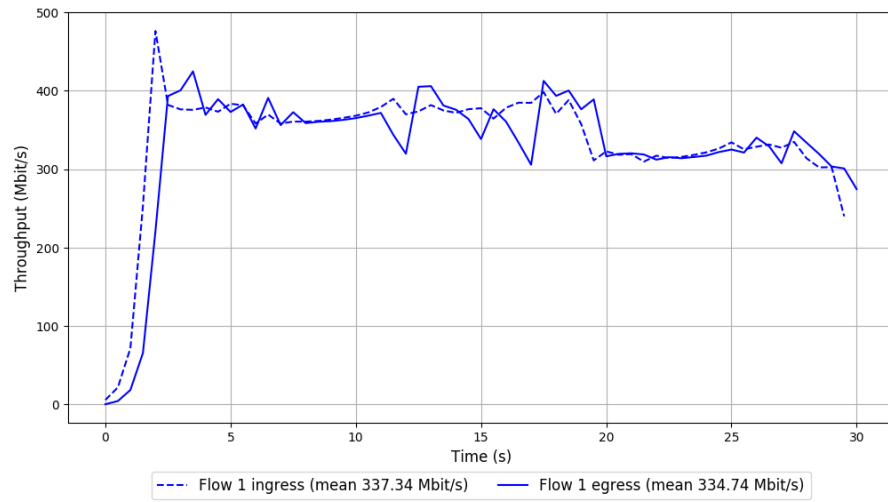

Flow 1 (95th percentile 133.14 ms)

```
Run 4: Statistics of PCC-Expr

Start at: 2018-12-12 06:45:04
End at: 2018-12-12 06:45:34
Local clock offset: -0.074 ms
Remote clock offset: 0.611 ms


# Below is generated by plot.py at 2018-12-12 09:04:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 331.48 Mbit/s
95th percentile per-packet one-way delay: 160.783 ms
Loss rate: 0.95%
-- Flow 1:
Average throughput: 331.48 Mbit/s
95th percentile per-packet one-way delay: 160.783 ms
Loss rate: 0.95%
```

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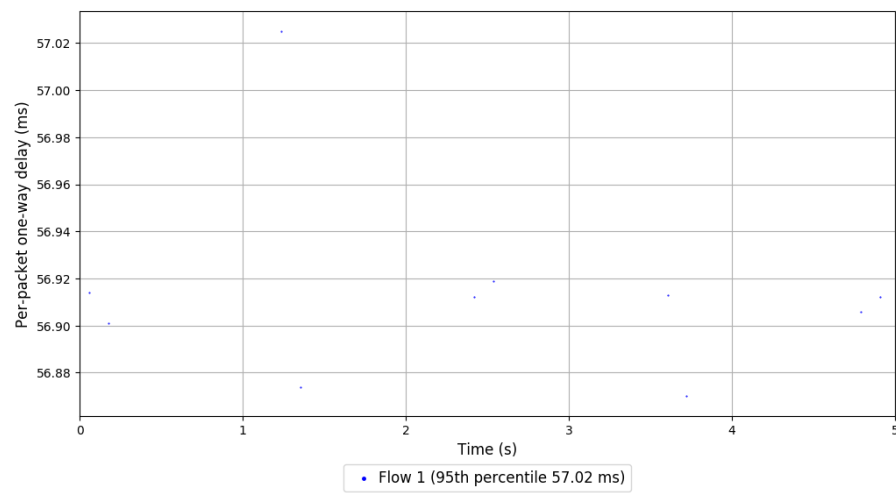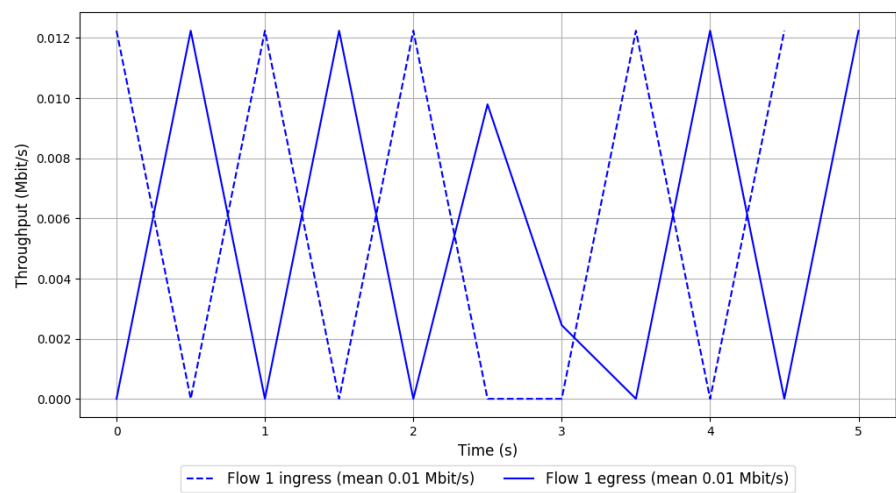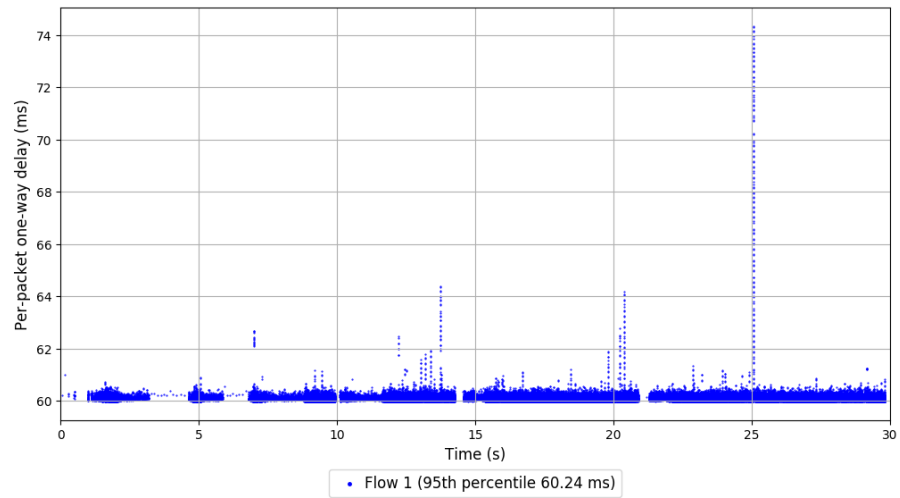
```
Run 5: Statistics of PCC-Expr

Start at: 2018-12-12 07:14:31
End at: 2018-12-12 07:15:01
Local clock offset: -0.042 ms
Remote clock offset: -0.459 ms


# Below is generated by plot.py at 2018-12-12 09:05:05
# Datalink statistics
-- Total of 1 flow:
Average throughput: 334.74 Mbit/s
95th percentile per-packet one-way delay: 143.141 ms
Loss rate: 0.77%
-- Flow 1:
Average throughput: 334.74 Mbit/s
95th percentile per-packet one-way delay: 143.141 ms
Loss rate: 0.77%
```

Run 5: Report of PCC-Expr — Data Link

Run 1: Statistics of QUIC Cubic

Start at: 2018-12-12 05:03:37
End at: 2018-12-12 05:04:07
Local clock offset: -0.117 ms
Remote clock offset: -0.273 ms

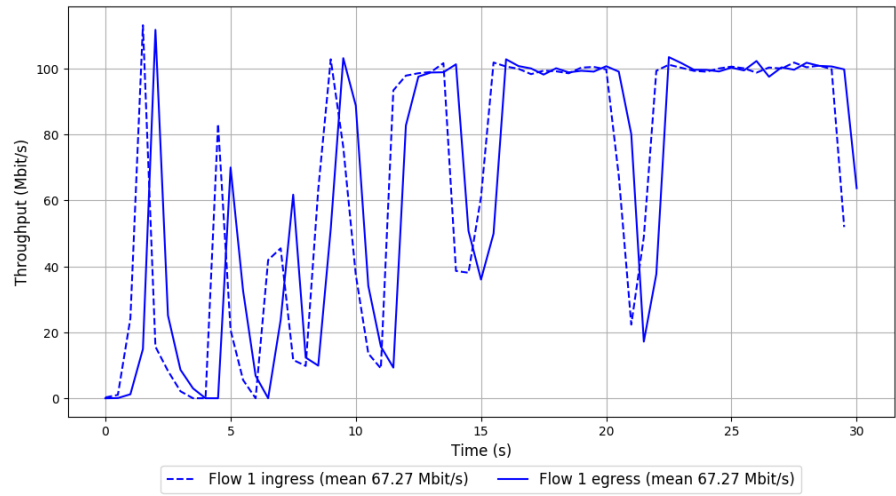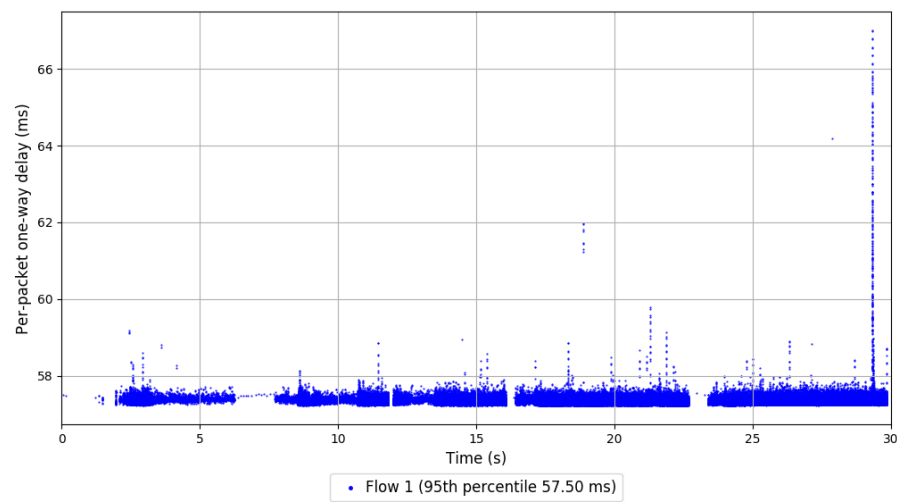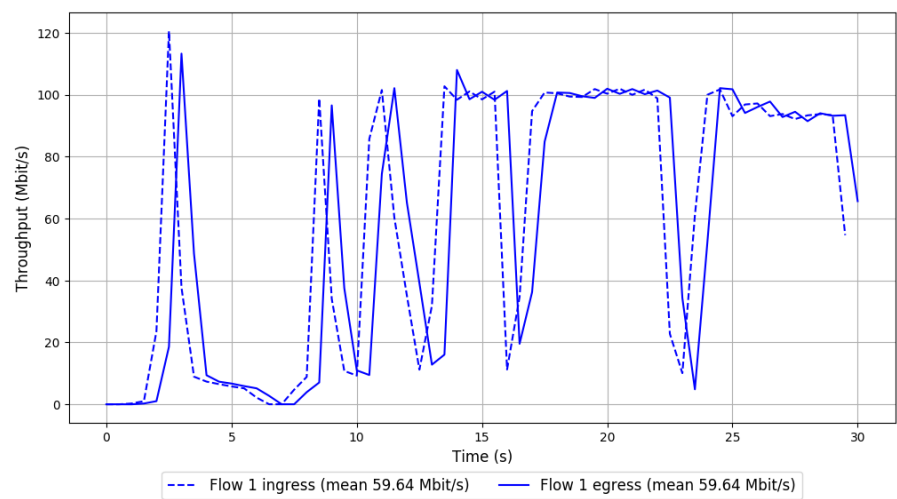## Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-12-12 05:32:01
End at: 2018-12-12 05:32:31
Local clock offset: -0.134 ms
Remote clock offset: -0.085 ms


# Below is generated by plot.py at 2018-12-12 09:05:05
# Datalink statistics
-- Total of 1 flow:
Average throughput: 67.27 Mbit/s
95th percentile per-packet one-way delay: 60.237 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 67.27 Mbit/s
95th percentile per-packet one-way delay: 60.237 ms
Loss rate: 0.01%
```

Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-12-12 06:01:10
End at: 2018-12-12 06:01:40
Local clock offset: -0.503 ms
Remote clock offset: -0.144 ms


# Below is generated by plot.py at 2018-12-12 09:05:05
# Datalink statistics
-- Total of 1 flow:
Average throughput: 59.64 Mbit/s
95th percentile per-packet one-way delay: 57.496 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 59.64 Mbit/s
95th percentile per-packet one-way delay: 57.496 ms
Loss rate: 0.00%
```
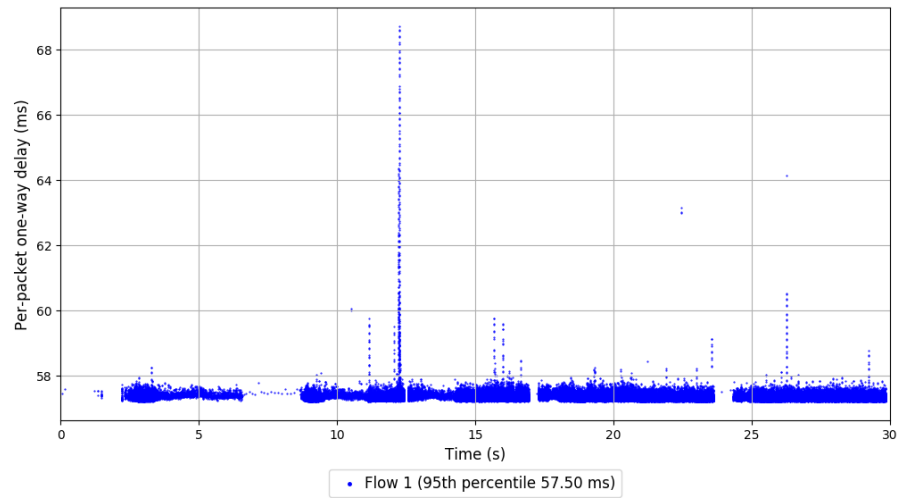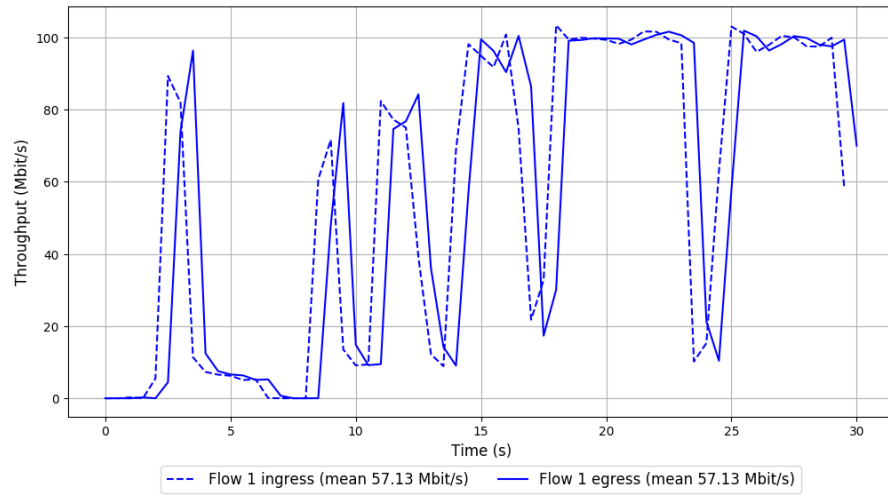
Run 3: Report of QUIC Cubic — Data Link

```
Run 4: Statistics of QUIC Cubic

Start at: 2018-12-12 06:30:38
End at: 2018-12-12 06:31:08
Local clock offset: -0.503 ms
Remote clock offset: -0.474 ms


# Below is generated by plot.py at 2018-12-12 09:05:05
# Datalink statistics
-- Total of 1 flow:
Average throughput: 57.13 Mbit/s
95th percentile per-packet one-way delay: 57.500 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 57.13 Mbit/s
95th percentile per-packet one-way delay: 57.500 ms
Loss rate: 0.00%
```
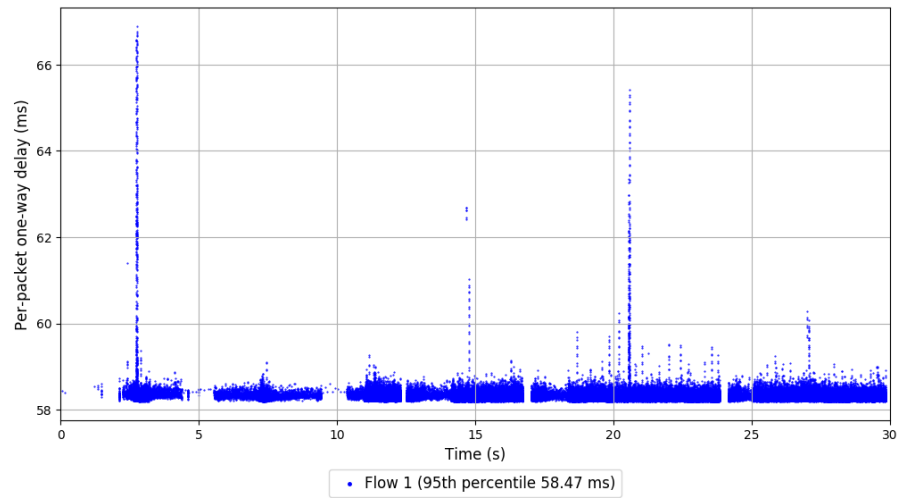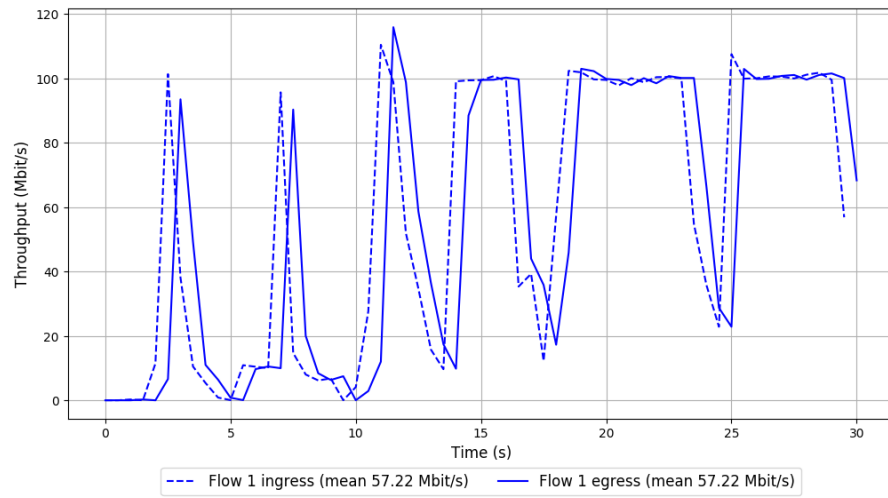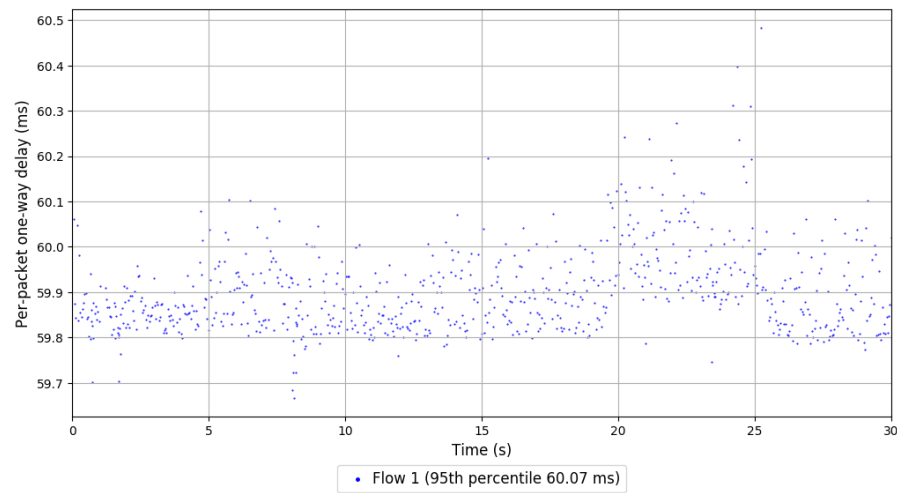
Run 4: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 57.13 Mbit/s)   Flow 1 egress (mean 57.13 Mbit/s)

Flow 1 (95th percentile 57.50 ms)

```
Run 5: Statistics of QUIC Cubic

Start at: 2018-12-12 06:59:49
End at: 2018-12-12 07:00:19
Local clock offset: -0.011 ms
Remote clock offset: 1.132 ms


# Below is generated by plot.py at 2018-12-12 09:05:05
# Datalink statistics
-- Total of 1 flow:
Average throughput: 57.22 Mbit/s
95th percentile per-packet one-way delay: 58.468 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 57.22 Mbit/s
95th percentile per-packet one-way delay: 58.468 ms
Loss rate: 0.00%
```
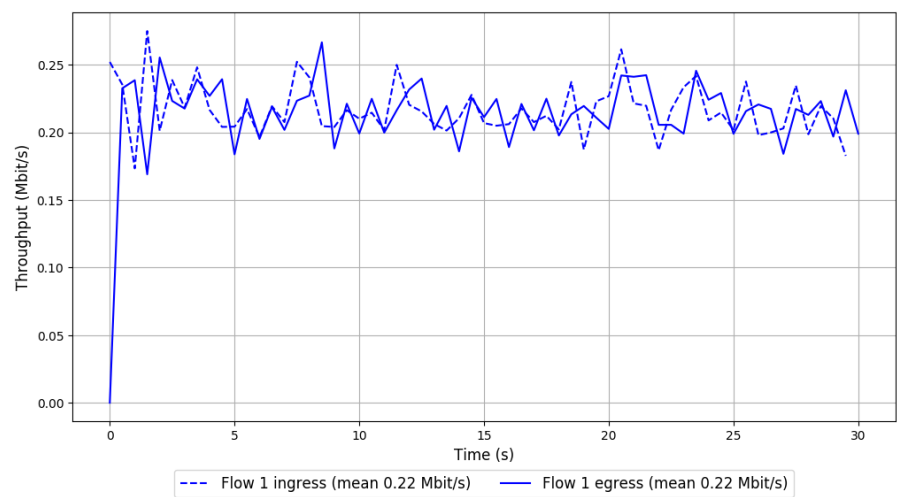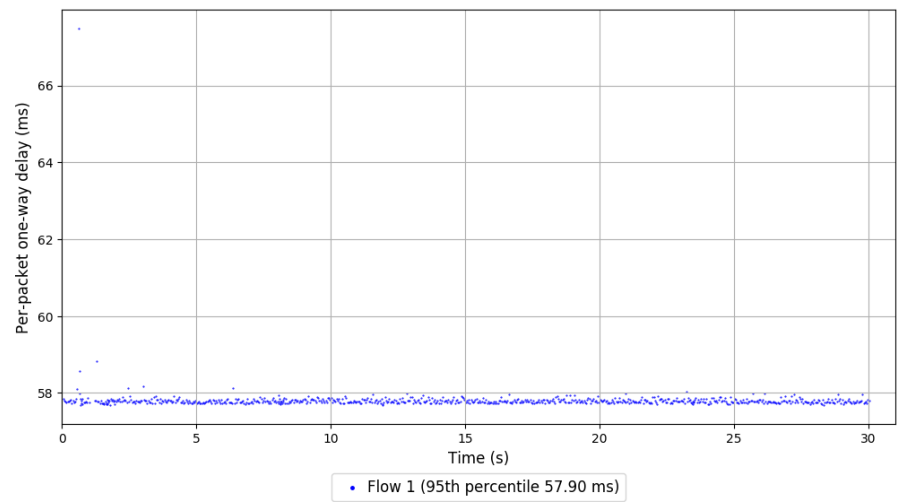
Run 5: Report of QUIC Cubic — Data Link

```
Run 1: Statistics of SCReAM

Start at: 2018-12-12 05:15:37
End at: 2018-12-12 05:16:07
Local clock offset: -0.306 ms
Remote clock offset: -0.7 ms


# Below is generated by plot.py at 2018-12-12 09:05:05
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 60.071 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 60.071 ms
Loss rate: 0.00%
```

Run 1: Report of SCReAM — Data Link

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

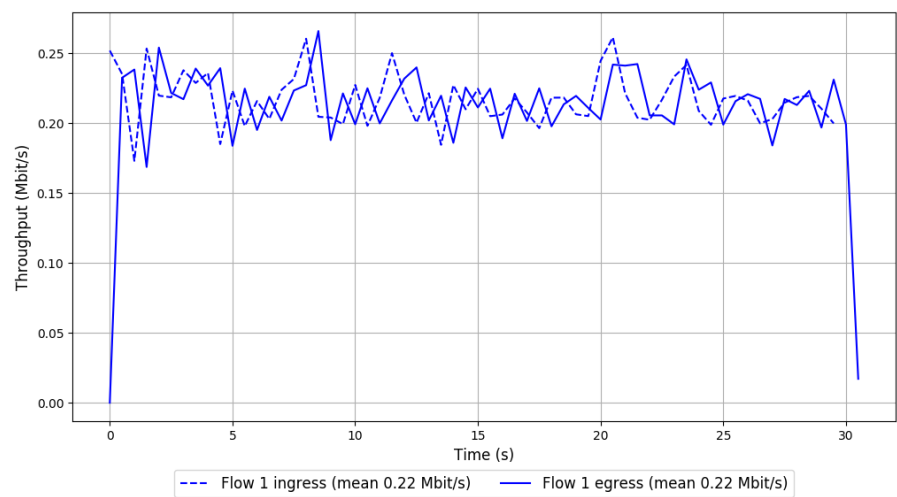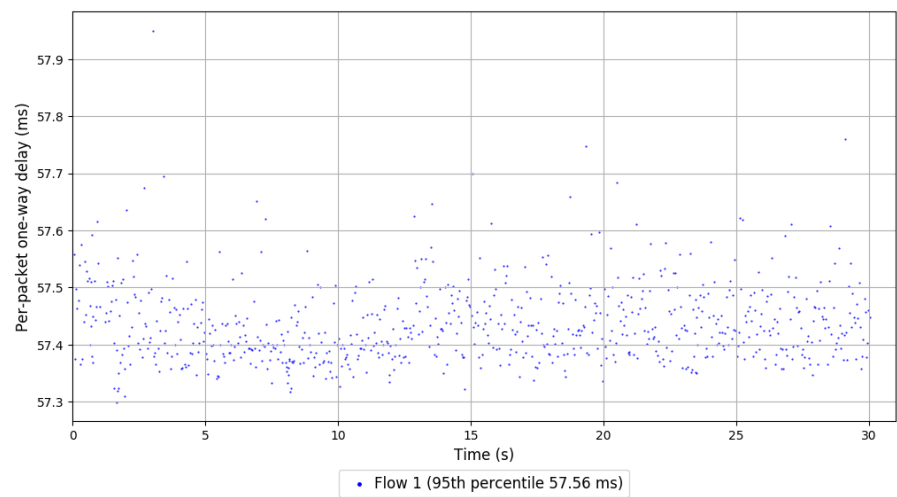• Flow 1 (95th percentile 60.07 ms)

```
Run 2: Statistics of SCReAM

Start at: 2018-12-12 05:44:20
End at: 2018-12-12 05:44:50
Local clock offset: -0.314 ms
Remote clock offset: -0.008 ms


# Below is generated by plot.py at 2018-12-12 09:05:05
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 57.900 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 57.900 ms
Loss rate: 0.00%
```

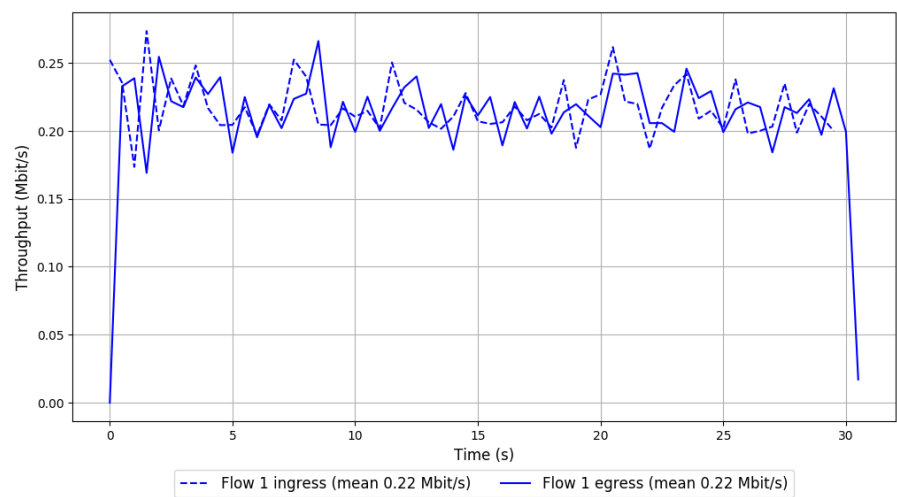Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2018-12-12 06:13:26
End at: 2018-12-12 06:13:57
Local clock offset: -0.518 ms
Remote clock offset: -0.233 ms


# Below is generated by plot.py at 2018-12-12 09:05:05
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 57.557 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 57.557 ms
Loss rate: 0.00%
```
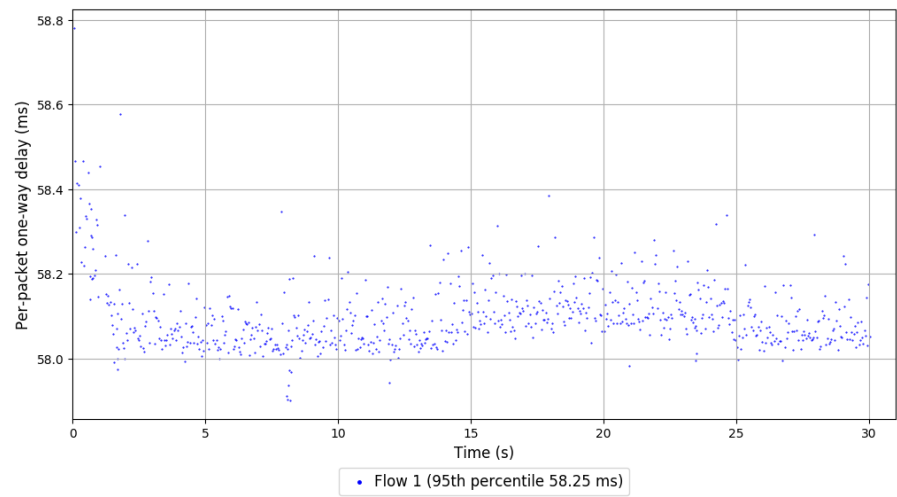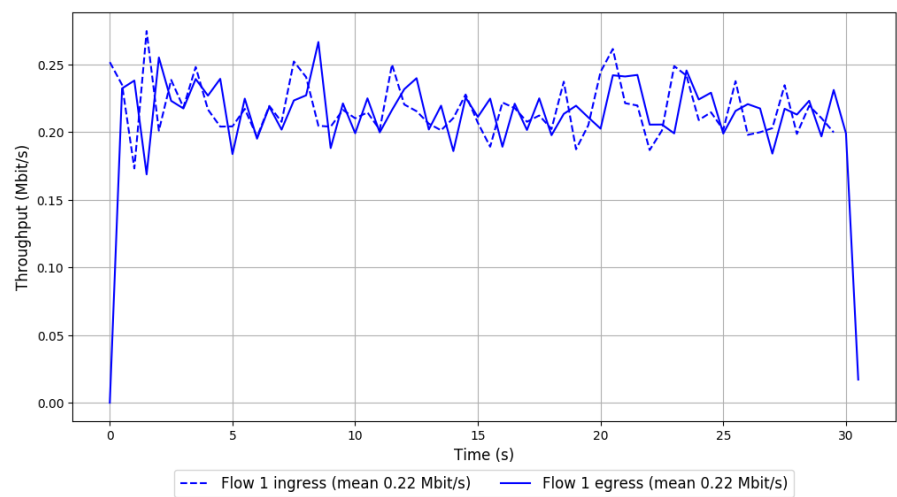
Run 3: Report of SCReAM — Data Link

```
Run 4: Statistics of SCReAM

Start at: 2018-12-12 06:42:47
End at: 2018-12-12 06:43:17
Local clock offset: -0.1 ms
Remote clock offset: 0.888 ms


# Below is generated by plot.py at 2018-12-12 09:05:05
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 58.250 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 58.250 ms
Loss rate: 0.00%
```
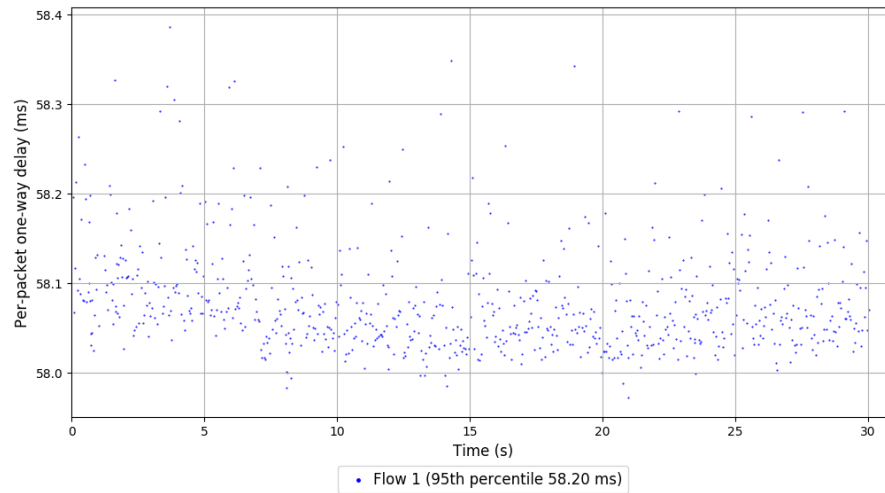
Run 4: Report of SCReAM — Data Link

```
Run 5: Statistics of SCReAM

Start at: 2018-12-12 07:12:15
End at: 2018-12-12 07:12:45
Local clock offset: 0.093 ms
Remote clock offset: 0.515 ms


# Below is generated by plot.py at 2018-12-12 09:05:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 58.198 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 58.198 ms
Loss rate: 0.00%
```
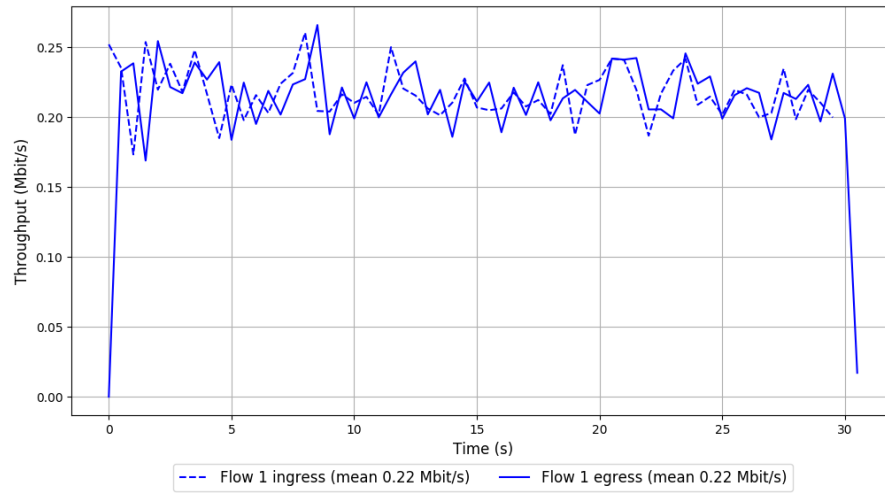
Run 5: Report of SCReAM — Data Link

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

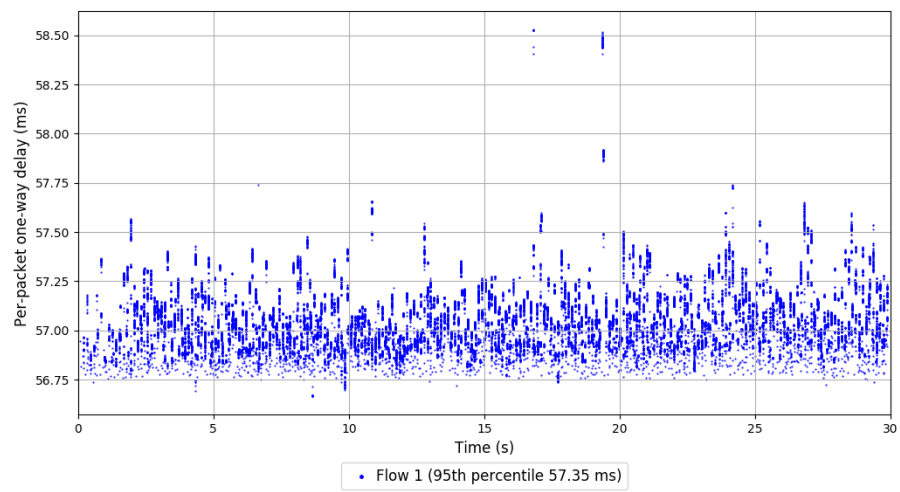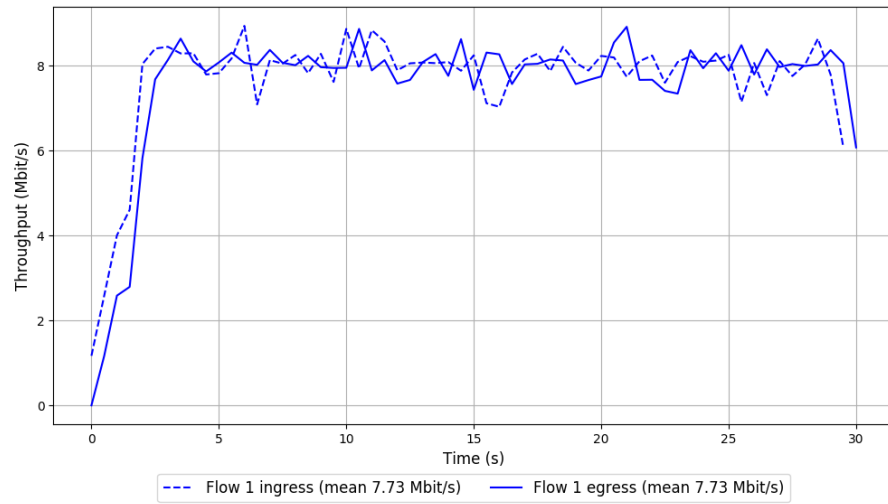Flow 1 (95th percentile 58.20 ms)

```
Run 1: Statistics of Sprout

Start at: 2018-12-12 05:11:09
End at: 2018-12-12 05:11:39
Local clock offset: -0.502 ms
Remote clock offset: -0.987 ms


# Below is generated by plot.py at 2018-12-12 09:05:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.73 Mbit/s
95th percentile per-packet one-way delay: 57.353 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 7.73 Mbit/s
95th percentile per-packet one-way delay: 57.353 ms
Loss rate: 0.00%
```
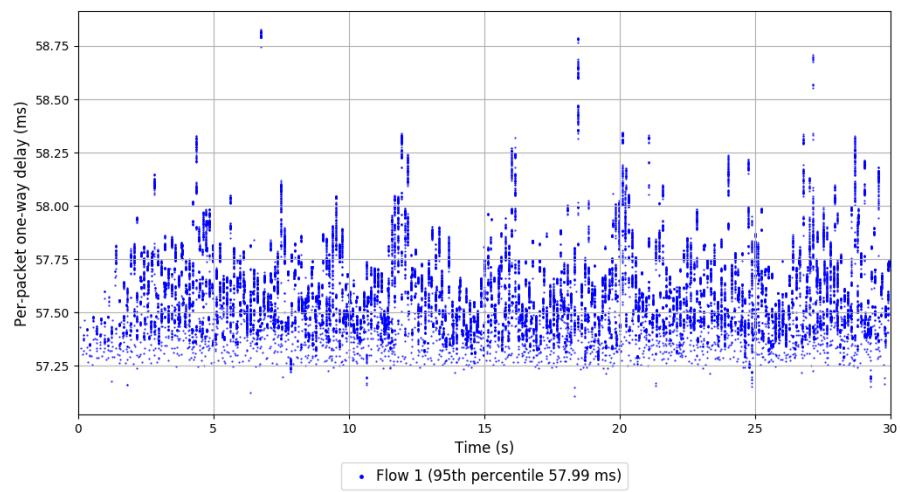
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-12-12 05:39:43
End at: 2018-12-12 05:40:13
Local clock offset: 0.163 ms
Remote clock offset: 0.229 ms


# Below is generated by plot.py at 2018-12-12 09:05:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.60 Mbit/s
95th percentile per-packet one-way delay: 57.988 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 7.60 Mbit/s
95th percentile per-packet one-way delay: 57.988 ms
Loss rate: 0.00%
```
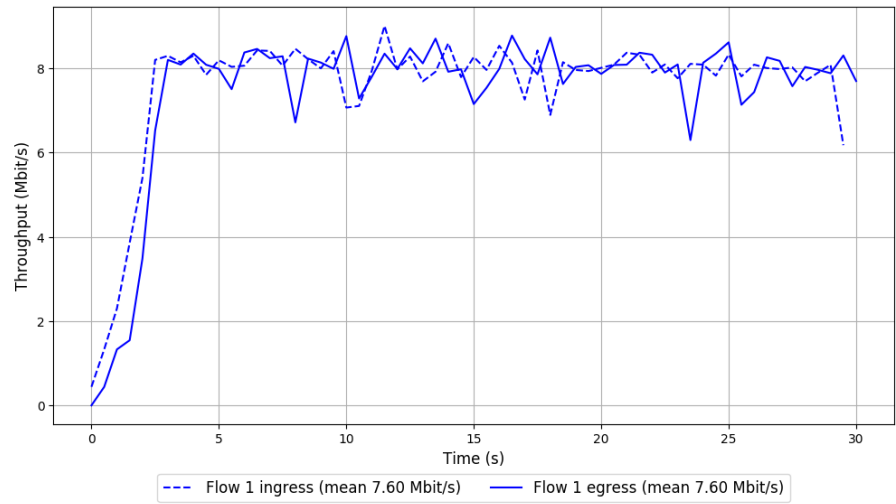
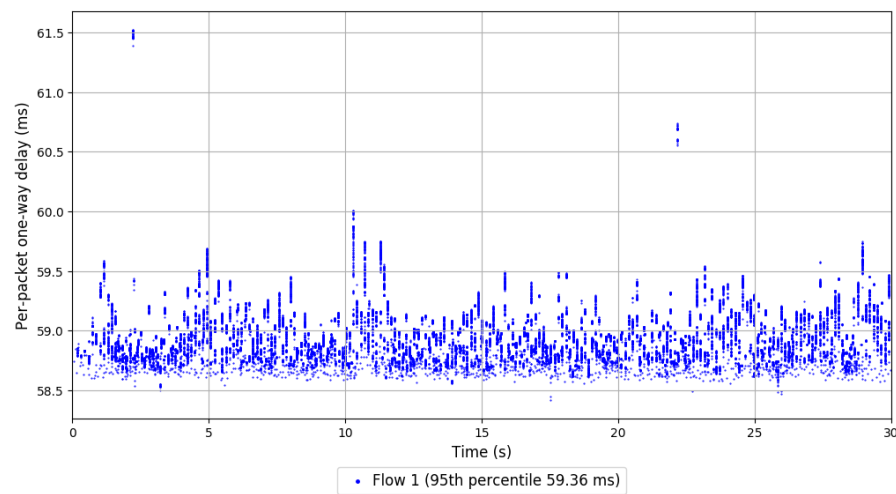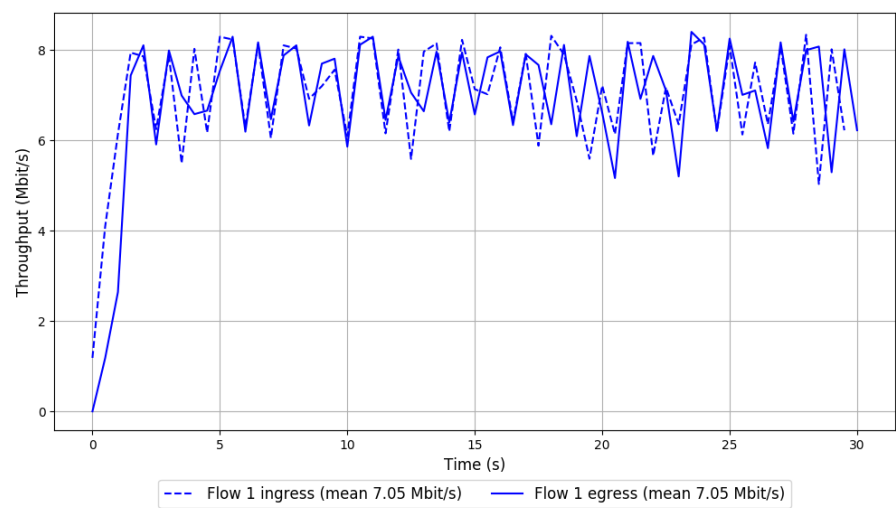Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-12-12 06:08:55
End at: 2018-12-12 06:09:25
Local clock offset: -0.093 ms
Remote clock offset: 1.31 ms


# Below is generated by plot.py at 2018-12-12 09:05:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.05 Mbit/s
95th percentile per-packet one-way delay: 59.362 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 7.05 Mbit/s
95th percentile per-packet one-way delay: 59.362 ms
Loss rate: 0.00%
```

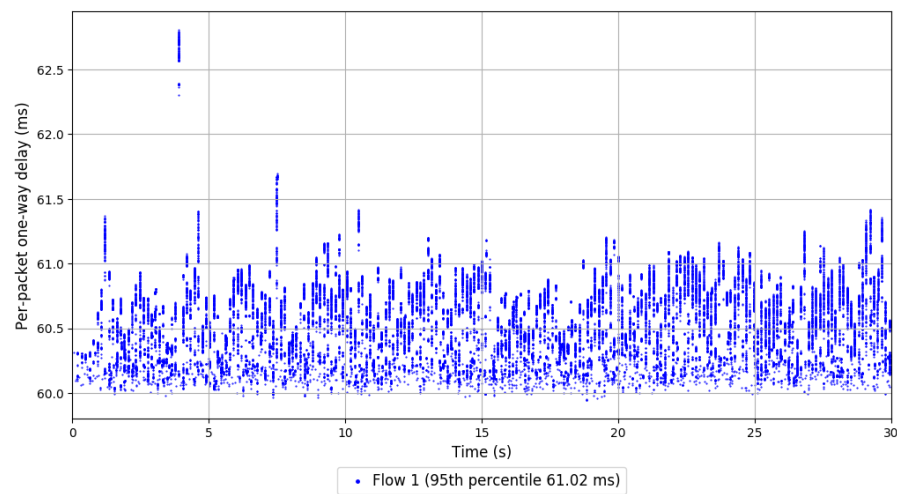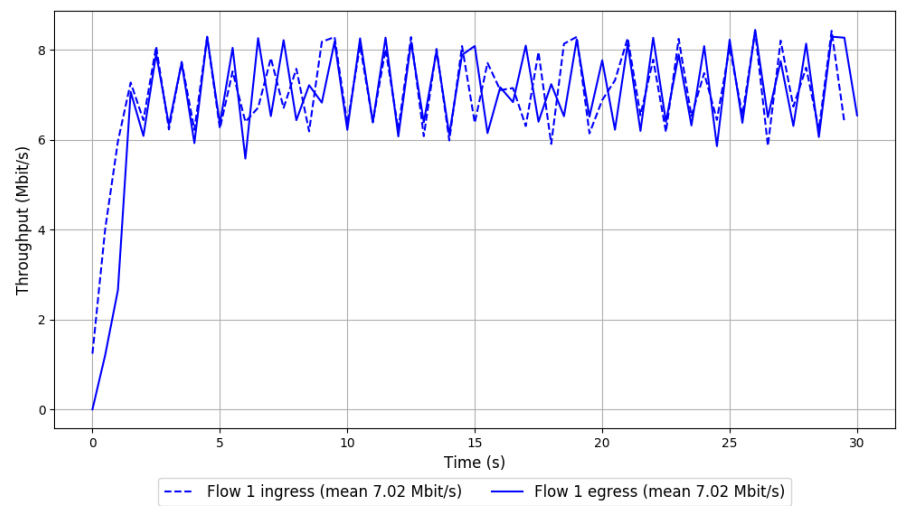## Run 3: Report of Sprout — Data Link

```
Run 4: Statistics of Sprout

Start at: 2018-12-12 06:38:20
End at: 2018-12-12 06:38:50
Local clock offset: 0.386 ms
Remote clock offset: -0.192 ms


# Below is generated by plot.py at 2018-12-12 09:05:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.02 Mbit/s
95th percentile per-packet one-way delay: 61.019 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 7.02 Mbit/s
95th percentile per-packet one-way delay: 61.019 ms
Loss rate: 0.00%
```

Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2018-12-12 07:07:31
End at: 2018-12-12 07:08:02
Local clock offset: -0.053 ms
Remote clock offset: 1.099 ms


# Below is generated by plot.py at 2018-12-12 09:05:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.75 Mbit/s
95th percentile per-packet one-way delay: 59.067 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 7.75 Mbit/s
95th percentile per-packet one-way delay: 59.067 ms
Loss rate: 0.00%
```
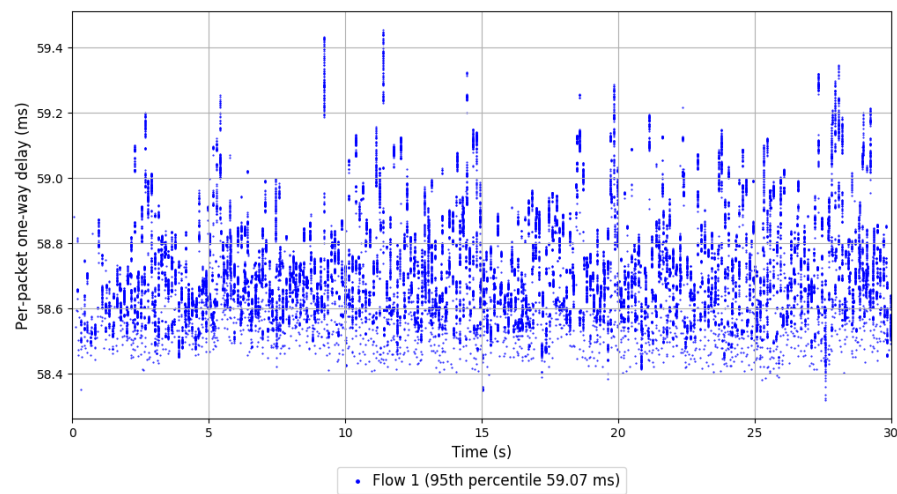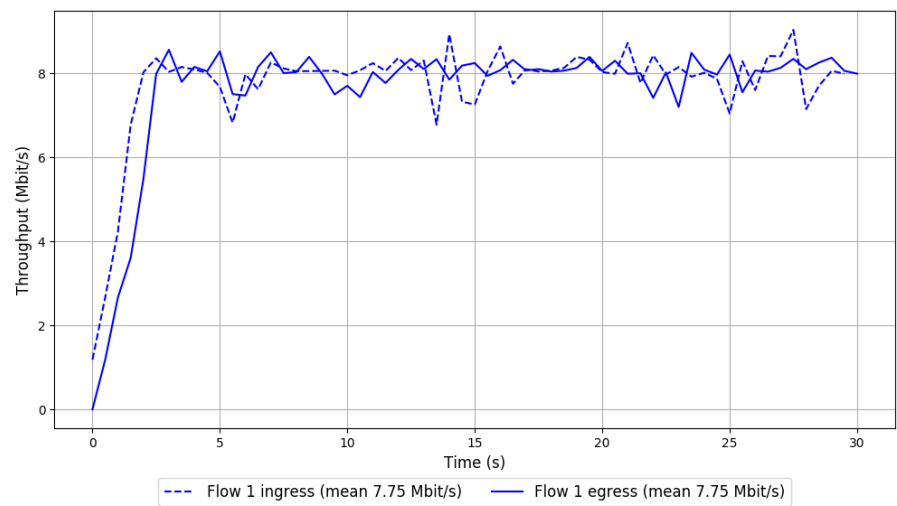
Run 5: Report of Sprout — Data Link

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

Start at: 2018-12-12 05:09:33
End at: 2018-12-12 05:10:03
Local clock offset: 0.316 ms
Remote clock offset: -0.112 ms


# Below is generated by plot.py at 2018-12-12 09:05:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 222.33 Mbit/s
95th percentile per-packet one-way delay: 57.003 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 222.33 Mbit/s
95th percentile per-packet one-way delay: 57.003 ms
Loss rate: 0.00%
```
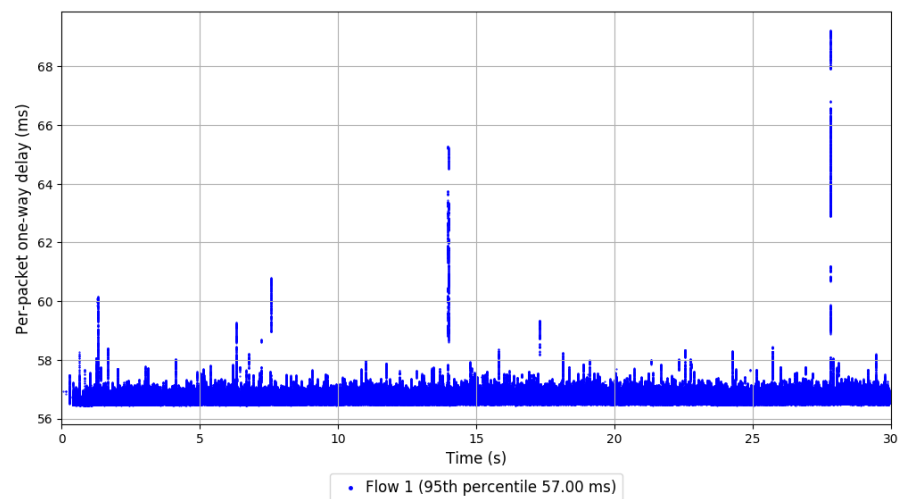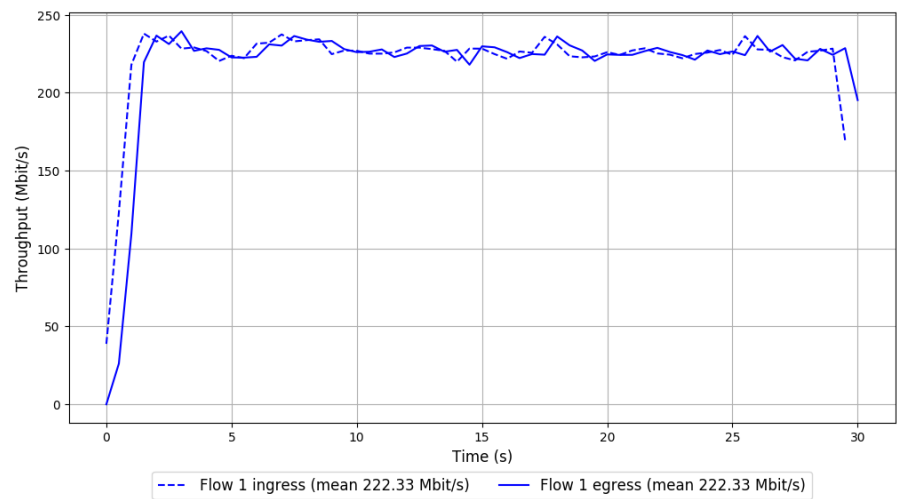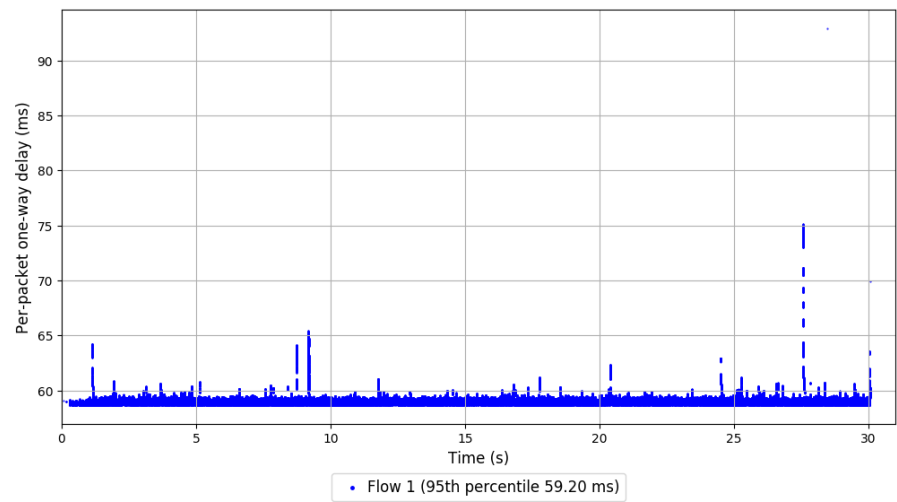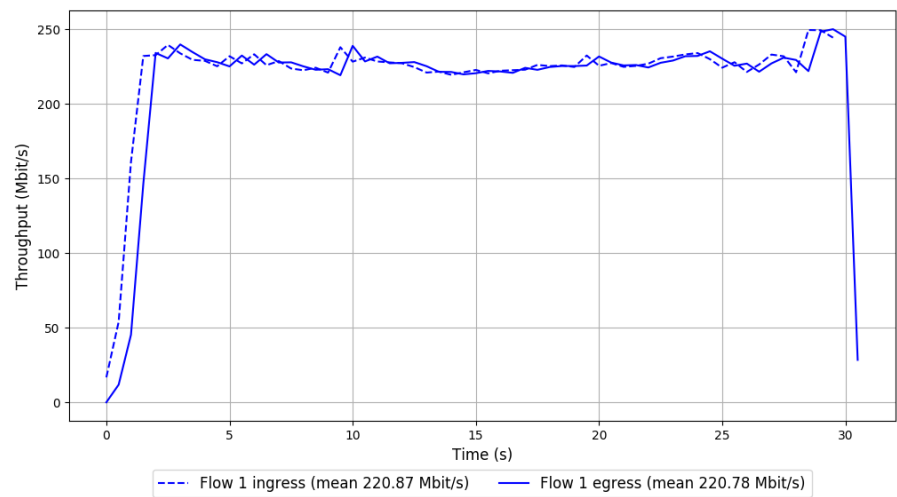
Run 1: Report of TaoVA-100x — Data Link

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

Start at: 2018-12-12 05:38:12
End at: 2018-12-12 05:38:42
Local clock offset: -0.077 ms
Remote clock offset: -1.345 ms


# Below is generated by plot.py at 2018-12-12 09:05:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 220.78 Mbit/s
95th percentile per-packet one-way delay: 59.201 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 220.78 Mbit/s
95th percentile per-packet one-way delay: 59.201 ms
Loss rate: 0.01%
```

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

Flow 1 ingress (mean 220.87 Mbit/s)   Flow 1 egress (mean 220.78 Mbit/s)

Flow 1 (95th percentile 59.20 ms)

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

Start at: 2018-12-12 06:07:24
End at: 2018-12-12 06:07:54
Local clock offset: -0.357 ms
Remote clock offset: -0.003 ms


# Below is generated by plot.py at 2018-12-12 09:05:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 222.06 Mbit/s
95th percentile per-packet one-way delay: 61.133 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 222.06 Mbit/s
95th percentile per-packet one-way delay: 61.133 ms
Loss rate: 0.01%
```
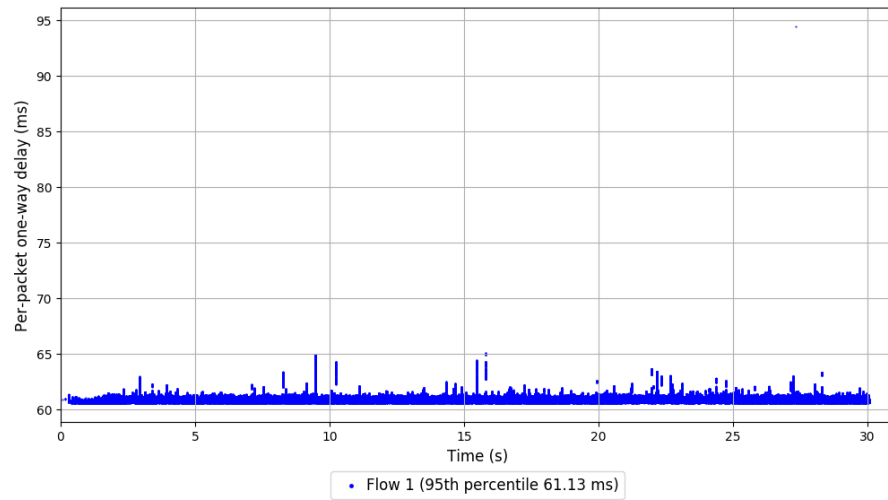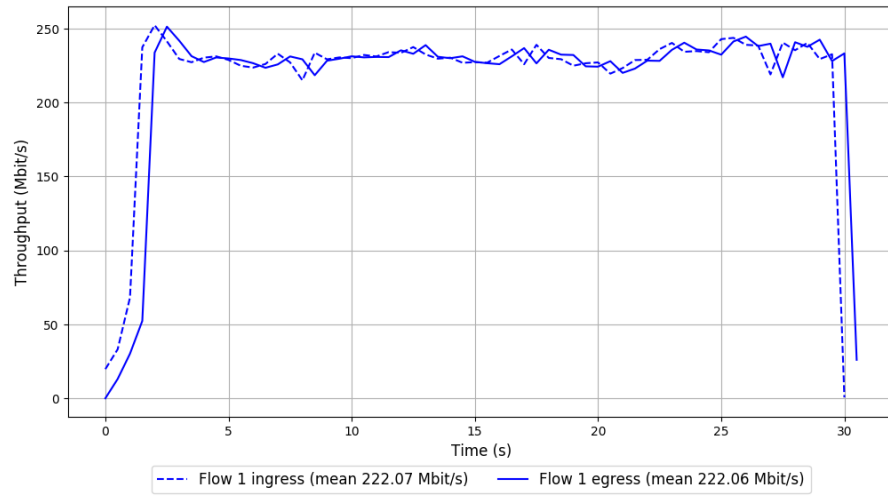
Run 3: Report of TaoVA-100x — Data Link

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

Start at: 2018-12-12 06:36:51
End at: 2018-12-12 06:37:21
Local clock offset: 0.359 ms
Remote clock offset: 0.077 ms


# Below is generated by plot.py at 2018-12-12 09:05:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 222.13 Mbit/s
95th percentile per-packet one-way delay: 60.542 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 222.13 Mbit/s
95th percentile per-packet one-way delay: 60.542 ms
Loss rate: 0.01%
```
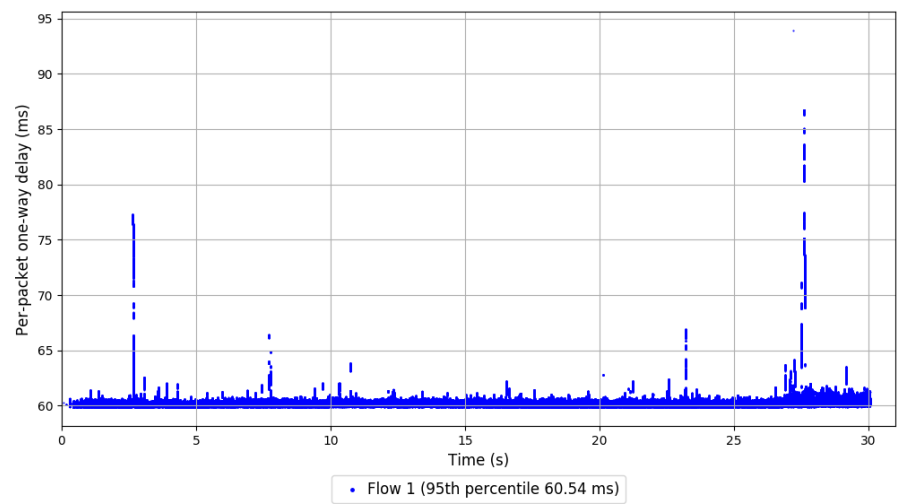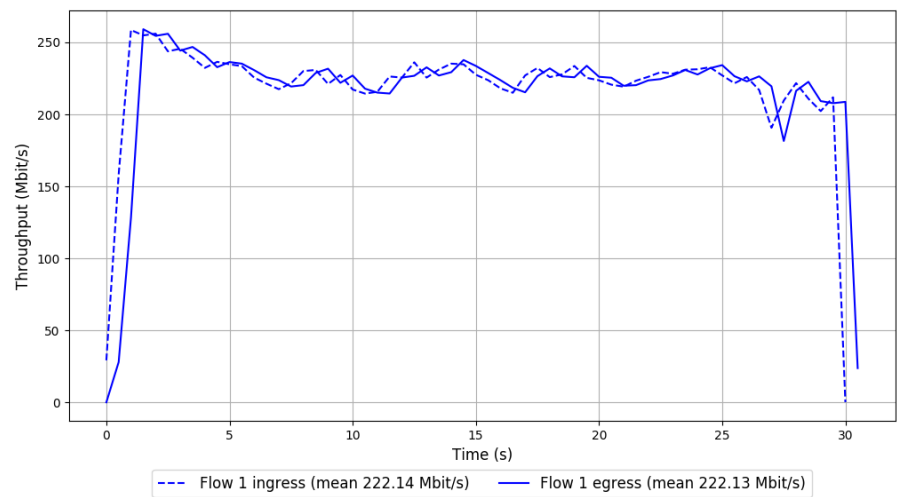
Run 4: Report of TaoVA-100x — Data Link

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

Start at: 2018-12-12 07:05:59
End at: 2018-12-12 07:06:29
Local clock offset: 0.354 ms
Remote clock offset: -0.826 ms


# Below is generated by plot.py at 2018-12-12 09:05:39
# Datalink statistics
-- Total of 1 flow:
Average throughput: 225.33 Mbit/s
95th percentile per-packet one-way delay: 56.409 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 225.33 Mbit/s
95th percentile per-packet one-way delay: 56.409 ms
Loss rate: 0.00%
```
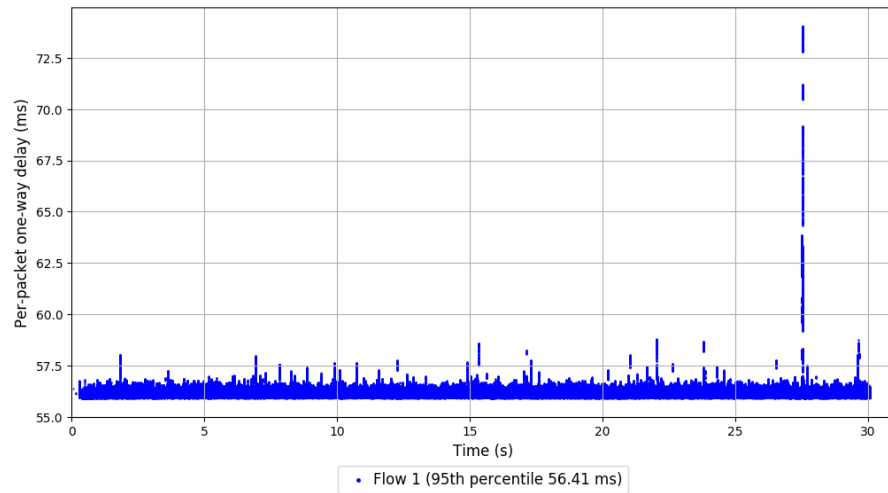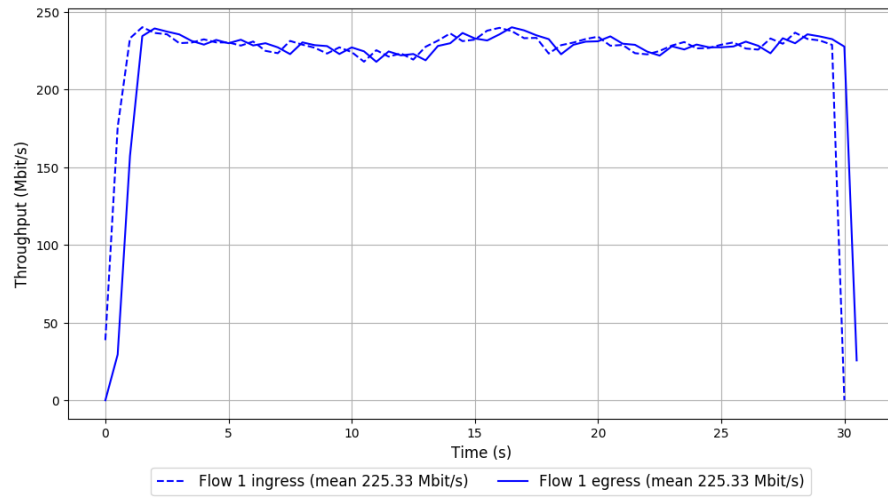
Run 5: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 225.33 Mbit/s)   Flow 1 egress (mean 225.33 Mbit/s)
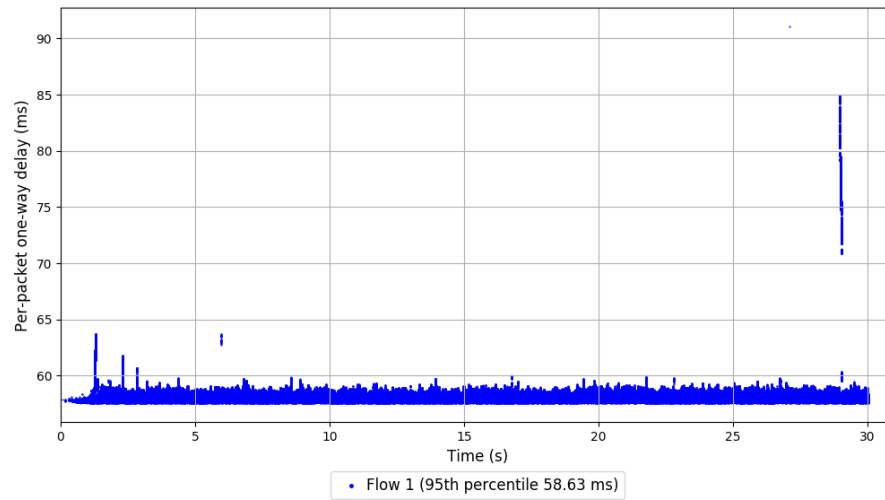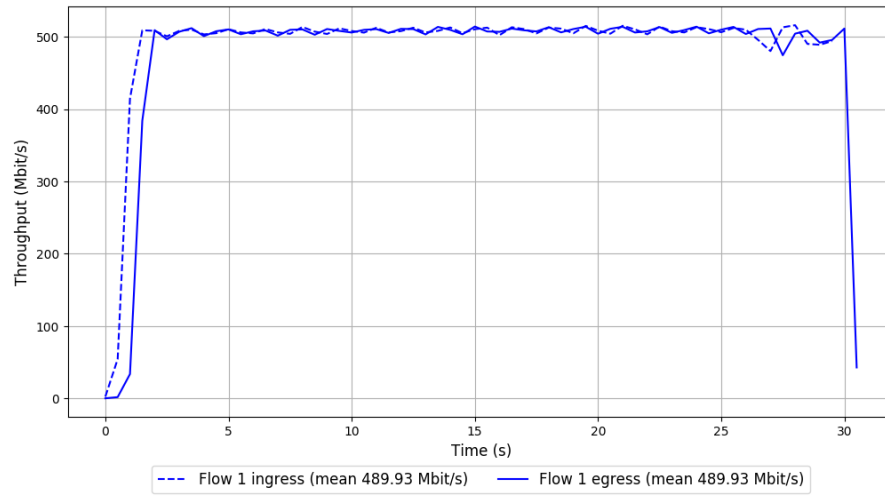

Flow 1 (95th percentile 56.41 ms)

```
Run 1: Statistics of TCP Vegas

Start at: 2018-12-12 05:02:05
End at: 2018-12-12 05:02:36
Local clock offset: -0.575 ms
Remote clock offset: -0.017 ms


# Below is generated by plot.py at 2018-12-12 09:06:42
# Datalink statistics
-- Total of 1 flow:
Average throughput: 489.93 Mbit/s
95th percentile per-packet one-way delay: 58.632 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 489.93 Mbit/s
95th percentile per-packet one-way delay: 58.632 ms
Loss rate: 0.00%
```
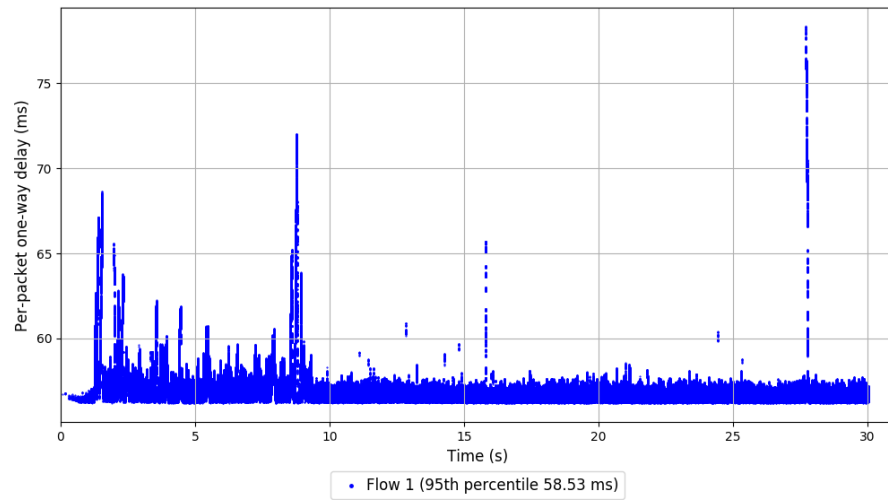
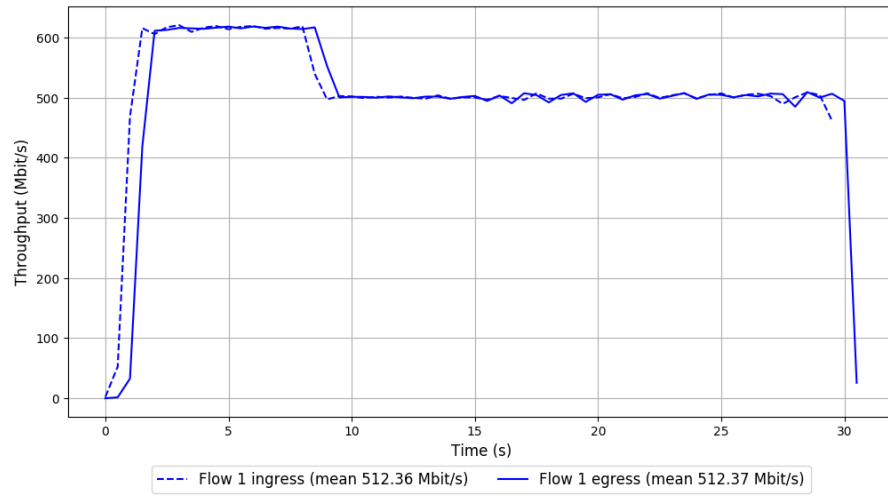Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-12-12 05:30:24
End at: 2018-12-12 05:30:54
Local clock offset: -0.285 ms
Remote clock offset: -1.355 ms


# Below is generated by plot.py at 2018-12-12 09:12:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 512.37 Mbit/s
95th percentile per-packet one-way delay: 58.530 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 512.37 Mbit/s
95th percentile per-packet one-way delay: 58.530 ms
Loss rate: 0.00%
```

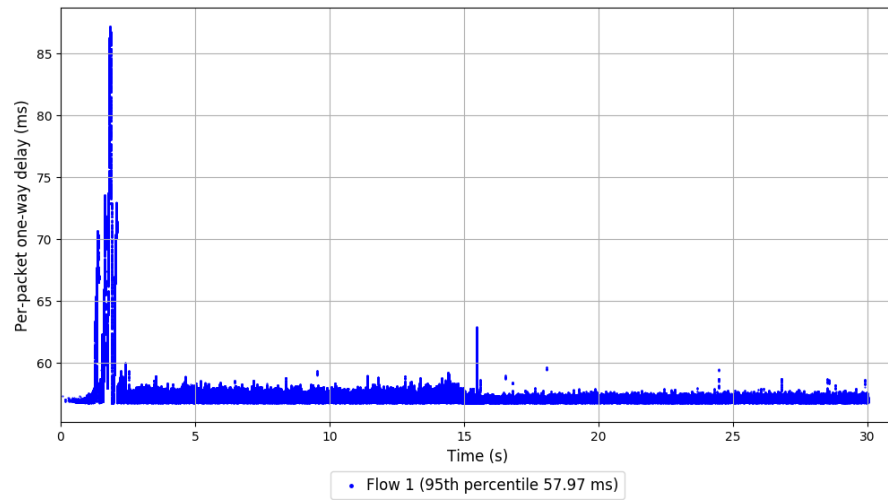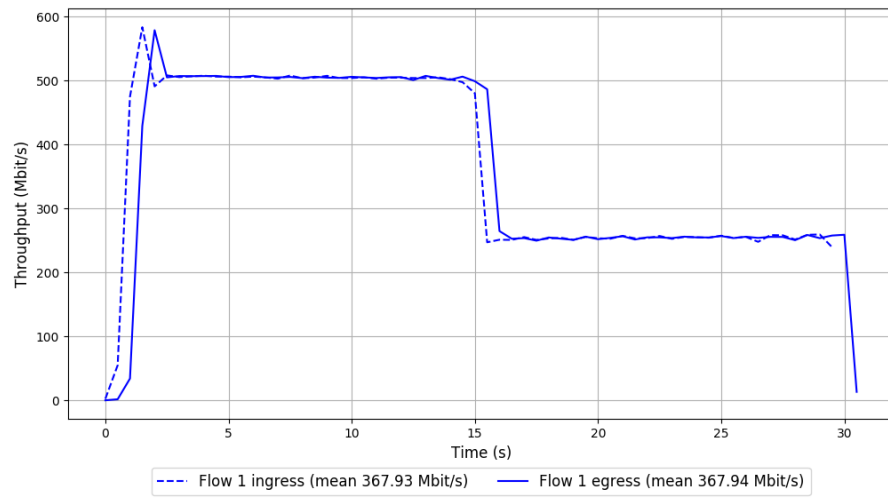Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2018-12-12 05:59:40
End at: 2018-12-12 06:00:10
Local clock offset: -0.268 ms
Remote clock offset: -0.298 ms


# Below is generated by plot.py at 2018-12-12 09:12:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 367.94 Mbit/s
95th percentile per-packet one-way delay: 57.969 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 367.94 Mbit/s
95th percentile per-packet one-way delay: 57.969 ms
Loss rate: 0.00%
```

Run 3: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 367.93 Mbit/s) --- Flow 1 egress (mean 367.94 Mbit/s)

Flow 1 (95th percentile 57.97 ms)

```
Run 4: Statistics of TCP Vegas

Start at: 2018-12-12 06:29:03
End at: 2018-12-12 06:29:33
Local clock offset: 0.321 ms
Remote clock offset: 1.332 ms


# Below is generated by plot.py at 2018-12-12 09:12:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 490.22 Mbit/s
95th percentile per-packet one-way delay: 58.810 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 490.22 Mbit/s
95th percentile per-packet one-way delay: 58.810 ms
Loss rate: 0.00%
```
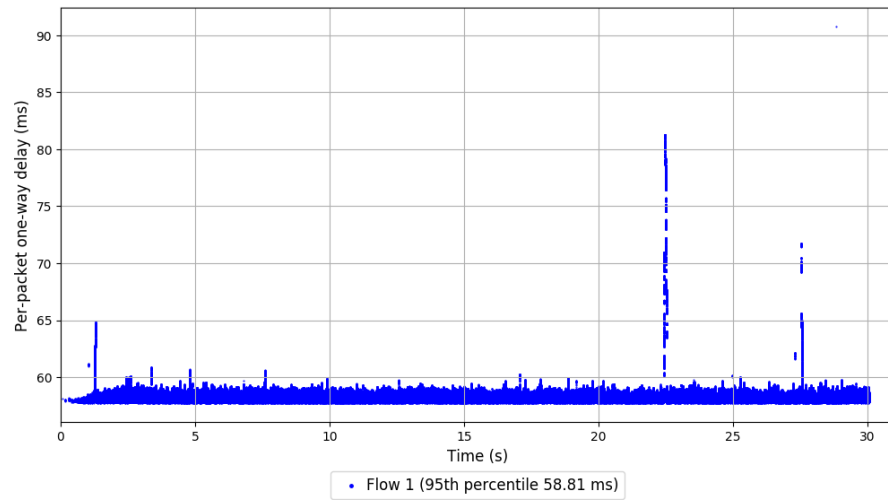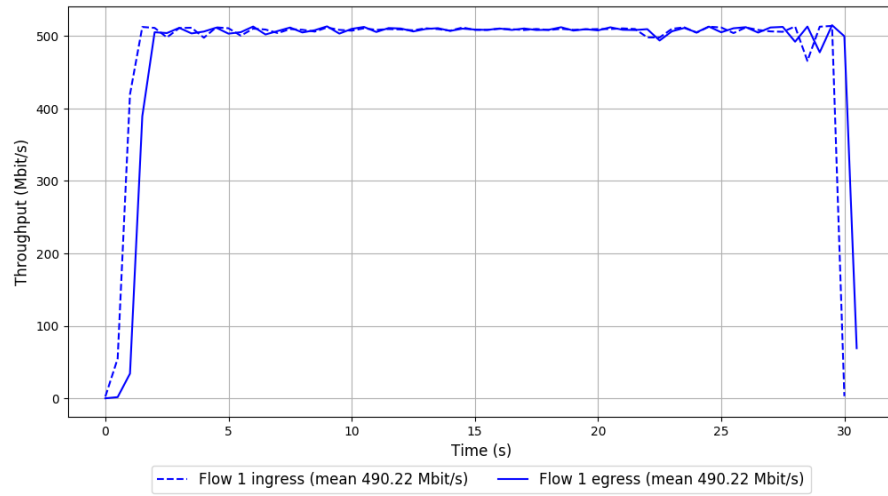
Run 4: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 490.22 Mbit/s) --- Flow 1 egress (mean 490.22 Mbit/s)
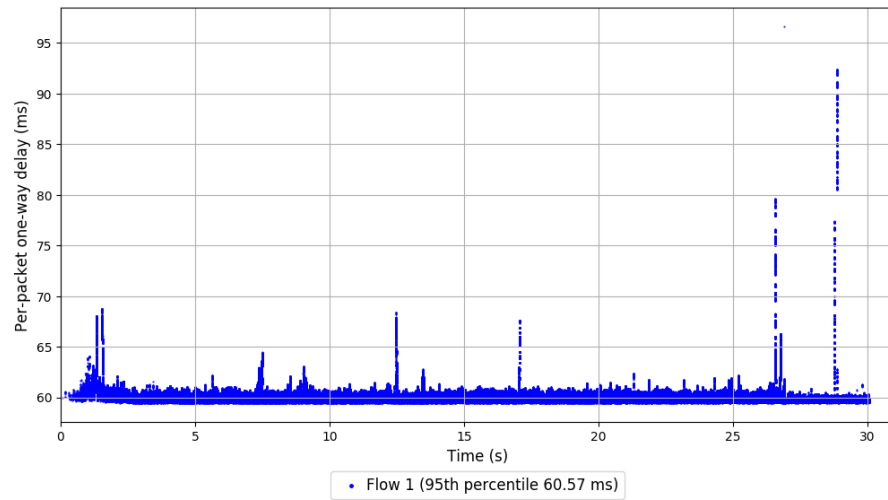
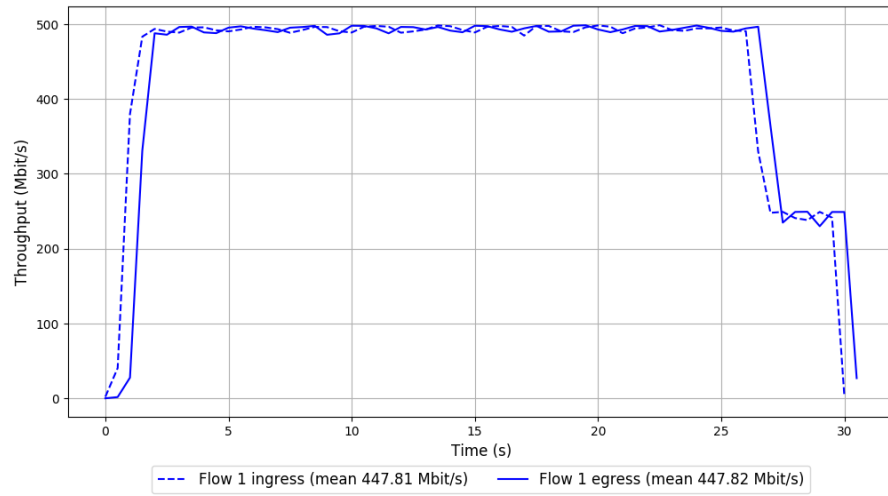

• Flow 1 (95th percentile 58.81 ms)

```
Run 5: Statistics of TCP Vegas

Start at: 2018-12-12 06:58:11
End at: 2018-12-12 06:58:41
Local clock offset: -0.245 ms
Remote clock offset: -0.898 ms


# Below is generated by plot.py at 2018-12-12 09:12:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 447.82 Mbit/s
95th percentile per-packet one-way delay: 60.570 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 447.82 Mbit/s
95th percentile per-packet one-way delay: 60.570 ms
Loss rate: 0.01%
```

Run 5: Report of TCP Vegas — Data Link

```
Run 1: Statistics of Verus

Start at: 2018-12-12 05:08:10
End at: 2018-12-12 05:08:40
Local clock offset: -0.518 ms
Remote clock offset: 0.032 ms


# Below is generated by plot.py at 2018-12-12 09:12:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 112.06 Mbit/s
95th percentile per-packet one-way delay: 167.363 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 112.06 Mbit/s
95th percentile per-packet one-way delay: 167.363 ms
Loss rate: 0.02%
```
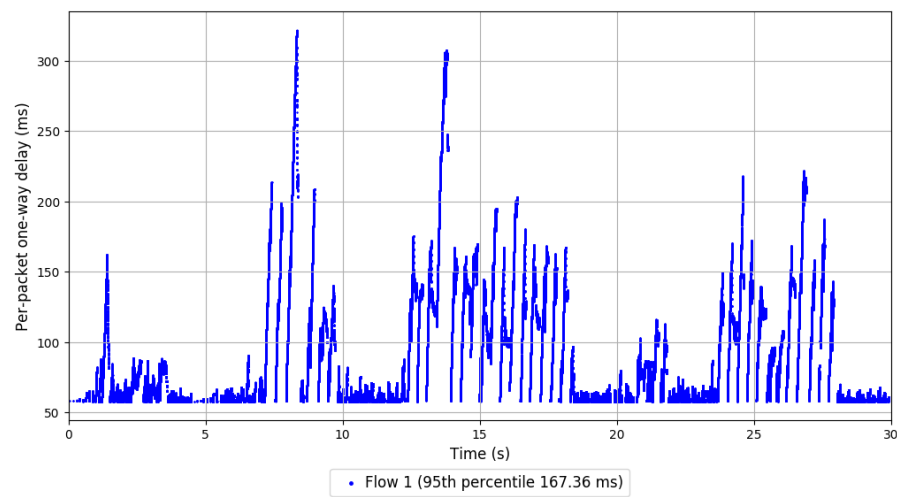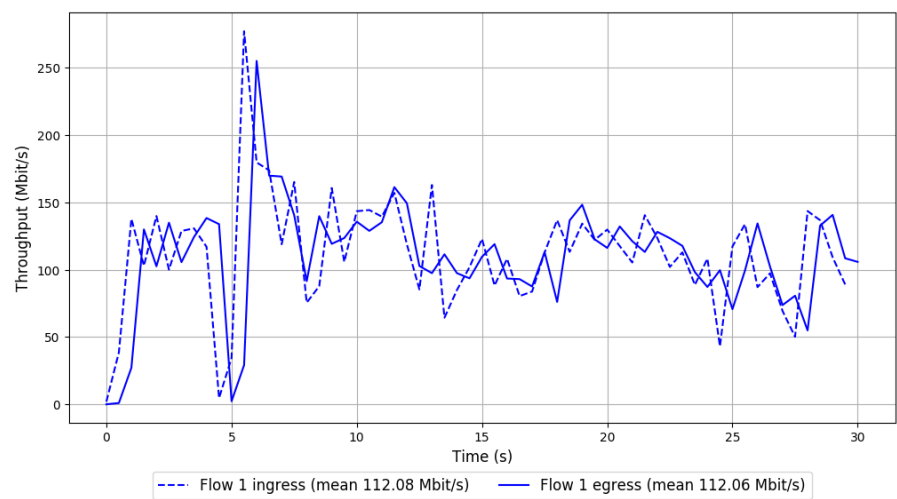
Run 1: Report of Verus — Data Link

Flow 1 ingress (mean 112.08 Mbit/s)   Flow 1 egress (mean 112.06 Mbit/s)
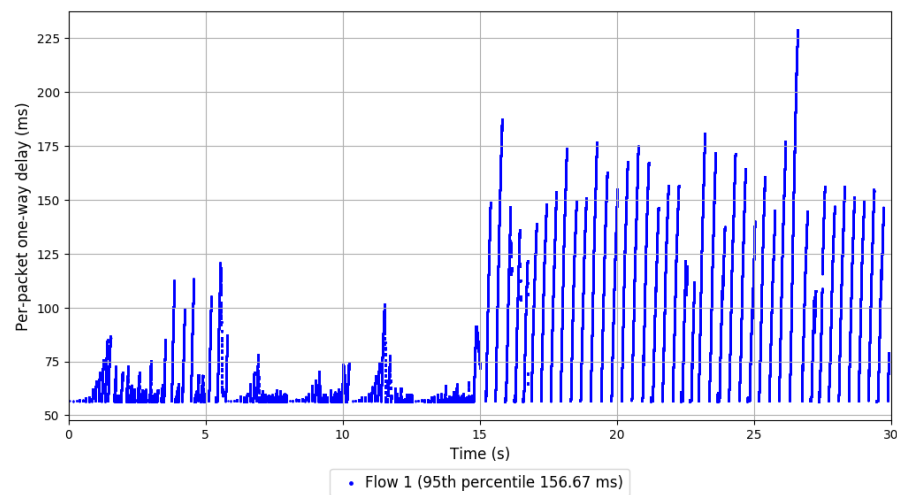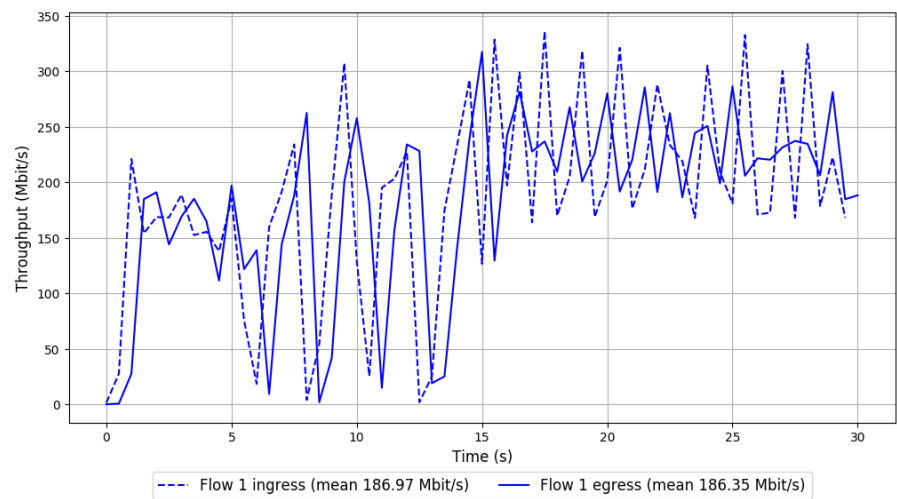

Flow 1 (95th percentile 167.36 ms)

```
Run 2: Statistics of Verus

Start at: 2018-12-12 05:36:45
End at: 2018-12-12 05:37:15
Local clock offset: 0.336 ms
Remote clock offset: -0.144 ms


# Below is generated by plot.py at 2018-12-12 09:12:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 186.35 Mbit/s
95th percentile per-packet one-way delay: 156.671 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 186.35 Mbit/s
95th percentile per-packet one-way delay: 156.671 ms
Loss rate: 0.33%
```
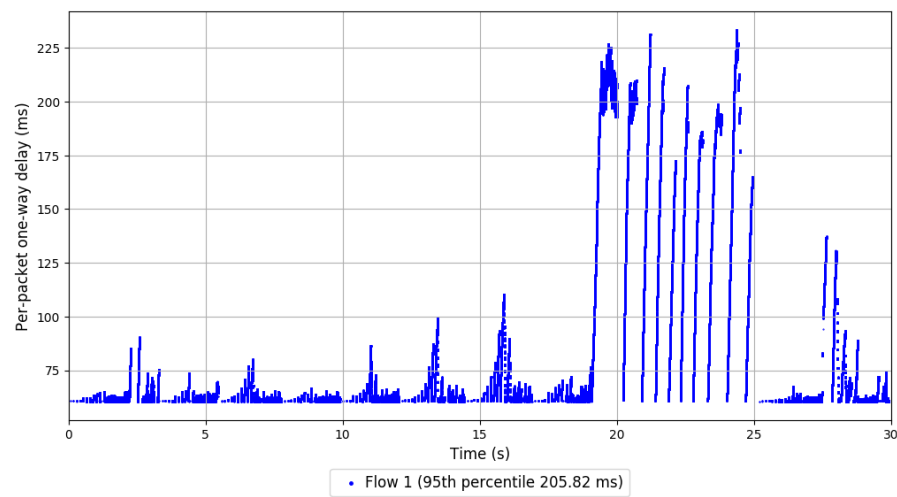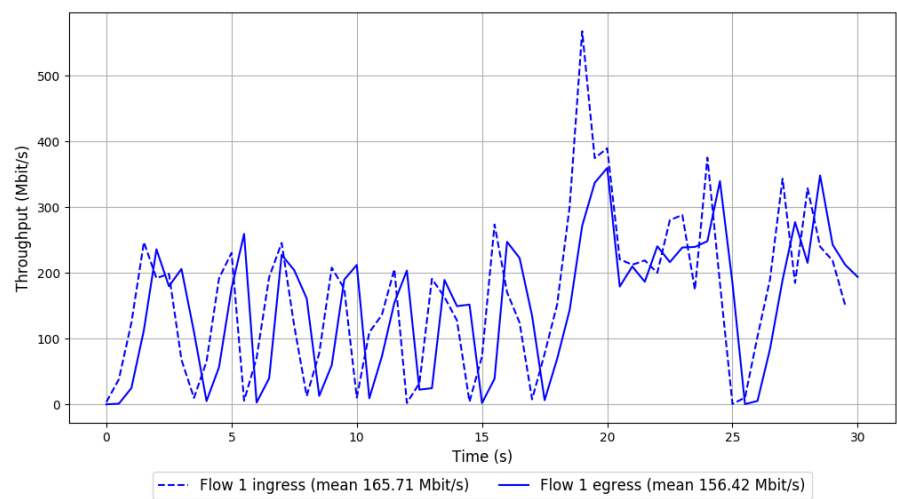
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-12-12 06:05:59
End at: 2018-12-12 06:06:29
Local clock offset: -0.245 ms
Remote clock offset: -0.012 ms


# Below is generated by plot.py at 2018-12-12 09:12:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 156.42 Mbit/s
95th percentile per-packet one-way delay: 205.816 ms
Loss rate: 5.61%
-- Flow 1:
Average throughput: 156.42 Mbit/s
95th percentile per-packet one-way delay: 205.816 ms
Loss rate: 5.61%
```

Run 3: Report of Verus — Data Link

```
Run 4: Statistics of Verus

Start at: 2018-12-12 06:35:20
End at: 2018-12-12 06:35:50
Local clock offset: -0.042 ms
Remote clock offset: 0.018 ms


# Below is generated by plot.py at 2018-12-12 09:14:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 214.95 Mbit/s
95th percentile per-packet one-way delay: 212.551 ms
Loss rate: 10.02%
-- Flow 1:
Average throughput: 214.95 Mbit/s
95th percentile per-packet one-way delay: 212.551 ms
Loss rate: 10.02%
```
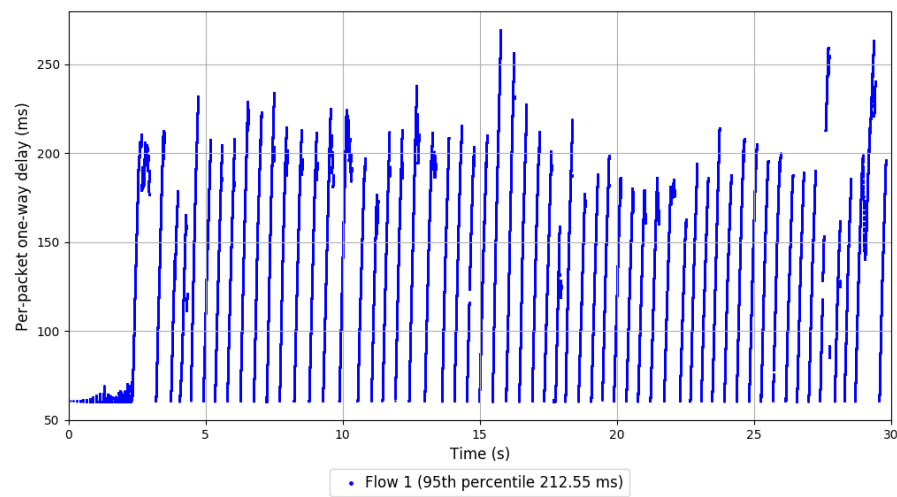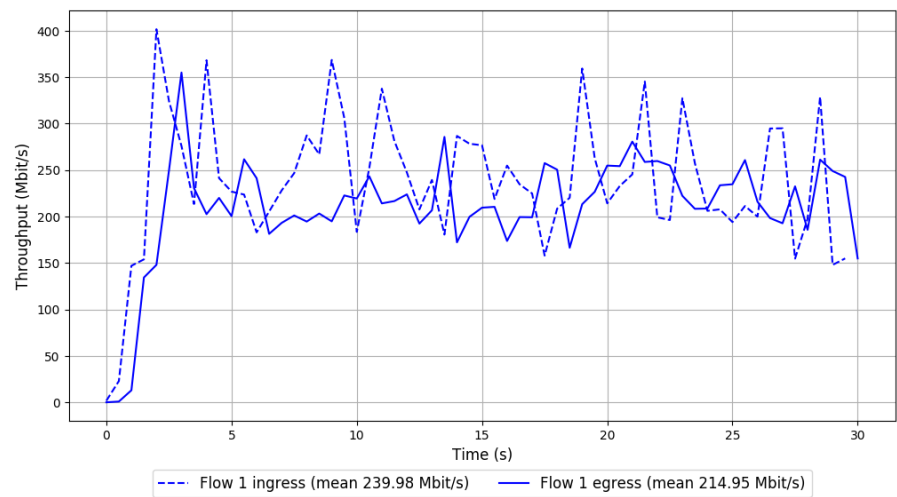
Run 4: Report of Verus — Data Link

Flow 1 ingress (mean 239.98 Mbit/s)   Flow 1 egress (mean 214.95 Mbit/s)

• Flow 1 (95th percentile 212.55 ms)

```
Run 5: Statistics of Verus

Start at: 2018-12-12 07:04:35
End at: 2018-12-12 07:05:05
Local clock offset: -0.395 ms
Remote clock offset: 1.053 ms


# Below is generated by plot.py at 2018-12-12 09:14:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 158.53 Mbit/s
95th percentile per-packet one-way delay: 118.606 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 158.53 Mbit/s
95th percentile per-packet one-way delay: 118.606 ms
Loss rate: 0.00%
```
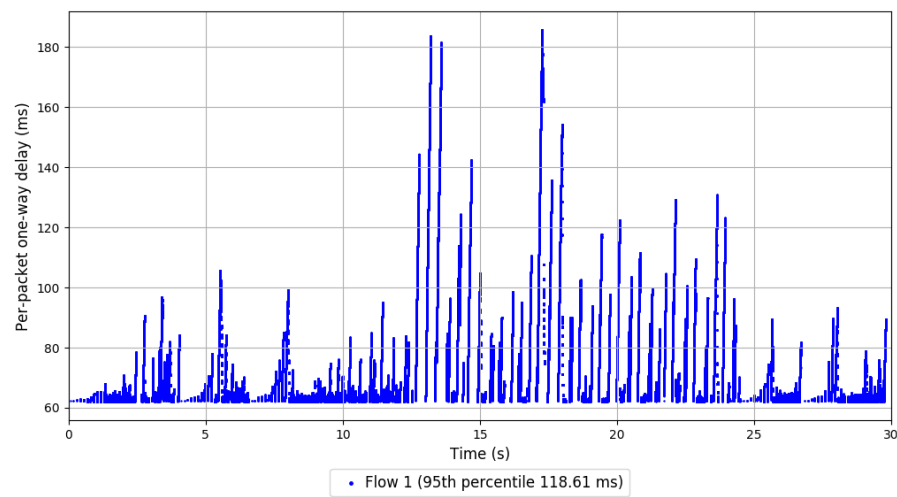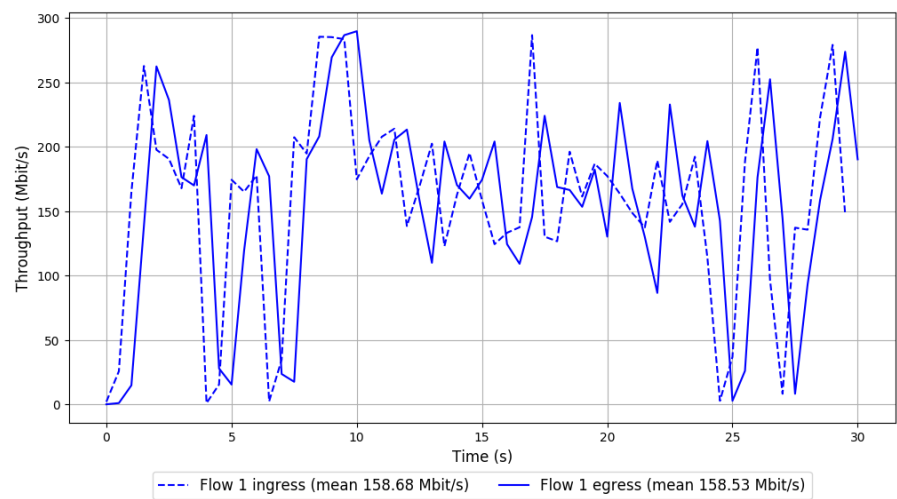
Run 5: Report of Verus — Data Link

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-12-12 05:19:31
End at: 2018-12-12 05:20:01
Local clock offset: -0.302 ms
Remote clock offset: 0.102 ms


# Below is generated by plot.py at 2018-12-12 09:16:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 395.67 Mbit/s
95th percentile per-packet one-way delay: 59.706 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 395.67 Mbit/s
95th percentile per-packet one-way delay: 59.706 ms
Loss rate: 0.00%
```
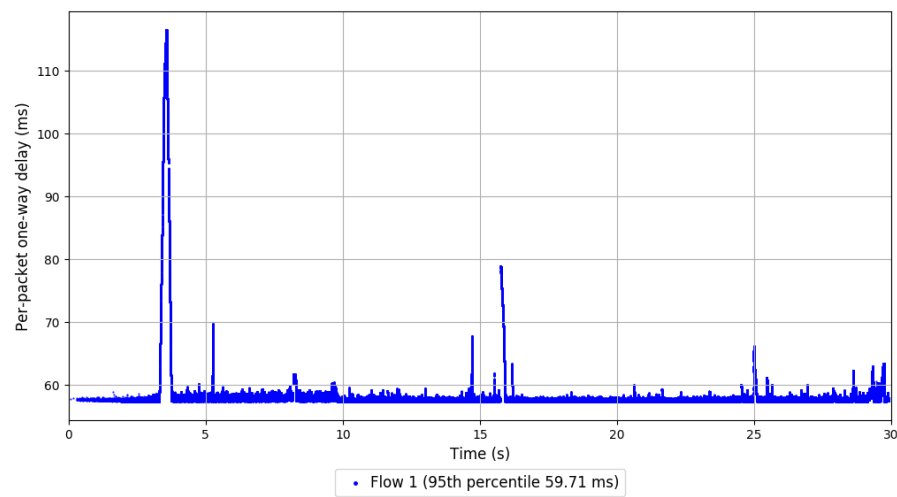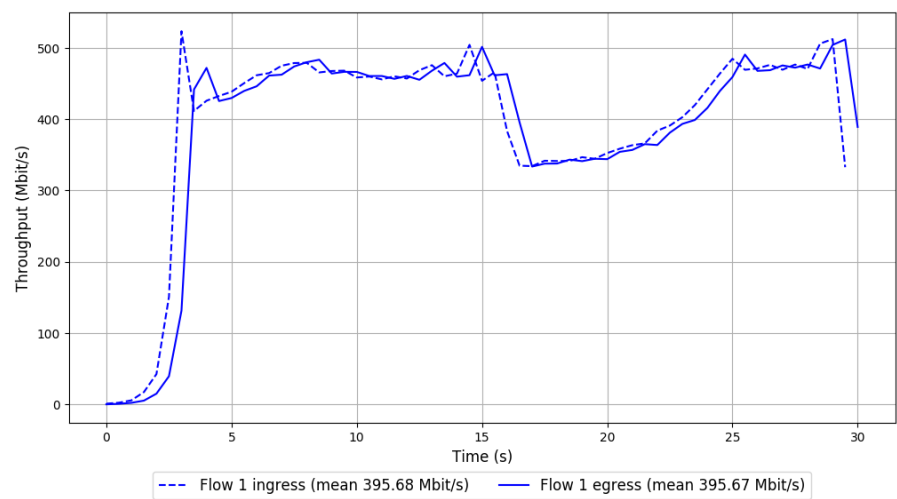
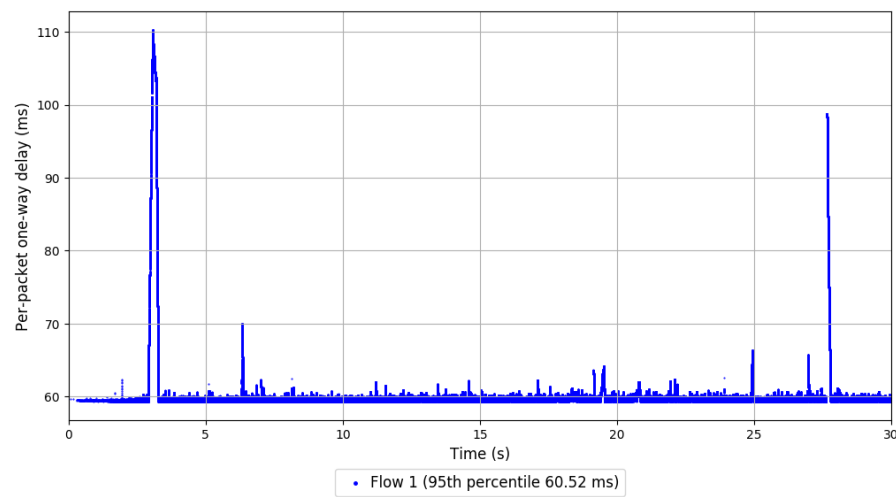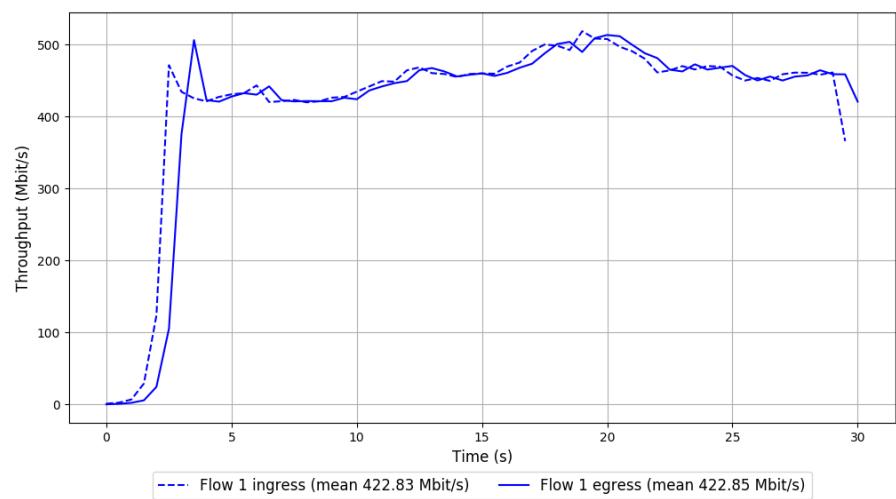Run 1: Report of PCC-Vivace — Data Link

```
Run 2: Statistics of PCC-Vivace

Start at: 2018-12-12 05:48:14
End at: 2018-12-12 05:48:44
Local clock offset: -0.146 ms
Remote clock offset: -0.754 ms


# Below is generated by plot.py at 2018-12-12 09:17:21
# Datalink statistics
-- Total of 1 flow:
Average throughput: 422.85 Mbit/s
95th percentile per-packet one-way delay: 60.518 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 422.85 Mbit/s
95th percentile per-packet one-way delay: 60.518 ms
Loss rate: 0.01%
```

Run 2: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 422.83 Mbit/s)   Flow 1 egress (mean 422.85 Mbit/s)
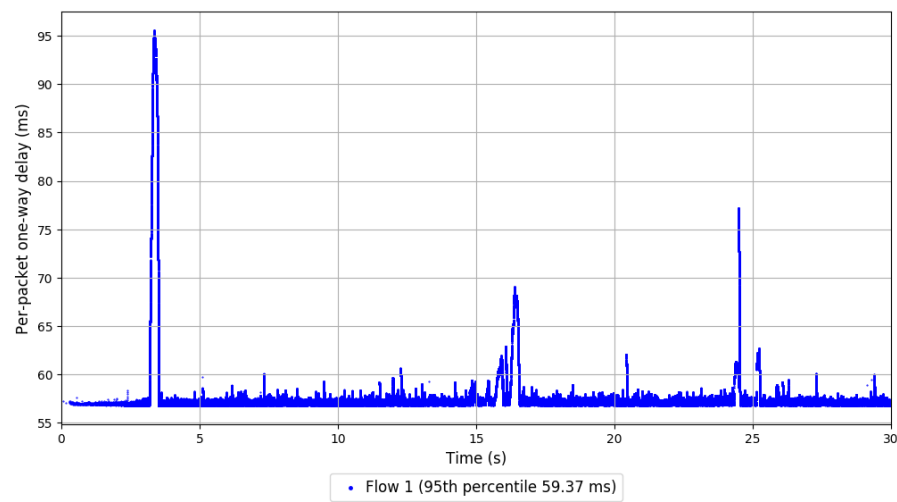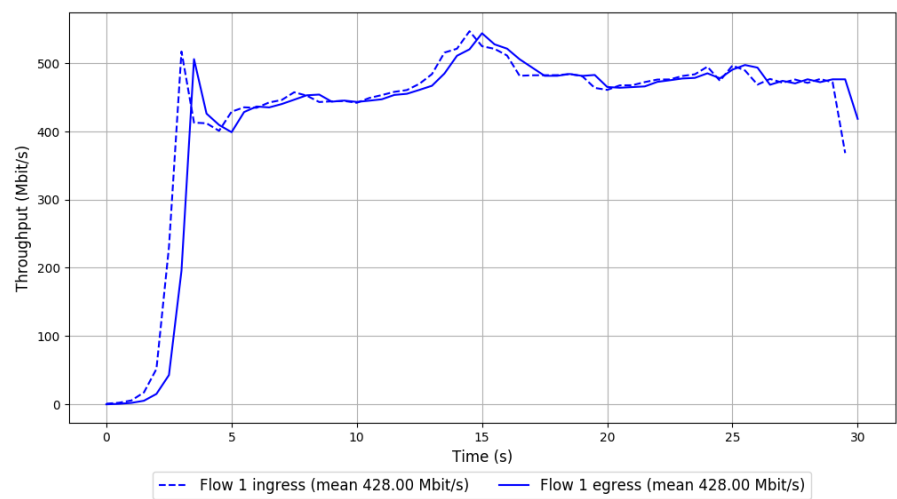

Flow 1 (95th percentile 60.52 ms)

```
Run 3: Statistics of PCC-Vivace

Start at: 2018-12-12 06:17:27
End at: 2018-12-12 06:17:57
Local clock offset: -0.049 ms
Remote clock offset: -0.089 ms


# Below is generated by plot.py at 2018-12-12 09:17:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 428.00 Mbit/s
95th percentile per-packet one-way delay: 59.368 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 428.00 Mbit/s
95th percentile per-packet one-way delay: 59.368 ms
Loss rate: 0.00%
```

Run 3: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 428.00 Mbit/s)   Flow 1 egress (mean 428.00 Mbit/s)
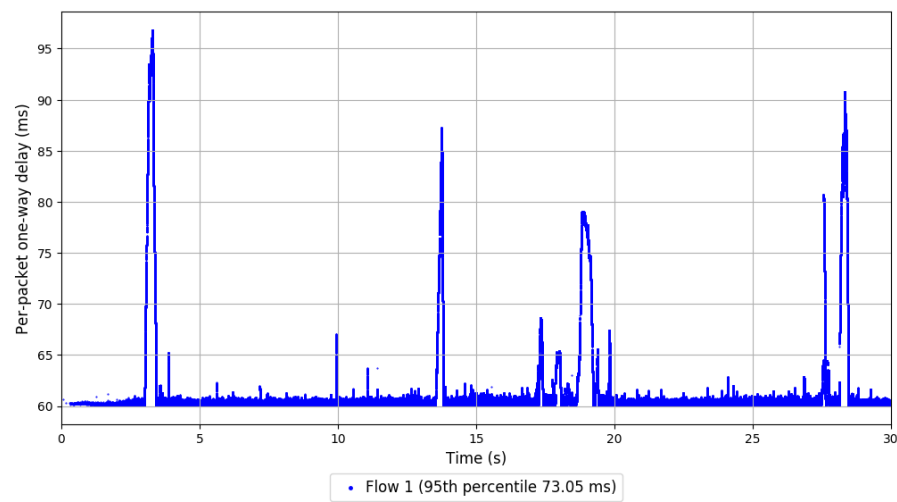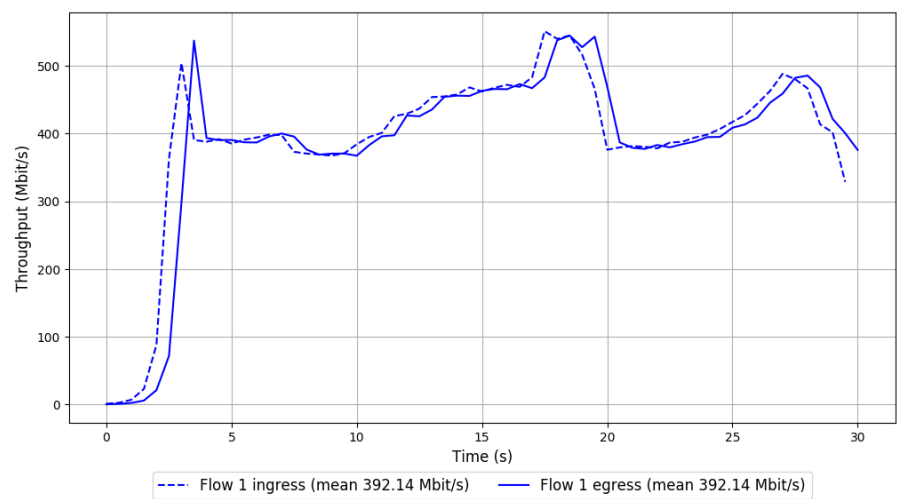

Flow 1 (95th percentile 59.37 ms)

```
Run 4: Statistics of PCC-Vivace

Start at: 2018-12-12 06:46:41
End at: 2018-12-12 06:47:11
Local clock offset: -0.236 ms
Remote clock offset: -0.172 ms


# Below is generated by plot.py at 2018-12-12 09:17:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 392.14 Mbit/s
95th percentile per-packet one-way delay: 73.054 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 392.14 Mbit/s
95th percentile per-packet one-way delay: 73.054 ms
Loss rate: 0.01%
```

Run 4: Report of PCC-Vivace — Data Link

```
Run 5: Statistics of PCC-Vivace

Start at: 2018-12-12 07:16:09
End at: 2018-12-12 07:16:39
Local clock offset: 0.331 ms
Remote clock offset: -0.401 ms


# Below is generated by plot.py at 2018-12-12 09:17:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 378.33 Mbit/s
95th percentile per-packet one-way delay: 60.677 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 378.33 Mbit/s
95th percentile per-packet one-way delay: 60.677 ms
Loss rate: 0.01%
```
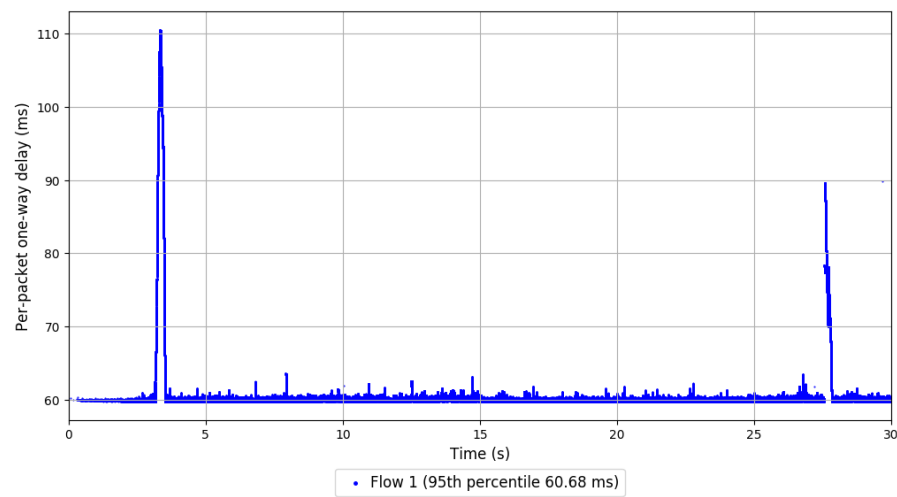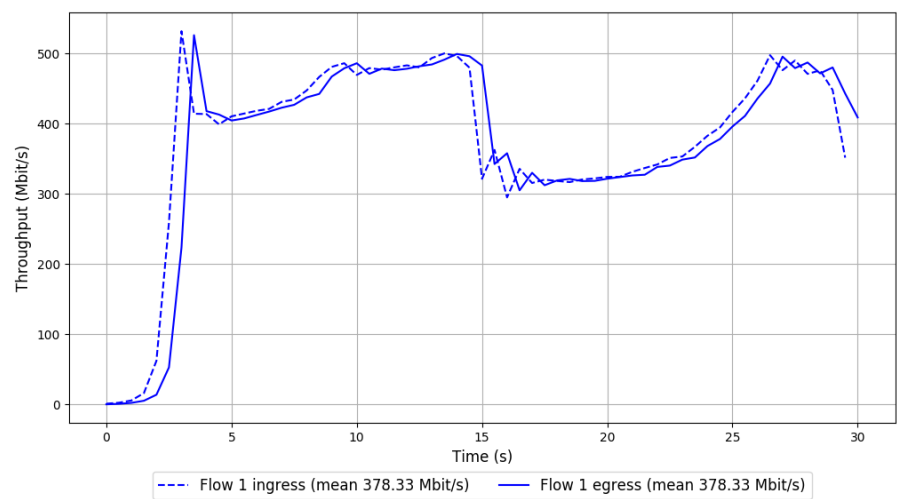
Run 5: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 378.33 Mbit/s) — — — Flow 1 egress (mean 378.33 Mbit/s) ——

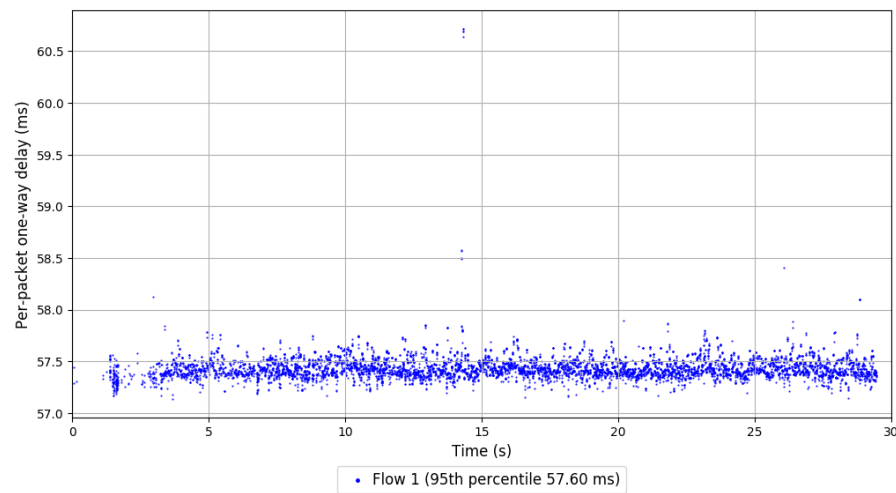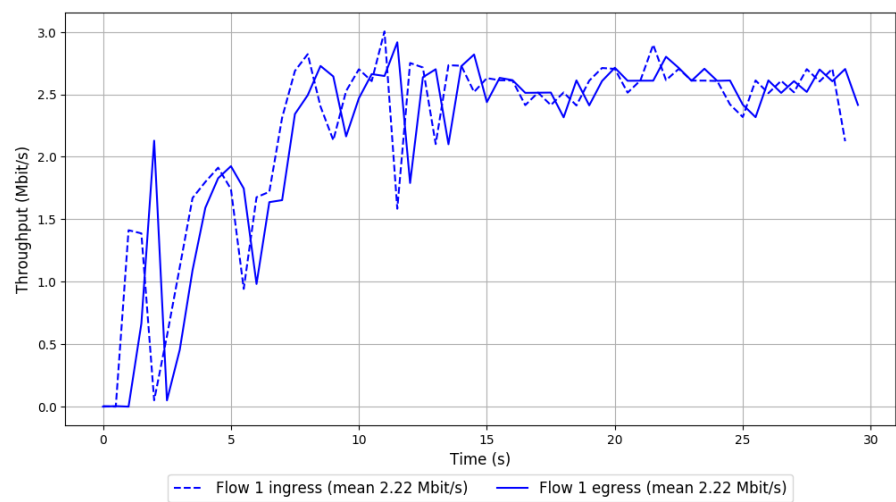

• Flow 1 (95th percentile 60.68 ms)

```
Run 1: Statistics of WebRTC media

Start at: 2018-12-12 05:16:45
End at: 2018-12-12 05:17:15
Local clock offset: -0.129 ms
Remote clock offset: -0.111 ms


# Below is generated by plot.py at 2018-12-12 09:17:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.22 Mbit/s
95th percentile per-packet one-way delay: 57.602 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.22 Mbit/s
95th percentile per-packet one-way delay: 57.602 ms
Loss rate: 0.00%
```

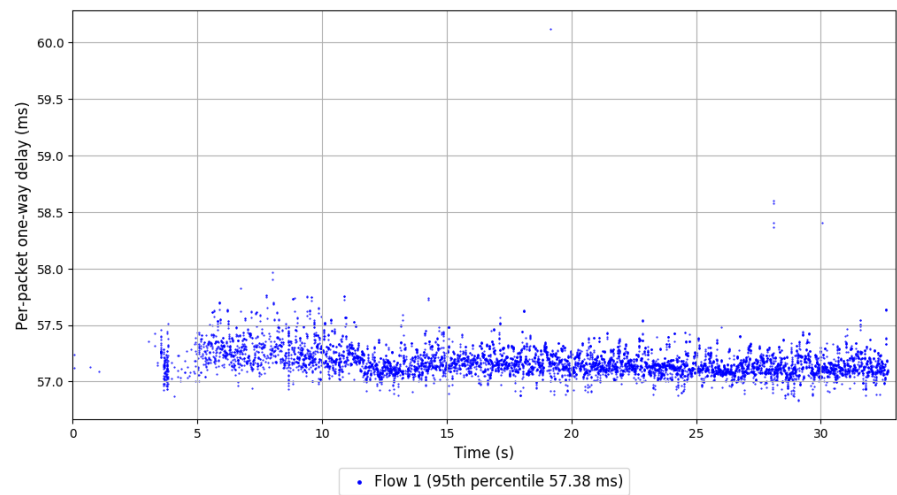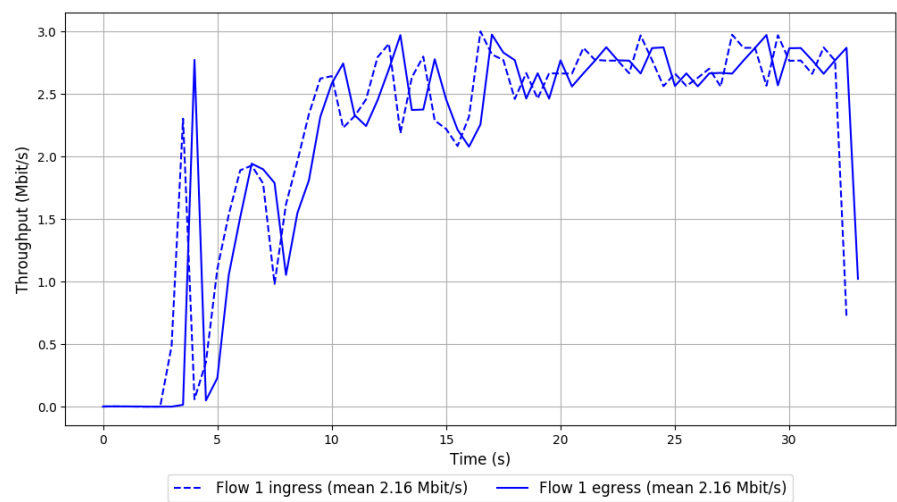Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2018-12-12 05:45:28
End at: 2018-12-12 05:45:58
Local clock offset: -0.084 ms
Remote clock offset: -0.121 ms


# Below is generated by plot.py at 2018-12-12 09:17:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.16 Mbit/s
95th percentile per-packet one-way delay: 57.385 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.16 Mbit/s
95th percentile per-packet one-way delay: 57.385 ms
Loss rate: 0.00%
```

Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-12-12 06:14:35
End at: 2018-12-12 06:15:05
Local clock offset: -0.042 ms
Remote clock offset: 0.106 ms


# Below is generated by plot.py at 2018-12-12 09:17:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.85 Mbit/s
95th percentile per-packet one-way delay: 60.920 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 1.85 Mbit/s
95th percentile per-packet one-way delay: 60.920 ms
Loss rate: 0.06%
```
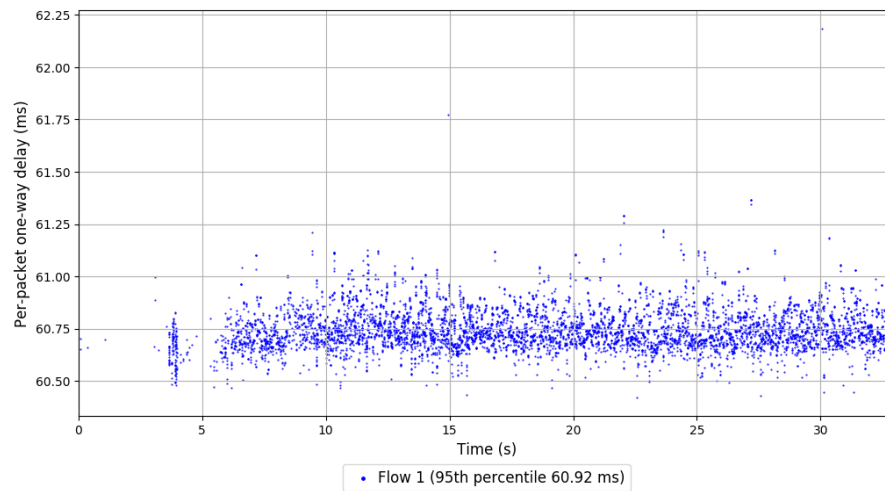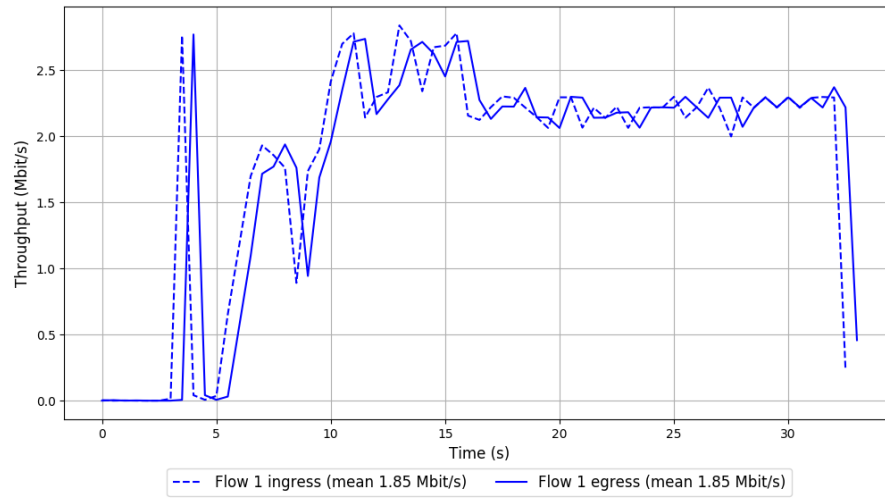
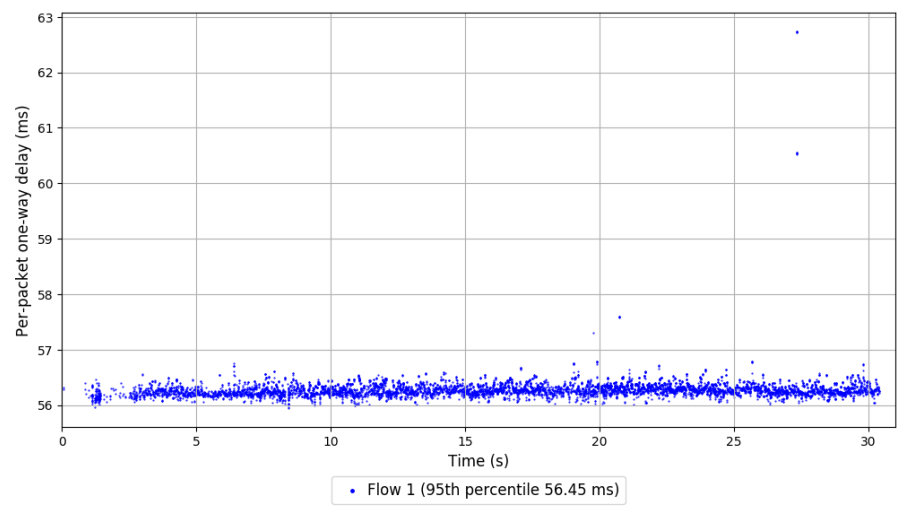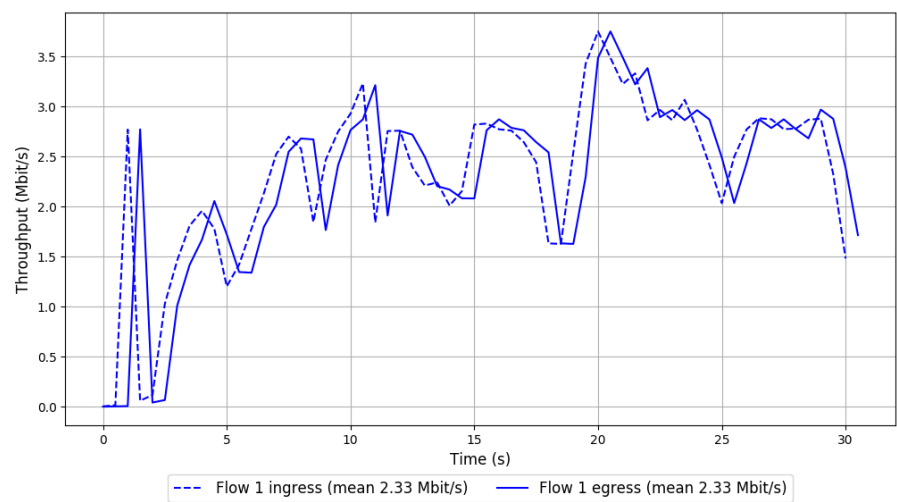Run 3: Report of WebRTC media — Data Link

```
Run 4: Statistics of WebRTC media

Start at: 2018-12-12 06:43:55
End at: 2018-12-12 06:44:25
Local clock offset: 0.189 ms
Remote clock offset: -0.747 ms


# Below is generated by plot.py at 2018-12-12 09:17:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.33 Mbit/s
95th percentile per-packet one-way delay: 56.454 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.33 Mbit/s
95th percentile per-packet one-way delay: 56.454 ms
Loss rate: 0.00%
```

Run 4: Report of WebRTC media — Data Link

Flow 1 ingress (mean 2.33 Mbit/s)   Flow 1 egress (mean 2.33 Mbit/s)

Flow 1 (95th percentile 56.45 ms)

```
Run 5: Statistics of WebRTC media

Start at: 2018-12-12 07:13:23
End at: 2018-12-12 07:13:53
Local clock offset: 0.165 ms
Remote clock offset: -0.192 ms


# Below is generated by plot.py at 2018-12-12 09:17:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 60.183 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 60.183 ms
Loss rate: 0.00%
```

Run 5: Report of WebRTC media — Data Link